

# **EM3399 Debian user manual**

v1.0

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Date: 2017-04-25

## Colophon

Ver	Author	Description	Date
V1.0	Qin	Initial version	2017-04-25

# Catalog

Catalog.....	3
1.Compiler Environment.....	4
1.1 Vmware7.0+ubuntu14.04.....	4
2. Compilation.....	4
2.1 Install the compiler.....	4
2.2 kernel compilation.....	4
2.3 Cure Debian System.....	4
3. Install USB driver.....	5
3.1 install debug serial driver.....	5
3.2 install driver.....	6
4. Flashing image.....	8
5. Test.....	9
5.1 SecureCRT setting.....	9
5.2 HDMI.....	10
5.3 test 3D.....	10
5.4 test video.....	10
5.5 audio.....	12
5.6 ethernet.....	13
5.7 wifi.....	14
5.8 bluetooth.....	14
5.9 3G(MU709s-2).....	16
5.10 external storage.....	17
5.11 test gpio.....	17

# 1. Compiler Environment

## 1.1 Vmware7.0+ubuntu14.04

Install Vmware7.0 in windows OS , and then install ubuntu14.04 64bit in VMware to compile. You can see the installing steps in the initial version.

# 2. Compilation

## 2.1 Install the compiler

Cross compile toolchain version: aarch64-linux-android-4.9

It is suggested to install the cross compile toolchain to /usr/local/arm/ (The makefile has designated the directory in the source).User also can install the tool chain to the other directory.(if change path,please sync the “CROSS\_COMPILE” in kernel/Makefile)

Installing commands:

```
# mkdir /usr/local/arm  
# tar zxvf aarch64-linux-android-4.9.tar.gz -C /usr/local/arm/
```

## 2.2 kernel compilation

```
tar zxvf kernel.tar.gz  
cd kernel  
make ARCH=arm64 rockchip_linux_defconfig  
make ARCH=arm64 rk3399-sapphire-excavator-linux.img -j12
```

After compile finish, you can get resource.img and kernel.img in the directory.

## 2.3 Cure Debian System

Download Boardcon debian system to the board, then modify your files in the system. Finally, do the follow the steps below to make the modified file system.

**Step1**, Insert U-disk to the board.

**Step2**, Execute the follow command to view the space required for the file system.

```
# df
```

```
root@linaro-alip:/media/linaro/WD/root# df  
Filesystem 1K-blocks Used Available Use% Mounted on  
/dev/root 29950948 1502020 27201008 6% /  
devtmpfs 1953212 0 1953212 0% /dev  
tmpfs 1953724 0 1953724 0% /dev/shm  
tmpfs 1953724 17020 1936704 1% /run  
tmpfs 5120 4 5116 1% /run/lock  
tmpfs 1953724 0 1953724 0% /sys/fs/cgroup  
tmpfs 390744 0 390744 0% /run/user/0  
tmpfs 390744 8 390736 1% /run/user/1000  
/dev/mmcblk0p1 1948416 979776 968640 51% /media/linaro/0000-4823  
/dev/sdb1 7548624 4148992 3399632 55% /media/linaro/WD  
root@linaro-alip:/media/linaro/WD/root#
```

Create an empty folder (rootfs), in that folder to make a size of 1.6Gb file system. Execute the follow command in the board of ubuntu system to make file system:

```
# cd /media/linaro/WD          (The udisk0 is the usb disk device name)
#mkdir rootfs
#cd rootfs
# dd if=/dev/zero of=linuxroot.img bs=1M count=1600
# mkfs.ext4 -F -L linuxroot linuxroot.img
# mount -o loop linuxroot.img /opt
# mount /dev/mmcblk1p5 /mnt
# cp -a /mnt/* /opt
# touch /opt/firstboot
# umount /opt
# umount /mnt
```

Now that we've got “**linuxroot.img**” in the path: /media/ linaro/WD/rootfs. The linuxroot.img is the final file system image files.

**Step3,** Execute the follow command in the ubuntu system of PC to calculates the actual size of linuxroot.img.

```
# e2fsck -p -f linuxroot.img
# resize2fs -M linuxroot.img
```

On the other hand, if you just want to modify the file system, you can use this way.

**NOTE: This is operating in the compiled environment.**

```
# mount linuxroot.img rootfs/  (The rootfs is your folder name)
```

After the modification:

```
# umount rootfs
```

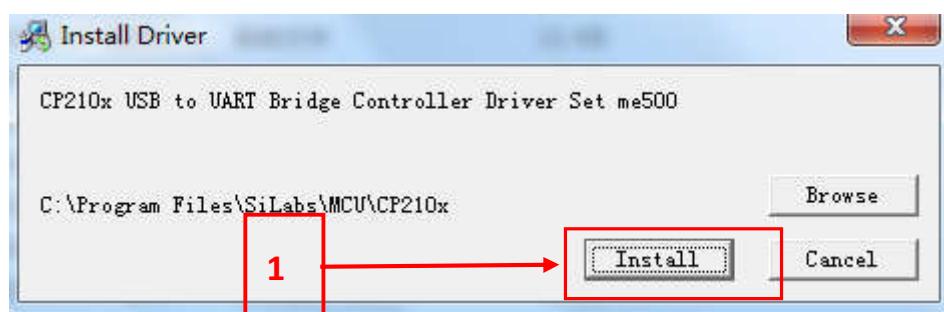
Then the **linuxroot.img** is the new file system.

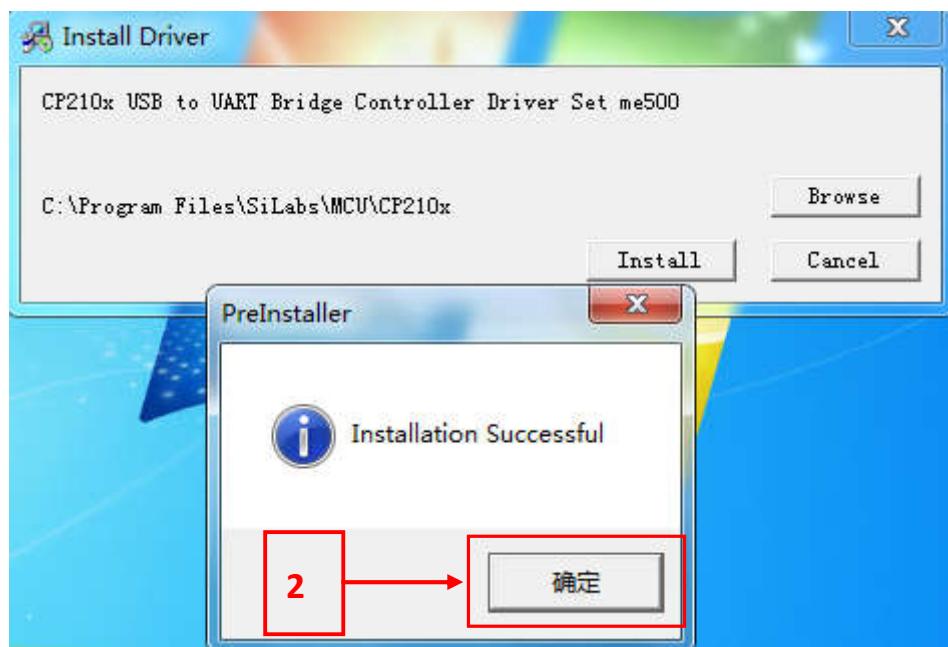
### 3. Install USB driver

#### 3.1 install debug serial driver

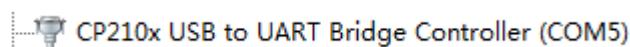
Step 1, install CP2102 driver

Unzip CP2102WIN7.rar to the windows, double click preInstaller.exe





You can check "Computer—>Right mouse button—>Device manager—>Port", As shown in Figure



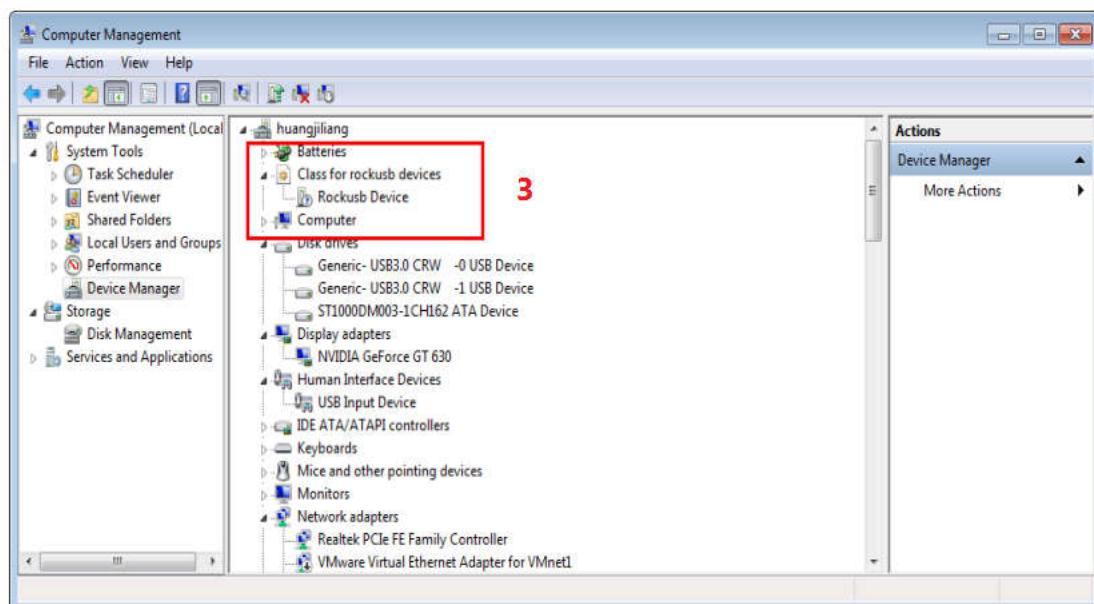
### 3.2 install driver

Step 1, install Rockchip driver assistant ( Release\_DriverAssitant/DriverInstall.exe) .



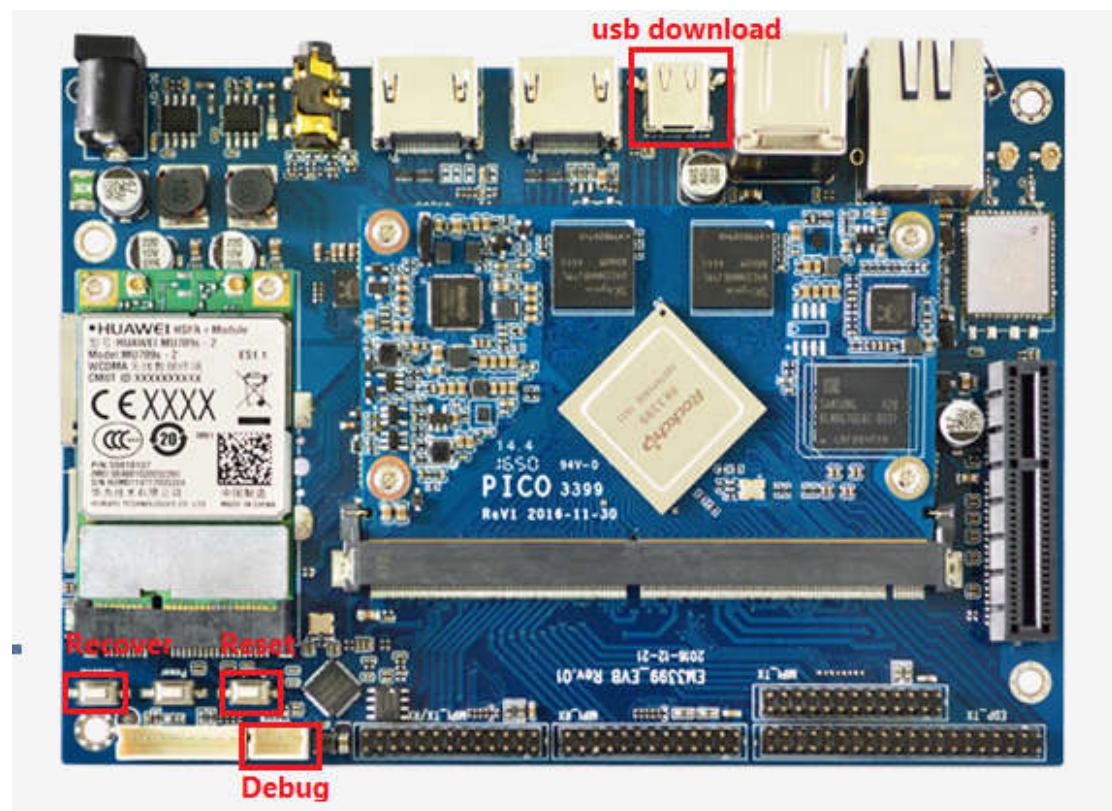


Step2, after successful installation, plug in the power and connecting OTG cable, in the computer hardware management interface can see the following information.



## 4. Flashing image

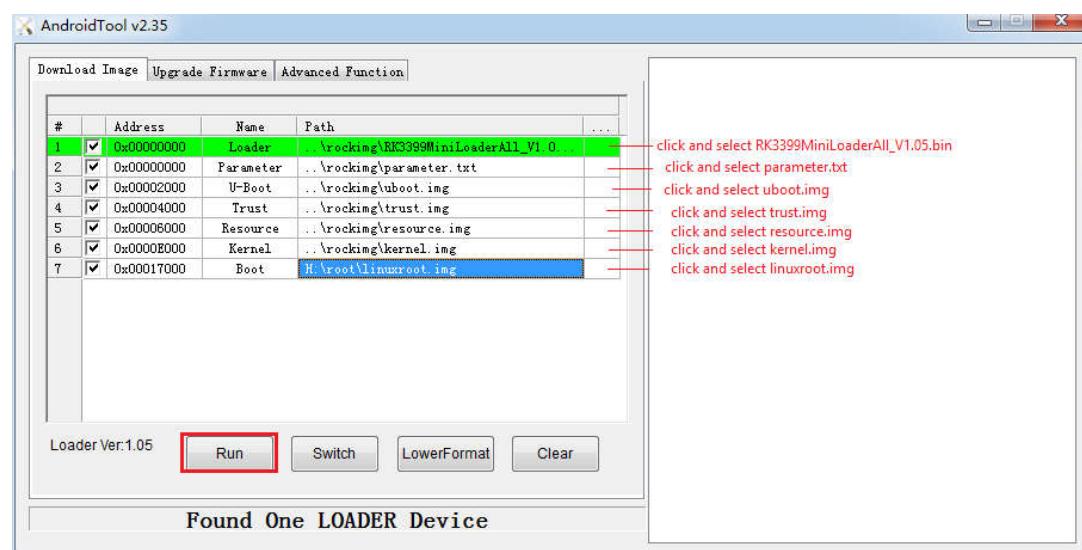
1, Connect power cable and usb download cable



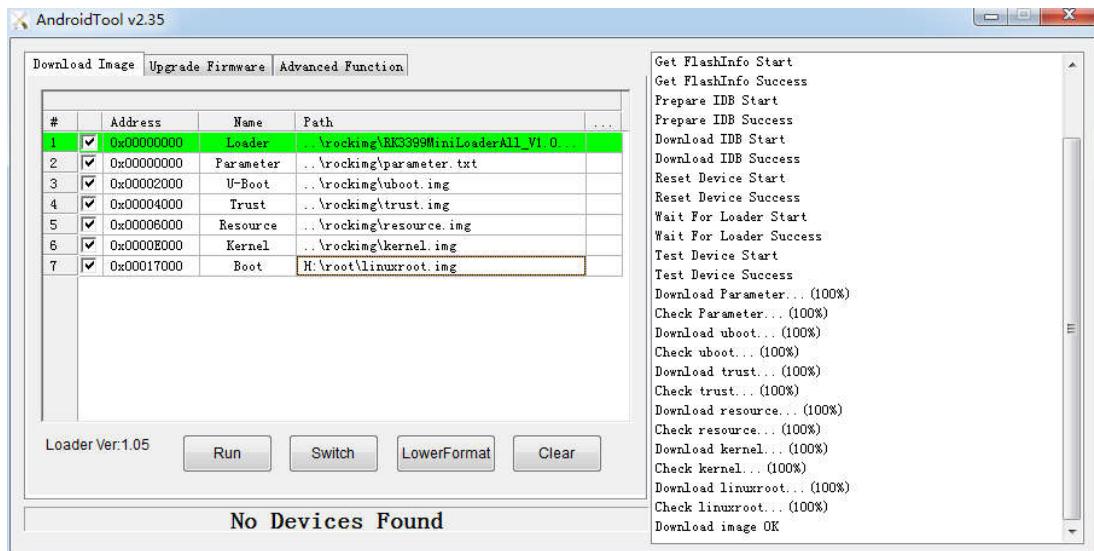
2, Press and hold Recover button and then press Reset button,release Revocer button until enter flashmode, as “Found One LOADER Devices” or “Found One MaskRom Devices”.

3, Running flashing tool with PC

Tool is in tools/AndroidTool\_Release\_v2.35, Run AndroidTool.exe, choose the target image and then click “Run” button as shown in below picture.



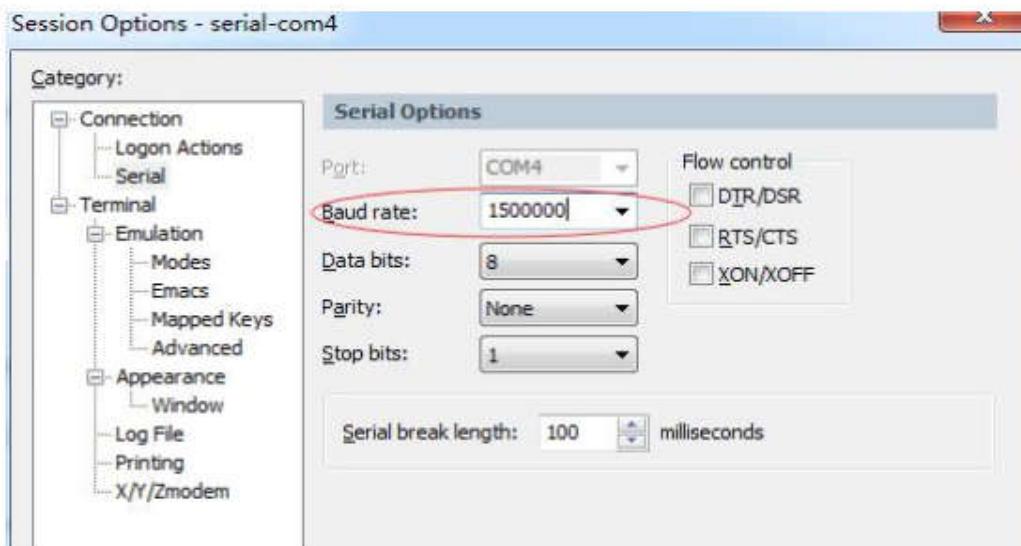
4. After the download is complete, the board will reboot automatically.



## 5. Test

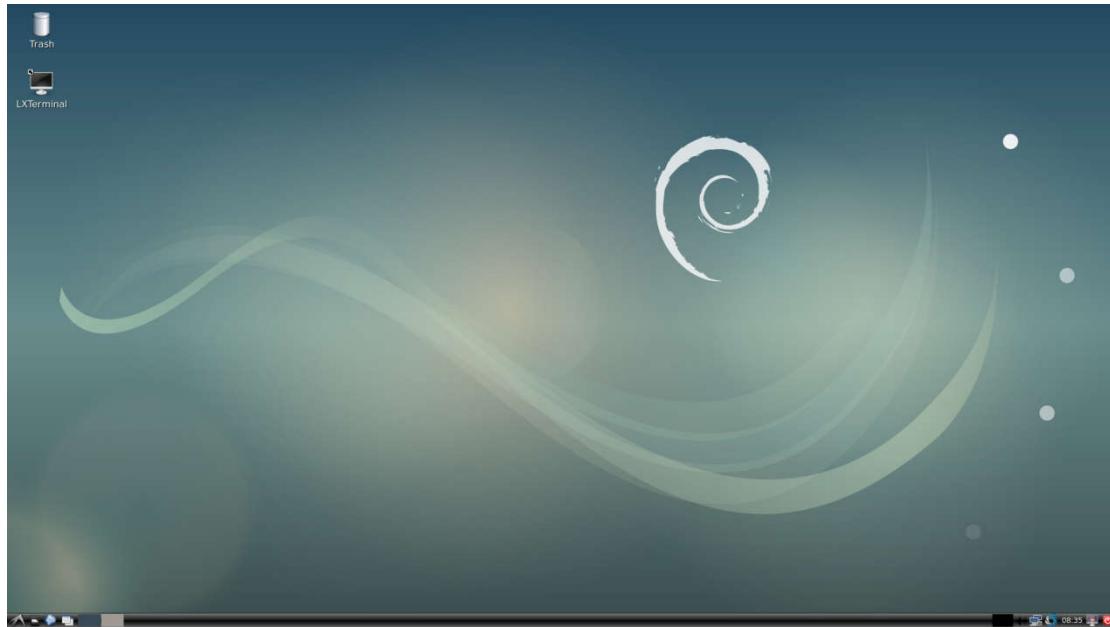
### 5.1 SecureCRT setting

baudrate parameters configuration



## 5.2 HDMI

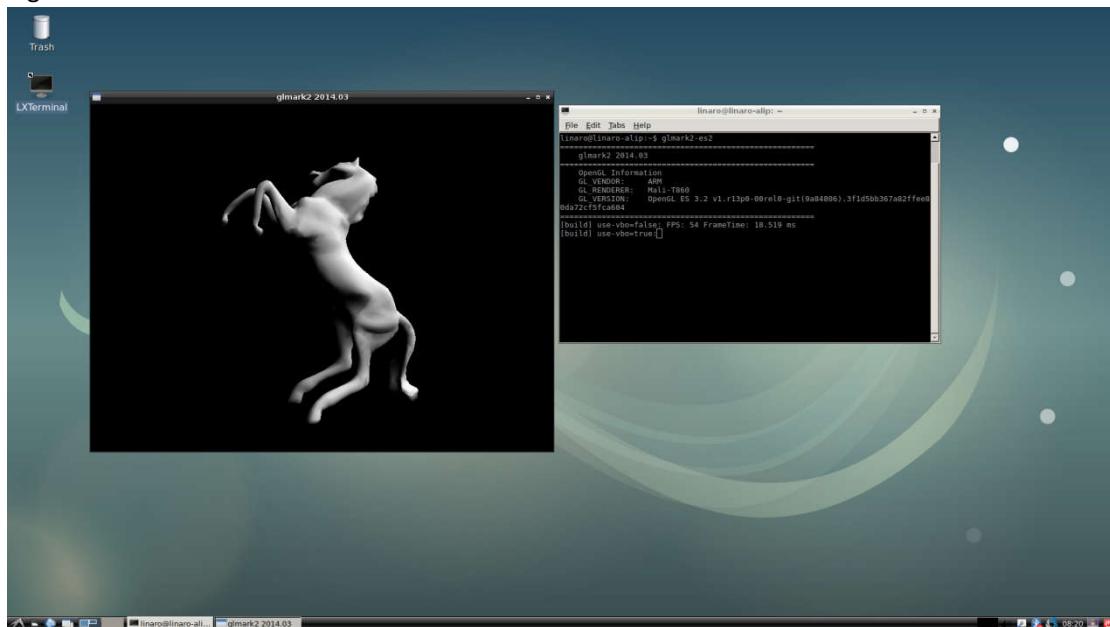
Connect the HDMI monitor and EM3399 with HDMI cable, then power on. After the board boot into Debian, HDMI monitor will display.



## 5.3 test 3D

Type as follow in LXTerminal:

```
# glmark2-es2
```



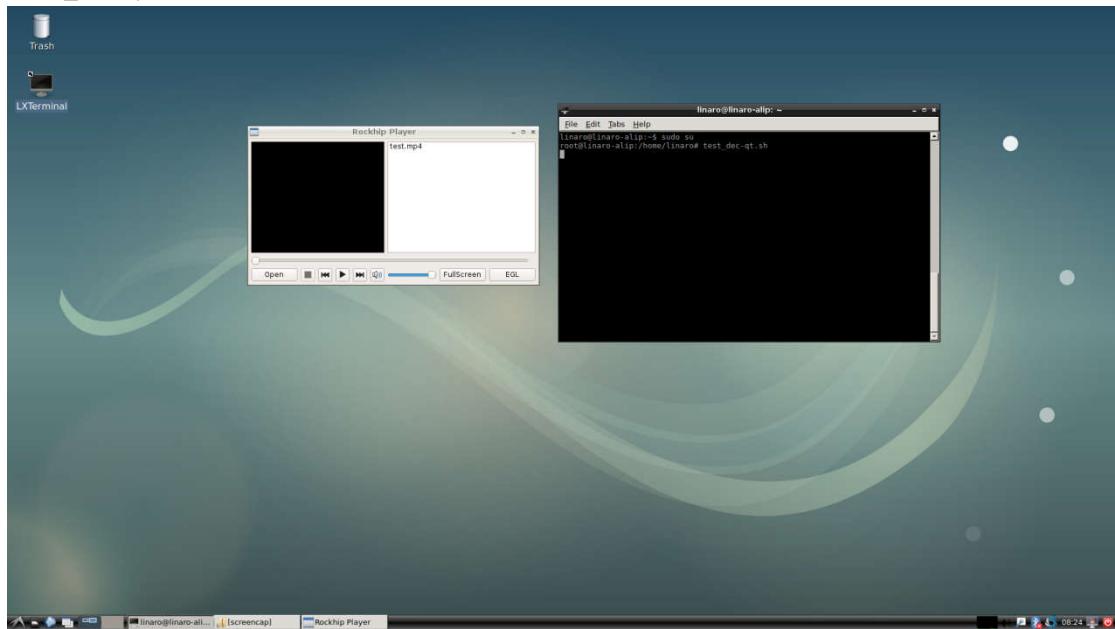
Or full screen test:

```
# glmark2-es2 --fullscreen
```

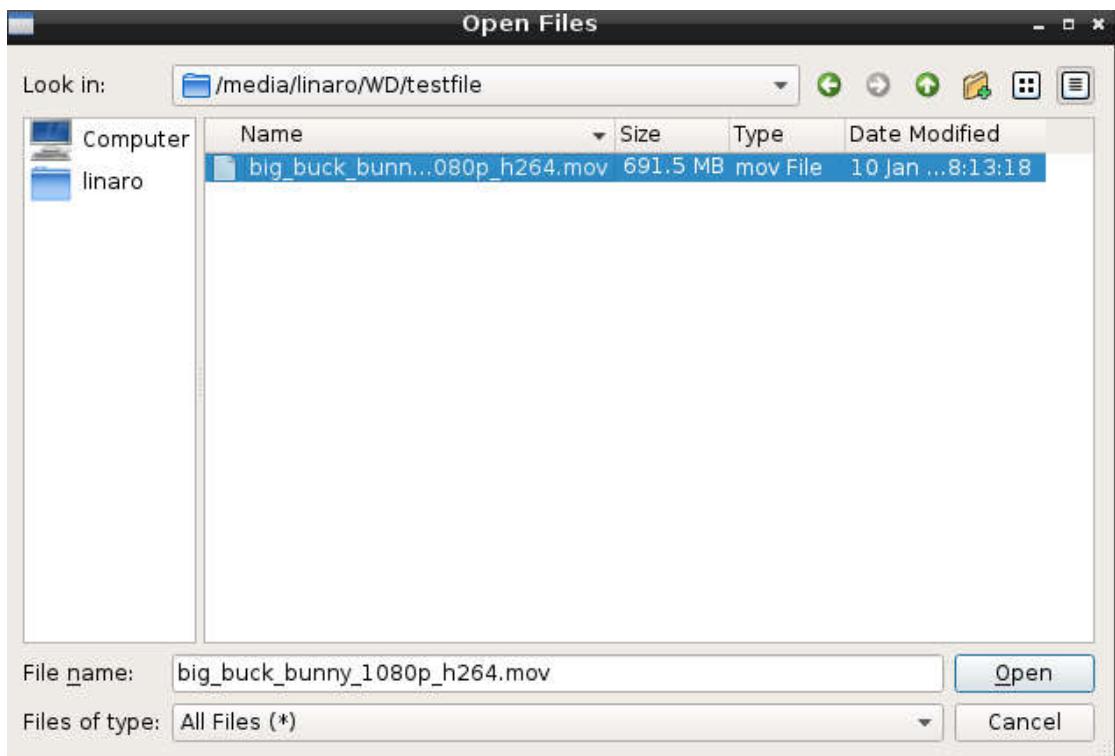
## 5.4 test video

Type as follow in LXTerminal to run video application:

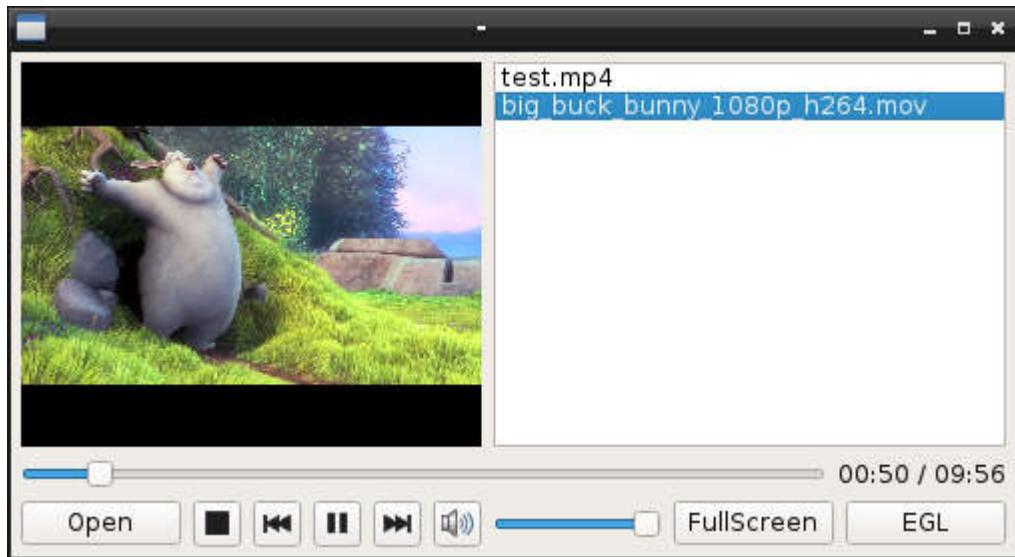
```
$sudo su  
#test_dec-qt.sh
```



Click "open" to select video



Double click the video file to play

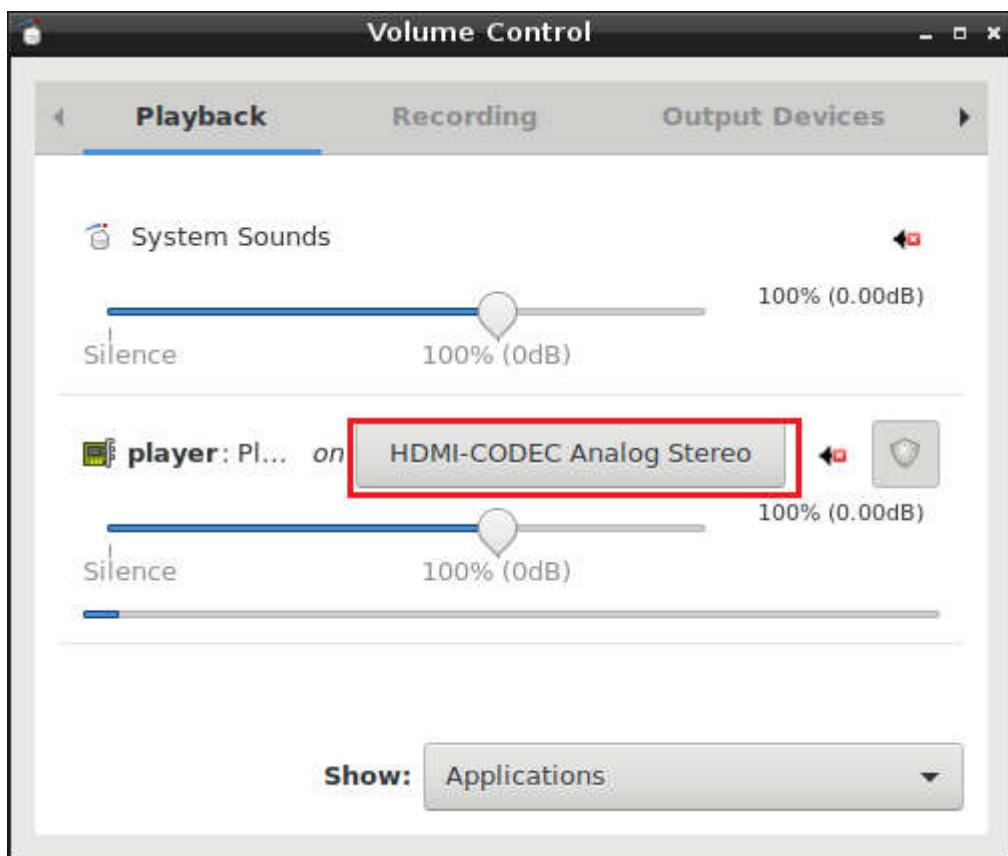


## 5.5 audio

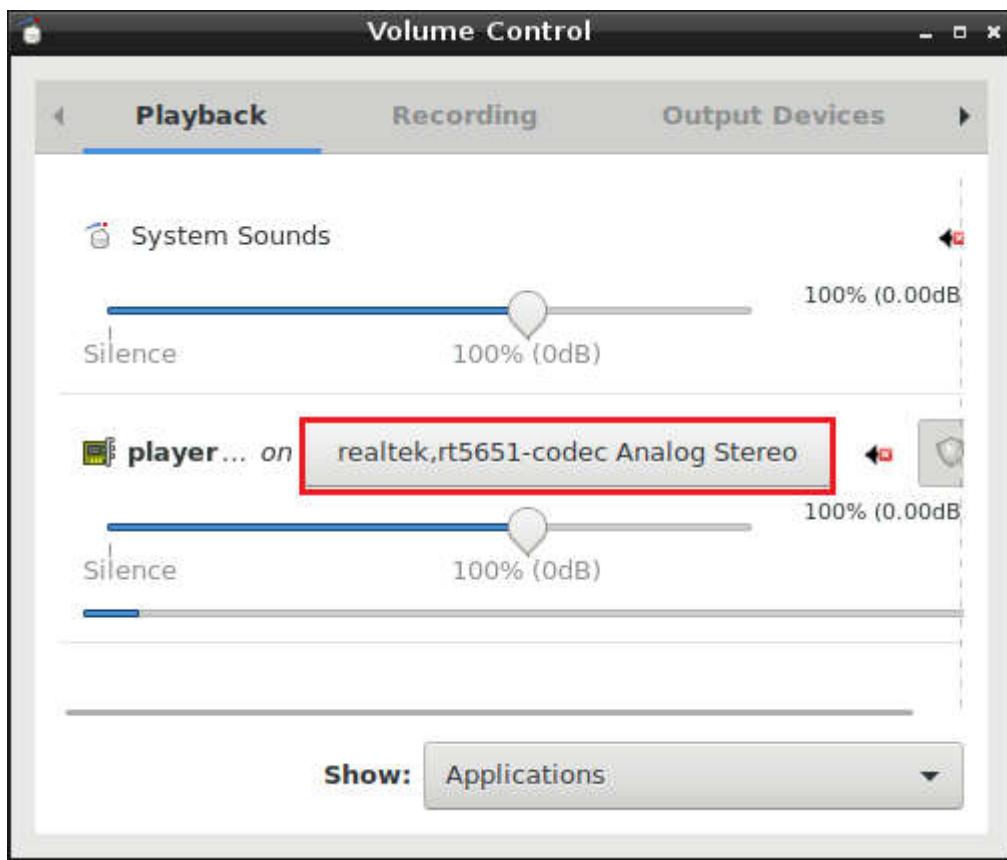
There is voice in HDMI but no voice in headphone when connect to HDMI by default. User can change the audio channel as follow:

Step 1, play the audio,

Step 2, START->Sound & Video->PulseAudio Volume Control



Step 3, Click the red box and select the channel you want.



There is voice in headphone but no in HDMI when select "realtek,rt5651-codes Analog Stereo".

## 5.6 ethernet

Plug in an Ethernet cable (RJ45) and start the system, it will obtain IP address Automatic and you can surf the Internet by chrome.

The screenshot shows a web browser window displaying the 'Boardcon Embedded Design' website. The URL is www.boardcon.com. The page features a navigation bar with links for Home, Company, Products, Service, Order, News, and Contact Us. On the right side, there is an 'Online Service' section with a dropdown menu for Sales Service and a list of users: kevin, shanyou, Tech Support (me), and zhou. The main content area includes sections for 'Products' (showing four items: Vehicle Tracking Device, MN3288, EM3288(CortexA12), and EM3399) and 'Latest News' (listing several news items with dates like 2016-06-03 and 2016-06-01). The bottom of the screen shows the Windows taskbar with icons for Start, Task View, File Explorer, Edge, Mail, Photos, OneDrive, and Task Manager.

## 5.7 wifi

**Step 1,** Connect WiFi antenna.

**Step 2,** Click the network manager  icon , then it will scan AP automatically.

**Step 3,** Select AP and type password. There is Wi-Fi icon in the status bar if connected.



**Step4,** Open the browser to browse the web.



## 5.8 bluetooth

Step1,open Bluetooth manager,

START->Preferences->Bluetooth Manager

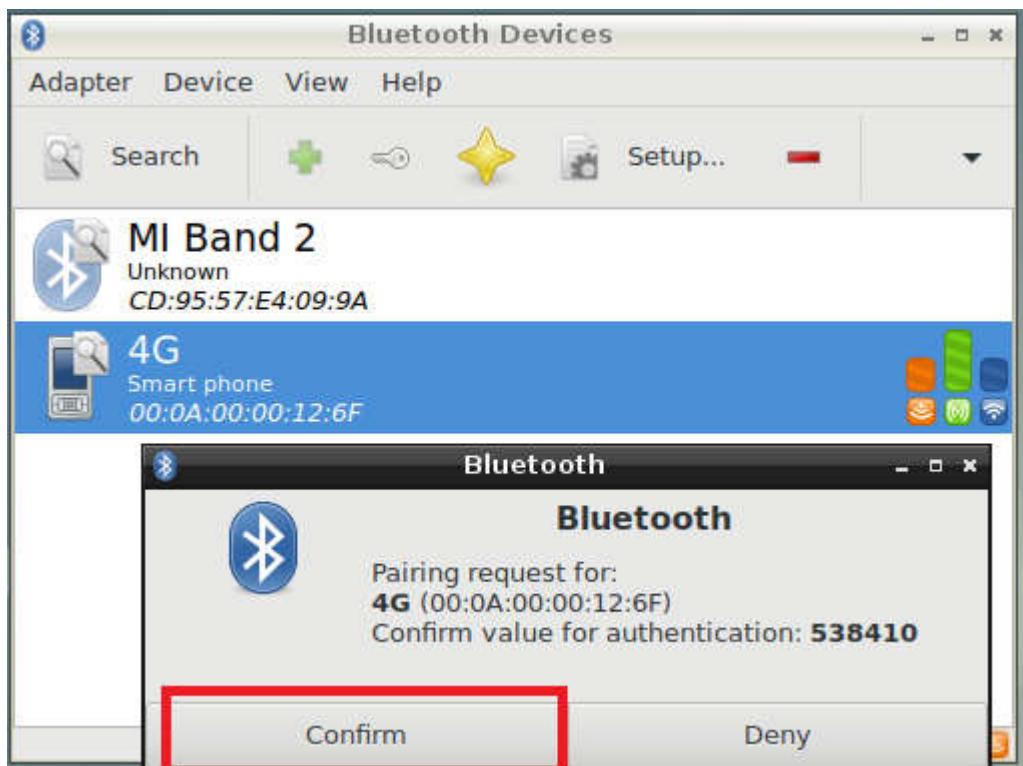
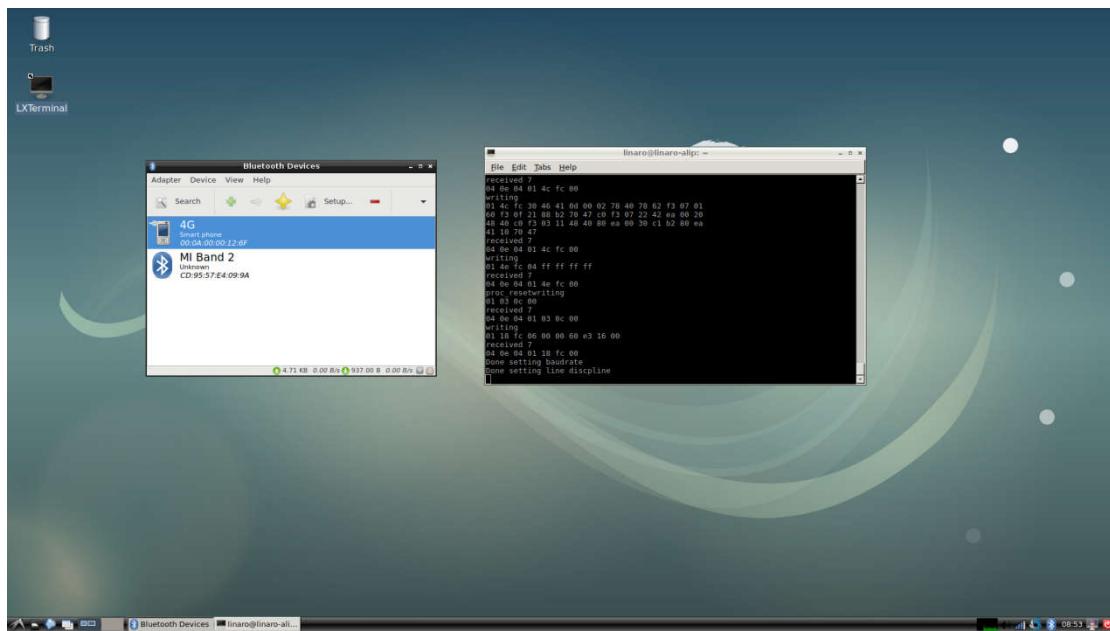
Step2, type follow in LXTerminal,

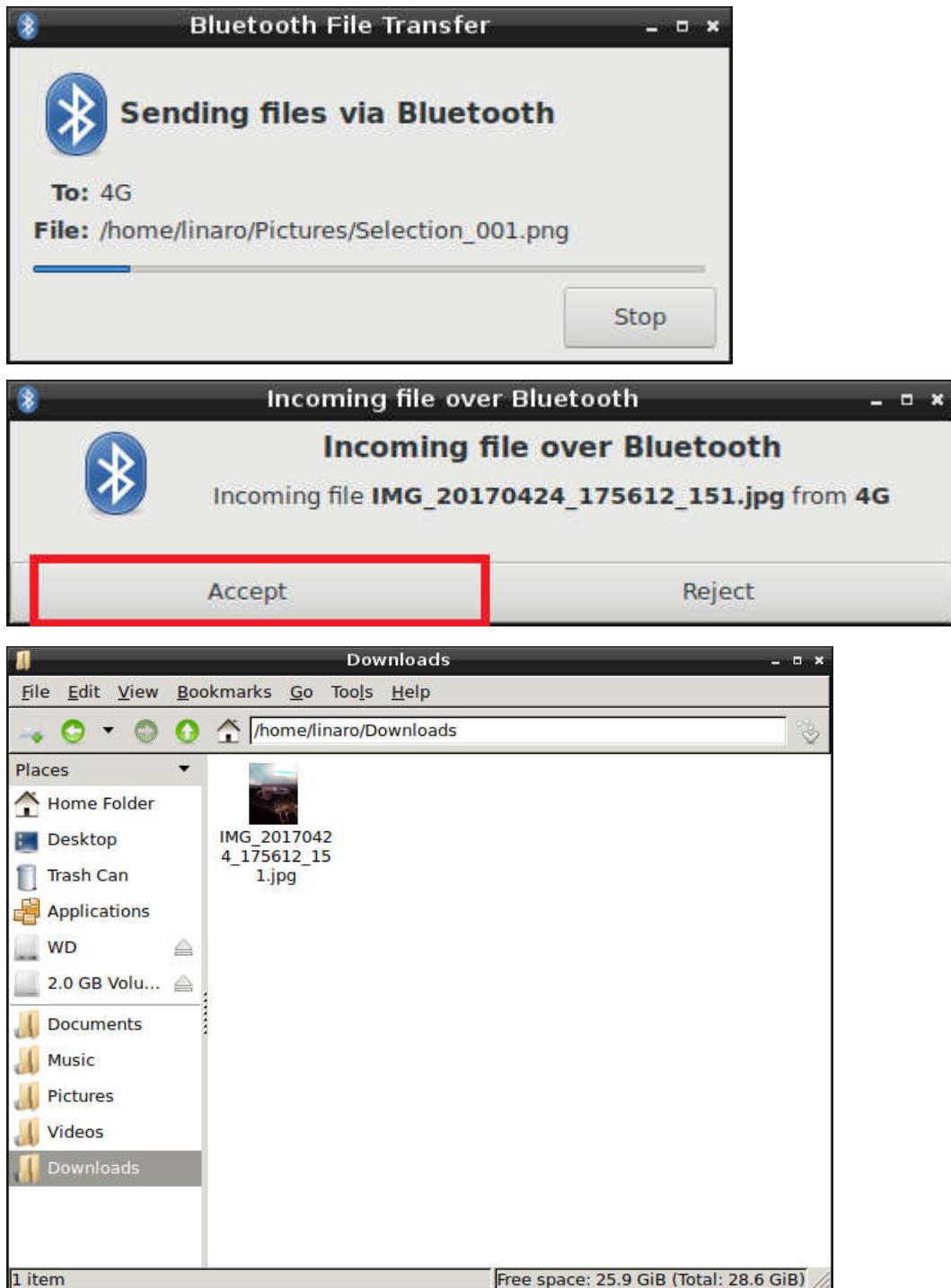
#test-bluetooth &

Step3,click “search” and right click to pair the device which you want to,

Step4,right click to transfer files .

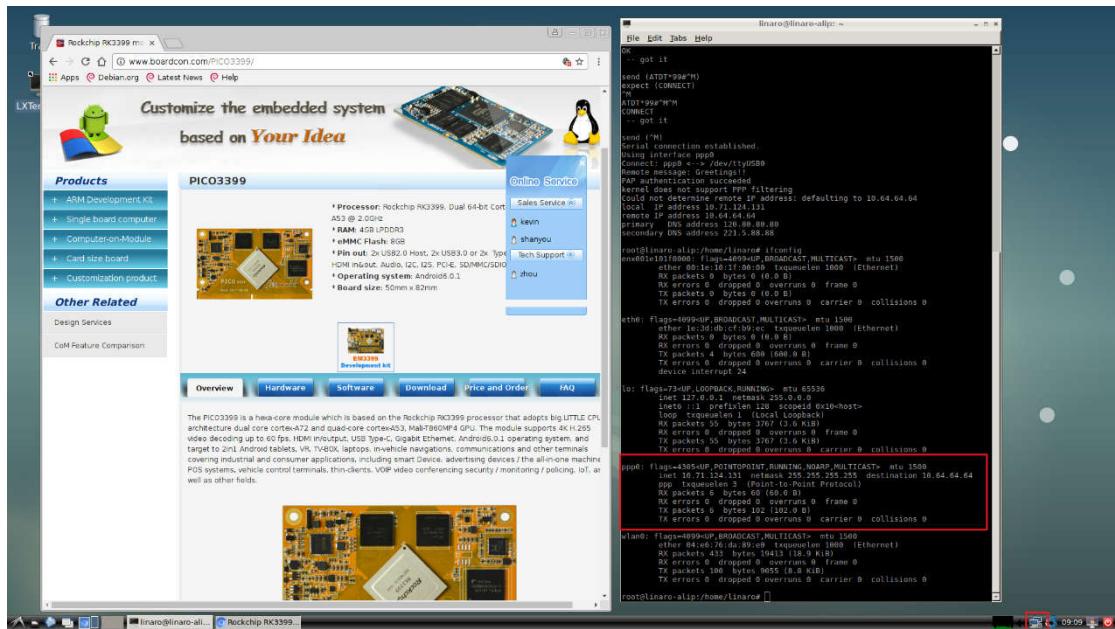
Receive files save at /home/linaro/Downloads/ by default.





## 5.9 3G(MU709s-2)

Connect 3G modem,3G antenna and insert SIM card,power on the board.then type as follow in LXTerminal,:  
# pppd call wcdma &  
# ifconfig  
you can surf the internet by 3G now.



## 5.10 external storage

In the board ,there support USB,SD card,mSATA for external storage devices. Support mount automatically,default mount to /media/linaro/ .

Note: Only USB and SD card support hot plog but mSATA not.

## 5.11 test gpio

support test gpio lists:

```
GPIO4_C6,GPIO3_D4,GPIO3_B2,GPIO4_C2,  
GPIO2_A2,GPIO2_A3,GPIO2_A4,GPIO2_A5,  
GPIO1_A0,GPIO1_A1,GPIO1_C6,GPIO1_D0,  
GPIO3_D5,GPIO3_D6,GPIO2_B4,GPIO4_D0
```

for exsample:

```
#gpio GPIO4_C6 H // control GPIO4_C6 output high level
```

```
#gpio GPIO4_C6 L // control GPIO4_C6 output low level
```