SMARC-I.MX8MPlus-Kit Android11 Test Manual

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Version Record

Version No.	Hardware Platform	Description	Date	Revisor
1.0	SOM： SMARK-IMX8MP-CM -V1_00 Carrier Board： SMARK-IMX8MP-MB-V1_00	Initial version, first release	2024-06-25	Yangyq

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I.Preface

Note: This manual mainly introduces the hardware interfaces of the development board.

Company Profile

Zhejiang Qiyang Intelligent Technology Co., Ltd. was established in Hangzhou in 2007. It is a National High-tech Enterprise focusing on the development, production and sales of ARM embedded products. More than 10 years of accumulation and precipitation have successfully constructed a service chain from product development to mass production.

As the core of the company, Qiyang R&D team is composed of more than 30 embedded engineers, who committed to providing users with easy-to-use embedded hardware, software tools and customized product solutions. Our products and solutions have been widely used in industrial control, Internet of Things, new retail, medical, electricity, environmental monitoring, charging piles and other fields.

The production base established in Zhuji provides a strong guarantee for Qiyang. It covers a over 5,000 square meters area also has 2 SMT production lines, and has passed and strictly followed the ISO9001 quality management system certification to guide production. With the strong production strength, the annual output can reach 1 million sets, ensuring the delivery time and solving the worries of users.

Qiyang has a complete sales market network, professional sales and after-sales team providing users with a full range of technical support and services. The business has spread to more than 120 countries and regions, and has successfully helped more than 2,000 users to quickly and efficiently bring products to the market.

The combination and extension of R&D, production capacity and market has laid a solid foundation for Qiyang to become a professional and global supplier of embedded software and hardware.

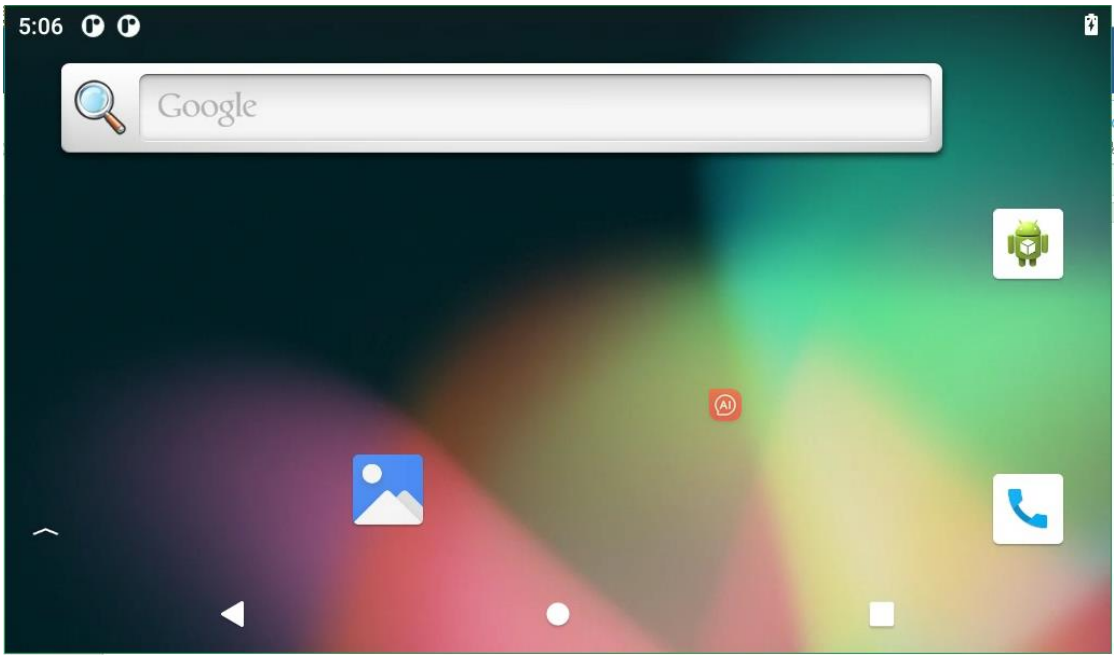
We offer:

- **Multi-platform software/hardware products**
  NXP, Rockchip, MTK, Renesas, TI, Atmel, Cirrus Logic and other multi-platform ARM development boards/core boards/industrial control boards and peripheral hardware products, as well as supporting tools and software resources to support users' rapid secondary development.
- **Customized service**
  Give full play to the accumulation of technology on the ARM platform, Linux, Android, and Ubuntu operating systems to provide users with customized embedded product services (OEM/ODM).

Thank you for using Qiyang's products. We will spare no effort on providing you with technical assistance! Wish you success in your work!

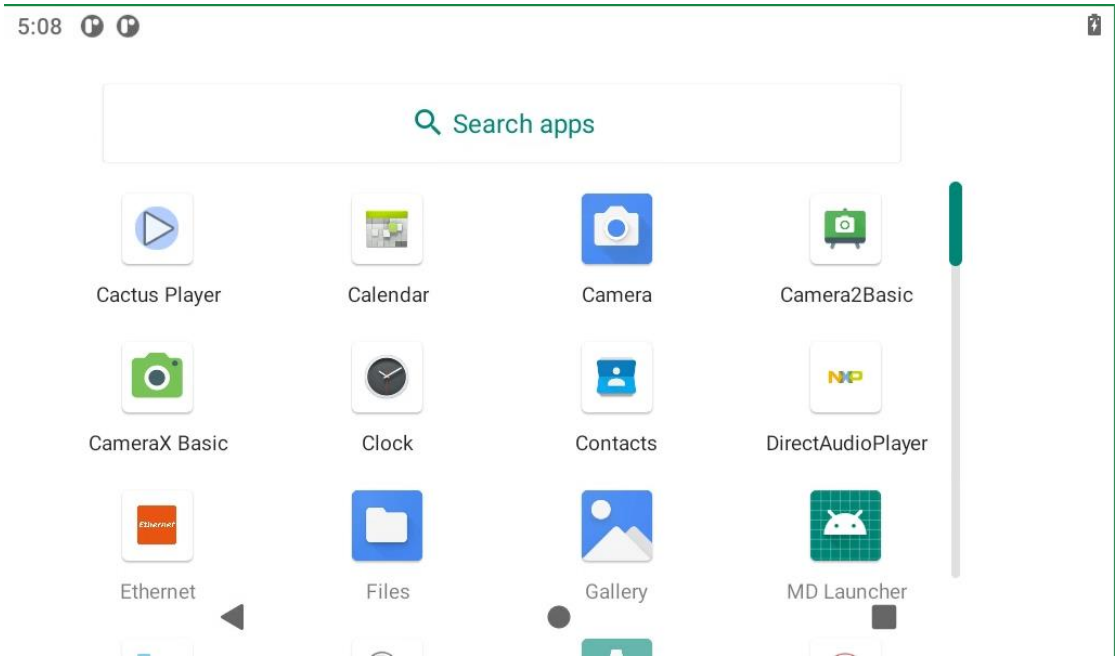
II. Mainboard Test

Operational Interface:



Menu:

Enter into menu by swiping up the operational interface



2.1.RTC Test

SMARC-I.MX8MPlus-Kit provides I2C2 to connect the SD2058 chipset as external hardware clock, please ensure the battery is installed before testing RTC.

Test Steps & Results:

1.Power on, then enter into Menu, then click setting>system>data and time

2.To set time manually or start network automatic calibration function (It requires mobile network to calibrate)

3.Power off for a while, then check if the time is correct.

2.2.CAN

Corresponding interface description:

Location	Device Node
J32	can0

J33	can1

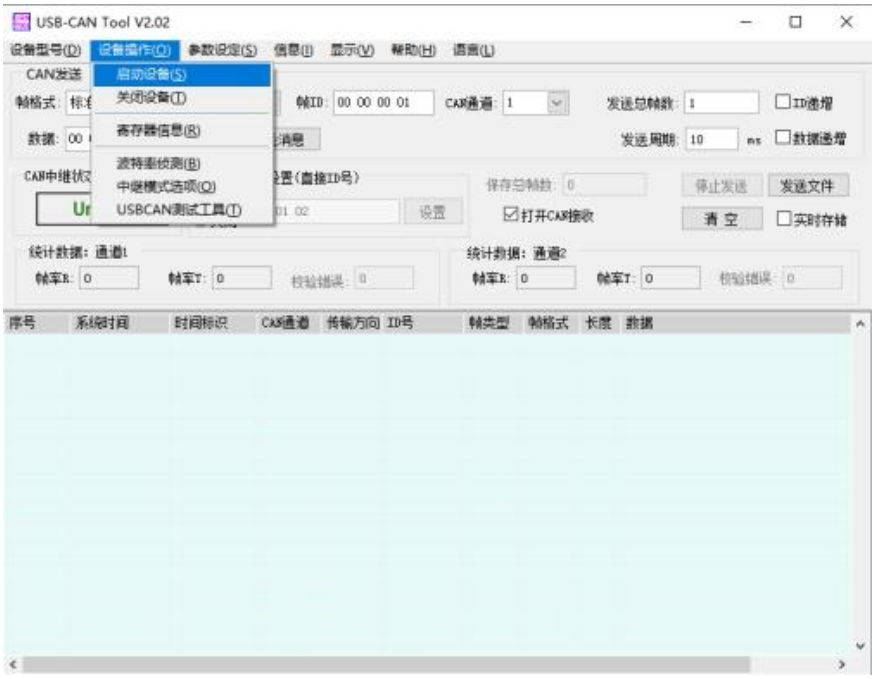
Test Steps & Results:

1. Connect the CAN interface on the development board to the CAN interface on the CAN analyzer or CAN interface on other boards (H to H, L to L)

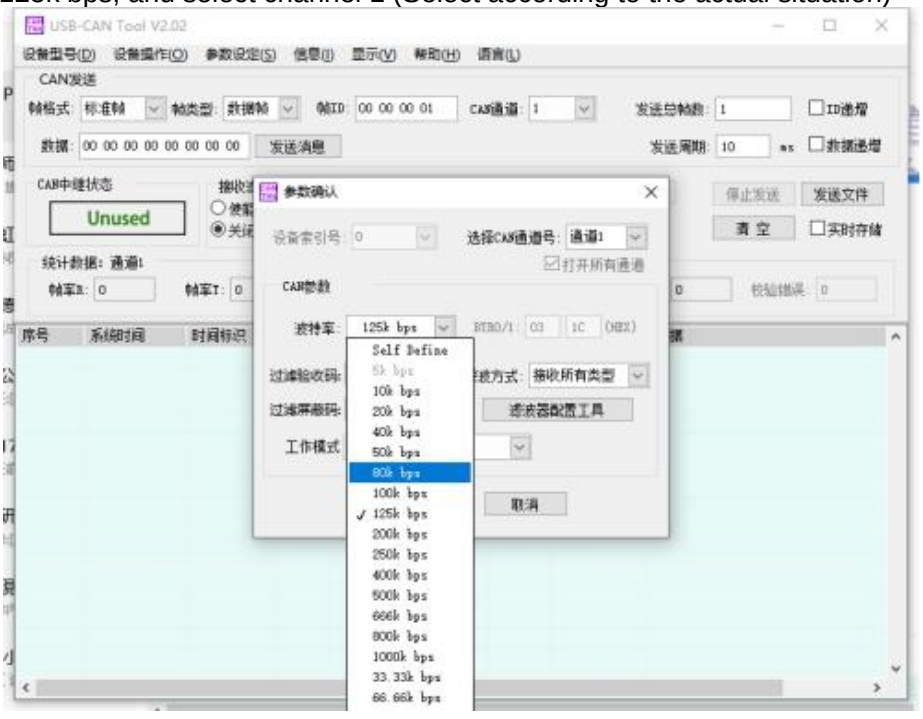
CAN Analyzer

2. Use CAN to analyze the receiving data from the development board

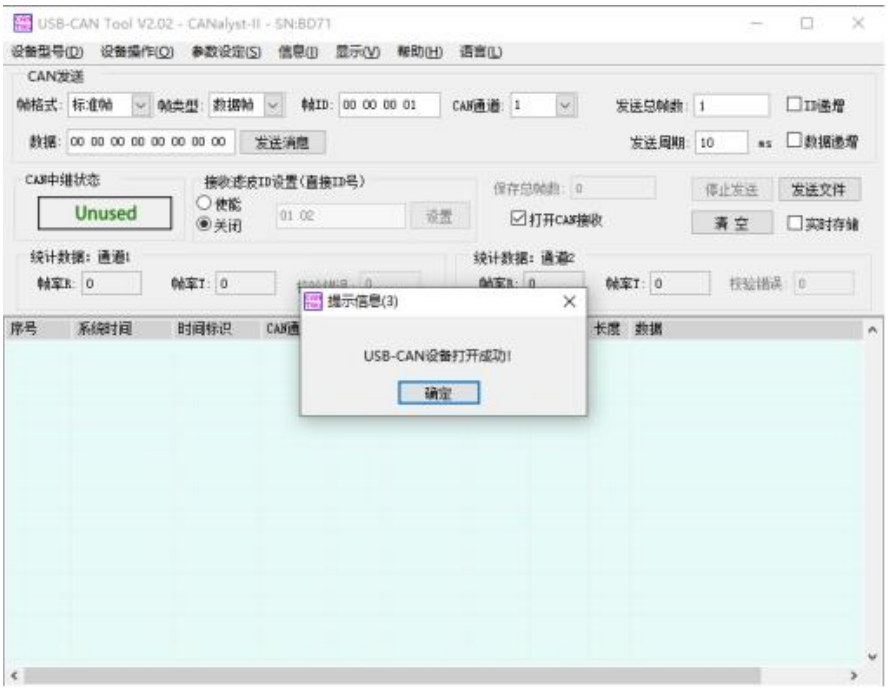
2.1 Open the CAN analyzer software and set the CAN parameter



Set the baud rate to 125k bps, and select channel 1 (Select according to the actual situation)



Pop out the below Window:



2.2 Set the CAN parameters on board and boot

```
# ip link set can0 type can bitrate 125000
# ifconfig can0 up
# ifconfig
```

Caution: The CAN on board has the default baud rate: ***250K***, if needs resetting ,please reset ***ifconfig can0 down***

```
can0      Link encap:UNSPEC    Driver flexcan
          UP RUNNING NOARP  MTU:16  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:10
          RX bytes:0 TX bytes:0
          Interrupt:37
```

2.3 Execute the test file

```
# cd system/bin/
```

./can_test can0 0

0 is the receiving data, 1 is the sending data

CAN analyzer sends data.

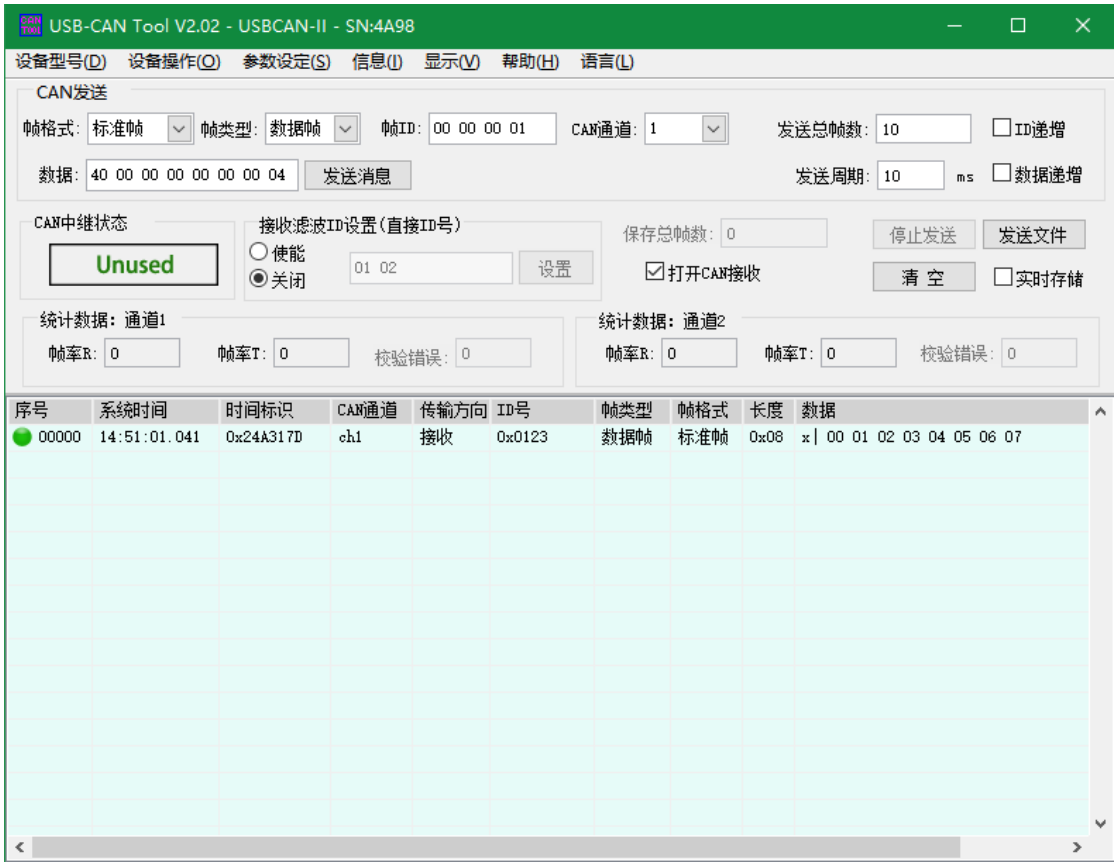
If it receives below data, it means the data is received successfully.

```
evk_8mp:/system/bin # ./can_test can0 0
CAN Start Testing ...
recieve can datas: can_id = 0x1, data_len = 8
data[0] = 0x40
data[1] = 0x0
data[2] = 0x0
data[3] = 0x0
data[4] = 0x0
data[5] = 0x0
data[6] = 0x0
data[7] = 0x4
Test Success.
```

./can_test can0 1

```
evk_8mp:/system/bin # ./can_test can0 1
CAN Start Testing ...
send can datas: can_id = 0x123, data_len = 8
data[0] = 0x0
data[1] = 0x1
data[2] = 0x2
data[3] = 0x3
data[4] = 0x4
data[5] = 0x5
data[6] = 0x6
data[7] = 0x7
Test Success.
```

CAN analyzer shows the below data



Till now, the testing for CAN0 is finished, the test methods for the other CAN ports are same.

2.3. Display Test

2.3.1HDMI Display

Test Steps & Results:

Insert a HDMI cable on J10, it shows normally.

2.3.2.LVDS Display

Test Steps & Results:

To connect Qiyang's 7-Inch LCD

If it shows normally, it means the LCD works normally

2.4.Touch Panel Test

Test Steps & Results:

If it shows normally, it means the touch panel works normally

2.5.Backlight Test

Test Steps & Results:

On Menu, click setting ->display->brightness, scroll the scroll bar, then observe the brightness change of the LCD.

2.6.USB Test

There are 5xUSB port on the development kit.
Corresponding interface description:

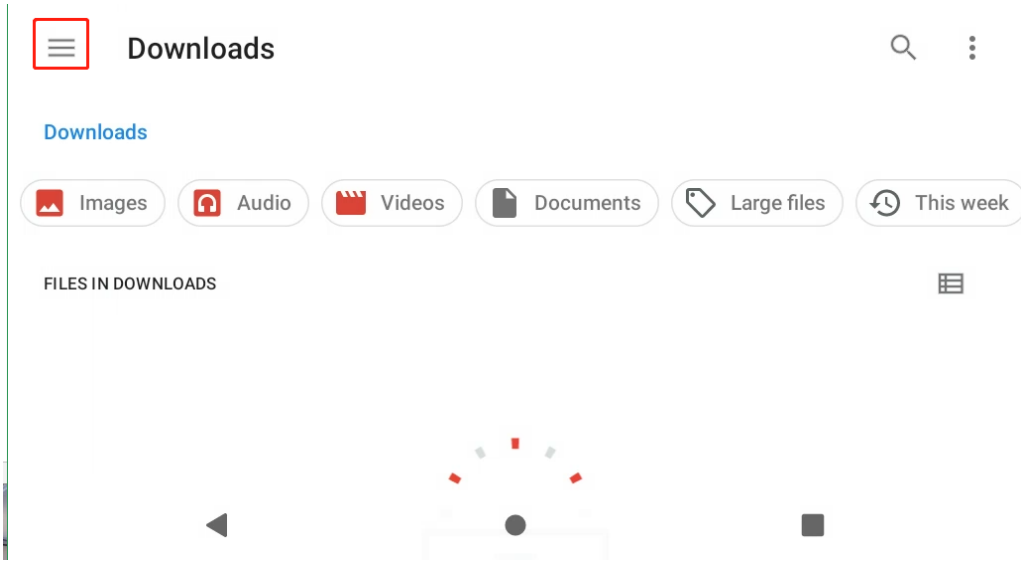
Location	Function
J5(Type-c)	Take as USB Host, to connect USB device
J6	Take as USB host, to connect USB device
J7(As a sample)	Take as USB Host, to connect USB device
J22	5G

Test Steps & Results:

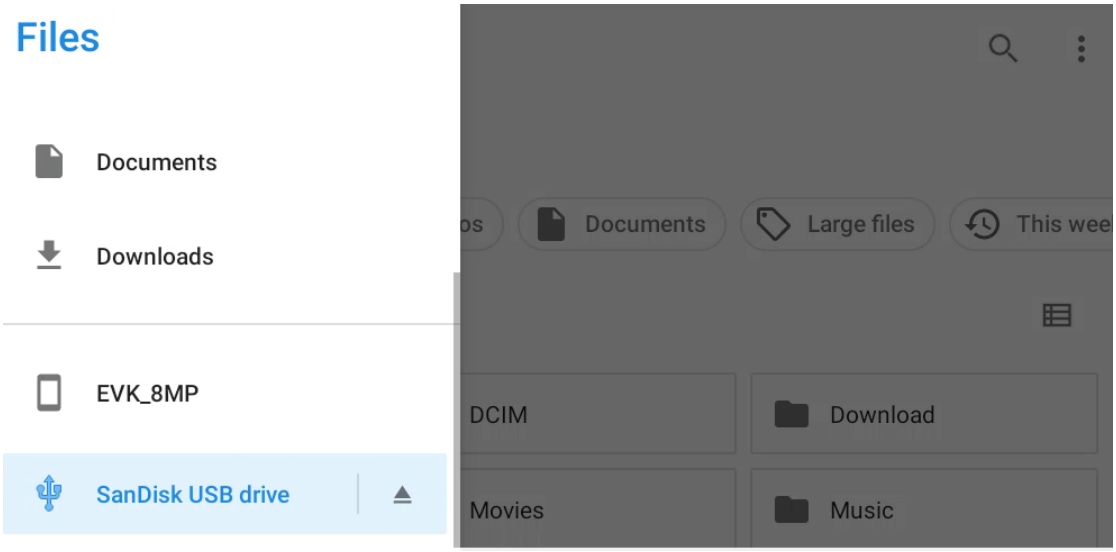
Insert a USB device at the corresponding port

For example: USB stick

Enter into the Menu, then click the file



Open the Menu, select the recognized USB stick, if the USB stick be recognized, if means the USB port works.



2.7.WIFI Test

SMARC-I.MX8MPlus-Kit has AP6256 WIFI IC.

Test Steps & Results:

Connect antenna on J22

On Menu, click Setting->Network->Wlan, Open wifi, connect to WIFI, input password, then it linked successfully.

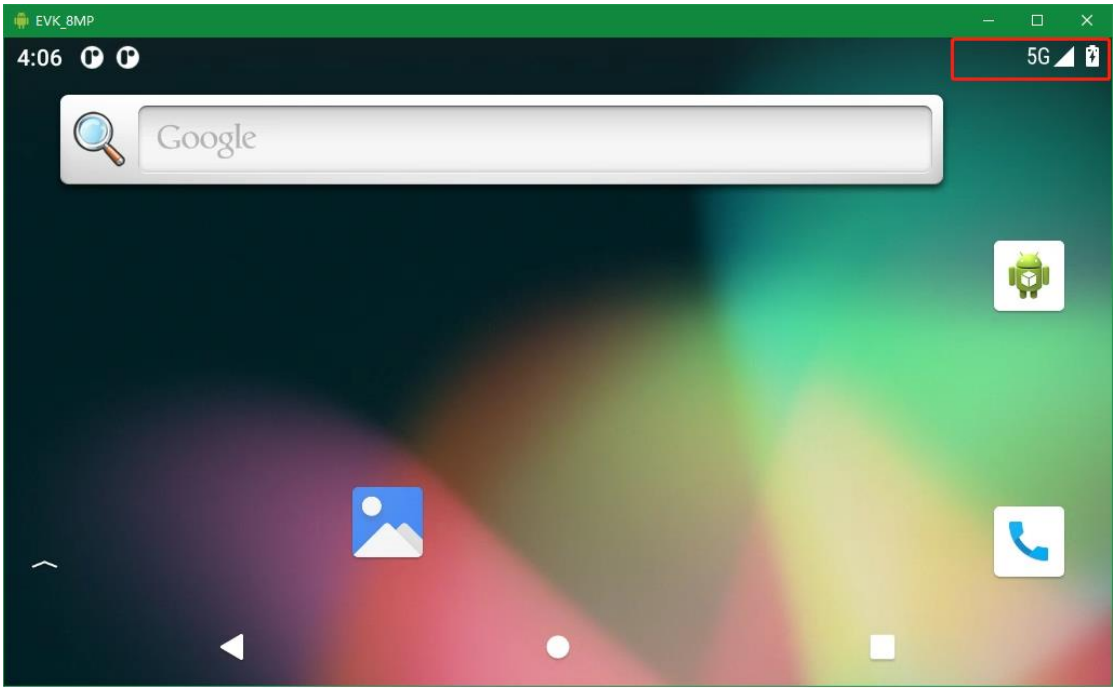
2.8.5G Test

SMARC-I.MX8MPlus-Kit has M.2 port, it connects to 5G external module.

Remark: To connect 4x antennas at least.

Insert a SIM card on S1, then connect to a 5G module

After booting, it shows the 5G symbol.



If it could visit the Internet, it means the 5G module works.

2.9.Serial Test

There are 5x serial port on SMARC-IMX8MPlus-Kit development board, including 1-ch as debug port, 3-ch as RS232 port, 1-ch as RS485 port.

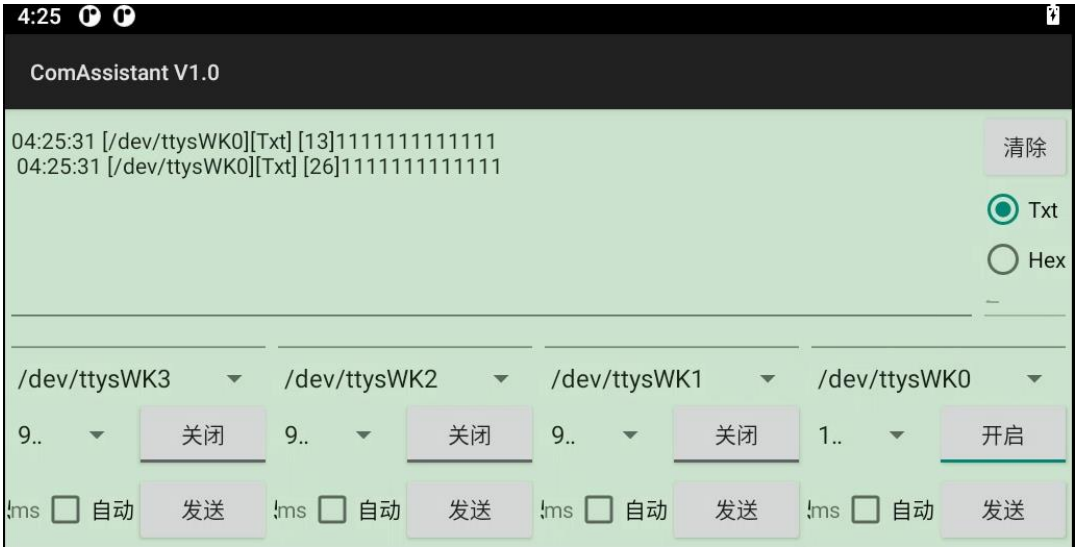
UART #	Location	Device Node
DEBUG（A53 Debug UART）	J24	/dev/ttymxc1
DEBUG（M4 Debug UART）	J25	
COM1（RS485）	J31	/dev/ttymxc0
COM1（RS232 ）	J27	/dev/ttysWK0
COM2（RS232 ）	J28	/dev/ttysWK1
COM3（RS232 ）	J29	/dev/ttysWK2

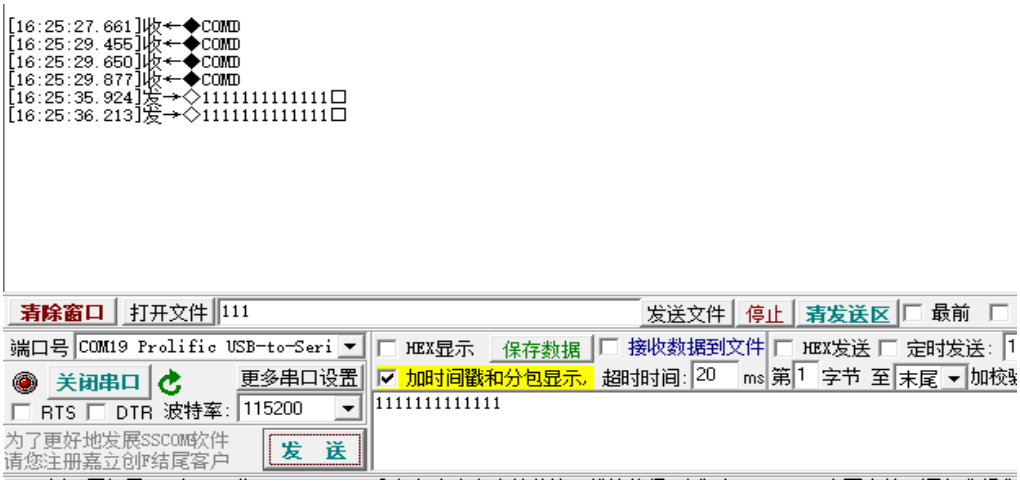
Test Steps & Results:

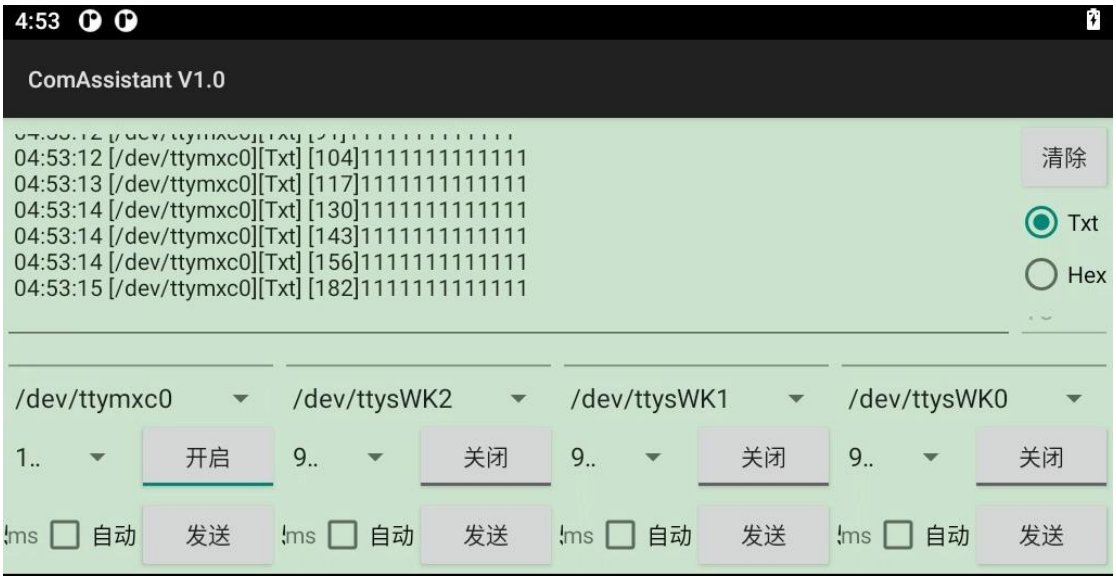
To connect to the relative UART No.

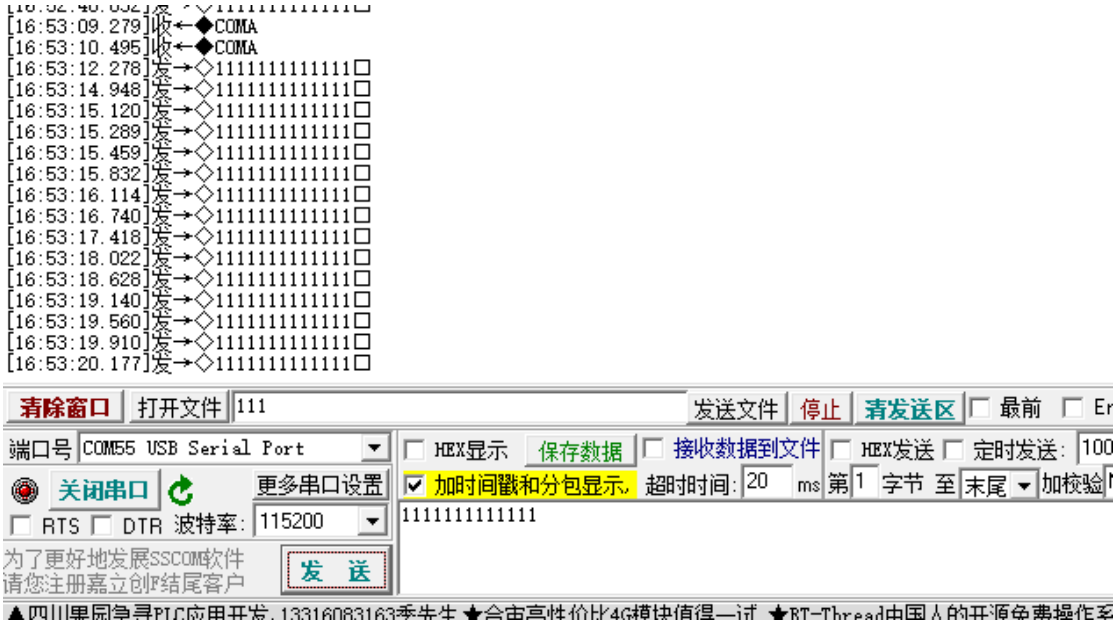
RS232 Test, by using RS232 cable to connect the PC

Install APP ‘’serial_test.apk”, then open UART /dev/ttysWK0, /dev/ttysWK1, /dev/ttysWK2, /dev/ttymxc2; to set baud rate as 115200.







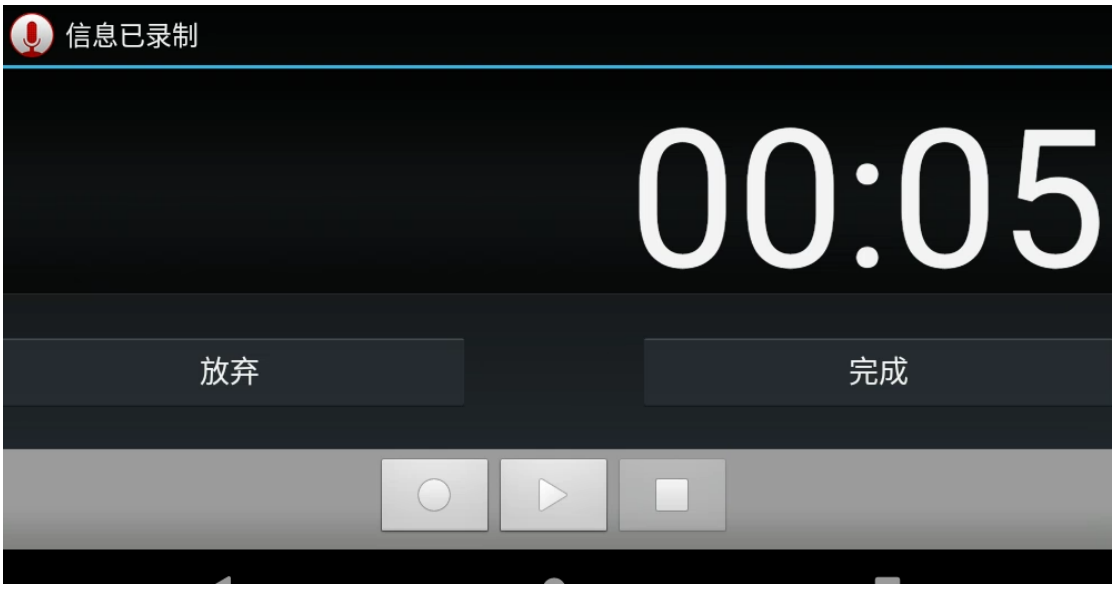


2.10. Audio Test

SMARC-IMX8MPlus-Kit mainboard connects ES8388 audio chipset.

Test Steps & Results:

Voice record test, by using voice record apk



Click ‘Record’, then play the voice.

Click the audio file , to see if it could play normally.

2.11.TF Test

SMARC-IMX8MPlus-Kit provides 1-ch TF card socket _J34 .

Test Steps & Results:

Insert a TF card on J34, power on, then the contents from TF card can be read.

2.12.SSD Test

Test Steps & Results:

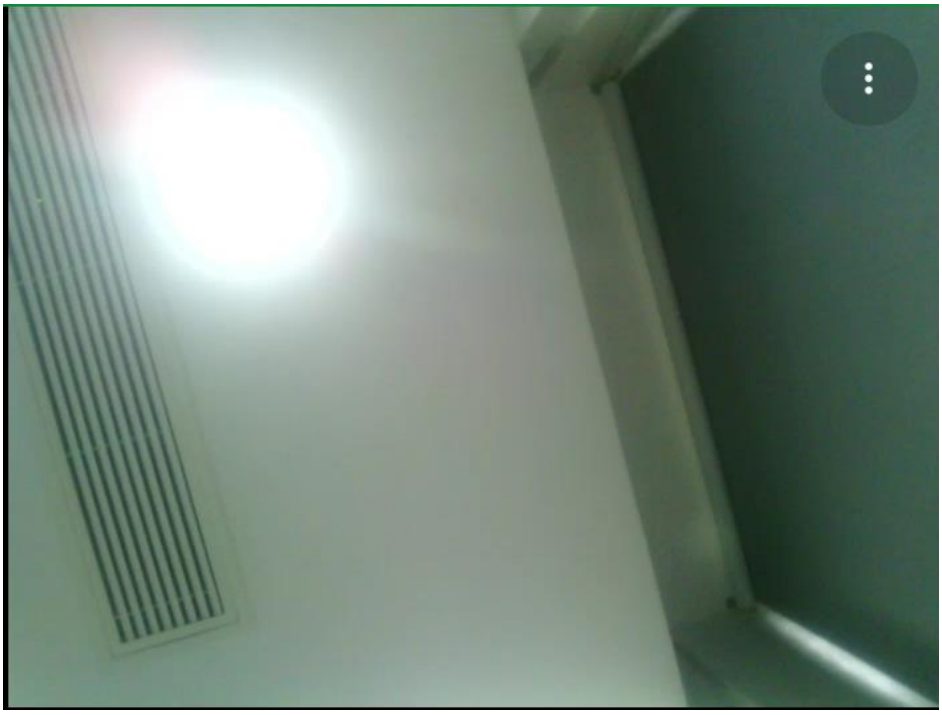
Insert SSD to J23, power on, then the contents from SSD can be read.

2.13.Camera Test

Test Steps & Results:

1. To connect Camera, on J16 or J17

2. Open Camera, if it can show the image normally.



2.14.Network Test

Test Steps & Results:

1. Insert LAN cable on J2 or J3

If it shows below icons, it means the LAN port be connected.

Open the web browser, if it could visit the Internet pages normally, it means the test is successful.

III. Conclusion

The tests for basic functions are finished. About the errors in test procedures, please review based on the test code. Information above might be not detailed enough. If there is any technical problem or suggestions，please contact us.

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