

Product name	Confidential
HUAWEI CDMA DATACARD	
Product version	140 pages
V100R001	

HUAWEI CDMA Datacard Modem AT Command Interface Specification



Huawei Technologies Co., Ltd.

All rights reserved

(REP01T01 V2.31/ IPD-CMM V2.0 / for internal use only

**Revision record**

Date	Revision Version	CR ID/ Defect ID	Section Number	Change Description	Author
2006.7.25	1.00			AT command interface draft completed initially	Zhangshunfeng /00110362
2007.2.1	1.01			Deleted sms、pb and uim.	Zhangshunfeng /00110362
2007.2.9	1.02			Added ^dsdormant report and roaming status.	Zhangshunfeng /00110362
2007.2.14	1.03			Modified ^dsdormant	Wangxiangyan g /48627
2007.3.5	1.04			Added ATD	Zhangshunfeng /00110362
2007.5.21	1.05			Added ^isdor	Zhangshunfeng /00110362
2007.12.28	1.06			Added the following at command groups: SMS Command group, Voice Call Command group, Data Service Interface Command group, Security Setting Interface Command group, Phonebook Service Interface Command group. Also added the following at commands: +CPIN, +CGMM(CMM), +CIMI, ^CARDMODE, S3, S4, +CLVL, +CMUT, ^CMICLVL, ^CLVRING.	Xuyuxia /65927
2008.10.30	1.07			Add +GCAP,ATI,^MEID, ^MDN,^PRLVER.	Xuyuxia /65927



Table of Contents

HUAWEI CDMA Data Modem AT Command Interface Specification	11
1 Overview	12
1.1 Introduction to AT Interfaces	12
1.2 Design	13
1.3 Modification Criteria	14
2 Introduction to Commands	15
3 Basic Information Query and Command Setting Description.....	16
3.1 Error Report Command: +CMEE	16
3.1.1 Syntax Structure.....	16
3.1.2 Description	16
3.1.3 Value Description.....	16
3.2 Echo Command: E.....	17
3.2.1 Syntax Structure.....	17
3.2.2 Description	17
3.2.3 Value Description.....	17
3.3 MS Response Format Command: V	17
3.3.1 Syntax Structure.....	17
3.3.2 Description	18
3.3.3 Value Description.....	18
3.4 Command line carriage return character S3	19
3.4.1 Syntax Structure.....	19
3.4.2 Interface Description.....	19
3.4.3 Value Description.....	19
3.4.4 Implementation Description	19
3.4.5 UTPS Related Flow	20
3.5 Response format character S4	20
3.5.1 Syntax Structure.....	20
3.5.2 Interface Description.....	20



- 3.5.3 Value Description..... 20
- 3.5.4 Implementation Description 20
- 3.6 BackspaceCharacter: S5..... 21
 - 3.6.1 Syntax Structure..... 21
 - 3.6.2 Description 21
 - 3.6.3 Value Description..... 21
- 3.7 RSSI Query Function Command: +CSQ..... 21
 - 3.7.1 Syntax Structure..... 21
 - 3.7.2 Description 22
 - 3.7.3 Value Description..... 22
- 3.8 Signal Indicator Query Command: ^CSQLVL 22
 - 3.8.1 Syntax Structure..... 22
 - 3.8.2 Description 23
 - 3.8.3 Value Description..... 23
- 3.9 Signal Indicator Query Function Command in the HDR Mode : ^HDRCSQLVL..... 23
 - 3.9.1 Syntax Structure..... 23
 - 3.9.2 Description 24
 - 3.9.3 Value Description..... 24
- 3.10 Manufacturer Information Query Command: +GMI..... 24
 - 3.10.1 Syntax Structure..... 24
 - 3.10.2 Description 24
 - 3.10.3 Value Description..... 24
 - 3.10.4 Instance 25
- 3.11 Software Version Query Command: +GMR..... 25
 - 3.11.1 Syntax Structure..... 25
 - 3.11.2 Description 25
 - 3.11.3 Value Description..... 25
- 3.12 ESN Query Command: +GSN..... 26
 - 3.12.1 Syntax Structure..... 26
 - 3.12.2 Description 26
 - 3.12.3 Value Description..... 26
- 3.13 Headset Volume Setting Command: +CLVL..... 26
 - 3.13.1 Syntax Structure..... 26
 - 3.13.2 Description 27
 - 3.13.3 Value Description..... 27
- 3.14 Microphone Mute Setting Command: +CMUT 27
 - 3.14.1 Syntax Structure..... 27
 - 3.14.2 Description 27



3.14.3 Value Description.....	27
3.15 Microphone Volume Setting Command: ^CMICLVL.....	28
3.15.1 Syntax Structure.....	28
3.15.2 Description	28
3.15.3 Value Description.....	28
3.16 Ringtone Volume Setting Command: ^CLVRING.....	29
3.16.1 Syntax Structure.....	29
3.16.2 Description	29
3.16.3 Value Description.....	29
3.17 Hardware Version Query Command: ^HWVER.....	30
3.17.1 Syntax Structure.....	30
3.17.2 Description	30
3.17.3 Value Description.....	30
3.18 Time Query Command: ^TIME.....	30
3.18.1 Syntax Structure.....	30
3.18.2 Description	30
3.18.3 Value Description.....	31
3.18.4 Instance	31
3.19 Repeat Previous Command: A/.....	31
3.19.1 Syntax Structure.....	31
3.19.2 Description	31
3.19.3 Value Description.....	31
3.19.4 Instance	31
3.20 Soft Shut-Down: ^SOFTDN.....	32
3.20.1 Syntax Structure.....	32
3.20.2 Description	32
3.20.3 Value Description.....	32
3.21 Product Name command +CGMM/+GMM	33
3.21.1 Syntax Structure.....	33
3.21.2 Interface Description.....	33
3.21.3 Value Description.....	33
3.21.4 Example Description	33
3.22 IMSI Read Command+CIMI.....	34
3.22.1 Syntax Structure.....	34
3.22.2 Interface Description	34
3.22.3 Value Description.....	34
3.22.4 Example Description	34
3.23 SIM Card Mode Identification ^CARDMODE	35



3.23.1 Syntax Structure.....	35
3.23.2 Interface Description.....	35
3.23.3 Value Description.....	35
3.23.4 Example Description.....	35
3.24 Query MS currently supported capability command +GCAP	36
3.24.1 Command Syntax.....	36
3.24.2 Description	36
3.24.3 Defined Values.....	36
3.25 MEID Query Command: ^MEID.....	36
3.25.1 Syntax Structure.....	36
3.25.2 Description	37
3.25.3 Value Description.....	37
3.26 Query MDN Command^MDN	37
3.26.1 Syntax Structure.....	37
3.26.2 Interface Description.....	37
3.26.3 Value Description.....	37
3.27 Query PRL Version Command^PRLVER	38
3.27.1 Syntax Structure.....	38
3.27.2 Interface Description.....	38
3.27.3 Value Description.....	38

4 Description of the System Setting Commands..... 39

4.1 RSSI Changing Indicator: ^RSSILVL.....	39
4.1.1 Syntax Structure.....	39
4.1.2 Interface Description.....	39
4.1.3 Value Description.....	39
4.2 HDR RSSI Changing: ^HRSSILVL.....	40
4.2.1 Syntax Structure.....	40
4.2.2 Interface Description.....	40
4.2.3 Value Description.....	40
4.3 UIM Card Changing Indicator: ^SIMST.....	40
4.3.1 Syntax Structure.....	40
4.3.2 Interface Description.....	40
4.3.3 Value Description.....	41
4.4 System Mode Changing Indicator: ^MODE.....	41
4.4.1 Syntax Structure.....	41
4.4.2 Interface Description.....	41
4.4.3 Value Description.....	41
4.5 System Information Query Command: ^SYSINFO.....	42



4.5.1 Syntax Structure.....	42
4.5.2 Interface Description.....	42
4.5.3 Value Description.....	42
4.6 Preferential Network Mode: ^PREFMODE.....	43
4.6.1 Syntax Structure.....	43
4.6.2 Interface Description.....	43
4.6.3 Value Description.....	43
4.7 Reset Command ^RESET.....	44
4.7.1 Syntax Structure.....	44
4.7.2 Interface Description.....	44
5 SMS Command Description.....	45
5.1 SMS Parameter Selection Command: ^HSMSSS.....	45
5.1.1 Syntax Structure.....	45
5.1.2 Description.....	46
5.1.3 Value Description.....	46
5.2 SMS Format Setting Command: +CMGF.....	47
5.2.1 Syntax Structure.....	47
5.2.2 Description.....	47
5.2.3 Value Description.....	47
5.3 SMS Delivery Indicator: +CMTI.....	48
5.3.1 Syntax Structure.....	48
5.3.2 Description.....	48
5.3.3 Value Description.....	48
5.4 New SMS Report Indicator: ^HCMT.....	48
5.4.1 Syntax Structure.....	48
5.4.2 Description.....	48
5.4.3 Value Description.....	49
5.5 New Message Status Report Arrival Indicator: +CDSI.....	50
5.5.1 Syntax Structure.....	50
5.5.2 Interface Description.....	50
5.5.3 Value Description.....	50
5.6 New SMS Status Report Command: ^HCDS.....	51
5.6.1 Syntax Structure.....	51
5.6.2 Description.....	51
5.6.3 Value Description.....	51
5.7 New SMS Notification Setting Command: +CNMI.....	52
5.7.1 Syntax Structure.....	52
5.7.2 Description.....	53



- 5.7.3 Value Description..... 53
- 5.7.4 Instance 55
- 5.8 SMS Deletion Command: +CMGD..... 56
 - 5.8.1 Syntax Structure..... 56
 - 5.8.2 Description 56
 - 5.8.3 Value Description..... 56
- 5.9 New SMS Acknowledgement Command: +CNMA 57
 - 5.9.1 Syntax Structure..... 57
 - 5.9.2 Description 57
 - 5.9.3 Value Description..... 58
- 5.10 SMS Storage Selection Command: +CPMS..... 64
 - 5.10.1 Syntax Structure..... 64
 - 5.10.2 Description 65
 - 5.10.3 Value Description..... 65
- 5.11 Message memory Full Indicator: ^SMMEMFULL..... 66
 - 5.11.1 Syntax Structure..... 66
 - 5.11.2 Description 66
 - 5.11.3 Value Description..... 66
- 5.12 Message Sending Command: ^HCMGS 66
 - 5.12.1 Syntax Structure..... 66
 - 5.12.2 Description 67
 - 5.12.3 Value Description..... 67
- 5.13 SMS Storage Command: +CMGW..... 76
 - 5.13.1 Syntax Structure..... 76
 - 5.13.2 Description 76
 - 5.13.3 Value Description..... 77
- 5.14 SMS List Command: ^HCMGL 78
 - 5.14.1 Syntax Structure..... 78
 - 5.14.2 Description 78
 - 5.14.3 Value Description..... 79
- 5.15 SMS Read Command: ^HCMGR 79
 - 5.15.1 Syntax Structure..... 79
 - 5.15.2 Description 80
 - 5.15.3 Value Description..... 80
- 5.16 SMS Sending Success Report Indicator: ^HCMGSS..... 81
 - 5.16.1 Syntax Structure..... 81
 - 5.16.2 Description 81
 - 5.16.3 Value Description..... 82



5.17 SMS Sending Failure Report Indicator: ^HCMGSF	82
5.17.1 Syntax Structure.....	82
5.17.2 Description	82
5.17.3 Value Description.....	82
6 Security Setting Interface Description.....	84
6.1 PIN Modification Command: +CPWD	84
6.1.1 Syntax Structure.....	84
6.1.2 Description	84
6.1.3 Value Description.....	85
6.2 PIN Enabling and Query Function Command: +CLCK.....	85
6.2.1 Syntax Structure.....	85
6.2.2 Description	85
6.2.3 Value Description.....	86
6.3 PIN Management Command: ^CPIN.....	87
6.3.1 Syntax Structure.....	87
6.3.2 Description	87
6.3.3 Value Description.....	88
6.4 PIN Management Command +CPIN	89
6.4.1 Syntax Structure.....	89
6.4.2 Interface Description.....	89
6.4.3 Value Description.....	89
6.5 Operation Mode Setting Command+CFUN	90
6.5.1 Syntax Structure.....	90
6.5.2 Interface Description.....	90
6.5.3 Value Description.....	91
7 Phonebook Service Interface Description.....	92
7.1 Phonebook Memory Selection Command: +CPBS	92
7.1.1 Syntax Structure.....	92
7.1.2 Description	93
7.1.3 Value Description.....	93
7.2 Phonebook Read Command: ^CPBR.....	93
7.2.1 Syntax Structure.....	93
7.2.2 Description	94
7.2.3 Value Description.....	94
7.3 Phonebook Write Command: ^CPBW	95
7.3.1 Syntax Structure.....	95
7.3.2 Description	95
7.3.3 Value Description.....	96



7.3.4 Instance	97
8 Description of the Voice Call Commands	98
8.1 Call Initiating D (Data Service)	98
8.1.1 Syntax Structure.....	98
8.1.2 Interface Description.....	98
8.1.3 Value Description.....	98
8.2 Call Initiating: +CDV (Voice Service)	99
8.2.1 Syntax Structure.....	99
8.2.2 Interface Description.....	99
8.2.3 Value Description.....	99
8.3 Call Ending: +CHV (Voice Service)	99
8.3.1 Syntax Structure.....	99
8.3.2 Interface Description.....	99
8.4 Call Answering A (Data Service).....	100
8.4.1 Syntax Structure.....	100
8.4.2 Interface Description.....	100
8.5 Call Answering: \$QCCAV (Voice Service).....	100
8.5.1 Syntax Structure.....	100
8.5.2 Interface Description.....	100
8.6 Incoming Call Indicator: RING.....	100
8.6.1 Syntax Structure.....	100
8.6.2 Interface Description.....	101
8.7 Caller Identification Display: +CLIP.....	101
8.7.1 Syntax Structure.....	101
8.7.2 Interface Description.....	101
8.7.3 Value Description.....	101
8.7.4 Instances.....	102
8.8 Call Status Querying: +CLCC.....	102
8.8.1 Syntax Structure.....	102
8.8.2 Interface Description.....	102
8.8.3 Value Description.....	102
8.9 Call Initiating Indicator: ^ORIG.....	103
8.9.1 Syntax Structure.....	103
8.9.2 Interface Description.....	103
8.9.3 Value Description.....	104
8.10 Call Put-Through Indicator: ^CONN.....	104
8.10.1 Syntax Structure.....	104
8.10.2 Interface Description.....	104



8.10.3 Value Description.....	104
8.11 Call Ending Indicator: ^CEND.....	105
8.11.1 Syntax Structure.....	105
8.11.2 Interface Description.....	105
8.11.3 Value Description.....	105
8.12 DTMF: ^DTMF.....	109
8.12.1 Syntax Structure.....	109
8.12.2 Interface Description.....	109
8.12.3 4.14.3 Value Description.....	110
8.13 Flash/Flash With Information Sending: ^HFLASH.....	110
8.13.1 Syntax Structure.....	110
8.13.2 Interface Description.....	111
8.13.3 Value Description.....	111
8.14 Voice Mode Change Command^CVOICE.....	111
8.14.1 Syntax Structure.....	111
8.14.2 Interface Description.....	111
8.14.3 Value Description.....	112
8.14.4 Implementation Description.....	112
8.14.5 UTPS Related Flow.....	112
8.15 Voice Output Port Setting Command^DDSETEX.....	113
8.15.1 Syntax Structure.....	113
8.15.2 Interface Description.....	113
8.15.3 Value Description.....	113
8.15.4 Implementation Description.....	113
8.15.5 UTPS Related Flow.....	114
9 Data Service Interface Description.....	115
9.1 PPP User Password Read Command ^PPPCFG.....	115
9.1.1 Syntax Structure.....	115
9.1.2 Interface Description.....	115
9.1.3 Value Description.....	115
9.2 Dormant indication ^DSDORMANT.....	116
9.2.1 Syntax Structure.....	116
9.2.2 Interface Description.....	116
9.2.3 Value Description.....	116
9.3 Read DataCard Dormant Status ^isdor.....	116
9.3.1 Syntax Structure.....	116
9.3.2 Interface Description.....	117
9.3.3 Value Description.....	117



9.3.4 Example Description.....	117
10 Overall Design Constraints	118
10.1 Standards Compliance.....	118
10.2 Hardware Limitations	118
10.3 Technology Limitations.....	118
11 Software Quality Attributes	119
12 Dependencies.....	120
13 Feasibility Analysis	121
14 Issues To Be Determined.....	122
15 Appendix	123
15.1 Appendix 1 AT Command Description.....	123
15.1.1 Basic Command.....	123
15.1.2 S Register Command.....	123
15.1.3 Extended Commands and Pre-defined Commands	124
15.2 Appendix 2 CME ERROR List.....	125
15.2.1 CME ERROR for Each Command and Possible Reasons	126
15.2.2 Error Description and Reason.....	128
15.2.3 CME ERROR and Description	129
15.2.4 Self-defined Common Errors for the Huawei	131
15.2.5 Usage of Self-defined Common Errors	131
15.3 Appendix 3 CMS ERROR List.....	131
15.4 Appendix 4 Summary of Final Result Codes.....	132
15.5 Appendix 5 Parameter Initial Values for AT Commands After MS Restart	133
16 Acronyms and Abbreviations	136



HUAWEI CDMA Data Modem AT Command Interface Specification

Keywords: PCMCIA card, CDMA, EVDO

Abstract: The document describes the interface between a terminal equipment (TE) and a mobile station (MS) based on AT.



1 Overview

This manual introduces the AT commands supported by HUAWEI CDMA DATA CARD, including the commands based on standard and extended AT commands developed by Huawei. This manual does not include commands that are implemented by Qualcomm while not required by the CDMA DATA CARD. The AT interface description only covers packets as well as the usage and process for TE and MS.

1.1 Introduction to AT Interfaces

DIAG interfaces are not introduced in this manual. It is recommended not to implement interfaces that are not referred in this manual or are not supported currently.

<> and [] are used to indicate AT commands:

<>: Parameters within the angle brackets are mandatory.

[]: Parameters within the brackets are optional.

<CR>: Carriage returns character, which value is specified with command S3.

<LF>: Linefeed character, which value is specified with command S4.

Figure 1-1 shows the interaction between TE and MS.

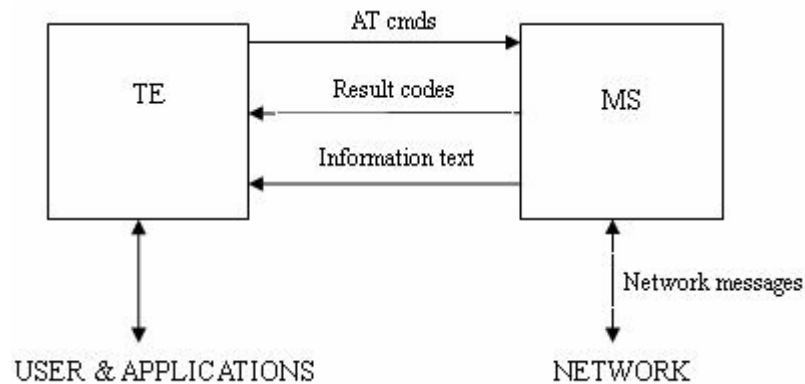


Figure 1-1 Interaction between TE and MS

1.2 Design

- 1 Function cohesion.
- 1 AT commands are packets transmitted through telecommunications ports. There is limitation on the size of packets. Except the two characters "AT", an AT command can carry no more than 260 characters (including null characters). Both a response and an unsolicited result code (URC) can contain no more than 668 characters.
- 1 Each command line contains only one AT command. An URC or a response reported by MS to TE can have only one AT command. Use a return character as the end of a command line. In principal, you are not allowed to use S3/S4 format to modify a command. The principal applies to boards and personal computer (PC) programs.
- 1 To improve the readability and criteria of commands and responses, no space is allowed after all newly added commands such as `AT^XXX:<arg0>, <arg1>, "^", ":", or "`. The beginning or the end should not contain redundant space. The principal applies to boards and personal computer (PC) programs.
- 1 You can only use a TE to send a second AT command after receiving the response from MS for the first AT command. Otherwise, the second AT command cannot be executed.
- 1 For AT commands need longer response time, a response can be reported in an asynchronous mode to ensure the normal running of other commands. If it takes longer for MS to respond to TE, the response may be disrupted by a URC. The interruption comprises of two situations. The first is that URC is reported after you execute an

AT command and wait for the response. After the URC is reported, the AT commands are being processed and the response will be reported. The second situation is that during the execution of AT commands, an URC is reported. The URC and response may be reported together. In some circumstance, RING can be used as terminal characters. For example, during the response waiting procedure after a hang up command is executed, a RING is reported, and then the hang up command abends.

- | The definition of a string: The byte stream that marked by double quotation marks and contains no quotation marks or commas.
- | Strings of AT commands cannot carry the combination of quotation marks and commas. Character escape is not supported in this version. Codes of UCS2 data is reported in raw mode. For example, if the UCS2 code of a Chinese character is 0x553, 553a is reported.
- | A possible response sent by MS to TE consists of the information text and the result code. The information text is optional and the result code is mandatory. The ATV command controls the format of the possible response. For details, see the description of ATV commands. In this manual, possible responses are in the ATV1 format.

1.3 Modification Criteria

I. For a Extended Interface

You can add parameters to extend AT commands. New parameters must not impact the original function.

II. For an Unsupported Function

If MS receives a command that cannot be identified, the result code of **COMMAND NOT SUPPORT**.

If an AT command has a redundant parameter, there are two handling ways:

- | MS reports the result code of **TOO MANY PARAMETERS**. Redundant parameters do not include equal marks.
- | Error tolerance is processed on parameters besides redundant ones.

The handling way varies with the command restriction.

III. Command Name

The name of a new Qualcomm AT command should begin with ^, such as, **AT^XXX**. The number of X cannot be more than nine.

2 Introduction to Commands

AT-based interfaces described in this manual are between TE and MS, helping implement functions, including SMS sending/receiving, data service, phonebook service, network system configuration, etc.

For details of commands sent by TE to MS, see the description of Appendix 13.1. Note the difference between "," and "-" returned with response of a TEST command. For example; **+CMGD: (1, 5), (0-4)** returned by **+CMGD=?** The available values of the first parameter can be one or five. The available values of the second parameter can be zero to four.

3 Basic Information Query and Command Setting Description

3.1 Error Report Command: +CMEE

3.1.1 Syntax Structure

Command	Possible Response(s)
+CMEE=<n> >	<CR><LF>OK<CR><LF>
+CMEE?	<CR><LF>+CMEE: <n><CR><LF><CR><LF>OK<CR><LF>
+CMEE=?	<CR><LF>+CMEE: (list of supported <n>s) <CR><LF><CR><LF>OK<CR><LF>

3.1.2 Description

Execute this command to enable or disable result code: +CME
ERROR :< err> to show MS-related errors. If it is enabled, Ms-related errors generate **result code**: +CME **ERROR** :< err> instead of **ERROR**. If an error is not MS related, **ERROR** is returned.

3.1.3 Value Description

<n>:

- | 0: If **+CME ERROR** :< err> result code is not used, only **ERROR** is returned, if any.
- | 1: If **+CME ERROR** :< err> result code is used, <err> uses the error number value.
- | 2: If **+CME ERROR** :< err> result code is used, <err> uses the detailed string value of errors.

<Err >:

For values, see "15.2 Appendix 2 CME ERROR List".

3.2 Echo Command: E

3.2.1 Syntax Structure

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

3.2.2 Description

Execute this command to set MS to return characters from TE or not.

3.2.3 Value Description

<Value>:

- | 0: MS does not return characters from TE.
- | 1: MS returns characters from TE.

If <value> is null, by default, <value> is 1.

3.3 MS Response Format Command: V

3.3.1 Syntax Structure

Command	Possible Response(s)
V[<value>]	<CR><LF>OK<CR><LF>

3.3.2 Description

Execute this command to set:

- 1 The format of result codes and information responses of AT commands, including the structure of headers and trailers
- 1 The form of result code contents (numeric code or verbose code)

Table 3-1 lists the impact on the format of result codes and information responses. `<cr>` represents S3 characters and `<lf>` represents S4 characters.

Table 3-1 Impact on response formats

	V0	V1
Information responses	<code><text><cr><lf></code>	<code><cr><lf><text><cr><lf></code>
Result codes	<code><numeric code><cr></code>	<code><cr><lf><verbose code><cr><lf></code>

3.3.3 Value Description

`<value>`:

- 1 0: MS sends abbreviatory headers and trailers and uses numbers as the format of result codes.
- 1 1: MS sends complete headers and trailers and uses strings as the format of strings.

If `<value>` is null, by default, `<value>` is 0.

3.4 Command line carriage return character S3

3.4.1 Syntax Structure

Command	Possible Response(s)
S3=<value>	<CR><LF>OK<CR><LF>
S3?	<CR><LF><value><CR><LF><CR><LF>OK<CR><LF>>

3.4.2 Interface Description

This command is used to set the command line carriage return character S3. S3 saves the command line carriage return character in the form of ASCII code value. This character is sent by TE. It means the end of a command line, and is identified by the MS. This character is also sent by MS, and serves as a part of the header, tail and end mark of the “result code” and “information response”.

When using the “S3=<value>” command to set S3, the current S3 character can serve as carriage return character of this command line, and the “result code” of this command line will use the newly set S3 character immediately, rather than waiting until the next command line.

3.4.3 Value Description

<value>:

0-127 The S3 character is set in the form of ASCII code value.

3.4.4 Implementation Description

Following ITU-T Recommendation V.25ter [14]

Mandatory

3.4.5 UTPS Related Flow

For UTPS, it will not be used and its value will not be changed also.

3.5 Response format character S4

3.5.1 Syntax Structure

Command	Possible Response(s)
S4=<value>	<CR><LF>OK<CR><LF>
S4?	<CR><LF><value><CR><LF><CR><LF>OK<CR><LF>>

3.5.2 Interface Description

This command is used to set the response format character S4. S4 saves the response format character in the form of ASCII code value. This character is sent by MS, and serves as a part of the header, tail and end mark of the “result code” and “information response”.

If the S4 character is changed in a command line, the “result code” of this command line will use the new S4 character immediately, rather than waiting until the next command line.

3.5.3 Value Description

<value>:

0-127 The S4 character is set in the form of ASCII code value.

3.5.4 Implementation Description

Following ITU-T Recommendation V.25ter [14]

Mandatory

3.6 Backspace Character: S5

3.6.1 Syntax Structure

Command	Possible Response(s)
S5=<value>	<CR><LF>OK<CR><LF>
S5?	<CR><LF><value><CR><LF><CR><LF>OK<CR><LF>

3.6.2 Description

Execute this command to set the back space character-S5. S5 saves the back space characters in the ASCII format. Execute this command through TE to delete a character.

3.6.3 Value Description

<value>:

0–127. Set S5 characters in the ASCII format.

3.7 RSSI Query Function Command: +CSQ

3.7.1 Syntax Structure

Command	Possible Response(s)
+CSQ	<CR><LF>+CSQ: <rss>, <ber><CR><LF><CR><LF>OK<CR><LF>
+CSQ=?	<CR><LF>+CSQ: (list of supported <rss>), (list of supported <ber>) <CR><LF><CR><LF>OK<CR><LF>

3.7.2 Description

Execute this command to get the receive signal strength indicator (RSSI) and the bit error rate (BER) of MS.

Execute the TEST command to query the supported RSSI and BER.

3.7.3 Value Description

<rssi> (receive signal strength indicator):

- | 0: The RSSI is equal to or less than -125 dBm
- | 1–30: Integer $(31 \times (125 - |rssi|) / 50)$ dBm
- | 31: The RSSI is equal to or more than -75 dBm
- | 99: The RSSI is unknown or cannot be tested.

<ber> (bit error rate):

- | BER value cannot be queried currently.
- | Execute either the EXECUTION command or the TEST command, **99** is returned.

3.8 Signal Indicator Query Command: ^CSQLVL

3.8.1 Syntax Structure

Command	Possible Response(s)
^CSQLVL	<CR><LF>+CSQLVL: <i><rssi></i> , <i><ber></i> <CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>ERROR<CR><LF>
^CSQLVL=?	<CR><LF>^CSQLVL: (list of supported <i><rssi></i> s), (list of supported <i><ber></i> s) <CR><LF><CR><LF>OK<CR><LF>

3.8.2 Description

Execute the EXECUTION command to query the RSSI and BER of the current code division multiple access (CDMA) network.

Execute the TEST command to query the supported RSSI and BER.

3.8.3 Value Description

<*rssi*> (receive signal strength indicator):

- | 0: No signal
- | 20: One indicator
- | 40: Two indicators
- | 60: Three indicators
- | 80: Four indicators
- | 99: Five indicators

<*ber*> (bit error rate):

- | BER value cannot be queried currently.
- | Execute either the EXECUTION command or the TEST command, **99** is returned.

3.9 Signal Indicator Query Function Command in the HDR Mode : ^HDRCSQLVL

3.9.1 Syntax Structure

Command	Possible Response(s)
^HDRCSQLVL	<CR><LF>^HDRCSQLVL: < <i>rssi</i> ><CR><LF><CR><LF> OK <CR><LF> If there is a MS-related error: <CR><LF> ERROR <CR><LF>
^HDRCSQLVL=?	<CR><LF>^HDRCSQLVL: (list of supported < <i>rssi</i> >s) <CR><LF><CR><LF> OK <CR><LF>

3.9.2 Description

Execute the EXECUTION command to query the RSSI in the HDR mode.

Execute the TEST command to query the supported RSSI.

3.9.3 Value Description

<rss> (receive signal strength):

- | 0: No signal
- | 20: One indicator
- | 40: Two indicators
- | 60: Three indicators
- | 80: Four indicators
- | 99: Five indicators

3.10 Manufacturer Information Query Command: +GMI

3.10.1 Syntax Structure

Command	Possible Response(s)
+GMI	<CR><LF>+GMI: <manufacturer><CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF> ERROR <CR><LF>
+GMI=?	<CR><LF> OK <CR><LF>

3.10.2 Description

Execute this command to query the manufacturer.

3.10.3 Value Description

<manufacturer>: Manufacturer information. Its value is a string.

3.10.4 Instance

```
AT+GMI
+GMI: HUAWEI TECHNOLOGIES CO., LTD
ok
```

3.11 Software Version Query Command: +GMR

3.11.1 Syntax Structure

Command	Possible Response(s)
+GMR	<pre><CR><LF>+GMR:<softversion><CR><LF><CR><LF> OK<CR><LF></pre> <p>If there is a MS-related error:</p> <pre><CR><LF>ERROR<CR><LF></pre>
+GMR=?	<pre><CR><LF>OK<CR><LF></pre>

3.11.2 Description

Execute the EXECUTION command to query the software version.

3.11.3 Value Description

<soft version>: Software version. It is a string of no more than 31 characters.

3.12 ESN Query Command: +GSN

3.12.1 Syntax Structure

Command	Possible Response(s)
+GSN	<CR><LF>+GSN: <ESN><CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>ERROR<CR><LF>
+GSN=?	<CR><LF>OK<CR><LF>

3.12.2 Description

Execute this command to query the electronic serial number (ESN) of MS.

3.12.3 Value Description

<ESN>: the ESN of MS.

3.13 Headset Volume Setting Command: +CLVL

3.13.1 Syntax Structure

Command	Possible Response(s)
+CLVL=<level>	<CR><LF>OK<CR><LF>
+CLVL?	<CR><LF>+CLVL: <level><CR><LF><CR><LF>OK<CR><LF>
+CLVL=?	<CR><LF>+CLVL: (list of supported <level>s) <CR><LF><CR><LF>OK<CR><LF>

3.13.2 Description

Execute the SET command to set the headset volume. Execute the READ command to read the headset volume. Execute the TEST command to query the value range of the headset volume.

The SET command can be executed during at any time.

The volume remains after the MS is restarted.

3.13.3 Value Description

<level>: 1–4, integer, the headset volume.

3.14 Microphone Mute Setting Command: +CMUT

3.14.1 Syntax Structure

Command	Possible Response(s)
+CMUT=<n>	<CR><LF>OK<CR><LF>
+CMUT?	<CR><LF>+CMUT: <n><CR><LF><CR><LF>OK<CR><LF>
+CMUT=?	<CR><LF>+CMUT: (list of supported <n>s) <CR><LF><CR><LF>OK<CR><LF>

3.14.2 Description

Execute the SET command to mute/unmute the microphone. Execute the READ command to read the microphone status. Execute the TEST command to query the value range.

You can only execute the SET command during an ongoing call. The setting is valid for the current call. After a call is finished or MS is restarted, <n> restores to 0.

3.14.3 Value Description

<n>:

- | 0: Unmute
- | 1: Mute

3.15 Microphone Volume Setting Command: ^CMICLVL

3.15.1 Syntax Structure

Command	Possible Response(s)
+CMICLVL=<level>	<CR><LF> OK <CR><LF> If there is a MS-related error: <CR><LF> ERROR <CR><LF>
+CMICLVL?	<CR><LF> +CMICLVL: <n><CR><LF><CR><LF> OK <CR><LF> If there is a MS-related error: <CR><LF> ERROR: <err><CR><LF>
+CMICLVL=?	<CR><LF> +CMICLVL: (list of supported <level>s) <CR><LF><CR><LF> OK <CR><LF>

3.15.2 Description

Execute the SET command to set the microphone volume. Execute the READ command to query microphone volume. Execute the TEST command to query the value range.

Execute the SET command at any time. The volume remains after the MS is restarted.

3.15.3 Value Description

<level>: 1–4, integer, the microphone volume.

3.16 Ringtone Volume Setting Command: ^CLVRING

3.16.1 Syntax Structure

Command	Possible Response(s)
<code>^CLVRING=<level></code>	<code><CR><LF>OK<CR><LF></code> If there is a MS-related error: <code><CR><LF>ERROR<CR><LF></code>
<code>^CLVRING?</code>	<code><CR><LF>+CLVRING:</code> <code><n><CR><LF><CR><LF>OK<CR><LF></code> If there is a MS-related error: <code><CR><LF>ERROR<CR><LF></code>
<code>^CLVRING=?</code>	<code><CR><LF>+CLVRING: (list of supported <level>s)</code> <code><CR><LF> <CR><LF>OK<CR><LF></code>

3.16.2 Description

Execute the SET command to set the ringtone volume. Execute the SET command at any time. The volume remains after the MS is restarted. Execute the READ command to query the ringtone volume. Execute the TEST command to query the value range.

3.16.3 Value Description

`<level>`: 0–4, integer, the ringtone volume. 0 represents mute.

3.17 Hardware Version Query Command: ^HWVER

3.17.1 Syntax Structure

Command	Possible Response(s)
^HWVER	<CR><LF>^HWVER:<hardversion><CR><LF><CR><LF>OK<CR><LF>

3.17.2 Description

Execute the EXECUTION command to query the hardware version.

3.17.3 Value Description

<hardversion>: hardware version, a string of no more than 31 characters.

3.18 Time Query Command: ^TIME

3.18.1 Syntax Structure

Command	Possible Response(s)
^TIME	<CR><LF>^TIME: <yyyy/mm/dd hh:mm:ss><CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: ERROR

3.18.2 Description

Execute this command to query the system time.

The response command format is ^TIME: <yyyy/mm/dd hh:mm:ss>:

- | yyyy: year
- | mm: month

- | dd: day
- | hh: hour
- | mm: minute
- | ss: second

If the CDMA system time cannot be retrieved, **ERROR** is returned.

3.18.3 Value Description

None

3.18.4 Instance

```
AT^TIME
^TIME: 2003/10/24 17:35:04
ok
```

3.19 Repeat Previous Command: A/

3.19.1 Syntax Structure

Command	Possible Response(s)
A/	

3.19.2 Description

Execute this command to repeat a previous AT command.

3.19.3 Value Description

None

3.19.4 Instance

If the last command is:

```
AT+GSN
+GSN: E43928A5
OK
```

A/
+GSN: E43928A5
OK

3.20 Soft Shut-Down: ^SOFTDN

3.20.1 Syntax Structure

Command	Possible Response(s)
^SOFTDN	<CR><LF>OK<CR><LF> If there is a MS-related error: ERROR

3.20.2 Description

Execute "^SOFTDN" to evoke the shut-down register process to shut down the MS.

3.20.3 Value Description

None

3.21 Product Name command

+CGMM/+GMM

3.21.1 Syntax Structure

Command	Possible Response(s)
+CGMM	<CR><LF> < production_name><CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CGMM=?	<CR><LF>OK<CR><LF>

3.21.2 Interface Description

This command is used to get product model NAME, the function of +CGMM and +GMM are identical . But the command +CGMM can be used when datacards have not SIM/USIM card . Product mode NAME is composed of character string, the max length can not beyond 2048 byte , including the end character ‘\0’ .。

3.21.3 Value Description

< production_name >: Product name

3.21.4 Example Description

Product Name: EC360

Input AT+CGMM

EC360

3.22 IMSI Read Command+CIMI

3.22.1 Syntax Structure

Command	Possible Response(s)
+CIMI	<CR><LF><IMSI><CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CIMI=?	<CR><LF>OK<CR><LF>

3.22.2 Interface Description

This command is used to read IMSI from UIM card or ME.

3.22.3 Value Description

<IMSI>: Directly return the value of IMSI, which should be a string with 15 digits

3.22.4 Example Description

```
AT+CIMI
```

```
1234512345678
```

3.23 SIM Card Mode Identification

^CARDMODE

3.23.1 Syntax Structure

Command	Possible Response(s)
^CARDMODE	<CR><LF>^CARDMODE:<sim_type>,<sim_name><CR><LF><CR><LF>OK <CR><LF>

3.23.2 Interface Description

This command is used to read the type and English name of SIM card which is inputted in the datacard.

3.23.3 Value Description

<sim_type>: SIM card type, the value defined:

- 0: Unknown mode
- 1: SIM card
- 2: USIM card
- 3: UIM card

3.23.4 Example Description

```
AT^cardmode
^CARDMODE:3,"uim"
OK
```

3.24 Query MS currently supported capability command +GCAP

3.24.1 Command Syntax

Command	Possible Response(s)
+GCAP	Return MS currently supported transmission capability

3.24.2 Description

This command is used to list MS currently supported transmission capability.

3.24.3 Defined Values

Only execution command is supported.

3.25 MEID Query Command: ^MEID

3.25.1 Syntax Structure

Command	Possible Response(s)
^MEID	<code><CR><LF>^MEID: <meid ><CR><LF></code> <code><CR><LF>OK <CR><LF></code> If there is a MS-related error: <code><CR><LF>ERROR<CR><LF></code>
^MEID=?	<code><CR><LF>OK<CR><LF></code>

3.25.2 Description

Execute this command to query the MEID value.

3.25.3 Value Description

<meid>: The value of MEID. Fixed 14 bytes string, HEX format. If MEID does not exist, display 0000000000000000.

3.26 Query MDN Command[^]MDN

3.26.1 Syntax Structure

Command	Possible Response(s)
[^] MDN	<code><CR><LF>[^] MDN: <MDN_num><CR><LF><CR><LF>OK<CR><LF></code> If there is error with MS: <code><CR><LF>+CME ERROR: <err><CR><LF></code>
[^] MDN=?	<code><CR><LF>OK<CR><LF></code>

3.26.2 Interface Description

Execution command is used to return MDN value from flash or R-UIM.

Test command return OK.

3.26.3 Value Description

<MDN_num>: String type, MDN value . It should be less than 15 digits.

3.27 Query PRL Version Command ^PRLVER

3.27.1 Syntax Structure

Command	Possible Response(s)
^PRLVER Or ^PRLVER?	<CR><LF>^ PRLVER: <prlversion><CR><LF><CR><LF>OK<CR><LF> If there is error with MS: <CR><LF>+CME ERROR: <err><CR><LF>

3.27.2 Interface Description

Execution and query command are used to return PRL version from flash or R-UIM.

3.27.3 Value Description

< prlversion >: PRL ID

4 Description of the System Setting Commands

4.1 RSSI Changing Indicator: ^RSSILVL

4.1.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^RSSILVL: <rssi><CR><LF>

4.1.2 Interface Description

If the variation of RSSI exceeds the domain value, the MS reports to the TE.

4.1.3 Value Description

<rssi>: Receive Signal Strength Indicator. Values are as follows:

- | 0: No signal
- | 20: One indicator
- | 40: Two indicators
- | 60: Three indicators
- | 80: Four indicators
- | 99: Five indicators

4.2 HDR RSSI Changing: ^HRSSILVL

4.2.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^HRSSILVL: <rssi><CR><LF>

4.2.2 Interface Description

If the variation of the high data rate (HDR) RSSI exceeds the domain value, MS reports to TE.

4.2.3 Value Description

<rssi>: Receive Signal Strength Indicator. Values are as follows:

- | 0: No signal
- | 20: One indicator
- | 40: Two indicators
- | 60: Three indicators
- | 80: Four indicators
- | 99: Five indicators

4.3 UIM Card Changing Indicator: ^SIMST

4.3.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^SIMST:<sim_state><CR><LF>

4.3.2 Interface Description

If the status of a UIM card changes, MS reports it to TE.

4.3.3 Value Description

<sim_state>: UIM card status, Values are as follows:

- | 1: Valid UIM card status
- | 240: ROMSIM version
- | 255: UIM card not exist

4.4 System Mode Changing Indicator: ^MODE

4.4.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^MODE:<sys_mode><CR><LF>

4.4.2 Interface Description

If the system mode is changed, MS will report it to TE.

4.4.3 Value Description

<sys_mode>: System mode. Values are as follows:

- | 0: No service
- | 2: CDMA mode
- | 4: HDR mode
- | 8: CDMA/HDR HYBRID mode

4.5 System Information Query Command: ^SYSINFO

4.5.1 Syntax Structure

Command	Possible Response(s)
^SYSINFO	<CR><LF>^SYSINFO:< srv_status >, < srv_domain >, < roam_status >, < sys_mode >, < sim_state ><CR><LF><CR><LF>OK<CR><LF>

4.5.2 Interface Description

Execute this command to query the system information, such as service status, domain, roaming status, system mode, and UIM card status.

4.5.3 Value Description

<srv_status>: System service status. Values are as follows:

- | 0: No service
- | 1: Restricted service
- | 2: Valid service
- | 3: Restricted domain services
- | 4: Power-saving mode and hibernate mode

<srv_domain>: System domain. Values are as follows:

- | 0: No service
- | 1: Only Circuit Switched domain (CS) service
- | 2: Only Packet Switched (PS) domain service
- | 3: Both PS service and CS service
- | 4: Neither CS service nor PS service is registered and MS is in the searching mode
- | 255: CDMA not supported

<roam_status>: Roaming status. Values are as follows:

- | 0: Non-roaming status
- | 1: Roaming status

<sys_mode>: System mode. Values are as follows:

- | 0: No service
- | 2: CDMA mode
- | 4: HDR mode
- | 8: CDMA/HDR HYBRID mode

<sim_state>: UIM card status. Values are as follows:

- | 1: Valid UIM card
- | 240: ROMSIM version
- | 255: UIM card not exist

4.6 Preferential Network Mode: ^PREFMODE

4.6.1 Syntax Structure

Command	Possible Response(s)
^PREFMOD E = < pref_mode >	<CR><LF> OK <CR><LF> If there is a MS-related error: <CR><LF> ERROR <CR><LF>
^PREFMOD E?	<CR><LF> ^ PREFMODE: < pref_mode > <CR><LF><CR><LF> OK <CR><LF>
^PREFMOD E =?	<CR><LF> ^ PREFMODE: (range of supported < pref_mode >s) <CR><LF> OK <CR><LF>

4.6.2 Interface Description

Execute this command to forcibly set the preferential network mode.

4.6.3 Value Description

< pref_mode >: Network mode. Values are as follows:

- | 2: CDMA mode

- | 4: HDR mode
- | 8: CDMA/HDR HYBRID mode

4.7 Reset Command **^RESET**

4.7.1 Syntax Structure

Command	Possible Response(s)
^reset	

4.7.2 Interface Description

It is use to reset device.

5 SMS Command Description

Notes: PDU mode is not supported now, when the related AT is used, do not set PDU mode, otherwise it will lead to unpredictable result.

5.1 SMS Parameter Selection Command: ^HSMSSS

5.1.1 Syntax Structure

Command	Possible Response(s)
<code>^HSMSSS=<ack>,
<prt>,<fmt>,<prv></code>	<code><CR><LF>OK<CR><LF></code> If there is an error: <code><CR><LF> ERROR<CR><LF></code>
<code>^HSMSSS?</code>	<code><CR><LF>^HSMSSS: <ack>,
<prt>,
<fmt>,<prv><CR><LF><CR><LF>OK<CR><LF></code>
<code>^HSMSSS =?</code>	<code><CR><LF>^HSMSSS: (list of supported <ack>,
<prt>,
<fmt>,<prv>s)<CR><LF><CR><LF>OK<CR><LF></code>

5.1.2 Description

Execute the SET command to set the parameters of SMS sending, including acknowledgement, priority, coding scheme, and privacy.

5.1.3 Value Description

<ack>: Acknowledge report

- | 0: Acknowledge report not required
- | 1: Acknowledge report required

<prt>: Priority

- | 0: Normal
- | 1: Interactive
- | 2: Urgent
- | 3: Emergency

<fm>: coding scheme

- | 0: GSM 7 BIT
- | 1: ASCII
- | 2: IA5
- | 3: OCTET
- | 4: LATIN
- | 5: LATIN_HEBREW
- | 6: UNICODE
- | 7: Others

<Prv>: Privacy

- | 0: Normal
- | 1: Restricted
- | 2: Confidential
- | 3: Secret

5.2 SMS Format Setting Command: +CMGF

5.2.1 Syntax Structure

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>

5.2.2 Description

Execute the SET command to set the SMS format. There are two formats depending on parameters of <mode>, including the PDU mode and the text mode. Since Chinese cannot be displayed in the text mode. For the specific message format in the PDU mode if the TEXT mode is adopted, see ^HCMGS. PDU mode is not supported currently.

Execute the READ command to query the current mode.

Execute the TEST command to query the value range.

5.2.3 Value Description

<mode> :

- | 0: PDU mode
- | 1: Text mode

If <mode> is null, by default, <mode> is one.

5.3 SMS Delivery Indicator: +CMTI

5.3.1 Syntax Structure

Command	Possible Response(s)
	<code><CR><LF>+CMTI: <mem>, <index><CR><LF></code>

5.3.2 Description

This indicator indicates that a new message (or report) is received.

5.3.3 Value Description

`<mem>`: "SM" and "ME" is supported.

- | "BM": Broadcast message memory
- | "ME": ME message memory
- | "MT": Memory related to ME
- | "SM": (U)SIM message memory
- | "TA": TA message memory
- | "SR": Status report memory

`<index>`: Integer, position in the memory.

5.4 New SMS Report Indicator: ^HCMT

5.4.1 Syntax Structure

Command	Possible Response(s)
	<code><CR><LF>^HCMT: <callerID>, <year>, <month>, <day>, <hour>, <minute>, <lang>, <format>, <length>, <prt>, <prv>, <type><CR><LF><msg><CTRL+Z><CR><LF></code>

5.4.2 Description

The MS reports new messages to the TE.

5.4.3 Value Description

<*callerID*>: Phone number of the message sender.

<*format*>: coding scheme.

- | 0: GSM 7 BIT
- | 1: ASCII
- | 2: IA5
- | 3: OCTET
- | 4: LATIN
- | 5: LATIN_HEBREW
- | 6: UNICODE
- | 7: Others

<*year, month, day, hour, minute*>: The receiving time of a message.

<*Length*>: The length of a message.

<*lang*>: Language.

- | 0: UNSPECIFIED
- | 1: ENGLISH
- | 2: FRENCH
- | 3: SPANISH
- | 4: JAPANESE
- | 5: KOREAN
- | 6: CHINESE
- | 7: HEBREW

<*prt*>: Priority

- | 0: Normal
- | 1: Interactive
- | 2: Urgent
- | 3: Emergency

<*Prv*>: Privacy

- | 0: Normal
- | 1: Restricted
- | 2: Confidential

- | 3: Secret
- <type>: The message type.
- | 0: Normal
 - | 1: CPT
 - | 2: Voice Mail
- <Msg>: A received message.

5.5 New Message Status Report Arrival Indicator: +CDSI

5.5.1 Syntax Structure

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

5.5.2 Interface Description

It indicates that a new message status report is received and shows the storage position.

5.5.3 Value Description

- <mem>:
- | "SM": (U)SIM memory.
 - | "ME": ROMSIM memory.
- <index>: Integer, memory position.

5.6 New SMS Status Report Command: ^HCDS

5.6.1 Syntax Structure

Command	Possible Response(s)
	<pre><CR><LF>^HCDS: <callerID>, <year>, <month>, <day>, <hour>, <minute>, <lang>, <format>, <length>, <prt>, <prv>, <type><CR><LF><msg> <CTRL+Z><CR><LF></pre>

5.6.2 Description

The MS does not save a message and reports it to the TE.

5.6.3 Value Description

<callerID>: Phone number of a message sender.

<format>: coding scheme.

- | 0: GSM 7 BIT
- | 1: ASCII
- | 2: A5
- | 3: OCTET
- | 4: LATIN
- | 5: LATIN_HEBREW
- | 6: UNICODE
- | 7: Others

<year, month, day, hour, minute>: Receiving time.

<Length>: Length.

<lang>: Language.

- | 0: UNSPECIFIED
- | 1: ENGLISH
- | 2: FRENCH

- | 3: SPANISH
- | 4: JAPANESE
- | 5: KOREAN
- | 6: CHINESE
- | 7: HEBREW

<prt>: Priority.

- | 0: Normal
- | 1: Interactive
- | 2: Urgent
- | 3: Emergency

<Prv>: Privacy.

- | 0: Normal
- | 1: Restricted
- | 2: Confidential
- | 3: Secret

<type>: Message type.

- | 0: Normal
- | 1: CPT
- | 2: Voice Mail

<Msg>: Received message.

5.7 New SMS Notification Setting Command: +CNMI

5.7.1 Syntax Structure

Command	Possible Response(s)
+CNMI=[<mode>[, <mt>[,<bm>[,<ds> , <bfr>]]]]	<CR><LF>OK<CR><LF> If there is a SMS-related error: <CR><LF>+CMS ERROR: <err><CR><LF>

+CNMI?	<CR><LF>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr><CR><LF><C R><LF>OK<CR><LF>
+CNMI=?	<CR><LF>+CNMI: (list of supported <mode>),(list of supported <mt>),(list of supported <bm>),(list of supported <ds>),(list of supported <bfr>) <CR><LF><CR><LF>OK<CR><LF>

5.7.2 Description

Execute the SET command to set the procedures of reporting a message to the TE:

- | <mode> and <bfr> are for message reports (including +CMTI, ^HCMT, +CDSI, and ^HCDS) that are reported to the TE.
- | <mt> is for new messages storage.
- | <bm> is not in use.
- | <ds> is for message status report storage (+CDSI and ^HCDS).

Execute the TEST command to query the supported parameters.

NOTE

After the MS is restarted, MODE=1 and MT=1, other parameters are restored to zero.

5.7.3 Value Description

<mode>: Set the message notification method.(Only support mode =1)

- | 0: Buffer a message notification in the MS. If the MS memory is full, a new notification replaces the earliest one.
- | 1: Send a message notification to the TE. If the sending fails (for example, in the online data mode), the message notification is discarded.
- | 2: Send a message notification and message status report to the TE. If the sending fails (for example, in the online data mode), buffer the message notification in the MS and send it to the TE later.

 NOTE

Message notifications are buffered in a losable memory. If the MS is powered off before it sends a message notification, the message notification may be lost. Thus, when $\langle mode \rangle = 0$ or 2 , messages cannot be forwarded directly ($\langle mt \rangle = 1$).

$\langle mt \rangle$: Set the message storage and notification rules.

There are two ways of message storage and report:

- 1 Save **SMS-DELIVER** in the MS. Send a position notification to the TE. If $MT=1$, the message notification adopts **+CMTI**, namely, save messages to $\langle mem3 \rangle$ specified by **+CPMS** and report the memory and index to the TE.
- 1 If **SMS-DELIVER** is not saved in the MS, send **SMS-DELIVERS** to the TE. If $MT=2$, the message notification adopts **^HCMT**, namely, messages are not saved in the MS while reported to the TE. The TE sends **AT+CNMA** to acknowledge messages. If **AT+CNMA** is not received in two seconds, the MS reports error to the network.

Figure 5-1 shows the interaction between the TE and the MS.

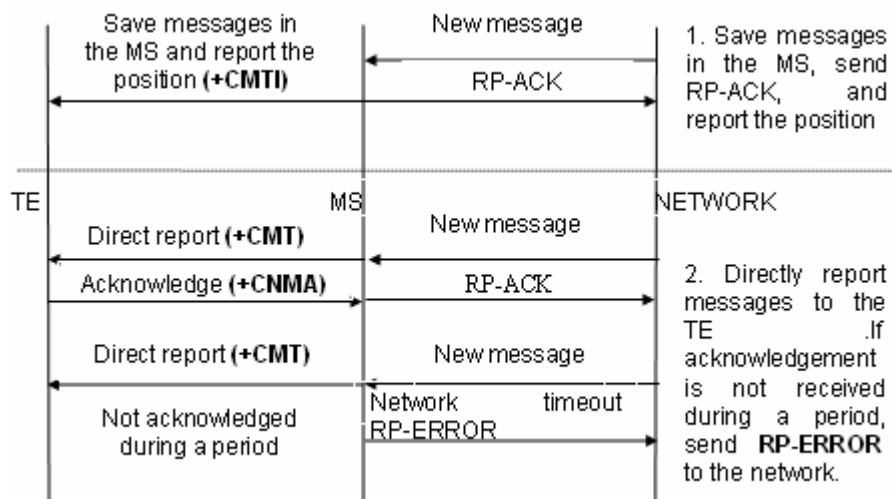


Figure 5-1 Interaction between the TE and the MS

<bm>: Set the cell broadcast. It is not supported currently.

<ds>: Set the return notification.

- | 0: MS does not send delivery reports to TE
- | 1: MS does not store messages but send delivery reports to TE directly

^HCDS: *<length><CR><LF><pdu>*

- | 2: If return notifications are saved in the MS, a position notification is sent to TE through +CDSI.

+CDSI: *<mem>,<index>*

<bfr>: Set the buffer processing when *<mode>*=1, 2 is entered from *<mode>*=0.

- | 0: In the *<mode>*1-2 mode, MS sends all USCs to TE in one time.
- | 1: In the *<mode>*1-2 mode, clear all USCs.

5.7.4 Instance

For example, CNMI=1,1,0,1,0.

It indicates that a new message is stored in MS. Then the storage position of the message is reported (+**CMTI**: "ME",1). The status report of the message is not stored but directly reported (^**HCDS**:)

If a message notification cannot be reported (for example, in the online-data mode), the message notification is discarded.

5.8 SMS Deletion Command: +CMGD

5.8.1 Syntax Structure

Command	Possible Response(s)
+ CMGD =<index>	<CR><LF> OK <CR><LF> If there is a message related error; <CR><LF>+ CMS ERROR : <err><CR><LF>
+ CMGD =?	<CR><LF>+ CMGD : (list of supported <index>)],(list of supported <delflag>)]<CR><LF><CR><LF> OK <CR><LF>

5.8.2 Description

Execute the EXECUTION command to delete messages saved in the <index> position of the <mem1> memory. For details and settings of <mem1>, see the description of +**CPMS**.

Execute the TEST command to query all the positions of messages in the memory

5.8.3 Value Description

<index>: The index of the message in the memory.

5.9 New SMS Acknowledgement Command: +CNMA

5.9.1 Syntax Structure

Command	Possible Response(s)
if pdu mode (+CMGF=0): +CNMA [= <i><n></i> [, <i><length h></i>] <i><CR></i> PDU is given <i><ctrl-Z/ESC></i>] <i>]]</i> if text mode (+CMGF=1): +CNMA	<i><CR></i> <i><LF></i> OK <i><CR></i> <i><LF></i> If there is a message related error: <i><CR></i> <i><LF></i> +CMS ERROR: <i><err></i> <i><CR></i> <i><LF></i>
+CNMA=?	if pdu mode (+CMGF=1): <i><CR></i> <i><LF></i> +CNMA: (list of supported <i><n></i> s) <i><CR></i> <i><LF></i> <i><CR></i> <i><LF></i> OK <i><CR></i> <i><LF></i> if text mode (+CMGF=1): <i><CR></i> <i><LF></i> OK <i><CR></i> <i><LF></i>

5.9.2 Description

Execute the EXECUTION command to acknowledge of receiving a message that is sent to the TE.

Only after a message is acknowledged, the MS sends the next **^HCMT** or **^HCDS** result code to the TE.

If MS does not receive acknowledgement in a specified period (network timeout), MS reports **RP-ERROR** and automatically sets *<mt>* and *<ds>* of **+CNMI** to zero. Thus, no message report is sent to TE. If message reports are required, *<mt>* and *<ds>* need to be reset.

If the command is executed and there is no message to acknowledge, **+CMS ERROR:** *<err>* is returned.

Execute the TEST command to query the supported values of <n>. If only zero is supported, it indicates that the command does not support TPDU sending.

5.9.3 Value Description

<n>:

- | 0: Not supported.
- | 1: Successful sending acknowledgement **RP-ACK** (or successful receiving of buffer result code).
- | 2: Sending failure **RP-ERROR**.

<ackpdu>:

Abbreviation	Reference	P1)	P2)	Description
TP-MTI	TP-Message Type Indicator	M	2b	Indicates the TP-Message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Indicates TP-UD has a header
TP-PI	TP-Parameter-Indicator	M	o	Indicates the available parameters
TP-PID	TP-Protocol-Identifier	O	o	Indicates the protocol identifiers
TP-DCS	TP-Data-Coding-Scheme	O	o	Indicates the data coding scheme
TP-UDL	TP-User-Data-Length	O	o	Indicates the user data length
TP-UD	TP-User-Data	O	3)	Indicates the user data

 NOTE

- | 1) indicates : mandatory (M) and optional (O)
- | 2 indicates: integer (I), bit (b), 2bits (2b), and octet (o)
- | 3) depends on TP-DCS

Table 5-1 Bit Number

Number of Octets	7	6	5	4	3	2	1	0	
1									TP-MTI, TP-UDHI
1									TP-PI
0,1									TP-PID
0,1									TP-DCS
0,1									TP-UDL
0 to 159									TP-UD

The bit 7 and the bit 2 to 5 are of the first byte are not used in **SMS-DELIVER-REPORT**. The sender should set the values of them to zero. If the value of any of these digits is not zero, the receiver should omit it.

 **NOTE**

< *TP-MTI* >: TP-message type, at the bit 0 and bit 1 of the first byte.

bit1	bit0	Message type	
0	0	SMS-DELIVER (in the direction SC to MS)	
0	0	SMS-DELIVER REPORT (in the direction MS to SC)	
1	0	SMS-STATUS-REPORT (in the direction SC to MS)	1
0	0	SMS-COMMAND (in the direction MS to SC)	
0	1	SMS-SUBMIT (in the direction MS to SC)	
0	1	SMS-SUBMIT-REPORT (in the direction SC to MS)	
1	1	Reserved	

< *TP-UDHI* >: TP-UD has a header, at the bit 6 of the first byte.

- 0: TP-UD domain only has messages
- 1: The beginning of the TP-UD domain has a header

< *TP-PI* >: Available parameters. The position is set to one, indicating that parameters exist.

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
Extension bit	Reserved	Reserved	Reserved	Reserved	TP-UDL	TP-DCS	TP-I

< *TP-PID* >: Protocol identifier. When the TE sends messages, the default value of it is 00000000. When the TE sends E-mail, the value of the TE should be 00110010=0x32.

<TP-DCS>: TE adopts the TP-DCS mode.

bit7-bit6 (TE adopts the TP-DCS mode)	00 (TE adopts this value when sending message)	bit5	0	bit5 is 0, indicates a message is not compressed
			1	<ul style="list-style-type: none"> ▫ bit5 is 1, indicates a message is compressed ▫ TE does not adopt this value
		bit4	0	<ul style="list-style-type: none"> ▫ bit4 is 0, indicates bit1 and bit0 are retained ▫ Value is 00
			1	bit4 is 1, indicates bit1 and bit0 contain message type (settings done by users decide message type, if a user sets it, bit4 is 1, such as setting class 1 or class 2)
		bit3-2 (message coding method)	0 0	GSM 7bit default codes
			0 1	8bit data
			1 0	UCS2 coding method, if a user enter Chinese, the TE adopts it
		bit1-0 (message type, the TE decides it according to the user selection)	0 0	Class 0, provides display and responds SC
			0 1	Class 1, saves to MS (NV); or saves to the UIM card when MS is full
			1 0	<ul style="list-style-type: none"> ▫ Class 2, dedicated for the UIM card ▫ The storage status is reported to SC after storage ▫ If the UIM card is full, failure and reason are reported to SC
			1 1	Class 3, stored to TE, MS receives messages and does not sent to TE, but responds to SC

bit7–4 (TE does not select TP-DCS when sending)	1100 and 1101 (GSM 7 bit coding), 1110 (no compressed UCS2 code)	bit3	0	<ul style="list-style-type: none"> ▫ Message waiting indication function is invalid ▫ Enhanced messages, E-mails, and voice mails that need indication function are not supported currently 	
			1	Activate the message waiting indication function	
		bit2	0	Retained bit, no meaning	
		bit1–0 (message waiting type)	0	0	There is a voice mail
			0	1	There is a fax
			1	0	There is a E-mail
			1	1	There is an unknown type message
	1111 (the TE does not select this value)	bit3	0	Retained bit, no meaning	
			1	8bit data	
		bit1–0	0	0	Class 0, providing the display and responding to the SC, but no storage
			0	1	Class 1, saved to MS (NV) or the UIM card
			1	0	Class 2, dedicated for the UIM card, the storage status is returned to SC after storage
			1	1	Class 3, saved to the TE, MS receives messages and does not sent to TE, but responds to SC

<TP-UDL>: The bytes of user data domain. If the value is zero, it indicates that the user data domain does not exist.

<TP-UD>: The user data domain may include user data headers. If there is a header (the bit6 value of byte0 is one), the value of TP-UDL equals the length of the value of User-Data-Header plus the length of the value of User-Data. The value of TP-UDL depends on the coding method. If the coding method is 7-bit default coding, it indicates the number of septets. If the coding method is 8bit coding, it indicates the number of octets. If the coding method is UCS2 coding, TP-UDL indicates the number of octets. If the coding method is compressed 7-bit, 8bit or UCS2, TP-UDL indicates the number of octets after compression.

Figure 5-2 shows the structure of the user data domain.

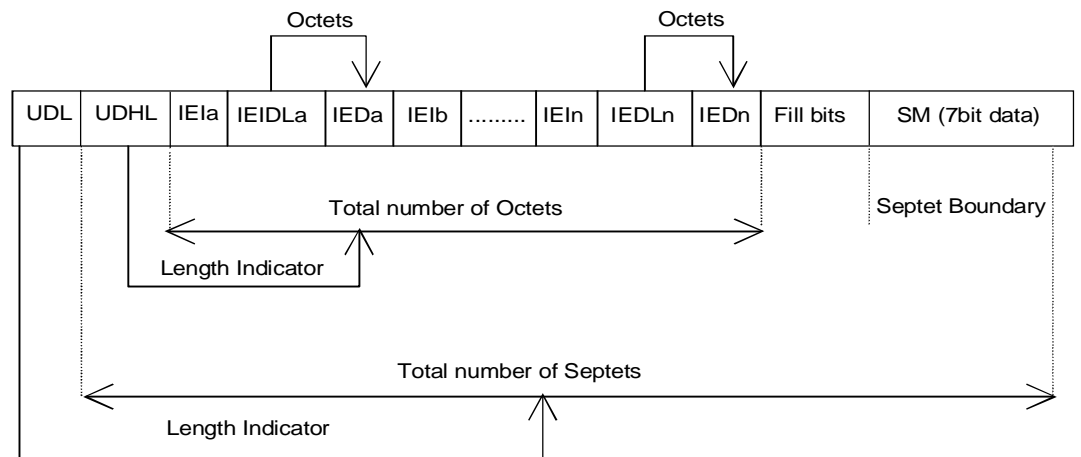


Figure 5-2 The user data format of the default 7bit coding

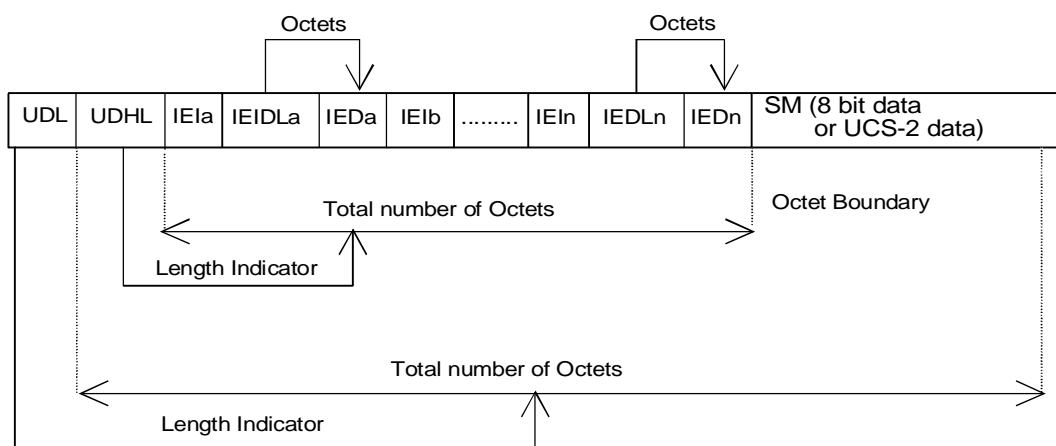


Figure 5-3 The user data format of 8bit coding or UCS2 coding

NOTE

IEI: Information Element Identifier.

5.10 SMS Storage Selection Command: +CPMS

5.10.1 Syntax Structure

Command	Possible Response(s)
+CPMS=<mem1>[, <mem2>[, <mem3>]]	<CR><LF>+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3><CR><LF><CR><LF> OK <CR><LF> If there is a message related error: <CR><LF> +CMS ERROR: <err><CR><LF>
+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><CR><LF><CR><LF> OK <CR><LF> If there is a message related error: <CR><LF> +CMS ERROR: <err><CR><LF>

Command	Possible Response(s)
+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s)<CR><LF><CR><LF>OK<CR><LF>

5.10.2 Description

Execute the SET command to select phonebook memory storage <storage>, which is used by other phonebook commands.

Execute the READ command to query the name and status of the selected storage.

Execute the TEST command to query storages supported by the MS.

5.10.3 Value Description

<mem1>: A string indicates the storage used by the message read and delete process. Available values are "SM" and "ME".

"SM": (U) SIM card

"ME": NV

<mem2>: A string indicates the storage used by the message write and send process. The available values are the same as that of <mem1>.

<mem3>: A string indicates the storage of received messages. The available values are the same as that of <mem1>.

<total1>: An integer indicates the number of messages can be saved in <mem1>.

<total2>: An integer indicates the number of messages can be saved in <mem2>.

<total3>: An integer indicates the number of messages can be saved in <mem3>.

<used1>: An integer indicates the number of messages currently saved in <mem1>.

<used2>: An integer indicates the number of messages currently saved in <mem2>.

<used3>: An integer indicates the number of messages currently saved in <mem3>.

5.11 Message memory Full Indicator: ^SMMEMFULL

5.11.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^SMMEMFULL:<mem_type><CR><LF>

5.11.2 Description

If the message storage is full, the indicator reports it.

5.11.3 Value Description

<mem_type>: A string indicates the type of the full storage.

"SM": (U) SIM

"ME": NV

5.12 Message Sending Command: ^HCMGS

5.12.1 Syntax Structure

Command	Possible Response(s)
if pdu mode (+CMGF=0): ^HCMGS=<length><CR> R> PDU is given<ctrl-Z/ESC> if text mode (+CMGF=1): ^HCMGS=<da>[,<today>] <CR> text is entered<ctrl-Z/ESC>>	if pdu mode (+CMGF=0): <CR><LF>^HCMGS: <mr>[,<ackpdu>]<CR><LF><CR><LF> OK <CR><LF> if text mode (+CMGF=1): <CR><LF>^HCMGS: <mr><CR><LF><CR><LF> OK <CR><LF> If there is a message related error: <CR><LF> +CMS ERROR: <err><CR><LF>

^HCMGS=?	<CR><LF>OK<CR><LF>
-----------------	---

5.12.2 Description

The TE sends a message to the network. The sending of a message can be divided into two steps. The PDU mode is not supported currently.

┆ PDU mode:

Send **^HCMGS=<length>** that ends with (CR).

The TE waits for **<CR><LF><greater_than><space>**(IRA 13, 10, 62, 32) from the MS. Then the TE sends PDU packets that ends with **<ctrl-Z>**(IRA 26).

┆ TEXT mode:

The TE sends **^HCMGS=<da>[,<toda>]** that ends with (CR).

The TE waits for **<CR><LF><greater_than><space>**(IRA 13, 10, 62, 32) from the MS and sends the message content that ends with **<ctrl-Z>**(IRA 26).

5.12.3 Value Description

┆ TEXT mode:

<da>: The phone number of a message recipient. The value range is from 0 to 9, *, and #. The maximum length of the value is 20 bits.

<toda>: coding scheme of the address . It is a digit of one byte. The parameter is in use only when the address coding is 8bit. EC360 adopts the 4bit coding currently. Thus, this parameter is not in use. By default, the value is zero.

The number type of the four highest bits:

- ┆ 0: UNKNOWN
- ┆ 1: INTERNATIONAL

The number type of the four lowest bits:

- ┆ 0: UNKNOWN
- ┆ 1: TELEPHONY

<mr>: The message identifier. The value is the decimal number of 0–9. The value range is 0–65535.

<ctrl-Z>: End of a message, the character is '0x1A'.

<ESC>: Cancel the message sending, the character is '0x1B'.

1 PDU mode:

<length>: The value equals the TPDU characters divided by two. The value is the decimal number of 0–9. The maximum value cannot be more than 178.

<mr>: The message identifier. The value is the decimal number of 0–9. The value range is 0–255.

<ackpdu>: If the value of <service> of +CSMS is one and the network supports it, the field is returned. SCA is not included. The format is the same as that of PDU. The field is not supported currently.

<ctrl-Z>: Identify the end of a PDU data. The character is "0x1A".

<ESC>: Cancel the message sending. The character is "0x1B".

Table 5-2 describes the PDU packet structure (The value range of the packet is 0–9, A–F, a–f, two characters forms an octet value. For example, "23"=0x23, "2a"=0x2a, all are hex)

Table 5-2 PDU packet structure

[<SCA>]			
<sc_len>	<type_addr>	<numbers>	TPDU

Figure 5-4 shows the structure of <SCA> message center address.

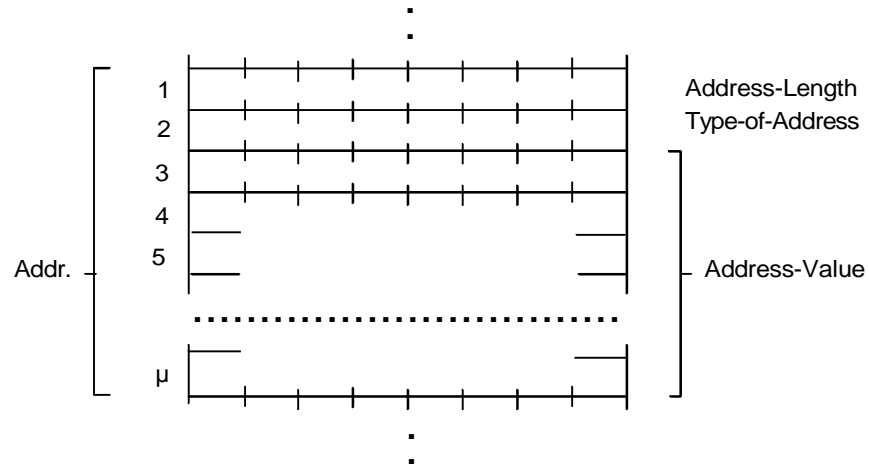


Figure 5-4 <SCA> structure

<sc_len>: The length of the service center number indicates half of the characters of <type_addr> and <numbers>.

<type_addr>: Number address type of two characters.

Figure 5-5 shows <type_addr> structure.

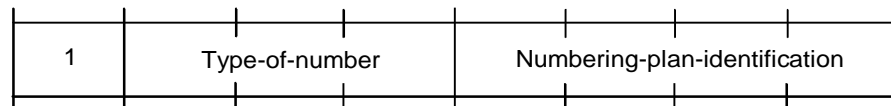


Figure 5-5 <type_addr> structure

Type-of-Number (bit6...bit4):

- | 0 0 0: If a user does not know the validation information of the destination address, use this value. The address number is formed by the network.
- | 0 0 1: If a user can identify the international number or take it as the national number, use this value.
- | 0 1 0: National number. No prefix or postfix is allowed. If a user sends a national number, use this value.
- | 0 1 1: A specified number in the network for management or services. A user cannot use this value.
- | 1 0 1: The default 7bit coding method for the GSM number. Not in use.
- | 1 1 0: Short number, not in use.

1 1 1 1: Extended and retained, not in use.

Numbering-plan-identification (bit3...bit0):

(Note: When the value of bit6/bit4 is 000,001,010. bit3/bit0 is invalid with other values)

1 0 0 0: The number is defined by the network number.

1 0 0 1: ISDN/telephone numbering plan.

1 0 0 1: Data numbering plan, not in use.

1 0 1 0: Telex numbering plan, not in use.

1 1 0 0: National numbering plan, not in use.

1 1 0 0: Private numbering plan, not in use.

1 1 0 1: ERMES numbering plan, not in use.

<numbers>: Address number. One byte has two numbers. bit3-bit0 has the first number and bit7-bit4 has the second number.

Figure 5-6 shows the coding sequence of a half-byte.

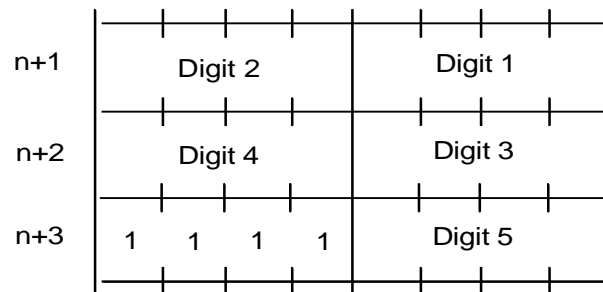


Figure 5-6 Half-byte coding for 5 numbers

Note: If the number length is an odd number, the highest four bits of the octet are filled with 1111.

'*': 1010

'#': 1011

'a': 1100

'b': 1101

'c': 1110

For example

If the number of SCA is 13902900, then <numbers> is31099200.

If the length of SCA number is an odd number: 139029001, <numbers> is "31099200F1".

If the number type is "A1", the corresponding <SCA> is "05a131099200".

If the type indication is the international number "A1", but the number is the national number of "13902900". Thus, "86" is required before the phone number. The corresponding <SCA> is "06a16831099200".

Table 5-3 lists TPDU data.

Table 5-3 The data structure of TPDU

1Octet							1Oct	2Oct-12Oct	1Oct	1Oct	1Oct	1Oct	
RP	UDHI	SR	VPF		RD	MTI		MR	DA	PI	DC	VP	UDL
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0						

<MTI>: Message type.

bit1 bit0

- 0 0 SMS-DELIVER (in the direction SC to MS)
- 0 0 SMS-DELIVER REPORT (in the direction MS to SC)
- 1 0 SMS-STATUS-REPORT (in the direction SC to MS)
- 1 0 SMS-COMMAND (in the direction MS to SC)
- 0 1 SMS-SUBMIT (in the direction MS to SC)
- 0 1 SMS-SUBMIT-REPORT (in the direction SC to MS)
- 1 1 Reserved

<RD>: Indicates whether the SC needs to receive a message that is saved in the Scand has the same MR and DA as the previous OA.

- 0: Accept
- 1: Not accept

<VPF>: The validity of the VP field.

- bit4 bit3
- 0 0 VP invalid
- 1 0 VP valid, the format is relative that is provided currently
- 0 1 VP valid, the format is enhanced

| 1 1 VP valid, the format is absolute

<RP>: Message reply path.

| 0: Not set

| 1: Set the return path.

<UDHI>: User data header identifier.

| 0: User data section only has a message.

| 1: User data section has a message and a header.

<SRR>: Status report request

| 0: The status report that indicates that a message is sent successfully is not required.

| 1: The status report that indicates that a message is sent successfully is required.

<MR>: Message identifier. Value: 0–255.

<DA>: Destination address. It is the same that is defined by the SCA. There are 2–12 octets in total. The maximum address number of the DA section is 20.

<PID>: Protocol identifier.

PID							
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0

Bit7 bit6 (bit 7 = 0, bit 6 = 0)

| 0 0 Assign bits 0..5, the values are defined as follows.

| 1 0 Assign bits 0..5, the values are defined as follows.

| 0 1 Retain

| 1 1 Assign bits 0..5 for special use of SC

Bit5 values:

| 0: No interworking, but SME-to-SME protocol

| 1: Telematic interworking (in this situation, value of bits4...0 is valid)



Bit4...Bit0: telematic devices type identifier. If the value is 1 0 0 1 0, it indicates email. Other values are not supported currently.



<DCS>: User data coding method.

Bit7...bit4		Bit3....bit0	
00xx	Bit 5	0: Message is not compressed	Bit1 bit0 Message type identifier 0 0 : Class0, provide display and responding SC storage
		1: Message is compressed . Not supported.	0 1 : Class1, save to NV (if NV is full, saving to UIM card) 1 0 : Class2, dedicated to the UIM card, storag status is reported to SC; if the UIM card is full, the failure and reason are reported to SC
	Bit 4	0: bit1 and bit0 retained	0 0 : Class3, save to the TE, MS receives messa and does not sent to TE, but responds to SC
		1: bit1 and bit0 indicate the message type	Bit3 bit2 Message type identifier 0 0 : GSM 7bit default coding 0 1 : 8bit data 1 0 : UCS2 coding method. If a user enter Chin it is adopted 0 0 : Retained value
0100...1011	Retained		
1100	Discard message content, message waiting indication is displayed, user data is in GSM 7 bit coding	Setting of Bit3...0 is the same as that of bit7...4=11	
1101	Store message, message waiting indication is displayed, user data is in GSM 7 bit coding	Bit3 indication : 0: Message waiting funciton is invalid 1: Message waiting funciton is activated Bit2 retained, value is 0 Bit1 bit0 Message type indication 0 0 : Voice mail waiting 0 1 : Fax waiting 1 0 : E-mail waiting 0 0 : Unknown type message waiting	

Bit7...bit4		Bit3.....bit0
1110	Store message, message waiting indication is displayed, user data is in UCS2 (not compressed) coding	Setting of Bit3...0 is the same as that of bit7...4=11
1111	Data coding/message class	Bit3 Retain, the value is 0 Bit2 Message coding method: † 0:GSM 7bit default coding † 1: 8bit data Bit1 bit0 Message type identifier 0 0 : Class0, provides the display and responding the SC, but no storage 0 1 : Class1, saves to NV (if NV is full, saves to UIM card) 1 0 : Class2, dedicated for the UIM card, the storage status is returned to SC after storage; if the UIM card is full, the failure and reason are reported 0 0 : Class3, saves to TE. MS receives message and does not send to TE, but responds to SC

<VP>: Validity period, starting from SC receives a message. If VPF=00, the field is missed, the time is as follows:

VP Value	Description
0 to 143	(VP + 1) x 5 minutes
144 to 167	12 hours + ((VP - 143) x 30 minutes)
168 to 196	(VP - 166) x 1 day
197 to 255	(VP - 192) x 1 week

<UDL>: User data length depends on the coding method.

- | If the 7-bit default coding is adopted, it indicates the number of septets.
- | If the 8bit coding is adopted, it indicates the number of octets.
- | If the UCS2 coding is adopted, it indicates the number of octets of UDL.
- | If there is compressed 7-bit, 8bit or UCS2 coding, it indicates the number of octets after compression.

For compressed message coding, the length of *<UD>* cannot exceed 160 septets. For messages that have no compressed codes, the length of *<UD>* does not exceed 140 octets.

<UD>: User data depends on the UDL.

5.13 SMS Storage Command: +CMGW

5.13.1 Syntax Structure

Command	Possible Response(s)
if pdu mode (+CMGF=0): +CMGW= <i><length></i> [, <i><stat></i>]]<CR> PDU is given <ctrl-Z/ESC> if text mode (+CMGF=1): +CMGW[= <i><oa/da></i> [, <i><toa/oda></i> [, <i><stat></i>]]<CR> text is entered <ctrl-Z/ESC>	<CR><LF>+CMGW: <index><CR><LF><CR><LF>OK<CR><LF> If there is a message related error: <CR><LF>+CMS ERROR: <err><CR><LF>
+CMGW=?	<CR><LF>OK<CR><LF>

5.13.2 Description

Save a message to the *<mem2>* memory that is set by +CPMS. The PDU mode is not supported currently.

5.13.3 Value Description

| TEXT mode:

<*oa/da*>: Phone number of a message sender/recipient. The value range is 0–9, *, and #. Up to 20 characters.

<*tooa/toda*>: Address coding method. A digit of one byte. The parameter is valid only when the address coding is 8bit. Currently, the EC360 adopts 4bit coding. Thus, the parameter is invalid. The value of the parameter is 0.

The highest four digits indicate the number type:

- | 0: UNKNOWN
- | 1: INTERNATIONAL

The lowest four digits indicate the number plan:

- | 0: UNKNOWN
- | 1: TELEPHONY

<*stat*>: Message type, string.

- | "REC UNREAD": Receive an unread message
- | "REC READ": Receive a read message
- | "STO UNSENT": Store an unsent message
- | "STO SENT": Store a sent message

The default value is "STO UNSENT".

| PDU mode:

<*length*>: Half of the sent TPDU characters.

<*mr*>: Message identifier. Its value is the decimal number of 0–9. Its value range is 0–255

<*ctrl-Z*>: Identify the end of a PDU data. The character is "0x1A".

<*ESC*>: Cancel the message sending. The character is "0x1B".

<*stat*>: Message storage status. Values are as follows (in the PDU mode, the default value is 0)

- | 0: Unread messages received
- | 1: Read messages received
- | 2: Unsent messages stored

- l 3: Sent messages stored
- l 4: All messages (only for +CMGL)

<index>: Position number in the memory. Its value is the decimal number of 0–9. Its value range is the maximum capacity of a message minus one.

PDU packet structure is consistent to the **^HCMGS** description.

5.14 SMS List Command: ^HCMGL

5.14.1 Syntax Structure

Command	Possible Response(s)
^HCMGL [= <i><st at></i>]	In the TEXT mode, a command is successfully executed: <CR><LF> ^HCMGL : <index1>, <tag1><CR><LF> <CR><LF> ^HCMGL : <index2>, <tag2><CR><LF> <CR><LF> OK <CR><LF> Otherwise: <CR><LF> +CMS ERROR : <err><CR><LF>
^HCMGL =?	<CR><LF> ^HCMGL : (list of supported <stat>s) <CR><LF><CR><LF> OK <CR><LF>

5.14.2 Description

Execute the EXECUTION command to query all the indices defined by *<stat>* in *<mem1>*.

Message status reports are processed as normal messages.

If *<stat>* adopts the default value, the EXECUTION command is equal to the SET command **^HCMGL** = "ALL".

Execute the TEST command to query supported status values.

5.14.3 Value Description

<stat> message type, string.

- | “REC UNREAD”: Unread messages received
- | “REC READ”: Read messages received
- | “STO UNSENT”: Unsent messages stored
- | “STO SENT”: Sent messages stored
- | “ALL”: All messages

<index>: Integer, indicates the position in memory.

<tag>: Integer, message status.

- | 1: Read messages
- | 3: Unread messages
- | 5: Sent messages
- | 7: Unsent messages

5.15 SMS Read Command: ^HCMGR

5.15.1 Syntax Structure

Command	Possible response(s)
^HCMGR =<index>[,<mode>]	In the TEXT mode and a command is successfully executed: <CR><LF> ^HCMGR : <callerID>, <year>, <month>, <day>, <hour>, <minute>, <lang>, <format>, <length>, <pri>, <prv>, <type> <CR><LF><msg> <CTRL+Z><CR><LF> OK <CR><LF> Otherwise: <CR><LF> +CMS ERROR : <err><CR><LF>
^HCMGR =?	<CR><LF> OK <CR><LF>

5.15.2 Description

Execute the EXECUTION command to query messages whose storage position is *<index>* in *<memI>*. According to the value of *<mode>*, the message status is changed by MS or TE. The processing when the parameters are null are the same as that when parameter values are zero.

Execute the TEST command and **OK** is returned.

5.15.3 Value Description

<index>: Integer indicates the position in memory.

<mode>: Changing message status.

- | 0: Change the status to read
- | 1: Does not change the status

<callerID>: Phone number of a message sender.

<format>: Coding scheme of a message.

- | 0: GSM 7 BIT
- | 1: ASCII
- | 2: IA5
- | 3: OCTET
- | 4: LATIN
- | 5: LATIN_HEBREW
- | 6: UNICODE
- | 7: Others

<year, month, day, hour, minute>: The time of message receiving.

<Length>: Length of a received message.

<lang>: Language.

- | 0: UNSPECIFIED
- | 1: ENGLISH
- | 2: FRENCH
- | 3: SPANISH
- | 4: JAPANESE
- | 5: KOREAN
- | 6: CHINESE

- | 7: HEBREW
- <prt>: Priority level.
- | 0: Normal
 - | 1: Interactive
 - | 2: Urgent
 - | 3: Emergency
- <Prv>: Privacy level.
- | 0: Normal
 - | 1: Restricted
 - | 2: Confidential
 - | 3: Secret
- <type>: Message type.
- | 0: Normal
 - | 1: CPT
 - | 2: Voice Mail
 - | 3: SMS Report
- <Msg>: Received messages.

5.16 SMS Sending Success Report Indicator: ^HCMGSS

5.16.1 Syntax Structure

Command	Possible response(s)
	<CR><LF>^HCMGSS: <mr><CR><LF>

5.16.2 Description

If a message is sent successfully, MS reports the indicator to TE.

5.16.3 Value Description

<mr>: Message identifier. Its value is decimal number of 0–9. Its value range is 0–65535.

5.17 SMS Sending Failure Report Indicator: ^HCMGSF

5.17.1 Syntax Structure

Command	Possible Response(s)
	<i><CR><LF>^HCMGSF: <err code><CR><LF></i>

5.17.2 Description

If message sending fails, MS reports the indicator to TE.

5.17.3 Value Description

<err code>: Message sending error code.

- | 0: WMS_ADDRESS_VACANT_S
- | 1: WMS_ADDRESS_TRANSLATION_FAILURE_S
- | 2: WMS_NETWORK_RESOURCE_SHORTAGE_S
- | 3: WMS_NETWORK_FAILURE_S
- | 4: WMS_INVALID_TELESERVICE_ID_S
- | 5: WMS_OTHER_NETWORK_PROBLEM_S
- | 6: WMS_OTHER_NETWORK_PROBLEM_MORE_FIRST_S
- | 31: WMS_OTHER_NETWORK_PROBLEM_MORE_LAST_S
- | 32: WMS_NO_PAGE_RESPONSE_S
- | 33: WMS_DESTINATION_BUSY_S
- | 34: WMS_NO_ACK_S
- | 35: WMS_DESTINATION_RESOURCE_SHORTAGE_S
- | 36: WMS_SMS_DELIVERY_POSTPONED_S
- | 37: WMS_DESTINATION_OUT_OF_SERVICE_S



- | 38: WMS_DESTINATION_NO_LONGER_AT_THIS_ADDRESS_S
- | 39: WMS_OTHER_TERMINAL_PROBLEM_S
- | 40: WMS_OTHER_TERMINAL_PROBLEM_MORE_FIRST_S
- | 47: WMS_OTHER_TERMINAL_PROBLEM_MORE_LAST_S
- | 48: WMS_SMS_DELIVERY_POSTPONED_MORE_FIRST_S
- | 49: WMS_SMS_DELIVERY_POSTPONED_MORE_LAST_S
- | 64: WMS_RADIO_IF_RESOURCE_SHORTAGE_S
- | 65: WMS_RADIO_IF_INCOMPATIBLE_S
- | 66: WMS_OTHER_RADIO_IF_PROBLEM_S
- | 67: WMS_OTHER_RADIO_IF_PROBLEM_MORE_FIRST_S
- | 95: WMS_OTHER_RADIO_IF_PROBLEM_MORE_LAST_S
- | 96: WMS_UNEXPECTED_PARM_SIZE_S
- | 97: WMS_SMS_ORIGINATION_DENIED_S
- | 98: WMS_SMS_TERMINATION_DENIED_S
- | 99: WMS_SUPPL_SERVICE_NOT_SUPPORTED
- | 100: WMS_SMS_NOT_SUPPORTED_S
- | 101: WMS_RESERVED_101_S
- | 102: WMS_MISSING_EXPECTED_PARM_S
- | 103: WMS_MISSING_MANDATORY_PARM_S
- | 104: WMS_UNRECOGNIZED_PARM_VALUE_S
- | 105: WMS_UNEXPECTED_PARM_VALUE_S
- | 106: WMS_USER_DATA_SIZE_ERROR_S
- | 107: WMS_OTHER_GENERAL_PROBLEMS_S
- | 108: WMS_OTHER_GENERAL_PROBLEMS_MORE_FIRST_S
- | 109: WMS_OTHER_GENERAL_PROBLEMS_MORE_LAST_S



6 Security Setting Interface Description

6.1 PIN Modification Command: +CPWD

6.1.1 Syntax Structure

Command	Possible Response(s)
+CPWD=<fac>,<oldpwd>,<newpwd>	<CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CPWD=?	<CR><LF>+CPWD: list of supported (<fac>,<pwdlength>)s<CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>

6.1.2 Description

Execute the EXECUTION command to change the password of the equipment lock function (such as PIN).

Execute the TEST command to query the equipments supported by the commands and the maximum length of corresponding passwords.

6.1.3 Value Description

<fac>: Objective of the command (only UIM cards are supported, value is "SC").

- | "SC": PIN of a UIM card
- | "P2": PIN2 of a UIM card

"AB": Not supported currently.

<oldpwd>, *<newpwd>*: Old password and new password, strings.

<pwdlength>: Maximum length of an equipment lock password.

6.2 PIN Enabling and Query Function Command: +CLCK

6.2.1 Syntax Structure

Command	Possible Response(s)
<code>+CLCK=<fac>,<mode>[,<passwd>[,<class>]]</code>	<p>If <i><mode></i>=2 and the command is successfully executed:</p> <p><code><CR><LF>+CLCK:</code> <code><status><CR><LF><CR><LF>OK<CR><LF></code></p> <p>If <i><mode></i>≠2 and the command is successfully executed:</p> <p><code><CR><LF>OK<CR><LF></code></p> <p>If there is a MS-related error:</p> <p><code><CR><LF>+CME ERROR: <err><CR><LF></code></p>
<code>+CLCK=?</code>	<p><code><CR><LF>+CLCK:</code> (list of supported <i><fac></i>s) <code><CR><LF><CR><LF>OK<CR><LF></code></p>

6.2.2 Description

Execute the command to lock, unlock, and query *<fac>* of MS or network equipments. Passwords are required.

Execute the TEST command to query equipments supported by the command.

6.2.3 Value Description

<fac>: Objective of the command (only UIM cards are supported, value is "SC").

"SC": UIM card (if the command is set, passwords are required when MS is powered on)

<mode>:

- | 0: Unlock
- | 1: Lock
- | 2: Query status

<status>:

- | 0: Inactive
- | 1: Active

<passwd>: It is a string. Quotation marks are required. The password is the same as the password set by the password changing command **+CPWD**. The item is a must when mode =0 or 1.

<classx>: Not supported currently.

- | 1: Voice call
- | 2: Data
- | 4: Fax
- | 8: Message
- | 7: Default value

6.3 PIN Management Command: ^CPIN

6.3.1 Syntax Structure

Command	Possible Response(s)
^CPIN =<pin>[,<newpin>]	<CR><LF> OK <CR><LF> If there is a MS-related error: <CR><LF> +CME ERROR: <err><CR><LF>
^CPIN?	<CR><LF> ^CPIN: <code>,[<times>],[<puk_times>,<pin_times>,<puk2_times>,<pin2_times><CR><LF><CR><LF> OK <CR><LF> If there is a MS-related error: <CR><LF> +CME ERROR: <err><CR><LF>
^CPIN=?	<CR><LF> OK <CR><LF>

6.3.2 Description

Execute the READ command to query whether there is password authentication requirement and the remainder validation times.

Execute the SET command to validate and unlock PIN and PIN2.

If PIN or PIN2 is required, enter **+CPIN**=<pin> to validate.

If PUK or PUK2 is required, enter **+CPIN**=<pin>. Use <newpin> to unlock. The first parameter is SIM PUK or SIM PUK2. The second parameter <newpin> is PIN or PIN2.

When you execute the SET command, if PIN is not required, an error **+CME ERROR** is returned.

 NOTE

PIN or PUK validation during an emergency call may lead to the fail of the call.

6.3.3 Value Description

<pin>, *<newpin>*: It is a string. Quotation marks are required.

<code>: It is a string (no quotation marks).

- | **READY**: MT does not require passwords. Since functions require PIN is not supported currently and there is PIN2 validation requirement, **READY** is not returned.
- | **SIM PIN**: ME is waiting SIM PIN to be given.
- | **SIM PUK**: ME is waiting SIM PUK to be given. It is used to unblock SIM PIN that is blocked.
- | **SIM PIN2**: PIN2 requirement (functions protected by PIN2 are not supported in this version).
- | **SIM PUK2**: PUK2 requirement. It is used to unblock SIM PIN2 that is blocked.

Note: To facilitate the function extension, the SIM PIN2 validation function is not disabled in this version.

<times>: Remainder times. The maximum value of PIN and PIN2 is three. The maximum value of PUK and PUK2 is ten.

Note: If a password is required, *<times>* shows remainder times of password validation. If a password is not required, *<times>* is null.

<puk_times>: Reminder PUK entering times. The maximum value is ten.

<pin_times>: Reminder PIN entering times. The maximum value is three.

<puk2_times>: Reminder PUK2 entering times. The maximum value is ten.

<pin2_times>: Reminder PIN2 entering times. The maximum value is three.

6.4 PIN Management Command +CPIN

6.4.1 Syntax Structure

Command	Possible Response(s)
+CPIN=<pin>[,<newpin>]	<CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CPIN?	<CR><LF>+CPIN: <code><CR><LF><CR><LF>OK<CR><LF>
+CPIN=?	<CR><LF>OK<CR><LF>

6.4.2 Interface Description

The READ command is used to indicate whether password input request exists.

The SET command is used to check and unlock the PIN and PIN2.

If the current password input request is PIN or PIN2, input “+CPIN=<pin>” to check.

If the current password input request is PUK or PUK2, input “+CPIN=<pin>,<newpin>” to unlock. The first parameter is SIM PUK or SIM PUK2, and the second parameter is <newpin>, which is a new PIN or PIN2.

When using the SET command, if the no PIN input request exists currently, an error message “+CME ERROR” will be returned.

Note: Verifying PIN or PUK during an emergency call may make the call disconnected.

6.4.3 Value Description

<pin>, <newpin>: It is a string. Quotation marks are required.

<code>: It is a string (no quotation marks).

- | READY: MT does not require passwords. Since functions require PIN are not supported currently and there is PIN2 validation requirement, **READY** is not returned.
- | SIM PIN: UICC/SIM PIN password request
- | SIM PUK: UICC/SIM PUK password request ,is used to unlock the blocked SIM PIN
- | SIM PIN2: PIN2 requirement (functions protected by PIN2 are not supported in this version).
- | SIM PUK2: PUK2 requirement. It is used to unblock SIM PIN2 that is blocked.

Note: To facilitate the function extension, the SIM PIN2 validation function is disabled in this version.

6.5 Operation Mode Setting Command+CFUN

6.5.1 Syntax Structure

Command	Possible Response(s)
+CFUN=[<fun>]	<CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CFUN?	<CR><LF>+CFUN: <fun><CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CFUN=?	<CR><LF>+CFUN: (list of supported <fun>s), (list of supported <rst>s)<CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>

6.5.2 Interface Description

EXECUTION Command is used to set MS mode or Reset MS.

READ Command return current mode.

TEST Command is used to return all the currently supported values.

6.5.3 Value Description

<fun>:

- 0 Set as LPM (Low power) mode (Before setting this mode should be offline mode)
- 1 Set as online mode (default value) (Before setting this mode should be offline mode)
- 4 Set as offline mode (Before setting this mode should be FTM mode)
- 5 Set as FTM mode (Before setting this mode should be online mode)
- 6 Reset (Before setting this mode should be offline mode)

7 Phonebook Service Interface Description

7.1 Phonebook Memory Selection Command: +CPBS

7.1.1 Syntax Structure

Command	Possible response(s)
+CPBS=<storage> > [,<reserved>]	<CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CPBS?	<CR><LF>+CPBS: <storage>[,<used>,<total>]<CR><LF><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF>
+CPBS=?	<CR><LF>+CPBS: (list of supported <storage>s)<CR><LF><CR><LF>OK<CR><LF> >

7.1.2 Description

Execute the SET command to select phonebook memory storage <storage>, which is used by other phonebook commands. After MS is restarted, the initial setting is "SM".

Execute the READ command to return currently selected memory, and when supported by manufacturer, number of used locations and total number of locations in the memory.

Execute the TEST command to query supported memory types.

7.1.3 Value Description

<storage>: Phonebook memory type. Only "SM" is supported currently.

- | "SM": UIM card phonebook
- | "ME": NV phonebook

<reserved>: Retained.

<used>: It is an integer, indicating the number of used locations in selected memory.

<total>: It is an integer, indicating the total number of locations in selected memory.

7.2 Phonebook Read Command: ^CPBR

7.2.1 Syntax Structure

Command	Possible Response(s)
<code>^CPBR=<index1> > [,<index2>]</code>	<code>[<CR><LF>^CPBR: <index1>,<number>,<type>,<text>,<coding>[,<email>][[...] <CR><LF>^CPBR: <index2>,<number>,<type>,<text>],<coding>[,<email>]]<CR><LF>]<CR><LF>OK<CR><LF></code> If there is a MS-related error: <code><CR><LF>+CME ERROR: <err><CR><LF></code>

^CPBR=?	<p><CR><LF>^CPBR: (list of supported <index>s),[<nlength>],[<tlength>],[<mlenth>]<CR><LF><CR><LF>OK<CR><LF></p> <p>If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF></p>
----------------	---

7.2.2 Description

Execute the command to query entries between *index1* and *index2* (two parameters) or *index1* (one parameter) of the selected memory. If there is no entry, **+CME ERROR: not found** is returned

You can also enter *index1* only. Then entries of *index1* are returned.

Execute the TEST command to query the position range of the selected memory and the maximum length of <number>, <text> and <email>.

7.2.3 Value Description

<index1>, <index2>, <index>: It is integer indicating the position in phonebook memory. The value of *index1* and *index2* is smaller than the total field returned by **+CPBS?**.

<number>: It is a string , indicating the phone number. Quotation marks are required.

<type>: Phone number type. "145" indicates the international number. For detailed value, see the description of *type_addr* of SC numbers in "Message Sending Command: ^HCMGS".

<text>: It is a string, indicating name. If coding=1, it indicates that <text> is the hexadecimal numbers of raw data. Quotation marks are required.

<coding>: Coding scheme, indicating the coding of the <text> field and the specified language.

- | 0: GSM 7 bit Default Alphabet
- | 1: RAW mode (upload <text> in raw mode)
- | 2: ASCII (upload <text> in ASCII format)

<email>: It is a string, indicating e-mail address. Currently, the field is valid when an UIM card is used as the memory.

<nlength>: It is an integer, indicating the maximum length of a phone number.

<tlength>: It is an integer, indicating the maximum length of a name.

<mlength>: It is an integer, indicating the maximum length of a e-mail address (not supported currently).

7.3 Phonebook Write Command: ^CPBW

7.3.1 Syntax Structure

Command	Possible Response(s)
^CPBW=[<i><index></i>][, <i><number></i>][, <i><type></i>][, <i><text></i>][, <i><coding></i>][, <i><email></i>]]]	<pre> <CR><LF>^CPBW: <index>,<number>,<type>,<text>,<coding> <CR> <LF> <CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF> </pre>
^CPBW=?	<pre> <CR><LF>^CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>],[<mlength>]<CR><LF> ><CR><LF>OK<CR><LF> If there is a MS-related error: <CR><LF>+CME ERROR: <err><CR><LF> </pre>

7.3.2 Description

Execute the command to write contacts to the position identified by *index* in the selected memory. If parameters only have *index*, contacts saved in the position identified by *index* will be deleted. If *index* is omitted and *number* is given, a contact is saved in the first null position. If there is no null position, **+CME ERROR: memory full** is reported.

Execute the TEST command to query the position range of the selected memory, maximum length of *number*, all values of *type*, maximum length of *text*, and maximum length of email. When saving contacts, you need to make sure that the length of strings is within the range of maximum length.

To make sure that TE is notified of added or deleted contacts, the information is reported:

```
<CR><LF>^CPBW:  
<index>,<number>,<type>,<text>,<coding><CR><LF>
```

If both number and text are null, it means deletion.

7.3.3 Value Description

<*index*>: Integer, indicates the position of the phonebook in the memory. Value ranges from 1 to the maximum value can be queried.

<*number*>: Phone number, characters (valid characters are: '0-9', '#', '*', '+', '(', ')', '-'). '(', ')', and '-' can be omitted no matter they are on which positions, they will not be considered as invalid characters and no error will be reported. Quotation marks are required.

<*type*>: Number type. "145" indicates international numbers. For details, see the description of *type_addr* of SC numbers in "Message Sending Command: ^HCMGS".

<*text*>: It is a string, indicating names (return or quotation marks are not supported). Quotation marks are required.

<*coding*>: Coding scheme, indicating the coding and language of <*text*>.

- | 0: GSM 7 bit Default Alphabet
- | 1: RAW mode (upload <*text*> in raw mode)
- | 2: ASCII (upload <*text*> in ASCII mode)

<*email*>: It is a string, indicates email addresses. Currently, the field is valid only when the memory is the UIM card. It is not supported currently.

<*nlength*>: It is an integer, indicating the maximum length of a phone number.

<*tlength*>: It is an integer, indicating the maximum length of a name.

<*mlength*>: It is an integer, indicating the maximum length of a email address. It is not supported currently.

7.3.4 Instance

For example, **AT^CPBW = 1,"28780808",129,"80534E4E3A",1**

 **NOTE**

Description: 1 (the position in the memory), "28780808" (phone number), 129 (phone number type), "80534E4E3A" (Name: Huawei), 1 (name coding scheme: UCS2).

8 Description of the Voice Call Commands

8.1 Call Initiating D (Data Service)

8.1.1 Syntax Structure

Command	Possible Response(s)
D[digits]	<CR><LF> OK <CR><LF>

8.1.2 Interface Description

Execute this command to initiate a data service.

8.1.3 Value Description

<digits>: Destination number.

8.2 Call Initiating: +CDV (Voice Service)

8.2.1 Syntax Structure

Command	Possible Response(s)
+CDV[<i>digits</i>]	<CR><LF> OK <CR><LF> If there is MS-related errors: <CR><LF> +CME ERROR: <err><CR><LF>

8.2.2 Interface Description

Execute this command to initiate a voice call in the CDMA network.

8.2.3 Value Description

<*digits*>: The phone number of the callee.

8.3 Call Ending: +CHV (Voice Service)

8.3.1 Syntax Structure

Command	Possible Response(s)
+CHV	<CR><LF> OK <CR><LF> If there is MS-related errors: <CR><LF> +CME ERROR: <err><CR><LF>

8.3.2 Interface Description

Execute this command to end a voice call in the CDMA network.

8.4 Call Answering A (Data Service)

8.4.1 Syntax Structure

Command	Possible Response(s)
A	<CR><LF> OK <CR><LF>

8.4.2 Interface Description

If there is an incoming call on the MS, the TE invokes this command to trigger the MS to answer the incoming call. If there is another incoming call, the TE invokes this command also.

8.5 Call Answering: \$QCCAV (Voice Service)

8.5.1 Syntax Structure

Command	Possible Response(s)
\$QCCAV	<CR><LF> OK <CR><LF> If there is MS-related errors: <CR><LF> +CME ERROR: <err><CR><LF>

8.5.2 Interface Description

If there is an incoming call on the MS, the TE invokes this command to trigger the MS to answer the incoming call. A user can also press and hold the headset button for no longer than three seconds to answer an incoming call.

8.6 Incoming Call Indicator: RING

8.6.1 Syntax Structure

Command	Possible Response(s)
	RING

8.6.2 Interface Description

If there is an incoming call, the MS reports periodically (T=5s) the indicator.

8.7 Caller Identification Display: +CLIP

8.7.1 Syntax Structure

Command	Possible Response(s)
	<code><CR><LF>+CLIP:<number>,<type>,,,,<CLI validity><CR><LF></code>

8.7.2 Interface Description

If the CLIP URC report function is enabled by the +CLIP command, when there is an incoming call, the URC following RING is reported to TE periodically (the period is 5 s).

8.7.3 Value Description

<number>: Incoming call number. The value must be ASCII characters. Valid characters include 0–9, *, #.

<type>: Number type. "145" indicates an international number. For detailed value description, see the definition for **type_addr** of SC in "Message Sending Command +CMGS".

255, not supported by CDMA

<CLI validity>:

- | 0 CLI is valid
- | 1 CLI is rejected by the caller.
- | 2 CLI is unusable due to network restriction or network configuration.

Three fields are retained between *<type>* and *<CLI validity>*.

8.7.4 Instances

If the incoming call number is displayed, **+CLIP:82882690,129,,,0** is reported.

If a caller enables the CLIR function that fails CLIP, **+CLIP:,129,,,1** is reported.

If a network-related issue leads to the failure of CLIP, **+CLIP:,129,,,2** is reported.

8.8 Call Status Querying: +CLCC

8.8.1 Syntax Structure

Command	Possible Response(s)
+CLCC	[<CR><LF>+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>[,<alpha>[,<priority>]]] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>[,<alpha>[,<priority>]]] [...]]<CR><LF>]<CR><LF> OK <CR><LF>
+CLCC=?	<CR><LF> OK <CR><LF>

8.8.2 Interface Description

Execute this command to query the number of calls and the status of each call.

8.8.3 Value Description

<idx>: Call ID. The value of EC ranges from 0 to 6.

<dir>: Call direction. The value is as follows:

0: MO call

1: MT call

<state>: Call status. The value is as follows:

0: Active
1: On hold
2: Dialing
3: Alerting
4: Incoming call
5: Call waiting
<mode>: Call type. The value is as follows:

0: Voice call
1: Data call
2: Fax

<mpty>: Multi-party call. The value is as follows:
0: Non multi-party call
1: Multi-party call

<number>: Call number. The value must be ASCII characters. Valid characters include 0–9, *, #, and +. In addition, + can only be at the first digit.

<type>: Type of call number. EC is 255.

<alpha>: Text in the phonebook that corresponds with the call number (unsupported and reserved field). EC is 255.

<priority>: Unsupported. EC is 255.

8.9 Call Initiating Indicator: ^ORIG

8.9.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^ORIG:<call_x>,<call_type><CR><LF>

8.9.2 Interface Description

It indicates that the MS is initiating a call.

8.9.3 Value Description

<call_x>: Call ID. It is the unique ID identifies a call. It shows that a call is put through. The value range of EW is 1 to 9. The value range of EC is 0 to 6.

<call_type>: Call type. The value is as follows:

- 0: Voice call
- 1: Circuit switched data call – GSM WCDMA (GW)
- 2: Packet switched data call (GW)
- 3: CDMA SMS call
- 7: OTA call (standard OTASP numbers)
- 8: OTA call (none standard OTASP numbers)
- 9: Emergency call

8.10 Call Put-Through Indicator: ^CONN

8.10.1 Syntax Structure

Command	Possible Response(s)
	<i><CR><LF>^CONN:<call_x>,<call_type><CR><LF></i>

8.10.2 Interface Description

If a call is put through, MS reports to TE to indicate that the call is active.

8.10.3 Value Description

<call_x>: Call ID. It is the unique ID that identifies the call. It shows that a call is put through.

<call_type>: Call type. The value is as follows:

- 0: Voice call
- 1: Circuit switched data call (GW)
- 2: Packet switched data call (GW)

- 3: CDMA text message call
- 7: OTA call (standard OTASP numbers)
- 8: OTA call (none standard OTASP numbers)
- 9: Emergency call

8.11 Call Ending Indicator: ^CEND

8.11.1 Syntax Structure

Command	Possible Response(s)
	<code><CR><LF>^CEND:<call_x>,<duration>,<end_status>[,<cc_cause>]<CR><LF></code>

8.11.2 Interface Description

If a call is ended, MS reports to TE to indicate the call ending cause and the call duration.

8.11.3 Value Description

`<call_x>`: Call ID. The value range of EC is 0–6.

`<duration>`: Call duration. The unit is second.

`<end_status>`: Call ending cause. The value of EC is 255.

CM_CALL_END_OFFLINE=0, The board is offline.

CM_CALL_END_NO_SRV=21, Board is out of service.

CM_CALL_END_FADE=22, Call is ended normally.

CM_CALL_END_INTERCEPT=23, Call is interrupted by BS.

CM_CALL_END_REORDER=24, BS record is received during a call.

CM_CALL_END_REL_NORMAL=25, BS releases a call.

CM_CALL_END_REL_SO_REJ=26, BS rejects the current SO service.

CM_CALL_END_INCOM_CALL=27, There is incoming BS call.

CM_CALL_END_ALERT_STOP=28, received alert stop from BS.

CM_CALL_END_CLIENT_END=29, Call is ended normally by the client end.

CM_CALL_END_ACTIVATION=30, received end activation - OTASP call.

CM_CALL_END_MC_ABORT=31, MC ends call initiation or call.

CM_CALL_END_RUIM_NOT_PRESENT=34, RUIM is not available.

CM_CALL_END_NDSS_FAIL=99, NDSS error.

CM_CALL_END_LL_CAUSE=100, rxd a reason from lower layer, look in cc_cause

CM_CALL_END_CONF_FAILED=101, After a MS initiates a call, the network fails to respond.

CM_CALL_END_INCOM_REJ=102, MS rejects an incoming call.

CM_CALL_END_SETUP_REJ=103, A call is rejected during the put-through process.

CM_CALL_END_NETWORK_END=104, The release is from the network. For details, check

CM_CALL_END_NO_FUNDS=105, The phone fee is used up.

CM_CALL_END_NO_GW_SRV=106, The MS is out of the service area.

<cc_cause>: Call control message. The value of EC is 255.

UNASSIGNED_CAUSE	1
NO_ROUTE_TO_DEST	3
CHANNEL_UNACCEPTABLE	6
OPERATOR_DETERMINED_BARRING	8
NORMAL_CALL_CLEARING	16
USER_BUSY	17
NO_USER_RESPONDING	18
USER_ALERTING_NO_ANSWER	19
CALL_REJECTED	21
NUMBER_CHANGED	22
NON_SELECTED_USER_CLEARING	26



DESTINATION_OUT_OF_ORDER	27
INVALID_NUMBER_FORMAT	28
FACILITY_REJECTED	29
RESPONSE_TO_STATUS_ENQUIRY	30
NORMAL_UNSPECIFIED	31
NO_CIRCUIT_CHANNEL_AVAILABLE	34
NETWORK_OUT_OF_ORDER	38
TEMPORARY_FAILURE	41
SWITCHING_EQUIPMENT_CONGESTION	42
ACCESS_INFORMATION_DISCARDED	43
REQUESTED_CIRCUIT_CHANNEL_NOT_AVAILABLE	44
RESOURCES_UNAVAILABLE_UNSPECIFIED	47
QUALITY_OF_SERVICE_UNAVAILABLE	49
REQUESTED_FACILITY_NOT_SUBSCRIBED	50
INCOMING_CALL_BARRED_WITHIN_CUG	55
BEARER_CAPABILITY_NOT_AUTHORIZED	57
BEARER_CAPABILITY_NOT_PRESENTLY_AVAILABLE	58
SERVICE_OR_OPTION_NOT_AVAILABLE	63
BEARER_SERVICE_NOT_IMPLEMENTED	65
ACM_GEQ_ACMMAX	68
REQUESTED_FACILITY_NOT_IMPLEMENTED	69
ONLY_RESTRICTED_DIGITAL_INFO_BC_AVAILABLE	70
SERVICE_OR_OPTION_NOT_IMPLEMENTED	79
INVALID_TRANSACTION_ID_VALUE	81
USER_NOT_MEMBER_OF_CUG	87
INCOMPATIBLE_DESTINATION	88
INVALID_TRANSIT_NETWORK_SELECTION	91





SEMANTICALLY_INCORRECT_MESSAGE	95
INVALID_MANDATORY_INFORMATION	96
MESSAGE_TYPE_NON_EXISTENT	97
MESSAGE_TYPE_NOT_COMPATIBLE_WITH_PROTOCOL_STATE	98
IE_NON_EXISTENT_OR_NOT_IMPLEMENTED	99
CONDITIONAL_IE_ERROR	100
MESSAGE_NOT_COMPATIBLE_WITH_PROTOCOL_STATE	101
RECOVERY_ON_TIMER_EXPIRY	102
PROTOCOL_ERROR_UNSPECIFIED	111
INTERWORKING_UNSPECIFIED	127
REJ_UNSPECIFIED	160
AS_REJ_RR_REL_IND	161
AS_REJ_RR_RANDOM_ACCESS_FAILURE	162
AS_REJ_RRC_REL_IND	163
AS_REJ_RRC_CLOSE_SESSION_IND	164
AS_REJ_RRC_OPEN_SESSION_FAILURE	165
AS_REJ_LOW_LEVEL_FAIL	166
AS_REJ_LOW_LEVEL_FAIL_REDIAL_NOT_ALLOWED	167
MM_REJ_INVALID_SIM	168
MM_REJ_NO_SERVICE	169
MM_REJ_TIMER_T3230_EXP	170
MM_REJ_NO_CELL_AVAILABLE	171
MM_REJ_WRONG_STATE	172
MM_REJ_ACCESS_CLASS_BLOCKED	173
ABORT_MSG_RECEIVED	174
OTHER_CAUSE	175



CNM_REJ_TIMER_T303_EXP	176
CNM_REJ_NO_RESOURCES	177
CNM_MM_REL_PENDING	178
CNM_INVALID_USER_DATA	179

Note: <cc_cause> is reported only when a call is initiated by the network. If MS does not receive response from the network after initiating a call and the call is ended, <cc_cause> is not reported.

8.12 DTMF: ^DTMF

8.12.1 Syntax Structure

Command	Possible Response(s)
<code>^DTMF=<call_x>,<dtmf_digit>[,<on_length>[,<off_length>]]</code>	<code><CR><LF>OK<CR><LF></code> If there is MS-related errors: <code><CR><LF>+CME ERROR: <err><CR><LF></code>

8.12.2 Interface Description

During a call, DTMF value is sent to the network by signaling and the DTMF tone is played on the MS.

There are two DTMF tone playing modes in the board: burst and continuous.

When the AT command carries only <call_x> and <dtmf_digit>, the board sends the command to the network to ask the playing of DTMF tone in the burst mode. Meanwhile, the board plays the DTMF tone in the burst mode. The default duration is tb (The duration of DTMF tone playing in the burst mode. The default value is 150 ms).

If the AT command carries <call_x>, <dtmf_digit>, and <on_length>. In addition, the value of <on_length> is 95, 150, 200, 250, 300, or 350 (unit: ms), the board sends the command to the network to ask the playing of DTMF tone in the burst mode. Meanwhile, set the DTMF tone playing duration based on the value of on_length. However, the local burst duration set on MS is not changed.

If the AT command carries <call_x>, <dtmf_digit>, and <on_length> and the value of <on_length> is 0 or 1:

- | When the value of <on_length> is 1, the board sends/plays the DTMF tone continuously.
- | When the value of <on_length> is 0, the board sends the command to stop the playing of DTMF tone.

Local settings on the board:

- | Burst tone duration tb (95, 150, 200, 250, 300, 350, unit: ms)
- | The maximum duration (tc) of the continuous DTMF playing mode. The default value is 60 s.

8.12.3 4.14.3 Value Description

<call_x>: Call ID. The value of EC is 0–6.

<dtmf_digit>: DTMF value. The value must be ASCII characters. Valid characters include 0–9, *, #.

<on_length>: 1: Execute the command to play DTMF tone in the continuous mode.

0: Execute the command to stop playing DTMF tone in the continuous mode.

95, 150, 200, 250, 300, 350: DTMF tone duration, unit: ms.

<off_length>: The interval between DTFM tones in the burst mode, unit: ms. The field is reserved.

8.13 Flash/Flash With Information Sending: ^HFLASH

8.13.1 Syntax Structure

Command	Possible Response(s)
AT^HFLASH	<CR><LF> OK <CR><LF>
AT^HFLASH=<phone number>	If there is MS-related errors: <CR><LF> +CME ERROR: <err><CR><LF>

8.13.2 Interface Description

Execute this command to enable the FLASH function. First, parameter validity of the AT command will be checked, including phone number and the length.

Constraint: The value must be ASCII characters. A phone number is a numeric string of zero to 32 digits. Then a FLASH command is sent. If there is no ongoing call, an error is reported.

If there is a waiting call, a FLASH command that does not carry a phone number is executed to answer the new incoming call.

During a call, a FLASH command that carries a phone number is executed to call a third party.

For other situations, an error is reported.

8.13.3 Value Description

<phone number>: Outgoing phone number. A phone number is a numeric string of zero to 32 digits.

8.14 Voice Mode Change Command ^CVOICE

8.14.1 Syntax Structure

Command	Possible Response(s)
^CVOICE=<mode>	<CR><LF>OK<CR><LF>
^CVOICE?	<CR><LF>^CVOICE: <mode >[,<sampling_rate>,<data_bit>,<frame_period>] <CR><LF><CR><LF>OK<CR><LF>
^CVOICE =?	<CR><LF>^CVOICE: (list of supported <mode >s) <CR><LF><CR><LF>OK<CR><LF>

8.14.2 Interface Description

The SET command is used to set the voice mode.

READ command is used to read the current voice mode, and return sampling rate、 data bit、 frame period.

TEST Command is used to return all the valid value for voice mode.

8.14.3 Value Description

<mode>: Voice mode

0 PC Voice Mode

1 Earphone Mode

<sampling _rate>: sampling rate

<data_bit>: data bit

<frame_period> : frame period, take millisecond as unit.

8.14.4 Implementation Description

Privately owned by Huawei

Optional

8.14.5 UTPS Related Flow

UTPS use this command to change the voice call mode. After change to PC Voice Mode, Opening related voice channel is needed when set up voice call. And Command ^DDSETEX is used to notify device voice channel has been opened.

8.15 Voice Output Port Setting

Command[^]DDSETEX

8.15.1 Syntax Structure

Command	Possible Response(s)
[^] DDSETEX=<port>	<CR><LF>OK<CR><LF> If there is MS-related errors: <CR><LF>+CME ERROR: <err><CR><LF>
[^] DDSETEX=?	<CR><LF> [^] DDSETEX: (list of supported<port >s)<CR><LF><CR><LF>OK<CR><LF>

8.15.2 Interface Description

The SET command is used to notify the device voice output port, After TE successfully opened port, send confirm notification to device, then can start PC voice services.

TEST Command return the valid value for voice output port.

8.15.3 Value Description

<port >: voice output port,

- 1 MODEM Port
- 2 DIAG Port
- 3 PCUI Port
- 4 PCVOICE Port

8.15.4 Implementation Description

Privately owned to Huawei

Optional



8.15.5 UTPS Related Flow

When UTPS is with PC voice mode, this command is used to give notification to device that UTPS has opened the voice port, then PC voice service can be started. UTPS has to successfully open the port firstly, and then send the notification.



9 Data Service Interface Description

9.1 PPP User Password Read Command ^PPPCFG

9.1.1 Syntax Structure

Command	Possible Response(s)
^ PPPCFG or ^ PPPCFG?	<CR><LF>^ PPPCFG: < ppp_user_id>,<ppp_pass_word><CR><LF><CR><LF> If there is MS-related errors: <CR><LF>ERROR<CR><LF>
^ PPPCFG = < ppp_user_id>,<ppp_pass_word>	<CR><LF>OK<CR><LF> If there is MS-related errors: <CR><LF>ERROR<CR><LF>

9.1.2 Interface Description

This at command is used to set user settings, read ppp user name and password.

9.1.3 Value Description

< ppp_user_id>: string

ppp authentication user name

<ppp_pass_word>: string

Ppp authentication user password.

9.2 Dormant indication ^DSDORMANT

9.2.1 Syntax Structure

Command	Possible Response(s)
	<CR><LF>^DSDORMANT : <dormant_state><CR><LF>

9.2.2 Interface Description

After data service connection is established, there is no uplink or downlink data transmission in a special time, Network or MS will request to step into dormant status. Command “AT+CTA?” is used to read the time which is set from MS, when the time is 0, the function that request to step into dormant status from MS is closed.

9.2.3 Value Description

<dormant state>: dormant status:

0: Nor Dormant Status

1: Dormant Status

2-255: Reserved

9.3 Read DataCard Dormant Status ^isdor

9.3.1 Syntax Structure

Command	Possible Response(s)
^isdor	<CR><LF>< dormant_status ><CR><LF><CR><LF>OK<CR><LF>

9.3.2 Interface Description

Get that data card has step into dormant state or not.

9.3.3 Value Description

< dormant status >:

Nor Dormant State: Modem is not in dormant state

Dormant state: Modem is in dormant state

9.3.4 Example Description

Advisor

Modem is not in dormant state

Ok

10 Overall Design Constraints

10.1 Standards Compliance

For details of AT command standard, see TIA/EIA/IS707.3.

10.2 Hardware Limitations

None

10.3 Technology Limitations

None



11 Software Quality Attributes

None





12 Dependencies

Based on the stability of Qualcomm codes.



13 Feasibility Analysis

None

14 Issues To Be Determined

None

15 Appendix

15.1 Appendix 1 AT Command Description

15.1.1 Basic Command

The format of basic commands is:

<command>[*<number>*]

<command> can be several English letters (A-Z) or "&" with a single English letter. *<number>* is a decimal number. It can have one bit or several bits. The first zero of *<number>* is omitted. If an AT command that should carry *<number>* does not carry *<number>*, *<number>* is defaulted as zero. If an AT command that should not carry *<number>* carries *<number>*, **TOO MANY PARAMETERS** is returned.

15.1.2 S Register Command

Commands begins with "S" are called S register commands.

Format:

- | **S***<parameter number>*?
- | **S***<parameter number>*=*<value>*

An S register command is formed by an "S" and a decimal number. The decimal number is called register ordinal number (parameter number). If a register ordinal number cannot be identified, it indicates that a command does not exist, and then **COMMAND NOT SUPPORT** is returned. Each S register saves a character. If a command is followed by a "?", it indicates that the command is a READ command. Execute a READ command to query the ASCII code of the character saved by the S register. The ASCII code is indicated by three decimal numbers. If there are no enough bits,

zero is filled. If an AT command is followed by a "=", it indicate that the command is an SET command. Replace the character saved in the S register with the value of *<value>*.

15.1.3 Extended Commands and Pre-defined Commands

Extended commands begin with "+". Pre-defined commands begin with a special character, such as "\$" and "%". All pre-defined commands in this manual begin with "^". Extended commands and pre-defined commands can be classified into two types: action commands and parameter commands.

I. Action Command

An ACTION command completes actions. An action command not only processes parameters of MS, such as **AT+CCFC** and **AT^HCMGS**. Action commands may carry parameters or not. Parameters are optional for action commands. An action command comprises of an EXECUTION command and a TEST command.

1 EXECUTION command

- Format:
- Without parameter: *<name>*
- With one parameter: *<name>[=<value>]*
- With multiple parameters: *<name>[=<compound_value>]*
<compound_value> indicates multiple parameters. "," is used to separate parameters. Parameters with a default value can be omitted and replaced by default values. If all parameters are omitted, "=" after *<name>* can be omitted. If a MS cannot identify *<name>*, the command does not exist. Then **COMMAND NOT SUPPORT** is returned. If a MS can identify *<name>* and commands (that should not carry parameters) carry parameters or parameter number exceeds the limit, **TOO MANY PARAMETERS** is returned.

1 TEST command

Format:

<name>=?

If a MS cannot identify *<name>*, **COMMAND NOT SUPPORT** is returned. If a MS can identify *<name>* and a response does not contain

parameters, **OK** is returned. If a response contains parameters, the value range of each parameter is returned, and then **OK** is returned.

II. Parameter Command

The PARAMETER command processes parameters of MS. These parameters may impact command execution. Parameter commands comprise of SET commands, READ commands, and TEST commands.

I SET Command

Format:

- With one parameter: *<name>[=<value>]*
- With multiple parameters: *<name>[=<compound_value>]*

Execute an SET command to set parameters. *<compound_value>* indicates several parameters. Several parameters are divided by ",". Parameters with default values can be omitted. If all parameters are omitted, "=" that follows *<name>* can be omitted also. If *<name>* cannot be identified, it indicates that an AT command does not exist and **COMMAND NOT SUPPORT** is returned. If *<name>* can be identified and an AT command that should not carry parameters carries parameters or parameters are too many, **TOO MANY PARAMETERS** is returned.

I READ command

Format:

<name>?

Execute the READ command to read parameter values.

I TEST command

Format:

<name>=?

If a MS cannot identify *<name>*, **COMMAND NOT SUPPORT** is returned. If a MS can identify *<name>* and a response does not contain parameters, **OK** is returned. If a response contains parameters, the value range of each parameter is returned, and then **OK** is returned.

15.2 Appendix 2 CME ERROR List

Note:

For all AT commands, if the default value of CMEE is 2, either **ERROR** or **CME ERROR** is reported. **CME ERROR** includes some common errors and particular errors of AT commands.

15.2.1 CME ERROR for Each Command and Possible Reasons

1 +CPWD:

- 16 DSAT_CME_INCORRECT_PASSWORD Reason number: 7
- 10 DSAT_CME_SIM_NOT_INSERTED Reason number: 4
- 100 DSAT_CME_UNKNOWN Reason number: 12
- 11 DSAT_CME_SIM_PIN_REQUIRED Reason number: 9
- 3 DSAT_CME_OP_NOT_ALLOWED Reason number: 40
- 15 DSAT_CME_SIM_WRONG Reason number: 6
- 103 DSAT_CME_ILLEGAL_MS Reason number: Not listed, in ec code
- 24 DSAT_CME_TEXT_STRING_TOO_LONG Reason number: 14
- 4 DSAT_CME_OP_NOT_SUPPORTED Reason number: 2

1 +CLCK:

- 16 DSAT_CME_INCORRECT_PASSWORD Reason number: 7
- 10 DSAT_CME_SIM_NOT_INSERTED Reason number: 4
- 100 DSAT_CME_UNKNOWN Reason number: 12
- 4 DSAT_CME_OP_NOT_SUPPORTED Reason number: 2
- 25 DSAT_CME_INVALID_CHAR_IN_TEXT Reason number: Not listed, in ec code
- 24 DSAT_CME_TEXT_STRING_TOO_LONG Reason number: 14



- 1 **+CPIN:**
 - 16 DSAT_CME_INCORRECT_PASSWORD Reason number: 7
 - 3 DSAT_CME_OP_NOT_ALLOWED Reason number: 40
 - 100 DSAT_CME_UNKNOWN Reason number: 12
 - 25 DSAT_CME_INVALID_CHAR_IN_TEXT Reason number: Not listed, in ec code
 - 24 DSAT_CME_TEXT_STRING_TOO_LONG Reason number: 14
 - 15 DSAT_CME_SIM_WRONG Reason number: 6
- 1 **+CPBS:**
 - 100 DSAT_CME_UNKNOWN Reason number: 12
 - 14 DSAT_CME_SIM_BUSY Reason number: 1
 - 3 DSAT_CME_OP_NOT_ALLOWED Reason number: 40
 - 10 DSAT_CME_SIM_NOT_INSERTED Reason number: 4
 - 11 DSAT_CME_SIM_PIN_REQUIRED Reason number: 9
- 1 **+CPBR:**
 - 3 DSAT_CME_OP_NOT_ALLOWED Reason number: 40
 - 100 DSAT_CME_UNKNOWN Reason number: 12
 - 21 DSAT_CME_INVALID_INDEX Reason number: 10
 - 22 DSAT_CME_NOT_FOUND Reason number: 11
 - 11 DSAT_CME_SIM_PIN_REQUIRED Reason number: 9
 - 10 DSAT_CME_SIM_NOT_INSERTED Reason number: 4
- 1 **+CPBW:**



- 3 DSAT_CME_OP_NOT_ALLOWED Reason number:
40
- 100 DSAT_CME_UNKNOWN Reason number:
12
- 21 DSAT_CME_INVALID_INDEX Reason number:
10
- 11 DSAT_CME_SIM_PIN_REQUIRED Reason number:
9
- 10 DSAT_CME_SIM_NOT_INSERTED Reason number:
4
- 24 DSAT_CME_TEXT_STRING_TOO_LONG Reason
number: 14
- 25 DSAT_CME_INVALID_CHAR_IN_TEXT Reason
number: Not listed, in ec code
- 26 DSAT_CME_DIAL_STRING_TOO_LONG Reason
number: 15
- 27 DSAT_CME_INVALID_CHAR_IN_DIAL_STRING
Reason number: 16
- 20 DSAT_CME_MEMORY_FULL Reason
number: 13

15.2.2 Error Description and Reason

- | 1: SIM card busy
- | 2: Operation not supported
- | 3: Validation when there is no validation requirement
- | 4: No SIM card
- | 5: There is a PUK validation request
- | 6: SIM card failure
- | 7: Wrong password
- | 8: Retrieving IMEI from NV failure or IMEI invalid
- | 9: Requesting PH-SIM PIN code
- | 10: Wrong index number
- | 11: Corresponding contact not found
- | 12: Unknown error
- | 13: Phonebook memory is full

- | 14: Text string too long
- | 15: Phone number too long
- | 16: Invalid character in phone number
- | 17: Network is timeout
- | 18: Service option temporarily wrong
- | 19: Network reject
- | 20: System error or retry operation due to busy
- | 21: Call deflection to a wrong number
- | 22: Call deflection to the own number
- | 23: User cannot be identified
- | 24: Resource for service does not exist
- | 25: Unknown service type
- | 26: Unknown network information
- | 27: No buffer area in CM for request sending
- | 28:SPN file error in SIM card
- | 29: Visit SPN file denied
- | 30: SPN file not exist
- | 31: MCC/MNC construct PLMN failure
- | 32: Long name/short name of operator not found
- | 33:Corresponding call of CALL_X not exist
- | 34: Operation mode not in the online mode
- | 35: Service status invalid
- | 36: Corresponding call_x of call forwarding command (CD) not incom
- | 37: Parameters of supplementary services are null (command 1x, 2x)
- | 38: Corresponding call not active
- | 39: Another SPN query operation in progress
- | 40: Operation not allowed

Common error:

1. 41: Since the MODEM interface is occupied, AT commands cannot be processed. The error may be returned for all AT commands.

15.2.3 CME ERROR and Description

- | 0: Phone failure



- | 3: Operation not allowed
- | 4: Operation not supported
- | 10: SIM not inserted
- | 11: SIM PIN required
- | 12: SIM PUK required
- | 13: SIM failure
- | 14: SIM busy
- | 15: SIM wrong
- | 16: Incorrect password
- | 17: SIM PIN2 required
- | 18: SIM PUK2 required
- | 20: Memory full
- | 21: Invalid index
- | 22: Not found
- | 23:Memory failure
- | 24:Text string too long
- | 26:Dial string too long
- | 27: Invalid characters in dial string
- | 30: No network service
- | 31: Network timeout
- | 32: Network not allowed - emergency calls only
- | 100: Unknown
- | 134: Service option temporarily out of order (#34)
- | 257: Network rejected supserv request
- | 258: Retry operation
- | 259: Invalid deflected to number
- | 260: Deflected to own number
- | 261: Unknown subscriber
- | 262: Service not available
- | 263: Unknown class
- | 264: Unknown network message
- | 65280: Call index error
- | 65281: Call state error
- | 65282: Sys state error



- | 65283: Parameters error
- | 65284: SPN file wrong
- | 65285: SPN file accessed denied
- | 65286: SPN file not exist
- | 65287: Another SPN query operation still not finished

15.2.4 Self-defined Common Errors for the Huawei

- | 4096: Modem is busy
- | 103: Illegal message
- | 25: Invalid characters in text string

15.2.5 Usage of Self-defined Common Errors

For terminals that support universal serial bus (USB) multiple-port mapping, AT commands can be executed through the MODEM port and PCUI port. If an AT command is executed through MODEM port or is not finished, AT commands cannot be executed through the PCUI port. To provide timely response to users, the PCUI port can be processed in the following ways:

- | If **CMEE=0: ERROR** is reported for command *xxx*.
- | If **CMEE=1:+CME ERROR:4096,INFO:xxx** is reported for command *xxx* (*XXX* is the copy of a command. It can contain up to 12 characters).
- | If **CMEE=2: +CME ERROR:modem is busy,INFO:xxx** is reported for command *xxx*.

15.3 Appendix 3 CMS ERROR List

Table 15-1 lists possible *<err>* values of **CMS ERROR** returned by all SMS AT commands.

Table 15-1 CMS error list

	1	300	301	302	303	305	313	314	320	321	322	340	50
+CNMI				4									
+CMGD		2		4			10		12	13			19

	1	300	301	302	303	305	313	314	320	321	322	340	50
+CNMA				4								18	19
+CPMS				4									
^HSMSSS													
^HCMGS	1			4		6							19
+CMGW	1	2		4		6	10		12		14		
^HCMGL				4					12				
^HCMGR		2		4			10		12	13			19

 **NOTE**

- | 1: SMS too long
- | 2: NV error
- | 4: Operation not allowed (initialization not finished)
- | 6: Wrong parameters
- | 10: SIM error
- | 11: SIM card busy
- | 12: Memory error
- | 13: Invalid memory index number <index>
- | 14: Memory full
- | 18: No SMS delivery
- | 19: Unknown error

15.4 Appendix 4 Summary of Final Result Codes

Final Result Code	No.	Description
OK	0	Indicates that an AT command is executed without error.
CONNECT	1	Indicates that a connection is established.

Final Result Code	No.	Description
NO CARRIER	3	Indicates that a connection is terminated.
ERROR	4	Indicates a normal error.
+CME ERROR: <i><err></i>		Indicates that the error type is shown by <i><err></i> .
+CMS ERROR: <i><err></i>		Indicates the error is related to SMS.
COMMAND NOT SUPPORT	Number not supported	Indicates that an AT command is not supported.
TOO MANY PARAMETERS	Number not supported	Indicates that there are too many parameters in an AT command.

Note: The final result code is the end of an AT command.

15.5 Appendix 5 Parameter Initial Values for AT Commands After MS Restart

Table 15-2 lists the initial value of parameters when MS is started.

Table 15-2 Initial value

	Initial Value
E	<i><value></i> is "1".
V	<i><value></i> is "1".
S3	<i><value></i> is "013".
S4	<i><value></i> is "010".
S5	<i><value></i> is "008".
+CPMS	<i><mem1></i> , <i><mem2></i> , and <i><mem3></i> is "ME".
+CPBS	<i><storage></i> is "SM".
+CMICLVL	<i><level></i> is "2".

	Initial Value
^CLVRING	<i><level></i> is "2".
^HSMSSS	<i><ack></i> =0, <i><prt></i> =0, <i><fm></i> =1, <i><Prv></i> =0.
+CMGF	<i><mode></i> =1.
+CMEE	<i><value></i> is "2".
+CNMI	<i><mode></i> =1, <i><mt></i> =1, <i><bm></i> =0, <i><ds></i> =2, <i><bfr></i> =0.
+CMUT	<i><n></i> is "0"
+CLVL	<i><level></i> is retrieved from NV.



List of reference:

[1] 3GPP 27.005-3d0

[2] 3GPP 27.007-320

[3] ITU-T Recommendation V.25 ter V0025-TE.DOC



16 Acronyms and Abbreviations

B

BER Bit Error Rate

D

DCS Data Coding Scheme

P

PCMCIA Personal Computer Memory Card International Association

PLMN Public Land Mobile Network

M

ME Mobile Equipment

R

RSSI Receive Signal Strength Indicator

S

SM Short Message

SCA Service Center Address



T

TE Terminal Equipment

U

URC Unsolicited Result Code



