



Dragino LM502 LoRaWAN Module AT Command Sets

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1 Introduction

This article describes the AT Commands Set used in Dragino LoRa® products, it covers below products:

- LM502
- LM502-Demo-Board

1.1 How to connect device and send AT command?

See [LM502 user manual](#) for detail of hardware connection and software settings.

2 General Command

2.1 +CGBR: Set baudrate

Command Type	Command Format	Response
Enquiry Command	AT+CGBR?	+CGBR=<baud> OK
Parameters Explain & Return	<baud>: baudrate	
Example	AT+CGBR? +CGBR=9600 OK	
Notice		

2.2 +CJOINMODE: Set Join Method

Command Type	Command Format	Response
Test Command	AT+CJOINMODE=?	+CJOINMODE:"mode" OK
Enquiry Command	AT+CJOINMODE?	+CJOINMODE:<mode> OK
Execute Command	+CJOINMODE=<mode>	OK or +CME ERROR:<err>
Parameters Explain & Return	<mode>: Join method, option: 0: OTAA 1: ABP <err>: error	
Example	AT+CGBR? +CGBR=9600 OK	
Notice	Default use OTAA to join	

2.3 +CDEVEUI: Set DevEUI

Command Type	Command Format	Response
Test Command	AT+CDEVEUI=?	+CDEVEUI=<DevEUI: length is 16>
Enquiry Command	AT+CDEVEUI?	+CDEVEUI:<value> OK

Execute Command	+CDEVEUI=<value>	OK or +CME ERROR:<err>
Parameters Explain & Return	<value>: DevEUI	
Example	AT+CDEVEUI? +CDEVEUI=AABBCCDD00112233 OK	
Notice	Set or get DevEUI, 8 bytes, hex format	

2.4 +CAPPEUI: Set AppEUI

Command Type	Command Format	Response
Test Command	AT+CAPPEUI=?	+CAPPEUI=<AppEUI: length is 16>
Enquiry Command	AT+CAPPEUI?	+CAPPEUI:<value> OK
Execute Command	AT+CAPPEUI=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>: AppEUI	
Example	AT+CAPPEUI=AABBCCDD00112233 OK	
Notice		

2.5 +CAPPKEY: Set AppKey

Command Type	Command Format	Response
Test Command	AT+ CAPPKEY=?	+CAPPKEY=<AppKey: length is 32>
Enquiry Command	AT+ CAPPKEY?	+CAPPKEY:<value> OK
Execute Command	AT+CAPPKEY=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>: AppKey	
Example	AT+CAPPKEY=AABBCCDD00112233AABBCCDD00112233 OK	
Notice		

2.6 +CDEVADDR: Set DevAddr

Command Type	Command Format	Response
Test Command	AT+CDEVADDR=?	+CDEVADDR=<DevAddr: length is 8, Device address of ABP mode>
Enquiry Command	AT+CDEVADDR?	+CDEVADDR:<value> OK
Execute Command	AT+CDEVADDR=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>: DevAddr	
Example	AT+CDEVADDR=00112233 OK	
Notice		

2.7 +CAPPSKEY: Set AppSKey

Command Type	Command Format	Response
Test Command	AT+CAPPSKEY=?	+CAPPSKEY=<AppSKey: length is 32>
Enquiry Command	AT+CAPPSKEY?	+CAPPSKEY:<value> OK
Execute Command	AT+CAPPSKEY=<value>	OK or +CME ERROR:<err>
Parameters Explain & Return	<value>: AppSKey	
Example	AT+CAPPSKEY=AABBCCDD00112233AABBCCDD00112233 OK	
Notice		

2.8 +CNWKSKEY: Set NwkSKey

Command Type	Command Format	Response
Test Command	AT+CNWKSKEY=?	+CNWKSKEY=<NwkSKey: length is 32>
Enquiry Command	AT+CNWKSKEY?	+CNWKSKEY:<value> OK
Execute Command	AT+CNWKSKEY=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>: Set NwkSKey	
Example	AT+CNWKSKEY=AABBCCDD00112233AABBCCDD00112233 OK	
Notice		

2.9 +CFREQBANDMASK: Set Channel Mask

Command Type	Command Format	Response
Test Command	AT+CFREQBANDMASK=?	+CFREQBANDMASK:"mask" OK
Enquiry Command	AT+CFREQBANDMASK?	+CFREQBANDMASK:<mask> OK
Execute Command	AT+CFREQBANDMASK=<mask>	OK or +CME ERROR:<err>
Parameters Explain & Return	<mask>: Set channels mask. 16 bit for 16 set of channels. Example: * 0001 for 0~7 channels. * 0002 for 8~15 channels.	
Example	AT+CFREQBANDMASK=0001 OK	
Notice	Need to set before OTAA join	

2.10 +CULDLMODE: Set uplink/downlink same frequency or different frequency

Command Type	Command Format	Response
Test Command	AT+CULDLMODE=?	+CULDLMODE:"mode" OK

Enquiry Command	AT+CULDLMODE?	+CULDLMODE:<mode> OK
Execute Command	AT+CULDLMODE=<mode>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<mode>: <div style="border: 1px solid black; padding: 2px; width: fit-content;"> 1: Uplink/Downlink same Frequency 2: Uplink/Downlink different Frequency </div>	
Example	AT+CULDLMODE=2 OK	
Notice	Need to set before OTAA join	

2.11 +CWORKMODE: Set working mode

Command Type	Command Format	Response
Test Command	AT+CWORKMODE=?	+CWORKMODE:"mode" OK
Enquiry Command	AT+CWORKMODE?	+CWORKMODE:<mode> OK
Execute Command	AT+CWORKMODE=<mode>	OK or +CME ERROR:<err>
Parameters Explain & Return	<mode>: as below <div style="border: 1px solid black; padding: 2px; width: fit-content;"> 2: normal working mode </div>	
Example	AT+CWORKMODE=2 OK	
Notice	Only support workmode =2 now.	

2.12 +CCLASS: Set Class

Command Type	Command Format	Response
Test Command	AT+CCLASS=?	+CCLASS:"class","branch","para1","para2","para3","para4" OK
Enquiry Command	AT+CCLASS?	+CCLASS:<class> OK

Execute Command	AT+CCLASS=<class>,[branch], [para1],[para2],[para3], [para4]	OK or +CME ERROR:<err>
Parameters Explain & Return	<p><class>:</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>0: classA 1: classB 2: classC</p> </div> <p>The parameters number are different for different class.</p> <p>1) classA=1 and branch=0: only need para1 for set Ping slot periodicity, from 0~7, and the actually period is $0.96 * 2^{\text{periodicity}}$(seconds)</p> <p>2) class=1 and branch=1: para1: set beacon frequency, unit: Hz; para2: set beacon DataRate, para3: set ping frequency, unit: Hz; para4: set ping DataRate.</p> <p>Refer LoRaWAN specification.</p>	
Example	AT+CCLASS=2 OK	
Notice	Set before join	

2.13 +CBL: check battery level

Command Type	Command Format	Response
Test Command	AT+CBL=?	+CBL:"value" OK
Enquiry Command	AT+CBL?	+CBL:<value> OK
Parameters Explain & Return	<value>: battery level , according to LoRaWAN specification.	
Example	AT+CBL? +CBL=100 OK	
Notice		

2.14 +CSTATUS: enquiry module status

Command Type	Command Format	Response
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Test Command	AT+CSTATUS=?	+CSTATUS:"status" OK
Enquiry Command	AT+CSTATUS?	+CSTATUS:<status> OK
Parameters Explain & Return	<status>: <div style="border: 1px solid black; padding: 5px;"> 00 — no operation 01 — sending data 02 — send data fail 03 — send data success 04 — JOIN success(only valid on the first JOIN) 05 — JOIN Fail (only valid on the first JOIN) 06 — network error (Link Check result) 07 — send data success, no downlink 08 — send data success, has downlink </div>	
Example	AT+CSTATUS? +CSTATUS=03 OK	
Notice		

2.15 +CJOIN: Join Network

Command Type	Command Format	Response
Test Command	AT+CJOIN=?	+CJOIN:<ParaName1>,[ParaName2],...[ParaName4] OK
Enquiry Command	AT+CJOIN?	+CJOIN:<ParaValue1>,[ParaValue2],...[ParaValue4] OK
Execute Command	AT+CJOIN =<ParaValue1>,[ParaValue2],...[ParaValue4]	OK Or +CME ERROR:<err>
Parameters Explain & Return	<ParaValue1>, [ParaValue2, ...[ParaValue4]: Value of Para 1~4; ParaValue1: Start or Stop join: ✓ 0 – stop JOIN ✓ 1 – Start Join. ParaValue2: Enable or Disable Auto Join: ✓ 0 - Disable Auto JOIN ✓ 1 - Enable Auto JOIN, (Auto Enabled if in pass through mode)	

	<p>ParaValue3: Join Period: 7~255 , unit second: Default: 8 seconds</p> <p>ParaValue4: Join Max tries : from 1 ~ 256</p>
Example	<p>AT+CJOIN=1,1,10,8(Start JOIN, Enable Auto Join, period 10s, max tries:8)</p> <p>OK</p> <p>+CJOIN:OK</p>
Notice	

2.16 +DTRX: Transmit and Receive data

Command Type	Command Format	Response
Test Command	AT+DTRX=?	+DTRX:[confirm],[nbtrials],<Length> ,<Payload> OK
Execute Command	AT+DTRX=[confirm],[nbtrials],<Length>,<Payload>	OK+SEND:TX_LEN OK+SENT:TX_CNT OK+RECV:TYPE,PORT,LEN,DATA or ERR+SEND:ERR_NUM ERR+SENT:TX_CNT or +CME ERROR:<err>
Parameters Explain & Return	<p>Confirm and nbtrials: Define send a confirm type packet or unconfirm type packet. For confirm type packet, module will wait for downlink confirm packet from server, if fail, module will send uplink packet again, the max retry is nbtrials.</p> <p>Length: Length of sent strings, According to LoRaWAN protocol, different Data Rate may have max length requirement, if data exceed limit length, server may ignore. 0 means NULL data</p> <p>Payload: HEX format</p> <p>Note:</p> <p>1, How to see if uplink success</p> <p>Confirm Type packet:</p> <p>There will be output after each uplink.</p> <p>OK+SEND, OK+SENT , OK+RECV.</p> <p>Unconfirm type:</p> <p>Each uplink will output OK+SEND,OK+SENT. If there is downlink from server, it will shows OK+RECV.</p> <p>2. Output status</p>	

	<p>OK+SEND:TX_LEN : Shows the uplink packet length</p> <p>OK+SENT:TX_CNT: shows the uplink packet tries.</p> <p>ERR+SEND:ERR_NUM :</p> <p>0— Not Join</p> <p>1— Busy</p> <p>2— Length exceed allow limit.</p> <p>ERR+SENT:TX_CNT : Error after max tries</p> <p>OK+RECV: TYPE,PORT,LEN,DATA Get downlink</p> <p>TYPE: 1Byte,</p> <p>Bit0: 0—unconfirm, 1—confirm</p> <p>Bit1: 0—no ACK, 1—ACK</p> <p>Bit2: 0—disable, 1—enable, Indicate if the downlink data includes LINK command reply</p> <p>Bit3: 0—disable, 1—enable, Indicate if downlink data includes TIME info</p> <p>Bit4~Bit7: Default 0, Reserve</p> <p>PORT: 1Byte, Downlink Port</p> <p>LEN: 1Byte, Downlink data length</p> <p>DATA:nByte, Downlink data, this field is empty if LEN=0</p>
Example	<p>AT+DTRX=1,2,10,0123456789</p> <p>OK+SEND:03</p> <p>OK+SENT:01</p> <p>OK+RECV:02,01,00</p> <p>Confirm data transmit successful, server will receive the payload “0123456789” , End node receive downlink confirm.</p>
Notice	This command is available after Joined network successful.

2.17 +DRX: Receive Data

Command Type	Command Format	Response
Test Command	AT+DRX=?	+DRX:<Length>,<Payload> OK
Enquiry Command	AT+DRX?	+DRX:<Length>,<Payload> OK Or +CME ERROR:<err>
Parameters Explain & Return	Return:	

	<p>Length: Data Length;</p> <p>Payload: HEX format string;</p> <p>OK: Get data normally.</p>
Example	<p>AT+DRX?</p> <p>OK</p>
Notice	This command will get data from receive buffer and clear it

2.18 +CCONFIRM: Set uplink transmit type

Command Type	Command Format	Response
Test Command	AT+CCONFIRM=?	+CCONFIRM:"value" OK
Enquiry Command	AT+CCONFIRM?	+CCONFIRM:<value> OK
Execute Command	AT+CCONFIRM=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>: 0: Unconfirmed up message 1: Confirmed up message	
Example	<p>AT+CCONFIRM=1</p> <p>OK</p>	
Notice	Need to set before uplink	

2.19 +CAPPPORT: Set uplink port

Command Type	Command Format	Response
Test Command	AT+CAPPPORT=?	+CAPPPORT:"value" OK
Enquiry Command	AT+CAPPPORT?	+CAPPPORT:<value> OK
Execute Command	AT+CAPPPORT=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>:	

	Uplink port in DEC format. Range: 1~223;
Example	AT+CAPPOR=10 OK
Notice	Need to set before uplink

2.20 +CDATARATE: Set data rate

Command Type	Command Format	Response
Test Command	AT+CDATARATE=?	+CDATARATE:"value" OK
Enquiry Command	AT+CDATARATE?	+CDATARATE:<value> OK
Execute Command	AT+CDATARATE=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<value>: 如下。 <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> Data Rate, default is 3: 0—SF12,BW125 1—SF11,BW125 2—SF10,BW125 3—SF9,BW125 4—SF8,BW125 5—SF7,BW125 </div>	
Example	AT+CDATARATE=1 OK	
Notice	Need to set before uplink, if set ADR=1 this setting will be ignored.	

2.21 +CRSSI: Enquiry signal strength

Command Type	Command Format	Response
Test Command	AT+CRSSI=?	+CRSSI OK
Enquiry Command	AT+CRSSI? FREQBANDIDX?	+CRSSI: 0: <Channel 0 rssi> 1: <Channel 1 rssi> ... 15: <Channel 8 rssi> OK

Parameters Explain & Return	<p><FREQBANDIDX>:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;">Return the RSSI for the 8 channels in the frequency bands</div>
Example	<pre>AT+CRSSI 1? +CRSSI: 0:-157 1:-157 2:-157 3:-157 4:-157 5:-157 6:-157 7:-157 OK</pre>
Notice	

2.22 +CNBTRIALS: Set uplink retries

Command Type	Command Format	Response
Test Command	AT+CNBTRIALS=?	+CNBTRIALS:"MType", "value" OK
Enquiry Command	AT+CNBTRIALS?	+CNBTRIALS:<MType>, <value> OK
Execute Command	AT+CNBTRIALS=<MType>, <value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<p><MType>: 0: unconfirm, 1: confirm <value>: Max retries : 1~15.</p>	
Example	<pre>AT+CNBTRIALS=1,2 OK</pre>	
Notice	Need to set before uplink	

2.23 +CRM: Set uplink mode

Command Type	Command Format	Response
Test Command	AT+CRM=?	+CRM:"reportMode", "reportInterval" OK
Enquiry Command	AT+CRM?	+CRM:<reportMode>,[reportInterval] OK
Execute Command	AT+CRM=<reportMode>,[reportI]	OK

	nterval]	Or +CME ERROR:<err>																					
Parameters Explain & Return	<p>This command is used for testing purpose.</p> <p><reportMode>:</p> <p>0- un-periodically uplink data.</p> <p>1- periodically uplink data;</p> <p><reportInterval>: valid when reportMode=1;Unlink Interval, unit: s.</p> <p>For different DR, the allowed minimum periodically is different, as below</p> <table border="1"> <thead> <tr> <th>DR\Interval(s)\Level</th> <th>LV1</th> <th>LV2</th> </tr> </thead> <tbody> <tr> <td>DR0</td> <td>150</td> <td>300</td> </tr> <tr> <td>DR1</td> <td>75</td> <td>150</td> </tr> <tr> <td>DR2</td> <td>35</td> <td>70</td> </tr> <tr> <td>DR3</td> <td>15</td> <td>30</td> </tr> <tr> <td>DR4</td> <td>10</td> <td>20</td> </tr> <tr> <td>DR5</td> <td>5</td> <td>10</td> </tr> </tbody> </table>		DR\Interval(s)\Level	LV1	LV2	DR0	150	300	DR1	75	150	DR2	35	70	DR3	15	30	DR4	10	20	DR5	5	10
DR\Interval(s)\Level	LV1	LV2																					
DR0	150	300																					
DR1	75	150																					
DR2	35	70																					
DR3	15	30																					
DR4	10	20																					
DR5	5	10																					
Example	AT+CRM=1,10 OK																						
Notice	Need to set before uplink																						

2.24 +CTXP: Set Transmit Power

Command Type	Command Format	Response
Test Command	AT+CTXP=?	+CTXP: "value" OK
Enquiry Command	AT+CTXP?	+CTXP:<value> OK
Execute Command	AT+CTXP=<value>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<p><value>: Output power, default is 0</p> <p>For CN470A, the value is:</p> <p>0 - 17dBm</p> <p>1 - 15dBm</p> <p>2 - 13dBm</p> <p>3 - 11dBm</p> <p>4 - 9dBm</p> <p>5 - 7dBm</p> <p>6 - 5dBm</p> <p>7 - 3dBm</p>	

Example	AT+CTXP=1 OK
Notice	Need to set before uplink

2.25 ++CLINKCHECK: Check network connection

Command Type	Command Format	Response
Test Command	AT+CLINKCHECK=?	+CLINKCHECK:"value" OK
Execute Command	AT+CLINKCHECK=<value>	OK or +CME ERROR:<err>
Parameters Explain & Return	<p><value>: Link Check parameter</p> <ul style="list-style-type: none"> 0 - Disable Link Check 1 - Execute one Link Check 2 - Module carry Link Check command for every uplink data <div style="border: 1px solid black; padding: 5px;"> <p>Return OK for config ok .</p> <p>If X1=1, it will wait for a while to get the reply, Format is as below.</p> <p>+CLINKCHECK:Y0, Y1, Y2, Y3, Y4</p> <p>Y0, means the Link Check result:</p> <ul style="list-style-type: none"> 0 - Means this Link Check ok none 0 - Means this Link Check fail <p>Y1: DemodMargin</p> <p>Y2: NbGateways</p> <p>Y3:Downlink RSSI</p> <p>Y4: Downlink SNR</p> </div>	
Example	AT+CLINKCHECK=1 OK +CLINKCHECK: 0, 0, 1, -68, 8	
Notice	Need to set before uplink	

2.26 +CADRL: Enable / Disable ADR

Command Type	Command Format	Response
Test Command	AT+CADR=?	+CADR: "value" OK
Enquiry Command	AT+CADR?	+CADR:<value>

		OK
Execute Command	AT+CADR=<value>	OK 或者 +CME ERROR:<err>
Parameters Explain & Return	<value>: <div style="border: 1px solid black; padding: 5px; width: fit-content;"> 0 – ADR Disable 1 – ADR Enable </div>	
Example	AT+CADR=1 OK	
Notice	Need to set before uplink. Default ADR is enable.	

2.27 +CRXP: Set RX window parameter

Command Type	Command Format	Response
Test Command	AT+CRXP=?	+CRXP:"RX1DRoffest","RX2DataRate", "RX2Frequency" OK
Enquiry Command	AT+CRXP?	+CRXP:<RX1DRoffest>,<RX2DataRate >,<RX2Frequency> OK
Execute Command	AT+CRXP=<RX1DRoffest>,<RX2DataRate>,<RX2Frequency>	OK Or +CME ERROR:<err>
Parameters Explain & Return	<RX1DRoffest>,<RX2DataRate>,<RX2Frequency>: See LoRaWAN protocol.	
Example	AT+CRXP=1,1,471000000 OK	
Notice	Need to set before uplink. Use default setting is not set.	

2.28 +CRX1DELAY: Set RX1 window delay

Command Type	Command Format	Response
Test Command	AT+CRX1DELAY=?	+CRX1DELAY: "Delay" OK
Enquiry Command	AT+CRX1DELAY?	+CRX1DELAY:<Delay> OK
Execute Command	AT+CRX1DELAY=<Delay>	OK Or +CME ERROR:<err>

Parameters Explain & Return	Delay: How long open RX1 window after transmit, Unit :s;
Example	AT+CRX1DELAY=2 OK
Notice	Need to set before uplink. Use default value is not set. .

2.29 +CSAVE: Save MAC Parameters.

Command Type	Command Format	Response
Test Command	T+CSAVE=?	+CSAVE OK
Execute Command	T+CSAVE	OK or +CME ERROR:<err>
Parameters Explain & Return	This command save the configure parameter to EERPOM/FLASH Active after AT+RESET,.	
Example	AT+CSAVE OK	
Notice	Need to save before uplink.	

2.30 +CRESTORE: Restore MAC parameters

Command Type	Command Format	Response
Test Command	AT+CRESTORE=?	+CRESTORE OK
Execute Command	AT+CRESTORE	OK or +CME ERROR:<err>
Parameters Explain & Return	Restore MAC default parameters to EERPOM/FLASH.	
Example	AT+CRESTORE OK	
Notice	Need to save before uplink.	

2.31 +CPINGSLOTINFOREQ: PingSlotInfo request

Command Type	Command Format	Response
Test Command	AT+CPINGSLOTINFOREQ=?	+CPINGSLOTINFOREQ:<periodicity> OK
Enquiry Command	AT+CPINGSLOTINFOREQ?	+CPINGSLOTINFOREQ:<periodicity> OK
Execute Command	AT+CPINGSLOTINFOREQ=<periodicity>	OK

	y>	Or +CME ERROR:<err>
Parameters Explain & Return	Periodicity: ping slot value	
Example	AT+CPINGSLOTINFOREQ=3 OK	
Notice	For ClassB	

2.32 +CADDMUTICAST: Add multiply broadcast address

Command Type	Command Format	Response
Test Command	AT+CADDMUTICAST=?	+CADDMUTICAST:"DevAddr","AppSKey","NwkSKey","Periodicity","Data rate" OK
Execute Command	AT+CADDMUTICAST=<DevAddr>,<AppSKey>,<NwkSKey>,[Periodicity],[Datarate]	OK Or +CME ERROR:<err>
Parameters Explain & Return	DevAddr: Multiply broadcast address AppSKey: Multiply broadcast APP Session Key NwkSKey: Multiply broadcast network key Periodicity: ping slot period Datarate: DataRate	
Example	AT+CADDMUTICAST=67678d5e,5ac8eb2016f11f19ad19d7f530592c44,59543069010279fa7317f85f47c46926, 2, 2 OK	
Notice	Set before Join	

2.33 +CDELMUTICAST: Delete multiply broadcast address

Command Type	Command Format	Response
Test Command	AT+CDELMUTICAST=?	+CDELMUTICAST:"DevAddr" OK
Execute Command	AT+CDELMUTICAST=<DevAddr>	OK or +CME ERROR:<err>
Parameters Explain & Return	DevAddr: multiply broadcast address	
Example	AT+CDELMUTICAST=67678d5e OK	
Notice		

2.34 +CNUMMUTICAST: Enquiry multiply broadcast numbers.

Command Type	Command Format	Response
Test Command	AT+CNUMMUTICAST=?	+CNUMMUTICAST:"number" OK
Enquiry Command	AT+CNUMMUTICAST?	+CNUMMUTICAST:<number> OK
Parameters Explain & Return		
Example	AT+CNUMMUTICAST? +CNUMMUTICAST:0 OK	
Notice		

2.35 +IREBOOT: Reboot module

Command Type	Command Format	Response
Test Command	AT+IREBOOT=?	+IREBOOT:"Mode" OK
Execute Command	AT+IREBOOT=<mode>	OK 或者 +CME ERROR:<err>
Parameters Explain & Return	<mode>: <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> 0: Reboot immediately 1: Reboot after finish the transmit frame 7: Reboot to enter bootloader </div>	
Example	AT+IREBOOT=1 OK	
Notice		

2.36 +ILOGLVL: Set log level

Command Type	Command Format	Response
Test Command	AT+IREBOOT=?	+ILOGLVL: "level" OK
Enquiry Command	AT+ILOGLVL?	+ILOGLVL:<level> OK
Execute Command	AT+ILOGLVL=<level>	OK or +CME ERROR:<err>
Parameters Explain & Return	<level>: <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> 0: Disable log 1~5: Log number , higher number output more log </div>	

Example	AT+ILOGLVL=1 OK
Notice	

2.37 +CLPM: Enable Low Power

Command Type	Command Format	Response
Test Command	AT+CLPM=?	+CLPM:"Mode" OK
Execute Command	AT+CLPM=<mode>	OK or +CME ERROR:<err>
Parameters Explain & Return	<mode>: Low power mode 1: Enter into low power mode	
Example	AT+CLPM=1 OK	
Notice	For transmission high than 40kbps, UART transmit may error So AT+CLPM=0 may return "+CME ERROR:", In this case, use can use "00000000D0A" (Hex format) to wake up the module.	

2.38 +CSLEEP: Low Power test command

Command Type	Command Format	Response
Test Command	AT+CSLEEP=?	+CSLEEP = <0, 1, 2 > OK
Execute Command	AT+CSLEEP=<sleep_mode>	OK or +CME ERROR:<err>
Parameters Explain & Return	Deep Sleep mode operation: 0 - Enter DeepSleep Mode, and can be waked up by Timer after 10ms 1 - Enter DeepSleep Mode, and can be waked up by pull up in set_b pin 2 - Enter DeepSleep Mode, can be waked up by UART. Press Any key to wake up.	
Example	AT+CSLEEP=0 deep sleep 10000 ms!=0 +CSLEEP OK	
Notice		

2.39 +CMCU: Low Power test command

Command Type	Command Format	Response
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Test Command	AT+CMCU=?	+CMCU = <0, 1, 2, 3 > OK
Execute Command	AT+CMCU=<mcu_mode>	OK or +CME ERROR:<err>
Parameters Explain & Return	Control MCU in low power mode: mcu_mode 0 - Only shutdown SX1262 1 - MCU, watchdog, Timer work, 2 - MCU, watchdog, Timer operate, System enter DeepSleep and wake up by set_b 3 - Enter into DeepSleep in every 15 s.	
Example	AT+CMCU=0 OK	
Notice		

2.40 +CSTDBY: Low Power test command

Command Type	Command Format	Response
Test Command	AT+CSTDBY=?	+CRXC = <0, 1> OK
Execute Command	AT+CSTDBY=<standby_mode>	OK Or +CME ERROR:<err>
Parameters Explain & Return	SX1262 is set to standby mode, MCU is set to DeepSleep mode, and wake up by UART 0 - STDBY_RC 1 - STDBY_XOSC	
Example	AT+CSTDBY=0 deep sleep wait for uart...	
Notice		

2.41 +CRX: RX Test Command

Command Type	Command Format	Response
Test Command	AT+CRX=?	+CRX:"Frequency","DataRate" OK
Execute Command	AT+CRX=<freq>,<data_rate>	OK or +CME ERROR:<err>
Parameters Explain & Return	RX continues receive Freq: 150000000-960000000 Data_rate: DR0~DR5, for SF12~SF7.	

Example	AT+CRX=470000000,0 start to rcv package (freq: 470000000, dr:0)
Notice	System will be in deal while loop. Reboot if want to use other AT Command

2.42 +CTX: Transmit Test Command

Command Type	Command Format	Response
Test Command	AT+CTX=?	+CTX:"Frequency","DataRate","TxPower" OK
Execute Command	AT+CTX=<freq>,<data_rate>,<pwr>	OK or +CME ERROR:<err>
Parameters Explain & Return	Transmit a Packet every 1 second Freq: 150000000-960000000 Data_rate: DR0~DR5, for SF12~SF7. Pwr: Output Power. 0 ~ 22.	
Example	AT+CTX=470000000,0,22 start to tx data(freq: 470000000, dr: 0, power: 22): 1	
Notice	System will be in deal while loop. Reboot if want to use other AT Command	

2.43 +CTXCW: Transmit Test Command

Command Type	Command Format	Response
Test Command	AT+CTXCW=?	+CTXCW:"Frequency","TxPower", "PaOpt" OK
Execute Command	AT+CTXCW=<freq>,<pwr>,<opt>	OK Or +CME ERROR:<err>
Parameters Explain & Return	TX continuously mode. Freq: 150000000-960000000 Pwr: Output Power : 0 ~ 22. Opt: SX1262 PA Optimal setting, from0-3, default is 0: 0: [0x04,0x07,0x00, 0x01], 1: [0x03,0x04,0x00,0x01], 2: [0x02,0x03,0x00,0x01], 3:[0x02,0x02,0x00,0x01]。	
Example	AT+CTXCW=470000000,22 Start to txcw (freq: 470000000, power: 22db, opt: 0)	

	AT+CTXCW=470000000,22,2 Start to txcw (freq: 470000000, power: 22db, opt: 2)
Notice	System will be in deal while loop. Reboot if want to use other AT Command