AT Command Set for ZTE Wireless Data Product

Version: 1.8

0 Version History

This chapter reports modifications and improvements over previous versions of the document.

Version	Date	Description
0.1	Jun 08 2007	First release
1.0	Jul 03 2007	Add some ZTE defined AT commands for enhanced functions
1.1	Aug 13 2007	Add AT command: +CFUN, +CREG Update AT command: +ZPAS
1.2	Jun 19 2008	Add AT command:+ZBANDI,+ZRSSI
1.4	Sep 26 2008	Add AT command:+ZNITZ
1.5	Oct 14 2008	Update CHUP VTS CMUT CIMI CNMI CGDCONT CSQ COPS CREG
1.6	Feb 14 2009	Modify the unsolicited message,cancel the ZUSIMR ZDONR ZPASR ZSECR
1.7	Mar 26 2009	Add AT command: +CQIUPD，+ZDFLOW
1.8	Jul 04 2009	Modified +ZSNT and +COPS command

1 Introduction

1.1 Purpose

This document discusses, in detail, the AT commands that are implemented in ZTE wireless data product. All the AT commands follow 3GPP (R99) TS27.005 and TS27.007.

1.2 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
ETSI	European Telecommunications Standards Institute
ITU-T	International Telecommunication Union - Telecommunications Standardization Sector
ME	Mobile Equipment
MT	Mobile Termination
SIM	Subscriber Identity Module
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)
UICC	Universal Integrated Circuit Card
USIM	Universal Subscriber Identity Module

2 General Commands

2.1 command echo E

2.1.1 Syntax

Table2-1: ATE basic command syntax

Command	Possible response(s)
E[<value>]	<CR><LF>OK<CR><LF>

2.1.2 Description

This command is used to set TA echoes commands back or not.

2.1.3 Defined values

< value >:

0: TA doesn't echo commands back

1: TA echoes commands back

default 1 i.e. TA echoes commands back

2.1.4 e.g.

Command: ATE1
Response: OK

2.2 Display Signal quality +CSQ

2.2.1 Syntax

Table2-2: +CSQ action command syntax

Command	Possible response(s)
+CSQ	<CR><LF>+CSQ: <rssi>,<ber><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CSQ=?	<CR><LF>+CSQ: (list of supported <rssi>s),(list of supported <ber>s)

| | <CR><LF><CR><LF>OK<CR><LF> |

2.2.2 Description

Execution command +CSQ returns received signal strength indication <rssi> and channel bit error rate <ber> from the MT.

Test command +CSQ=? returns values supported as compound values.

2.2.3 Defined values

<rssi>:

0   -113 dBm or less

1   -111 dBm

2...30   -109... -53 dBm

31   -51 dBm or greater

99   not known or not detectable

<ber> (in percent):

0...7   as RXQUAL values in the table in GSM 05.08 [20] subclause 8.2.4

99   not known or not detectable

2.2.4 e.g.

Command: AT+CSQ
Response: +CSQ: 30,99
          OK

2.3 Request revision identification +CGMR

2.3.1 Syntax

Table2-3: +CGMR action command syntax

Command	Possible response(s)
+CGMR	<CR><LF><revision><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CGMR=?	<CR><LF>OK<CR><LF>

2.3.2 Description

Execution command causes the TA to return one or more lines of information text <revision>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the version, revision level or date, or other pertinent information of the MT to which it is connected to. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide more information if desired.

2.3.3 Defined values

<revision>: the total number of characters, including line terminators, in the information text shall

       not exceed 31 characters.

2.3.4 e.g.

Command: AT+CGMR

Response: P663M1V1.0.2B03 P663M1V1.0.2B03 1   [June 10 2006 10:00:00]

       OK

2.4 Request model identification +CGMM

2.4.1 Syntax

Table2-4: +CGMM action command syntax

Command	Possible response(s)
+CGMM	<CR><LF><model><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CGMM=?	<CR><LF>OK<CR><LF>

2.4.2 Description

     Execution command causes the TA to return one or more lines of information text <model>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the specific model of the MT to which it is connected to. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide more information if desired.

2.4.3 Defined values

<model>: the total number of characters, including line terminators, in the information text shall

       not exceed 2048 characters.

2.4.4 e.g.

Command: AT+CGMM

Response: MF330

       OK

2.5 Request international mobile subscriber identity +CIMI

2.5.1 Syntax

Table2-5: +CIMI action command syntax

Command	Possible response(s)
+CIMI	<CR><LF><IMSI><CR><LF><CR><LF>OK<CR><LF>

	<CR><LF>+CME ERROR: <err><CR><LF>
+CIMI=?	<CR><LF>OK<CR><LF>

2.5.2 Description

Execution command causes the TA to return `<IMSI>`, which is intended to permit the TE to identify the individual active application in the UICC (GSM or USIM) or SIM card which is attached to MT.

2.5.3 Defined values

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

2.5.4 e.g.

Command: AT+CIMI

Response: 460001194914416

        OK

2.6 Request product serial number identification +CGSN

2.6.1 Syntax

Table2-6: +CGSN action command syntax

Command	Possible response(s)
+CGSN	<CR><LF><IMEI><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CGSN=?	<CR><LF>OK<CR><LF>

2.6.2 Description

Execution command causes the TA to return one or more lines of information text <sn>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the individual MT to which it is connected to. Typically, the text will consist of a single line containing the IMEI (International Mobile station Equipment Identity) number of the MT, but manufacturers may choose to provide more information if desired.

Now this command can only return the IMEI number.

2.6.3 Defined values

`<sn>`: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

<IMEI>: the IMEI value in NV.

2.6.4 e.g.

Command: AT+CGSN

Response: 356722000068154

OK

2.7 Request manufacturer identification +CGMI

2.7.1 Syntax

Table 10-17: + CGMI parameter command syntax

Command	Possible response(s)
+CGMI	<CR><LF><manufacturer><CR><LF><CR><LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>
+CGMI=?	<CR><LF>OK<CR><LF>

2.7.2 Description

Execution command causes the TA to return one or more lines of information text <manufacturer>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the manufacturer of the MT to which it is connected to. The text will consist of a single line containing the name of the manufacturer.

2.7.3 Defined values

<manufacturer>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Text shall not contain the sequence 0<CR> or OK<CR>

2.7.4 e.g.

Command: AT+CGMI
Response: ZTE INCORPORATED
OK

2.8 Request request TA revision identification +GMR

2.8.1 Syntax

Table 10-18: + GMR parameter command syntax

Command	Possible response(s)
+GMR	<CR><LF>< TA revision ><CR><LF><CR><LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>
+GMR=?	<CR><LF>OK<CR><LF>

2.8.2 Description

Execution command causes the TA to return one or more lines of information text < TA revision>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the version, revision level or date, or other pertinent information of the MT to which it is connected to. The text will consist of a single line containing the version of the

product.

2.8.3 Defined values

< TA revision >: the total number of characters, including line terminators, in the information text shall not exceed 31 characters.

2.8.4 e.g.

Command: AT+GMR

Respond: +GMR: BD_P673M3V1.0.1B02

      OK

3 SMS Commands

3.1 Message Format +CMGF

3.1.1 Syntax

Table3-1: +CMGF parameter command syntax

Command	Possible response(s)
+CMGF[=<mode>]	<CR><LF>OK<CR><LF>
+CMGF?	<CR><LF>+CMGF: <mode><CR><LF><CR><LF>OK<CR><LF>
+CMGF=?	<CR><LF>+CMGF: (list of supported <mode>s)<CR><LF><CR><LF>OK<CR><LF>

3.1.2 Description

Set command tells the TA, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages. Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters).

Test command returns supported modes as a compound value.

3.1.3 Defined values

<mode>:

    0   PDU mode (default when implemented)

    1   text mode (not supported now)

3.1.4 e.g.

Command: AT+CMGF=0

Response: OK

3.2 New Message Indications +CMTI

3.2.1 Syntax

Table3-2: +CMTI parameter command syntax

Command	Possible response(s)
	<CR><LF>+CMTI: <mem>,<index><CR><LF>

3.2.2 Description

When new message is received and stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code.

3.2.3 Defined values

<mem1>: string type

"ME"   ME message storage

"SM"   (U)SIM message storage

"SR"   status report storage

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

3.3 New SMS-STATUS-REPORT Indications +CDSI

3.3.1 Syntax

Table3-3: +CMTI parameter command syntax

Command	Possible response(s)
	<CR><LF>+CDSI: <mem>,<index><CR><LF>

3.3.2 Description

When new SMS-STATUS-REPORT is received and stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code.

3.3.3 Defined values

<mem1>: string type

"ME"   ME message storage

"SM"   (U)SIM message storage

"SR"   status report storage

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

3.4 Configuration of New Message Indications to TE +CNMI

3.4.1 Syntax

Table3-4: +CNMI parameter command syntax

Command	Possible response(s)
+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	<CR><LF>OK<CR><LF> <CR><LF>+CMS ERROR: <err><CR><LF>
+CNMI?	<CR><LF>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr><CR><LF><CR><LF>OK<CR><LF>
+CNMI=?	<CR><LF>+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) <CR><LF><CR><LF>OK<CR><LF>

3.4.2 Description

Set command selects the procedure, how receiving of new messages from the network is indicated to the TE when TE is active.

Test command gives the settings supported by the TA as compound values.

3.4.3 Defined values

<mode>:

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>:

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>

<bm>:

0   No CBM indications are routed to the TE.

2   CBM indications are routed to the TE.

<ds>:

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...3 is entered (OK response shall be given before flushing the codes).

3.4.4 e.g.

1.No cell broadcast service
Command: AT+CNMI=3,1,0,2,0
Response: OK

2. Cell broadcast service
Command: AT+CNMI=3,1,2,2,0
Response: OK

3.5 Delete Message +CMGD

3.5.1 Syntax

Table3-5: +CMGD action command syntax

Command	Possible response(s)
+CMGD=<index>[,<delflag>]	<CR><LF>OK<CR><LF> <CR><LF>+CMS ERROR: <err><CR><LF>
+CMGD=?	<CR><LF>+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]<CR><LF><CR><LF>OK<CR><LF>

3.5.2 Description

Execution command deletes message from preferred message storage `<mem1>` location `<index>`. If `<delflag>` is present and not set to 0 then the ME shall ignore `<index>` and follow the rules for `<delflag>` shown below. If deleting fails, final result code `+CMS ERROR:<err>` is returned.

Test command shows the valid memory locations and optionally the supported values of <delflag>.

3.5.3 Defined values

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

<delflag>: an integer indicating multiple message deletion request as follows:

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.

3.5.4 e.g.

Command: AT+CMGD=2
Response: OK

3.6 Preferred Message Storage +CPMS

3.6.1 Syntax

Table3-6: +CPMS parameter command syntax

Command	Possible response(s)
+CPMS=<mem1>[, <mem2>[,<mem3>]]	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> +CMS ERROR: <err>
+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>, <mem3>,<used3>,<total3> +CMS ERROR: <err>
+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s)

3.6.2 Description

Set command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. If chosen storage is not appropriate for the ME (but is supported by the TA), final result code +CMS ERROR: <err> shall be returned. See chapter Message Service Failure Result Code for a list of possible <err> values.

Test command returns lists of memory storages supported by the TA.

3.6.3 Defined values

<mem1>:string type; memory from which messages are read and deleted (commands List

Messages +CMGL, Read Message +CMGR and Delete Message +CMGD); defined

values (others are manufacturer specific):

"ME"   ME message storage

"SM"   (U)SIM message storage

<mem2>: string type; memory to which writing and sending operations are made (commands Send Message from Storage +CMSS and Write Message to Memory +CMGW)); refer <mem1> for defined values

<mem3>: string type; memory to which received SMs are preferred to be stored (unless forwarded directly to TE; refer command New Message Indications +CNMI); refer <mem1> for defined values; received CBMs are always stored in "BM" (or some manufacturer specific storage) unless directly forwarded to TE; received status reports are always stored in "SR" (or some manufacturer specific storage) unless directly forwarded to TE

<total1>: integer type; total number of message locations in <mem1>

<total2>: integer type; total number of message locations in <mem2>

<total3>: integer type; total number of message locations in <mem3>

<used1>: integer type; number of messages currently in <mem1>

<used2>: integer type; number of messages currently in <mem2>

<used3>: integer type; number of messages currently in <mem3>

3.6.4 e.g.

Command: AT+CPMS?
Response: +CPMS: "SM",10,40,"SM",10,40,"ME",1,100
        OK

3.7 Service Centre Address +CSCA

3.7.1 Syntax

Table3-7: +CSCA parameter command syntax

Command	Possible response(s)
+CSCA=<sca>[,<tosca>]	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CSCA?	<CR><LF>+CSCA: <sca>,<tosca><CR><LF><CR><LF>OK<CR><LF>

	<CR><LF>+CME ERROR: <err><CR><LF>
+CSCA=?	<CR><LF>OK<CR><LF>

3.7.2 Description

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

3.7.3 Defined values

<sca>:   RP SC address Address-Value field in string format

<tosca>:   RP SC address Type-of-Address octet in integer format

3.7.4 e.g.

Command: AT+CSCA="+8613800290500"
Response: OK

3.8 Send Message +CMGS

3.8.1 Syntax

Table3-8: +CMGS action command syntax

Command	Possible response(s)
+CMGS=<length><CR> *PDU is given*<ctrl-Z/ESC>	**if PDU mode(+CMGF=0) and sending successful:** <CR><LF>+CMGS: <mr>[,<ackpdu>]<CR><LF><CR><LF>OK<CR><LF> **if sending fails:** <CR><LF>+CMS ERROR: <err><CR><LF>
+CMGS=?	<CR><LF>OK<CR><LF>

3.8.2 Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. This command should be abortable.

3.8.3 Defined values

<length>:   integer type value indicating the length of the actual TP data unit in octets

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

<ackpdu>:   RP-User-Data element of RP-ACK PDU

<ctrl-Z>:   must be used to indicate the ending of PDU

3.8.4 e.g.

Command: AT+CMGS=24

       >0891683108200905F0040D91683151120800F700085090092313454800462C94

          E01< ctrl-Z >

Response: OK

3.9 Write Message to Memory +CMGW

3.9.1 Syntax

Table3-9: +CMGW action command syntax

Command	Possible response(s)
+CMGW=<length>[,<stat>]<CR>*PDU is given*<ctrl-Z/ESC>	<CR><LF>+CMGW: <index><CR><LF><CR><LF>OK<CR><LF> … <CR><LF>+CMS ERROR: <err><CR><LF>
+CMGW=?	<CR><LF>OK<CR><LF>

3.9.2 Description

Execution command stores a message to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given. (ME/TA manufacturer may choose to use different default <stat> values for different message types.) The entering of PDU is done similarly as specified in command Send Message +CMGS. If writing fails, final result code +CMS ERROR: <err> is returned.

3.9.3 Defined values

<length>:   integer type value indicating the length of the actual TP data unit in octets

<stat>:   integer type in PDU mode (default 0), or string type in text mode (default "REC

         UNREAD"); indicates the status of message in memory; defined values:

    0   "REC UNREAD"   received unread message (i.e. new message)

    1   "REC READ"   received read message

    2   "STO UNSENT"   stored unsent message (only applicable to SMs)

    3   "STO SENT"   stored sent message (only applicable to SMs)

    4   "ALL"   all messages (only applicable to +CMGL command)

<index>:   integer type; value in the range of location numbers supported by the associated

         memory

3.9.4 e.g.

Command: AT+CMGW=24

>0891683108200905F0040D91683151120800F70008509092313454800462C94

E01< ctrl-Z >

Response: +CMGW: 9

OK

3.10 List Messages +CMGL

3.10.1 Syntax

Table3-10: +CMGL action command syntax

Command	Possible response(s)
+CMGL[=<stat>]	**if PDU mode and command successful:** [<CR><LF>+CMGL: <index>,<stat>,[<reserved>],<length><CR><LF><pdu> [<CR><LF>+CMGL:<index>,<stat>,[<reserved>],<length><CR><LF><pdu> [...]]<CR><LF>]<CR><LF>OK<CR><LF> **otherwise:** <CR><LF>+CMS ERROR: <err><CR><LF>
+CMGL=?	<CR><LF>+CMGL: (list of supported <stat>s) <CR><LF><CR><LF>OK<CR><LF>

3.10.2 Description

Execution command returns messages with status value <stat> from preferred message storage <mem1> to the TE. Entire data units <pdu> are returned. If status of the message is 'received unread', status in the storage changes to 'received read'. If listing fails, final result code +CMS ERROR: <err> is returned.

Test command shall give a list of all status values supported by the TA.

3.10.3 Defined values

<stat>:   integer type in PDU mode (default 0), or string type in text mode (default "REC

UNREAD"); indicates the status of message in memory; defined values:

0   "REC UNREAD"   received unread message (i.e. new message)

1   "REC READ"   received read message

2   "STO UNSENT"   stored unsent message (only applicable to SMs)

3   "STO SENT"   stored sent message (only applicable to SMs)

4   "ALL"   all messages (only applicable to +CMGL command)

<length>:   integer type value indicating the length of the actual TP data unit in octets

3.10.4 e.g.

Command: AT+CMGL=4

Response:

+CMGL: 0,1,,22

0891683108200905F0240D91683109294348F00000509092513174 0002ED32

+CMGL: 1,1,,24

0891683108200905F0040D91683151120800F70008509092313454800462C94E01

+CMGL: 7,1,,27

0891683108200905F0200D91683109294348F00000509092614030 0008E6B3997C269

BCF

OK

3.11 Read Message +CMGR

3.11.1 Syntax

Table3-11: +CMGR action command syntax

Command	Possible response(s)
+CMGR=<index>	**if PDU mode and command successful:** <CR><LF>+CMGR: <stat>,[<reserved>],<length><CR><LF><pdu><CR><LF><CR><LF>OK<CR><LF> **otherwise:** <CR><LF>+CMS ERROR: <err><CR><LF>
+CMGR=?	<CR><LF>OK<CR><LF>

3.11.2 Description

Execution command returns message with location value <index> from preferred message storage <mem1> to the TE. Status of the message and entire message data unit <pdu> is returned. If status of the message is 'received unread', status in the storage changes to 'received read'. If reading fails, final result code +CMS ERROR: <err> is returned.

3.11.3 Defined values

<stat>:   integer type in PDU mode (default 0), or string type in text mode (default "REC

UNREAD"); indicates the status of message in memory; defined values:

0   "REC UNREAD"   received unread message (i.e. new message)

1   "REC READ"   received read message

2   "STO UNSENT"   stored unsent message (only applicable to SMs)

3   "STO SENT"   stored sent message (only applicable to SMs)

4   "ALL"   all messages (only applicable to +CMGL command)

<length>:   integer type value indicating the length of the actual TP data unit in octets

3.11.4 e.g.

Command: AT+CMGR=7
Response: +CMGR: 1,,27
0891683108200905F0200D91683109294348F00000509092614030008E6B39
97C269BCF
OK

3.12 Select Message Service +CSMS

3.12.1 Syntax

Table3-12: +CSMS action command syntax

Command	Possible response(s)
+CSMS=<service>	<CR><LF>+CSMS: <mt>,<mo>,<bm><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CMS ERROR: <err><CR><LF>
+CSMS?	<CR><LF>+CSMS: <service>,<mt>,<mo>,<bm><CR><LF>OK<CR><LF>
+CSMS=?	<CR><LF>+CSMS: (list of supported <service>s)<CR><LF>OK<CR><LF>

3.12.2 Description

Set command selects messaging service <service>. It returns the types of messages supported by the ME: <mt> for mobile terminated messages, <mo> for mobile originated messages and <bm> for broadcast type messages. If chosen service is not supported by the ME (but is supported by the TA), final result code +CMS ERROR: <err> shall be returned.

Also read command returns supported message types along the current service setting.

Test command returns a list of all services supported by the TA.

3.12.3 Defined values

<service>:

0   3G TS 23.040 [3] and 3G TS 23.041 [4]

1   3G TS 23.040 [3] and 3G TS 23.041 [4]the requirement of <service> setting 1 is

mentioned under corresponding command descriptions)

2...127   reserved

128...   manufacturer specific

<mt>, <mo>, <bm>:

0   type not supported

1   type supported

3.12.4 e.g.

Command: AT+CSMS=?
Response: +CSMS: (0-1)
               OK

3.13 New class0 Message Indications +ZCLAS

3.13.1 Syntax

Table3-13: +ZCLAS action command syntax

Command	Possible response(s)
	<CR><LF>+ZCLAS: <length> <pdu><CR><LF>

3.13.2 Description

When new class0 message is received, indication the pdu sms to TE and without storing the message in memory.

3.13.3 Defined Values

<length>:   integer type value indicating the length of the actual TP data unit in octets
<pdu>:   User-Data element of PDU

3.13.4 e.g.

Response: +ZCLAS: 26,040D91685108923137F2001080902151635523066376783E8701

4 Commands for Safety Configuration

4.1 Change password +CPWD

4.1.1 Syntax

Table 4-1: +CPWD action command syntax

Command	Possible response(s)
+CPWD=<fac>,<oldpwd>,<newpwd>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CPWD=?	<CR><LF>+CPWD: list of supported (<fac>,<pwdlength>)s<CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

4.1.2 Description

Action 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.

4.1.3 Defined values

<fac>:   values reserved by the present document:

"CS"   CNTRL (lock CoNTRoL surface (e.g. phone keyboard))

"PS"   PH-SIM (lock PHone to SIM/UICC card) (MT asks password when other than current SIM/UICC card inserted; MT may remember certain amount of previously used cards thus not requiring password when they are inserted)

"PF"   lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted)

"SC"   SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued)

"AO"   BAOC (Barr All Outgoing Calls)

"OI"   BOIC (Barr Outgoing International Calls)

"OX"   BOIC-exHC (Barr Outgoing International Calls except to Home Country)

"AI"   BAIC (Barr All Incoming Calls)

"IR"   BIC-Roam (Barr Incoming Calls when Roaming outside the home country)

"NT"   barr incoming calls from numbers Not stored to TA memory

"NM"   barr incoming calls from numbers Not stored to MT memory

"NS"   barr incoming calls from numbers Not stored to SIM/UICC memory

"NA"   barr incoming calls from numbers Not stored in Any memory

"AB"   All Barring services (applicable only for <mode>=0)

"AG"   All outGoing barring services (applicable only for <mode>=0)

"AC"   All inComing barring services (applicable only for <mode>=0)

"FD"   SIM card or active application in the UICC (GSM or USIM) fixed dialling memory
feature (if PIN2 authentication has not been done during the current session, PIN2 is
required as <passwd>)

"PN"   Network Personalization

"PU"   network sUbset Personalization

"PP"   service Provider Personalization

"PC"   Corporate Personalization

"P2"   SIM PIN2

<oldpwd>, <newpwd>:   string type; <oldpwd> shall be the same as password specified for the
facility from the MT user interface or with command Change
Password +CPWD and <newpwd> is the new password; maximum
length of password can be determined with <pwdlength>

<pwdlength>:   integer type maximum length of the password for the facility

4.1.4 e.g.

Command: AT+CPWD="SC","1234","4321"
Response: OK

4.2 Enter PIN +CPIN

4.2.1 Syntax

Table 4-2: +CPIN parameter command syntax

Command	Possible response(s)
+CPIN=<pin>[,<newpin>]	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CPIN?	<CR><LF>+CPIN: <code><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CPIN=?	<CR><LF>OK<CR><LF>

4.2.2 Description

Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, 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 active application in the UICC (GSM or USIM) or SIM card.

Read command returns an alphanumeric string indicating whether some password is required or not.

When the User Interface is started, MT will use this read command automatically.

4.2.3 Defined values

<pin>, <newpin>: string type values

<code> values reserved by the present document:

READY	MT is not pending for any password
SIM PIN	MT is waiting UICC/SIM PIN to be given
SIM PUK	MT is waiting UICC/SIM PUK to be given
SIM PIN2	MT is waiting active application in the UICC (GSM or USIM) or SIM card PIN2 to be given
SIM PUK2	MT is waiting active application in the UICC (GSM or USIM) or SIM card PUK2 to be given

4.2.4 e.g.

Command: AT+CPIN?
Response: +CPIN: SIM PUK2
         OK

4.3 Facility lock +CLCK

4.3.1 Syntax

Table 4-3: +CLCK action command syntax

Command	Possible response(s)
+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	**when <mode>=2 and command successful:** <CR><LF>+CLCK:<status>[,<class1>[<CR><LF>+CLCK:<status>,<class2>[...]]<CR><LF><CR><LF>OK<CR><LF> **when <mode>≠2 and command successful:** <CR><LF>OK<CR><LF>

	<CR><LF>+CME ERROR: <err><CR><LF>
+CLCK=?	<CR><LF>+CLCK: (list of supported <fac>s)<CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

4.3.2 Description

Execute command is used to lock, unlock or interrogate a MT 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>. This command should be abortable when network facilities are set or interrogated.

Test command returns facility values supported as a compound value.

4.3.3 Defined values

<fac>: values reserved by the present document:

"CS"　CNTRL (lock CoNTRoL surface (e.g. phone keyboard))

"PS"　PH-SIM (lock PHone to SIM/UICC card) (MT asks password when other than current SIM/UICC card inserted; MT may remember certain amount of previously used cards thus not requiring password when they are inserted)

"PF"　lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted)

"SC"　SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued)

"AO"　BAOC (Barr All Outgoing Calls)

"OI"　BOIC (Barr Outgoing International Calls)

"OX"　BOIC-exHC (Barr Outgoing International Calls except to Home Country)

"AI"　BAIC (Barr All Incoming Calls)

"IR"　BIC-Roam (Barr Incoming Calls when Roaming outside the home country)

"NT"　barr incoming calls from numbers Not stored to TA memory

"NM"　barr incoming calls from numbers Not stored to MT memory

"NS"　barr incoming calls from numbers Not stored to SIM/UICC memory

"NA"　barr incoming calls from numbers Not stored in Any memory

"AB"   All Barring services (applicable only for <mode>=0)

"AG"   All outGoing barring services (applicable only for <mode>=0)

"AC"   All inComing barring services (applicable only for <mode>=0)

"FD"   SIM card or active application in the UICC (GSM or USIM) fixed dialling memory
feature (if PIN2 authentication has not been done during the current session, PIN2 is
required as <passwd>)

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

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

1   voice (telephony)

2   data

4   fax (facsimile services)

8   short message service

4.3.4 e.g.

Command: AT+CLCK=”SC”,0,”1234”
Response: OK

4.4 Restricted SIM access +CRSM

4.4.1 Syntax

Table 4-4: +CRSM action command syntax

Command	Possible response(s)
+CRSM=<command>[,<fileid> [,<P1>,<P2>,<P3>[,<data>]]]	<CR><LF>+CRSM:<sw1>,<sw2>[,<response>]<CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CRSM=?	<CR><LF>OK<CR><LF>

4.4.2 Description

By using this command instead of Generic SIM Access +CSIM TE application has easier but more limited access to the SIM database. Set command transmits to the MT the SIM <command> and its required parameters. MT handles internally all SIM-MT interface locking and file selection routines. As response to the command, MT sends the actual SIM information parameters and response data. MT error result code +CME ERROR may be returned when the command cannot be passed to the SIM, but failure in the execution of the command in the SIM is reported in <sw1> and <sw2> parameters.

Coordination of command requests to SIM and the ones issued by GSM/UMTS application inside the MT is implementation dependent. However the TE should be aware of the precedence of the GSM/UMTS application commands to the TE commands.

4.4.3 Defined values

<command>:

176   READ BINARY

178   READ RECORD

192   GET RESPONSE

214   UPDATE BINARY

220   UPDATE RECORD

242   STATUS

<fileid>: integer type; this is the identifier of a elementary datafile on SIM. Mandatory for every command except STATUS

<P1>, <P2>, <P3>: integer type; parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS.

<data>: information which shall be written to the SIM (hexadecimal character format;)

<sw1>, <sw2>: integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command

<response>: response of a successful completion of the command previously issued (hexadecimal character format;). STATUS and GET RESPONSE return data, which gives

information about the current elementary datafield. This information includes the type of file and its size. After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command

4.4.4 e.g.

Command: AT+CRSM=176,28423,0,0,9

Response: +CRSM: 144,0,"084906103392791577"

      OK

5 Commands for UMTS Packet Domain

5.1 Define PDP Context +CGDCONT

5.1.1 Syntax

Table 5-1: +CGDCONT parameter command syntax

Command	Possible response(s)
+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<pd1 > [,…[,pdN]]]]]]]]	<CR><LF>OK<CR><LF> <CR><LF>ERROR<CR><LF>
+CGDCONT?	<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [...]]<CR><LF>
+CGDCONT=?	<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s) ［,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]] [<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),

	(list of supported <h_comp>s) [,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]] [...]]<CR><LF>

5.1.2 Description

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

A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP_type>, the parameter value ranges for each <PDP_type> are returned on a separate line.

5.1.3 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>: (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol

    X.25   ITU-T/CCITT X.25 layer 3 (Obsolete)

    IP   Internet Protocol (IETF STD 5)

    IPV6   Internet Protocol, version 6 (IETF RFC 2460)

    OSPIH   Internet Hosted Octet Stream Protocol (Obsolete)

    PPP   Point to Point Protocol (IETF STD 51)

<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.

    If the value is null or omitted, then the subscription value will be requested.

<PDP_address>: a string parameter that identifies the MT in the address space applicable to the PDP.

    If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.

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

<d_comp>: a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 [61])

    0 - off   (default if value is omitted)

    1 - on (manufacturer preferred compression)

    2 - V.42bis

    3 - V.44

    Other values are reserved.

<h_comp>: a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61])

    0 – off (default if value is omitted)

    1 – on (manufacturer preferred compression)

    2 - RFC1144 (applicable for SNDCP only)

    3 - RFC2507

    4 - RFC3095 (applicable for PDCP only)

    Other values are reserved.

<pd1>, … <pdN>: zero to N string parameters whose meanings are specific to the <PDP_type>

5.1.4 e.g.

Command: AT+CGDCONT=1,"IP","mms.com",,0,0

Response: OK

5.2 PS attach or detach +CGATT

5.2.1 Syntax

Table 5-2: +CGATT parameter command syntax

Command	Possible response(s)
+CGATT= [<state>]	<CR><LF>OK<CR><LF> <CR><LF>ERROR<CR><LF>
+CGATT?	<CR><LF>+CGATT: <state><CR><LF> OK<CR><LF>
+CGATT=?	<CR><LF>+CGATT: (list of supported <state>s) <CR><LF> OK<CR><LF>

5.2.2 Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

The read command returns the current Packet Domain service state.

The test command is used for requesting information on the supported Packet Domain service states.

5.2.3 Defined values

<state>: indicates the state of PS attachment

    0 – detached

    1 - attached

5.2.4 e.g.

Command: AT+CGATT=?

Response: +CGATT: (0,1)

        OK

5.3 PDP context activate or deactivate +CGACT

5.3.1 Syntax

Table 5-3: +CGACT parameter command syntax

Command	Possible response(s)
+CGACT=[<state> [,<cid>[,<cid>[,…]]]]	<CR><LF>OK<CR><LF> <CR><LF>ERROR<CR><LF>
+CGACT?	<CR><LF>+CGACT: <cid>, <state>[<CR><LF>+CGACT: <cid>, <state>[...]]<CR><LF> OK<CR><LF>
+CGACT=?	<CR><LF>+CGACT: (list of supported <state>s)<CR><LF> OK<CR><LF>

5.3.2 Description

The execution command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the requested state for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and them attempts to activate the specified contexts. If the attach fails then the MT responds with ERROR or, if extended error responses are enabled, with the appropriate failure-to-attach error message.

If no <cid>s are specified the activation form of the command activates all defined contexts.

If no <cid>s are specified the deactivation form of the command deactivates all active contexts.

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

5.3.3 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 the +CGDCONT commands).

5.3.4 e.g.

Command: AT+CGACT=?

Response: +CGACT: (0,1)

OK

6 Commands for Phonebook

6.1 Select phonebook memory storage +CPBS

6.1.1 Syntax

Table 6-1: +CPBS action command syntax

Command	Possible response(s)
+CPBS=<storage> [,<password>]	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CPBS?	<CR><LF>+CPBS: <storage>[,<used>,<total>]<CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CPBS=?	<CR><LF>+CPBS: (list of supported <storage>s)<CR><LF><CR><LF>OK<CR><LF>

6.1.2 Description

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

Read command returns currently selected memory, and when supported by manufacturer, number of used locations and total number of locations in the memory.

Test command returns supported storages as compound value.

6.1.3 Defined values

<storage> values reserved by the present document:

  "SM"   SIM/UICC phonebook. If a SIM card is present or if a UICC with an active GSM application is present,   the EFADN under DFTelecom is selected.   If a UICC with an active USIM application is present, the global phonebook, DFPHONEBOOK under

DFTelecom is selected.

"DC"   MT dialled calls list (+CPBW may not be applicable for this storage)

"EN"   SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage)

"FD"   SIM/USIM fixdialling-phonebook. If a SIM card is present or if a UICC with an active GSM application is present, the information in EFFDN under DFTelecom is selected. If a UICC with an active USIM application is present, the information in EFFDN under ADFUSIM is selected.

"LD"   SIM/UICC last-dialling-phonebook

"MC"   MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage)

"ME"   MT phonebook

"MT"   combined MT and SIM/USIM phonebook

"ON"   SIM (or MT) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also). When storing information in the SIM/UICC, if a SIM card is present or if a UICC with an active GSM application is present, the information in EFMSISDN under DFTelecom is selected. If a UICC with an active USIM application is present, the information in EFMSISDN under ADFUSIM is selected.

"RC"   MT received calls list (+CPBW may not be applicable for this storage)

"TA"   TA phonebook

"AP"   Selected application phonebook. If a UICC with an active USIM application is present, the application phonebook, DFPHONEBOOK under ADFUSIM is selected.

<password>: string type value representing the PIN2-code required when selecting PIN2-code locked <storage>s above, e.g. "FD" or the hidden key to be verified in order to access to the hidden phonebook entries in the UICC/USIM or any other phonebook with hidden entries.

If the combined phonebook is selected, "MT", the <password> will correspond to the hidden key of the USIM phonebook.

<used>: integer type value indicating the number of used locations in selected memory

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

6.1.4 e.g.

Command: AT+CPBS?

Response: +CPBS: "SM",0,250

             OK

6.2 Read phonebook entries +CPBR

6.2.1 Syntax

Table 6-2: +CPBR action command syntax

Command	Possible response(s)
+CPBR=<index1>[,<index2>]	[<CR><LF>+CPBR:<index1>,<number><type><text>[[...]<CR><LF>+CPBR:<index2>,<number><type><text><CR><LF>]]<CR><

	LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>
+CPBR=?	<CR><LF>+CPBR:(list of supported <index>s),[<nlength>],[<tlength>]<CR><LF><CR><LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>

6.2.2 Description

Execution command returns phonebook entries in location number range <index1>... <index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. Entry fields returned are location number <index*n*>, phone number stored there <number> (of format <type>) and text <text> associated with the number. If all queried locations are empty (but available), no information text lines may be returned. If listing fails in an MT error, +CME ERROR: <err> is returned.

Test command returns location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields. In case of SIM/UICC storage, the lengths may not be available. If MT is not currently reachable, +CME ERROR: <err> is returned.

6.2.3 Defined values

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

<number>: string type phone number of format <type>

<type>: type of address octet in integer format

<text>: string type field of maximum length <tlength>

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

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

6.2.4 e.g.

Command: AT+CPBR=3,7
Response: +CPBR: 3,"13989245045",129,"zhangshan"
            +CPBR: 4,"13989245045",129,"lishi"
            +CPBR: 5,"88888888",129," 56FD5BB6"
            +CPBR: 6,"13989245045",129," 623F7ACB519B"
            +CPBR: 7,"88888888",129," 0041"
            OK

6.3 Write phonebook entry +CPBW

6.3.1 Syntax

Table 6-3: +CPBW action command syntax

Command	Possible response(s)
+CPBW=[<index>][,<number>[,<type>[,<text>]]]	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CPBW=?	<CR><LF>+CPBW:(list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>]<CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

6.3.2 Description

Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. Entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If those fields are omitted, phonebook entry is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific). If writing fails in an MT error, +CME ERROR: <err> is returned.

Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number formats of the storage, and the maximum length of <text> field. In case of SIM/UICC storage, the lengths may not be available. If MT is not currently reachable, +CME ERROR: <err> is returned. If storage does not offer format information, the format list should be empty parenthesis.

6.3.3 Defined values

<index>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

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

<text>: string type field of maximum length <tlength>

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

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

6.3.4 e.g.

Command: AT+CPBW=32,"88723348",129,"zhangguoli"
Response: OK

7 Commands for System Configuration

7.1 Operator selection +COPS

7.1.1 Syntax

Table 7-1: +COPS parameter command syntax

Command	Possible response(s)
+COPS=[<mode>[,<format>[,<oper>]]]	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+COPS?	<CR><LF>+COPS:<mode>[,<format>,<oper>]<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+COPS=?	<CR><LF>+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>)s][,,(list of supported <mode>s),(list of supported <format>s)]<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

7.1.2 Description

Set 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 MT 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, MT shall be unregistered until <mode>=0 or 1 is selected). This command should be abortable when registration/deregistration attempt is made.

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/UICC, 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.

7.1.3 Defined values

<mode>:

    0   automatic (<oper> field is ignored). For ZTE, Set AUTOMATIC network selection should use AT+ZSNT.

    1   manual (<oper> field shall be present)

    2   deregister from network

    3   set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response

    4   manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered

<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; long alphanumeric format can be up to 16 characters long and short format up to 8 characters; numeric format is the GSM Location Area Identification number which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1)

<stat>:

    0   unknown

    1   available

    2   current

    3   forbidden

<AcT> access technology selected:

    0   GSM

    2   UTRAN

    No para   UMTS PREF, only used for Write command.

7.1.4 e.g.

Command: AT+COPS?

Response: +COPS: 0,0,"China Mobile Communication Corp."

            OK

7.2 Set phone functionality +CFUN

7.2.1 Syntax

Table 7-2: +CFUN parameter command syntax

Command	Possible response(s)
+CFUN=[<fun>[,<rst>]]	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CFUN?	<CR><LF>+CFUN:<fun><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CFUN=?	<CR><LF>+CFUN: (list of supported <fun>s), (list of supported <rst>s) <CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

7.2.2 Description

Set command selects the level of functionality <fun> in the MT. 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, MT resetting with <rst> parameter may be utilized.

7.2.3 Defined values

<fun>:

   0   minimum functionality

   1   full functionality

   4   disable phone both transmit and receive RF circuits

   5...127   reserved for manufacturers as intermediate states between full and minimum functionality

<rst>:

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

   NOTE: This shall be always default when <rst> is not given.

   1   reset the MT before setting it to <fun> power level

7.2.4 e.g.

Command: AT+CFUN?

Response: +CFUN: 0

        OK

7.3 Network registration +CREG

7.3.1 Syntax

Table 7-3: +CREG parameter command syntax

Command	Possible response(s)
+CREG=[<n>]	<CR><LF>OK<CR><LF>
+CREG?	<CR><LF>+CREG:<n>,<stat>[,<lac>,<ci>]<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CREG=?	<CR><LF>+CREG:(list of supported <n>s) <CR><LF>OK<CR><LF>

7.3.2 Description

Set 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, or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell..

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

7.3.3 Defined values

<n>:

    0   disable network registration unsolicited result code

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

    2   enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]

<stat>: registration status

    0   not registered, ME is not currently searching a new operator to register to

    1   registered, home network

    2   not registered, but ME is currently searching a new operator to register to

    3   registration denied

    4   unknown

    5   registered, roaming

<lac>: string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>: string type; two byte cell ID in hexadecimal format

7.3.4 e.g.

Command: AT+CREG?

Response: +CREG: 0,5

        OK

7.4 Subscriber number +CNUM

7.4.1 Syntax

Table 7-4: +CNUM action command syntax

Command	Possible response(s)
+CNUM	`<CR><LF>+CNUM:[<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]][<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [,<itc>]][...]]<CR><LF><CR><LF>OK<CR><LF>` `<CR><LF>+CME ERROR: <err><CR><LF>`
+CNUM=?	`<CR><LF>OK<CR><LF>`

7.4.2 Description

Action command returns the MSISDNs related to the subscriber (this information can be stored in the SIM/UICC or in the MT). When storing information in the SIM/UICC, if a SIM card is present or if a UICC with an active GSM application is present, the information is stored in the EF_{MSISDN} under $DF_{Telecom}$. If a UICC with an active USIM application is present, the information is stored in the EF_{MSISDN} under ADF_{USIM}). If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

7.4.3 Defined values

`<alphax>`: optional alphanumeric string associated with `<numberx>`;

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

`<typex>`: type of address octet in integer format

`<speed>`:

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

1	300 bps (V.21)
2	1200 bps (V.22)
3	1200/75 bps (V.23)
4	2400 bps (V.22bis)
5	2400 bps (V.26ter)
6	4800 bps (V.32)
7	9600 bps (V.32)
12	9600 bps (V.34)
14	14400 bps (V.34)
15	19200 bps (V.34)
16	28800 bps (V.34)
17	33600 bps (V.34)
34	1200 bps (V.120)
36	2400 bps (V.120)
38	4800 bps (V.120)

39	9600 bps (V.120)
43	14400 bps (V.120)
47	19200 bps (V.120)
48	28800 bps (V.120)
49	38400 bps (V.120)
50	48000 bps (V.120)
51	56000 bps (V.120)
65	300 bps (V.110)
66	1200 bps (V.110)
68	2400 bps (V.110 or X.31 flag stuffing)
70	4800 bps (V.110 or X.31 flag stuffing)
71	9600 bps (V.110 or X.31 flag stuffing)
75	14400 bps (V.110 or X.31 flag stuffing)
79	19200 bps (V.110 or X.31 flag stuffing)
80	28800 bps (V.110 or X.31 flag stuffing)
81	38400 bps (V.110 or X.31 flag stuffing)
82	48000 bps (V.110 or X.31 flag stuffing)
83	56000 bps (V.110 or X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI or RDI service in order to get FTM)
84	64000 bps (X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI service in order to get FTM)
115	56000 bps (bit transparent)
116	64000 bps (bit transparent)
120	32000 bps (PIAFS32k)
121	64000 bps (PIAFS64k)
130	28800 bps (multimedia)
131	32000 bps (multimedia)
132	33600 bps (multimedia)
133	56000 bps (multimedia)
134	64000 bps (multimedia)

<service> (service related to the phone number):

0   asynchronous modem

1   synchronous modem

2   PAD Access (asynchronous)

3   Packet Access (synchronous)

4   voice

5   fax

also all other values below 128 are reserved by the present document

`<itc>` (information transfer capability):

0   3,1 kHz

1   UDI

7.4.4 e.g.

Command:AT+CNUM

Response: +CNUM: "2332","23232",129

          OK

7.5 GPRS network registration status +CGREG

7.5.1 Syntax

Table 7-5: + CGREG parameter command syntax

Command	Possible response(s)
+CGREG=[<n>]	
+CGREG?	<CR><LF>+CGREG:<n>,<stat><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CGREG=?	<CR><LF>+CGREG:(list of supported <n>s) <CR><LF>OK<CR><LF>

7.5.2 Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status

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

7.5.3 Defined values

<n>:
   0   disable network registration unsolicited result code
   1   enable network registration unsolicited result code +CGREG: <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

7.5.4 e.g.

Command: AT+CGREG?

Response: +CGREG: 0,5

          OK

8 Call Control Commands

8.1 Dial command D

8.1.1 Syntax

Table 8-1: D parameter command syntax

Command	Possible response(s)
D<dial string>	<CR><LF><RE><CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

8.1.2 Description

This command is used to originate a voice call.

8.1.3 Defined values

<dial string>: the string to dial.

<RE>:   Return result

    OK   successful

    BUSY   busy signal detected

    CONNECT   connection has been established

    NO ANSWER   connection completion timeout

    NO CARRIER   connection terminated

    NO DIALTONE   no dial tone detected

8.1.4 e.g.

Command: ATD1860;

Response: CONNECT

8.2 Answer incoming call A

8.2.1 Syntax

Table 8-2: A parameter command syntax

Command	Possible response(s)

A	<CR><LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>

8.2.2 Description

This command is used to answer an incoming call.

8.2.3 Defined values

Null.

8.2.4 e.g.

Command: ATA
Response: OK

8.3 Hang up call +CHUP

8.3.1 Syntax

Table 8-3: +CHUP parameter command syntax

Command	Possible response(s)
+CHUP	<CR><LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>
+CHUP=?	<CR><LF>OK<CR><LF>

8.3.2 Description

Execution command causes the TA to hang up the current GSM/UMTS call of the MT.

8.3.3 Defined values

Null.

8.3.4 e.g.

Command: AT+CHUP
Response: OK

8.4 Calling line identification presentation +CLIP

8.4.1 Syntax

Table 8-4: +CLIP parameter command syntax

Command	Possible response(s)
+CLIP=[<n>]	<CR><LF>OK<CR><LF>
	<CR><LF>+CME ERROR: <err><CR><LF>

+CLIP?	<CR><LF> <n>,<m><CR><LF>
+CLIP=?	<CR><LF>+CLIP: (list of supported <n>s) <CR><LF>
Unsolicited result code	<CR><LF>+CLIP: <CLI>, <type>, , , <CLI validity><CR><LF>

8.4.2 Description

This command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call. Set 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>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]] response is returned after every RING (or +CRING: <type>; refer subclause "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.

Read command gives the status of <n>, and also triggers an interrogation of the provision status of the CLIP service according 3GPP TS 22.081 [3] (given in <m>).Test command returns values supported as a compound value.

8.4.3 Defined values

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

    0   disable

    1   enable

<m> (parameter shows the subscriber CLIP service status in the network):

    0   CLIP not provisioned

    1   CLIP provisioned

    2   unknown (e.g. no network, etc.)

<number>: string type phone number of format specified by <type>

<type>: type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

<subaddr>: string type subaddress of format specified by <satype>

<satype>: type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8)

<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.

When CLI is not available (<CLI validity>=2), <number> shall be an empty string ("") and <type> value will not be significant. Nevertheless, MT/TA may return the recommended value 128 for <type> ((TON/NPI unknown in accordance with GSM 04.08 [8] subclause 10.5.4.7).

When CLI has been withheld by the originator, (<CLI validity>=1) and the CLIP is provisioned with the "override category" option (refer 3GPP TS 22.081[3] and 3GPP TS 23.081[40]), <number> and <type> is provided. Otherwise, MT/TA shall return the same setting

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for <number> and <type> as if the CLI was not available.

8.4.4 e.g.

Command: AT+CLIP=0

Response: OK

8.5 DTMF and tone generation +VTS

8.5.1 Syntax

Table 8-5: +VTS parameter command syntax

Command	Possible response(s)
+VTS=<DTMF>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

8.5.2 Description

This command allows the transmission of DTMF tones.

8.5.3 Defined values

<DTMF>: A single ASCII character in the set 0-9, #,*,A-D.

8.5.4 e.g.

Command: AT+VTS=5

Response: OK

8.6 Mute control +CMUT

8.6.1 Syntax

Table 8-6: +CMUT parameter command syntax

Command	Possible response(s)
+CMUT=<n>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CMUT?	<CR><LF>+CMUT:<n><CR><LF> <CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CMUT=?	+CMUT：（list of supported <n>s）

8.6.2 Description

This command is used to enable and disable the uplink voice muting during a voice call.

Test command returns supported values as compound value.

8.6.3 Defined values

<n>:

    0   mute off

    1   mute on

8.6.4 e.g.

Command: AT+CMUT=1

Response: OK

8.7 Loudspeaker volume level +CLVL

8.7.1 Syntax

Table 8-7: +CLVL parameter command syntax

Command	Possible response(s)
+CLVL=<level>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CLVL?	<CR><LF>+CLVL:<level><CR><LF> <CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CLVL=?	<CR><LF>+CLVL: (list of supported <level>s)<CR><LF> <CR><LF>OK<CR><LF>

8.7.2 Description

This command is used to select the volume of the internal loudspeaker of the MT.

Test command returns supported values as compound value.

8.7.3 Defined values

<level>: integer type value with manufacturer specific range (smallest value represents the lowest sound level).

8.7.4 e.g.

Command: AT+CLVL=?

Response: +CLVL: (0-5)

           OK

8.8 Microphone volume level +CMVL

8.8.1 Syntax

Table 8-8: +CMVL parameter command syntax

Command	Possible response(s)
+CMVL=<level>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CMVL?	<CR><LF>+CMVL:<level><CR><LF> <CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CMVL=?	<CR><LF>+CMVL: (list of supported <level>s)<CR><LF> <CR><LF>OK<CR><LF>

8.8.2 Description

This command is used to select the volume of the internal microphone of the MT.

Test command returns supported values as compound value.

8.8.3 Defined values

<level>: integer type value with manufacturer specific range (smallest value represents the lowest sound level).

8.8.4 e.g.

Command: AT+CMVL=?

Response: +CMVL: (0-3)

        OK

8.10 Read emergency call number table +ZECC

8.10.1 Syntax

Table 8-10: +ZECC parameter command syntax

Command	Possible response(s)
+ZECC?	<CR><LF>+ZECC: "eccl","ecc2",…<CR><LF> <CR><LF>OK<CR><LF>
+ZECC=?	<CR><LF>OK<CR><LF>

8.10.2 Description

This command is used to read the emergency call number table of the MT.

8.10.3 Defined values

<ecc1>, <ecc2>, … : the emergency call number

8.10.4 e.g.

Command: AT+ZECC?

Response: +ZECC: "911"

        OK

8.11 Select bearer service type +CBST

8.11.1 Syntax

Table 8-11: +CBST parameter command syntax

Command	Possible response(s)
+CBST=[<speed>[,<name>[,<ce>]]]	
+CBST?	+CBST: <speed>,<name>,<ce>
+CBST=?	+CBST: (list of supported <speed>s),(list of supported <name>s),(list of supported <ce>s)

8.11.2 Description

Set command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated (refer GSM 02.02 [1]). Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls (refer +CSNS).

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

8.11.3 Defined values

<speed>:

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

    1   300 bps (V.21)

    2   1200 bps (V.22)

    3   1200/75 bps (V.23)

    4   2400 bps (V.22bis)

    5   2400 bps (V.26ter)

    6   4800 bps (V.32)

    7   9600 bps (V.32)

    12   9600 bps (V.34)

    14   14400 bps (V.34)

    15   19200 bps (V.34)

    16   28800 bps (V.34)

    34   1200 bps (V.120)

    36   2400 bps (V.120)

    38   4800 bps (V.120)

    39   9600 bps (V.120)

    43   14400 bps (V.120)

47   19200 bps (V.120)
48   28800 bps (V.120)
49   38400 bps (V.120)
50   48000 bps (V.120)
51   56000 bps (V.120)
65   300 bps (V.110)
66   1200 bps (V.110)
68   2400 bps (V.110 or X.31 flag stuffing)
70   4800 bps (V.110 or X.31 flag stuffing)
71   9600 bps (V.110 or X.31 flag stuffing)
75   14400 bps (V.110 or X.31 flag stuffing)
79   19200 bps (V.110 or X.31 flag stuffing)
80   28800 bps (V.110 or X.31 flag stuffing)
81   38400 bps (V.110 or X.31 flag stuffing)
82   48000 bps (V.110 or X.31 flag stuffing)
83   56000 bps (V.110 or X.31 flag stuffing)
115   56000 bps (bit transparent)
116   64000 bps (bit transparent)
also all other values below 128 are reserved

<name>:
0   data circuit asynchronous (UDI or 3.1 kHz modem)
1   data circuit synchronous (UDI or 3.1 kHz modem)
2   PAD Access (asynchronous) (UDI)
3   Packet Access (synchronous) (UDI)
4   data circuit asynchronous (RDI)
5   data circuit synchronous (RDI)
6   PAD Access (asynchronous) (RDI)
7   Packet Access (synchronous) (RDI)
also all other values below 128 are reserved by the present document

<ce>:
0   transparent
1   non-transparent
2   both, transparent preferred
3   both, non-transparent preferred

8.11.4 e.g.

Command: AT+CBST?
Response: +CBST: 0,0,1
          OK

8.12 Cellular result codes +CRC

Table 18: +CRC parameter command syntax

Command	Possible response(s)
+CRC=[<mode>]	
+CRC?	+CRC: <mode>
+CRC=?	+CRC: (list of supported <mode>s)

Description

Set command controls whether or not the extended format of incoming call indication or GPRS network request for PDP context activation or notification for VBS/VGCS calls 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 as a compound value.

NOTE: Similar command may be found in TIA IS-99 [15] and TIA IS-135 [16].

Defined values

<mode>:

0   disables extended format

1   enables extended format

<type>:

ASYNC [,<priority>[,<subaddr>,<satype>]]   asynchronous transparent

SYNC [,<priority>[,<subaddr>,<satype>]]   synchronous transparent

REL ASYNC [,<priority>[,<subaddr>,<satype>]]   asynchronous non-transparent

REL SYNC [,<priority>[,<subaddr>,<satype>]]   synchronous non-transparent

FAX [,<priority>[,<subaddr>,<satype>]]   facsimile (TS 62)

VOICE [,<priority>[,<subaddr>,<satype>]]   normal voice (TS 11)

VOICE/*XXX* [,<priority>[,<subaddr>,<satype>]]   voice followed by data (BS 81) (*XXX* is ASYNC, SYNC, REL ASYNC or REL SYNC)

ALT VOICE/*XXX* [,<priority>[,<subaddr>,<satype>]] alternating voice/data, voice first (BS 61)

ALT *XXX*/VOICE [,<priority>[,<subaddr>,<satype>]] alternating voice/data, data first (BS 61)

ALT VOICE/FAX [,<priority>[,<subaddr>,<satype>]] alternating voice/fax, voice first (TS 61)

```
ALT FAX/VOICE [,<priority>[,<subaddr>,<satype>]] alternating voice/fax, fax first
```
(TS 61)

```
GPRS <PDP_type>, <PDP_addr>[, [<L2P>][,<APN>]]        GPRS network request
```
for PDP context
activation

```
VGC <GCA>, <GId>, <ackflag> [,<priority>]            voice group call (TS
```
91)
```
VBC <GCA>, <GId>, <ackflag> [,<priority>]            voice broadcast call
```
(TS 92)

The optional <priority> indicates the eMLPP priority level of the incoming call by paging, notification or setup message. The priority level values are as defined in eMLPP specification 3GPP TS 22.067 [54].

`<subaddr>`: string type subaddress of format specified by `<satype>`

`<satype>`: type of subaddress octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.8)

`<PDP_type>` ,`<PDP_addr>` and `<APN>` are as defined in the Define PDP Context (+CGDCONT) command. The optional `<L2P>` proposes a layer 2 protocol to use between the MT and the TE. It is defined in the Enter GPRS Data Mode (+CGDATA) command. If the MT is unable to announce to the TE the network's request (for example it is in V.250 online data state) the MT shall reject the request. No corresponding unsolicited result code shall be issued when the MT returns to a command state.

<GCA> is a part of the group call reference as specified in 3GPP TS 23.003 [7] and indicates group call area.

<GId> is a part of the group call reference as specified in 3GPP TS 23.003 [7] and indicates group call identification.The <ackflag>=1 proposes that a predefined confirmation procedure is to be used after the call is ended. For <ackflag>=0 no confirmation procedure is required.

Implementation

Mandatory when data or fax circuit mode calls implemented or for a MT supporting AT commands only and eMLPP or VGCS or VBS is implemented.

8.13 Voice Hangup Control +CVHU

Table 27: +CVHU parameter command syntax

Command	Possible response(s)
+CVHU=[<mode>]	
+CVHU?	+CVHU:<mode>
+CVHU=?	+CVHU:(list of supported <mode>s)

Description

Set command selects whether ATH or "drop DTR" shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode. (See subclause 6.6).

NOTE: When <mode> = 2, this command must be seen in conjunction with the V.250 [14] command &D. Else &D shall be ignored.

Defined values

<mode>:

0   "Drop DTR" ignored but OK response given. ATH disconnects.

1   "Drop DTR" and ATH ignored but OK response given.

2   "Drop DTR" behaviour according to &D setting. ATH disconnects.

Implementation

Optional

8.14 Hook control

Syntax

H[<value>]

Description

This command instructs the DCE to disconnect from the line, terminating any call in progress. All

of the functions of the command shall be completed before the DCE issues any result code.

NOTE – When used with modem-on-hold procedures per V.92, the call may be terminated without

disconnecting from the line. Other V.250 commands such as AT+PMHF may then be used to cause the

PSTN to switch to another line for placing another outgoing call or accepting another incoming call.

Abortability

This action may not be aborted.

Defined values

0 Disconnect from line and terminate call.

Result codes

OK The result code is issued after circuit 109 is turned off, if it was previously on.

ERROR If <**value**> is not recognized or supported.

Execution time

Execution time for this action varies widely depending on the call termination procedure of the

underlying DCE and manufacturers' implementation. The DTE should wait for the result code

before proceeding with subsequent commands.

Implementation

Implementation of this command is mandatory. If the value specified is not recognized or

implemented, an **ERROR** result code shall be generated.

9 Commands for STK Service

9.1 Get STK Main Menu +ZSTM

9.1.1 Syntax

Table 9-1: +ZSTM parameter command syntax

Command	Possible response(s)
+ZSTM	\<CR>\<LF>\<item_number_N>,\<title>[,\<item1_id>,\<item1_text>[,\<item2_id>,\<item2_text>[…,\<itemN_id>,\<itemN_text>]]]]\<CR>\<LF>\<CR>\<LF> OK\<CR>\<LF>

9.1.2 Description

This command is used to inquire the STK main menu information.

9.1.3 Defined values

\<item_number_N>：the number of main menus

\<title>：the title of the main menu

\<item1_id>：the ID of item1

\<item1_text>：the text of item1

\<item2_id>：the ID of item2

\<item2_text>：the text of item2

………..

\<itemN_id>：the ID of itemN

\<itemN_text>：the text of itemN

9.1.4 e.g.

Command: AT+ZSTM
Response: 7,8052A8611F57305E26;1,808D448BAF901F9012;2,805A314E5

9.2 Select Main Menu Item +ZSELM

9.2.1 Syntax

Table 9-2: +ZSELM parameter command syntax

Command	Possible response(s)
+ZSELM=<menu_item_id>	<CR><LF>OK<CR><LF>

9.2.2 Description

This command is used to select the STK main menu item.

9.2.3 Defined values

<menu_item_id>：the ID of selected main menu item; this ID is obtained in the response of

AT+ZSTM, the range of this value is from 0 to 255.

9.2.4 e.g.

Command: AT+ZSELM=6

Response: OK

+ZSTI: 3,;19,8079FB52A852A97406;50,8065E05FE75C0F52A9624B;51,8

9.3 Sub-menu Items Reports +ZSTI

9.3.1 Syntax

Table 9-3: +ZSTI parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZSTI:<num_items_N>,<item_title>;<itme1_id>,<item1_text>;<item2_id>,<item2_text>;……<itemN_id>,<itemN_text><CR><LF>

9.3.2 Description

When users select one of the main menu item, the sub-items under this main menu item is reported to TE using unsolicited code.

9.3.3 Defined values

<num_items_N>：the number of items

<item_title>：the title of item

<item1_id>：the ID of item1

<item1_text>：the text of item1

<item2_id>：the ID of item2

<item2_text>：the text of item2

………..

<itemN_id>：the ID of itemN

<itemN_text>：the text of itemN

9.4 Select Sub-menu Item +ZSELI

9.4.1 Syntax

Table 9-4: +ZSELI parameter command syntax

Command	Possible response(s)
+ZSELI=<item_id>	<CR><LF>OK<CR><LF>

9.4.2 Description

This command is used to select the STK sub-menu item.

9.4.3 Defined values

<item_id>：the ID of selected sub-menu item; this ID is obtained in the report of AT+ZSTI, the range of this value is from 0 to 255.

9.4.4 e.g.

Command: AT+ZSELI=18

Response: OK

+ZSTI: 2,;1,805B9E65F68BDD8D39;2,80538653F28BDD8D39;

9.5 Requests for Text Display +ZDIST

9.5.1 Syntax

Table 9-5: +ZDIST parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZDIST: <immediate_rsp_required>,<text_string><CR><LF>

9.5.2 Description

When (U)SIM card requests for displaying text, the text string is reported to TE using unsolicited code.

9.5.3 Defined values

<immediate_rsp_required>：

1: need immediate response

2: don't need immediate response

<text_string>：the text string reported to display

9.6 Requests for Character Input +ZGINK

9.6.1 Syntax

Table 9-6: +ZGINK parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZGINK:<hint_text>,<input_dcs><CR><LF>

9.6.2 Description

When (U)SIM card requests for inputting a single character, the request is reported to TE using unsolicited code.

9.6.3 Defined values

<hint_text>：the hint character

<input_dcs>：the data code scheme of user input

9.7 Requests for Text String Input +ZGINP

9.7.1 Syntax

Table 9-7: +ZGINP parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZGINP:<hint_text>,<input_dcs>,<max_input_length>,<min_input_length><CR><LF>

9.7.2 Description

When (U)SIM card requests for inputting text string, the request is reported to TE using unsolicited code.

9.7.3 Defined values

<hint_text>：the hint text string

<input_dcs>：the data code scheme of user input

<max_input_length>：the max length that user can input

<min_input_length>：the min length that user can input

9.8 Requests for Build Main Menu +ZPSTM

9.8.1 Syntax

Table 9-8: +ZPSTM parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZPSTM:<menu_number_N>,<menu_title>;<item1_id>,<item1_text>;<item2_id>,<item2_text>;……<itemN_id>,<itemN_text><CR><LF>

9.8.2 Description

When (U)SIM card requests for building main menu, the request is reported to TE using unsolicited code.

9.8.3 Defined values

<menu_number_N >：the number of main menus

![ZTE中兴 Logo] AT Command Set for ZTE Wireless Data Product   Confidential▲

<menu _title>：the title of the main menu

<item1_id>：the ID of item1

<item1_text>：the text of item1

<item2_id>：the ID of item2

<item2_text>：the text of item2

………..

<itemN_id>：the ID of itemN

<itemN_text>：the text of itemN

9.9 Requests for Rebuild Main Menu +ZEND

9.9.1 Syntax

Table 9-9: +ZEND parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZEND<CR><LF>

9.9.2 Description

When (U)SIM card requests session-end, the request for rebuilding main menu is reported to TE using unsolicited code.

9.9.3 Defined values

No value.

9.10 SMS Sending Status Reports +ZSMSR

9.10.1 Syntax

Table 9-10: +ZSMSR parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZSMSR:<text_string><CR><LF>

9.10.2 Description

When (U)SIM card sends SMS of STK service, the SMS sending status reports is routed to TE using unsolicited code.

9.10.3 Defined values

<text_string>：the text string of STK SMS sending status reports

9.11 Requests for More Time +ZMTime

9.11.1 Syntax

Table 9-11: +ZMTime parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+ZMTime:<cmd_id><CR><LF>

9.11.2 Description

When (U)SIM card requests for more time, the request is reported to TE using unsolicited code.

9.11.3 Defined values

<cmd_id>：the type of current STK command

9.12 Not Support Current Command Type Reports +Zunsupport

9.12.1 Syntax

Table 9-12: +Zunsupport parameter command syntax

Command	Possible response(s)
unsolicited code	<CR><LF>+Zunsupport:<cmd_id><CR><LF>

9.12.2 Description

When (U)SIM card doesn't support the type of current STK command, the report is routed to TE using unsolicited code.

9.12.3 Defined values

<cmd_id>：the type of current STK command

9.13 Menu Backwards +ZBK

9.13.1 Syntax

Table 9-13: +ZBK parameter command syntax

Command	Possible response(s)
+ZBK=<itemid >	<CR><LF>OK<CR><LF>

9.13.2 Description

This command is used to select that the menu return to the upper menu or main menu.

9.13.3 Defined values

<itemid>：the ID of the item

0：return to the main menu

1：return to the upper menu

9.13.4 e.g.

Command: AT+ZBK=1
Response: OK

9.14 Input Character +ZINKR

9.14.1 Syntax

Table 9-14: +ZINKR parameter command syntax

Command	Possible response(s)
+ZINKR=<input_dcs>,<input_text>	<CR><LF>OK<CR><LF>

9.14.2 Description

This command is used to hint users to input character.

9.14.3 Defined values

<input_dcs>：the data code scheme of user input

0：SMS_DEF_ALPHABET

1：YES_NO

2：NUMERICAL_ONLY

3：UCS2_ALPHABET

4：NUMERCIAL_UCS2

<input_text>：the text user input

9.15 Input Text String +ZINPR

9.15.1 Syntax

Table 9-15: +ZINPR parameter command syntax

Command	Possible response(s)
+ZINPR=<input_dcs>,< input_text >	<CR><LF>OK<CR><LF>

9.15.2 Description

This command is used to hint users to input text string.

9.15.3 Defined values

<input_dcs>：the data code scheme of user input

0：SMS_DEF_ALPHABET

1：YES_NO

2：NUMERICAL_ONLY

3：UCS2_ALPHABET

4：NUMERCIAL_UCS2

<input_text>：the text user input

9.16 Text Display +ZDISTR

9.16.1 Syntax

Table 9-16: + ZDISTR parameter command syntax

Command	Possible response(s)
+ZDISTR	<CR><LF>OK<CR><LF>

9.16.2 Description

This command is used to hint users to validate text string display.

9.16.3 Defined values

No value.

9.16.4 e.g.

Command: AT+ZDISTR

Response: OK

10 ZTE defined AT commands for enhanced functions

10.1 Display operator +ZDON

10.1.1 Syntax

Table 10-1: +ZDON parameter command syntax

Command	Possible response(s)
+ZDON？	<CR><LF>+ZDON: <RPLMN>,<RMCC>,<RMNC>,<HPLMN>,<HMCC>,<HMNC>,<ROAM_STATUS><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

10.1.2 Description

This command is used to display the current operator, including the name and PLMN. This command can just be used as read command (i.e. AT+ZDON?).

When the operator changes, the new operator information is routed to TE using unsolicited code.

10.1.3 Defined values

<RPLMN>: the name of local operator

<RMCC>: the MCC of local operator

<RMNC>:   the MNC of local operator

<HPLMN>:   the name of attributive operator

<HMCC>:   the MCC of attributive operator

<HMNC>:   the MNC of attributive operator

<SRV_DOMAIN>:   service domain

CS_ONLY: CS domain service available

PS_ONLY: PS domain service available

CS_PS: CS&PS domain service available

<ROAM_STATUS>:

ROAM _NONE

ROAM _OFF

ROAM _ON

10.1.4 e.g.

Command: AT+ZDON?

Response: +ZDON: "China Mobile",460,0,"China Mobile",460,0,"ROAM_OFF"

         OK

10.2 Configuration of Network Selection Mode +ZSNT

10.2.1 Syntax

Table 10-2: +ZSNT parameter command syntax

Command	Possible response(s)
+ZSNT=<cm_mode>,<net_sel_mode>,<pref_acq>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZSNT?	<CR><LF>+ZSNT: <cm_mode>,<net_sel_mode>,<pref_acq><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZSNT=?	<CR><LF>OK<CR><LF>

10.2.2 Description

This command is used to set and read the network selection mode. The set command format

is as follows:

AT+ZSNT=0,0,0   AUTOMATIC network selection，GSM+WCDMA

AT+ZSNT=0,0,1   AUTOMATIC network selection，GSM+WCDMA，GSM preferred

AT+ZSNT=0,0,2   AUTOMATIC network selection，GSM+WCDMA，WCDMA preferred

AT+ZSNT=1,0,0   AUTOMATIC network selection，GSM only

AT+ZSNT=2,0,0   AUTOMATIC network selection，WCDMA only

NOTE: Command like "AT+ZSNT=x, 1, y" shouldn't be used. Set manual network selection should use AT+COPS.

The read command format is as follows:

+ZSNT: 1, 1, x   MANUAL network selection, GSM only

+ZSNT: 2, 1, x   MANUAL network selection, WCDMA only

+ZSNT: 0, 1, 0   MANUAL network selection, UMTS pref

+ZSNT: 0, 1, 2   MANUAL network selection, UMTS pref

10.2.3 Defined values

<cm_mode>:   Preferred network mode，as "Preferred" parameter in QPST system panel.

    0:    AUTOMATIC

    1:    GSM_ONLY

    2:    WCDMA_ONLY

<net_sel_mode>:   selection of network selection mode, as "preferred selection mode" parameter in QPST system panel.

    0:    AUTOMATIC network selection

    1:    MANUAL network selection.

     NOTE: This parameter only used for read command. Set manual network selection should use AT+COPS.

    2:    LIMITIED network selection

<pref_acq>:   Preferred network mode acquisition parameter, as "preferred Acquisition" parameter in QPST system panel.

    0 :   AUTOMATIC order

    1 :   GSM_WCDMA order

    2:    WCDMA_GSM order

10.2.4 e.g.

Command: AT+ZSNT=0,0,2

Response: OK

10.3 Check Card Status +ZPAS

10.3.1 Syntax

Table 10-3: +ZPAS parameter command syntax

Command	Possible response(s)
+ZPAS?	<CR><LF>+ZPAS: <network>,<srv_domain><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

10.3.2 Description

This command is used to check card status, including the type of current network and service domain. This command can just be used as read command (i.e. AT+ZPAS?).

When the network changes, the new type of network is routed to TE using unsolicited code.

10.3.3 Defined values

<network>: the type of current network

No Service

Limited Service

EDGE

GPRS

GSM

HSDPA

HSUPA

UMTS

<srv_domain>: service domain

CS_ONLY: CS domain service available.

PS_ONLY: PS domain service available.

CS_PS: CS&PS domain service available.

CAMPED: camped in a cell.

10.3.4 e.g.

Command: AT+ZPAS?

Response: +ZPAS: "GPRS","CS_PS"

OK

10.4 Check PCB No. +ZPCB

10.4.1 Syntax

Table 10-7: +ZPCB parameter command syntax

Command	Possible response(s)
+ZPCB？	<CR><LF>+ZPCB: <PCB version><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZPCB=?	<CR><LF>OK<CR><LF>

10.4.2 Description

This command is used to check PCB No.. This command can just be used as read command (i.e. AT+ZPCB?).

10.4.3 Defined values

<PCB version> :   PCB No., the string shall not exceed 64 characters

10.4.4 e.g.

Command: AT+ZPCB？
Response: +ZPCB: P660M1-5.0.0
      OK

10.5 Control Device Power Mode +ZOPRT

10.5.1 Syntax

Table 10-8: +ZOPRT parameter command syntax

Command	Possible response(s)
+ZOPRT=<mode>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZOPRT?	<CR><LF>+ZOPRT:<mode><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

10.52 Description

This command is used to set and read the device power mode.

10.5.3 Defined values

<mode> :   the device power mode

    1   FTM mode

    5   Online mode

    6   Low Power mode

10.5.4 e.g.

Command: AT+ZOPRT=5

Response: OK

10.6 Select message storage +ZSMSD

10.6.1 Syntax

Table 10-9: +ZSMSD parameter command syntax

Command	Possible response(s)
+ZSMSD=<value>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZSMSD?	<CR><LF>+ZSMSD: <value><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZSMSD=?	<CR><LF>OK<CR><LF>

10.6.2 Description

    This command is used to set and read the preferential message storage position.

10.6.3 Defined values

<value> :   the preferential message storage position

    0   the message store in NW firstly

    1   the message store in (U)SIM firstly

    2   the message store in NV firstly

10.6.4 e.g.

Command: AT+ZSMSD=1

Response: OK

10.7 Check USIM Card Type +ZUSIM

10.7.1 Syntax

Table 10-10: +ZUSIM parameter command syntax

Command	Possible response(s)
+ZUSIM=?	<CR><LF>+ZUSIM:<usim_card><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

10.7.2 Description

This command is used to check the type of current (U)SIM card.

10.7.3 Defined values

<usim_card> :　the type of current (U)SIM card

    0　current is SIM card

    1　current is USIM card

10.7.4 e.g.

Command: AT+ZUSIM=?
Response: +ZUSIM: 0
        OK

10.8 Read USIM phonebook entries +ZCPBR

10.8.1 Syntax

Table 10-11: +ZCPBR action command syntax

Command	Possible response(s)
+ZCPBR=<index1>[,<index2>]	(1) standard phonebook not support (2)ZTE special phonebook [<CR><LF>+ZCPBR:<index1>,<number1><type><text>[,<number2>,<type>[…][,<email>][…]]<CR><LF>+ZCPBR:<index2>,<number1><type><text>[,<number2>,<number3>,<type>[,…][,<email>][…]]<CR><LF>]<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

+ZCPBR=?	(1) standard phonebook not support (2)ZTE special phonebook <CR><LF>+ZCPBR:(list of supported <index>s),[<nlength>],[<tlength>],[<mlenth>]<CR><LF><CR><LF> >OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

This command is used to read phonebook entries from USIM card, including the accessorial number and email info. When the special function is not needed,it returns "not support".

Execution command returns USIM phonebook entries in location number range <index1>...<index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. Entry fields returned are location number <index$n$>, phone number stored there <number> (of format <type>) and text <text> associated with the number. If all queried locations are empty (but available), no information text lines may be returned. If listing fails in an MT error, +CME ERROR: <err> is returned.

Test command returns location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields. In case of SIM/UICC storage, the lengths may not be available. If MT is not currently reachable, +CME ERROR: <err> is returned.

10.8.3 Defined values

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

<number1>, <number2>, <number3>: string type phone number of format <type>

<type>: type of address octet in integer format

<text>: string type field of maximum length <tlength>

<email>: string type field of maximum length <mlenth>

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

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

<mlenth>: integer type value indicating the maximum length of field <email>

10.8.4 e.g.

Command: AT+ZCPBR=1,10

       Response: not support

Command: AT+ZCPBR=1,10

Response: +ZCPBR: 1,"12345","544D45","12345","","313233343500746D652E636F6D",

       +ZCPBR: 2,"123","544D4532","123","","3133",

       +ZCPBR: 3,"678","544D4533","678","","36373800544D452E636F6D",

       OK

10.92 Write USIM phonebook entry +ZCPBW

10.9.1 Syntax

Table 10-12: +ZCPBW action command syntax

Command	Possible response(s)
+ZCPBW=[<index>][,<number1>[,<type>[,<text>[,<number2>,<number3>[,<type>[…][,<email>]]]]]]	(1) standard phonebook not support (2)ZTE special phonebook <CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+ZCPBW=?	(1) standard phonebook not support (2)ZTE special phonebook <CR><LF>+ZCPBW:(list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>],[<mlength>]<CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

10.9.2 Description

This command is used to write phonebook entries on USIM card, including the accessorial number and email info. When the special function is not needed,it returns "not support".

Execution command writes USIM phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. Entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If those fields are omitted, phonebook entry is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific). If writing fails in an MT error, +CME ERROR: <err> is returned.

Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number formats of the storage, and the maximum length of <text> field. In case of SIM/UICC storage, the lengths may not be available. If MT is not currently reachable, +CME ERROR: <err> is returned. If storage does not offer format information, the format list should be empty parenthesis.

10.9.3 Defined values

<index>: integer type values in the range of location numbers of phonebook memory

<number1>, <number2>: string type phone number of format <type>

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

<text>: string type field of maximum length <tlength>

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

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

<mlenth>: integer type value indicating the maximum length of field <email>

10.9.4 e.g.

Command:

AT+ZCPBW=3,"678",129,"544D4533","678","451","36373800544D452E636F6D"

Response: not support

Command:

AT+ZCPBW=3,"678",129,"544D4533","678","451","36373800544D452E636F6D"

Response: OK

10.10 Check PIN and PUK retry times +ZPINPUK

10.10.1 Syntax

Table 10-13: +ZPINPUK parameter command syntax

Command	Possible response(s)
+ZPINPUK=?	<CR><LF>+ZPINPUK:<pinnumber><puknumber><CR><LF><CR><LF>OK<CR><LF>

10.10.2 Description

This command is used to check PIN and PUK left retry times.

10.10.3 Defined values

<pinnumber> :   PIN left retry times

<puknumber> :   PUK left retry times

10.10.4 e.g.

Command: AT+ZPINPUK=?

Response: +ZPINPUK: 3,10

        OK

10.11 Set Band Status +ZBANDI

10.11.1 Syntax

Table 10-14: +ZBANDI parameter command syntax

Command	Possible response(s)
+ZBANDI=<band >	<CR><LF>OK<CR><LF>

	<CR><LF>ERROR<CR><LF>
+ZBANDI?	+ZBANDI: <band ><CR><LF>

10.11.2 Description

This command is used to change the band status. Notice the command is used only in platform 6290 and 6246.

10.11.3 Defined values

at+zbandi=0   • Automatic (Auto) - Default

at+zbandi=1   • UMTS 850 + GSM 900/1800

at+zbandi=2   • UMTS 2100 + GSM 900/1800 (Europe)

at+zbandi=3   • UMTS 850/2100 + GSM 900/1800

at+zbandi=4   • UMTS 850/1900 + GSM 850/1900

Notice! the command is used only in platform 6290 and 6246.

10.12 Report signal strength +ZRSSI

10.12.1 Syntax

Table10-15 : +ZRSSI parameter command syntax

Command	Possible response(s)
+ZRSSI	<CR><LF>+ZRSSI:<rssi>,<ecio>,<rscp><CR><LF><CR><LF>OK<CR><LF> 有 MS 相关错误时： <CR><LF>+CME ERROR: <err><CR><LF>

10.12.2 Description

This command is used to report signal strength.. Notice the command is used only in platform 6290 and 6246.

10.12.3 Defined values

3G network（registered to 3G network）

+ZRSSI: rssi,ecio,rscp

The unit of Rscp is 0.5dbm (in 0.5 dBm step with no sign).

The unit of Ecio is 0.5db (in 0.5 dB step with no sign).

The relation is: 2*rssi=rscp-ecio

e.g.

+ZRSSI: 49,8,106

$Rssi_{dbm}$ = -rssi = -49dbm

$Ecio_{db}$ = -ecio/2= -4db

$Rscp_{dbm}$ = - rscp /2= -53dbm

2G network（there is no ecio and rscp value when registered in 2G network，so set value of 1000）

e.g.

+ZRSSI: rssi,1000,1000

No network e.g.

+ZRSSI：OK

Notice! the command is used only in platform 6290 and 6246.

10.13 Change CQI Value +CQIUPD

10.13.1 Syntax

Table10-17: +CQIUPD parameter command syntax

Command	Possible response(s)
+CQIUPD =<Command>,<cqi offset>	<CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>
+CQIUPD?	<CR><LF>+CQIUPD: <cqi offset ><CR><LF><CR><LF>OK<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>

10.13.2 Description

This command is used to decrease or incease the CQI value reported by UE. And this new cqi offset will be stored in NV.

10.13.3 Defined values

< Command >:

0   Restore CQI original value

1   Increase CQI value

2   Decrease CQI value

< cqi offset >:

The unit of cqi offset is 0.5dB , the range of this value is from 0 to 26.

10.13.4 e.g.

Command: AT+CQIUPD=2,2
Response: OK

10.14 Define Total Data Flow Statistic +ZDFLOW

10.14.1 Syntax

Table10-18: + ZDFLOW parameter command syntax

Command	Possible response(s)
+ZDFLOW=<rx_last>[,<tx_last>[,<rx_total >[,<tx_total>]]]	<CR><LF>OK<CR><LF> <CR><LF>ERROR<CR><LF>
+ZDFLOW？	<CR><LF>+ZDFLOW: <rx_last>[,<tx_last>[,<rx_total>[,<tx_total>]]]<CR><LF>

10.14.2 Description

The set command specifies data flow statistic parameter values in NV.

A special form of the set command,+ZDFLOW=0,0,0,0 causes the Reset of the four values in NV.

The read command returns the current four settings in NV.

This AT Extend cmd is mostly for UI using.

10.14.3 Defined values

<rx_last>: (character string type)receive total data flow statistic of the last whole connect process.

<tx_last>: (character string type)transmit total data flow statistic of the last whole connect process

<rx_total>: (character string type)receive total data flow statistic of all whole connect processes after the user reset the records.

<tx_total>: (character string type) transmit total data flow statistic of all whole connect processes after the user reset the records.

The four values lenghs are max 15 bytes.And if the lengths of one value or more values are more than 15 then the anterior 15 characters is valid and no error is display.

10.14.4e.g.

Command: AT+ZDFLOW=100M，209.83M，3.76G，421.77K
Response: OK

10.15 Query the status of Network Lock +ZSEC

10.15.1 Syntax

Table10-18: + ZSEC parameter command syntax

Command	Possible response(s)
+ZSEC?	<CR><LF>+ZSEC:<SEC_STATUE>,<SEC_ITEMS><CR><LF><CR><LF>OK<CR><LF> MS Error ： <CR><LF>+CME ERROR: <err><CR><LF>

10.15.2 Description

Extensible AT command, this command is for querying the status of encryption. (The appropriative function of Network Lock)

10.15.3 Defined values

< SEC_STATUE >：

    0:　Initializing the encryption (Insignificant SEC_ITEMS)

    1:　Encrypt error. (Insignificant SEC_ITEMS)

    2:　Lock Encryption

    3:　Unlocked or correct MCC/MNC/EF_GID1

<SEC_ITEMS>：

    0:　No action

    1:　Network lock

    2:　(U)SIM card lock

    3:　Network Lock and (U)SIM card Lock

10.15.4 e.g.

Command: AT+ZSEC?
Response: +ZSEC: 3,0
        OK

10.16 Unlock and query the unlock residual time +ZNCK

10.16.1 Syntax

Table10-15 : +ZNCK parameter command syntax

Command	Possible response(s)
Command	Possible response(s)

+ZNCK=<"nck_code">	<CR><LF>OK<CR><LF>
	MS error：
	<CR><LF>+CME ERROR: <err><CR><LF>
+ZNCK?	<CR><LF>+ZNCK:<nck_time><CR><LF><CR><LF>OK<CR><LF>
	MS error：
	<CR><LF>+CME ERROR: <err><CR><LF>

10.16.2 Description

Extensible AT command, this command is for unlock and querying the residual time of this function.. (The appropriative function of Network Lock)

The Unlock Code would be fed back by the command EXECUTION,.

The unlock residual time would be fed back by the command READ.

10.16.3 Defined values

<"nck_code">： Unlock code

10.16.4 e.g.

Command:AT+ZNCK?
Response: +ZNCK: 5
        OK
Command:AT+ZNCK=" 707054c4b4926836"
Response: OK

10.17 Query the MCC,MNC command +ZLKLIST

10.17.1 Syntax

Table10-15 : +ZLKLIST parameter command syntax

Command	Possible response(s)
+ZLILIST?	<CR><LF>+ZLKLIST:
	<list0>，[<list1>，<list2>，<list3>**....]**
	<CR><LF><CR><LF>OK<CR><LF>
	MS error：

	<CR><LF>+CME ERROR: <err><CR><LF>

10.17.2 Description

This command returns the mcc, mnc list, it is used to control the auto installation function.

10.17.3 Defined values

<list0>：MCC MNC

10.17.4 e.g.

Command: +ZLKLIST?

Response: +ZLKLIST: 46000，46002

OK

11 Unstructured supplementary service data command

11.1 Unstructured supplementary service data command +CUSD

11.1.1 Syntax

Table 11_1 +CUSD parameter command syntax

Command	Possible response(s)
+CUSD=[<n>[,<str>[,<dcs>]]]	+*CME ERROR: <err>*
+CUSD?	+CUSD: <n>
+CUSD=?	+CUSD: (list of supported <n>s)

11.1.2 Description

This command allows control of the Unstuctured Supplementary Service Data (USSD) according to 3GPP TS 22.090 [23]. Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation) +CUSD: <m>[,<str>,<dcs>] to the TE. In addition, value <n>=2 is used to cancel an ongoing USSD session.

When <str> is given, a mobile initiated USSD-string or a response USSD-string to a network initiated operation is sent to the network. The response USSD-string from the network is returned in a subsequent unsolicited +CUSD result code.

NOTE: In case of successful mobile initiated operation, MT/TA implemented according to a version prior to 6 of this standard, waits the USSD response from the network and sends it to the TE before the final result code. This will block the AT command interface for the period of the operation. Such MT/TA does not support <n> value 2.

The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standards.

Test command returns values supported as a compound value.

11.1.3 Defined values

\<n\>:

0   disable the result code presentation to the TE

1   enable the result code presentation to the TE

2   cancel session (not applicable to read command response)

\<str\>: string type USSD-string (when \<str\> parameter is not given, network is not
interrogated):

- if \<dcs\> indicates that 3GPP TS 23.038 [25] 7 bit default alphabet is used:

  - if TE character set other than "HEX" (refer command Select TE Character Set
    +CSCS): MT/TA converts GSM alphabet into current TE character set according
    to rules of 3GPP TS 27.005 [24] Annex A

  - if TE character set is "HEX": MT/TA converts each 7-bit character of GSM
    alphabet into two IRA character long hexadecimal number (e.g. character Π
    (GSM 23) is presented as 17 (IRA 49 and 55))

- if \<dcs\> indicates that 8-bit data coding scheme is used: MT/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))

\<dcs\>: 3GPP TS 23.038 [25] 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

3   other local client has responded

4   operation not supported

5   network time out

11.1.4 eg

Command: AT+CUSD=1,*100#,15
Response:
OK
+CUSD:0,"0055006E006700750065006C007400690067006700650072002000 43006F00640065002E
00200042006900740074006500200072007500660065006E0020005300690065002000320030 00
330030002E",72