

Aurora Software Guide

This software provide some shell commands to demo how to drive devices on the Aurora Device.

Specification

For Aurora 100

Item	Values
Memory	512MB DDR3 RAM
Storage	4GB 8-bit eMMC on-board flash SD slot
Peripheral Interface	1 x USB Host 1 x 100M Ethernet interface 1 x Record interface 1 x Play interface 2 x Relay output interface(MAX 30V/2A) 2 x GPIO input interface 1 x Extern 12V interface(MAX 2A) 1 x USB OTG 1 x SD card interface 1 x TTL UART
On-board LED	1 x Power LED 1 x user-defined LED
Power	1 x DC interface (24V/2.5A)
Button	1 x reset button
Knob	1 x sound volume knob
Operating temperature(C)	0 ~ 90 (refer to am3358)

For Aurora 200

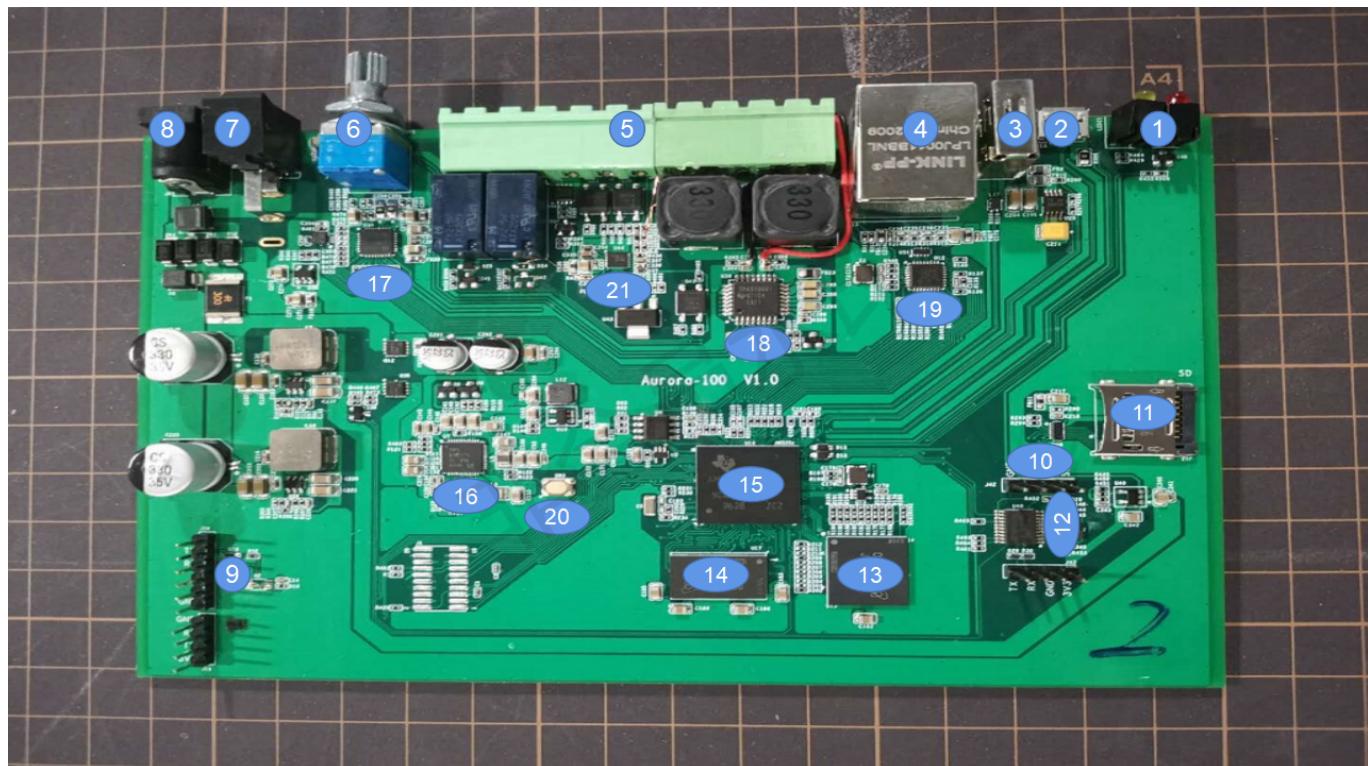
Item	Values
Memory	512MB DDR3 RAM
Storage	4GB 8-bit eMMC on-board flashsud SD slot

Item	Values
Peripheral Interface	1 x USB Host 4 x 100M Ethernet interface 1 x Record interface 2 x Play interface 3 x Relay output interface(MAX 30V/2A) 3 x GPIO input interface 1 x Extern 12V interface(MAX 2A) 1 x USB OTG 1 x SD card interface 1 x TTL UART
On-board LED	1 x Power LED 1 x User-defined LED 1 x Network status LED
Power	1 x DC interface(24V/2.5A)
Button	1 x Reset button
Knob	1 x Sound volume knob
Operating temperature(C)	0 ~ 90 (refer to am3358)

Hardware Overview

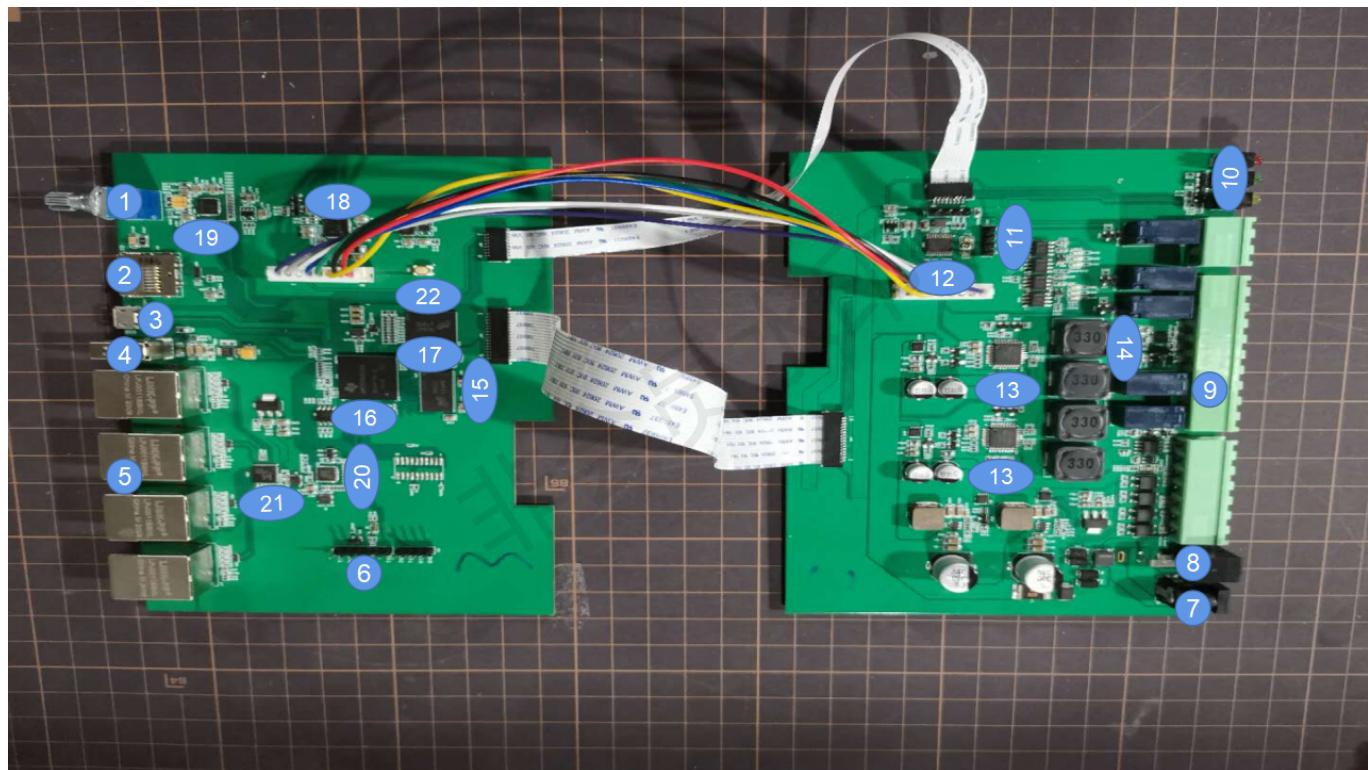
It is convenient to use this hardware overview for finding the location of the hardware.

For Aurora 100



- **1. LED:** Include power LED and user-defined LED.

- **2. USB OTG:** This USB Port is used to connect to your computer via serial mode of putty.
- **3. USB Host:** You can plug USB device, such as USB mouse,USB keyboard and USB flash disk into Aurora via those two USB hosts.
- **4. Ethernet interface:** Access to the Internet.
- **5. Extern Interface:** Include 1 x Record interface , 1 x Play interface , 2 x Relay output interface , 2 x GPIO input interface , 1 x Extern 12V interface.
- **6. Knob:** Adjust the speaker volume.
- **7. Power switch:** Power on or power off the Aurora.
- **8. DC jack:** Input 24V/2.5A power.
- **9. TTL UART:** You also can connect the Aurora with your computer via this UART port.
- **10. SWIM jack:** You can use this jack to update the mpu(stm8) firmware.
- **11. SD Card Slot:** To plug in micro-SD card to update the Aurora firmware.
- **12. STM8:** Software power switch chip for Aurora.
- **13. MTFC4GACAJCN:** 4GB EMMC Storage.
- **14. MT41K256M16TW:** 512M DDR3 RAM.
- **15. AM3358:** Main controller.
- **16. TPS65217CRSLR:** Power Management Chip.
- **17. TLV320AIC3104:** Audio codec chip.
- **18. TPA3106D1:** Amplifier for speaker.
- **19. LAN8710A:** 100M Network cable drive network card.
- **20. Power button:** power on or power off the AM3358.
- **21. MAX9814ETD:** Amplifier for Mic.



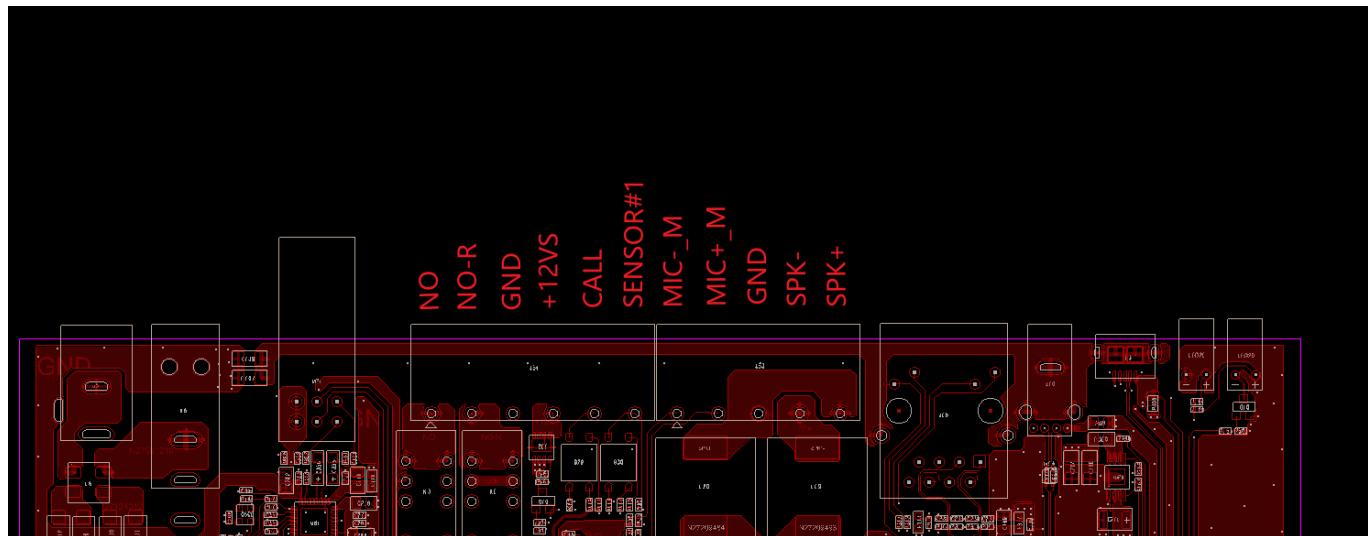
- **1. Knob:** Adjust the speaker volume.
- **2. SD Card Slot:** To plug in micro-SD card to update the Aurora firmware.
- **3. USB OTG:** This USB Port is used to connect to your computer via serial mode of putty.
- **4. USB Host:** You can plug USB device, such as USB mouse,USB keyboard and USB flash disk into Aurora via those two USB hosts.
- **5. Ethernet interface:** 4 x Ethernet Interface be controlled by the switch chip.
- **6. TTL UART:** You also can connect the Aurora with your computer via this UART port.
- **7. DC jack:** Input 24V/2.5A power.
- **8. Power switch:** Power on or power off the Aurora.
- **9. Extern Interface:** Include 1 x Record interface , 2 x Play interface , 3 x Relay output interface , 3 x GPIO input interface , 1 x Extern 12V interface.
- **10. LED:** Include power LED and user-defined LED , network status LED.
- **11. SWIM jack:** You can use this jack to update the mpu(stm8) firmware.
- **12. STM8:** Software power switch chip for Aurora.
- **13. TPA3106D1:** Amplifier for speaker.
- **14. MAX9814ETD:** Amplifier for Mic.
- **15. MT41K256M16TW:** 512M DDR3 RAM.
- **16. AM3358:** Main controller.

- **17. MTFC4GACAJCN:** 4GB EMMC Storage.
- **18. TPS65217CRSLR:** Power Management Chip.
- **19. TLV320AIC3104:** Audio codec chip.
- **20. LAN8710A:** 100M Network cable drive network card.
- **21. RTL8305NB:** Ethernet switch controller.
- **22. Power button:** power on or power off the AM3358.

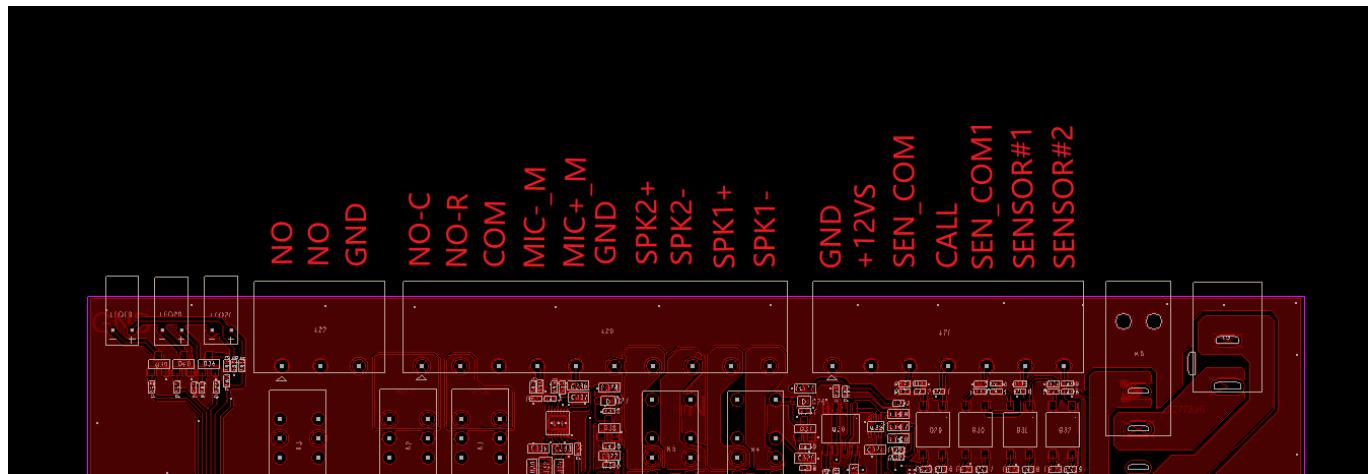
Extern Interface pinout

It is very useful when we test there pin.

For Aurora 100



For Aurora 200



Introduction To Software

Preparatory Work

Materials Required

- Aurora100 or Aurora200
- Internet network
- Internet cable
- 4GB (or more memory) SD card and SD card reader
- PC (Windows10)
- [USB To Uart Adapter](#) (optional)
- 24V/2A DC interface adapter
- Multimeter
- Especial Speaker x 1 (Aurora100) or Especial Speaker x 2 (Aurora200)
- Especial Mic

Update firmware

- **Step 1.** Select the [firmware](#) to download and this firmware both Aurora 100 and Aurora 200 all be used:

BeagleBoard.org Latest Firmware Images

Download the latest firmware for your BeagleBoard, BeagleBoard-xM, BeagleBoard-X15, BeagleBone, BeagleBone Black, BeagleBone Black Wireless, BeagleBone AI, BeagleBone Blue, SeeedStudio BeagleBone Green, SeeedStudio BeagleBone Green Wireless, SanCloud



BeagleBone Enhanced, element14 BeagleBone Black Industrial, Arrow BeagleBone Black Industrial, Mentor BeagleBone uSomIQ, Neuromeka BeagleBone Air, or PocketBeagle

See the [Getting Started guide](#) and the [community wiki page](#) for hints on loading these images. See our [Debian page](#) on how the latest images are built.

Recommended Debian Images

Buster IoT TIDL (without graphical desktop and with machine learning acceleration tools) for [BeagleBoard-X15](#) and [BeagleBone AI](#) via microSD card

► [AM5729 Debian 10.3 2020-04-06 8GB SD IoT TIDL](#)

image for [BeagleBoard-X15](#), and [BeagleBone AI](#) - more info - sha256sum: b9ac77af8be8156144b6192ed5d94404e381f19c0611042b26aadff18f49530e

Buster IoT (without graphical desktop) for [BeagleBone](#) and [PocketBeagle](#) via microSD card

► [AM3358 Debian 10.3 2020-04-06 4GB SD IoT](#)

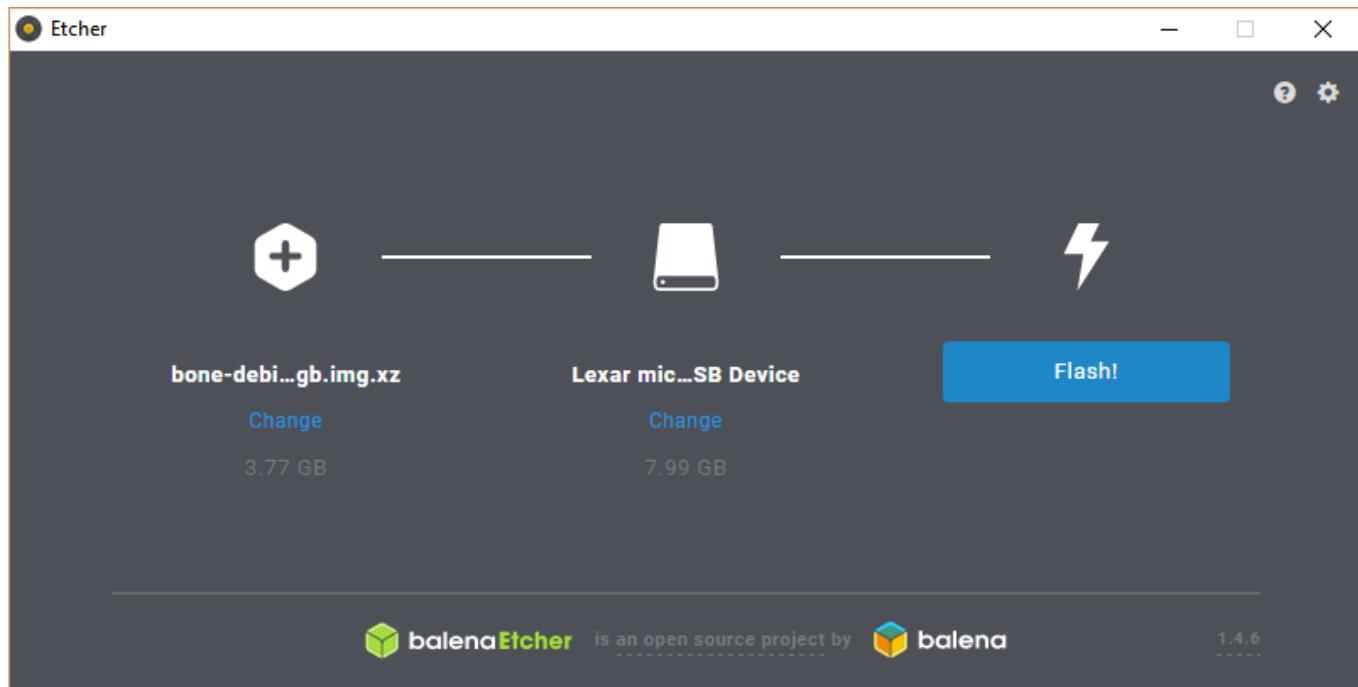
image for [PocketBeagle](#), [BeagleBone](#), [BeagleBone Black](#), [BeagleBone Black Wireless](#), [BeagleBone Black Industrial](#), [BeagleBone Blue](#), [SeeedStudio BeagleBone Green](#), [SeeedStudio BeagleBone Green Wireless](#), [SanCloud BeagleBone Enhanced](#), [Arrow BeagleBone Black Industrial](#) and [Mentor BeagleBone uSomIQ](#) - more info - sha256sum: 22448ba28d0d58e25e875aac3b4e91eaef82e2d11c9d2c43d948ed60708f7434

Stretch for [BeagleBoard](#) via microSD card

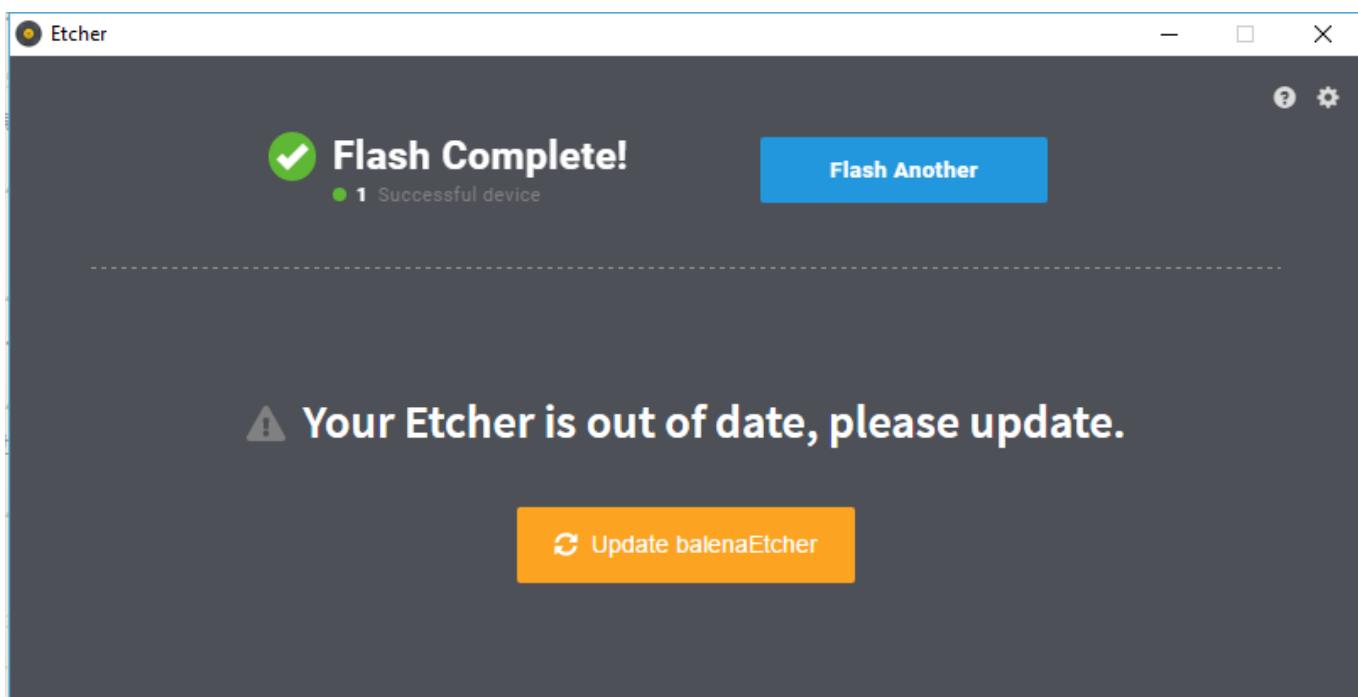
► [OMAP3/DM3730 Debian 9.5 2018-10-07 4GB SD LXQT](#) image for [BeagleBoard](#), [BeagleBoard-xM](#) - more info - sha256sum:

2a29626ab7c20890109a0eea4ea6e88e4e31d01d8a447b38eac5953d8eb9ce

- **Step 2.** Connect an SD card to a PC or MAC with an SD card reader, an SD card with more than 4G memory is required.
- **Step 3.** Click here to download [Etcher](#), then use the Etcher to write the [*.img.xz](#) file directly to the SD card. Or extract the [*.img.xz](#) file into a [*.img](#) file, and then burn it to an SD card using another mirror write tool.

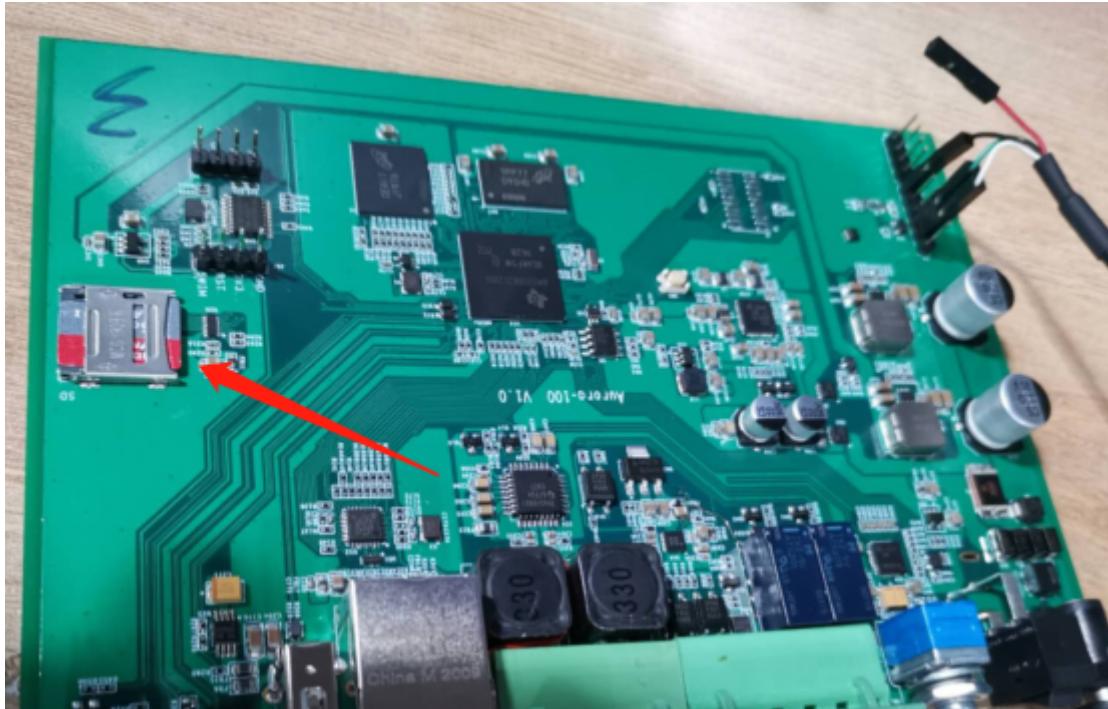


we can get below the picture when the etcher burns successful.

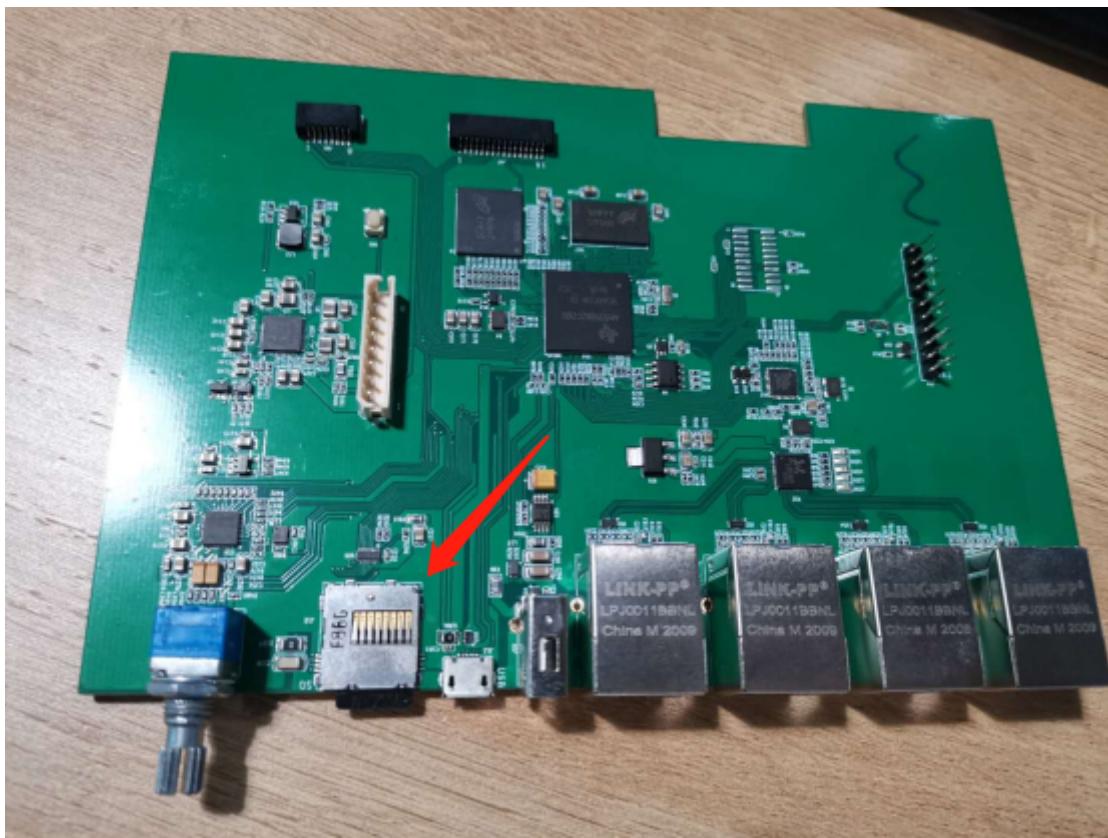


- **Step 4.** After writing the image to the SD card, insert the SD card into Aurora.

For Aurora 100



For Aurora 200



- **Step 5.** Connect Aurora to a computer by using USB To Uart Adapter.the hardware connection as below.

Aurora USB To Uart Adapter

TX	RX
RX	TX

Aurora USB To Uart Adapter

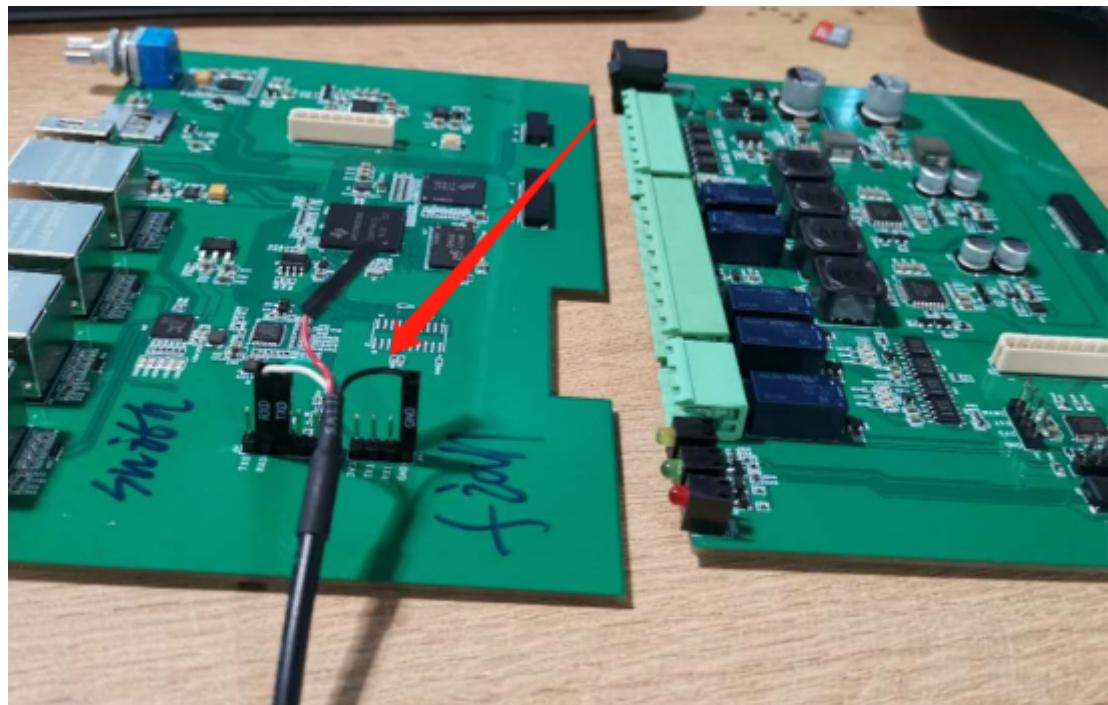
GND

GND

For Aurora 100



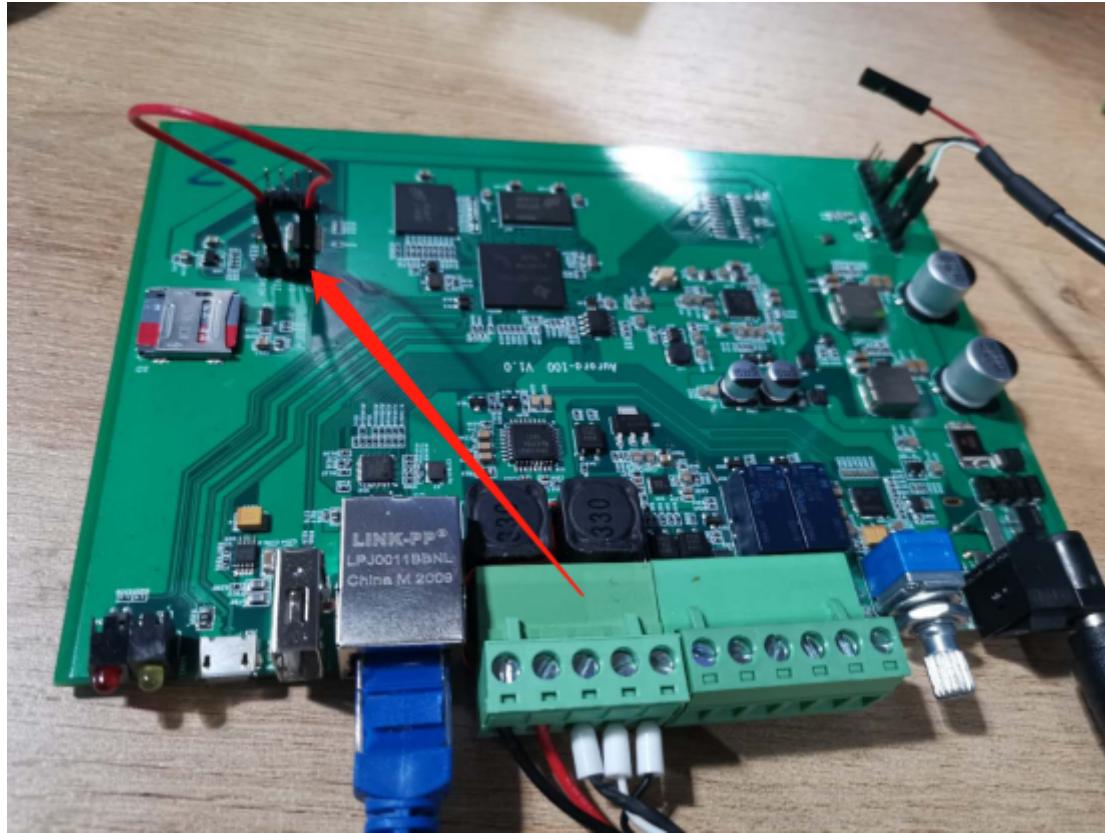
For Aurora 200



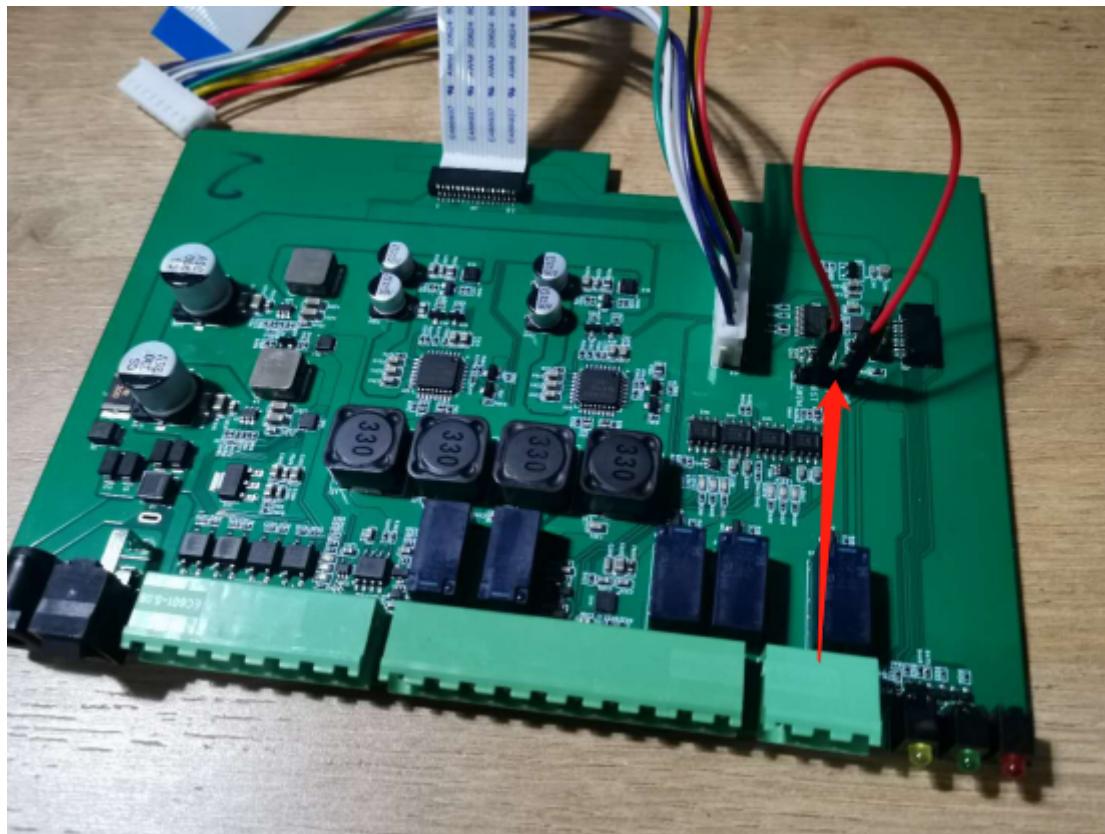
- **Step 6.** Connect RST to GND at stm8 to stop stm8 power-manager code.

we can skip this step if use the newest firmware for stm8

For Aurora 100

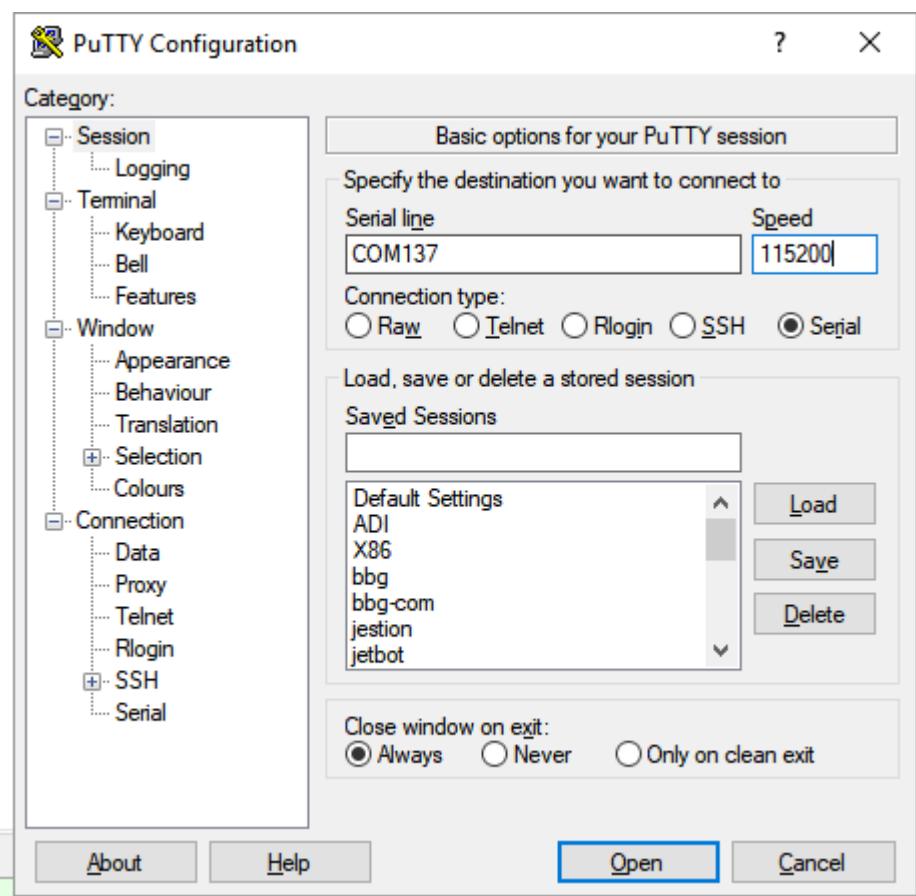
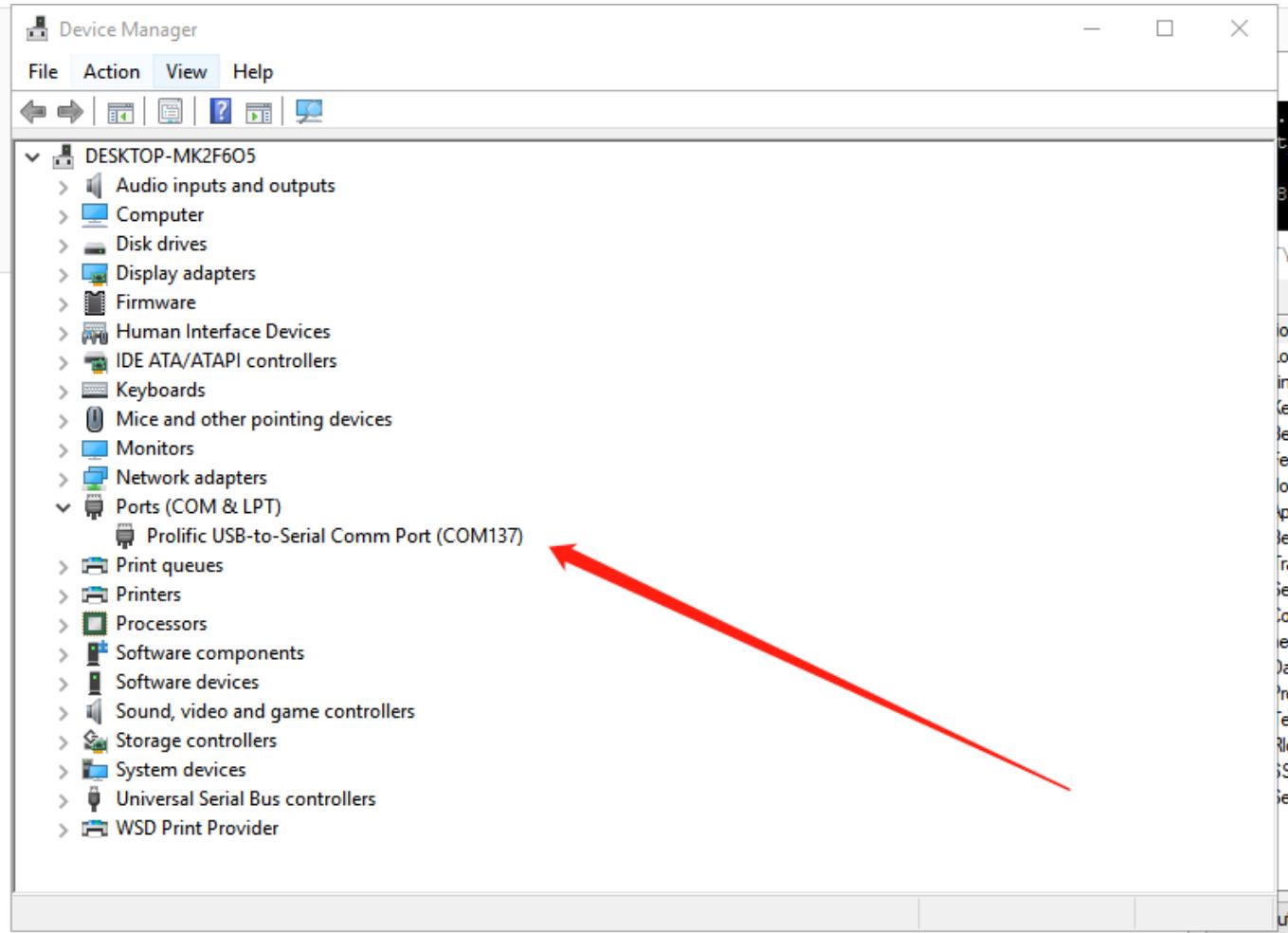


For Aurora 200



the system will reboot repeatedly if our firmware does not have `power-manager.service`.and there does not exist `power-manager.service` at default firmware. So we have to connect RST to GND at stm8 to stop `power-manager.service` . we will install the `power-manager.service` at subsequent steps.

- **Step 7.** Use **PUTTY**, select **Serial** protocol, fill in the correct COM port of Aurora, 115200 baud, 8Bits, Parity None, Stop Bits 1, Flow Control None.



- **Step 8.** Use a 24V Power adapter to power the Aurora board. and you can see the LED power on. Do not take out the SD card during writing.
- **Step 9.** The login user name is **debian**, and password is **temppwd**.

```
cblkpl ro rootfstype=ext4 rootwait coherent_pool=1M net.ifnames=0 lpj=1990656 r
ng_core.default_quality=100 quiet] ...
debug: [bootz 0x82000000 0x88080000:648cf9 88000000] ...
## Flattened Device Tree blob at 88000000
Booting using the fdt blob at 0x88000000
Loading Ramdisk to 8f9b7000, end 8ffffcf9 ... OK
Loading Device Tree to 8f92b000, end 8f9b6fff ... OK

Starting kernel ...

[    0.002149] timer_probe: no matching timers found
[    0.195726] l4_wkup_cm:clk:0010:0: failed to disable
[    1.476388] omap_voltage_late_init: Voltage driver support not added

Debian GNU/Linux 10 beaglebone ttyS0

BeagleBoard.org Debian Buster IoT Image 2020-04-06

Support: http://elinux.org/Beagleboard:BeagleBoneBlack_Debian

default username:password is [debian:temppwd]

beaglebone login: debian
Password:
```

- **Step 10.** Edit **/boot/uEnv.txt** then reboot to start eMMC boot.

```
sudo sh -c "echo cmdline)init=/opt/scripts/tools/eMMC/init-eMMC-flasher-v3.sh >> \
/boot/uEnv.txt"
sudo reboot
```

it will take some time for updating firmware.please wait with patience.

You have to power off the board and unplug sd card when you terminal show this message.and the script will updating firmware repeatedly if we does not power off.

```
[ OK ] Stopped Dispatch Password ...ts to Console Directory Watch.
[ OK ] Stopped Forward Password R...uests to Wall Directory Watch.
[ OK ] Stopped target Swap.
      Stopping Restore / save the current clock...
[ OK ] Stopped Network Time Synchronization.
[ OK ] Stopped Raise network interfaces.
[ OK ] Stopped Load/Save Random Seed.
[ OK ] Stopped Restore / save the current clock.
[ OK ] Stopped Update UTMP about System Boot/Shutdown.
[ OK ] Stopped Apply Kernel Variables.
[ OK ] Stopped Load Kernel Modules.
[ OK ] Stopped Create Volatile Files and Directories.
[ OK ] Stopped target Local File Systems.
[ OK ] Stopped target Local File Systems (Pre).
[ OK ] Stopped Create Static Device Nodes in /dev.
[ OK ] Stopped Create System Users.
[ OK ] Stopped Remount Root and Kernel File Systems.
[ OK ] Stopped File System Check on Root Device.
[ OK ] Reached target Shutdown.
[ OK ] Reached target Final Step.
[ OK ] Started Power-Off.
[ OK ] Reached target Power-Off.
[ 480.372332] systemd-shutdown: 37 output lines suppressed due to ratelimiting
[ 480.656867] systemd-shutdown[1]: Syncing filesystems and block devices.
```

- **Step 11.** Unplug `sd card` then power on.

If you boot at emmc , the terminal will print `/dev/mmcblk1p1`.

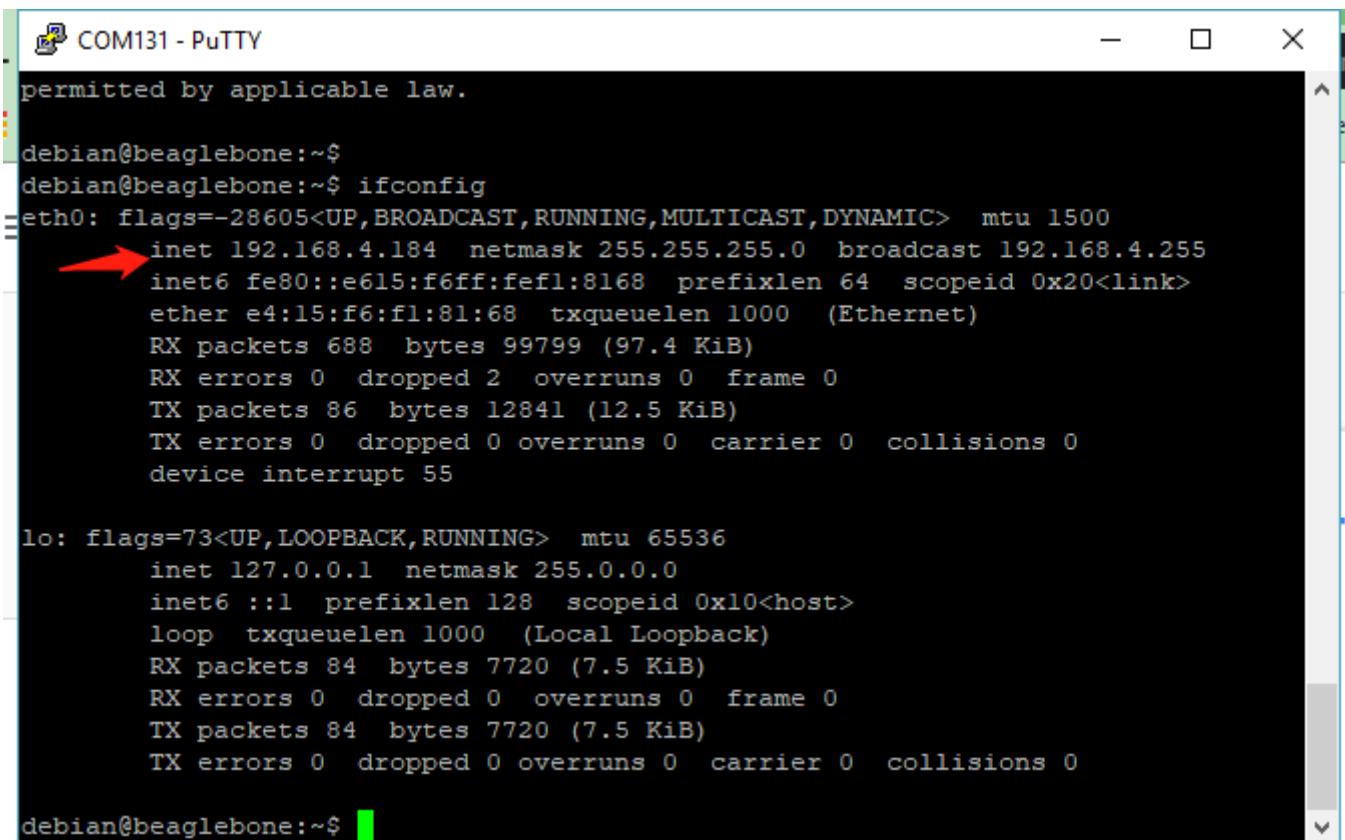
```
867 bytes read in 405 ms (2 KiB/s)
uboot_overlays: loading /lib/firmware/BB-BONE-AUDI-02-00A0.dtbo ...
3614 bytes read in 48 ms (73.2 KiB/s)
uboot_overlays: loading /lib/firmware/BB-BONE-eMMC1-01-00A0.dtbo ...
1584 bytes read in 51 ms (30.3 KiB/s)
uboot_overlays: loading /lib/firmware/AM335X-PRU-RPROC-4-19-TI-00A0.dtbo ...
3801 bytes read in 44 ms (84 KiB/s)
loading /boot/initrd.img-4.19.94-ti-r42 ...
6589689 bytes read in 433 ms (14.5 MiB/s)
debug: [console=ttyO0,115200n8 bone_capemgr.uboot_capemgr_enabled=1 root=/dev/mmcblk1p1 ro rootfstype=ext4 rootwait coherent_pool=1M net.ifnames=0 lpj=1990656 ring_core.default_quality=100 quiet] ...
debug: [bootz 0x8000000 0x88080000:648cf9 88000000] ...
## Flattened Device Tree blob at 88000000
      Booting using the fdt blob at 0x88000000
      Loading Ramdisk to 8f9b7000, end 8f115cf9 ... OK
      Loading Device Tree to 8f92b000, end 8f9b61ff ... OK

Starting kernel ...

[ 0.002164] timer_probe: no matching timers found
[ 0.195699] 14_wkup_cm:clk:0010:0: failed to disable
[ 1.476390] omap_voltage_late_init: Voltage driver support not added
```

- **Step 12.** Connect Internet cable to Ethernet interface if the Green LED to blink and the Yellow LED to light that indicates the network work well.we can get as below information about the eth0 at Aurora if we type `ifconfig` cmd.

```
ifconfig
```



```
permitted by applicable law.

debian@beaglebone:~$ ifconfig
eth0: flags=-28605<UP,BROADCAST,RUNNING,MULTICAST,DYNAMIC> mtu 1500
    inet 192.168.4.184 netmask 255.255.255.0 broadcast 192.168.4.255
        inet 192.168.4.184 netmask 255.255.255.0 broadcast 192.168.4.255
        inet6 fe80::e615:f6ff:fe1:8168 prefixlen 64 scopeid 0x20<link>
            ether e4:15:f6:f1:81:68 txqueuelen 1000 (Ethernet)
            RX packets 688 bytes 99799 (97.4 KiB)
            RX errors 0 dropped 2 overruns 0 frame 0
            TX packets 86 bytes 12841 (12.5 KiB)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
            device interrupt 55

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
        RX packets 84 bytes 7720 (7.5 KiB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 84 bytes 7720 (7.5 KiB)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

debian@beaglebone:~$
```

the ip addr maybe different for this picture depending on your router.

- **Step 13.** Internet test

```
ping -c 5 www.china.com
```

```
ether e4:15:f6:f1:82:30 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

usbl: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
inet 192.168.6.2 netmask 255.255.255.0 broadcast 192.168.6.255
ether e4:15:f6:f1:82:34 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

debian@beaglebone:~/aurora_test/eth0$ ping -c 5 www.china.com
PING www.china.com.wscdns.com (183.6.248.88) 56(84) bytes of data.
64 bytes from 183.6.248.88 (183.6.248.88): icmp_seq=1 ttl=55 time=6.44 ms
64 bytes from 183.6.248.88 (183.6.248.88): icmp_seq=3 ttl=55 time=420 ms
64 bytes from 183.6.248.88 (183.6.248.88): icmp_seq=4 ttl=55 time=295 ms
64 bytes from 183.6.248.88 (183.6.248.88): icmp_seq=5 ttl=55 time=6.27 ms

--- www.china.com.wscdns.com ping statistics ---
5 packets transmitted, 4 received, 20% packet loss, time 26ms
rtt min/avg/max/mdev = 6.268/182.020/420.249/181.151 ms
debian@beaglebone:~/aurora_test/eth0$
```

if the terminal print like this indicates the network has been connecting to the Internet. if we can not get the Internet maybe need to check your network environment.

Devices Usage

Env install

- **Step 1.** git clone the test code.

```
cd ~
git clone --depth 1 https://github.com/Hansen0314/aurora_test.git
```

- **Step 2.** Install the gpio to control the gpio of Aurora.

```
sudo cp ~/aurora_test/gpio /bin/
```

- **Step 3.** Install the phytool to config the LAN of Aurora.

```
git clone https://github.com/wkz/phytool
cd ~/phytool
make
sudo make install
sudo cp /usr/local/bin/phytool /home/debian/aurora_test/eth0/
```

- **Step 4.** Install the power-service that communicate with stm8 to enable `power-manager.service`.

```
cd ~/aurora_test/power-service  
sudo ./install.sh
```

you can disconnect GND to RST at stm8 for now.

- **Step 5.** Install voice card to enable speaker and mic then reboot.

```
sudo sh -c "echo uboot_overlay_addr0=/lib/firmware/BB-BONE-AUDI-02-00A0.dtbo >> \  
/boot/uEnv.txt"  
cd ~/aurora_test/voice_card  
sudo cp asound.state /var/lib/alsa/  
sudo cp asound.conf /etc/  
sudo reboot
```

If the terminal prints no error go to next step.

+12VS

we can use this cmd to make +12VS power on.

```
gpio set 11
```

and the pin's location you can view the [Extern-Interface-pinout](#). You can get 12v at +12VS by using a multimeter.

we can use this cmd to make +12VS power off.

```
gpio clear 11
```

Input

If you want to test input of aurora 100.

```
gpio input 44 #if GND connect to CALL we will get 1  
gpio input 46 #if GND connect to SENSOR#1 we will get 1  
gpio input 75 #if GND connect to Small_hole we will get 1
```

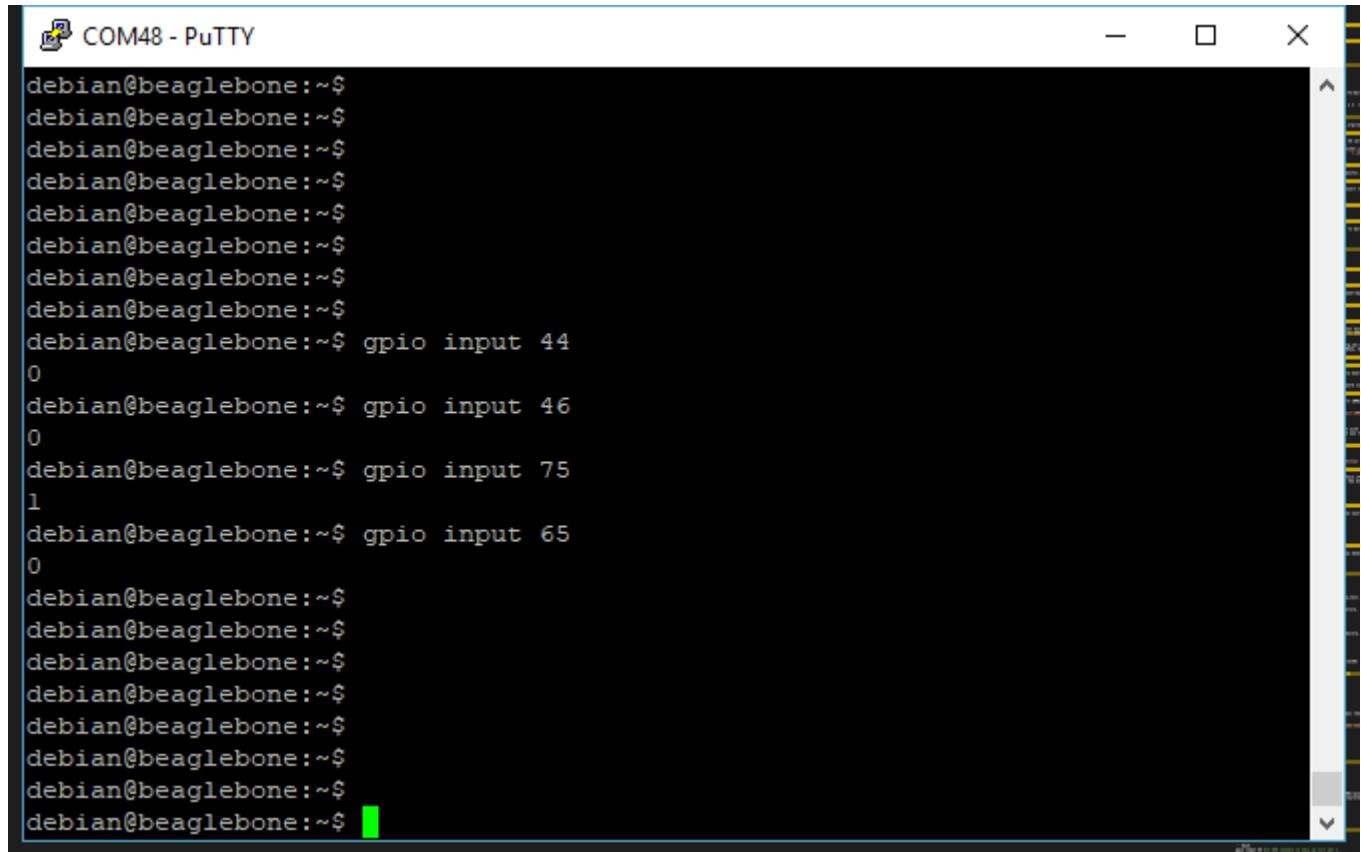
if everything going well we will get this result.

```
debian@beaglebone:~$  
1  
debian@beaglebone:~$ gpio input 46  
1  
debian@beaglebone:~$ gpio input 75  
1  
debian@beaglebone:~$  
debian@beaglebone:~$  
debian@beaglebone:~$  
debian@beaglebone:~$  
debian@beaglebone:~$  
debian@beaglebone:~$  
debian@beaglebone:~$  
debian@beaglebone:~$
```

If you want to test input of aurora 200.

```
gpio input 44 #if GND connect to CALL we will get 0  
gpio input 46 #if GND connect to SENSOR#1 we will get 0  
gpio input 75 #if GND connect to Small_hole we will get 1  
gpio input 65 #if GND connect to SENSOR#2 we will get 0
```

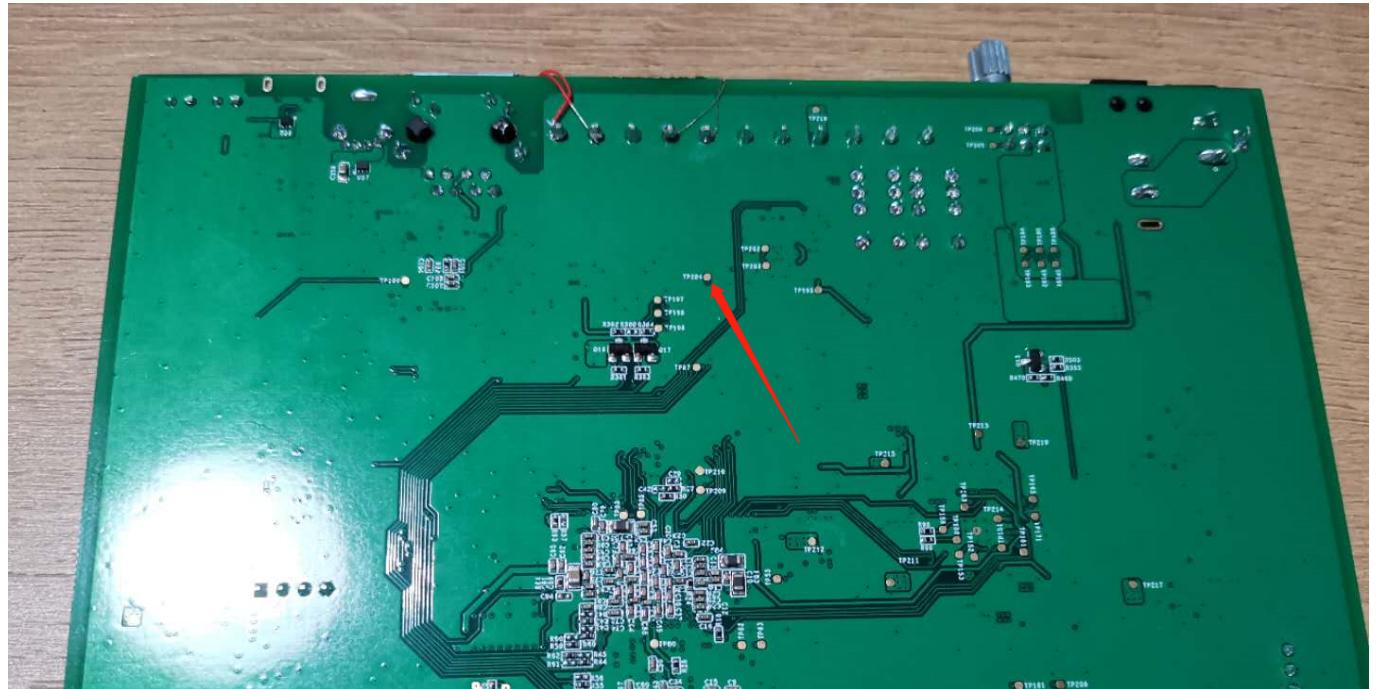
if everything going well we will get this result.



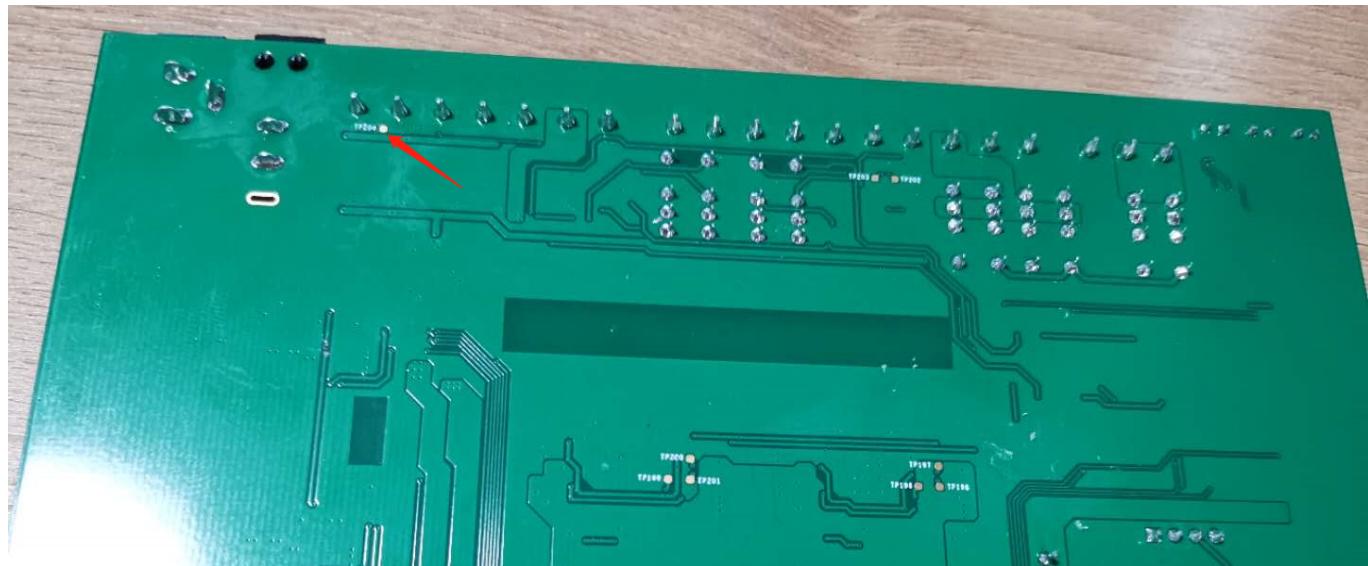
```
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ gpio input 44
0
debian@beaglebone:~$ gpio input 46
0
debian@beaglebone:~$ gpio input 75
1
debian@beaglebone:~$ gpio input 65
0
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
debian@beaglebone:~$ 
```

and the pin's location you can view the [Extern-Interface-pinout](#).

this is Small_hole's location for Aurora100



this is Small_hole's location for Aurora200



LED state

we can use this cmd to control the user-define LED.

```
gpio set 23 #power on LED  
gpio clear 23 #power off LED
```

and the LED's location you can view [hardware-overview](#).

Relay

If you want to test relay of aurora 100 You can use this cmd.

```
gpio set 71 #make NO connect to GND  
gpio clear 71 #make NO disconnect to GND  
gpio set 47 #make NO-R connect to GND  
gpio clear 47 #make NO-R disconnect to GND
```

If you want to test relay of aurora 200 You can use this cmd.

```
gpio set 71 #make NO connect to GND  
gpio clear 71 #make NO disconnect to GND  
gpio set 47 #make NO-R connect to GND  
gpio clear 47 #make NO-R disconnect to GND  
gpio set 27 #make NO-C connect to GND  
gpio clear 27 #make NO-C disconnect to GND
```

and the pin's location you can view [Extern-Interface-pinout](#).

Voice card

the voice card needs some time to setup after power on. So we need to check voice card setup successful before run `./power_on_voice.sh`. we can use `aplay -l` to check whether set up successful. we can get this message if set up successful.

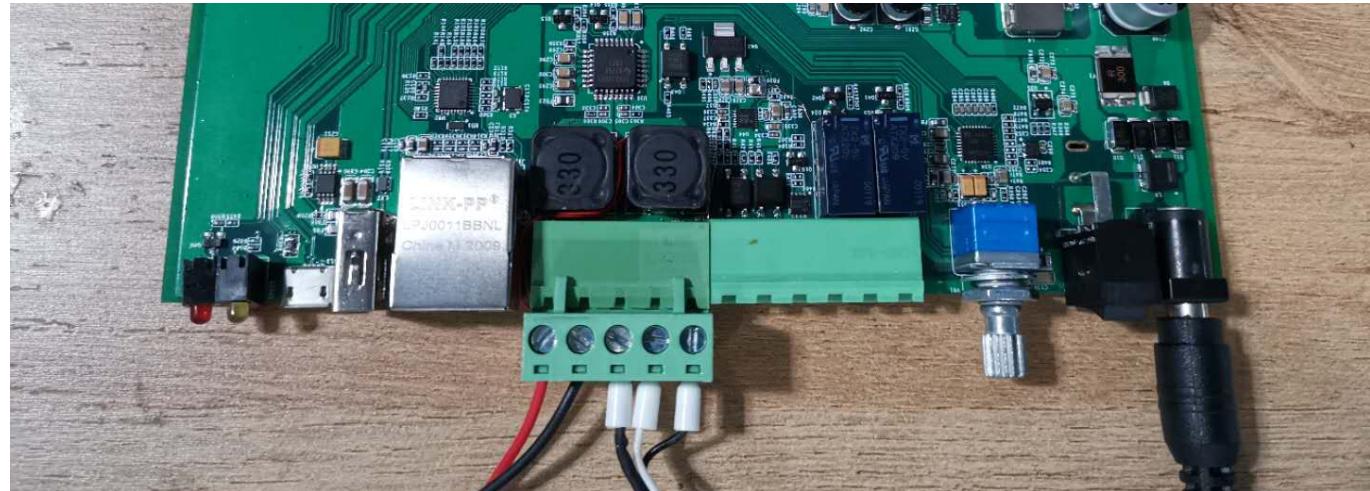
```
debian@beaglebone:~/aurora_test/voice_card$ aplay -l
**** List of PLAYBACK Hardware Devices ****
card 0: B [AudioCape Rev B], device 0: davinci-mcasp.0-tlv320aic3x-hifi tlv320ai
c3x-hifi-0 [davinci-mcasp.0-tlv320aic3x-hifi tlv320aic3x-hifi-0]
  Subdevices: 1/1
  Subdevice #0: subdevice #0
```

and you can get this information as soon as login by using `root` login.

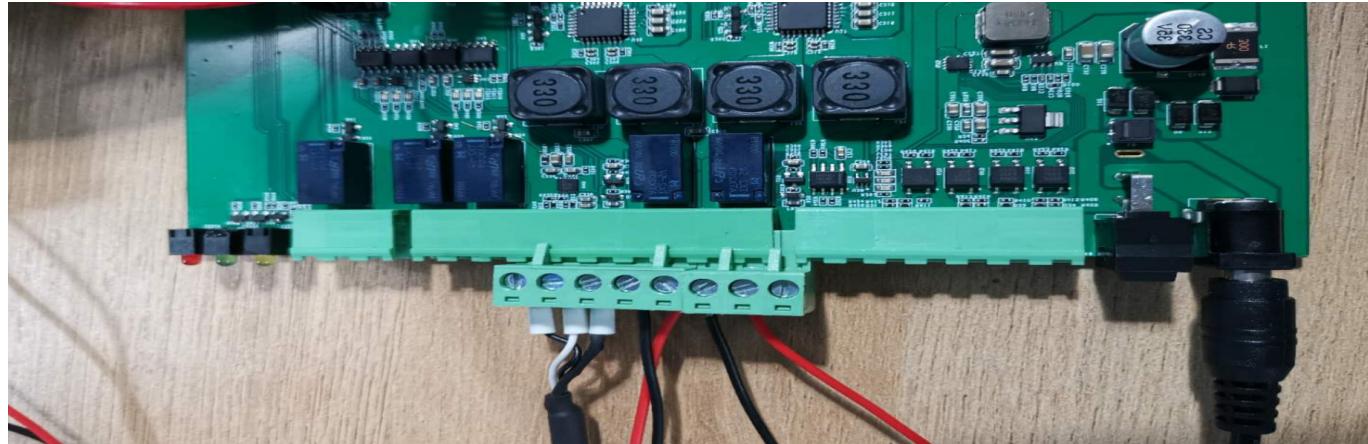
It is very important to check the connection of the Speaker and the Mic. and the pin's location you can view [Extern-Interface-pinout](#).

Mic	Aurora
Yellow	GND
Black	MIC-_M
Red	MIC+_M
Speaker	Aurora
Red	SPK+
Black	SPK-

For Aurora100



For Aurora200



if you use aurora 100 we can use this cmd to test it.

```
cd ~/aurora_test/voice_card  
./power_on_voice.sh 1
```

if you use aurora 200 we can use this cmd to test it.

```
cd ~/aurora_test/voice_card  
./power_on_voice.sh 1 #the one speaker  
./power_on_voice.sh 2 #the other speaker
```

you can hear your speech from the Speaker if you speak to the mic.and you can adjust the knob to modify the sound volume for hardware side.the software also supports adjust the sound volume by using [alsamixer](#).

```
sudo alsamixer
```

The asound.conf and asound.state that you can found by accessing [github](#).

Appendix

DDR3 speed test

- **Step 1.** install speed test tool

```
sudo apt update  
sudo apt install -y mbw
```

- **Step 2.** test speed

mbw -q 100

we can get this message

Avg	Method: MEMCPY	Elapsed: 0.70637	MiB: 100.00000	Copy: 141.568
MiB/s				
Avg	Method: DUMB	Elapsed: 0.54541	MiB: 100.00000	Copy: 183.347
MiB/s				
Avg	Method: MCBLOCK	Elapsed: 0.29263	MiB: 100.00000	Copy: 341.723
MiB/s				

EMMC speed test

- **Step 1.** clear caches

```
sudo sh -c "echo 3 > /proc/sys/vm/drop_caches"
```

- **Step 2.** test speed

```
time sudo dd if=/dev/mmcblk1 of=/dev/null bs=128k count=8192
```

we can get this message

```
8192+0 records in  
8192+0 records out  
1073741824 bytes (1.1 GB, 1.0 GiB) copied, 26.4425 s, 40.6 MB/s
```

Power manager

Power manager have two-part on the one hard is stm8 and on the other hand, is am3358(main controller).we have to use this cmd to enable stm8's power manager after power on Aurora.

```
gpio set 45
```

If the power manager power on at stm8, at the same time the am3358's power manager has to enable. how to enable it we can view [Env install](#)'s step4.

We need to generate the falling edge level if you want to power off the stm8's power manager.

```
gpio set 45  
gpio clear 45
```

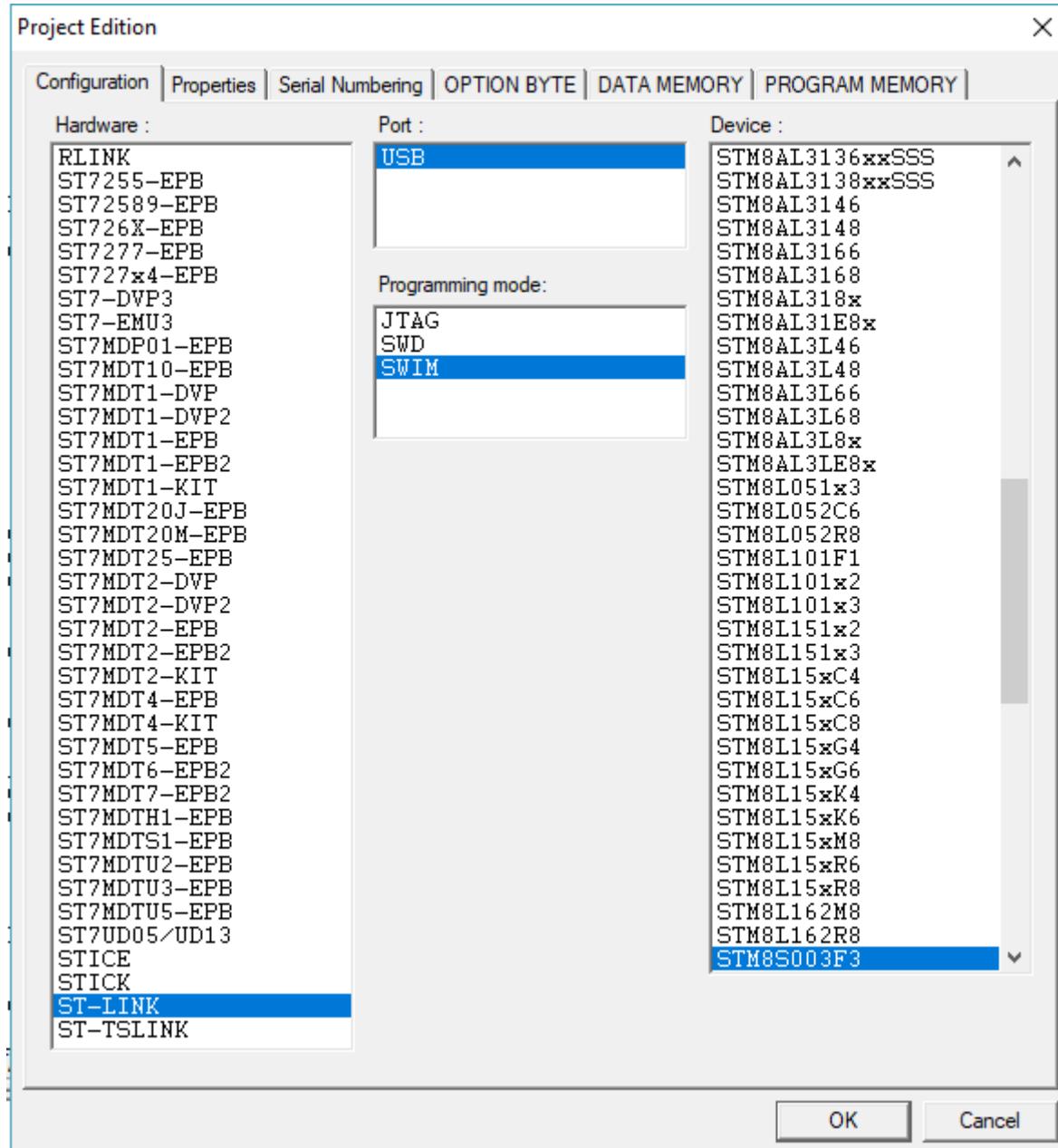
Update STM8 firmware

- **Step 1.** Download [stvp](#) that is a download tool for stm8.
- **Step 2.** Install stm8 [driver](#).

Name	Date modified	Type	Size
amd64	08/02/2018 1:24 AM	File folder	
x86	08/02/2018 1:24 AM	File folder	
dpminst_amd64.exe	08/02/2018 1:24 AM	Application	665 KB
dpminst_x86.exe	08/02/2018 1:24 AM	Application	540 KB
readme.txt	11/09/2018 4:15 PM	Text Document	1 KB
stlink_bridge_wlinusb.inf	08/02/2018 1:25 AM	Setup Information	3 KB
stlink_dbg_wlinusb.inf	08/02/2018 1:26 AM	Setup Information	5 KB
stlink_VCP.inf	08/02/2018 1:29 AM	Setup Information	3 KB
stlink_wlinusb_install.bat	23/06/2017 10:16 ...	Windows Batch File	1 KB
stlinkbridgewinusb_x64.cat	08/02/2018 1:33 AM	Security Catalog	11 KB
stlinkbridgewinusb_x86.cat	08/02/2018 1:33 AM	Security Catalog	11 KB
stlinkdbgwinusb_x64.cat	08/02/2018 1:33 AM	Security Catalog	11 KB
stlinkdbgwinusb_x86.cat	08/02/2018 1:33 AM	Security Catalog	11 KB
stlinkvcp_x64.cat	08/02/2018 1:33 AM	Security Catalog	10 KB
stlinkvcp_x86.cat	08/02/2018 1:33 AM	Security Catalog	10 KB

- **Step 3.** Open the stvp and config it.

Select ST-Link ->SWIM->STM8S00F3

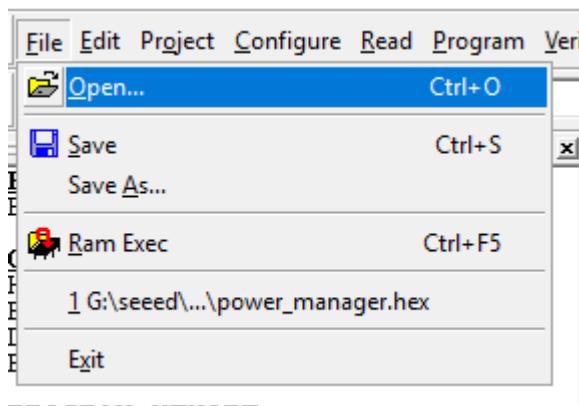


- **Step 4.** download [firmware](#) to desktop and rename to [power_manager.hex](#).

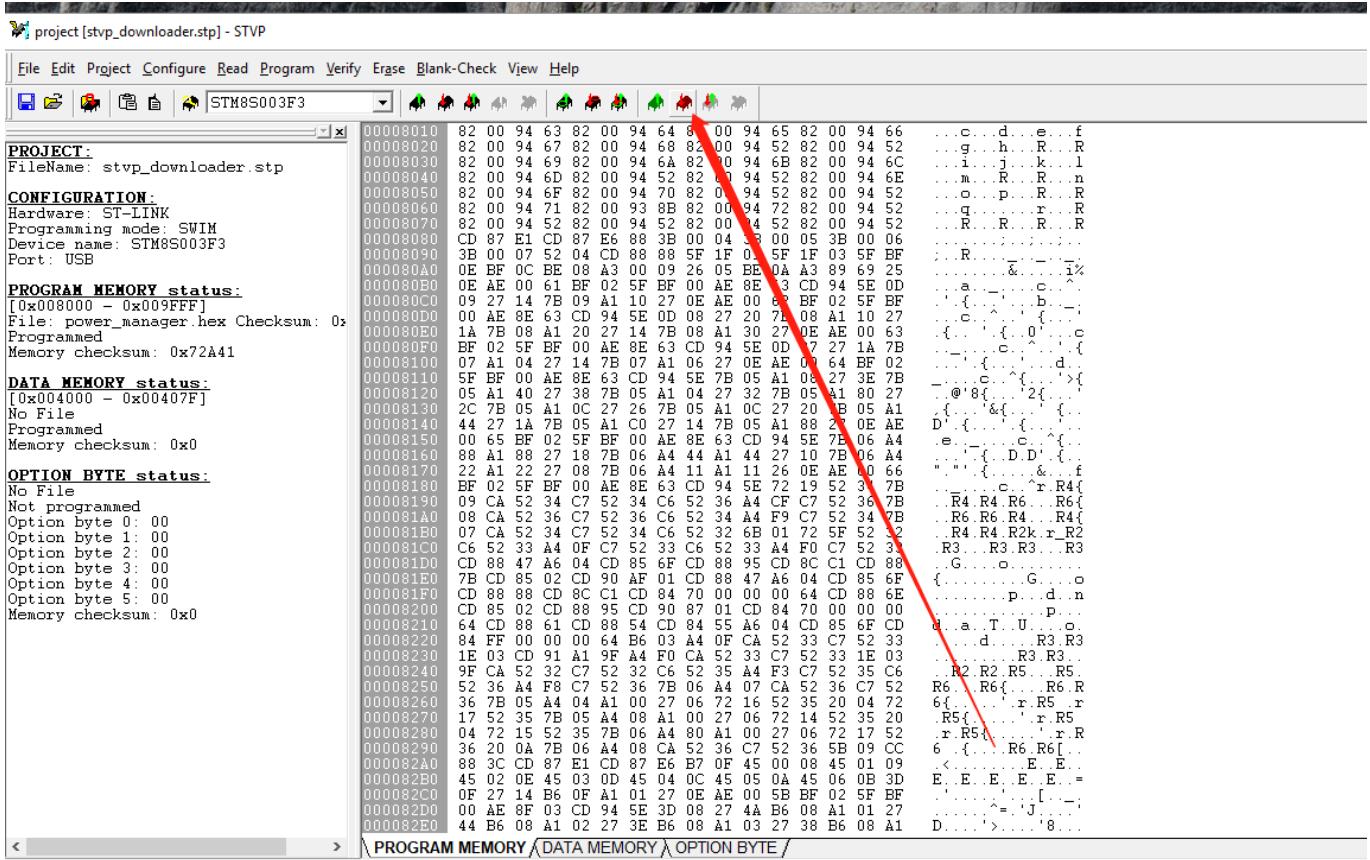
- **Step 5.** Connect STM8 to the computer by ST-link



- **Step 6.** Open the firmware then burn it to stm8



burn the firmware



if we burn successful we can get below picture.

