MeiG_SLM130 EVB User Guide_V1.2

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Revision History

Version Number	Date	Reason for Revision
V1.0	2020-05-30	Establish the first version
V1.1	2020-06-30	Update chapter 3.2, add chapter 4.3
V1.2	2020-08-17	Delete chapter 4 and 5, modify some description

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1. Introduction

1.1 SLM130 EVB Introduction

SLM130 EVB is suitable for testing and debugging the functions and performance of the SLM130 module. It can help users to evaluate related development and applications. The development board mainly provides access to the following interfaces: power interface, SIM card interface, UART interface, Debug interface, GPIO interface, antenna interface, etc.

Device	EVB Kit included or not	Description
EVB	Yes	Used to test the functions of SLM130
SLM130 module	Yes	Soldered on EVB already
NB Antenna	Yes	Wide frequency range NB Antenna
USB to UART cable	Yes	2pcs USB to UART cable, one for communication, the other is for debug
Adapter	Yes	5V Adapter

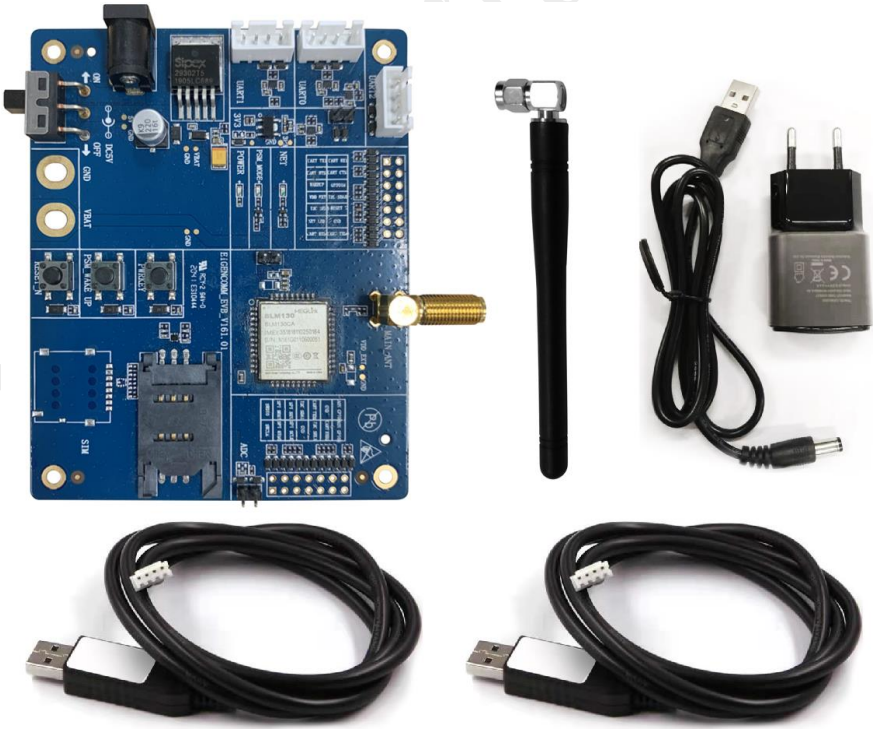


Figure 1.1 EVB and Accessories

2. Hardware Description

2.1 SLM130 EVB Overview

Following is a brief introduction on the interfaces of the SLM130 EVB.

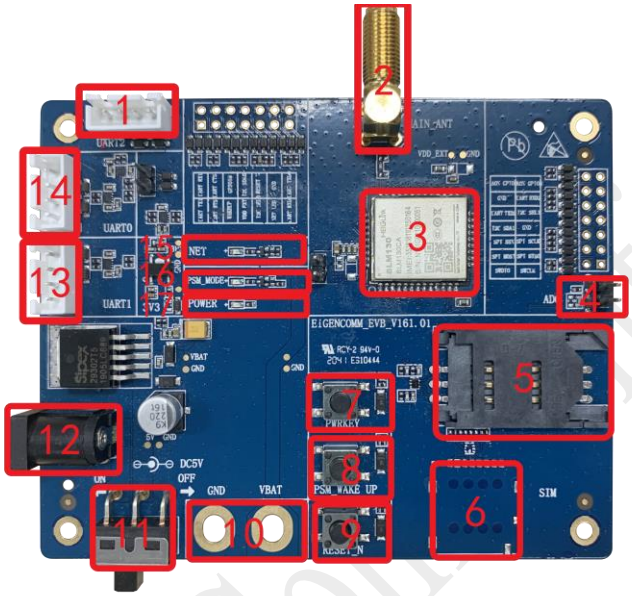


Figure 2.1 SLM130 Top View

No.	Description	No.	Description
1	Debug interface	10	SLM130 module power interface: 3.3V-4.2V
2	Antenna interface	11	EVB power switch
3	SLM130 NBIoT module	12	EVB power interface：5V
4	ADC interface	13	UART1 interface
5	SIM card slot 1: standard card	14	UART0 interface
6	SIM card slot 2:micro-sim card	15	Indicator light：NET
7	PWRKEY button (Boot)	16	Indicator light：PSM_MODE
8	PSM_WAKE UP button	17	Indicator light：POWER
9	RESET_N button		

Table 2.1 Interfaces of EVB

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2.2 EVB Connection

2.2.1 Power Supply

There are two ways to power on the SLM130 module on the EVB:

- The first solution is to connect 5V adapter to interface-12, switch the EVB power switch (interface-11) to “ON”, then the module will be powered on directly.
- The second solution is to apply power to Interface-10 of the EVB to power on the SLM130 module directly, see the figure below

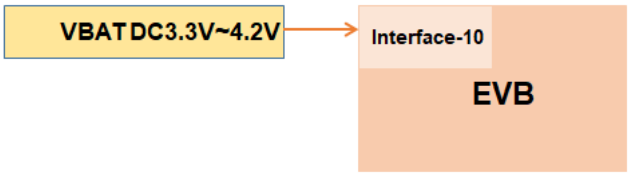


Figure 2.2 EVB VBAT Power Connection Diagram

2.2.2 AT command interaction

User can do AT communication and upgraded FW through UART1, see the figure below

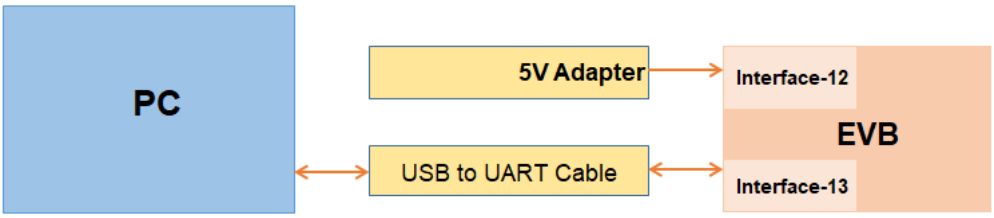


Figure 2.3 EVB UART1 (Download & AT) Connection Diagram

2.2.3 Log Capturing

User can capture the SLM130 module debug log through UART0, see the figure below

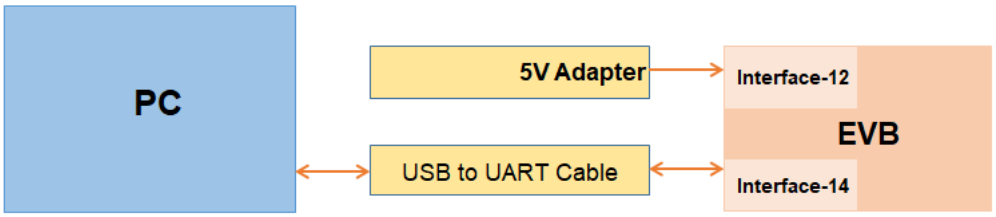


Figure 2.1 EVB UART0 (Debug) Connection Diagram

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2.3 Interface Description

This chapter mainly introduces the various functional interfaces, buttons, status indicators and test points of SLM130 EVB so as to help users to quickly understand the use of the EVB.

2.3.1 Power Connector

Connect the 5V adapter to Inteface-12, put the jumper cap as below and switch the EVB power switch to “ON” state, then the module will be powered on directly.

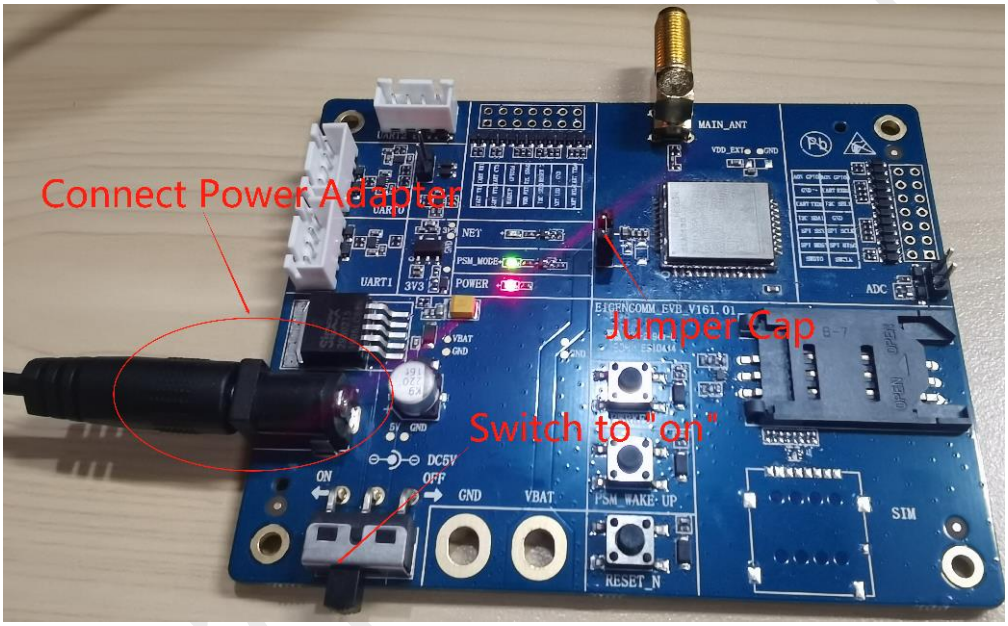


Figure 2.5 Power-on Diagram of EVB

2.3.2 UART Interface

SLM320 module provides 3xUART interfaces: UART0, UART1 and UART2.

- UART0 is used for capturing debug log;
- UART1 is for AT communication and FW updating;
- UART2 is reserved and unused.

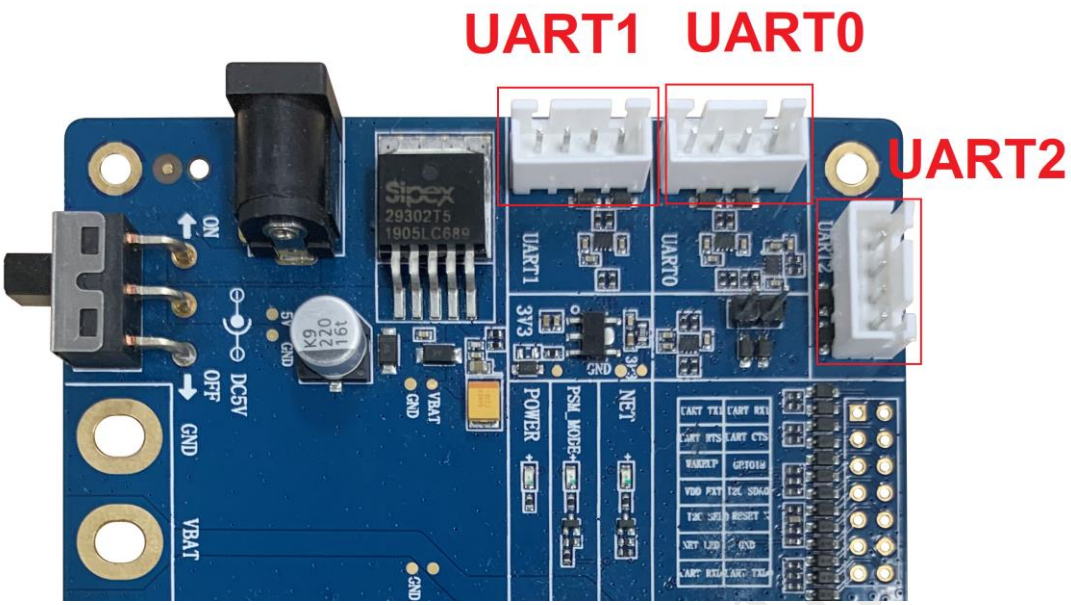


Figure 2.6 UART Interface

2.3.3 SIM Card Interface

The EVB provides two USIM/SIM card sockets, one is standard SIM card and the other is Micro-SIM card as backup, supports SIM_DECTECT hot swap function, and supports 1.8V/3.0V voltage automatic matching.

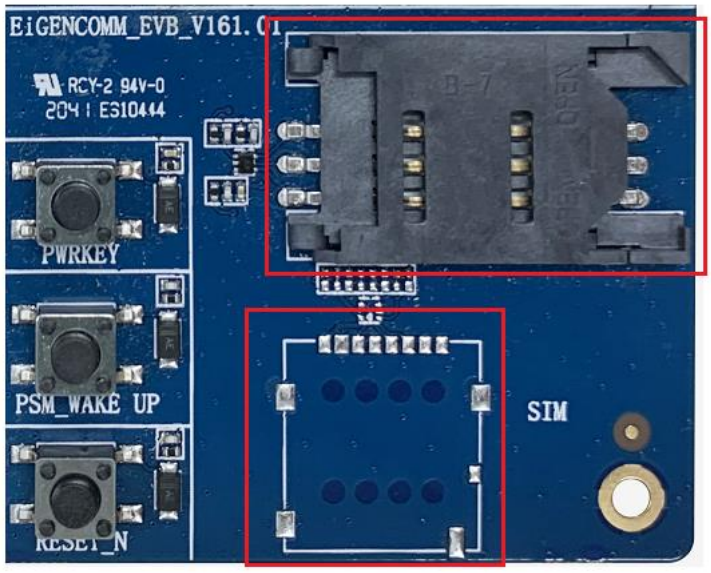


Figure 2.7 SIM Card Sockets

2.3.4 Antenna Interface

The EVB provides an external SMA antenna interface. The impedance of the SMA antenna is 50 ohm.

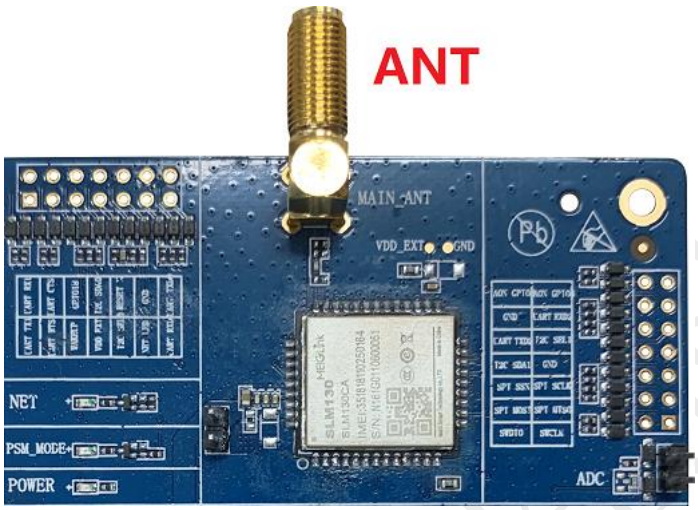
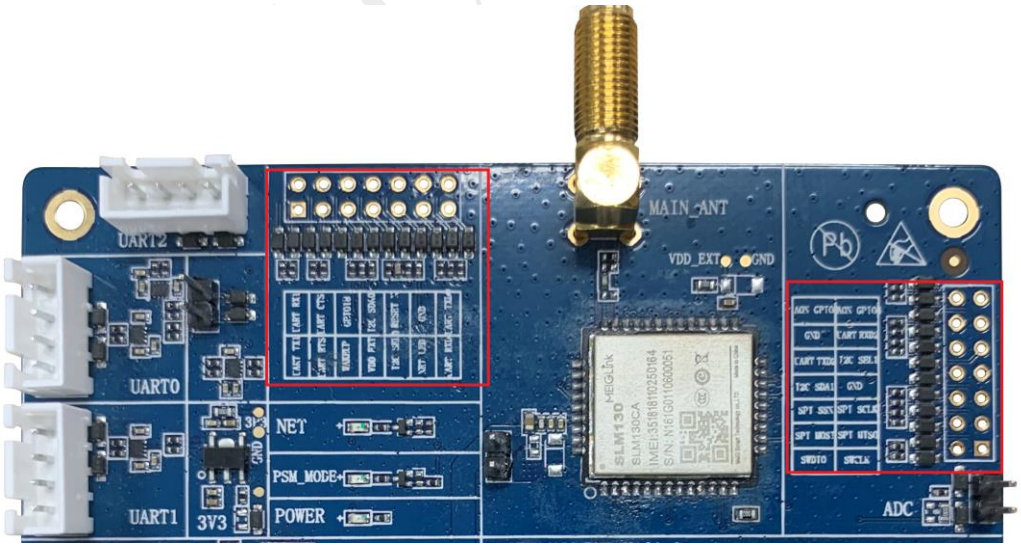


Figure 2.8 NB-IoT Antenna Interface

2.3.5 Test points on SLM130 EVB

There are also test points on the SLM130 EVB, user could test the electrical performance and timing of the test points easily.



3. SLM130 FW Updating Process with EVB

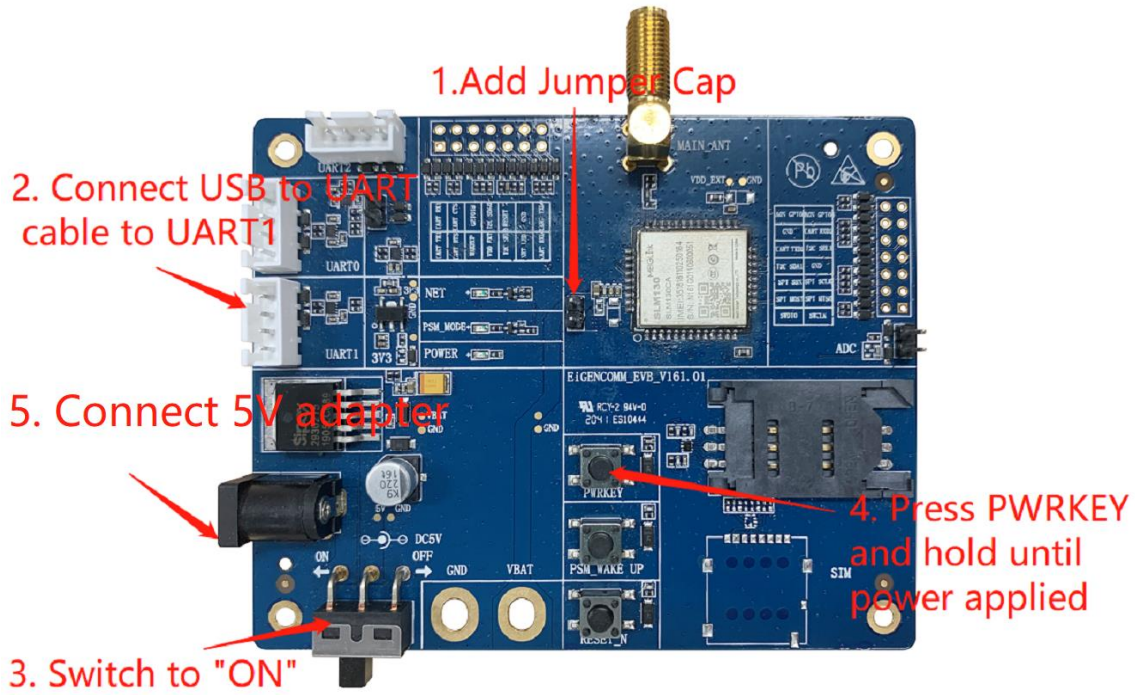
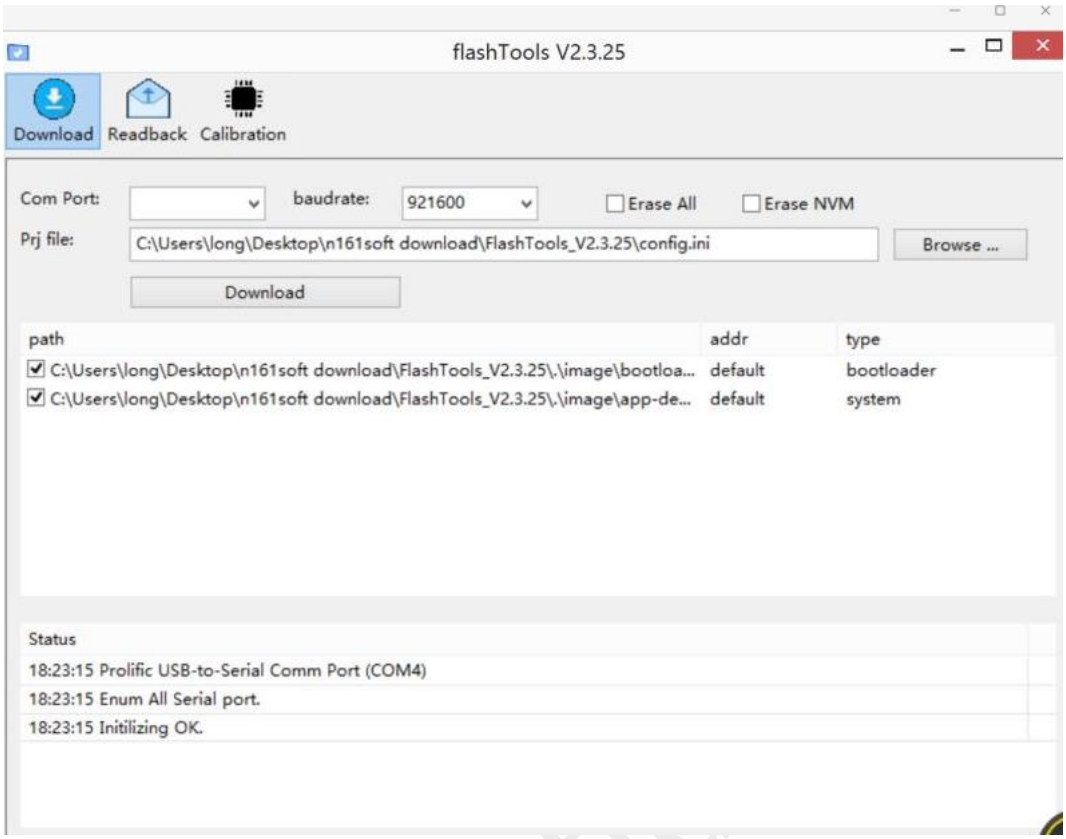


Figure 3.1 EVB Operation Steps

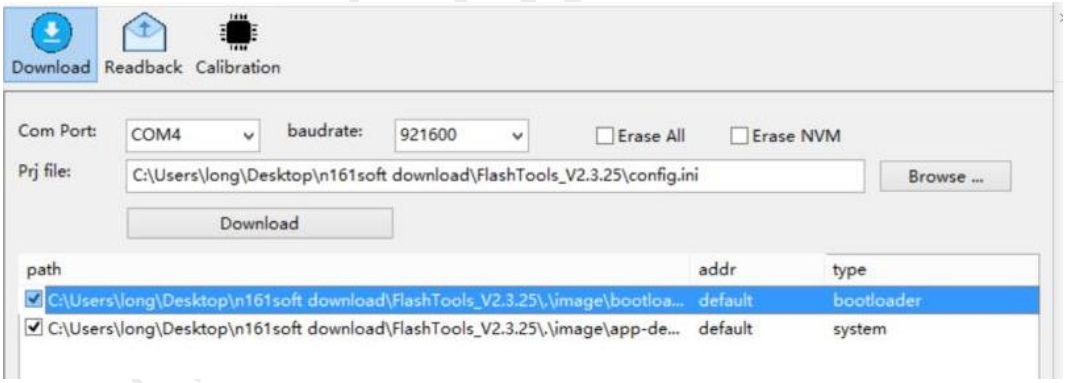
In order to upgrade the SLM130 module FW on the EVB, user needs to operate according to the following steps

- Plug in the jumper cap
- Connect USB to UART cable to UART1
- Switch EVB power switch to “ON”
- Press PWRKEY and hold until power applied
- Connect 5V adapter to power jack and release the PWRKEY button
- After the above wiring is completed, open FlashTools

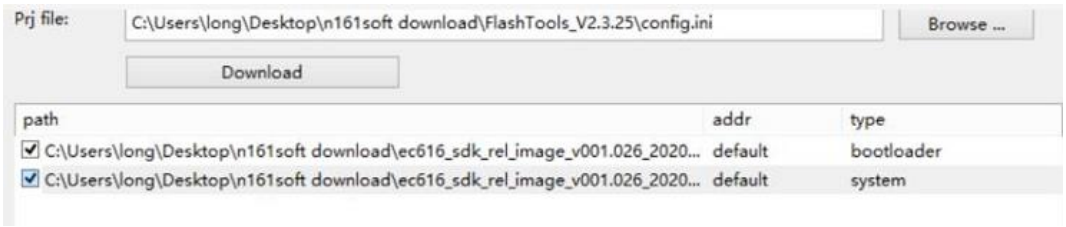


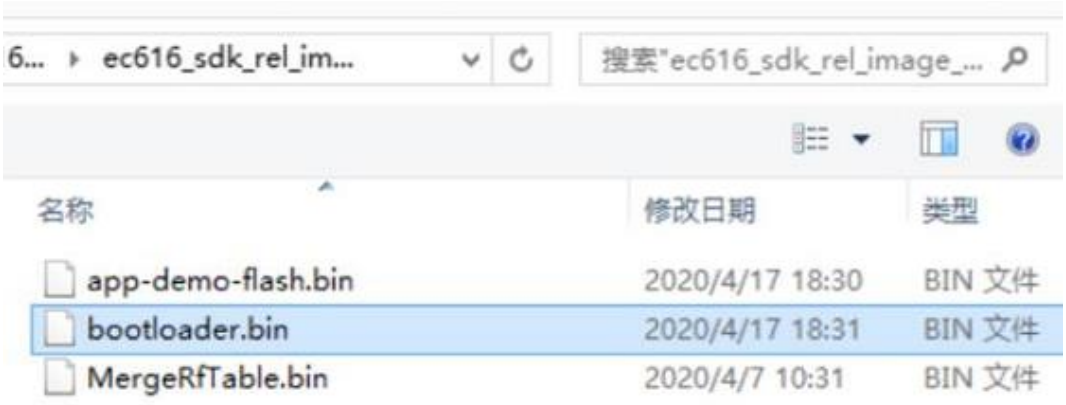


- Select the corresponding port and set the baud rate to 921600 (you don't need to check Erase ALL for the first programming)

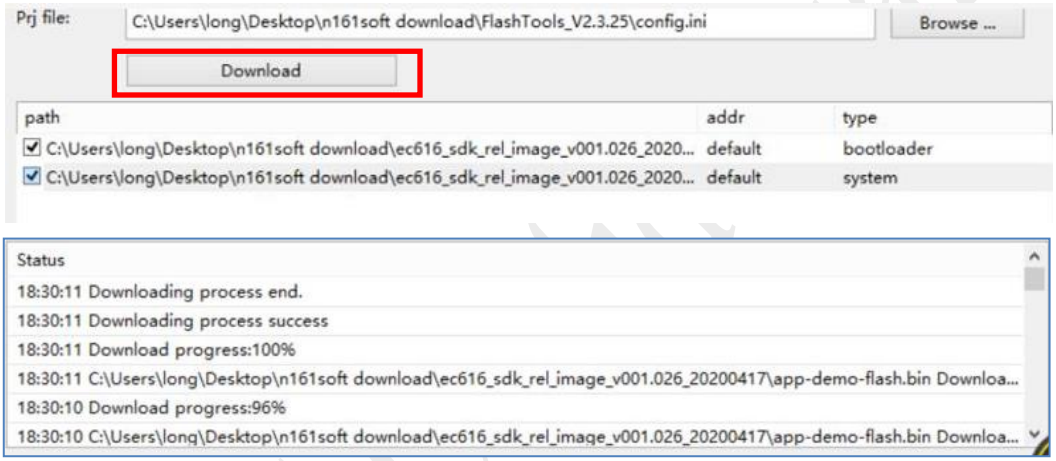


- Select the *bootloader.bin* and *app_demo_flash.bin* files in the ec616_sdk_rel_image_v001 folder.



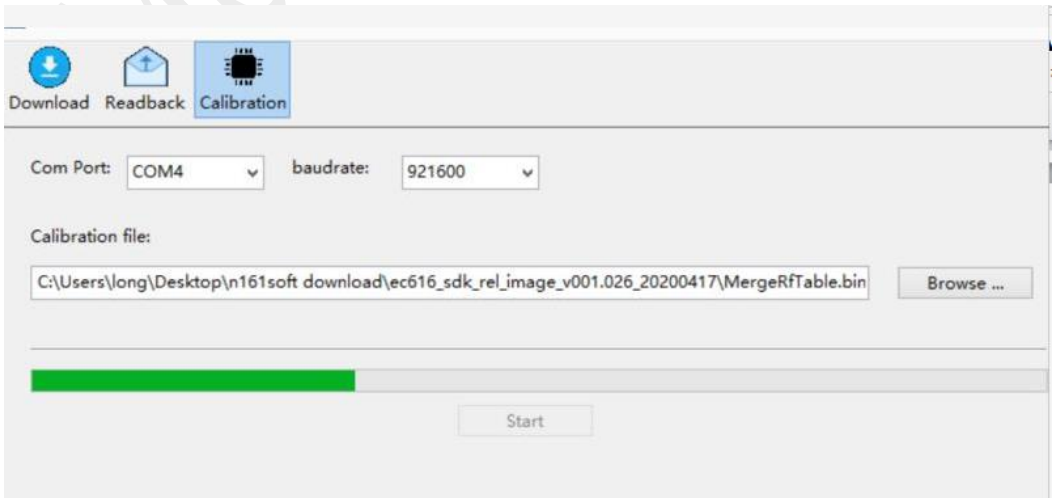


- First click the Download button under Download. Downloading process success means the download is successful.



- (This step is required after the first download/full wipe. Otherwise, skip it)

Select the corresponding port and baud rate under Calibration, and select MergeRfTable.bin in the ec616_sdk_rel_image_v001 folder for the Calibration file.



4. Appendix

4.1 Abbreviations

Abbreviation	English Description
IO	Input Output
DI	Number Input
PI	Power Input
AMR	Adaptive Multi-rate
BER	Bit Error Rate
BTS	Base Transceiver Station
PCI	Peripheral Component Interconnect
CS	Circuit Switched (CS) domain
CSD	Circuit Switched Data
DCE	Data communication equipment
DTE	Data terminal equipment
DTR	Data Terminal Ready
EFR	Enhanced Full Rate
EMC	Electromagnetic Compatibility
ESD	Electrostatic Discharge
FR	Frame Relay
GMSK	Gaussian Minimum Shift Keying
GPIO	General Purpose Input Output
HR	Half Rate
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
HSPA	HSPA High-Speed Packet Access
HSPA+	HSPA High-Speed Packet Access+
IEC	International Electro-technical Commission
IMEI	International Mobile Equipment Identity
MEID	Mobile Equipment Identifier
I/O	Input/Output
ISO	International Standards Organization
ITU	International Telecommunications Union
Bps	bits per second
LED	Light Emitting Diode
M2M	Machine to machine

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MO	Mobile Originated
MT	Mobile Terminated
NTC	Negative Temperature Coefficient
PC	Personal Computer
PCB	Printed Circuit Board
PDU	Packet Data Unit
PPP	Point-to-point protocol
PS	Packet Switched
QPSK	Quadrate Phase Shift Keying
SIM	Subscriber Identity Module
TCP/IP	Transmission Control Protocol/ Internet Protocol
UART	Universal asynchronous receiver-transmitter
USIM	Universal Subscriber Identity Module
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
WCDMA	Wideband Code Division Multiple Access
TD-SCDMA	Time Division-Synchronous Code Division Multiple Access
TDD LTE	Time Division Long Term Evolution
FDD LTE	Frequency Division Duplexing Long Term Evolution
Vmax	Maximum Voltage Value
Vnorm	Normal Voltage Value
Vmin	Minimum Voltage Value
V_{IH}max	Maximum Input High Level Voltage Value
V_{IH}min	Minimum Input High Level Voltage Value
V_{IL}max	Maximum Input Low Level Voltage Value
V_{IL}min	Minimum Input Low Level Voltage Value
V_{OH}max	Maximum Output High Level Voltage Value
V_{OH}min	Minimum Output High Level Voltage Value
V_{OL}max	Maximum Output Low Level Voltage Value
V_{OL}min	Minimum Output Low Level Voltage Value

Table 4.1 Abbreviations

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