# CN SWM C

**Document type: Reference Manual**

**Document ID: A30880-A10-A001-75-D376**

**AT Command set for Master BenQ mobile phones and modems**

**Release/Version: Master R75**

**Date: 10. February, 2006**

Issued by

| |
|---|
| Comneon GmbH & Co OHG |
| CN MUC |
| Rosenheimerstr. 116 |
| 81669 Munich |

Copyright © Comneon 2006 All Rights Reserved.

Comneon GmbH & Co OHG

Document No.: A30880-A10-A001-75-D376
Revision: Master R75
Revision Date: 10. February, 2006

# Table of Contents

Table of Contents ..... iii
1 General information ..... 1
1.2 Abbreviations and glossary ..... 1
1.3 Notational Conventions ..... 1
1.4 Related documentation ..... 2
1.4.1 Related internal documentation ..... 2
1.4.2 Related Standardisation documentation ..... 2
2 Software interface ..... 4
2.1 Overview of the supported AT command set ..... 4
2.1.1 Alphabetical list of all 3GPP TS 27.007 commands ..... 4
2.1.2 Alphabetical list of all 3GPP TS 27.005 commands ..... 6
2.1.3 Alphabetical list of all V250 commands ..... 7
2.1.4 Alphabetical list of all FAX commands ..... 7
2.1.5 Alphabetical list of all Bluetooth-related commands ..... 8
2.1.6 Alphabetical list of all BenQ-specific commands ..... 8
2.1.7 Alphabetical list of developers' commands ..... 10
2.2 The AT command set ..... 11
2.2.1 Commands that can be executed without the PIN ..... 11
2.2.2 Commands that can be interrupted ..... 12
2.2.3 Generic TA control commands according to ITU-T V.250 ..... 12
2.2.4 Command combinations to be avoided ..... 17
2.3 AT commands and responses according to 3GPP TS 27.007 ..... 18
2.3.1 General commands according to 3GPP TS 27.007 ..... 18
2.3.2 Call control commands ..... 21
2.3.3 Network service related commands ..... 23
2.3.4 Commands related to mobile equipment control and status ..... 35
2.3.5 Extensions of Hayes Standard commands for GPRS ..... 54
2.3.6 Commands for GPRS ..... 55
2.3.7 Commands related to mobile equipment errors ..... 74
2.3.8 TIA IS-101 commands ("Voice control interim standard for asynchronous DCE") ..... 74
2.4 General commands according to 3GPP TS 27.005 ..... 76
2.5 Modem commands ..... 86
2.6 Fax commands ..... 88
2.7 Bluetooth related commands ..... 101
2.8 General commands according to ITU-T Recommendation V.250 ..... 104
2.9 BenQ defined commands ..... 105
2.10 Developers' commands ..... 149
2.12 List of all Unsolicited result codes ..... 151
3 Appendix A ..... 154
3.1 Factory settings made by AT&F ..... 154
3.2 Features of the Telephone book memory ..... 155
3.3 Writing to the FDN Phonebook / FDN Replacement ..... 156
3.4 How to use special characters in certain commands ( e. g., AT+CPBW) ..... 156
3.5 S Registers ..... 158
3.6 Circuit assignments ..... 159
4 Appendix B ..... 160
4.1 Example for creating / retrieving an organizer entry ..... 160
4.2 Examples and hints for using GPRS commands ..... 161
4.2.1 Defining and using a Context Definition Id (CID): ..... 161
4.2.2 Defining Quality of service for a CID ..... 163
4.3 The GPRS dial command ATD ..... 166
5 Appendix C ..... 167

5.1 Enum E_RegistryHMIKeys ... 167
5.2 Enum E_AuMa_Purpose ... 170
5.3 typedef enum SAE_Event_definitions ... 171
5.3.1 Enums for S75, SL75, S68 ... 171
5.3.2 Enums for EL71 ... 172
6 Errors and Messages ... 174
6.1 Summary of CME ERRORS (+CME ERROR) related to 3GPP TS 27.007 ... 174
6.2 Summary of CMS ERRORS (+CMS ERROR) related to 3GPP TS 27.005 ... 175
6.3 GSM return values issued by AT+CEER ... 177
6.3.1 Return values issued by AT+CEER for Radio Resource ... 177
6.3.2 Return values issued by AT+CEER for Mobility Manager ... 177
6.3.3 Return values issued by AT+CEER for Call Control ... 178
6.4 GPRS return values issued by AT+CEER ... 179
6.4.1 Return values issued by AT+CEER for GPRS Layer 3 Mobility Management ... 179
6.4.2 GSM return values issued by AT+CEER for Session Manager ... 180
6.4.3 Internal values of Session Manager issued by AT+CEER ... 180
6.4.4 Internal values GAPI issued by AT+CEER ... 181
6.4.5 Internal values of Link Manager issued by AT+CEER ... 181
6.4.6 Internal values of IP stack issued by AT+CEER (ENIP_LOC_OWN) ... 181
6.5 List of keys implemented for AT+CKPD / AT^SKPD ... 181
6.6 Use of BenQ specific Key O/o ... 183
6.7 Use of BenQ specific Key X/x ... 183
6.8 List of Commands related to CSCS / UCS2 ... 183
6.9 Result codes ... 184
6.10 List of *# codes ... 185
7 Index ... 187

# List of Tables

Table 2-1: Supported 3GPP TS 27.007 commands [15] ..... 6
Table 2-2: Supported 3GPP TS 27.005 commands [14] ..... 7
Table 2-3: Supported commands according to ITU-T Recommendation V.250 [16] ..... 7
Table 2-4: Supported commands according to ITU-T Recommendation TR29.2 [20] ..... 7
Table 2-5: Supported Bluetooth-related commands [19] ..... 8
Table 2-6: Supported BenQ-specific commands ..... 9
Table 2-7: Generic TA control commands supported according to ITU-T V.25 ..... 14
Table 2-8: Conventions applying to the presentation of AT commands ..... 18
Table 2-9: List of dummy FAX commands (Fax Class 2) ..... 88
Table 2-10: List of unexpected messages ..... 153
Table 3-1: Features of the telephone book memory ..... 155
Table 3-2: Using escape characters in commands ..... 157
Table 3-3: Using escape characters in GSM commands ..... 158
Table 3-4: S-Registers ..... 158
Table 6-1: CME ERRORS related to 3GPP TS 27.007 ..... 175
Table 6-2: CMS ERRORS related to 3GPP TS 27.005 ..... 176
Table 6-3 GSM return values issued by AT+CEER ..... 177
Table 6-4: Radio Resource return values issued by AT+CEER ..... 177
Table 6-5: Mobility Manager return values issued by AT+CEER ..... 178
Table 6-6: Call control return values issued by AT+CEER ..... 179
Table 6-7 GPRS return values ..... 179
Table 6-8: Return values issued by AT+CEER for GPRS Layer 3 Mobility Management ..... 180
Table 6-9: GMM return values issued by AT+CEER ..... 180
Table 6-10: Internal values of Session Manager issued by AT+CEER ..... 180
Table 6-11: GAPI values issued by AT+CEER ..... 181
Table 6-12: LMAN return values issued by AT+CEER ..... 181
Table 6-13: ENIP return values issued by AT+CEER ..... 181
Table 6-14: Result codes ..... 184
Table 6-15: List of *# codes ..... 185

# 1 General information

This document constitutes the manual reference to the AT command set supported by <master> BenQ mobile phones.

## 1.2 Abbreviations and glossary

The following abbreviations and terms are used throughout this specification:

| Abbreviation / Term | Meaning |
|---|---|
| ALS | Alternate Line Service |
| CSD | Circuit Switched Data |
| CTS | Clear to send |
| CUG | Closed User Gruop |
| DCE | Data Carrier Equipment |
| DSR | Data Set Ready |
| DTE | Data Terminal Equipment |
| DTR | Data Terminal Ready |
| FDN | Fixed dialling numbers |
| GPP | Generation Partnership Project |
| IMEI | Internatonal Mobile Station Equipment Identity |
| IMSI | International Mobile Subscriber Identity |
| ME | Mobile Equipment |
| PDU | Protocol Data Unit |
| PIN | Personal Identification Number |
| PPP | Point-to-Point Protocol |
| PUK | PIN Unblocking Key |
| RLP | Radio Link Protocol |
| RTS | Ready to send |
| SIM | Subscriber Identity Module |
| SNDCP | Subnetwork Dependency Convergence Protocol |
| SWIM | Smart card that has both SIM and WIM applications |
| TA | Terminal Adapter |
| TE | Terminal Equipment |
| UDI | Unrestricted Digital Information |
| WIM | Wireless Identification Module |

## 1.3 Notational Conventions

The following notational conventions apply throughout this manual:

| Convention | Meaning |
|---|---|
| Case sensitivity | Although the names of commands are not case-sensitive, cases should not be mixed. Either “AT” or “at” should be specified, but neither “aT” nor “At”. Throughout this manual, “AT” is used |
| 007 | Leading zeroes in strings can be omitted |
| `Letters and digits` | Letters and digits in the `Courier New` font indicate parameter names and values |
| <u>abc</u> | <u>Underlined</u> parameter values indicate the recommended default setting of this parameter. |

| | |
|---|---|
| | In *parameter type* commands, this value should be used in factory settings which are configured by V.250 command `&F0`.<br>In *action type* commands, this value should be used when parameter is not given |
| “ … ” | Double quotes (“) are used to indicate text strings |
| @ | Symbols (e. g. @) inside quotes are interpreted as text strings |
| Comma (,) | Commas are used as delimiters for strings which are not included in double quotes |
| Spaces | Spaces inside strings are ignored unless they are included in double quotes |
| <CR> | Carriage return character as specified with the S3 command |
| <LF> | Linefeed character as specified with the S4 command |
| < .. > | Angle brackets are used to denote a syntactical element. Angle brackets do not appear in the command line |
| [ … ] | Square brackets are used to indicate that a parameter of a command or part of TA information response is optional. Square brackets do not appear in the command line.<br><br>If a parameter is omitted in a command that has parameters, the parameter retains its present value. In action type commands, action should be done on the basis of the recommended default setting of the parameter<br><br>If an optional parameter ([`<value>`]) is omitted in V.250 commands, its assumed value is `0` |

## 1.4 Related documentation

All documents listed in this section are related to the current document.

### 1.4.1 Related internal documentation

The following internal documents are related to the current document:

[1] Design Specification K1-Sat

[2] “(Unsolicited) result codes issued by Remote Control-related calls”

### 1.4.2 Related Standardisation documentation

The following standardisation documents are related to the current document:

[3] GSM 02.22: "Digital cellular telecommunication system (Phase 2+); Personalisation of GSM Mobile Equipment (ME) Mobile functionality specification".

[4] GSM 02.30: "Digital cellular telecommunication system (Phase 2+); Man-Machine Interface (MMI) of the Mobile Station (MS)".

[5] GSM 03.38: "Digital cellular telecommunication system (Phase 2+); Alphabet and language specific information".

[6] GSM 03.40: Digital cellular telecommunications system (Phase 2+);Technical realization of the Short Message Service (SMS) Point-to-Point (PP)

[7] GSM 03.41: "Digital cellular telecommunications system (Phase 2+); Technical realization of Short Message Service Cell Broadcast (SMSCB)".

[8] GSM 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".

[9] GSM 04.11: "Digital cellular telecommunication system (Phase 2+); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[10]GSM 05.08: "Digital cellular telecommunication system (Phase 2+); Radio subsystem link control".

[11]GSM 11.11: Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME)

[12]

[13]3GPP TS 24.008: "3rd Generation Partnership Project; Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3".

[14]3GPP TS27.005: "Digital cellular telecommunication system (Phase 2+); Radio transmission and reception".

[15]3GPP TS 27.007: "Digital cellular telecommunications system (Phase 2+);AT command set for GSM Mobile Equipment (ME)

[16]ITU-T Draft new Recommendation V.250 “Serial asynchronous automatic dialling and control”

[17]ITU-T Recommendation T.31: "Asynchronous facsimile DCE control, service class 1"

[18]ITU-T Recommendation T.32: "Asynchronous facsimile DCE control, service class 2"

[19]Hands-free Profile Adopted Version 1.0, 2003-04-29, by Bluetooth SIG Car Working Group; Doc no. CAR_x_SPEC/V1.0)

[20]TR29.2: Standards Proposal No. 2388, Proposed New Standard “Asynchronous Facsimile DCE Control Standard” (if approved, to be published as EIA/TIA-592), October 1990

[21]V29: 9600 bits per second modem standardized for use on point-to-point 4-wire leased telephone-type circuits

[22]ITU-T Draft new Recommendation V27ter: 4800/2400 bits per second modem standardized for use in the general switched telephone network

# 2 Software interface

All supported AT commands, settings and the responses according to 3GPP TS 27.007 are explained in this chapter

## 2.1 Overview of the supported AT command set

This section provides overviews of the supported sets of AT commands, separate for each type of command set.

### 2.1.1 Alphabetical list of all 3GPP TS 27.007 commands

Table 2-1 lists all the supported 3GPP TS 27.007 AT commands in alphabetical order, and indicates the type of command as defined in the 3GPP TS 27.007 standard:

| 27.007 command | Function | Type of command | Page |
|---|---|---|---|
| AT+CACM | Accumulated call meter | Mobile equipment control | 35 |
| AT+CALM | Alert sound mode | Mobile equipment control | 35 |
| AT+CAMM | Accumulated call meter maximum | Mobile equipment control | 36 |
| AT+CAOC | Advice of charge | Network service | 23 |
| AT+CBC | Battery charge | Mobile equipment control | 36 |
| AT+CBST | Select bearer service type | Modem command | 86 |
| AT+CCFC | Call forwarding number and conditions | Network service | 23 |
| AT+CCLK | Clock | Mobile equipment control | 36 |
| AT+CCWA | Call waiting | Network service | 24 |
| AT+CEER | Query the reason for disconnection of last call | Call control | 21 |
| AT+CGACT | PDP context activate or deactivate | GPRS | 55 |
| AT+CGANS | Manual response to a network request for PDP context activation | GPRS | 55 |
| AT+CGATT | GPRS attach or detach | GPRS | 56 |
| AT+CGAUTO | Auto response to a network request for PDP context activation | GPRS | 56 |
| AT+CGCLASS | GPRS mobile station class | GPRS | 57 |
| AT+CGCMOD | PDP context Modify | GPRS | 57 |
| AT+CGDATA | Enter data state | GPRS | 57 |
| AT+CGDCONT | Define PDP Context | GPRS | 58 |
| AT+CGDSCONT | Define Secondary PDP Context | GPRS | 59 |
| AT+CGEQMIN | 3G Quality of Service Profile (Minimum acceptable) | UMTS | 60 |
| AT+CGEQREQ | 3G Quality of Service Profile (Requested) | UMTS | 62 |
| AT+CGEREP | GPRS event reporting | GPRS | 65 |
| AT+CGMI | Issue manufacturer ID code | General | 18 |
| AT+CGMM | Issue model ID code | General | 18 |
| AT+CGMR | Output the GSM telephone version | General | 19 |

| | | | |
|---|---|---|---|
| AT+CGPADDR | Show PDP address | GPRS | 69 |
| AT+CGQMIN | Quality of Service Profile (Minimum acceptable) | GPRS | 66 |
| AT+CGQREQ | Quality of Service Profile (Requested) | GPRS | 68 |
| AT+CGREG | GPRS network registration status | GPRS | 69 |
| AT+CGSMS | Select service for MO SMS messages | GPRS | 70 |
| AT+CGSN | Output the serial number (IMEI) | General | 19 |
| AT+CGTFT | Traffic Flow Template | GPRS | 71 |
| AT+CHLD | Call hold and multiparty | Network service | 25 |
| AT+CHUP | Hangup call | Call control | 21 |
| AT+CIMI | Output of IMSI | General | 19 |
| AT+CIND | Indicator Control | Mobile equipment control | 37 |
| AT+CKPD | Keypad control | General | 19 |
| AT+CLCC | List Current Calls | Network service | 25 |
| AT+CLCK | Switch locking on and off | Network service | 26 |
| AT+CLIP | Calling Line Identification Presentation | Network service | 27 |
| AT+CLIR | Calling Line Identification Restriction | Call control | 28 |
| AT+CLVL | Loudspeaker volume level | Mobile equipment control | 39 |
| AT+CMEC | Mobile Termination control mode | Mobile equipment control | 39 |
| AT+CMEE | Expanded error messages according to 3GPP TS 27.007 | Mobile equipment error | 74 |
| AT+CMER | Mobile Termination control mode | Mobile equipment control | 40 |
| AT+CMUT | Mute control | Mobile equipment control | 41 |
| AT+CNUM | Read own numbers | Mobile equipment control | 29 |
| AT+COLP | Connected Line Identification Presentation | Call control | 30 |
| AT+COPN | Read operator names | Network service | 30 |
| AT+COPS | Commands concerning selection of network operator | Network service | 31 |
| AT+CPAS | Query the telephone status | Mobile equipment control | 42 |
| AT+CPBF | Find book entries | Mobile equipment control | 42 |
| AT+CPBR | Read a telephone-book entry | Mobile equipment control | 43 |
| AT+CPBS | Select a telephone book | Mobile equipment control | 44 |
| AT+CPBW | Write a telephone-book entry | Mobile equipment control | 44 |
| AT+CPIN | Enter PIN and query lock | Mobile equipment control | 45 |
| AT+CPOL | Preferred operator list | Network service | 32 |
| AT+CPUC | Price per unit and currency table | Mobile equipment control | 47 |
| AT+CPWD | Change password to a lock | Network service | 32 |
| AT+CR | Service reporting control | General | 21 |
| AT+CRC | Cellular result codes | General | 22 |
| AT+CREG | Network registration | Network service | 33 |
| AT+CRLP | Select radio link protocol parameter for originating non-transparent data call | Modem command | 86 |

| | | | |
|---|---|---|---|
| AT+CRMP | Ring Melody Playback | Mobile equipment control | 47 |
| AT+CRSL | Ringer sound level | Mobile equipment control | 48 |
| AT+CRSM | Restricted SIM access | Mobile equipment control | 48 |
| AT+CSCS | Select TE character set | General | 20 |
| AT+CSDF | Set Date Format | Mobile equipment control | 49 |
| AT+CSGT | Get / Set Own Greetings | Mobile equipment control | 49 |
| AT+CSQ | Output signal quality | Mobile equipment control | 50 |
| AT+CSSN | Supplementary service notifications | Network service | 34 |
| AT+CSTF | Set Time Format | Mobile equipment control | 50 |
| AT+CSVM | Set voice mail number | Mobile equipment control | 51 |
| AT+CTZR | Time Zone Reporting | Mobile equipment control | 51 |
| AT+CTZU | Automatic Time Zone Update | Mobile equipment control | 52 |
| AT+CVIB | Vibrator mode | Mobile equipment control | 53 |
| AT+GSN | Output the serial number (IMEI) | General | 20 |
| AT+VTD | Set duration of a DTMF tone | TIA IS101 | 74 |
| AT+VTS | Send a DTMF tone | TIA IS101 | 74 |
| AT+WS46 | Select wireless network | General | 20 |

**Table 2-1: Supported 3GPP TS 27.007 commands [15]**

### 2.1.2 Alphabetical list of all 3GPP TS 27.005 commands

Table 2-2 lists all the supported 3GPP TS 27.005 AT commands in alphabetical order, and indicates the type of command as defined in the 3GPP TS 27.005 standard:

| 27.005 commands | Function | Type of command | Page |
|---|---|---|---|
| AT+CMGC | Send an SMS command | Message sending and writing | 76 |
| AT+CMGD | Delete an SMS in the SMS memory | Message sending and writing | 76 |
| AT+CMGF | SMS format | General configuration | 77 |
| AT+CMGL | (Short) Message List | Message receiving and reading | 77 |
| AT+CMGR | (Short) Message Read (SMS | Message receiving and reading | 78 |
| AT+CMGS | (Short) Message Send | Message sending and writing | 78 |
| AT+CMGW | (Short) Message Write (SMS to the SMS memory | Message sending and writing | 79 |
| AT+CMMS | More (Short) Message to Send | Message sending and writing | 79 |
| AT+CMSS | Send an SMS from the SMS memory | Message sending and writing | 80 |
| AT+CMUX | Multiplexing Mod | | 80 |
| AT+CNMA | Acknowledgment of a short message directly output | Message receiving and reading | 80 |
| AT+CNMI | New | Message receiving and reading | 81 |

| | | | |
|---|---|---|---|
| AT+CPMS | Preferred SMS message storage | General configuration | 83 |
| AT+CSCA | Address of the SMS service centre | Message configuration | 84 |
| AT+CSCB | Select cell broadcast messages | Message configuration | 84 |
| AT+CSMS | Selection of message service | General configuration | 85 |

**Table 2-2: Supported 3GPP TS 27.005 commands [14]**

### 2.1.3 Alphabetical list of all V250 commands

Table 2-3 lists all the supported "V250" AT commands in alphabetical order:

| Command | Function | Page |
|---|---|---|
| AT+GCAP | Request Capabilities List | 104 |
| AT+IPR | Fixed DTE rate | 104 |

**Table 2-3: Supported commands according to ITU-T Recommendation V.250 [16]**

### 2.1.4 Alphabetical list of all FAX commands

Table 2-3 lists all the supported AT commands for FAX services in alphabetical order:

| Command | Function | Page |
|---|---|---|
| AT+FBADLIN | Define or read number of bad lines | 89 |
| AT+FBADMUL | Define, read or test number of bad lines | 89 |
| AT+FBOR | Query the bit order for receive mode | 90 |
| AT+FCIG | Query or set the Local polling id | 90 |
| AT+FCLASS | Select, read or test FAX service class | 91 |
| AT+FCQ | Control Copy Quality | 91 |
| AT+FCR | Capability to receive | 92 |
| AT+FDCC | Select service for MO SMS messages | 92 |
| AT+FDFFC | Data Compresssion Format Conversion | 93 |
| AT+FDIS | Query or set session parameters | 93 |
| AT+FDR | Begin or continue phase C data reception | 95 |
| AT+FDT | Data Transmission | 95 |
| AT+FET | End a page or document | 96 |
| AT+FK | Kill operation, orderly FAX abort | 96 |
| AT+FLID | Query or set session parameters | 96 |
| AT+FMDL | Identify Product Model | 97 |
| AT+FMFR | Request Manufacturer Identification | 97 |
| AT+FOPT | Set bit order independently | 97 |
| AT+FPHCTO | DTE Phase C Response Timeout | 97 |
| AT+FREV | Identify Product Revision | 98 |
| AT+FRH | Receive Data Using HDLC Framing | 98 |
| AT+FRM | Receive Data | 98 |
| AT+FRS | Receive Silence | 99 |
| AT+FTH | Transmit Data Using HDLC Framing | 99 |
| AT+FTM | Transmit Data | 99 |
| AT+FTS | Stop Transmission and Wait | 100 |
| AT+FVRFC | Vertical resolution format conversion | 100 |

**Table 2-4: Supported commands according to ITU-T Recommendation TR29.2 [20]**

### 2.1.5 Alphabetical list of all Bluetooth-related commands

Table 2-5 lists all the supported Bluetooth-related AT commands in alphabetical order:

| Command | Function | Page |
|---|---|---|
| AT+BINP | Phone number corresponding to the last voice tag recorded in the HF | 101 |
| AT+BLDN | Redial Last Number | 101 |
| AT+BRSF | Report Supported Features | 101 |
| | | 102 |
| AT+BSIR | In-band Ring Tone Command | 102 |
| AT+NREC | Noise Reduction and Echo Canceling | 102 |
| AT+VGS | Gain of the Speaker Volume | 103 |
| AT^SABD | Accessory for Bluetooth Data | 105 |
| AT^SPTT | Push To Talk | 139 |

**Table 2-5: Supported Bluetooth-related commands [19]**

### 2.1.6 Alphabetical list of all BenQ-specific commands

| Command | Function | Page |
|---|---|---|
| AT^SABD | Accessory for Bluetooth Data | 105 |
| AT^SACD | Accessory Data | 105 |
| AT^SACM | Output ACM (accumulated call meter) and ACMmax | 106 |
| AT^SAKA | Any Key Answer | 107 |
| AT^SAOF | Auto Off | 107 |
| AT^SBAC | Backup Alarm Clock | 108 |
| AT^SBIG | Get / Set Big Letters in display | 108 |
| AT^SBLK | Clear black list | 108 |
| AT^SBMH | Bookmark Handling | 109 |
| AT^SBNR | Binary Read | 110 |
| AT^SBNW | Binary Write | 112 |
| AT^SCAM | Camera Settings | 113 |
| AT^SCCM | CC Monitor | 114 |
| AT^SCID | Output card ID | 114 |
| AT^SCKA | Display SIM card status | 114 |
| AT^SCKH | Get / Set Carkit/Headset stettings | 115 |
| AT^SCKS | Display SIM unsolicited card status | 115 |
| AT^SGCLASS | GPRS mobile station class and store it to EE-Block | 116 |
| AT^SCNI | Output call number information | 116 |
| AT^SCRE | Get / Set Call Screening in display | 117 |
| AT^SDBR | Database Read | 117 |
| AT^SDLD | Delete the ”last number redial” memory | 118 |
| AT^SDLY | Delay Command | 118 |
| AT^SGAUTH | Select Type of Authentication for PPP connection | 118 |
| AT^SGDCONT | Define PDP Context | 119 |
| AT^SGDI | Get Device Info | 120 |

| | | |
|---|---|---|
| AT^SGDV | GPRS data volume | 120 |
| AT^SGMR | GSM telephone software info | 121 |
| AT^SGND | Get phone number associated date | 121 |
| AT^SHFR | Set Handsfree Loudspeaker on/off | 122 |
| AT^SICO | Icon control | 123 |
| AT^SIFS | Query InterFace Setting | 123 |
| AT^SILL | Get / Set Illumination | 123 |
| AT^SINT | Set Info Tones | 124 |
| AT^SJAV | Install JAVA application | 124 |
| AT^SKYT | Key Tones | 125 |
| AT^SKPD | Keypad control single key | 124 |
| AT^SLCD | Last call duration | 125 |
| AT^SLCK | Switch locks (including user-defined locks) on and off | 126 |
| AT^SLNG | Language settings | 127 |
| AT^SMDR | Melody Duration | 127 |
| AT^SMEL | Melody values | 128 |
| AT^SMGL | List SMS (without status change from *unread* to *read)* | 129 |
| AT^SMGO | SMS overflow indicator | 130 |
| AT^SMGR | Read SMS | 131 |
| AT^SMIB | Minute Beep | 131 |
| AT^SMPL | Media Player URC | 132 |
| AT^SMSO | Switch device off | 132 |
| AT^SNFS | Select NF hardware | 133 |
| AT^SNFV | Set the volume | 133 |
| AT^SOBX | Set OBEX Debug Level | 134 |
| AT^SPBA | Query active phonebook book | 134 |
| AT^SPBC | Seek the first entry in the sorted telephone book which begins with the selected (or next available) letter | 134 |
| AT^SPBG | Read entry from the sorted telephone book via the sorted index | 135 |
| AT^SPBS | Select a telephone book (including BenQ-specific books) | 135 |
| AT^SPIC | Output PIN counter | 136 |
| AT^SPLM | Read the PLMN | 137 |
| AT^SPLR | Read an entry from the preferred-operator | 137 |
| AT^SPLW | Write an entry to the preferred-operator | 137 |
| AT^SPRF | Get / Set Active Profile | 138 |
| AT^SPST | Play Signal Tone | 138 |
| AT^SPTT | Push To Talk | 139 |
| AT^SPWD | Change password to a lock (including user-defined locks) | 139 |
| AT^SQWE | Switch Mode for External Interface | 140 |
| AT^SREM | Get / Set Reminder state | 140 |
| AT^SRMP | Ring Melody Playback | 141 |
| AT^SSAT | Set Auto Time | 141 |
| AT^SSCL | Show Clock | 143 |
| AT^SSET | Profile Settings Control (SET Melody and Picture settings in Mobile | 144 |
| AT^SSTK | SIM Toolkit | 145 |
| AT^STTP | Test Tone Play | 146 |
| AT^STWL | Get/Set T9 Worldlist | 147 |
| AT^SVIB | Vibrator mode | 147 |
| AT^SVID | Video Settings | 148 |


**Table 2-6: Supported BenQ-specific commands**

### 2.1.7 Alphabetical list of developers' commands


| Command | Function | Page |
|---|---|---|
| AT^SAPO | APO Data Tracer | 149 |
| AT^SCHNULLI | Bluetooth Data Tracer | 149 |
| AT^SCHOBI | Gipsy Data Tracer | 150 |
| AT^STRC | Data Tracer | 150 |

## 2.2 The AT command set

GSM mobile telephones and modems can be operated via Remote Control using a serial interface (data cable or infrared connection). Remote control is implemented by means of AT+C commands according to the 3GPP TS 27.007 [15] and 3GPP TS 27.005 [14] specifications, as well as several manufacturer-specific AT commands. These commands are described in more detail in section 2.2.4.

A command entered at the user port generally begins with an 'AT' command prefix. The remainder of the line is interpreted as a sequence of the commands described below. The commands are not case-sensitive. More than one command may be given on a single line, with the semicolon serving as the delimiter between commands.

The "V.250" specification [16] applies to the sequence of the interface commands. According to this guideline, commands should begin with the character string **"AT"** and end with **"<CR>" (= 0x0D).** The input of a command is acknowledged by the display of "OK" or "ERROR".

### 2.2.1 Commands that can be executed without the PIN

The following commands can be executed without entering the PIN:

| | | | |
|---|---|---|---|
| AT&C | AT^SQWE | AT+CMUT | AT+VTD |
| AT&D | AT^SRMP | AT+CPAS | AT+WS46 |
| AT&F | AT^STRC | AT+CPIN | ATA |
| AT^SACD | AT+CALM | AT+CPWD | ATD |
| AT^SCCM | AT+CBC | AT+CREG | ATE |
| AT^SCKA | AT+CCLK | AT+CRMP | ATH |
| AT^SCKS | AT+CGMI | AT+CRSL | ATI |
| AT^SDLY | AT+CGMR | AT+CSCS | ATO |
| AT^SGAUTH | AT+CGMM | AT+CSQ | ATQ |
| AT^SIFS | AT+CGSN | AT+CTZR | ATS0..7 |
| AT^SKPD | AT+CIND | AT+CVIB | ATV |
| AT^SLCK | AT+CKPD | AT+GCAP | ATX |
| AT^SMSO | AT+CLCK | AT+GMI | ATZ |
| AT^SOBX | AT+CLVL | AT+GMM | AT\Q |
| AT^SPIC | AT+CMEC | AT+GMR | |
| AT^SPST | AT+CMEE | AT+GSN | |
| AT^SPWD | AT+CEER | AT+IPR | |

### 2.2.2 Commands that can be interrupted

A command currently in process is interrupted by each additional character entered. This means that you should not enter the next command until you have received the acknowledgment; otherwise the current command is interrupted. The following commands can be interrupted:

| | | | |
|---|---|---|---|
| AT^SBNR | AT^SPLR | AT+CMGC | AT+COPS |
| AT^SBNW | AT^SPLW | AT+CMGD | AT+CPBR |
| AT^SDBR | AT^SSTK | AT+CMGL | AT+CPBS |
| AT^SKPD | AT+CGACT | AT+CMGR | AT+CPBW |
| AT^SMGL | AT+CGATT | AT+CMGS | AT+VTS |
| AT^SMGR | AT+CGCMOD | AT+CMGW | ATA |
| AT^SPLM | AT+CHLD | AT+CMSS | ATD |

### 2.2.3 Generic TA control commands according to ITU-T V.250

The generic TA control commands ("Hayes standard commands") correspond to the commands of AT Hayes compatible modems.

All commands in Table 2-7 expect a numeric argument; if this argument is omitted, the default of `0` is assumed.

| Command | Function |
|---|---|
| AT... | Prefix for all commands |
| ATA | Accept call (V.250, according to [16]) |
| ATB[*n*] | This modem command is used to set the bearer service for data connections (cf. `AT+CBST`).<br>can take one of the following values:<br><n><br>7 2400bps, asynchronous, V.22bis<br>11 4800bps, asynchronous, V.32<br>13 9600bps, asynchronous, 32<br>15 14400bps, asynchronous, V.34<br>25 2400bps, asynchronous, V.110 ISDN<br>27 4800bps, asynchronous, V.110 ISDN<br>29 9600bps, asynchronous, V.110 ISDN<br>31 14400bps, asynchronous, V.110 ISDN |
| ATD <dial_string>[;] | Dial command.<br>For more detailed information see the `ATD` command section on page 15 |
| ATE0 | Deactivate command echo |
| ATE1 | Activate command echo |
| ATH[0] | Release existing connection |
| ATI[n] | Modem command according to [16]:<br>Display product code: |

| Command | Function |
|---|---|
| | 0 042<br>1 042<br>2 0K, (check firmware checksum)<br>8 Display supported operation modes (see ATB)<br>9 identification of modem and mobile phone |
| ATL[*n*] | Monitor speaker loudness (modem command according to [16]) |
| ATM[*n*] | Monitor speaker mode (modem command according to [16]) |
| ATO[*n*] | Switch back to transparent mode after +++ interruption<br>(modem command according to [16]) |
| ATQ0 | Display acknowledgments (responses or messages) |
| ATQ1 | Suppress acknowledgments (responses or messages) |
| ATSn=x | Write value x to S register n<br>(modem command according to [16]) |
| ATSn? | Display value of S register n (modem command according to [16])<br>***Note**: This type of mobile phone does not allow the values of all S registers to be displayed with a single command* |
| ATV0 | Display acknowledgments as numbers |
| ATV1 | Display acknowledgments as text |
| ATX<n> | Report link with CONNECT only ignore busy signal<br><n> can take one of the following values:<br>1 Report link with CONNECT plus baud rate, ignore busy signal<br>2 same as ATX1<br>3 same as ATX1 but report BUSY<br>4 same as ATX3 |
| ATZ | Set to default configuration |
| AT&C<n> | Circuit 109 (Received line signal detector / DCD) behaviour<br><n> can take one of the following values:<br>0 DCD always ON<br>1 DCD ON if carrier detected |
| AT&D[n] | Circuit 108 (Data terminal ready / DTR) behaviour<br>**Note**: The AT&D<n> commands described below take no effect since circuit 108 is not supported in this type of mobile phone. See section 3.6 for more information on which circuit assignments are supported.<br><n> can take one of the following values:<br>0 DTR ignored<br>1 On DTR ON to OFF: go to online command mode, do not disconnect<br>2 On DTR ON to OFF: disconnect go to command mode. Automatic answer is disabled while DTR OFF. |

| Command | Function |
|---|---|
| AT&F[0] | Resets all current parameters of the following AT commands to their factory profile:<br>ATE, ATQ, ATV, AT\Q, AT&C, AT&D, AT&S , AT+VTS, ATX<br><br>AT+CAOC, AT+CBST, AT+CCWA, AT+CEER, AT+CLIP, AT+CMEC, AT+CMEE, AT+CMER, AT+CNMI, AT+COLP, AT+COPS, AT+CPOL, AT+CPMS, AT+CPBS, AT+CR,, AT+CRC, AT+CREG, AT+CRLP, AT+CSCS, AT+CSMS, AT+CSSN, AT^SACM, AT^SCKS, AT^SMGO,<br><br>S parameters<br><br>If GPRS is supported then also the following GPRS commands are affected:<br>AT+CGAUTO, AT+CR, AT+CGEREP, AT+CGREG<br><br>AT^SACD<br><br>Any existing connections will be terminated. No other commands are accepted on the same command line. |
| AT\N | No action (\N2 - \N6)<br>\N2<br>\N3<br>\N4<br>\N5<br>\N6 |
| AT\Q<n | Local flow control selection (DTE ↔ DCE); can be customized<br><n> can take one of the following values:<br>0 Disable flow control<br>1 XON-XOFF software flow control<br>2 CTS only flow control<br>3 RTS/CTS flow control |
| AT\V[n] | Modem command<br>0 No /REL or /RLP appendix with the CONNECT message<br>1 /REL or /RLP appendix with the CONNECT message |
| AT+GMI | request TA manufacturer identification (see AT+CGMI) |
| AT+GMM | request TA model identification (see AT+CGMM) |
| AT+GMR | request TA revision identification (see AT+CGMR) |
| AT+GSN | request TA serial number identification (see AT+CGSN) |

**Table 2-7: Generic TA control commands supported according to ITU-T V.25**

**The ATD command**

The ATD command is a special command in that all characters specified in the same line (or up to a semicolon) are considered part of the number to dial. The ATD command can be used to create three types of calls:

- voice calls
- CSD data call / fax calls
- GPRS data calls

**ATD for voice calls**

To dial for a voice call the trailing semicolon (;) is required. The following syntax for a voice call is supported:

| Command | Function |
|---|---|
| ATD<str>; | Dial the dialing string <str> with the voice utility<br>Valid dial modifiers:<br>g G The next call is treated as a closed user group call<br>I restrict AT+CLIR<br>i suppress AT+CLIR for next call<br>T tone dialing<br>P pulse dialing is ignored<br>The trailing character ";" indicates that the call is to be set up with the voice utility. The dial command returns OK to the user immediately after starting a voice call.<br>Other behavior like *# sequences in the dial command, and also data calls remain unchanged.<br><br>A special form of the dial command is a GPRS data call. The syntax for setting up such a GPRS data call is:<br>ATD*<99>[*[<called_address>] [*[<L2P>][*[<cid>]]]]#<br>ATD*<98>[*<cid>]#<br><br>See also section "ATD for GPRS data call calls" on page 16. |
| ATD><n>; | Dial the telephone number from the current telephone book location number <n><br>The telephone book is selected using the AT+CPBS (or AT^SPBS) command. |
| ATD><mem><n>; | Dial the telephone number from the telephone book <mem> location number <n> |
| ATDx[;] | Dial phone number x |
| | I ISDN<br>The phone call will be made as a UDI call. An ISDN connection to a V.110 terminal adapter will be established. The data transmission speed is the same as for an "analog" call (2400 / 4800 / 9600 / 14400 bps). |
| | PP Plus: same as + character |
| ATDL; | Dial last telephone number |

**ATD for CSD data call or FAX calls**

To dial for a CSD data call or a FAX call the trailing semicolon (;) must not be used The following syntax for a CSD data/Fax call is supported:

| | | |
|---|---|---|
| ATD<type><number> | Dial command for modem and fax calls<br><br>The selection if either a data or fax call is set up depends on the setting of the fax class. See the command AT+FCLASS for further details. | |
| <type> | T<br>P | Tone or pulse dialling. Ignored as not useful for GSM calls |
| | I | ISDN<br>The phone call will be made as a UDI (V.110) call. A connection to a V.110 terminal adapter will be established. The data transmission speed is the same as for an “analog” call (2400 / 4800 / 9600 / 14400 bps). See AT+CBST for further information. This parameter is ignored for fax calls.<br><br>Example:<br><br>AT+CBST=7<br><br>ATDI1234<br><br>and<br><br>AT+CBST=71<br><br>ATD1234<br><br>will result in the same call setup parameters |
| | PP | PLUS: same as + character |
| ATDL | Dial last telephone number | |

**ATD for GPRS data call calls**

To dial for a GPRS data call the following syntax is supported:

| | | |
|---|---|---|
| ATD*<GPRS_SC>[*[<called_address>] [*[<L2P>][*[<cid>[,<cid>[,…]]]]]]# | | |
| | Dial command for a GPRS data call. | |
| | <GPRS_SC> | GPRS service code |
| | 99 | request to use the Packet Domain service |
| | <called_address> | A IP-address (IPv4, IPv6) |
| | <L2P> | Layer 2 protocol |
| | PPP | The protocol used for connect the MT to external device. |
| | <cid> | 1-3 PDP context identifier |

| | | |
|---|---|---|
| ATD*<GPRS_SC_IP>[*<cid>[,<cid>[,…]]]# | | |
| | Dial command for a GPRS data call. | |
| | <GPRS_SC_IP> | GPRS service code |

| | | | |
|---|---|---|---|
| | | 98 | request to use the GPRS with IP (PDP types IP and PPP) |
| | <cid> | 1-3 | PDP context identifier |

**Notes for GPRS calls**:

1) The ATD command for GPRS always includes an attach if the mobile is currently detached. The attach may last for some time (up to 60 seconds). During attach the command is interruptible.
2) If no <cid> is given in the ATD command a predefined PDP context without an Access Point Name is used for dialing. But maybe it is demanded by the network operator so the dial fails and issues an error message.
3) It is not possible to use a <cid> which is already active for the ATD command.

### 2.2.4 Command combinations to be avoided

It is possible to specify more than a single command in the command line at any one time; however, not all command combinations will have the expected result. To ensure that responses to commands will be displayed in the order expected, the following command combinations should be avoided:

- General commands according to ITU-T Recommendation V.250 combined with fax commands
- General commands according to 3GPP TS 27.007 combined with BenQ defined commands
- General commands according to 3GPP TS 27.005 specified stand-alone

## 2.3 AT commands and responses according to 3GPP TS 27.007

According to 3GPP TS , it is possible to execute an AT command in any of the following forms:

| | | |
|---|---|---|
| Test command | AT+CXXX=? | The mobile phone or modem responds by sending the list of parameters and value ranges; these can be set using the corresponding Write command or by means of internal processes |
| Read command | AT+CXXX? | This command displays the current value setting of the parameter(s). |
| Write command | AT+CXXX=<...> | This command is used to set parameters that can be set. |
| Execute command | AT+CXXX | This command reads non-settable parameters which are influenced by internal processes in the mobile phone or modem |

**Table 2-8: Conventions applying to the presentation of AT commands**

### 2.3.1 General commands according to 3GPP TS 27.007

This section provides the descriptions of general 3GPP TS 27.007 commands [10].

**ATO**

| ATO | Return to online data state |
|---|---|
| Execute command<br>ATO | Response:<br>CONNECT/NO CARRIER/ERROR |

**AT+CGMI**

| AT+CGMI | Issue manufacturer ID code |
|---|---|
| Test command<br>AT+CGMI=? | Response:<br>OK |
| Execute command<br>AT+CGMI | Response<br><manufacturer> |
| | Parameter:<br><manufacturer> Name of manufacturer (BENQ) |

**AT+CGMM**

| AT+CGMM | Issue model ID code |
|---|---|
| Test command<br>AT+CGMM=? | Response:<br>OK |
| Execute command<br>AT+CGMM | Response:<br><model> |
| | Parameter:<br><model> Name of telephone (MOBILE) |

## AT+CGMR

| AT+CGMR | Output the GSM telephone version |
|---|---|
| Test command:<br>AT+CGMR=? | Response:<br>OK |
| Execute command:<br>AT+CGMR | Response:<br><revision> |
| | Parameter:<br><revision> Version of the telephone software |

## AT+CGSN

| AT+CGSN | Output the serial number (IMEI) |
|---|---|
| Test command<br>AT+CGSN=? | Response:<br>OK |
| Execute command<br>AT+CGSN | Response:<br><sn> |
| | Parameter<br><sn> IMEI of the telephone |

## AT+CIMI

| AT+CIMI | Output of IMSI |
|---|---|
| Test command:<br>AT+CIMI=? | Response:<br>OK |
| Execute command<br>AT+CIMI | Response:<br><imsi> |
| | Parameter:<br><imsi> International Mobile Subscriber Identity (IMSI) |

## AT+CKPD

| AT+CKPD | Keypad control | | |
|---|---|---|---|
| Test command<br>AT+CKPD=? | Response:<br>OK/ERROR/+CME ERROR | | |
| Write command<br>AT+CKPD=<keys>[,<time>[,<pause>]] | | | |
| | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <keys> | string of characters representing keys (see section 6.5 for a list of implemented keys) | |
| | <time> | 0...255 | time in tenths of seconds (0.1 seconds) that each key must be pressed |
| | | 3 | Default: = 0.3 sec |
| | <pause> | 0...255 | length of pause in tenths of seconds (*0.1 seconds) that may elapse between two key presses |
| **Note:**<br>Keypad handling has to be enabled prior to executing this command by means of the AT+CMEC=2 command. | | | |

## AT+CSCS

| AT+CSCS | Select TE character set |
|---|---|
| Test command<br>AT+CSCS=? | Response:<br>+CSCS: (list of supported <chset>s)<br>OK |
| | Parameter:<br><chset> String; determines which TE character set is used<br>GSM GSM character set is used<br>UCS2 UCS2 character set is used |
| Read command<br>AT+CSCS? | Response:<br>+CSCS: <chset><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><chset> See Test command |
| Write command<br>AT+CSCS=[<chset>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><chset> See Test command |

## AT+GSN

| AT+GSN | Output the serial number (IMEI) |
|---|---|
| Test command<br>AT+GSN=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT+GSN | Response:<br><sn> |
| | Parameter:<br><sn> IMEI of the telephone |

## AT+WS46

| AT+WS46 | Select wireless network |
|---|---|
| Test command<br>AT+WS46=? | Response:<br>(list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> Integer; WDS side stack<br>12 GSM digital cellular |
| Read command<br>AT+WS46? | Response:<br><n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT+WS46=[<n>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |

### 2.3.2 Call control commands

This section provides the descriptions of commands related to call control.

**AT+CEER**

| AT+CEER | Query the reason for disconnection of last call |
|---|---|
| Test command<br>AT+CEER=? | Response:<br>OK |
| Execute command<br>AT+CEER | Response:<br>+CEER: <report> |
| | Parameter<br><report> Reason for disconnection, reported as numbers. For detailed information see section 6.3. |

**AT+CHUP**

| AT+CHUP | Hangup call |
|---|---|
| Test command<br>AT+CHUP=? | OK/ERROR/+CME ERROR |
| Execute command<br>AT+CHUP | Response:<br>OK/ERROR |

For more detailed information see [2].

**AT+CR**

| AT+CR | Service reporting control |
|---|---|
| Test command | Response: |
| AT+CR=? | +CR: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 disables reporting<br>1 enables reportingIf enabled, the intermediate result code +CR: <serv> is returned from the TA to the TE before the intermediate result code CONNECT is transmitted. |
| Read command<br>AT+CR? | Response:<br>+CR: <mode><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |
| Write command<br>AT+CR=<mode> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |
| Unsolicited Result Code<br>+CR: <serv> | |
| | Parameter:<br><serv> ASYNC<br>SYNC<br>REL ASYNC<br>REL SYNC<br>GPRS<br>For a detailed description refer to [15] |

## AT+CRC

| AT+CRC | Cellular result codes |
|---|---|
| Test command<br>AT+CRC=? | Response:<br>+CRC: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter<br><mode> 0 disables reporting<br>1 enables reporting<br>When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal ring. |
| Read command<br>AT+CRC? | Response:<br>+CRC: <mode><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |
| Write command<br>AT+CRC=<mode> | |
| | Response<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |
| Unsolicited Result Code<br>+CRING: <type> | |
| | Parameter:<br><type> ASYNC<br>SYNC<br>REL ASYNC<br>REL SYNC<br>FAX<br>VOICE<br>VOICE DATA<br>ALT VOICE DATA<br>ALT DATA VOICE<br>ALT VOICE FAX<br>ALT FAX VOICE<br>For more detailed information refer to [15] |

### 2.3.3 Network service related commands

This section provides the descriptions of commands related to network service.

**AT+CAOC**

| AT+CAOC | Advice of charge |
|---|---|
| Test command<br>AT+CAOC=? | Response:<br>+CAOC: (list of supported <mode>s) |
| | Parameter:<br><mode> 0 query CCM value<br>1 deactivate the unsolicited reporting of CCM value<br>2 activate the unsolicited reporting of CCM value |
| Read command<br>AT+CAOC? | Response<br>+CAOC: <mode> |
| | Parameter:<br><mode> See Test command |
| Write command<br>AT+CAOC=<mode> | |
| | Response:<br>OK |
| | Parameter:<br><mode> See Test command |
| Execute command<br>AT+CAOC | Response:<br>+CAOC: <ccm><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><ccm> Updated hexadecimal call meter, measured in home units; coding in analogy to ACMmax on the SIM |
| Unsolicited result code<br>+CCCM:<ccm> | |

**AT+CCFC**

| AT+CCFC | Call forwarding number and conditions |
|---|---|
| Test command<br>AT+CCFC=? | Response:<br>+CCFC: (list of supported <reas>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><reas> 0 Always<br>1 If busy<br>2 If no answer<br>3 If not available<br>4 All reasons (0-3)<br>5 All conditional reasons (1-3) |
| Write command<br>AT+CCFC=<reas>, <mode>[, <num>[,<type>[,<class>[,,,<time>]]]] | |
| | Response:<br>If <mode>=2 and command is successful<br>+CCFC: <status>,<class1>[,<num>,<type>[,,,<time>]][<CR><LF><br>+CCFC:....]<br>OK/ERROR/+CME ERROR |
| | Parameter: |

| | | | |
|---|---|---|---|
| | <reas> | | See Test command |
| | <mode> | 0 | Deactivate |
| | | 1 | Activate |
| | | 2 | Query |
| | | 3 | Install |
| | | 4 | Delete |
| | <num> | | Telephone number |
| | <type> | | Type of telephone number |
| | <class> | 1 | Voice |
| | | 2 | Data |
| | | 4 | Fax |
| | | 7 | Voice, Data and FAX (default) |
| | | 8 | SMS |
| | | 16 | data circuit sync |
| | | 32 | data circuit async |
| | | 64 | dedicated packet access |
| | | 128 | dedicated PAD access |
| | | X | combination of some of the above classes, e.g. 255 regroups all classes and 5 regroups Voice and FAX |
| | <time> | 1-30 | Time, rounded to a multiple of five seconds |
| | <status> | 0 | Inactive |
| | | 1 | Active |

## AT+CCWA

| AT+CCWA | Call waiting | | |
|---|---|---|---|
| Test command<br>AT+CCWA=? | Response:<br>+CCWA: (list of supported <n>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | 0 | Disable |
| | | 1 | Enable |
| Read command<br>AT+CCWA? | Response:<br>+CCWA: <n><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | See Test command | |
| Write command<br>AT+CCWA=[<n>,[<mode>[,<class>]]] | | | |
| | Response:<br>If <mode>=2 and command is successful<br>+CCWA: <status>, <class1><CR><LF>+CCWA: ....]<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | See Test command | |
| | <mode> | 0 | Disable |
| | | 1 | Enable |
| | | 2 | Query Status |
| | <class> | 1 | Voice |
| | | 2 | Data |
| | | 4 | Fax |
| | | 7 | Voice, Data and Fax (default) |
| | | 8 | SMS |
| | | 16 | data circuit sync |

| | | | |
|---|---|---|---|
| | | 32 | data circuit async |
| | | 64 | dedicated packet access |
| | | 128 | dedicated PAD access |
| | | X | combination of some of the above classes, e.g. 255 regroups all classes and 5 regroups Voice and FAX |
| Unsolicited result code:<br>+CCWA: <num>,<type>,<class>,,<cli validity>,<alpha>,<line> | | | |
| | Parameter: | | |
| | <num> | Telephone number | |
| | <type> | Type of telephone number | |
| | <class> | See Write command | |
| | <CLI validity> | 0 | CLI valid |
| | | 1 | CLI has been withheld |
| | | 2 | CLI is not available |
| | <alpha> | String type alphanumeric representation of telephone number | |
| | <line> | 1 | Default line |
| | | 2 | subscribed alternate line service (ALS); line 2 |

## AT+CHLD

| AT+CHLD | Call hold and multiparty | | |
|---|---|---|---|
| Test command<br>AT+CHLD=? | Response:<br>+CHLD: (list of supported <n>s)<br>OK/ERROR/+CME ERROR | | |
| Write command<br>AT+CHLD=[<n>] | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <n> | 0 | Terminates all held calls or sets UDUB (**U**ser **D**etermined **U**ser **B**usy) for a waiting call |
| | | 1 | Terminates all active calls (if there are any) and accepts the other call (waiting call or held call) |
| | | 1<x> | Terminates call number <x> (x= 1-7) |
| | | 2 | Puts all active calls on hold (if there are any) and accepts the other call (waiting call or held call) as active |
| | | 2<x> | Puts all active calls except call <x> (x= 1-7) on hold |
| | | 3 | Connects the call put on hold to the active call multiparty |
| | | 4 | Call transfer |
| In situations of conflict, the respective action is always applied to the waiting call.<br>Terminating calls:<br>Use the "AT+CHUP" command to terminate all calls except waiting calls | | | |
| **Note:**<br>The scope of this command depends on the SIM clearing and/or on the network support | | | |

## AT+CLCC

| AT+CLCC | List Current Calls |
|---|---|
| Test command<br>AT+CLCC=? | Response:<br>OK |
| Execute command | Response: |

| | | | |
|---|---|---|---|
| AT+CLCC | [+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[<CR><LF><br>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>,<number>,<type>,<alpha>[...]]]<br><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <id> | Indicates the call identification number as described in subclause 4.5.5.1 of the GSM 02.30 document [4]; | |
| | | 0 .. 65535 | this number (integer) can be used in AT+CHLD command operations |
| | <dir> | Specifies whether the call is mobile originated or mobile terminated | |
| | | 0 | mobile originated (MO) call |
| | | 1 | mobile terminated (MT) call |
| | <stat> | Indicates the 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> | Indicates the 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> | Specifies whether or not the call is of multiparty (conference) call parties | |
| | | 0 | No (no multiparty (conference) call) |
| | | 1 | Yes (multiparty (conference) call) |
| | <number> | string type phone number in format specified by <type> | |
| | <type> | type of address octet in integer format | |
| | <alpha> | string type alphanumeric representation of <number>corresponding to the entry found in phonebook, character set according to the AT+CSCS command | |

## AT+CLCK

| | | | |
|---|---|---|---|
| AT+CLCK | Switch locking on and off<br>**Revision to 3GPP TS 27.007 according to CR TDOC ETSI/SMG4 187/96** | | |
| Test command<br>AT+CLCK=? | Response:<br>+CLCK: (list of supported <fac>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <fac> | | |
| | | AB | All barring services |

| | | |
|---|---|---|
| | AC | All incoming barring services |
| | AG | All outgoing barring services |
| | AI | BAIC (bar all incoming calls) |
| | AO | BAOC (bar all outgoing calls) |
| | CS | Control Surface = keylock |
| | FD | FDN lock |
| | IR | BIC-Roam (bar incoming calls when roaming outside the home country) |
| | OI | BOIC (bar outgoing international calls) |
| | OX | BOIC-exHC (bar outgoing international calls except to home country) |
| | PC | Corporate personalization (GSM 02.22, [3]) |
| | PF | Phone locked to very first inserted SIM |
| | PN | Network personalization (GSM 02.22, [3]) |
| | PP | Service provider personalization (GSM 02.22, [3]) |
| | PS | Phone locked to SIM (device code) |
| | PU | Network subset personalization (GSM 02.22, [3]) |
| | SC | SIM card (PIN) |

Write command

AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]

Response:

If <mode>=2 and command is successful

```
+CLCK: <status>[,<class1>[<CR><LF>
+CLCK: <status>, class2....]]
OK/ERROR/+CME ERROR
```

Parameter:

| | | |
|---|---|---|
| <fac> | See Test command | |
| <mode> | 0 | Cancels lock |
| | 1 | Activates lock |
| | 2 | Queries lock status |
| <passwd> | | Password |
| <class> | 1 | Voice |
| | 2 | Data |
| | 4 | Fax |
| | 7 | Voice, Data and FAX (default) |
| | 8 | SMS |
| | 16 | data circuit sync |
| | 32 | data circuit async |
| | 64 | dedicated packet access |
| | 128 | dedicated PAD access |
| | X | combination of some of the above classes, e.g. 255 regroups all classes and 5 regroups Voice and FAX |
| <status> | 0 | Off |
| | 1 | On |

**Note:**

If no device code ("PS") has previously been entered, `at+clck=ps,2` will return an error.

It is possible to set a new device code or to delete it using the `AT+CPWD` command.

## AT+CLIP

| AT+CLIP | Calling Line Identification Presentation |
|---|---|
| Test command | Response: |

| | | | |
|---|---|---|---|
| AT+CLIP=? | +CLIP: (list of supported <n>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | 0 | Suppresses Unsolicited result codes |
| | | 1 | Displays Unsolicited result codes |
| Read command<br>AT+CLIP? | Response:<br>+CLIP: <n>,<m><br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <n> | See Test command | |
| | <m> | 0 | CLIP not booked |
| | | 1 | CLIP booked |
| | | 2 | Unknown |
| Write command<br>AT+CLIP=[<n>] | | | |
| | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | See Read command | |
| Unsolicited result code<br>+CLIP: <num>,<type>,,,<alpha>,<CLI validity> | | | |
| | Parameter: | | |
| | <num> | Telephone number | |
| | <type> | 1 | Voice |
| | | 2 | Data |
| | | 4 | Fax |
| | | 7 | Voice, Data and FAX (default) |
| | | 8 | SMS |
| | | 16 | data circuit sync |
| | | 32 | data circuit async |
| | | 64 | dedicated packet access |
| | | 128 | dedicated PAD access |
| | | X | combination of some of the above classes, e.g. 255 regroups all classes and 5 regroups Voice and FAX |
| | <alpha> | String type alphanumeric representation of <num> | |
| | <cli validity> | 0 | CLI valid |
| | | 1 | CLI withheld by originator |
| | | 2 | CLI not available due to network |

## AT+CLIR

| AT+CLIR | Calling Line Identification Restriction | | |
|---|---|---|---|
| Test command<br>AT+CLIR=? | Response:<br>+CLIR: (list of supported <n>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <n> | 0 | Presentation indicator is used according to network |
| | | 1 | CLIR invocation (incognito) |
| | | 2 | CLIR suppression (not incognito) |
| Read command<br>AT+CLIR? | Response:<br>+CLIR: <n>, <m><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |

| | | | |
|---|---|---|---|
| | <n> | See Test command | |
| | <m> | 0 | CLIR not provisioned (not incognito) |
| | | 1 | CLIR provisioned in permanent mode (incognito) |
| | | 2 | Unknown |
| | | 3 | CLIR mode presentation temporarily restricted (next call incognito) |
| | | 4 | CLIR mode presentation temporarily allowed (next call not incognito) |
| Write command<br>AT+CLIR=[<n>] | | | |
| | Response<br>OK/ERROR/+CME ERROR | | |
| | Parameter:<br><n> | See Read command | |

## AT+CNUM

| AT+CNUM | Read own numbers | |
|---|---|---|
| Test command<br>AT+CNUM=? | Response:<br>OK/ERROR/+CME ERROR | |
| Execute command<br>AT+CNUM | Response:<br>+CNUM: [<alpha1>],<number1>,<type1>[<CR><LF><br>+CNUM: [<alpha2>],<number2>,<type2> [...]]<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <alpha*x*> | optional alphanumeric string associated with <number*x*>; used character set should be the one selected with AT+CSCS command. |
| | <number*x*> | string type phone number of format specified by <type*x*> |
| | <type*x*> | type of address octet in integer format (see GSM 04.08 [8] subclause 10.5.4.7) |

## AT+COLP

| AT+COLP | Connected Line Identification Presentation |
|---|---|
| Test command<br>AT+COLP=? | Response:<br>+COLP: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Disable<br>1 Enable |
| Read command<br>AT+COLP? | Response:<br>+COLP: <n>, <m><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command<br><m> 0 COLP not provisioned (no presentation)<br>1 COLP provisioned<br>2 Unknown |
| Write command<br>AT+COLP=[<n>] | |
| | Response.<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Unsolicited message<br>+COLP: <num>,<type>,,,<alpha> | |
| | Parameter<br><num> Telephone number<br><type> Type of telephone number<br><alpha> String type alphanumeric representation of<br><num><num><num><num><num><num><num><num><num> |

## AT+COPN

| AT+COPN | Read operator names |
|---|---|
| Test command<br>AT+COPN=? | Response:<br>OK |
| Execute command<br>AT+COPN | Response:<br>+COPN: numeric <oper1>,long alphanumeric <oper1>[<CR><LF><br>+COPN: numeric <oper2>,long alphanumeric <oper2>][…]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><operx> Network operator in numeric and alphanumeric notation see AT^SPLM command |

## AT+COPS

| AT+COPS | Commands concerning selection of network operator |
|---|---|
| Test command<br>AT+COPS=? | Response:<br>+COPS: [list of supported (<stat>,long alphanumeric <oper>,,numeric <oper>)s][,,( list of supported, <mode>s),(list of supported <format>s ) ]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><stat> 0 Unknown<br>1 Useful network operator<br>2 Used network operator<br>3 Prohibited network operator<br><oper> Operator in the format according to <mode><br><mode> 0 Automatic mode<br>1 Manual selection of network operator<br>2 Deregistrate<br>3 Setting of format<br>4 Automatic, selected manually<br><format> 0 Long alphanumeric <oper><br>2 Numeric <oper> |
| **Note:**<br>Output of long alphanumeric <oper> is according to the settings defined using the AT+CSCS command, i. e. either in GSM or in UCS2 character set. | |
| Read command<br>AT+COPS? | Response:<br>+COPS: <mode>[,<format>,<oper]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command<br><format> See Test command<br><oper> Network operator |
| **Note:**<br>If <format> is set to long alphanumeric (0) output of <oper> is according to the settings defined using the AT+CSCS command, i. e. either in GSM or in UCS2 character set. | |
| Write command<br>AT+COPS=<mode>[,<format>[,<oper>]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command<br><format> See Test command<br>If <mode> = 1, <format> can only be 2<br><oper> In numeric form only |

## AT+CPOL

| AT+CPOL | Preferred operator list |
|---|---|
| Test command<br>AT+CPOL=? | Response:<br>+CPOL: (list of supported <index>s), (list of supported <format>s) |
| | Parameter:<br><index> order number of operator in the preferred-operator list of the SIM<br><format> 2 Numeric |
| Read command<br>AT+CPOL? | Response:<br>+CPOL: <index1>, <format>,<oper1>[<CR><LF><br>+CPOL: <index2>, <format>,<oper2>][…]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><indexx> See Test command<br><format> See Test command |
| Write command<br>AT+CPOL=[<index>][, <format>[,<oper>]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> See Test command<br><format> See Test command<br><operx> Operator |

## AT+CPWD

| AT+CPWD | Change password to a lock |
|---|---|
| Test command<br>AT+CPWD=? | Response:<br>+CPWD: list of supported (<fac>, <pwdlength>)s<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><fac><br>AB All Barring services<br>AC All incoming barring services<br>AG All outgoing barring services<br>AI BAIC (bar all incoming calls)<br>AO BAOC (bar all outgoing calls)<br>IR BIC-Roam (bar incoming calls when roaming outside the home country)<br>OI BOIC (bar outgoing international calls)<br>OX BOIC-exHC (bar outgoing international calls except to home country)<br>PS Phone locked to SIM (device code)<br>P2 PIN2<br>SC SIM card (PIN)<br><pwdlength> Password length |
| Write command<br>AT+CPWD=<fac>,<oldpwd>,<newpwd> | |
| | Response:<br>OK/ERROR/+CME ERROR<br>Parameter:<br><fac> See Test command<br><oldpwd> Existing password |

| | | |
|---|---|---|
| | <newpwd> | New password |
| **Note:**<br>PS<br>AT+CPWD="PS",,<newpwd><br>AT+CPWD="PS",<oldpwd> | | <br>Phone Code (device code)<br>if no password has yet been entered<br>to delete password |

## AT+CREG

| AT+CREG | Network registration | | |
|---|---|---|---|
| Test command<br>AT+CREG=? | Response:<br>+CREG: (list of supported <n>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <n> | 0 | Suppresses the unexpected network status messages |
| | | 1 | Displays the unexpected network status messages |
| | | 2 | Enables unexpected network registration and location information messages |
| Read command<br>AT+CREG? | Response:<br>+CREG: <n>,<stat>[,<lac>,<ci>]<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | See Test command | |
| | <stat> | 0 | Not checked in, not seeking |
| | | 1 | Checked in |
| | | 2 | Not checked in, but seeking a network |
| | | 3 | Check-in denied by network |
| | | 4 | Unknown |
| | | 5 | Registered, roaming |
| | <lac> | Hexadecimal 2-byte string type of location area code | |
| | <ci> | Hexadecimal 2-byte string type of cell ID | |
| Write command<br>AT+CREG=<n> | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <n> | See Test command | |
| Unsolicited result code<br>+CREG: <stat> | | | |

## AT+CSSN

| AT+CSSN | Supplementary service notifications<br>**Revision according to 3GPP TS 27.007 Version 5.0.0** |
|---|---|
| Test command<br>AT+CSSN=? | Response:<br>+CSSN: (list of supported <n>s), (list of supported <m>s)<br>Parameter:<br><n> 0 Suppresses the +CSSI result code<br>1 Activates the +CSSI result code<br><m> 0 Suppresses the +CSSU result code<br>1 Activates the +CSSU messages |
| | For supported +CSSI/+CSSU result codes see section 2.10 below. |
| Read command<br>AT+CSSN? | Response:<br>+CSSN: <n>,<m> |
| | Parameter:<br><n> See Test command<br><m> See Test command |
| Write command<br>AT+CSSN=<n>[,<m>] | |
| | Parameter:<br><n> See Test command<br><m> See Test command |
| Unsolicited result code<br>+CSSI: <code1>[,[<index>][,<number>]]<br>+CSSU: <code2>[,[<index>][,<number>]] | |
| | <code1> Intermediate result code<br>0 unconditional call forwarding is active<br>1 some of the conditional call forwardings active<br>2 a MOC has been forwarded<br>3 Waiting call is pending<br>4 outgoing CUG call (also <index> present)<br>5 outgoing calls are barred<br>6 incoming calls are barred<br>7 CLIR suppression rejected |
| | <code2> Unsolicited result code<br>0 forwarded MTC<br>1 this is a CUG call (also <index> present)<br>2 call is set on hold<br>3 hold call is retrieved<br>4 call is member of multiparty<br>5 Held call was terminated<br>7 call is being connected (alerting) with the remote party in alerting state in explicit call transfer<br>8 call has been connected with the other remote party in explicit call transfer operation (also number may be present) |
| | <index> Closed user group index (if available) |
| | <number> ECT number (if available)<br>0 unconditional call forwarding is active<br>1 some of the conditional call forwardings active<br>2 a MOC has been forwarded<br>3 Waiting call is pending |

### 2.3.4 Commands related to mobile equipment control and status

This section provides the descriptions of commands related to network service.

**AT+CACM**

| AT+CACM | Accumulated call meter |
|---|---|
| Test command<br>AT+CACM=? | Response<br>OK |
| Read command<br>AT+CACM? | Response:<br>+CACM: <acm><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><acm> Accumulated call meter in hexadecimal format, measured in home units; the coding is the same as ACMmax on the SIM |
| Write command<br>AT+CACM=[<passwd>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><passwd> String type; usually PIN2 |

**AT+CALM**

| AT+CALM | Alert sound mode |
|---|---|
| Test command<br>AT+CALM=? | Response:<br>+CALM: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| Read command<br>AT+CALM? | Response:<br>+CALM: <mode><br>OK/ERROR/+CME ERROR |
| Write command<br>AT+CALM=<mode> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter<br><mode> 0 Normal Mode<br>1 Silent Mode |

## AT+CAMM

| AT+CAMM | Accumulated call meter maximum |
|---|---|
| Test command<br>AT+CAMM=? | Response:<br>OK/ERROR/+CME ERROR |
| Read command<br>AT+CAMM? | Response:<br>+CAMM: <acmmax><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><acmmax> Accumulated call meter maximum in hexadecimal format, measured in home units; coding in analogy to ACMmax on the SIM |
| Write command<br>AT+CAMM=[<acmmax>[,<passwd>]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><acmmax> see Read command |
| | <passwd> String type; usually PIN2 |

## AT+CBC

| AT+CBC | Battery charge |
|---|---|
| Test command<br>AT+CBC=? | Response:<br>+CBC: (list of supported <bcs>s),(list of supported <bcl>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><bcs> 0 ME is supplied from battery<br>1 ME has battery but is not supplied from there<br>2 ME has no battery connected<br>3 Error<br><bcl> 0 Battery is flat, no more actions are possible<br>1-100 charge in per cent |
| Execute command<br>AT+CBC | Response:<br>+CBC: <bcs>,<bcl> |

## AT+CCLK

| AT+CCLK | Clock |
|---|---|
| Test command<br>AT+CCLK=? | Response:<br>OK/ERROR/+CME ERROR |
| Read command<br>AT+CCLK? | Response:<br>+CCLK: <time><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><time> string type value; format is "yy/MM/dd,hh:mm:ss+zz", where characters indicate the year (last two digits), month, day, hour, minutes, seconds and time zone; e.g. “04/05/06,22:10:00+08" stands for 6th of May 2004, 22:10:00 GMT +2 hours |
| Write command<br>AT+CCLK=<time> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><time> see Test command |

## AT+CIND

| AT+CIND | Indicator Control | | |
|---|---|---|---|
| Test command<br>AT+CIND=? | Response<br>+CIND: ("battchg",(0-5)),<br>("signal",(0-5)),<br>("service",(0,1)),<br>("message",(0,1)),<br>("call",(0,1)),<br>("roam",(0,1)),<br>("smsfull",(0,1))<br>("call status",(10x-20x,31x,33x,34x,51x,53x,54x)),<br>("GPRS coverage",(0,1)),<br>("callsetup",(0-3))<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <battchg> | 0 .. 5 | battery charge level (0 = empty, 5 = full) |
| | <signal> | 0 .. 5 | quality of signal (0 = not detectable , 5 = good) |
| | <service> | 0 | Service not available |
| | | 1 | Service available |
| | <message> | 0 | No unread message in memory storage |
| | | 1 | At least one unread message in storage |
| | <call> | 0 | No call in progress or established |
| | | 1 | call in progress or established |
| | <roam> | 0 | Home network, no roaming |
| | | 1 | roaming |
| | <smsfull> | 0 | memory locations are available |
| | | 1 | a short message memory storage in the MT has become full |
| | <call status> | 0 | There was no call since reporting was enabled |
| | | 10x | Call number x was released |
| | | 11x | A MOC with call number x has started dialing |
| | | 12x | A MOC with call number x is ringing at B-party |
| | | 13x | A MTC with call number x is ringing |
| | | 14x | Call number x was established |
| | | 15x | Call number x is waiting |
| | | 16x | Call(s) was/were swapped; x is call number of the call on hold. If no call is held, x = 0. |
| | | 170 | A call is now in multiparty. No call number provided. |
| | | 180 | A call was transfered. No call number provided. |
| | | 19x | Call number x was set on hold by B-party |
| | | 20x | Call number x was set to active by B-party |
| | | 21x | CCBS is available for this call |
| | | 31x | A Data-MOC call number x has been started |
| | | 33x | A Data-MTC with call number x is ringing |
| | | 34x | A Data call number x was established |
| | | 51x | A Data-MOC call number x has been started |
| | | 53x | A Data-MTC with call number x is ringing |
| | | 54x | A Data call number x was established |
| | <GPRS coverage> | 0 | No GPRS coverage available or coverage |

| | | | |
|---|---|---|---|
| | | | unknown |
| | | 1 | GPRS coverage available |
| | <callsetup> | 0 | No call setup in progress |
| | | 1 | MTC is waiting or ringing |
| | | 2 | A MOC was initiated |
| | | 3 | A MOC is ringing at B-party |

**Note:**
The Test command returns the supported values which are issued as unsolicited result code of each indicator. It does NOT return the supported values to set an indicator.
Each indicator can be switched on (1) or off (0).

| | | |
|---|---|---|
| Read command<br>AT+CIND? | Response:<br>+CIND: <ind1>,<stat1>,... <ind10>,<stat10><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <stat1> | battery charge |
| | <stat2> | signal quality |
| | <stat3> | service |
| | <stat4> | message |
| | <stat5> | call |
| | <stat6> | roam |
| | <stat7> | smsfull |
| | <stat8> | call status<br>**Remark**: the last-issued/buffered call status is displayed |
| | <stat9> | GPRS coverage |
| | <stat10> | call setup |

**Note:**
The Read command does NOT return the current setting of the indicator, what it does is issue the current value of the indicator.
Example: +CIND: 2,3,1,0,0,0,0,0,1,0 indicates battery charge = 2, signal quality = 3, service = 1, call = 0 …….etc.

| | | | |
|---|---|---|---|
| Write command<br>AT+CIND=[<ind>],[<ind>],[...],…. | | | |
| | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <ind> | 0 | the indicator is switched off |
| | | 1 | the indicator is switched on |

**Note:**

To have all the unsolicited result codes of the above parameters <stat1> to <stat10> displayed, you must set the <ind> parameter of the AT+CMER command to 2 (AT+CMER=x,x,x,2

To filter for relevant unsolicited result codes only (e.g. smsfull, or roam), you must set the <ind> parameter of the AT+CMER command to 1 and,also, the values of those <stat1> to <stat10> parameters to 0 that you want displayed.

**Example:**

Issuing the AT+CIND=0,1,1,…… command in combination with AT+CMER=x,x,x,1 will display only the first parameter (i.e. battery charge) as an unsolicited result code, since only the indicator for battery charge is set to 0.

## AT+CLVL

| AT+CLVL | Loudspeaker volume level |
|---|---|
| Test command<br>AT+CLVL=? | Response:<br>+CLVL: (list of supported <level>s)<br>OK |
| Read command<br>AT+CLVL? | Response:<br>+CLVL: <level><br>OK/ERROR/+CME ERROR |
| Write command<br>AT+CLVL=<level> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><level> Loudspeaker Volume Level |

## AT+CMEC

| AT+CMEC | Mobile Termination control mode |
|---|---|
| Test command<br>AT+CMEC=? | Response:<br>+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><keyp> 0 MT can be operated only through its keypad (execute command of AT+CKPD cannot be used)<br>2 MT can be operated from both MT keypad and TE<br><disp> 0 only MT can write to its display<br><ind> 0 only MT can set the status of its indicators |
| Read command<br>AT+CMEC? | Response:<br>+CMEC: <keyp>,0,0<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><keyp> See Test command |
| Write command<br>AT+CMEC=[<keyp>[,0[,0]]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><keyp> See Test command |

## AT+CMER

| AT+CMER | Mobile Termination control mode | | |
|---|---|---|---|
| Test command<br>AT+CMER=? | Response:<br>+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)<br><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <mode> | 0 | buffer unsolicited result codes in the TA; if TA result code buffer is full, codes the oldest ones are 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 | same as "2".<br>This input for the bluetooth carkit is acceptable but the behaviour is same as mode=2 |
| | <keyp> | 0 | no keypad event reporting |
| | | 1 | keypad event reporting using result code +CKEV: <key>,<press>, where <key> indicates the key (refer values defined in table for AT+CKPD) and <press> whether the key is pressed (1) or released (0). Only key pressings that are not caused by AT+CKPD are indicated by the TA to the TE |
| | | 2 | keypad event reporting using result code +CKEV: <key>,<press>. All key pressings shall be directed from TA to TE |
| | <disp> | 0 | no display event reporting |
| | <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 AT+CIND), while <value> is the new value of that indicator. Only those indicator events that are not caused by AT+CIND are indicated by the TA to the TE |
| | | 2 | indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events are be directed by 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) |
| Read command<br>AT+CMER? | Response:<br>+CMER: <mode>,<keyp>,0,<ind>,<bfr><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <mode> | See Test command | |
| | <keyp> | See Test command | |

| | | |
|---|---|---|
| | <ind> | See Test command |
| | <bfr> | See Test command |
| Write command<br>AT+CMER=[<mode>],[<keyp>],[<disp>],[<ind>],[<bfr>] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <mode> | See Test command |
| | <keyp> | See Test command |
| | <disp> | See Test command |
| | <ind> | See Test command |
| | <bfr> | See Test command |
| Unsolicited result code:<br>+CIEV: <ind>,<value><br>+CKEV: <key>,<press> | | |
| | Parameter: | |
| | <ind> | The number of the indicator according to command AT+CIND=? |
| | <value> | The new value of the indicator according to AT+CIND=?<br>e.g. +CIEV: 8,101 -> call status indicator (8), new value 'call number one was released' (101). |
| | <key> | Indicates the key the indication is for (refer values defined in table for AT+CKPD). |
| | <press> | Status of <key><br>e.g.: +CKEV: "E",0 End key was released<br>0 <key> released<br>1 <key> pressed |

## AT+CMUT

| AT+CMUT | Mute control |
|---|---|
| Test command<br>AT+CMUT=? | Response:<br>+CMUT: (list of supported <n>s)<br>OK |
| | Parameter:<br><n> 0 mute off<br>1 mute on |
| Read command<br>AT+CMUT? | Response:<br>+CMUT: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT+CMUT=<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| **Note**:<br>Only applicable during an active/hold call | |

## AT+CPAS

| AT+CPAS | Query the telephone status |
|---|---|
| Test command<br>AT+CPAS=? | Response:<br>+CPAS: (list of supported <pas>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><pas> 0 Ready<br>3 Incoming call (phone is ringing)<br>4 Call is active |
| Execute command<br>AT+CPAS | Response:<br>+CPAS: <pas><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><pas> see Test command |

## AT+CPBF

| AT+CPBF | Find book entries |
|---|---|
| Test command<br>AT+CPBF=? | Response:<br>+CPBF: <nlength>,<tlength><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><nlength> Max. length of telephone number<br><tlength> Max. length of text corresponding to the number |
| Write command<br>AT+CPBF=<findtext> | |
| | Response:<br>[+CPBF: <index1>, <number>, <type>, <text>[[…]<CR><LF><br>+CPBF: <index2>, <number>, <type>, <text>]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><findtext> Text where to search within the current phonebook memory<br><findtext> depends on AT+CSCS<br><index> location numbers of phonebook memory<br><number> phone number of format <text><br><type> integer type; Type of address octet (see TS 24.008)<br><text> Text corresponding to the telephone number<br><text> depends on AT+CSCS |

## AT+CPBR

| AT+CPBR | Read a telephone-book entry | |
|---|---|---|
| Test command<br>AT+CPBR=? | Response:<br>+CPBR: (list of supported <index>s), <nlength>, <tlength><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <index> | Location number |
| | <nlength> | Max. length of telephone number |
| | <tlength> | Max. length of text corresponding to the number |
| Write command<br>AT+CPBR=<index1>[,<index2>] | | |
| | Response:<br>[+CPBR: <index1>, <number>, <type>, <text >[[…]<CR><LF><br>+CPBR: <index2>, <number>, <type>, <text>]]<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <index1> | Location number where the read of the entry starts |
| | <index2> | Location number where the read of the entry ends |
| | <number> | Telephone number |
| | <type> | Type of number |
| | <text> | Text corresponding to the telephone number<br><text> depends on AT+CSCS. |

**Note:**
In the <text> field, special characters like the following may be displayed:
`"` (0x22), `@` (0x00), `ò` (0x08), `Ö` (0x5c).
See also sections on AT+CPBW and
Appendix A: "How to use special characters in certain commands ( e. g., AT+CPBW"). Empty entries do not produce any output.

## AT+CPBS

| AT+CPBS | Select a telephone book |
|---|---|
| Test command<br>AT+CPBS=? | Response:<br>+CPBS: (list of supported <sto>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><sto><br>FD SIM fix-dialing phonebook<br>SM SIM phonebook<br>DC ME Dialled Calls List<br>ON SIM (or ME) own numbers (MSISDNs) list<br>LD SIM last-dialling phonebook<br>MC ME missed (unanswered received) calls list<br>RC ME received calls list<br><br>For a description of telephone-book features, see section 3.2. |
| Read command<br>AT+CPBS? | Response:<br>+CPBS: <sto>,<used>,<total><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><sto> See Test command<br><used> integer type value indicating the number of used locations in selected memory<br><total> integer type value indicating the total number of locations in selected memory |
| Write command<br>AT+CPBS=<sto>[,<passwd>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><sto> See Test command<br><passwd> PIN2 only for selecting the FD-phonebook |

## AT+CPBW

| AT+CPBW | Write a telephone-book entry |
|---|---|
| Test command<br>AT+CPBW=? | Response:<br>+CPBW: (list of supported <index>s), <nlength>,(list of supported <type>s), <tlength><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> Location number<br><nlength> Max. length of telephone number<br><tlength> Max. length of text corresponding to the number |
| Write command<br>AT+CPBW=[<index>][,<nummer>[,<type>[,<text>]]] | |
| | Response<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> Location number at which the entry is written<br><nummer> Telephone number<br><type> Type of number |

| | | |
|---|---|---|
| | <text> | Text corresponding to the telephone number<br>The following characters in <text> must be entered via the BenQ-specific escape sequence (see also Appendix A: "How to use special characters in certain commands ( e. g., AT+CPBW")<br><text> depends on AT+CSCS. |

| GSM Char | Hex char | ASCII | 3 byte Esc Seq (hex) | Notes |
|---|---|---|---|---|
| Ö | x5C | \ | x5C x35 x43 | Backslash |
| " | x22 | " | x5C x32 x32 | String delim |
| Ò | x08 | BSP | x5C x30 x38 | Backspace |
| @ | x00 | NULL | x5C x30 x30 | GSM Null |

GSM=0x00 may cause problems on application level when using the function `strlen()` and should thus be represented by an escape sequence

## AT+CPIN

| AT+CPIN | Enter PIN and query lock |
|---|---|
| Test command<br>AT+CPIN=? | Response:<br>OK |
| Read command<br>AT+CPIN? | Response:<br>+CPIN: <code><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><code> |

| | |
|---|---|
| READY | No further input necessary |
| SIM PIN | SIM PIN input necessary |
| SIM PUK | SIM PUK input necessary |
| PH-SIM PIN | Device code PIN (theft protection) input necessary |
| PH-SIM PUK | Device code PUK (theft protection) input necessary |
| SIM PIN2 | PIN2, e.g. for editing the FDN book; only possible if previous command was acknowledged with +CME ERROR:17 |
| SIM PUK2 | Only possible if previous command was acknowledged with error +CME ERROR:18 |

device specific codes (SIM LOCK):

| | |
|---|---|
| PH-FSIM PIN | There is no current PIN |
| PH-FSIM PUK | Phone locked to very first inserted SIM |
| PH-NET PIN | There is no current PIN |
| PH-NET PUK | Network Personalization is actually a PUK |
| PH-NETSUB PIN | There is no current PIN |
| PH-NETSUB PUK | Network Subset Personalization is actually a PUK |
| PH-SP PIN | There is no current PIN |
| PH-SP PUK | Network Personalization is actually a PUK |
| PH-CORP PIN | There is no current PIN |
| PH-CORP PUK | Network Personalization is actually a PUK |

| | | |
|---|---|---|
| | | The required error message can (must) be provoked by an attempted Write command |
| Write command<br>AT+CPIN=<pin>[,<newpin>] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <pin> | Password for appropriate lock; if the lock is a PUK, a <newpin> is necessary. |
| | <newpin> | New password for the lock |

## AT+CPUC

| AT+CPUC | Price per unit and currency table |
|---|---|
| Test command<br>AT+CPUC=? | Response:<br>OK |
| Read command<br>AT+CPUC? | Response:<br>+CPUC: <currency>,<ppu><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><currency> three-character currency code (e.g. "EUR") see AT+CSCS command<br><ppu> price per unit; dot is used as a decimal separator (e.g. "1.33") |
| Write command<br>AT+CPUC=<currency>,<ppu>[,<passwd>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><passwd> String type; usually PIN2 |

## AT+CRMP

| AT+CRMP | Ring Melody Playback |
|---|---|
| Test command<br>AT+CRMP=? | Response:<br>+CRMP: (list of supported <call type>s),(list of supported <volume>s)<br>OK |
| Write command<br>+CRMP=<call type>[,<volume>] | |
| | Response:<br>+CRMP: <call type>[,<volume>]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><call type> For details see Appendix 5.3.<br><volume> integer type parameter with manufacturer specific range |
| **Note:**<br>The Write command starts playing the ring melody. | |
| Execute command<br>AT+CRMP | Response:<br>OK/ERROR/+CME ERROR |
| **Note:**<br>The Execute command stops the melody played.<br>If an MTC is received during an active test ring, the test ring is switched off and the "normal" ring is switched on. | |

## AT+CRSL

| AT+CRSL | Ringer sound level |
|---|---|
| Test command<br>AT+CRSL=? | Response:<br>+CRSL: (list of supported <level>s)<br>OK |
| | Parameter:<br><level> Ringer Sound Level |
| Read command<br>AT+CRSL? | Response:<br>+CRSL: <level><br>OK/ERROR/+CME ERROR |
| Write command<br>AT+CRSL=<level> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><level> See Test command |

## AT+CRSM

| AT+CRSM | Restricted SIM access | | |
|---|---|---|---|
| Test command<br>AT+CRSM=? | Response:<br>OK | | |
| Write command<br>+CRSM=<command>[,<file_id>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]] | | | |
| | Response:<br>+CRSM: <sw1>,<sw2>[,<response>]<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <command> | 176 | READ BINARY |
| | | 178 | READ RECORD |
| | | 192 | GET RESPONSE |
| | | 214 | UPDATE BINARY |
| | | 220 | UPDATE RECORD |
| | | 242 | STATUS |
| | <file_id> | integer | identifier of the data file on the SIM, mandatory for every command except STATUS (see 2) |
| | <P1>,<br><P2>,<br><P3> | integer | transferal parameter from ME to SIM, mandatory for every command except GET RESPONSE, STATUS (see 2) |
| | <data> | Hex. string | information to be written to the SIM |
| | <pathid> | Hex. string | string type; contains the path of an elementary file on the SIM/UICC in hexadecimal format as defined in ETSI TS 102 221 [60]. |
| | <sw1>,<br><sw2> | integer | information from the SIM as to whether the command was executed at all, and if so, how |
| | <response> | Hex. string | return value received from the SIM; not available for UPDATE commands |

## AT+CSDF

| AT+CSDF | Set Date Format |
|---|---|
| Test command<br>AT+CSDF=? | Response:<br>+CSDF: (list of supported <mode>s)<br>OK |
| | Parameter:<br><mode> 3 MM/DD/YYYY<br>4 DD/MM/YYYY<br>5 DD.MM.YYYY (default)<br>6 YYYY.MM.DD<br>7 YYYY-MM-DD |
| Read command<br>AT+CSDF? | Response:<br>+CSDF: <mode><br>OK<br>Parameter:<br><mode> See Test command |
| Write command<br>AT+CSDF=[<mode>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |

## AT+CSGT

| AT+CSGT | Get / Set Own Greetings |
|---|---|
| Test command<br>AT+CSGT=? | Response<br>+CSGT:(0,1),<ltext><br>OK/ERROR/+CME ERROR |
| Read command<br>AT+CSGT? | Response<br>+CSGT: <text>,<mode><br>OK/ERROR/+CME ERROR |
| | Parameter<br><mode> 0 Enabled<br>1 Disabled<br><ltext> Maximum text length<br><text> String; Greeting Text |
| Write command<br>AT+CSGT=<mode>[,<text>] | |
| | Response<br>OK/ERROR/+CME ERROR |

## AT+CSQ

| AT+CSQ | Output signal quality |
|---|---|
| Test command<br>AT+CSQ=? | Response:<br>+CSQ: (list of supported <rssi>s), list of supported <ber>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><rssi> Reception level<br>0 -113 dBm or less<br>1 111 dBm<br>2 - 30 -109 to -53 dBm<br>31 -51 dBm or more<br>99 Unknown<br><ber> Bit error rate<br>0-7 Like RXQUAL values in Table GSM 05.08 [10] in section 8.2.4<br>99 Unknown |
| Execute command<br>AT+CSQ | Response:<br>+CSQ: <rssi>, <ber><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><rssi> See Test command<br><ber> See Test command |

## AT+CSTF

| AT+CSTF | Set Time Format |
|---|---|
| Test command<br>AT+CSTF=? | Response:<br>+CSTF: (list of supported <mode>s)<br>OK |
| | Parameter:<br><mode> 1 HH:MM (24 hour clock) (default)<br>2 HH:MM a.m./p.m |
| Read command<br>AT+CSTF? | Response:<br>+CSTF: <mode><br>OK |
| | Parameter:<br><mode> See Test command |
| Write command<br>AT+CSTF=[<mode>] | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |

## AT+CSVM

| AT+CSVM | Set voice mail number |
|---|---|
| Test command<br>AT+CSVM=? | Response:<br>+CSVM: (list of supported <mode>s), (list of supported <type>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode><br>0 Disable the voice mail number<br>1 Enable the voice mail number<br><type> integer type; Type of address octet (refer TS 24.008) 128..255 |
| Read command<br>AT+CSVM? | Response:<br>+CSVM: <mode>,<number>,<type><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command<br><number> string type; Character string <0..9,+><br><type> See Test command |
| Write command<br>AT+CSVM=<mode>[,<number>[,<type>]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command<br><number> See Read command<br><type> See Test command |

## AT+CTZR

| AT+CTZR | Time Zone Reporting |
|---|---|
| Test command<br>AT+CTZR=? | Response:<br>+CTZR: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Disable time zone change reporting<br>1 Enable time zone change reporting |
| Read command<br>AT+CTZR? | Response:<br>+CTZR: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT+CTZR=<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Unsolicited result code<br>+CTZV: <tz> | Parameter:<br><tz> Refer to AT+CCLK (e.g."+04" for time zone with 1 hour more than UTC) |

## AT+CTZU

| AT+CTZU | Automatic Time Zone Update |
|---|---|
| Test command<br>AT+CTZU=? | Response:<br>+CTZU: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Disable time zone change update<br>1 Enable time zone change update |
| Read command<br>AT+CTZU? | Response<br>+CTZU: <n><br>OK/ERROR/+CME ERROR |
| Write command<br>AT+CTZU=<n> | Parameter:<br><n> See Test command |

## AT+CUSD

| AT+CUSD | Unstructured supplementary service data |
|---|---|
| Test command<br>AT+CUSD=? | Response:<br>+CUSD: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Disable<br>1 Enable<br>2 Cancel session (not applicable to Read command) |
| Read command<br>AT+CUSD? | Response:<br>+CUSD: <n><br>OK/ERROR/+CME ERROR |
| Write command<br>AT+CUSD=[<n>,[<str>[,<dcs>]]] | |
| | Parameter<br><n> See Test command<br><str> String type USSD string<br><dcs> Integer, Data Coding Scheme (default 15) |
| | |
| Unsolicited result code<br>+CUSD: <m>[,<str>,<dcs>] | |
| | Parameter:<br><m> 0 USSD Notify<br>1 USSD Request<br>2 USSD terminated by network<br>4 USSD operation not supported |

## AT+CVIB

| AT+CVIB | Vibrator mode |
|---|---|
| Test command<br>AT+CVIB=? | Response:<br>+CVIB: (list of supported <mode>s)<br>OK |
| | Parameter:<br><mode> See Write command, but only 0 an 1 |
| Read command<br>AT+CVIB? | Response:<br>+CVIB: <mode><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command, but only 0 and 1 |
| Write command<br>AT+CVIB=<mode> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command<br>0 general disable vibration<br>1 general enable vibration<br>16 - 22 vibration settings for calls (STANDARD, HELICOPTER, UFO, SHOCK, MOSQUITO, TRAIN,OFF)<br>50 - 55 vibration settings for messages, see calls (no OFF)<br>56 disable general SMS vibration<br>57 enable general SMS vibration<br>58 disable general CBS vibration<br>59 enable general CBS vibration<br>100 - 106 vibration settings for instant messages values see calls<br>150 - 156 vibration settings for alarm clock, values see calls |

### 2.3.5 Extensions of Hayes Standard commands for GPRS

This chapter describes all the extensions of the Hayes Standard commands for GPRS.

| Command | Function |
|---|---|
| ATD*<GPRS_SC>[*[<called_address>] [*[<L2P>][*[<cid>]]]]# | |
| | Request GPRS service<br><GPRS_SC> GPRS Service Code a digit string (value 99)<br><called_address> a string that identifies the called party in the address space<br><L2P> a string which indicates the layer 2 protocol<br><cid> a digit string which specifies a particular PDP context definition. The cid has to be defined by using the AT+CGDCONT command<br>The dial command responds with CONNECT or ERROR |
| ATD*<GPRS_SC_IP>[*<cid>]# | |
| | Request GPRS **IP** service<br><GPRS_SC_IP> GPRS Service Code a digit string (value 98)<br><cid> a digit string which specifies a particular PDP context definition. The cid has to be defined by using the AT+CGDCONT command<br>The dial command responds with CONNECT or ERROR |
| ATO | Return to on-line data state |
| ATS0 | Automatic answer. The command may be used to turn off (n=0) and on (n>0) the automatic response to a network request for a PDP context activation. |
| ATS3 | Termination character |
| ATS4 | Response formatting character |
| ATS5 | Command line editing character |
| ATS7 | Wait for carrier after dialing (in seconds). |

### 2.3.6 Commands for GPRS

This section provides the descriptions of commands related to GPRS.

**AT+CGACT**

| AT+CGACT | PDP context activate or deactivate |
|---|---|
| Test command<br>AT+CGACT=? | Response<br>+CGACT: (list of supported <state>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><state> indicates the state of PDP context activation<br>0 deactivated<br>1 activated |
| Read command<br>AT+CGACT? | Response:<br>+CGACT: <cid>,<state>[<CR><LF><br>+CGACT: <cid>,<state>...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> numeric PDP Context Identifier<br><state> See Test command |
| Write command<br>AT+CGACT=[<state>[,<cid>[,<cid>[,…]]]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Read command<br><state> See Test command |

**AT+CGANS**

| AT+CGANS | Manual response to a network request for PDP context activation |
|---|---|
| Test command<br>AT+CGANS=? | Response:<br>+CGANS: (list of supported <response>s), (list of supported <L2P>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><response> 0 the request is rejected<br>1 the request is answered<br><L2P> layer 2 protocol to be used between the TE and MT PPP |
| Write command<br>AT+CGANS=[<response>, [<L2P> ,[<cid>]]] | |
| | Response:<br>CONNECT/ERROR/+CME ERROR |
| | Parameter:<br><response> See Test command<br><L2P> See Test command<br><cid> numeric PDP Context Identifier |

## AT+CGATT

| AT+CGATT | GPRS attach or detach |
|---|---|
| Test command<br>AT+CGATT=? | Response:<br>+CGATT: (list of supported <state>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><state> indicates the state of GPRS attachment<br>0 detached<br>1 attached |
| Read command<br>AT+CGATT? | Response:<br>+CGATT: <state><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><state> See Test command |
| Write command<br>AT+CGATT=[<state>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><state> See Test command |

## AT+CGAUTO

| AT+CGAUTO | Auto response to a network request for PDP context activation |
|---|---|
| Test command<br>AT+CGAUTO=? | Response:<br>+CGAUTO: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> indicates the state of PDP context activation<br>0 turn off automatic response for GPRS only<br>1 turn on automatic response for GPRS only<br>3 modem compatibility mode, GPRS and circuit switched calls (default) |
| Read command<br>AT+CGAUTO? | Response:<br>+CGAUTO: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT+CGAUTO=[<n>] | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |

## AT+CGCLASS

| AT+CGCLASS | GPRS mobile station class |
|---|---|
| Test command<br>AT+CGCLASS=? | Response:<br>+CGCLASS: (list of supported <class>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><class> string parameter for the GPRS mobile class<br>B class B<br>CG class C in GPRS only mode<br>CC class C in circuit switched only mode (lowest) |
| Read command<br>AT+CGCLASS? | Response:<br>+CGCLASS: <class><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT+CGCLASS=[<class>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><class> See Test command |

## AT+CGCMOD

| AT+CGCMOD | PDP context Modify |
|---|---|
| Test command<br>AT+CGCMOD=? | Response:<br>+CGCMOD: (list of <cid>s associated with active contexts)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> numeric PDP Context Identifier |
| Write command<br>AT+CGCMOD=[<cid>[,<cid>[,...]]] | |
| | Response<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command |

## AT+CGDATA

| AT+CGDATA | Enter data state |
|---|---|
| Test command<br>AT+CGDATA=? | Response:<br>+CGDATA: (list of supported <L2P>s)<br>OK/ERROR/+CME ERROR |
| | Parameter: Layer 2 protocol to be used between the TE and MT<br><L2P> PPP Point-to-Point Protocol |
| Write command<br>AT+CGDATA=[<L2P> ,[<cid> [,<cid> [,...]]] | |
| | Response:<br>CONNECT/ERROR/+CME ERROR |
| | Parameter:<br><L2P> See Test command<br><cid> 1 .. x numeric PDP Context Identifier (maximum value x returned by command AT+CGDCONT=?) |

## AT+CGDCONT

| AT+CGDCONT | Define PDP Context |
|---|---|
| Test command<br>AT+CGDCONT=? | Response:<br>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s) [<CR><LF><br>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> 1 .. x numeric PDP Context Identifier<br><PDP_type> string parameter of Packet Data Protocol type<br>PPP Type PPT<br>IP Type IP<br><d_comp> numeric parameter that controls PDP data compression<br>0 off<br>1 on (manufacturer preferred compression)<br>2 V.42bis<br><h_comp> numeric parameter that controls PDP header compression<br>0 off<br>1 on (manufacturer preferred compression) which is RFC1144 if it is available<br>2 RFC1144 (applicable for SNDCP only)<br>3 RFC2507 |
| Read command<br>AT+CGDCONT? | Response:<br>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[<CR><LF><br>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command<br><PDP_type> See Test command<br><APN> string parameter for Access Point Name<br><PDP_addr> string parameter: Consists of dot-separated numeric (0-255) parameters on the form 'a1.a2.a3.a4', for IPv4 and 'a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16' for IPv6.<br><d_comp> See Test command<br><h_comp> See Test command |
| Write command<br>AT+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr>[,<d_comp>[, <h_comp>]]]]]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command<br><PDP_type> See Test command<br><APN> See Read command<br><PDP_addr> See Read command<br><d_comp> See Test command<br><h_comp> See Test command |

## AT+CGDSCONT

| AT+CGDSCONT | Define Secondary PDP Context |
|---|---|
| Test command<br>AT+CGDSCONT=? | Response:<br>+CGDSCONT: (range of supported <cid>s), (list of <p_cid>s for active primary contexts), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s) [<CR><LF>+CGDSCONT : (range of supported <cid>s), (list of <p_cid>s for active primary contexts), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s) [...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> 1…x numeric PDP Context Identifier<br><p_cid> Primary PDP Context Identifier<br><PDP_type> string parameter of Packet Data Protocol type<br>PPP Type PPT<br>IP Type IP<br>IPV6 Type IP Version 6<br><d_comp> numeric parameter that controls PDP data compression<br>0 off<br>1 on (manufacturer preferred compression)<br>2 V.42bis<br><h_comp> numeric parameter that controls PDP header compression<br>0 off<br>1 on (manufacturer preferred compression) which is RFC1144 if it is available<br>2 RFC1144 (applicable for SNDCP only)<br>3 RFC2507 |
| Read command<br>AT+CGDSCONT? | Response:<br>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp><br>[<CR><LF>+CGDSCONT: <cid>, <p_cid, <d_comp>, <h_comp>[...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command<br><p_cid> See Test command<br><d_comp> See Test command<br><h_comp> See Test command |
| Write command | |
| AT+CGDSCONT=[<cid> [,<p_cid> ,[<d_comp>,],[<h_comp>] ]]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command<br><p_cid> See Test command<br><d_comp> See Test command<br><h_comp> See Test command |

**AT+CGEQMIN**

| AT+CGEQMIN | 3G Quality of Service Profile (Minimum acceptable) |
|---|---|
| Test command<br>AT+CGEQMIN=? | Response:<br>+CGEQMIN: <PDP_type>, (list of supported <Traffic_class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s)[<CR><LF><br>+CGEQMIN: <PDP_type>, (list of supported <Traffic_class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s)[…]]<br><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><PDP_type> — string parameter of Packet Data Protocol type<br>PPP — Type PPP<br>IP — Type IP<br>IPV6 — Type IP Version 6<br><Traffic_class> — numeric parameter for the traffic class<br>0 — conversational<br>1 — streaming<br>2 — interactive<br>3 — background<br><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'<br>0 — network subscribed value<br>1..8640 — kbit/s<br><Maximum bitrate DL> — Same as Maximum bitrate UL but for down link<br>0 — network subscribed value<br>1..8640 — kbit/s<br><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<br>0 — network subscribed value<br>1..8640 — kbit/s |

| | | |
|---|---|---|
| <Guaranteed bitrate DL> | a numeric parameter that indicates the guaranteed number of kbits/s delivered to 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 | |
| | 0 | network subscribed value |
| | 1..8640 | kbit/s |
| <Delivery order> | a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not | |
| | 0 | No |
| | 1 | Yes |
| | 2 | network subscribed value |
| <Maximum SDU size> | a numeric parameter (1,2,3,...) that indicates the maximum allowed SDU size in octets | |
| | 0 | network subscribed value |
| | 1..1520 | 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'. For example, a target SDU error ratio of $5 \cdot 10^{-3}$ would be specified as 5E3 | |
| | 0E0 | network subscribed value |
| | 1E1-1E6 | Range of supported values |
| <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'. | |
| | 0E0 | network subscribed value |
| | 5E2-6E8 | Range of supported values |
| <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 | network subscribed value |
| <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 | |
| | 0 | network subscribed value |
| | 1..4000 | 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 | |
| | 0 | network subscribed value |
| | 1..3 | Priority Level |

| Read command | Response: |
|---|---|
| AT+CGEQMIN? | +CGEQMIN: <cid>, <Traffic_class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, <Guaranteed bitrate DL, <Delivery order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio>, <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority>[<CR><LF><br>+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><br><br>OK/ERROR/+CME ERROR |
| | Parameter: |
| | <cid> — numeric PDP Context Identifier |
| | <Traffic_class> — See Test command |
| | <Maximum bitrate UL> — See Test command |
| | <Maximum bitrate DL> — See Test command |
| | <Guaranteed bitrate UL> — See Test command |
| | <Guaranteed bitrate DL> — See Test command |
| | <Delivery order> — See Test command |
| | <Maximum SDU size> — See Test command |
| | <SDU error ratio> — See Test command |
| | <Residual bit error ratio> — See Test command |
| | <Delivery of erroneous SDUs> — See Test command |
| | <Transfer delay> — See Test command |
| | <Traffic handling priority> — See Test command |
| Write command | |
| AT+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> ]]]]]]]]]]]] | |
| | Response: |
| | OK/ERROR/+CME ERROR |
| | Parameter: |
| | <cid> — See Read command |
| | <Traffic_class> — See Test command |
| | <Maximum bitrate UL> — See Test command |
| | <Maximum bitrate DL> — See Test command |
| | <Guaranteed bitrate UL> — See Test command |
| | <Guaranteed bitrate DL> — See Test command |
| | < Delivery order> — See Test command |
| | < Maximum SDU size> — See Test command |
| | < SDU error ratio> — See Test command |
| | < Residual bit error ratio> — See Test command |
| | < Delivery of erroneous SDUs> — See Test command |
| | < Transfer delay> — See Test command |
| | < Traffic handling priority> — See Test command |

## AT+CGEQREQ

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

| | |
|---|---|
| Test command<br>AT+CGEQREQ=? | Response:<br>+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)<br>[<CR><LF>+CGEQREQ: : <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Guaranteed 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) […]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><PDP_type> string parameter of Packet Data Protocol type<br>PPP Type PPP<br>IP Type IP<br>IPV6 Type IP Version 6<br><Traffic class> numeric parameter for the traffic class<br>0 conversational<br>1 streaming<br>2 interactive<br>3 background<br>4 network subscribed value<br><Guaranteed bitrate UL><br>numeric parameter for the traffic class<br>1..8640 kbit/s<br><Maximum bitrate UL><br>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<br>1..8640 kbit/s<br><Maximum bitrate DL><br>Same as Maximum bitrate UL but for down link<br>1..8640 kbit/s<br><Guaranteed bitrate UL><br>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<br>1..8640 kbit/s<br><Guaranteed bitrate DL><br>Same as Guaranteed bitrate DL but for down link<br>1..8640 kbit/s<br><Delivery order> a numeric parameter that indicates whether the UMTS |

| | | |
|---|---|---|
| | bearer shall provide in-sequence SDU delivery or not | |
| | 0 | No |
| | 1 | Yes |
| | 2 | network subscribed value |
| <Maximum SDU size> | | |
| | a numeric parameter (1,2,3,…) that indicates the maximum allowed SDU size in octets | |
| | 1..1520 | 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 $5 \cdot 10^{-3}$ would be specified as 5E3 | |
| | 0E0 | network subscribed value |
| | 1E1-1E6 | Range of supported values |
| <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'. | |
| | 0E0 | network subscribed value |
| | 5E2-6E8 | Range of supported values |
| <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 | network subscribed value |
| <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 | |
| | 0 | network subscribed value |
| | 1..4000 | 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 | |
| | 0 | network subscribed value |
| | 1..3 | Priority Level |

| | |
|---|---|
| Read command<br>AT+CGEQREQ? | Response<br>+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><br>[<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><br>[…]]<br>OK/ERROR/+CME ERROR |
| | Parameter: |
| | <cid> — numeric PDP Context Identifier |
| | <Traffic class> — See Test command |
| | <Guaranteed bitrate UL> — See Test command |
| | <Maximum bitrate DL> — See Test command |
| | <Guaranteed bitrate UL> — See Test command |
| | <Guaranteed bitrate DL> — See Test command |
| | <Delivery order> — See Test command |
| | <Maximum SDU size> — See Test command |
| | <SDU error ratio> — See Test command |
| | <Residual bit error ratio> — See Test command |
| | <Delivery of erroneous SDUs> — See Test command |
| | <Transfer delay> — See Test command |
| | <Traffic handling priority> — See Test command |
| Write command<br>AT+CGEQREQ=[<cid> [,<Traffic class> [,<Guaranteed 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> ]]]]]]]]]]]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter: |
| | <cid> — See Read command |
| | <Traffic class> — See Test command |
| | <Guaranteed bitrate UL> — See Test command |
| | <Maximum bitrate DL> — See Test command |
| | <Guaranteed bitrate UL> — See Test command |
| | <Guaranteed bitrate DL> — See Test command |
| | <Delivery order> — See Test command |
| | <Maximum SDU size> — See Test command |
| | <SDU error ratio> — See Test command |
| | <Residual bit error ratio> — See Test command |
| | <Delivery of erroneous SDUs> — See Test command |
| | <Transfer delay> — See Test command |
| | <Traffic handling priority> — See Test command |

## AT+CGEREP

| | |
|---|---|
| AT+CGEREP | GPRS event reporting |

| | | |
|---|---|---|
| Test command<br>AT+CGEREP=? | Response:<br>+CGEREP: (list of supported <mode>s),(list of supported <bfr>s)<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <mode> | numeric parameter |
| | 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> | numeric parameter |
| | 0 | MT buffer of unsolicited result codes defined within this command is cleared when 1 or 2 is entered for <mode> |
| | 1 | MT buffer of unsolicited result codes defined within this command is flushed to the TE when 1 or 2 is entered for <mode> |
| Read command<br>AT+CGEREP? | Response:<br>+CGEREP: <mode>,<bfr><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <mode> | See Test command |
| | <bfr> | See Test command |
| Write command<br>AT+CGEREP=[<mode>[,<bfr>]] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <mode> | See Test command |
| | <bfr> | See Test command |
| Unsolicited result code: | | |
| +CGEV: REJECT <PDP_type>, <PDP_addr> | | context activation rejected |
| +CGEV: NW REACT <PDP_type>, <PDP_addr> | | context activation by ME |
| +CGEV: NW DEACT <PDP_type>, <PDP_addr> | | detached by network |
| +CGEV: ME DEACT <PDP_type>, <PDP_addr> | | context activation by ME |
| +CGEV: NW DETACH | | detached by network |
| +CGEV: ME DETACH | | detached by ME |
| +CGEV: NW CLASS <class> | | change of mobile class by network |
| +CGEV: ME CLASS <class> | | change of mobile class by ME |
| | Parameter: | |
| | <PDP_type> | The PDP context type.<br>Refer to AT+CGDCONT for details |
| | <PDP_addr> | The IP-address of the context |

## AT+CGQMIN

| AT+CGQMIN | Quality of Service Profile (Minimum acceptable) |
|---|---|
| Test command | Response: |

| | | |
|---|---|---|
| AT+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)[...]]<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <PDP_type> | string parameter of Packet Data Protocol type<br>PPP Type PPP<br>IP Type IP |
| | <precedence> | numeric parameter for the precedence class<br>0 network subscribed value<br>1 .. 3 |
| | <delay> | numeric parameter for the delay class<br>0 network subscribed value<br>1 .. 4 |
| | <reliability> | numeric parameter for the reliability class<br>0 network subscribed value<br>1..5 |
| | <peak> | numeric parameter for the peak throughput class<br>0 network subscribed value<br>1 .. 7 |
| | <mean> | numeric parameter for the mean throughput class<br>0 network subscribed value<br>1..12 |
| Read command<br>AT+CGQMIN? | Response:<br>+CGQMIN:<br><cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[<br><CR><LF>+CGQMIN:<br><cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>[...]]<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cid> | numeric PDP Context Identifier |
| | <PDP_type> | See Test command |
| | <precedence> | See Test command |
| | <delay> | See Test command |
| | <reliability> | See Test command |
| | <peak> | See Test command |
| | <mean> | See Test command |
| Write command<br>AT+CGQMIN=[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cid> | See Read command |
| | <PDP_type> | See Test command |
| | <precedence> | See Test command |
| | <delay> | See Test command |
| | <reliability> | See Test command |
| | <peak> | See Test command |
| | <mean> | See Test command |

## AT+CGQREQ

| AT+CGQREQ | Quality of Service Profile (Requested) | |
|---|---|---|
| Test command<br>AT+CGQREQ=? | Response:<br>+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)[<CR><LF>+CGQREQ: <PDP_type>, <precedence>, <delay>, <reliability>, <peak>, <mean>[...]]<br><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <PDP_type> | string parameter of Packet Data Protocol type |
| | PPP | Type PPP |
| | IP | Type IP |
| | <precedence> | numeric parameter for the precedence class |
| | 0 | network subscribed value |
| | 1..3 | |
| | <delay> | numeric parameter for the delay class |
| | 0 | network subscribed value |
| | 1..4 | |
| | <reliability> | numeric parameter for the reliability class |
| | 0 | network subscribed value |
| | 1..5 | |
| | <peak> | numeric parameter for the peak throughput class |
| | 0 | network subscribed value |
| | 1..7 | |
| | <mean> | numeric parameter for the mean throughput class |
| | 0 | network subscribed value |
| | 1..12 | |
| Read command<br>AT+CGQREQ? | Response:<br>+CGQREQ: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>[<CR><LF>+CGQREQ: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>[...]]<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cid> | numeric PDP Context Identifier |
| | <PDP_type> | See Test command |
| | <precedence> | See Test command |
| | <delay> | See Test command |
| | <reliability> | See Test command |
| | <peak> | See Test command |
| | <mean> | See Test command |
| Write command<br>AT+CGQREQ=[<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cid> | See Read command |
| | <precedence> | See Test command |
| | <delay> | See Test command |
| | <reliability> | See Test command |
| | <peak> | See Test command |
| | <mean> | See Test command |

## AT+CGPADDR

| AT+CGPADDR | Show PDP address |
|---|---|
| Test command<br>AT+CGPADDR=? | Response:<br>+CGPADDR: (list of defined <cid>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> numeric PDP Context Identifier |
| Write command<br>AT+CGPADDR=[<cid> ,[< cid> [,<cid> [,...]]]] | |
| | Response:<br>+CGPADDR: <cid>,<PDP addr>[<CR><LF><br>+CGPADDR: <cid>,<PDP addr>[...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command<br><PDP addr> IP address of PDP |

## AT+CGREG

| AT+CGREG | GPRS network registration status |
|---|---|
| Test command<br>AT+CGREG=? | Response:<br>+CGREG: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Suppresses the unexpected network status messages<br>1 Enable the unexpected network status messages |
| Unsolicited result code<br>OK/ERROR/+CME ERROR | |
| Read command<br>AT+CGREG? | Response:<br>+CGREG: <n>,<stat><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command<br><stat> Status<br>0 Not registered, not currently searching<br>1 Registered home network<br>2 Not registered, but currently searching<br>3 registration denied by network<br>4 Unknown<br>5 Registered, roaming |
| Write command<br>AT+CGREG=[<n>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Unsolicited Result Code<br>+CGREG: <stat> | Parameter:<br><stat> See Read command |

## AT+CGSMS

| AT+CGSMS | Select service for MO SMS messages |
|---|---|
| Test command<br>AT+CGSMS=? | Response:<br>+CGSMS: (list of currently available <service>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><service> numeric parameter for service or service preference<br>0 GPRS<br>1 circuit switched<br>2 GPRS preferred (use circuit switched if GPRS not available)<br>3 circuit switched preferred (use GPRS if circuit switched not available) |
| Read command<br>AT+CGSMS? | Response:<br>+CGSMS: <service><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><service> See Test command |
| Write command<br>AT+CGSMS=[<service>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><service> See Test command |

## AT+CGTFT

| AT+CGTFT | Traffic Flow Template |
|---|---|
| Test command<br>AT+CGTFT=? | Response:<br>+CGTFT: <PDP_type>list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s), (list of supported <flow label (ipv6)>s) [<CR><LF><br>+CGTFT: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s), (list of supported <flow label (ipv6)>s) [...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><PDP_type> string parameter of Packet Data Protocol type<br>PPP Type PPP<br>IP Type IP<br>IPV6 Type IP Version 6 |
| | <packet filter identifier><br>numeric parameter identifies the filter<br>1..8 |
| | <evaluation precedence index><br>Numeric parameter<br>0..255 |
| | <source address and subnet mask><br>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.<br>m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16', for IPv6.<br>Where 'ax' is the IP address and 'mx' is the mask. |
| | <protocol number (ipv4) / next header (ipv6)><br>Numeric parameter<br>0..255 |
| | <destination port range><br>Consists of dot-separated parameters of the form 'f.t' (from ...to).<br>0..65535 |
| | <source port range><br>Same as destination port range but source port<br>0..65535 |
| | <ipsec security parameter index (spi)> |

| | | |
|---|---|---|
| | | Hexadecimal parameter, value range from 0..FFFFFFFF |
| | <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> | Dot-separated numeric parameters on the form 't.m'. 0..255 |
| | <flow label (ipv6)> | Hexadecimal parameter, value range from 00000 to FFFFF. Valid for IPv6 only<br>0 network subscribed value |
| Read command<br>AT+CGTFT? | Response:<br>+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)><br>[<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)>, <flow label (ipv6)><br>[…]]<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cid> | numeric PDP Context Identifier |
| | <packet filter identifier> | See Test command |
| | <evaluation precedence index> | See Test command |
| | <source address and subnet mask> | See Test command |
| | <protocol number (ipv4) / next header (ipv6)> | See Test command |
| | <destination port range> | See Test command |
| | <source port range> | See Test command |
| | <ipsec security parameter index (spi)> | See Test command |
| | <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> | See Test command |
| | <flow label (ipv6)> | See Test command |
| Write command<br>AT+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)> ]]]]]]]]] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cid> | See Read command |
| | <packet filter identifier> | See Test command |
| | <evaluation precedence index> | See Test command |
| | <source address and subnet mask> | See Test command |
| | <protocol number (ipv4) / next header | See Test command |

| | | |
|---|---|---|
| | (ipv6)> | |
| | <destination port range> | See Test command |
| | <source port range> | See Test command |
| | <ipsec security parameter index (spi)> | See Test command |
| | <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> | See Test command |
| | <flow label (ipv6)> | See Test command |

### 2.3.7 Commands related to mobile equipment errors

**AT+CMEE**

| AT+CMEE | Expanded error messages according to 3GPP TS 27.007 |
|---|---|
| Test command<br>AT+CMEE=? | Response:<br>+CMEE: (list of supported <n>s) |
| | Parameter:<br><n><br>0 Suppresses the expanded error format<br>1 Expanded error messages as number<br>2 Expanded error messages as text |
| Read command<br>AT+CMEE? | Response:<br>+CMEE: <n> |
| | Parameter:<br><n> See Read command |
| Write command<br>AT+CMEE=<n> | Response:<br>OK/ERROR/+CME ERROR<br>Parameter:<br><n> See Read command |
| **Note:**<br>For detailed information on the values possible for +CME ERROR see section 6.1.<br>+CMS errors have been defined for SMS; for detailed information on the values possible for +CMS ERROR see section 6.2. | |

### 2.3.8 TIA IS-101 commands ("Voice control interim standard for asynchronous DCE")

This section provides the descriptions of other AT commands.

**AT+VTD**

| AT+VTD | Set duration of a DTMF tone |
|---|---|
| Test command<br>AT+VTD=? | Response:<br><duration><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><duration> Duration of tone (in tenths of seconds)<br>1 .. 255 |
| Read command<br>AT+VTD? | Response:<br><duration><br>OK/ERROR/+CME ERROR |
| Write command<br>AT+VTD=<duration> | |
| | Response:<br>OK/ERROR |
| | Parameter:<br><duration> See Test command |

**AT+VTS**

| AT+VTS | Send a DTMF tone |
|---|---|
| Test command | Response: |

| | | | |
|---|---|---|---|
| AT+VTS=? | (list of supported <dtmf>s), (list of supported <duration>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <dtmf> | 0-9,<br>#,*,<br>A-D | exactly one character of the list |
| | <duration> | 1 .. 255 | Duration of tone (in tenths of seconds) |
| Write command<br>AT+VTS=<dtmf>[,<duration>]<br>Or<br>AT+VTS=<dtmf-string> | | | |
| | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <dtmf> | character from the list, see Test command | |
| | <dtmf-string> | max. 29 characters in quotation marks (”...”)<br>(no duration cannot be specified) | |

## 2.4 General commands according to 3GPP TS 27.005

3GPP TS 27.005 commands are used for operating the SMS functions of the GSM mobile phone. GSM module mobiles support the SMS PDU mode.

### AT+CMGC

| AT+CMGC | Send an SMS command | |
|---|---|---|
| Test command<br>AT+CMGC=? | Response:<br>OK/ERROR/+CME ERROR | |
| Write command<br>**If PDU mode (+CMGF=0)**<br>AT+CMGC=<length><CR><br>***PDU is given:***<br><ctrl-Z/ESC> | | |
| | Response:<br>**If sending is successful:**<br>+CMGC: <mr><br>**If sending is not successful:**<br>+CMS ERROR | |
| | Parameter: | |
| | <length> | Length of PDU |
| | <pdu> | See AT+CMGL command |
| | <mr> | Message reference |
| | <ackpdu> | RP-ACK PDU according to [3] |
| | <ackpdu> | RP-ACK PDU according to [3] |

### AT+CMGD

| AT+CMGD | Delete an SMS in the SMS memory | |
|---|---|---|
| Test command<br>At+CMGD=? | Response:<br>OK/ERROR/+CME ERROR | |
| Write command<br>AT+CMGD=<index> | | |
| | Response:<br>OK/ERROR/+CMS ERROR | |
| | Parameter: | |
| | <index> | Index of message in memory selected by AT+CPMS |

## AT+CMGF

| AT+CMGF | SMS format |
|---|---|
| Test command<br>AT+CMGF=? | Response:<br>+CMGF: (list of supported <mode>s) |
| | Parameter:<br><mode> 0 PDU mode |
| Read command<br>AT+CMGF? | Response:<br>+CMGF: <mode> |
| | Parameter:<br><mode> See Test command |
| Write command<br>AT+CMGF=[<mode>] | |
| | Response:<br>OK/ERROR |
| | Parameter:<br><mode> See Test command |

## AT+CMGL

| AT+CMGL | (Short) Message List<br>**Revision according to 3GPP TS 27.005** |
|---|---|
| Test command<br>AT+CMGL=? | Response:<br>+CMGL: (list of supported <stat>s) |
| | Parameter:<br><stat><br>0 REC UNREAD<br>i.e. received messages unread (default)<br>1 REC READ<br>i.e. received messages read<br>2 STO UNSENT<br>i.e. stored unsent messages<br>3 STO SENT<br>i.e. stored sent messages<br>4 ALL<br>i.e. all messages |
| Write command<br>AT+CMGL[=<stat>] | |
| | Response:<br>If PDU mode (+CMGF=0) and command are successful:<br>+CMGL:<br><index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF><br>+CMGL:<br><index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><LF>[...]] |
| | Parameter:<br><index> Index of message in memory selected by AT+CPMS<br><stat> See Test command<br><pdu> The PDU begins with the service-center address (according to GSM 04.11, [9]), followed by the TPDU (according to GSM 03.40, [3]) in hexadecimal format<br>otherwise: +CMS ERROR<br><alpha> String type alphanumeric representation of telephone number<br><length> Length of PDU |

## AT+CMGR

| AT+CMGR | (Short) Message Read (SMS)<br>**Revision according to 3GPP TS 27.005** |
|---|---|
| Test command<br>AT+CMGR=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT+CMGR=<index> | |
| | Response:<br>**If PDU mode (+CMGF=0) and command is successful:**<br>+CMGR: <stat>,,<length><CR><LF><pdu> |
| | Parameter:<br><index> — Index of message in memory selected by AT+CPMS<br><pdu> — The PDU begins with the service-center address (according to GSM 04.11, [9]), followed by the TPDU (according to GSM 03.40, [3]) in hexadecimal format<br><stat>:<br>0 REC UNREAD i.e. received messages unread (default)<br>1 REC READ i.e. received messages read<br>2 STO UNSENT i.e. stored unsent messages<br>3 STO SENT i.e. stored sent messages<br>4 ALL i.e. all messages<br><length> — Length of PDU otherwise: +CMS ERROR |

## AT+CMGS

| AT+CMGS | (Short) Message Send |
|---|---|
| Test command<br>AT+CMGS=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>**If PDU mode (+CMGF=0)**<br>AT+CMGS=<length><CR><br>***PDU is given:***<br><ctrl-Z/ESC> | |
| | Response:<br>**If sending is successful:**<br>+CMGS: <mr><br>**If sending is not successful:**<br>+CMS ERROR |
| | Parameter:<br><length> — Length of PDU<br><pdu> — The PDU begins with the service-center address (according to GSM 04.11, [9]), followed by the TPDU (according to GSM 03.40, [6]) in hexadecimal format<br><mr> — Message reference<br><ackpdu> — RP-ACK PDU according to GSM 03.40 [6] |

## AT+CMGW

| AT+CMGW | (Short) Message Write (SMS to the SMS memory) |
|---|---|
| Test command<br>AT+CMGW=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>**If PDU mode (+CMGF=0)**<br>AT+CMGW=<length>[,<stat>]<CR><br>***PDU is given:***<br><ctrl-Z/ESC> | |
| | Response:<br>+CMGW: <index><br>+CMS ERROR |
| | Parameter:<br><length> — Length of PDU<br><stat>:<br>0 REC UNREAD — i.e. received messages unread (default)<br>1 REC READ — i.e. received messages read<br>2 STO UNSENT — i.e. stored unsent messages<br>3 STO SENT — i.e. stored sent messages<br>4 ALL — i.e. all messages<br><pdu> — The PDU begins with the service-center address (according to GSM 04.11, [9]), followed by the TPDU (according to GSM 03.40, [6]) in hexadecimal format<br><index> — Index of message in memory selected by AT+CPMS |

## AT+CMMS

| AT+CMMS | More (Short) Message to Send |
|---|---|
| Test command<br>AT+CMMS=? | Response:<br>+CMMS: (list of supported <mode>s) |
| | Parameter:<br><mode>:<br>0 Disable<br>1 Keep link enabled until time between last send messages command response and next send command exceeds 5 seconds then ME closes the link and TA switches <n> to 0<br>2 keep link enabled until time between last send messages command response and next send command exceeds 5 seconds then ME closes the link and TA does NOT switch <n> to 0 |
| Read command<br>AT+CMMS? | Response:<br>+CMMS: <mode> |
| | Parameter:<br><mode> — See Test Command |
| Write command<br>AT+CMMS=[<mode>] | |
| | Response:<br>OK/ERROR |
| | Parameter<br><mode> — See Test Command |

## AT+CMSS

| AT+CMSS | Send an SMS from the SMS memory |
|---|---|
| Test command<br>AT+CMSS=? | Response<br>OK |
| Write command<br>AT+CMSS=<index>[,<da>[,<toda>]] | |
| | Response:<br>**If sending is successful:**<br>+CMSS: <mr><br>**If sending is not successful:**<br>+CMS ERROR |
| | Parameter:<br><index> Index of message in selected memory <mem2><br><da> Destination address in string format<br><toda> Format of destination address<br><mr> Message reference<br><ackpdu> RP-ACK PDU according to GSM 03.40 [6] |

## AT+CMUX

| AT+CMUX | Multiplexing Mode |
|---|---|
| Test command<br>AT+CMUX=? | Response<br>+CMUX: (list of supported <mode>s)<br>OK/ERROR |
| Read command<br>AT+CMUX? | Response<br>+CMUX: <mode><br>OK |
| Write command<br>AT+CMUX=<mode> | Response<br>OK<br>Parameter<br><mode> 0 Basic option |

## AT+CNMA

| AT+CNMA | Acknowledgment of a short message directly output (without storing)<br>*(**NOTE**: This command is only available if Phase 2+ compatibility has been activated by means of* AT+CSMS=*1)* |
|---|---|
| Test command<br>AT+CNMA=? | Response:<br>+CNMA: (list of supported <n>s) |
| | Parameter:<br><n> 0 Mode of functioning in analogy to GSM 27.005 text mode |
| Write command<br>AT+CNMA[=<n>] | Response:<br>OK/ERROR/+CMS ERROR |
| | Parameter:<br><n> See Test command |

## AT+CNMI

| AT+CNMI | New Message Indication |
|---|---|
| **Notes** | TA selects the procedure how the receipt of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in GSM 03.38 ( see [5]).<br>1) If the DTR signal is not available or the state of the signal is ignored (V.250 command &D0), reliable message transfer can be assured by using AT+CNMA acknowledgement procedure.<br>2) The rules <mt>=2 and <mt>=3 for storing received SM are possible only if phase 2+ compatibility is activated with AT+CSMS=1<br>3) The parameter <ds>=1 is only available in phase 2+ |
| Test command<br>AT+CNMI=? | Response:<br>+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) |
| | Parameter:<br><mode> 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.<br>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<br><mt> Rules for storing received SMS depend on the relevant data coding method (refer to GSM 03.38, ( see [5]) ), preferred memory storage AT+CPMS) setting and this value<br>**Note** If the AT command interface is acting as the only display device, the ME must support storage of class 0 messages and messages in the message waiting indication group (discard message)<br>0 No SMS-DELIVER indications are routed to the TE<br>1 If SMS-DELIVER is stored in ME/TA, indication of the memory location is routed to the TE using unsolicited result code<br>+CMTI: <mem>,<index><br>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:<br>+CMT: <length><CR><LF<>pdu> (PDU mode enabled)<br>3 Class 3 SMS-DELIVERs are routed directly to the TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1. |
| | <bm> Rules for storing received CBMs depend on the relevant data coding method (refer to GSM 03.38 ( see [5])), the setting of Select CBM Types AT+CSCB) and these values:<br>0 No CBM indications are routed to the TE.<br>2 New CBMs are routed directly to the TE using unsolicited result code:<br>+CBM: <length><CR><LF><pdu> (PDU mode enabled)<br>**Note** The settings of command AT+CNMI and AT+CSCB have to be done on the same Serial Interface. |

| | | | |
|---|---|---|---|
| | <ds> | 0 | No SMS-STATUS-REPORTs are routed to the TE |
| | | 1 | SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:<br>+CDS: <length><CR><LF><pdu> (PDU mode enabled) |
| | | 2 | If SMS-STATUS-REPORT is routed into ME/TA, indication of the memory location is routed to the TE using unsolicited result code:<br>+CDSI: <mem>,<index> |
| | <bfr> | 1 | TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered. |
| | <mem> | See AT+CPMS command | |
| | <index> | Index of the record on the chip card | |
| | <length> | Length of <pdu> | |
| | <pdu> | See AT+CMGL command | |
| Read command<br>AT+CNMI? | Response :<br>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> | | |
| | Parameter: | | |
| | <mode> | See Test command | |
| | <mt> | See Test command | |
| | <bm> | See Test command | |
| | <ds> | See Test command | |
| | <bfr> | See Test command | |
| Write command<br>AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]] | | | |
| | Response:<br>OK/ERROR/+CMS ERROR | | |
| | Parameter: | | |
| | <mode> | See Test command | |
| | <mt> | See Test command | |
| | <bm> | See Test command | |
| | <ds> | See Test command | |
| | <bfr> | See Test command | |
| Unsolicited result code<br>+CMTI: <mem>,<index><br>+CMT: <length><CR><LF><>pdu><br>+CDS: <length><CR><LF><pdu><br>+CDSI: <mem>,<index><br>+CBM: <length><CR><LF><pdu> | | | |

## AT+CPMS

| AT+CPMS | Preferred SMS message storage<br>**Revision according to 3GPP TS 27.005** |
|---|---|
| Test command<br>AT+CPMS=? | Response:<br>+CPMS: (list of supported <mem1>s),( list of supported <mem2>s) ,(list of supported <mem3>s) |
| | Parameter:<br><mem1> Memory from which messages are read and deleted<br>SM SIM message storage<br>ME Mobile Equipment message storage<br>MT combination of "ME" and "SM" storages<br><mem2> Messages will be written and sent from this memory storage:<br>SM SIM message storage<br>ME Mobile Equipment message storage<br>MT combination of "ME" and "SM" storages<br><mem3> Memory in which received messages are preferred to be stored, if routing to TE is not set<br>(see AT+CNMI command with parameter <mt>=2)<br>SM SIM message storage<br>ME Mobile Equipment message storage<br>MT combination of "ME" and "SM" storages |
| Read command<br>AT+CPMS? | Response:<br>+CPMS:<br><mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> |
| | Parameter:<br><memx> Memory from which messages are read and deleted, x=1..3<br><usedx> Number of messages currently in <memx><br><totalx> Total number of messages that can be stored in <memx> |
| Write command<br>AT+CPMS= <mem1>[,<mem2>[,<mem3>]] | |
| | Response:<br>+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3><br>OK/ERROR/+CMS ERROR |
| | Parameter:<br><mem1> See Test command<br><mem2> See Test command<br><mem3> See Test command |

**Note**
Incoming short messages with message class 2 (see GSM 03.38, [5] ) will be stored in the "SM" storage only. Therefore, the AT^SMGO:2 indication (see AT^SMGO command) can occur without a preceding AT^SMGO:1 indication.

## AT+CSCA

| AT+CSCA | Address of the SMS service centre | |
|---|---|---|
| Test command<br>AT+CSCA=? | Response:<br>OK/ERROR/+CME ERROR | |
| Read command<br>AT+CSCA? | Response:<br>+CSCA: <sca>,<tosca> | |
| | Parameter: | |
| | <sca> | Service center address in string format |
| | <tosca> | Service center address format |
| Write command<br>AT+CSCA=<sca>[,<tosca>] | | |
| | Response:<br>OK/ERROR | |

## AT+CSCB

| AT+CSCB | Select cell broadcast messages | |
|---|---|---|
| Test command<br>AT+CSCB=? | Response:<br>+CSCB: (list of supported <mode>s) | |
| | Parameter: | |
| | <mode> 0 | Accepts messages that are defined in <mids> and <dcss> |
| | 1 | Does not accept messages that are defined in <mids> and <dcss> |
| Read command<br>AT+CSCB? | Response:<br>+CSCB: <mode>,<mids>,<dcss> | |
| | Parameter: | |
| | <mode> | See Test command |
| | <mids> | String type; combinations of CBM message IDs |
| | <dcss> | String type; combinations of CBM data coding schemes |
| Write command<br>AT+CSCB=[<mode>[,<mids>[,<dcss>]]] | | |
| | Parameter: | |
| | <mode> | See Test command |
| | <mids> | String type; combinations of CBM message IDs |
| | <dcss> | String type; combinations of CBM data coding schemes |

## AT+CSMS

| AT+CSMS | Selection of message service<br>**Revision according to 3GPP TS 27.005 Version 5.0.0** |
|---|---|
| Test command<br>AT+CSMS=? | Response:<br>+CSMS: (list of supported <service>s) |
| | Parameter:<br><service> 0 GSM 03.40 [6] and 03.41 [7]<br>1 GSM 03.40 [6] and 03.41 [7] and compatibility of the AT command syntax for phase 2+<br>**Note:** Deactivating phase 2+ compatibility is only possible if the direct output of short messages AT+CNMI=1,2 or AT+CNMI=1,3 is not activated. If necessary, the latter should be deactivated first |
| Read command<br>AT+CSMS? | Response:<br>+CSMS: <service>,<mt>,<mo>,<bm> |
| | Parameter:<br><service> See Test Command<br><mt> Mobile terminated messages<br>1 Type supported<br><mo> Mobile originated messages<br>1 Type supported<br><bm> Broadcast type messages<br>1 Type not supported |
| Write command<br>AT+CSMS= <service> | |
| | Response:<br>+CSMS: <mt>,<mo>,<bm><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><service> See Test Command |

## 2.5 Modem commands

This section provides the descriptions of modem commands.

### AT+CBST

| AT+CBST | Select bearer service type | | |
|---|---|---|---|
| Selects the bearer service <name> with data rate <speed> and the connection element <ce> to be used when data calls are originated. | | | |
| Test command<br>AT+CBST =? | Response:<br>+CBST: (list of supported <speed>s), (list of supported <name>s), (list of supported <ce>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <speed> | 0 | auto bauding |
| | | 4 | 2400 bps ( V.22bis) |
| | | 6 | 4800 bps ( V.32) |
| | | 7 | 9600 bps (V.32) |
| | | 14 | 14400 bps (V.34) |
| | | 68 | 2400 bps (V.110) |
| | | 70 | 4800 bps (V.110) |
| | | 71 | 9600 bps (V.110) |
| | | 75 | 14400 bps (V.110) |
| | <name> | 0 | asynchronous modem |
| | <ce> | 1 | non-transparent |
| Read command<br>AT+CBST? | Response:<br>+CBST: <speed>,<name>,<ce><br>OK/ERROR/+CME ERROR | | |
| Write command<br>AT+CBST=<speed>[,0,1] | | | |
| | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <speed> | See Test command | |

### AT+CRLP

| AT+CRLP | Select radio link protocol parameter for originating non-transparent data call | |
|---|---|---|
| This modem command sets radio link protocol (RLP) parameters used when non-transparent data calls are initiated. This command returns supported values as a compound value. | | |
| Test command<br>AT+CRLP=? | Response:<br>+CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s )<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <iws> | Interworking window size (IWF to MS)<br>0-61 Default: 61 |
| | <mws> | Mobile window size (MS to IWF)<br>0-61 Default: 61 |

| | | |
|---|---|---|
| | <T1> | Acknowledgement timer (T1 in 10 ms units)<br>48-255 Default: 78 |
| | <N2> | Re-transmission attempts N2<br>1-255 Default: 6 |
| Read command<br>AT+CRLP? | Response<br>The command returns current settings for the supported RLP version 0.<br>+CRLP: <iws>,<mws>,<T1>,<N2><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <iws> | See Test command |
| | <mws> | See Test command |
| | <T1> | See Test command |
| | <N2> | See Test command |
| Write command<br>AT+CRLP= [<iws>[,<mws>[,<T1>,<N2>]]] | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <iws> | See Test command |
| | <mws> | See Test command |
| | <T1> | See Test command |
| | <N2> | See Test command |

## 2.6 Fax commands

The following commands can be used for FAX transmission. If the ME is acting as a FAX modem to a PC-based application, it is necessary to select the appropriate service class (FAX class) provided by the ME. The ME reports its FAX service class capabilities, both the current setting and the range of services available, via the AT+FCLASS command.

**Note**: According to EIA/-592-A [20], the Error Correcting Mode (ECM) should not be used when sending FAXes over GSM.

| +FCLASS parameter | Service Class | Reference, Standard |
|---|---|---|
| 0 | | e.g. TIA/EIA-602 or ITU V.250 |
| 1 | Service Class 1 | EIA/TIA-578-A |
| 2 | Vendor-specific | this document and EIA PN-2388 (draft) |

The following FAX commands are dummy commands. Invoking these commands will not cause ERROR result codes, but these commands have no functionality either.

**Note**: all these commands are Fax Class 2 commands

| Command | Meaning |
|---|---|
| AT+FAA | Auto Answer mode |
| AT+FECM | Error Correction Mode control |
| AT+FLNFC | Page Length format conversion |
| AT+FLPL | Indicate document available for polling |
| AT+FMINSP | Minimum Phase C speed |
| AT+FRBC | Phase C data receive byte count |
| AT+FREL | Phase C received EOL alignment |
| AT+FSPL | Enable polling |
| AT+FTBC | Phase C data transmit byte count |
| AT+FWDFC | Page width format conversion |

**Table 2-9: List of dummy FAX commands (Fax Class 2)**

**AT+FBADLIN**

| AT+FBADLIN | Define or read number of bad lines |
|---|---|
| **Used for FAX class 2 only**<br>This command defines the "Copy Quality OK" threshold.<br>If pixel count errors were detected in normal resolution (98 dpi) mode in as many consecutive lines as defined in **<**badlin**>**, the copy quality is unacceptable.<br>If pixel count errors were detected in fine resolution (196 dpi) mode in twice as many consecutive lines as defined in **<**badlin**>**, the copy quality is unacceptable.<br>"Copy Quality Not OK" occurs if either the error percentage is too high or if too many consecutive lines contain errors | |
| Read command<br>AT+FBADLIN? | Response:<br>+FBDADLIN: <badlin><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><badlin> See Write command |
| Write command<br>AT+FBADLIN=<badlin> | |
| | Parameter:<br><badlin> 0...255 0 indicates that error checking is not present or disabled<br>(Default value: 10) |

**AT+FBADMUL**

| AT+FBADMUL | Define, read or test number of bad lines |
|---|---|
| **Used for FAX class 2 only**<br>This command defines the "Copy-Quality-OK" multiplier. The number of lines received with a bad pixel count is multiplied by this number. If the result exceeds the total number of lines on the page the error rate is considered too high. A threshold multiplier value of 20 corresponds to a 5% error rate. | |
| Read command<br>AT+FBADMUL? | Response:<br>+FBADMUL: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Write command |
| Write command<br>AT+FBADMUL =<n> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0...255 0 indicates that error checking is not present or disabled<br>(Default value: 20) |

**AT+FBOR**

| AT+FBOR | Query the bit order for receive mode |
|---|---|
| **Used for FAX class 2 only**<br>Query the bit order for receive-mode. The mode is set by the ME dependent on the selected Service Class. | |
| Test command<br>AT+FBOR=? | Response:<br>+FBOR: (list of supported bit order modes <bor>s) OK |
| | Parameter:<br><bor><br>0 direct bit order for both Phase C and Phase B/D data<br>1 Reversed bit order for Phase C data, direct bit order for Phase B/D data |
| Read command<br>AT+FBOR? | Response:<br>+FBOR: <bor><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><bor> See Test command |
| Write command<br>AT+FBOR=<bor> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><bor> See Test command |

**AT+FCIG**

| AT+FCIG | Query or set the Local polling id |
|---|---|
| **Used for FAX class 2 only** | |
| Test command<br>AT+FCIG=? | Response:<br>+FCIG: (max. length of Local Polling ID string) (range of supported ASCII character values)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><id> Local Polling ID string, maximum length and possible content as reported by Test command.<br>Default value is empty string (“”).<br>Maximum length: 20<br><br>See also the “AT+FLID” command |
| Read command<br>AT+FCIG? | Response:<br>+FCIG: <id><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><id> See Test command |
| Write command<br>AT+FCIG=<id> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><id> See Test command |

**AT+FCQ**

| AT+FCQ | Control Copy Quality |
|---|---|
| **Used for FAX class 2 only**<br>This command controls Copy Quality checking when receiving a fax | |
| Test command<br>AT+FCQ=? | Response:<br>+FCQ: (list of supported copy quality checking <cq>s)<br>OK |
| | Parameter:<br><cq><br>0 No checking of copy quality performed. The ME will generate Copy Quality OK (MCF) responses to complete pages<br>1 ME can check 1-D phase data. The connected application must check copy quality for 2-D phase C data |
| Read command<br>AT+FCQ? | Response:<br>+FCQ <cq><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cq> See Test command |
| Write command<br>AT+FCQ=<cq> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter<br><cq> See Test command |

**AT+FCLASS**

| AT+FCLASS | Select, read or test FAX service class |
|---|---|
| Test command<br>AT+FCLASS=? | Response:<br>+FCLASS: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n><br>0 data (e.g. EIA/TIA-602 or ITU V.250)<br>1 Fax class 1 (EIA/TIA-578-A, Service Class 1)<br>2 Vendor-specific (Fax class 2 (EIA/TIA SP-2388, an early draft version of EIA/TIA-592-A – asynchronous Facsimile DCE Control Standard - Service class 2 ) |
| Read command<br>AT+FCLASS? | Response:<br>+FCLASS: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT+FCLASS=<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |

**AT+FCR**

| AT+FCR | Capability to receive | |
|---|---|---|
| Write command<br>AT+FCR=<cr> | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <cr> 0 | ME cannot receive message data. This value can be used when the application has insufficient storage. The ME can send and can be polled for a file. |
| | 1 | ME can receive message data.<br>**Used for FAX class 2 only** |

**AT+FDCC**

| AT+FDCC | Select service for MO SMS messages | |
|---|---|---|
| **Used for Faxclass 2 only**<br>This command allows the connected application to sense and constrain the capabilities of the facsimile DCE (=ME), from the choices defined in ITU T.30 Table 2. | | |
| Test command<br>AT+FDCC=? | Response:<br>+FDCC: (list of <vr>s), (list of <br>s), (list of <wd>s), (list of <ln>s), (list of <df>s), (list of <ec>s), (list of <bf>s), (list of <st>s)<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <vr> | Vertical Resolution |
| | <br> | Bit rate |
| | <wd> | Page Width |
| | <ln> | Page length |
| | <df> | Data compression Format |
| | <ec> | Error Correction mode |
| | <bf> | Binary File transfer mode |
| | <st> | Scan Time / line |
| **Note:**<br>For further information see AT+FDIS | | |
| Read command:<br>AT+FDCC? | Response:<br>+FDCC: <vr>,<br>,<wd>,<ln>,<df>,<ec>,<bf>,<st><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <vr> | See Test command |
| | <br> | See Test command |
| | <wd> | See Test command |
| | <ln> | See Test command |
| | <df> | See Test command |
| | <ec> | See Test command |
| | <bf> | See Test command |
| | <st> | See Test command |
| Write command<br>AT+FDCC=<vr>,<br>,<wd>,<ln>,<df>,<ec>,<bf>,<st> | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <vr> | See Test command |
| | <br> | See Test command |
| | <wd> | See Test command |

| | | |
|---|---|---|
| | <ln> | See Test command |
| | <df> | See Test command |
| | <ec> | See Test command |
| | <bf> | See Test command |
| | <st> | See Test command |

**AT+FDFFC**

| AT+FDFFC | Data Compresssion Format Conversion | |
|---|---|---|
| **Used for FAX class 2 only**<br>This parameter determines whether there is a mismatch in the ME response between the data format negotiated for the facsimile session (reported by the +FDCS:DF subparameter) and the Phase C data desired by the controlling application, indicated by the optional +FDT:DF subparameter, or the +FDIS=DF subparameter for the +FDR operation. | | |
| Test command<br>AT+FDFFC=? | Response:<br>+FDFFC: (list of supported <df>s)<br>OK/ERROR/+CME ERROR | |
| | Parameter:<br><df> | 0 mismatch checking is always disabled. The controlling application has to check the +FDCS: DF subparameter and transfer matching data |
| Read command<br>AT+FDFFC? | Response:<br>+FDFFC: <df><br>OK/ERROR/+CME ERROR | |
| | Parameter:<br><df> | See Test Command |
| Write command<br>AT+FDFFC=<df> | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter:<br><df> | See Test Command |

**AT+FDIS**

| AT+FDIS | Query or set session parameters | |
|---|---|---|
| **Used for FAX class 2 only**<br>This command allows the controlling application to set and constrain the capabilities used for the current session. +FDIS is used to generate DIS or DTC messages directly. +FDIS (and received DIS messages) is also used to generate DCS messages. | | |
| Test command<br>AT+FDIS=? | Response<br>+FDIS: (list of <vr>s), (list of <br>s), (list of <wd>s), (list of <ln>s), (list of <df>s), (list of <ec>s), (list of <bf>s), (list of <st>s) | |
| | Parameter:<br><vr> | Vertical Resolution |
| | 0 | normal, 98 lpi |
| | 1 | fine, 196 lpi |
| | <br> | Bit rate |
| | 0 | 2400 bit/s, V.27ter |
| | 1 | 4800 bit/s, V.27ter |
| | 2 | 7200 bit/s, V.29 |
| | 3 | 9600 bit/s, V.29 |
| | <wd> | Page Width |
| | 0*) | 1728 pixels in 215mm |
| | 1 | 2048 pixels in 255 mm |

| | | |
|---|---|---|
| | 2 | 2432 pixels in 303 mm |
| | 3 | 1216 pixels in 151 mm |
| | 4 | 864 pixels in 107 mm |
| <ln> | | Page length |
| | 0 | A4, 297mm |
| | 1 | B4, 364mm |
| | 2 | unlimited length |
| <df> | | Data compression Format |
| | 0*) | 1-D modified Huffman |
| | 1 | 2-D modified read |
| | 2 | 2-D uncompressed mode |
| <ec> | | Error Correction mode |
| | 0*) | disable ECM |
| | 1 | enable ECM, 64 bytes/frame |
| | 2 | enable ECM, 256 bytes/frame |
| <bf> | | Binary Fole transfer mode |
| | 0*) | disable BFT |
| | 1 | enable BFT |
| <st | | Scan Time / line |
| | 0*) | 0 ms (at vr= normal) |
| | 1 | 5 ms |
| | 2 | 10 ms |
| | 3 | 10 ms |
| | 4 | 20 ms |
| | 5 | 20 ms |
| | 6 | 40 ms |
| | 7 | 40 ms |

***) Note:**
Only the default value needs to be implemented.
Use test command to check which parameter values are in fact possible!

| | | |
|---|---|---|
| Read command<br>AT+FDIS? | Response:<br>+FDIS: <vr>,<br>,<wd>,<ln>,<df>,<ec>,<bf>,<st><br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <vr> | See Test command |
| | <br> | See Test command |
| | <wd> | See Test command |
| | <ln> | See Test command |
| | <df> | See Test command |
| | <ec> | See Test command |
| | <bf> | See Test command |
| | <st> | See Test command |
| Write command<br>AT+FDIS=<VR>,<BR>,<WD>,<LN>,<DF>,<EC>,<BF>,<ST> | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter: | |
| | <vr> | See Test command |
| | <br> | See Test command |
| | <wd> | See Test command |
| | <ln> | See Test command |
| | <df> | See Test command |
| | <ec> | See Test command |
| | <bf> | See Test command |

| | | |
|---|---|---|
| | <st> | See Test command |

**AT+FDR**

| AT+FDR | Begin or continue phase C data reception |
|---|---|
| **Used for FAX class 2 only**<br>This command initiates transition to Phase C data reception | |
| Execute command<br>AT+FDR | Response:<br>CONNECT/OK/ERROR |

**AT+FDT**

| AT+FDT | Data Transmission | |
|---|---|---|
| **Used for FAX class 2 only**<br>This command requests the ME to transmit a Phase C page. When the ME is ready to accept Phase C data, it issues the negotiation responses and the CONNECT result code to the application.<br>In Phase B, this command releases the ME to proceed with negotiation, and releases the DCS message to the remote station.<br>In Phase C, this command resumes transmission after the end of a data stream transmitted before. | | |
| Execute command<br>AT+FDT | Response<br>CONNECT | |
| | Parameter: | |
| | **<dt>** | list of <df>s, <vr>s, <wd>s, <ln>s |
| | <df> | Data compression Format |
| | 0 *) | 1-D modified Huffman |
| | 1 | 2-D modified read |
| | 2 | 2-D uncompressed mode |
| | <vr> | Vertical Resolution |
| | 0 | normal, 98 lpi |
| | 1 | fine, 196 lpi |
| | <wd> | Page Width |
| | 0*) | 1728 pixels in 215mm |
| | 1 | 2048 pixels in 255 mm |
| | 2 | 2432 pixels in 303 mm |
| | 3 | 1216 pixels in 151 mm |
| | 4 | 864 pixels in 107 mm |
| | <ln> | Page length |
| | 0 | A4, 297mm |
| | 1 | B4, 364mm |
| | 2 | unlimited length |
| ***) Note:**<br>Only the default value needs to be implemented. Use test command to check which parameter values are in fact possible! | | |

**AT+FET**

| AT+FET | End a page or document |
|---|---|
| **Used for FAX class 2 only**<br>This command indicates that the current page or part thereof is complete. An ERROR response code results if this command is issued while the mode is on-hook. | |
| Write command<br>AT+FET=<ppm> | Response:<br>OK/ERROR |
| | Parameter:<br><ppm> Post Page Message Codes<br>0 Another page next, same document<br>1 another document next<br>2 no more pages or documents<br>4 another page, procedure interrupt<br>5 another document, procedure interrupt |

**AT+FK**

| AT+FK | Kill operation, orderly FAX abort |
|---|---|
| **Used for FAX class 2 only**<br>This command causes the TA to terminate the session in an orderly manner. | |
| Execute command<br>AT+FK | Response:<br>OK/ERROR |

**AT+FLID**

| AT+FLID | Query or set session parameters |
|---|---|
| **Used for FAX class 2 only** | |
| Test command<br>AT+FLID=? | Response:<br>+FLID: (max. character length of Local ID string) (range of supported ASCII character values)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><lid> Local ID string, max. length and possible content as reported by test command.<br>Default value is empty string (“”).<br>Maximum length: 20<br><br>See also the “AT+FCIG” command |
| Read command<br>AT+FLID? | Response:<br>+FLID: <lid><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><lid> See Test Command |
| Write command<br>AT+FLID=<lid> | Response<br>+FLID: (max. character length of Local ID string) (range of supported ASCII character values)<br>OK/ERROR/+CME ERROR |
| | Parameter<br><lid> See Test command |

**AT+FMDL**

| AT+FMDL | Identify Product Model |
|---|---|
| **Used for FAX class 2 only**<br>Send the model identification to the TA. | |
| Read command<br>AT+FMDL? | Response:<br>`Gipsy Soft Protocolstack`<br>`OK` |

**AT+FMFR**

| AT+FMFR | Request Manufacturer Identification |
|---|---|
| **Used for FAX class 2 only**<br>Send the manufacturer identification to the TA. | |
| Read command<br>AT+FMFR? | Response:<br>`BenQ`<br>`OK` |

**AT+FOPT**

| AT+FOPT | Set bit order independently |
|---|---|
| **Used for FAX class 2 only** | |
| Read command<br>AT+FOPT? | Parameter:<br>`<opt>` `0` non-standard<br>`1` standard |
| Write command<br>AT+FOPT=<opt> | Response:<br>`OK/ERROR/+CME ERROR`<br>Model-specific command to set bit order independently of the understanding which is "mirrored" and which is direct. |
| | Parameter:<br>`<opt>` `1` See Read command |

**AT+FPHCTO**

| AT+FPHCTO | DTE Phase C Response Timeout |
|---|---|
| **Used for FAX class 2 only**<br>Determines how long the DCE will wait for a command after reaching the end of data when transmitting in Phase C. When time-out is reached, the DCE assumes that there are no more pages or documents to send | |
| Read command<br>AT+FPHCTO? | Response:<br>`+FPHCTO:` <tout><br>`OK/ERROR` |
| | Parameter: |
| | `<tout>` See Write command |
| Write command<br>AT+FPHCTO=<tout> | |
| | Response:<br>`OK/ERROR` |
| | Parameter:<br>`<tout>` `0...255` Time-out value in 100ms units.<br>Default: `30` |
| | Model-specific command to set bit order independently of the understanding which is "mirrored" and which is direct |

**AT+FREV**

| AT+FREV | Identify Product Revision |
|---|---|
| **Used for FAX class 2 only**<br>This command sends the revision identification to the TA. | |
| Read command<br>AT+FREV? | Response<br>V2.550<br>OK |

**AT+FRH**

| AT+FRH | Receive Data Using HDLC Framing |
|---|---|
| **Used for FAX class 1 only**<br>This command causes the TA to receive frames using the HDLC protocol and the modulation defined below. An ERROR response code results if this command is issued while the modem is on-hook. | |
| Execute command<br>AT+FRH=<mod> | Response:<br>CONNECT/ERROR |
| | Parameter:<br><mod> modulation mode<br>3 V21 Ch2 300 bps |

**AT+FRM**

| AT+FRM | Receive Data |
|---|---|
| **Used for FAX class 1 only**<br>This command causes the TA to enter the receiver-mode using the modulation defined below.<br>An ERROR response code results if this command is issued while the modem is on-hook | |
| Test command<br>AT+FRM=? | Response<br>+FRM:(List of supported modulation modes <mod>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mod> 96 V.29 9600 bps See [21]<br>72 V.29 7200 bps See [21]<br>48 V.27ter 4800 bps See [22]<br>24 V.27ter 2400 bps See [22] |
| Write command<br>AT+FRM=<mod> | Response:<br>CONNECT |
| | Parameter<br><mod> See Test command |

**AT+FRS**

| AT+FRS | Receive Silence |
|---|---|
| **Used for FAX class 1 only**<br>This command causes the TA to report an OK result code to the TE after <time> 10 millisecond intervals of silence have been detected on the line. This command is aborted if any character is received by the DTE. The modem discards the aborting character and issues an OK result code. An ERROR response code results if this command is issued while the mode is on-hook. | |
| Write command<br>AT+FRS=<time> | Response:<br>(List of supported modulation modes <mod>s)<br>OK |
| | Parameter<br><time> 0 .. 255 number of 10 millisecond intervals |

**AT+FTH**

| AT+FTH | Transmit Data Using HDLC Framing |
|---|---|
| **Used for FAX class 1 only**<br>This command causes the TA to transmit data using HDLC protocol and the modulation mode defined below. An ERROR response code results if this command is issued while the modem is on-hook. | |
| Read command<br>AT+FTH? | Response:<br>+FTH:(List of supported modulation modes <mod>s)<br>OK/ERROR/+CME ERROR |
| | Parameter<br><mod> 3 V.21 Ch2 300 bps |
| Write command<br>AT+FTH=<mod> | Response:<br>CONNECT |
| | Parameter<br><mod> See Read command |

**AT+FTM**

| AT+FTM | Transmit Data |
|---|---|
| **Used for FAX class 1 only**<br>This command causes the TA to transmit data using the modulation mode defined below.<br>An ERROR response code results if this command is issued while the modem is on-hook. | |
| Test command<br>AT+FTM=? | Response:<br>+FTH:(List of supported modulation modes <mod>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mod> modulation mode<br>96 V.29 9600 bps See [21]<br>72 V.29 7200 bps See [21]<br>48 V.27ter 4800 bps See [22]<br>24 V.27ter 2400 bps See [22] |
| Write command<br>AT+FTM=<mod> | Response:<br>CONNECT |
| | Parameter<br><mod> See Test command |

**AT+FTS**

| AT+FTS | Stop Transmission and Wait |
|---|---|
| **Used for FAX class 1 only**<br>This command causes the TA to terminate a transmission and wait for <time> 10 millisecond intervals before responding with the OK result code to the DTE. An ERROR response code results if this command is issued while the modem is on-hook | |
| Write command<br>AT+FTS=<time> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><time> 0 .. 85 number of 10 millisecond intervals |

**AT+FVRFC**

| AT+FVRFC | Vertical resolution format conversion |
|---|---|
| **Used for FAX class 2 only**<br>This command determines the DCE response to a mismatch between the vertical resolution negotiated for the facsimile session and the Phase C data desired by the DTE.<br>An ERROR response code results if this command is issued while the modem is on-hook | |
| Test command<br>AT+FVRFC=? | Response:<br>(List of supported mismatch checking modes <vrfc>)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><vrfc> 0 disable mismatch checking<br>2 enable mismatch checking, with resolution conversion of 1-D data in the DCE and an implied AT+FK command executed on 2-D mismatch detection |
| Read command<br>AT+FVRFC? | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><vrfc> See Test command |
| Write command<br>AT+FVRFC=<vrfc> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><vrfc> See Test command |

## 2.7 Bluetooth related commands

This section provides descriptions of commands related to Bluetooth applications. AT commands defined in this chapter are only to be used over a bluetooth connection between mobile and devices such as Headset or Carkit. These commands are currently specified in the Bluetooth Profile Description and not part of an ETSI specification [18].

### AT+BINP

This command is part of the Handsfree (e.g. Carkit) Profile.

| AT+BINP | Phone number corresponding to the last voice tag recorded in the HF |
|---|---|
| Test command<br>AT+BINP=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT+BINP=1 | Response:<br>+BINP: <number>, <type><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><number> Telephone number<br><type> Type of number |

### AT+BLDN

This command is part of the Handsfree (e.g. Carkit) Profile.

| AT+BLDN | Redial Last Number |
|---|---|
| Execute command<br>AT+BLDN; | Response:<br>OK/ERROR/+CME ERROR<br>Dial Last number! Similar to ATDL command but only for connection over Bluetooth |

### AT+BRSF

| AT+BRSF | Report Supported Features |
|---|---|
| Test command<br>AT+BRSF=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT+BRSF=<integer> | |
| | Response:<br>+BRSF: <integer><br>OK |
| | Parameter:<br><integer> A 32 bit integer type parameter: |

| Bit | Feature |
|---|---|
| 0 | Three-way Calling |
| 1 | EC and/or NR function |
| 2 | Voice Recognition |
| 3 | In-band ringing Tone (AT+BSIR) |
| 4 | Attach a number to a voice Tag (AT+BINP) |
| 5 | Ability to reject a call |
| 6…31 | Unused |

## AT+BSIR

| AT+BSIR | In-band Ring Tone Command (for Bluetooth Handsfree Profile) |
|---|---|
| Test command<br>AT+BSIR=? | Response:<br>OK |
| Unsolicited result code<br>^BSIR: <bsir> | |
| | Parameter:<br><mode> 0 Mobile provides no in-band ring tone<br>1 Mobile provides in-band ring tone |

## AT+NREC

This command is part of the Handsfree (e.g. Carkit) Profile.

| AT+NREC | Noise Reduction and Echo Canceling |
|---|---|
| Test command<br>AT+NREC=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT+NREC=<nrec> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><nrec> 0 Disable Noise Reduction and Echo Cancellation<br>1 Enable Noise Reduction and Echo Cancellation |

## AT+VGS

This command is part of the Headset and Handsfree (e.g. Carkit) Profile.

| AT+VGS | Gain of the Speaker Volume | |
|---|---|---|
| Test command<br>AT+VGS=? | Response:<br>OK/ERROR/+CME ERROR | |
| Write command<br>AT+VGS=<gain> | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter:<br><gain> 0 .. 15 | Minimum Gain<br>Maximum Gain |
| Unsolicited result code<br>+VGS: <gain> | | |

## 2.8 General commands according to ITU-T Recommendation V.250

This section provides the descriptions of general ITU-T Recommendation V.250 commands.

### AT+GCAP

| AT+GCAP | Request Capabilities List |
|---|---|
| Test command<br>AT+GCAP=? | Response:<br>OK/ERROR |
| Read command<br>AT+GCAP? | Response:<br>+GCAP: <mode> |
| | Parameter<br><mode> : e.g. "+GCAP: AT+CGSMS , AT+FCLASS" |

### AT+IPR

| AT+IPR | Fixed DTE rate |
|---|---|
| Test command<br>AT+IPR=? | Response:<br>+IPR: (list of supported <rate> values)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><rate> bits per second at which the DTE-DCE interface is to operate. The set of supported values can be retrieved by means of the Test command.<br>0 Auto-bauding |
| Read command<br>AT+IPR? | Response:<br>+IPR: <rate><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><rate> See Test command |
| Write command:<br>AT+IPR=<rate> | Response:<br>+IPR: <rate><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><rate> See Test command |

## 2.9 BenQ defined commands

Since user-defined commands cannot be implemented according to official syntax, the character string ”+C” is replaced by ”^S” (”^” = 0x5E). In future, if a user-defined command is accepted in the syntax prescribed in 3GPP TS recommendations, the command can be addressed using either command string.

### AT^SABD

| AT^SABD | Accessory for Bluetooth Data |
|---|---|
| Test command<br>AT^SABD=? | Response :<br>^SABD: (list of supported <mode>s)<br>OK |
| | Parameter:<br><mode> See Write command |
| Read command<br>AT^SABD? | Response:<br>^SABD: <mode><br>OK |
| Write command<br>AT^SABD=<mode>[,<data>] | |
| | Response:<br>[^SABD: <data>]<br>OK |
| | Parameter:<br><mode> integer type parameter, indicating the status of the Accessory Data interface<br>0 disable Notifications and Accessory Data Transfer<br>1 enable Accessory Data Transfer Mode<br>2 Data Transfer mode<br>**Note**: It can be used directly since x65 devices, no need to switch in mode 1 beforehand.<br><data> String type, as input parameter only available in transfer mode (see <mode> = 2), Accessory specific data. |
| Unsolicited Result Code :<br>^SABD: <data> | |
| **Note**:<br>Unsolicited Result Code, only available if write command with mode = 1 or 2 previously entered, that is to say if Data Transfer Mode enabled. | |

### AT^SACD

| AT^SACD | Accessory Data |
|---|---|
| Test command<br>AT^SACD=? | Response:<br>^SACD: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR<br>The Test command returns the modes for the Accessory Notifications and Accessory Data Transfer |
| | Parameter:<br><mode> See Write command |
| Read command:<br>AT^SACD? | Response:<br>^SACD: (list of supported <mode>s)<br>OK |

| | |
|---|---|
| | The Read command returns the mode currently selected |
| Write command<br>AT^SACD==<mode>[,data] | |
| | Response:<br>[^SACD: <data>]<br>OK<br>The Write command enables the accessory notifications and accessory data transfer. If the mode is set to 'unsolicited Notifications' , all accessory notifications are issued with the unsolicited result code |
| | Parameter:<br><mode> integer type parameter, indicating the status of the Accessory Data interface<br>0 disable Notifications and Accessory Data Transfer<br>1 enable Accessory Data Transfer<br>2 Data Transfer mode<br>Note: It can be used directly as of x65 devices, no need to switch in mode 1 beforehand.<br><data> String type, as input parameter only available in transfer mode (see <mode> = 2),<br>Accessory specific data. |
| Unsolicited Result Code for mode '2':<br>^SACD: <data> | |
| **Note:**<br>Unsolicited Result Code, only available if Data Transfer Mode enabled (i. e. <mode> = 1 or <mode>=2 previously entered in Write command | |

## AT^SACM

| AT^SACM | Output ACM (accumulated call meter) and ACMmax |
|---|---|
| Test command<br>AT^SACM=? | Response:<br>^SACM: (list of supported <n>s) |
| Execute command<br>AT^SACM | Response:<br>^SACM: <n>,<acm>,<acm_max><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Write command<br><acm> Accumulated call meter<br><acm_max> Maximum accumulated call meter |
| Write command<br>AT^SACM=<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> Specifies whether the unsolicited result code is to be displayed<br>0 Suppresses the Unsolicited result code specified<br>1 Displays the Unsolicited result code specified |
| Unsolicited result code<br>^SACM: <m> | Parameter:<br><m> 1 ACM limit almost reached<br>2 ACM greater than ACMmax<br>3 ACM range overflow |

## AT^SAKA

| AT^SAKA | Any Key Answer |
|---|---|
| Test command<br>AT^SAKA=? | Response:<br>^SAKA: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 OFF Any Key Answer is deactivated<br>1 ON Any Key Answer is activated (default) |
| Read command<br>AT^SAKA? | Response:<br>^SAKA: <mode><br>OK/ERROR/+CME ERROR<br>The Read command returns the actual setting for the <mode> parameter. |
| Write command<br>AT^SAKA=[<mode>] | |
| | Response:<br>OK/ERROR/+CME ERROR<br>The Write command sets the Any Key Answer to ON (default) or OFF |

## AT^SAOF

| AT^SAOF | Auto Off |
|---|---|
| Test command<br>AT^SAOF=? | Response:<br>^SAOF: (list of supported <mode>s and <time> format)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 OFF Auto off deactivated<br>1 ON Auto off activated |
| | <time><br>hh:mm Time for Auto Off |
| Read command<br>AT^SAOF? | Response:<br>^SAOF: <mode>,<time><br>OK/ERROR/+CME ERROR<br>The Read command returns the actual setting for the <mode>and <time> parameter. |
| Write command<br>AT^SAOF=<mode>,[<time>] | |
| | Response:<br>OK/ERROR/+CME ERRORThe Write command sets the Auto Off ON or OFF with an optional time |

## AT^SBAC

| AT^SBAC | Backup Alarm Clock |
|---|---|
| Test command<br>AT^SBAC=? | Response:<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SBAC? | Response:<br>^SBAC:<path><br>OK/ERROR/+CME ERROR<br>Parameter:<br><path> Path and file name of the PD file |
| Write command<br>AT^SBAC=<action> | |
| | Response:<br>OK/ERROR/+CME ERROR<br>Parameter:<br><action> Action to be done for backup<br>0 Lock PD file reading<br>1 Unlock PD file reading<br>2 Lock PD file writing<br>3 Unlock PD file writing |
| **Note:** | Before every read/write access the PD file has to be locked. After the read/write access has finished the PD file has to be unlocked again. |

## AT^SBIG

| AT^SBIG | Get / Set Big Letters in display |
|---|---|
| Test command<br>AT^SBIG=? | Response:<br>^SBIG: (0,1)<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SBIG? | Response:<br>^SBIG:<state><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><state> 0 Enabled<br>1 Disabled |
| Write command<br>AT^SBIG=<state> | |
| | Response:<br>OK/ERROR/+CME ERROR |

## AT^SBLK

| AT^SBLK | Clear black list |
|---|---|
| Test command<br>AT^SBLK=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SBLK | Response:<br>OK/ERROR/+CME ERROR |

## AT^SBMH

| AT^SBMH | Bookmark Handling |
|---|---|
| Test command<br>AT^SBMH=? | Response:<br>^SBMH: (list of supported <action>s),max. length of <folder><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><action> 1 overwrite existing bookmarks in root folder by imported bookmarks<br>2 append imported bookmarks to bookmarks in root folder<br>3 append imported bookmarks to existing bookmarks in folder specified by <folder>.<br>Only for this <action> is the <folder> parameter required<br><folder> string type parameter which contains the folder name where the bookmarks have to be stored |
| Read command<br>AT^SBMH? | Response:<br>OK/ERROR/+CME ERROR |
| **Note:**<br>The read command causes the Browser to export the bookmarks to a file called bookmark.htm.<br>This bookmark file is stored in data\misc folder of the file system. | |
| Write command<br>AT^SBMH=<action>[,<folder>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><action> See Test command<br><folder> See Test command |
| **Note:**<br>The file name of the import file has to be bookmark.htm and has to be stored in the data\misc folder of the file system. | |

## AT^SBNR

| AT^SBNR | Binary Read | | | | |
|---|---|---|---|---|---|
| Test command<br>AT^SBNR=? | Response:<br>^SBNR: (list of supported <type>s, (list of supported <subtype>s))<br>OK/ERROR/+CME ERROR | | | | |
| | Parameter: | | | | |
| | <type> | bmp | Bitmap; Windows bitmap format compression; 2/16/256 colours | | |
| | | | <subtype> | 0 | Logo shown permanently when registered in home network |
| | | | | 1 | Screensaver |
| | | | | 2 | Wallpaper |
| | | mid | ring tones in standard MIDI format 0, without polyphony specification: http://www.midi.org | | |
| | | | <subtype> | 0 – 8 | Group1 .. Group9 |
| | | | | 9 | Startup melody |
| | | | | 10 | Shutdown melody |
| | | dir | Folder name | | |
| | | | <subtype> | 1 | Ringtone |
| | | | | 2 | Ringtone EMS |
| | | | | 3 | Ringtone ON/OFF |
| | | | | 4 | Ringtone Slide |
| | | | | 5 | Pictures |
| | | | | 6 | Pictures EMS |
| | | | | 7 | Pictures Logo |
| | | | | 8 | Pictures Wallpaper |
| | | | | 9 | Pictures MMS |
| | | | | 10 | Videos |
| | | | | 11 | Animation |
| | | | | 12 | Colour skins |
| | | | | 13 | JAM |
| | | | | 14 | Java Applications |
| | | | | 15 | Java Games |
| | | | | 16 | Themes |
| | | | | 17 | Avatars |
| | | | | 18 | SMS Archive |
| | | | | 19 | SMS Archive Inbox |
| | | | | 20 | SMS Archive Sent |
| | | | | 21 | SMS Archive Unsent |
| | | | | 22 | SMS Archive Draft |
| | | | | 23 | Camera |
| | | | | 24 | MMS |
| | | | | 25 | System Email |
| | | | | 26 | MMC1 Pictures |
| | | | | 27 | MMC1 Videos |
| | | | | 28 | MISC |
| | | | | 29 | System SMS |
| | | | | 30 | System WAP |
| | | t9d | Tegic database for t9 text recognition. | | |
| | | | <subtype> | 0 | first (and only) entry of type t9d |

| | | | |
|---|---|---|---|
| | <actNumber> | 0 | deletes entry of the current subtype |
| | | other | current packet number |
| | <maxNumber> | maximum number of packets | |
| Write command<br>AT^SBNR=<type>,<subtype> | | | |
| | Response:<br>^SBNR: <type>,<subtype>,1,<maxNumber><br><CR><LF><data>[<CR><LF><br>^SBNR: <type>,<subtype>,2,<maxNumber><br><CR><LF><data><CR><LF>[...]]<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <type> | see Test command | |
| | <subtype> | see Test command | |
| | <data> | data in hexadecimal form (PDU) | |
| | <maxNumber> | see Test command<br>See the “<br>Appendix B” for examples | |

## AT^SBNW

| AT^SBNW | Binary Write |
|---|---|
| Test command<br>AT^SBNW=? | Response:<br>^SBNW: (list of supported <type>s, list of supported <subtype>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><type> See AT^SBNR<br><subtype> See AT^SBNR<br><actNumber> 0 deletes entry of the current subtype<br>other current packet number<br><maxNumber> maximum number of packets |
| Write command<br>AT^SBNW=<type>,<subtype>, [<actNumber>[, <maxNumber>]]<CR><br>***PDU is given:***<br><ctrl-Z/ESC> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><type> see Test command<br><subtype> see Test command<br><actNumber> see Test command<br><maxNumber> see Test command |
| **Notes**:<br>1)<br>2)<br>3)<br>4)<br>5)<br>6)<br>7) | <br>It is not possible to upload data when a call is active or in progress.<br>If a call is active the mobile responds with +CME ERROR: PHONE BUSY, the current upload sequence is aborted and all data packets are discarded.<br>If uploaded data is not useable (e.g. wrong data format) the mobile responds with +CME ERROR: INV CHAR IN TEXT after the last packet is uploaded.<br>To get the extended +CME ERROR response, AT+CMEE=2 has to be sent first. Otherwise the mobile only returns an ERROR. (see 1)<br>If <actNumber> and <maxNumber> are omitted during the upload, the mobile aborts the whole input sequence for the current subtype.<br>If <actNumber> is 0 during the upload and <maxNumber> is omitted, the mobile deletes the current record with index <subtype><br>Packets have to be uploaded in the right order! |
| **Restriction**<br>The maximum PDU size is 508 bytes. See "<br>Appendix B" for examples. | |

## AT^SCAM

| AT^SCAM | Camera Settings | | |
|---|---|---|---|
| Test command<br>AT^SCAM=? | Response:<br>OK/ERROR/+CME ERROR | | |
| Read command<br>AT^SCAM? | Response:<br>^SCAM: <name>,<res>,<selftimer>,<wbalance><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <name> | String with Default Name of picture | |
| | <res> | Resolution | |
| | | 0 | Premium (default) |
| | | 1 | High |
| | | 2 | Medium |
| | | 3 | Low |
| | | 4 | Wallpaper |
| | <selftimer> | 0 | 5 Seconds |
| | | 1 | 10 Seconds |
| | | 2 | 15 Seconds |
| | | 3 | 20 Seconds |
| | | 4 | 30 Seconds |
| | <wbalance> | White balance | |
| | | 0 | Auto (default) |
| | | 1 | Indoor |
| | | 2 | Outdoor |
| Write command<br>AT^SCAM=<name>,<res>,<selftimer>,<wbalance> | | | |
| | Response:<br>OK/ERROR<br>The Write command sets the camera settings | | |

## AT^SCCM

| AT^SCCM | CC Monitor |
|---|---|
| Test command<br>AT^SCCM=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SCCM | Response:<br>^SCCM: <version> , <General>, <Setup>, <Network>, <Battery>, <Diagnosis>, <Provider><br>OK/ERROR/+CME ERROR |
| | Parameters:<br><version> The version string of the CC Monitor<br><General> General:Specified as a 6-digit-hexadecimal-value<br><Setup> Setup: Specified as a 6-digit-hexadecimal-value<br><Network> Network:Specified as a 6-digit-hexadecimal-value<br><Battery> Battery:Specified as a 6-digit-hexadecimal-value<br><Diagnosis> Diagnosis: Specified as a 6-digit-hexadecimal-value<br><Provider> Provider: Specified as a 6-digit-hexadecimal-value |
| **Note:**<br>6-digit-hexadecimal-values are specified by Simens Company itself | |

## AT^SCID

| AT^SCID | Output card ID |
|---|---|
| Test command<br>AT^SCID=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SCID | Response:<br>^SCID: <cid><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> Number of SIM card |

## AT^SCKA

| AT^SCKA | Display SIM card status |
|---|---|
| Test command<br>AT^SCKA=? | Response:<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SCKA? | Response:<br>^SCKA: <n><br>OK/ERROR |
| | Parameter:<br><n> 0 No card<br>2 Card in card reader |

## AT^SCKH

| AT^SCKH | Get / Set Carkit/Headset stettings |
|---|---|
| Test command<br>AT^SCKH=? | Response:<br>^SCKH: (0-3)<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SCKH? | Response:<br>^SCKH: 0,<state0><br>^SCKH: 1,<state1><br>^SCKH: 2,<state2><br>^SCKH: 3,<state3>,<minutes><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><statex> 0 Enabled<br>1 Disabled<br><minutes> time in minutes for auto off feature |
| Write command<br>AT^SCKH=<n>,<state>[,<minutes>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><statex> See Test command<br><minutes> See Test command |
| **Note:**<br>0<br>1<br>2<br>3 | <br>Auto Answer in Headset<br>Auto Answer in Carkit<br>Loudspeaker in Carkit<br>Loudspeaker in CarkitAuto off feature |

## AT^SCKS

| AT^SCKS | Display SIM unsolicited card status |
|---|---|
| Test command<br>AT^SCKS=? | Response:<br>^SCKS: (list of supported <n>s) |
| | Parameter:<br><n> 0 Suppresses the Unsolicited result codes<br>1 Displays the Unsolicited result codes |
| Read command<br>AT^SCKS? | Response:<br>^SCKS: <n>, <m> |
| | Parameter:<br><m> 0 No card<br>1 Card in card reader |
| Write command<br>AT^SCKS=<n> | Response:<br>OK/ERROR |
| | Parameter<br><n> See Test command |
| Unsolicited result code<br>^SCKS: <m> | |

## AT^SGCLASS

| AT^SGCLASS | GPRS mobile station class and store it to EE-Block |
|---|---|
| Test command<br>AT^SGCLASS=? | Response:<br>^SGCLASS: (list of supported <class>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><class> string parameter for the GPRS mobile class<br>B class B<br>CG class C in GPRS only mode<br>CC class C in circuit switched only mode (lowest) |
| Read command<br>AT^SGCLASS? | Response:<br>^SGCLASS: <class><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT^SGCLASS=[<class>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><class> See Test command |
| Note.<br>This command is equal to +CGCLASS but the new value is additionally stored in the EE-Block | |

## AT^SCNI

| AT^SCNI | Output call number information |
|---|---|
| Test command<br>AT^SCNI=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SCNI | Response:<br>^SCNI: 1[,<cs>[,<number>,<type>]]<CR><LF><br>^SCNI: 2[,<cs>[,<number>,<type>]]<CR><LF><br>^SCNI: 3[,<cs>[,<number>,<type>]]<CR><LF><br>^SCNI: 4[,<cs>[,<number>,<type>]]<CR><LF><br>^SCNI: 5[,<cs>[,<number>,<type>]]<CR><LF><br>^SCNI: 6[,<cs>[,<number>,<type>]]<CR><LF><br>^SCNI: 7[,<cs>[,<number>,<type>]]<br><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cs> Call status of affiliated call number ( first parameter)<br>0 Call on hold<br>1 Active call<br>2 Waiting call<br><number> Telephone number<br><type> Type of number |

## AT^SCRE

| AT^SCRE | Get / Set Call Screening in display |
|---|---|
| Test command<br>AT^SCRE=? | Response:<br>^SCRE: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SCRE? | Response:<br>SCRE:<n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Disabled<br>X Enabled only for phone group X |
| Write command<br>AT^SCRE=<n> | Response:<br>OK/ERROR/+CME ERROR |

## AT^SDBR

| AT^SDBR | Database Read |
|---|---|
| Test command | Response: |
| AT^SDBR=? | ^SDBR: (list of supported <index>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> Location number stored in the alphabetically-sorted addressbook |
| Write command<br>AT^SDBR=<index1>[,<number_typ>] | |
| | Response:<br>[^SDBR: <number_typ>, <number>, <typ>, <text>[<CR><LF><br>^SDBR: <number_typ>, <number>, <typ>, <text>[…]]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><number_typ> Number type<br>0 phone number 'HOME'<br>1 phone number 'OFFICE'<br>2 phone number 'MOBILE'<br>3 phone number 'FAX'<br>4 phone number 'MOBILE OFFICE'<br>5 phone number 'FAX OFFICE'<br><number> Telephone number<br><typ> Type of number<br><text> Text corresponding to the telephone number<br><text> depends on AT+CSCS. |
| **Note:**<br>In the <text> field, special characters like the following may appear:<br>`"` (0x22), `@` (0x00), `ò` (0x08), `Ö` (0x5c).<br><br>(See also AT+CPBW and<br>Appendix A: "How to use special characters in certain commands ( e. g., AT+CPBW") | |

## AT^SDLD

| AT^SDLD | Delete the "last number redial" memory |
|---|---|
| Test command<br>AT^SDLD=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SDLD | Response:<br>OK/ERROR/+CME ERROR |

## AT^SDLY

| AT^SDLY | Delay Command |
|---|---|
| Test command<br>AT^SDLY=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SDLY =<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> Time (in tenth of second) until OK is returned<br>e.g. <n>= 10 corresponds to 1 second |
| **Note:**<br>This command implements a delay for the specified time. | |

## AT^SGAUTH

| AT^SGAUTH | Select Type of Authentication for PPP connection |
|---|---|
| Test command<br>AT^SGAUTH=? | Response:<br>^SGAUTH: (list of supported <auth>s) ,(max supported string length for username),(max supported string length for password)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><auth> indicates type of supported authentication<br>0 none<br>1 PAP<br>2 CHAP<br>3 PAP and CHAP |
| Read command<br>AT^SGAUTH? | Response:<br>^SGAUTH: <auth><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><auth> See Test command |
| Write command<br>AT^SGAUTH =<auth>,[username [,password] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><auth> See Test command<br><username> Username used for authentication<br><password> Password to be used for authentication |

## AT^SGDCONT

| AT^SGDCONT | Define PDP Context |
|---|---|
| Test command<br>AT^SGDCONT=? | Response:<br>^SGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s) [<CR><LF><br>^SGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> numeric PDP Context Identifier<br>0 .. 4<br>**Note:** The default context is not affected by the ATZ and AT&F commands<br><PDP_type> string parameter of Packet Data Protocol type<br>PPP Type PPT<br>IP Type IP<br><d_comp> numeric parameter that controls PDP data compression<br>0 off<br><h_comp> numeric parameter that controls PDP header compression<br>0 off |
| Read command<br>AT^SGDCONT? | Response:<br>^SGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp> [<CR><LF><br>^SGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[...]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> See Test command<br><PDP_type> See Test command<br><APN> string parameter for Access Point Name<br><PDP_addr> string parameter in IP V4 address notification<br><d_comp> See Test command<br><h_comp> See Test command |
| Write command<br>AT^SGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> ]]]] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter<br><cid> See Test command<br><PDP_type> See Test command<br><APN> See Read command<br><PDP_addr> See Read command |

## AT^SGDI

| AT^SGDI | Get Device Info |
|---|---|
| Test command<br>AT^SGDI=? | Response:<br>^SGDI: (list of supported <capability>s)<br>OK/ERROR/+CME Error |
| | Parameter:<br><capability> Name of the device<br>BBERRY Blackberry |
| Write command<br>AT^SGDI =<capability> | |
| | Response:<br>^SGDI: <value><br>OK/ERROR/+CME Error |
| | Parameter:<br><value> The capability value: PROSUMER or ENTERPRISE<br><capability> See Test command |

## AT^SGDV

| AT^SGDV | GPRS data volume |
|---|---|
| Test command<br>AT^SGDV=? | Response:<br>^SGDV: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Reset GPRS data volume statistics<br>1 Get total amount of data (mobile) |
| Read command<br>AT^SGDV? | Response：<br>^SGDV: <cid>,<down>,<up>[<CR><LF>^SGDV:<br><cid>,<down>,<up>[..]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><cid> The context ID<br><down> count of bytes of downlink<br><up> count of bytes of uplink |
| Write command<br>AT^SGDV=<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |

## AT^SGMR

| AT^SGMR | Output the GSM telephone software info | |
|---|---|---|
| Test command:<br>AT^SGMR=? | Response:<br>OK | |
| Execute command:<br>AT^SGMR | Response:<br><version>, <builder>, <ReconfTime>, <BuildTime> ,<br><BuildDate>, <BSVersion>, <BSRElease>, <BuildLocation> | |
| | Parameter: | |
| | <version> | Version of the telephone software |
| | <builder> | Account used while compiling |
| | <ReconfTime> | Time stamp of last 'reconfigure' of Configuration |
| | <BuildTime> | Time of build |
| | <BuildDate> | Date of Build |
| | <BSVersion> | Baseline version |
| | <BSRElease> | Baseline release |
| | <BuildLocation> | DBMS used for build |
| **Note:**<br>This information is available only if the BFC-bus is open | | |

## AT^SGND

| AT^SGND | Get phone number associated date | |
|---|---|---|
| Test command<br>AT^SGND=? | Response<br>OK/ERROR | |
| Write command<br>AT^SGND=<number> | | |
| | Response:<br>^SGND: <name>, [<IDType>, <ID>, [<CR><LF><IDType>, <ID>,[...]]]<br>OK/ERROR | |
| | Parameter: | |
| | <number> | The phone number the data is requested for. |
| | <name> | The last name associated (address book) or text field (SIM phone book). |
| | <IDType> | |
| | rmcLuid | luid usable in Irmc GET |
| | SyncMLLuid | luid used for SyncML |
| | SM | SIM phonebook |
| | <ID> | The luid ID or phonebook index. |

## AT^SHFR

| AT^SHFR | Set Handsfree Loudspeaker on/off | | |
|---|---|---|---|
| Test command<br>AT^SHFR=? | Response:<br>^SHFR: (list of supported <mode>s, <ind>s)<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <mode> | 0 | Disable Handsfree Loudspeaker |
| | | 1 | Enable Handsfree Loudspeaker (MMI confirmation necessary per key press only possible during an established call) |
| | <ind> | 0 | Disable Handsfree Loudspeaker events |
| | | 1 | Enable Handsfree Loudspeaker events |
| Read command<br>AT^SHFR? | Response:<br>^SHFR: <mode>,<ind><br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <mode> | See Test command | |
| | <ind> | See Test command | |
| Write command<br>AT^SHFR=[<mode>][,<ind>] | | | |
| | Response<br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <mode> | See Test command | |
| | <ind> | See Test command | |
| Unsolicited result code<br>^SHFR: <mode> | | | |

## AT^SICO

| AT^SICO | Icon control |
|---|---|
| Test command<br>AT^SICO =? | Response:<br>^SICO: (list of supported <n>s),( list of supported <m>s)<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SICO =<n>,<m> | |
| | Response for <m> = 0 and 1<br>OK/ERROR/+CME ERROR |
| | Response for <m> = 2<br>^SICO: <s><br>OK |
| | Parameter:<br><n> Type of icon<br>0 GPS icon<br><m> 0 hide icon<br>1 show icon<br>2 query icon status<br><s> Status<br>0 icon hidden<br>1 icon shown |

## AT^SIFS

| AT^SIFS | Query InterFace Setting |
|---|---|
| Test command<br>AT^SIFS=? | Response:<br>OK/ERROR/+CME ERROR |
| Exec command<br>AT^SIFS | Response:<br>^SIFS: <medium><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><medium> possible external interfaces.<br>Wire<br>USB<br>IrDA<br>BT |

## AT^SILL

| AT^SILL | Get / Set Illumination |
|---|---|
| Test command<br>AT^SILL=? | Response:<br>^SILL: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SILL? | Response:<br>^SILL:<n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> Illumination setting |
| Write command<br>AT^SILL=<n> | Response:<br>OK/ERROR/+CME ERROR |

## AT^SINT

| AT^SINT | Set Info Tones |
|---|---|
| Test command<br>AT^SINT=? | Response:<br>^SINT: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 OFF Info Tones are deactivated<br>1 ON Info Tones are activated (default)<br>2 Extended Info Tones are set to extended mode |
| Read command<br>AT^SINT? | Response:<br>^SINT: <mode><br>OK<br>The Read command returns the current setting of the <mode> parameter. |
| Write command<br>AT^SINT=[<mode>] | |
| | Response:<br>OK/ERROR/+CME ERROR<br>The Write command sets the Aout Time to ON (default) or OFF |

## AT^SJAV

| AT^SJAV | Install JAVA application |
|---|---|
| Test command<br>AT^SJAV=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SJAV=<file> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><file> Complete path and filename of the installation file to be installed. |
| **Note:**<br>Depending on the JAVA application to be installed the installation may request user inputs at the MMI. This behaviour can not be influenced by the mobile. | |

## AT^SKPD

| AT^SKPD | Keypad control single key |
|---|---|
| Test command<br>AT^SKPD=? | Response:<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SKPD =<key> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><key> The key in ASCII integer format (e.g. 48 for key '0')<br>For a list of keys implemented for AT^SKPD see section 6.6 |

## AT^SKYT

| AT^SKYT | Key Tones |
|---|---|
| Test command<br>AT^SKYT=? | Response:<br>^SKYT: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 Silent Key Tones are silent<br>1 Click Key Tones are click (default)<br>2 Tones Key Tones are tones |
| Read command<br>AT^SKYT? | Response:<br>^SKYT: <mode><br>OK/ERROR/+CME ERROR<br>The Read command returns the current setting of the <mode> parameter. |
| Write command<br>AT^SKYT=[<mode>] | |
| | Response:<br>OK/ERROR/+CME ERROR |

## AT^SLCD

| AT^SLCD | Last call duration |
|---|---|
| Test command<br>AT^SLCD=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SLCD | Response:<br>^SLCD: <duration><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><duration> Duration of last or active call in format hh:mm:ss |

## AT^SLCK

| AT^SLCK | Switch locks (including user-defined locks) on and off |
|---|---|
| Test command<br>AT^SLCK=? | Response:<br>^SLCK: (list of supported <fac>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><fac> See Test command of AT+CLCK |
| Write command<br>AT^SLCK = <fac>, <mode> [,<passwd>[,<class>]] | |
| | Response:<br>**If <mode>=2 and command is successful**<br>^SLCK: <status>[,<class1>[<CR><LF><br>^SLCK: <status>, class2....]]<br>OK/ERROR/+CME ERROR |
| | Parameter: |
| | <fac> See Test command of AT+CLCK |
| | <mode> |
| | 0 Cancels lock |
| | 1 Activates lock |
| | 2 Queries lock status |
| | <passwd> Password |
| | <class> |
| | 1 Voice |
| | 2 Data |
| | 4 Fax |
| | 7 Voice, Data and FAX (default) |
| | 8 SMS |
| | 16 data circuit sync |
| | 32 data circuit async |
| | 64 dedicated packet access |
| | 128 dedicated PAD access |
| | X combination of some of the above classes, e.g. 255 regroups all classes and 5 regroups Voice and FAX |
| | <status> 0 Off |
| | 1 On |

## AT^SLNG

| AT^SLNG | Language settings |
|---|---|
| Test command<br>AT^SLNG=? | Response:<br>^SLNG: (list of supported languages <lng>s) |
| | Parameter:<br><lng> Integer; language coded according to GSM 03.38 ( see [5]) or mobile-specific language (>100) |
| Read command<br>AT^SLNG? | Response:<br>^SLNG: <lng> |
| Write command<br>AT^SLNG=<lng> | |
| | Response:<br>OK/ERROR/+CME ERROR |

## AT^SMDR

| AT^SMDR | Melody Duration |
|---|---|
| Test command<br>AT^SMDR=? | Response:<br>^SMDR: (<index>s), <time><br>OK |
| | Parameter:<br><index> Available indexes.<br><time> Integer value for the duration time of a Melody |
| **Note:**<br>actually only melody duration index 0 is available | |
| Read command<br>AT^SMDR? | Response:<br>^SMDR: <index>, <time> <CR><LF><br>^SMDR: <index>, <time> <CR><LF><br>[[..]]<br>OK/ERROR/+CMS ERROR |
| Write command<br>AT^SMDR=<index>,<time> | |
| | Response:<br>OK/ERROR/+CME ERROR |

## AT^SMEL

| AT^SMEL | Melody values |
|---|---|
| Test command<br>AT^SMEL=? | Response:<br>^SMEL:(<purpose>s),(<mode>s), (<volume>s)<br>OK |
| | Parameter:<br><purpose> values see section 5.2 “Enum E_AuMa_Purpose”<br><mode> 0 OFF Melody for the purpose off<br>1 ON Melody for the purpose on<br>2 BEEP only beep for the purpose<br>3 Ascend Ascending Melody volume for <purpose><br><volume> manufacturer specific volume from 0 to 5 |
| Read command<br>AT^SMEL? | Response:<br>^SMEL:< purpose>,<mode>,<volume> <CR><LF><br>^SMEL:< purpose>,<mode>,<volume> <CR><LF><br>[[..]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><purpose> See Test Command<br><mode> See Test Command<br><volume> See Test Command |
| Write command<br>AT^SMEL = <purpose>[,<mode>][,<volume>] | |
| | Response:<br>OK/ERROR/+CME ERROR<br>Default value for mode is ON and default value for volume is 3 |
| Execute command<br>AT^SMEL | Response:<br>^SMEL:<purpose>,(<mode>s),(<volume>s) <CR><LF><br>^SMEL:<purpose>,(<mode>s),(<volume>s) <CR><LF><br>[[..]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><purpose> See Test Command<br><mode> See Test Command<br><volume> See Test Command |
| **Note:**<br>The Execute command delivers the available range of <mode> and <volume> for every <purpose>. | |

## AT^SMGL

| AT^SMGL | List SMS (without status change from *unread* to *read*)<br>**Revision according to 3GPP TS 27.005** |
|---|---|
| Test command<br>AT^SMGL=? | Response<br>^SMGL: (list of supported <stat>s) |
| | Parameter:<br><stat><br>0 REC UNREAD received unread messages (default)<br>1 REC READ received read messages<br>2 STO UNSENT stored unsent messages<br>3 STO SENT stored sent messages<br>4 ALL all messages |
| Write command<br>AT^SMGL [=<stat>] | |
| | Response:<br>**If PDU mode (+CMGF=0) and command is successful:**<br>^SMGL: <index>,<stat>,[<alpha>],<length><br><CR><LF><pdu><br>[<CR><LF>^SMGL: <index>,<stat>,[<alpha>],< length><br><CR><LF><pdu><br>[...]] |
| | Parameter:<br><stat> See Test command<br><pdu> The PDU begins with the service-center address (according to GSM 04.11, see [9]), followed by the TPDU according to GSM 03.40 (see [3]) in hexadecimal format<br>otherwise:<br>+CMS ERROR: <err> |

## AT^SMGO

| AT^SMGO | SMS overflow indicator |
|---|---|
| Test command<br>AT^SMGO=? | Response:<br>^SMGO: (list of supported <n>s)<br>OK/ERROR/+CMS ERROR |
| | Parameter:<br><n> 0 Disable<br>1 Enable |
| Read command<br>AT^SMGO? | Response:<br>^SMGO: <n>,<mode><br>OK/ERROR/+CMS ERROR |
| | Parameter:<br><n> See Test command<br><mode> 0 Space still available<br>1 SMS storage full (The "SM" and "ME" storages are full, i. e. the "MT" storage is full. See AT+CPMS command.)<br>2 A message is queued in the (network-based) Message Service Centre (MSC) to be forwarded/delivered to the mobile phone (e.g., a Class 2 message is queued but the "SM" storage is full; or any kind of message is queued but every storage is full ) |
| Write command<br>AT^SMGO=<n> | Response<br>OK/ERROR/+CMS ERROR |
| | Parameter:<br><n> See Test command<br><mode> See Test command |
| Unsolicited result code:<br>^SMGO: <mode> | Parameter:<br><mode> See Test command |
| **Note**<br>Incoming short messages with message class 2 (refer <dcs> GSM 03.38, see [5]) will be stored in "SM" storage only. Therefore, AT^SMGO: 2 indication can occur without a preceding AT^SMGO: 1 indication. | |

## AT^SMGR

| AT^SMGR | Read SMS (without status change from *unread* to *read)*<br>**Syntax identical with** AT+CMGR |
|---|---|
| Test command<br>AT^SMGR=? | Response<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SMGR=<index> | |
| | Response:<br>**If PDU mode (+CMGF=0) and command are successful:**<br>AT^SMGR: <stat>,[<alpha>],<length><CR><LF><pdu> |
| | Parameter:<br><pdu> The PDU begins with the service-center address (according to GSM 04.11, see [9]), followed by the TPDU according to GSM 03.40 (see [3]) in hexadecimal format<br>otherwise:<br>+CMS ERROR: <err> |
| | <stat><br>0 REC UNREAD received unread messages (default)<br>1 REC READ received read messages<br>2 STO UNSENT stored unsent messages<br>3 STO SENT stored sent messages<br>4 ALL all messages |
| | <length> See the AT+CMGL command<br>otherwise:+CMS ERROR: <err> |
| | <index> Index of message in memory selected by AT+CPMS |

## AT^SMIB

| AT^SMIB | Minute Beep |
|---|---|
| Test command<br>AT^SMIB=? | Response:<br>^SMIB: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 OFF Minute Beep is deactivated<br>1 ON Minute Beep is activated |
| Read command<br>AT^SMIB? | Response:<br>^SMIB: <mode><br>OK/ERROR/+CME ERROR<br>The Read command returns the actual setting for the <mode> parameter. |
| | Parameter:<br><mode> See Test command |
| Write command<br>AT^SMIB=[<mode>] | |
| | Response:<br>OK/ERROR/+CME ERROR<br>The Write command sets the Aout Time ON (default) or OFF |
| | Parameter:<br><mode> See Test command |

## AT^SMPL

| AT^SMPL | Media Player URC |
|---|---|
| Test command<br>AT^SMPL=? | Response:<br>^SMPL: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> 0 Disable the unsolicited result code from media player<br>1 Enable the unsolicited result code from media player |
| Read command<br>AT^SMPL? | Response:<br>^SMPL: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Write command<br>AT^SMPL =<n> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> See Test command |
| Unsolicited result code<br>^SMPL: <type>,<info> | |
| | Parameter:<br><info> The value of the media player depending on <type>.<br><type> 1 <info> is a string holding the title string<br>2 <info> has a number indication the play status (play, stop, etc)<br>3 <info> hold the position data of current title in seconds<br>4 <info> hold info if audio (0) or video (1) is currently playing |

## AT^SMSO

| AT^SMSO | Switch device off |
|---|---|
| Test command<br>AT^SMSO=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command<br>AT^SMSO | Response:<br>^SMSO: MS OFF Device switches off<br>OK |
| Write command<br>AT^SMSO=<mode> | |
| | Parameter:<br><mode> 0 Response :<br>^SMSO: MS OFF<br>OK<br>1 Response:<br>^SMSO: MS RESET<br>OK |

## AT^SNFS

| AT^SNFS | Select NF hardware |
|---|---|
| Test command<br>AT^SNFS=? | Response:<br>^SNFS: (list of supported <dev>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><dev> 0 Cell phone mode<br>1 Handsfree<br>2 Bluetooth<br>3 Audio Stream |
| Read command<br>AT^SNFS? | Response:<br>^SNFS: <dev><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><dev> See Test command and additionally<br>4 Idle |
| **Note:**<br>Volume should be set to "0" temporarily before NF hardware is changed (see AT^SNFV command). | |
| Write command<br>AT^SNFS=<dev> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><dev> See Test command |
| **Note:**<br>NF hardware can only be selected when a Wire or Bluetooth connections exists. | |

## AT^SNFV

| AT^SNFV | Set the volume |
|---|---|
| Test command<br>AT^SNFV=? | Response:<br>^SNFV: (list of supported <vol>s) |
| | Parameter:<br><vol> Value range of volume (0 to 4)<br>0 Low volume<br>1<br>2<br>3<br>4 max. volume (approx. 3 dB/level) |
| Read command<br>AT^SNFV? | Response:<br>^SNFV: <vol> |
| | Parameter:<br><vol> See Test command |
| Write command<br>AT^SNFV=<vol> | |
| | Response<br>OK/ERROR/+CME ERROR |
| | Parameter: |
| | <vol> See Test command |

## AT^SOBX

| AT^SOBX | Set OBEX Debug Level |
|---|---|
| Write command<br>AT^SOBX=<level> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><level> 0 .. 127 enables a specific level of tracing for OBEX debug information. |

## AT^SPBA

| AT^SPBA | Query active phonebook book |
|---|---|
| Test command<br>AT^SPBA=? | Response:<br>^SPBA: (list of supported <book>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><book> Possible default books are:<br>0 Phonebook<br>1 Address book |
| Read command<br>AT^SPBA? | Response:<br>^SPBA: <book><br>OK |
| | Parameter:<br><book> See Test command<br>The read option returns the actual setting for the default book. |

## AT^SPBC

| AT^SPBC | Seek the first entry in the sorted telephone book which begins with the selected (or next available) letter |
|---|---|
| Test command<br>AT^SPBC=? | Response:<br>^SPBC: (list of sorted telephone books supported <mem>s)<br>See AT+CPBS / AT^SPBS<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SPBC=<char> | |
| | Response:<br>^SPBC: <index><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><char> A .. Z First letter of desired entry<br>Value range: capital letters only<br>(if <char> is not capital letter, the index of the first entry beginning with a special character is displayed)<br><index> Index in the sorted telephone book (access via AT^SPBG) |

## AT^SPBG

| AT^SPBG | Read entry from the sorted telephone book via the sorted index |
|---|---|
| Test command<br>AT^SPBG=? | Response<br>^SPBG: (list of supported <index>s), <nlength>, <tlength><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> Location number<br><nlength> Max. length of telephone number<br><tlength> Max. length of the text corresponding to the number |
| Write command<br>AT^SPBG=<index1>[, <index2>] | |
| | Response<br>^SPBG: <index1>,<number>,<type>,<text>[<CR><CL><br>^SPBG: <index2>,<number>,<type>,<text>][...]<br>OK/ERROR/+CME ERROR |
| | Parameter<br><index1> Location number where the read of the entry starts<br><index2> Location number where the read of the entry ends<br><number> Telephone number<br><type> Type of number<br><text> Text corresponding to the telephone number |

## AT^SPBS

| AT^SPBS | Select a telephone book (including BenQ-specific books) |
|---|---|
| Test command<br>AT^SPBS=? | Response<br>^SPBS: (list of supported <sto>s)<br>OK/ERROR/+CME ERROR |
| | Parameter<br><sto><br>BL Blacklist dialing numbers (barred numbers from remote)<br>CD Callback dialing numbers (answered calls)<br>CS Common sortable telephone book (sorted combination of "SM", "ME", "FD"; access only via ^SPBC, ^SPBG)<br>DC ME Dialled Calls List<br>FD SIM fix-dialing telephone book<br>LD SIM last dialing number<br>MC ME Missed Calls List<br>MD Last number redial memory in telephone device<br>MS Missed dialing numbers (unanswered calls)<br>ON Own telephone numbers<br>OW Own numbers<br>RC ME Received Calls List<br>RD Red book (all entries in "CS" whose name portions have an exclamation mark ('!') as their final character)<br>SD Service dialing numbers |
| **Note.**<br>For detailed information on the telephone-book features see "<br>Appendix A" | |
| Read command<br>AT^SPBS? | Response:<br>^SPBS: <sto>[,<used>,<total>]<br>OK/ERROR/+CME ERROR |

| | |
|---|---|
| | Parameter:<br><sto> See Test command<br><used> integer type value indicating the number of used locations in selected memory<br><total> integer type value indicating the total number of locations in selected memory |
| Write command<br>AT^SPBS=<sto> | Response<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><sto> See Test command |

## AT^SPIC

| AT^SPIC | Output PIN counter |
|---|---|
| Test command<br>AT^SPIC=? | Response<br>^SPIC:(list of supported <fac>s)<br>OK/ERROR/+CME ERROR<br>Parameter:<br><fac> One of the following facilities:<br>PS Phone locked to SIM (device code)<br>PF Phone locked to very first inserted SIM<br>SC SIM card (PIN)<br>PN Network personalization (GSM 02.22, [3])<br>PC Corporate personalization (GSM 02.22, [3])<br>PP Service provider personalization (GSM 02.22, [3])<br>PU Network subset personalization (GSM 02.22, [3])<br>P2 PIN2 |
| Write command<br>AT^SPIC=<fac> | Response:<br>^SPIC: <pin_attempts>,<puk_attempts><br>OK/ERROR/+CME ERROR<br>Parameter:<br><pin_attempts> Number of attempts left to enter the PIN password via AT+CLCK (or AT+CPIN, and more).<br><puk_attempts> Number of attempts still available to enter the PUK password |
| Read command<br>AT^SPIC? | Response:<br>^SPIC:(<fac1>,<pin_attempts>,<puk_attempts>)[,(<fac2>,<pin_attempts>,<puk_attempts>)][,...]<br>OK/ERROR/+CME ERROR<br>Parameter:<br><fac1> See Test command |
| | <puk_attempts> See Write command |
| | <pin_attempts> See Write command. |
| Execute command<br>AT^SPIC | Response:<br>^SPIC: <n><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> Number of attempts still available to enter the <passwd>.<br>Use the AT+CPIN? command to check which password is being required. |

## AT^SPLM

| AT^SPLM | Read the PLMN list |
|---|---|
| Test command<br>AT^SPLM=? | Response:<br>OK/ERROR/+CME ERROR |
| Execute command:<br>AT^SPLM | Response:<br>^SPLM: numeric <oper>,long alphanumeric <oper>[<CR><LF><br>^SPLM: numeric <oper>,long alphanumeric <oper>[…]]<br>OK/ERROR/+CME ERROR |
| | Parameter<br><oper> Network operator in numeric and alphanumeric notation |

## AT^SPLR

| AT^SPLR | Read an entry from the preferred-operator list |
|---|---|
| Test command<br>AT^SPLR=? | Response<br>^SPLR: (list of supported <index>s)<br>OK/ERROR/+CME ERROR |
| | Parameter<br><index> Location numbers |
| Write command<br>AT^SPLR=<index1>[, <index2>] | |
| | Response:<br>^SPLR: <index1>, numeric <oper><br>^SPLR: .....<br>^SPLR: <index2>, numeric <oper><br>OK/ERROR/+CME ERROR |
| | Parameter<br><index1> Location number where the read of the entry starts |
| | <index2> Location number where the read of the entry ends |
| | <oper> Network operator in numeric form |

## AT^SPLW

| AT^SPLW | Write an entry to the preferred-operator list |
|---|---|
| Test command<br>AT^SPLW=? | Response<br>^SPLW: (list of supported <index>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> Location number at which the entry is written |
| Write command<br>AT^SPLW=<index>[, <oper>] | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> See Test command |
| | <oper> Network operator in numeric form |

## AT^SPRF

| AT^SPRF | Get / Set Active Profile |
|---|---|
| Test command<br>AT^SPRF=? | Response:<br>^SPRF:<index>,<name>[<CR><LF><br>^SPRF:<index>,<name>[<CR><LF><br>[[...]]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> — Numeric index of profile<br><name> — Name of the profile (string type, character set according to setting of AT+CSCS) |
| Read command<br>AT^SPRF? | Response:<br>SPRF:<index>,<name><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><index> — See Test command<br><name> — See Test command |
| Write command<br>AT^SPRF=<index> | Response:<br>OK/ERROR/+CME ERROR<br>Parameter:<br><index> — See Test command. The index of the profile which should be set to active. |

## AT^SPST

| AT^SPST | Play Signal Tone |
|---|---|
| Test command<br>AT^SPST =? | Response:<br>^SPST: (list of supported <n>s)<br>OK/ERROR/+CME ERROR |
| Write command<br>AT^SPST =<n>,<m> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><n> — Type of Signal Tone (st = self terminating)<br>0 Carkit PTT (st)<br>1 Carkit PTT long (st)<br>2 Carkit Crash (st)<br>3 Carkit Error (st)<br>4 Carkit Call Setup (st)<br><m> — Mode<br>0 Stop tone (not necessary for self terminating tones)<br>1 Play tone |

## AT^SPTT

| AT^SPTT | Push To Talk (for BT Headset) | | |
|---|---|---|---|
| Test command<br>AT^SPTT =? | Response:<br>OK/ERROR/+CME ERROR | | |
| Write command<br>AT^SPTT =<n> | Response<br>OK/ERROR/+CME ERROR | | |
| | Parameter: | | |
| | <n> | Key Press | |
| | | 0 | Short key pressed |
| | | 1 | Long key pressed |

## AT^SPWD

| AT^SPWD | Change password to a lock (including user-defined locks) | | |
|---|---|---|---|
| Test command<br>AT^SPWD=? | Response<br>^SPWD: list of supported (<fac>, <pwdlength>)s<br>OK/ERROR/+CME ERROR | | |
| | Parameter. | | |
| | <fac> | P2 | PIN2 |
| | | PS | Phone locked to SIM (device code) |
| | | SC | SIM card (PIN) |
| | | AO | BAOC (bar all outgoing calls) |
| | | OI | BOIC (bar outgoing international calls) |
| | | OX | BOIC-exHC (bar outgoing international calls except to home country) |
| | | AI | BAIC (bar all incoming calls) |
| | | IR | BIC-Roam (bar incoming calls when roaming outside the home country) |
| | | AB | All barring services |
| | | AG | All outgoing barring services |
| | | AC | All incoming barring services |
| | | PN | Network personalization (GSM 02.22, [3]) |
| | | PC | Corporate personalization (GSM 02.22, [3] |
| | | PU | Network subset personalization (GSM 02.22, [3] |
| | | PP | Service provider personalization (GSM 02.22, [3]) |
| | | PF | Phone locked to very first inserted SIM |
| | <pwdlength> | Length of password | |
| Write command<br>AT^SPWD = <fac>,<oldpwd>, <newpwd> | | | |
| | Response:<br>OK/ERROR/+CME ERROR | | |
| | Parameter | | |
| | <fac> | See Test command | |
| | <oldpwd> | Old password | |
| | <newpwd> | New password | |

## AT^SQWE

| AT^SQWE | Switch Mode for External Interface |
|---|---|
| Test command<br>AT^SQWE=? | Response:<br>^SQWE: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 RCCP AT command mode without CSD<br>1 BFC BenQ specific data transfer mode<br>2 GIPSY Default mode, AT command mode with CSD<br>3 OBEX OBEX data transfer mode<br>5 LOOP For internal use only |
| Read command<br>AT^SQWE? | Response:<br>^SQWE: <mode><br>OK<br>The Read command returns the actual setting for the <mode> parameter. |
| Write command<br>AT^SQWE=<mode> | |
| | Response:<br>OK/ERROR<br>The Write command sets the mode for this interface (e.g. BT, IrDA, Wire) |
| **Note:**<br>The 'OK' message is issued before the switching of serial interface has started. The switching may take some time (approx. 500 ms). | |

## AT^SREM

| AT^SREM | Get / Set Reminder state |
|---|---|
| Test command<br>AT^SREM=? | Response:<br>SREM: (list of supported <urc> s), (list of supported <reminder>s), (list of supported <state>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><urc> 0 Unsolicited Result Code ON<br>1 Unsolicited Result Code OFF<br><reminder> 0 Task/Appointment reminder<br>1 Alarm clock Reminder<br><state> 0 Set the reminder state to dismissed<br>1 Set the reminder state to snoozed<br>2 reminder state is active (for read command only) |
| Read command<br>AT^SREM? | Response:<br>SREM: <urc> [<reminder>,[<Id>],<state>, [<CR><LF>,[...]]]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><urc> See Test Command<br><reminder> See Test command<br><Id> Unique Id of the reminder (for PIM only)<br><state> See Test command |
| Write command<br>AT^SREM=<urc>,<reminder>,[<Id>],<state>,<snoozetime> | |
| | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><urc> See Test Command<br><reminder> See Test command |

| | | |
|---|---|---|
| | <Id> | See Read command |
| | <state> | See Test command |
| | <snoozetime> | Time to snooze (in minutes) |
| Unsolicited result code<br>^SREM: <reminder>,<Id><reminder>,<Id> | | |
| | Parameter: | |
| | <reminder> | See Test command |
| | <Id> | See Read command |

## AT^SRMP

| AT^SRMP | Ring Melody Playback |
|---|---|
| Test command<br>AT^SRMP=? | Response.<br>^SRMP: (list of supported <call type>s),(list of supported <volume>s)<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SRMP? | Response:<br>^SRMP: (<call type1>,<volume>s)[…]<br>[^SRMP: (<call typex>,<volume>s)]<br>OK/ERROR/+CME ERROR<br>The Read command returns the volume set for each ring melody index. |
| Write command<br>^SRMP=<call type>[,<volume>] | |
| | Response:<br>^SRMP: <call type>[,<volume>]<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><call type> For details see Appendix 5.3<br><volume> integer type parameter with manufacturer specific range |
| | The Write command starts playing the ring melody. |
| Execute command<br>AT^SRMP | Response:<br>OK/ERROR/+CME ERROR |
| **Note:**<br>The Execute command stops the melody played.If an MTC is received during an active test ring, the test ring is switched off and the ”normal” ring is switched on. | |

## AT^SSAT

| AT^SSAT | Set Auto Time (NITZ) |
|---|---|
| Test command<br>AT^SSAT=? | Response:<br>^SSAT: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 OFF Auto Time is OFF<br>1 ON Auto Time is ON |
| Read command<br>AT^SSAT? | Response:<br>^SSAT: <mode><br>OK/ERROR/+CME ERROR<br>The Read command returns the current setting for the <mode> parameter. |
| Write command<br>AT^SSAT=[<mode>] | |
| | Response:<br>OK/ERROR/+CME ERROR<br>The Write command sets Auto Time update from network via NITZ Feature ON or OFF |

## AT^SSCL

| AT^SSCL | Show Clock |
|---|---|
| Test command<br>AT^SSCL=? | Response:<br>^SSCL: (list of supported <mode>s)<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> 0 OFF Clock is not visible<br>1 ON Clock is visible |
| Read command<br>AT^SSCL? | Response:<br>^SSCL: <mode><br>OK<br>The Read command returns the current setting for the <mode> parameter. |
| | Parameter<br><mode> See Test command |
| Write command<br>AT^SSCL=[<mode>] | |
| | Response:<br>OK/ERROR<br>The Write command sets the visibility of the clock to ON (default) or OFF |
| | Parameter:<br><mode> See Test command |

## AT^SSET

| AT^SSET | Profile Settings Control (SET Melody and Picture settings in Mobile ) |
|---|---|
| Test command<br>AT^ SSET =? | Response<br>^SSET:( (list of <action>s), <applicationX>,(list of <key>s)),…, ((list of <action>s),<applicationY>,(list of <key>s))<br>OK |
| | Parameter:<br><action> integer type value that lets you set, get or delete settings; the following values are defined:<br>0 Delete<br>1 Set<br>2 Get<br><application> integer type value; the following values are defined:<br>1 MMI Settings (Melody and Picture Settings)<br><key> integer type value indicating the feature related, e.g. incoming SMS ringer melody, background picture.<br>values See Appendix enum E_RegistryHMIKeys |
| Write command<br>^SSET=<action>[,<application>[,<key>[,<fullname>]]] | |
| | Response to Write and Delete Action<br>OK/ERROR/+CME ERROR: <err> |
| | Response to Read Action with application and key parameters<br>[^SSET: <applicationX>,<keyY>,<fullname><CR><LF>]<br>OK/ERROR/+CME ERROR: <err><br>Response to Read Action with application parameter but without key parameter<br>[[^SSET: <applicationX>,<key1>,<fullname><CR><LF>][…]<br>[^SSET: <applicationX>,<keyN>,<fullname><CR><LF>]]<br>OK/ERROR/+CME ERROR: <err> |
| | Response to Read Action without application and key parameters<br>[[^SSET: <applicationX>,<key1>,<fullname><CR><LF>][…]<br>[^SSET: <applicationX>,<keyN>,<fullname><CR><LF>][…]<br>[^SSET: <applicationY>,<key1>,<fullname><CR><LF>][…]<br>[^SSET: <applicationY>,<keyM>,<fullname><CR><LF>]]<br>OK/ERROR/+CME ERROR: <err> |
| | Parameter:<br><action> see Test command<br><application> see Test command<br><key> see Test command<br><fullname> String type parameter which contains the name of the file with extension |
| **Description:** | The Test command returns a list of possible applications with its available actions and keys. |
| | The Write command is used to set, get or delete settings of the mobile.<br>Delete Action If no parameters are provided, every setting will be deleted. If no <key> parameter is entered then all settings of this application are deleted<br>Otherwise just the setting corresponding to the key will be deleted.<br>Set Action All parameters are mandatory. |

| | | |
|---|---|---|
| | Get Action | Optional application and <key> parameters<br>If no <key> parameter is entered then all settings of this application are retrieved, otherwise just the setting corresponding to the <key> will be retrieved. |
| **Example Note:** | The <fullname> parameter should be specified according to the character setting defined in the AT+CSCS command.<br><br>Example: "A:\Sounds\jump.mid"<br><br>In GSM character set, this string is different to ANSI character set (standard) and thus the Backslash character must be passed as two characters:<br>the extension table character and a slash.<br>The extension table character has value 1B and the following character "/" has value 2F.<br><br>In UCS2 character set, there is no problem since "\" is defined as value 005C.<br><br>**Note**: String case insensitive (Upper or Lower case) | |

## AT^SSTK

| AT^SSTK | SIM Toolkit | |
|---|---|---|
| Test command<br>AT^SSTK=? | Response:<br>^SSTK: <profile> | |
| | Parameter:<br><profile> | ME profile according to GSM 11.14 |
| Write command<br>AT^SSTK=<length>[,<mode>]<CR><br>***PDU is given:***<br><ctrl-Z/ESC> | | |
| | Response:<br>OK/ERROR/+CME ERROR | |
| | Parameter:<br><length> | Length of PDU in bytes, with a maximum PDU length of 255 bytes |
| | <mode> | |
| | 0 | Single command |
| | 1 | Sequence of commands |
| | <pdu> | SIM Toolkit commands,<br>see GSM 11.14 |
| Unsolicited result code<br>^SSTK: <data> | | |
| | Parameter:<br><data> | Single command |

## AT^STLN

| AT^STLN | T9 Language Selection |
|---|---|
| Test command<br>AT^STLN=? | Response:<br>^STLN: (list of supported <action>s),(list of supported <index>s)<br>OK/ERROR |
| | Parameter:<br><action><br>0 Disable T9 input Language<br>1 Enable T9 input Language |
| | <index> Index corresponding to a language |
| Read command<br>AT^STLN? | Response<br>^STLN:<action>,<index><br>OK |
| | Parameter:<br><action> See Test Command |
| | <index> See Test Command |
| Write command<br>AT^STLN=<action>[,<index>] | |
| | Response:<br>OK/ERROR |
| | Parameter:<br><action> See Test Command |
| | <index> See Test Command |

## AT^STTP

| AT^STTP | Test Tone Play |
|---|---|
| Test command | Response: |
| AT^STTP=? | ^STTP: (list of supported <tone>s), (list of supported <mode>s), (list of supported <volume>s), (list of supported <player>s), (list of supported <handsfree>s), (list of supported <asp>s),<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><tone> Integer type value for the tone type to play<br><mode> 0 Stop tone<br>1 Play Tone<br><volume> SEA_Volume enum value for the volume loudness<br><player> 0 PWM Player used<br>1 DSP Player used<br><handsfree> 0 Handsfree mode OFF<br>1 Handsfree mode ON<br><asp> 0 Acoustic shock protection OFF<br>1 Acoustic shock protection ON |
| Write command<br>AT^STTP=<tone>, <mode>,<volume>,<player>,<handsfree>,<asp> | |
| | Response:<br>OK/ERROR/+CME ERROR<br>The Write command stops or plays the tone with the configured parameters |
| | <tone> See Test Command<br><mode> See Test Command<br><volume> See Test Command<br><player> See Test Command |

| | | |
|---|---|---|
| | <handsfree> | See Test Command |
| | <asp> | See Test Command |

## AT^STWL

| AT^STWL | Get/Set T9 Worldlist s |
|---|---|
| Test command<br>AT^STWL=? | Response:<br>^STWL:(list of supported <mode>s)<br>OK |
| | Parameter:<br><mode> Numeric index of action<br>0 Export T9 Worldlist to file<br>1 Append T9 words from the imported file to the T9 Wordlist |
| Read command<br>AT^STWL? | Response:<br>^STWL: <fullname>]<br>OK/ERROR/+CME_EROOR |
| | Parameter:<br><fullname> Name of the T9 Wordlist file (string type)<br>See AT+CSCS |
| Write command<br>AT^STWL=<mode>,<fullname> | |
| | Response:<br>OK/ERROR/+CME: Error |
| | Parameter:<br><mode> See Test Command<br><fullname> See Read Command |

## AT^SVIB

| AT^SVIB | Vibrator mode |
|---|---|
| Test command<br>AT^SVIB=? | Response:<br>^SVIB: (list of supported <mode>s)<br>OK |
| | Parameter:<br><mode> Vibrator modes<br>0 general disable vibration<br>1 general enable vibration<br>16 - 22 vibration settings for calls (STANDARD, HELICOPTER, UFO, SHOCK, MOSQUITO, TRAIN,OFF) |
| | 50 - 55 vibration settings for messages, see calls (no OFF) |
| | 56 disable general SMS vibration |
| | 57 enable general SMS vibration |
| | 58 disable general CBS vibration |
| | 59 enable general CBS vibration |
| | 100 - 106 vibration settings for instant messages values see calls |
| | 150 - 156 vibration settings for alarm clock, values see calls |
| Read command<br>AT^SVIB? | Response:<br>^SVIB: <mode>,<mode>,<mode>,<mode>,<mode>,<mode>,<mode><br>current <mode>for every setting<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |

| | |
|---|---|
| Write command<br>AT^SVIB=<mode> | Response:<br>OK/ERROR/+CME ERROR |
| | Parameter:<br><mode> See Test command |

## AT^SVID

| AT^SVID | Video Settings |
|---|---|
| Test command<br>AT^SVID=? | Response:<br>OK/ERROR/+CME ERROR |
| Read command<br>AT^SVID? | Response:<br>^SVID: <name>, <rec>,<mic>,<wbalance><br>OK/ERROR/+CME ERROR |
| | Parameter:<br><name> String indicating the default name of the image<br><rec> Recording Time<br>0 MMS-LOW<br>1 MMS-HIGH<br>2 Maximum (default)<br><mic> Microphone<br>0 OFF<br>1 ON (default)<br><wbalance> White Balance<br>0 Auto (default)<br>1 Indoor<br>2 Outdoor |
| Write command<br>AT^SVID=<name>, <rec>,<mic>,<wbalance> | |
| | Response:<br>OK/ERROR<br>The Write command sets the video default name |
| | Parameter:<br><name> See Read Command<br><rec> See Read Command<br><mic> See Read Command<br><wbalance> See Read Command |

## 2.10 Developers' commands

The commands described in this section are developers' commands and may only be used by qualified personnel.

### AT^SAPO

| AT^SAPO | APO Data Tracer | |
|---|---|---|
| Test command<br>AT^SAPO=? | Response:<br>OK/ERROR/+CME Error | |
| Write command<br>AT^SAPO=<mode>[,<"submode">] | | |
| | Response:<br>OK/ERROR/+CME: Error | |
| | Parameter: | |
| | <mode> | Numeric index of mode<br>The value and its range is out of scope of this document. |
| | <submode> | String type of submode<br>The value and its range is out of scope of this document. |

**Note**: This command is available for special SIM cards only.

### AT^SCHNULLI

| AT^SCHNULLI | Bluetooth Data Tracer | |
|---|---|---|
| Test command<br>AT^SCHNULLI=? | Response:<br>OK/ERROR/+CME Error | |
| Write command<br>AT^SCHNULLI=<mode>[,<"submode">] | | |
| | Response:<br>OK/ERROR/+CME: Error | |
| | Parameter: | |
| | <mode> | Numeric index of mode<br>The value and its range is out of scope of this document. |
| | <submode> | String type of submode<br>The value and its range is out of scope of this document. |

**Note**: This command is available for special SIM cards only.

## AT^SCHOBI

| AT^SCHOBI | Gipsy Data Tracer |
|---|---|
| Test command<br>AT^SCHOBI=? | Response:<br>OK/ERROR/+CME Error |
| Read command<br>AT^SCHOBI? | Response:<br>^SCHOBI: <data><br>OK/ERROR/+CME Error |
| | Parameter:<br><data> Numeric trace data.<br>The value and its range is out of scope of this document. |
| Write command<br>AT^SCHOBI=<"tracemode">] | |
| | Response:<br>OK/ERROR/+CME: Error |
| | Parameter:<br><tracemode> Numeric index in string format of trace mode<br>The value and its range is out of scope of this document. |

## AT^STRC

| AT^STRC | Data Tracer |
|---|---|
| Test command<br>AT^STRC=? | Response:<br>OK/ERROR/+CME Error |
| Write command<br>AT^STRC=<protocol>[,<serial>] | |
| | Response:<br>OK/ERROR/+CME: Error |
| | Parameter:<br><protocol> Numeric index of protocol<br>The value and its range is out of scope of this document. |
| | <serial> Numeric index of serial interface<br>The value and its range is out of scope of this document. |

**Note**: This command is available for special SIM cards only.

## 2.12 List of all Unsolicited result codes

Unsolicited result codes indicate that processing of actions currently running is aborted due to an unforeseen event. Table 2-10 lists all unsolicited result codes defined, together with their meaning:

| Message | Meaning |
|---|---|
| +CBM: <length><CR><LF><pdu> | Direct output of the broadcast message.<br>For an explanation of parameters see the AT+CNMI command |
| +CCCM:<ccm> | Indication that the <ccm> value has changed but no more than every 10 seconds |
| +CCWA: <num>,<type>,<class>,,<cli validity>,<alpha>,<line> | Call waiting indication<br>For an explanation of parameters see AT+CCWA |
| +CDS: <length><CR><LF><pdu> | Direct output of the status report<br>For an explanation of parameters see AT+CNMI |
| +CDSI: <mem>,<index> | Displays the status report index and memory<br>For an explanation of parameters see the AT+CNMI command |
| +CGEV: ME CLASS <class> | The mobile equipment has forced a change of MS class<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: ME DEACT <PDP_type>, <PDP_addr> | The mobile equipment has forced a context deactivation<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: ME DETACH | The mobile equipment has forced a GPRS detach<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: NW CLASS <class> | The network has forced a change of MS class<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: NW DEACT <PDP_type>, <PDP_addr> | The network has forced context deactivation<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: NW DETACH | The network has forced a GPRS detach<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: NW REACT <PDP_type>, <PDP_addr> | The network has requested a context reactivation<br>For an explanation of parameters see AT+CGEREP |
| +CGEV: REJECT <PDP_type>, <PDP_addr> | A network request for PDP context activation occurred when the MT was unable to report it and was automatically rejected<br>For an explanation of parameters see |

| | |
|---|---|
| | AT+CGEREP |
| +CGREG: <stat> | GPRS Network registration<br>For an explanation of parameters see AT+CGREG |
| +CRING: <type> | For an explanation of parameters see AT+CRC |
| +CIEV: <ind>,<value> | Indicator event reporting For an explanation of parameters see AT+CMER |
| +CKEV: <key>,<press> | For an explanation of parameters see AT+CMER |
| +CLIP: <num>,<type>,,,<alpha>,<CLI validity> | Telephone number of caller<br>For an explanation of parameters see AT+CLIP |
| +CMT: <length><CR><LF<>pdu> | Direct output of the short message<br>For an explanation of parameters see AT+CNMI |
| +CMTI: <mem>,<index> | Indication that a new message has arrived<br>For an explanation of parameters see AT+CNMI |
| +COLP: <num>,<type>,,,<alpha> | Telephone number of called line<br>For an explanation of parameters see AT+COLP |
| +CREG: <stat> | Network registration<br>For an explanation of parameters see AT+CREG |
| +CSSI: <code1>[,[<index>][,<number>]]<br>+CSSU: <code2>[,[<index>][,<number>]] | Supplementary service intermediate/unsolicited result code<br>For an explanation of parameters see AT+CSSN |
| +CTZV: <tz> | Time Zone Changed indication<br>For an explanation of parameters see AT+CTZR |
| +CUSD: <m>[,<str>,<dcs>] | For Unstructured supplementary service data see AT+CUSD |
| ^SABD: <data> | For an explanation of parameters see AT^SABD |
| ^SACD: <data> | For an explanation of parameters see AT^SACD |
| ^SACM: <m> | Message indicating if ACM has reached the maximum value ACMmax<br>For an explanation of parameters see AT^SACM |
| ^SCKS: <m> | Message indicating whether card has been removed or inserted<br>For an explanation of parameters see AT^SCKS |
| ^SMGO: <mode> | SMS overflow indicator<br>For an explanation of parameters see AT^SMGO |
| ^SREM: <reminder>,<Id> | For an explanation of parameters see AT^SREM |
| ^SSTK: <data> | The user has selected a menu entry from a menu created by means of AT^SSTK |

| | |
|---|---|
| +VGS: <gain> | Speaker Volume indication used in Headset and Handsfree(Carkit) Bluetooth Profile<br>For an explanation of parameters see AT+VGS |

**Table 2-10: List of unexpected messages**

# 3 Appendix A

## 3.1 Factory settings made by AT&F

```
Reset pending locks (Phone Pin/Puk, Pin2/Puk2 ...)
which are given as answer to AT+CPIN?
ATS0=0
ATS3=13
ATS4=10
ATS5=8
ATS7=60
ATV1
ATE1
ATQ0
AT\Q3
AT&C1
AT&D2
ATX0
AT+VTD=1

AT+CSCS="GSM"
AT+CMEE=0
AT+CLIP=0
AT+COLP=0
AT+CPBS=SM (if available)
AT^SCKS=0
AT^SACM=0

AT+CRC=0
AT+CAOC=1
AT+CCWA=0
AT+CSSN=0,0
AT+CPOL=,2
AT+CMER=0,0,0,0,0
AT+CREG=0
AT+CMEC=0,0,0
AT+CRC=0
AT+COPS=0,0
The extended error report (AT+CEER) will be reset (0,0).

AT+CNMI=0,0,0,0,1
AT+CMPS=SM,SM,SM
AT^SMGO=0
AT+CSMS=0
AT+CSCB=0
If GPRS is supported, the following GPRS commands are affected as well:
AT+CGAUTO=0
AT+CR=0
AT+CGEREP=0,0
AT+CGREG=0

AT^SABD=0
AT^SACD=0
```

## 3.2 Features of the Telephone book memory

Table 3-1 lists the features supported by the telephone book memory.

| Name | Description | Category | Access | Write allowed ? | How to delete completely |
|---|---|---|---|---|---|
| FD | Fix-dialing number (SIM fix-dialing telephone book) | 3GPP TS 27.007 | AT+CPBS or AT^SPBS | PIN2 required | |
| SM | Abbreviate dialing number (SIM telephone book) | 3GPP TS 27.007 | AT+CPBS or AT^SPBS | device code required if FDN replacement is active | |
| DC (MD) | Mobile last dialing number (last number redial memory; only if "LD" is not available) | 3GPP TS 27.007 | AT+CPBS or AT^SPBS | - | AT^SDLD |
| ON (OW) | Own Numbers (SIM own telephone numbers) | 3GPP TS 27.007 (BenQ) | AT+CPBS (historical) | x | |
| LD | SIM last dialing number (last number redial memory on SIM) | 3GPP TS 27.007 | AT+CPBS or AT^SPBS | - | AT^SDLD |
| ME | Mobile-equipment telephone book (ME dialing numbers) | 3GPP TS 27.007 | AT+CPBS or AT^SPBS | device code required if FDN replacement is active | |
| BD | Barred dialing numbers (blocked numbers) | BenQ | AT^SPBS | - | |
| SD | Service dialing numbers (Service numbers) | BenQ | AT^SPBS | - | |
| MC (MS) | Missed dialing numbers (unanswered calls) | 3GPP TS 27.007 (BenQ) | AT+CPBS, AT^SPBS | - | |
| RC (CD) | Callback dialing numbers (answered calls) | 3GPP TS 27.007 (BenQ) | AT+CPBS, AT^SPBS | - | |
| BL | Blacklist of dialing numbers (numbers that are blocked for a certain time in order to prevent continuous accesses from remote control) | BenQ | AT^SPBS | - | |
| MB | Mailbox dialing numbers (network-operator mailbox) | BenQ | AT^SPBS | - | |
| CS | Common sortable numbers (sorted combination of SM, ME, FD) | BenQ | AT^SPBS, AT^SPBC, AT^SPBG | - | |
| RD | Red book numbers (CS entries with ! at the end of the name portion) | BenQ | AT^SPBS, AT^SPBC, AT^SPBG | - | |

**Table 3-1: Features of the telephone book memory**

## 3.3 Writing to the FDN Phonebook / FDN Replacement

Writing to the fixed-dialing number phonebook is protected by PIN2. A sample Write sequence (to e.g. record 5) is provided below:

| AT Command | Comment |
|---|---|
| AT+CMEE=2<br>OK | Activate expanded error message |
| AT+CPBS=?<br>+CPBS: (“FD”,”SM”,”LD”)<br>OK | Listing of available telephone books |
| AT+CPBS=”FD”,”12345678”<br>OK | Selection of the FDN telephone book and provide PIN2 with the same command |
| AT+CPBW=5,"1234",,”test”<br>+CME ERROR: SIM PIN2 REQUIRED<br>AT+CPIN?<br>+CPIN: SIM PIN2<br>AT+CPIN="12345678"<br>OK | A Write to record 5 is attempted<br>PIN2 is required for this purpose<br>Query of the PIN status<br>PIN2 is to be entered<br>Input of PIN2 |
| AT+CPBW=5,"1234",,”test”<br>OK | A Write to record 5 is attempted...<br>PIN2 remains active as long as you use the commands<br>`AT+CPIN, AT+CPBS, AT+CPBR, AT+CPBW, AT+CACM, AT+CAMM, AT+CPUC or AT^SPIC, AT^SPBS, AT^SPBC, AT^SPBG,:`<br>If you use other commands or if none of the above commands are executed within five minutes, PIN2 is no longer valid. |
| AT+CPBW=6,"5678",,”new test”<br>OK | A Write to record 6 is attempted... |

In addition, if there is no FDN phonebook available on the SIM, it is possible to activate a feature which activates an FDN-like behavior for the ”SM” and ”ME” phonebooks (FDN replacement). (Currently this feature can only be activated via the MMI lock/device lock/excluding telephone book.)
In this case, the Write to the ”SM” and ”ME” phonebooks is ensured by the device code (PH-SIM PIN and PH-SIM PUK, respectively).
The sequence for entering the device code is analogous to the above example.

## 3.4 How to use special characters in certain commands ( e. g., AT+CPBW)

String parameters like <text> in certain commands (like, for instance, AT+CPBW) should be entered using quotation marks `"` (Ascii=Windows=GSM =0x22), since the following problems may occur if the quotation marks are omitted:

- SPACEs (Space, Blank, Ascii=Windows=GSM =0x20) are skipped.
  E.g. at+cpbw=1,"123",,K. H. results in "K.H." ☹
  at+cpbw=1,"123",,"K. H."spaces are retained ☺

- Commas (`,`) (Ascii=Windows=GSM =0x2C) and semicolons (`;`)(Ascii=Windows=GSM =0x3B) are prohibited and must not be used in <text>, because they are used as separators between parameters and commands.
  E.g. at+cpbw=1,"123",,Kurz,Helmut results in ERROR ☹
  at+cpbw=1,"123",,"Kurz,Helmut" ☺

To be able, however, to enter quotation marks (and some other special characters) in string parameters you will have to use the Escape character (hex value 0x5c). While “0x5c” denotes the backslash (`\`) in the ASCII character set (Ascii=Windows=0x5C), in the GSM character set “0x5C” denotes the `Ö` character.

The escape sequence thus has the following structure:

- The sequence begins with the escape character 0x5C (ASCII=Windows=`\', GSM =`Ö`)
  - The special character follows and is entered as a 2 Byte representation of the GSM chacter set value . e.g. the 2 Byte representation of the `@` (GSM =0x**00**) is `**00**`

Table 3-2 lists the special characters that should be entered using the escape sequence:

| GSM Char | GSM hex value | ASCII char. | 3 byte esc. seq.(hex) | Note |
|---|---|---|---|---|
| Ö | 0x5C | \ | 0x5C 0x35 0x43 | Backslash |
| " | 0x22 | “ | 0x5C 0x32 0x32 | String delimiter |
| ò | 0x08 | BSP | 0x5C 0x30 0x38 | Backspace |
| @ | 0x00 | NULL | 0x5C 0x30 0x30 | GSM NULL |

**Table 3-2: Using escape characters in commands**

Examples of using escape characters in GSM commands are listed in Table 3-3:

| Desired phonebook entry | <text> in AT+CPBW command (hex) |
|---|---|
| Ölhändler | 0x22 0x5C 0x35 0x43 0x6C 0x68 0x7B 0x6E 0x64 0x6C 0x65 0x72 0x22 |
| “Eddi" Kurz | 0x22 0x5C 0x32 0x32 0x45 0x64 0x64 0x69 0x5C 0x32 0x32 0x20 0x4B 0x75 0x72 0x7A 0x22 |
| Oòo | 0x22 0x4F 0x5C 0x30 0x38 0x6F 0x22 |
| @Adr. | 0x22 0x5C 0x30 0x30 0x41 0x64 0x72 0x2E 0x22<br>[no problems with strlen()] |
| | 22 00 41 64 72 2E 22<br>(may cause problems with strlen() in application) |

**Table 3-3: Using escape characters in GSM commands**

Note:
When reading phonebook records, there is NO replacement. Every character will appear in normal GSM character set notation (like the left column in the example above).

## 3.5 S Registers

This section provides the meanings of S registers used in the modem:

| S Register | Function (default values in bold type) | | |
|---|---|---|---|
| S 0 | The number of rings before the call is answered<br>default: 0 (i. e. does not answer) | | |
| S 3 | Command termination character and first character of response trailer (**CR**) | | |
| S 4 | Second character of response trailer (**LF**) | | |
| S 5 | Editing character; erases the previous character (**BS**) | | |
| S 6 | Escape character | | |
| S 7 | Wait for carrier after dialing (in seconds).<br>default: 60 | | |
| S 8 + S 9 | No action | | |
| S 10 | Delay between Lost Carrier and Hang up in 0.1 sec. (Default 2 = 200ms) | | |
| S 11 .. S17 | No action | | |
| S 18 | Bit 0 | 0 | No GSM exit cause |
| | | 1 | With GSM exit cause |
| | Bit 1 | 0 | No SMS indication “+C” |
| | | 1 | With incoming SMS indication “+C” |
| S 19 ... S99 | No action | | |

**Table 3-4: S-Registers**

Only the following S registers can be modified by means of the corresponding ATSn=x command (where n denotes the number of the register): S0, S3, S5, S6, S7, S8, S10; S18.
All the other S registers are used internally and thus read-only.

The contents of a single S register can be displayed via the ATSn? command (where n denotes the number of the register). It is not possible to have the contents of multiple registers displayed at the same time.

## 3.6 Circuit assignments

The following circuits are assigned at the mobile connector to support the exchange of data:

| Name: | Direction | Function | ITU V24 Circuit |
|---|---|---|---|
| SG | | Signal Ground | 102 |
| TxD | DTE to DCE | Transmitted Data | 103 |
| RxD | DCE to DTE | Received Data | 104 |
| CTS | DCE to DTE | Clear To Send | 106 |
| DCD | DCE to DTE | Data Carrier Detect | 109 |

# 4 Appendix B

## 4.1 Example for creating / retrieving an organizer entry

**-vcs object which has to be uploaded:**

BEGIN:VCALENDAR
VERSION:1.0
BEGIN:VEVENT
CATEGORIES:ANNIVERSARY
DTSTART:19991213T100000
DESCRIPTION:W. von BenQ
END:VEVENT
END:VCALENDAR

**-hexadecimal representation of this object:**
424547494E3A5643414C454E4441520D0A56455253494F4E3A312E300D0A424547494E3A564556454E540
D0A43415445474F524945533A414E4E49564552534152590D0A445453544152543A31393939313231335431
30303030300D0A444553435249505449 4F4E3A572E20766F6E205369656D656E730D0A454E443A56455645
4E540D0A454E443A5643414C454E4441520D0A

**-upload of an entry on record 20**

at^sbnw="vcs",20,1,3<CR>
<CR><LF> > <Space>
424547494E3A5643414C454E4441520D0A56455253494F4E3A312E300D0A424547494E3A564556454E540
D0A43415445474F<Ctrl-Z>
<CR><LF>OK<CR><LF>

at^sbnw="vcs",20,2,3<CR>
<CR><LF> > <Space>
524945533A414E4E49564552534152590D0A445453544152543A313939393132313354313030303030300D0A4
4455343524950<Ctrl-Z>
<CR><LF>OK<CR><LF>

at^sbnw="vcs",20,3,3<CR>
<CR><LF> > <Space>
54494F4E3A572E20766F6E205369656D656E730D0A454E443A564556454E540D0A454E443A5643414C454
E4441520D0A<Ctrl-Z>
<CR><LF>OK<CR><LF>

All characters are answered with an echo. Echoing can be switched off via „ATE0“.
In this example the organizer entry is uploaded in 50-byte packets (100 input characters in every PDU).
Characters in blue characterize the responses of the mobile.

**-interrogation of the current <type>,<subtype>,<actNumber>,<maxNumber>**

at^sbnw?<CR>
<CR><LF>^SBNW: "vcs",20,2,3<CR><LF>
<CR><LF>OK<CR><LF>

description: The current object which is uploaded is an VCS object.
It has to be stored on record 20.
2 of 3 packets have already been uploaded.

**-deleting of record 20**

at^sbnw="vcs",20,0<CR>
<CR><LF>OK<CR><LF>

**-download entry from record 20**

at^sbnr="vcs",20<CR>
<CR><LF>^SBNR: <space>"vcs",20,1,1<CR><LF>
424547494E3A5643414C454E4441520D0A56455253494F4E3A312E300D0A424547494E3A564556454E540
D0A43415445474F524945533A414E4E49564552534152590D0A445453544152543A31393939313231335431
30303030300D0A444553435249505449 4F4E3A572E20766F6E205369656D656E730D0A454E443A56455645
4E540D0A454E443A5643414C454E4441520D0A<CR><LF>
<CR><LF>OK<CR><LF>

The mobile divides the record entry into packets of 176 byte (=176*2 characters).

**-Download of an empty record 20**

at^sbnr="vcs",20<CR>
<CR><LF>OK<CR><LF>

**-Test command of AT^SBNW**

at^sbnw=?<CR>
<CR><LF>^SBNW: ("bmp",(0)),(„mid“,(0)),(„vcs“,(1-30)) <CR><LF>
<CR><LF>OK<CR><LF>

description: The mobile supports bitmaps of subtype `0`, midi obects of subtype 0 and vcs objects of the subtypes `1` to `30`.

## 4.2 Examples and hints for using GPRS commands

### 4.2.1 Defining and using a Context Definition Id (CID):

Whenever a CID is used as a parameter for a GPRS command the CID has to be defined first via the AT+CGDCONT or, for secondary contexts, AT+CGDSCONT command.
To retrieve the parameter of a CID the AT+CGDCONT/AT+CGDSCONT read option must be used.
If the response of AT+CGDCONT/AT+CGDSCONT? is OK only, no CID is defined.

AT+CGDCONT?
OK // no CID defined

All parameters of the CID are initiated by NULL or non-existing values, and the CID itself is set to undefined.
To define a CID use the AT+CGDCONT command with at least one CID parameter.

The present version of the mobile software supports CID 1, CID 2 and CID 3 by using the AT+CGDCONT and the AT+CGDSCONT command.
All three CIDs could be defined as a primary or a secondary context.
Furthermore the CIDs are global within the mobile. That means that it is possible to define and activate a context using the cable and to deactivate and reset this context using another interface (e.g the IrDa).

e.g. for primary context definition and activation

```
AT+CGDCONT=1,IP
OK                          // defines CID 1 and sets the PDP type to IP
                            // access point name and IP address aren't set

AT+CGDCONT=2,IPV6, "APN", 111.222.123.234. 111.222.123.234.111.222.123.234.111.222.123.234
OK                          // defines CID 2 and sets PDP type IP version 6 , APN and IP addr

AT+CGDCONT=2,IP, "internet.t-d1.gprs", 111.222.123.234,1,1
OK                          // defines and overwrites CID 2 and sets PDP type, APN and IP addr and
                            manufacturer preferred compression for header and data
```

A subsequent read command will return

```
AT+CGDCONT?
+CGDCONT: 1,"IP","","",0,0
+CGDCONT:2,”IP”,"internet.t-d1.gprs",”111.222.123.234”,1,1
OK

AT+CGDCONT=1
OK                  // sets the CID 1 to be undefined
```

A subsequent read command will return

```
AT+CGDCONT?
+CGDCONT:2,”IP”,"internet.t-d1.gprs",”111.222.123.234”,1,1
OK
```

For secondary context definition and activation

```
// precondition: define and activate a primary context first
AT+CGDCONT=1,IP, "internet.t-d1.gprs", 111.222.123.234
OK                          // defines CID 1 as primary
AT+CGACT=1,1                // activate primary context
OK

AT+CGDSCONT=2,1,0,0// define CID 2 as a secondary context of CID 1
OK                          // without header and without data compression

AT+CGACT=1,2                // activates the CID 2 (secondary)
OK
```

The activation of a secondary context depends on network support.

### 4.2.2 Defining Quality of service for a CID

Quality of Service (QoS) is a special parameter of a CID which again consists of several parameters.
The QoS consists of

- the precedence class
- the delay class
- the reliability class
- the peak throughput class
- the mean throughput class

and is subdivided into "requested QoS" and "minimum acceptable QoS".

All parameters of the QoS are initiated by default to the "network subscribed value (= 0)", but the QoS itself is set to undefined. Use the AT+CGQREQ or AT+CGQMIN command to define a QoS.
e.g.:

```
AT+CGQREQ=1,2
OK              // overwrites the precedence class of QoS of CID 1 and sets
                // the QoS of CID 1 to be present

A following read command will response
AT+CGQREQ?
+CGQREQ: 1,2,0,0,0,0
OK                  // all QoS values of CID 1 are set to network subscribed
                    // except precedence class which is set to 2

AT+CGQREQ=1
OK                  // set the QoS of CID 1 to not present
```

The commands

AT+CGEQMIN and AT+CGEQREQ (Minimum and Requested 3G Quality of Service Profile) have to used in the same manner and have the same behaviour. The 3G-QoS consists of the following parameter:

- 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

It is possible to define a 3G-QoS in addition to an already defined QoS (older release).

AT+CGEQREQ=1,4,8640,0,63,576,2,1520,”2E1”,”5E7”,3,4000
OK // defines a 3G-QoS using all parameters

After defining a CID and its QoS it could be activated. To activate a CID use

AT+CGACT=1,2
OK // activate CID 2

If the CID is already active, the mobile immediately returns OK.

If no CID is given, all CIDs defined will be activated by means of
AT+CGACT = // NO CID and NO STATE given
OK // all defined CIDs will be activated

If no CID is defined the mobile returns +CME ERROR: invalid index
Remark: If the mobile is NOT attached via AT+CGATT=1 before activating, the attach is automatically done by means of the AT+CGACT command.

After a CID has been defined and activated, it can be used using AT commands as in the following example:

AT+CGDATA=PPP,1
CONNECT // the mobile is connected using the parameters of CID 1

AT+CDATA=
CONNECT // the mobile is connected using default parameter

The mobile supports Layer 2 Protocol (L2P) PPP only.
Remark: If the mobile is NOT attached by means of AT+CGATT=1 and if the CID is NOT activated before connecting, the attach and activate is automatically done by means of the AT+CGDATA command.
Example to define a TFT for a CID
The handling and behaviour of a TFT is similar to the QoS, the only difference is that the CID has to be defined before the TFT:

Here are some examples to define a TFT:
AT+CGDCONT=1,IP, "internet.t-d1.gprs"

OK // define the context first

AT+CGTFT=1 // reset all TFT packet filter of CID 1
OK

AT+CGTFT=1,2,1 // set TFT filter 2 with eval. precedence index 2 for CID 1
OK

// set TFT filter 3 with all parameter of an IPv4 CID 1
AT+CGTFT=1,3,1,”123.124.125.126.233.234.235.236”,1,”2.655”,”0.65534”,”ABCDEF”,”0.255”
OK

Remark: It is possible to change the QoS and TFT parameter while a context is active or online. The new values are temporary stored in the ME and take effect if the context is activated next time or using the AT+CGCMOD command.

## 4.3 The GPRS dial command ATD

For more detailed information see [2].

As an alternative to using the GPRS-AT commands it is possible to connect to a GPRS network by using the dial command "atD".

There are two GPRS Service Codes for the ATD command. Values 98 and 99.
e. g.:

```
ATD*99#
CONNECT                 // establish a connection via service code 99


ATD*99*123.124.125.126*PPP*1#
CONNECT                 // establish a connection via service code 99, IP address 123…
                        //and L2P = PPP and using CID 1.
                        // The CID has to be defined by means of AT+CGDCONT


ATD*99**PPP#
CONNECT                 // establish a connection via service code 99 and L2P = PPP


ATD*99***1#
CONNECT                 // establish a connection via service code 99 and using CID 1


ATD*99*PPP*1#
CONNECT                 // establish a connection via service code 99 and L2P = PPP and
                        // using CID 1. The CID has to be defined by means of AT+CGDCONT


ATD*98#
CONNECT                 // establish an IP connection via service code 98

ATD*98*1#
CONNECT                 // establish an IP connection via service code 98 using CID 1
                        // The CID has to be defined by means of AT+CGDCONT
```

# 5 Appendix C

## 5.1 Enum E_RegistryHMIKeys

```
typedef enum
{
   eRegSkin_Start = 0,

   // - Color Skin ----------------------------------------------------------------------------------------
   eRegSkin_ColorControls,                ///< Index   1: Color scheme (only text colors)
   eRegSkin_HeadlineFullscreenBgImage,     ///< Index   3: Headline background picture (full-screen)
   eRegSkin_HeadlineStandardBgImage,       ///< Index   4: Headline background picture (default)
   eRegSkin_BodyStandardBgImage,           ///< Index   5: Body background picture (default)
   eRegSkin_BodyTabBgImage,                ///< Index   6: Body background picture (tabulator)
   eRegSkin_BottomFullscreenBgImage,       ///< Index   7: Bottom background picture (full-screen)
   eRegSkin_BottomStandardBgImage,         ///< Index   8: Bottom background picture (default)
   eRegSkin_PopupFeedbackBgImage,          ///< Index  10: Popup background picture (feedback)
   eRegSkin_PopupOptionsBgImage,           ///< Index  11: Popup background picture (options)
   eRegSkin_Selection1LineBgImage,         ///< Index  12: Selection background picture (1 line)
   eRegSkin_Selection2LineBgImage,         ///< Index  13: Selection background picture (2 line)
   eRegSkin_Selection3LineBgImage,         ///< Index  14: Selection background picture (3 line)
   eRegSkin_SelectionIconOnlyBgImage,      ///< Index  15: Selection background picture (icon only)
   eRegSkin_PopupSearchLineBgImage,        ///< Index  16: Search field line popup background picture
   eRegSkin_PopupQuickAccessFieldBgImage,  ///< Index  17: Quick access field popup background picture
   eRegSkin_ProgressStatusbarImage,        ///< Index  18: Progress/status bar picture
   eRegSkin_TabSelectedBgImage,            ///< Index  19: Tabulator background picture (selected)
   eRegSkin_TabUnselectedBgImage,          ///< Index  20: Tabulator background picture (unselected)
   eRegSkin_ExternalDisplayBgImage,        ///< Index  21: External display background picture
   eRegSkin_End,                           ///< Index  22

   // - Animations/Images (Graphics), which are available by setup menu (partly not) -------------------------
   eRegGraph_Start = 100,
   eRegGraph_Wallpaper,                    ///< Index 101: Wallpaper
   eRegGraph_Logo,                         ///< Index 102: Provider-Logo
   eRegGraph_Startup,                      ///< Index 103: Mobile startup animation
   eRegGraph_Shutdown,                     ///< Index 104: Mobile shutdown animation
   eRegGraph_NetSearch,                    ///< Index 105: Net search animation
   eRegGraph_Preview,                      ///< Index 106: Preview animation
   eRegGraph_InsertSim,                    ///< Index 107: Insert Sim animation
   eRegGraph_Wait,                         ///< Index 108: Wait animation
   eRegGraph_PinInput,                     ///< Index 109: Pin input animation
   eRegGraph_Screensaver,                  ///< Index 110: Screensaver
   eRegGraph_ScreensaverType,              ///< Index 111: Screensaver type
   eRegGraph_Distinctive_Face,             ///< Index 112: Calling face no Group
   eRegGraph_Distinctive1_Face,            ///< Index 113: Calling face Group 1
   eRegGraph_Distinctive2_Face,            ///< Index 114: Calling face Group 2
   eRegGraph_Distinctive3_Face,            ///< Index 115: Calling face Group 3
   eRegGraph_Distinctive4_Face,            ///< Index 116: Calling face Group 4
   eRegGraph_Distinctive5_Face,            ///< Index 117: Calling face Group 5
   eRegGraph_Distinctive6_Face,            ///< Index 118: Calling face Group 6
   eRegGraph_Distinctive7_Face,            ///< Index 119: Calling face Group 7
   eRegGraph_Distinctive8_Face,            ///< Index 120: Calling face Group 8
   eRegGraph_Distinctive9_Face,            ///< Index 121: Calling face Group 9
   eRegGraph_Distinctive_Video,            ///< Index 122: Calling video no Group
   eRegGraph_Distinctive1_Video,           ///< Index 123: Calling video Group 1
   eRegGraph_Distinctive2_Video,           ///< Index 124: Calling video Group 2
   eRegGraph_Distinctive3_Video,           ///< Index 125: Calling video Group 3
```

```
eRegGraph_Distinctive4_Video,        ///< Index 126: Calling video Group 4
eRegGraph_Distinctive5_Video,        ///< Index 127: Calling video Group 5
eRegGraph_Distinctive6_Video,        ///< Index 128: Calling video Group 6
eRegGraph_Distinctive7_Video,        ///< Index 129: Calling video Group 7
eRegGraph_Distinctive8_Video,        ///< Index 130: Calling video Group 8
eRegGraph_Distinctive9_Video,        ///< Index 131: Calling video Group 9
eRegGraph_End,                   ///< Index 132

// - Sounds (Audio), which are available by setup menu ----------------------------------------------------
eRegAudio_Start = 200,
eRegAudio_Calls,                 ///< Index 201: Ring tone Calls
eRegAudio_Distinctive,             ///< Index 202: Ring tone Calls no Group
eRegAudio_Distinctive1,            ///< Index 203: Ring tone Calls Group 1
eRegAudio_Distinctive2,            ///< Index 204: Ring tone Calls Group 2
eRegAudio_Distinctive3,            ///< Index 205: Ring tone Calls Group 3
eRegAudio_Distinctive4,            ///< Index 206: Ring tone Calls Group 4
eRegAudio_Distinctive5,            ///< Index 207: Ring tone Calls Group 5
eRegAudio_Distinctive6,            ///< Index 208: Ring tone Calls Group 6
eRegAudio_Distinctive7,            ///< Index 209: Ring tone Calls Group 7
eRegAudio_Distinctive8,            ///< Index 210: Ring tone Calls Group 8
eRegAudio_Distinctive9,            ///< Index 211: Ring tone Calls Group 9
eRegAudio_Appointments,              ///< Index 212: Ring tone Appointments
eRegAudio_Messages,                ///< Index 213: Ring tone Messages
eRegAudio_AlarmClock,              ///< Index 214: Ring tone Alarm Clock
eRegAudio_InstantMessaging,          ///< Index 215: Ring tone Instant Messaging
eRegAudio_Games,                 ///< Index 216: Ring tone Games
eRegAudio_Startup,               ///< Index 217: Ring tone mobile startup
eRegAudio_Shutdown,                ///< Index 218: Ring tone mobile shutdown
eRegAudio_OpenSlider,              ///< Index 219: Ring tone Open Slider
eRegAudio_CloseSlider,             ///< Index 220: Ring tone Close Slider
eRegAudio_CallLine1,               ///< Index 221: Ring tone unknown incoming call (for primary number)
eRegAudio_CallLine2,               ///< Index 222: Ring tone unknown incoming call for secondary number (E-Plus only)
eRegAudio_PTTRingTone,               ///< Index 223: Ring tone Push to talk Over Cellular
eRegAudio_OpenClamshell,             ///< Index 224: Ring tone Open Clamshell
eRegAudio_CloseClamshell,            ///< Index 225: Ring tone Close Clamshell
eRegAudio_End,                   ///< Index 226

// - Special key words, which are not available by setup menu ------------------------------------------
eRegSpecial_Start = 300,
eRegSpecial_CameraClick,             ///< Index 301: Ring tone Camera Click
eRegSpecial_BrowserBookmarks,        ///< Index 302: Browser bookmarks
eRegSpecial_MainMenuConfiguration,     ///< Index 303: Main menu configuration
eRegSpecial_MainMenu1Icon,           ///< Index 304: Main menu 1 icon
eRegSpecial_MainMenu2Icon,           ///< Index 305: Main menu 2 icon
eRegSpecial_MainMenu3Icon,           ///< Index 306: Main menu 3 icon
eRegSpecial_MainMenu4Icon,           ///< Index 307: Main menu 4 icon
eRegSpecial_MainMenu5Icon,           ///< Index 308: Main menu 5 icon
eRegSpecial_MainMenu6Icon,           ///< Index 309: Main menu 6 icon
eRegSpecial_MainMenu7Icon,           ///< Index 310: Main menu 7 icon
eRegSpecial_MainMenu8Icon,           ///< Index 311: Main menu 8 icon
eRegSpecial_MainMenu9Icon,           ///< Index 312: Main menu 9 icon
eRegSpecial_MainMenu10Icon,          ///< Index 313: Main menu 10 icon
eRegSpecial_MainMenu11Icon,          ///< Index 314: Main menu 11 icon
eRegSpecial_MainMenu12Icon,          ///< Index 315: Main menu 12 icon
eRegSpecial_MainMenu1Animation,        ///< Index 316: Main menu 1 animation
eRegSpecial_MainMenu2Animation,        ///< Index 317: Main menu 2 animation
eRegSpecial_MainMenu3Animation,        ///< Index 318: Main menu 3 animation
eRegSpecial_MainMenu4Animation,        ///< Index 319: Main menu 4 animation
eRegSpecial_MainMenu5Animation,        ///< Index 320: Main menu 5 animation
eRegSpecial_MainMenu6Animation,        ///< Index 321: Main menu 6 animation
eRegSpecial_MainMenu7Animation,        ///< Index 322: Main menu 7 animation
eRegSpecial_MainMenu8Animation,        ///< Index 323: Main menu 8 animation
```

```
eRegSpecial_MainMenu9Animation,        ///< Index 324: Main menu 9 animation
eRegSpecial_MainMenu10Animation,       ///< Index 325: Main menu 10 animation
eRegSpecial_MainMenu11Animation,       ///< Index 326: Main menu 11 animation
eRegSpecial_MainMenu12Animation,       ///< Index 327: Main menu 12 animation
eRegSpecial_PositiveFeedbackIcon,      ///< Index 328: Positive feedback icon
eRegSpecial_NegativeFeedbackIcon,      ///< Index 329: Negative feedback icon
eRegSpecial_QuestionFeedbackIcon,      ///< Index 330: Question feedback icon
eRegSpecial_WarningFeedbackIcon,       ///< Index 331: Warning feedback icon
eRegSpecial_HintFeedbackIcon,          ///< Index 332: Hint feedback icon
eRegSpecial_ApplicationGame,           ///< Index 333: Application/Game
eRegSpecial_ThumbnailIcon,             ///< Index 334: Thumbnail icon
eRegSpecial_LargeFont,                 ///< Index 335: Large font
eRegSpecial_MediumFont,                ///< Index 336: Medium font
eRegSpecial_SmallFont,                 ///< Index 337: Small font
eRegSpecial_LargeDigitFont,            ///< Index 338: Large digit font
eRegSpecial_SendAnimation,             ///< Index 339: Send animation
eRegSpecial_ReceiveAnimation,          ///< Index 340: Receive animation
eRegSpecial_SendReceiveAnimation,      ///< Index 341: Send - Receive animation
eRegSpecial_End,                       ///< Index 342

// - Theme ----------------------------------------------------------------------------------------
eRegTheme_Start = 400,
eRegTheme,                             ///< Index 401: Name of the active theme
eRegTheme_InstallPath,                 ///< Index 402: Installation path of the active theme
eRegTheme_End,                         ///< Index 403

// - Avatar ---------------------------------------------------------------------------------------
eRegAvatar_Start = 500,
eRegAvatar,                            ///< Index 501: Name of the active avatar
eRegAvatar_InstallPath,                ///< Index 502: Installation path of the active avatar
eRegAvatar_Idle1,                      ///< Index 503: Idle1
eRegAvatar_Idle2,                      ///< Index 504: Idle2
eRegAvatar_Idle3,                      ///< Index 505: Idle3
eRegAvatar_Idle4,                      ///< Index 506: Idle4
eRegAvatar_Idle5,                      ///< Index 507: Idle5
eRegAvatar_Positive_Feedback,          ///< Index 508: Positive_Feedback
eRegAvatar_Negative_Feedback,          ///< Index 509: Negative_Feedback
eRegAvatar_Info_Feedback,              ///< Index 510: Info_Feedback
eRegAvatar_Question_Feedback,          ///< Index 511: Question_Feedback
eRegAvatar_Cross_Feedback,             ///< Index 512: Cross_Feedback
eRegAvatar_Help,                       ///< Index 513: Help
eRegAvatar_Help_Search,                ///< Index 514: Help_Search
eRegAvatar_Question_Name,              ///< Index 515: Question_Name
eRegAvatar_Question_Bday,              ///< Index 516: Question_Bday
eRegAvatar_PIN_Prompt,                 ///< Index 517: PIN_Prompt
eRegAvatar_PIN_Confirmation,           ///< Index 518: PIN_Confirmation
eRegAvatar_Switch_On,                  ///< Index 519: Switch_On
eRegAvatar_Switch_Off,                 ///< Index 520: Switch_Off
eRegAvatar_Screen_Saver1,              ///< Index 521: Screen_Saver1
eRegAvatar_Screen_Saver2,              ///< Index 522: Screen_Saver2
eRegAvatar_VIP_Cultivation,            ///< Index 523: VIP_Cultivation
eRegAvatar_Phone_Feature,              ///< Index 524: Phone_Feature
eRegAvatar_Christmas,                  ///< Index 525: Christmas
eRegAvatar_Santa_Claus,                ///< Index 526: Santa_Claus
eRegAvatar_Valentine_Day,              ///< Index 527: Valentine_Day
eRegAvatar_Halloween,                  ///< Index 528: Halloween
eRegAvatar_Chinese_New_Year,           ///< Index 529: Chinese_New_Year
eRegAvatar_Birthday,                   ///< Index 530: Birthday
eRegAvatar_Users_Birthday,             ///< Index 531: Users_Birthday
eRegAvatar_Memo,                       ///< Index 532: Memo
eRegAvatar_Voice_Memo,                 ///< Index 533: Voice_Memo
eRegAvatar_Call_Reminder,              ///< Index 534: Call_Reminder
eRegAvatar_Meeting,                    ///< Index 535: Meeting
```

```
   eRegAvatar_SMS,                    ///< Index 536: SMS
   eRegAvatar_MMS,                    ///< Index 537: MMS
   eRegAvatar_Alarm_Clock,            ///< Index 538: Alarm_Clock
   eRegAvatar_Battery_Charging,       ///< Index 539: Battery_Charging
   eRegAvatar_Battery_Low,            ///< Index 540: Battery_Low
   eRegAvatar_Holiday,                ///< Index 541: Holiday
   eRegAvatar_Mute_Sound,             ///< Index 542: Mute_Sound
   eRegAvatar_Keypad_Lock,            ///< Index 543: Keypad_Lock
   eRegAvatar_Spare_1,                ///< Index 544: Spare_1
   eRegAvatar_Spare_2,                ///< Index 545: Spare_2
   eRegAvatar_Spare_3,                ///< Index 546: Spare_3
   eRegAvatar_Spare_4,                ///< Index 547: Spare_4
   eRegAvatar_Spare_5,                ///< Index 548: Spare_5
   eRegAvatar_Spare_6,                ///< Index 549: Spare_6
   eRegAvatar_Spare_7,                ///< Index 550: Spare_7
   eRegAvatar_Spare_8,                ///< Index 551: Spare_8
   eRegAvatar_Spare_9,                ///< Index 552: Spare_9
   eRegAvatar_Spare_10,               ///< Index 553: Spare_10

   // ----------------------------------------------------------------------------------------------------
   eRegAvatar_End                     ///< Index 554
} E_RegistryHMIKeys;
```

## 5.2 Enum E_AuMa_Purpose

```
typedef enum tag_AuMa_Purpose
{
   E_AUMA_PURPOSE_MINITEM=-1,                //DO NOT USE THIS AS A PURPOSE !!! ONLY FOR RANGE CHECKING !!!

   E_AUMA_PURPOSE_MTC=0,                     ///<Ring tone triggered by a MTC
   E_AUMA_PURPOSE_DISTRIBUTIONLIST_MTC,      ///<Ring tone triggered by a MTC for distribution list

   E_AUMA_PURPOSE_VOICECALL,                 ///<Voice call / voice channel

   E_AUMA_PURPOSE_PTT,                       ///<Ring tone triggered by PTT

   E_AUMA_PURPOSE_LOW_POWER,                 ///<Low-power sound


   E_AUMA_PURPOSE_SMS,                       ///<SMS notification
   E_AUMA_PURPOSE_DISTRIBUTIONLIST_SMS,      ///<Ring tone triggered by a SMS for distribution list
   E_AUMA_PURPOSE_MMS,                       ///<MMS notification
   E_AUMA_PURPOSE_CBS,                       ///<CBS notification
   E_AUMA_PURPOSE_IMPS,                      ///<IMPS notification
   E_AUMA_PURPOSE_EMAIL,                     ///<IMPS notification

   E_AUMA_PURPOSE_VOICEMEMO_RECORD,
   E_AUMA_PURPOSE_APPLICATION_RECORD,        ///<Used for Ring tone record or record from Java Applications


   E_AUMA_PURPOSE_ALARMCLOCK,                ///<Alarm clock
   E_AUMA_PURPOSE_ORGANIZER_ALARM,           ///<All kinds of organizer alarms

   E_AUMA_PURPOSE_VR,                        ///<Voice Recognition sounds

   E_AUMA_PURPOSE_APPLICATION_PLAYBACK,      ///<Other application sounds
   E_AUMA_PURPOSE_APPLICATION_BROWSER,       ///<application sound used by browser
   E_AUMA_PURPOSE_APPLICATION_VOLUME,        ///<application sound used by apbas for volume
   E_AUMA_PURPOSE_APPLICATION_AVATAR,        ///<application sound used by avatar
   E_AUMA_PURPOSE_APPLICATION_IDC,           ///<application sound used by Idle call
   E_AUMA_PURPOSE_APPLICATION_VOICE_MEMO,    ///<application voice memo record and playback
   E_AUMA_PURPOSE_APPLICATION_MPLAYER,       ///<application sound used by Media player
   E_AUMA_PURPOSE_APPLICATION_JAVA_GEN,      ///<application sound used by Java in general
   E_AUMA_PURPOSE_APPLICATION_JAVA_GAMES,    ///<application sound used by Java for games
   E_AUMA_PURPOSE_APPLICATION_MESSAGES,      ///<application sound used for embedded sound in messages
```

```
   E_AUMA_PURPOSE_PTT_SIGNAL,          ///<application sound used by PTT for signaling
   E_AUMA_PURPOSE_PTT_TALK,            ///<application sound used by PTT talk burst

   E_AUMA_PURPOSE_FAX_DATA,            ///<All Info Tones
   E_AUMA_PURPOSE_FAX_ALERT,           ///<All Key Tones

   E_AUMA_PURPOSE_STARTUP,             ///<application sound used by SoundAE for startup
   E_AUMA_PURPOSE_SHUTDOWN,            ///<application sound used by SoundAE for shutdown

   E_AUMA_PURPOSE_CAMERA_CLICK,        ///<Camera Click sounds
   E_AUMA_PURPOSE_FMRADIO,             ///<FM Radio
   E_AUMA_PURPOSE_SLIDER,              ///<Slider sound
   E_AUMA_PURPOSE_SLIDER_OPEN,         ///<Slider sound for Open
   E_AUMA_PURPOSE_SLIDER_CLOSE,        ///<Slider sound for Close


   E_AUMA_PURPOSE_SERVICE_TONES,       ///<All Service Tones


   E_AUMA_PURPOSE_INFO_TONES,          ///<All Info Tones
   E_AUMA_PURPOSE_KEY_TONES,           ///<All Key Tones


   E_AUMA_PURPOSE_CALLWAITING_TONES,   ///<Call Waiting Tones
   E_AUMA_PURPOSE_CONNECT_TONE,        ///<Connect Tone
   E_AUMA_PURPOSE_LOCAL_RINGING_TONE,  ///<Local Ringing Tones

   E_AUMA_PURPOSE_LIGHT_MISSED_EVENTS  ,   ///<Missed events used for light
   E_AUMA_PURPOSE_LIGHT_NET_SEARCH,    ///<net search used for light
   E_AUMA_PURPOSE_LIGHT_MEDIA_PLAYER,  ///<Media player used for light

   E_AUMA_PURPOSE_WAP_PUSH,
   E_AUMA_PURPOSE_COUNTDOWN_EXPIRED,
   E_AUMA_PURPOSE_VIDEO_CLICK,
   E_AUMA_PURPOSE_SMS_RING_ONLY,
   E_AUMA_PURPOSE_RING_ONLY,
   E_AUMA_PURPOSE_SILENT_MTC,
   E_AUMA_PURPOSE_LOW_POWER_INDICATION,


   E_AUMA_PURPOSE_MAXITEM              //DO NOT USE THIS AS A PURPOSE !!! ONLY FOR RANGE CHECKING !!!
} E_AuMa_Purpose;
```

## 5.3 typedef enum SAE_Event_definitions

### 5.3.1 Enums for S75, SL75, S68

```
typedef enum SAE_Event_definitions
{
   E_SAE_EVENT_DUMMY_MIN = INT_MIN,   ///< Dummy value to force the size of
                                      ///< this enum to the size of int, like
                                      ///< ANSI-C.
   E_SAE_EVENT_MTC_START_MARKER = 0,  ///< Dummy value to mark the starting of MTC events
   E_SAE_EVENT_MTC_LINE1 = E_SAE_EVENT_MTC_START_MARKER, ///< Call on line 1
   E_SAE_EVENT_MTC_LINE2,             ///< Call on line 2
   E_SAE_EVENT_MTC_PB,                ///< Phone/Addressbook call
   E_SAE_EVENT_MTC_AB_DISTINCTIVE1,   ///< Call adressbook group 1
   E_SAE_EVENT_MTC_AB_DISTINCTIVE2,   ///< Call adressbook group 2
   E_SAE_EVENT_MTC_AB_DISTINCTIVE3,   ///< Call adressbook group 3
   E_SAE_EVENT_MTC_AB_DISTINCTIVE4,   ///< Call adressbook group 4
   E_SAE_EVENT_MTC_AB_DISTINCTIVE5,   ///< Call adressbook group 5
   E_SAE_EVENT_MTC_AB_DISTINCTIVE6,   ///< Call adressbook group 6
   E_SAE_EVENT_MTC_AB_DISTINCTIVE7,   ///< Call adressbook group 7
   E_SAE_EVENT_MTC_AB_DISTINCTIVE8,   ///< Call adressbook group 8
```

```
   E_SAE_EVENT_MTC_AB_DISTINCTIVE9,   ///< Call adressbook group 9
   E_SAE_EVENT_RING_ONLY,             ///< MTC with sound only
   E_SAE_EVENT_SILENT_MTC,            ///< MTC effect for vibra and light
   E_SAE_EVENT_MTC_END_MARKER = E_SAE_EVENT_SILENT_MTC, ///< Dummy value to mark the ending of MTC events
   E_SAE_EVENT_MMS,                   ///< Incoming MMS
   E_SAE_EVENT_SMS,                   ///< Incoming SMS
   E_SAE_EVENT_CBS,                   ///< Incoming CBS
   E_SAE_EVENT_ALARM_CLOCK,           ///< Expired Alarm Clock
   E_SAE_EVENT_ORG_ALARM,             ///< Expired Organizer Alarm
   E_SAE_EVENT_POC_RINGER,            ///< Push to talk alarm
   E_SAE_EVENT_IMPS,                  ///< Chat Client , IMPS
   E_SAE_EVENT_EMAIL,                 ///< Incoming Email
   E_SAE_EVENT_STARTUP,               ///< Mobile startup event
   E_SAE_EVENT_SHUTDOWN,              ///< Mobile shutdown event
   E_SAE_EVENT_FAX_DATA,              ///< Fax Data
   E_SAE_EVENT_FAX_ALERT,             ///< Fax Alert
   E_SAE_EVENT_SLIDER_OPEN,           ///< Slider open (if supported)
   E_SAE_EVENT_SLIDER_CLOSE,          ///< Slider close (if supported)
   E_SAE_EVENT_CAMERACLICK,           ///< Cameraclick
   E_SAE_EVENT_VIDEOCLICK,            ///< Videoclick
   E_SAE_EVENT_LOWBAT,                ///< LowBat event
   E_SAE_EVENT_COUNTDOWN_EXPIRED,     ///< Countdown expired event
   E_SAE_EVENT_MISSED_EVENTS,         ///< When any missed event is indicated in idle mode
   E_SAE_EVENT_NET_SEARCH,            ///< When device is searching for a network
   E_SAE_EVENT_MEDIAPLAYER,           ///< When Media Player plays sound
   E_SAE_EVENT_CALL_WAITING,          ///< Used for Call waiting as an seperate event
   E_SAE_EVENT_WAP_PUSH_AUDIO,        ///< WAP PUSH event only audio
   E_SAE_EVENT_WAP_PUSH_EFFECT,       ///< WAP PUSH event only effect
   E_SAE_EVENT_SMS_RING_ONLY,         ///< SMS ringing only
   E_SAE_EVENT_LOWBAT_INDICATION,     ///< LowBat Indecation, comes as an warning tone
   E_SAE_EVENT_UNKNOWN,               ///< Unknown event
   E_SAE_EVENT_DUMMY_MAX = INT_MAX    ///< Dummy value to force the size of this enum to size of int, like
                                      ///< ANSI-C.
} E_SAE_Event;
```

### 5.3.2 Enums for EL71

```
typedef enum SAE_Event_definitions
{
   E_SAE_EVENT_DUMMY_MIN = INT_MIN,   ///< Dummy value to force the size of
                                      ///< this enum to the size of int, like
                                      ///< ANSI-C.
   E_SAE_EVENT_MTC_START_MARKER = 0,  ///< Dummy value to mark the starting of MTC events
   E_SAE_EVENT_MTC_LINE1 = E_SAE_EVENT_MTC_START_MARKER, ///< Call on line 1
   E_SAE_EVENT_MTC_LINE2,             ///< Call on line 2
   E_SAE_EVENT_MTC_PB,                ///< Phone/Addressbook call
   E_SAE_EVENT_MTC_AB_DISTINCTIVE1,   ///< Call adressbook group 1
   E_SAE_EVENT_MTC_AB_DISTINCTIVE2,   ///< Call adressbook group 2
   E_SAE_EVENT_MTC_AB_DISTINCTIVE3,   ///< Call adressbook group 3
   E_SAE_EVENT_MTC_AB_DISTINCTIVE4,   ///< Call adressbook group 4
   E_SAE_EVENT_MTC_AB_DISTINCTIVE5,   ///< Call adressbook group 5
   E_SAE_EVENT_MTC_AB_DISTINCTIVE6,   ///< Call adressbook group 6
   E_SAE_EVENT_MTC_AB_DISTINCTIVE7,   ///< Call adressbook group 7
   E_SAE_EVENT_MTC_AB_DISTINCTIVE8,   ///< Call adressbook group 8
   E_SAE_EVENT_MTC_AB_DISTINCTIVE9,   ///< Call adressbook group 9
   E_SAE_EVENT_MTC_DISTRIBUTION_LIST, ///< Distributiuon list
   E_SAE_EVENT_RING_ONLY,             ///< MTC with sound only
   E_SAE_EVENT_SILENT_MTC,            ///< MTC effect for vibra and light
   E_SAE_EVENT_MTC_END_MARKER = E_SAE_EVENT_SILENT_MTC, ///< Dummy value to mark the ending of MTC events
   E_SAE_EVENT_MMS,                   ///< Incoming MMS
   E_SAE_EVENT_SMS,                   ///< Incoming SMS
   E_SAE_EVENT_CBS,                   ///< Incoming CBS
   E_SAE_EVENT_ALARM_CLOCK,           ///< Expired Alarm Clock
   E_SAE_EVENT_ORG_ALARM,             ///< Expired Organizer Alarm
   E_SAE_EVENT_POC_RINGER,            ///< Push to talk alarm
   E_SAE_EVENT_IMPS,                  ///< Chat Client , IMPS
```

```
    E_SAE_EVENT_EMAIL,                ///< Incoming Email
    E_SAE_EVENT_STARTUP,              ///< Mobile startup event
    E_SAE_EVENT_SHUTDOWN,             ///< Mobile shutdown event
    E_SAE_EVENT_FAX_DATA,             ///< Fax Data
    E_SAE_EVENT_FAX_ALERT,            ///< Fax Alert
    E_SAE_EVENT_SLIDER_OPEN,          ///< Slider open (if supported)
    E_SAE_EVENT_SLIDER_CLOSE,         ///< Slider close (if supported)
    E_SAE_EVENT_CAMERACLICK,          ///< Cameraclick
    E_SAE_EVENT_VIDEOCLICK,           ///< Videoclick
    E_SAE_EVENT_LOWBAT,               ///< LowBat event
    E_SAE_EVENT_COUNTDOWN_EXPIRED,    ///< Countdown expired event
    E_SAE_EVENT_MISSED_EVENTS,        ///< When any missed event is indicated in idle mode
    E_SAE_EVENT_NET_SEARCH,           ///< When device is searching for a network
    E_SAE_EVENT_MEDIAPLAYER,          ///< When Media Player plays sound
    E_SAE_EVENT_CALL_WAITING,         ///< Used for Call waiting as an seperate event
    E_SAE_EVENT_WAP_PUSH_AUDIO,       ///< WAP PUSH event only audio
    E_SAE_EVENT_WAP_PUSH_EFFECT,      ///< WAP PUSH event only effect
    E_SAE_EVENT_SMS_RING_ONLY,        ///< SMS ringing only
    E_SAE_EVENT_LOWBAT_INDICATION,    ///< LowBat Indecation, comes as an warning tone
    E_SAE_EVENT_UNKNOWN,              ///< Unknown event
    E_SAE_EVENT_DUMMY_MAX = INT_MAX   ///< Dummy value to force the size of this enum to size of int, like
                                      ///< ANSI-C.
} E_SAE_Event;
```

# 6 Errors and Messages

This section provides information on the final result code of a command execution (+CMS ERROR: <err>) and indicates an error related to mobile equipment or network.

## 6.1 Summary of CME ERRORS (+CME ERROR) related to 3GPP TS 27.007

Table 6-1 lists the numbers and meaning of CME errors (+CMS ERROR: <err>) related to 3GPP TS 27.007 [15].
***Note**: Values smaller than 256 are reserved.*

| Code of <err> | Meaning |
|---|---|
| 0 | phone failure |
| 1 | no connection to phone |
| 2 | phone-adapter link reserved |
| 3 | Operation not allowed |
| 4 | Operation not supported |
| 5 | PH-SIM PIN required |
| 6 | PH-FSIM PIN required |
| 7 | PH-FSIM PUK required |
| 10 | SIM not inserted |
| 11 | SIM PIN required |
| 12 | SIM PUK required |
| 13 | SIM failure |
| 14 | SIM busy |
| 15 | SIM wrong |
| 16 | Incorrect password |
| 17 | SIM PIN2 required |
| 18 | SIM PUK2 required |
| 20 | Memory full |
| 21 | invalid index |
| 22 | not found |
| 23 | Memory failure |
| 24 | text string too long |
| 25 | invalid characters in text string |
| 26 | dial string too long |
| 27 | invalid characters in dial string |
| 30 | no network service |
| 31 | Network timeout |
| 32 | Network not allowed emergency calls only |
| 40 | Network personalization PIN required |
| 41 | Network personalization PUK required |
| 42 | Network subset personalization PIN required |
| 43 | Network subset personalization PUK required |
| 44 | service provider personalization PIN required |
| 45 | service provider personalization PUK required |
| 46 | Corporate personalization PIN required |
| 47 | Corporate personalization PUK required |
| 100 | Unknown |

| | |
|---|---|
| 103 | Illegal MS (#3) (Values in parentheses are GSM 04.08 cause codes, see [8].) |
| 106 | Illegal ME (#6) |
| 107 | GPRS services not allowed (#7) |
| 111 | PLMN not allowed (#11) |
| 112 | Location area not allowed (#12) |
| 113 | Roaming not allowed in this location area (#13) |
| 132 | service option not supported (#32) |
| 133 | requested service option not subscribed (#33) |
| 134 | service option temporarily out of order (#34) |
| 148 | unspecified GPRS error |
| 149 | PDP authentication failure |
| 150 | invalid mobile class |
| | |
| 256 | Operation temporarily not allowed |
| 257 | call barred |
| 258 | phone is busy |
| 259 | user abort |
| 260 | invalid dail string |
| 261 | Supplementary service not executed |
| 262 | SIM blocked |
| 263 | Supplementary service rejected |

**Table 6-1: CME ERRORS related to 3GPP TS 27.007**

## 6.2 Summary of CMS ERRORS (+CMS ERROR) related to 3GPP TS 27.005

Table 6-2 lists the numbers and meaning of CMS errors related to 3GPP TS 27.005 [14].

| <err> code | Meaning |
|---|---|
| **1** | Unassigned (unallocated) number |
| **8** | Operator determined barring |
| **10** | Call barred |
| **21** | Short message transfer rejected |
| **27** | Destination out of service |
| **28** | Unidentified subscriber |
| **29** | Facility rejected |
| **30** | Unknown subscriber |
| **38** | Network out of order |
| **41** | Temporary failure |
| **42** | Congestion |
| **47** | Resources unavailable, unspecified |
| **50** | Requested facility not subscribed |
| **69** | Requested facility not implemented |
| **81** | Invalid short message transfer reference value |
| **95** | Invalid message, unspecified |
| **96** | Invalid mandatory information |
| **97** | Message type non-existent or not implemented |
| **98** | Message not compatible with short message protocol state |
| **99** | Information element non-existent or not implemented |
| **111** | Protocol error, unspecified |
| **127** | Interworking, unspecified |
| **128** | Telematic interworking not supported |

| | |
|---|---|
| **129** | Short message Type 0 not supported |
| **130** | Cannot replace short message |
| **143** | Unspecified TP-PID error |
| **144** | Data coding scheme (alphabet) not supported |
| **145** | Message class not supported |
| **159** | Unspecified TP-DCS error |
| **160** | Command cannot be executed |
| **161** | Command unsupported |
| **175** | Unspecified TP-Command error |
| **176** | TPDU not supported |
| **192** | SC busy |
| **193** | No SC subscription |
| **194** | SC system failure |
| **195** | Invalid SME address |
| **196** | Destination SME barred |
| **197** | SM Rejected-Duplicate SM |
| **198** | TP-VPF not supported |
| **199** | TP-VP not supported |
| **208** | D0 SIM SMS storage full |
| **209** | No SMS storage capability in SIM |
| **210** | Error in MS |
| **211** | Memory Capacity Exceeded |
| **212** | SIM Application Toolkit Busy |
| **213** | SIM data download error |
| **255** | Unspecified error cause |
| **300** | ME failure |
| **301** | SMS service of ME reserved |
| **302** | Operation not allowed |
| **303** | Operation not supported |
| **304** | Invalid PDU mode parameter |
| **305** | Invalid text mode parameter |
| **310** | SIM not inserted |
| **311** | SIM PIN required |
| **312** | PH-SIM PIN required |
| **313** | SIM failure |
| **314** | SIM busy |
| **315** | SIM wrong |
| **316** | SIM PUK required |
| **317** | SIM PIN2 required |
| **318** | SIM PUK2 required |
| **320** | Memory failure |
| **321** | Invalid memory index |
| **322** | Memory full |
| **330** | SMSC address unknown |
| **331** | no network service |
| **332** | Network timeout |
| **340** | NO +CNMA ACK EXPECTED |
| **500** | Unknown error |
| **512** | User abort |

**Table 6-2: CMS ERRORS related to 3GPP TS 27.005**

## 6.3 GSM return values issued by AT+CEER

Table 6-7 lists the GSM return values issued by the AT+CEER command in the form <x>,<y>, where x indicates the type of the value returned and y denotes the reason why the call was terminated. Table 6-7 provides the values for the applications handled by AT+CEER (x values). For more detailed information on meaning of the y values see tables Table 6-8 through Table 6-13:

| Value | Meaning |
|---|---|
| 2 | GSM values for Radio Resource (see section 6.3.1) |
| 4 | GSM values for Mobility Manager (see section 6.3.2) |
| 8 | GSM values for Call Control (see section 6.3.3) |

**Table 6-3 GSM return values issued by AT+CEER**

### 6.3.1 Return values issued by AT+CEER for Radio Resource

| Value | Meaning |
|---|---|
| 0 | NORMAL EVENT |
| 1 | ABNORMAL RELEASE, UNSPECIFIED |
| 2 | ABNORMAL RELEASE, CHANNEL UNACCEPTABLE |
| 3 | ABNORMAL RELEASE, TIMER EXPIRED |
| 4 | ABNORMAL RELEASE, NO ACTIVITY ON RADIO PATH |
| 5 | PREEMPTIVE RELEASE |
| 6 | PREEMPTIVE RELEASE |
| 8 | HANDOVER IMPOSSIBLE, TA OUT OF RANGE |
| 9 | CHANNEL MODE UNACCEPTABLE |
| 10 | FREQUENCY NOT IMPLEMENTED |
| 12 | LOWER LAYER FAILURE |
| 65 | CALL ALREADY CLEARED |
| 95 | SEMANTICALLY INCORRECT MESSAGE |
| 96 | INVALID MANDATORY INFORMATION |
| 97 | MESSAGE TYPE NOT IMPLEMENTED |
| 98 | MESSAGE NOT COMP W. STATE |
| 99 | IE NOT IMPLMENTED |
| 100 | CONDITIONAL IE ERROR |
| 101 | NO CELL ALLOCATION AVAILABLE |
| 111 | PROTOCOL ERROR UNSPECIFIED |

**Table 6-4: Radio Resource return values issued by AT+CEER**

### 6.3.2 Return values issued by AT+CEER for Mobility Manager

| Value | Meaning |
|---|---|
| 2 | IMSI UNKNOWN IN HLR |
| 3 | ILLEGAL MS |
| 4 | IMSI UNKNOWN IN VLR |
| 5 | IMEI NOT ACCEPTED |
| 6 | ILLEGAL ME |
| 11 | PLMN NOT ALLOWED |
| 12 | LA NOT ALLOWED |
| 13 | ROAMING N. ALL. in this LA |
| 15 | NO SUITABLE CELLS in this LA |

| | |
|---|---|
| 17 | NETWORK FAILURE |
| 20 | MAC FAILURE (sent to network) |
| 21 | SYNCH FAILURE (sent to network) |
| 22 | CONGESTION |
| 23 | GSM auth. Unaccept. (sent to network, UMTS only) |
| 32 | SERVICE OPT. NOT SUPPORTED |
| 33 | REQ. SERVICE NOT SUBSCRIBED |
| 34 | SERV. TEMPOR. OUT OF ORDER |
| 38 | CALL CANNOT BE IDENTIFIED |
| 95 | SEMANTICALLY INCORRECT MESSAGE |
| 96 | INVALID MANDATORY INFORMATION |

**Table 6-5: Mobility Manager return values issued by AT+CEER**

### 6.3.3 Return values issued by AT+CEER for Call Control

| Value | Meaning |
|---|---|
| 1 | UNASSIGNED NUMBER |
| 3 | NO ROUTE TO DESTINATION |
| 6 | CHANNEL UNACCEPTABLE |
| 8 | OPERATOR DETERMINED BARRING |
| 16 | NORMAL CLEARING |
| 17 | USER BUSY |
| 18 | NO USER RESPONDING |
| 19 | USER ALERTING, NO ANSWER |
| 21 | CALL REJECTED |
| 22 | NUMBER CHANGED |
| 25 | PRE-EMPTION (sent to network) |
| 26 | NON SELECTED USER CLEARING |
| 27 | DESTINATION OUT OF ORDER |
| 28 | INCOMPLETE NUMBER |
| 29 | FACILITY REJECTED |
| 30 | RESPONSE TO STATUS ENQUIRY |
| 31 | NORMAL, UNSPECIFIED |
| 34 | NO CIRCUIT/CHANNEL AVAILABLE |
| 38 | NETWORK OUT OF ORDER |
| 41 | TEMPORARY FAILURE |
| 42 | SWITCHING EQUIPMENT CONGESTION |
| 43 | ACCESS INFORMATION DISCARDED |
| 44 | REQUESTED CHANNEL NOT AVAIL. |
| 47 | RESOURCES UNAVAILABLE, UNSPEC |
| 49 | QUALITY OF SERVICE UNAVAILABLE |
| 50 | REQ. FACILITY NOT SUBSCRIBED |
| 55 | INCOMING CALLS BARRED IN CUG |
| 57 | BEARER CAPABILITY NOT AUTH. |
| 58 | BEARER CAP. NOT PRES.AVAIL. |
| 63 | SERVICE OR OPTION NOT AVAIL. |
| 65 | BEARER SERVICE NOT IMPLEM. |
| 68 | ACM EQUAL OR GREATER ACM-MAX |
| 69 | REQ. FACILITY NOT IMPLEMENTED |
| 70 | ONLY RESTRICTED DIGITAL INFORMATION BEARER CAP. AVAIL. |
| 79 | SERVICE OR OPTION NOT IMPL. |

| | |
|---|---|
| 81 | INVALID TI |
| 87 | USER NOT MEMBER OF CUG |
| 88 | INCOMPATIBLE DESTINATION |
| 91 | INVALID TRANSIT NETWORK SELECTION |
| 95 | SEMANTICALLY INCORRECT MESSAGE |
| 96 | INVALID MANDATORY INFORMATION |
| 97 | MESSAGE TYPE NOT IMPLEMENTED |
| 98 | MESSAGE NOT COMP W. CC STATE |
| 99 | IE NOT IMPLMENTED |
| 100 | CONDITIONAL IE ERROR |
| 101 | MESSAGE NOT COMP W. CC STATE |
| 102 | RECOVERY ON TIMER EXPIRY |
| 111 | PROTOCOL ERROR, UNSPECIFIED |
| 127 | INTERWORKING, UNSPECIFIED |

**Table 6-6: Call control return values issued by AT+CEER**

## 6.4 GPRS return values issued by AT+CEER

Table 6-7 lists the GPRS return values issued by the AT+CEER command in the form <x>,<y>, where x indicates the type of the value returned and y denotes the reason why the call was terminated. Table 6-7 provides the values for the applications handled by AT+CEER (x values). For more detailed information on meaning of the y values see tables Table 6-8 through Table 6-13:

| Value | Meaning |
|---|---|
| 48 | GPRS Layer 3 Mobility Management (see section 6.4.1) |
| 50 | GSM values of Session Manager (see section 6.4.2) |
| 51 | Internal values of Session Manager (see section 6.4.3) |
| 241 | Internal values of GAPI (see section 6.4.4) |
| 242 | Internal values of Link Manager (see section 6.4.5) |
| 243 | Internal values of IP stack (see section 6.4.6) |

**Table 6-7 GPRS return values**

### 6.4.1 Return values issued by AT+CEER for GPRS Layer 3 Mobility Management

| Value | Meaning |
|---|---|
| 2 | IMSI is unknown in HLR |
| 3 | MS is illegal |
| 6 | ME is illegal |
| 7 | GPRS services not allowed |
| 8 | GPRS services not allowed in combination with non-GPRS services |
| 9 | MS cannot be identified |
| 10 | Implicit detachment |
| 11 | PLMN not allowed |
| 12 | Location area not allowed |
| 13 | Roaming not allowed in current location area |
| 14 | GPRS services not allowed in current PLMN |
| 16 | MSC temporarily unreachable |
| 17 | Network failure |
| 22 | Congestion |
| 48 – 63 | Retry upon entry into new cell low – high |

| | |
|---|---|
| 95 | Message semantically incorrect |
| 96 | Mandatory information invalid |
| 97 | Message type does not exist or is not implemented |
| 98 | Message type incompatible with protocol state |
| 99 | Information element does not exist or is not implemented |
| 100 | Conditional error |
| 101 | Message incompatible with protocol state |
| 111 | Unspecified protocol error |

**Table 6-8: Return values issued by AT+CEER for GPRS Layer 3 Mobility Management**

### 6.4.2 GSM return values issued by AT+CEER for Session Manager

| Value | Meaning |
|---|---|
| 25 | LLC or SNDCP failure |
| 26 | Insufficient resources |
| 27 | Missing or unknown APN |
| 28 | PDP address or type unknown |
| 29 | User authentication failed |
| 30 | Activation rejected by GGSN |
| 31 | Activation rejected for unspecified reason |
| 32 | Service option not supported |
| 33 | Requested service option not subscribed |
| 34 | Service option temporarily out of order |
| 35 | NSAPI already used |
| 36 | Regular deactivation |
| 37 | QoS not accepted |
| 38 | Network failure |
| 39 | Reactivation required |
| 81 | Invalid transaction identifier value |
| 95 | Message semantically incorrect |
| 96 | Mandatory information invalid |
| 97 | Message type does not exist or is not implemented |
| 98 | Message type incompatible with protocol state |
| 99 | Information element does not exist or is not implemented |
| 100 | Conditional IE error |
| 101 | Message incompatible with protocol state |
| 111 | Unspecified protocol error |

**Table 6-9: GMM return values issued by AT+CEER**

### 6.4.3 Internal values of Session Manager issued by AT+CEER

| Value | Meaning |
|---|---|
| 3 | T3380 timer expired |
| 4 | DeactAct |
| 5 | DeactActReject |
| 6 | DeactActStaticPDPaddressCollision |
| 7 | Unspecified protocol error |

**Table 6-10: Internal values of Session Manager issued by AT+CEER**

### 6.4.4 Internal values GAPI issued by AT+CEER

| Value | Meaning |
|---|---|
| 0 | Regular deactivation of the call |
| 1 | Action temporarily not allowed |
| 2 | Wrong connection type |
| 3 | Specified data service profile invalid |
| 4 | PDP type or address is unknown |
| 255 | Undefined |

**Table 6-11: GAPI values issued by AT+CEER**

### 6.4.5 Internal values of Link Manager issued by AT+CEER

| Value | Meaning |
|---|---|
| 0 | Regular call deactivation |
| 1 | Action temporarily not allowed |
| 2 | Bearer invalid |
| 3 | Specified data service profile invalid |
| 4 | GPRS profile invalid |
| 5 | CSD profile invalid |
| 17 | Modem in use |
| 18 | Modem not responding |
| 19 | Modem error |
| 20 | Timeout while waiting for modem |
| 21 | Modem nocarrier |
| 22 | Modem no dialtone |
| 23 | Modem busy |
| 24 | Modem dial timeout |
| 25 | Modem call lost |
| 255 | Undefined |

**Table 6-12: LMAN return values issued by AT+CEER**

### 6.4.6 Internal values of IP stack issued by AT+CEER (ENIP_LOC_OWN)

| Value | Meaning |
|---|---|
| 0 | Regular call deactivation |
| 1 | LCP stopped |
| 255 | Undefined |

**Table 6-13: ENIP return values issued by AT+CEER**

## 6.5 List of keys implemented for AT+CKPD / AT^SKPD

The following keys are implemented for the AT+CKPD and AT^SKPD commands:

| Character (AT+CKPD) | key value (dec) (AT^SKPD) | Comment |
|---|---|---|
| # | 35 | Hash (number sign) |

| | | |
|---|---|---|
| % | 37 | Percent sign |
| * | 42 | asterisk |
| 0..9 | 48 .. 57 | number keys |
| : | | Colon; escape character for manufacturer specific keys |
| < | 61 | Left arrow |
| > | 62 | Right arrow |
| C/c | 10 | clear display (C/CLR) |
| E/e | 12 | connection end (END) |
| F/f | 26 | Navi centre |
| S/s | 11 | connection start (SEND) |
| V/v | 14 | Down arrow |
| W/w | | pause character |
| Y/y | 9 | delete last character (C) |
| [ | 1 | soft key 1 |
| ] | 4 | soft key 2 |
| ^ | 59 | Up arrow |
| | | |
| **BenQ specific keys** | | |
| + | | side key up with + sign |
| - | | side key down with - sign |
| M | | right side key |
| O/o | | short / operator key (planet with two arrows around) |
| X/x | | Hexanumeric string of all BenQ Keys |

## 6.6 Use of BenQ specific Key O/o

“:” following the CKPD command indicates the use of manufacturer specific keys. The new BenQ key O/o is defined to use the short key which is sometimes used in R65 e.g. the key under the navi in the S65 model.

A command could look like.

- AT+CKPD=:O <cr>
- AT+CKPD=”:O”<cr>
- AT+CKPD=:o <cr>
- AT+CKPD=”:o”<cr>

The short key will normaly call the browser menue by default but this behavior can be changed by the user

## 6.7 Use of BenQ specific Key X/x

“:” following the CKPD command indicates the use of manufacturer specific keys. The subsequent X states a that a string may be appended, which can include all BenQ keys in hexadecimal format. Otherwise an error will be indicated.

A command could look like.

- AT+CKPD=:X4142434445 <cr>
- AT+CKPD=”:X4142434445”<cr>
- AT+CKPD=:x4142434445 <cr>
- AT+CKPD=”:x4142434445”<cr>

Both will result in sending the keys 41 , 42 , 43 , 44 and 45 to the mobil, which will generate different keys depending on the language settings of the mobile. In case of an English version this would be a,b,c,d and e.

The application must handle the state of the mobile, because not all keys behave the same way in different states. So no characters result an effect, when neo is not in crossed mode for example. This will not be indicated in by an error.

Keys not useable in the current mode are just ignored. Some modes can be set by keys, as for example crossing mode by 0x17 and 0x18. For detailed key information see keypad.h All BenQ key stated there can be used , too.

## 6.8 List of Commands related to CSCS / UCS2

The following commands relate to the AT+CSCS command and UCS2:

- AT+CNUM
- AT+CPBR
- AT+CPBW
- AT+CPUC
- AT^SDBR
- AT^SSET

## 6.9 Result codes

Table 6-14 lists the numbers of result codes and provides their meaning:

| Indication | Numeric | Meaning |
|---|---|---|
| OK | 0 | Command executed, no errors, Wake up after reset |
| CONNECT | 1 | Link established |
| RING | 2 | Ring detected |
| NO CARRIER | 3 | Link not established or disconnected |
| ERROR | 4 | Invalid command or command line too long |
| NO DIALTONE | 6 | No dial tone, dialling impossible, wrong mode |
| BUSY | 7 | Remote station busy |
| CONNECT 2400 | 10 | Link with 2400 bps |
| CONNECT 4800 | 30 | Link with 4800 bps |
| CONNECT 9600 | 32 | Link with 9600 bps |
| CONNECT 14400 | 33 | Link with 14400 bps |
| CONNECT 2400/RLP | 47 | Link with 2400 bps and Radio Link Protocol |
| CONNECT 4800/RLP | 48 | Link with 4800 bps and Radio Link Protocol |
| CONNECT 9600/RLP | 49 | Link with 9600 bps and Radio Link Protocol |
| CONNECT 14400/RLP | 50 | Link with 14400 bps and Radio Link Protocol |

**Table 6-14: Result codes**

For detailed information on uncolicited result codes issued ba Remote Control-related calls see [2].

## 6.10 List of *# codes

The commands listed in Table 6-15 can be used with ATD (only for voice calls):

| *# code | Functionality | Possible response(s) |
|---|---|---|
| *#06# | Query IMEI: | <IMEI> / OK |
| **04[2]*oldPin*newPin[2]*newPin[2]# | Change SIM pwd: | +CME ERROR/ OK |
| **05[2]*unblKey*newPin[2]*newPin[2]# | Change/Unblocking SIM pwd: | |
| *[*]03*[ZZ]*oldPw*newPw*newPw# | Registration of network password: | |
| *#30# | Interrogation CLIP | AT+CLIP / OK |
| *#31# | Interrogation CLIR | AT+CLIR : <n>,<m> OK |
| *#76# | Interrogation COLP | AT+COLP : 0,<m> OK |
| *#77# | Interrogation COLR (Connection line interpretation restriction) | +COLR : 0,<m> OK |
| (choice of *,#,*#,**,##)21*DN*BS# | Act/deact/int/reg/eras CFU | AT+CCFC |
| (choice of *,#,*#,**,##)67*DN*BS# | Act/deact/int/reg/eras CF busy | |
| (choice of *,#,*#,**,##)61*DN*BS*T# | Act/deact/int/reg/eras CF no reply | |
| (choice of *,#,*#,**,##)62*DN*BS# | Act/deact/int/reg/eras CF no reach | |
| (choice of *,#,*#,**,##)002*DN*BS*T# | Act/deact/int/reg/eras CF all | |
| (choice of *,#,*#,**,##)004*DN*BS*T# | Act/deact/int/reg/eras CF all cond. | |
| (choice of *,#,*#)43*BS# | Activation/deactivation/int WAIT | AT+CCWA |
| (choice of *,#,*#)33*Pw*BS# | Act/deact/int BAOC | AT+CLCK |
| (choice of *,#,*#)331*Pw*BS# | Act/deact/int BAOIC | |
| (choice of *,#,*#)332*Pw*BS# | Act/deact/int BAOIC exc.home | |
| (choice of *,#,*#)35*Pw*BS# | Act/deact/int. BAIC | |
| (choice of *,#,*#)351*Pw*BS# | Act/deact/int BAIC roaming | |
| #330*Pw*BS# | Deact. All Barring Services | |
| #333*Pw*BS# | Deact. All Outg.Barring Services | |
| #353*Pw*BS# | Deactivation. All Inc.Barring Services | |

**Table 6-15: List of *# codes**

The abbreviations used in Table 6-15 have the following meaning:

| | | | |
|---|---|---|---|
| ZZ | type of supplementary services | 330 | Barring services |
| ZZ | | ---- | All services |
| DN | dialling number | 0-9 | string of digits |
| BS | basic service:Voice | 11 | Voice |
| | | 16 | Sms |
| | | 13 | Fax |
| | | 12 | Sms+fax |
| | | 19 | Voice+fax |
| | | 10 | Voice+SMS+fax |
| | | 25 | Data circuit asyncron |
| | | 24 | Data circuit syncron |
| | | 27 | PAD |
| | | 26 | packet |
| | | 21 | data circuit async.+PAD |
| | | 22 | data circuit sync.+packet |
| | | 20 | data circ.Async+sync.+PAD+ packet |
| | | ---- | all services |
| T | time in seconds | | |
| Pw | network password | | |

# 7 Index

AT 12
AT&C 13
AT&D 13
AT&F 14
AT^S KPD 124
AT^SABD 105
AT^SACD 105
AT^SACM 106
AT^SAKA 107
AT^SAOF 107
AT^SAPO 149
AT^SBAC 108
AT^SBIG 108
AT^SBLK 108
AT^SBMH 109
AT^SBNR 110
AT^SBNW 112
AT^SCAM 113
AT^SCCM 114
AT^SCHNULLI 149
AT^SCHOBI 150
AT^SCID 114
AT^SCKA 114
AT^SCKH 115
AT^SCKS 115
AT^SCNI 116
AT^SCRE 117
AT^SDBR 117
AT^SDLD 118
AT^SDLY 118
AT^SGAUTH 118
AT^SGDCONT 119
AT^SGDI 120
AT^SGDV 120
AT^SGND 121
AT^SGRT 49
AT^SHFR 122
AT^SICO 123
AT^SIFS 123
AT^SILL 123
AT^SINT 124
AT^SJAV 124
AT^SKYT 125
AT^SLCK 126
AT^SLDC 125
AT^SLNG 127
AT^SMDR 127
AT^SMEL 128
AT^SMGL 129
AT^SMGO 130
AT^SMGR 131
AT^SMIB 131
AT^SMPL 132
AT^SMSO 132
AT^SNFS 133
AT^SNFV 133
AT^SOBX 134
AT^SPBA 134
AT^SPBC 134
AT^SPBG 135
AT^SPBS 135
AT^SPIC 136
AT^SPLM 137
AT^SPLR 137
AT^SPLW 137
AT^SPRF 138
AT^SPST 138
AT^SPTT 139
AT^SPWD 139
AT^SQWE 140
AT^SRMP 141
AT^SSAT 141
AT^SSCL 143
AT^SSET 144
AT^SSTK 145
AT^STLN 146
AT^STRC 150
AT^STTP 146
AT^STWL 147
AT^SVIB 147
AT^SVID 148
AT+BINP 101
AT+BLDN 101
AT+BRSF 101
AT+CACM 35
AT+CALM 35
AT+CAMM 36
AT+CAOC 23
AT+CBC 36
AT+CBST 86
AT+CCFC 23
AT+CCLK 36
AT+CCWA 24
AT+CEER 21, 177, 179
AT+CGACT 55
AT+CGANS 55
AT+CGATT 56
AT+CGAUTO 56
AT+CGCLASS 57
AT+CGCMOD 57
AT+CGDATA 57
AT+CGDCONT 58
AT+CGDSCONT 59
AT+CGEQMIN 60
AT+CGEQREQ 62
AT+CGEREP 65
AT+CGMI 18
AT+CGMM 18
AT+CGMR 19, 121
AT+CGPADDR 69
AT+CGQMIN 66
AT+CGQREQ 68
AT+CGREG 69
AT+CGSMS 70
AT+CGSN 19
AT+CGTFT 71
AT+CHLD 25
AT+CHUP 21
AT+CIMI 19
AT+CKPD 19

AT+CLCC ..... 25
AT+CLCK ..... 26
AT+CLIP ..... 27
AT+CLIR ..... 28
AT+CLVL ..... 39
AT+CMEC ..... 39
AT+CMEE ..... 74
AT+CMER ..... 40
AT+CMGC ..... 76
AT+CMGD ..... 76
AT+CMGF ..... 77
AT+CMGL ..... 77
AT+CMGR ..... 78
AT+CMGS ..... 78
AT+CMGW ..... 79
AT+CMMS ..... 79
AT+CMSS ..... 80
AT+CMUT ..... 41
AT+CMUX ..... 80
AT+CNMA ..... 80
AT+CNMI ..... 81
AT+CNUM ..... 29
AT+COLP ..... 30
AT+COPN ..... 30
AT+COPS ..... 31
AT+CPAS ..... 42
AT+CPBF ..... 42
AT+CPBR ..... 43
AT+CPBS ..... 44
AT+CPBW ..... 44
AT+CPIN ..... 45
AT+CPMS ..... 83
AT+CPOL ..... 32
AT+CPUC ..... 47
AT+CPWD ..... 32
AT+CR ..... 21
AT+CRC ..... 22
AT+CREG ..... 33
AT+CRLP ..... 86
AT+CRMP ..... 47
AT+CRSL ..... 48
AT+CRSM ..... 48
AT+CSCA ..... 84
AT+CSCB ..... 84
AT+CSCS ..... 20
AT+CSDF ..... 49
AT+CSMS ..... 85
AT+CSQ ..... 50
AT+CSSN ..... 34
AT+CSTF ..... 50
AT+CSVM ..... 51
AT+CTZR ..... 51
AT+CTZU ..... 52
AT+CVIB ..... 53
AT+FAA ..... 88
AT+FBADLIN ..... 89
AT+FBADMUL ..... 89
AT+FBOR ..... 90
AT+FCIG ..... 90
AT+FCLASS ..... 91
AT+FCQ ..... 91
AT+FCR ..... 92
AT+FDCC ..... 92
AT+FDFFC ..... 93
AT+FDIS ..... 93
AT+FDR ..... 95
AT+FDT ..... 95
AT+FECM ..... 88
AT+FET ..... 96
AT+FK ..... 96
AT+FLID ..... 96
AT+FLNFC ..... 88
AT+FLPL ..... 88
AT+FMDL ..... 97
AT+FMFR ..... 97
AT+FMINSP ..... 88
AT+FOPT ..... 97
AT+FPHCTO ..... 97
AT+FRBC ..... 88
AT+FREL ..... 88
AT+FREV ..... 98
AT+FRH ..... 98
AT+FRM ..... 98
AT+FRS ..... 99
AT+FSPL ..... 88
AT+FTBC ..... 88
AT+FTH ..... 99
AT+FTM ..... 99
AT+FTS ..... 100
AT+FVRFC ..... 100
AT+FWDFC ..... 88
AT+GCAP ..... 104
AT+GSN ..... 20
AT+IPR ..... 104
AT+NREC ..... 102
AT+VGS ..... 103
AT+VTD ..... 74
AT+VTS ..... 74
AT+WS46 ..... 20
ATA ..... 12
ATB ..... 12
ATD ..... 12, 15, 54
ATDL ..... 15, 16
ATH ..... 12
ATI ..... 12
ATL ..... 13
ATM ..... 13
AT\N ..... 14
ATO ..... 13, 18, 54
AT\Q ..... 14
ATQ ..... 13
ATS ..... 13, 54
ATSREM ..... 140
AT\V ..... 14
ATV ..... 13
ATX ..... 13
ATZ ..... 13
command, developers' ..... 149
developers' commands ..... 149