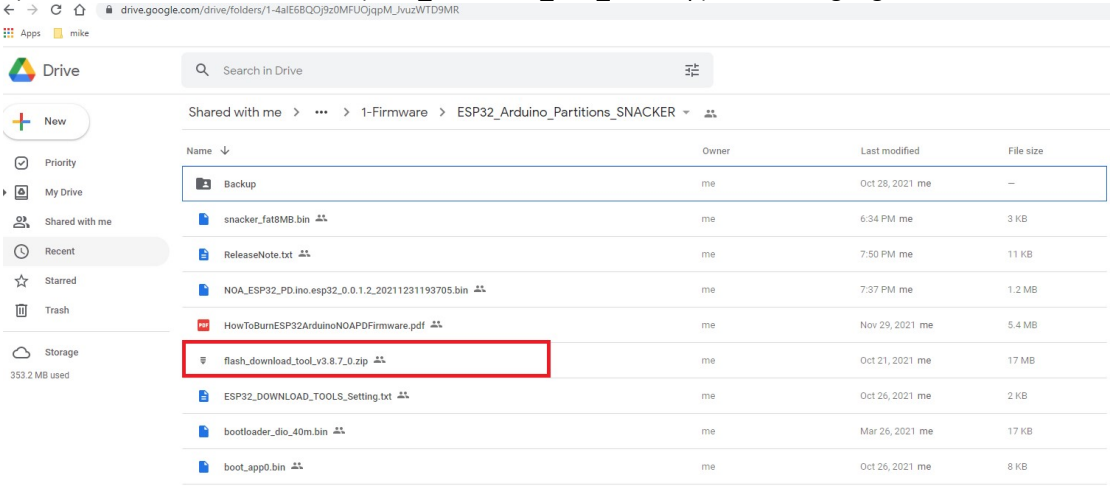
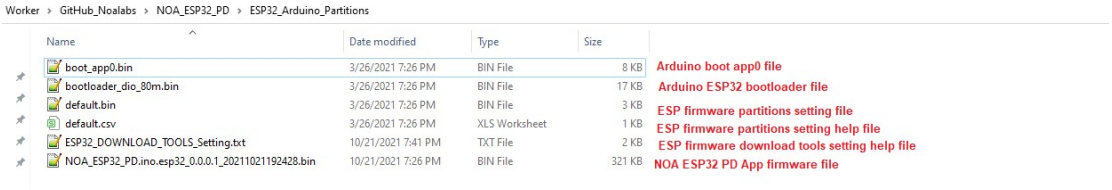
How to burn ES32 Arduino NOA PD Firmware
With ESP download tool(1.0.0.3)

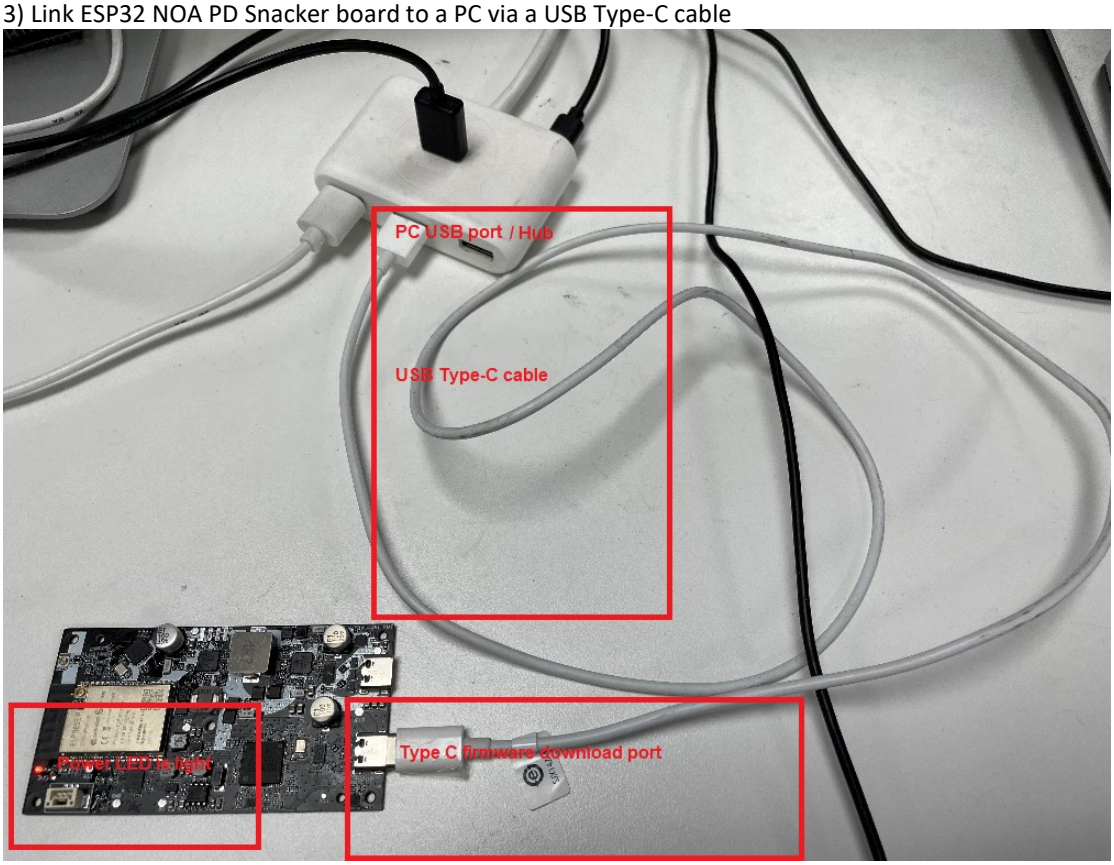
1) Get Firmware download tools(flash_download_tool_3.8.7.zip) from NOA google drive site



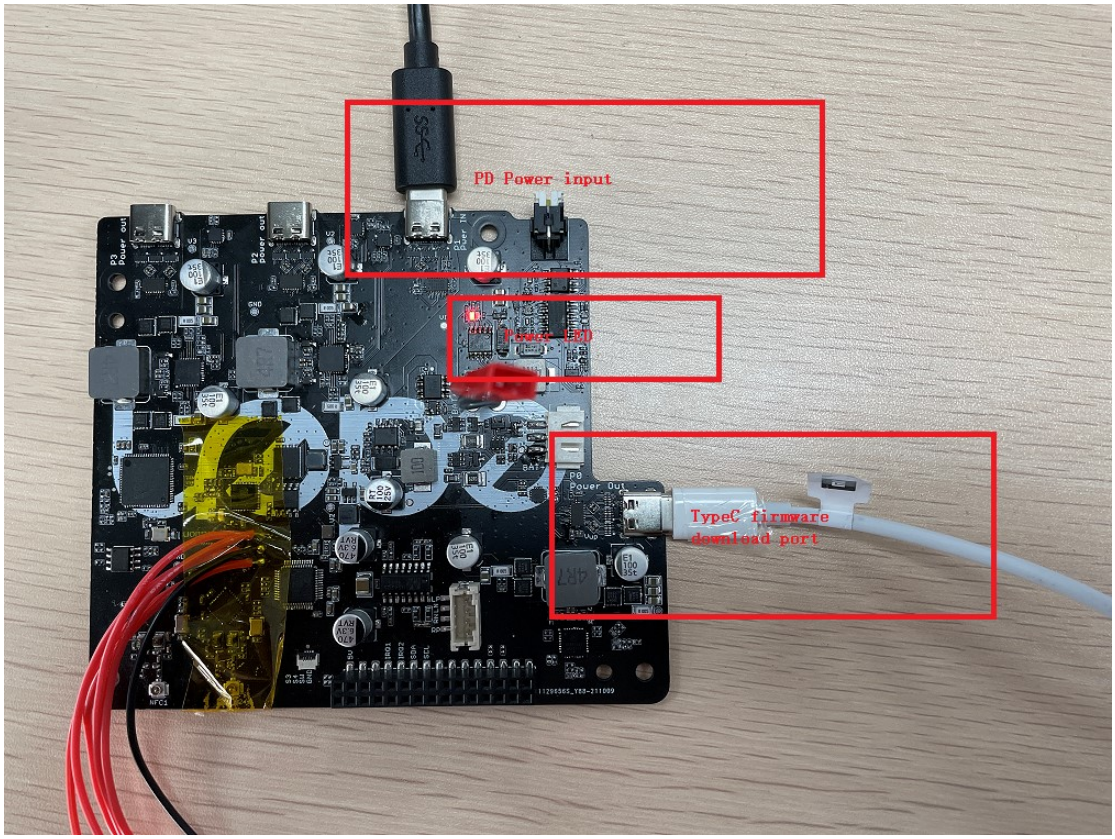
2) Get ES32 Arduino NOA PD firmware, put them in a directory



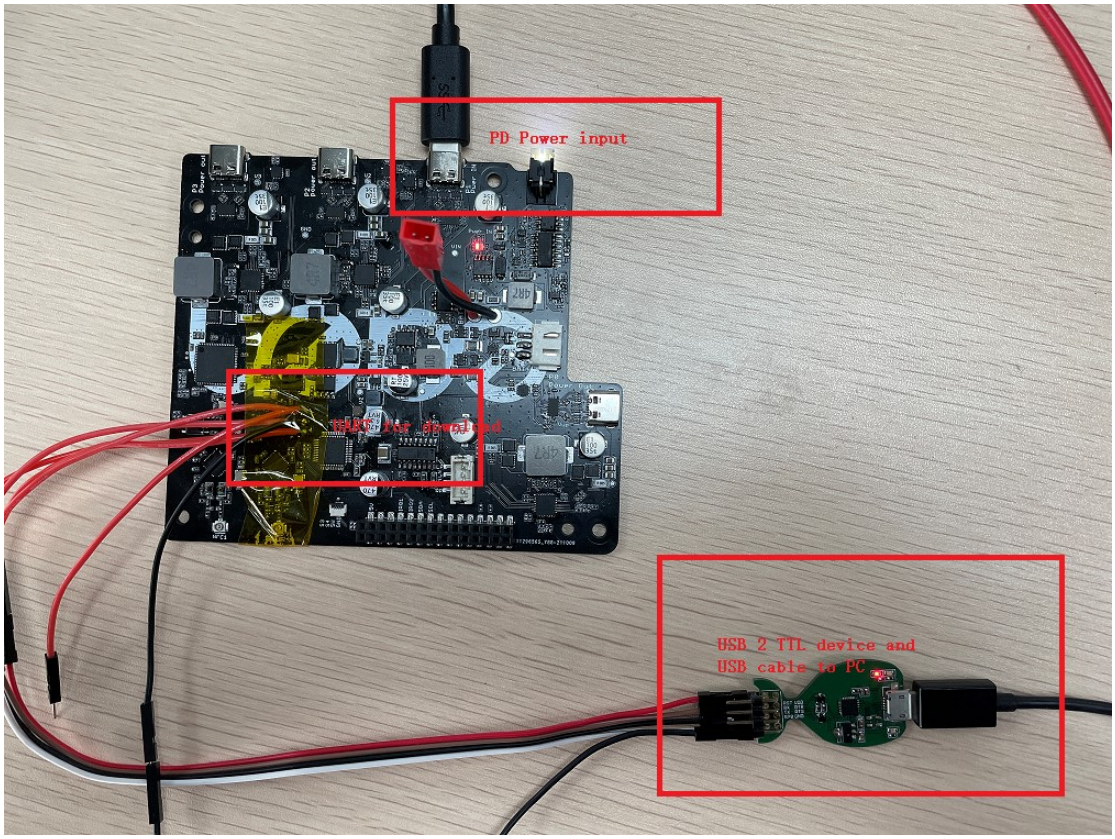
3) Link ESP32 NOA PD Snacker board to a PC via a USB Type-C cable



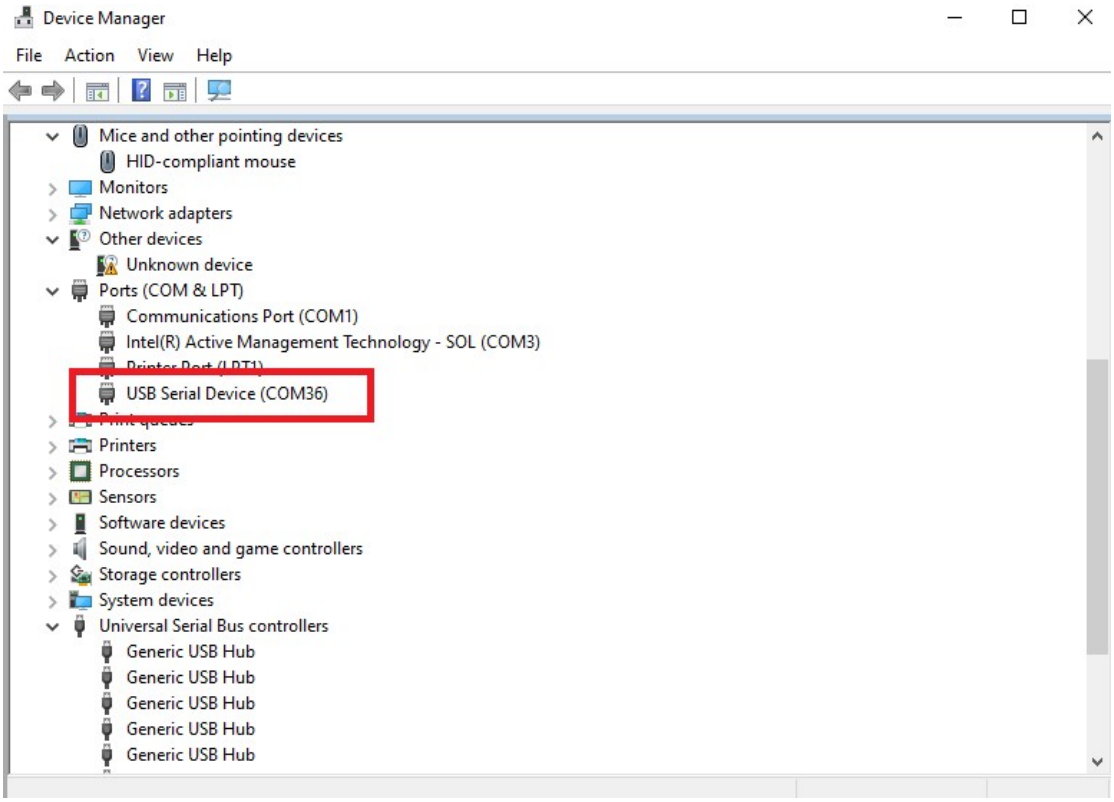
Link ESP32 NOA PD Station board to a PC via a USB Type-C cable



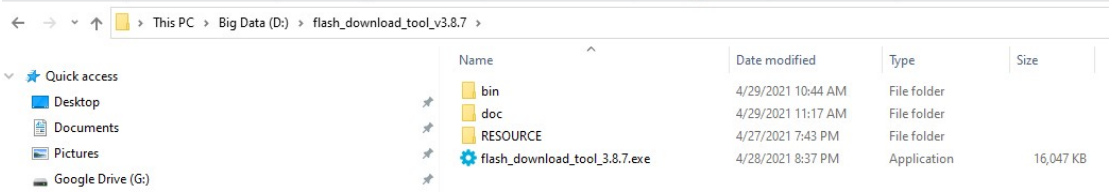
Or link to PC via a USB2TTL device and USB cable



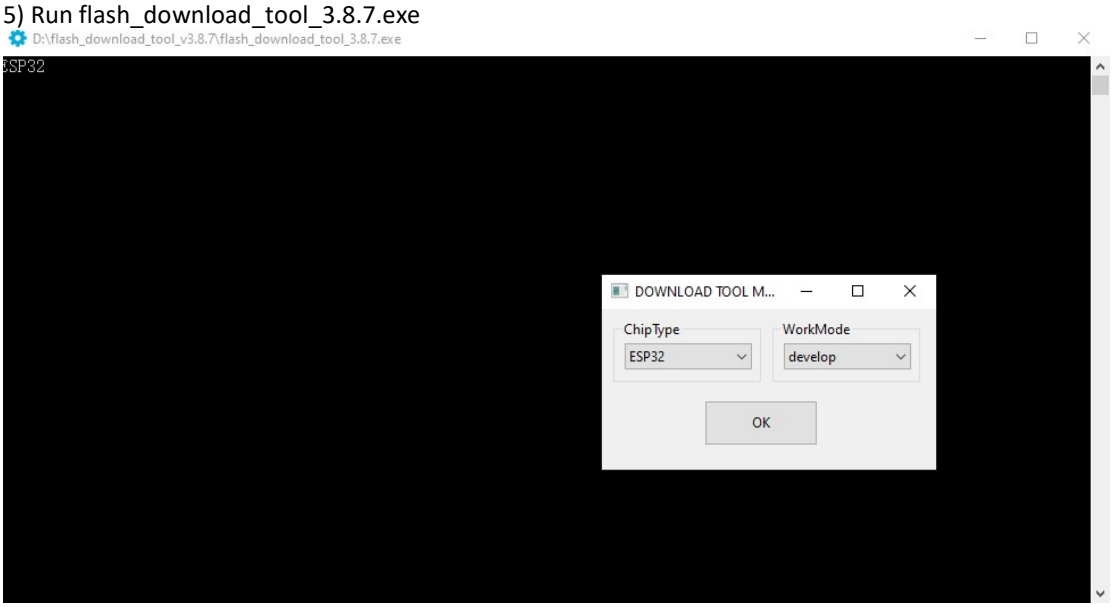
Make sure the Power LED on NOA PD board is light and Check A USB Serial Device(COM*) is enabled in PC system



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

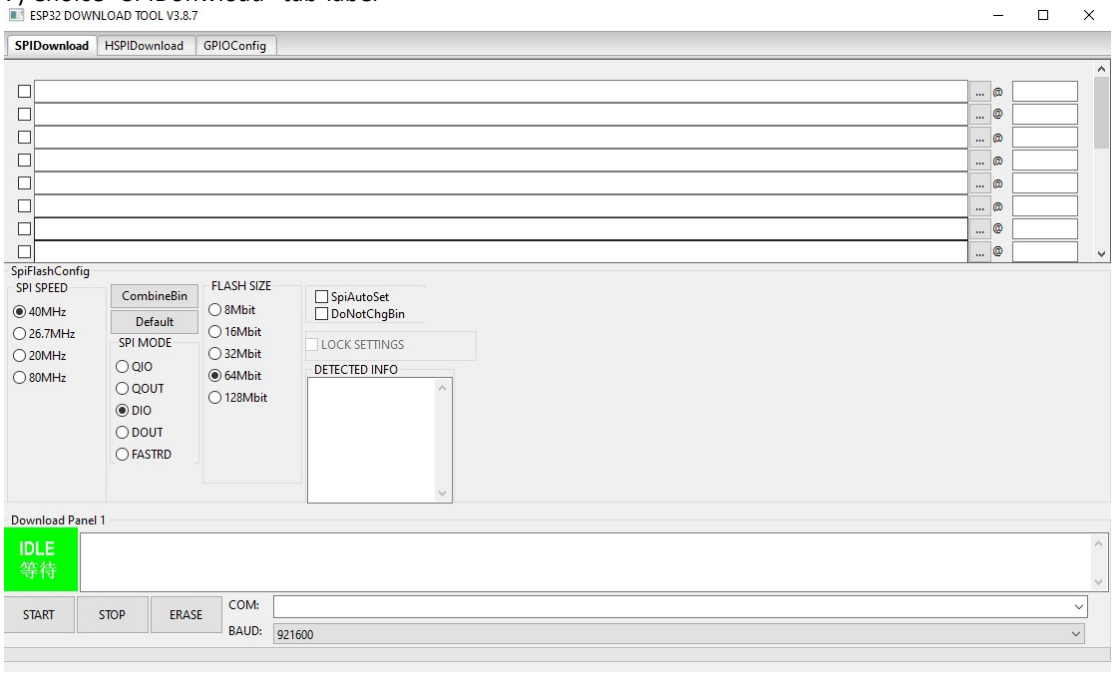


5) Run flash_download_tool_3.8.7.exe

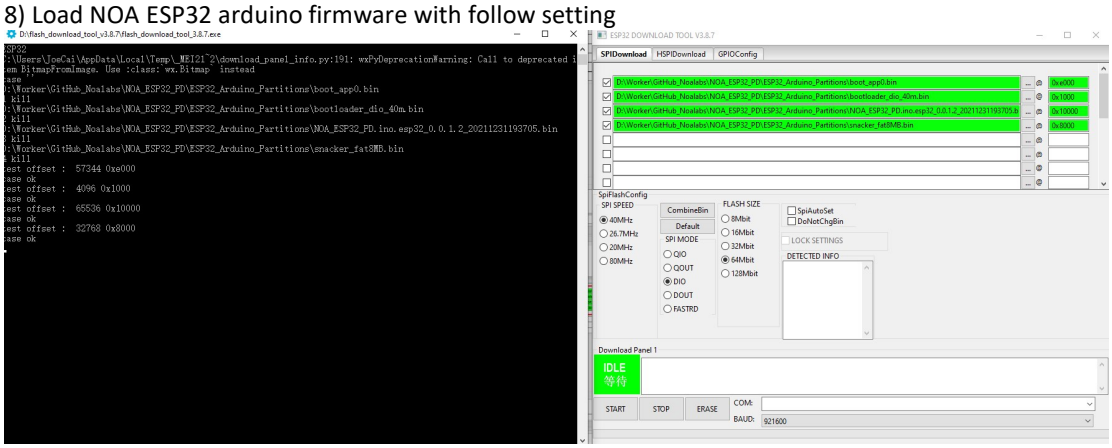


6) Select ESP32 for “ChipType” and develop for “WorkMode”, click “OK” for continue

7) Choice “SPIDonwload” tab-label



8) Load NOA ESP32 arduino firmware with follow setting

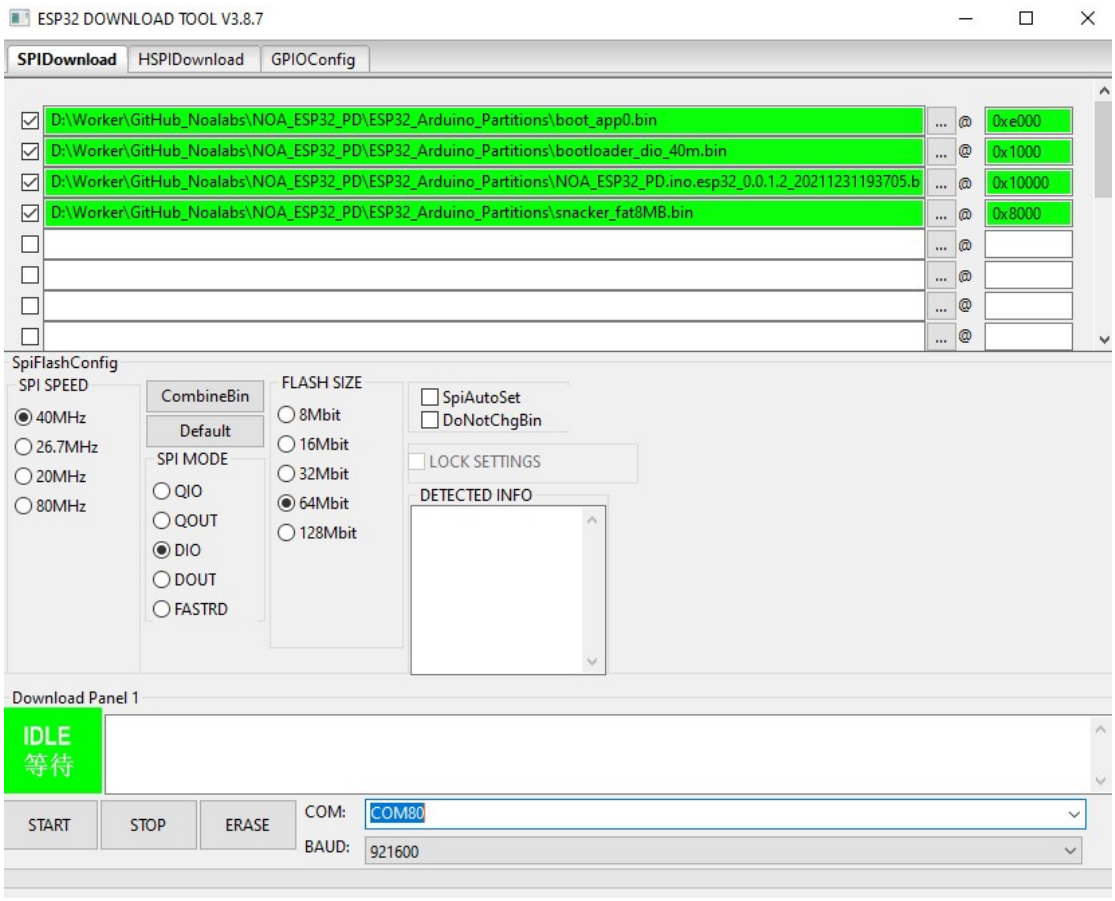


boot_app0.bin	0xe000
bootloader_dio_40m.bin	0x1000
NOA_ESP32_PD.ino.esp32.bin	0x10000
default.bin/snacker_fat8MB.bin	0x8000

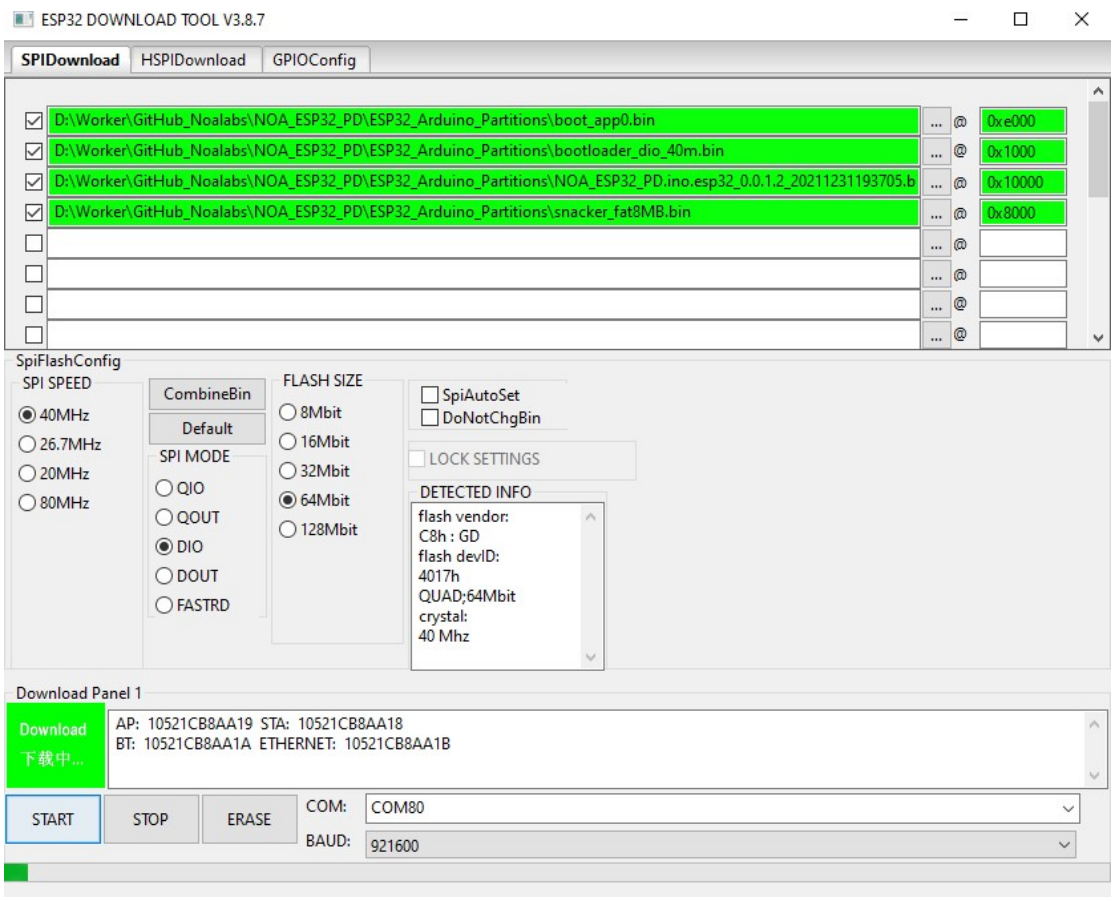
Note: default.bin is the partition file for Station board
snacker_fat8MB.bin is the partition file for Snacker board

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

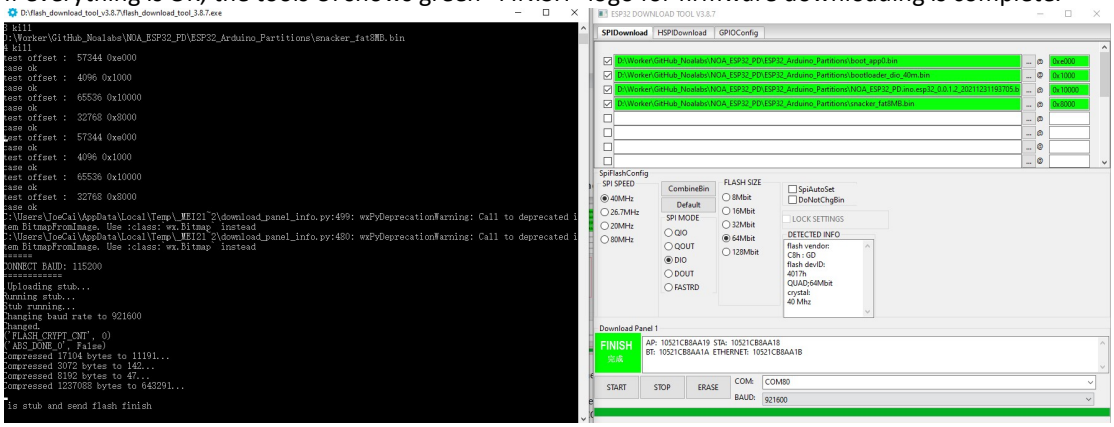
9) Choice the COM port that is enabled in step 3), set the BAUD to 921600 or 115200,



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.



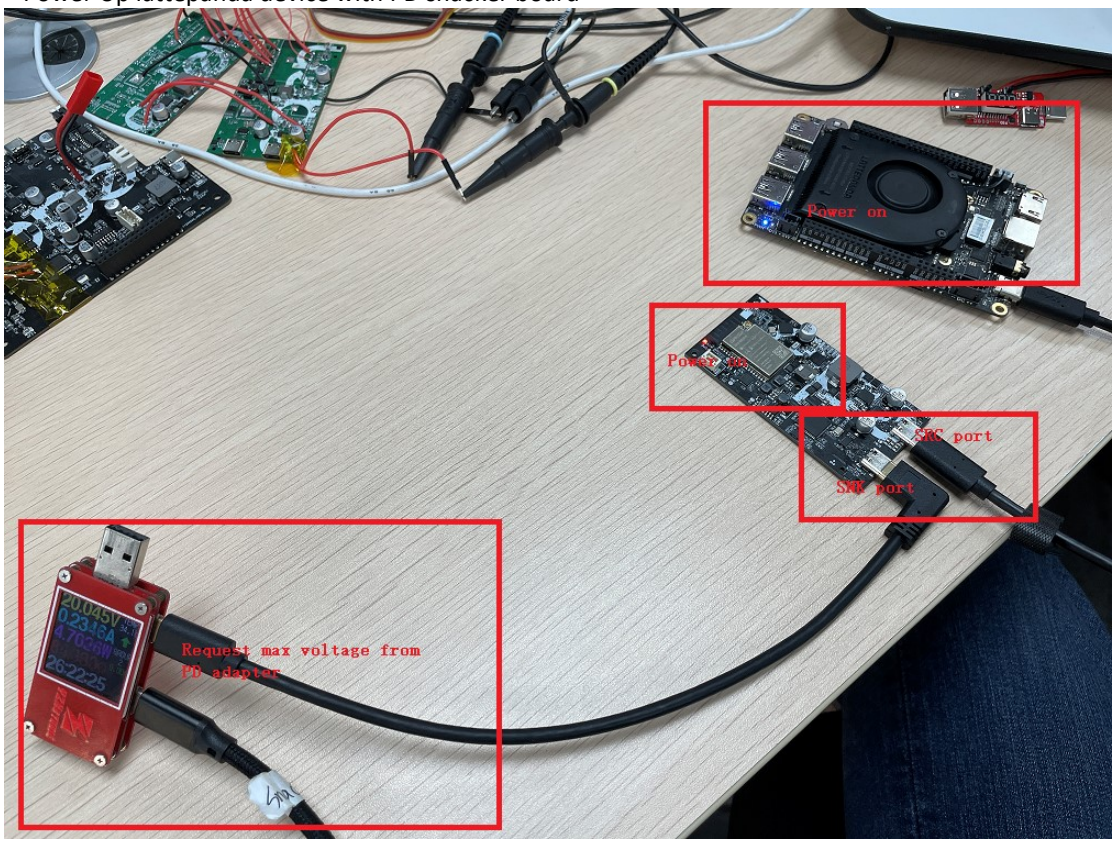
click “ERASE” button, the tools can help us erase the SPI flash value and make the flash clean.

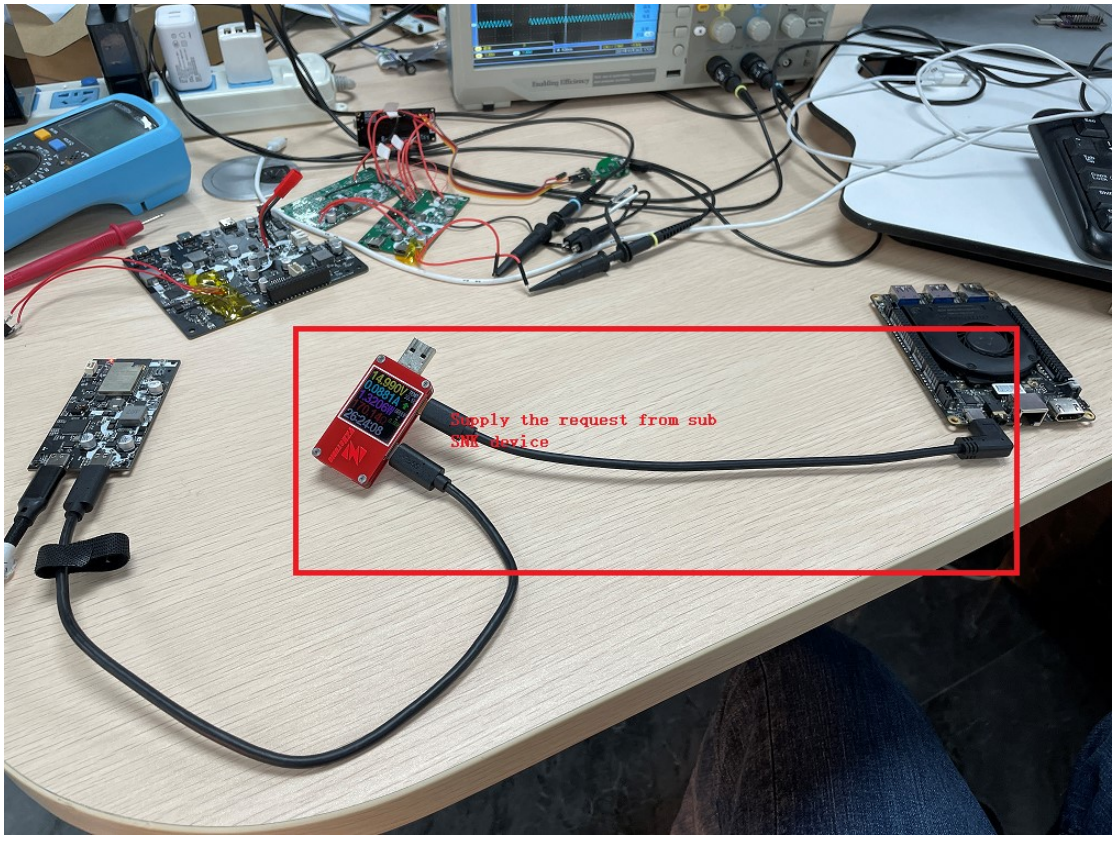
10) Close “ESP32 DOWNLOAD TOOL” app to finish the work. Unplug and plug the type-c cable to PC again, open the COM port that is enabled in step 3) with 115200 setting via “SSCOM” tools, it will show some booting log.

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.

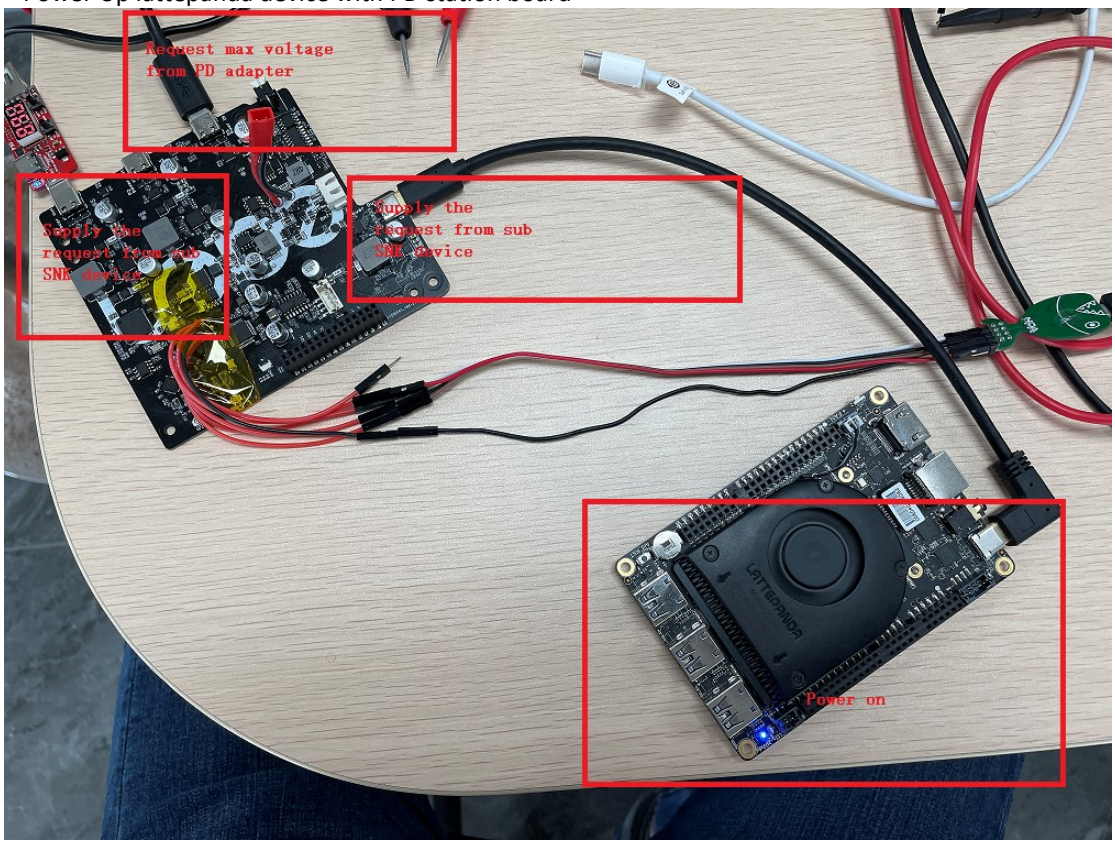
11) Simple Testing

* 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



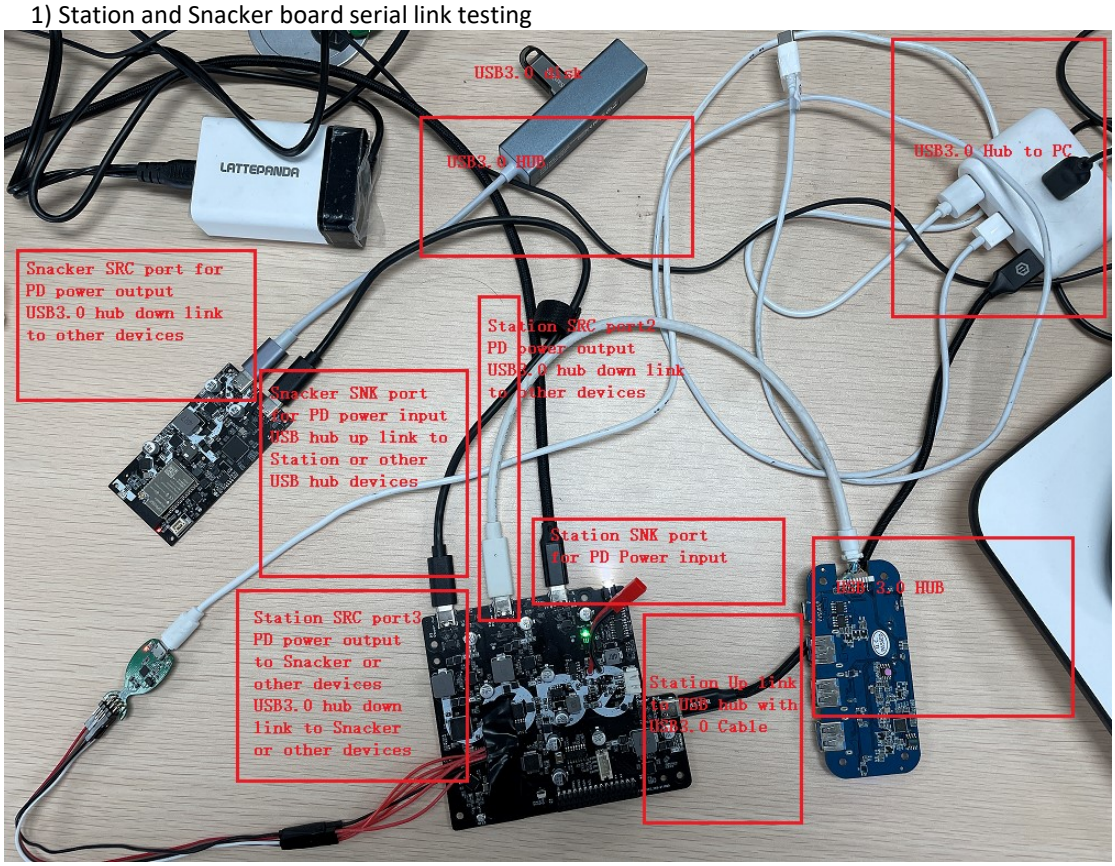


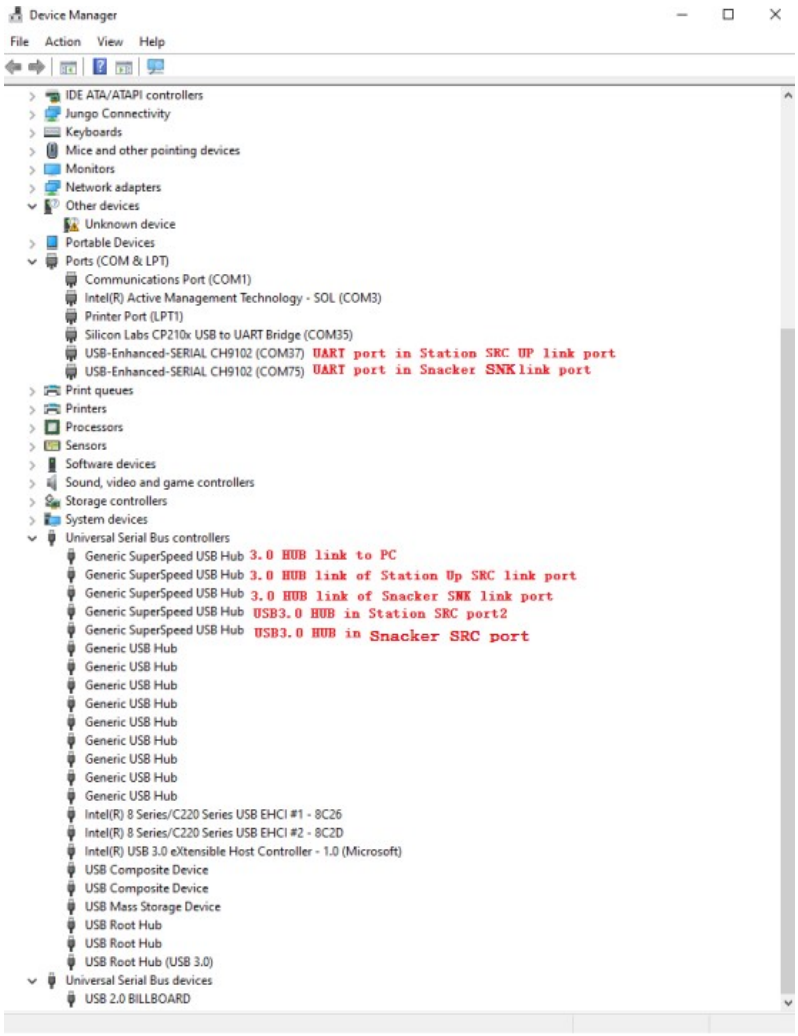
* Power Up lattepanda device with PD station board

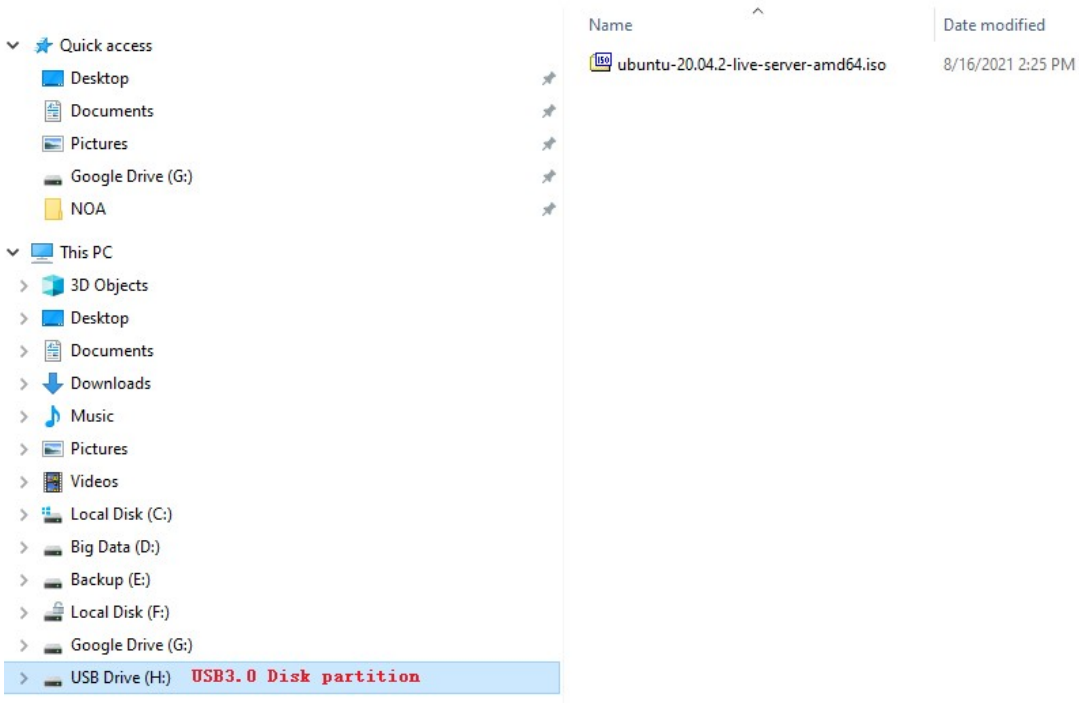


* USB HUB link testing

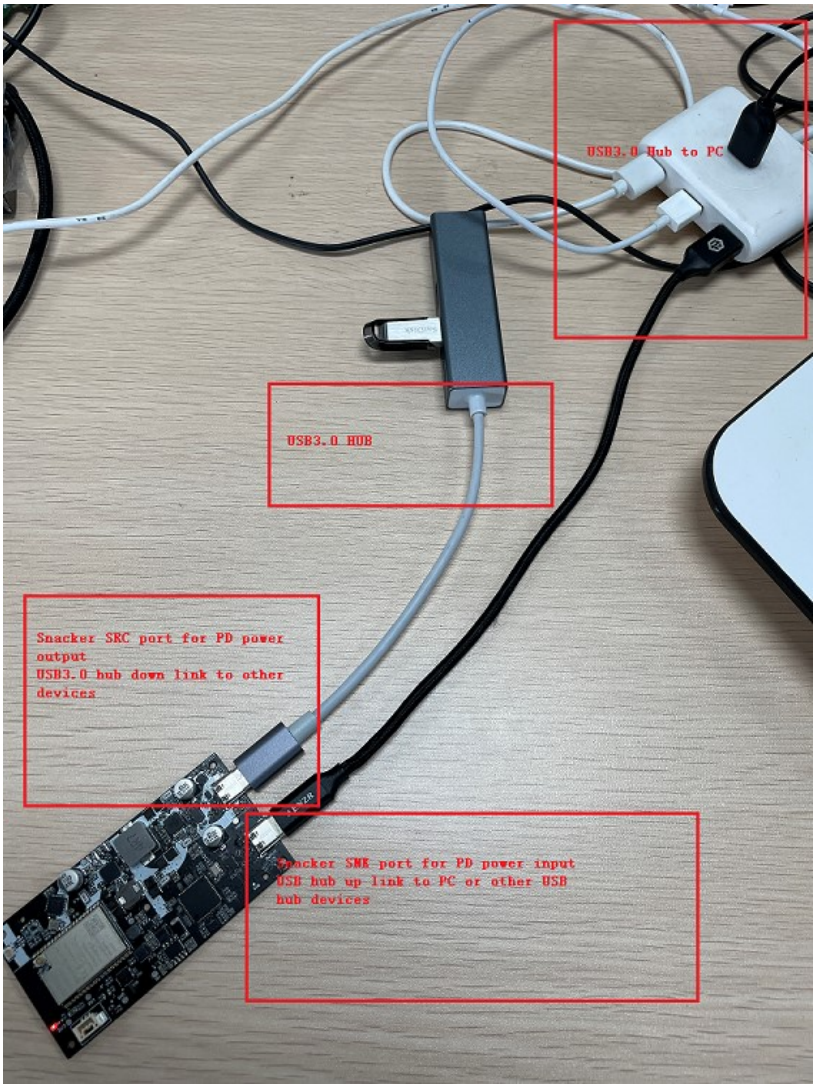
1) Station and Snacker board serial link testing

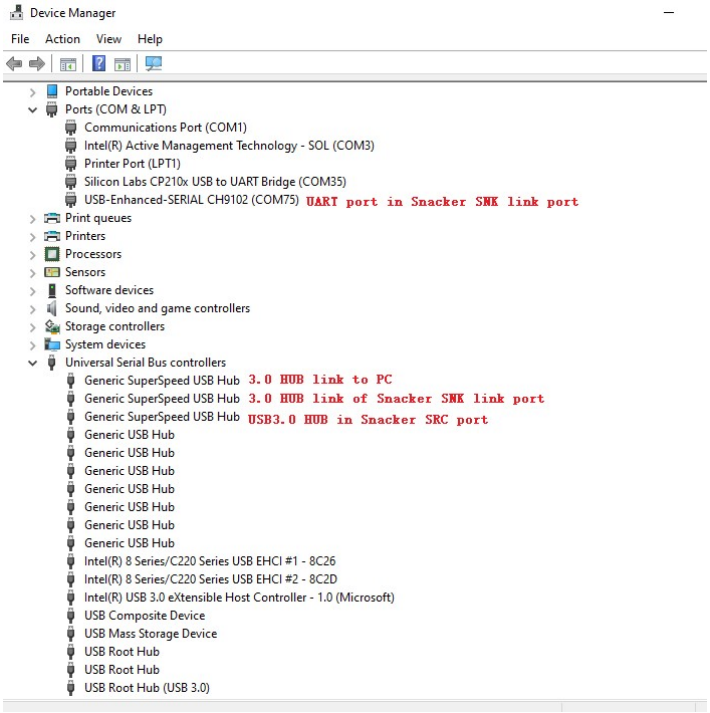



Device Manager
File Action View Help
IDE ATA/ATAPI controllers
Jungo Connectivity
Keyboards
Mice and other pointing devices
Monitors
Network adapters
Other devices
Unknown device
Portable Devices
Ports (COM & LPT)
Communications Port (COM1)
Intel(R) Active Management Technology - SOL (COM3)
Printer Port (LPT1)
Silicon Labs CP210x USB to UART Bridge (COM35)
USB-Enhanced-SERIAL CH9102 (COM37) UART port in Station SRC UP link port
USB-Enhanced-SERIAL CH9102 (COM75) UART port in Snacker SNK link port
Print queues
Printers
Processors
Sensors
Software devices
Sound, video and game controllers
Storage controllers
System devices
Universal Serial Bus controllers
Generic SuperSpeed USB Hub 3.0 HUB link to PC
Generic SuperSpeed USB Hub 3.0 HUB link of Station Up SRC link port
Generic SuperSpeed USB Hub 3.0 HUB link of Snacker SNK link port
Generic SuperSpeed USB Hub USB3.0 HUB in Station SRC port2
Generic SuperSpeed USB Hub USB3.0 HUB in Snacker SRC port
Generic USB Hub
Generic USB Hub
Generic USB Hub
Generic USB Hub
Generic USB Hub
Generic USB Hub
Generic USB Hub
Generic USB Hub
Generic USB Hub
Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26
Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D
Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
USB Composite Device
USB Composite Device
USB Mass Storage Device
USB Root Hub
USB Root Hub
USB Root Hub (USB 3.0)
Universal Serial Bus devices
USB 2.0 BILLBOARD

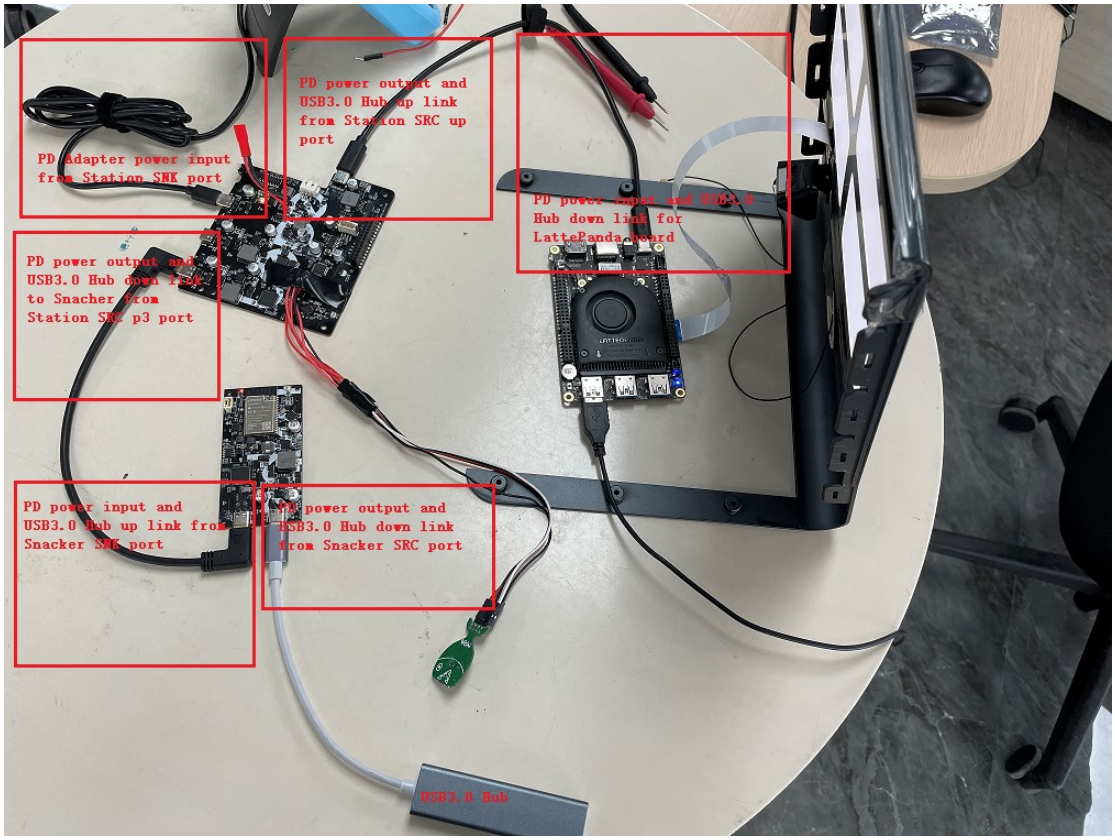

Quick access
Desktop
Documents
Pictures
Google Drive (G:)
NOA
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Big Data (D:)
Backup (E:)
Local Disk (F:)
Google Drive (G:)
USB Drive (H:) USB3.0 Disk partition
Name
Date modified
ubuntu-20.04.2-live-server-amd64.iso
8/16/2021 2:25 PM

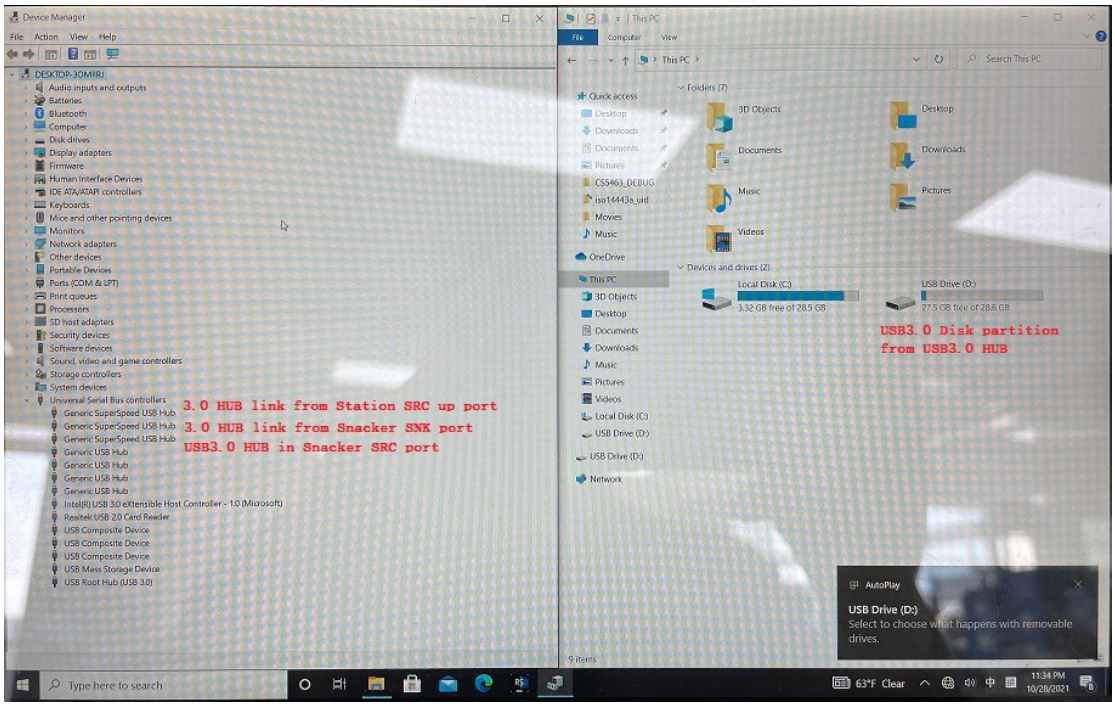
2) Snacker board link





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

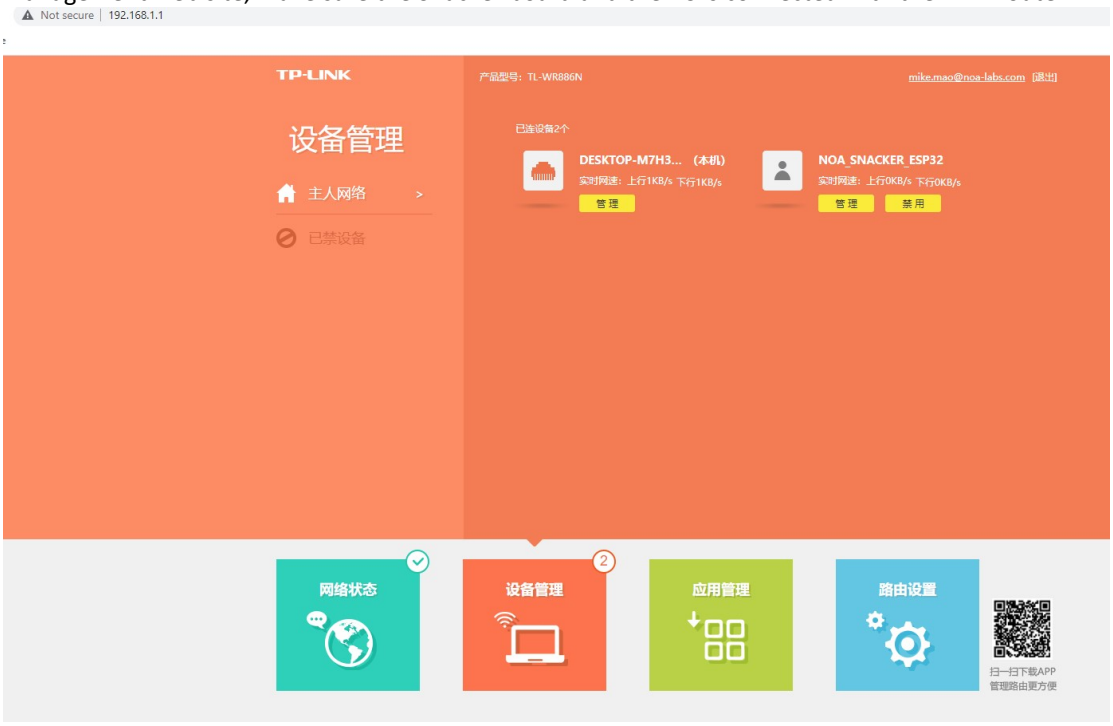
A) Station mode

1. Set a WiFi router SSID to NOARDTest

Set Password for “NOARDTest” SSID to 12345678

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.



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 cygwin1.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
```

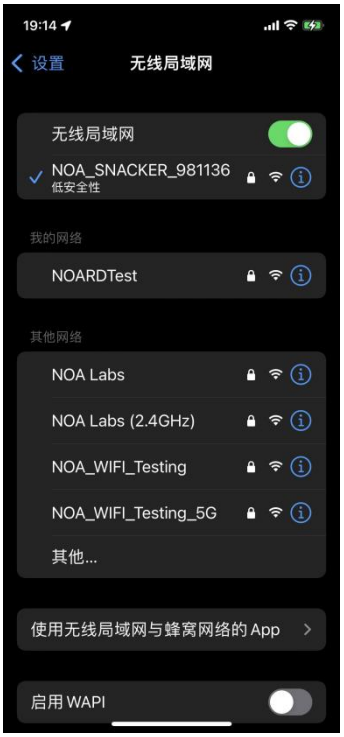
7. Run iperf client mode command to connect Snacker board and test the performance of Snacker board WIFI single

```
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 Mbits/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 Mbits/sec
[  3]  5.0-10.0 sec  2.12 MBytes  3.57 Mbits/sec
[  3] 10.0-15.0 sec  2.00 MBytes  3.36 Mbits/sec
[  3] 15.0-20.0 sec  2.12 MBytes  3.57 Mbits/sec
[  3] 20.0-25.0 sec  2.12 MBytes  3.57 Mbits/sec
[  3] 25.0-30.0 sec  2.00 MBytes  3.36 Mbits/sec
[  3]  0.0-30.2 sec  13.1 MBytes  3.65 Mbits/sec
```

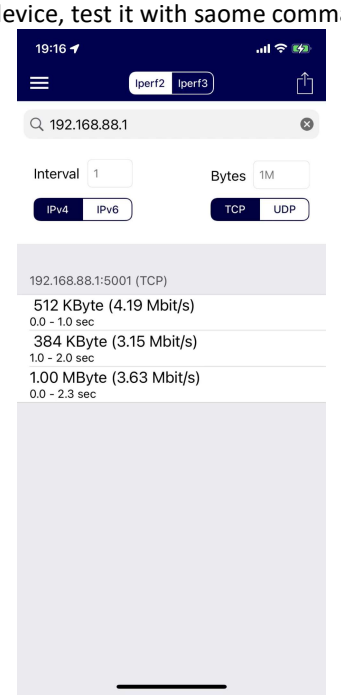
B) AP mode

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.

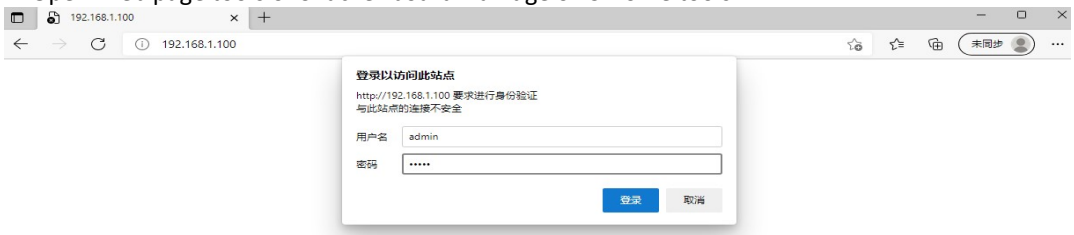
4. Open the iperf tools in your device, test it with saome commands



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

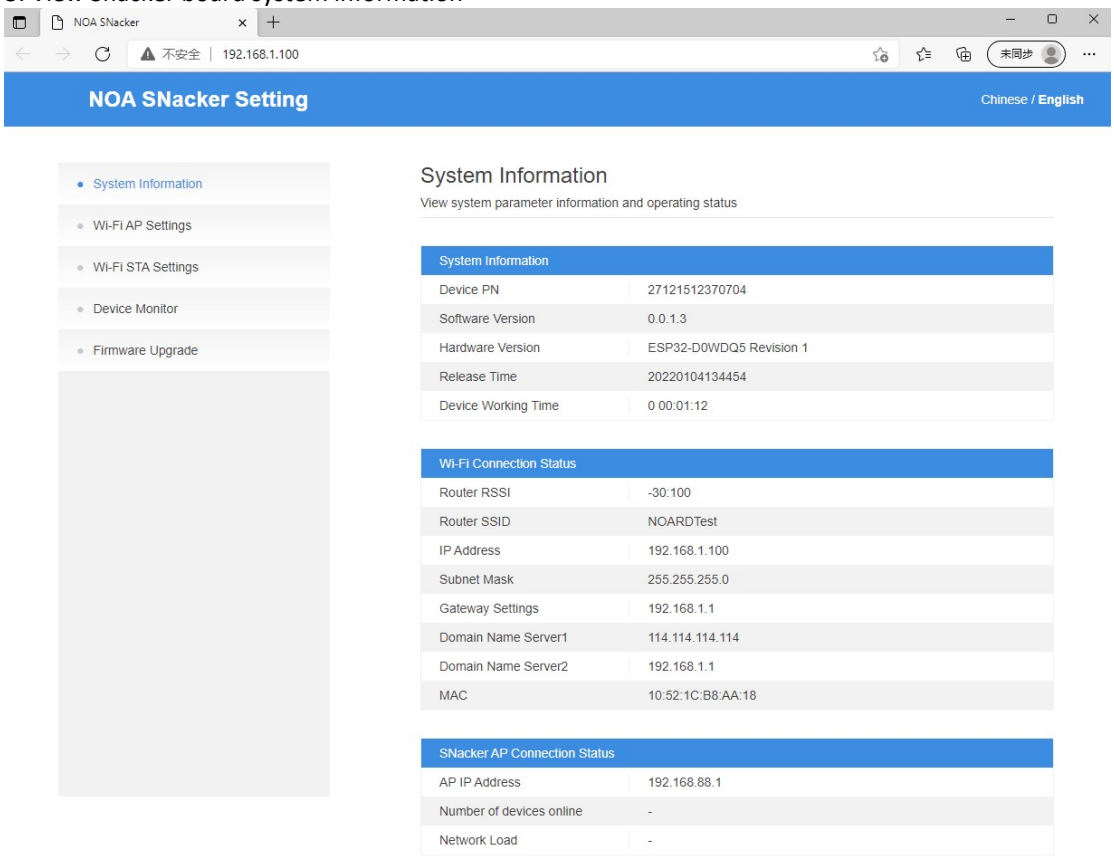
6) Web page tools for Snacker board

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

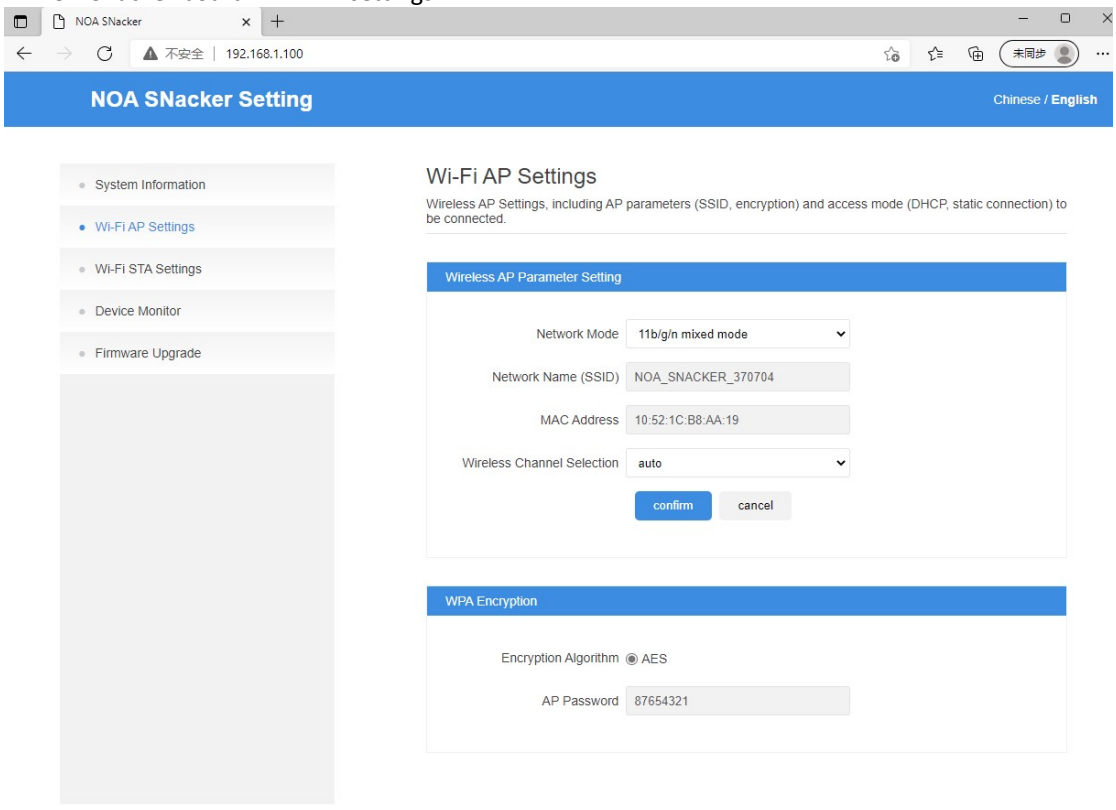


Input "admin" for user and "admin" for password to login the Web page tools.

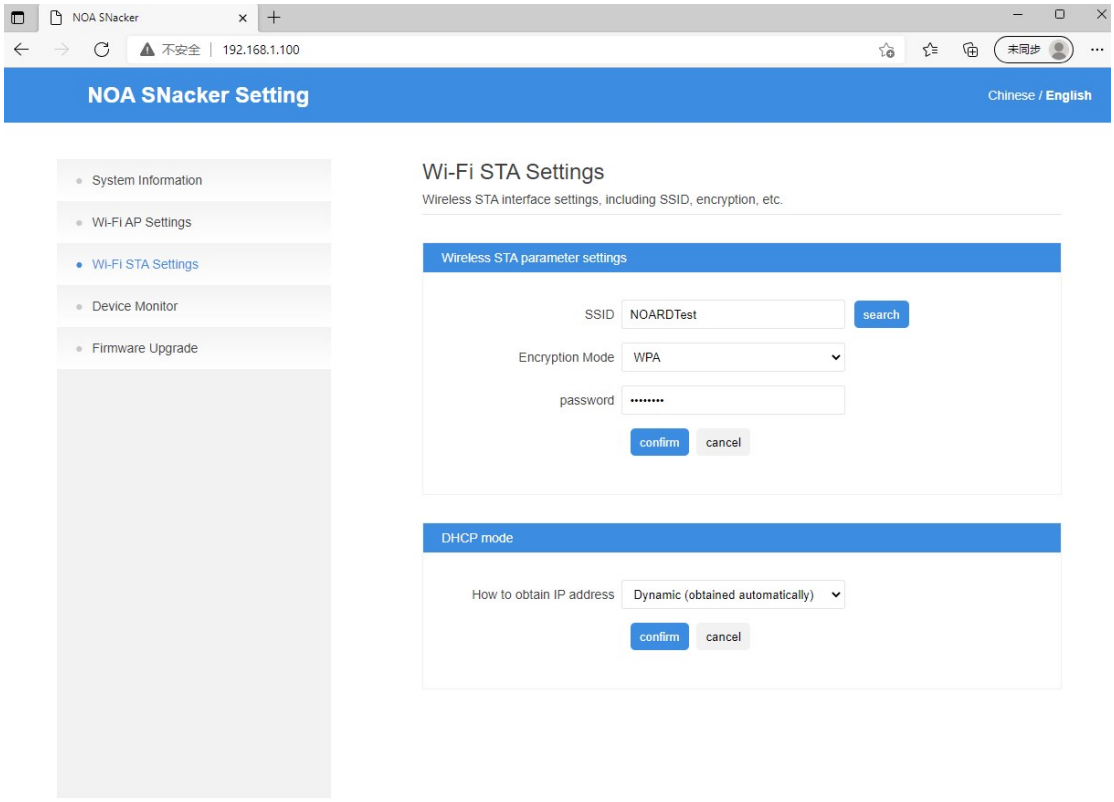
3. View Snacker board system information



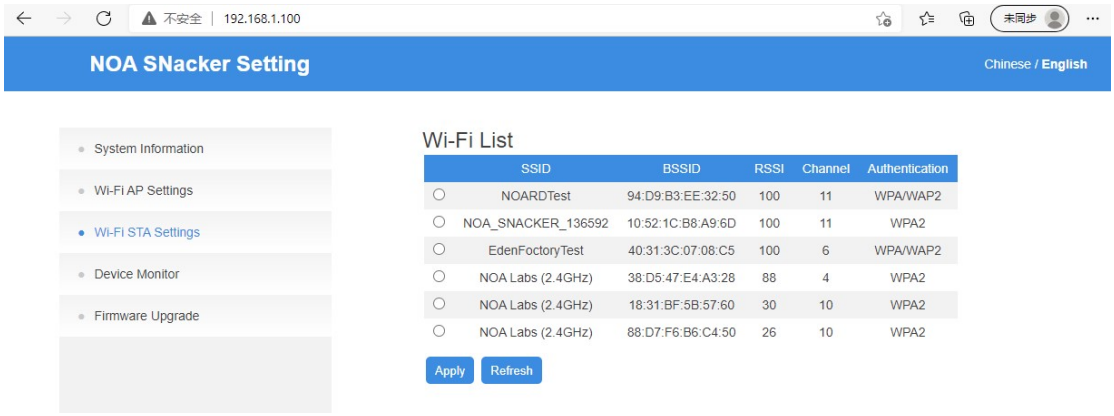
4. View Snacker board Wi-Fi AP settings



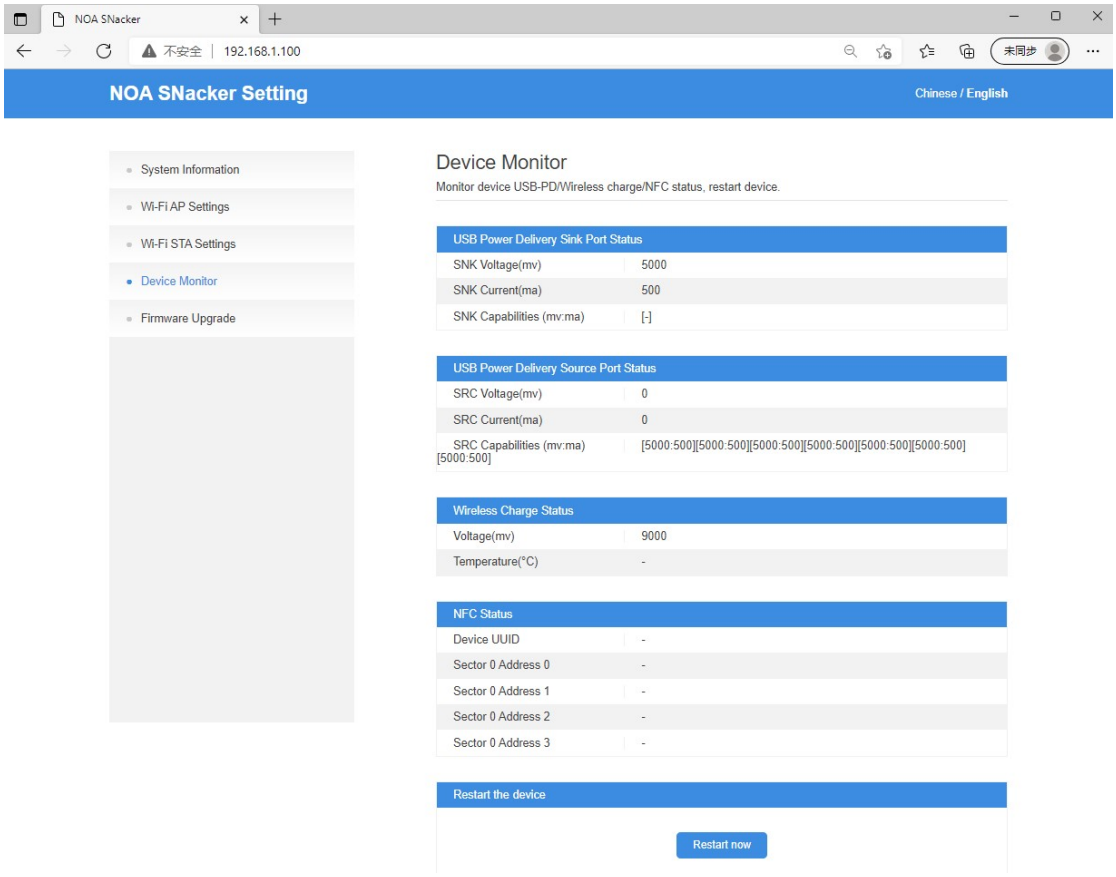
5. View Snacker board Wi-Fi STA settings



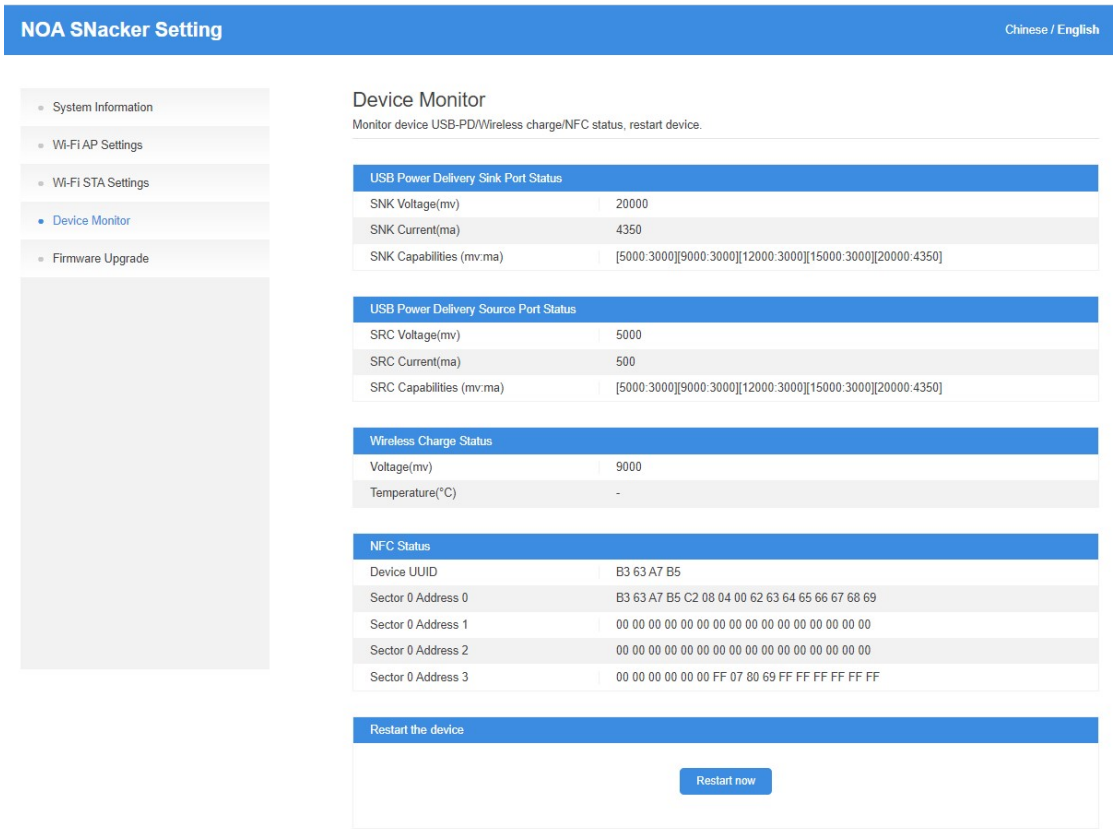
Click “search” button to scan wifi list around Snacker board



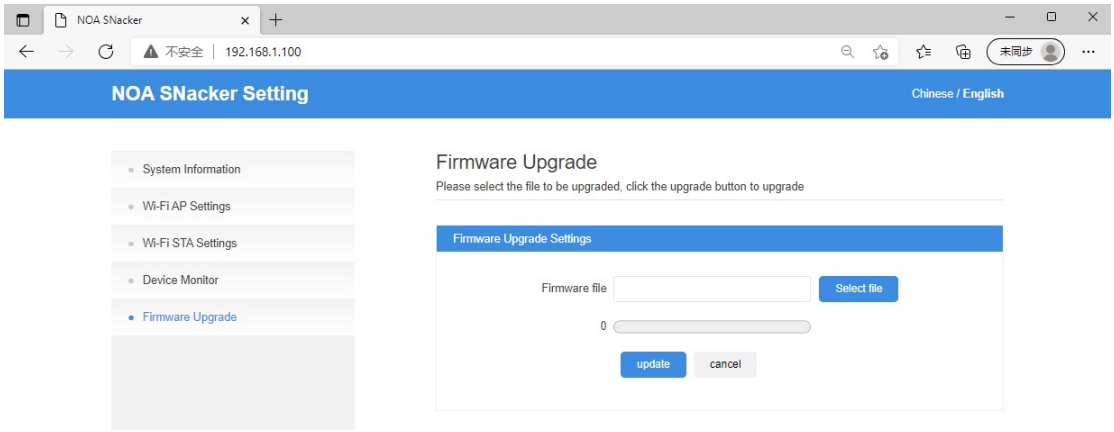
6. View Snacker board Device Monitor



Full information about Snacker board



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) .....