

How to burn ES32 Arduino NOA PD Firmware With ESP download tool(1.0.0.2)

- 1) Get Firmware download tools(flash_download_tool_3.9.0.zip) from espressif website

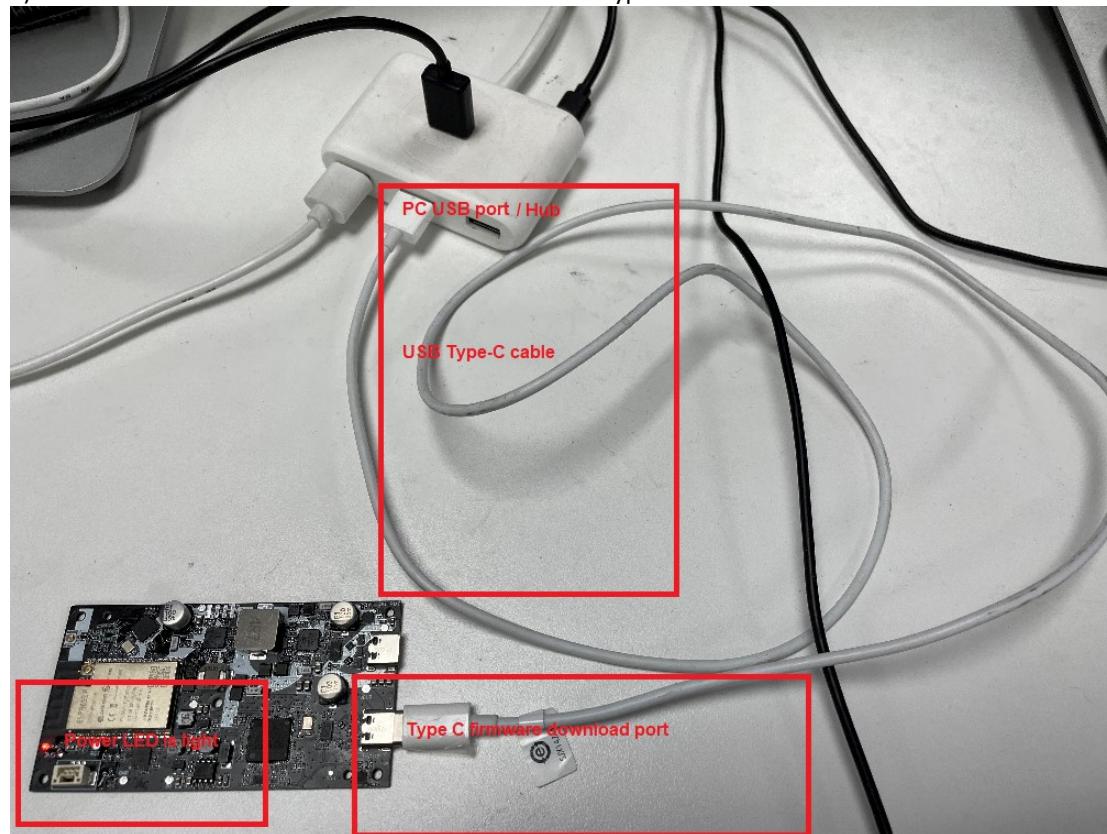
The screenshot shows the Espressif Support website with the 'Support' tab selected. Below it, the 'Download > Tools' section is visible. A search bar at the top right contains the text 'Search keywords'. On the left, there's a sidebar with a 'Filter' button and a 'Product' dropdown menu containing options for ESP32-S3, ESP32-S2, ESP32-C3, and ESP32. The main content area displays a table titled 'Flash Download Tools' with one result: 'Flash Download Tools' (Version V3.9.0, Release Date 2021.09.18, Platform Windows PC). There are 'Download' and 'Expand all' buttons at the top of the table.

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

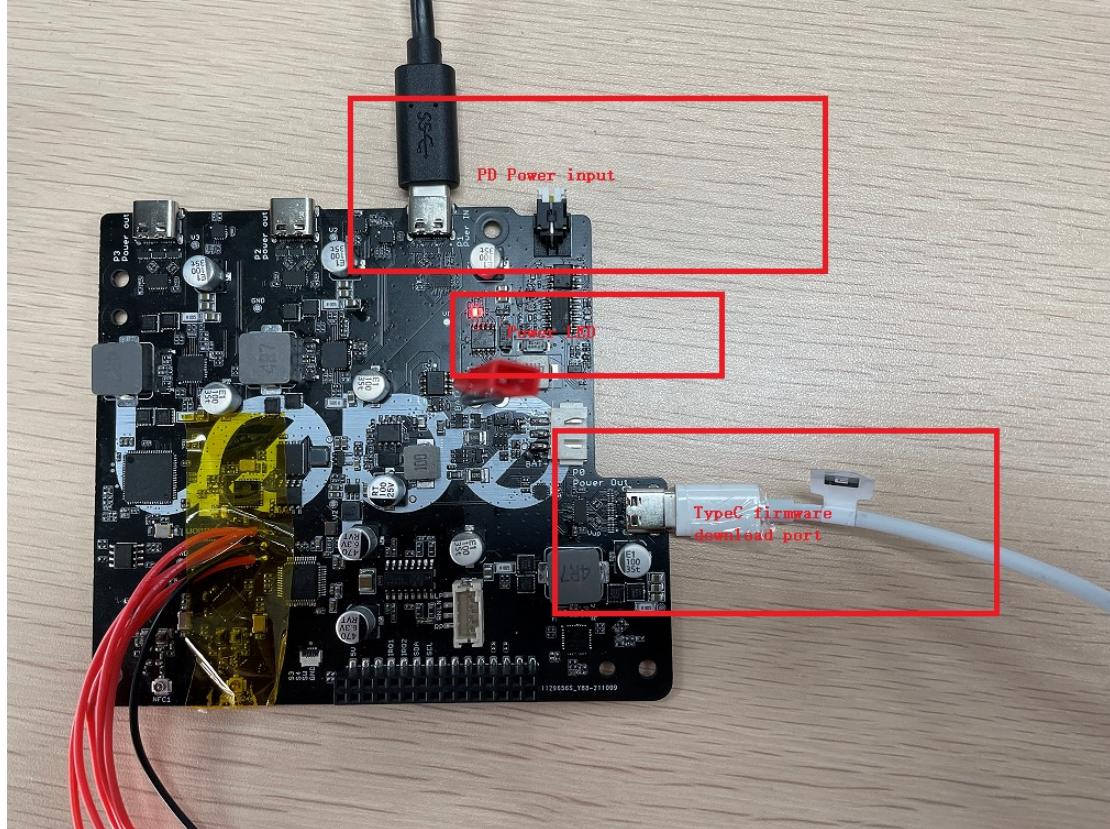
The screenshot shows a file explorer window with the path 'Worker > GitHub_Noalabs > NOA_ESP32_PD > ESP32_Arduino_Partitions'. It lists several files:

Name	Date modified	Type	Size	Description
boot_app0.bin	3/26/2021 7:26 PM	BIN File	8 KB	Arduino boot app0 file
bootloader_dio_80m.bin	3/26/2021 7:26 PM	BIN File	17 KB	Arduino ESP32 bootloader file
default.bin	3/26/2021 7:26 PM	BIN File	3 KB	ESP firmware partitions setting file
default.csv	3/26/2021 7:26 PM	XLS Worksheet	1 KB	ESP firmware partitions setting help file
ESP32_DOWNLOAD_TOOLS_Setting.txt	10/21/2021 7:41 PM	TXT File	2 KB	ESP firmware download tools setting help file
NOA_ESP32_PD.ino.esp32_0.0.0_1_2021021192428.bin	10/21/2021 7:26 PM	BIN File	321 KB	NOA ESP32 PD App firmware file

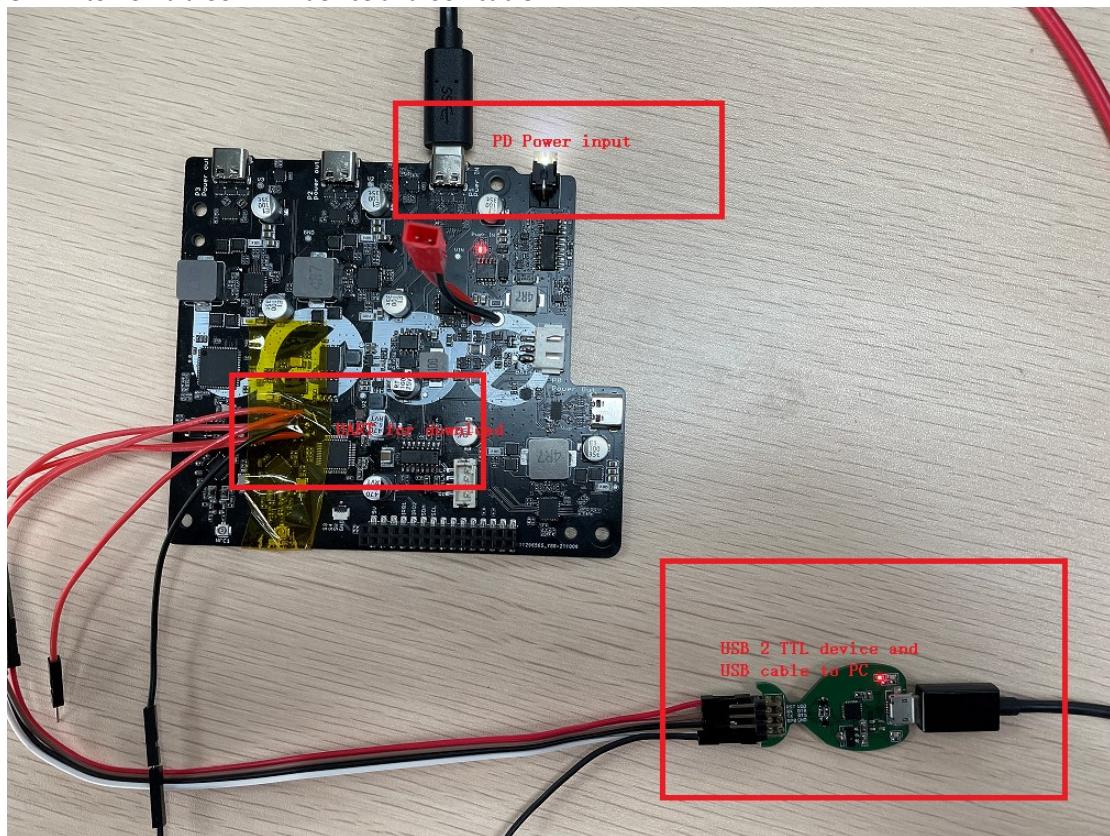
- 3) Link ESP32 NOA PD Snacker board to a PC via a USB Type-C cable



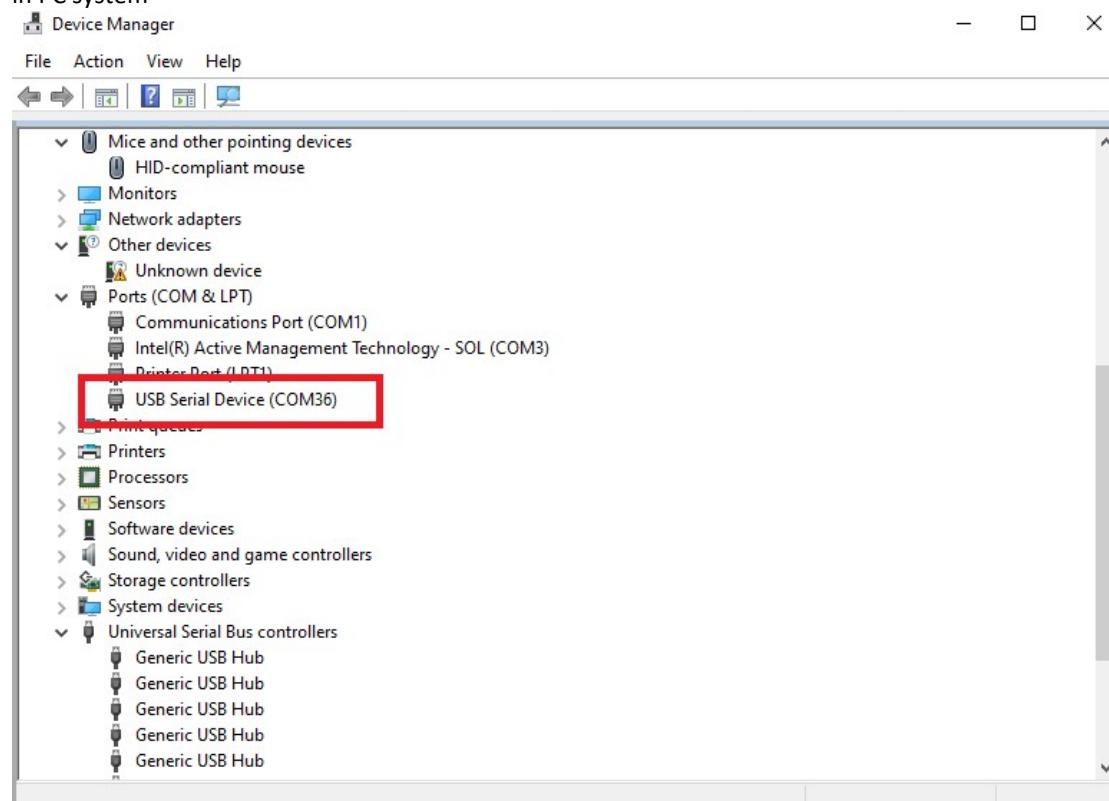
Link ESP32 NOA PD Station board to a PC via a USB Type-C cable



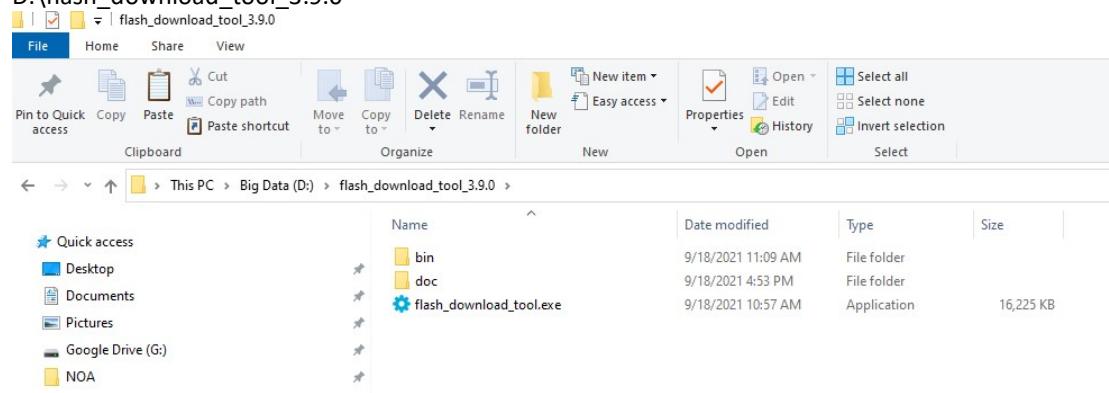
Or link to PC via a USB2TTL device and USB cable



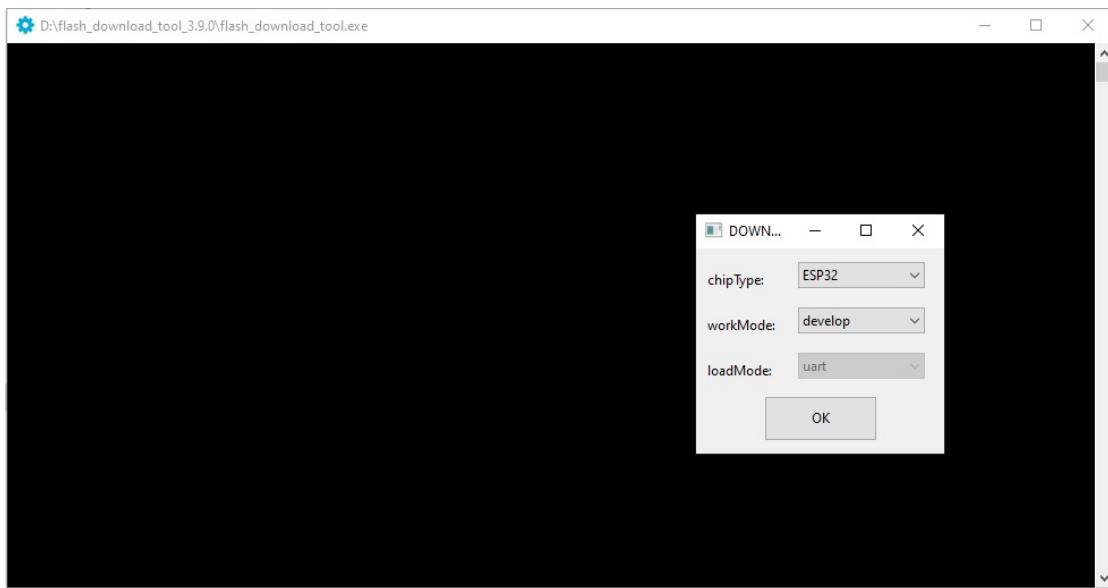
Make sure the Power LED on NOA PD board is light and Check A USB Serial Device(COM*) is enabled in PC system



4) Unzip flash_download_tool_3.9.0.zip file in PC to a directory that is named as
D:\flash_download_tool_3.9.0

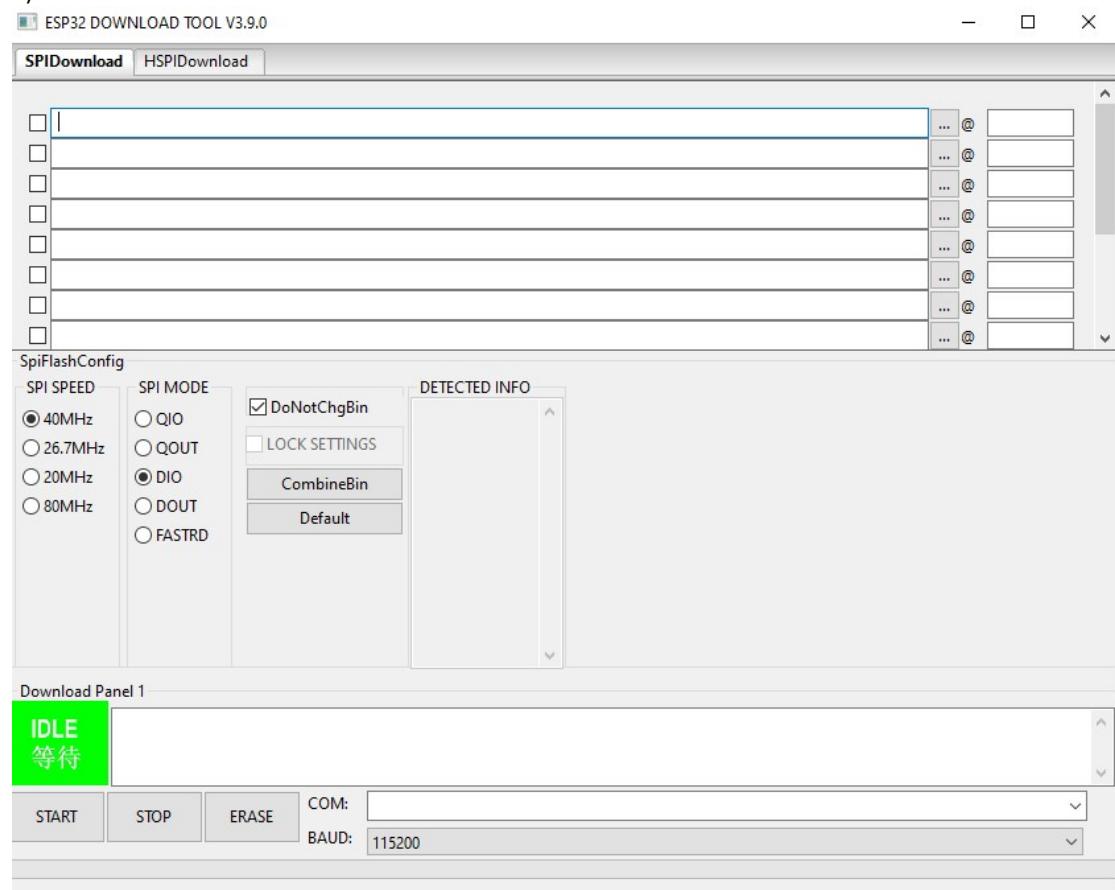


5) Run flash_download_tool.exe

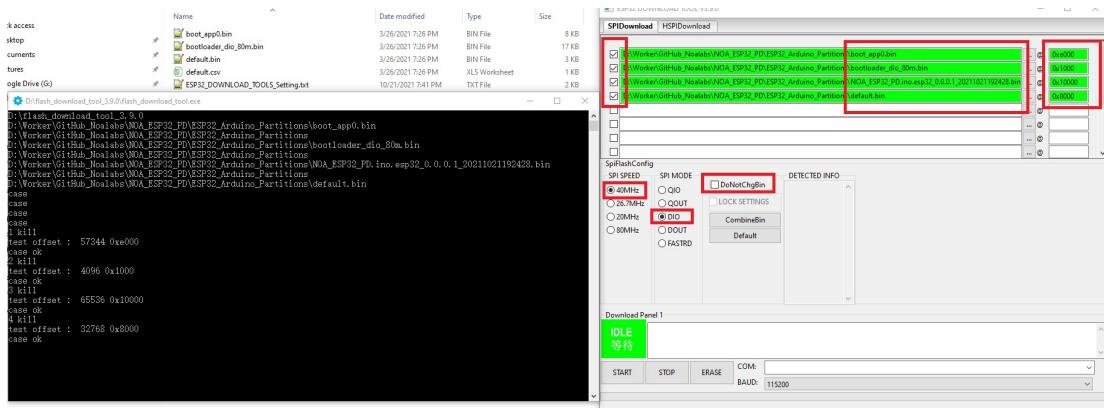


6) Select ESP32 for “chipType” and develop for “workMode”, click “OK” for continue

7) Choice “SPIDownload” tab-label



8) Load NOA ESP32 arduino firmware with follow setting



boot_app0.bin	0xe000
bootloader_*_.bin	0x1000
NOA_ESP32_PD.ino.esp32.bin	0x10000
default.bin	0x8000

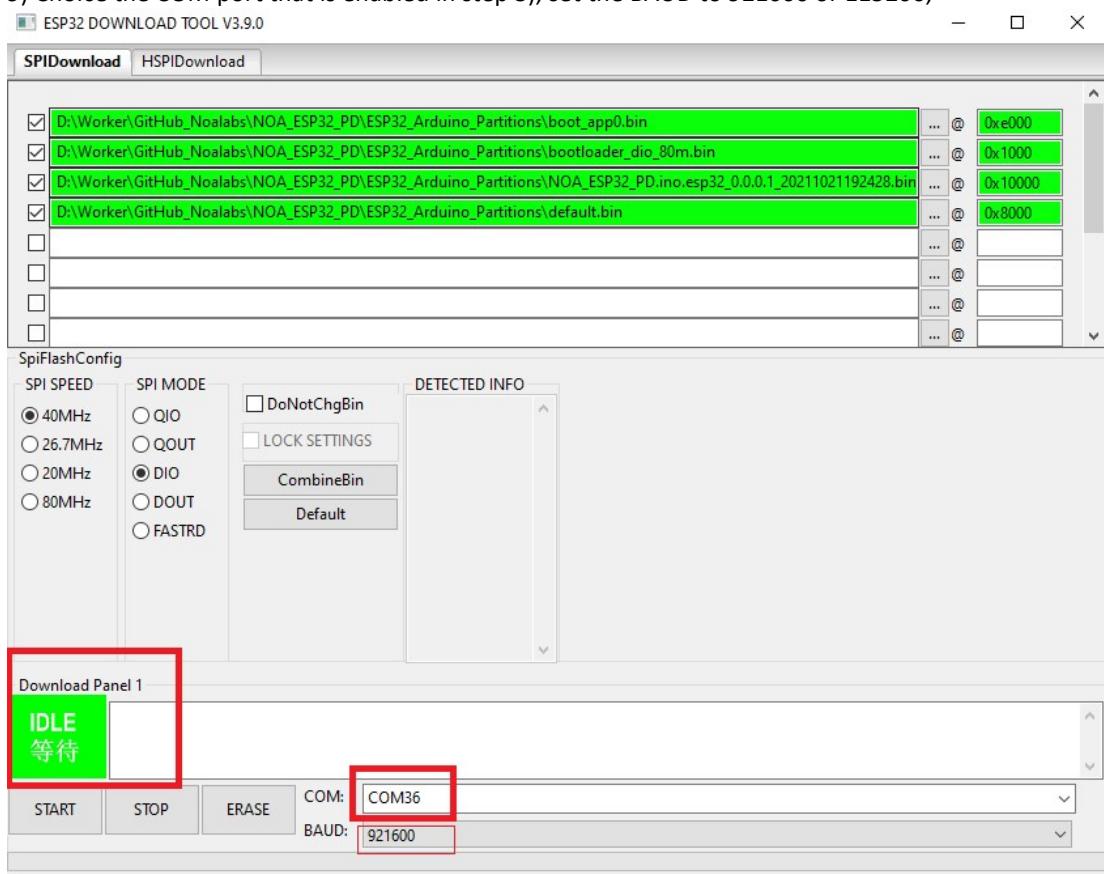
Set "SPI SPEED" to 40MHz

Set "SPI MODE" to DIO

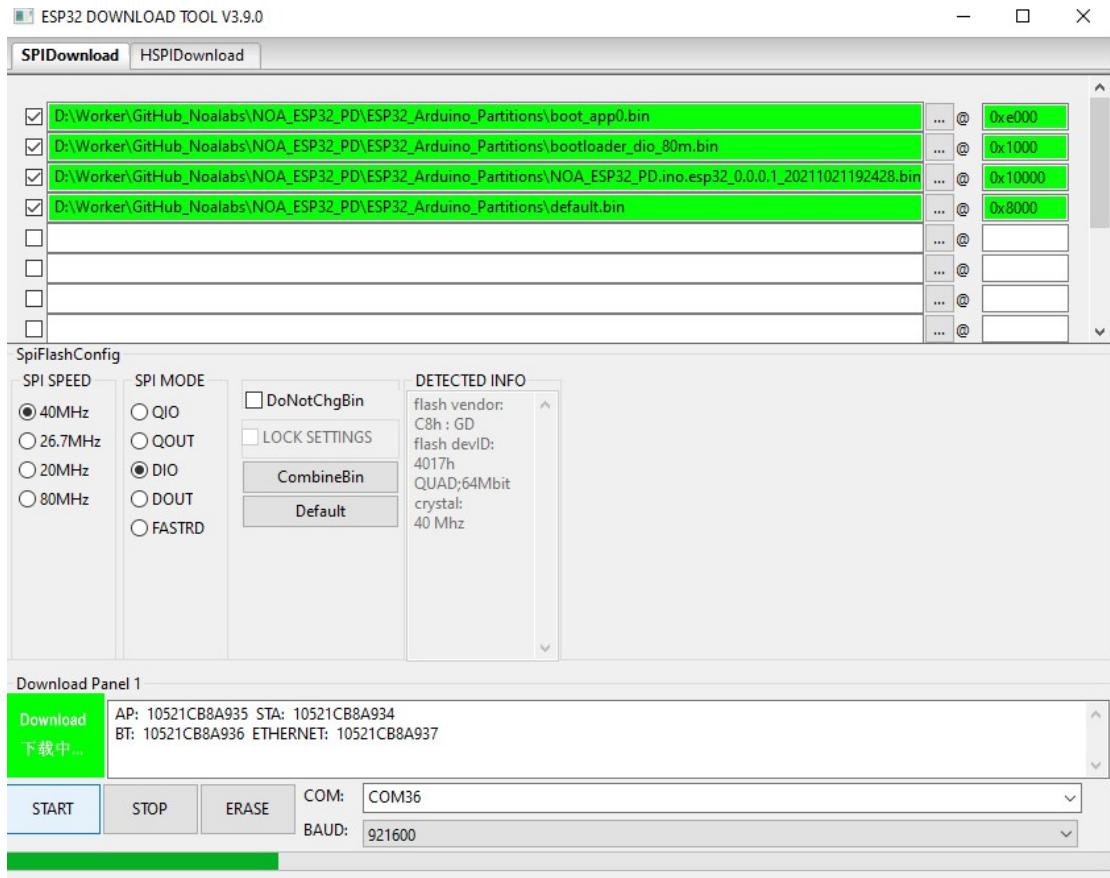
Unchecked "DoNotChgBin"

Make sure "Download Panel1" show a green "IDLE" logo

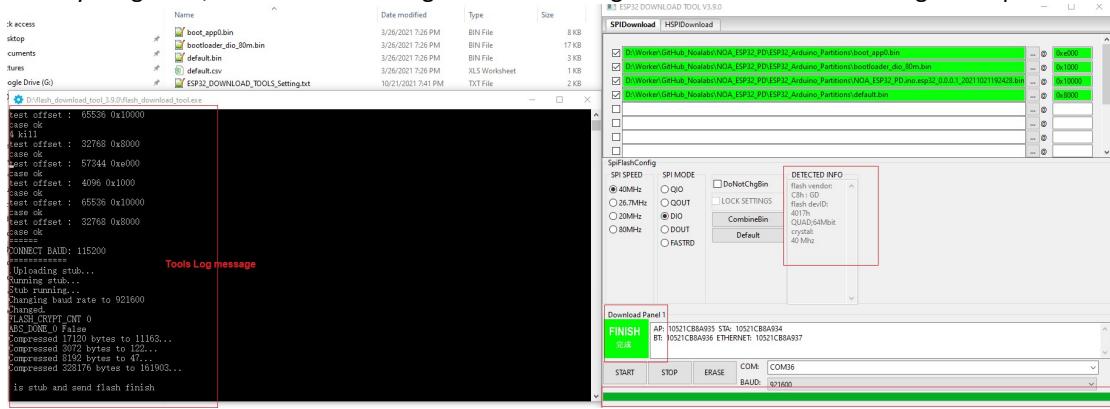
9) Choice the COM port that is enabled in step 3), set the BAUD to 921600 or 115200,



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

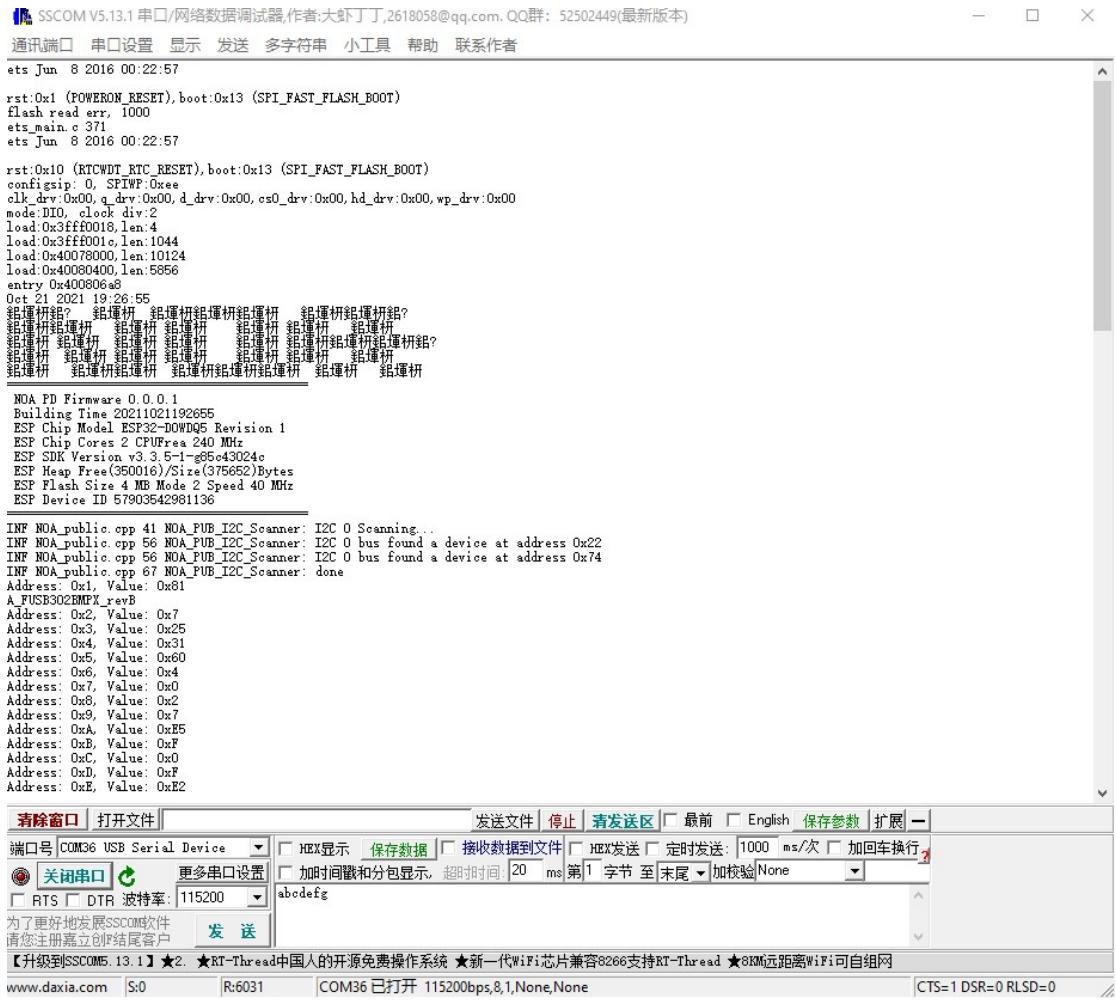


If everything is OK, the tools UI shows green “FINISH” logo for firmware downloading is complete.



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

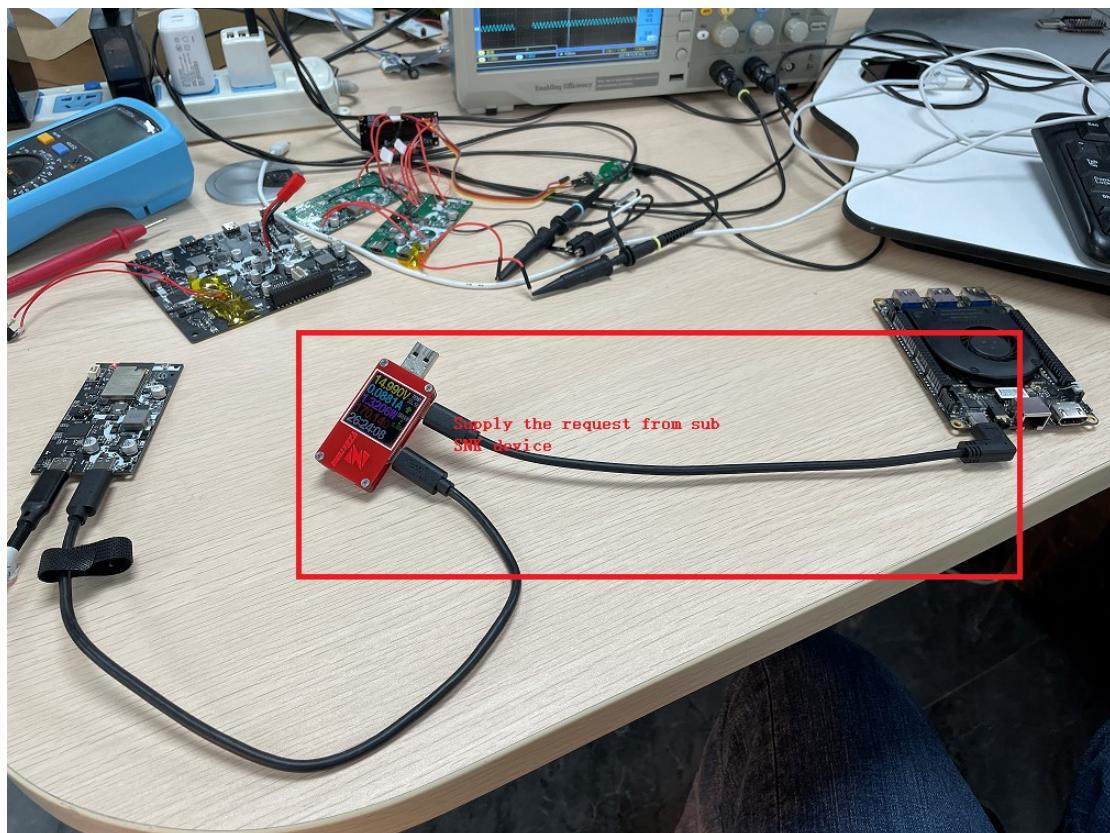
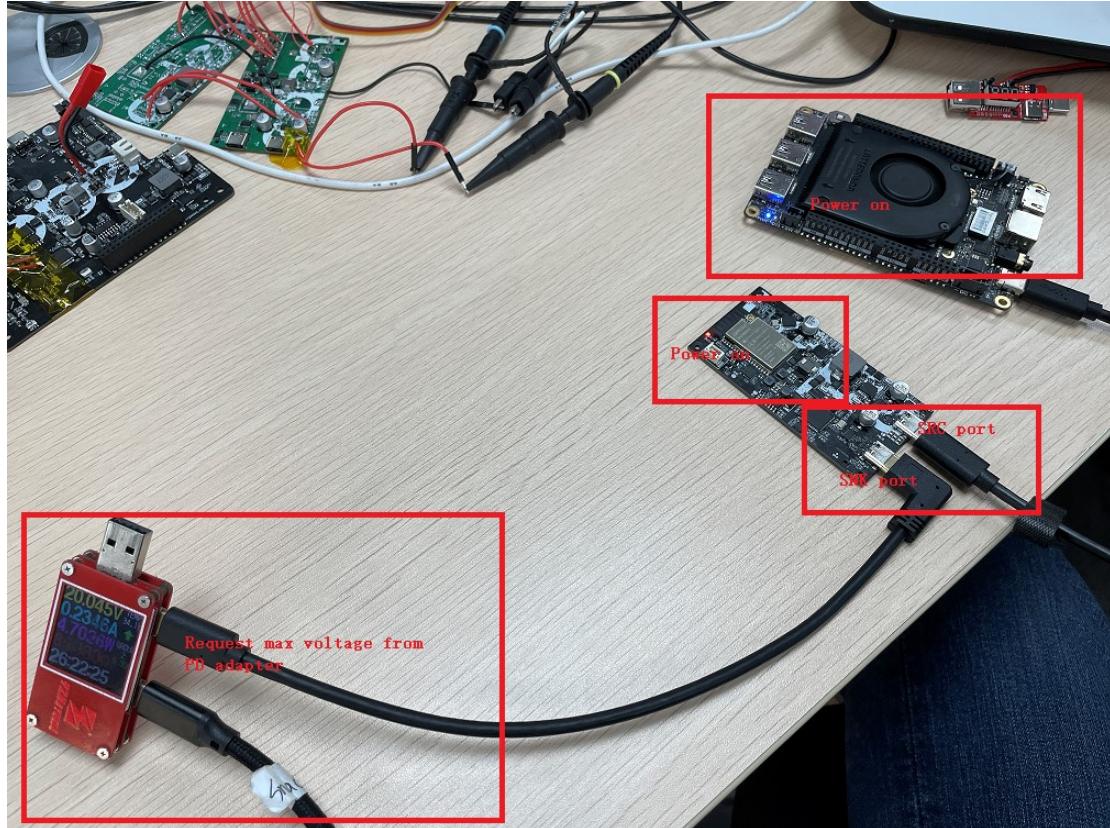
10) Close “ESP32 DOWNLOAD TOOL” app to finish the work. Unplug and plug the type-c cable to PC again, open the COM port that is enabled in step 3) with 115200 setting via “SSCOM” tools, it will show some booting log.



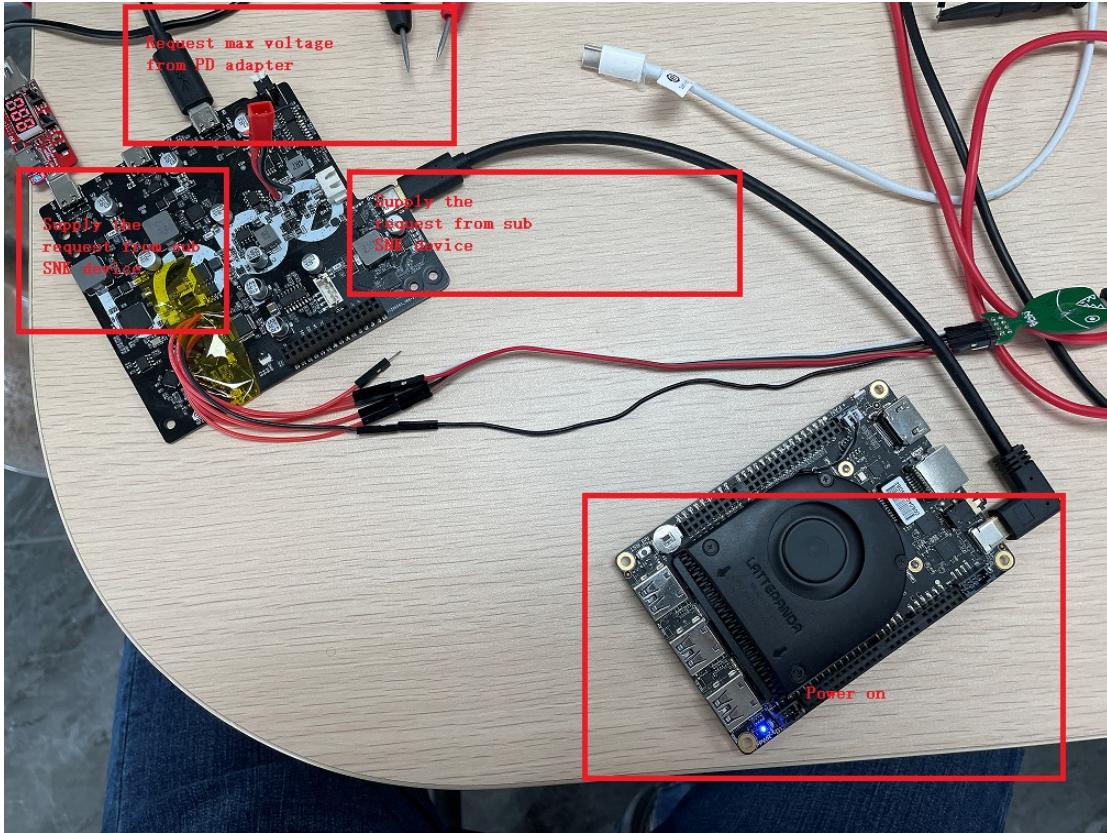
Check the Firmware version and Building Time, if it is same with the NOA ESP32 PD App firmware filename, that is mean the NOA PD board is working with the new firmware.

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

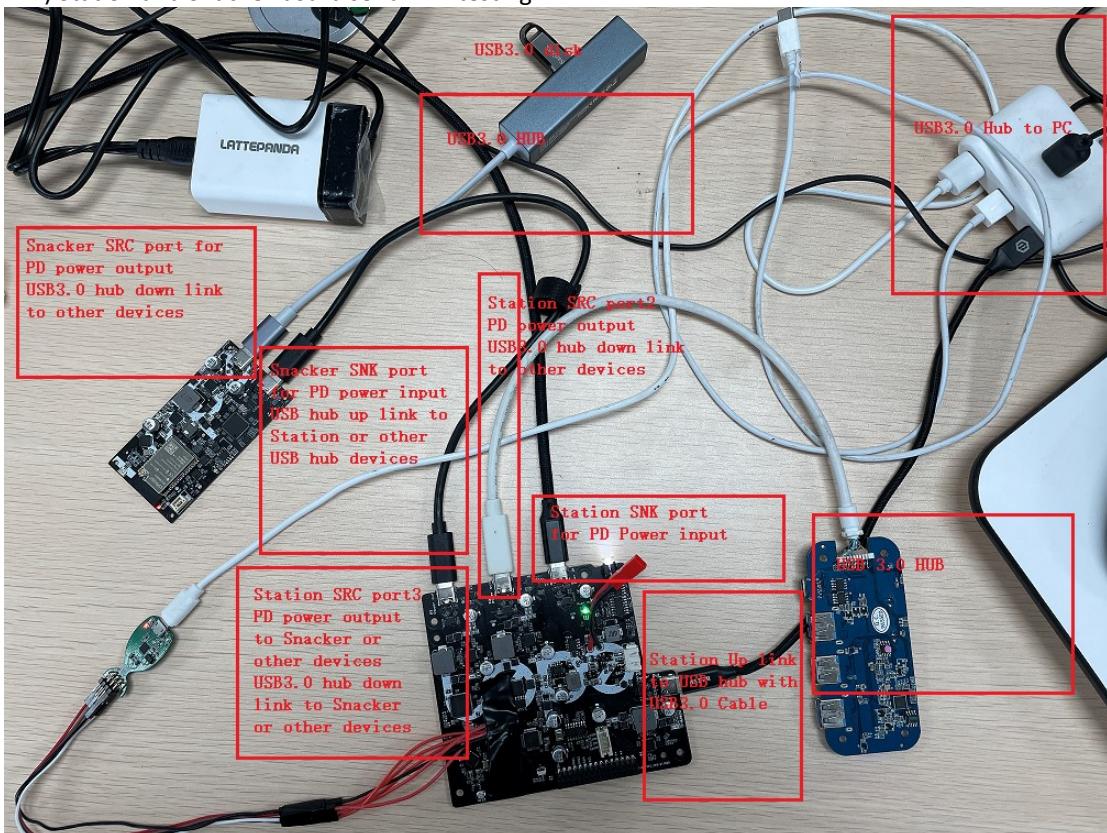


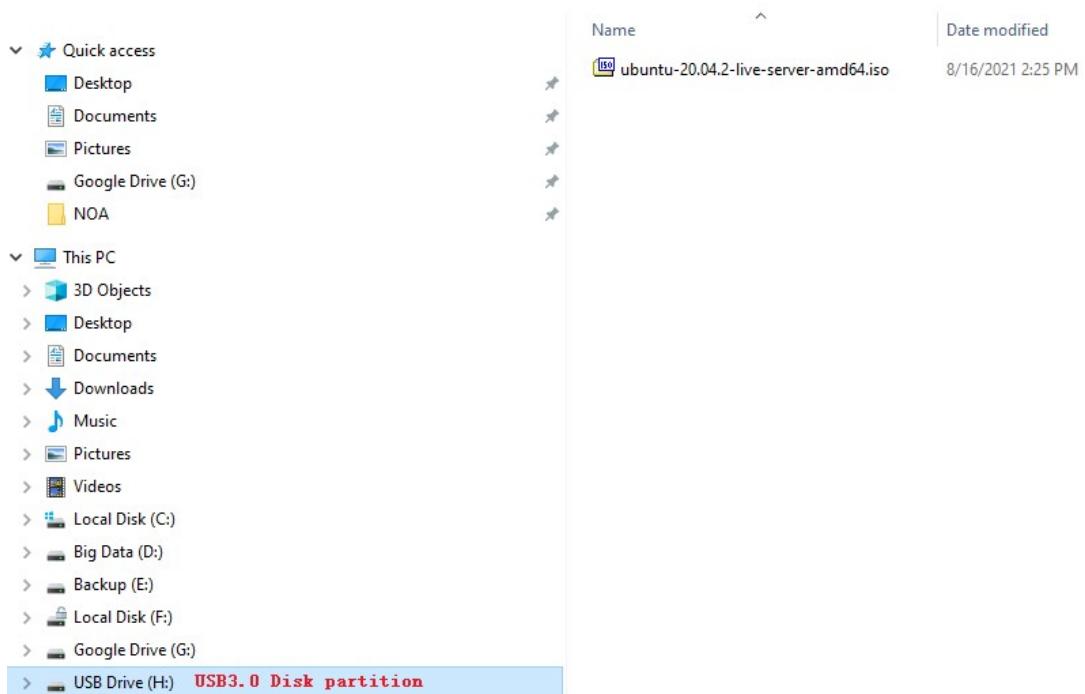
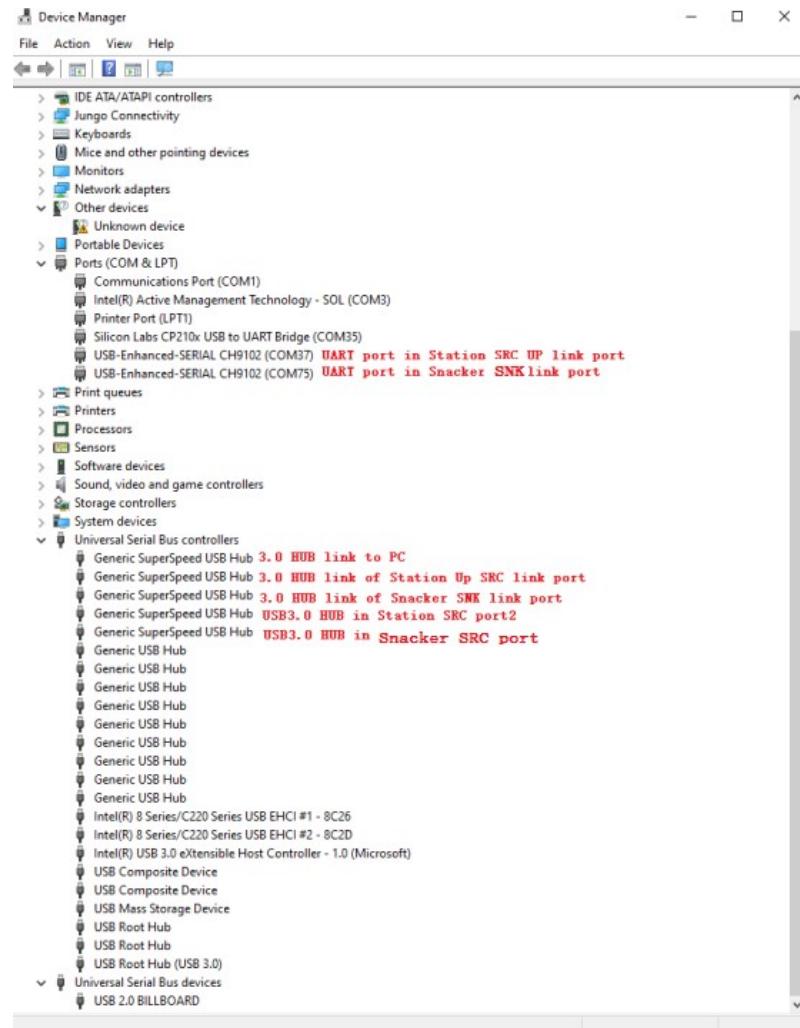
* Power Up lattepanda device with PD station board



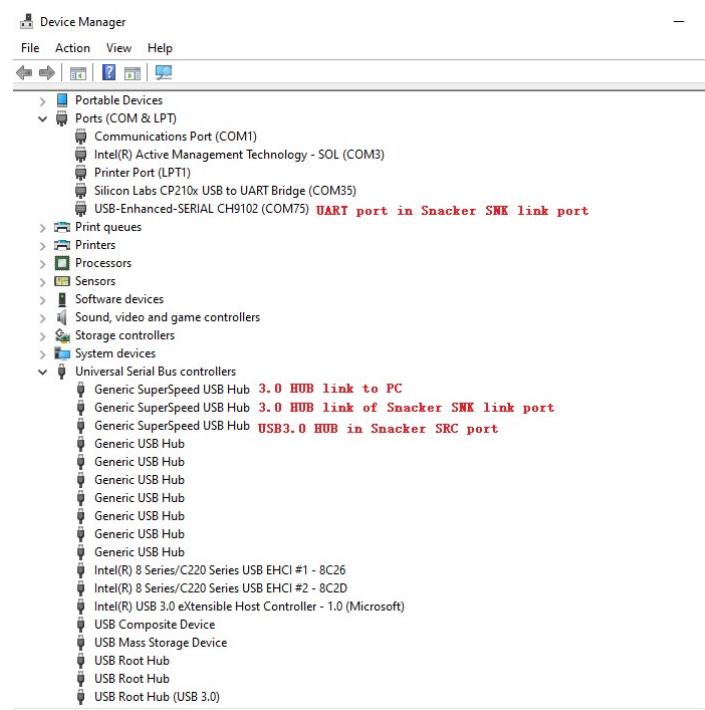
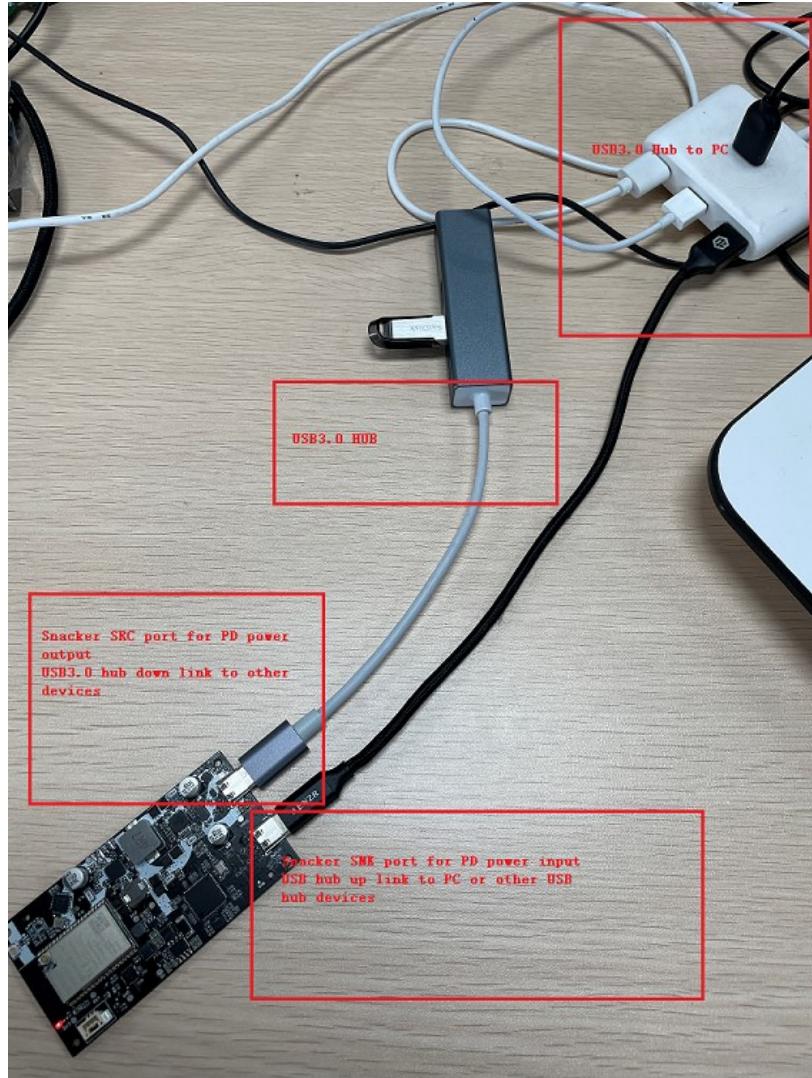
* USB HUB link testing

1) Station and Snacker board serial link testing

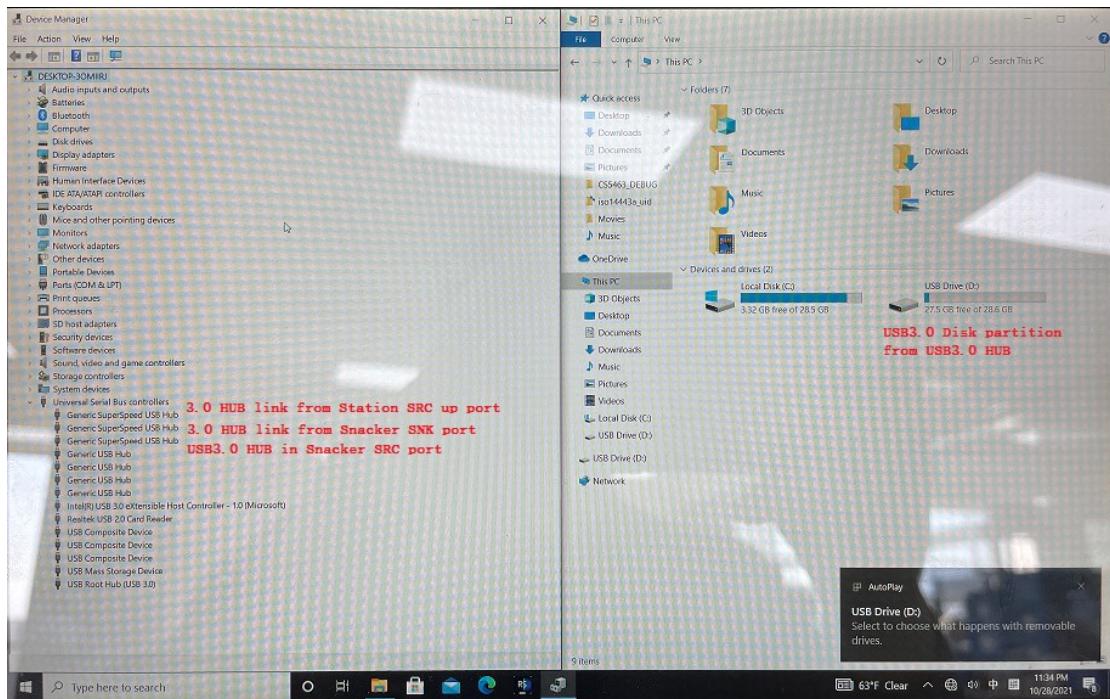
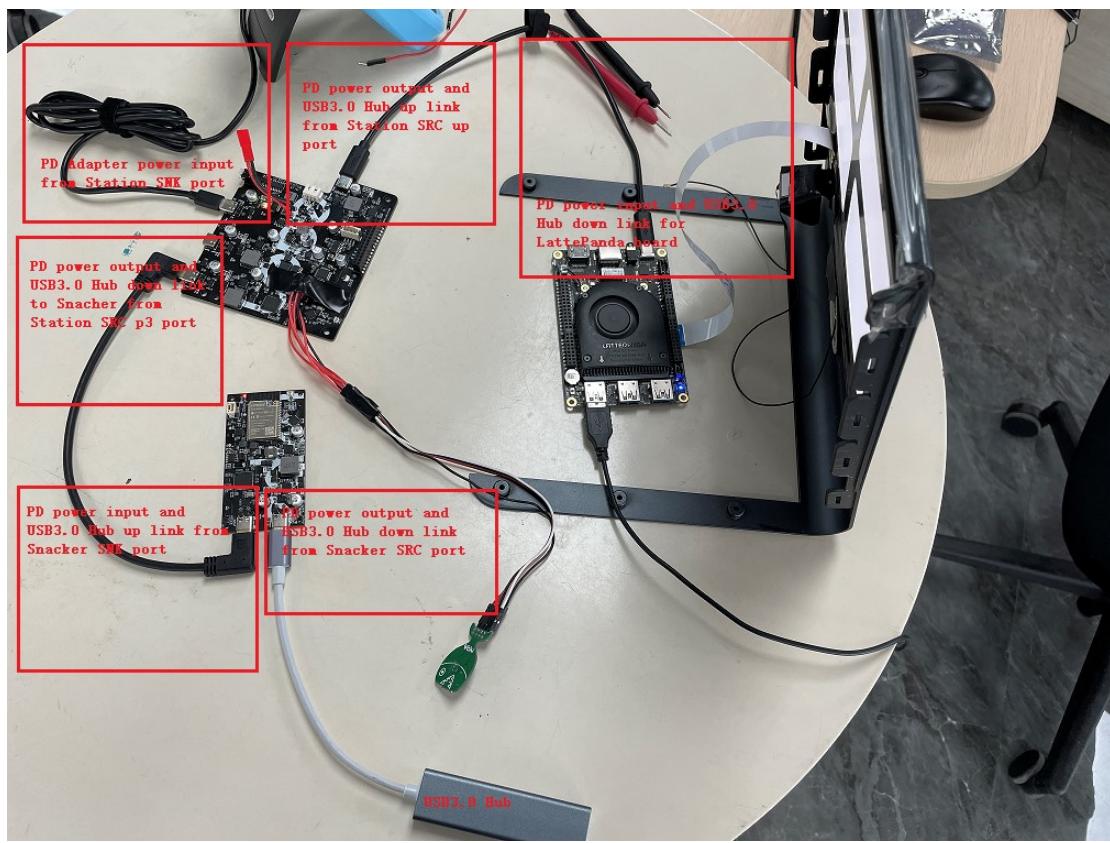




2) Snacker board link



3) Station , Lattepanda and Snacker board serial link testing



4) Voltage Value of port

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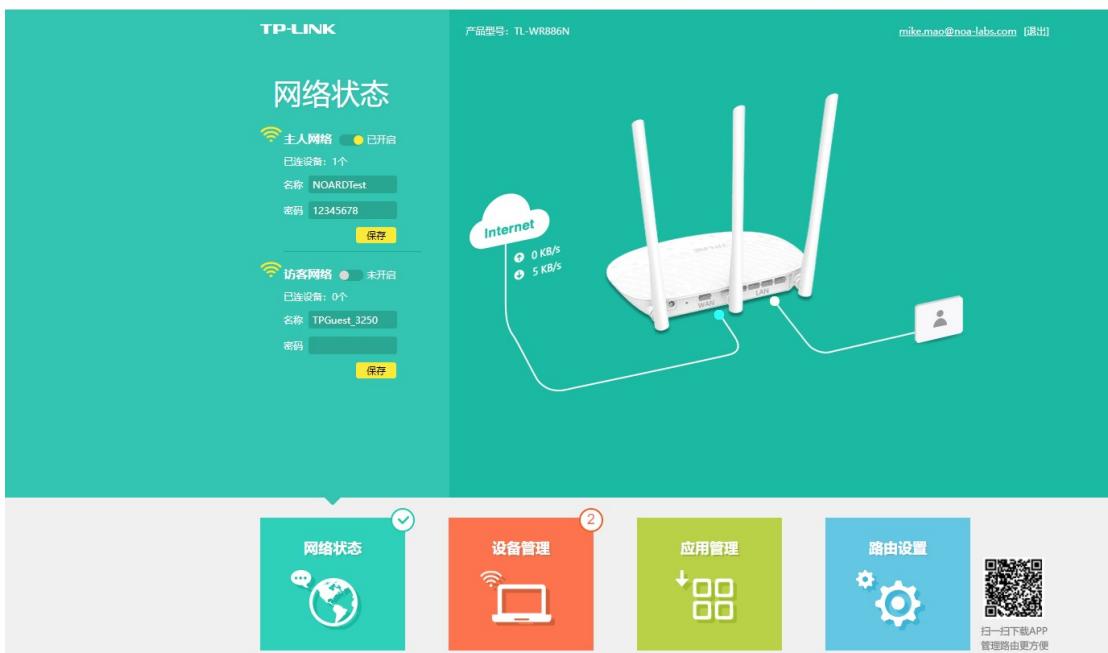
5) WIFI performance testing for SNacker board

A) Station mode

1. Set a WiFi router SSID to NOARDTest

Set Password for “NOARDTest” SSID to 12345678

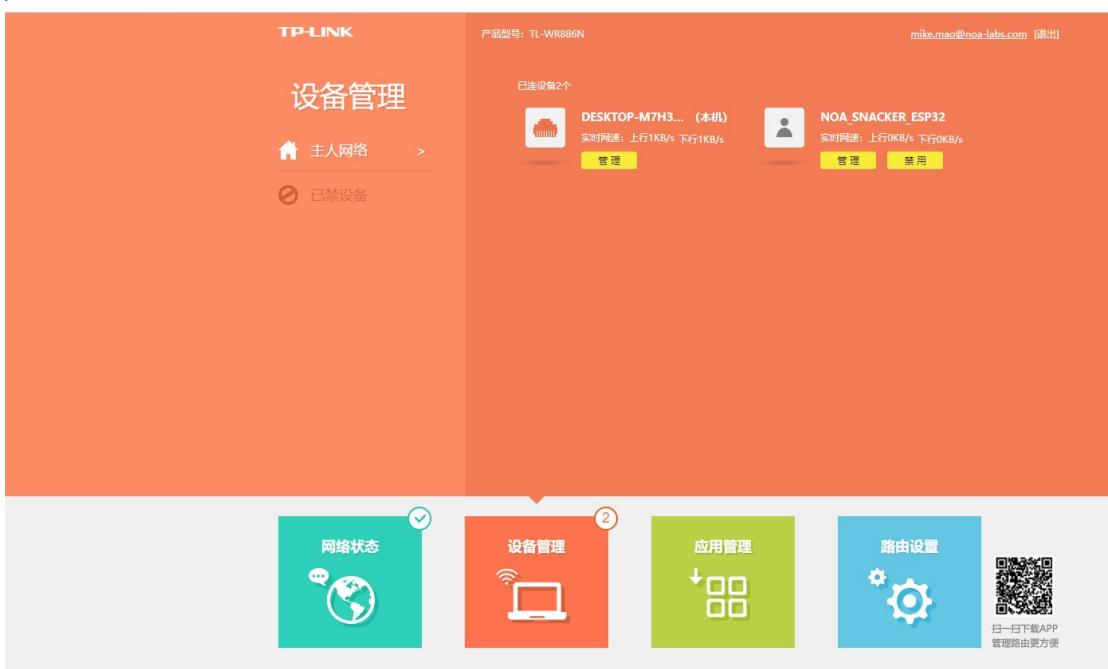
⚠ Not secure | 192.168.1.1



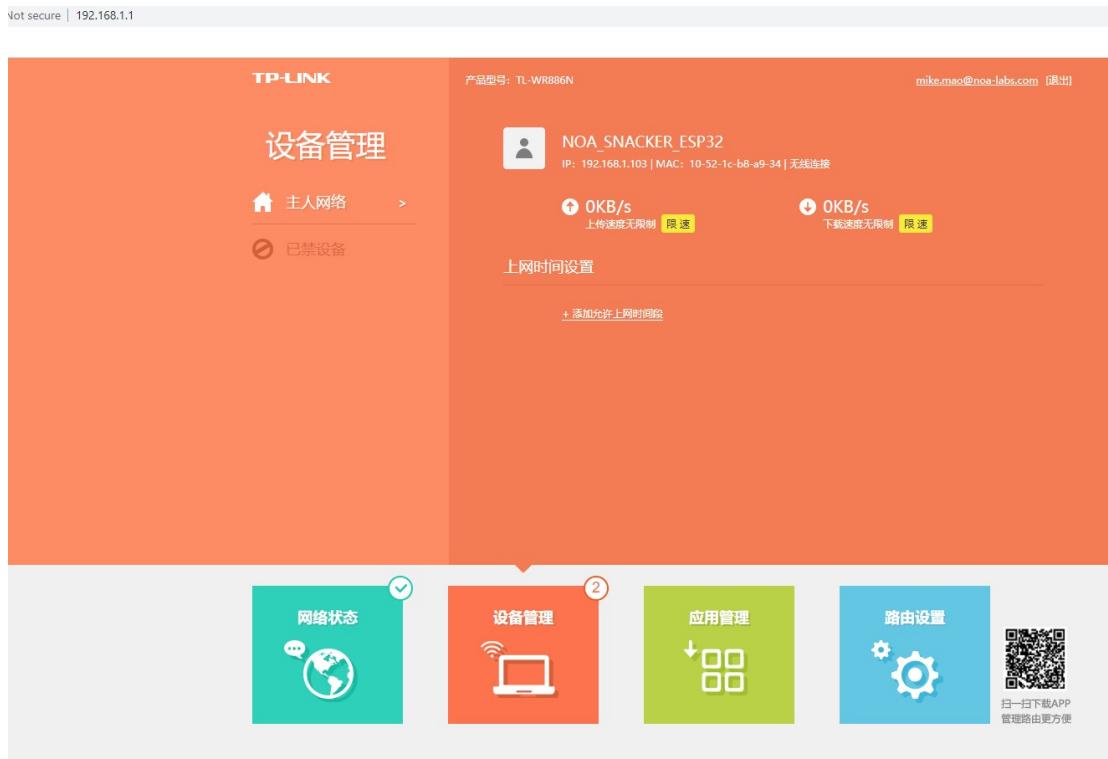
2. Boot up Snacker board (firmware version is higher than 0.0.0.9), wait board auto link to NOARDTest SSID router.

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

```

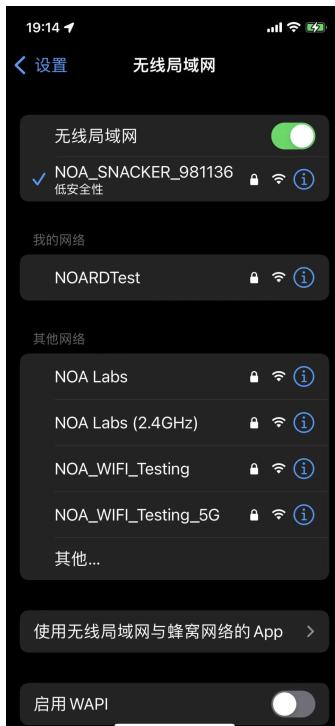
E:\Tools\iperf-2.0.9-win64>iperf.exe -c 192.168.1.103
-----
Client connecting to 192.168.1.103, TCP port 5001
TCP window size: 208 KByte (default)
-----
[ 3] local 192.168.1.102 port 49259 connected with 192.168.1.103 port 5001
[ ID] Interval Transfer Bandwidth
[ 3] 0.0-10.2 sec 4.38 MBytes 3.59 Mbites/sec

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)

12) Note:

1) Known issues:

* SRC ports of Snacker and Station board base on FUSB302B01MPX chip don't support Type-c flipped and un-flipped features.

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)