

How to burn ES32 Arduino NOA PD Firmware With ESP download tool(1.0.0.3)

- 1) Get Firmware download tools(flash_download_tool_3.8.7.zip) from NOA google drive site

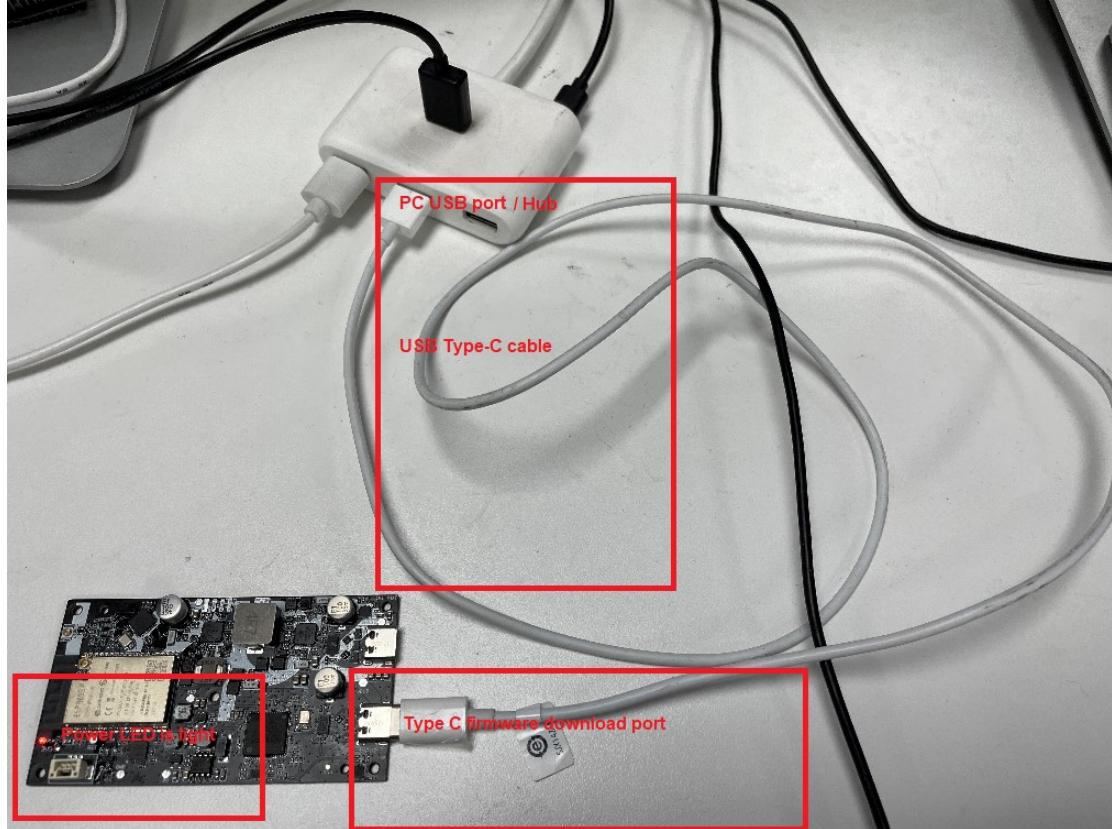
The screenshot shows a Google Drive interface. On the left, there's a sidebar with 'Priority', 'My Drive', 'Shared with me', 'Recent', 'Starred', and 'Trash'. Below that is a 'Storage' section showing '353.2 MB used'. The main area shows a folder structure: 'Shared with me > ... > 1-Firmware > ESP32_Arduino_Partitions_SNACKER'. Inside this folder are several files: 'Backup', 'snacker_fat8MB.bin', 'ReleaseNote.txt', 'NOA_ESP32_PD.ino.esp32_0.0.1_20211102119248.bin', 'HowToBurnESP32ArduinoNOAPDFirmware.pdf', 'flash_download_tool_v3.8.7.0.zip' (which is highlighted with a red box), 'ESP32_DOWNLOAD_TOOLS_Setting.txt', 'bootloader_dio_40m.bin', and 'boot_app0.bin'. The 'flash_download_tool_v3.8.7.0.zip' file has a size of 17 MB and was modified on Oct 21, 2021.

- 2) Get ES32 Arduino NOA PD firmware, put them in a directory

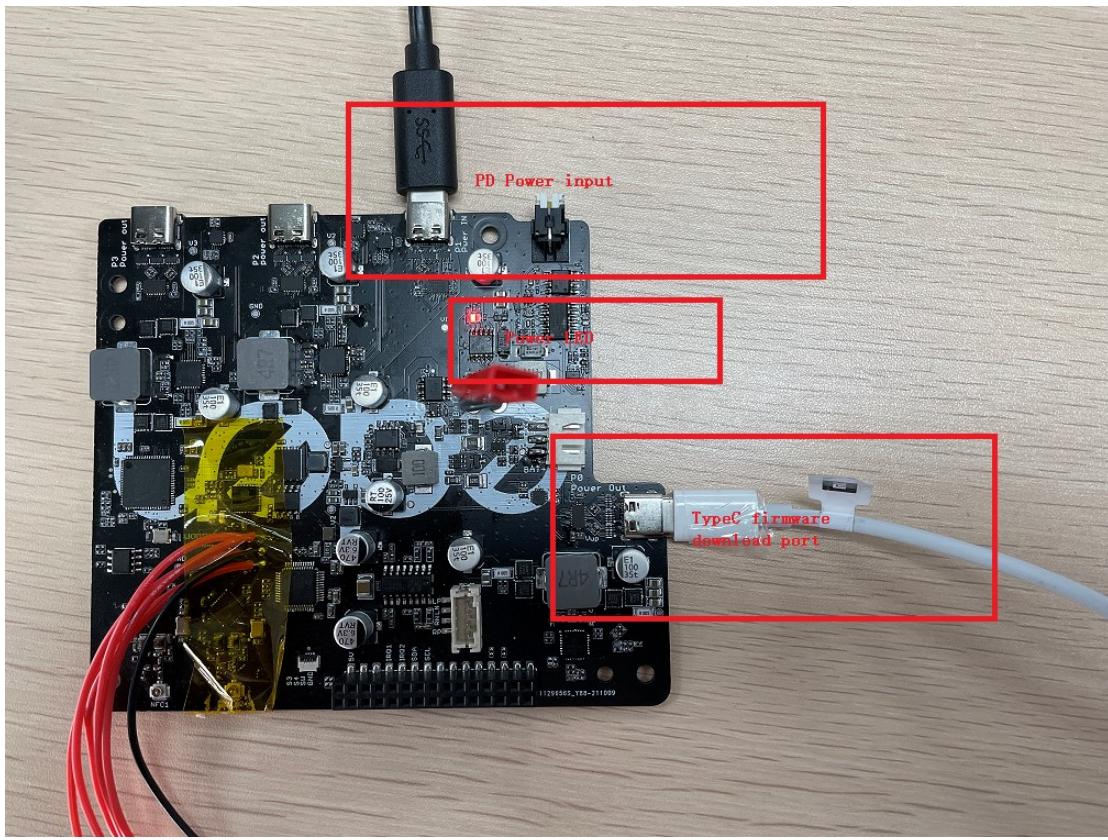
The screenshot shows a file explorer window with the path 'Worker > GitHub_Noalabs > NOA_ESP32_PD > ESP32_Arduino_Partitions'. It lists several files:

- boot_app0.bin: Arduino boot app0 file
- bootloader_dio_80m.bin: Arduino ESP32 bootloader file
- default.bin: ESP firmware partitions setting file
- default.csv: ESP firmware partitions setting help file
- ESP32_DOWNLOAD_TOOLS_Setting.txt: ESP firmware download tools setting help file
- NOA_ESP32_PD.ino.esp32_0.0.1_20211102119248.bin: NOA ESP32 PD App firmware file

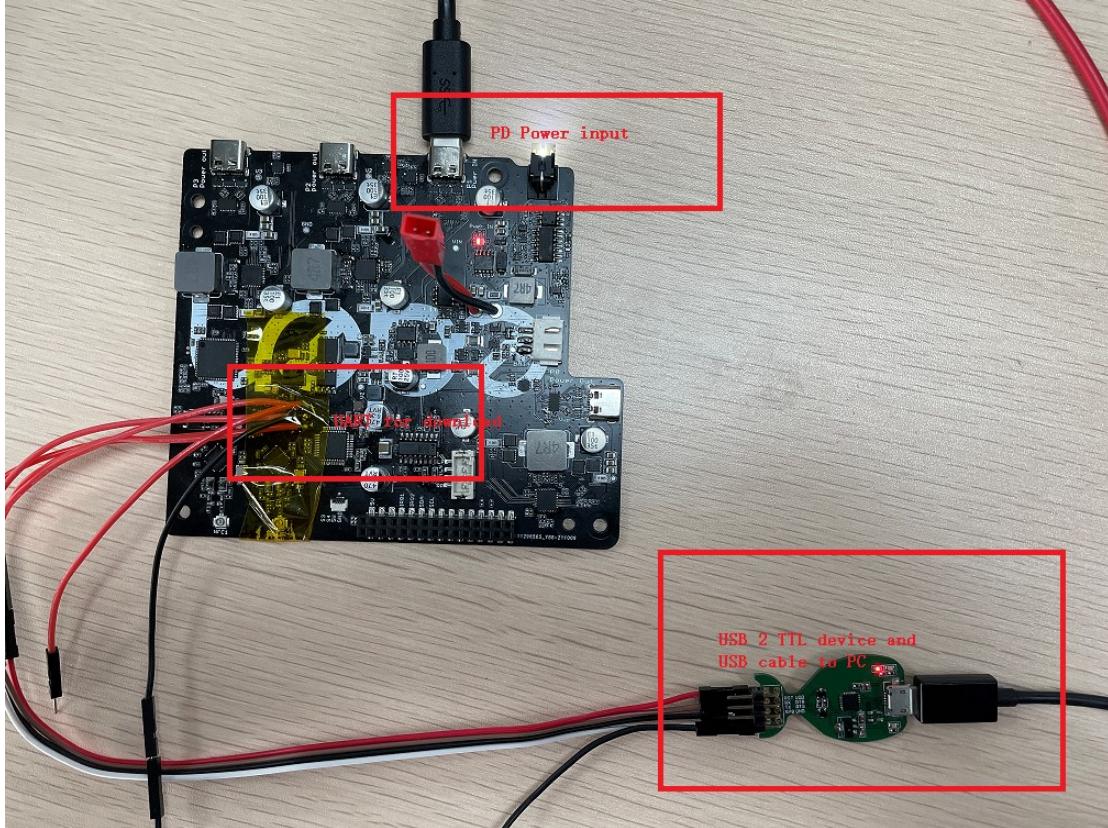
- 3) Link ESP32 NOA PD Snacker board to a PC via a USB Type-C cable



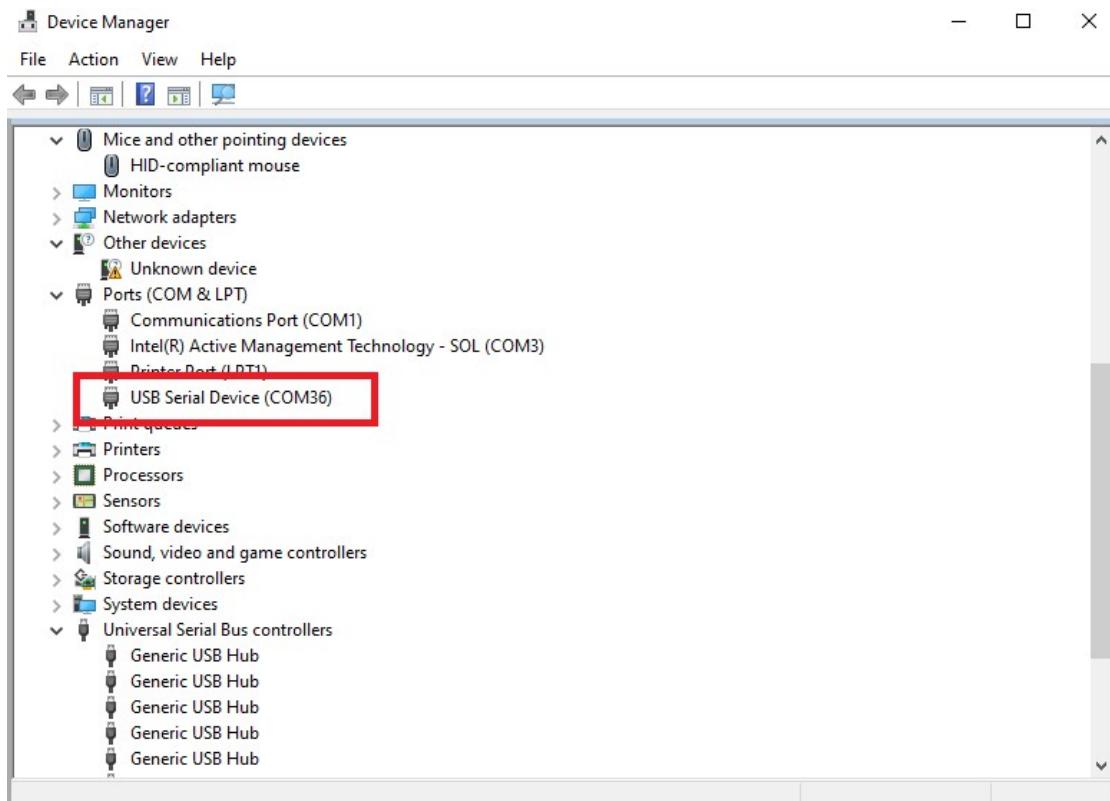
Link ESP32 NOA PD Station board to a PC via a USB Type-C cable



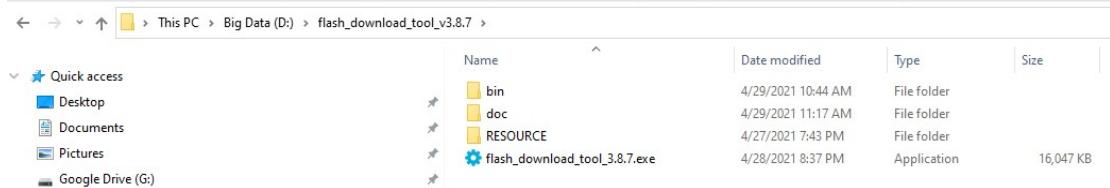
Or link to PC via a USB2TTL device and USB cable



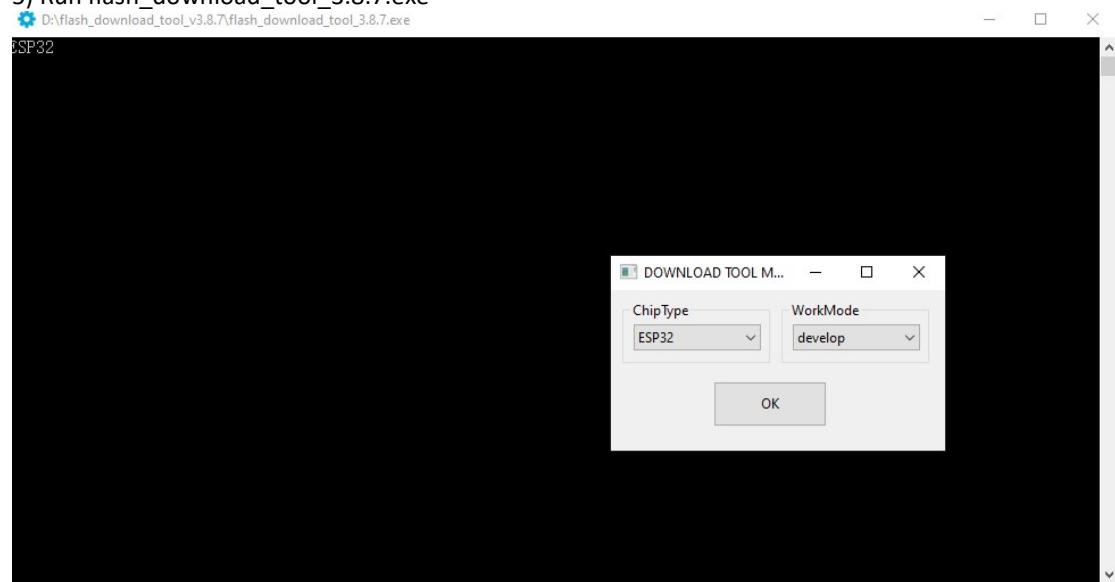
Make sure the Power LED on NOA PD board is light and Check A USB Serial Device(COM*) is enabled in PC system



4) Unzip flash_download_tool_v3.8.7_0.zip file in PC to a directory that is named as D:\flash_download_tool_v3.8.7

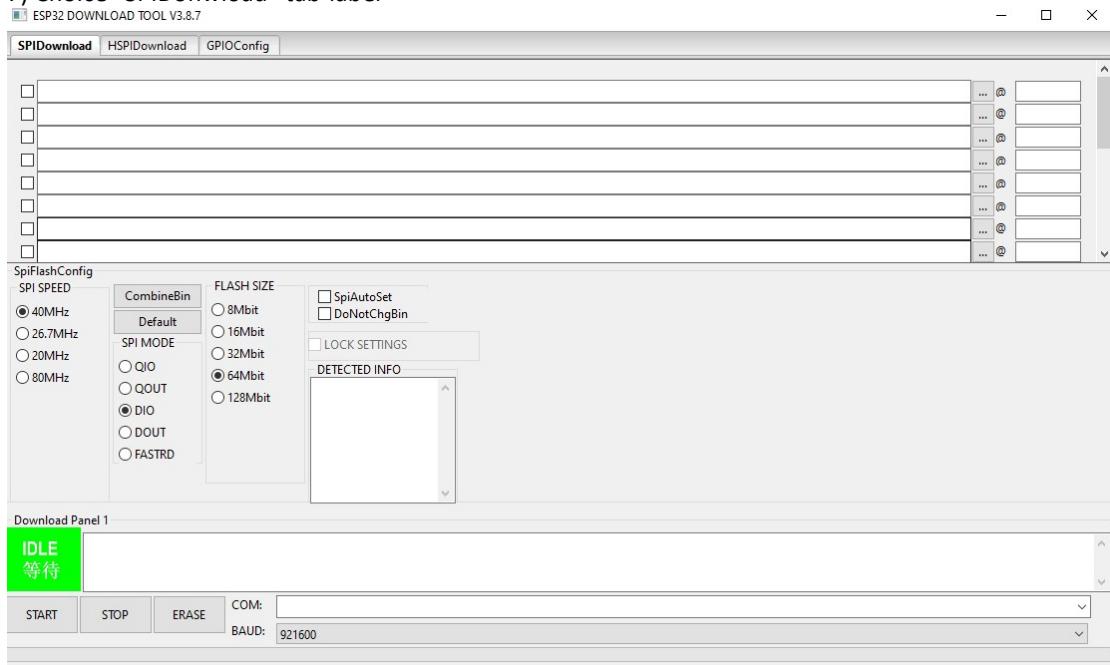


5) Run flash_download_tool_3.8.7.exe

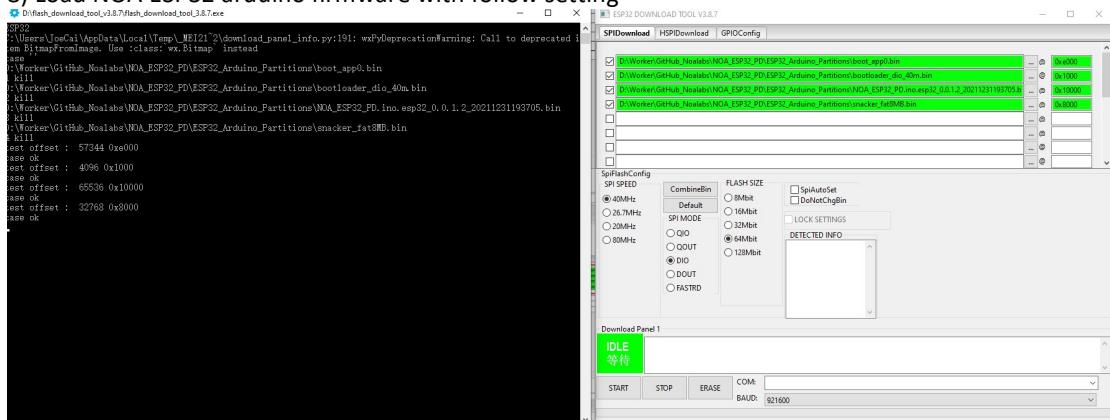


6) Select ESP32 for "ChipType" and develop for "WorkMode", click "OK" for continue

7) Choice “SPIDownload” tab-label



8) Load NOA ESP32 arduino firmware with follow setting



boot_app0.bin	0xe000
bootloader_dio_40m.bin	0x1000
NOA_ESP32_PD.ino.esp32.bin	0x10000
default.bin/snacker_fat8MB.bin	0x8000

Note: default.bin is the partition file for Station board

snacker_fat8MB.bin is the partition file for Snacker board

Set “SPI SPEED” to 40MHz

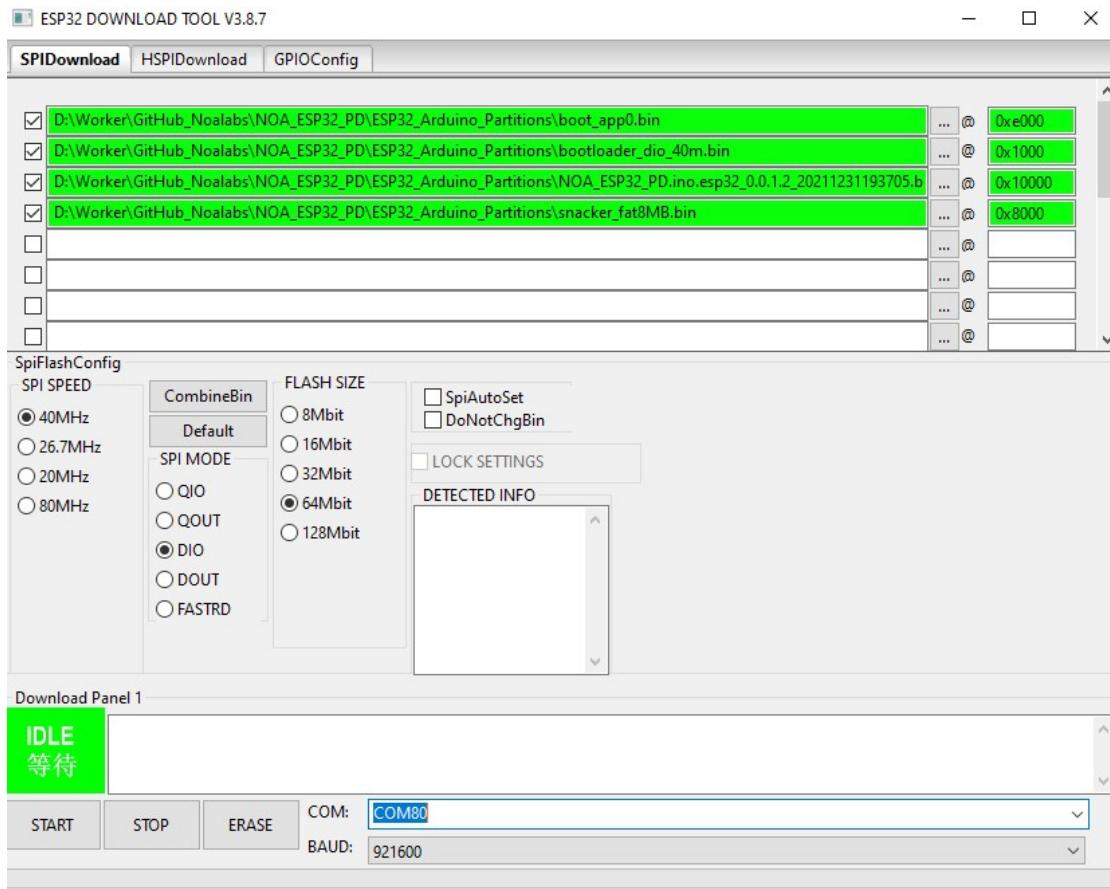
Set “SPI MODE” to DIO

Select 64Mbit for “FLASHSIZE”

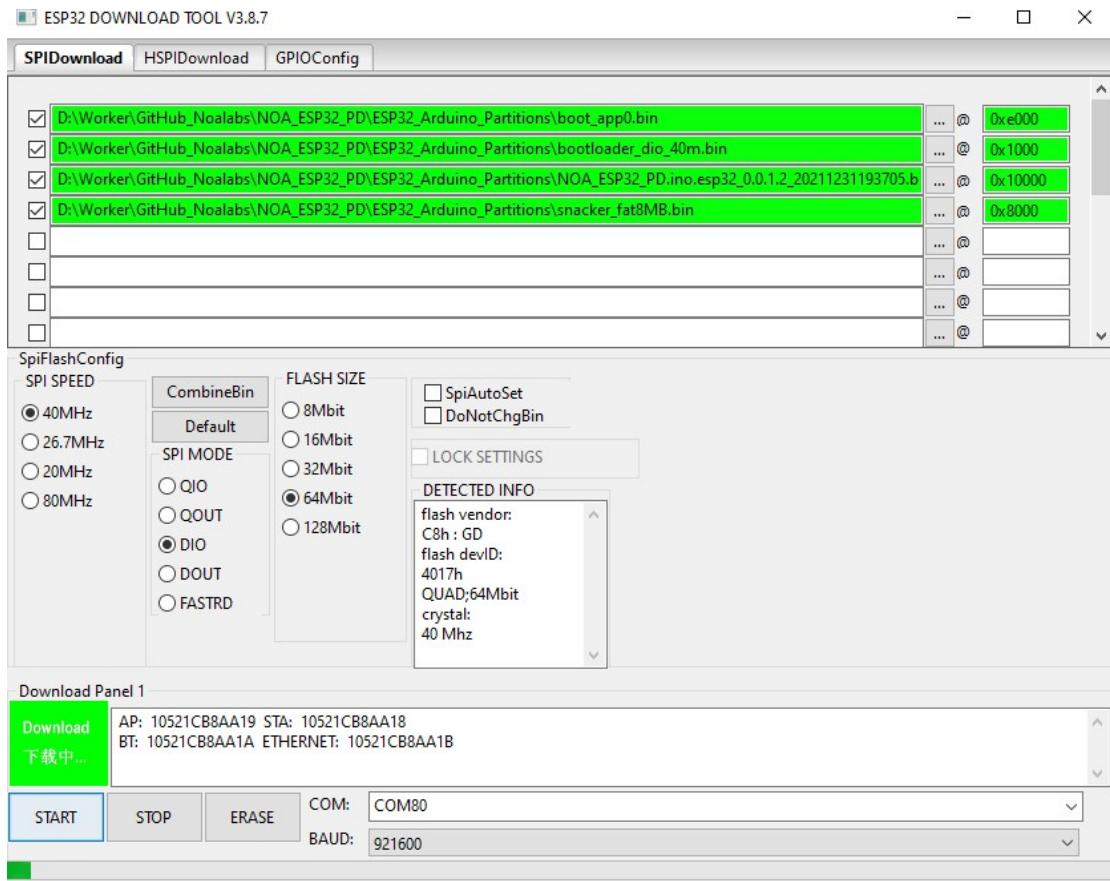
Unchecked “DoNotChgBin”

Make sure “Download Panel1” show a green “IDLE” logo

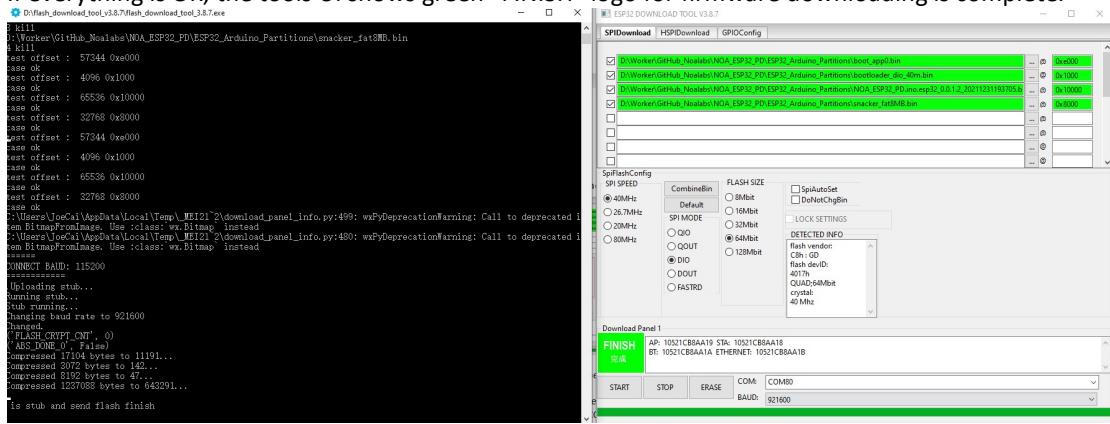
9) Choice the COM port that is enabled in step 3), set the BAUD to 921600 or 115200,



click "START" button to download firmware to NOA PD board

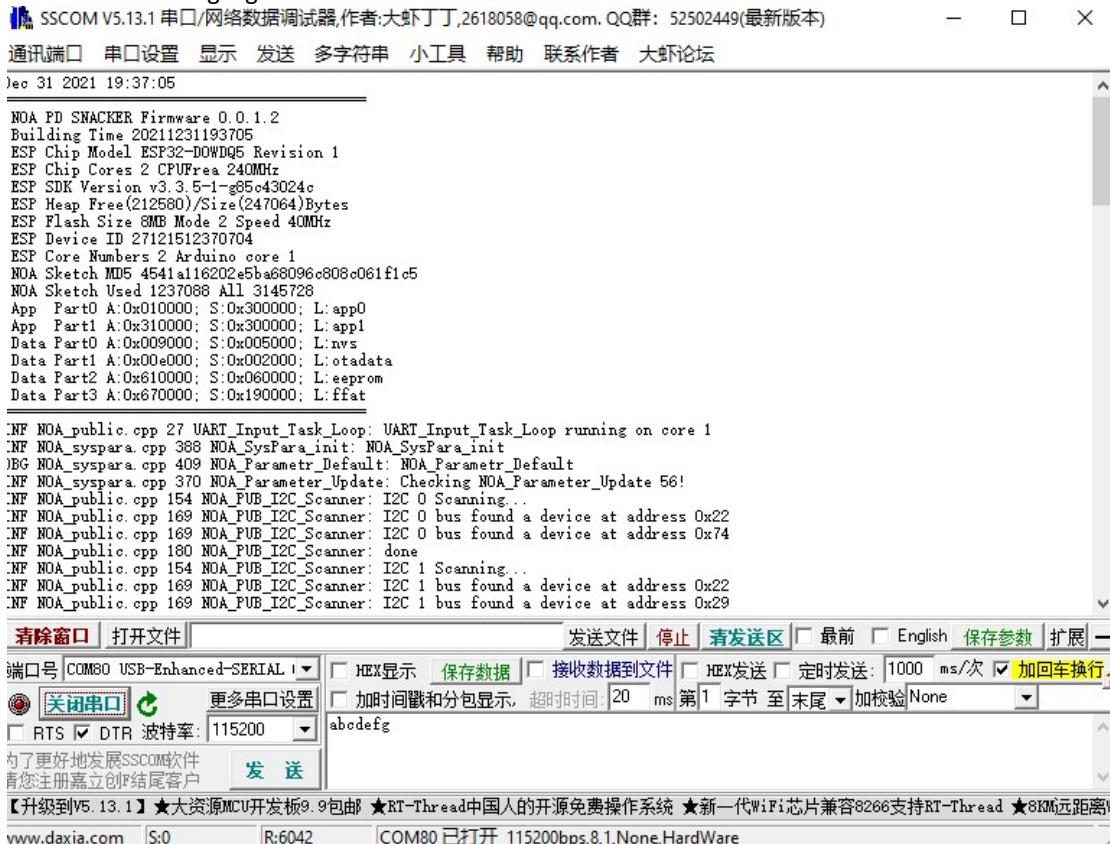


If everything is OK, the tools UI shows green “FINISH” logo for firmware downloading is complete.



click “ERASE” button, the tools can help us erase the SPI flash value and make the flash clean.

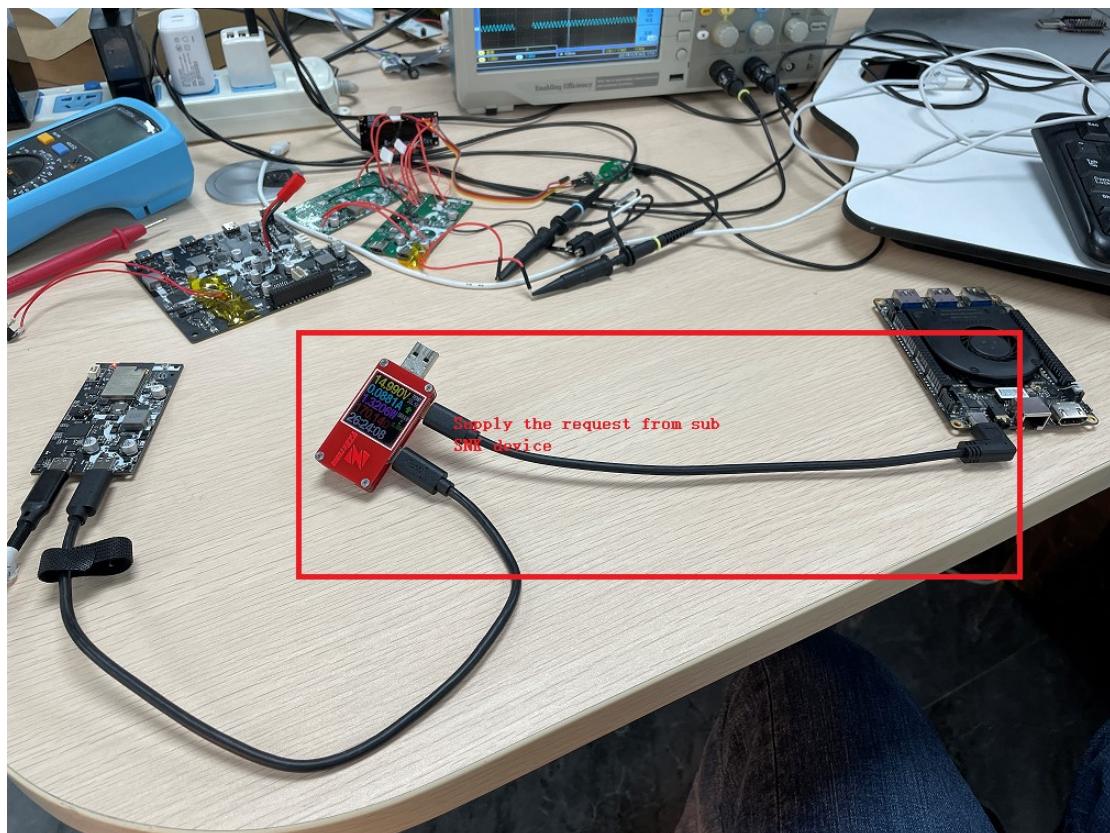
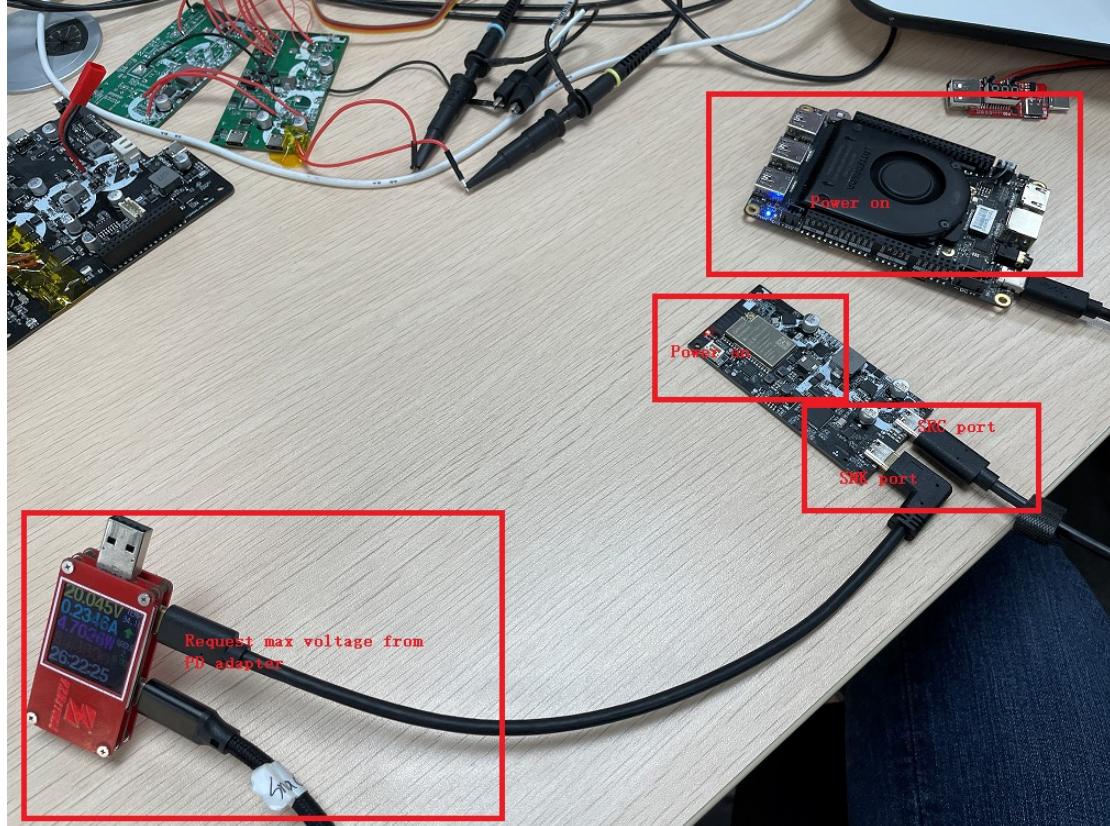
10) Close “ESP32 DOWNLOAD TOOL” app to finish the work. Unplug and plug the type-c cable to PC again, open the COM port that is enabled in step 3) with 115200 setting via “SSCOM” tools, it will show some booting log.



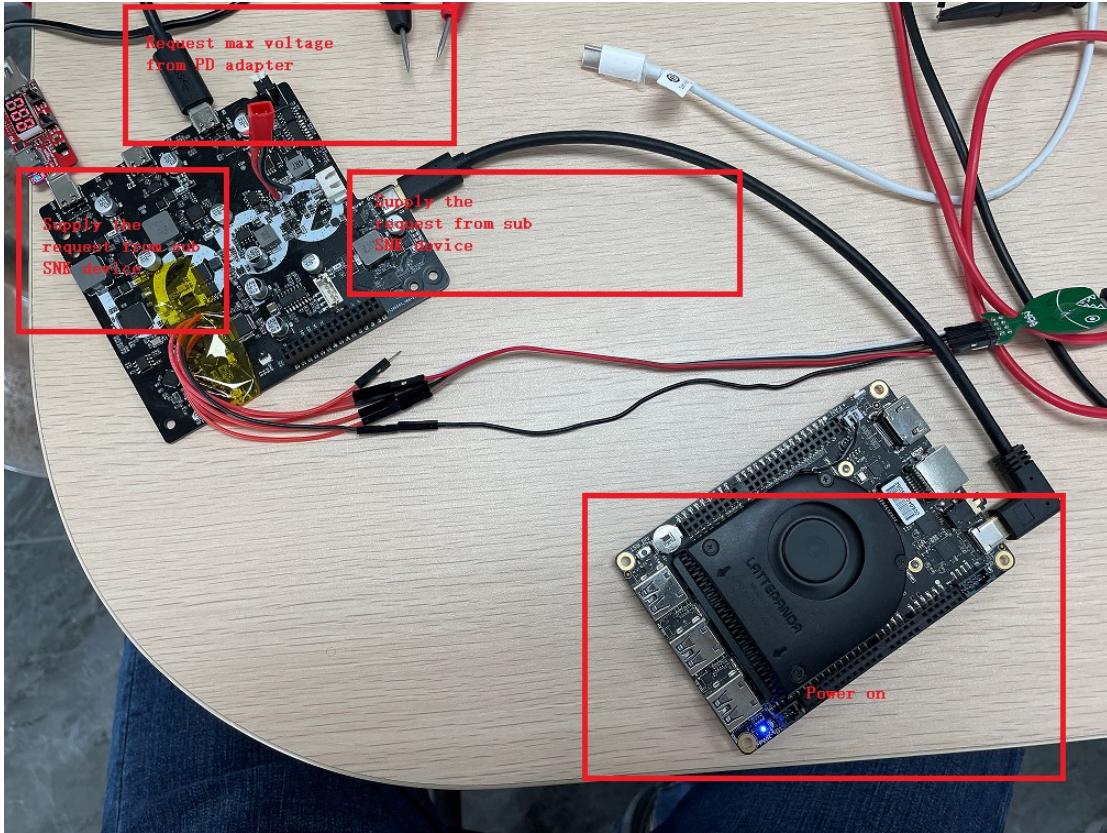
Check the Firmware version and Building Time, if it is same with the NOA ESP32 PD App firmware filename, that is mean the NOA PD board is working with the new firmware.

11) Simple Testing

- * For all NOA PD devices, the PD SNK port is always request the max voltage output of PD adapter
- * For all NOA PD devices, the PD SRC port is zero voltage output without connection in default
- * Power Up lattepanda device with PD snacker board

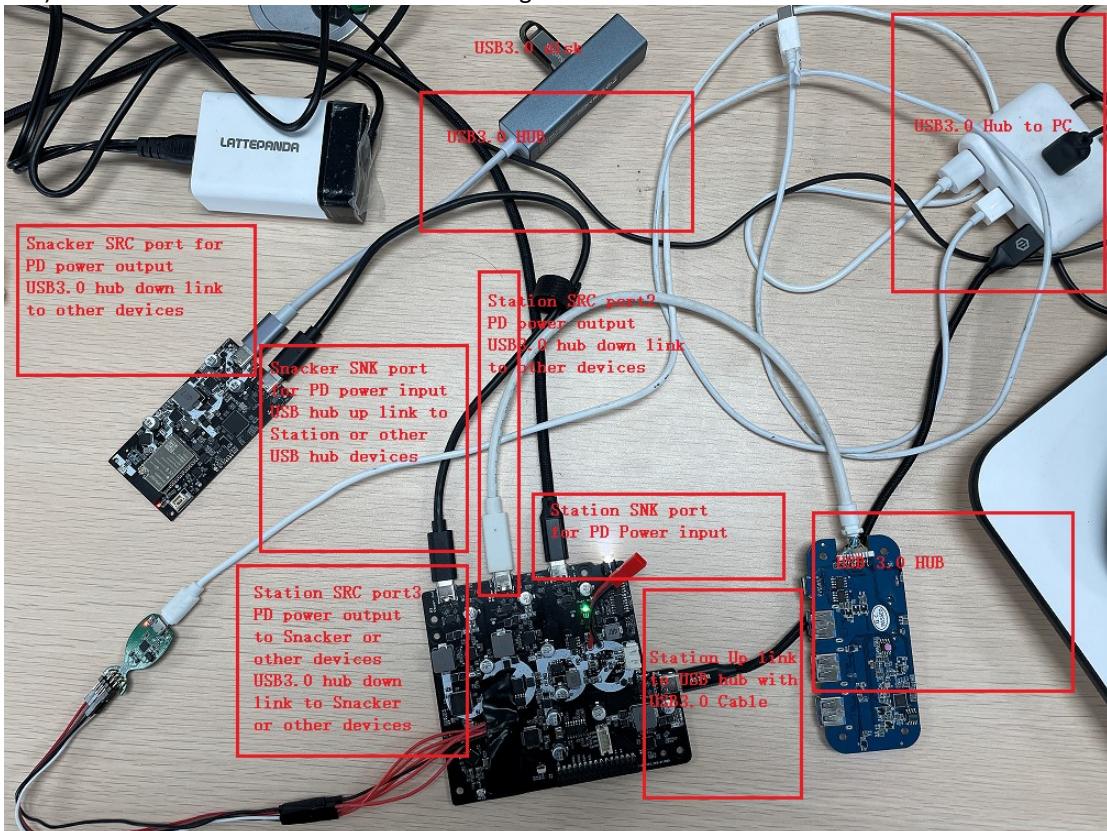


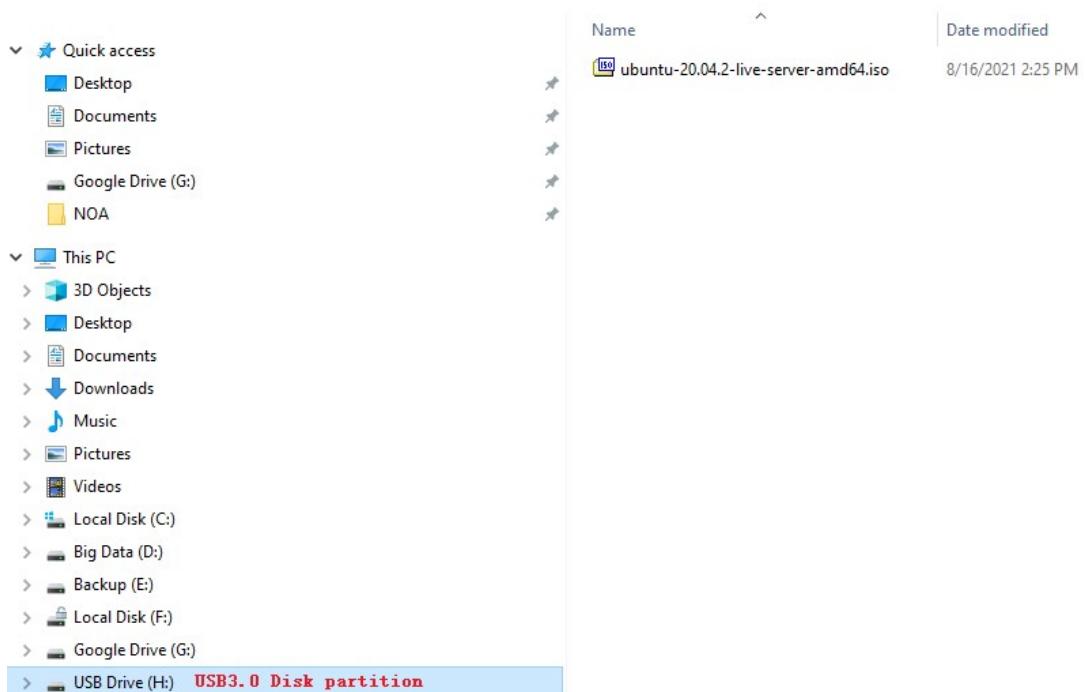
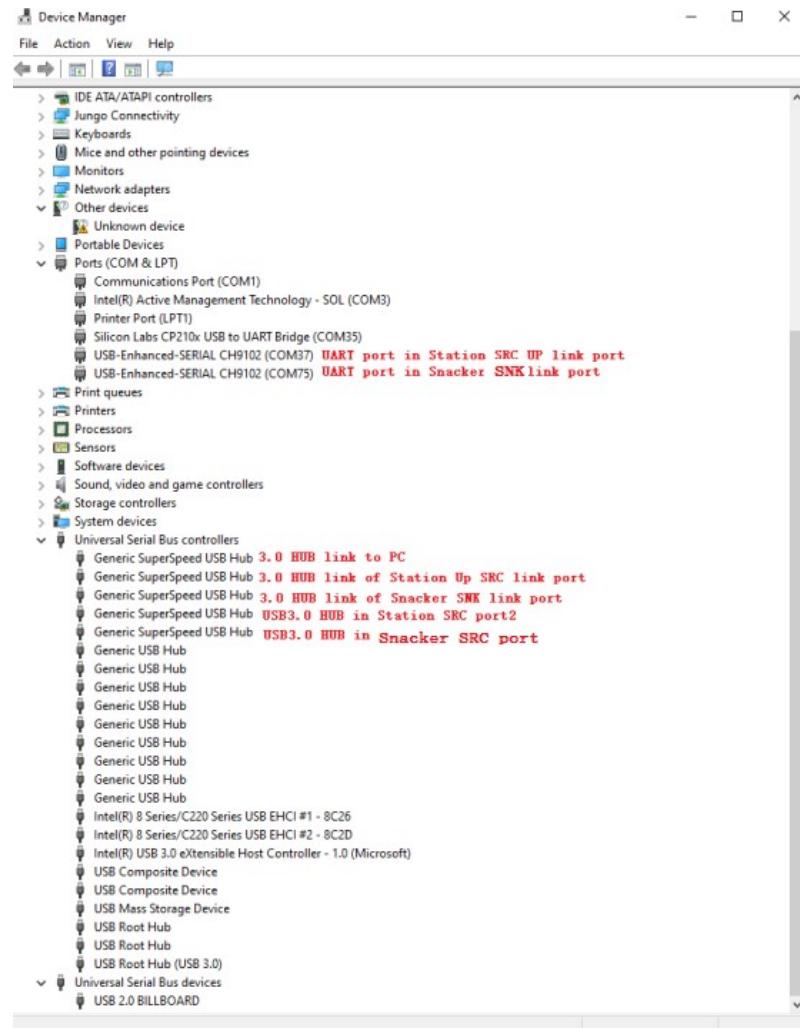
* Power Up lattepanda device with PD station board



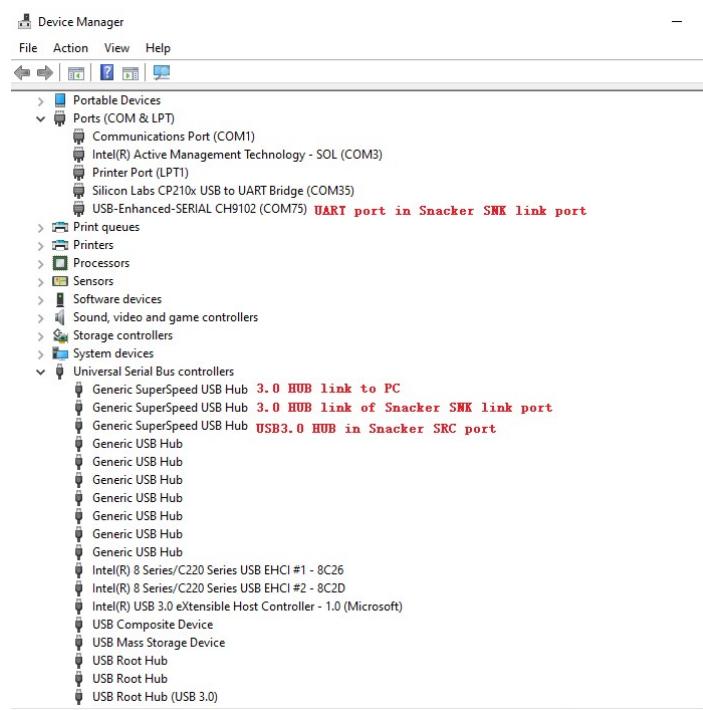
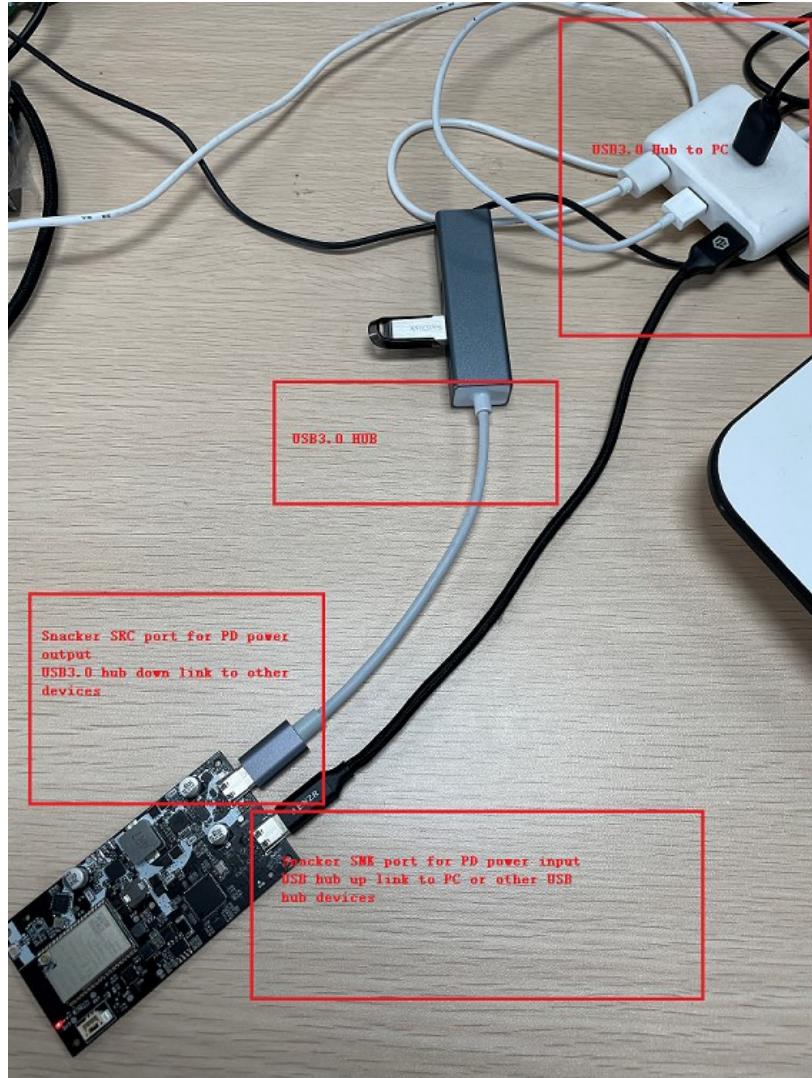
* USB HUB link testing

1) Station and Snacker board serial link testing

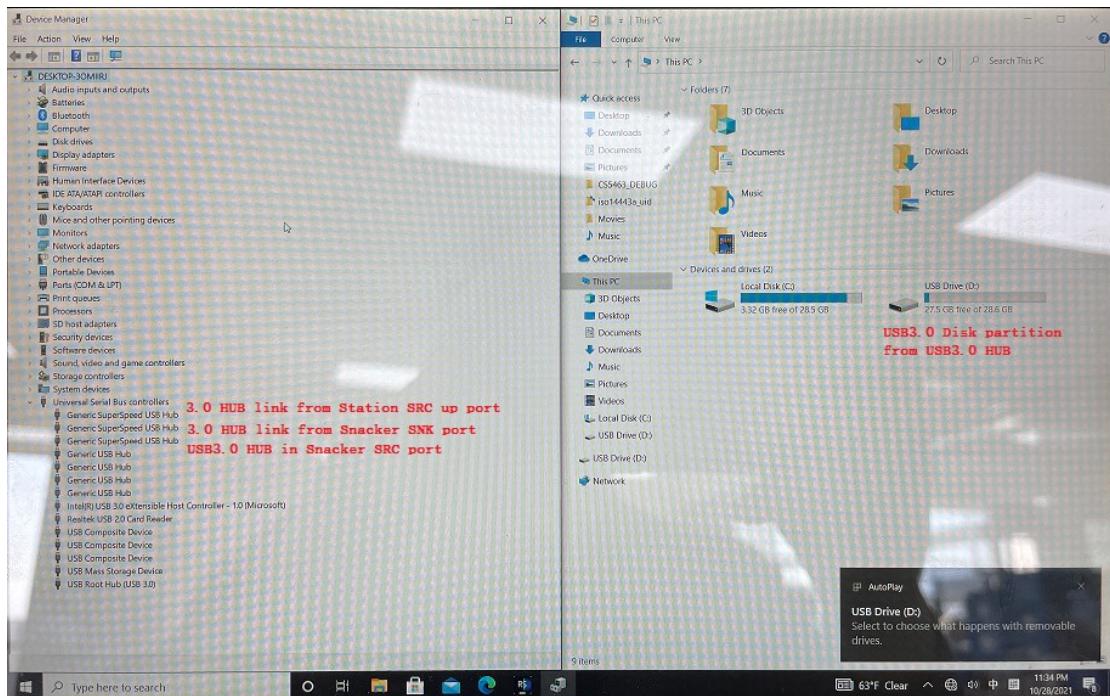
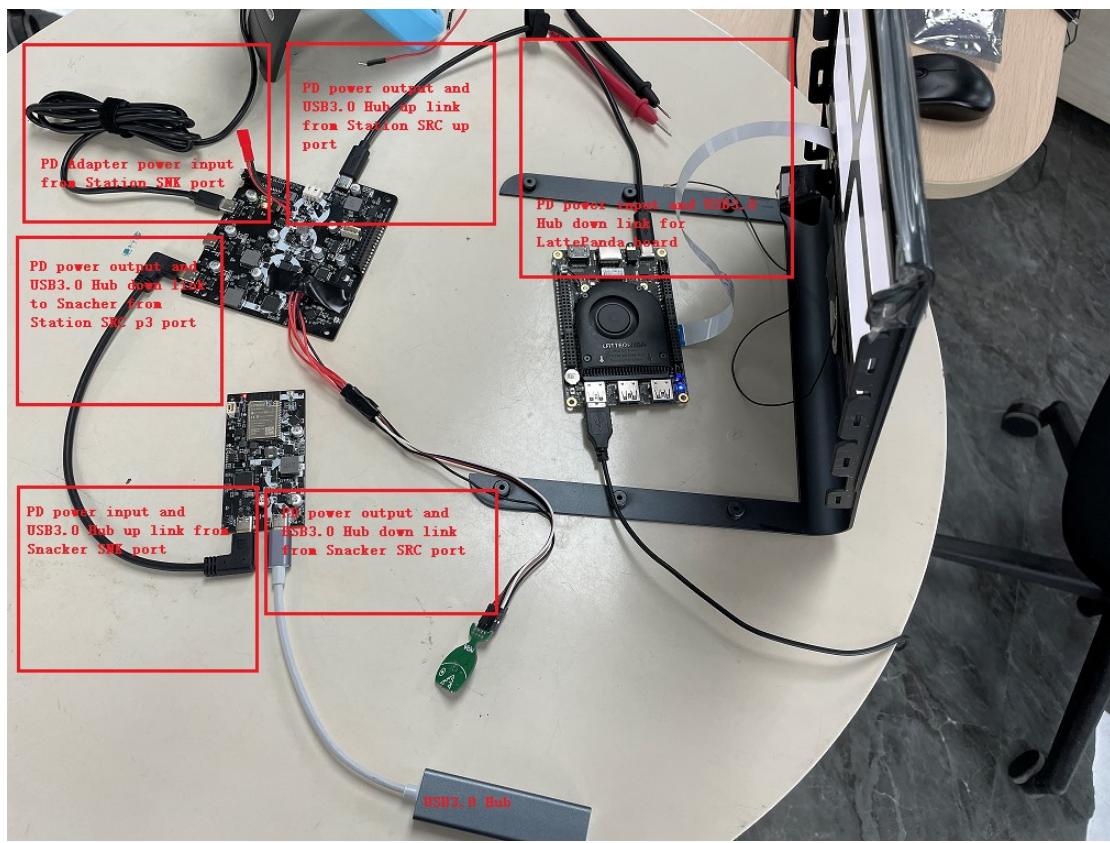




2) Snacker board link



3) Station , Lattepanda and Snacker board serial link testing



4) Voltage Value of port

.....

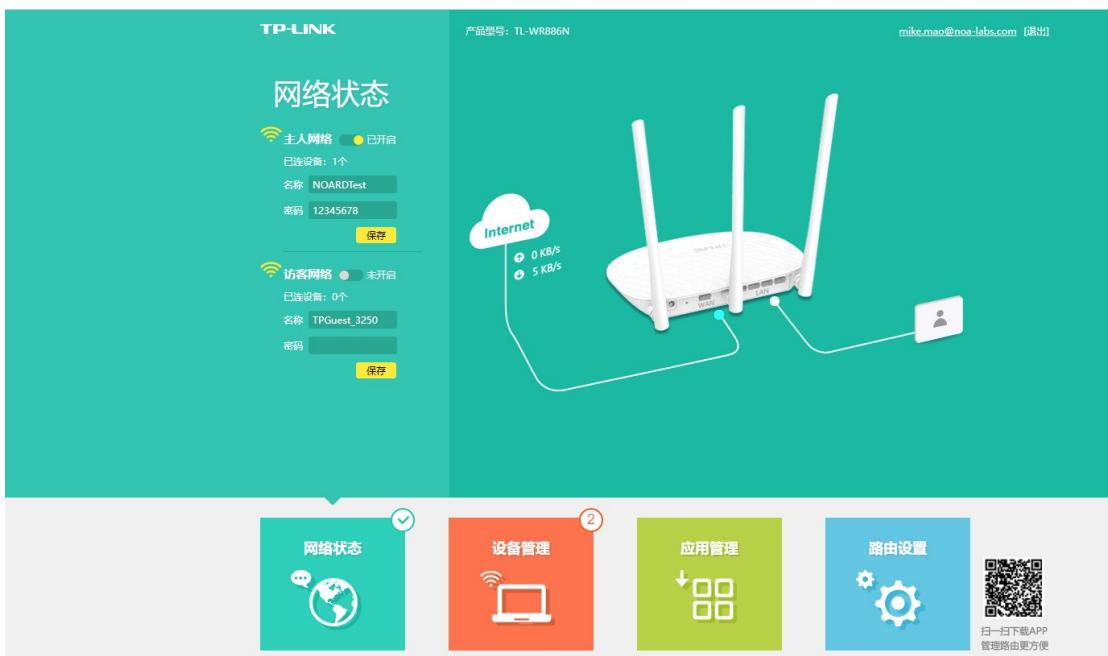
5) WIFI performance testing for SNacker board

A) Station mode

1. Set a WiFi router SSID to NOARDTest

Set Password for “NOARDTest” SSID to 12345678

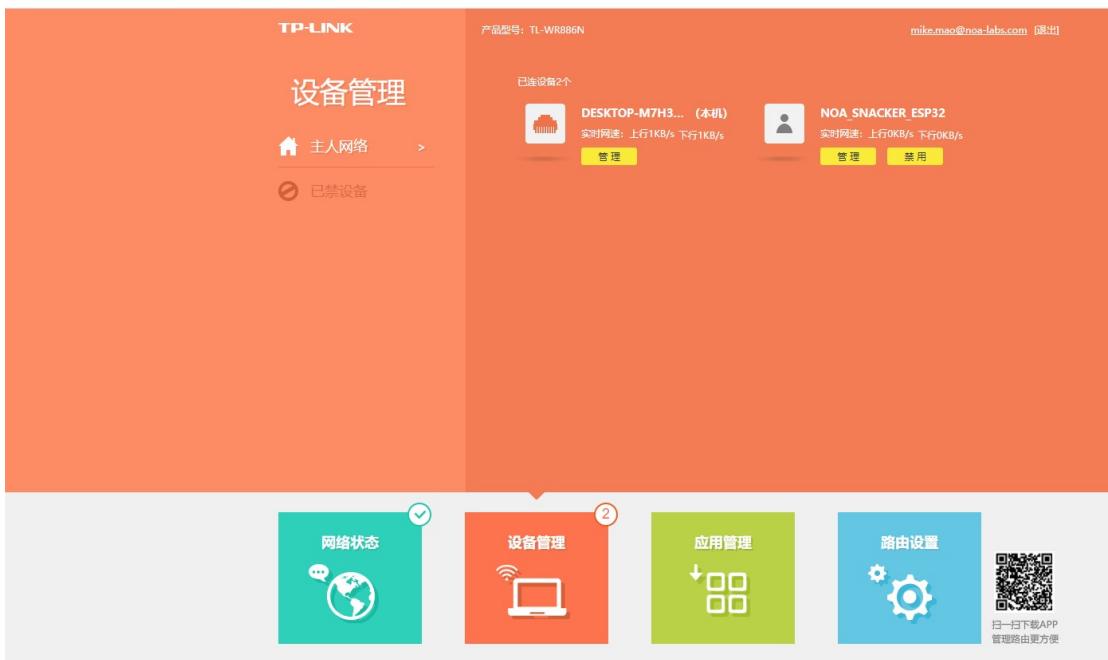
⚠ Not secure | 192.168.1.1



2. Boot up Snacker board (firmware version is higher than 0.0.0.9), wait board auto link to NOARDTest SSID router.

3. Link a PC to the same WIFI router via ethernet port or WIFI, login in the WIFI router management web site, make sure the Snacker board and the PC is connected with the WIFI router.

⚠ Not secure | 192.168.1.1



4. Get the IP address of Snacker board from WIFI router



5. Download latest version Iperf2.0 command tools from internet
<https://sourceforge.net/projects/iperf2/> to PC

6. Open a CMD shell in PC, and go to the directory of Iperf tools

```
E:\Tools>cd iperf-2.0.9-win64
E:\Tools\iperf-2.0.9-win64>dir
 Volume in drive E is Backup
 Volume Serial Number is 1438-E5B4

 Directory of E:\Tools\iperf-2.0.9-win64

11/24/2021  03:18 PM    <DIR>          .
11/24/2021  03:18 PM    <DIR>          ..
06/16/2016  11:17 AM           67,955 checkdelay.exe
04/17/2016  04:12 PM         71,187 cyggcc_s-seh-1.dll
04/17/2016  04:13 PM        1,369,107 cygstdc++-6.dll
04/21/2016  10:14 PM        3,539,372 cygwinl.dll
06/16/2016  11:17 AM         176,917 iperf.exe
              5 File(s)     5,224,538 bytes
              2 Dir(s)   288,064,987,136 bytes free
```

7. Run iperf client mode command to connect Snacker board and test the performance of Snacker board WIFI single

```

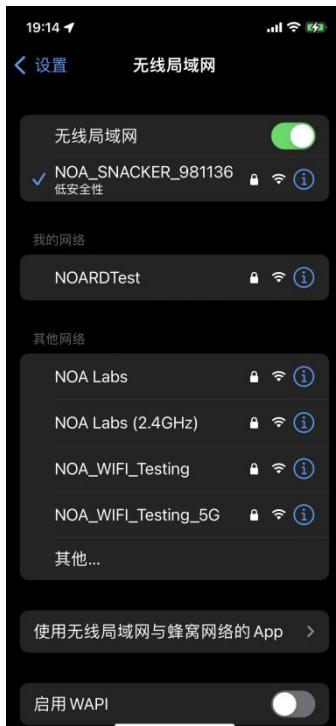
E:\Tools\iperf-2.0.9-win64>iperf.exe -c 192.168.1.103
-----
Client connecting to 192.168.1.103, TCP port 5001
TCP window size: 208 KByte (default)
-----
[ 3] local 192.168.1.102 port 49259 connected with 192.168.1.103 port 5001
[ ID] Interval Transfer Bandwidth
[ 3] 0.0-10.2 sec 4.38 MBytes 3.59 Mbites/sec

E:\Tools\iperf-2.0.9-win64>iperf.exe -c 192.168.1.103 -t 30 -i 5 -w 1024k
-----
Client connecting to 192.168.1.103, TCP port 5001
TCP window size: 1.00 MByte
-----
[ 3] local 192.168.1.102 port 49261 connected with 192.168.1.103 port 5001
[ ID] Interval Transfer Bandwidth
[ 3] 0.0- 5.0 sec 2.75 MBytes 4.61 Mbites/sec
[ 3] 5.0-10.0 sec 2.12 MBytes 3.57 Mbites/sec
[ 3] 10.0-15.0 sec 2.00 MBytes 3.36 Mbites/sec
[ 3] 15.0-20.0 sec 2.12 MBytes 3.57 Mbites/sec
[ 3] 20.0-25.0 sec 2.12 MBytes 3.57 Mbites/sec
[ 3] 25.0-30.0 sec 2.00 MBytes 3.36 Mbites/sec
[ 3] 0.0-30.2 sec 13.1 MBytes 3.65 Mbites/sec

```

B) AP mode

1. Snacker board is enable AP mode in default, it broadcasts a SSID as NOA_SNACKER_***** , name, ***** part is different for each board. It is from chip ID of ESP32 module.
2. Scan WIFI signal with a PC or a Smart phone, found and click the SSID that Snacker board broadcast, input “87654321” for the password, waiting your PC or Smart phone connect to Snacker board.



3. After your device is connected to Snacker board, make sure your device got IP setting from Snacker board.



4. Open the iperf tools in your device, test it with some commands



5. Don't testing AP mode and Station mode in same time

6) Web page tools for Snacker board

1. Connect a PC to the Snacker board via WIFI station mode or AP mode
2. Open Web page tools of Snacker board via Edge or Chrome tools



Input "admin" for user and "admin" for password to login the Web page tools.

3. View Snacker board system information

The screenshot shows the NOA SNacker Setting interface. On the left, a sidebar menu includes 'System Information' (selected), 'Wi-Fi AP Settings' (highlighted in blue), 'Wi-Fi STA Settings', 'Device Monitor', and 'Firmware Upgrade'. The main content area is titled 'System Information' with the sub-instruction 'View system parameter information and operating status'. It contains three tables:

- System Information** table:

Device PN	27121512370704
Software Version	0.0.1.3
Hardware Version	ESP32-D0WDQ5 Revision 1
Release Time	20220104134454
Device Working Time	0 00:01:12
- Wi-Fi Connection Status** table:

Router RSSI	-30:100
Router SSID	NOARDTest
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Gateway Settings	192.168.1.1
Domain Name Server1	114.114.114.114
Domain Name Server2	192.168.1.1
MAC	10:52:1C:B8:AA:18
- SNacker AP Connection Status** table:

AP IP Address	192.168.88.1
Number of devices online	-
Network Load	-

4. View Snacker board Wi-Fi AP settings

The screenshot shows the NOA SNacker Setting interface. The sidebar menu now includes 'Wi-Fi AP Settings' (selected). The main content area is titled 'Wi-Fi AP Settings' with the sub-instruction 'Wireless AP Settings, including AP parameters (SSID, encryption) and access mode (DHCP, static connection) to be connected.' It contains two sections:

- Wireless AP Parameter Setting** section:

Network Mode	11b/g/n mixed mode
Network Name (SSID)	NOA_SNACKER_370704
MAC Address	10:52:1C:B8:AA:19
Wireless Channel Selection	auto

Buttons: confirm, cancel
- WPA Encryption** section:

Encryption Algorithm	<input checked="" type="radio"/> AES
AP Password	87654321

5. View Snacker board Wi-Fi STA settings

The screenshot shows the NOA SNacker Setting web interface. On the left, a sidebar menu includes: System Information, Wi-Fi AP Settings, **Wi-Fi STA Settings**, Device Monitor, and Firmware Upgrade. The main content area has two tabs: "Wi-Fi STA Settings" (selected) and "DHCP mode".

Wi-Fi STA Settings: This tab displays "Wireless STA parameter settings" with fields for SSID (NOARDTest), Encryption Mode (WPA), and password (*****). Buttons for "search", "confirm", and "cancel" are present.

DHCP mode: This tab shows "How to obtain IP address" set to "Dynamic (obtained automatically)". Buttons for "confirm" and "cancel" are present.

Click “search” button to scan wifi list around Snacker board

The screenshot shows the NOA SNacker Setting web interface. The sidebar menu is identical to the previous screenshot. The main content area is titled "Wi-Fi List" and displays a table of wireless networks.

	SSID	BSSID	RSSI	Channel	Authentication
○	NOARDTest	94:D9:B3:EE:32:50	100	11	WPA/WAP2
○	NOA_SNACKER_136592	10:52:1C:B8:A9:6D	100	11	WPA2
○	EdenFactoryTest	40:31:3C:07:08:C5	100	6	WPA/WAP2
○	NOA Labs (2.4GHz)	38:D5:47:E4:A3:28	88	4	WPA2
○	NOA Labs (2.4GHz)	18:31:BF:5B:57:60	30	10	WPA2
○	NOA Labs (2.4GHz)	88:D7:F6:B6:C4:50	26	10	WPA2

Buttons for "Apply" and "Refresh" are located at the bottom of the table.

6. View Snacker board Device Monitor

NOA SNacker x +

不安全 | 192.168.1.100

Chinese / English

NOA SNacker Setting

- System Information
- Wi-Fi AP Settings
- Wi-Fi STA Settings
- Device Monitor**
- Firmware Upgrade

Device Monitor
Monitor device USB-PD/Wireless charge/NFC status, restart device.

USB Power Delivery Sink Port Status	
SNK Voltage(mv)	5000
SNK Current(ma)	500
SNK Capabilities (mv:ma)	[-]

USB Power Delivery Source Port Status	
SRC Voltage(mv)	0
SRC Current(ma)	0
SRC Capabilities (mv:ma)	[5000:500][5000:500][5000:500][5000:500][5000:500][5000:500]

Wireless Charge Status	
Voltage(mv)	9000
Temperature(°C)	-

NFC Status	
Device UUID	-
Sector 0 Address 0	-
Sector 0 Address 1	-
Sector 0 Address 2	-
Sector 0 Address 3	-

Restart the device

Restart now

Full information about Snacker board

NOA SNacker Setting Chinese / English

- System Information
- Wi-Fi AP Settings
- Wi-Fi STA Settings
- Device Monitor**
- Firmware Upgrade

Device Monitor
Monitor device USB-PD/Wireless charge/NFC status, restart device.

USB Power Delivery Sink Port Status	
SNK Voltage(mv)	20000
SNK Current(ma)	4350
SNK Capabilities (mv:ma)	[5000:3000][9000:3000][12000:3000][15000:3000][20000:4350]

USB Power Delivery Source Port Status	
SRC Voltage(mv)	5000
SRC Current(ma)	500
SRC Capabilities (mv:ma)	[5000:3000][9000:3000][12000:3000][15000:3000][20000:4350]

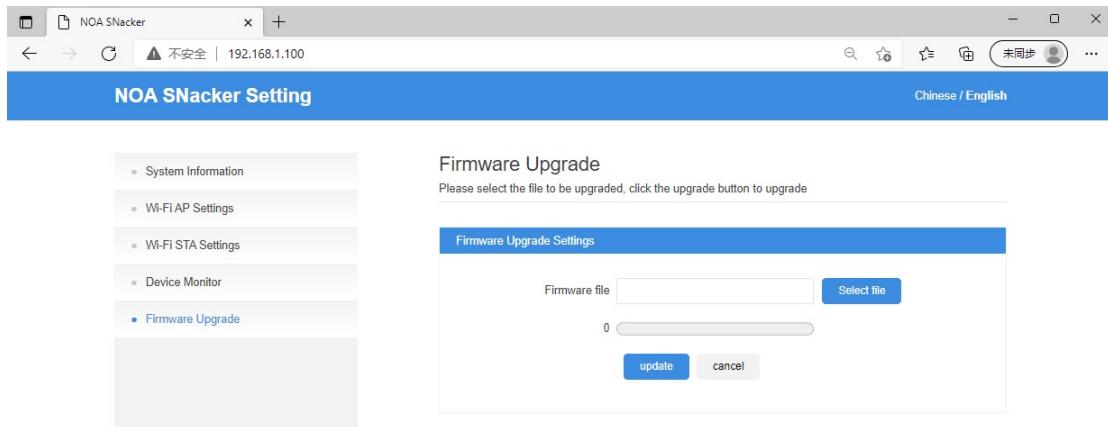
Wireless Charge Status	
Voltage(mv)	9000
Temperature(°C)	-

NFC Status	
Device UUID	B3 63 A7 B5
Sector 0 Address 0	B3 63 A7 B5 C2 08 04 00 62 63 64 65 66 67 68 69
Sector 0 Address 1	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Sector 0 Address 2	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Sector 0 Address 3	00 00 00 00 00 FF 07 80 69 FF FF FF FF FF FF

Restart the device

Restart now

7. Snacker board firmware upgrade tool(OTA)



8.

7)

12) Note:

1) Known issues:

- * The USB3.0 Hub feature about SNK ports of Snacker is not stable

2) Warning issues:

- * P0 port of Station board is a 15V voltage output, don't link it to any PC USB hub port, it will burn the device. The port is linked to LattePanda board only.**

3)