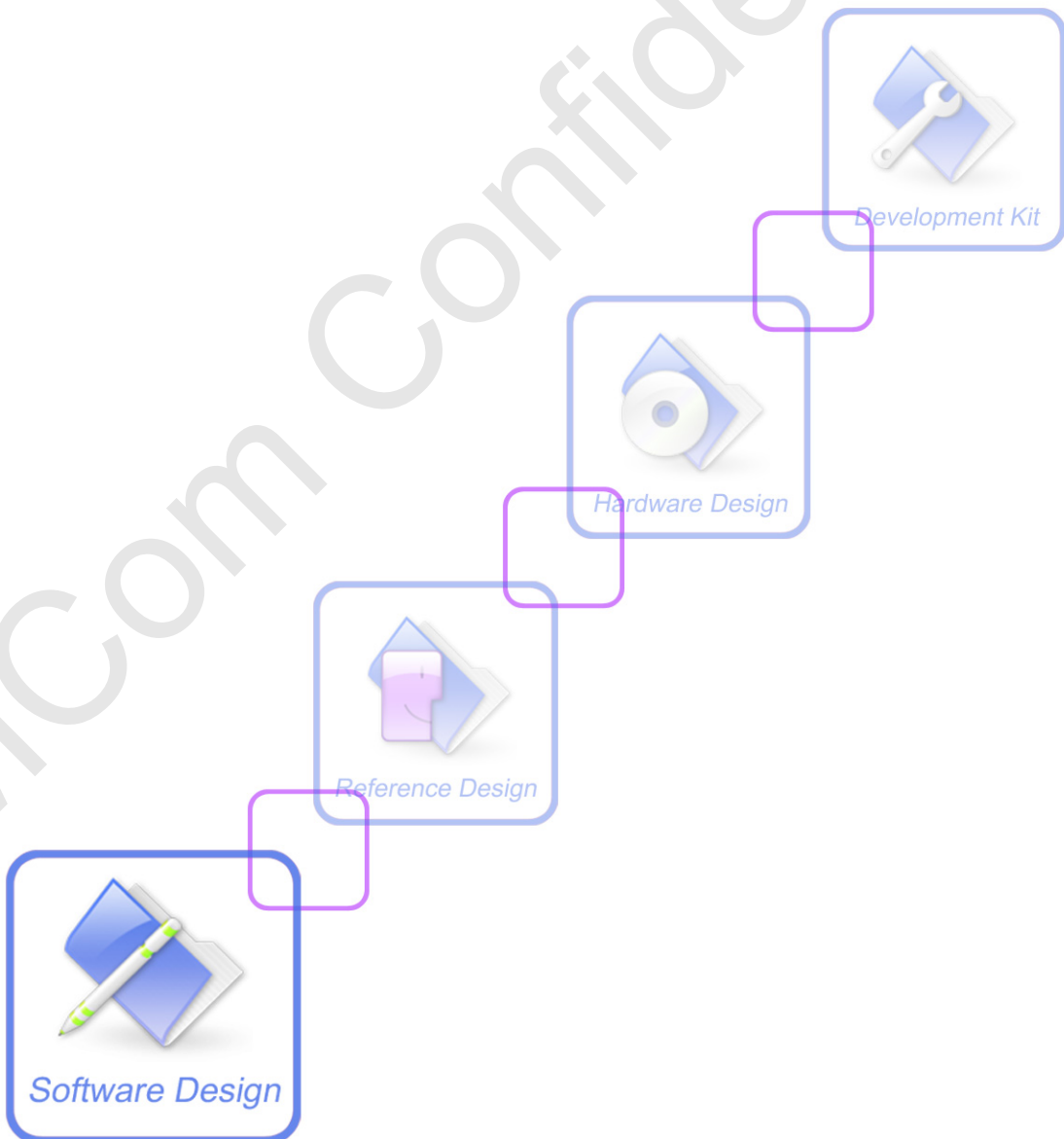




SIM7500_SIM7600 Command Manual _V1.12

Series_AT



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Version History

| Version | Date | Chapter | What is new |
|---------|------------|----------------------------|-----------------------------|
| V1.00 | 2016-07-08 | | New version |
| V1.01 | 2016-07-21 | 5.5 AT+CCUG | Add note. |
| V1.01 | 2016-07-21 | 5.6 AT+CUSD | Add note. |
| V1.01 | 2016-07-21 | 5.7 AT+CAOC | Add note. |
| V1.01 | 2016-07-21 | 5.8 AT+CSSN | Add note. |
| V1.01 | 2016-07-21 | 11.2 AT+STGI | Add PDU format support |
| V1.01 | 2016-07-21 | 11.3 AT+STGR | Add PDU format support |
| V1.01 | 2016-07-21 | 11.6 AT+STENV | Add this command |
| V1.01 | 2016-07-21 | 11.7 AT+STSM | Add this command |
| V1.02 | 2016-07-27 | 11.7 AT+STSM | Modify this command |
| V1.02 | 2016-07-27 | 5.13 AT+CNAOP | Modify this command |
| V1.02 | 2016-07-27 | 5.18 AT+CTZU | Modify this command |
| V1.02 | 2016-07-27 | 5.19 AT+CTZR | Modify this command |
| V1.02 | 2016-07-27 | 5.16 AT+CPSI | Modify this command |
| V1.02 | 2016-07-27 | 9.15 AT+CGAUTH | Modify this command |
| V1.02 | 2016-07-27 | Chapter 15 | Delete the CSOCK* Command |
| V1.02 | 2016-07-27 | 3.21 AT&F | Modify this command |
| V1.02 | 2016-07-28 | 6.25 AT+CACDBFN | Modify this command |
| V1.02 | 2016-07-29 | 5.18 AT+CTZU | Modify this command |
| V1.02 | 2016-07-29 | 5.18 AT+CTZR | Modify this command |
| V1.02 | 2016-07-29 | 6.24 AT+SIDET | Modify this command |
| V1.02 | 2016-07-29 | 5.20 AT+NETMODE | Modify this command,PIN->NO |
| V1.02 | 2016-07-29 | 12.5 AT+CGFUNC | Modify this command |
| V1.02 | 2016-07-29 | 12.6 AT+CGDRT | Modify this command |
| V1.02 | 2016-07-29 | 12.7 AT+CGGRTV | Modify this command |
| V1.02 | 2016-07-29 | 12.8 AT+CGSETV | Modify this command |
| V1.02 | 2016-07-29 | 5.15 AT+CPSI | Modify this command |
| V1.02 | 2016-07-29 | 11.2 AT+STGI | Modify this command |
| V1.02 | 2016-07-29 | 11.7 AT+STSM | Modify this command |
| V1.02 | 2016-07-29 | Delete CSD function | Delete CSD function |
| V1.02 | 2016-08-05 | 11.5 AT+STKFMT Set STK pdu | Modify this command |

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| | | format | |
| V1.02 | 2016-08-05 | 5.15 AT+CPSI Inquiring UE system information | Modify 1xlte |
| V1.02 | 2016-08-05 | 9.11 AT+CGDATA Enter data state | Modify cid |
| V1.02 | 2016-08-05 | 9.3 AT+CGACT PDP context activate or deactivate | Modify cid |
| V1.02 | 2016-08-05 | 7.9 AT+CNMI New message indications to TE | Modify default value |
| V1.02 | 2016-08-12 | 7.25 AT+CMGP Set cdma/evdo text mode parameters | Modify format |
| V1.02 | 2016-08-16 | 15.7 Common Channel Service 15.8 SSL Certificate & Key management | Modify these commands |
| V1.02 | 2016-08-16 | 6.29 AT+CTXVOL 6.30 AT+CTXMICGAIN | Add commands |
| V1.02 | 2016-08-17 | 11.7 AT+STSM Get STK Setup Menu List with PDU Mode | Modify this command |
| V1.02 | 2016-08-17 | 5.14 AT+CNSDP Preferred service domain selection | Delete this command |
| V1.02 | 2016-08-19 | AT+CMGENREF AT+CMSSEXM AT+CSALPHA | Delete this command |
| V1.02 | 2016-08-26 | 15.1.6 AT+CPINGSTOP | Modify this command |
| V1.02 | 2016-08-30 | 5.19 AT+NETMODE | Modify this command |
| V1.02 | 2016-09-05 | 3.21 AT&F | Modify this command |
| V1.02 | 2016-09-05 | 10.6 AT+CMTE | Modify test command |
| V1.02 | 2016-09-05 | 15.7.3 AT+CCHOPEN 15.7.7 AT+CCHSET 15.7.8 AT+CCHADDR | Modify these commands |
| V1.02 | 2016-09-05 | 15.7.10 Unsolicited common channel command <err> Codes | Add error code description |
| V1.02 | 2016-09-06 | 6.27 AT+CMICGAIN 6.28 AT+COUTGAIN 6.29 AT+CTXVOL 6.30 AT+CTXMICGAIN | Modify these commands |
| V1.02 | 2016-09-06 | 6.31 AT+CRXVOL 6.32 AT+CECH 6.33 AT+CECDT 6.34 AT+CECWB | Add these commands |

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| | | 6.35 AT+CNSN 6.36 AT+CNSLIM 6.37 AT+CFNSMOD 6.38 AT+CFNSIN 6.39 AT+CFNSLVL | |
| V1.02 | 2016-09-06 | 12.6 AT+CGDRT 12.7 AT+CGSETV 12.8 AT+CGGETV 12.9 AT+CGISR | Modify these commands |
| V1.02 | 2016-09-07 | 9.15 AT+CGAUTH | Modify read command and test command |
| V1.02 | 2016-09-09 | 5.11 AT+CNMP | Modify this command |
| V1.02 | 2016-09-09 | 3.21 AT&F | Modify this command |
| V1.02 | 2016-09-09 | 11.5 AT+STKFMT | Modify this command |
| V1.02 | 2016-09-13 | 6.24 AT+SIDET | Modify this command |
| V1.02 | 2016-09-13 | 4.23 AT+CUSBPIDSWITCH | Add this command |
| V1.02 | 2016-09-14 | 6.22 AT+CSDVC | Modify this command |
| V1.02 | 2016-09-18 | 6.40 AT+CECRX 6.41 AT+CNLPPG 6.42 AT+CNLPPL | Add these commands |
| V1.02 | 2016-09-19 | 7.2 AT+CPMS | Modify this command |
| V1.02 | 2016-09-21 | 10.6 AT+CMTE | Modify this command |
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| V1.02 | 2016-09-27 | 15.2.10 AT+CIPFILTERSET | Modify this command |
| V1.02 | 2016-09-28 | 3.33 AT+CIMI | Modify this command |
| V1.02 | 2016-09-28 | 3.34 AT+CIMIM | Add this command |
| V1.02 | 2016-09-28 | 7.13 AT+CMGS 7.15 AT+CMGW 7.20 AT+CMGSEX | Modify these commands |
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| V1.02 | 2016-10-12 | 9.6 AT+CGTFT | Modify this command |
| V1.02 | 2016-10-13 | 9.4 AT+CGDCONT | Modify this command |

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| V1.02 | 2016-10-20 | 9.8 AT+CGEQREQ 9.10 AT+CGEQMIN | Modify these commands |
| V1.02 | 2016-10-20 | 12.9 AT+CGISR | Modify this command |
| V1.02 | 2016-10-24 | 5.13 AT+CNAOP | Modify this command |
| V1.02 | 2016-10-24 | 3.21 AT&F | Modify this command |
| V1.02 | 2016-10-28 | 16.20 AT+CGPSMODE | Add this command |
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| V1.02 | 2016-11-04 | 16.21 AT+CBDS | Add this command |
| V1.02 | 2016-11-04 | 15.3.9 AT+CFTPGET 15.3.11 AT+CFTPLIST | Modify these commands |
| V1.02 | 2016-11-04 | 15.3.15 AT+CFTPCACHERD | Add this command |
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| V1.03 | 2016-11-17 | 16.21 AT+CBDS | Modify this command |
| V1.03 | 2016-11-17 | 16.15 AT+CGPSINFOCFG | Modify this command |
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| V1.03 | 2016-11-24 | 15.7.3 AT+CCHOPEN 15.7.6 AT+CCHRECV | Modify these commands |

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| V1.03 | 2016-12-21 | 9.4 AT+CGDCONT | Modify this command |
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| V1.03 | 2017-1-12 | 5.14 AT+CPSI | Modify this command |
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| V1.04 | 2017-2-20 | 5.12 AT+CNBP | Modify this command |
| V1.04 | 2017-2-21 | 3.12 AT+IPR 12.1 AT+IPREX | Modify these commands |
| V1.04 | 2017-3-8 | 3.21 AT&F | Modify this command |
| V1.04 | 2017-3-28 | 17.24 AT+CLBS | Add this command |
| V1.04 | 2017-4-13 | 17.9 AT+CGPSNEMARATE | Add this command |
| V1.04 | 2017-4-14 | 15.5 HTTPS | Add this chapter |
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| V1.04 | 2017-5-17 | 16 AT Commands for Open/Close Network | Add this chapter |
| V1.04 | 2017-5-24 | 18 Audio Application Commands | Add this chapter |
| V1.04 | 2017-5-25 | 15.7 SMTP | Delete this chapter |
| V1.04 | 2017-5-25 | 15.4 FTPS | Add this chapter |
| V1.05 | 2017-6-19 | 15.6 HTTPS | Modify HTTPS commands |
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| V1.05 | 2017-7-10 | 14.2 AT+CFTRANTX | Modify this command |
| V1.05 | 2017-7-10 | 13 AT Commands for File System | Modify the description |
| V1.05 | 2017-7-11 | 6.44 AT+CPCMFRM | Add this command |
| V1.05 | 2017-7-14 | 15.8.9 AT+CCERTVERIFY | Add this command |

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| V1.05 | 2017-8-25 | 7.12 AT+CMGR | Modify this command |
| V1.05 | 2017-9-5 | 5.15 AT+CNSMOD | Modify this command |
| V1.05 | 2017-9-5 | 5.14 AT+CPSI | Modify this command |
| V1.06 | 2017-10-13 | 1.1 Scope | Modify scope |
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| V1.07 | 2017-10-16 | 15.6.4 AT+CHTTPSCLSE | Modify this command |
| V1.07 | 2017-11-3 | 7.9 AT+CNMI | Modify this command |
| V1.07 | 2017-11-7 | 12.2 AT+CFGRI | Modify this command |
| V1.07 | 2017-11-13 | 17.25 AT+CLBS | Modify this command |
| V1.07 | 2017-11-13 | 15.8 NTP | Add this chapter |
| V1.07 | 2017-11-13 | 17.23 AT+CGNSSINFO | Add this command |
| V1.07 | 2017-12-14 | 4.23 AT+CUSBPIDSWITCH | Modify this command |
| V1.07 | 2017-12-15 | 17.25 AT+CLBS | Modify this command |
| V1.08 | 2017-12-18 | 17.8 AT+CGPSNMEA | Modify this command |
| V1.08 | 2017-12-18 | 17.24 AT+CGNSSMODE | Add this command |
| V1.08 | 2018-1-10 | 17.26 AT+CLBS | Modify this command |
| V1.08 | 2018-1-24 | 17.21 AT+CGPSMODE | Delete this command |
| V1.08 | 2018-1-24 | 17.22 AT+CBDS | Delete this command |
| V1.08 | 2018-1-24 | 15.8.2 Unsolicited NTP Codes | Delete this command |
| V1.08 | 2018-2-8 | 15.10.1 AT+CCERTDOWN | Modify this command |
| V1.08 | 2018-2-9 | 15.8.1 AT+CNTP | Modify this command |
| V1.08 | 2018-2-28 | 13 AT Commands for File System | Modify this chapter |
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| V1.08 | 2018-3-28 | 15.6.9 Unsolicited HTTPS command <err> Codes | Modify this command |
| V1.08 | 2018-4-2 | 17.8 AT+CGPSNMEA | Modify this command |
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| V1.09 | 2018-4-17 | 6.45 AT+CPTONE | Add this command |

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| V1.09 | 2018-4-18 | 15.3.16 AT+CFTPSINGLEIP | Add this command |
| V1.09 | 2018-5-2 | 17.24 AT+CLBS | Modify this command |
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| V1.09 | 2018-5-9 | 15.10.2 AT+CCERTLIST | Modify this command |
| V1.09 | 2018-5-21 | 15.8.1 AT+CNTP | Modify this command |
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| V1.09 | 2018-7-25 | 15.9 Common Channel Service 15.10 SSL Certificate & Key Management | Add mbedtls |
| V1.09 | 2018-8-3 | 15.6.5 AT+CHTTPSEND 15.6.6 AT+CHTTPSRECV | Modify these commands |
| V1.09 | 2018-8-3 | 15.9.9 AT+CCHMODE | Add this command |
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| V1.10 | 2018-8-22 | 18.3 AT+CCMXSTOPWAV 18.5 AT+CCMXSTOP | Modify these commands |
| V1.10 | 2018-9-11 | 17.25 AT+CLBSCFG 17.26 AT+CASSISTLOC | Modify these commands |
| V1.10 | 2018-9-17 | 17.11 AT+CGPSFTM 17.13 AT+CGPSXE 17.16 AT+CGPSINFOCFG | Modify these commands |
| V1.11 | 2018-9-17 | 6.22 AT+CSDVC 18.1 AT+CREC | Modify these commands |
| V1.11 | 2018-9-17 | 6.46 AT+CODECCTL | Add this command |
| V1.11 | 2018-9-27 | 7.4 AT+CSCA 17.17 AT+CGPSPMD 17.26 AT+CASSISTLOC | Modify these commands |
| V1.11 | 2018-10-18 | 18.2 AT+CCMXPLAYWAV 18.4 AT+CCMXPLAY | Modify these commands |
| V1.11 | 2018-10-18 | 18.6 AT+CRECAMR | Add this commands |
| V1.11 | 2018-10-29 | 3.12 AT+IPR 6.22 AT+CSDVC | Modify these commands |

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| V1.12 | 2018-11-30 | 18.1 AT+CREC | Modify this command |
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| V1.12 | 2019-1-9 | 5.11 AT+CNMP 11.5 AT+STKFMT | Modify these commands |
| V1.12 | 2019-1-16 | 11.5 AT+STKFMT 18.4 AT+CCMXPLAY | Modify these commands |
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| V1.12 | 2019-1-30 | 11.5 AT+STKFMT | Modify this command |
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| V1.12 | 2019-2-20 | 6.47 AT+CPCMBANDWIDTH | Add this command |
| V1.12 | 2019-3-4 | 13 AT Commands for File System | Modify this command |
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| V1.12 | 2019-3-13 | 4.23 AT+CUSBPIDSWITCH | Modify this command |
| V1.12 | 2019-3-20 | 7.2 AT+CPMS | Modify this command |
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| V1.12 | 2019-6-4 | 15.2.1 AT+CIPCCFG 15.2.7 AT+NETOPEN 15.2.12 AT+CIOPEN | Modify these commands |
| V1.12 | 2019-6-12 | 3.11 ATI 3.12 AT+IPR 3.13 AT+ICF 3.31 AT+CGSN 5.11 AT+CNMP 5.12 AT+CNBP | Modify these commands |

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| | | 6.26 AT+CPCMREG 6.44 AT+CPCMFRM 7.20 AT+CMGSEX 10.7 AT+CPMVT 12.1 AT+IPREX 12.2 AT+CFGRI 13 AT Commands for File System 15.7.1 AT+CHTPSERV 15.8.1 AT+CNTP 17.13 AT+CGPSXE 17.14 AT+CGPSXD 17.15 AT+CGPSXDAUTO 17.17 AT+CGPSPMD 17.24 AT+CLBS 18.1 AT+CREC 18.2 AT+CCMXPLAYWAV 18.4 AT+CCMXPLAY 18.6 AT+CRECAMR | |
| V1.12 | 2019-8-14 | 5.19 AT+NETMODE | Delete this command |
| V1.12 | 2019-9-4 | 5.11 AT+CNMP 6.46 AT+CODECCTL 12.5 AT+CGFUNC 12.6 AT+CGDRT 12.7 AT+CGSETV 12.9 AT+CGISR 15.8.1 AT+CNTP 17.1 AT+CGPS 18.4 AT+CCMXPLAY | Modify these commands |
| V1.12 | 2019-9-20 | 17.27 AT+CGPSIPV6 17.28 AT+CGPSXTRADATA | Add these commands |
| V1.12 | 2019-10-25 | 15.2 TCP/UDP 15.3 FTP 15.4 FTPS 15.5 HTTP 15.6 HTTPS 15.9 Common Channel Service 15.10 SSL Certificate & Key Management | Delete these chapters These commands have been moved to new documents and use new solution. Please refer to the documents as follow: SIM7500_SIM7600_SIM7800 Series_TCPIP_AT Command Manual SIM7500_SIM7600_SIM7800 Series_FTPS_AT Command Manual SIM7500_SIM7600_SIM7800 |

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1 Introduction

1.1 Scope

The present document describes the AT Command Set for the SIMCom Module:
SIM7500 series, SIM7600 series.

More information about the SIMCom Module which includes the Software Version information can be retrieved by the command [ATI](#). In this document, a short description, the syntax, the possible setting values and responses, and some examples of AT commands are presented.

Prior to using the Module, please read this document and the Version History to know the difference from the previous document.

In order to implement communication successfully between Customer Application and the Module, it is recommended to use the AT commands in this document, but not to use some commands which are not included in this document.

1.2 References

The present document is based on the following standards:

- [1] ETSI GSM 01.04: Abbreviations and acronyms.
- [2] 3GPP TS 27.005: Use of Data Terminal Equipment – Data Circuit terminating Equipment (DTE – DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS).
- [3] 3GPP TS 27.007: AT command set for User Equipment (UE).
- [4] WAP-224-WTP-20010710-a
- [5] WAP-230-WSP-20010705-a
- [6] WAP-209-MMSEncapsulation-20010601-a

1.3 Terms and abbreviations

For the purposes of the present document, the following abbreviations apply:

- AT ATtention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE
- DCE Data Communication Equipment; Data Circuit terminating Equipment
- DCS Digital Cellular Network
- DTE Data Terminal Equipment

- DTMF Dual Tone Multi–Frequency
- EDGE Enhanced Data GSM Environment
- EGPRS Enhanced General Packet Radio Service
- GPIO General–Purpose Input/Output
- GPRS General Packet Radio Service
- GSM Global System for Mobile communications
- HSDPA High Speed Downlink Packet Access
- HSUPA High Speed Uplink Packet Access
- I2C Inter–Integrated Circuit
- IMEI International Mobile station Equipment Identity
- IMSI International Mobile Subscriber Identity
- ME Mobile Equipment
- MO Mobile–Originated
- MS Mobile Station
- MT Mobile–Terminated; Mobile Termination
- PCS Personal Communication System
- PDU Protocol Data Unit
- PIN Personal Identification Number
- PUK Personal Unlock Key
- SIM Subscriber Identity Module
- SMS Short Message Service
- SMS–SC Short Message Service – Service Center
- TA Terminal Adaptor; e.g. a data card (equal to DCE)
- TE Terminal Equipment; e.g. a computer (equal to DTE)
- UE User Equipment
- UMTS Universal Mobile Telecommunications System
- USIM Universal Subscriber Identity Module
- WCDMA Wideband Code Division Multiple Access
- FTP File Transfer Protocol
- HTTP Hyper Text Transfer Protocol
- RTC Real Time Clock
- URC Unsolicited Result Code

1.4 Definitions and conventions

1. For the purposes of the present document, the following syntactical definitions apply:

<CR> Carriage return character.

<LF> Linefeed character.

<...> Name enclosed in angle brackets is a syntactical element. Brackets themselves do not appear in the command line.

[...] Optional subparameter of AT command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line.

If subparameter is not given, its value equals to its previous value or the recommended default value.

underline Underlined defined subparameter value is the recommended default setting or factory setting.

2. Document conventions:

- ◆ Display the examples of AT commands with *Italic* format.
- ◆ Not display *blank-line* between command line and responses or inside the responses.
- ◆ Generally, the characters <CR> and <LF> are intentionally omitted throughout this document.
- ◆ If command response is ERROR, not list the ERROR response inside command syntax.

NOTE: AT commands and responses in figures may be not following above conventions.

3. Special marks for commands or parameters:

SIM PIN – Is the command PIN protected?

YES – AT command can be used only when SIM PIN is READY.

NO – AT command can be used when SIM card is absent or SIM PIN validation is pending.

References – Where is the derivation of command?

3GPP TS 27.007 – 3GPP Technical Specification 127 007.

V.25ter – ITU-T Recommendation V.25ter.

Vendor – This command is supported by SIMCom.

2 AT Interface Synopsis

2.1 Interface settings

Between Customer Application and the Module, standardized RS-232 interface is used for the communication, and default values for the interface settings as following:

115200bps, 8 bit data, no parity, 1 bit stop, no data stream control.

2.2 AT command syntax

The prefix “AT” or “at” (no case sensitive) must be included at the beginning of each command line (except `A/` and `+++`), and the character `<CR>` is used to finish a command line so as to issue the command line to the Module. It is recommended that a command line only includes a command.

When Customer Application issues a series of AT commands on separate command lines, leave a pause between the preceding and the following command until information responses or result codes are retrieved by Customer Application, for example, “OK” is appeared. This advice avoids too many AT commands are issued at a time without waiting for a response for each command.

In the present document, AT commands are divided into three categories: Basic Command, S Parameter Command, and Extended Command.

1. Basic Command

The format of Basic Command is “AT<x><n>” or “AT&<x><n>”, “<x>” is the command name, and “<n>” is/are the parameter(s) for the basic command, and optional. An example of Basic Command is “ATE<n>”, which informs the TA/DCE whether received characters should be echoed back to the TE/DTE according to the value of “<n>”; “<n>” is optional and a default value will be used if omitted.

2. S Parameter Command

The format of S Parameter Command is “ATS<n>=<m>”, “<n>” is the index of the S-register to set, and “<m>” is the value to assign to it. “<m>” is optional; in this case, the format is “ATS<n>”, and then a default value is assigned.

3. Extended Command

The Extended Command has several formats, as following table list:

Table 2-1: Types of Extended Command

| Command Type | Syntax | Comments |
|-------------------|-----------------|---|
| Test Command | AT+<NAME>=? | Test the existence of the command; give some information about the command subparameters. |
| Read Command | AT+<NAME>? | Check the current values of subparameters. |
| Write Command | AT+<NAME>=<...> | Set user-definable subparameter values. |
| Execution Command | AT+<NAME> | Read non-variable subparameters determined by internal processes. |

NOTE: The character “+” between the prefix “AT” and command name may be replaced by other character. For example, using “#” or “\$” instead of “+”.

2.3 Information responses

If the commands included in the command line are supported by the Module and the subparameters are correct if presented, some information responses will be retrieved by from the Module. Otherwise, the Module will report “ERROR” or “+CME ERROR” or “+CMS ERROR” to Customer Application.

Information responses start and end with <CR><LF>, i.e. the format of information responses is “<CR><LF><response><CR><LF>”. Inside information responses, there may be one or more <CR><LF>. Throughout this document, only the responses are presented, and <CR><LF> are intentionally omitted.

3 AT Commands According V.25TER

3.1 A/ Repeat last command

Description

This command is used for implement previous AT command repeatedly (except A/), and the return value depends on the last AT command. If A/ is issued to the Module firstly after power on, the response “OK” is only returned.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|--|
| A/ | <i>The response the last AT command return</i> |

Examples

```

AT+GCAP
+GCAP:+CGSM,+FCLASS,+DS
OK
A/
+GCAP:+CGSM,+FCLASS,+DS
OK
    
```

3.2 ATD Dial command

Description

This command is used to list characters that may be used in a dialling string for making a call or controlling supplementary services.

NOTE:

- Support several “P” or “p” in the DTMF string but the valid auto-sending DTMF after characters “P” or “p” should not be more than 29.
- Auto-sending DTMF after character “P” or “p” should be ASCII character in the set 0-9, *, #.

| SIM PIN | References |
|---------|------------|
| NO | V25.ter |

Syntax

| Execution Commands | Responses |
|---------------------|--|
| ATD<n>[<mgsms>][:;] | <i>Originate a voice call successfully:</i> OK VOICE CALL: BEGIN |
| | <i>Originate a data call successfully:</i> CONNECT [<text>] |
| | <i>Originate a call unsuccessfully during command execution:</i> ERROR |
| | <i>Originate a call unsuccessfully for failed connection recovery:</i> NO CARRIER |
| | <i>Originate a call unsuccessfully for error related to the MT:</i> +CME ERROR: <err> |
| | |

Defined values

<n>

String of dialing digits and optionally V.25ter modifiers dialing digits:

0 1 2 3 4 5 6 7 8 9 * # + A B C

Following V.25ter modifiers are ignored:

, T P ! W @

<mgsms>

String of GSM modifiers:

I Activates CLIR (disables presentation of own phone number to called party)
i Deactivates CLIR (enables presentation of own phone number to called party)
G Activate Closed User Group explicit invocation for this call only
g Deactivate Closed User Group explicit invocation for this call only

<:;>

The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls.

<text>

CONNECT result code string; the string formats please refer ATX/AT\V/AT&E command.

<err>

Service failure result code string; the string formats please refer +CME ERROR result code and AT+CMEE command.

Examples

```
ATD10086;
```

```
OK
```

```
VOICE CALL:BEGIN
```

3.3 ATD<mem><n> Originate call from specified memory

Description

This command is used to originate a call using specified memory and index number.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Commands | Responses |
|--------------------|--|
| ATD<mem><n>[:] | <i>Originate a voice call successfully:</i> OK VOICE CALL: BEGIN |
| | <i>Originate a data call successfully:</i> CONNECT [<text>] |
| | <i>Originate a call unsuccessfully during command execution:</i> ERROR |
| | <i>Originate a call unsuccessfully for failed connection recovery:</i> NO CARRIER |
| | <i>Originate a call unsuccessfully for error related to the MT:</i> +CME ERROR: <err> |

Defined values

<mem>

Phonebook storage: (For detailed description of storages see [AT+CPBS](#))

| | |
|------|--|
| "DC" | ME dialed calls list |
| "MC" | ME missed (unanswered received) calls list |
| "RC" | ME received calls list |
| "SM" | SIM phonebook |
| "ME" | UE phonebook |
| "FD" | SIM fixed dialing phonebook |
| "ON" | MSISDN 1st |
| "LD" | Last number dialed phonebook |
| "EN" | Emergency numbers |

<n>

Integer type memory location in the range of locations available in the selected memory, i.e. the index returned by [AT+CPBR](#).

<:>

The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls.

<text>

CONNECT result code string; the string formats please refer ATX/AT\V/AT&E command.

<err>

Service failure result code string; the string formats please refer +CME ERROR result code and AT+CMEE command.

Examples

```
ATD>SM3;
```

```
OK
```

```
VOICE CALL: BEGIN
```

3.4 ATD<n> Originate call from active memory (1)

Description

This command is used to originate a call to specified number.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Commands | Responses |
|--------------------|--|
| ATD<n>[:] | <i>Originate a voice call successfully:</i> OK VOICE CALL: BEGIN |
| | <i>Originate a data call successfully:</i> CONNECT [<text>] |
| | <i>Originate a call unsuccessfully during command execution:</i> ERROR |
| | <i>Originate a call unsuccessfully for failed connection recovery:</i> NO CARRIER |
| | <i>Originate a call unsuccessfully for error related to the MT:</i> +CME ERROR: <err> |

Defined values

<n>

Integer type memory location in the range of locations available in the selected memory, i.e. the index number returned by [AT+CPBR](#).

<:>

The termination character ":" is mandatory to set up voice calls. It must not be used for data and fax

calls.
 <text>
 CONNECT result code string; the string formats please refer ATX/AT\V/AT&E command.
 <err>
 Service failure result code string; the string formats please refer +CME ERROR result code and AT+CMEE command.

Examples

```
ATD>2;
OK
VOICE CALL: BEGIN
```

3.5 ATD><str> Originate call from active memory (2)

Description

This command is used to originate a call to specified number.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Commands | Responses |
|--------------------|--|
| ATD><str>[:] | <p><i>Originate a voice call successfully:</i> OK VOICE CALL: BEGIN</p> <p><i>Originate a data call successfully:</i> CONNECT [<text>]</p> <p><i>Originate a call unsuccessfully during command execution:</i> ERROR</p> <p><i>Originate a call unsuccessfully for failed connection recovery:</i> NO CARRIER</p> <p><i>Originate a call unsuccessfully for error related to the MT:</i> +CME ERROR: <err></p> |

Defined values

<str>
 String type value, which should equal to an alphanumeric field in at least one phone book entry in the searched memories. <str> formatted as current TE character set specified by AT+CSCS.<str> must be double quoted.

| |
|---|
| <;> |
| The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls. |
| <text> |
| CONNECT result code string; the string formats please refer ATX/AT\V/AT&E command. |
| <err> |
| Service failure result code string; the string formats please refer +CME ERROR result code and AT+CMEE command. |

Examples

```
ATD>"Kobe";
OK
VOICE CALL: BEGIN
```

3.6 ATA Call answer

Description

This command is used to make remote station to go off-hook, e.g. answer an incoming call. If there is no an incoming call and entering this command to TA, it will be return "NO CARRIER" to TA.

| SIM PIN | References |
|---------|------------|
| YES | V.25ter |

Syntax

| Execution Commands | Responses |
|--------------------|---|
| ATA | <p><i>For voice call:</i></p> <p>OK</p> <p>VOICE CALL: BEGIN</p> |
| | <p><i>For data call, and TA switches to data mode:</i></p> <p>CONNECT</p> |
| | <p><i>No connection or no incoming call:</i></p> <p>NO CARRIER</p> |

Examples

```
ATA
VOICE CALL: BEGIN
OK
```

3.7 ATH Disconnect existing call

Description

This command is used to disconnect existing call. Before using **ATH** command to hang up a voice call, it must set **AT+CVHU=0**. Otherwise, ATH command will be ignored and “OK” response is given only.

This command is also used to disconnect PS data call, and in this case it doesn't depend on the value of **AT+CVHU**.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|--|
| ATH | If AT+CVHU=0 : VOICE CALL: END: <time> OK |
| | OK |

Defined values

| |
|--|
| <time> |
| Voice call connection time: |
| Format – HHMMSS (HH: hour, MM: minute, SS: second) |

Examples

| |
|-----------------------|
| AT+CVHU=0 |
| OK |
| ATH |
| VOICE CALL:END:000017 |
| OK |

3.8 ATSO Automatic answer incoming call

Description

The S-parameter command controls the automatic answering feature of the Module. If set to 000, automatic answering is disabled, otherwise it causes the Module to answer when the incoming call indication (RING) has occurred the number of times indicated by the specified value; and the setting will not be stored upon power-off, i.e. the default value will be restored after restart.

| SIM PIN | References |
|---------|------------|
|---------|------------|

| | |
|-----|---------|
| YES | V.25ter |
|-----|---------|

Syntax

| Read Command | Responses |
|---------------|-----------|
| ATSO? | <n> OK |
| | ERROR |
| Write Command | Responses |
| ATSO=<n> | OK |
| | ERROR |

Defined values

| |
|---|
| <n> |
| 000 Automatic answering mode is disable. (default value when power-on) |
| 001–255 Enable automatic answering on the ring number specified. |
| NOTE: 1.The S-parameter command is effective on voice call and data call. 2.If <n> is set too high, the remote party may hang up before the call can be answered automatically. |

Examples

| |
|----------|
| ATSO? |
| 000 |
| OK |
| ATSO=003 |
| OK |

3.9 +++ Switch from data mode to command mode

Description

This command is only available during a connecting PS data call. The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to Command Mode. This allows to enter AT commands while maintaining the data connection to the remote device.

NOTE: To prevent the +++ escape sequence from being misinterpreted as data, it must be preceded and followed by a pause of at least 1000 milliseconds, and the interval between two '+' character can't exceed 900 milliseconds.

| | |
|---------|------------|
| SIM PIN | References |
| YES | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|-----------|
| +++ | OK |

Examples

| |
|-----|
| +++ |
| OK |

3.10 ATO Switch from command mode to data mode

Description

[ATO](#) is the corresponding command to the [+++](#) escape sequence. When there is a PS data call connected and the TA is in Command Mode, [ATO](#) causes the TA to resume the data and takes back to Data Mode.

| SIM PIN | References |
|---------|------------|
| YES | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|---|
| ATO | <i>TA/DCE switches to Data Mode from Command Mode:</i> CONNECT [<baud rate>] |
| | <i>If connection is not successfully resumed:</i> NO CARRIER |
| | ERROR |

Examples

| |
|----------------|
| ATO |
| CONNECT 115200 |

3.11 ATI Display product identification information

Description

This command is used to request the product information, which consists of manufacturer identification, model identification, revision identification, International Mobile station Equipment Identity (IMEI) and overall capabilities of the product.

| SIM PIN | References |
|---------|------------|
|---------|------------|

| | |
|----|---------|
| NO | V.25ter |
|----|---------|

Syntax

| Execution Command | Responses |
|-------------------|--|
| ATI | Manufacturer: <manufacturer> Model: <model> Revision: <revision> IMEI: [<sn>] +GCAP: list of <name>s OK |

Defined values

<manufacturer>

The identification of manufacturer.

<model>

The identification of model.

<revision>

The revision identification of firmware.

<sn>

Serial number identification, which consists of a single line containing IMEI (International Mobile station Equipment Identity) number.

<name>

List of additional capabilities:

| | |
|-----------|-------------------------------------|
| +CGSM | GSM function is supported |
| +FCLASS | FAX function is supported |
| +DS | Data compression is supported |
| +ES | Synchronous data mode is supported. |
| +CIS707-A | CDMA data service command set |
| +CIS-856 | EVDO data service command set |
| +MS | Mobile Specific command set |

Examples

ATI

Manufacturer: SIMCOM INCORPORATED

Model: SIMCOM_SIM7600C

Revision: SIM7600C_V1.0

IMEI: 351602000330570

+GCAP: +CGSM,+FCLASS,+DS

OK

3.12 AT+IPR Set local baud rate temporarily

Description

This command sets the baud rate of module's serial interface temporarily, after reboot the baud rate is set to value of IPREX.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| | |
|-------------------|---|
| Test Command | Responses |
| AT+IPR=? | +IPR: (list of supported<speed>s) OK |
| Read Command | Responses |
| AT+IPR? | +IPR: <speed> OK |
| Write Command | Responses |
| AT+IPR=<speed> | OK ERROR |
| Execution Command | Responses |
| AT+IPR | <i>Set the value to boot value:</i> OK |

Defined values

<speed>
Baud rate per second:
0, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600, 3000000, 3200000, 3686400

Note: LE20 doesn't support 0.

Examples

```
AT+IPR?
+IPR: 115200
OK
AT+IPR=?
+IPR:(0,300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600,
3000000,3200000,3686400)
```

```

OK
AT+IPR=115200
OK
AT+IPR=0
OK
  
```

3.13 AT+ICF Set control character framing

Description

This command sets character framing which contains data bit, stop bit and parity bit.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------------------|--|
| AT+ICF=? | +ICF: (list of supported<format>s), (list of supported<parity>s) OK |
| Read Command | Responses |
| AT+ICF? | +ICF: <format>,<parity> OK |
| Write Command | Responses |
| AT+ICF= <format>[,<parity>] | OK ERROR |
| Execution Command | Responses |
| AT+ICF | <i>Set default value:</i> OK |

Defined values

| <format> | |
|----------|--|
| 1 | – data bit 8, stop bit 2 |
| 2 | – data bit 8, parity bit 1, stop bit 1 |
| <u>3</u> | – data bit 8, stop bit 1 |
| 4 | – data bit 7, stop bit 2 |
| 5 | – data bit 7, parity bit 1, stop bit 1 |
| 6 | – data bit 7, stop bit 1 |
| <parity> | |
| 0 | – Odd |
| 1 | – Even |
| 2 | – Space |

3 - none

Examples

AT+ICF?

+ICF: 3,3

OK

AT+ICF=?

+ICF: (1-6),(0-3)

OK

AT+ICF=3,3

OK

3.14 AT+IFC Set local data flow control

Description

The command sets the flow control mode of the module.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Test Command | Responses |
|----------------------|---|
| AT+IFC=? | +IFC: (list of supported<DCE>s), (list of supported<DTE>s) OK ERROR |
| Read Command | Responses |
| AT+IFC? | +IFC: <DCE>,<DTE> OK ERROR |
| Write Command | Responses |
| AT+IFC=<DCE>[,<DTE>] | OK ERROR |
| Execution Command | Responses |
| AT+IFC | <i>Set default value:</i> OK ERROR |

Defined values

<DCE>

- 0 – none (default)
- 2 – RTS hardware flow control

<DTE>

- 0 – none (default)
- 2 – CTS hardware flow control

Examples

AT+IFC?

+IFC: 0,0

OK

AT+IFC=?

+IFC: (0,2),(0,2)

OK

AT+IFC=2,2

OK

3.15 AT&C Set DCD function mode

Description

This command determines how the state of DCD PIN relates to the detection of received line signal from the distant end.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Command | Responses |
|--------------------------------|-----------|
| <i>AT&C[<value>]</i> | OK |
| | ERROR |

Defined values

<value>

- 0 DCD line shall always be on.
- 1 DCD line shall be on only when data carrier signal is present.
- 2 Setting winks(briefly transitions off,then back on)the DCD line when data calls end.

Examples

AT&C1

OK

3.16 ATE Enable command echo

Description

This command sets whether or not the TA echoes characters.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|-----------|
| ATE[<value>] | OK |
| | ERROR |

Defined values

| <value> |
|-------------------|
| 0 – Echo mode off |
| 1 – Echo mode on |

Examples

| |
|------|
| ATE1 |
| OK |

3.17 AT&V Display current configuration

Description

This command returns some of the base configuration parameters settings.

| SIM PIN | References |
|---------|------------|
| YES | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|-----------|
| AT&V | <TEXT> |
| | OK |
| | ERROR |

Defined values

| |
|--------|
| <TEXT> |
|--------|

All relative configuration information.

Examples

```
AT&V
&C: 0; &D: 2; &F: 0; E: 1; L: 0; M: 0; Q: 0; V: 1; X: 0; Z: 0; S0: 0;
S3: 13; S4: 10; S5: 8; S6: 2; S7: 50; S8: 2; S9: 6; S10: 14; S11: 95;
+FCLASS: 0; +ICF: 3,3; +IFC: 2,2; +IPR: 115200; +DR: 0; +DS: 0,0,2048,6;
+WS46: 12; +CBST: 0,0,1;
.....
OK
```

3.18 AT&D Set DTR function mode

Description

This command determines how the TA responds when DTR PIN is changed from the ON to the OFF condition during data mode.

| SIM PIN | References |
|---------|------------|
| NO | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|-----------|
| AT&D[<value>] | OK |
| | ERROR |

Defined values

<value>

- 0 TA ignores status on DTR.
- 1 ON->OFF on DTR: Change to Command mode with remaining the connected call
- 2 ON->OFF on DTR: Disconnect call, change to Command mode. During state DTR = OFF is auto-answer off.

Examples

```
AT&D1
OK
```

3.19 AT&S Set DSR function mode

Description

The command determines how the state of DSR pin works.

| SIM PIN | References |
|---------|------------|
| YES | V.25ter |

Syntax

| Execution Command | Responses |
|-------------------|-----------|
| AT&S<value> | OK |
| | ERROR |

Defined values

<value>

0 DSR line shall always be on.

1 DSR line shall be on only when DTE and DCE are connected.

Examples

```
AT&S0
```

```
OK
```

3.20 ATV Set result code format mode

Description

This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.

NOTE: In case of using This command without parameter <value> will be set to 0.

| SIM PIN | References |
|---------|------------|
| No | V.25ter |

Syntax

| Write Command | Responses |
|---------------|----------------------------|
| ATV[<value>] | <i>If <value> =0</i> |
| | 0 |
| | <i>If <value> =1</i> |
| | OK |

Defined values

<value>

0 Information response: <text><CR><LF>

Short result code format: <numeric code><CR>

1 Information response: <CR><LF><text><CR><LF>

Long result code format: <CR><LF><verbose code><CR><LF>

Examples

```
ATVI
```

```
OK
```

3.21 AT&F Set all current parameters to manufacturer defaults

Description

This command is used to set all current parameters to the manufacturer defined profile.

NOTE:List of parameters reset to manufacturer default can be found in defined values, factory default settings restorable with AT&F[<value>].

Every ongoing or incoming call will be terminated.

| SIM PIN | References |
|---------|------------|
| NO | V.250 |

Syntax

| Execution Command | Responses |
|-------------------|-----------|
| AT&F[<value>] | OK |

Defined values

<value>

0 — Set some temporary TA parameters to manufacturer defaults. The setting after power on or reset is same as value 0.

default values

| TA parameters | VALUE |
|---------------|----------------|
| AT+CATR | 0 |
| AT+CNMP | 2 |
| AT+CNAOP ① | 7,9,4,2,5,3,11 |
| AT+CTZU | 0 |

① The default value of no CDMA/EVDO version is 7,9,5,3,11,2,4

Examples

```
AT&F
```

```
OK
```

3.22 ATQ Set Result Code Presentation Mode

Description

Specify whether the TA transmits any result code to the TE or not. Text information transmitted in response is not affected by this setting

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Write Command | Responses |
|-------------------|----------------------------------|
| ATQ<n> | If <n>=0: OK |
| | If <n>=1: No Responses |
| Execution Command | Responses |
| ATQ | <i>Set default value:0</i> OK |
| | No Responses |

Defined values

| <n> |
|-----------------------------------|
| 0 – DCE transmits result code |
| 1 – DCE not transmits result code |

Examples

| |
|------|
| ATQ0 |
| OK |

3.23 ATX Set CONNECT Result Code Format

Description

This parameter setting determines whether the TA transmits unsolicited result codes or not. The unsolicited result codes are

<CONNECT><SPEED><COMMUNICATION PROTOCOL>[<TEXT>]

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Write Command | Responses |
|-------------------|-----------------------------|
| ATX<VALUE> | OK |
| | ERROR |
| Execution Command | Responses |
| ATX | <i>Set default value: 1</i> |
| | OK |
| | ERROR |

Defined values

| <value> |
|--|
| 0 – CONNECT result code returned |
| 1,2,3,4 – May be transmits extern result codes according to AT&E and AT\V settings. Refer to AT&E. |

Examples

| |
|------|
| ATXI |
| OK |

3.24 AT\V Set CONNECT Result Code Format About Protocol

Description

This parameter setting determines whether report the communication protocol. If PS call, it also determines whether report APN, uplink rate, downlink rate.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Write Command | Responses |
|-------------------|-----------------------------|
| AT\V<value> | OK |
| | ERROR |
| Execution Command | Responses |
| AT\V | <i>Set default value: 0</i> |
| | OK |
| | ERROR |

Defined values

<value>

- 0 – Don't report
- 1 – Report communication protocol. And report APN, uplink rate, downlink rate if PS call. Refer to AT&E. The maybe communication protocol report include "NONE", "PPPOverUD", "AV32K", "AV64K", "PACKET". And APN in string format while uplink rate and downlink rate in integer format with kb unit.

Examples

```
AT\V0
```

```
OK
```

3.25 AT&E Set CONNECT Result Code Format About Speed

Description

This parameter setting determines to report Serial connection rate or Wireless connection speed. It is valid only ATX above 0.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Write Command | Responses |
|-------------------|-----------------------------|
| AT&E<value> | OK |
| | ERROR |
| Execution Command | Responses |
| AT&E | <i>Set default value: 1</i> |
| | OK |

Defined values

<value>

- 0 – Wireless connection speed in integer format.
- 1 – Serial connection rate in integer format. Such as: "115200"

Examples

```
AT&E0
```

```
OK
```

3.26 AT&W Save the user setting to ME

Description

This command will save the user settings to ME which set by ATE, ATQ, ATV, ATX, AT&C AT&D, AT&S, AT\V, AT+IFC and ATSO.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Write Command | Responses |
|-------------------|-----------------------------|
| AT&W<value> | OK |
| | ERROR |
| Execution Command | Responses |
| AT&W | <i>Set default value: 0</i> |
| | OK |
| | ERROR |

Defined values

| <value> |
|----------|
| 0 – Save |

Examples

| |
|-------|
| AT&W0 |
| OK |

3.27 ATZ Restore the user setting from ME

Description

This command will restore the user setting from ME which set by ATE, ATQ, ATV, ATX, AT&C AT&D, AT&S, AT\Q, AT\V, and ATSO.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Write Command | Responses |
|---------------|-----------|
| ATZ<value> | OK |

| | |
|-------------------|-----------------------------|
| | ERROR |
| Execution Command | Responses |
| ATZ | <i>Set default value: 0</i> |
| | OK |
| | ERROR |

Defined values

| |
|-------------|
| <value> |
| 0 – Restore |

Examples

| |
|------|
| ATZ0 |
| OK |

3.28 AT+CGMI Request manufacturer identification

Description

This command is used to request the manufacturer identification text, which is intended to permit the user of the Module to identify the manufacturer.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|-------------------|----------------|
| Test Command | Responses |
| AT+CGMI=? | OK |
| Execution Command | Responses |
| AT+CGMI | <manufacturer> |
| | OK |

Defined values

| |
|-------------------------------------|
| <manufacturer> |
| The identification of manufacturer. |

Examples

| |
|---------------------|
| AT+CGMI |
| SIMCOM INCORPORATED |
| OK |

3.29 AT+CGMM Request model identification

Description

This command is used to requests model identification text, which is intended to permit the user of the Module to identify the specific model.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|---------------|
| AT+CGMM=? | OK |
| Execution Command | Responses |
| AT+CGMM | <model> OK |

Defined values

| |
|------------------------------|
| <model> |
| The identification of model. |

Examples

| |
|-----------------|
| AT+CGMM |
| SIMCOM_SIM7600C |
| OK |

3.30 AT+CGMR Request revision identification

Description

This command is used to request product firmware revision identification text, which is intended to permit the user of the Module to identify the version.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|-----------|
| AT+CGMR=? | OK |
| Execution Command | Responses |


```
AT+CGMR
+CGMR: <revision>
OK
```

Defined values

```
<revision>
The revision identification of firmware.
```

Examples

```
AT+CGMR
+CGMR: LE11B01SIM7600C
OK
```

3.31 AT+CGSN Request product serial number identification

Description

This command requests product serial number identification text, which is intended to permit the user of the Module to identify the individual ME to which it is connected to.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|----------------------------|
| AT+CGSN=? | OK |
| Execution Command | Responses |
| AT+CGSN | <sn> OK |
| | +CME ERROR: memory failure |

Defined values

```
<sn>
Serial number identification, which consists of a single line containing the IMEI (International Mobile station Equipment Identity) number of the MT.
If in CDMA/EVDO mode ,it will show ESN(Electronic Serial Number)
```

Examples

```
AT+CGSN
351602000330570
```

```

OK
AT+CGSN (CDMA/EVDO mode)
0x8059D1F6
OK
    
```

3.32 AT+CSCS Select TE character set

Description

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

Read command shows current setting and test command displays conversion schemes implemented in the TA.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------------------------|---|
| AT+CSCS=? | +CSCS: (list of supported <code><chset></code> s) OK |
| Read Command | Responses |
| AT+CSCS? | +CSCS: <code><chset></code> OK |
| Write Command | Responses |
| AT+CSCS= <code><chset></code> | OK ERROR |
| Execution Command | Responses |
| AT+CSCS | <i>Set subparameters as default value:</i> OK |

Defined values

`<chset>`

Character set, the definition as following:

- “IRA” International reference alphabet.
- “GSM” GSM default alphabet; this setting causes easily software flow control (XON /XOFF) problems.
- “UCS2” 16-bit universal multiple-octet coded character set; UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF.

Examples

```
AT+CSCS="IRA"
OK
AT+CSCS?
+CSCS:"IRA"
OK
```

3.33 AT+CIMI Request international mobile subscriber identity

Description

Execution command causes the TA to return `<IMSI>`, which is intended to permit the TE to identify the individual SIM card which is attached to MT.

NOTE: If USIM card contains two apps, like China Telecom 4G card, one RUIM/CSIM app, and another USIM app; so there are two IMSI in it; AT+CIMI will return the RUIM/CSIM IMSI; AT+CIMIM will return the USIM IMSI;

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|-----------------------|
| AT+CIMI=? | OK ERROR |
| Execution Command | Responses |
| AT+CIMI | <IMSI> OK ERROR |

Defined values

<IMSI>

International Mobile Subscriber Identity (string, without double quotes).

Examples

```
AT+CIMI
460010222028133
OK
```

3.34 AT+CIMIM Request another international mobile subscriber identity

Description

Execution command causes the TA to return `<IMSI>`, which is intended to permit the TE to identify the individual SIM card which is attached to MT.

NOTE: If USIM card contains two apps, like China Telecom 4G card, one RUIM/CSIM app, and another USIM app; so there are two IMSI in it; AT+CIMIM will return the USIM IMSI; AT+CIMI will return the RUIM/CSIM IMSI;

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|---------------------------|
| AT+CIMIM=? | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CIMIM | <code><IMSI></code> |
| | OK |
| | ERROR |

Defined values

| |
|---|
| <code><IMSI></code> |
| International Mobile Subscriber Identity (string, without double quotes). |

Examples

| |
|-----------------|
| <i>AT+CIMIM</i> |
| 460110222028133 |
| OK |

3.35 AT+GCAP Request overall capabilities

Description

Execution command causes the TA reports a list of additional capabilities.

| SIM PIN | References |
|---------|------------|
| YES | V.25ter |

Syntax

| Test Command | Responses |
|-------------------|--------------------------|
| AT+GCAP=? | OK |
| | ERROR |
| Execution Command | Responses |
| AT+GCAP | +GCAP: (list of <name>s) |
| | OK |
| | ERROR |

Defined values

<name>

List of additional capabilities.

- +CGSM GSM function is supported
- +FCLASS FAX function is supported
- +DS Data compression is supported
- +ES Synchronous data mode is supported.
- +CIS707-A CDMA data service command set
- +CIS-856 EVDO data service command set
- +MS Mobile Specific command set

Examples

AT+GCAP

+GCAP:+CGSM,+FCLASS,+DS

OK

4 AT Commands for Status Control

4.1 AT+CFUN Set phone functionality

Description

This command is used to select the level of functionality `<fun>` in the ME. Level "full functionality" is where the highest level of power is drawn. "Minimum functionality" is where minimum power is drawn. Level of functionality between these may also be specified by manufacturers. When supported by manufacturers, ME resetting with `<rst>` parameter may be utilized.

NOTE: `AT+CFUN=6` must be used after setting `AT+CFUN=7`. If module in offline mode, must execute `AT+CFUN=6` or restart module to online mode.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|--|
| AT+CFUN=? | +CFUN: (list of supported <code><fun></code> s), (list of supported <code><rst></code> s) OK ERROR +CME ERROR: <code><err></code> |
| Read Command | Responses |
| AT+CFUN? | +CFUN: <code><fun></code> OK ERROR +CME ERROR: <code><err></code> |
| Write Command | Responses |
| AT+CFUN= <code><fun></code> [, <code><rst></code>] | OK ERROR +CME ERROR: <code><err></code> |

Defined values

| <code><fun></code> |
|-------------------------------------|
| 0 – minimum functionality |
| 1 – full functionality, online mode |

| | | |
|--------------------|---|--|
| 4 | - | disable phone both transmit and receive RF circuits |
| 5 | - | Factory Test Mode |
| 6 | - | Reset |
| 7 | - | Offline Mode |
| <rst> | | |
| 0 | - | do not reset the ME before setting it to <fun> power level |
| 1 | - | reset the ME before setting it to <fun> power level. This value only takes effect when <fun> equals 1. |

Examples

```

AT+CFUN?
+CFUN: 1
OK
AT+CFUN=0
OK

```

4.2 AT+CPIN Enter PIN

Description

This command is used to send the ME a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards MT and an error message, +CME ERROR, is returned to TE.

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

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--|--------------------------------|
| AT+CPIN=? | OK |
| Read Command | Responses |
| AT+CPIN? | +CPIN: <code> |
| | OK |
| | ERROR |
| | +CME ERROR: <err> |
| Write Command | Responses |
| AT+CPIN= <pin> [, <newpin>] | OK |
|] | ERROR |

```
+CME ERROR: <err>
```

Defined values

| | |
|------------|--|
| <pin> | String type values. |
| <newpin> | String type values. |
| <code> | Values reserved by the present document: |
| READY | – ME is not pending for any password |
| SIM PIN | – ME is waiting SIM PIN to be given |
| SIM PUK | – ME is waiting SIM PUK to be given |
| PH-SIM PIN | – ME is waiting phone-to-SIM card password to be given |
| SIM PIN2 | – ME is waiting SIM PIN2 to be given |
| SIM PUK2 | – ME is waiting SIM PUK2 to be given |
| PH-NET PIN | – ME is waiting network personalization password to be given |

Examples

```
AT+CPIN?
+CPIN: SIM PUK2
OK
```

4.3 AT+CICCID Read ICCID from SIM card

Description

This command is used to Read the ICCID from SIM card

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|-------------------|
| AT+CICCID=? | OK |
| Execution Command | Responses |
| AT+CICCID | +ICCID: <ICCID> |
| | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

<ICCID>

Integrate circuit card identity, a standard ICCID is a 20-digit serial number of the SIM card, it presents the publish state, network code, publish area, publish date, publish manufacture and press serial number of the SIM card.

Examples

AT+CICCID

+ICCID: 898600700907A6019125

OK

4.4 AT+CSIM Generic SIM access

Description

This command is used to control the SIM card directly.

Compared to restricted SIM access command [AT+CRSM](#), [AT+CSIM](#) allows the ME to take more control over the SIM interface.

For SIM–ME interface please refer 3GPP TS 11.11.

NOTE: The SIM Application Toolkit functionality is not supported by [AT+CSIM](#). Therefore the following SIM commands can not be used: [TERMINAL PROFILE](#), [ENVELOPE](#), [FETCH](#) and [TEMINAL RESPONSE](#).

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|--------------------------------|---|
| Test Command | Responses |
| AT+CSIM=? | OK |
| Write Command | Responses |
| AT+CSIM=<length>,<com mand> | +CSIM: <length>, <response> OK ERROR +CME ERROR: <err> |

Defined values

<length>

Integer type; length of characters that are sent to TE in <command> or <response>

<command>

Command passed from MT to SIM card.

<response>

Response to the command passed from SIM card to MT.

Examples

```
AT+CSIM=?
```

```
OK
```

4.5 AT+CRSM Restricted SIM access

Description

By using **AT+CRSM** instead of Generic SIM Access **AT+CSIM**, TE application has easier but more limited access to the SIM database.

Write command transmits to the MT the SIM **<command>** and its required parameters. MT handles internally all SIM-MT interface locking and file selection routines. As response to the command, MT sends the actual SIM information parameters and response data. MT error result code +CME ERROR may be returned when the command cannot be passed to the SIM, but failure in the execution of the command in the SIM is reported in **<sw1>** and **<sw2>** parameters.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|--|---|
| Test Command | Responses |
| AT+CRSM=? | OK |
| Write Command | Responses |
| AT+CRSM=<command>[,<fileID>[,<p1>,<p2>,<p3>[,<data>]]] | +CRSM: <sw1>,<sw2>[,<response>] OK ERROR +CME ERROR: <err> |

Defined values

<command>

Command passed on by the MT to the SIM:

- 176 – READ BINARY
- 178 – READ RECORD
- 192 – GET RESPONSE
- 214 – UPDATE BINARY
- 220 – UPDATE RECORD
- 242 – STATUS
- 203 – RETRIEVE DATA

219 – SET DATA

<fileID>

Identifier for an elementary data file on SIM, if used by <command>.

The following list the fileID hex value, user needs to convert them to decimal.

EFs under MF

| | |
|--------|-------------------------------|
| 0x2FE2 | ICCID |
| 0x2F05 | Extended Language Preferences |
| 0x2F00 | EF DIR |
| 0x2F06 | Access Rule Reference |

EFs under USIM ADF

| | |
|--------|--|
| 0x6F05 | Language Indication |
| 0x6F07 | IMSI |
| 0x6F08 | Ciphering and Integrity keys |
| 0x6F09 | C and I keys for pkt switched domain |
| 0x6F60 | User controlled PLMN selector w/Acc Tech |
| 0x6F30 | User controlled PLMN selector |
| 0x6F31 | HPLMN search period |
| 0x6F37 | ACM maximum value |
| 0x6F38 | USIM Service table |
| 0x6F39 | Accumulated Call meter |
| 0x6F3E | Group Identifier Level |
| 0x6F3F | Group Identifier Level 2 |
| 0x6F46 | Service Provider Name |
| 0x6F41 | Price Per Unit and Currency table |
| 0x6F45 | Cell Bcast Msg identifier selection |
| 0x6F78 | Access control class |
| 0x6F7B | Forbidden PLMNs |
| 0x6F7E | Location information |
| 0x6FAD | Administrative data |
| 0x6F48 | Cell Bcast msg id for data download |
| 0x6FB7 | Emergency call codes |
| 0x6F50 | Cell bcast msg id range selection |
| 0x6F73 | Packet switched location information |
| 0x6F3B | Fixed dialling numbers |
| 0x6F3C | Short messages |
| 0x6F40 | MSISDN |
| 0x6F42 | SMS parameters |
| 0x6F43 | SMS Status |
| 0x6F49 | Service dialling numbers |
| 0x6F4B | Extension 2 |
| 0x6F4C | Extension 3 |
| 0x6F47 | SMS reports |
| 0x6F80 | Incoming call information |

| | |
|---------|---------------------------------------|
| 0x6F81 | Outgoing call information |
| 0x6F82 | Incoming call timer |
| 0x6F83 | Outgoing call timer |
| 0x6F4E | Extension 5 |
| 0x6F4F | Capability Config Parameters 2 |
| 0x6FB5 | Enh Multi Level Precedence and Pri |
| 0x6FB6 | Automatic answer for eMLPP service |
| 0x6FC2 | Group identity |
| 0x6FC3 | Key for hidden phonebook entries |
| 0x6F4D | Barred dialling numbers |
| 0x6F55 | Extension 4 |
| 0x6F58 | Comparison Method information |
| 0x6F56 | Enabled services table |
| 0x6F57 | Access Point Name Control List |
| 0x6F2C | De-personalization Control Keys |
| 0x6F32 | Co-operative network list |
| 0x6F5B | Hyperframe number |
| 0x6F5C | Maximum value of Hyperframe number |
| 0x6F61 | OPLMN selector with access tech |
| 0x6F5D | OPLMN selector |
| 0x6F62 | HPLMN selector with access technology |
| 0x6F06 | Access Rule reference |
| 0x6F65 | RPLMN last used access tech |
| 0x6FC4 | Network Parameters |
| 0x6F11 | CPHS: Voice Mail Waiting Indicator |
| 0x6F12, | CPHS: Service String Table |
| 0x6F13 | CPHS: Call Forwarding Flag |
| 0x6F14 | CPHS: Operator Name String |
| 0x6F15 | CPHS: Customer Service Profile |
| 0x6F16 | CPHS: CPHS Information |
| 0x6F17 | CPHS: Mailbox Number |
| 0x6FC5 | PLMN Network Name |
| 0x6FC6 | Operator PLMN List |
| 0x6F9F | Dynamic Flags Status |
| 0x6F92 | Dynamic2 Flag Setting |
| 0x6F98 | Customer Service Profile Line2 |
| 0x6F9B | EF PARAMS - Welcome Message |
| 0x4F30 | Phone book reference file |
| 0x4F22 | Phone book synchronization center |
| 0x4F23 | Change counter |
| 0x4F24 | Previous Unique Identifier |
| 0x4F20 | GSM ciphering key Kc |
| 0x4F52 | GPRS ciphering key |

| | |
|----------------------|--------------------------------------|
| 0x4F63 | CPBCCH information |
| 0x4F64 | Investigation scan |
| 0x4F40 | MExE Service table |
| 0x4F41 | Operator Root Public Key |
| 0x4F42 | Administrator Root Public Key |
| 0x4F43 | Third party Root public key |
| 0x6FC7 | Mail Box Dialing Number |
| 0x6FC8 | Extension 6 |
| 0x6FC9 | Mailbox Identifier |
| 0x6FCA | Message Waiting Indication Status |
| 0x6FCD | Service Provider Display Information |
| 0x6FD2 | UIM_USIM_SPT_TABLE |
| 0x6FD9 | Equivalent HPLMN |
| 0x6FCB | Call Forwarding Indicator Status |
| 0x6FD6 | GBA Bootstrapping parameters |
| 0x6FDA | GBA NAF List |
| 0x6FD7 | MBMS Service Key |
| 0x6FD8 | MBMS User Key |
| 0x6FCE | MMS Notification |
| 0x6FD0 | MMS Issuer connectivity parameters |
| 0x6FD1 | MMS User Preferences |
| 0x6FD2 | MMS User connectivity parameters |
| 0x6FCF | Extension 8 |
| 0x5031 | Object Directory File |
| 0x5032 | Token Information File |
| 0x5033 | Unused space Information File |
| EFs under Telecom DF | |
| 0x6F3A | Abbreviated Dialing Numbers |
| 0x6F3B | Fixed dialling numbers |
| 0x6F3C | Short messages |
| 0x6F3D | Capability Configuration Parameters |
| 0x6F4F | Extended CCP |
| 0x6F40 | MSISDN |
| 0x6F42 | SMS parameters |
| 0x6F43 | SMS Status |
| 0x6F44 | Last number dialled |
| 0x6F49 | Service Dialling numbers |
| 0x6F4A | Extension 1 |
| 0x6F4B | Extension 2 |
| 0x6F4C | Extension 3 |
| 0x6F4D | Barred Dialing Numbers |
| 0x6F4E | Extension 4 |
| 0x6F47 | SMS reports |

| | |
|--|-----------------------------------|
| 0x6F58 | Comparison Method Information |
| 0x6F54 | Setup Menu elements |
| 0x6F06 | Access Rule reference |
| 0x4F20 | Image |
| 0x4F30 | Phone book reference file |
| 0x4F22 | Phone book synchronization center |
| 0x4F23 | Change counter |
| 0x4F24 | Previous Unique Identifier |
| <p1> <p2> <p3> | |
| Integer type; parameters to be passed on by the Module to the SIM. | |
| <data> | |
| Information which shall be written to the SIM (hexadecimal character format, refer AT+CSCS). | |
| <sw1> <sw2> | |
| Status information from the SIM about the execution of the actual command. It is returned in both cases, on successful or failed execution of the command. | |
| <response> | |
| Response data in case of a successful completion of the previously issued command. “STATUS” and “GET RESPONSE” commands return data, which gives information about the currently selected elementary data field. This information includes the type of file and its size. After “READ BINARY” or “READ RECORD” commands the requested data will be returned. <response> is empty after “UPDATE BINARY” or “UPDATE RECORD” commands. | |

Examples

```
AT+CRSM=?
OK
```

4.6 AT+SPIC Times remain to input SIM PIN/PUK

Description

This command is used to inquire times remain to input SIM PIN/PUK.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| | |
|-------------------|--|
| Test Command | Responses |
| AT+SPIC=? | OK |
| Execution Command | Responses |
| AT+SPIC | +SPIC: <pin1> , <puk1> , <pin2> , <puk2> OK |

Defined values

| |
|----------------------------------|
| <pin1> |
| Times remain to input PIN1 code. |
| <puk1> |
| Times remain to input PUK1 code. |
| <pin2> |
| Times remain to input PIN2 code. |
| <puk2> |
| Times remain to input PUK2 code. |

Examples

| |
|------------------|
| AT+SPIC=? |
| OK |
| AT+SPIC |
| +SPIC: 3,10,0,10 |
| OK |

4.7 AT+CSPN Get service provider name from SIM

Description

This command is used to get service provider name from SIM card.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|--------------|-----------------------------|
| AT+CSPN=? | OK |
| | ERROR |
| Read Command | Responses |
| AT+CSPN? | +CSPN: <spn>,<display mode> |
| | OK |
| | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

| |
|-------|
| <spn> |
|-------|

String type; service provider name on SIM
 <display mode>
 0 – doesn't display PLMN. Already registered on PLMN.
 1 – display PLMN

Examples

```
AT+CSPN=?
OK
AT+CSPN?
+CSPN: "CMCC",0
OK
```

4.8 AT+CSQ Query signal quality

Description

This command is used to return received signal strength indication <rss> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA as compound values.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CSQ=? | +CSQ: (list of supported <rss>s),(list of supported <ber>s) OK |
| Execution Command | Responses |
| AT+CSQ | +CSQ: <rss>,<ber> OK ERROR |

Defined values

| <rss> | | |
|-----------|---|-----------------------------|
| 0 | – | -113 dBm or less |
| 1 | – | -111 dBm |
| 2...30 | – | -109... -53 dBm |
| 31 | – | -51 dBm or greater |
| 99 | – | not known or not detectable |
| 100 | – | -116 dBm or less |
| 101 | – | -115 dBm |
| 102...191 | – | -114... -26dBm |

| | | |
|--------------------|---|---|
| 191 | - | -25 dBm or greater |
| 199 | - | not known or not detectable |
| 100...199 | - | expand to TDSCDMA, indicate RSCP received |
| <ber> | | |
| (in percent) | | |
| 0 | - | <0.01% |
| 1 | - | 0.01% --- 0.1% |
| 2 | - | 0.1% --- 0.5% |
| 3 | - | 0.5% --- 1.0% |
| 4 | - | 1.0% --- 2.0% |
| 5 | - | 2.0% --- 4.0% |
| 6 | - | 4.0% --- 8.0% |
| 7 | - | >=8.0% |
| 99 | - | not known or not detectable |

Examples

```
AT+CSQ
+CSQ: 22,0
OK
```

4.9 AT+AUTOCSQ Set CSQ report

Description

This command is used to enable or disable automatic report CSQ information, when automatic report enabled, the module reports CSQ information every five seconds or only after **<rsssi>** or **<ber>** is changed, the format of automatic report is "+CSQ: **<rsssi>**,**<ber>**".

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|---|
| AT+AUTOCSQ=? | +AUTOCSQ: (list of supported <auto> s),(list of supported <mode> s) OK |
| Read Command | Responses |
| AT+AUTOCSQ? | +AUTOCSQ: <auto> , <mode> OK |
| Write Command | Responses |
| AT+AUTOCSQ= <auto> [, < | OK |

| | |
|--------|-------|
| mode>] | ERROR |
|--------|-------|

Defined values

<auto>

0 – disable automatic report

1 – enable automatic report

<mode>

0 – CSQ automatic report every five seconds

1 – CSQ automatic report only after <rssi> or <ber> is changed_

NOTE: If the parameter of <mode> is omitted when executing write command, <mode> will be set to default value.

Examples

AT+AUTOCSQ=?

+AUTOCSQ: (0-1),(0-1)

OK

AT+AUTOCSQ?

+AUTOCSQ: 1,1

OK

AT+AUTOCSQ=1,1

OK

+CSQ: 23,0 (when <rssi> or <ber> changing)

4.10 AT+CSQDELTA Set RSSI delta change threshold

Description

This command is used to set RSSI delta threshold for signal strength reporting.

| SIM PIN | References |
|---------|------------|
|---------|------------|

| | |
|----|--------|
| NO | Vendor |
|----|--------|

Syntax

| Test Command | Responses |
|---------------|---|
| AT+CSQDELTA=? | +CSQDELTA: (list of supported <delta>s) OK |
| Read Command | Responses |
| AT+CSQDELTA? | +CSQDELTA: <delta> OK ERROR |

| | |
|---------------------|--|
| Write Command | Responses |
| AT+CSQDELTA=<delta> | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CSQDELTA | <i>Set default value (<delta>=5) :</i> |
| | OK |

Defined values

| |
|---------------------|
| <delta> |
| Range: from 0 to 5. |

Examples

```
AT+CSQDELTA?
+CSQDELTA: 5
OK
```

4.11 AT+CATR Configure URC destination interface

Description

This command is used to configure the serial port which will be used to output URCs. We recommend configure a destination port for receiving URC in the system initialization phase, in particular, in the case that transmitting large amounts of data, e.g. use TCP/UDP and MT SMS related AT command.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|----------------|------------------------------------|
| Test Command | Responses |
| AT+CATR=? | +CATR: (list of supported <port>s) |
| | OK |
| Read Command | Responses |
| AT+CATR? | +CATR: <port> |
| | OK |
| Write Command | Responses |
| AT+CATR=<port> | OK |
| | ERROR |

Defined values

```
<port>
0 - all ports
1 - use UART port to output URCs
2 - use MODEM port to output URCs
3 - use ATCOM port to output URCs
4 - use cmux virtual port1 to output URCs
5 - use cmux virtual port2 to output URCs
6 - use cmux virtual port3 to output URCs
7 - use cmux virtual port4 to output URCs
```

Examples

```
AT+CATR=1
OK
AT+CATR?
+CATR: 1
OK
```

4.12 AT+CPOF Power down the module

Description

This command is used to power off the module. Once the AT+CPOF command is executed, The module will store user data and deactivate from network, and then shutdown.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|-----------|
| AT+CPOF=? | OK |
| Execution Command | Responses |
| AT+CPOF | OK |

Examples

```
AT+CPOF
OK
```

4.13 AT+CRESET Reset the module

Description

This command is used to reset the module.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|-----------|
| AT+CRESET=? | OK |
| Execution Command | Responses |
| AT+CRESET | OK |

Examples

```
AT+CRESET=?
OK
AT+CRESET
OK
```

4.14 AT+CACM Accumulated call meter

Description

This command is used to reset the Advice of Charge related accumulated call meter value in SIM file EF_{ACM}.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|--------------|
| AT+CACM=? | OK |
| | ERROR |
| Read Command | Responses |
| AT+CACM? | +CACM: <acm> |
| | OK |
| | ERROR |

| | |
|-------------------|-------------------|
| | +CME ERROR: <err> |
| Write Command | Responses |
| AT+CACM=<passwd> | OK |
| | ERROR |
| | +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CACM | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

<passwd>

String type, SIM PIN2.

<acm>

String type, accumulated call meter value similarly coded as <ccm> under +CAOC.

Examples

AT+CACM?

+CACM: "000000"

OK

4.15 AT+CAMM Accumulated call meter maximum

Description

This command is used to set the Advice of Charge related accumulated call meter maximum value in SIM file EF_{ACMmax}.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| | |
|--------------|-----------------|
| Test Command | Responses |
| AT+CAMM=? | OK |
| | ERROR |
| Read Command | Responses |
| AT+CAMM? | +CAMM: <acmmax> |
| | OK |
| | ERROR |

| | |
|---------------------------------|-------------------|
| | +CME ERROR: <err> |
| Write Command | Responses |
| AT+CAMM= <acmmax>[,<passwd>] | OK |
| | ERROR |
| | +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CAMM | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

<acmmax>

String type, accumulated call meter maximum value similarly coded as <ccm> under AT+CAOC, value zero disables ACMmax feature.

<passwd>

String type, SIM PIN2.

Examples

AT+CAMM?

+CAMM: "000000"

OK

4.16 AT+CPUC Price per unit and currency table

Description

This command is used to set the parameters of Advice of Charge related price per unit and currency table in SIM file EF_{PUC}..

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| | |
|--------------|---------------------------|
| Test Command | Responses |
| AT+CPUC=? | OK |
| | ERROR |
| Read Command | Responses |
| AT+CPUC? | +CPUC: [<currency>,<ppu>] |
| | OK |

| | |
|-------------------------------------|-------------------|
| | ERROR |
| | +CME ERROR: <err> |
| Write Command | Responses |
| AT+CPUC=<currency>,<ppu>[,<passwd>] | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

<currency>

String type, three-character currency code (e.g. "GBP", "DEM"), character set as specified by command Select TE Character Set AT+CSCS.

<ppu>

String type, price per unit, dot is used as a decimal separator. (e.g. "2.66").

<passwd>

String type, SIM PIN2.

Examples

AT+CPUC?

+CPUC: "GBP", "2.66"

OK

4.17 AT+CCLK Real time clock management

Description

This command is used to manage Real Time Clock of the module.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|----------------|---------------|
| Test Command | Responses |
| AT+CCLK=? | OK |
| Read Command | Responses |
| AT+CCLK? | +CCLK: <time> |
| | OK |
| Write Command | Responses |
| AT+CCLK=<time> | OK |
| | ERROR |

Defined values

<time>

String type value; format is “yy/MM/dd,hh:mm:ss±zz”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; three last digits are mandatory, range -47...+48). E.g. 6th of May 2008, 14:28:10 GMT+8 equals to “08/05/06,14:28:10+32”.

NOTE: 1. Time zone is nonvolatile, and the factory value is invalid time zone.
 2. Command **+CCLK?** will return time zone when time zone is valid, and if time zone is 00, command **+CCLK?** will return “+00”, but not “-00”.

Examples

```
AT+CCLK="08/11/28,12:30:33+32"
```

```
OK
```

```
AT+CCLK?
```

```
+CCLK: "08/11/28,12:30:35+32"
```

```
OK
```

```
AT+CCLK="08/11/26,10:15:00"
```

```
OK
```

```
AT+CCLK?
```

```
+CCLK: "08/11/26,10:15:02+32"
```

```
OK
```

4.18 AT+CMEE Report mobile equipment error

Description

This command is used to disable or enable the use of result code “+CME ERROR: <err>” or “+CMS ERROR: <err>” as an indication of an error relating to the functionality of ME; when enabled, the format of <err> can be set to numeric or verbose string.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------|---------------------------------------|
| AT+CMEE=? | +CMEE: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CMEE? | +CMEE: <n> OK |
| Write Command | Responses |

| | |
|-------------------|---------------------------|
| AT+CMEE=<n> | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CMEE | <i>Set default value:</i> |
| | OK |

Defined values

| |
|---|
| <n> |
| 0 – Disable result code, i.e. only “ERROR” will be displayed. |
| 1 – Enable error result code with numeric values. |
| 2 – Enable error result code with string values. |

Examples

| |
|--------------------------------|
| AT+CMEE? |
| +CMEE: 2 |
| OK |
| AT+CPIN="1234","1234" |
| +CME ERROR: incorrect password |
| AT+CMEE=0 |
| OK |
| AT+CPIN="1234","1234" |
| ERROR |
| AT+CMEE=1 |
| OK |
| AT+CPIN="1234","1234" |
| +CME ERROR: 16 |

4.19 AT+CPAS Phone activity status

Description

This command is used to return the activity status <pas> of the ME. It can be used to interrogate the ME before requesting action from the phone.

NOTE: This command is same as AT+CLCC, but AT+CLCC is more commonly used. So AT+CLCC is recommended to use.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|--------------|-----------|
| Test Command | Responses |
|--------------|-----------|

| | |
|-------------------|---|
| AT+CPAS=? | +CPAS: (list of supported <pas>s) OK |
| Execution Command | Responses |
| AT+CPAS | +CPAS: <pas> OK |

Defined values

| |
|---|
| <pas> |
| 0 – ready (ME allows commands from TA/TE) |
| 3 – ringing (ME is ready for commands from TA/TE, but the ringer is active) |
| 4 – call in progress (ME is ready for commands from TA/TE, but a call is in progress) |

Examples

| |
|----------------------------------|
| <i>RING (with incoming call)</i> |
| AT+CPAS |
| +CPAS: 3 |
| OK |
| AT+CPAS=? |
| +CPAS: (0,3,4) |
| OK |

4.20 AT+SIMEI Set IMEI for the module

Description

This command is used to set the module's IMEI value.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|-----------------|-------------------------------|
| Test Command | Responses |
| AT+SIMEI=? | OK |
| Read Command | Responses |
| AT+SIMEI? | +SIMEI: <imei> OK ERROR |
| Write Command | Responses |
| AT+SIMEI=<imei> | OK |

| |
|-------|
| ERROR |
|-------|

Defined values

<imei>

The 15-digit IMEI value.

Examples

```
AT+SIMEI=357396012183170
```

```
OK
```

```
AT+SIMEI?
```

```
+SIMEI: 357396012183170
```

```
OK
```

```
AT+SIMEI=?
```

```
OK
```

4.21 AT+SMEID Request Mobile Equipment Identifier

Description

Only task effect in 7600CE

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Read Command | Responses |
|--------------|-------------------------------|
| AT+SMEID? | +SMEID: <MEID> OK ERROR |

Defined values

<MEID>

Mobile Equipment Identifier (string, without double quotes).

Examples

```
AT+SMEID?
```

```
+SMEID: A1000021A5906F
```

OK

4.22 AT+CSVM Voice Mail Subscriber number

Description

Execution command returns the voice mail number related to the subscriber.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------------------------------|---|
| AT+CSVM=? | +CSVM: (0-1), "(0-9,+)", (128-255) OK ERROR |
| Read Command | Responses |
| AT+CSVM? | +CSVM: <valid>, "<number>",<type> OK ERROR |
| Write Command | Responses |
| AT+CSVM=<valid>, "<number>",<type> | OK ERROR |

Defined values

<valid>

Whether voice mail number is valid:

0 – Voice mail number is invalid.

1 – Voice mail number is valid.

<number>

String type phone number of format specified by <type>.

<type>

Type of address octet in integer format. see also AT+CPBR <type>

Examples

AT+CSVM?

+CSVM: 1, "13697252277",129

OK

4.23 AT+CUSBPIDSWITCH Change module's PID

Description

Execution command change the module's PID. This command will reset the module if change to other PID (not current used PID).

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---|---|
| AT+CUSBPIDSWITCH=? | +CUSBPIDSWITCH: (9000,9001,9002,9003,9004,9005,9006,9007,9011,9016,9018,9019,901A,901B,9020,9021,9022,9023,9024,9025,9026,9027,9028,9029,902A,902B),(0-1),(0-1) OK ERROR |
| Read Command | Responses |
| AT+CUSBPIDSWITCH? | +CUSBPIDSWITCH: <pid> OK ERROR |
| Write Command | Responses |
| AT+CUSBPIDSWITCH=<pid>, <reserve1>,<reserve2> | OK ERROR |

Defined values

<pid>

This command support pids, 9001 is the default value.

9000,9001,9002,9003,9004,9005,9006,9007,9011,9016,9018,9019,901A,901B,9020,9021,9022,9023,9024,9025,9026,9027,9028,9029,902A,902B

<reserve1>

0 or 1, this value is for the reserve

<reserve2>

0 or 1, this value is for the reserve

Examples

```
AT+CUSBPIDSWITCH?
+CUSBPIDSWITCH: 9001
OK
```

```
AT+CUSBPIDSWITCH=9001,1,1
OK
```

PID configuration:

9000:Diag, NMEA, At, Modem, Audio, Rmnet
 9001:Diag, NMEA, At, Modem, Audio, Rmnet
 9002:Diag, NMEA, At, Modem, Audio, Rmnet
 9003:Diag, NMEA, At, Modem, Audio, MBIM
 9004:Diag, NMEA, At, Modem, Audio, GNSS, Rmnet
 9005:Diag, NMEA, At, Modem, Audio, GNSS, MBIM
 9006:Diag, NMEA, At,Modem
 9007:Diag, NMEA, At, Modem, Audio, Rmnet,mass_storage
 9011:RNDIS,Diag, NMEA, At, Modem, Audio
 9016:Diag, Rmnet
 9018:Diag, NMEA, At, Modem, Audio, Ecm
 9019:RNDIS
 901A: Diag, NMEA, At, Rmnet
 901B:NMEA, At, Rmnet
 9020: Diag, At, Modem
 9021: Diag, Modem
 9022: Diag, Modem, Rmnet
 9023: Modem
 9024: At, Modem
 9025: Modem,rmnet
 9026: Modem,Audio
 9027: Modem,Audio, Rmnet
 9028:Diag, Modem,Audio, Rmnet
 9029:Diag, Modem,Audio
 902A: At
 902B: Diag, NMEA, At, Modem, Rmnet,Usb-audio

4.24 Indication of EONS

This module supports EONS function; the following table shows the URC related EONS.

| | |
|--------------|--|
| OPL INIT | Description |
| OPL DONE | This indication means EF-OPL has been read successfully. Only after this URC is reported, the AT+COPS? can query the network name that supports EONS function. |
| PNN INIT | Description |
| PNN DONE | This indication means EF-PNN has been read successfully |
| OPL UPDATING | Description |

| | |
|--------------|---|
| OPL UPDATING | This indication means the EF-OPL is updating using OTA message. After updating, the “OPL DONE” should report. |
| PNN UPDATING | Description |
| PNN UPDATING | This indication means the EF-PNN is updating using OTA message. After updating, the “PNN DONE” should report. |
| PNN UPDATING | This indication means the EF-PNN is updating using OTA message. After updating, the “PNN DONE” should report. |

4.25 Indication of Voice Mail

This module supports voice mail function; the subscriber number is configured by AT+CSVM command, the following table shows the URC related Voice Mail.

| | |
|------------------------------|--|
| Box Empty | Description |
| +VOICEMAIL: EMPTY | This indication means the voice mail box is empty |
| New Message | Description |
| +VOICEMAIL: NEW MSG | This indication means there is a new voice mail message notification received. This is for CPHS. |
| Voice Mail Status Updated | Description |
| +VOICEMAIL: WAITING, <count> | This indication means that there are <count> number of voice mail messages that needs to be got. |

Defined values

< count>

Count of voice mail message that waits to be got.

Examples

+VOICEMAIL: WAITING, <count>

+VOICEMAIL: WAITING, 5

5 AT Commands for Network

5.1 AT+CREG Network registration

Description

This command is used to control the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the ME network registration status, or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

Read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the ME. Location information elements <lac> and <ci> are returned only when <n>=2 and ME is registered in the network.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|--|
| AT+CREG=? | +CREG: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CREG? | +CREG: <n>,<stat>[,<lac>,<ci>] OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+CREG=<n> | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CREG | <i>Set default value (<n>=0) :</i> OK |

Defined values

| <n> | |
|-----|---|
| 0 | – disable network registration unsolicited result code |
| 1 | – enable network registration unsolicited result code +CREG: <stat> |
| 2 | – enable network registration and location information unsolicited result code +CREG: |

`<stat>[,<lac>,<ci>]`

`<stat>`

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

`<lac>`

Two byte location area code in hexadecimal format(e.g."00C3" equals 193 in decimal).

NOTE: The `<lac>` not supported in CDMA/HDR mode

`<ci>`

Cell Identify in hexadecimal format.

GSM : Maximum is two byte

WCDMA : Maximum is four byte

TDS-CDMA : Maximum is four byte

NOTE: The `<ci>` not supported in CDMA/HDR mode

Examples

```
AT+CREG?
```

```
+CREG: 0,1
```

```
OK
```

5.2 AT+COPS Operator selection

Description

Write command forces an attempt to select and register the GSM/UMTS network operator. `<mode>` is used to select whether the selection is done automatically by the ME or is forced by this command to operator `<oper>` (it shall be given in format `<format>`). If the selected operator is not available, no other operator shall be selected (except `<mode>=4`). The selected operator name format shall apply to further read commands (`AT+COPS?`) also. `<mode>=2` forces an attempt to deregister from the network. The selected mode affects to all further network registration (e.g. after `<mode>=2`, ME shall be unregistered until `<mode>=0` or 1 is selected).

Read command returns the current mode and the currently selected operator. If no operator is selected, `<format>` and `<oper>` are omitted.

Test command returns a list of quadruplets, each representing an operator present in the network. Quadruplet consists of an integer indicating the availability of the operator `<stat>`, long and short alphanumeric format of the name of the operator, and numeric format representation of the operator. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM, and other networks.

It is recommended (although optional) that after the operator list TA returns lists of supported `<mode>`s and `<format>`s. These lists shall be delimited from the operator list by two commas.

When executing `AT+COPS=?`, any input from serial port will stop this command.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| | |
|---|---|
| Test Command | Responses |
| <code>AT+COPS=?</code> | [+COPS: [list of supported (<code><stat></code>),long alphanumeric <code><oper></code> ,short alphanumeric <code><oper></code> ,numeric <code><oper></code> [, <code>< AcT></code>]]s] [, (list of supported <code><mode></code> s), (list of supported <code><format></code> s)] OK ERROR +CME ERROR: <code><err></code> |
| Read Command | Responses |
| <code>AT+COPS?</code> | +COPS: <code><mode></code> [, <code><format></code> , <code><oper></code> [, <code>< AcT></code>]] OK ERROR +CME ERROR: <code><err></code> |
| Write Command | Responses |
| <code>AT+COPS=<code><mode></code> [,<code><format></code> [,<code><oper></code> [,<code>< AcT></code>]]]</code> | OK ERROR +CME ERROR: <code><err></code> |
| Execution Command | Responses |
| <code>AT+COPS</code> | OK |

Defined values

<mode>

- 0 – automatic
- 1 – manual
- 2 – force deregister
- 3 – set only <format>
- 4 – manual/automatic
- 5 – manual, but do not modify the network selection mode (e.g. GSM, WCDMA) after module resets.

NOTE: if <mode> is set to 1, 4, 5 in write command, the <oper> is needed.

<format>

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

<oper>

string type, <format> indicates if the format is alphanumeric or numeric.

<stat>

- 0 – unknown
- 1 – available
- 2 – current
- 3 – forbidden

<AcT>

Access technology selected

- 0 – GSM
- 1 – GSM Compact
- 2 – UTRAN
- 7 – EUTRAN
- 8 – CDMA/HDR

NOTE: the value 8 do not follow the 3gpp spec, we add this value to distinguish cdma/hdr.

Examples

```
AT+COPS?
```

```
+COPS: 0,0,"China Mobile Com",0
```

```
OK
```

```
AT+COPS=?
```

```
+COPS: (2,"China Unicom","Unicom","46001",0),(3,"China Mobile Com","DGTMP",  
"46000",0),(0,1,2,3,4,5),(0,1,2)
```

```
OK
```

5.3 AT+CLCK Facility lock

Description

This command is used to lock, unlock or interrogate a ME or a network facility `<fac>`. Password is normally needed to do such actions. When querying the status of a network service (`<mode>=2`) the response line for 'not active' case (`<status>=0`) should be returned only if service is not active for any `<class>`.

| | |
|---------|----------------|
| SIM PIN | References |
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|---|
| AT+CLCK=? | +CLCK: (list of supported <code><fac></code> s) OK ERROR +CME ERROR: <code><err></code> |
| Write Command | Responses |
| AT+CLCK= <code><fac></code> , <code><mode></code> [, <code><passwd></code>],[<code><class></code>]] | OK <i>When <code><mode>=2</code> and command successful:</i> +CLCK: <code><status></code> [, <code><class1></code>][<code><CR></code> <code><LF></code> +CLCK: <code><status></code> , <code><class2></code> [...] OK ERROR +CME ERROR: <code><err></code> |

Defined values

| <code><fac></code> | |
|--------------------------|---|
| "PF" | lock Phone to the very First inserted SIM card or USIM card |
| "SC" | lock SIM card or USIM card |
| "AO" | Barr All Outgoing Calls |
| "OI" | Barr Outgoing International Calls |
| "OX" | Barr Outgoing International Calls except to Home Country |
| "AI" | Barr All Incoming Calls |
| "IR" | Barr Incoming Calls when roaming outside the home country |
| "AB" | All Barring services (only for <code><mode>=0</code>) |
| "AG" | All outGoing barring services (only for <code><mode>=0</code>) |
| "AC" | All inComing barring services (only for <code><mode>=0</code>) |

"FD" SIM fixed dialing memory feature
 "PN" Network Personalization
 "PU" network subset Personalization
 "PP" service Provider Personalization
 "PC" Corporate Personalization

<mode>

0 – unlock
 1 – lock
 2 – query status

<status>

0 – not active
 1 – active

<passwd>

Password.

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

<classX>

It is a sum of integers each representing a class of information (default 7):

1 – voice (telephony)
 2 – data (refers to all bearer services)
 4 – fax (facsimile services)
 8 – short message service
 16 – data circuit sync
 32 – data circuit async
 64 – dedicated packet access
 128 – dedicated PAD access
 255 – The value 255 covers all classes

Examples

```
AT+CLCK="SC",2
+CLCK: 0
OK
```

5.4 AT+CPWD Change password

Description

Write command sets a new password for the facility lock function defined by command Facility Lock [AT+CLCK](#).

Test command returns a list of pairs which present the available facilities and the maximum length of their password.

SIM PIN References

| | |
|-----|----------------|
| YES | 3GPP TS 27.007 |
|-----|----------------|

Syntax

| Test Command | Responses |
|-------------------------------------|---|
| AT+CPWD=? | +CPWD: (list of supported (<fac>,<pwdlength>)s) OK |
| | ERROR |
| | +CME ERROR: <err> |
| Write Command | Responses |
| AT+CPWD= <fac>,<oldpwd>,<newpwd> | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

<fac>

Refer Facility Lock +CLCK for other values:

- "SC" SIM or USIM PIN1
- "P2" SIM or USIM PIN2
- "AB" All Barring services
- "AC" All inComing barring services (only for <mode>=0)
- "AG" All outGoing barring services (only for <mode>=0)
- "AI" Barr All Incoming Calls
- "AO" Barr All Outgoing Calls
- "IR" Barr Incoming Calls when roaming outside the home country
- "OI" Barr Outgoing International Calls
- "OX" Barr Outgoing International Calls except to Home Country

<oldpwd>

String type, it shall be the same as password specified for the facility from the ME user interface or with command Change Password AT+CPWD.

<newpwd>

String type, it is the new password; maximum length of password can be determined with <pwdlength>.

<pwdlength>

Integer type, max length of password.

Examples

AT+CPWD=?

+CPWD: ("AB",4),("AC",4),("AG",4),("AI",4),("AO",4),("IR",4),("OI",4),("OX",4),("SC",8),("P2",8)

OK

5.5 AT+CCUG Closed user group

Description

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

NOTE: This command not supported in CDMA/HDR mode.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| | |
|------------------------------------|---------------------------|
| Test Command | Responses |
| AT+CCUG=? | OK |
| | ERROR |
| Read Command | Responses |
| AT+CCUG? | +CCUG: <n>,<index>,<info> |
| | OK |
| | ERROR |
| | +CME ERROR: <err> |
| Write Command | Responses |
| AT+CCUG= <n>[,<index>[,<info>]] | OK |
| | ERROR |
| | +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CCUG | <i>Set default value:</i> |
| | OK |

Defined values

<n>

- 0 – disable CUG temporary mode
- 1 – enable CUG temporary mode

<index>

- 0..9 – CUG index
- 10 – no index (preferred CUG taken from subscriber data)

<info>

- 0 – no information
- 1 – suppress OA
- 2 – suppress preferential CUG
- 3 – suppress OA and preferential CUG

Examples

```
AT+CCUG?
+CCUG: 0,0,0
OK
```

5.6 AT+CUSD Unstructured supplementary service data

Description

This command allows control of the Unstructured Supplementary Service Data (USSD). Both network and mobile initiated operations are supported. Parameter `<n>` is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation) `+CUSD: <m>[,<str>,<dcs>]` to the TE. In addition, value `<n>=2` is used to cancel an ongoing USSD session.

NOTE: This command not supported in CDMA/HDR mode.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--|---|
| AT+CUSD=? | +CUSD: (list of supported <code><n></code> s) OK |
| Read Command | Responses |
| AT+CUSD? | +CUSD: <code><n></code> OK |
| Write Command | Responses |
| AT+CUSD= <code><n>[,<str>[,<dcs>]]</code> | OK ERROR +CME ERROR: <code><err></code> |
| Execution Command | Responses |
| AT+CUSD | <i>Set default value (<n>=0):</i> OK |

Defined values

| |
|--|
| <n> |
| <ul style="list-style-type: none"> 0 – disable the result code presentation in the TA 1 – enable the result code presentation in the TA 2 – cancel session (not applicable to read command response) |
| <str> |
| String type USSD-string. |
| <dcs> |
| Cell Broadcast Data Coding Scheme in integer format (default 0). |
| <m> |
| <ul style="list-style-type: none"> 0 – no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation) 1 – further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 2 – USSD terminated by network 4 – operation not supported 5 – network time out |

Examples

```
AT+CUSD?
```

```
+CUSD: 1
```

```
OK
```

```
AT+CUSD=0
```

```
OK
```

5.7 AT+CAOC Advice of charge

Description

This command refers to Advice of Charge supplementary service that enables subscriber to get information about the cost of calls. With <mode>=0, the execute command returns the current call meter value from the ME.

This command also includes the possibility to enable an unsolicited event reporting of the CCM information. The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes, but not more that every 10 seconds. Deactivation of the unsolicited event reporting is made with the same command.

NOTE: This command not supported in CDMA/HDR mode.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|-----------|
|--------------|-----------|

| | |
|-------------------|---|
| AT+CAOC=? | +CAOC: (list of supported <mode>s) OK ERROR |
| Read Command | Responses |
| AT+CAOC? | +CAOC: <mode> OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+CAOC=<mode> | +CAOC: <ccm> OK OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CAOC | <i>Set default value (<mode>=1):</i> OK ERROR |

Defined values

<mode>

- 0 – query CCM value
- 1 – deactivate the unsolicited reporting of CCM value
- 2 – activate the unsolicited reporting of CCM value

<ccm>

String type, three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30), value is in home units and bytes are similarly coded as ACMmax value in the SIM.

Examples

```
AT+CAOC=0
+CAOC: "000000"
OK
```

5.8 AT+CSSN Supplementary service notifications

Description

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

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

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

NOTE: This command not supported in CDMA/HDR mode.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|---|
| AT+CSSN=? | +CSSN: (list of supported <code><n></code> s),(list of supported <code><m></code> s) OK ERROR |
| Read Command | Responses |
| AT+CSSN? | +CSSN: <code><n>,<m></code> OK ERROR |
| Write Command | Responses |
| AT+CSSN= <code><n>[,<m>]</code> | OK ERROR +CME ERROR: <code><err></code> |

Defined values

`<n>`

Parameter sets/shows the +CSSI result code presentation status in the TA:

- 0 – disable
- 1 – enable

`<m>`

Parameter sets/shows the +CSSU result code presentation status in the TA:

- 0 – disable
- 1 – enable

| |
|---|
| <code1> |
| 0 – unconditional call forwarding is active |
| 1 – some of the conditional call forwarding are active |
| 2 – call has been forwarded |
| 3 – call is waiting |
| 5 – outgoing calls are barred |
| <index> |
| Refer "Closed user group +CCUG". |
| <code2> |
| 0 – this is a forwarded call (MT call setup) |
| 2 – call has been put on hold (during a voice call) |
| 3 – call has been retrieved (during a voice call) |
| 5 – call on hold has been released (this is not a SS notification) (during a voice call) |
| <number> |
| String type phone number of format specified by <type> . |
| <type> |
| Type of address octet in integer format; default 145 when dialing string includes international access code character "+", otherwise 129. |
| <subaddr> |
| String type sub address of format specified by <satype> . |
| <satype> |
| Type of sub address octet in integer format, default 128. |

Examples

```
AT+CSSN=1,1
OK
AT+CSSN?
+CSSN: 1,1
OK
```

5.9 AT+CPOL Preferred operator list

Description

This command is used to edit the SIM preferred list of networks.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|--|
| AT+CPOL=? | +CPOL: (list of supported <index> s), (list of supported <format> s) |

| | |
|--|--|
| | OK |
| | ERROR |
| Read Command | Responses |
| AT+CPOL? | [+CPOL:<index1>,<format>,<oper1>[<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<LTE_AcT1>][<CR><LF> +CPOL: <index2>,<format>,<oper2>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<LTE_AcT1>] [...]] OK ERROR |
| Write Command | Responses |
| AT+CPOL=<index> | OK |
| [,<format>[,<oper>]][,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<LTE_AcT1>]] | ERROR |
| NOTE: If using USIM card, the last four parameters must set. | +CME ERROR: <err> |

Defined values

<index>

Integer type, the order number of operator in the SIM preferred operator list.

If only input <index>, command will delete the value indicate by <index>.

<format>

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

<operX>

String type.

<GSM_AcTn>

GSM access technology:

- 0 – access technology not selected
- 1 – access technology selected

<GSM_Compact_AcTn>

GSM compact access technology:

- 0 – access technology not selected
- 1 – access technology selected

<UTRA_AcTn>

UTRA access technology:

```

0 - access technology not selected
1 - access technology selected
<LTE_AcTn>
LTE access technology:
0 - access technology not selected
1 - access technology selected
    
```

Examples

```

AT+CPOL?
+CPOL: 1,2,"46001",0,0,1,0
OK
AT+CPOL=?
+CPOL: (1-8),(0-2)
OK
    
```

5.10 AT+COPN Read operator names

Description

This command is used to return the list of operator names from the ME. Each operator code `<numericX>` that has an alphanumeric equivalent `<alphaX>` in the ME memory shall be returned.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+COPN=? | OK |
| | ERROR |
| Write Command | Responses |
| AT+COPN | +COPN:<numeric1>,<alpha1>[<CR><LF> +COPN: <numeric2>,<alpha2> [...]] |
| | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

```

<numericX>
String type, operator in numeric format (see AT+COPI).
    
```

<alphaX>
String type, operator in long alphanumeric format (see [AT+COPS](#)).

Examples

```
AT+COPN
+COPN: "46000","China Mobile Com"
+COPN: "46001"," China Unicom"
.....
OK
```

5.11 AT+CNMP Preferred mode selection

Description

This command is used to select or set the state of the mode preference.

NOTE: The set value in Write Command will take effect immediately; The set value will retain after module reset;

NOTE: The response will be returned immediately for Test Command and Read Command; The maximum response time for Write Command is 10 seconds.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|----------------|--|
| Test Command | Responses |
| AT+CNMP=? | +CNMP: (list of supported <mode>s) OK |
| Read Command | Responses |
| AT+CNMP? | +CNMP: <mode> OK |
| Write Command | Responses |
| AT+CNMP=<mode> | OK <i>If <mode> not supported by module, this command will return ERROR.</i> ERROR |

Defined values

```
<mode>
 2 - Automatic
13 - GSM Only
14 - WCDMA Only
```


- 38 – LTE Only
- 59 – TDS-CDMA Only
- 9 – CDMA Only
- 10 – EVDO Only
- 19 – GSM+WCDMA Only
- 22 – CDMA+EVDO Only
- 48 – Any but LTE
- 60 – GSM+TDSCDMA Only
- 63 – GSM+WCDMA+TDSCDMA Only
- 67 – CDMA+EVDO+GSM+WCDMA+TDSCDMA Only
- 39 – GSM+WCDMA+LTE Only
- 51 – GSM+LTE Only
- 54 – WCDMA+LTE Only

Examples

```
AT+CNMP=13
OK
AT+CNMP?
+CNMP: 2
OK
```

5.12 AT+CNBP Preferred band selection

Description

This command is used to select or set the state of the band preference.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|---|
| AT+CNBP? | +CNBP: <mode>[,<lte_mode>][,<tds_mode>] OK |
| Write Command | Responses |
| AT+CNBP=<mode>[,<lte_mode>][,<tds_mode>] | OK ERROR |

Defined values

<mode>
64 bit number, the value is “1” << “<pos>”, then or by bit.

Some special mode value declared below:

0x40000000 BAND_PREF_NO_CHANGE

<pos>

Value:

| | |
|--------------------|-----------------|
| 0xFFFFFFFF7FFFFFFF | Any (any value) |
| 7 | GSM_DCS_1800 |
| 8 | GSM_EGSM_900 |
| 9 | GSM_PGSM_900 |
| 16 | GSM_450 |
| 17 | GSM_480 |
| 18 | GSM_750 |
| 19 | GSM_850 |
| 20 | GSM_RGSM_900 |
| 21 | GSM_PCS_1900 |
| 22 | WCDMA_IMT_2000 |
| 23 | WCDMA_PCS_1900 |
| 24 | WCDMA_III_1700 |
| 25 | WCDMA_IV_1700 |
| 26 | WCDMA_850 |
| 27 | WCDMA_800 |
| 48 | WCDMA_VII_2600 |
| 49 | WCDMA_VIII_900 |
| 50 | WCDMA_IX_1700 |

<lte_mode>

64/256 bit number, the value is “1” << “<lte_pos>”, then or by bit.

NOTE: FDD(band1 ~ band32, band66 , band252, and band255), TDD(band33 ~ band42)

<lte_pos>

Value:

| | |
|---|---|
| 0x48002000007FF3FDF3FFF | Any (any value) |
| 0 | EUTRAN_BAND1(UL:1920-1980; DL:2110-2170) |
| 1 | EUTRAN_BAND2(UL:1850-1910; DL:1930-1990) |
| 2 | EUTRAN_BAND3(UL:1710-1785; DL:1805-1880) |
| 3 | EUTRAN_BAND4(UL:1710-1755; DL:2110-2155) |
| 4 | EUTRAN_BAND5(UL: 824-849; DL: 869-894) |
| 5 | EUTRAN_BAND6(UL: 830-840; DL: 875-885) |
| 6 | EUTRAN_BAND7(UL:2500-2570; DL:2620-2690) |
| 7 | EUTRAN_BAND8(UL: 880-915; DL: 925-960) |
| 8 | EUTRAN_BAND9(UL:1749.9-1784.9; DL:1844.9-1879.9) |
| 9 | EUTRAN_BAND10(UL:1710-1770; DL:2110-2170) |
| 10 | EUTRAN_BAND11(UL:1427.9-1452.9; DL:1475.9-1500.9) |
| 11 | EUTRAN_BAND12(UL:698-716; DL:728-746) |
| 12 | EUTRAN_BAND13(UL: 777-787; DL: 746-756) |

| | |
|-------------|---|
| 13 | EUTRAN_BAND14(UL: 788-798; DL: 758-768) |
| 16 | EUTRAN_BAND17(UL: 704-716; DL: 734-746) |
| 17 | EUTRAN_BAND18(UL: 815-830; DL: 860-875) |
| 18 | EUTRAN_BAND19(UL: 830-845; DL: 875-890) |
| 19 | EUTRAN_BAND20(UL: 832-862; DL: 791-821) |
| 20 | EUTRAN_BAND21(UL: 1447.9-1462.9; DL: 1495.9-1510.9) |
| 22 | EUTRAN_BAND23(UL: 2000-2020; DL: 2180-2200) |
| 23 | EUTRAN_BAND24(UL: 1626.5-1660.5; DL: 1525 -1559) |
| 24 | EUTRAN_BAND25(UL: 1850-1915; DL: 1930 -1995) |
| 25 | EUTRAN_BAND26(UL: 814-849; DL: 859 -894) |
| 26 | EUTRAN_BAND27(UL: 807.5-824; DL: 852 -869) |
| 27 | EUTRAN_BAND28(703-748; DL: 758-803) |
| 28 | EUTRAN_BAND29(UL:1850-1910 or 1710-1755; |
| DL:716-728) | |
| 29 | EUTRAN_BAND30(UL: 2305-2315 ; DL: 2350 - 2360) |
| 32 | EUTRAN_BAND33(UL: 1900-1920; DL: 1900-1920) |
| 33 | EUTRAN_BAND34(UL: 2010-2025; DL: 2010-2025) |
| 34 | EUTRAN_BAND35(UL: 1850-1910; DL: 1850-1910) |
| 35 | EUTRAN_BAND36(UL: 1930-1990; DL: 1930-1990) |
| 36 | EUTRAN_BAND37(UL: 1910-1930; DL: 1910-1930) |
| 37 | EUTRAN_BAND38(UL: 2570-2620; DL: 2570-2620) |
| 38 | EUTRAN_BAND39(UL: 1880-1920; DL: 1880-1920) |
| 39 | EUTRAN_BAND40(UL: 2300-2400; DL: 2300-2400) |
| 40 | EUTRAN_BAND41(UL: 2496-2690; DL: 2496-2690) |
| 41 | EUTRAN_BAND42(UL: 3400-3600; DL: 3400-3600) |
| 42 | EUTRAN_BAND43(UL: 3600-3800; DL: 3600-3800) |
| 65 | EUTRAN_BAND66(UL: 1710-1780; DL: 2110-2200) |
| 70 | EUTRAN_BAND71(UL: 663-698; DL: 617-652) |
| 251 | EUTRAN_BAND252(DL: 5150-5250) |
| 254 | EUTRAN_BAND255(DL: 5725-5850) |

<tds_mode>

64bit number, the value is "1" << "<tds_pos>", then or by bit.

<tds_pos>

Value:

| | |
|---------------------|---|
| 0x0000000000000003F | Any (any value) |
| 0 | TDS Band A (1900-1920 MHz, 2010-2020 MHz) |
| 1 | TDS Band B (1850-1910 MHz, 1930-1990 MHz) |
| 2 | TDS Band C (1910-1930 MHz) |
| 3 | TDS Band D (2570-2620 MHz) |
| 4 | TDS Band E (2300-2400 MHz) |
| 5 | TDS Band F (1880-1920 MHz) |

<term_mode>

0 – term permanent

sys_mode values:

- 2 – CDMA
- 3 – GSM
- 4 – HDR
- 5 – WCDMA
- 9 – LTE
- 11 – TDSCDMA

Examples

```
AT+CNAOP=7,9,5,3,11,2,4
```

```
OK
```

```
AT+CNAOP?
```

```
+CNAOP: 7,9,5,3,11,2,4
```

```
OK
```

5.14 AT+CPSI Inquiring UE system information

Description

This command is used to return the UE system information.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------|---|
| AT+CPSI=? | +CPSI: (scope of <time>) OK |
| Read Command | Responses |
| | <p><i>If camping on a cdma/evdo cell:</i></p> <p>+CPSI: CDMA,<Operation Mode>[,<MCC>-<MNC>,<CDMA ch num>,<CDMA pilot PN>,<CDMA RX Chain 0 AGC>,<CDMA RX Chain 1 AGC>,<CDMA Chain 0 LNA>,<CDMA Chain 1 LNA>,<CDMA TX AGC>,<SID>,<NID>,<CDMA EC/IO>,<BID>]</p> <p>+CPSI: EVDO,<Operation Mode>[,<MCC>-<MNC>,<EVDO ch num>,<EVDO RX Chain 0 AGC>,<EVDO RX Chain 1 AGC>,<EVDO TX AGC>,<EVDO Serving PN>,<EVDO Rel0 SCI>,<EVDO RelA SCI>,<EVDO EC/IO>]</p> <p>OK</p> |

| | |
|----------|---|
| AT+CPSI? | <p><i>If camping on a gsm cell:</i></p> <p>+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Absolute RF Ch Num>,<RxLev>,<Track LO Adjust>,<C1-C2></p> <p>OK</p> |
| | <p><i>If camping on a wcdma cell:</i></p> <p>+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Frequency Band>,<PSC>,<Freq>,<SSC>,<EC/IO>,<RSCP>,<Qual>,<RxLev>,<TXPWR></p> <p>OK</p> |
| | <p><i>If camping on a tds-cdma cell:</i></p> <p>+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Frequency Band>,<Uarfcn>,<Cpid></p> <p>OK</p> |
| | <p><i>If camping on a lte cell:</i></p> <p>+CPSI: <System Mode>,<Operation Mode>[,<MCC>-<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,<RSSI>,<RSSNR>]</p> <p>OK</p> |
| | <p><i>If camping on a cdma/evdo cell:</i></p> <p>+CPSI: CDMA,<Operation Mode>[,<MCC>-<MNC>,<CDMA ch num>,<CDMA pilot PN>,<CDMA RX Chain 0 AGC>,<CDMA RX Chain 1 AGC>,<CDMA Chain 0 LNA>,<CDMA Chain 1 LNA>,<CDMA TX AGC>,<SID>,<NID>,<CDMA EC/IO>,<BID>]</p> <p>+CPSI: EVDO,<Operation Mode>[,<MCC>-<MNC>,<EVDO ch num>,<EVDO RX Chain 0 AGC>,<EVDO RX Chain 1 AGC>,<EVDO TX AGC>,<EVDO Serving PN>,<EVDO Rel0 SCI>,<EVDO RelA SCI>,<EVDO EC/IO>]</p> <p>OK</p> |
| | <p><i>If camping on a cdma/ehrpd cell:</i></p> <p>+CPSI: CDMA,<Operation Mode>[,<MCC>-<MNC>,<CDMA ch num>,<CDMA pilot PN>,<CDMA RX Chain 0 AGC>,<CDMA RX Chain 1 AGC>,<CDMA Chain 0 LNA>,<CDMA Chain 1 LNA>,<CDMA TX AGC>,<SID>,<NID>,<CDMA EC/IO>,<BID>]</p> <p>+CPSI: eHRPD,<Operation Mode>[,<MCC>-<MNC>,<EVDO ch num>,<EVDO RX Chain 0 AGC>,<EVDO RX Chain 1 AGC>,<EVDO TX AGC>,<EVDO Serving PN>,<EVDO Rel0 SCI>,<EVDO RelA SCI>,<EVDO EC/IO>]</p> <p>OK</p> |

| | |
|----------------|--|
| | <p><i>If camping on 1xlte cell:</i></p> <p>+CPSI: CDMA,<Operation Mode>[,<MCC>-<MNC>,<CDMA ch num>,<CDMA pilot PN>,<CDMA RX Chain 0 AGC>,<CDMA RX Chain 1 AGC>,<CDMA Chain 0 LNA>,<CDMA Chain 1 LNA>,<CDMA TX AGC>,<SID>,<NID>,<CDMA EC/IO>,<BID>]</p> <p>+CPSI: LTE,<Operation Mode>[,<MCC>-<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,<RSSI>,<RSSNR>]</p> <p>OK</p> |
| | <p><i>If no service:</i></p> <p>+CPSI: NO SERVICE, Online</p> <p>OK</p> |
| | ERROR |
| Write Command | Responses |
| AT+CPSI=<time> | OK |
| | ERROR |

Defined values

| | |
|----------------------|--|
| <time> | The range is 0-255, unit is second, after set <time> will report the system information every the seconds. |
| <System Mode> | System mode, values: “NO SERVICE”, “GSM”, “WCDMA”, “LTE”, “TDS”... If module in LIMITED SERVICE state and +CNLSA command is set to 1, the system mode will display as “GSM-LIMITED”, “WCDMA-LIMITED”... |
| <Operation Mode> | UE operation mode, values: “Unknown”, “Online”, “Offline”, “Factory Test Mode”, “Reset”, “Low Power Mode”. |
| <MCC> | Mobile Country Code (first part of the PLMN code) |
| <MNC> | Mobile Network Code (second part of the PLMN code) |
| <LAC> | Location Area Code (hexadecimal digits) |
| <Cell ID> | Service-cell Identify. |
| <Absolute RF Ch Num> | AFRCN for service-cell. |
| <Track LO Adjust> | Track LO Adjust |

| | |
|------------------|--|
| <C1> | Coefficient for base station selection |
| <C2> | Coefficient for Cell re-selection |
| <Frequency Band> | Frequency Band of active set |
| <PSC> | Primary synchronization code of active set. |
| <Freq> | Downlink frequency of active set. |
| <SSC> | Secondary synchronization code of active set |
| <EC/IO> | Ec/Io value |
| <RSCP> | Received Signal Code Power |
| <Qual> | Quality value for base station selection |
| <RxLev> | RX level value for base station selection |
| <TXPWR> | UE TX power in dBm. If no TX, the value is 500. |
| <Cpid> | Cell Parameter ID |
| <TAC> | Tracing Area Code |
| <PCellID> | Physical Cell ID |
| <earfcn> | E-UTRA absolute radio frequency channel number for searching LTE cells |
| <dlbw> | Transmission bandwidth configuration of the serving cell on the downlink |
| <ulbw> | Transmission bandwidth configuration of the serving cell on the uplink |
| <RSRP> | Current reference signal received power in -1/10 dBm. Available for LTE |
| <RSRQ> | Current reference signal receive quality as measured by L1. |
| <RSSNR> | Average reference signal signal-to-noise ratio of the serving cell |
| <BID> | Base ID |

Examples

```

AT+CPSI?
+CPSI: GSM,Online,460-00,0x182d,12401,27 EGSM 900,-64,2110,42-42
OK
AT+CPSI?
+CPSI: WCDMA,Online,460-01,0xA809,11122855,WCDMA IMT 2000,279,10663,0,1.5,62,33,
52,500
OK
AT+CPSI=?
+CPSI: (0-255)
OK
    
```

5.15 AT+CNSMOD Show network system mode

Description

This command is used to return the current network system mode.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|---|
| AT+CNSMOD=? | +CNSMOD: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CNSMOD? | +CNSMOD: <n>,<stat> OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+CNSMOD=<n> | OK ERROR +CME ERROR: <err> |

Defined values

| | |
|--------|--|
| <n> | |
| 0 | – disable auto report the network system mode information |
| 1 | – auto report the network system mode information, command: +CNSMOD:<stat> |
| <stat> | |

- 0 – no service
- 1 – GSM
- 2 – GPRS
- 3 – EGPRS (EDGE)
- 4 – WCDMA
- 5 – HSDPA only(WCDMA)
- 6 – HSUPA only(WCDMA)
- 7 – HSPA (HSDPA and HSUPA, WCDMA)
- 8 – LTE
- 9 – TDS-CDMA
- 10 – TDS-HSDPA only
- 11 – TDS- HSUPA only
- 12 – TDS- HSPA (HSDPA and HSUPA)
- 13 – CDMA
- 14 – EVDO
- 15 – HYBRID (CDMA and EVDO)
- 16 – 1XLTE(CDMA and LTE)
- 23 – eHRPD
- 24 – HYBRID(CDMA and eHRPD)

Examples

```
AT+CNSMOD?
+CNSMOD: 0,2
OK
```

5.16 AT+CEREG EPS network registration status

Description

The set command controls the presentation of an unsolicited result code +CEREG: <stat> when <n>=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code +CEREG: <stat>[,<tac>,<ci>[,<AcT>]] when <n>=2 and there is a change of the network cell in E-UTRAN; in this latest case <AcT>, <tac> and <ci> are sent only if available.

NOTE 1: If the EPS MT in GERAN/UTRAN/E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <tac>, <ci> and <AcT>, if available, are returned only when <n>=2 and MT is registered in the network.

| SIM PIN | References |
|---------|--------------------|
| NO | 3GPP TS 24.008 [8] |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CEREG=? | +CEREG: (list of supported <n>s) OK ERROR |
| Read Command | Responses |
| AT+CEREG? | +CEREG: <n>,<stat>[,<tac>,<ci>[,<AcT>]] OK ERROR |
| Write Command | Responses |
| AT+CEREG=[<n>] | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CEREG | <i>Set default value (<n>=0) :</i> OK ERROR |

Defined values

<n>

- 0 – disable network registration unsolicited result code
- 1 – enable network registration unsolicited result code +CEREG: <stat>
- 2 – enable network registration and location information unsolicited result code +CEREG: <stat>[,<tac>,<ci>[,<AcT>]]

<stat>

- 0 – not registered, MT is not currently searching an operator to register to
- 1 – registered, home network
- 2 – not registered, but MT is currently trying to attach or searching an operator to register to
- 3 – registration denied
- 4 – unknown (e.g. out of E-UTRAN coverage)
- 5 – registered, roaming
- 6 – registered for "SMS only", home network (not applicable)
- 7 – registered for "SMS only", roaming (not applicable)
- 8 – attached for emergency bearer services only (See NOTE 2)

<tac>

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

<ci>

string type; four byte E-UTRAN cell identify in hexadecimal format

<AcT>

A numeric parameter that indicates the access technology of serving cell

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

Examples

```
AT+CEREG?
```

```
+CEREG: 0,4
```

```
OK
```

5.17 AT+CTZU Automatic time and time zone update

Description

This command is used to enable and disable automatic time and time zone update via NITZ

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------------|--|
| AT+CTZU=? | +CTZU: (list of supported <on/off>s) OK |
| Read Command | Responses |
| AT+CTZU? | +CTZU: < on/off > OK |
| Write Command | Responses |
| AT+CTZU=< on/off > | OK ERROR |

Defined values

<on/off>

Integer type value indicating:

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

NOTE: 1. The value of < on/off > is nonvolatile, and factory value is 0.

2. For automatic time and time zone update is enabled (+CTZU=1):

If time zone is only received from network and it isn't equal to local time zone (AT+CCLK), time zone is updated automatically, and real time clock is updated based on local time and the difference between time zone from network and local time zone (Local time zone must be valid).

If Universal Time and time zone are received from network, both time zone and real time clock is updated automatically, and real time clock is based on Universal Time and time zone from network.

Examples

```
AT+CTZU?
```

```
+CTZU: 0
```

```
OK
```

```
AT+CTZU=1
```

```
OK
```

5.18 AT+CTZR Time and time zone reporting

Description

This command is used to enable and disable the time zone change event reporting. If the reporting is enabled the MT returns the unsolicited result code +CTZR: <tz>[,<time>][,<dst>] whenever the time zone is changed.

NOTE: The time zone reporting is not affected by the Automatic Time and Time Zone command AT+CTZU.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CTZR=? | +CTZR: (list of supported < on/off >s) OK |
| Read Command | Responses |
| AT+CTZR? | +CTZR: < on/off > OK |
| Write Command | Responses |

| | |
|--------------------|---------------------------|
| AT+CTZR=< on/off > | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CTZR | <i>Set default value:</i> |
| | OK |

Defined values

<on/off>

Integer type value indicating:

- 0 – Disable time zone change event reporting (default).
- 1 – Enable time zone change event reporting.

+CTZV: <tz>[,<time>][,<dst>]

Unsolicited result code when time zone received from network isn't equal to local time zone, and if the informations from network don't include date and time, time zone will be only reported, and if network daylight saving time is present, it is also reported. For example:

- +CTZV: 32 *(Only report time zone)*
- +CTZV: 32,1 *(Report time zone and network daylight saving time)*
- +CTZV: 32,08/12/09,17:00:00 *(Report time and time zone)*
- +CTZV: 32,08/12/09,17:00:00,1 *(Report time, time zone and daylight saving time)*

For more detailed informations about time and time zone, please refer 3GPP TS 24.008.

- <tz> Local time zone received from network.
- <time> Universal time received from network, and the format is “yy/MM/dd,hh:mm:ss”, where characters indicate year (two last digits), month, day, hour, minutes and seconds.
- <dst> Network daylight saving time, and if it is received from network, it indicates the value that has been used to adjust the local time zone. The values as following:
 - 0 – No adjustment for Daylight Saving Time.
 - 1 – +1 hour adjustment for Daylight Saving Time.
 - 2 – +2 hours adjustment for Daylight Saving Time.

NOTE: Herein, <time> is Universal Time or NITZ time, but not local time.

Examples

AT+CTZR?

+CTZR: 0

OK

AT+CTZR=1

OK

6 AT Commands for Call Control

6.1 AT+CVHU Voice hang up control

Description

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

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|------------------------------|--|
| Test Command | Responses |
| AT+CVHU=? | +CVHU: (list of supported <i><mode></i> s) OK |
| Read Command | Responses |
| AT+CVHU? | +CVHU: <i><mode></i> OK |
| Write Command | Responses |
| AT+CVHU= <i><mode></i> | OK ERROR |
| Execution Command | Responses |
| AT+CVHU | <i>Set default value:</i> OK |

Defined values

<mode>

- 0 – “Drop DTR” ignored but OK response given. **ATH** disconnects.
- 1 – “Drop DTR” and **ATH** ignored but OK response given.

Examples

```
AT+CVHU=0
OK
AT+CVHU?
+CVHU: 0
OK
```

6.2 AT+CHUP Hang up call

Description

This command is used to cancel voice calls. If there is no call, it will do nothing but OK response is given. After running AT+CHUP, multiple “VOICE CALL END: ” may be reported which relies on how many calls exist before calling this command.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CHUP=? | OK |
| Execution Command | Responses |
| AT+CHUP | VOICE CALL: END: <time> [... VOICE CALL: END: <time>] OK |
| | <i>No call:</i> OK |

Defined values

| |
|--|
| <time> |
| Voice call connection time. |
| Format – HHMMSS (HH: hour, MM: minute, SS: second) |

Examples

| |
|------------------------|
| AT+CHUP |
| VOICE CALL:END: 000017 |
| OK |

6.3 AT+CBST Select bearer service type

Description

Write command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls.

| SIM PIN | References |
|---------|------------|
|---------|------------|

| | |
|-----|----------------|
| YES | 3GPP TS 27.007 |
|-----|----------------|

Syntax

| Test Command | Responses |
|-------------------------|--|
| AT+CBST=? | +CBST: (list of supported <speed>s), (list of supported <name>s), (list of supported <ce>s) OK |
| Read Command | Responses |
| AT+CBST? | +CBST: <speed>,<name>,<ce> OK |
| Write Command | Responses |
| AT+CBST= | OK |
| <speed>[,<name>[,<ce>]] | ERROR |
| Execution Command | Responses |
| AT+CBST | <i>Set default value:</i> OK |

Defined values

<speed>

| | | |
|----------|---|--|
| <u>0</u> | – | autobauding(automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service) |
| 7 | – | 9600 bps (V.32) |
| 12 | – | 9600 bps (V.34) |
| 14 | – | 14400 bps(V.34) |
| 16 | – | 28800 bps(V.34) |
| 17 | – | 33600 bps(V.34) |
| 39 | – | 9600 bps(V.120) |
| 43 | – | 14400 bps(V.120) |
| 48 | – | 28800 bps(V.120) |
| 51 | – | 56000 bps(V.120) |
| 71 | – | 9600 bps(V.110) |
| 75 | – | 14400 bps(V.110) |
| 80 | – | 28800 bps(V.110 or X.31 flag stuffing) |
| 81 | – | 38400 bps(V.110 or X.31 flag stuffing) |
| 83 | – | 56000 bps(V.110 or X.31 flag stuffing) |
| 84 | – | 64000 bps(X.31 flag stuffing) |
| 116 | – | 64000 bps(bit transparent) |
| 134 | – | 64000 bps(multimedia) |

<name>

| | | |
|----------|---|--------------------|
| <u>0</u> | – | Asynchronous modem |
| 1 | – | Synchronous modem |

| | |
|---|-----------------------------------|
| 4 | – data circuit asynchronous (RDI) |
| <ce> | |
| 0 | – transparent |
| 1 | – non-transparent |
| NOTE: If <speed> is set to 116 or 134, it is necessary that <name> is equal to 1 and <ce> is equal to 0. | |

Examples

```
AT+CBST=0,0,1
OK
AT+CBST?
+CBST:0,0,1
OK
```

6.4 AT+CRLP Radio link protocol

Description

Radio Link Protocol(RLP) parameters used when non-transparent data calls are originated may be altered with write command.

Read command returns current settings for each supported RLP version <verX>. Only RLP parameters applicable to the corresponding <verX> are returned.

Test command returns values supported by the TA as a compound value. If ME/TA supports several RLP versions <verX>, the RLP parameter value ranges for each <verX> are returned in a separate line.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|---|
| AT+CRLP=? | +CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s) [,<ver1> [, (list of supported <T4>s)]] [<CR><LF> +CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s) [,<ver2> [, (list of supported <T4>s)]] [...] OK |
| Read Command | Responses |
| AT+CRLP? | +CRLP: <iws>, <mws>, <T1>, <N2> [,<ver1> [, <T4>]] [<CR><LF> |

| | |
|--|--|
| | +CRLP:<iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]] [...] OK |
| Write Command | Responses |
| AT+CRLP=<iws> [,<mws>[,<T1>[,<N2> [,<ver>[,<T4>]]]]] | OK ERROR |
| Execution Command | Responses |
| AT+CRLP | OK |

Defined values

<ver>, <verX>

RPL version number in integer format, and it can be 0, 1 or 2; when version indication is not present it shall equal 1.

<iws>

IWF to MS window size.

<mws>

MS to IWF window size.

<T1>

Acknowledgement timer.

<N2>

Retransmission attempts.

<T4>

Re-sequencing period in integer format.

NOTE: <T1> and <T4> are in units of 10 ms.

Examples

AT+CRLP?

+CRLP:61,61,48,6,0

+CRLP:61,61,48,6,1

+CRLP:240,240,52,6,2

OK

6.5 AT+CR Service reporting control

Description

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

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|--|
| AT+CR=? | +CR: (list of supported <mode>s) OK |
| Read Command | Responses |
| AT+CR? | +CR: <mode> OK |
| Write Command | Responses |
| AT+CR=<mode> | OK |
| Execution Command | Responses |
| AT+CR | <i>Set default value:</i> OK |

Defined values

<mode>

0 – disables reporting

1 – enables reporting

<serv>

ASYNC asynchronous transparent

SYNC synchronous transparent

REL ASYNC asynchronous non-transparent

REL sync synchronous non-transparent

GPRS [<L2P>] GPRS

The optional <L2P> proposes a layer 2 protocol to use between the MT and the TE.

Examples

AT+CR?

+CR:0

OK

AT+CR=1

OK

6.6 AT+CRC Cellular result codes

Description

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

Test command returns values supported by the TA as a compound value.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CRC=? | +CRC: (list of supported <mode>s) OK |
| Read Command | Responses |
| AT+CRC? | +CRC: <mode> OK |
| Write Command | Responses |
| AT+CRC=<mode> | OK |
| Execution Command | Responses |
| AT+CRC | <i>Set default value:</i> OK |

Defined values

| | |
|---------------|---|
| <mode> | |
| 0 | – disable extended format |
| 1 | – enable extended format |
| <type> | |
| ASYNC | asynchronous transparent |
| SYNC | synchronous transparent |
| REL ASYNC | asynchronous non-transparent |
| REL SYNC | synchronous non-transparent |
| FAX | facsimile |
| VOICE | normal voice |
| VOICE/XXX | voice followed by data(XXX is ASYNC, SYNC, REL ASYNC or REL SYNC) |
| ALT VOICE/XXX | alternating voice/data, voice first |
| ALT XXX/VOICE | alternating voice/data, data first |
| ALT FAX/VOICE | alternating voice/fax, fax first |

GPRS

GPRS network request for PDP context activation

Examples

```
AT+CRC=1
```

```
OK
```

```
AT+CRC?
```

```
+CRC: 1
```

```
OK
```

6.7 AT+CLCC List current calls

Description

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

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|-------------------|---|
| Test Command | Responses |
| AT+CLCC=? | +CLCC: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CLCC? | +CLCC: <n> OK |
| Write Command | Responses |
| AT+CLCC=<n> | OK |
| Execution Command | Responses |
| AT+CLCC | +CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]<CR><LF> +CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [...] OK ERROR +CME ERROR: <err> |

Defined values

<n>

0 – Don't report a list of current calls of ME automatically when the current call status changes.

1 – Report a list of current calls of ME automatically when the current call status changes.

<idX>

Integer type, call identification number, this number can be used in +CHLD command operations.

<dir>

0 – mobile originated (MO) call

1 – mobile terminated (MT) call

<stat>

State of the call:

0 – active

1 – held

2 – dialing (MO call)

3 – alerting (MO call)

4 – incoming (MT call)

5 – waiting (MT call)

6 – disconnect

<mode>

bearer/teleservice:

0 – voice

1 – data

2 – fax

9 – unknown

<mpty>

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

1 – call is one of multiparty (conference) call parties

<number>

String type phone number in format specified by <type>.

<type>

Type of address octet in integer format;

128 – Restricted number type includes unknown type and format

145 – International number type

161 – national number. The network support for this type is optional

177 – network specific number, ISDN format

129 – Otherwise

<alpha>

String type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set [AT+CSCS](#).

Examples

```

ATD10011;
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10011",129,"sm"
OK
RING (with incoming call)
AT+CLCC
+CLCC: 1,1,4,0,0,"02152063113",128,"gongsi"
OK
    
```

6.8 AT+CEER Extended error report

Description

Execution command causes the TA to return the information text `<report>`, which should offer the user of the TA an extended report of the reason for:

- 1 The failure in the last unsuccessful call setup(originating or answering) or in-call modification.
- 2 The last call release.
- 3 The last unsuccessful GPRS attach or unsuccessful PDP context activation.
- 4 The last GPRS detach or PDP context deactivation.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|----------------------|
| AT+CEER=? | OK |
| Execution Command | Responses |
| AT+CEER | +CEER:<report> OK |

Defined values

`<report>`
Wrong information which is possibly occurred.

Examples

```

AT+CEER
+CEER: Invalid/incomplete number
    
```


OK

6.9 AT+CCWA Call waiting

Description

This command allows control of the Call Waiting supplementary service. Activation, deactivation and status query are supported. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. Parameter <n> is used to disable/enable the presentation of an unsolicited result code +CCWA: <number>,<type>,<class> to the TE when call waiting service is enabled. Command should be abortable when network is interrogated.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|------------------------------------|---|
| AT+CCWA=? | +CCWA: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CCWA? | +CCWA: <n> OK |
| Write Command | Responses |
| AT+CCWA= <n>[,<mode>[,<class>]] | <i>When <mode>=2 and command successful:</i> +CCWA:<status>,<class>[<CR><LF> +CCWA: <status>, <class>[...]] OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CCWA | <i>Set default value (<n>=0):</i> OK |

Defined values

<n>

Sets/shows the result code presentation status in the TA

- 0 – disable
- 1 – enable

<mode>

When <mode> parameter is not given, network is not interrogated:

- 0 – disable
- 1 – enable
- 2 – query status

<class>

It is a sum of integers each representing a class of information (default 7)

- 1 – voice (telephony)
- 2 – data (refers to all bearer services)
- 4 – fax (facsimile services)
- 7 – voice, data and fax(1+2+4)
- 8 – short message service
- 16 – data circuit sync
- 32 – data circuit async
- 64 – dedicated packet access
- 128 – dedicated PAD access
- 255 – The value 255 covers all classes

<status>

- 0 – not active
- 1 – active

<number>

String type phone number of calling address in format specified by <type>.

<type>

Type of address octet in integer format;

- 128 – Restricted number type includes unknown type and format
- 145 – International number type
- 129 – Otherwise

Examples

```
AT+CCWA=?
```

```
+CCWA:(0-1)
```

```
OK
```

```
AT+CCWA?
```

```
+CCWA: 0
```

```
OK
```

6.10 AT+CHLD Call related supplementary services

Description

This command allows the control the following call related services:

1. A call can be temporarily disconnected from the ME but the connection is retained by the network.
2. Multiparty conversation (conference calls).
3. The served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber's own connection.

Calls can be put on hold, recovered, released, added to conversation, and transferred. This is based on the GSM/UMTS supplementary services.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|---------------------------------------|
| AT+CHLD=? | +CHLD: (list of supported <n>s) OK |
| Write Command | Responses |
| AT+CHLD=<n> | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CHLD <i>Default to <n>=2.</i> | OK ERROR +CME ERROR: <err> |

Defined values

| <n> | |
|----------|---|
| 0 | – Terminate all held calls; or set User Determined User Busy for a waiting call |
| 1 | – Terminate all active calls and accept the other call (waiting call or held call) |
| 1X | – Terminate a specific call X |
| <u>2</u> | – Place all active calls on hold and accept the other call (waiting call or held call) as the active call |
| 2X | – Place all active calls except call X on hold |
| 3 | – Add the held call to the active calls |
| 4 | – Connect two calls and cut off the connection between users and them simultaneously |

Examples

```
AT+CHLD=?
+CHLD: (0,1,1x,2,2x,3,4)
OK
```

6.11 AT+CCFC Call forwarding number and conditions

Description

This command allows control of the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--|---|
| AT+CCFC=? | +CCFC: (list of supported <reason>s) OK |
| Write Command | Responses |
| AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]] | When <mode>=2 and command successful: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][<CR><LF>+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][...]] OK ERROR +CME ERROR:<err> |

Defined values

<reason>

- 0 – unconditional
- 1 – mobile busy
- 2 – no reply
- 3 – not reachable
- 4 – all call forwarding
- 5 – all conditional call forwarding

<mode>

- 0 – disable
- 1 – enable
- 2 – query status
- 3 – registration
- 4 – erasure

<number>

String type phone number of forwarding address in format specified by <type>.

<type>

Type of address octet in integer format:

- 145 – dialing string <number> includes international access code character '+'
- 129 – otherwise

<subaddr>

String type sub address of format specified by <satype>.

<satype>

Type of sub address octet in integer format, default 128.

<classX>

It is a sum of integers each representing a class of information (default 7):

- 1 – voice (telephony)
- 2 – data (refers to all bearer services)
- 4 – fax (facsimile services)
- 16 – data circuit sync
- 32 – data circuit async
- 64 – dedicated packet access
- 128 – dedicated PAD access
- 255 – The value 255 covers all classes

<time>

1..30 – when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20.

<status>

- 0 – not active
- 1 – active

Examples

```
AT+CCFC=?
```

```
+CCFC: (0,1,2,3,4,5)
```

```
OK
```

```
AT+CCFC=0,2
```

```
+CCFC: 0,255
```

```
OK
```

6.12 AT+CLIP Calling line identification presentation

Description

This command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.

Write command enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network.

When the presentation of the CLI at the TE is enabled (and calling subscriber allows), +CLIP: <number>,<type>,,[,<alpha>][,<CLI validity>] response is returned after every RING (or +CRING: <type>; refer sub clause "Cellular result codes +CRC") result code sent from TA to TE. It is manufacturer specific if this response is used when normal voice call is answered.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| | |
|-------------------|--|
| Test Command | Responses |
| AT+CLIP=? | +CLIP: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CLIP? | +CLIP: <n>,<m> OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+CLIP=<n> | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CLIP | <i>Set default value(<n>=0):</i> OK |

Defined values

<n>

Parameter sets/shows the result code presentation status in the TA:

- 0 – disable
- 1 – enable

<m>

- 0 – CLIP not provisioned
- 1 – CLIP provisioned
- 2 – unknown (e.g. no network, etc.)

<number>

String type phone number of calling address in format specified by <type>.

<type>

Type of address octet in integer format;

- 128 – Restricted number type includes unknown type and format
- 145 – International number type
- 161 – national number. The network support for this type is optional
- 177 – network specific number, ISDN format
- 129 – Otherwise

<alpha>

String type alphanumeric representation of <number> corresponding to the entry found in phone book.

<CLI validity>

- 0 – CLI valid
- 1 – CLI has been withheld by the originator
- 2 – CLI is not available due to interworking problems or limitations of originating network

Examples

```
AT+CLIP=1
```

```
OK
```

```
RING (with incoming call)
```

```
+CLIP: "02152063113",128,,,"gongsi",0
```

6.13 AT+CLIR Calling line identification restriction

Description

This command refers to CLIR-service that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.

Write command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. If this command is used by a subscriber without provision of CLIR in permanent mode the network will act.

Read command gives the default adjustment for all outgoing calls (given in <n>), and also triggers an interrogation of the provision status of the CLIR service (given in <m>).

Test command returns values supported as a compound value.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|-----------|
|--------------|-----------|

| | |
|---------------|--|
| AT+CLIR=? | +CLIR: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CLIR? | +CLIR: <n>,<m> OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+CLIR=<n> | OK ERROR +CME ERROR: <err> |

Defined values

| | |
|-----|--|
| <n> | <ul style="list-style-type: none"> 0 – presentation indicator is used according to the subscription of the CLIR service 1 – CLIR invocation 2 – CLIR suppression |
| <m> | <ul style="list-style-type: none"> 0 – CLIR not provisioned 1 – CLIR provisioned in permanent mode 2 – unknown (e.g. no network, etc.) 3 – CLIR temporary mode presentation restricted 4 – CLIR temporary mode presentation allowed |

Examples

```
AT+CLIR=?
+CLIR:(0-2)
OK
```

6.14 AT+COLP Connected line identification presentation

Description

This command refers to the GSM/UMTS supplementary service COLP(Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.

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

manufacturer specific if this response is used when normal voice call is established.

When the AT+COLP=1 is set, any data input immediately after the launching of “ATDXXX;” will stop the execution of the ATD command, which may cancel the establishing of the call.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+COLP=? | +COLP: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+COLP? | +COLP: <n>,<m> OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+COLP =<n> | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+COLP | <i>Set default value(<n>=0, <m>=0):</i> OK |

Defined values

| |
|---|
| <n> |
| Parameter sets/shows the result code presentation status in the TA: |
| 0 – disable |
| 1 – enable |
| <m> |
| 0 – COLP not provisioned |
| 1 – COLP provisioned |
| 2 – unknown (e.g. no network, etc.) |

Examples

| |
|-------------------|
| AT+COLP? |
| +COLP: 1,0 |
| OK |
| ATD10086; |
| VOICE CALL: BEGIN |

```
+COLP: "10086",129,,
```

```
OK
```

6.15 AT+VTS DTMF and tone generation

Description

This command allows the transmission of DTMF tones and arbitrary tones which cause the Mobile Switching Center (MSC) to transmit tones to a remote subscriber. The command can only be used in voice mode of operation (active voice call).

NOTE: The END event of voice call will terminate the transmission of tones, and as an operator option, the tone may be ceased after a pre-determined time whether or not tone duration has been reached.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------------------------|--|
| AT+VTS=? | +VTS: (list of supported<dtmf>s) OK |
| Write Command | Responses |
| AT+VTS=<dtmf> [,<duration>] | OK |
| AT+VTS=<dtmf-string> | ERROR |

Defined values

| |
|---|
| <dtmf> |
| A single ASCII character in the set 0-9, *, #, A, B, C, D. |
| <duration> |
| Tone duration in 1/10 seconds, from 0 to 255. This is interpreted as a DTMF tone of different duration from that mandated by the AT+VTD command, otherwise, the duration which be set the AT+VTD command will be used for the tone (<duration> is omitted). |
| <dtmf-string> |
| A sequence of ASCII character in the set 0-9, *, #, A, B, C, D, and maximal length of the string is 29. The string must be enclosed in double quotes (“”), and separated by commas between the ASCII characters (e.g. “1,3,5,7,9,*”). Each of the tones with a duration which is set by the AT+VTD command. |

Examples

```

AT+VTS=1
OK
AT+VTS=1,20
OK
AT+VTS="1,3,5"
OK
AT+VTS=?
+VTS: (0-9,*,#,A,B,C,D)
OK
    
```

6.16 AT+VTD Tone duration

Description

This refers to an integer `<n>` that defines the length of tones emitted as a result of the `AT+VTS` command. A value different than zero causes a tone of duration `<n>/10` seconds.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------------------------|--|
| AT+VTD=? | +VTD: (list of supported <code><n></code> s) OK |
| Read Command | Responses |
| AT+VTD? | +VTD: <code><n></code> OK |
| Write Command | Responses |
| AT+VTD= <code><n></code> | OK |

Defined values

`<n>`

Tone duration in integer format, from 0 to 255, and 0 is factory value.

0 Tone duration of every single tone is dependent on the network.

1...255 Tone duration of every single tone in 1/10 seconds.

Examples

```

AT+VTD=?
+VTD: (0-255)
    
```

```

OK
AT+VTD?
+VTD: 0
OK
AT+VTD=5
OK
    
```

6.17 AT+CSTA Select type of address

Description

Write command is used to select the type of number for further dialing commands ([ATD](#)) according to GSM/UMTS specifications.

Read command returns the current type of number.

Test command returns values supported by the Module as a compound value.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------------------------------|--|
| AT+CSTA=? | +CSTA:(list of supported <type>s) OK |
| Read Command | Responses |
| AT+CSTA? | +CSTA: <type> OK |
| Write Command | Responses |
| AT+CSTA= <type> | OK ERROR |
| Execution Command | Responses |
| AT+CSTA | OK |

Defined values

[<type>](#)

Type of address octet in integer format:

- 145 – when dialling string includes international access code character “+”
- 161 – national number.The network support for this type is optional
- 177 – network specific number,ISDN format
- 129 – otherwise

NOTE: Because the type of address is automatically detected on the dial string of dialing command, command [AT+CSTA](#) has really no effect.

Examples

```
AT+CSTA?
+CSTA: 129
OK
AT+CSTA=145
OK
```

6.18 AT+CMOD Call mode

Description

Write command selects the call mode of further dialing commands ([ATD](#)) or for next answering command ([ATA](#)). Mode can be either single or alternating.

Test command returns values supported by the TA as a compound value.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|---------------------------------------|---|
| Test Command | Responses |
| AT+CMOD=? | +CMOD: (list of supported <mode> s) OK |
| Read Command | Responses |
| AT+CMOD? | +CMOD: <mode> OK |
| Write Command | Responses |
| AT+CMOD= <mode> | OK ERROR |
| Execution Command | Responses |
| AT+CMOD | <i>Set default value:</i> OK |

Defined values

[<mode>](#)

0 – single mode(only supported)

NOTE: The value of [<mode>](#) shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-on, factory and user resets shall also set the value to zero. This reduces the possibility that alternating mode calls are originated or answered accidentally.

Examples

```
AT+CMOD?
```

```
+CMOD: 0
```

```
OK
```

```
AT+CMOD=0
```

```
OK
```

6.19 AT+VMUTE Speaker mute control

Description

This command is used to control the loudspeaker to mute and unmute during a voice call or a video call which is connected. If there is not a connected call, write command can't be used.

When all calls are disconnected, the Module sets the subparameter as 0 automatically.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|-----------------|---|
| Test Command | Responses |
| AT+VMUTE=? | +VMUTE: (list of supported <mode>s) OK |
| Read Command | Responses |
| AT+VMUTE? | +VMUTE: <mode> OK |
| Write Command | Responses |
| AT+VMUTE=<mode> | OK ERROR |

Defined values

<mode>

0 – mute off

1 – mute on

Examples

```
AT+VMUTE=1
```

```
OK
```

```
AT+VMUTE?
```

```
+VMUTE:1
```

```
OK
```

6.20 AT+CMUT Microphone mute control

Description

This command is used to enable and disable the uplink voice muting during a voice call or a video call which is connected. If there is not a connected call, write command can't be used.

When all calls are disconnected, the Module sets the subparameter as 0 automatically.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|----------------|--|
| AT+CMUT=? | +CMUT: (list of supported <mode>s) OK |
| Read Command | Responses |
| AT+CMUT? | +CMUT: <mode> OK |
| Write Command | Responses |
| AT+CMUT=<mode> | OK ERROR |

Defined values

| <mode> |
|--------------|
| 0 – mute off |
| 1 – mute on |

Examples

```

AT+CMUT=1
OK
AT+CMUT?
+CMUT: 1
OK
    
```

6.21 AT+MORING Enable or disable report MO ring URC

Description

This command is used to enable or disable report MO ring URC

| SIM PIN | References |
|---------|------------|
|---------|------------|

| | |
|----|--------|
| NO | Vendor |
|----|--------|

Syntax

| Test Command | Responses |
|------------------|-----------------------|
| AT+MORING=? | +MORING: (0-1) OK |
| Read Command | Responses |
| AT+MORING? | +MORING: <mode> OK |
| Write Command | Responses |
| AT+MORING=<mode> | OK ERROR |

Defined values

<mode>

Enable or disable report MO ring URC:

- 0 – disable
- 1 – enable.

Examples

```
AT+MORING=1
OK
AT+MORING?
+MORING:1
OK
AT+MORING=?
+MORING: (0-1)
OK
```

6.22 AT+CSDVC Switch voice channel device

Description

This command is used to switch voice channel device. After changing current voice channel device and if there is a connecting voice call, it will use the settings of previous device (loudspeaker volume level, mute state of loudspeaker and microphone, refer to [AT+CLVL](#), [AT+VMUTE](#), and [AT+CMUT](#)).

| | |
|---------|------------|
| SIM PIN | References |
|---------|------------|

| | |
|----|--------|
| NO | Vendor |
|----|--------|

Syntax

| Test Command | Responses |
|----------------|--|
| AT+CSDVC=? | +CSDVC: (list of supported <dev>s) OK |
| Read Command | Responses |
| AT+CSDVC? | +CSDVC: <dev> OK |
| Write Command | Responses |
| AT+CSDVC=<dev> | OK |

Defined values

<dev>

- 0 – close voice channel device. only used after AT+CODECCTL=1
- 1 – handset
- 3 – speaker phone

Examples

```
AT+CSDVC=1
```

```
OK
```

```
AT+CSDVC?
```

```
+CSDVC:1
```

```
OK
```

6.23 AT+CLVL Loudspeaker volume level

Description

Write command is used to select the volume of the internal loudspeaker audio output of the device. Test command returns supported values as compound value.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|---|
| AT+CLVL=? | +CLVL: (list of supported <level>s) OK |

| | |
|-----------------|----------------------|
| Read Command | Responses |
| AT+CLVL? | +CLVL: <level> OK |
| Write Command | Responses |
| AT+CLVL=<level> | OK ERROR |

Defined values

<level>

Integer type value which represents loudspeaker volume level. The range is from 0 to 5, and 0 represents the lowest loudspeaker volume level, 4 is default factory value.

NOTE: <level> is nonvolatile, and it is stored when restart.

Examples

AT+CLVL?

+CLVL:4

OK

AT+CLVL=3

OK

6.24 AT+SIDET Set sidetone

Description

This command is used to enable or disable sidetone. Please refer to related hardware design document for more information. This command is only used after call start.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|---------------|---|
| Test Command | Responses |
| AT+SIDET=? | +SIDET: (list of supported <en>s) OK |
| Read Command | Responses |
| AT+SIDET? | +SIDET: <en> OK |
| Write Command | Responses |
| AT+SIDET=<en> | OK |

| |
|-------|
| ERROR |
|-------|

Defined values

<en>

0: disable sidetone

1: enable sidetone

Examples

AT+SIDET?

+SIDET: 0

OK

AT+SIDET=?

+SIDET: (0-1)

OK

AT+SIDET=1

OK

6.25 AT+CACDBFN Change default ACDB filename

Description

This command is used to change default acdb filename. But there are six acdb files used by system, we can't change default acdb filename to them. These filenames including Bluetooth_cal.acdb, General_cal.acdb, Global_cal.acdb, Hdmi_cal.acdb, Headset_cal.acdb, Speaker_cal.acdb

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------------|---|
| AT+CACDBFN=? | +CACDBFN: (acdb file(s) listed in /data <acdb file>s,except six acdb file used by system) OK |
| Read Command | Responses |
| AT+CACDBFN? | +CACDBFN: <acdb file> OK |
| Write Command | Responses |
| AT+CACDBFN=<acdb file> | OK ERROR |

Defined values

<acdb file>

<acdb file> file(s) in the directory /data with suffix: acdb, except six acdb file used by system

Examples

```
AT+CACDBFN=Handset_cal.acdb
OK
AT+CACDBFN?
+CACDBFN: Handset_cal.acdb
OK
AT+CACDBFN=?
+CACDBFN: (Handset_cal.acdb,Handset_tianmai.acdb)
OK
```

6.26 AT+CPCMREG USB audio control

Description

This command is used to start/stop usb audio function.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|----------------------------|---|
| AT+CPCMREG=? | +CPCMREG: (list of supported < mode >s) OK |
| Read Command | Responses |
| AT+CPCMREG? | +CPCMREG: <mode> OK |
| Write Command | Responses |
| AT+CPCMREG=<mode>[,<stop>] | OK ERROR |

Defined values

<mode>

0 – stop usb audio function, need used after call stop.

1 – start usb audio function, need used after call start(ATDxxx;)

<stop>

1 – stop usb audio function, need used after call stop. only used when mode=0;

Examples

```
AT+CPCMREG=1           //start usb audio function
OK
AT+CPCMREG=0,1        //stop usb audio function
OK
AT+CPCMREG?
+CPCMREG:1
OK
```

6.27 AT+CMICGAIN Adjust mic gain

Description

This command is used to adjust mic gain. If this command was used during call, it will take immediate effect. Otherwise, it will take effect in next call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|---------------------|---|
| Test Command | Responses |
| AT+CMICGAIN=? | +CMICGAIN: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CMICGAIN? | +CMICGAIN: <value> OK |
| Write Command | Responses |
| AT+CMICGAIN=<value> | OK ERROR |

Defined values

<value>

Gain value from 0-8, 8 is the max. 3 is the default value. This value will be reset to default value after Module reset.

Examples

```
AT+CMICGAIN=1
```

```

OK
AT+CMICGAIN?
+CMICGAIN:1
OK
    
```

6.28 AT+COUTGAIN Adjust out gain

Description

This command is used to adjust out(speaker/handset) gain. If this command was used during call, it will take immediate effect. Otherwise, it will take effect in next call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------------|---|
| AT+COUTGAIN=? | +COUTGAIN: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+COUTGAIN? | +COUTGAIN: <value> OK |
| Write Command | Responses |
| AT+COUTGAIN=<value> | OK ERROR |

Defined values

<mode>
Gain value from 0-8, 8 is the max. 8 is the default value. This value will be reset to default value after Module reset.

Examples

```

AT+COUTGAIN=1
OK
AT+COUTGAIN?
+COUTGAIN:1
OK
    
```

6.29 AT+CTXVOL Adjust TX voice mic volume

Description

This command is used to adjust mic gain. It modify the TX_VOICE_VOL in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CTXVOL=? | +CTXVOL: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CTXVOL? | +CTXVOL: <value> OK |
| Write Command | Responses |
| AT+CTXVOL=<value> | OK ERROR |

Defined values

<value>

Gain value from 0x0000-0xffff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CTXVOL=0x1234
```

```
OK
```

```
AT+CTXVOL?
```

```
+CTXVOL: 0x2d33
```

```
OK
```

6.30 AT+CTXMICGAIN Adjust TX voice mic gain

Description

This command is used to adjust mic gain. It modify the TX_VOICE_MIC_GAIN in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| | |

| | |
|----|--------|
| NO | Vendor |
|----|--------|

Syntax

| Test Command | Responses |
|-----------------------------------|--|
| AT+CTXMICGAIN=? | +CTXMICGAIN: (list of supported <mode>,<value>s) OK |
| Read Command | Responses |
| AT+CTXMICGAIN? | +CTXMICGAIN: <mode>,<value> OK |
| Write Command | Responses |
| AT+CTXMICGAIN=<mode> >,<value> | OK ERROR |

Defined values

| |
|---|
| <mode> |
| mode value from 0-1, default value is not a fixed value. It varies with different versions. |
| <value> |
| gain value from 0x0000-0xffff, default value is not a fixed value. It varies with different versions. |

Examples

| |
|------------------------|
| AT+CTXMICGAIN=1,0x1234 |
| OK |
| AT+CTXMICGAIN? |
| +CTXMICGAIN: 1,0x2000 |
| OK |

6.31 AT+CRXVOL Adjust RX voice output speaker volume

Description

This command is used to adjust digital Volume of output signal after speech decoder, before summation of sidetone and DAC. It modify the RX_VOICE_SPK_GAIN in DSP. This command only be used during call and don't save the parameter after call.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------|-----------|
|--------------|-----------|

| | |
|-------------------|---|
| AT+CRXVOL=? | +CRXVOL: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CRXVOL? | +CRXVOL: <value> OK |
| Write Command | Responses |
| AT+CRXVOL=<value> | OK ERROR |

Defined values

<value>

Gain value from 0x0000-0xffff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CRXVOL=0x1234
```

```
OK
```

```
AT+CRXVOL?
```

```
+CRXVOL: 0x3fd9
```

```
OK
```

6.32 AT+CECH Inhibit far-end echo

Description

This command is used to adjust additional muting gain applied in DES during far-end only. It modify the DENS_gamma_e_high of TX_VOICE_SMECNS in DSP. The bigger the value, the stronger the inhibition .This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|--------------|---|
| Test Command | Responses |
| AT+CECH=? | +CECH: (list of supported <value>s) OK |
| Read Command | Responses |

| | |
|-----------------|----------------------|
| AT+CECH? | +CECH: <value> OK |
| Write Command | Responses |
| AT+CECH=<value> | OK |
| | ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

AT+CECH=0x1234

OK

AT+CECH?

+CECH: 0x0200

OK

6.33 AT+CECDT Inhibit echo during doubletalk

Description

This command is used to adjust additional muting gain applied in DES during doubletalk. It modify the DENS_gamma_e_dt of TX_VOICE_SMECNS in DSP. The bigger the value, the stronger the inhibition .This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|------------------|--|
| Test Command | Responses |
| AT+CECDT=? | +CECDT: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CECDT? | +CECDT: <value> OK |
| Write Command | Responses |
| AT+CECDT=<value> | OK |
| | ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CECDT=0x1234
```

```
OK
```

```
AT+CECDT?
```

```
+CECDT: 0x0100
```

```
OK
```

6.34 AT+CECWB Inhibit echo in the high band

Description

This command is used to adjust the aggressiveness of EC in the high band (4 ~ 8 kHz). A higher value is more aggressive and suppresses more high-band echo. Q-format - Q4.11WB_gamma_E = 2048 * gamma Where gamma is in the range [0,15]. It modify the WB_gamma_e of TX_VOICE_SMECNS in DSP. The bigger the value, the stronger the inhibition .This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|--|
| AT+CECWB=? | +CECWB: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CECWB? | +CECWB: <value> OK |
| Write Command | Responses |
| AT+CECWB=<value> | OK ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```

AT+CECWB=0x1234
OK
AT+CECWB?
+CECWB: 0x0300
OK
    
```

6.35 AT+CNSN MIC NOISE suppression

Description

This command is used to adjust oversubtraction factor and bias compensation for noise estimation. It modify the DENS_gamma_n of TX_VOICE_SMECNS in DSP. The bigger the value, the stronger the noise suppression .This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-----------------|---|
| AT+CNSN=? | +CNSN: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CNSN? | +CNSN: <value> OK |
| Write Command | Responses |
| AT+CNSN=<value> | OK ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```

AT+CNSN=0x1234
OK
AT+CNSN?
+CNSN: 0x0258
    
```

OK

6.36 AT+CNSLIM MIC NOISE suppression

Description

This command is used to controls the maximum amount of noise suppression. It modify the DENS_limit_NS of TX_VOICE_SMECNS in DSP. The bigger the value, the stronger the noise suppression .This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|-------------------|---|
| Test Command | Responses |
| AT+CNSLIM=? | +CNSLIM: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CNSLIM? | +CNSLIM: <value> OK |
| Write Command | Responses |
| AT+CNSLIM=<value> | OK ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CNSLIM=0x1234
```

```
OK
```

```
AT+CNSLIM?
```

```
+CNSLIM: 0x16c4
```

```
OK
```

6.37 AT+CFNSMOD Adjust parameter fnsMode of RX_VOICE_FNS

Description

This command is used to modify the fnsMode of RX_VOICE_FNS in DSP. This command only be

used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------|--|
| AT+CFNSMOD=? | +CFNSMOD: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CFNSMOD? | +CFNSMOD: <value> OK |
| Write Command | Responses |
| AT+CFNSMOD=<value> | OK ERROR |

Defined values

<value>

Gain value is bellow, default value is not a fixed value. It varies with different versions.

0x00FF – Maximum NS

0x0073 – Basic stationary NS

0x00F3 – Enhanced stationary NS

0x01FF – Aggressive NS

Examples

```
AT+CFNSMOD=0x0073
```

```
OK
```

```
AT+CFNSMOD?
```

```
+CFNSMOD: 0x0073
```

```
OK
```

6.38 AT+CFNSIN Adjust parameter fnsInputGain of RX_VOICE_FNS

Description

This command is used to modify the fnsInputGain of RX_VOICE_FNS in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CFNSIN=? | +CFNSIN: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CFNSIN? | +CFNSIN: <value> OK |
| Write Command | Responses |
| AT+CFNSIN=<value> | OK ERROR |

Defined values

<value>

Gain value from 0x2000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CFNSIN=0x2234
```

```
OK
```

```
AT+CFNSIN?
```

```
+CFNSIN: 0x2000
```

```
OK
```

6.39 AT+CFNSLVL Adjust parameter fnsTargetNS of RX_VOICE_FNS

Description

This command is used to modify the fnsTargetNS of RX_VOICE_FNS in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CFNSLVL=? | +CFNSLVL: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CFNSLVL? | +CFNSLVL: <value> OK |
| Write Command | Responses |

| | |
|--------------------|-------|
| AT+CFNSLVL=<value> | OK |
| | ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CFNSLVL=0x2234
```

```
OK
```

```
AT+CFNSLVL?
```

```
+CFNSLVL: 0x1000
```

```
OK
```

6.40 AT+CECRX Enable or disable VOICE_MOD_ENABLE

Description

This command is used to enable or disable VOICE_MOD_ENABLE. It modify the VOICE_MOD_ENABLE in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|--|
| AT+CECRX=? | +CECRX: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CECRX? | +CECRX: <value> OK |
| Write Command | Responses |
| AT+CECRX=<value> | OK ERROR |

Defined values

<value>

This default value is not a fixed value. It varies with different versions.

1: Enable

0: Disable

Examples

```
AT+CECRX=1
```

```
OK
```

```
AT+CECRX?
```

```
+CECRX: 1
```

```
OK
```

6.41 AT+CNLPPG Modify the NLPP_gain in DSP

Description

This command is used to modify the NLPP_gain of VOICE_ECRX_PARAM in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------|---|
| AT+CNLPPG=? | +CNLPPG: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CNLPPG? | +CNLPPG: <value> OK |
| Write Command | Responses |
| AT+CNLPPG =<value> | OK ERROR |

Defined values

<value>

Gain value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CNLPPG=0x1234
```

```
OK
```

```
AT+CNLPPG?
```

```
+CNLPPG: 0x1000
```

OK

6.42 AT+CNLPPL Modify the NLPP_limit in DSP

Description

This command is used to modify the NLPP_limit of VOICE_ECRX_PARAM in DSP. This command only be used during call and don't save the parameter after call.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CNLPPL=? | +CNLPPL: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CNLPPL? | +CNLPPL: <value> OK |
| Write Command | Responses |
| AT+CNLPPL=<value> | OK ERROR |

Defined values

<value>

Value from 0x0000-0x7fff, default value is not a fixed value. It varies with different versions.

Examples

```
AT+CNLPPL=0x1234
OK
AT+CNLPPL?
+CNLPPL: 0x7fff
OK
```

6.43 AT+CECM Adjust echo canceller

Description

This AT command is used to select the echo cancellation mode. Write command only be used during call.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| Test Command | Responses |
|-----------------|---|
| AT+CECM=? | +CECM: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CECM? | +CECM: <value> OK |
| Write Command | Responses |
| AT+CECM=<value> | OK ERROR |

Defined values

<value>

This default value is not a fixed value. It varies with different versions.

- 0: disable EC mode
- 1: EC mode recommended for Speaker phone aggressive
- 2: EC mode recommended for Speaker phone medium
- 3: EC mode recommended for Speaker least aggressive
- 4: EC mode recommended for Bluetooth
- 5: EC mode recommended for Bluetooth (less aggressive)
- 6: EC mode recommended for Bluetooth (least aggressive)
- 7: EC mode recommended for HANDSFREE
- 8: EC mode recommended for Headset
- 9: EC mode recommended for Handset

Examples

```
AT+CECM=1
OK
AT+CECM?
+CECM: 1
OK
```

6.44 AT+CPCMFRM Set usb audio sample rate to 16k bit

Description

This command is used to set usb audio sample rate to 16K bit.

NOTE: This command only support for usb audio 8k to 16k switching, but not support for 16k to 8k switching.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------------------------|---|
| AT+CPCMF _{RM} =? | +CPCMF _{RM} : (list of supported <value>s) OK |
| Read Command | Responses |
| AT+CPCMF _{RM} ? | +CPCMF _{RM} : <value> OK |
| Write Command | Responses |
| AT+CPCMF _{RM} =<value> | OK |
| | ERROR |

Defined values

<value>

Gain value from 0-1, default value is 0.

0 : usb audio use 8k bit

1 : usb audio use 16k bit

Examples

```
AT+CPCMFRM=1
```

```
OK
```

```
AT+CPCMFRM?
```

```
+CPCMFRM: 1
```

```
OK
```

6.45 AT+CPTONE Play tone

Description

This AT command is used to local play a tone.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Read Command | Responses |
|-------------------------------------|--|
| AT+CPTONE=? | +CPTONE: (list of supported <tone>s) OK |
| Write Command | Responses |
| AT+CPTONE=<tone> | OK |
| AT+CPTONE=<tone>,<time>,<gain> > | OK |

Defined values

| |
|--|
| <tone> |
| Support 0-16. |
| < time> |
| Duration, the default value is 50ms. Support 1-1000. |
| <gain> |
| The default value is 4000. Support 1-9999. |

Examples

| |
|----------------------|
| AT+CPTONE=1 |
| OK |
| AT+CPTONE=1,200,1000 |
| OK |

6.46 AT+CODECCTL Control codec by Host device or Module

Description

This command is used to select Host device or Module to control codec. This command doesn't save the parameter after reboot.

| IM PIN | References |
|--------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|---|
| AT+CODECCTL=? | +CCODECCTL: (list of supported <mode>s) OK |
| Read Command | Responses |
| AT+CODECCTL? | +CCODECCTL: <mode> OK |

| Write Command | Responses |
|--------------------|-----------|
| AT+CODECCTL=<mode> | OK |
| | ERROR |

Defined values

<mode>

mode value from 0-1, default value is 0.

0 : Module control codec when play sound.

1 : Host device control codec. Host device can open codec by AT+CSDVC=1 or AT+CSDVC=3, close codec by AT+CSDVC=0.

Examples

```
AT+CODECCTL=1
```

```
OK
```

```
AT+CODECCTL?
```

```
+CCODECCTL: 0
```

```
OK
```

6.47 AT+CPCMBANDWIDTH Modify the sampling rate of the PCM

Description

This command is used to modify the sampling rate of the PCM to 8k or 16k. This command don't save the parameter after reboot.

| IM PIN | References |
|--------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|--|
| AT+CPCMBANDWIDTH=? | +CPCMBANDWIDTH: (list of supported <volte_sample>s), (list of supported <novolte_sample>s) OK |
| Read Command | Responses |
| AT+CPCMBANDWIDTH? | +CPCMBANDWIDTH: <volte_sample>,<novolte_sample> OK |
| Write Command | Responses |
| AT+CPCMBANDWIDTH=<volte_sample>,<novolte_sample> | OK |
| | ERROR |

Defined values

<volte_sample>

Value from 0-1, default value is 0.

0 : Sampling rate is 16K.

1 : Sampling rate is 8K.

<novolte_sample >

Value from 0-1, default value is 1.

0 : Sampling rate is 16K.

1 : Sampling rate is 8K.

Examples

```
AT+CPCMBANDWIDTH=1,0
```

```
OK
```

```
AT+CPCMBANDWIDTH?
```

```
+CPCMBANDWIDTH: 1,0
```

```
OK
```

7 AT Commands for SMS

7.1 AT+CSMS Select message service

Description

This command is used to select messaging service [<service>](#).

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| | |
|--|---|
| Test Command | Responses |
| AT+CSMS=? | +CSMS: (list of supported <service> s) OK |
| Read Command | Responses |
| AT+CSMS? | +CSMS: <service> , <mt> , <mo> , <bm> OK |
| Write Command | Responses |
| AT+CSMS= <service> | +CSMS: <mt> , <mo> , <bm> OK ERROR +CMS ERROR: <err> |

Defined values

[<service>](#)

- 0 – SMS at command is compatible with GSM phase 2.
- 1 – SMS at command is compatible with GSM phase 2+.

[<mt>](#)

Mobile terminated messages:

- 0 – type not supported.
- 1 – type supported.

[<mo>](#)

Mobile originated messages:

- 0 – type not supported.
- 1 – type supported.

<bm>

Broadcast type messages:

- 0 – type not supported.
- 1 – type supported.

Examples

AT+CSMS=0

+CSMS:1,1,1

OK

AT+CSMS?

+CSMS:0,1,1,1

OK

AT+CSMS=?

+CSMS:(0-1)

OK

7.2 AT+CPMS Preferred message storage

Description

This command is used to select memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|----------------------------------|---|
| AT+CPMS=? | +CPMS: (list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s) OK |
| Read Command | Responses |
| AT+CPMS? | +CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK ERROR +CMS ERROR: <err> |
| Write Command | Responses |
| AT+CPMS=<mem1>[,<mem2>[,<mem3>]] | +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK |

| | ERROR |
|-------------------|---|
| | +CMS ERROR: <err> |
| Execution Command | Responses |
| AT+CPMS | Set default value (<mem1>="SM", <mem2>="SM", <mem3>="SM"): +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK |
| | ERROR |

Defined values

<mem1>

String type, memory from which messages are read and deleted (commands List Messages [AT+CMGL](#), Read Message [AT+CMGR](#) and Delete Message [AT+CMGD](#)).

“ME” and “MT” FLASH message storage

“SM” SIM message storage

“SR” Status report storage (**not used in CDMA/EVDO mode**)

<mem2>

String type, memory to which writing and sending operations are made (commands Send Message from Storage [AT+CMSS](#) and Write Message to Memory [AT+CMGW](#)).

“ME” and “MT” FLASH message storage

“SM” SIM message storage

<mem3>

String type, memory to which received SMS is preferred to be stored (unless forwarded directly to TE; refer command New Message Indications [AT+CNMI](#)).

“ME” FLASH message storage

“SM” SIM message storage

<usedX>

Integer type, number of messages currently in <memX>.

<totalX>

Integer type, total number of message locations in <memX>.

Examples

AT+CPMS=?

+CPMS: ("ME","MT","SM","SR"),("ME","MT","SM"),("ME","SM")

OK

AT+CPMS?

+CPMS:"ME", 0, 23,"ME", 0, 23,"ME", 0, 23

OK

AT+CPMS="SM","SM","SM"

+CPMS:3,50,3,50,3,50

OK

7.3 AT+CMGF Select SMS message format

Description

This command is used to specify the input and output format of the short messages.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|------------------------------|---|
| AT+CMGF=? | +CMGF: (list of supported <i><mode></i> s) OK ERROR |
| Read Command | Responses |
| AT+CMGF? | +CMGF: <i><mode></i> OK ERROR |
| Write Command | Responses |
| AT+CMGF= <i><mode></i> | OK ERROR |
| Execution Command | Responses |
| AT+CMGF | <i>Set default value (<mode>=0):</i> OK ERROR |

Defined values

| <i><mode></i> |
|---------------------|
| 0 – PDU mode |
| 1 – Text mode |

Examples

| |
|--------------|
| AT+CMGF? |
| +CMGF: 0 |
| OK |
| AT+CMGF=? |
| +CMGF: (0-1) |
| OK |
| AT+CMGF=1 |

OK

7.4 AT+CSCA SMS service centre address

Description

This command is used to update the SMSC address, through which mobile originated SMS are transmitted.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| | |
|-------------------------|----------------------------|
| Test Command | Responses |
| AT+CSCA=? | OK |
| Read Command | Responses |
| AT+CSCA? | +CSCA: <sca>,<tosca> OK |
| Write Command | Responses |
| AT+CSCA=<sca>[,<tosca>] | OK |

Defined values

<sca>

Service Centre Address, value field in string format, BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer to command [AT+CSCS](#)), type of address given by <tosca>.

<tosca>

SC address Type-of-Address octet in integer format, when first character of <sca> is + (IRA 43) default is 145, otherwise default is 129.

Examples

```
AT+CSCA="+8613012345678"
```

OK

```
AT+CSCA?
```

```
+CSCA: "+8613010314500", 145
```

OK

7.5 AT+CSCB Select cell broadcast message indication

Description

The test command returns the supported `<mode>`s as a compound value.

The read command displays the accepted message types.

Depending on the `<mode>` parameter, the write command adds or deletes the message types accepted.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---|---|
| AT+CSCB=? | +CSCB: (list of supported <code><mode></code> s) OK ERROR |
| Read Command | Responses |
| AT+CSCB? | +CSCB: <code><mode></code> , <code><mids></code> , <code><dcss></code> OK ERROR |
| Write Command | Responses |
| AT+CSCB= <code><mode></code> [, <code><mids></code> >[, <code><dcss></code>]] | OK ERROR +CMS ERROR: <code><err></code> |

Defined values

`<mode>`

- 0 – message types specified in `<mids>` and `<dcss>` are accepted.
- 1 – message types specified in `<mids>` and `<dcss>` are not accepted.

`<mids>`

String type; all different possible combinations of CBM message identifiers.

`<dcss>`

String type; all different possible combinations of CBM data coding schemes(default is empty string)

Examples

```
AT+CSCB=?
+CSCB: (0-1)
```

```
OK
AT+CSCB=0,"15-17,50,86",""
OK
```

7.6 AT+CSMP Set text mode parameters

Description

This command is used to select values for additional parameters needed when SM is sent to the network or placed in storage when text format message mode is selected.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---|------------------------------------|
| AT+CSMP=? | OK |
| Read Command | Responses |
| AT+CSMP? | +CSMP: <fo>,<vp>,<pid>,<dcs> OK |
| Write Command | Responses |
| AT+CSMP=[<fo>[,<vp>[,<p id>[,<dcs>]]]] | OK ERROR |

Defined values

<fo>

Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if <fo> is set to 49.

<vp>

Depending on SMS-SUBMIT <fo> setting: GSM 03.40,TP-Validity-Period either in integer format (default 167), in time-string format, or if is supported, in enhanced format (hexadecimal coded string with quotes), (<vp> is in range 0... 255).

<pid>

GSM 03.40 TP-Protocol-Identifier in integer format (default 0).

<dcs>

GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format depending on the command or result code.

Examples

```
AT+CSMP=17,23,64,244
OK
```

7.7 AT+CSDH Show text mode parameters

Description

This command is used to control whether detailed header information is shown in text mode result codes.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CSDH=? | +CSDH: (list of supported <show>s) OK ERROR |
| Read Command | Responses |
| AT+CSDH? | +CSDH: <show> OK |
| Write Command | Responses |
| AT+CSDH=<show> | OK ERROR |
| Execution Command | Responses |
| AT+CSDH | <i>Set default value (<show>=0):</i> OK ERROR |

Defined values

<show>

- 0 – do not show header values defined in commands `AT+CSCA` and `AT+CSMP` (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <toa> in `+CMT`, `AT+CMGL`, `AT+CMGR` result codes for SMS-DELIVERs and SMS-SUBMITs in text mode; for SMS-COMMANDs in `AT+CMGR` result code, do not show <pid>, <mn>, <da>, <toda>, <length> or <data>
- 1 – show the values in result codes

Examples

```

AT+CSDH?
+CSDH: 0
OK
AT+CSDH=1
OK
    
```

7.8 AT+CNMA New message acknowledgement to ME/TA

Description

This command is used to confirm successful receipt of a new message (SMS-DELIVER or SMS-STATUSREPORT) routed directly to the TE. If ME does not receive acknowledgement within required time (network timeout), it will send RP-ERROR to the network.

NOTE: The execute / write command shall only be used when [AT+CSMS](#) parameter `<service>` equals 1 (= phase 2+) and appropriate URC has been issued by the module, i.e.:

- <+CMT> for <mt>=2 incoming message classes 0, 1, 3 and none;
- <+CMT> for <mt>=3 incoming message classes 0 and 3;
- <+CDS> for <ds>=1.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|-------------------|--|
| AT+CNMA=? | if text mode(AT+CMGF=1): OK if PDU mode(AT+CMGF=0): +CNMA: (list of supported <n>s) OK |
| Write Command | Responses |
| AT+CNMA=<n> | OK ERROR +CMS ERROR: <err> |
| Execution Command | Responses |
| AT+CNMA | OK ERROR +CMS ERROR: <err> |

Defined values

<n>

Parameter required only for PDU mode.

- 0 – Command operates similarly as execution command in text mode.
- 1 – Send positive (RP-ACK) acknowledgement to the network. Accepted only in PDU mode.
- 2 – Send negative (RP-ERROR) acknowledgement to the network. Accepted only in PDU mode.

Examples

```
AT+CNMI=1,2,0,0,0
```

```
OK
```

```
+CMT:"1380022xxxx",,"", "02/04/03,11 :06 :38+32" <CR><LF>
```

Testing

(receive new short message)

```
AT+CNMA(send ACK to the network)
```

```
OK
```

```
AT+CNMA
```

```
+CMS ERROR: 340
```

(the second time return error, it needs ACK only once)

7.9 AT+CNMI New message indications to TE

Description

This command is used to select the procedure how receiving 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). If set `<mt>=3` or `<ds>=1`, make sure `<mode>=1`, If set `<mt>=2`, make sure `<mode>=1` or `2`, otherwise it will return error.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---------------|---|
| AT+CNMI=? | +CNMI: (list of supported <code><mode></code> s),(list of supported <code><mt></code> s),(list of supported <code><bm></code> s),(list of supported <code><ds></code> s),(list of supported <code><bfr></code> s) OK |
| Read Command | Responses |
| AT+CNMI? | +CNMI: <code><mode></code> , <code><mt></code> , <code><bm></code> , <code><ds></code> , <code><bfr></code> OK |
| Write Command | Responses |

| | |
|--|---------------------------------|
| AT+CNMI=<mode>[,<mt>[,<bm>[,<ds> [,<bfr>]]]] | OK |
| | ERROR |
| | +CMS ERROR: <err> |
| Execution Command | Responses |
| AT+CNMI | <i>Set default value:</i> OK |

Defined values

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

<mt>

The rules for storing received SMS depend on its data coding scheme, preferred memory storage (**AT+CPMS**) setting and this value:

- 0 – No SMS-DELIVER indications are routed to the TE.
- 1 – If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem3>,<index>.
- 2 – SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code:
+CMT:[<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or
+CMT:<oa>,<alpha>,<scts>[,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]
<CR> <LF><data>
(text mode enabled, about parameters in italics, refer command Show Text Mode Parameters **AT+CSDH**).
- 3 – Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.

<bm> (not used in CDMA/EVDO mode)

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

- 0 – No CBM indications are routed to the TE.
- 2 – New CBMs are routed directly to the TE using unsolicited result code:
+CBM: <length><CR><LF><pdu> (PDU mode enabled); or

| | |
|--|--|
| +CBM: <sn>,<mid>,<dc>,<page>,<pages><CR><LF><data> (text mode enabled) | |
| <ds> (not used in CDMA/EVDO mode) | |
| 0 | No SMS-STATUS-REPORTs are routed to the TE. |
| 1 | SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled); or +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> (text mode enabled) |
| 2 | If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem3>,<index>. |
| <bfr> | |
| 0 | TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 to 2 is entered (OK response shall be given before flushing the codes). |
| 1 | TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 to 2 is entered. |

Examples

| |
|---|
| AT+CNMI? |
| +CNMI: 0,0,0,0,0 |
| OK |
| AT+CNMI=? |
| +CNMI: (0,1,2),(0,1,2,3),(0,2),(0,1,2),(0,1) |
| OK |
| AT+CNMI=2,1 (unsolicited result codes after received messages.) |
| OK |

7.10 AT+CGSMS Select service for MO SMS messages

Description

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

The test command is used for requesting information on which services and service preferences can be set by using the [AT+CGSMS](#) write command

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

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|--|
| AT+CGSMS=? | +CGSMS: (list of supported <service>s) OK |

| Read Command | Responses |
|--------------------|----------------------------------|
| AT+CGSMS? | +CGSMS: <service> OK |
| Write Command | Responses |
| AT+CGSMS=<service> | OK ERROR +CME ERROR: <err> |

Defined values

<service>

A numeric parameter which indicates the service or service preference to be used

- 0 – GPRS(value is not really supported and is internally mapped to 2)
- 1 – circuit switched(value is not really supported and is internally mapped to 3)
- 2 – GPRS preferred (use circuit switched if GPRS not available)
- 3 – circuit switched preferred (use GPRS if circuit switched not available)

Examples

```
AT+CGSMS?
```

```
+CGSMS: 3
```

```
OK
```

```
AT+CGSMS=?
```

```
+CGSMS: (0-3)
```

```
OK
```

7.11 AT+CMGL List SMS messages from preferred store

Description

This command is used to return messages with status value <stat> from message storage <mem1> to the TE.

If the status of the message is 'received unread', the status in the storage changes to 'received read'.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CMGL=? | +CMGL: (list of supported <stat>s) OK |
| Write Command | Responses |

| | |
|----------------------------------|--|
| AT+CMGL=<stat> | <p><i>If text mode (AT+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:</i></p> <p>+CMGL:<index>,<stat>,<oa>/<da>,<alpha>,<scts>,<tooa>/<oda>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length><CR><LF><data><CR><LF></p> <p>+CMGL:<index>,<stat>,<oa>/<da>,<alpha>,<scts>,<tooa>/<oda>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length><CR><LF><data>[...]</p> <p>OK</p> |
| (Continuation of AT+CMGL=<stat>) | <p><i>If text mode (AT+CMGF=1), command successful and SMS-STATUS-REPORTs:</i></p> <p>+CMGL:<index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st><CR><LF></p> <p>+CMGL:<index>,<stat>,<fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st>[...]</p> <p>OK</p> |
| (Continuation of AT+CMGL=<stat>) | <p><i>If text mode (AT+CMGF=1), command successful and SMS-COMMANDs:</i></p> <p>+CMGL:<index>,<stat>,<fo>,<ct><CR><LF></p> <p>+CMGL:<index>,<stat>,<fo>,<ct>[...]</p> <p>OK</p> |
| (Continuation of AT+CMGL=<stat>) | <p><i>If text mode (AT+CMGF=1), command successful and CBM storage:</i></p> <p>+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data><CR><LF></p> <p>+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]</p> <p>OK</p> |
| (Continuation of AT+CMGL=<stat>) | <p><i>If PDU mode (AT+CMGF=0) and Command successful:</i></p> <p>+CMGL:<index>,<stat>,<alpha>,<length><CR><LF><pdu><CR><LF></p> <p>+CMGL:<index>,<stat>,<alpha>,<length><CR><LF><pdu>[...]</p> <p>OK</p> |
| (Continuation of AT+CMGL=<stat>) | <p>+CMS ERROR: <err></p> |

Defined values

| |
|--|
| <stat> |
| 1. Text Mode: "REC UNREAD" received unread message (i.e. new message) |

| | |
|--------------|-----------------------|
| "REC READ" | received read message |
| "STO UNSENT" | stored unsent message |
| "STO SENT" | stored sent message |
| "ALL" | all messages |

2. PDU Mode:

- 0 – received unread message (i.e. new message)
- 1 – received read message
- 2 – stored unsent message
- 3 – stored sent message
- 4 – all messages

<index>

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

<oa>

Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toa>.

<da>

Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toa>.

<alpha>

String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set [AT+CSCS](#).

<scts>

TP-Service-Centre-Time-Stamp in time-string format (refer <dt>).

<toa>

TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toa>).

<toa>

TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.

<length>

Integer type value indicating in the text mode ([AT+CMGF=1](#)) the length of the message body <data> in characters; or in PDU mode ([AT+CMGF=0](#)), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)

<data>

In the case of SMS: TP-User-Data in text mode responses; format:

1. If <dc> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit

- default alphabet into two IRA character long hexadecimal numbers. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
2. If `<dc>` indicates that 8-bit or UCS2 data coding scheme is used, or `<fo>` indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
 3. If `<dc>` indicates that GSM 7 bit default alphabet is used:
 - a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. If TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal numbers.
 4. If `<dc>` indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers.

`<fo>`

Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if `<fo>` is set to 49.

`<mr>`

Message Reference

GSM 03.40 TP-Message-Reference in integer format.

`<ra>`

Recipient Address

GSM 03.40 TP-Recipient-Address Address-Value field in string format;BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set(refer to command `AT+CSCS`);type of address given by `<tora>`

`<tora>`

Type of Recipient Address

GSM 04.11 TP-Recipient-Address Type-of-Address octet in integer format (default refer `<toda>`)

`<dt>`

Discharge Time

GSM 03.40 TP-Discharge-Time in time-string format:"yy/MM/dd,hh:mm:ss+zz",where characters indicate year (two last digits),month,day,hour,minutes,seconds and time zone.

`<st>`

Status

GSM 03.40 TP-Status in integer format

0...255

`<ct>`

Command Type

GSM 03.40 TP-Command-Type in integer format

0...255

`<sn>`

Serial Number

GSM 03.41 CBM Serial Number in integer format

| |
|---|
| <mid> |
| Message Identifier GSM 03.41 CBM Message Identifier in integer format |
| <page> |
| Page Parameter GSM 03.41 CBM Page Parameter bits 4-7 in integer format |
| <pages> |
| Page Parameter GSM 03.41 CBM Page Parameter bits 0-3 in integer format |
| <pdu> |
| In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). |

Examples

```

AT+CMGL=?
+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")
OK
AT+CMGL="ALL"
+CMGL: 1,"STO UNSENT","+10011",,,145,4
Hello World
OK
    
```

7.12 AT+CMGR Read message

Description

This command is used to return message with location value <index> from message storage <mem1> to the TE.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|-----------------|---|
| AT+CMGR=? | OK |
| Write Command | Responses |
| AT+CMGR=<index> | <p><i>If text mode (AT+CMGF=1), command successful and SMS-DELIVER:</i></p> <p>+CMGR: <stat>,<oa>,<[alpha]>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data></p> <p>OK</p> |

| |
|--|
| <p><i>If text mode (AT+CMGF=1), command successful and SMS-SUBMIT:</i></p> <p>+CMGR:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dc>,<vp>],<sca>,<tosca>,<length><CR><LF><data></p> <p>OK</p> |
| <p><i>If text mode (AT+CMGF=1), command successful and SMS-STATUS-REPORT:</i></p> <p>+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st></p> <p>OK</p> |
| <p><i>If text mode (AT+CMGF=1), command successful and SMS-COMMAND:</i></p> <p>+CMGR:<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length>]<CR><LF><data></p> <p>OK</p> |
| <p><i>If text mode (AT+CMGF=1), command successful and CBM storage:</i></p> <p>+CMGR:<stat>,<sn>,<mid>,<dc>,<page>,<pages><CR><LF><data></p> <p>OK</p> |
| <p><i>If PDU mode (AT+CMGF=0) and Command successful:</i></p> <p>+CMGR:<stat>,[<alpha>],<length><CR><LF><pdu></p> <p>OK</p> |
| <p>+CMS ERROR: <err></p> |

Defined values

<index>

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

<stat>

1. Text Mode:

"REC UNREAD" received unread message (i.e. new message)

"REC READ" received read message

"STO UNSENT" stored unsent message

"STO SENT" stored sent message

2. PDU Mode:

0 – received unread message (i.e. new message)

1 – received read message.

2 – stored unsent message.

3 – stored sent message

<oa>

Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default

alphabet characters) are converted to characters of the currently selected TE character set, type of address given by [<tooa>](#).

[<alpha>](#)

String type alphanumeric representation of [<da>](#) or [<oa>](#) corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set [AT+CSCS](#).

[<scts>](#)

TP-Service-Centre-Time-Stamp in time-string format (refer [<dt>](#)).

[<tooa>](#)

TP-Originating-Address, Type-of-Address octet in integer format. (default refer [<toda>](#)).

[<fo>](#)

Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if [<fo>](#) is set to 49.

[<pid>](#)

Protocol Identifier

GSM 03.40 TP-Protocol-Identifier in integer format

0...255

[<dcsc>](#)

Depending on the command or result code: SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format.

[<sca>](#)

RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by [<tosca>](#).

[<tosca>](#)

RP SC address Type-of-Address octet in integer format (default refer [<toda>](#)).

[<length>](#)

Integer type value indicating in the text mode ([AT+CMGF=1](#)) the length of the message body [<data>](#) > (or [<cdata>](#)) in characters; or in PDU mode ([AT+CMGF=0](#)), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length).

[<data>](#)

In the case of SMS: TP-User-Data in text mode responses; format:

- 1 – If [<dcsc>](#) indicates that GSM 7 bit default alphabet is used and [<fo>](#) indicates that TP-User-Data-Header-Indication is not set:
 - a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal numbers. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55)).
- 2 – If [<dcsc>](#) indicates that 8-bit or UCS2 data coding scheme is used, or [<fo>](#) indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers. (eg. octet with integer value 42 is presented to TE

- as two characters 2A (IRA 50 and 65)).
- 3 – If `<dcs>` indicates that GSM 7 bit default alphabet is used:
 - a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. If TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal numbers.
 - 4 – If `<dcs>` indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers.

`<da>`

Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by `<toda>`.

`<toda>`

TP-Destination-Address, Type-of-Address octet in integer format. (when first character of `<da>` is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.

`<vp>`

Depending on SMS-SUBMIT `<fo>` setting: TP-Validity-Period either in integer format (default 167) or in time-string format (refer `<dt>`).

`<mr>`

Message Reference

GSM 03.40 TP-Message-Reference in integer format.

`<ra>`

Recipient Address

GSM 03.40 TP-Recipient-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command `AT+CSCS`); type of address given by `<tora>`

`<tora>`

Type of Recipient Address

GSM 04.11 TP-Recipient-Address Type-of-Address octet in integer format (default refer `<toda>`)

`<dt>`

Discharge Time

GSM 03.40 TP-Discharge-Time in time-string format: "yy/MM/dd,hh:mm:ss+zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone.

`<st>`

Status

GSM 03.40 TP-Status in integer format

0...255

`<ct>`

Command Type

GSM 03.40 TP-Command-Type in integer format

0...255

`<mn>`

Message Number

GSM 03.40 TP-Message-Number in integer format

<sn>

Serial Number

GSM 03.41 CBM Serial Number in integer format

<mid>

Message Identifier

GSM 03.41 CBM Message Identifier in integer format

<page>

Page Parameter

GSM 03.41 CBM Page Parameter bits 4-7 in integer format

<pages>

Page parameter

GSM 03.41 CBM Page Parameter bits 0-3 in integer format

<pdu>

In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers. (eg. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

Examples

```
AT+CMGR=1
```

```
+CMGR: "STO UNSENT", "+10011", ,145,17,0,0,167, "+8613800100500",145,11
```

```
Hello World
```

```
OK
```

7.13 AT+CMGS Send message

Description

This command is used to send message from a TE to the network (SMS-SUBMIT).

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---|--|
| AT+CMGS=? | OK |
| Write Command | Responses |
| <i>If text mode (AT+CMGF=1):</i> AT+CMGS=<da>[,<toda>]< CR> <i>Text is entered.</i> | <i>If sending successfully:</i> +CMGS: <mr> OK |
| <CTRL-Z/ESC> | <i>If cancel sending:</i> |

| | |
|---|--|
| If PDU mode(AT+CMGF=0): AT+CMGS=<length><CR> PDU is entered <CTRL-Z/ESC> | OK |
| | If sending fails: ERROR |
| | If sending fails: +CMS ERROR: <err> |

Defined values

| | |
|----------|--|
| <da> | Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tda>. |
| <tda> | TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255. |
| <length> | integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> > (or <data>) in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length) |
| <mr> | Message Reference GSM 03.40 TP-Message-Reference in integer format. NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used. |

Examples

```

AT+CMGS="13012832788"<CR>(TEXT MODE)
> ABCD<ctrl-Z/ESC>
+CMGS: 46
OK
    
```

7.14 AT+CMSS Send message from storage

Description

This command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|--------------------------------------|---|
| AT+CMSS=? | OK |
| Write Command | Responses |
| AT+CMSS= <index> [,<da>[,<toda>]] | +CMSS: <mr> OK ERROR <i>If sending fails:</i> +CMS ERROR: <err> |

Defined values

<index>

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

<da>

Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.

<mr>

Message Reference

GSM 03.40 TP-Message-Reference in integer format.

<toda>

TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.

NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

```
AT+CMSS=3
```

```
+CMSS: 0
```

```
OK
```

```
AT+CMSS=3,"13012345678"
```

```
+CMSS: 55
```

```
OK
```

7.15 AT+CMGW Write message to memory

Description

This command is used to store message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|--|--|
| AT+CMGW=? | OK |
| Write Command | Responses |
| <i>If text mode(AT+CMGF=1):</i> AT+CMGW=<oa>/<da>[,<t ooa>/<toda>[,<stat>]]<CR> <i>Text is entered.</i> <CTRL-Z/ESC> <i>If PDU mode(AT+CMGF=</i> 0): AT+CMGW=<length>[,<sta t>]<CR> <i>PDU is entered.</i> <CTRL-Z/ESC> | <i>If write successfully:</i> +CMGW: <index> OK <i>If cancel write:</i> OK <i>If write fails:</i> ERROR <i>If write fails:</i> +CMS ERROR: <err> |

Defined values

| | |
|----------|--|
| <index> | Integer type; value in the range of location numbers supported by the associated memory and start with zero. |
| <oa> | Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toa>. |
| <toa> | TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>). |
| <da> | Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>. |
| <toda> | TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255. |
| <length> | Integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length). |
| <stat> | |

1. Text Mode:
 - "STO UNSENT" stored unsent message
 - "STO SENT" stored sent message
2. PDU Mode:
 - 2 – stored unsent message
 - 3 – stored sent message

NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

```
AT+CMGW="13012832788" <CR> (TEXT MODE)
ABCD<ctrl-Z/ESC>
+CMGW:1
OK
```

7.16 AT+CMGD Delete message

Description

This command is used to delete message from preferred message storage [<mem1>](#) location [<index>](#). If [<delflag>](#) is present and not set to 0 then the ME shall ignore [<index>](#) and follow the rules for [<delflag>](#) shown below.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|--|--|
| AT+CMGD=? | +CMGD: (list of supported <index> s)[,(list of supported <delflag> s)] OK |
| Write Command | Responses |
| AT+CMGD= <index> [, <delflag>] | OK ERROR +CMS ERROR: <err> |

Defined values

[<index>](#)

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

[<delflag>](#)

- 0 – (or omitted) Delete the message specified in `<index>`.
- 1 – Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched.
- 2 – Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched.
- 3 – Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched.
- 4 – Delete all messages from preferred message storage including unread messages.

NOTE: If set `<delflag>`=1, 2, 3 or 4, `<index>` is omitted, such as `AT+CMGD=,1`.

Examples

```
AT+CMGD=1
OK
```

7.17 AT+CMGMT Change message status

Description

This command is used to change the message status. If the status is unread, it will be changed read. Other statuses don't change.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|-------------------------------------|--------------------------------------|
| <code>AT+CMGMT=?</code> | OK |
| Write Command | Responses |
| <code>AT+CMGMT=<index></code> | OK |
| | ERROR |
| | +CMS ERROR: <code><err></code> |

Defined values

`<index>`

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

Examples

```
AT+CMGMT=1
```

OK

7.18 AT+CMVP Set message valid period

Description

This command is used to set valid period for sending short message.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CMVP=? | +CMVP: (list of supported <vp>s) OK |
| Read Command | Responses |
| AT+CMVP? | +CMVP:<vp> OK |
| Write Command | Responses |
| AT+CMVP=<vp> | OK ERROR +CMS ERROR: <err> |

Defined values

<vp>

Validity period value:

| | |
|------------|---------------------------------------|
| 0 to 143 | (<vp>+1) x 5 minutes (up to 12 hours) |
| 144 to 167 | 12 hours + (<vp>-143) x 30 minutes |
| 168 to 196 | (<vp>-166) x 1 day |
| 197 to 255 | (<vp>-192) x 1 week |

Examples

AT+CMVP=167

OK

AT+CMVP?

+CMVP: 167

OK

7.19 AT+CMGRD Read and delete message

Description

This command is used to read message, and delete the message at the same time. It integrate [AT+CMGR](#) and [AT+CMGD](#), but it doesn't change the message status.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|------------------|--|
| AT+CMGRD=? | OK |
| Write Command | Responses |
| AT+CMGRD=<index> | <p><i>If text mode(AT+CMGF=1),command successful and SMS-DELIVER:</i> +CMGRD:<stat>,<oa>,<[alpha]>,<[scts]>,<[tooa]>,<[fo]>,<[pid]>,<[dcs]>,<[sca]>,<[tosca]>,<[length]><CR><LF><data> OK</p> <p><i>If text mode(AT+CMGF=1),command successful and SMS-SUBMIT:</i> +CMGRD:<stat>,<[da]>,<[alpha]>,<[toda]>,<[fo]>,<[pid]>,<[dcs]>,<[vp]>,<[sca]>,<[tosca]>,<[length]><CR><LF><data> OK</p> <p><i>If text mode(AT+CMGF=1),command successful and SMS-STATUS-REPORT:</i> +CMGRD: <stat>,<[fo]>,<[mr]>,<[ra]>,<[tora]>,<[scts]>,<[dt]>,<[st]> OK</p> <p><i>If text mode(AT+CMGF=1),command successful and SMS-COMMAND:</i> +CMGRD:<stat>,<[fo]>,<[ct]>,<[pid]>,<[mn]>,<[da]>,<[toda]>,<[length]><CR><LF><data> OK</p> <p><i>If text mode(AT+CMGF=1),command successful and CBM storage:</i> +CMGRD:<stat>,<[sn]>,<[mid]>,<[dcs]>,<[page]>,<[pages]><CR><LF><data> OK</p> <p><i>If PDU mode(AT+CMGF=0) and command successful:</i> +CMGRD: <stat>,<[alpha]>,<[length]><CR><LF><pdu></p> |

| | |
|--|-------------------|
| | OK |
| | ERROR |
| | +CMS ERROR: <err> |

Defined values

Refer to command [AT+CMGR](#).

Examples

```
AT+CMGRD=6
+CMGRD:"REC READ", "+8613917787249", "06/07/10,12:09:38+32",145,4,0,0, "+86138002105
00",145,4
How do you do
OK
```

7.20 AT+CMGSEX Send message

Description

This command is used to send message from a TE to the network (SMS-SUBMIT).

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---|---|
| AT+CMGSEX=? | OK |
| Write Command | Responses |
| <i>If text mode (AT+CMGF=1):</i> AT+CMGSEX=<da>[,<toda> >][,<mr>,<msg_seg>,<msg_ total>]<CR> <i>Text is entered.</i> <CTRL-Z/ESC> | <i>If sending successfully:</i> +CMGSEX: <mr> OK <i>If cancel sending:</i> OK <i>If sending fails:</i> ERROR <i>If sending fails:</i> +CMS ERROR: <err> |

Defined values

| |
|---|
| <da> |
| Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>. |
| <toda> |
| TP-Destination-Address, Type-of-Address octet in integer format. (When first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255. |
| <mr> |
| Message Reference GSM 03.40 TP-Message-Reference in integer format. The maximum length is 255. |
| <msg_seg> |
| The segment number for long sms |
| <msg_total> |
| The total number of the segments for long sms. Its range is from 2 to 255. |
| NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: For single SMS, it is 160 characters if the 7 bit GSM coding scheme is used; For multiple long sms, it is 153 characters if the 7 bit GSM coding scheme is used. |

Examples

| |
|---|
| AT+CMGSEX="13012832788", 190, 1, 2<CR>(TEXT MODE) |
| > ABCD<ctrl-Z/ESC> |
| +CMGSEX: 190 |
| OK |
| AT+CMGSEX="13012832788", 190, 2, 2<CR>(TEXT MODE) |
| > EFGH<ctrl-Z/ESC> |
| +CMGSEX: 190 |
| OK |

7.21 AT+CMSSEX Send multi messages from storage

Description

This command is used to send messages with location value <index1>,<index2>,<index3>... from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).The max count of index is 13 one time.

Note: This command not support in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|--------------|-----------|
|--------------|-----------|

| | |
|--|---|
| AT+CMSSEX=? | OK |
| Write Command | Responses |
| AT+CMSSEX= <index> [,<index >[,...]] | +CMSSEX: <mr>[,<mr>[,...]] OK ERROR |
| | <i>If sending fails:</i> [+CMSSEX: <mr>[,<mr>[,...]]] +CMS ERROR: <err> |

Defined values

| | |
|---------|---|
| <index> | Integer type; value in the range of location numbers supported by the associated memory and start with zero. |
| <mr> | Message Reference GSM 03.40 TP-Message-Reference in integer format. |
| | NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used. |

Examples

| | |
|---|--|
| AT+CMSSEX=0,1 +CMSSEX: 239,240 | |
| OK | |
| AT+CMSSEX=0,1 +CMSSEX: 238 +CMS ERROR: Invalid memory index | |

7.22 AT+CMGP Set cdma/evdo text mode parameters

Description

The command is used to select values for additional parameters needed when SM is sent to the network or placed in storage when text format message mode is selected.

NOTE: take effect in CDMA/EVDO mode

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.005 |

Syntax

| Test Command | Responses |
|---|--|
| AT+CMGP=? | OK |
| Read Command | Responses |
| AT+CMGP? | +CMGP: <tid>,<vpf>,<vp>,<ddtf>,<ddt> OK |
| Write Command | Responses |
| AT+CMGP=[Tid][,<vpf>,<vp>,<ddtf>,<ddt>] | OK |

Defined values

<tid>

Teleservice ID, value maybe 4095,4096,4097,4098,4099,4100,4101,4102
Default 4098

<vpf>

Valid Period Format

0, Absolute
1, Relative

<vp>

Valid Period

“YY/MM/DD,HH/MM/SS” if vpf=0,
Integer not exceed 248 if vpf=1

<ddtf>

Deferred Delivery Time Format

0, Absolute
1, Relative

<ddt>

Deferred Delivery Time

“YY/MM/DD,HH/MM/SS” if ddtf=0,
Integer not exceed 248 if ddtf=1

Examples

```
AT+CMGP=4098,0,"11/04/22,16:21:00",1,12
OK
```

8 AT Commands for Phonebook

8.1 AT+CPBS Select phonebook memory storage

Description

This command selects the active phonebook storage, i.e. the phonebook storage that all subsequent phonebook commands will be operating on.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|--|
| AT+CPBS=? | +CPBS: (list of supported <storage>s) OK |
| Read Command | Responses |
| AT+CPBS? | +CPBS: <storage>[,<used>,<total>] OK +CME ERROR: <err> |
| Write Command | Responses |
| AT+CPBS=<storage> | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CPBS | <i>Set default value "SM":</i> OK |

Defined values

| <storage> |
|---|
| Values reserved by the present document: |
| "DC" ME dialed calls list Capacity: max. 100 entries AT+CPBW command is not applicable to this storage. |
| "MC" ME missed (unanswered received) calls list Capacity: max. 100 entries AT+CPBW command is not applicable to this storage. |

| | |
|---------|---|
| "RC" | ME received calls list Capacity: max. 100 entries <i>AT+CPBW</i> command is not applicable to this storage. |
| "SM" | SIM phonebook Capacity: depending on SIM card |
| "ME" | Mobile Equipment phonebook Capacity: max. 500 entries |
| "FD" | SIM fixdialling-phonebook Capacity: depending on SIM card |
| "ON" | MSISDN 1st Capacity: depending on SIM card |
| "LD" | Last number dialed phonebook Capacity: depending on SIM card <i>AT+CPBW</i> command is not applicable to this storage |
| "EN" | Emergency numbers Capacity: depending on SIM card <i>AT+CPBW</i> command is not applicable to this storage. |
| <used> | Integer type value indicating the number of used locations in selected memory. |
| <total> | Integer type value indicating the total number of locations in selected memory. |

Examples

```

AT+CPBS=?
+CPBS: ("SM","DC","FD","LD","MC","ME","RC","EN","ON")
OK
AT+CPBS="SM"
OK
AT+CPBS?
+CPBS: "SM",1,200
OK

```

8.2 AT+CPBR Read phonebook entries

Description

This command gets the record information from the selected memory storage in phonebook. If the storage is selected as "SM" then the command will return the record in SIM phonebook, the same to others.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------------------------|---|
| AT+CPBR=? | +CPBR: (<minIndex>-<maxIndex>), [<nlength>], [<tlength>] OK +CME ERROR: <err> |
| Write Command | Responses |
| AT+CPBR= <index1>[,<index2>] | [+CPBR: <index1>,<number>,<type>,<text>[<CR><LF> +CPBR: <index2>,<number>,<type>,<text>[...]]] OK ERROR +CME ERROR: <err> |

Defined values

<index1>

Integer type value in the range of location numbers of phonebook memory.

<index2>

Integer type value in the range of location numbers of phonebook memory.

<index>

Integer type.the current position number of the Phonebook index.

<minIndex>

Integer type the minimum <index> number.

<maxIndex>

Integer type the maximum <index> number

<number>

String type, phone number of format <type>, the maximum length is <nlength>.

<type>

Type of phone number octet in integer format, default 145 when dialing string includes international access code character "+", otherwise 129.

<text>

String type field of maximum length <tlength>; often this value is set as name.

<nlength>

Integer type value indicating the maximum length of field <number>.

<tlength>

Integer type value indicating the maximum length of field <text>.

Examples

AT+CPBS?

+CPBS: "SM",2,200

OK

```
AT+CPBR=1,10
+CPBR: 1,"1234567890",129,"James"
+CPBR: 2,"0987654321",129,"Kevin"
OK
```

8.3 AT+CPBF Find phonebook entries

Description

This command finds the record in phonebook (from the current phonebook memory storage selected with [AT+CPBS](#)) which alphanumeric field has substring `<findtext>`. If `<findtext>` is null, it will list all the entries.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|---|
| AT+CPBF=? | +CPBF: [<code><nlength></code>],[<code><tlength></code>] OK +CME ERROR: <code><err></code> |
| Write Command | Responses |
| AT+CPBF=[<code><findtext></code>] | [+CPBF: <code><index1></code> , <code><number></code> , <code><type></code> , <code><text></code> [<code><CR><LF></code>] +CPBF: <code><indexN></code> , <code><number></code> , <code><type></code> , <code><text></code> [...]] OK ERROR +CME ERROR: <code><err></code> |

Defined values

`<findtext>`

String type, this value is used to find the record. Character set should be the one selected with command [AT+CSCS](#).

`<index>`

Integer type values in the range of location numbers of phonebook memory.

`<number>`

String type, phone number of format `<type>`, the maximum length is `<nlength>`.

`<type>`

Type of phone number octet in integer format, default 145 when dialing string includes international access code character "+", otherwise 129.

`<text>`

String type field of maximum length [<length>](#); Often this value is set as name.

[<nlength>](#)

Integer type value indicating the maximum length of field [<number>](#).

[<length>](#)

Integer type value indicating the maximum length of field [<text>](#).

Examples

```
AT+CPBF="James "
```

```
+CPBF: 1,"1234567890",129,"James "
```

```
OK
```

8.4 AT+CPBW Write phonebook entry

Description

This command writes phonebook entry in location number [<index>](#) in the current phonebook memory storage selected with [AT+CPBS](#).

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--|---|
| AT+CPBW=? | +CPBW:(list of supported <index> s),[<nlength>], (list of supported <type> s),[<tlength>] OK +CME ERROR: <err> |
| Write Command | Responses |
| AT+CPBW=[<index>],[<number>],[<type>],[<text>] | OK ERROR +CME ERROR: <err> |

Defined values

[<index>](#)

Integer type values in the range of location numbers of phonebook memory.If [<index>](#) is not given, the first free entry will be used. If [<index>](#) is given as the only parameter, the phonebook entry specified by [<index>](#) is deleted.If record number [<index>](#) already exists, it will be overwritten.

[<number>](#)

String type, phone number of format [<type>](#), the maximum length is [<nlength>](#).It must be a non-empty string.

<type>
 Type of address octet in integer format, The range of value is from 129 to 255. If <number> contains a leading “+” <type> = 145 (international) is used. Supported value are:
 145 – when dialling string includes international access code character “+”
 161 – national number. The network support for this type is optional
 177 – network specific number, ISDN format
 129 – otherwise

NOTE: Other value refer TS 24.008 [8] subclause 10.5.4.7.

<text>
 String type field of maximum length <tlength>; character set as specified by command Select TE Character Set [AT+CSCS](#).

<nlength>
 Integer type value indicating the maximum length of field <number>.

<tlength>
 Integer type value indicating the maximum length of field <text>.

NOTE: If the parameters of <type> and <text> are omitted and the first character of <number> is ‘+’, it will specify <type> as 145(129 if the first character isn’t ‘+’) and <text> as NULL.

Examples

```
AT+CPBW=3,"88888888",129,"John"
OK
AT+CPBW=,"6666666",129,"mary"
OK
AT+CPBW=1
OK
```

8.5 AT+CNUM Subscriber number

Description

Execution command returns the MSISDNs related to the subscriber (this information can be stored in the SIM or in the ME). If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------|-----------|
| AT+CNUM=? | OK |
| Execution Command | Responses |

| | |
|---------|--|
| AT+CNUM | [+CNUM: <alpha>,<number>,<type>[<CR><LF> +CNUM: <alpha>,<number>,<type> [...]] OK +CME ERROR: <err> |
|---------|--|

Defined values

<alpha>

Optional alphanumeric string associated with <number>, used character set should be the one selected with command Select TE Character Set [AT+CSCS](#).

<number>

String type phone number of format specified by <type>.

<type>

Type of address octet in integer format.see also [AT+CPBR <type>](#)

Examples

AT+CNUM

+CNUM: "", "13697252277", 129

OK

9 AT Commands for GPRS

9.1 AT+CGREG GPRS network registration status

Description

This command controls the presentation of an unsolicited result code “+CGREG: <stat>” when <n>=1 and there is a change in the MT's GPRS network registration status.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

| | |
|-------------------|--|
| Test Command | Responses |
| AT+CGREG=? | +CGREG: (list of supported <n>s) OK |
| Read Command | Responses |
| AT+CGREG? | +CGREG: <n>,<stat>[,<lac>,<ci>] OK |
| Write Command | Responses |
| AT+CGREG=<n> | OK |
| Execution Command | Responses |
| AT+CGREG | <i>Set default value:</i> OK |

Defined values

| | |
|--------|---|
| <n> | |
| 0 | – disable network registration unsolicited result code |
| 1 | – enable network registration unsolicited result code +CGREG: <stat> |
| 2 | – there is a change in the ME network registration status or a change of the network cell: +CGREG: <stat>[,<lac>,<ci>] |
| <stat> | |
| 0 | – not registered, ME is not currently searching an operator to register to |
| 1 | – registered, home network |
| 2 | – not registered, but ME is currently trying to attach or searching an operator to register to |
| 3 | – registration denied |

- 4 – unknown
- 5 – registered, roaming

<lac>

Two bytes location area code in hexadecimal format (e.g. "00C3" equals 193 in decimal).

NOTE: The <lac> not supported in CDMA/HDR mode

<ci>

Cell ID in hexadecimal format.

GSM : Maximum is two byte

WCDMA : Maximum is four byte

TDS-CDMA : Maximum is four byte

NOTE: The <ci> not supported in CDMA/HDR mode

Examples

```
AT+CGREG=?
```

```
+CGREG: (0-1)
```

```
OK
```

```
AT+CGREG?
```

```
+CGREG: 0,0
```

```
OK
```

9.2 AT+CGATT Packet domain attach or detach

Description

The write command is used to attach the MT to, or detach the MT from, the Packet Domain service.

The read command returns the current Packet Domain service state.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|--|
| AT+CGATT=? | +CGATT: (list of supported <state>s) OK |
| | ERROR |
| Read Command | Responses |
| AT+CGATT? | +CGATT: <state> OK |

| | |
|------------------|-------------------|
| | ERROR |
| Write Command | Responses |
| AT+CGATT=<state> | OK |
| | ERROR |
| | +CME ERROR: <err> |

Defined values

| |
|--|
| <state> |
| Indicates the state of Packet Domain attachment: |
| 0 – detached |
| <u>1</u> – attached |

Examples

| |
|------------|
| AT+CGATT? |
| +CGATT: 0 |
| OK |
| AT+CGATT=1 |
| OK |

9.3 AT+CGACT PDP context activate or deactivate

Description

The write command is used to activate or deactivate the specified PDP context (s). This command is not used in CDMA/EVDO mode.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| | |
|------------------|---|
| Test Command | Responses |
| AT+CGACT=? | +CGACT: (list of supported <state>s) OK |
| Read Command | Responses |
| AT+CGACT? | +CGACT: [<cid>, <state> [<CR><LF> +CGACT: <cid>, <state> [...]] OK |
| Write Command | Responses |
| AT+CGACT=<state> | OK |

| | |
|----------|-------------------|
| [,<cid>] | ERROR |
| | +CME ERROR: <err> |

Defined values

| |
|---|
| <state> |
| Indicates the state of PDP context activation: |
| 0 – deactivated |
| 1 – activated |
| <cid> |
| A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). |
| 1...24,100...179 |

Examples

| |
|---------------|
| AT+CGACT? |
| +CGACT: 1,1 |
| OK |
| AT+CGACT=? |
| +CGACT: (0,1) |
| OK |
| AT+CGACT=0,1 |
| OK |

9.4 AT+CGDCONT Define PDP context

Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. A special form of the write command ([AT+CGDCONT=<cid>](#)) causes the values for context <cid> to become undefined.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|--|
| AT+CGDCONT=? | +CGDCONT: (range of supported<cid>s),<PDP_type>,,(list of supported <d_comp>s),(list of supported <h_comp>s)(list of <ipv4_ctrl>s),(list of <emergency_flag>s) |

| | |
|--|---|
| | OK |
| | ERROR |
| Read Command | Responses |
| AT+CGDCONT? | +CGDCONT: [<cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>, <ipv4_ctrl>, <emergency_flag>[<CR><LF>] +CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>, <ipv4_ctrl>, <emergency_flag>[...]] OK |
| | ERROR |
| Write Command | Responses |
| AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>][,<ipv4_ctrl>[,<emergency_flag>]]]]]]] | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CGDCONT | OK |
| | ERROR |

Defined values

<cid>

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

1...24,100...179

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

IP Internet Protocol

PPP Point to Point Protocol

IPV6 Internet Protocol Version 6

IPV4V6 Dual PDN Stack

<APN>

(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.

<PDP_addr>

A string parameter that identifies the MT in the address space applicable to the PDP.

Read command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using command [AT+CGPADDR](#).

<d_comp>

A numeric parameter that controls PDP data compression, this value may depend on platform:

- 0 – off (default if value is omitted)
- 1 – on
- 2 – V.42bis

<h_comp>

A numeric parameter that controls PDP header compression, this value may depend on platform:

- 0 – off (default if value is omitted)
- 1 – on
- 2 – RFC1144
- 3 – RFC2507
- 4 – RFC3095

<ipv4_ctrl>

Parameter that controls how the MT/TA requests to get the IPv4 address information:

- 0 – Address Allocation through NAS Signaling
- 1 – on

<emergency_flag>

emergency_flag:

- 0 – off (default if value is omitted)
- 1 – on

Examples

AT+CGDCONT?

```
+CGDCONT: 1,"IPV4V6",,"0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,0
+CGDCONT: 2,"IPV6","ims","0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,0
+CGDCONT: 3,"IPV4V6",,"0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,1
```

OK

AT+CGDCONT=?

```
+CGDCONT: (1-24,100-179),"IP",,(0-2),(0-4),(0-1),(0-1)
+CGDCONT: (1-24,100-179),"PPP",,(0-2),(0-4),(0-1),(0-1)
+CGDCONT: (1-24,100-179),"IPV6",,(0-2),(0-4),(0-1),(0-1)
+CGDCONT: (1-24,100-179),"IPV4V6",,(0-2),(0-4),(0-1),(0-1)
```

OK

9.5 AT+CGDSCONT Define Secondary PDP Context

Description

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

undefined.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|---|
| AT+CGDSCONT=? | +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) OK ERROR |
| Read Command | Responses |
| AT+CGDSCONT? | +CGDSCONT: [<cid>,<p_cid>,<d_comp>,<h_comp> [<CR><LF>+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp> [...]]] OK ERROR |
| Write Command | Responses |
| AT+CGDSCONT=<cid>[,<p_cid>[,<d_comp>[,<h_comp>]]] | OK ERROR |

Defined values

<cid>

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

NOTE: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCONT.

<p_cid>

a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of

permitted values is returned by the test form of the command.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

IP Internet Protocol
 PPP Point to Point Protocol
 IPV6 Internet Protocol Version 6
 IPV4V6 Dual PDN Stack

<d_comp>

a numeric parameter that controls PDP data compression (applicable for SNDCPonly) (refer 3GPP TS 44.065 [61])

0 off
 1 on (manufacturer preferred compression)
 2 V.42bis
 Other values are reserved.

<h_comp>

a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62])

0 off
 1 on (manufacturer preferred compression)
 2 RFC1144 (applicable for SNDCP only)
 3 RFC2507
 4 RFC3095 (applicable for PDCP only)
 Other values are reserved.

Examples

AT+CGDSCONT?

+CGDSCONT: 2,1,0,0

OK

AT+CGDSCONT=2,1

OK

AT+CGDSCONT=?

+CGDSCONT: (1-24,100-179),(4,5,6),"IP",(0-2),(0-4)
+CGDSCONT: (1-24,100-179),(4,5,6),"PPP",(0-2),(0-4)
+CGDSCONT: (1-24,100-179),(4,5,6),"IPV6",(0-2),(0-4)
+CGDSCONT: (1-24,100-179),(4,5,6),"IPV4V6",(0-2),(0-4)

OK

9.6 AT+CGTFT Traffic Flow Template

Description

This command allows the TE to specify a Packet Filter - PF for a Traffic Flow Template - TFT that is used in the GGSN in UMTS/GPRS and Packet GW in EPS for routing of packets onto different QoS flows towards the TE. The concept is further described in the 3GPP TS 23.060 [47]. A TFT consists of from one and up to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|--|
| AT+CGTFT=? | +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>+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) [...]] OK ERROR |
| Read Command | Responses |
| AT+CGTFT? | +CGTFT: [<cid>,<packet filter identifier>,<evaluation precedence index>,<source address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<destination port range>,<source port |

| | <p>range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)> [<CR><LF>+CGTFT: <cid>,<packet filter identifier>,<evaluation precedence index>,<source address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<destination port range>,<source port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)> [...]]</p> <p>OK</p> <p>ERROR</p> |
|--|--|
| Write Command | Responses |
| <p>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)>]]]]]]]]]</p> | <p>OK</p> <p>ERROR</p> |
| Execute Command | Responses |
| <p>AT+CGTFT</p> | <p>OK</p> <p>ERROR</p> |

Defined values

| |
|--|
| <p><cid></p> <p>a numeric parameter which specifies a particular PDP context definition (see the AT+CGDCONT and AT+CGDSCONT commands).</p> |
| <p><PDP_type></p> <p>(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.</p> <p>IP Internet Protocol</p> |

| | |
|---|---|
| PPP | Point to Point Protocol |
| IPV6 | Internet Protocol Version 6 |
| IPV4V6 | Dual PDN Stack |
| <packet filter identifier> | a numeric parameter, value range from 1 to 16. |
| <evaluation precedence index> | a numeric parameter. The value range is from 0 to 255. |
| <source address and subnet mask> | string type The string is given as dot-separated numeric (0-255) parameters on the form: "a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16", for IPv6. |
| <protocol number (ipv4) / next header (ipv6)> | a numeric parameter, value range from 0 to 255. |
| <destination port range> | string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t". |
| <source port range> | string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t". |
| <ipsec security parameter index (spi)> | numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF. |
| <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> | string type. The string is given as dot-separated numeric (0-255) parameters on the form "t.m". |
| <flow label (ipv6)> | numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only. |

Examples

| |
|---|
| <i>AT+CGTFT?</i> |
| <i>+CGTFT: 2,1,0,"74.125.71.99.255.255.255.255",0,0,0,0,0,0,0</i> |
| <i>OK</i> |
| <i>AT+CGTFT=2,1,0,"74.125.71.99.255.255.255.255"</i> |
| <i>OK</i> |
| <i>AT+CGTFT=?</i> |
| <i>+CGTFT: "IP",(1-2),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFFFF</i> <i>FFF),(0-255.0-255),(0-FFFFFF)</i> |
| <i>+CGTFT: "PPP",(1-2),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFF</i> <i>FFFF),(0-255.0-255),(0-FFFFFF)</i> |
| <i>+CGTFT: "IPV6",(1-2),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFF</i> <i>FFFF),(0-255.0-255),(0-FFFFFF)</i> |
| <i>+CGTFT: "IPV4V6",(1-16),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFFFFF</i> <i>FFFF),(0-255.0-255),(0-FFFFFF)</i> |

OK

9.7 AT+CGQREQ Quality of service profile (requested)

Description

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.. A special form of the set command (`AT+CGQREQ=<cid>`) causes the requested profile for context number `<cid>` to become undefined.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--|---|
| AT+CGQREQ=? | +CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [-<CR><LF> +CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [...] OK ERROR |
| Read Command | Responses |
| AT+CGQREQ? | +CGQREQ: [<cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>[-<CR><LF> +CGQREQ: <cid>, <precedence >, <delay>, <reliability>., <peak>, <mean>[...]] OK ERROR |
| Write Command | Responses |
| AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]] | OK ERROR |
| Execution Command | Responses |
| AT+CGQREQ | OK ERROR |

Defined values

<cid>

A numeric parameter which specifies a particular PDP context definition (see [AT+CGDCONT](#) command). The range is from 1 to 24,100 to 179

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

- IP Internet Protocol
- PPP Point to Point Protocol
- IPV6 Internet Protocol Version 6
- IPV4V6 Dual PDN Stack

<precedence>

A numeric parameter which specifies the precedence class:

- 0 – network subscribed value
- 1 – high priority
- 2 – normal priority
- 3 – low priority

<delay>

A numeric parameter which specifies the delay class:

- 0 – network subscribed value
- 1 – delay class 1
- 2 – delay class 2
- 3 – delay class 3
- 4 – delay class 4

<reliability>

A numeric parameter which specifies the reliability class:

- 0 – network subscribed value
- 1 – Non real-time traffic,error-sensitive application that cannot cope with data loss
- 2 – Non real-time traffic,error-sensitive application that can cope with infrequent data loss
- 3 – Non real-time traffic,error-sensitive application that can cope with data loss, GMM/-SM,and SMS
- 4 – Real-time traffic,error-sensitive application that can cope with data loss
- 5 – Real-time traffic error non-sensitive application that can cope with data loss

<peak>

A numeric parameter which specifies the peak throughput class:

- 0 – network subscribed value
- 1 – Up to 1000 (8 kbit/s)
- 2 – Up to 2000 (16 kbit/s)
- 3 – Up to 4000 (32 kbit/s)
- 4 – Up to 8000 (64 kbit/s)
- 5 – Up to 16000 (128 kbit/s)
- 6 – Up to 32000 (256 kbit/s)
- 7 – Up to 64000 (512 kbit/s)
- 8 – Up to 128000 (1024 kbit/s)
- 9 – Up to 256000 (2048 kbit/s)

<mean>

A numeric parameter which specifies the mean throughput class:

| | |
|----|----------------------------|
| 0 | – network subscribed value |
| 1 | – 100 (~0.22 bit/s) |
| 2 | – 200 (~0.44 bit/s) |
| 3 | – 500 (~1.11 bit/s) |
| 4 | – 1000 (~2.2 bit/s) |
| 5 | – 2000 (~4.4 bit/s) |
| 6 | – 5000 (~11.1 bit/s) |
| 7 | – 10000 (~22 bit/s) |
| 8 | – 20000 (~44 bit/s) |
| 9 | – 50000 (~111 bit/s) |
| 10 | – 100000 (~0.22 kbit/s) |
| 11 | – 200000 (~0.44 kbit/s) |
| 12 | – 500000 (~1.11 kbit/s) |
| 13 | – 1000000 (~2.2 kbit/s) |
| 14 | – 2000000 (~4.4 kbit/s) |
| 15 | – 5000000 (~11.1 kbit/s) |
| 16 | – 10000000 (~22 kbit/s) |
| 17 | – 20000000 (~44 kbit/s) |
| 18 | – 50000000 (~111 kbit/s) |
| 31 | – optimization |

Examples

```
AT+CGQREQ?
```

```
+CGQREQ:
```

```
OK
```

```
AT+CGQREQ=?
```

```
+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
```

```
+CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
```

```
+CGQREQ: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31)
```

```
+CGQREQ: "IPV4V6",(0-3),(0-4),(0-5),(0-9),(0-18,31)
```

```
OK
```

9.8 AT+CGEQREQ 3G quality of service profile (requested)

Description

The test command returns values supported as a compound value.

The read command returns the current settings for each defined context for which a QOS was explicitly specified.

The write command allows the TE to specify a Quality of Service Profile for the context identified

by the context identification parameter `<cid>` which is used when the MT sends an Activate PDP Context Request message to the network.

A special form of the write command, `AT+CGEQREQ=<cid>` causes the requested profile for context number `<cid>` to become undefined.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CGEQREQ=? | +CGEQREQ: <code><PDP_type></code> ,(list of supported <code><Traffic class></code> s),(list of supported <code><Maximum bitrate UL></code> s),(list of supported <code><Maximum bitrate DL></code> s),(list of supported <code><Guaranteed bitrate UL></code> s),(list of supported <code><Guaranteed bitrate DL></code> s),(list of supported <code><Delivery order></code> s),(list of supported <code><Maximum SDU size></code> s),(list of supported <code><SDU error ratio></code> s),(list of supported <code><Residual bit error Ratio></code> s),(list of supported <code><Delivery of erroneous SDUs></code> s),(list of Supported <code><Transfer delay></code> s),(list of supported <code><Traffic handling priority></code> s),(list of supported <code><Source statistics descriptor></code> s),(list of supported <code><Signaling indication flag></code> s) OK ERROR |
| Read Command | Responses |
| AT+CGEQREQ? | +CGEQREQ: [<code><cid></code> , <code><Traffic class></code> , <code><Maximum bitrate UL></code> , <code><Maximum bitrate DL></code> , <code><Guaranteed bitrate UL></code> , <code><Guaranteed bitrate DL></code> , <code><Delivery order></code> , <code><Maximum SDU size></code> , <code><SDU error ratio></code> , <code><Residual bit error ratio></code> , <code><Delivery of erroneous SDUs></code> , <code><Transfer Delay></code> , <code><Traffic handling priority></code> , <code><Source statistics descriptor></code> , <code>< Signaling indication flag></code>][<code><CR><LF></code> +CGEQREQ: <code><cid></code> , <code><Traffic class></code> , <code><Maximum bitrate UL></code> , <code><Maximum bitrate DL></code> , <code><Guaranteed bitrate UL></code> , <code><Guaranteed bitrate DL></code> , <code><Delivery order></code> , <code><Maximum SDU size></code> , <code><SDU error ratio></code> , <code><Residual bit error ratio></code> , <code><Delivery of erroneous SDUs></code> , <code><Transfer Delay></code> , <code><Traffic handling priority></code> , <code><Source statistics descriptor></code> , <code><Signaling indication flag></code> [...]] OK ERROR |
| Write Command | Responses |

| AT+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>[,<Source statistics descriptor>[,<Signaling indication flag>]]]]]]]]]]]]]]]] | OK |
|--|-------------------|
| | ERROR |
| | +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CGEQREQ | OK |
| | ERROR |

Defined values

<cid>

Parameter specifies a particular PDP context definition. The parameter is also used in other PDP context-related commands. The range is from 1 to 24,100 to 179

<Traffic class>

- 0 – conversational
- 1 – streaming
- 2 – interactive
- 3 – background
- 4 – subscribed value

<Maximum bitrate UL>

This parameter indicates the maximum number of kbits/s delivered to UMTS(up-link traffic)at a SAP. As an example a bitrate of 32kbit/s would be specified as 32(e.g. AT+CGEQREQ=...,32,...). The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Maximum bitrate DL>

This parameter indicates the maximum number of kbits/s delivered to UMTS(down-link traffic)at a SAP.As an example a bitrate of 32kbit/s would be specified as 32(e.g. AT+CGEQREQ=...,32,...). The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate UL>

This parameter indicates the guaranteed number of kbit/s delivered to UMTS(up-link traffic)at a SAP(provided that there is data to deliver).As an example a bitrate of 32kbit/s would be specified as

32(e.g. `AT+CGEQREQ=...,32,...`).

The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate DL>

This parameter indicates the guaranteed number of kbit/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(e.g. `AT+CGEQREQ=...,32,...`).

The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Delivery order>

This parameter indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

- 0 – no
- 1 – yes
- 2 – subscribed value

<Maximum SDU size>

This parameter indicates the maximum allowed SDU size in octets.

The range is from 0 to 1520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>

This parameter indicates the target value for the fraction of SDUs lost or detected as erroneous.SDU error ratio is defined only for conforming traffic.As an example a target SDU error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. `AT+CGEQREQ=...,"5E3",...`).

- “0E0” – subscribed value
- “1E2”
- “7E3”
- “1E3”
- “1E4”
- “1E5”
- “1E6”
- “1E1”

<Residual bit error ratio>

This parameter 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.As an example a target residual bit error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. `AT+CGEQREQ=...,"5E3",...`).

- “0E0” – subscribed value
- “5E2”
- “1E2”
- “5E3”
- “4E3”
- “1E3”
- “1E4”
- “1E5”

“1E6”

“6E8”

<Delivery of erroneous SDUs>

This parameter indicates whether SDUs detected as erroneous shall be delivered or not.

- 0 – no
- 1 – yes
- 2 – no detect
- 3 – subscribed value

<Transfer delay>

This parameter indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds.

The range is 0 and from 100 to 4000. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Traffic handling priority>

This parameter specifies the relative importance for handling of all SDUs belonging to the UMTS Bearer compared to the SDUs of the other bearers.

The range is from 0 to 3. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Source statistics descriptor>

This parameter indicates profile parameter that Source statistics descriptor for requested UMTS QoS

The range is from 0 to 1. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Signaling indication flag>

This parameter indicates Signaling flag.

The range is from 0 to 1 The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

- IP Internet Protocol
- PPP Point to Point Protocol
- IPV6 Internet Protocol Version 6
- IPV4V6 Dual PDN Stack

Examples

AT+CGEQREQ?

+CGEQREQ:

OK

AT+CGEQREQ=?

+CGEQREQ: "IP",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)


```
+CGEQREQ: "PPP",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
+CGEQREQ: "IPV6",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
+CGEQREQ:"IPV4V6",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
```

OK

9.9 AT+CGQMIN Quality of service profile (minimum acceptable)

Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. A special form of the set command, `AT+CGQMIN=<cid>` causes the minimum acceptable profile for context number `<cid>` to become undefined.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|---|
| 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)[...]] OK ERROR |
| Read Command | Responses |
| AT+CGQMIN? | +CGQMIN: [<cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF> +CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]] OK ERROR |

| Write Command | Responses |
|---|-----------|
| AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak> [,<mean>]]]]] | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CGQMIN | OK |
| | ERROR |

Defined values

<cid>

A numeric parameter which specifies a particular PDP context definition (see [AT+CGDCONT](#) command). The range is from 1 to 24,100 to 179.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

- IP Internet Protocol
- PPP Point to Point Protocol
- IPV6 Internet Protocol Version 6
- IPV4V6 Dual PDN Stack

<precedence>

A numeric parameter which specifies the precedence class:

- 0 – network subscribed value
- 1 – high priority
- 2 – normal priority
- 3 – low priority

<delay>

A numeric parameter which specifies the delay class:

- 0 – network subscribed value
- 1 – delay class 1
- 2 – delay class 2
- 3 – delay class 3
- 4 – delay class 4

<reliability>

A numeric parameter which specifies the reliability class:

- 0 – network subscribed value
- 1 – Non real-time traffic,error-sensitive application that cannot cope with data loss
- 2 – Non real-time traffic,error-sensitive application that can cope with infrequent data loss
- 3 – Non real-time traffic,error-sensitive application that can cope with data loss, GMM/-SM,and SMS
- 4 – Real-time traffic,error-sensitive application that can cope with data loss
- 5 – Real-time traffic error non-sensitive application that can cope with data loss

<peak>

A numeric parameter which specifies the peak throughput class:

- 0 – network subscribed value
- 1 – Up to 1000 (8 kbit/s)
- 2 – Up to 2000 (16 kbit/s)
- 3 – Up to 4000 (32 kbit/s)
- 4 – Up to 8000 (64 kbit/s)
- 5 – Up to 16000 (128 kbit/s)
- 6 – Up to 32000 (256 kbit/s)
- 7 – Up to 64000 (512 kbit/s)
- 8 – Up to 128000 (1024 kbit/s)
- 9 – Up to 256000 (2048 kbit/s)

<mean>

A numeric parameter which specifies the mean throughput class:

- 0 – network subscribed value
- 1 – 100 (~0.22 bit/s)
- 2 – 200 (~0.44 bit/s)
- 3 – 500 (~1.11 bit/s)
- 4 – 1000 (~2.2 bit/s)
- 5 – 2000 (~4.4 bit/s)
- 6 – 5000 (~11.1 bit/s)
- 7 – 10000 (~22 bit/s)
- 8 – 20000 (~44 bit/s)
- 9 – 50000 (~111 bit/s)
- 10 – 100000 (~0.22 kbit/s)
- 11 – 200000 (~0.44 kbit/s)
- 12 – 500000 (~1.11 kbit/s)
- 13 – 1000000 (~2.2 kbit/s)
- 14 – 2000000 (~4.4 kbit/s)
- 15 – 5000000 (~11.1 kbit/s)
- 16 – 10000000 (~22 kbit/s)
- 17 – 20000000 (~44 kbit/s)
- 18 – 50000000 (~111 kbit/s)
- 31 – optimization

Examples

AT+CGQMIN?

+CGQMIN:

OK

AT+CGQMIN=?

+CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)

+CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)

+CGQMIN: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31)

```
+CGQMIN: "IPV4V6",(0-3),(0-4),(0-5),(0-9),(0-18,31)
```

```
OK
```

9.10 AT+CGEQMIN 3G quality of service profile (minimum acceptable)

Description

The test command returns values supported as a compound value.

The read command returns the current settings for each defined context for which a QOS was explicitly specified.

The write command allow the TE to specify a Quality of Service Profile for the context identified by the context identification parameter `<cid>` which is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept message.

A special form of the write command, `AT+CGEQMIN=<cid>` causes the requested for context number `<cid>` to become undefined.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------|---|
| AT+CGEQMIN=? | +CGEQMIN: <PDP_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error Ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of Supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signaling indication flag>s) OK ERROR |
| Read Command | Responses |
| 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>,<Source statistics descriptor>,< Signaling indication flag>][<CR><LF>+CGEQMIN: |

| | |
|--|---|
| | <p><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>,<Source statistics descriptor>,<Signaling indication flag>[...]]</p> <p>OK</p> <p>ERROR</p> |
| Write Command | Responses |
| <p>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>[,<Source statistics descriptor>[,<Signaling indication flag>]]]]]]]]]]]]]</p> | <p>OK</p> <p>ERROR</p> <p>+CME ERROR: <err></p> |
| Execution Command | Responses |
| AT+CGEQMIN | <p>OK</p> <p>ERROR</p> |

Defined values

<cid>

Parameter specifies a particular PDP context definition. The parameter is also used in other PDP context-related commands. The range is from 1 to 24,100 to 179.

<Traffic class>

- 0 – conversational
- 1 – streaming
- 2 – interactive
- 3 – background
- 4 – subscribed value

<Maximum bitrate UL>

This parameter indicates the maximum number of kbits/s delivered to UMTS(up-link traffic)at a SAP.As an example a bitrate of 32kbit/s would be specified as 32(e.g. AT+CGEQMIN=...,32,...). The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed

value will be requested.

<Maximum bitrate DL>

This parameter indicates the maximum number of kbits/s delivered to UMTS(down-link traffic)at a SAP.As an example a bitrate of 32kbit/s would be specified as 32(e.g. `AT+CGEQMIN=...,32,...`).

The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate UL>

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

The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate DL>

This parameter indicates the guaranteed number of kbit/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(e.g. `AT+CGEQMIN=...,32,...`).

The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Delivery order>

This parameter indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

- 0 – no
- 1 – yes
- 2 – subscribed value

<Maximum SDU size>

This parameter indicates the maximum allowed SDU size in octets.

The range is from 0 to 1520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>

This parameter indicates the target value for the fraction of SDUs lost or detected as erroneous.SDU error ratio is defined only for conforming traffic.As an example a target SDU error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. `AT+CGEQMIN=...,”5E3”,...`).

- “0E0” – subscribed value
- “1E2”
- “7E3”
- “1E3”
- “1E4”
- “1E5”
- “1E6”
- “1E1”

<Residual bit error ratio>

This parameter 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.As an example a target residual bit error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g.

`AT+CGEQMIN=...,"5E3",...).`

`"0E0"` – subscribed value

`"5E2"`

`"1E2"`

`"5E3"`

`"4E3"`

`"1E3"`

`"1E4"`

`"1E5"`

`"1E6"`

`"6E8"`

<Delivery of erroneous SDUs>

This parameter indicates whether SDUs detected as erroneous shall be delivered or not.

`0` – no

`1` – yes

`2` – no detect

`3` – subscribed value

<Transfer delay>

This parameter indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds.

The range is 0 and from 100 to 4000. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Traffic handling priority>

This parameter specifies the relative importance for handling of all SDUs belonging to the UMTS Bearer compared to the SDUs of the other bearers.

The range is from 0 to 3. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Source statistics descriptor>

This parameter indicates profile parameter that Source statistics descriptor for requested UMTS QoS

The range is from 0 to 1. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Signaling indication flag>

This parameter indicates Signaling flag.

The range is from 0 to 1 The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

IP Internet Protocol

PPP Point to Point Protocol

IPV6 Internet Protocol Version 6

IPV4V6 Dual PDN Stack

Examples

```

AT+CGEQMIN?
+CGEQMIN:
OK
AT+CGEQMIN=?
+CGEQMIN: "IP",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1E
1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E
4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
+CGEQMIN: "PPP",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1
E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1
E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
+CGEQMIN: "IPV6",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","
1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","
1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
+CGEQMIN: "IPV4V6",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1E
1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","
1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
OK
    
```

9.11 AT+CGDATA Enter data state

Description

The command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types. This may include performing a PS attach and one or more PDP context activations. The command is not used in CDMA/EVDO mode.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|-------------------------|--|
| AT+CGDATA=? | +CGDATA: (list of supported <L2P>s) OK ERROR |
| Write Command | Responses |
| AT+CGDATA=[<L2P>,<cid>] | CONNECT [<text>] NO CARRIER OK |

| | |
|--|-------------------|
| | ERROR |
| | +CME ERROR: <err> |

Defined values

| |
|--|
| <L2P> |
| A string parameter that indicates the layer 2 protocol to be used between the TE and MT. PPP Point-to-point protocol for a PDP such as IP |
| <text> |
| CONNECT result code string; the string formats please refer ATX/AT\V/AT&E command. |
| <cid> |
| A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1...24,100...179 |

Examples

| |
|-------------------|
| AT+CGDATA=? |
| +CGDATA: ("PPP") |
| OK |
| AT+CGDATA="PPP",1 |
| CONNECT 115200 |

9.12 AT+CGPADDR Show PDP address

Description

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

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|------------------------------------|--|
| AT+CGPADDR=? | [+CGPADDR: (list of defined <cid>s)] OK |
| | ERROR |
| Write Command | Responses |
| AT+CGPADDR= <cid>[,<cid>[,...]] | [+CGPADDR:<cid>,<PDP_addr>[<CR><LF> +CGPADDR: <cid>,<PDP_addr>[...]]] OK |
| | SIM card supports IPV4V6 type and the PDP_type of the command |

| | “at+cgdcont” defined is ipv4v6 : [+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>] +CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]] OK ERROR +CME ERROR: <err> |
|-------------------|--|
| Execution Command | Responses |
| AT+CGPADDR | [+CGPADDR: <cid>,<PDP_addr>] +CGPADDR: <cid>,<PDP_addr>[...]] OK SIM card supports IPV4V6 type and the PDP_type of the command “at+cgdcont” defined is ipv4v6 : [+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>] +CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]] OK ERROR +CME ERROR: <err> |

Defined values

<cid>

A numeric parameter which specifies a particular PDP context definition (see [AT+CGDCONT](#) command). If no <cid> is specified, the addresses for all defined contexts are returned.

1...24,100...179

<PDP_addr>

A string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the [AT+CGDCONT](#) command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_addr> is omitted if none is available.

<PDP_addr_IPV4>

A string parameter that identifies the MT in the address space applicable to the PDP.

<PDP_addr_IPV6>

A string parameter that identifies the MT in the address space applicable to the PDP when the sim_card supports ipv6. The pdp type must be set to “ipv6” or “ipv4v6” by the [AT+CGDCONT](#) command.

Examples

AT+CGPADDR=?

+CGPADDR: (1)

OK

```

AT+CGPADDR=1
+CGDCONT: 1,"IPV4V6","", "0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,0

OK
AT+CGPADDR
+CGPADDR: 1,10.195.1.140,36.9.136.148.128.48.134.218.173.205.47.44.88.174.123.200
+CGPADDR: 2,10.195.34.92,36.9.136.148.128.48.146.115.92.140.135.230.248.131.5.90
+CGPADDR: 3,0.0.0.0,0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0

OK
    
```

9.13 AT+CGCLASS GPRS mobile station class

Description

This command is used to set the MT to operate according to the specified GPRS mobile class.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|--------------------|---|
| AT+CGCLASS=? | +CGCLASS: (list of supported <class>s) OK ERROR |
| Read Command | Responses |
| AT+CGCLASS? | +CGCLASS: <class> OK ERROR |
| Write Command | Responses |
| AT+CGCLASS=<class> | OK ERROR +CME ERROR: <err> |
| Execution Command | Responses |
| AT+CGCLASS | <i>Set default value:</i> OK ERROR |

Defined values

<class>

A string parameter which indicates the GPRS mobile class (in descending order of functionality)

A – class A (highest)

Examples

```
AT+CGCLASS=?
+CGCLASS: ("A")
OK
AT+CGCLASS?
+CGCLASS: "A"
OK
```

9.14 AT+CGEREP GPRS event reporting

Description

The write command enables or disables sending of unsolicited result codes, “+CGEV” from MT to TE in the case of certain events occurring in the Packet Domain MT or the network. `<mode>` controls the processing of unsolicited result codes specified within this command. `<bfr>` controls the effect on buffered codes when `<mode>` 1 or 2 is entered. If a setting is not supported by the MT, ERROR or +CME ERROR: is returned.

Read command returns the current `<mode>` and buffer settings.

Test command returns the modes and buffer settings supported by the MT as compound values.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|--|
| AT+CGEREP=? | +CGEREP: (list of supported <code><mode></code> s),(list of supported <code><bfr></code> s) OK ERROR |
| Read Command | Responses |
| AT+CGEREP? | +CGEREP: <code><mode></code> , <code><bfr></code> OK ERROR |
| Write Command | Responses |
| AT+CGEREP= <code><mode></code> [, <code><bfr></code>] | OK ERROR +CME ERROR: <code><err></code> |
| Execution Command | Responses |
| AT+CGEREP | OK ERROR |

Defined values

<mode>

- 0 – buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE.
- 1 – discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE.
- 2 – buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE.

<bfr>

- 0 – MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered.
- 1 – MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK response shall be given before flushing the codes).

The following unsolicited result codes and the corresponding events are defined:

+CGEV: REJECT <PDP_type>, <PDP_addr>

A network request for PDP context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected.

+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]

The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT.

+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]

The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.

+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]

The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.

+CGEV: NW DETACH

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

+CGEV: ME DETACH

The mobile equipment has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: NW CLASS <class>

The network has forced a change of MS class. The highest available class is reported (see [AT+CGCLASS](#)).

+CGEV: ME CLASS <class>

The mobile equipment has forced a change of MS class. The highest available class is reported (see [AT+CGCLASS](#)).

Examples

```

AT+CGEREP=?
+CGEREP: (0-2),(0-1)
OK
AT+CGEREP?
+CGEREP: 0,0
OK
    
```

9.15 AT+CGAUTH Set type of authentication for PDP-IP connections of GPRS

Description

This command is used to set type of authentication for PDP-IP connections of GPRS.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|--|--|
| AT+CGAUTH=? | +CGAUTH: , 127 ,127 (for CDMA1x-EvDo only) +CGAUTH:(range of supported <cid>s),(list of supported <auth_type> s),127,127 (NOTE: the first line of the response is for CDMA 1x and Evdo only) OK ERROR +CME ERROR: <err> |
| Read Command | Responses |
| AT+CGAUTH? | [+CGAUTH: , "user " , "passwd" (for CDMA1x-EvDo only)] +CGAUTH:[<cid> , <auth_type> [, <user> , <passwd>]] <CR> <LF> ... OK ERROR +CME ERROR: <err> |
| Write Command | Responses |
| AT+CGAUTH=<cid>[, <auth_type>[, <passwd>[, <user>]]] | OK ERROR |
| AT+CGAUTH=, , <user> , <pa | |

| <code>swwd></code> (for CDMA1x-EvDo) | <code>+CME ERROR: <err></code> |
|---|--------------------------------------|
| Execution Command | Responses |
| <code>AT+CGAUTH</code> | <code>OK</code> |
| | <code>ERROR</code> |
| | <code>+CME ERROR: <err></code> |

Defined values

`<cid>`

Parameter specifies a particular PDP context definition. This is also used in other PDP context-related commands.

1...24,100...179

`<auth_type>`

Indicate the type of authentication to be used for the specified context. If CHAP is selected another parameter `<passwd>` needs to be specified. If PAP is selected two additional parameters `<passwd>` and `<user>` need to be specified.

- 0 – none
- 1 – PAP
- 2 – CHAP
- 3 – PAP or CHAP

`<passwd>`

Parameter specifies the password used for authentication.

`<user>`

Parameter specifies the user name used for authentication.

Examples

`AT+CGAUTH=?`

`+CGAUTH: ,,127,127(for CDMA1x-EvDo only)`

`+CGAUTH: (1-24,100-179),(0-3),127,127`

`OK`

`AT+CGAUTH=1,1,"123","SIMCOM"`

`OK`

10 Hardware Related Commands

10.1 AT+CVALARM Low and high voltage Alarm

Description

This command is used to open or close the low voltage alarm function.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|---|
| AT+CVALARM=? | +CVALARM: (list of supported <enable>s), (list of supported <low voltage>s), (list of supported high <high voltage>s) OK |
| Read Command | Responses |
| AT+CVALARM? | +CVALARM: <enable>,<low voltage>,<high voltage> OK |
| Write Command | Responses |
| AT+CVALARM=<enable>[,<low voltage>][,<high voltage>] | OK ERROR |

Defined values

<enable>

0 - Close

1 - Open. If voltage < <low voltage>, it will report "UNDER-VOLTAGE WARNNING" every 10s. If voltage > <high voltage>, it will report "OVER-VOLTAGE WARNNING" every 10s.

<low voltage>

Between 3300mV and 4000mV. Default value is 3300.

<high voltage>

Between 4000mV and 4300mV. Default value is 4300.

NOTE: The three parameters will be saved automatically.

Examples

```
AT+CVALARM=1,3400,4300
```

```
OK
```



```

AT+CVALARM?
+CVALARM: 1,3400,4300
OK
AT+CVALARM=?
+CVALARM: (0,1),(3300-4000),(4000-4300)
OK
    
```

10.2 AT+CVAUXS Set state of the pin named VREG_AUX1

Description

This command is used to set state of the pin which is named VREG_AUX1.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CVAUXS=? | +CVAUXS: (list of supported <state>s) OK |
| Read Command | Responses |
| AT+CVAUXS? | +CVAUXS: <state> OK |
| Write Command | Responses |
| AT+CVAUXS=<state> | OK ERROR |

Defined values

| <state> |
|--|
| 0 – the pin is closed. |
| 1 – the pin is opened (namely, open the pin) |

Examples

```

AT+CVAUXS=1
OK
AT+CVAUXS?
+CVAUXS: 1
OK
    
```

10.3 AT+CVAUXV Set voltage value of the pin named VREG_AUX1

Description

This command is used to set the voltage value of the pin which is named VREG_AUX1.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|---------------------|---|
| Test Command | Responses |
| AT+CVAUXV=? | +CVAUXV: (list of supported <voltage>s) OK |
| Read Command | Responses |
| AT+CVAUXV? | +CVAUXV: <voltage> OK |
| Write Command | Responses |
| AT+CVAUXV=<voltage> | OK ERROR |

Defined values

<voltage>

Voltage value of the pin which is named VREG_AUX1. The unit is in mV. And the value must be the multiple of 50mv.

Examples

```
AT+CVAUXV=?
```

```
+CVAUXV: (1700-3050)
```

```
OK
```

```
AT+CVAUXV=2800
```

```
OK
```

```
AT+CVAUXV?
```

```
+CVAUXV: 2800
```

```
OK
```

10.4 AT+CADC Read ADC value

Description

This command is used to read the ADC value from modem. ME supports 2 types of ADC, which are raw type and voltage type.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CADC=? | +CADC: (range of supported <adc>s) OK |
| Write Command | Responses |
| AT+CADC=<adc> | +CADC: <value> OK ERROR |

Defined values

<adc>

ADC type:

- 0 – raw type.
- 2 – voltage type(mv)

<value>

Integer type value of the ADC.

Examples

```
AT+CADC=?
```

```
+CADC: (0,2)
```

```
OK
```

```
AT+CADC=0
```

```
+CADC: 187
```

```
OK
```

10.5 AT+CADC2 Read ADC2 value

Description

This command is used to read the ADC2 value from modem. ME supports 2 types of ADC, which are raw type and voltage type.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|----------------|---|
| AT+CADC2=? | +CADC2: (range of supported <adc>s) OK |
| Write Command | Responses |
| AT+CADC2=<adc> | +CADC2: <value> OK ERROR |

Defined values

| |
|---------------------------------|
| <adc> |
| ADC2 type: |
| 0 – raw type. |
| 2 – voltage type(mv) |
| <value> |
| Integer type value of the ADC2. |

Examples

| |
|---------------|
| AT+CADC2=? |
| +CADC2: (0,2) |
| OK |
| AT+CADC2=0 |
| +CADC2: 187 |
| OK |

10.6 AT+CMTE Control the module whether power shutdown when the module's temperature upon the critical temperature

Description

This command is used to control the module whether power shutdown when the module's temperature upon the critical temperature

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| | |
|-------------------|---|
| Test Command | Responses |
| AT+CMTE=? | +CMTE: (list of supported<on/off>s) OK |
| Read Command | Responses |
| AT+CMTE? | +CMTE: <on/off > OK |
| Write Command | Responses |
| AT+CMTE=<on/off > | OK ERROR |

Defined values

| |
|-----------------------------------|
| <on/off> |
| 0 – Disable temperature detection |
| 1 – Enable temperature detection |

Examples

```

AT+CMTE?
+CMTE: 1
OK
AT+CMTE=1
OK
AT+CMTE=?
+CMTE: 1
OK

```

NOTE:

- When temperature is extreme high or low, product will power off.
- URCs indicating the alert level “+CMTE:-1” or “+CMTE:1” are intended to enable the user to take appropriate precaution, such as protect the module from exposure to extreme conditions, or save or back up data etc.
- Level “+CMTE:-2” or “+CMTE:2” URCs are followed by immediate shutdown.

10.7 AT+CPMVT Low and high voltage Power Off

Description

This command is used to open or close the low and high voltage power off function.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|--|
| AT+CPMVT=? | +CPMVT: (list of supported <enable>s), (list of supported <low voltage>s), (list of supported <high voltage>s) OK |
| Read Command | Responses |
| AT+CPMVT? | +CPMVT: <enable>,<low voltage>,<high voltage> OK |
| Write Command | Responses |
| AT+CPMVT=<enable>[,<low voltage>],[<high voltage>] | OK ERROR |

Defined values

| |
|--|
| <enable> |
| 0 – Close |
| 1 – Open. If voltage < <low voltage>, it will report “UNDER-VOLTAGE WARNNING POWER DOWN” and power off the module. If voltage > <high voltage>, it will report “OVER-VOLTAGE WARNNING POWER DOWN” and power off the module |
| <low voltage> |
| Between 3200mV and 4000mV. Default value is 3200. |
| <high voltage> |
| Between 4000mV and 4300mV. Default value is 4300. |

Examples

```

AT+CPMVT=1,3400,4300
OK
AT+CPMVT?
+CPMVT: 1,3400,4300
OK
AT+CPMVT=?
+CPMVT: (0-1),(3200-4000),(4000-4300)
    
```

OK

10.8 AT+CDELTA Set the module go to recovery mode

Description

This command is used to set the module go to recovery mode.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Write Command | Responses |
|---------------|-----------|
| AT+CDELTA | OK |
| | ERROR |

Defined values

NOTE: the command will write flag to the module and reboot the module, then the module will reboot and read the flag and enter recovery mode to update the firmware.

Examples

```
AT+CDELTA
OK
```

10.9 AT+CR IIC Read values from register of IIC device

Description

This command is used to read values from register of IIC device.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|-----------|
| AT+CR IIC=? | OK |
| Write Command | Responses |

| | |
|----------------------------------|-----------------------|
| AT+CRIIIC= <addr>,<reg>,<len> | +CRIIIC: <data> OK |
| | ERROR |

Defined values

| |
|---|
| <addr> |
| Device address. Input format must be hex, such as 0xFF. |
| <reg> |
| Register address. Input format must be hex, such as 0xFF. |
| <len> |
| Read length. Range:1-4; unit:byte. |
| <data> |
| Data read. Input format must be hex, such as 0xFF. |

Examples

| |
|-------------------------|
| AT+CRIIIC=0x34, 0x02, 2 |
| +CRIIIC: 0x01,0x5d |
| OK |

10.10 AT+CWIIC Write values to register of IIC device

Description

This command is used to write values to register of IIC device.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|--|-------------|
| Test Command | Responses |
| AT+CWIIC=? | OK |
| Write Command | Responses |
| AT+CWIIC= <addr>,<reg>,<data>,<len> | OK ERROR |

Defined values

| |
|---|
| <addr> |
| Device address. Input format must be hex, such as 0xFF. |
| <reg> |
| Register address. Input format must be hex, such as 0xFF. |

<len>

Read length. Range: 1-4; unit: byte.

<data>

Data written. Input format must be hex, such as 0xFF – 0xFFFFFFFF.

Examples

```
AT+CWIIC=0x34, 0x03, 0x5d, 1
```

```
OK
```

10.11 AT+CBC Read the voltage value of the power supply

Description

This command is used to read the voltage value of the power supply

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Read Command | Responses |
|--------------|-------------------|
| AT+CBC | +CBC: <vol> OK |
| | ERROR |

Defined values

<vol>

The voltage value, such as 3.8.

Examples

```
AT+CBC
```

```
+CBC: 3.591V
```

```
OK
```

10.12 AT+CPMUTEMP Read the temperature of the module

Description

This command is used to read the temperature of the module

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Read Command | Responses |
|--------------|-------------------------|
| AT+CPMUTEMP | +CPMUTEMP: <temp> OK |
| | ERROR |

Defined values

<temp>

The Temperature value, such as 29.

Examples

```
AT+CPMUTEMP
+CPMUTEMP: 29
OK
```

11 AT Commands for SIM Application Toolkit

11.1 AT+STIN SAT Indication

Description

Every time the SIM Application issues a Proactive Command, via the ME, the TA will receive an indication. This indicates the type of Proactive Command issued.

AT+STGI must then be used by the TA to request the parameters of the Proactive Command from the ME. Upon receiving the **+STGI** response from the ME, the TA must send **AT+STGR** to confirm the execution of the Proactive Command and provide any required user response, e.g. a selected menu item.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|--------------|-----------------|
| AT+STIN=? | OK |
| Read Command | Responses |
| AT+STIN? | +STIN: <cmd_id> |
| | OK |

Unsolicited Result Codes

+STIN: <cmd_id>

Proactive Command notification

- 21 – display text
- 22 – get inkey
- 23 – get input
- 24 – select item

+STIN: 25

Notification that SIM Application has returned to main menu. If user doesn't do any action in 2 minutes, application will return to main menu automatically.

Defined values

<cmd_id>

- 21 – display text
- 22 – get inkey

- 23 – get input
- 24 – select item
- 25 – set up menu
- 81 – session end (pdu mode only)
- 0 – none command

Examples

```
AT+STIN?
```

```
+STIN: 24
```

```
OK
```

11.2 AT+STGI Get SAT information

Description

Regularly this command is used upon receipt of an URC "+STIN" to request the parameters of the Proactive Command. Then the TA is expected to acknowledge the AT+STGI response with AT+STGR to confirm that the Proactive Command has been executed. AT+STGR will also provide any user information, e.g. a selected menu item. The Proactive Command type value specifies to which "+STIN" the command is related.

NOTE: Please check the format referred to AT+STKFMT

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|------------------|---|
| AT+STGI=? | OK |
| Write Command | Responses |
| AT+STGI=<cmd_id> | <i>PDU format</i> +STGI: <cmd_id>,<tag>,<pdu_len>,<pdu_value> OK |
| AT+STGI=<cmd_id> | <i>NOT PDU format, listed below:</i> <i>If <cmd_id>=10:</i> OK |
| | <i>If <cmd_id>=21:</i> +STGI:21,<prio>,<clear_mode>,<text_len>,<text> OK |
| | <i>If <cmd_id>=22:</i> +STGI: 22,<rsp_format>,<help>,<text_len>,<text> OK |

| |
|--|
| <p><i>If</i> <code><cmd_id>=23:</code> +STGI:23,<rsp_format>,<max_len>,<min_len>,<help>,<show>,<t ext_len>,<text> OK</p> |
| <p><i>If</i> <code><cmd_id>=24:</code> +STGI:24,<help>,<softkey>,<present>,<title_len>,<title>,<item_n um> +STGI:24,<item_id>,<item_len>,<item_data> [...] OK</p> |
| <p><i>If</i> <code><cmd_id>=25:</code> +STGI:25,<help>,<softkey>,<title_len>,<title>,<item_num> +STGI:25,<item_id>,<item_len>,<item_data> [...] OK</p> |

Defined values

| |
|---|
| <code><cmd_id></code> |
| 21 – display text 22 – get inkey 23 – get input 24 – select item 25 – set up menu |
| <code><prio></code> |
| Priority of display text |
| 0 – Normal priority 1 – High priority |
| <code><clear_mode></code> |
| 0 – Clear after a delay 1 – Clear by user |
| <code><text_len></code> |
| Length of text |
| <code><rsp_format></code> |
| 0 – SMS default alphabet 1 – YES or NO 2 – numerical only 3 – UCS2 |
| <code><help></code> |
| 0 – Help unavailable 1 – Help available |
| <code><max_len></code> |
| Maximum length of input |

| | |
|-------------|---|
| <min_len> | Minimum length of input |
| <show> | <ul style="list-style-type: none"> 0 – Hide input text 1 – Display input text |
| <softkey> | <ul style="list-style-type: none"> 0 – No softkey preferred 1 – Softkey preferred |
| <present> | Menu presentation format available for select item <ul style="list-style-type: none"> 0 – Presentation not specified 1 – Data value presentation 2 – Navigation presentation |
| <title_len> | Length of title |
| <item_num> | Number of items in the menu |
| <item_id> | Identifier of item |
| <item_len> | Length of item |
| <title> | Title in ucs2 format |
| <item_data> | Content of the item in ucs2 format |
| <text> | Text in ucs2 format. |
| <tag> | Not used now. |
| <pdu_len> | Integer type, pdu string length |
| <pdu_value> | String type, the pdu string. |

Examples

```

AT+STGI=25 (NOT PDU format)
+STGI:25,0,0,10,"795E5DDE884C59295730",15
+STGI:25,1,8,"8F7B677E95EE5019"
+STGI:25,2,8,"77ED4FE17FA453D1"
+STGI:25,3,8,"4F1860E05FEB8BAF"
+STGI:25,4,8,"4E1A52A17CBE9009"
+STGI:25,5,8,"8D448D3963A88350"
    
```

```

+STGI:25,6,8,"81EA52A9670D52A1"
+STGI:25,7,8,"8F7B677E5F6994C3"
+STGI:25,8,8,"8BED97F367425FD7"
+STGI:25,9,10,"97F34E506392884C699C"
+STGI:25,10,8,"65B095FB59296C14"
+STGI:25,11,8,"94C358F056FE7247"
+STGI:25,12,8,"804A59294EA453CB"
+STGI:25,13,8,"5F005FC34F1195F2"
+STGI:25,14,8,"751F6D3B5E388BC6"
+STGI:25,21,12,"00530049004D53614FE1606F"
OK
AT+STGI=24 (PDU format)
+STGI:24,0,48,"D02E81030124008202818285098070ED70B963A883508F0A018053057F574E0
78C618F0C0280917791777ED6D88606F"
OK
    
```

11.3 AT+STGR SAT respond

Description

The TA is expected to acknowledge the [AT+STGI](#) response with [AT+STGR](#) to confirm that the Proactive Command has been executed. [AT+STGR](#) will also provide any user information, e.g. a selected menu item.

NOTE: Please check the format referred to AT+STKFMT

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|-------------------------------|-----------------------------|
| AT+STGR=? | OK |
| Write Command | Responses |
| AT+STGR=<cmd_id>[,<data>] | <i>NOT PDU format</i> OK |
| AT+STGR=<pdu_len>,<pdu_value> | <i>PDU format</i> OK |

Defined values

| <cmd_id> | |
|----------|-------------|
| 22 | – get inkey |
| 23 | – get input |

- 24 – select item
- 25 – set up menu
- 81 – session end
- 83 – session end by user
- 84 – go backward

<data>

If <cmd_id>=22:

Input a character

If <cmd_id>=23:

Input a string.

If <rsp_format> is YES or NO, input of a character in case of ANSI character set requests one byte, e.g. “Y”.

If <rsp_format> is numerical only, input the characters in decimal number, e.g. “123”

If <rsp_faomat> is UCS2, requests a 4 byte string, e.g. “0031”

<rsp_faomat> refer to the response by AT+STGI=23

If <cmd_id>=24:

Input the identifier of the item selected by user

If <cmd_id>=25:

Input the identifier of the item selected by user

If <cmd_id>=83:

<data> ignore

Note: It could return main menu during Proactive Command id is not 22 or 23

If <cmd_id>= 84:

<data> ignore

<pdu_len>

Integer type, pdu string length

<pdu_value>

String type, the pdu string.

Examples

AT+STGR=25,1 (NOT PDU format)

OK

+STIN: 24

AT+STGR=30,"810301240002028281830100900101" (PDU format)

OK

11.4 AT+STK STK switch

Description

This command is used to disable or enable the STK function. If the argument is 1, it is enabled. While if the argument is 0, it is disabled.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+STK=? | +STK: (list of supported <value>s) OK |
| Read Command | Responses |
| AT+STK? | +STK: <value> OK |
| Write Command | Responses |
| AT+STK=<value> | OK ERROR |
| Execution Command | Responses |
| AT+STK | <i>Set default value (<value>=0):</i> OK |

Defined values

| <value> |
|-----------------|
| 0 – Disable STK |
| 1 – Enable STK |

Examples

| |
|----------|
| AT+STK=1 |
| OK |

11.5 AT+STKFMT Set STK pdu format

Description

This command is used to disable or enable the STK pdu mode. If the argument is 1, it is enabled. While if the argument is 0, it is disabled.

NOTE: Module should reboot to take effective.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| | |
|-------------------|------------------------|
| Read Command | Responses |
| AT+STKFMT? | +STKFMT: <value> OK |
| Write Command | Responses |
| AT+STKFMT=<value> | OK ERROR |

Defined values

| |
|---|
| <value> |
| 0 – Disable STK pdu format, decoded command mode. |
| 1 – Enable STK pdu format |

Examples

| |
|-------------|
| AT+STKFMT=1 |
| OK |

11.6 AT+STENV Original STK PDU Envelope Command

Description

This command is used to original stk pdu envelope command.

NOTE: PDU format supported only.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| | |
|----------------------|-------------|
| Test Command | Responses |
| AT+STENV=? | OK |
| Write Command | Responses |
| AT+STENV=<len>,<pdu> | OK ERROR |

Defined values

| |
|---------------------------------|
| <len> |
| Integer type, pdu string length |
| <pdu> |

String type, pdu value

Examples

```
AT+STENV=18,"D30782020181900101"
```

```
OK
```

11.7 AT+STSM Get STK Setup Menu List with PDU Mode

Description

This command is used to get the stk setup menu list with pdu mode

NOTE: PDU format supported only.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|--------------|--|
| AT+STSM=? | OK |
| Read Command | Responses |
| AT+STSM? | +STSM: <cmd_id>,<tag>,<pdu_len>,<pdu_value> OK ERROR |

Defined values

<cmd_id>

Integer type, please refer to AT+STIN

<tag>

Not used now.

<pdu_len>

Integer type, pdu string length

<pdu_value>

String type, the pdu string.

Examples

```
AT+STSM?
```

```
+STSM:25,0,120,"D07681030125008202818285078065B052BF529B8F0A018070ED70B963A883
508F06028070AB94C38F0A03806D41884C77ED4FE18F0A048081EA52A9670D52A18F0A0580
624B673A97F34E508F0606808D854FE18F0A07805A314E50753162118F0A0880767E53D8751F
6D3B8F0A09806D596C5F98919053"
```

OK

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12 AT Commands for Hardware

12.1 AT+IPREX Set local baud rate permanently

Description

This command sets the baud rate of module's serial interface permanently, after reboot the baud rate is also valid.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| | |
|-------------------|--|
| Test Command | Responses |
| AT+IPREX=? | +IPREX: (list of supported<speed>s) OK |
| Read Command | Responses |
| AT+IPREX? | +IPREX: <speed> OK |
| Write Command | Responses |
| AT+IPREX=<speed> | OK ERROR |
| Execution Command | Responses |
| AT+IPREX | <i>Set current value as default value:</i> OK |

Defined values

<speed>

Baud rate per second:

0, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600, 3000000, 3200000, 3686400

Note: LE20 doesn't support 0.

Examples

```
AT+IPREX?
```

```
+IPREX: 115200
```

```
OK
```

```

AT+IPREX=?
+IPREX: (0,300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600,
3000000,3200000,3686400)
OK
AT+IPREX=115200
OK
AT+IPREX=0
OK
    
```

12.2 AT+CFGRI Indicate RI when using URC

Description

This command is used to configure whether pulling down <URC time> milliseconds the RI pin of UART when URC reported. If <status> is 1, host may be wake up by RI pin, add setting <URC time>, <SMS time> pulling down time of RI pin.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---|--|
| AT+CFGRI=? | +CFGRI: (range of supported <status>s), (range of supported <URC time>s), (range of supported <SMS time>s) OK |
| Read Command | Responses |
| AT+CFGRI? | +CFGRI: <status>,<URC time>,<SMS time> OK |
| Write Command | Responses |
| AT+CFGRI=<status>,<URC time>,<SMS time> | OK ERROR |
| Execution Command | Responses |
| AT+CFGRI | Set <status> = 0 Set <URC time> = 60 Set <SMS time> = 120 OK |

Defined values

```

<status>
  0 off
  1 on
<URC time>
    
```

a numeric parameter which is number of milliseconds to assert RI delay to reset RI. The range is 10 to 6000.

<SMS time>

a numeric parameter which is number of milliseconds to assert RI delay to reset RI. The range is 20 to 6000.

Examples

```
AT+CFGRI=?
+CFGRI: (0-1),(10-6000),(20-6000)
OK
AT+CFGRI?
+CFGRI: 0,60,120
OK
AT+CFGRI=1
OK
AT+CFGRI
OK
```

12.3 AT+CSCLK Control UART Sleep

Description

This command is used to enable UART Sleep or always work, if set to 1, UART can sleep when DTR pull high if set to 0, UART always work

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|--|
| AT+CSCLK=? | +CSCLK: (range of supported <status>s) OK |
| Read Command | Responses |
| AT+CSCLK? | +CSCLK: <status> OK |
| Write Command | Responses |
| AT+CSCLK=<status> | OK ERROR |
| Execution Command | Responses |
| AT+CSCLK | Set <status> = 0 OK |

Defined values

| <status> | |
|----------|-----|
| 0 | off |
| 1 | on |

Examples

```

AT+CSCLK=?
+CSCLK: (0-1)
OK
AT+CSCLK?
+CSCLK: 0
OK
AT+CSCLK=1
OK
AT+CSCLK
OK
    
```

12.4 AT+CMUX Enable the multiplexer over the UART

Description

This command is used to enable the multiplexer over the UART, after enabled four virtual ports can be used as AT command port or MODEM port, the physical UART can no longer transfer data directly under this case.

By default all of the four virtual ports are used as AT command port.

Second serial port is not support this command.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|---|
| AT+CMUX=? | +CMUX: (0),(0),(1-8),(1-1500),(0),(0),(2-1000) OK |
| Read Command | Responses |
| AT+CMUX? | +CMUX:<value>,<subset>,<port_speed>,<N1>,<T1>,<N2>,<T2> OK |
| Write Command | Responses |
| AT+CMUX= | OK |

| | |
|---|-------|
| <code><value>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>]]]]]]]</code> | ERROR |
|---|-------|

Defined values

| | |
|------------------------------------|--|
| <code>< value >:</code> | 0 – currently only 0 is supported (basic operation mode). |
| <code>< subset >:</code> | Currently omitted |
| <code>< port_speed >:</code> | Currently omitted, you can set speed before enable multiplexer |
| <code>< N1 >:</code> | 1-1500 |
| <code>< T1 >:</code> | Currently omitted |
| <code>< N2 >:</code> | Currently omitted |
| <code>< T2 >:</code> | 2-1000 |

Examples

```

AT+CMUX=?
+CMUX: (0),(0),(1-8),(1-1500),(0),(0),(2-1000)
OK
AT+CMUX?
+CMUX: 0,0,5,1500,0,0,600
OK
AT+CMUX=0
OK
    
```

NOTE: Currently only basic operation mode is supported.

12.5 AT+CGFUNC Enable/disable the function for the special GPIO

Description

SIM7500/SIM7600 supplies many GPIOs, all of which can be used as General Purpose Input/Output pin, interrupt pin and some of them can be used as function pin.

This command is used to enable/disable the function for the special GPIO. Please consult the document “SIM7500_SIM7600 Series_GPIO_Application_Note” for more details.

The configuration will be saved automatically.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| Test Command | Responses |
|-----------------------------|--|
| AT+CGFUNC=? | +CGFUNC: (list of supported <GPIO>s),(list of supported <function>s) OK |
| Read Command | Responses |
| AT+CGFUNC=<GPIO> | +CGFUNC: <GPIO>,<function> OK ERROR |
| Write Command | Responses |
| AT+CGFUNC=<GPIO>,<function> | OK ERROR |

Defined values

<GPIO>

7500C/CE GPIO:

3: GPIO3/Ethernet

40: GPIO40/STATUS

44: GPIO44/SD_DETECT

7500A GPIO:

40: GPIO40/STATUS

<function>

0 : gpio function.

1 : function1

Note:

GPIO40 default function is STATUS

GPIO44 default function is GPIO

If Ethernet hardware has been ready, GPIO3 default function is Ethernet.

Instead, GPIO3 default function is GPIO.

Examples

```
AT+CGFUNC=40,1
```

```
OK
```

```
AT+CGFUNC=40
```

```
+CGFUNC: 40,1
```

OK

12.6 AT+CGDRT Set the direction of specified GPIO

Description

This command is used to set the specified GPIO to input or output state. If setting to input state, then this GPIO can not be set to high or low value.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------------------|---|
| AT+CGDRT=? | +CGDRT: (list of supported <GPIO>s),(list of supported <gpio_io >s) OK |
| Write Command | Responses |
| AT+CGDRT=<GPIO>,<gpio_io> | OK ERROR |
| Read Command | Responses |
| AT+CGDRT=<GPIO> | +CGDRT: <GPIO>,<gpio_io> OK ERROR |

Defined values

<GPIO>

The value is GPIO ID, different hardware versions have different values.

<gpio_io>

- 0 – in
- 1 – out

NOTE: The GPIO must be set to GPIO FUNCTION through AT+CGFUNC, then it will set success.

Examples

```
AT+CGDRT=43,0
OK
```

12.7 AT+CGSETV Set the value of specified GPIO

Description

This command is used to set the value of the specified GPIO to high or low.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|----------------------------|---|
| AT+CGSETV=? | +CGSETV: (list of supported <GPIO>s),(list of supported <gpio_hl>s) OK |
| Write Command | Responses |
| AT+CGSETV=<GPIO>,<gpio_hl> | OK ERROR |

Defined values

<GPIO>

The value is GPIO ID, different hardware versions have different values.

<gpio_hl>

- 0 - low
- 1 - high

NOTE: The GPIO must be set to GPIO FUNCTION through AT+CGFUNC, then it will set success.

Examples

```
AT+CGSETV=43,0
OK
```

12.8 AT+CGGETV Get the value of specified GPIO

Description

This command is used to get the value (high or low) of the specified GPIO.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|--|
| AT+CGGETV=? | +CGGETV: (list of supported <GPIO>s) OK |
| Write Command | Responses |
| AT+CGGETV=<GPIO> | +CGGETV: <GPIO>,<gpio_hl> OK ERROR |

Defined values

<GPIO>

The value is GPIO ID, different hardware versions have different values.

<gpio_hl>

0 – low

1 – high

NOTE: The GPIO must be set to GPIO FUNCTION through AT+CGFUNC, then it will set success.

Examples

```
AT+CGGETV=43
+CGGETV: 43,0
OK
```

12.9 AT+CGISR Set GPIO interrupt trigger condition

Description

The module supplies many GPIOs, all of which can be used as General Purpose Input/Oupt pin, interrupt pin and some of them can be used as function pin.

This command is used to set one GPIO pin as an interrupt source, and then set the detect type[optional] and polarity type[optional], and enable interrupt. Please consult the document “SIM7500_SIM7600 Series_GPIO_Application_Note” for more details.

| SIM PIN | References |
|---------|------------|
| No | |

Syntax

| Test Command | Responses |
|--------------|-----------|
|--------------|-----------|

| | |
|--|---|
| AT+CGISR=? | +CGISR: (list of supported <GPIO>s), <detect>,<polarity>,<URC char [size(45)]> OK |
| Read Command | Responses |
| AT+CGISR=<GPIO> | <i>opened:</i> +CGISR: < GPIO >,<detect>,<polarity>,<URC> <i>not opened:</i> +CGISR: < GPIO >,< detect > OK |
| Write Command | Responses |
| AT+CGISR=<GPIO >,<detect>,<polarity>,<URC> | OK |

Defined values

< GPIO >

The value is GPIO ID, different hardware versions have different values.

< detect >

0 – no detect.

1 – level detection

2 – edge detection

< polarity >

0 – low level/edge detection

1 – high level/edge detection

<URC >

Your ISR string, the max length of URC string is 45 bytes.

If the length of string more than 45 bytes, it will be auto cute the string.

If not set the string, it will be auto make a string for this setting, the string format is *GPIO_<GPIO>_ISR!*

NOTE:

1. if the interruption is triggered SIM7500/SIM7600 will send the following URC to host, URC is your ISR string or *GPIO_< GPIO >_ISR*
2. If the GPIO use to interruption, before it must be setting on GPIO function and input mode.

For example:

```
AT+CGFUNC=41,0
```

```
AT+CGDRT=41,0
```

3. If set GPIO to no detect, it will be stop detect interruption and stop send URC.

Examples

```
AT+CGISR=41
```

```
+CGISR : 41,1,1,GPIO_41_ISR!   If the pin ISR is opened
```

```
OK
```

```
+CGISR : 41,0   If the pin ISR is not opened
```

```
OK
```

```
AT+CGISR=41,2,1
```

```
OK
```

```
AT+CGISR=41,0
```

```
OK
```

13 AT Commands for File System

The file system is used to store files in a hierarchical (tree) structure, and there are some definitions and conventions to use the Module.

Local storage space is mapped to “C:”, “D:” for TF card, “E:” for multimedia, “F:” for cache.

NOTE: General rules for naming (both directories and files):

- 1 The length of actual fully qualified names of directories and files can not exceed 254.
- 2 Directory and file names can not include the following characters:
 \ : * ? “ < > | , ;
- 3 Between directory name and file/directory name, use character “/” as list separator, so it can not appear in directory name or file name.
- 4 The first character of names must be a letter or a numeral or underline, and the last character can not be period “.” and oblique “/”.
- 5 7600M1+1 can not support “D:”and “E:”, if all the following AT are executed, “ERROR” will be returned.

13.1 AT+FSCD Select directory as current directory

Description

This command is used to select a directory. The Module supports absolute path and relative path.

Read Command will return current directory without double quotation marks. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|----------------|-----------------------------------|
| AT+FSCD=? | OK |
| Read Command | Responses |
| AT+FSCD? | +FSCD: <curr_path> OK |
| Write Command | Responses |
| AT+FSCD=<path> | +FSCD: <curr_path> OK ERROR |

Defined values

<path>
String without double quotes, directory for selection.
NOTE: If <path> is “..”, it will go back to previous level of directory.

<curr_path>
String without double quotes, current directory.

Examples

AT+FSCD=C:

+FSCD: C:/

OK

AT+FSCD=C:/

+FSCD: C:/

OK

AT+FSCD?

+FSCD: C:/

OK

AT+FSCD=..

+FSCD: C:/

OK

AT+FSCD=D:

+FSCD: D:/

OK

AT+FSCD?

+FSCD:D:/

OK

13.2 AT+FSMKDIR Make new directory in current directory

Description

This command is used to create a new directory in current directory. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|-----------|
| AT+FSMKDIR=? | OK |
| Write Command | Responses |
| AT+FSMKDIR=<dir> | OK |
| | ERROR |

Defined values

<dir>

String without double quotes, directory name which does not already exist in current directory.

Examples

```
AT+FSMKDIR= SIMTech
```

```
OK
```

```
AT+FSCD?
```

```
+FSCD: C:/
```

```
OK
```

```
AT+FSLs
```

```
+FSLs: SUBDIRECTORIES:
```

```
SIMTech
```

```
OK
```

13.3 AT+FSRMDIR Delete directory in current directory

Description

This command is used to delete existing directory in current directory. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|-----------|
| AT+FSRMDIR=? | OK |
| Write Command | Responses |
| AT+FSRMDIR=<dir> | OK |
| | ERROR |

Defined values

<dir>

String without double quotes.

Examples

```
AT+FSRMDIR=SIMTech
```

```
OK
```

```

AT+FSCD?
+FSCD: C:/
OK
AT+FSLs
+FSLs: SUBDIRECTORIES:
Audio
Picture
Video
VideoCall
OK
    
```

13.4 AT+FSLs List directories/files in current directory

Description

This command is used to list informations of directories and/or files in current directory. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|--|
| AT+FSLs=? | +FSLs: (list of supported <type>s) OK |
| Read Command | Responses |
| AT+FSLs? | +FSLs: SUBDIRECTORIES:<dir_num>,FILES:<file_num> OK |
| Write Command | Responses |
| AT+FSLs=<type> | [+FSLs: SUBDIRECTORIES: <list of subdirectories> <CR><LF>] [+FSLs: FILES: <list of files> <CR><LF>] OK |
| Execution Command | Responses |

| | |
|---------|--|
| AT+FSLS | [+FSLS: SUBDIRECTORIES: <list of subdirectories> <CR><LF>] [+FSLS: FILES: <list of files> <CR><LF>] OK |
|---------|--|

Defined values

<dir_num>

Integer type, the number of subdirectories in current directory.

<file_num>

Integer type, the number of files in current directory.

<type>

- 0 – list both subdirectories and files
- 1 – list subdirectories only
- 2 – list files only

Examples

AT+FSLS?

+FSLS: SUBDIRECTORIES:2,FILES:2

OK

AT+FSLS

+FSLS: SUBDIRECTORIES:

FirstDir

SecondDir

+FSLS: FILES:

image_0.jpg

image_1.jpg

OK

AT+FSLS=2

+FSLS: FILES:

image_0.jpg

image_1.jpg

OK

13.5 AT+FSDEL Delete file in current directory

Description

This command is used to delete a file in current directory. Before do that, it needs to use [AT+FSCD](#) select the father directory as current directory. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------------|-----------|
| AT+FSDEL=? | OK |
| Write Command | Responses |
| AT+FSDEL=<filename> | OK |
| | ERROR |

Defined values

<filename>

String with or without double quotes, file name which is relative and already existing.

If <filename> is *.* , it means delete all files in current directory.

If the file path contains non-ASCII characters, the filename parameter should contain a prefix of {non-ascii} and the quotation mark.

Examples

```
AT+FSDEL=image_0.jpg
OK
```

13.6 AT+FSRENAME Rename file in current directory

Description

This command is used to rename a file in current directory. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|-----------|
| AT+FSRENAME=? | OK |

| Write Command | Responses |
|-----------------------|-----------|
| AT+FSRENAME= | OK |
| <old_name>,<new_name> | ERROR |

Defined values

<old_name>

String with or without double quotes, file name which is existed in current directory. If the file path contains non-ASCII characters, the file path parameter should contain a prefix of {non-ascii} and the quotation mark.

<new_name>

New name of specified file, string with or without double quotes. If the file path contains non-ASCII characters, the file path parameter should contain a prefix of {non-ascii} and the quotation mark.

Examples

```
AT+FSRENAME=image_0.jpg, image_1.jpg
```

```
OK
```

```
AT+FSRENAME="my test.jpg", {non-ascii}"E6B58BE8AF95E99984E4BBB62E6A7067"
```

```
OK
```

13.7 AT+FSATTRI Request file attributes

Description

This command is used to request the attributes of file which exists in current directory. Support "C:", "D:", "E:", "F:".

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-----------------------|--------------------------------------|
| AT+FSATTRI=? | OK |
| Write Command | Responses |
| AT+FSATTRI=<filename> | +FSATTRI: <file_size>, <create_date> |
| | OK |

Defined values

<filename>

String with or without double quotes, file name which is in current directory. If the file path

contains non-ASCII characters, the file path parameter should contain a prefix of {non-ascii} and the quotation mark.

<file_size>

The size of specified file, and the unit is in Byte.

<create_date>

Create date and time of specified file, the format is YYYY/MM/DD HH/MM/SS Week.

Week – Mon, Tue, Wed, Thu, Fri, Sat, Sun

Examples

```
AT+FSATTRI=image_0.jpg
```

```
+FSATTRI: 8604, 2008/04/28 10:24:46 Tue
```

```
OK
```

```
AT+FSATTRI={non-ascii}"E6B58BE8AF95E99984E4BBB62E6A7067"
```

```
+FSATTRI: 6296, 2012/01/06 00:00:00 Sun
```

```
OK
```

13.8 AT+FSMEM Check the size of available memory

Description

This command is used to check the size of available memory. The response will list total size and used size of local storage space if present and mounted. Support “C:”, “D:”, “E:”, “F:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|-----------------------------------|
| AT+FSMEM=? | OK |
| Execution Command | Responses |
| AT+FSMEM | +FSMEM: C:(<total>, <used>) OK |

Defined values

<total>

The total size of local storage space.

<used>

The used size of local storage space.

NOTE: The unit of storage space size is in Byte.

Examples

```
AT+FSMEM
+FSMEM: C:(11348480, 2201600)
OK
```

13.9 AT+FSLOCA Select storage place

Description

This command is used to set the storage place for media files. Support “C:”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|--|
| AT+FSLOCA=? | +FSLOCA: (list of supported <loca>s) OK |
| Read Command | Responses |
| AT+FSLOCA? | +FSLOCA: <loca> OK |
| Write Command | Responses |
| AT+FSLOCA=<loca> | OK ERROR |

Defined values

<loca>
0 – store media files to local storage space (namely “C:/”)

Examples

```
AT+FSLOCA=0
OK
AT+FSLOCA?
+FSLOCA: 0
OK
```

13.10 AT+FSCOPY Copy an appointed file

Description

This command is used to copy an appointed file on C:/ to an appointed directory on C:/, the new file name should give in parameter. Support “C:”, “D:”, “E:”, “F:”.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|---|
| AT+FSCOPY=? | OK |
| Write Command | Responses |
| AT+FSCOPY=<file1>,<file2>[<sync_mode>] | +FSCOPY: <percent> [+FSCOPY: <percent>] OK OK +FSCOPY: <percent> [+FSCOPY: <percent>] +FSCOPY: END <i>If found any error:</i> SD CARD NOT PLUGGED IN FILE IS EXISTING FILE NOT EXISTING DIRECTORY IS EXISTED DIRECTORY NOT EXISTED FORBID CREATE DIRECTORY UNDER \"C:/\" FORBID DELETE DIRECTORY INVALID PATH NAME INVALID FILE NAME SD CARD HAVE NO ENOUGH MEMORY EFS HAVE NO ENOUGH MEMORY FILE CREATE ERROR READ FILE ERROR WRITE FILE ERROR ERROR |

Defined values

<file1>

The sources file name or the whole path name with sources file name. If the file path contains non-ASCII characters, the file path parameter should contain a prefix of {non-ascii} and the quotation mark.

<file2>

The destination file name or the whole path name with destination file name. If the file path contains non-ASCII characters, the file path parameter should contain a prefix of {non-ascii} and the quotation mark.

<percent>

The percent of copy done. The range is 0.0 to 100.0

<sync_mode>

The execution mode of the command:

- 0 – synchronous mode
- 1 – asynchronous mode

NOTE:

1. The <file1> and <file2> should give the whole path and name, if only given file name, it will refer to current path (AT+FSCD) and check the file's validity.
2. If <file2> is a whole path and name, make sure the directory exists, make sure that the file name does not exist or the file name is not the same name as the sub folder name, otherwise return error.
3. <percent> report refer to the copy file size. The big file maybe report many times, and little file report less.
4. If <sync_mode> is 1, the command will return OK immediately, and report final result with +FSCOPY: END.

Examples

AT+FSCD?

+FSCD: C:/

OK

AT+FSCOPY= C:/TESTFILE,COPYFILE (Copy file TESTFILE on C:/ to C:/COPYFILE)

+FSCOPY: 1.0

+FSCOPY: 100.0

OK

AT+FSCOPY= "my test.jpg", {non-ascii}"E6B58BE8AF95E99984E4BBB62E6A7067"

+FSCOPY: 1.0

+FSCOPY: 100.0

OK

14 AT Commands for File Transmission

14.1 AT+CFTRANRX Transfer a file to EFS

Description

This command is used to transfer a file to EFS. Support SDcard.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------------------|--|
| AT+CFTRANRX=? | +CFTRANRX: [{non-ascii}]"FILEPATH" OK |
| Write Command | Responses |
| AT+CFTRANRX="<filepath>",<len> | > OK |
| | > ERROR |
| | ERROR |

Defined values

<filepath>

The path of the file on EFS.

<len>

The length of the file data to send. The range is from 0 to 2147483647.

NOTE

The <filepath> must be a full path with the directory path.

Examples

```
AT+CFTRANRX="c:/MyDir/t1.txt",10
```

```
>testcontent
```

```
OK
```

```
AT+CFTRANRX="d:/MyDir/t1.txt",10
```

```
>testcontent
```

```
OK
```

14.2 AT+CFTRANTX Transfer a file from EFS to host

Description

This command is used to transfer a file from EFS to host. Before using this command, the [AT+CATR](#) must be used to set the correct port used. Support SDCard.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---|---|
| AT+CFTRANTX=? | +CFTRANTX: [{non-ascii}]"FILEPATH" OK |
| Write Command | Responses |
| AT+CFTRANTX="<filepath> [>],[<location>,<size>] | [+CFTRANTX: DATA,<len> ... +CFTRANTX: DATA,<len>] +CFTRANTX: 0 OK |
| | ERROR |

Defined values

<filepath>

The path of the file on EFS.

<len>

The length of the following file data to output.

<location>

The beginning of the file data to output.

<size>

The length of the file data to output.

NOTE

The <filepath> must be a full path with the directory path.

Examples

```
AT+CFTRANTX="c:/MyDir/t1.txt"
```

```
+CFTRANTX: DATA, 11
```

```
Testcontent
```

```
+CFTRANTX: 0
```

```
OK
```

```
AT+CFTRANTX="d:/MyDir/t1.txt"
```

```
+CFTRANTX: DATA, 11
```

```
Testcontent
```

```
+CFTRANTX: 0
```

```
OK
```

```
AT+CFTRANTX="d:/MyDir/t1.txt",1,4
```

```
+CFTRANTX: DATA, 4
```

```
estc
```

```
+CFTRANTX: 0
```

```
OK
```

15 AT Commands for Internet Service

15.1 DNS&PING

15.1.1 AT+CDNSGIP Query the IP address of given domain name

Description

This command is used to query the IP address of given domain name.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|--------------------------|---|
| AT+CDNSGIP=? | OK ERROR |
| Write Command | Responses |
| AT+CDNSGIP=<domain name> | <i>If successful, return:</i> +CDNSGIP: 1,<domain name>,<IP address> OK |
| | <i>If fail, return:</i> +CDNSGIP: 0,<dns error code> ERROR |
| | ERROR |

Defined values

<domain name>

A string parameter (string should be included in quotation marks) which indicates the domain name.

<IP address>

A string parameter (string should be included in quotation marks) which indicates the IP address corresponding to the domain name.

<dns error code>

A numeric parameter which indicates the error code.

10 DNS GENERAL ERROR

Examples

```
AT+CDNSGIP=?
OK
AT+CDNSGIP="www.google.com"
+CDNSGIP: 1,"www.google.com","203.208.39.99"
OK
```

15.1.2 AT+CDNSGHNAME Query the domain name of given IP address

Description

This command is used to query the domain name of given IP address.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|----------------------------|--|
| AT+CDNSGHNAME=? | OK ERROR |
| Write Command | Responses |
| AT+CDNSGHNAME=<IP address> | <i>If successful, return:</i> +CDNSGHNAME: <index>,<domain name>,<IP address> OK <i>If fail, return:</i> +CDNSGHNAME: 0,<dns error code> ERROR ERROR |

Defined values

<domain name>

A string parameter (string should be included in quotation marks) which indicates the domain name.

<IP address>

A string parameter (string should be included in quotation marks) which indicates the IP address corresponding to the domain name.

<dns error code>

A numeric parameter which indicates the error code.

10 DNS GENERAL ERROR

<index>

A numeric parameter which indicates DNS result index. This value is always 1 if performing successfully. Currently only the first record returned from the DNS server will be reported.

Examples

```
AT+CDNSGNAME=?
OK
AT+CDNSGNAME=" 58.32.231.148"
+CDNSGNAME: 1,"mail.sim.com","58.32.231.148"
OK
```

15.1.3 AT+CPING Ping destination address

Description

This command is used to ping destination address.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|---|---|
| AT+CPING=? | +CPING: IP address, (list of supported <dest_addr_type>s),(1-100),(4-188),(1000-10000),(10000-100000), (16-255) OK ERROR |
| Write Command | Responses |
| AT+CPING=<dest_addr>,<dest_addr_type> [,<num_pings>[,<data_packet_size> >[,<interval_time>[,<wait_time> [,<TTL>]]]]] | OK <i>If ping's result_type = 1</i> +CPING: <result_type>,<resolved_ip_addr>,<data_packet_size>,<rtt>,<TTL> <i>If ping's result_type = 2</i> +CPING: <result_type> <i>If ping's result_type = 3</i> |

| | |
|--|---|
| | +CPING: <result_type>,<num_pkts_sent>,<num_pkts_recvd>,<num_pkts_lost>,<min_rtt>,<max_rtt>,<avg_rtt> |
| | ERROR |

Defined values

<dest_addr>

The destination is to be pinged; it can be an IP address or a domain name.

<dest_addr_type>

Integer type. Address family type of the destination address

- 1 – IPv4.
- 2 – IPv6(reserved)

<num_pings>

Integer type. The num_pings specifies the number of times the ping request (1-100) is to be sent. The default value is 4.

<data_packet_size>

Integer type. Data byte size of the ping packet (4-188). The default value is 64 bytes.

<interval_time>

Integer type. Interval between each ping. Value is specified in milliseconds (1000ms-10000ms). The default value is 2000ms.

<wait_time>

Integer type. Wait time for ping response. An ping response received after the timeout shall not be processed. Value specified in milliseconds (10000ms-100000ms). The default value is 10000ms.

<TTL>

Integer type. TTL(Time-To-Live) value for the IP packet over which the ping(ICMP ECHO Request message) is sent (16-255), the default value is 255.

<result_type>

- 1 – Ping success
- 2 – Ping time out
- 3 – Ping result

<num_pkts_sent>

Indicates the number of ping requests that were sent out.

<num_pkts_recvd>

Indicates the number of ping responses that were received.

<num_pkts_lost>

Indicates the number of ping requests for which no response was received.

<min_rtt>

Indicates the minimum Round Trip Time(RTT).

<max_rtt>

Indicates the maximum RTT.

<avg_rtt>

Indicates the average RTT.

<resolved_ip_addr>

Indicates the resolved ip address.

< rtt>

Round Trip Time.

Examples

```
AT+CPING=?
```

```
+CPING:IP address,(1,2), (1-100), (4-188),(1000-10000),(10000-100000), (16-255)
```

```
OK
```

```
AT+CPING="www.baidu.com",1,4,64,1000,10000,255
```

```
OK
```

```
+CPING: 1,119.75.217.56,64,410,255
```

```
+CPING: 1,119.75.217.56,64,347,255
```

```
+CPING: 1,119.75.217.56,64,346,255
```

```
+CPING: 1,119.75.217.56,64,444,255
```

```
+CPING: 3,4,4,0,346,444,386
```

15.1.4 AT+CPINGSTOP Stop an ongoing ping session

Description

This command is used to stop an ongoing ping session.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|----------------|--|
| AT+CPINGSTOP=? | OK |
| Write Command | Responses |
| AT+CPINGSTOP | +CPING: <result_type>,<num_pkts_sent>,<num_pkts_recvd>,<num_pkts_lost>,<min_rtt>,<max_rtt>,<avg_rtt> OK OK ERROR |

Defined values

| |
|---|
| <result_type> |
| 1 – Ping success |
| 2 – Ping time out |
| 3 – Ping result |
| <num_pkts_sent> |
| Indicates the number of ping requests that were sent out. |
| <num_pkts_recvd> |
| Indicates the number of ping responses that were received. |
| <num_pkts_lost> |
| Indicates the number of ping requests for which no response was received. |
| <resolved_ip_addr> |
| Indicates the resolved ip address. |
| <min_rtt> |
| Indicates the minimum Round Trip Time (RTT). |
| <max_rtt> |
| Indicates the maximum RTT. |
| <avg_rtt> |
| Indicates the average RTT. |

Examples

| |
|--------------|
| AT+CPINGSTOP |
| OK |

15.2 HTP

These AT Commands of HTP related are used to synchronize system time with HTTP server.

15.2.1 AT+CHTPSERV Set HTP server info

Description

This command is used to add or delete HTP server information. There are maximum 16 HTP servers.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|---------------|-----------------------------------|
| AT+CHTPSERV=? | +CHTPSERV:"ADD","HOST",(1-65535), |

| | |
|--|--|
| | (0-1)[,"PROXY",(1-65535)] +CHTSPSERV: "DEL",(0-15) OK |
| Read Command | Responses |
| AT+CHTSPSERV? | +CHTSPSERV:<index>"<host>",<port>,<http_version> [,"<proxy>",<proxy_port>] ... +CHTSPSERV:<index>"<host>",<port>[,"<proxy>",<proxy_port>] OK OK <i>(if HTP server not setted)</i> |
| Write Command | Responses |
| AT+CHTSPSERV="<cmd>", "<host_or_idx>",<port>,<http_version>[,"<proxy>",<proxy_port>]] | OK ERROR |

Defined values

<cmd>

This command to operate the HTP server list.

“ADD”: add a HTP server item to the list

“DEL”: delete a HTP server item from the list

<host_or_idx>

If the <cmd> is “ADD”, this field is the same as <host>, needs quotation marks; If the <cmd> is “DEL”, this field is the index of the HTP server item to be deleted from the list, does not need quotation marks.

<host>

The HTP server address. Max length is 254.

<port>

The HTP server port.

<http_version>

The HTTP version of the HTP server:

0- HTTP 1.0

1- HTTP 1.1

<proxy>

The proxy address, the maximum length is 254.

<proxy_port>

The port of the proxy

<index>

The HTP server index.

Examples

```
AT+CHTPSERV="ADD","www.google.com",80,1
OK
```

15.2.2 AT+CHTUPDATE Updating date time using HTP protocol

Description

This command is used to updating date time using HTP protocol.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|-----------------|---------------------------|
| AT+CHTUPDATE=? | OK |
| Read Command | Response |
| AT+CHTUPDATE? | +CHTUPDATE:<status> OK |
| Execute Command | Responses |
| AT+CHTUPDATE | OK +CHTUPDATE: <err> |
| | ERROR |

Defined values

<status>

The status of HTP module:

Updating: HTP module is synchronizing date time

NULL: HTP module is idle now

<err>

The result of the HTP updating

Examples

```
AT+CHTUPDATE
OK
+CHTUPDATE: 0
```

15.2.3 Unsolicited HTP Codes

| Code of <err> | Description |
|---------------|--------------------------------|
| 0 | Operation succeeded |
| 1 | Unknown error |
| 2 | Wrong parameter |
| 3 | Wrong date and time calculated |
| 4 | Network error |

15.3 NTP

These AT Commands of NTP related are used to synchronize system time with NTP server.

15.3.1 AT+CNTP Update system time

Description

This command is used to update system time with NTP server.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Test Command | Responses |
|-------------------------------|---------------------------------|
| AT+CNTP=? | +CNTP: 255,(-96~96) OK |
| Read Command | Responses |
| AT+CNTP? | +CNTP: <host>,<timezone> OK |
| Write Command | Responses |
| AT+CNTP="<host>"[,<timezone>] | OK ERROR |
| Write Command | Responses |
| AT+CNTP | OK +CNTP:<err_code> ERROR |

Defined values

<host>

NTP server address,length is 255.
 <timezone>
 Local time zone,the range is(-96 to 96), default value is 0.

Examples

```
AT+CNTP="202.120.2.101",32
OK
AT+CNTP
OK
+CNTP: 0
```

15.3.2 Unsolicited NTP Codes

| Code of <err> | Description |
|---------------|--------------------------------|
| 0 | Operation succeeded |
| 1 | Unknown error |
| 2 | Wrong parameter |
| 3 | Wrong date and time calculated |
| 4 | Network error |
| 5 | Time zone error |
| 6 | Time out error |

16 AT Commands for Open/Close Network

16.1 AT+CNETSTART Open network

Description

This command opens packet network.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Read Command | Responses |
|-------------------|-------------------------|
| AT+CNETSTART? | +CNETSTART: <net_state> |
| | OK |
| | ERROR |
| Execution Command | Responses |
| AT+CNETSTART | OK |
| | +CNETSTART: <err> |
| | +CNETSTART: <err> |
| | OK |
| | +CNETSTART: <err> |
| | ERROR |
| | ERROR |

Defined values

<net_state>

a numeric parameter that indicates the state of PDP context activation:

- 0 network close (deactivated)
- 1 network is opening
- 2 network open(activated)
- 3 network is closing

<err >

The result of operation, 0 is success, other value is failure.

Examples

AT+CNETSTART

OK

+CNETSTART: 0

AT+CNETSTART?

+CNETSTART: 2

OK

16.2 AT+CNETSTOP Close network

Description

This command closes network. Before calling this command, all opened sockets must be closed first.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Execution Command | Responses |
|-------------------|------------------|
| AT+CNETSTOP | OK |
| | +CNETSTOP: <err> |
| | +CNETSTOP: <err> |
| | OK |
| | +CNETSTOP: <err> |
| | ERROR |
| | ERROR |

Defined values

<err>

The result of operation, 0 is success, other value is failure.

Examples

```
AT+CNETSTOP
```

```
OK
```

```
+CNETSTOP: 0
```

16.3 AT+CNETIPADDR Inquire PDP address

Description

This command inquires the IP address of current active PDP.

| SIM PIN | References |
|---------|------------|
| YES | Vendor |

Syntax

| Read Command | Responses |
|----------------|---------------------------|
| AT+CNETIPADDR? | +CNETIPADDR: <ip_address> |
| | OK |
| | +CNETIPADDR: <err_info> |
| | ERROR |
| | ERROR |

Defined values

<ip_address>

A string parameter that identifies the IP address of current active socket PDP.

<err_info>

A string parameter that displays the cause of occurring error.

Examples

```
AT+CNETIPADDR?
```

```
+CNETIPADDR: 10.71.155.118
```

```
OK
```

16.4 Unsolicited Open/Close network command <err> Codes

| Code of <err> | Description |
|---------------|---------------------|
| 0 | Operation succeeded |

| | |
|---|-------------------------|
| 1 | Unknown error |
| 2 | Open network failed |
| 3 | Close network failed |
| 4 | Network not opened |
| 5 | Operation not support |
| 6 | Busy |
| 7 | Network has been opened |
| 8 | Network is also in use |

17 AT Commands for GPS

17.1 AT+CGPS Start/Stop GPS session

Description

This command is used to start or stop GPS session.

NOTE:

1. Output of NMEA sentences is automatic; no control via AT commands is provided. If executing `AT+CGPS=1`, the GPS session will choose cold or hot start automatically.
2. UE-based and UE-assisted mode depend on URL (`AT+CGPSURL`). When UE-based mode fails, it will switch standalone mode.
3. UE-assisted mode is singly fixed. Standalone and UE-based mode is consecutively fixed.
4. After the GPS closed, it should to wait about 2s~30s for start again. Reason: If the signal conditions are right (strong enough signals to allow ephemeris demodulation) or ephemeris demodulation is on going, sometimes MGP will stay on longer in order to demodulate more ephemeris. This will help the engine provide faster TTFF and possibly better yield later (up to 2 hours), because it has the benefit of more ephemeris available.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---|---|
| <code>AT+CGPS=?</code> | <code>+CGPS: (list of supported <on/off>s),(list of supported <mode>s)</code> OK |
| Read Command | Responses |
| <code>AT+CGPS?</code> | <code>+CGPS: <on/off>,<mode></code> OK |
| Write Command | Responses |
| <code>AT+CGPS=<on/off></code> <code>[,<mode>]</code> | OK <i>If UE-assisted mode, when fixed will report indication:</i> <code>+CAGPSINFO:<lat>,<lon>,<alt>,<date>,<time></code> <i>If <off>, it will report indication:</i> <code>+CGPS: 0</code> |
| | ERROR |

Defined values

<on/off>

- 0 – stop GPS session
- 1 – start GPS session

<mode>

- Ignore - standalone mode
- 1 – standalone mode
- 2 – UE-based mode
- 3 – UE-assisted mode

<lat>

Latitude of current position. Unit is in 10⁸ degree

<log>

Longitude of current position. Unit is in 10⁸ degree

<alt>

MSL Altitude. Unit is meters.

<date>

UTC Date. Output format is ddmmyyyy

<time>

UTC Time. Output format is hhmmss.s

< unconfidence >

Unconfidence of the location, GPS fixed report 39, cell fixed report 100.

< uncertainty_meter >

Uncertainty meters.

Examples

```
AT+CGPS?
```

```
OK
```

```
AT+CGPS=1,1
```

```
OK
```

17.2 AT+CGPSINFO Get GPS fixed position information

Description

This command is used to get current position information.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|--|
| AT+CGPSINFO=? | +CCGPSINFO: (scope of <time>) |

| | |
|--------------------|---|
| | OK |
| Read Command | Responses |
| AT+CGPSINFO? | +CCGPSINFO: <time> OK |
| Write Command | Responses |
| AT+CGPSINFO=<time> | OK +CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] OK (if <time>=0) |
| Execution Command | Responses |
| AT+CGPSINFO | +CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] OK |

Defined values

<lat>

Latitude of current position. Output format is ddmm.mmmmmm

<N/S>

N/S Indicator, N=north or S=south

<log>

Longitude of current position. Output format is dddmm.mmmmmm

<E/W>

E/W Indicator, E=east or W=west

<date>

Date. Output format is ddmmyy

<UTC time>

UTC Time. Output format is hhmmss.s

<alt>

MSL Altitude. Unit is meters.

<speed>

Speed Over Ground. Unit is knots.

<course>

Course. Degrees.

<time>

The range is 0-255, unit is second, after set <time> will report the GPS information every the seconds.

Examples

AT+CGPSINFO=?

+CGPSINFO: (0-255)

```

OK
AT+CGPSINFO?
+CGPSINFO: 0
OK
AT+CGPSINFO
+CGPSINFO:3113.343286,N,12121.234064,E,250311,072809.3,44.1,0.0,0
OK
    
```

17.3 AT+CGPSCOLD Cold start GPS

Description

This command is used to cold start GPS session.

NOTE: Before using this command, it must use `AT+CGPS=0` to stop GPS session.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|-----------|
| AT+CGPSCOLD=? | OK |
| Execution Command | Responses |
| AT+CGPSCOLD | OK |

Examples

```

AT+CGPSCOLD=?
OK
AT+CGPSCOLD
OK
    
```

17.4 AT+CGPSHOT Hot start GPS

Description

This command is used to hot start GPS session

NOTE: Before using this command, `AT+CGPS=0` must be used to stop GPS session.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------|-----------|
| AT+CGPSHOT=? | OK |

| Execution Command | Responses |
|-------------------|-----------|
| AT+CGPSHOT | OK |

Examples

```
AT+CGPSHOT=?
```

```
OK
```

```
AT+CGPSHOT
```

```
OK
```

17.5 AT+CGPSURL Set AGPS default server URL

Description

This command is used to set AGPS default server URL. It will take effect only after restarting.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|-----------------------|
| AT+CGPSURL=? | OK |
| Read Command | Responses |
| AT+CGPSURL? | +CGPSURL: <URL> OK |
| Write Command | Responses |
| AT+CGPSURL=<URL> | OK ERROR |

Defined values

<URL>

AGPS default server URL. It needs double quotation marks.

Examples

```
AT+CGPSURL="123.123.123.123:8888"
```

```
OK
```

```
AT+CGPSURL?
```

```
+CGPSURL: "123.123.123.123:8888"
```

```
OK
```


17.6 AT+CGPSSSL Set AGPS transport security

Description

This command is used to select transport security, used certificate or not. The certificate gets from local carrier. If the AGPS server doesn't need certificate, execute [AT+CGPSSSL=0](#).

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------|--|
| AT+CGPSSSL=? | +CGPSSSL: (list of supported <SSL>s) OK |
| Read Command | Responses |
| AT+CGPSSSL? | +CGPSSSL: <SSL> OK |
| Write Command | Responses |
| AT+CGPSSSL=<SSL> | OK ERROR |

Defined values

| <SSL> |
|---------------------------|
| 0 – don't use certificate |
| 1 – use certificate |

Examples

```
AT+CGPSSSL=0
OK
```

17.7 AT+CGPSAUTO Start GPS automatic

Description

This command is used to start GPS automatically when module powers on, GPS is closed defaultly.

NOTE: If GPS start automatically, its operation mode is standalone mode.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------|--|
| AT+CGPSAUTO=? | +CGPSAUTO:(list of supported <auto>s) OK |
| Read Command | Responses |
| AT+CGPSAUTO? | +CGPSAUTO:<auto> OK |
| Write Command | Responses |
| AT+CGPSAUTO=<auto> | OK ERROR |

Defined values

| <auto> |
|-------------------|
| 0 – Non-automatic |
| 1 – automatic |

Examples

| |
|---------------|
| AT+CGPSAUTO=1 |
| OK |

17.8 AT+CGPSNMEA Configure NMEA sentence type

Description

This command is used to configure NMEA output sentences which are generated by the gpsOne engine when position data is available.

NOTE: If nmea bit 2 GPGSV doesn't configure, GPGSV sentence also doesn't output on AT/modem port even set AT+CGPSFTM=1.

Module should reboot to take effect.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------|------------------------------------|
| AT+CGPSNMEA=? | +CGPSNMEA: (scope of <nmea>) OK |
| Read Command | Responses |
| AT+CGPSNMEA? | +CGPSNMEA: <nmea> OK |
| Write Command | Responses |

| | |
|--------------------|----------------------------------|
| AT+CGPSNMEA=<nmea> | OK |
| | <i>If GPS engine is running:</i> |
| | ERROR |

Defined values

<nmea>

Range – 0 to 262143

Each bit enables an NMEA sentence output as follows:

Bit 0 – GPGGA (global positioning system fix data)

Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data)

Bit 2 – GPGSV (GPS satellites in view)

Bit 3 – GPGSA (GPS DOP and active satellites)

Bit 4 – GPVTG (track made good and ground speed)

Bit 5 – PQXFI (Global Positioning System Extended Fix Data.)

Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only)

Bit 7 – GNGSA (1. GPS/2. Glonass/3. GALILEO DOP and Active Satellites.)

Bit 8 – GNGNS (fix data for GNSS receivers;output for GPS,GLONASS,GALILEO)

Bit 9 – Reserved

Bit 10 – GAGSV (GALILEO satellites in view)

Bit 11 –Reserved

Bit 12 –Reserved

Bit 13 –Reserved

Bit 14 –Reserved

Bit 15 –Reserved,

Bit 16 –BDGSA/PQGSA (BEIDOU/QZSS DOP and active satellites)

Bit 17 –BDGSV/PQGSV (BEIDOUQZSS satellites in view)

Set the desired NMEA sentence bit(s). If multiple NMEA sentence formats are desired, “OR” the desired bits together.

NOTE: Reserved default 0, set invalid.

Examples

```
AT+CGPSNMEA=200191
```

```
OK
```

17.9 AT+CGPSNEMARATE Set NMEA output rate

Description

This command is used to set nmea output rate

NOTE: send the command before open gps

SIM PIN References

| | |
|----|--------|
| NO | Vendor |
|----|--------|

Syntax

| Test Command | Responses |
|--|---|
| AT+CGPSNMEARATE=? | +CGPSNMEARATE: (scope of <rate>) OK |
| Read Command | Responses |
| AT+CGPSNMEARATE? | +CGPSNMEARATE: <rate> OK |
| Write Command | Responses |
| AT+CGPSNMEARATE=< r ate > | OK ERROR |

Defined values

| <rate> | |
|----------|------------------|
| <u>0</u> | output rate 1HZ |
| 1 | output rate 10HZ |

Examples

| |
|--------------------|
| AT+CGPSNMEARATE =1 |
| OK |

17.10 AT+CGPSMD Configure AGPS MO method

Description

This command specifies if the Mobile-Originated (MO) GPS session should use the control plane session or user plane session.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------|---|
| AT+CGPSMD=? | +CGPSMD: (scope of <method>) OK |
| Read Command | Responses |
| AT+CGPSMD? | +CGPSMD: <method> OK |

| Write Command | Responses |
|--------------------|----------------------------------|
| AT+CGPSMD=<method> | OK |
| | <i>If GPS engine is running:</i> |
| | ERROR |

Defined values

| <method> |
|-----------------------|
| 0 – Control plane |
| <u>1</u> – User plane |

Examples

| |
|-------------|
| AT+CGPSMD=1 |
| OK |

17.11 AT+CGPSFTM Start GPS test mode

Description

This command is used to start GPS test mode.

NOTE:

1. If test mode starts, the URC will report on AT port, Modem port and UART port.
2. If testing on actual signal, <SV> should be ignored, and GPS must be started by AT+CGPS, AT+CGPSCOLD or AT+CGPSHOT.
3. If testing on GPS signal simulate equipment, <SV> **must be choiced**, and GPS will start automatically.
4. URC sentence will report every 1 second.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------------|--------------------|
| AT+CGPSFTM=? | OK |
| Read Command | Responses |
| AT+CGPSFTM? | +CGPSFTM: <on/off> |
| | OK |
| Write Command | Responses |
| AT+CGPSFTM=<on/off> | OK |
| | ERROR |

Defined values

| |
|--------------------------------------|
| <on/off> |
| 0 – Close test mode |
| 1 – Start test mode |
| <CNo> |
| Satellite CNo value. Floating value. |
| URC format |
| \$GPGSV[,<SV>,<CNo>][...] |
| \$GLGSV[,<SV>,<CNo>][...] |
| \$BDGSV[,<SV>,<CNo>][...] |
| \$GAGSV[,<SV>,<CNo>][...] |
| \$PQGSV[,<SV>,<CNo>][...] |

Examples

```

AT+CGPSFTM=1
OK
$GLGSV,78,20.6,66,25.6,77,21.6,79,21.9,67,26.2,68,23.6

$GPGSV,10,36.3,12,33.5,14,26.5,15,27.0,18,30.6,20,29.4,21,14.9,24,32.8,25,30.6,31,29.1,32,27.0

$BDGSV,201,28.7,204,29.0,206,27.3,207,25.9,209,25.0,210,18.5
    
```

17.12 AT+CGPSDEL Delete the GPS information

Description

This command is used to delete the GPS information. After executing the command, GPS start is cold start.

NOTE: This command must be executed after GPS stopped.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|-----------|
| AT+CGPSDEL=? | OK |
| Execution Command | Responses |
| AT+CGPSDEL | OK |
| | ERROR |

Examples

```
AT+CGPSDEL=?
```

```
OK
```

```
AT+CGPSDEL
```

```
OK
```

17.13 AT+CGPSXE Enable/Disable GPS XTRA function

Description

This command is used to enable/disable the GPS XTRA function.

NOTE: XTRA function must download the assistant file from network by HTTP, so the APN must be set by [AT+CGDCONT](#) command.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------|--|
| AT+CGPSXE=? | +CGPSXE: (list of supported <on/off>s) OK |
| Read Command | Responses |
| AT+CGPSXE? | +CGPSXE: <on/off> OK |
| Write Command | Responses |
| AT+CGPSXE=<on/off> | OK ERROR |

Defined values

<on/off>

0 – Disable GPS XTRA

1 – Enable GPS XTRA

Examples

```
AT+CGPSXE=?
```

```
+CGPSXE: (0,1)
```

```
OK
```

```
AT+CGPSXE=0
```

```
OK
```

17.14 AT+CGPSXD Download XTRA assistant file

Description

This command is used to download the GPS XTRA assistant file from network through http protocol. Module will download the latest assistant file form server and write the file into module.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------|--|
| AT+CGPSXD=? | +CGPSXD: (list of supported <server>s) OK |
| Read Command | Responses |
| AT+CGPSXD? | +CGPSXD: <server> OK |
| Write Command | Responses |
| AT+CGPSXD=<server> | OK +CGPSXD: <resp> |
| | +CGPSXD: <resp> ERROR |

Defined values

| |
|--|
| <server> |
| 0 – XTRA primary server (precedence) |
| 1 – XTRA secondary server |
| 2 – XTRA tertiary server |
| <resp> |
| refer to Unsolicited XTRA download Codes |

Examples

| |
|----------------|
| AT+CGPSXD=? |
| +CGPSXD: (0-2) |
| OK |
| AT+CGPSXD=0 |
| OK |
| +CGPSXD: 0 |

17.15 AT+CGPSXDAUTO Download XTRA assistant file automatically

Description

This command is used to control download assistant file automatically or not when GPS start. XTRA function must enable for using this command. If assistant file doesn't exist or check error, the module will download and inject the assistant file automatically.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|------------------------|--|
| AT+CGPSXDAUTO=? | +CGPSXDAUTO: (list of supported <on/off>s) OK |
| Read Command | Responses |
| AT+CGPSXDAUTO? | +CGPSXDAUTO: <on/off> OK |
| Write Command | Responses |
| AT+CGPSXDAUTO=<on/off> | OK |
| | ERROR |

Defined values

<on/off>

- 0 – disable download automatically
- 1 – enable download automatically

NOTE: Some URCs will report when downloading, it's same as [AT+CGPSXD](#) command.

Examples

```
AT+CGPSXDAUTO=?
+CGPSXDAUTO: (0,1)
OK
AT+CGPSXDAUTO=0
OK
```

17.16 AT+CGPSINFOCFG Report GPS NMEA-0183 sentence

Description

This command is used to report NMEA-0183 sentence.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| Test Command | Responses |
|---------------------------------------|---|
| AT+CGPSINFOCFG=? | +CGPSINFOCFG: (scope of <time>),(scope of <config>) OK |
| Read Command | Responses |
| AT+CGPSINFOCFG? | +CGPSINFOCFG: <time>,<config> OK |
| Write Command | Responses |
| AT+CGPSINFOCFG=<time> >[,<config>] | OK (NMEA-0183 Sentence) OK (if <time>=0) |

Defined values

<time>

The range is 0-255, unit is second, after set <time> will report the GPS NMEA sentence every the seconds.

If <time>=0, module stop reporting the NMEA sentence.

<config>

Range – 0 to 262143

Each bit enables an NMEA sentence output as follows:

Bit 0 – GPGGA (global positioning system fix data)

Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data)

Bit 2 – GPGSV (GPS satellites in view)

Bit 3 – GPGSA (GPS DOP and active satellites)

Bit 4 – GPVTG (track made good and ground speed)

Bit 5 – PQXFI (Global Positioning System Extended Fix Data.)

Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only)

Bit 7 – GNGSA (1. GPS/2. Glonass/3. GALILE DOP and Active Satellites.)

Bit 8 – GNGNS (fix data for GNSS receivers;output for GPS,GLONASS,GALILEO)

Bit 9 – Reserved

Bit 10 – GAGSV (GALILEO satellites in view)

Bit 11 –Reserved

Bit 12 –Reserved

Bit 13 –Reserved

Bit 14 –Reserved

Bit 15 –Reserved,

Bit 16 –BDGSA/PQGSA (BEIDOU/QZSS DOP and active satellites)

Bit 17 –BDGSV/PQGSV (BEIDOUQZSS satellites in view)

Set the desired NMEA sentence bit(s). If multiple NMEA sentence formats are desired, “OR” the desired bits together.

NOTE: Reserved default 0, set invalid.

For example:

If want to report GPRMC sentence by 10 seconds, should execute AT+CGPSINFOCFG=10,2

Examples

```
AT+CGPSINFOCFG=?
```

```
+CGPSINFO: (0-255),(0-262143)
```

```
OK
```

```
AT+CGPSINFOCFG=10,31
```

```
OK
```

```
$GPGSV,4,1,16,04,53,057,44,02,55,334,44,10,61,023,44,05,45,253,43*7D
```

```
$GPGSV,4,2,16,25,10,300,40,17,25,147,40,12,22,271,38,13,28,053,38*77
```

```
$GPGSV,4,3,16,26,09,187,35,23,06,036,34,24,,,,,27,,, *7A
```

```
$GPGSV,4,4,16,09,,,,,31,,,,,30,,,,,29,,, *7D
```

```
$GPGGA,051147.0,3113.320991,N,12121.248076,E,1,10,0.8,47.5,M,0,M,, *45
```

```
$GPVTG,NaN,T,,M,0.0,N,0.0,K,A*42
```

```
$GPRMC,051147.0,A,3113.320991,N,12121.248076,E,0.0,0.0,211211,,A*66
```

```
$GPGSA,A,3,02,04,05,10,12,13,17,23,25,26,,,1.4,0.8,1.2*3B
```

17.17 AT+CGPSPMD Configure positioning mode

Description

This command is used to configure the positioning modes support.

NOTE: Need to restart the module after setting the mode.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------|-----------------------------------|
| AT+CGPSPMD=? | +CGPSPMD: (scope of <mode>) OK |
| Read Command | Responses |
| AT+CGPSPMD? | +CGPSPMD: <mode> OK |

| Write Command | Responses |
|-------------------|-----------|
| AT+CGPSPMD=<mode> | OK |
| | ERROR |

Defined values

<mode>

Default - 65407

Range - 1 to 65407

Each bit enables a supported positioning mode as follows:

Bit 0 – Standalone

Bit 1 – UP MS-based

Bit 2 – UP MS-assisted

Bit 3 – CP MS-based (2G)

Bit 4 – CP MS-assisted (2G)

Bit 5 – CP UE-based (3G)

Bit 6 – CP UE-assisted (3G)

Bit 7 – NOT USED

Bit 8 – UP MS-based (4G)

Bit 9 – UP MS-assisted(4G)

Bit 10 – CP MS-based (4G)

Bit 11 – CP MS-assisted (4G)

Set the desired mode sentence bit(s). If multiple modes are desired, “OR” the desired bits together.

Example, support standalone, UP MS-based and UP MS-assisted, set Binary value 0000 0111, is 7.

Examples

```
AT+CGPSPMD=127
```

```
OK
```

17.18 AT+CGPSMSB Configure based mode switch to standalone

Description

This command is used to configure AGPS based mode switching to standalone mode automatically or not.

NOTE: This command must be executed after GPS stopped.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------|-----------|
|--------------|-----------|

| | |
|-------------------|----------------------------------|
| AT+CGPSMSB=? | +CGPSMSB: (scope of <mode> OK |
| Read Command | Responses |
| AT+CGPSMSB? | +CGPSMSB: <mode> OK |
| Write Command | Responses |
| AT+CGPSMSB=<mode> | OK ERROR |

Defined values

| |
|---|
| <mode> |
| 0 – Don't switch to standalone mode automatically |
| 1 – Switch to standalone mode automatically |

Examples

| |
|--------------|
| AT+CGPSMSB=0 |
| OK |

17.19 AT+CGPSHOR Configure positioning desired accuracy

Description

The command is used to configure the positioning desired accuracy threshold in meters.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| | |
|----------------------------|---|
| Test Command | Responses |
| AT+CGPSHOR=? | +CGPSHOR: (scope of <acc>), (scope of <acc_f> OK |
| Read Command | Responses |
| AT+CGPSHOR? | +CGPSHOR: <acc>,<acc_f> OK |
| Write Command | Responses |
| AT+CGPSHOR=<acc>[,<acc_f>] | OK ERROR |

Defined values

```

<acc>
Range – 0 to 1800000
Default value is 50
<acc_f>
Reserved
    
```

Examples

```

AT+CGPSHOR=50
OK
    
```

17.20 AT+CGPSNOTIFY LCS respond positioning request

Description

This command is used to respond to the incoming request for positioning request message.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|----------------------|--|
| AT+CGPSNOTIFY=? | +CGPSNOTIFY: (list of supported <resp>s) OK |
| Write Command | Responses |
| AT+CGPSNOTIFY=<resp> | OK ERROR |

Defined values

```

<resp>
0 – LCS notify verify accept
1 – LCS notify verify deny
2 – LCS notify verify no response
    
```

Examples

```

AT+CGPSNOTIFY=?
+CGPSNOTIFY: (0-2)
OK
AT+CGPSNOTIFY=0
OK
    
```

17.21 AT+CGNSSINFO Get GNSS fixed position information

Description

This command is used to get current position related information.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| | |
|---------------------|--|
| Test Command | Responses |
| AT+CGNSSINFO=? | +CGNSSINFO: (scope of <time>) OK |
| Read Command | Responses |
| AT+CGNSSINFO? | +CGNSSINFO: <time> OK |
| Write Command | Responses |
| AT+CGNSSINFO=<time> | OK +CGNSSINFO: [<mode>],[<GPS-SVs>],[<GLONASS-SVs>],[<BEIDOU-SVs>], [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC-time>],[<alt>], [<speed>],[<course>],[<PDOP>],[<HDOP>],[<VDOP>] OK (if <time>=0) |
| Execution Command | Responses |
| AT+CGNSSINFO | +CGNSSINFO: [<mode>],[<GPS-SVs>],[<GLONASS-SVs>],[<BEIDOU-SVs>], [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC-time>],[<alt>], [<speed>],[<course>],[<PDOP>],[<HDOP>],[<VDOP>] OK |

Defined values

| | |
|---------------------------------|-------------------|
| <mode> | |
| Fix mode | 2=2D fix 3=3D fix |
| <GPS-SVs> | |
| GPS satellite valid numbers | scope: 00-12 |
| <GLONASS-SVs> | |
| GLONASS satellite valid numbers | scope: 00-12 |
| <BEIDOU-SVs> | |
| BEIDOU satellite valid numbers | scope: 00-12 |
| <lat> | |

Latitude of current position. Output format is ddmm.mmmmmm
 <N/S>
 N/S Indicator, N=north or S=south
 <log>
 Longitude of current position. Output format is dddmm.mmmmmm
 <E/W>
 E/W Indicator, E=east or W=west
 <date>
 Date. Output format is ddmmyy
 <UTC time>
 UTC Time. Output format is hhmmss.s
 <alt>
 MSL Altitude. Unit is meters.
 <speed>
 Speed Over Ground. Unit is knots.
 <course>
 Course. Degrees.
 <time>
 The range is 0-255, unit is second, after set <time> will report the GPS information every the seconds.
 <PDOP>
 Position Dilution Of Precision.
 <HDOP>
 Horizontal Dilution Of Precision.
 <VDOP>
 Vertical Dilution Of Precision.

Examples

```
AT+CGNSSINFO=?
+CGNSSINFO: (0-255)
OK
AT+CGNSSINFO?
+CGPSINFO: 0
OK
AT+CGNSSINFO
+CGNSSINFO:
2,09,05,00,3113.330650,N,12121.262554,E,131117,091918.0,32.9,0.0,255.0,1.1,0.8,0.7
OK
AT+CGNSSINFO (if not fix,will report null)
+CGNSSINFO: ,,
OK
```


17.22 AT+CGNSSMODE Configure GNSS support mode

Description

This command is used to configure GPS, GLONASS, BEIDOU and QZSS support mode.
 And DPO(Dynamic power optimization) status
 Module should reboot to take effective.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|--------------------------------------|--|
| AT+CGNSSMODE=? | +CGNSSMODE: (scope of <gNSS_mode>),(scope of <dpo_mode>) OK |
| Read Command | Responses |
| AT+CGNSSMODE? | +CGNSSMODE: <gNSS_mode>,<dpo_mode> OK |
| Write Command | Responses |
| AT+CGNSSMODE=<mode >[,<dpo_mode>] | OK ERROR |

Defined values

<gNSS_mode>

Range – 0 to 15

Bit0: GLONASS

Bit1: BEIDOU

Bit2: GALILEO

Bit3: QZSS

1: enable 0:disable

GPS always support

<dpo_mode>

1: enable DPO

0: disable DPO

Examples

```
AT+CGNSSMODE=15,1
```

```
OK
```

17.23 Unsolicited XTRA download Codes

| Code of <err> | Description |
|---------------|--------------------------------------|
| 0 | Assistant file download successfully |
| 1 | Assistant file doesn't exist |
| 2 | Assistant file check error |
| 220 | Unknown error for HTTP |
| 221 | HTTP task is busy |
| 222 | Failed to resolve server address |
| 223 | HTTP timeout |
| 224 | Failed to transfer data |
| 225 | Memory error |
| 226 | Invalid parameter |
| 227 | Network error |

220~227 codes are same as Unsolicited HTTP codes

17.24 AT+CLBS Base station location

Description

The write command is used to base station location.

NOTE:

1. The LBS is only support in GSM/WCDMA/CDMA/LTE net mode.
2. It needs to execute AT+CNETSTART to open network before execute the AT+CLBS write command. It needs to execute AT+CNETSTOP to close network after complete the LBS operation.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|---|--|
| AT+CLBS=? | +CLBS: (1,2,3,4,9),(1-24,100-179),(-180.000000-180.000000),(-90.000000-90.000000),(0,1) OK |
| Write Command | Responses |
| AT+CLBS=<type>[,<cid>[, [<longitude>,<latitude>],[on_type]]] | OK 1)type = 1,get longitude and latitude |

| | |
|--|--|
| | +CLBS: <ret_code>[,<latitude>,<longitude>,<acc>] |
| | 2)type = 2,get detail address +CLBS: <ret_code>[,<detail_addr>] |
| | 3)type = 3,get access times +CLBS: <ret_code>[,<times>] |
| | 4)type = 4,get longitude latitude and date time +CLBS: <ret_code>[,<latitude>,<longitude>,<acc>,<date>,<time>] |
| | 5)type = 9, report positioning error +CLBS: <ret_code> |
| | ERROR |
| | +CLBS: <ret_code> |
| | ERROR |

Defined values

<type>

A numeric parameter which specifies the location type.

- 1 use 3 cell's information
- 2 get detail address
- 3 get access times
- 4 get longitude latitude and date time
- 9 report positioning error

NOTE: For LE22 (new baseline), this parameter could use 1 and 2 only!

<cid>

A numeric parameter which specifies a particular PDP context definition (see [AT+CGDCONT](#) command).

1...24,100...179

NOTE: This parameter takes no effect in SIM7500/SIM7600, it's only in order to keep compatible with the previous software version and other projects, support convenience for the customers.

<longitude>

Current longitude in degrees.

<latitude>

Current latitude in degrees.

<detail_addr>

Current detail address. It based the UCS2 coding. Each 4 characters in the URC is for one UCS2 character.

<acc>

| |
|--|
| Positioning accuracy. |
| <lon_type> |
| The type of longitude and latitude |
| 0 WGS84, the default type |
| 1 GCJ02. |
| <times> |
| access service times. |
| <data> |
| service date(UTC, the format is YYYY/MM/DD). |
| <time> |
| service time(UTC, the format is HH:MM:SS). |
| <ret_code> |
| The result code. |
| 0 Success |
| 1 Parameter error returned by server. |
| 2 Service out of time returned by server. |
| 3 Location failed returned by server. |
| 4 Query timeout returned by server. |
| 5 Certification failed returned by server. |
| 6 Server LBS error success. |
| 7 Server LBS error failed. |
| 80 Report LBS to server success |
| 81 Report LBS to server parameter error |
| 82 Report LBS to server failed |
| 110 Other Error |
| 8 LBS is busy. |
| 9 Open network error. |
| 10 Close network error. |
| 11 Operation timeout. |
| 12 DNS error. |
| 13 Create socket error. |
| 14 Connect socket error. |
| 15 Close socket error. |
| 16 Get cell info error. |
| 17 Get IMEI error. |
| 18 Send data error. |
| 19 Receive data error. |
| 20 NONET error. |
| 21 Net not opened. |

Examples

```

AT+CLBS=?
+CLBS: (1,2,3,4,9),( 1-24,100-179),(-180.000000-180.000000),(-90.000000-90.000000),(0,1)

OK
AT+CLBS=1
OK

+CLBS: 0,31.228525,121.380295,500
AT+CLBS=2
OK

+CLBS: 0,4e0a6d775e020020957f5b81533a002091d1949f8def002097608fd166688baf79d162805927697c,
AT+CLBS=3
OK

+CLBS: 0,22
AT+CLBS=4
OK

+CLBS: 0,31.228525,121.380295,500,2025/06/07,10:49:08
AT+CLBS=9
OK

+CLBS: 80
    
```

17.25 AT+CLBSCFG Base station location configure

Description

The write command is used to set and query the base station location configure.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Test Command | Responses |
|------------------------|--|
| AT+CLBSCFG=? | +CLBSCFG: (0-1), 3,"Param Value" OK |
| Write Command | Responses |
| AT+CLBSCFG=<operate>,< | +CLBSCFG: 0,<para>,<value> |

| | |
|---------------------------------------|----------------------|
| <code>para>[,<value>]</code> | OK |
| | OK |
| | ERROR |
| | +CLBSCFG: <ret_code> |
| | ERROR |

Defined values

| |
|--|
| <code><operate></code> |
| A numeric parameter which specifies the operator. |
| 0 read operator |
| 1 write operator |
| <code><para></code> |
| A numeric parameter which specifies the operator parameter. |
| 3 Server's address |
| lbs-simcom.com:3002 |
| <code><value></code> |
| The value of parameter. |
| The allowed <code><value></code> is "lbs-simcom.com:3002". |
| Server's address of "lbs-simcom.com:3002" is free. |
| <code><ret_code></code> |
| Please refer to the <code><ret_code></code> of AT+CLBS. |

Examples

| |
|---|
| <code>AT+CLBSCFG=?</code> |
| <code>+CLBSCFG: (0-1),3,"Param Value"</code> |
| <code>OK</code> |
| <code>AT+CLBSCFG=0,3</code> |
| <code>+CLBSCFG: 0,3,"lbs-simcom.com:3002"</code> |
| <code>OK</code> |
| <code>AT+CLBSCFG=1,3,"lbs-simcom.com:3002"</code> |
| <code>OK</code> |

17.26 AT+CASSISTLOC Base station location of LTE/CDMA1x mode

Description

The write command is used to base station location. This command only is applicable to CDMA

only or CDMA and LTE hybrid network or CDMA and EVDO hybrid network.

| SIM PIN | References |
|---------|----------------|
| YES | 3GPP TS 27.007 |

Syntax

| Write Command | Responses |
|----------------------|--|
| AT+CASSISTLOC=<mode> | +CASSISTLOC: <longitude>,<latitude>,, +CASSISTLOC: <ret_code> OK |
| | +CASSISTLOC: ,,, OK |
| | ERROR |

Defined values

| | |
|-------------|------------------------------------|
| <mode> | 1 – get longitude and latitude. |
| <longitude> | Current east longitude in degrees. |
| <latitude> | Current north latitude in degrees. |
| <ret_code> | The result code. 0 Success |

Examples

| |
|------------------------------------|
| AT+CASSISTLOC=1 |
| +CASSISTLOC:31.220278,121.353058,, |
| +CASSISTLOC:0 |
| OK |

17.27 AT+CGPSIPV6 Set AGPS IPV6 ADDR & PORT

Description

This command is used to set AGPS IPV6 addr and port. It will take effect only after restarting.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------------------------|-------------------------------------|
| AT+CGPSIPV6=? | OK |
| Read Command | Responses |
| AT+CGPSIPV6? | +CGPSIPV6: <ipv6_addr>,<port> OK |
| Write Command | Responses |
| AT+CGPSIPV6=<ipv6_addr> >,<port> | OK ERROR |

Defined values

<ipv6_addr>

AGPS IPV6 addr. It needs double quotation marks.

<port>

AGPS IPV6 port.

Examples

```
AT+CGPSIPV6="2001:0268:1AFF:0000:0000:0000:B6F8:A5D2",7275
```

```
OK
```

```
AT+CGPSIPV6?
```

```
+CGPSIPV6: "2001:0268:1AFF:0000:0000:0000:B6F8:A5D2",7275
```

```
OK
```

17.28 AT+CGPSXTRADATA Query The Validity Of The Current gpsOne

Xtra Data

Description

This command is used to query the validity of the current gpsOne xtra data.

NOTE: It needs to execute AT+CGPSXE to enable before execute the AT+CGPSXTRADATA read.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CGPSXTRADATA=? | OK |
| Read Command | Responses |
| AT+CGPSXTRADATA? | +CGPSXTRADATA: <xtradatadurtime>,<injecteddatatime> OK |

Defined values

<xtradatadurtime>

Valid time of injected gpsOneXTRA data,unit:minute

0 No gpsOneXTRA file or gpsOneXTRA file is overdue

1-10080 Valid time of gpsOneXTRA file

<injecteddatatime>

Starting time of the valid time of XTRA data, format:

“YYYY/MM/DD,hh:mm:ss”,e.g. “2019/09/26,15:31:20”

Examples

AT+CGPSXTRADATA=?

OK

AT+CGPSXTRADATA?

+CGPSXTRADATA:168,"2019/09/25,05:00:00"

OK

18 Audio Application Commands

18.1 AT+CREC Record wav audio file

Description

This command is used to record a wav audio file. It can record wav file during a call or not, the record file should be put into the "E:".

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Read Command | Responses |
|-----------------------------------|---------------------------------------|
| AT+CREC? | +CREC: <status> OK |
| Write Command | Responses |
| AT+CREC=<record_path>,<file_name> | +CREC:1 OK |
| AT+CREC=<mode> | +CREC:0 OK +RECSTATE: crec stop |

Defined values

<file_name>

The name of wav audio file. Maximum file_name length is 240 characters. (including "")

<record_path>

- 1 – local path
- 2 – remote path
- 3 – local and remote sound mixing

<status>

- 0 – free
- 1 – busy

<mode>

- 0 – stop record

Examples

```
AT+CREC=1,"E:/record.wav"
```

```
+CREC: 1
OK
AT+CREC=0
+CREC: 0
OK
+RECSTATE: crec stop
```

18.2 AT+CCMXPLAYWAV Play wav audio file

Description

This command is used to play a wav audio file. It can play wav file during a call or not.

NOTE Wav file format require mono channel, 8kHz sampling frequency, 16bit sampling size, 128kbps.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|---|--|
| AT+CCMXPLAYWAV=? | +CCMXPLAYWAV: (list of supported <play_path>s),(list of supported <repeat>s) OK |
| Write Command | Responses |
| AT+CCMXPLAYWAV=<file_name>,<play_path>[,<repeat>] | +WAVSTATE: wav play OK <i>Report URC automatically after playing end</i> +WAVSTATE: wav play stop |
| | ERROR |

Defined values

<file_name>

The name of wav audio file. Maximum file_name length is 240 characters. (including "")

<play_path>

- 1 - remote path
- 2 - local path

<repeat>

This parameter is reserved, not used at present, you can input this parameter or not. (0--255)

Examples

```
AT+CCMXPLAYWAV="E:/record.wav",2
+WAVSTATE: wav play
OK
+WAVSTATE: wav play stop
```

18.3 AT+CCMXSTOPWAV Stop playing wav audio file

Description

This command is used to stop playing wav audio file. Execute this command during wav audio playing. If wav audio file was played end in the past, when you execute “AT+CCMXSTOPWAV”, there is no “+WAVSTATE: wav play stop”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Test Command | Responses |
|-------------------|---|
| AT+CCMXSTOPWAV=? | OK |
| Execution Command | Responses |
| AT+CCMXSTOPWAV | +CCMXSTOPWAV: OK +WAVSTATE: wav play stop |

Examples

```
AT+CCMXSTOPWAV
+CCMXSTOPWAV:
OK
+WAVSTATE: wav play stop
```

18.4 AT+CCMXPLAY Play audio file

Description

The command is used to play an audio file.

| | |
|---------|------------|
| SIM PIN | References |
| NO | Vendor |

Syntax

| Test Command | Responses |
|--|---|
| AT+CCMXPLAY=? | +CCMXPLAY: (list of supported <play_path>s),(list of supported <repeat>s) OK |
| Write Command | Responses |
| AT+CCMXPLAY=<file_name>[,<play_path>[,<repeat>]] | +CCMXPLAY: OK +AUDIOSTATE: audio play +AUDIOSTATE: audio play stop |
| | +CCMXPLAY: OK +AUDIOSTATE: audio play error |
| | ERROR |

Defined values

<file_name>

The name of audio file. Support audio file format mp3, aac, amr, wav. Maximum file_name length is 240 characters. (including "")

<play_path>[optional]

0 – local path

2 – remote path

NOTE: audio file format mp3 and aac can't play to remote path

<repeat>[optional]

0 – don't play repeat. Play only once.

1...255 – play repeat times. E.g. <repeat>=1, audio will play twice.

Examples

```
at+ccmxplay="E:/ring.mp3",0,255
```

```
+CCMXPLAY:
```

```
OK
```

```
+AUDIOSTATE: audio play
```

+AUDIOSTATE: audio play stop

18.5 AT+CCMXSTOP Stop playing audio file

Description

The command is used to stop playing audio file. Execute this command during audio playing. If audio file was played end in the past, when you execute “AT+CCMXSTOP”, there is no “+AUDIOSTATE: audio play stop”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Execution Command | Responses |
|-------------------|--|
| AT+CCMXSTOP | +CCMXSTOP: OK +AUDIOSTATE: audio play stop |
| Test Command | Responses |
| AT+CCMXSTOP=? | OK |

Examples

```
AT+CCMXSTOP
+CCMXSTOP:
OK
+AUDIOSTATE: audio play stop
```

18.6 AT+CRECAMR Record amr audio file

Description

This command is used to record an amr audio file. It can record amr file during a call or not, the record file should be put into the “E:?”.

| SIM PIN | References |
|---------|------------|
| NO | Vendor |

Syntax

| Read Command | Responses |
|--------------|--------------------|
| AT+CRECAMR? | +CRECAMR: <status> |

| | |
|--------------------------------------|---|
| | OK |
| Write Command | Responses |
| AT+CRECAMR=<record_path>,<file_name> | +CRECAMR: <status> OK |
| AT+CRECAMR=<mode> | +CRECAMR: <status> OK +RECSTATE: crecamr stop |

Defined values

| |
|---|
| <file_name> |
| The name of amr audio file. Maximum file_name length is 240 characters. (including "'") |
| <record_path> |
| 1 – local path |
| 2 – remote path |
| <status> |
| 0 – free |
| 1 – busy |
| <mode> |
| 0 – stop record |

Examples

| |
|------------------------------|
| AT+CRECAMR=1,"E:/record.amr" |
| +CRECAMR: 1 |
| OK |
| AT+CRECAMR=0 |
| +CRECAMR: 0 |
| OK |
| +RECSTATE: crecamr stop |

19 Appendixes

19.1 Verbose code and numeric code

| Verbose result code | Numeric (V0 set) | Description |
|---------------------|------------------|--|
| 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, dialing impossible, wrong mode |
| BUSY | 7 | Remote station busy |
| NO ANSWER | 8 | Connection completion timeout |

19.2 Response string of AT+CEER

| Number | Response string |
|--------------------------|---|
| <i>CS internal cause</i> | |
| 0 | Phone is offline |
| 21 | No service available |
| 25 | Network release, no reason given |
| 27 | Received incoming call |
| 29 | Client ended call |
| 34 | UIM not present |
| 35 | Access attempt already in progress |
| 36 | Access failure, unknown source |
| 38 | Concur service not supported by network |
| 29 | No response received from network |
| 45 | GPS call ended for user call |
| 46 | SMS call ended for user call |
| 47 | Data call ended for emergency call |
| 48 | Rejected during redirect or handoff |
| 100 | Lower-layer ended call |
| 101 | Call origination request failed |
| 102 | Client rejected incoming call |
| 103 | Client rejected setup indication |
| 104 | Network ended call |
| 105 | No funds available |

| | |
|-----|-----------------------------------|
| 106 | No service available |
| 108 | Full service not available |
| 109 | Maximum packet calls exceeded |
| 301 | Video connection lost |
| 302 | Video call setup failure |
| 303 | Video protocol closed after setup |
| 304 | Video protocol setup failure |
| 305 | Internal error |

CS network cause

| | |
|----|---|
| 1 | Unassigned/unallocated number |
| 3 | No route to destination |
| 6 | Channel unacceptable |
| 8 | Operator determined barring |
| 16 | Normal call clearing |
| 17 | User busy |
| 18 | No user responding |
| 19 | User alerting, no answer |
| 21 | Call rejected |
| 22 | Number changed |
| 26 | Non selected user clearing |
| 27 | Destination out of order |
| 28 | Invalid/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 circuit/channel not available |
| 47 | Resources unavailable, unspecified |
| 49 | Quality of service unavailable |
| 50 | Requested facility not subscribed |
| 55 | Incoming calls barred within the CUG |
| 57 | Bearer capability not authorized |
| 58 | Bearer capability not available |
| 63 | Service/option not available |
| 65 | Bearer service not implemented |
| 68 | ACM \geq ACMmax |
| 69 | Requested facility not implemented |
| 70 | Only RDI bearer is available |

| | |
|-----|--|
| 79 | Service/option not implemented |
| 81 | Invalid transaction identifier value |
| 87 | User not member of CUG |
| 88 | Incompatible destination |
| 91 | Invalid transit network selection |
| 95 | Semantically incorrect message |
| 96 | Invalid mandatory information |
| 97 | Message non-existent/not implemented |
| 98 | Message type not compatible with state |
| 99 | IE non-existent/not implemented |
| 100 | Conditional IE error |
| 101 | Message not compatible with state |
| 102 | Recovery on timer expiry |
| 111 | Protocol error, unspecified |
| 117 | Interworking, unspecified |

CS network reject

| | |
|----|---|
| 2 | IMSI unknown in HLR |
| 3 | Illegal MS |
| 4 | IMSI unknown in VLR |
| 5 | IMEI not accepted |
| 6 | Illegal ME |
| 7 | GPRS services not allowed |
| 8 | GPRS & non GPRS services not allowed |
| 9 | MS identity cannot be derived |
| 10 | Implicitly detached |
| 11 | PLMN not allowed |
| 12 | Location Area not allowed |
| 13 | Roaming not allowed |
| 14 | GPRS services not allowed in PLMN |
| 15 | No Suitable Cells In Location Area |
| 16 | MSC temporarily not reachable |
| 17 | Network failure |
| 20 | MAC failure |
| 21 | Synch failure |
| 22 | Congestion |
| 23 | GSM authentication unacceptable |
| 32 | Service option not supported |
| 33 | Requested service option not subscribed |
| 34 | Service option temporarily out of orde |
| 38 | Call cannot be identified |
| 40 | No PDP context activated |
| 95 | Semantically incorrect message |

| | |
|-----|--|
| 96 | Invalid mandatory information |
| 97 | Message type non-existent |
| 98 | Message type not compatible with state |
| 99 | Information element non-existent |
| 101 | Message not compatible with state |
| 161 | RR release indication |
| 162 | RR random access failure |
| 163 | RRC release indication |
| 164 | RRC close session indication |
| 165 | RRC open session failure |
| 166 | Low level failure |
| 167 | Low level failure no redial allowed |
| 168 | Invalid SIM |
| 169 | No service |
| 170 | Timer T3230 expired |
| 171 | No cell available |
| 172 | Wrong state |
| 173 | Access class blocked |
| 174 | Abort message received |
| 175 | Other cause |
| 176 | Timer T303 expired |
| 177 | No resources |
| 178 | Release pending |
| 179 | Invalid user data |

PS internal cause lookup

| | |
|----|-------------------------------|
| 0 | Invalid connection identifier |
| 1 | Invalid NSAPI |
| 2 | Invalid Primary NSAPI |
| 3 | Invalid field |
| 4 | SNDCP failure |
| 5 | RAB setup failure |
| 6 | No GPRS context |
| 7 | PDP establish timeout |
| 8 | PDP activate timeout |
| 9 | PDP modify timeout |
| 10 | PDP inactive max timeout |
| 11 | PDP lowerlayer error |
| 12 | PDP duplicate |
| 13 | Access technology change |
| 14 | PDP unknown reason |

PS network cause

| | |
|-----|---|
| 25 | LLC or SNDCP failure |
| 26 | Insufficient resources |
| 27 | Missing or unknown APN |
| 28 | Unknown PDP address or PDP type |
| 29 | User Authentication failed |
| 30 | Activation rejected by GGSN |
| 31 | Activation rejected, unspecified |
| 32 | Service option not supported |
| 33 | Requested service option not subscribed |
| 34 | Service option temporarily out of order |
| 35 | NSAPI already used (not sent) |
| 36 | Regular deactivation |
| 37 | QoS not accepted |
| 38 | Network failure |
| 39 | Reactivation required |
| 40 | Feature not supported |
| 41 | Semantic error in the TFT operation |
| 42 | Syntactical error in the TFT operation |
| 43 | Unknown PDP context |
| 44 | PDP context without TFT already activated |
| 45 | Semantic errors in packet filter |
| 46 | Syntactical errors in packet filter |
| 81 | Invalid transaction identifier |
| 95 | Semantically incorrect message |
| 96 | Invalid mandatory information |
| 97 | Message non-existent/not implemented |
| 98 | Message type not compatible with state |
| 99 | IE non-existent/not implemented |
| 100 | Conditional IE error |
| 101 | Message not compatible with state |
| 111 | Protocol error, unspecified |

19.3 Summary of CME ERROR codes

Description

This result code is similar to the regular ERROR result code. The format of `<err>` can be either numeric or verbose string, by setting `AT+CMEE` command.

| SIM PIN | References |
|---------|----------------|
| NO | 3GPP TS 27.007 |

Syntax

+CME ERROR: <err>

Defined values

<err>

Values (numeric format followed by verbose format):

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

- 103 Illegal MESSAGE
- 106 Illegal ME
- 107 GPRS services not allowed
- 111 PLMN not allowed
- 112 Location area not allowed
- 113 Roaming not allowed in this location area
- 132 service option not supported
- 133 requested service option not subscribed
- 134 service option temporarily out of order
- 148 unspecified GPRS error
- 149 PDP authentication failure
- 150 invalid mobile class
- 257 network rejected request
- 258 retry operation
- 259 invalid deflected to number
- 260 deflected to own number
- 261 unknown subscriber
- 262 service not available
- 263 unknown class specified
- 264 unknown network message
- 273 minimum TFTS per PDP address violated
- 274 TFT precedence index not unique
- 275 invalid parameter combination

“CME ERROR” codes of MMS:

- 170 Unknown error for mms
- 171 MMS task is busy now
- 172 The mms data is over size
- 173 The operation is overtime
- 174 There is no mms receiver
- 175 The storage for address is full
- 176 Not find the address
- 177 Invalid parameter
- 178 Failed to read mss
- 179 There is not a mms push message
- 180 Memory error
- 181 Invalid file format
- 182 The mms storage is full
- 183 The box is empty
- 184 Failed to save mms
- 185 It's busy editing mms now
- 186 It's not allowed to edit now
- 187 No content in the buffer
- 188 Failed to receive mms

| | |
|----------------------------------|-----------------------------------|
| 189 | Invalid mms pdu |
| 190 | Network error |
| 191 | Failed to read file |
| 192 | None |
| “CME ERROR” codes of FTP: | |
| 201 | Unknown error for FTP |
| 202 | FTP task is busy |
| 203 | Failed to resolve server address |
| 204 | FTP timeout |
| 205 | Failed to read file |
| 206 | Failed to write file |
| 207 | It’s not allowed in current state |
| 208 | Failed to login |
| 209 | Failed to logout |
| 210 | Failed to transfer data |
| 211 | FTP command rejected by server |
| 212 | Memory error |
| 213 | Invalid parameter |
| 214 | Network error |

Examples

```
AT+CPIN="1234","1234"
+CME ERROR: incorrect password
```

19.4 Summary of CMS ERROR codes

Description

Final result code +CMS ERROR: [<err>](#) indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed. Neither ERROR nor OK result code shall be returned. ERROR is returned normally when error is related to syntax or invalid parameters. The format of [<err>](#) can be either numeric or verbose. This is set with command [AT+CMEE](#).

| SIM PIN | References |
|---------|----------------|
| --- | 3GPP TS 27.005 |

Syntax

```
+CMS ERROR: <err>
```

Defined values

```
<err>
```

| | |
|-----|-----------------------------|
| 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 |
| 341 | Buffer overflow |
| 342 | SMS size more than expected |
| 500 | unknown error |

Examples

```
AT+CMGS=02112345678  
+CMS ERROR: 304
```


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