

GGB-1916-C

GNSS/2.5G GSM/GPRS/Bluetooth Module

AT Commands Manual



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Contents

1.	INTRODUCTION	8
1.1	AT COMMANDS TYPES.....	8
2.	GENERAL COMMANDS	9
2.1	AT+CGMI – REQUEST MANUFACTURER IDENTIFICATION.....	9
2.2	AT+CGMM – REQUEST MODEL IDENTIFICATION	9
2.3	AT+CGMR – REQUEST FIRMWARE REVISION IDENTIFICATION.....	9
2.4	AT+CGSN – IMEI IDENTIFICATION.....	10
2.5	AT+CSCS – SELECT TE CHARACTER SET.....	10
2.6	AT+GCAP – REQUEST COMPLETE CAPABILITIES LIST.....	11
2.7	AT+GMI – REQUEST MANUFACTURER IDENTIFICATION.....	12
2.8	AT+GMM – REQUEST MODEL IDENTIFICATION	12
2.9	AT+GMR – REQUEST REVISION IDENTIFICATION	12
2.10	AT+CIMI – INTERNATIONAL MOBILE SUBSCRIBER IDENTITY.....	12
2.11	AT+CFUN – SET PHONE FUNCTIONALITY	13
2.12	AT&F – SET TO FACTORY-DEFINED CONFIGURATION	13
2.13	AT&V – DISPLAY CURRENT CONFIGURATION.....	14
2.14	AT&W – SAVE STORED PROFILE.....	14
2.15	ATQ – SET RESULT CODE SUPPRESSION MODE.	15
2.16	ATV – SET DCE RESPONSE FORMAT.....	15
2.17	ATX – SET CONNECT RESULT CODE FORMAT	15
2.18	ATZ – RESET TO DEFAULT CONFIGURATION	16
2.19	ATI – IDENTIFICATION INFORMATION.....	17
3.	STATUS CONTROL COMMANDS	18
3.1	AT+CEER – EXTENDED ERROR REPORT	18
3.2	AT+CPAS – PHONE ACTIVITY STATUS.....	20
3.3	AT+CTZR – TIME ZONE REPORTING	20
4.	SERIAL INTERFACE CONTROL COMMANDS	22
4.1	AT&C – SET UART DATA CARRIER DETECT (DCD) FUNCTION MODE.....	22
4.2	AT&D – SET UART DATA TERMINAL READY (DTR-PC VIEW) FUNCTION MODE	22
4.3	AT+IFC – DTE-DCE LOCAL FLOW CONTROL	23
4.4	AT+IPR – LOCAL SERIAL PORT DATA RATE	23
5.	SIM RELATED COMMANDS	25
5.1	AT+CLCK – FACILITY LOCK	25

5.2	AT+CPIN – ENTER PIN	26
5.3	AT+CPWD – CHANGE PASSWORD	27
5.4	AT+CRSM – RESTRICTED SIM ACCESS.....	28
6.	NETWORK SERVICE COMMANDS	30
6.1	AT+COPS – OPERATOR SELECTION.....	30
6.2	AT+CREG – NETWORK REGISTRATION	31
6.3	AT+CSQ – SIGNAL QUALITY	32
6.4	AT+CPOL – PREFERRED OPERATOR LIST.....	32
6.5	AT+COPN – READ OPERATOR NAME	34
7.	CALL RELATED COMMANDS	35
7.1	ATA – ANSWER AN INCOMING CALL	35
7.2	ATD – INITIATES A PHONE CALL CONNECTION	35
7.3	ATH – TERMINATES A PHONE CALL CONNECTION.....	36
7.4	ATP – SELECT PULSE DIALING	36
7.5	ATSO – AUTOMATIC ANSWER	36
7.6	ATS6 – PAUSE BEFORE BLIND DIALING	37
7.7	ATS7 – THE AMOUNT OF TIME TO WAIT FOR CONNECTION COMPLETION	37
7.8	ATS8 – THE AMOUNT OF TIME TO WAIT FOR COMMA DIAL MODIFIER	37
7.9	ATS10 – THE AMOUNT OF TIME TO SPECIFY DISCONNECT DELAY.....	38
7.10	ATT – SELECT TONE DIALING	38
7.11	AT+CSTA – SELECT TYPE OF ADDRESS	39
7.12	AT+CLCC – LIST CURRENT CALLS	39
7.13	AT+CR – SERVICE REPORTING CONTROL.....	40
7.14	AT+CRC – CELLULAR RESULT CODE.....	41
7.15	AT+CSNS – SINGLE NUMBERING SCHEME	42
8.	SMS COMMANDS	44
8.1	AT+CSMS – SELECT MESSAGE SERVICE.....	44
8.2	AT+CMGF – MESSAGE FORMAT	45
8.3	AT+CSCA – SERVICE CENTER ADDRESS	45
8.4	AT+CPMS – PREFERRED MESSAGE STORAGE	46
8.5	AT+CMGD – DELETE MESSAGE.....	47
8.6	AT+CMGL – LIST MESSAGE	48
8.7	AT+CMGR – READ MESSAGE	49
8.8	AT+CMGS – SEND MESSAGE	51
8.9	AT+CMGW – WRITE MESSAGE TO MEMORY.....	52
8.10	AT+CMSS – SEND MESSAGE FROM STORAGE.....	53

8.11	AT+CMGC – SEND COMMAND	54
8.12	AT+CNMI – NEW MESSAGE INDICATIONS TO TE.....	54
8.13	AT+CRES – RESTORE SETTINGS.....	57
8.14	AT+CSAS – SAVE SETTINGS.....	58
8.15	AT+CSCB – SELECT CELL BROADCAST MESSAGE TYPES	58
8.16	AT+CSDH – SHOW TEXT MODE PARAMETERS	59
8.17	AT+CSMP – SET TEXT MODE PARAMETERS.....	60
9.	PHONEBOOK COMMANDS	61
9.1	AT+CPBS – SELECT PHONEBOOK MEMORY STORAGE.....	61
9.2	AT+CPBW – WRITE PHONEBOOK ENTRIES	61
9.3	AT+CPBR – READ PHONEBOOK ENTRIES.....	62
9.4	AT+CPBF – FIND PHONEBOOK ENTRIES	63
9.5	AT+CNUM – SUBSCRIBER NUMBER	64
10.	GPS RELATED COMMANDS.....	65
10.1	AT+EGPSC – POWER ON/OFF GPS.....	65
10.2	AT+EGPSS – SEND PMTK COMMAND.....	65
10.3	AT+EGPSEPO – SET EPO PARAMETER.....	66
10.4	AT+EGPSTS – SET GPS TIME SYNC PARAMETER	66
11.	AUDIO COMMANDS.....	68
11.1	ATL – SET VOLUME OF THE MONITOR SPEAKER.....	68
11.2	ATM – SET MODE OF THE MONITOR SPEAKER.....	68
11.3	AT+VTS – ALLOWS THE TRANSMISSION OF DTMF TONES.....	69
11.4	AT+CRSL – RINGER SOUND LEVEL.....	69
11.5	AT+CLVL – LOUDSPEAKER VOLUME LEVEL	69
11.6	AT+CMUT – MUTE CONTROL.....	70
12.	HARDWARE RELATED COMMANDS	71
12.1	AT+CCLK – CLOCK.....	71
12.2	AT+CALA – ALARM.....	71
12.3	AT+CALD – DELETE ALARM	72
12.4	AT+CBC – BATTERY CHARGE	72
12.5	AT+ESIMS – CHECK SIM STATUS.....	73
12.6	AT+LSSLEEP – ENABLE SLEEP MODE	74
12.7	AT+LSGPIOC – GPIO SELECT CONFIGURATION	74
12.8	AT+LSGPIOR – GPIO READ	75
12.9	AT+LSGPIOW – GPIO SET	76
12.10	AT+LSADC – ADC READ	76

12.11	AT+EPOF – POWER OFF MODEM	77
12.12	AT+EADC – ADC CHANNEL INDICATION	77
12.13	UNSOLICITED RESULT CODE: +EADC	78
13.	GPRS RELATED COMMANDS.....	79
13.1	AT+CGDCONT – DEFINE PDP CONTEXT	79
13.2	AT+CGATT – PS ATTACH OR DETACH	80
13.3	AT+CGQREQ – QUALITY OF SERVICE PROFILE (REQUESTED)	81
13.4	AT+CGQMIN – QUALITY OF SERVICE PROFILE (MINIMUM ACCEPTABLE)	82
13.5	AT+CGACT – PDP CONTEXT ACTIVATE OR DEACTIVATE	83
13.6	AT+CGDATA – ENTER DATA STATE	83
13.7	AT+CGPADDR – SHOW PDP ADDRESS	84
13.8	AT+CGEREP – PACKET DOMAIN EVENT REPORTING	85
13.9	AT+CGCLASS – GPRS MOBILE STATION CLASS	86
13.10	AT+CGREG – GPRS NETWORK REGISTRATION STATUS	87
13.11	AT+CGSMS – SELECT SERVICE FOR MO SMS MESSAGES	88
14.	GPRS TCP/IP RELATED COMMANDS	90
14.1	AT+EGDCONT – DEFINE TCP/IP DATA ACCOUNT	90
14.2	AT+ETCPIP – ACTIVATE / DEACTIVATE PDP	90
14.3	AT+ETL – SOCKET OPERATION	91
14.4	AT+ETLQ – QUERY THE SOCKET DATA TRAFFIC STATISTICS	92
14.5	AT+EIPSEND – SEND DATA BY SOCKET	93
14.6	AT+EIPRECV – RECEIVE DATA FROM SOCKET	94
14.7	AT+ETLLISTEN – SERVER LISTEN SERVICE	94
15.	SUPPLEMENTARY SERVICE COMMANDS	96
15.1	AT+CCFC – CALL FORWARDING NUMBER AND CONDITIONS	96
15.2	AT+CCUG – CLOSED USER GROUP	97
15.3	AT+CCWA – CALL WAITING	98
15.4	AT+CHLD – CALL RELATED SUPPLEMENTARY SERVICES	99
15.5	AT+CLIP – CALLING LINE IDENTIFICATION PRESENTATION	100
15.6	AT+CLIR – CALLING LINE IDENTIFICATION RESTRICTION	100
15.7	AT+COLP – CONNECTED LINE IDENTIFICATION PRESENTATION	101
15.8	AT+CUSD – UNSTRUCTURED SUPPLEMENTARY SERVICE DATA	102
15.9	AT+CSSN – SUPPLEMENTARY SERVICE NOTIFICATIONS	103
16.	OTHER COMMANDS.....	105
16.1	ATE – COMMAND ECHO MODE	105
16.2	ATS3 – COMMAND LINE TERMINATION CHARACTER	105

16.3 AT\$4 – RESPONSE FORMATTING CHARACTER 106

16.4 AT\$5 – COMMAND LINE EDITING CHARACTER 106

17. BT CONNECTION MANAGER COMMANDS108

17.1 AT+EBTPWR – POWER ON/OFF BT 108

17.2 AT+EBTNAME – READ/WRITE BT DEVICE LOCAL NAME 108

17.3 AT+EBTADDR – READ/WRITE BT DEVICE LOCAL ADDRESS 109

17.4 AT+EBTINQ – INQUIRY BT DEVICES 109

17.5 AT+EBTINQC – CANCEL INQUIRY BT DEVICES..... 110

17.6 AT+EBTVISB – SET BT VISIBLE..... 110

17.7 AT+EBTRNAME – READ REMOTE BT DEVICE NAME 111

17.8 AT+EBTPAIR – PAIR BT DEVICE..... 111

17.9 AT+EBTPAIRCNF – ALLOW OR DISALLOW BT PAIR..... 112

17.10 AT+EBTRP – READ REMOTE BT DEVICE SUPPORT PROFILES 112

17.11 AT+EBTSENM – READ/WRITE SECURITY MODE, ENCRYPTION MODE 113

17.12 AT+EBTOPAD – GET DEVICE LIST 114

17.13 AT+EBTSTATE – QUERY CONNECT MANGER AND PROFILE STATUS 114

17.14 AT+EBTENSNIFF – SET OR GET SNIFF MODE LEVEL..... 115

17.15 AT+EBTCONN – CONNECT BT PROFILE 116

17.16 AT+LSBTSP – SEND DATA THROUGH BT SPP INTERFACE 117

17.17 AT+LSTALKWALK – OPEN OR CLOSE TALKIE-WALKIE BLUETOOTH AUDIO STREAM..... 117

17.18 AT+LSTALKWALKSPK – TALKIE-WALKIE’S LOUDSPEAKER VOLUME LEVEL 117

17.19 AT+LSTALKWALKMIC – TALKIE-WALKIE’S MICROPHONE SENSITIVITY LEVEL..... 118

17.20 UNSOLICITED RESULT CODE: PAIR INDICATION +EBTPAIR..... 118

17.21 UNSOLICITED RESULT CODE: INQUIRY INDICATION +EBTINQ 119

17.22 UNSOLICITED RESULT CODE: INQUIRY COMPLETED INDICATION +EBTIND 119

17.23 UNSOLICITED RESULT CODE: PASSIVE PAIR RESPONSE +EBTPAIRRES 120

17.24 UNSOLICITED RESULT CODE: NOTIFY PROFILE CONNECTED +EBTCONN 120

17.25 UNSOLICITED RESULT CODE: NOTIFY ALL SUPPORTED PROFILES ARE (DE)ACTIVE +EBTPRFAC 121

17.26 UNSOLICITED RESULT CODE: NOTIFY PROFILE DISCONNECTED +EBTDISC 121

17.27 UNSOLICITED RESULT CODE: NOTIFY VISIBILITY IS CHANGED +EBTVISB 122

17.28 UNSOLICITED RESULT CODE: NOTIFY BT IS RESET +EBTRST 122

17.29 UNSOLICITED RESULT CODE: NOTIFY BOND PROFILE FAIL + EBTPRFBND 122

17.30 UNSOLICITED RESULT CODE: NOTIFY BT DEVICES NEED CONNECT OUR PROFILE +EBTPRFAU 123

17.31 UNSOLICITED RESULT CODE: NOTIFY PROFILE CONNECTED +EBTPRFCN 123

17.32 UNSOLICITED RESULT CODE: NOTIFY PROFILE DISCONNECTED +EBTPRFDSCN 123

17.33 UNSOLICITED RESULT CODE: SPP MESSAGE INDICATION +BT\$PP 124

18. GENERIC ATTRIBUTE PROFILE (GATT) COMMANDS125

18.1	AT+GATSREG – (DE) REGISTER GATT SERVER.....	125
18.2	AT+GATSS - ADD/REMOVE A SERVICE.....	125
18.3	AT+GATSC - ADD A CHARACTERISTIC TO AN EXISTED SERVICE.....	126
18.4	AT+GATSD - ADD A DESCRIPTOR TO AN EXISTED SERVICE	127
18.5	AT+GATSST - START/STOP A SERVICE	128
18.6	AT+GATSL - START/STOP ADVERTISING	129
18.7	AT+GATADV - SET ADVERTISING PARAMETERS	130
18.8	AT+GATCPU - CONNECTION PARAMETERS UPDATE	130
18.9	AT+GATSIND: SEND AN INDICATION TO A CLIENT	131
18.10	AT+GATSRSP - SEND A RESPONSE TO A CLIENT'S READ OR WRITE OPERATION	132
18.11	AT+LSGATTNMEA: SEND GPS NMEA INDICATIONS TO A CLIENT	132
18.12	UNSOLICITED RESULT CODE : NOTIFY WHEN A CONNECTION OR DISCONNECTION COMES +GATSCON	133
18.13	UNSOLICITED RESULT CODE: NOTIFY WHEN CLIENT'S READ REQUEST COMES +GATRREQ	133
18.14	UNSOLICITED RESULT CODE: NOTIFY WHEN CLIENT'S WRITE REQUEST COMES +GATWREQ.....	134

1. Introduction

The GGB-1916 Cellular Modules AT Commands Manual provides the necessary information to configure the applicable GGB-1916 cellular modules

1.1 AT commands types

In general AT commands comprises of three parts, which start with AT, followed by a command and ended with the line termination character <cr>. The response from each command varies and is documented within the following text. In general a successful command will respond with OK, whilst an unrecognized command will fail with an error.

1.1.1 Set command

Syntax	Description
AT+<x>=<...>	A set command configures the user-preferred values for the specified command.

1.1.2 Read command

Syntax	Description
AT+<x>?	A read command provides the current configuration of the command parameters.

1.1.3 Test command

Syntax	Description
AT+<x>=?	A test command returns the list of parameters allowed by the current command.

1.1.4 Action command

Syntax	Description
AT+<x>	An action command forces to execute a specific action for the command.

2. General Commands

2.1 AT+CGMI – Request Manufacturer Identification

Syntax

Type	Command	Response
Test	+CGMI=?	OK
Read	+CGMI	+CGMI: <manufacturer> OK

Description

Identifying the manufacturer identification

Field

Parameter	Type	Description
<manufacturer>	String	Manufacturer name

2.2 AT+CGMM – Request Model Identification

Syntax

Type	Command	Response
Test	+CGMM=?	OK
Read	+CGMM	+CGMM: <model> OK

Description

Identifying the model identification

Field

Parameter	Type	Description
<model>	String	Model name

2.3 AT+CGMR – Request Firmware Revision Identification

Syntax

Type	Command	Response
Test	+CGMR=?	OK
Read	+CGMR	+CGMR: <revision> OK

Description

Identifying the firmware revision identification

Field

Parameter	Type	Description
<revision>	String	Revision name

2.4 AT+CGSN – IMEI Identification

Syntax

Type	Command	Response
Test	+CGSN=?	OK
Read	+CGSN	<IMEI> OK

Description

Identifying the IMEI

Field

Parameter	Type	Description
<serial number>	String	IMEI

2.5 AT+CSCS – Select TE Character Set

Syntax

Type	Command	Response
Test	+CSCS=?	+CSCS: (list of supported <chset>s)

		OK
Read	+CSCS?	+CSCS: <chset> OK
Set	+CSCS=<chset>	OK note : If the function is retrieving an error, then return ERROR

Description

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

Field

Parameter	Type	Description
<chset>	String	<ul style="list-style-type: none"> ● "GSM" GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems ● "HEX" character strings consist only of hexadecimal numbers from 00 to FF; e.g. "032FE6" equals three 8-bit characters with decimal values 3, 47 and 230; no conversions to the original MT character set shall be done. ● "IRA" International reference alphabet (ITU-T T.50) ● "PCCP437" PC character set Code Page 437 ● "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99 ● "8859-1" ISO 8859 Latin character set ● "UCS2_08X1"

2.6 AT+GCAP – Request Complete Capabilities List

Syntax

Type	Command	Response
Test	+GCAP=?	OK
Read	+GCAP	+GCAP: <capability 1>[,<capability 2>[...]] OK

Description

Request complete capabilities list.

Field

Parameter	Type	Description
<capability>	String	The equipment supported command set list. Where: +CGSM: GSM ETSI command set +FCLASS: Fax command set

2.7 AT+GMI – Request Manufacturer Identification

Description

Same as AT+CGMI

2.8 AT+GMM – Request Model Identification

Description

Same as AT+CGMM

2.9 AT+GMR – Request Revision Identification

Description

Same as AT+CGMR

2.10 AT+CIMI – International Mobile Subscriber Identity

Syntax

Type	Command	Response
Test	+CIMI=?	OK
Read	+CIMI	<IMSI> OK

Description

Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual

SIM which is attached to ME.

Field

Parameter	Type	Description
<IMSI>	String	International Mobile Subscriber Identity

2.11 AT+CFUN – Set Phone Functionality

Syntax

Type	Command	Response
Test	+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s) OK
Read	+CFUN?	+CFUN: <fun> OK
Set	+CFUN=<fun>,<rst>	OK Note: If the function is retrieving an error, then return ERROR.

Description

AT+CFUN=0 turn off radio and SIM power. (Supported only for feature phone with feature option)

AT+CFUN=1,1 or AT+CFUN=4,1 can reset the target. (Supported only for feature phone)

AT+CFUN=1 can enter normal mode. (Supported only for module solution)

AT+CFUN=4 can enter flight mode. (Supported only for module solution)

Field

Parameter	Type	Description
<fun>	Number	<ul style="list-style-type: none"> ● 1 : Full functionality ● 4: Disable phone both transmit and receive RF circuits (supported only for module solution) ● 0: Minimal functionality, turn off radio and SIM power.
<rst>	Number	<ul style="list-style-type: none"> ● 0 : Do not reset the MT before setting it to <fun> power level ● 1 : Reset the MT before setting it to <fun> power level

2.12 AT&F – Set to Factory-Defined Configuration

Syntax

Type	Command	Response
Action	AT&F<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set to factory-defined configuration

Field

Parameter	Type	Description
<value>	Number	0 : Set parameters to factory defaults

2.13 AT&V – Display Current Configuration

Syntax

Type	Command	Response
Action	AT&V	DEFAULT PROFILE <user default configuration> USER PROFILE <user configuration> ACTIVE PROFILE <current configuration> OK

Description

Display Current Configuration

2.14 AT&W – Save Stored Profile

Syntax

Type	Command	Response
Action	AT&W	OK Note: If the function is retrieving an error, then return ERROR.

Description

Save Stored Profile

2.15 ATQ – Set Result Code Suppression Mode.

Syntax

Type	Command	Response
Action	ATQ<value>	For supported values If <value> is 0 then return OK. If <value> is 1 then return (none). For unsupported values If previous <value> was 0 then return ERROR. If previous <value> was 1 then return (none).

Description

Set result code suppression mode.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0: DCE transmits result codes. ● 1: Result codes are suppressed and not transmitted.

2.16 ATV – Set DCE Response Format

Syntax

Type	Command	Response
Action	ATV<value>	If <value> is 0 then return 0. If <value> is 1 then return OK. Note: If the function is retrieving an error, then return ERROR.

Description

Set DCE response format.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0: DCE transmits limited headers and trailers and numeric text. ● 1: DCE transmits full headers and trailers and verbose response text

2.17 ATX – Set CONNECT Result Code Format

Syntax

Type	Command	Response
Action	ATX<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The setting of this parameter determines whether or not the DCE transmits particular result codes to the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes off-hook to begin dialing, and whether or not engaged tone (busy signal) detection is enabled. However, this setting has no effect on the operation of the W dial modifier, which always checks for dial tone regardless of this setting, or on the busy signal detection capability of the W and @ dial modifiers.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0: CONNECT result code is given upon entering online data state. Dial tone and busy detection are disabled. ● 1: CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are disabled. ● 2: CONNECT <text> result code is given upon entering online data state. Dial tone detection is enabled, and busy detection is disabled. ● 3: CONNECT <text> result code is given upon entering online data state. Dial tone detection is disabled, and busy detection is enabled. ● 4: CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are both enabled.

2.18 ATZ – Reset To Default Configuration

Syntax

Type	Command	Response
Action	ATZ<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Reset to default configuration

Field

Parameter	Type	Description
<value>	Number	0 : Set parameters to factory defaults

2.19 ATI – Identification Information

Syntax

Type	Command	Response
Read	ATI	<model> <revision> OK

Description

Request Identification Information

Field

Parameter	Type	Description
<model>	String	model name
<revision>	String	Revision name

3. Status Control Commands

3.1 AT+CEER – Extended Error Report

Syntax

Type	Command	Response
Test	+CEER=?	OK
Read	+CEER	+CEER: <cause>, <report> OK

Description

Execution command causes the TA to return one or more lines of information text <report>, which offer the user of the TA an extended report of the reason for

- The failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- The last call release;

Field

Parameter	Type	Description																														
<cause>	Number	Code number of the received error																														
<report>	String	Code description of the received error <table border="1" style="margin-left: 20px;"> <thead> <tr> <th><cause></th> <th><report></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>NONE</td> </tr> <tr> <td>1</td> <td>CM_UNASSIGNED_NUM</td> </tr> <tr> <td>3</td> <td>CM_NO_ROUTE_TO_DESTINATION</td> </tr> <tr> <td>6</td> <td>CM_CHANNEL_UN_ACCP</td> </tr> <tr> <td>8</td> <td>CM_OPR_DTR_BARRING</td> </tr> <tr> <td>10</td> <td>CM_CALL_BARRED*</td> </tr> <tr> <td>11</td> <td>CM_RESERVED*</td> </tr> <tr> <td>16</td> <td>CM_NORMAL_CALL_CLR</td> </tr> <tr> <td>17</td> <td>CM_USER_BUSY</td> </tr> <tr> <td>18</td> <td>CM_NO_USER_RESPONDING</td> </tr> <tr> <td>19</td> <td>CM_NO_ANSWER_ON_ALERT</td> </tr> <tr> <td>21</td> <td>CM_CALL_REJECTED</td> </tr> <tr> <td>22</td> <td>CM_NUMBER_CHANGED</td> </tr> <tr> <td>25</td> <td>CM_PRE_EMPTION</td> </tr> </tbody> </table>	<cause>	<report>	0	NONE	1	CM_UNASSIGNED_NUM	3	CM_NO_ROUTE_TO_DESTINATION	6	CM_CHANNEL_UN_ACCP	8	CM_OPR_DTR_BARRING	10	CM_CALL_BARRED*	11	CM_RESERVED*	16	CM_NORMAL_CALL_CLR	17	CM_USER_BUSY	18	CM_NO_USER_RESPONDING	19	CM_NO_ANSWER_ON_ALERT	21	CM_CALL_REJECTED	22	CM_NUMBER_CHANGED	25	CM_PRE_EMPTION
<cause>	<report>																															
0	NONE																															
1	CM_UNASSIGNED_NUM																															
3	CM_NO_ROUTE_TO_DESTINATION																															
6	CM_CHANNEL_UN_ACCP																															
8	CM_OPR_DTR_BARRING																															
10	CM_CALL_BARRED*																															
11	CM_RESERVED*																															
16	CM_NORMAL_CALL_CLR																															
17	CM_USER_BUSY																															
18	CM_NO_USER_RESPONDING																															
19	CM_NO_ANSWER_ON_ALERT																															
21	CM_CALL_REJECTED																															
22	CM_NUMBER_CHANGED																															
25	CM_PRE_EMPTION																															

		26	CM_NON_SEL_USER_CLEAR
		27	CM_DEST_OUT_OF_ORDER
		28	CM_INVALID_NUMBER_FORMAT
		29	CM_FACILITY_REJECT
		30	CM_RES_STATUS_ENQ
		31	CM_NORMAL_UNSPECIFIED
		34	CM_NO_CIRCUIT_CHANNEL_AVAIL
		38	CM_NETWORK_OUT_OF_ORDER
		41	CM_TEMPORARY_FAILURE
		42	CM_SWITCH_EQUIPMENT_CONGESTION
		43	CM_ACCESS_INFO_DISCARDED
		44	CM_REQUESTED_CKT_CHANEL_NOT_AVIL
		47	CM_RESOURCE_UNAVAIL_UNSPECIFIED
		49	CM_QOS_UNAVAIL
		50	CM_REQ_FAC_NOT_SUBS
		55	CM_IC_BAR_CUG
		57	CM_BEARER_CAP_NOT_AUTHORISED
		58	CM_BEARER_CAP_NOT_AVAIL
		63	CM_SER_UNAVAILABLE
		65	CM_BEARER_SER_UNIMPL
		68	CM_ACM_EXCEEDED
		69	CM_REQ_FACILITY_UNAVAIL
		70	CM_RESTR_DIGITAL_INFO
		79	CM_SER_OPT_UNIMPL
		81	CM_INVALID_TI_VALUE
		87	CM_USER_NOT_IN_CUG
		88	CM_INCOMPATIBLE_DEST
		91	CM_INVALID_TRANSIT_NW_SEL
		95	CM_SEMANTIC_ERR
		96	CM_INVALID_MANDATORY_INF
		97	CM_MSG_TYPE_UNIMPL
		98	CM_MSG_TYPE_NOT_COMPATIBLE
		99	CM_IE_NON_EX
		100	CM_COND_IE_ERR
		101	CM_INCOMP_MESG_WITH_STATE
		102	CM_RECOVERY_ON_TIMER_EXPIRY
		111	CM_PROTOCOL_ERR_UNSPECIFIED

			127	CM_INTER_WRK_UNSPECIFIED	
			128	ERROR_CAUSE_UNKNOWN*	

3.2 AT+CPAS – Phone Activity Status

Syntax

Type	Command	Response
Test	+CPAS=?	+CPAS: (list of supported <pas>s) OK
Read	+CPAS	+CPAS: <pas> OK

Description

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

Field

Parameter	Type	Description
<pas>	Number	<ul style="list-style-type: none"> ● 0 : Ready (MT allows commands from TA/TE) ● 1 : Unavailable (MT does not allow commands from TA/TE) ● 3: Ringing (MT is ready for commands from TA/TE, but the ringer is active) ● 4 : Call in progress (MT is ready for commands from TA/TE, but a call is in progress)

3.3 AT+CTZR – Time Zone Reporting

Syntax

Type	Command	Response
Test	+CTZR=?	+CTZR: (list of supported <onoff>s) OK
Read	+CTZR?	+CTZR: <onoff> OK

Set	+CTZR=<onoff>	OK Note: If the function is retrieving an error, then return ERROR.
-----	---------------	--

Description

Enables and disables the time zone change event reporting.

Field

Parameter	Type	Description
<onoff>	Number	<ul style="list-style-type: none">● 0: Disable automatic time zone update via NITZ (default).● 1: Enable automatic time zone update via NITZ.

4. Serial Interface Control Commands

4.1 AT&C – Set UART Data Carrier Detect (DCD) Function Mode

Syntax

Type	Command	Response
Action	AT&C<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set UART Data Carrier Detect (DCD) Function Mode

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : DCD line is always active ● 1 : DCD line is active in the presence of data carrier only

4.2 AT&D – Set UART Data Terminal Ready (DTR-PC view) Function Mode

Syntax

Type	Command	Response
Action	AT&D<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set UART Data Terminal Ready (DTR-PC view) Function Mode

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Ignores status on DTR ● 1 : DTR drop from active to inactive: Change to command mode while retaining the connected data call ● 2: DTR drop from active to inactive: Disconnect data call, change to command mode. During state DTR inactive auto answer is off

4.3 AT+IFC – DTE-DCE Local Flow Control

Syntax

Type	Command	Response
Test	+IFC=?	+IFC: (list of supported <DCE_by_DTE>s), (list of supported <DTE_by_DCE>s) OK
Read	+IFC?	+IFC: <DCE_by_DTE>, <DTE_by_DCE> OK
Set	+IFC=<DCE_by_DTE>,<DTE_by_DCE>	OK Note: If the function is retrieving an error, then return ERROR.

Description

DTE-DCE local flow control

Field

Parameter	Type	Description
<DCE_by_DTE>	Number	Specifies the method to be used by the DTE to control the flow of received data from the DCE <ul style="list-style-type: none"> ● 0 : None ● 1 : Enable software flow control ● 2 : Enable hardware flow control
<DTE_by_DCE>	Number	Specifies the method to be used by the DCE to control the flow of transmitted data from the DTE <ul style="list-style-type: none"> ● 0 : None ● 1 : Enable software flow control ● 2 : Enable hardware flow control

4.4 AT+IPR – Local Serial Port Data Rate

Syntax

Type	Command	Response
Test	+IPR=?	+IPR: (list of supported <rate>s) OK

Read	+IPR?	+IPR: <rate> OK
Set	+IPR=<rate>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Specifies the data rate, at which the DCE will accept commands. May be used to select operation at rates at which the DCE is not capable of automatically detecting the data rate being used by the DTE.

Field

Parameter	Type	Description
<rate>	Number	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800, 921600. If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto-detect (AT+ICF=0). Supported auto-detectable <rate> values and fixed only <rate> values are both the same.

5. SIM Related Commands

5.1 AT+CLCK – Facility Lock

Syntax

Type	Command	Response
Test	+CLCK=?	+CLCK: (list of supported <fac>s) OK
Set	+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	when <mode>=2 +CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[...]] OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<fac>	String	<ul style="list-style-type: none"> ● "SC" : SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued) ● "AO" : BAOC (Barr All Outgoing Calls) (refer GSM 02.88 clause 1) ● "OI" : BOIC (Barr Outgoing International Calls) (refer GSM 02.88 clause 1) ● "OX" : BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM 02.88 clause 1) ● "AI" : BAIC (Barr All Incoming Calls) (refer GSM 02.88 clause 2) ● "IR" : BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM 02.88 clause 2) ● "AB" : All Barring services (refer GSM 02.30) ● "AG" : All outgoing barring services (refer GSM 02.30) ● "AC" : All incoming barring services (refer GSM 02.30) ● "FD" : SIM fixed dialing memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) ● "PF" : Lock Phone to the very first SIM card

		<ul style="list-style-type: none"> ● "PN" : Network Personalization (refer GSM 02.22) ● "PU" : Network subset Personalization (refer GSM 02.22) ● "PP" : Service Provider Personalization (refer GSM 02.22) ● "PC" : Corporate Personalization (refer GSM 02.22)
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Unlock ● 1 : Lock ● 2 : Query status (only "SC", "AO", "OI", "OX", "AI", "IR" support query mode)
<status>	Number	<ul style="list-style-type: none"> ● 0 : Not active ● 1 : Active
<passwd>	String	Password
<class>	Number	Sum of integers each representing a class of information (default 7): <ul style="list-style-type: none"> ● 1 : Voice (telephony) ● 2 : Data (refers to all bearer services) ● 4 : Fax (facsimile services) ● 8 : Short message service ● 16 : Data circuit sync ● 32 : Data circuit async ● 64 : Dedicated packet access ● 128 : Dedicated PAD access

5.2 AT+CPIN – Enter PIN

Syntax

Type	Command	Response
Test	+CPIN=?	OK
Read	+CPIN?	+CPIN: <code> OK
Set	+CPIN=<pin>,<newpin>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set command sends to the ME a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards ME and an error message is returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the SIM.

Field

Parameter	Type	Description
<pin>, <newpin>	String	Only (decimal) digits (0 9) shall be used. The minimum number of digits is 4, the maximum length is 8 digits
<code>	String	<p>Values reserved by the present document:</p> <ul style="list-style-type: none"> ● READY : MT is not pending for any password ● SIM PIN : MT is waiting SIM PIN to be given ● SIM PUK : MT is waiting SIM PUK to be given ● PH-SIM PIN : MT is waiting phone to SIM card password to be given ● PH-FSIM PIN : MT is waiting phone-to-very first SIM card password to be given ● PH-FSIM PUK : MT is waiting phone-to-very first SIM card unblocking password to be given ● SIM PIN2 : MT is waiting SIM PIN2 to be given ● SIM PUK2 : MT is waiting SIM PUK2 to be given ● PH-NET PIN : MT is waiting network personalization password to be given ● PH-NET PUK : MT is waiting network personalization unblocking password to be given ● PH-NETSUB PIN : MT is waiting network subset personalization password to be given ● PH-NETSUB PUK : MT is waiting network subset personalization unblocking password to be given ● PH-SP PIN : MT is waiting service provider personalization password to be given ● PH-SP PUK : MT is waiting service provider personalization unblocking password to be given ● PH-CORP PIN : MT is waiting corporate personalization password to be given ● PH-CORP PUK : MT is waiting corporate personalization unblocking password to be given

5.3 AT+CPWD – Change Password

Syntax

Type	Command	Response
Test	+CPWD=?	+CPWD: list of supported (<fac>,<pwdlength>)s

		OK
Set	+CPWD=<fac>,<oldpwd>,<newpwd>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<fac>	String	<ul style="list-style-type: none"> ● "SC" : SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued) ● "AO" : BAOC (Barr All Outgoing Calls) (refer GSM 02.88 clause 1) ● "OI" : BOIC (Barr Outgoing International Calls) (refer GSM 02.88 clause 1) ● "OX" : BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer GSM 02.88 clause 1) ● "AI" : BAIC (Barr All Incoming Calls) (refer GSM 02.88 clause 2) ● "IR" : BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer GSM 02.88 clause 2) ● "AB" : All Barring services (refer GSM 02.30) ● "AG" : All outgoing barring services (refer GSM 02.30) ● "AC" : All incoming barring services (refer GSM 02.30) ● "P2" : SIM PIN2
<oldpwd>	String	Old password
<newpwd>	String	New password
<pwdlength>	Number	Maximum length of the password for the facility

5.4 AT+CRSM – Restricted SIM Access

Syntax

Type	Command	Response
Test	+CRSM=?	OK
Set	+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]]	+CRSM: <sw1>,<sw2>,<response> OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<command>	Number	Command passed on by the MT to the SIM; refer 3GPP TS11.11: <ul style="list-style-type: none"> ● 176 : READ BINARY ● 178 : READ RECORD ● 192 : GET RESPONSE ● 214 : UPDATE BINARY ● 220 : UPDATE RECORD ● 242 : STATUS
<fileid>	Number	This is the identifier of an elementary data file on SIM.
<P1>, <P2>, <P3>	Number	Parameters passed on by the MT to the SIM.
<data>	String	Information which shall be written to the SIM (hexadecimal character format; refer +CSCS)
<pathid>	String	Contains the path of an elementary file on the SIM/UICC in hexadecimal format as defined in ETSI TS 102 221 (e.g. "7F205F70" in SIM and UICC case). The <pathid> shall only be used in the mode "select by path from MF" as defined in ETSI TS 102 221. NOTE: Since valid elementary file identifiers may not be unique over all valid dedicated file identifiers the <pathid> indicates the targeted UICC/SIM directory path in case of ambiguous file identifiers. For earlier versions of this specification or if <pathid> is omitted, it could be implementation specific which one will be selected.
<sw1>, <sw2>	Number	Information from the SIM about the execution of the actual command.
<response>	String	Response of a successful completion of the command previously issued (hexadecimal character format) [Note1]: READ BINARY is used for transparent EF. READ RECORD is used for linear fixed or cyclic EF [Note2]: Before using READ BINARY, READ RECORD, UPDATE BINARY, UPDATE RECORD, please use command GET RESPONSE to get the exact length information first.

6. Network Service Commands

6.1 AT+COPS – Operator Selection

Syntax

Type	Command	Response
Test	+COPS=?	+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>[,<Act>])s][,,(list of supported <mode>s),(list of supported <format>s)] OK Note: If the function is retrieving an error, then return ERROR.
Read	+COPS?	+COPS: <mode>[,<format>,<oper>]
Set	+COPS=<mode>[,<format>,<oper>[,<Act>]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set command forces an attempt to select and register the GSM/UMTS network operator. If the selected operator is not available, ERROR is returned. Read command returns the current mode, the currently selected operator. Test command returns operator list present in the network

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Automatic (<oper> field is ignored) ● 1 : Manual (<oper> field shall be present) ● 2: Deregister from network ● 3: Set only <format> (for read command +COPS?), do not attempt registration/deregistration ● 4 : Manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered
<format>	Number	<ul style="list-style-type: none"> ● 0 : Long format alphanumeric <oper> ● 1 : Short format alphanumeric <oper> ● 2 : Numeric <oper>
<oper>	String	Operator format
<stat>	Number	<ul style="list-style-type: none"> ● 0 : Unknown ● 1 : Available

		<ul style="list-style-type: none"> ● 2: Current ● 3: Forbidden
<Act>	Number	<ul style="list-style-type: none"> ● 0: GSM ● 2: UTRAN

6.2 AT+CREG – Network Registration

Syntax

Type	Command	Response
Test	+CREG=?	+CREG: (list of supported <n>s) OK
Read	+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]] OK
Set	+CREG=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the MT network registration status, or code +CREG: <stat>[,<lac>,<ci>[,<Act>]] when <n>=2 and there is a change of the network cell. Read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <lac>,<ci> and <Act> are returned only when <n>=2 and MT is registered in the network.

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 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
<stat>	Number	<ul style="list-style-type: none"> ● 0: Not registered, MT is not currently searching a new operator to register to ● 1: Registered, home network ● 2: Not registered, but MT is currently searching a new operator to register to ● 3: Registration denied

		<ul style="list-style-type: none"> ● 4 : Unknown ● 5 : Registered, roaming
<lac>	String	Two byte location area code in hexadecimal format
<ci>	String	Four byte cell ID in hexadecimal format
<Act>	Number	<ul style="list-style-type: none"> ● 0 : GSM ● 2 : UTRAN ● 3 : GSM w/EGPRS ● 4 : UTRAN w/HSDPA ● 5 : UTRAN w/HSUPA ● 6 : UTRAN w/HSDPA and HSUPA

6.3 AT+CSQ – Signal Quality

Syntax

Type	Command	Response
Test	+CSQ=?	+CSQ: (list of supported <rssi>s),(list of supported <ber>s) OK
Read	+CSQ	+CSQ: <rssi>,<ber> OK

Description

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

Field

Parameter	Type	Description
<rssi>	Number	<ul style="list-style-type: none"> ● 0 : 113 dBm or less ● 1 : 111 dBm ● 2...30: 109... 53 dBm ● 31 : 51 dBm or greater ● 99 : not known or not detectable
<ber> (in percent)	Number	<ul style="list-style-type: none"> ● 0...7 : as RXQUAL values in the table in TS 45.008 ● 99 : not known or not detectable

6.4 AT+CPOL – Preferred Operator List

Syntax

Type	Command	Response
Test	+CPOL=?	+CPOL: (list of supported <index>s),(list of supported <format>s) OK
Read	+CPOL?	+CPOL:<index1>,<format>,<oper1>[,<GSM_Act1>,<GSM_Compact_Act1>,<UTRAN_Act1>][<CR><LF>]+CPOL:<index2>,<format>,<oper2>[,<GSM_Act2>,<GSM_Compact_Act2>,<UTRAN_Act2>][...] OK
Set	+CPOL=<index>,<format>[,<oper>[<GSM_Act>,<GSM_compact_Act>,<UTRAN_Act>]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<indexn>	Number	the order number of operator in the SIM/USIM preferred operator list
<format>	Number	<ul style="list-style-type: none"> ● 0 : Long format alphanumeric <oper> ● 1 : Short format alphanumeric <oper> ● 2 : Numeric <oper>
<opern>	String	<format> indicates if the format is alphanumeric or numeric (see +COPS)
<GSM_Actn>	Number	GSM access technology: <ul style="list-style-type: none"> ● 0 : Access technology not selected ● 1 : Access technology selected
<GSM_Compact_Actn>	Number	GSM compact access technology <ul style="list-style-type: none"> ● 0 : Access technology not selected ● 1 : Access technology selected
<UTRAN_Act>	Number	UTRA access technology. Allowed values <ul style="list-style-type: none"> ● 0 : Access technology not selected ● 1 : Access technology selected

6.5 AT+COPN – Read Operator Name

Syntax

Type	Command	Response
Test	+COPN=?	OK
Read	+COPN	+COPN: <numeric1>,<alpha1>[<CR><LF>+COPN: <numeric2>,<alpha2>[...]] OK

Description

Execute command returns the list of operator names from the MT. Each operator code <numeric> that has an alphanumeric equivalent <alphan> in the MT memory shall be returned.

Field

Parameter	Type	Description
<numeric>	String	operator in numeric format
<alpha>	String	operator in long alphanumeric format

7. Call Related Commands

7.1 ATA – Answer An Incoming Call

Syntax

Type	Command	Response
Action	ATA	OK Note: If there is no connection, then return NO CARRIER.

Description

Answers and initiates a connection to an incoming call.

7.2 ATD – Initiates A Phone Call Connection

Syntax

Type	Command	Response
Action	ATD<dial string>	OK Note: If there is no connection, then return NO CARRIER. Note: If current connection is busy, then return BUSY.
	ATD<<n>	

Description

Initiates a phone connection, which may be data, facsimile (+FCLASS> 0), or voice (phone number terminated by semicolon). The phone number used to establish the connection will consist of digits and modifiers, or a stored number specification. ATD memory dial can originate call to phone number in entry location <n> (the memory storage of +CPBS setting will be used.). ATDL is used to dial LDN(last dialed number) and it will always dial as voice call.

Field

Parameter	Type	Description
<dial string>	Number	<ul style="list-style-type: none"> ● 0 1 2 3 4 5 6 7 8 9 * # +. Valid characters for origination. If DTMF dialing is implemented, A, B, C, D are valid characters for origination. ● W : The W modifier is ignored but is included for compatibility reasons only ● , : The comma modifier is ignored but is included for compatibility reasons only ● ; : Informs the Infrared Modem that the number is a voice number

		rather than a fax or data number
		<ul style="list-style-type: none"> ● T : The T modifier is handled (tone DTMF dialing functionality) ● P : The P modifier is handled (pulse DTMF dialing functionality)
<n>	Number	Index in PHB

7.3 ATH – Terminates A Phone Call Connection

Syntax

Type	Command	Response
Action	ATH	OK Note: If there is no connection, then return NO CARRIER.

Description

Terminates a connection

7.4 ATP – Select Pulse Dialing

Description

(This setting is ignored.)

7.5 ATSO – Automatic Answer

Syntax

Type	Command	Response
Read	ATSO?	<value> OK
Set	ATSO=<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0: Automatic answering is disabled. ● 1 to 255: Enable automatic answering on the ring number specified.

7.6 ATS6 – Pause Before Blind Dialing

Description

(This setting is ignored.)

7.7 ATS7 – The Amount Of Time To Wait For Connection Completion

Syntax

Type	Command	Response
Read	ATS7?	<value> OK
Set	ATS7=<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	1 to 255 Number of seconds in which connection must be established or call will be disconnected

7.8 ATS8 – The Amount Of Time To Wait For Comma Dial Modifier

Syntax

Type	Command	Response
Read	ATS8?	<value>

		OK
Set	ATS8=<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0: DCE does not pause when "," encountered in dial string. ● 1 to 255: Number of seconds to pause. Recommended default setting ● 2: DCE pauses two seconds when "," is encountered.

7.9 ATS10 – The Amount Of Time To Specify Disconnect Delay

Syntax

Type	Command	Response
Read	ATS10?	<value> OK
Set	ATS10=<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	1 to 254 Number of tenths of a second of delay.

7.10 ATT – Select Tone Dialing

Description

(This setting is ignored.)

7.11 AT+CSTA – Select Type Of Address

Syntax

Type	Command	Response
Test	+CSTA=?	+CSTA: (list of supported <type>s) OK
Read	+CSTA?	+CSTA: <type> OK
Set	+CSTA=<type>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Selects the type of number for further dialing commands (D) according to GSM/UMTS specifications.

Field

Parameter	Type	Description
<type>	Number	Type of address octet in integer format (refer 3GPP TS 24.008 sub clause 10.5.4.7); Default 145 when dialing string includes international access code character "+", otherwise 129

7.12 AT+CLCC – List Current Calls

Syntax

Type	Command	Response
Test	+CLCC=?	+CSTA: (list of supported <type>s) OK
Read	+CLCC	[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>]][<CR><LF> +CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>]][...]] OK

Description

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

Field

Parameter	Type	Description
<idx>	Number	call identification number as described in 3GPP TS 22.030 sub clause 4.5.5.1; this number can be used in +CHLD command operations
<dir>	Number	<ul style="list-style-type: none"> ● 0 : Mobile originated (MO) call ● 1 : Mobile terminated (MT) call
<stat>	Number	state of the call: <ul style="list-style-type: none"> ● 0 : Active ● 1 : Held ● 2 : Dialing (MO call) ● 3 : Alerting (MO call) ● 4 : Incoming (MT call) ● 5 : Waiting (MT call)
<mode>	Number	bearer/teleservice: <ul style="list-style-type: none"> ● 0 : Voice ● 1 : Data ● 2 : Fax ● 3 : Voice followed by data, voice mode ● 4 : Alternating voice/data, voice mode ● 5 : Alternating voice/fax, voice mode ● 6 : Voice followed by data, data mode ● 7 : Alternating voice/data, data mode ● 8 : Alternating voice/fax, fax mode ● 9 : Unknown
<mpty>	Number	<ul style="list-style-type: none"> ● 0 : Call is not one of multiparty (conference) call parties ● 1 : Call is one of multiparty (conference) call parties
<number>	String	type phone number in format specified by <type>
<type>	Number	Type of address octet in integer format (refer TS 24.008 sub clause 10.5.4.7)

7.13 AT+CR – Service Reporting Control

Syntax

Type	Command	Response
Test	+CR=?	+CR: (list of supported <mode>s) OK
Read	+CR?	+CR: <mode> OK
Set	+CR=<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Disables reporting ● 1 : Enables reporting
<serv>	String	<ul style="list-style-type: none"> ● ASYNC : Asynchronous transparent ● SYNC : Synchronous transparent ● REL ASYNC : Asynchronous non-transparent ● REL SYNC : Synchronous non-transparent

7.14 AT+CRC – Cellular Result Code

Syntax

Type	Command	Response
Test	+CRC=?	+CRC: (list of supported <mode>s) OK
Read	+CRC?	+CRC: <mode> OK
Set	+CRC=<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Disables extended format ● 1 : Enables extended format
<type>	String	<ul style="list-style-type: none"> ● ASYNC : Asynchronous transparent ● SYNC : Synchronous transparent ● REL ASYNC : Asynchronous non-transparent ● REL SYNC : Synchronous non-transparent ● FAX : Facsimile (TS 62) ● VOICE : Normal voice (TS 11) ● VOICE/XXX : Voice followed by data (BS 81) (XXX is ASYNC, SYNC, REL ASYNC or REL SYNC) ● ALT VOICE/XXX : Alternating voice/data, voice first (BS 61) ● ALT XXX/VOICE : Alternating voice/data, data first (BS 61) ● ALT VOICE/FAX : Alternating voice/fax, voice first (TS 61) ● ALT FAX/VOICE: Alternating voice/fax, fax first (TS 61). ● GPRS : GPRS network request for PDP context activation

7.15 AT+CSNS – Single Numbering Scheme

Syntax

Type	Command	Response
Test	+CSNS=?	+CSNS: (list of supported <mode>s) OK
Read	+CSNS?	+CSNS: <mode> OK
Set	+CSNS=<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none">● 0 : Voice● 1 : Alternating voice/fax, voice first (TS 61)● 2 : Fax (TS 62)● 3 : Alternating voice/data, voice first (BS 61)● 4 : Data● 5 : Alternating voice/fax, fax first (TS 61)● 6 : Alternating voice/data, data first (BS 61)● 7 : Voice followed by data (BS 81)

8. SMS Commands

8.1 AT+CSMS – Select Message Service

Syntax

Type	Command	Response
Test	+CSMS=?	+CSMS: (list of supported <service>s) OK
Read	+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm> OK
Set	+CSMS=<service>	+CSMS: <mt>,<mo>,<bm> OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<service>	Number	<ul style="list-style-type: none"> ● 0 : 3GPP TS 23.040 and 3GPP TS 23.041 ● 1 : 3GPP TS 23.040 and 3GPP TS 23.041 The requirement of <service> setting 1 is mentioned under corresponding command descriptions)
<mt>	Number	Mobile terminated messages <ul style="list-style-type: none"> ● 0 : Type not supported ● 1 : Type supported
<mo>	Number	Mobile originated messages <ul style="list-style-type: none"> ● 0 : Type not supported ● 1 : Type supported
<bm>	Number	Broadcast messages <ul style="list-style-type: none"> ● 0 : Type not supported ● 1 : Type supported

8.2 AT+CMGF – Message Format

Syntax

Type	Command	Response
Test	+CMGF=?	+CMGF: (list of supported <mode>s) OK
Read	+CMGF?	+CMGF: <mode> OK
Set	+CMGF=<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : PDU mode (default when implemented) ● 1 : Text mode

8.3 AT+CSCA – Service Center Address

Syntax

Type	Command	Response
Test	+CSCA=?	OK
Read	+CSCA?	+CSCA: <sca>,<tosca> OK
Set	+CSCA=<sca>[,<tosca>]	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<sca>	String	Service center address field
<tosca>	String	Service center address format

8.4 AT+CPMS – Preferred Message Storage

Syntax

Type	Command	Response
Test	+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported<mem2>s),(list of supported <mem3>s) OK
Read	+CPMS?	+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK
Set	+CPMS=<mem1>	+CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mem1>	String	Messages to be read and deleted from this memory storage <ul style="list-style-type: none"> ● “SM” – SIM message storage ● “ME” – Mobile Equipment message storage ● “MT” – Sum of “SM” and “ME” storages
<mem2>	String	Messages will be written and sent to this memory storage <ul style="list-style-type: none"> ● “SM” – SIM message storage ● “ME” – Mobile Equipment message storage ● “MT” – Sum of “SM” and “ME” storages
<mem3>	String	Received messages will be placed in this memory storage

		<ul style="list-style-type: none"> ● “SM” – SIM message storage ● “ME” – Mobile Equipment message storage ● “MT” – Sum of “SM” and “ME” storages
<usedx>	Number	Number of messages currently in <memx>
<totalx>	Number	Number of messages storable in <memx>

8.5 AT+CMGD – Delete Message

Syntax

Type	Command	Response
Test	+CMGD=?	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)] OK
Set	+CMGD=<index>,<delflag>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Deletes message from preferred message <mem1> (see AT+CPMS) storage location <index>.

Field

Parameter	Type	Description
<index>	Number	An integer indicating value in the range of location numbers
<delflag>	Number	An integer indicating multiple message deletion request as follows: <ul style="list-style-type: none"> ● 0 (or omitted) – Delete the message specified in <index> ● 1 : Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched ● 2 : Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched ● 3: Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched. ● 4: Delete all messages from preferred message storage including unread messages.

8.6 AT+CMGL – List Message

Syntax

Type	Command	Response
Test	+CMGL=?	+CMGL: (list of supported <stat>s) OK
Set	+CMGL=<stat>	<p><u>if text mode (+CMGF=1), SMS-SUBMITs and/or SMS-DELIVERs:</u> +CMGL:<index>,<stat>,<oa/da>,<[alpha]>,<[scts]>,<[tooa/toda]>,<length><CR><LF><data><CR><LF>+CMGL:<index>,<stat>,<da/oa>,<[alpha]>,<[scts]>,<[tooa/toda]>,<length><CR><LF><data>[...]</p> <p><u>if text mode (+CMGF=1), SMS-STATUS-REPORTs:</u> +CMGL:<index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>,<[scts]>,<dt>,<st><CR><LF>+CMGL:<index>,<stat>,<fo>,<mr>,<[ra]>,<[tora]>,<[scts]>,<dt>,<st>[...]</p> <p><u>if text mode (+CMGF=1), SMS-COMMANDs:</u> +CMGL: <index>,<stat>,<fo>,<ct><CR><LF>+CMGL:<index>,<stat>,<fo>,<ct>[...]</p> <p><u>if text mode (+CMGF=1), CBM storage:</u> +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data><CR><LF>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]</p> <p><u>if PDU mode (+CMGF=0):</u> +CMGL: <index>,<stat>,<[alpha]>,<length><CR><LF><pdu><CR><LF>+CMGL:<index>,<stat>,<[alpha]>,<length><CR><LF><pdu>[...]</p> <p>Note: If the function is retrieving an error, then return ERROR.</p>

Description

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

Field

Parameter	Type	Description
<stat>	Number or String	In Text mode: <ul style="list-style-type: none"> ● "REC UNREAD" : Received unread messages ● "REC READ" : Received read messages ● "STO UNSENT" : Stored unsent messages ● "STO SENT" : Stored sent messages ● "ALL" : All messages In PDP mode <ul style="list-style-type: none"> ● 0 : Received unread messages ● 1 : Received read messages ● 2 : Stored unsent messages ● 3 : Stored sent messages ● 4 : All messages
<index>	Number	Storage position
<oa>	String	Originator address
<alpha>	String	Alphanumeric representation of <da> corresponding to the entry found in the phonebook 3GPP TS 24.008
<scts>	String	Service center time stamp in time-string format
<tooa>	Number	Type of address of <oa> - octet
<length>	Number	<ul style="list-style-type: none"> ● In text mode: number of characters ● In PDU mode: PDU's length in octets without the Service Center's address.
<da>	String	Destination address
<toda>	Number	Type of address of <da> - octet
<fo>	Number	First octet of the SMS TPDU (see 3GPP TS 23.040)
<mr>	Number	Message reference
<ra>	String	Recipient address field
<tora>	Number	Type of address of <ra> - octet

8.7 AT+CMGR – Read Message

Syntax

Type	Command	Response
Test	+CMGR=?	OK
Set	+CMGR=<index>	if text mode (+CMGF=1), SMS-DELIVER: +CMGR:<stat>,<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sc>,<tosca>,<length>]<CR><LF><data>

		<p><u>if text mode (+CMGF=1), SMS-SUBMIT:</u> +CMGR:<stat>,<da>,<alpha>],[<toda>,<fo>,<pid>,<dcs>,<vp>],<sc ca>,<tosca>,<length>]<CR><LF><data></p> <p><u>if text mode (+CMGF=1), SMS-STATUSREPORT:</u> +CMGR:<stat>,<fo>,<mr>,<ra>],[<tora>,<scts>,<dt>,<st></p> <p><u>if text mode (+CMGF=1), SMS-COMMAND:</u> +CMGR:<stat>,<fo>,<ct>[,<pid>,<mn>],[<da>],[<toda>],<length>< CR><LF><cdata>]</p> <p><u>if text mode (+CMGF=1), CBM storage:</u> +CMGR:<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data ></p> <p><u>if PDU mode (+CMGF=0):</u> +CMGR: <stat>,<alpha>,<length><CR><LF><pdu></p> <p>Note: If the function is retrieving an error, then return ERROR.</p>
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Description

Returns messages with location value <index> from preferred message storage <mem1> to the TE. If the status of the message is .received unread. The status in the storage changes to .received read.

Field

Parameter	Type	Description
<index>	Number	Storage position
<stat>	Number	<ul style="list-style-type: none"> ● 0: in PDU mode or "REC UNREAD" in text mode: received unread SMS ● 1: in PDU mode or "REC READ" in text mode: received read SMS ● 2: in PDU mode or "STO UNSENT" in text mode: stored unsent SMS ● 3: in PDU mode or "STO SENT" in text mode: stored sent SMS
<oa>	String	Originator address
<alpha>	String	Alphanumeric representation of <da> or <a> corresponding to the entry found in the phonebook 3GPP TS 24.008
<scts>	String	Service center time stamp in time-string format
<tooa>	Number	Type of address of <oa> - octet

<fo>	Number	First octet of the SMS TPDU (see 3GPP TS 23.040)
<pid>	Number	TP-Protocol-Identifier (default 0); see the 3GPP TS 23.040
<dc>	Number	Data Coding Scheme
<sca>	String	Service center address field
<tosca>	Number	Type of address of <sca> - octet in Number format (for more details see the 3GPP TS 24.008); default 145 when string includes '+', otherwise default 129
<length>	Number	<ul style="list-style-type: none"> ● In text mode: number of characters ● In PDU mode: PDU's length in octets without the Service Center's address. In example 0
<da>	String	Destination address
<toda>	Number	Type of address of <da> - octet
<vp>	Number	Format depending of the <fo> setting
<mr>	Number	Message reference
<ra>	String	Recipient address field
<tora>	Number	Type of address of <ra> - octet
<dt>	String	Discharge time in format "yy/MM/dd,hh:mm:ss+zz";
<st>	Number	Status of an SMS STATUS-REPORT
<ct>	Number	TP-Command-Type
<mn>	Number	See the 3GPP TS 23.040 TP-Message-Number in integer format
<cdata>	String	TP-Command-Data in text mode responses
<sn>	Number	CBM serial number
<mid>	Number	CBM message identifier
<page>	Number	3GPP TS 23.041 CBM Page Parameter bits 4-7 in integer format
<pages>	Number	3GPP TS 23.041 CBM Page Parameter bits 0-3 in integer format
<pdu>	String	Protocol data unit:

8.8 AT+CMGS – Send Message

Syntax

Type	Command	Response
Test	+CMGS=?	OK
Set	<p><u>if text mode (+CMGF=1):</u> +CMGS=<da>[,<toda>]<CR>te xt is entered<ctrl-Z/ESC></p> <p><u>if PDU mode (+CMGF=0):</u></p>	<p><u>if text mode (+CMGF=1):</u> +CMGS: <mr>[,<scts>]</p> <p><u>if PDU mode (+CMGF=0):</u></p>

	+CMGS=<length><CR>PDU is given<ctrl-Z/ESC>	+CMGS: <mr>[,<ackpdu>] Note: If the function is retrieving an error, then return ERROR.
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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.

Field

Parameter	Type	Description
<da>	String	Destination address
<toda>	Number	Type of address of <da> - octet
<text>	String	SMS String
<mr>	Number	Message reference
<length>	Number	<ul style="list-style-type: none"> ● In text mode: number of characters ● In PDU mode: PDU's length in octets without the Service Center's address.

8.9 AT+CMGW – Write Message To Memory

Syntax

Type	Command	Response
Test	+CMGW=?	OK
Set	<p>if text mode (+CMGF=1): +CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>text is entered<ctrl-Z/ESC></p> <p>if PDU mode (+CMGF=0): +CMGW=<length>[,<stat>]<CR>PDU is given<ctrl-Z/ESC></p>	<p>+CMGW: <index></p> <p>OK</p> <p>Note: If the function is retrieving an error, then return ERROR.</p>

Description

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

Field

Parameter	Type	Description
<da>	String	TP-Destination-Address Address-Value field (see the 3GPP TS 23.040)
<oa>	String	TP-Originating-Address Address-Value field (see the 3GPP TS 23.040)
<toa>	Number	TP-Originating-Address Type-of-Address octet (see the 3GPP TS 24.011)
<toda>	Number	TP-Destination-Address Type-of-Address octet (see the 3GPP TS 24.011)
<stat>	Number or String	Number type in PDU mode, or string type in text mode ; it indicates the message status in memory: <ul style="list-style-type: none"> ● 0: in PDU mode or "REC UNREAD" in text mode: received unread SMS messages ● 1: in PDU mode or "REC READ" in text mode: received read SMS messages ● 2: in PDU mode or "STO UNSENT" in text mode: stored unsent SMS messages ● 3: in PDU mode or "STO SENT" in text mode: stored sent SMS messages
<text>	String	SMS string
<index>	Number	Storage position
<length>	Number	The parameter meaning depends on the message format: <ul style="list-style-type: none"> ● In text mode: number of characters ● In PDU mode: PDU's length in octets without the Service Center's address.
<PDU>	String	Protocol Data Unit

8.10 AT+CMSS – Send Message From Storage

Syntax

Type	Command	Response
Test	+CMSS=?	OK
Set	+CMSS=<index>[,<da>[,<toda> >]]	<p><u>if text mode (+CMGF=1):</u> +CMSS: <mr>[,<scts>]</p> <p><u>if PDU mode (+CMGF=0):</u> +CMSS: <mr>[,<ackpdu>]</p> <p>OK</p> <p>Note: If the function is retrieving an error, then return ERROR.</p>

Description

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

Field

Parameter	Type	Description
<da>	String	Destination-Address
<toda>	Number	Type-of-Address octet (see the 3GPP TS 24.011)
<index>	Number	Storage position
<mr>	Number	Message reference

8.11 AT+CMGC – Send Command

Syntax

Type	Command	Response
Test	+CMGC=?	OK
Set	if text mode (+CMGF=1): +CMGC=<fo>,<ct>[,<pid>[,<m n>[,<da>[,<toda>]]]]<CR> if PDU mode (+CMGF=0): +CMGC=<length><CR>PDU is given<ctrl-Z/ESC>	<u>if text mode (+CMGF=1):</u> +CMGC: <mr>[,<scts>] <u>if PDU mode (+CMGF=0):</u> +CMGC: <mr>[,<ackpdu>] OK Note: If the function is retrieving an error, then return ERROR.

Description

Execution command sends a command message from a TE to the network (SMSCOMMAND).

8.12 AT+CNMI – New Message Indications To TE

Syntax

Type	Command	Response
Test	+CNMI=?	+CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported<bm>s),(list of supported <ds>s),(list of supported <bfr>s)

		OK
Read	+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> OK
Set	+CNMI=<mode>[,<mt>[,<bm>[,<ds> [,<bfr>]]]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Disable unsolicited result code ● 1: Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. ● 2: Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE. ● 3: Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.
<mt>	Number	<ul style="list-style-type: none"> ● 0: No SMS-DELIVER indications are routed to the TE. ● 1 : If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem>,<index> ● 2 : SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group(store message)) are routed directly to the TE using unsolicited result code: +CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or +CMT: <oa>, [<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF> <data> (text mode enabled; about parameters in italics, refer command Show Text Mode Parameters +CSDH) ● 3: Class 3 SMS-DELIVERs are routed directly to TE using unsolicited

		result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.
<bm>	Number	<ul style="list-style-type: none"> ● 0: No CBM indications are routed to the TE. ● 2 : New CBMs are routed directly to the TE using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode enabled); or +CBM: <sn>,<mid>,<dc>,<page>,<pages><CR><LF><data> (text mode enabled) If ME supports data coding groups which define special routing also for messages other than class 3 (e.g. (U)SIM specific messages), ME may choose not to route messages of such data coding schemes into TE (indication of a stored CBM may be given as defined in <bm>=1). ● 3: Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM Storage is supported, messages of other classes result in indication as defined in <bm>=1.
<ds>	Number	<ul style="list-style-type: none"> ● 0: No SMS-STATUS-REPORTs are routed to the TE. ● 1 : SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled); or +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> (text mode enabled)
<bfr>:	Number	<ul style="list-style-type: none"> ● 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.
<mem>	String	
<index>	Number	Storage position
<length>	Number	In text mode: number of characters In PDU mode: PDU's length in octets without the Service Center's address.
<pdu>	String	Protocol data unit:
<oa>	String	Originator address
<scts>	String	Service center time stamp in time-string format
<sn>	Number	CBM serial number
<mid>	Number	CBM message identifier
<dc>	Number	Data Coding Scheme
<page>	Number	CBM Page Parameter bits 4-7 in integer format as described in 3GPP TS 23.041

		CBM Page Parameter bits 0-3 in integer format as described in 3GPP TS 23.041
<fo>	Number	First octet of the SMS TPDU (see 3GPP TS 23.040)
<mr>	Number	Message reference
<ra>	String	Recipient address field
<tora>	Number	Type of address of <ra> - octet
<dt>	String	Discharge time in format "yy/MM/dd,hh:mm:ss+zz"
<st>	Number	Status of a SMS STATUS-REPORT
<message_id>	Number	Message-ID of the 3GPP2 SMS
<priority>	Number	3GPP2 priority: <ul style="list-style-type: none"> ● 0: normal ● 1: interactive ● 2: urgent ● 3: emergency
<privacy>	Number	3GPP2 privacy <ul style="list-style-type: none"> ● 0: not restricted ● 1: restrictive ● 2: confidential ● 3: secret
<callback_number>	String	Callback number
<encoding>	Number	Text encoding <ul style="list-style-type: none"> ● 2: ASCII7 ● 3: IA5 ● 4: UCS2 ● 8: ISO 8859-1 ● 9: GSM7
<num_sms>	Number	Total number of SMS
<part>	Number	Fragment part number
<reference>	Number	3GPP2 reference ID

8.13 AT+CRES – Restore Settings

Syntax

Type	Command	Response
Test	+CRES=?	+CRES: (list of supported <profile>s) OK

Set	+CRES=<profile>	OK Note: If the function is retrieving an error, then return ERROR.
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Description

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

Field

Parameter	Type	Description
<profile>	Number	0...1 : Manufacturer specific profile number where settings are to be stored

8.14 AT+CSAS – Save Settings

Syntax

Type	Command	Response
Test	+CSAS=?	+CSAS: (list of supported <profile>s) OK
Set	+CSAS=<profile>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<profile>	Number	0...1 : Manufacturer specific profile number where settings are to be stored

8.15 AT+CSCB – Select Cell Broadcast Message Types

Syntax

Type	Command	Response
Test	+CSCB=?	+CSCB: (list of supported <mode>s) OK
Read	+CSCB?	+CSCB: <mode>,<mids> OK
Set	+CSCB=<mode>,<mids>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Message types specified in <mids> and <dcss> are accepted ● 1 : Message types specified in <mids> and <dcss> are not accepted
<mids>	String	We support 10 message identifiers at most. String type: all different possible combinations of CBM message identifiers (refer <mid>)(default is empty string); e.g. "0,1,5,320-478,922"
<dcss>	String	String type; all different possible combinations of CBM data coding schemes (refer <dcss>) (default is empty string); e.g. "0-3,5"

8.16 AT+CSDH – Show Text Mode Parameters

Syntax

Type	Command	Response
Test	+CSDH=?	+CSDH: (list of supported <show>s) OK
Read	+CSDH?	+CSDH: <show> OK
Set	+CSDH=<show>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<show>	Number	<ul style="list-style-type: none"> ● 0 : do not show detailed SMS header information ● 1: show detailed SMS header information

8.17 AT+CSMP – Set Text Mode Parameters

Syntax

Type	Command	Response
Test	+CSMP=?	OK
Read	+CSMP?	+CSMP:<fo>,<vp>,<pid>,<dcs> OK
Set	+CSMP=<fo>,<vp>,<pid>,<dcs> >	OK Note: If the function is retrieving an error, then return ERROR.

Description

Setting Text Mode Parameters. Set command is used to select values for additional parameters needed when SM is sent to the network or placed in storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0... 255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by <fo>.

Field

Parameter	Type	Description
<fo>	Number	0~255 : Validity Period only relative format support
<vp>	Number	0~255 : Relative format
<pid>	Number	0~255 : If PID value is reserved or SC specific will return error
<dcs>	Number	0~255 : Not support compress ,not support reserve bit is 1

9. Phonebook Commands

9.1 AT+CPBS – Select Phonebook Memory Storage

Syntax

Type	Command	Response
Test	+CPBS=?	+CPBS: (list of supported <storage>s) OK
Read	+CPBS?	+CPBS: <storage>[,<used>,<total>] OK
Set	+CPBS=<storage>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<storage>	String	Phonebook memory storage <ul style="list-style-type: none"> ● "ME" : MT phonebook ● "SM" : SIM/UICC phonebook ● "LD" : Last-dialing phonebook ● "MC": MT missed calls list ● "RC": MT received calls list. ● "DC" : MT dialed calls list ● "FD" : SIM/USIM fixdialling-phonebook ● "ON" : SIM own numbers (MSISDNs) list
<used>	Number	Indicates the number of used locations in selected memory
<total>	Number	Indicates the total number of locations in selected memory

9.2 AT+CPBW – Write Phonebook Entries

Syntax

Type	Command	Response
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Test	+CPBW=?	+CPBW: (list of supported<index>s),<nlength>,(list of supported <type>s),<tlength> OK
Set	+CPBW=<index>,<number>,<t ype>,<text>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<index>	Number	The range of location numbers of phonebook memory
<number>	String	phone number of format <type>
<type>	Number	Type of address
<text>	String	Text associated with the number. The maximum length is <tlength>
<nlength>	Number	indicating the maximum length of field <number>
<tlength>	Number	indicating the maximum bytes of field <text> after encoding

9.3 AT+CPBR – Read Phonebook Entries

Syntax

Type	Command	Response
Test	+CPBR=?	+CPBR: (list of supported<index>s),[<nlength>],[<tlength>] OK
Set	+CPBR=<index1>,< index2>	+CPBR:<index1>,<number>,<type>,<text>[,<hidden>][[...]<CR><LF> >+CPBR:<index2>,<number>,<type>,<text>[,<hidden>]] OK Note: If the function is retrieving an error, then return ERROR.

Description

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

location number <indexn>, phone number <number> in <indexn>, and text <text> associated with the number.

Field

Parameter	Type	Description
<index>	Number	The range of location numbers of phonebook memory
<number>	String	phone number of format <type>
<type>	Number	Type of address
<text>	String	Text associated with the number. The maximum length is <tlength>
<nlength>	Number	indicating the maximum length of field <number>
<tlength>	Number	indicating the maximum bytes of field <text> after encoding

9.4 AT+CPBF – Find Phonebook Entries

Syntax

Type	Command	Response
Test	+CPBF=?	+CPBF:[<nlength>,<tlength> OK
Set	+CPBF=<findtext>	+CPBF: <index1>,<number>,<type>,<text> [...]<CR><LF>+CPBF: <index2>,<number>,<type>,<text>] OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<index>	Number	The range of location numbers of phonebook memory
<number>	String	phone number of format <type>
<type>	Number	Type of address
<text>	String	Text associated with the number. The maximum length is <tlength>
<nlength>	Number	indicating the maximum length of field <number>

<length>	Number	indicating the maximum bytes of field <text> after encoding
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9.5 AT+CNUM – Subscriber Number

Syntax

Type	Command	Response
Test	+CNUM=?	OK
Read	+CNUM	+CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>] [<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service>] [...]] OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<alphax>	String	Optional alphanumeric string associated with <numberx>
<numberx>	String	phone number of format specified by <typex>
<typex>	Number	Type of address
<service>	Number	service related to the phone number)

10. GPS related Commands

10.1 AT+EGPSC – Power On/Off GPS

Syntax

Type	Command	Response
Test	+EGPSC=?	+EGPSC:(list of supported<state>s) OK
Read	+EGPSC?	+EGPSP:<state> OK
Set	+EGPSC=<state>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Power on/off GPS.

Field

Parameter	Type	Description
<state>	Number	<ul style="list-style-type: none"> ● 0 : power off GPS ● 1 : power on GPS

10.2 AT+EGPSS – Send PMTK Command

Syntax

Type	Command	Response
Test	+EGPSS=?	OK
Set	+EGPSS="<pmtk>"	OK Note: If the function is retrieving an error, then return ERROR.

Description

Send MTK private GPS command – PMTK command to GPS chip.

Field

Parameter	Type	Description
<pmtk>	String	PMTK command string. No '?' before the PMTK string

10.3 AT+EGPSEPO – Set EPO Parameter

Syntax

Type	Command	Response
Test	+EGPSEPO=?	+EGPSEPO:(list of supported<status>s)(list of supported<data account>s) OK
Read	+EGPSEPO?	+EGPSEPO:<status><data account> OK
Set	+EGPSEPO=<status>,<data account>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enable/Disable EPO downloading and aiding features. Set the data account used by EPO downloading.

Field

Parameter	Type	Description
<status>	Number	<ul style="list-style-type: none"> ● 0 : Disable EPO ● 1 : Enable EPO
<data account>	Number	Network data account is used to access internet and set by command "AT+EGDCONT".

10.4 AT+EGPSTS – Set GPS Time Sync Parameter

Syntax

Type	Command	Response
Test	+EGPSTS=?	+EGPSTS:(list of supported<status>s)(list of supported<data account>s) OK
Read	+EGPSTS?	+EGPSTS:<status><data account>

		OK
Set	+EGPSTS=<status>,<data account>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enable/Disable GPS time sync and aiding. Set time sync network data account.

Field

Parameter	Type	Description
<status>	Number	<ul style="list-style-type: none"> ● 0 : Disable GPS time sync ● 1 : Enable GPS time sync
<data account>	Number	Network data account is used to access internet and set by command "AT+EGDCONT".

11. Audio Commands

11.1 ATL – Set Volume Of The Monitor Speaker

Syntax

Type	Command	Response
Action	ATL<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set volume of the monitor speaker.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0 : Low speaker volume ● 1 : Low speaker volume ● 2 : Medium speaker volume ● 3 : High speaker volume

11.2 ATM – Set Mode Of The Monitor Speaker

Syntax

Type	Command	Response
Action	ATM<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set mode of the monitor speaker.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0 : Speaker is always off ● 1 : Speaker is on until TA informs TE that the carrier has been detected ● 2: Speaker is always on when TA is off-hook.

11.3 AT+VTS – Allows The Transmission Of DTMF Tones

Syntax

Type	Command	Response
Test	+VTS=?	(list of supported <tone1>s),(list of supported <tone2>s) ,(list of supported <duration>s)
Set	+VTS=<dtmf>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<dtmf>	String	A single ASCII character in the set .0-9, #, *, A-D.

11.4 AT+CRSL – Ringer Sound Level

Syntax

Type	Command	Response
Test	+CRSL=?	+CRSL: (list of supported <level>s)
Read	+CRSL?	+CRSL: <level> OK
Set	+CRSL=<level>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set the incoming call ringer sound level.

Field

Parameter	Type	Description
<level>	Number	value with manufacturer specific range

11.5 AT+CLVL – Loudspeaker Volume Level

Syntax

Type	Command	Response
Test	+CLVL=?	+CLVL: (list of supported <level>s)
Read	+CLVL?	+CLVL: <level> OK
Set	+CLVL=<level>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets the volume of the internal speaker in the ME

Field

Parameter	Type	Description
<level>	Number	Value with manufacturer specific range.

11.6 AT+CMUT – Mute Control

Syntax

Type	Command	Response
Test	+CMUT=?	+CMUT: (list of supported <n>s)
Read	+CMUT?	+CMUT: <n> OK
Set	+CMUT=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 0 : Mute off ● 1 : Mute on

12. Hardware Related Commands

12.1 AT+CCLK – Clock

Syntax

Type	Command	Response
Test	+CCLK=?	OK
Read	+CCLK?	+CCLK: <time> OK
Set	+CCLK=<time>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<time>	String	Format is "YY/MM/DD, HH:MM:SS", where characters indicate year (two last digits), month, day, hour, minutes, seconds.

12.2 AT+CALA – Alarm

Syntax

Type	Command	Response
Test	+CALA=?	+CALA: (0) OK
Read	+CALA?	+CALA: <time>,<n1>,,,<recurr>[<CR><LF>+CALA: <time>,<n2>,,,<recurr>[...]] OK
Set	+CALA=<time>[,<n>[,<type>[, <text>[,<recur>]]]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets an alarm time in the ME

Field

Parameter	Type	Description
<n>	Number	indicating the index of the alarm
<type>	Number	We don't care about type value.
<text>	String	text content
<recurr>	String	indicating day of weeks for the alarm in one of the following format: "<1..7>[,<1..7>[...]]" – Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), ..., Sunday (7). Example: The string "1, 2, 3, 4, 5" may be used to set an alarm for all weekdays "0" – Sets a recurrent alarm for all days in the week.
<time>	String	Format is "YY/MM/DD, HH:MM:SS", where characters indicate year (two last digits), month, day, hour, minutes, seconds.

12.3 AT+CALD – Delete Alarm

Syntax

Type	Command	Response
Test	+CALD=?	+CALD: (list of supported <n>s) OK
Set	+CALD=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Action command deletes an alarm in the MT.

Field

Parameter	Type	Description
<n>	Number	indicating the index of the alarm; default is manufacturer specific

12.4 AT+CBC – Battery Charge

Syntax

Type	Command	Response
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Test	+CBC=?	+CBC: (list of supported <bcs>s),(list of supported <bcl>s) OK
Read	+CBC	+CBC: <bcs>,<bcl> OK

Description

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

Field

Parameter	Type	Description
<bcs>	Number	<ul style="list-style-type: none"> ● 0 : MT is powered by the battery ● 2 : MT does not have a battery connected
<bcl>	Number	<ul style="list-style-type: none"> ● 0 : Battery is exhausted, or MT does not have a battery connected ● 1...100 : Battery has 1 100 percent of capacity remaining

12.5 AT+ESIMS – Check SIM Status

Syntax

Type	Command	Response
Read	AT+ESIMS?	+ESIMS: <SIM_INSERTED> OK
Set	AT+ESIMS=<mode>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The read command is only response the SIM inserted status.

The active command is used to trigger SIM reset procedure and response the SIM inserted status.

The execute command is used to enable/disable +ESIMS URC report.

Field

Parameter	Type	Description
<SIM_INSERTED>	Number	<ul style="list-style-type: none"> ● 0 : No SIM ● 1 : Detected
<mode>	Number	<ul style="list-style-type: none"> ● 0 : Disable +ESIMS URC

		<ul style="list-style-type: none"> ● 1 : Enable +ESIMS URC
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12.6 AT+LSSLEEP – Enable Sleep Mode

Syntax

Type	Command	Response
Set	+LSSLEEP=<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Enable sleep mode.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 1 : enable sleep mode

12.7 AT+LSGPIOC – GPIO select configuration

Syntax

Type	Command	Response
Test	+LSGPIOC=?	+LSGPIOC: (list of supported <gpio_id>),(list of supported <gpio_mode>),(list of supported <gpio_out_val>\<gpio_in_pull_val >),(list of supported <gpio_in_pull_en> OK
Read	LSGPIOC?	+LSGPIOC: <gpio_id>,<gpio_mode>[<gpio_id>,<gpio_mode>[....]] OK
Set	+LSGPIOC=<gpio_id>,<gpio_mode>[,<gpio_out_val>\<gpio_in_pull_val>],<gpio_in_pull_en>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Configures the GPIOs pins as input or output. When the GPIOs pins are configured as output pin, it is possible to set the value.

Field

Parameter	Type	Description
<gpio_id>	Number	GPIO pin identifier <ul style="list-style-type: none"> ● 4: pin number 4 ● 5: pin number 5 ● 6: pin number 6 ● 7: pin number 7 ● 9: pin number 9
<gpio_mode>	Number	Mode identifier: configured function <ul style="list-style-type: none"> ● 0: output ● 1: input
<gpio_out_val>	Number	GPIO output value (for output function <gpio_mode>=0 only): <ul style="list-style-type: none"> ● 0: low ● 1: high
<gpio_in_pull_val >	Number	GPIO input value (for input function <gpio_mode>=1 only): <ul style="list-style-type: none"> ● 0: pull down ● 1: pull up
<gpio_in_pull_en>	Number	GPIO input value (for input function <gpio_mode>=1 only): <ul style="list-style-type: none"> ● 0: Disable pull up/pull down ● 1: Enable pull up/pull down

12.8 AT+LSGPIOR – GPIO read

Syntax

Type	Command	Response
Test	+LSGPIOR=?	+LSGPIOR: (list of supported <gpio_id>s) OK
Set	+LSGPIOR=<gpio_id>	+LSGPIOR: <gpio_id>,<gpio_val> OK Note: If the function is retrieving an error, then return ERROR.

Description

Read the current value of the specified GPIO pin, no matter whether it is configured as input or output.

Field

Parameter	Type	Description
<gpio_id>	Number	GPIO pin identifier: pin number
<gpio_val>	Number	GPIO value. Allowed values are 0 and 1

12.9 AT+LSGPIOW – GPIO set

Syntax

Type	Command	Response
Test	+LSGPIOW=?	+UGPIOW: (list of supported <gpio_id>s),(list of supported <gpio_out_val>s) OK
Set	+LSGPIOW=<gpio_id>,<gpio_out_val>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set the output of the specified GPIO pin, but only if it is configured in output function.

Field

Parameter	Type	Description
<gpio_id>	Number	GPIO pin identifier: pin number
<gpio_out_val>	Number	GPIO value. Allowed values are 0 and 1

12.10 AT+LSADC – ADC read

Syntax

Type	Command	Response
Test	+LSADC=?	+LSADC: OK
Read	+LSADC?	+LSADC: <adc_val> OK Note: If the function is retrieving an error, then return ERROR.

Description

Read the current value of the specified ADC, given in mV. The syntax and the parameters range are shown in the

response to the test command if ADC is supported; if no ADC is supported by the modem, an error is returned. Before you want to read the current value of ADC, please use the command AT+EADC=1 to enable ADC function.

Field

Parameter	Type	Description
<adc_val>	Number	Current ADC value measured on the specified ADC pin, typical range [0-2800 mV]

12.11 AT+EPOF – Power off modem

Syntax

Type	Command	Response
Test	+EPOF=?	OK
Action	+EPOF	

Description

This command is used to power off modem and cut off power.

12.12 AT+EADC – ADC Channel Indication

Syntax

Type	Command	Response
Test	+EADC=?	+EADC: (list of supported <op>s) OK
Set	+EADC=<op>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Disable ● 1: Enable

12.13 Unsolicited result code: +EADC

Format

Unsolicited result code
+EADC: <ADC0>,<ADC1>,<ADC2>,<ADC3>,<ADC4>

Description

This is indication report the battery status to AP.

Field

Parameter	Type	Description
<ADC0>	Number	Battery voltage (micro voltage)
<ADC1>	Number	Battery temperature (1/100 C)
<ADC2>	Number	AUX voltage (micro voltage)
<ADC3>	Number	Charge current (micro A)
<ADC4>	Number	Charger voltage (micro voltage)

13. GPRS related Commands

13.1 AT+CGDCONT – Define PDP Context

Syntax

Type	Command	Response
Test	+CGDCONT=?	+CGDCONT: (range of supported<cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[,(list of supported <pd1>s)]...[(list of supported <pdN>s)]]][<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[,(list of supported <pd1>s)]...[(list of supported <pdN>s)]]][...] OK
Read	+CGDCONT?	+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>,<h_comp>,<pd1>[,...[,<pdN>]]][<CR><LF>+CGDCONT: <cid>, <PDP_type>,<APN>,<PDP_addr>, <d_comp>,<h_comp>,<pd1>[,...[,<pdN>]]][...] OK
Set	+CGDCONT=<cid> [,<PDP_type>[,<APN> [,<PDP_addr> [,<d_comp>[,<h_comp> [,<pd1>[,...[,<pdN>]]]]]]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<cid>	Number	A particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of

		the command.
<PDP_type>	String	IP Internet Protocol
<APN>	String	(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.
<PDP_address>	String	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>	Number	controls PDP data compression (applicable for SNDTCP only) 0 – Off (default if value is omitted)
<h_comp>	Number	controls PDP header compression 0 – Off (default if value is omitted)
<pd1>, ... <pdN>	String	Zero to N string parameters whose meanings are specific to the <PDP_type>

13.2 AT+CGATT – PS attach or detach

Syntax

Type	Command	Response
Test	+CGATT=?	+CGATT: (list of supported <state>s) OK
Read	+CGATT?	+CGATT: <state> OK
Set	+CGATT=<state>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<state>	Number	state of PS attachment <ul style="list-style-type: none"> ● 0 : Detached ● 1 : Attached

13.3 AT+CGQREQ – Quality of Service Profile (Requested)

Syntax

Type	Command	Response
Test	+CGQREQ=?	+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of Supported <reliability>s), (list of supported <peak>s), (list of supported <mean>s) [...]] OK
Read	+CGQREQ?	+CGQREQ: <cid>, <precedence >,<delay>, <reliability>, <peak>, <mean>[<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>,<mean>[...]] OK
Set	+CGQREQ=<cid> [,<precedence >,<delay> [,<reliability.>,<peak> [,<mean>]]]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<cid>	Number	particular PDP context definition
<precedence>	Number	precedence class
<delay>	Number	delay class

<reliability>	Number	reliability class
<peak>	Number	peak throughput class
<mean>	Number	mean throughput class

13.4 AT+CGQMIN – Quality of Service Profile (Minimum acceptable)

Syntax

Type	Command	Response
Test	+CGQMIN=?	+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)[...]] OK
Read	+CGQMIN?	+CGQMIN: <cid>, <precedence >,<delay>, <reliability>,<peak>,<mean>[<CR><LF>+CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>,<mean>[...]] OK
Set	+CGQMIN=<cid> [,<precedence >[,<delay> [,<reliability.>[,<peak> [,<mean>]]]]]	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<cid>	Number	particular PDP context definition
<precedence>	Number	precedence class
<delay>	Number	delay class
<reliability>	Number	reliability class

<peak>	Number	peak throughput class
<mean>	Number	mean throughput class

13.5 AT+CGACT – PDP context activate or deactivate

Syntax

Type	Command	Response
Test	+CGACT=?	+CGACT: (list of supported <state>s) OK
Read	+CGACT?	+CGACT: <cid>, <state>[<CR><LF>+CGACT: <cid>, <state>[...]] OK
Set	+CGACT=<state>,<cid>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<state>	Number	The state of PDP context activation <ul style="list-style-type: none"> ● 0 : Deactivated ● 1 : Activated Other values are reserved and will result in an ERROR response to the execution command.
<cid>	Number	Specifies a particular PDP context definition. If no <cid> is specified, then UE assumes it as 1. The usage of omitted <cid> to activate/deactivate all is not supported.

13.6 AT+CGDATA – Enter data state

Syntax

Type	Command	Response
Test	+CGDATA=?	+CGDATA: (list of supported<L2P>s) OK

Set	+CGDATA=<L2P>,<cid>	CONNECT Note: If the function is retrieving an error, then return ERROR.
-----	---------------------	---

Description

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

Field

Parameter	Type	Description
<L2P>	String	Indicates the layer 2 protocol to be used between the TE and MT PPP Point-to-point protocol for a PDP such as IP Other values will result in an ERROR response.
<cid>	Number	A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)

13.7 AT+CGPADDR – Show PDP address

Syntax

Type	Command	Response
Test	+CGPADDR=?	+CGPADDR: (list of defined <cid>s) OK
Set	+CGPADDR=<cid>	+CGPADDR: <cid>,<PDP_addr> OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<cid>	Number	A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, an ERROR result code will be returned. Multiple <cid> fields are not supported.

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

Syntax

Type	Command	Response
Test	+CGEREP=?	+CGEREP: (list of supported <mode>s),(list of supported<bfr>s) OK
Read	+CGEREP?	+CGEREP: <mode>,<bfr> OK
Set	+CGEREP=<mode>,<bfr>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set command enables or disables sending of unsolicited result codes (URC), +CGEV: XXX from MT to TE in the case of certain events occurring in the Packet Domain MT or the network.

Field

Parameter	Type	Description
<mode>	Number	<ul style="list-style-type: none"> ● 0: Disables sending of URC, +CGEV. No codes are forwarded to the TE. ● 1: Enables sending of URC, +CGEV. Forward them directly to the TE.
<bfr>	Number	0 MT will not buffer any URC. 0 is default value if omitted, and it's the only supported setting.

+CGEV:

For network attachment, the following unsolicited result codes and the corresponding events are defined:

+CGEV: NW DETACH

The network has forced a PS detach. This implies that all active contexts have been deactivated.

These are not reported separately.

+CGEV: ME DETACH

The mobile termination has forced a PS detach. This implies that all active contexts have been

deactivated. These are not reported separately.

For PDP context deactivation, the following unsolicited result codes and the corresponding events are defined:

+CGEV: NW DEACT <PDP_type>, <PDP_addr>, <cid>

The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

+CGEV: ME DEACT <PDP_type>, <PDP_addr>, <cid>

The mobile termination has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

For PDP context activation, the following unsolicited result codes and the corresponding events are defined:

+CGEV: ME PDN ACT <cid>

The mobile termination has activated a context. The <cid> for this context is provided to the TE. The format of the parameters <cid> is found in command +CGDCONT.

For other PDP context handling, the following unsolicited result codes and the corresponding events are defined:

+CGEV: REJECT <PDP_type>, <PDP_addr>

A network request for context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected. The format of the parameters <PDP_type> and <PDP_addr> are found in command +CGDCONT.

+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]

The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

13.9 AT+CGCLASS – GPRS mobile station class

Syntax

Type	Command	Response
Test	+CGCLASS=?	+CGCLASS: (list of supported <class>s) OK
Read	+CGCLASS?	+CGCLASS:<class> OK
Set	+CGCLASS=<class>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The set command is used to set the MT to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

The read command returns the current GPRS mobile class.

The test command is used for requesting information on the supported GPRS mobile classes.

Field

Parameter	Type	Description
<class>	String	<p>GPRS mobile class (in descending order of functionality)</p> <ul style="list-style-type: none"> ● A class A (highest) ● B class B ● CG class C in GPRS only mode ● CC class C in circuit switched only mode (lowest) <p>Other values are reserved and will result in an ERROR response to the set command.</p> <p>If the MT is GPRS attached when the set command is issued with a <class> = CC specified, a detach request shall be sent to the network.</p>

:

13.10 AT+CGREG – GPRS network registration status

Syntax

Type	Command	Response
Test	+CGREG=?	+CGREG: (list of supported <n>s) OK
Read	+CGREG?	+CGREG:<n>,<stat>[,<lac>,<ci>[,<Act>]] OK
Set	+CGREG=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>[,<Act>]] when <n>=2 and there is a change of the network cell. The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of

the MT. Location information elements <lac>,<ci> and <Act> are returned only when <n>=2 and MT is registered in the network.

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 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>	Number	<ul style="list-style-type: none"> ● 0 : Not registered, MT is not currently searching an operator to register to ● 1 : Registered, home network ● 2 : Not registered, but MT is currently trying to attach or searching an operator to register to ● 3 : Registration denied ● 4 : Unknown ● 5 : Registered, roaming
<lac>	String	two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<ci>	String	four byte cell ID in hexadecimal format
<Act>	Number	<ul style="list-style-type: none"> ● 0 – GSM ● 2 – UTRAN ● 3 – GSM w/EGPRS ● 4 – UTRAN w/HSDPA ● 5 – UTRAN w/HSUPA ● 6 – UTRAN w/HSDPA and HSUPA

13.11 AT+CGSMS – Select service for MO SMS messages

Syntax

Type	Command	Response
Test	+CGSMS=?	+CGSMS: (list of supported <service>s) OK
Read	+CGSMS?	+CGSMS: <service> OK
Set	+CGSMS= <service>	OK

		Note: If the function is retrieving an error, then return ERROR.
--	--	--

Description

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages. The read command returns the currently selected service or service preference. The test command is used for requesting information on the currently available services and service preferences.

Field

Parameter	Type	Description
<service>	Number	The service or service preference to be used <ul style="list-style-type: none">● 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)

14. GPRS TCP/IP related Commands

14.1 AT+EGDCONT – Define TCP/IP data account

Syntax

Type	Command	Response
Test	+EGDCONT=?	+EGDCONT: (range of supported<id>s), <PDP_type>,<APN>[,<proxy ip>,< proxy port>] OK
Read	+EGDCONT?	+EGDCONT:<id>,<PDP_type>,<APN>,<proxy ip>,< proxy port> OK
Set	+EGDCONT=<id>,<PDP_type>,<APN>,<proxy ip>,< proxy port>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Define TCP/IP data account

Field

Parameter	Type	Description
<id>	Number	Data account id, total 3 accounts was defined. Value range is 0 - (GPRS_MAX_PDP_SUPPORT-1). A data account id is coupled with a PDP, and the PDP context id will be allocated auto.
<PDP_type>	String	(Packet Data Protocol type) a string parameter.IP Internet Protocol
<APN>	String	(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.
<proxy ip>	String	Proxy ip address. Some special APNs may need this content like "CMWAP". If the value is null or omitted, means do not need this type.
<proxy port>	Number	Same with proxy ip.

14.2 AT+ETCPIP – Activate / Deactivate PDP

Syntax

Type	Command	Response
Test	+ETCPIP=?	+EGDCONT: (range of supported<id>s), (list of supported < op>s) OK
Read	+ETCPIP?	+ETCPIP:<id>,<op> +ETCPIP:<id>,<op> OK
Set	+ETCPIP=<op>,<id>,<user name>,<passwd>,<auth>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Activate or deactivate PDP.

Field

Parameter	Type	Description
<op>	Number	Operation mode: ● 0 : Deactivate PDP ● 1 : Activate PDP
<id>	Number	Data account id
<user name>	string	User Name
<passwd>	string	Password
<auth>	Number	A numeric parameter used to indicate authentication type. Default is PAP. ● 0 : PAP ● 1 : CHAP

14.3 AT+ETL –Socket operation

Syntax

Type	Command	Response
Test	+ETL=?	+ETL: (list of supported <op>s),,, OK
Set (op=0)	+ETL=0,<socket id>	OK Note: If the function is retrieving an error, then return ERROR.
Set (op=1)	+ETL=1,<id>,<type>,<dest ip>,<dest port>	+ETL:<socket id>

		OK Note: If the function is retrieving an error, then return ERROR.
Set (op=2)	+ETL=2,<id>	+ETL:<socket id>,<type>,<dest ip>,<dest port> OK Note: If the function is retrieving an error, then return ERROR.

Description

Create/close/query socket.

Field

Parameter	Type	Description
<op>	Number	Operation mode: <ul style="list-style-type: none"> ● 0 : Close a socket with socket id ● 1 : Create a socket and return socket id ● 2 : Query all the socket info with data account id
<id>	Number	Data account id
<socket id>	Number	Socket id. When create a socket, if success will return this value
<type>	Number	<ul style="list-style-type: none"> ● 0: TCP ● 1: UDP
<dest ip>	String	Dest ip address
<dest port>	Number	Dest port

14.4 AT+ETLQ – Query the socket data traffic statistics

Syntax

Type	Command	Response
Test	+ETLQ=?	+ETLQ: (0-10) OK
Set	+ETLQ=<socket id>	+ETLQ:<total send>,<total ack>,<total receive> OK Note: If the function is retrieving an error, then return ERROR.

Description

Query the socket data transfer statistics.

Field

Parameter	Type	Description
<socket id>	Number	When create a socket, if success will return this value
<total send>	Number	Total send data bytes in this socket
<total ack>	Number	Total send data bytes which get the dest ack in this socket
<total receive>	Number	Total receive data bytes in this socket

14.5 AT+EIPSEND – Send data by socket

Syntax

Type	Command	Response
Test	+EIPSEND=?	+EIPESND: (0-10),, OK
Set	+EIPSEND=<socket id>,<data>,<dest ip>,<dest port>	+EIPSEND: <ret> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send data by socket.

Note: For TCP socket, send command should not add ip address and port.

Send TCP data to socket 1:

AT+EIPSEND=1,"1122abcd" //data is 0x11, 0x22, 0xab, 0xcd

For UDP socket,

If use AT+ETL to create a UDP socket and not with ip and port, send command should add ip address and port, or will return error. If create UDP socket command already with ip and port, the send command format is same with TCP.

send UDP data to socket 2 with ip and port:

AT+EIPSEND=2,"1122abcd","10.0.0.1", 80 //send 4 bytes data: 0x11, 0x22, 0xab, 0xcd

The max send data length is 512 bytes raw data.

Field

Parameter	Type	Description
<socket id >	Number	When create a socket, if success will return this value.
<data>	String	Hex format string. For example, if you want send "0x01, 0x22, 0xAB, 0xCD" 4 bytes data, you need send string "0122ABCD"

<dest ip>	String	Dest ip address. Only UDP socket need
<dest port>	Number	Dest port. Only UDP socket need.
<ret>	Number	The socket sends success data length. If error, <ret> will be a negative number reply the socket error cause

14.6 AT+EIPRECV– Receive data from socket

Syntax

Type	Command	Response
Test	+EIPRECV=?	+EIPRECV: (list of supported <??>s),(list of supported <receives data length>) OK
Set	+EIPRECV=<socket id>	+EIPRECV: <socket id>,<data string> OK note: If the function is retrieving an error, then return ERROR.

Description

Receive data from socket.

Note: The max receives data length is 512 bytes raw data.

Field

Parameter	Type	Description
<socket id >	Number	When create a socket, if success will return this value

14.7 AT+ETLLISTEN–Server listen service

Syntax

Type	Command	Response
Set	+ETLLISTEN=<id>,<port>	+ETLLISTEN:<socket id> OK note: If the function is retrieving an error, then return ERROR.

Description

Server listen service. Server will accept auto when connect coming.

Field

Parameter	Type	Description
<id>	Number	Data account id, total 3 accounts was defined. Value range is 0-2. A data account id is coupled with a PDP, and the PDP context id will be allocated auto.
<port>	Number	Listen port

15. Supplementary Service Commands

15.1 AT+CCFC – Call forwarding number and conditions

Syntax

Type	Command	Response
Test	+CCFC=?	+CCFC: (list of supported <reason>s) OK
Set	+CCFC=<reason>,<mode>[,<number>,<type>,<class>,<subaddr>,<satype>,<time>]]]]]]	when <mode>=2: +CCFC: <status>,<class1>,<number>,<type>,<subaddr>,<satype>,<time>]]]] <CR><LF>+CCFC:<status>,<class2>,<number>,<type>,<subaddr>,<satype>,<time>]]]] ...]] OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<reason>	Number	<ul style="list-style-type: none"> ● 0: unconditional ● 1: mobile busy ● 2: no reply ● 3: not reachable ● 4: all call forwarding (refer 3GPP TS 22.030) ● 5: all conditional call forwarding (refer 3GPP TS 22.030)
<mode>	Number	<ul style="list-style-type: none"> ● 0: disable ● 1: enable ● 2: query status ● 3: registration ● 4: erasure
<number>	String	phone number of forwarding address in format specified by <type>

<type>	Number	type of address
<subaddr>	String	sub address of format specified by <satype>
<satype>	Number	type of sub address (refer TS 24.008 sub clause 10.5.4.8)
<classx>	Number	a sum of integers each representing a class of information (default 7) <ul style="list-style-type: none"> ● 1: voice (telephony) ● 2: data (refers to all bearer services) ● 4: fax (facsimile services) ● 8: short message service ● 16: data circuit sync ● 32: data circuit async ● 64: dedicated packet access ● 128: dedicated PAD access
<time>	Number	1...30 when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded
<status>	Number	<ul style="list-style-type: none"> ● 0: not active ● 1: active

15.2 AT+CCUG – Closed user group

Syntax

Type	Command	Response
Test	+CCUG=?	OK
Read	+CCUG?	+CCUG: <n>,<index>,<info> OK
Set	+CCUG=<n>,<index>,<info>	OK Note: If the function is retrieving an error, then return ERROR.

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.

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 0: disable CUG temporary mode ● 1: enable CUG temporary mode
<index>	Number	<ul style="list-style-type: none"> ● 0...9: CUG index

		<ul style="list-style-type: none"> ● 10: no index (preferred CUG taken from subscriber data)
<info>	Number	<ul style="list-style-type: none"> ● 0: no information ● 1: suppress OA ● 2: suppress preferential CUG ● 3: suppress OA and preferential CUG

15.3 AT+CCWA – Call waiting

Syntax

Type	Command	Response
Test	+CCWA=?	+CCWA: (list of supported <n>s) OK
Read	+CCWA?	+CCWA: <n> OK
Set	+CCWA=<n>,<mode>,<class>	when <mode>=2 +CCWA: <status>,<class1>[<CR><LF>+CCWA: <status>,<class2>[...]] OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<n>	Number	sets/shows the result code presentation status to the TE <ul style="list-style-type: none"> ● 0: disable ● 1: enable
<mode>	Number	when <mode> parameter is not given, network is not interrogated <ul style="list-style-type: none"> ● 0: disable ● 1: enable ● 2: query status

<class>	Number	Sum of integers each representing a class of information (default 7) <ul style="list-style-type: none"> ● 1: voice (telephony) ● 2: data (refers to all bearer services) ● 4: fax (facsimile services) ● 8: short message service ● 16: data circuit sync ● 32: data circuit async ● 64: dedicated packet access ● 128: dedicated PAD access
<status>	Number	<ul style="list-style-type: none"> ● 0: not active ● 1: active

15.4 AT+CHLD – Call related supplementary services

Syntax

Type	Command	Response
Test	+CHLD=?	+CHLD: (list of supported <n>s) OK
Set	+CHLD=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<n>	Number	sets/shows the result code presentation status to the TE <ul style="list-style-type: none"> ● 0: Releases all held calls, or sets User-Determined User Busy for a waiting call ● 1: Releases all active calls and accepts the other (waiting or held) call ● 1x: Releases the specific active call X ● 2: Places all active calls on hold and accepts the other (held or waiting) call' ● 2x: Places all active calls, except call X, on hold

		<ul style="list-style-type: none"> ● 3: Adds a held call to the conversation ● 4: Connects two calls and disconnects the subscriber from both calls ● 5: Activate the Completion of Calls to Busy Subscriber Request. (CCBS)
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15.5 AT+CLIP – Calling line identification presentation

Syntax

Type	Command	Response
Test	+CLIP=?	+CLIP: (list of supported <n>s) OK
Read	+CLIP?	+CLIP: <n>,<m> OK
Set	+CLIP=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<n>	Number	parameter sets/shows the result code presentation status to the TE <ul style="list-style-type: none"> ● 0: disable ● 1: enable
<m>	Number	parameter shows the subscriber CLIP service status in the network <ul style="list-style-type: none"> ● 0: CLIP not provisioned ● 1: CLIP provisioned ● 2: unknown (e.g. no network, etc.)

15.6 AT+CLIR – Calling line identification restriction

Syntax

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

		OK
Read	+CLIR?	+CLIR: <n>,<m> OK
Set	+CLIR=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Requests calling line identification restriction.

Field

Parameter	Type	Description
<n>	Number	parameter sets the adjustment for outgoing call <ul style="list-style-type: none"> ● 0: presentation indicator is used according to the subscription of the CLIR service ● 1: CLIR invocation ● 2: CLIR suppression
<m>	Number	parameter shows the subscriber CLIR service status in the network <ul style="list-style-type: none"> ● 0: CLIR not provisioned ● 1: CLIR provisioned in permanent mode ● 2: unknown (e.g. no network, etc.) ● 3: CLIR temporary mode presentation restricted ● 4: CLIR temporary mode presentation allowed

15.7 AT+COLP – Connected line identification presentation

Syntax

Type	Command	Response
Test	+COLP=?	+COLP: (list of supported <n>s) OK
Read	+COLP?	+COLP: <n>,<m> OK
Set	+COLP=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

When enabled (and called subscriber allows), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from TA to TE before any +CR or V.250 responses.

Field

Parameter	Type	Description
<n>	Number	parameter sets/shows the result code presentation status to the TE <ul style="list-style-type: none"> ● 0: disable ● 1: enable
<m>	Number	parameter shows the subscriber COLP service status in the network <ul style="list-style-type: none"> ● 0: COLP not provisioned ● 1: COLP provisioned ● 2: unknown (e.g. no network, etc.)

15.8 AT+CUSD – Unstructured supplementary service data

Syntax

Type	Command	Response
Test	+CUSD=?	+CUSD: (list of supported <n>s) OK
Read	+CUSD?	+CUSD: <n> OK
Set	+CUSD=<n>,<str>,<dcs>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Allows control of the Unstructured Supplementary Service Data (USSD). Both network- and mobile-initiated operations are supported. This command is used to enable the unsolicited result code +CUSD.

Field

Parameter	Type	Description
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<n>	Number	<ul style="list-style-type: none"> ● 0: disable the result code presentation to the TE ● 1: enable the result code presentation to the TE ● 2: cancel session (not applicable to read command response)
<str>	String	type USSD string
<dc>	Number	3GPP TS 23.038 Cell Broadcast Data Coding Scheme in integer format (default 15)

15.9 AT+CSSN – Supplementary service notifications

Syntax

Type	Command	Response
Test	+CSSN=?	+CSSN: (list of supported <n>s),(list of supported <m>s) OK
Read	+CSSN?	+CSSN: <n>,<m> OK
Set	+CSSN=<n>,<m>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

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

Field

Parameter	Type	Description
<n>	Number	parameter sets/shows the +CSSI result code presentation status to the TE

		<ul style="list-style-type: none"> ● 0: disable ● 1: enable
<m>	Number	<p>parameter sets/shows the +CSSU result code presentation status to the TE</p> <ul style="list-style-type: none"> ● 0: disable ● 1: enable
<code1>	Number	<p>it is manufacturer specific, which of these codes are supported</p> <ul style="list-style-type: none"> ● 0: unconditional call forwarding is active ● 1: some of the conditional call forwardings are active ● 2: call has been forwarded ● 3: call is waiting ● 4: this is a CUG call (also <index> present) ● 5: outgoing calls are barred ● 6: incoming calls are barred ● 7: CLIR suppression rejected ● 8: call has been deflected
<index>	Number	refer "Closed user group +CCUG"
<code2>	Number	<p>it is manufacturer specific, which of these codes are supported</p> <ul style="list-style-type: none"> ● 0: this is a forwarded call (MT call setup) ● 1: this is a CUG call (also <index> present) (MT call setup) ● 2: call has been put on hold (during a voice call) ● 3: call has been retrieved (during a voice call) ● 4: multiparty call entered (during a voice call) ● 5: call on hold has been released (this is not a SS notification) (during a voice call) ● 6: forward check SS message received (can be received whenever) ● 7: call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call) ● 8: call has been connected with the other remote party in explicit call transfer operation (also number and sub address parameters may be present) (during a voice call or MT call setup) ● 9: this is a deflected call (MT call setup) ● 10: additional incoming call forwarded
<number>	String	phone number of format specified by <type>
<type>	Number	type of address
<subaddr>	String	sub address of format specified by <satype>
<satype>	String	type of sub address octet in integer format

16. Other Commands

16.1 ATE – Command Echo Mode

Syntax

Type	Command	Response
Action	ATE<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 0 DCE does not echo characters during command state and online command state. ● 1 DCE echoes characters during command state and online command state.

16.2 ATS3 – Command Line Termination Character

Syntax

Type	Command	Response
Read	ATS3?	<value> OK
Action	ATS3<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 13: Carriage return character (CR, IA5 0/13). ● 0 to 127: Set command line termination character to this value.

16.3 ATS4 – Response Formatting Character

Syntax

Type	Command	Response
Read	ATS4?	<value> OK
Action	ATS4<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

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

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none"> ● 10: Line feed character (LF, IA5 0/10).. ● 0 to 127: Set response formatting character to this value.

16.4 ATS5 – Command Line Editing Character

Syntax

Type	Command	Response
Read	ATS5?	<value> OK
Action	ATS5<value>	OK Note: If the function is retrieving an error, then return ERROR.

Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE as a request to delete

from the command line the immediately preceding character.

Field

Parameter	Type	Description
<value>	Number	<ul style="list-style-type: none">● 8 Backspace character (BS, IA5 0/8).● 0 to 127 Set command line editing character to this value.

Description

Receive data from socket.

Note: The max receives data length is 512 bytes raw data.

Field

Parameter	Type	Description
<socket id >	Number	When create a socket, if success will return this value

17. BT Connection Manager Commands

17.1 AT+EBTPWR – Power on/off BT

Syntax

Type	Command	Response
Test	+EBTPWR=?	+EBTPWR: (list of supported <op>s) OK
Set	+EBTPWR=<op>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to power on or off BT. The power on command could only be sent when BT is power off. And the power off command could only be sent when BT is power on.

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Power on ● 1: Power off

17.2 AT+EBTNAME – Read/Write BT device local name

Syntax

Type	Command	Response
Test	+EBTNAME=?	OK
Read	+EBTNAME?	+EBTNAME: <device name> OK
Set	+EBTNAME=<device name>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read or write BT device local name.

Field

Parameter	Type	Description
<device name>	String	BT name do not need use "" double quotes. The max invalid length of the device name is 54.

17.3 AT+EBTADDR – Read/Write BT device local address

Syntax

Type	Command	Response
Test	+EBTADDR=?	OK
Read	+EBTADDR?	+EBTADDR: <address> OK
Set	+EBTADDR=<address>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read or write BT device local address. This CMD should only sent to Target when BT is power off.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters. Example: xxxxxxxyzzzz It means : LAP is "xxxxxx", UAP is "yy", NAP is "zzzz"

17.4 AT+EBTINQ – Inquiry BT devices

Syntax

Type	Command	Response
Test	+EBTINQ=?	+EBTINQ: (0-255),(0-255),(0-255),(0-4294967295) OK
Read	+EBTINQ?	+EBTINQ: <interval>,<poll time>,<device number>,<Cod> OK
Set	+EBTINQ=<interval>,<poll time>,<device	OK Note: If the function is retrieving an error, then return ERROR.

	number>,<Cod>	
Action	+EBTINQ	OK

Description

The command is used to inquiry BT devices.

Field

Parameter	Type	Description
<interval>	Number	The value should greater than poll time. (Note: Current the parameter does not work, because of BT stack already have itself timer)
<poll time>	Number	The max seconds number for inquiring
<device number>	Number	
<Cod>	Number	ref: https://www.bluetooth.org/en-us/specification/assignednumbers/baseband

17.5 AT+EBTINQC – Cancel inquiry BT devices

Syntax

Type	Command	Response
Test	+EBTINQC=?	OK
Action	+EBTINQC	OK

Description

The command is used to cancel inquiry BT devices. Should be sent only when it's inquiring.

17.6 AT+EBTVISB – Set BT visible

Syntax

Type	Command	Response
Test	+EBTVISB=?	+EBTVISB: (0-1),(0-255) OK
Set	+EBTVISB=<n>,<time>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to set BT visible

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 0: Non-visible ● 1: Visible
<time>	Number	Visible time ,seconds (0~255) <ul style="list-style-type: none"> ● 0: Visible forever ● 1~255: Visible time seconds

17.7 AT+EBTRNAME – Read remote BT device name

Syntax

Type	Command	Response
Test	+EBTRNAME=?	OK
Set	+EBTRNAME=<address>	+EBTRNAME:<device name> OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read remote BT device name

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.

17.8 AT+EBTPAIR – Pair BT device

Syntax

Type	Command	Response
Test	+EBTPAIR=?	+EBTPAIR: ,(0-255) OK
Set	+EBTPAIR=<address>,<timeou t>	+EBTPAIR:<address>,<name>,<enable 16 digits pin>[,<password>] OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to pair BT device

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<timeout>	Number	Time in seconds for pairing timeout. The value should between 1 and 20. 0 means 20s. Value larger than 20 will be treat as 20.
<name>	String	BT name do not need use "" double quotes.
<enable 16 digits pin>	Number	<ul style="list-style-type: none"> ● 0: Not enable the 16 digits pin ● 1: Enable the 16 digits pin
<password>	String	

17.9 AT+EBTPAIRCNF – Allow or disallow BT pair

Syntax

Type	Command	Response
Test	+EBTPAIRCNF=?	+EBTPAIRCNF: (0-1), OK
Set	+EBTPAIRCNF=<n>,<password> >	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to allow or disallow BT pair.

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 0: Disallow BT pair ● 1: Allow BT pair
<password>	String	Password need use "" double quotes.

17.10 AT+EBTRP – Read remote BT device support profiles

Syntax

Type	Command	Response
------	---------	----------

Test	+EBTRP=?	OK
Set	+EBTRP=<address>	+EBTRP:<profile_bitmap> OK

Description

The command is used to read remote BT device support profiles which we support also.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<profile_bitmap>	Number	uint64, one bit is a profile support or not. <ul style="list-style-type: none"> ● 0: not support ● 1: supported Example : profile_bitmap value is 1 , 0x0000000000000001 means profile 1 supported, others not supported. Bit1: SPP Profile, UUID = 0x1101. Bit2-Bit64: All reserved.

17.11 AT+EBTSENEM – Read/Write security mode, encryption mode

Syntax

Type	Command	Response
Test	+EBTSENEM=?	+EBTSENEM: (0-4),(0-2) OK
Read	+EBTSENEM?	+EBTSENEM:<sec-mod>,<enc-mod> OK
Set	+EBTSENEM=<sec-mod>,<enc-mod>	OK Note: If the function is retrieving an error, then return ERROR.

Description

The command is used to read or write BT security and encryption mode. Currently we only support security mode setting. Note that the value of queried value of security mode is decide by BT Stack, may not be the same with setting value.)

Field

Parameter	Type	Description
<sec-mod>	Number	<ul style="list-style-type: none"> ● 0: Off ● 1: Non-secure ● 2: Service ● 3: Link ● 4: Unknown
<enc-mod>	Number	<ul style="list-style-type: none"> ● 0: Off ● 1: pt_to_pt ● 2: pt_to_pt_and_bcast

17.12 AT+EBTOPAD – Get device list

Syntax

Type	Command	Response
Test	+EBTOPAD=?	+EBTOPAD: (0-4), OK
Set	+EBTOPAD=<n>,<address>	+EBTOPAD:<index>,<address> OK

Description

The command is used to operate device list.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<n>	Number	<ul style="list-style-type: none"> ● 0: Delete ● 1: Locate ● 2: Delete all ● 3: Most recently used ● 4: Return total list
<index>	Number	

17.13 AT+EBTSTATE – Query connect manger and profile status

Syntax

Type	Command	Response
Test	+EBTSTATE=?	+EBTSTATE: ,(0-4294967295) OK
Read	+EBTSTATE	+EBTSTATE: <CM state> OK
Set	+EBTSTATE=<address>,<profile id>	+EBTSTATE: <profile state> OK

Description

The command is used to query BT connect manger and profile status.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<CM state>	Number	<ul style="list-style-type: none"> ● 1: START, BT is powering on. ● 2: READY, BT powered on, stand by for working ● 3: PAIRING ● 4: INQUIRING ● 5: CONNECTING ● 6: CONNECTED ● 7: NUKNOWN
<profile state>	Number	<ul style="list-style-type: none"> ● 1: START, Reserved. ● 2: IDLE, APP for this profile not activated. ● 3: ACTIVATE, APP for this profile activated. ● 4: AUTHORIZING, authorizing for connection. ● 5: DISCONNECTING, disconnecting for connection. ● 6: DEACTIVATING, deactivating for profile APP.
<profile id>	Number	See BT Profile SPEC for profile UUID.

17.14 AT+EBTENSNIFF – Set or get SNIFF mode level

Syntax

Type	Command	Response
------	---------	----------

Test	+EBTENSNIFF=?	+EBTENSNIFF: (0-1),(0-4) OK
Read	+EBTENSNIFF=<op>,<level>	+EBTENSNIFF:<level> OK

Description

The command is used to read or set BT sniff level

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Write. ● 1: Read.
<level>	Number	<ul style="list-style-type: none"> ● 0: Reserved. ● 1: Reserved. ● 2: Reserved. ● 3: Reserved.

17.15 AT+EBTCONN – Connect BT profile

Syntax

Type	Command	Response
Test	+EBTCONN=?	+EBTCONN: (0-1),,(0-4294967295),(0-1) OK
Set	+EBTCONN=<n>,<address>,<profile id>,<role>	OK

Description

The command is used to connect BT profile.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<n>	Number	<ul style="list-style-type: none"> ● 0: Disconnect ● 1: Connect

<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<role>	Number	<ul style="list-style-type: none"> ● 0: Client ● 1: Server

17.16 AT+LSBTSP – Send Data through BT SPP interface

Syntax

Type	Command	Response
Test	+LSBTSP=?	OK
Set	+LSBTSP=<data>	OK

Description

The command is used to send data through BT SPP interface.

Field

Parameter	Type	Description
<data>	String	User defined content. The max invalid length of the data content is 63.

17.17 AT+LSTALKWALK – Open or close Talkie-Walkie Bluetooth audio stream

Syntax

Type	Command	Response
Test	+LSTALKWALK=?	+LSTALKWALK OK
Set	+LSTALKWALK=<n>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Open/Close talkie walkie Bluetooth audio stream.

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 0 : Close ● 1 : Open

17.18 AT+LSTALKWALKSPK – Talkie-Walkie’s Loudspeaker Volume Level

Syntax

Type	Command	Response
Test	+LSTALKWALKSPK=?	+LSTALKWALKSPK: (list of supported <level>s)
Read	+LSTALKWALKSPK?	+LSTALKWALKSPK: <level> OK
Set	+LSTALKWALKSPK=<level>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets the volume of the Talkie-Walkie’s loudspeaker.

Field

Parameter	Type	Description
<level>	Number	Value with manufacturer specific range.

17.19 AT+LSTALKWALKMIC – Talkie-Walkie’s Microphone Sensitivity Level

Syntax

Type	Command	Response
Test	+LSTALKWALKMIC=?	+LSTALKWALKMIC: (list of supported <level>s)
Read	+LSTALKWALKMIC?	+LSTALKWALKMIC: <level> OK
Set	+LSTALKWALKMIC=<level>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Sets the sensitivity of the Talkie-Walkie’s microphone.

Field

Parameter	Type	Description
<level>	Number	Value with manufacturer specific range.

17.20 Unsolicited result code: Pair indication +EBTPAIR

Format

Unsolicited result code
+EBTPAIR:<address>,<device name>,<enable 16 digits pin>[,<password>]

Description

The command is used to notify other device want to pair local BT, and may be need input password or pin code.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.
< enable 16 digits pin >	Number	<ul style="list-style-type: none"> ● 0: Not enable the 16 digits pin ● 1: Enable the 16 digits pin
<password>	String	Password do not need use "" double quotes.

17.21 Unsolicited result code: Inquiry indication +EBTINQ

Format

Unsolicited result code
+EBTINQ:<address>,<device name>

Description

The command is used to notify other BT devices are found. It should be output after command AT+EBTINQ.

Field

Parameter	Type	Description
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.

17.22 Unsolicited result code: Inquiry completed indication +EBTIND

Format

Unsolicited result code
+EBTIND:<result>,<is cancelled>

Description

The command is used to notify that the inquiring is completed.

Field

Parameter	Type	Description
<result >	Number	<ul style="list-style-type: none"> ● 0: Failed ● 1: Successful
<is cancelled>	Number	<ul style="list-style-type: none"> ● 0: Not be canceled ● 1: Be canceled

17.23 Unsolicited result code: Passive pair response +EBTPAIRRES

Format

Unsolicited result code
+EBTPAIRRES:<result>,<is first>,[address]

Description

The command is used to notify the response of passive pairing.

Field

Parameter	Type	Description
<result >	Number	<ul style="list-style-type: none"> ● 0: Failed ● 1: Successful
<is first>	Number	<ul style="list-style-type: none"> ● 0: Not be first ● 1: Be first
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters

17.24 Unsolicited result code: Notify profile connected +EBTCONN

Format

Unsolicited result code
+EBTCONN:<result>,<address>,<profile id>

Description

The command is used to notify BT profile connected.

Field

Parameter	Type	Description
<result >	Number	<ul style="list-style-type: none"> ● 0: Failed

		● 1: Successful
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<profile id>	Number	Please see BT Profile SPEC for profile UUID.

17.25 Unsolicited result code: Notify all supported profiles are (de)active +EBTPRFAC

Format

Unsolicited result code
+EBTPRFAC:<state>

Description

The command is used to notify all supported profiles are deactivate or active.

Field

Parameter	Type	Description
<state>	Number	<ul style="list-style-type: none"> ● 0: All deactivate ● 1: All active

17.26 Unsolicited result code: Notify profile disconnected +EBTDISC

Format

Unsolicited result code
+EBTDISC:<n>,<address>[,<profile id>,<passive>]

Description

The command is used to notify BT connections are disconnected.

Field

Parameter	Type	Description
<n>	Number	<ul style="list-style-type: none"> ● 1: One connection is disconnected ● 2: All connections are disconnected
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<passive>	Number	<ul style="list-style-type: none"> ● 0: Not passive disconnect ● 1: Passive disconnected

17.27 Unsolicited result code: Notify visibility is changed +EBTVISB

Format

Unsolicited result code
+EBTVISB:3,<is because AT>

Description

The command is used to notify BT visibility is changed.

Field

Parameter	Type	Description
<is because AT>	Number	<ul style="list-style-type: none"> ● 0: Not because receive AT+EBTVISB ● 1: Because receive AT+EBTVISB

17.28 Unsolicited result code: Notify BT is Reset +EBTRST

Format

Unsolicited result code
+EBTRST:1

Description

The command is used to notify BT is reset.

17.29 Unsolicited result code: Notify bond profile fail + EBTPRFBND

Format

Unsolicited result code
+EBTPRFBND:<profile id>,0

Description

The command is used to notify BT bond profile fail.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.

17.30 Unsolicited result code: Notify BT devices need connect our profile +EBTPRFAU

Format

Unsolicited result code
+EBTPRFAU:<Profile id>,<address>,<device name>

Description

The command is used to notify other BT devices need connect our profile.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters
<device name>	String	BT name do not need use "" double quotes.

17.31 Unsolicited result code: Notify profile connected +EBTPRFCN

Format

Unsolicited result code
+EBTPRFCN:<profile id>,<result>

Description

The command is used to notify BT profile connected.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<result>	Number	<ul style="list-style-type: none"> ● 0: Failed ● 1: Successful

17.32 Unsolicited result code: Notify profile disconnected +EBTPRFDSCN

Format

Unsolicited result code
+EBTPRFDSCN:<profile id>,<address>

Description

The command is used to notify BT profile disconnected.

Field

Parameter	Type	Description
<profile id>	Number	Please see BT Profile SPEC for profile UUID.
<address>	String	BT address do not need use "" double quotes. Length should be 12 characters

17.33 Unsolicited result code: SPP message indication +BTSP

Format

Unsolicited result code
+BTSP: <data>

Description

The command is used to notify other BT device sends data to our BT SPP interface.

Field

Parameter	Type	Description
<data>	String	User defined content.

18. Generic Attribute Profile (GATT) Commands

18.1 AT+GATSREG – (De) Register GATT Server

Syntax

Type	Command	Response
Test	+GATSREG=?	+GATSREG OK
Set	+GATSREG=<op>,<user_id>	+GATSREG:<op>,<user_id>,<result> OK Note: If the function is retrieving an error, then return ERROR.

Description

(De)Register GATT Server with user_id.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Deregister ● 1: Register
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success

18.2 AT+GATSS - Add/Remove a service

Syntax

Type	Command	Response
Test	+GATSS=?	+GATSS OK
Set (Add)	+GATSS=<op>,<user_id>,<uui <d>,<num_handles>,<is_prima <ry>,<inst>	+GATSS:<op>,<user_id>,<uuiid>,<is_primary>,<result>,<inst>,<ser vice_handle> OK Note: If the function is retrieving an error, then return ERROR.
Set	+GATSS=<op>,<user_id>,<serv	+GATSS:<op>,<user_id>,<result>,<service_handle>

(Remove)	ice_handle>	OK Note: If the function is retrieving an error, then return ERROR.
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Description

Add or remove a service to or from a GATT Server.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Remove ● 1: Add
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<uuid>	String	The UUID of the service, a string with hex value, max length is 32, min length is 4.
<num_handles>	Number	Number of handles of this service. Dec format.
<is_primary>	Number	<ul style="list-style-type: none"> ● 0: Not primary service ● 1: Primary service
<inst>	Number	Instance id of this UUID. Dec format.
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success
<service_handle>	Number	The handle of this service. Dec format.

18.3 AT+GATSC - Add a characteristic to an existed service

Syntax

Type	Command	Response
Test	+GATSC=?	+GATSC OK
Set	+GATSC=<op>,<user_id>,<service_handle>,<uuid>,<inst>,<char_handle>,<prop>,<permission>	+GATSC:<op>,<user_id>,<service_handle>,<uuid>,<inst>,<result>,<char_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Add a characteristic to an existed service.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description																				
<op>	Number	<ul style="list-style-type: none"> ● 1: Add 																				
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.																				
<service_handle>	Number	The handle of this service. Dec format.																				
<uuid>	String	The UUID of the service, a string with hex value, max length is 32, min length is 4.																				
<inst>	Number	Instance id of this UUID. Dec format.																				
<prop>	Number	Properties of this characteristic. Dec format. (0 - 4294967295) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Properties</th> <th>Dec format map</th> </tr> </thead> <tbody> <tr><td>Default</td><td>0</td></tr> <tr><td>Broadcast</td><td>1</td></tr> <tr><td>Read</td><td>2</td></tr> <tr><td>Write without response</td><td>4</td></tr> <tr><td>Write</td><td>8</td></tr> <tr><td>Notify</td><td>16</td></tr> <tr><td>Indicate</td><td>32</td></tr> <tr><td>Signed write</td><td>64</td></tr> <tr><td>Extended properties</td><td>128</td></tr> </tbody> </table>	Properties	Dec format map	Default	0	Broadcast	1	Read	2	Write without response	4	Write	8	Notify	16	Indicate	32	Signed write	64	Extended properties	128
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Write with encrypted protection	32																					
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Signed write	128																					
Signed write with MITM protection	256																					
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success 																				
<char_handle>	Number	The handle of this Characteristic. Dec format.																				

18.4 AT+GATSD - Add a descriptor to an existed service

Syntax

Type	Command	Response
Test	+GATSD=?	+GATSD OK
Set	+GATSD=<op>,<user_id>,<service_handle>,<uuid>,<inst>,<permission>	+GATSD:<op>,<user_id>,<service_handle>,<uuid>,<inst>,<result>,<handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Add a descriptor to an existed service.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	● 1: Add
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<service_handle>	Number	The handle of this service. Dec format.
<uuid>	String	The UUID of the descriptor, a string with hex value, max length is 32, min length is 4.
<inst>	Number	Instance id of this UUID. Dec format.
<permission>	Number	Permission of this descriptor. Dec format. (0 - 4294967295)
<result>	Number	● 0: Success ● Others: Un-success
<handle>	Number	The handle of this descriptor. Dec format.

18.5 AT+GATSST - Start/Stop a service

Syntax

Type	Command	Response
Test	+GATSST=?	+GATSST OK
Set	+GATSST=<op>,<user_id>,<service_handle>,<transport>	+GATSST:<op>,<user_id>,<result>,<service_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Start or stop a service.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Stop ● 1: Start
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<service_handle>	Number	The handle of this service. Dec format.
<transport>	Number	Transport way to start service. <ul style="list-style-type: none"> ● 0: LE ● 1: BR/EDR ● 2: Dual mode
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success

18.6 AT+GATSL - Start/Stop advertising

Syntax

Type	Command	Response
Test	+GATSL=?	+GATSL OK
Set	+GATSL=<user_id>,<op>	+GATSL: <user_id>,<result> OK Note: If the function is retrieving an error, then return ERROR.

Description

Start or stop advertising.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Stop ● 1: Start
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string,

		each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
--	--	---

18.7 AT+GATADV - Set Advertising parameters

Syntax

Type	Command	Response
Test	+GATADV=?	+GATADV OK
Set	+GATADV=<min_interval>,<max_interval>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Set advertising parameters.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<min_interval>	Number	Minimum advertising interval for undirected and low duty cycle directed advertising. Dec format. Range: 32 to 16384.
<max_interval>	Number	Maximum advertising interval for undirected and low duty cycle directed advertising. Dec format. Range: 32 to 16384.

18.8 AT+GATCPU - Connection parameters update

Syntax

Type	Command	Response
Test	+GATCPU=?	+GATCPU OK
Set	+GATCPU=<addr>,<min_interval>,<max_interval>,<timeout>,<latency>	OK Note: If the function is retrieving an error, then return ERROR.

Description

Connection parameters update.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<addr>	Number	Address of the peer device. HEX value.
<min_interval>	Number	Minimum value of the connection interval. Dec format. Range: 6 to 3200.
<max_interval>	Number	Maximum value of the connection interval. Dec format. Range: 6 to 3200.
<timeout>	Number	Supervision timeout for the connection. Dec format. Range: 10 to 3200.
<latency>	Number	Maximum allowed slave latency for the connection specified as the number of connection events. Dec format. Range: 0 to 499.

18.9 AT+GATSIND: send an indication to a client

Syntax

Type	Command	Response
Test	+GATSIND=?	+GATSIND OK
Set	+GATSIND=<user_id>,<conn_id>,<attr_handle>,<need_confirm>,<value>	+GATSIND:<result>,<user_id>,<conn_id>,<attr_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send an indication or notification to a client.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<conn_id>	Number	The connection id of current connection.
<attr_handle>	Number	The handle of the characteristic value. Dec format.
<need_confirm>	Number	Need client confirm when send indication, not when send notification. <ul style="list-style-type: none"> ● 0: No ● 1: Yes
<value>	String	The value need to be notified. Hex format.
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success

18.10 AT+GATSRSP - send a response to a client's read or write operation

Syntax

Type	Command	Response
Test	+GATSRSP=?	+GATSRSP OK
Set	+GATSRSP=<user_id>,<client_result>,<conn_id>,<trans_id>,<attr_handle>,<value>	+GATSRSP:<result>,<user_id>,<conn_id>,<attr_handle> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send response to a client.

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<client_result>	Number	Result of response for client request. 0-255
<conn_id>	Number	The connection id of current connection.
<trans_id>	Number	The ID of the current transaction. 0-255.
<attr_handle>	Number	The handle of the attribute. Dec format.
<value>	String	The value need to be response. Hex format.
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success
<handle>	Number	The handle of this descriptor. Dec format.

18.11 AT+LSGATTNMEA: send GPS NMEA indications to a client

Syntax

Type	Command	Response
Test	+LSGATTNMEA=?	+LSGATTNMEA: OK
Set	+LSGATTNMEA=<onoff>	+LSGATTNMEA:<result> OK Note: If the function is retrieving an error, then return ERROR.

Description

Send GPS NMEA indications to a client periodically (1 second).

Note: Each GATT Server AT can only send after the prior AT return OK/ERROR.

Field

Parameter	Type	Description
<onoff>	Number	<ul style="list-style-type: none"> ● 0: Disable periodical GPS NMEA indications ● 1: Enable periodical GPS NMEA indications
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● 1: Un-success (BLE is disabled) ● 2: Un-success (GPS is disabled) ● 3: Un-success (GPS and BLE are disabled)

18.12 Unsolicited result code : Notify when a connection or disconnection comes +GATSCON

Format

Unsolicited result code
+GATSCON:<op>,<user_id>,<result>,<addr>,<conn_id>

Description

Notify when connection’s status change.

Field

Parameter	Type	Description
<op>	Number	<ul style="list-style-type: none"> ● 0: Disconnect ● 1: Connect
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<result>	Number	<ul style="list-style-type: none"> ● 0: Success ● Others: Un-success
<addr>	Number	Address of the peer device. HEX value.
<conn_id>	Number	The connection id of current connection.

18.13 Unsolicited result code: Notify when client’s read request comes +GATRREQ

Format

Unsolicited result code
+GATRREQ:<user_id>,<conn_id>,<trans_id>,<addr>,<attr_handle>,<is_long>,<offset>

Description

Notify when a client’s read request comes.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<conn_id>	Number	The connection id of current connection.
<trans_id>	Number	The id of the current transaction. 0-255.
<addr>	Number	Address of the peer device. HEX value.
<attr_handle>	Number	Handle of attribute. Dec format.
<is_long>	Number	Tell server that the request is one or several requests.
<offset>	Number	Offset of the request. 0 –65535

18.14 Unsolicited result code: Notify when client’s write request comes

+GATWREQ

Format

Unsolicited result code
+GATWREQ:<user_id>,<conn_id>,<trans_id>,<addr>,<attr_handle>,<value>,<need_rsp>,<is_prepare>,<offset>

Description

Notify when a client’s write request comes.

Field

Parameter	Type	Description
<user_id>	String	User id of GATT server, or the name of the GATT server. A Hex value string, each char of it should in set { '0'~'9','a'~'f','A'~'F'}. Max length of it is 32.
<conn_id>	Number	The connection id of current connection.
<trans_id>	Number	The id of the current transaction. 0-255.
<addr>	Number	Address of the peer device. HEX value.

<attr_handle>	Number	Handle of attribute. Dec format.
<value>	String	The value need to be write. Hex format.
<need_rsp>	Number	Whether client need server's response. <ul style="list-style-type: none">● 0: No● 1: Yes
<is_prepare>	Number	Whether or not server execute request immediately. <ul style="list-style-type: none">● 1: No● 2: Yes
<offset>	Number	Offset of the request. 0 –65535