MediaPad 7 Lite Maintenance Manual
V1.0

Prepared by	Documentation team of the Product Development Unit	**Date**	2012-09-04
Reviewed by	Technical support platform of the Product Development Unit	**Date**	2012-09-04
Approved by	Service representative platform of the Product Development Unit	**Date**	2012-09-04

Huawei Technologies Co., Ltd.

Change History

Date	Revision Version	Change Reason	Changed Section	Change Description	Author
2012-09-04	V1.0				

Contents

1 Product Overview

1.1 Appearance

1.2 Product Models

MediaPad 7 Lite has multiple models. The following table describes the main functional differences of these models.

Model	Description	Difference
S7-931w	Wi-Fi Only	8G NAND FLASH
S7-931wA	Wi-Fi Only	4G NAND FLASH
S7-931wD	Wi-Fi Only	8G NAND FLASH with Dock

1.3 Product Features

- 7-inch capacitive multi-touch screen
- Technologies for mobile network interfaces: GSM/GPRS/EDGE and UMTS/HSDPA
- Multi-tab web page browser
- High definition (HD) multimedia play
- Android ICS 4.0
- 7-inch Wide Screen Video Graphics Array (WSVGA) In-Plane Switching (IPS) (1024x600) HD multi-touch screen
- Cortex A8 1.2GHz CPU
- Rear network camera with 3.2 megapixels
- Full HD play
- GPS/A-GPS
- 4100 mAh battery
- Wi-Fi 802.11b/g/n

Dimensions (H × W × D)

11 mm x 194 mm × 120 mm

Weight

- About 370 g (including the battery)

Screen

- Type: IPS-LCD, Glare
- Size: 7-inch
- Resolution: WSVGA (1024 x 600 pixels)
- Viewing angle: 80 °(up)/80 °(down)/80 °(left)/80 °(right)
- Color: 16 million colors
- Contrast: 800:1
- Brightness: 350 cd/m^2 (maximum)
- LVDS interface
-

Wi-Fi

- Single band: 2.4 GHz 802.11 b/g/n; dual-band: 2.4 GHz/5GHz 802.11 a/b/g/n, WEP, WPA, and WPA2
- Working band: 2.4 GHz/5 GHz
- Conducted power:

  IEEE 802.11b: $\leq$ 18 dBm (*)

  IEEE 802.11g: $\leq$ 16 dBm (*)

  IEEE 802.11n: $\leq$ 14 dBm@MCS7 (*)

  * The maximum power depends on the country code.
- Conducted sensitivity:

  IEEE 802.11b: –85 dBm@11 Mbit/s

  IEEE 802.11g: –71 dBm@54 Mbit/s

  IEEE 802.11n: –68 dBm@ MCS7

Bluetooth

- Standard compliance: Bluetooth 3.0, 2.1 + EDR compatible
- Transmit power: 6 dBm, Power Class 1.5
- Litefile: A2DP, AVRCP, FTP, HSP, OPP, HID, PAN

Key and indicator

- Power key
- Volume adjustment key

Interface, sensor, and audio configuration

- 3.5 mm stereo headset interface
- MicroSD card slot: compatible with the SDHC card, supporting the maximum memory of 32 GB
- USB interface: micro USB 2.0 MHL-compliant interface
- SIM card slot
- Built-in gravity sensor
- Built-in actuator motor
- Built-in loudspeaker and microphone

GPS

- GPS/A-GPS

Processor

- RK2918 ARM Cortex-A8 1.2GHz

Memory

- RAM: 1 GB
- Flash: 8 GB (standard), supporting 16 GB and 4 GB
- MicroSD card: up to 32 GB

Network camera

- Front network camera: CMOS, 300,000 pixels, fixed focal length, VGA

- Rear network camera: CMOS, 3.2 megapixels, fixed focal length

Operating system

- Linux 2.6.35

- Android ICS 4.0

2 Maintenance Instructions

2.1 Applicable Scope

This document provides repair instructions for technicians at service centers authorized by Huawei. Being Huawei proprietary, this document is accessible only for authorized service centers and companies. Although every effort was made to ensure the accuracy of this

document, errors may still exist. If you find any errors or have any suggestions, please contact Huawei's customer service.

2.2 Precautions

- Maintenance and calibration operations are performed only by qualified technicians.
- All maintenance and calibration operations are performed in antistatic rooms with antistatic wrist straps correctly worn.
- All components, screws, and insulators are correctly installed and all cables are correctly connected after maintenance and calibration, and that all cables and wires are installed and connected correctly.
- Soldering is lead-free and compliant with the environmental protection requirements.

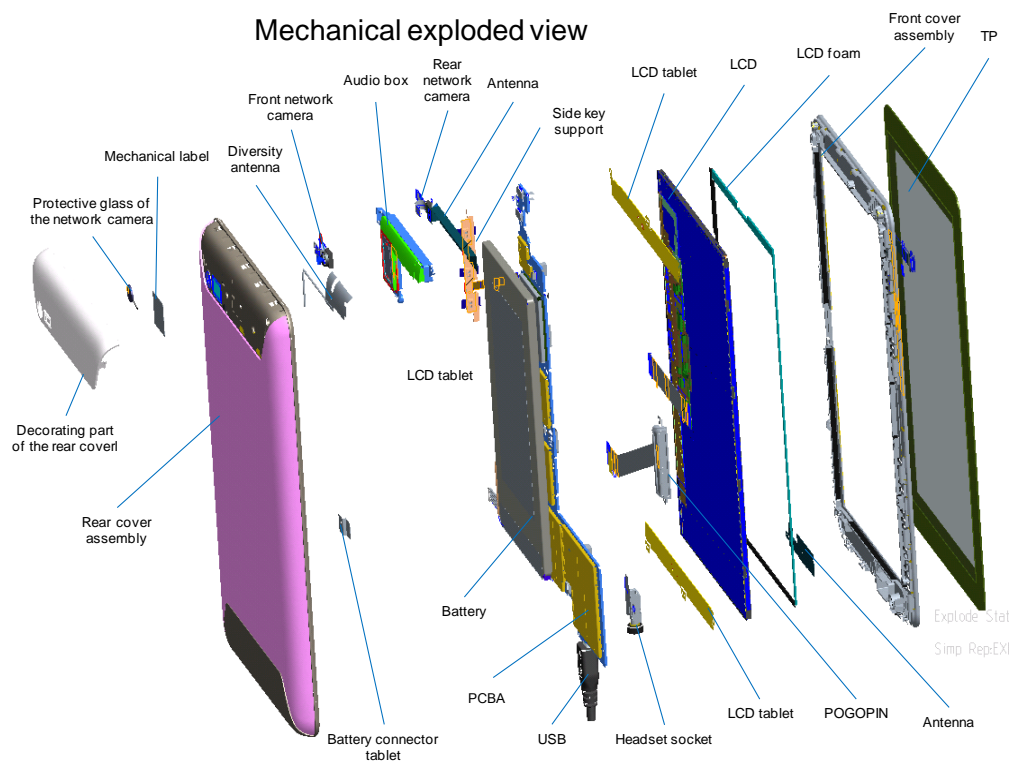ESD is the main cause of damage to electrostatic-sensitive components. Each ASC must exercise caution to avoid ESD damage and comply with the ESD protection requirements in this manual.

2.3 Obtaining Product and Maintenance Information

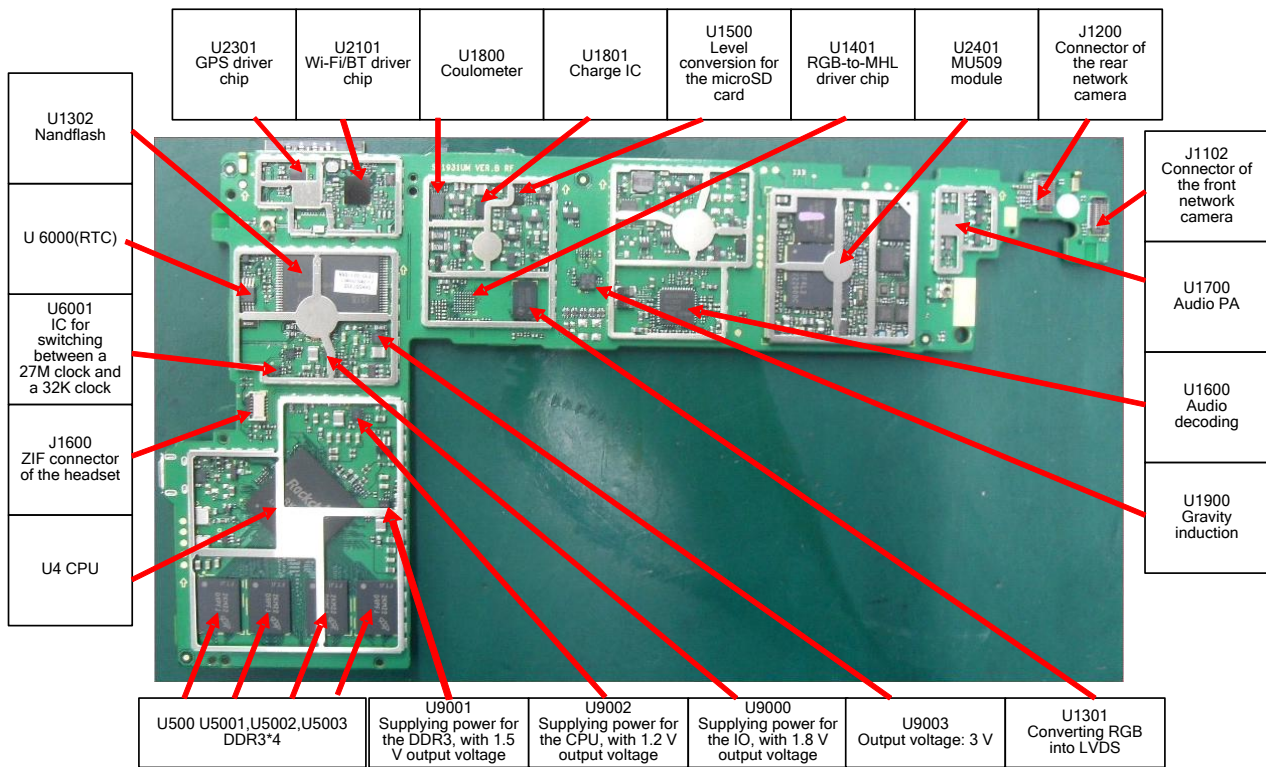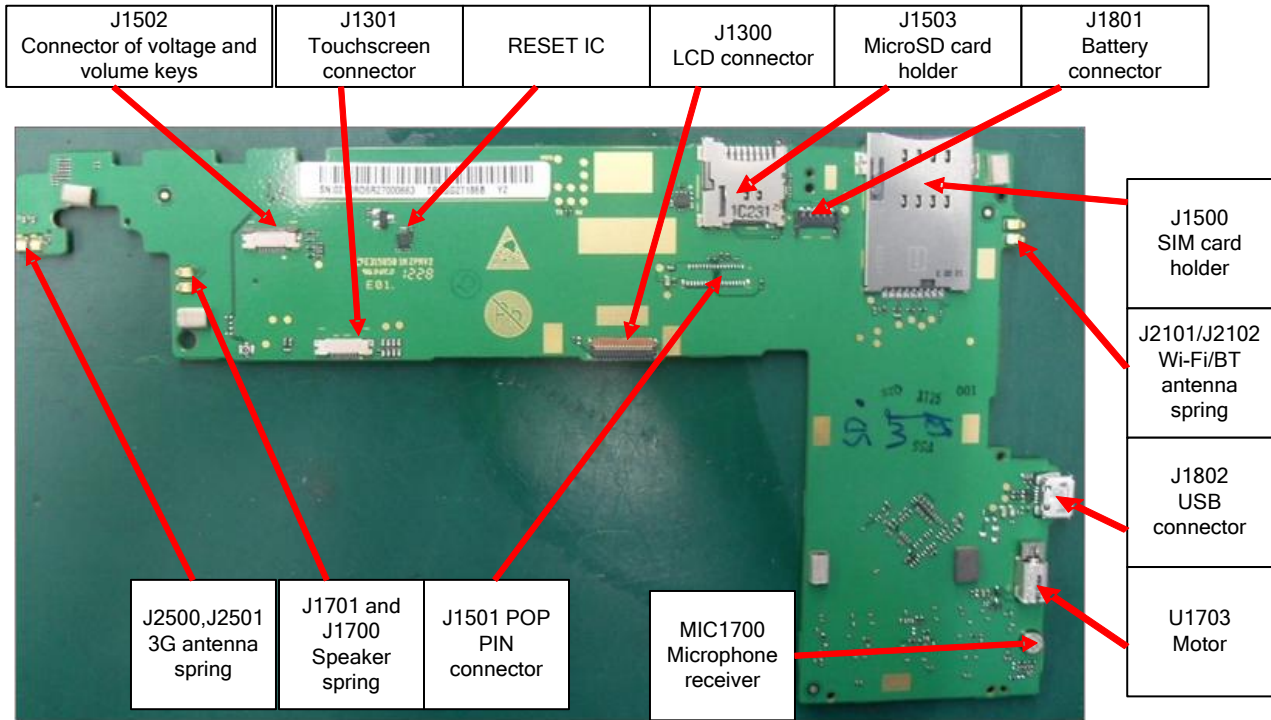To obtain product and maintenance information, visit Huawei website at:

http://www.huaweidevice.com/cn/technicaIndex.do.

3 Explosive View Drawing

Mechanical exploded view

4 PCBA Components

4.1 Components on the PCBA

U2301 GPS driver chip	
U2101 Wi-Fi/BT driver chip	
U1800 Coulometer	
U1801 Charge IC	
U1500 Level conversion for the microSD card	
U1401 RGB-to-MHL driver chip	
U2401 MU509 module	
J1200 Connector of the rear network camera	

U1302 Nandflash

U 6000(RTC)

U6001 IC for switching between a 27M clock and a 32K clock

J1600 ZIF connector of the headset

U4 CPU

J1102 Connector of the front network camera

U1700 Audio PA

U1600 Audio decoding

U1900 Gravity induction

U500 U5001,U5002,U5003 DDR3*4

U9001 Supplying power for the DDR3, with 1.5 V output voltage

U9002 Supplying power for the CPU, with 1.2 V output voltage

U9000 Supplying power for the IO, with 1.8 V output voltage

U9003 Output voltage: 3 V

U1301 Converting RGB into LVDS

| J1502 Connector of voltage and volume keys | J1301 Touchscreen connector | RESET IC | J1300 LCD connector | J1503 MicroSD card holder | J1801 Battery connector |

J1500 SIM card holder

J2101/J2102 Wi-Fi/BT antenna spring

J1802 USB connector

U1703 Motor

| J2500,J2501 3G antenna spring | J1701 and J1700 Speaker spring | J1501 POP PIN connector | MIC1700 Microphone receiver |

4.2 BOM List

(For your reference only. The latest BOM information can be downloaded in the system of Huawei)

Part Number	Description	Place
14240181	BTB Connector,Fmale,24Pin,0.4mm,SMT,Mating Height 1.0mm,Terminal Dedicated	J1102, J1200
14090083	Soft Print Board Connector,33Pin,0.3mm,0.3mm,0mm	J1300
14090042	Flexible Printed circuit Connector, 9 PIN, 0.5mm, 0.5mm, Angle,Single Row,PCB Welding Type/SMT/Upside Contact,Mobile Dedicated	J1301, J1502
14240249	Card Connecter,MicroSD Receptacle,8pin,PUSH-PUSH,1.1mm,Without Lock,Without Hold Peg,1.45mm,Terminal Dedicated	J1503
14240283	PC Connector,11,0.3mm,0.1mm,0.6mm	J1600
51621274	DKBA8.382.0615,Main Antenna SMT Spring,C5600	J1700, J1701, J2101, J2102, J2402, J2403

Part Number	Description	Place
14240309	IO Connector,Female,5pin,WTB Connector,SMT,Terminal Dedicated	J1801
14240272	IO Connector,Micro_B-Female,5pin,Side Plugging Type,SMT,Terminal Dedicated	J1802
14240004	Coaxial Connector,RF Switch,Straight,Female,SMT,Terminal Dedicated	J2100, J2400
14240433	RF Connector,Coaxial Connector,50ohm,Straight,male,SMT,W.FL2,Terminal Dedicated	J2401
12070038	Temperature Compensated Oscillator,26MHz,+/-1.5ppm(max),+1.8V,+/-0.5ppm(max),-40degC,85degC,Terminal Dedicated	TCXO2300
39200455	Terminal Baseband process IC,Digital Base Band Processor-1.2GHz-RK2918,1.2/1.8/2.6/2.5/3.3V,TFBGA512,Terminal Dedicated	U4
39110682	LDO,2.5V,2%(Max),0.3A,SOT23-5,Terminal dedicated	U1000
39110548	LDO,3.3V,2%,0.15A,SC70-5,Terminal Dedicated	U1001, U1300
39110490	Voltage Regulator,1.2V LDO Regulator,2%,0.15A,SOT-23-5A,Terminal Dedicated ,BT	U1002
39110471	Voltage Regulator,2.85,3%,0.15A,SOT-23-5,Terminal Dedicated (from39110307)	U1200
43140104	Interface Controller,RGB to LVDS,1.8/3.3V, Terminal Dedicated	U1301
40060386	NAND Flash, 8GB(x8bit) MLC,40MHz,8192KB,3.3V,TSOP48(Pb-Free),MediaPad 7 Lite Dedicate,Terminal Dedicated	U1302
36020411	CMOS,8BIT Level Shifter With Automatic Direction Sensing,SDIO Bus Application,WCSP20,7ns,50mA,CMOS,CMOS,25nS,Terminal Dedicated,117C/W	U1500
36020401	CMOS,2BIT-1.8V/3.3V Level Shifter ,GFN8(Pb-free),1.5ns,14mA,CMOS,Open drain,Terminal Dedicated	U1501, U6002
43110077	AUDIO Chip,QFN,CODEC,Support I2S,PCM Interface,ACE,Terminal Dedicated	U1600

Part Number	Description	Place
39080127	Operation Amplifier,Audio Power Amplifier,2.5V~5.5V,Differencial,Micro SMD 9pin(BGA Pb-Free),Terminal Dedicated	U1700
39110709	Power Driver,2A Boost DCDC,QFN10,Terminal Dedicated	U1702
32050033	Vibrator,Cylindrical,3.0V,0.11A,11000rpm,9.5mm* 4.5mm*4.85mm,SMT, SANYO, 28.5ohm,Terminal Dedicated	U1703
39070073	0.3~2.75V,Battery Gauge,SON,Terminal Dedicated	U1800
39070117	Battery Management IC, 4.2V,18V,Charger with separate Power Path Control,WCSP,SMT,Terminal Dedicated	U1801
38140064	Semiconductor Sensor,Accelerometer,LGA,3axis,Terminal Dedicated	U1900
39070145	Voltage Monitor,2.7V, Delay Reset Chip,0.9V-6V,SOT23-3,Terminal Dedicated	U2000
47140049	RF Switch,0.5~3.0 GHz,SP3T,0.45dB,1.22,20dB,TSON,200~260V(HBM),Terminal Dedicated	U2100
39210010	Terminal Baseband process IC,Single Band 2.4GHz WLAN/Bluetooth 2.1/FM Single chip-BCM4330,2.3~5.5V,WLBGA133(Pb-free)	U2101
39210036	Terminal Baseband Peripheral IC,GPS Receiver,support GLONESS,2.3~5.5V-WLBGA42(Pb-free),Terminal Dedicated	U2300
47090053	RF LNA,1575MHz,14dB min.,1.6dB max.,SOT886,Terminal Dedicated	U2301
36020366	CMOS,4BIT Level Shifter With Automatic Direction Sensing,WLCSP(Pb-free),7.4ns,50mA,CMOS,CMOS,Terminal Dedicated	U2400
51078365	MU509-b,HSDPA/WCDMA 2100/900 EDGE/GPRS/GSM Four Band,China Hubei Open Market,Module,Media Pad	U2401
40020189	DDR3 DRAM,2Gb DDR3,1600MHz,8bit,1.5V,FBGA78,Terminal Dedicated	U5000, U5001, U5002, U5003
39130135	RTC,Real Time Clock,TSSOP8, Terminal Dedicated	U6000

Part Number	Description	Place
38020033	Analog Switch,Single Channel Bidirectional,1.65-5.5V,7~50ohm,250MHz,SC-70,SC-88	U6001
36020336	LVCMOS,Unbuffer Single Inverter Gate,SC-70,9.0ns,4.0mA,CMOS,CMOS	U6003
39110566	Switching Regulators,1~4V,1.5A,SMT,Terminal Dedicated	U9000, U9001, U9002, U9003
36020382	CMOS,Power on reset,MLP-8 2 x 2x 0.8mm-,0.5mm Pitch,300ns,0.5mA,COMS,COMS,3ns	U9004
12020216	Crystal,37.4MHz,10pF/8.3pF/9pF,+/-10ppm,80ohm, 2016,Terminal Dedicated	X2100
12020125	Crystal,0.032768MHz,12.5pF+/-30ppm,60/80kohm, 3.2*1.5 SMD,Terminal Dedicate,ELOM,TS16949	X6000
12020171	Crystal Oscillator,27MHz,12pF,20 ppm,50ohm,3225	X6001
12020151	Crystal,24.000MHz,12pf,+/-v30ppm,50ohm,HCX-3 SB,Terminal Dedicated	X6002

5 Software Upgrade

5.1 Upgrade Environment

Item	Description	Remarks
Upgrade environment	MicroSD card	> 512 MB
	USB cable	Part Number: 97065432
	Computer	
Upgrade file	MediaPad 7 Lite S7-931u V100R001C001B010	This version is for your reference only. Download the latest version for upgrade.
Update tool	RKBatchTool.exe	
Upgrade method	Using a microSD card	
	Using a USB cable	

5.2 Upgrade Using a microSD Card

5.2.1 Copying the Upgrade File from the Computer

1. Check the current upgrade environment.

   Ensure that the microSD card can be read and written.

2. Obtain the upgrade package.

   Copy the **dload** directory to the microSD card.

3. Ensure that the battery charge level is sufficient or charge the battery during the upgrade process.

5.3 Upgrade Process

1. Copy the **dload** directory to the root directory of the microSD card.

2. Check that the microSD card is not damaged.

   If the upgrade package is large, remove and reinsert the microSD card, and then open the package immediately after you copy the dload folder to the microSD card to ensure that the microSD card is not damaged. If you directly open the upgrade packet in ZIP format without removing and then reinserting the microSD card, you might only open the ZIP package structure stored on the computer instead of the ZIP package on the microSD card.

   You can also use MyDiskTest to check the available storage space of the microSD card. The size of the copied upgrade package must be smaller than this space.

3. Ensure that MediaPad 7 Lite is powered off.

4. Insert the microSD card into the MediaPad 7 Lite.

5. The microSD card is automatically upgraded after MediaPad 7 Lite is powered on. Ensure that the available battery charge level exceeds 30%; otherwise, connect a USB power supply.

6. During the upgrade, the screen shown in the following figure is displayed.
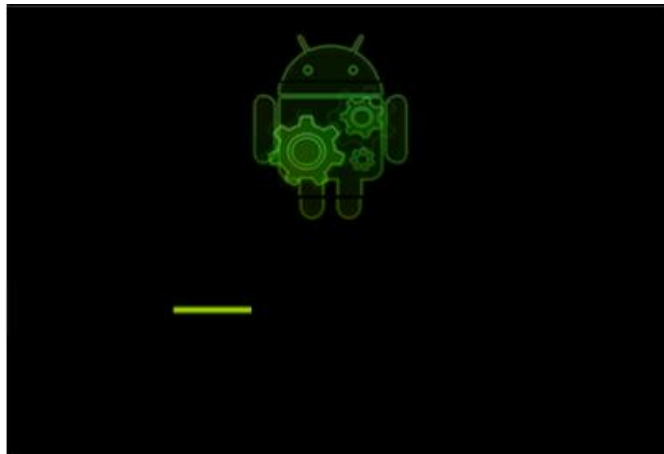
7. When the upgrade succeeds, the screen shown in the following figure is displayed.
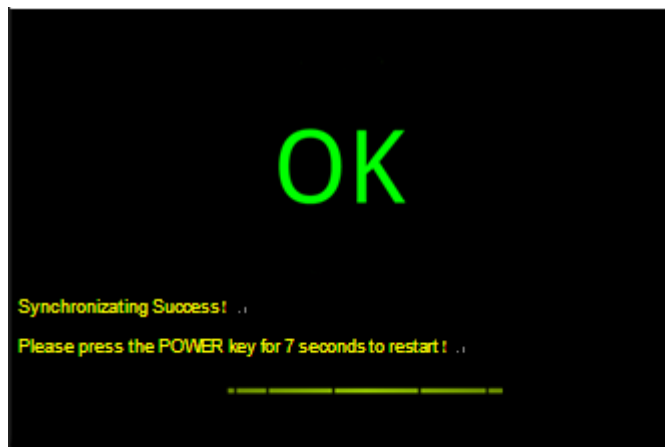
When the upgrade fails, the screen shown in the following figure is displayed.

8.   After the upgrade, remove the microSD card. MediaPad 7 Lite automatically restarts.

5.4 Troubleshooting

- Failure 1

    A message is displayed on the screen during the upgrade, indicating that the upgrade failed. In this case, check whether improper operations are performed. Then remove the microSD card and install it again, or replace the microSD card and try upgrading the software again.

- Failure 2

    If a failure occurs at the beginning of the upgrade process, check whether the upgrade version is correct and whether MediaPad 7 Lite or microSD card is damaged.

6 Upgrading Using the USB

6.1 Entering USB Upgrade Mode

If MediaPad 7 Lite is connected to the computer for the first time, **Found New Device** is displayed, indicating that the system has entered USB upgrade mode.

6.2 Installing the Driver

Before upgrading the firmware, close the player. Press the volume down key (-) and connect MediaPad 7 Lite to the USB port of the PC. If you install the driver for the first time, the window shown in the following figure is displayed.
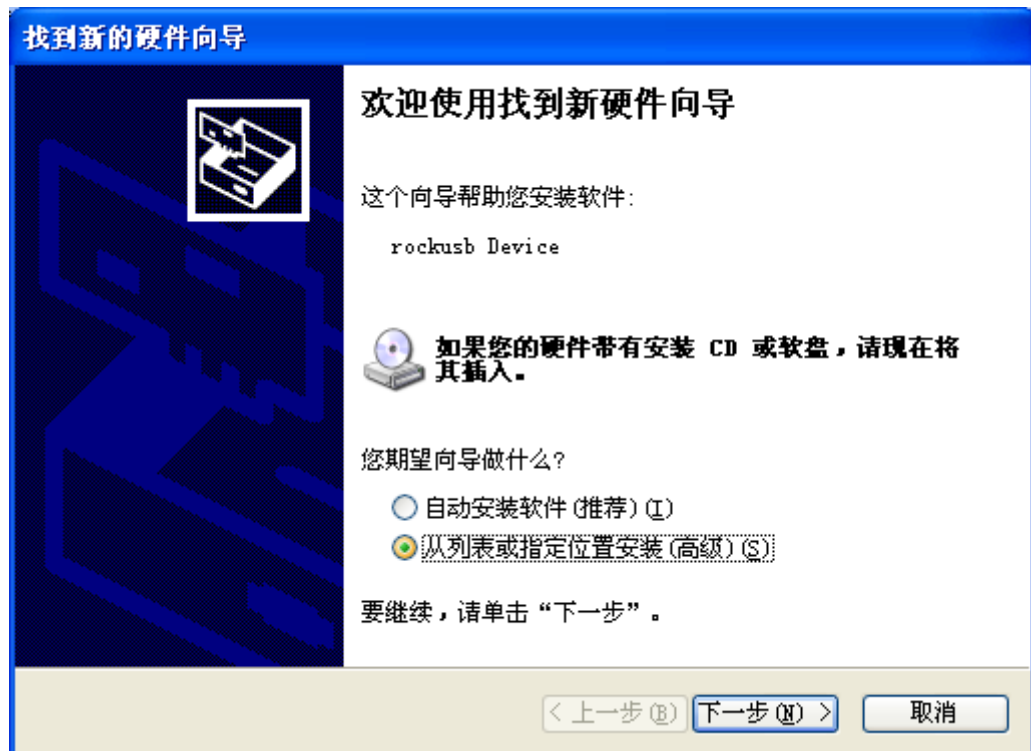
Choose to install the driver from the list or the specified position and click **Next**.
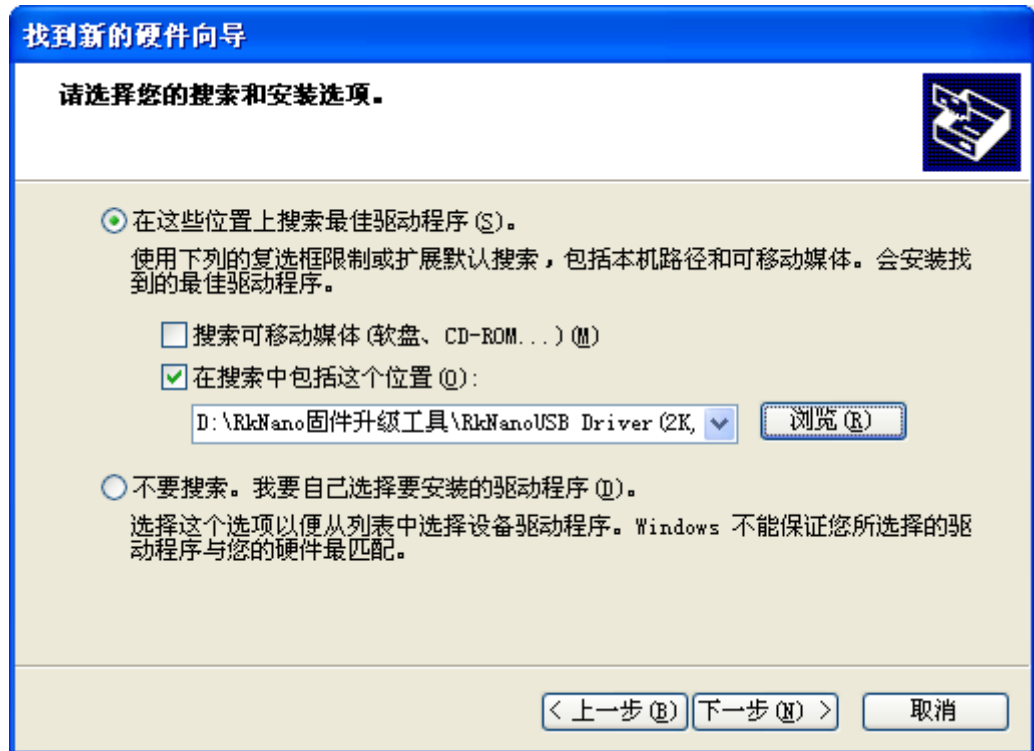
Select the **rockusb.sys** file under the driver folder.

Up to now, the driver of the USB device is installed.

6.3 Batch Firmware Upgrade

Main window
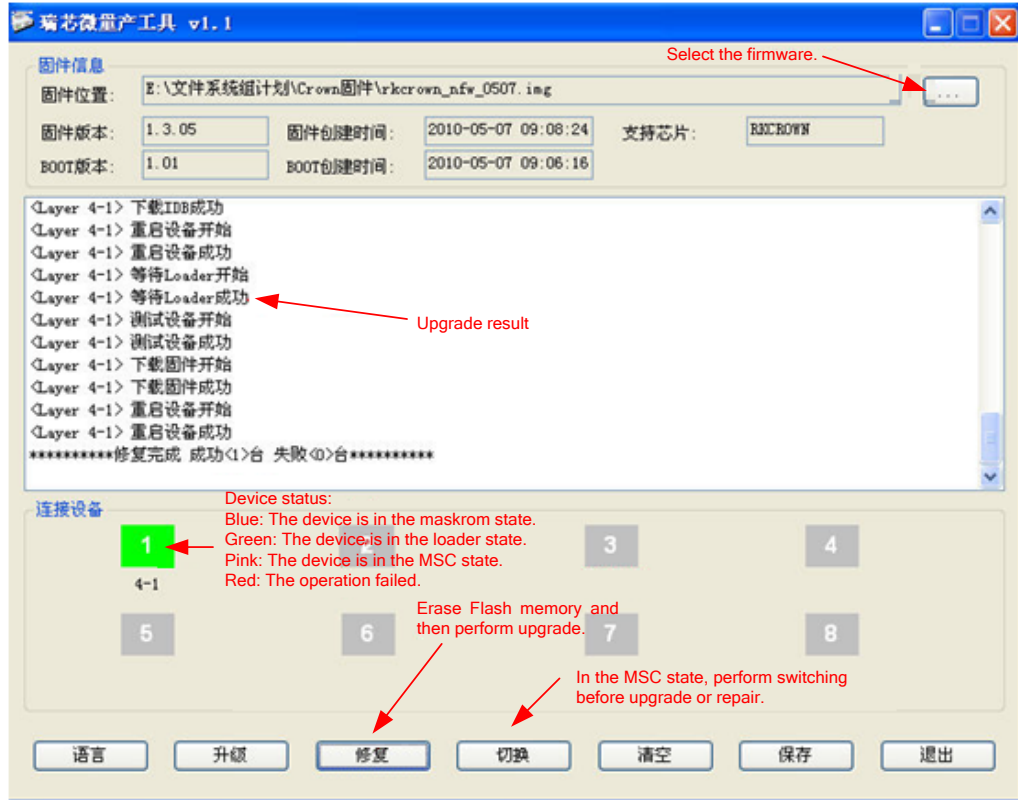
Procedure

1. Insert MediaPad 7 Lite and enable it to enter the upgrade mode (as shown in the preceding main window).
2. Select firmware.
3. Ensure that MediaPad 7 Lite is in the Rockusb state (Maskrom or Loader state).
4. Upgrade or repair MediaPad 7 Lite.

Precautions

- Perform batch upgrade on the hub. A maximum of four pieces of MediaPad 7 Lite can be upgraded at the same time.
- Restart the batch upgrade program after modifying the configuration file.
- Do not start other upgrade programs when running **RKBatchTool.exe**.

7 Maintenance Tools

	Name: constant-temperature heat gun **Usage: to heat components**
	Name: soldering iron **Usage: to maintain and solder components**
	Name: DC power supply **Usage: to supply DC current**
	Name: soldering table **Usage: to secure the PCBA**
	Name: lead-free solder wire **Usage: for soldering**
	Name: digital multimeter **Usage: to measure during repair**
	Name: toolkit **Usage: to assemble and disassemble components**
	Name: electric screwdriver **Usage: to fasten and remove screws**

Name: guitar pick
Usage: to disassemble
MediaPad 7 Lite

Name: air suction ball
Usage: to disassemble
MediaPad 7 Lite
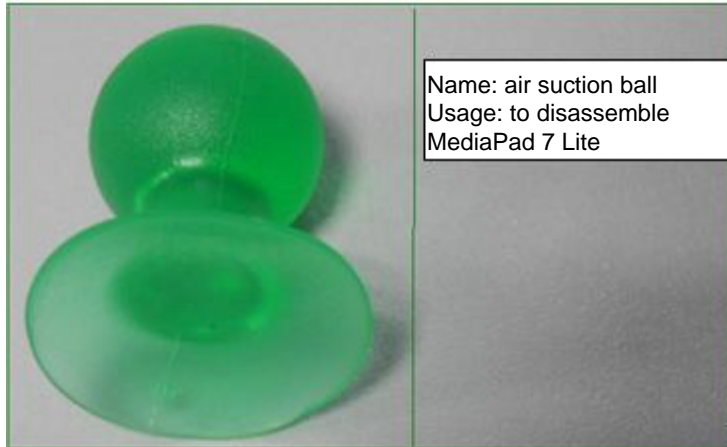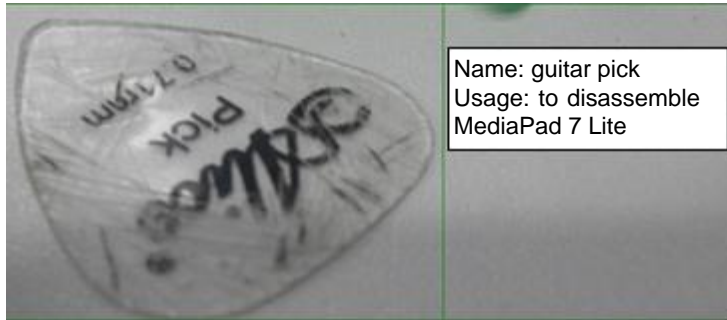
8 Disassembly Procedure

Before disassembling MediaPad 7 Lite, prepare the following tools:

- 0.6 mm thick disassembly pick (Do not use the metal disassembly pick that may easily damage MediaPad 7 Lite.)
- Small-sized Phillips screwdriver, used to disassemble the external three screws
- Small-sized hexagon screwdriver, used to disassemble the internal screws

1. Ensure that the ESD wrist strap is well grounded.

2. Disassemble MediaPad 7 Lite, as shown in the following figure.

3. Open the decorative cap.
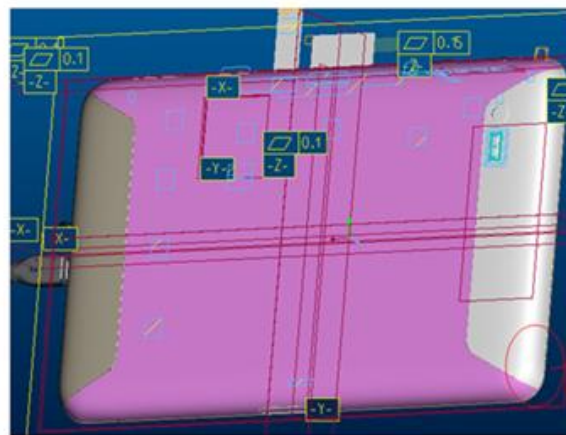
Insert a thin blade or other objects such as the nail into the gap between the decorative cap and the rear cover to upward separate the decorating part from the rear cover (Note that the gap is narrow).
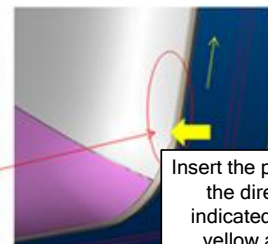
Insert the pick along the direction indicated by the yellow arrow.

You can also use an air suction ball to open the decorative cap.

1. Place the air suction ball on the decorating part on the rear cover, press the air suction ball, and quickly pull out the air suction ball. A gap is formed between the decorating part and the rear cover.

2. Use the guitar pick to separate the decorating part from the rear cover.
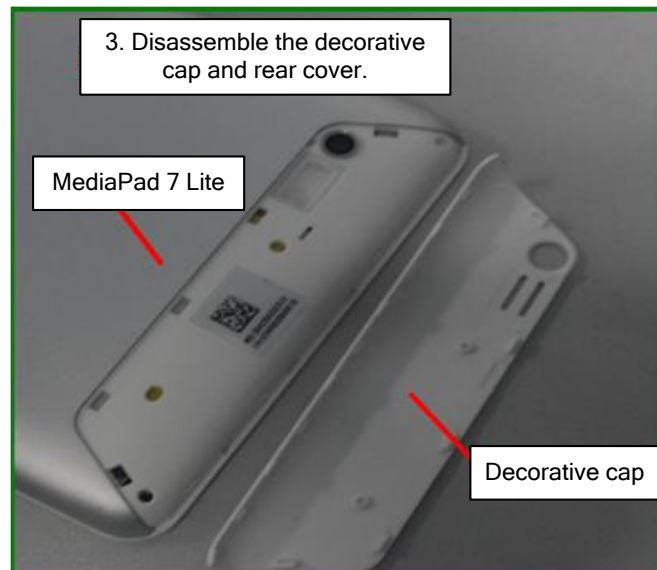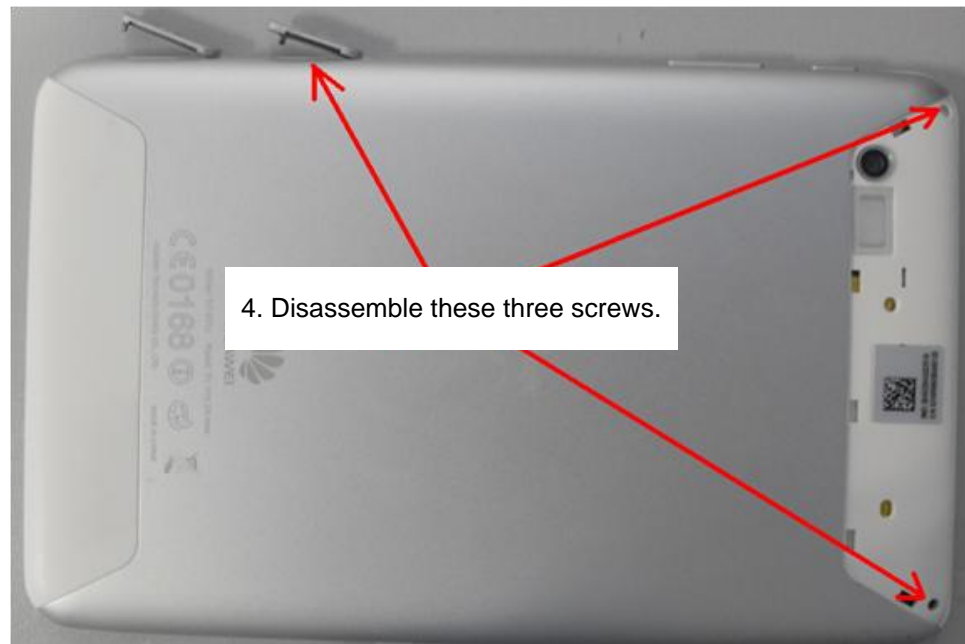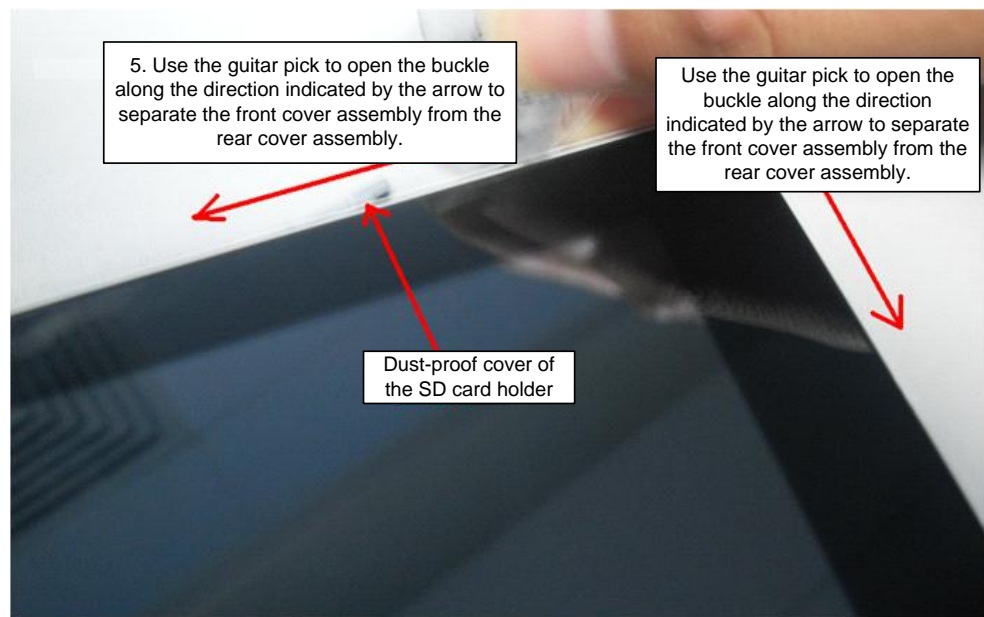

3. Disassemble the decorative cap and rear cover.
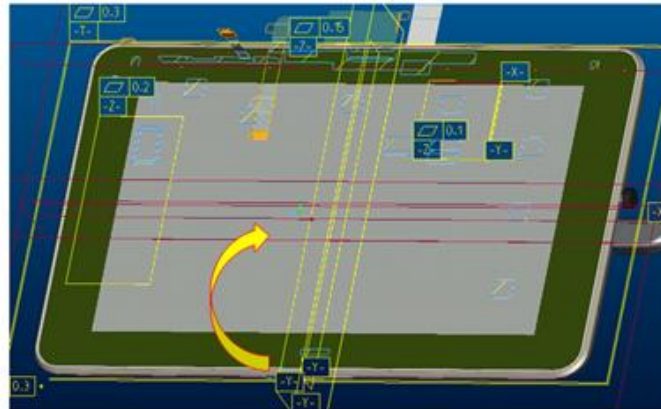
MediaPad 7 Lite

Decorative cap

4.   Remove screws.

4. Disassemble these three screws.

5.   Open the front and rear covers.

5. Use the guitar pick to open the buckle along the direction indicated by the arrow to separate the front cover assembly from the rear cover assembly.

Use the guitar pick to open the buckle along the direction indicated by the arrow to separate the front cover assembly from the rear cover assembly.
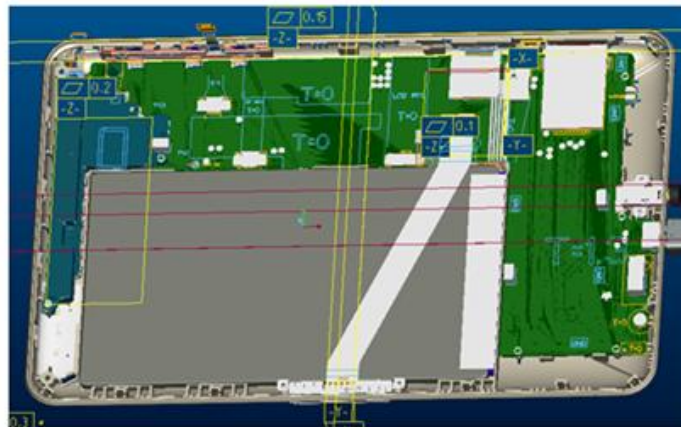
Dust-proof cover of the SD card holder

6.   Open the front cover.

6. Open the front cover assembly from the lower edge. Otherwise, the TP FPC and LCD FPC will be broken.

6. Open the rear cover from the longer edge without the microSD and SIM card holders.

The microSD card holder and SIM card holder are at the other longer edge.
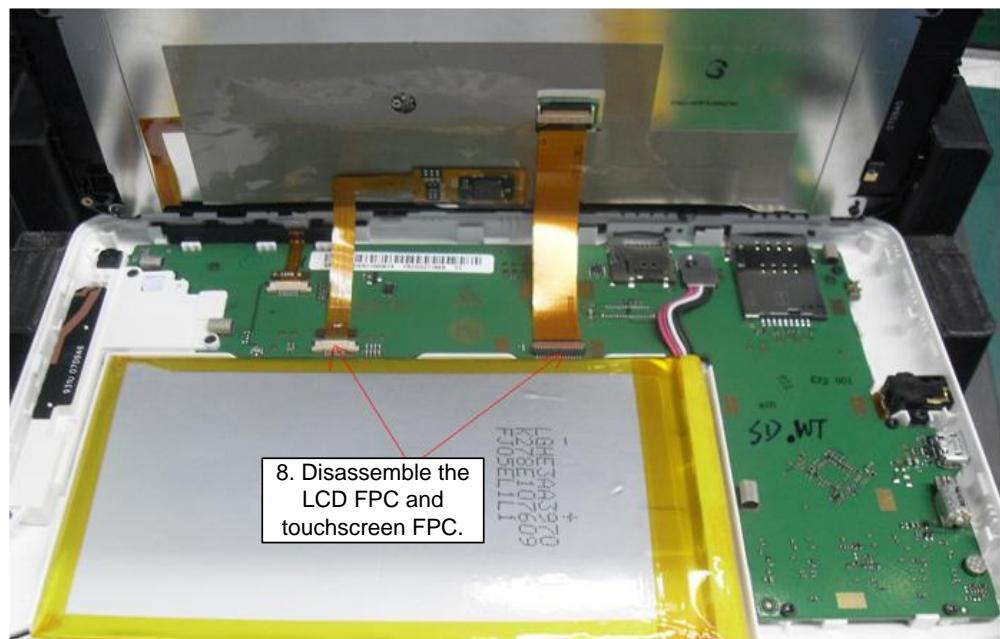
Rear cover of MediaPad 7 Lite
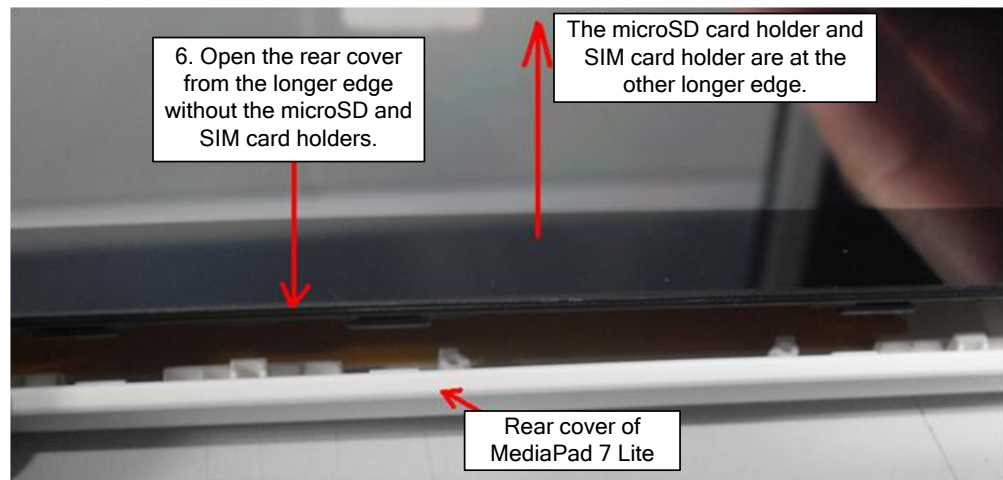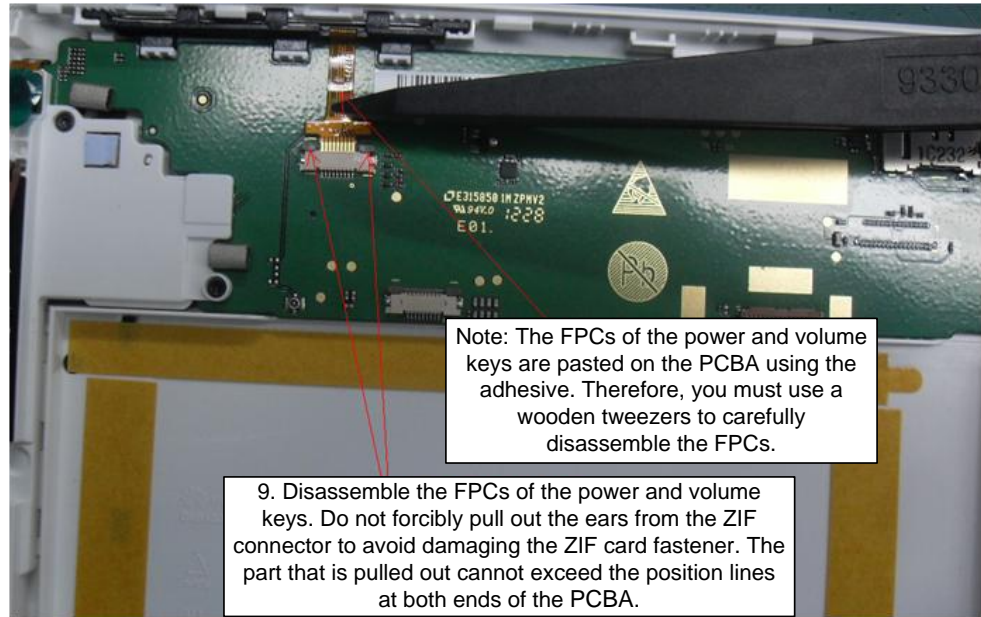
7. Disassemble the internal assembly.

7. To disassemble the PCBA, use a hexagon screwdriver to remove the headset and audio box, open the tablets of the key FPC and battery connector, and then disassemble the screw of the PCBA.

8.   Disassemble the LCD flexible printed circuit (FPC) and touchscreen FPC.


8. Disassemble the LCD FPC and touchscreen FPC.

9.   Disassemble the FPCs of the power and volume keys.

Note: The FPCs of the power and volume keys are pasted on the PCBA using the adhesive. Therefore, you must use a wooden tweezers to carefully disassemble the FPCs.

9. Disassemble the FPCs of the power and volume keys. Do not forcibly pull out the ears from the ZIF connector to avoid damaging the ZIF card fastener. The part that is pulled out cannot exceed the position lines at both ends of the PCBA.

10. Disassemble the 10 self-tapping screws used for fastening the speaker and audio box, battery connector, headset jack, and PCBA.

Speaker and audio box

Disassemble the screw of the battery connector tablet.

Headset jack

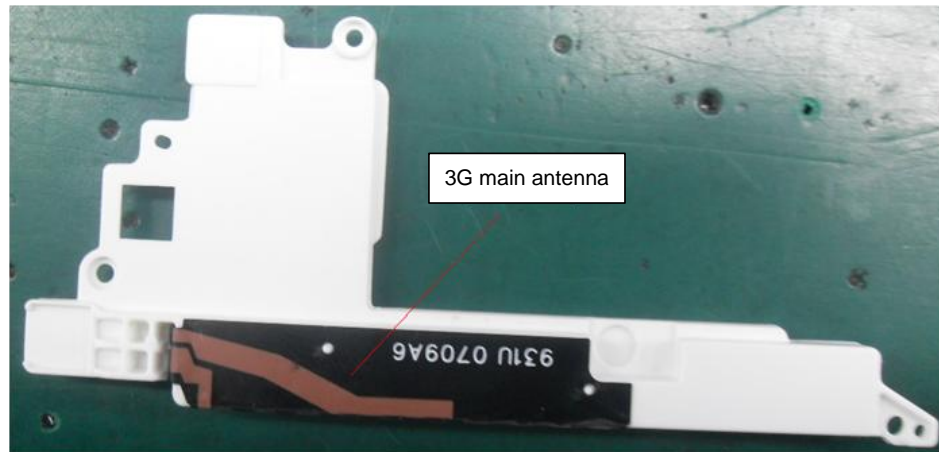10. Disassemble the 10 self-tapping screws used for fastening PCBA, headset, speaker, and battery.
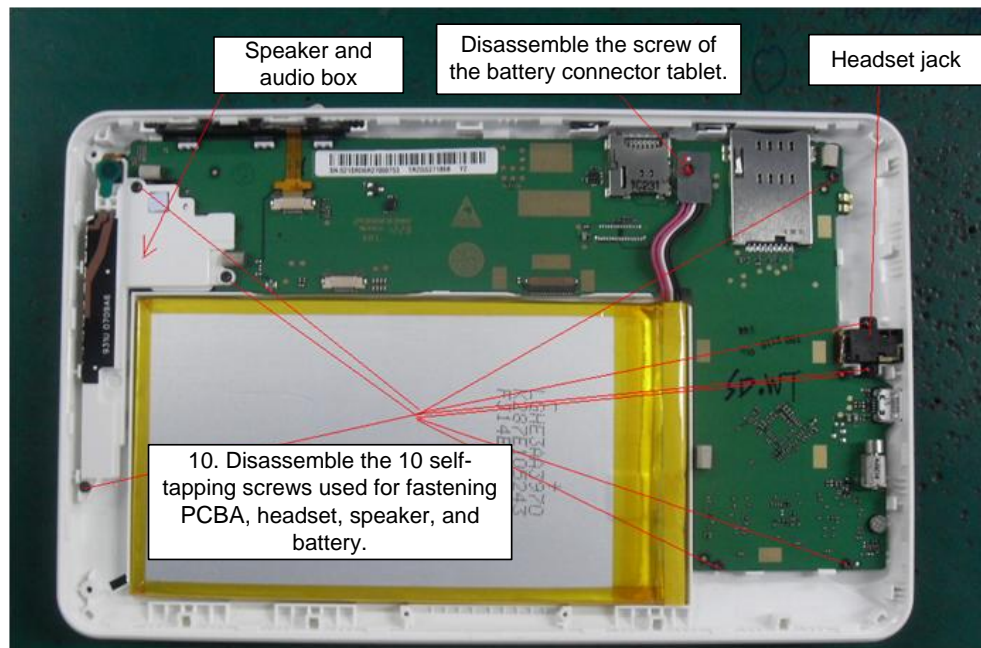
11. Remove the headset jack, front network camera, and rear network camera from the PCBA.
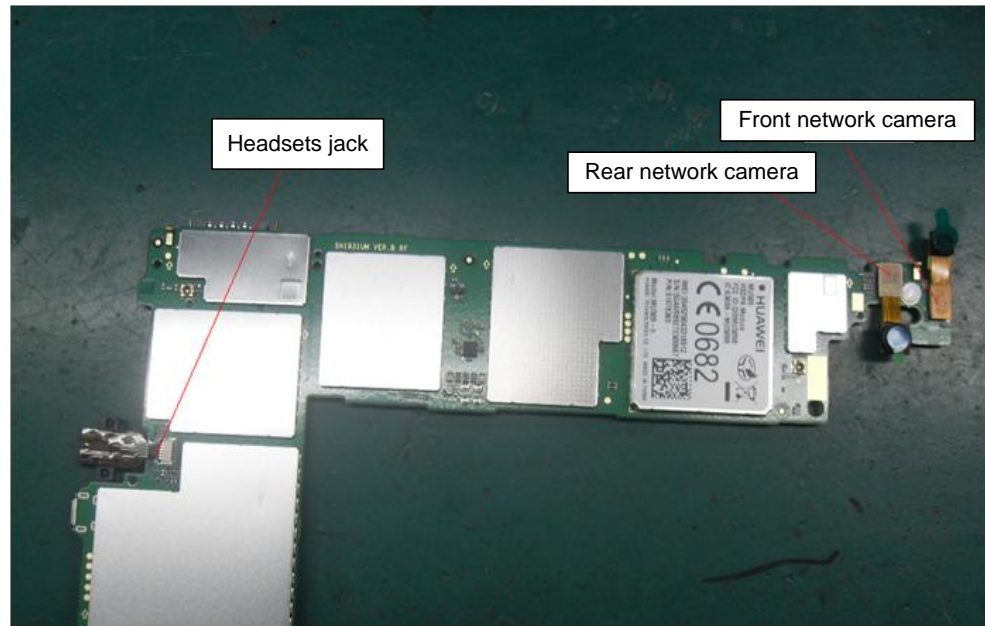
The following figure shows the disassembled audio box.

3G main antenna

The following figure shows the disassembled PCBA.

Top side of the PCBA of MeidaPad 7 Lite
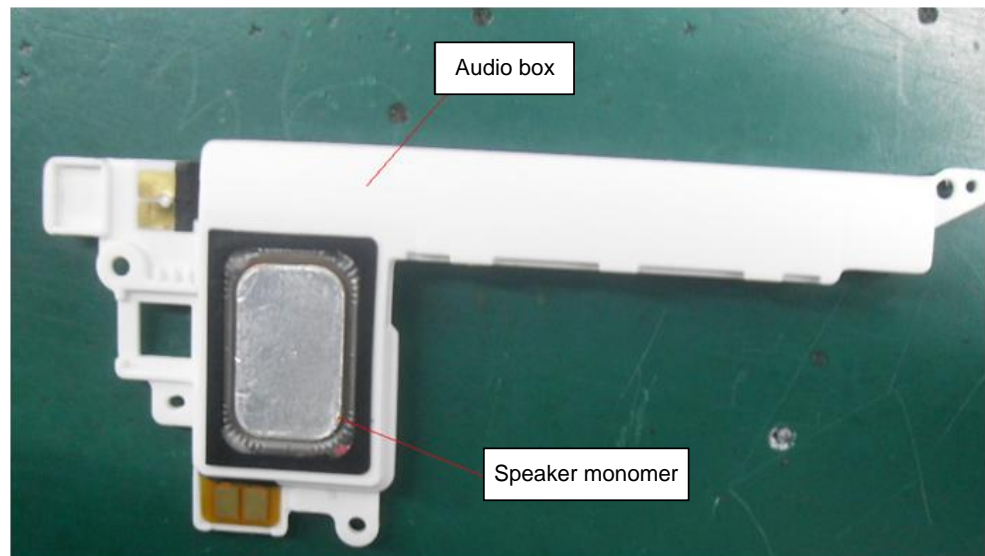
Bottom side of the PCBA
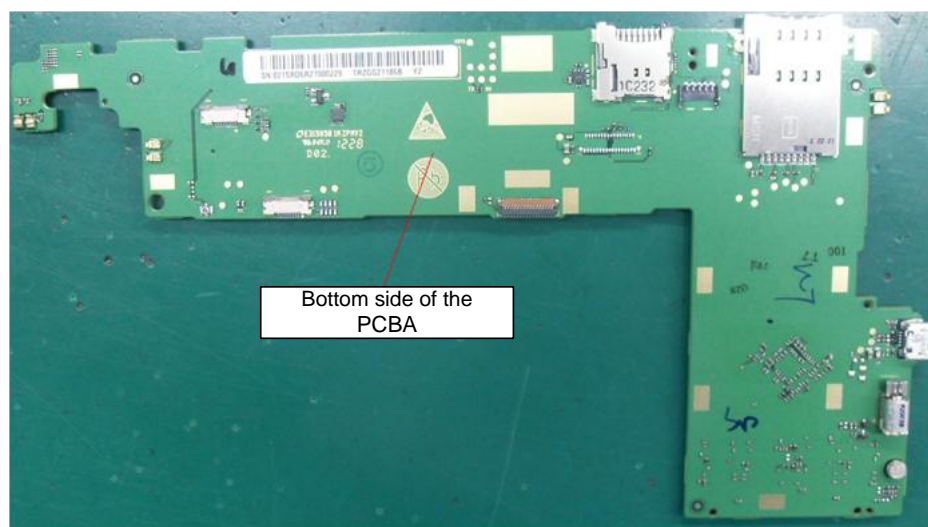
# 9 Troubleshooting for Common Failures

9.1 Principle

MediaPad 7 Lite, designed for home and mobile users, provides high-speed radio interfaces such as WCDMA and Wi-Fi interfaces for access to the broadband metropolitan area network, and MHL-to-HDMI port to support various multimedia formats. MediaPad 7 Lite supports multimedia, games, GPS, audio, and data communication, providing entertainment and communication services for home and mobile users.

MediaPad 7 Lite consists of the following key components: processor (RK2918), 3G module (MU509), charge management chip (BQ24161), WLAN/Bluetooth module (BCM4330), 24-bit RGB-to-LVDS transceiver, and GPS module (BCM47511)

The characteristics of the main chip RK2918 are as follows:

The RK2918, provided by Rockchips Electronics CO., Ltd, is a high-performance and low-power consumption multimedia processing chip based on Arm Cortex-A8. The RK2918 adopts the 3D acceleration technology and is designed for smartphones, personal mobile Internet access devices, and other digital multimedia applications. In design, the RK2918 adopts the RK2918 chip as the kernel and integrates third-party peripherals such as HDMI, codec, Wi-Fi/Bluetooth, GPS, camera, G-sensor, memory, and 3G. The RK2918 is an MID solution featuring the compatibility with Android 4.0 and Adobe Flash Player 10.1, rich functions and powerful performance.
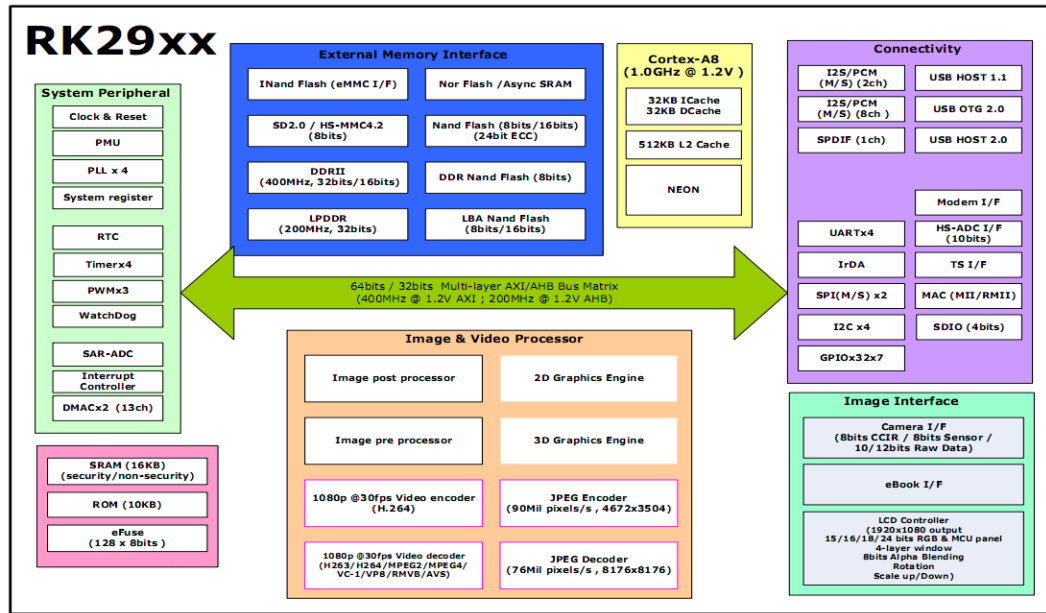
Major performance indicators of MediaPad 7 Lite

Performance Indicator	Requirement	Remarks
Processor performance	AP: 1 GHz Modem: 256 MHz	
Cache	L2 256 KB	
Storage space	1 GB DRAM + 4 GB NAND Flash	Four 256 Mbit DDR3s
USB	1 HS-USB	
Electromagnetic compatibility	Compliant with Huawei internal specification DKBA 1620-2007.5	
Environment protection	Lead-free, meeting RoHS	

PCBA and FPCs of MediaPad 7 Lite

Board and FPC	Hardware Version	Function
PCBA	SH1931UM	Used to function as the main control board
FPC	SH1931UL	Used to connect the LCD
FPC	SH1931UF	Used to connect the speaker
FPC	SH1931UI	Used to connect the POG PIN
FPC	SH1931UK	Used to connect the key

External interfaces

No.	Interface Type	Physical Connection Mode	Number of Interfaces	Description
1	USB	Micro-usb	1	It meets the USB 2.0 specification and is used to connect related devices such as the PC. The input is the 5 V/2 A DC power interface.
2	WCDMA	Main antenna	1	It is used to transmit uplink voice data (WCDMA).
3	WLAN	Built-in antenna	2	It is used to connect local WLAN devices.
5	Power key	Dome key	1	It is used to power on or off MediaPad 7 Lite.
9	Key	Volume adjustment key	2	VOL+ and VOL-
10	Touchscreen	I2C interface	1	Capacitively compatible
11	LCD	RGB	1	1024 x 600 pixels
12	MHL interface	Micro-USB	1	HD television interface and USB interface reuse
13	Pog PIN interface	Pedestal	1	The pedestal is used for serial port communication and charge.

9.2 Startup Failure

MediaPad 7 Lite can be normally started only when the following conditions are met:

- Press the power key for 2 seconds when the battery is installed.
- The battery is installed, the USB interface is connected to the 5 V DC regulated power supply, and MediaPad 7 Lite is started and enters the USB charge mode.
- The battery is installed, the pedestal interface is connected to the 5 V DC regulated power supply, and MediaPad 7 Lite is started and enters the charge mode.

9.2.1 Startup Failure Due to High Current

Adjust the voltage of the DC regulated power supply to 5 V/3 A. Use the DC regulated power supply to power the LITE_USB interface. The current exceeds 500 mA after MediaPad 7 Lite is powered on. This usually occurs when the IC patch is abnormal or damaged.
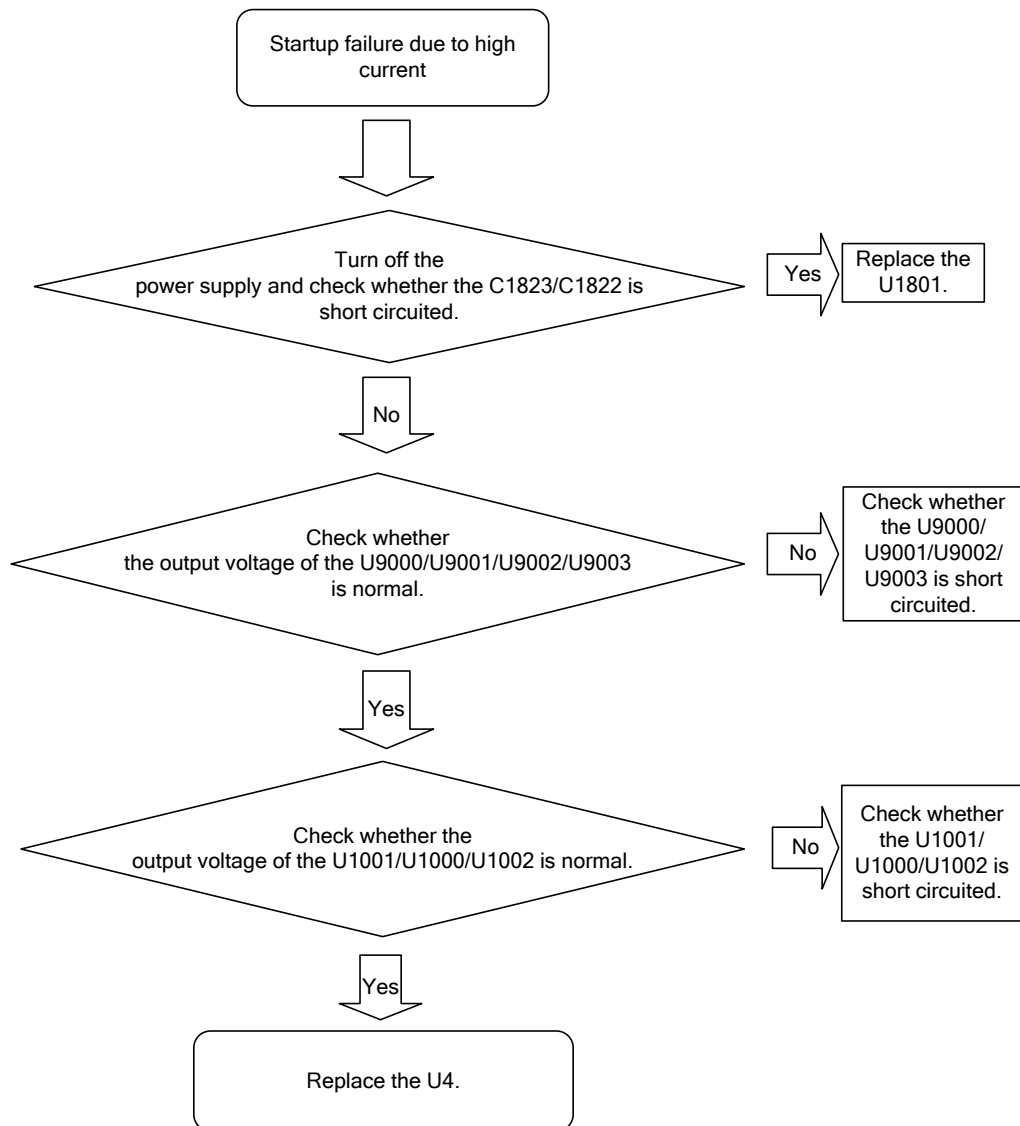
Figure 9-1

```
                    ┌─────────────────────────┐
                    │  Startup failure due to  │
                    │      high current        │
                    └─────────────────────────┘
                                 │
                                 ▼
          Turn off the                                    ┌──────────────┐
   power supply and check whether the C1823/C1822 is ──Yes──│ Replace the  │
          short circuited.                                │    U1801.     │
                                 │                         └──────────────┘
                                No
                                 ▼
                                                          ┌──────────────┐
                                                          │ Check whether │
          Check whether                                   │  the U9000/   │
   the output voltage of the U9000/U9001/U9002/U9003 ──No──│ U9001/U9002/  │
                is normal.                                │ U9003 is short│
                                 │                         │  circuited.   │
                                Yes                        └──────────────┘
                                 ▼
                                                          ┌──────────────┐
                                                          │ Check whether │
          Check whether the                               │   the U1001/  │
   output voltage of the U1001/U1000/U1002 is normal. ──No──│ U1000/U1002 is│
                                 │                         │short circuited.│
                                Yes                        └──────────────┘
                                 ▼
                    ┌─────────────────────────┐
                    │     Replace the U4.     │
                    └─────────────────────────┘
```
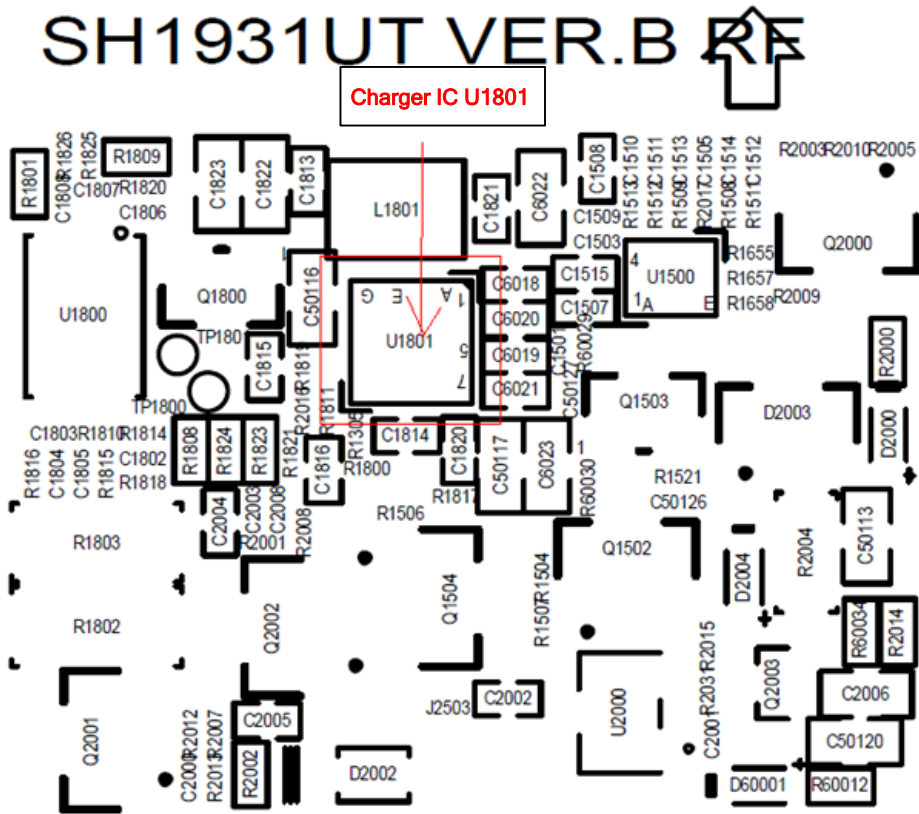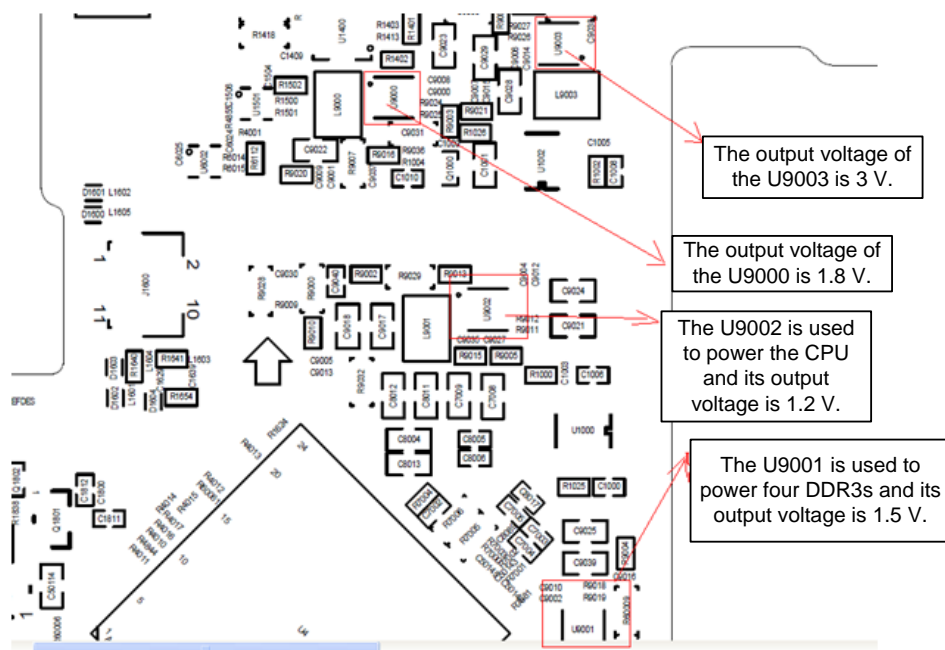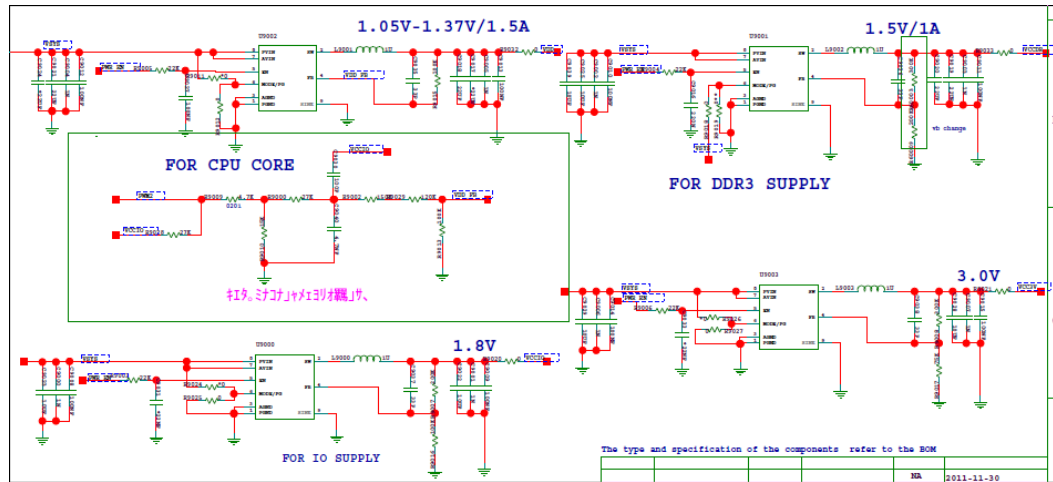
Figure 9-2

Figure 9-3

The output voltage of the U9003 is 3 V.

The output voltage of the U9000 is 1.8 V.

The U9002 is used to power the CPU and its output voltage is 1.2 V.

The U9001 is used to power four DDR3s and its output voltage is 1.5 V.

9.2.2 Startup Failure Due to Low Current

The following figure shows the principles of the power supply system.

Adjust the voltage of the DC regulated power supply to 5 V/3 A. Use the DC regulated power supply to power the LITE_USB interface. The current is about 120 mA after MediaPad 7 Lite is powered on. This usually occurs when the coulometer or output voltage is abnormal.
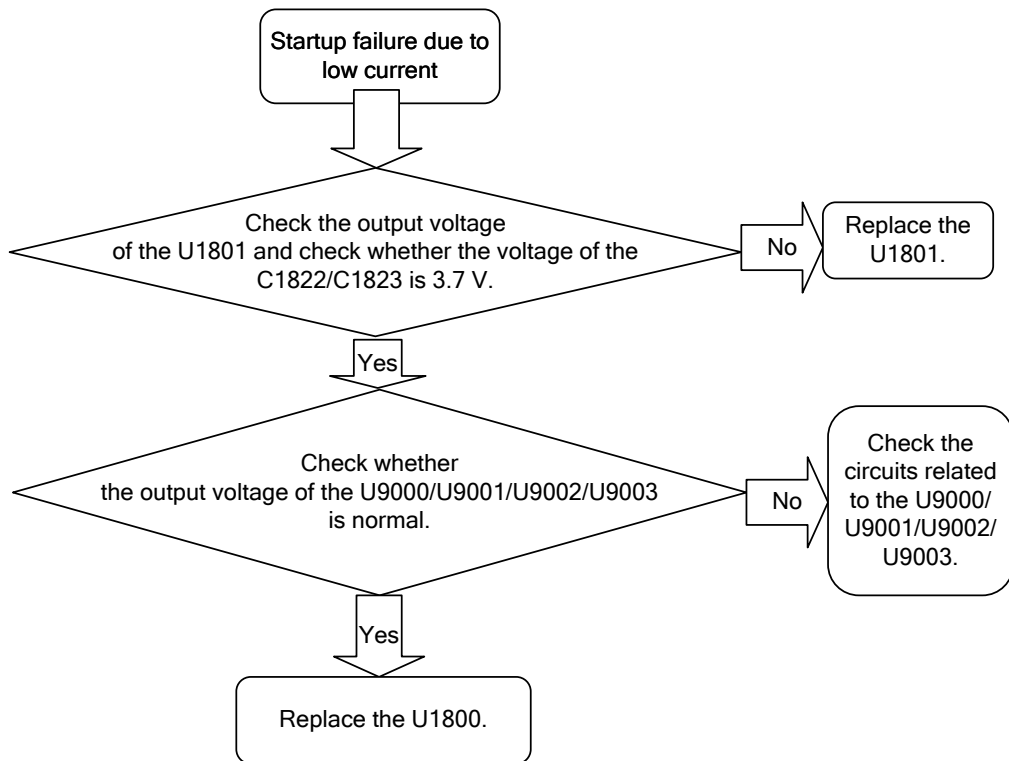
The following figure shows the principles of the coulometer.
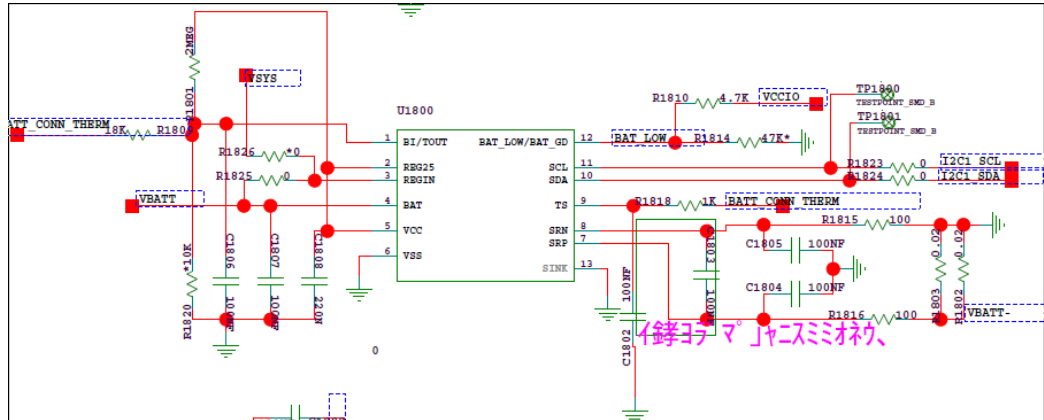
9.3 Charge Failure

The following figure shows the charge principles.
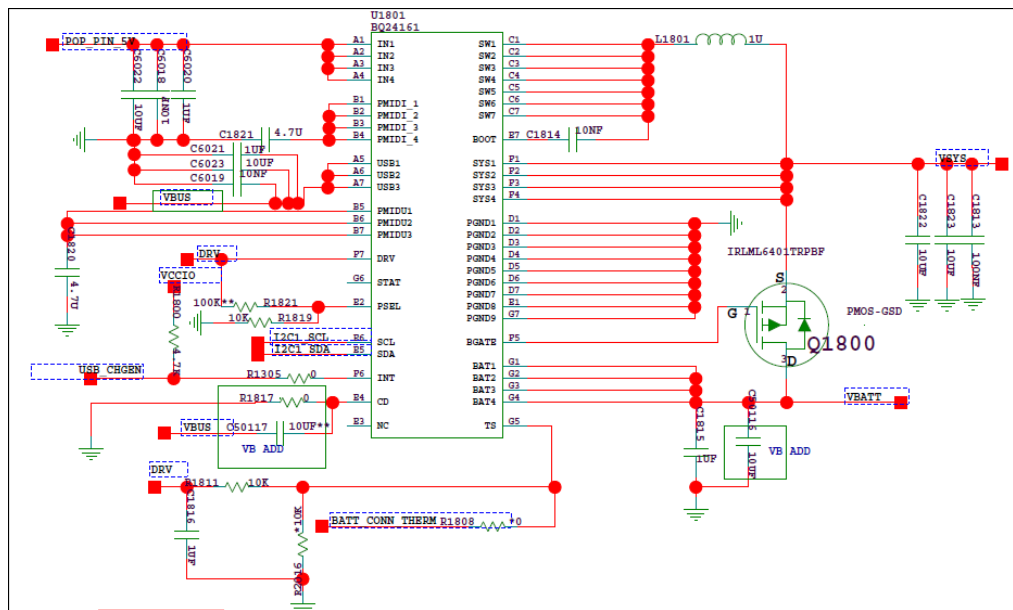
The charge function of MediaPad 7 Lite is controlled by the U1801. For the solution, see Figure 9-2 (component layout of MediaPad 7 Lite).
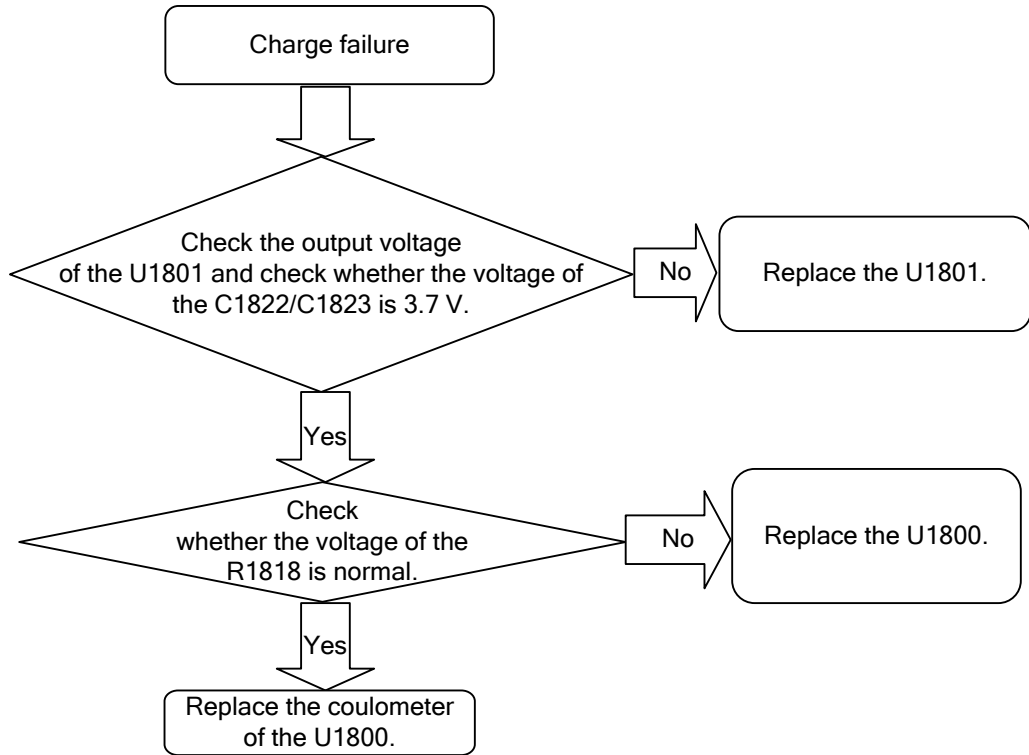
9.4 Failure to Identify the SIM Card

The following figure shows the principles of the SIM card.
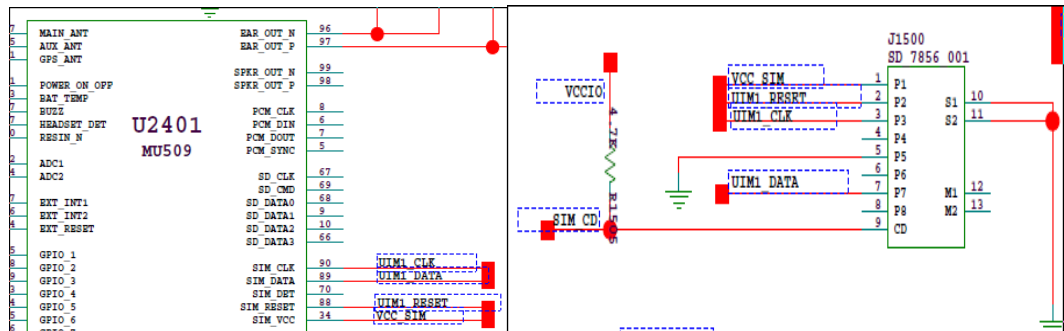
The SIM card cannot be identified. For the solution, see Figure 9-2 (component layout of MediaPad 7 Lite).

Re-load the U1302 (Nand flash).
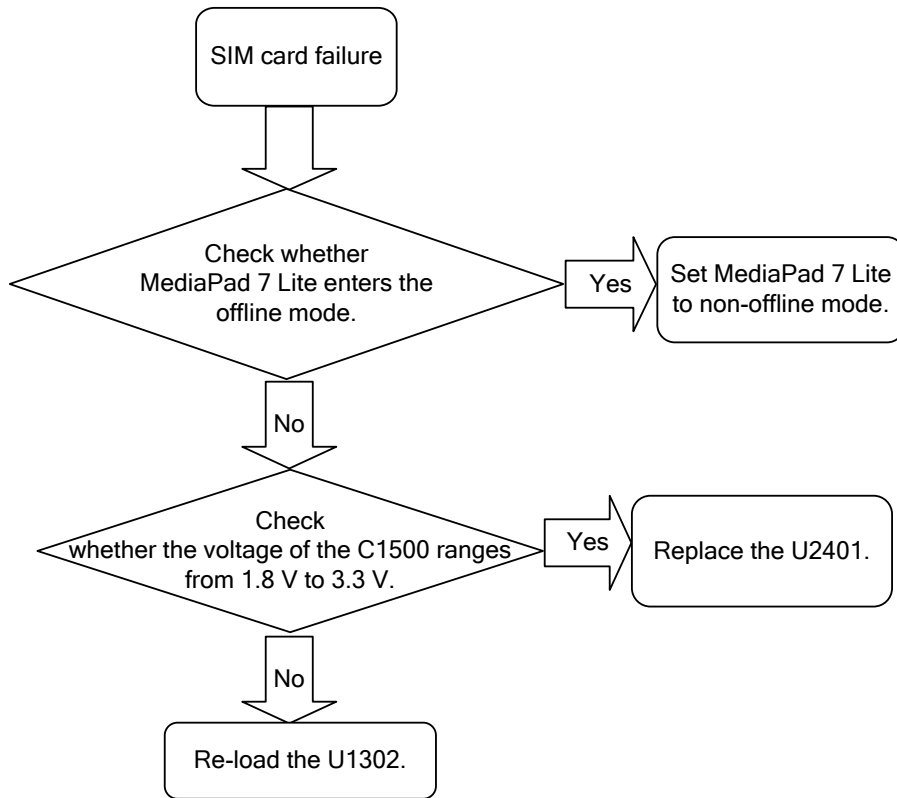
9.5 Failure to Identify the MicroSD Card

The following figure shows the principles of the microSD card.
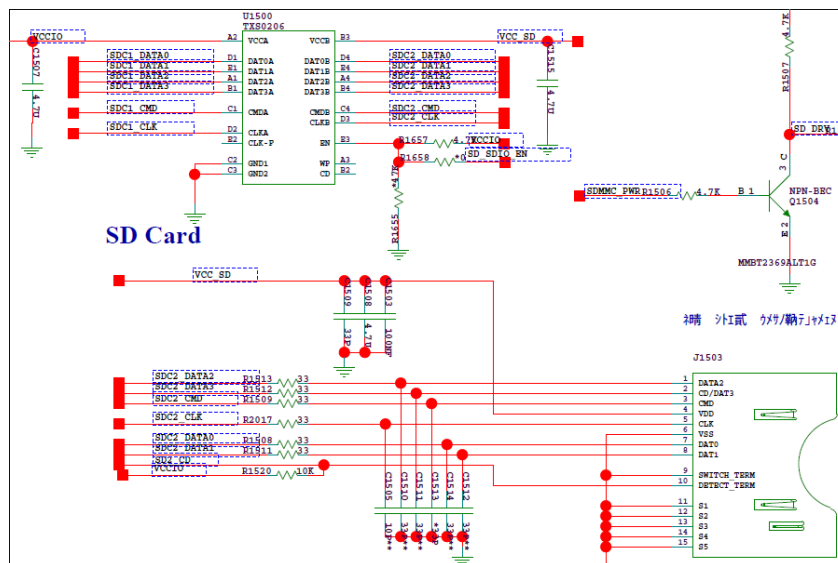
The microSD card of MediaPad 7 Lite is installed at the bottom of the PCBA. For the solution, see Figure 9-2 (component layout of MediaPad 7 Lite).
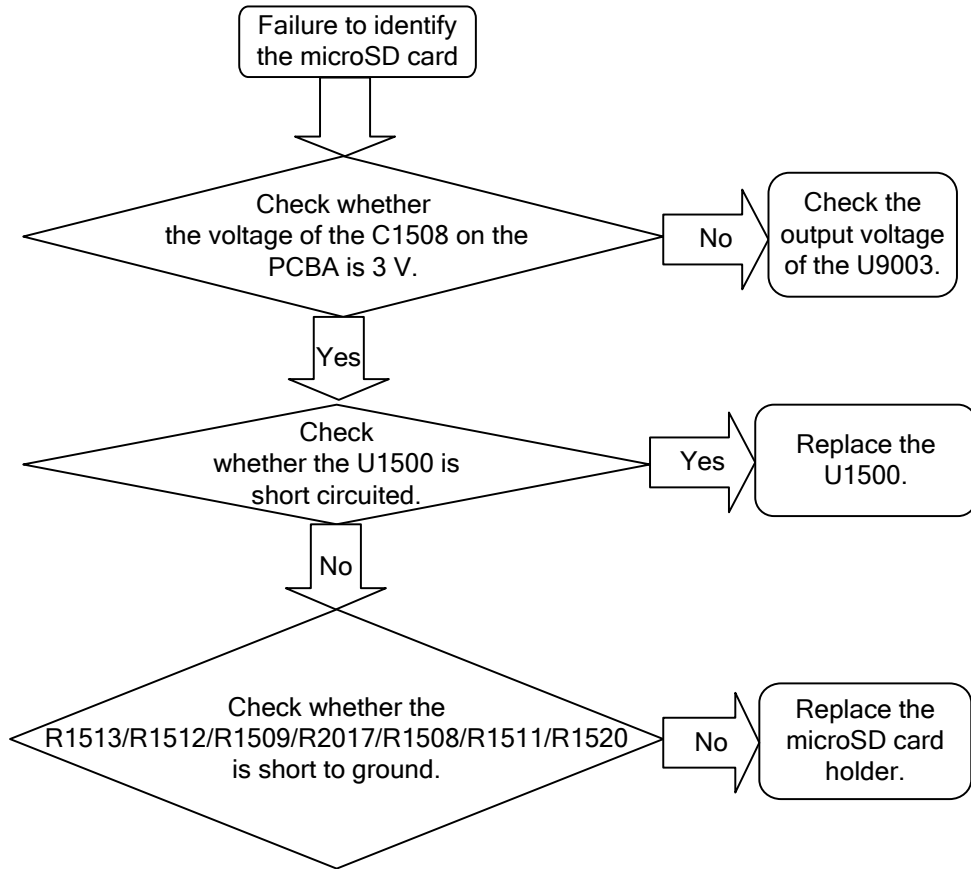
9.6 Display Failure
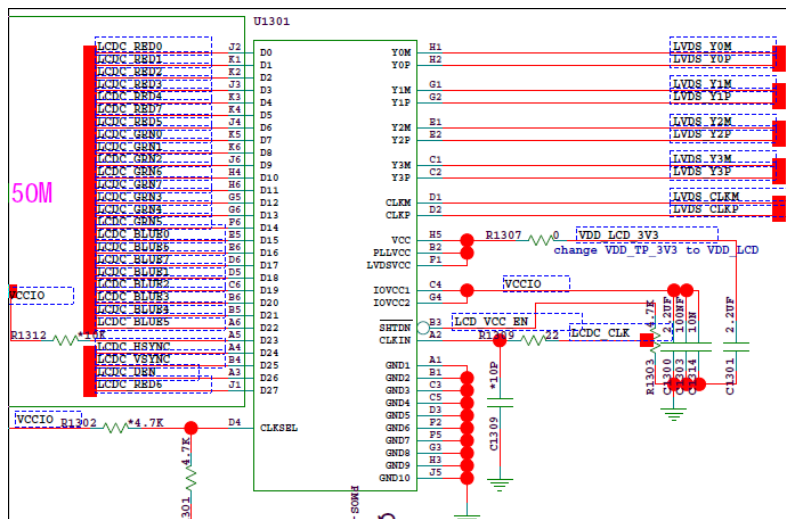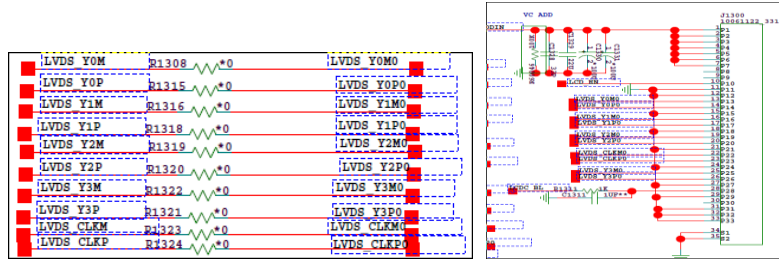
The backlight can be illuminated but no graphics are displayed. For the solution, see the following flowchart.
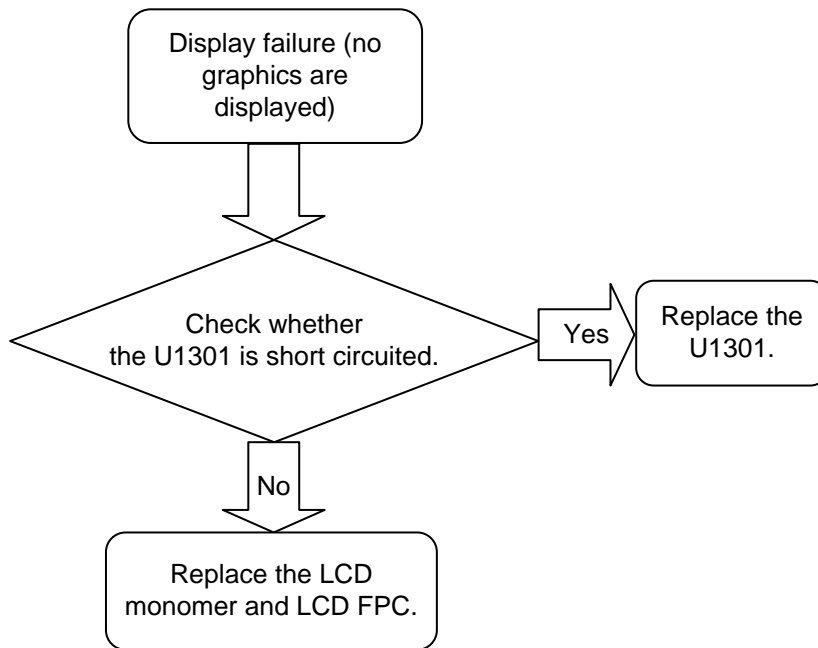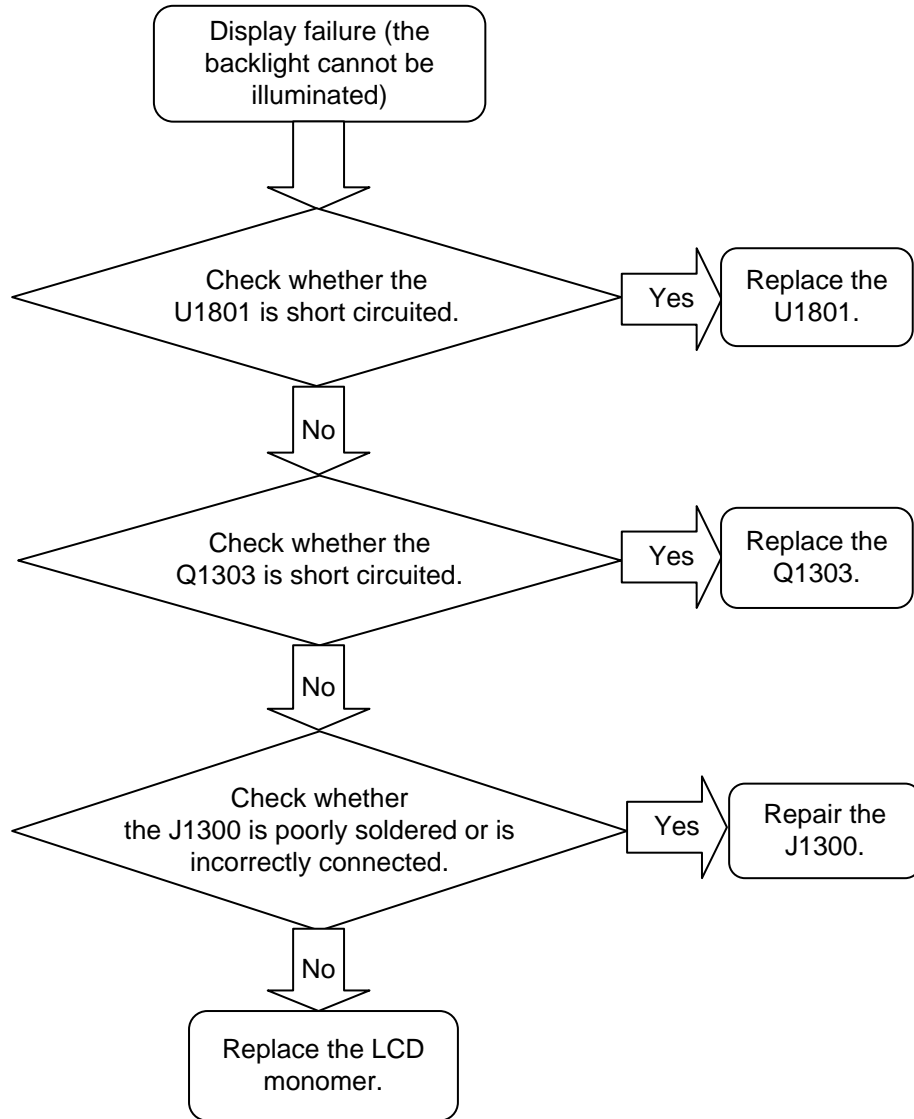

9.6.1 Display Failure

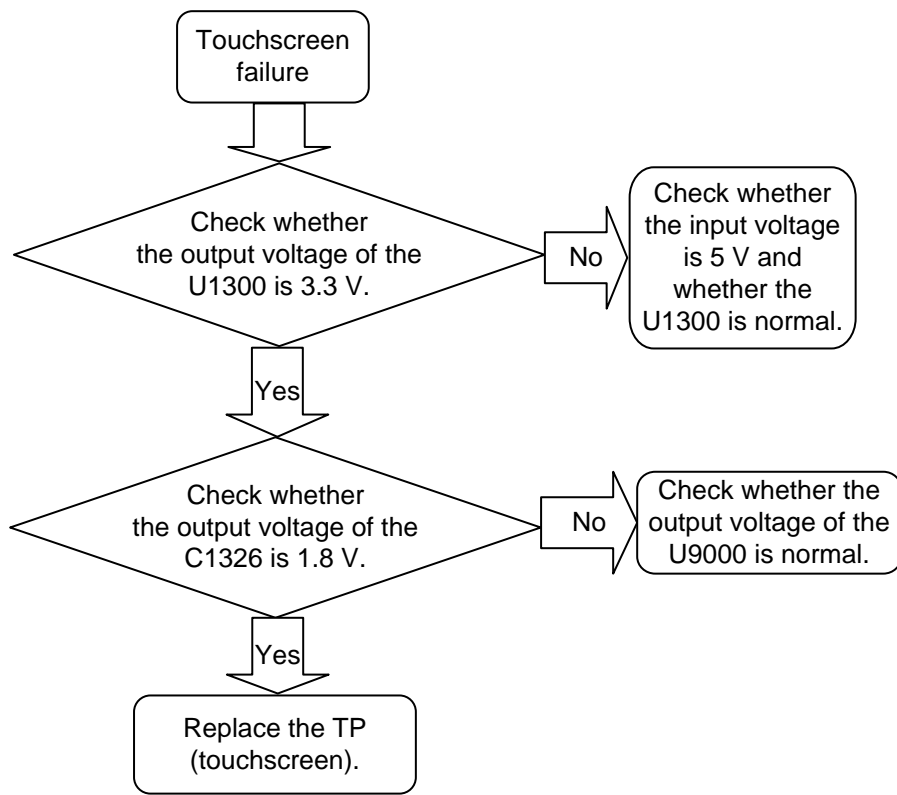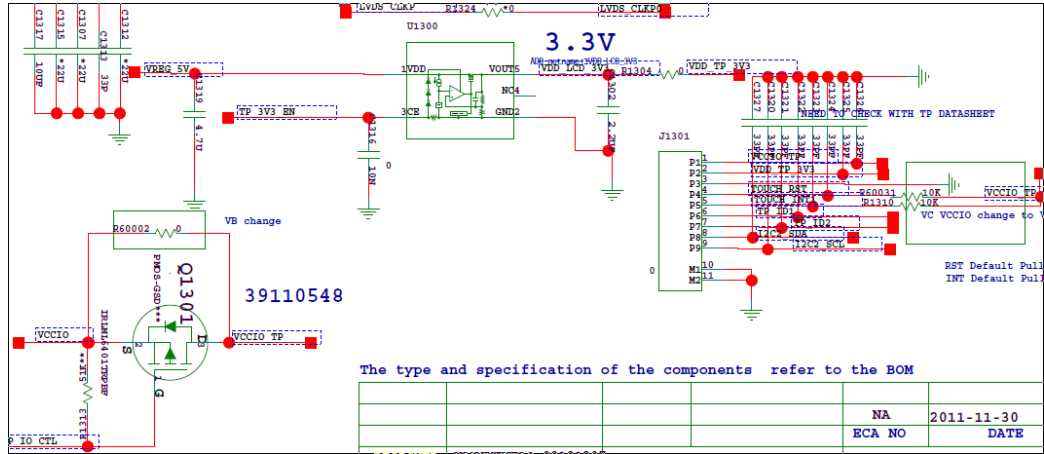The following figure shows the voltage principles of the backlight.
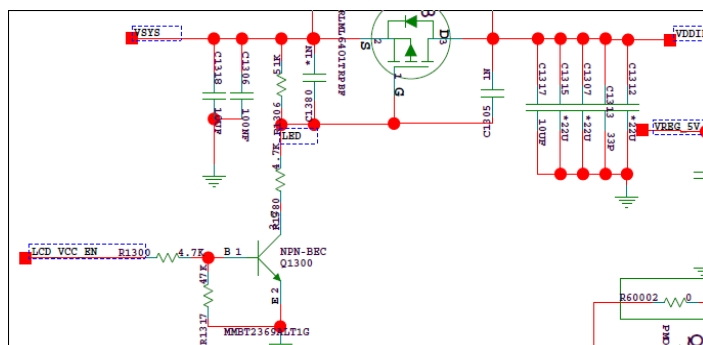
The backlight cannot be illuminated. For the solution, see the following flowchart.

Display failure (the backlight cannot be illuminated)

↓

Check whether the U1801 is short circuited. → Yes → Replace the U1801.

No ↓

Check whether the Q1303 is short circuited. → Yes → Replace the Q1303.

No ↓

Check whether the J1300 is poorly soldered or is incorrectly connected. → Yes → Repair the J1300.

No ↓

Replace the LCD monomer.

9.7 Touchscreen Failure

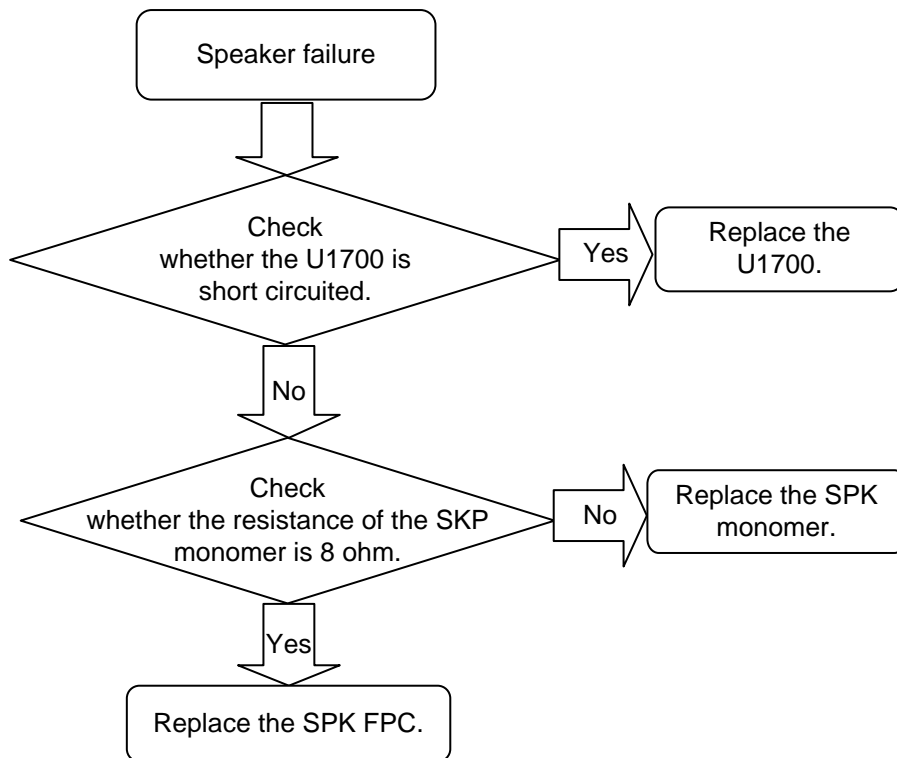The following figure shows the principles.
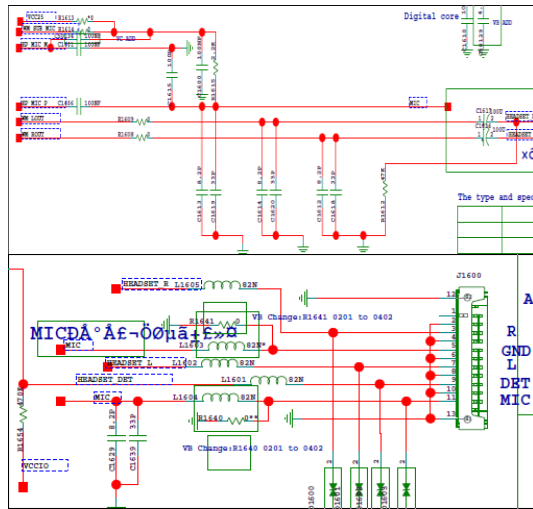
9.8 Speaker Failure

The following figure shows the principles.

5V BOOST
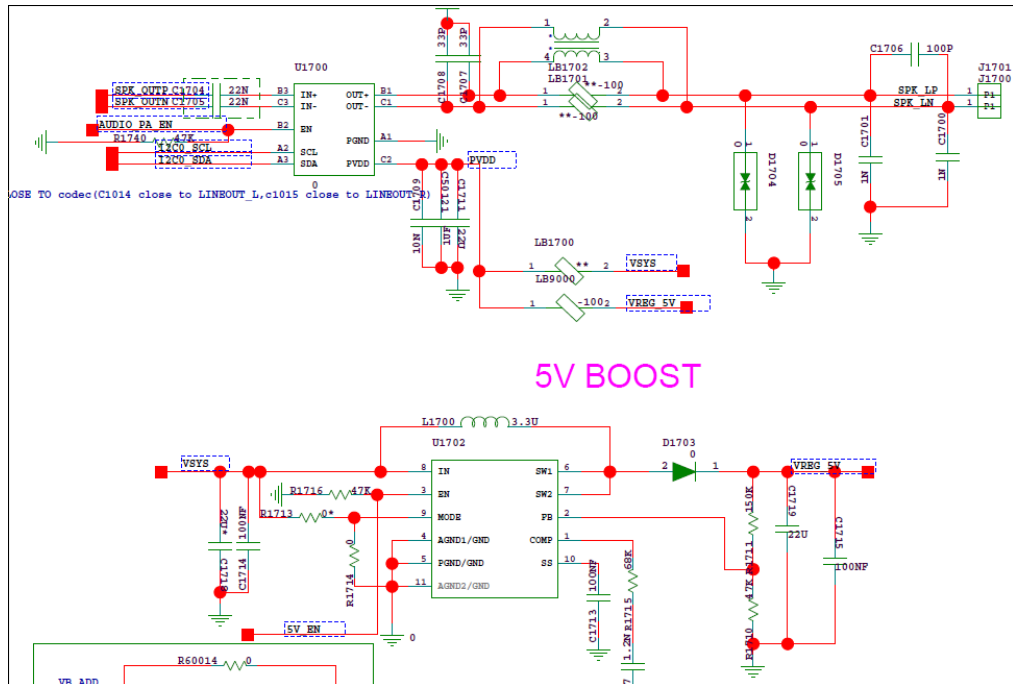
Check whether the touchscreen of MediaPad 7 Lite is normal. If the touchscreen is normal, the 5 V power supply of the speaker power amplifier (PA) is normal. In this case, rectify the fault according to the following flowchart.
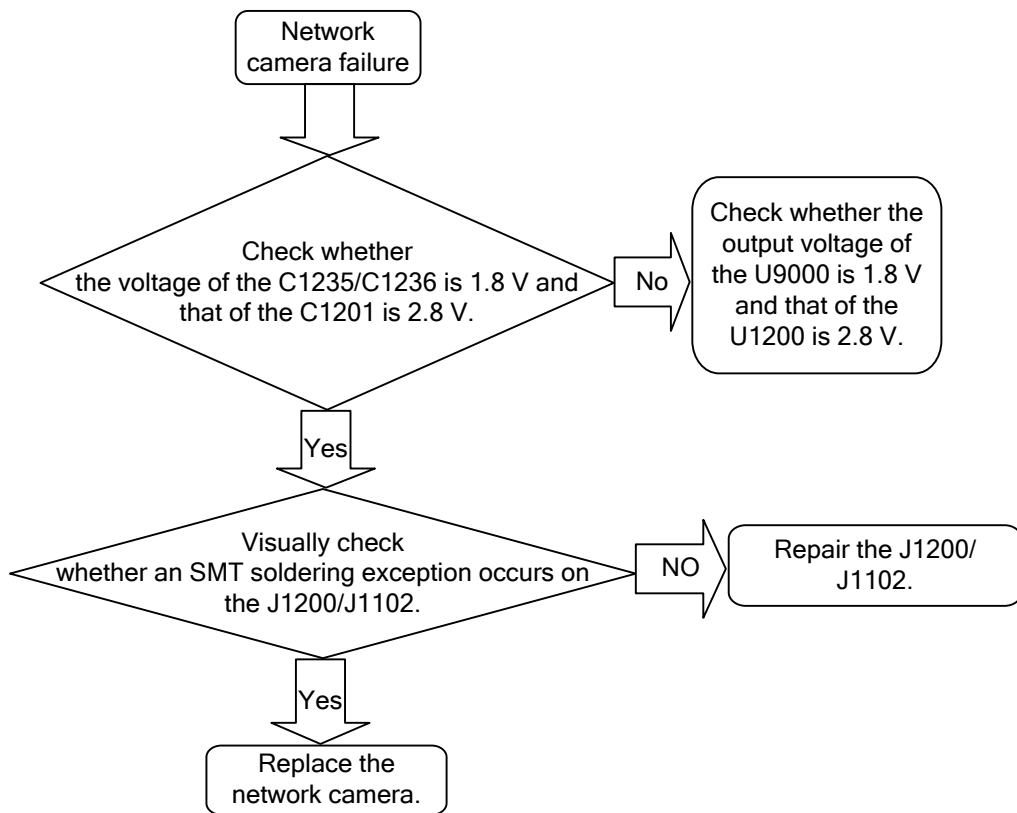
9.9 Headset Failure

Check whether the headset interface is correctly connected. If the headset interface is correctly connected, replace the headset jack.
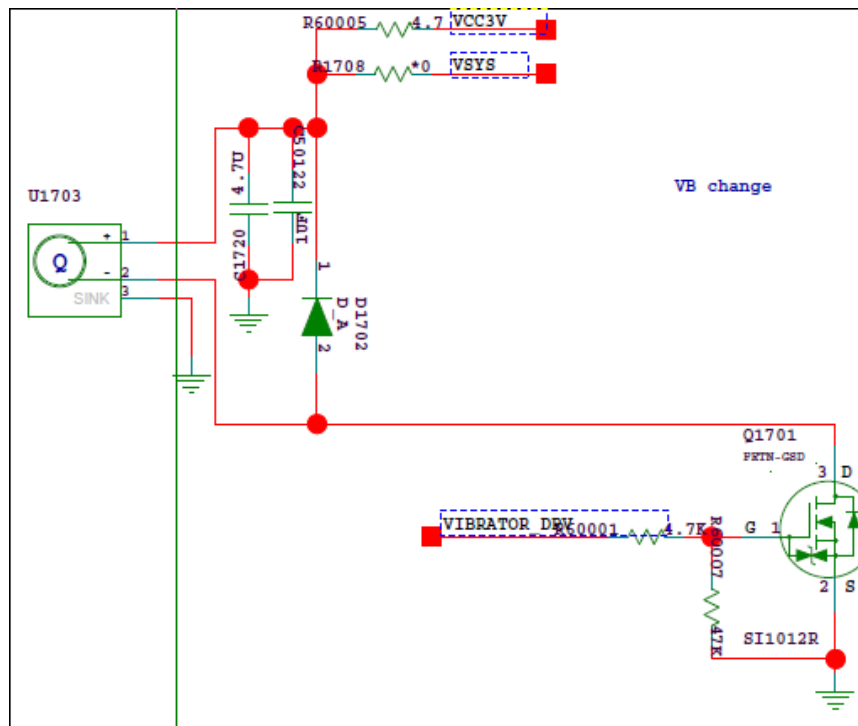
9.10 Network Camera Failure

9.11 Vibration Failure

The motor is faulty. Perform the following operations:
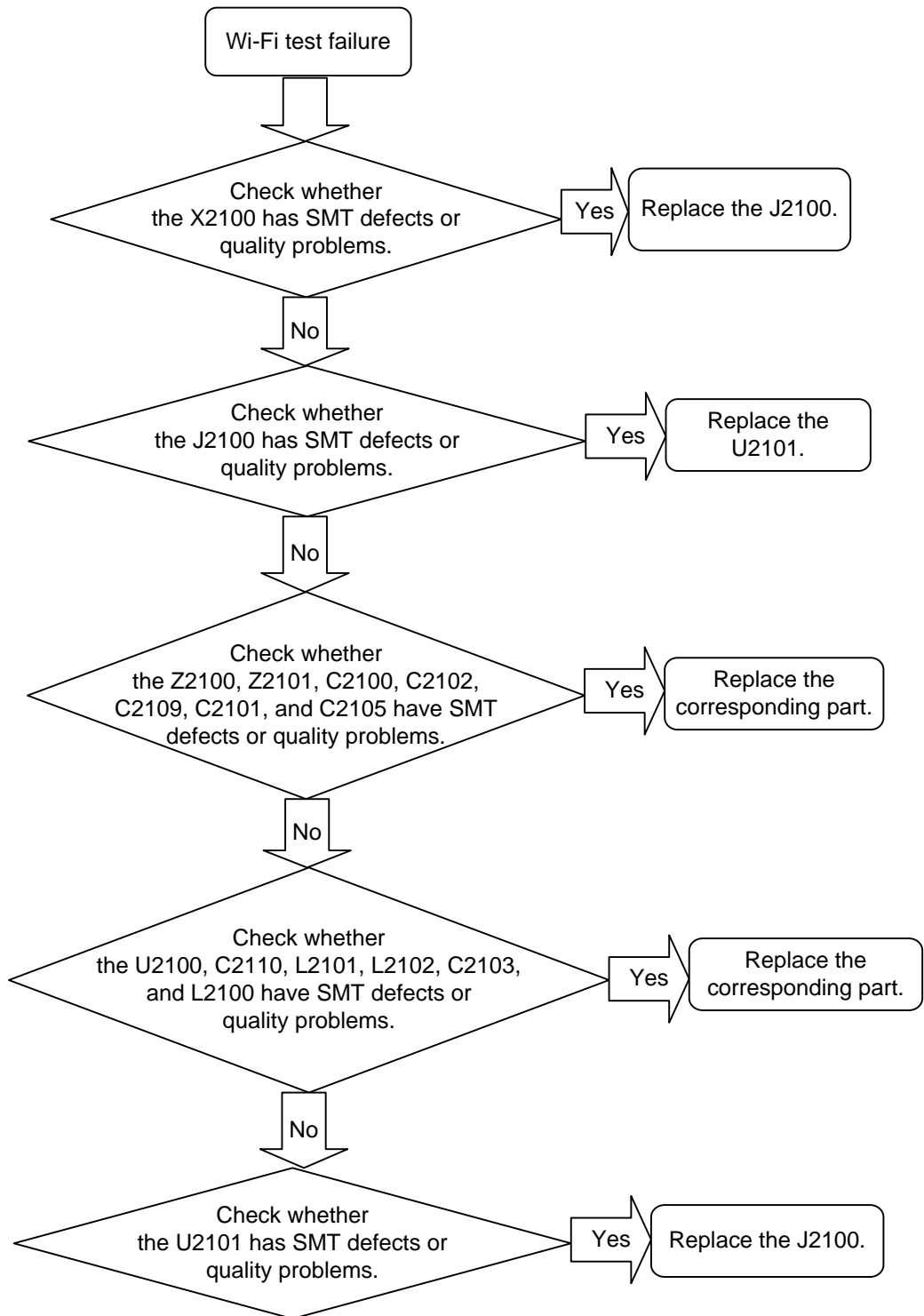
1. Measure whether the voltage of the R60005 is 3 V. The voltage of the R60005 is 3 V if the system is normally started.

2. Connect the R60001 to the CPU and use the multimeter to measure whether the impedance is normal.

3. Measure whether the voltage is 3 V at both ends of the motor. If yes, replace the motor.
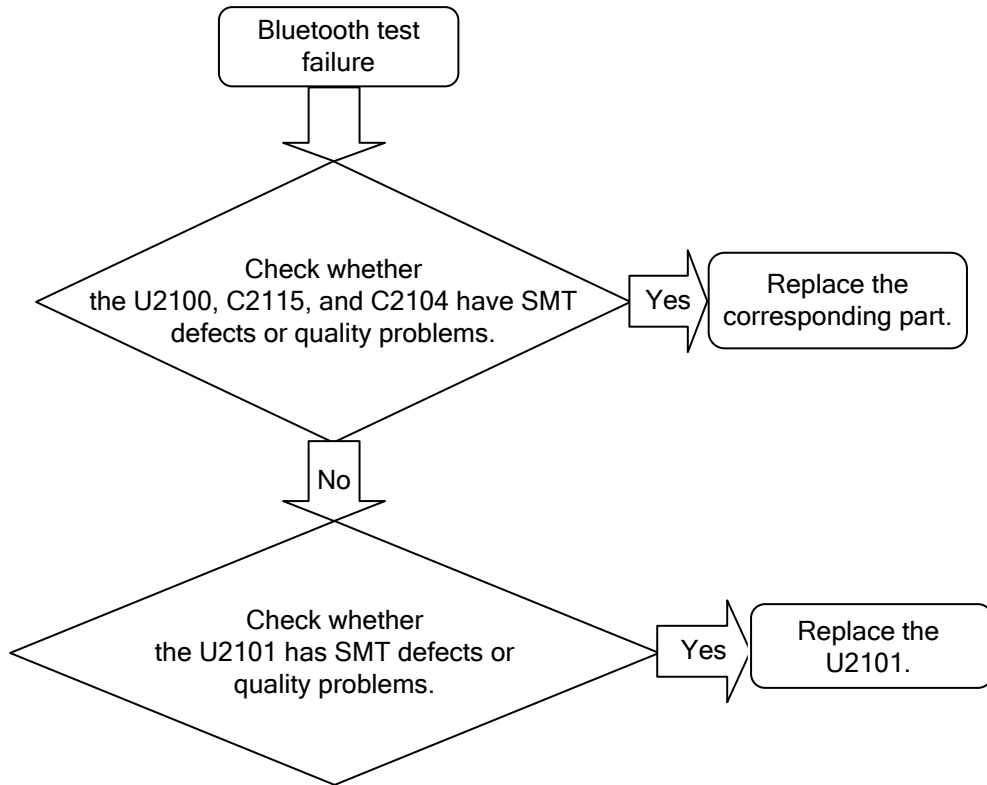
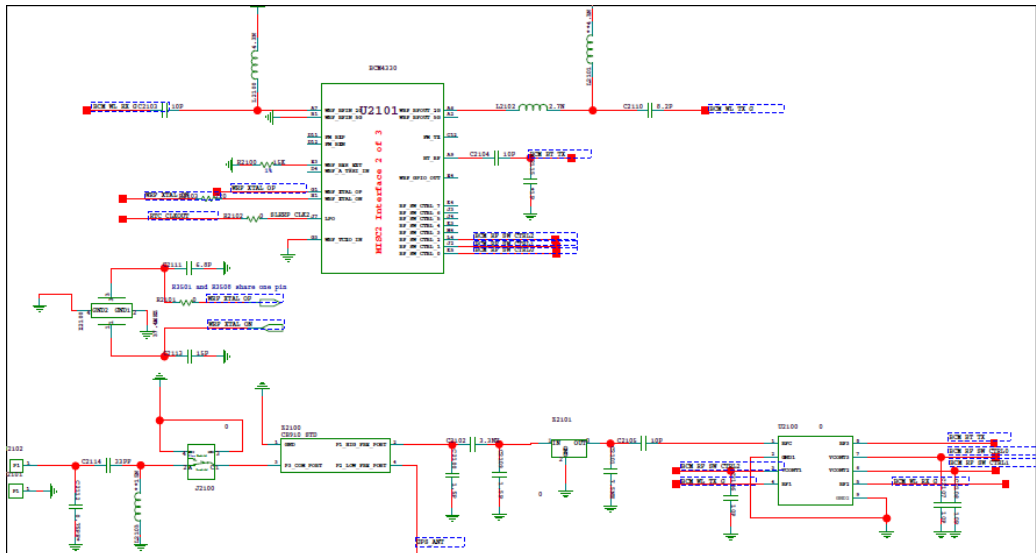The following figure shows the circuits of the motor.

9.12 Wi-Fi Failure

```
                         ┌──────────────────┐
                         │  Wi-Fi test failure │
                         └──────────────────┘
                                  │
                                  ▼
                      ◇ Check whether
                        the X2100 has SMT defects or ──── Yes ──▶ Replace the J2100.
                        quality problems. ◇
                                  │ No
                                  ▼
                      ◇ Check whether
                        the J2100 has SMT defects or ──── Yes ──▶ Replace the
                        quality problems. ◇                       U2101.
                                  │ No
                                  ▼
                      ◇ Check whether
                        the Z2100, Z2101, C2100, C2102,
                        C2109, C2101, and C2105 have SMT ── Yes ──▶ Replace the
                        defects or quality problems. ◇             corresponding part.
                                  │ No
                                  ▼
                      ◇ Check whether
                        the U2100, C2110, L2101, L2102, C2103,
                        and L2100 have SMT defects or ──── Yes ──▶ Replace the
                        quality problems. ◇                        corresponding part.
                                  │ No
                                  ▼
                      ◇ Check whether
                        the U2101 has SMT defects or ──── Yes ──▶ Replace the J2100.
                        quality problems. ◇
```
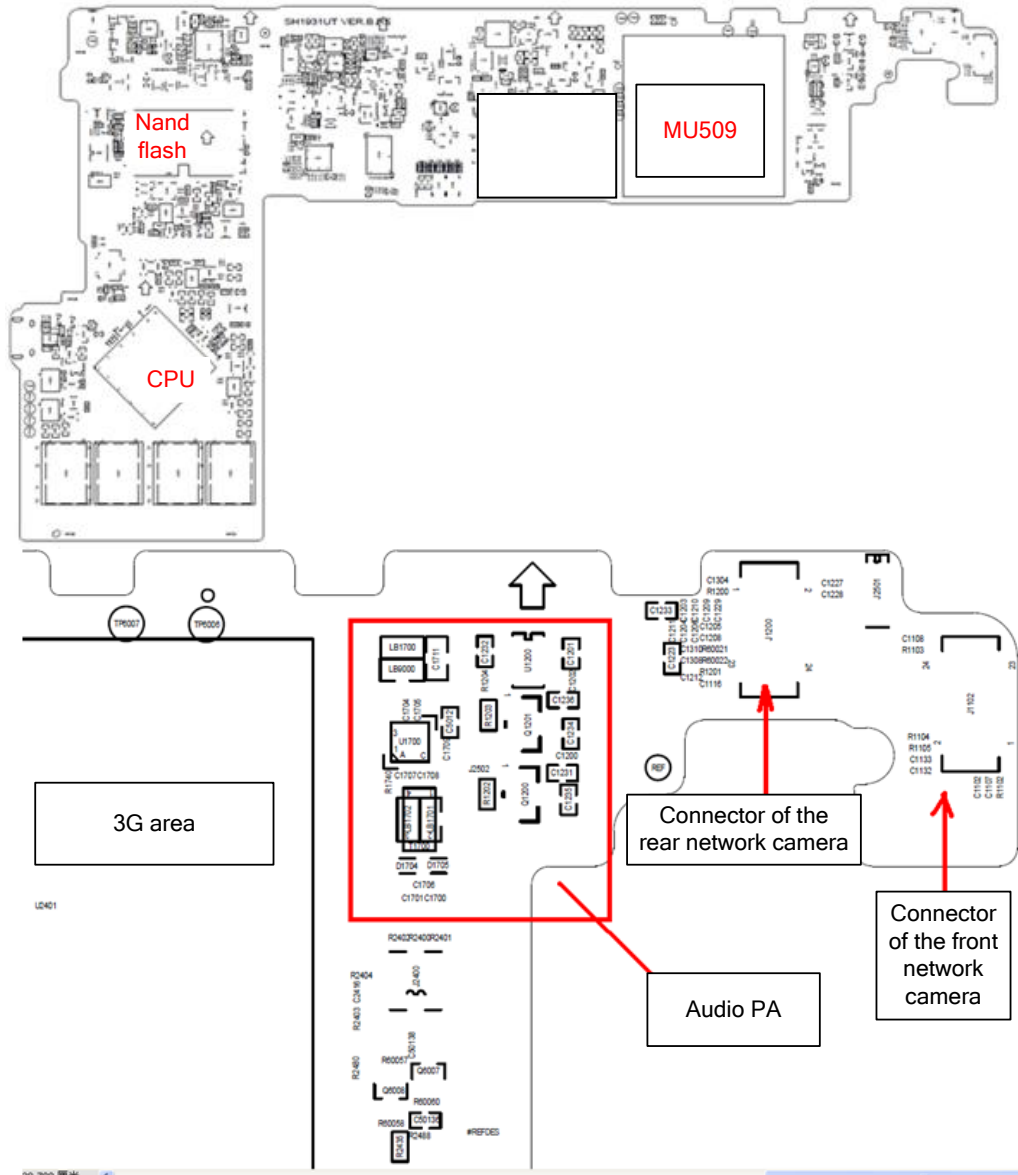
9.13 Bluetooth Failure

The following figure shows the Wi-Fi/Bluetooth principles.

9.14 GPS Failure

In terms of GNSS functions, MediaPad 7 Lite needs to support the GPS and be compatible with the GLONASS. The BCM47511 chip provides an external GPS LNA interface to increase the GPS reception performance. As shown in the following figure, the GPS/GLONASS signal received by the GPS antenna is filtered and then amplified by the LNA. The SAW then sends the amplified signal to the BCM47511 chip for processing.

The following figure shows the principles of GPS reception.

```
                        ┌─────────────────┐
                        │  GPS test failure │
                        └─────────────────┘
                                 │
                                 ▼
              ◇ Check whether                    ┌──────────────┐
              ◇ the TCXO2300 has SMT detects or  │ Replace the  │
              ◇ quality problems.        ── Yes ▷│ TCXO2300.    │
                                                 └──────────────┘
                                 │ No
                                 ▼
              ◇ Check whether
              ◇ the z2100, L2304, C2310, L2305, R2306, Z2300,    ┌──────────────┐
              ◇ L2300, L2306, U2301, C2309, L2307, Z2301, C2316, │ Replace the  │
              ◇ C2311, and L2301 have SMT defects or      Yes ▷ │ corresponding part. │
              ◇ quality problems.                                └──────────────┘
                                 │ No
                                 ▼
              ◇ Check whether                    ┌──────────────┐
              ◇ the U2300 has SMT defects or     │ Replace the  │
              ◇ quality problems.        ── Yes ▷│ TCXO2300.    │
                                                 └──────────────┘
```

The following figure shows the GPS and Wi-Fi/Bluetooth silkscreen.

9.15 Position of the SH1931UT in MediaPad 7 Lite

1931UT VER.B RF

Top side

MU509 are

GPS area

Wi-Fi area

SH1931UT VER.B RF

Top side

Nand Flash area

CPU area

Areas for 4 DDR3s

Position of the SH1931UT (on the bottom side)

Bottom side

Overall schematic drawing

Bottom side

Bottom side

MicroSD card holder

SIM card holder

Bottom side

Bottom side
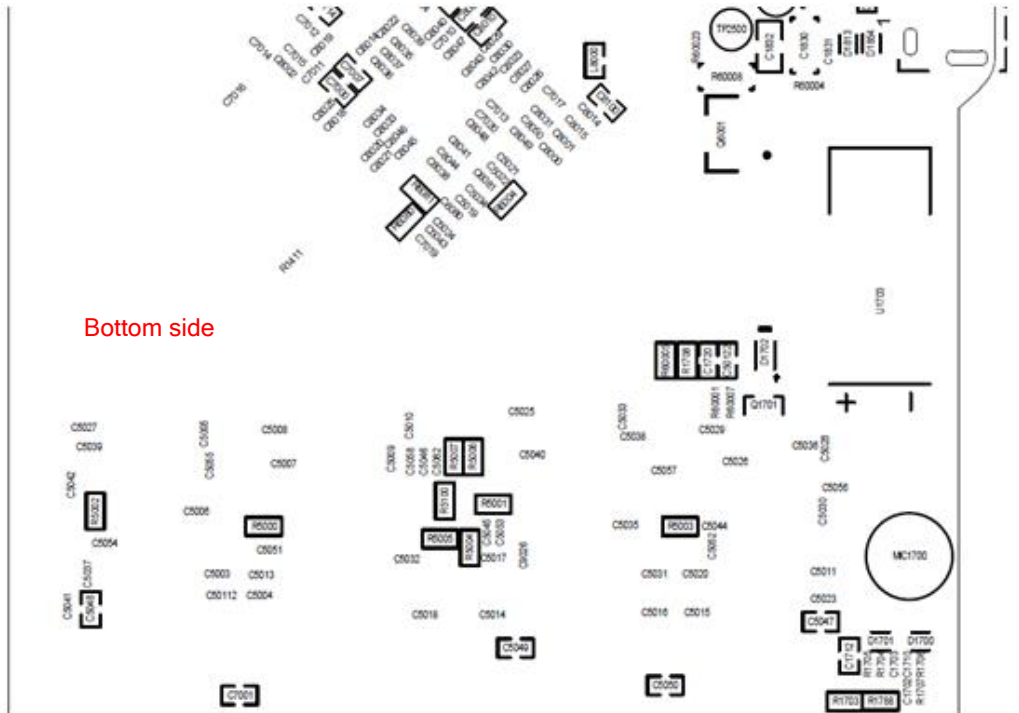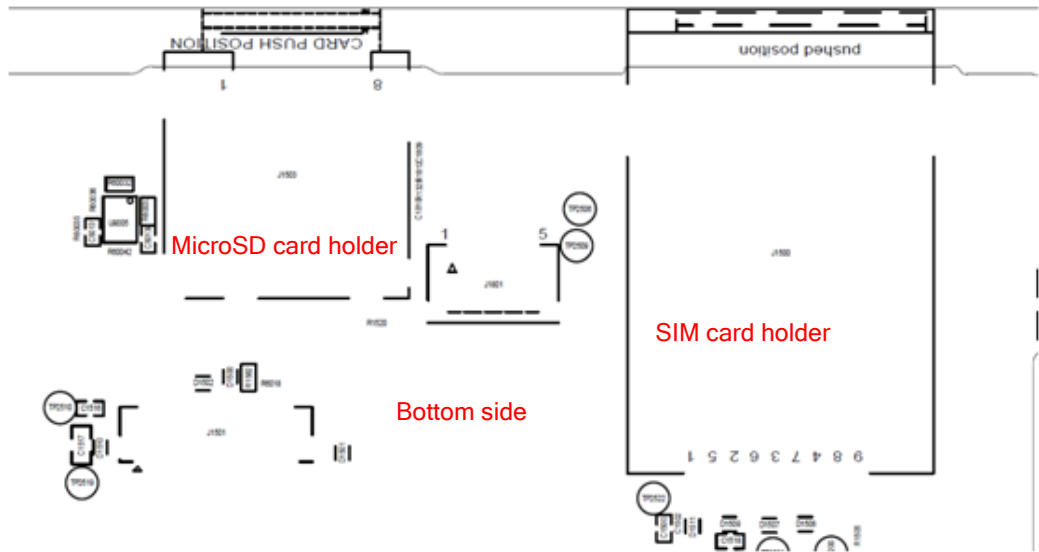
10 Solder Points on the PCB and BGA Chip

The red part indicates the null PIN, the green part indicates the ground, and the blue part indicates the signal solder point.

Top side

The red part indicates the null PIN, the green part indicates the ground, and the blue part indicates the signal solder point.

The red part indicates the null PIN, the green part indicates the ground, and the blue part indicates the signal solder point.

CPU

The red part indicates the null PIN, the green part indicates the ground, and the blue part indicates the signal solder point.

Bottom side

29.700 x 20.908 厘米

11 Function Tests

11.1 Preparations

- Upgrade MediaPad 7 Lite normally.
- Prepare an empty microSD card without write protection.
- Prepare an SIM card.
- Prepare a gravity induction test clamp and place the test prototype on it.
- Prepare the Bluetooth AP and Wi-Fi AP.
- Prepare a USB OTG cable and a USB disk.
- Prepare an MHL cable (that is, MHL-to-HDMI cable). Only the 931WD supports the MHL function.

11.2 Delivery Software (Customized Software) Entering the MMI Test Mode

2. Enter numerals in the dialog box, for example, ()()2846579()().

()()2846579()()

sin	ln	7	8	9	÷	(
cos	log	4	5	6	×	)
tan	e	1	2	3	−	
π	^					=
!	√	0		.	+	

3. Tap the equal mark.

12:05

Testing

Tablet information

Battery information

Usage statistics

Wi-Fi information

4. Tap MMI test.

MMI Test

Project Menu Act

Bluetooth Test Mode

12:05
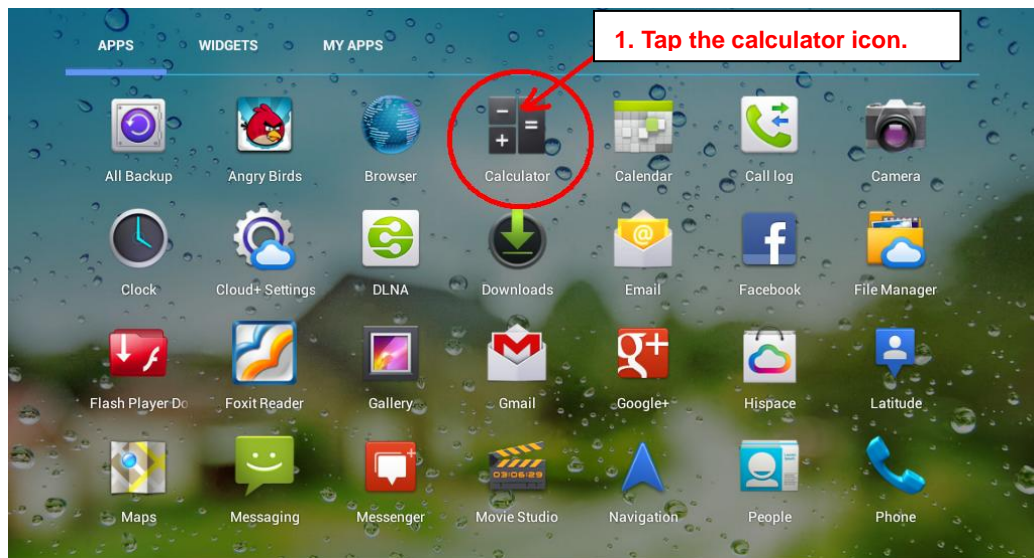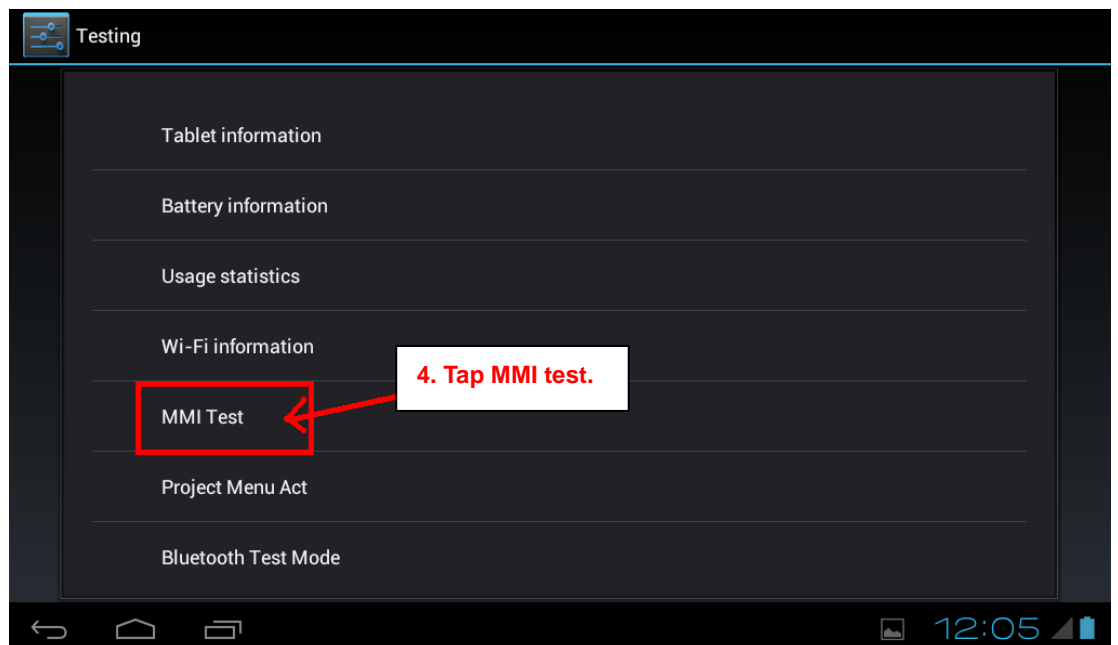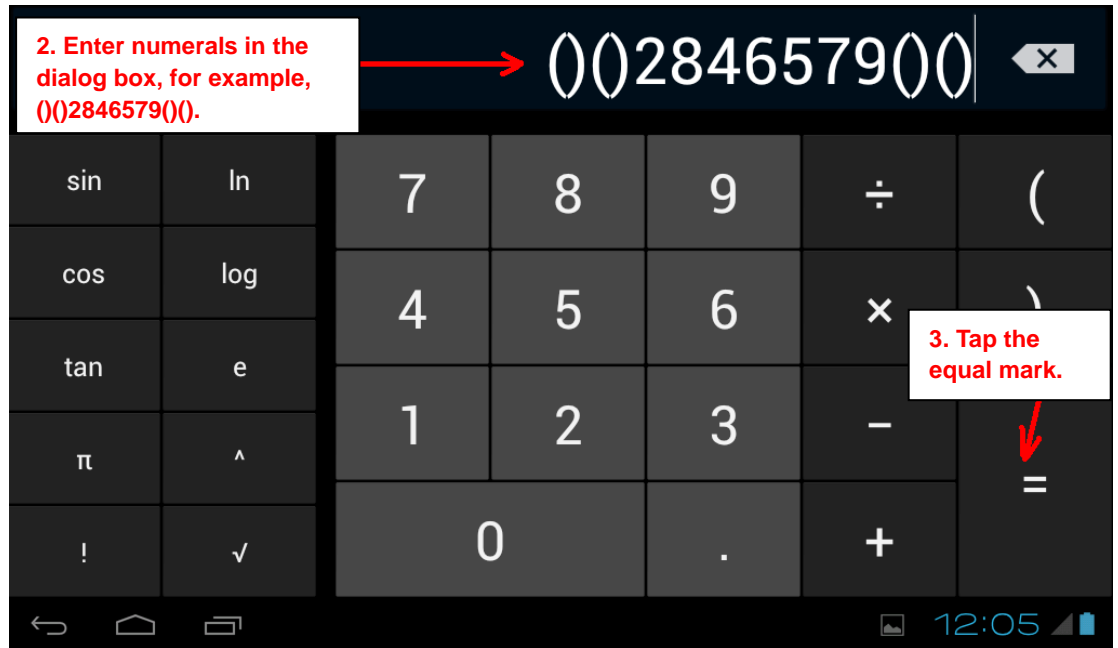
11.3 Production Software Entering the MMI Test Mode

After MediaPad 7 Lite is normally powered on, the **MMI Test** icon is available in the main window. Tap this icon to access the **MMI Test** page.
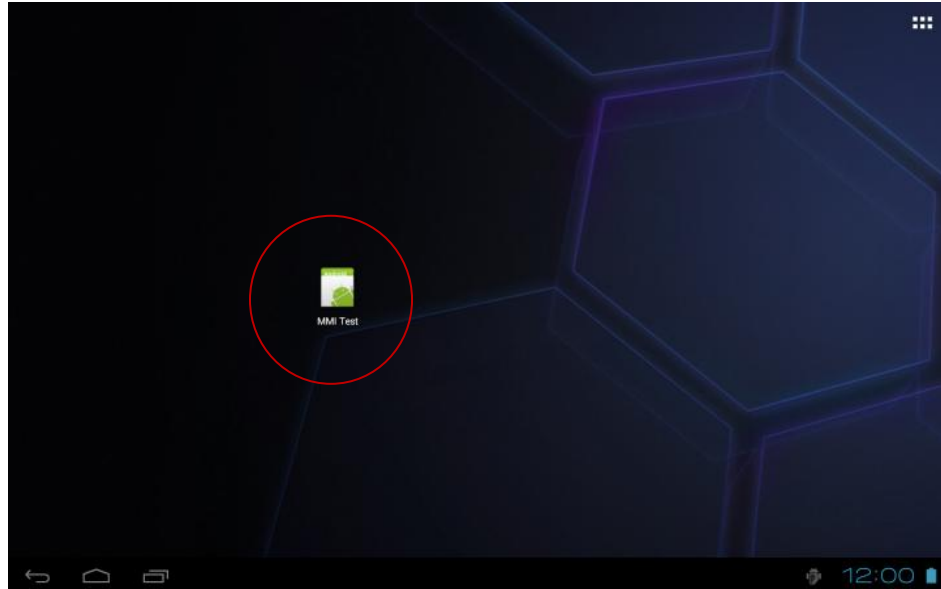
11.4 MMI Test

📖 **NOTE**

The results of some test items must be manually confirmed. That is, you must select the test result after these test items are tested. The results of other test items are automatically confirmed by the software. The meanings of test results are as follows:

- [Success]: The test item passes the test.
- [Fail]: The test item does not pass the test.

As shown in the following figure, the **Success** and **Fail** buttons are available.
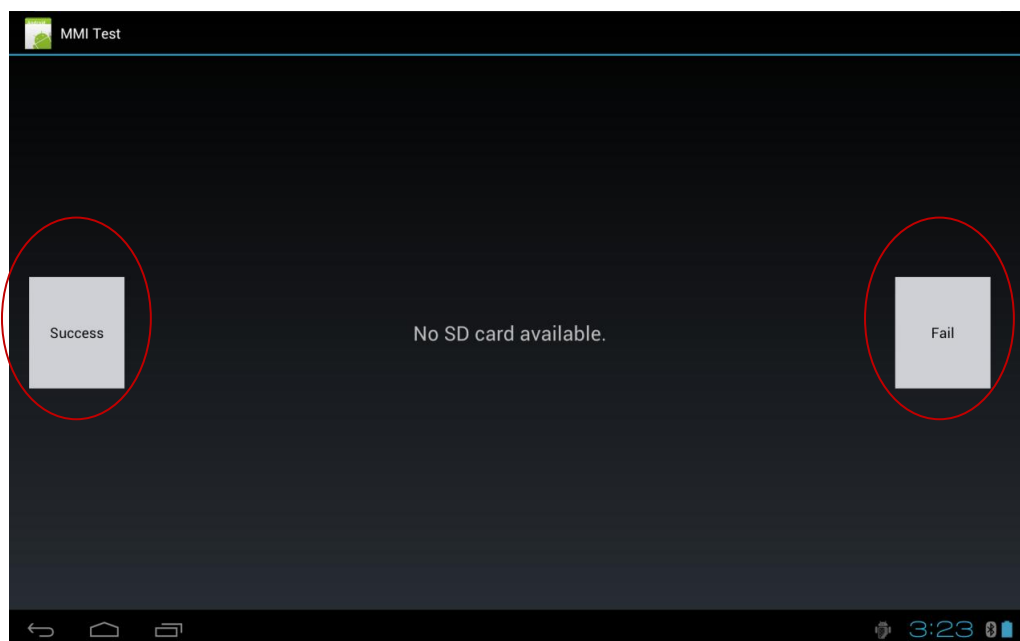
In an MMI test, the system checks whether the charge level is low and whether the PT procedure is finished. If the charge level is lower than 20%, a dialog box is displayed, indicating that the program will be forcibly disabled. If the PT procedure is not finished, a dialog box is displayed, prompting you to continue the current test.

Make full preparations before an MMI test, which can increase the test efficiency.

MicroSD Card Test

On the microSD card test page, the system automatically detects the microSD card. If the microSD card is not detected, the message "NO SD card available" is displayed. If the microSD card is detected, the next test item is automatically executed.

Figure 11-1 Page displayed when the microSD card is detected
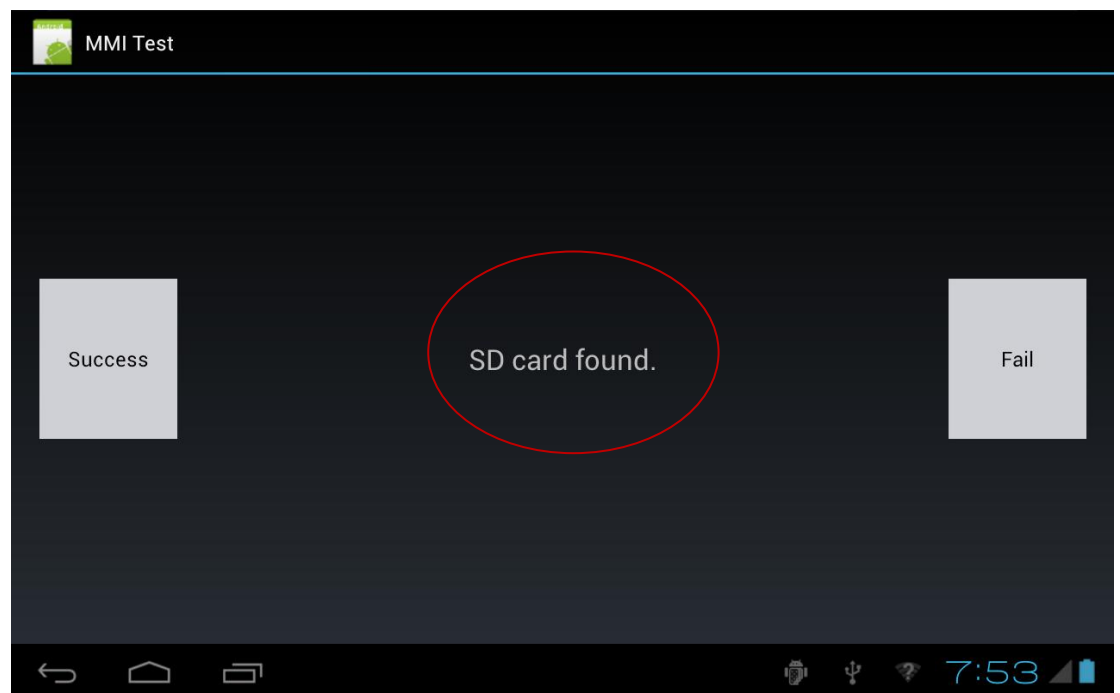
SIM Card Test

In an SIM card test, the system automatically detects the SIM card. If the SIM card is not detected, the message "NO SIM card available" is displayed, as shown in the following figure.

If the SIM card is detected, the next test item is automatically executed.

Figure 11-2 Page displayed when the SIM card is not detected
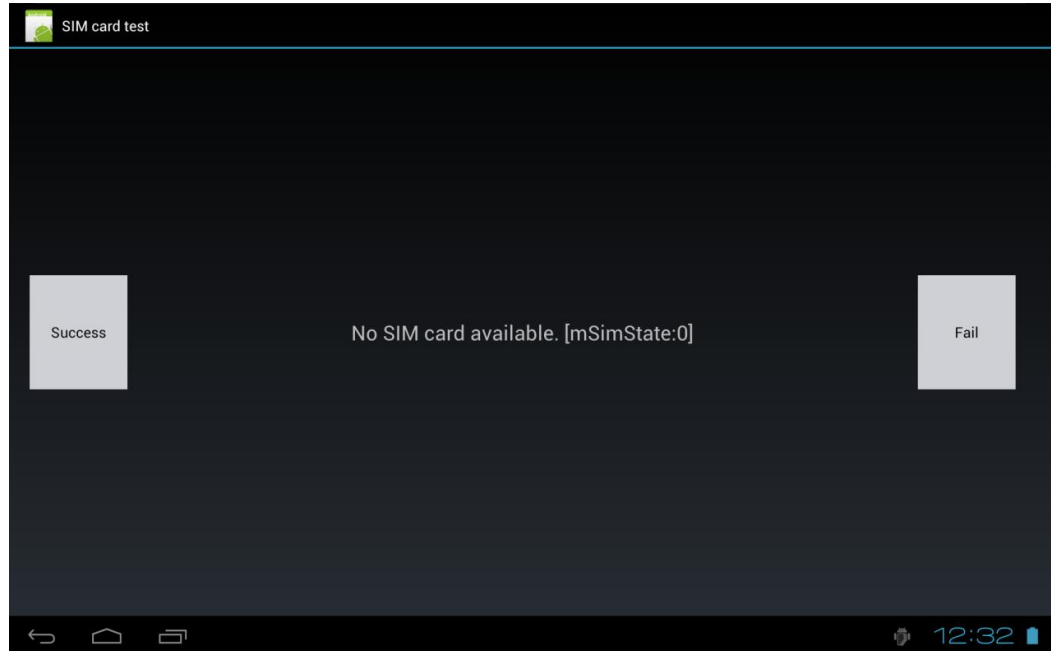
Bluetooth Test

In a Bluetooth test, the system automatically searches for the nearby Bluetooth devices. Fifteen seconds later, a window listing the searched Bluetooth devices is displayed, and the next test item is executed. If no Bluetooth devices are available nearby, the system displays "No Bluetooth devices found. Search again?" To search for Bluetooth devices again, tap OK; otherwise, tap **Cancel**.
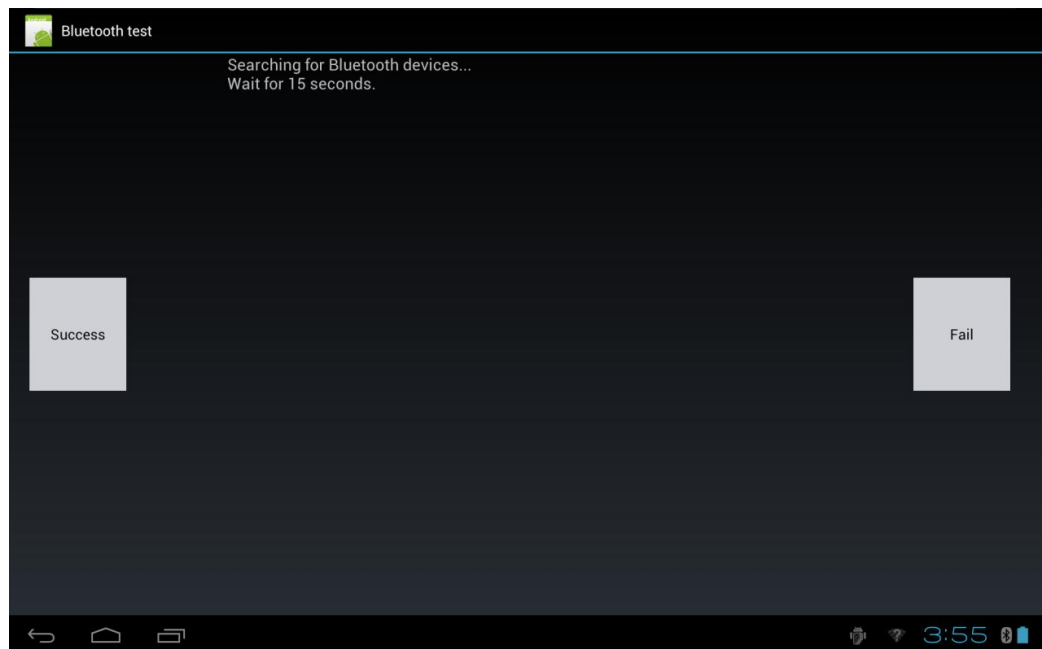
Figure 11-3 Page displayed when no Bluetooth devices are found nearby
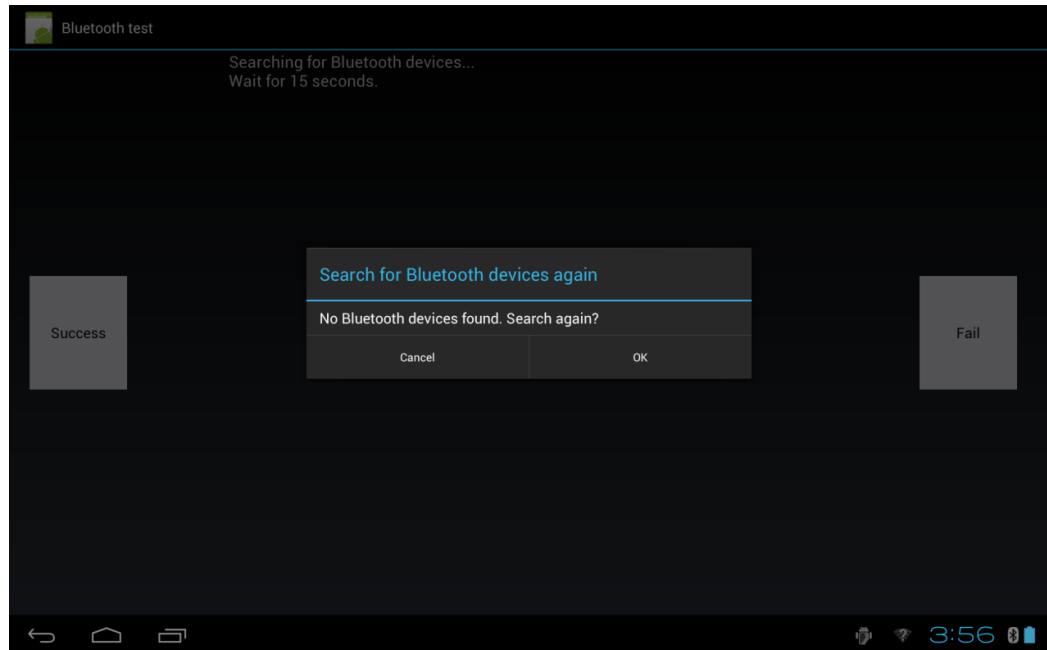
Wi-Fi Test

In a Wi-Fi test, the system first searches for Wi-Fi hot spots. The searched Wi-Fi hotspots are displayed on the screen. The program automatically checks whether the Wi-Fi test is successful. If the Wi-Fi test is successful, the program automatically executes the next test item.
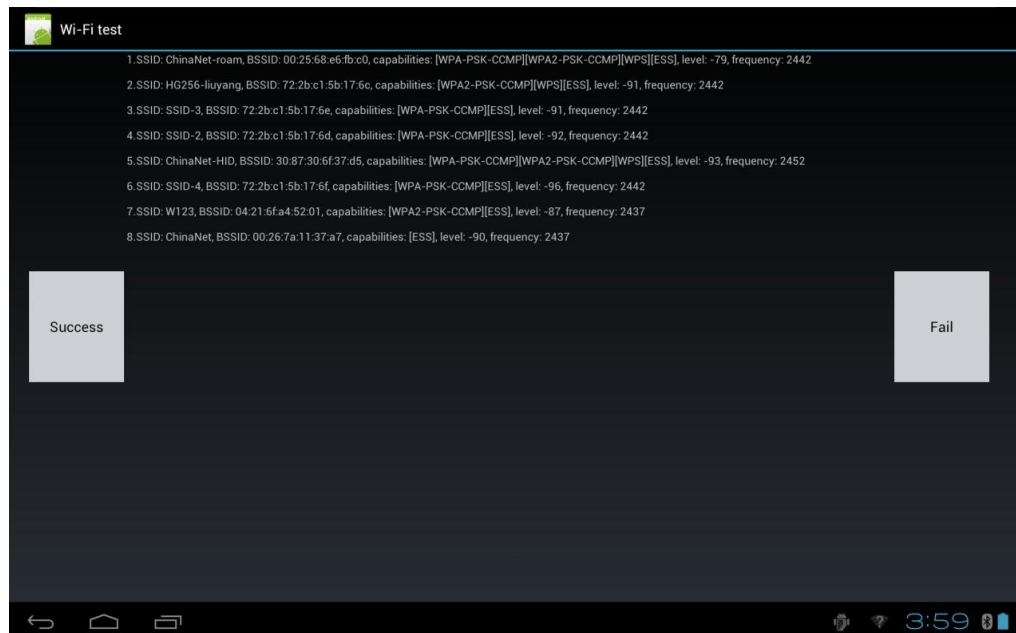
Coulometer Test

The system automatically tests whether the coulometer is normal. If the test is successful, the system automatically executes the next test item.
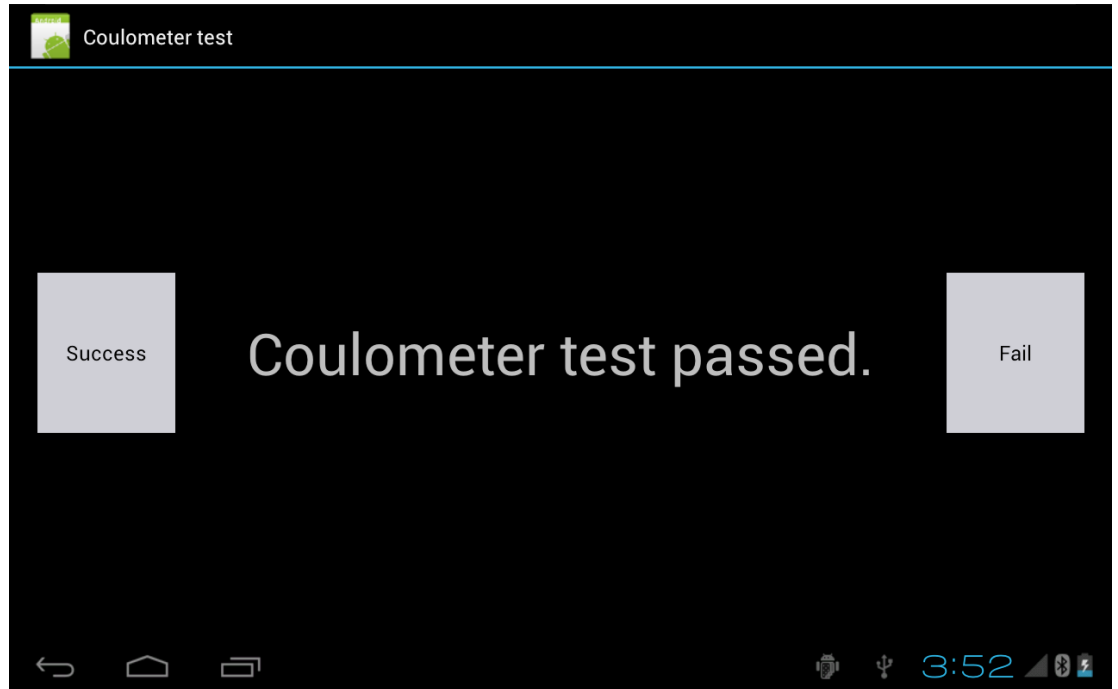
Gravity Sensor Test

In a gravity test, the operator needs to place MediaPad 7 Lite on the clamp. The system automatically tests the gravity. If the test results on the X, Y, and Z axes are all about 45 degrees, the test is successful. Otherwise, the test failed. If the test is successful, the next test is executed. If the test failed, the current window is retained.

USB Host Test

Before a USB host test, connect the transfer cable of the USB disk and insert the USB disk. If the test is successful, the system automatically executes the next test item. Otherwise, the current window is retained, displaying a test failure message.

Keypad Test

In a keypad test, three keys are displayed on the screen, as shown in the following figure. The operator needs to press these three keys on MediaPad 7 Lite. If the test is successful, these keys are displayed in blue. Otherwise, the test failed.

📖 **NOTE**

The **back** and **home** keys in this window are invalid.

Figure 11-4 Three keys displayed in blue, test succeeded
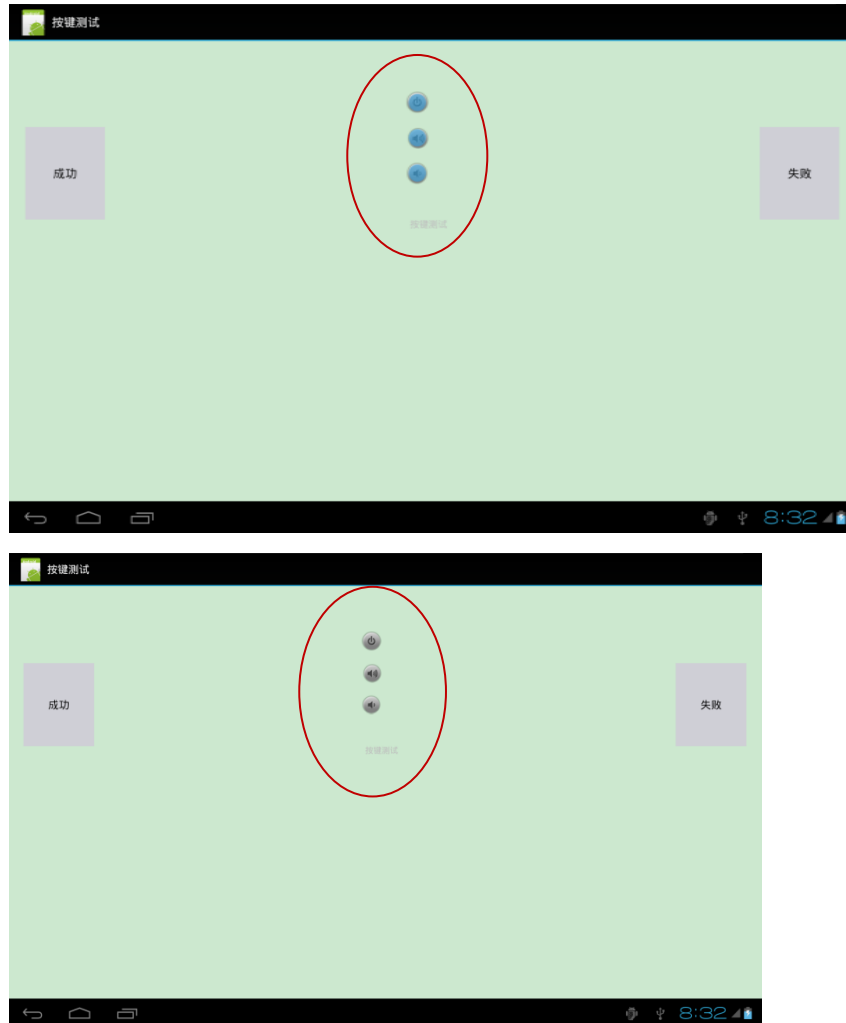
Capacitive Touchscreen Test

In a touchscreen test, tap and slide along the blue line. If the blue line becomes a red line, the test is successful. Otherwise, the test failed.

Figure 11-5 Blue line turned into red line, test succeeded
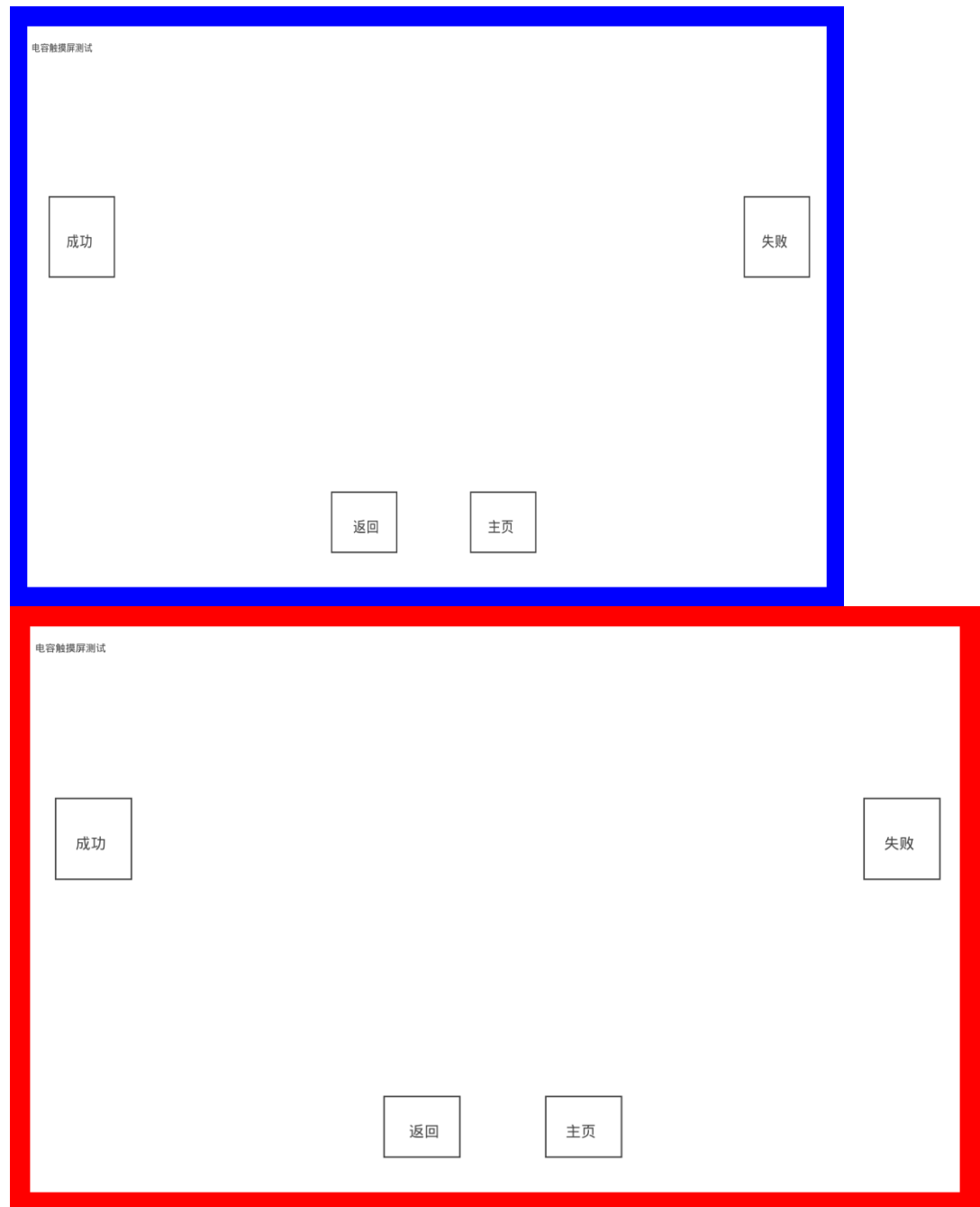
LCD Test

In an LCD test, press **Success** in turn. Check whether bad spots (light and dark spots) exist on the displayed graphics. If no bad spots exist, select **Success**. Otherwise, select **Fail**.
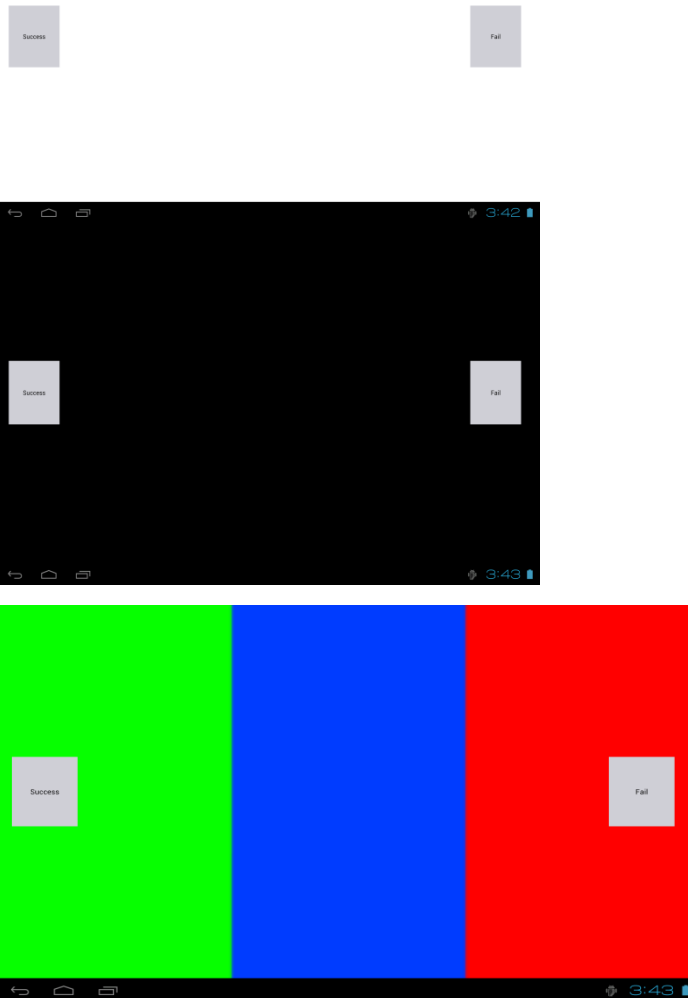
LEAK Test

In an LEAK test, the entire screen is black. Tap the screen. The result confirmation page is displayed. If the entire screen is black, the test is successful. Otherwise, the test failed.
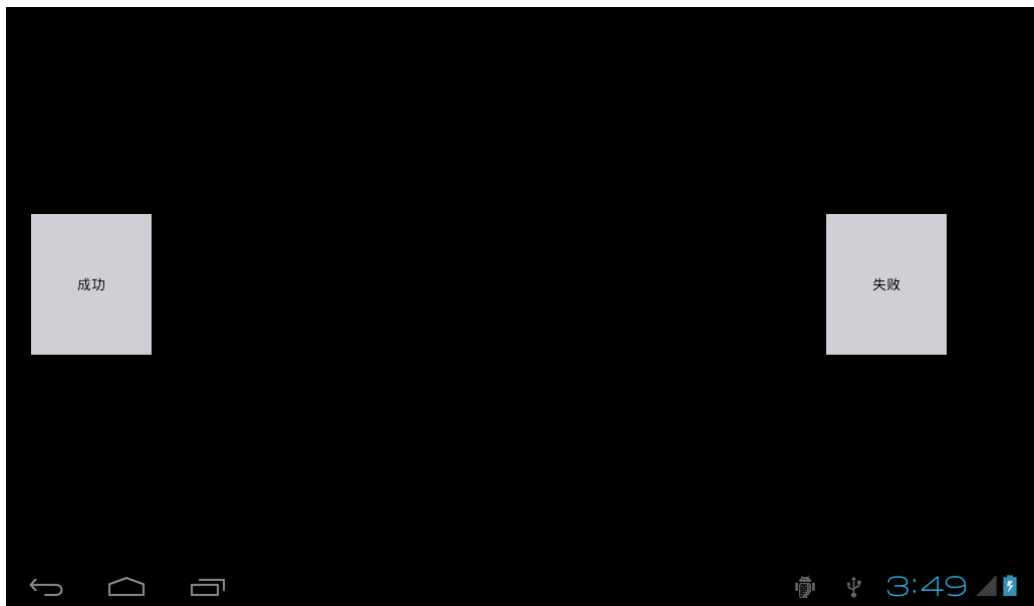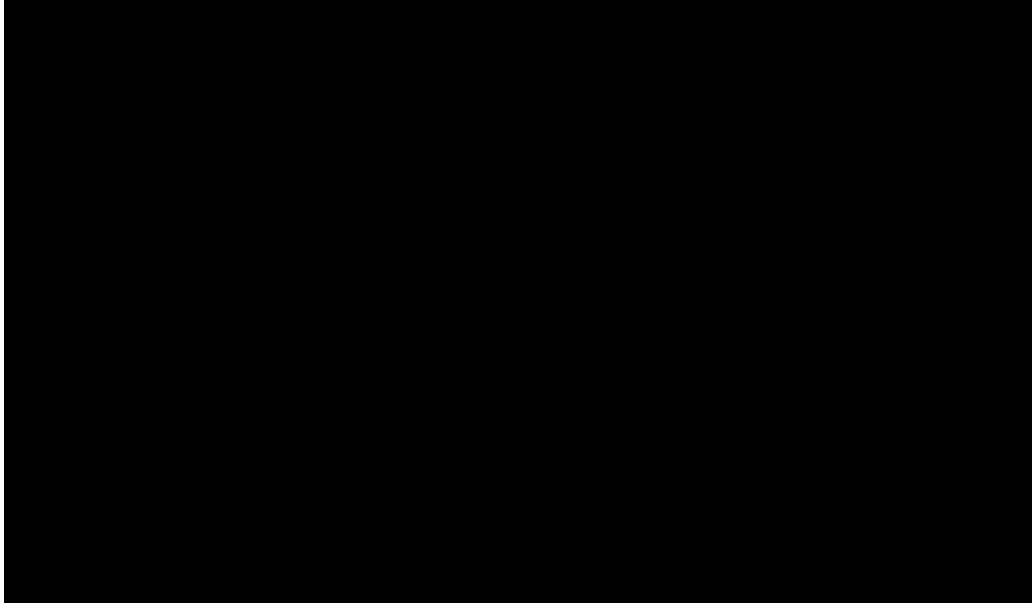
LCD Backlight Test

In an LCD backlight test, the system automatically changes the backlight. If the system normally changes the backlight, the test is successful. Otherwise, the test failed.

Front Network Camera Test

In a front network camera test, the pictures taken by the front network camera are displayed on the screen. If the pictures are normally displayed, the test is successful. Otherwise, the test failed.
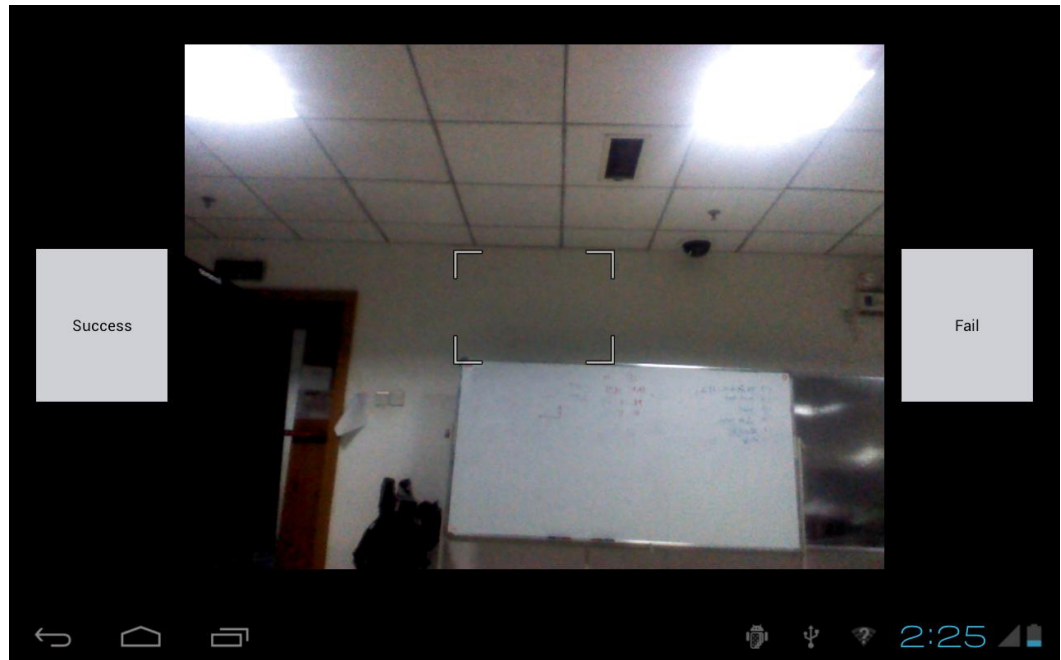
Rear Network Camera Test

In a rear network camera test, the pictures taken by the rear network camera are displayed on the screen. If the pictures are normally displayed, the test is successful. Otherwise, the test failed.
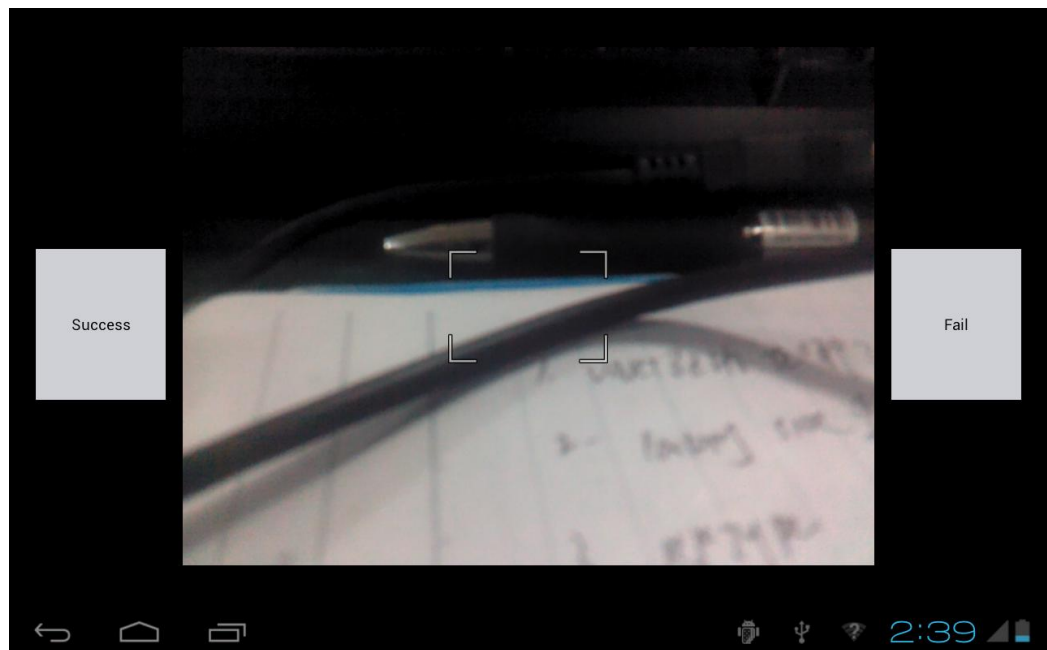
Speaker Test

In a speaker test, a song is played. If audio is normally output, the test is successful. Otherwise, the test failed.


Speaker Loopback Testing

In a recording test, tap **Record** on the screen. Three seconds later, tap **Play** to play the recorded audio. If the recorded audio is normal, the test is successful. Otherwise, the test failed.
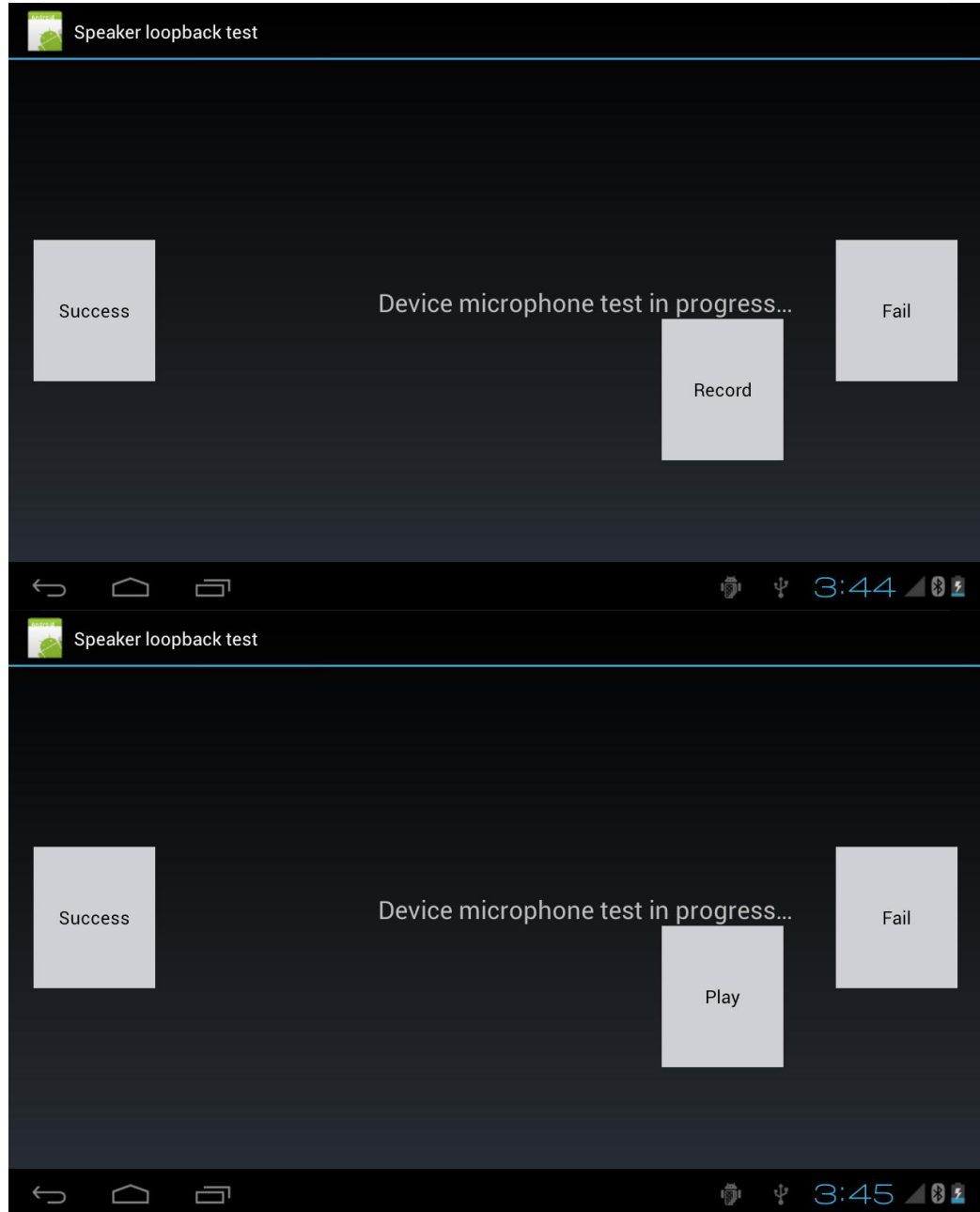
Headset Loopback Test

In a headset recording test, insert the headset and tap **Record** to start recording. After the recording is finished, tap **Play** to play the recorded audio and check whether the recorded audio is normal.
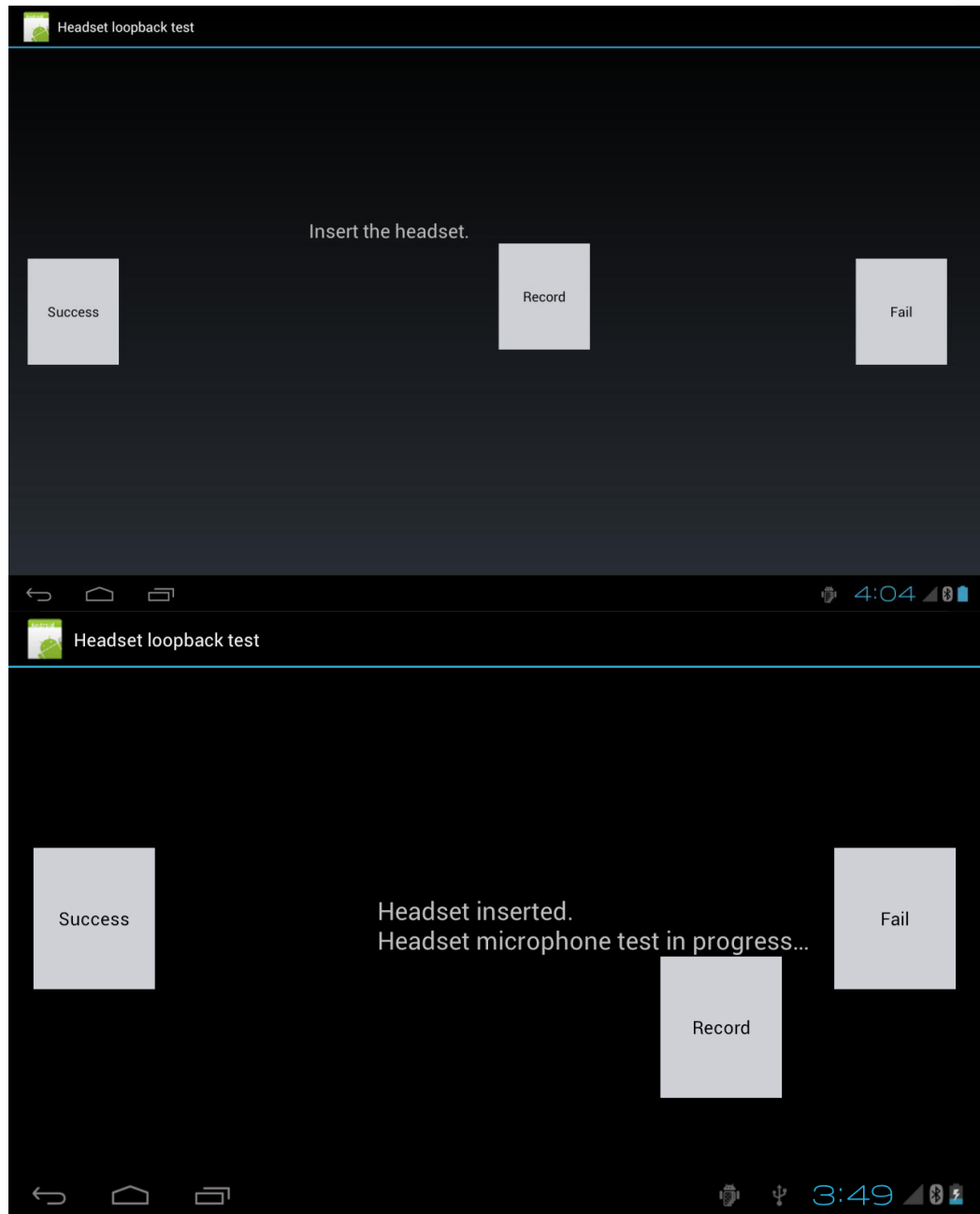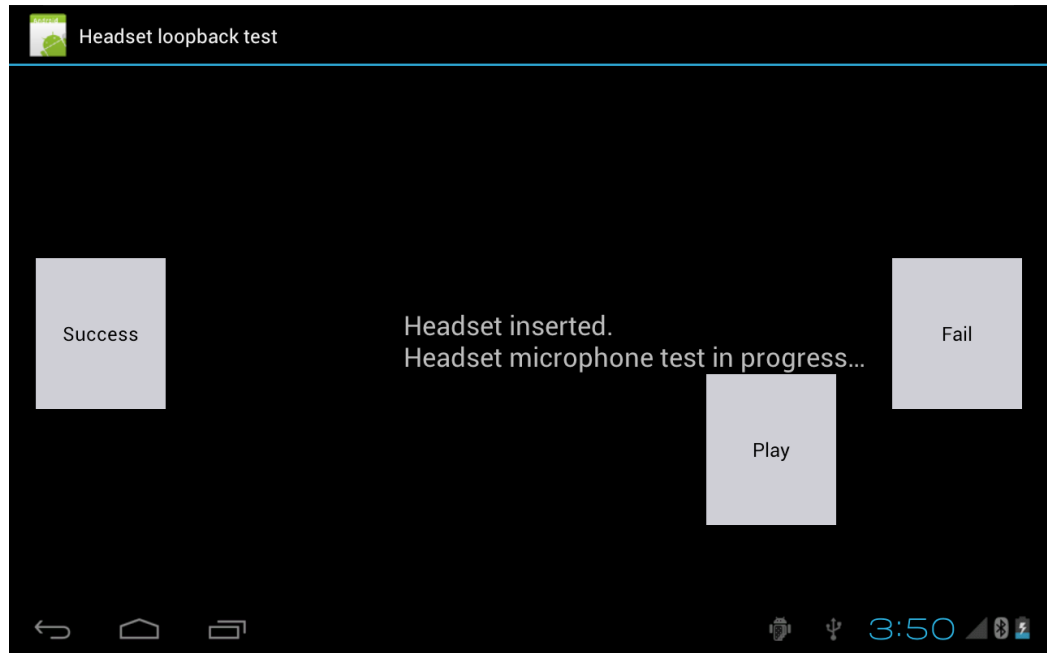
Headset Test

In a headset test, songs are played. Insert the headset and check whether the sound channels are normal. If the sound channels are normal, the test is successful. Otherwise, the test failed.
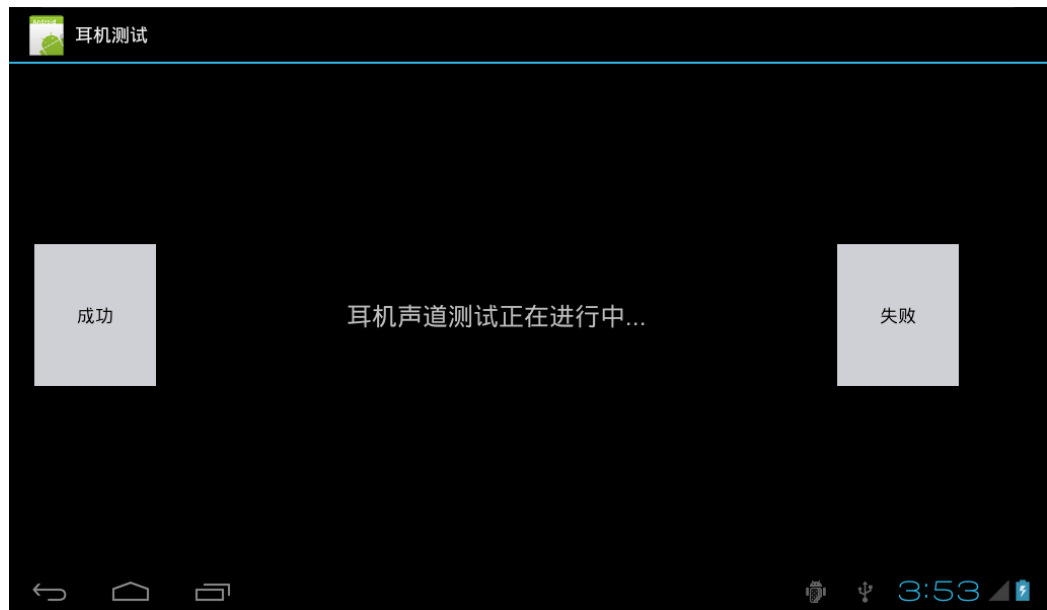

Headset Insertion/Removal Test

Perform headset insertion/removal tests. If the headset is not inserted, **in**, **out,** and the circle in the middle are displayed in red. Insert the headset, press the linear-controlled button of the headset, and then remove the headset. If **in**, **out**, and the circle in the middle are displayed in blue, the test is successful and the next test item is executed. Otherwise, the test failed.
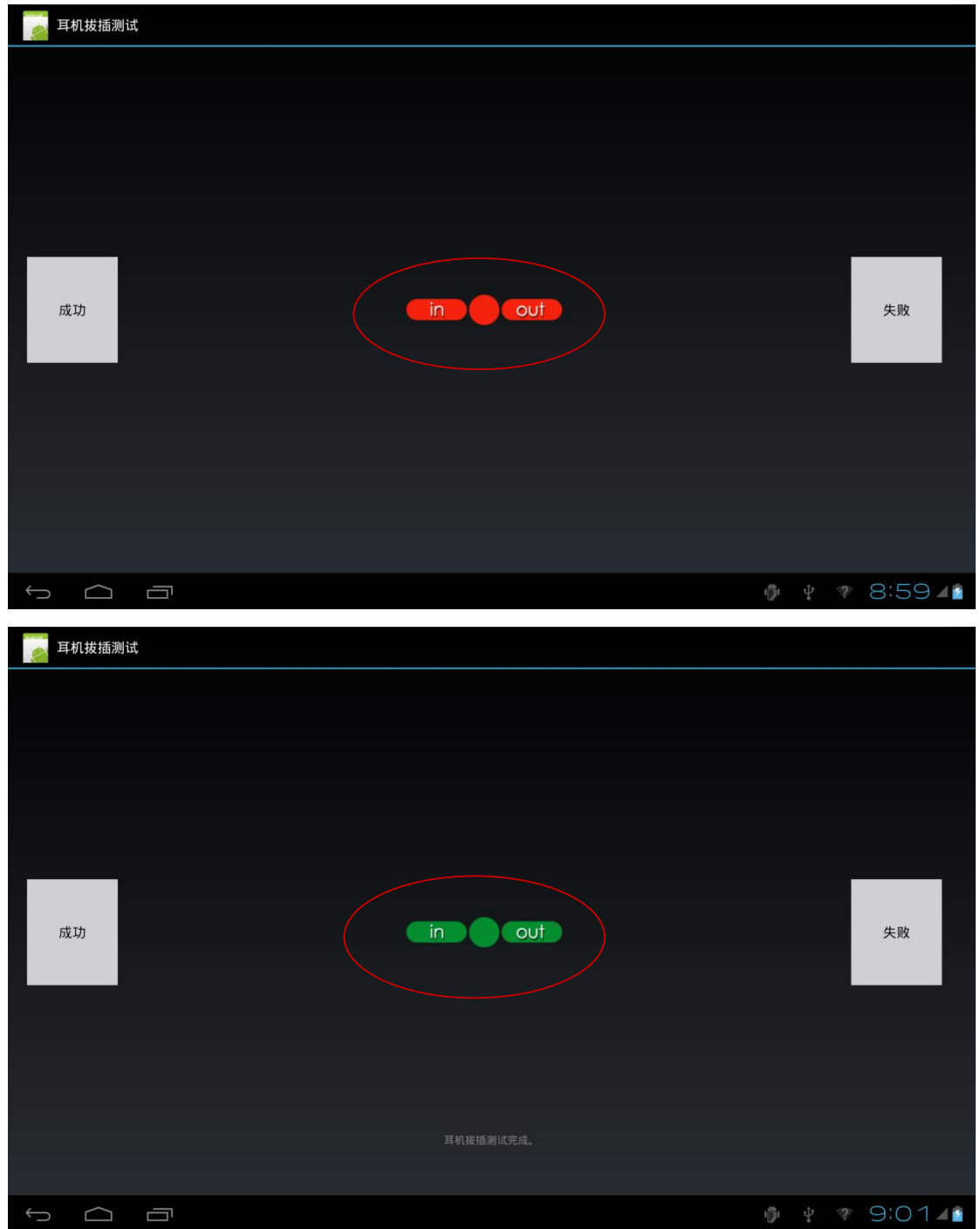
Motor Test

In a motor test, MediaPad 7 Lite starts to vibrate. Place your hand on MediaPad 7 Lite. If you feel the vibration, the test is successful. Otherwise, the test failed.
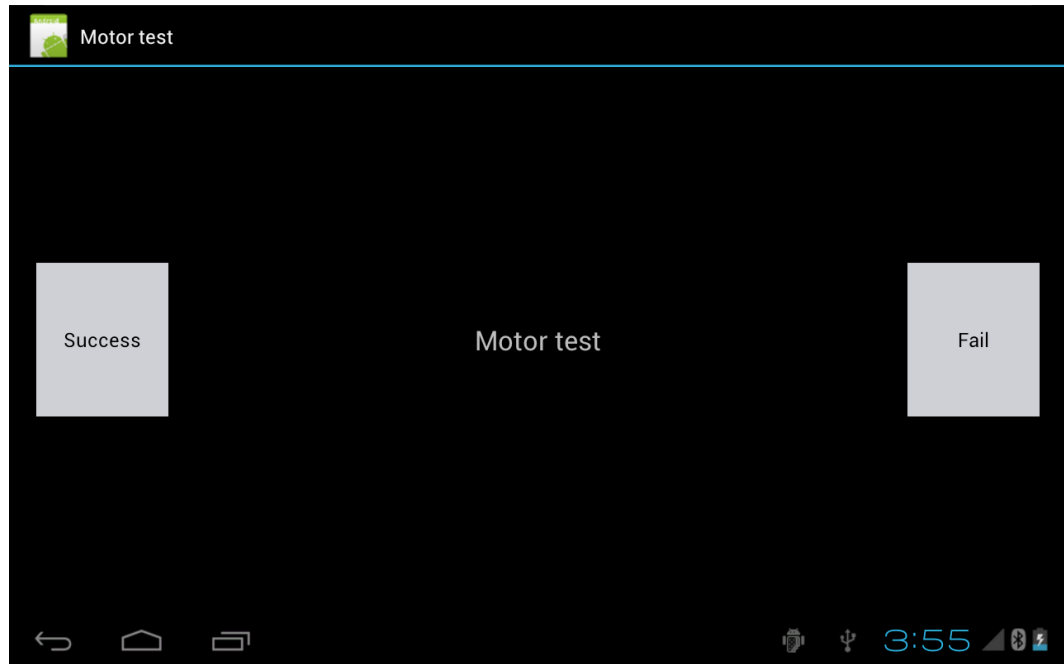
HDMI Test

The HDMI test is required only for 931WD. In an HDMI test, audios are played. The cable for transferring to the HDMI is connected to the TV on MediaPad 7 Lite. Check whether the images and audio data output from the TV are normal. If yes, the test is successful. Otherwise, the test failed.
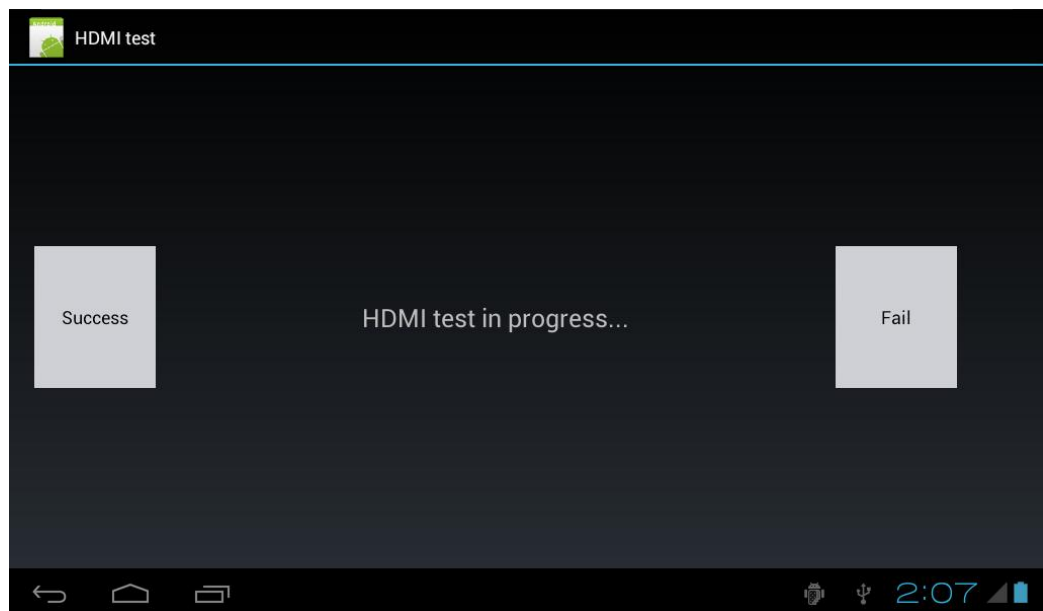
Test Results

After all test items are finished, the failed test items are displayed. For 931WD, a button for entering the pedestal test is available in the upper right corner, as shown in the following figure.