

External AT Commands

MDM6200/6600 Based products

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About this document

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May 25, 2012	V042	M. Rogmans	Added _ODSTATE
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1 SCOPE

This document lists the AT commands available on the Nyos product family, dual mode WCDMA/HSDPA/HSUPA - GSM/GPRS/EDGE – (GPS) devices based on the Qualcomm MDM6200/6600 chip set.

Most of the supported AT commands are specified in 3GPP TS 27.007 and 3GPP TS 27.005. Details of these commands can be found in those 3GPP specifications [1] & [2].

Only Option and/or Qualcomm proprietary AT commands are fully described in this document.

Please note that only supported commands are listed.

2 BASIC COMMANDS

Command	Description	Supported	Applicable Mode
AT	Command line prefix	Yes	Any
at	Command line prefix	Yes	Any
A/	Re-execution of previously executed AT command	Yes	Any
a/	Re-execution of previously executed AT command	Yes	Any
+++	Switching from Online Date mode to Online Command mode	Yes	Any

3 DTE-TA/DCE INTERFACE COMMANDS

All these commands are specified in 3GPP TS27.007 [1] and or ITU-T V.25ter.

Command	Description	Supported	Applicable Mode
S3	Command line termination character (S-parameter)	Yes	Any
S4	Response formatting character (S-parameter)	Yes	Any
S5	Command line editing character (S-parameter)	Yes	Any
E	Command Echo	Yes	Any
Q	Result code suppression	Yes	Any
V	DCE Response format	Yes	Any
X	Result code selection and call progress monitoring control	Yes	Any
&S	DSR control management Default – Always ON (&S0)	Yes	Any
&W	Stores the V250 registers and S-registers into NV memory	Yes	Any
&E	Controls the display of data rate to be either serial rate or wireless connection speed	Yes	Any
&C	Circuit 109 behavior	Yes	Any
&D	Circuit 108 behavior	Yes	Any
+IPR	Fixed DTE rate	Yes	Any
+ICF	DTE-DCE character framing	Yes	Any
+IFC	DTE-DCE local flow control	Yes	Any
&V	Dump configuration parameters	Yes	Any

4 GENERAL COMMANDS

All these commands are specified in 3GPP TS27.007 [1].

Command	Description	Supported	Applicable Mode
+CGMI	Request manufacturer identification	Yes	Any
+CGMM	Request model identification	Yes	Any
+CGMR	Request revision identification	Yes	Any
+CGSN	Request product serial number identification	Yes	Any
+CSCS	Select TE character set	Yes	UMTS
+CIMI	Request international mobile subscriber identity	Yes	UMTS
Z	Reset to default configuration	Yes	Any
&F	Set to factory defined configuration	Yes	Any
I	Request identification information	Yes	Any
+GMI	Request manufacturer identification	Yes	Any
+GMM	Request manufacturer identification	Yes	Any
+GMR	Request revision identification	Yes	Any
+GSN	Request revision identification	Yes	Any
+GCAP	Request complete capabilities list	Yes	Any
%V	Requests revision identification; command processed regardless of SIM state Similar to +CGMR/+GMR command	Yes	Any
\S	Prints the AT command settings	Yes	Any

PCCA STD-101 commands

Command	Description	Supported	Applicable Mode
+WS46=?	Selects wireless network	Yes	UMTS

5 CALL CONTROL COMMANDS

All these commands are specified in 3GPP TS27.007 [1].

Command	Description	Supported	Applicable Mode
+CSTA	Select type of address	Yes - for address types 129 and 145 only	UMTS
D	Dial (using new dial modifiers, ">", "I/i", "G/g", and ";" applicable to UMTS only) > = direct dial from phone book I/i = override CLIR supplementary service default G/g = control CUG supplementary service for call ; = initiate voice call	Yes	UMTS
+CMOD	Call mode <mode> – 0	Yes	UMTS
+CHUP	Hang up	Yes – for voice call hang-up	UMTS
+CBST	Select bearer service type	Yes	UMTS
+CRLP	Radio link protocol	Yes	UMTS
+CR	Service reporting control	Yes	UMTS
+CEER	Extended Error Report	Yes	UMTS
+CRC	Cellular result codes	Yes	Any
+CVHU	Voice Hang-up Control	Yes	UMTS
T	Select tone dialing	Yes – but does nothing	Any
P	Select pulse dialing	Yes – but does nothing	Any
A	Answer	Yes	UMTS
H	Hook control	Yes	UMTS
O	Return to online data state	Yes	UMTS
S0	Automatic answer	Yes	Any
S6	Pause before blind dialing	Yes – but does nothing	Any
S7	Connection completion timeout	Yes – but does nothing	Any
S8	Comma dial modifier time	Yes – but does nothing	Any
S10	Automatic connect delay	Yes – but does nothing	Any
S30	Setting of inactive timer value for disconnection when no user data is exchanged during a data call	Yes – but does nothing	Any
L	Monitor speaker loudness	Yes – but does nothing	Any
M	Monitor speaker mode	Yes – but does nothing	Any
+DS	Data compression	Yes	Any
+DR	Data compression reporting	Yes	Any
W	Enables/disables the display of extended result code in response to a data call	Yes	Any
+VTS	DTMF tone generations	Yes	Any
+VTD	DTMF tone duration	Yes	Any

6 NETWORK SERVICE RELATED COMMANDS

All these commands are specified in 3GPP TS27.007 [1].

Command	Description	Supported	Applicable Mode
+CNUM	Subscriber Number	Yes	UMTS
+CREG	Network registration	Yes	UMTS
+COPS	Operator selection	Yes	UMTS
+CLCK	Facility lock	Yes	UMTS
+CPWD	Change password	Yes	UMTS
+CLIP	Calling line identification presentation	Yes	UMTS
+CLIR	Calling line identification restriction	Yes	UMTS
+COLP	Connected line identification presentation	Yes	UMTS
+CDIP	Called line identification presentation	Yes	UMTS
+CCUG	Closed user group	Yes	UMTS
+CCFC	Call Forwarding Number and Conditions	Yes	UMTS
+CCWA	Call waiting	Yes	UMTS
+CHLD	Call related supplementary services	Yes	UMTS
+CTFR	Call deflection	Yes	UMTS
+CUSD	Unstructured supplementary service data	Yes	UMTS
+CAOC	Advice of charge	Yes	UMTS
+CSSN	Supplementary service notifications	Yes	UMTS
+CLCC	List current calls	Yes	UMTS
+CPOL	Preferred operator list	Yes	UMTS
+COPN	Reads operator names	Yes	UMTS
+CPLS	Selection of preferred PLMN list	Yes	UMTS

7 MOBILE EQUIPMENT COMMANDS

All these commands are specified in 3GPP TS27.007 [1].

Command	Description	Supported	Applicable Mode
+CPAS	Phone activity status	Yes	UMTS
+CFUN	Set phone functionality	Yes	UMTS
+CPIN	Enter PIN	Yes	UMTS
+CBC	Battery charge	Yes – but not applicable	UMTS
+CSQ	Signal quality	Yes	Any
+CMEC	Mobile equipment control code	Yes – but not applicable	UMTS
+CKPD	Keypad control	No	UMTS
+CPBS	Select phone book memory storage	Yes	UMTS
+CPBR	Read phone book entries	Yes	UMTS
+CPBF	Find phone book entries	Yes	UMTS
+CPBW	Write phone book entry	Yes	UMTS
+CCLK	Clock	Yes – partially as UE has no RTC	UMTS
+CSIM	Generic SIM access	Yes	UMTS
+CRSM	Restricted SIM access	Yes - partially	UMTS
+CACM	Accumulated call meter	No	UMTS
+CAMM	Accumulated call meter maximum	No	UMTS
+CPUC	Price per unit and currency table	No	UMTS
+CLAC	Lists all available AT commands	Yes	UMTS
+CTZU	Automatic time zone update	Yes	UMTS
+CTZR	Time zone reporting	Yes	UMTS
+CLVL	Loudspeaker volume level	Yes	UMTS
+CMUT	Mute control	Yes	UMTS
+CMEE	Report mobile equipment error	Yes	UMTS

8 UMTS PACKET DOMAIN COMMANDS

All these commands are specified in 3GPP TS27.007 [1].

Command	Description	Supported	Applicable Mode
+CGDCONT	Define PDP context	Yes	UMTS
+CGDSCON	Define Secondary PDP context	No	UMTS
+CGTFT	Traffic flow template	No	UMTS
+CGQREQ	Requested quality of service profile	Yes	UMTS
+CGQMIN	Minimum acceptable quality of service profile	Yes – but does nothing	UMTS
+CGEQREQ	Requested 3G quality of service profile	Yes	UMTS
+CGEQMIN	Minimum acceptable 3G quality of service profile	Yes – but does nothing	UMTS
+CGATT	PS attach or detach	Yes	UMTS
+CGACT	PDP context activate or deactivate	Yes	UMTS
+CGCMOD	PDP context modify	No	UMTS
+CGDATA	Enters data state	No	UMTS
+CGPADDR	Show PDP address	No	UMTS
+CGCLASS	GPRS mobile station class (GPRS only)	Yes	UMTS
+CGEREP	Packet domain event reporting	Yes – but does nothing	UMTS
+CGREG	GPRS network registration status	Yes	UMTS
+CGSMS	Select service for MO SMS messages	Yes	UMTS

9 UMTS SMS COMMANDS

All these commands are specified in 3GPP TS27.005 [2].

Command	Description	Supported
+CSMS	Select message service	Yes
+CPMS	Preferred message storage	Yes
+CMGF	Message format	Yes
+CSCA	Service center address	Yes
+CSMP	Set text mode parameters	Yes
+CSDH	Show text mode parameters	Yes
+CSCB	Select cell broadcast message types	Yes
+CNMI	New message indications to TE	Yes
+CMGL	List message	Yes
+CMGR	Read message	Yes
+CNMA	New message acknowledge to ME/TA	Yes
+CMGS	Send message	Yes
+CMSS	Send message from storage	Yes
+CMGW	Write message to memory	Yes
+CMGD	Delete message	Yes
+CMGC	Send command	No
+CMMS	Indicates more messages to send	No
+CSAS	Saves the settings of +CSCA, +CSMP, +CSCB into NV	No
+CRES	Restores the settings of +CSCA, +CSMP, +CSCB into NV	No

10 CDMA SMS COMMANDS

These commands are derived from the UMTS 3GPP TS27.005[2] spec.

Command	Description	Supported
\$QCSMS	Select message service	No
\$QCPMS	Preferred message storage	Yes
\$QCMGF	Message format	Yes
\$QCSCA	Service center address	No
\$QCSMP	Set text/PDU mode parameters	Yes
\$QCSDH	Show text mode parameters	No
\$QCSCB	Select cell broadcast message types	Yes
\$QCNMI	New message indications to TE	Yes
\$QCMGL	List message	Yes
\$QCMGR	Read message	Yes
\$QCNMA	New message acknowledge to ME/TA	No
\$QCMGS	Send message	Yes
\$QCMSS	Send message from storage	Yes
\$QCMGW	Write message to memory	Yes
\$QCMGD	Delete message	Yes
\$QCMGC	Send command	No
\$QCMMS	Indicates more messages to send	No
\$QCSAS	Saves the settings of +CSCA, +CSMP, +CSCB into NV	No
\$QCRES	Restores the settings of +CSCA, +CSMP, +CSCB into NV	No

10.1 Send SMS (\$QCMGS)

Command	Possible Response(s)
\$QCMGS=<da>[,<toda>]<CR><LF><text><CTRL-Z> (Text mode, \$QCMGF=1)	If sending successful: +CMGS: <mr>
\$QCMGS=<da>,<length>,<encoding>[,<prio>[,<privacy>[,<alertmode>[,<language>[,<replyoption>[,<callbackNr>[,<displayMode>]]]]]]<CR><LF><data><CTRL-Z> (PDU mode, \$QCMGF=0)	if sending fails: +CMS ERROR: <err>
\$QCMGS=?	\$QCMGS: ,(0-255),(0-9),(0-3),(0-3),(0-3),(0-7),(0-7),,<0-3>

Description

This command sends an SMS in text mode or in pdu mode.
Note, with \$QCSMP some other parameters can be set.

Defined Values

<da>:..... Destination address between double quotes.

<toda>:..... Type of address (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

<length>:..... Nr of encoded characters in the pdu (eg pdu 4142 has length 2: (AB))

<encoding>:

Value	Description
0	Octet unspecified (8 bit)
1	IS91EP (varies)
2	ASCII (7 bit)
3	IA5 (7 bit)
4	Unicode (16 bit)
5	Shift JIS (8 or 16bit)
6	Korean (8 or 16 bit)
7	Latin Hebrew (8 bit)
8	Latin (8 bit)
9	GSM 7 bit default (7 bit)

Remark, the 7 bit encoding (except the GSM 7 bit default) are encoded following the CDMA 7 bit packing (different from UMTS)

<prio>:

Value	Description
0	Normal
1	Interactive
2	Urgent
3	Emergency

<privacy>:

Value	Description
0	Normal
1	Restricted
2	Confidential
3	Secret

<alertmode>:

Value	Description
0	Default (preIS637A : OFF)
1	Low prio (preIS637A : ON)
2	Medium prio
3	High prio

<language>:

Value	Description
0	Unspecified
1	English
2	French
3	Spanish
4	Japanese
5	Korean
6	Chinese
7	Hebrew

<replyoption>:

Value	Description
0	No acknowledge requested
1	User acknowledge requested
2	Delivery acknowledge requested
3	Delivery & User acknowledge requested
4	Read acknowledge requested
5	Read & User acknowledge requested
6	Read & Delivery acknowledge requested
7	Read & Delivery & User acknowledge requested

< callbackNr >: .. Number to be dialled in reply to a received SMS message

<displayMode>:

Value	Description
0	Immediately
1	Mobile default setting
2	User Invoke
3	Reserved

<data>: Hexadecimal values (two digits per bytes) without 0x. Eg 4142 for 'AB'

<text>: Text message

<mr>:..... Message Reference number.

10.2 Read SMS (\$QCMGR)

Command	Possible Response(s)
\$QCMGR=<index>	<p>if PDU mode (\$QCMGF=0) and command successful: \$QCMGR: <stat>,<oa>,<scts>,<tooa>,
<length>,<encoding><prio>,<privacy>,<alertmode>,
<language>,<teleservice>,<replyoption>,< callbackNr >,
<displayMode>,<nummsg>,<servicecat>,<msgID><CR>
<LF><data></p> <p>If TEXT mode (\$QCMGF=1) and command successful: \$QCMGR: <stat>,<oa>,<scts>,<tooa>,
<length><CR><LF><text></p> <p>otherwise: +CMS ERROR: <err> if reading fails: +CMS ERROR: <err></p>
\$QCMGR=?	OK

Description

This command reads an SMS in text mode or in pdu mode.

Defined Values

<stat>: Status of message (eg "REC UNREAD")

<oa>:..... Originating address between quotes.

<scts>:..... Service Center TimeStamp between quotes

<tooa>:..... Type of originating address (when first character of <oa> is + (IRA 43) default is 145, otherwise default is 129)

<length>: See Send SMS (\$QCMGS)

<encoding>: See Send SMS (\$QCMGS)

<prio>: See Send SMS (\$QCMGS)

<privacy>: See Send SMS (\$QCMGS)

<alertmode>: See Send SMS (\$QCMGS)

<language>: See Send SMS (\$QCMGS)

<teleservice>: ... Note setting the teleservice with sending is done via \$QCSMP

Value	Description
4096	Embedded IS91 SMS
4097	Page
4098	Short message (default)
4099	Voice Mail Notification (<nummsg> is valid)
4100	WAP
4101	Enhanced Messaging / EMS
4102	Srv Category Programming
4103	Card App Toolkit
327680	Broadcast message (<servicecat> is valid)

<replyopt>: ... See Send SMS (\$QCMGS)

<callbackNr >: .. See Send SMS (\$QCMGS)

<displayMode>: See Send SMS (\$QCMGS)

<nummsg>: Number of voice mail messages.
Note: This number is only valid if Teleservice equals 4099

<servicecat>: Broadcast service category (See table 9.3.1-1 of [3])
Note: This number is only valid if Teleservice equals 327680

Value	Description
0	Unknown or unspecified
1	Emergency Broadcasts
2	Administrative
3	Maintenance
4	General News – Local
5	General News – Regional
6	General News – National
7	General News – International
8	Business/Financial News – Local
9	Business/Financial News – Regional
10	Business/Financial News – National
11	Business/Financial News – International
12	Sports News – Local
13	Sports News – Regional
14	Sports News – National
15	Sports News – International
16	Entertainment News – Local
17	Entertainment News – Regional
18	Entertainment News – National
19	Entertainment News – International
20	Local Weather
21	Area Traffic Reports
22	Local Airport Flight Schedules
23	Restaurants
24	Lodgings
25	Retail Directory

26	Advertisements
27	Stock Quotes
28	Employment Opportunities
29	Medical/Health/Hospitals
30	Technology News
31	Multi-category
32	Card Application Toolkit Protocol Teleservice(CATPT)
33..63	KDDI Corporation
64..4095	Reserved for standard service categories
4096	CMAS - Presidential-Level Alert
4097	CMAS - Extreme Threat to Life and Property
4098	CMAS - Severe Threat to Life and Property
4099	CMAS - AMBER (Child Abduction Emergency)
4100	CMAS - Test Message
4101..4351	CMAS – RESERVED
4352.. 32768	Reserved for standard service categories
32769.. 32831	KDDI Corporation
32832.. 49152	Reserved
49153.. 49215	KDDI Corporation
49216.. 65535	Reserved

<msgid>: Identification Nr of the message.
Messages that must be concatenated will have the same ID

<data>: See Send SMS (\$QCMGS)

<text>: See Send SMS (\$QCMGS)

10.3 List SMS (\$QCMGL)

Command	Possible Response(s)
\$QCMGL[=<stat>]	<p>if PDU mode (\$QCMGF=0) and command successful: \$QCMGL: <stat>,<oa>,<scts>,<toa>,<length>,<encoding><prio>,<privacy>,<alertmode>,<language>,<teleservice>,<replyoption>,<callbackNr >,<displayMode>,<nummsg>,<servicecat>,<msgID><CR><LF><data>[<CR><LF> \$QCMGL: <stat>,... ...]</p> <p>If TEXT mode (\$QCMGF=1) and command successful: \$QCMGR: <stat>,<oa>,<scts>,<toa>,<length><CR><LF><text>>[<CR><LF> \$QCMGL: <stat>,... ...]</p> <p>otherwise: +CMS ERROR: <err> if reading fails: +CMS ERROR: <err></p>
\$QCMGL=?	+CMGL: (list of supported <stat>)

Description

This command lists all SMS'es with the given stat in text mode or in PDU mode. It displays the same info as QCMGR does.

Eg:

\$QCMGL="ALL" will list all SMS'es.

\$QCMGL="REC UNREAD" will list all unread SMS'es.

Defined Values

For a list of defined values see Read SMS (\$QCMGR).

10.4 Set SMS parameters (\$QCSMP)

Command	Possible Response(s)
\$QCSMP=<teleservice>,<relValid>,<valid>,<relDef>,<def>	<p>OK</p> <p>Or</p> <p>ERROR</p>
\$QCSMP?	\$QCSMP: =<teleservice>,<relValid>,<valid>,<relDef>,<def>
\$QCSMP=?	OK

Description

This command sets some extra SMS parameters: teleservice, validity period and deferred delivery timestamp.

These commands are used in text and in PDU mode.

Defined Values

<teleservice>:

Value	Description
4096	Embedded IS91 SMS
4097	Page
4098	Short message (default)
4099	Voice Mail Notification
4100	WAP
4101	Enhanced Messaging / EMS
4102	Srv Category Programming

<relValid>:

Value	Description
0	Validity period is given as a relative timestamp
1	Validity period is given as a absolute timestamp
2	Validity period is not sent over the air (give eg.0 as <valid>) (default)

<valid>:..... Validity timestamp. After this the message can be discarded.

If relative: (<relValid> = 1): (Defined in 3GPP2 C.S0015)

Value	Description
0..143	(Value+1)*5 minutes
144..167	12 hours + ((value-143) * 30 minutes
168..196	(value – 166) days
197..244	(value -192) weeks
245	Indefinite
246	Immediate
247	Valid until mobile becomes inactive
248	Valid until registration area changes, discard if not registered

If absolute : (<relValid> = 0): (Defined in 3GPP2 C.S0015)
Time format is "yy/mm/dd,hh:mm:ss"

<relDef>:

Value	Description
0	Deferred delivery time is given as a relative timestamp
1	Deferred delivery time is given as a absolute timestamp
2	Deferred delivery time is not sent over the air (give eg.0 as <def>) (default)

<def>:..... Deferred delivery timestamp, to give the time of delivery
If relative: (<relDef> = 1): (Defined in 3GPP2 C.S0015)

Value	Description
0..143	(Value+1)*5 minutes
144..167	12 hours + ((value-143) * 30 minutes
168..196	(value – 166) days
197..244	(value -192) weeks
247	Deliver when mobile next becomes active

If absolute : (<defValid> = 0): (Defined in 3GPP2 C.S0015)
Time format is "yy/mm/dd,hh:mm:ss"

10.5 Select cell broadcast message types (\$QCSCB)

Command	Possible Response(s)
\$QCSCB=<mode>,<servicecatlist>	OK Or ERROR
\$QCSCB?	\$QCSCB: <mode>,<servicecat>
\$QCSCB=?	\$QCSCB: (0-1)

Description

This command selects which type of cell broadcast message are to be received.
Note that in order to set it, the third parameter of \$QCNMI (<bm>) must be different from 0.

Defined Values

<mode>:

Value	Description
0	Message type defined in <servicecat> are accepted
1	Message type defined in <servicecat> are NOT accepted

< servicecatlist >:List of comma separated values, one string (eg. "4097,4098")
See 10.2 Read SMS (\$QCMGR) for pre defined service categories.

10.6 New message indication (\$QCNMI)

Command	Possible Response(s)
\$QCNMI=[<mode>,<mt>,<bm>,<ds>,<bfr>]]	OK Or ERROR
\$QCNMI?	\$QCNMI: <mode>,<mt>,<bm>,<ds>,<bfr>
\$QCNMI=?	\$QCNMI: (0,1,2),(0,1,2,3,4),(0,1),(0,1,2),(0,1)

Description

This command selects how incoming messages are to be routed/displayed.

Defined Values

<mode>:

Value	Description
0	Buffer unsolicited result codes when <mt> is not 2.
1	Normal display of unsolicited result codes (default) (same as 2)
2	Normal display of unsolicited result codes (default) (same as 1)

<mt>:

Value	Description
0	No SMS-DELIVER indications are routed to the TE.
1	If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: \$QCMTI: <mem>,<index> Messages that are not saved (Wap push, flash, broadcast) will give index -1 (default)
2	SMS-DELIVERs are routed directly to the TE using unsolicited result code: \$QCMT:(see Unsolicited result codes for SMS) (same as 3)
3	SMS-DELIVERs are routed directly to the TE using unsolicited result code: \$QCMT:(see Unsolicited result codes for SMS) (same as 2)
4	Special mode, all incoming messages are saved in NV and no indication is given to user, so no unsolicited messages will be given

<bm>:

Value	Description
0	No Broadcast messages are displayed (default)
1	Broadcast messages are displayed using \$QCBM (see Unsolicited result codes for SMS)

<ds>:

Value	Description
0	No meaning, status report routing is not supported in CDMA
1	No meaning, status report routing is not supported in CDMA
2	No meaning, status report routing is not supported in CDMA (default)

<bfr>:

Value	Description
0	Buffer is flushed when mode is not 0. (default)
1	Buffer is cleared when mode is not 0.

10.7 Unsolicited result codes for SMS

Syntax of the unsolicited result codes when a message is received:

- When Second parameter (<mt>) of \$QCNMI equals to 1 (default)
\$QCMTI: <mem>,<index>
- When Second parameter (<mt>) of \$QCNMI equals to 2 and pdu mode (\$QCMGF=0):
\$QCMT:
<oa>,<scts>,<tooa>,<length>,<encoding><prio>,<privacy>,<alertmode>,<language>,<teleservice>,<replyoption>,<callbackNr>,<displayMode>,<nummsg>,<servicecat>,<msgID><CR><LF><data>
- When Second parameter (<mt>) of \$QCNMI equals to 2 and text mode (\$QCMGF=1):
\$QCMT: <oa>,<scts>,<tooa>,<length><CR><LF><text>
Note <data> is only displayed when it can be decoded (7bit ascii)
- When Second parameter (<mt>) of \$QCNMI equals to 2 and third parameter <bm> equals to 1 or 2 and pdu mode (\$QCMGF=0) and a broadcast message is received:
\$QCBM:
<oa>,<scts>,<tooa>,<length>,<encoding><prio>,<privacy>,<alertmode>,<language>,<teleservice>,<replyoption>,<callbackNr>,<displayMode>,<nummsg>,<servicecat>,<msgID><CR><LF><data>

Defined values

<mem>:

Value	Description
"BM"	Broadcast Message Storage
"ME"	ME Message Storage
"MT"	any of the storages associated with ME
"SM"	SIM message storage
"SR"	Status Report storage

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

For the definition of the other defined values, see Read SMS (\$QCMGR).

11 SYNCHRONOUS DATA MODE COMMANDS

These commands are specified in ITU-T V.80ter.

Command	Description	Supported	Applicable Mode
+ES	Enables the synchronous mode	Yes	Any
+ESA	Preferred message storage	Yes	UMTS

These commands are not tested and probably will not work over the USB interface.

12 OPTION PROPRIETARY GENERAL COMMANDS

These are commands added by Option to accomplish things that cannot be done via the standard AT commands that are available in both the GSM/GPRS/UMTS as the CDMA specifications. This list of proprietary commands will grow during the development of the module.

12.1 Hardware version “AT_OHWV”

Command	Possible Response(s)
OHWV	OHWV: Hardware Version

Description

This command returns hardware version.

12.2 Power Amplifier Temperature “AT_OPATEMP”

Command	Possible Response(s)
AT_OPATEMP?	_OPATEMP: <n>, <overtemp>, <patemp>
AT_OPATEMP=?	_OPATEMP: (0-1)
AT_OPATEMP=[<n>]	_OPATEMP: (list of supported <n>s)

Description

This commands shows the current temperature measured near the power amplifiers. A write of n=1 enables an unsolicited result when the temperature changes with 1 degree Celsius. When the PA temperature exceeded a preset safe value the unsolicited result is shown regardless of this setting.

Syntax of the unsolicited result: _OPATEMP: <overtemp>, <patemp>

Defined values

<overtemp>:

Value	Description
0	PA temperature has not exceeded safety value.
1	PA temperature has exceeded safety after which the unit was put in low power mode (+CFUN=0). Will change back to 0 after a +CFUN=1.

<patemp>: Current temperature measured near the power amplifiers in degrees Celsius (10-100).

Possible customization

It's possible to customize the unsolicited output of this command. This will allow for two thresholds instead of one for over temperature

This changes the syntax of the unsolicited to the following:

_OPATEMP: <n>, <data_overtemp>, <voice_overtemp>, <patemp>

<data_overtemp>:

Value	Description
0	PA temperature has not exceeded data safety value.
1	PA temperature for data calls has been exceeded. Any active data calls will have been disconnected. Attempting to make a new data call with ATD will result in CME ERROR: 631

<data_overtemp>:

Value	Description
0	PA temperature has not exceeded data safety value.
1	PA temperature for voice calls has been exceeded. Any active voice calls will have been disconnected. Attempting to make a new voice call with AT+CDV will result in CME ERROR: 631

Note:

Upon disconnecting an active data or voice call, an unsolicited result code will be sent over the AT port with the following format:

For Data:

_OPATEMP: Data Call Abort <patemp>

For Voice:

_OPATEMP: Voice Call Abort <patemp>

12.3 W_Disable State INDication “AT_OWIND”

Command	Possible Response(s)
AT_OWIND=<wind>	OK
AT_OWIND?	_OWIND: <wind>,<wind_state>
AT_OWIND=?	_OWIND: (list of supported <wind>s)

Description

Set command allows the enabling or disabling of the unsolicited “_OWSTAT: <wind_state>” result code, which reports a W_DISABLE signal state change. The result code is disabled by default. The <wind> value is not stored in NV-RAM, so when required, the result code needs to be enabled at each power cycle.

When enabled, an unsolicited “_OWSTAT” indication will be generated each time the W_DISABLE signal state changes.

Read command returns the current <wind> setting, as well as the current W_DISABLE state. Test command returns the range of supported <wind>s.

Defined values

<wind>:..... unsolicited result code state

Value	Description
0	_OWSTAT indication disabled
1	_OWSTAT indication enabled

<wind_state>: ... state of the W_DISABLE signal

Value	Description
0	W_DISABLE signal active low
1	W_DISABLE signal active high

12.4 Aircraft mode “AT_OAIR”

Command	Possible response(s)
_OAIR=<aircraft mode>	OK
_OAIR?	_OAIR: <aircraft mode>
_OAIR=?	_OAIR: (list of supported <aircraft mode>s)

Description

Allows the user to switch the RF mode of the GSM/WCDMA (protocol stack), or query its current state. It actually does the same for the GSM/WCDMA part as AT+CFUN does for the values 0 and 1.

After every reboot of the card, this mode will be used for both GSM/WCDMA (protocol stack).

Defined Values

<aircraft mode>:

Value	Description
0,2	RF stack on (cfr. “AT+CFUN=1”)
1,3	RF stack off (cfr. ”AT+CFUN=0”)

12.5 Request Product Serial Number “AT_OGSN”

Command	Possible response(s)
_OGSN	<serial number> OK
_OGSN?	ERROR
_OGSN=?	OK
_OGSN=<argument>	ERROR

Description

Allows the user to read the UE’s Product Serial Number.

Note: this is the exact same functionality as the AT+CGSN command as described in Chapter 4 of this document.

12.6 Card ID “AT_OID”

Command	Possible response(s)
_OID	<key>: <value> ...
_OID?	ERROR
_OID=?	OK

Description

This command reads out the ADC so that the various keys which define a card can be obtained.

Defined values

Key	Value
SN	Serial Number (same as with AT+CGSN)
HWV	Hardware Version (same as with AT_OHWV)
FWV	Firmware Version (same as with ATI)
BTV	Boot Code Version (same as in _OBTV except when FULL BUILD)
HA	Reserved
HI	Reserved
FBT	Firmware Build Time, e.g.: FBT: (Date: Oct 25 2004, Time: 16:28:21)
PMN	Product Marketing Name

12.7 Restore Factory Defaults “AT_OFACDFT”

Command	Possible response(s)
_OFACDFT=<n>	OK ERROR

Description

Will schedule or execute the requested factory default type. After using the command, a manual reset is needed for the settings to be deleted.

Defined values

<n>:

Value	Description
1	Delete customer’s settings (except otasp settings for cdma phone)
2	Delete customer’s settings (only cdma keys kept for cdma phone)
8	Delete customer’s settings (only akey kept)

12.8 List Slot Image Information “AT_OIMGLST”

Command	Possible response(s)
_OIMGLST=<n>	ERROR
_OIMGLST?	_OIMGLST: <image_type> Type: <type> UniqueID: <unique_id> BuildID: <build_id> Tech: <tech> OK
_OIMGLST=?	ERROR

Description

This command will list information about the 2 Flash Slots (when filled).
Per <image_type>, all applicable slots will be listed by type, uid, build-id and tech.

Defined values

<image_type>:

Value	Description
UMTS Image	2G/3G technology image
CDMA Image	1.x/EVDO technology image

<type>:

Value	Description
OSBL	OSBL slot
AMSS	AMSS slot
Cust	Customization Slot

<uniqueID>:..... numerical value

<BuildID>: string value

<tech>

Value	Description
UMTS	2G/3G technology
CDMA	1.x/EVDO

12.9 Activate Slot Technology “AT_OIMGACT”

Command	Possible response(s)
_OIMGACT=<tech>	OK ERROR
_OIMGACT?	_OIMGACT: Type: <type> UniqueID: <unique_id> BuildID: <build_id> Tech: <tech> OK
_OIMGACT=?	ERROR

Description

Will active a technology or will list the current active running slot. If a technology is activated, the device will perform a reset.

All applicable slots will listed by type, uid, build-id and tech.

Defined values

<type>:

Value	Description
OSBL	OSBL slot
AMSS	AMSS slot
Cust	Customization Slot

<uniqueID>:..... numerical value

<BuildID>: string value

<tech>:

Value	Description
UMTS	2G/3G technology
CDMA	1.x/EVDO

12.10 Call status info indication “AT_OLCC”

Command	Possible Response(s)
AT_OLCC?	_OLCC: <n>
AT_OLCC=?	_OLCC: (0-1)
AT_OLCC=[<n>]	OK

Description

This command enables/disables the unsolicited result code “_OLCC: <+CLCC parameters>”.

Defined values

<n>:

Value	Description
0	Turns off unsolicited result code _OLCC: <+CLCC parameters>
1	Turns on unsolicited result code _OLCC: <+CLCC parameters>

<+CLCC parameters>:

See 3GPP 27.007 AT+CLCC

Additionally to the <stat> parameters described in 27.007:

<stat>:

Value	Description
30	Call has been ended/torn down

13 OPTION PROPRIETARY UMTS COMMANDS

These are commands added by Option to accomplish things that cannot be done via the standard AT commands that are available in the GSM/GPRS/UMTS specifications. This list of proprietary commands will grow during the development of the module.

13.1 SECURITY “AT_OSEC”

Command	Possible Response(s)
_OSEC=[<sec>]	OK
_OSEC?	_OSEC: <sec>
_OSEC=?	_OSEC: (list of supported <sec>s)

Description

This command sets the 3G RRC security setting. Please note that a hard reset of the card is required before the setting will take effect.

Defined values

<sec>:

Value	Description
0	None
1	Integrity
2	Ciphering
3	Fake Security
4	Integrity and Ciphering

13.2 Background Layer Status “AT_OBLS”

Command	Possible Response(s)
_OBLS	_OBLS: <sim>,<lm>,<sms>

Description

This command returns the status of the SIM, LM and SM procedures in the Background Layer.

Defined Values

<sim>:

Value	Description
0	The SIM is not ready to accept SIM unlock commands (+CPIN)
1	The SIM is ready to accept SIM unlock commands (+CPIN)
2	The SIM has been removed or is faulty

<lm>:

Value	Description
0	List management is not ready, i.e. the phonebooks and recent calls lists cannot be accessed
1	List management is ready, phonebooks can be accessed

<sms>:

Value	Description
0	Short message services are not ready; short messages cannot be sent nor read and written from the SIM
1	Short message services are ready

13.3 Preferred SYStem “AT_OPSYS”

Command	Possible Response(s)
_OPSYS=[<mode>[,<domain>]]	OK
_OPSYS?	_OPSYS: <mode>,<domain>
_OPSYS=?	_OPSYS: (0-3),(0-4)

Description

This command changes the preferred system, GSM/WCDMA, the acquisition order and the service domain preference PS/CS.

Defined values

<mode>:

Value	Description
0	GSM only
1	WDMA only
2	GSM first
3	WCDMA first

<domain>:

Value	Description
0	Acquire only circuit-switched systems
1	Acquire only packet-switched systems
2	Acquire circuit-and/or packet-switched systems
3	Any domain will do; no preference
4	To be used by clients who do not want to change the service domain

13.4 Selected SYStem “AT_OSSYS”

Command	Possible Response(s)
_OSSYS=[<n>]	OK
_OSSYS?	_OSSYS: <n>,<AcT>
_OSSYS=?	_OSSYS: (0-1),(0,2)

Description

This command enables/disables the unsolicited result code “_OSSYSI: <AcT>”

Defined values

<n>:

Value	Description
0	Turns off unsolicited result code “_OSSYSI: <AcT>”
1	Turns on unsolicited result code “_OSSYSI: <AcT>”

<AcT>:

Value	Description
0	GSM
2	UTRAN
3	No service

13.5 Preferred Band Mode “AT_OPBM”

Command	Possible response(s)
_OPBM=<band>,<n>	OK
_OPBM=?	_OPBM: (list of supported <band>s)
_OPBM?	<band>: <n><CR><LF> [<band>: <n><CR><LF> [...]]

Description

This command is used to disable/enable specific frequency bands.

Defined Values

<band>:

Value	Description
“ANY”	any band
“EGSM”	EGSM (900MHz) band
“DCS”	DCS (1800MHz) band
“PCS”	PCS (1900MHz) band
“G850”	GSM 850MHz band
“U2100”	WCDMA 2100MHz band (Band Class I)
“U1700”	WCDMA 3GPP UMTS1800 band (Band Class III)
“U1900”	WCDMA 3GPP UMTS1900 band (Band Class II)
“U850”	WCDMA 3GPP UMTS850 band (Band Class V)

<n>:

Value	Description
0	disable
1	enable

13.6 Prioritized Operator Name Indication “AT_OPONI”

Command	Possible Response(s)
_OPONI=[<n>]	OK
_OPONI?	_OPONI: <n>
_OPONI=?	_OPONI: (0-1)

Description

This command is obsolete.

This command enables/disables the unsolicited result code “_OPON: <cs>,<oper>,<src>”.

Defined values

<n>:

Value	Description
0	Turns off unsolicited result code “_OPON: <cs>,<oper>,<src>”
1	Turns on unsolicited result code “_OPON: <cs>,<oper>,<src>”

<cs>:

Value	Description
1	8-bit code

<oper>: network operator name string

<src>:

Value	Description
3	SE13 list: <oper> presented in hex format
4	Actual MCC/MNC: <oper> presented by MCCMNC in decimal format

13.7 Prioritized Operator Name “AT_OPON”

Command	Possible Response(s)
_OPON?	_OPON: <cs>,<oper>,<src>
_OPON=?	OK

Description

This command is obsolete.

This command reads the "REAL" network name of the currently registered network.

Defined values

<cs>:

Value	Description
1	8-bit code

<oper>: network operator name string

<src>:

Value	Description
3	SE13 list: <oper> presented in hex format
4	Actual MCC/MNC: <oper> presented by MCCMNC in decimal format

13.8 Cell Type Indicator “AT_OCTI”

Command	Possible Response(s)
_OCTI=[<mode>]	OK
_OCTI?	_OCTI: <mode>,<celltype>
_OCTI=?	_OCTI: (list)

Description

This command is used to get the Cell Type (GSM/GPRS/EDGE) and to enable the unsolicited result code _OCTI: <celltype> that is sent whenever the cell type changes.

Defined values

<mode>:

Value	Description
0	Disable sending of the unsolicited result code
1	Enable sending of the unsolicited result code

<celltype>:

Value	Description
0	Unknown
1	GSM
2	GPRS
3	EDGE

13.9 HSDPA Call In Progress “AT_OHCIP”

Command	Possible Response(s)
_OHCIP	_OHCIP: <status>
_OHCIP?	_OHCIP: <status>
_OHCIP=?	OK

Description

This command can be used to see whether a HSDPA call is in progress. <status> will be set to 1 only when a HSDPA transaction is in progress (i.e. when a HS-DSCH transport channel is active), not when merely the cell supports HSDPA.. The reason that it is not possible to determine whether the serving cell supports HSDPA is because the System Information messages broadcast by the cell don't convey this information.

Defined values

<status>:

Value	Description
0	HSDPA call not in progress
1	HSDPA call in progress

13.10 Unsolicited HSDPA Call In Progress “AT_OUHCIP”

Command	Possible Response(s)
_OUHCIP=[<mode>]	OK
_OUHCIP?	_OUHCIP: <mode>,<status>
_OUHCIP=?	_OUHCIP: (0,1)

Description

This is a variant of the `_OHCIP` command which will generate an unsolicited message `_OUHCIP: <status>` when the HSDPA call status changes . <status> will be set to 1 only when a HSDPA transaction is in progress (i.e. when a HS-DSCH transport channel is active), not when merely the cell supports HSDPA.. The reason that it is not possible to determine whether the serving cell supports HSDPA is because the System Information messages broadcast by the cell don't convey this information.

Defined values

<mode>:

Value	Description
0	Turn unsolicited response off
1	Turn unsolicited response on

<status>:

Value	Description
0	HSDPA call not in progress
1	HSDPA call in progress

13.11 Unsolicited WCDMA Cell Type Indicator “AT_OUWCTI”

Command	Possible Response(s)
AT_OUWCTI?	_OUWCTI: <u_ena>,<WCDMA Cell Type>
AT_OUWCTI=<u_ena>	OK
AT_OUWCTI=?	ERROR

Description

This is a variant of the `_OUWCTI` command which will generate an unsolicited message `_OUWCTI: <WCDMA Cell Type>` when the cell type changes (if enabled via <u_ena>).

Defined values

<u_ena>:

Value	Description
0	Disable unsolicited _OUWCTI message response.
1	Enable unsolicited _OUWCTI message response.

<WCDMA Cell Type>:

Value	Description
0	Non-WCDMA cell type or not registered to cell
1	WCDMA only
2	WCDMA + HSDPA
3	WCDMA + HSUPA
4	WCDMA + HSDPA + HSUPA

13.12 WCDMA Cell Type Indicator “AT_OWCTI”

Command	Possible Response(s)
AT_OWCTI?	_OWCTI: <WCDMA Cell Type>

Description

Query command returns the current cell type if broadcasted by a cell in SIB 5 if compliant with 3GPP Rel. 6.

Defined values

<WCDMA cell type>:

Value	Description
0	Non-WCDMA cell type or not registered to cell
1	WCDMA only
2	WCDMA + HSDPA
3	WCDMA + HSUPA
4	WCDMA + HSDPA + HSUPA

13.13 Get ENS PLMN Mode “AT+PACSP”

Command	Possible Response(s)
AT+PACSP AT+PACSP?	<p>If ENS not enabled (nv item): +CME ERROR: operation not allowed:</p> <p>If ENS enabled but no PIN entered yet: +CME ERROR: SIM busy</p> <p>Else: +PACSP: <PLMN mode> OK</p>

Description

This command can be used to read the PLMN Mode Bit of the CSP file (CPHS), provided that ENS is enabled.

Defined values

<PLMN mode>:

Value	Description
0	PLMN mode bit equals 0
1	PLMN mode bit equals 1

13.14 Show HPLMN Operator Name “AT_OSIMOP”

Command	Possible Response(s)
_OSIMOP	_OSIMOP: “<long_operator_name>”, “<short_operator_name>”, “<MCC_MNC>” +CME ERROR: <err>

Description

This command displays the HPLMN operator name in long and short alphanumeric format, as well as the MCC/MNC combination, provided that the HPLMN is listed in the UCS2 or SE13 list internal operator list. If the HPLMN is not found, only the <MCC_MNC> is returned.

Defined values

<long_operator_name>:(string type)

HPLMN operator name in long alphanumeric format. String character set is coded according to the AT+CSCS setting. If the character set is <UCS2>, and the operator name is listed in the internal UCS2 table, then the string will be presented in UCS2 characters; if the HPLMN is not in the UCS2 list, then the SE13 presentation will be used;

<short_operator_name>:(string type)

HPLMN operator name in short alphanumeric format. String character set is coded according to the AT+CSCS setting. If the character set is <UCS2>, and the operator name is listed in the internal UCS2 table, then the string will be presented in UCS2 characters; if the HPLMN is not in the UCS2 list, then the SE13 presentation will be used;

<MCC_MNC>:(numeric type)

MCC and MNC of HPLMN, presented in IRA characters converted from BCD. Hence, the number has structure: (country code digit 1)(country code digit 2) (country code digit 3)(network code digit 1)(network code digit 2)[(network code digit 3)].

13.15 Unsolicited Signal Quality Indication “AT_OSQI”

Command	Possible Response(s)
_OSQI=<n>	+CME ERROR: <err>
_OSQI?	_OSQI: <n>
_OSQI=?	_OSQI: (list of supported <n>s)

Description

This command controls sending of the unsolicited result code _OSIQQ which is sent when a significant change (more than 10 dBm) in received signal strength.

_OSIQQ syntax:

_OSIQQ: <rss>,<ber>

Defined Values

<n>:

Value	Description
0	Disable sending of _OSIGQ unsolicited result code
1	Enable sending of _OSIGQ unsolicited result code

<rssi>:

Value	Description
0	-125 dBm or less
1	-122 dBm
2...30	-121...-75 dBm
31	-75 dBm or greater
99	not known or not detectable

<ber>:.....0 to 7 as RXQUAL values defined in GSM 05.08 section 8.2.4

13.16 Indicate signal strength for WCDMA “AT_OEANT”

Command	Possible Response(s)
_OEANT	_OEANT: <n>
_OEANT?	_OEANT: <m>
_OEANT=<m>	OK

Description

OEANT implements an indication of signal strength depending on RSCP.

Defined values

<n>:

Value	Description
0	Not in coverage
1	Very weak signal
2	Weak signal
3	Normal signal
4	Strong signal
5	Very strong signal

<m>:

Value	Description
0	Disable sending of “_OEANT” unsolicited result code
1	Enable sending of “_OEANT” unsolicited result code

The unsolicited and query response from OEANT are in the form of: `_OEANT: <n>`

The number of bars is calculated based on certain RSCP THRESHOLDS (A)

6 values (0-5) are defined:

Antenna	RSCP[dBm]
5	RSCP <=A0
4	A0 < RSCP <=A1
3	A1 < RSCP <= A2
2	A2 < RSCP <=A3
1	A3 < RSCP
0	Out of Service

13.17 Enable/Disable CHAP “AT_OCHAP”

Command	Possible Response(s)
<code>_OCHAP=<sec></code>	OK
<code>_OCHAP?</code>	<code>_OCHAP: <sec></code>
<code>_OCHAP=?</code>	<code>_OCHAP: (0-1)</code>

Description

This command enables or disables CHAP Protocol security setting during activation of a PDP context. The value is stored in NV. The default state is enabled.

Note that this command only affects PDP contexts activate via Windows Dial-Up.

Defined values

`<sec>`:

Value	Description
0	Disabled
1	Enabled

13.18 Disable NBNS Info “AT_ONBNS”

Command	Possible Response(s)
<code>AT_ONBNS=<disable nbns></code>	OK
<code>AT_ONBNS?</code>	<code>_ONBNS: <disable nbns></code>
<code>AT_ONBNS=?</code>	<code>_ONBNS: (0,1)</code>

Description

Set command is used to modify the ‘OSKNV_DISABLE_NBNS’ NV-item, which is used to control the sending of NBNS/WINS information in the PDP context activation request.

Read command returns the current status, test command returns the range of supported values.

Any change will be used when making the next PDP context activation after a reboot.

Defined values

<disable nbns>:

Value	Description
0	NBNS/WINS enabled (i.e. NBNS info included in PDP context activation)
1	NBNS/WINS disabled (i.e. NBNS info not included in PDP context activation)

13.19 Network Call “AT_OWANCALL”

Command	Possible Response(s)
AT_OWANCALL=<c>,<s>,<u>	OK
AT_OWANCALL?	_OWANCALL: <c>, <s>, <u>

Description

This commands starts or stops a network call for a specific context. There’s also an option to enable unsolicited notification of state changes in the call state of that context.

Example: To set up a call on context 1 with unsolicited notifications enabled.

AT_OWANCALL=1,1,1 (<- set up call)
OK

_OWANCALL: 1, 1 (<- call is up now)

AT_OWANCALL=1,0,1 (<- tear down call)
OK

_OWANCALL: 1, 0 (<- call has torn down)

Defined values

<c>: The context corresponding to the cgdcont id.

<s>: Desired state.

Value	Description
0	Disconnect
1	Connected
2	Call Failed (only available at query command)
3	Connection failed

<u>: unsolicited notifications of state changes for that context.
If enabled, the card will put unsolicited notifications to the NDIS port of the format: _OWANCALL: <c>,<s>

Value	Description
0	Disable
1	Enable

13.20 Network Data “AT_OWANDATA”

Command	Possible Response(s)
AT_OWANDATA=<c>	_OWANDATA: <c>, <ip>, <gw>, <dns1>, <dns2>, <nbns1>, <nbns2>, <csp> OK
AT_OWANDATA?	_OWANDATA: <c>, <ip>, <gw>, <dns1>, <dns2>, <nbns1>, <nbns2>, <csp> ... OK

Description

This command is used with an active call (set up using AT_OWANCALL) to get the IP details used for configuring the network interface.

The write command will just look up the IP details for that specific context and return nothing if the context is not active.

The query command will loop through all the contexts and display the IP details for the ones who's context is active.

Defined values

<c>: The context corresponding to the cgdcont id.
 <ip>: IP address
 <gw>: Gateway address
 <dns1>: First DNS server
 <dns2>: Second DNS server
 <nbns1>: First NBNS server
 <nbns2>: Second NBNS server
 <csp>: Connection Speed

13.21 WWAN Network Errors “AT_OWANNWERROR”

Command	Possible Response(s)
_OWANNWERROR?	_OWANNWERROR: <nwErrRegistration>,<nwErrAttach>,<nwErrActivation>
_OWANNWERROR=?	OK

Description

This command can be used to query network error codes, which are used by the driver to identify and forward network errors to the Microsoft WWAN driver model. Three types of possible errors are returned by this command:

- <nwErrRegistration>: Registration reject and network originated deregistration errors (eg “Illegal ME”, “Congestion”,...);
- <nwErrAttach>: Attach reject and NW originated detach errors (eg “GPRS Services Not Allowed”, “No suitable Cells”,...);
- <nwErrActivation>: PDP Context activation rejection and NW originated context deactivation errors (eg “Missing or unknown APN”,...);

All errors are returned as numeric values, which are all defined in 3GPP 24.008.

The FWR will store each and every error value as received by the mobile network, regardless of whether the WWAN Driver Model can interpret them. The FWR will decide if the error in question is a registration error, an attach error, or a PDP context activation error, and will fill the corresponding error value accordingly.

It is specified in the WWAN Driver Model that unrecognized errors are handled transparently: they are logged by Microsoft for further debugging, and no other action is taken. Error values that are recognized by the driver model will be shown to the user. Unknown errors or “no errors” are defined as 0x00.

It is highly likely that more than one error happens in a single error situation, or during consecutive errors. For example, “Illegal MS” will result in a registration error as well as in an attach error. This will also result in more than one error value being filled. Microsoft handles these scenarios by interpreting the provided error values according to their hierarchy: Registration errors have highest priority, next attach errors, and finally PDP context activation errors.

It is also possible that there are intermediate errors. For example, “registration denied” when trying to roam on a hostile network will result in a network error. Afterwards a friendly network can be found, resulting in a ‘no error’ situation: the corresponding error value will be reset to 0x00. Because the error values are monitored by the Driver, the WWAN driver will be able to handle such scenarios.

The following tables list all error values that are recognized by the WWAN Driver model:

Error Value	Name	Interpretation of cause code
2	IMSI unknown in HLR	1. SIM/Device not activated 2. Subscription expired resulting in network deactivation
3	Illegal MS	MS blocked by network due to stolen report
4	IMSI unknown in VLR	Roaming is not subscribed
6	Illegal ME	MS blocked by network due to stolen report
7	GPRS Services not allowed	no subscription for GPRS
8	GPRS and non-GPRS services not allowed	GPRS / non GPRS service not allowed
11	PLMN not allowed	Service is blocked by the network due to subscription expiry or any other causes
12	Location Area not allowed	Location area is not allowed because of subscription
13	Roaming not allowed in this location area	Roaming is subscribed but it is not allowed in this area
14	GPRS services not allowed in this PLMN	Selected network does not provide GPRS service to the MS
15	No suitable cells in location area	No subscription for the service
22	Congestion	Registration failed due to congestion in the network

Table: 3GPP TS 24.008 cause codes for registration / attach failures

Error Value	Error Value	Interpretation of cause code
8	Operator determined barring	Packet data service is blocked by the operator
26	Insufficient resources	Context cannot be activated because of insufficient resources on network
27	Missing or unknown APN	No APN or Unknown APN is provided in the activation request
29	User authentication failed	Wrong user name or password provided in the activation request
32	Service option not supported	GPRS is not supported by the network
33	Requested service option is not subscribed	Requested service (GPRS) is not subscribed by the user.
34	Service option is temporarily out of order	Packet data service is temporarily out of order. User needs to retry after sometime

Table: 3GPP TS 24.008 cause codes for connection failures

Please also refer to the Microsoft “WWAN Driver Model Specification (v0.8)” for more information about this implementation.

Exceptions

There are two exceptions to the above explanation:

1) Option Proprietary error value(s):

Certain scenarios do not provide an error from the network. Currently, only 'moving out of coverage' is defined. When the MS moves out of coverage, the NW is obviously no longer available to generate the appropriate error, but the driver will still get C(G)REG indications to inform that registration is lost. A custom registration error will be loaded in this scenario:

Error Value	Meaning
300	No Network Coverage

Table: Option Proprietary WWAN NW errors

2) Normal Network Initiated PDP Context Deactivation:

Not all network initiated PDP context deactivation are the result of an error situation. Upon a 'normal' release, the NW sends '0x24' (36d) as 'error' value. This would result in the following response:

```
_OWANNWERROR: 0,0,36
```

Since 0x24 (36d) is not specified in the WWAN Driver Model, we cannot predict how Microsoft would react to this scenario. To avoid problems, The FWR will simply reset the activation error value:

```
_OWANNWERROR: 0,0,0
```

in order not to confuse the WWAN driver.

Defined values

<nwErrRegistration>: integer value

Error code as forwarded by the Network upon registration failure;

<nwErrAttach>: integer value

Error code as forwarded by the Network upon attach failure;

<nwErrActivation>: integer value

Error code as forwarded by the Network upon PDP context activation failure;

13.22 Set PAP/CHAP Security Parameters “AT_OPDPP”

Command	Possible Response(s)
_OPDPP=[<cid>,<n>,<passw>,<user>]	OK
_OPDPP?	_OPDPP: <cid>,<n>,<user>
_OPDPP=?	_OPDPP: (1-16),(0-2), passw, user

Description

This command is used to set the security parameters of PAP/CHAP for use with PDP context activation.

For each PDP context id, a password, username and type of security (PAP or CHAP) is set. Please note that both Username and Password are mandatory. Also note that this command only affects PDP contexts activated over NDIS.

Defined values

<cid>:

Value between 1-16 (max contexts) which depicts the PDP context ID

<n>:

Value	Description
0	No Security
1	PAP
2	CHAP

<passw>: Password to be used in security handling

<user>:.....Username to be used in security handling

13.23 Set PAP/CHAP Security Parameters “AT\$QCPDPP”

REMARK

*Option recommends to use AT_OPDPP instead of AT\$QCPDPP!
AT_OPDPP and AT\$QCPDPP provide the exact same functionality.
AT\$QCPDPP should only be used in case problems with backwards compatibility of software applications is needed.*

Command	Possible Response(s)
\$QCPDPP=[<cid>,<n>,<passw>,<user>]	OK
\$QCPDPP?	\$QCPDPP: <cid>,<n>,<user>
\$QCPDPP=?	\$QCPDPP: (1-16),(0-2), passw, user

Description

This command is used to set the security parameters of PAP/CHAP for use with PDP context activation.

For each PDP context id, a password, username and type of security (PAP or CHAP) is set.

Please note that both Username and Password are mandatory.
Also note that this command only affects PDP contexts activated over NDIS.

Defined values

<cid>: Value between 1-16 (max contexts) which depicts the PDP context ID

<n>:

Value	Description
0	No Security
1	PAP
2	CHAP

<passw>:..... Password to be used in security handling

<user>:.....Username to be used in security handling

13.24 Read out HSPA capabilities “AT_OHSPACAT”

Command	Possible Response(s)
_OHSPACAT=[<n>]	ERROR
_OHSPACAT?	_ OBBV: <n>,<m>
_OHSPACAT=?	(6,8,12),(<hsupa_pos>)

Description

This command can be used to read the HSPA capabilities of a unit

Defined Values

<n>:.....Value for the HSDPA capability

<m>:.....Value for the HSUPA capability

<hsupa_pos>:.....If the firmware supports 2ms TTI: 1-6
.....If the firmware does not support 2ms TTI: 1,3,5

13.25 Get Neighbor cell information “AT_ONCI”

Command	Possible Response(s)
_ONCI?	See below
_ONCI	ERROR
_ONCI=?	ERROR

Description

This command returns information about current cell and neighbour cells in 2G or 3G mode. Neighbour cells information are formatted as lines of 3 results, preceded by <NUM MSGS>, <MSG NUM>.

- Output of the command when no network:

_ONCI: -1

OK

- Output of the command when connected to 2G:

_ONCI: 2G

_ONCI: <LAC>, <CID>

_ONCI: <NUM OPER>

_ONCI: <Timing Advance>

_ONCI: (<SC NCC>, <SC BCC>)

_ONCI: <NUM MSGS>, <MSG NUM>,(<ARFCN>, <NCC>, <BCC>,
<RXLEV>),(<ARFCN>, <NCC>, <BCC>, <RXLEV>),(<ARFCN>, <NCC>, <BCC>,
<RXLEV>)

_ONCI: <NUM MSGS>, <MSG NUM>,(<ARFCN>, <NCC>, <BCC>,
<RXLEV>),(<ARFCN>, <NCC>, <BCC>, <RXLEV>),(<ARFCN>, <NCC>, <BCC>,
<RXLEV>)

OK

- Output of the command when connected to 3G

_ONCI: 3G

_ONCI: <UC-ID>

_ONCI: <NUM OPER>

_ONCI: <DCH FLAG>

_ONCI: <NUM MSGS>, <MSG NUM>, (<PRI SC>, <SEC SC>, <PATH
LOSS>),(<PRI SC>, <SEC SC>, <PATH LOSS>),(<PRI SC>, <SEC SC>, <PATH
LOSS>)

_ONCI: <NUM MSGS>, <MSG NUM>, (<PRI SC>, <SEC SC>, <PATH
LOSS>),(<PRI SC>, <SEC SC>, <PATH LOSS>),(<PRI SC>, <SEC SC>, <PATH
LOSS>)

OK

13.26 Retrieve Retry Counter “AT_OERCN”

Command	Possible Response(s)
_OERCN	_OERCN: <PIN retries>, <PUK retries>
_OERCN?	_OERCN: <PIN retries>, <PUK retries>
_OERCN=?	_OERCN: (1-2) (see description)
_OERCN=<x>	_OERCN: <PINX retries>, <PUKX retries> (see description)

Description

Retrieves the PIN and PUK retry counters. Displays how many PIN and PUK retries are left. In the first version, this command could only be used to get the PIN(1)/PUK(1) retry counters (via AT_OERCN or AT_OERCN?). AT_OERCN=? and AT_OERCN=<X> would return ERROR with the first version. Now when using the write command (_OERCN=<X>) you can specify if you want to read the pin/puk or the pin2/puk2 retry counters.

Defined values

<PIN retries>:.....The number of PIN retries will be a value from 0 to 3.

<PUK retries>:The number of PUK retries will be a number from 0 to 10.

<X>:1 -> get PIN/PUK retry counters
.....2 -> get PIN2/PUK2 retry counters

<PINX retries>:The number of PIN1/PIN2 retries (according to <X>).
.....Will be a value from 0 to 3.

<PUKX retries>:....The number of PUK1/PUK2 retries (according to <X>).
.....Will be a number from 0 to 10.

13.27 PDP Call Status Info Indication “AT_OGACT”

Command	Possible Response(s)
_OGACT=[<n>]	OK
_OGACT?	_OGACT: <n>
_OGACT=?	_OGACT: (0,1)

Description

This command enables/disables the unsolicited result code “_OGACT: <CGACT parameters>”

Defined Values

<n>:

Value	Description
0	Turns off unsolicited result code “_OGACT: <CGACT> parameters >”
1	Turns on unsolicited result code “_OGACT: <CGACT> parameters >”

<CGACT parameters>

See 3GPP 27.007 AT+CGACT

13.28 SIM Background Layer Status “AT_OSRPE”

Command	Possible Response(s)
_OSRPE=[<n>]	OK
_OSRPE?	OK
_OSRPE=?	OK
_OSRPE	_OSRPE = <SIM status>

Description

This command returns the status of the SIM in the Background Layer.

Defined Values

<SIM status>:

Value	Description
0	SIM not ready to accept SIM unlock commands
1	SIM ready to accept SIM unlock commands
2	SIM removed or faulty

13.29 SIM Select “AT_OSIMSEL”

Command	Possible response(s)
_OSIMSEL=<select>, <require_reset>	OK, ERROR
_OSIMSEL?	_OSIMSEL: selection: <select> or ERROR
_OSIMSEL=?	_OSIMSEL: (0,1), (1) or ERROR

Description

Select the normal (external – off module) SIM or the extended (internal – on module) SIM. This command can only be used on GTM6x1WFS device variants.

Defined values

<select>: choose between the normal and extended SIM.

Value	Description
0	means normal (external - off module) SIM selected.
1	means extended (internal - on module) SIM selected

<require_reset>: the SIM switch is only performed after a reset.

Value	Description
1	Means a reset is required.

14 OPTION PROPRIETARY CDMA COMMANDS

These are commands added by Option to accomplish things that cannot be done via the standard AT commands that are available in the CDMA specifications. This list of proprietary commands will grow during the development of the module.

14.1 Preferred SYStem “AT_OPSYS”

Command	Possible Response(s)
_OPSYS=[<mode>[,<domain>]]	OK
_OPSYS?	_OPSYS: <mode>,<domain>
_OPSYS=?	_OPSYS: (5-7),(4)

Description

This command changes the preferred system, 1.x/EV-DO or automatic

Defined values

<mode>:

Value	Description
5	Acquire system automatically
6	1.x only (CDMA)
7	EV-DO only (HDR)

<domain>:

Value	Description
4	Do not change the service domain

14.2 Selected SYStem “AT_OSSYS”

Command	Possible Response(s)
_OSSYS=[<n>]	OK
_OSSYS?	_OSSYS: <n>,<AcT>
_OSSYS=?	_OSSYS: (0-1),(0,2)

Description

This command enables/disables the unsolicited result code “_OSSYSI: <AcT>”

Defined values

<n>:

Value	Description
0	Turns off unsolicited result code “_OSSYSI: <AcT>”
1	Turns on unsolicited result code “_OSSYSI: <AcT>”

<AcT>:

Value	Description
3	No Service
4	1.x/CDMA
5	EV-DO/HDR
6	HDR Hybrid, listening to both 1.x & EVDO systems for attachment

14.3 Preferred Band Mode “AT_OPBM”

Command	Possible response(s)
_OPBM=<band>,<n>	OK
_OPBM=?	_OPBM: (list of supported <band>s)
_OPBM?	<band>: <n><CR><LF> [<band>: <n><CR><LF> [...]]

Description

This command is used to disable/enable specific frequency bands.

Defined Values

<band>:

Value	Description
“ANY”	any band
“BC0_A”	Band Class 0, A-Side System
”BC0_B”	Band Class 1, B-Side System
”BC1”	Band Class 1

<n>:

Value	Description
0	disable
1	enable

14.4 Network Call “AT_OWANCALL”

Command	Possible Response(s)
AT_OWANCALL=<c>,<s>,<u>	OK
AT_OWANCALL?	_OWANCALL: <c>, <s>, <u>
AT_OWANCALL=?	_OWANCALL=(1,2),(0,1),(0,1)

Description

This command initiates a network connection on the desired Profile ID

Example: To set up a call on profile 1 with unsolicited notifications enabled.

```
AT_OWANCALL=1,1,1 ( <- set up call )
OK
```

```
_OWANCALL: 1, 1 ( <- call is up now )
```

```
AT_OWANCALL=1,0,1 ( <- tear down call )
OK
```

```
_OWANCALL: 1, 0 ( <- call has torn down )
```

Defined values

<c>: Desired profile ID
 1: Test Mode (Agilent/CMU test systems)
 2: Live Network connection (currently still under development)

<s>: Desired state.

Value	Description
0	Disconnect
1	Connected
2	Call Failed (only available at query command)
3	Connection failed

<u>: unsolicited notifications of state changes for that context.
 If enabled, the card will put unsolicited notifications to the NDIS port of the
 format: _OWANCALL: <c>,<s>

Value	Description
0	Disable
1	Enable

14.5 Network Data “AT_OWANDATA”

Command	Possible Response(s)
AT_OWANDATA=<c>	_OWANDATA: <c>, <ip>, <gw>, <dns1>, <dns2>, <nbns1>, <nbns2>, <csp> OK
AT_OWANDATA?	_OWANDATA: <c>, <ip>, <gw>, <dns1>, <dns2>, <nbns1>, <nbns2>, <csp> ... OK

Description

This command is used with an active call (set up using AT_OWANCALL) to get the IP details used for configuring the network interface.

The write command will just look up the IP details for that specific profile ID and return nothing if the context is not active.

The query command will loop through all the contexts and display the IP details for the ones who's connection is active.

Defined values

- <c>: The context corresponding to the cgdcont id.
- <ip>: IP address
- <gw>: Gateway address
- <dns1>: First DNS server
- <dns2>: Second DNS server
- <nbns1>: First NBNS server
- <nbns2>: Second NBNS server
- <csp>:Connection Speed

14.6 Unsolicited Signal Quality Indication “AT_OSQI”

Command	Possible Response(s)
_OSQI=<n>	+CME ERROR: <err>
_OSQI?	_OSQI: <n>
_OSQI=?	_OSQI: (list of supported <n>s)

Description

This command controls sending of the unsolicited result code _OSIGQ which is sent when a significant change (more than 10 dBm) in received signal strength. The CDMA variant of OSQI is only applicable for 1.x/CDMA (voice) systems.

_OSIGQ syntax:
_OSIGQ: <rsssi>,<ber>

Defined Values

<n>:

Value	Description
0	Disable sending of _OSIGQ unsolicited result code
1	Enable sending of _OSIGQ unsolicited result code

<rsssi>:

Value	Description
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>:..... will always be 99

14.7 Base Station Info “AT_OBSI”

Command	Possible Response(s)
_OBSI	_OBSI=<aa>,<bb>,<cc>

Description

This command reads the base station info.

Defined Values

<aa>: Base Station ID
 <bb>: Base Station Latitude (gps coordinate : divide <bb >by 14400)
 <cc>: Base Station Longitude (gps coordinate : divide <cc> by 14400)

14.8 Emergency Mode Status “AT_OEMM”

Command	Possible Response(s)
_OEMM?	_OEMM:<unsol>,
_OEMM = <unsol>	
_OEMM=?	_OEMM : (0-1)

Description

This command checks the Emergency Mode Status. AT+CDV=911 will bring the modem in emergency mode. The modem will stay in Emergency Mode for minimum 6 minutes, even when the emergency call is terminated.

Defined Values

<unsol>.....unsolicited message status

Value	Description
0	Unsolicited messages Off
1	Unsolicited messages On

.....emergency mode status

Value	Description
0	Emergency Mode Off
1	Emergency Mode On

14.9 Emergency Mode Release “AT_OEMR”

Command	Possible Response(s)
_OEMR	OK

Description

This command releases the Emergency Mode Status if the phone is in Emergency mode.

14.10 Send Flash Command “AT_OFLSH”

Command	Possible Response(s)
_OFLSH	OK
_OFLSH=<n>	OK

Description

This command is used to send a flash command with (AT_OFLSH=<n>) or without information (AT_OFLSH). The information <n> is the phone number. This can only be executed while a voice call is active. The _OFLSH unsolicited AT command will be returned if a flash was sent to the base station over the air.

This command sends a flash or flash with information to the base station. The flash command is used to manage call waiting and 3-way calls. For call waiting situations when the 3 party call is received, send a flash (AT_OFLSH) to toggle between the two different call parties. The _OFLSH unsolicited AT command will be returned if a flash was sent to the base station over the air. Note that on CDMA networks, this does not guarantee that an actual switch between calls took place, because there is no acknowledgement to the modem. For 3-way calls, initiate the first call to party # 1. Then send a flash with information (AT_OFLSH=1234567890) to initiate a call to party # 2, party # 1 will automatically be placed on hold. The “information” is the phone number of party # 2. Once a conversation with party # 2 is established, send a regular flash (AT_OFLSH) to connect all 3 parties. Send another flash (AT_OFLSH) to disconnect party # 2, or End call (see ATH) to end the call with all parties.

Defined Values

<n>:..... Phone Number

14.11 Play a Single DTMF tone “AT+VTS”

Command	Possible Response(s)
+VTS=<n>	OK

Description

This command enables playing a single DTMF tone, locally as well as remotely on an active call.

Defined Values

<n>:..... 0 1 2 3 4 5 6 7 8 9 A B C D # *

14.12 Set DTMP tone Duration “AT+VTD”

Command	Possible Response(s)
+VTD=<n>	OK

Description

This command sets the DTMF tone duration.

Defined Values

<n>:..... Duration dtmf signal = n * 0.1 sec

Note that a value of 0 produces a continuous dtmf

14.13 Read Preferred Roaming List “AT_OPRLV”

Command	Possible Response(s)
_OPRLV?	_OPRLV: <n>

Description

This command reads the Preferred Roaming List Version of the current NAM.

Defined Values

<n>:..... 0-65535

14.14 CDMA/1x Dial Command “AT+CDV”

Command	Possible Response(s)
+CDV = <n>	OK

Description

This command will initiate a voice call on the 1x/CDMA network

Defined Values

<n>:..... Receiver Phone Number

14.15 CDMA/1x Terminate Call Command “AT+CHV”

Command	Possible Response(s)
+CHV	OK

Description

This command will terminate an ongoing voice call on the 1x/CDMA network

14.16 Roaming Indicator “AT_ORMI”

Command	Possible Response(s)
_ORMI?	_ORMI: <aa>,<bb>,<cc>,<dd>,<ee>
_ORMI=<aa>	OK
_ORMI=?	_ORMI: (0-1)

Description

This command reads the roaming indicator info

Defined Values

<aa>.....Unsolicited message status

Value	Description
0	Unsolicited messages OFF
1	Unsolicited messages ON

<bb>:..... Roaming Indicator Value

Value	Description
0	SYS_ROAM_STATUS_OFF
1	SYS_ROAM_STATUS_ON
2	SYS_ROAM_STATUS_BLINK
3	SYS_ROAM_STATUS_OUT_OF_NEIGHBORHOOD
4	SYS_ROAM_STATUS_OUT_OF_BLDG
5	SYS_ROAM_STATUS_PREF_SYS
6	SYS_ROAM_STATUS_AVAIL_SYS
7	SYS_ROAM_STATUS_ALLIANCE_PARTNER
8	SYS_ROAM_STATUS_PREMIUM_PARTNER
9	SYS_ROAM_STATUS_FULL_SVC
10	SYS_ROAM_STATUS_PARTIAL_SVC
11	SYS_ROAM_STATUS_BANNER_ON
12	SYS_ROAM_STATUS_BANNER_OF
64-127	Non-standard roaming indicator values

<cc>:..... Roaming Indicator Icon

Value	Description
0	ROAM ICON ON
1	ROAM ICON OFF
2	ROAM ICON BLINK

<dd>:..... Roaming Indicator text (max 16 characters)
Text is default 7-bit ASCII

<ee>:..... Alert id

Value	Description
0	Verizon Wireless
1	Network Extender
2	-
3	-
4	Extended Network
5	Roaming
6	-
7	-
255	Alert id not supported

Alert Id will reference a file that contains the sound to be played

NOTE!!!

If the cdma service is lost, an unsolicited message will be displayed. (Alert : Service Lost)

14.17 System ID “AT_OSID”

Command	Possible Response(s)
_OSID	_OSID: <aa>,<bb>,<cc>

Description

This command reads the network system id info.

Defined Values

- <aa>:..... IS95 or IS856
Note : if another system detected or no system available then command returns “ERROR”
- <bb>:..... System ID
For is95 this is a 16 bit number
For is856 this is a 16 byte number
- <cc>: Network ID
For is95 is is a 16 bit number
For is856 this is not available.

14.18 MEID and PseudoESN number “AT_OMEID”

Command	Possible Response(s)
_OMEID	_OMEID: <aa>, <bb>

Description

This command reads the MEID and Pseudo ESN.

Defined Values

- <aa>:..... MEID number
- <bb>:..... Pseudo ESN number

14.19 1.x/CDMA Signal Quality Level “AT+CSQ”

Command	Possible Response(s)
+CSQ	+CSQ: <N>

Description

This command returns a signal strength level indication depending on the RSSI. This command is only valid for 1.x/CDMA (voice) systems.

Defined Values

<N>:

Value	Description
7	-113 dbm
9	-110 dbm
14	-102 dbm
16	-99 dbm
21	-91 dbm
24	-86 dbm
27	-81 dbm
31	-75 dbm

14.20 EVDO/HDR Signal Quality Level “AT^HDRCSQ”

Command	Possible Response(s)
^HDRCSQ	^HDRCSQ: <N>
^HDRCSQ=?	^HDRCSQ: (0,20,40,60,80,99)

Description

This command returns a signal strength level indication depending on the RSSI. This command is only valid for EVDO/HDR systems.

Defined Values

<N>:

Value	Description
99	-60 dbm
80	-75 dbm
60	-90 dbm
40	-105 dbm
20	<-105 dbm but still signal
0	No signal

14.21 Voice Privacy “AT_OPRV”

Command	Possible Response(s)
_OPRV= <n>, <unsol>	OK _OPRV: 0 _OPRV: 1
_OPRV?	_OPRV: <n>,<disp>
_OPRV=?	_OPRV: (0-1),(0-1)

Description

This command sets the desired voice privacy and can generate an unsolicited message when the voice privacy setting is being set or changes.

It will write the NV item NV_VOICE_PRIV_I with the given privacy setting so all following calls will have the new privacy option.

When a voice call is active, the new privacy will be applied for that call.

Note that the base station can reject the privacy option or can change it.

Extract from 3GPP2 C.S0005:

“Voice privacy is the process by which user voice transmitted over a CDMA Traffic Channel is afforded a modest degree of protection against eavesdropping over the air.”

“Voice privacy is provided in the CDMA system by means of the private long code mask used for PN spreading. Voice privacy is provided on the Traffic Channels only. All calls are initiated using the public long code mask for PN spreading. The mobile station user may request voice privacy during call set-up using the Origination Message or Page Response Message, and during Traffic Channel operation using the Long Code Transition Request Order.”

Defined Values

<n>:

Value	Description
0	Standard privacy
1	Enhanced privacy

<unsol>:

Value	Description
0	No unsolicited message when privacy changes
1	Unsolicited message will be printed when privacy changes

14.22 Selected System in PRL List “AT_OSYS PRL”

Command	Possible Response(s)
_OSYS PRL= x	ERROR
_OSYS PRL?	_OSYS PRL: <n>
_OSYS PRL=?	ERROR

Description

This command can be used to check if the currently selected system is a part of the Preferred Roaming List

Defined Values

<n>:

Value	Description
0	Selected system is not a part of the PRL
1	Selected system is a part of the PRL

14.23 Access Overload Class “AT_OAOC”

Command	Possible Response(s)
_OAOC=[<aoc>]	OK
_OAOC?	_OAOC: <aoc>
_OAOC=?	_OAOC: (0-15)

Description

This command changes the Access Overload Class of the current nam. The Access Overload Class of the phone is normally determined by the last digit of the MIN, thus producing an equal distribution of classes from 0-9. There are six additional classes (10-15), which are used for special purpose mobiles, such as test phones.

Defined values

<aoc>: 0-15

14.24 Read Current NAM “AT_OCNM”

Command	Possible response(s)
_OCNM= <n>	ERROR
_OCNM=?	ERROR
_OCNM?	_OCNM: <nam>

Description

This command is used to read out the current NAM

Defined Values

<nam>: Numerical NAM value

14.25 Roaming Preference “AT_ORMP”

Command	Possible Response(s)
_ORMP=<rp>]]	OK
_ORMP?	_ORMP: <rp>
_ORMP=?	_ORMP: (1-3,255)

Description

This command changes the Roam Preference of the current nam. The Roam Preference of a CDMA modem informs the MS whether it is allowed to roam on foreign CDMA networks or only allow operation on home networks.

Defined values

<rp>:..... Desired Roaming Preference

Value	Description
1	Allow Home Network only
2	Allow Roaming Only
3	Allow Roaming on affiliated networks
255	Allow Roaming on any network

14.26 Slot Cycle Index “AT_OSCI”

Command	Possible Response(s)
_OSCI=<sci>	OK
_OSCI?	_OSCI: <sci1>
_OSCI=?	_OSCI: (0-3)

Description

On the CDMA Paging Channel (this is the shared channel that all phones listen to for incoming calls and other control info), time is divided into "slots". To conserve power, phones that are currently idle only "wake up" and listen for messages on the Paging Channel during their assigned slots. The slot cycle index determines how often the phone's slot comes around.

Defined values

<sci>: Slot Cycle Index

Value	Description
0	Default Passive SCI=9 (Idle sleep = 5.12s)
1	Passive SCI=6 (Idle sleep = 426.66 ms)
2	Passive SCI=5 (Idle sleep = 213.33 ms)
3	Passive SCI=7 (Idle sleep = 1280 ms)

Important Note!

The slot cycle information can ONLY be read/written when there is a data connection established. In all other cases, AT_OSCI will return “error”.

14.27 Answer Hold “AT_OANHO”

Command	Possible Response(s)
_OANHO= <n>	OK _OANHO: 0 _OANHO: 1
_OANHO?	_OANHO:<n>
_OANHO=?	_OANHO: (0-1)

Description

This command can only be called when there is an incoming voice call or when a voice call is put on hold.

By issuing AT_OANHO=1 an incoming voice call is put on hold, issuing AT_ONHO=0 will make the conversation active.

Unsolicited results will be given when answer hold becomes active and inactive.

Defined Values

<n>:

Value	Description
0	Stops putting the incoming voice call on hold , “_OANHO: 0” will be displayed if successful
1	Puts the incoming voice call on hold, “_OANHO: 1” will be displayed if successful

14.28 Voice Mail Indication “AT_OVMI”

Command	Possible Response(s)
_OVMI= <n>	ERROR
_OVMI?	_OVMI: <LineID>,<n>
_OVMI=?	_OVMI: <LineID>,<n>

Description

This command is used to display the current number of Voice Mail messages stored on the phone.

Defined Values

<LineID>:..... Voice Mail LineID, will be 1

<n>:..... Number of stored Voice Mail messages

14.29 1.x/CDMA system registration “AT+CREG”

Command	Possible Response(s)
+CREG=<n>	OK
+CREG?	+CREG: <n>,<state>
+CREG=?	+CREG: (0-1)

Description

This command is used to query the UE's registration state on 1.x/CDMA (voice) systems and to enable an unsolicited result code for network registration updates if so desired.

Defined Values

<n>:

Value	Description
0	Disable Unsolicited Result Code
1	Enable Unsolicited Result Code

<state>:

Value	Description
0	Not Registered, Not Searching
1	Registered on Home Network
2	Not Registered, Searching
3	Registration Denied
4	Unknown Registration State
5	Registered on Roaming Network

14.30 HDR/EVDO system registration "AT+CGREG"

Command	Possible Response(s)
+CGREG=<n>	OK
+CGREG?	+CGREG: <n>,<state>
+CGREG=?	+CGREG: (0-1)

Description

This command is used to query the UE's registration state on HDR/EVDO systems and to enable an unsolicited result code for network registration updates if so desired.

Defined Values

<n>:

Value	Description
0	Disable Unsolicited Result Code
1	Enable Unsolicited Result Code

<state>:

Value	Description
0	Not Registered, Not Searching
1	Registered on Home Network
2	Not Registered, Searching
3	Registration Denied
4	Unknown Registration State
5	Registered on Roaming Network

14.31 Read Base Station System Time “AT_OBSTIME”

Command	Possible Response(s)
_OBSTIME?	_OBSTIME:<stl>,<sth>,<l>,<o>,<d>
_OBSTIME=<n>	OK

Description

This command reads the base station system time from the sync channel message. Using the write command will enable/disable unsolicited OBSTIME updates. Note that the default behaviour is enabled from boot up.

Defined Values

<stl>: System time (lowest 4 bytes)
Time unit = 80ms
Time starting from 06/01/1980 known as GPS Zero Time

<sth>: System time (highest 4 bytes)

<l>: Number of leap seconds that have occurred since the start of System Time

<o>: Offset of local time from System Time
Number Presentation is 6 bit two's complement
Time unit: Half Hour

<q>: Daylight savings time indicator

<n>:

Value	Description
0	OBSTIME unsolicited is enabled
1	OBSTIME unsolicited is disabled

14.32 Enable Page Hold Mechanism “AT_OPHOLDEN”

Command	Possible Response(s)
_OPHOLDEN=<n>	OK ERROR
_OPHOLDEN?	<n> OK
_OPHOLDEN=?	_OPHOLDEN: (0-2)

Description

This command will enable/disable the paging hold mechanism for incoming voice calls, SMS messaging and OTAPA requests. This mechanism introduces a system that allows for the initial paging for a voice call, SMS or OTAPA to be put in a fabricated “hold” state. This allows the receiving party to handle some other desired business before either activating the Tx Radio and respond to the incoming page or to reject it altogether. The amount of retries allowed from the network before automatically accepting the page is indicated by <n>

When an incoming page is received, the UE sends an unsolicited result code, indicating that such a page has been received:

_OPAGHOLD=<m>

For a full flow of the mechanism, please refer to the flowchart in 14.38 below.

Defined Values

<n>:

Value	Description
0	Page Hold Mechanism is disabled
1	Page Hold Mechanism is enabled, 1 paging retry allowed
2	Page Hold Mechanism is enabled, 2 paging retries allowed

<m>:

Value	Description
0	Paging for incoming Voice Call has been received
1	Paging for incoming SMS has been received
2	Paging for incoming OTAPA has been received (can be PRL update)

14.33 Handle Held Paging Request “AT_OCTPAG”

Command	Possible Response(s)
_OCTPAG=<n>	OK ERROR
_OCTPAG?	ERROR
_OCTPAG=?	_OCTPAG: (0-1)

Description

In the case of when an incoming page is being held via the OPHOLDEN mechanism, this command allows for handling the currently held page, either accepting or declining it.

For a full flow of the mechanism, please refer to the flowchart in 14.38 below.

Defined Values

<n>:

Value	Description
0	Reject Currently Held Page
1	Accept Currently Held Page

14.34 Page Hold Flowchart

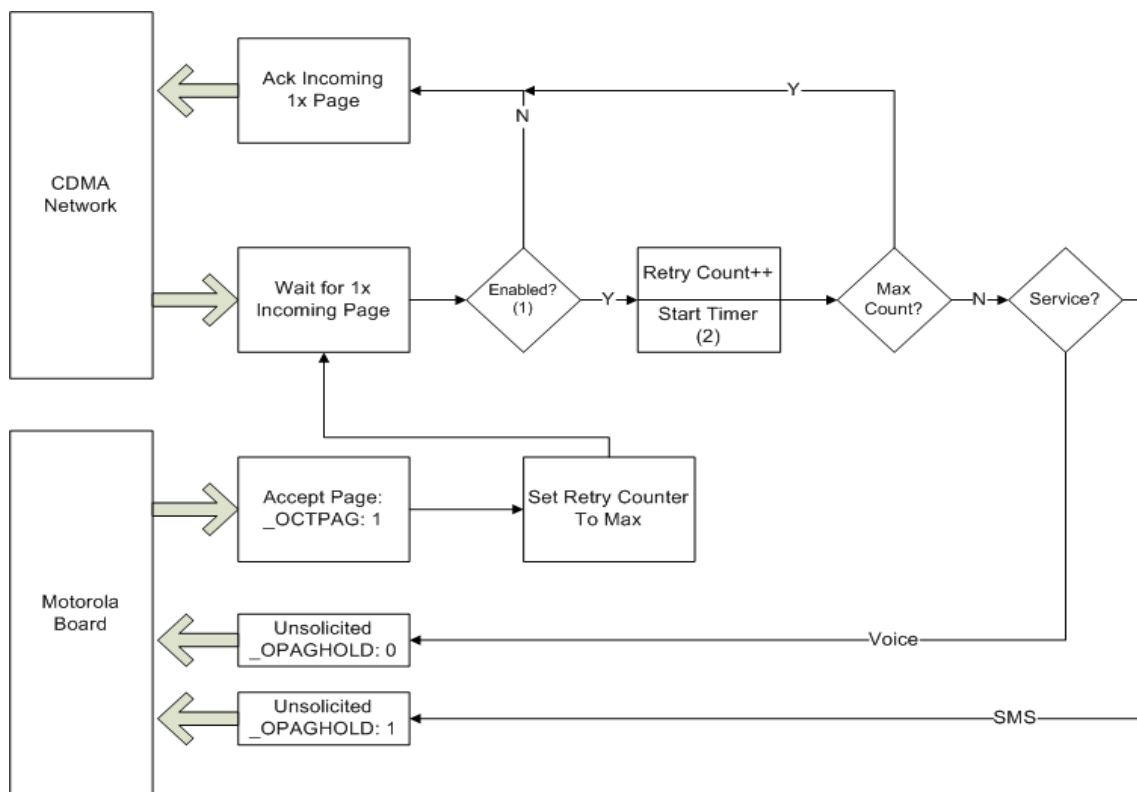


Figure 1: Page Hold Flowchart

14.35 Check 1.x/EVDO Revision “AT_OCDMAREV”

Command	Possible Response(s)
_OCDMAREV?	_OCDMAREV: <1x_rev>, <evdo_rev>
_OCDMAREV	OK
_OCDMAREV=?	ERROR

Description

This command checks the current 1.x and/or EVDO revision of the network.

Defined values

<1x_rev>:

Value	Description
0x1	CDMA 1x IS95
0x2	CDMA 1x IS2000
0x4	CDMA 1x IS2000 Release A

<evdo_rev>:

Value	Description
0x1	CDMA 1x
0x2	EVDO Rev 0
0x4	EVDO Rev A
0x8	EVDO Rev B
0x8000	Null Bearer

14.36 Data Session info “AT_ODSI”

Command	Possible Response(s)
_ODSI?	_ODSI: <m>, <n>
_ODSI	OK
_ODSI=?	ERROR

Description

This command checks on which service the data connection is made 1x or hdr, and if the data session is dormant or not.

Defined values

<m>:

Value	Description
0	No data service available
1	1x data service
2	Hdr data service

<n>:

Value	Description
0	Active
1	Dormant

14.37 PRL Status “AT_OPRLSTAT”

Command	Possible Response(s)
_OPRLSTAT=<enable>	OK ERROR
_OPRLSTAT?	_OPRLSTAT: <enable> ERROR
_OPRLSTAT=?	_OPRLSTAT: (0-1)

Description

This commands can check the enable status of the PRL (Preferred Roaming List). It can enable or disable the PRL. By default the PRL is enabled. This command can be used for testing, to make the device register on a network which is not in the PRL (together with _ORMP and _OHOMESID).

If the NV item is not active or cannot be written the command will return ERROR.

Defined values

<enable>:

Value	Description
0	PRL is not enabled
1	PRL is enabled (default)

14.38 ERI Text on “AT_OERITXT”

Command	Possible Response(s)
_OERITXT=<enable>	OK ERROR
_OERITXT?	_OERITXT: <enable> ERROR
_OERITXT=?	_OERITXT: (0-1)

Description

This commands will enable/disable ERI banner text messages in the result message of “AT_ORMI?”.

Defined values

<enable>:

Value	Description
0	ERI text not shown
1	ERI text shown (default)

14.39 ERI Alert on “AT_OERIALRT”

Command	Possible Response(s)
_OERIALRT=<enable>	OK ERROR
_OERIALRT?	_OERIALRT: <enable> ERROR
_OERIALRT =?	_OERIALRT: (0-1)

Description

This command will enable/disable the ERI alert sound id's in the result message of “AT_ORMI?”

Defined values

<enable>:

Value	Description
0	ERI alert messages not played
1	ERI alert messages played (default)

14.40 ERI Version “AT_OERIV”

Command	Possible Response(s)
_OERIV?	_OERIV: <version nr> ERROR

Description

This command will read the version number from the header of the eri file.

Defined values

<version nr>: version number of eri file (0 - 65535)

14.41 Unsolicited display message: “AT_ODISPLAY”

Command	Possible Response(s)
_ODISPLAY=<n>	OK ERROR
_ODISPLAY?	_ODISPLAY: <enable> ERROR
_ODISPLAY =?	_ODISPLAY: (0-1)

Description

When display information is available from the network, _ODISPLAY: <text> will be sent unsolicited when n is set to 1. By default n is 0, so nothing will be sent.

Defined values

<n>:

Value	Description
0	No unsolicited message is sent out (default)
1	Unsolicited message is sent when display info comes from the network.

<text>: Text coming from the network. When a WPS call is queued, this text will be “QUEUED” without the quotes.

14.42 Block Services during PTT connection “AT_OPTTBLOCK”

Command	Possible Response(s)
_OPTTBLOCK=<n>	OK ERROR
_OPTTBLOCK?	_OPTTBLOCK: <n> ERROR
_OPTTBLOCK =?	_OPTTBLOCK: (0-3)

Description

This command will allow the blocking of incoming voice calls or outgoing SMS and is intended to be used while a PTT (push-to-talk) connection is active. For incoming voice calls, the MDM will immediately generate a call end event, preventing the MDM from going into ringing state. For sending SMS, entering the command for sending an SMS will return CMS ERROR 521.

Defined values

<n>:

Value	Description
0	Nothing is blocked
1	Block incoming voice calls, allow outgoing SMS
2	Block outgoing SMS, allow incoming voice calls
3	Block both incoming voice calls and outgoing SMS

14.43 Data call release “AT_ODCR”

Command	Possible Response(s)
_ODCR?	ERROR
_ODCR	OK/ERROR
_ODCR=?	ERROR

Description

This command release the data call interface. It returns OK when interface released, ERROR when no interface found.

14.44 Unsolicited HDR Signal Quality Indication “AT_OHDRSQI”

Command	Possible Response(s)
_OHDRSQI=<n>	OK ERROR
_OHDRSQI?	_OHDRSQI: <n>
_OHDRSQI=?	_OHDRSQI: (0-1)

Description

This command controls sending of the unsolicited result code _OHDRSIGQ which is sent when the HDR signal quality changes. This command is only valid for EVDO/HDR systems. It returns the same value as ^HRCSSQ (see 14.20).

_OHDRSIGQ syntax:
_OHDRSIGQ: <val>

Defined Values

<n>:

Value	Description
0	Disable sending of _OHDRSIGQ unsolicited result code (default)
1	Enable sending of _OHDRSIGQ unsolicited result code

Defined Values

<val>:

Value	Description
99	-60 dbm
80	-75 dbm
60	-90 dbm
40	-105 dbm
20	<-105 dbm but still signal
0	No signal

14.45 Unsolicited Data state change

Command	Possible Response(s)
_ODSTATE=<n>	OK ERROR
_ODSTATE?	_ODSTATE: <enabled>,<state>
_ODSTATE =?	_ODSTATE: (0-2)

Description

This command controls sending of the unsolicited result code _ODSTATE which is sent when the CDMA 1x or HDR data call changes its state.

When <enabled> is set to 1, only data call active and data call ended will be sent unsolicited. When going from dormant to active, this will not be sent.

When <enabled> is set to 2, all state changes are sent unsolicited, including going to dormant mode and waking up again and data call ended.

The dormant timer at the device side can be controlled with AT+CTA=x. X is a value in seconds going from 0 (never go to dormant) to a max of 255 seconds. Default it is set to 30 seconds. Note that there is also a network timer. The data connection will go in dormant mode when one of those 2 timers expires. Whenever data is exchanged the timers are restarted and the link is active again.

When the data call goes to dormant mode, after a period of no data exchange, the 1x/HDR data link is closed, but the IP link is still connected. AT+CLCC will not list a dormant data call. Whenever data has to be sent out or comes in, the 1x/HDR data link has to be brought up again.

The data call state also can be checked with AT_ODSI (see 14.36).

Unsolicited _ODSTATE syntax:
_ODSTATE: <state>

Defined Values

<enabled>:

Value	Description
0	Disable sending of _ODSTATE unsolicited result code (default)
1	Enable partial sending of _ODSTATE unsolicited result code, no dormant state
2	Enable full sending of _ODSTATE unsolicited result code

Defined Values

<state>:

Value	Description
0	Data call is ended

1	Data call is active
2	Data call is dormant

14.46 Data call start “AT_ODCS”

Command	Possible Response(s)
_ODCS?	ERROR
_ODCS	OK/ERROR
_ODCR=?	OK

Description

This command starts a data call. It returns OK when it is possible to start one, ERROR if not (eg when there is still a data call busy). It does the same as ATD#777. After some time on the modem port the unsolicited CONNECT 3072000 (or 23) is sent out, NO CARRIER when the data call ended.

The command can be started from any AT port.

15 CDMA: UNSOLICITED RESULTS DURING OTA SERVICE PROVISIONING

15.1 Unsolicited Result Strings during manual provisioning

OTASP: MDN_DOWNLOADED
OTASP: NAM_DOWNLOADED
OTASP: BAD_SPC
OTASP: SPC_FAILLURE
OTASP: SPL_UNLOCKED
OTASP: IMSI_DOWNLOADED
OTASP: AKEY_EXCHANGED
OTASP: PRL_DOWNLOADED
OTASP: COMMIT_SUCCESFUL

15.2 Unsolicited Results Strings during automatic provisioning

OTASP: OTAPA_STARTED
OTASP: OTAPA_STOPPED
OTASP: OTAPA_ABORTED

16 CDMA: MOBILE IP PROGRAMMING

16.1 Enable/disable Mobile IP “AT\$QCMIP”

Command	Possible Response(s)
\$QCMIP=<n>	OK
\$QCMIP?	\$QCMIP: <n>
\$QCMIP=?	\$QCMIP: (0-2)

Description

This command enables/disables the mobile ip capabilities

Defined Values

<n> :

Value	Description
0	Mobile IP disabled, Single IP only
1	Mobile IP preferred. If no Mobile IP available switch to single IP
2	Mobile IP only

16.2 Enable/disable currently active profile “AT\$QCMIPPEP”

Command	Possible Response(s)
\$QCMIPPEP=<n>	OK
\$QCMIPPEP?	\$QCMIPPEP: <n>
\$QCMIPPEP=?	\$QCMIPPEP: (0-1)

Description

This command enables/disables the mobile ip active profile

Defined Values

<n>:

Value	Description
0	Active profile disabled
1	Active profile enabled

16.3 Return MIP profile info “AT \$QCMIPGETP”

Command	Possible Response(s)
\$ QCMIPGETP =<n>	Returns all parameters of active MIP profile specified OK
\$ QCMIPGETP?	\$ QCMIPGETP: <n>
\$ QCMIPGETP =?	\$ QCMIPGETP: (0-5)

Description

This command enables/disables the mobile ip active profile

Defined Values

<n>:..... Active Profile

Note :

Active profile parameters:

- Profile:
- NAI:
- Home Addr:
- Primary HA:
- Secondary HA:
- MN-AAA SPI:
- MN-HA SPI:
- Rev Tun:
- MN-AAA SS:
- MN-HA SS:

16.4 Set MIP MN-AAA SPI “AT\$QCMIPMASPI”

Command	Possible Response(s)
\$ QCMIPMASPI =<n>,<m>	OK
\$ QCMIPMASPI?	ERROR
\$ QCMIPMASPI =?	\$ QCMIPMASPI: (0-4294967295),(0-1)

Description

This command stores MN-AAA SPI for the active profile

Defined Values

<n>:..... SPI value

<m>:

Value	Description
0	do not commit to NV
1	commit to NV

16.5 Set MIP MN-AAA shared secret “AT\$QCMIPMASSX”

Command	Possible Response(s)
\$ QCMIPMASSX =<n>,<m>	OK
\$ QCMIPMASSX?	Set/Not Set
\$ QCMIPMASSX =?	\$QCMIPMASSX: [0x00-0xFF] (max 16 bytes), 0-1

Description

This command stores the MN-AAA shared secret key for the active profile.

Defined Values

<n>:..... MN-AAA shared secret key
Note: This value must be entered in Hex format

<m>:

Value	Description
0	do not commit to NV
1	commit to NV

16.6 Set MIP MN-HA SPI “AT\$QCMIPMHSPI”

Command	Possible Response(s)
\$ QCMIPMHSPI =<n>,<m>	OK
\$ QCMIPMHSPI?	Set/Not Set
\$ QCMIPMHSPI =?	\$ QCMIPMHSPI: (0-4294967295),(0-1)

Description

This command stores the SPI value for MN-HA for the active profile.

Defined Values

<n>:..... SPI value

<m>:

Value	Description
0	do not commit to NV
1	commit to NV

16.7 Set MIP MN-HA shared secret “AT\$QCMIPMHSSX”

Command	Possible Response(s)
\$QCMIPMHSS =<n>,<m>	OK
\$QCMIPMHSS?	Set/Not Set
\$QCMIPMHSS =?	\$QCMIPMHSS: [0x00-0xFF] (max 16 bytes), 0-1

Description

This command stores the MN-HA shared secret key for the active profile.

Defined Values

<n>:..... MN-HA shared secret key
Note: This value must be entered in Hex format

<m>:

Value	Description
0	do not commit to NV
1	commit to NV

16.8 Set MIP NAI “AT\$QCMIPNAI”

Command	Possible Response(s)
\$QCMIPNAI =<n>,<m>	OK
\$QCMIPNAI?	<n>,<m>
\$QCMIPNAI =?	\$ QCMIPNAI: (20,21,23-7E),(0-1)

Description

This command stores the Network Access Identifier for the active profile.

Defined Values

<n>:..... NAI String, containing user info used to access network.

<m>:

Value	Description
0	do not commit to NV
1	commit to NV

16.9 Select MIP user profile to be active “AT\$QCMIPP”

Command	Possible Response(s)
\$ QCMIPP =<n>	OK
\$ QCMIPP?	<n>
\$ QCMIPP =?	\$QCMIPP: (0-5)

Description

This command selects profile to be active.

Defined Values

<n>:..... Profile Number

16.10 Set MIP reverse tunnelling “AT\$QCMIPRT”

Command	Possible Response(s)
\$QCMIPRT =<n>,<m>	OK
\$QCMIPRT?	<n>,<m>
\$QCMIPRT =?	\$QCMIPRT: (0-1),(0-1)

Description

This command enables/disables reverse tunnelling for the active profile.

Defined Values

<n>:

Value	Description
0	No MIP reverse tunnelling requested
1	Request MIP reverse tunnelling requested

<m>:

Value	Description
0	do not commit to NV
1	commit to NV

16.11 Enable/disable RFC 2002bis authentication “AT\$QCMIPT”

Command	Possible Response(s)
\$ QCMIPT =<n>	OK
\$ QCMIPT?	<n>
\$ QCMIPT =?	\$ QCMIPT: (0-1)

Description

This command enables/disables RFC 2002bis authentication.

Defined Values

<n>:

Value	Description
0	MIP RFC 2002bis authentication disabled
1	MIP RFC 2002bis authentication enabled

17 CDMA: KEYBOARD PROGRAMMING

17.1 Unlock modem “AT_OSPC” (Service Programming Code)

Command	Possible Response(s)
_OSPC=<key>	If match : SPC CODE OK OK If no match : ERROR
_OSPC?	_OSPC: LOCKED Or _OSPC: UNLOCKED OK
_OSPC =?	_OSPC : 6 DIGITS SPC CODE

Description

This command will unlock the modem if the given key matches the programmed key. If the modem is unlocked, then the values of the at-commands in this chapter can be written. As long as the modem is locked, the write functions of the at-commands in this chapter cannot change the content of the items and the write function will return ERROR.

Defined Values

<key>: 6 digits key

17.2 Manual programming A-key “AT_OAKEYUPDATE

Command	Possible Response(s)
_OAKEYUPDATE=<key>	_OAKEYUPDATE: successful _OAKEYUPDATE: a-key programming failed _OAKEYUPDATE: invalid a-key OK
_OAKEYUPDATE?	ERROR
_OAKEYUPDATE =?	_OAKEYUPDATE : 26 DIGIT AKEY

Description

This command will program the a-key for the current nam.

Defined Values

<key>: 26 digits a-key

17.3 Read/Write IMSI value “AT_OIMSI”

Command	Possible Response(s)
_OIMSI= <imsi>	OK
_OIMSI?	_OIMSI : <m>
_OIMSI =?	_OIMSI : IMSI 15 digit string

Description

This command will read/program the IMSI value for the current nam.

Defined Values

<imsi>:..... 15 digit IMSI value

Value	Description
Digit [10...0]	IMSI_S value
Digit[12..11]	IMSI_11_12 value
Digit[15..13]	MCC

17.4 Read/Write MDN value “AT+MDN”

Command	Possible Response(s)
+MDN= <mdn>	OK
+MDN?	+MDN : <mdn>
+MDN	+MDN : <mdn>
+MDN=?	OK

Description

This command will read/program the MDN value from current nam, only useful if not yet provisioned.

Defined Values

<mdn>:..... MDN value (max 15 digits, ranging from 0 to 9)

17.5 Read/Write home sid/nid pairs “AT_OHOMESID”

Command	Possible Response(s)
_OHOMESID= <n>,<sid>,<nid>	OK
_OHOMESID?	_ OHOMESID: <n>,<sid>,<nid>
_OHOMESID =?	_ OHOMESID: (0-19),(0-65535),(0-65535)

Description

This command will read/program the home sid/nid pairs for the current nam.

Defined Values

<n>:..... index of the home sid/nid pair.
 <sid>: home System Identification number.
 <nid>: home Network Identification number.

17.6 Get GT Code “AT_OGTC”

Command	Possible Response(s)
_OGTC?	_OGTC: <GT code> OK

Description

This command will read the GT code (string) from NV. If the GT code is not written to NV the default UNKNOWN will be shown.

Defined values

<GT mode>: string type; GT mode of data card;

17.7 Get Customisation Identification “AT_OCID”

Command	Possible Response(s)
_OCID?	_OCID: <cid> OK

Description

This command will read the Customisation identification (string) from NV. If it is not written to NV the default UNKNOWN will be shown.

Defined values

<cid>: string type; customisation identification.

REFERENCES

Reference documents		Owner
[1]	3GPP TS 27.007 V3.7.0 (2000-12) AT Command set for User Equipment (UE) (Release 1999)	3GPP
[2]	3GPP TS 27.005 V3.1.0 (2000-01) Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)	3GPP
[3]	3GPP2 C.R1001 Administration of Parameter Value Assignments for cdma2000 Spread Spectrum Standards	3GPP2