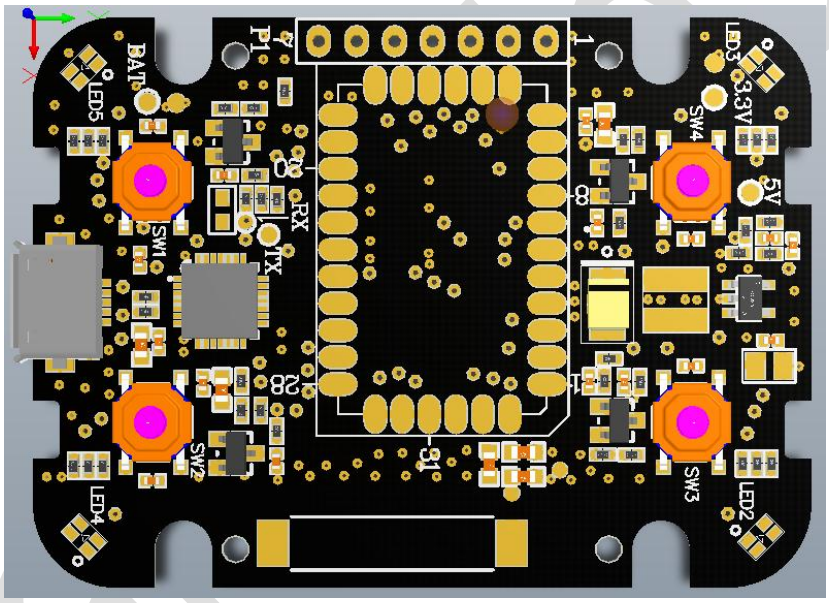
RAK_LB801 LoRaButton Firmware Upgrade Manual

1.Required materials (hardware, tools)

- RAK_LB801 LoRaButton board
- RAK LoRaButton Upgrade Tool V1.0
- Micro USB line and PC（Only support Windows）

Note: RAK_LB801 LoRaButton has two versions of firmware: open source project firmware and the AT command firmware.These are two different firmware.Therefore do not mix them.

The RAK LoRaButton Upgrade Tool V1.0 you can download in this link :
http://www.rakwireless.com/en/download



2.Firmware Upgrade

In order to facilitate the user to upgrade the device firmware, we have designed a BOOT upgrade mode for the device. The user can upgrade the device directly using the UART interface. The BOOT mode essentially adds the code to receive the rewrite firmware at the start address of the device's RAM. After the device upgrade is complete, jump to the application's address to run.

This module provides two firmware: AT command firmware and open source project firmware.These two firmware upgrades' methods are described in detail below.

2.1AT Firmware Upgrade

Required tools:

- RAL LoRaButton Upgrade Tool V1.0
- AT Firmware

The tools mentioned above can be accessed through the RAK official website.

RAL LoRaButton Upgrade Tool V1.0:You can download it through this link:

Url:RAL LoRaButton Upgrade Tool V1.0.exe

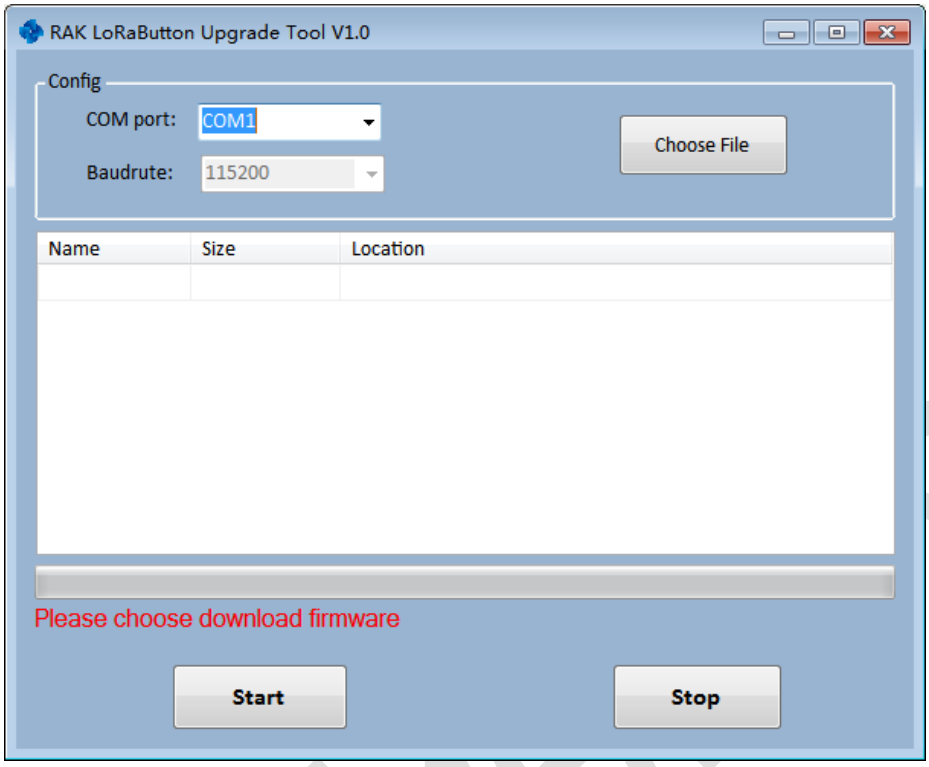
AT Firmware:You need to choose the right firmware package, and you can download three firmware packages from the following link.

Url:AT Command Firmware

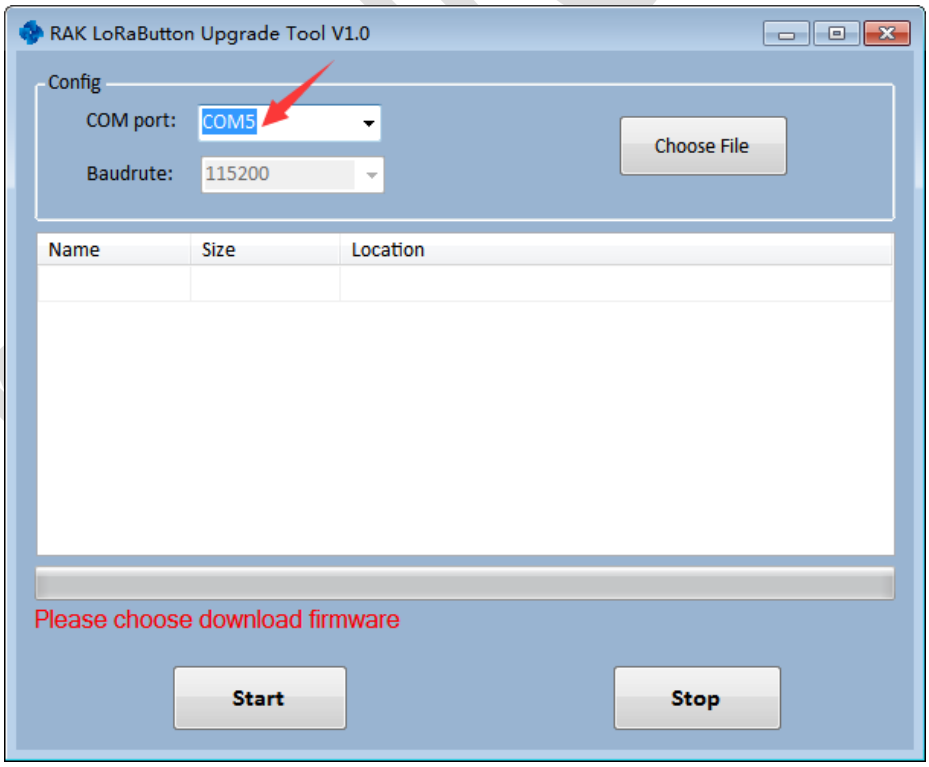
The firmware upgrade methods are the same, and the following will be an example of one of the firmware upgrades.

1. Use the micro USB link LoRaButton module to your PC.

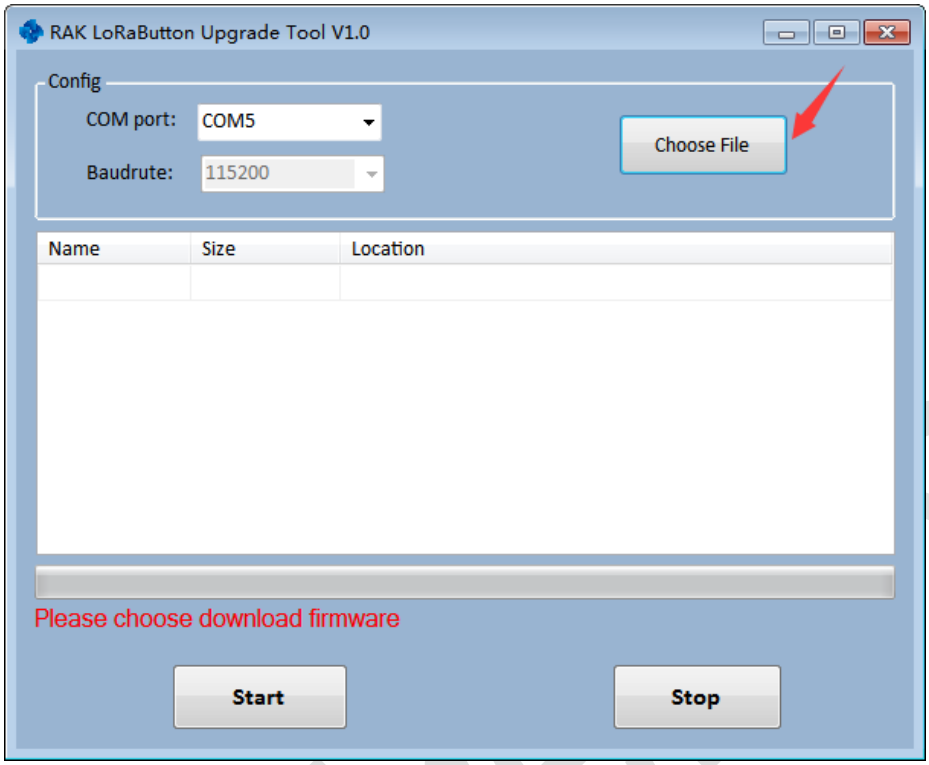
2. Run the software of RAL LoRaButton Upgrade Tool V1.0.exe

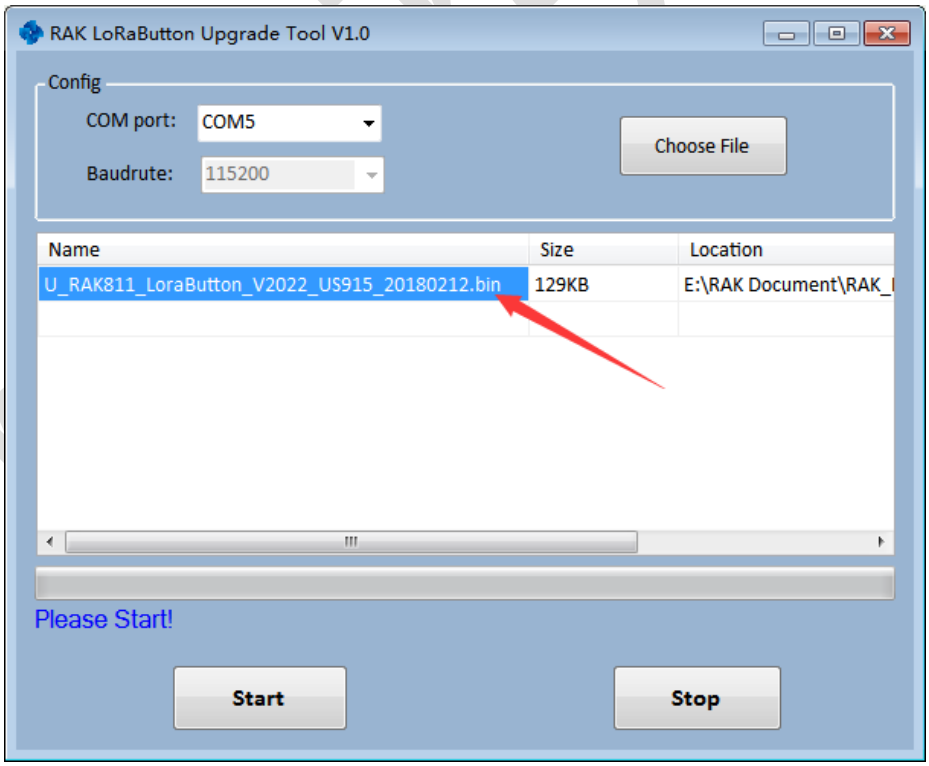


Select the right port:

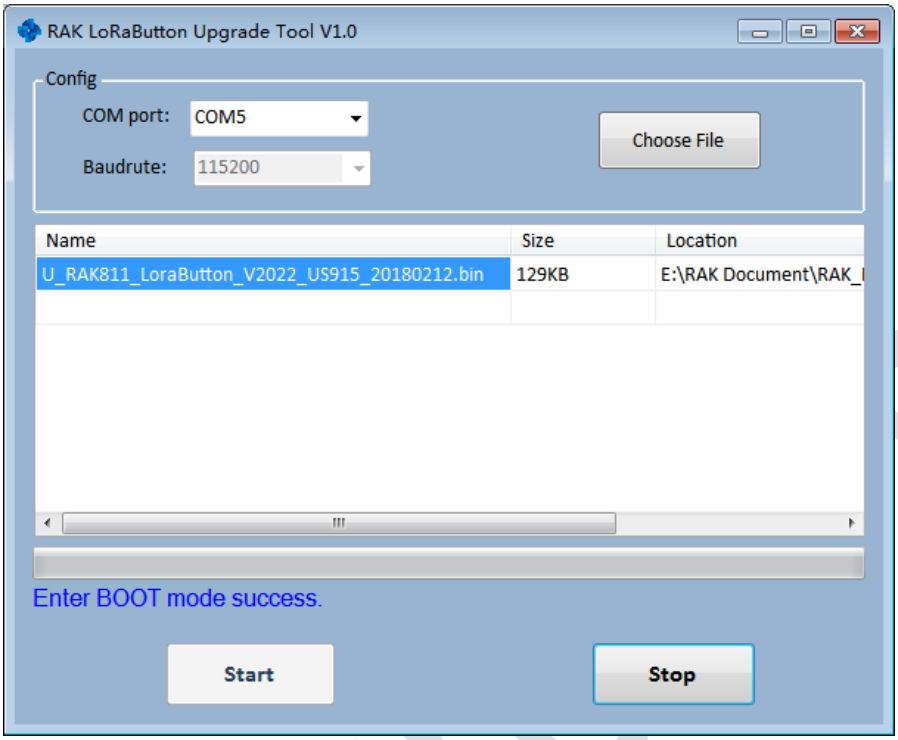


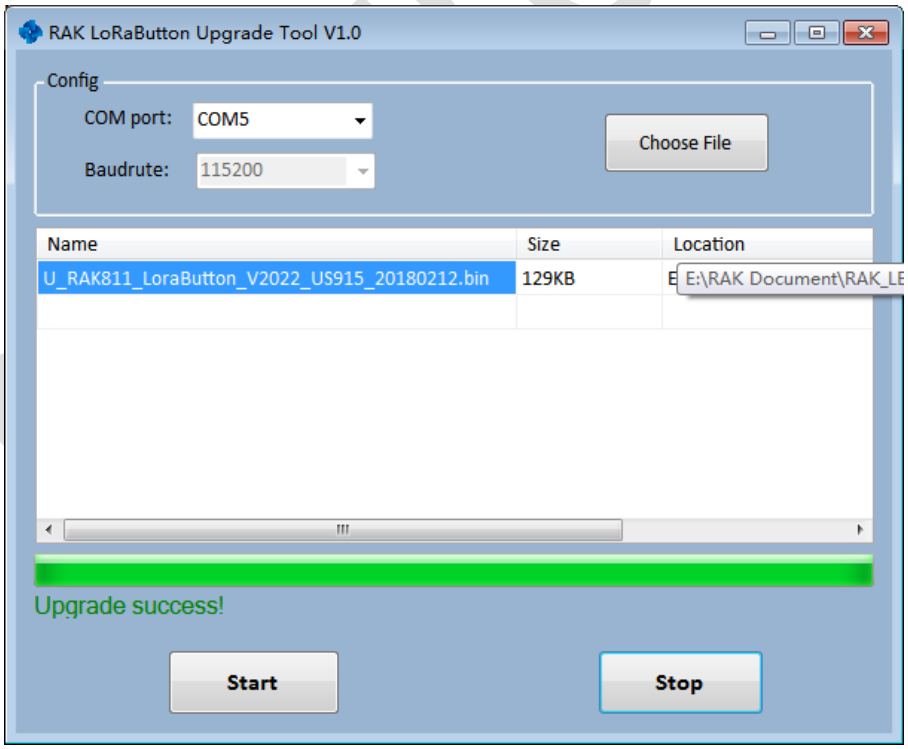
3. Add firmware (select the right firmware)





4. Click on “Start”. then long press button 1(SW3) and button 2(SW2), until the device flashes red. Indicates that the device has entered BOOT mode. The tool will then automatically start the download process.





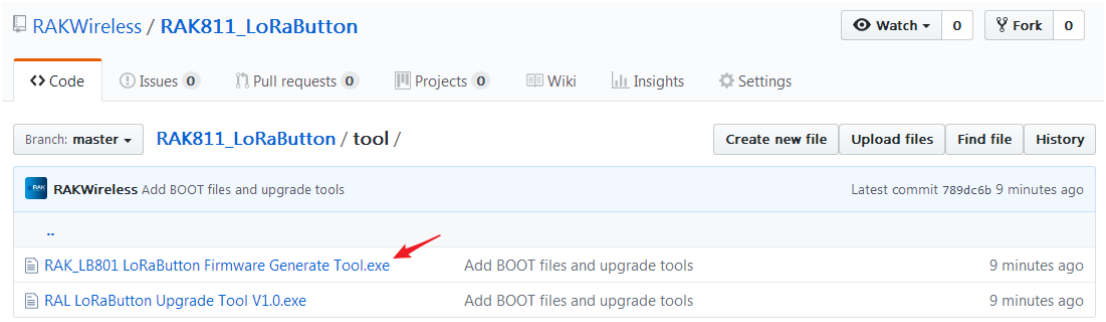
Congratulations! firmware upgrade is successful, and then you can use the AT command system.Please refer to the RAk_LB801 LoRaButton AT Firmwawre User Manual V1.0.PDF for specific AT instruction operation.

2.2 Open Source Project firmware download

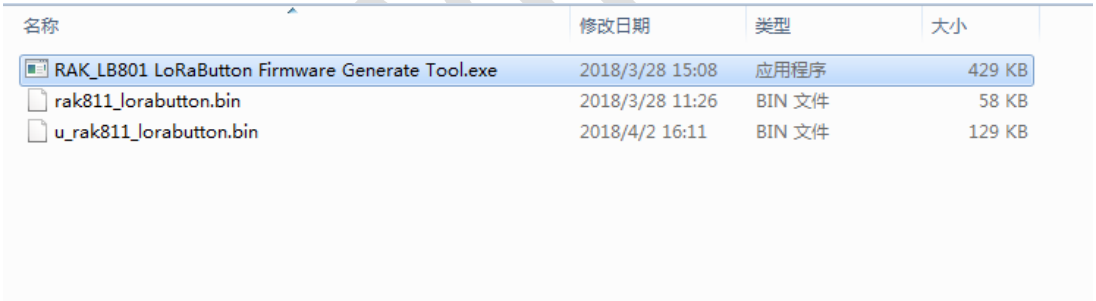
The application firmware of the RAK_LB801 device is a firmware compiled using open source code provided by RAK:

https://github.com/RAKWireless/RAK811_LoRaButton

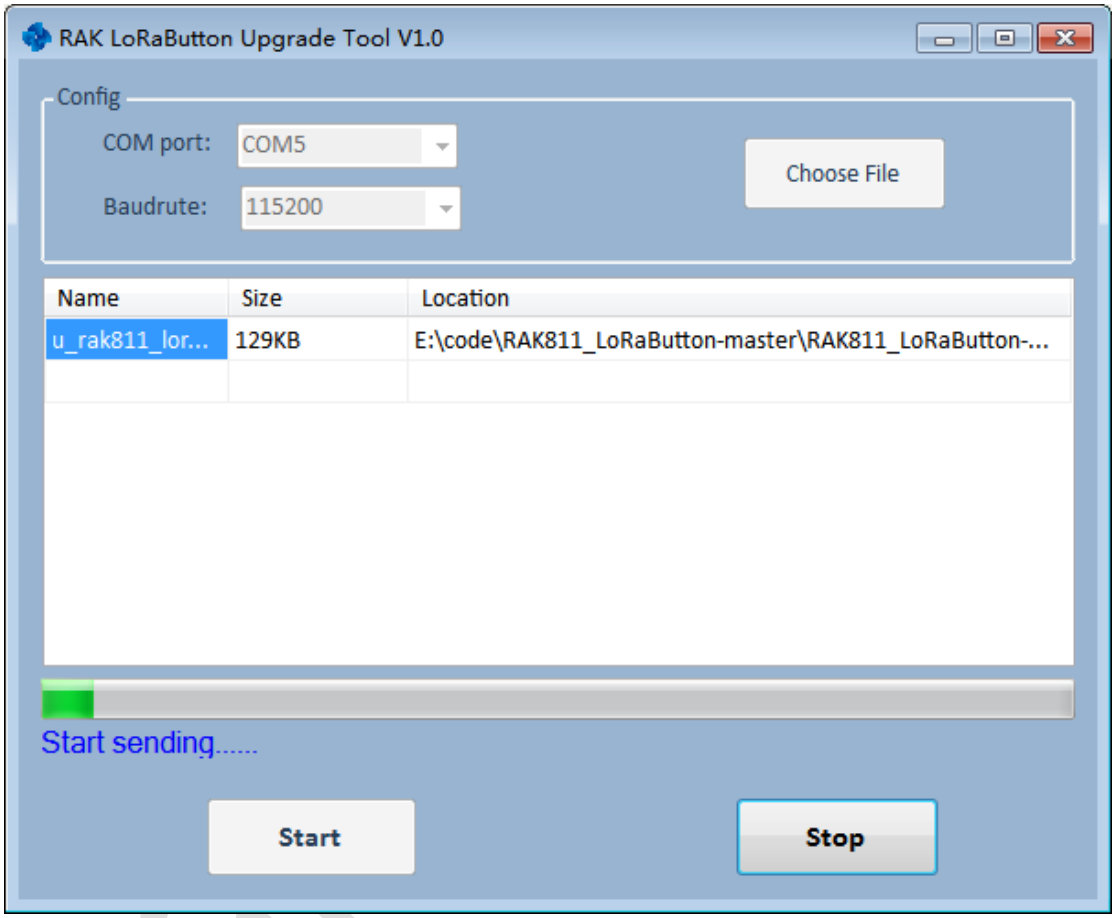
However, the bin file directly generated by the open source code compiler cannot be upgraded through BOOT. You need to use the RAK_LB801 LoRaButton Firmware Generate Tool.exe to convert it to a bin file that can be upgraded by BOOT.



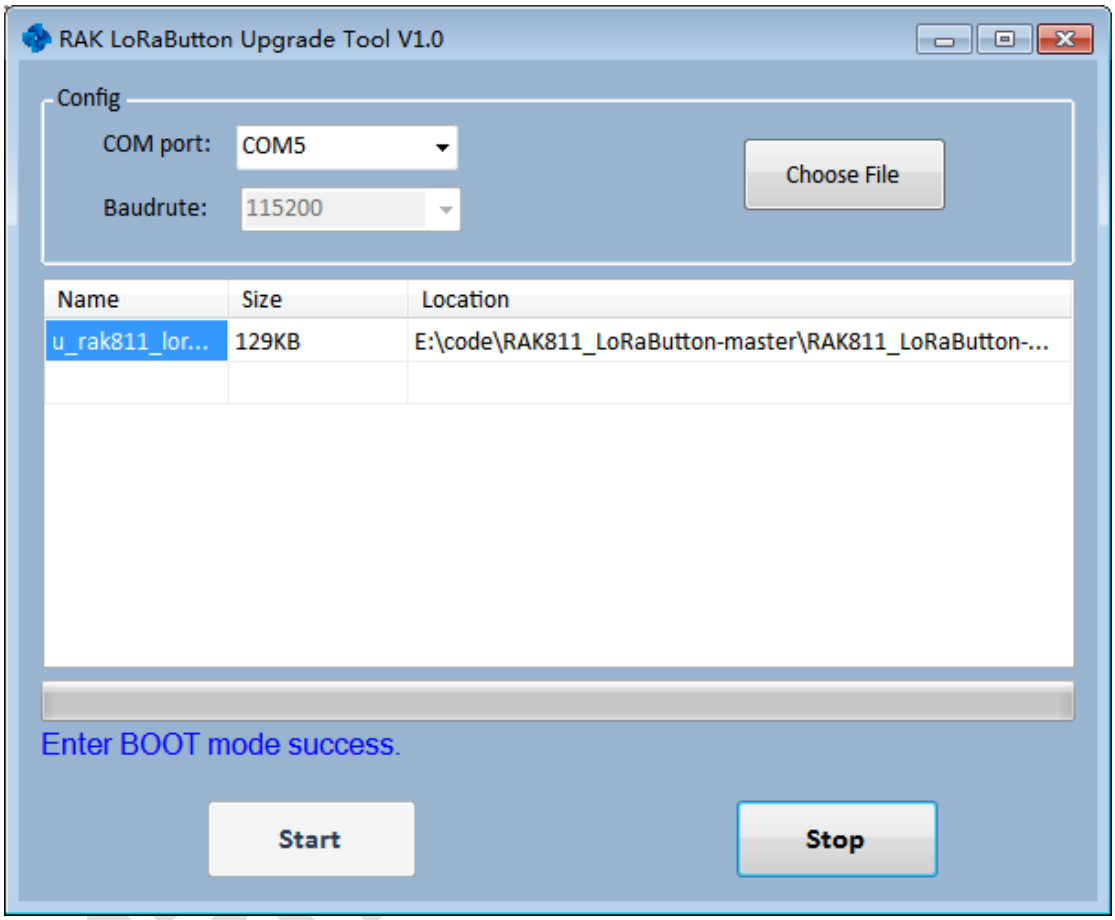
After successfully compiling with open source project, the generated rak811_lorabutton.bin file and RAK_LB801 LoRaButton Firmware Generate Tool are placed in the same directory. Click on the Run tool to generate the u_rak811_lorabutton.bin file. This file can use BOOT mode to upgrade the firmware.



If you are using the device for the first time, or if your application code is not modified, long press any key to reset the function. Then plug in the device Micro USB interface to connect the computer, long press button 1(SW3) and button 2(SW2), Until the device flashes red. At this time, release buttons 1 and 2 to open the RAK LoRaButton Upgrade Tool V1.0.exe on the computer, select the device serial port, select the generated u_rak811_lorabutton.bin file, and click “Start” to start the firmware upgrade.



If the application code in your device is damaged, or you reprogrammed the BOOT firmware. At this point, you need to press button 1(SW3) and button 2(SW2) for a long time until the device is flashing red, Then use the Micro USB connector to connect the device to the computer,at this point can release the button.(The premise is that the device has enough battery power). Next, open the RAK LoRaButton Upgrade Tool V1.0.exe on the computer, select the device port number, select the u_rak811_lorabutton.bin file, and click “Start” to start the upgrade.



2.2 BOOT firmware download

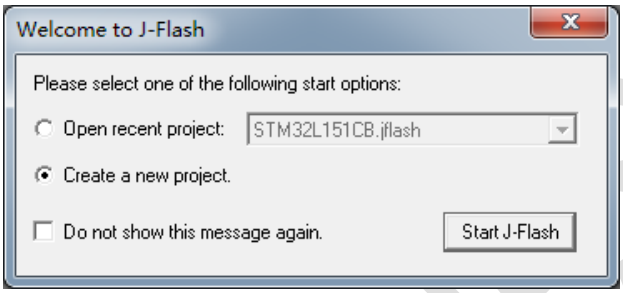
This method is only used when the device is abnormal, and it needs to open the shell of the device when it is used.

The BOOT firmware of the device will not be erased if it is operating normally.

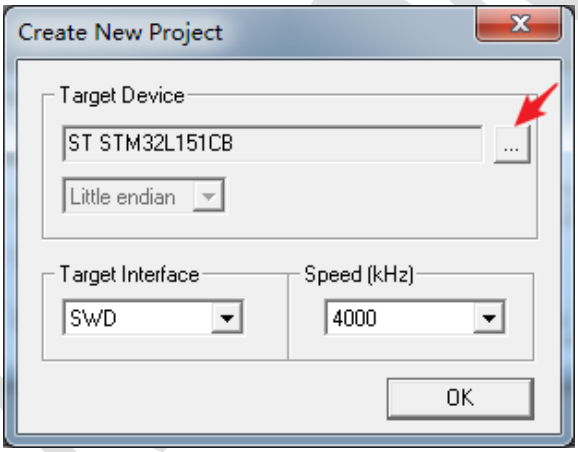
Downloading BOOT firmware requires J-link device and SEGGER software. First install SEGGER, please download SEGGER here:

https://www.segger.com/downloads/jlink

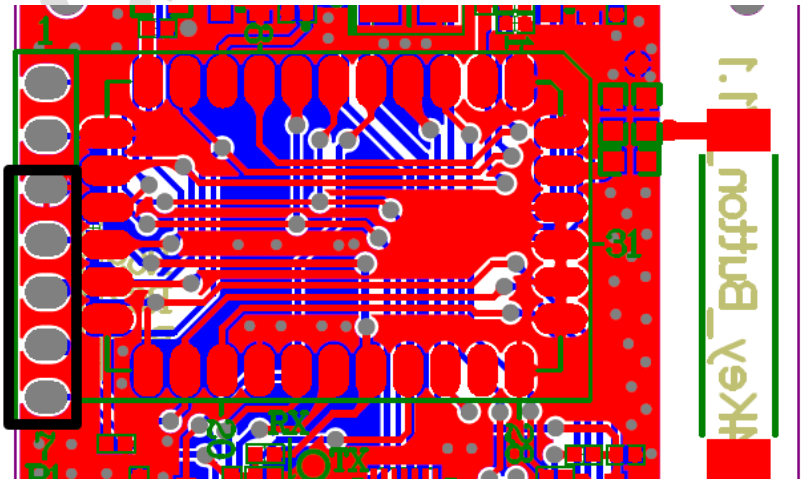
After installation is complete, open J-Flash and choose to create a new project.



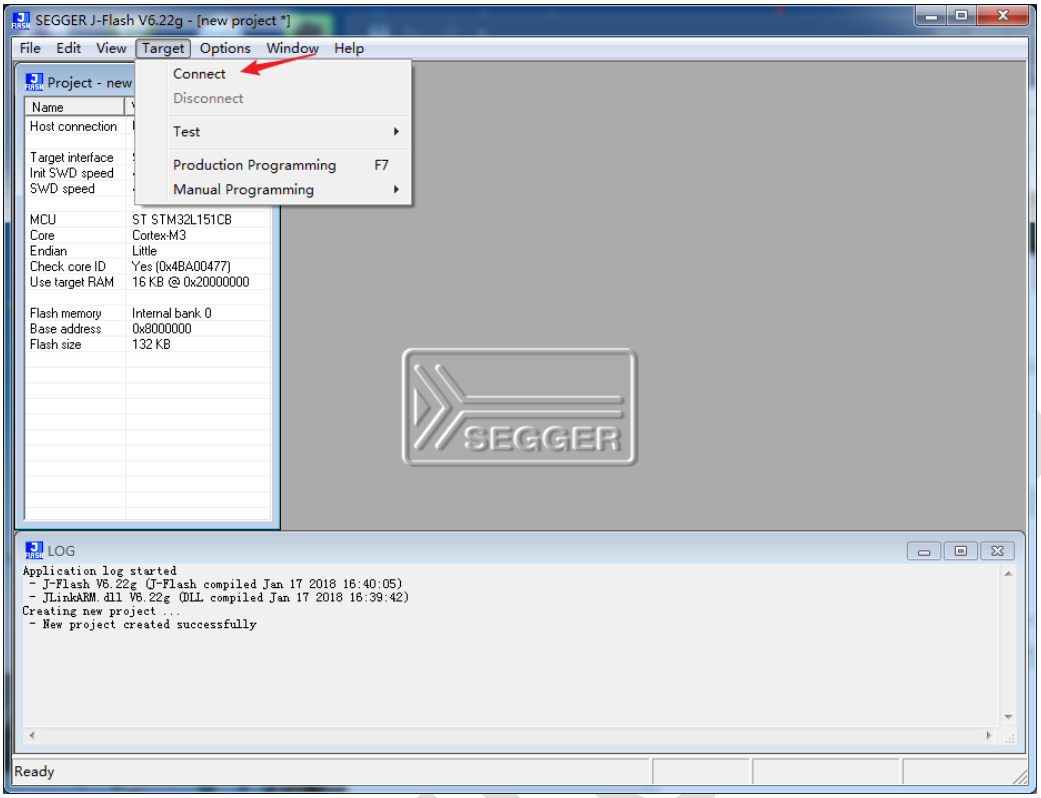
Then select the device as “STM32L151CB”. Select interface for “SWD”



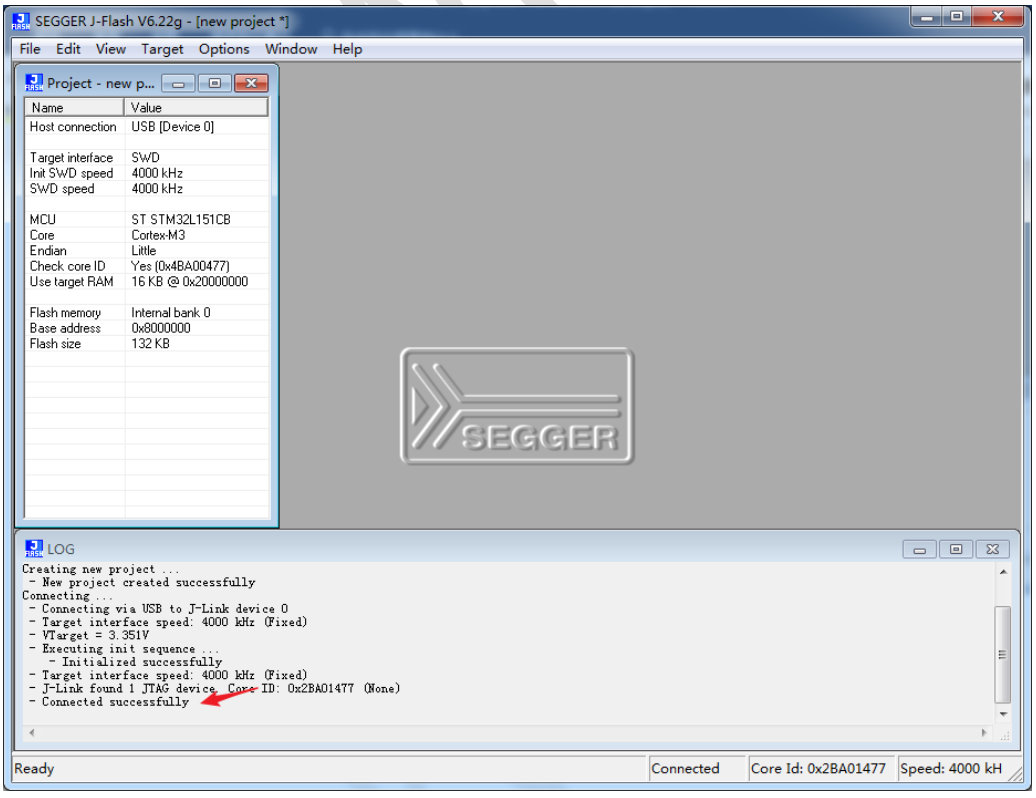
Next use the j-link device to connect the RAK_LB801 LoRaButton's SWD interface. SWD interface of the device, see the schematic.



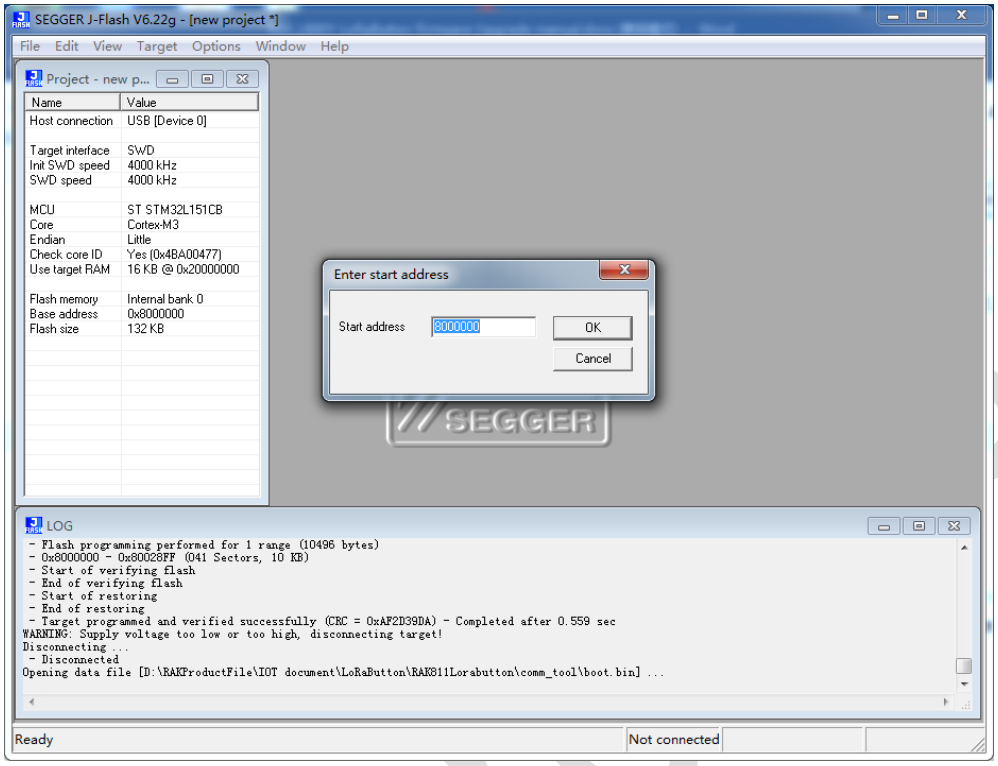
After connecting the SWD interface of the j-link and the SWD interface of the device, click "Connect" to try to connect.



Normally, "LOG" message box will display "Connection successful".(If there have some problem with this step, please Google).



Next click "File" -> "Open data file", select the boot.bin file, and enter the starting address 8000000.(boot.bin file you can find in the open source project)



Finally, click "Target"->"Manual programming"->"Program & Verify" to start downloading the boot.bin program. After success, you will see a successful programming message.(If there have some problem with this step, please Google)