

# **MC2261 AT Command User Manual**

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**ZTE CORPORATION**

## Update History

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Bak 1:The update history is added after this document is update.

Bak 2:This version only support sprint at command.

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# 1 ZTE AT Commands

## 1.1 SMS Text Mode Command

### 1.1.1 +CPMS: Preferred Message Storage

description	SET command is used to set the corresponding SMS storage media and return the current using information of selected storage media	
format	AT+CPMS=<mem1> [,<mem2>]	<CR><LF>+CPMS: <used1>,<total1>,<used2>,<total2><CR><LF><CR><LF>OK<CR><LF>
	AT+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2><CR><LF><CR><LF>OK<CR><LF>
	AT+CPMS= ?	+CPMS: (list of supported <mem1>s), (list of supported <mem2>s)<CR><LF><CR><LF>OK<CR><LF>
parameter	<p>&lt;mem1&gt; : Value of character string, indicating the storage media for receiving list SMS</p> <p>“MT” : receiving SMS storage</p> <p>&lt;mem2&gt; : Value of character string, indicating the storage media for writing SMS</p> <p>“MO” : sending SMS storage</p> <p>&lt;used1&gt; : indicating the current number of messages in &lt;mem1&gt;</p> <p>&lt;total1&gt; : indicating the total number of messages saved in &lt;mem2&gt;</p> <p>&lt;used2&gt; : indicating the current number of messages in &lt;mem1&gt;</p> <p>&lt;total2&gt; : indicating the total number of messages saved in &lt;mem2&gt;</p>	
note	READ command is used to return the name and using information of current selected storage media. TEST command is used to return all types of storage media MT supports	

### 1.1.2 +CNMI: New Message Indications to TE

description	Set command is used to set the procedure that new messages are reported to TE.	
format	AT+CNMI=[<mode>,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	<CR><LF>OK<CR><LF> otherwise: +CMS ERROR: <err>

	<p>AT+CNMI ?</p>	<p>&lt;CR&gt;&lt;LF&gt;+CNMI: &lt;mode&gt;,&lt;mt&gt;,&lt;bm&gt;,&lt;ds&gt;,&lt;bfr&gt; &lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt;</p>
	<p>AT+CNMI= ?</p>	<p>&lt;CR&gt;&lt;LF&gt;+CNMI: (list of supported &lt;mode&gt;s),(list of supported &lt;mt&gt;s),(list of supported &lt;bm&gt;s),(list of supported &lt;ds&gt;s),(list of supported &lt;bfr&gt;s) &lt;CR&gt;&lt;LF&gt;&lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt;</p>
<p>parameter</p>	<p>&lt;mode&gt;: set the message notice method (currently support mode=1). 0: cache the message notice in ME. If ME's cache memory is full, new notice will cover the older one 1: directly send the message notice to TE. When it is unable to send (e.g.. under online data mode), give up the notice(default) 2: directly send the message notice and message status report to TE. When it is unable to send (e.g.. under online data mode), cache the message notice into ME, and send to TE at a time Note: Message notice will be cached in volatile memory. If MT is powered off before sending, the message could lose. Therefore, as &lt;mode&gt;=0 or 2, can't use the message to directly forward (&lt;mt&gt;=2 and 3) &lt;mt&gt;: used to set the message storage and notice rules 1. save SMS_DELIVER to MT, and send a notice to TE(default) +CMTI: &lt;mem&gt;,&lt;index&gt; 2. not save SMS_DELIVER to MT, and send SMS_DELIVER to TE directly +ZCMT:&lt;callerID&gt;,&lt;year&gt;,&lt;month&gt;,&lt;day&gt;,&lt;hour&gt;,&lt;minute&gt;,&lt;second&gt;,&lt;lang&gt;,&lt;format&gt;,&lt;length&gt;,&lt;prt&gt;,&lt;prv&gt;,&lt;type&gt;,&lt;tag&gt;&lt;CR&gt;&lt;LF&gt;&lt;msg&gt; &lt;CTRL+Z&gt; 3. save SMS_DELIVER to MT, and not send a notice to TE &lt;bm&gt;: used to set cell broadcast information, do not temporarily support(default is 0) &lt;ds&gt;: used to set the message receipt 0: do not send the message receipt to TE 1: do not save the message receipt to MT, but send to TE +ZCDS:&lt;callerID&gt;,&lt;year&gt;,&lt;month&gt;,&lt;day&gt;,&lt;hour&gt;,&lt;minute&gt;,&lt;second&gt;,&lt;lang&gt;,&lt;format&gt;,&lt;length&gt;,&lt;prt&gt;,&lt;prv&gt;,&lt;type&gt;,&lt;tag&gt;&lt;CR&gt;&lt;LF&gt;&lt;msg&gt; &lt;CTRL+Z&gt; 2: save the message receipt to MT, and send a notice to TE through +CDSI to show the storage location +CDSI: &lt;mem&gt;,&lt;index&gt; &lt;bfr&gt;: used to set the cache processing from &lt;mode&gt;=0 to &lt;mode&gt;=1, 2 0: after entering &lt;mode&gt;1-2, send unsolicited result code to TE at a time(default) 1: after entering &lt;mode&gt;1-2, clear unsolicited result code</p>	

note	<p>&lt;mode&gt; and &lt;bfr&gt; are used to set new message alert ( including +CMTI, +ZCMT, +CDSI, +ZCDS )</p> <p>&lt;mt&gt; is used to set directly report to TE or save in MT and report the storage location when receiving new message</p> <p>&lt;bm&gt; do not use it temporarily</p> <p>&lt;ds&gt; is used to set whether or not report SMS status report(+CDSI, +ZCDS)</p> <p>Default: +CNMI=1,1,0,2,0</p>
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### 1.1.3 +CMTI: Message Arrival Indication

description	Indicates new messages are received (or new message report)	
format		<CR><LF>+CMTI: <mem>,<index> <CR><LF>
parameter	<p>&lt;mem&gt;</p> <p>type of memory, currently support <b>"MT"</b> only, other memory optional</p> <p>"BM": broadcast message memory</p> <p>"ME": ME message memory</p> <p>"MT": memory relating to ME</p> <p>"TA": TA message memory</p> <p>"SR": status report memory</p> <p>&lt;index&gt;</p> <p>value of integral type, the location in memory</p>	

### 1.1.4 +CDSI: New Message Status Report

description	Indicates new message status report is received and show the storage location.	
format		<CR><LF>+CDSI: <mem>,<index> <CR><LF>
parameter	<p>&lt;mem&gt;: message memory</p> <p><b>"MT":ROM message memory</b></p> <p>&lt;index&gt;</p> <p>value of integral type, location in memory</p>	

### 1.1.5 +CMGD: Delete Messages

description	Execution command is used to delete the messages at <index> in <mem1>	
format	AT+CMGD=<index>[,<delflag>]	<CR><LF>OK<CR><LF> otherwise: +CMS ERROR: <err>
	AT+CMGD=?	<CR><LF>+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)] <CR><LF><CR><LF>OK<CR><LF>



parameter	<p>&lt;index&gt;: the messages storage location.                  &lt;delflag&gt;                  0: (or default) delete the messages designated by &lt;index&gt;.                  1: delete all read messages in first prior memory, save unread messages, sent messages and unsent messages                  2: delete all read and sent messages in first prior memory, save unread messages and unsent messages                  3: delete all read, sent and unsent messages in first prior memory, save unread messages                  4: delete all messages including unread messages in first prior memory</p> <p style="color: red;">Bak : Command include&lt;DelFalg&gt;param , &lt;Index&gt;is disable , &lt;DelFalg&gt;is enable.</p>
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**1.1.6 +CNMA: Acknowledge New Messages**

description	Execution command is used to acknowledge the receipt of new message directly sent to TE. For the use of this command, please refer to the descriptions of +CNMI command	
format	AT+CNMA	<CR><LF>OK<CR><LF> if there is any error regarding message: <CR><LF>+CMS ERROR:<err><CR><LF>
	AT+CNMA= ?	<CR><LF>OK<CR><LF>
note	<p>Before the acknowledge of previous message, MT would not sent TE another +ZCMT or +ZCDS result code.                  If MT doesn't obtain the acknowledge in specified period of time (network timeout), MT would send RP-ERROR to network and automatically set the parameter &lt;mt&gt; and &lt;ds&gt; of +CNMI command as 0. It would forbid sending message notice to TE. If it requires MT to report the message notice again, you need set &lt;mt&gt; &amp; &lt;ds&gt; again                  If the command is executed, but the message is not acknowledged, <b>return with ERROR.</b></p> <p>Test command is used to &lt;n&gt; value supported by the command. If it supports 0 only, it means the command doesn't support send by TPDU                  Mandatory when &lt;service&gt; value 1 of command Select Message Service +CSMS is supported</p>	

**1.2 Proprietary Interface: SMS Interface**

**1.2.1 +ZSMEMFULL: SMS Storage memory full**

description	When SMS storage memory is full, it will report the message	
format		<CR><LF>+ZSMEMFULL:<mem_type> <CR><LF>

parameter	<mem_type> value of character string, indicating the type of full storage memory “ME”: indicating NV
example	+ZSMMEMFULL: “ME”

**1.2.2 +ZCMT: Don’t save newly received messages, and report to TE directly**

description	Don’t save newly received messages, and report to TE directly	
format		<CR><LF>+ZCMT: <call ID>,<year>,<month>,<day>,<hour>,<minute>,<second>,<lang>,<format>,<length>,<prt>,<prv>,<type>,<tag><CR><LF><msg><CTRL+Z><CR><LF>
parameter	<callerID>: number of message sender <year, month, day, hour, minute, second>: year, month, day, hour, minute, second when received SMS <lang>: language, refer to +ZCMGW to take the value <format>: indicating the coding format of the message, refer to +ZCMGW to take the value <length>: the length of received message. <prt>: message priority level, refer to +ZCMGW to take the value <prv>: Privacy level, refer to +ZCMGR to take the value <type>: type of message, refer to +ZCMGR to take the value <tag>: value of integral number, SMS status, refer to +ZCMGR to take the value <msg>: received SMS. Control characters <ctrl-Z>: indicating the ending of one message, character:'0x1A'(Unicode: '0x001A') <ESC>: cancel the sending of the message , character: '0x1B'(Unicode: '0x001B')	

**1.2.3 +ZCDS: New SMS Status Direct Report**

description	Don’t save newly received messages, and directly report to TE	
format		<CR><LF>+ZCDS: <callerID>,<year>,<month>,<day>,<hour>,<minute>,<second>,<lang>,<format>,<length>,<prt>,<prv>,<type>,<tag><CR><LF><msg><CTRL+Z><CR><LF>
parameter	<callerID>: number of message sender <year, month, day, hour, minute, second> year, month, day, hour, minute, second when received SMS <lang>: language, refer to +ZCMGW to take the value <format> indicating the coding format of the message, refer to +ZCMGW to take the value <length>: the length of received message <prt>: message priority level, refer to +ZCMGW to take the value	

	<p>&lt;prv&gt;: Privacy level, refer to +ZCMGR to take the value</p> <p>&lt;type&gt;: type of message, refer to +ZCMGR to take the value</p> <p>&lt;tag&gt;: value of integral number, SMS status, refer to +ZCMGR to take the value</p> <p>&lt;msg&gt;: received SMS. Control characters</p> <p>&lt;ctrl-Z&gt;: indicating the ending of one message, character: '0x1A'(Unicode: '0x001A')</p> <p>&lt;ESC&gt;: cancel the sending of the message , character: '0x1B'(Unicode: '0x001B')</p>
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**1.2.4 +ZCMGS: Send Message**

description	Send a message to network side. It takes two steps to send a message	
format	AT+ZCMGS="<da>",<language>,<encode>,<ack>,<priority><CR><data><ctrl-Z/ESC>	<CR><LF>+ZCMGS: <mr><CR><LF><CR><LF>OK<CR><LF> otherwise: +CMS ERROR: <err>
	AT+ZCMGS=?	<CR><LF>OK<CR><LF>
parameter	<p>TEXT mode:</p> <p>When GSM 7 BIT or UNICODE is used, the value of text character is shown. For example: the UCS2 value for the character “会” is 4E1A, then, the text should be “0x4E1A” rather than “4E1A”</p> <p>&lt;da&gt;: number of message recipient. Take the value from 0~9,*, #, up to 20 digits.</p> <p>&lt; language &gt;</p> <p>language, take the value as below:</p> <p>0: UNSPECIFIED</p> <p>1: ENGLISH</p> <p>2: FRENCH</p> <p>3: SPANISH</p> <p>4: JAPANESE</p> <p>5: KOREAN</p> <p>6: CHINESE</p> <p>7: HEBREW</p> <p>&lt;encode&gt;: indicating the coding method of the message, take the value as below:</p> <p>0: GSM 7 BIT</p> <p>1: ASCII code (coding range&lt;=7F). Send the original characters in ASCII coding, for example, the ASCII code for the letter A is 0x41, then the character to be transmitted is “A”</p> <p>2: IA5 (optional)</p> <p>3: OCTET (optional)</p> <p>4: LATIN (optional)</p> <p>5: LATIN_HEBREW (optional)</p> <p>6: UNICODE (coding range&gt;7F). Send the original value in UNICODE coding.</p> <p>For example, the UNICODE for the Chinese character “一” is 0x4E00, then the</p>	

	<p>character to be transmitted is '0x4E00'</p> <p>7: Other coding method</p> <p>&lt;ack&gt;</p> <p>0: no ack</p> <p>1: need ack</p> <p>&lt;priority&gt;</p> <p>value of integral type, indicating the priority level of the message, take the value as below:</p> <p>0: Normal</p> <p>1: Interactive</p> <p>2: Urgent</p> <p>3: Emergency</p> <p>&lt;mr&gt;: message symbol</p> <p>&lt;data&gt;: message date</p> <p>&lt;ctrl-Z&gt;: indicating the ending of one message. Under non-UNICODE:'0x1A'; under UNICODE:'0x001A'</p> <p>&lt;ESC&gt;: Cancel the sending of the message. Under non-UNICODE:'0x1B', under UNICODE:'0x001B'</p>	
example	<p>AT+ZCMGS=13554890280,1,1,1,0</p> <p>&lt;CR&gt;414243&lt;ctrl-Z&gt;</p>	<p>+ZCMGS:4</p> <p>OK</p>

**1.2.5 +ZCMGW: Write Message to Memory**

description	<p>Save message into &lt;mem2&gt; through +CPMS command, and you could save it into ME</p>	
format	<p>AT+ZCMGW=&lt;oa/da&gt;[,&lt;tooa/toda&gt;], &lt;stat&gt;,&lt;ptr&gt;,&lt;type&gt;,&lt;format&gt;, &lt;lang&gt;[,&lt;year&gt;,&lt;month&gt;,&lt;day&gt;, &lt;hour&gt;,&lt;minute&gt;,&lt;second&gt;] &lt;CR&gt;&lt;text&gt;&lt;ctrl-Z/ESC&gt;</p>	<p>+ZCMGW: &lt;index&gt;</p> <p>otherwise: +CMS ERROR: &lt;err&gt;</p>
	<p>AT+ZCMGW=?</p>	<p>&lt;CR&gt;&lt;LF&gt;OK&lt;CR&gt;&lt;LF&gt;</p>
parameter	<p>&lt;oa/da&gt;</p> <p>number of message sender/recipient. Take the value from 0~9,*, #, up to 20 digits</p> <p>&lt; tooa/toda&gt;</p> <p>address coding method. The number of one byte, this parameters works as the address coding is 8bit. Now 4bit coding is used, therefore this parameter doesn't work. The value is fixed to be 0</p> <p>The higher four digits is number type:</p> <p>0: UNKNOWN</p> <p>1: INTERNATIONAL</p> <p>The lower four digits is number plan:</p> <p>0: UNKNOWN</p>	

	<p>1: TELEPHONY</p> <p>&lt;stat&gt; value of integral type, indicating the storage status of SMS, take the value as below:</p> <p>0: received unread messages 1: received read messages 2: saved unsent messages 3: saved sent messages 4: all messages (the value is only applicable for +CMGL command)</p> <p>&lt;lang&gt; language take the value as below:</p> <p>0: UNSPECIFIED 1: ENGLISH 2: FRENCH 3: SPANISH 4: JAPANESE 5: KOREAN 6: CHINESE 7: HEBREW</p> <p>&lt;ptr&gt; value of integral type, indicating the priority level of the message, take the value as below:</p> <p>0: Normal 1: Interactive 2: Urgent 3: Emergency</p> <p>&lt;year&gt;,&lt;month&gt;,&lt;day&gt;,&lt;hour&gt;,&lt;minute&gt;,&lt;second&gt;: year, month, day, hour, minute, second when received SMS.</p> <p>&lt;index&gt;: the location number in memory, take a decimal from 0~9, and the value ranges from 0 to the max. capacity of the memory.</p> <p>&lt;format&gt;: indicating the coding method of the message, take the value as below:</p> <p>0: GSM 7 BIT 1: ASCII code (coding range&lt;=7F). Send the original characters in ASCII coding, for example, the ASCII code for the letter A is 0x41, then the character to be transmitted is “A” 2: IA5 (optional) 3: OCTET (optional) 4: LATIN (optional) 5: LATIN_HEBREW (optional) 6: UNICODE (coding range&gt;7F). Send the original value in UNICODE coding. For example, the UNICODE for the Chinese character “-” is 0x4E00, then the character to be transmitted is ‘0x4E00’ 7: Other coding method</p> <p>&lt;type&gt;: type of message</p>
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	<p>0: Normal                  1: CPT (Optional)                  2: Voice Mail                  3: SMS Report                  &lt;text&gt;: message text                  &lt;CR&gt;: command ending mark, indicating the ending of one command.                  &lt;ctrl-Z&gt;: indicating the ending of one message. Under non-UNICODE:'0x1A', and under UNICODE:'0x001A'                  &lt;ESC&gt;: Cancel the sending of the message. Under non-UNICODE:'0x1B', and under UNICODE:'0x001B'</p>
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**1.2.6 +ZCMGL: List Messages**

description	Return all SMS index designated by <stat> from <mem1>	
format	AT+ZCMGL=<stat>	Under text mode, the command is successfully executed: <CR><LF>+ZCMGL: <index1>,                  <tag1><CR><LF>                  <CR><LF>+ZCMGL: <index1>,                  <tag1><CR><LF> .....                  <CR><LF>OK<CR><LF>                  otherwise: +CMS ERROR: <err>
	AT+ZCMGL=?	<CR><LF>+ZCMGL: (list of supported <stat>s)                  <CR><LF><CR><LF>OK                  <CR><LF>
parameter	<stat> type of message, the default value is 0 0: received unread message 1: received read message 2: saved unsent message 3: saved messages in Sent Messages 4: all sms <index>: value of integral type, location in memory <tag>: value of integral number, SMS status, please refer to +ZCMGR to take the value	
note	The SMS status report will be processed as a common received message. TEST command is used to return all stat values	

**1.2.7 +ZCMGR: Read Message**

description	EXECUTION command is used to return the message saved at index from <mem1>
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format	AT+ZCMGR=<index>[,<mode>]	Under text mode, the command is successfully executed: <CR><LF>+ZCMGR: <callerID>,<year>,<month>,<day>,<hour>,<minute>,<second>,<lang>,<format>,<length>,<prt>,<prv>,<type>,<stat><CR><LF><msg><CTRL+Z><CR><LF>OK<CR><LF> otherwise: +CMS ERROR: <err>
	AT+ZCMGR=?	<CR><LF>OK<CR><LF>
parameter	<index>: value of integral type, location in memory <mode>: SMS status modifying mode 0: change to READ status 1: don't change the status <callerID>: number of message sender <format>: indicating the coding format of the message, refer to +ZCMGW to take the value <year, month, day, hour, minute,second>: year, month, day, hour, minute, second when received SMS <Length>: the length of received message. <lang>: language, refer to +ZCMGW to take the value <prt>: message priority level, refer to +ZCMGW to take the value <Prv>: Privacy level 0: Normal 1: Restricted 2: Confidential 3: Secret <type>: type of message 0: Normal 1: CPT 2: Voice Mail 3: SMS Report <stat>: type of message, refer to +ZCMGW to take the value <Msg>: received messages <ctrl-Z>: indicating the ending of one message. Under non-UNICODE: '0x1A'; under UNICODE:'0x001A'	
note	The SMS status will be revised by single board or back end according to the value of <mode>.	

**1.2.8 +ZCMGSS: Message Sent Report**

description	If the message is sent successfully, report to TE through this command.	
format		<CR><LF>+ZCMGSS: <mr><CR><LF>

parameter	<mr> the message's mark, take a decimal from 0~9, and the value ranges from 0~65535.
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**1.2.9 +ZCMGSF: Message Unsent Report**

description	If the message is unsent, report to TE through this command	
format		<CR><LF>+ZCMGSF:<err code> <CR><LF>
parameter	<err code> take the value of the error code as below as the message is unsent 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
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## 2 Basic AT Commands

### 2.1.1 E: Turn off/on echo commands

description	Turn off/on echo commands	
format	ATE<value>	<CR><LF>OK<CR><LF>
parameter	<value> 0: turn off echo 1: turn on echo	
example	ATE0	OK
	ATE1	ATE1 OK
note	CE MUST support the parameter E0 which will turn off echo commands CE MUST support the parameter E1 which will turn on echo commands CE MUST set the E parameter to E1 as default	

### 2.1.2 Q: Enable/Disable return result codes

description	Enable /Disable return result codes	
format	ATQ<value>	<CR><LF>OK<CR><LF>
parameter	<value> 0: enable 1: disable	
example	ATQ0	OK
	ATQ1	
note	CE MUST support the parameter Q0 which will cause the device to return result codes CE MUST support the parameter Q1 which will cause the device to NOT return result codes CE MUST set the Q parameter to Q0 as default	

### 2.1.3 V: Return result codes as numbers/words

description	Return result codes as numbers/words	
format	ATV<value>	<CR><LF>OK<CR><LF>
parameter	<value> 0: result codes as numbers 1: result codes as words	
example	ATV0	0

	ATV1	OK
note	<p>CE MUST support the parameter V0 which will cause the device to return result codes as numbers</p> <p>CE MUST support the parameter V1 which will cause the device to return result codes as words</p> <p>CE MUST set the V parameter to V1 as default</p>	

**2.1.4 Z0: Reset the parameters to the default configuration**

description	Reset the parameters to the default configuration	
format	ATZ0	<CR><LF>OK<CR><LF>
example	ATZ0	OK
note	<p>CE MUST support the parameter Z0 which will cause the device to reset the parameters to the default configuration</p>	

**2.1.5 &C: Set circuit 109 (CF) or Received Line Signal Detector (RLSD)**

description	Set circuit 109 (CF) or Received Line Signal Detector (RLSD)	
format	AT&C<value>	<CR><LF>OK<CR><LF>
parameter	<p>&lt;value&gt;</p> <p>0: set circuit 109 (CF) or Received Line Signal Detector (RLSD) always on</p> <p>1: set circuit 109 (CF) or Received Line Signal Detector (RLSD) on in accordance with the specified service</p>	
example	AT&C0	OK
	AT&C1	OK
note	<p>CE MUST support the parameter &amp;C0 (Data Carrier Detect) which will set circuit 109 (CF) or Received Line Signal Detector (RLSD) always on</p> <p>Note: Circuit 109 is generally used for serial communications. Most Sprint devices use the USB interface and this is not required for general use of the device. It may be needed for specific applications or unusual use cases.</p> <p>CE MUST support the parameter &amp;C1 (Data Carrier Detect) which will set circuit 109 (CF) or Received Line Signal Detector (RLSD) on in accordance with the specified service</p> <p>CE MUST set the C parameter (Data Carrier Detect) to C1 as default</p>	

**2.1.6 &D: Set DTR(Data Terminal Ready) Signal**

description	Set DTR(Data Terminal Ready) Signal	
format	AT&D<value>	<CR><LF>OK<CR><LF>
parameter	<p>&lt;value&gt;</p> <p>0: ignore circuit 108/2</p> <p>1: enter online command state following ON-to-OFF transition of circuit 108/2</p> <p>2: enter command state following On to Off transition of circuit 108/2</p>	
example	AT&D0	OK

	AT&D1	OK
	AT&D2	OK
note	<p>CE MUST support the parameter &amp;D0 (Data Terminal Ready) which will ignore circuit 108/2 (CD)                  Note: Circuit 108 is generally used for serial communications. Most Sprint devices use the USB interface and this is not required for general use of the device. It may be needed for specific applications or unusual use cases</p> <p>CE MUST support the parameter &amp;D1 (Data Terminal Ready) which will enter online command state following ON-to-OFF transition of circuit 108/2</p> <p>CE MUST support the parameter &amp;D2 (Data Terminal Ready) which will enter command state following On to Off transition of circuit 108/2</p> <p>CE MUST set the D parameter (Data Terminal Ready) to D0 as default</p>	

### 3 Extended AT Configuration Commands

#### 3.1.1 +GCAP: Return the list of all commands supported by the device

description	Return the list of all commands supported by the device	
format	AT+GCAP	<CR><LF>+GCAP: +CIS707-A,CIS-856, +MS, +ES, +DS, +FCLASS<CR><LF> <CR><LF>OK<CR><LF>
example	AT+GCAP	+GCAP: +CIS707-A,+MS,+ES,+DS, +FCLASS  OK
note	<p>CE MUST support “AT+GCAP” which will return the list of all commands supported by the device</p> <p>CE MUST return “ERROR” for any other AT+GCAP string</p>	

#### 3.1.2 +GMI: Return the manufacturer name on a single line

description	Return the manufacturer name on a single line	
format	AT+GMI	<CR><LF>+GMI: xxxCO,.LTD <CR><LF><CR><LF><CR><LF>OK<CR><LF>
example	AT+GMI	+GMI: ZTE CO,.LTD  OK
note	<p>CE MUST support “AT+GMI” which will return the manufacturer name on a single line</p> <p>CE MUST return “ERROR” for any other AT+GMI string</p>	

#### 3.1.3 +GMM: Return the device model name and number

description	Return the device model name and number
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format	AT+GMM	<CR><LF>+GMM: <name><CR><LF> <CR><LF>OK<CR><LF>
example	AT+GMM	+GMM: MC2716  OK
note	CE MUST support “AT+GMM” which will return the device model name and number as defined by the OEM and approved by Sprint on a single line CE MUST return “ERROR” for any other AT+GMM string	

**3.1.4 +GMR: Return the current firmware version on a single line**

description	Return the current firmware version on a single line	
format	AT+GMR	<CR><LF>+GMR: <firmware version> <CR><LF><CR><LF>OK<CR><LF>
example	AT+GMR	+GMR: <firmware version>  OK
note	CE MUST support “AT+GMR” which will return the current firmware version on a single line “AT+GMR” MUST return the firmware of each processor on a separate line in the format of “<firmware version>” CE MUST return “ERROR” for any other AT+GMR string	

**3.1.5 +GSN: Get the ESN of device**

description	Return the “<ESN>” or the “<MEID>:<pseudo ESN>” of the device	
format	AT+GSN	<CR><LF>+GSN: <ESN><CR><LF> <CR><LF>OK<CR><LF> or <CR><LF> +GSN: <MEID>:<pseudo ESN> <CR><LF><CR><LF>OK<CR><LF>
example	AT+GSN	+GSN: 0x11111111 OK
note	CE MUST support “AT+GSN” which will return the “<ESN>” or the “<MEID>:<pseudo ESN>” of the device CE MUST return the decimal value on the first line and the hexadecimal value on the second line for “AT+GSN” CE MUST return “ERROR” for any other AT+GSN string	

**3.1.6 +ICF: Set the character framing**

description	Set the character framing between the device and a connected terminal	
format	AT+ICF=<format>,<parity>	<CR><LF>OK<CR><LF>
	AT+ICF?	<CR><LF>+ICF: <format>,<parity><CR> <LF><CR><LF>OK<CR><LF>

	AT+ICF=?	<CR><LF>+ICF: (list of supported < format >s),( list of supported < parity >s) <CR><LF><CR><LF>OK<CR><LF>
parameter	<format> 0: Auto Detect 1: 8 Data 2 Stop 2: 8 Data 1 Parity 1 Stop 3: 8 Data 1 Stop 4: 7 Data 2 Stop 5: 7 Data 1 Parity 1 Stop 6: 7 Data <parity> 0: Odd 1: Even 2: Mark 3: Space	
example	AT+ICF=0,0	OK
	AT+ICF?	+ICF: 2,2 OK
	AT+ICF=?	+ICF: (0-6),(0-3) OK
note	CE MUST support “AT+ICF=<format>,<parity>” which will set the character framing between the device and a connected terminal CE MUST set the default value of ICF to auto detect CE MUST support “AT+ICF?” which will return the current setting in the format “<format>,<parity>” CE MUST support “AT+ICF=?” which will return the list of supported format and parity values in the format “<format>:<comment>” with each setting on a separate line followed by “<parity>:<comment>” with each setting on a separate line CE MUST return “ERROR” for any other AT+ICF string	

**3.1.7 +IFC: Control the local flow control**

description	Control the local flow control	
format	AT+IFC=<DCE_by_DTE>,<DTE_by_DCE>	<CR><LF>OK<CR><LF>
	AT+IFC?	<CR><LF>+IFC: <DCE_by_DTE>,<DTE_by_DCE><CR><LF><CR><LF>OK<CR><LF>
	AT+IFC=?	<CR><LF>+IFC: (),() <CR><LF><CR><LF>OK<CR><LF>

parameter	<DCE_by_DTE> 0: None 2: Circuit 133 (Ready for Receiving) <DTE_by_DCE> 0: None 2: Circuit 106 (Clear to Send/Ready for Sending)	
example	AT+IFC=0,0	OK
	AT+IFC?	+IFC: 2,2  OK
	AT+IFC=?	+IFC: (0,2),(0,2)  OK
note	CE MUST set the default value of IFC to none for DCE_by_DTE and DTE_by_DCE CE MUST return “ERROR” for any other AT+IFC string	

**3.1.8 +IPR: Set the Rm interface rate**

description	Set the Rm interface rate to the specified rate	
format	AT+IPR=<rate>	<CR><LF>OK<CR><LF>
	AT+IPR?	<CR><LF>+IPR: <rate><CR><LF> <CR><LF>OK<CR><LF>
	AT+IPR=?	<CR><LF>+IPR: (list of supported <rate>s)<CR><LF><CR><LF>OK<CR><LF>
parameter	<rate> (300,1200,2400,4800,9600,19200,38400,57600,115200,230400)	
example	AT+IPR=115200	OK
	AT+IPR?	+IPR: 115200  OK
	AT+IPR=?	+IPR: (),(300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400)  OK
note	CE MUST return “ERROR” for any rate that is not supported by the device CE MUST set the IPR value to 0 by default which will enable auto detect of the Rm Interface rate CE MUST return “ERROR” for any other AT+IPR string	

**3.1.9 +CAD: Return the type of service available**

description	The type of service available	
format	AT+CAD?	<CR><LF>+CAD: <num><CR><LF> <CR><LF>OK<CR><LF>

parameter	<num> 0: no service is available 1: CDMA Digital service available 2: TDMA Digital service available 3: Analog service is available	
example	AT+CAD?	+CAD: 0  OK
note	CE MUST return "ERROR" for any other AT+CAD string.	

**3.1.10 +CRM: Get the current numerical value of CRM**

description	Get the current numerical value of CRM	
format	AT+CRM=<value>	<CR><LF>OK<CR><LF>
	AT+CRM?	<CR><LF>+CRM: <value><CR><LF> <CR><LF>OK<CR><LF>
parameter	<value> 1: Relay Layer Packet Data Service 2: PPP Network Layer Packet Data Service	
	AT+CRM?	+CRM: 1  OK
note	CE MUST return "ERROR" for any other AT+CRM string	

**3.1.11 +CBC: The battery state and charge(not supported for modem)**

description	The battery state and charge	
format	AT+CBC?	<CR><LF><BCS>,<BCL> <CR><LF><CR><LF>OK<CR><LF>
parameter	<BCS> 0: Powered by battery only 1: Connected to an external source 2: Battery status not available 3: Power fault <BCL> the number if battery bars the UI is currently displaying	
example	AT+CBC?	0,0  OK
note	CE MUST return "ERROR" for any other AT+CBC string	

**3.1.12 +CMIP: IP address of the mobile station**

description	IP address of the mobile station	
format	AT+CMIP?	<CR><LF><address> <CR><LF> <CR><LF>OK<CR><LF>

parameter	<address> the IP address will be the IP address assigned by the network in PPP IPCP for SIP or in the MIP Registration Reply for Mobile IP	
example	AT+CMIP?	0.0.0.0  OK
note	CE MUST return “0.0.0.0” for “AT+CMIP?” if there is currently no IP session established CE MUST return “ERROR” for any other AT+CMIP string	

**3.1.13 +CBIP: IP address of the base station**

description	IP address of the base station	
format	AT+CBIP?	<CR><LF><address> <CR><LF><CR><LF>OK<CR><LF>
parameter	<address> the IP address will be the source IP address in the Router Advertisement message that the device receives from the network	
example	AT+CBIP?	0.0.0.0  OK
note	CE MUST return “0.0.0.0” for “AT+CBIP?” if there is currently no IP session established CE MUST return “ERROR” for any other AT+CBIP string	

**3.1.14 +CSS: The serving system band and SID**

description	The serving system band and SID	
format	AT+CSS?	<CR><LF>+CSS: <Channel>,<Band>,<SID><CR><LF><CR><LF>OK<CR><LF>
parameter	<Channel> Channel will be the channel that the device is currently talking or listening to <Band> A: Device is operating in the A block B: Device is operating in the B block C: Device is operating in the C block D: Device is operating in the D block E: Device is operating in the E block F: Device is operating in the F block G: Device is operating in the G block Z: Device is not registered <SID> SID will be the numerical value of the SID or 999999 if the mobile is not registered	



example	AT+CSS?	+CSS: 1000,C,0  OK
note	CE MUST return “ERROR” for any other AT+CSS string	

**3.1.15 +CSQ: Signal Quality Measure and the Frame Error Rate**

description	Signal Quality Measure and the Frame Error Rate	
format	AT+CSQ?	<CR><LF>+CSQ: <SEQ>,<FER> <CR><LF><CR><LF>OK<CR><LF>
parameter	<SEQ> the measured RSSI value <FER> 0: less than 0.01% 1: 0.01% to less than 0.1% 2: 0.1% to less than 1.0% 3: 0.5% to less than 1.0% 4: 1.0% to less than 2.0% 5: 2.0% to less than 4.0% 6: 4.0% to less than 8.0% 7: greater than 8.0% 99: FER is unknown	
example	AT+CSQ?	+CSQ: 31,99  OK
note	CE MUST return “ERROR” for any other AT+CSQ string	

**3.1.16 +CTA: The packet data inactivity timer**

description	The packet data inactivity timer	
format	AT+CTA?	<CR><LF>+CTA: <value> <CR><LF><CR><LF>OK<CR><LF>
parameter	<value> 0 Traffic Channel not released during inactivity periods. 20-255 Release the Traffic Channel after <value> second intervals have elapsed since last sending or receiving RLP data frames on the Um interface.	
example	AT+CTA?	+CTA: 30  OK
note	CE MUST not support “AT+CTA=<value>” CE MUST return “ERROR” for any other AT+CTA string	

**3.1.17 +CPS: The service option to be used for packet data service(Not implemented)**

description	The service option to be used for packet data service
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format	AT+CPS?	<CR><LF>+CPS: <value><CR><LF> <CR><LF>OK<CR><LF>
example	AT+CPS?	+CPS: 1  OK
note	CE MUST not support “AT+CPS =<value>” CE MUST return “ERROR” for any other AT+CPS string	

**3.1.18 +CPSR: Disable/Enable the packet call state reporting(Not implemented)**

description	Disable/Enable the packet call state reporting	
format	AT+CPSR?	<CR><LF>+CPSR: <value><CR><LF> <CR><LF>OK<CR><LF>
	AT+ CPSR=<value>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<value> 0: disable 1: enable Note: enabling packet call state reporting will cause the device to autonomously send the following information 0: Packet data service is in the Inactive State 1: Packet data service is in the Active State, and the call control function is in the Initialization/Idle State 2: Packet data service is in the Active State, and the call control function is in the Initialization/Traffic State 3: Packet data service is in the Active State, the call control function is in the Connected State, and the packet data service option is using primary traffic 4: Packet data service is in the Active State, the call control function is in the Connected State, and the packet data service option is using secondary traffic 5: Packet data service is in the Active State, and the call control function is in the Dormant/Idle State 6: Packet data service is in the Active State, and the call control function is in the Dormant/Traffic State 7: Packet data service is in the Active State, and the call control function is in the Reconnect/Idle State 8: Packet data service is in the Active State, and the call control function is in the Reconnect/Traffic State	
example	AT+CPSR?	+CPSR: 1  OK
	AT+CPSR=1	OK

note	<p>CE MUST set the packet call state reporting to disable as they default</p> <p>CE MUST set the packet call state reporting to disable when the Rm Interface is torn down</p> <p>Note: this could be due to the data cable being removed or the device power cycling.</p> <p>CE MUST return “ERROR” for any other AT+CPSR string</p>
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**3.1.19 +CPTC: Request a traffic channel(Not implemented)**

description	Request a traffic channel	
format	AT+CPTC=<value>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<value> 0: release the traffic channel 1: originate a traffic channel	
example	AT+CPTC=0	OK
note	CE MUST return “ERROR” for any other AT+CPTC string	

**3.1.20 +CPER: Disable/Enable the packet call event reporting(Not implemented)**

description	Disable/Enable the packet call event reporting	
format	AT+CPER?	<CR><LF>+CPER: <value><CR><LF> <CR><LF>OK<CR><LF>
	AT+CPER=<value>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<value> 0: disable 1: enable Note: enabling packet call event reporting will cause the device to autonomously send the following information 0: Enter Idle State 1: Idle handoff, same system 2: Idle handoff, new system 3: Page received 4: Origination sent 5: Traffic Channel assigned 6: Hard handoff	
example	AT+CPER?	+CPER: 1  OK
	AT+CPER=1	OK
note	<p>CE MUST set the packet call event reporting to disable as they default.</p> <p>CE MUST set the packet call event reporting to disable when the Rm Interface is torn down.</p> <p>Note: this could be due to the data cable being removed or the device power cycling.</p> <p>ATCMD-089 CE MUST return “ERROR” for any other AT+CPER string</p>	

## 4 Qualcomm Proprietary AT Command Set

### 4.1.1 \$QCMIP: The current value of the Mobile IP behavior

description	The current value of the Mobile IP behavior	
format	AT\$QCMIP?	<CR><LF>\$QCMIP: <value><CR><LF> <CR><LF>OK<CR><LF>
	AT\$QCMIP=<value>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<value> 0: the Mobile IP behavior to Simple IP only 1: the Mobile IP behavior to MIP preferred with SIP fallback 2: the Mobile IP behavior to MIP only	
example	AT\$QCMIP?	\$QCMIP: 1  OK
	AT\$QCMIP=1	OK
note	CE MUST return “ERROR” for any other AT\$QCMIP string	

### 4.1.2 \$QCMIPP: Return the current active Mobile IP profile

description	Return the current active Mobile IP profile	
format	AT\$QCMIPP?	<CR><LF>\$QCMIPP: <X><CR><LF> <CR><LF>OK<CR><LF>
	AT\$QCMIPP=<X>	<CR><LF>OK<CR><LF>
parameter	<X> MIP user profile number: between 0 and 5	
example	AT\$QCMIPP?	\$QCMIPP: 1  OK
note	CE MUST support “AT\$QCMIPP=X” where X is an integer between 0 and 5 CE MUST return “ERROR” for any other AT\$QCMIPP string	

### 4.1.3 \$QCMIPT: The current value of the “RFC 2002bis authentication” flag

description	The current value of the “RFC 2002bis authentication” flag	
format	AT\$QCMIPT?	<CR><LF>\$QCMIPT: <value><CR><LF> <CR><LF>OK<CR><LF>
parameter	<value> 0: use of RFC 2002bis authentication is disable. 1: use of RFC 2002bis authentication is enabled.	
example	AT\$QCMIPT?	\$QCMIPT: 1  OK

note	CE MUST return “ERROR” for any other AT\$QCMIPT string
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**4.1.4 \$QCMPEP: Disable/Enable the active profile**

description	Disable/Enable the active profile	
format	AT\$QCMPEP?	<CR><LF>\$QCMPEP: <value><CR><LF> <CR><LF>OK<CR><LF>
	AT\$QCMPEP=<value>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<value> 0: disable the active profile 1: enable the active profile	
example	AT\$QCMPEP?	\$QCMPEP: 1  OK
	AT\$QCMPEP=1	OK
note	CE MUST return “ERROR” for any other AT\$QCMPEP string	

**4.1.5 \$QCMIPGETP: The values of the specified profile**

description	The values of the specified profile	
format	AT\$QCMIPGETP?	<CR><LF>\$QCMIPGETP: <X> <CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPGETP=<X>	<CR><LF> Profile <X> (Enabled   Disabled) NAI: Home Address: Primary HA: Secondary HA: MN-AAA SPI: MN-HA SPI: Reverse Tunneling: (0 for off   1 for on) MN-AAA SS: (set   unset) <b>MN-HA SS: (set   unset)</b> <CR><LF><CR><LF>OK<CR><LF>
parameter	<X> The profile number :0-5	
example	AT\$QCMIPGETP?	\$QCMIPGETP: 0  OK

	AT\$QCMIPGETP=0	Profile:0 Enabled NAI:0000000000000000@hcm.sprintpcs.com Home Addr:0.0.0.0 Primary HA:68.28.15.12 Secondary HA:68.28.31.12 MN-AAA SPI:1234 MN-HA SPI:1234 Rev Tun:1 MN-AAA SS:Set MN-HA SS:Set  OK
note	CE MUST separate each line of the profile with exactly one carriage return and line feed CE MUST not display the SS (Shared Secret) CE MUST return "ERROR" for any other AT\$QCMIPGETP string	

**4.1.6 \$QCMIPNAI: Set ASCII NAI string**

description	Set ASCII NAI string	
format	AT\$QCMIPNAI?	<CR><LF>< NAI ><Y><CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>\$QCMIPNAI: Unset<CR><LF> <CR><LF>OK<CR><LF>
	AT\$QCMIPNAI="< NAI >",<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<NAI> the user entered ASCII NAI string <Y> 0: not save the NAI to NV memory 1: save the NAI to NV memory	
example	AT\$QCMIPNAI?	user@domain,0  OK
	AT\$QCMIPNAI="user@domain",0	OK
note	CE MUST not save the NAI to NV memory if Y is set to 0 CE MUST use the user entered NAI only for the next MIP session if Y is set to 0. Note: the device must use the user entered NAI for MIP reregistrations as well as the initial MIP registration CE MUST use the NAI stored in NV memory after the MIP session has deregistered or expired if Y is set to 0 CE MUST save the NAI to NV memory if Y is set to 1	

**4.1.7 \$QCMIPRT: Set user reverse tunneling flag**

description	Set user reverse tunneling flag	
format	AT\$QCMIPRT?	<CR><LF>\$QCMIPRT: <X>,<Y> <CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPRT=<X>,<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<X> 0: disable the user reverse tunneling flag 1: enable the user reverse tunneling flag <Y> 0: not save the reverse tunneling flag to NV memory 1: save the reverse tunneling flag to NV memory	
example	AT\$QCMIPRT?	\$QCMIPRT: 0,1  OK
	AT\$QCMIPRT=0,0	OK
note	CE MUST not save the reverse tunneling flag to NV memory if Y is set to 0 CE MUST use the user entered reverse tunneling flag only for the next MIP session if Y is set to 0 CE MUST use the reverse tunneling flag stored in NV memory after the MIP session has deregistered or expired if Y is set to 0 CE MUST save the reverse tunneling flag to NV memory if Y is set to 1 CE MUST return “ERROR” for any other AT\$QCMIPRT string	

**4.1.8 \$QCMIPMASS: Set ASCII Mobile Node AAA shared secret string**

description	Set ACSII Mobile Node AAA shared secret string	
format	AT\$QCMIPMASS="<X>",<Y>	<CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPMASS?	<CR><LF>\$QCMIPMASS: (Set Unset) <CR><LF><CR><LF>OK<CR><LF>
parameter	<X> ASCII Mobile Node AAA shared secret string <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPMASS ="sprint",0	OK
	AT\$QCMIPMASS?	\$QCMIPMASS: Set  OK
note	the Mobile Node AAA shared secret string MUST be enclosed between double quotes	

**4.1.9 \$QCMIPMASSX: Set Hex Mobile Node AAA shared secret**

description	Set Hex Mobile Node AAA shared secret
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format	AT\$QCMIPMASSX=<X>,<Y>	<CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPMASSX?	<CR><LF>\$QCMIPMASSX: (Set Unset) <CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the user entered hex Mobile Node AAA shared secret of up to 16 bytes <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPMASSX=aaa,0	OK
	AT\$QCMIPMASSX?	\$QCMIPMASSX: Set  OK
note	CE MUST return “ERROR” if the user entered Mobile Node AAA shared secret begins with “0x” for AT\$QCMIPMASSX. CE MUST return “ERROR” and not save a Mobile Node AAA shared secret that is longer than 16 bytes for AT\$QCMIPMASSX. CE MUST return “ERROR” and not save a Mobile Node AAA shared secret that is longer than the maximum allowed length when using AT\$QCMIPMASS. CE MUST return “ERROR” and not save a Mobile Node AAA shared secret that contains any characters other than (0-9,A-F,a-f) for AT\$QCMIPMASSX. CE MUST not save the Mobile Node AAA shared secret to NV memory if Y is set to 0. CE MUST use the user entered Mobile Node AAA shared secret only for the next MIP session if Y is set to 0. CE MUST use the Mobile Node AAA shared secret stored in NV memory after the MIP session has deregistered or expired if Y is set to 0. CE MUST save the Mobile Node AAA shared secret to NV memory if Y is set to 1	

**4.1.10 \$QCMIPMHSS: Set ASCII Mobile Node Home Agent shared secret**

description	Set ASCII Mobile Node Home Agent shared secret string	
format	AT\$QCMIPMHSS="<X>",<Y>	<CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPMHSS?	<CR><LF>\$QCMIPMHSS: (Set Unset) <CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the user entered ASCII Mobile Node Home Agent shared secret string <Y> 0: not save the reverse tunneling flag to NV memory 1: save the reverse tunneling flag to NV memory	
example	AT\$QCMIPMHSS="1234",0	OK



	AT\$QCMIPMHSS?	\$QCMIPMHSS: Unset  OK
note	The Mobile Node Home Agent shared secret string MUST be enclosed between double quotes	

**4.1.11 \$QCMIPMHSSX: Set hex Mobile Node Home Agent shared secret**

description	Set hex Mobile Node Home Agent shared secret	
format	AT\$QCMIPMHSSX=<X>,<Y>	<CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPMHSSX?	<CR><LF>\$QCMIPMHSSX: (Set Unset) <CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the user entered hex Mobile Node Home Agent shared secret of up to 16 bytes <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPMHSSX = aaaaaa,0	OK
	AT\$QCMIPMHSSX?	\$QCMIPMHSSX: Set  OK
note	CE MUST return “ERROR” if the user entered Mobile Node Home Agent shared secret begins with “0x” for AT\$QCMIPMHSSX CE MUST return “ERROR” and not save a Mobile Node Home Agent shared secret that is longer than 16 bytes for AT\$QCMIPMHSSX CE MUST return “ERROR” and not save a Mobile Node Home Agent shared secret that is longer than the maximum allowed length when using AT\$QCMIPMHSSX. CE MUST return “ERROR” and not save a Mobile Node Home Agent shared secret that contains any characters other than (0-9,A-F,a-f) for AT\$QCMIPMHSSX CE MUST not save the Mobile Node Home Agent shared secret to NV memory if Y is set to 0 CE MUST use the user entered Mobile Node Home Agent shared secret only for the next MIP session if Y is set to 0 CE MUST use the Mobile Node Home Agent shared secret stored in NV memory after the MIP session has deregistered or expired if Y is set to 0. CE MUST save the Mobile Node Home Agent shared secret to NV memory if Y is set to 1	

**4.1.12 \$QCMIPMASPI: Set Mobile Node AAA SPI integer value**

description	Set Mobile Node AAA SPI integer value the change to NV memory	
format	AT\$QCMIPMASPI?	<CR><LF>\$QCMIPMASPI: <X>,<Y> <CR><LF><CR><LF>OK<CR><LF>

	AT\$QCMIPMASPI=<X>,<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the user entered Mobile Node AAA SPI integer value between (0-4294967295) <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPMASPI?	\$QCMIPMASPI: 2,1  OK
	AT\$QCMIPMASPI=1234,0	OK
note	CE MUST return "ERROR" for any other AT\$QCMIPMASPI string.	

**4.1.13 \$QCMIPMHSPI: Set Mobile Node Home Agent SPI integer value**

description	Set Mobile Node Home Agent SPI integer value the change to NV memory	
format	AT\$QCMIPMHSPI?	<CR><LF>\$QCMIPMHSPI: <X>,<Y> <CR><LF><CR><LF>OK<CR><LF>
	AT\$QCMIPMHSPI=<X>,<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the user entered Mobile Node Home Agent SPI integer value between (0-4294967295) <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPMHSPI?	\$QCMIPMHSPI: 3,1  OK
	AT\$QCMIPMHSPI=1234,0	OK
note	CE MUST return "ERROR" for any other AT\$QCMIPMHSPI string.	

**4.1.14 \$QCMIPPHA: Set Primary Home Agent IP Address**

description	Set Primary Home Agent IP Address	
format	AT\$QCMIPPHA?	<CR><LF><X>,<Y><CR><LF><CR><LF> OK<CR><LF>
	AT\$QCMIPPHA ="<X>",<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the Primary Home Agent IP Address string MUST be enclosed between double quotes. Valid values for X are ((0-255).(0-255).(0-255).(0-255)) <Y> 0: not save the change to NV memory 1: save the change to NV memory	

example	AT\$QCMIPPHA?	192.168.1.10,0 OK
	AT\$QCMIPPHA="192.168.1.10",0	OK
note	CE MUST return "ERROR" for any other AT\$QCMIPPHA string.	

**4.1.15 \$QCMIPSHA: Set secondary Home Agent IP Address**

description	Set secondary Home Agent IP Address	
format	AT\$QCMIPSHA?	<CR><LF><X>,<Y><CR><LF><CR><LF> OK<CR><LF>
	AT\$QCMIPSHA="<X>",<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the Secondary Home Agent IP Address string MUST be enclosed between double quotes. Valid values for X are ((0-255).(0-255).(0-255).(0-255)). <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPSHA?	192.168.1.10,0 OK
	AT\$QCMIPSHA="192.168.1.10",0	OK
note	CE MUST return "ERROR" for any other AT\$QCMIPSHA string.	

**4.1.16 \$QCMIPHA: Set Home Agent IP Address**

description	Set Home Agent IP Address the change to NV memory	
format	AT\$QCMIPHA?	<CR><LF><X>,<Y><CR><LF><CR><LF> OK<CR><LF>
	AT\$QCMIPHA="<X>",<Y>	<CR><LF><CR><LF>OK<CR><LF>
parameter	<X> the Home Agent IP Address string MUST be enclosed between double quotes. Valid values for X are ((0-255).(0-255).(0-255).(0-255)). <Y> 0: not save the change to NV memory 1: save the change to NV memory	
example	AT\$QCMIPHA?	192.168.1.1,0 OK
	AT\$QCMIPHA="192.168.1.10",0	OK
note	CE MUST return "ERROR" for any other AT\$QCMIPHA string. CE MUST use the IP Address in NV memory after the MIP session has deregistered or expired if Y is set to 0	

**5 Sprint Specific AT Commands**

**5.1 CDMA AT Commands**

**5.1.1 ATD: Make a packet data call**

description	Make a packet data call	
format	ATD<number>	<CR><LF><CR><LF>OK<CR><LF>
example	ATD#777	OK
note	CE MUST ignore any <number> and establish a packet data call. Note: in the past only #777, which is configured in a NV item, would cause the device to establish a packet data connection. As Sprint no longer allows any other type of data connection with our devices, this requirement will in effect disable the ability to use the device as a modem or fax	

**5.1.2 \$MDN: Return the mobile directory number**

description	Return the mobile directory number	
format	AT\$MDN?	<CR><LF>\$MDN: <value><CR><LF> <CR><LF>OK<CR><LF>
parameter	<value> The mobile directory number	
example	AT\$MDN?	\$MDN: 1111111111  OK
note	CE MUST return "ERROR" for any other AT\$MDN string	

**5.1.3 \$MSID: Return Mobile Station ID**

description	Return Mobile Station ID	
format	AT\$MSID?	<CR><LF>\$MSID: <value><CR><LF> <CR><LF>OK<CR><LF>
parameter	<value> the 10 digit mobile directory number	
example	AT\$MSID?	\$MSID: 0966661668  OK
note	CE MUST return "ERROR" for any other AT\$MSID string.	

**5.1.4 \$MIPERR: Return the last MIP error code received by the device**

description	Return the last MIP error code received by the device	
format	AT\$MIPERR?	<CR><LF>\$MIPERR: <value><CR><LF> <CR><LF>OK<CR><LF>
parameter	<value> the last MIP error code	

example	AT\$MIPERR?	\$MIPERR: 0 OK
note	CE MUST return "ERROR" for any other AT\$MIPERR string.	

**5.1.5 \$ERI: Return the current Enhanced Roaming Indicator value**

description	Return the current Enhanced Roaming Indicator value	
format	AT\$ERI?	<CR><LF>\$ERI: <value><CR><LF> <CR><LF>OK<CR><LF>
parameter	<value> decimal as defined in the Sprint Enhanced Roaming Indicators document [9]	
example	AT\$ERI?	\$ERI: 0 OK
note	CE MUST return "ERROR" for any other AT\$ ERI string	

**5.1.6 \$ROAM: Set the device mode**

description	Set the device mode	
format	AT\$ROAM=<N>	<CR><LF>OK<CR><LF>
	AT\$ROAM=?	<CR><LF>\$ROAM: <N><CR><LF> <CR><LF>OK<CR><LF>
parameter	<N> 0:set the device to Sprint only mode 1:set the device to automatic mode	
example	AT\$ROAM=1	OK
	AT\$ROAM=?	\$ROAM: 1 OK
note	CE MUST return "ERROR" for any other AT\$ROAM string Factory Settings must set the value of AT\$ROAM to the value defined in the Sprint PRI Template Program Release Instructions and factory default template [6]	

**5.1.7 \$RMGUARD: Set roam guard**

description	Set roam guard ( only support never ask N=1 )	
format	AT\$RMGUARD=<N>	<CR><LF>OK<CR><LF>
	AT\$RMGUARD=?	<CR><LF>\$RMGUARD: <N><CR><LF> <CR><LF>OK<CR><LF>
parameter	<N> 1:set roam guard to never ask 2:set roam guard to always ask	
example	AT\$RMGUARD=1	OK

	AT\$RMGUARD=2	ERROR
	AT\$RMGUARD=?	\$RMGUARD: 1 OK
note	CE MUST return "ERROR" for any other AT\$RMGUARD string	

**5.1.8 \$PRL: Get CDMA PRL version of the device**

description	Get CDMA PRL version of the device	
format	AT\$PRL?	<CR><LF>+PRL: <N><CR><LF>
example	AT\$PRL?	+PRL: 201 OK
note	“AT\$PRL?” which will return the CDMA PRL version of the device.	

**5.2 OMA-DM commands**

**5.2.1 +OMADM: Disable/Enable OMA-DM capabilities**

description	Disable/Enable OMA-DM capabilities, save the OMA-DM setting through power cycles	
format	AT+OMADM=<omadm_mode>	<CR><LF>OK<CR><LF>
	AT+OMADM=?	<CR><LF>+OMADM: <N><CR><LF> <CR><LF>OK<CR><LF>
parameter	< omadm_mode > 0:disable OMA-DM capabilities, ignore network initiated OMA-DM WAP Push messages. If the user attempts a client initiated OMA-DM session when OMA-DM is disabled, the CE MUST perform a client initiated OMA-DM session but will not enable OMA-DM capabilities 1:enable OMA-DM capabilities 2:launch a client initiated OMA-DM session 5 : cancel OMA-DM session Note: if OMA-DM is currently disabled this AT command will launch a client initiated OMA-DM session but will not enable OMA-DM capabilities	
example	AT+OMADM=1	OK
	AT+OMADM=?	+OMADM: 1 OK
note	CE MUST ignore network initiated OMA-DM WAP Push messages when OMA-DM is disabled Factory Settings must set the value of AT+OMADM to 1	

**5.2.2 +OMALOG: Disable/Enable OMA-DM client logging**

description	Disable/Enable OMA-DM client logging
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format	AT+OMALOG=<N>	<CR><LF>OK<CR><LF>
	AT+OMALOG=?	<CR><LF>+OMALOG: <N><CR><LF> <CR><LF>OK<CR><LF>
parameter	<N> 0:disable OMA-DM client logging 1:enable OMA-DM client logging. CE MUST write the complete OMA-DM XML transactions to a single file in the EFS for later retrieval when OMA-DM client logging is turned on	
example	AT+OMALOG=1	OK
	AT+OMALOG=?	+OMALOG: 1  OK
note	CE MUST return "ERROR" for any other AT+OMALOG string Factory Settings must set the value of AT+OMADM to 0	

**5.2.3 +FUMO: Disable/Enable FUMO capabilities**

description	Disable/Enable FUMO capabilities	
format	AT+FUMO=< fumo_mode >	<CR><LF>OK<CR><LF>
	AT+FUMO=?	<CR><LF>+FUMO: <N><CR><LF> <CR><LF>OK<CR><LF>
parameter	< fumo_mode > 0:disable FUMO capabilities 1:enable FUMO capabilities 2:perform a client initiated FUMO session, but will not enable FUMO capabilities 5 : cancel FUMO session 8 : manul the install session of FUMO	
example	AT+FUMO=1	OK
	AT+FUMO=?	+FUMO: 1  OK
note	Factory Settings must set the value of AT+FUMO to 1 CE MUST return "ERROR" for any other AT+FUMO string	

**5.2.4 +PRL: disable/enable PRL update capabilities**

description	disable/enable PRL update capabilities	
format	AT+PRL=<prl_mode>	<CR><LF>OK<CR><LF>
	AT+PRL=?	<CR><LF>+PRL: <N><CR><LF> <CR><LF>OK<CR><LF>
parameter	<prl_mode> 0: disable PRL update capabilities	

	1: enable PRL update capabilities. 2: perform a client initiated PRL update 3: set the device to check for PRL updates every 45 days 4: set the device to check for PRL updates every 90 days.  5 : cancel PRL session	
example	AT+PRL=1	OK
	AT+PRL=?	+PRL: 1  OK
note	Factory Settings must set the value of AT+PRL to 1 CE MUST return "ERROR" for any other AT+PRL string "AT+PRL=?" which will return the current PRL update setting.	

**5.2.5 +HFA: Cancel/Launch HFA Session**

description	Cancel/Launch HFA Session	
	AT+HFA=<hfa_mode>	<CR><LF>OK<CR><LF>
parameter	<hfa_mode> 0: cancel HFA session	
example	AT+ HFA =0	OK
note		

**5.2.6 +HFAR: START the start sign of HFA session**

description	the start sign of HFA session	
	<CR><LF>+HFAR: START<CR><LF>	
parameter		
example	+HFAR: START	
note		

**5.2.7 +HFAR: SUCCESS the success sign of HFA session**

description	the success sign of HFA session	
	<CR><LF>+HFAR: SUCCESS<CR><LF>	
parameter		
example	+HFAR: SUCCESS	
note		

**5.2.8 +HFAR: FAIL the fail sign of HFA session**

description	the fail sign of HFA session	
	<CR><LF>+HFAR:FAIL, <Error Code> <CR><LF>	
parameter	<Error Code>	



example	+HFAR: FAIL,25346	
note		

**5.2.9 +DCR: START the start sign of DC session**

description	the start sign of DC session	
	<CR><LF>+DCR: START: <CR><LF>	
parameter		
example	+DCR: START	
note		

**5.2.10 +DCR: SUCCESS the success sign of DC session**

description	the success sign of DC session	
	<CR><LF>+DCR: SUCCESS <CR><LF>	
parameter		
example	+DCR: SUCCESS	
note		

**5.2.11 +DCR: FAIL the fail sign of DC session**

description	the fail sign of DC session	
	<CR><LF>+DCR: FAIL, <Error Code> <CR><LF>	
parameter		
example	+DCR: FAIL, 25346	
note		

**5.2.12 +PRLR: START the start sign of PRL session**

description	the start sign of PRL session	
	<CR><LF>+PRLR: START<CR><LF>	
parameter		
example	+PRLR: START	
note		

**5.2.13 +PRLR: SUCCESS the success sign of PRL session**

description	the the success sign of PRL session start sign of hfa	
	<CR><LF>+PRLR: SUCCESS <CR><LF>	
parameter		
example	+PRLR: SUCCESS	

note	
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**5.2.14 +PRLR: FAIL the fail sign of PRL session**

description	the fail sign of PRL session	
	<CR><LF>+PRLR: FAIL, <Error Code> <CR><LF>	
parameter		
example	+PRLR: FAIL,25346	
note		

**5.2.15 +FUMOR: IF\_DOWNLOAD the start sign of FUMO session**

description	the start sign of FUMO session	
	<CR><LF>+FUMOR: IF_DOWNLOAD <CR><LF>	
parameter		
example	+FUMOR: IF_DOWNLOAD	
note		

**5.2.16 +FUMOR: IF\_INSTALL the install start sign of fireware install**

description	the install start sign of fireware install	
	<CR><LF>+FUMOR: IF_INSTALL <CR><LF>	
parameter		
example	+FUMOR: IF_INSTALL	
note		

**5.2.17 +FUMORDesc: the description of delta packet**

description	the description of firemare delta packet	
	<CR><LF>+FUMORDes c: <description><CR><LF>	
parameter	<description> The description of delta packet,	
example	+FUMORDesc:Fireware updata	
note		

**5.2.18 +FUMORSec: The time of install of delta packet**

description	The time of install of delta packet	
	<CR><LF>+FUMORSec: <estimatedInstallTimeInS ecs><CR><LF>	
parameter	<estimatedInstallTimeInSecs>	

	The time of install of delta packet	
example	+FUMORSec: 25	
note		

### 5.2.19 +FUMORBytes: The size of delta packet

description	The size of delta packet	
	<CR><LF>+FUMORByte: <size><CR><LF>	
parameter	<size> The size of delta packet	
example	+FUMORBytes:6234	
note		

### 5.2.20 +FUMOR: FAIL the fail sign of FUMO session

description	the fail sign of FUMO session	
	<CR><LF>+FUMOR: FAIL, <Error Code><CR><LF>	
parameter		
example	+FUMOR: FAIL,25346	
note		

### 5.2.21 +FUMOR: SUCCESS the success sign of FUMO session

description	the success sign of FUMO session	
	<CR><LF>+FUMOR: SUCCESS <CR><LF>	
parameter		
example	+FUMOR: SUCCESS	
note		

### 5.2.22 +DCR: NO\_CONTENT the no content sign of DCsession

description	the no content sign of DCsession	
	<CR><LF>+DCR: NO_CONTENT <CR><LF>	
parameter		
example	+DCR: NO_CONTENT	
note		

### 5.2.23 +PRLR: NO\_CONTENT the no content sign of PRL session

description	the no content sign of PRL session	
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	<CR><LF>+PRLR: NO_CONTENT <CR><LF>	
parameter		
example	+PRLR: NO_CONTENT	
note		

**5.2.24 +FUMOR: NO\_CONTENT the no content sign of FUMO session**

description	the no content sign of FUMO session	
	<CR><LF>+FUMOR: NO_CONTENT <CR><LF>	
parameter		
example	+FUMOR: NO_CONTENT	
note		

**5.2.25 +FUMOR: IN\_REPORTING the report status sign of FUMO session**

description	the report status sign of FUMO session	
	<CR><LF>+FUMOR: IN_REPORTING <CR><LF>	
parameter		
example	+FUMOR: IN_REPORTING	
note	The client report the status to OMA serve	

**5.2.26 +ZOPSMS: DISCONNECT\_LINK the push message sign of NI session**

description	the push message sign of NI session when the PPP connected	
	<CR><LF>+ZOPSMS: DISCONNECT_LINK <CR><LF>	
parameter		
example	+ZOPSMS: DISCONNECT_LINK	
note		

**5.3 Device reset commands**

**5.3.1 \$RTN: Set the device to factory defaults**

description	Set the device to factory defaults	
format	AT\$RTN=<N>	<CR><LF>OK<CR><LF>
parameter	<N> the device MSL	

example	AT\$RTN=000000	OK
note	CE MUST set the device to factory defaults and power cycle the device if the correct MSL is entered CE MUST return "ERROR" if the MSL is not correct and not power cycle the device CE MUST return "ERROR" for any other AT\$RTN string	

**5.3.2 \$RESET: Initiate a device power cycle**

description	Initiate a device power cycle	
format	AT\$RESET	<CR><LF>OK<CR><LF>
example	AT\$RESET	OK
note	CE MUST support "AT\$RESET" which will immediately initiate a device power cycle	

**5.4 Debug commands**

**5.4.1 \$1XRXPOWER: Return CDMA 1X channel, Pilot, and immediate RSSI**

description	Return the CDMA 1X channel, Pilot, and immediate RSSI measurements in dBm for each antenna on separate lines in the format	
format	AT\$1XRXPOWER?	<CR><LF><antenna>,<Channel>,<Pilot>,<RSSI><CR><LF><CR><LF>OK<CR><LF>
example	AT\$1XRXPOWER?	0,100,247,-85.5 OK
note	If the device does not support multiple antennas, only one value is returned. If the device supports multiple antennas, the primary antenna is listed first followed by additional antennas	

**5.4.2 \$1XECIO: Return the CDMA 1X Channel, Pilot, and immediate Ec/Io**

description	Return the CDMA 1X Channel, Pilot, and immediate Ec/Io measurements in dB for each antenna on separate lines in the format	
format	AT\$1XECIO?	<CR><LF> <antenna>,<Channel>,<Pilot>,<Ec/Io><CR><LF><CR><LF>OK<CR><LF>
example	AT\$1XECIO?	0,50,247,-85.5 OK
note	If the device does not support multiple antennas, only one value is returned. If the device supports multiple antennas, the primary antenna is listed first followed by additional antennas	

**5.4.3 \$DEBUG: Return the debug information**

description	Return the debug information
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n		
format	AT\$DEBUG?	<CR><LF><CR><LF><Fieldname>:<value> <CR><LF><CR><LF>OK<CR><LF>
parameter		
example	AT\$DEBUG?	1x Engineering State : Idle SO : 3 .... OK

### 5.5 FCC Regulations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiated radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

### 4RF Exposure Information

This Modular Approval is limited to OEM installation for mobile and fixed applications

only. The antenna installation and operating configurations of this transmitter, including any applicable source-based time-averaging duty factor, antenna gain and cable loss must satisfy MPE categorical Exclusion Requirements of §2.1091.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons, must not be collocated or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures.

The end user has no manual instructions to remove or install the device and a separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

Maximum antenna gain allowed for use with this device is 2dBi.

When the module is installed in the host device, the FCC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: “Contains FCC ID: Q78-MC2261” .

## 5.6 Operating Condition

Temperature: -20 ~+50 °