



**BOARDCON**  
Embedded Design

June 2024

# EMT113-S3

# User manual

*Allwinner T113-S3 Dual-core platform*

**Boardcon Embedded Design**

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ODM dedicated to providing high quality  
Single Board Computer and System-on-Module



## Overview

The content of this document is only described for the development board **EMT113-S3**, aiming to help users quickly understand, apply and develop the board.

## System Support

Development Board	Android	Debian	Buildroot
EMT113-S3 V1 CMT113-S3 V1	x	x	√

## Revision History

Version	Date	Author	Revision History
V1.0	2024-06-25	Boardcon Team	Initial version
V1.1	2025-10-15	Boardcon Team	Support T113-S4

## Instructions

No warranty of accuracy is given concerning the contents of the information contained in this document. Boardcon reserves the right to change details in this document without notice.

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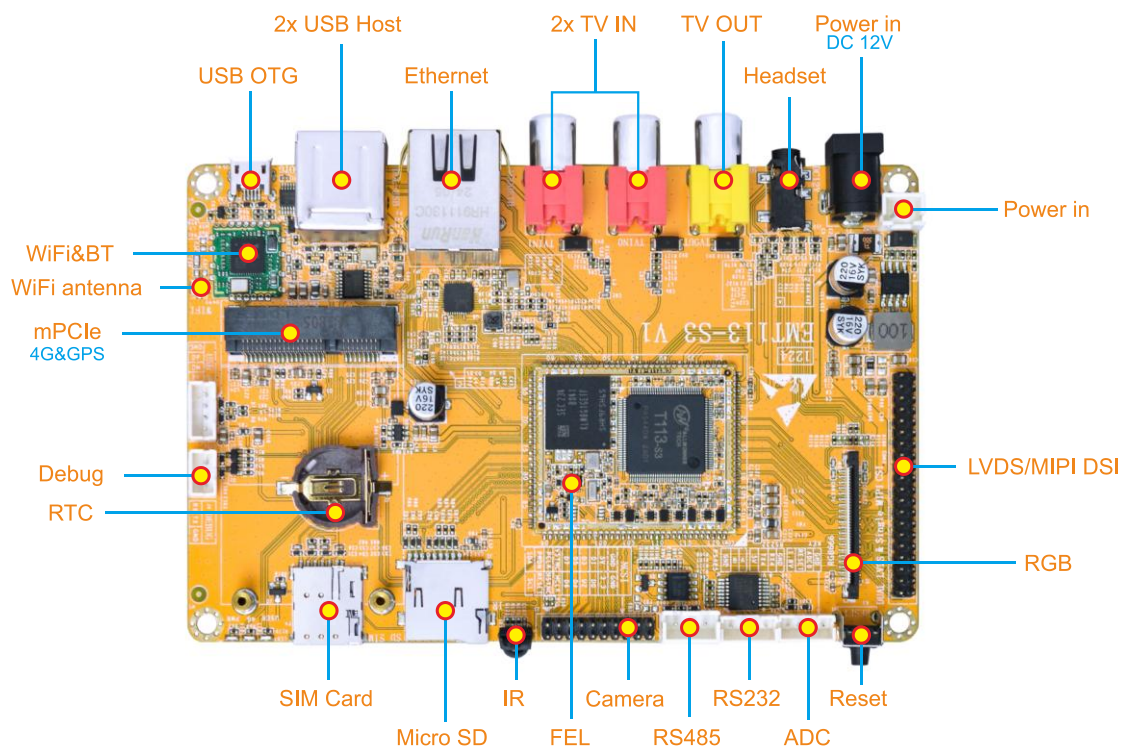
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		cache
DSP		<ul style="list-style-type: none"> <li>• Single-core HiFi4</li> <li>• 32KB I-cache + 32KB D-cache</li> </ul>
Video	Decoder	<ul style="list-style-type: none"> <li>• H.265 up to 1080p@60fps</li> <li>• H.264 up to 1080p@60fps</li> <li>• H.263, MPEG-1/2/4, JPEG, Xvid, Sorenson Spark, up to 1080p@60fps</li> </ul>
	Encoder	<ul style="list-style-type: none"> <li>• JPEG/M JPEG up to 1080p@60fps</li> <li>• Supports input picture scaler up/down</li> </ul>
RAM		SPI 128MB(-S3)/256MB(-S4) DDR3
ROM		8GB eMMC5.1(up to 32GB)
Support system		Buildroot
<b>Hardware Parameters</b>		
Extended Storage		<ul style="list-style-type: none"> <li>• Support 1x MicroSD Card</li> </ul>
Display		<ul style="list-style-type: none"> <li>• Support 1x RGB (multiplexed with LVDS1) output</li> <li>• Support 1x MIPI DSI/Dual-LVDS output</li> <li>• Support 1x TV out output</li> </ul>
Audio		<ul style="list-style-type: none"> <li>• Support 1x Headphone output/input</li> </ul>
USB		<ul style="list-style-type: none"> <li>• Support 1x USB2.0 OTG, Micro USB</li> <li>• Support 3x USB2.0 Host, Dual-USB AF and 4 pin connector</li> </ul>
Network		<ul style="list-style-type: none"> <li>• Support 1x Gigabit Ethernet</li> <li>• Support 1x WIFI/BT module</li> <li>• Support 1x 4G module</li> </ul>
Camera		Support 2x TV out, RCA connector
Peripheral communication		<ul style="list-style-type: none"> <li>• Support 1x RS485</li> <li>• Support 1x UART</li> </ul>
Other parameters		Support 1x Debug, 1x IR, 1x RTC, 1x ADC
<b>Electrical Parameters</b>		

Power supply input voltage	12V/3A
RTC input voltage	3V/0.6uA
Operating temperature	0~70°
Storage temperature	-40~85°
Structural Parameters	
Core board dimensions	36mm x 30mm
Motherboard dimensions	130mm x 85mm

### 3. Hardware Interface Introduction



Interface parameters	
Power in	12V DC power input interface
Reset	Reset key
Micro USB	Micro USB interface, OTG download interface

Ethernet	Gigabit Ethernet RJ45 interface
1X USB2.0 Host(1)	Dual-layer USB2.0 HOST interface
1X USB2.0 Host(2)	USB expansion interface
WIFI&BT	WIFI&Bluetooth module
1X UART	UART4, RS232 level interface
PCIe2.0 4G model	4G model interface
RTC	RTC coin cell connector
Audio I/O	Earphone output/input
Nano SIM	Nano SIM card port
Micro SD	MicroSD card slot
IR	infrared receiver
Debug	debug the serial port
RS485	RS485 communication interface
ADC	ADC interface
MIPI_DSI/Dual-LVDS	DSI/Dual-LVDS display interface
RGB	RGB interface
TV out	RCA connector
2X TV IN	2X RCA connector

## Install Drivers and Tool

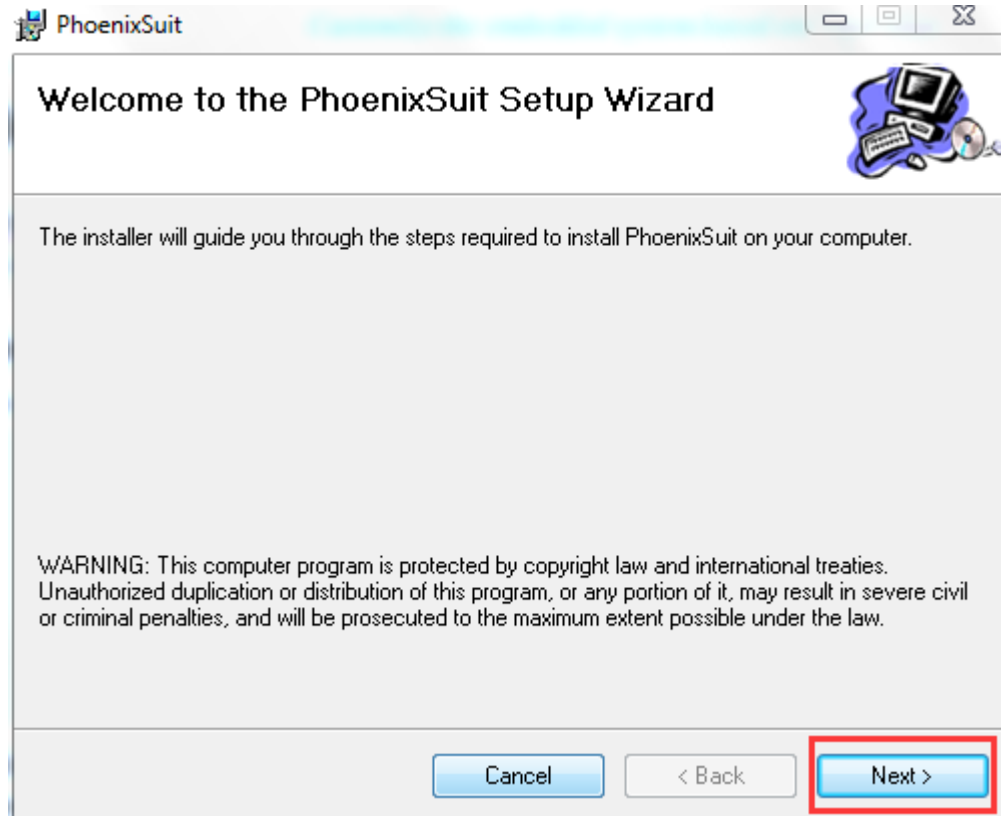
To download firmware and debug in the terminal, the following drivers and software need to be installed(for Windows computers):

Number	Driver name	Driver	Use
1	phoenixsuit	PhoenixSuit_EN.msi	USB Download tool and OTG USB driver
2	CH9102X	SETUP.EXE	Serial port debugging driver
3	Serial Terminal Tool	SecureCRT.exe	Debugging tool

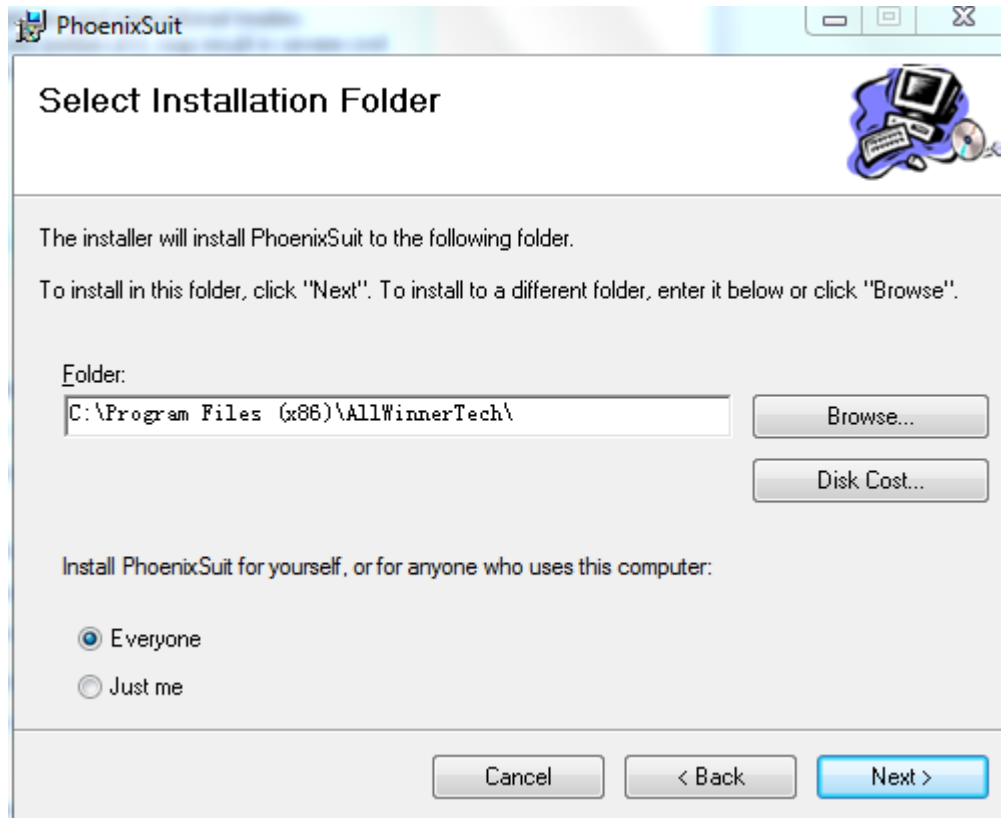
# 1.Install Download Tool

Step 1, open tools\phoenixsuit\_V1.1.0\_20150325\PhoenixSuit\_EN.msi

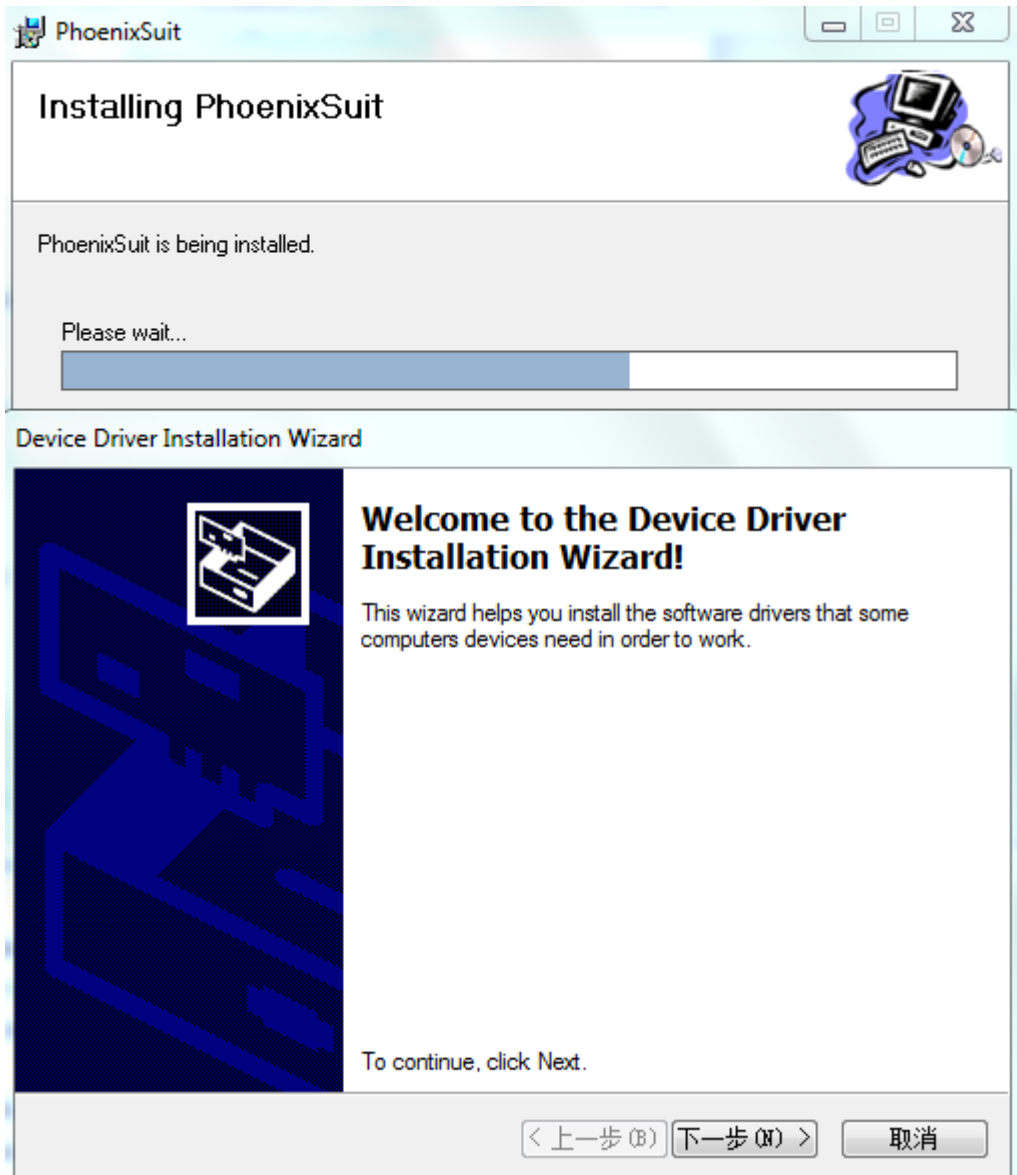
Step 2, click **Next** to install the tool.

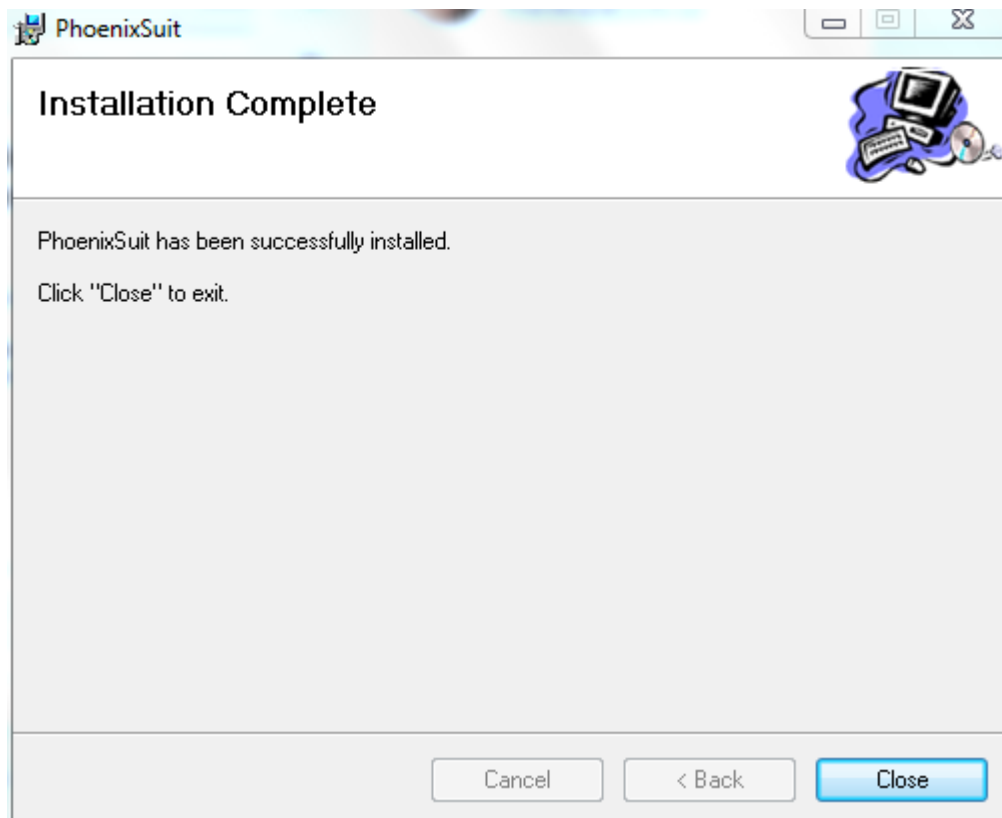


Step 3, click button **Next**.

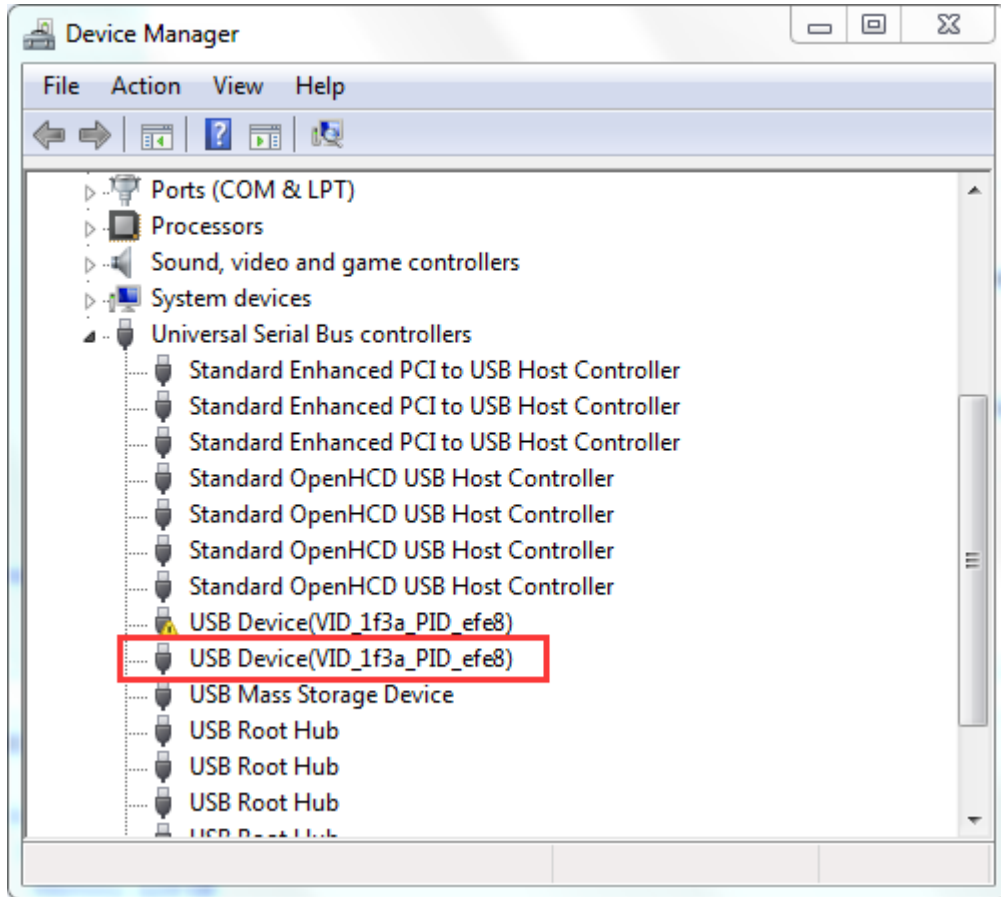


*Step 4*, The install OTG USB download driver pops up when you install the PhoenixSuit. Then click **Next** to install.





**Step 5**, after the installation is complete, connect the board and PC with USB OTG cable and press the Boot select key **SW2** and hold then power the board, the following information is displayed in the Computer Device Manager, indicating that the USB driver was successfully installed.



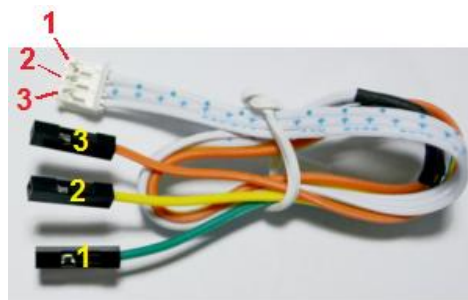
The PhoenixSuit interface features a blue header bar with the logo and navigation icons for Home, Firmware, Apk, and News. A central dialog box titled 'PhoenixSuit' contains a warning icon and the following text: 'Tips: Does mandatory format? Forced format will lead to files are missing, please back up important files! Select Yes, enter the format upgrade mode. Select No, enter the normal upgrade mode. (Recommended)'. Below the text are 'Yes' and 'No' buttons. At the bottom, a light blue section contains a red warning icon and the text: 'Upgrade Instructions 1. Power on your tablet 2. Connect the tablet to your PC with the included USB cable'. A red-bordered box at the bottom left contains the text 'Caution: Beginning Firmware Upgrade', and the bottom right corner displays 'PhoenixSuit V1.10'.

## 2.Install CH9102X Driver

### 2.1 How to connect the serial port tool



Pin	Connection Description
RXD	Receive, connect to RX pin of the board.
TXD	Transmit, connect to TX pin of the board.
GND	Ground, connect to GND pin of the board.
3V3	No need to connect.



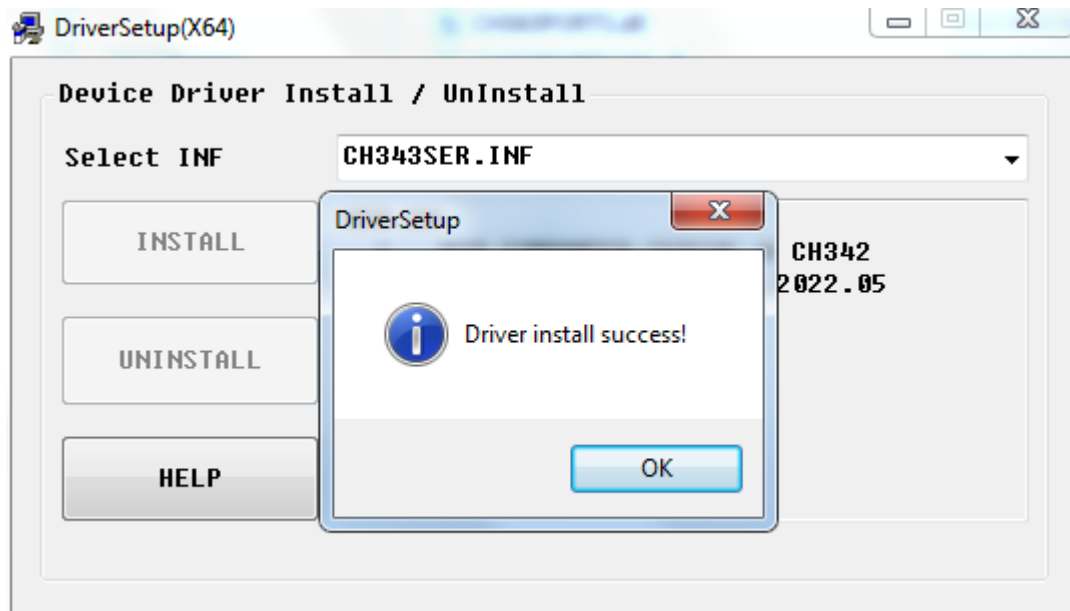
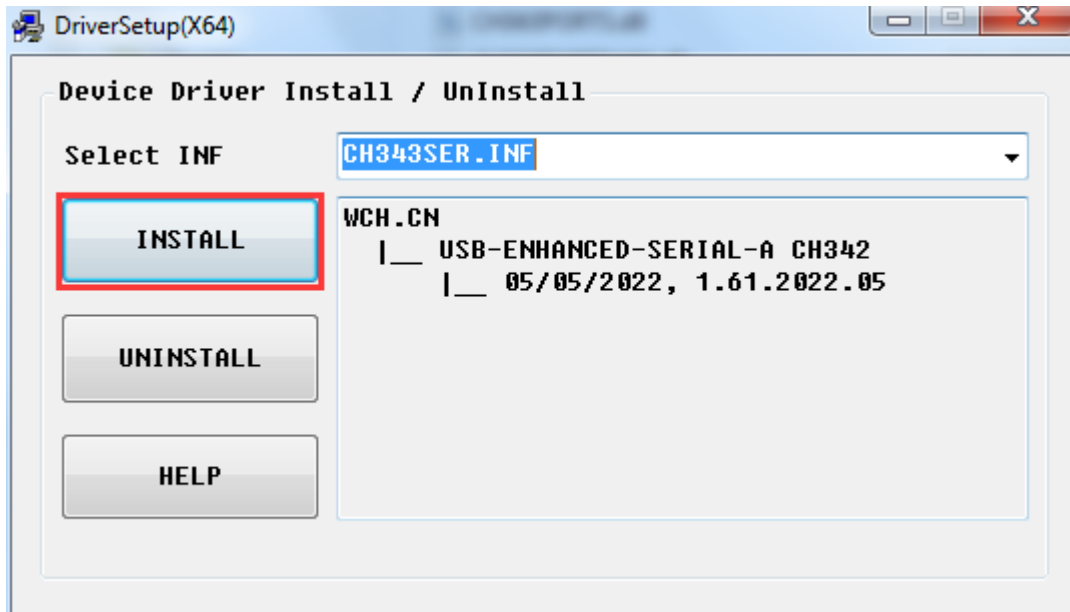
Pin	Connection Description
1	RX, connect to TXD pin of the CH9102X Module.
2	TX, connect to RXD pin of the CH9102X Module.
3	Ground, connect to GND pin of the CH9102X Module.

### 2.2 Install driver

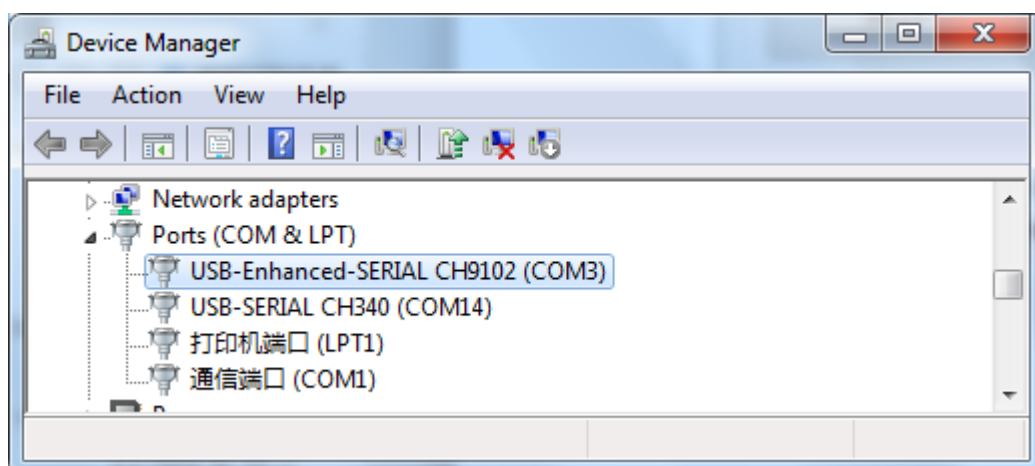
**Step 1**, plug the CH9102X Module to the PC.

**Step 2**, unzip CH343SER.ZIP on Windows.

**Step 3**, select and install the corresponding SETUP.EXE according to the computer properties.



Step 4, after the installation is completed, the device will be listed under **Device Manager** -> **ports** with unique serial port assigned.

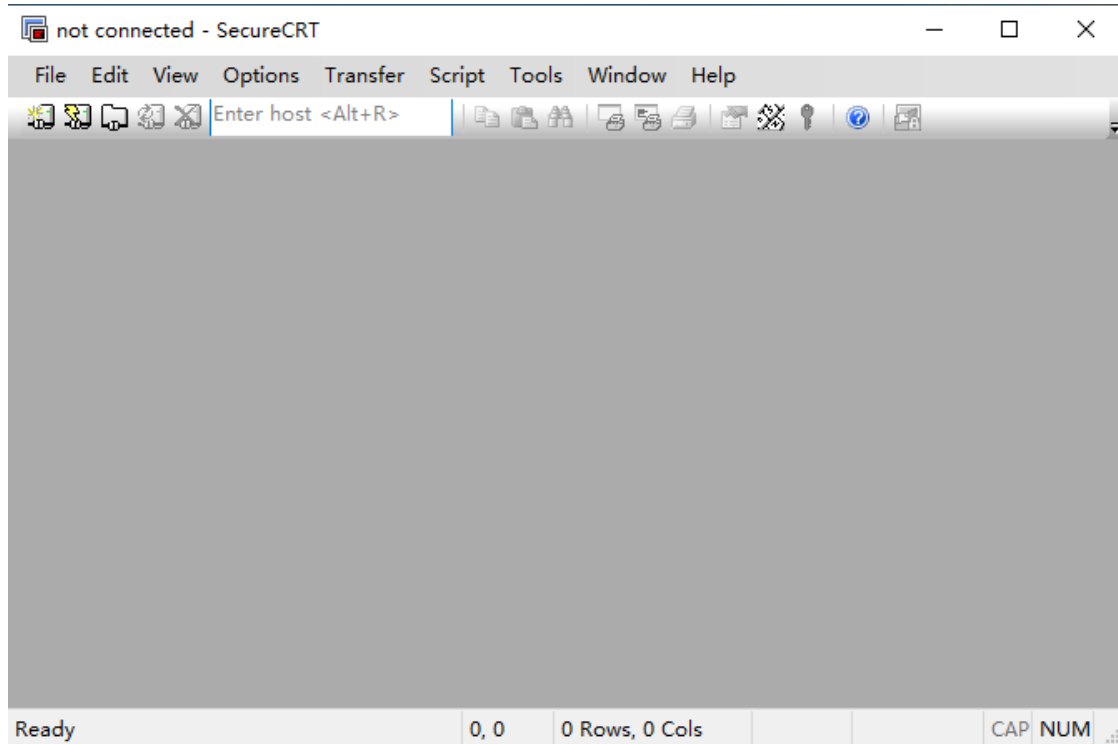


## 3. Install Serial Terminal Tool

The serial terminal SecureCRT is used for debugging in Windows. It can be used directly after decompression.

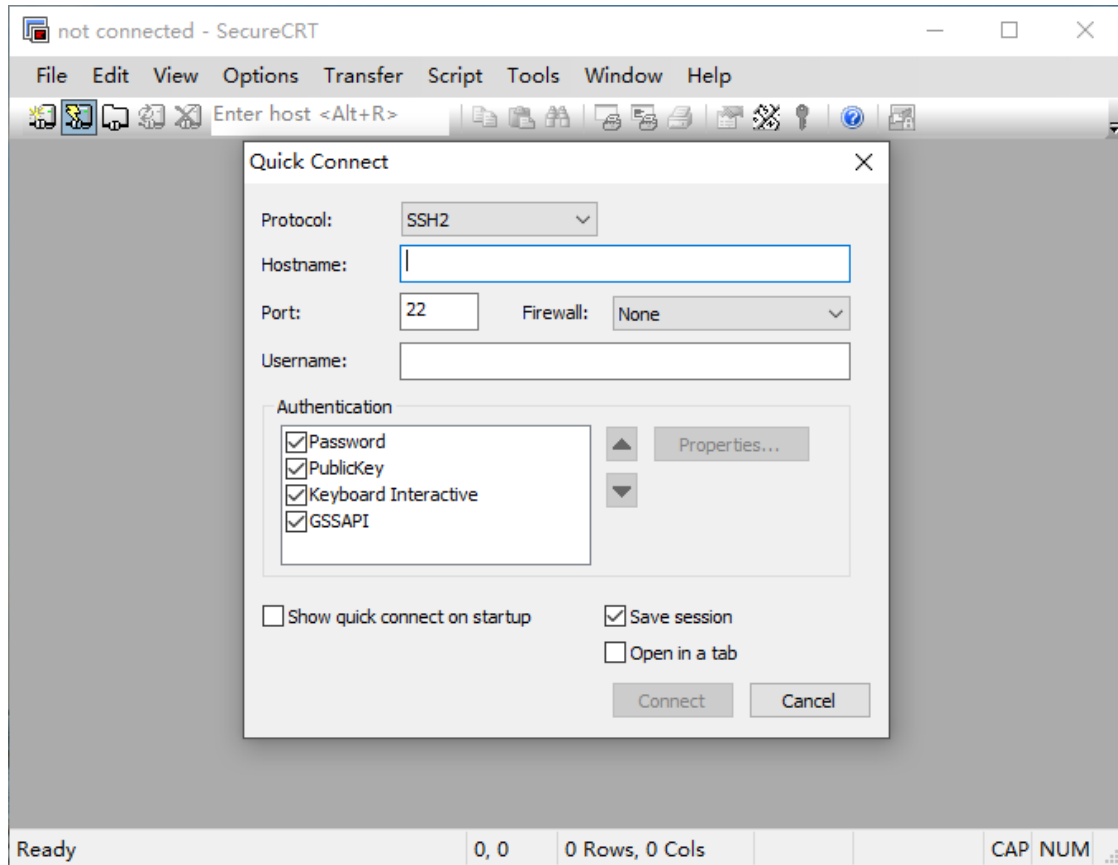
*Step 1*, unzip Platform/SecureCRT.rar on PC.

*Step 2*, click SecureCRT/SecureCRT.exe open the SecureCRT.

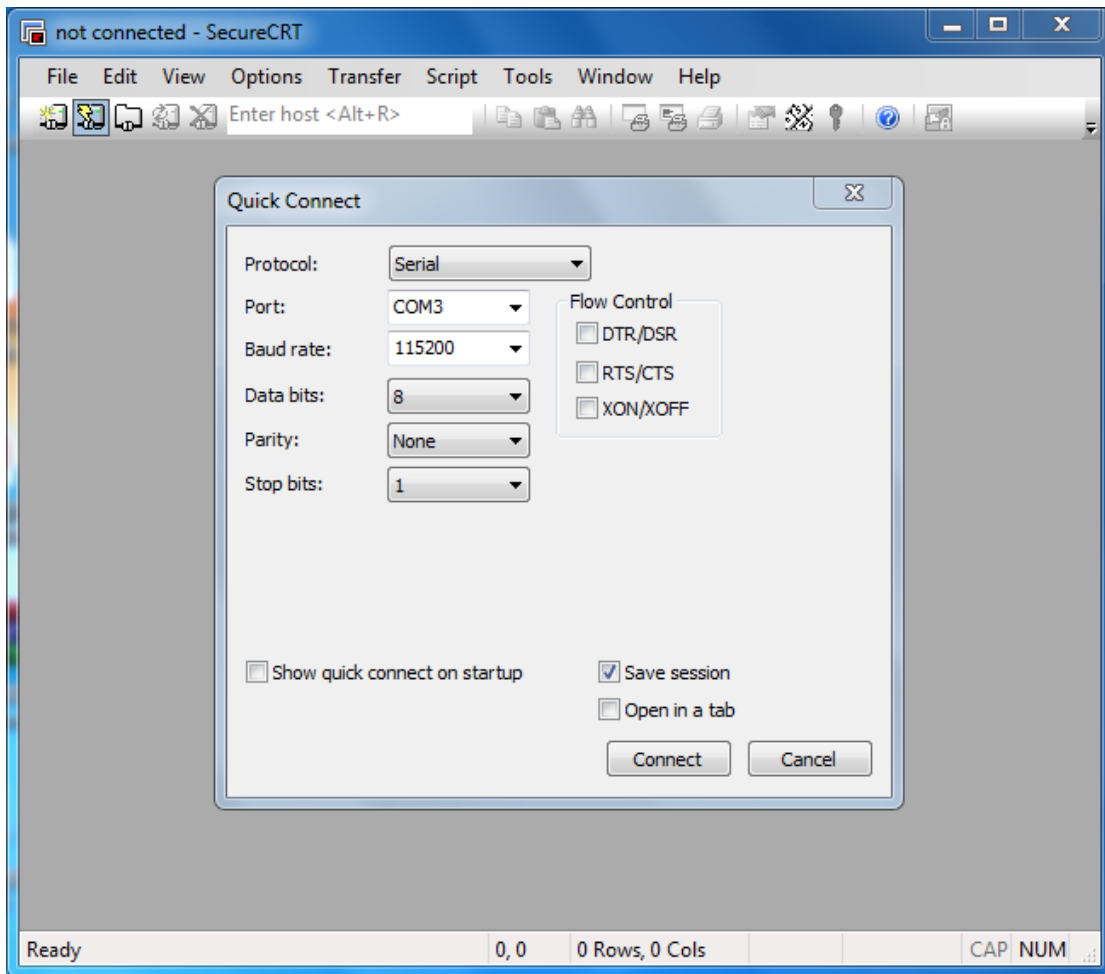


*Step 3*, confirm that the CH9102X driver has been installed and the CH9102X module is connecting to the PC.

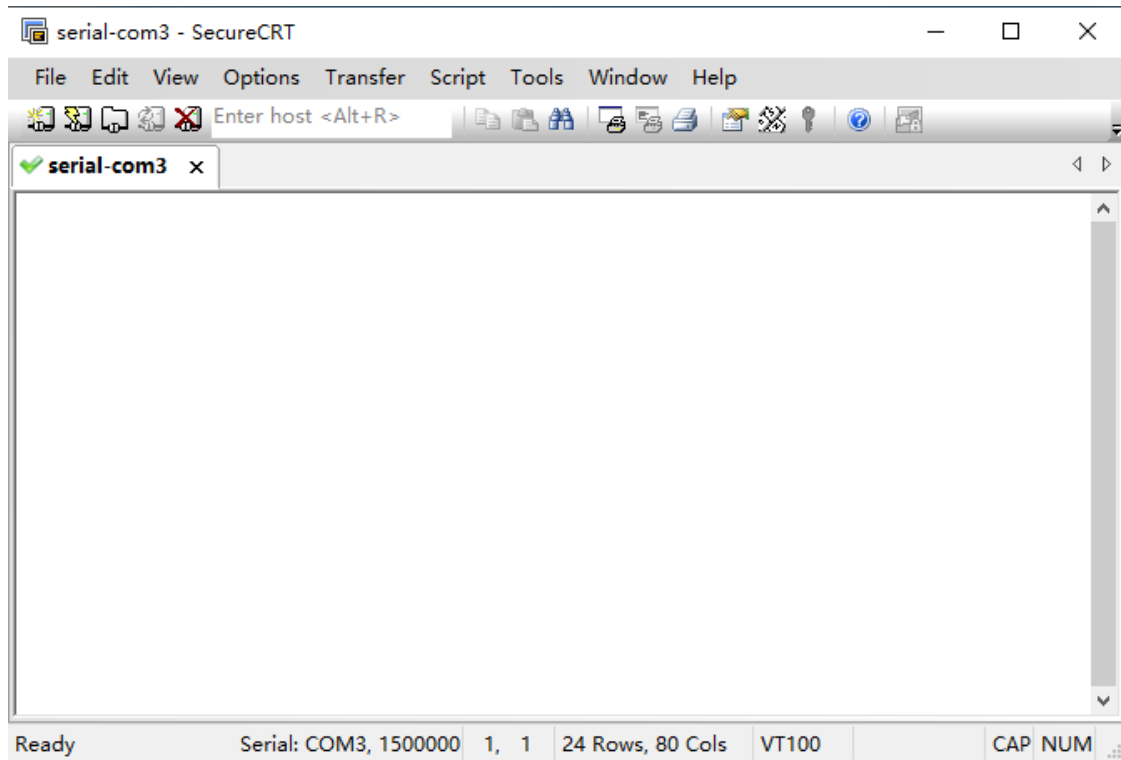
*Step 4*, click the **Quick Connect** button to go to the Quick Connect configuration screen.



Step 5, configure as shown in the following figure:



**Step 6**, after clicking connect button, the terminal serial interface will be successfully accessed.



# Buildroot

## 1. Compiler Environment

It is recommended to use Ubuntu 16.04 for compilation . If you encounter an error during compilation, you can check the error message and install the corresponding software packages accordingly. Other Linux versions may need to adjust the software package accordingly. In addition to the system requirements, there are other hardware and software requirements.

Hardware requirements	Software requirements
64-bit system, hard disk space should be greater than 100G. If you do multiple builds, you will need more hard drive space.	Ubuntu 16.04 system

## 2. Install Tools

The contents of this directory only provide the software package installation commands that are needed to build the compiled SDK environment. Please install other tools such as samba and ssh yourself.

PC OS: ubuntu system

Network: online

Permission: root

## 2.1 Install dependent packages

```
# sudo apt-get install git
# sudo apt-get install gnupg
# sudo apt-get install flex
# sudo apt-get install bison
# sudo apt-get install gperf
# sudo apt-get install build-essential
# sudo apt-get install zip
# sudo apt-get install curl
# sudo apt-get install libc6-dev
# sudo apt-get install libncurses5-dev:i386
# sudo apt-get install x11proto-core-dev
# sudo apt-get install libx11-dev:i386
# sudo apt-get install libreadline6-dev:i386
# sudo apt-get install libgl1-mesa-glx:i386
# sudo apt-get install libgl1-mesa-dev
# sudo apt-get install g++-multilib
# sudo apt-get install mingw32
# sudo apt-get install tofrodos
# sudo apt-get install python-markdown
# sudo apt-get install libxml2-utils
# sudo apt-get install xsltproc
# sudo apt-get install zlib1g-dev:i386
# sudo apt-get install gawk
# sudo dpkg-reconfigure dash //select no
# sudo ln -s /usr/lib/i386-linux-gnu/mesa/libGL.so.1 /usr/lib/i386-linux-gnu/libGL.so
# sudo apt-get install u-boot-tools
# sudo apt-get install libssl-dev
```

If the compilation encountered error, please according to the error message install the corresponding software package.

## 3.Compile Source

**Step 1**, unzip the source

```
$ tar xvfj t113-s-v1.1-2.1-20250911.tar.bz2
$ cd t113-s-v1.1-2.1-20250911
```

**Step 2**, Configuration

```
$ ./build.sh config //Configuration
```

```
zhaolinhai@boardcon:~/T113/ t113-s-v1.1-2.1-20250911$ ./build.sh config
```

```
Welcome to mkscript setup progress
All available platform:
  0. linux
Choice [linux]: 0
All available linux_dev:
  0. bsp
  1. dragonboard
  2. longan
  3. tinyos
Choice [longan]: 2
All available kern_ver:
  0. linux-5.4
Choice [linux-5.4]: 0
All available ic:
  0. t113           #T113-S3
  1. t113_s4       #T113-S4
  2. t113_s4p      #T113-S4P
Choice [t113]: 0
All available board:
  0. evb1
  1. evb1_auto
  2. evb1_auto_nand
  3. evb1_auto_nor
Choice [evb1_auto]: 1
All available flash:
  0. default
  1. nor
Choice [default]: 0
All available gnueabi:
  0. gnueabi
  1. gnueabihf
Choice [gnueabi]: 0
INFO: Prepare toolchain .....
toolchain_archivedir=/home/zhaolinhai/T113/
t113-s-v1.1-2.1-20250911/build/toolchain/gcc-linaro-5.3.1-2016.05-x86_64_arm-linux-gnueabi.tar.
xz
```

### Step 3, compile kernel and File system

#### Select the display device

**Path:** t113-s-v1.1-2.1-20250911\device\product\configs\evb1\_auto\uboot-board.dts

//display\_type: 0-lvds 1-AV\_PAL 2-AV\_NTSC 3-mipi 4-RGB



```
# define display_type 4
# if (display_type == 4)
    # define TFT_7Inch_RGB 0 //1: 7 inch RGB; 0: 5 inch RGB
# endif
```

**Path:** t113-s-v1.1-2.1-20250911\device\product\configs\evb1\_auto\board.dts //display\_type:  
0-lvds 1-AV\_PAL 2-AV\_NTSC 3-mipi 4-RGB

```
#define display_type 4

#define Touch_gt9xx 0 //1: touch is gt9xx(mipi,lvds) 0: touch is gsl1680(5inch rgb)

#if (display_type == 4)

    #define TFT_7Inch_RGB 0 //1: 7 inch RGB; 0: 5 inch RGB

#endif
```

t113-s-v1.1-2.1-20250911\platform\framework\auto\rootfs\etc\qtenv.sh

```
#TouchDevice=gt9xxnew_ts
```

```
TouchDevice=gslX680
```

t113-s-v1.1-2.1-20250911\platform\framework\auto\rootfs\etc\init.d\rcS

```
#insmod /lib/modules/5.4.61/gt9xxnew_ts.ko
```

```
insmod /lib/modules/5.4.61/gslX680new.ko
```



```
board.dts x
0
1 /*
2  * Allwinner Technology CO., Ltd.
3  */
4
5 /dts-v1/;
6
7 /* optee used 7MB: SHM 2M: OS: 1M: TA:4M*/
8 /memreserve/ 0x41900000 0x00100000;
9 /* DSP used 1MB */
10 /* /memreserve/ 0x42000000 0x00100000; */
11
12 //display_type: 0-lvds 1-AV_PAL 2-AV_NTSC 3-mipi 4-RGB
13 #define display_type 4
14
15 #define Touch_gt9xx 0 //1: touch is gt9xx(mipi,lvds,7inch rgb) 0: touch is gsl1680(5inch rgb)
16
17 #if (display_type == 4)
18 #define TFT_7Inch_RGB 0 //1: 7 inch RGB; 0: 5 inch RGB
19 #endif
20
21
```

### Compile in one step

```
$. /build.sh
```

```
/home/zhaolinhai/T113/t113-s-v1.1-2.1/platform/framework/auto/kernel/xr829/Makefile:19: CROSS_COMPILE: arm-linux-gnueabi-
Building modules, stage 2.
MODPOST 1 modules
CC [M] /home/zhaolinhai/T113/t113-s-v1.1-2.1/platform/framework/auto/kernel/xr829/xr829.mod.o
LD [M] /home/zhaolinhai/T113/t113-s-v1.1-2.1/platform/framework/auto/kernel/xr829/xr829.ko
make[1]: Leaving directory '/home/zhaolinhai/T113/t113-s-v1.1-2.1/out/kernel/build'
/home/zhaolinhai/T113/t113-s-v1.1-2.1/platform/framework/auto/kernel/xr829/xr829.ko -> '/home/zhaolinhai/T113/t113-s-v1.1-2.1/pl
orm/./out/t113/evb1_auto/longan/buildroot/target/lib/modules/5.4.61/xr829.ko'
PARTITION_FEX=/home/zhaolinhai/T113/t113-s-v1.1-2.1/device/config/chips/t113/configs/evb1_auto/longan/sys_partition.fex
ROOTFS_FEX_LINE=64
ROOTFS_FEX_STR= size = 2097152
ROOTFS_FEX_SIZE= 2097152
EXT4_SIZE=1073741824(1073741824/1024/1024)
/home/zhaolinhai/T113/t113-s-v1.1-2.1/device/config/chips/t113/configs/evb1_auto/longan/sys_partition.fex rootfs.fex size is 2097
EXT4_SIZE= 2097152*512=1073741824
Creating filesystem with parameters:
Size: 1073741824
Block size: 4096
Blocks per group: 32768
Inodes per group: 8192
Inode size: 256
Journal blocks: 4096
Label:
Blocks: 262144
Block groups: 8
Reserved blocks: 0
Reserved block group size: 63
Created filesystem with 7557/65536 inodes and 57737/262144 blocks
/home/zhaolinhai/T113/t113-s-v1.1-2.1/build/bin/make_ext4fs -s -l 1073741824 /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_a
/longan/rootfs_ext4 /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/target
INFO: pack rootfs ok ...
INFO: -----
INFO: build lichee OK.
INFO: -----
zhaolinhai@boardcon:~/T113/t113-s-v1.1-2.1$
```

### Compile in separately

#### (1), compile kernel

```
$. /build.sh menuconfig // Configure the kernel
$. /build.sh saveconfig // replace
kernel/linux-5.4/arch/arm/configs/sun8iw20p1smp_t113_auto_defconfig
$. /build.sh kernel
```

#### (2), compile File system

```
$. /build.sh buildroot
```

#### Step 4, compile QT

```
$. /build.sh qt
```



```
:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin" /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/host/
bin/fakeroot -- /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/build/buildroot-fs/ext2/fakeroot
rootdir=/home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/build/buildroot-fs/ext2/target
table=/home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/build/buildroot-fs/full_devices_table.txt'
mke2fs 1.44.5 (15-Dec-2018)
Creating regular file /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/images/rootfs.ext2
64-bit filesystem support is not enabled. The larger fields afforded by this feature enable full-strength checksumming. Pass -O
64bit to rectify.
Creating filesystem with 131072 4k blocks and 32768 inodes
Filesystem UUID: c1bee498-7d5d-4329-bfdf-4ce8676b8af2
Superblock backups stored on blocks:
    32768, 98304

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Copying files into the device: done
Writing superblocks and filesystem accounting information: done

ln -sf rootfs.ext2 /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113/evb1_auto/longan/buildroot/images/rootfs.ext4
make: Leaving directory '/home/zhaolinhai/T113/t113-s-v1.1-2.1/buildroot/buildroot-201902'
INFO: copy the config files form device...
make: Entering directory '/home/zhaolinhai/T113/t113-s-v1.1-2.1/platform'
Makefile:35: "-----1-----"
Makefile:36: /home/zhaolinhai/T113/t113-s-v1.1-2.1/platform
make: Nothing to be done for 'INSTALL_FILES'.
make: Leaving directory '/home/zhaolinhai/T113/t113-s-v1.1-2.1/platform'
INFO: pre gpu lib...
cp: cannot stat '/home/zhaolinhai/T113/t113-s-v1.1-2.1/platform/core/graphics/gpu_um_pub/mali-bifrost/fbdev/mali-g31/arm-linux-gnu
/lib/*': No such file or directory
cp: cannot stat '/home/zhaolinhai/T113/t113-s-v1.1-2.1/platform/core/graphics/gpu_um_pub/mali-bifrost/fbdev/mali-g31/arm-linux-gnu
/lib/*': No such file or directory
INFO: build buildroot OK.
INFO: build Qt and buildroot OK.
zhaolinhai@boardcon:~/T113/t113-s-v1.1-2.1$
```

### Step 5, generated image file

\$ ./build.sh pack

```
cardscript.fex Len: 0x6de
sunxi_gpt.fex Len: 0x2000
sunxi_mbr.fex Len: 0x10000
dlnfo.fex Len: 0x4000
arisc.fex Len: 0x6
vmlinux.fex Len: 0x36df63e
boot-resource.fex Len: 0xdad400
Vboot-resource.fex Len: 0x4
env.fex Len: 0x20000
Venv.fex Len: 0x4
env.fex Len: 0x20000
Venv.fex Len: 0x4
boot.fex Len: 0x124c800
Vboot.fex Len: 0x4
rootfs.fex Len: 0xd2a0a20
Vrootfs.fex Len: 0x4
dsp0.fex Len: 0x3fc78
Vdsp0.fex Len: 0x4
BuildImg 0
Dragon execute image.cfg SUCCESS !
-----image is at-----
size:302M /home/zhaolinhai/T113/t113-s-v1.1-2.1/out/t113_linux_evb1_auto_uart0_240627.img
pack finish
zhaolinhai@boardcon:~/T113/t113-s-v1.1-2.1$ ls out
gcc-linaro-5.3.1-2016.05-x86_64_arm-linux-gnueabi kernel pack_out serversocket t113 t1
zhaolinhai@boardcon:~/T113/t113-s-v1.1-2.1$ ls out
gcc-linaro-5.3.1-2016.05-x86_64_arm-linux-gnueabi
kernel
pack_out
serversocket
t113
t113_linux_evb1_auto_uart0_240627.img
zhaolinhai@boardcon:~/T113/t113-s-v1.1-2.1$
```

Image t113\_linux\_evb1\_auto\_uart0\_240627.img is generated in /out directory.

### Step 6, Clear all generated files

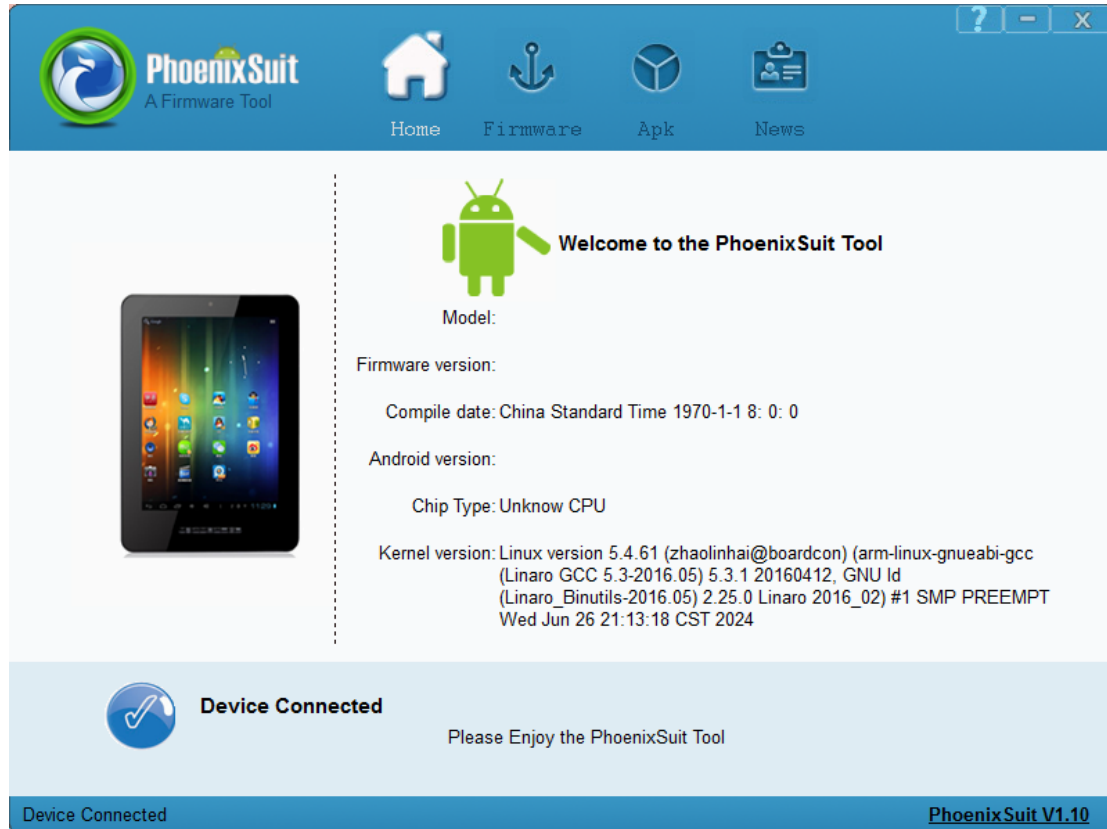
\$ ./build.sh distclean

**Note:** Step 6 is only required if you need to clear all generated files.

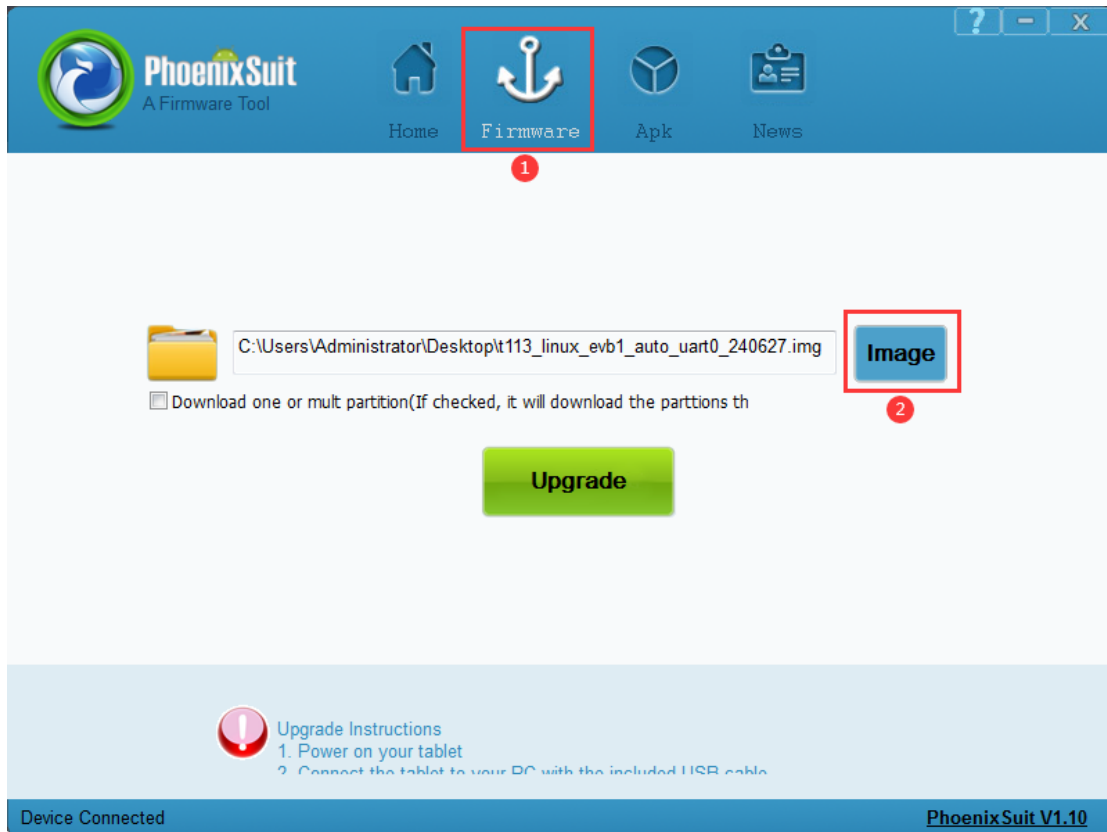
## 4. Burn Images

### 4.1 Burn by USB

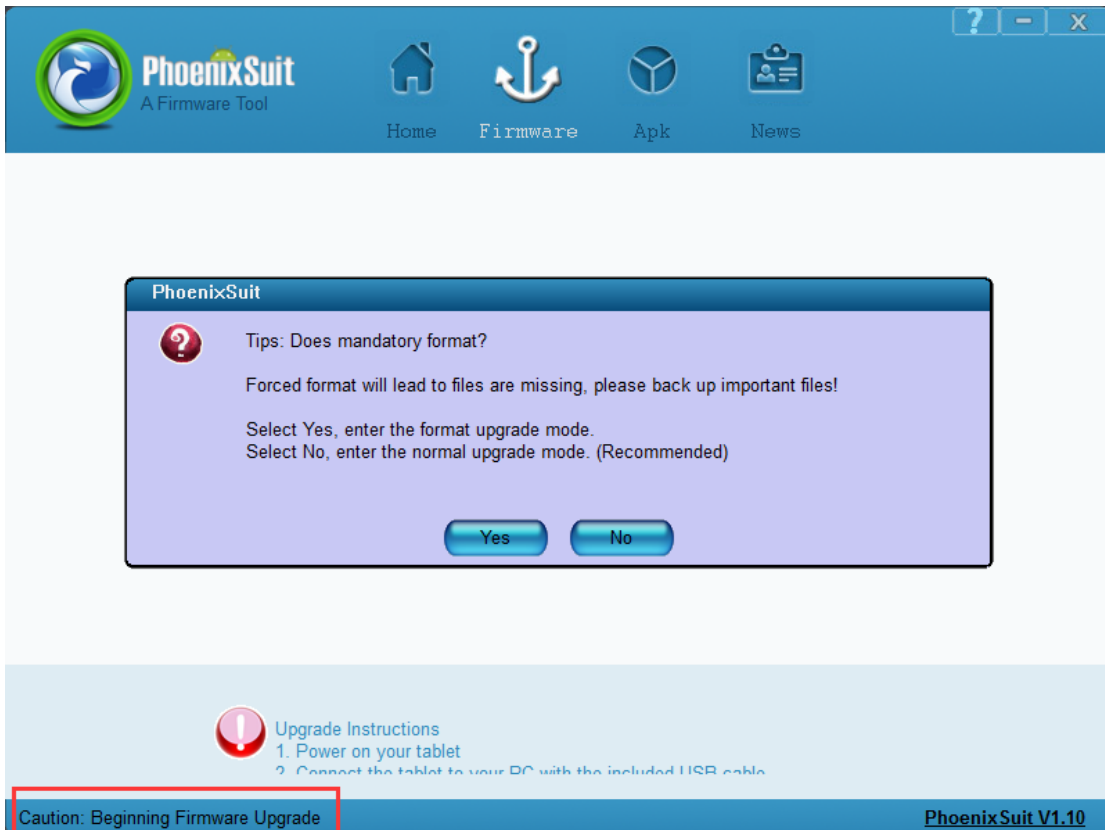
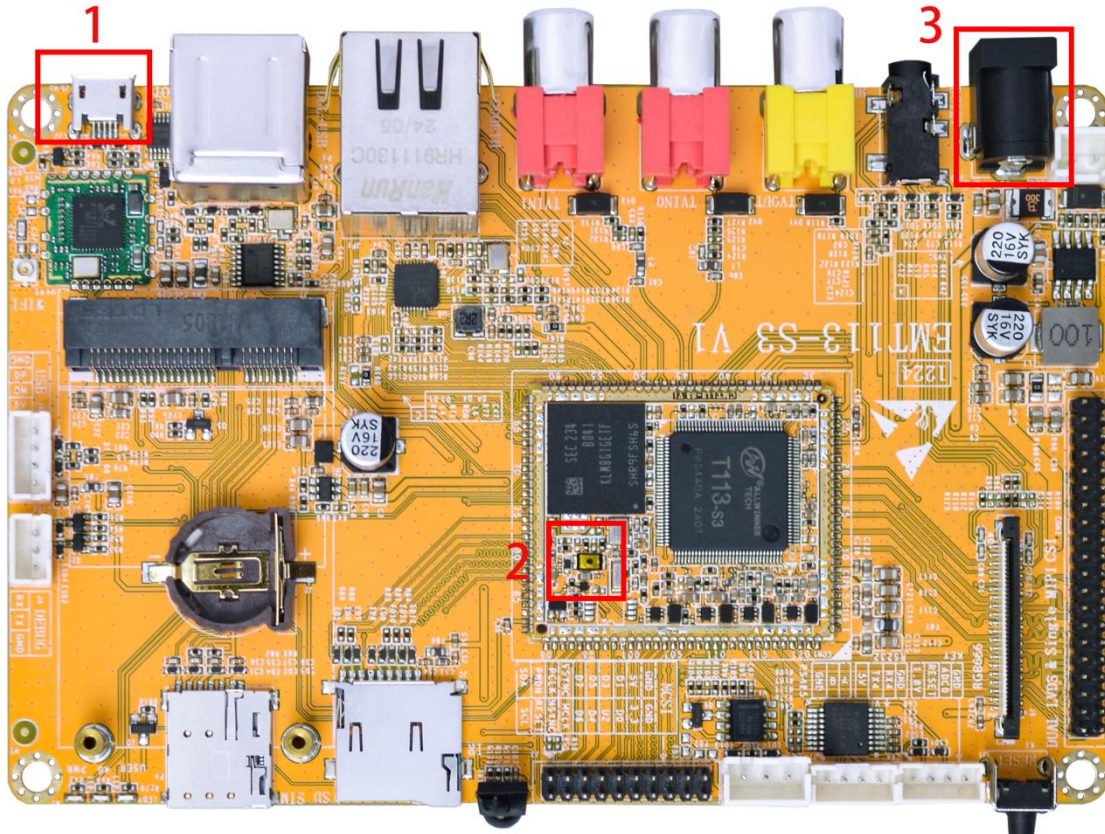
Step 1, Open download tool **PhoenixSuit**.



Step 2, open **Firmware** -> **Image** select the download firmware [t113\\_linux\\_evb1\\_auto\\_uart0\\_240627](#).



**Step 3**, connect PC and development board with Micro USB cable, keep pressing the Boot select key **SW2** and power the board until the download tool **PhoenixSuit** pop up the upgrade window.



Step 4, click **Yes** to flash.



## 4.2 Burn by sdcard

*Step 1*, open download tool **PhoenixCard**.

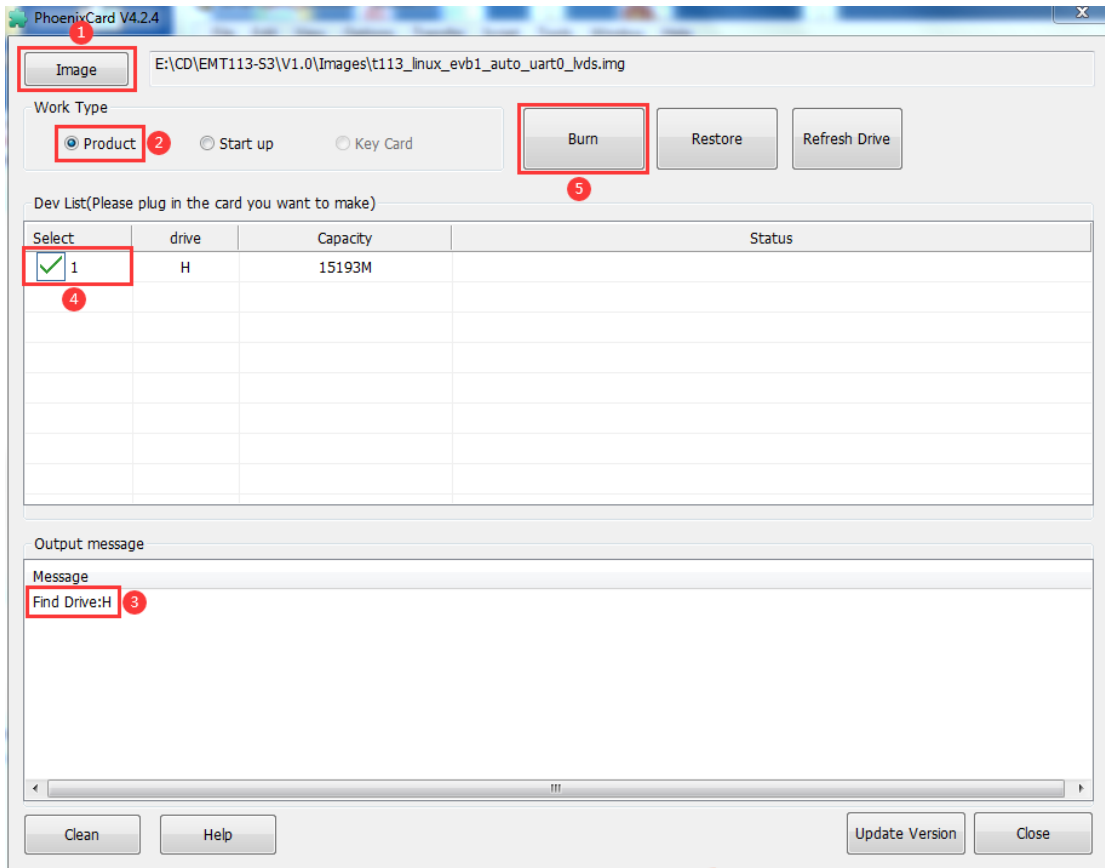
*Step 2*, click "Image" to add the image.

*Step 3*, select "Product" or "Start up".

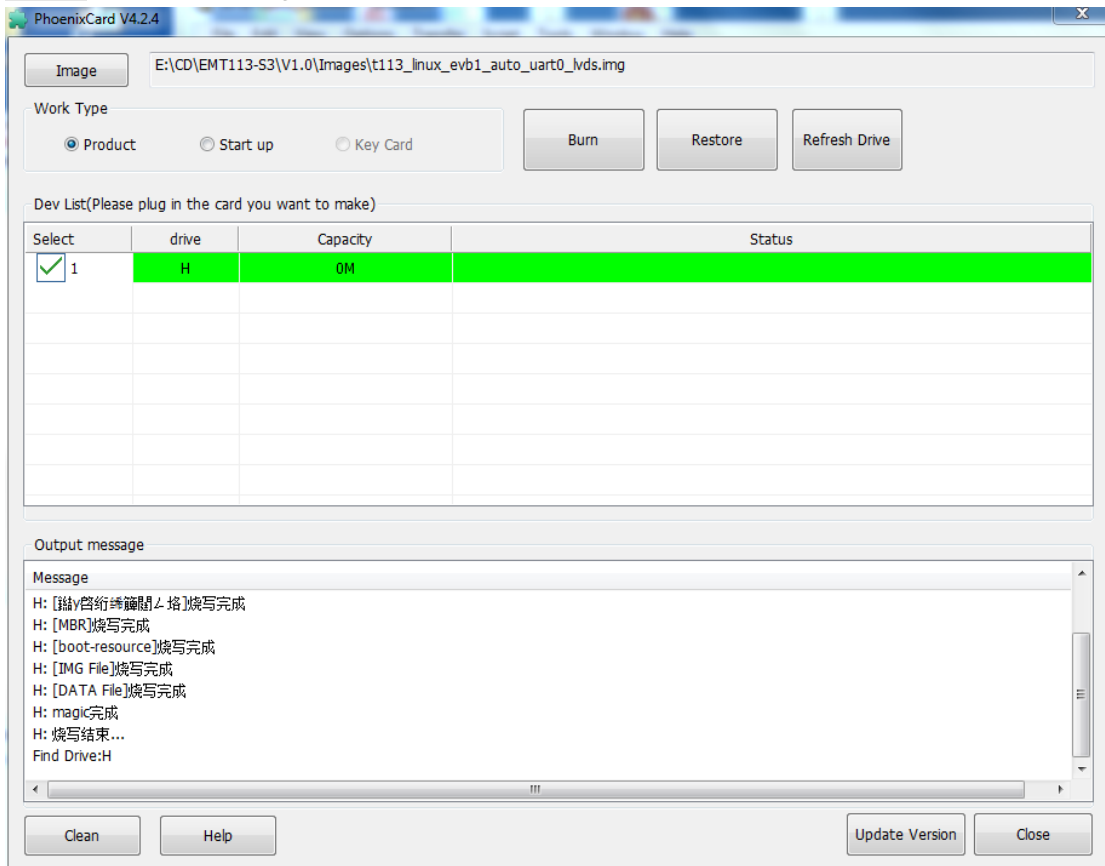
*Step 4*, Insert SD card to the PC.

*Step 5*, when the phoenixCard "output message" show "Find Driver" then select driver in "Dev List".

*Step 6*, click "Burn" to burn the Image to sdcard.



Step 7, wait for burning to complete.



**Note:** If the card already has more than one partition, the first operation may fail, re-click “Burn” can be normal Burn.

After using PhoenixCard to make a mass production card or a start up card, when there are multiple partitions in the card, and some of the partitions can not be recognized by Windows system, the file browser to see the capacity is very small, if you need to restore as a memory card, use the PhoenixCard “Restore” to format, the card will be formatted into a single partition, the capacity is also normal.

You can also use the disk partitioning tool that comes with Windows to delete partitions.

## 5. Buildroot Application

### 5.1 Normal display

EMT113-S3 Buildroot supports 10.1” LVDS, 10.1” MIPI, 7” RGB LCD display, TV OUT. However, there is pin multiplexing, can not be displayed at the same time, can only select one of the displays by updating the corresponding image as follow:

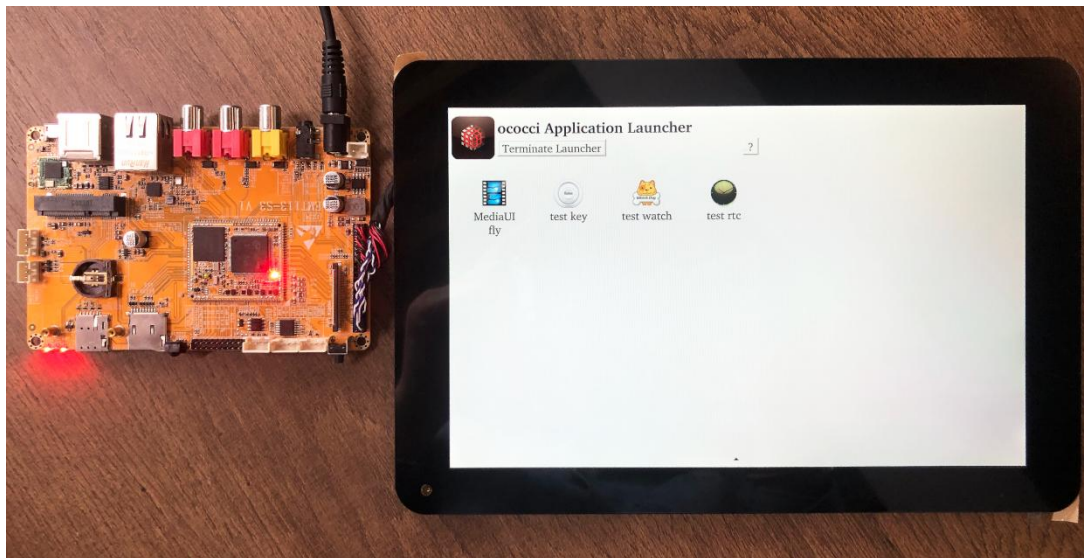
Support 10.1” LVDS LCD: t113\_linux\_evb1\_auto\_uart0\_lvds.img

Support 10.1” MIPI LCD: t113\_linux\_evb1\_auto\_uart0\_mipi.img

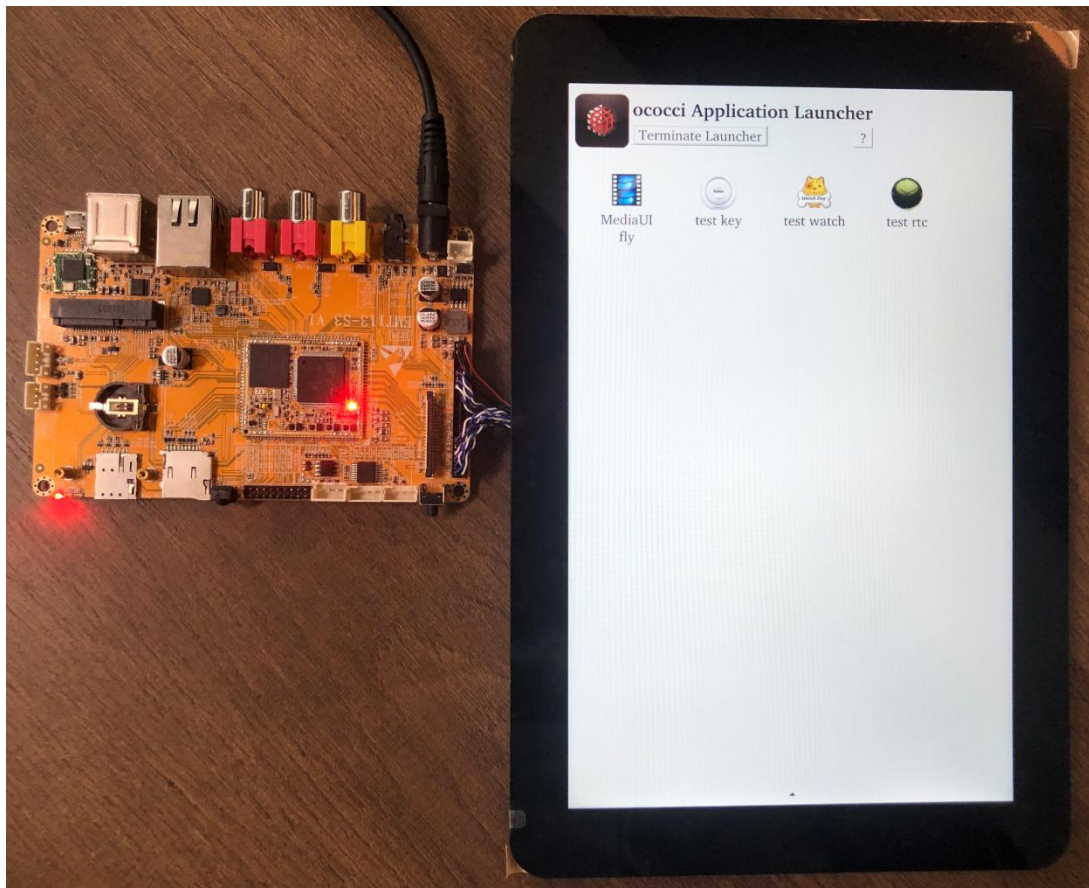
Support 5” RGB LCD: t113\_linux\_evb1\_auto\_uart0\_RGB\_LCD5.img

Support AV OUT: t113\_linux\_evb1\_auto\_uart0\_AV\_PAL.img

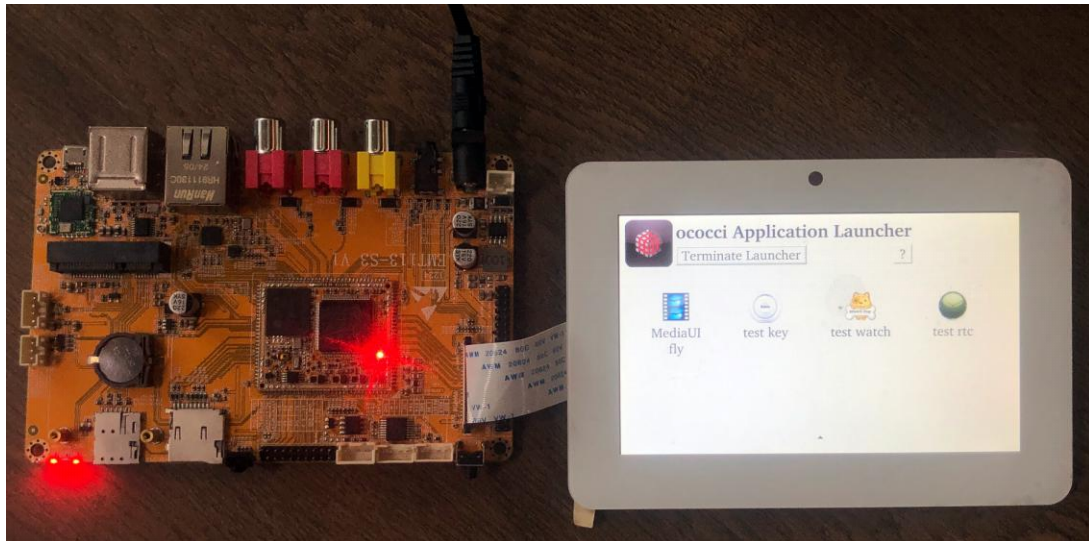
The 10.1” LVDS LCD display effect diagram is as follows:



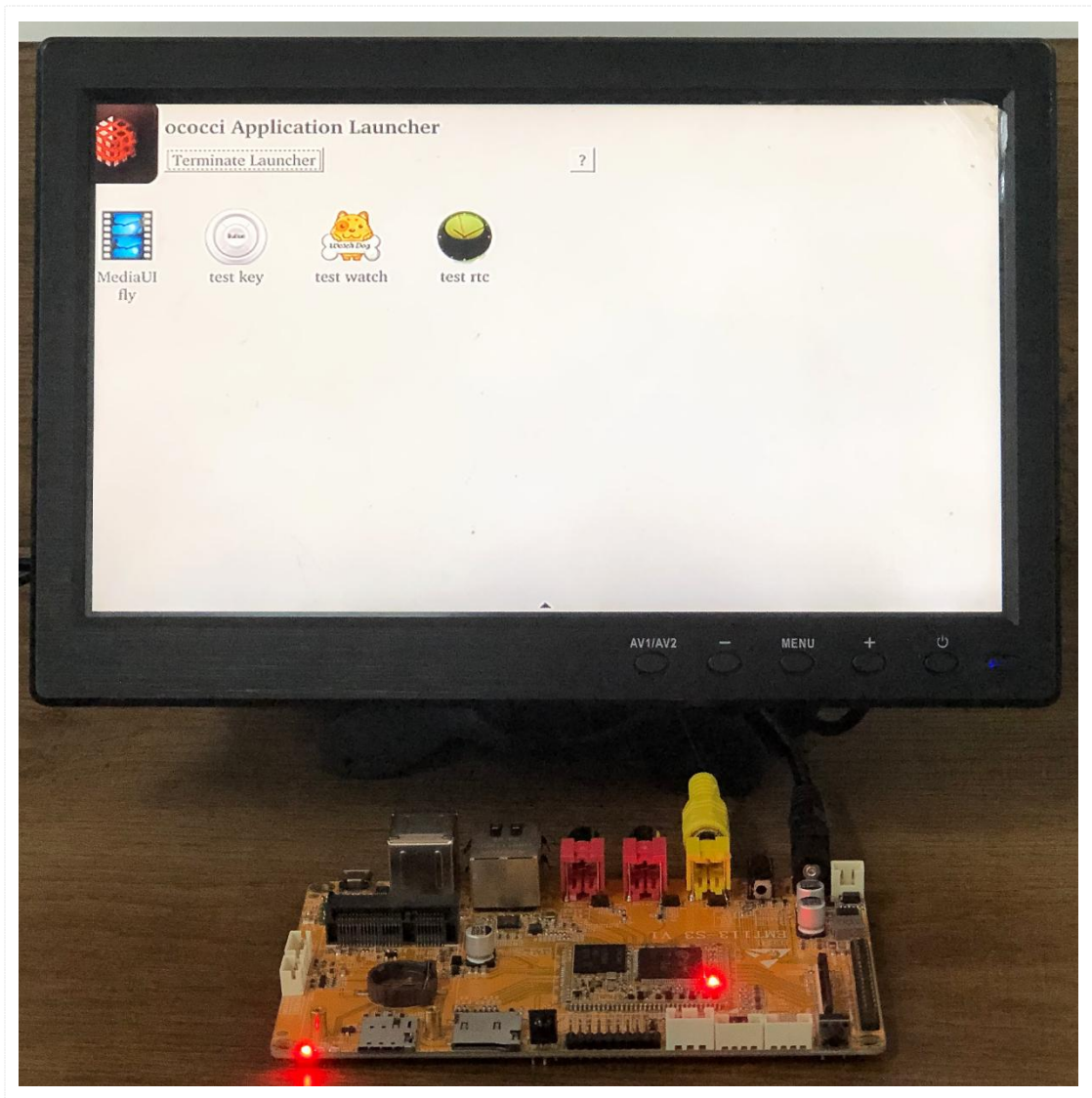
The 10.1” MIPI LCD display effect diagram is as follows:



The 5" RGB LCD display effect diagram is as follows:



The AV OUT display effect diagram is as follows:



## 5.2 TVIN

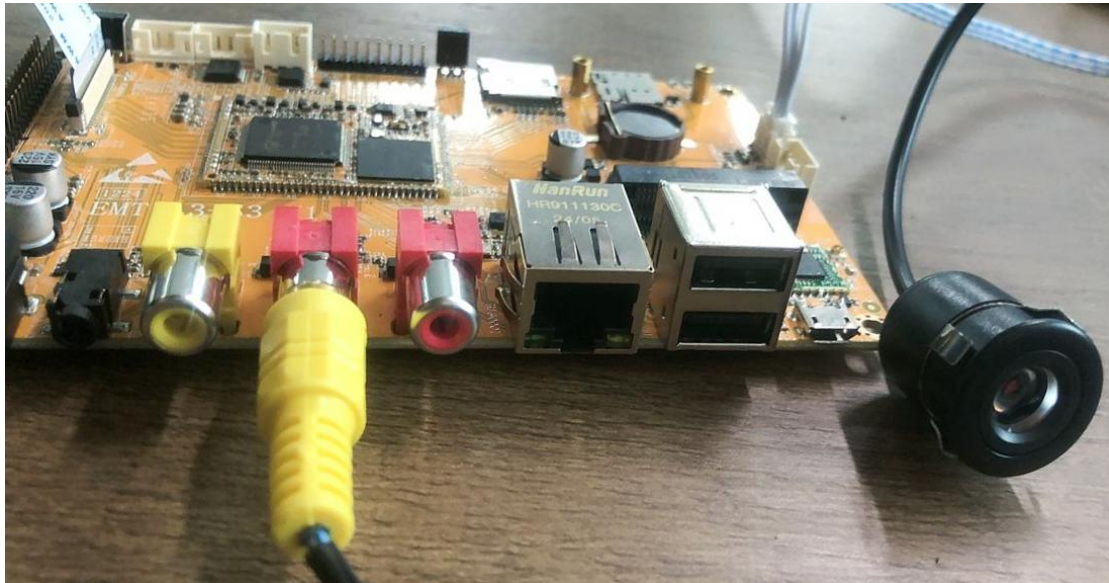
**Step 1**, Connect the AV Camera to the TVIN0/TVIN1 on the EMT113-S3 , then power on and execute follow command:

TV-IN0:

```
# tvdtest 4 0 720 576 ./ 4 100 25
```

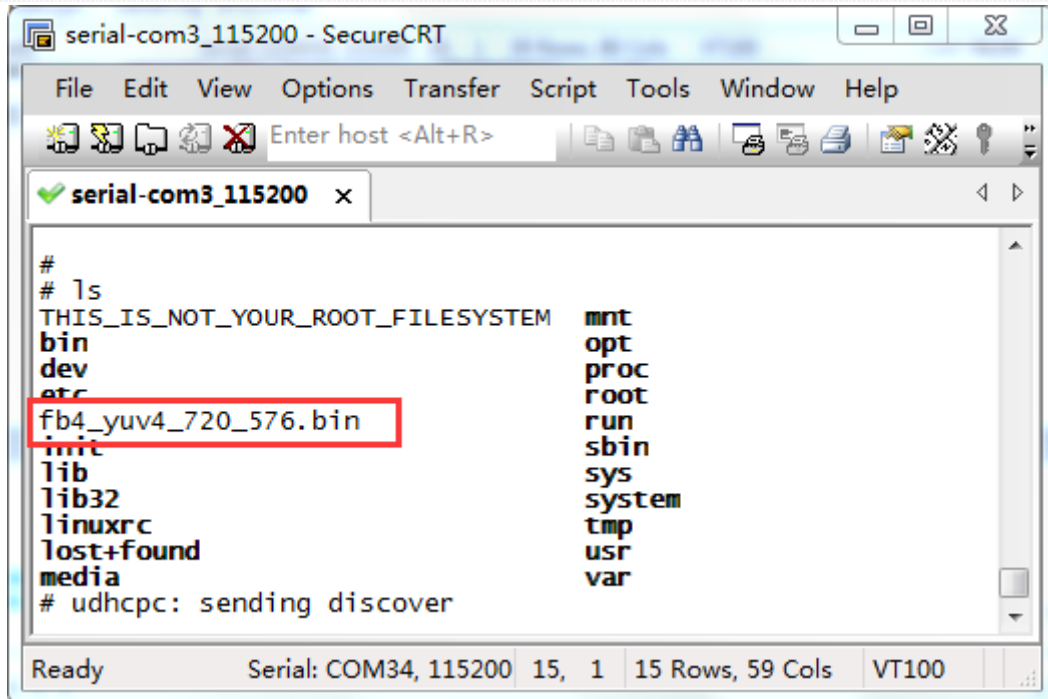
TV-IN1:

```
# tvdtest 4 1 720 576 ./ 4 100 25
```

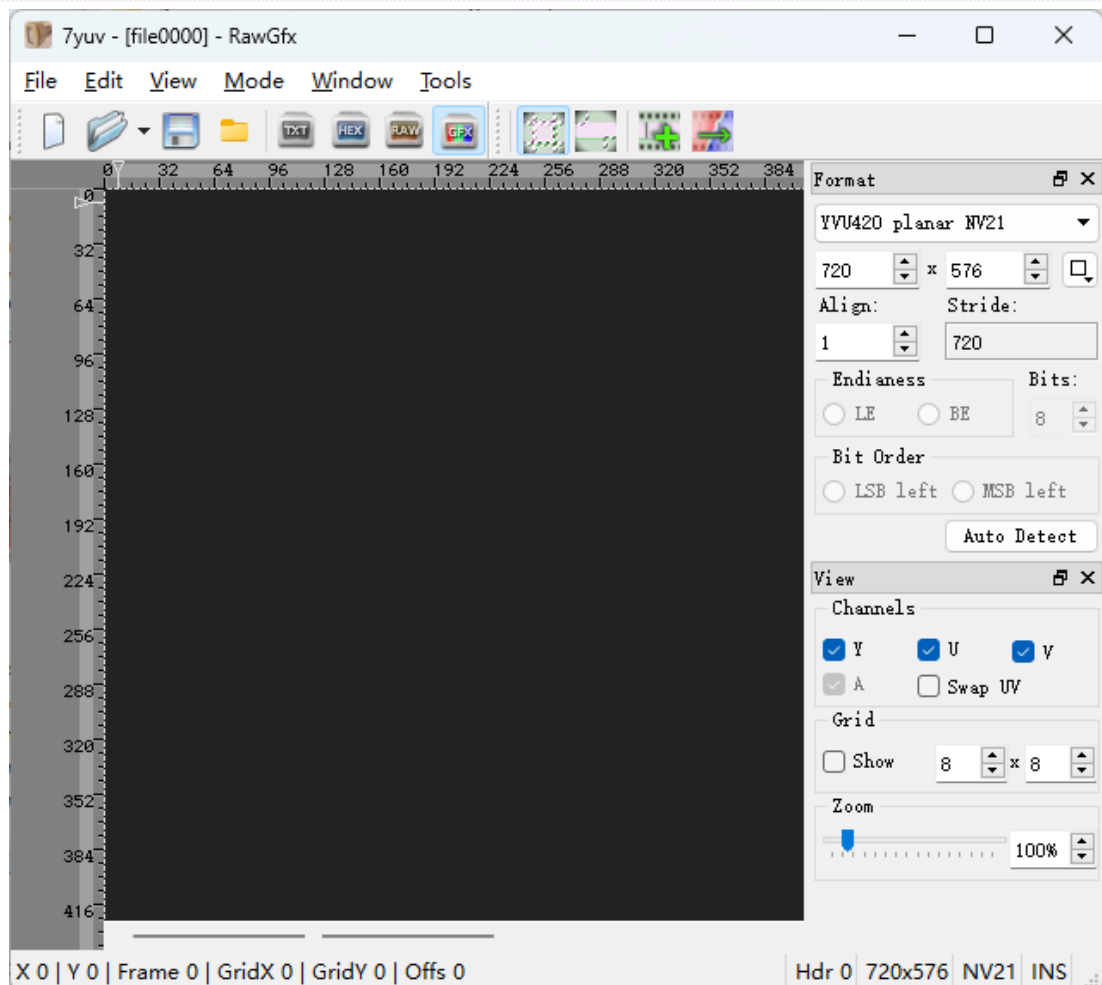


```
serial-com3_115200 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_115200 x
# tvdtest 4 0 720 576 ./ 4 100 25
[ 35.849586] VE: enable hw clock
[ 35.853423] enable_cedar_hw_clk,552
INFO : cedar <veInitialize:1307>: *** ic_version = 0x1301000010210,
[ 35.859274] [tvd] vidioc_s_fmt_vid_cap:1598
[ 35.859274] interface=0
[ 35.859274] system=PAL
[ 35.859274] format=0
[ 35.859274] output_fmt=YUV420
(getInstance 91)
init chwd success !
(HwDisplay 284)
(hwd_init 1259)
open /dev/video4 fd = 6
fmt.fmt.pix_mp.pixelformat=825[ 35.881531] [tvd] vidioc_s_fmt_vid_cap:1602
[ 35.881531] row=1
[ 35.881531] column=1
[ 35.881531] ch[0]=0
[ 35.881531] ch[1]=0
[ 35.881531] ch[2]=0
[ 35.881531] ch[3]=0
382478
[ 35.910311] [tvd] vidioc_s_fmt_vid_cap:1604
[ 35.910311] width=720
[ 35.910311] height=576
[ 35.910311] dev->sel=0
[ 35.910571] [tvd] tvd_cagc_and_3d_config:1456 tvd0 agc auto mode
[ 35.910714] [tvd] tvd_cagc_and_3d_config:1465 tvd0 CAGC enable:0x1
[ 35.941363] [tvd] tvd_cagc_and_3d_config:1492 tvd0 3d enable :0x47100000
resolution got from sensor = 720*576 num_planes = 0
[ 36.178618] [tvd] vidioc_streamon:1687 out vidioc_streamon:0
VIDIOC_STREAMON ok
[ 36.256008] [tvd] tvd_isr:785 In tvd_isr
udhpcp: sending discover
udhpcp: sending discover
VIDIOC_STREAMOFF ok
mode 4 test done at the 0 time!!
time cost 4.528075(s)
# udhpcp: sending discover
Ready Serial: COM34, 115200 39, 1 39 Rows, 80 Cols VT100 CAP NUM
```

Step 2, After executing the command, get the following file in the current directory:



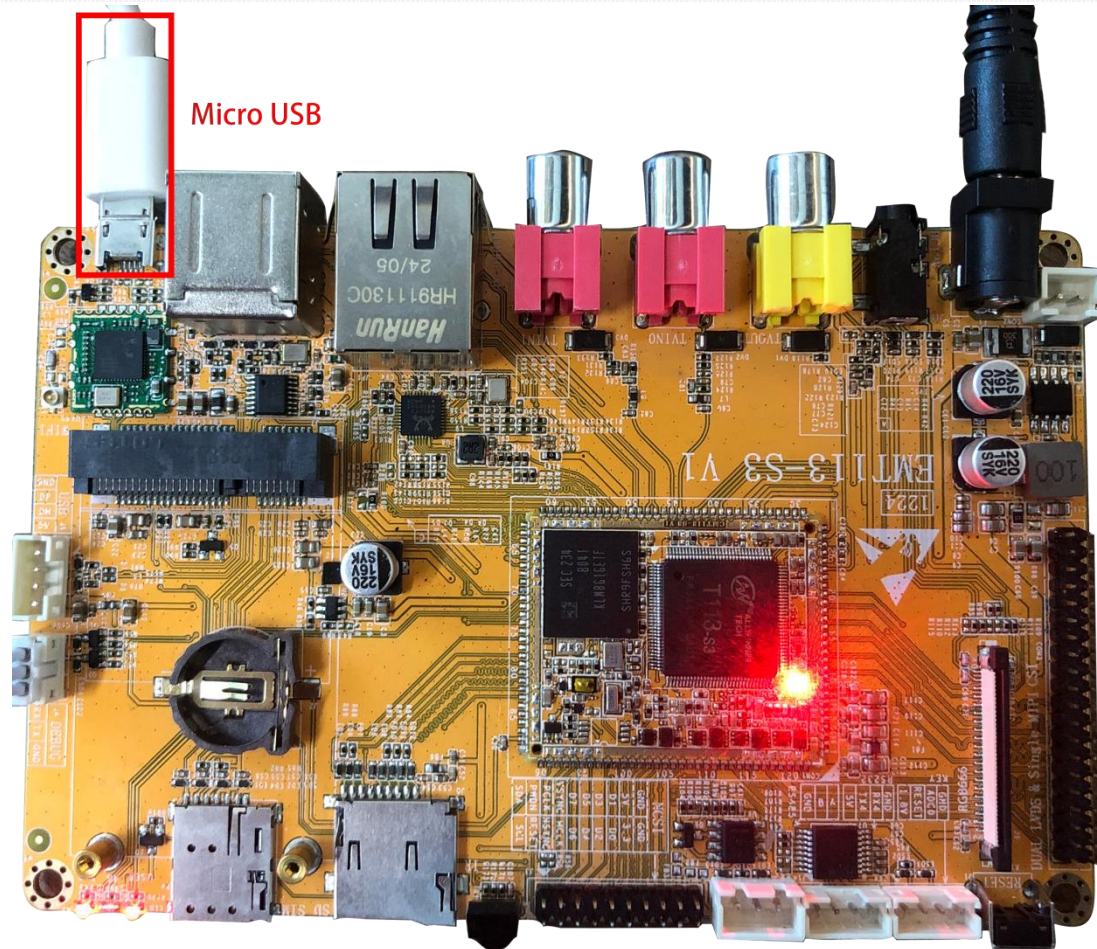
Step 3, Copy the file to the sdcard then insert the sdcard to the PC. Open 7yuv.exe (need install 7yuv.exe in pc) to review the TN-IN picture. The Format select: YVU420 planar NV21.



## 5.3 Micro USB

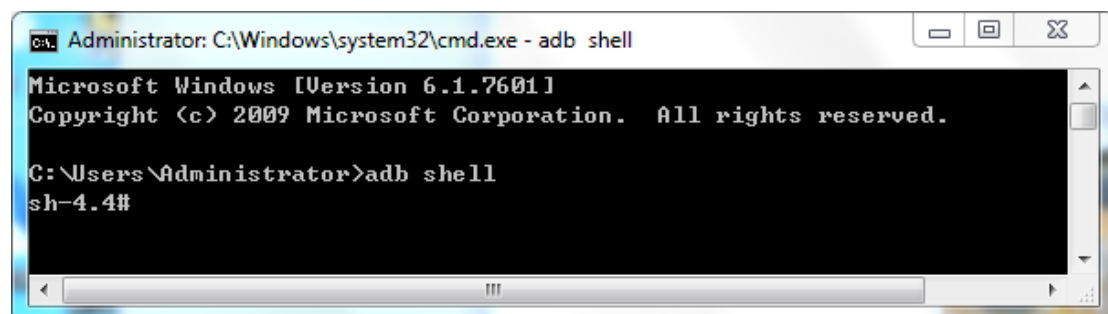
**ADB:** // Please install the ADB driver on your computer by yourself

Connect Micro USB cable to the PC.



After the system boot, execute the following command in Windows CMD to test adb:

# adb shell



### Micro USB to Host:

The Micro USB to Host used as a WIFI signal. Connect the WIFI antenna and power on. When the system boot, the default is ADB. Execute follow command to switch HOST to WIFI signal.

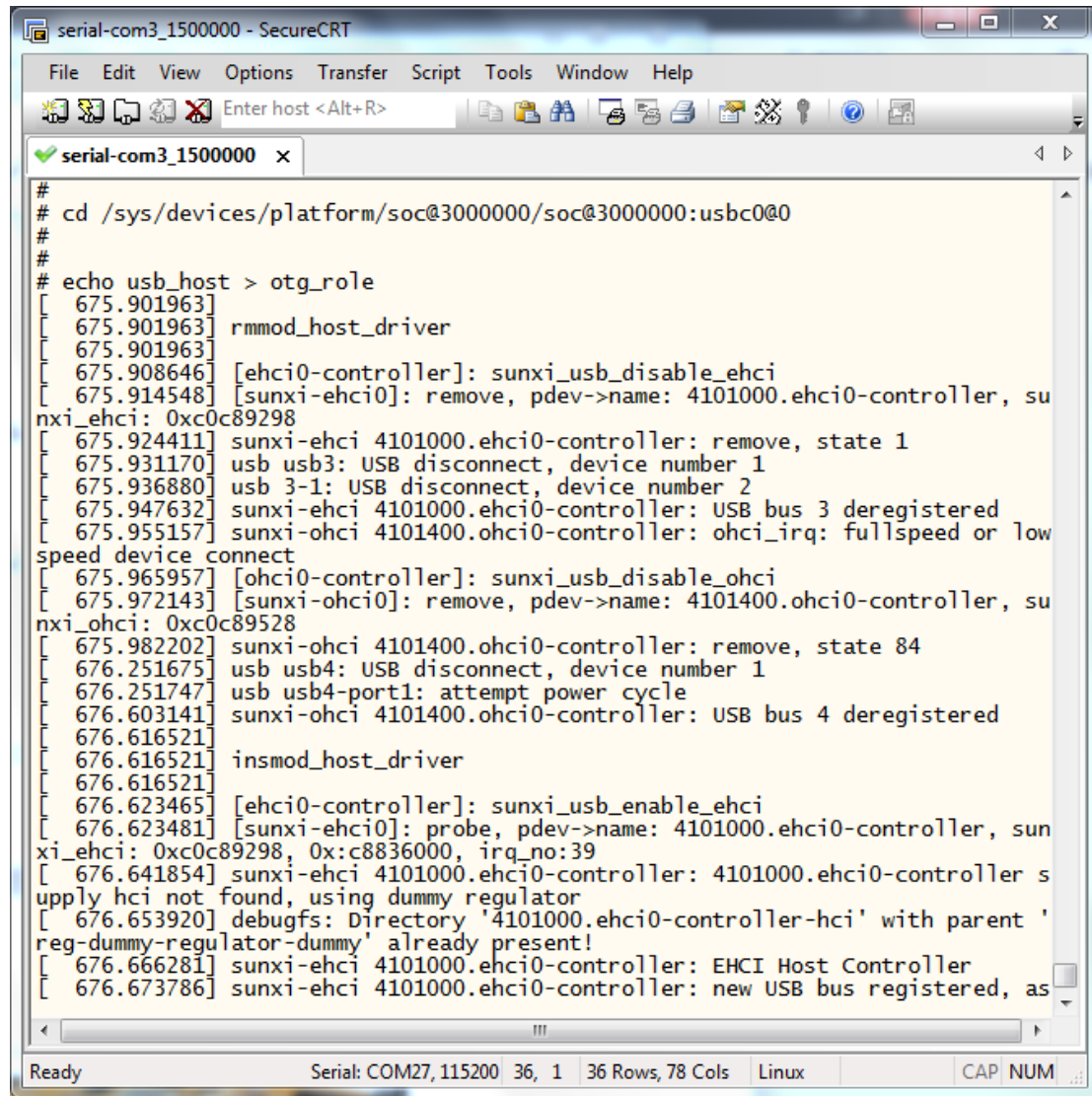
```
# cd /sys/devices/platform/soc@3000000/soc@3000000:usbc0@0
```

```
# echo usb_host > otg_role //Switch to Host
```

```
# /etc/wlan-connect.sh Boardcon Boardcon43435656 1 //Connect to WIFI, the SSID:
```

Boardcon Password:Boardcon43435656

# ping -I wlan0 www.boardcon.com //Test network



```
serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
#
# cd /sys/devices/platform/soc@3000000/soc@3000000:usbc0@0
#
#
# echo usb_host > otg_role
[ 675.901963]
[ 675.901963] rmmmod_host_driver
[ 675.901963]
[ 675.908646] [ehci0-controller]: sunxi_usb_disable_ehci
[ 675.914548] [sunxi-ehci0]: remove, pdev->name: 4101000.ehci0-controller, sunxi_ehci: 0xc0c89298
[ 675.924411] sunxi-ehci 4101000.ehci0-controller: remove, state 1
[ 675.931170] usb usb3: USB disconnect, device number 1
[ 675.936880] usb 3-1: USB disconnect, device number 2
[ 675.947632] sunxi-ehci 4101000.ehci0-controller: USB bus 3 deregistered
[ 675.955157] sunxi-ohci 4101400.ohci0-controller: ohci_irq: fullspeed or low speed device connect
[ 675.965957] [ohci0-controller]: sunxi_usb_disable_ohci
[ 675.972143] [sunxi-ohci0]: remove, pdev->name: 4101400.ohci0-controller, sunxi_ohci: 0xc0c89528
[ 675.982202] sunxi-ohci 4101400.ohci0-controller: remove, state 84
[ 676.251675] usb usb4: USB disconnect, device number 1
[ 676.251747] usb usb4-port1: attempt power cycle
[ 676.603141] sunxi-ohci 4101400.ohci0-controller: USB bus 4 deregistered
[ 676.616521]
[ 676.616521] insmod_host_driver
[ 676.616521]
[ 676.623465] [ehci0-controller]: sunxi_usb_enable_ehci
[ 676.623481] [sunxi-ehci0]: probe, pdev->name: 4101000.ehci0-controller, sunxi_ehci: 0xc0c89298, 0xc8836000, irq_no:39
[ 676.641854] sunxi-ehci 4101000.ehci0-controller: 4101000.ehci0-controller supply hci not found, using dummy regulator
[ 676.653920] debugfs: Directory '4101000.ehci0-controller-hci' with parent 'reg-dummy-regulator-dummy' already present!
[ 676.666281] sunxi-ehci 4101000.ehci0-controller: EHCI Host Controller
[ 676.673786] sunxi-ehci 4101000.ehci0-controller: new USB bus registered, as
```

Ready Serial: COM27, 115200 36, 1 36 Rows, 78 Cols Linux CAP NUM

```

serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
#
# /etc/wlan-connect.sh Boardcon Boardcon43435656 1
3
/lib/modules/5.4.61/8723du.ko
/lib/modules/5.4.61/xr829_wep.ko
ifconfig: SIOCGIFFLAGS: No such device
rmmod: can't unload module '8723du': No such file or directory
/etc/wlan-connect.sh: line 42: 8723du=: command not found
insmod other
[ 779.451423] RTW: module init start
[ 779.455498] RTW: rtl8723du v5.13.4.2-0-g1be1b3f9a.20220927_COEX20200103-353
5
[ 779.463515] RTW: build time: Apr 30 2024 16:35:59
[ 779.468804] RTW: rtl8723du BT-Coex version = COEX20200103-3535
[ 779.600116] RTW: HW EFUSE
[ 779.603246] RTW: 0x000: 29 81 40 7C 01 88 07 00 A0 04 EC 35 12 C0 A2 D8
  
```

```

serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
wlan0    Link encap:Ethernet  HWaddr C8:FE:0F:6D:4A:A8
         inet addr:192.168.0.167  Bcast:192.168.0.255  Mask:255.255.255.0
         inet6 addr: fe80::cafe:fff:fe6d:4aa8/64  Scope:Link
         UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
         RX packets:541 errors:0 dropped:107 overruns:0 frame:0
         TX packets:15 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:79006 (77.1 KiB)  TX bytes:2210 (2.1 KiB)

# ping -I wlan0 www.boardcon.com
PING www.boardcon.com (67.222.54.196): 56 data bytes
64 bytes from 67.222.54.196: seq=0 ttl=48 time=190.311 ms
64 bytes from 67.222.54.196: seq=1 ttl=48 time=184.181 ms
64 bytes from 67.222.54.196: seq=2 ttl=48 time=195.475 ms
64 bytes from 67.222.54.196: seq=3 ttl=48 time=370.400 ms
64 bytes from 67.222.54.196: seq=4 ttl=48 time=310.934 ms
64 bytes from 67.222.54.196: seq=5 ttl=48 time=207.731 ms
^C
--- www.boardcon.com ping statistics ---
6 packets transmitted, 6 packets received, 0% packet loss
round-trip min/avg/max = 184.181/243.172/370.400 ms
#
  
```

## 5.4 Bluetooth

*Step 1*, connect the antenna.

*Step 2*, Bluetooth test.

```

# cd /sys/devices/platform/soc@3000000/soc@3000000:usbc0@0
# echo usb_host > otg_role //Switch adb to Host
# insmod /lib/modules/5.4.61/rtk_btusb.ko
  
```

```
# hciconfig //View bluetooth device

# hciconfig
hci0: Type: Primary Bus: USB
      BD Address: C8:FE:0F:6D:4A:A9 ACL MTU: 1021:8 SCO MTU: 255:12
      DOWN
      RX bytes:584 acl:0 sco:0 events:30 errors:0
      TX bytes:369 acl:0 sco:0 commands:30 errors:0

# bluetoothd -d -n & //Start the Bluetooth service and run in the background
# bluealsa -p a2dp-source & //Start the Bluetooth audio service
# bluetoothctl //Enter the Bluetooth console

#
# bluetoothctl
bluetoothd[12615]: src/agent.c:agent_ref() 0x1594690: ref=1
bluetoothd[12615]: src/agent.c:register_agent() agent :1.2
Agent registered
[bluetooth]#

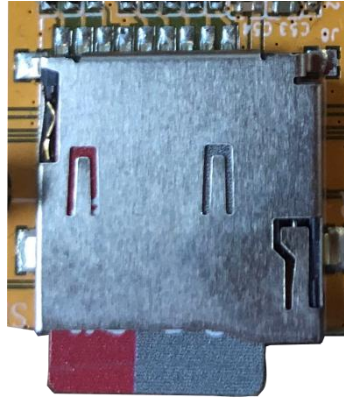
# show //View own Bluetooth device

[bluetooth]# show
Controller C8:FE:0F:6D:4A:A9 (public)
Name: BlueZ 5.50
Alias: BlueZ 5.50
Class: 0x00000000
Powered: no
Discoverable: no
Pairable: yes
UUID: Audio Source (0000110a-0000-1000-8000-00805f9b34fb)
UUID: Generic Attribute Profile (00001801-0000-1000-8000-00805f9b34fb)
UUID: A/V Remote Control (0000110e-0000-1000-8000-00805f9b34fb)
UUID: PnP Information (00001200-0000-1000-8000-00805f9b34fb)
UUID: A/V Remote Control Target (0000110c-0000-1000-8000-00805f9b34fb)
UUID: Generic Access Profile (00001800-0000-1000-8000-00805f9b34fb)
Modalias: usb:v1D6Bp0246d0532
Discovering: no
[bluetooth]#

# power on //Turn on the Bluetooth device
# devices //View Bluetooth devices
# scan on //Scan for Bluetooth devices
# scan off //Stop scanning the Bluetooth device
# connect D8:6C:02:4B:2D:11 //Connect to Bluetooth headset
# aplay -D bluealsa:DEV=D8:6C:02:4B:2D:11 //mnt/usb/sda1/shiguojingqian.wav //Play
audio file, Bluetooth headset has audio output
# exit //Exit the Bluetooth console
```

## 5.5 SD card

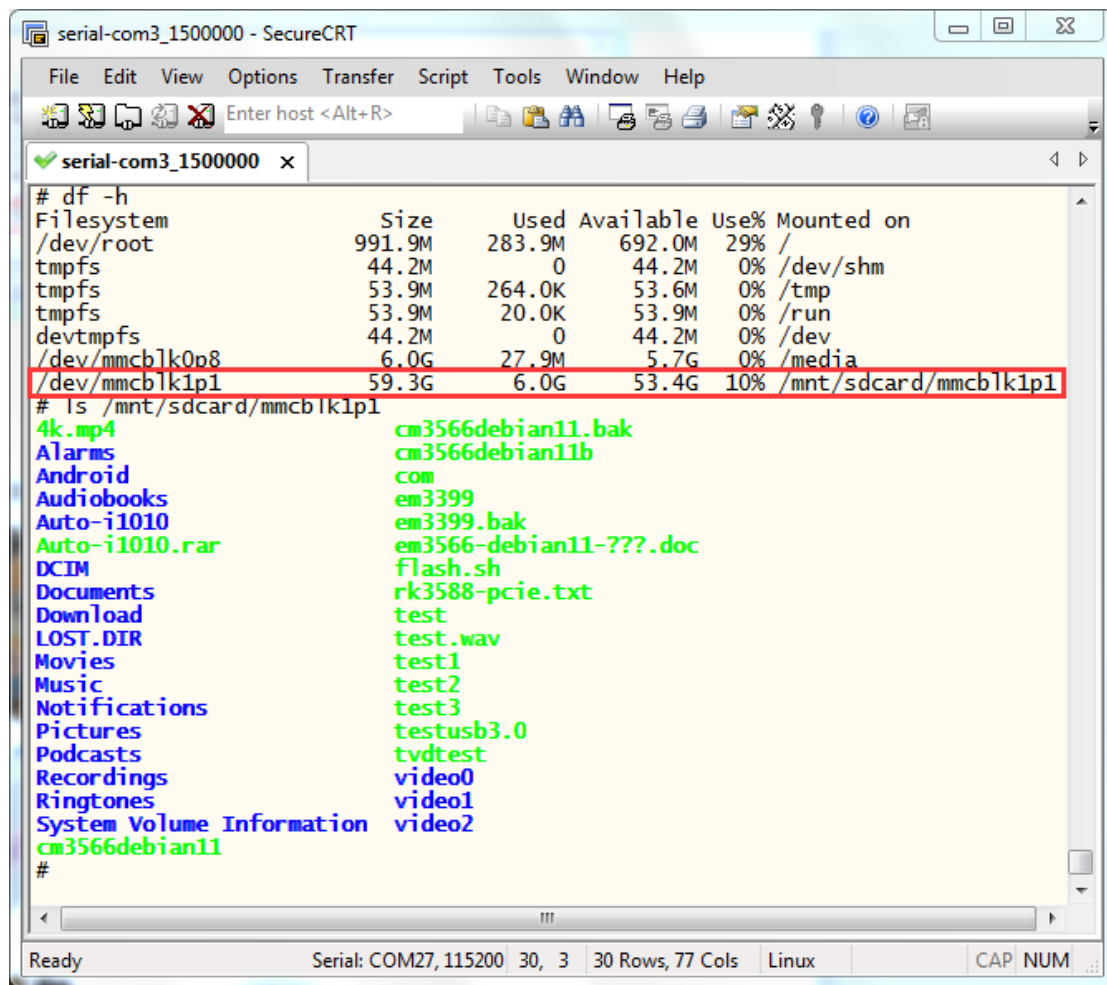
*Step 1*, insert the micro SD card into the board, then power on.



*Step 2*, Execute the follow command to view the SD card drive device auto-mount directory.

```
# df -l
```

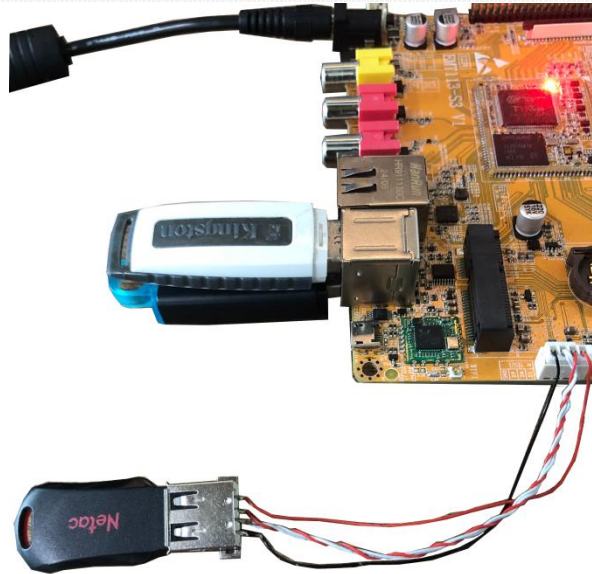
```
# ls /mnt/sdcard/mmcblk1p1
```



```
serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
# df -h
Filesystem      Size      Used Available Use% Mounted on
/dev/root       991.9M    283.9M    692.0M    29% /
tmpfs           44.2M     0         44.2M     0% /dev/shm
tmpfs           53.9M    264.0K    53.6M     0% /tmp
tmpfs           53.9M    20.0K     53.9M     0% /run
devtmpfs       44.2M     0         44.2M     0% /dev
/dev/mmcblk0p8  6.0G     27.9M    5.7G      0% /media
/dev/mmcblk1p1 59.3G     6.0G    53.4G     10% /mnt/sdcard/mmcblk1p1
# ls /mnt/sdcard/mmcblk1p1
4k.mp4          cm3566debian11.bak
Alarms          cm3566debian11b
Android         com
Audiobooks     em3399
Auto-i1010     em3399.bak
Auto-i1010.rar em3566-debian11-???.doc
DCIM           flash.sh
Documents      rk3588-pcie.txt
Download       test
LOST.DIR       test.wav
Movies         test1
Music          test2
Notifications  test3
Pictures       testusb3.0
Podcasts       tvdtest
Recordings     video0
Ringtones     video1
System Volume Information video2
cm3566debian11
#
Ready          Serial: COM27, 115200 30, 3 30 Rows, 77 Cols Linux CAP NUM
```

## 5.6 USB host

*Step 1*, insert USB 2.0 flash drive into the USB interface.



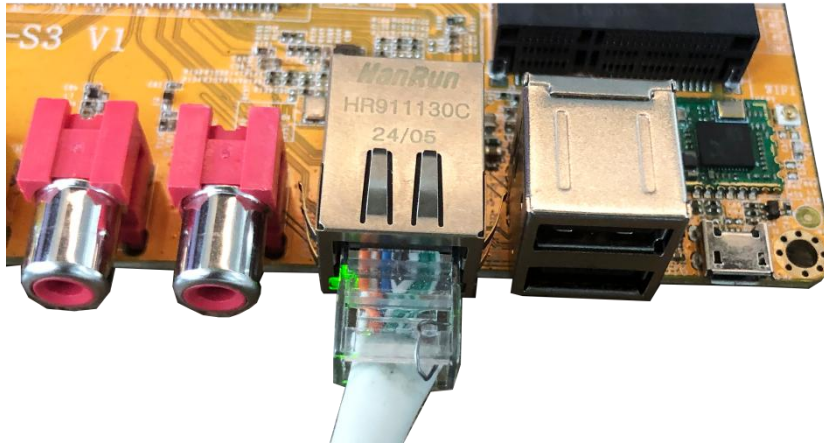
Step 2, Execute follow command to view the USB flash drive device auto-mount directory.

```
# df -h
# ls /mnt/usb/sda1
# ls /mnt/usb/sdb1
# ls /mnt/usb/sdc1
```

```
serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
# df -h
Filesystem      Size      Used Available Use% Mounted on
/dev/root       991.9M    284.0M    691.9M    29% /
tmpfs           44.2M     0          44.2M    0% /dev/shm
tmpfs           53.9M    60.0K     53.8M    0% /tmp
tmpfs           53.9M    20.0K     53.9M    0% /run
devtmpfs       44.2M     0          44.2M    0% /dev
/dev/sda1       62.7M     1.3M     61.4M    2% /mnt/usb/sda1
/dev/mmcblk1p1 59.3G     6.0G     53.4G   10% /mnt/sdcard/mmcblk1p1
/dev/sdb1       57.6G    42.1G    15.6G   73% /mnt/usb/sdb1
/dev/sdc1       3.6G     3.6G     23.0M   99% /mnt/usb/sdc1
/dev/mmcblk0s6 6.0G     27.9M     5.7G    0% /media
# ls /mnt/usb/sda1
?????.txt      black_list
Alarms         photo0
Android       photo1
Audiobooks    rs485?????.txt
DCIM          rs485r
Documents     rs485s
Download      snapshot
LOST.DIR      test1
Movies        test2
Music         test3
Notifications test4
Pictures      test5
Podcasts      testusb3.0
Recordings    video0
Ringtones     video1
System Volume Information white_list
# udhccp: sending discover
```

## 5.7 Ethernet

*Step 1*, connect the network cable to the Ethernet port.



*Step 2*, according to the terminal serial port printing information, it can be seen that the Gigabit Ethernet recognition is successful.

```
# ifconfig
```

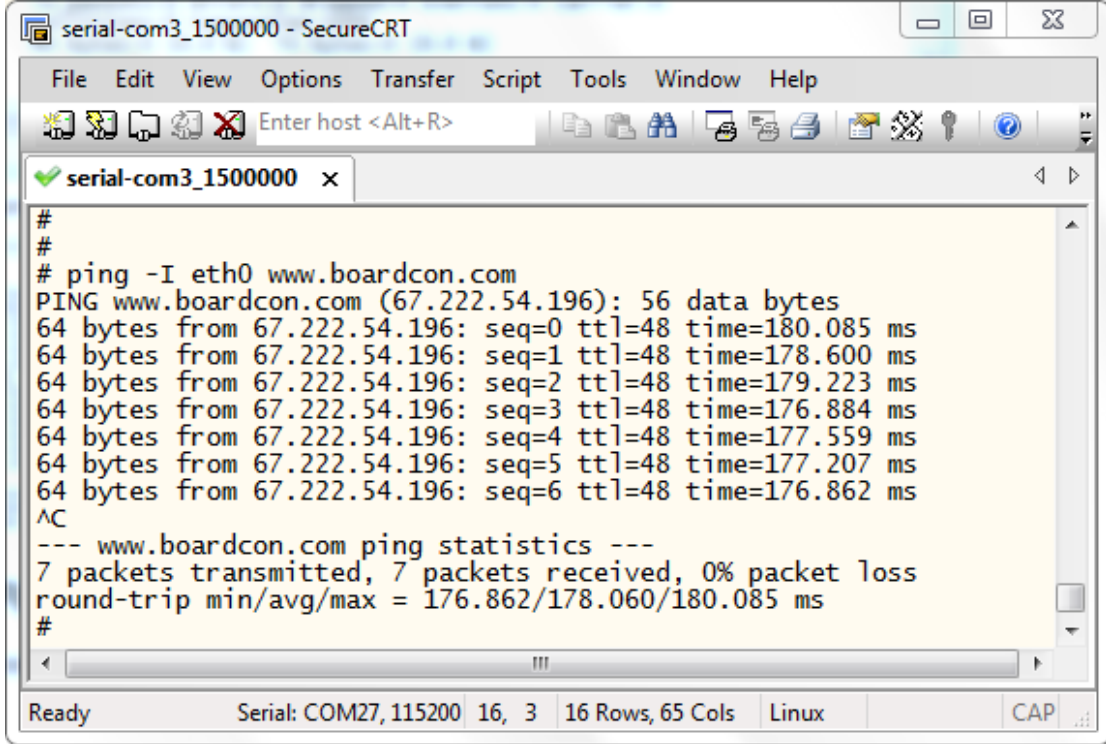
```
serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
#
# [ 1976.327993] sunxi-gmac 4500000.eth eth0: Link is Down
# [ 1980.488021] sunxi-gmac 4500000.eth eth0: Link is Up - 1Gbps/Full - flow control off
# ifconfig
eth0    Link encap:Ethernet  HWaddr 6A:1C:DC:2A:68:E0
        inet addr:192.168.0.178  Bcast:192.168.0.255  Mask:255.255.255.0
        inet6 addr: fe80::681c:dcff:fe2a:68e0/64  Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:7636  errors:3  dropped:404  overruns:0  frame:0
        TX packets:18  errors:0  dropped:0  overruns:0  carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:967769 (945.0 KiB)  TX bytes:1940 (1.8 KiB)
        Interrupt:39

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128  Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:0  errors:0  dropped:0  overruns:0  frame:0
        TX packets:0  errors:0  dropped:0  overruns:0  carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

#
```

*Step 3*, internet test.

```
# ping -I eth0 www.boardcon.com
```



```
serial-com3_1500000 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_1500000 x
#
#
# ping -I eth0 www.boardcon.com
PING www.boardcon.com (67.222.54.196): 56 data bytes
64 bytes from 67.222.54.196: seq=0 ttl=48 time=180.085 ms
64 bytes from 67.222.54.196: seq=1 ttl=48 time=178.600 ms
64 bytes from 67.222.54.196: seq=2 ttl=48 time=179.223 ms
64 bytes from 67.222.54.196: seq=3 ttl=48 time=176.884 ms
64 bytes from 67.222.54.196: seq=4 ttl=48 time=177.559 ms
64 bytes from 67.222.54.196: seq=5 ttl=48 time=177.207 ms
64 bytes from 67.222.54.196: seq=6 ttl=48 time=176.862 ms
^C
--- www.boardcon.com ping statistics ---
7 packets transmitted, 7 packets received, 0% packet loss
round-trip min/avg/max = 176.862/178.060/180.085 ms
#
Ready Serial: COM27, 115200 16, 3 16 Rows, 65 Cols Linux CAP
```

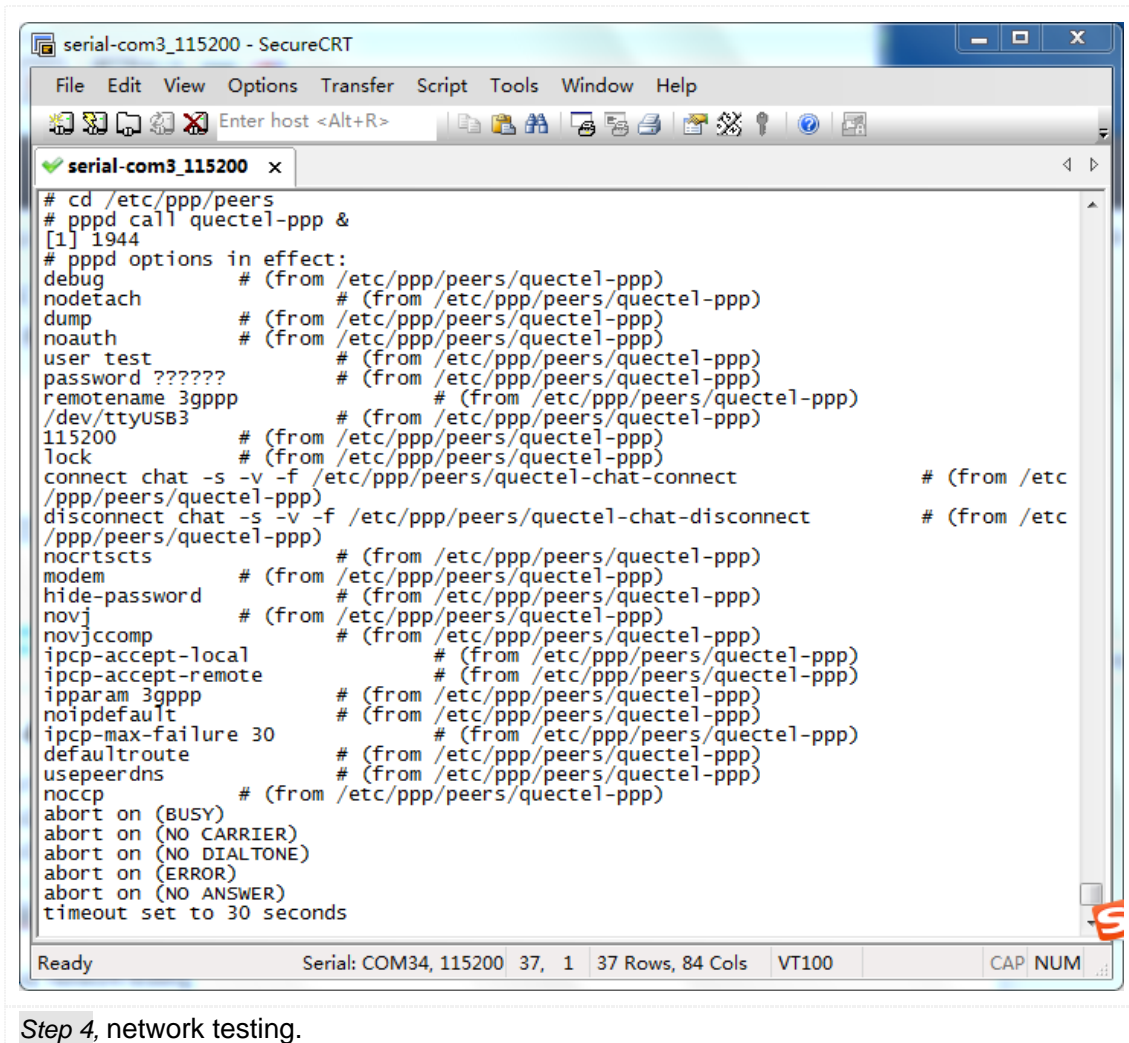
## 5.8 4G(EC20)

*Step 1*, insert 4G module to PCIe slot (4G model:EC20).

*Step 2*, connect antenna and insert SIM card.

*Step 3*, execute follow command to test 4G.

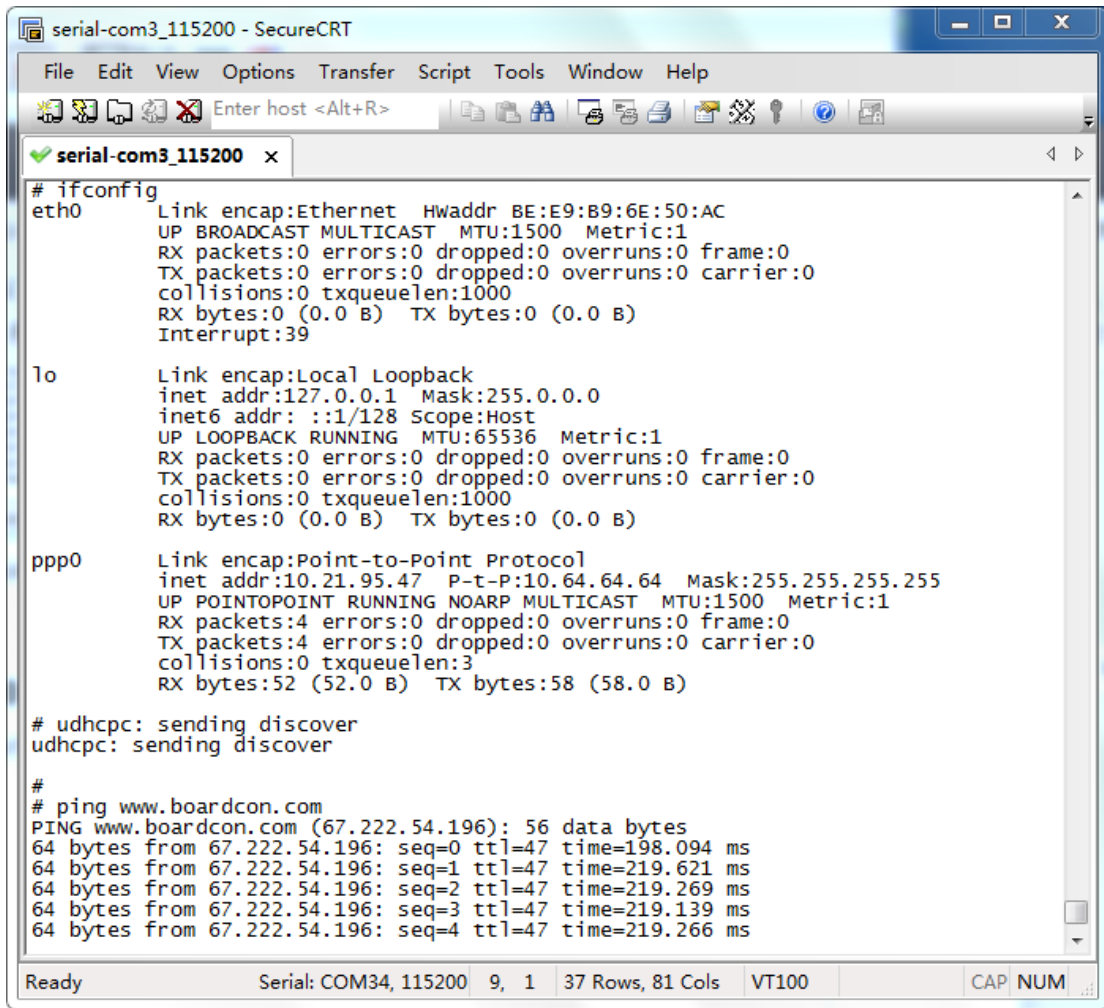
```
# cd /etc/ppp/peers
# pppd call quectel-ppp &
```



```
serial-com3_115200 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_115200 x
# cd /etc/ppp/peers
# pppd call quectel-ppp &
[1] 1944
# pppd options in effect:
debug          # (from /etc/ppp/peers/quectel-ppp)
nodetach       # (from /etc/ppp/peers/quectel-ppp)
dump           # (from /etc/ppp/peers/quectel-ppp)
noauth        # (from /etc/ppp/peers/quectel-ppp)
user test     # (from /etc/ppp/peers/quectel-ppp)
password ????? # (from /etc/ppp/peers/quectel-ppp)
remotename 3gppp # (from /etc/ppp/peers/quectel-ppp)
/dev/ttyUSB3 # (from /etc/ppp/peers/quectel-ppp)
115200       # (from /etc/ppp/peers/quectel-ppp)
lock         # (from /etc/ppp/peers/quectel-ppp)
connect chat -s -v -f /etc/ppp/peers/quectel-chat-connect # (from /etc
/ppp/peers/quectel-ppp)
disconnect chat -s -v -f /etc/ppp/peers/quectel-chat-disconnect # (from /etc
/ppp/peers/quectel-ppp)
nocrtscts     # (from /etc/ppp/peers/quectel-ppp)
modem         # (from /etc/ppp/peers/quectel-ppp)
hide-password # (from /etc/ppp/peers/quectel-ppp)
novj          # (from /etc/ppp/peers/quectel-ppp)
novjcomp      # (from /etc/ppp/peers/quectel-ppp)
ipcp-accept-local # (from /etc/ppp/peers/quectel-ppp)
ipcp-accept-remote # (from /etc/ppp/peers/quectel-ppp)
ipparam 3gppp # (from /etc/ppp/peers/quectel-ppp)
noipdefault   # (from /etc/ppp/peers/quectel-ppp)
ipcp-max-failure 30 # (from /etc/ppp/peers/quectel-ppp)
defaultroute  # (from /etc/ppp/peers/quectel-ppp)
usepeerdns    # (from /etc/ppp/peers/quectel-ppp)
nocc          # (from /etc/ppp/peers/quectel-ppp)
abort on (BUSY)
abort on (NO CARRIER)
abort on (NO DIALTONE)
abort on (ERROR)
abort on (NO ANSWER)
timeout set to 30 seconds

Ready          Serial: COM34, 115200 37, 1 37 Rows, 84 Cols  VT100  CAP NUM
```

Step 4, network testing.



```

serial-com3_115200 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_115200 x
# ifconfig
eth0    Link encap:Ethernet  HWaddr BE:E9:B9:6E:50:AC
        UP BROADCAST MULTICAST  MTU:1500  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
        Interrupt:39

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

ppp0    Link encap:Point-to-Point Protocol
        inet addr:10.21.95.47  P-t-P:10.64.64.64  Mask:255.255.255.255
        UP POINTOPOINT RUNNING NOARP MULTICAST  MTU:1500  Metric:1
        RX packets:4 errors:0 dropped:0 overruns:0 frame:0
        TX packets:4 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:3
        RX bytes:52 (52.0 B)  TX bytes:58 (58.0 B)

# udhpcp: sending discover
udhpcp: sending discover

#
# ping www.boardcon.com
PING www.boardcon.com (67.222.54.196): 56 data bytes
64 bytes from 67.222.54.196: seq=0 ttl=47 time=198.094 ms
64 bytes from 67.222.54.196: seq=1 ttl=47 time=219.621 ms
64 bytes from 67.222.54.196: seq=2 ttl=47 time=219.269 ms
64 bytes from 67.222.54.196: seq=3 ttl=47 time=219.139 ms
64 bytes from 67.222.54.196: seq=4 ttl=47 time=219.266 ms

Ready          Serial: COM34, 115200  9, 1  37 Rows, 81 Cols  VT100  CAP NUM
  
```

## 5.9 Headset

*Step 1*, plug the headphones into the headphone jack.

*Step 2*, execute follow command to play audio file in the sdcard.

```
# aplay -l
# cat /proc/asound/card
# aplay -D hw:0,0 /mnt/sdcard/mmcblk1p1/test.wav
```

*Step 3*, execute follow command to recording test.

```
# arecord -Dhw:audiocodec -f S24_LE -r 44100 -c 1 -d 100 -vvv test.wav
# aplay -D hw:0,0 test.wav
```

*Step 4*, execute follow command to set the volume.

```
# amixer -c 0 cset numid=17,iface=MIXER,name='Headphone volume' 7 // the value is 0-7
```

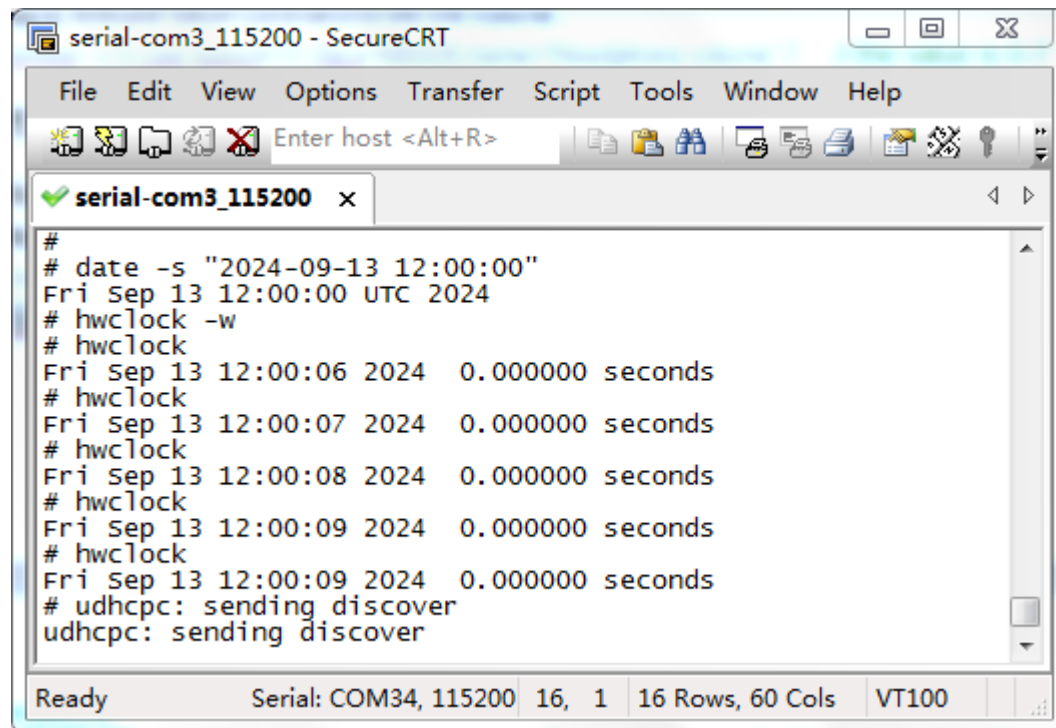
## 5.10 RTC

*Step 1*, install the coin cell battery.

*Step 2*, execute follow command to set the RTC time.

```
# date -s "2024-09-13 12:00:00"
# hwclock -w
```

```
# hwclock
```



```

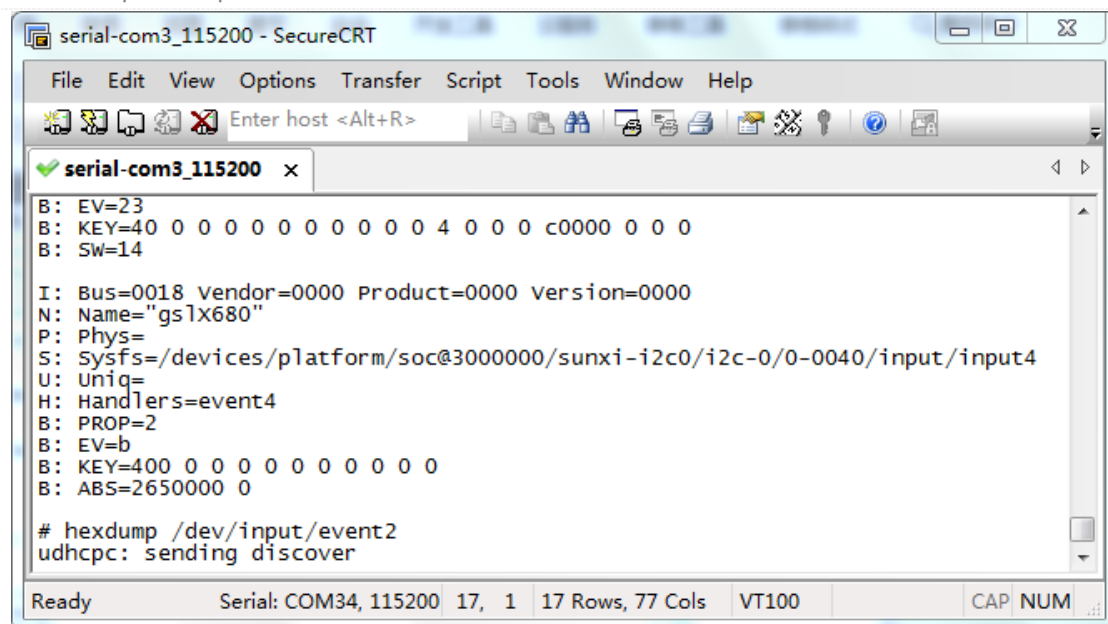
serial-com3_115200 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_115200 x
#
# date -s "2024-09-13 12:00:00"
Fri Sep 13 12:00:00 UTC 2024
# hwclock -w
# hwclock
Fri Sep 13 12:00:06 2024  0.000000 seconds
# hwclock
Fri Sep 13 12:00:07 2024  0.000000 seconds
# hwclock
Fri Sep 13 12:00:08 2024  0.000000 seconds
# hwclock
Fri Sep 13 12:00:09 2024  0.000000 seconds
# hwclock
Fri Sep 13 12:00:09 2024  0.000000 seconds
# udhpcp: sending discover
udhpcp: sending discover
Ready          Serial: COM34, 115200  16, 1  16 Rows, 60 Cols  VT100
  
```

After setting the time zone correctly, confirm that the time matches the actual time. After confirming the RTC time synchronization, power off, only the RTC coin cell battery is kept, other devices are disconnected, the development board is idle for a period of time, and then connect the power supply to confirm whether the time is running.

## 5.11 IR

*Step 1*, execute the following command to turn on IR receiving data information printing:

```
# cat /proc/bus/input/devices
# hexdump /dev/input/event2
```



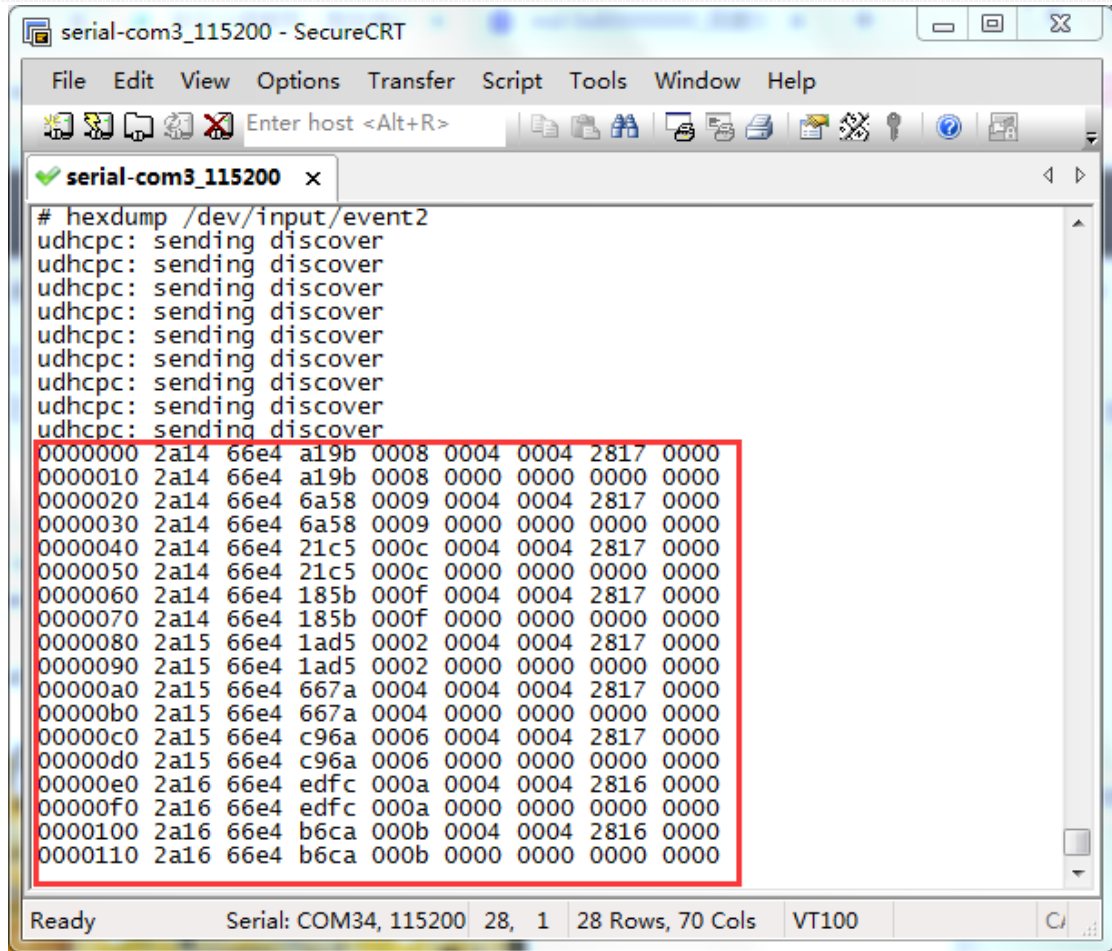
```

serial-com3_115200 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
serial-com3_115200 x
B: EV=23
B: KEY=40 0 0 0 0 0 0 0 0 0 0 4 0 0 0 c0000 0 0 0
B: SW=14

I: Bus=0018 Vendor=0000 Product=0000 Version=0000
N: Name="gslx680"
P: Phys=
S: Sysfs=/devices/platform/soc@3000000/sunxi-i2c0/i2c-0/0-0040/input/input4
U: Uniq=
H: Handlers=event4
B: PROP=2
B: EV=b
B: KEY=400 0 0 0 0 0 0 0 0 0 0
B: ABS=2650000 0

# hexdump /dev/input/event2
udhpcp: sending discover
Ready          Serial: COM34, 115200  17, 1  17 Rows, 77 Cols  VT100  CAP NUM
  
```

*Step 2*, press the remote control against the infrared receiver head, and the return value can be obtained in the terminal printing.



## 5.12 RS485

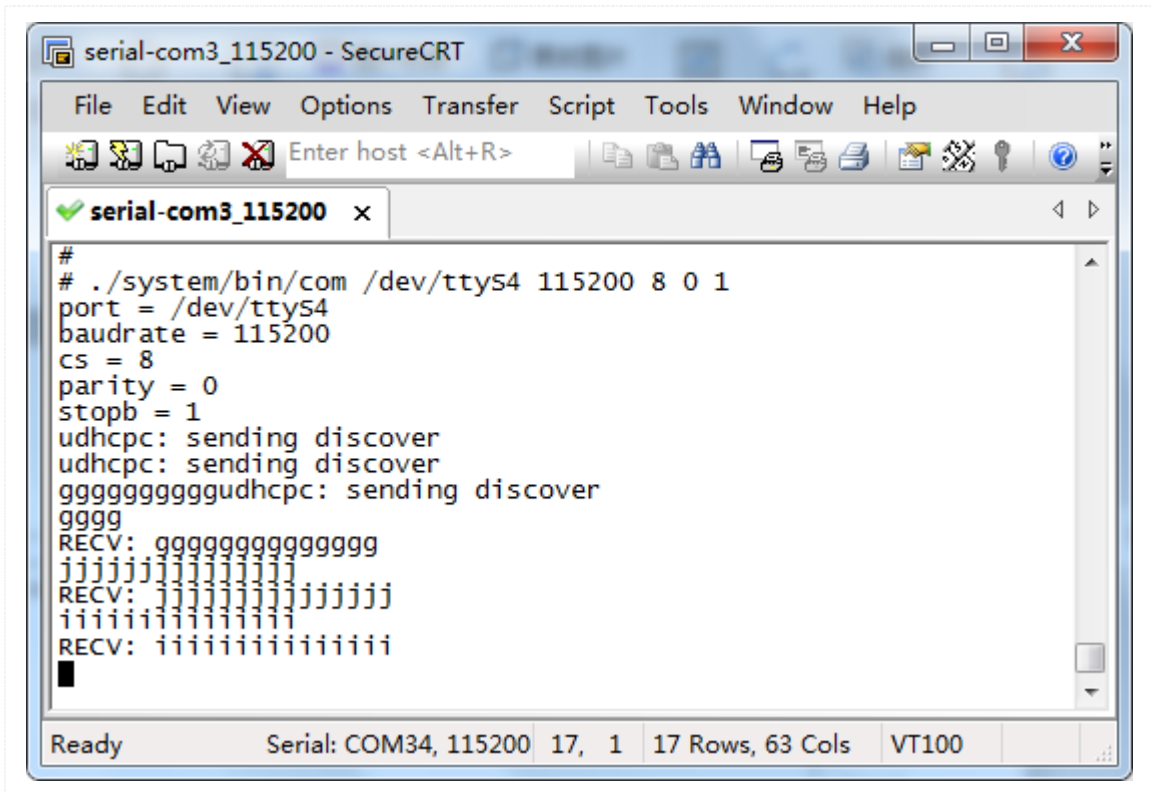
*Step 1*, connect the RS485 ports of board A and board B as follows:



*Step 2*, put the “com” file the the board then execute the following commands on the terminal serial ports of board A and board B respectively.

```
# ./system/bin/com /dev/ttyS5 115200 8 0 1
```





The screenshot shows a terminal window titled "serial-com3\_115200 - SecureCRT". The window contains the following text:

```
#
# ./system/bin/com /dev/ttyS4 115200 8 0 1
port = /dev/ttyS4
baudrate = 115200
cs = 8
parity = 0
stopb = 1
udhcpc: sending discover
udhcpc: sending discover
gggggggggudhcpc: sending discover
gggg
RECV: gggggggggggggggg
jjjjjjjjjjjjjjjjjjjj
RECV: jjjjjjjjjjjjjjjjjjjj
iiiiiiiiiiiiiiiiii
RECV: iiiiiiiiiiiiiiiii
█
```

The status bar at the bottom of the window displays: "Ready Serial: COM34, 115200 17, 1 17 Rows, 63 Cols VT100".

## 5.14 Play Video

Execute follow command to test:

```
# ps -ef
```

Kill applauncher and qt\_daemon

```
1241 root    applauncher
1242 root    qt_daemon
1244 root    [jbd2/mmcblk0p8-]
1245 root    [ext4-rsv-conver]
1246 root    [ext4lazyinit]
```

```
# kill 1241
```

```
# kill 1242
```

Execute follow command to play:

```
# fbinit
# /etc/qtENV_video.sh
# xplayerdemo
# set url:/mnt/usb/sda/Test.mp4
# play
# stop
```

Press "ctrl + c" to exit play video. Then execute follow command to display desktop.