MaaXBoard

(EM-MC-SBC-IMX8M)

Linux User Manual

V1.1

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Regulatory Compliance:

- MaaXBoard single board computer has passed the CE & FCC certification.

Revision History

Rev.	Description	Author	Date
V1.0	Initial version	Sandy	20190301
V1.1	1. Add MIPI displayer, USB Device and Demo 2. Modify Wi-Fi and Camera operation	Sandy	20190705

Catalog

Chapter 1 Introduction

1.1 Package Content

The content of software release package is subject to the actual release sources. For the file structure and instructions, refer to the following table:

Release Folder tree

```
├─01Doc
|    ├─RN
|    |      MaaXBoard-ReleaseNote-Vxx.pdf
|    └─UM
|           MaaXBoard-UserManual-Vxx.pdf
|           MaaXBoard-DevelopmentGuide-Vxx.pdf
└─02Linux
     ├─01LinuxSourceCode
     |      linux_4.14.78_ xxx.tar.gz
     |      u-boot_2018.03._xxx.tar.gz
     ├─02LinuxShipmentImage
     |      MaaXBoard-LinuxShipmentImage-Yocto-Vxxx.img
     └─03LinuxTools
        gcc-linaro-7.3.1-2018.05-x86_64_aarch64-linux-gnu.tar.xz
```

01Doc	**Description**
MaaXBoard-ReleaseNote-Vxx.pdf	Release Note
MaaXBoard-UserManual-Vxx.pdf	User Manual
MaaXBoard-DevelopmentGuide-Vxx.pdf	Development Guide
01LinuxSourceCode	**Description**
linux_4.14.78_xxx.gz	Linux kernel source code: 4.14.78 version
u-boot_2018.03._xxx.tar.gz	u-boot source code: 2018.03
02LinuxShipmentImage	**Description**
MaaXBoard-LinuxShipmentImage-Yocto-Vxxx.img	Yocto image with firmwares, SD Card Image
03LinuxTools	**Description**
gcc-linaro-7.3.1-2018.05-x86_64_aarch64-linux-gnu.tar.xz	Gcc compiler for u-boot, kernel and applications
xxx	Other tools

1.2 Feature List

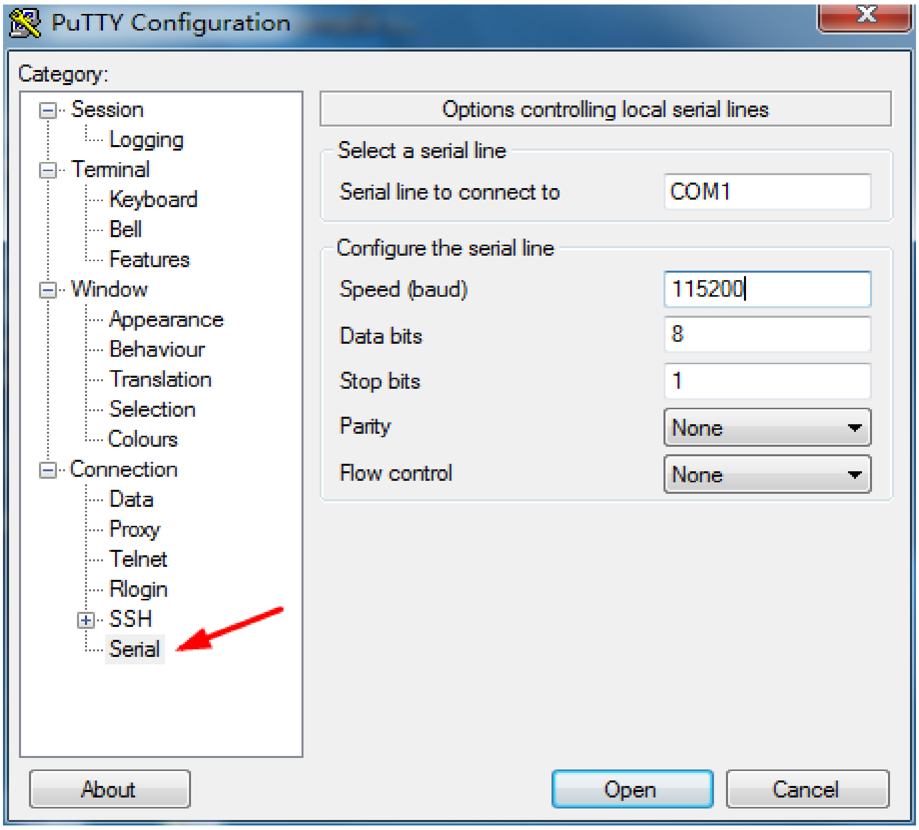
- U-Boot version: 2018.03
- Kernel version: 4.14.78
- Evaluation image Yocto sumo 2.5
- Qt 5.1.1 Library or later
- Desktop
- Development based on NXP i.MX 8M
- Micro SD boot
- HDMI display
- HDMI audio output
- 1 Gigabit Ethernet (RJ45)
- 2 USB 3.0 can work in Host & Device mode
- 3 UART (TTL) include debug port
- External interfaces(I2C, UART,SPI ,SAI and GPIO)
- WIFI & BLE 4.2
- MIPI-LVDS Display
- MIPI-DSI Display
- MIPI camera
- Dual Display (TBD)

Chapter 2 Quick Start

The default version of MaaXBoard support boot up from SD Card only. To burn the image to SD Card, refer to Chapter 4.For the hardware connection and accessories details, please check the QSG.

2.1 Boot from SDCard

- Install the Serial Communication software (e.g. PUTTY), select the corresponding port number, baudrate as 115200, data bits as 8, stop bits as 1, parity as none.



PuTTY Configuration

Options controlling local serial lines

Select a serial line

Serial line to connect to: COM1

Configure the serial line

Speed (baud): 115200

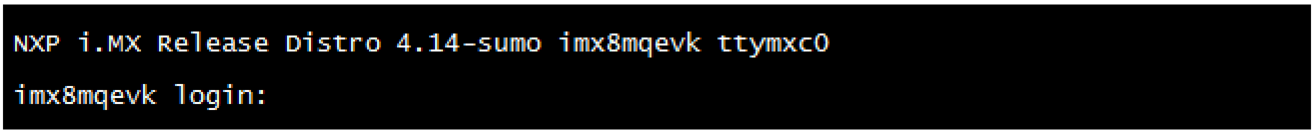
Data bits: 8

Stop bits: 1

Parity: None

Flow control: None

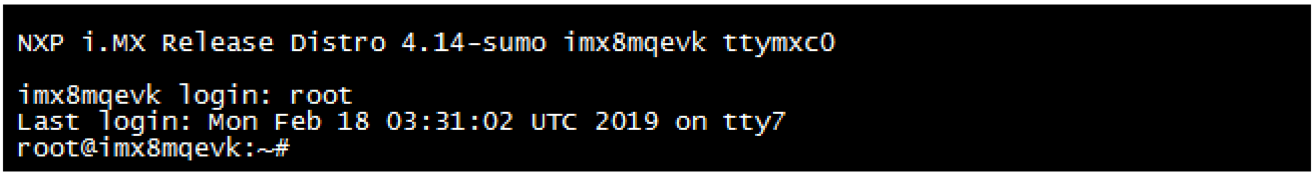
- Connect the debug interface to PC with USB to TTL converter. Pin 6, 8 and 10 of J10 to the GND, RXD and TXD pin of the USB to TTL converter.
- Insert the SD card (with pre-burned image) into the card slot J19.
- Powered the board with a 5V, 2A, Type-C interface power (to J4).
- When the system boot up, the serial terminal will print the following information:



```
NXP i.MX Release Distro 4.14-sumo imx8mqevk ttymxc0

imx8mqevk login:
```

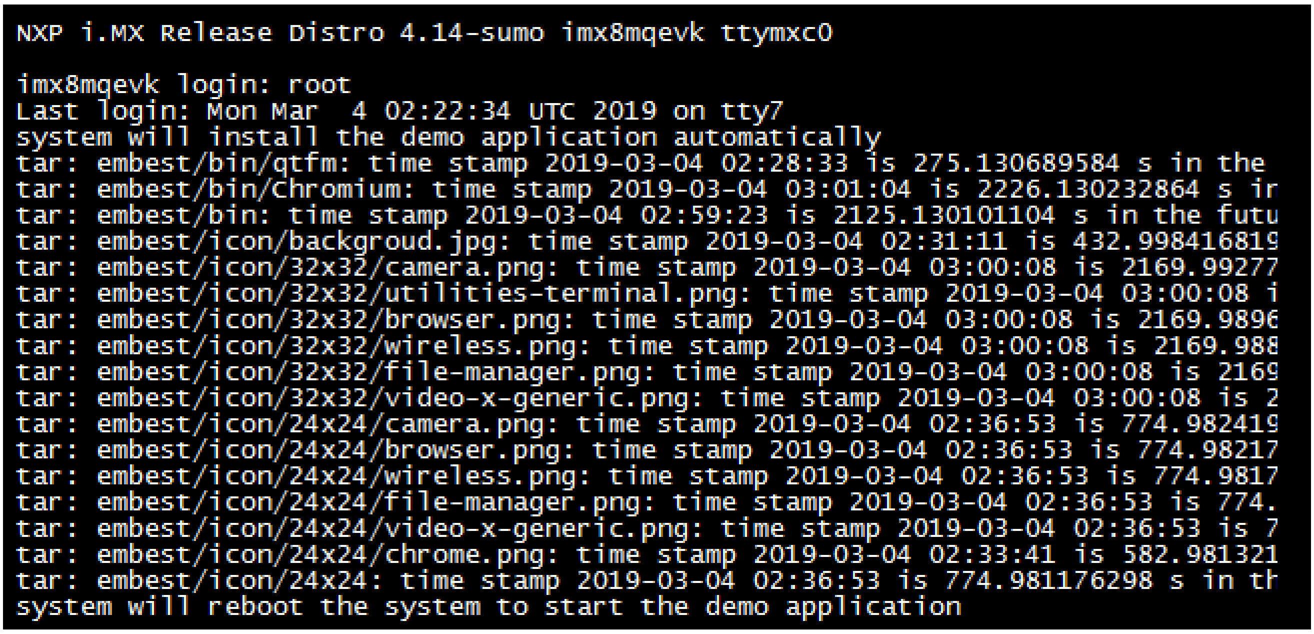
- Enter username as “root” to login.



```
NXP i.MX Release Distro 4.14-sumo imx8mqevk ttymxc0

imx8mqevk login: root
Last login: Mon Feb 18 03:31:02 UTC 2019 on tty7
root@imx8mqevk:~#
```

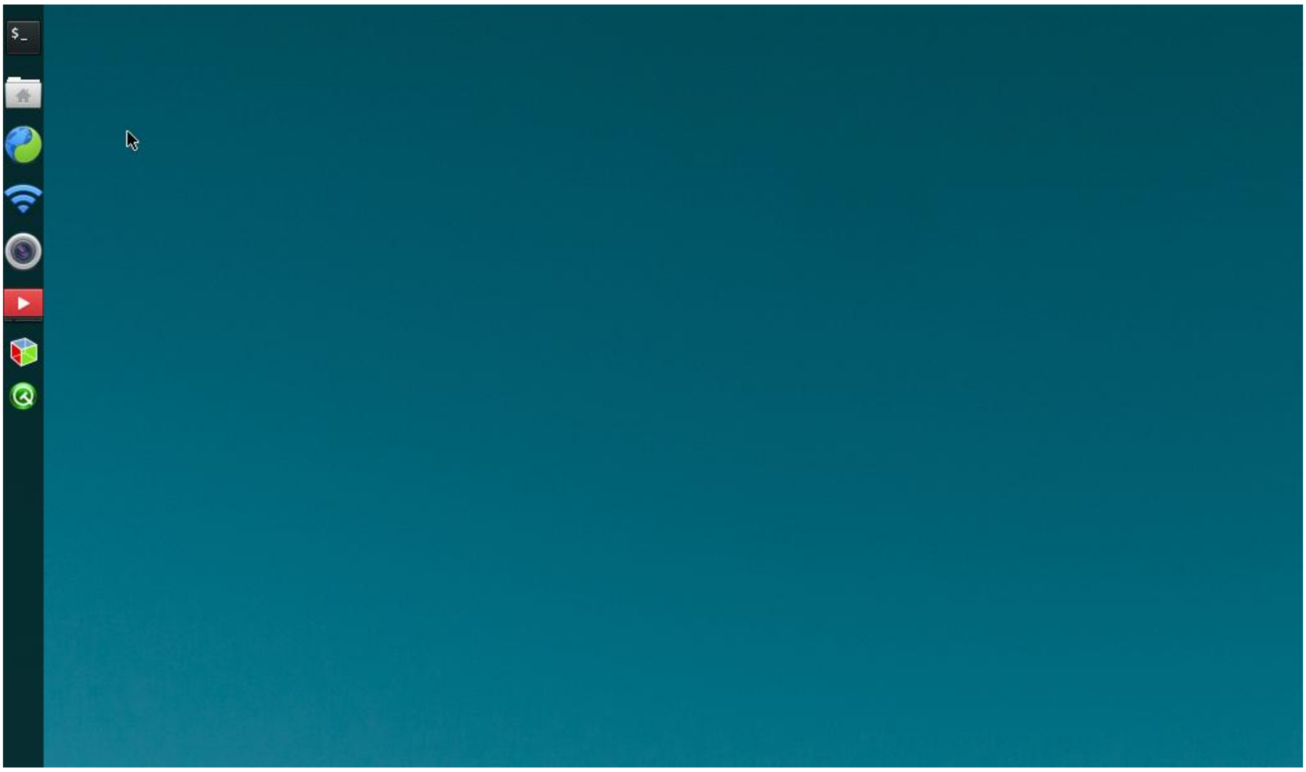
The first time to start the system and login from serial terminal, the system will install the demo application automatically. When installation finished, system will notify the below info and reboot automatically.



```
NXP i.MX Release Distro 4.14-sumo imx8mqevk ttymxc0

imx8mqevk login: root
Last login: Mon Mar  4 02:22:34 UTC 2019 on tty7
system will install the demo application automatically
tar: embest/bin/qtfm: time stamp 2019-03-04 02:28:33 is 275.130689584 s in the
tar: embest/bin/Chromium: time stamp 2019-03-04 03:01:04 is 2226.130232864 s ir
tar: embest/bin: time stamp 2019-03-04 02:59:23 is 2125.130101104 s in the futu
tar: embest/icon/backgroud.jpg: time stamp 2019-03-04 02:31:11 is 432.998416819
tar: embest/icon/32x32/camera.png: time stamp 2019-03-04 03:00:08 is 2169.99277
tar: embest/icon/32x32/utilities-terminal.png: time stamp 2019-03-04 03:00:08 i
tar: embest/icon/32x32/browser.png: time stamp 2019-03-04 03:00:08 is 2169.9896
tar: embest/icon/32x32/wireless.png: time stamp 2019-03-04 03:00:08 is 2169.988
tar: embest/icon/32x32/file-manager.png: time stamp 2019-03-04 03:00:08 is 2169
tar: embest/icon/32x32/video-x-generic.png: time stamp 2019-03-04 03:00:08 is 2
tar: embest/icon/24x24/camera.png: time stamp 2019-03-04 02:36:53 is 774.982419
tar: embest/icon/24x24/browser.png: time stamp 2019-03-04 02:36:53 is 774.98217
tar: embest/icon/24x24/wireless.png: time stamp 2019-03-04 02:36:53 is 774.9817
tar: embest/icon/24x24/file-manager.png: time stamp 2019-03-04 02:36:53 is 774.
tar: embest/icon/24x24/video-x-generic.png: time stamp 2019-03-04 02:36:53 is 7
tar: embest/icon/24x24/chrome.png: time stamp 2019-03-04 02:33:41 is 582.981321
tar: embest/icon/24x24: time stamp 2019-03-04 02:36:53 is 774.981176298 s in th
system will reboot the system to start the demo application
```

After the reboot, screen will show the demo application.



Chapter 3 Feature Configuration & Introduction

First of all, please refer to the previous chapter and boot up the system. Then configure or use the functions according to the following guidance.

3.1 USER LED

User can control the 2 single color LED indicators, LED0 and LED1 (corresponding to usr_led and sys_led) on MaaXBoard Board. Execute the following instructions in serial terminal to control them.
Light out LED:

```
root@imx8mqevk:~# echo 0 > /sys/class/leds/usr_led/brightness
root@imx8mqevk:~# echo 0 > /sys/class/leds/sys_led/brightness
```

Light up LED:

```
root@imx8mqevk:~# echo 1 > /sys/class/leds/usr_led/brightness
root@imx8mqevk:~# echo 1 > /sys/class/leds/sys_led/brightness
```

3.2 Button

MaaXBoard support 3 button: S2, S3 and S4. S2 is “PWR” button, S3 is “BACK” button, S4 is “HOME” button.

1. Test BACK and HOME button with following instructions:

   Enter **evtest** command, then choose the event id for **gpio_keys**

```
root@imx8mqevk:~# evtest
No device specified, trying to scan all of /dev/input/event*
Available devices:
/dev/input/event0:      30370000.snvs:snvs-powerkey
/dev/input/event1:      UVC Camera (046d:0825)
/dev/input/event2:      Logitech USB Optical Mouse
/dev/input/event3:      SIGMACH1P USB Keykoard
/dev/input/event4:      SIGMACH1P USB Keykoard
/dev/input/event5:      gpio_keys
/dev/input/event6:      bd718xx-pwrkey
Select the device event number [0-6]: 5
Input driver version is 1.0.1
Input device ID: bus 0x19 vendor 0x1 product 0x1 version 0x100
Input device name: "gpio_keys"
Supported events:
  Event type 0 (EV_SYN)
  Event type 1 (EV_KEY)
    Event code 102 (KEY_HOME)
    Event code 412 (KEY_PREVIOUS)
Properties:
Testing ... (interrupt to exit)
Event: time 1548661524.359278, type 1 (EV_KEY), code 412 (KEY_PREVIOUS), value 1
Event: time 1548661524.359278, -------------- SYN_REPORT ------------
Event: time 1548661524.631199, type 1 (EV_KEY), code 412 (KEY_PREVIOUS), value 0
Event: time 1548661524.631199, -------------- SYN_REPORT ------------
Event: time 1548661525.683262, type 1 (EV_KEY), code 102 (KEY_HOME), value 1
Event: time 1548661525.683262, -------------- SYN_REPORT ------------
Event: time 1548661525.935198, type 1 (EV_KEY), code 102 (KEY_HOME), value 0
Event: time 1548661525.935198, -------------- SYN_REPORT ------------
```

2. Press PWR button for more than 8s, system will enter suspend mode, press PWR again for 1s, the system will reboot. PWR button also support short press detective, you can test it with following instructions:

```
root@imx8mqevk:~# evtest /dev/input/event0
Input driver version is 1.0.1
Input device ID: bus 0x19 vendor 0x0 product 0x0 version 0x0
Input device name: "30370000.snvs:snvs-powerkey"
Supported events:
  Event type 0 (EV_SYN)
  Event type 1 (EV_KEY)
    Event code 116 (KEY_POWER)
Properties:
Testing ... (interrupt to exit)
Event: time 1551666457.807550, type 1 (EV_KEY), code 116 (KEY_POWER), value 1
Event: time 1551666457.807550, -------------- SYN_REPORT ------------
Event: time 1551666458.000081, type 1 (EV_KEY), code 116 (KEY_POWER), value 0
Event: time 1551666458.000081, -------------- SYN_REPORT ------------
```

Note: Press “CTRL+C” to exit the test.

3.3 Displayer

MaaXBoard supports 3 kinds of displayer: HDMI, MIPI-LVDS and MIPI-DSI screen. Users can connect the screen to MaaXBoard before boot up the system according to the following table. When the system boot up, the screen will print the related startup message and login UI. Users can connect keyboard to login the MaaXBoard file system. The default displayer is HDMI screen.

Screen Type	Interface
HDMI (Default screen)	J19 (Standard HDMI Interface)
MIPI-DSI	J16
MIPI-LVDS	J16

Display device could be chosen by modify the fdt_file value in uEnv.txt.

Modification Method:

After the system start up, use **vi** command to modify the uEnv.txt under path /run/media/mmcblk0p1, use **sync** command to synchronize, then reboot the system to make the modification effective.

3.3.1 HDMI

HDMI is the default displayer, the fdt_file value should be:

```
fdt_file=em-sbc-imx8m.dtb
```

The max HDMI screen resolution supported is 4K.

3.3.2 MIPI-DSI Screen

Choose MIPI-DSI screen, the fdt_file value should be:

```
fdt_file=em-sbc-imx8m-dcss-dsi.dtb
```

MIPI-DSI supports backlight brightness adjustment. The backlight brightness has a range from 0 to 255, in which 10 means highest brightness, 0 means lowest.

Execute the following instructions on the serial terminal to implement the backlight test:

```
root@imx8mqevk:~# echo 7 > /sys/class/backlight/backlight/brightness
```

3.3.3 MIPI-LVDS Screen

Choose MIPI-LVDS screen, the fdt_file value should be:

```
fdt_file=em-sbc-imx8m-dcss-lvds.dtb
```

MIPI-LVDS supports backlight brightness adjustment. The backlight brightness has a range from 0 to 10, in which 10 means highest brightness, 0 means lowest.

Execute the following instructions on the serial terminal to implement the backlight test:

```
root@imx8mqevk:~# echo 5 > /sys/class/backlight/lvds_backlight/brightness
```

3.4 Touchscreen

Connect the screen module to J16, execute the following instructions on the serial terminal to implement the touch screen calibration program:

```
root@imx8mqevk:~# ts_calibrate
```

Following the notes on LCD, click the “+” icon for five times to complete the calibration.

3.5 HDMI Audio

Choose HDMI screen as displayer, connect HDMI displayer and the Audio devices, play the audio file:

```
root@imx8mqevk:~# aplay audio_sample.wav
root@imx8mqevk:~# gst-play-1.0 audio_sample.wav
```

Note: aplay command support audio file in wav format, gst-play command support wav, mp3 and aac format.

3.6 UART

MaaXBoard supports 2 UART interface.

MaaXBoard (CPU)	Interface Type
UART1	UART TTL (Debug Interface)
UART2	UART TTL

3.6.1 UART 2

In the Yocto system, the node for UART2 is /dev/ttymxc1.
The system image provides a test application, uart_test, which could be used for a loop back test.
Short connect the pin 16 and 18 in J10, then enter the following instructions in serial terminal:

```
root@imx8mqevk:~# ./uart_test -d /dev/ttymxc1 -b 115200
/dev/ttymxc1 RECV 10 total
/dev/ttymxc1 RECV: 1234567890
```

The result of RECV as above, means test passed.

Note: Press “CTRL+C” to exit the test.

3.7 Gigabit Ethernet Interface

Connect the network cable to J13, enter the following instructions to set the IP address:
(The below IP address are example, replace it with your real network environment)

3.7.1 Automatic get IP Address

When you connect the network cable, MaaXBoard will get the IP address automatically, you can check the IP address with **ifconfig** command, and test the network with the following instruction:

```
root@imx8mqevk:~# ping www.baidu.com
```

3.7.2 Configure static IP

If you need to set a static IP, execute the following instructions:
You may need to add route info as below:

```
route add default gw 192.168.8.254
```

Set static IP address:

```
root@imx8mqevk:~# ifconfig eth0 192.168.8.119
```

Network test:

```
root@imx8mqevk:~# ping www.baidu.com
```

3.8 USB 3.0 Interface

The USB 3.0 interface HUB1 on have 2 USB Host Interface, the upper one is USB1, the lower one is USB0. USB0 and USB1 both support USB HOST function, USB0 support USB Device function.

3.8.1 USB Host

Insert a U-disk to USB0 or USB1, serial terminal will display the disk information:

```
[   541.484723] usb 2-1: new SuperSpeed USB device number 2 using xhci-hcd
[   541.548910] usb-storage 2-1:1.0: USB Mass Storage device detected
[   541.558886] scsi host0: usb-storage 2-1:1.0
[   542.593679] scsi 0:0:0:0: Direct-Access     Kingston DataTraveler 3.0     PQ: 0 ANSI: 6
[   542.604306] sd 0:0:0:0: [sda] 30218842 512-byte logical blocks: (15.5 GB/14.4 GiB)
[   542.612602] sd 0:0:0:0: [sda] Write Protect is off
[   542.618045] sd 0:0:0:0: [sda] Write cache: disabled, read cache: enabled, doesn't support DPO
or FUA
[   542.632439]   sda: sda1
[   542.636616] sd 0:0:0:0: [sda] Attached SCSI removable disk
[   542.817343] FAT-fs (sda1): Volume was not properly unmounted. Some data may be corrupt.
Please run fsck.
```

Execute the following instructions on the serial terminal:

```
root@imx8mqevk:~# ls /dev/sd*
/dev/sda   /dev/sda1
```

Storage nodes for U disk is /dev/sda, you can use mount command to mount the device for further use.

EM-MC-SBC-IM8M also supports other USB device such as key board and mouse.

3.8.2 USB Device

USB0 support USB Device function could be used to burn the system image or use as USB Network adapter.

3.8.2.1 BURNING MODE

Connect USB0 and PC before power on the board. The system will not boot normally, it will enter burning mode. Then users could burn the system image to the development board using uuu tools. For the detail information, refer to MaaXBoard EMMC burning Guide.

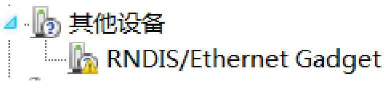
3.8.2.2 USB NETWORK ADAPTER

To use USB0 as USB network adapter, users should modify the value of fdt_file in uEnv.txt and reboot the system.

fdt_file=em-sbc-imx8m-usb0-device.dtb

When choose this value, the displayer is HDMI.

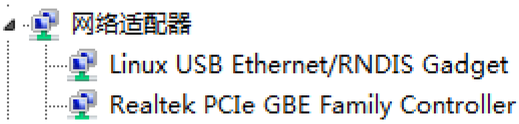
Connect USB0 to PC after the system start up, open the device manager, and check if the following device is recognized:



其他设备
RNDIS/Ethernet Gadget

Please follow the steps listed below to finish USB Device test (Use Windows 7 as example).

1) Install Linux USB Ethernet driver (In release package: LinuxTools), then the device manager will list the Network Adapter: Linux USB Ethernet/RNDIS Gadget



网络适配器
Linux USB Ethernet/RNDIS Gadget
Realtek PCIe GBE Family Controller

2) Execute the following instructions to set and view the IP address of USB OTG port

The below IP address are example, you can select any other IP, but make sure it is NOT the same network segment as your PC’s Ethernet port.

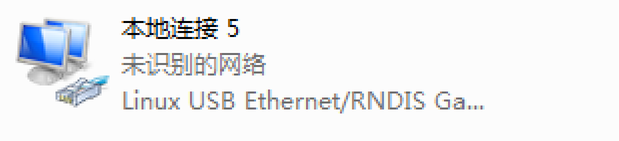
```
root@imx8mqevk:~# ifconfig usb0 up
root@imx8mqevk:~# ifconfig usb0 192.168.1.115
root@imx8mqevk:~# ifconfig
```

The terminal window will print information as shown below

```
usb0      Link encap:Ethernet   HWaddr 92:a9:b6:be:8b:3f
          inet addr:192.168.1.115   Bcast:192.168.1.255   Mask:255.255.255.0
          inet6 addr: fe80::90a9:b6ff:febe:8b3f/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST   MTU:1500   Metric:1
          RX packets:167 errors:0 dropped:0 overruns:0 frame:0
          TX packets:28 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:12180 (11.8 KiB)   TX bytes:7075 (6.9 KiB)
```

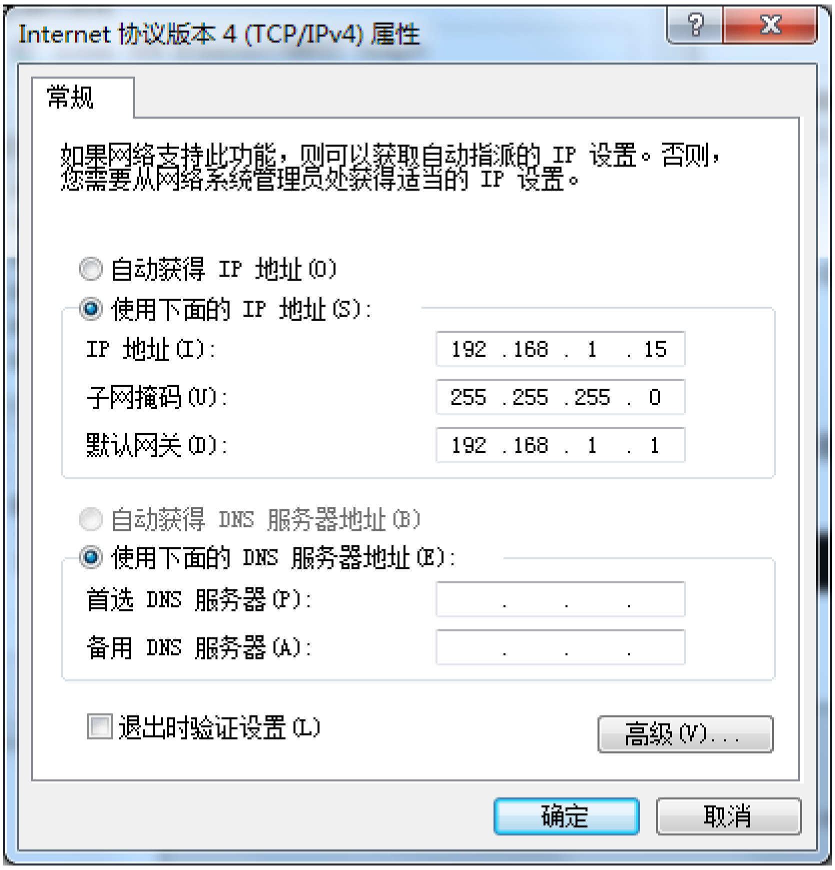
3) Open Control Panel, in the search box, type adapter, and then, under Network and Sharing Center,

select View network connections, you will find a new Local Area Connection as shown below



本地连接 5
未识别的网络
Linux USB Ethernet/RNDIS Ga...

4) Right click the connection “Local Area Connection 5”, select “Properties”-> “Networking” -> “Internet Protocol Version 4 (TCP/IPv4)”, then select Properties to open the following window. Set an IP address that is in the same network segment as the USB OTG port, then click “OK”.



Internet 协议版本 4 (TCP/IPv4) 属性

常规

如果网络支持此功能，则可以获取自动指派的 IP 设置。否则，
您需要从网络系统管理员处获得适当的 IP 设置。

○ 自动获得 IP 地址(O)
● 使用下面的 IP 地址(S):
IP 地址(I): 192 . 168 . 1 . 15
子网掩码(U): 255 . 255 . 255 . 0
默认网关(D): 192 . 168 . 1 . 1

○ 自动获得 DNS 服务器地址(B)
● 使用下面的 DNS 服务器地址(E):
首选 DNS 服务器(P): . . .
备用 DNS 服务器(A): . . .

□ 退出时验证设置(L)

5) Execute the following instruction to verify the network connection;

```
root@imx8mqevk:~# ping 192.168.1.15
PING 192.168.1.15 (192.168.1.15) 56(84) bytes of data.
64 bytes from 192.168.1.15: icmp_seq=1 ttl=64 time=0.865 ms
64 bytes from 192.168.1.15: icmp_seq=2 ttl=64 time=0.464 ms
64 bytes from 192.168.1.15: icmp_seq=3 ttl=64 time=0.259 ms
```

The information shown above indicates the network connection is working properly.

3.9 Wi-Fi

The on-board Wi-Fi module support 2.4G/5G network.

3.9.1 Connect Wi-Fi

To connect WIFI, execute the following instructions on the serial terminal:

```
root@imx8mqevk:~# ./wifi_sta_connect.sh Embest-WiFi 12345678
```

In above instruction: “Embest-WiFi” is the SSID of the WIFI, “12345678” is the password.
If the connection succeeds, it will print the following info:

```
udhcpc: sending discover
udhcpc: sending select for 192.168.1.141
udhcpc: lease of 192.168.1.141 obtained, lease time 86400
/etc/udhcpc.d/50default: Adding DNS 192.168.1.1
```

Test Wi-Fi network with ping command:

```
root@imx8mqevk:~# ping www.baidu.com -I wlan0
PING www.a.shifen.com (103.235.46.39) 56(84) bytes of data.
64 bytes from 103.235.46.39: icmp_seq=1 ttl=50 time=122 ms
```

3.9.2 Disconnect Wi-Fi Connection

To disconnect WIFI, execute the following instructions on the serial terminal:

```
root@imx8mqevk:~# ./wifi_stop.sh
```

If the operation success, it will print the following info:

```
Terminating DHCP
3907

Terminating hostapd

Terminating wpa_supplicant
root 3887 1 0 09:25 ? 00:00:00 wpa_supplicant -B -i wlan0 -c /etc/wpa_supplicant.conf -D nl80211
sending signal 15 to procs
wlan0 has been disconnected on STA mode and AP mode !
```

3.9.3 Wi-Fi AP

To open a Wi-Fi hotspot, connect the network cable to J13, execute the following instructions on the serial terminal:

```
root@imx8mqevk:~# ./wifi_ap_start.sh
Configuration file: /etc/hostapd_mx8.conf
rfkill: Cannot open RFKILL control device
```

```
wlan0: Could not connect to kernel driver
Using interface wlan0 with hwaddr 80:c5:f2:7f:6e:cd and ssid "wifi_testAP"
wlan0: interface state UNINITIALIZED->ENABLED
wlan0: AP-ENABLED
```

Now, you can connect Wi-Fi device to this hotspot, the default ssid is wifi_testAP, password is 12345678. If you need to modify it, use **vi** command to modify the related parameter in **/etc/hostapd_mx8.conf**, then reopen the hotspot.
Shut off the Wi-Fi connection: use **./wifi_stop.sh** command

3.10 Bluetooth 4.2

Execute the following instructions in the serial terminal:

```
root@imx8mqevk:~# ./ bluetooth_start.sh
```

System will open Bluetooth module and scan the Bluetooth device.

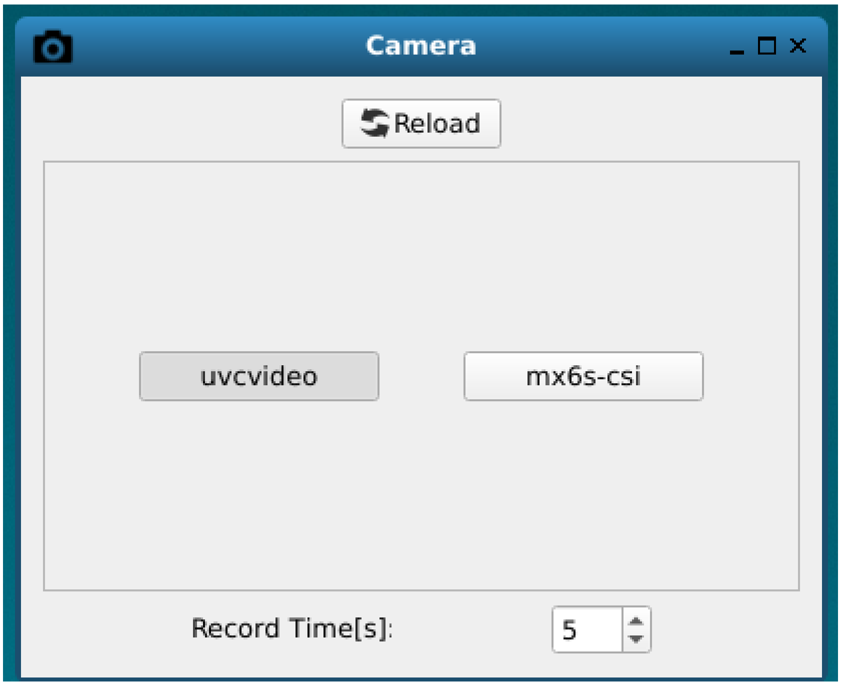
3.11 Camera

MaaXBoard support USB Camera and MIPI-CSI Camera. System provide a Camera application, could be used with desktop environment to preview, photograph and record video.
Connect a displayer, camera to MaaXBoard, make sure the desktop environment is start up.
To use the Camera application, execute the following instructions in the serial terminal:

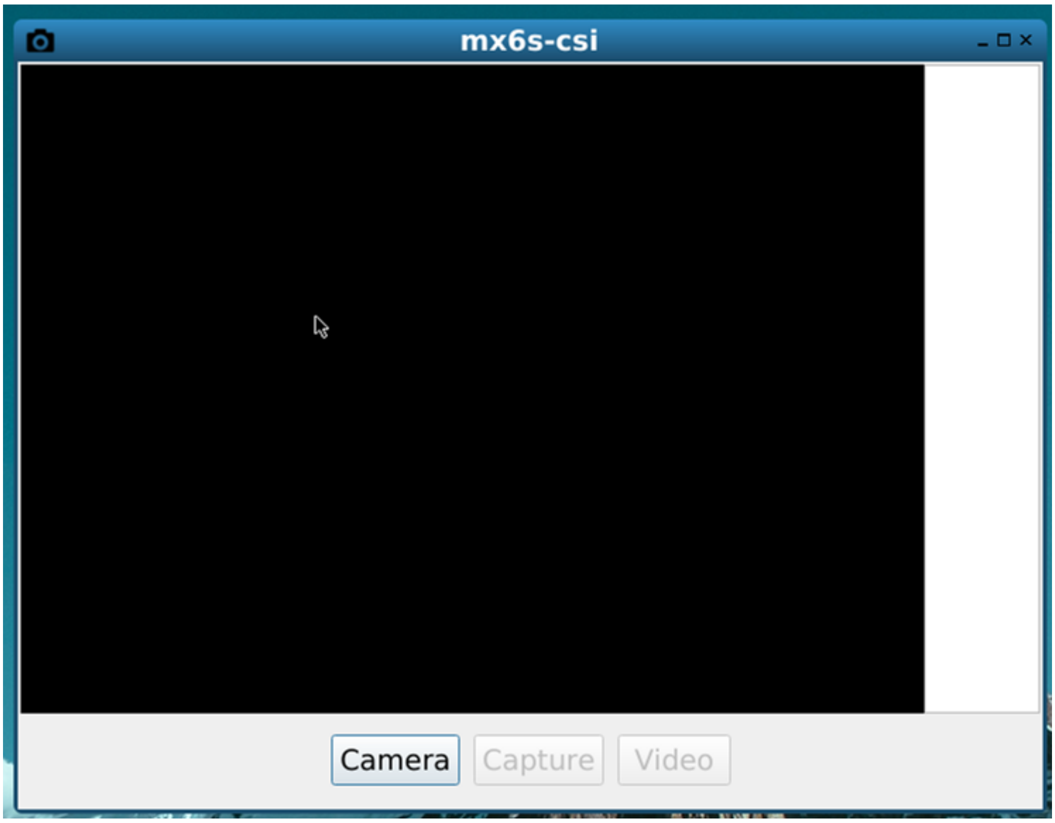
```
root@imx8mqevk:~# ./Camera
```

Note: Press “CTRL+C” in serial terminal or click “X” on the screen to exit the camera application.

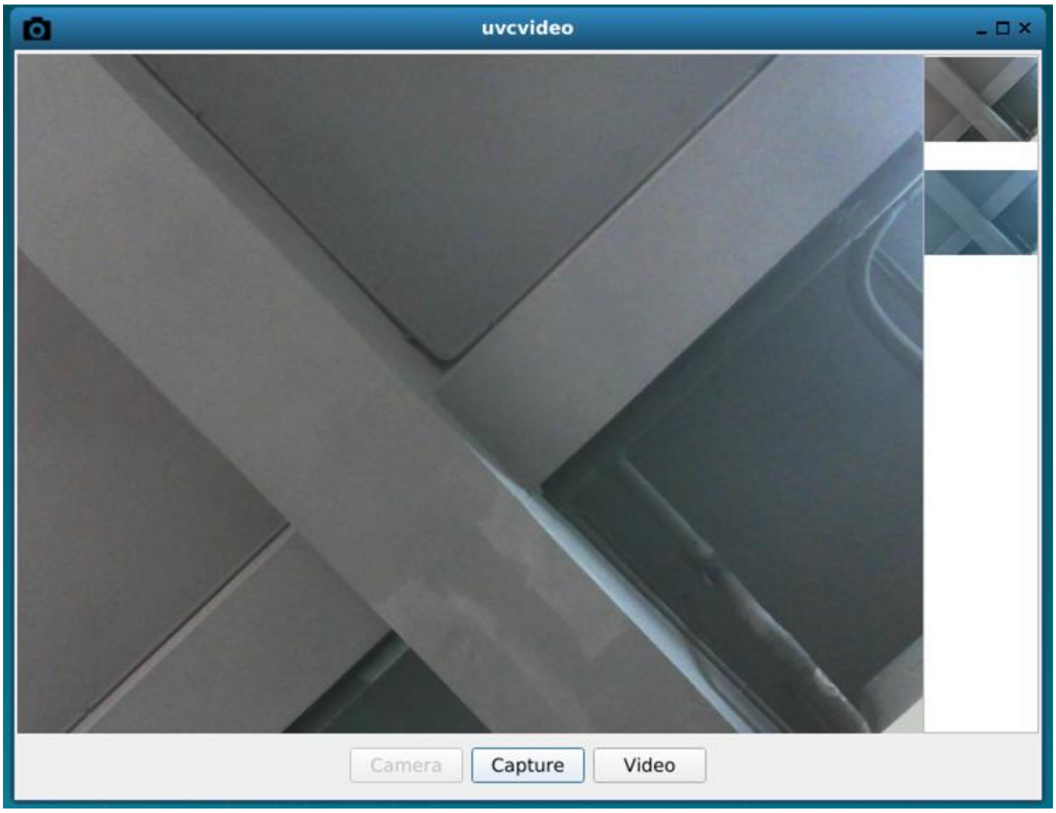
The Camera application will be shown on the screen:



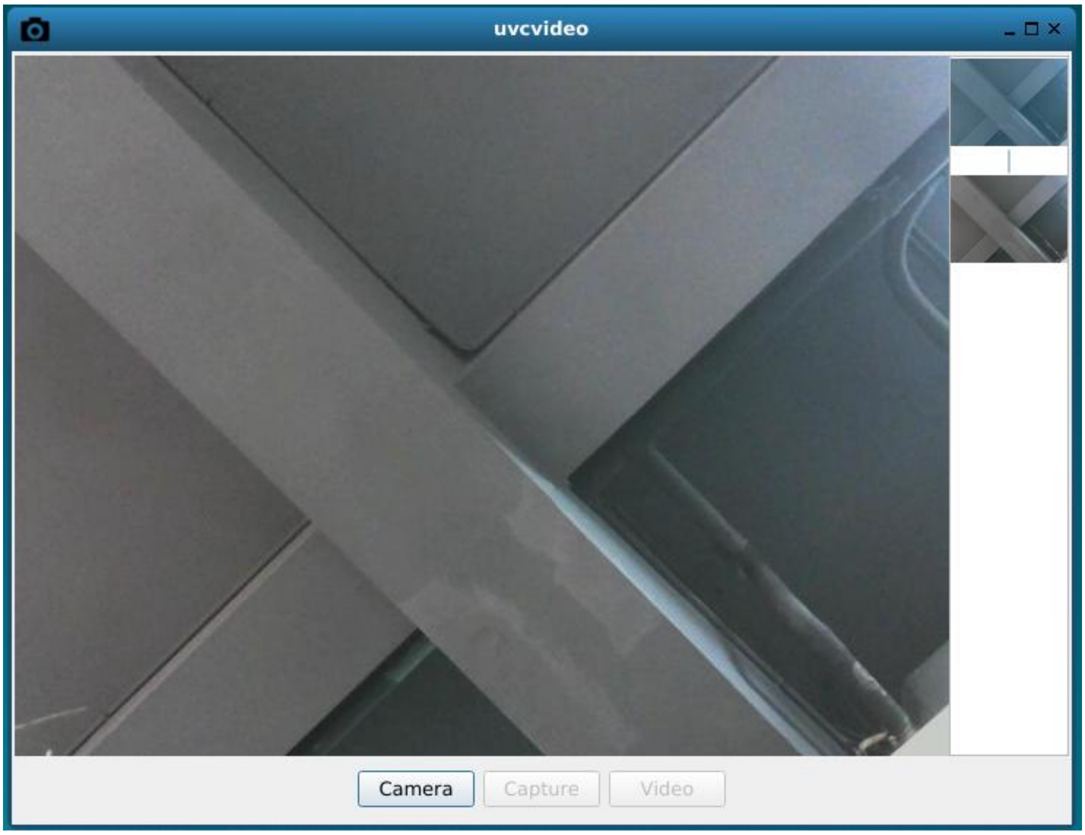
Choose uvcvideo when you use the USB camera, choose mx6s-csi when you use MIPI-CSI camera.



Click the Camera button on screen, to open Camera and preview the video.



Click Capture button to take a photo and show the thumbnail in the right side of the window. Click Video, it will record yuv video file in yuyv format, users could copy it to PC to check with YUVplayer.



Click the thumbnail to close the camera preview and show the whole image in current window.

3.12 GPIO (40 Pin Sense Hat) (TBD)

TBD

3.13 Automatically Mount

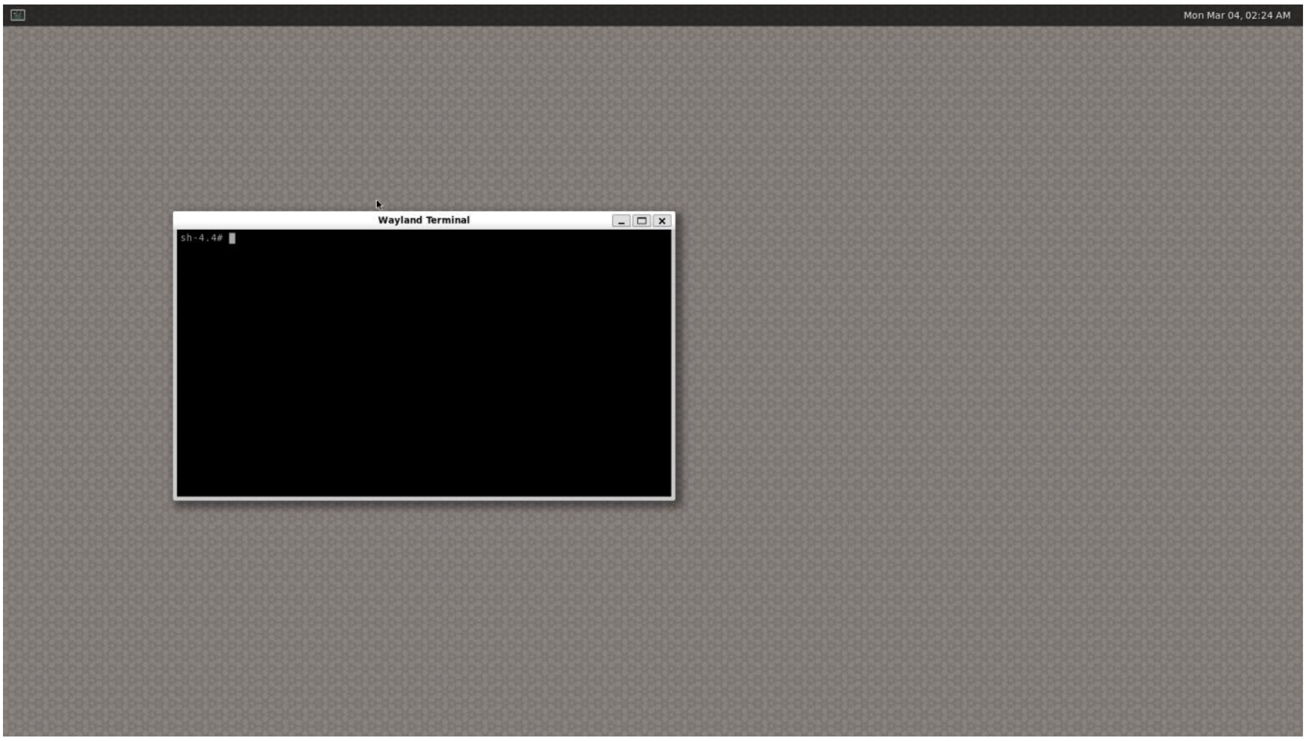
When storage device is connected with the board, Yocto system will mount the storage device to /run/media path, for example:

```
root@imx8mqevk:~# ls /run/media/
mmcblk0p1   sda1
```

In this example, mmcblk0p1 is the first partition of SD Card, sda1 is U disk.

3.14 Desktop Environment

Connect displayer to MaaXBoard, desktop environment will start automatically after system boot. Users can connect keyboard and mouse to the board, open Wayland Terminal to operate it.



```
sh-4.4#
```

If user login from the serial terminal, system will install demo application automatically. For the details of the Demo, refer to next Chapter.

3.15 QT&GPU

Yocto file system integrated QT5.9.4 and GPU development Library, such as EGL, OpenCV, Open CL and Open VG. It also provides several test programs.

GPU test program saved in path /opt/, users can execute them in serial terminal, e.g.:

```
root@imx8mqevk:~# /usr/share/qt5/examples/gui/openglwindow/openglwindow
root@imx8mqevk:~# /opt/imx-gpu-sdk/GLES3/Skybox/Skybox_Wayland
root@imx8mqevk:~# /opt/imx-gpu-sdk/OpenVG/Example3/Example3_Wayland
root@imx8mqevk:~# /opt/viv_samples/tiger/tiger
```

Note: Press “CTRL+C” to exit the test.

3.16 Play Video

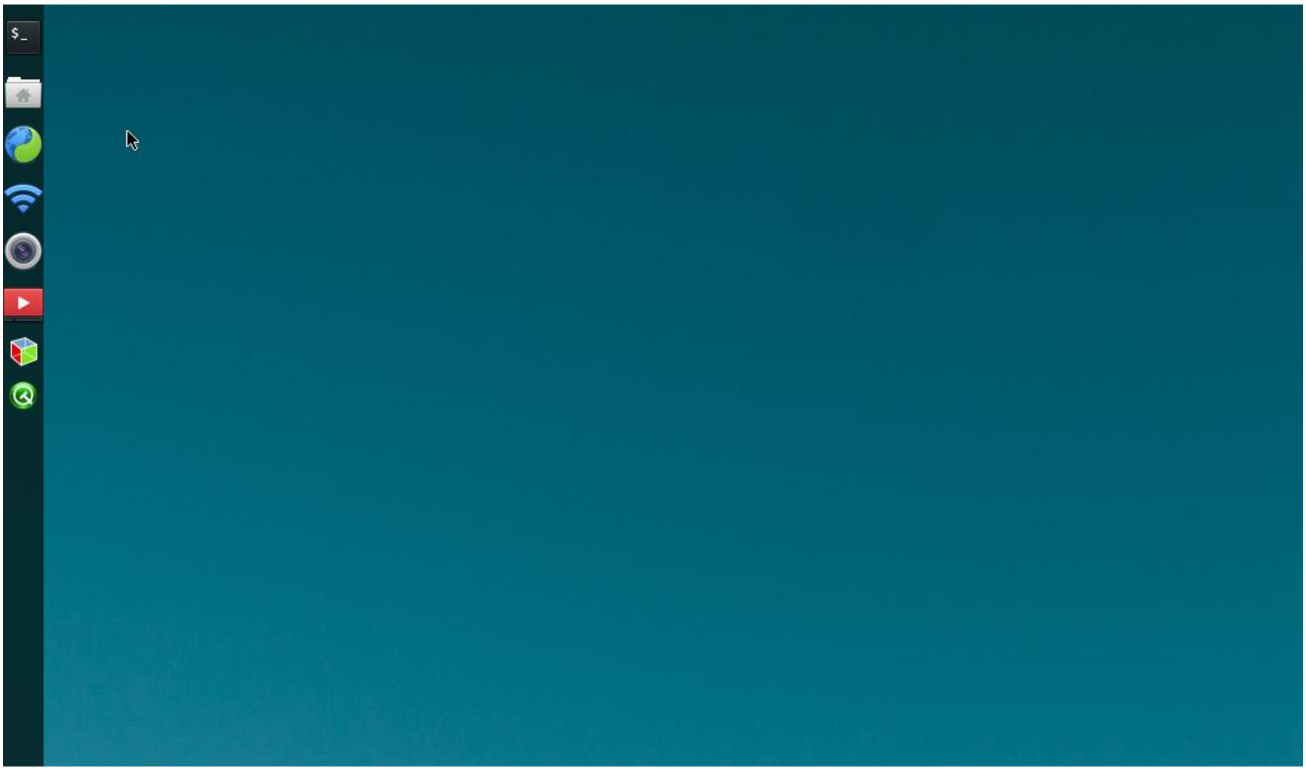
Yocto system support play video file in mp4 format, the largest support resolution is 4K, Execute the following instructions in the serial terminal:

```
root@imx8mqevk:~# gst-play-1.0 4ktest.mp4
```

Chapter 4 Demo Application

The first time to start the system and login from serial terminal, the system will install the demo application and reboot automatically. Then the demo application will be shown the screen.

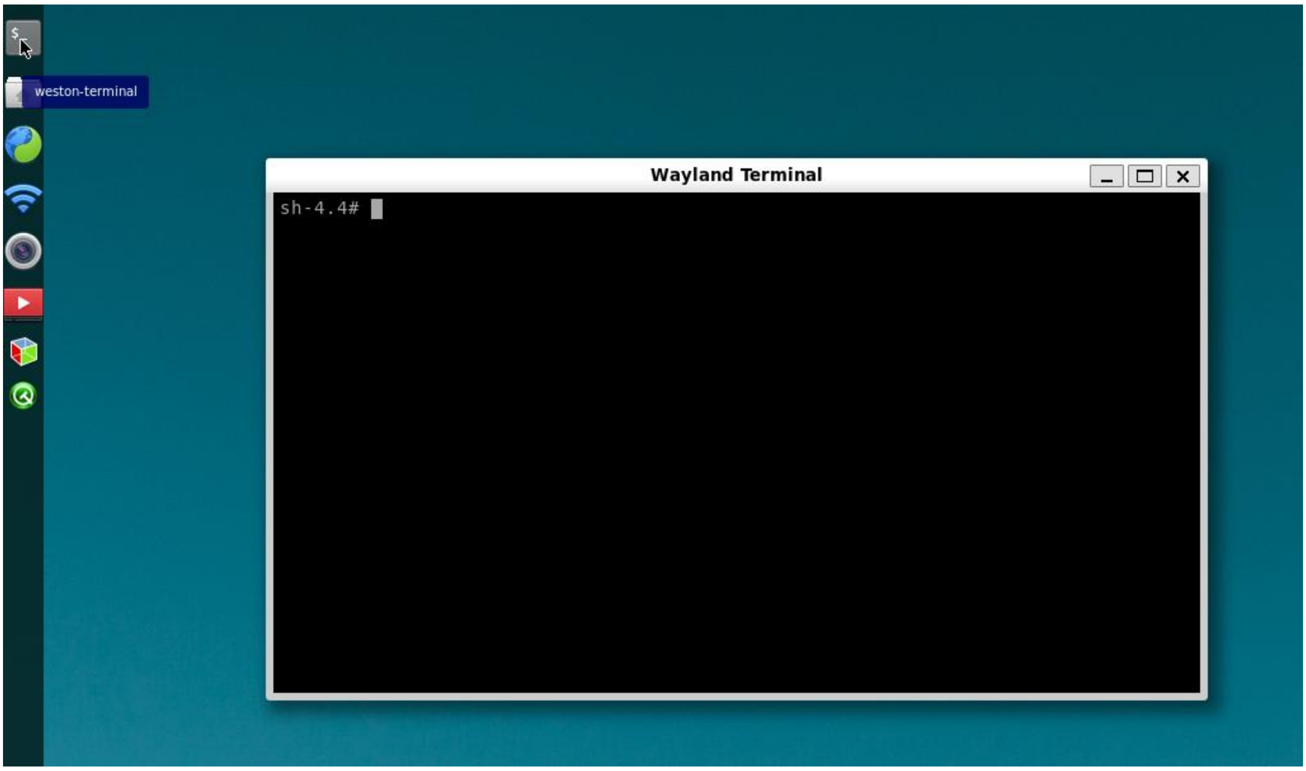
This Demo could display and run normally on HDMI and MIPI-LVDS screen. Users could connect keyboard and mouse to operate.



Demo support these application, which could be open from the menu in the left side of the screen, they are:

- Wayland Terminal
- QtFM
- Chromium
- WiFi_Config
- Camera
- Video
- 3D Example
- QT Examples

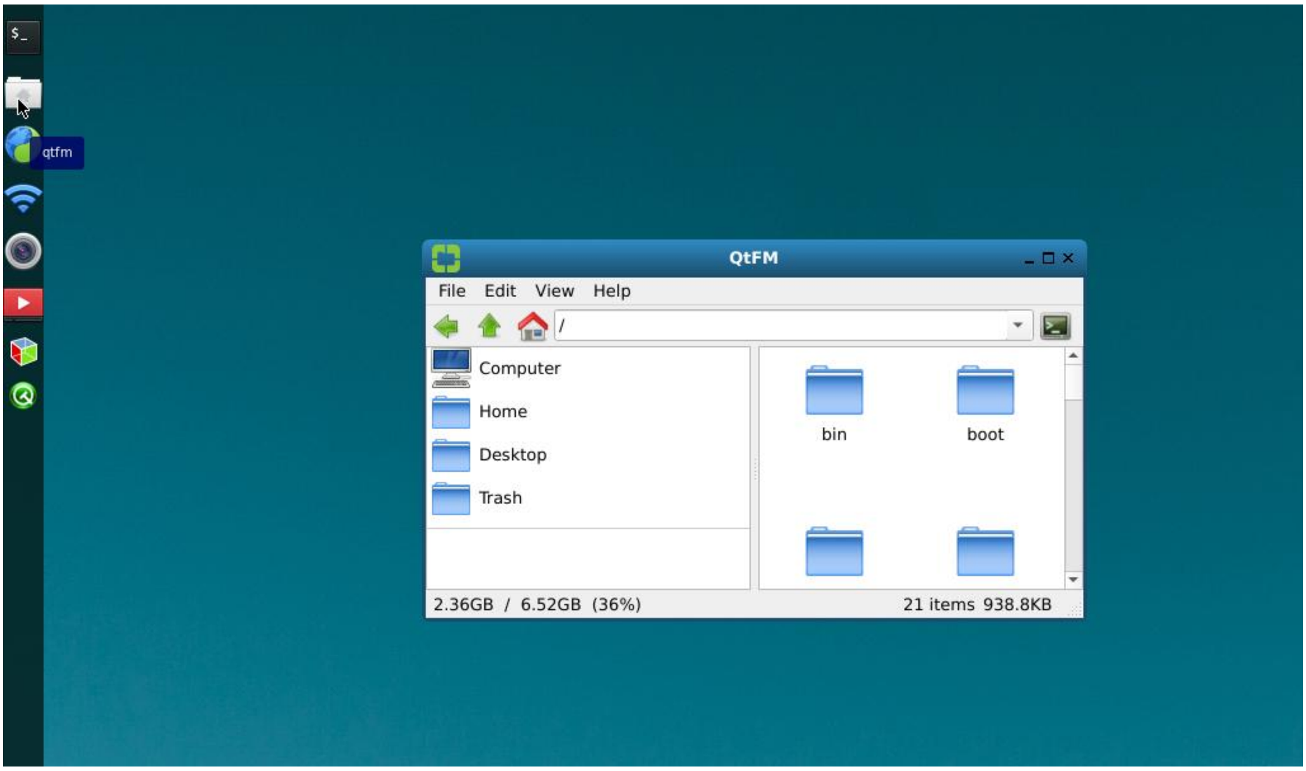
4.1 Wayland Terminal



```
sh-4.4#
```

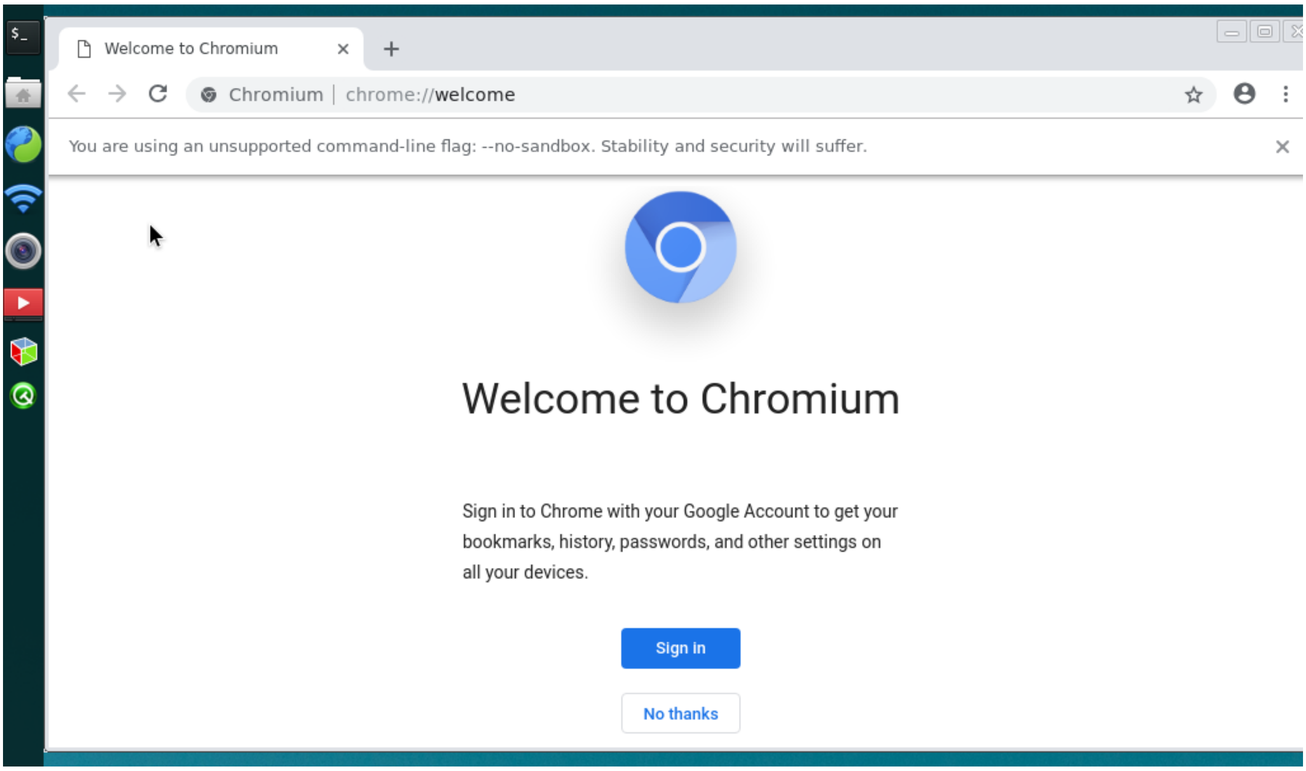
A terminal application could connect keyboard and mouse to operate.

4.2 QtFM



A File Manager based on QT, could be used to view the files and their properties in the system. Support operation as: Copy, Cut, Paste, Delete, Compress, etc.

4.3 Chromium



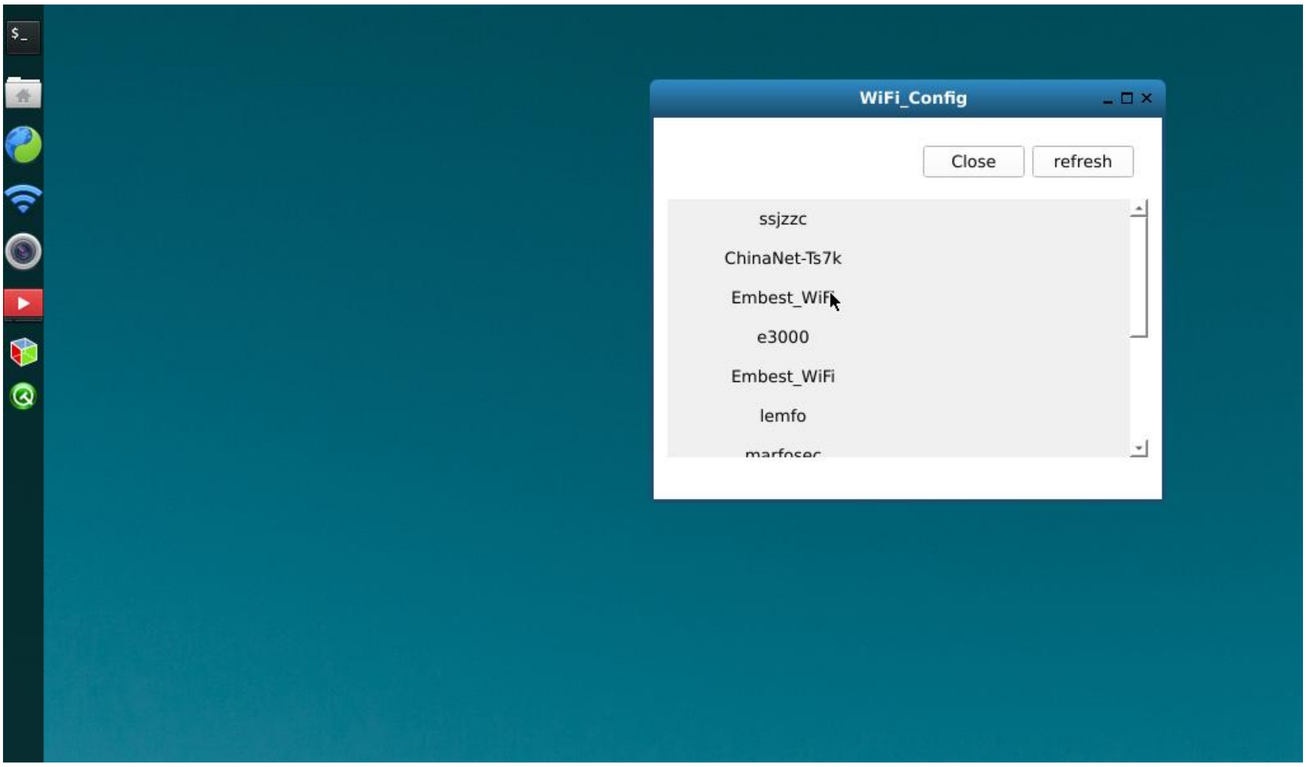
You are using an unsupported command-line flag: --no-sandbox. Stability and security will suffer.

Welcome to Chromium

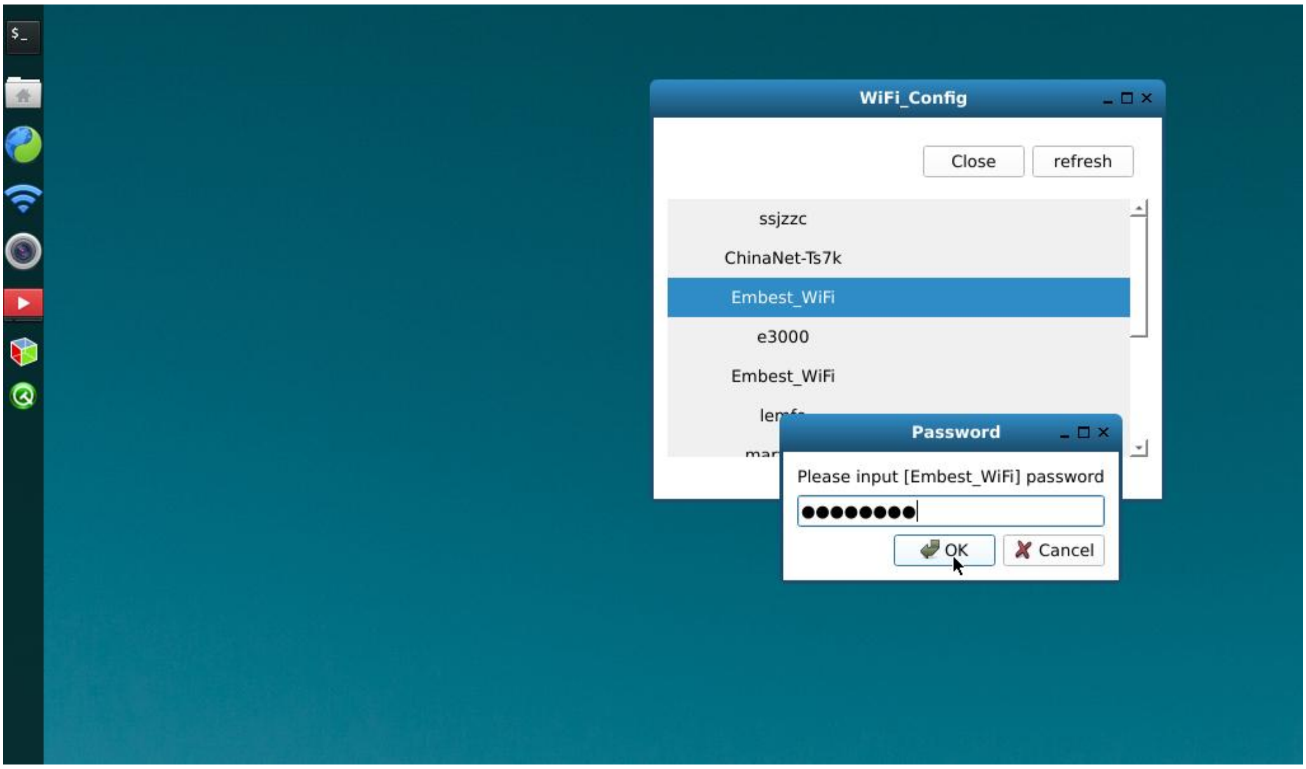
Sign in to Chrome with your Google Account to get your bookmarks, history, passwords, and other settings on all your devices.

Users could connect the internet with this application.

4.4 WiFi_Config



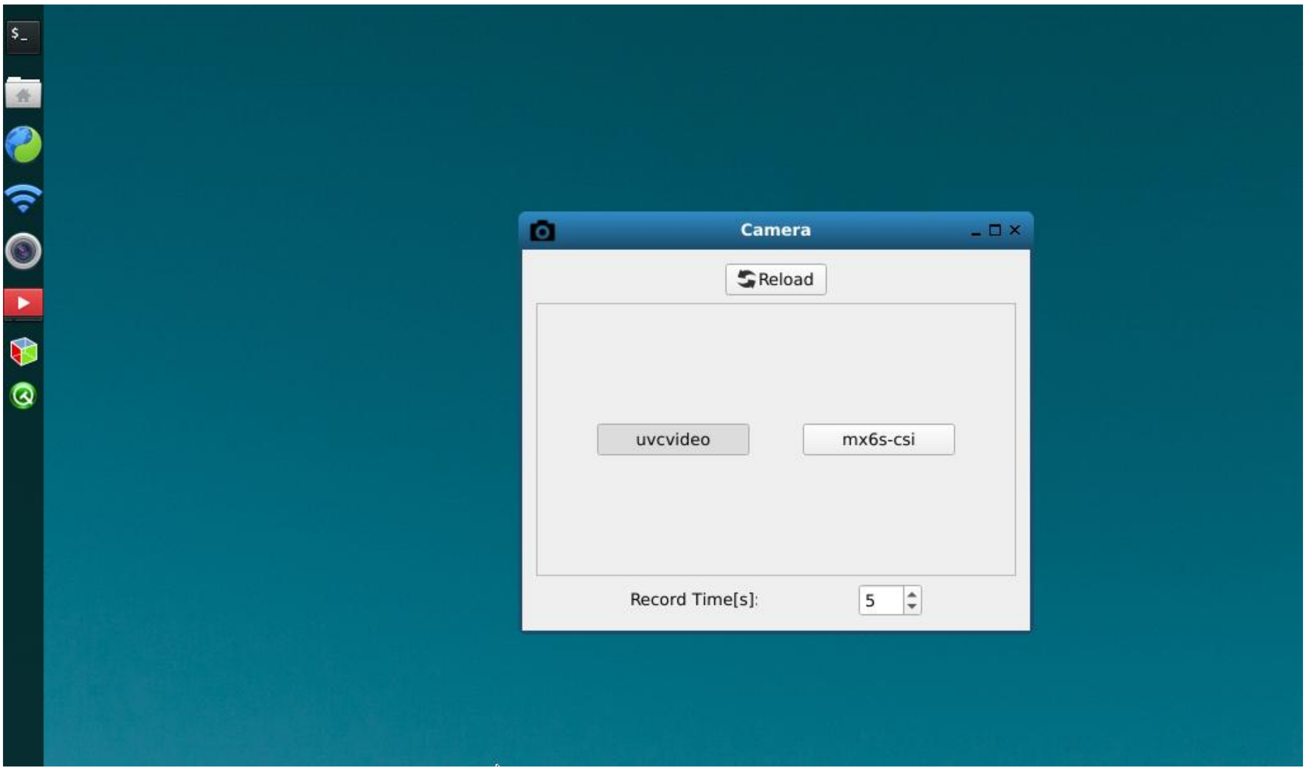
Open WiFi_Config will open Wi-Fi module and shutdown the Gigabit Ethernet adapter. System will scan the Wi-Fi connection. Click the Wi-Fi SSID and enter password to connect. Users could also disconnect the Wi-Fi, refresh the Wi-Fi, shutdown Wi-Fi module and open Gigabit Ethernet adapter.



Please input [Embest_WiFi] password

●●●●●●●●

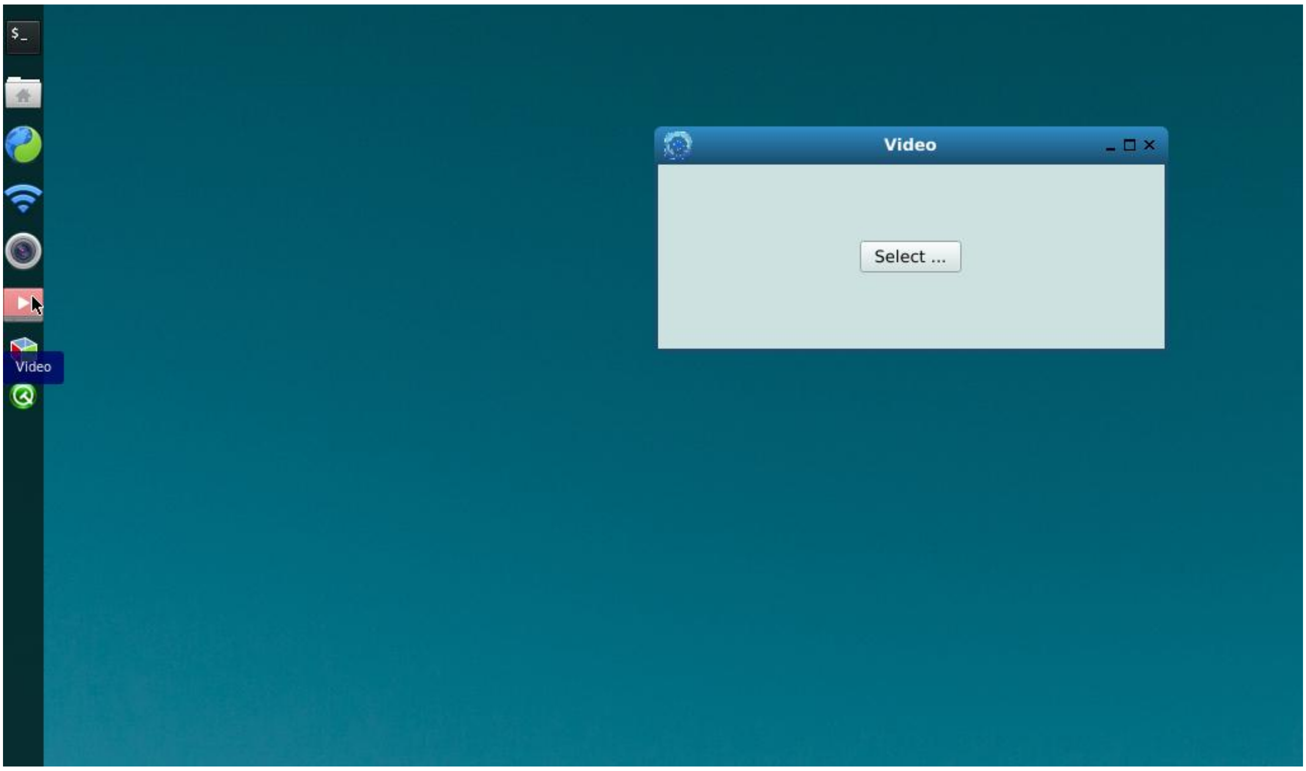
4.5 Camera

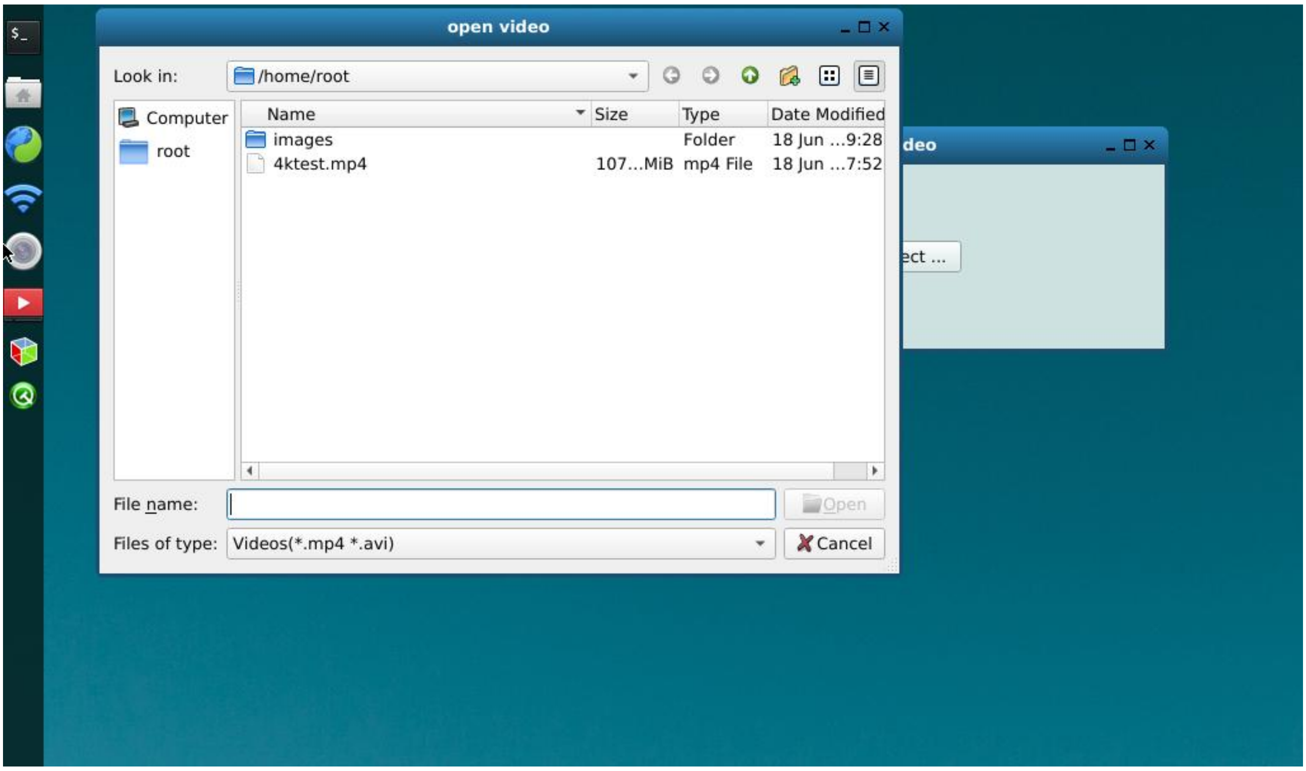


Camera application support USB Camera and MIPI-CSI Camera to preview, photograph and record video. It is the same with Camera application in Yocto system. Refer to 3.11 Camera.

4.6 Video

Video application support play video in mp4 and avi format. The largest support resolution is 4K. Users could choose the video file to be displayed.



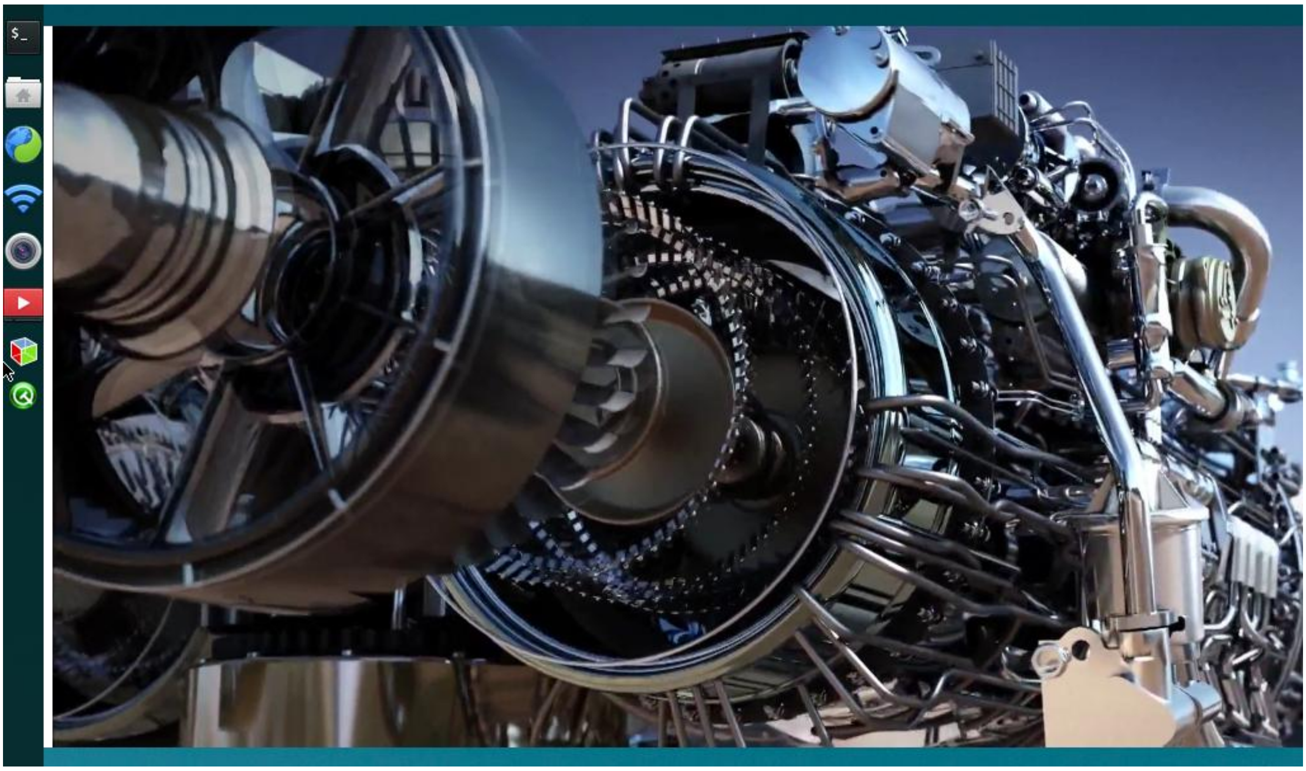


Look in: /home/root

Name	Size	Type	Date Modified
images		Folder	18 Jun ...9:28
4ktest.mp4	107...MiB	mp4 File	18 Jun ...7:52

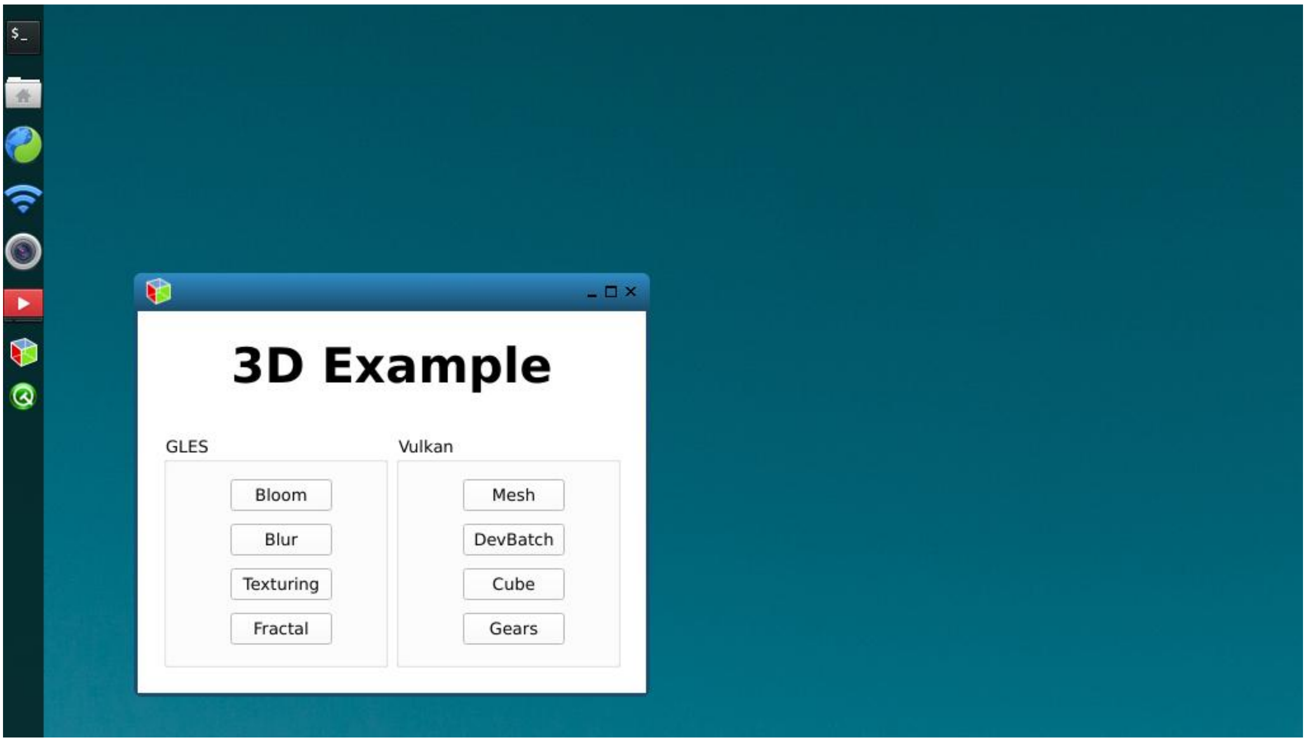
File name:

Files of type: Videos(*.mp4 *.avi)

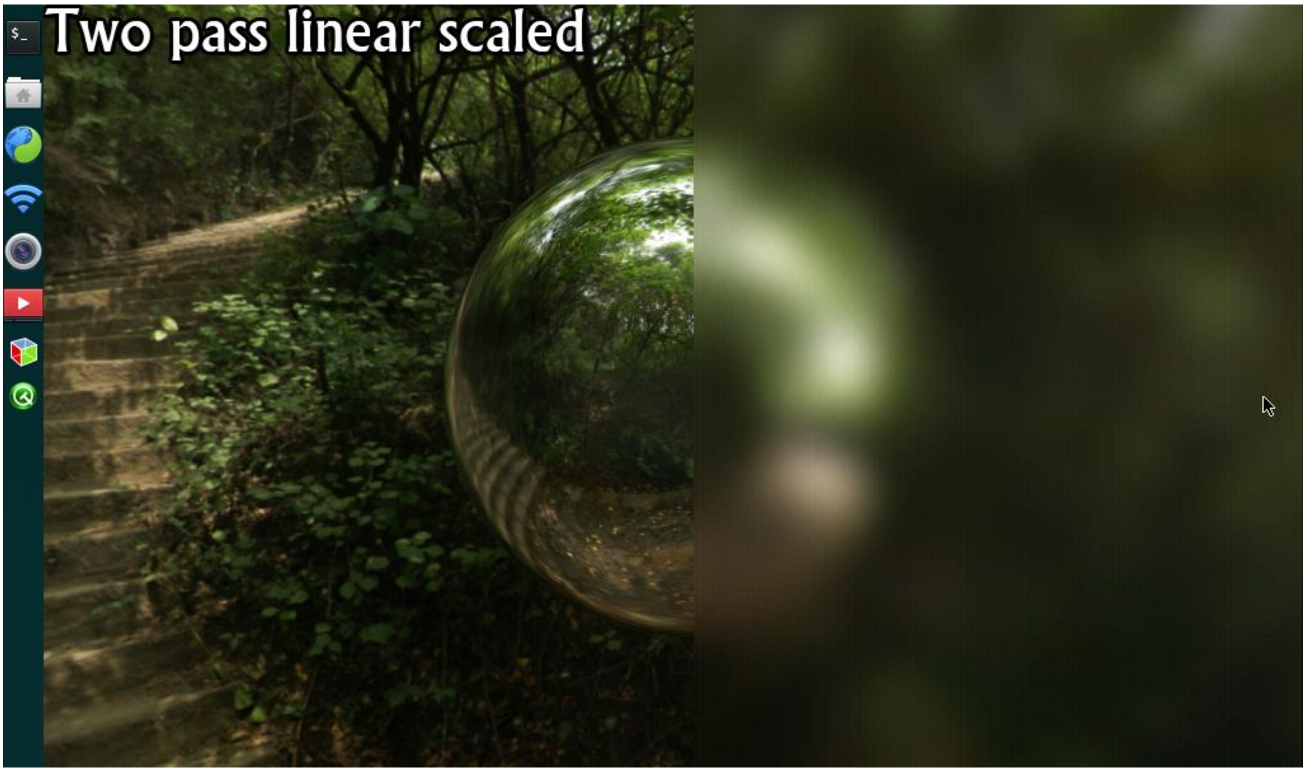


When the video play to the end, it be go back to the file select UI.

4.7 3D Example



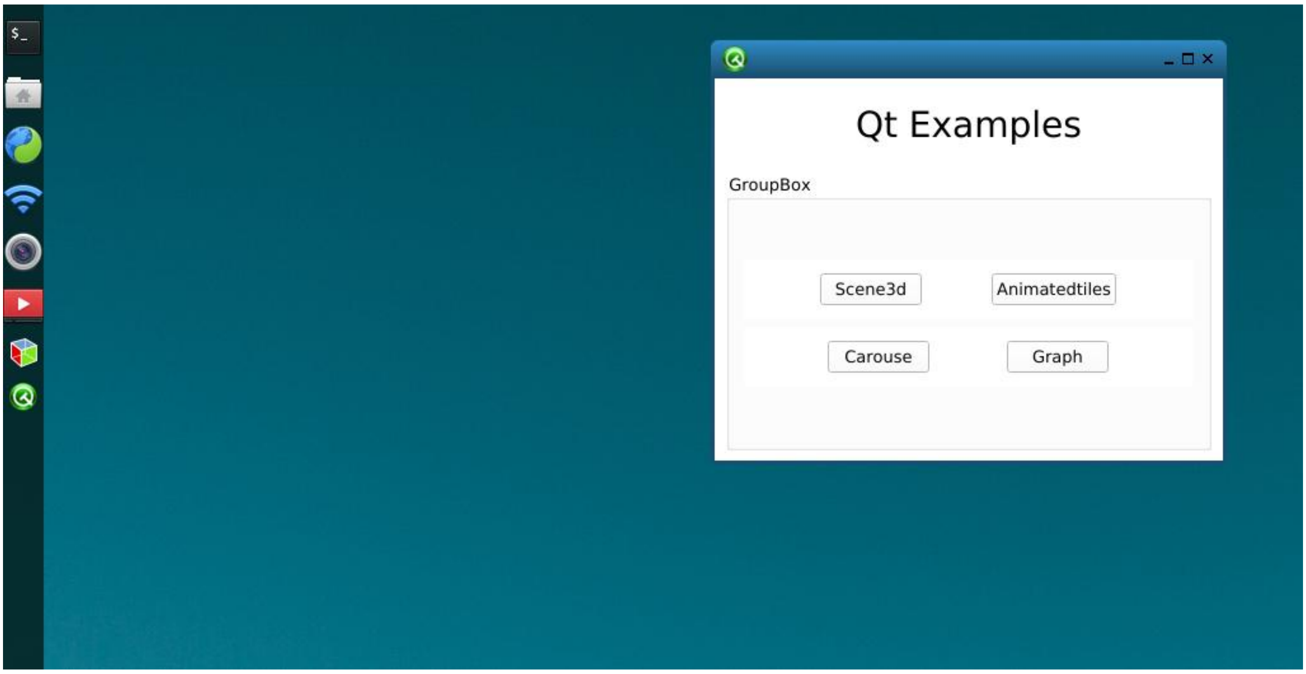
3D Example provides 8 3D test examples. Users could click the example name to open the related application, press Esc on the keyboard to exit the application.



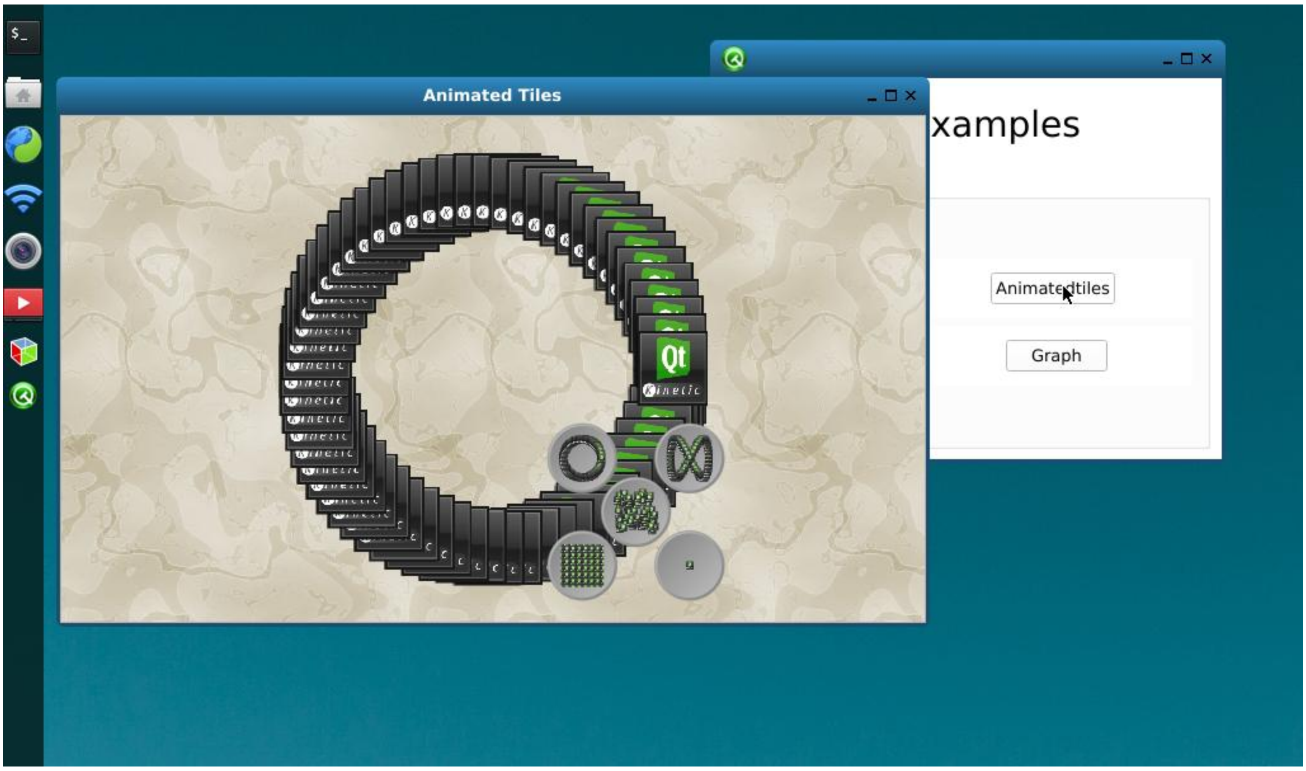
Note: You can only open 1 example at the same time. Close it by press Esc on the keyboard.

4.8 QT Examples

QT Example provides 4 QT test examples. Users could click the example name to open the related application, click “X” button in the application to exit.



Note: You can only open 1 example at the same time. Close it by click “X”.

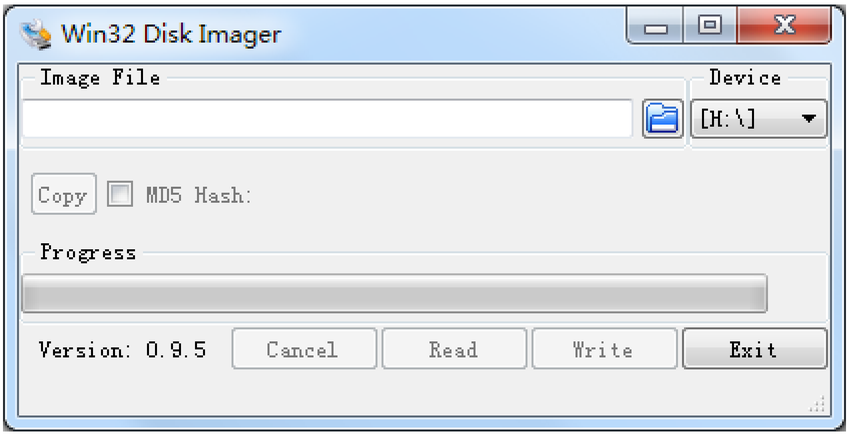


Chapter 5 Burn or update the system Image

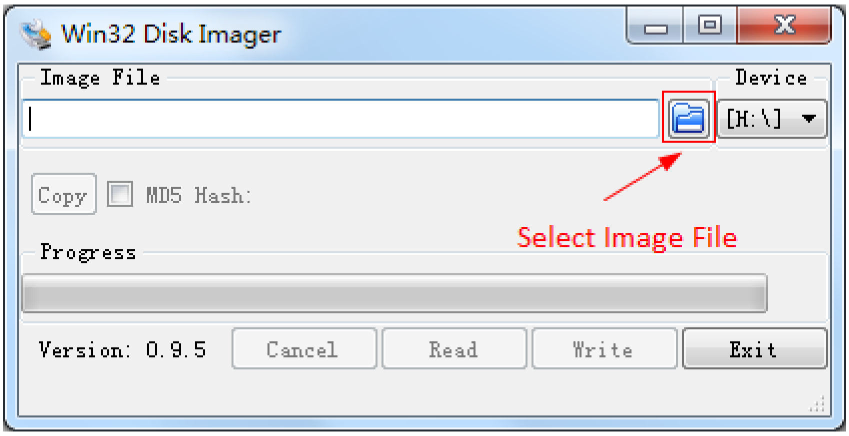
5.1 Burn the System Image to SD Card under Windows OS

1. Firstly, you should prepare a SD card, which is no less than 8GB.
2. Then, download and install “Win32 Disk Imager” from:

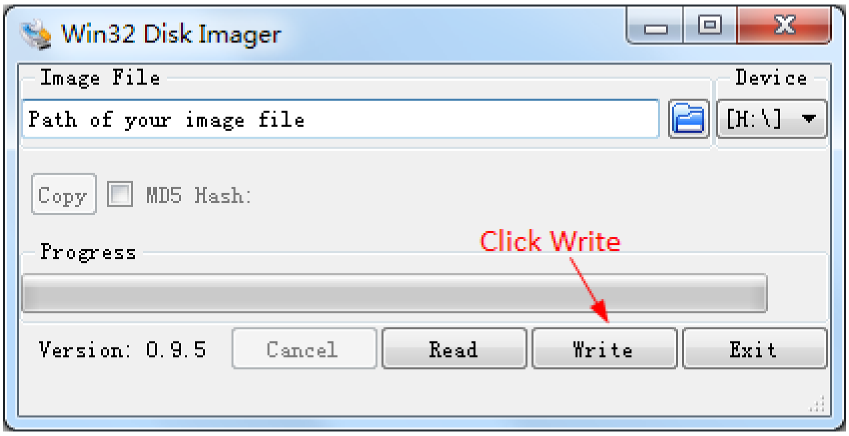
   https://sourceforge.net/projects/win32diskimager/.



3. Select the system images file: eg:MaaXBoard-LinuxShipmentImage-Yocto-V1.0.6r07.img



4. Click “Write” button to burn the images:



5.2 Burn the System Image to SD Card under Linux OS

In Ubuntu or Debian OS, you can use bmap-tool to burn the image to SD Card. Here we use MaaXBoard-LinuxShipmentImage-Yocto-V1.0.6r07.img as an example:

1. Install bmap-tools

```
$ sudo apt install bmap-tools
```

2. Enter the following instructions in command line to check the SD Card ID, in this example is: sdc

```
$ ls /dev/sd*
/dev/sda    /dev/sda2   /dev/sdb    /dev/sdb2   /dev/sdc    /dev/sdc2
/dev/sda1   /dev/sda5   /dev/sdb1   /dev/sdb5   /dev/sdc1
```

3. If SD Card is mounted, umount it.

```
$ sudo umount /dev/sdc1
$ sudo umount /dev/sdc2
```

4. Burn the SD card with following instructions:

```
$ bmaptool create -o burn.map MaaXBoard-LinuxShipmentImage-Yocto-V1.0.6r07.img
$ sudo bmaptool copy --bmap burn.map MaaXBoard-LinuxShipmentImage-Yocto-V1.0.6r07.img
/dev/sdc
```

5.3 Update System Image in eMMC

USB0 (The lower one in USB interface HUB1) support burning mode. Connect USB0 and PC before power on the board. The system will enter burning mode. Then users could burn the system image to the development board using uuu tools. For the detail information, refer to MaaXBoard EMMC burning Guide.

Chapter 6 Appendix

6.1 Hardware

For the detail hardware introduction, please refer to MaaXBoard Hardware user manual.

Chapter 7 Technical Support and Warranty

7.1 Technical Support

Avnet Manufacturing Services provides its product with one-year free technical support including:

- Providing software and hardware resources related to the embedded products of Avnet Manufacturing Services;
- Helping customers properly compile and run the source code provided by Avnet Manufacturing Services;
- Providing technical support service if the embedded hardware products do not function properly under the circumstances that customers operate according to the instructions in the documents provided by Avnet Manufacturing Services;
- Helping customers troubleshoot the products.
- The following conditions will not be covered by our technical support service. We will take appropriate measures accordingly:
    - Customers encounter issues related to software or hardware during their development process;
    - Customers encounter issues caused by any unauthorized alter to the embedded operating system;
    - Customers encounter issues related to their own applications;
    - Customers encounter issues caused by any unauthorized alter to the source code provided by Avnet Manufacturing Services.

7.2 Warranty Conditions

- 12-month free warranty on the PCB under normal conditions of use since the sales of the product;
- The following conditions are not covered by free services; Avnet Manufacturing Services will charge accordingly:
    - Customers fail to provide valid purchase vouchers or the product identification tag is damaged, unreadable, altered or inconsistent with the products;
    - Not according to the user's manual operation causes damage to the product;
    - Products are damaged in appearance or function caused by natural disasters (flood, fire, earthquake, lightning strike or typhoon) or natural aging of components or other force majeure;
    - Products are damaged in appearance or function caused by power failure, external forces, water, animals or foreign materials;

  - Products malfunction caused by disassembly or alter of components by customers or, products disassembled or repaired by persons or organizations unauthorized by Avnet Manufacturing Services, or altered in factory specifications, or configured or expanded with the components that are not provided or recognized by Avnet Manufacturing Services and the resulted damage in appearance or function;
  - Product failures caused by the software or system installed by customers or inappropriate settings of software or computer viruses;
  - Products purchased from unauthorized sales;
  - Warranty (including verbal and written) that is not made by Avnet Manufacturing Services and not included in the scope of our warranty should be fulfilled by the party who committed. Avnet Manufacturing Services has no any responsibility.
- Within the period of warranty, the freight for sending products from customers to Avnet Manufacturing Services should be paid by customers; the freight from Avnet Manufacturing Services to customers should be paid by us. The freight in any direction occurs after warranty period should be paid by customers;
- Please contact technical support if there is any repair request.
- **Avnet Manufacturing Services will not take any responsibility on the products sent back without the permission of the company.**

Chapter 8 Contact Information

- Tel: +86-755-33190846/33190847/33190848
- E-mail:
  - Technical support: support@embest-tech.com
  - Sales contact: globalsales@embest-tech.com
- Fax: +86-755-25616057
- Website: http://www.embest-tech.com/
- Address: Tower B 4/F, Shanshui Building, Nanshan Yungu Innovation Industry Park, Liuxian Ave.No.4093,Nanshan District, Shenzhen, Guangdong, China