

AT Commands Set SIM5210_ATC_V1.60



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Version History

Version	Chap	oter	What is new
V1.00	New	version	
V.160	3.6	ATI	Add a new parameter <qcn_type></qcn_type>
	4.4	ATD> <mem><n></n></mem>	Add this command
	4.5	ATD> <n></n>	Add this command
	4.6	ATD> <str></str>	Add this command
	4.11	AT+CBST	Modify the description of <speed></speed>
	4.16	AT+VTS	Modify the description of AT+VTS
	5.6	AT+CSDH	Modify write command of AT+CSDH
	5.7	AT+CMGL	Modify write command of AT+CMGL
	6.3	AT+COPS	Modify wirte command of AT+COPS
	7.6	AT+CMEC	Modify write command of AT+CMEC
	7.15	AT+AUTOCSQ	Add test command of AT+AUTOCSQ
	8.1	AT+CPBS	Modify the description of <storage></storage>
	9.1	AT+IPR	Modify the description of <speed></speed>
	9.2	AT\$QCTER	Modify the description of <speed></speed>

Contents

Gen	eral No	tes	2
Сор	yright		2
Con	tents		4
1	Introdu	uction	8
	1.1	Scope	8
	1.2	References	8
	1.3	Abbreviations	8
	1.4	Definitions and conventions	9
2	AT inte	erface synopsis	. 10
	2.1	Interface settings	. 10
	2.2	AT command syntax	10
	2.3	AT command response	. 10
3	Genera	al Commands	. 11
	3.1	Request manufacturer identification (AT+CGMI)	. 11
	3.2	Request model identification (AT+CGMM)	. 11
	3.3	Request revision identification (AT+CGMR)	. 11
	3.4	Request product serial number identification (AT+CGSN)	12
	3.5	Request overall capabilities (AT+GCAP)	12
	3.6	Display product identification information (ATI)	13
	3.7	Re-issue the last command given (A/)	13
	3.8	Switch to DM mode (AT\$QCDMG)	14
	3.9	Select TE character set (AT+CSCS)	14
	3.10	Request international mobile subscriber identity (AT+CIMI)	15
4	Call C	ontrol Commands and Methods	16
	4.1	Select type of address (AT+CSTA)	16
	4.2	Call mode (AT+CMOD)	16
	4.3	Mobile originated call to specified number(ATD)	. 17
	4.4	Mobile originated call using specified memory and index number (ATD> <mem><</mem>	(n>)
		18	
	4.5	Mobile originated call from active memory using index number(ATD> <n>)</n>	18
	4.6	Mobile originated call from active memory using corresponding field(ATD> <str>)</str>	19
	4.7	Answer an incoming call (ATA)	19
	4.8	Voice hangup control (AT+CVHU)	20
	4.9	Disconnect existing voice call (ATH)	20
	4.10	Hangup call (AT+CHUP)	21
	4.11	Select bearer service type (AT+CBST)	21
	4.12	Radio link protocol (AT+CRLP)	22
	4.13	Service reporting control (AT+CR)	23
	4.14	Extended error report (AT+CEER)	24
	4.15	Cellular result codes (AT+CRC)	25
	4.16	DTMF tone generation (AT+VTS)	26
	4.17	Speaker mute control (AT+VMUTE)	26



	4.18	Mic mute control (AT+CMUT)	27
	4.19	Mic volume control (AT+CMIC)	27
	4.20	Receive gain selection (AT+VGR)	28
	4.21	Auto answer incoming call (AT+AUTOANSWER)	28
	4.22	Set voice channel device (AT+CSDVC)	29
5	SMS	Related Commands	30
	5.1	Message service failure result code +CMS ERROR	30
	5.2	Select message service (AT+CSMS)	30
	5.3	Preferred message storage (AT+CPMS)	31
	5.4	Message format (AT+CMGF)	32
	5.5	Service centre address (AT+CSCA)	33
	5.6	Show text mode parameters (AT+CSDH)	34
	5.7	New message indications to TE (AT+CNMI)	34
	5.8	List messages (AT+CMGL)	36
	5.9	Read message (AT+CMGR)	38
	5.10	Send message (AT+CMGS)	41
	5.11	Send message from storage (AT+CMSS)	42
	5.12	Write message to memory (AT+CMGW)	43
	5.13	Delete message (AT+CMGD)	44
	5.14	Set text mode parameters (AT+CSMP)	44
	5.15	Read message only (AT+CMGRO)	45
	5.16	Change message status (AT+CMGMT)	48
	5.17	Set message valid period (AT+CMVP)	48
	5.18	Read and delete message (AT+CMGRD)	49
	5.19	Send message quickly (AT+CMGSO).	51
	5.20	Write message to memory quickly (AT+CMGWO)	52
	5.21	Set message storage full on PC (AT+PCFULL)	53
	5.22	Send message when register on network (AT+CSETSMS)	54
6	Netwo	ork Service Related Commands	55
	6.1	Subscriber number (AT+CNUM)	55
	6.2	Network registration (AT+CREG)	55
	6.3	Operator selection (AT+COPS)	56
	6.4	Facility lock (AT+CLCK)	58
	6.5	Change password (AT+CPWD)	59
	6.6	Calling line identification presentation (AT+CLIP)	59
	6.7	Calling line identification restriction (AT+CLIR)	61
	6.8	Connected line identification presentation (AT+COLP)	61
	6.9	Closed user group (AT+CCUG)	62
	6.10	Call forwarding number and conditions (AT+CCFC)	63
	6.11	Call waiting (AT+CCWA)	65
	6.12	Call related supplementary services (AT+CHLD)	
	6.13	Unstructured supplementary service data (AT+CUSD)	
	6 14	Advice of charge (AT+CAOC)	
	6 15	Supplementary service notifications (AT+CSSN)	60
	0.15	supportementary service nouncations (ATTCSSIV)	07



	6.16	List current calls (AT+CLCC)	70
	6.17	Preferred operator list (AT+CPOL)	71
	6.18	Read operator names (AT+COPN)	72
	6.19	Preferred mode selection (AT+CNMP)	73
	6.20	Preferred band selection (AT+CNBP)	73
	6.21	Acquisitions order preference (AT+CNAOP)	74
	6.22	Preferred service domain selection (AT+CNSDP)	75
	6.23	Inquiring UE system information (AT+CPSI)	75
	6.24	Show network system mode (AT+CNSMOD)	76
7	Mobil	le Equipment Control and Status Commands	78
	7.1	Phone activity status (AT+CPAS)	78
	7.2	Set phone functionality (AT+CFUN)	78
	7.3	Enter PIN (AT+CPIN)	79
	7.4	Signal quality (AT+CSQ)	
	7.5	Battery capacity query (AT+CBC)	
	7.6	Mobile Equipment control mode (AT+CMEC)	
	7.7	Keypad control (AT+CKPD)	
	7.8	Accumulated call meter (AT+CACM)	
	7.9	Accumulated call meter maximum (AT+CAMM)	
	7.10	Price per unit and currency table (AT+CPUC)	
	7.11	Control phone to power down (AT\$QCPWRDN)	
	7.12	Report Mobile Equipment error (AT+CMEE)	
	7.13	Mobile Equipment error result code (+CME ERROR)	
	7.14	Switch device between UART & USB (AT+CUUSWITCH)	
	7.15	Set CSQ report (AT+AUTOCSQ)	
	7.16	Low voltage Alarm (AT+CVALARM)	89
	7.17	Set Trigger mode of interrupt GPIO (AT+CGPIO)	
	7.18	Read ICCID in SIM card (AT+CICCID)	
	7.19	Read values from register of IIC device (AT+CRIIC)	91
	7.20	Write values to register of IIC device (AT+CWIIC)	91
	7.21	Switch between Windows & Linux system support (AT+COMSWITCH)	
	7.22	Open or Close Test Mode (AT+CSWITCHTEST)	
8	Phone	ebook Related Commands	
	8.1	Select phonebook memory storage (AT+CPBS)	94
	8.2	Read phonebook entries (AT+CPBR)	
	8.3	Find phonebook entries (AT+CPBF)	96
	8.4	Write phonebook entry (AT+CPBW)	97
9	V24-V	V25 Command	
	9.1	Set local baud rate temporarily (AT+IPR)	
	9.2	Set local baud rate permanently (AT\$QCTER)	
	9.3	Set control character framing (AT+ICF)	
	9.4	Set local data flow control (AT+IFC)	100
	9.5	Set circuit Data Carrier Detect (DCD) function mode (AT&Cx)	101
	9.6	Set circuit Data Terminal Ready (DTR) function mode (AT&Dx)	
		, , , , , , , , , , , , , , , , , , , ,	



	9.7	ATE e	nable command echo (ATEx)	102
	9.8	Displa	y current configuration (AT&V)	102
10	C	omman	ds for Packet Domain	104
	10.1	Define	PDP Context (AT+CGDCONT)	104
	10.2	Quality	y of Service Profile (Requested) (AT+CGQREQ)	105
	10.3	Quality	y of Service Profile (Minimum acceptable)(AT+CGQMIN)	107
	10.4	Packet	Domain attach or detach (AT+CGATT)	110
	10.5	PDP co	ontext activate or deactivate(AT +CGACT)	110
	10.6	Enter of	data state (AT+CGDATA)	111
	10.7	Show]	PDP address (AT+CGPADDR)	112
	10.8	GPRS	mobile station class(AT +CGCLASS)	113
	10.9	GPRS	event reporting(AT +CGEREP)	113
	10.10	GPRS	network registration status (AT+CGREG)	115
	10.11	Select	service for MO SMS messages (AT+CGSMS)	116
11	TCP/I	P Relate	ed Commands	117
	11.1	Define	e socket PDP Context (AT+CGSOCKCONT)	117
	11.2	Set act	tive PDP context's profile number (AT+ CSOCKSETPN)	118
	11.3	Inquire	e socket PDP address AT+IPADDR	119
	11.4	Open s	socket(AT+NETOPEN)	119
	11.5	Establi	ish TCP connection (AT+TCPCONNECT)	119
	11.6	Send T	TCP data (AT+TCPWRITE)	120
	11.7	Send U	JDP data (AT+UDPSEND)	120
	11.8	Startup	p TCP server(AT+SERVERSTART)	121
	11.9	List al	l of clients' information (AT+LISTCLIENT)	121
	11.10	Discor	nnect specified client (AT+CLOSECLIENT)	121
	11.11	Activa	te specified client (AT+ACTCLIENT)	122
	11.12	Close	socket (AT+NETCLOSE)	122
12	A	T Com	mands sample	123
	12.1	SMS C	Commands	123
	12.2	TCP/II	P Commands	124
	1	2.2.1	TCP Server	124
	1	2.2.2	TCP Client	124
	1	2.2.3	UDP	124



1 Introduction

1.1 Scope

This document presents the AT Command Set for SIM5210, suitable for End-User.

1.2 References

Document name	Version
3GPP TS 07.07	7.8.0
3GPP TS 27.007	6.4.0
3GPP TS 27.005	5.0.0
Software Requirement Specification [HSDPA PCMCIA Modem Manager]	1.0

1.3 Abbreviations

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

- AT Attention; this two-character abbreviation is always used to start a command line to be sent from TE to TA
- CBM Cell Broadcast Message
- DCE Data Communication Equipment
- Diagnostic Monitor
- DTE Data Terminal Equipment
- DTMF Dual Tone Multi-Frequency
- ESN Electronic Serial Number
- ME Mobile Equipment
- MIC Microphone
- MIDI Musical Instrument Digital Interface MIDI
- MIN Mobile Identification Number
- MO Mobile Originated
- MS Mobile Station
- MT Mobile Terminated
- OA Outgoing Access
- PCS Personal Communication Services
- PDU Protocol Data Unit
- PIN Personal Identification Number
- PUK Personal Unlock Key
- RSSI Received Signal Strength Indicator
- SID System Identification
- SIM Subscriber Identity Module
- SMS Short Message Service
- SMSC Short Message Service Center
- TA Terminal Adaptor, e.g. a GSM data card (equal to DCE; Data Circuit terminating



Equipment)

- TE Terminal Equipment, e.g. a computer (equal to DTE; Data Terminal Equipment)
- TI **Teleservice Identifier**
- UE User Equipment
- WCDMA Wide-band Code Division Multiple Access

1.4 Definitions and conventions

- For the purposes of the present document, the following syntactical definitions apply: 1.
 - Carriage return character $\langle CR \rangle$
 - $\langle LF \rangle$ Linefeed character
 - <....> Name enclosed in angle brackets is a syntactical element. Brackets themselves do not appear.
 - Optional subparameter of a command or an optional part of TA information response is [...] enclosed in square brackets. Brackets them selves do not appear.

In this document, all AT commands and return values will disply italic, but AT commands in the cutline 2. do not follow above rule.

For example: AT

$$AI + CSQ$$

+ $CSQ:25,99$
 OK

- The contents between "<" and ">"are command parameters. 3. For example: ATD<dial_no>;
- In this case, <dial_no>is a parameter. User needs enter a phone number that user wants to dial. 4.
 - The contents between "[" and "]" are optional parameters.
 - For example: <par1>[,<par2>];

In this case, <par2> is an optional parameter.

The return-results (parameters) between "[" and "]" are optional parameters, which indicate the 5. return-results depend on specific situation.

For example: par_a[,par_b,par_c,par_d];

In this case, par_b, par_c, par_d are optional return-results.



2 AT interface synopsis

2.1 Interface settings

Module and DTE are using standard RS-232 interface, the default value for cluster setting is 115200bps, eight data bits, no parity, 1 stop bit, and no data stream control.

2.2 AT command syntax

AT command start with header AT, and end with <CR>. If the format of AT command input was correct, the terminal will return the corresponding request information, and finally will return "OK"; Otherwise, the terminal will return "ERROR". When parameters follow with AT command, 1) For string type, we will put quotation marks to the both side of input string, 2) For numeric string type, able to input numeric value immediately.

2.3 AT command response

The response data package for AT command could be existing between <CR><LF>.

- 1. If AT command implemented successful, then return "OK";
- 2. If AT command syntax error, then return "ERROR";
- 3. If AT command implemented failed, return "+CMS ERROR" or "+CME ERROR". *NOTE: The following sections will ignore <CR> and <LF>.*



3 General Commands

3.1 Request manufacturer identification (AT+CGMI)

Description

Execution command causes the TA to return the manufacturer identification text, which is intended to permit the user of the TA to identify the manufacturer of the ME to which it is connected to.

Syntax

Test Command	Response
AT+CGMI=?	OK
Execution Command	Response
AT+CGMI	<manufacturer></manufacturer>
	OK

Defined Values

<manufacturer> the identification of manufacturer.

```
Implementation
AT+CGMI
SIMCOM INCORPORATED
OK
```

3.2 Request model identification (AT+CGMM)

Description

Execution command causes the TA to return model identification text, which is intended to permit the user of the TA to identify the specific model of the ME to which it is connected to.

Syntax

Test Command	Response
AT+CGMM=?	ОК
Execution Command	Response
AT+CGMM	<model></model>
	ОК

Defined Values

<model> the identification of model.

Implementation

```
AT+CGMM
SIMCOM_SIM5210
OK
```

3.3 Request revision identification (AT+CGMR)

Description

Execution command causes the TA to return product firmware version identification text, which is intended to permit the user of the TA to identify the version, revision level or date, or other pertinent information of the ME to which it is connected to.



Test Command	Response
AT+CGMR=?	ОК
Execution Command	Response
AT+CGMR	<revision></revision>
	ОК

<revision> the revision identification of firmware.

```
Implementation
```

```
AT+CGMR
+CGMR: M6280A QCT_03_V17_0_071225_0_H2.1 1 [Aug 02 2007 11:22:39]
OK
```

3.4 Request product serial number identification (AT+CGSN)

Description

Execution command causes the TA to return identification text, which is intended to permit the user of the TA to identify the individual ME to which it is connected to .

Syntax

Test Command	Response
AT+CGSN=?	ОК
Execution Command	Response
AT+CGSN	<sn></sn>
	ОК

Defined Values

<sn> serial number identification, which consists of a single line containing the IMEI(International Mobile station Equipment Identity) number of the ME.

Implementation

```
AT+CGSN
11111111111110
OK
```

3.5 Request overall capabilities (AT+GCAP)

Description

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

Syntax

Test Command	Response
AT+GCAP=?	ОК
Execution Command	Response
AT+GCAP	+GCAP: (list of <name>s)</name>
	ОК

Defined Values

<name></name>	list of additional capabilities.
---------------	----------------------------------

+CGSM	GSM function is supported
+FCLASS	FAX function is supported
+DS	Data compression is supported



Implementation

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

3.6 Display product identification information (ATI)

Description

The command is used to request the product identification informations, which consist of manufacturer identification, model identification, revision identification, internal revision, International Mobile station Equipment Identity and overall capabilities of the product.

Syntax

Execution Command	Response
ATI	Manufacturer: <manufacturer></manufacturer>
	Model: <model></model>
	Revision: <revision></revision>
	QCN: <qcn_type></qcn_type>
	IMEI: <sn></sn>
	+GCAP: list of <name>s</name>
	OK

Defined Values

<manufacturer></manufacturer>	the identification	n of manufacturer.
<model></model>	the identification	n of model.
<revision></revision>	the revision iden	tification of firmware.
<qcn_type></qcn_type>	the . identificatio	n of qcn.
<sn></sn>	serial number	identification, which consists of a single line containing the
	IMEI(Internation	nal Mobile station Equipment Identity) number of the ME.
<name></name>	list of additional	capabilities.
	+CGSM	GSM function is supported
	+FCLASS	FAX function is supported
	+DS	Data compression is supported

Implementation

ATI Manufacturer: SIMCOM INCORPORATED Model: SIMCOM_SIM5210 Revision: M6280A SIM5210_QCT6280_409035_080304_V1.02 1 [Mar 04 2008 20:17:13] Internal Revision: B01V01 IMEI: 1111111111110 +GCAP: +CGSM,+FCLASS,+DS OK

3.7 Re-issue the last command given (A/)

Description

The command is used for implement previous AT command repeatedly(Except A/), and the return value depends on the last AT command.



Syntax

Execution Command	Response
A/	<the at="" command="" last="" response="" return="" the=""></the>

Defined Values

None.

Implementation

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

3.8 Switch to DM mode (AT\$QCDMG)

Description

Execution command will switch current serial port to DM mode; the DM mode mainly uses for download software or read debug information. Normally, when the serial port working under AT mode, user is able to input AT command, after executing AT command, the serial port will switch to the DM mode and could not input AT command at that status.

Syntax

Test Command	Response
AT\$QCDMG=?	ОК
Execution Command	Response
AT\$QCDMG	ОК
	ERROR

Defined Values

- 1. After switching to DM mode, could not accept commonly AT commands.
- 2. The status will switch to DM mode when module debugging.
- 3. The status will resume to AT mode after restart module.
- 4. The baud rate can not modify by AT command under the DM mode.

Connect two calls and cut off the connection between users and them simultaneously.

Implementation

```
AT$QCDMG
```

OK

3.9 Select TE character set (AT+CSCS)

Description

Write command informs TA which character set <chest> is used by the TE. TA is then able to convert character strings correctly TE and ME character sets.

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

Test Commond	Desmanae
resi Commano	Kesponse
1 cot commune	1.00000000



AT+CSCS=?	+CSCS: (list of supported <chset>s)</chset>
	OK
Read Command	Response
AT+CSCS?	+CSCS: <chset></chset>
	OK
Write Command	Response
AT+CSCS= <chset></chset>	OK
Execution Command	Response
AT+CSCS	<pre>set default value(<chest>="IRA")</chest></pre>
	ОК

<chest> character set, the define is following:

- "IRA" international reference alphabet.
- "GSM" GSM default alphabet; this setting causes easily software flow control (XON/XOFF) problems.
- "UCS2" 16-bit universal multiple-octet coded character set; UCS32 character strings are converted to hexadecimal numbers from 0000 to FFFF.

Implementation

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

3.10 Request international mobile subscriber identity (AT+CIMI)

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.

Syntax

Test Command	Response
AT+CIMI=?	ОК
Execution Command	Response
AT+CIMI	<imsi></imsi>
	OK

Defined Values

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

```
Implementation
AT+CIMI
460010222028133
OK
```



4 Call Control Commands and Methods

4.1 Select type of address (AT+CSTA)

Description

Write command selects the type of number for further dialing commands(D) according to GSM specifications.

Read command returns the current type of number.

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

Syntax

Test Command	Response
AT+CSTA=?	+CSTA: (list of supported <type>s)</type>
	ОК
Read Command	Response
AT+CSTA?	+CSTA: <type></type>
	ОК
Write Command	Response
AT+CSTA= <type></type>	ОК
Execution Command	Response
AT+CSTA	set default value (<type>=145)</type>
	ОК

Defined Values

<type> type of address octet in integer format; default 145 when dialing string includes international access code character "+", otherwise 129.

Implementation

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

4.2 Call mode (AT+CMOD)

Description

Write command selects the call mode of further dialing commands(D) or for next answering command(A). Mode can be either single or alternating.

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

Test Command	Response
AT+CMOD=?	+CMOD: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CMOD?	+CMOD: <mode></mode>



	ОК
Write Command	Response
AT+CMOD= <mode></mode>	ОК
Execution Command	Response
AT+CMOD	ОК

<mode> 0 - single mode(only supported)

- 1 alternating voice/fax(teleservice 61)
- 2 alternating voice/data(bearer service 61)
- 3 voice followed by data(bearer service 81)
- **NOTE:** The value of <mode> shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-up, factory and user resets shall also set the value to zero. This reduces the possibility that alternating mode calls are originated or answered accidentally.

Implementation

AT+CMOD? +CMOD: 0 OK AT+CMOD=0 OK

4.3 Mobile originated call to specified number(ATD)

Description

Originate a call to specified number.

Syntax

Execution Command	Response
ATD <n>[<mgsm>][;]</mgsm></n>	ОК
	VOICE CALL: BEGIN
	ERROR

Defined Values

<n> string of dialing digits and optionally V.25ter modifiers dialing digits:

0-9,*,#,+,A,B,C

Following V.25ter modifiers are ignored:

,(comma),T,P,!,W,@

<mgsm> String of GSM modifiers:

- I Activates CLIR(disables presentation of own phone number to called party)
- I Deactivates CLIR(enables presentation of own phone number to called party)
- G Activate Closed User Group explicit invocation for this call only.
- g Deactivate Closed User Group explicit invocation for this call only.
- <;> The termination character ";" is mandatory to set up voice calls.It must not be used for data and fax calls.

Implementation



ATD10086; OK

VOICE CALL: BEGIN

4.4 Mobile originated specified call using memory and index number (ATD><mem><n>)

Description

Originate a call using specified memory and index number.

Syntax

Execution Command	Response
ATD> <mem><n>;</n></mem>	ОК
	VOICE CALL: BEGIN
	ERROR

Defined Values

<mem></mem>	Phonebook	storage:
	For detaile	ed description of storages see AT+CPBS.
	"DC"	ME dialed calls list
	"MC"	ME missed (unanswered received) calls list
	"RC"	ME received calls list
	"SM"	SIM phonebook
	"ME"	UE phonebook
	"FD"	SIM fixdialling-phonebook
	"ON"	MSISDN list
"LD'	"LD"	Last number dialed phonebook
	"EN"	Emergency numbers
<n></n>	Integer type	memory location in the range of locations available
	.1 • 1	

e in the selected memory, i.e. < the index returned by AT+CPBR.

Implementation

ATD>SM3; OK

VOICE CALL: BEGIN

4.5 Mobile originated call from active memory using index number(ATD><n>)

Description

Originate a call to specified number.

Execution Command	Response
ATD> <n>;</n>	ОК
	VOICE CALL: BEGIN



ERROR		
EKKUK		

<n> Integer type memory location in the range of locations available in the selected memory, i.e. the Index number returned by **AT+CPBR**.

Implementation

ATD>2;

OK

VOICE CALL: BEGIN

4.6 Mobile originated call from active memory using corresponding field(ATD><str>)

Description

Originate a call to specified number.

Syntax

Execution Command	Response
ATD> <str>;</str>	ОК
	VOICE CALL: BEGIN
	ERROR

Defined Values

<str> string type value("x"), which should equal to an alphanumeric field in at least one phone book entry in the searched memories. str formatted as current TE character set specified by AT+CSCS.

Implementation

ATD>john; OK

VOICE CALL: BEGIN

4.7 Answer an incoming call (ATA)

Description

The command is used to answer an incoming call. If there is no an incoming call and entering this command to TA, it will be result "NO CARRIER" response given.

Syntax

Execution Command	Response
ATA	VOICE CALL: BEGIN
	ОК
	if there is no an incoming call
	NO CARRIER

```
Defined Values
```

None.

Implementation



ATA VOICE CALL: BEGIN OK

4.8 Voice hangup control (AT+CVHU)

Description

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

Test Command	Response
AT+CVHU=?	+CVHU: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CVHU?	+CVHU: <mode></mode>
	OK
Write Command	Response
AT+CVHU= <mode></mode>	ОК
Execution Command	Response
AT+CVHU	<pre>set default value(<mode>=1)</mode></pre>
	ОК

Defined Values

<mode> 0 – ATH command could disconnect a voice call.

1 – ATH command ignored, but OK response given.

Implementation

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

4.9 Disconnect existing voice call (ATH)

Description

The command is used to disconnect existing voice call. Before using ATH command to hangup a voice call, it must set AT+CVHU=0. Otherwise, ATH command will be ignored and "OK" response is given only. **Syntax**

Execution Command	Response
ATH	<i>if AT+CVHU=0</i>
	VOICE CALL: END: <time></time>
	OK
	<i>if</i> AT+CVHU=1
	OK

Defined Values



<time> Telephone connection time.

Format – HHMMSS(HH: hour, MM: minute, SS: second).

Implementation

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

4.10 Hangup call (AT+CHUP)

Description

The command is used to hangup the current call. If there is no active call, it will do nothing but generate "OK" response.

Syntax

Test Command	Response
AT+CHUP=?	ОК
Execution Command	Response
AT+CHUP	VOICE CALL: END: <time></time>
	ОК
	if there is no active call:
	ОК

Defined Values

<time> Telephone connection time.

Format – HHMMSS(HH: hour, MM: minute, SS: second).

Implementation

AT+CHUP VOICE CALL: END: 000017 OK

4.11 Select bearer service type (AT+CBST)

Description

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

Syntax

Test Command	Response
AT+CBST=?	+CBST: (list of supported <speed>s), (list of supported <name>s), (list of supported <ce>s) OK</ce></name></speed>
Read Command	Response
AT+CBST?	+CBST: <speed>,<name>,<ce> OK</ce></name></speed>



Write Command	Response
AT+CBST= <speed>[</speed>	ОК
, <name>[,<ce>]]</ce></name>	
Execution Command	Response
AT+CBST	set default value (0,0,1)
	OK

<speed>

0

 autobauding(automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)

	7	_	9600 bps
	12	_	9600 bps
	14	_	14400 bps
	16	_	28800 bps
	17	_	33600 bps
	39	_	9600 bps
	43	_	14400 bps
	48	_	28800 bps
	51	_	56000 bps
	71	—	9600 bps
	75	_	14400 bps
	80	_	28800 bps
	81	_	38400 bps
	83	_	56000 bps
	84	_	64000 bps
	116	ō —	64000 bps
	134	↓ _	64000 bps
NOTE.	: Į	f < sp	eed> is set to 116 or 134, it is necessary that $<$ name> is equal to 1 and $<$ ce> is
	e	equal i	to 0

<name>

0 - GSM

1 – WCDMA

4 - data circuit asynchronous (RDI)

0 – transparent

1-non-transparent

Implementation

<ce>

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

4.12 Radio link protocol (AT+CRLP)

Description

Radio Link Protocol(RLP) parameters used when non-transparent data calls are originated may be



altered with write command.

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

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

Test Command	Response
AT+CRLP=?	+CRLP: (list of supported <iws>s), (list of supported <mws>s),</mws></iws>
	(list of supported <t1>s), (list of supported <n2>s) [,<ver1></ver1></n2></t1>
	[,(list of supported <t4>s)]]</t4>
	[<cr><lf>+CRLP: (list of supported <iws>s), (list of</iws></lf></cr>
	supported <mws>s), (list of supported <t1>s), (list of</t1></mws>
	<pre>supported <n2>s) [,<ver2> [,(list of supported <t4>s)]]</t4></ver2></n2></pre>
	[]]
	ОК
Read Command	Response
AT+CRLP?	+CRLP: <iws>, <mws>, <t1>, <n2> [,<ver1> [, <t4>]]</t4></ver1></n2></t1></mws></iws>
	[<cr><lf>+CRLP:<iws>,<mws>,<t1>,<n2>[,<ver2>[,<t4>]]</t4></ver2></n2></t1></mws></iws></lf></cr>
	[]]
	OK
Write Command	Response
AT+CRLP= <iws>[,<</iws>	ОК
mws>[, <t1>[,<n2>[,</n2></t1>	
<ver>[,<t4>]]]]]</t4></ver>	
Execution Command	Response
AT+CRLP	ОК

Defined Values

<ver>>, <verx>RLP version number in integer format, and it can be 0, 1 or 2; when version
indication is not present it shall equal 1.<iws>IWF to MS window size.<mws>MS to IWF window size.<T1>acknowledgement timer.

- <N2> retransmission attempts.
- <T4> re-sequencing period in integer format.

NOTE: $\langle T1 \rangle$ and $\langle T4 \rangle$ are in units of 10 ms.

Implementation

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

4.13 Service reporting control (AT+CR)



Description

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

Test Command	Response
AT+CR=?	+CR: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CR?	+CR: <mode></mode>
	ОК
Write Command	Response
AT+CR= <mode></mode>	ОК
Execution Command	Response
AT+CR	set default value (<mode>=0)</mode>
	OK

Defined Values

<mode> 0 – disables reporting

	1 – enables reporti	ng
<serv></serv>	ASYNC	asynchronous transparent
	SYNC	synchronous transparent
	REL ASYNC	asynchronous non-transparent
	REL sync	synchronous non-transparent
	GPRS [<l2p>]</l2p>	GPRS

The optional $\langle L2P \rangle$ proposes a layer 2 protocol to use between the MT and the TE.

Implementation

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

4.14 Extended error report (AT+CEER)

Description

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

- the failure in the last unsuccessful call setup(originating or answering) or in-call modification.
- the last call release.
- the last unsuccessful GPRS attch or unsuccessful PDP context activation.
- the last GPRS detach or PDP context deactivation.

Test Command	Response
--------------	----------



AT+CEER=?	ОК
Execution Command	Response
AT+CEER	+CEER: <report></report>
	ОК

<report> wrong information which is possibly occurred.

Implementation

AT+CEER +CEER: Invalid/incomplete number OK

4.15 Cellular result codes (AT+CRC)

Description

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

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

Syntax

Test Command	Response
AT+CRC=?	+CRC: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CRC?	+CRC: <mode></mode>
	ОК
Write Command	Response
AT+CRC= <mode></mode>	ОК
Execution Command	Response
AT+CRC	<pre>set default value(<mode>=0)</mode></pre>
	ОК

Defined Values

<mode> 0 – disable extended format

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

GPRS



GPRS network request for PDP context activation

Implementation

AT+CRC=1 OK AT+CRC? +CRC: 1 OK

4.16 DTMF tone generation (AT+VTS)

Description

The command is used to send a DTMF tone to network during a voice call which is connected.

Syntax

Test Command	Response
AT+VTS=?	+VTS: (list of supported <key>s)</key>
	OK
Write Command	Response
AT+VTS= <key></key>	ОК
	ERROR

Defined Values

<key></key>	0-9	dial from 0 to 9 numbers
	*	dial "*" key
	#	dial "#" key

Implementation

AT+VTS=1 OK AT+VTS=? +VTS: (0-9, *,#) OK

4.17 Speaker mute control (AT+VMUTE)

Description

The command is used to control the speaker to mute and unmute during a voice call which is connected.

Test Command	Response
AT+VMUTE=?	+VMUTE: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+VMUTE?	+VMUTE: <mode></mode>
	ОК
Write Command	Response
AT+VMUTE= <mode></mode>	ОК



<mode> 0 – mute off

1 - mute on

Implementation

AT+VMUTE=1 OK AT+VMUTE? +VMUTE: 1 OK

4.18 Mic mute control (AT+CMUT)

Description

The command is used to enable and disable the uplink voice muting during a voice call which is connected.

Syntax

Test Command	Response
AT+CMUT=?	+CMUT: (list of supported <mode>s)</mode>
	OK
Read Command	Response
AT+CMUT?	+CMUT: <mode></mode>
	OK
Write Command	Response
AT+CMUT= <mode></mode>	ОК

Defined Values

<mode> 0 – mute off

1 - mute on

Implementation

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

4.19 Mic volume control (AT+CMIC)

Description

The command is used to change the microphone gain level.

Test Command	Response
AT+CMIC=?	+CMIC: (list of supported <gainlevel>s)</gainlevel>
	ОК
Read Command	Response
AT+CMIC?	+CMIC: <gainlevel></gainlevel>
	ОК



Write Command	Response
AT+CMIC= <gainlevel></gainlevel>	ОК

<gainlevel> range from 0 to 15, and 0 is the lowest, 15 is the highest

Implementation

AT+CMIC=5 OK AT+CMIC ? +CMIC :5 OK AT+CMIC= ? +CMIC :(0-15) OK

4.20 Receive gain selection (AT+VGR)

Description

The command causes the TA to control volume high and low.

Syntax

Test Command	Response
AT+VGR=?	+VGR: (list of supported <vol>s)</vol>
	ОК
Read Command	Response
AT+VGR?	+VGR: <vol></vol>
	ОК
Write Command	Response
AT+VGR= <vol></vol>	ОК

Defined Values

<vol> range from 0 to 4, and 0 is the lowest, 4 is the highest

Implementation

AT+VGR? +VGR: 2 OK AT+VGR=4 OK

4.21 Auto answer incoming call (AT+AUTOANSWER)

Description

The command causes the module to disable and enable auto answer when there is a incoming call.

Read Command	Response
AT+AUTOANSWE	+AUTOANSWER: <arg></arg>
R?	ОК
Write Command	Response



AT+AUTOANSWE	OK
_	

R=<arg>

Defined Values

 $\langle arg \rangle = 0 - disable$ auto answer

1 - enable auto answer

Implementation

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

4.22 Set voice channel device (AT+CSDVC)

Description

The command causes the module to set current voice channel device.

Syntax

Test Command	Response
AT+CSDVC=?	+CSDVC: (list of supported <arg>s)</arg>
	ОК
Read Command	Response
AT+CSDVC?	+CSDVC: <arg></arg>
	ОК
Write Command	Response
AT+CSDVC= <arg></arg>	ОК

Defined Values

<arg> 1 – handset

2-headset

3 – speaker phone

Implementation

AT+CSDVC=2 OK AT+CSDVC? +CSDVC:2 OK



5 SMS Related Commands

5.1 Message service failure result code +CMS ERROR

Description

Final result code +CMS ERROR: <err> indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed. Neither ERROR nor OK result code shall be returned. ERROR is returned normally when error is related to syntax or invalid parameters.

Syntax

+CMS ERROR: <err>

Defined Values

<err>

300 ME failure 301 SMS service of ME reserved 302 operation not allowed 303 operation not supported 304 invalid PDU mode parameter 305 invalid text mode parameter 310 (U)SIM not inserted 311 (U)SIM PIN required 312 PH-(U)SIM PIN required 313 (U)SIM failure 314 (U)SIM busy 315 (U)SIM wrong 316 (U)SIM PUK required 317 (U)SIM PIN2 required 318 (U)SIM PUK2 required 320 memory failure 321 invalid memory index 322 memory full 330 SMSC address unknown 331 no network service 332 network timeout 340 no +CNMA acknowledgement expected 500 unknown error

Implementation

AT+CMGS=02152063366

+CMS ERROR: 304

5.2 Select message service (AT+CSMS)

Description

The command is used to select messaging service <service>.



Syntax

Test Command	Response
AT+CSMS=?	+CSMS: (list of supported <service>s)</service>
	ОК
Read Command	Response
AT+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm></bm></mo></mt></service>
	ОК
Write Command	Response
AT+CSMS= <service></service>	+CSMS: <mt>,<mo>,<bm></bm></mo></mt>
	ОК
	CMCEDDOD.

Defined Values

- 0 SMS AT command is compatible with GSM Phase 2
- 1 SMS AT command is compatible with GSM Phase 2+
- <mt> Mobile Terminated Messages:
 - 0 Type not supported
 - 1 Type supported
- <mo> Mobile Originated Messages:
 - 0 Type not supported
 - 1 Type supported
- <bm> Broadcast Type Messages:
 - 0 Type not supported
 - Type supported

Implementation

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

1

5.3 Preferred message storage (AT+CPMS)

Description

The command is used to select memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

Test Command	Response
AT+CPMS=?	+CPMS: (list of supported <mem1>s), (list of supported</mem1>
	<mem2>s), (list of supported <mem3>s)</mem3></mem2>



	ОК
Read Command	Response
AT+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,</total2></used2></mem2></total1></used1></mem1>
	<mem3>,<used3>,<total3></total3></used3></mem3>
	ОК
	+CMS ERROR: <err></err>
Write Command	Response
AT+CPMS= <mem1></mem1>	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3></total3></used3></total2></used2></total1></used1>
[, <mem2>[,<mem3>]</mem3></mem2>	ОК
]	
	+CMS ERROR: <err></err>

<mem1></mem1>	string type, memory from which messages are read and deleted (commands List Messages
	+CMGL, Read Message +CMGR and Delete Message +CMGD)
<mem2></mem2>	string type, memory to which writing and sending operations are made (commands Send
	Message from Storage +CMSS and Write Message to Memory +CMGW)
<mem3></mem3>	string type, memory to which received SMS is preferred to be stored (unless forwarded
	directly to TE; refer command New Message Indications +CNMI)
<usedx></usedx>	integer type, number of messages currently in <memx></memx>
<totalx></totalx>	integer type, total number of message locations in <memx></memx>

Implementation

```
AT+CPMS=? ("ME" and "MT" means FLASH message storage; "SM" and "SR" means SIM
message storage.)
+CPMS: ("ME", "MT", "SM", "SR"),("ME", "MT", "SM", "SR"),("ME", "MT", "SM", "SR")
OK
AT+CPMS?
+CPMS: "ME", 0, 23, "ME", 0, 23, "ME", 0, 23
OK
AT+CPMS= "SM", "SM", "SM"
+CPMS: 3,40,3,40,3,40
OK
```

5.4 Message format (AT+CMGF)

Description

The command is used to tell the TA, which input and output format of messages to use.

Test Command	Response
AT+CMGF=?	+CMGF: (list of supported <mode>s)</mode>
	OK
Read Command	Response
AT+CMGF?	+CMGF: <mode></mode>
	ОК



Write Command	Response
AT+CMGF= <mode></mode>	ОК
Execution Command	Response
AT+CMGF	set default value (<mode>=0)</mode>
	ОК

<mode>

- 0 PDU mode (default when implemented)
- 1 text mode

Implementation

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

5.5 Service centre address (AT+CSCA)

Description

The command is used to update the SMSC address, through which mobile originated SMS are transmitted.

Syntax

Test Command	Response
AT+CSCA=?	ОК
Read Command	Response
AT+CSCA?	+CSCA: <sca>,<tosca></tosca></sca>
	ОК
Write Command	Response
AT+CSCA= <sca></sca>	ОК
[, <tosca>]</tosca>	
	+CME ERROR: <err></err>

Defined Values

- <sca> SC address, value field in string format, BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tosca>.
- <tosca> SC address Type-of-Address octet in integer format. (When first character is + default is 145, otherwise default is 129)

Implementation

AT+CSCA="+8613010314500" OK AT+CSCA?



+CSCA: "+8613010314500", 145 OK

5.6 Show text mode parameters (AT+CSDH)

Description

The command is used to control whether detailed header information is shown in text mode result codes.

Syntax

Test Command	Response
AT+CSDH=?	+CSDH: (list of supported <show>s)</show>
	ОК
Read Command	Response
AT+CSDH?	+CSDH: <show></show>
	ОК
Write Command	Response
AT+CSDH= <show></show>	ОК
Execution Command	Response
AT+CSDH	set default value (<show>=0)</show>
	ОК

Defined Values

<show>

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

Implementation

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

5.7 New message indications to TE (AT+CNMI)

Description

The command is used to select the procedure, how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF). **Syntax**

Test Command	Response
AT+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</bfr></ds></bm></mt></mode>



Read Command	Response
AT+CNMI?	+CNMI: <mode>,<mt>, ,<ds>,<bfr></bfr></ds></mt></mode>
	ОК
Write Command	Response
AT+CNMI= <mode></mode>	ОК
[, <mt>[,<bm>[,<ds></ds></bm></mt>	
[, <bfr>]]]]</bfr>	+CMS ERROR: <err></err>
Execution Command	Response
AT+CNMI	set default value($<$ mode>=0, $<$ mt>=0, $<$ bm>=0, $<$ ds>=0,
	$\langle bfr \rangle = 0)$
	OK

<mode>

- 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.
- 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.
- 2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.
- 3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.
- <mt>
- > the rules for storing received SMS depend on its data coding scheme, preferred memory storage (+CPMS) setting and this value:
 - 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> the rules for storing received CBMs depend on its data coding scheme, the setting of Select CBM Types (+CSCB) and this value:
 - 0 No CBM indications are routed to the TE.
 - 1 If CBM is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CBMI: <mem>,<index>
 - 2 New CBMs are routed directly to the TE using unsolicited result code:
 - +CBM: <length><CR><LF><pdu> (PDU mode enabled); or

+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)



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>

- 0 No SMS-STATUS-REPORTs are routed to the TE.
- 1 SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled); or +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)
- 2 If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem>,<index>

<bfr>

- 0 TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 to 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 to 3 is entered.

Implementation

```
AT+CNMI?
+CNMI: 0,0,0,0,0
OK
AT+CNMI=?
+CNMI: (0,1,2),(0,1,2,3),(0,2),(0,1,2),(0,1)
OK
AT+CNMI=2,1 (unsolicited result codes after received messages.)
OK
```

5.8 List messages (AT+CMGL)

Description

The command returns messages with status value <stat> from message storage <mem1> to the TE. Syntax

Test Command	Response
AT+CMGL=?	+CMGL: (list of supported <stat>s)</stat>
	ОК
Write Command	Response
AT+CMGL= <stat></stat>	if text mode (+CMGF=1), command successful and SMS-SUBMITs
	and/or SMS-DELIVERs:
	+CMGL:
	<index>,<stat>,<oa da="">,[<alpha>],[<scts>][,<tooa toda="">,<length>]</length></tooa></scts></alpha></oa></stat></index>
	<cr><lf><data>[<cr><lf></lf></cr></data></lf></cr>
	+CMGL:
	<index>,<stat>,<da oa="">,[<alpha>],[<scts>][,<tooa toda="">,</tooa></scts></alpha></da></stat></index>
	<length>]<cr><lf><data>[]]</data></lf></cr></length>
	ОК
	if text mode (+CMGF=1), command successful and SMS-


STATUS-REPORTs:
+CMGL:
<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st></st></dt></scts></tora></ra></mr></fo></stat></index>
[<cr><lf></lf></cr>
+CMGL:
<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<sets>,<dt>,<st></st></dt></sets></tora></ra></mr></fo></stat></index>
[]]
OK
if text mode (+CMGF=1) command successful and SMS-
COMMANDS:
+CMGL: <index> <stat> <fo> <ct>[<cr><lf></lf></cr></ct></fo></stat></index>
$\pm CMGL: < cindex > < stat > fo > < ct []]$
if text mode $(+CMGE-1)$ command successful and CBM storage:
(FCMCI + cindex) <stat. <sn=""> <mid. <nage.<="" th=""></mid.></stat.>
CDs of Fs colores [cCDs of Fs
<ck><lf><uala>[<ck><lf></lf></ck></uala></lf></ck>
+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages></pages></page></mid></sn></stat></index>
<cr><lf><data>[]]</data></lf></cr>
OK
otherwise:
+CMS ERROR: <err></err>

Defined Values

<stat>

a. Text Mode:

"REC UNREAD"	received unread message (i.e. new message)
"REC READ"	received read message
"STO UNSENT"	stored unsent message
"STO SENT"	stored sent message
"ALL"	all messages

- b. PDU Mode:
 - 0 received unread message (i.e. new message)
 - 1 received read message
 - 2 stored unsent message
 - 3 stored sent message
 - 4 all messages
- <alpha> string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set +CSCS.
- <da> Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character



set, type of address given by <toda>.

<data> In the case of SMS: TP-User-Data in text mode responses; format:

- 1 if <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
- 2 if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
- if <dcs> indicates that GSM 7 bit default alphabet is used:
 a. if TE character set other than "HEX":ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number
- 4. if <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.
- <length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
- <index> integer type, value in the range of location numbers supported by the associated memory
- <oa> Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tooa>
- <pdu> In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
- <scts> TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)
- <toda> TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)
- <tooa> TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>)

Implementation

AT+CMGL=? +CMGL: ("REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL") OK AT+CMGL="ALL" +CMGL: 1, "STO UNSENT", "+10011",,,145,4 abcd OK

5.9 Read message (AT+CMGR)



Description

The command returns message with location value <index> from message storage <mem1> to the TE. Syntax

Test Command	Response
AT+CMGR=?	ОК
Write Command	Response
AT+CMGR= <index></index>	if text mode (+CMGF=1), command successful and SMS-
	DELIVER:
	+CMGR:
	<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,</dcs></pid></fo></tooa></scts></alpha></oa></stat>
	<sca>, <tosca>, <length>]<cr><lf><data></data></lf></cr></length></tosca></sca>
	OK
	if text mode (+CMGF=1), command successful and SMS-
	SUBMIT:
	+CMGR:
	<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],</vp></dcs></pid></fo></toda></alpha></da></stat>
	<sca>, <tosca>,<length>]<cr><lf><data></data></lf></cr></length></tosca></sca>
	OK
	if text mode (+CMGF=1), command successful and SMS-
	STATUS-REPORT:
	+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st></st></dt></scts></tora></ra></mr></fo></stat>
	OK
	if and the (CMCE 1) and the second large large large
	<i>ij lexi mode</i> (+CMGF=1), <i>commana successjul and SMS</i> -
	COMMAND:
	+CNGR;
	CD~IF~data>]
	UK CK
	if text mode (+CMGF=1) command successful and CBM
	storage:
	+CMGR:
	<pre><stat>,<sn>,<mid>,<dcs>,<page>,<pages><cr><lf><data></data></lf></cr></pages></page></dcs></mid></sn></stat></pre>
	OK
	otherwise:
	+CMS ERROR: <err></err>

Defined Values

<stat>

a. Text Mode:



"REC UNREAD"received unread message (i.e. new message)"REC READ"received read message"STO UNSENT"stored unsent message"STO SENT"stored sent message"ALL"all messages

- b. PDU Mode:
 - 0 received unread message (i.e. new message)
 - 1 received read message
 - 2 stored unsent message
 - 3 stored sent message
 - 4 all messages
- <alpha> string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set +CSCS.
- <da> Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
- <data> In the case of SMS: TP-User-Data in text mode responses; format:
 - 1 if <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
 - 2 if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
 - if <dcs> indicates that GSM 7 bit default alphabet is used:
 a. if TE character set other than "HEX":ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number
 - 4. if <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.
- <length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
- <index> integer type, value in the range of location numbers supported by the associated memory <oa> Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tooa>
- <pdu> In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts



each octet of TP data unit into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) <scts> TP-Service-Centre-Time-Stamp in time-string format (refer <dt>) TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <toda> <da> is + (IRA 43) default is 145, otherwise default is 129) <tooa> TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>) <dcs> depending on the command or result code: SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format. <fo> depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. CBM Message Identifier in integer format. <mid> <sca> RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tosca> RP SC address Type-of-Address octet in integer format (default refer <toda>) <tosca> depending on SMS-SUBMIT <fo> setting: TP-Validity-Period either in integer format $\langle vp \rangle$ (default 167) or in time-string format (refer <dt>).

Implementation

```
AT+CMGR=1
+CMGR: "STO UNSENT","+10011",,145,17,0,0,167,"+8613800100500",145,4
abcd
OK
```

5.10 Send message (AT+CMGS)

Description

The command is used to send message from a TE to the network (SMS-SUBMIT).

Syntax

Test Command	Response
AT+CMGS=?	ОК
Write Command	Response
<i>if text mode</i> (+ <i>CMGF</i> =1):	<i>if text</i> mode (+CMGF=1) and sending successful:
AT+CMGS= <da>[,<toda< th=""><th>+CMGS: <mr></mr></th></toda<></da>	+CMGS: <mr></mr>
>] <cr>text is entered</cr>	ОК
<ctrl-z esc=""></ctrl-z>	
	if sending fails:
	+CMS ERROR: <err></err>

Defined Values

<data> In the case of SMS: TP-User-Data in text mode responses; format:

- 1 if <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default



alphabet into two IRA character long hexadecimal number. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))

- 2 if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
- if <dcs> indicates that GSM 7 bit default alphabet is used:
 a. if TE character set other than "HEX":ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number
- 4. if <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.
- <toda> TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)
- <length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
- <mr> TP-Message-Reference in integer format.

Implementation

```
AT+CMGS="13012832788"<CR> (TEXT MODE)
> ABCD<ctrl-Z/ESC>
+CMGS: 46
OK
```

5.11 Send message from storage (AT+CMSS)

Description

The command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

Syntax

Test Command	Response
AT+CMSS=?	ОК
Write Command	Response
AT+CMSS= <index></index>	if text mode (+CMGF=1) and sending successful:
[, <da>[,<toda>]]</toda></da>	+CMSS: <mr></mr>
	ОК
	if sending fails:
	+CMS ERROR: <err></err>

Defined Values

<index> integer type, value in the range of location numbers supported by the associated memory.

<da> Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.



<mr> TP-Message-Reference in integer format.

<toda> TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

Implementation

```
AT+CMSS=3
+CMSS: 0
OK
AT+CMSS=3,"13012832788"
+CMSS: 55
OK
```

5.12 Write message to memory (AT+CMGW)

Description

The command is used to store message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>.

Syntax

Test Command	Response
AT+CMGW=?	ОК
Write Command	Response
if text mode(+CMGF=1):	+CMGW: <index></index>
AT+CMGW= <oa da="">[,<t< td=""><td>ОК</td></t<></oa>	ОК
ooa/toda>[, <stat>]]<cr></cr></stat>	
text is entered	+CMS ERROR: <err></err>
<ctrl-z esc=""></ctrl-z>	

Defined Values

- <index> integer type, value in the range of location numbers supported by the associated memory.
- <da> Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
- <toda> TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)
- <length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)

<stat>

a.	Text Mode:	
	"REC UNREAD"	received unread message (i.e. new message)
	"REC READ"	received read message
	"STO UNSENT"	stored unsent message
	"STO SENT"	stored sent message
	"ALL"	all messages

- b. PDU Mode:
 - 0 received unread message (i.e. new message)
 - 1 received read message



- 2 stored unsent message
- 3 stored sent message
- 4 all messages

Implementation

AT+CMGW="13012832788" <CR> (TEXT MODE) ABCD<ctrl-Z/ESC> +CMGW: 1 OK

5.13 Delete message (AT+CMGD)

Description

The command is used to delete message from preferred message storage <mem1> location <index>.

Syntax

Test Command	Response
AT+CMGD=?	+CMGD: (list of supported <index>s)[,(list of supported</index>
	<delflag>s)]</delflag>
	OK
Write Command	Response
AT+CMGD= <index></index>	ОК
[, <delflag>]</delflag>	
	+CMS ERROR: <err></err>

Defined Values

<delflag>

- 0 (or omitted) Delete the message specified in <index>
- 1 Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched.
- 2 Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched.
- 3 Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched.
- 4 Delete all messages from preferred message storage including unread messages.

Implementation

AT+CMGD=1

OK

5.14 Set text mode parameters (AT+CSMP)

Description

The command is used to select values for additional parameters needed when SM is sent to the network or placed in storage when text format message mode is selected.

Syntax

Test Command	Response
AT+CSMP=?	OK
Read Command	Response



AT+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs></dcs></pid></vp></fo>
	ОК
Write Command	Response
AT+CSMP= <fo>[,<</fo>	ОК
vp>[, <pid>[,<dcs>]]]</dcs></pid>	

Defined Values

- <fo> depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), or SMS-COMMAND (default 2) in integer format.
- <vp> depending on SMS-SUBMIT <fo> setting: TP-Validity-Period either in integer format (default 167), in time-string format, or if is supported, in enhanced format (hexadecimal coded string with quotes).
- <pid> protocol-Identifier in integer format (default 0).
- <dcs> SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format depending on the command or result code.

Implementation

AT+CSMP=17,23,64,244 OK

5.15 Read message only (AT+CMGRO)

Description

The command returns message with location value <index> from message storage <mem1> to the TE, but the message's status don't change.

Syntax

Test Command	Response
AT+CMGRO=?	ОК
Write Command	Response
AT+CMGRO= <index></index>	if text mode (+CMGF=1), command successful and SMS-
	DELIVER:
	+CMGRO:
	<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,</dcs></pid></fo></tooa></scts></alpha></oa></stat>
	<sca>,</sca>
	<tosca>,<length>]<cr><lf><data></data></lf></cr></length></tosca>
	ОК
	if text mode (+CMGF=1), command successful and SMS-
	SUBMIT:
	+CMGRO:
	<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],</vp></dcs></pid></fo></toda></alpha></da></stat>
	<sca>,</sca>
	<tosca>,<length>]<cr><lf><data></data></lf></cr></length></tosca>
	ОК
	if text mode (+CMGF=1), command successful and SMS-



MS-
1110-
>
CBM
ata>

Defined Values

<stat>

a. Text Mode:

"REC UNREAD"	received unread message (i.e. new message)
"REC READ"	received read message
"STO UNSENT"	stored unsent message
"STO SENT"	stored sent message
"ALL"	all messages

- b. PDU Mode:
 - 0 received unread message (i.e. new message)
 - 1 received read message
 - 2 stored unsent message
 - 3 stored sent message
 - 4 all messages
- <alpha> string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set +CSCS.
- <da> Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character



set, type of address given by <toda>.

<data> In the case of SMS: TP-User-Data in text mode responses; format:

- 1 if <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
- 2 if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
- if <dcs> indicates that GSM 7 bit default alphabet is used:
 a. if TE character set other than "HEX":ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number
- 4. if <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.
- <length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)<index> integer type, value in the range of location numbers supported by the associated memory
- <oa> Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tooa>
- <pdu> In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
- <scts> TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)
- <toda> TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)
- <tooa> TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>)
- <dcs> depending on the command or result code: SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format.
- <fo> depending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.
- <mid> CBM Message Identifier in integer format.
- <sca> RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tosca>
- <tosca> RP SC address Type-of-Address octet in integer format (default refer <toda>)
- <vp> depending on SMS-SUBMIT <fo> setting: TP-Validity-Period either in integer format



(default 167) or in time-string format (refer <dt>).

Implementation

```
AT+CMGRO=6
+CMGRO: "REC READ","+8613917787249",,"06/07/10,12:09:38+32", 145 ,4, 0,0 ,
"+8613800210500", 145,4
abcd
OK
```

5.16 Change message status (AT+CMGMT)

Description

The command is used to change the message status. If the status is unread, it will be changed read. Other statuses don't change.

Syntax

Test Command	Response
AT+CMGMT=?	ОК
Write Command	Response
AT+CMGMT= <index></index>	ОК
	+CMS ERROR: <err></err>

Defined Values

<index> integer type, value in the range of location numbers supported by the associated memory.

Implementation

AT+CMGMT=1 OK

5.17 Set message valid period (AT+CMVP)

Description

This command is used to set valid period for sending sms

Syntax

Test Command	Response
AT+CMVP=?	ОК
Read Command	Response
AT+CMVP?	+CMVP: <year>,<month>,<day>,<hour>,<minute>,<second></second></minute></hour></day></month></year>
	ОК
Write Command	Response
AT+CMVP= <year>,</year>	ОК
[<month>],[<day>],</day></month>	
[<hour>],[<minute>],</minute></hour>	+CMS ERROR: <err></err>
[<second>]</second>	

Defined Values

<year>,<month>,<day>,<hour>,<minute>,<second> are decimals all.

Implementation

AT+*CMVP*=1,1,25



ОК АТ+СМVР? +СМVР: "01-01-25-00-00-00" ОК

5.18 Read and delete message (AT+CMGRD)

Description

The command is used to read message, and delete the message at the same time. It integrate +CMGR and +DMGD, but it doesn't change the message status. **Syntax**

Test Command	Response
AT+CMGRD=?	ОК
Write Command	Response
AT+CMGRD= <index></index>	if text mode (+CMGF=1), command successful and SMS-
	DELIVER:
	+CMGRD:
	<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,</dcs></pid></fo></tooa></scts></alpha></oa></stat>
	<sca>,</sca>
	<tosca>,<length>]<cr><lf><data></data></lf></cr></length></tosca>
	ОК
	if text mode (+CMGF=1), command successful and SMS-
	SUBMIT:
	+CMGRD:
	<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],</vp></dcs></pid></fo></toda></alpha></da></stat>
	<sca>,</sca>
	<tosca>,<length>]<cr><lf><data></data></lf></cr></length></tosca>
	ОК
	if text mode (+CMGF=1), command successful and SMS-
	STATUS-REPORT:
	+CMGRD:
	<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st></st></dt></scts></tora></ra></mr></fo></stat>
	ОК
	if text mode (+CMGF=1), command successful and SMS-
	COMMAND:
	+CMGRD:
	<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length></length></toda></da></mn></pid></ct></fo></stat>
	<cr><lf><cdata>]</cdata></lf></cr>
	OK
	<i>if</i> text mode (+CMGF=1), command successful and CBM



<pre>storage: +CMGRD: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><cr><lf><data> OK</data></lf></cr></pages></page></dcs></mid></sn></stat></pre>
<i>if PDU mode (+CMGF=0) and command successful:</i> +CMGR: <stat>,[<alpha>],<length><cr><lf><pdu> OK</pdu></lf></cr></length></alpha></stat>
otherwise: +CMS ERROR: <err></err>

Defined Values

a. Text Mode:

"REC UNREAD"	received unread message (i.e. new message)
"REC READ"	received read message
"STO UNSENT"	stored unsent message
"STO SENT"	stored sent message
"ALL"	all messages

- b. PDU Mode:
 - 0 received unread message (i.e. new message)
 - 1 received read message
 - 2 stored unsent message
 - 3 stored sent message
 - 4 all messages
- <alpha> string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set +CSCS.
- <da> Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
- <data> In the case of SMS: TP-User-Data in text mode responses; format:
 - 1 if <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
 - 2 if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
 - 3. if <dcs> indicates that GSM 7 bit default alphabet is used:



а	a. if TE character set other than "HEX":ME/TA converts GSM alphabet into current TE
С	character set.
t	b. if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default
	alphabet into two IRA character long hexadecimal number
4. if	E < dcs > indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit for UCS2 data coding scheme is used: ME/TA converts each 8-bi
C	octet into two IRA character long hexadecimal number.
<length></length>	integer type value indicating in the text mode (+CMGF=1) the length of the message body
	<data>> (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual</cdata></data>
	TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
<index></index>	integer type, value in the range of location numbers supported by the associated memory
<oa></oa>	Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit
	default alphabet characters) are converted to characters of the currently selected TE
	character set, type of address given by <tooa></tooa>
<pdu></pdu>	In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts
	each octet of TP data unit into two IRA character long hexadecimal number. (e.g. octet with
	integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
<scts></scts>	TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)</dt>
<toda></toda>	TP-Destination-Address, Type-of-Address octet in integer format. (when first character of
	<da> is + (IRA 43) default is 145, otherwise default is 129)</da>
<tooa></tooa>	TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>)</toda>
<dcs></dcs>	depending on the command or result code: SMS Data Coding Scheme (default 0), or Cell
	Broadcast Data Coding Scheme in integer format.
<fo></fo>	pending on the command or result code: first octet of SMS-DELIVER, SMS-SUBMIT
	(default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.
<mid></mid>	BM Message Identifier in integer format.
<sca></sca>	PSC address Address-Value field in string format; BCD numbers (or GSM 7 bit default
	alphabet characters) are converted to characters of the currently selected TE character set,
	type of address given by <tosca></tosca>
<tosca></tosca>	RP SC address Type-of-Address octet in integer format (default refer <toda>)</toda>
<vp></vp>	depending on SMS-SUBMIT <fo> setting: TP-Validity-Period either in integer format</fo>
	(default 167) or in time-string format (refer <dt>).</dt>

Implementation

```
AT+CMGRD=6
+CMGRD: "REC READ","+8613917787249",,"06/07/10,12:09:38+32",145, 4,0,0
"+8613800210500",145,4
abcd
OK
```

5.19 Send message quickly (AT+CMGSO)

Description

The command is used to send message from a TE to the network (SMS-SUBMIT). But it's different from +CMGS. This command only need one time input, and wait for ">" needless.

Syntax

Test Command	Response	
--------------	----------	--



AT+CMGSO=?	ОК
Write Command	Response
If text mode (+CMGF=1):	if text mode (+CMGF=1) and sending successful:
AT+CMGSO= <da>[,<tod< td=""><td>+CMGSO: <mr></mr></td></tod<></da>	+CMGSO: <mr></mr>
a>], <text></text>	ОК
If PDU mode (+CMGF=0):	
AT+CMGSO= <length>,</length>	if sending fails:
<pducontent></pducontent>	+CMS ERROR: <err></err>

Defined Values

<mr> TP-Message-Reference in integer format.

- <data> In the case of SMS: TP-User-Data in text mode responses; format:
 - 1 if <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
 - a. if TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
 - 2 if <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
 - 3. if <dcs> indicates that GSM 7 bit default alphabet is used:
 - a. if TE character set other than "HEX":ME/TA converts GSM alphabet into current TE character set.
 - b. if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal number
 - 4. if <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.
- <length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
- <toda> TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

<text> content of message <pducontent> content of message

Implementation

AT+CMGSO="10086","YECX" +CMGSO: 128

OK

5.20 Write message to memory quickly (AT+CMGWO)

Description

SIM5210_ATC_V1.60



The command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. But it's different from +CMGW. This command only need one time input, and wait for ">" needless. Syntax

Test Command	Response
AT+CMGWO=?	ОК
Write Command	Response
<i>if text mode</i> (+ <i>CMGF</i> =1):	+CMGWO: <index></index>
AT+CMGWO= <da></da>	ОК
[, <toda>],<text></text></toda>	
<i>if PDU mode (+CMGF=0):</i>	+CMS ERROR: <err></err>
AT+CMGWO= <length>,</length>	
<pducontent></pducontent>	

Defined Values

<index></index>	integer type, value in the range of location numbers supported by the associated
	memory
<da></da>	Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7
	bit default alphabet characters) are converted to characters of the currently selected TE
	character set, type of address given by <toda>.</toda>
<toda></toda>	TP-Destination-Address, Type-of-Address octet in integer format. (when first character
	of <da> is + (IRA 43) default is 145, otherwise default is 129)</da>
<text></text>	content of message
<pducontent></pducontent>	content of message

Implementation

AT+CMGWO="13012832788","ABCD" +CMGWO: 1 OK

5.21 Set message storage full on PC (AT+PCFULL)

Description

The command used to set message storage full on PC. This command is for PC private, the message only store in SIM or PC.

Syntax

Test Command	Response
AT+PCFULL=?	ОК
Read Command	Response
AT+PCFULL?	+PCFULL: <arg></arg>
	ОК
Write Command	Response
AT+PCFULL= <arg></arg>	ОК
	ERROR

Defined Values

<arg>



- 0 unfilled
- 1 full

Implementation

AT+PCFULL=1 OK

5.22 Send message when register on network (AT+CSETSMS)

Description

The command is used to set a short message. It will be send when register on network.

Syntax

Test Command	Response
AT+CSETSMS=?	ОК
Write Command	Response
if text mode (+CMGF=1):	ОК
AT+CSETSMS= <da></da>	
[, <toda>],<text></text></toda>	ERROR
if PDU mode(+CMGF=0):	
AT+CSETSMS= <length>,</length>	
<pducontent></pducontent>	

Defined Values

<da></da>	Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7
	bit default alphabet characters) are converted to characters of the currently selected TE
	character set, type of address given by <toda>.</toda>
<length></length>	integer type value indicating in the text mode (+CMGF=1) the length of the message
	body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of</cdata></data>
	the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted
	in the length)
<toda></toda>	TP-Destination-Address, Type-of-Address octet in integer format. (when first character
	of <da> is + (IRA 43) default is 145, otherwise default is 129)</da>
<text></text>	content of message
<pducontent></pducontent>	content of message

Implementation

AT+CSETSMS="13012832788","ABCD" OK



6 Network Service Related Commands

6.1 Subscriber number (AT+CNUM)

Description

Execution command returns the MSISDNs related to the subscriber (this information can be stored in the SIM or in the ME). If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

Syntax

Test Command	Response
AT+CNUM=?	ОК
Execution Command	Response
AT+CNUM	+CNUM: [<alpha1>],<number1>,<type1></type1></number1></alpha1>
	[<cr><lf>+CNUM: [<alpha2>], <number2>,<type2> []]</type2></number2></alpha2></lf></cr>
	ОК
	+CME ERROR: <err></err>

Defined values

<alphax></alphax>	optional alphanumeric string associated with <numberx>; used character set should be</numberx>
	the one selected with command Select TE Character Set +CSCS.

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

<typex> type of address octet in integer format.

Implementation

AT+CNUM +CNUM: ,"13697252277",129 OK

6.2 Network registration (AT+CREG)

Description

Write command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the ME network registration status.

Read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the ME.

Syntax

Test Command	Response
AT+CREG=?	+CREG: (list of supported <n>s)</n>
	OK
Read Command	Response
AT+CREG?	+CREG: <n>,<stat></stat></n>
	ОК
	+CME ERROR: <err></err>



Write Command	Response
AT+CREG = <n></n>	ОК
Execution Command	Response
AT+CREG	set default value (<n>=0)</n>
	OK

Defined values

< n >

- 0 disable network registration unsolicited result code
- 1 enable network registration unsolicited result code +CREG: <stat>

<stat>

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

Implementation

AT+CREG? +CREG: 0,1 OK

6.3 Operator selection (AT+COPS)

Description

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

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

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

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

Test Command	Response
AT+COPS=?	+COPS: [list of supported (<stat>,long alphanumeric <oper></oper></stat>
	,short alphanumeric <oper>,numeric <oper>[,< AcT>])s]</oper></oper>
	[,(list of supported <mode>s),(list of supported <format>s)]</format></mode>



	ОК
	+CME ERROR: <err></err>
Read Command	Response
AT+COPS?	+COPS: <mode>[,<format>,<oper>[,< AcT>]]</oper></format></mode>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+COPS= <mode></mode>	OK
[, <format>[,<oper>[,</oper></format>	
< AcT>]]]	+CME ERROR: <err></err>
	ERROR
Execution Command	Response
AT+COPS	ОК

Defined values

<mode>

- 0 automatic (default)
- 1 manual
- 2 force deregister
- 3 set only <format>
- 4 manual/automatic

<format>

- 0 long format alphanumeric <oper>
- 1 short format alphanumeric <oper>
- 2 numeric <oper>
- <oper> string type, <format> indicates if the format is alphanumeric or numeric.

<stat>

- 0 unknown
- 1 available
- 2 current
- 3 forbidden
- <AcT> access technology selected
 - 0 GSM
 - 1 GSM Compact
 - 2 UTRAN

Implementation

AT+COPS? +COPS: 0,0,"China Mobile Com",0 OK AT+COPS=? +COPS: (2,"China Unicom","Unicom","46001",0),(3,"China Mobile Com","DGT MPT","46



000",0),,(0,1,2,3,4),(0,1,2) OK

6.4 Facility lock (AT+CLCK)

Description

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

Syntax

Test Command	Response
AT+CLCK=?	+CLCK: (list of supported <fac>s)</fac>
	OK
	+CME ERROR: <err></err>
Write Command	Response
AT+CLCK= <fac>,<mo< td=""><td>+CME ERROR: <err></err></td></mo<></fac>	+CME ERROR: <err></err>
de>	
[, <passwd>[,<class>]]</class></passwd>	when <mode>=2 and command successful:</mode>
	+CLCK: <status>[,<class1></class1></status>
	[<cr><lf>+CLCK: <status>,<class2></class2></status></lf></cr>
	[]]
	ОК

Defined values

<fac>

"PF"	lock Phone to the very First inserted SIM card or USIM card
"SC"	lock SIM card or USIM card
"AO"	Barr All Outgoing Calls
"OI"	Barr Outgoing International Calls
"OX"	Barr Outgoing International Calls except to Home Country
"AI"	Barr All Incoming Calls
"IR"	Barr Incoming Calls when roaming outside the home country
"AB"	All Barring services
"AG"	All outGoing barring services
"AC"	All inComing barring services
"FD"	SIM fixed dialing memory feature
"PN"	Network Personalization
"PU"	network subset Personalization
"""	

- "PP" service Provider Personalization
- "PC" Corporate Personalization

<mode>

- 0 unlock
- 1 lock



2 query status

<status>

0 not active

1 active

<passwd> password.

Implementation

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

6.5 Change password (AT+CPWD)

Description

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

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

Syntax

Test Command	Response
AT+CPWD=?	+CPWD: (list of supported (<fac>,<pwdlength>)s)</pwdlength></fac>
	OK
	+CME ERROR: <err></err>
Write Command	Response
AT+CPWD= <fac>,</fac>	OK
<oldpwd>,<newpwd< td=""><td></td></newpwd<></oldpwd>	
>	+CME ERROR: <err></err>

Defined values

<fac> refer Facility Lock +CLCK for other values

"SC" SIM or USIM PIN1

```
"P2" SIM or USIM PIN2
```

```
    <oldpwd> shall be the same as password specified for the facility from the ME user interface or with
command Change Password +CPWD. String type.
```

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

Implementation

AT+CPWD=? +CPWD: ("AB",4),("SC",8),("P2",8) OK

6.6 Calling line identification presentation (AT+CLIP)

Description

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

SIM5210_ATC_V1.60



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

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

Syntax

Test Command	Response
AT+CLIP=?	+CLIP: (list of supported <n>s)</n>
	OK
Read Command	Response
AT+CLIP?	+CLIP: <n>,<m></m></n>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CLIP= <n></n>	ОК
Execution Command	Response
AT+CLIP	set default value (<n>=0, <m>=0)</m></n>
	OK

Defined values

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

<m>

<type>

- 0 CLIP not provisioned
- 1 CLIP provisioned
- 2 unknown (e.g. no network, etc.)
- <number> string type phone number of calling address in format specified ty <type>
 - type of address octet in integer format;
 - 128 Restricted number type includes unknown type and format
 - 145 International number type
 - 129 Otherwise

<alpha> string type alphanumeric representation of <number> corresponding to the entry found in phone book

<CLI validity> 0 CLI valid

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

Implementation

```
AT+CLIP=1
OK
RING (with incoming call)
```



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

6.7 Calling line identification restriction (AT+CLIR)

Description

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

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

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

Test command returns values supported as a compound value.

Syntax:

Test Command	Response
AT+CLIR =?	+CLIR: (list of supported <n>s)</n>
	ОК
Read Command	Response
AT+CLIR?	+CLIR: <n>,<m></m></n>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CLIR = <n></n>	ОК
	+CME ERROR: <err></err>

Defined values:

<n>

- 0 presentation indicator is used according to the subscription of the CLIR service
- 1 CLIR invocation
- 2 CLIR suppression

<m>

- 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

Implementation:

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

6.8 Connected line identification presentation (AT+COLP)



Description

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

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

Syntax

Test Command	Response
AT+COLP=?	+COLP: (list of supported <n>s)</n>
	ОК
Read Command	Response
AT+COLP?	+COLP: <n>,<m></m></n>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+COLP = <n></n>	ОК
Execution Command	Response
AT+COLP	set default value ($=0$, $=0$)
	ОК

Defined values

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

<m>

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

Implementation

```
AT+COLP=1
OK
RING (with incoming call)
ATA (answer incoming call)
OK
+COLP: "02152063113",128,,,"gongsi"
```

6.9 Closed user group (AT+CCUG)

Description

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

Syntax



Test Command	Response
AT+CCUG=?	ОК
Read Command	Response
AT+CCUG?	+CCUG: <n>,<index>,<info></info></index></n>
	ОК
Write Command	Response
AT+CCUG= <n></n>	ОК
[, <index>[,<info>]]</info></index>	
Execution Command	Response
AT+CCUG	set default value ($=0$, $=0$, $=0$)
	ОК

Defined values

<n>

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

<index>

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

<info>

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

Implementation

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

6.10 Call forwarding number and conditions (AT+CCFC)

Description

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

Syntax

Test Command	Response
AT+CCFC=?	+CCFC: (list of supported <reason>s)</reason>
	ОК
Write Command	Response
AT+CCFC= <reason>,</reason>	when <mode>=2 and command successful:</mode>
<mode>[,<number></number></mode>	+CCFC: <status>,<class1>[,<number>,<type></type></number></class1></status>
[, <type>[,<class></class></type>	[, <subaddr>,<satype>[,<time>]]][</time></satype></subaddr>
[, <subaddr>[,<satype< td=""><td><cr><lf>+CCFC: <status>,<class2>[,<number>,<type></type></number></class2></status></lf></cr></td></satype<></subaddr>	<cr><lf>+CCFC: <status>,<class2>[,<number>,<type></type></number></class2></status></lf></cr>
>[, <time>]]]]]]</time>	[, <subaddr>,<satype>[,<time>]]][]]</time></satype></subaddr>
	ОК



+CME ERROR: <err>

Defined values

<reason>

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

<mode>

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

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

- <type> type of address octet in integer forma; default 145 when dialing string includes international access code character "+", otherwise 129.
- <subaddr> string type sub address of format specified by <satype>.

<satype> type of sub address octet in integer format, default 128.

<classx> is a sum of integers each representing a class of information (default 7):

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

<time>

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

<status>

- 0 not active
- 1 active

Implementation

```
AT+CCFC=?
+CCFC: (0,1,2,3,4,5)
OK
AT+CCFC=0,2
+CCFC: 0,255
OK
```



6.11 Call waiting (AT+CCWA)

Description:

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

Syntax:

Test Command	Response
AT+CCWA=?	+CCWA: (list of supported <n>s)</n>
	ОК
Read Command	Response
AT+CCWA?	+CCWA: <n></n>
	ОК
Write Command	Response
AT+CCWA= <n></n>	+CME ERROR: <err></err>
[, <mode>[,<class>]]</class></mode>	
	when <mode>=2 and command successful</mode>
	+CCWA: <status>,<class>[<cr><lf>+CCWA: <status>,</status></lf></cr></class></status>
	<class>[]]</class>
	ОК
Execution Command	Response
AT+CCWA	set default value $(=0)$
	ОК

Defined values:

<n> (sets/shows the result code presentation status in the TA)

- 0 disable
- 1 enable
- <mode> (when <mode> parameter is not given, network is not interrogated)
 - 0 disable
 - 1 enable
 - 2 query status
- <class> is a sum of integers each representing a class of information (default 7)
 - 1 voice (telephony)
 - 2 data (refers to all bearer services)
 - 4 fax (facsimile services)
 - 7 voice, data and fax(1+2+4)
 - 8 short message service
 - 16 data circuit sync
 - 32 data circuit async
 - 64 dedicated packet access
 - 128 dedicated PAD access



<status>

0 not active

1 active

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

- <type> type of address octet in integer format; default 145 when dialing string includes international access code character "+", otherwise 129.
- <alpha> optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS.

<CLI validity>

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

Implementation:

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

6.12 Call related supplementary services (AT+CHLD)

Description

The command allows the control of the following call related services:

1. A call can be temporarily disconnected from the ME but the connection is retained by the network

2. Multiparty conversation (conference calls)

3. The served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber's own connection

Calls can be put on hold, recovered, released, added to conversation, and transferred.

Syntax

Test Command	Response
AT+CHLD=?	+CHLD: (list of supported <n>s)</n>
	ОК
	ERROR
Write Command	Response
AT+CHLD= <n></n>	ОК
	ERROR

Defined values

<n>:

- 0 Terminate all held calls; or set User Determined User Busy for a waiting call
- 1 Terminate all active calls and accept the other call (waiting call or held call)
- 1X Terminate the active call X



- 2 Place all active calls on hold and accept the other call (waiting call or held call) as the active call
- 2X Place all active calls except call X on hold
- 3 Add the held call to the active calls
- 4 Connect two calls and cut off the connection between users and them simultaneously

Implementation

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

6.13 Unstructured supplementary service data (AT+CUSD)

Description

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

Syntax

Test Command	Response
AT+CUSD=?	+CUSD: (list of supported <n>s)</n>
	ОК
Read Command	Response
AT+CUSD?	+CUSD: <n></n>
	ОК
Write Command	Response
AT+CUSD= <n></n>	ОК
[, <str>[,<dcs>]]</dcs></str>	
	ERROR
Execution Command	Response
AT+CUSD	set default value $(=0)$
	ОК

Defined values

<n>

- 0 disable the result code presentation in the TA
- 1 enable the result code presentation in the TA
- 2 cancel session (not applicable to read command response)
- <str> string type USSD-string
- <dcs> Cell Broadcast Data Coding Scheme in integer format (default 0)

<m>

- 0 no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
- 1 further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
- 2 USSD terminated by network



- 4 operation not supported
- 5 network time out

Implementation

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

6.14 Advice of charge (AT+CAOC)

Description

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

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

Syntax:

Test Command	Response
AT+CAOC=?	+CAOC: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CAOC?	+CAOC: <mode></mode>
	ОК
Write Command	Response
AT+CAOC= <mode></mode>	+CAOC: <ccm></ccm>
	ОК
	ERROR
Execution Command	Response
AT+ CAOC	set default value (<mode>=1)</mode>
	ОК

Defined values

<mode>:

- 0 query CCM value
- 1 deactivate the unsolicited reporting of CCM value
- 2 activate the unsolicited reporting of CCM value
- <ccm> string type, three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30), value is in home units and bytes are similarly coded as ACMmax value in the SIM.

Implementation:

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



6.15 Supplementary service notifications (AT+CSSN)

Description

The 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 $\langle n \rangle = 1$ and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: $\langle code1 \rangle [,\langle index \rangle]$ is sent to TE before any other MO call setup result codes presented in the present document. When several different $\langle code1 \rangle$ 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.

Syntax

Test Command	Response
AT+CSSN=?	+CSSN: (list of supported <n>s),(list of supported <m>s)</m></n>
	ОК
Read Command	Response
AT+CSSN?	+CSSN: <n>,<m></m></n>
	ОК
Write Command	Response
AT+CSSN= <n>[,<m></m></n>	ОК
]	
	ERROR

Defined values

<n> (parameter sets/shows the +CSSI result code presentation status in the TA)

- 0 disable
- 1 enable

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

- 0 disable
- 1 enable

<code1> (it is manufacturer specific, which of these codes are supported)

- 0 unconditional call forwarding is active
- 1 some of the conditional call forwarding are active
- 2 call has been forwarded
- 3 call is waiting
- 4 this is a CUG call (also <index> present)
- 5 outgoing calls are barred
- 6 incoming calls are barred
- 7 CLIR suppression rejected
- 8 call has been deflected

<index> refer "Closed user group +CCUG"



<code2> (it is manufacturer specific, which of these codes are supported)

- 0 this is a forwarded call (MT call setup)
- 1 this is a CUG call (also <index> present) (MT call setup)
- 2 call has been put on hold (during a voice call)
- 3 call has been retrieved (during a voice call)
- 4 multiparty call entered (during a voice call)
- 5 call on hold has been released (this is not a SS notification) (during a voice call)
- 6 forward check SS message received (can be received whenever)
- 7 call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)
- 8 call has been connected with the other remote party in explicit call transfer operation (also number and sub address parameters may be present) (during a voice call or MT call setup)
- 9 this is a deflected call (MT call setup)
- <number> string type phone number of format specified by <type>.
- <type> type of address octet in integer format; default 145 when dialing string includes international access code character "+", otherwise 129.
- <subaddr> string type sub address of format specified by <satype>.

<satype> type of sub address octet in integer format, default 128.

Implementation

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

6.16 List current calls (AT+CLCC)

Description

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

Syntax

Test Command	Response
AT+CLCC=?	ОК
Execution Command	Response
AT+CLCC	+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>[,<alpha>]] [<cr><lf>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>[,<alpha>]] []] OK</alpha></type></number></mpty></mode></stat></dir></id2></lf></cr></alpha></type></number></mpty></mode></stat></dir></id1>
	+CME ERROR: <err></err>

Defined values

<idx> integer type, call identification number, this number can be used in +CHLD command operations.

<dir>



0 mobile originated (MO) call mobile terminated (MT) call 1 (state of the call) <stat> 0 active 1 held 2 dialing (MO call) 3 alerting (MO call) 4 incoming (MT call) 5 waiting (MT call) (bearer/teleservice) <mode> 0 voice 1 data 2 fax 9 unknown <mpty> 0 call is not one of multiparty (conference) call parties 1 call is one of multiparty (conference) call parties string type phone number in format specified by <type>. <number> type of address octet in integer format, default 145 when dialing string includes <type> international access code character "+", otherwise 129. string type alphanumeric representation of <number> corresponding to the entry found in <alpha> phonebook; used character set should be the one selected with command Select TE Character Set +CSCS. Implementation ATD10011; OK AT+CLCC

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

6.17 Preferred operator list (AT+CPOL)

Description

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

Syntax

Test Command	Response
AT+CPOL=?	+CPOL: (list of supported <index>s), (list of supported <format>s) OK</format></index>



	+CME ERROR: <err></err>
Read Command	Response
AT+CPOL?	+CPOL: <index1>,<format>,<oper1></oper1></format></index1>
	[<cr><lf>+CPOL: <index2>,<format>,<oper2></oper2></format></index2></lf></cr>
	[]]
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CPOL= <index></index>	ОК
[, <format>[,<oper>]]</oper></format>	
	+CME ERROR: <err></err>

Defined values

<indexn> integer type, the order number of operator in the SIM preferred operator list.

<format>

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

<oper> string type.

Implementation

```
AT+CPOL?
+CPOL: 1,"46001"
OK
AT+CPOL=?
+CPOL: (1-10),(0-2)
OK
```

6.18 Read operator names (AT+COPN)

Description

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

Syntax

Test Command	Response
AT+COPN=?	ОК
Execution Command	Response
AT+COPN	+COPN: <numeric1>,<alpha1></alpha1></numeric1>
	[<cr><lf>+COPN: <numeric2>,<alpha2></alpha2></numeric2></lf></cr>
	[]]
	ОК
	+CME ERROR: <err></err>

Defined values

<numericn> string type, operator in numeric format (see +COPS).


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

Implementation

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

6.19 Preferred mode selection (AT+CNMP)

Description

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

Syntax

Test Command	Response
AT+CNMP=?	+CNMP: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CNMP?	+CNMP: <mode></mode>
	ОК
Write Command	Response
AT+CNMP= <mode></mode>	ОК

Defined values

<mode>

1	Digital	Only
1	Dignui	Omy

- 2 Automatic
- 3 Emergency Call Only
- 13 GSM Only
- 14 WCDMA Only

Implementation

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

6.20 Preferred band selection (AT+CNBP)

Description

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

Read Command	Response
AT+CNBP?	+CNBP: <mode></mode>
	ОК
Write Command	Response
AT+CNBP= <mode></mode>	ОК



ERROR

<mode></mode>	64bit number, the value is "1" << " <pos>", then or by bit</pos>
<pos></pos>	value:

0xFFFFFFFFF7FFFFFFF	Any (any value)
7	GSM_DCS_1800
8	GSM_EGSM_900
9	GSM_PGSM_900
16	GSM_450
17	GSM_480
18	GSM_750
19	GSM_850
20	GSM_RGSM_900
21	GSM_PCS_1900
22	WCDMA_IMT_2000
23	WCDMA_PCS_1900
24	WCDMA_III_1700
25	WCDMA_IV_1700
26	WCDMA_850
27	WCDMA_800
48	WCDMA_VII_2600
49	WCDMA_VIII_900
50	WCDMA_IX_1700

Implementation

```
AT+CNBP=0x000700000FFF0380
OK
AT+CNBP?
+CNBP: 0xFFFFFFF53FFFFFF
OK
```

6.21 Acquisitions order preference (AT+CNAOP)

Description

Write command resets the state of acquisitions order preference.

Test Command	Response
AT+CNAOP=?	+CNAOP: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CNAOP?	+CNAOP: <mode></mode>
	ОК
Write Command	Response
AT+CNAOP= <mode></mode>	ОК



ERROR

<mode>

- 0 Automatic
- 1 GSM,WCDMA
- 2 WCDMA,GSM

Implementation

```
AT+CNAOP=1
OK
AT+CNAOP?
+CNAOP: 2
OK
```

6.22 Preferred service domain selection (AT+CNSDP)

Description

Write command resets the state of the service domain preference.

Syntax

Test Command	Response
AT+CNSDP=?	+CNSDP: (list of supported <mode>s)</mode>
	ОК
Read Command	Response
AT+CNSDP?	+CNSDP: <mode></mode>
	ОК
Write Command	Response
AT+CNSDP= <mode></mode>	ОК
	ERROR

Defined values

<mode>

- 0 CS Only
- 1 PS Only
- 2 CS+PS

Implementation

```
AT+CNSDP=2
OK
AT+CNSDP?
+CNSDP: 0
OK
```

6.23 Inquiring UE system information (AT+CPSI)

Description

The command returns the UE system information; currently show the information of GSM only.



Syntax

Test Command	Response
AT+CPSI=?	+CPSI: (scope of <time>)</time>
	ОК
Read Command	Response
AT+CPSI?	+CPSI: <system mode="">, <operation mode="">, <location area<="" td=""></location></operation></system>
	ID>, <cell id="">,<absolute ch="" num="" rf="">, <rx level="">,</rx></absolute></cell>
	<track adjust="" lo=""/> , <c1-c2></c1-c2>
	ОК
Write Command	Response
AT+CPSI= <time></time>	ОК
	ERROR

Defined values

<time></time>	the range is 0-255, unit is second, after set <time> will report the system</time>
	information every the seconds.
<system mode=""></system>	system mode, values: "NO SERVICE", "GSM" or "WCDMA".
<operation mode=""></operation>	UE operation mode, values: "Online", "Factory Test Mode", "Reset",
	"Low Power Mode"
<location area="" id=""></location>	LAI for service-cell, using the format of Hex or empty if PLMN is
	undefined.
<cell id=""></cell>	service-cell ID of GSM.
<absolute ch="" num="" rf=""></absolute>	AFRCN for service-cell.
<rx level=""></rx>	RX level
<track adjust="" lo=""/>	Track LO Adjust
• • •	

Implementation

```
AT+CPSI?
+CPSI: GSM,Online,460-00 0x182d,12401,27 EGSM 900,-64,2110,42-42
OK
AT+CPSI=?
+CPSI: (0-255)
OK
```

6.24 Show network system mode (AT+CNSMOD)

Description

The command returns the current network system mode.

Test Command	Response
AT+CNSMOD=?	+CNSMOD: (list of supported <n>s)</n>
	ОК
Read Command	Response
AT+CNSMOD?	+CNSMOD: <n>,<stat></stat></n>
	ОК



	+CME ERROR: <err></err>
Write Command	Response
AT+CNSMOD= <n></n>	ОК
	ERROR

<n>

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

<state>

- 0 no service
- 1 GSM
- 2 GPRS
- 3 EGPRS(EDGE)
- 4 WCDMA
- 5 HSDPA

Implementation

AT+CNSMOD? +CNSMOD: 0,2

OK



7 Mobile Equipment Control and Status Commands

7.1 Phone activity status (AT+CPAS)

Description

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

Syntax

Test Command	Response
AT+CPAS=?	+CPAS: (list of supported <pas>s)</pas>
	ОК
	+CME ERROR: <err></err>
Execution Command	Response
AT+CPAS	+CPAS: <pas></pas>
	ОК
	+CME ERROR: <err></err>

Defined values

<pas>

- 0 ready (ME allows commands from TA/TE)
- 1 unavailable (ME does not allow commands from TA/TE)
- 2 unknown (ME is not guaranteed to respond to instructions)
- 3 ringing (ME is ready for commands from TA/TE, but the ringer is active)
- 4 call in progress (ME is ready for commands from TA/TE, but a call is in progress)
- 5 asleep (ME is unable to process commands from TA/TE because it is in a low functionality state)

Implementation

RING (with incoming call)

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

7.2 Set phone functionality (AT+CFUN)

Description

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

NOTE: Use AT+CFUN=6 after AT+CFUN=7.



Syntax

Test Command	Response
AT+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s)</rst></fun>
	UK (INCOMPANY)
	+CME ERROR: <err></err>
Read Command	Response
AT+CFUN?	+CFUN: <fun></fun>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CFUN=[<fun>[,<rst< td=""><td>OK</td></rst<></fun>	OK
>]]	
	+CME ERROR: <err></err>

Defined values

<fun>

- 0 minimum functionality
- 1 full functionality, online mode
- 4 disable phone both transmit and receive RF circuits
- 5 Factory Test Mode
- 6 Reset
- 7 Offline Mode

<rst>

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

reset the ME before setting it to <fun> power level

Implementation

1

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

7.3 Enter PIN (AT+CPIN)

Description

The 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 MT and an error message, +CME ERROR, is returned to TE.

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

Test Command	Response
--------------	----------



AT+CPIN=?	ОК
Read Command	Response
AT+CPIN?	+CPIN: <code></code>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CPIN= <pin>[,<new< th=""><th>ОК</th></new<></pin>	ОК
pin>]	
	+CMF FRROR. corr>

<pin></pin>	string type v	values
<newpin></newpin>	string type v	values
<code></code>	values reser	ved by the present document:
READ	Y	ME is not pending for any password
SIM P	IN	ME is waiting SIM PIN to be given
SIM P	UK	ME is waiting SIM PUK to be given
PH-SI	M PIN	ME is waiting phone-to-SIM card password to be given
SIM P	IN2	ME is waiting SIM PIN2 to be given
SIM P	UK2	ME is waiting SIM PUK2 to be given
PH-NI	ET PIN	ME is waiting network personalization password to be given

Implementation

AT+CPIN? +CPIN: SIM PUK2 OK

7.4 Signal quality (AT+CSQ)

Description

Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA as compound values.

Syntax

Test Command	Response
AT+CSQ=?	+CSQ: (list of supported <rssi>s),(list of supported <ber>s) OK</ber></rssi>
	2
Execute Command	Response
AT+CSQ	+CSQ: <rssi>,<ber></ber></rssi>
	OK
	+CME ERROR: <err></err>

Defined values

<rssi>

0 -113 dBm or less

-111 dBm

1



230	-10953 dBm
31	-51 dBm or greater
99	not known or not detectable
<ber> (in</ber>	percent)
0	<0.01%
1	0.01% 0.1%
2	0.1% 0.5%
3	0.5% 1.0%
4	1.0% 2.0%
5	2.0% 4.0%
6	4.0% 8.0%
7	>=8.0%
99	not known or not detectable

Implementation

AT+CSQ +CSQ: 22, 99 OK

7.5 Battery capacity query (AT+CBC)

Description

Execution command returns battery connection status <bcs> and battery charge level <bcl> of the ME. Test command returns values supported by the TA as compound values.

Syntax

Test Command	Response
AT+CBC=?	+CBC: (list of supported <bcs>s),(list of supported <bcl>s)</bcl></bcs>
	ОК
Execute Command	Response
AT+CBC	+CBC: <bcs>,<bcl></bcl></bcs>
	OK
	+CME ERROR: <err></err>

Defined values

<bcs>

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

<bcl>

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

Implementation

AT+CBC

+*CBC: 0,100*

SIM5210_ATC_V1.60

81

OK

7.6 Mobile Equipment control mode (AT+CMEC)

Description

The command selects the equipment, which operates ME keypad, writes to ME display and sets ME indicators. If operation mode is not allowed by the ME, +CME ERROR: <err> is returned.

Syntax

Test Command	Response
AT+CMEC=?	+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)</ind></disp></keyp>
Read Command	Response
AT+CMEC?	+CMEC: <keyp>,<disp>,<ind></ind></disp></keyp>
	UK
Write Command	Response
AT+CMEC= <keyp>[,<d< td=""><td>ОК</td></d<></keyp>	ОК
isp>[, <ind>]]</ind>	
	+CME ERROR: <err></err>

Defined values

<keyp>

- 0 ME can be operated only through its keypad (execute command of +CKPD cannot be used)
- 1 ME can be operated only from TE (with command +CKPD)
- 2 ME can be operated from both ME keypad and TE

<disp> default 0

<ind> default 0.

Implementation

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

7.7 Keypad control (AT+CKPD)

Description

The command emulates ME keypad by giving each keystroke as a character in a string <keys>.

Test Command	Response
AT+CKPD=?	ОК
Write Command	Response
AT+CKPD= <keys>[,<ti< td=""><td>ОК</td></ti<></keys>	ОК
me>[, <pause>]]</pause>	
	+CME ERROR: <err></err>



<keys> string of characters representing keys as listed in the following table

Char	IRA (dec)	Comment (+ some known key symbols)
#	35	hash (number sign)
%	37	percent sign (P)
*	42	star (*)
0 9	48 57	number keys
:	58	escape character for manufacturer specific keys
;	59	escape character for string entering
<	60	left arrow
>	62	right arrow
@	64	alpha key (/ABC)
A/a	65/97	channel A (A)
B/b	66/98	channel B (B)
C/c	67/99	clear display (C/CLR)
D/d	68/100	volume down
E/e	69/101	connection end (END)
F/f	70/102	function (FCN)
L/1	76/108	phone lock (LOCK)
M/m	77/109	menu (MENU)
P/p	80/112	power (PWR)
Q/q	81/113	quiet/mute (MUTE)
R/r	82/114	recall last number (R/RCL/MR)
S/s	83/115	connection start (SEND)
T/t	84/116	store/ memory (STO/M/M+)
U/u	85/117	volume up
V/v	86/118	down arrow
W/w	87/119	pause character
X/x	88/120	auxiliary (AUX)
Y/y	89/121	delete last character (C)
[91	soft key 1
]	93	soft key 2
٨	94	up arrow

<time> 0...255 seconds(default values are manufacturer specific, but should be so long that a normal ME can handle keystrokes correctly)

<pause> 0...255 seconds (default values are manufacturer specific, but should be so long that a normal ME can handle keystrokes correctly)

Implementation

AT+CKPD=1234,,20 OK

7.8 Accumulated call meter (AT+CACM)

Description



The command resets the Advice of Charge related accumulated call meter value in SIM file EFACM. **Syntax**

Test Command	Response
AT+CACM=?	ОК
Read Command	Response
AT+CACM?	+CACM: <acm></acm>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CACM= <passwd></passwd>	ОК
	+CME ERROR: <err></err>
Execute Command	Response
AT+CACM	+CME ERROR: <err></err>

Defined values

<passwd> string type, SIM PIN2.

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

Implementation

```
AT+CACM?
+CACM: "000000"
OK
```

7.9 Accumulated call meter maximum (AT+CAMM)

Description

The command sets the Advice of Charge related accumulated call meter maximum value in SIM file EFACMmax.

Syntax

Test Command	Response
AT+CAMM=?	ОК
Read Command	Response
AT+CAMM?	+CAMM: <acmmax></acmmax>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CAMM= <acmmax></acmmax>	ОК
[, <passwd>]</passwd>	
	+CME ERROR: <err></err>

Defined values

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



<passwd> string type, SIM PIN2.

Implementation

```
AT+CAMM?
+CAMM: "000000"
OK
```

7.10 Price per unit and currency table (AT+CPUC)

Description

The command sets the parameters of Advice of Charge related price per unit and currency table in SIM file EFPUCT.

Syntax

Test Command	Response
AT+CPUC=?	ОК
Read Command	Response
AT+CPUC?	+CPUC: [<currency>,<ppu>]</ppu></currency>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CPUC= <currency></currency>	OK
, <ppu>[,<passwd>]</passwd></ppu>	
	+CME ERROR: <err></err>

Defined values

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

string type, price per unit, dot is used as a decimal separator. (e.g. "2.66")string type, SIM PIN2.

Implementation

```
AT+CPUC?
+CPUC: "GBP",2.66
OK
```

7.11 Control phone to power down (AT\$QCPWRDN)

Description

The command controls the phone to power down.

Syntax

Execute Command	Response
AT\$QCPWRDN	ОК
	ERROR

Defined values

None.

Implementation



AT\$QCPWRDN OK

7.12 Report Mobile Equipment error (AT+CMEE)

Description

The command disables or enables the use of result code +CME ERROR: <err> as an indication of an error relating to the functionality of the ME.

Syntax

Test Command	Response
AT+CMEE=?	+CMEE: (list of supported <n>s)</n>
	ОК
Read Command	Response
AT+CMEE?	+CMEE: <n></n>
	ОК
Write Command	Response
AT+CMEE= <n></n>	OK
	ERROR
Execute Command	Response
AT+CMEE	ОК
	ERROR

Defined values

<n>

- 0 disable +CME ERROR: <err> result code and use ERROR instead
- 1 enable +CME ERROR: <err> result code and use numeric <err> values (refer next subclause)
- 2 enable +CME ERROR: <err> result code and use verbose <err> values (refer next subclause)

Implementation

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

7.13 Mobile Equipment error result code (+CME ERROR)



Description

The operation of +CME ERROR: <err> result code is similar to the regular ERROR result code: if +CME ERROR: <err> is the result code for any of the commands in a command line, none of the following commands in the same command line is executed (neither ERROR nor OK result code shall be returned as a result of a completed command line execution). The format of <err> can be either numeric or verbose. This is set with command +CMEE (refer previous subclause).

Syntax

+CME ERROR: <err>

Defined values

<err> values (numeric format followed by verbose format):

0	phone failure
1	no connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required



46	corporate personalization PIN required
47	corporate personalization PUK required
100	unknown
103	Illegal MS (#3)
106	Illegal ME (#6)
107	GPRS services not allowed (#7)
111	PLMN not allowed (#11)
112	Location area not allowed (#12)
113	Roaming not allowed in this location area (#13)
132	service option not supported (#32)
133	requested service option not subscribed (#33)
134	service option temporarily out of order (#34)
149	PDP authentication failure
150	invalid mobile class
148	unspecified GPRS error
151	VBS/VGCS not supported by the network
152	No service subscription on SIM
153	No subscription for group ID
154	Group Id not activated on SIM
155	No matching notification
156	VBS/VGCS call already present
157	Congestion
158	Network failure
159	Uplink busy
160	No access rights for SIM file
161	No subscription for priority

162 operation not applicable or not possible

Implementation

AT+CPIN="1234","1234"

+CME ERROR: incorrect password

7.14 Switch device between UART & USB (AT+CUUSWITCH)

Description

Execution command causes module to switch AT command communication device between UART and USB.

Read Command	Response
AT+CUUSWITCH?	+CUUSWITCH: <arg></arg>
	ОК
	ERROR
Write Command	Response



AT+CUUSWITCH= <ar< th=""><th>ОК</th></ar<>	ОК
g>	
	ERROR

<arg>

0 UART device

1 USB device (default)

Implementation

AT+CUUSWITCH? +CUUSWITCH: 1 OK

7.15 Set CSQ report (AT+AUTOCSQ)

Description

The command causes the module to disable and enable auto report CSQ information, if we enable auto report, the module reports CSQ information every five seconds, the format of report is +CSQ: <rssi>,<ber>. 0 for default.

Syntax

Test Command	Response
AT+AUTOCSQ=?	+AUTOCSQ: (list of supported <arg>s)</arg>
	OK
Read Command	Response
AT+AUTOCSQ?	+AUTOCSQ: <arg></arg>
	ОК
Write Command	Response
AT+AUTOCSQ= <arg></arg>	ОК
	ERROR

Defined values

<arg>

0 disable auto report

1 enable auto report

Implementation

AT+AUTOCSQ=1 OK +*CSQ: 23,99*

7.16 Low voltage Alarm (AT+CVALARM)

Description

Open or close the low voltage alarm function. 0 for default.

Test Command	Response
AT+CVALARM = ?	+CVALARM: (list of supported < enable>s)



	OK
Write Command	Response
AT+CVALARM= <ena< th=""><th>ОК</th></ena<>	ОК
ble>	
	ERROR

< enable>

0 Close

Open. If voltage<3.45V,every 20 seconds will report a string : warning! Voltage is low:<voltage value>

Implementation

AT+ CVALARM =1 OK AT+ CVALARM = ? + CVALARM:(0,1) OK

1

7.17 Set Trigger mode of interrupt GPIO (AT+CGPIO)

Description

Set GPIO interrupt trigger mode.

Syntax

Write Command	Response
AT+CGPIO= <detect>,<</detect>	ОК
polarity>	
	ERROR

Defined values

<detect>

0 LEVEL trigger mode

1 EDGE trigger mode

<polarity>

0 trigger when low level

1 trigger when high level

Implementation

AT+ CGPIO =1,1 OK

7.18 Read ICCID in SIM card (AT+CICCID)

Description

Read the ICCID in SIM card.

Test Command	Response
AT+CICCID=?	ОК



Write Command	Response
AT+CICCID	+ICCID: <iccid> OK</iccid>
	+CME ERROR: <err></err>

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

Implementation

```
AT+CICCID
+ICCID: 898600700907A6019125
OK
```

7.19 Read values from register of IIC device (AT+CRIIC)

Description

Read values from register of IIC device.

Syntax

Test Command	Response
AT+CRIIC=?	ОК
Write Command	Response
AT+CRIIC= <addr><reg< td=""><td>+CRIIC: <data></data></td></reg<></addr>	+CRIIC: <data></data>
> <len></len>	ОК
	ERROR

Defined values

<addr> device address. Input format must be hex, such as 0xFF.

<reg> register address. Input format must be hex, such as 0xFF.

<len> read length. Range: 1-4; unit: byte

<data> data read. Input format must be hex, such as 0xFF - 0xFFFFFFF.

Implementation

AT+CRIIC=0x0F, 0x0F, 2 +CRIIC: 0xFFFF OK

7.20 Write values to register of IIC device (AT+CWIIC)

Description

Write values to register of IIC device.

Test Command	Response
AT+CWIIC=?	ОК
Write Command	Response



AT+CWIIC= <addr><re< th=""><th>ОК</th></re<></addr>	ОК
g> <data><len></len></data>	
	ERROR

<addr> device address. Input format must be hex, such as 0xFF.

<reg> register address. Input format must be hex, such as 0xFF.

<len> read length. Range: 1-4; unit: byte.

<data> data written. Input format must be hex, such as 0xFF - 0xFFFFFFF.

Implementation

```
AT+CWIIC=0x0F, 0x0F, 0x1234, 2
+CWIIC: 0x1234
OK
```

7.21 Switch between Windows & Linux system support (AT+COMSWITCH)

Description

The command is used to control the switch between Windows and Linux system support. If switch to support Linux, the device is a standard modem device (CDC), for CDC device need no extra driver in Linux and Mac OS. It may need a reboot for data card or module to take effect.

NOTE: This command is used just under non-test mode. Refer command AT+CSWITCHTEST for test mode.

Syntax

Write Command	Response
AT+COMSWITCH= <ar< td=""><td>ОК</td></ar<>	ОК
g>	
	ERROR
Read Command	Response
AT+COMSWITCH?	+COMSWITCH: <arg_status></arg_status>
	ОК

Defined values

<arg>

- 1 Linux Modem device
- 2 Windows Modem device

<arg_status>

- 3 Windows Modem state
- 4 Linux and Mac Modem state
- 5 switch Windows Modem to Linux Modem success state
- 6 switch Linux Modem to Windows Modem success state

Implementation

AT+COMSWITCH? +COMSWITCH: 5 OK

7.22 Open or Close Test Mode (AT+CSWITCHTEST)



Description

The command is used to control the open or close of the test (download) mode. If open, the Diag port could be used to download (update)software and parameter adjust. The module will reboot when using AT+CSWITCHTEST=1 to open the test mode.

Syntax

Write Command	Response
AT+CSWITCHTEST=<	+CSWITCHTEST: SUCCEED
arg>	OK
	+CSWITCHTEST: REPEAT OK
	+CSWITCHTEST: FAIL
	ERROR
Read Command	Response
AT+CSWITCHTEST?	+CSWITCHTEST: <arg></arg>
	ОК

Defined values

<arg>

- 0 Close test (download) mode
- 1 Open test (download) mode, default value after update.

Implementation

```
AT+CSWITCHTEST?
+CSWITCHTEST: 1
OK
AT+CSWITCHTEST=1
+CSWITCHTEST: REPEAT
OK
AT+CSWITCHTEST=0
+CSWITCHTEST: SUCCEED
OK
```



8 Phonebook Related Commands

All phonebook, the maximum length of the phone number is 20 digits, the range of the name length depends on the SIM card.

8.1 Select phonebook memory storage (AT+CPBS)

Description

The command selects phonebook memory storage <storage>, which is used by other phonebook commands. If setting fails, +CME ERROR: <err> is returned.

Syntax

Test Command	Response
AT+CPBS=?	+CPBS: (list of supported <storage>s)</storage>
	ОК
Read Command	Response
AT+CPBS?	+CPBS: <storage>[,<used>,<total>]]</total></used></storage>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CPBS= <storage></storage>	ОК
	+CME ERROR: <err></err>

Defined values

<storage> values reserved by the present document:

"DC"	ME dialed calls list
"MC"	ME missed (unanswered received) calls list
"RC"	ME received calls list
"SM"	SIM phonebook
"ME"	UE phonebook
"FD"	SIM fixdialling-phonebook
"ON"	MSISDN list
"LD"	Last number dialed phonebook
"EN"	Emergency numbers
integer type	value indicating the number of used locations in selected memory.

<total> integer type value indicating the total number of locations in selected memory.

Implementation

<used>

```
AT+CPBS=?
+CPBS: ("SM", "DC", "FD", "LD", "MC", "ME", "RC", "EN", "ON")
OK
AT+CPBS="SM"
OK
```



AT+CPBS? +CPBS: "SM",1,200 OK

8.2 Read phonebook entries (AT+CPBR)

Description

The command gets the record information from the selected memory storage in phonebook. if the storage is selected as "SM" then the command will return the record in SIM phonebook, the same to others. **Syntax**

Test Command	Response
AT+CPBR=?	+CPBR: (list of supported <index>s), [<nlength>], [<tlength>]</tlength></nlength></index>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
Write Command AT+CPBR= <index1></index1>	Response [+CPBR: <index1>,<number>,<type>,<text>[[]</text></type></number></index1>
Write Command AT+CPBR= <index1> [,<index2>]</index2></index1>	Response [+CPBR: <index1>,<number>,<type>,<text>[[] <cr><lf>+CPBR: <index2>,<number>,<type>,<text>]]</text></type></number></index2></lf></cr></text></type></number></index1>
Write Command AT+CPBR= <index1> [,<index2>]</index2></index1>	Response [+CPBR: <index1>,<number>,<type>,<text>[[] <cr><lf>+CPBR: <index2>,<number>,<type>,<text>]] OK</text></type></number></index2></lf></cr></text></type></number></index1>
Write Command AT+CPBR= <index1> [,<index2>]</index2></index1>	Response [+CPBR: <index1>,<number>,<type>,<text>[[] <cr><lf>+CPBR: <index2>,<number>,<type>,<text>]] OK</text></type></number></index2></lf></cr></text></type></number></index1>

Defined Values

<index1>, <index2>, <index>

integer type value in the range of location numbers of phonebook memory.

<number> string type, phone number of format <type>, the maximum length is < nlength >

<type></type>	type of phone number octet in integer format, default 145 when dialing string includes
	international access code character "+", otherwise 129.

<text> string type field of maximum length <tlength>; Often this value is set as name

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

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

Implementation

```
AT+CPBS?
+CPBS: "SM",2,200
OK
AT+CPBR=1,10 (record information in SIM card)
+CPBR: 1,"12345678901234567890",129,"Gjmjojggjmtpgj"
+CPBR: 2,"0987654321",129,"zuohongyan"
OK
AT+CPBS="DC" (dialed calls information)
OK
AT+CPBR=1,10
+CPBR: 1,"10010",129,""
```



```
+CPBR: 2,"10010",129,""
+CPBR: 3,"10010",129,""
+CPBR: 4, "521", 129, ""
+CPBR: 5,"114",129,""
+CPBR: 6, "13918723549", 129, ""
+CPBR: 7, "10010", 129, ""
+CPBR: 8, "13918723549", 129, ""
+CPBR: 9,"13918723549",129,""
+CPBR: 10, "13918723549", 129, ""
OK
AT+ CPBS="MC"
                       (missed calls information)
OK
AT+CPBR=1,10
+CPBR: 1,"13918723549",129,""
OK
AT+CPBS="RC"
                       (received calls information)
OK
AT+CPBR=1,10
+CPBR: 1, "02152063113", 129, ""
+CPBR: 2, "02152063113", 129, ""
+CPBR: 3,"13918723549",129,""
OK
```

8.3 Find phonebook entries (AT+CPBF)

Description

The command finds the record in phonebook(from the current phonebook memory storage selected with +CPBS) which alphanumeric field has substring <findtext>.

Syntax

Test Command	Response
AT+CPBF=?	+CPBF: [<nlength>],[<tlength>]</tlength></nlength>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CPBF= <findtext></findtext>	[+CPBF: <index1>,<number>,<type>,<text>[[]</text></type></number></index1>
	<cr><lf>+CBPF: <index2>,<number>,<type>,<text>]]</text></type></number></index2></lf></cr>
	ОК
	+CME ERROR: <err></err>

Defined values

<findtext> string type, this value is used to find the record.

<index1>, <index2> integer type values in the range of location numbers of phonebook memory.



<number></number>	string type, phone number of format <type>, the maximum length is</type>
	< nlength >
<type></type>	type of phone number octet in integer format, default 145 when dialing string
	includes international access code character "+", otherwise 129.
<text></text>	string type field of maximum length <tlength>; Often this value is set as name</tlength>
<nlength></nlength>	integer type value indicating the maximum length of field <number>.</number>
<tlength></tlength>	integer type value indicating the maximum length of field <text>.</text>

Implementation

AT+CPBF="Gjmjo" +CPBF: 1,"12345678901234567890",129,"Gjmjojggjmtpgj" OK

8.4 Write phonebook entry (AT+CPBW)

Description

The command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.

Syntax

Test Command	Response
AT+CPBW=?	+CPBW: (list of supported <index>s),[<nlength>],</nlength></index>
	(list of supported <type>s),[<tlength>]</tlength></type>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+CPBW= <index></index>	ОК
[, <number>[,<type>[,<text< td=""><td></td></text<></type></number>	
>]]]	+CME ERROR: <err></err>

Defined values

<index></index>	integer type value, appointing the location where the entry stored .	
<number></number>	string type, phone number of format <type>, the maximum length is < nlength >.</type>	
<type></type>	type of phone number octet in integer format, default 145 when dialing string inclu	
	international access code character "+", otherwise 129.	
<text></text>	string type field of maximum length <tlength>; Often this value is set as name.</tlength>	
<nlength></nlength>	integer type value indicating the maximum length of field <number>.</number>	
<tlength></tlength>	integer type value indicating the maximum length of field <text>.</text>	

Implementation

AT+CPBW=2, "0987654321", 129, "qwertyuiop"

OK



9 V24-V25 Command

9.1 Set local baud rate temporarily (AT+IPR)

Description

The command sets the baud rate of module's serial interface temporarily, after reboot the baud rate is set to default.

Syntax

Test Command	Response
AT+IPR=?	+IPR: (list of supported <speed>s)</speed>
	ОК
	+CME ERROR: <err></err>
Read Command	Response
AT+IPR?	+IPR: <speed></speed>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+IPR= <speed></speed>	ОК

Defined values

<speed> Baud rate per second

Dudu Tute p
300
600
1200
2400
4800
9600
19200
38400
57600
115200
230400
460800

Implementation

AT+IPR? +IPR: 115200 OK AT+IPR=? +IPR: (300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800) OK AT+IPR=115200

OK

9.2 Set local baud rate permanently (AT\$QCTER)

Description

The command sets the baud rate of module's serial interface permanently, after reboot the baud rate is also valid.

Syntax

Test Command	Response
AT\$OCTER=?	\$QCTER: (list of supported <speed>s)</speed>
	ОК
	+CME ERROR: <err></err>
Read Command	Response
AT\$OCTER?	<pre>\$QCTER: <speed></speed></pre>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT\$QCTER= <speed></speed>	ОК

Defined values

<speed> Baud rate per second

iuu iuic pe
300
600
1200
2400
4800
9600
19200
38400
57600
115200
230400
460800

Implementation

```
AT$QCTER?

$QCTER: 115200

OK

AT$QCTER=?

$QCTER: (300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800)

OK

AT$QCTER=115200

OK
```

9.3 Set control character framing (AT+ICF)



Description

The command sets character framing which contain data bit, stop bit and parity bit.

Syntax

Test Command	Response
AT+ICF=?	+ICF: (list of supported <format>s), (list of</format>
	supported <parity>s)</parity>
	ОК
	+CME ERROR: <err></err>
Read Command	Response
AT+ICF?	+ICF: <format>,<parity></parity></format>
	ОК
	+CME ERROR: <err></err>
Write Command	Response
AT+ICF= <format>,<parit< td=""><td>ОК</td></parit<></format>	ОК
y>	

Defined values

<format></format>	(only support value "3" at moment)
<format></format>	(only support value "3" at moment)

- 0 auto detect
- 1 data bit 8, stop bit 2
- 2 data bit 8, stop bit 1, parity bit 1
- 3 data bit 8, stop bit 1
- 4 data bit 7, stop bit 2
- 5 data bit 7, stop bit 1, parity bit 1
- 6 data bit 7, stop bit 1

<parity>

- 0 Odd
- 1 Even
- 2 mark
- 3 none

Implementation

AT+ICF? +ICF: 3,3 OK AT+ICF=? +ICF: (3),(0-3) OK AT+ICF=3,3 OK

9.4 Set local data flow control (AT+IFC)

Description



The command sets the flow control of the module.

Syntax

Test Command	Response
AT+IFC=?	+IFC: (list of supported <dce>s), (list of supported<dte>s) OK</dte></dce>
	+CME ERROR: <err></err>
Read Command	Response
AT+IFC?	+IFC: <dce>,<dte> OK</dte></dce>
	+CME ERROR: <err></err>
Write Command	Response
AT+IFC= <dce>,<dte< td=""><td>ОК</td></dte<></dce>	ОК
>	

Defined values

<DCE>

- 0 none
- 1 Xon/Xoff, don't pass characters on to data stack
- 2 RTS hardware flow control
- 3 Xon/Xoff, pass characters on to data stack

<DTE>

- 0 none
- 1 Xon/Xoff flow control
- 2 CTS hardware flow control

Implementation

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

9.5 Set circuit Data Carrier Detect (DCD) function mode (AT&Cx)

Description

The command controls DCD(Data Carrier Detect) signal.

Syntax

Execution Command	Response
AT&Cx	ОК

Defined values



Х

- 0 DCD line is always ON.
- 1 Turn on when the value incongruous with appointed value.
- 2 Always on except when channel disconnected (Default value).

Implementation:

AT&C2

OK

9.6 Set circuit Data Terminal Ready (DTR) function mode (AT&Dx)

Description

The command controls DTR(Data Terminal Ready) signal.

Syntax

Execution Command	Response
AT&Dx	ОК

Defined values

Х

- 0 Ignore.
- 1 When the state from ON to OFF, enter ONLINE mode.
- 2 When the state from ON to OFF, enter COMMAND mode. (Default value)

Implementation

AT&D2

OK

9.7 ATE enable command echo (ATEx)

Description

The command sets whether or not echo.

Syntax

Execution Command	Response
ATEx	OK

Defined values

Х

- 0 Echo mode off
- 1 Echo mode on(default)

Implementation

ATE1

OK

9.8 Display current configuration (AT&V)

Description

The command displays current configuration.

Execution Command	Response
-------------------	----------



AT&V	<text> OK</text>
	+CME ERROR: <err></err>

<TEXT> All relative configuration information.

Implementation

AT&V

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

OK



10 Commands for Packet Domain

10.1 Define PDP Context (AT+CGDCONT)

Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

Syntax

Test Command	Response
AT+CGDCONT=?	+CGDCONT: (range of supported <cid>s), <pdp_type>,,,(list</pdp_type></cid>
	of supported <d_comp>s),(list of supported <h_comp>s)[,(list</h_comp></d_comp>
	of supported <pd1>s)[,[,(list of supported <pdn>s)]]]</pdn></pd1>
	[<cr><lf>+CGDCONT: (range of supported <cid>s),</cid></lf></cr>
	<pdp_type>,,,(list of supported <d_comp>s),(list of</d_comp></pdp_type>
	<pre>supported <h_comp>s)[,(list of supported <pd1>s)[,[,(list of</pd1></h_comp></pre>
	<pre>supported <pdn>s)]]][]]</pdn></pre>
	OK
	ERROR
Read Command	Response
AT+CGDCONT?	+CGDCONT: <cid>, <pdp_type>, <apn>,<pdp_addr>,</pdp_addr></apn></pdp_type></cid>
	<d_comp>, <h_comp>[,<pd1>[,[,pdN]]]</pd1></h_comp></d_comp>
	[<cr><lf>+CGDCONT: <cid>, <pdp_type>, <apn>,</apn></pdp_type></cid></lf></cr>
	<pdp_addr>, <d_comp>, <h_comp>[,<pd1>[,[,pdN]]]</pd1></h_comp></d_comp></pdp_addr>
	[]]
	OK
	ERROR
Write Command	Response
AT+CGDCONT=[<ci< td=""><td>OK</td></ci<>	OK
d>[, <pdp_type></pdp_type>	
[, <apn></apn>	ERROR
[, <pdp_addr></pdp_addr>	
[, <d_comp></d_comp>	
[, <h_comp></h_comp>	
[, <pd1></pd1>	
[,[,pdN]]]]]]]]	

Defined values

<cid>

(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum



	value = 1) is returned by the test form of the command.
<pdp_type></pdp_type>	(Packet Data Protocol type) a string parameter which specifies the type of packet
	data protocol
	IP Internet Protocol
	PPP Point to Point Protocol
<apn></apn>	(Access Point Name) a string parameter which is a logical name that is used to
	select the GGSN or the external packet data network.
<pdp_addr></pdp_addr>	a string parameter that identifies the MT in the address space applicable to the PDP.
	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></d_comp>	a numeric parameter that controls PDP data compression:
	0 off (default if value is omitted)
	1 on
<h_comp></h_comp>	a numeric parameter that controls PDP header compression:
	0 off (default if value is omitted)
	1 on
<pd1>,<pdn></pdn></pd1>	zero to N string parameters whose meanings are specific to the <pdp_type>.</pdp_type>

Implementation:

```
AT+CGDCONT?
+CGDCONT: 1, "IP", "", "",0,0
OK
AT+CGDCONT=?
+CGDCONT: (1-16), "IP",,,(0-1),(0-1)
+CGDCONT: (1-16), "PPP",,,(0-1),(0-1)
OK
```

10.2 Quality of Service Profile (Requested) (AT+CGQREQ)

Description

The 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.

Test Command	Response
AT+CGQREQ=?	+CGQREQ: <pdp_type>, (list of supported <precedence>s),</precedence></pdp_type>
	(list of supported <delay>s), (list of supported <reliability>s) ,</reliability></delay>
	(list of supported <peak>s), (list of supported <mean>s)</mean></peak>
	[<cr><lf>+CGQREQ: <pdp_type>, (list of supported</pdp_type></lf></cr>
	<pre><precedence>s), (list of supported <delay>s), (list of supported</delay></precedence></pre>
	<reliability>s) , (list of supported <peak>s), (list of supported</peak></reliability>
	<mean>s)</mean>
	[]]
	OK
	ERROR



Read Command	Response
AT+CGQREQ?	+CGQREQ: <cid>, <precedence>, <delay>, <reliability>,</reliability></delay></precedence></cid>
	<peak>, <mean></mean></peak>
	[<cr><lf>+CGQREQ: <cid>, <precedence>, <delay>,</delay></precedence></cid></lf></cr>
	<reliability.>, <peak>, <mean>[]]</mean></peak></reliability.>
	ОК
	ERROR
Write Command	Response
AT+CGQREQ=	OK
[<cid>[,<precedence< td=""><td></td></precedence<></cid>	
>[, <delay></delay>	ERROR
[, <reliability.></reliability.>	
[, <peak></peak>	
[, <mean>]]]]]</mean>	

<cid></cid>		a numeric parameter which specifies a particular PDP context definition (see		
+CGDCONT command).				
<pdp_type> (Packet Data Protocol type) a string parameter which specifies the type of pa</pdp_type>		(Packet Data Protocol type) a string parameter which specifies the type of packet data		
		protocol.		
<precede< td=""><td>nce></td><td colspan="3">a numeric parameter which specifies the precedence class:</td></precede<>	nce>	a numeric parameter which specifies the precedence class:		
	0	default priority		
	1	high priority		
	2	normal priority		
	3	low priority		
<delay></delay>		a numeric parameter which specifies the delay class:		
	0	setting value		
	1	delay class 1		
	2	delay class 2		
	3	delay class 3		
	4	delay class 4		
<reliabili< td=""><td>ty></td><td>a numeric parameter which specifies the reliability class:</td></reliabili<>	ty>	a numeric parameter which specifies the reliability class:		
	0	setting value		
	1	Up to 1000 (8 kbit/s)		
	2	Up to 2000 (16 kbit/s)		
	3	Up to 4000 (32 kbit/s)		
	4	Up to 8000 (64 kbit/s)		
	5	Up to 16000 (128 kbit/s)		
<peak></peak>	;	a numeric parameter which specifies the peak throughput class:		
	0	setting value		
	1	Up to 1000 (8 kbit/s)		
	2	Up to 2000 (16 kbit/s)		
	3	Up to 4000 (32 kbit/s)		



- 4 Up to 8000 (64 kbit/s)
- 5 Up to 16000 (128 kbit/s)
- 6 Up to 32000 (256 kbit/s)
- 7 Up to 64000 (512 kbit/s)
- 8 Up to 128000 (1024 kbit/s)
- 9 Up to 256000 (2048 kbit/s)

<mean>

a numeric parameter which specifies the mean throughput class:

- 0 setting value
- 1 100 (~0.22 bit/s)
- 2 200 (~0.44 bit/s)
- 3 500 (~1.11 bit/s)
- 4 1000 (~2.2 bit/s)
- 5 2000 (~4.4 bit/s)
- 6 5000 (~11.1 bit/s)
- 7 10000 (~22 bit/s)
- 8 20000 (~44 bit/s)
- 9 50000 (~111 bit/s)
- 10 100000 (~0.22 kbit/s)
- 11 200000 (~0.44 kbit/s)
- 12 500000 (~1.11 kbit/s)
- 13 1000000 (~2.2 kbit/s)
- 14 2000000 (~4.4 kbit/s)
- 15 5000000 (~11.1 kbit/s)
- 16 10000000 (~22 kbit/s)
- 17 2000000 (~44 kbit/s)
- 18 50000000 (~111 kbit/s)
- 31 optimization

Implementation

```
AT+CGQREQ?
+CGQREQ:
OK
AT+CGQREQ=?
+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
OK
```

10.3 Quality of Service Profile (Minimum acceptable)(AT+CGQMIN)

Description

The 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.

Test Command	Response
AT+CGQMIN=?	+CGQMIN: <pdp_type>, (list of supported <precedence>s),</precedence></pdp_type>
	(list of supported <delay>s), (list of supported <reliability>s) ,</reliability></delay>

	<pre>(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</mean></peak></reliability></delay></precedence></pdp_type></lf></cr></mean></peak></pre>
	ERROR
Read Command	Response
AT+CGQMIN?	+CGQMIN: <cid>, <precedence>, <delay>, <reliability>,</reliability></delay></precedence></cid>
	<peak>, <mean></mean></peak>
	[<cr><lf>+CGQMIN: <cid>, <precedence>, <delay>,</delay></precedence></cid></lf></cr>
	<reliability.>, <peak>, <mean></mean></peak></reliability.>
	[]]
	ОК
	ERROR
Write Command	Response
AT+CGQMIN=[<cid></cid>	ОК
[, <precedence></precedence>	
[, <delay></delay>	ERROR
[, <reliability.></reliability.>	
[, <peak></peak>	
[, <mean>]]]]]</mean>	

<cid></cid>	a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).
<pdp_type></pdp_type>	(Packet Data Protocol type) a string parameter which specifies the type of packet data
	protocol.
<precedence></precedence>	a numeric parameter which specifies the precedence class:
0	default priority
1	high priority
2	normal priority
3	low priority
<delay></delay>	a numeric parameter which specifies the delay class:
0	setting value
1	delay class 1
2	delay class 2
3	delay class 3
4	delay class 4
<reliability></reliability>	a numeric parameter which specifies the reliability class:
0	setting value
1	Up to 1000 (8 kbit/s)


- 2 Up to 2000 (16 kbit/s)
- 3 Up to 4000 (32 kbit/s)
- 4 Up to 8000 (64 kbit/s)
- 5 Up to 16000 (128 kbit/s)

<peak>

- a numeric parameter which specifies the peak throughput class:
- 0 setting value
- 1 Up to 1000 (8 kbit/s)
- 2 Up to 2000 (16 kbit/s)
- 3 Up to 4000 (32 kbit/s)
- 4 Up to 8000 (64 kbit/s)
- 5 Up to 16000 (128 kbit/s)
- 6 Up to 32000 (256 kbit/s)
- 7 Up to 64000 (512 kbit/s)
- 8 Up to 128000 (1024 kbit/s)
- 9 Up to 256000 (2048 kbit/s)

<mean>

- a numeric parameter which specifies the mean throughput class:
- 0 setting value
- 1 100 (~0.22 bit/s)
- 2 200 (~0.44 bit/s)
- 3 500 (~1.11 bit/s)
- 4 1000 (~2.2 bit/s)
- 5 2000 (~4.4 bit/s)
- 6 5000 (~11.1 bit/s)
- 7 10000 (~22 bit/s)
- 8 20000 (~44 bit/s)
- 9 50000 (~111 bit/s)
- 10 100000 (~0.22 kbit/s)
- 11 200000 (~0.44 kbit/s)
- 12 500000 (~1.11 kbit/s)
- 13 1000000 (~2.2 kbit/s)
- 14 2000000 (~4.4 kbit/s)
- 15 5000000 (~11.1 kbit/s)
- 16 1000000 (~22 kbit/s)
- 17 2000000 (~44 kbit/s)
- 18 5000000 (~111 kbit/s)
- 31 optimization

Implementation

```
AT+CGQMIN?
+CGQMIN:
OK
AT+CGQMIN=?
+CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
OK
```



10.4 Packet Domain attach or detach (AT+CGATT)

Description

The write command is used to attach the MT to, or detach the MT from, the Packet Domain service. The read command returns the current Packet Domain service state.

Syntax

Test Command	Response
AT+CGATT =?	+CGATT: (list of supported <state>s)</state>
	ОК
	ERROR
Read Command	Response
AT+CGATT?	+CGATT: <state></state>
	ОК
	ERROR
Write Command	Response
AT+CGATT=[<state>]</state>	ОК
	ERROR

Defined values

<state> indicates the state of Packet Domain attachment:

- 0 detached
- 1 attached

Implementation

```
AT+CGATT?
+CGATT: 0
OK
AT+CGATT=1
OK
```

10.5 PDP context activate or deactivate(AT +CGACT)

Description

The write command is used to activate or deactivate the specified PDP context (s).

Syntax

Test Command	Response
AT+CGACT=?	+CGACT: (list of supported <state>s)</state>
	ОК
	ERROR
Read Command	Response
AT+CGACT?	+CGACT: <cid>, <state></state></cid>
	[<cr><lf>+CGACT: <cid>, <state></state></cid></lf></cr>
	[]]



	ОК
	ERROR
Write Command	Response
AT+CGACT=[<state< td=""><td>ОК</td></state<>	ОК
>[, <cid>]]</cid>	
	+CME ERROR: <err></err>
	ERROR

Defined values

<state> indicates the state of PDP context activation:

- 0 deactivated
- 1 activated
- <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).

Implementation

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

10.6 Enter data state (AT+CGDATA)

Description

The command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types. This may include performing a PS attach and one or more PDP context activations.

Syntax

Test Command	Response
AT+CGDATA=?	+CGDATA: (list of supported <l2p>s)</l2p>
	ОК
	ERROR
Write Command	Response
AT+CGDATA=[<l2p< td=""><td>CONNECT</td></l2p<>	CONNECT
>,[<cid>[,<cid></cid></cid>	
[,]]]]	+CME ERROR: <err></err>
	ERROR

Defined Values



- <L2P> a string parameter that indicates the layer 2 protocol to be used between the TE and MT PPP Point-to-point protocol for a PDP such as IP
- <cid> a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).

```
AT+CGDATA=?
+CGDATA: ("PPP")
OK
AT+CGDATA="PPP",1
CONNECT
```

10.7 Show PDP address (AT+CGPADDR)

Description

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

Syntax

Test Command	Response
AT+CGPADDR=?	+CGPADDR: (list of defined <cid>s)</cid>
	ОК
	ERROR
Write Command	Response
AT+CGPADDR=[<cid< td=""><td>+CGPADDR: <cid>,<pdp_addr></pdp_addr></cid></td></cid<>	+CGPADDR: <cid>,<pdp_addr></pdp_addr></cid>
>[, <cid>[,]]]</cid>	[<cr><lf>+CGPADDR: <cid>,<pdp_addr></pdp_addr></cid></lf></cr>
	[]]
	ОК
	ERROR

Defined values

<cid>

a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).

If no <cid> is specified, the addresses for all defined contexts are returned.

<PDP_addr> a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available.

Implementation

AT+CGPADDR =? +CGPADDR: (1) OK AT+CGPADDR=1 +CGPADDR: 1,"" OK



10.8 GPRS mobile station class(AT +CGCLASS)

Description

The command is used to set the MT to operate according to the specified GPRS mobile class. **Syntax**

Test Command	Response
AT+CGCLASS=?	+CGCLASS: (list of supported <class>s)</class>
	ОК
	ERROR
Read Command	Response
AT+CGCLASS?	+CGCLASS: <class></class>
	OK
	ERROR
Write Command	Response
AT+CGCLASS=	OK
[<class>]</class>	
	ERROR

Defined Values:

<class> a string parameter which indicates the GPRS mobile class (in descending order of functionality)

class A (highest)

Implementation

```
AT+CGCLASS=?
+CGCLASS: ("A")
OK
AT+CGCLASS?
+CGCLASS: "A"
OK
```

А

10.9 GPRS event reporting(AT +CGEREP)

Description

The command enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the Packet Domain MT or the network. <mode> controls the processing of unsolicited result codes specified within this command. <bfr> controls the effect on buffered codes when <mode> 1 or 2 is entered. If a setting is not supported by the MT, ERROR or +CME ERROR: is returned.

Syntax

Test Command	Response
AT+CGEREP=?	+CGEREP: (list of supported <mode>s),(list of supported <bfr>s) OK</bfr></mode>



	ERROR
Read Command	Response
AT+CGEREP?	+CGEREP: <mode>,<bfr></bfr></mode>
	ОК
	ERROR
Write Command	Response
AT+CGEREP=[<mo< td=""><td>ОК</td></mo<>	ОК
de>[, <bfr>]]</bfr>	
	ERROR

Defined values

<mode>

- 0 buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE.
- 1 discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE.
- 2 buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE.

<bfr>

- 0 MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered.
- 1 MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK response shall be given before flushing the codes).

The following unsolicited result codes and the corresponding events are defined:

+CGEV: REJECT <PDP_type>, <PDP_addr>

(A network request for PDP context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected.)

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

(The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT.)

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

(The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.)

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

(The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.)

+CGEV: NW DETACH

(The network has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.)

+CGEV: ME DETACH

(The mobile equipment has forced a Packet Domain detach. This implies that all active contexts have been deactivated. These are not reported separately.)



+CGEV: NW CLASS <class>

(The network has forced a change of MS class. The highest available class is reported (see +CGCLASS).)

+CGEV: ME CLASS <class>

(The mobile equipment has forced a change of MS class. The highest available class is reported (see +CGCLASS).)

Implementation

```
AT+CGEREP=?
+CGEREP: (0-2),(0-1)
OK
AT+CGEREP?
+CGEREP: 0,0
OK
```

10.10 GPRS network registration status (AT+CGREG)

Description

The 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>] when <n>=2 and there is a change of the network cell.

Syntax

Test Command	Response
AT+CGREG =?	+CGREG: (list of supported <n>s)</n>
	ОК
	ERROR
Read Command	Response
AT+CGREG?	+CGREG: <n>,<stat></stat></n>
	ОК
	+CME ERROR: <err></err>
	ERROR
Write Command	Response
AT+CGREG=[<n></n>	ОК
]	
	ERROR

Defined values

 $\langle n \rangle$

0	disable network registration unsolicited result code
1	enable network registration unsolicited result code +CGREG: <stat></stat>
<stat></stat>	
0	not registered, ME is not currently searching an operator to register to
1	registered, home network
2	not registered, but ME is currently trying to attach or searching an operator to register to



- 3 registration denied
- 4 unknown
- 5 registered, roaming

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

10.11 Select service for MO SMS messages (AT+CGSMS)

Description

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

Syntax

Test Command	Response
AT+CGSMS=?	+CGSMS: (list of currently available <service>s)</service>
	ОК
	ERROR
Read Command	Response
AT+CGSMS?	+CGSMS: <service></service>
	ОК
	ERROR
Write Command	Response
AT+CGSMS =	ОК
[<service>]</service>	
	ERROR

Defined Values

<service> a numeric parameter which indicates the service or service preference to be used

0 GPRS

1 circuit switched

- 2 GPRS preferred (use circuit switched if GPRS not available)
- 3 circuit switched preferred (use GPRS if circuit switched not available)

Implementation

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



11 TCP/IP Related Commands

11.1 Define socket PDP Context (AT+CGSOCKCONT)

Description

The command specifies socket PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

Sv	nta	s
$\sim J$		

Test Command	Response
AT+CGSOCKCONT=	+ CGSOCKCONT: (range of supported <cid>s),</cid>
?	<pdp_type>,,,(list of supported <d_comp>s),(list of</d_comp></pdp_type>
	<pre>supported <h_comp>s)[,(list of supported <pd1>s)[,[,(list</pd1></h_comp></pre>
	of supported <pdn>s)]]]</pdn>
	[<cr><lf>+CGDCONT: (range of supported <cid>s),</cid></lf></cr>
	<pdp_type>,,,(list of supported <d_comp>s),(list of</d_comp></pdp_type>
	<pre>supported <h_comp>s)[,(list of supported <pd1>s)[,[,(list</pd1></h_comp></pre>
	of supported <pdn>s)]]][]]</pdn>
	ОК
	ERROR
Read Command	Response
AT+ CGSOCKCONT?	+CGSOCKCONT: <cid>, <pdp_type>, <apn>,</apn></pdp_type></cid>
	<pdp_addr>, <d_comp>, <h_comp>[,<pd1>[,[,pdN]]]</pd1></h_comp></d_comp></pdp_addr>
	[<cr><lf>+CGDCONT: <cid>, <pdp_type>, <apn>,</apn></pdp_type></cid></lf></cr>
	<pdp_addr>, <d_comp>, <h_comp>[,<pd1>[,[,pdN]]]</pd1></h_comp></d_comp></pdp_addr>
	[]]
	ОК
	ERROR
Write Command	Response
AT+CGSOCKCONT=	ОК
[<cid> [,<pdp_type></pdp_type></cid>	
[, <apn> [,<pdp_addr></pdp_addr></apn>	ERROR
[, <d_comp>[,<h_comp></h_comp></d_comp>	
[, <pd1> [,[,pdN]]]]]]]]</pd1>	

Defined values

<cid></cid>	(PDP Context Identifier) a numeric parameter which specifies a particular PDP
	context definition. The parameter is local to the TE-MT interface and is used in
	other PDP context-related commands. The range of permitted values (minimum
	value = 1) is returned by the test form of the command.
<pdp_type></pdp_type>	(Packet Data Protocol type) a string parameter which specifies the type of packet
	data protocol
	IP Internet Protocol

Internet Protocol



	PPP Point to Point Protocol
<apn></apn>	(Access Point Name) a string parameter which is a logical name that is used to
	select the GGSN or the external packet data network.
<pdp_addr></pdp_addr>	a string parameter that identifies the MT in the address space applicable to the PDP.
	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></d_comp>	a numeric parameter that controls PDP data compression:
	0 off (default if value is omitted)
	1 on
<h_comp></h_comp>	a numeric parameter that controls PDP header compression:
	0 off (default if value is omitted)
	1 on
<pd1>,<pdn></pdn></pd1>	zero to N string parameters whose meanings are specific to the <pdp_type>.</pdp_type>

```
AT+CGSOCKCONT?
+CGSOCKCONT: 1, "IP", "", "",0,0
OK
AT+CGSOCKCONT=?
+CGSOCKCONT: (1-16), "IP",,,(0-1),(0-1)
+CGSOCKCONT: (1-16), "PPP",,,(0-1),(0-1)
OK
```

11.2 Set active PDP context's profile number (AT+ CSOCKSETPN)

Description

The command sets default active PDP context's profile number. When we activate PDP by using AT+NETOPEN command, we need use the default profile number, and the context of this profile is set by AT+CGSOCKCONT command.

Syntax

Test Command	Response
AT+CSOCKSETP	+CSOCKSETPN: (list of supported <profile_number>s)</profile_number>
N=?	ОК
	ERROR
Read Command	Response
AT+CSOCKSETP	+ CSOCKSETPN: <profile_number></profile_number>
N?	ОК
	ERROR
Write Command	Response
AT+CSOCKSETP	OK
	OK
N=[<profile_numb< td=""><td></td></profile_numb<>	



er>]		
	er>]	

Defined values

<profile_number> a numeric parameter that identifies default profile number, the range of permitted values is one to sixteen.

Implementation

AT+CSOCKSETPN=1 OK

11.3 Inquire socket PDP address AT+IPADDR

Description

The command inquires the IP address of current active socket PDP.

Syntax

Execution Command	Response
AT+IPADDR	+IPADDR: < ip_address > OK
	ERROR

Defined values

<ip_address> a string parameter that identifies the IP address of current active socket PDP.

Implementation

AT+IPADDR +IPADDR: 10.71.155.118 OK

11.4 Open socket(AT+NETOPEN)

Description

The command opens socket, and it can also activate the socket PDP context at the same time.

Syntax

Write Command	Response
AT+NETOPEN=	ОК
<sock_type>,<port></port></sock_type>	
	ERROR

Defined values

<sock_type> a string parameter that identifies the type of transmission protocol.

TCP Transfer Control Protocol

UDP User Datagram Protocol

<port> a numeric parameter that identifies the port of socket, the range of permitted values is 0 to 65535.

Implementation

AT+NETOPEN="TCP",80 OK

11.5 Establish TCP connection (AT+TCPCONNECT)



Description

The command establishes TCP connection with TCP server.

Syntax

Write Command	Response
AT+TCPCONNECT=	OK
<server_ip>, <port></port></server_ip>	
	ERROR

Defined values

<server_IP> a string parameter that identifies the IP address of TCP server.

<port> a numeric parameter that identifies the port of TCP server, the range of permitted values is 0 to 65535.

Implementation

AT+TCPCONNECT="192.168.0.1",80 OK

11.6 Send TCP data (AT+TCPWRITE)

Description

The command sends TCP data when the TCP connection is established.

Syntax

Write Command	Response
AT+TCPWRITE=	ОК
<send_string></send_string>	
	ERROR

Defined values

<send_string> a string parameter that identifies the content of TCP data.

NOTE: length of <send_string> is not more than 512.

Implementation

```
AT+TCPWRITE="TEST"
OK
```

11.7 Send UDP data (AT+UDPSEND)

Description

The command sends UDP data.

Syntax

Write Command	Response
AT+UDPSEND=	ОК
<send_string>,</send_string>	
<ip_address>,<port></port></ip_address>	ERROR

Defined values

<send_string></send_string>	a string parameter that identifies the content of UDP data.
<ip_address></ip_address>	a string parameter that identifies the IP address of receiver.
<port></port>	a numeric parameter that identifies the port of receiver, the range of permitted values
	is 0 to 65535.

NOTE: length of <send_string> is not more than 512.



```
AT+UDPSEND="TEST", "192.168.0.1",80
OK
```

11.8 Startup TCP server(AT+SERVERSTART)

Description

The command starts up TCP server, and the server can receive the request of TCP client.

Syntax

Execution Command	Response
AT+SERVERSTART	ОК
	ERROR

Defined values

None.

Implementation

AT+SERVERSTART OK

11.9 List all of clients' information (AT+LISTCLIENT)

Description

The command lists all of clients' information, and these clients have already been connected with TCP server.

Syntax

Execution Command	Response
AT+LISTCLIENT	NO. <index1> client: <ip_address> <port></port></ip_address></index1>
	[NO. <index2> client: <ip_address> <port>]</port></ip_address></index2>
	OK
	ERROR

Defined values

<client_index></client_index>	a numeric parameter that identifies the index of client, the max number of client is ten,
	and the range of permitted values is 0 to 9.
<ip_address></ip_address>	a string parameter that identifies the IP address of client.
<port>:</port>	a numeric parameter that identifies the port of client, the range of permitted values is 0
	to 65535.

Implementation

AT+LISTCLIENT NO.0 client : 10.71.34.32 80 NO.1 client : 10.71.78.89 1020 OK

11.10 Disconnect specified client (AT+CLOSECLIENT)

Description:

The command disconnects the specified client.



Syntax

Write Command	Response
AT+CLOSECLIENT=	ОК
<client_index></client_index>	
	ERROR

Defined values:

<cli>index> a numeric parameter that identifies the client index which will be closed, The allocated index may be read using the +LISTCLIENT command.

Implementation:

AT+CLOSECLIENT=0 OK

11.11 Activate specified client (AT+ACTCLIENT)

Description

The command activates the specified client, when the client is activated, the client is able to receive data from TCP server or send data to the TCP server.

Syntax

Write Command	Response
AT+ACTCLIENT=	ОК
<client_index></client_index>	
	ERROR

Defined values

<client_index> a numeric parameter that identifies the client index which will be closed. The allocated index may be read using the +LISTCLIENT command.

Implementation

AT+ ACTCLIENT=0 OK

11.12 Close socket (AT+NETCLOSE)

Description

The command closes socket, if the socket is opened for a server, then it will disconnect all of clients' connection that is connected with the server.

Syntax

Execution Command	Response
AT+NETCLOSE	OK
	ERROR

Defined values

None.

Implementation

AT+NETCLOSE OK



12 AT Commands sample

12.1 SMS Commands

Demonstration	Syntax	Expect Result
Set SMS system into text mode,	AT+CMGF=1	ОК
as opposed to PDU mode.		
Selects memory storages.	AT+CPMS="SM","SM","SM"	+CPMS: 0,40,0,40,0,40
		ОК
Set new message indications to	AT+CNMI=2,1	OK
ТЕ		
Send an SMS to myself.	AT+CMGS="+861358888xxxx"	+CMGS:34
	>This is a test <ctrl+z></ctrl+z>	ОК
Unsolicited notification of the		+CMTI:"SM",1
SMS arriving.		
Read SMS message that has	AT+CMGR=1	+CMGR: "REC UNREAD",
just arrived.		"+86135888xxxx", ,"08/01/3
NOTE: the number should be		0,
the same as that given		20:40:31+00"
in the +CMTI		This is a test
notification.		ОК
Reading the message again	AT+CMGR=1	+CMGR: "REC READ",
changes the status to "READ"		"+861358888xxxx",,"08/01/
from "UNREAD".		30,
		20:40:31+00"
		This is a test
		ОК
Send another SMS to myself.	AT+CMGS="+861358888xxxx"	+CMGS:35
	>Test again <ctrl+z></ctrl+z>	ОК
Unsolicited notification of the		+CMTI:"SM",2
SMS arriving.		
Listing all SMS messages.	AT+CMGL="ALL"	+CMGL:1, "REC READ",
		"+861358888xxxx", ,
		"08/01/30
		,20:40:31+00"
		This is a test
		+CMGL:2, "REC
		UNREAD","
		", "+861358888xxxx",
		, "08/01/30,20:45:12+00"
		Test again
		OK
Delete an SMS message.	AT+CMGD=1	
List all SMS messages to show	AT+CMGL="ALL"	+CMGL: 2,"REC READ",

message has been deleted.	"+861358888xxxx",
	"08/01/30,
	20:45:12+00"
	Test again
	ОК

12.2 TCP/IP Commands

12.2.1 TCP Server

Demonstration	Syntax	Expect Result
Activate the specified socket's	AT+NETOPEN="TCP",80	OK
PDP context and Create a		
socket.		
For Tcp Server, it starts a	AT+SERVERSTART	OK
Passive open for connections.		
List all of clients'	AT+LISTCLIENT	NO.0 client : 10.71.34.32
information.		80
		NO.1 client : 10.71.78.89
		1020
		OK
Activate the specified	AT+ACTCLIENT = 0	OK
client.		
Send data to an active client.	AT+TCPWRITE="Test"	OK
Close the specified client.	AT+CLOSECLIENT=0	OK
Close all of clients and	AT+NETCLOSE	OK
Deactivate the specified		
socket's PDP context.		

12.2.2 TCP Client

Demonstration	Syntax	Expect Result
Activate the specified	AT+NETOPEN="TCP",80	OK
socket's PDP context and		
Create a socket.		
Attempt to establish the	AT+TCPCONNECT="192.16	OK
TCP connection with the	8.0.1",80	
specified Tcp server.		
Send data to server.	AT+TCPWRITE="Test"	OK
Disconnect the connection	AT+NETCLOSE	OK
with server and Deactivate		
the specified socket's PDP		
context.		

12.2.3 UDP

Demonstration			Syntax	Expect Result
Activate	the	specified	AT+NETOPEN="TCP",80	OK

socket's PDP context and		
Create a socket.		
Send data.	AT+UDPSEND="TEST","19	OK
	2.168.0.1",80	
Close the socket and	AT+NETCLOSE	OK
Deactivate the specified		
socket's PDP context.		



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