

RAK811 Breakout Board Specification v1.0

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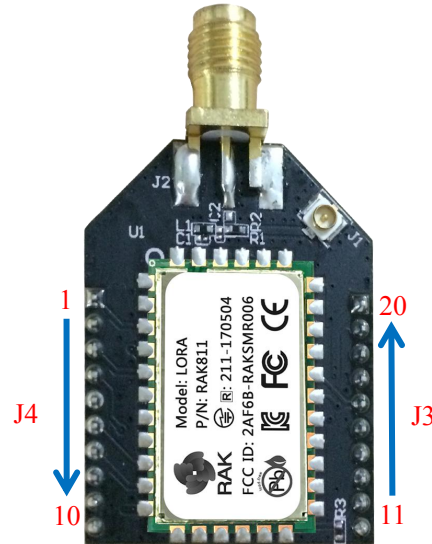
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1. General Description

The following image is RAK811 Breakout Board development board, and it support the IPEX interface antenna and the SMA interface antenna. The interface resource are as follow:



Pin NO.	Pin Name	Description
1	PB14	General I/O port
2	PA12	General I/O port
3	PA8	General I/O port
4	PA2	General I/O port
5	PB15	General I/O port
6	PB4	General I/O port
7	PA13, SWDIO	General I/O port, Debug port
8	PA14, SWCLK	General I/O port, Debug port
9	PA1	General I/O port
10	PA0	General I/O port
11	GND	Ground
12	BOOT0	Boot pin (High level effective)
13	PA15	General I/O port
14	PB5	General I/O port
15	PB3	General I/O port
16	RST	Reset the module (Low level effective)
17	PB12	General I/O port
18	UART1_RXD	Receive data
19	UART1_TXD	Transmit data
20	LoRa_3.3V	Digital power supply

2. Quick Start Demonstrate

Power supply this board through Pin20(LoRa_3.3V) and Pin11(GND) with 3.3V. Connect Pin12(BOOT0) to ground, and connect Pin18(RXD), Pin19(TXD) to the computer. Then open the Uart Assist Tool, send AT command to operate the module.

2.1 Join-Otaa

Welcome to RAK811

Send: at+mode=0 */* SET LoraWAN work mode */*

Return: OK

Send: at+get_config=dev_eui */* GET Dev_EUI check */*

Return: OK3037343644357402

Send: at+set_config=app_eui:39d7119f920f7952&app_key:a6b08140dae1d795ebfa5a6dee1f4dbd

/ SET LoraGateway app_eui and app_key , big endian*/*

Return: OK

Send: at+join=otaa*/* Join OTAA type*/*

Return: OK

at+recv=3,0,0*/* Join status success*/*

2.2 Join-Abp

Welcome to RAK811

Send: at+mode=0 */* SET LoraWAN work mode */*

Return: OK

Send: at+set_config=dev_addr:00112233&nwks_key:3432567afde4525e7890cfea234a5821

&apps_key:a48adfc393a0de458319236537a11d90

/ SET LoraGateway dev_addr nwks_key and apps_key , big endian*/*

Return: OK

Send: at+join=abp */* Join ABP type*/*

Return: OK

2.3 LoraWAN send&recv

*/*After join gateway success, then can send and receive data*/*

Send: at+send=0,2,0000000000000007F000000000000000

*/*APP port:2, battery level 50%, unconfirmed message*/*

Return: at+recv=2,0,0 */*unconfirmed mean tx success*/*

Send: at+send=1,2,00000000000007F000000000000000

*/*APP port :2, battery level 50%, confirmed message*/*

Return: at+recv=1,0,0/*/*confirmed mean receive ack from gateway*/*

*/*If gateway has data to send module, will receive date meanwhile ack */*

Return: at+recv=0,2,10,30313233343536373839

*/*APP port :2, receive size 10, hex:30313233343536373839*/*

2.4 P2P send&recv

/ Module A Rx Side*/*

Welcome to RAK811

Send: at+mode=1 */* SET LoraP2P work mode */*

Return: OK

Send: at+rf_config=867700000,10,0,1,8,14

/ SET LoraP2P Frequency:867.7MHz, SF10,Bandwith 125KHz, coding Rate:4/5, Preamlen:8, tx power:14dbm */*

Return: OK

Send: at+rx=1 */* SET LoraP2P Rx continue enable report rx data */*

Return: OK

Send: at+rx_stop */* If want stop Rx continue */*

/ Module B Tx Side*/*

Welcome to RAK811

Send: at+mode=1 */* SET LoraP2P work mode */*

Return: OK

Send: at+rf_config=867700000,10,0,1,8,14

/ SET LoraP2P Frequency:867.7MHz, SF10,Bandwith 125KHz, coding Rate:4/5, Preamlen:8, tx power:14dbm */*

Return: OK

Send: at+txc=100,1000,800100000600010002da9557e142d9

/ SET LoraP2P Tx continue ,100 packets, 1S interval, hex data */*

Return: OK

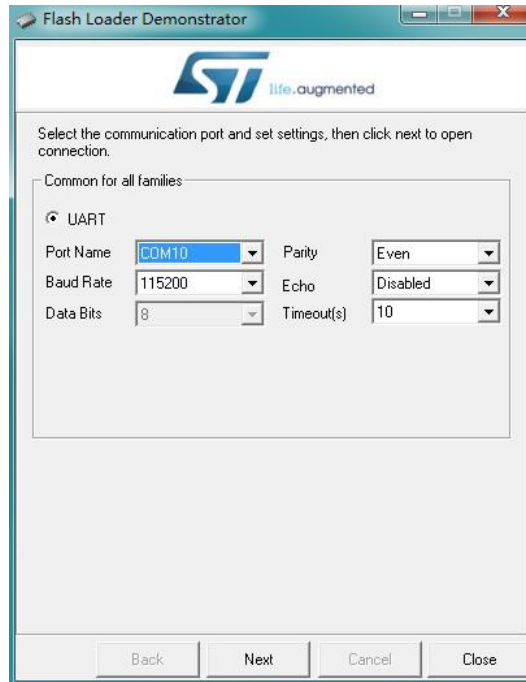
Send: at+recv=9,0,0 */*When Tx complete */*

Send: at+tx_stop */* If want stop Tx continue */*

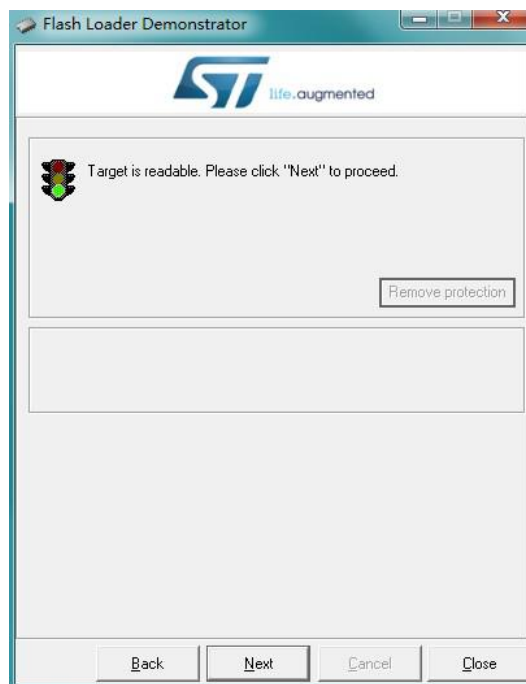
3. How To Upgrade Firmware

To upgrade the Breakout board, First we should make the module get into Boot mode. We should connect Pin12(BOOT0) with 3.3V. Then reset the module, Operate according to the steps:

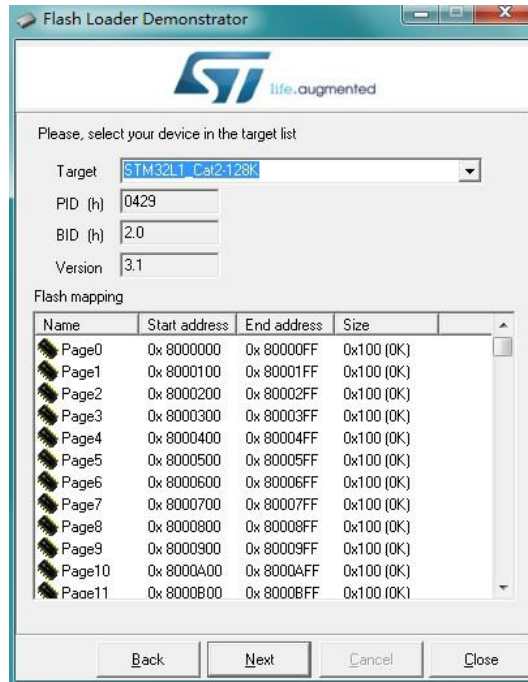
1. Open the Flash Loader Demonstrator tool, Set the serial port parameters;



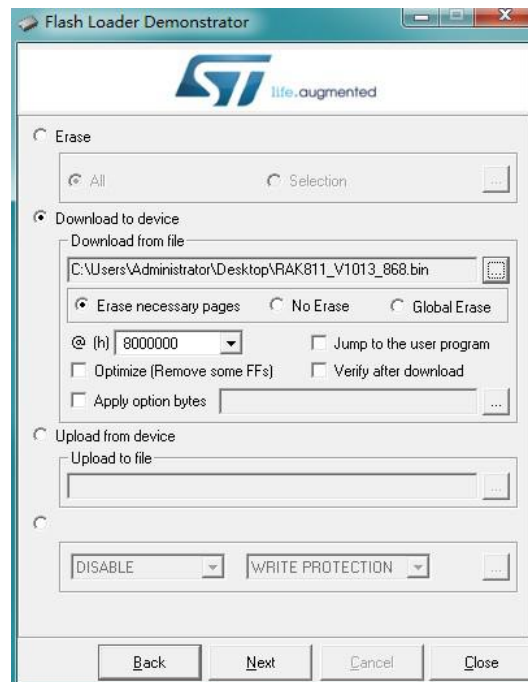
2. Click the “NEXT” button, arrive the following interface;



3.The again the “Next” button, Choose STM32L1_Cat2-128K;



4.Choose “Download to device”, Set the path to the new firmware, and click “NEXT” button.



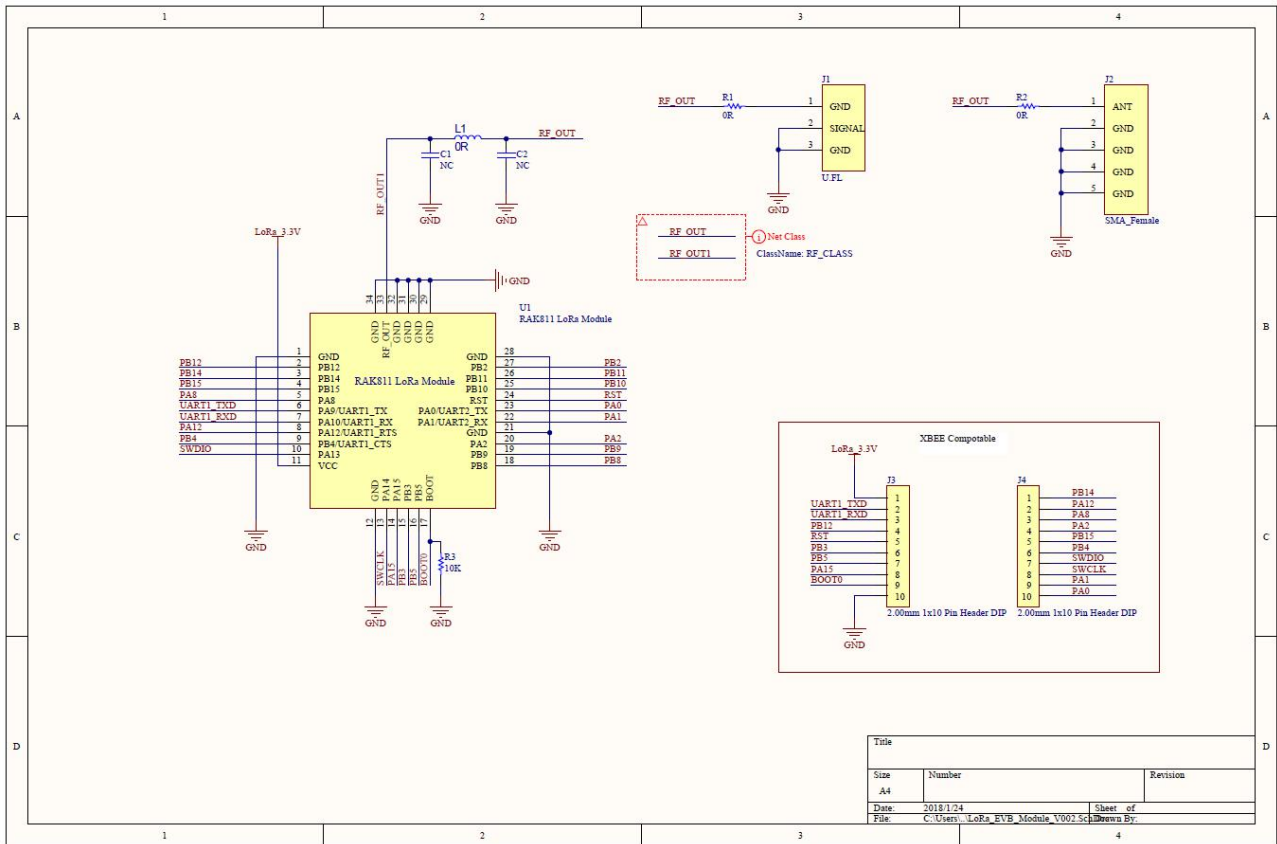
5. Upgrading:



6. Upgrade Successful.



4. Appendix



5. Modify Record

Version	Author	Data	Modify content
V1.0	Tony	2018-01-24	Create Document