C5110Maintenance Manual Basic Version

V1.0

Prepared by	Product Department Documentation Team	Date	2009-12-1
Reviewed by		Date	
Approved by		Date	

Huawei Technologies Co., Ltd.

Revision record

Date	Revision Version	Revision Cause	Section Number	Change Description	Author
2009-12-1	V1.0				Product Department Documentation Team

Contents

1 Product Introduction

1.1 Product Appearance

1.2 Product Feature

Item	Description
Technical standard	CDMA2000 1x
Frequency band	800MHz Uplink: 824-849MHz; Downlink: 869-894MHz
External interface	l Charge interface/data interface: 5pin Mini USB l Earphone interface:3.5mm l 6pin R-UIM card connector l Micro SD card interface (4G match)
Display	TFT LCD: 2.0 inch; 262k color; 320 × 240 pixel
Camera	0.3 million pixel camera
Battery	800 mAh Li-ion; Standby time: more than 200 h; Talk time: more than 240 minutes; (network dependent)
Charger	5V, 400mA

2 Maintenance Instructions

2.1 Document Application

This document provides instructions for maintenance of Huawei products. This manual is Huawei proprietary and is only permitted to be used by authorized service partners. Shall there be any mistakes found in this document, kindly contact our customer service personnel.

2.2 Maintenance Precautions

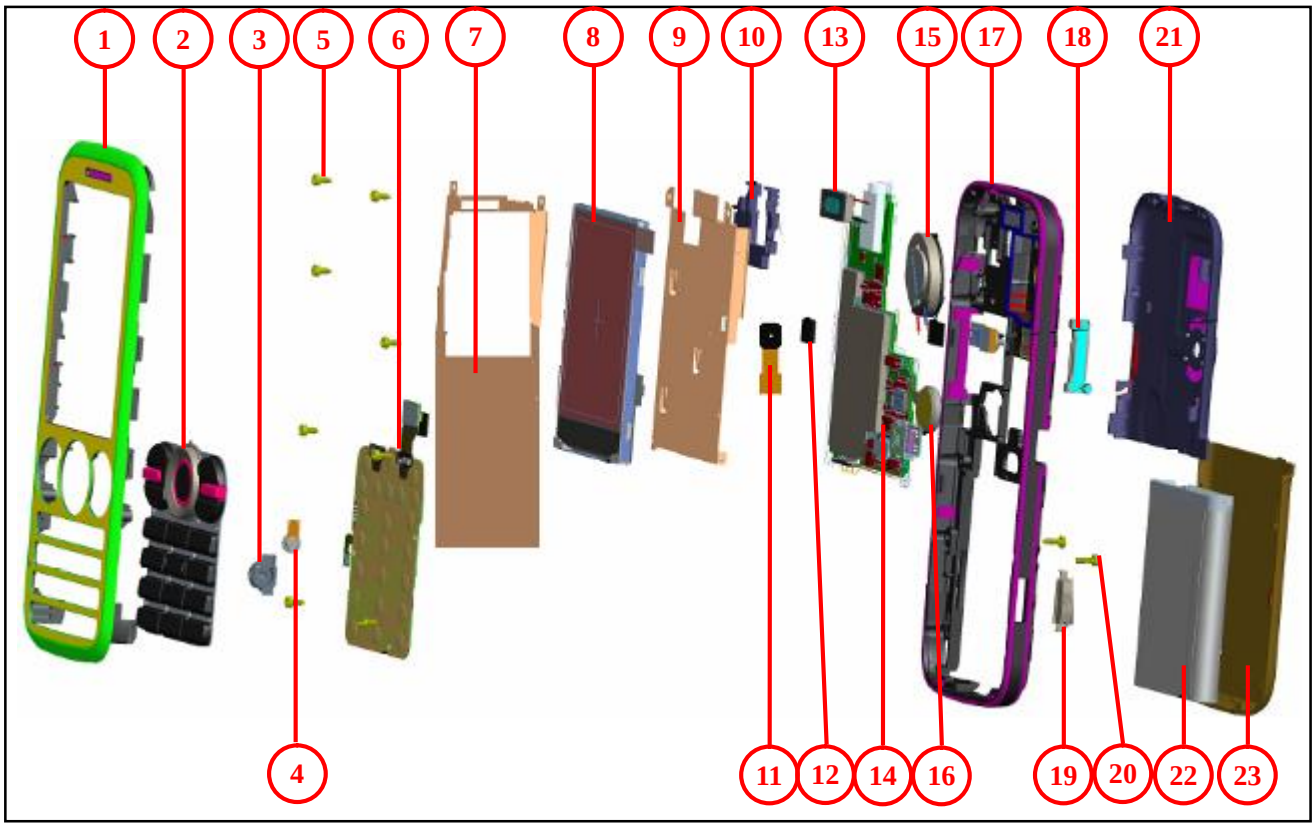
- Maintenance and calibration can be conducted only by qualified technical personnel.
- Always wear an antistatic wrist strap during operation in an antistatic room.
- Ensure that all the components, screws, and insulators are properly installed after maintenance or calibration. Ensure that all the cables are properly connected.
- Ensure that the soldering should comply with the environmental requirements and lead-free.

Electrostatic discharging is the major cause for the damage of sensitive electronic components. Each service site should attach great importance to the electrostatic discharging and strictly observe the antistatic measures described in this manual.

2.3 Obtaining Maintenance Information

For more related product knowledge and maintenance information, please visit Huawei website http://www.huaweidevice.com/worldwide/technicaIndex.do —> Documentation

3 Exploded View of the Whole Unit

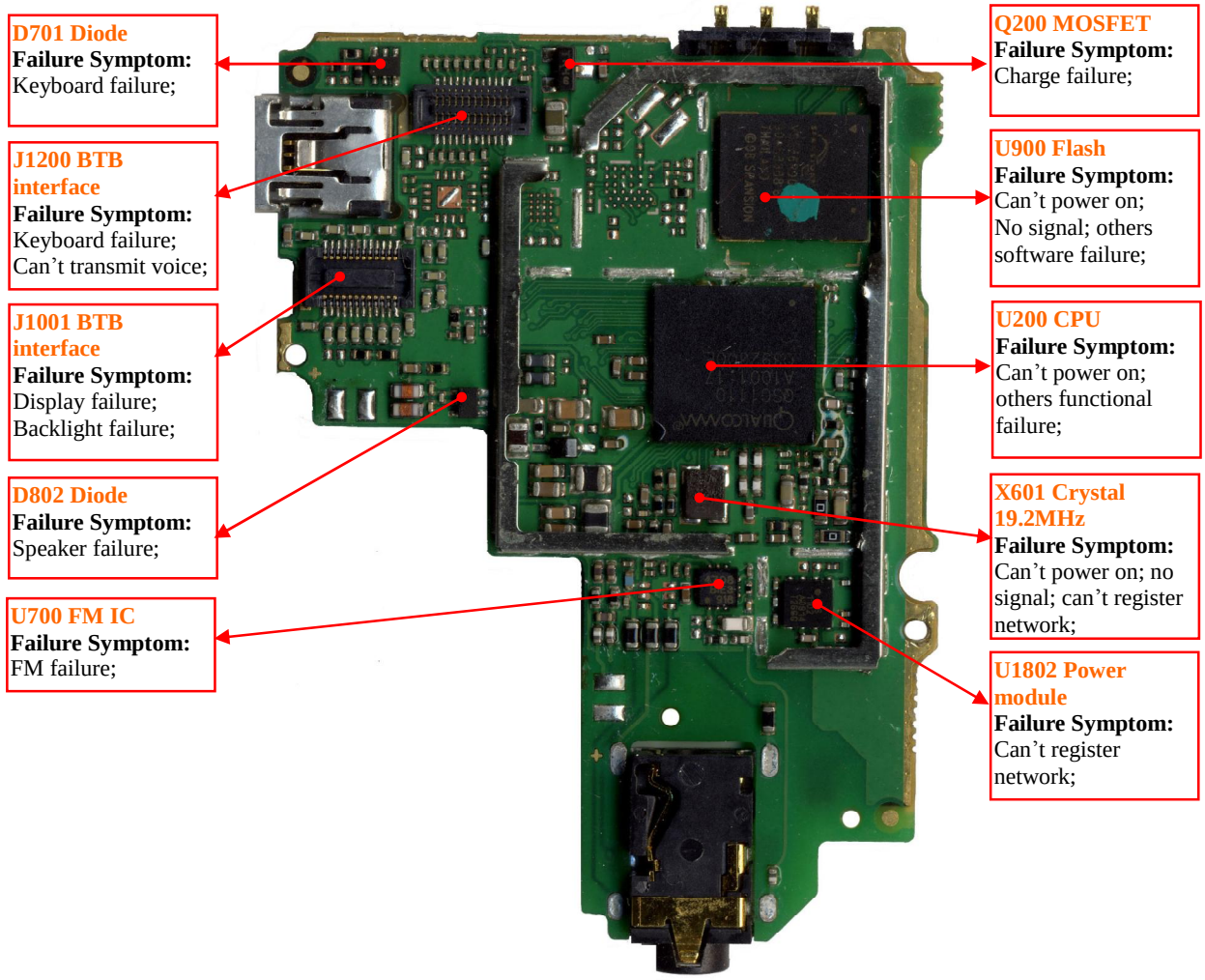


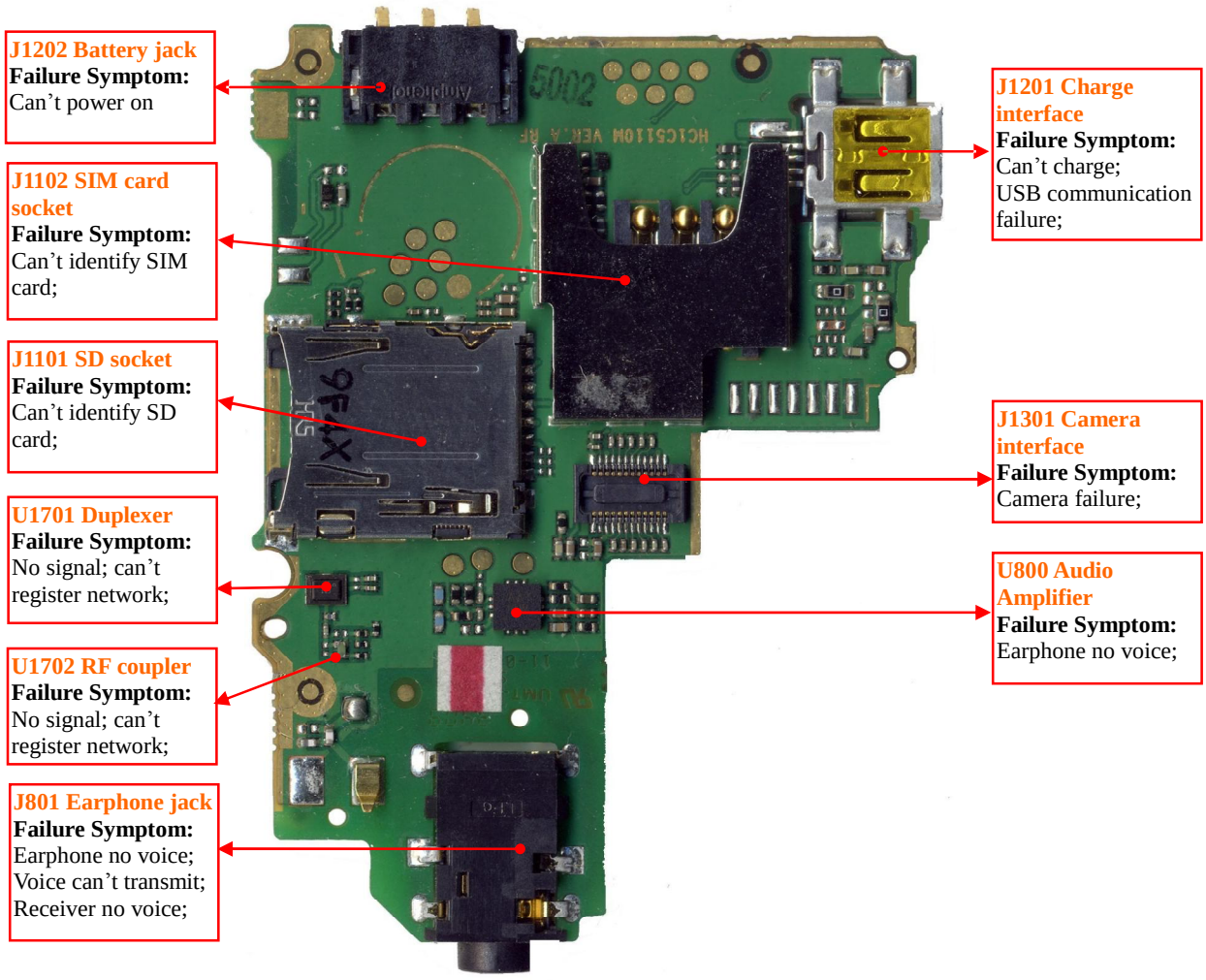
Exploded view BOM list. It is only for your information.

No.	Name	Quantity
1	Front cover	1
2	Keypad	1
3	Slipcover of MIC	1
4	MIC	1
5	Screw-ST1.4*2.8	8
6	Key board	1
7	Metal Shield ASM	1
8	LCD	1
9	Metal shield of LCD	1
10	PCB support frame	1
11	Camera	1

No.	Name	Quantity
12	Camera foam	1
13	Receiver	1
14	Main board	1
15	Speaker	1
16	Motor	1
17	Back cover	1
18	Volume key	1
19	Camera key	1
20	Screw-ST1.4*4.0 *D2.6 *0.8	2
21	Rear DECO Housing	1
22	Battery	1
23	Battery cover	1

4 Location of Components on the Main Board





BOM List is only reference for you. The lasted BOM information is in TCS or ITEM system, please check.

BOM	Name	Location
15040208	Transient Suppressing Diodes	D701,D802
14240184	Earphone connector-3.5mm-6Pin	J801
14240105	BTB connector-female-24Pin	J1001,J1301
14240094	Mini SD Receptacle-10pin	J1101
14240181	BTB connector-female	J1200
14240145	IO connector-Mini USB -5Pin	J1201
14240100	Battery jack-3PIN	J1202
15060150	MOSFET-P channel	Q200
43110047	Audio IC (FM Stereo Radio-SI4708)	U700
39080113	Audio amplifier	U800
13080037	Duplexer -TX:824~849MHz;RX:869~894MHz	U1701
47050047	RF coupler -823MHz~925MHz	U1702
47100181	Power module-824~849MHz-29.5dB(High Gain)/18dB(Low Gain)	U1802

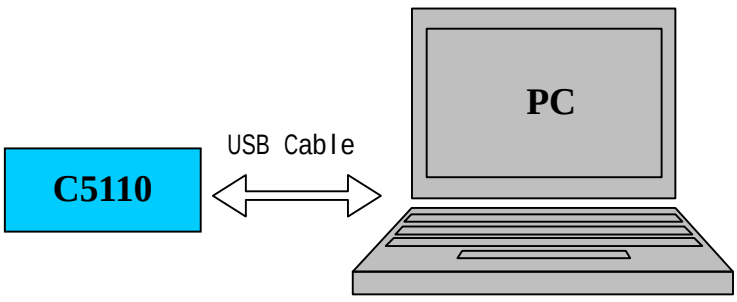
BOM	Name	Location
12020141	Crystal oscillator -19.2MHz-7pF-+/-10ppm-70ohm	X601
39200153	CDMA2000 1X Digital Processor QSC1110-3.0/3.6/4.2/5.0V	U200
40060216	FLASH-128Mbit Flash+64Mbit PSRAM-104MHz-128KB-1.8V	U900

5 Software Upgrade

5.1 Preparations Before Upgrade

Item	Contents	Remark
Update condition	PC	Windows2000 or Windows XP system CPU: Pentium II 233 RAM:64M Bytes Free Disk Memory:100M Bytes Port: COM port Display: At least 800×600, 256 colors
	Battery	The battery level shall be no less than two bars.
	PST tool / Mini SD card	PST: Use V2.28 or latest version to download Mini SD card: more than 128M.
	USB Cable	BOM:02450604
	USB driver	PC Suit-C08B134
File list	C5110 (SD card download folder) sd_update_manifest.dat(SD card) sd_update_delete_files.dat(SD card) C5110V100R001C58B406.xml(PST download)	This version name is only for example. Please download the latest version.
Upgrade mode	PST download SD card upgrade	Normal Download Force Download

5.2 Hardware Connecting



5.3 Upgrade Procedure

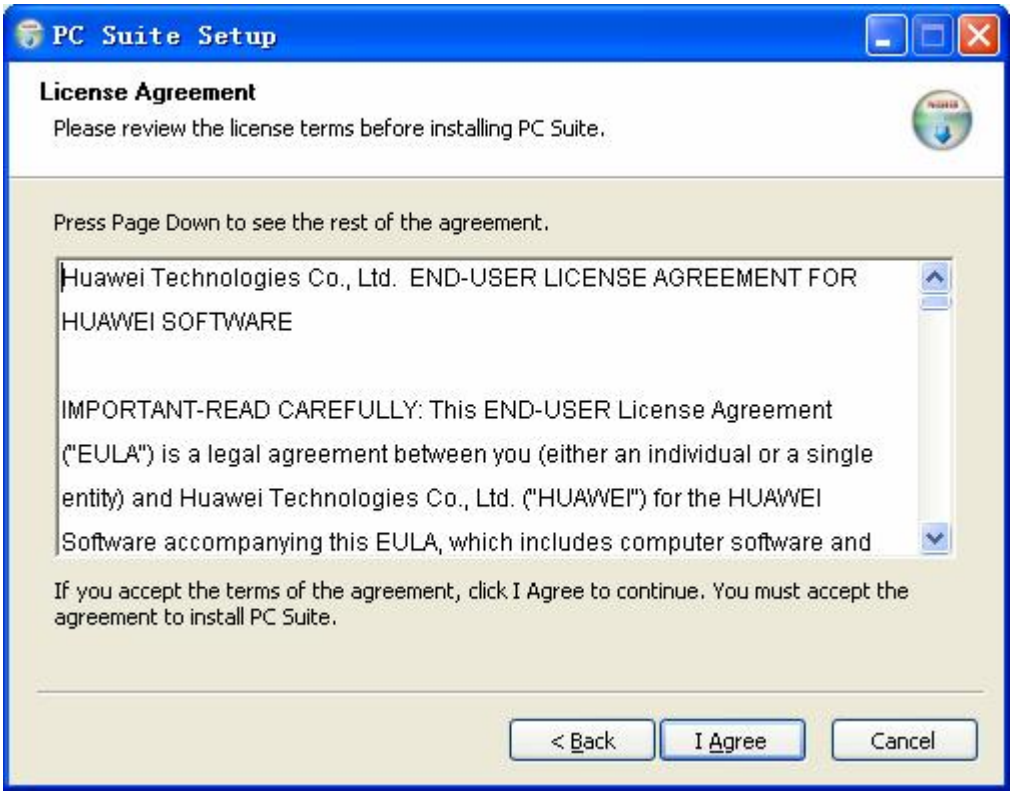
5.3.1 Install USB driver program

1. Double-click installation program **Setup.exe**;

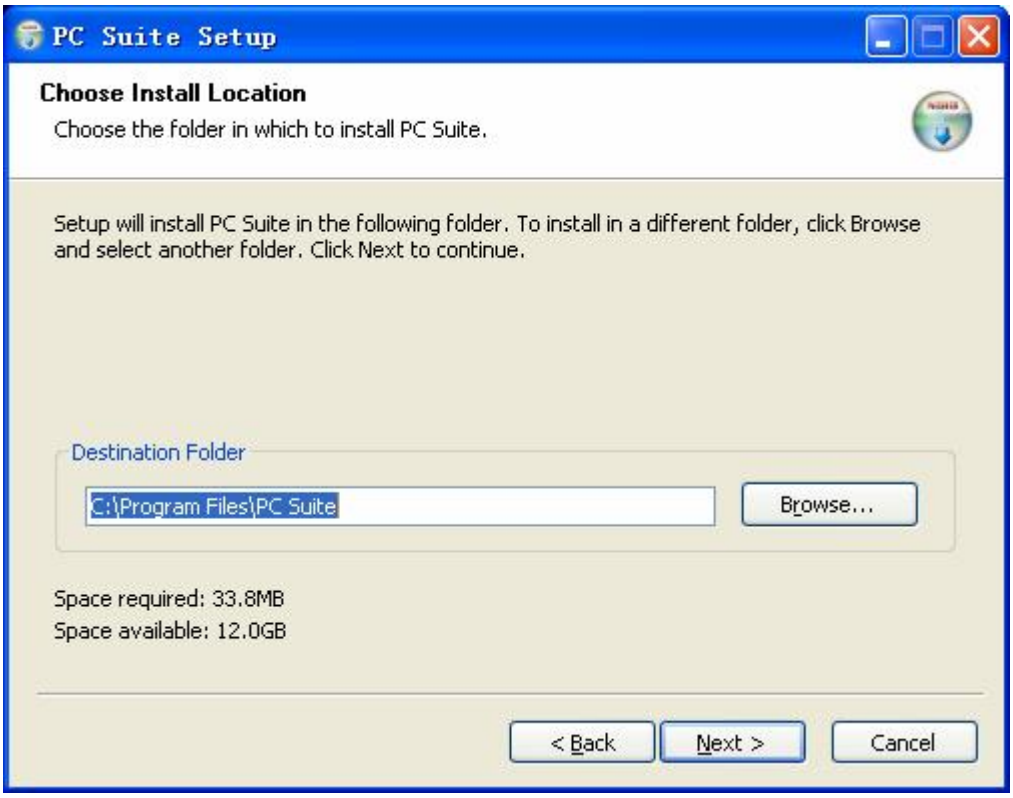
2. Select a language;

3. Click “Next” to continue;

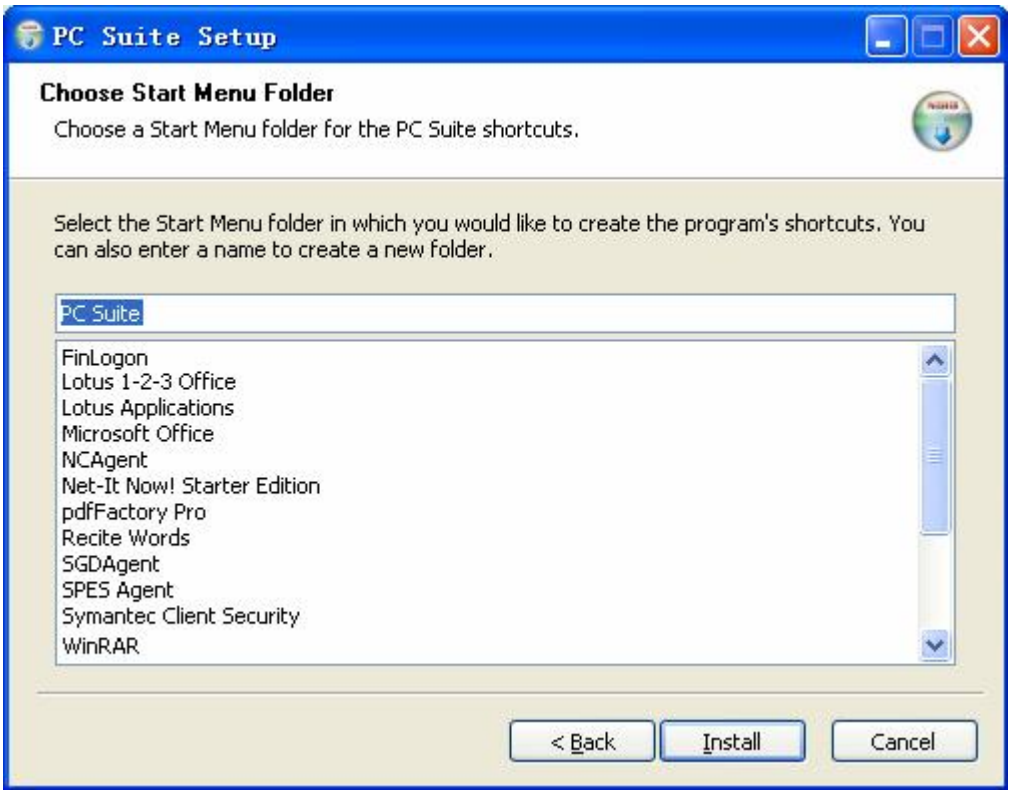
4. Click “I Agree” to continue;

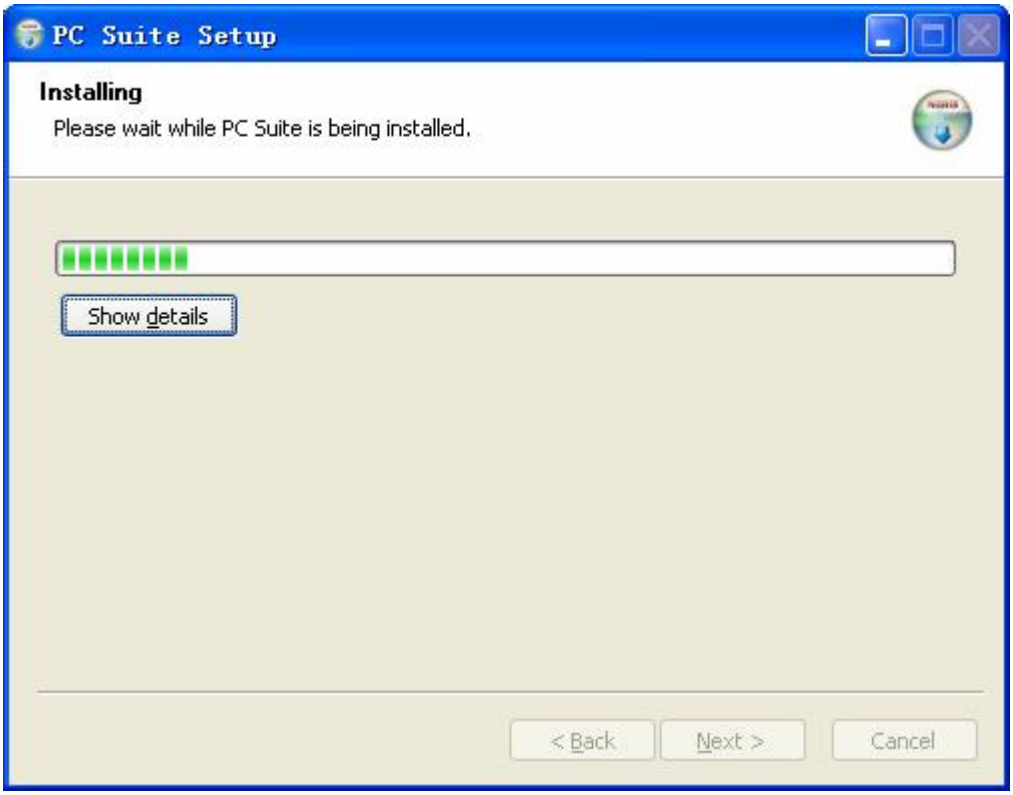


5. Click “Next” to continue;

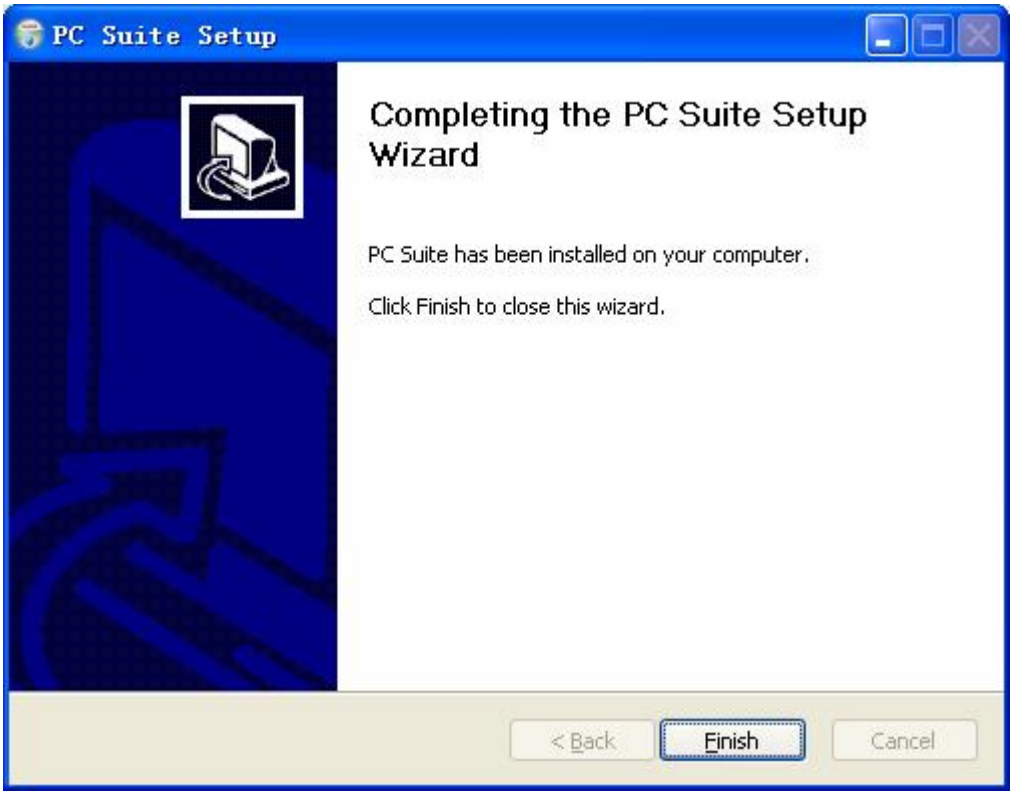


6. Click “Install” to continue;

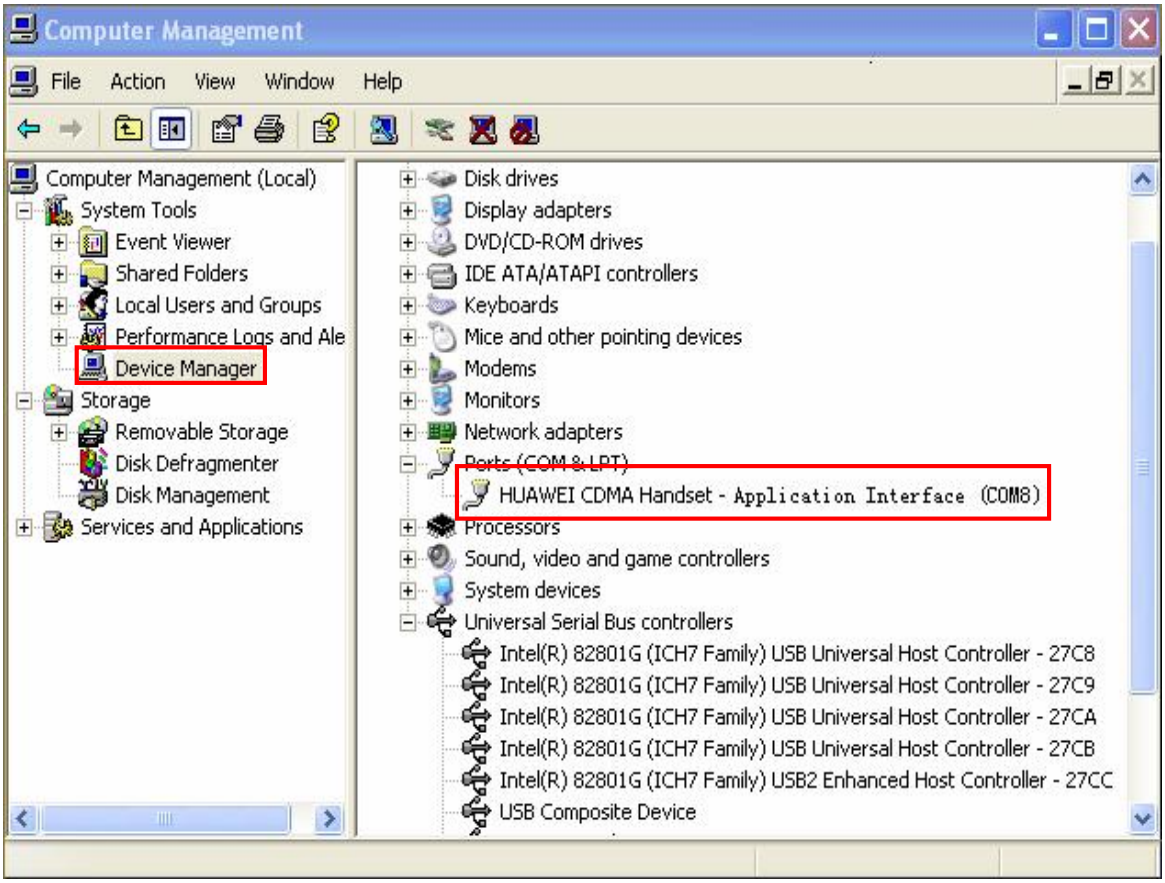




7. Click “Finish” to finish the installation;



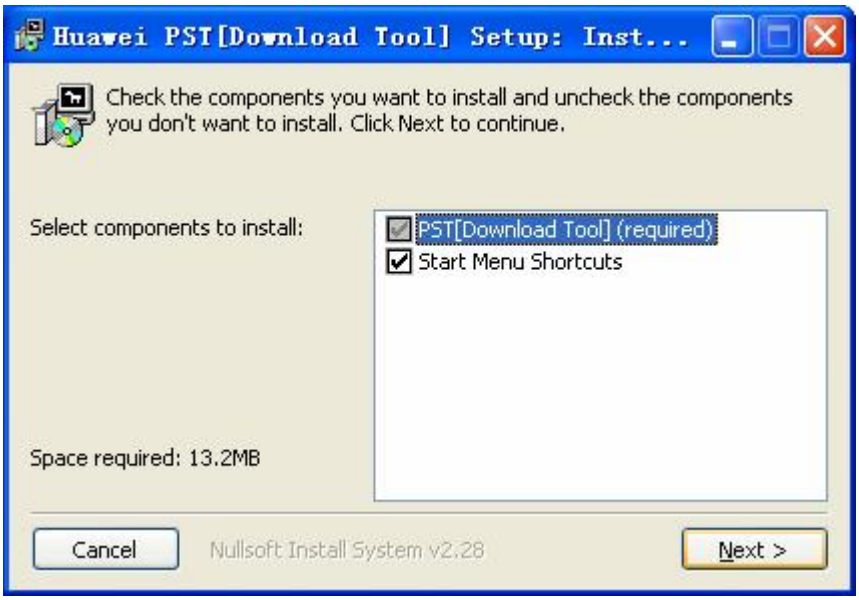
8. After installation, connect handset and PC with USB cable, you can find new ports from "Device Management", as shown below;



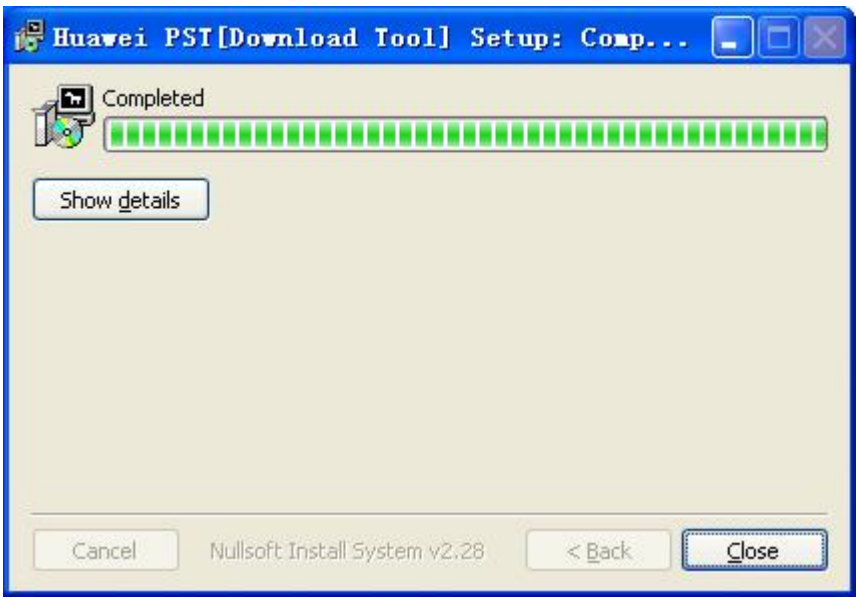
Note:
The port number is variable. Ensure mobile phone is properly connected to PC during installation.

5.3.2 Install PST Download tool

1. Double-click PST download program file to install, Click “Next” to continue;

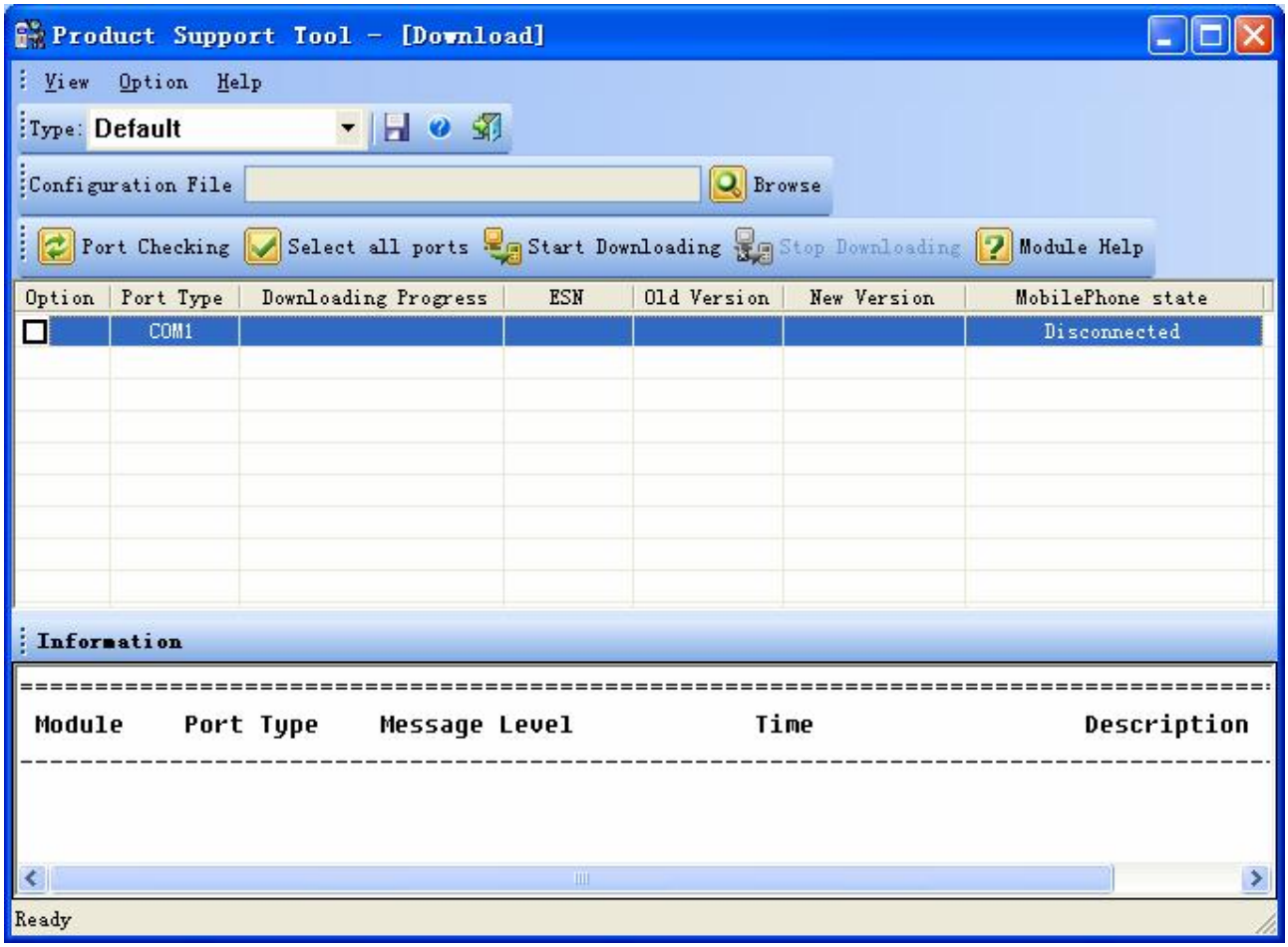


2. Click “Close” to finish installation;

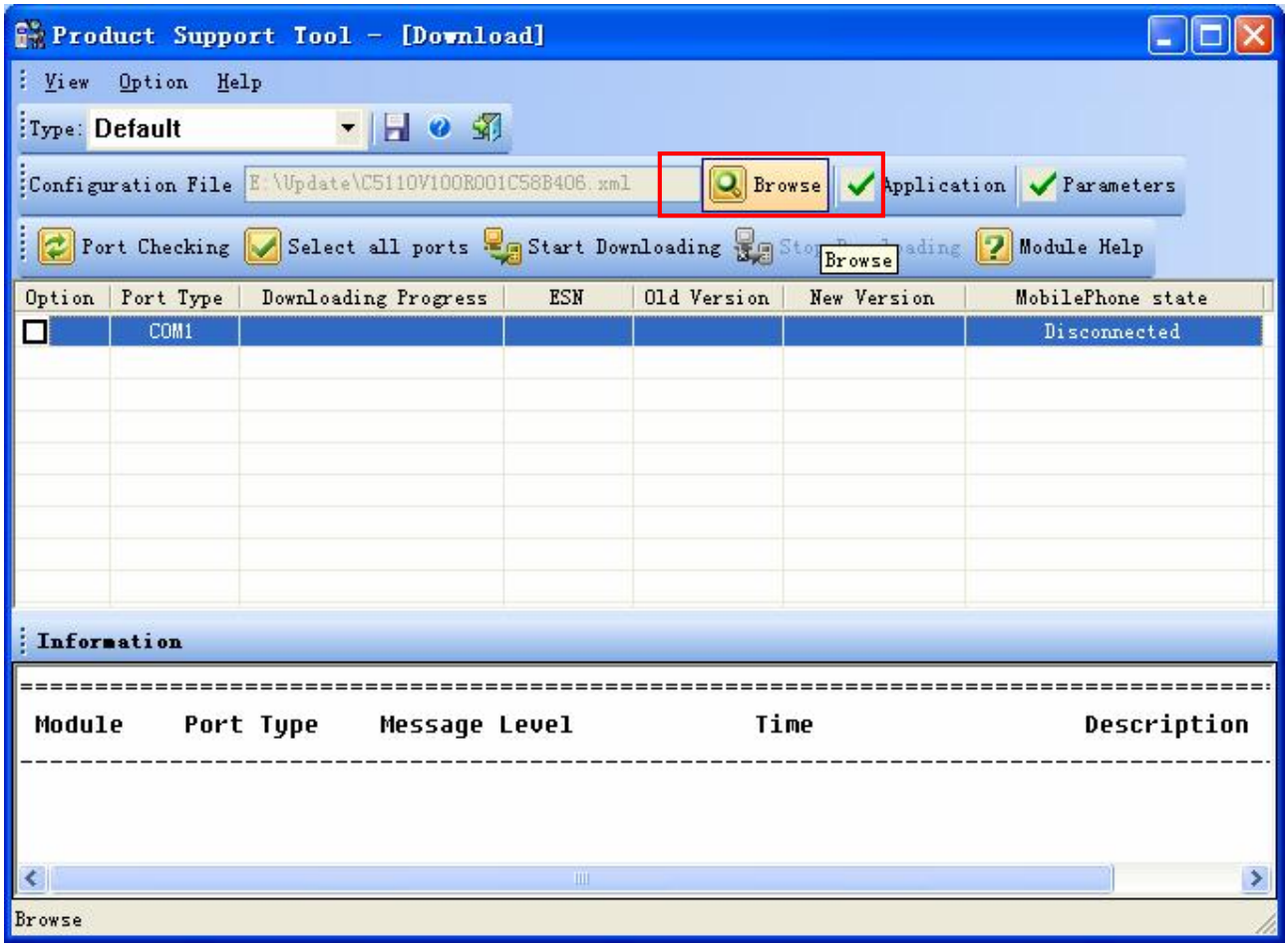


5.3.3 Upgrade guide

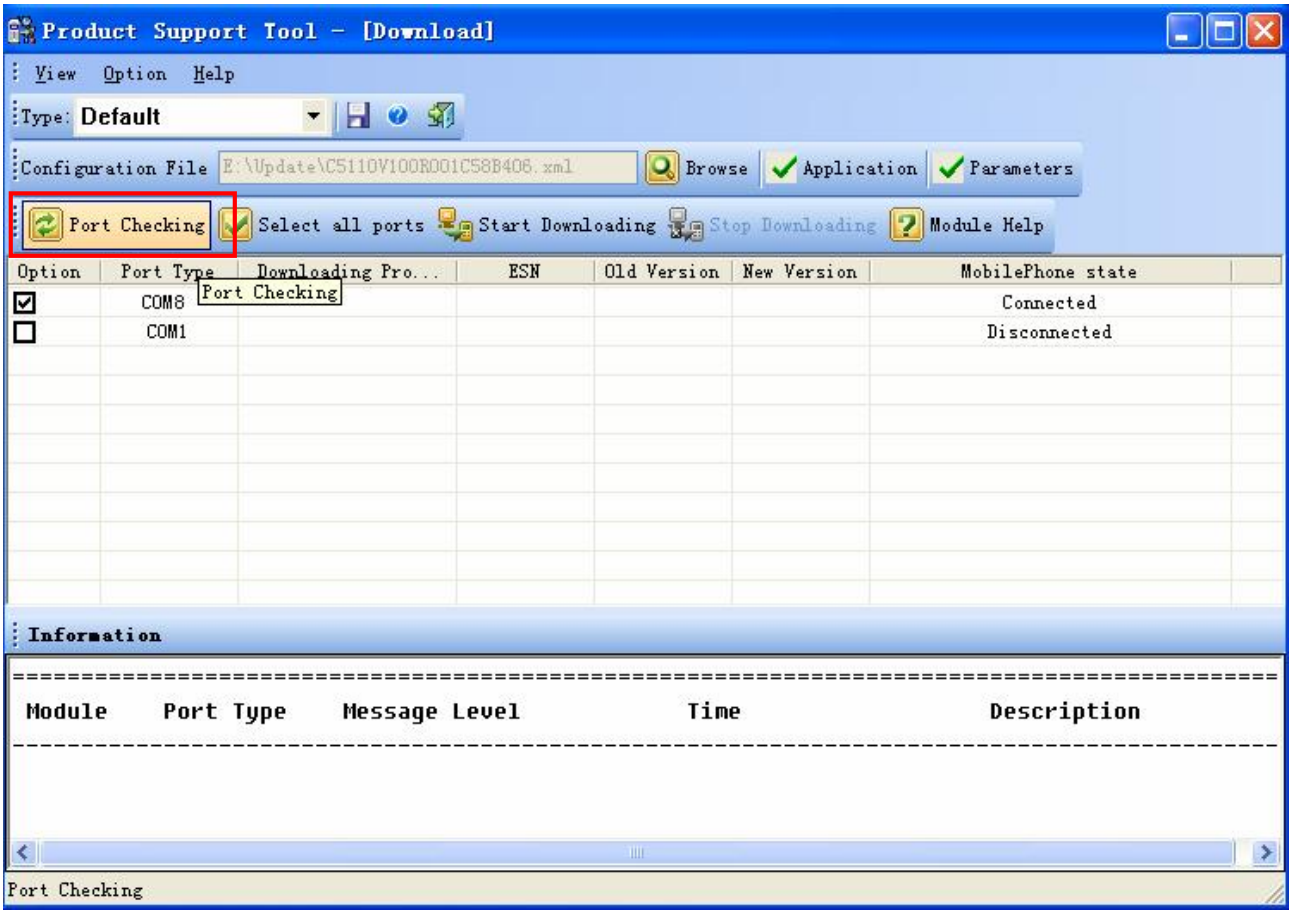
1. Open PST download tool, here below is the interface;



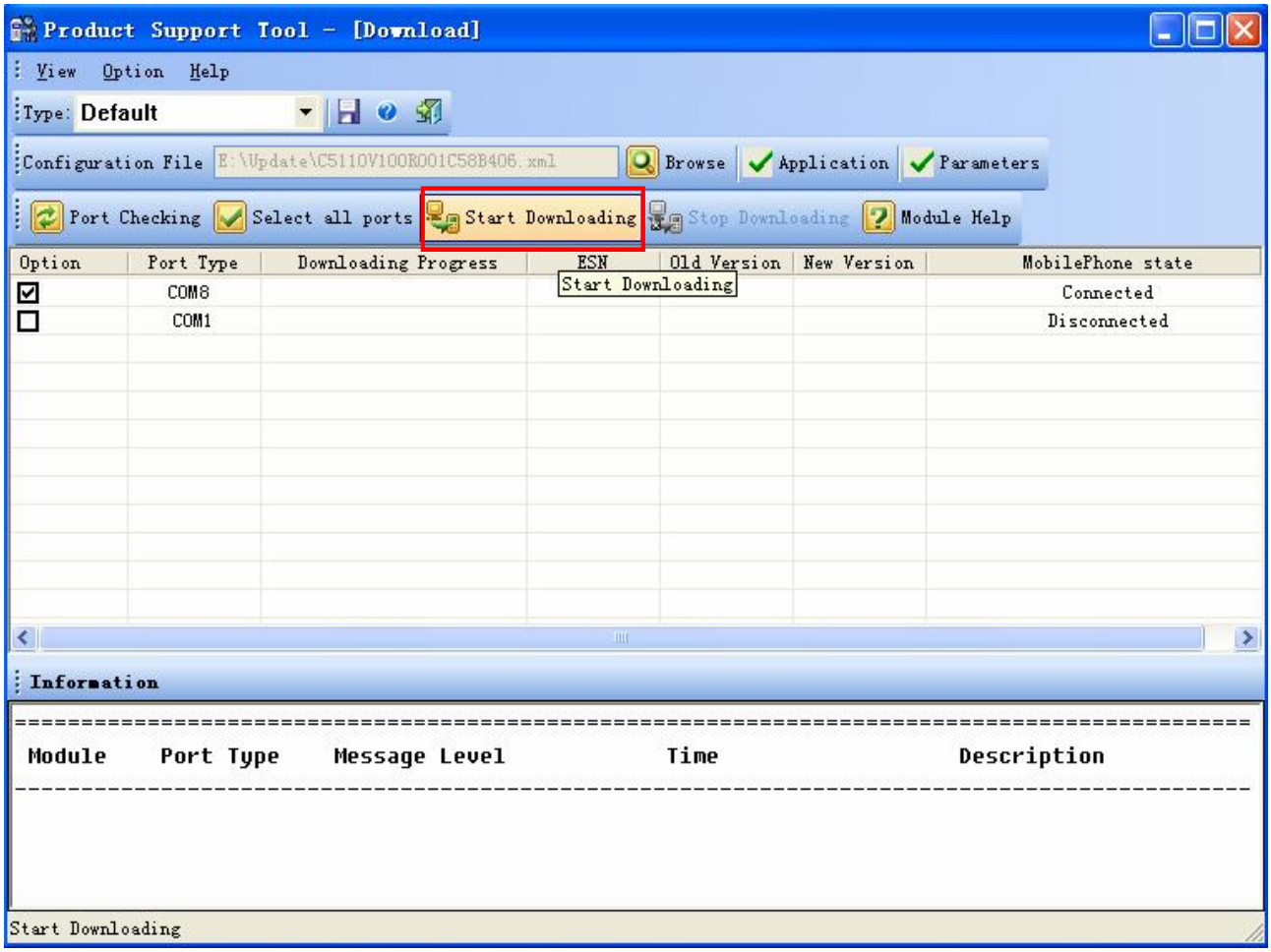
2. Click “Browse” to choose version file;

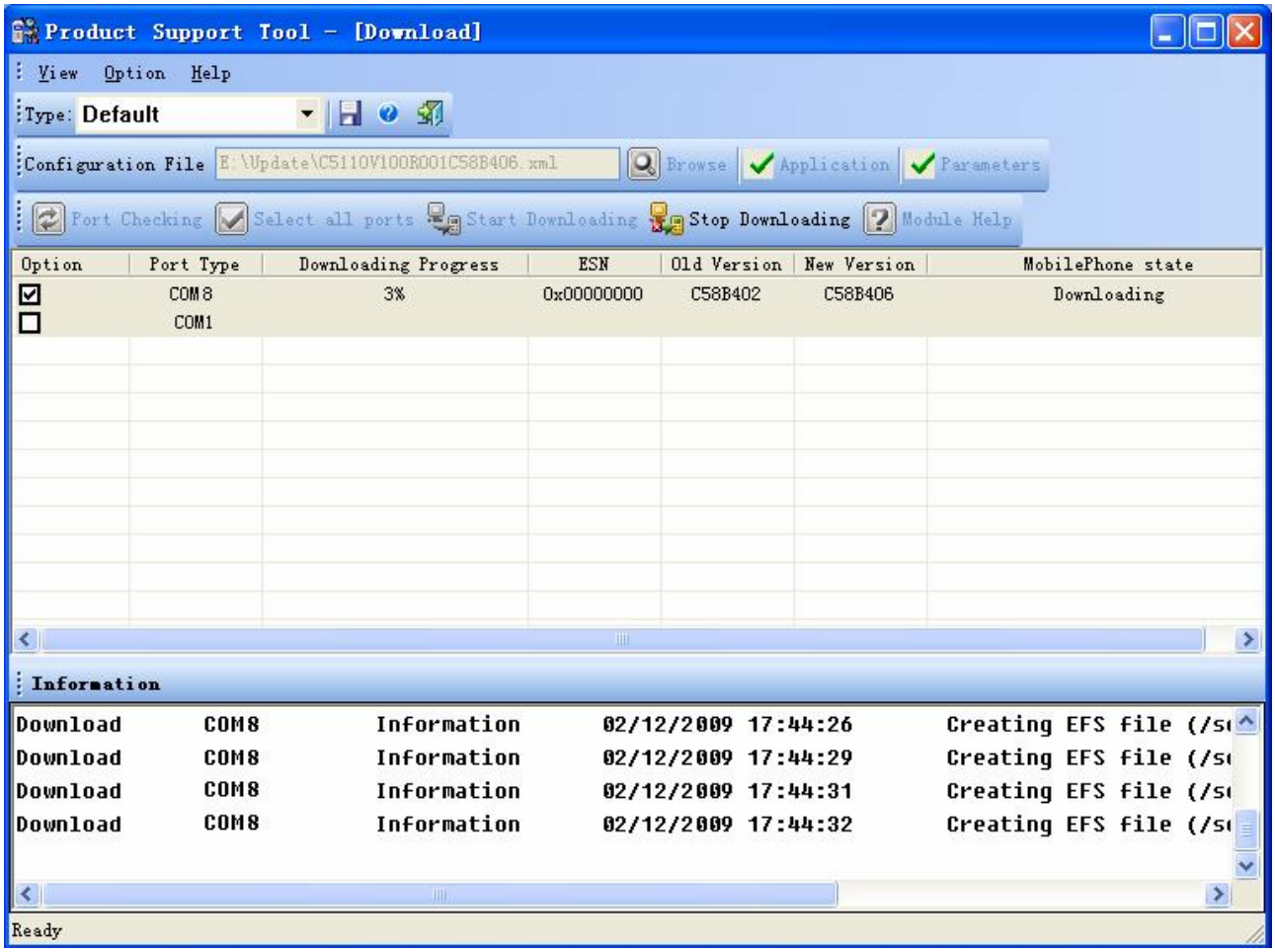


3. Click “Port Checking” and select a com port;

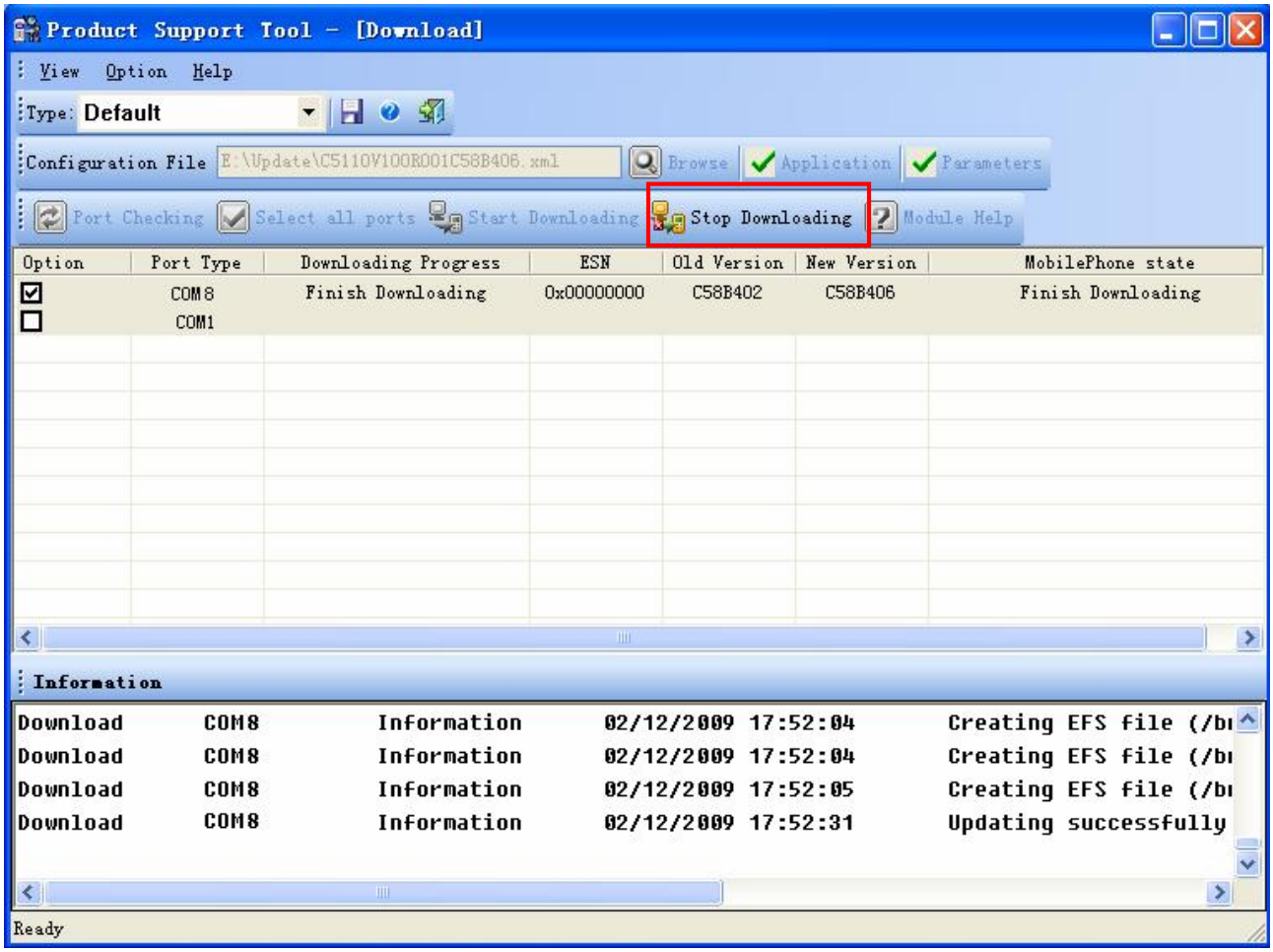


4. Click “Start Downloading” to start downloading process;


Product Support Tool - [Download]
View Option Help
Type: Default
Configuration File E:\Update\C5110V100R001C58B406.xml
Browse
Application
Parameters
Port Checking
Select all ports
Start Downloading
Stop Downloading
Module Help
Option
Port Type
Downloading Progress
ESN
Old Version
New Version
MobilePhone state
Start Downloading
COM8
Connected
COM1
Disconnected
Information
Module
Port Type
Message Level
Time
Description
Start Downloading



5. Finish downloading process. Click “Stop Downloading” to exit download.



5.4 SD Card Download

5.4.1 SD Card normal upgrade

1. A Micro SD card of 128MB or more should be available. The Micro SD card made by Sandisk, Kingstone, or Kingmax is recommended.
2. Format the MICRO SD card (fat32 or fat16).
3. Copy all files into the root directory of the Micro SD card. (Include sd_update_delete_files.dat, sd_update_manifest.dat,C5110 folder)
   Insert the Micro SD card into the handset needed to be updated.
4. Power on the headset, in the SOS interface, input **##497613+send** key to enter engineering Mode. Then you select “SD Download”.

Notes:

1. Make sure battery level shall be no less than two bars.
2. In the root directory of a micro SD card that had been used can appear four new folders (pic、video、music、others), it can’t affect the download.

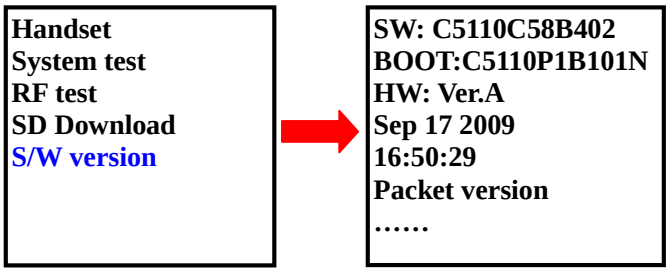
5.4.2 SD Card Forcedly upgrade

Notes: The software version in this document is only for example, this version can't support SD card forcedly upgrade.

1. If updates fail, you can re-install battery, press "**8**" and hold on, and then press "**power**". Headset will start forcedly downloading.
2. If no battery, you can press "**8**" and hold on and then **insert charger**, headset will start forcedly downloading.

5.5 Software Version Check After Upgrade

In the standby screen or SOS interface, input **##497613** and press **send** key, and choose "**S/W version**";



Notes:

The figure is for your information only. It is subject to different software versions.

5.6 Update Troubleshooting

Failure type	Ensure that…
Can't found the new com port.	l The phone is connected to the PC. l Other USB device is running. l The driver is correctly installed.
Upgrade fail	l The USB cable is stably connected. l The files in SD card are correctly.

6 Maintenance Tools

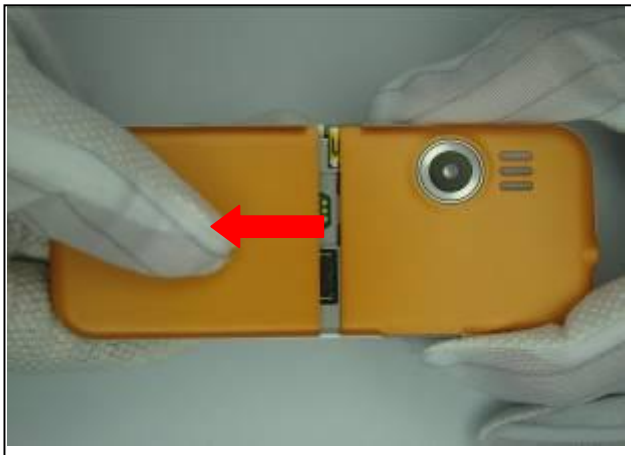
	Name: constant-temperature gun Application: It is used to heat the components.
	Name: soldering iron Application: It is used for soldering during maintenance.
	Name: DC power Application: It is used to supply power.
	Name: soldering fixture Application: It is used to fix the main board.
	Name: lead-free solder wire Application: It is used for soldering.
	Name: digital multimeter Application: It is used for measuring during maintenance.
	Name: Oscillograph Application: It is used for measuring during maintenance.

	Name: Tool kit Application: It is used to assembly and disassembly terminal product.
	Name: Electrical screwdriver Application: It used for turning screws.

7 Disassembly Procedure

1. Make sure the ESD antistatic wrist strap connect to the ground is normal.

2. Disassembly process of C5110.



3. Remove the battery cover and take out battery.

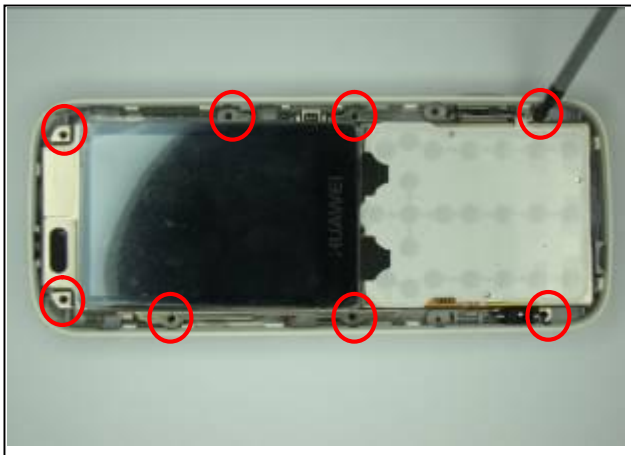
4. Prize the decoration cover according to the figure above.

5. Loosen decoration cover.

6. Unscrew the two screws.

7. Loosen front cover.

8. Take out front cover.



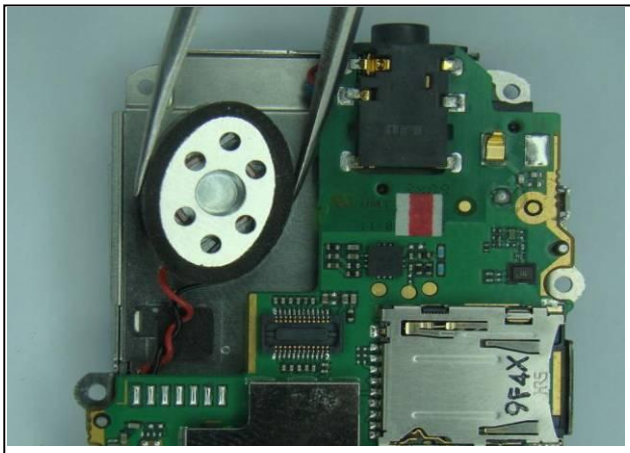
9. Unscrew the eight screws.

10. Remove the metal piece.

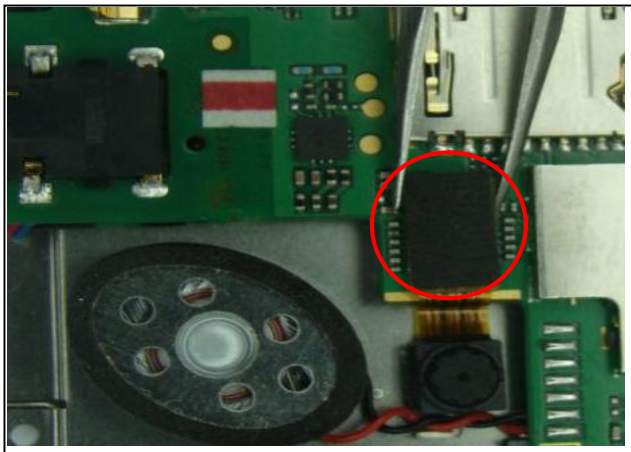
11. Loosen the lock according to the figure above.

12. Take out the main board.

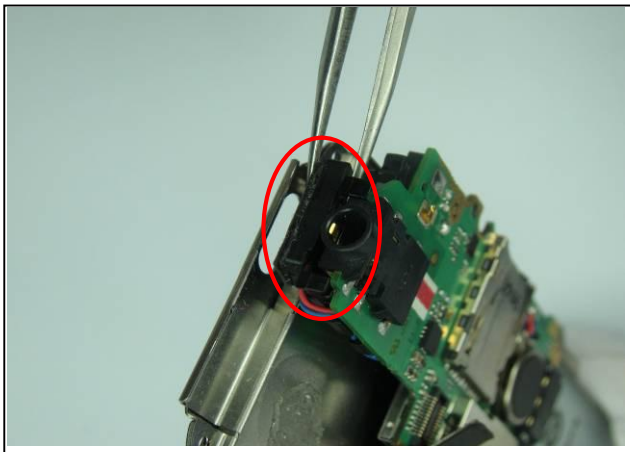
13. Solder the motor and remover it.



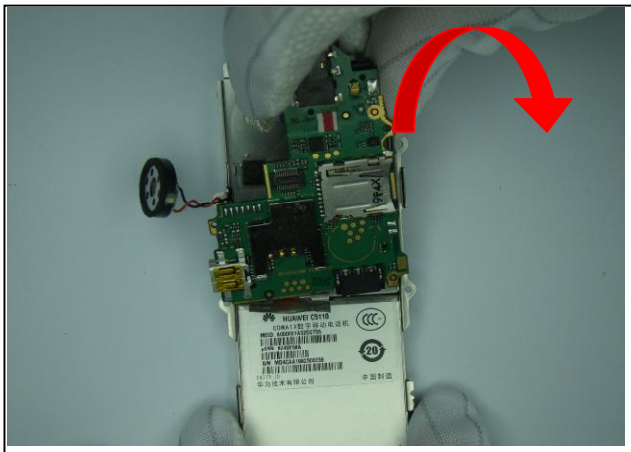
14. Speaker is pasted onto the shield cover, remove the speaker carefully.



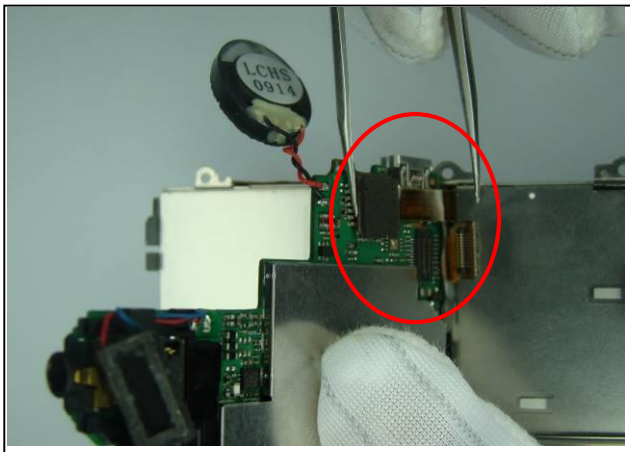
15. Prize the FPC of camera carefully.



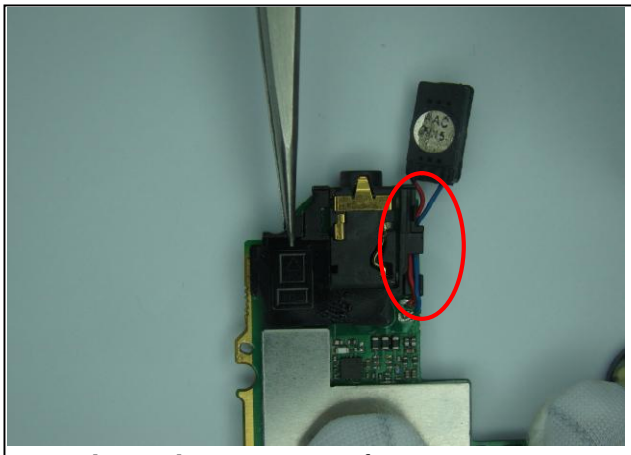
16. Take out receiver.



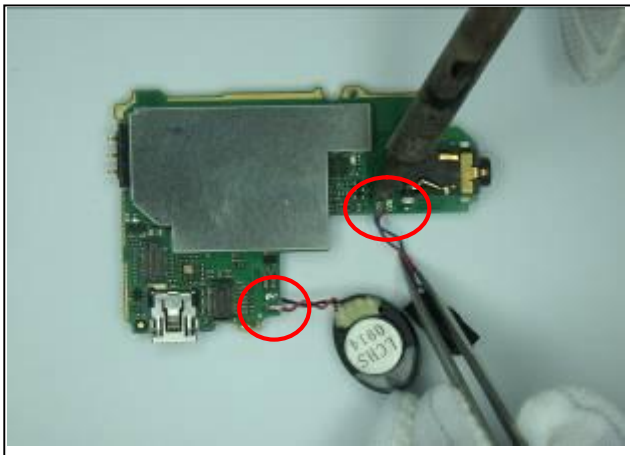
17. Turn the main board according the direction of arrowhead.



18. Prize the two FPC interfaces carefully, and then take out the main board.



19. Take out the PCB support frame, pay attention to the lead of receiver.



20. Solder receiver and speaker.

21. Camera is pasted onto the shield sheet, remove camera carefully.

22. Take out the shield sheet of LCD.

23. Prize the LCD carefully

24. Disassembly process is completed.

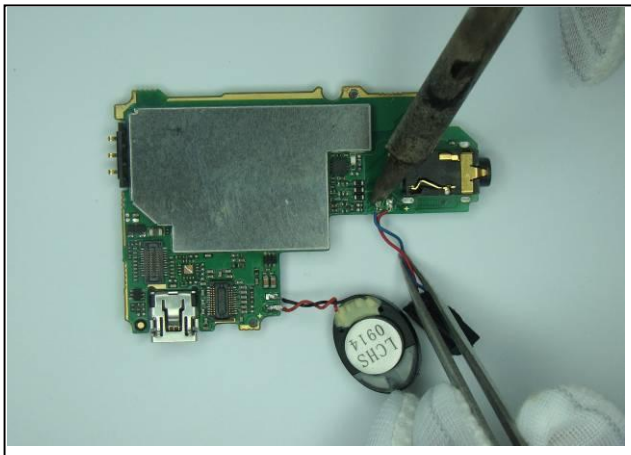
8 Assembly Procedure

1. Make sure the ESD antistatic wrist strap connect to the ground is normal.

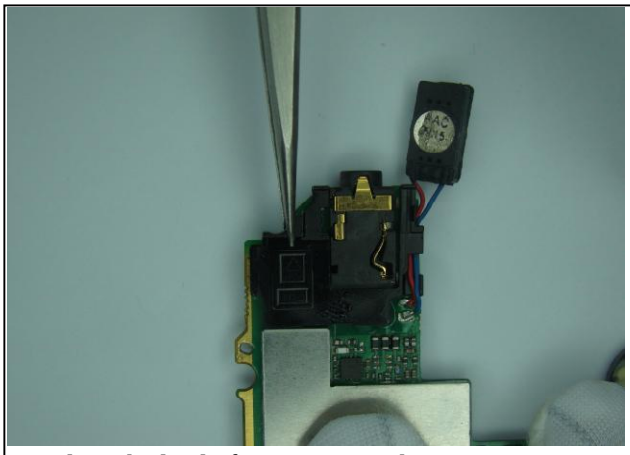
2. Assembly process is as follow.

3. Place LCD onto the shield cover.

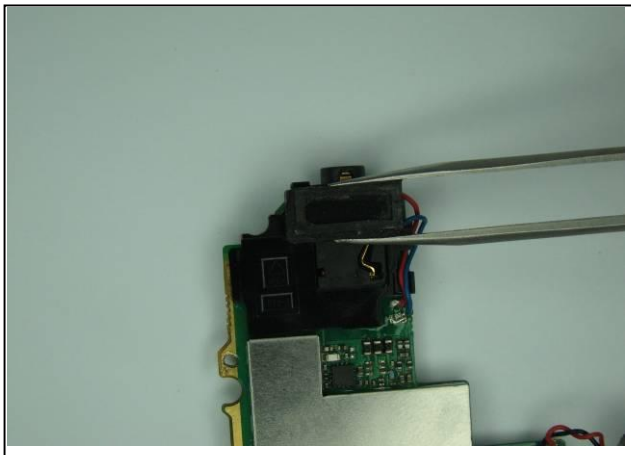
4. Place the shield sheet onto LCD.



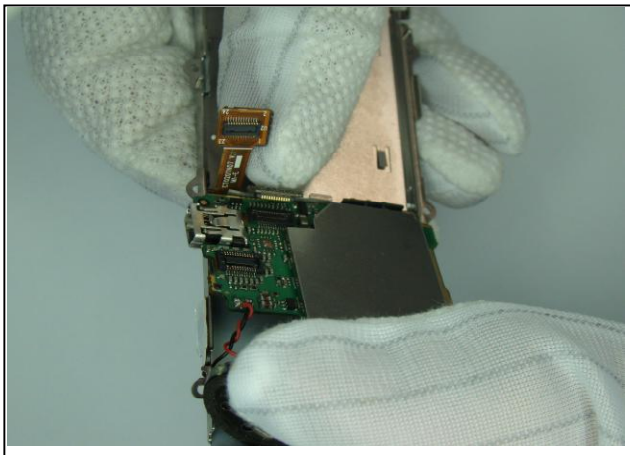
5. Solder receiver and speaker onto main board.



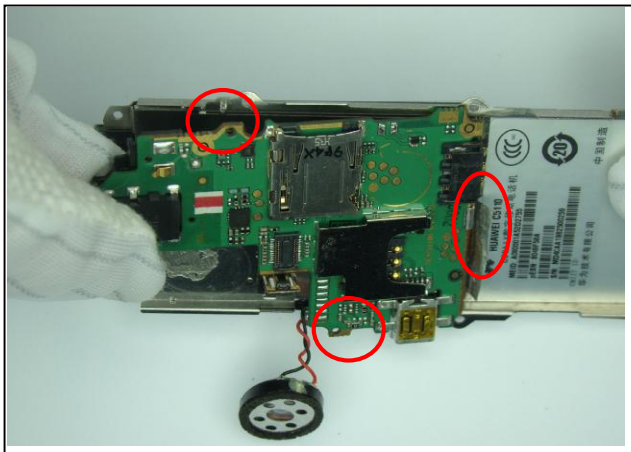
6. Place the lead of receiver into the PCB support frame and install PCB support frame onto main board.



7. Place receiver onto the PCB support frame.

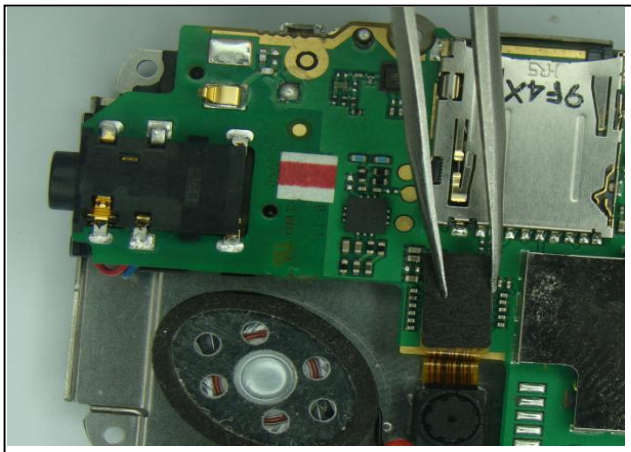


8. Connect the two FPC to main board.



9. Place main board onto the shield cover, pay attention to level the lock and anchor point.

10. Place speaker and camera affix them onto shield sheet.

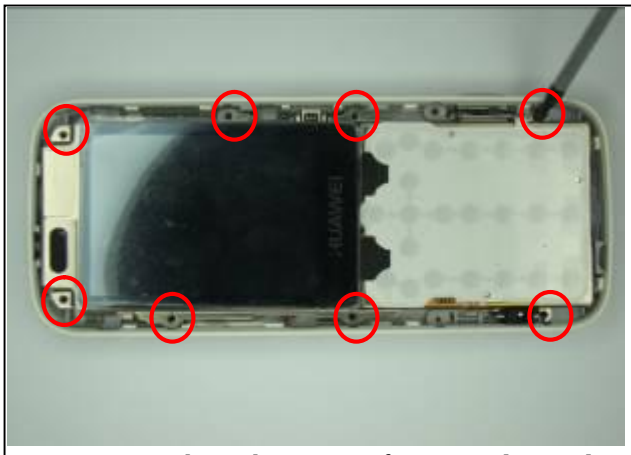


11. Connect the FPC to main board.

12. Solder motor onto main board and place it onto the location.

13. Place the main board into the back cover.

14. Press main board and make sure the locks lock.



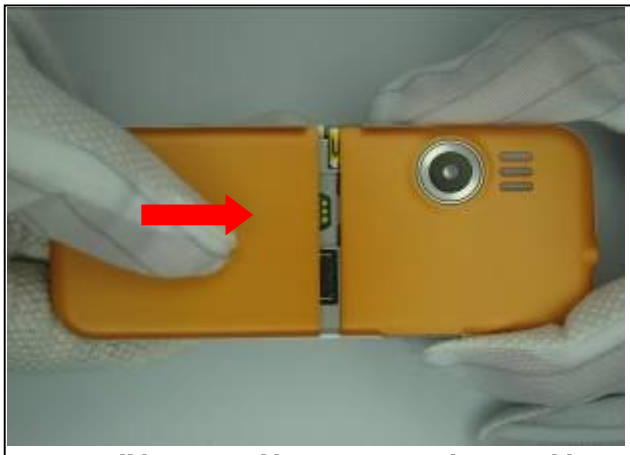
15. Screw on the eight screws. If you use electrical screwdriver to fix screw, the torque is 1.0±0.1 kgf.cm.

16. Install the front cover.

17. Press the front cover and make sure all locks lock.

18. Install the decoration cover and make sure all locks lock.

19. Screw on the two screws. If you use electrical screwdriver to fix screw, the torque is 1.0±0.1 kgf.cm.



20. Install battery and battery cover. The assembly is completed.

9 Troubleshooting of Common Failures

Before performing the following troubleshooting operations, ensure the software of mobile phone is in good condition and restored to default settings.

9.1 Principle Instruction

The main chip of system is QSC1110. Include four function modules, baseband interface management module, power management module, analog signals processing module, RF channel signal processing module.

According to functions, C5110 can be divided into the baseband processing module (including CPU-U200 and Flash-U900), power module (U200), RF module (U200) and peripheral circuit.

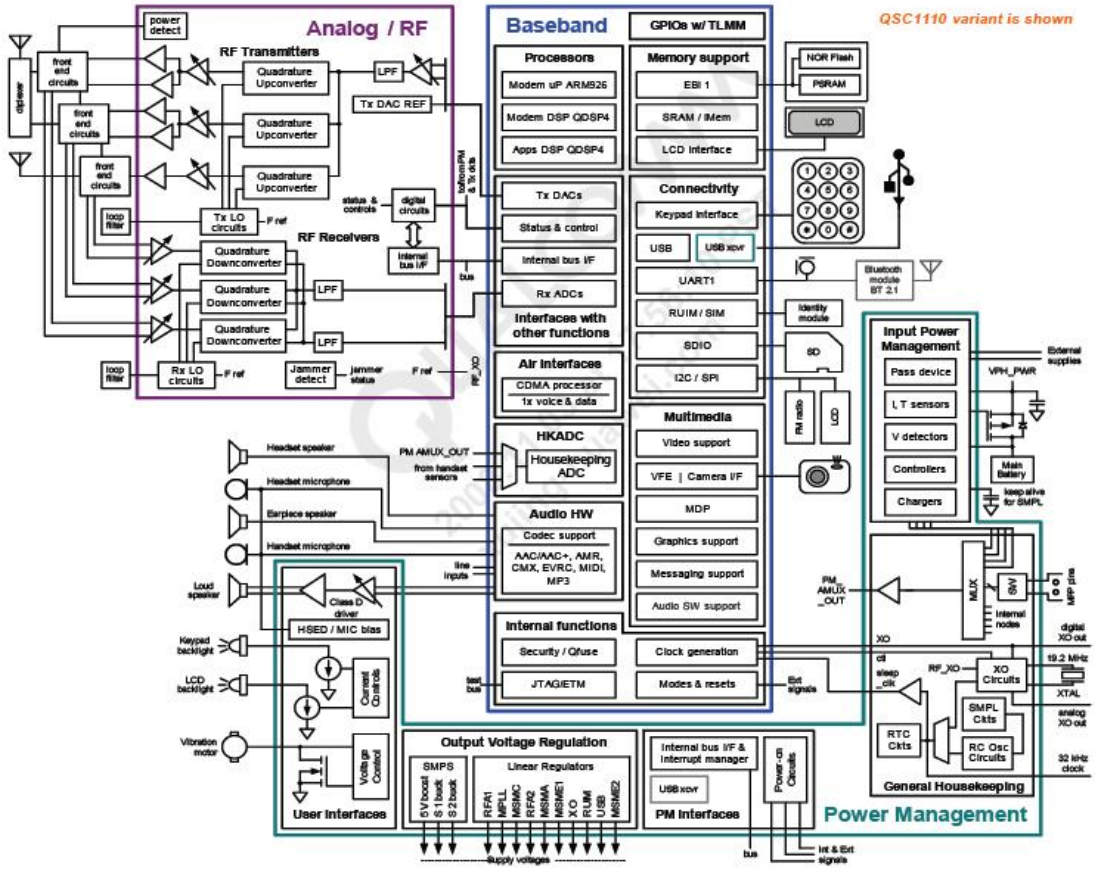
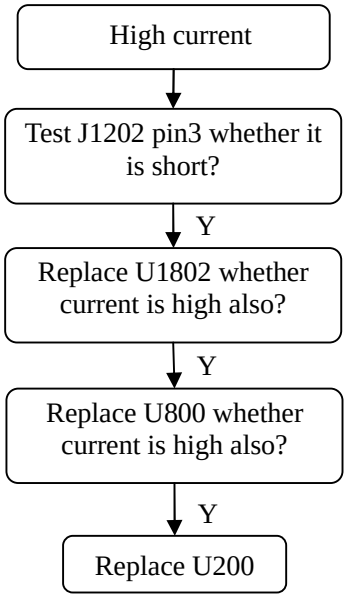


Figure 1-1 QSC1110 functional block diagram and typical application

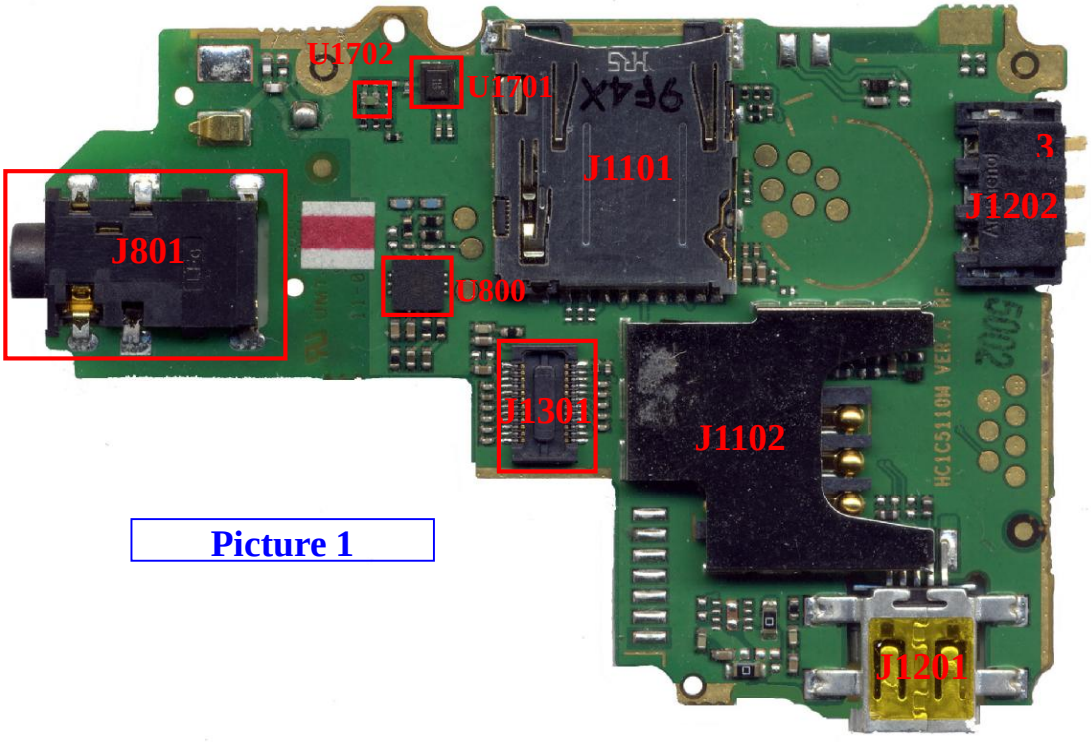
9.2 Can't Power On

1. High current (DC power supply)

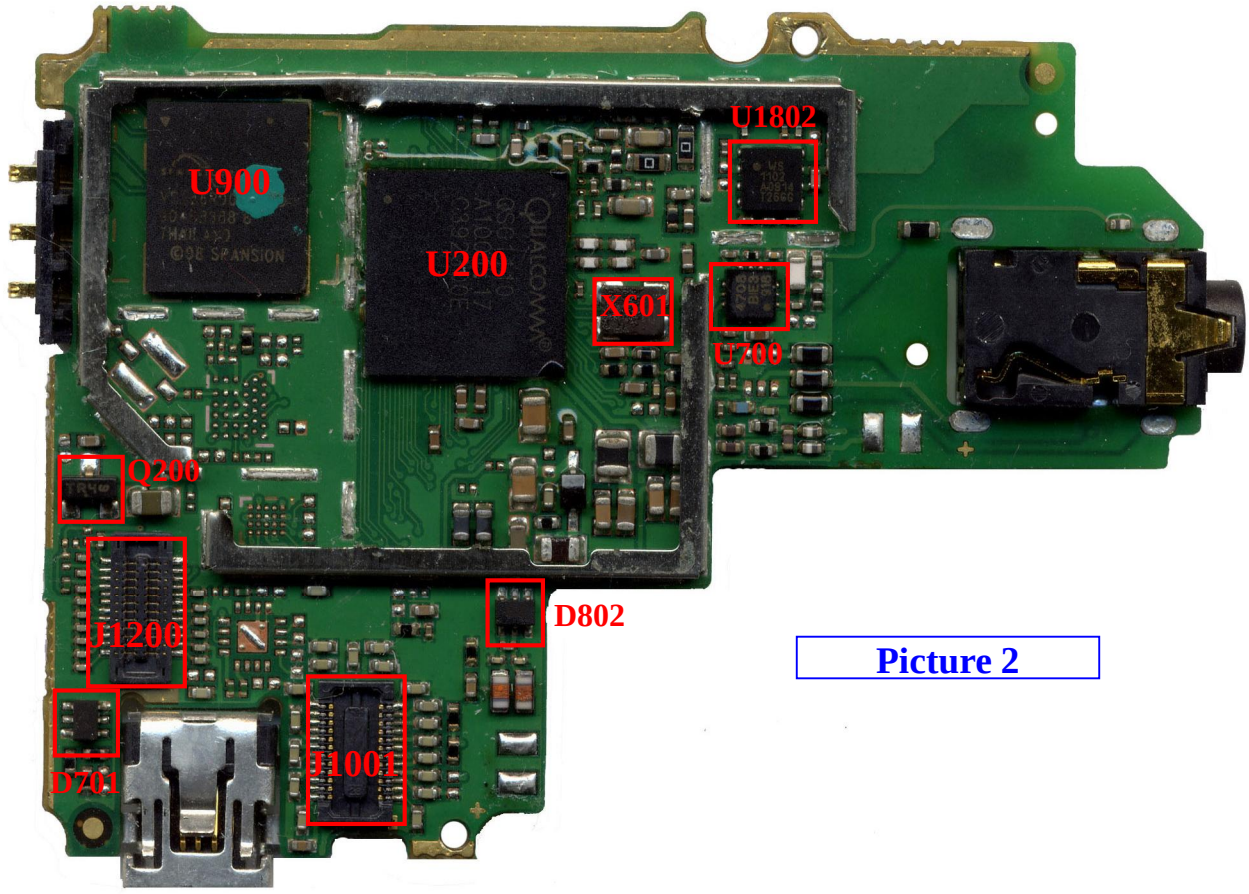
Analyzing: High current is caused by the short of power supply circuit, when use the DC power supply, the current is about 1A or more. This fault consist of major reasons, the VBAT is short with ground.



Refer to Picture 1 and Picture 2



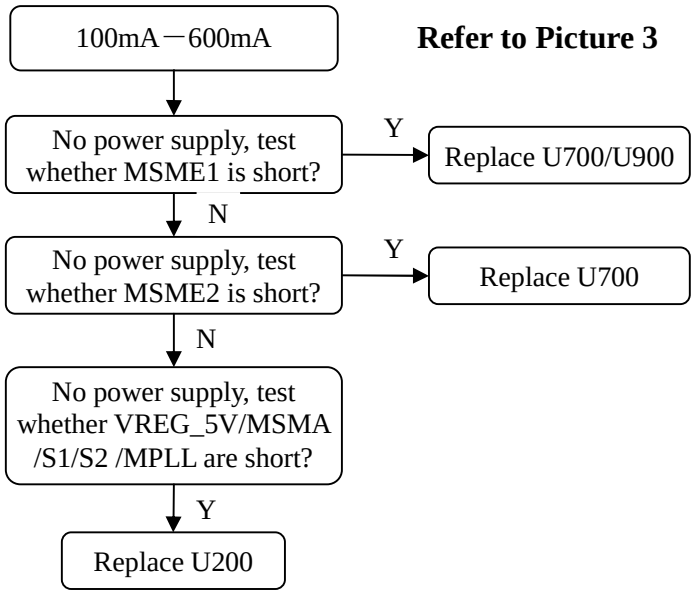
Picture 1

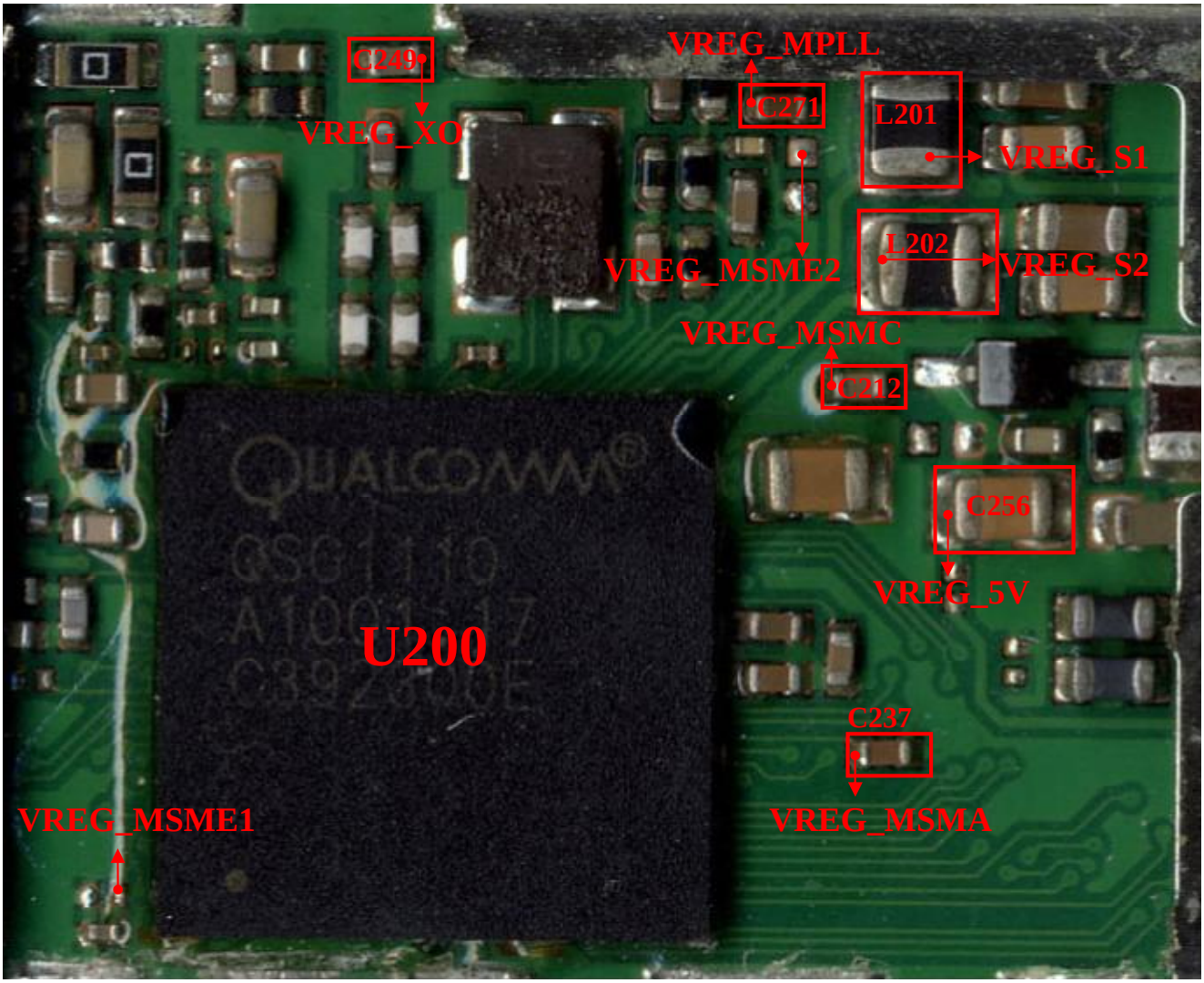


Picture 2

2. Can not power on---the current is about 100mA－600mA(When press the power key)

Analyzing： This failure is often caused by VREG_5V.

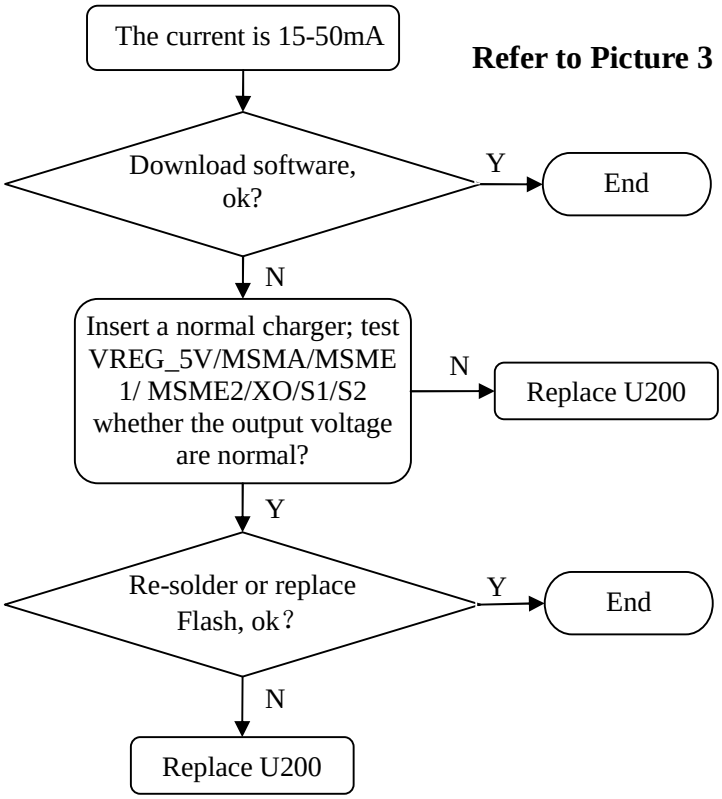



C249
VREG_XO
VREG_MPLL
C271
L201
VREG_S1
VREG_MSME2
L202
VREG_S2
VREG_MSMC
C212
C256
VREG_5V
U200
C237
VREG_MSME1
VREG_MSMA

Picture 3

3. Can not power on---the current is about 15mA－50mA(When press the power key)

Analyzing： This failure is often caused by the faulty software or flash IC, the reason is the software run not normal.

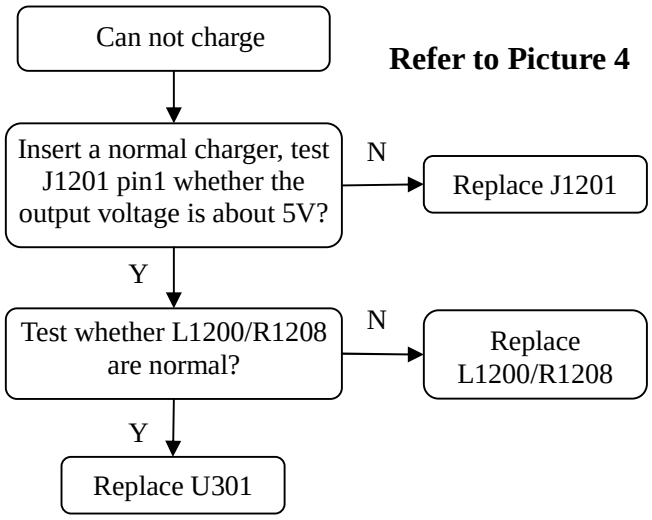


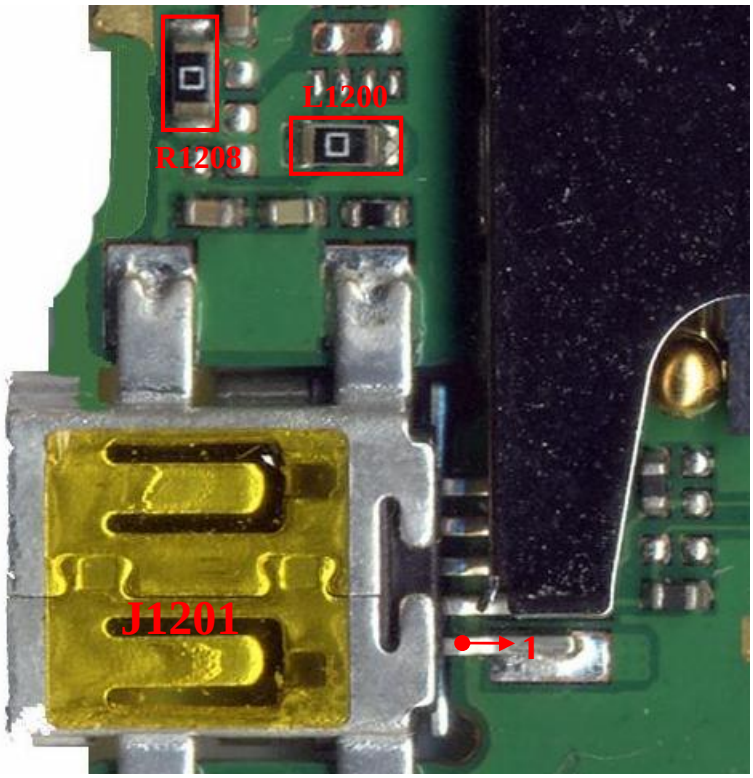
VREG_MSMA=2.2V
VREG_5V=5V
VREG_MSME1=1.8V
VREG_MSME2=2.85V
VREG_XO=2.85V
VREG_S1=1.3V
VREG_S2=2.2V

9.3 Can not charge

Analyzing：

Can not charge is often caused by charge interface.

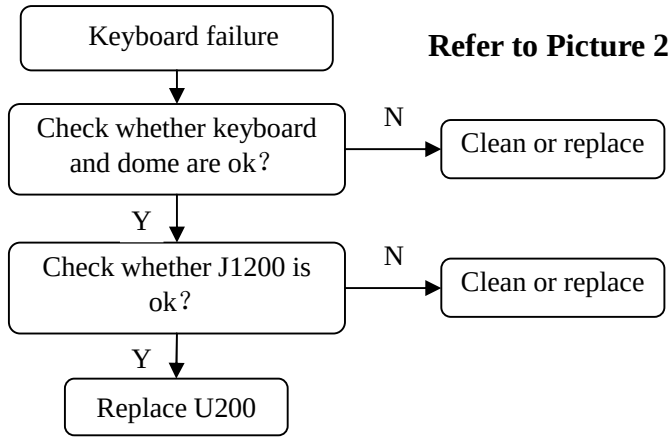




Picture 4

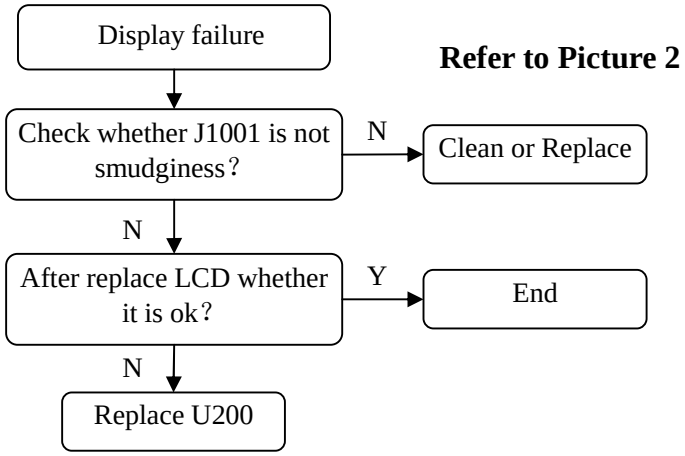
9.4 Keyboard failure

Analyzing： C5110 Keyboard faulty is often caused by smudginess or feculence of the DOME, clear it.



9.5 Display failure

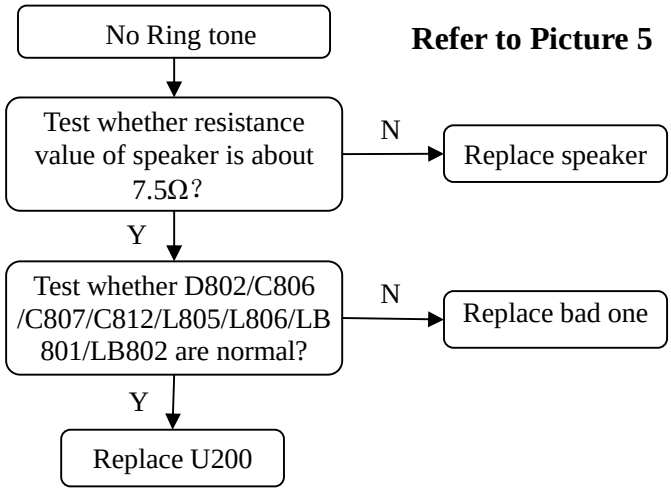
Analyzing： LCD can not display is often caused by LCD fault. C5110 display failures consist of major reasons, LCD and main board connect badness, before replace the LCD, I suggests checking whether the connecting is normal.

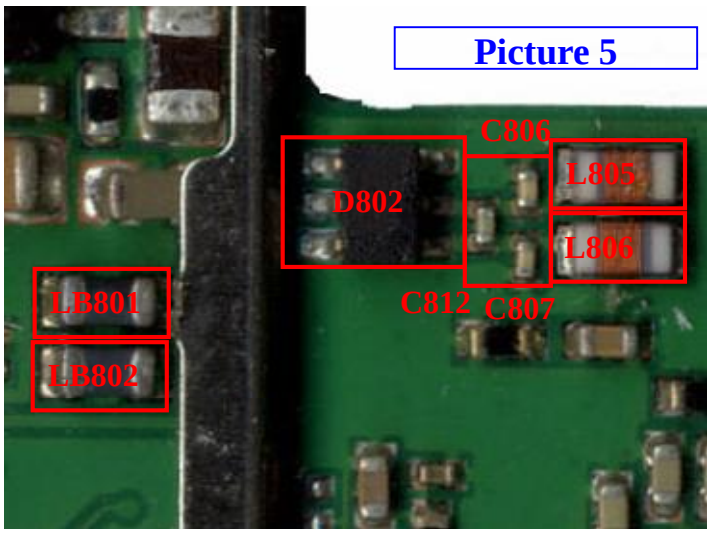


9.6 Audio failure

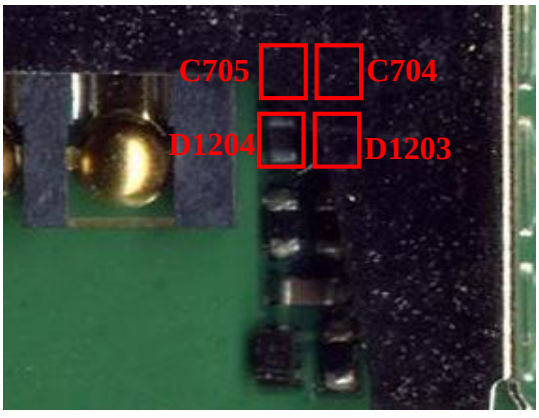
1. No Ring tone

Analyzing: Before replace or repair the parts, please reset the function or reset factory.



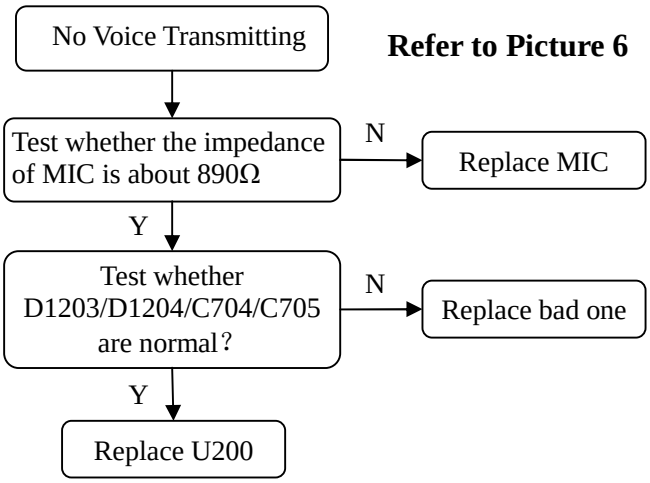


Picture 5

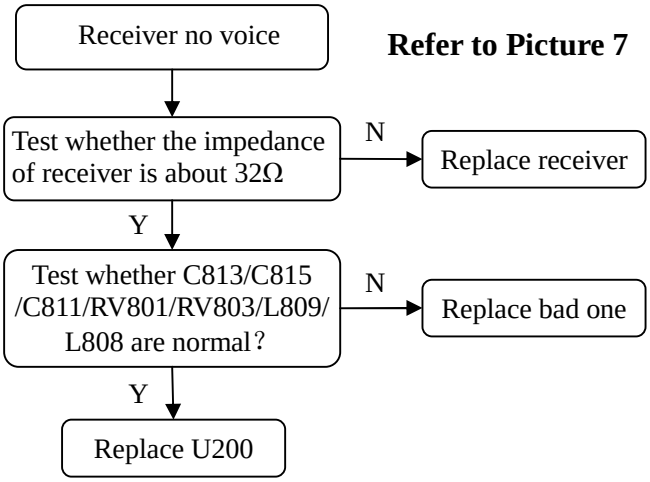


Picture 6

2. Voice Transmitting failure

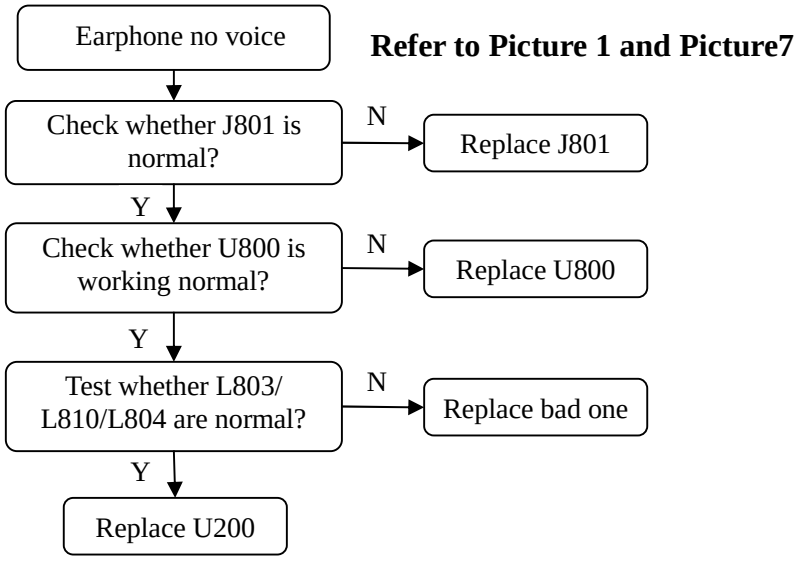


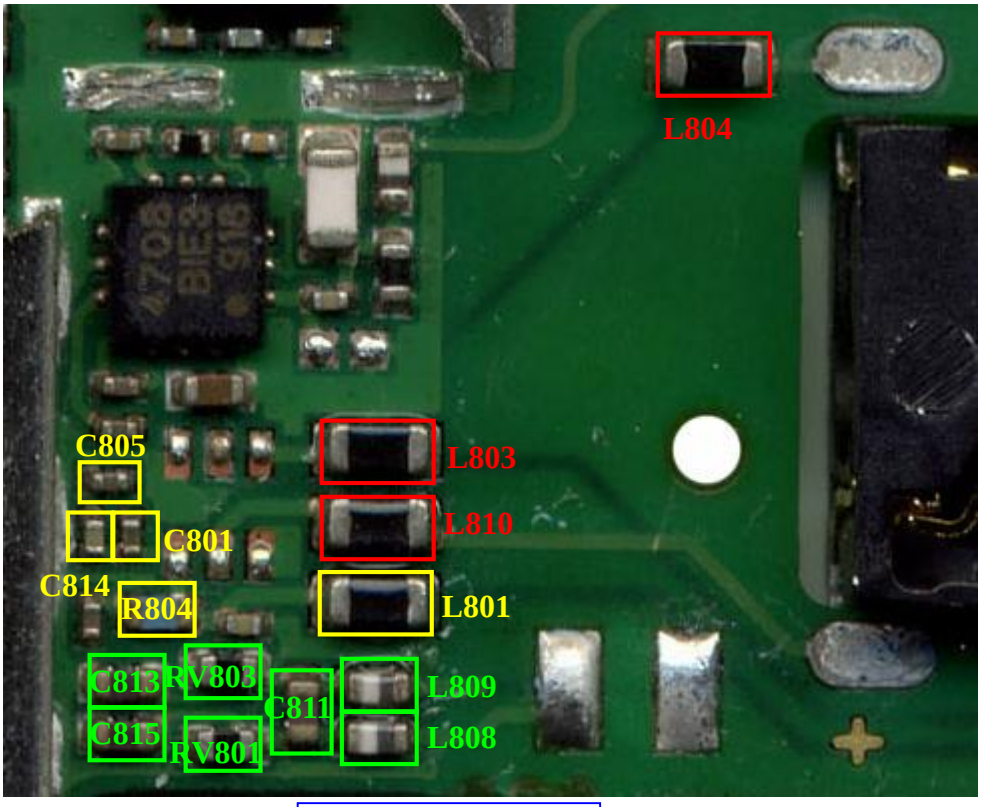
3. Receiver failure



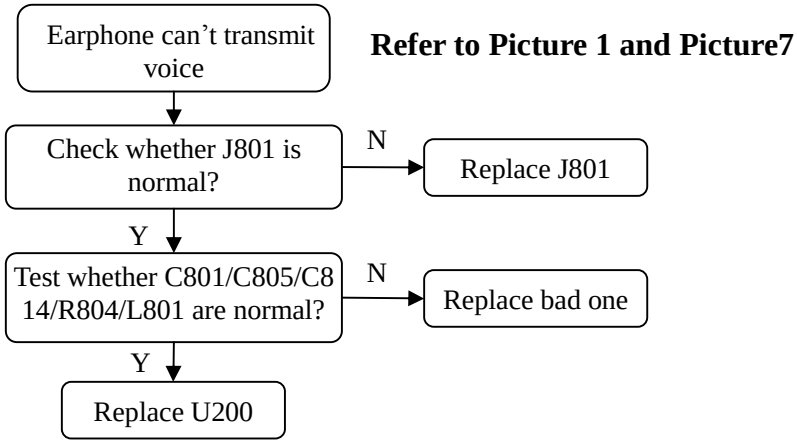
4. Earphone failure

Analyzing: Before replace or repair the parts, please reset the function or reset factory.

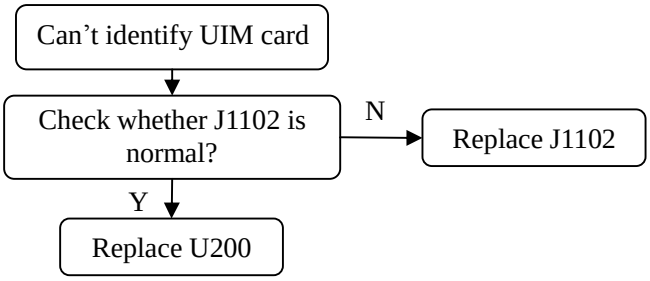




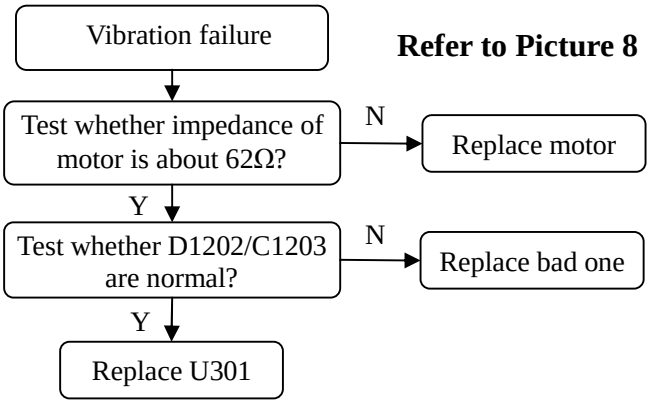
Picture 7

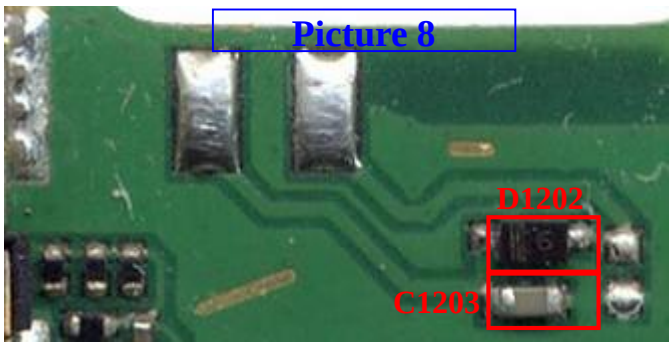


9.7 Can’t identify UIM card



9.8 Vibration failure

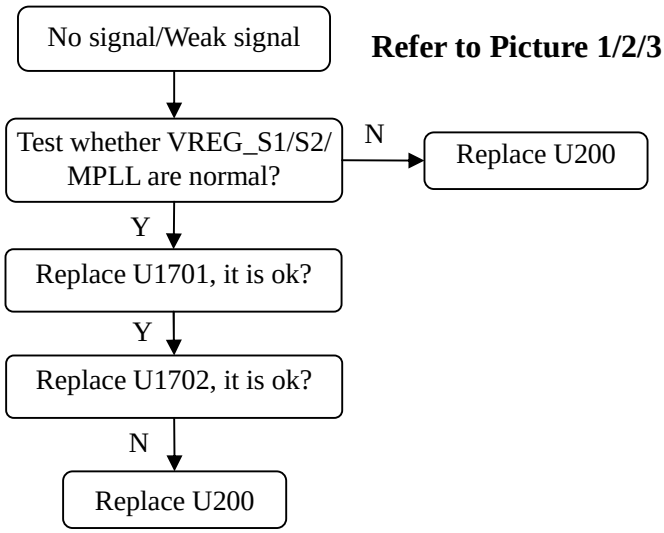




9.9 RF failure

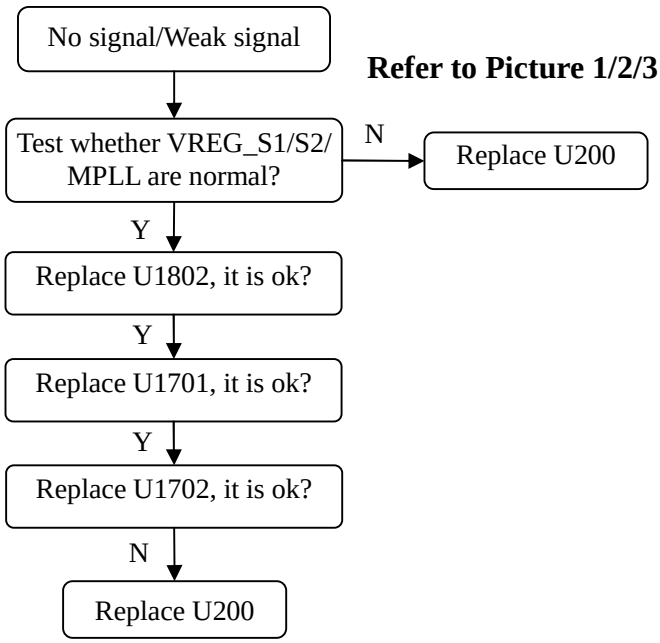
1. No signal/Weak signal

Analyzing: RX signal failure of C5110 is often caused by duplexer failure.



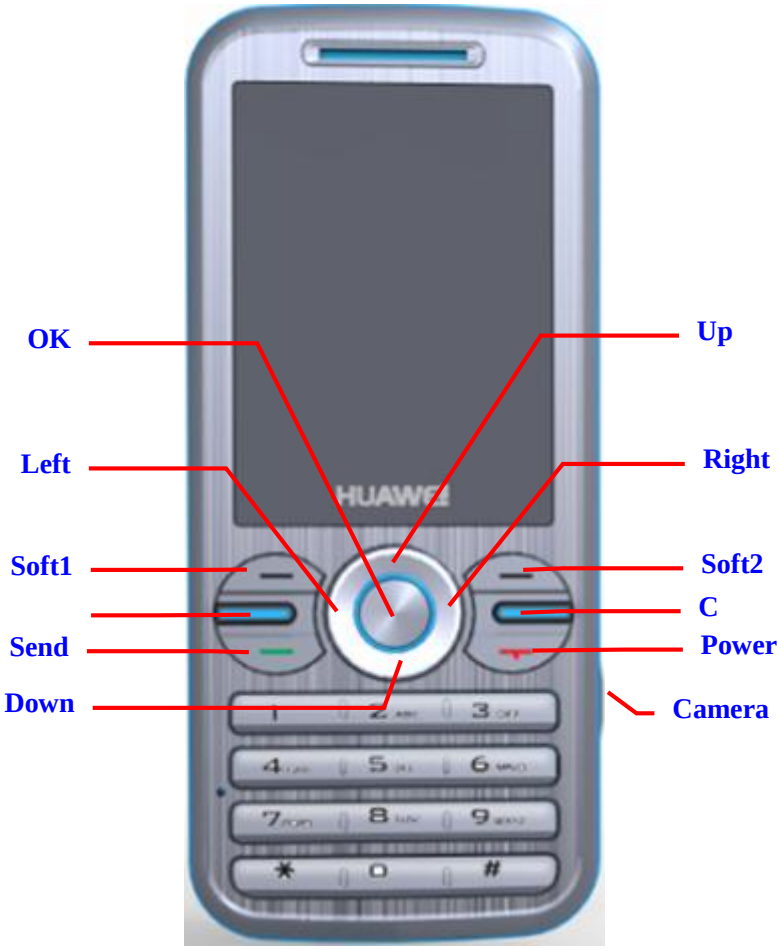
2. Can’t register network

Analyzing: Can’t register is often caused by PA failure.



10 Functional Test

10.1 Test command



Engineering test command	Function description
***#06#+ send**	Fast query ESN
##147852 + send	Enter MMI test mode

10.2 MMI Test

Enter **##147852 + send** to access MMI test mode.

Item	Contents	Method and Phenomenon(According to the Standard New Device)
LCD test	Black screen	Press the **Down** key to display the black screen. Release the key to end the test.

Item	Contents	Method and Phenomenon(According to the Standard New Device)
	White screen	Press the **UP** key to display the white screen. Release the key to end the test.
	Grid screen	Press the **Left** key to display the grid. Release the key to end the test.
	Pixel pattern screen	Press the **Right** key to display the pixel pattern. Release the key to end the test.
	LCD Backlight	Press the **Soft1** key to turn off the backlight. Release the key to turn on the backlight and end the test.
	Red screen	Press the **6** key to display the red screen. Release the key to end the test.
	Green screen	Press the **7** key to display the green screen. Release the key to end the test.
	Blue screen	Press the **8** key to display the blue screen. Release the key to end the test.
Speaker	Melody	Press the **1** key to play the music and display **1** on the LCD. If insert earphone, you can hear music form receiver of earphone. Press any key to enter the next test.
Vibration	Motor	Press the **Soft2** key to test the motor. Release the key to end the test.
Earpiece	Earpiece	Press the **3** key to play the multi-tone about 2 seconds. If insert earphone, you can hear multi-tone form receiver of earphone. Press any key to enter the next test.
Audio loopback	Audio loop	Press the **Send** key to perform the audio loopback test. The audio are input from the MIC and output from the earpiece. Press any key to enter the next test.
FM	FM	Insert earphone, press and hold the **0** key to display the value of the searched channel. If the signal of some channel is good, you will hear the FM radio from earphone. If there is no channel, no value is displayed. Press any key to enter the next test.
Keypad backlight	Backlight	Press the **5** key to turn on the keypad backlight and display **5** on the LCD. Release the key to turn off the keypad backlight and end the test.
Camera	Camera	Press the **9** key test camera. Press any key to enter the next test.
*	Mini SD card	Press the ***** key test mini SD card. If SD card is normal, LCD display “cards is ok”, otherwise LCD display “No Card”. Press any key to enter the next test.
Keypad	Keypad	Press the *****, **OK**, **2**, **4**, **music**, **C**, **camera** keys to display corresponding characters on the screen. Press the **#** key, if all the keys are tested, **PASS** is displayed; otherwise, **FAIL** is displayed. Press the **Power** key to quit the test.

10.3 Voice Call Test

1. Insert R-UIM card to mobile phone, press and hold **Power** key to power on.
2. Check whether the signal strength is changed normally in normal network environment.
3. Dial a fixed-line number to test the voice quality during a call.
4. If the preceding tests are normal, end the voice call test. Otherwise, perform the test again or note down failure symptoms for further analysis and repair.