ZIGBEE Firmware Function Description:

1、 Suitable for MCU: CC2530

2、 Adopt protocol stack version: ZStack-CC2530-2.5.1a

3、 Support AT commands

4、 Support status indicator I/O

5、 Serial port I/O：P02/P03

6、 Support automatic recovery network state after power-off rest.

7、 Offer programming instruction as well as support transparent data upload of non-AT command modules and AT command modules.

AT Commands:

I. Serial port configuration by default: Baud rate (9600), no parity, data bit (8), stop bit(1) and no flow control.

II. Command and data format:

1.AT command format: AT+command type=Parameter1, parameter 2…

The format of parameters is 16 hexadecimal number to 16 hexadecimal character. If you set IEEE address parameter as 8 bytes (0x01,0x02,x03,0x04,0x05,x06,0x07,0x08), then AT command parameter is a character string of sixteen characters "0102030405060708".

2.Data format:

The format of parameters is 16 hexadecimal number to 16 hexadecimal character, as we mentioned above.

A) When Zigbee non-coordinator device is incorporated into network, it automatically sends report packet including its own IEEE address and short address to a coordinator without manual intervention. The format is +ZBC=<logicalType>,<localshortddr>,<localieeeaddr><\r\n>.

B) Zigbee non-coordinator device directly receives serial port data and sends it to coordinator after converted to data packet "+ZBD=<localieeeaddr>,<data><CR><LF>" by modules and then outputs through serial port.

C) The coordinator receives and sends data according to the format of
+ZBD=< localshortddr >,<data><CR><LF>

D) After coordinator resets or starts normally and builds up a network successfully, the serial port will output:
+RST 00,0000,1112131415161718,1256,13

III. AT Commands Description:

1. Enter/Exit AT command configuration mode:

Commands	Response	Parameter	Description
+++	CCATMODE LOGIN	No	Enter AT command
	CCATMODE LOGOUT	No	Exit AT command
	ERROR	No	Error

Eg.: Send +++ and return CCATMODE LOGIN.

2. Check and set serial port baud rate

Commands	Response	Parameter
Check：AT+ BAUD？	Range：00～04	Range：00～04
Setting：AT+ BAUD =para	OK	00=9600;01=19200; 02=38400;03=57600; 04=115200 Default：00（9600）

3. Check and set device type

Commands	Response	Parameter
Check：AT+DETP?	+DETP para	Para: 00/01/02
Setting：AT+DETP=para	OK	00: Coordinator 01: Router 02: Terminal node Default: 00

4. Check and set IEEE address (MAC address)

Commands	Response	Parameter
Check：AT+IEAD?	+IEAD para	Para：64 bit IEEE address
Setting：AT+IEAD=para	OK	64-bit 16 hexadecimal

5. Check and set network identifier (PANID)

Commands	Response	Parameter
Check：AT+PNID?	+PNID Para	Para：Network identifier 8-bit 16 hexadecimal and 4-byte 16 hexadecimal number representing 4-byte with high-order at the front.
Setting：AT+PNID=para	OK	

Such as sending AT+PNID? and it returns +PNID 0B.

6. Check and set communication channel.

Commands	Response	Parameter
Check：AT+CHAN?	+CHAN para	It supports sixteen communication channels with values of 0x0B~0x1A and corresponding frequency of 2405MHz~2480MHz. Each channel takes 5MHz.
Setting：AT+CHAN=para	OK	

7. Re-build network router (broadcast)

Command	Response	Parameter
AT+BDCT	OK	No

This command only works for COO node. After COO gets the command, it will broadcast in one second, which asks COO node to start a whole network broadcast and re-build a network router structure. Therefore, in three to five seconds after the command executes, wireless data will be heavier. Meantime, we don't recommend users receive or send data so as not to lose data.

8. Factory reset

Command	Response	Parameter
Setting：AT+FRST	OK	Default setting of modules, as follows:

The serial port baud rate is 9600, the type of the device is 00, IEEE address is 3333333333333333, network identifier is 0001 and the communication signal is 0B

9. Module soft reset and restart.

Command	Response	Parameter
AT+SRST	+SRST para	Para format：<devicetype>,<localshortddr>,<ieeeaddr>,<pan id>,<channel> You can example as follows:

Such as sending AT+SRST,
It will return +SRST 00,0001,1112131415161718,1256,13

00 stands for device type as a coordinator;
0002 is short address;
1112131415161718 is IEEE address;
1256 is network identifier;
13 is communication signal.

Note: After configuration above, you must (soft) reset the device so that new network parameter can work.

After configuration and soft reset, you can't revise type of the device. If you have to change, please do it after restoring factory settings