AnyDATA

DTL718-W(-P) Module

AT Command Reference

AnyDATA®

Wireless Solutions for a Smarter World

Send Technical Questions to:

support_sh@anydata.com

AnyDATA (Shanghai)

489 SongTao Road, Sector B, 1st FL.

Pudong ZhangJiang Hi-Tech Park, Shanghai, 201203

Tel: +86(021) 5080-4828

Fax: +86(021) 5080-3828

AnyDATA Corporation

5 Oldfield

Irvine, California 92618

USA

http://www.anydata.com

Document History

Version	Date	Description
00	2012-5-25	Initial Version
01	2012-8-2	Add +CLVL\+CMUT commands Delete set command of +WS46
02	2012-8-28	Add +CNMP command Add +CMUT command Modify ATS7 default value
03	2013-3-13	Add +ACELLINFO command Add GPS-related command Add $QCPDPP command

Contents

1   Overview

1.1   Scope of Document

This document describes all AT commands implemented on AnyDATA DTL718-W module, for internal or manufacturer use.

As the firmware of DTL718-W-P and DTL718-W module are the same, the document can also be

applied to DTL718-W-P module.

1.2   Normative References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.
[1] ETSI GSM 07.07
[2] ETSI GSM 07.07
[3] TIA-EIA-IS-707-A.3
[4] ITU-T Recommendation V.25 ter [14]

1.3   Abbreviations

Abbreviations	Full Spelling
3GPP	Third Generation Partnership Project
BER	Bit Error Rate
CDMA	Code Division Multiple Access
CLIP	Call Line Identifier presentation
DCE	Data Circuit Equipment
DCS	Data coding scheme
DTE	Data Terminal Equipment
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
IMEI	International Mobile Equipment Identity
ITU-T	International Telecommunication Union-Telecommunication Standardization Sector
IWF	Interworking Function
MT	Mobile Terminal
PDP	Packet Data Protocol
PIN	Personal Identity Number
PLMN	Public land mobile network
PUK	PIN Unblocking Key
RPLMN	Registered PLMN
RSSI	Receive signal strength indicator
SCA	Service Center Address
SIM	GSM Subscriber Identity Module
SM	Short message
TE	Terminal Equipment
UIM	User Identity Module
URC	Unsolicited result code
USIM	Universal Subscriber Identity Module
WCDMA	Wideband CDMA

1.4   Definitions

The following syntactical definitions apply:

<CR>   Carriage return character, is the command line and result code terminator   character, which value, in decimal ASCII between 0 and 255,is specified within parameter S3. The default value is 13.

<LF>   Linefeed character, is the character recognized as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter S4. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (V1 option used) otherwise, if numeric format result codes are used (V0 option used) it will not appear in the result codes.

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

[...]   Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called action type commands, action should be done on the basis of the recommended default setting of the subparameter.

As 3GPP TS 17.007 describes, there is a TA part between TE and MT. And in the TIA/EIA IS 707-A's description, TA part is ignored. In order to describe uniformly, PC or AP is considered as TE; TA part is merged into MT.

The following is a figure of Data exchange structure:
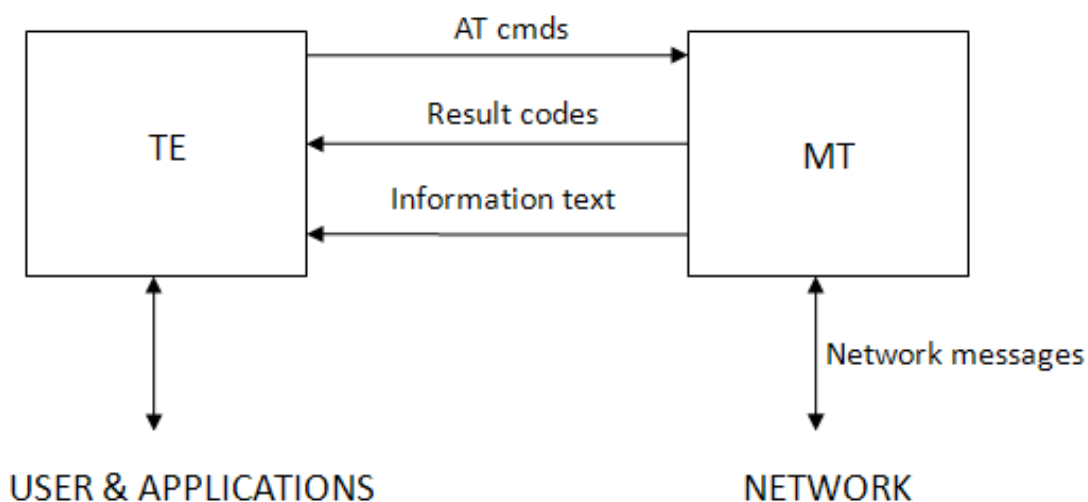
AT command is transmitted as data packets through the communication ports. In addition to these two characters "AT", data packets can receive up to 260 characters in length (including the final null character). The maximum length of the URC or response messages reported by MT is limited to 668 characters range.

Each command line can contain one AT command. For the URC or response messages, it is not allowed to report more than one message in a line. Each line ends with a carriage return. S3/S4 command modification is unavailable to users. These principles are applied in the communications between MT and TE.

To increase the readability and normativity of the command, there should be no space after a comma or colon in a new defined interface, for example: AT+XXX:<arg0>,<arg1>.

When an AT command is transmitted from TE, the second command will be transmitted after a response of the first command from MT, otherwise the second one will not be executed.

It may take a long time to feedback the results of the AT command, and the responses may be broken by URC. To avoid this interface, it is recommended to report the result codes asynchronously. There are two kinds of interface. One is that an URC is reported when waiting for a response. The command is still in the implementation process and the result codes will be reported after the URC. The other is that the response will be reported mixing up with the URC. The RING command is a special URC. For some special cases, it will be used as a command terminator. For example, when it is in the implementation process of a hang-up command, the RING URC will terminate the hang-up process abnormally.

Unless otherwise specified, all the default encoding format between TE and MT are GSM 7 bit Default Alphabet, according to 3GPP TS 23.038 Section 6. Characters @ is still transmitted in 7bit encoding as 0x00. MT and TE should be able to handle the character. MT transmits the carriage return character (<CR>) and line feed character (<LF>) in the string as a space.

The definition of the string: stream of bytes up by the double quotes, without quotes or commas. A group of quote and comma character should not appear in strings, otherwise strings cannot be distinguished from the parameters. For UCS2 encoded data format, its value is reported as the character encoding format, such as that a character of the UCS2 coded 0x553a is reported as 553a.

2 Basic Commands

2.1 A/, Repeating A Command Line

Description

If the prefix "A/" or "a/" is received, the module shall immediately execute once again the body of the preceding command line.

Syntax

Execution command	A/

Example
AT+CSQ
+CSQ: 99,0
OK
A/
+CSQ: 99,0

2.2   ATE, Command Echo

Description
Set command enables/disables the command echo.

Syntax

Set command	ATE[<n>]
Response	OK

Parameter

<n>	0 - disables command echo 1 - enables command echo (factory default) , hence command sent to the device are echoed back to the DTE before the response is given. Note: if parameter is omitted, the command has the same behavior of ATE1.

2.3   +CGMI, Request Manufacturer Identification

Description
Execution command returns the device manufacturer identification code.

Syntax

Execution command	AT+CGMI
Response	AnyDATA CO., LTD OK

2.4   +CGMR, Request Revision Identification

Description
Execution command returns device software revision number.

Syntax

Execution command	AT+CGMR
Response	<version> OK

2.5   +CGSN, Request Serial Number Identification

Description
Execution command returns the device ESN.

Syntax

Execution command	AT+CGSN
Response	<sn>

Parameter

<sn>	the device board serial number , an octet in hexadecimal format

Example
AT+CGSN
42FB40B5
OK

2.6 +CSCS, Select TE Character Set

Description
Set command sets the current character set used by the device.

Syntax

Set command	AT+CSCS=<chset>
Response	OK
Read command	AT+CSCS?
Response	+CSCS: <chset>
Test command	AT+CSCS=?
Response	+CSCS: (list of supported <chset>s)

Parameter

<chset>	character set "IRA" - ITU-T.50 (default) "UCS2" - 16-bit universal multiple-octet coded character set

Example
AT+CSCS=?
+CSCS: ("IRA","UCS2")
OK
AT+CSCS?
+CSCS:"IRA"
OK

2.7 +CIMI , Request International Mobile Subscriber Identity (IMSI)

Description

Execution command returns the value of the Internal Mobile Subscriber Identity.

Syntax

Execution command	AT+CIMI
Response	<imsi>

Parameter

<imsi>	the value of the Internal Mobile Subscriber Identity, a string of decimal digits

Example

AT+CIMI
460016191604844
OK

2.8 +GCAP, Capabilities List

Description

Execution command returns the equipment supported command set list. The command works only when UIM card exists.

Syntax

Execution command	AT+GCAP
Response	+GCAP: <cap>

Parameter

<cap>	the equipment supported command set list. +CGSM: GSM supported +FCLASS: Fax command set +ES: Error control command set +DS: Data Service common modem command set

Example

AT+GCAP
+GCAP: +CGSM,+ES ,+DS +FCLASS
OK

2.9 +CMEE, Report Mobile Equipment Error

Description

Set command enables/disables the report of result code: +CME ERROR: <err> as an indication of an error relating to the commands issued. When enabled, device related errors cause the +CME ERROR: <err> final result code instead of the default ERROR final result code. ERROR is anyway returned normally when the error is not related to MT.

Syntax

Set command	AT+CMEE=<n>
Response	OK
Read command	AT+CMEE?
Response	+CMEE: <n>
Test command	AT+CMEE=?
Response	+CMEE: (list of supported <n>s)

Parameter

<n>	enable flag
	0 - disable +CME ERROR:<err> reports, use only ERROR report
	1 - enable +CME ERROR:<err> reports, with <err> in numeric format
	2 - enable +CME ERROR: <err> reports, with <err> in verbose format(default)

Example

AT+CMEE=0
OK
AT+CGSN
ERROR
AT+CMEE=1
OK
AT+CGSN
+CME ERROR: 23
AT+CMEE=2
OK
AT+CGSN
+CME ERROR: memory failure
AT+CMEE=?
+CMEE: (0, 1, 2)

3 Call Control Commands

3.1 ATA, Answer

Description

Execution command is used to answer to an incoming call if automatic answer is disabled.

Syntax

Execution command	ATA

Response	OK
	or: ERROR

3.2 ATD, Dial

Description

Execution command starts a data call to the phone number given as parameter.

Syntax

Execution command	ATD<phonenumber>;
	ATD>mem<n>;
	ATD><string>;
Response	OK
	or ERROR

Parameter

<phonenumber>	phone number to be dialed, a string of 0 or more of the characters: "0 1 2 3 4 5 6 7 8 9 * #"
mem<n>	initiates a call from the currently selected phone book, location <n>
<string>	initiates a call from the currently selected phone book, the parameter describes the text associated to the number in phonebook

Example

ATD13800138000;
OK
ATD>"John";
OK

3.3 ATH, Disconnect

Description

Execution command is used to close the current conversation.

Syntax

Execution command	ATH<value>
Response	OK
	or: ERROR

3.4 ATS0, Enables/disables Automatic Answering

Description

Set command sets the number of rings required before device automatically answers an incoming call.

Syntax

Set command	ATS0=<value>
Response	OK
Read command	ATS0?
Response	<value>

Parameter

<value>	0 auto answer disabled (factory default)
	1 to 255 number of rings required before automatic answer

Example

ATS0=2

OK

ATS?

002

3.5   +CSTA, Selects Type of Address

Set command sets the type of address to dial.

Syntax

Set command	AT+CSTA=<type>
Response	OK
Read command	AT+CSTA?
Response	+CSTA: <type>
Test command	AT+CSTA=?
Response	+CSTA: (list of supported <type>s)

Parameter

<type>	type of address
	129 - number in national format
	145 - number in international format (contains the "+")

Example

AT+CSTA=129

OK

AT+CSTA=?

+CSTA: (129, 145)

3.6   +CHUP, Hangup Call

Description

Execution command hangs up all active calls, giving an assured procedure to terminate an

alternating mode call.

Syntax

Execution command	AT+CHUP
Response	OK

3.7 +CRLP, Radio Link Protocol

Description

Radio link protocol (RLP) parameters used for non-transparent data calls.

Syntax

Set command	AT+CRLP=<iws>,<mws>,<T1>,<N>,<ver>
Response	OK
Read command	AT+CRLP?
Response	+CRLP: <iws>,<mws>,<T1>,<N>,0
	+CRLP: <iws>,<mws>,<T1>,<N>,1
	+CRLP: <iws>,<mws>,<T1>,<N>,2
Test command	AT+CRLP=?
Response	+CRLP: (list of supported <iws>,<mws>,<T1>,<N>s),0
	+CRLP: (list of supported <iws>,<mws>,<T1>,<N>s),1
	+CRLP: (list of supported <iws>,<mws>,<T1>,<N>s),2

Parameter

<ver>	version
For Version 0 and 1, the following parameter values are supported:	
<iws>	IWF to MS window size, range from 0 to 61
<mws>	MS to IWF window size, range from 0 to 61
<T1>	acknowledgement timer , in 10ms units, range from 38 to 255
<N>	retransmission attempts , range from 1 to 255
For Version 2, the following parameter values are supported:	
<iws>	IWF to MS window size, range from 0 to 488
<mws>	MS to IWF window size, range from 0 to 488
<T1>	acknowledgement timer , in 10ms units, range from 42 to 255
<N>	retransmission attempts, range from 1 to 255

Example

AT+CRLP=61,61,48,6,0
OK
AT+CRLP=?
+CRLP: (0-61),(0-61),(38-255),(1-255),0
+CRLP: (0-61),(0-61),(38-255),(1-255),1
+CRLP: (0-488),(0-488),(42-255),(1-255),2
OK

AT+CRLP?
+CRLP: 61,61,48,6,0
+CRLP: 61,61,48,6,1
+CRLP: 240,240,52,6,2
OK

3.8 +CEER, Extended Error Report

Description

Execution command returns information text, which offers the user an extended report for the reason of the failure of the last unsuccessful call set up (originating or answering) or in-call modification.

Syntax

Execution command	AT+CEER
Response	+CEER: <report>

Parameter

<report>	an extended report for
	- the failure in the last unsuccessful call setup(originating or answering) or in-call modification;
	- the last call release;
	- the last unsuccessful GPRS attach or unsuccessful PDP context activation;
	- the last GPRS detach or PDP context deactivation.

Example

ATD13800138000;
OK
NO CARRIER
AT+CEER
+CEER：User busy
OK

3.9 +VTS, DTMF And Tone Generation

Description

Set command allows the transmission of DTMF tones.

Syntax

Set command	AT+VTS=<string>
Response	OK

| Test command | AT＋VTS＝<string> |
| Response | +VTS: (list of supported <string>s) |

Parameter

| <string> | a single ASCII character in the set 0-9, #,*,A-D |

Example
ATD10010;
OK
AT+VTS=3
AT+VTS＝?
+VTS: (0-9, A-D, *, #)
OK

3.10 ATS, S Parameters

Description
Basic commands that begin with the letter "S" are known as "S-Parameters". The number following the "S" indicates the "parameter number" being referenced.

Syntax

Set command	ATSn=<value>
Response	OK
Read command	ATSn?
Response	Sn: <value>

Parameter

S0	set the number of rings required before device automatically answers an incoming call. <value>=0 auto answer disabled (factory default) 1 to 255 number of rings required before automatic answer
S3	set the value of the character recognized by the device as command line terminator, range is 0 to 127; factory default value is 013 (ASCII CR)
S4	set the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, range is 0 to 127; factory default value is 010 (ASCII LF)
S5	set the value of the character recognized by the device as a request to delete from the command line the immediately preceding character, range is 0 to 127; factory default value is 008 (ASCII BS).
S6	set the pause before blind dialing, range is 2 to 10; factory default value is 002
S7	sets number of seconds to wait for completion of call answering or originating procedure before giving up and disconnecting; range is 0 to 255, factory default value is 000

| S8 | specifies the amount of time, in seconds, that the TE shall pause, during signaling of call addressing information to the network (dialing), when a "," (comma) dial modifier is encountered in a dial string. range is 1 to 255, factory default value is 002. |

Example
ATS6=8
OK
ATS6?
008

3.11 +CHLD, Call Related Supplementary Services

Description
Set command allows call control using Call Hold and MultiParty.

Syntax

Set command	AT+CHLD=<n>
Response	OK
Test command	AT+CHLD=?
Response	+CHLD: (list of supported <n>s)

Parameter

| <n> | 0 – release all held calls or sets User Determined User Busy(UDUB) for a waiting call
1 – releases all active calls (if any exist) and accepts the other (held or waiting) call
1x – releases a specific active call X
2 – places all active calls (if any exist) on hold and accepts the other (held or waiting) call
2x – places all active calls on hold except call X with which communication shall be supported.
3 – adds a held call to the conversation
4 – connects the two calls and disconnects the subscriber from both calls(ECT)
Note:
1. X is range from 1 to 7
2. This is based on the GSM supplementary services HOLD (Call Hold), MPTY (MultiParty) and ECT (Explicit Call Transfer). The application of the command depends on various carriers, such as AT+CHLD=3.
3. Set AT+CHLD=1 first to release the active call, then the current conversation can be closed by ATH. |

Example
ATD10086;
ATD10010;
AT+CLCC
+CLCC: 1,0,1,0,0,"10086",129,"CCCC"
+CLCC: 2,0,0,0,0,"10010",129
OK
AT+CHLD=3
OK
AT+CLCC
+CLCC: 1,0,0,0,1,"10086",129,"CCCC"
+CLCC: 2,0,0,0,1,"10010",129
OK
AT+CHLD=22
OK
AT+CLCC
+CLCC: 1,0,1,0,0,"10086",129,"CCCC"
+CLCC: 2,0,0,0,0,"10010",129
AT+CHLD=?
+CHLD(0,1,1x,2,2x,3,4)
OK

4 Network Service Commands

4.1 +CNUM, Subscriber Number

Description
Execution command returns the MSISDNs related to the subscriber. If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

Syntax

Execution command Response	AT+CNUM +CNUM: [<alpha1>],<number1>,<type1> +CNUM: [<alpha2>],<number2>,<type2> [...]]

Parameter

<alphax>	optional alphanumeric string associated with <numberx>, as

	defined in +CSCS
<numberx>	string type phone number of format specified by <typex>
<typex>	type of address octet in integer format

Example
AT+CNUM
+CNUM: ,"13925275265",129
+CNUM: ,"13145854693",129
OK

4.2 +CREG, Network Registration Report

Description
Set command enables/disables network registration reports. The unsolicited results code reports the network registration status.

Syntax

Set command	AT+CREG=<n>
Response	OK
Read command	AT+CREG?
Response	+CREG: <n>,<stat>[,<lac>,<ci>]
Test command	AT+CREG=?
Response	+CREG: (list of supported <n>s)
Unsolicited message	+CREG: <stat>[,<lac>,<ci>]

Parameter

<n>	0 - disable network registration unsolicited result code
	1 - enable network registration unsolicited result code +CREG: <stat>
	2 - enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]
<stat>	0 - not registered, ME is not currently searching a new operator to register to
	1 - registered, home network
	2 - not registered, but ME is currently searching a new operator to register to
	3 - registration denied
	4 - unknown
	5 - registered, roaming
<lac>	string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<ci>	string type; two byte cell ID in hexadecimal format

Example
AT+CREG=2
OK
AT+CREG?

+CREG: 2,1,250040,7C48
OK
AT+CREG=?
+CREG: (0-2)
OK

4.3 +CGREG, GPRS Network Registration Status

Description

Set command enables/disables GPRS network registration reports. The unsolicited results code reports the GPRS network registration status.

Syntax

Set command	AT+CGREG=<n>
Response	OK
Read command	AT+CGREG?
Response	+CGREG: <n>,<stat>[,<lac>,<ci>]
Test command	AT+CGREG=?
Response	+CGREG: (list of supported <n>s)
Unsolicited message	+CGREG: <stat>[,<lac>,<ci>]

Parameter

<n>	0 - disable network registration unsolicited result code
	1 - enable network registration unsolicited result code +CGREG: <stat>
	2 - enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]
<stat>	0 - not registered, ME is not currently searching a new operator to register to
	1 - registered, home network
	2 - not registered, but ME is currently searching a new operator to register to
<lac>	3 - registration denied
	4 - unknown
<ci>	5 - registered, roaming
	string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
	string type; two byte cell ID in hexadecimal format

Example

AT+CGREG=2
OK
AT+CGREG?
+CGREG: 2,1, 250040, 7C48

OK

4.4 +COPS, Operator Selection

Description

Registers/displays network operators available.

Syntax

Set command	AT+COPS=[<mode>[,<format>[,<oper>[,<AcT>]]]]
Response	OK
Read command	AT+COPS?
Response	+COPS: <mode>[,<format>,<oper>,<AcT>]
Test command	AT+COPS=?
Response	+COPS: (<stat1>,<oper1(in<format>=0)>, <oper1(in<format>=1)>,<oper1(in<format>=2)>,<AcT1>), (<stat2>,<oper2(in<format>=0)>,<oper2(in<format>=1)>, <oper2(in<format>=2)>,<AcT2>),[…] (list of supported <mode>s),(list of supported <format>s)

Parameter

<mode>	registration mode
	0 – automatic (<oper> field is ignored)
	1 – manual (<oper> field shall be present)
	2 – de-register from network
	3 – set only <format> (for read command AT+COPS?), do not attempt registration/de-registration (<oper> field is ignored); this value is not applicable in read command response
	4 – manual/automatic (<oper> field shall be present); If manual selection falls, automatic mode <mode>=0) is entered
	Note: If the selected operator is not available, other operators also cannot be registered, except for <mode>=4
<format>	format of <oper> reports
	0 – long format alphanumeric <oper>
	1 - short format alphanumeric <oper>
	2 – numeric <oper>
<oper>	Shows the operator identity, within speech marks, in the format set by <format>
<AcT>	access technology
	0 – GSM
	1 – GSM COMPACT
	2 – UTRAN
<stat>	availability of operator
	0 – unknown
	1 – available

2 – current
3 – forbidden

Example
AT+COPS=0,1,"46001",2
OK
AT+COPS?
+COPS: 0,1,"UNICOM",2
OK
AT+COPS=2
OK
AT+COPS?
+COPS: 2, 1,"UNICOM"，2
OK
AT+COPS=?
+COPS:
(3,"CHINAMOBILE","CMCC","46000",0),(2,"CHN-UNICOM","UNICOM","46001",2),
(0,1,2,3,4),(0,1,2)
OK

4.5   +CPOL, Preferred Operator List

Description
Set command is used to edit the SIM preferred list of networks. In EFPLMsel, one operator can only be stored once. To modify the information of the operator, please delete the record, and then add one.

Syntax

Set command Response	AT+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>, <GSM_Compact_AcT>,<UTRAN_AcT>]]] OK
Read command Response	AT+CPOL？ +CPOL:<index>,<format>,<oper>,<GSM_AcT>, <GSM_Compact_AcT>,<UTRAN_AcT>
Test command Response	AT+CPOL=? +CPOL: (list of supported <index>s), (list of supported <format>s)

Parameter

<index>	Integer type; the order number of operator in the SIM preferred operator list. With the execute command, if <index> is left out, the next free location shall be used

<format>	if only the <format> is given, the result format changes for the read command 0 – long format alphanumeric <oper> 1 - short format alphanumeric <oper> 2 – numeric <oper>
<oper>	string type, Shows the operator identity, within speech marks, in the format set by <format> Note: To delete an entry, give <index> but leave out <oper>
<GSM_AcT>, <GSM_Compact_AcT>, <UTRAN_AcT>	access technologies, set "1" to select and the other two set "0"

Example

AT+CPOL=1,2,"46000",0,0,1

OK

AT+CPOL=2

OK

AT+CPOL=,2

AT+CPOL？

+CPOL: 1,2,"46000",0,0,1

+CPOL: 3,2,"46001",0,0,1

OK

AT+CPOL=?

+CPOL: (1-8),(0-2)

OK

4.6 +CPLS, Selection of Preferred PLMN List

Description

Set command selects a preferred PLMN list from the UIM.

Syntax

Set command	AT+CPLS=<list>
Response	OK
Read command	AT+CPLS?
Response	+CPLS: <list>
Test command	AT+CPLS=?
Response	+CPLS: (list of supported <list>s)

Parameter

<list>	0 - User controlled PLMN selector with Access Technology $EF_{PLMNwAcT}$, if not found in the SIM/UICC then PLMN preferred list $EF_{PLMNsel}$ (this file is only available in SIM card or GSM application selected in UICC)

| | 1 - Operator controlled PLMN selector with Access Technology EF$_{OPLMNwAcT}$ |
| | 2 - HPLMN selector with Access Technology EF$_{HPLMNwAcT}$ |

Example
AT+CPLS=?
+CPLS: 0,1,2
AT+CPLS=1
OK

4.7   +COPN, Read Operator Names

Description
Execution command returns the list of operator names from the module. Each operator code <numericx> that has an alphanumeric equivalent <alphax> in the ME memory.

Syntax

Execution command	AT+COPN
Response	+COPN: <numeric1>,<alpha1>
	+COPN: <numeric2>,<alpha2>
	+COPN: [...]]

Parameter

<numericx>	string type, operator in numeric format (see AT+COPS)
<alphax>	string type, operator in long alphanumeric format (see AT+COPS)

Example
AT+COPN
+COPN: "46000","CHINA MOBILE"
+COPN: "46001","CHN-CUGSM"
OK

4.8   +CNMP, Preferred Mode Seletion

Description
Execution command selects the state of the mode preference.

Syntax

Set command	AT+CNMP=<mode>
Response	OK
Read command	AT+CNMP?
Response	+CNMP: <mode>
Test command	AT+CNMP=?
Response	+CNMP: (list of supported <mode>s)

Parameter

<mode>	preferred mode 2 - Automatic 13 - GSM Only 14 - WCDMA Only 19 - GSM+WCDMA

Example

AT+CNMP=13
OK
AT+CNMP?
+CNMP: 13
AT+CNMP=?
+CNMP: (1,2,3,13,14,19)

4.9 +CLCK, Facility Lock/Unlock

Description

Set command is used to lock or unlock a ME or a network facility.

Syntax

Set command Response	AT+CLCK=<fac>,<mode>[,<passwd> [,<class>]] when <mode>=2: +CLCK: <status>[,<class>] when <mode>=0 or 1: OK
Test command Response	AT+CLCK=? +CLCK: (list of supported <fac>s)

Parameter

<fac>	facility "AB" - All Barring services (not supported temporarily) "AC" – All in Coming barring services (not supported temporarily) "AG" – All out Going barring services (not supported temporarily) "AI" - BAIC (Barr All Incoming Calls) (not supported temporarily) "AO"- BAOC (Barr All Outgoing Calls) (not supported temporarily) "IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "OI" - BOIC (Barr Outgoing International Calls) "OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country) "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued)

	"FD" – SIM card or active application in the UICC(GSM or USIM) fixed dialing memory feature (not supported temporarily) "PN" – network personalization (not supported temporarily) "PU" – network sUbset personalization (not supported temporarily) "PP" – service provider personalization (not supported temporarily) "PC" – corporate personalization (not supported temporarily) "PF" – lock phone to the very first inserted SIM/UICC card (not supported temporarily)
\<mode\>	defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status current status of the facility
\< status \>	0 - not active 1 - active
\<passwd\>	shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD; this field is necessary when \<mode\>=0 or 1.
\<class\>	sum of integers each representing a class of information(not supported) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service

Note: Password is normally needed to do such action. 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\>. This command should be aborted when network facilities are set or interrogated.

When \<fac\> has been locked, it will return "sim failure" if lock \<fac\>. And when \<fac\> has been unlocked, it also will return "sim failure" if unlock \<fac\>.

Example
AT+CLCK =?
+CLCK:("AB","AC","AG","AI","AO","IR","OI","OX","SC","FD","PN","PU","PP","PC","PF")
OK
AT+CLCK ="SC",1,"1234",1
OK
AT+CLCK="SC",2
+CLCK: 0
OK

4.10 +CPWD, Change Facility Password

Description
Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK.

Syntax

Set command	AT+CPWD=<fac>,<oldpwd>,<newpwd>
Response	OK
Test command	AT+CPWD=?
Response	+CPWD: (list of supported <fac>&<pwdlength>s)

Parameter

<fac>	Facility
	"SC" - SIM (PIN request)
	"P2" - SIM PIN2
	"AB" - All barring services(it is not supported temporarily)
<oldpwd>	string type value of the characters:"0 1 2 3 4 5 6 7 8 9"; it shall be the same as password specified for the facility from the ME user interface or with command +CPWD.
<newpwd>	
<pwdlength>	string type, it is the new password
	the maximum length of their password

Example

AT+CPWD="SC",1234,5555
OK
AT+CPWD=?
+CPWD:("AB",4),("AC",4),("AG",4) ,("AI",4),
("AO",4) ,("IR",4),("OI",4) ,("OX",4),("SC",8) ,("P2",8)
OK

4.11 +CLIP, Calling Line Identification Presentation

Description

Set command enables/disables the presentation of the CLI (Calling Line Identity) at the TE. If enabled the device will report the response after each RING.

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

Syntax

Set command	AT+CLIP=[<n>]
Response	OK
Read command	AT+CLIP?
Response	+CLIP: <n>,<m>
Test command	AT+CLIP=?
Response	+CLIP: (list of supported <n>s)
Unsolicited message	+CLIP:<number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]

Parameter

<n>	0 - disables CLI indication (factory default)
	1 - enables CLI indication
<m>	parameter shows the subscriber CLIP service status in the network
	0 – CLIP not provisioned
	1 – CLIP provisioned
	2 – unknown(e.g. no network, etc.)
<number>	string type phone number of format specified by <type>
<type>	type of address octet in integer format
	129 - unknown type of number and ISDN/Telephony numbering plan
	145 - international type of number ,contains the character "+"
<subaddr>	string type subaddress of format specified by <satype>
<satype>	type of subaddress octet in integer format
	128 – default
<alpha>	string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<CLI_validity>	0 - CLI valid
	1 - CLI has been withheld by the originator
	2 - CLI is not available due to interworking problems or limitation or originating network
	Note: 3 fields are reserved between <type> and <CLI_validity>.

Example
AT+CLIP=1
OK
RING
+CLIP: "12345678901",129,,,"AAA",0
AT+CLIP=?
+CLIP: (0-1)
OK

4.12 +CLIR, Calling Line Identification Restriction

Description
Set command enables/disables CLI to the called party, when originating a call.

Syntax

Set command	AT+CLIR=<n>
Response	OK
Read command	AT+CLIR?
Response	+CLIR: <n>,<m>

Test command	AT+CLIR=?
Response	+CLIR: (list of supported <n>s)

Parameter

<n>	this setting effects CLI status for following calls
	0 – presentation indicator is used according to the subscription of the CLIR service
	1 – CLIR invocation (hide)
	2 – CLIR suppression (show)
<m>	shows the subscriber CLIR service status in the network
	0 – CLIR not provisioned
	1 – CLIR provisioned in permanent mode
	2 – unknown (e.g. no network, etc.)
	3 – CLIR temporary mode presentation restricted
	4 – CLIR temporary mode presentation allowed

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

4.13 +COLP, Connected Line Identification Presentation

Description
Set command enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call.

Syntax

Set command	AT+COLP=<n>
Response	OK
Read command	AT+COLP?
Response	+COLP:<n>,<m>
Unsolicited message	+COLP:<number>,<type>[,<subaddr>,<satype>[,<alpha>]]

Parameter

<n>	parameter sets/shows the result code presentation status in the TA
	0 – disable
	1 – enable
<m>	Parameter shows the subscriber COLP service status in the network
	0 – COLP not provisioned
	1 – COLP provisioned

<number>	2 – unknown (e.g. no network, etc.) 3 – COLP temporary mode presentation restricted 4 - COLP temporary mode presentation allowed string type phone number of format specified by <type>
<type>	type of address octet in integer format
	129 - unknown type of number and ISDN/Telephony numbering plan
	145 - international type of number ,contains the character "+"
<subaddr>	string type subaddress of format specified by <satype>
<satype>	type of subaddress octet in integer format
	128 – default
<alpha>	string type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.

Example
AT+COLP?
+COLP: 1,0
OK +COLP: "1001",129
AT+COLP=?
+COLP: (0-1)
OK

4.14 +FCLASS, Select Mode

Description

Set command puts the modem in to the correct mode of operation, allowing information to be processed in a suitable manner.

Syntax

Set command	AT+FCLASS=<n>
Response	OK
Read command	AT+FCLASS?
Response	<n>
Test command	AT+FCLASS=?
Response	+FCLASS: (list of supported <n>s)

Parameter

<n>	0 – data
	1 – fax

Example
AT+FCLASS=1
OK
AT+FCLASS?

0
OK
AT+FCLASS=?
+FCLASS: (0-1)

4.15 +CBST, Select Bearer Service Type

Description

Set command selects the bearer service for Mobile Originated calls. Values may also be used during mobile terminated data call setup.

Syntax

Set command	AT+CBST=<speed>[,<name>[,<ce>]]
Response	OK
Read command	AT+CBST?
Response	+CBST: <speed>,<name>,<ce>
Test command	AT+CBST=?
Response	+CBST: (list of supported <speed>s),(list of supported <name>s), (list of supported <ce>s)

Parameter

<speed>	0 - 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 or X.31 flag stuffing)
	75 - 14400 bps (V.110 or X.31 flag stuffing)
	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; this setting can be used in conjunction with asynchronous non-transparent UDI or RDI service in order to get FTM)
	84 - 64000 bps (X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI service in order to get FTM)
	116 - 64000 bps (bit transparent)
	134 - 64000 bps (multimedia)
	Note:

	Value 116 and 134 corresponding speed support synchronous and transparent; Value 7 corresponding speed supports asynchronous and transparent/non-transparent; The rest support asynchronous and non-transparent.
<name>	Bearer service type
	0 - data circuit asynchronous (UDI or 3.1 kHz modem)
	1 - data circuit synchronous (UDI or 3.1 kHz modem)
	4 - data circuit asynchronous (RDI)
<ce>	Sets whether error correction is performed by RLP, or by other means
	0 – transparent
	1 – non-transparent

Example
AT+CBST?
+CBST: 0,0,1
OK
AT+CBST=?
+CBST: (0,7,12,14,16,17,39,43,48,51,71,75,80,81,83,84,116,134),(0,1,4),(0,1)
OK
AT+CBST=7,0,1
OK

4.16 +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.

Syntax

Set command	AT+CCUG=[<n>[,<index>[,<info>]]]
Response	OK
Read command	AT+CCUG?
Response	+CCUG: <n>,<index>,<info>

Parameter

<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

Example
AT+CCUG?
+CCUG: 0,0,0
OK
AT+CCUG=1，0，2
OK

4.17 +ACELLINFO, Cell Information Request

Description
This command provides a periodic reporting of the serving cell and neighbor cells information.

Syntax

Set command	AT+ACELLINFO=[<mode>]
Response	➢ For GSM serving cell: +ACELLINFO:<type>,<MCC>,<MNC>,<LAC>,<Cell_ID>,<ARFCN>, <BSIC>,<RX_LEV>,<C1>,<C2>,<TA> ➢ For GSM neighbor cell: +ACELLINFO:<type>,<MCC>,<MNC>,<LAC>,<Cell_ID>,<ARFCN>, <BSIC>, <RX_LEV> ➢ For WCDMA serving cell: +ACELLINFO:<type>,<MCC>,<MNC>,<LAC>,<Cell_ID>,<PSC>, <UARFCN>, <RSCP>, <ECIO>, <RAC>, <URA> ➢ For WCDMA monitored set cell: +ACELLINFO:<type>, <UARFCN>, <PSC>, <RSCP>, <ECIO>
Read command	AT+ACELLINFO?
Response	+ACELLINFO: <mode>
Test command	AT+ACELLINFO=?
Response	+ACELLINFO: (list of supported <mode>s)

Parameter

<mode>	0 - disable the periodic reporting
	1 - report the cell information on a 5s cycle
	If <mode> is omitted, the cell information will be reported once
<type>	cell type
	0 - GSM serving cell
	1 - GSM neighbor cell
	2 - WCDMA serving cell
	3 - WCDMA monitored cell
	4 - WCDMA active cell
<MCC>	Mobile country code
<MNC>	Mobile network code

<LAC>	Location area code, range is 0 to 65535
<Cell_ID>	Cell ID, range is 0 to 65535
<ARFCN>	Absolute Radio Frequency Channel Number, range is 0 to 1023
<BSIC>	Base Station Identity Code. see 24.008 10.5.1.3
<RX_LEV>	RX level, range is 0 to 63. See 3GPP TS 45.008 Section 8.1.4
<C1>	C1 value as defined in 45.008 6.4, coefficient for base station selection, default: 0
<C2>	C2 value as defined in 45.008 6.4, coefficient for Cell re-selection, default: 0
<TA>	Timing Advance; changes with the mobile distance from the base station.
<PSC>	Serving cell primary scrambling code.
<UARFCN>	Serving cell DL UARFCN
<RSCP>	Received Signal Code Power
<ECIO>	Ec/Io value
<RAC>	Routing Area Code, 10.5.2.37b GSM04.08
<URA>	UTRAN Registration Area (URA)

Example
AT+ACELLINFO=?
+ACELLINFO: 1-3
AT+ACELLINFO=1
+ACELLINFO: 0, 460, 1, 2184, 31691, 717, 30, 34, 22, 32, -1
+ACELLINFO: 1, 460, 1, 2184, 31693, 724, 28, 18,
+ACELLINFO: 1, 460, 1, 2184, 31692, 715, 16, 15,
OK
+ACELLINFO: 0, 460, 1, 2184, 31691, 717, 30, 39, 27, 37, -1
+ACELLINFO: 1, 460, 1, 2184, 31693, 724, 28, 18,
+ACELLINFO: 1, 460, 1, 2184, 31692, 715, 16, 15,
…
AT+ACELLINFO=0
OK
AT+ACELLINFO
+ACELLINFO: 0, 460, 1, 2184, 31691, 717, 30, 40, 28, 38, -1
+ACELLINFO: 1, 460, 1, 2184, 31693, 724, 28, 15,
+ACELLINFO: 1, 460, 1, 2184, 31692, 715, 16, 15,
OK

5 ME Control & Status Commands

5.1 +CPAS, Phone Activity Status

Description

Execution command returns the activity status of the ME.

Syntax

Execution command	AT+CPAS
Response	+CPAS: <pas>
Test command	AT+CPAS=?
Response	+CPAS: (list of supported <pas>s)

Parameter

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

Example

AT+CPAS
+CPAS: 4
OK
AT+CPAS=?
+CPAS: (0, 3, 4)
OK

5.2   +CFUN, Set Phone Functionality

Description

Set command sets level of functionality provided by the modem.

Syntax

Set command	AT+CFUN=<fun>[,<rst>]
Response	OK
Read command	AT+CFUN?
Response	+CFUN: <fun>
Test command	AT+CFUN=?
Response	+CFUN: (list of supported <fun>s), (list of supported <rst>s)

Parameter

<fun>	the power saving function mode
	0 - set to minimum functionality (ex-mode must be non-Offline)
	1 - set to full functionality (ex-mode must be non-Offline)(default)
	4 - disable phone both transmit and receive RF circuits(ex-mode must be non-Offline)
	5 - set to FTM mode (ex-mode must be Online)
	6 - reset MT (ex-mode must be Offline)

	7 - set to Offline(ex-mode must be non-FTM mode)
<rst>	whether to reset the MT before setting it to <fun> functionality level
	0 - no reset before setting MT to <fun> functionality level (default)
	1 - reset the MT before setting it to <fun> functionality level

Example
AT+CFUN?
+CFUN: 1
OK
AT+CFUN=?
+CFUN: (0-1,4-7), (0-1)
OK
AT+CFUN=7,0
OK

5.3   +CPIN, Enter PIN

Description
This command is used to query and enter a password which is necessary before the modem will operate. If the PIN is to be entered twice, the modem shall automatically repeat the PIN.

Syntax

Set command	AT+CPIN=<pin>
Response	OK
Read command	AT+CPIN?
Response	+CPIN: <code>

Parameter

<pin>	string type values within "quotes"
<code>	READY - MT is not pending for any password
	SIM PIN - MT is waiting SIM PIN to be given
	SIM PUK - MT is waiting SIM PUK to be given
	PH-SIM PIN - MT is waiting phone-to-SIM card password to be given
	SIM PIN2 - MT is waiting UIM PIN2 to be given
	SIM PUK2 - MT is waiting UIM PUK2 to be given
	PH-NET PIN - MT is waiting network personalization password to be given

Example
AT+CPIN?
+CPIN: READY
OK
AT+CPIN?
+CPIN: SIM PIN

AT+CPIN="1111"
OK

5.4   +CSQ, Signal Quality

Description
Set command returns the signal strength of the registered network.

Syntax

Exectuion command	AT+CSQ
Response	+CSQ:<rssi>,<ber>

Parameter

<rssi>	signal strength indication
	0 -113 dBm or less
	1 -111 dBm
	2...30 -109... -53 dBm
	31 -51 dBm or greater
	99 not known or not detectable
<ber>	channel bit error rate, in percent
	0...7 as RXQUAL values in the table in TS 45.008 [20] subclause 8.2.4
	99 not known or not detectable

Example
AT+CSQ
+CSQ: 17, 99

5.5   +CCLK, Clock

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

Syntax

Read Command	AT+CCLK?
Response	+CCLK: <time>
Set Command	AT+CCLK=<time>
Response	OK

Parameter

<time>	current time as quoted string in the format :"YY/MM/DD, HH:MM:SS "
	YY - year (two last digits are mandatory), range is 00 to 99
	MM - month (two last digits are mandatory), range is 01 to 12

	DD - day (two last digits are mandatory), range is 01 to 31 (if the month MM has less than 31 days, the clock will be set for the next month) HH - hour (two last digits are mandatory), range is 00 to 23 MM - minute (two last digits are mandatory), range is 00 to 59 SS - seconds (two last digits are mandatory), range is 00 to 59

Example

AT+CCLK?

+CCLK: "11/07/20,17:34:23"

5.6 +CSIM, Generic SIM access

Description

This command allows a direct control of the SIM by a distant application on the TE.

Syntax

Set command	AT+CSIM=<length>,<command>
Response	+CSIM:<length>,<response>

Parameter

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

Example

AT+CSIM=14,"A0A40000026F07"

+CSIM: 4, "6E00"

5.7 +CLAC, List all available AT commands

Description

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

Syntax

Execution command	AT +CLAC
Response	<AT Command1>
	<AT Command2>
	[…]

Parameter

<AT Command >	defines the AT command. Text shall not contain the sequence 0<CR> or OK<CR>

Example

AT +CLAC
+GMI
+GCAP
+WS46
+CFUN
…
OK

5.8 +CTZU, Automatic Time Zone Update

Description

Set command enables and disables automatic time zone update via NITZ.

Syntax

Set command	AT+CTZU=<onoff>
Response	OK
Read command	AT+CTZU?
Response	+CTZU: <onoff>
Test command	AT+CTZU=?
Response	+CTZU: (list of supported <onoff>s)

Parameter

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

Example

AT+CTZU=?
+CTZU: (0-1)
AT+CTZU?
+CTZU: 1
OK
AT+CTZU=0
OK

5.9 +CTZR, Time Zone Reporting

Description

Set command enables and disables the time zone change event reporting.

Syntax

Set command	AT+CTZR=<onoff>
Response	OK
Read command	AT+CTZR?
Response	+CTZR: <onoff>
Test command	AT+CTZR=?
Response	+CTZR: (list of supported <onoff>s)

Parameter

<onoff>	0 – disable time zone change event reporting (default).
	1 – enable time zone change event reporting

Example

AT+CTZR=?
+CTZR: (0-1)
OK
AT+CTZR?
+CTZR: 1
OK
AT+CTZR=0
OK

5.10 +IFC, MT-TE Local Flow Control

Description

Set command selects the flow control behavior of the serial port in both directions: from MT to TE & from TE to MT.

Syntax

Set command	AT+IFC=<n1>,<n2>
Response	OK
Read command	AT+IFC?
Response	+IFC: <n1>,<n2>
Test command	AT+IFC =?
Response	+IFC: (list of supported <n1>s, list of supported <n2>s)

Parameter

<n1>	flow control option for the data received by DTE
	0 - flow control None
	1 - XON/XOFF filtered
	2 - RTS flow control(default)
	3 - XON/XOFF not filtered

| <n2> | flow control option for the data sent by modem
0 - flow control None
1 - XON/XOFF filtered
2 - RTS flow control(default) |

Example
AT+IFC=?
+IFC: (0-3), (0-2)
OK AT+IFC?
+IFC: 2, 2
OK
AT+IFC=2, 2
OK

5.11 &D, Set DTE Ready (DTR) Line Mode

Description
Set commands determines how DCE responds when ITU-T V.25 circuit 108/2 (or equivalent) is changed from ON to OFF condition during online data state.

Syntax

Set command	AT&D<n>
Response	OK

Parameter

<n>	0 – DCE ignores status of DTR (default) 1 – change to command mode and retain the connected call when DTR changes from ON to OFF 2 – disconnect data call(CSD, PS data service), change to command mode when DTR changes from ON to OFF. When state DTR= OFF auto-answer is off

Example
AT&D0
OK

5.12 &C, Set Carrier Detection (DCD) Line Mode

Description
Set commands determines how ITU-T V.25 circuit 109 (or equivalent) relates to the detection of received line signal from remote end (recommended default 1 i.e. 109 operation relates to detection of received signal.)

Syntax

Set command	AT&C<n>
Response	OK

Parameter

<n>	0 – DCD line always is ON (default)
	1 – DCD line is in ON in the presence of data carrier only
	2 - DCD line is in OFF in 1 second after the presence of data carrier ; and is always ON in other times

Example

AT&C0
OK

5.13 +IPR, Fixed DTE Rate

Description

Set commands specifies the data rate at which the modem will accept commands.

Syntax

Set command	AT+IPR=<baud rate>
Response	OK
Read command	AT+IPR?
Response	+IPR: <baud rate>
Test command	AT+IPR=?
Response	+IPR: (list of supported <baud rate>s)

Parameter

<baud rate>	specified shall be the rate in bits per second

Example

AT+IPR?
+IPR: 115200
OK
AT+IPR=38400
OK
AT+IPR=?
+IPR: (), (300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400)
OK

5.14 &F, Set to Factory Defined Configuration

Description

Set command set to factory defined configuration.

Syntax

Set command	AT&F
Response	OK

5.15 &W, Store User Settings

Description

Set command stores user setting to the profile, including S0\S7\S10\&C\&D\+IFC.

Syntax

Set command	AT&W
Response	OK

5.16 +WS46, Select Wireless Network

Description

Read command returns the cellular network Wireless Data Service (WDS) operating with the modem. Use +COPS command to force the choice of an operator.

Syntax

Read command	AT+WS46?
Response	<n>
Test command	AT+WS46=?
Response	+WS46: (list of supported <n>s)

Parameter

<n>	Cellular network wireless data service 12 – GSM digital cellur 22 – WCDMA 25 – GSM +WCDMA

Example

AT+WS46?
25
AT+WS46=?
+WS46: (12,22,25)

6　SMS Commands

6.1   +CPMS, Preferred Message Storage

Description

Set command selects memory storages to be used for reading, writing, sending and storing SMs.

Syntax

Set command	AT+CPMS=<mem1>[,<mem2>[,<mem3>]]
Response	+CPMS: <used1>,<total1>,<used2>,<total2>, <used3>,<total3>
Read command	AT+CPMS?
Response	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2> ,<total2>, <mem3>,<used3>,<total3>
Test command	AT+CPMS=?
Response	+CPMS: (list of supported <mem1>s), (list of supported <mem2>s),(list of supported <mem3>s)

Parameter

<mem1>	memory from which messages are read and deleted(+CMGL\+CMGR\ +CMGD) "SM" - SIM SMS memory storage "ME" - ME internal storage "BM" – broadcast message storage "MT" –any of the storages associated with ME "SR" – status report storage
<mem2>	memory to which writing and sending operations are made, options are as same as <mem1>(+CMGS\+CMGW)
<mem3>	memory to which received SMs are preferred to be stored, options are as same as <mem1> received broadcasts are usually to be stored in "BM" or to be stored in the storage which user selects; received SM reports are usually to be stored in "SR" or in the storage which user selects
<used1>	number of SMs stored into <mem1>
<used2>	number of SMs stored into <mem2>
<used3>	number of SMs stored into <mem3>
<total1>	max number of SMs that <mem1> can contain
<total2>	max number of SMs that <mem2> can contain
<total3>	max number of SMs that <mem3> can contain

Example

AT+CPMS?
+CPMS:"ME",4,23,"ME",4,23,"SM",32,50
OK
AT+CPMS=?
+CPMS:("ME","MT","SM","SR"),("ME","MT","SM","SR"),("ME","MT","SM","SR")

```
OK
AT+CPMS="SM","ME","MT"
+CPMS: 32,50,4,23,4,23
OK
AT+CPMS?
+CPMS:"SM",32,50,"ME",4,23,"MT",4,23
OK
```

6.2 +CMGF, Message Format

Description

Set command selects the format of messages used with send, list, read and write commands.

Syntax

Set command	AT+CMGF=<mode>
Response	OK
Read command	AT+CMGF?
Response	+CMGF: <mode>
Test command	AT+CMGF=?
Response	+CMGF: (list of supported <mode>s)

Parameter

<mode>	0 - PDU mode, as defined in GSM 3.40 and GSM 3.41
	1 - text mode

Example

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

6.3 +CMGL, List Messages

Description

Execution command reports the list of all the messages with status value <stat> stored into <mem1> message storage. If status of the message is "received unread", the status in the storage changes to "received read".

IF PDU MODE:

Syntax

Execution command	AT+CMGL=<stat>
Response	+CMGL:<index1>,<stat>,[<alpha>],<length><CR><LF><pdu>
	+CMGL:<index2>,<stat>,[<alpha>],<length><CR><LF><pdu>
	[...]]

| Test command | AT+CMGL =? |
| Response | +CMGL: (list of supported <stat>s) |

Parameter

<index>	message position in the memory storage list
<stat>	status of the message
	0 - received unread message
	1 - received read message
	2 - stored message not yet sent
	3- stored message already sent
	4 - all messages
<alpha>	string type; alphanumeric representation of <oa/da> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<length>	the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
<pdu>	protocol data unit in hexadecimal format

Example

AT+CMGL=?
+CMGL: (0-4)
OK
AT+CMGL=4
+CMGL: 1,1,,35
0891683108705505F0010F0B813120882624F7000808738B54084F1F592732344FF4429023A
+CMGL: 2,3,,21
0891683108705505F001100B813120882624F7000808738B54084F1F5927
OK

IF TEXT MODE:

Syntax

Set command Response	AT+CMGL=<stat>
	• if SMS-SUBMITs and/or SMS-DELIVERs:
	+CMGL:<index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<tooa/toda>, <length>]<CR><LF><data>
	+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>, <length>]<CR><LF><data>
	[...]]
	• if SMS-STATUS-REPORTs:
	+CMGL:<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
	+CMGL:<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
	[...]]
	• if SMS-COMMANDs:
	+CMGL: <index>,<stat>,<fo>,<ct>
	+CMGL: <index>,<stat>,<fo>,<ct>

	[...]] • if CBM storage: +CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data> +CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data> [...]]
Test command Response	AT+CMGL =? +CMGL: (list of supported <stat>s)

Parameter

<index>	message position in the memory storage list
<stat>	"REC UNREAD" - received unread message (i.e. new message) "REC READ" - received read message "STO UNSENT" - stored unsent message (only applicable to SMs) "STO SENT" - stored sent message (only applicable to SMs) "ALL" - all messages
<data>	TP-User-Data in text mode
<oa/da>	destination/originating address in string format; used character set should be the one selected with +CSCS.
<alpha>	string type; alphanumeric representation of <oa/da> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<scts>	Service-Centre-Time-Stamp in time-string format (refer <dt>)
<tooa/toda>	type of number <oa/da> 129 - number in national format 145 - number in international format (contains the "+")
<length>	integer type value indicating the length of the message body <data>
<fo>	depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
<mr>	TP-Message-Reference in integer format
<ra>	recipient address in string format; type of address given by <tora>
<tora>	type of recipient address, octet in integer format
<dt>	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. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
<st>	TP-Status in integer format
<ct>	TP-Command-Type in integer format (default 0)
<sn>	CBM Serial Number in integer format
<page>	CBM Page Parameter bits 4-7 in integer format
<pages>	CBM Page Parameter bits 0-3 in integer format

Example
AT+CMGL=?
+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")
OK
AT+CSDH?
+CSDH: 0
OK
AT+CMGL="ALL"
+CMGL: 1,"REC READ","13901234567",,"11/08/22,09:19:13+32"
E8A2ABE5BC80E999A4000101
+CMGL: 2,"REC READ","13817894561", "AA","11/08/30,19:47:21+32"
E238D3958633EA46EE644EFA038576
OK

6.4 +CMGD, Delete Message

Description
Execution command deletes from memory <mem1> the message(s).

Syntax

Set command	AT+CMGD=<index>[,<delflag>]
Response	OK
Test command	AT+CMGD=?
Response	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]

Parameter

<index>	message index in the selected storage <mem1>
<delflag>	an integer indicating multiple message deletion request
	0 (or omitted) - delete message specified in <index>
	1 - delete all read messages from <mem1> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched
	2 - delete all read messages from <mem1> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched
	3 - delete all read messages from <mem1> storage, sent and unsent mobile originated messages, leaving unread messages untouched
	4 - delete all messages from <mem1> storage.
	Note: if <delflag> is present and not set to 0 then <index> is ignored and ME shall follow the rules for <delflag> shown above.
	Note: if the location to be deleted is empty, an error message is reported.

Example
AT+CMGD=?

+CMGD: (0,1,3),(0-4)
OK

6.5 +CMGR, Read Message

Description

Execution command reports the message with location value <index> from <mem1> message storage.

IF PDU MODE:

Syntax

Set command	AT+CMGR=<index>[,<mode>]
Response	+CMGR:<stat>,[<alpha>],<length><CR><LF><pdu>

Parameter

<index>	message position in the memory storage list
<mode>	message status modification
	0 (or omitted) – change the status of message to "REC READ"(default value)
	1 – not to change the status
<stat>	status of the message
	0 - received unread message
	1 - received read message
	2 - stored message not yet sent
	3- stored message already sent
<alpha>	string type; alphanumeric representation of <oa/da> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<length>	the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
<pdu>	protocol data unit in hexadecimal format

Example

AT+CMGR=1
+CMGR: 1,,25
00040B818139208263F300001150506195632306C8329BFD0E01

IF TEXT MODE:

Syntax

Set command	AT+CMGR=<index>
Response	• if SMS-DELIVERs:
	+CMGR:<stat>,<oa>,[<alpha>],[<scts>][,<tooa>,<fo>,<pid>,<dcs>,<sca>, <tosca>,<length>]<CR><LF><data>
	• if SMS-SUBMITs:

	+CMGR:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>]<sca>, <tosca>,<length>]<CR><LF><data>
	• if SMS-STATUS-REPORTs:
	+CMGR:<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
	• if SMS-COMMANDs:
	+CMGR:<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]
	• if CBM storage:
	+CMGR:<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>

Parameter

<index>	message position in the memory storage list
<stat>	"REC UNREAD" - received unread message
	"REC READ" - received read message
	"STO UNSENT" - stored unsent message
	"STO SENT" - stored sent message
<oa/da>	destination/originating address in string format; used character set should be the one selected with +CSCS.
<alpha>	string type; alphanumeric representation of <oa/da> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<scts>	Service-Centre-Time-Stamp in time-string format (refer <dt>)
<tooa/toda>	type of number <oa/da>
	129 - number in national format
	145 - number in international format (contains the "+")
<fo>	depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
<pid>	TP-Protocol-Identifier in integer format (default 0)
<dcs>	SMS Data Coding Scheme (default 0)
<sca>	RP SC address string format, type of address given by <tosca>
<tosca>	type of RP SC address, octet in integer format
<length>	integer type value indicating the length of the message body <data>
<vp>	depending on SMS-SUBMIT <fo> setting, TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>)
<mr>	TP-Message-Reference in integer format
<ra>	recipient address in string format; type of address given by <tora>
<tora>	type of recipient address, octet in integer format
<dt>	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. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
<st>	TP-Status in integer format
<ct>	TP-Command-Type in integer format (default 0)
<sn>	CBM Serial Number in integer format

<mid>	CBM Message Identifier in integer format
<page>	CBM Page Parameter bits 4-7 in integer format
<pages>	CBM Page Parameter bits 0-3 in integer format
<data>	TP-User-Data in text mode
<cdata>	TP-Command-Data in text mode responses; ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))

Example
AT+CSDH=1
OK
AT+CMGR=1
+CMGR:"REC UNREAD","13388888888",, "11/09/02,15:21:43+32",145,36,0,8,
"+8613010314500",145,7
4F60600E4E488FD968377684554A
OK

6.6   +CMGS, Send Message

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

IF PDU MODE:
Syntax

Set command	AT+CMGS=<length><CR>
	PDU is given<ctrl-Z/ESC>
Response	+CMGS: <mr>[,<ackpdu>]

Parameter

<length>	the number of octets coded in the TP layer data unit to be given (i.e. SMSC address octets are excluded)
<mr>	TP-Message-Reference in integer format
<ackpdu>	RP-User-Data element of RP-ACK PDU; it is supported when <service> is set to 1 in +CSMS and the network permits.

Example
AT+CMGS=19
>0031000D91683120882624F70000A704D4F29C0E<Ctrl-Z>
+CMGS: 20
OK

IF TEXT MODE:

Syntax

Set command	AT+CMGS=<da>[,<toda>]<CR>
	text is entered<ctrl-Z/ESC>
Response	+CMGS: <mr>[,<scts>]

Parameter

<da>	destination address in string format; used character set should be the one selected with +CSCS.
<toda>	type of number <da>
	129 - number in national format
	145 - number in international format (contains the "+")
<mr>	TP-Message-Reference in integer format
<scts>	Service-Centre-Time-Stamp in time-string format (refer <dt>)

Example

AT+CMGS="13316538879"

>test<ctrl-Z>

+CMGS: 19

OK

6.7 +CMGW, Write Message To Memory

Description

Execution command writes in the <mem2> memory storage a new message. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given.

IF PDU MODE:

Syntax

Set command	AT+CMGW=<length>[,<stat>]<CR>
	PDU is given<ctrl-Z/ESC>
Response	+CMGW: <index>

Parameter

<length>	the number of octets coded in the TP layer data unit to be given (i.e. SMSC address octets are excluded)
<stat>	status of the message
	0 - received unread message
	1 - received read message
	2 - stored message not yet sent
	3- stored message already sent
<index>	message position in the memory storage list

Example

AT+CMGW=19

>0031000D91683120882624F70000A704D4F29C0E<ctrl-Z>

+CMGW: 0

OK

IF TEXT MODE:

Syntax

Set command	AT+CMGW=<oa/da>[,<tooa/toda>[,<stat>]]<CR>
	text is entered<ctrl-Z/ESC>
Response	+CMGW: <index>

Parameter

<oa/da>	originating/destination address in string format; used character set should be the one selected with +CSCS.
<tooa/toda>	type of number <oa/da>
	129 - number in national format
	145 - number in international format (contains the "+")
<stat>	"REC UNREAD" - received unread message
	"REC READ" - received read message
	"STO UNSENT" - stored unsent message
	"STO SENT" - stored sent message
<index>	message position in the memory storage list

Example

AT+CMGW="13028862427",129

> test<ctrl-Z>

+CMGW: 1

OK

6.8 +CMSS, Send Message from Storage

Description

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

IF PDU MODE:

Syntax

Set command	AT+CMSS=<index>[,<da>[,<toda>]]
Response	+CMSS: <mr>[,<ackpdu>]

Parameter

<index>	message position in the memory storage list
<da>	destination address in string format; used character set should be the

<toda>	type of number <da>
	129 - number in national format
	145 - number in international format (contains the "+")
<mr>	TP-Message-Reference in integer format
<ackpdu>	RP-User-Data element of RP-ACK PDU; it is supported when when +CSMS parameter <service> equals 1

Note: the first row above begins "one selected with +CSCS." for <toda>.

Example
AT+CMGW=19
>0031000D91683113865589F80000A704D4F29C0E<ctrl-Z/ESC>
+CMGW: 2
OK
AT+CMSS=2,"13761111222"
+CMSS: 21
OK

IF TEXT MODE:
Syntax

| Set command | AT+CMSS=<index>[,<da>[,<toda>]] |
| Response | +CMSS: <mr>[,<scts>] |

Parameter

<index>	message position in the memory storage list
<da>	destination address in string format; used character set should be the one selected with +CSCS.
<toda>	type of number <da>
	129 - number in national format
	145 - number in international format (contains the "+")
<mr>	TP-Message-Reference in integer format
<scts>	Service-Centre-Time-Stamp in time-string format (refer <dt>)

Example
AT+CMGW="13316855988"
> test<ctrl-Z>
+CMGW: 3
OK
AT+CMSS=3
+CMSS: 22
OK

6.9   +CNMI, New Message Indications To TE

Description

Set command selects the behavior of the device on how the receiving of new messages from the network is indicated to the TE.

Syntax

Set command	AT+CNMI=[<mode>[,<mt>[,<bm>[, <ds>[,<bfr>]]]]]
Response	OK
Read command	AT+CNMI?
Response	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>
Test command	AT+CNMI=?
Response	+CNMI: (list of supported <mode>s), (list of supported <mt>s), (list of supported <bm>s), (list of supported <ds>s), (list of supported <bfr>s)

Parameter

<mode>	unsolicited result codes buffering option
	0 - Buffer unsolicited result codes in the ME. If ME 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 –forward indication directly to the TE and reject new received message unsolicited result codes, otherwise discard them
	2 - Buffer unsolicited result codes in the ME in case the TE is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE.
	Note: Unsolicited result codes are buffered in ME. If MT is power off before forwarding them, messages may be lost.
<mt>	result code indication reporting for SMS-DELIVER; If AT command interface is acting as the only display device, the ME must support storing of class 0 messages and messages in the message waiting indication group (discard message)
	0 - No SMS-DELIVER indications are routed to the TE.
	1 - If SMS-DELIVER is stored into MT, indication of the memory location is routed to the TE using the following unsolicited result code:
	+CMTI: <mem>,<index>
	2 - SMS-DELIVERs are routed directly to the TE using unsolicited result code:
	(PDU mode)
	+CMT: [<alpha>],<length><CR><LF><pdu>
	(or TEXT mode)
	+CMT: <oa>, [<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>, <length>]<CR><LF><data>
	Note: Class 2 messages and messages in the message waiting indication group (store message) result in indication as defined in <mt>=1.
	3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.

<bm>	the rules for storing received CBMs depend on its data coding scheme 0 - No CBM indications are routed to the TE. 1 - If CBM is stored into ME, indication of the memory location is routed to the TE using unsolicited result code: +CBMI: <mem>,<index> 2 - New CBMs are routed directly to the TE using unsolicited result code: (PDU mode) +CBM: <length><CR><LF><pdu> (or TEXT mode) +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> 3 - Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.
<ds>	SMS status report indication 0 - No SMS-STATUS-REPORTs are routed to the TE. 1 - SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: (PDU mode) +CDS: <length><CR><LF><pdu> (or TEXT mode) +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> 2 - If SMS-STATUS-REPORT is stored into ME, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem>,<index>
<bfr>	0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes). 1 - TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered.

Example
AT+CNMI=?
+CNMI:(0,1,2),(0,1,2,3),(0,2),(0,1,2),(0,1)
OK
AT+CNMI=1,1,0,0,0
OK
AT+CMGF=1
OK
+CMTI: "SM",7
OK

6.10 +CNMA, New Message Acknowledgement

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

SMS-STATUS-REPORT) which is routed directly to the TE. This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1. TA shall not send another +CMT or +CDS result code to TE before previous one is acknowledged.

If ME does not get acknowledgement within required time (network timeout), ME should send RP-ERROR to the network. ME/TA shall automatically disable routing to TE by setting both <mt> and <ds> values of +CNMI to zero.

NOTE: In case that a directly routed message must be buffered in ME/TA (possible when +CNMI parameter <mode> equals 0 or 2) or AT interpreter remains too long in a state where result codes cannot be sent to TE (e.g. user is entering a message using +CMGS), acknowledgement (RP-ACK) must be sent to the network without waiting +CNMA command from TE. Later, when buffered result codes are flushed to TE, TE must send +CNMA[=0] acknowledgement for each result code. In this way, ME/TA can determine if message should be placed in non-volatile memory and routing to TE disabled (+CNMA[=0] not received). Refer command +CNMI for more details how to use <mode> parameter reliably.

In PDU mode, it is possible to send either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network. Parameter <n> defines which one will be sent. Optionally (when <length> is greater than zero) an acknowledgement TPDU (SMS-DELIVER-REPORT for RP-ACK or RP-ERROR) may be sent to the network. The entering of PDU is done similarly as specified in command Send Message +CMGS, except that the format of <ackpdu> is used instead of <pdu> (i.e. SMSC address field is not present). PDU shall not be bounded by double quotes. T

Syntax

Execution command	(PDU mode) AT+CNMA[=<n>[,<length>[<CR>PDU is given<ctrl-Z/ESC>]]] (or TEXT mode) AT+CNMA
Response	OK

Parameter

<n>	0 - command operates similarly as defined for the text mode. If the only value supported is 0, the device does not support sending of TPDU. 1 - send RP-ACK (or buffered result code received correctly) 2 - send RP-ERROR (if PDU is not given, ME/TA shall send SMS-DELIVER-REPORT with GSM 03.40 TP-FCS value set to 'FF' (unspecified error cause))

6.11 +CMT, New Message Indication

Description

SMS-DELIVERs are routed directly to the TE using the unsolicited result code.

IF PDU MODE:
Syntax

| Unsolicited message | +CMT: [<alpha>],<length><CR><LF><pdu> |

Parameter

<alpha>	string type; alphanumeric representation of <oa/da> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<length>	the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
<pdu>	protocol data unit in hexadecimal format

Example

AT+CNMI=1,2,0,0,0
OK
+CMT: ,24
0891683110304105F0240D91683167019855F700001190804134432304F4F29C0E

IF TEXT MODE:

Syntax

| Unsolicited message | +CMT：<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]<CR><LF><data> |

Parameter

<oa>	originating address in string format; used character set should be the one selected with +CSCS.
<alpha>	string type; alphanumeric representation of <oa> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<scts>	Service-Centre-Time-Stamp in time-string format (refer <dt>)
<tooa>	type of number <oa> 129 - number in national format 145 - number in international format (contains the "+")
<fo>	depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
<pid>	TP-Protocol-Identifier in integer format (default 0)
<dcs>	SMS Data Coding Scheme (default 0)
<sca>	RP SC address string format, type of address given by <tosca>
<tosca>	type of RP SC address, octet in integer format
<length>	integer type value indicating the length of the message body <data>
<data>	TP-User-Data in text mode

Example

AT+CNMI=1,2,0,0,0
OK

+CMT:"+8613316855988",,"11/07/22 15:56:35+32"
TEST

6.12 +CMTI, Memory Location Indication

Description

The unsolicited result code indicate the memory location of SMS-DELIVER when +CNMI parameter <mt> equals 1

Syntax

Unsolicited message	+CMTI: <mem>,<index>

Parameter

<mem>	memory storage where the new message is stored: "SM" "ME"
<index>	location on the memory where SMS is stored.

Example

AT+CNMI=1,1,0,0,0
OK
+CMTI: "SM",15
OK

6.13 +CSDH, Show Text Mode Parameters

Description

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

Syntax

Set command	AT+CSDH[=<show>]
Response	OK
Read command	AT+CSDH?
Response	+CSDH: <show>
Test command	AT+CSDH=?
Response	+CSDH: (list of supported <show>s)

Parameter

<show>	0 - do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode; for SMS-COMMANDs in +CMGR result code, do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata> (default)
	1 - show the values in result codes

Example
AT+CSDH?
OK
+CSDH: 0
AT+CMGL="ALL"
+CMGL:1,"REC READ","10655752","11/08/22,09:19:13+32"
E8A2ABE5BC80E999A4000101
OK
AT+CSDH=1
OK
AT+CMGL="ALL"
+CMGL:1,"REC READ","10655752","11/08/22,09:19:13+32",161,12
E8A2ABE5BC80E999A4000101
OK
AT+CSDH=?
+CSDH: (0-1)
OK

6.14 +CSCA, Service Centre Address

Description
Set command updates the SMSC address, through which mobile originated SMs are transmitted.
In text mode, setting is used by send and write commands. In PDU mode, setting is used by the
same commands, but only when the length of the SMSC address coded into <pdu> parameter
equals zero.

Syntax

Set command	AT+CSCA=<sca>[,<tosca>]
Response	OK
Read command	AT+CSCA?
Response	+CSCA: <sca>[,<tosca>]

Parameter

| <sca> | RP SC address string format, type of address given by <tosca> |
| <tosca> | type of RP SC address, octet in integer format |

Example
AT+CSCA="+8613800755500",145
OK
AT+CSCA?
+CSCA: "+8613800755500",145
OK

6.15 +CSCB, Select Cell Broadcast Message Types

Description

Set command selects which types of CBMs are to be received by the ME.

Syntax

Set command	AT+CSCB=[<mode>[,<mids>[,<dcss>]]]
Response	OK
Read command	AT+CSCB?
Response	+CSCB: <mode>,<mids>,<dcss>
Test command	AT+CSCB=?
Response	+CSCB: (list of supported <mode>s)

Parameter

<mode>	0 - message types specified in <mids> and <dcss> are accepted (default)
	1 - message types specified in <mids> and <dcss> are not accepted
<mids>	string type; all different possible combinations of CBM message identifiers (default is empty string); e.g. "0,1,5,320-478,922"
<dcss>	string type; all different possible combinations of CBM data coding schemes (default is empty string); e.g. "0-3,5"

Example

```
AT+CSCB=?
+CSCB: (0-1)
OK
AT+CSCB=1
OK
AT+CSCB?
+CSCB: 1, "",""
OK
AT+CSCB=0,"0-1","1-2"
OK
AT+CSCB?
+CSCB: 0, "0-1,0-65535","1-2"
OK
AT+CSCB=0,"2-3","3-4"
OK
AT+CSCB?
+CSCB: 0, "2-3,0-1,0-65535","3-4"
OK
AT+CSCB=1,"5-6","1-5"
OK
AT+CSCB?
```

+CSCB: 1,"2-3,0-1,0-65535","1-5"
OK

6.16 +CSMP, Set Text Mode Parameters

Description

Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC

Syntax

Set command	AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]
Response	OK
Read command	AT+CSMP?
Response	+CSMP: [<fo>[,<vp>[,<pid>[,<dcs>]]]]

Parameter

<fo>	depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
<vp>	depending on SMS-SUBMIT <fo> setting; TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>)
<pid>	TP-Protocol-Identifier in integer format (default 0)
<dcs>	SMS Data Coding Scheme (default 0)

Example
AT+CSMP?
+CSMP: ,,0,0
OK
AT+CSMP=17,255,0,0
OK

6.17 +CSMS, Select Message Service

Description

Set command selects messaging service <service>. It returns the types of messages supported by the ME: <mt> for mobile terminated messages, <mo> for mobile originated messages and <bm> for broadcast type messages.

Syntax

Set command	AT+CSMS=<service>
Response	+CSMS: <mt>,<mo>,<bm>
Read command	AT+CSMS?
Response	+CSMS: <service>,<mt>,<mo>,<bm>

Test command	AT+CSMS=?
Response	+CSMS: (list of supported <service>s)

Parameter

<service>	0 - GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0; Phase 2+ features which do not require new command syntax may be supported (e.g. correct routing of messages with new Phase 2+ data coding schemes)) 1 - GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with GSM 07.05 Phase 2+ version; the requirement of <service> setting 1 is mentioned under corresponding command descriptions)
<mt>,<mo>,<bm>	0 - type not supported 1 - type supported

Example
AT+CSMS?
+CSMS: 0,1,1,1
OK
AT+CSMS=?
+CSMS: (0-1)
OK
AT+CSMS=0
+CSMS: 1,1,1
OK

6.18 +CMMS, More Messages to Send

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

Syntax

Set command	AT+CMMS=<n>
Response	OK
Read command	AT+CMMS?
Response	+CMMS: <n>
Test command	AT+CMMS=?
Response	+CMMS: (list of supported <n>s)

Parameter

<n>	0 disable
	1 keep enabled until the time between the response of the latest message

send command (+CMGS, +CMSS, etc.) and the next send command exceeds 1-5 seconds (the exact value is up to ME implementation), then ME shall close the link and TA switches <n> automatically back to 0

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

Example
AT+CMMS?
+CMMS: 0
OK
AT+CMMS=1
OK
AT+CMMS=?
+CMMS: (0-2)
OK

6.19 +CGSMS, Select service for MO SMS messages

Description

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

Syntax

Set command	AT+CGSMS[=<service>]
Response	OK
Read command	AT+CGSMS?
Response	+CGSMS: <service>
Test command	AT+CGSMS=?
Response	+CGSMS: (list of supported <service>s)

Parameter

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

Example
AT+CGSMS=1
OK

AT+CGSMS?
+CGSMS: 1
OK
AT+CGSMS=?
+CGSMS: (0-3)
OK

7 Phonebook Commands

7.1 +CPBS, Select Phonebook Memory Storage

Description

Set command selects phonebook memory storage, which will be used by other phonebook commands.

Syntax

Set command	AT+CPBS=<storage>
Response	OK
Read command	AT+CPBS?
Response	+CPBS: <storage>,<used>,<total>
Test command	AT+CPBS=?
Response	+CPBS: (list of supported <storage>s)

Parameter

<storage>	phonebook memory type "SM" - UIM phonebook "ME" - NV phonebook
<used>	the number of occupied records
<total>	the maximum index number

Example

AT+CPBS="ME"
OK
AT+CPBS?
+CPBS: "ME",5,100
OK
AT+CPBS=?
+CPBS: ("SM","ME")
OK

7.2   +CPBR, Read Phonebook Entries

Description

Execution command returns phonebook entries in location number range <index1> to <index2> from the current phonebook memory storage selected with +CPBS. If <index2> is omitted, only location <index1> is returned.

Syntax

Execution command	AT+CPBR=<index1>[,<index2>]
Response	+CPBR: <index>,<number>,<type>,<text>
	[+CPBR: <index>,<number>,<type>,<text>[…]]
Test command	AT+CPBR=?
Response	+CPBR: (list of supported <index>s)[,<nlength>][,<tlength>]

Parameter

<index1>&<index2>	integer type value in the range of location numbers of phonebook memory
<index>	the current position number of the PB index (to see the range of values use +CPBR=?)
<number>	string type phone number in format <type>
<type>	type of phone number octet in integer format
	129 - national numbering scheme
	145 - international numbering scheme
<text>	the alphanumeric text associated to the number in phonebook; used character set should be the one selected with command +CSCS.
<nlength>	maximum <number> field length, integer type
<tlength>	maximum <name> field length, integer type

Example

AT+CPBR=3
+CPBR: 3,"10010",129,"CCC"
OK
AT+CPBR=4, 6
+CPBR: 4, "10086", 129, "BBBBB"
+CPBR: 5, "13888888888", 129, "DD"
+CPBR: 6, "18955555555", 145, "ABC"
OK
AT+CPBR=6, 4
+CPBR: 4, "10086", 129, "BBBBB"
+CPBR: 5, "13888888888", 129, "DD"
+CPBR: 6, "18955555555", 145, "ABC"
OK

AT+CPBS?
+CPBS: "ME", 6, 100
AT+CPBR=?
+CPBR: (1-100), 40, 182

7.3 +CPBW, Write Phonebook Entry

Description

Set command stores a phonebook record at the position <index> defined by <number>, <type> and <text> parameters. If <index> is given and <number> is omitted, the phonebook record at this position will be deleted.

Syntax

Set command	AT+CPBW=[<index>][,[<number>][,<type>],<text>]
Response	OK
Test command	AT+CPBW=?
Response	+CPBW: (list of supported<index>s)[,<nlength>], (list of supported <type>s)[, <tlength>]

Parameter

<index>	record position; If the parameter is omitted, the record will be written to the next vacancy
<number>	string type phone number in format <type>, 0 or more of the characters: "0 1 2 3 4 5 6 7 8 9 * # + ( ) -". No matter characters"( ) -" appear in which position of the string, they will be ignored. These characters won't cause an ERROR result code.
<type>	type of phone number octet in integer format
<text>	the alphanumeric text associated to the number in phonebook; used character set should be the one selected with command +CSCS. Note: The <text> must be enclosed in double quotes; but double quotation marks are not permitted to appear in the content. For example, "Lin"da" is a wrong expression.
<nlength>	maximum <number> field length, integer type
<tlength>	maximum <name> field length, integer type

Example

AT+CPBW=1,"10000",129,"Linda"
OK
AT+CPBW=2,"10001",129,"John"
OK
AT+CPBW=3,"10002", ,"AAA"
OK
AT+CPBW=,"10003",129,"BBB"
OK

AT+CPBW=,"+10004", ,"CCC"
OK
AT+CPBR=1,5
+CPBR: 1,"10000",129,"Linda"
+CPBR: 2,"10001",129,"John"
+CPBR: 3,"10002",129,"AAA"
+CPBR: 4,"10003",129,"BBB"
+CPBR: 5,"+10004",145,"CCC"
OK
AT+CPBW=1
OK
AT+CPBW=2,"",129,"John"
OK
AT+CPBR=1,5
+CPBR: 3,"10002",129,"AAA"
+CPBR: 4,"10003",129,"BBB"
+CPBR: 5,"+10004",145,"CCC"
OK

7.4   +CPBF, Find Phonebook Entry

Description

Set command returns the phonebook records which the <text> field begins with the letters defined by <findtext>.

Syntax

Set command Response	AT+CPBF=<findtext> +CPBF: <index1>,<number>,<type>,<text> [+CBPF: <index2>,<number>,<type>,<text> [...]]
Test command Response	AT+CPBF=? +CPBF: [<nlength>],[<tlength>]

Parameter

<index>	record position
<number>	string type phone number in format <type>, 0 or more of the characters:"0 1 2 3 4 5 6 7 8 9 * # + ( ) -"
<type>	type of phone number octet in integer format
<text>,<findtext>	the alphanumeric text associated to the number in phonebook; used character set should be the one selected with command +CSCS.
<nlength>	maximum <number> field length, integer type
<tlength>	maximum <name> field length, integer type

Example

AT+CPBF= "C"

+CPBF: 3, "10010", 129, "CCC"

+CPBF: 6, "+18955555555", 145, "CBA"

OK

AT+CPBF= "CB"

+CPBF: 6, "+18955555555", 145, "CBA"

OK

AT+CPBS?

+CPBS:"ME", 7, 100

AT+CPBF=?

+CPBF: 40, 182

OK

8 GPRS Commands

8.1 +CGATT, PS Attach or Detach

Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

Syntax

Set command	AT+CGATT=<state>
Response	OK
Read command	AT+CGATT?
Response	+CGATT: <state>
Test command	AT+CGATT=?
Response	+CGATT: (list of supported <state>s)

Parameter

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

Example
AT+CGATT?
+CGATT: 1
OK
AT+CGATT=0
OK
AT+CGATT=?
+CGATT: (0,1)
OK

8.2 +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>.

Syntax

Set command	AT+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr> [,<d_comp> [,<h_comp>]]]]]]
Response	OK
Read command	AT+CGDCONT?
Response	+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>, <d_comp>, <h_comp>
Test command	AT+CGDCONT=?
Response	+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s) [+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[...]]

Parameter

<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; range from 1 to 16
<PDP_type>	a string parameter which specifies the type of packet data protocol IP Internet Protocol (IETF STD 5) PPP Point to Point Protocol (IETF STD 51) IPV6 IPV4V6
<APN>	a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.
<PDP_addr>	a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing

that, a dynamic address will be requested.

The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

<d_comp>	a numeric parameter that controls PDP data compression 0 - off (default if value is omitted) 1 - on
<h_comp>	a numeric parameter that controls PDP header compression 0 - off (default if value is omitted) 1 - on

Example

AT+CGDCONT=1,"IP","CMNET",,0,1

OK

AT+CGDCONT?

+CGDCONT: 1,"IP","CMCC",""",0,1

+CGDCONT: 2,"PPP","",""0,0

+CGDCONT: 3,"IP","CMNET",""",0,0

AT+CGDCONT=?

+CGDCONT: (1-3), "IP",,,(0-2),(0-3)

+CGDCONT: (1-3), "PPP",,,(0-2),(0-3)

8.3 $QCPDPP, PDP Authentication

Description

Set command defines authentication parameters for the PDP context id.

Syntax

Set command	AT$QCPDPP=<cid>,<auth_type>,<auth_name>,<auth_pwd>
Response	OK
Read command	AT$QCPDPP?
Response	$QCPDPP: <cid1>,<auth_type>,<auth_name>,<auth_pwd> $QCPDPP: <cid2>,<auth_type>,<auth_name>,<auth_pwd> …
Test command	AT$QCPDPP=?
Response	$QCPDPP: (list of supported <cid>s), (list of supported <auth_type>s),[<auth_name>],[<auth_pwd>]

Parameter

<cid>	specifies a particular PDP context definition. This is also used in other PDP context-related commands.
<auth_type>	indicates the types of authentication to be used for the specified

	context.
	0 - none
	1 - PAP
	2 - CHAP
	3 - PAP or CHAP
<auth_name>	specifies the user name used for authentication. It is required for the authentication types PAP or CHAP.
<auth_pwd>	specifies the password used for authentication. It is required for the authentication types PAP or CHAP.

Example
AT$QCPDPP=?
$QCPDPP: (1-16),(0-3),,
AT$QCPDPP=1, 1, "hdth47","w58gdpv1@bizm.ocn.ne.jp"
OK

8.4 +CGACT, PDP Context Activate or Deactivate

Description
Set command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and them attempts to activate the specified contexts.

Syntax

Set command	AT+CGACT=<state>,<cid>
Response	OK
Read command	AT+CGACT?
Response	+CGACT:<cid=1>,<state>
	+CGACT:<cid=2>,<state>
	+CGACT:<cid=3>,<state>
Test command	AT+CGACT=?
Response	+CGACT: (list of supported <state>s)

Parameter

<state>	indicates the state of PDP context activation
	0 - deactivated
	1 - activated
<cid>	a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT)

Example
AT+CGACT=1,1

OK
AT+CGACT=0,2
OK
AT+CGACT?
+CGACT: 1,1
+CGACT: 2,0
+CGACT: 3,0
OK
AT+CGACT=?
+CGACT: (0-1)

8.5 +CGDATA, Enter Data State

Description

Set 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.

Syntax

Set command	AT+CGDATA=<L2P>,<cid>
Response	CONNECT
Test command	AT+CGDATA=?
Response	+CGDATA: (list of supported <L2P>s)

Parameter

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

Example

AT+CGDATA="PPP",2
CONNECT   7200000
AT+CGDATA=?
+CGDATA: ("PPP")

8.6 +CGPADDR, Show PDP address

Description

Set command returns a list of PDP addresses for the specified context identifiers.

Syntax

Set command	AT+CGPADDR=<cid>[,<cid>]
Response	+CGPADDR: <cid>，<PDP_addr>
	[+CGPADDR: <cid>，<PDP_addr>]..]
Test command	AT+CGPADDR=?
Response	+CGPADDR: (list of supported <cid>s)

Parameter

| <cid> | a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT) |
| <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 +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_address> is omitted if none is available. |

Example

AT+CGPADDR=1,2
+CGPADDR: 1,"10.101.23.210"
+CGPADDR: 2,"10.99.119.67"
OK
AT+CGPADDR=?
+CGPADDR: (1,2,3)

9 GPS Commands

9.1 ^GPSMODE, GPS Mode Set

Description
Set command sets the GPS positioning mode.

Syntax

Set command	AT^GPSMODE=<mode>
Response	OK
Read command	AT^GPSMODE?
Response	^GPSMODE: <mode>
Test command	AT^GPSMODE =?
Response	^GPSMODE: (list of supported <mode>s)

Parameter

| <mode> | location mode |
| | 1 - Standalone(default) |

| | 2 - MS Based (A-GPS) |
| | 3 - MS-Assisted/Hybird |

9.2 ^GPSLOC, Launch Positioning

Description

Set command enables/disables the URC of positioning result and sets the interval of tracking and positioning.

Syntax

Set command	AT^GPSLOC=<mode>[,<interval>]
Response	OK
Execution command	AT^GPSLOC
Response	OK
	(output the NEMA data)
Read command	AT^GPSLOC?
Response	^GPSLOC:<mode>,<interval>
Test command	AT^GPSLOC=?
Response	^GPSLOC:(list of supported <mode>s),(list of supported <interval>s)

Parameter

<mode>	0 – disables the unsolicited result code
	1 – enables the unsolicited result code
<interval>	0 – single positioning(default)
	1 to 3600 – interval of tracking and positioning, in sec

Note: The minimum reported interval of position information is subject to real interval set by each location mode. If the interval is smaller than the real calculating time, the locating calculation this time will not be discarded and locating information will be reported. After that, a new positioning will be launched.

9.3 ^GPSEND, End Current Positioning

Description

Execution command sets to end the current positioning.

Note: To a single positioning, ^GPSEND is unnecessary. Tracking and positioning must be ended by this command.

Syntax

Execution command	AT^GPSEND
Response	OK

9.4 ^GPSMPCIP, MPC Server IP & Port

Description

Set command sets IP address and port of MPC(Mobile Position Center) Server according to the carrier.

Syntax

Set command	AT^GPSMPCIP=<ip>,<port>
Response	OK
Read command	AT^GPSMPCIP?
Response	^GPSMPCIP:<ip>,<port>
Test command	AT^GPSMPCIP=?
Response	^GPSMPCIP:(<ip>),(list of supported <port>s)

Parameter

<ip>	MPC server IP address, in format of xxx.xxx.xxx.xxx, the value of "xxx" is from 0 to 255.
<port>	range is 0 to 65535

9.5 ^GPSRES, Reset Position Infomation

Description

Execution command reset all position related information. The following information will be emptied or set zero:

GPS satellite calendar information

GPS satellite ephemeris information

accurate position information stored in MT

Note: If a previous positioning session has not finished, sending this command, an ERROR response BUSY will be reported.

Syntax

Execution command	AT^GPSRES
Response	OK

9.6 ^GPSQOS, GPS QOS

Description

Set command sets the QOS parameters value of GPS

Syntax

Set command	AT^GPSQOS=<threshold>,<performance>
Response	OK
Read command	AT^GPSQOS?
Response	^GPSQOS:<threshold>,<performance>
Test command	AT^GPSQOS=?
Response	^GPSQOS: (list of supported <threshold>s),(list of supported

	<performance>s)

Parameter

<threshold>	position accuracy threshold
	0 - 1000m
	1 - 500m
	2 - 250m
	3 - 100m
	4 - 50m
	5 - 25m
<performance>	time limit, range is 0 to 255
	If a single positioning result is not reported in <performance> seconds, this positioning is failed.

9.7 ^GPSPORT, GPS NMEA Serial Port

Description

Set command sets specified to receive NMEA data. This function is subject to modules spec whether it supports or not.

Syntax

Set command	AT^GPSPORT=<port>[,<mode>]
Response	OK
Read command	AT^GPSPORT?
Response	^GPSPORT:<port>,<mode>
Test command	AT^GPSPORT=?
Response	^GPSPORT:(list of supported <port>s),(list of supported <mode>s)

Parameter

<port>	0 - UART1(com port)
	1 - UART2(com port)
	2 - USB(USB NMEA port)
	3 – USB_MDM (USB MDM port)
	4 – USB_DIAG (USB DIAG port)
	5 – USB_SER3 (USB AUX port)
<mode>	0 – report NMEA data in 1Hz, no matter the positioning is successful.
	1 – report NMEA data when the positioning is successful.

9.8 ^GPSFMT, NMEA Data Format

Description

Set command enables/disables specified output format of NMEA data.

Syntax

Set command	AT^GPSFMT=<format>[,<mode>]
Response	OK
Read command	AT^GPSFMT?
Response	^GPSFMT:(list of enabled <format>s)
Test command	AT^GPSFMT=?
Response	^GPSFMT:(list of supported <format>s)

Parameter

<format>	GGA - Global Positioning System Fix Data RMC - Geographical Position - Latitude/Longitude GSV - GPS Satellites in View GSA - GPS DOP and Active Satellites VTG - Course Over Ground and Ground Speed
<mode>	0 – disables 1 – enables

9.9 Standalone Positioning

Standalone GPS positioning mode is the traditional positioning mode. It downloads data from the satellite. It cannot be located indoor. The best testing environment is under the open sky outdoor.

Example

AT^GPSMODE=1 //set Standalone mode positioning

OK

AT^GPSLOC=1,1 //enable URC, set tracking & positioning, interval time is 1s

OK

AT^GPSPORT=5   //output the GPS data via AUX port

OK

AT^GPSLOC //launch positioning

OK

……

$GPGGA,021502.2,,,,,0,,,,,,,,*7E

$GPVTG,,T,,M,,N,,K,N*2C

$GPRMC,,V,,,,,,,,,,N*53

$GPGSA,A,1,,,,,,,,,,,,,,*1E //NMEA is reported in 1Hz through UART1

……

$GPGGA,021551.2,3112.638069,N,12134.888934,E,1,04,26.5,-189.5,M,,,*12

$GPVTG,,T,,M,0.0,N,0.0,K,N*2C
$GPRMC,021551.2,A,3112.638069,N,12134.888934,E,0.0,,110610,,,A*47
$GPGSA,A,3,09,15,21,26,,,,,,,,,43.7,26.5,34.7*09
$GPGSV,2,1,07,09,48,035,35,12,,,28,15,17,075,34,21,30,208,31*4E
$GPGSV,2,2,07,26,21,067,35,30,,,27,22,52,317,*7A //positioning success
……
AT^GPSEND   //end the positioning
OK

9.10 AGPS Positioning

AGPS positioning is a mode assisted by network. Valid UIM card is necessary to establish a connection to network. And IP & port of MPC server must be settled.

Example
AT^GPSMPCIP? //check MPC
^GPSMPCIP=xxx.xxx.xxx.xxx, xxxx
OK
AT^GPSMODE=2 // set MSB mode
OK
AT^GPSPORT=5   //output the GPS data via AUX port
OK
AT^GPSLOC=1,1 // enable URC, set tracking & positioning, interval time is 1s
OK AT^GPSLOC //launch positioning
OK
……
//report NMEA data
……
AT^GPSEND //end MSB positioning
OK
AT^GPSMODE=3 //set MSA/hybrid mode
OK
AT^GPSLOC // launch MSA positioning
OK
……
AT^GPSEND
OK

9.11 NMEA Data Format

Send ^GPSFMT command to set specified output format of NMEA data. And it must be set after a positioning conversation, otherwise it is invalid.

Example

AT^GPSMODE=3 //set MSA/hybrid mode
OK
AT^GPSLOC=1,1 // enable URC, set tracking & positioning, interval time is 1s
OK
AT^GPSPORT=5   //output the GPS data via AUX port
OK
AT^GPSFMT?
^GPSFMT:GGA,RMC,GSV,GSA,VTG //list enabled format
OK
AT^GPSLOC //launch MSA positioning
OK
……
$GPGSV,3,1,09,09,11,045,,12,45,067,,14,45,324,,18,45,156,*72
$GPGSV,3,2,09,22,67,223,,24,11,213,,27,,,,30,55,135,*44 $GPGSV,3,3,09,31,22,246,*42
$GPGGA,033254.0,3112.530258,N,12134.821346,E,2,00,0.1,17.0,M,,,,*3F
$GPVTG,,T,,M,,N,,K,N*2C
$GPRMC,033254.0,A,3112.530258,N,12134.821346,E,,,120610,,,D*6B
$GPGSA,A,3,,,,,,,,,,,,,0.1,0.1,0.1*33
……
AT^GPSEND
OK
AT^GPSFMT=GSV,0 //disable GSV reported
OK
AT^GPSFMT=RMC,0 //disable RMC reported
OK
AT^GPSFMT=GSA,0 //disable GSA reported
OK
AT^GPSFMT=VTG,0 //disable VTG reported
OK
AT^GPSLOC
OK
……
$GPGGA,033429.0,3112.418249,N,12134.978738,E,2,00,0.1,18.0,M,,,,*37
……   //only GGA data reported
$GPGGA,033438.0,3112.522855,N,12134.982278,E,2,00,0.1,18.0,M,,,,*3C
……
AT^GPSEND
OK

9.12 Reset Position Infomation

Send ^GPSRES command to delete positioning related information such as GPS satellite calendar and satellite ephemeris information. This command can be used in Standalone GPS cold-start testing.

Example
AT^GPSMODE=1 //set Standalone mode
OK
AT^GPSLOC=1,1
OK
AT^GPSRES   //delete all positioning information
OK AT^GPSLOC // launch positioning (S-GPS cold start)
OK
……
//NMEA data reported
……
AT^GPSEND
OK
AT^GPSLOC // launch positioning again (hot start)
OK
……
/NMEA data reported
……
AT^GPSEND
OK
AT^GPSRES BUSY //after last positioning, MGP engine hasn't been off yet, delete failed
……// wait for a moment
AT^GPSRES
OK

9.13 Set GPS QOS Parameters

If positioning is unsuccessful in QOS limited time or can not achieve the specified position accuracy threshold, the positioning is failed this time.

Example
AT^GPSMODE=1
OK
AT^GPSLOC=1,0 //set single positioning
OK
AT^GPSQOS=3,10 //set position accuracy threshold 100m, time limit 10secs
OK
AT^GPSPORT=5   //output the GPS data via AUX port
OK
AT^GPSLOC
OK
$GPGGA,052701.9,,,,,0,,,,,,,,,*70
$GPGGA,052702.9,,,,,0,,,,,,,,,*73
$GPGGA,052703.9,,,,,0,,,,,,,,,*72
$GPGGA,052704.9,,,,,0,,,,,,,,,*75

$GPGGA,052705.9,,,,0,,,,,,,,*74
$GPGGA,052706.9,,,,0,,,,,,,,*77
$GPGGA,052707.9,,,,0,,,,,,,,*76
$GPGGA,052708.9,,,,0,,,,,,,,*79
$GPGGA,052709.9,,,,0,,,,,,,,*78
$PSTIS,*61 // NMEA is reported in 1Hz in 10s, position failed, this positioning is over
AT^GPSQOS=3,5 // set position accuracy threshold 100m, time limit 5secs
OK
AT^GPSLOC
OK
$GPGGA,053722.9,,,,0,,,,,,,,*70
$GPGGA,053723.9,,,,0,,,,,,,,*71
$GPGGA,053724.9,,,,0,,,,,,,,*76
$GPGGA,053725.9,,,,0,,,,,,,,*77
$PSTIS,*61 //this positioning costs 5s, failed
AT^GPSFMT?
^GPSFMT:GGA
OK

FCC Certification Requirements.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

According to the definition of mobile and fixed device is described in Part 2.1091(b), this device is a mobile device.

And the following conditions must be met:

1. The EUT is a mobile device; maintain at least a 20 cm separation between the EUT and the user's body and must not transmit simultaneously with any other antenna or transmitter.

2. The device is only for fixed operation mode. (A Class II Change would be required for near-body Host applications.)

3. If the FCC ID of the module cannot be seen when it is installed, then the host label must

include the text: Contains FCC ID: RHZWDTL718-W

4. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed 2dBi.