EXPLORER™500

AT COMMAND SET

SPECIFICATION
# 1 Table of Content

1. **Table of Content** ................................................................. 2

2. **Introduction** ........................................................................ 5

3. **Inmarsat defined AT Commands** ........................................ 5
   - AT+IGPS - GPS Location Information ........................................... 5
   - AT+JPOINTER - Antenna Pointing ................................................ 6
   - AT+IBALARM - Report the Alarm State of the Terminal ..................... 6
   - AT+ISIG - Signal quality indication ................................................. 7
   - AT+IMETER - Call Metering ........................................................... 7
   - AT+ITCSI - Configure Incoming Voice Quality .............................. 8
   - AT+ITCSO - Configure Outgoing Voice Quality ............................... 8
   - AT+ITIP - TCP/IP Settings ............................................................. 9
   - AT+INOTIFY - Control the sending of unsolicited result codes .......... 9
   - AT+INIS - Network Interface Status .............................................. 10
   - AT+ITNT - Configure NAT for an interface ..................................... 11
   - AT+ISLEEP - UT Sleep Mode Timeout ........................................... 11
   - AT+ITSGLUSER - Configure UT for single user operation ............... 12
   - AT+ILOG - Retrieve UT log file .................................................... 13
   - AT+IBLTH - Manage BlueTooth Pairing ....................................... 13
   - AT+IBTIF - Configure UT BlueTooth Interface ............................... 15
   - AT+IBTINQ - Bluetooth inquiry management ................................ 16

4. **3GPP/ITU defined AT Commands** ........................................ 17
   - AT+CBC - Battery charge ......................................................... 17
   - AT+CSQ - Signal quality ............................................................ 18
   - AT+CSIL - Silence Command .................................................... 18
   - AT+CPIN - Enter PIN ................................................................ 19
   - AT+CRSM - Restricted SIM Access ............................................ 19
   - AT+CFUN - Set phone functionality ............................................ 20
   - AT+CGATT - PS attach or detach ............................................... 20
   - AT+CGREP - Packet Domain event reporting ............................... 21
   - AT+CGREG - GPRS network registration status ........................... 22
   - AT+CPNP - Read operator names .............................................. 23
   - AT+COPS - PLMN selection ....................................................... 24
   - AT+CGCLASS - GPRS mobile station class +CGCLASS ................... 26
   - AT+CPLS - Selection of preferred PLMN list ................................ 26
   - AT+CGATT - PS attach or detach ............................................... 27
   - AT+CPLS - Selection of preferred PLMN list ................................ 27
   - AT+CREG - Network registration .............................................. 28
   - AT+CAAP - Automatic answer for eMLPP Service ....................... 29
   - AT+CACM - Accumulated call meter ......................................... 30
   - AT+CAEMLPP - eMLPP Priority Registration and Interrogation ....... 30
   - AT+CUSD - Unstructured supplementary service data .................. 31
   - AT+CHLD - Call related supplementary services .......................... 32
   - AT+CAMM - Accumulated call meter ......................................... 33
   - AT+COLP - Connected line identification presentation .................... 33
   - AT+CFCF - Call forwarding number and conditions ....................... 34
   - AT+CPS - eMLPP subscriptions .................................................. 35
   - AT+CPUC - Price per unit and currency table ................................ 36
   - AT+CPWD - Change password .................................................. 36
   - AT+CDIP - Called line identification presentation .......................... 37
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+CCWA</td>
<td>Call waiting</td>
<td>38</td>
</tr>
<tr>
<td>AT+CCWE</td>
<td>Call Meter maximum event</td>
<td>39</td>
</tr>
<tr>
<td>AT+CLKC</td>
<td>Facility lock +CLKC</td>
<td>40</td>
</tr>
<tr>
<td>AT+CLIP</td>
<td>Calling line identification presentation</td>
<td>42</td>
</tr>
<tr>
<td>AT+CLIR</td>
<td>Calling line identification restriction</td>
<td>43</td>
</tr>
<tr>
<td>AT+CFCS</td>
<td>Fast call setup conditions</td>
<td>43</td>
</tr>
<tr>
<td>AT+CASN</td>
<td>Supplementary service notifications</td>
<td>44</td>
</tr>
<tr>
<td>AT+CSVN</td>
<td>Set Voice Mail Number</td>
<td>45</td>
</tr>
<tr>
<td>AT+CMOD</td>
<td>Call mode</td>
<td>46</td>
</tr>
<tr>
<td>AT+GMI</td>
<td>Request manufacturer identification</td>
<td>46</td>
</tr>
<tr>
<td>AT+CGMI</td>
<td>Request Manufacturer Identification</td>
<td>47</td>
</tr>
<tr>
<td>AT+CMUT</td>
<td>Mute Control</td>
<td>47</td>
</tr>
<tr>
<td>AT+WS46</td>
<td>PCCA STD-101 [17] select wireless network</td>
<td>48</td>
</tr>
<tr>
<td>AT+CALM</td>
<td>Alert sound mode</td>
<td>48</td>
</tr>
<tr>
<td>AT+GMR</td>
<td>Request Revision Identification</td>
<td>49</td>
</tr>
<tr>
<td>AT+CGMR</td>
<td>Request Revision Identification</td>
<td>49</td>
</tr>
<tr>
<td>AT+CNUM</td>
<td>Subscriber number</td>
<td>50</td>
</tr>
<tr>
<td>AT+ICF</td>
<td>DTE DCE Character Framing</td>
<td>50</td>
</tr>
<tr>
<td>AT+CAOC</td>
<td>Advice of Charge</td>
<td>51</td>
</tr>
<tr>
<td>AT+CPBF</td>
<td>Find phonebook entries</td>
<td>52</td>
</tr>
<tr>
<td>AT+IFC</td>
<td>DTE-DCE local flow control</td>
<td>53</td>
</tr>
<tr>
<td>AT+CPAS</td>
<td>Phone activity status</td>
<td>54</td>
</tr>
<tr>
<td>AT+GMM</td>
<td>Request model identification</td>
<td>54</td>
</tr>
<tr>
<td>AT+CGMM</td>
<td>Request Model Identification</td>
<td>55</td>
</tr>
<tr>
<td>AT+CPBR</td>
<td>Read phonebook entries</td>
<td>55</td>
</tr>
<tr>
<td>AT+CPBS</td>
<td>Select phonebook memory storage</td>
<td>56</td>
</tr>
<tr>
<td>AT+CPBW</td>
<td>Write phonebook entry</td>
<td>57</td>
</tr>
<tr>
<td>ATE</td>
<td>Command Echo</td>
<td>58</td>
</tr>
<tr>
<td>ATI</td>
<td>Request Identification Information</td>
<td>59</td>
</tr>
<tr>
<td>ATL</td>
<td>Monitor speaker loudness</td>
<td>59</td>
</tr>
<tr>
<td>ATM</td>
<td>Monitor speaker mode</td>
<td>59</td>
</tr>
<tr>
<td>ATN</td>
<td>Automode control</td>
<td>60</td>
</tr>
<tr>
<td>ATP</td>
<td>Select pulse dialling (command)</td>
<td>60</td>
</tr>
<tr>
<td>ATQ</td>
<td>Result Code Suppression</td>
<td>61</td>
</tr>
<tr>
<td>ATS</td>
<td>Set Register</td>
<td>61</td>
</tr>
<tr>
<td>ATT</td>
<td>Select tone dialling (command)</td>
<td>62</td>
</tr>
<tr>
<td>ATV</td>
<td>DCE Response Format</td>
<td>62</td>
</tr>
<tr>
<td>ATX</td>
<td>Result Code Selection and Call Progress Monitoring Control</td>
<td>63</td>
</tr>
<tr>
<td>ATZ</td>
<td>Reset To Default Configuration</td>
<td>63</td>
</tr>
<tr>
<td>AT&amp;C</td>
<td>Circuit 109 (Received line signal detector) Behaviour</td>
<td>64</td>
</tr>
<tr>
<td>AT&amp;D</td>
<td>Circuit 108 (Data terminal ready) Behaviour</td>
<td>64</td>
</tr>
<tr>
<td>AT&amp;F</td>
<td>Set to Factory defined Configuration</td>
<td>65</td>
</tr>
<tr>
<td>AT&amp;K</td>
<td>Dummy</td>
<td>65</td>
</tr>
<tr>
<td>AT&amp;V</td>
<td>Display Active and stored profile</td>
<td>66</td>
</tr>
<tr>
<td>AT&amp;W</td>
<td>Store profile</td>
<td>66</td>
</tr>
<tr>
<td>AT+CIMI</td>
<td>Request International Mobile Subscriber Identity</td>
<td>66</td>
</tr>
<tr>
<td>AT+CIND</td>
<td>Indicator control</td>
<td>67</td>
</tr>
<tr>
<td>AT+IPR</td>
<td>Fixed DTE rate</td>
<td>68</td>
</tr>
<tr>
<td>AT+CBST</td>
<td>Select bearer service type</td>
<td>68</td>
</tr>
<tr>
<td>AT+ILRR</td>
<td>DTE DCE Local Rate Reporting</td>
<td>70</td>
</tr>
<tr>
<td>AT+GSN</td>
<td>Request product serial number identification</td>
<td>70</td>
</tr>
<tr>
<td>AT+CGSN</td>
<td>Request Product Serial Number Identification</td>
<td>71</td>
</tr>
<tr>
<td>AT+CCLK</td>
<td>Clock</td>
<td>71</td>
</tr>
<tr>
<td>AT+CRC</td>
<td>Cellular result codes</td>
<td>72</td>
</tr>
<tr>
<td>AT+FCLASS</td>
<td>Select mode</td>
<td>72</td>
</tr>
<tr>
<td>AT+THRANE</td>
<td>Enter debug shell</td>
<td>Error! Bookmark not defined.</td>
</tr>
</tbody>
</table>
AT+CLAC - List all available AT commands ...............................................................73
AT+CLCC - List current calls .......................................................................................73
AT+CEER - Extended error report ..............................................................................74
AT+CSRDF - Settings date format .............................................................................75
AT+CSCS - Select TE Character Set ..........................................................................75
AT+GCAP - Request complete capabilities list .........................................................76
AT+CMAR - Master Reset ..........................................................................................77
AT+CMEC - Mobile Equipment control mode ............................................................77
AT+CMEE - Report Mobile Equipment error .............................................................78
AT+CMER - Mobile Equipment event reporting .........................................................78
AT+CR - Service reporting control ...........................................................................81
AT+CSTA - Select type of address .............................................................................81
AT+CSTF - Settings time format ................................................................................81
AT+GCI - Country of Installation .............................................................................82
AT+CSMS - Select Message Service .........................................................................82
AT+CPMS - Preferred Message Storage ....................................................................83
AT+CSCA - Service Centre Address .........................................................................83
AT+CMGD - Delete Message .....................................................................................84
AT+CMSS - Send Message from Storage ..................................................................84
AT+CMMG - Send Command ....................................................................................85
AT+CNMI - New Message Indication to TE .................................................................85
AT+CGSM - Select service for MO SMS messages ...............................................89
AT+CRES - Restore Settings .....................................................................................89
AT-CSAS - Save Settings ..........................................................................................90
AT+CSMP - Set Text Mode Parameters .....................................................................90
AT+CMGF - Message Format .....................................................................................91
AT+CMGL - List Messages .......................................................................................91
AT+CMGR - Read Messages .....................................................................................92
AT+CMGS - Send Message .......................................................................................93
AT+CMGW - Write Message to Memory ....................................................................95
AT+ITEMP - UT temperature ....................................................................................96
AT+CGEOREQ - 3G Quality of Service Profile (Requested) ......................................96
AT+CGEOQMIN - 3G Quality of Service Profile (Minimum acceptable)..................101
ATA - Answer ...........................................................................................................105
AT+CGDSCONT - Define Secondary PDP Context....................................................105
AT+CGEQNEG - 3G Quality of Service Profile (Negotiated) .....................................107
AT+CGDATA - Enter data state ................................................................................109
ATD - Dial ..................................................................................................................110
ATH - Hook control ..................................................................................................111
AT+CHUP - Hangup call .........................................................................................111
AT+CGCMOD - PDP Context Modify .......................................................................112
AT+CGADDR - Show PDP address ...........................................................................112
AT+CGDCONT - Define PDP Context .......................................................................113
AT+CGTFT - Traffic Flow Template .........................................................................115
AT+CGQMIN - Quality of Service Profile (Minimum acceptable) .........................118
AT+CGREQ - Quality of Service Profile (Requested) .............................................119
AT+CGELL - PDP context activate or deactivate ......................................................120
AT+CCUG - Closed user group ..............................................................................121
2 Introduction

This document describes all the AT commands supported by the Thrane & Thrane EXPLORER 500 BGAN Terminal.

It describes both the proprietary Inmarsat defined AT commands used by the Inmarsat Launchpad and the standard AT commands defined in 3GPP and ITU.

This document describes the AT command syntaxes and supported parameters, for more details please refer to the appropriate 3GPP and ITU documents.

3 Inmarsat defined AT Commands

This chapter describes the AT commands that was defined by Inmarsat.

AT_IGPS - GPS Location Information
Ref : UT-TE Interface Specification ver 1.2 section 3.1.11

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_IGPS=&lt;lat&gt;,&lt;lon&gt;</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>_IGPS?</td>
<td>_IGPS: &lt;lat&gt;,&lt;lon&gt;,&lt;type&gt;,&lt;status&gt;,&lt;time&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>_IGPS=?</td>
<td>Return all supported values</td>
</tr>
</tbody>
</table>

Defined Values

<lat>
Latitude in decimal degrees (minutes & seconds converted to decimal degrees)
Positive values for North and negative values for South

<lon>
Longitude, also in decimal
Positive values for East and negative values for West

<type>
"2D", the GPS receiver has a 2D fix (and the GPS receiver is ON)
"3D", the GPS receiver has a 3D fix (and the GPS receiver is ON)
"Stored" the GPS receiver is turned off - Lat & Lon values are stored values,
time is the time of that fix
"Acquiring" the GPS receiver is turned on and it is attempting to acquire a
fix, the Lat & Lon values are stored values, time is the time of that fix

<status>
"allowed" - the UT is allowed to display the GPS location
"barred" - GPS Operation barred in this location (Lat & Lon will be returned as Zero)
"undetermined" - the UT has not received a network policy on GPS Display at the moment (Lat & Lon will be returned as Zero)

<time> = The time "NOW" held in the GPS receiver if the receiver is active and has determined a time.
The time the GPS fix was taken if <type> = "stored" or "acquiring"
blank if no data available.

**AT_IPOINT - Antenna Pointing**

AT IPOINT - Antenna Pointing
Ref: UT-TE Interface Specification ver 1.2 section 3.1.1

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_IPOINT= &lt;action&gt;</td>
<td>OK</td>
</tr>
<tr>
<td>_IPOINT?</td>
<td>_IPOINT: &lt;status&gt;</td>
</tr>
<tr>
<td>_IPOINT=?</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Defined Values**

<action>
0 Enter Pointing Mode (Implementation Optional)
1 Exit Pointing Mode (Implementation Mandatory)

<status>
0 In Pointing Mode
1 Not in Pointing Mode

**AT_IBALARM - Report the Alarm State of the Terminal**

IBALARM - Report the Alarm State of the Terminal
Ref: Common MMI Functional Specification & UT-TE Interface Specification ver 1.5 section 3.3.10

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_IBALARM</td>
<td>Repeat of all unsolicited alarms that are still active.</td>
</tr>
<tr>
<td>_IBALARM=?</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Defined Values**

Note: The set command causes the UT to reissue all unsolicited events messages for any outstanding alarms.
Informative example:
AT_IBALARM

OK

ITEMP: 1
+CME ERROR: 10

Supported Values

AT_ISIG - Signal quality indication

AT_ISIG - Signal quality indication
Ref : UT-TE Interface Specification ver 1.2 section 3.1.12

Command | Possible response(s)
------------------|--------------------------------------------------
_ISIG=<n> | OK
 | _ISIG: <rssi>
 | +CME ERROR: <err>

_ISIG? | _ISIG: <n>

_ISIG=? | _ISIG: (list of supported <n>s)

Defined Values

<n>
0 Disable sending of _ISIG unsolicited result code
1 Enable sending of _ISIG unsolicited result code
(sending unsolicited results at least every ½ second)

<rssi> Average value for C/No. A value of 0 should indicate that the receiver is not locked.

Supported Values

<n> 0,1

AT_IMETER - Call Metering

AT_IMETER - Call Metering
Ref : UT-TE Interface Specification ver 1.4 section 3.3.6

Command | Possible response(s)
------------------|--------------------------------------------------
_IMETER=<counter>,<mode> | IMETER= <counter>,<value>
 | OK

_IMETER? <counter> | IMETER: <mode>

_IMETER=? | Return all supported values

Defined Values

<counter>
CS Circuit Switched duration in seconds
PS Packet Switched volume in bytes

<value>
any value
<mode>
0      Query Meter value
1      Deactivate the unsolicited reporting of Meter value
2      Activate the unsolicited reporting of Meter value
      (results are sent when the meter value changes,
       but not more than every 10 seconds)
3      Reset Meter to zero

Supported Values
<counter>
   CS, PS

<mode>
   0 - 3

AT_ITCSI - Configure Incoming Voice Quality
AT_ITCSI - Configure Incoming Voice Quality
Ref : UT-TE Interface Specification, Thrane & Thrane Specific Extensions
ver 1.6 section 4.2
============================================================================= Command                          Possible response(s)============================================================================= _ITCSI=<interface>,<codings>      OK +CME ERROR: <err>============================================================================= _ITCSI?<interface>               _ITCSI: <interface>,<codings>============================================================================= _ITCSI=?                         _ITCSI: (list of supported interfaces),
                                             (list of supported codings)
============================================================================= Defined Values
<interface>
   "an"      Analogue 2 wire
   "bt0"     Bluetooth interface (device) 1
   "bt1"     Bluetooth interface (device) 2
   ...
   "bt6"     Bluetooth interface (device) 7

<coding>
   List of codings (e.g. ambe,isdn64). If list is empty the interface does not
   support incoming calls.
   "ambe"   Interface supports AMBE coded voice only
   "isdn64"  Interface supports 64k isdn (e.g. is a fax) only

AT_ITCSO - Configure Outgoing Voice Quality
AT_ITCSO - Configure Outgoing Voice Quality
Ref : UT-TE Interface Specification, Thrane & Thrane Specific Extensions
ver 1.6 section 4.3
============================================================================= Command                          Possible response(s)============================================================================= _ITCSO=<coding>                  OK
EXPLORER 500 AT Command Set

+CME ERROR: <err>

_ITCSO?

_ITCSO: <coding>

_ITCSO=?

_ITCSO: (list of supported coding)

Defined Values

<coding>
"ambe" Interface supports AMBE coded voice
"isdn64" Interface supports 64k isdn (e.g. is a fax)

AT_ITIP - TCP/IP Settings

AT ITIP - TCP/IP Settings

Ref:

Command Possible response(s)

_ITIP=<ip>,<netmask> OK
+CME ERROR: <err>

_ITIP?

_ITIP=<ip>,<netmask>

_ITIP=?

Defined Values

<ip>
The IP address of the UT. The parameter, when combined with <netmask>, also defines IP address range for addresses issued to UTs via DHCP.

<netmask>
The subnet mask associated with the UT's LAN interface.

AT_IBNOTIFY - Control the sending of unsolicited result codes

AT+CMER - Control the sending of unsolicited result codes

Ref: UT-TE Interface Specification ver 1.x section x.x.x.
Ref: Proposed _IBNOTIFY Command {21 Apr 05}

Command Possible response(s)

_IBNOTIFY=<code>,<status> +CME ERROR: <err>

_IBNOTIFY?

_IBNOTIFY: <code>,<status>
[<CR><LF>_IBNOTIFY: <code>,<status>[...]]

_IBNOTIFY=?

_IBNOTIFY = (range of supported <codes>),
(range of supported <statuses>)

Defined Values
<code>
_IBLTH reporting Bluetooth, mandatory if _IBNOTIFY is implemented
_IGPS reporting GPS position, mandatory if _IBNOTIFY is implemented
_IPOINT reporting change in pointing mode, mandatory if _IBNOTIFY is implemented
_IITEMP reporting change in temperature status, mandatory if _IBNOTIFY is implemented
_ISIG reporting of signal strength, optional
_ISLEEP reporting change in sleep status, optional
.IMETER reporting usage meters, optional
.ALL causes the UT to enable or disable all supported unsolicited result codes.

Others can be added, e.g.:
+CGEV reporting events in the packet domain, optional as controlled by +CGEREP command.

Manufacturers are encouraged to include more values of <code> than are documented here - the list shall be extended by adding <code> with a value the same as that of the unsolicited result code.

<status>

0 Disable the sending of this unsolicited result code
1 Enable the sending of this unsolicited result code.

Supported Values
<code>
_IBLTH, _IGPS, _ITEMP, _IPOINT, _IERROR, ALL
<status>
0, 1

AT_INIS - Network Interface Status

AT_INIS - Network Interface Status
Ref: UT-TE Interface Specification ver 1.2 section 3.1.3
-------------------------------------------------------------
Command                         Possible response(s)
-------------------------------------------------------------
_INIS= <interface>,<status>      OK
+CME ERROR: <err>

_INIS?       _INIS: <interface>,<status>
+CME ERROR: <err>

_INIS=?       _INIS: {List of supported <interface>s}

Defined Values

<interface>
eth  Ethernet
wlan Wireless LAN (802.11b WiFi)
usb  USB
isdn ISDN
bt  Bluetooth
psdn Plain Old Telephone (2W)
**AT_ITNAT - Configure NAT for an interface**

AT_ITNAT - Configure NAT for an interface  
Ref: Common MMI Functional Specification & UT-TE Interface Specification  
ver 1.6 section 4.1

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ITNAT= &lt;interface&gt;,&lt;status&gt;</td>
<td>OK</td>
</tr>
<tr>
<td>_CME ERROR: &lt;err&gt;</td>
<td></td>
</tr>
<tr>
<td>_ITNAT? &lt;interface&gt;</td>
<td>_ITNAT: &lt;interface&gt;,&lt;status&gt;</td>
</tr>
<tr>
<td>_ITNAT=?</td>
<td>_ITNAT: (list of supported &lt;interface&gt;s), (list of supported &lt;status&gt;s)</td>
</tr>
</tbody>
</table>

**Defined Values**

<table>
<thead>
<tr>
<th>&lt;interface&gt;</th>
<th>eth, bt</th>
</tr>
</thead>
</table>
| <status>      | 0 Off (Interface is in modem mode)  
|               | 1 On (Interface is in NAT mode) |

**AT_ISLEEP - UT Sleep Mode Timeout**

AT_ISLEEP - UT Sleep Mode Timeout  
Ref: UT-TE Interface Specification ver 1.2 section 3.1.9

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ISLEEP= &lt;mode&gt;[,&lt;idle timer&gt;]</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>_ISLEEP?</td>
<td>_ISLEEP: &lt;mode&gt;[,&lt;idle timer&gt;]</td>
</tr>
<tr>
<td>_ISLEEP=?</td>
<td>_ISLEEP: (range of acceptable values)</td>
</tr>
</tbody>
</table>

**Defined Values**

<table>
<thead>
<tr>
<th>&lt;status&gt;</th>
<th>0, 1</th>
</tr>
</thead>
</table>
<mode>
0 Unsolicited alerts for Sleep Mode disabled
1 Unsolicited alerts for Sleep Mode enabled

<idle timer>
0 - xxxx In seconds
In its unsolicited alert format, _ISLEEP supports the parameter <action>

$action>
"Sleeping" The UT is entering sleep mode, the MMI should not poll for information (unless due to operator interaction)
"Waking" The UT is exiting from sleep mode, the MMI may now poll for status information

Supported Values
(mode>
0,1
(idle timer> - not supported -

AT_ITSGLUSER - Configure UT for single user operation

AT_ITSGLUSER - Configure UT for single user operation

Command Possible response(s)
_ITSGLUSER=<mode> OK +CME ERROR: <err>
_ITSGLUSER=? _ITSGLUSER: <mode>
_ITSGLUSER=? _ITSGLUSER: (list of supported modes)

Description
This command controls the single user mode operation of the UT.

In this mode all cid's (see +cgdcont) are shared among all interfaces of the UT. The cid 11 and 10 are reserved for the primary/secondary PDP context of the Ethernet interface. Activation of PDP contexts (+cgdata, atd) should include a reference to one or more cid's (activating of all defined PDP contexts should be avoid).

When changing to single user mode all active PDP contexts will be closed.

Defined Values:-
<mode>
0 = disable single user mode (default)
1 = enable single user mode

Execute Command:
Enable/disable single user mode.

Read Command
Returns current mode of operation.
Test Command:
  Returns a list of supported modes

**AT_ILOG - Retrieve UT log file**

AT_ILOG - Retrieve UT log file
Ref : UT-TE Interface Specification ver 1.2 section 3.1.8
=============================================================================
Command                          Possible response(s)
=============================================================================
  _ILOG= <logfile>[,<value>]       OK
                                 +CME ERROR: <err>

  _ILOG? <logfile>[,<lines>]       _ILOG: "Contents of log file....."
                                 +CME ERROR: <err>

  _ILOG =?                         _ILOG: <list of supported log files>
=============================================================================
Defined Values

<logfile>
  Text string describing the log file, e.g. "Error Log" and " Connection Log"

<value>
  0       No action
  1       Erase

<lines>
  Number of lines (entries) of the log file to return, if not specified then the entire log file is returned.

Supported Values
  <logfile>
   Error Log

**AT_IBLTH - Manage BlueTooth Pairing**

AT_IBLTH - Manage BlueTooth Pairing
Ref : UT-TE Interface Specification, Thrane & Thrane Specific Extensions
  ver 1.6 section 8.6.1
=============================================================================
Command                          Possible response(s)
=============================================================================
  _IBLTH=<address>,<status>[,<passkey>
  ][,<services_allowed>
    ][,<services_disallowed>]}
                                 OK
                                 +CME ERROR: <err>

  _IBLTH?                          _IBLTH: <list of visible, paired
devices>
  <address>,<status>,<name>,<major class>,<minor
class>,<services_offered>,<services_allowed>,<services_taken>

  _IBLTH=?                        OK
                                 ERROR
=============================================================================
Unsolicited event

=============================================================================  
_IBLTH: <list of devices responding to inquiry>/<device requesting connection>
<Address>,<status>,<name>,<major class>,<minor class>,<services_offered>,<services_allowed>,<services_taken>
=============================================================================  

<Address>
Defined Values (ALL)

>Status>
Defined Values (SET)
 0  Reject pairing with/Disconnect from bluetooth device
 1  Accept pairing with/Connect to bluetooth device

Defined Values (READ)
 1  In-Range - Paired or Connected(+Paired)

Defined Values (EVENT: INQUIRY RESPONSE)
 0  In-Range - Not Paired or Not Connected
 1  In-Range - Paired and Connected

Defined Values (EVENT: PAIRING REQUEST)
 3  In-Range - Pairing Requested

<passkey>
Defined Values (ALL)
 16 char pincode

>Name>
Defined Values (READ+EVENT)
 first 32 chars max

>Major class>
Defined Values (READ+EVENT)
 major device class - only one

>Minor class>
Defined Values (READ+EVENT)
 minor device class - dependent on major device class

>Services offered>
Defined Values (READ+EVENT)
 services on offer - bits 13 to 23 ORed together as decimal, not related to the T&T service mask

>Services allowed>
Defined Values (ALL)
 services allowed - bits 0 to 5 ORed together as decimal, see T&T service mask

>Services taken>
Defined Values (READ+EVENT)
 services taken - bits 0 to 5 ORed together as decimal, see T&T service mask
<services_disallowed>
<Defined Values (SET)
services not allowed - bits 0 to 5 ORed together as decimal, see T&T service mask

<T&T service mask>
Decimal bit mask
  Bit 0 - serial port
  Bit 1 - dialup port
  Bit 2 - fax port
  Bit 3 - lan port using PPP
  Bit 4 - cordless telephony channel
  Bit 5 - headset channel

AT_IBTIF - Configure UT BlueTooth Interface

AT_IBTIF - Configure UT BlueTooth Interface
Ref : UT-TE Interface Specification, Thrane & Thrane Specific Extensions
ver 1.6 section 8.6.2

Command | Possible response(s)
---|---
_IBTIF= | OK
| +CME ERROR: <err>
_IBTIF? | _IBTIF:
<status>,<discoverability_mode>,<security_mode>,<name> | OK
_IBTIF=? | OK

Defined Values

<status>
  0 Disable Bluetooth
  1 Enable Bluetooth

<discoverability_mode>
Note: Common MMI will only use 0 and 1, therefore the rest are optional
  0 Not accessible (no inquiry scan+no page scan = not discoverable and not connectable)
  1 General accessible (inquiry scan+page scan = discoverable and connectable)
  2 Limited accessible (limited inquiry scan+page scan = limited discoverable and connectable)
  3 Connectable only ( no inquiry scan+page scan = not discoverable and connectable)

<security_mode>
  1 Security mode 1 (non-secure)
  2 Security mode 2 (service level enforced)
  3 Security mode 3 (link level enforced)
<name>
first 32 chars max

<passkey>
16 char pincode

<services_allowed>
see T&T Service Mask (_IBLTH)

**AT_IBTINQ - Bluetooth inquiry management**

AT_IBTINQ - Bluetooth inquiry management
Ref: UT-TE Interface Specification, Thrane & Thrane Specific Extensions
ver 1.6 section 8.6.3

Command Possible response(s)
_IBTINQ=[<duration> [, <inquiry mode>]] OK
+CME ERROR: <err>

_ IBTINQ=? _IBTINQ: (Maximum <duration>), (range of supported <inquiry_mode>s)

unsolicited event

_IBTINQ: END

Defined Values

<duration>
Inquiry period in seconds (default=10)

<inquiry mode>
1 general inquiry mode (default)
2 limited inquiry mode
4 3GPP/ITU defined AT Commands

This chapter describes the AT commands specified by 3GPP standard and by ITU.

AT+CBC - Battery charge

AT+CBC - Battery charge
Ref: TS 27.007 - 460 section 8.4

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CBC</td>
<td>+CBC: &lt;bcs&gt;,&lt;bcl&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

+CBC=?

+CBC: (list of supported <bcs>s),
     (list of supported <bcl>s)

Defined Values

<bcs>
0  ME is powered by the battery
1  ME has a battery connected, but is not powered by it
2  ME does not have a battery connected
3  Recognized power fault, calls inhibited

<bcl>
0  battery is exhausted, or ME does not have a battery connected
1..100 battery has 1 100 percent of capacity remaining

note !!!!

Interpretation for Common MMI
A <bcs> of 1 or 2 shall be interpreted as "mains power connected"
A <bcs> of 1 combined with a <bcl> of <100 = battery charging
A <bcs> of 1 combined with a <bcl> of 100 = battery fully charged
A <bcs> of 1 combined with a <bcl> of 0 = battery is exhausted
A <bcs> of 2 combined with a <bcl> of 0 = MT does not have a battery connected

Further:
For BGAN use the +CBC Command needs to be supported in an unsolicited mode of operation.
(Arguably we could use +CIND and the +CIEV {battchv} unsolicited command to update
battery status, however we have elected to extend this command as it is more consistent
to have the values returned in the same format (scale of 1 to 100 not 1 to 5)

+CMER shall be extended to enable / disable unsolicited reporting of +CBC

Supported Values

<bcs>
0-2

<bcl>
### AT+CSQ - Signal quality

**AT+CSQ** - Signal quality  
Ref: TS 27.007 - 420 section 8.5

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CSQ</td>
<td>+CSQ: &lt;rssi&gt;,&lt;ber&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

| +CSQ=?       | +CSQ: (list of supported <rssi>s),                                                  |
|             | (list of supported <ber>s)                                                          |

**Defined Values**

- **<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
  - 99: not known or not detectable

**Supported Values**

- **<rssi>**  (0-31)
- **<ber>**  99

### AT+CSIL - Silence Command

**AT+CSIL** - Silence Command  
Ref: TS 27.007 - 420 section 6.23

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CSIL=[&lt;mode&gt;]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

| +CSIL=?       | +CSIL:<mode>                                                                        |
|              | +CME ERROR: <err>                                                                   |

| +CSIL=?       | +CSIL:(list of supported <mode>s)                                                  |
|              | +CME ERROR: <err>                                                                   |

**Defined Values**

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

**Supported Values**
**AT+CPIN - Enter PIN**

**AT+CPIN - Enter PIN**

Ref: TS 27.007 - 460 section 8.3

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CPIN=&lt;pin&gt;,&lt;newpin&gt;</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CPIN?</td>
<td>+CPIN: &lt;code&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CPIN=?</td>
<td></td>
</tr>
</tbody>
</table>

**Defined Values**

- **<pin>, <newpin>**
  - string type values

- **<code>**
  - READY: ME is not pending for any password
  - SIM PIN: ME is waiting SIM PIN to be given
  - SIM PUK: ME is waiting SIM PUK to be given

**Supported Values**

- none

---

**AT+CRSM - Restricted SIM Access**

**AT+CRSM**

Ref: ETSI TS 127.007 V4.6.0 section 8.18

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CRSM=</td>
<td></td>
</tr>
<tr>
<td>+CRSM=&lt;command&gt;,&lt;fileid&gt;,&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;[,&lt;data&gt;]]</td>
<td>+CRSM: &lt;sw1&gt;, &lt;sw2&gt;[,&lt;response&gt;]</td>
</tr>
</tbody>
</table>

**<action>**

- submits a restricted usim command and returns the card response or an error.

- **<command>** is
  - 176 READ BINARY
  - 178 READ RECORD
  - 214 UPDATE BINARY
  - 220 UPDATE RECORD
  - 242 STATUS
  - 192 GET RESPONSE is automatically handled by the interface if necessary and is therefore not implemented.

- **<P1>,<P2>,<P3>** default to 0 if omitted
- **<data>** should only appear for UPDATE BINARY and UPDATE RECORD and is invalid.
and will be rejected for other commands.

**AT+CFUN - Set phone functionality**

AT+CFUN - Set phone functionality  
Ref : TS 27.007 - 460 section 8.2  
=============================================================================  
Command                          Possible response(s)  
=============================================================================  
+CFUN=\[<fun>,<rst>\]             +CME ERROR: <err>  
+CFUN=                           +CFUN: <fun>  
                                      +CME ERROR: <err>  
+CFUN=?                          +CFUN: (list of supported <fun>s),  
                                      (list of supported <rst>s)  
                                      +CME ERROR: <err>  
=============================================================================  
Defined Values  

<fun>  
0      minimum functionality  
1      full functionality  
2      disable phone transmit RF circuits only  
3      disable phone receive RF circuits only  
4      disable phone both transmit and receive RF circuits  
5..127 reserved for manufacturers as intermediate states between full and minimum functionality

<rst>  
0      do not reset the ME before setting it to <fun> power level  
1      reset the ME before setting it to <fun> power level  

**AT+CGATT - PS attach or detach**

AT+CGATT - PS attach or detach  
Ref : TS 27.007 - 460 section 10.1.9  
=============================================================================  
Command                          Possible response(s)  
=============================================================================  
+CGATT= \[<state>\]                OK  
                                      ERROR  
+CGATT?                           +CGATT: <state>  
+CGATT=?                          +CGATT: (list of supported <state>s)  
=============================================================================  
Defined Values  

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

Supported Values
<state>:
(0,1)

AT+CGEREP - Packet Domain event reporting
AT+CGEREP - Packet Domain event reporting
Ref : TS 27.007 - 460 section 10.1.18
============================================================================= Command                          Possible response(s)
============================================================================= +CGEREP=[<mode>,<bfr>]]                  OK
                                                                               ERROR
+CGEREP?                     +CGEREP: <mode>,<bfr>
+CGEREP=?                        +CGEREP: (list of supported <mode>s),
                               (list of supported <bfr>s)
============================================================================= Defined Values
<mode>:
  0      buffer unsolicited result codes in the MT; if MT result code buffer
         is full, the oldest ones can be discarded. No codes are forwarded to
         the TE.
  1      discard unsolicited result codes when MT TE link is reserved
         (e.g. in on line data mode); otherwise forward them directly to the TE
  2      buffer unsolicited result codes in the MT when MT TE link is reserved
         (e.g. in on line data mode) and flush them to the TE when MT TE link
         becomes available; otherwise forward them directly to the TE
<bfr>:
  0      MT buffer of unsolicited result codes defined within this command is
         cleared when <mode> 1 or 2 is entered
  1      MT buffer of unsolicited result codes defined within this command is
         flushed to the TE when <mode> 1 or 2 is entered (OK response shall
         be given before flushing the codes)

Defined events
The following unsolicited result codes and the corresponding events are defined:
  +CGEV: REJECT <PDP_type>, <PDP_addr>
         A network request for PDP context activation occurred when the MT was
         unable to report it to the TE with a +CRING unsolicited result code
         and was automatically rejected.
  +CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]
         The network has requested a context reactivation. The <cid> that was
         used to reactivate the context is provided if known to the MT.
  +CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]
         The network has forced a context deactivation. The <cid> that was used
         to activate the context is provided if known to the MT.
+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]
The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.

+CGEV: NW DETACH
The network has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.
+CGEV: ME DETACH
The mobile equipment has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: NW CLASS <class>
The network has forced a change of MS class. The highest available class is reported (see +CGCLASS).

+CGEV: ME CLASS <class>
The mobile equipment has forced a change of MS class. The highest available class is reported (see +CGCLASS).

Supported Values
<mode>:
(0,1,2)
<bfr>:
(0,1)

Defined events
+CGEV: ME CLASS <class>

AT+CGREG - GPRS network registration status
AT+CGREG - GPRS network registration status
Ref: TS 27.007 - 460 section 10.1.19

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGREG= [n]</td>
<td></td>
</tr>
<tr>
<td>+CGREG?</td>
<td>+CGREG: &lt;n&gt;,&lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;]</td>
</tr>
<tr>
<td></td>
<td>CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CGREG=?</td>
<td>+CGREG: (list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

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

<stat>
0 not registered, ME is not currently searching an operator to register to
The MS is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED.
The GPRS service is disabled, the MS is allowed to attach for GPRS if requested by the user.

1. registered, home network
   The MS is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on the home PLMN.

2. not registered, but ME is currently trying to attach or searching an operator to register to
   The MS is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The MS will start a GPRS attach as soon as an allowable PLMN is available.

3. registration denied
   The MS is in GMM state GMM-NULL. The GPRS service is disabled, the MS is not allowed to attach for GPRS if requested by the user.

4. unknown

5. registered, roaming
   The MS is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on a visited PLMN.

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

<string type; two byte cell ID in hexadecimal format

Supported Values

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

<stat>
  0 not registered
  1 registered, home network
  2 not registered, but ME is currently trying to attach or searching an operator to register to
  3 registration denied
  4 unknown
  5 registered, roaming

<lac>
  two byte location area code in hexadecimal format

AT+COPN - Read operator names

AT+COPN - Read operator names
Ref : TS 27.007 - 460 section 7.21

Command Possible response(s)

+COPN +COPN: <numeric1>,<alpha1>
Defined Values

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

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

Supported Values
- all -

AT+COPS - PLMN selection

AT+COPS - PLMN selection
Ref: TS 27.007 - 420 section 7.3

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+COPS= [&lt;mode&gt;,&lt;format&gt;,&lt;oper&gt;,&lt;AcT&gt;]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+COPS?</td>
<td>+COPS: &lt;mode&gt;,&lt;format&gt;,&lt;oper&gt;,&lt;AcT&gt;]]</td>
</tr>
<tr>
<td>+COPS=?</td>
<td>+COPS: list of supported (&lt;stat&gt;, long alphanumeric &lt;oper&gt;, short alphanumeric &lt;oper&gt;, numeric &lt;oper&gt;,&lt;AcT&gt;))] list of supported &lt;mode&gt;s, list of supported &lt;format&gt;s]]</td>
</tr>
</tbody>
</table>

Defined Values

<mode>
0 automatic (<oper> field is ignored)
1 manual (<oper> field shall be present, and <AcT> optionally)
2 deregister from network
3 set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> and <AcT> fields are ignored); this value is not applicable in read command response
4 manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered

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

<oper> string type;
=format> indicates if the format is alphanumeric or numeric;
long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]); numeric format is the GSM Location Area identification number (refer TS 24.008 [8] subclause 10.5.1.3) which consists of a
three BCD digit country code coded as in ITU T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall
not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)
(network code digit 3)(network code digit 2)(network code digit 1)

<stat> 0 unknown
1 available
2 current
3 forbidden

<AcT> access technology selected:
0 GSM
1 GSM Compact
2 UTRAN

Supported Values

<mode>
0 automatic (<oper> field is ignored)
1 manual (<oper> field shall be present, and <AcT> optionally)
2 deregister from network
3 set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> and <AcT> fields are ignored);
this value is not applicable in read command response
4 manual/automatic (<oper> field shall be present); if manual selection fails,
automatic mode (<mode>=0) is entered

<format>
2 numeric <oper>

<stat>
0 unknown
1 available
2 current
3 forbidden

<AcT> access technology selected:
2 UTRAN
### AT+CGCLASS - GPRS mobile station class +CGCLASS

**Command**  
+CGCLASS= [<class>]  
+CGCLASS?  
+CGCLASS=?

**Possible response(s)**  
OK  
ERROR

---

**Defines Values**

- **<class>**: A string parameter which indicates the GPRS mobile class (in descending order of functionality)
  - A: class A (highest)
  - B: class B
  - CG: class C in GPRS only mode
  - CC: class C in circuit switched only mode (lowest)

### AT+CPLS - Selection of preferred PLMN list

**Command**  
+CPLS= [<list>]  
+CPLS?  
+CPLS=?

**Possible response(s)**  
+CME ERROR: <err>

---

**Defines Values**

- **<list>**:
  - 0: User controlled PLMN selector with Access Technology EFPLMNwAcT, if not found in the SIM/UICC then PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC)
  - 1: Operator controlled PLMN selector with Access Technology EFOPLMNwAcT
  - 2: HPLMN selector with Access Technology EFHPLMNwAcT

**Supported Values**
AT+CGATT - PS attach or detach

AT+CGATT - PS attach or detach
Ref : TS 27.007 - 420 section 10.1.9

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

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

Supported Values
<state>:    
(0,1)

AT+CPOL - Preferred PLMN list

AT+CPOL    - Preferred PLMN list
Ref : TS 27.007 - 420 section 7.19

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

Defined Values
Defined values
<indexn>: integer type; the order number of operator in the SIM/USIM preferred operator list

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

<opern>: string type;
=format> indicates if the format is alphanumeric or numeric (see +COPS)

<GSM_AcTn>: GSM access technology:
0    access technology not selected
1    access technology selected

<GSM_Compact_AcTn>: GSM compact access technology:
0    access technology not selected
1    access technology selected

<UTRA_AcTn>: UTRA access technology:
0    access technology not selected
1    access technology selected

Supported Values
=format>
2    numeric <oper>

<UTRA_AcTn>: UTRA access technology:
0    access technology not selected
1    access technology selected

AT+CREG - Network registration
AT+CREG - Network registration
Ref : TS 27.007 - 460 section 7.2

Command                          Possible response(s)
+CREG=<n>

+CREG?                           +CREG: <n>,<stat>,[<lac>,<ci>]
                                        +CME ERROR: <err>

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

Defined Values
<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, ME is not currently searching a new operator to
    register to
1    registered, home network
2    not registered, but ME 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

Supported Values

<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, ME is not currently searching a new operator to
          register to
  1      registered, home network
  2      not registered, but ME is currently searching a new operator to
          register to
  3      registration denied
  4      unknown
  5      registered, roaming

<lac>  two byte location area code in hexadecimal format

AT+CAAP - Automatic answer for eMLPP Service

AT+CAAP - Automatic answer for eMLPP Service
Ref : TS 27.007 - 460 section 7.25
============================================================================= Command                          Possible response(s)=============================================================================+CAAP=<priority>,<status>        +CME ERROR: <err>+CAAP=?                          +CAAP: (list of supported <priority>,<status>)epsilon
=============================================================================Defined Values
<priority>
eMLPP automatic answer priority level value {A,B,0,1,..,4} as defined in 3GPP
TS 22.067

<status> integer type
0      disable eMLPP <priority> for automatic answering
1      enable eMLPP <priority> for automatic answering

Supported Values
<priority>
    A,B,0,1,2,3,4
<status>
    0,1

**AT+CACM - Accumulated call meter**

AT+CACM - Accumulated call meter
Ref: TS 27.007 - 460 section 8.25

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CACM=[&lt;passwd&gt;]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CACM?</td>
<td>+CACM: &lt;acm&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CACM=?</td>
<td></td>
</tr>
</tbody>
</table>

Defined Values

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

Supported Values
- none

**AT+CAEMLPP - eMLPP Priority Registration and Interrogation**

AT+CAEMLPP - eMLPP Priority Registration and Interrogation
Ref: TS 27.007 - 460 section 7.22

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CAEMLPP=&lt;priority&gt;</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CAEMLPP?</td>
<td>+CAEMLPP: &lt;default_priority&gt;,&lt;max_priority&gt; +CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CAEMLPP=?</td>
<td></td>
</tr>
</tbody>
</table>

Defined Values

- `<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]

Supported Values
<priority>
0-6

AT+CUSD - Unstructured supplementary service data

AT+CUSD - Unstructured supplementary service data
Ref: TS 27.007 - 460 section 7.15

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CUSD=[&lt;n&gt;[,&lt;str&gt;[,&lt;dcs&gt;]]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CUSD?</td>
<td>+CUSD: &lt;n&gt;</td>
</tr>
<tr>
<td>+CUSD=?</td>
<td>+CUSD: (list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

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

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

if <dcs> indicates that 3GPP TS 23.038 [25] 7 bit default alphabet is used:
if TE character set other than "HEX" (refer command Select TE Character Set +CSCS):
ME/TA converts GSM alphabet into current TE character set according to rules of
3GPP TS 27.005 [24] Annex A
if TE character set is "HEX": ME/TA converts each 7 bit character of GSM alphabet
into two IRA character long hexadecimal number (e.g. character (GSM 23) is presented
as 17 (IRA 49 and 55))
if <dcs> indicates that 8 bit data coding scheme is used: ME/TA converts each 8 bit
octet into two IRA character long hexadecimal number (e.g. octet with integer value
42 is presented to TE as two characters 2A (IRA 50 and 65))

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

<m>
0 no further user action required (network initiated USSD Notify, or no further
information needed after mobile initiated operation)
1       further user action required (network initiated USSD Request, or
further information
2       USSD terminated by network
3       other local client has responded
4       operation not supported
5       network time out

Supported Values
<n>
0,1,2
<tr>
Hex string in coding/alphabet indicated by dcs
<dc>
<m>

**AT+CHLD - Call related supplementary services**

**AT+CHLD - Call related supplementary services**
Ref : TS 27.007 - 460 section 7.13
=============================================================================  
<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CHLD=[&lt;n&gt;]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CHLD=?</td>
<td>[+CHLD: (list of supported &lt;n&gt;s)]</td>
</tr>
</tbody>
</table>

**Defined Values**
<n>
integer type; equals to numbers entered before SEND button in 3GPP TS 22.030 [19] subclause 4.5.5.1
NOTE: The "directory number" case shall be handled with dial command D, and
the END case with hangup
command H (or +CHUP). The 4*"directory number" case is handled with +CTFR
command.

Supported Values
0     -   Releases all held calls or sets User Determined User Busy (UDUB) for
a waiting call.
1     -   Releases all active calls (if any exist) and accepts the other (held
or waiting) call.
1X    -   Releases a specific active call X.
2     -   Places all active calls (if any exist) on hold and accepts the other
(held or waiting) call.
2X    -   Places all active calls on hold except call X with which
communication shall be supported.
3     -   Adds a held call to the conversation.
4     -   Connects the two calls and disconnects the subscriber from both
calls (ECT).
## AT+CAMM - Accumulated call meter

AT+CAMM - Accumulated call meter maximum
Ref : TS 27.007 - 460 section 8.26

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+CAMM=[&lt;acmmax&gt;,,&lt;passwd&gt;]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>AT+CAMM?</td>
<td>+CAMM: &lt;acmmax&gt;</td>
</tr>
<tr>
<td>AT+CAMM=?</td>
<td></td>
</tr>
</tbody>
</table>

### Defined Values
- `<passwd>`: string type; SIM PIN2
- `<acmmax>`: string type; accumulated call meter maximum value similarly coded as `<ccm>` under +CAOC

### Supported Values
- `<acmmax>,<passwd>`

## AT+COLP - Connected line identification presentation

AT+COLP - Connected line identification presentation
Ref : TS 27.007 - 420 section 7.8

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+COLP=[&lt;n&gt;]</td>
<td></td>
</tr>
<tr>
<td>AT+COLP?</td>
<td>AT+COLP: &lt;n&gt;,&lt;m&gt;</td>
</tr>
<tr>
<td>AT+COLP=?</td>
<td>AT+COLP: (list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

### Defined Values
- `<n>` (parameter sets/shows the result code presentation status in the TA)
  - 0: disable
  - 1: nable
- `<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.)

### Supported Values
- none
## AT+CCFC - Call forwarding number and conditions

**Ref:** TS 27.007 - 460 section 7.11

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CCFC=&lt;reason&gt;,&lt;mode&gt;[,&lt;number&gt;[,&lt;type&gt;[,&lt;class&gt;[,&lt;subaddr&gt;[,&lt;satype[,[&lt;CR&gt;&lt;LF&gt;]]]]]]]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>
|                                  | when <mode>=2 and command successful: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr[,<satype[,[<CR><LF>]]]]]]
|                                  | +CCFC: <status>,<class2>[,<number>,<type>[,<subaddr[,<satype[,[<time>]]]]]
| +CCFC=?                          | +CCFC: (list of supported <reason>s)                                                 |

### Defined Values

- **<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 octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7);
  - default 145 when dialling string includes international access code character "+", otherwise 129

- **<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

- **<class>** is a sum of integers each representing a class of information (default 7):
  - 1 voice (telephony)
  - 2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
EXPLORER 500 AT Command Set

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, default value 20

<status>
0 not active
1 active

Supported Values

<reason>
(0-5)

<mode>
(0-4)

<type>
default = 145

<satype>
default = 128

<classx>
1 voice
2 data
4 fax
8 short message service
16 data circuit sync
32 data circuit async
64 dedicated packet access
128 dedicated PAD access
default = 7

<status>
(0,1)

AT+CPPS - eMLPP subscriptions

AT+CPPS- eMLPP subscriptions
Ref : TS 27.007 - 460 section 7.23

Command Possible response(s)
+CPPS: <priority>[,<priority> [...]]
+CME ERROR: <err>

AT+CPPS - eMLPP subscriptions

+CPPS: <priority>[,<priority> [...]]
+CME ERROR: <err>
+CPPS=?

Defined Values

<priority> integer type,
eMLPP subscription to priority level \{0,1,\ldots,4\} as defined in 3GPP TS 22.067 [45].

Supported Values
0-4

**AT+CPUC - Price per unit and currency table**

+CPUC - Price per unit and currency table
Ref: TS 27.007 - 420 section 8.27

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CPUC=&lt;currency&gt;,&lt;ppu&gt;[,&lt;passwd&gt;]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CPUC?</td>
<td>+CPUC: &lt;currency&gt;,&lt;ppu&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CPUC=?</td>
<td></td>
</tr>
</tbody>
</table>

Defined Values

<currency>: string type;
Three-character currency code

<ppu>: Price per unit

<passwd>: string type;
SIM PIN2

Supported Values
- none -

**AT+CPWD - Change password**

AT+CPWD - Change password
Ref: TS 27.007 - 460 section 7.5

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CPWD=&lt;fac&gt;,&lt;oldpwd&gt;,&lt;newpwd&gt;</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

+CPWD=? 
+CPWD: list of supported \(<fac>,<pwdlength>\)s
+CME ERROR: <err>

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

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

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

Supported Values
<fac>
SC, AO, OI, OX, AI, IR, AB, AG, AC
<pwdlength>
4

AT+CDIP - Called line identification presentation

AT+CDIP - Called line identification presentation
Zef : TS 27.007 - 420 section 7.9

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CDIP=[&lt;n&gt;]</td>
<td>-</td>
</tr>
<tr>
<td>+CDIP?</td>
<td>+CDIP: &lt;n&gt;,&lt;m&gt;</td>
</tr>
<tr>
<td>+CDIP=?</td>
<td>+CDIP: (list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

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

<m> (parameter shows the subscriber "multiple called numbers" service status in the network):
0  "multiple called numbers service" is not provisioned
1  "multiple called numbers service" is 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)

Supported Values
- none -

**AT+CCWA - Call waiting**

AT+CCWA - Call waiting

Ref : TS 27.007 - 460 section 7.12

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CCWA=[&lt;n&gt;[,&lt;mode&gt;[,&lt;class&gt;]]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td></td>
<td>when &lt;mode&gt;=2 and command successful</td>
</tr>
<tr>
<td></td>
<td>+CCWA: &lt;status&gt;,&lt;class1&gt;[&lt;CR&gt;&lt;LF&gt;</td>
</tr>
<tr>
<td></td>
<td>+CCWA: &lt;status&gt;,&lt;class2&gt;[...]]</td>
</tr>
</tbody>
</table>

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

**Defined Values**

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

NOTE: Parameter <n> is used to disable/enable the presentation of an unsolicited result code

+CCWA: <number>,<type>,<class>,[<alpha>],[<CLI validity>],[<subaddr>,<satype>]
[,<priority>]]
to the TE when call waiting service is enabled.

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

<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)

   <alpha>
   optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

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

   When CLI is not available (<CLI validity>=2), <number> shall be an empty string (""") and
   <type> value will not be significant. Nevertheless, TA may return the recommended value 128 for
   <type> ((TON/NPI unknown in accordance with TS 24.008 [8] subclause 10.5.4.7).
   When CLI has been withheld by the originator, (<CLI validity>=1) and the CLIP is provisioned with
   the "override category" option (refer 3GPP TS 22.081[3] and 3GPP TS
   23.081[40]), <number> and <type> is provided. Otherwise, TA shall return the same setting for <number> and
   <type> as if the CLI was not available.

   <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)

   <priority>
   optional digit type parameter indicating that the eMLPP priority level of the incoming call.
   The priority level values are as defined in eMLPP specification 3GPP TS
   22.067 [54].

   Supported Values
   <classX>
   1,2,4,8,16,32

---

**AT+CCWE - Call Meter maximum event**

AT+CCWE - Call Meter maximum event  
Ref: TS 27.007 - 460 section 8.28

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CCWE=&lt;mode&gt;</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

---
EXPLORER 500 AT Command Set

+CCWE?
+CCWE: <mode>
+CME ERROR: <err>

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

Defined Values

<stdio

AT+CLCK - Facility lock +CLCK

AT++CLCK - Facility lock +CLCK
Ref: TS 27.007 - 460 section 7.4

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>

Defined Values

<fac> values reserved by the present document:
"CS" CNTRL (lock CoNTRoL surface (e.g. phone keyboard))
"PS" PH SIM (lock Phone to SIM/UICC card) (ME asks password when other than current SIM/UICC card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
"PF" lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (ME asks password when other than the first SIM/UICC card is inserted)
"SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in ME power up and when this lock command is issued)
"AO" BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1)
"OI" BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 [6] clause 1)
"OX" BOIC exHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS 22.088 [6] clause 1)
"AI" BAIC (Barr All Incoming Calls) (refer 3GPP TS 22.088 [6] clause 2)
"IR" BIC Roam (Barr Incoming Calls when Roaming outside the home country) (refer 3GPP TS 22.088 [6] clause 2)
"NT" barr incoming calls from numbers Not stored to TA memory
"NM" barr incoming calls from numbers Not stored to ME memory
"NS" barr incoming calls from numbers Not stored to SIM/UICC memory
"NA" barr incoming calls from numbers Not stored in Any memory
"AB" All Barring services (refer 3GPP TS 22.030 [19])
       (applicable only for <mode>=0)
"AG" All outGoing barring services (refer 3GPP TS 22.030 [19])
       (applicable only for <mode>=0)
"AC" All inComing barring services (refer 3GPP TS 22.030 [19])
       (applicable only for <mode>=0)
"FD" SIM card or active application in the UICC (GSM or USIM) fixed dialling
       memory feature (if PIN2 authentication has not been done during the
       current
       session, PIN2 is required as <passwd>)
"PN" Network Personalization (refer 3GPP TS 22.022 [33])
"PU" network sUbset Personalization (refer 3GPP TS 22.022 [33])
"PP" service Provider Personalization (refer 3GPP TS 22.022 [33])
"PC" Corporate Personalization (refer 3GPP TS 22.022 [33])

<mode>:
   0     unlock
   1     lock
   2     query status

<status>:
   0     not active
   1     active

<passwd>:
   string type; shall be the same as password specified for the facility
   from the ME user interface or with command Change Password +CPWD

<classx> is a sum of integers each representing a class of information (default
   ?):
   1     voice (telephony)
   2     data (refers to all bearer services; with <mode>=2 this may refer only
       to some bearer service if TA does not support values 16, 32, 64 and 128)
   4     fax (facsimile services)
   8     short message service
  16     data circuit sync
  32     data circuit async
  64     dedicated packet access
 128    dedicated PAD access

Supported Values

<fac>
("SC","AO","OI","OIX","AI","IR","AB","AG","AC")

<mode>
   (0,1,2)

<status>
   (0,1)

<passwd>

<classx>
AT+CLIP - Calling line identification presentation

Ref : TS 27.007 - 420 section 7.6

Command | Possible response(s)
--- | ---
+CLIP=[<n>]

+CLIP? | +CLIP: <n>,<m>

+CLIP=? | +CLIP: (list of supported <n>s)

Defined Values

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

<m> (parameter shows the subscriber CLIP service status in the network):
0 CLIP not provisioned
1 CLIP provisioned
2 unknown (e.g. no network, etc.)

<number>
string type phone number of 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)

<alpha>
optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

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

When CLI is not available ( <CLI validity>=2), <number> shall be an empty string (""), and <type> value will not be significant. Nevertheless, TA may return the recommended value 128 for <type>

((TON/NPI unknown in accordance with TS 24.008 [8] subclause 10.5.4.7).
When CLI has been withheld by the originator, (<CLI validity>=1) and the CLIP is provisioned
with the "override category" option (refer 3GPP TS 22.081[3] and 3GPP TS 23.081[40]), <number> and <type> is provided. Otherwise, TA shall return the same setting for <number> and <type> as if the CLI was not available.

Supported Values
- none -

AT+CLIR - Calling line identification restriction

AT+CLIR - Calling line identification restriction
Ref : TS 27.007 - 420 section 7.7

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CLIR= [&lt;n&gt;]</td>
<td></td>
</tr>
<tr>
<td>+CLIR?</td>
<td>+CLIR: &lt;n&gt;,&lt;m&gt;</td>
</tr>
<tr>
<td>+CLIR=?</td>
<td>+CLIR: (list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values
<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

Supported Values
- none -

AT+CFCS - Fast call setup conditions

AT+CFCS - Fast call setup conditions
Ref : TS 27.007 - 420 section 7.24

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CFCS= [&lt;priority&gt;,&lt;status&gt;]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CFCS?</td>
<td>+CFCS: &lt;priority&gt;[,&lt;priority&gt;[, ...]]</td>
</tr>
<tr>
<td>+CFCS=?</td>
<td>+CFCS: (list of supported &lt;priority&gt;,&lt;status&gt;)</td>
</tr>
</tbody>
</table>

Defined Values
<priority>
integer type, eMLPP fast call set-up priority level \{0,1,\ldots,4\} as defined in 3GPP TS 22.067 [45]

<status>
integer type
0 disable <priority> for fast call set-up
1 enable <priority> for fast call set-up

Supported Values
- none -

**AT+CSSN - Supplementary service notifications**

**AT+CSSN - Supplementary service notifications**
Ref : TS 27.007 - 420 section 7.17

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CSSN=[&lt;n&gt; [,&lt;m&gt;]]</td>
<td>+CSSN: &lt;n&gt;,&lt;m&gt;</td>
</tr>
<tr>
<td>+CSSN?</td>
<td>+CSSN: &lt;n&gt;,&lt;m&gt;</td>
</tr>
<tr>
<td>+CSSN=?</td>
<td>+CSSN: (list of supported &lt;n&gt;s),</td>
</tr>
<tr>
<td></td>
<td>(list of supported &lt;m&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

<n> (parameter sets/shows the +CSSI result code presentation status in the TA):
0 disable
1 enable

<m> (parameter sets/shows the +CSSU result code presentation status in the TA):
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 additional 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)

Supported Values
- none -

**AT+CSVM - Set Voice Mail Number**

AT+CSVM - Set Voice Mail Number
Ref : TS 27.007 - 420 section 8.33

---

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CSVM=&lt;mode&gt;[,&lt;number&gt;[,&lt;type&gt;]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CSVM?</td>
<td>+CSVM: &lt;mode&gt;,&lt;number&gt;,&lt;type&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CSVM=?</td>
<td>+CSVM: (list of supported &lt;mode&gt;s), (list of supported &lt;type&gt;s)</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

Defined Values

<mode>
0 Disable the voice mail number.
1 Enable the voice mail number.

<number>
string type; Character string <0..9,+>
integer type; Type of address octet. (refer TS 24.008 subclause 10.5.4.7)
129   ISDN / telephony numbering plan, national / international unknown
145   ISDN / telephony numbering plan, international number
161   ISDN / telephony numbering plan, national number
128 - 255 Other values refer TS 24.008 section 10.5.4.7

type of address octet in integer format (refer TS 24.008 subclause 10.5.4.7);
   default 145 when dialling string includes international access code character "+",
   otherwise 129

Supported Values
<mode>
   All
<type>
   129, 145

AT+CMOD - Call mode

AT+CMOD - Call mode
Ref : TS 27.007 - 420 section 6.4

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

Defined Values

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

Supported Values
   (0)

AT+GMI - Request manufacturer identification

AT+GMI - Request manufacturer identification
Ref : ITU-T V.250 section 6.1.4

--- Command                          Possible response(s) ---
+GMI                               OK
Defined Values
- none -

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters.

Text shall not contain the sequence "0 <CR>" (3/0, 0/13) or "OK<CR>" (4/15, 4/11, 0/13).

Supported Values
- none -

**AT+CGMI - Request Manufacturer Identification**

AT+CGMI - Request Manufacturer Identification
Ref : TS 27.007 - 420 section 5.1

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGMI</td>
<td>&lt;manufacturer&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

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

Text shall not contain the sequence 0<CR> or OK<CR>

Supported Values
- none -

**AT+CMUT - Mute Control**

AT+CMUT - Mute control
Ref : 3GPP TS 27.007 V4.2.0 paragraph 8.24

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CMUT=&lt;n&gt;</td>
<td></td>
</tr>
<tr>
<td>+CME ERROR: &lt;err&gt;</td>
<td></td>
</tr>
</tbody>
</table>

+CMUT?
+CME ERROR: <err>

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

Description:
This command is used to enable and disable the uplink voice muting during a voice call.
Test command returns supported values as compound value.

Defined values

<n>:
  0 mute off
  1 mute on

Implementation
Optional.

**AT+WS46 - PCCA STD-101 [17] select wireless network**

AT+WS46 - PCCA STD-101 [17] select wireless network
Ref : ITU-T V.250 section 5.9

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+WS46=&lt;n&gt;</td>
<td></td>
</tr>
<tr>
<td>+WS46?</td>
<td>&lt;n&gt;</td>
</tr>
<tr>
<td>+WS46=?</td>
<td>(list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

<n>
12  GSM digital cellular
refer PCCA STD-101 [17] for other values

Supported Values

<n>  11

**AT+CALM - Alert sound mode**

AT+CALM - Alert sound mode
Ref : 3GPP TS 27.007 V4.2.0 paragraph 8.20

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CALM=&lt;mode&gt;</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CALM?</td>
<td>+CALM: &lt;mode&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CALM=?</td>
<td>+CALM: (list of supported &lt;mode&gt;s)</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

Description
This command is used to select the general alert sound mode of the ME.

Test command returns supported values as compound value.

Defined values

<mode>:
0 normal mode
1 silent mode (all sounds from ME are prevented)
2... manufacturer specific

Implementation
Optional.

### AT+GMR - Request Revision Identification

**AT+GMR - Request Revision Identification**
Ref: ITU-T V.250 section 6.1.6

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+GMR</td>
<td>OK</td>
</tr>
<tr>
<td>+GMR=?</td>
<td></td>
</tr>
</tbody>
</table>

**Defined Values**
- none -

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters.
Text shall not contain the sequence "0 <CR>" (3/0, 0/13) or "OK<CR>" (4/15, 4/11, 0/13).

**Supported Values**
- none -

### AT+CGMR - Request Revision Identification

**AT+CGMR - Request Revision Identification**
Ref: TS 27.007 - 420 section 5.3

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGMR</td>
<td>&lt;revision&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CGMR=?</td>
<td></td>
</tr>
</tbody>
</table>

**Defined Values**
<revision>

The total number of characters, including line terminators, in the information text shall not exceed 2048 characters.
Text shall not contain the sequence 0<CR> or OK<CR>

**Supported Values**
- none -
AT+CNUM - Subscriber number

AT+CNUM - Subscriber number
Ref : TS 27.007-460 section 7.1
============================================================================= Command Possible response(s)
============================================================================= +CNUM +CNUM: [<alpha1>,<number1>,<type1>,[<speed>,<service>],<itc>]<CR><LF> +CNUM: [<alpha2>,<number2>,<type2>,[<speed>,<service>],<itc>]<...>
+CME ERROR: <err>
----------------------------------------------------------------------------
----------------------------------------------------------------------------
+CNUM=?

Defined Values

<alpha> optional alphanumeric string associated with <number>; used character set should be the one selected with command Select TE Character Set +CSCS

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

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

<speed> as defined in subclause 6.7

<service> (service related to the phone number):
  0  asynchronous modem
  1  synchronous modem
  2  PAD Access (asynchronous)
  3  Packet Access (synchronous)
  4  voice
  5  fax
also all other values below 128 are reserved by the present document

<itc> (information transfer capability):
  0  3.1 kHz
  1  UDI

Supported Values
- none -

AT+ICF - DTE DCE Character Framing

AT+ICF - DTE DCE Character Framing
Ref : ITU-T V.250 section 6.2.11
============================================================================= Command Possible response(s)
=============================================================================
+ICF=[<format>,<parity>]]

+ICF?
+ICF:<format>,<parity>

+ICF=?
+ICF:(list of supported <format> values),
(list of supported <parity> values)

defined Values

<format>
0    auto detect
1    8 Data 2 Stop
2    8 Data 1 Parity 1 Stop
3    8 Data 1 Stop
4    7 Data 2 Stop
5    7 Data 1 Parity 1 Stop
6    7 Data 1 Stop

<parity>
0    Odd
1    Even
2    Mark
3    Space

Recommended default setting :
For <format>:    3
For <parity>:    3

Supportet Values
- none -

AT+CAOC - Advice of Charge

AT+CAOC - Advice of Charge
Ref : TS 27.007 - 420 section 7.16

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

Defined Values

<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
Supported Values
<mode>
(0-2)

**AT+CPBF - Find phonebook entries**

AT+CPBF - Find phonebook entries
Ref: TS 27.007 - 420 section 8.13

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CPBF=&lt;findtext&gt;</td>
<td>[+CPBF: &lt;index1&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;[,&lt;hidden&gt;]]</td>
</tr>
<tr>
<td></td>
<td>[...]&lt;CR&gt;&lt;LF&gt;+CPBF: &lt;index2&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;[,&lt;hidden&gt;]]</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

+CPBF=?                       +CPBF: [<nlength>],[<tlength>]
+CME ERROR: <err>

**Defined Values**

<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>; 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

**Supported Values**
<findtext>
only supported for storage ME (selected with +CFBS)  
if used on another storage commands will return +CME ERROR: 3 (operation not allowed)

AT+IFC - DTE-DCE local flow control

AT+IFC - DTE-DCE local flow control
Ref : ITU-T V.250 section 6.2.12

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+IFC=[&lt;DCE_by_DTE&gt;,&lt;DTE_by_DCE&gt;]</td>
<td></td>
</tr>
<tr>
<td>+IFC?</td>
<td>+IFC:&lt;DCE_by_DTE&gt;,&lt;DTE_by_DCE&gt;</td>
</tr>
<tr>
<td>+IFC=?</td>
<td>+IFC:(list of supported &lt;DCE_by_DTE&gt; values), (list of supported &lt;DTE_by_DCE&gt; values)</td>
</tr>
</tbody>
</table>

defined Values

<DCE_by_DTE>

0 None
1 DC1/DC3 on circuit 103; do not pass DC1/DC3 characters to the remote DCE
2 Circuit 133 (Ready for Receiving)
3 DC1/DC3 on circuit 103 with DC1/DC3 characters being passed through to the remote DCE in addition to being acted upon for local flow control
4 to 127 Reserved for future standardization
Other Reserved for manufacturer-specific use

<DTE_by_DCE>

0 None
1 DC1/DC3 on circuit 104
2 Circuit 106 (Clear to Send/Ready for Sending)
3 to 127 Reserved for future standardization
Other Reserved for manufacturer-specific use

Recommended default settings
For DCE_by_DTE : 2
For DTE_by_DCE : 2

Supported Values
<DCE_by_DTE> (0-3)
<DTE_by_DCE> (0-2)
AT+CPAS - Phone activity status

AT+CPAS - Phone activity status
Ref: TS 27.007 - 460 section 8.1

Command | Possible response(s)
-----------------------------------------------
+CPAS | +CPAS: <pas>
+CME ERROR: <err>

+CPAS=? | +CPAS: (list of supported <pas>s)
+CME ERROR: <err>

Defined Values

<pas>
0      ready (ME allows commands from TA/TE)
1      unavailable (ME does not allow commands from TA/TE)
2      unknown (ME is not guaranteed to respond to instructions)
3      ringing (ME is ready for commands from TA/TE, but the ringer is active)
4      call in progress (ME is ready for commands from TA/TE, but a call is in progress)
5      asleep (ME is unable to process commands from TA/TE because it is in a low functionality state)
also all other values below 128 are reserved by the present document

Supported Values
- none -

AT+GMM - Request model identification

AT+GMM - Request model identification
Ref: ITU-T V.250 section 6.1.5

Command | Possible response(s)
-----------------------------------------------
+GMM | OK

+GMM=? | 

Defined Values
- none -

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters. Text shall not contain the sequence "0 <CR>" (3/0, 0/13) or "OK<CR>" (4/15, 4/11, 0/13).

Supported Values
- none -
# AT+CGMM - Request Model Identification

**AT+CGMM** - Request Model Identification  
Ref : TS 27.007 - 420 section 5.2

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGMM</td>
<td>&lt;model&gt;</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

+CGMM=?

---

**Defined Values**

- `<model>`
  - The total number of characters, including line terminators, in the information text shall not exceed 2048 characters.
  - Text shall not contain the sequence 0<CR> or OK<CR>

**Supported Values**

- none -

# AT+CPBR - Read phonebook entries

**AT+CPBR** - Read phonebook entries  
Ref : TS 27.007 - 460 section 8.12

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
</table>
| +CPBR=<index1>[,<index2>] | [+CPBR: 
  <index1>,<number>,<type>,<text>[,<hidden>]  
  [...]<CR><LF>+CPBR: <index2>,<number>,  
  <type>,<text>[,<hidden>]]  
  +CME ERROR: <err> |

+CPBR=?  

---

**Defined Values**

- `<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

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

<int length>
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

Supported Values
<index1> (1-99)
<index2> (1-99)

AT+CPBS - Select phonebook memory storage
AT+CPBS - Select phonebook memory storage
Ref : TS 27.007 - 460 section 8.11
=============================================================================Command Possible response(s)
=============================================================================+CPBS=<storage>[,<password>]
+CME ERROR: <err>
+CPBS? +CPBS: <storage>[,<used>,<total>]
+CME ERROR: <err>
+CPBS=? +CPBS: (list of supported <storage>s)
=============================================================================Defined Values
<storage> values reserved by the present document
"DC" ME dialled calls list (+CPBW may not be applicable for this storage)
"EN" SIM/USIM (or ME) emergency number (+CPBW is not be applicable for this storage)
"FD" SIM/USIM fixdialling phonebook. If a SIM card is present or if a UICC with an active GSM application is present, the information in EFFDN under DFTelecom is selected. If a UICC with an active USIM application is present, the information in EFFDN under ADFUSIM is selected.
"LD" SIM/UICC last dialling phonebook
"MC" ME missed (unanswered received) calls list (+CPBW may not be applicable for this storage)
"ME" ME phonebook
"MT" combined ME and SIM/USIM phonebook
"ON" SIM (or ME) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also). When storing information in the SIM/UICC, if a SIM card is present or if a UICC with an active GSM application is present, the information in
EFMSISDN under DFTelecom is selected. If a UICC with an active USIM application is present, the information in EFMSISDN under ADFUSIM is selected.

"RC" ME received calls list (+CPBW may not be applicable for this storage)

"SM" SIM/UICC phonebook. If a SIM card is present or if a UICC with an active GSM application is present, the EFADN under DFTelecom is selected. If a UICC with an active USIM application is present, the global phonebook, DFPHONEBOOK under DFTelecom is selected.

"TA" TA phonebook

"AP" Selected application phonebook. If a UICC with an active USIM application is present, the application phonebook, DFPHONEBOOK under ADFUSIM is selected.

$password
string type value representing the PIN2-code required when selecting PIN2-code locked <storage>s above, e.g. "FD" or the hidden key to be verified in order to access to the hidden phonebook entries in the UICC/USIM or any other phonebook with hidden entries.

If the combined phonebook is selected, "MT", the $password$ will correspond to the hidden key of the USIM phonebook.

$used$
integer type value indicating the number of used locations in selected memory

$total$
integer type value indicating the total number of locations in selected memory

Supported Values
<storage>
"ME", "MC", "DC", "RC"

AT+CPBW - Write phonebook entry
AT+CPBW - Write phonebook entry
Ref : TS 27.007 - 460 section 8.14
============================================================================= Command                          Possible response(s)============================================================================= +CPBW= [<index>][,<number>[,<type>[,<text>[,<hidden>]]]]                                +CME ERROR: <err> +CPBW=                         +CPBW: (list of supported <storage>s),<[nlength]>),                                 +CME ERROR: <err> +CPBW=?                          +CPBW: (list of supported <storage>s),<[tlength]>),                                 +CME ERROR: <err>============================================================================= Defined Values

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F +45 39 55 88 88 · info@tt.dk · www.tt.dk · Comp.reg.: 65 72 46 18 · VAT: DK-20 64 64 46
integer type values in the range of location numbers of phonebook memory

string type phone number of format <type>

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

default 145 when dialling string includes international access code character "+",
otherwise 129

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

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

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

indicates if the entry is hidden or not

0 phonebook entry not hidden
1 phonebook entry hidden

Supported Values
<index>    (1-99)
<nlength>  32
<type>     (129,145)
<tlength>  92

only supported for storage ME (selected with +CFBS)
if used on another storage commands will return +CME ERROR: 3 (operation not allowed)

**ATE - Command Echo**

ATE - Command Echo
Ref : ITU-T V.250 section 6.2.4

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE&lt;value&gt;</td>
<td></td>
</tr>
</tbody>
</table>

OK

Defined Values
<value>

0 DCE does not echo characters during command state and online command state.
DCE echoes characters during command state and online command state.

Recommended default setting:

DCE echoes characters during command state and online command state

Supported Values

\( (0,1) \)

### ATI - Request Identification Information

ATI - Request Identification Information  
Ref: ITU-T V.250 section 6.1.3

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I[&lt;value&gt;]</td>
<td></td>
</tr>
</tbody>
</table>

Defined Values

\(<value>\) may optionally be used to select from among multiple types of identifying information, specified by the manufacturer.

Supported Values

\( (0,1) \)

### ATL - Monitor speaker loudness

ATL - Monitor speaker loudness  
Ref: ITU-T V.250 section 6.3.13

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L[&lt;value&gt;]</td>
<td></td>
</tr>
</tbody>
</table>

Defined Values

0 Low speaker volume  
1 Low speaker volume  
2 Medium speaker volume  
3 High speaker volume

Supported Values

\( (0,1,2,3) \)

### ATM - Monitor speaker mode

ATM - Monitor speaker mode  
Ref: ITU-T V.250 section 6.3.14
### M[<value>]

Defined Values
- 0: Speaker is always off
- 1: Speaker on until DCE informs DCE that carrier has been detected
- 2: Speaker is always on when DCE is off-hook

Supported Values
- (0, 1, 2)

#### ATN - Automode control

ATN - Automode control

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N[&lt;value&gt;]</td>
<td></td>
</tr>
</tbody>
</table>

Defined Values
- N0: Automode detection disabled. A subsequent handshake will be conducted according to the contents of S32.
- N1: Automode enabled. A subsequent handshake will be conducted according to the Automode algorithm.

Supported Values
- any

#### ATP - Select pulse dialling (command)

ATP - Select pulse dialling (command)

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>OK</td>
</tr>
</tbody>
</table>

### P

- OK
### ATQ - Result Code Suppression

**ATQ - Result Code Suppression**  
Ref : ITU-T V.250 section 6.2.5

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
</table>
| ATQ[<value>]  | OK  If value is 0.  
|               | (none) If value is 1  
|               | (because result codes are suppressed).  
|               | ERROR For unsupported values  
|               | (if previous value was Q0).  
|               | (none) For unsupported values  
|               | (if previous value was Q1).         |

**Defined Values**  
<value>  
0  DCE transmits result codes.  
1  Result codes are suppressed and not transmitted.

**Recommended default setting :**  
0  DCE transmits result codes.

**Supported Values**  
(0,1)

---

### ATS - Set Register

**ATS3**  
Ref : ITU-T V.250 section 6.2.1-3

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS[&lt;register&gt;]=[&lt;value&gt;]</td>
<td>OK</td>
</tr>
</tbody>
</table>

**ATS<register>?**  
<value>  
ERROR if register not implemented

**Defined Values**  
<register>  
0  Rings to Auto-Answer  
1  Ring Counter  
2  Escape Character  
3  CR Character  
4  LF Character  
5  BS Character  
6  Wait Time for Dial Tone (Also wait before Blind Dialing)  
7  Wait Time for Carrier  
8  Pause Time for Dial (,)  
9  Carrier Detect Response Time  
10 Carrier Loss Disconnect Time
11    DTMF Tone duration
12    Reserved
95    Dummy for Windows XP

<value>
0 to 255 Set register to this value.

Supported Values
<register>
(0,2,3,4,5,6,7,8,10,12,95)
<value>
(0-255)

ATT - Select tone dialling (command)
ATT - Select tone dialling (command)
Ref :

Command                          Possible response(s)
-------------------------------------------------------------------------------
T                                OK
-------------------------------------------------------------------------------

ATV - DCE Response Format
ATV - DCE Response Format
Ref : ITU-T V.250 section 6.2.6

Command                         Possible response(s)
-------------------------------------------------------------------------------
ATV[<value>]
0                                 If value is 0
(because numeric response text is being used).
OK                                If value is 1.
4                                 For unsupported values
(if previous value was V0).
ERROR                             For unsupported values
(if previous value was V1).
-------------------------------------------------------------------------------

Defined Values
<value>
0     DCE transmits limited headers and trailers and numeric text.
1     DCE transmits full headers and trailers and verbose response text.

Recommended default setting :
1     DCE transmits full headers and trailers and verbose response text.
Supported Values
(0,1)

NOTE !!
Effect of V parameter on response formats
V0
-------------------------------------------------------------------
Information responses <text><cr><lf>                        <cr><lf>
Result codes      <numeric code><cr>                        <cr><lf>
-------------------------------------------------------------------
V1
-------------------------------------------------------------------
Information responses <text><cr><lf>                        <cr><lf>
Result codes      <numeric code><cr>                        <cr><lf>
-------------------------------------------------------------------

ATX - Result Code Selection and Call Progress Monitoring Control
ATX - Result Code Selection and Call Progress Monitoring Control
Ref : ITU-T V.250 section 6.2.7
============================================================================= COMMAND                      POSSIBLE RESPONSE(S) ATX[<value>] OK
-----------------------------------------------------------------------------
Defined Values
<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

Supported Values
(0-4)

ATZ - Reset To Default Configuration
ATZ - Reset To Default Configuration
Ref : ITU-T V.250 section 6.1.1
============================================================================= COMMAND                      POSSIBLE RESPONSE(S) Z[<value>]   OK       If <value> is recognized.
ERROR   If <value> is not recognized or supported.
============================================================================
Defined Values
<value>
is optional and manufacturer-specific.

Supported Values
0

**AT&C - Circuit 109 (Received line signal detector) Behaviour**

AT&C - Circuit 109 (Received line signal detector) Behaviour
Ref : ITU-T V.250 section 6.2.8

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;C[&lt;value&gt;]</td>
<td>OK</td>
</tr>
</tbody>
</table>

Defined Values
<value>
0     The DCE always presents the ON condition on circuit 109.
1     Circuit 109 changes in accordance with the underlying DCE, which may include functions other than the physical layer functions (e.g. Recommendations V.42, V.110, V.120 and V.13).

Recommended default setting :
1     Circuit 109 changes in accordance with the underlying DCE, which may include functions other than the physical layer functions (e.g. Recommendations V.42, V.110, V.120 and V.13).

Supported Values
(0,1)

**AT&D - Circuit 108 (Data terminal ready) Behaviour**

AT&D - Circuit 108 (Data terminal ready) Behaviour
Ref : ITU-T V.250 section 6.2.9

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;D[&lt;value&gt;]</td>
<td>OK</td>
</tr>
</tbody>
</table>

Defined Values
<value>
0     DCE ignores circuit 108/2.
1     Upon an on-to-off transition of circuit 108/2, the DCE enters online
2 Upon an on-to-off transition of circuit 108/2, the DCE instructs the underlying DCE to perform an orderly cleardown of the call. The disposition of any data in the DCE pending transmission to the remote DCE is controlled by the ?ETBM parameter (6.5.6) if implemented; otherwise, this data is sent before the call is cleared, unless the remote DCE clears the call first (in which case pending data is discarded).

The DCE disconnects from the line. Automatic answer is disabled while circuit 108/2 remains off.

Supported Values
(0-2)

**AT&F - Set to Factory defined Configuration**

AT&F - Set to Factory defined Configuration
Ref : ITU-T V.250 section 6.1.2

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;F[&lt;value&gt;]</td>
<td>OK If value is valid. ERROR If value is not recognized or not supported.</td>
</tr>
</tbody>
</table>

Defined Values

- <value>
  - 0 Set parameters to factory defaults.
  - (other) Reserved for manufacturer proprietary use.

Supported Values

0

**AT&K - Dummy**

AT&K - Dummy
Ref :

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;K[&lt;value&gt;]</td>
<td>OK</td>
</tr>
</tbody>
</table>

Defined Values

- ?

Supported Values

any
AT&V - Display Active and stored profile

Refer:

Command | Possible response(s)
-----------------|----------------------------------
AT&V         | <profiles>OK

Defined Values
None

Supported Values
None

AT&W - Store profile

Refer:

Command | Possible response(s)
-----------------|----------------------------------
AT&W[<value>] | OK

Defined Values
0   Main storage

Supported Values
0

AT+CIMI - Request International Mobile Subscriber Identity

Refer: TS 27.007 - 420 section 5.6
Implementation: Optional

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

Defined Values
<IMSI>
Supported Values
- none -

**AT+CIND - Indicator control**

AT+CIND - Indicator control  
Ref : 3GPP TS 27.007 V4.2.0 paragraph 8.9

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CIND=[&lt;ind&gt;[,&lt;ind&gt;[,...]]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CIND?</td>
<td>+CIND: &lt;ind&gt;[,&lt;ind&gt;[,...]]</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CIND=? &lt;ind&gt;s)</td>
<td>+CIND: (&lt;descr&gt;,(list of supported &lt;ind&gt;s))[,...]</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

**Description**

Set command is used to set the values of ME indicators. <ind> value 0 means that the indicator is off (or in state which can be identified as "off" state), 1 means that indicator is on (or in a state which is more substantial than "off" state), 2 is more substantial than 1, and so on. If the indicator is a simple on/off style element, it has values 0 and 1. The number of elements is ME specific. If ME does not allow setting of indicators or ME is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values. If certain indicator is not writable, setting of it should be ignored. If parameter is empty field, indicator shall remain in the previous value.

Read command returns the status of ME indicators. If ME is not currently reachable, +CME ERROR: <err> is returned.

Test command returns pairs, where string value <descr> is a maximum 16 character description of the indicator and compound value is the allowed values for the indicator. If ME is not currently reachable, +CME ERROR: <err> is returned.

**NOTE:** ME manufacturer should offer the description of supported indicators not listed here and their value ranges and default values.

**Defined values**

<ind>: integer type value, which shall be in range of corresponding <descr> <descr> values reserved by the present document and their <ind> ranges:

"message" message received (0 1)

**Implementation**

Optional.
**AT+IPR - Fixed DTE rate**

**Ref:** ITU-T V.250 section 6.2.10

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+IPR=&lt;rate&gt;</td>
<td>+IPR: &lt;rate&gt;</td>
</tr>
<tr>
<td>+IPR?</td>
<td>+IPR: &lt;rate&gt;</td>
</tr>
<tr>
<td>+IPR=?</td>
<td>+IPR: (list of supported autodetectable &lt;rate&gt; values)[, (list of fixed-only &lt;rate&gt; values)]</td>
</tr>
</tbody>
</table>

**Defined Values**

- **<rate>**
  - The rate in bits per second at which the DTE-DCE interface should operate.

**Recommended default setting:**

It is recommended that the default for this parameter be the automatic detection setting (0), which facilitates initial DTE-DCE communications.

**Supported Values**

- **<rate> 0**

---

**AT+CBST - Select bearer service type**

**Ref:** TS 27.007 - 460 section 6.7

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+CBST=&lt;speed&gt;[,&lt;name&gt;[,&lt;ce&gt;]]</td>
<td>OK or ERROR</td>
</tr>
<tr>
<td>AT+CBST?</td>
<td>+CBST: &lt;speed&gt;,&lt;name&gt;,&lt;ce&gt; OK</td>
</tr>
<tr>
<td>AT+CBST=?</td>
<td>+CBST: (list of supported &lt;speed&gt;s), (list of supported &lt;name&gt;s), (list of supported &lt;ce&gt;s) OK</td>
</tr>
</tbody>
</table>

**Defined Values**

- **<speed>**:
  - 0  autobauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)
  - 1  300 bps (V.21)
  - 2  1200 bps (V.22)
  - 3  1200/75 bps (V.23)
  - 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)
<table>
<thead>
<tr>
<th>Speed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>14400 bps (V.34)</td>
</tr>
<tr>
<td>1</td>
<td>19200 bps (V.34)</td>
</tr>
<tr>
<td>2</td>
<td>28800 bps (V.34)</td>
</tr>
<tr>
<td>3</td>
<td>33600 bps (V.34)</td>
</tr>
<tr>
<td>4</td>
<td>1200 bps (V.120)</td>
</tr>
<tr>
<td>5</td>
<td>2400 bps (V.120)</td>
</tr>
<tr>
<td>6</td>
<td>4800 bps (V.120)</td>
</tr>
<tr>
<td>7</td>
<td>9600 bps (V.120)</td>
</tr>
<tr>
<td>8</td>
<td>14400 bps (V.120)</td>
</tr>
<tr>
<td>9</td>
<td>19200 bps (V.120)</td>
</tr>
<tr>
<td>10</td>
<td>28800 bps (V.120)</td>
</tr>
<tr>
<td>11</td>
<td>38400 bps (V.120)</td>
</tr>
<tr>
<td>12</td>
<td>48000 bps (V.120)</td>
</tr>
<tr>
<td>13</td>
<td>56000 bps (V.120)</td>
</tr>
<tr>
<td>14</td>
<td>300 bps (V.110)</td>
</tr>
<tr>
<td>15</td>
<td>1200 bps (V.110)</td>
</tr>
<tr>
<td>16</td>
<td>2400 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>17</td>
<td>4800 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>18</td>
<td>9600 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>19</td>
<td>14400 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>20</td>
<td>19200 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>21</td>
<td>28800 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>22</td>
<td>38400 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>23</td>
<td>48000 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>24</td>
<td>56000 bps (V.110 or X.31 flag stuffing)</td>
</tr>
<tr>
<td>25</td>
<td>64000 bps (X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI or RDI service in order to get FTM)</td>
</tr>
<tr>
<td>26</td>
<td>56000 bps (bit transparent)</td>
</tr>
<tr>
<td>27</td>
<td>64000 bps (bit transparent)</td>
</tr>
<tr>
<td>28</td>
<td>32000 bps (PIAFS32k)</td>
</tr>
<tr>
<td>29</td>
<td>64000 bps (PIAFS64k)</td>
</tr>
<tr>
<td>30</td>
<td>28800 bps (multimedia)</td>
</tr>
<tr>
<td>31</td>
<td>32000 bps (multimedia)</td>
</tr>
<tr>
<td>32</td>
<td>33600 bps (multimedia)</td>
</tr>
<tr>
<td>33</td>
<td>56000 bps (multimedia)</td>
</tr>
<tr>
<td>34</td>
<td>64000 bps (multimedia)</td>
</tr>
</tbody>
</table>

*<name>*:

- 0: data circuit asynchronous (UDI or 3.1 kHz modem)
- 1: data circuit synchronous (UDI or 3.1 kHz modem)
- 2: PAD Access (asynchronous) (UDI)
- 3: Packet Access (synchronous) (UDI)
- 4: data circuit asynchronous (RD)
- 5: data circuit synchronous (RDI)
- 6: PAD Access (asynchronous) (RDI)
- 7: Packet Access (synchronous) (RDI)

*<ce>*:

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

**Supported Values**

- *<speed>*: (0-17,115,116)
**AT+ILRR - DTE DCE Local Rate Reporting**

**AT+ILRR - DTE DCE Local Rate Reporting**  
Ref : ITU-T V.250 section 6.2.13

---

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ILRR=&lt;value&gt;</td>
<td>+ILRR:&lt;rate&gt;[,&lt;rx_rate&gt;]</td>
</tr>
<tr>
<td>+ILRR?</td>
<td>+ILRR:&lt;current setting&gt;</td>
</tr>
<tr>
<td>+ILRR=?</td>
<td>+ILRR:(list of supported &lt;value&gt;s)</td>
</tr>
</tbody>
</table>

**defined Values**

- `<value>`
  - 0  Disables reporting of local port rate (ILRR: is not transmitted)
  - 1  Enables reporting of local port rate (ILRR: is transmitted)

- `<rx_rate>`
  - value reports the rate on circuit 104 (RXD), if it is different from the rate on circuit 103 (TXD).

**Supported Values**
- none

---

**AT+GSN - Request product serial number identification**

**AT+GSN - Request product serial number identification**  
Ref : ITU-T V.250 section 6.1.7

---

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+GSN</td>
<td>OK</td>
</tr>
<tr>
<td>+GSN=?</td>
<td></td>
</tr>
</tbody>
</table>

**Defined Values**
- none
- none

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters. Text shall not contain the sequence "0 <CR>" (3/0, 0/13) or "OK<CR>" (4/15, 4/11, 0/13).

**Supported Values**
- none
### AT+CGSN - Request Product Serial Number Identification

**Command**

<table>
<thead>
<tr>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGSN &lt;sn&gt;</td>
</tr>
<tr>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

**+CGSN=?**

---

**Defined Values**

- `<sn>`: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.
  
  Text shall not contain the sequence 0<CR> or OK<CR>

**Supported Values**

- `none`

### AT+CCLK - Clock

**Command**

<table>
<thead>
<tr>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CCLK=&lt;time&gt;</td>
</tr>
<tr>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

**+CCLK?**

| +CCLK: <time>         |
| +CME ERROR: <err>     |

**+CCLK=?**

| OK                    |

**Defined Values**

- `<time>`: string type value; format is "yy/MM/dd, hh:mm:ss zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range 47...+48).
  
  E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06, 22:10:00+08"

**NOTE:** If ME does not support time zone information then the three last characters of `<time>` are not returned by +CCLK?. The format of `<time>` is specified by use of the +CSDF command.

**Supported Values**
AT+CRC - Cellular result codes

AT+CRC - Cellular result codes
Ref : TS 27.007 - 420 section 6.11
============================================================================= Command Possible response(s) +CRC=[<mode>] +CRC?: <mode> +CRC=? (list of supported <mode>s)
============================================================================= Defined Values <mode>: 0 disables extended format 1 enables extended format

Supported Values (0,1)

AT+FCLASS - Select mode

AT+FCLASS - Select mode
Ref : TS 27.007 - 420 section C.2.1
============================================================================= Command Possible response(s) +FCLASS=<n> +FCLASS? <n> +FCLASS=? (list of supported <n>s)
============================================================================= Defined Values <n> Mode 0 data 1 fax class 1 (TIA-578-A) 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) 3...7 reserved for other fax modes 8 voice 9...15 reserved for other voice modes 16..79 reserved 80 VoiceView (Radish) 81..255 reserved

Supported Values <n> 0
### AT+CLAC - List all available AT commands

**AT+CLAC - List all available AT commands**  
Ref: TS 27.007 - 420 section 8.36

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CLAC</td>
<td>&lt;AT Command1&gt; [CR LF &lt;AT Command2&gt;[…]]</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

**+CLAC=?**  
Defined Values  
<AT Command >:  
Defines the AT command including the prefix AT.  
Text shall not contain the sequence 0<CR> or OK<CR>

**Supported Values**  
- none -

### AT+CLCC - List current calls

**AT+CLCC - List current calls**  
Ref: TS 27.007 - 460 section 7.18

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CLCC</td>
<td>[+CLCC: &lt;id1&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;[, &lt;number&gt;,&lt;type&gt;[, &lt;alpha&gt;[, &lt;priority&gt;]]][CR]&lt;LF&gt;+CLCC: &lt;id2&gt;, &lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;[, &lt;number&gt;,&lt;type&gt;[, &lt;alpha&gt;[, &lt;priority&gt;]]][…]]</td>
</tr>
<tr>
<td></td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

**+CLCC=?**  
Defined Values  
<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> mobile originated (MO) call  
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)

<alpha>
string type alphanumeric representation of <number> corresponding to the entry
found in phonebook;
used character set should be the one selected with command Select TE Character
Set +CSCS

<priority>
optional digit type parameter indicating the eMLPP priority level of the call,
values specified in 3GPP TS 22.067 [54]

Supported Values
- none -

AT+CEER - Extended error report
AT+CEER - Extended error report
Ref : TS 27.007 - 420 section 6.10
=============================================================================
Command                          Possible response(s)
=============================================================================
+CEER                            +CEER: <report>
OK
-----------------------------------------------------------------------------
+CEER=?                          OK
=============================================================================
### AT+CSDF - Settings date format

**AT+CSDF - Settings date format**  
Ref: TS 27.007 - 420 section 6.22

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CSDF=[(&lt;mode&gt;),&lt;auxmode&gt;)]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CSDF?</td>
<td>+CSDF: &lt;mode&gt;[,&lt;auxmode&gt;]</td>
</tr>
<tr>
<td>+CSDF=?</td>
<td>+CSDF: (list of supported &lt;mode&gt;s)[, (list of supported &lt;auxmode&gt;s)]</td>
</tr>
<tr>
<td>+CME ERROR: &lt;err&gt;</td>
<td></td>
</tr>
</tbody>
</table>

**Defined Values**

- **<mode>**
  - NOTE: It is manufacturer specific which modes that are supported.
  - 1 DD-MMM-YYYY  
    - NOTE: Presentation of MMM is language dependent.
  - 2 DD-MM-YY
  - 3 MM/DD/YY
  - 4 DD/MM/YY
  - 5 DD.MM.YY
  - 6 YYMMD
  - 7 YY-MM-DD
  - 8-255 Manufacturer specific

- **<auxmode>**
  - 1 yy/MM/dd (default)
  - 2 yyyy/MM/dd

All other values are reserved by the present document.

**NOTE:** The <time> format of +CCLK and +CALA "yy/MM/dd, hh:mm:ss zz" when <auxmode>=1 and it is "yyyy/MM/dd, hh:mm:ss zz" when <auxmode>=2.

If the ME does not support time zone information then the three last characters may be omitted (see +CCLK command).

**Supported Values**

- **<mode>** 8
- **<auxmode>** 1

### AT+CSCS - Select TE Character Set

**AT+CSCS - Select TE Character Set**  
Ref: TS 27.007 - 420 section 5.5

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
</table>

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Author: HenrikMøller  
Rev. PA2  
Page 75  
1/16/2006

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F +45 39 55 88 88 • info@tt.dk • www.tt.dk • Comp.reg.: 65 72 46 18 • VAT: DK-20 64 64 46
+CSCS=[<chset>]

+CSCS?
+CSCS: <chset>

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

Defined Values

<chset> (conversion schemes not listed here can be defined by manufacturers):

"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 ME character set shall be done.
NOTE 2: If ME is using GSM 7 bit default alphabet, its characters
shall be padded with 8th bit
(zero) before converting them to hexadecimal numbers (i.e. no SMS
style packing of 7 bit alphabet).
"IRA" international reference alphabet (ITU T T.50 [13])
"PCCPxxx" PC character set Code Page xxx
"PCDN" PC Danish/Norwegian character set
"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-n" ISO 8859 Latin n (1-6) character set
"8859-C" ISO 8859 Latin/Cyrillic character set
"8859-A" ISO 8859 Latin/Arabic character set
"8859-G" ISO 8859 Latin/Greek character set
"8859-H" ISO 8859 Latin/Hebrew character set

Supported Values

<chset> (8859-1)

AT+GCAP - Request complete capabilities list

AT+GCAP - Request complete capabilities list
Ref : ITU-T V.250 section 6.1.9

Command Possible response(s)
AT+GCAP +GCAP:+[<name>], [...]

+GCAP=?

Defined Values

<name> examples:
+CLASS T.class1, +F or T.class2, +F
Class 1 Facsimile DCE Control
Class 2 Facsimile DCE Control

+MS +M commands
  Modulation Control: +MS and +MR commands
+MV18S +MV18 commands
  V.18 Modulation Control: +MV18S and +MV18R
+ES +E commands
  Error Control: +ES, +EB, +ER, +EFCS, +ETBM
+DS +D commands
  Data Compression: +DS and +DR

Text shall not contain the sequence "0 <CR>" (3/0, 0/13) or "OK<CR>" (4/15, 4/11, 0/13).

Supported Values
  - none -

AT+CMAR - Master Reset

AT+CMAR - Master Reset
Ref : TS 27.007 - 420 section 8.35

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CMAR=&lt;phone lock code&gt;</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CMAR=?</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

Defined Values

<phone lock code > string type
  Security code (Phone Lock code) must be verified before performing the master reset.

Supported Values
  <phone lock code> secret

AT+CMEC - Mobile Equipment control mode

AT+CMEC - Mobile Equipment control mode
Ref : TS 27.007 - 420 section 8.6

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CMEC=[&lt;keyp&gt;,&lt;disp&gt;[,&lt;ind&gt;]]</td>
<td>+CME ERROR: &lt;err&gt;</td>
</tr>
<tr>
<td>+CMEC=?</td>
<td>+CMEC: &lt;keyp&gt;,&lt;disp&gt;,&lt;ind&gt;</td>
</tr>
<tr>
<td>+CMEC=?</td>
<td>+CMEC: (list of supported &lt;keyp&gt;s),</td>
</tr>
<tr>
<td></td>
<td>(list of supported &lt;disp&gt;s),</td>
</tr>
<tr>
<td></td>
<td>(list of supported &lt;ind&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values
ME can be operated only through its keypad (execute command of +CKPD cannot be used)

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

ME can be operated from both ME keypad and TE

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

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

ME display can be written by both ME and TE

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

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

ME indicators can be set by both ME and TE

ATO+CMEE - Report Mobile Equipment error

AT+CMEE - Report Mobile Equipment error
Ref: TS 27.007 - 420 section 9.1

---

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CMEE=[&lt;n&gt;]</td>
<td></td>
</tr>
<tr>
<td>+CMEE?</td>
<td>+CMEE: &lt;n&gt;</td>
</tr>
<tr>
<td>+CMEE=?</td>
<td>+CMEE: (list of supported &lt;n&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

<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)

Supported Values

(0,1)

ATO+CMER - Mobile Equipment event reporting

AT+CMER - Mobile Equipment event reporting
Ref: TS 27.007 - 460 section 8.10

---
EXPLORER 500 AT Command Set

Command                          Possible response(s)
============================================================================= 
+CMER=0[,<keyp>[,,<disp>[,,<ind>[,,<bfr>]]]]  +CMER ERROR: <err> 

============================================================================= 
+CMER?                        +CMER: <mode>,<keyp>,<disp>,<ind>,<bfr> 

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

Defined Values

<mode>
0      buffer unsolicited result codes in the TA; if TA result code buffer is 
       full, codes can be buffered in some other place or the oldest ones can be 
       discarded
1      discard unsolicited result codes when TA TE link is reserved (e.g. in 
       on line data mode); otherwise forward them directly to the TE 
2      buffer unsolicited result codes in the TA when TA TE link is reserved 
       (e.g. in on line data mode) and flush them to the TE after reservation; 
       otherwise forward them directly to the TE 
3      forward unsolicited result codes directly to the TE; TA TE link 
       specific inband technique used to embed result codes and data when TA is in on line 
       data mode

<keyp>
0      no keypad event reporting
1      keypad event reporting using result code +CKEV: <key>,<press>. <key> 
       indicates 
       the key (refer IRA values defined in table in subclause "Keypad control 
       +CKPD") and <press> if the key is pressed or released (1 for pressing and 0 for 
       releasing). 
       Only those key pressings, which are not caused by +CKPD shall be 
       indicated by the TA to the TE. 
       NOTE 1: When this mode is enabled, corresponding result codes of all 
       keys currently 
       pressed should be flushed to the TA regardless of <bfr> setting.
2      keypad event reporting using result code +CKEV: <key>,<press>. All key 
       pressings 
       shall be directed from TA to TE. 
       NOTE 2: When this mode is enabled, corresponding result codes of all 
       keys 
       currently pressed should be flushed to the TA regardless of <bfr> setting.

<disp>
0      no display event reporting 
1      display event reporting using result code +CDEV: <elem>,<text>. <elem> 
       indicates
the element order number (as specified for +CDIS) and <text> is the new value of text element. Only those display events, which are not caused by +CDIS shall be indicated by the TA to the TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS. Display event reporting using result code +CDEV: <elem>,<text>. All display events shall be directed from TA to TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS.

<ind>
0  no indicator event reporting
1  indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE.

2  indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE.

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

NOTE !!!!
TS 27.007 defines the parameters for +CMER to be:-
+CMER: <mode>, <keyp>, <disp>, <ind>, <bfr>

For BGAN Common MMI this command is extended to:-
+CMER: <mode>, <keyp>, <disp>, <ind>, <bfr>, <bat>

where:
<bat>:
0  no battery event reporting
1  battery event reporting using result code +CBC: <bcs>,<bcl>. Values for <bcs>,<bcl> are as defined in 2.10.4 above and 4 below. Values to be sent on a change of battery status by more than 10% (or a change in main power status).

Supported Values
<mode>
0, 1, 2
<keyp>, <disp>, <ind>
0
AT+CR - Service reporting control

AT+CR - Service reporting control
Ref: TS 27.007 - 420 section 6.9

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CR= [&lt;mode&gt;]</td>
<td></td>
</tr>
<tr>
<td>+CR?</td>
<td>+CR: &lt;mode&gt;</td>
</tr>
<tr>
<td>+CR=?</td>
<td>+CR: (list of supported &lt;mode&gt;s)</td>
</tr>
</tbody>
</table>

Defined Values

<mode>:
0  disables reporting
1  enables reporting

Supported Values
(0,1)

AT+CSTA - Select type of address

AT+CSTA - Select type of address
Ref: TS 27.007 - 460 section 6.1

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CSTA= [&lt;type&gt;]</td>
<td></td>
</tr>
<tr>
<td>+CSTA?</td>
<td>+CSTA= [&lt;type&gt;]</td>
</tr>
<tr>
<td>+CSTA=?</td>
<td>+CSTA: (list of supported &lt;type&gt;s),</td>
</tr>
</tbody>
</table>

Defined Values

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

Supported Values
<type> (129,145)

AT+CSTF - Settings time format

AT+CSTF - Settings time format
Ref: TS 27.007 - 420 section 6.24

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
</table>
EXPLORER 500 AT Command Set

---

+CSTF=[<mode>]
+CME ERROR: <err>

+CSTF?
+CSTF:<mode>
+CME ERROR: <err>

+CSTF=?
+CSTF:(list of supported <mode>s)
+CME ERROR: <err>

Defined Values

<mode>
1  HH:MM (24 hour clock)
2  HH:MM a.m./p.m.
3-7 Manufacturer specific

Supported Values
<mode> 1

AT+GCI - Country of Installation

AT+GCI - Country of Installation
Ref : ITU-T V.250 section 6.1.10

Command Possible response(s)

+GCI=<T.35 country code>

+GCI?
+GCI:<current country code>

+GCI=?
+GCI:(< country code> [,<country code> [,<country code> .........]])

Defined Values

<T.35 country code>

Supported Values

<T.35 country code>

AT+CSMS - Select Message Service

AT+CSMS - Select Message Service
Ref : TS 27.005 - 420 section 3.2.1

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)

Defined Values
### AT+CPMS - Preferred Message Storage

**AT+CPMS Preferred Message Storage**

Ref : TS 27.005 - 420 section 3.2.2

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CPMS=&lt;mem1&gt;[,&lt;mem2&gt;[,&lt;mem3&gt;]]</td>
<td>+CPMS: &lt;used1&gt;,&lt;total1&gt;, &lt;used2&gt;,&lt;total2&gt;, &lt;used3&gt;,&lt;total3&gt;</td>
</tr>
<tr>
<td>+CMS ERROR: &lt;err&gt;</td>
<td></td>
</tr>
</tbody>
</table>

| +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) |

**Defined Values**
- none -

**Supported Values**
- <mem1>,<mem2>,<mem3>
- ME, SM, SR

### AT+CSCA - Service Centre Address

**AT+CSCA - Service Centre Address**

Ref : TS 27.005 - 420 section 3.3.1

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
</table>

| +CSCA=<sca>[,<tosca>] |

| +CSCA? | +CSCA: <sca>,<tosca> |
| +CSCA=? |

**Defined Values**
- none -

Supported Values
<sca>,<tosca>

AT+CMGD - Delete Message

AT+CMGD - Delete Message
Ref : TS 27.005 - 420 section 3.5.4

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CMGD=&lt;index&gt;[,&lt;delflag&gt;]</td>
<td>+CMS ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

+CMGD=?
+CMGD: (list of supported <index>s)[,
(list of supported <delflag>s)]

Defined Values
<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.

Supported Values
<index>   0-255
<delflag> 0-4

AT+CMSS - Send Message from Storage

AT+CMSS - Send Message from Storage
Ref : TS 27.005 - 420 section 3.5.2

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CMSS=&lt;index&gt;[,&lt;da&gt;[,&lt;toda&gt;]]</td>
<td>if PDU mode (+CMGF=0) and sending successful: +CMSS: &lt;mr&gt;[,&lt;ackpdu&gt;]</td>
</tr>
<tr>
<td></td>
<td>if sending fails:     +CMS ERROR: &lt;err&gt;</td>
</tr>
</tbody>
</table>

+CMSS=?
Defined Values  
- none -

Supported Values
-<index>-  
  0-255  
-<da>-  
-<toda>-  
  128-255

AT+CMGC - Send Command

AT+CMGC - Send Message
Ref: TS 27.005 - 420 section 3.5.5

Command Possible response(s)

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

+CMGC=+?

Defined Values
  - none -

Supported Values
-<fo>-  
  0-164

AT+CNMI - New Message Indication to TE

AT+CNMI - New Message Indication to TE
Ref: TS 27.005 - 420 section 3.4.1

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)

Defined Values
-<mode>-
NOTE 3: The buffering mechanism may as well be located in the ME; the setting affects only to unsolicited result codes specified within this command:

0       Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.

1       Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.

2       Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

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

<mt>   (the rules for storing received SMs depend on its data coding scheme, preferred memory storage (+CPMS) setting and this value;

NOTE 5: If AT command interface is acting as the only display device, the ME must support storing of class 0 messages and messages in the message waiting indication group (discard message)

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)

If ME has its own display device then class 0 messages and messages in the message waiting indication group (discard message) may be copied to both ME display and to TE.

In this case, ME shall send the acknowledgement to the network.

Class 2 messages and messages in the message waiting indication group (store message) result in indication as defined in <mt>=1.

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.

<mt> parameter
Receiving procedure for different message data coding schemes

- **no class:** as in 3GPP TS 23.038 [2], but use \textless mem3\textgreater as preferred memory.
- **class 0:** as in 3GPP TS 23.038 [2], but use \textless mem3\textgreater as preferred memory if message is tried to be stored.
- **class 1:** as in 3GPP TS 23.038 [2], but use \textless mem3\textgreater as preferred memory.
- **class 2:** as in 3GPP TS 23.038 [2]
- **class 3:** as in 3GPP TS 23.038 [2], but use \textless mem3\textgreater as preferred memory.

**message waiting indication group (discard message):** as in 3GPP TS 23.038 [2], but use \textless mem3\textgreater as preferred memory if message is tried to be stored.

**message waiting indication group (store message):** as in 3GPP TS 23.038 [2], but use \textless mem3\textgreater as preferred memory.

- **mt=0** but send indication if message stored successfully.
- **mt=1** but send indication if message stored successfully.

**SMS-DELIVER result code and acknowledgement summary**

<table>
<thead>
<tr>
<th>(\text{mt})</th>
<th>no class</th>
<th>class 0</th>
<th>class 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>class 3</td>
<td>or class 1</td>
<td>or message waiting</td>
<td>or message</td>
</tr>
<tr>
<td>waiting group (store)</td>
<td></td>
<td>indication group (discard)</td>
<td>indication</td>
</tr>
<tr>
<td>1</td>
<td>+CMTI</td>
<td>[+CMTI *1)]</td>
<td>+CMTI</td>
</tr>
<tr>
<td>+CMTI</td>
<td>2</td>
<td>+CMT &amp; +CNMA3)</td>
<td>+CMTI &amp; +CNMA *2])</td>
</tr>
<tr>
<td>+CMT &amp; +CNMA *3)</td>
<td>3</td>
<td>+CMTI</td>
<td>[+CMTII)]</td>
</tr>
<tr>
<td>+CMT &amp; +CNMA *3)</td>
<td>3</td>
<td>+CMTI</td>
<td>[+CMTII)]</td>
</tr>
</tbody>
</table>

*1) result code is sent when ME does not have other display device than AT interface.

*2) acknowledgement command must be sent when +CSMS <service> value equals 1 and ME does not have other display device than AT interface.

*3) acknowledgement command must be sent when +CSMS <service> value equals 1.

-the rules for storing received CBMs depend on its data coding scheme,
the setting of Select CBM Types (+CSCB) and this value):

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>
                      (textmode 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.

<bm> parameter
<bm>    Receiving procedure for different message data coding schemes (refer 3GPP TS 23.038 [2])
    0   all schemes: as in 3GPP TS 23.038 [2]; if CBM storage is supported, store message to "BM" (or some manufacturer or data coding scheme specific memory)
    1   all schemes: as <bm>=0 but send indication if message stored successfully
    2   all schemes: route message to TE unless ME has detected a special routing to somewhere else (e.g. to (U)SIM; an indication may be sent if message stored successfully)
    3   class 3: route message to TE
         others: as <bm>=1 (if CBM memory storage is supported)

<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>

SMS-STATUS-REPORT result code and acknowledgement summary
<ds>    result codes and commands
    1    +CDS & +CNMA *1)
    2    +CDSI
*1)   acknowledgement command must be sent when +CSMS <service>

value equals 1

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

Supported Values
<mode>
1
<mt>
0-1
<brm>
0
<ds>
0
<bfr>
0

AT+CGSMS - Select service for MO SMS messages

AT+CGSMS - Select service for MO SMS messages
Ref : TS 27.007 - 420 section 10.1.20

Command                          Possible response(s)
+CGSMS= [<service>]              OK
                                        ERROR
+CGSMS?                          +CGSMS: <service>
+CGSMS=?                         +CGSMS: (list of currently available <service>s)

Defined Values
<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)

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

Supported Values
+cgsms=3

AT+CRES - Restore Settings

AT+CRES - Restore Settings
Ref : TS 27.005 - 410 section 3.3.6
EXPLORER 500 AT Command Set

Command                          Possible response(s)

+CRES[=<profile>]                +CMS ERROR: <err>

+CRES=?                          +CRES: (list of supported <profile>s)

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. See chapter Message Service Failure Result Code for <err> values.

Defined Values
- none -

Supported Values
Profile number 0-9

AT+CSAS - Save Settings

AT+CSAS - Save Settings
Ref : TS 27.005 - 410 section 3.3.5

Command                          Possible response(s)

+CSAS[=<profile>]                +CMS ERROR: <err>

+CSAS=?                          +CSAS: (list of supported <profile>s)

Description
Execution command saves active message service settings to a non-volatile memory. A TA can contain several profiles of settings. Settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP 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. See chapter Message Service Failure Result Code for <err> values.

Test command shall display the supported profile numbers for reading and writing of settings.

Defined Values
- none -

Supported Values
Profile number 0-9

AT+CSMP - Set Text Mode Parameters

AT+CSMP - Set Text Mode Parameters
Ref : TS 27.005 - 420 section 3.3.2

Command                          Possible response(s)

+CSMP[=<mode>]                   +CMS ERROR: <err>

+CSMP=?                          +CSMP: (list of supported <mode>s)

Description
Execution command sets text mode parameters.

Defined Values
- none -

Supported Values
Text mode parameter values
+CSMP=[<fo>[[,<vp>[[,<pid>[,[<dcs>]]]]]

+CSMP?
+CSMP: <fo>,<vp>,<pid>,<dcs>

+CSMP=?

Description
Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. 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>. If TA supports the EVPF, see 3GPP TS 23.040 [3], it shall be given as a hexadecimal coded string (refer e.g. <pdu>) with double quotes.

NOTE: When storing a SMS-DELIVER from the TE to the preferred memory storage in text mode (refer command Write Message to Memory +CMGW), <vp> field can be used for <scts>.

Defined Values
- none -

Supported Values
<fo>,<vp>,<pid>,<dcs>

AT+CMGF - Message Format

AT+CMGF Message Format
Ref : TS 27.005 - 420 section 3.2.3

+CMGF=[<mode>]

+CMGF?
+CMGF: <mode>

+CMGF=?
+CMGF: (list of supported <mode>s)

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

Supported Values
<mode>
  0 og 1

AT+CMGL - List Messages

+CMGL - List Messages
Ref : TS 27.005 - 420 section 3.4.2

+CMGL=

+CMGL?
+CMGL: (list of supported SMs)

Defined Values

Supported Values

AT+CMGR - Get Receipt Report

AT+CMGR - Get Receipt Report

Ref : TS 27.005 - 420 section 3.4.3

+CMGR=

+CMGR?
+CMGR: <mode>
+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>],<scts>, <dt>,<st>[<CR><LF>
+CMGL:
<index>,<stat>,<fo>,<mr> [,<ra>],<scts>, <dt>,<st> [...]

if text mode (+CMGF=1), command successful and

SMS-COMMANDs:

+CMGR: <index>,<stat>,<ct><CR><LF>
+CMGR: <index>,<stat>,<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)

Defined Values
- none -

Supported Values
<stat>

0-4

AT+CMGR - Read Messages

+CMGR - Read Messages
Ref: TS 27.005 - 420 section 3.4.3

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>,<oa>,[<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>

AT+CMGS - Send Message

AT+CMGS - Send Message
Ref: TS 27.005 - 420 section 3.5.1(text mode), section 4.3 (pdu mode)

Command                          Possible response(s)
------------------------------------------------------------------------------
if PDU mode (+CMGF=0):
+CMGS=<length><CR>               +CMGS: <mr>[,<ackpdu>]
PDU is given                      if sending fails:
<ctrl-Z/ESC>                      +CMS ERROR: <err>
If text mode (+CMGF=1):
+CMGS=<da>[,<toda>]<CR>            +CMGS: <mr>[,<scts]>
text is entered                   if sending fails:
<ctrl-Z/ESC>                      +CMS ERROR: <err>
+CMGS=?

Description (PDU mode)
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.
Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is
returned. Values can be used to identify message upon unsolicited delivery
status report result code. If sending fails in a network or an ME error, final
result code +CMS ERROR: <err> is returned. See chapter Message Service Failure
Result Code for a list of <err> values. This command should be abortable.
- <length> must indicate the number of octets coded in the TP layer data unit to be given (i.e. SMSC address octets are excluded)
- the TA shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that PDU can be given from TE to ME/TA
- the DCD signal shall be in ON state while PDU is given
- the echoing of given characters back from the TA is controlled by V.25ter echo command E
- the PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU
- when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command Service Centre Address +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU, i.e. TPDU starts right after SMSC length octet
- sending can be cancelled by giving <ESC> character (IRA 27)
- <ctrl-Z> (IRA 26) must be used to indicate the ending of PDU

Description (text mode)
=======================
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. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for a list of <err> values. This command should be abortable.

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. Value can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for a list of <err> values. This command should be abortable.

- entered text (3GPP TS 23.040 [3] TP-Data-Unit) is sent to address <da> and all current settings (refer Set Text Mode Parameters +CSMP and Service Centre Address +CSCA) are used to construct the actual PDU in ME/TA
- the TA shall send a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that text can be entered from TE to ME/TA
- the DCD signal shall be in ON state while text is entered
- the echoing of entered characters back from the TA is controlled by V.25ter echo command E
- the entered text should be formatted as follows:
  - if <dcs> (set with +CSMP) indicates that 3GPP TS 23.038 [2] GSM 7 bit default alphabet is used and <fo> indicates that 3GPP TS 23.040 [3] TP-User-Data-Header-Indication is not set:
    - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS in 3GPP TS 27.007 [9]): ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A; backspace can be used to delete last character and carriage returns can be used (previously mentioned four character sequence shall be sent to the TE after every carriage return entered by the user)
- if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into the GSM 7 bit default alphabet characters. (e.g. 17 (IRA 49 and 55) will be converted to character (GSM 7 bit default alphabet 23))

- if <dcs> indicates that 8-bit or UCS2 data coding scheme is used or <fo> indicates that 3GPP TS 23.040 [3] TP-User-Data-Header-Indication is set: the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. two characters 2A (IRA 50 and 65) will be converted to an octet with integer value 42)

- sending can be cancelled by giving <ESC> character (IRA 27)
- <ctrl-Z> (IRA 26) must be used to indicate the ending of the message body

Defined Values
- none -

Supported Values
<length>
0-164

AT+CMGW - Write Message to Memory

AT+CMGW - Write Message to Memory
Ref: TS 27.005 - 420 section 3.5.3

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

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

+CMGW=?

Defined Values
- none -

Supported Values
<length>
0-164
<stat>
0-3

Description (text mode)
Execution command stores message (either SMS-DELIVER or SMS-SUBMIT) 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. The entering of text is done similarly as specified in command Send Message +CMGS. If writing fails, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for <err> values.

NOTE: SMS-COMMANDs and SMS-STATUS-REPORTs can not be stored in text mode.

**AT_ITEMP - UT temperature**

AT_ITEMP - UT temperature
Ref : UT-TE Interface Specification ver 1.2 section 3.1.7

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_ITEMP</td>
<td>_ITEMP: &lt;status&gt;[,&lt;temperature&gt;]</td>
</tr>
<tr>
<td>+CME ERROR: &lt;err&gt;</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>_ITEMP=?</th>
<th>_ITEMP: (List of supported &lt;statuses&gt;), (normal temperature &lt;range&gt;)</th>
</tr>
</thead>
</table>

**Defined Values**

<status>
- 0      OK, Normal operation
- 1      Hot, Warning
- 2      Very Hot, Reducing functionality
- 3      Very Very Hot, Shutting down calls
- 4      Too Hot, Imminent shutdown

<temperature>
Measured temperature in degrees C (optional parameter)

**Supported Values**

<status>
- 0, 1, 2, 4

<temperature>
- negative and positive values

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

AT+CGEQREQ - 3G Quality of Service Profile (Requested)
Ref : TS 27.007 - 460 section 10.1.6

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGEQREQ=[&lt;cid&gt; [,&lt;Traffic class&gt;],&lt;Maximum bitrate UL&gt;,&lt;Maximum bitrate DL&gt;,&lt;Guaranteed bitrate UL&gt;,&lt;Guaranteed bitrate DL&gt;,&lt;Delivery order&gt;,&lt;Maximum SDU size&gt;,&lt;SDU error ratio&gt;]</td>
<td>OK, ERROR</td>
</tr>
</tbody>
</table>

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

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

=============================================================================

Defined Values

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

The following parameters are defined in 3GPP TS 23.107 [46] -

<Traffic class>
a numeric parameter that indicates the type of application for which the
UMTS bearer service is optimised.
  0      conversational
  1      streaming
  2      interactive
  3      background
  4      subscribed value
Other values are reserved.

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

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

<Guaranteed bitrate UL>
a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver).

As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=...,32, ...).

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

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

<Delivery order>
a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.
0 no
1 yes
2 subscribed value.
Other values are reserved.

<Maximum SDU size>
a numeric parameter (1,2,3,...) that indicates the maximum allowed SDU size in octets.
If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>
a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic.
The value is specified as 'mEe'. As an example a target SDU error ratio of 5e10-3 would be specified as '5E3' (e.g. AT+CGEQREQ=...,"5E3",...). '0E0' means subscribed value.

<Residual bit error ratio>
a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'.
As an example a target residual bit error ratio of 5e10-3 would be specified as '5E3' (e.g. AT+CGEQREQ=...,"5E3",...). '0E0' means subscribed value.

<Delivery of erroneous SDUs>
a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.
0 no
1 yes
2 no detect
3 subscribed value
Other values are reserved.
<Transfer delay>
a numeric parameter (0,1,2,...) that indicates the targeted time between request
to transfer an SDU at one SAP to its delivery at the other SAP, in
milliseconds.
If the parameter is set to '0' the subscribed value will be requested.

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

<PDP_type> (see +CGDCONT and +CGDSCONT commands).
If a value is omitted for a particular class then the value is considered to be unspecified.

Supported Values
<cid>
(1-11)

<Traffic class>
(0-4)

<Maximum bitrate UL>
(0-8640)

<Maximum bitrate DL>
(0-8640)

<Guaranteed bitrate UL>
(0-8640)

<Guaranteed bitrate DL>
(0-8640)

<Delivery order>
(0-2)

<Maximum SDU size>
(0-1520)

<SDU error ratio>
("1E6"-"1E1","0E0").

<Residual bit error ratio>
("6E8"-"5E2","0E0")

<Delivery of erroneous SDUs>
(0-3)

<Transfer delay>
(0-4000)

<Traffic handling priority>
(0-3)
AT+CGEQMIN - 3G Quality of Service Profile (Minimum acceptable)

AT+CGEQMIN - 3G Quality of Service Profile (Minimum acceptable)
Ref : TS 27.007 - 460 section 10.1.7

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

+CGEQMIN=?                                   +CGEQMIN: <PDP_type>,
(list of supported
<Traffic class>s),

+CGEQMIN=?

+CGEQMIN: <PDP_type>,
(Plist of supported
<Traffic class>s),
<Maximum bitrate UL>s ,
<Maximum bitrate DL>s),
<Guaranteed bitrate UL>s),
<Guaranteed bitrate DL>s) ,
<Delivery order>s) ,
<Maximum SDU size>s) ,
error ratio>s) ,
<Residual bit error ratio>s) ,
<Delivery of erroneous SDUs>s) ,
<Transfer delay>s) ,
<Traffic handling priority>s)
<PDP_type>,
<Traffic class>s) ,
<Maximum bitrate UL>s),
<Maximum bitrate DL>s) ,
<Guaranteed bitrate UL >s),
<Guaranteed bitrate DL >s) ,
<Delivery order>s) ,
<Maximum SDU size>s) ,
error ratio>s) ,
<Residual bit error ratio>s) ,
<Delivery of erroneous SDUs>s) ,
<Transfer delay>s) ,
<Traffic handling priority>s)  
[...]
=============================================================================  
Defined Values
<cid>
  a numeric parameter which specifies a particular PDP context definition  
    (see +CGDCONT and +CGDSCONT commands).  
    The following parameters are defined in 3GPP TS 23.107 [46] -
<Traffic class>
a numeric parameter that indicates the type of application for which
the UMTS bearer service is optimised.
0 conversational
1 streaming
2 interactive
3 background
Other values are reserved.

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

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

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

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

<Delivery order>
a numeric parameter that indicates whether the UMTS bearer shall provide
in-sequence SDU delivery or not.
0 no
1 yes
Other values are reserved.

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

<SDU error ratio>
a string parameter that indicates the target value for the fraction of
SDUs lost or detected as erroneous. SDU error ratio is defined only for
conforming traffic. The value is specified as 'mEe'. As an example a target
SDU error ratio of 5o10-3 would be specified as '5E3' (e.g.
AT+CGEQMIN=...,"5E3",...).

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

<Delivery of erroneous SDUs>
a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.
0 no
1 yes
2 no detect
Other values are reserved.

<Transfer delay>
a numeric parameter (0,1,2,...) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds.

<Traffic handling priority>
a numeric parameter (1,2,3,...) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers.

<PDP_type>
(see +CGDCONT and +CGDSCONT commands).
If a value is omitted for a particular class then the value is considered to be unspecified.

Supported Values

<cid>
(1-11)

<Traffic class>
(0-3)

<Maximum bitrate UL>
(1-8640)

<Maximum bitrate DL>
(1-8640)

<Guaranteed bitrate UL>
(1-8640)

<Guaranteed bitrate DL>
(1-8640)

<Delivery order>
(0,1)

<Maximum SDU size>
(1-1520)

<SDU error ratio>
("1E6"-"1E1").

<Residual bit error ratio>
("6E8"-"5E2")
<Delivery of erroneous SDUs>
(0,1,2)

<Transfer delay>
(1-4000)

<Traffic handling priority>
(1-3)

<PDP_type>
"IP"

### ATA - Answer

**ATA**

Ref : ITU-T V.250 section 6.3.5

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alphabetic</td>
</tr>
<tr>
<td>A</td>
<td>(ATV1)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>CONNECT</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>text</td>
</tr>
<tr>
<td>NO CARRIER</td>
<td>3</td>
</tr>
<tr>
<td>ERROR</td>
<td>4</td>
</tr>
<tr>
<td>OK</td>
<td>0</td>
</tr>
</tbody>
</table>

-----------------------------------------------------------------------------------------------

**Defined Values**

**Supported Values**

### AT+CGDSCONT - Define Secondary PDP Context

**AT+CGDSCONT - Define Secondary PDP Context**

Ref : TS 27.007 - 460 section 10.1.2
### Command Set

<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGDSCONT=&lt;cid&gt;,&lt;p_cid&gt; [, ,&lt;d_comp&gt; [,&lt;h_comp&gt;]]]</td>
<td>OK ERROR</td>
</tr>
<tr>
<td>+CGDSCONT?</td>
<td>+CGDSCONT: &lt;cid&gt;, &lt;p_cid&gt;, &lt;data_comp&gt;, &lt;head_comp&gt;[&lt;CR&gt;&lt;LF&gt;+CGDSCONT: &lt;cid&gt;, &lt;p_cid&gt;, &lt;data_comp&gt;, &lt;head_comp&gt;[...]]]</td>
</tr>
<tr>
<td>+CGDSCONT=?</td>
<td>+CGDSCONT: (range of supported &lt;cid&gt;s), (list of &lt;cid&gt;s for active primary contexts), &lt;PDP_type&gt;,,, (list of supported &lt;d_comp&gt;s), (list of supported &lt;h_comp&gt;s) [&lt;CR&gt;&lt;LF&gt;+CGDSCONT: (range of supported &lt;cid&gt;s), (list of &lt;cid&gt;s for active primary contexts) , &lt;PDP_type&gt;,,, (list of supported &lt;d_comp&gt;s) [...]]</td>
</tr>
</tbody>
</table>

#### Defined Values

- **<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 +CGDSCONT 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)
    - IPV6 Internet Protocol, version 6 (IETF RFC 2460)
    - PPP Point to Point Protocol (IETF STD 51)

- **<d_comp>**
  - a numeric parameter that controls PDP data compression (applicable to GPRS only)
    - 0  off (default if value is omitted)
    - 1  on
  - Other values are reserved.
a numeric parameter that controls PDP header compression
0    off (default if value is omitted)
1    on
Other values are reserved.
NOTE. At present only one data compression algorithm (V.42bis) is provided
in SNDCP.
If and when other algorithms become available, a command will be
provided to
    select one or more of these. (GPRS only)

Supported Values
<cid>
(1-11)
<p_cid>
(1-11)
<PDP_type>
PPP    Point to Point Protocol (IETF STD 51)
<d_comp>
0    off (default if value is omitted)
<h_comp>
0    off (default if value is omitted)
1    on

AT+CGEQNEG - 3G Quality of Service Profile (Negotiated)

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

+CGEQNEG=?                        +CGEQNEG: (list of <cid>s associated with active contexts)

Defined Values

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

The following parameters are defined in 3GPP TS 23.107 [46] –

<Traffic class>
a numeric parameter that indicates the type of application for which the UMTS bearer service is optimised.
0      conversational
1      streaming
2      interactive
3      background
Other values are reserved.

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

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

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

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

<Delivery order>
a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.
0      no
1      yes
Other values are reserved.
<Maximum SDU size>
a numeric parameter that (1,2,3,...) indicates the maximum allowed SDU size in octets.

<SDU error ratio>
a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5\times10^{-3} would be specified as '5E3' (e.g. +CGEQNEG:...,"5E3",...).

<Residual bit error ratio>
a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5\times10^{-3} would be specified as '5E3' (e.g. +CGEQNEG:...,"5E3",...).

<Delivery of erroneous SDUs>
a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.
0 - no
1 - yes
2 - no detect
Other values are reserved.

<Transfer delay>
a numeric parameter (0,1,2,...) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds.

<Traffic handling priority>
a numeric parameter (1,2,3,...) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If a value is omitted for a particular class then the value is considered to be unspecified.

Supported Values

<cid>
(1-11)

AT+CGDATA - Enter data state
AT+CGDATA - Enter data state
Ref : TS 27.007 - 460 section 10.1.12
==============================================================================
**Command** | **Possible response(s)**
--- | ---
+CGDATA=[<L2P>,[<cid> [,<cid> [,...]]]] | CONNECT, ERROR

---

+CGDATA=? | +CGDATA: (list of supported <L2P>s)

---

**Defined Values**

- **<L2P>**
  - a string parameter that indicates the layer 2 protocol to be used between the TE and MT
  - **NULL** none, for PDP type OSP/IHOS
  - **PPP** Point-to-point protocol for a PDP such as IP
  - **PAD** character stream for X.25 character (triplex X PAD) mode
  - **X25** X.25 L2 (LAPB) for X.25 packet mode
  - **M-xxxx** manufacturer-specific protocol (xxxx is an alphanumeric string)
    - If the value is omitted, the layer 2 protocol is unspecified.
    - Other values are reserved and will result in an ERROR response.

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

**Supported Values**

- **<L2P>**
  - **PPP** Point-to-point protocol for a PDP such as IP

- **<cid>**
  - (1-11)

---

**ATD - Dial**

**ATD**

Ref: ITU-T V.250 section 6.3.1

---

**Command** | **Possible response(s)**
--- | ---
D[<dial_string>][;] | Alphabetic, Numeric, Description

- **(ATV1)**
  - **CONNECT** 1

**Description**

- successfully established and X0 is selected.
  - If connection is transmitted immediately before circuit 109 is turned on.

- This result code is transmitted immediately before circuit 109 is turned on. The contents of text are manufacturer-specific, and may include indication of DTE interface speed, line speed, error control and data compression techniques in use, and other information.
NO CARRIER  3  If a connection cannot be established, or was aborted by reception of an additional character from the DTE
ERROR       4  If issued while in online command state
BUSY        7  If busy signal detection is enabled or the W or @ dial modifier is used, and a busy signal is detected
NO ANSWER   8  If the "@" dial modifier is used, and remote ringing followed by five seconds of silence is not detected before the expiration of the connection timer defined by S7
NO DIALTONE 6  If dial tone detection is enabled or the W dial modifier is used, and no dial tone is detected within the associated timeout period
OK          0  If command is aborted by either reception of an additional character from the DTE or by the DTE turning off circuit 108 (if &D1 or &D2 is selected; see 6.2.9), or if the dial string is terminated by a semicolon character

-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
=============================================================================  
Defined Values
<dial_string>
A string of 0 or more of the characters: "0 1 2 3 4 5 6 7 8 9 * # + A B C D"

Supported Values

ATH - Hook control
ATH
Ref : ITU-T V.250 section 6.3.6

Command                          Possible response(s)
-----------------------------------------------------------------------------
H[<value>]                        
-----------------------------------------------------------------------------

-----------------------------------------------------------------------------

Defined Values
<value>
  0  Disconnect from line and terminate call.

Supported Values

AT+CHUP - Hangup call
AT+CHUP - Hangup call
Ref : TS 27.007 - 460 section 6.5

Command                          Possible response(s)
+CHUP

+CHUP=

Defined Values
- none -

Supported Values
- none -

AT+CGCMOD - PDP Context Modify

AT+CGCMOD - PDP Context Modify
Ref : TS 27.007 - 460 section 10.1.11

Command                          Possible response(s)
+CGCMOD=[<cid>[,<cid>[,...]]]     OK
ERROR

+CGCMOD=?                        +CGCMOD: (list of <cid>s associated with active contexts)

Defined Values

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

Supported Values

<cid>
(1-11)

AT+CGPADDR - Show PDP address

AT+CGPADDR - Show PDP address
Ref : TS 27.007 - 460 section 10.1.14

Command                          Possible response(s)
+CGPADDR=[<cid> [,<cid> [,...]]] +CGPADDR: <cid>,<PDP_addr>
[<CR><LF>+CGPADDR: <cid>,<PDP_addr>
[...]]

+CGPADDR=?                        +CGPADDR: (list of defined <cid>s)

Defined Values
<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.

Supported Values
<cid>
(1-11)

<PDP_address>
(0.0.0.0-255.255.255)

AT+CGDCONT - Define PDP Context
AT+CGDCONT - Define PDP Context
Ref : TS 27.007 - 460 section 10.1.1
=============================================================================  
Command                          Possible response(s)  
OK
ERROR
+CGDCONT?:
+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp>[, <pd1>[,…[pdN]]]}
[<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp>[, <pd1>[,…[pdN]]]}
[<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,…(list of supported
<d_comp>s), (list of supported <h_comp>s)[,…[pd1]s][,…[pdN]s]})]
[<CR><LF>+CGDCONT?:
+CGDCONT: (range of supported <cid>s), <PDP_type>,,…(list of supported
<d_comp>s), (list of supported <h_comp>s)[,…[pd1]s][,…[pdN]s]})]
=============================================================================  

Defined Values

<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 which specifies the type of packet data protocol
IP    Internet Protocol (IETF STD 5)
IPV6  Internet Protocol, version 6 (IETF RFC 2460)
PPP   Point to Point Protocol (IETF STD 51)

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

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

<d_comp>
a numeric parameter that controls PDP data compression
0    off (default if value is omitted)
1    on
Other values are reserved.

<h_comp>
a numeric parameter that controls PDP header compression
0    off (default if value is omitted)
1    on
Other values are reserved.
NOTE: At present only one data compression algorithm (V.42bis) is provided in SNDCP.
If and when other algorithms become available, a command will be provided to select one or more of these.

<pd1>, … <pdN>
zero to N string parameters whose meanings are specific to the <PDP_type>
For PDP type OSP:IHOSS the following parameters are defined:
<pd1> =  <host>
the fully formed domain name extended hostname of the Internet host
<pd2> = <port >
the TCP or UDP port on the Internet host

<pd3> = <protocol>
the protocol to be used over IP on the Internet - "TCP" or "UDP"

Supported Values

<cid>
(1-11)

<PDP_type>
"IP"

<APN>

<PDP_address>

<d_comp>
0 off (default if value is omitted)

<h_comp>
0 off (default if value is omitted)
1 on

AT+CGTFT - Traffic Flow Template
AT+CGTFT - Traffic Flow Template
Ref : TS 27.007 - 460 section 10.1.3
============================================================================= |
Command | Possible response(s)
============================================================================= |
+CGTFT=[<cid>,[<packet filter identifier>,<evaluation precedence index>,<source address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<destination port range>,[<source port range> [,<ipsec security parameter index (spi)> [,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> [,<flow label (ipv6)> ]]]]])]]]
----------------------------------------------------------------- |
+CGTFT? | +CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header range>, <destination port range>, <source port range>, <ipsec security parameter index (spi)> , <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> , <flow label (ipv6)> [CR]<LF>+CGTFT: <cid>,
<packet filter identifier>,
<evaluation precedence index>,
<source address and subnet mask>,
<protocol number (ipv4) / next header (ipv6)>,
<destination port range>, <source port range>,
<ipsec security parameter index (spi)>,
<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,
<flow label (ipv6)>

+CGTFT=?                         +CGTFT: <PDP_type>,
(identifier>s),
precedence index>s),
subnet mask>s),
(ipv4) / next header (ipv6)>s),
range>s),
range>s),
parameter index (spi)>s),
(tos) (ipv4) and mask / traffic class (ipv6) and mask>s),
(ipv6)>s)
[CR]<LF>+CGTFT: <PDP_type>,
(identifier>s),
precedence index>s),
subnet mask>s),
(ipv4) / next header (ipv6)>s),
range>s),
range>s),
parameter index (spi)>s),
(tos) (ipv4) and mask / traffic class (ipv6) and mask>s),
(ipv6)>s)
[...]}

Defined Values

<cid>
a numeric parameter which specifies a particular PDP context definition
The following parameters are defined in 3GPP TS 23.060[47] -

<packet filter identifier>
Numeric parameter, value range from 1 to 8.

<source address and subnet mask>
Consists of dot-separated numeric (0-255) parameters on the form 'a1.a2.a3.a4.m1.m2.m3.m4', for IPv4 and 'a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16', for IPv6.

<protocol number (ipv4) / next header (ipv6)>
Numeric parameter, value range from 0 to 255.

<destination port range>
Consists of dot-separated numeric (0-65535) parameters on the form 'f.t'.

<source port range>
Consists of dot-separated numeric (0-65535) parameters on the form 'f.t'.

<ipsec security parameter index (spi)>
Hexadecimal parameter, value range from 00000000 to FFFFFFFF.

<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>
Dot-separated numeric (0-255) parameters on the form 't.m'.

<flow label (ipv6)>
Hexadecimal parameter, value range from 00000 to FFFFF. Valid for IPv6 only.

<evaluation precedence index>
Numeric parameter, value range from 0 to 255.

Some of the above listed attributes may coexist in a Packet Filter while others mutually exclude each other, the possible combinations are shown in 3GPP TS 23.060[47].

Supported Values

<cid>
(1-11)

<packet filter identifier>
(1-8)

<source address and subnet mask>
(0.0.0.0.0.0.0.0-255.255.255.255.255.255.255.255)

<protocol number (ipv4) / next header (ipv6)>
(0-255)

<destination port range>
(0.0-65535.65535)

<source port range>
(0.0-65535.65535)
<ipsec security parameter index (spi)>
(00000000-FFFFFFFF)

<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>
0.0-255.255)

<evaluation precedence index>
(0-255)

<PDP type>
"IP"

**AT+CGQMIN - Quality of Service Profile (Minimum acceptable)**

AT+CGQMIN - Quality of Service Profile (Minimum acceptable)
Ref : TS 27.007 - 460 section 10.1.5
=======================================================================================================================
<table>
<thead>
<tr>
<th>Command</th>
<th>Possible response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+CGQMIN=[&lt;cid&gt;,[,&lt;precedence &gt;[,  OK</td>
<td></td>
</tr>
<tr>
<td>&lt;delay&gt; [,                ERROR</td>
<td></td>
</tr>
<tr>
<td>&lt;reliability.&gt; [,&lt;peak&gt;[,</td>
<td></td>
</tr>
<tr>
<td>&lt;mean&gt;]]]]]</td>
<td></td>
</tr>
<tr>
<td>+CGQMIN?</td>
<td>+CGQMIN: &lt;cid&gt;, &lt;precedence &gt;, &lt;delay&gt;,</td>
</tr>
<tr>
<td></td>
<td>&lt;reliability&gt;, &lt;peak&gt;, &lt;mean&gt;</td>
</tr>
<tr>
<td></td>
<td>[[&lt;CR&gt;&lt;LF&gt;+CGQMIN: &lt;cid&gt;,</td>
</tr>
<tr>
<td></td>
<td>&lt;precedence &gt;, &lt;delay&gt;,</td>
</tr>
<tr>
<td></td>
<td>&lt;reliability.&gt;, &lt;peak&gt;,</td>
</tr>
</tbody>
</table>
|                                       | <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) |
|                                       | [...] |
| +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) |
|                                       | [...] |
=======================================================================================================================

**Defined Values**

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

The following parameters are defined in GSM 03.60 -

<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

If a value is omitted for a particular class then this class is not checked.

Supported Values
- none -

AT+CQREQ - Quality of Service Profile (Requested)

AT+CQREQ - Quality of Service Profile (Requested)
Ref : TS 27.007 - 460 section 10.1.4

Command                          Possible response(s)
+CGQREQ=[<cid>,[<precedence>[,   OK
     <delay>[,            ERROR
     <reliability.>[,   +CGQREQ: <cid>,<precedence >,<delay>,
     <peak> [,<mean>]]]]]]

+CGQREQ?

+CGQREQ?: <cid>,<precedence >,<delay>,
         <reliability>,<peak>,<mean>  +CGQREQ: <PDP_type>,
         [<CR><LF>+CGREQ: <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>+CGREQ: <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)
         [...]]

Defined Values

<cid>
a numeric parameter which specifies a particular PDP context definition
(see the +CGDCONT and +CGDSCONT commands).
The following parameters are defined in GSM 03.60 -

- <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

If a value is omitted for a particular class then the value is considered to be unspecified.

Supported Values
- none -

**AT+CGACT - PDP context activate or deactivate**

**AT+CGACT - PDP context activate or deactivate**

Ref : TS 27.007 - 460 section 10.1.10

Command Possible response(s)
---------------------------------------------
+CGACT=\[<state> [,<cid>[,<cid>],[.]]\]

OK
ERROR

+CGACT? +CGACT: <cid>, <state>
[<CR><LF>+CGACT: <cid>,<state>[...]]

+CGACT=? +CGACT: (list of supported <state>s)

Defined Values

- <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
  (see the +CGDCONT and +CGDSCONT commands).

Supported Values
AT+CCUG - Closed user group

Ref: TS 27.007 - 420 section 7.10

---

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

Defined Values

<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

Supported Values

<n>
0,1

<index>
0-10

<info>
0-3