

E5331 Maintenance Manual Basic Version

V1.0

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Revision Record

Date	Revision Version	Revision Reason	Section Number	Change Description	Author
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1 Product Introduction

1.1 Product Appearance



1.2 Hardware Specifications

Item	Specifications	
Technical standard	• WAN: HSPA+/HSPA/UMTS/EDGE/GPRS/GSM • WLAN: IEEE 802.11b/g/n	
Operating frequency	HSPA+/HSPA/UMTS	E5331: 2100/900MHz
	EDGE/GPRS/GSM: 1900/1800/900/850MHz	
	WLAN: 2.401GHz–2.495GHz	
Internal memory	128MB Flash, 64MB Memory	
Maximum transmitter power	UMTS: ≥ 24 (+/-3) dBm	
	WLAN (Power adapter mode)	802.11b: 14 (+/-3) dBm
		802.11g: 11 (+/-3) dBm
		802.11n: 7 (+/-3) dBm
Receiver sensitivity	UMTS: -106dBm	
	WLAN 802.11b: -76dBm@11Mbps/-82dBm@1Mbps	
	WLAN 802.11g: -65dBm@54Mbps	
	WLAN 802.11n: -64dBm@65Mbps	

Item	Specifications
WLAN speed	802.11b: Up to 11Mbit/s
	802.11g: Up to 54Mbit/s
	802.11n: Support MCS0–MCS7; Up to 72.2Mbit/s.
Maximum power consumption	3.5 W
Power supply	• AC: 100V–240V • DC: 5V, 1A
Battery	• Type: Li (Rechargeable) • Capacity: 3.7 V, 1500 mAh • Maximum working time: 4.5 hours • Maximum standby time: 150 hours while Wi-Fi is off; 30 hours while Wi-Fi is often on.
External interfaces	USB interface: Micro USB
	SIM card: standard 6-pin SIM card interface
Display screen	LED
key-press	Power key, Reset key
Antenna	• Built-in GSM/UMTS main diversity antenna • Built-in UMTS diversity antenna • Built-in WLAN antenna
Dimensions (D × W × H)	92.8mm×60mm×13.8mm
Weight	about 83g (including the battery)
Temperature	• Operating: 0°C to +35°C • Storage: –40°C to +70°C
Humidity	5% to 95%

2 Maintenance Instructions

2.1 Document Application

This document provides instructions for the maintenance of Huawei products for the maintenance personnel in Huawei-authorized service sites. This manual is Huawei proprietary and is only permitted to be used by authorized service sites or companies. Mistakes may be found in the document. If you have found any mistake or have any suggestion, please 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 the operation and conduct the maintenance 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 is lead-free.



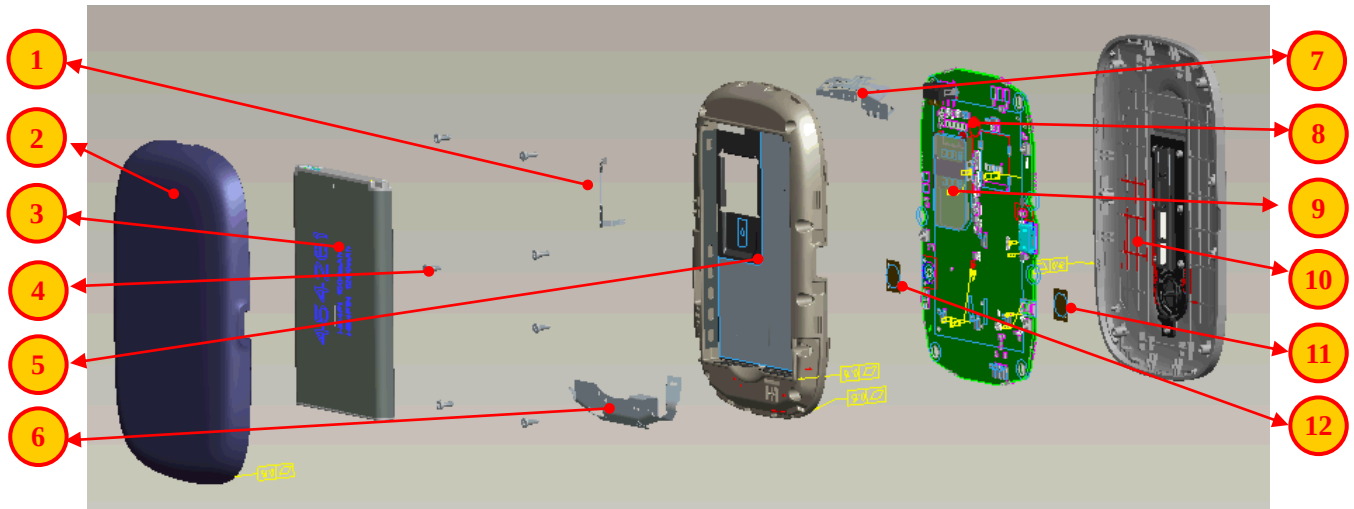
Electrostatic discharging is the major cause for the damage of sensitive electronic components. Each service site should attach great importance to the electrostatic discharging and strictly observe the antistatic measures described in this manual.

2.3 Maintenance Information Direction

To obtain related product knowledge and maintenance information, please visit Huawei website

<http://www.huaweidevice.com/worldwide/technicalIndex.do>

3 Exploded View of the Whole Unit

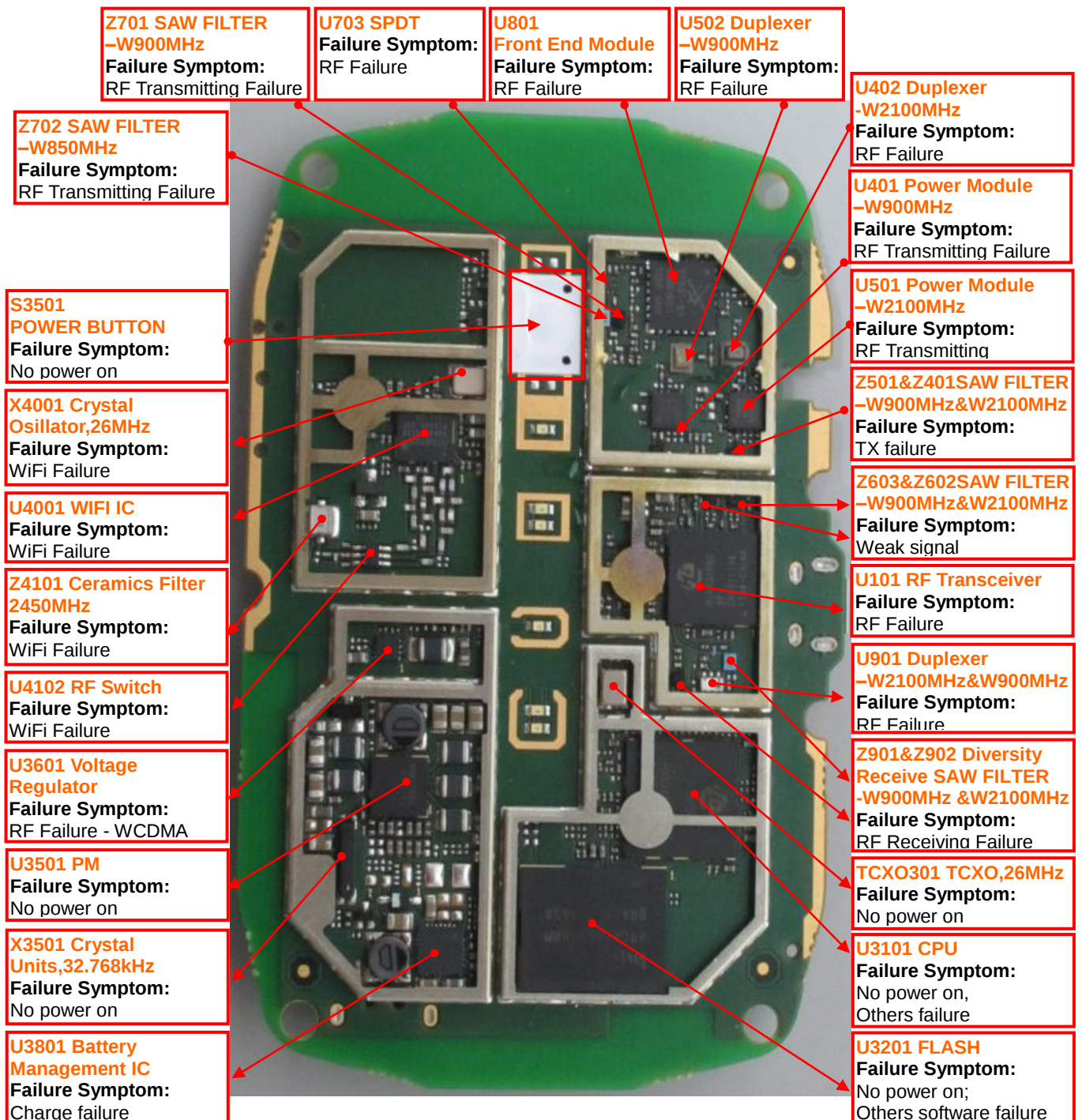


This exploded view is only applied to show phone frame. It is not regarded as a reference for applying spare parts.

No.	Description	Quantity
1	WiFi Antenna	1
2	Battery Cover	1
3	Battery	1
4	Bolt	7
5	Back Cover	1
6	Main Antenna	1
7	Diversity Antenna	1
8	Water Proof Label	1
9	Main Board	1
10	Front Cover	1
11	Power Button Dome	1
12	Reset Button Dome	1

4 Location of Components on the Main Board

Take E5331 for example:



BOM List is only for your reference, the lasted BOM information is downloaded in the system of Huawei.

BOM	Description	Location
07050038	NTC,10000ohm,NTC,SMD,0402,B=3380K,TS16949	RT301
07050063	Thermistor,150kohm+/-5%,SMT,0402	RT4101,RT4201,RT4224
07040075	Varistor,18V,14V,10A,40V,SMT,0402,82pF@1KHz	RV3301,RV3601
07040071	Varistor,90V,45V,1A,300V,SMT,0402,3pF@1MHz	RV4101,RV4102,RV4103, RV4104,RV4105,RV4106
16100036	Touch switch-SPST-12V(DC)-0.05A-SMT-0.6mm-5*2.5-100000-for Mobile phone side key	S3301,S3302,S3601
12070021	TCXO,26MHz,+/-1.5ppm(max),+2.85V,+/-1.5ppm(max),30degC,+80degC	TCXO301
35020092	Consumption Chip,Hi6331RBCV301,STFBGA,2.85V/1.8V,2G/3G Multi mode and Multi band RF Transceiver	U101
35020094	Consumable Chip,Hi6481RBCV150,TFBGA,3.3/5V,Average Input Current Limit,Six Bucks E5	U201
40060266	MCP,1Gb(128Mb*8) NAND FLASH,166MHz,128KB,1.8V,FBGA107(Pb-free),512Mb(32Mb*16) DDR	U301
47100306	Power Module,1920-1980MHz,27dB,28dBm,QFN,1000V	U401
13080065	Duplexer,TX:1920~1980MHz/RX:2110~2170MHz,1.8dB,2.2dB,50dB/ 42dB,2520	U402
47140042	0.5~3GHz,SPDT,0.46,22,TSSON	U1004,U1204,U601,U702, U703,U902
47100348	RF Power Amplifying Module,824MHz~849MHz/880MHz~915MHz/1710MHz~1785MHz/18 50MHz~1910MHz,33.5,35dBm,LGA	U701
47140051	RF Switch, 824-2170MHz,SP10T,0.65-1.2dB,1.5,18dB/58dB,QFN,200~260V(HB M),Termnal Dedicated	U802
51621511	DKBA8.382.0693,U7519_Antenna_Pin,U7519	U803,U805
36020336	LVC MOS,Unbuffer Single Inverter Gate,SC-70,9.0ns,4.0mA,CMOS,CMOS	U806
47140045	0.5~2.5GHz,SP4T,0.95,15,QFN	U901
47100387	RF Power Amplifying Module,880MHz~915MHz,28/18/11,QFN,1000V	U1201
13080105	Duplexer,TX:880~915MHz/RX:920~960MHz,3dB.,3.5dB.,47dB./38dB .,2.5*2.0*0.5mm	U1202

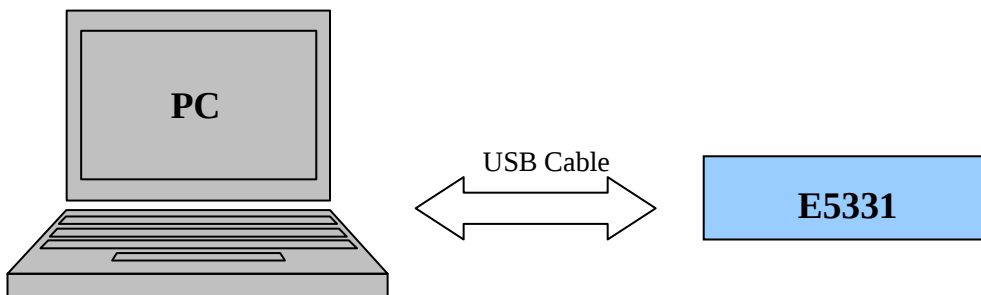
35020090	Consumable Chip,Hi6755RBCV120,SVFBGA,1.2/2.5V,WCDMA/HSPA Communication Baseband Function,SOC Support Dual Mode PS	U3101
39110566	Switching Regulators,1~4V,1.5A,SMT	U3802
39200280	Terminal Dedicated IC,WIFI 802.11bgn,1.8V~3.3V,BGA97(Pb-Free)	U3901
47140023	RF Switch,DC~3000MHz,SPDT,0.6dB,1.4,20dB,SOP6-26-50,250V	U4002
39070085	Battery Management IC,4.1~16V,DC-DC Charger,Smart Power Control,QFN,SMT	U4201
39110532	Voltage Regulator,Vin~20V,0.7A,5-Pin SOT23	U4301
12020123	Crystal Units,32.768kHz,12.5pF,20ppm,65kohm,SX4	X3601
12020132	Crystal Osillator,26MHz,12pF,+/-10ppm,50ohm,SMD3225	X3901
13010186	SAW FILTER,1950,2.9	Z401
13010253	SAW Filter,881.5MHz/942.5MHz,2.5dB/3.0dB,50V,1814	Z601
13010176	SAW filter,2140MHz,1.9dB,1.4*1.1mm	Z602
13010189	SAW FILTER,897.5MHz,2.7dB,100V(MM),SFLT5-0101	Z1201,Z701
13010174	SAW Filter,836.5MHz,2.1dB,50V,1.4*1.1mm,TS16949	Z702
13010320	SAW Filter,881.5MHz/942.5MHz,2.5dB/3.2dB,50V,1814	Z801
13010321	SAW Filter,1842.5MHz/1960MHz,3.0dB/3.0dB,50V,1814	Z802
13010148	SAW Filter ,2140,3.0dB,50V,00231804	Z901
13010240	SAW FILTER,(925~960)MHz,2.1dB,100v,SFLT5-0101	Z903
13030025	Ceramics Filter,2450MHz,2.30dB,2.5*2.0*1.3mm	Z4001
47100305	Power Module, 824MHz~849MHz,27dB,28.5dBm	U501
13080070	Duplexer,TX:824MHz~849MHz/RX:869MHz~894MHz	U502
13030024	ceramic filter,869.5MHz,0.65 dB,ESD	U503
13010174	SAW Filter,836.5MHz,2.1dB,50V,1.4*1.1mm	Z501
7040072	ESD_EMI Filter,14V,30pF,800~3000MHz,ARRAY,0603	Z4301,Z4302,Z4303

5 Software Upgrade

5.1 Preparations Before Upgrade

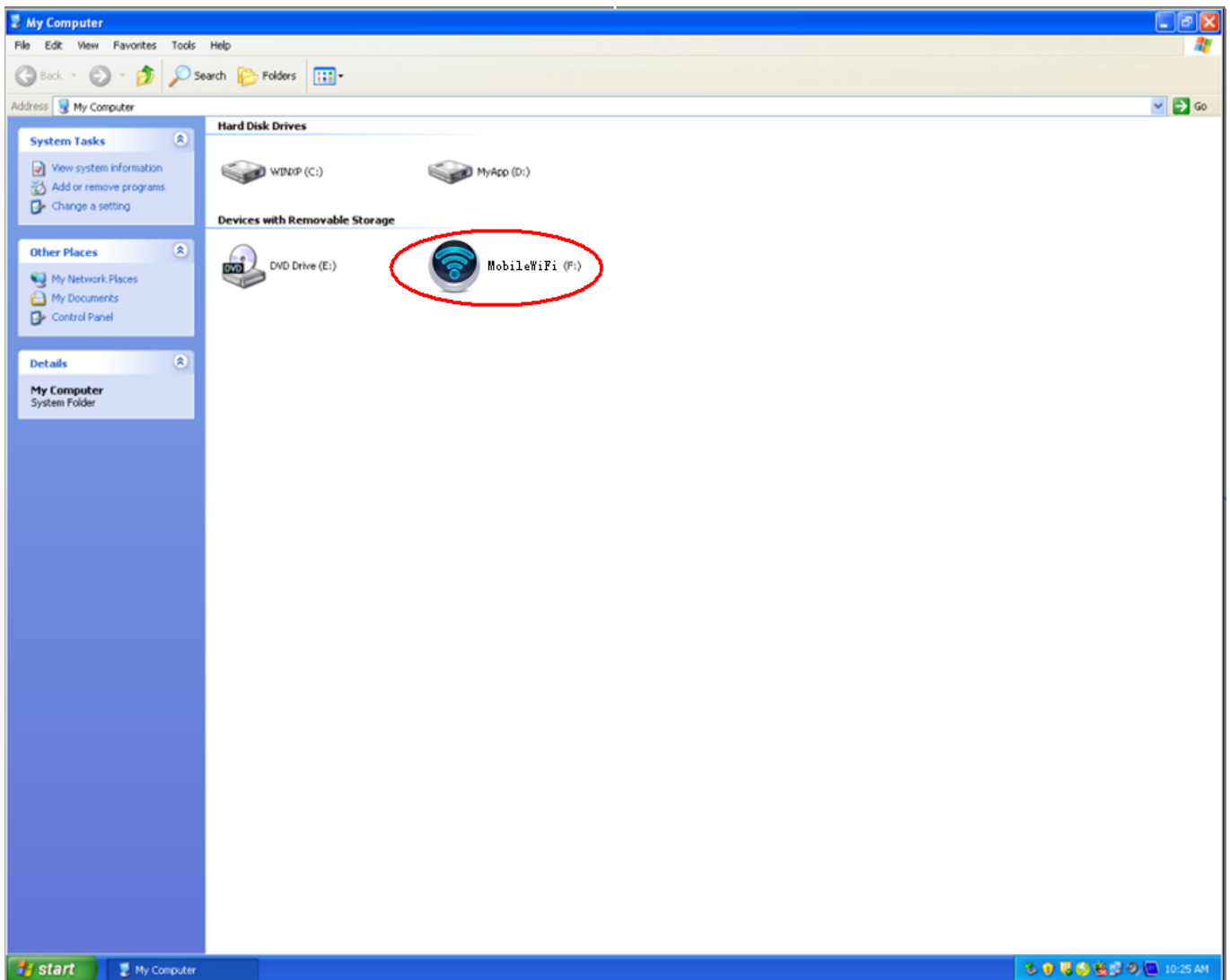
Item	Content	Remark
Upgrade software	E5331 Mobile WiFi Firmware v3.6.exe	Firmware software (The client software is just for you information, please download the newest software to upgrade)
Upgrade mode	Normal upgrade	/
	Force upgrade	/
Upgrade condition	Computer	Windows XP / Windows 7/ Vista
	USB data cable	BOM: 02450760

5.2 Hardware connection

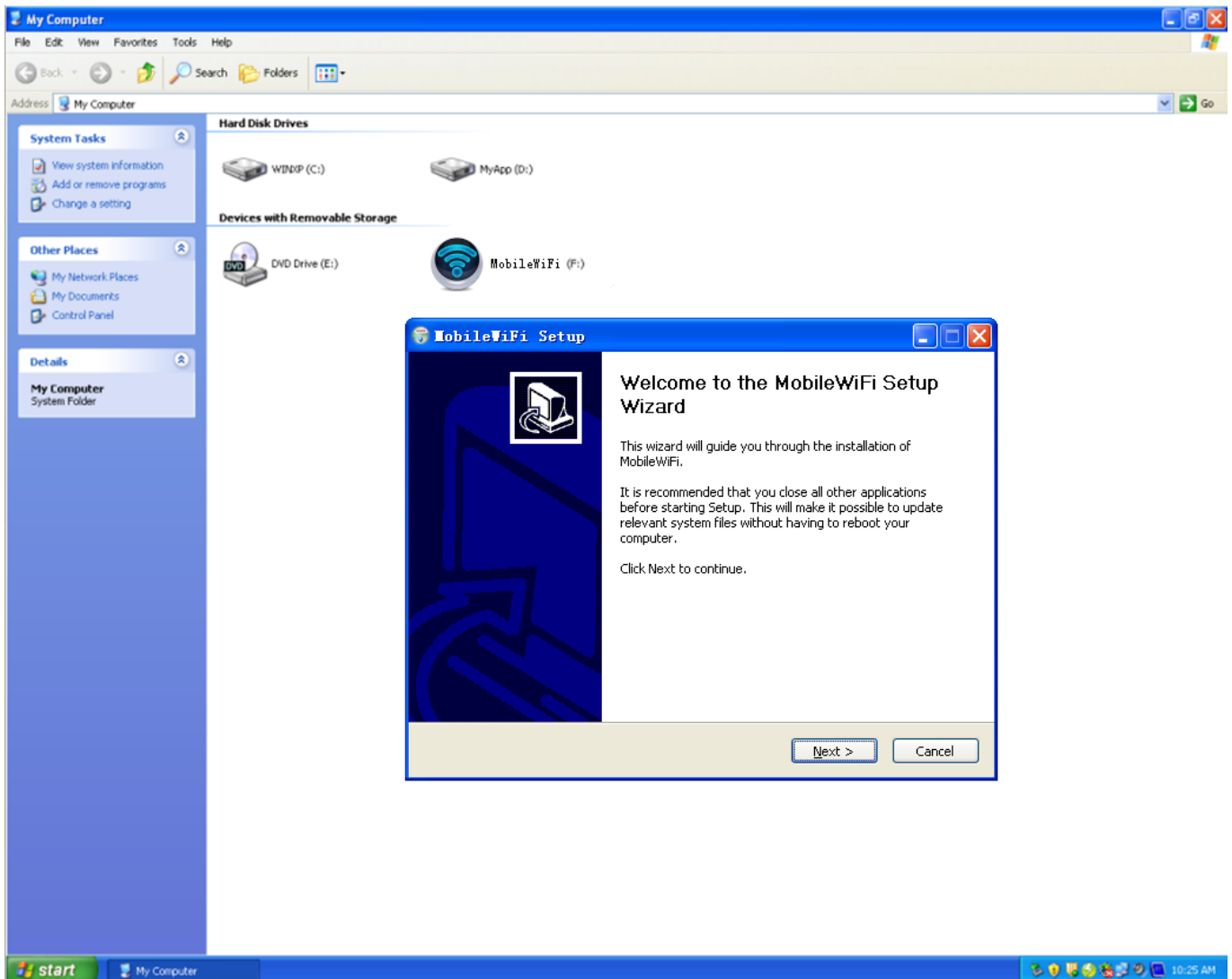


5.3 Client Software Installation

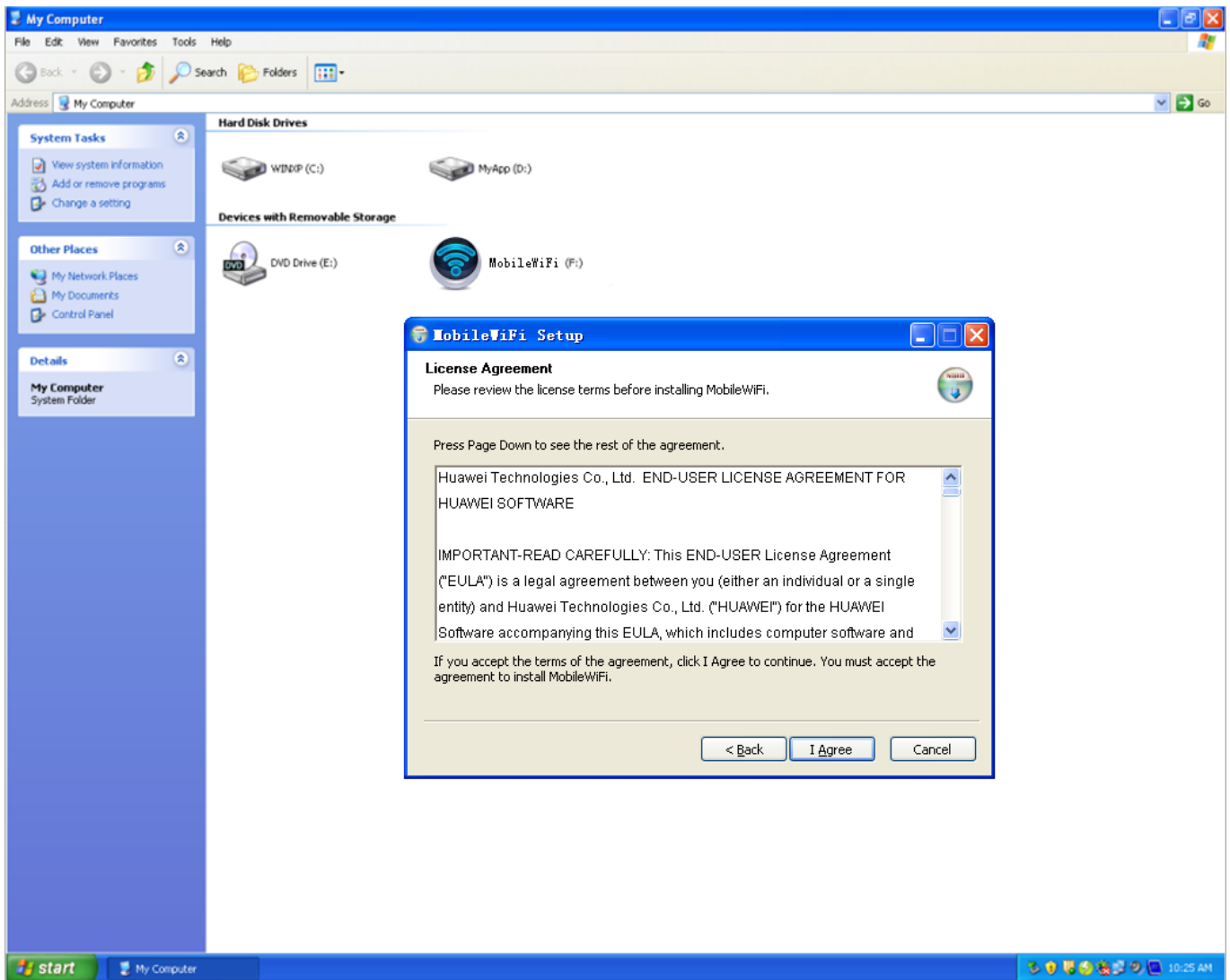
1. Power on the E5331.
2. Connect the E5331 to the PC with USB data cable.
3. Double click the “**MobileWiFi**”.



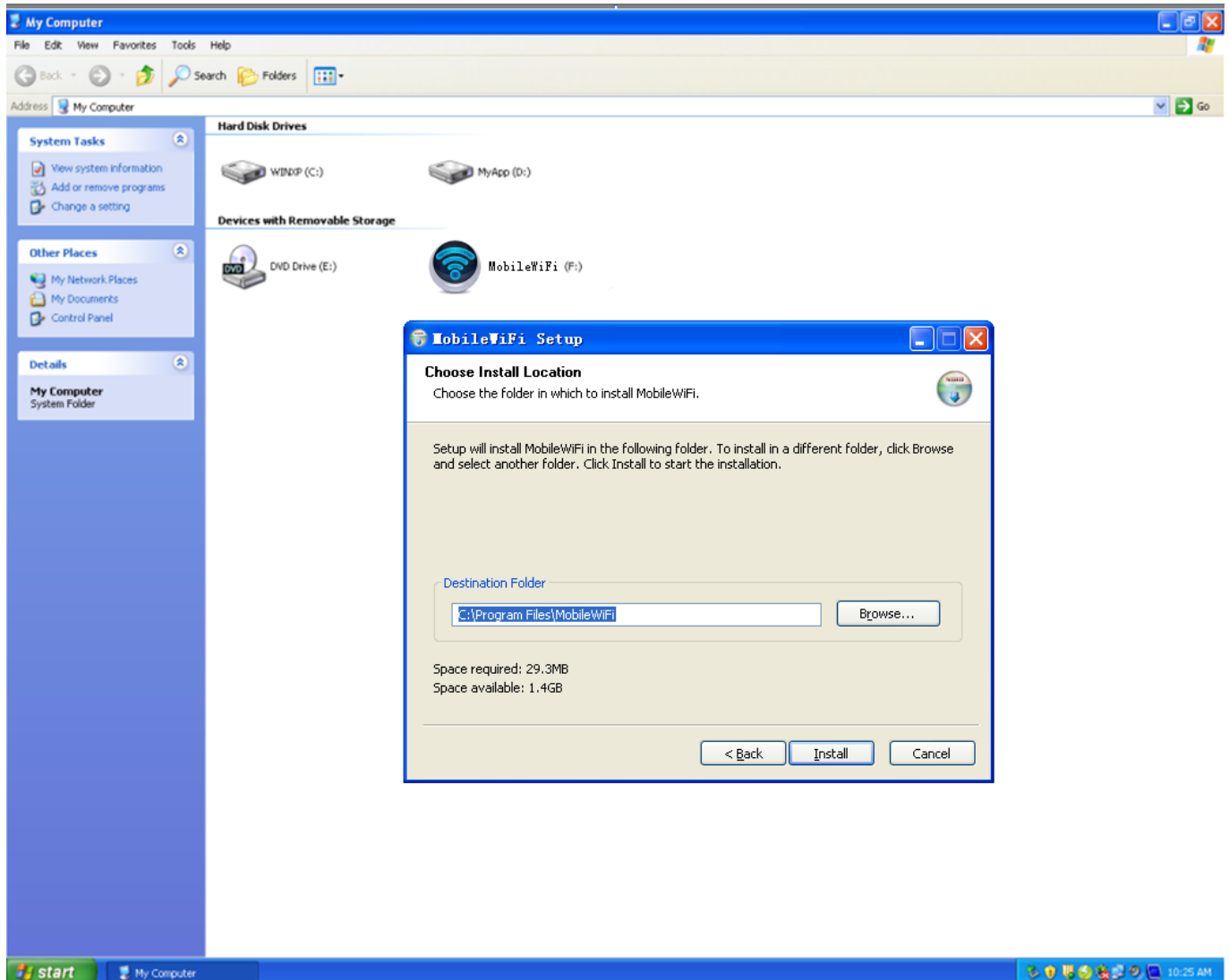
- Click **Next** to continue.

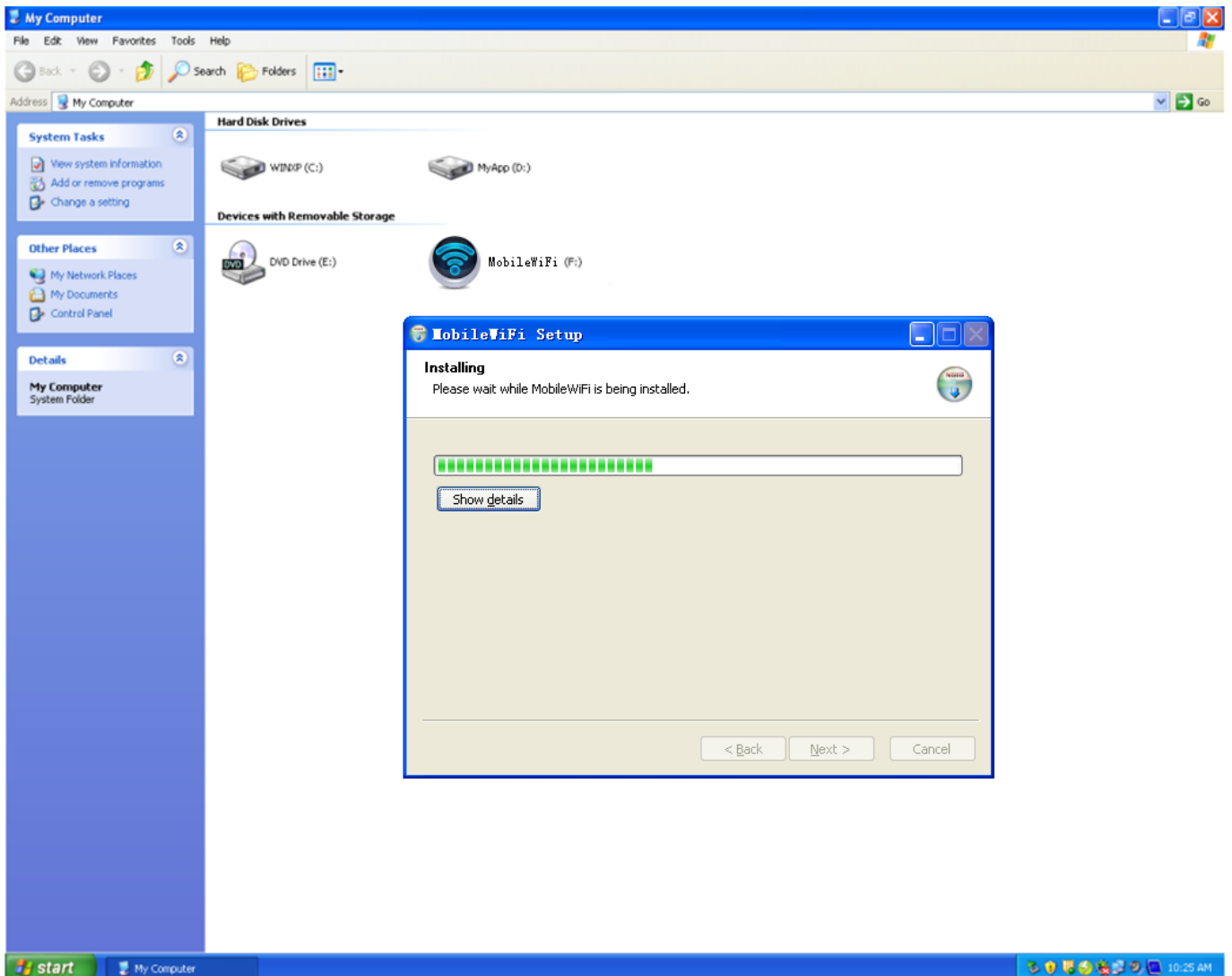


- Click **I Agree** to continue.

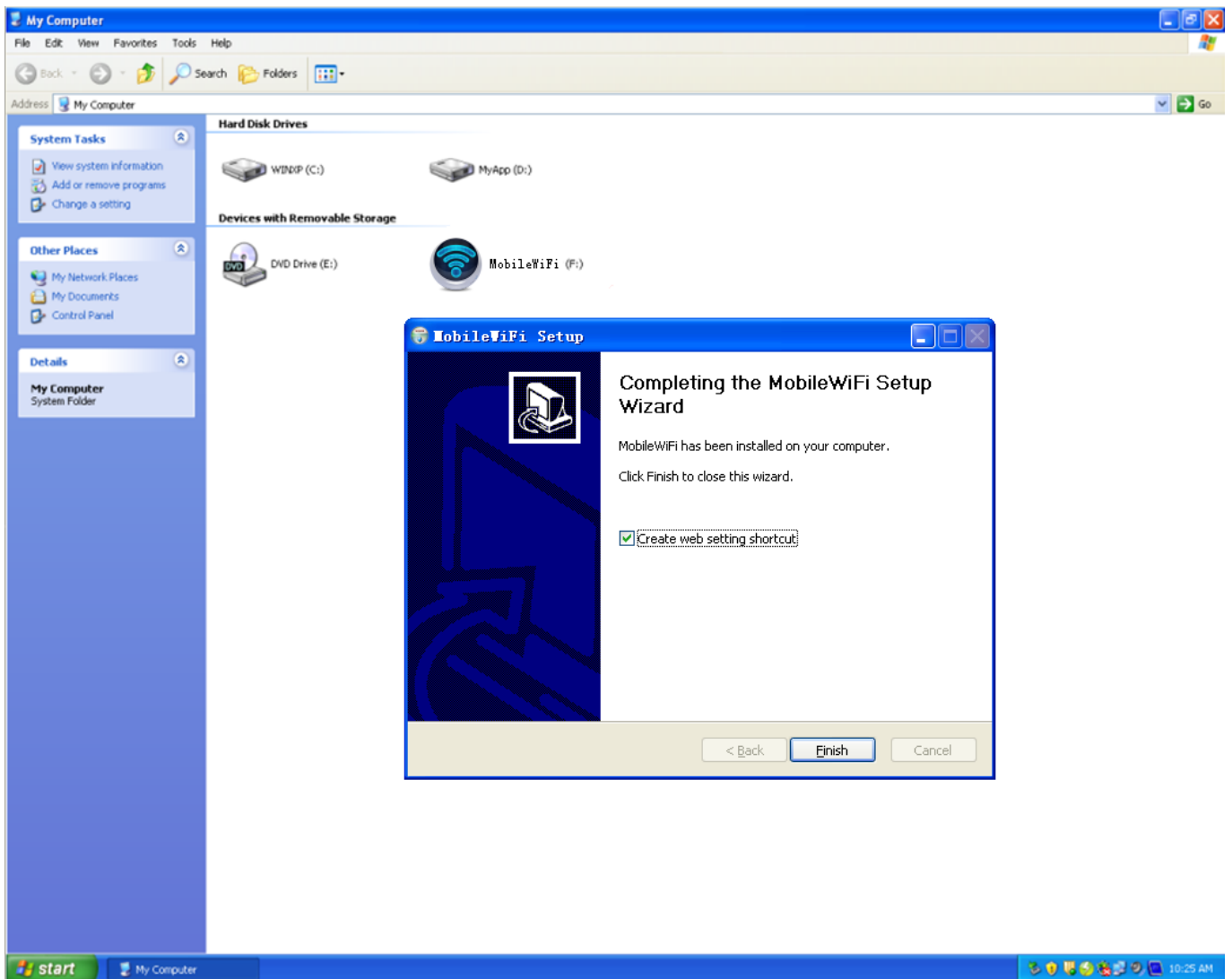


6. Click “Install” to continue.

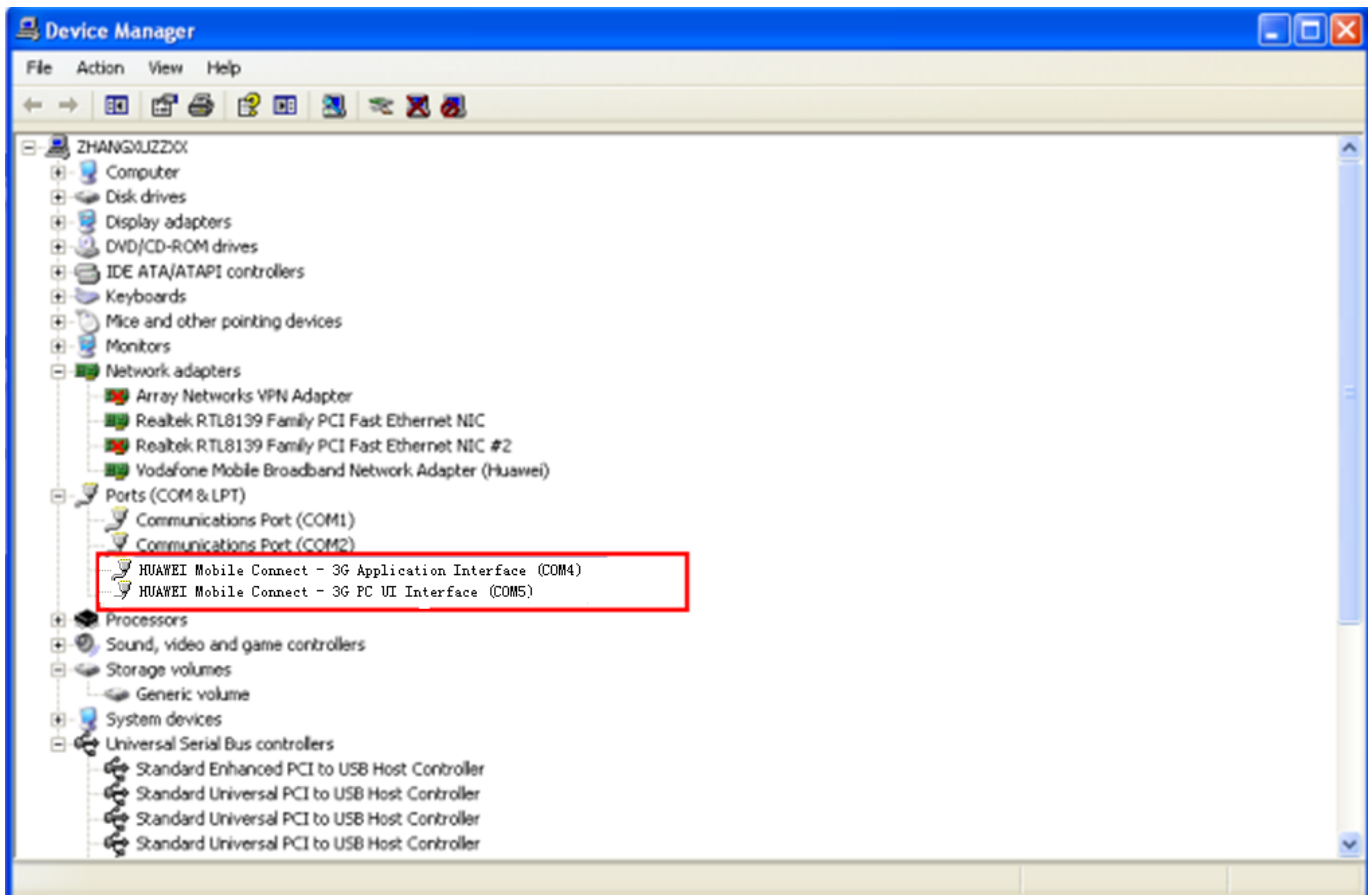




7. The installation is completed. Click **Finish** to close the window.



8. Power on the wireless modem. Then connect the wireless modem to the PC with USB data cable. Access the "Device Management" to check if the connection between the wireless modem and the PC is well.



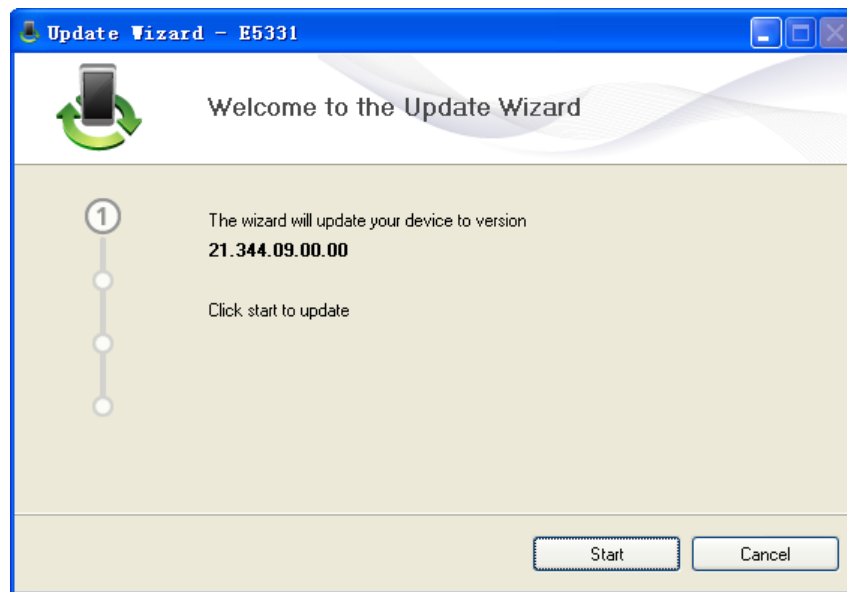
5.4 Update Procedure

Please install the client software before upgrade.

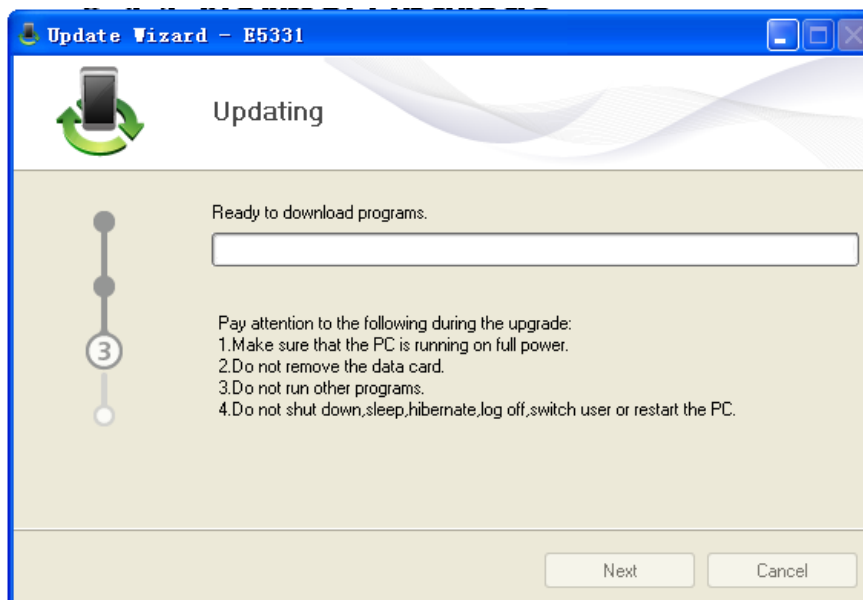
After updated successfully, please restore the factory settings.

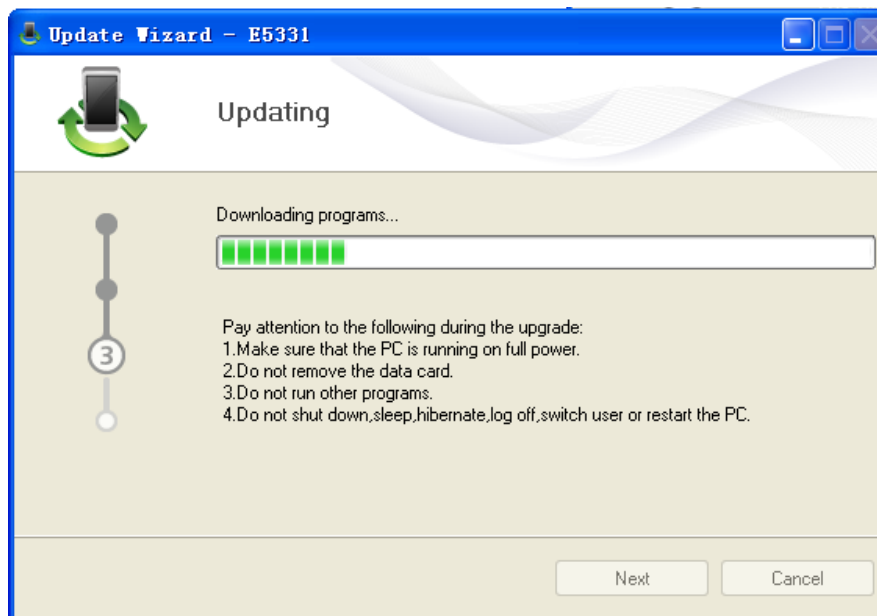
5.4.1 Normal Upgrade

1. Start Upgrade tool, shows as below(actual verisoin is depended on the upgraded firmware), click “next” button to ready to start upgrade the E5331:

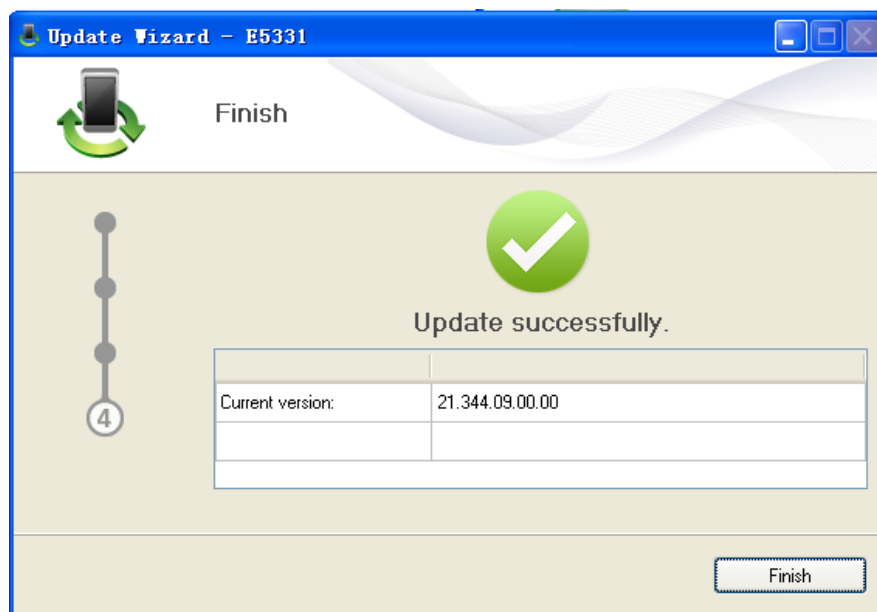


2. click start button, the upgrade software start upgrading, shows as below:





3. After upgrade complete, the board reboot automatically.
4. At last, all work complete, shows as below (actual version is depended on the upgraded firmware),please click the “Finish” button to finish the upgrade:

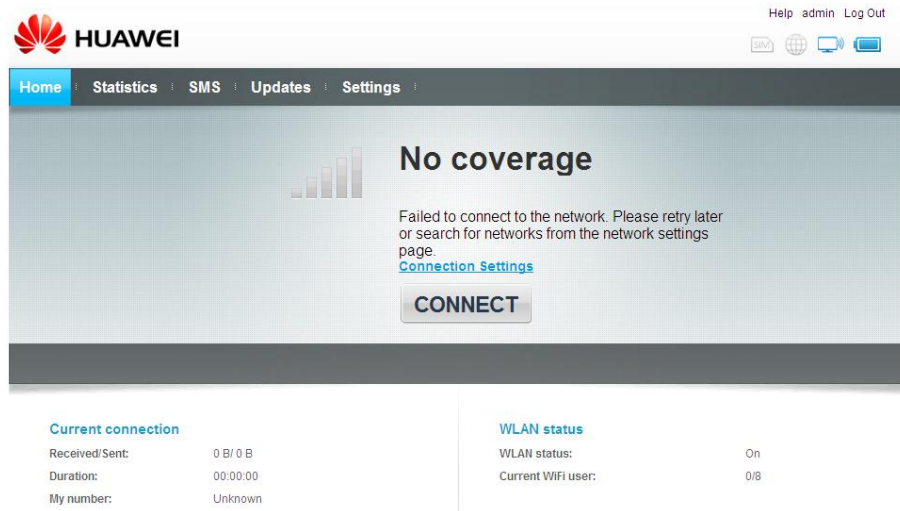


5. Reset your Data Card to restore default settings. Then you can test the function of your data card.
Caution: you must restore default settings of your data card before you test functions of the data card

5.5 Check the Software Version

Verify the FW version from WebUI. You may visit <http://192.168.1.1>

1. Log_in



2. Check Version for E5331.



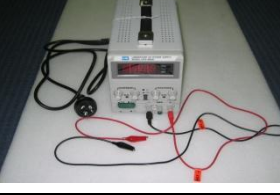
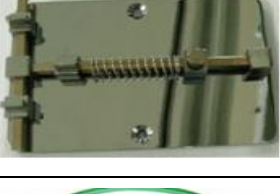
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5.6 Exception Handling

Failure Type	Ensure that...
Can not connect the wireless modem	The wireless modem is power on The client software is installed

Failure Type	Ensure that...
Upgrade software failure	Open the upgrade software is correctly. You can restart the PC and the wireless modem to try the download again.

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: Oscilloscope Application: It is used for measuring during maintenance.
	Name: Tool kit Application: It is used to assembly and disassembly the wireless modem.
	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. Disassemble procedure of the E5331 is shown below.



3. Remove the battery cover.



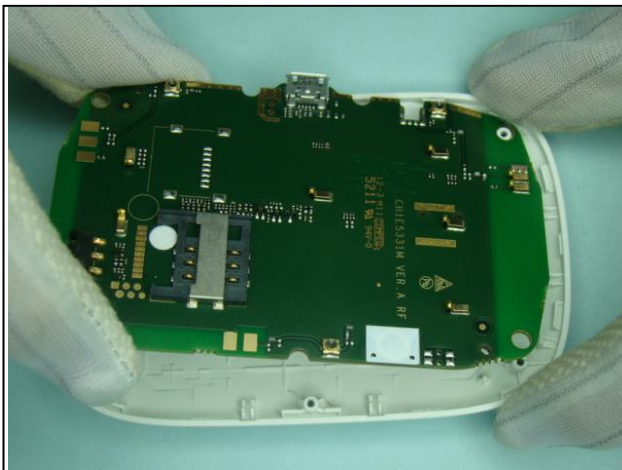
4. Remove the battery.



5. Remove the seven screws.



6. Loosen the Front cover, Remove the Front cover.



7. Remove the main board.



8. Disassembly procedure of the E5331 is completed.

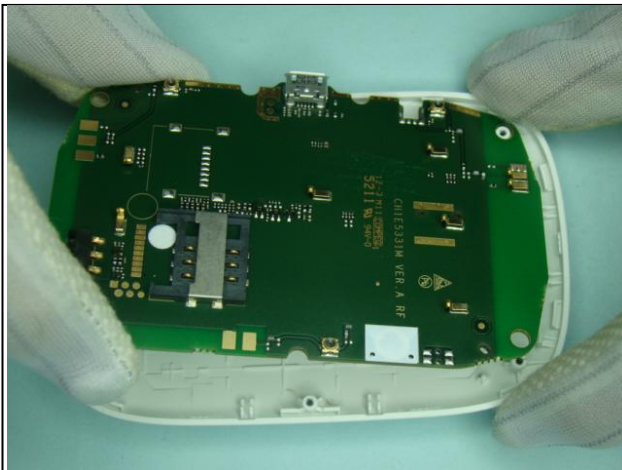
8 Assembly Procedure



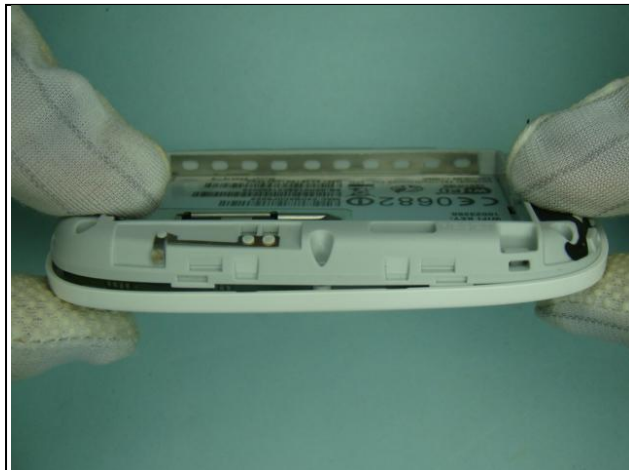
1. Make sure the ESD antistatic wrist strap connect to the ground is normal.



2. Assembly procedure of the E5331 is shown below.



3. Install the main board.



4. Install the back cover.



5. Install the screw.



6. Install the battery.



7. Install the battery cover.



8. Assembly procedure of the E5331 is completed.

9 Troubleshooting for Common Faults

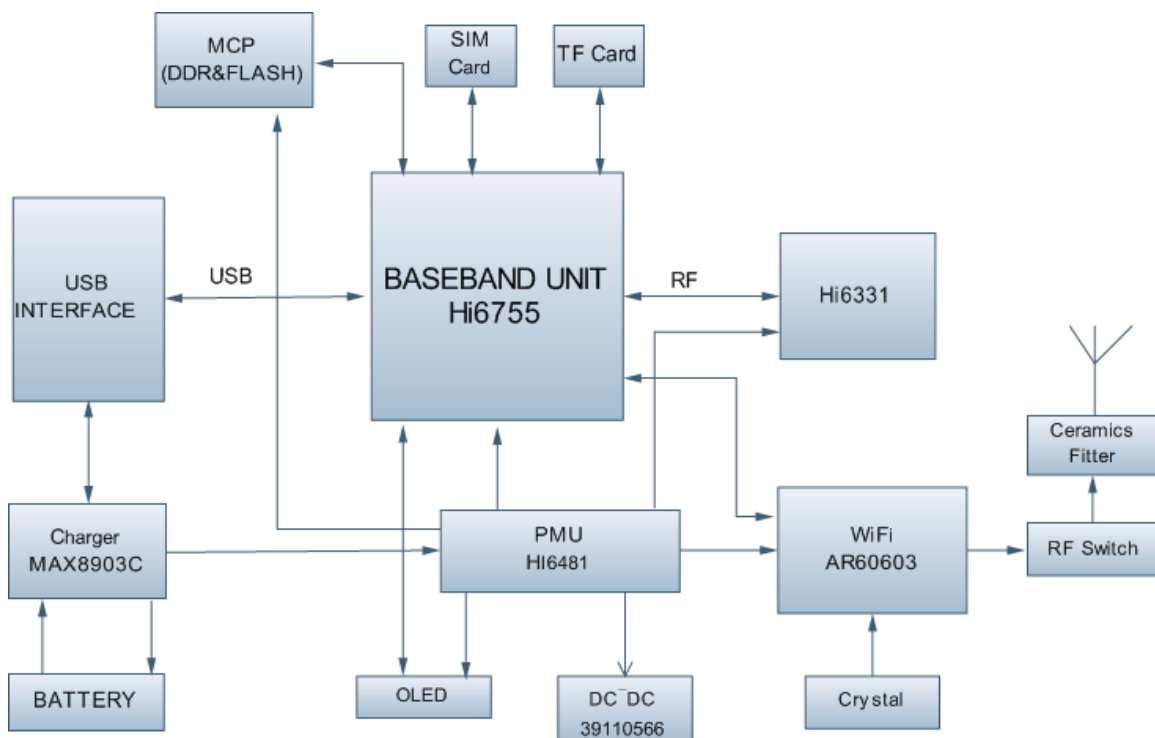
Take E5331 for example:

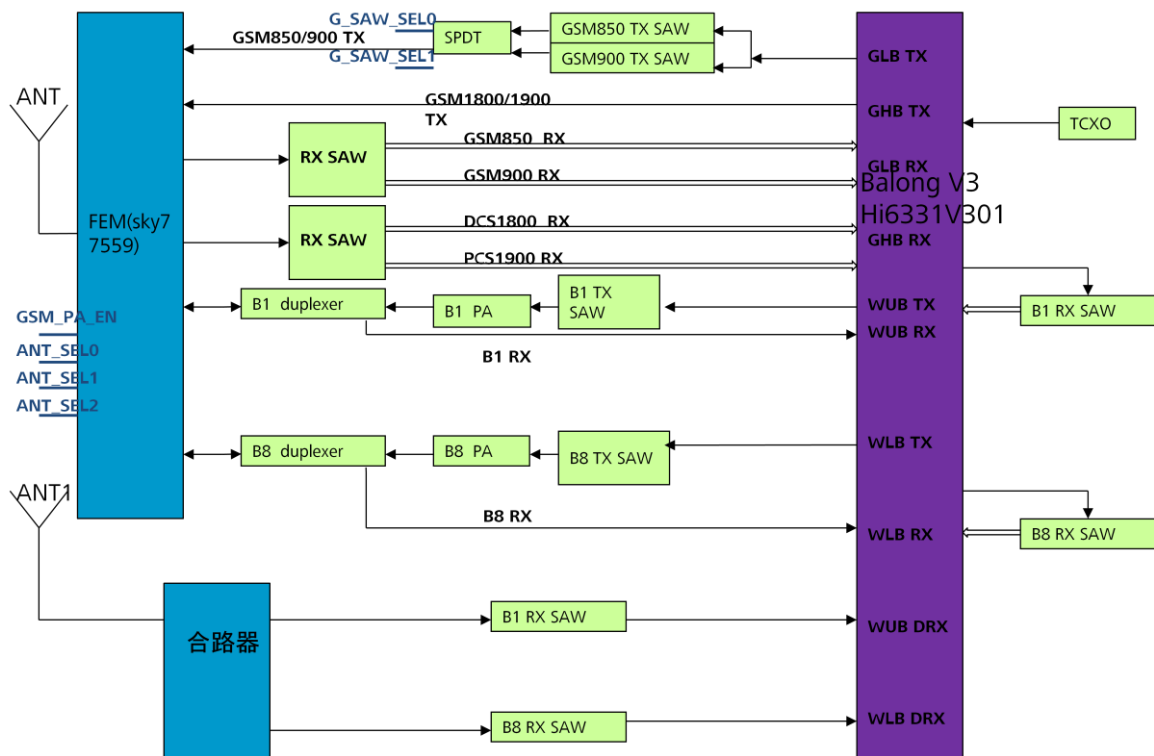
Before performing the following troubleshooting operations on the hardware, ensure that the software on the wireless modem is in good condition and is restored to default settings.

9.1 Principle Instruction

E5331 includes the following modules:

- WLAN baseband sub-system AR6063;
- Power Management Module Hi6481;
- Memory module MCP;
- The baseband processing module Hi6755;
- RF module transceiver module Hi6331.

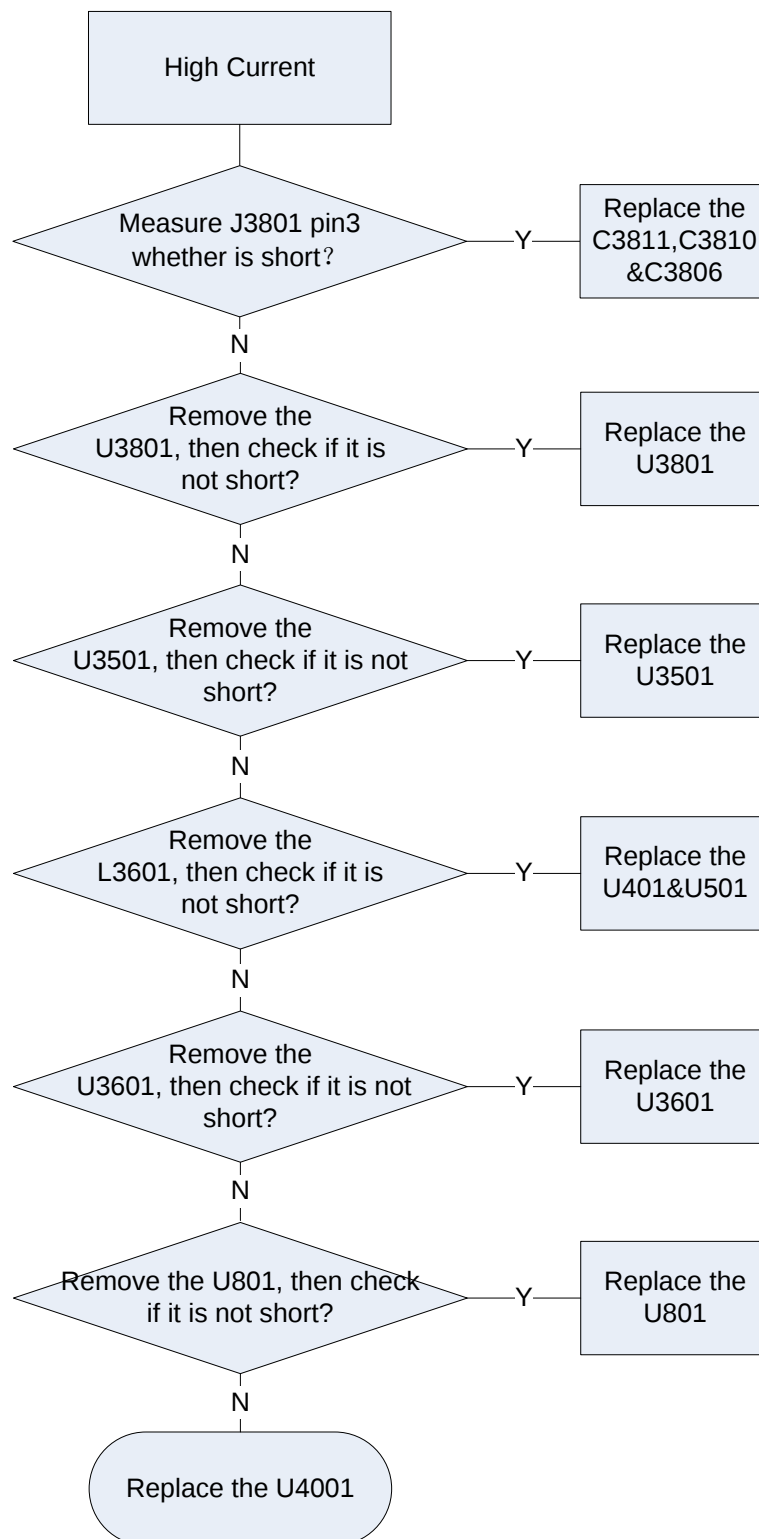




9.2 No Power on

9.2.1 No Power On—High Current (DC Power Supply)

Reference Figure 9-1



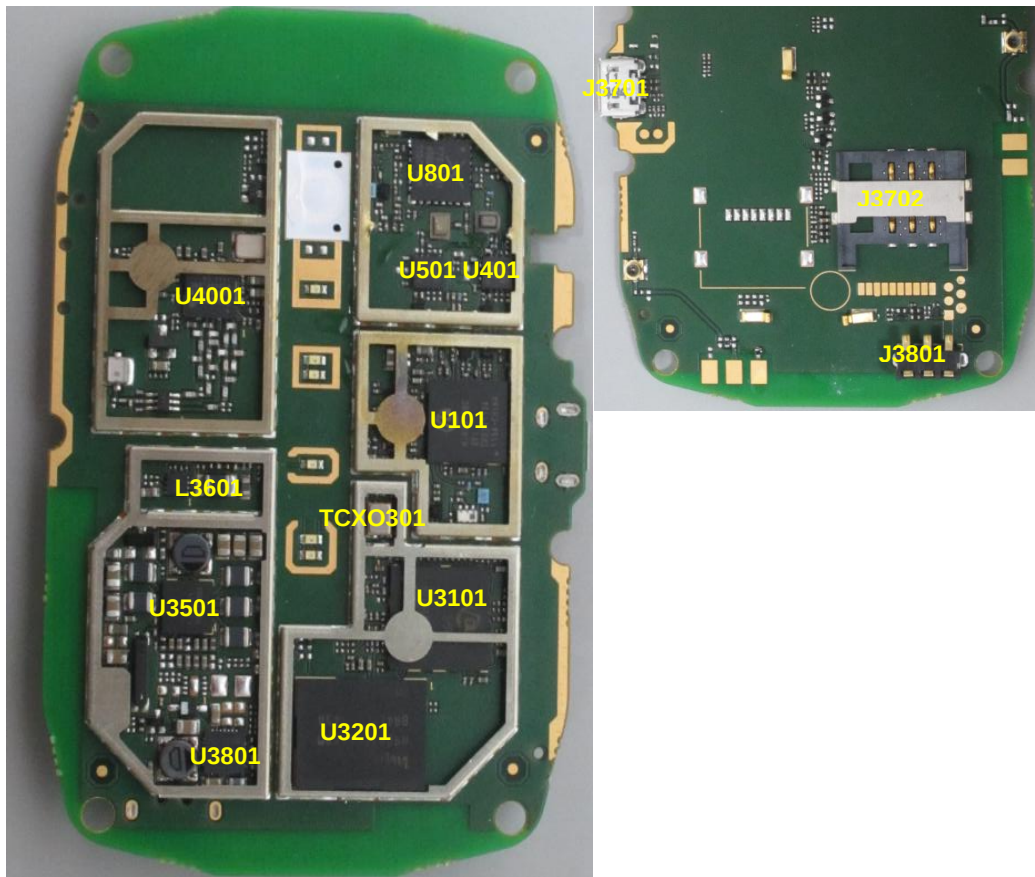
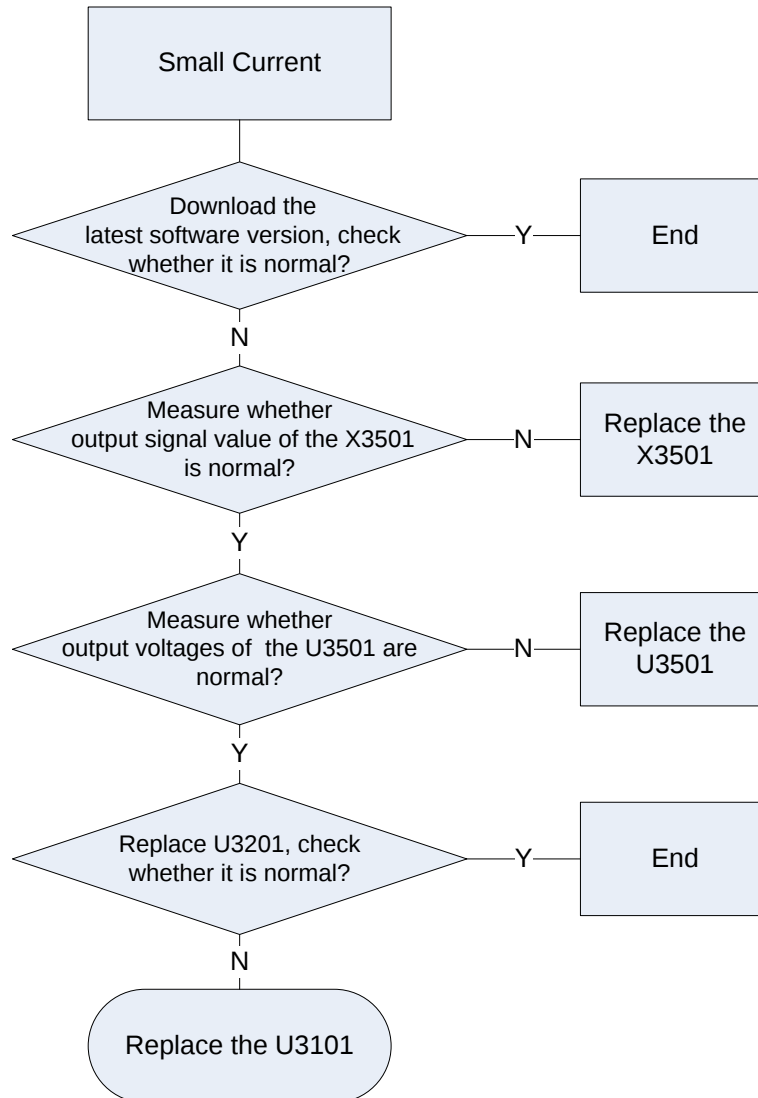


Figure 9-1

9.2.2 No Power On—Small Current (DC Power Supply)

Reference Figure 9-2



U201 Output	Reference Value	Test Point
VDD_2V6	2.6V	C3512
LDO5	/	C3507
VDD_PMU	3.1V	C3533
V_CORE_1V8	1.8V	C3505
VREF	2.6V	C3514
VDD_2V8	2.8V	C3511
VBUCK5	2.85V	C3521

U201 Output	Reference Value	Test Point
VREG_SIM	3V/1.8V	C3513
V_TCXO_2V85	2.85V	C3510
VOUT12	3.3V	C3516
VDD_1V2T	1.2V	C3504
VDD_1V2C	1.2V	C3502
VDD_1V8	1.8V	C3503

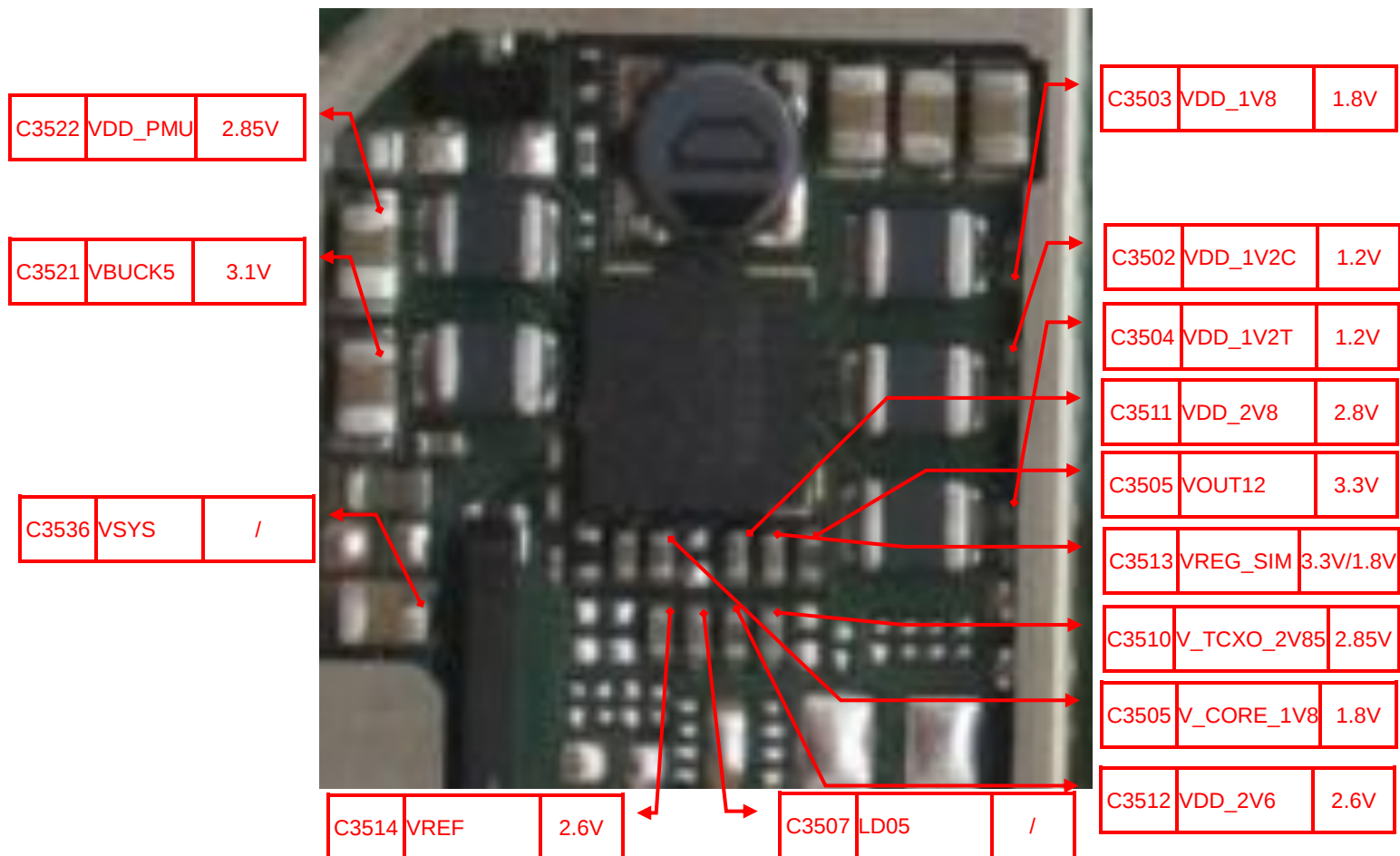


Figure 9-2

9.3 Charge Failure

Reference Figure 9-3

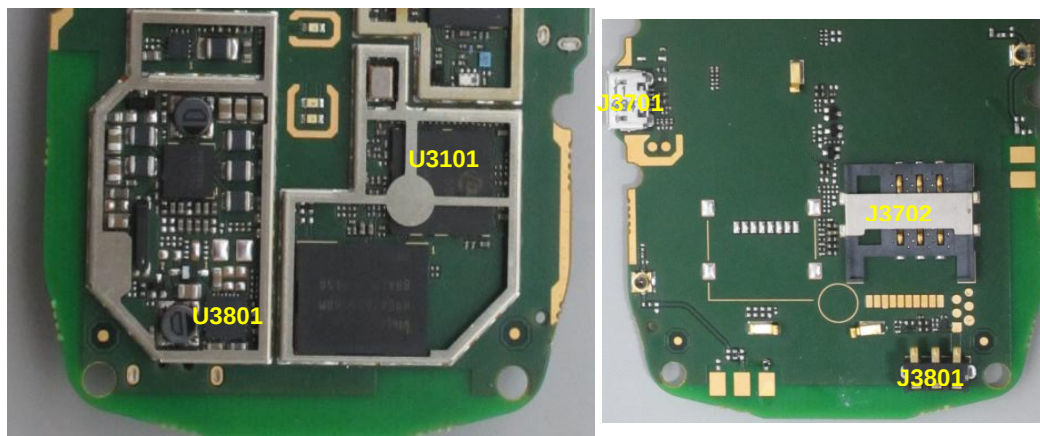
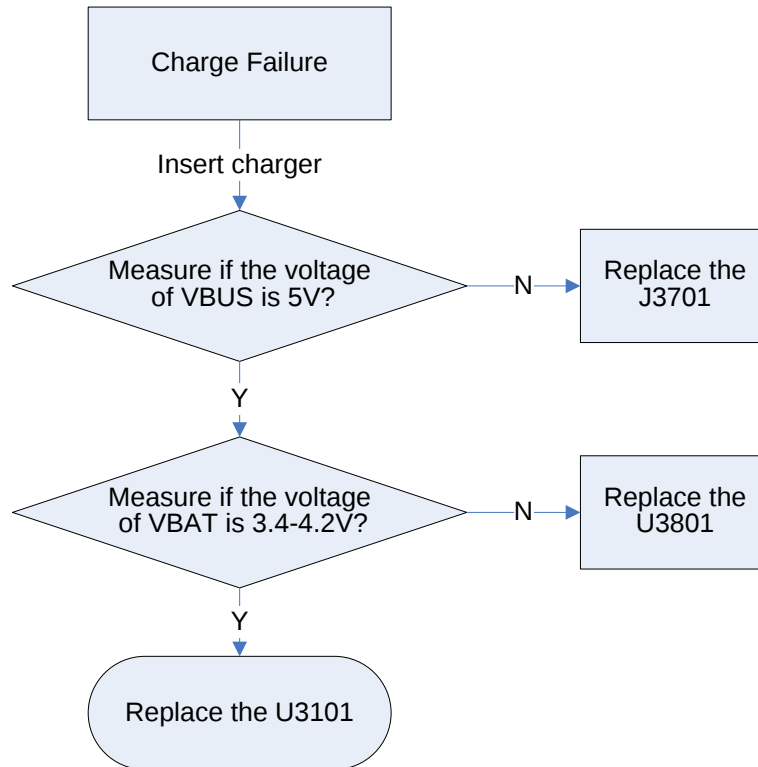
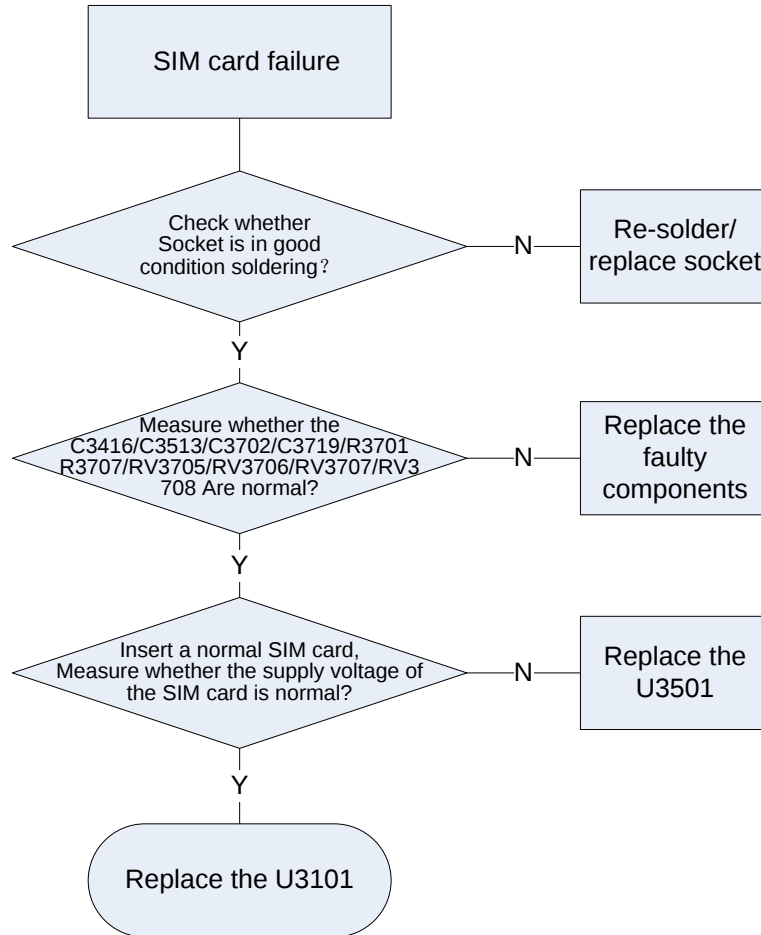


Figure 9-3

9.4 SIM Card Failure

Reference Figure 9-4



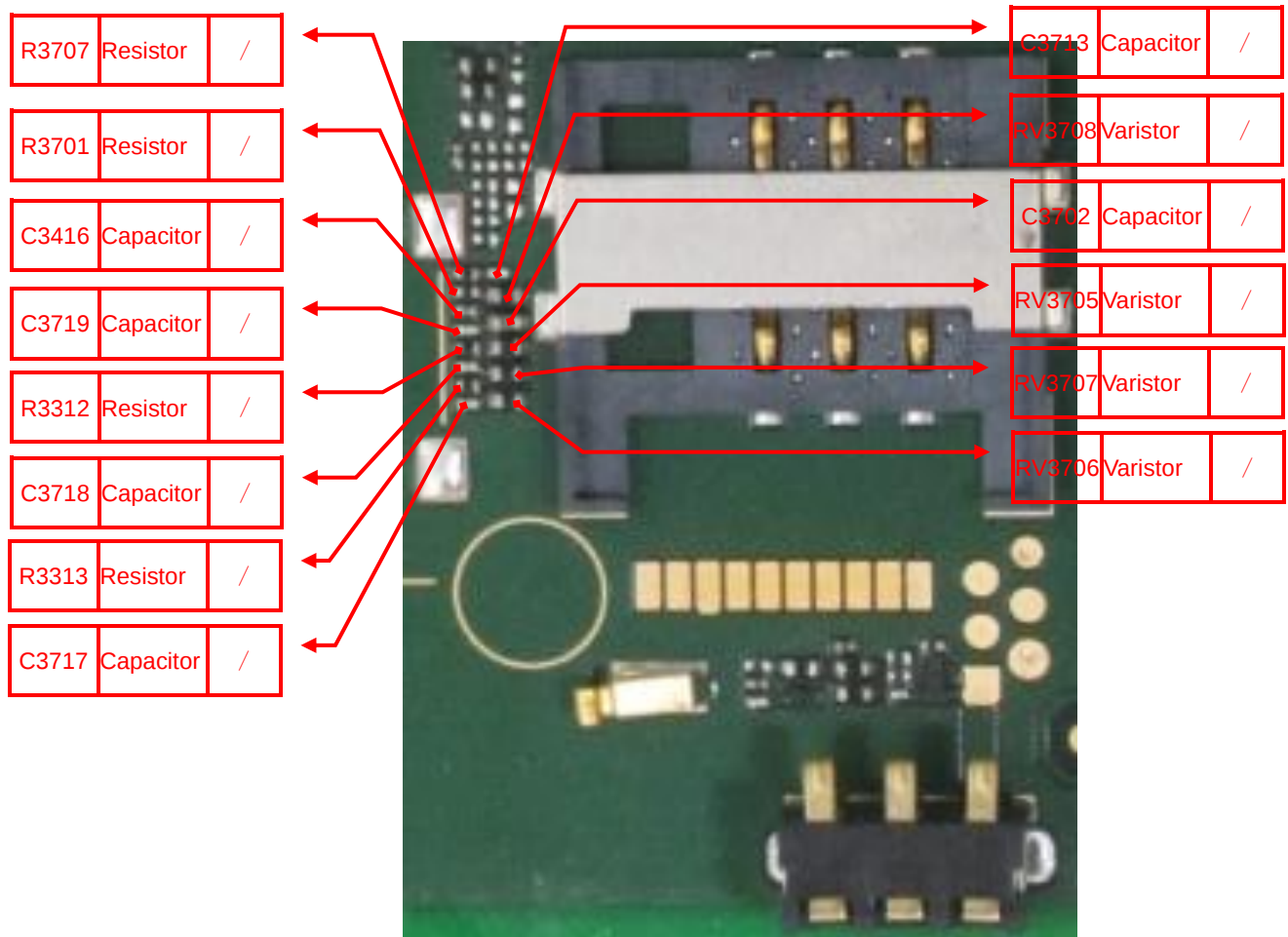


Figure 9-4

*

9.5 Data Communication Failure

Reference Figure 9-5

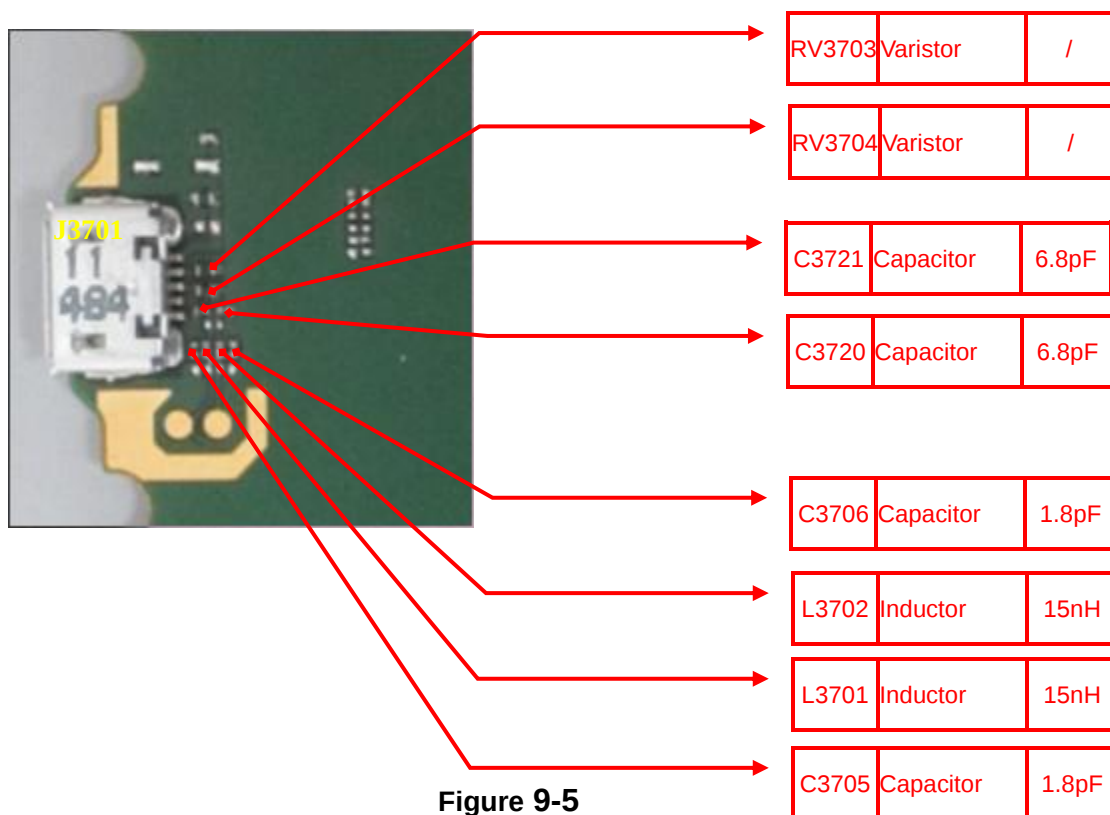
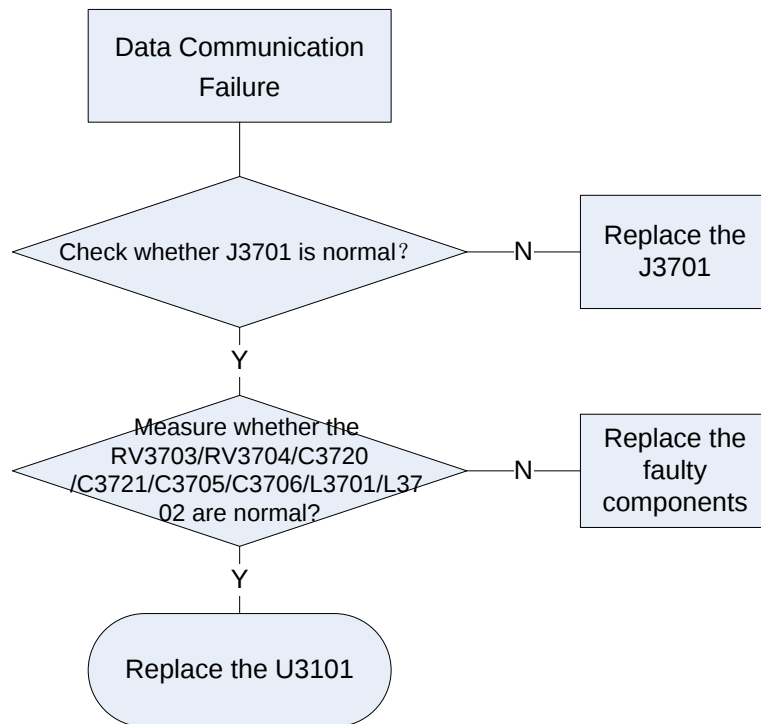
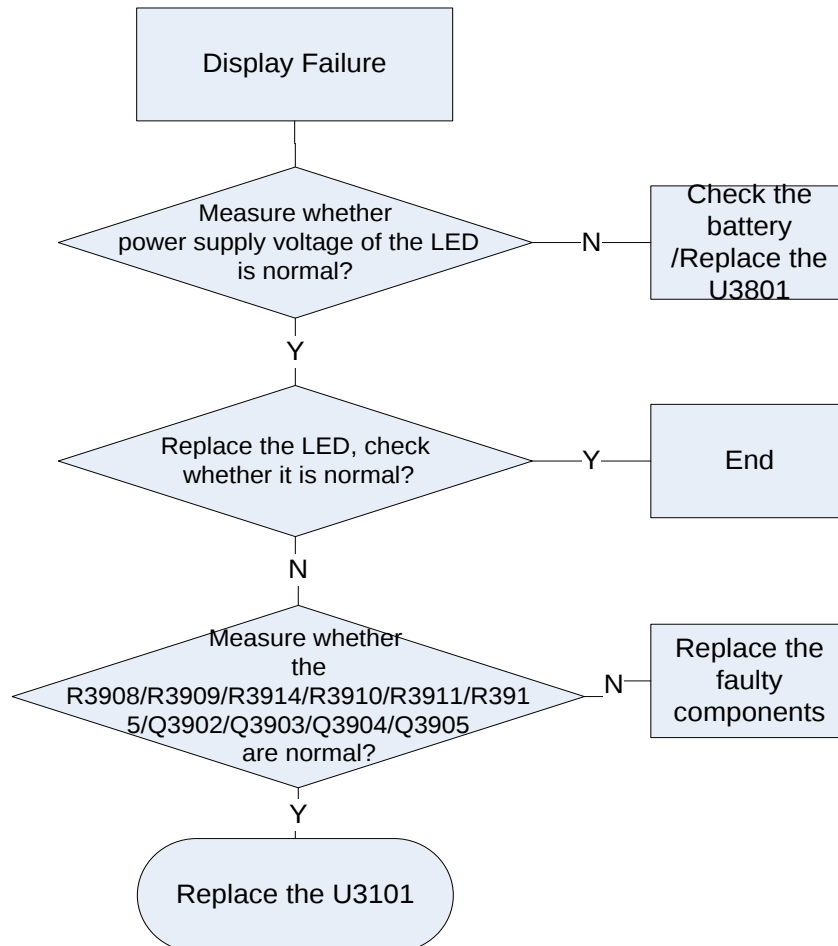


Figure 9-5

9.6 Display Failure

Reference Figure 9-6



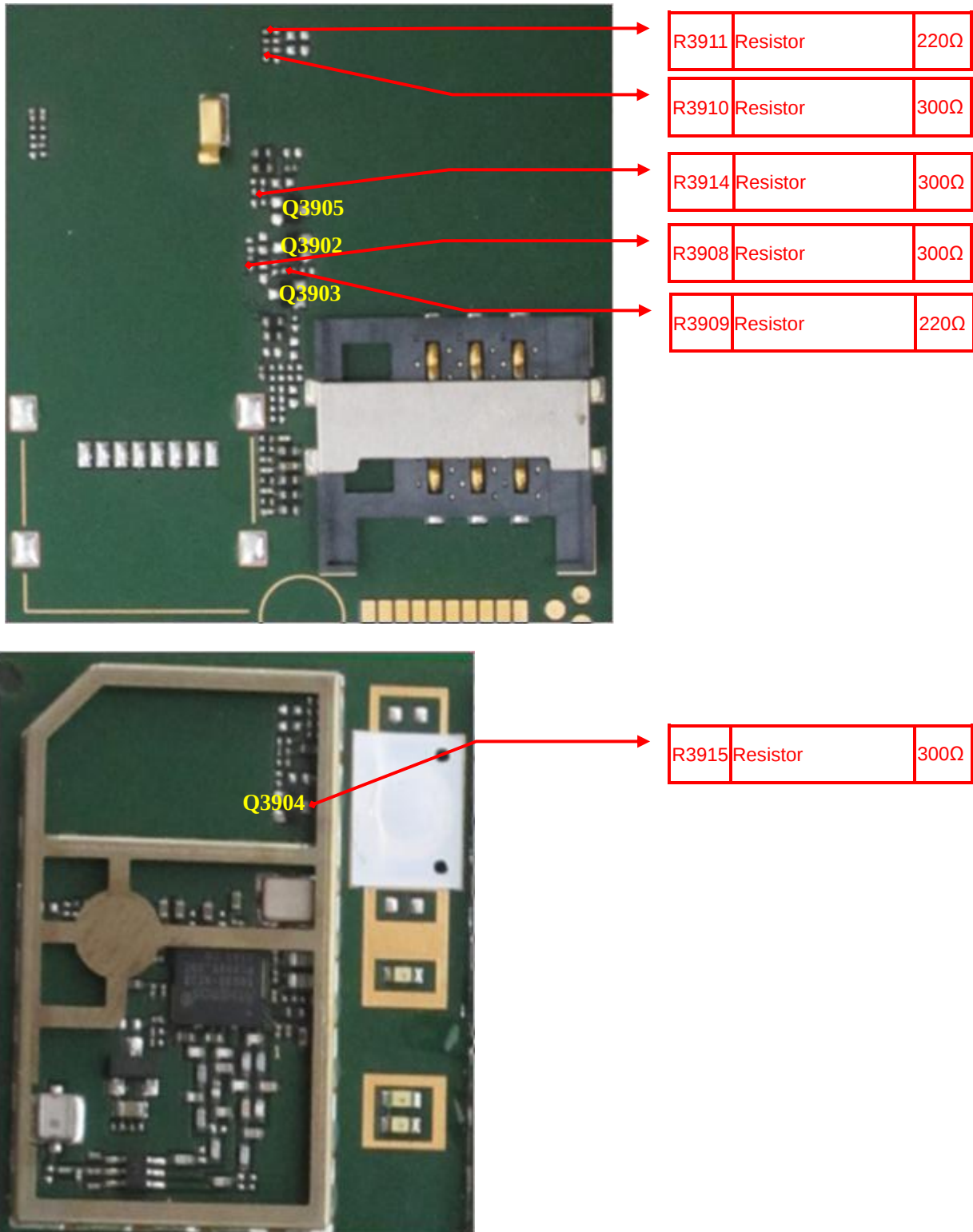
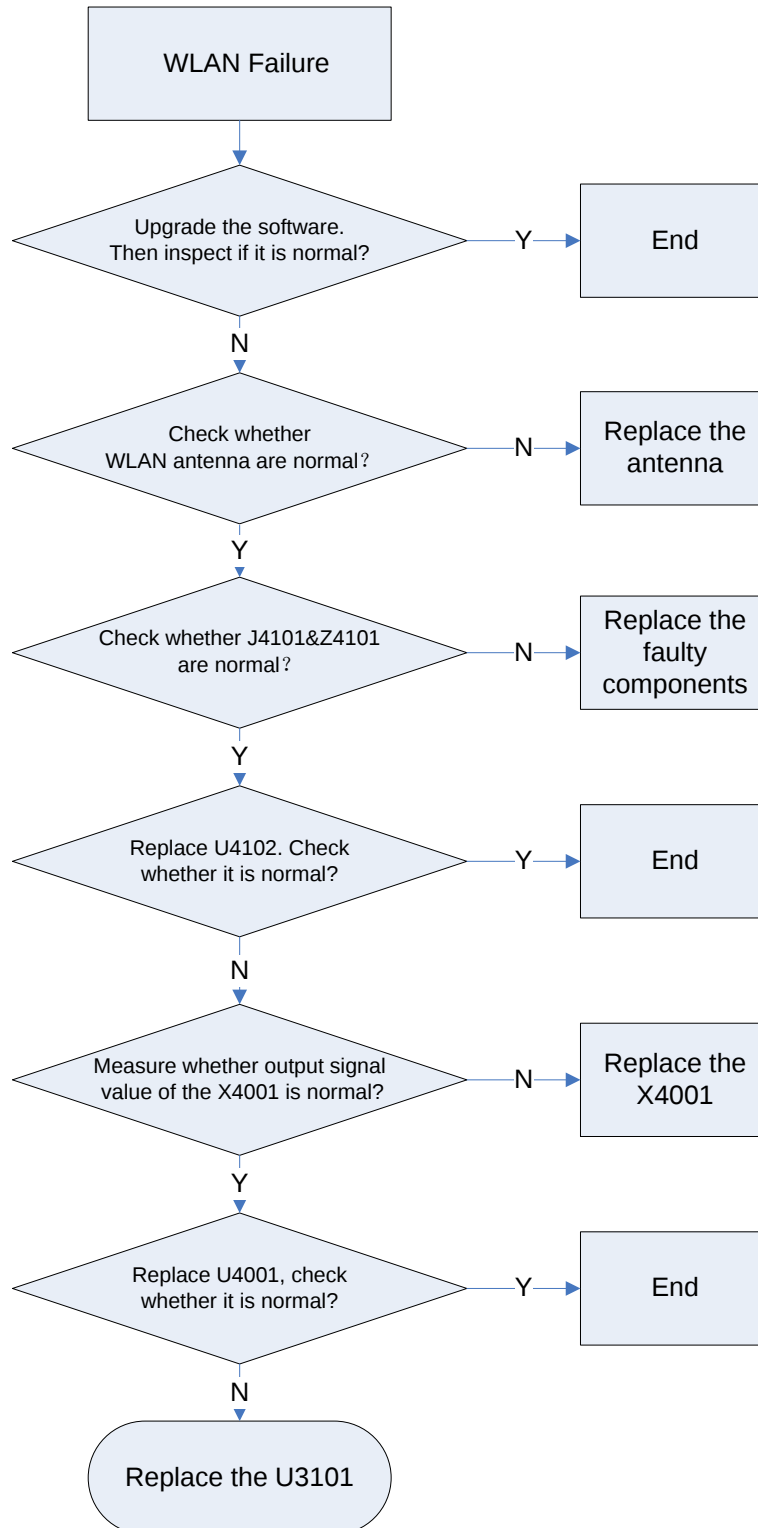


Figure 9-6

9.7 WLAN Failure

Reference Figure 9-7



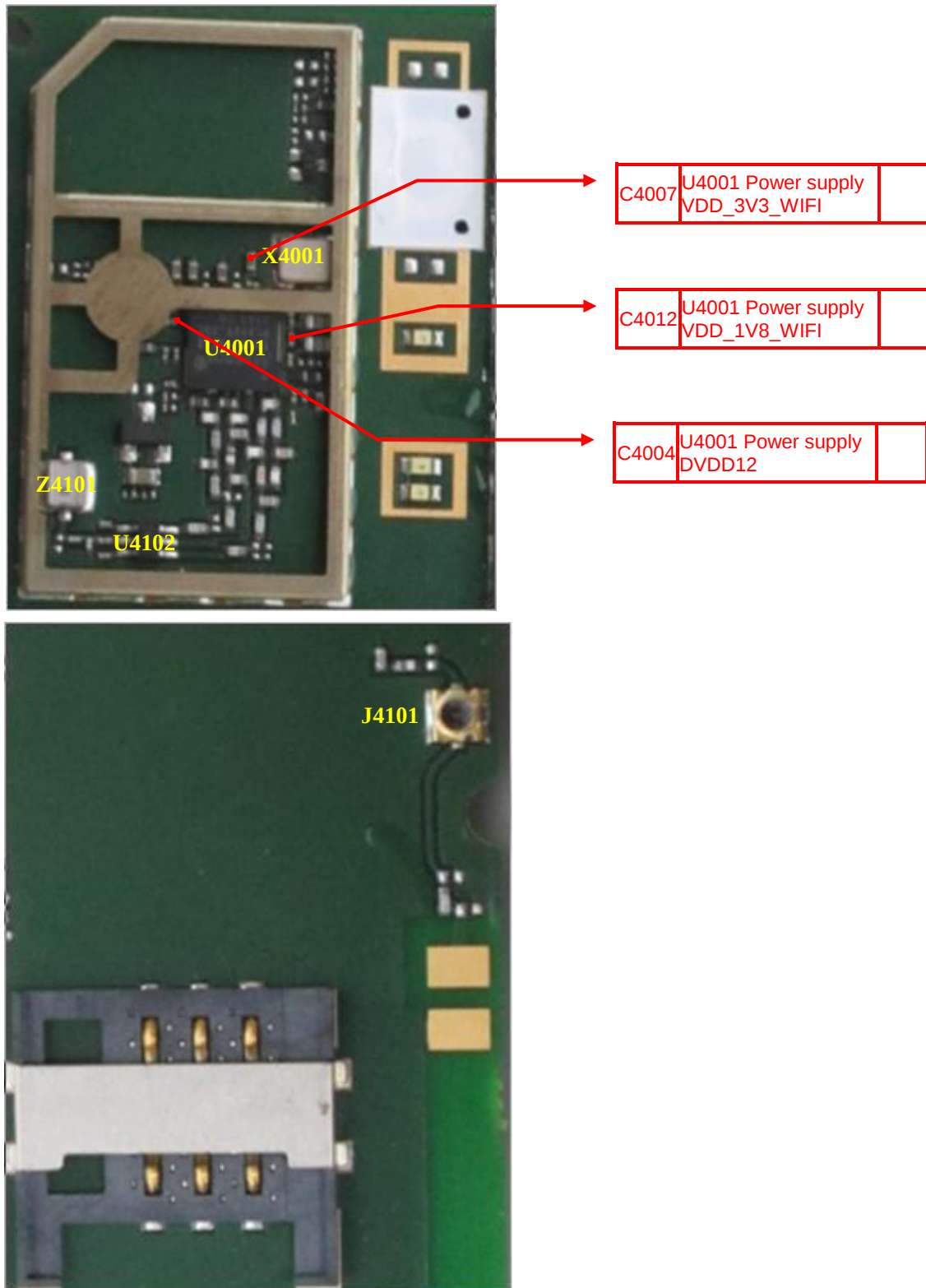
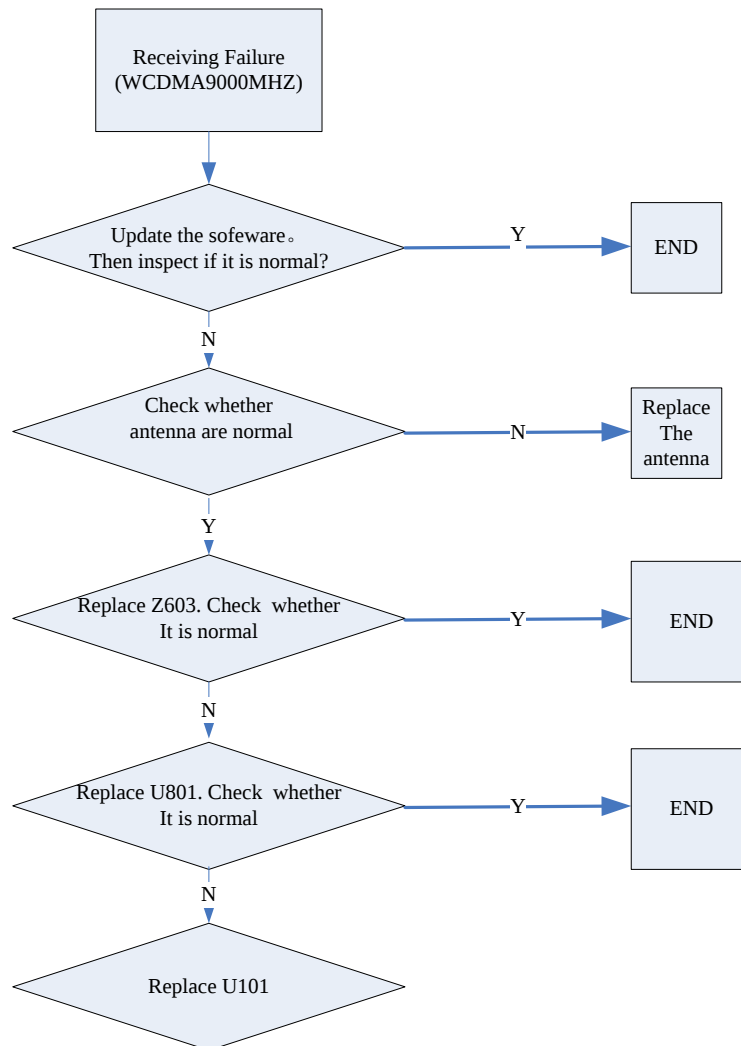


Figure 9-7

9.8 RF Failure

9.8.1 RF Receiving Failure – WCDMA 2100MHz

Reference Figure 9-8



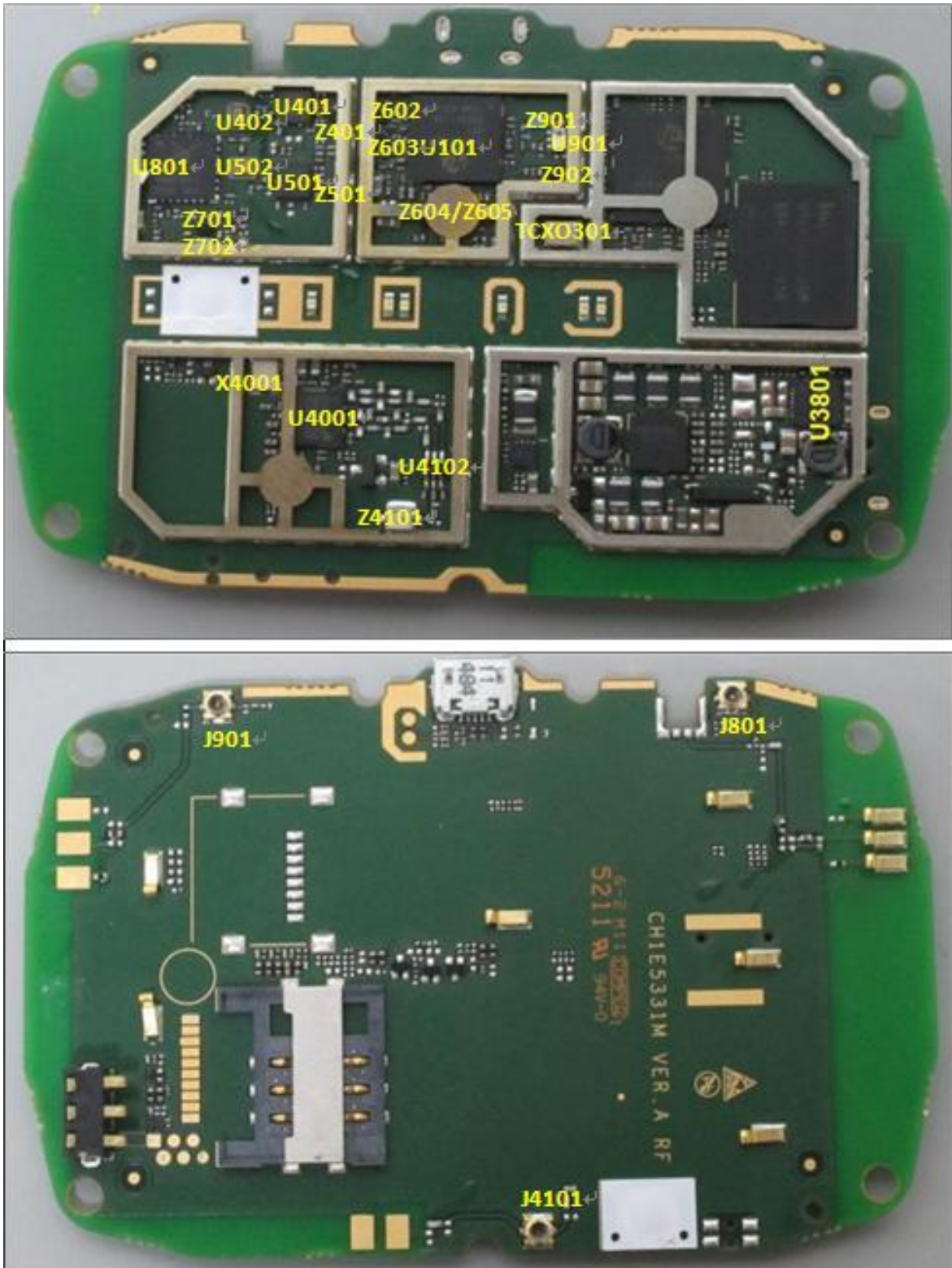
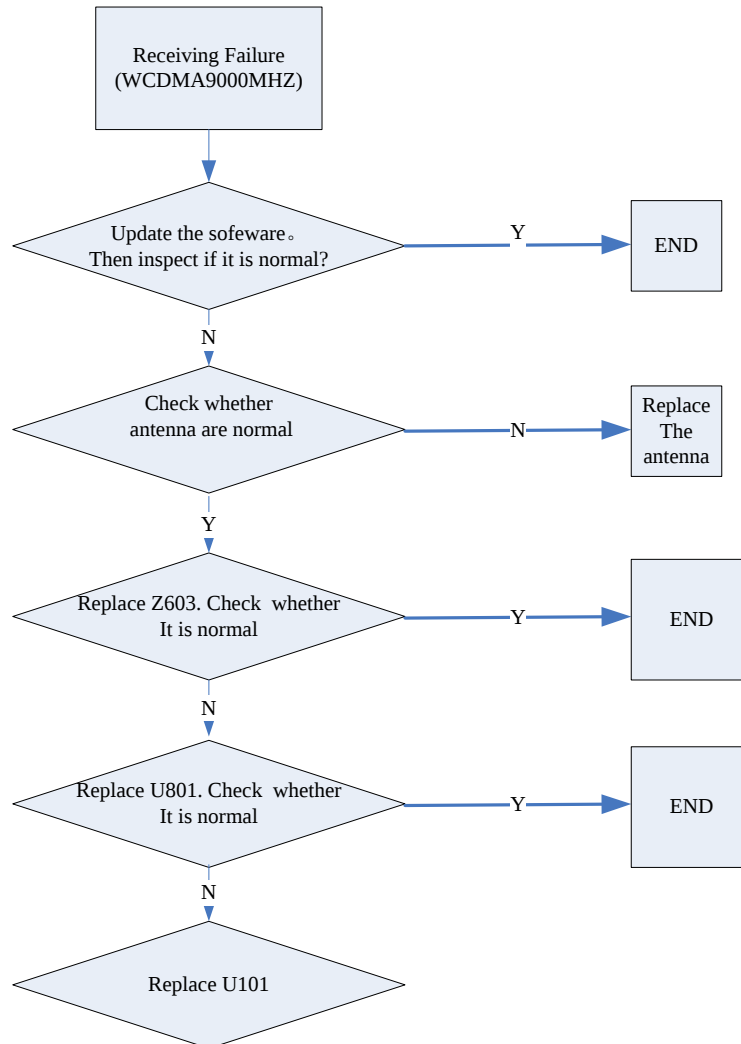


Figure 9-8

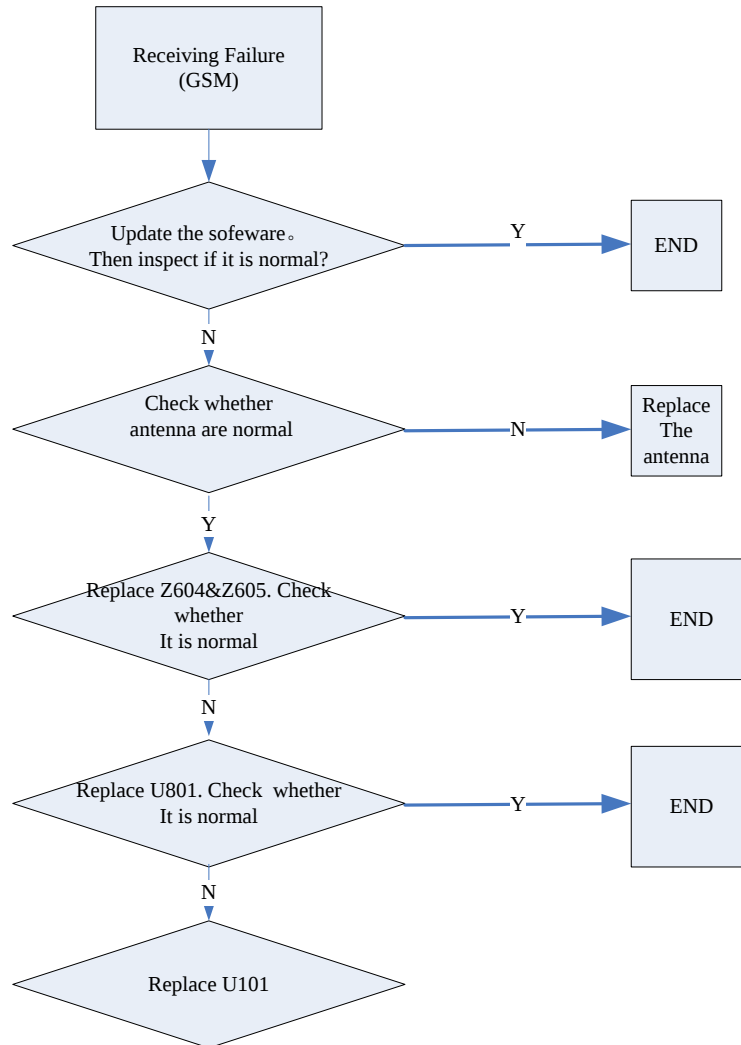
9.8.2 RF Receiving Failure – WCDMA 900MHz

Reference Figure 9-8



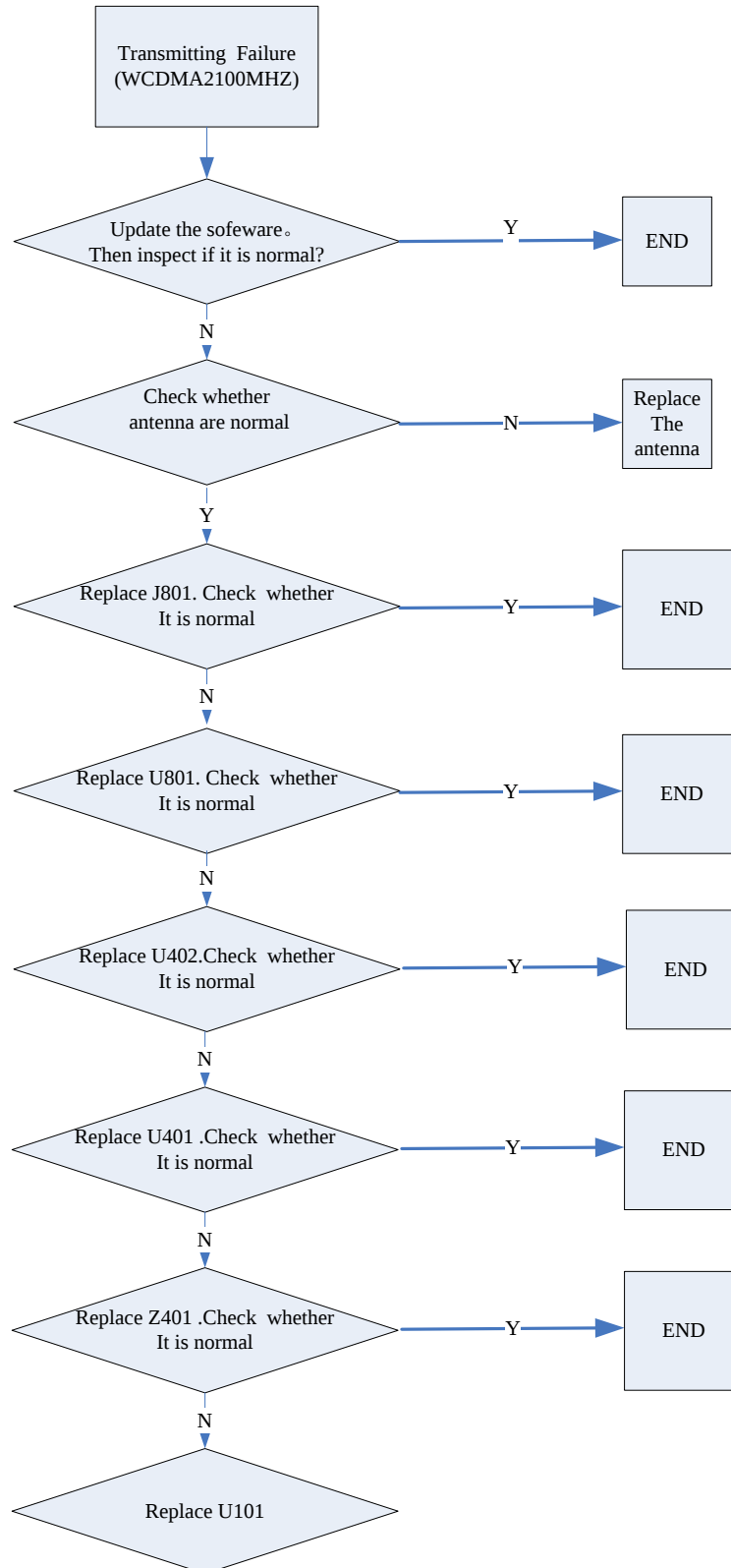
9.8.3 RF Receiving Failure – GSM

Reference Figure 9-8



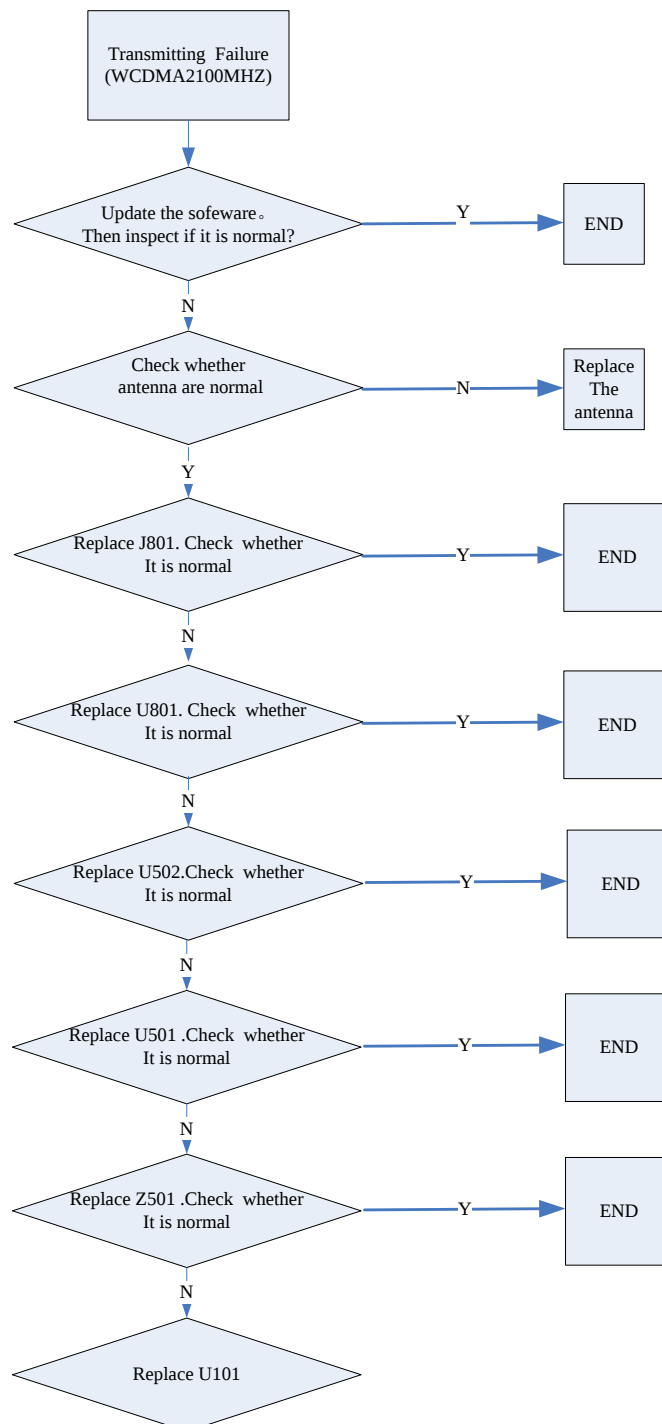
9.8.4 RF Transmitting Failure – WCDMA 2100MHz

Reference Figure 9-8



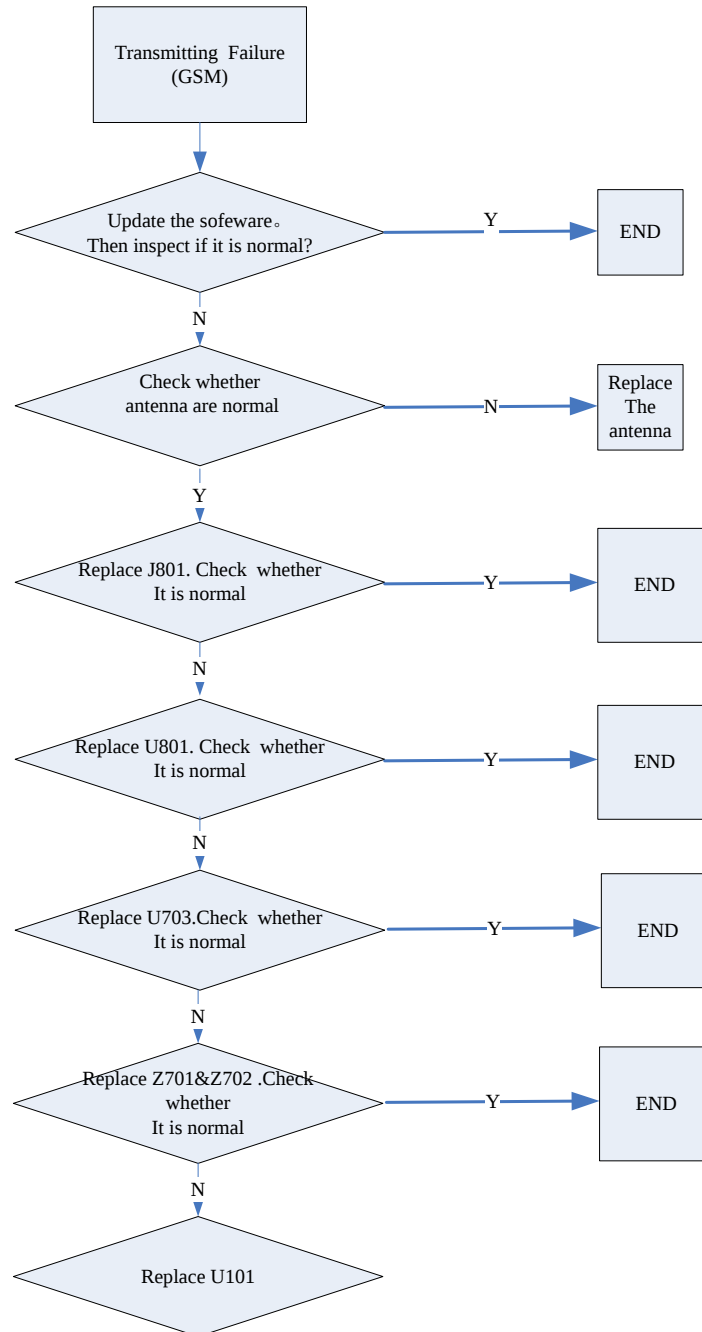
9.8.5 RF Transmitting Failure – WCDMA 900MHz

Reference Figure 9-8

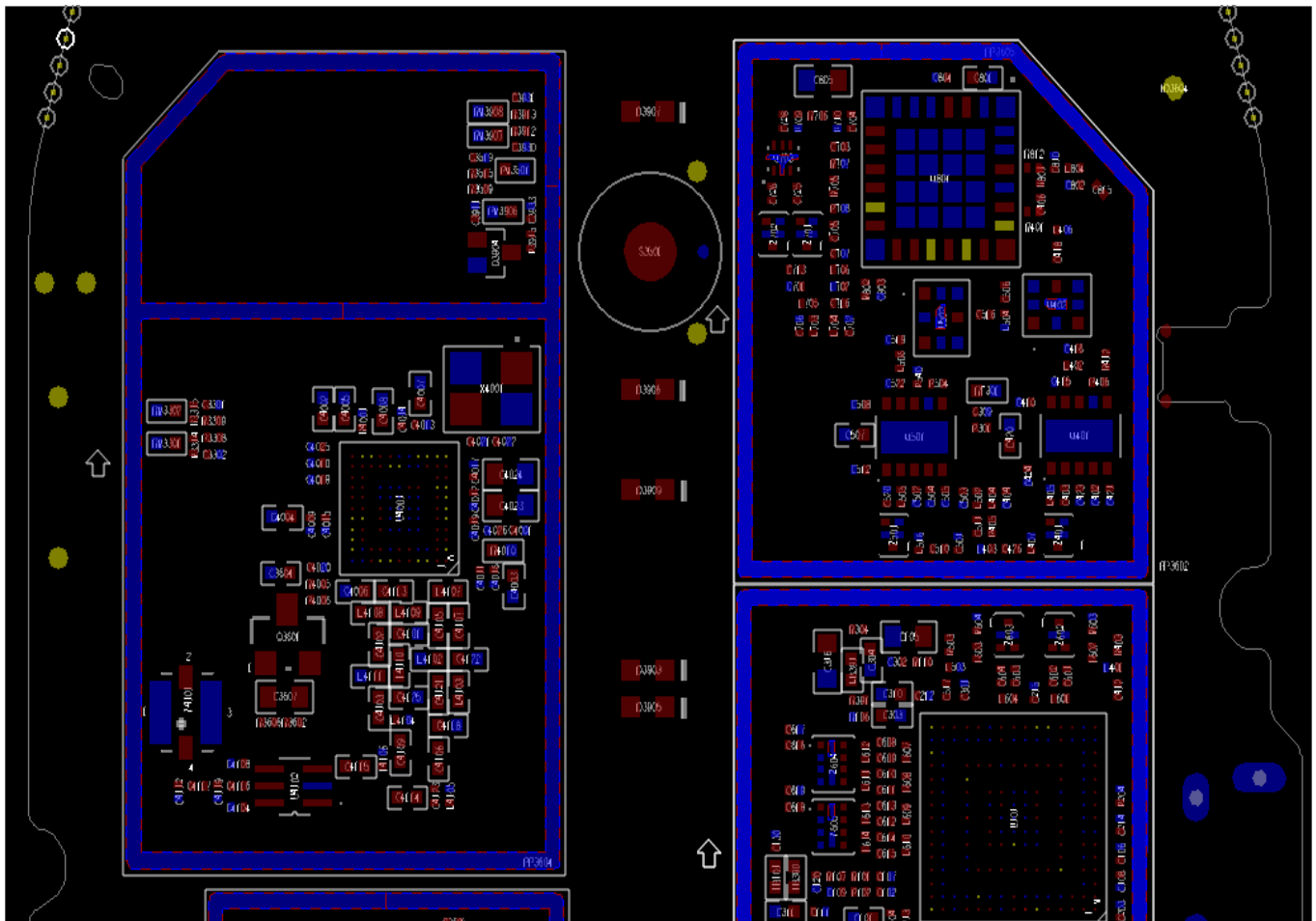


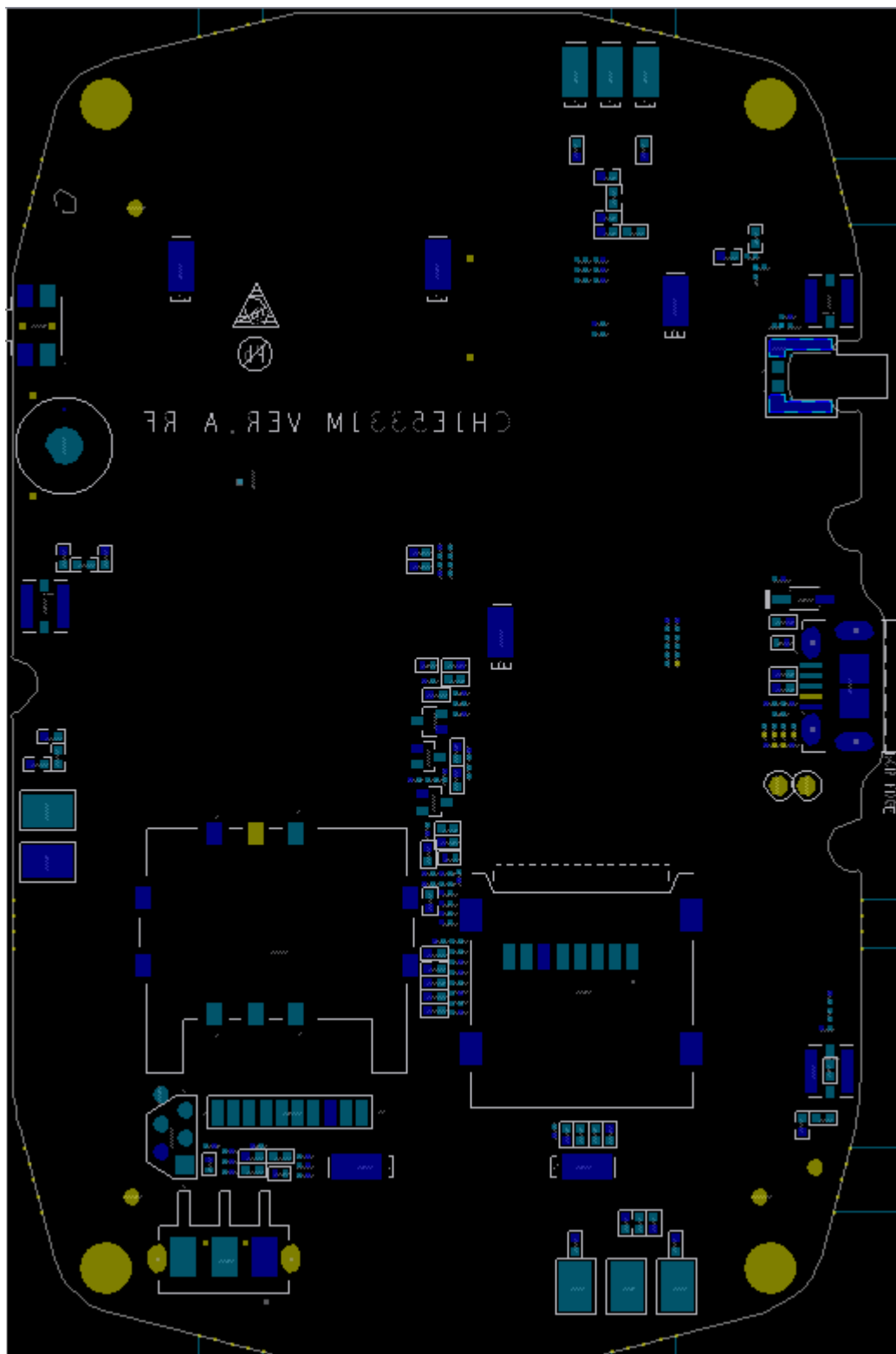
9.8.6 RF Transmitting Failure – GSM

Reference Figure 9-8



10 Weld Points Indicator Chart for PCB





11 Functional Test

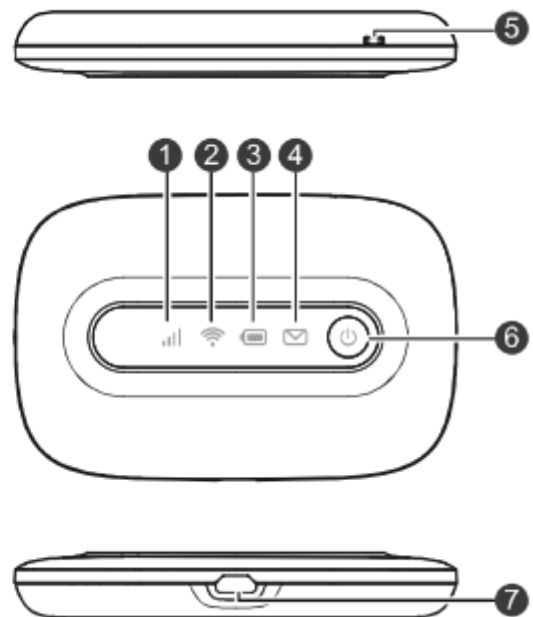
11.1 Appearance Introduction

Appearance

No.	Item
1	Signal indicator
2	Wi-Fi indicator
3	Battery indicator
4	SMS indicator
5	Strap hole
6	Power button
7	USB port(Micro USB Type B)

Note:

Wi-Fi: Wireless Fidelity

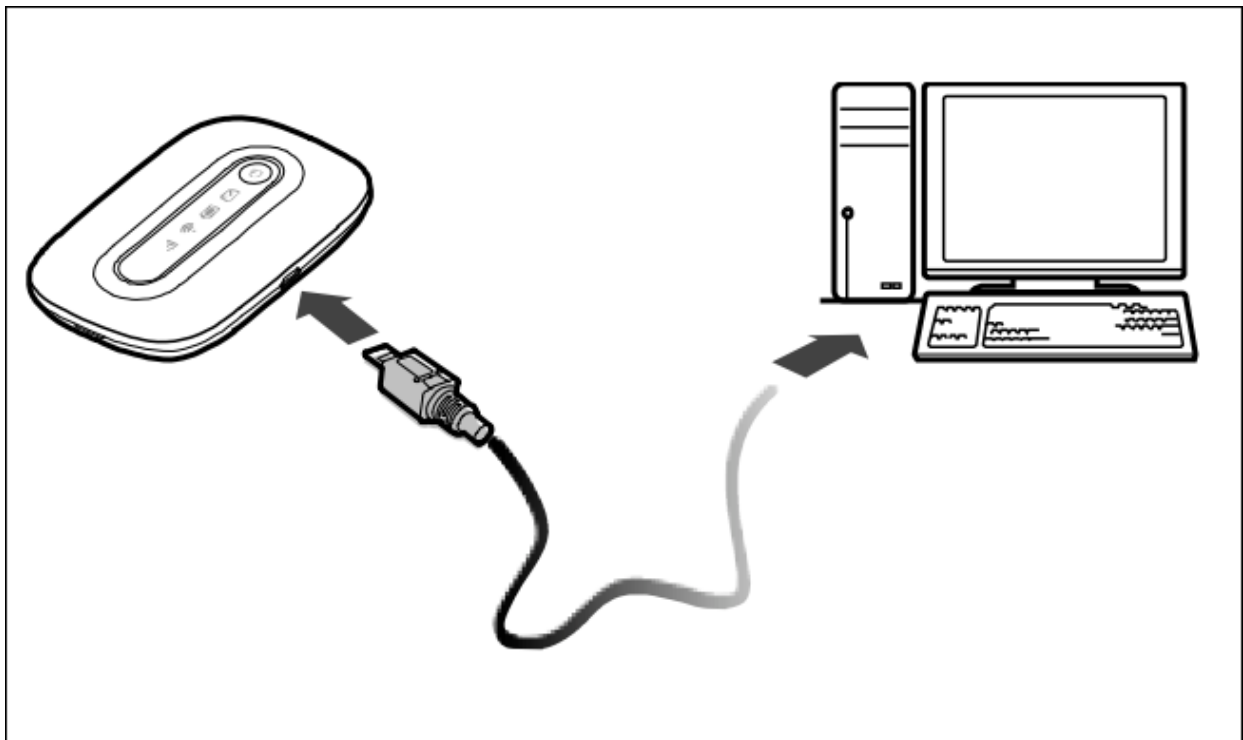


11.2 Data Service

11.2.1 USB Modem

After you connect the E5331 to a PC with a USB interface, the E5331 driver is installed on the PC automatically and the shortcut of the WEB page is displayed on the PC desktops. You can configure APN on the E5331 WEB page (or directly use the default settings) and set up a network connection. Then you can send or receive E-mail, access the network through wireless connection, and download files through wireless data channels.

One-device access via USB

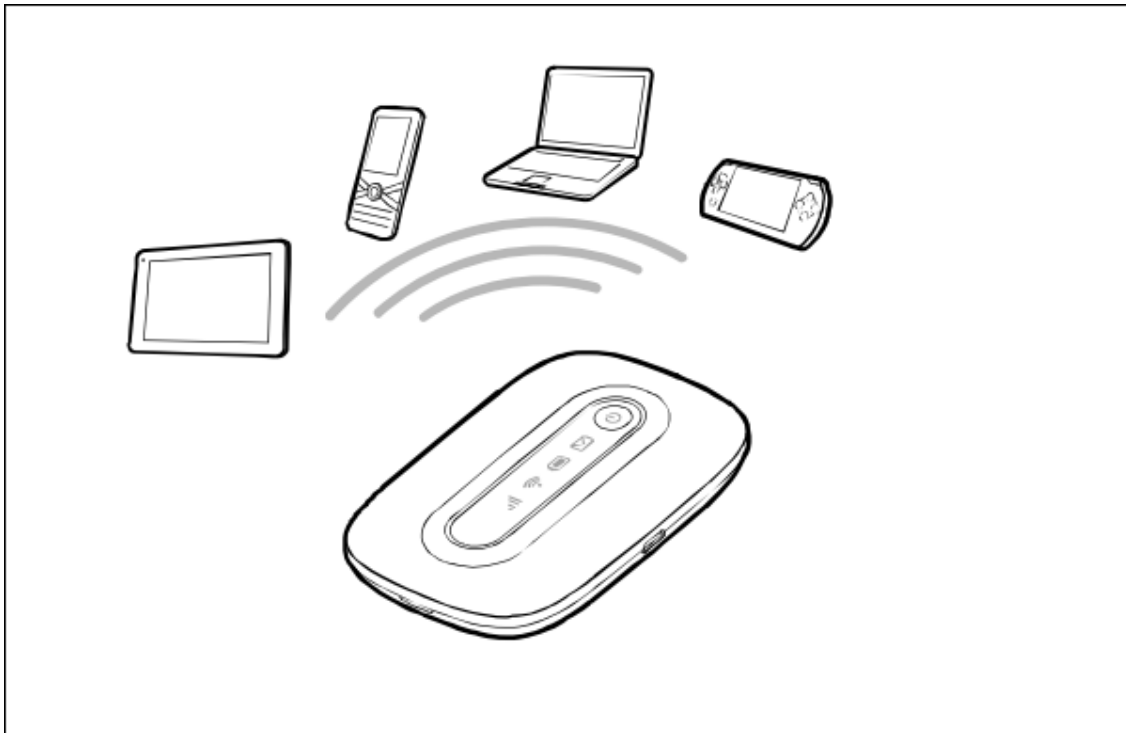


11.2.2 Wireless Modem

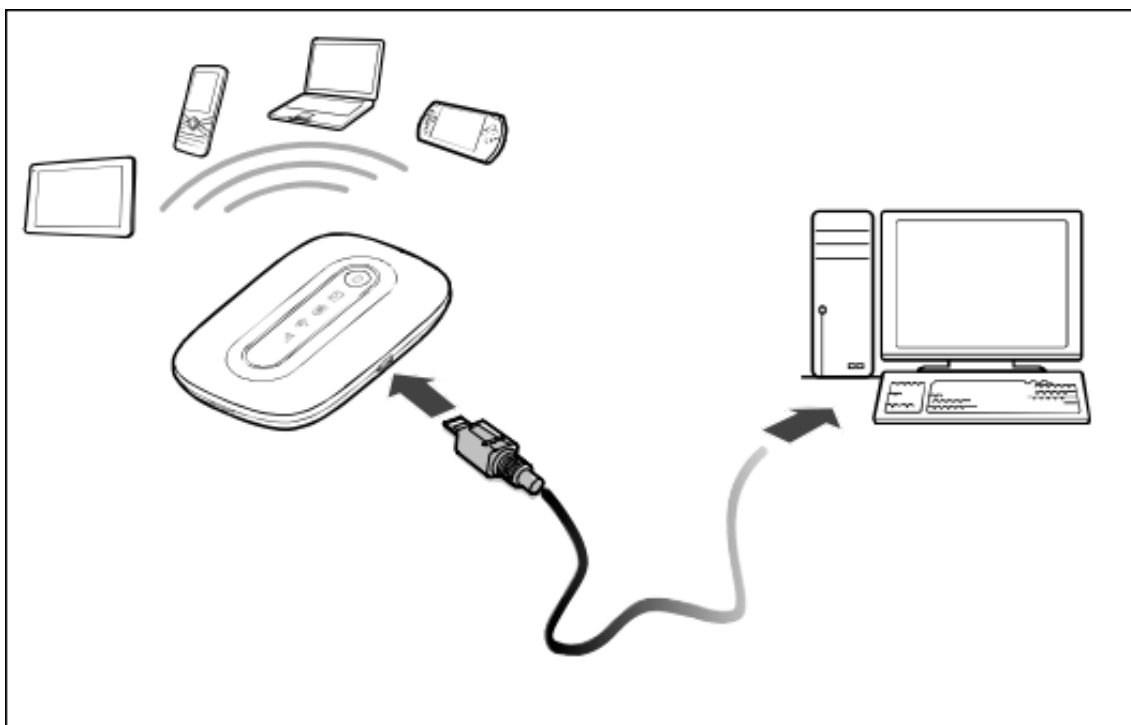
The E5331 can be used as a wireless modem when the Wi-Fi is enabled. You can access the Internet service through setting up the wireless network connection with the E5331.

A maximum of eight wireless users can access the E5331 at the same time. You can set up the WLAN with the access point (AP) function.

Multi-device access via Wi-Fi



Multi-device access via Wi-Fi and USB at the same time



11.3 Internet Test

For details of network connection settings, Please refer to Product Manual.