BLU™

PRODUCTS

SERVICE MANUAL

BLU DASH

Contents

ATTENTION

Boards, which contain Electrostatic Sensitive Device(ESD), art indicated. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective packages as described

1. Summary

This manual describes the troubleshooting and repair process of baseband, RF and multimedia part of mobile phone, which developed by BLU based on the platform MT6573 of MTK. To other platforms of MTK for reference only.

MT6573 is a highly integrated 3.75G baseband SOC platform which incorporates advanced features like HSPA R6 modem,676MHz ARM11 CPU, OpenGL ES 2.0 3D graphics,8M camera ISP, Programmable hardware video codec, and FWVGA display. MT6573 can help phone manufacturers build high performance 3.75G smart phone with PC-like browser,3D gaming, and cinema class hone entertainment experience.

1.1 Mobile Feature

1) App.Processor:ARM1176JZF-S 650MHz;

2) Modem Processor: ARM1176JZF-S 507MHz,HSDPA-7.2Mbps,HSUPA-5.76Mbps;

3) Support EGSM900/DCS1800/GSM850/1900,UMTS850/1900 or UMTS850/2100;

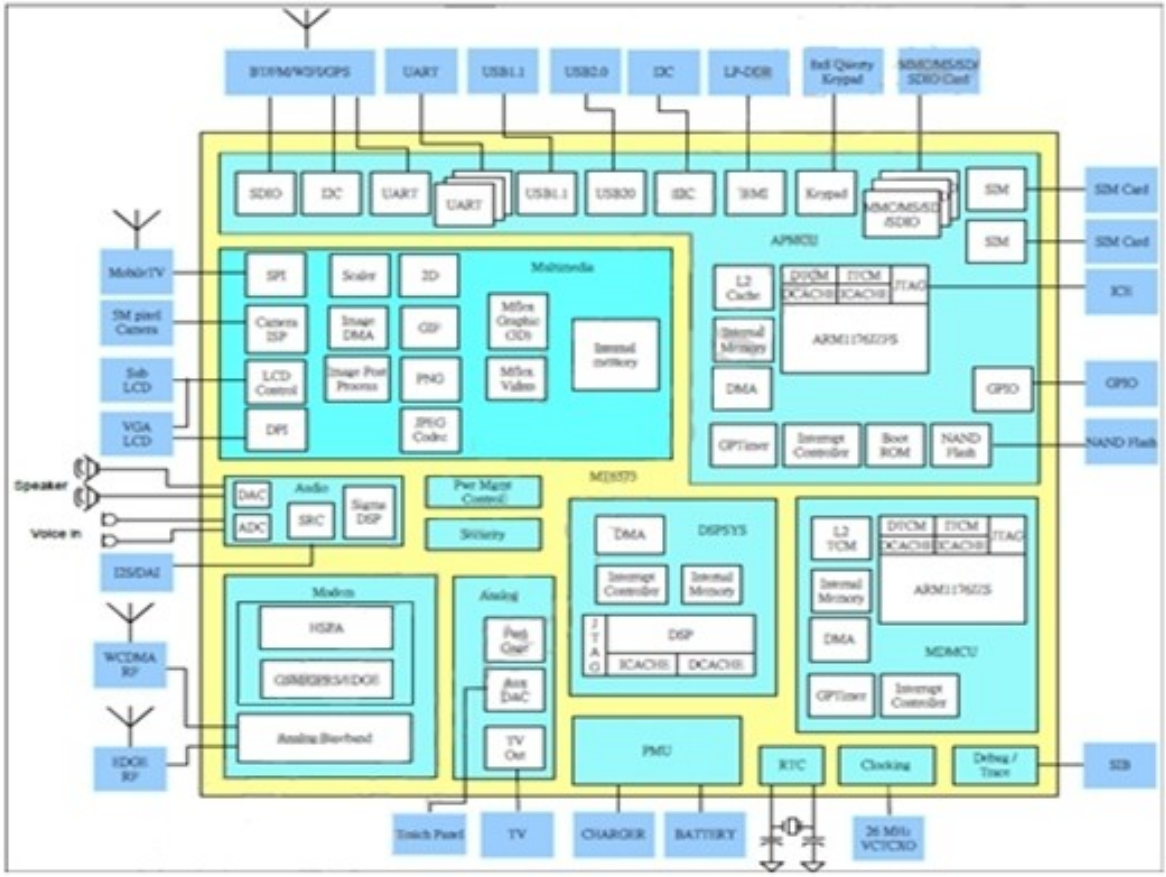
4) Support EFR SIM card (3V/1.8V) ,support dual SIM cards;

5) Integrated multimedia feature, support 2M Camera/mp3/mp4, extended card, 2.8 inch QVGA LCD, Capacitive Touch Panel ;

6) Extended external features: MT6620 integrated BlueTooth/FM/GPS/Wi-Fi functions, G-Sensor, M-Sensor, ALS/PS-Sensor,0.3M front Camera;

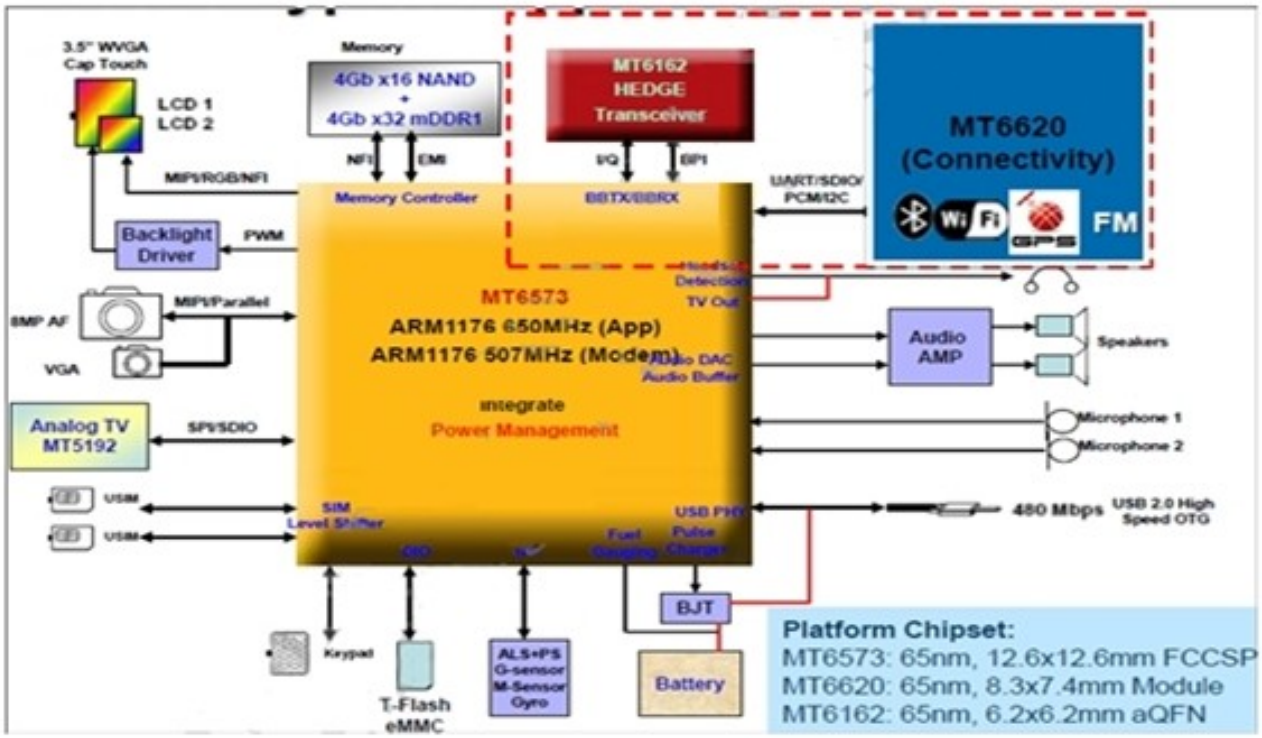
1.2 Mobile Application System

MT6573 chip block diagram, see image 1-2-1:



1-2-1 chip block diagram

MT6573 baseband chip application, as Image 1-2-2:



1-2-2 chip typical application

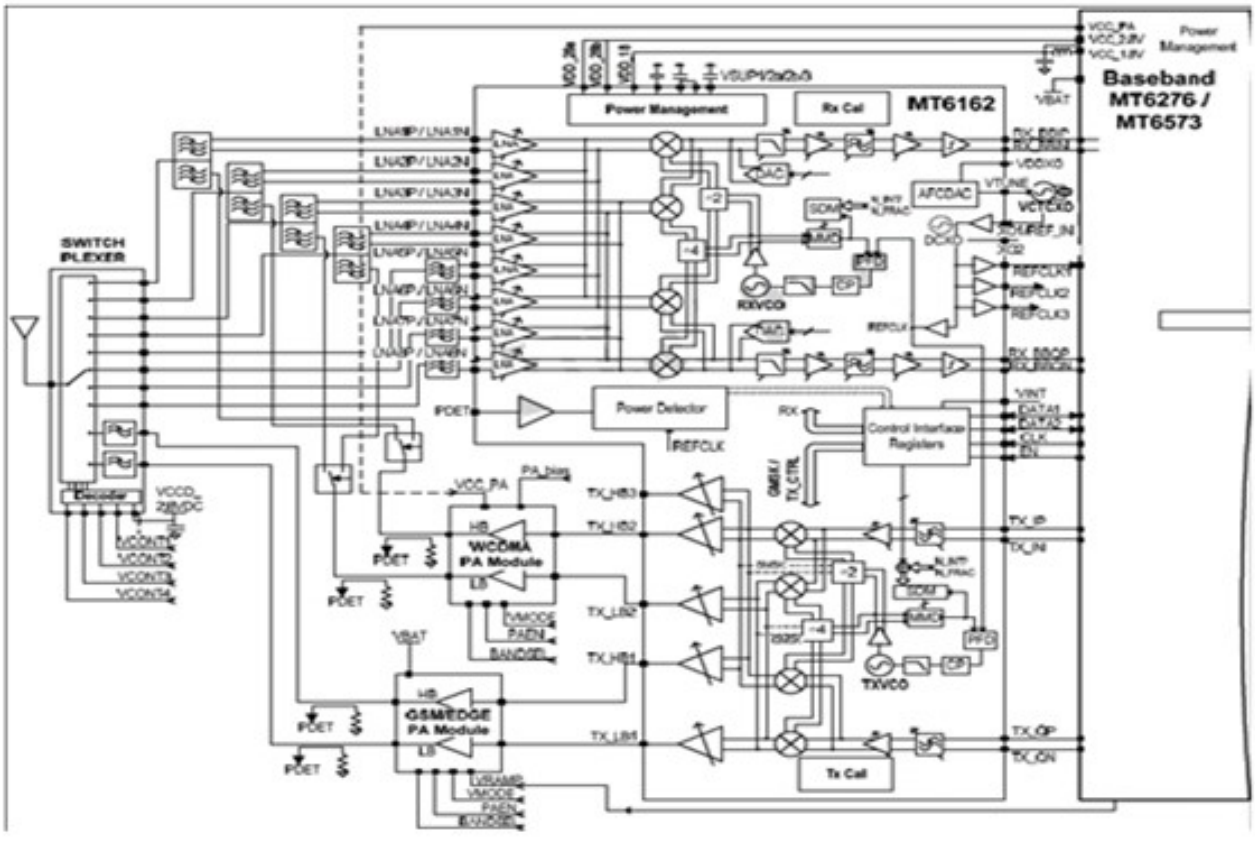
1.3 RF Part

RF part mainly includes antenna system, transmit access, receive access and frequency synthesizer for GSM or UMTS channel tune .

RF circuit mainly finish wireless signal receive and sending, it completes voice and signal duplex transmit with BTS by air interface. For detailed, receive circuit finish received BTS high frequency signal AGC enlargement, down convert, cause certain scope imitation base band I/Q signal, send to base circuit to make other process. Transmitter circuit finishes base band sending data signal modulation and power enlargement, cause outburst pulse signal that correspond with GSM or UMTS standard demand and transmit the signal to BTS through antenna. RF circuit performance will influence directly the mobile signal communication effect.

RF part is composed of RF transceiver (MT6162), plus a power amplifier, antenna switch, filter and other peripheral devices.MT6162 is a single-chip multi-mode transceiver offering unparalleled integration and feature set resulting in industry's lowest eBoM. It is fully compliant with 3G mode(3GPP Rel.6),as well as supporting GSM/GPRS/EDGE modes(GGE).

RF circuit includes: receiver part, transmitter part. RF application circuit is shown as Image 1-3:



1-3 RF application circuit

1.3.1 Transmitter

1) Low noise GMSK/8PSK/3G TX modulator eliminating external SAW filters, with Direct-Frequency Modulation TX for GSM mode;

2) Dedicated Tx drivers can support radio configuration with multi-mode multi-Band Pas;

3) Excellent 3G EVM performance over the full Tx dynamic range;

4) High dynamic range integrated synchronous power detector, with ultra-fast TX power control support;

5) Low Tx supply current form Vbat: 48mA(3G avg.DG09,BandI);36mA(GMSK DFM);

1.3.2 TX Part

1) High performance SAW-less(3G only)direct conversion receiver, with differential input LNAs;

2) Receiver with superior sensitivity and blocking margins;

3) Low Rx supply current from Vbat: Typical 37mA(3G avg.DG09,BandI); 40mA(GSM/EDGE);;

1.3.3 Frequency Synthesizer

Fast settling synthesizers, with 26MHz internal DCXO or external VCTCXO reference.

1.4 Baseband and Logical Control Part

MTK baseband part is the core of the entire mobile phone control system; mainly finish data signal that receive and transmit baseband signal process and complete appliance system logical control, including RF part, battery management and charger part and I/O port(include keypad scan, display, audio I/O, SIM card, COM download port and so on) control and management.

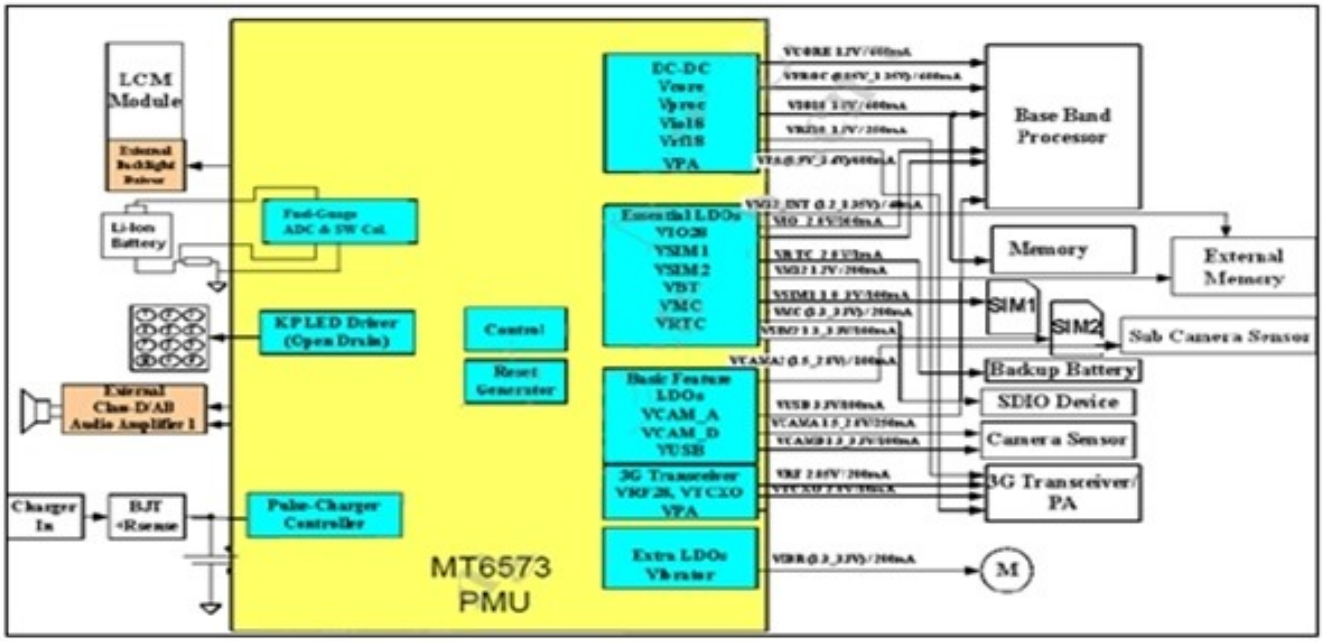
1.4.1 Control and processing of RF part

1) When receive, the difference simulation baseband I/Q signal（IP，IN，QP，QN）received from RF part is GMSK demodulated that is A/D change to data signal by baseband circuit. And then send to DSP to make digital signal process (including: channel balance, decryption, deinterlearing, channel decode), decode voice to get digital audio signal, make the signal digifax change D/A, simulation audio enlargement to push receiver to make a sound.

2) When transmit, baseband circuit make simulation audio signal that microphone input enlarge and filter and A/D change to become digital audio signal, and send signal to DSP to make other process, including voice compression coding(FR, ERF, HR, AMR), channel coding, interlacing, encrypt, channel balance and GMSK modulation, become difference simulation baseband I/Q signal(IP，IN，QP，QN), and send RF part to process;

1.4.2 Power Management

The MT6573 built-in high performance power management IC, highly integrated functions fulfill all power requirement in smart phone system. PMU block diagram see Image 1-4-1:



1-4-1 PMU block diagram

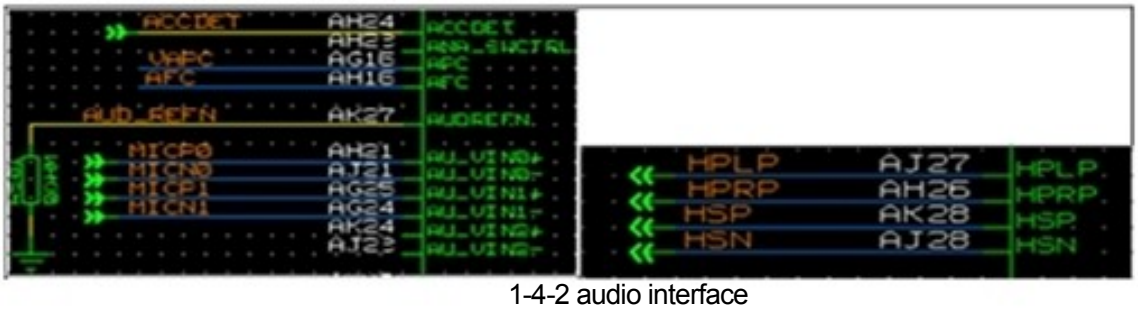
1.4.3 Program Memory and Logical Control Part

MT6573 platform storage circuit is completed by MCP, usually 4Gbit/2Gbit DDR + 4Gbit/4Gbit NAND.

BB Chip has a special EMI interface used to access external Memory; currently we used in most of our projects is the MCP, the future may be used Nand Flash (by NFI interface access).MCP stores important communication protocol software and mobile control program and MMI software. MCU run relative FLASH software to coordinate mobile operation, include RF and I/O interface control and respond to user operation.

1.4.4 Audio Interface

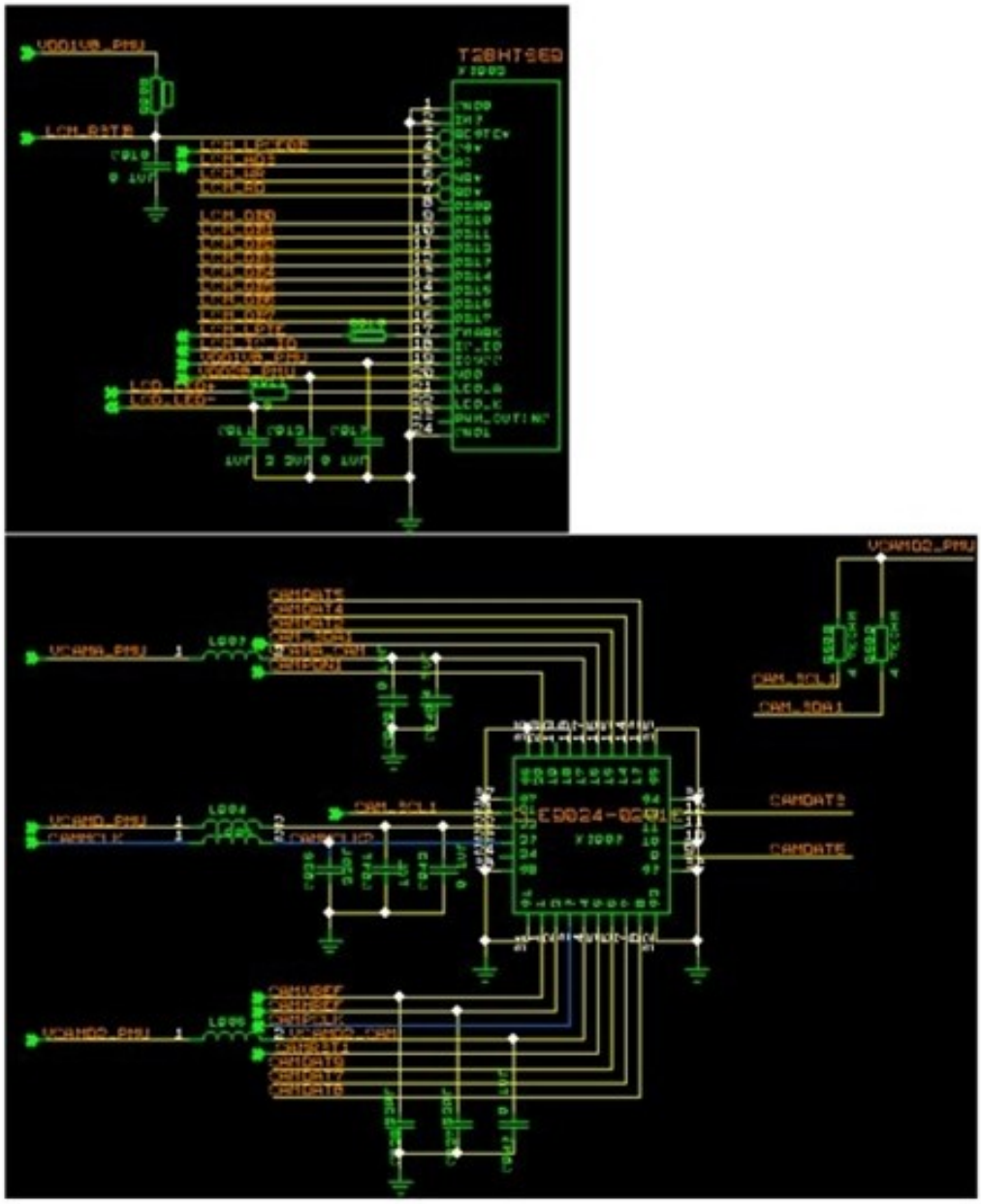
The circuit of audio interface is shown as Image 1-4-2:



1-4-2 audio interface

1.4.5 Camera and LCD Interface

Dash use CPU 8bit interface LCD, support resolution QVGA(240*320);Support 2M Back Camera and 0.3M front camera. The interface is shown as Image 1-4-3:



1-4-3 LCD and Camera interface

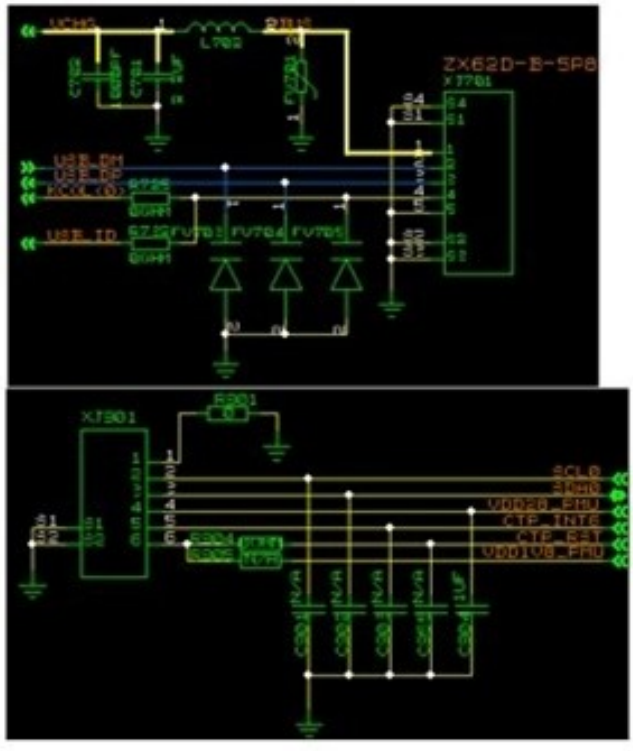
1.4.6 SIM and T-card Interface

The circuit of audio interface is shown as Image 1-4-4:

1-4-4 **T-card and SIM Interface**

1.4.7 USB and TP Interface

DASH support USB2.0 High Speed Data transmission, support Capacitive Touch Panel, the interface is shown as Image 1-4-5:

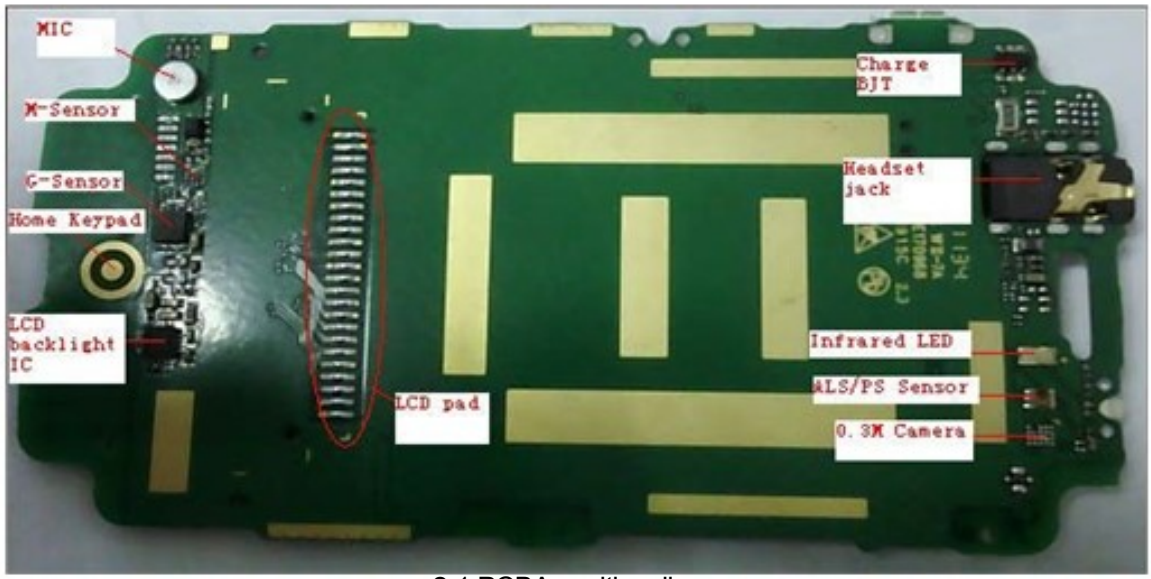


1-4-5 **USB and TP Interface**

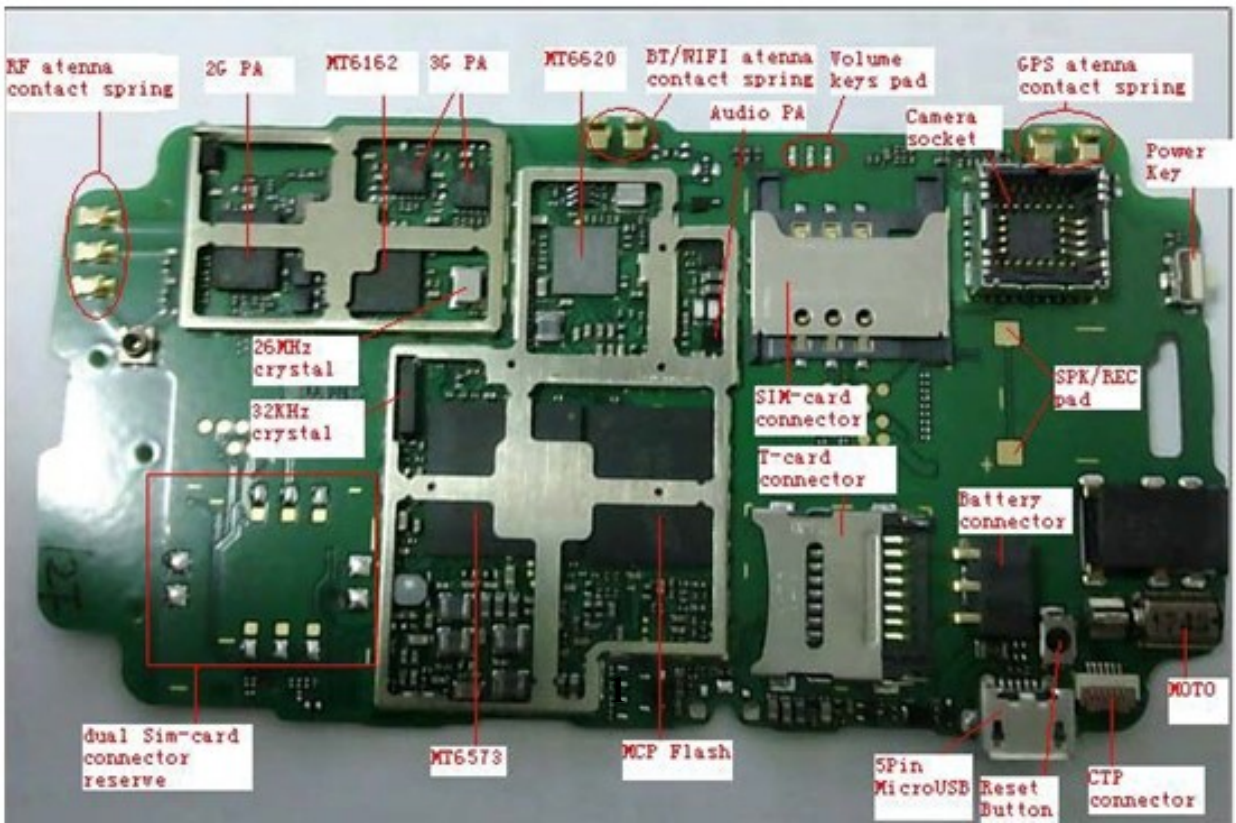
2. Mobile Maintenance Guide

In mobile circuit system, all lines can be divided into three types: power supply line, control line and signal line. When analyze fault, for active device, we can check power supply line first, and then check control line, at last check signal line, expel fault step by step. During maintenance, if you encounter failure probability of 100%, please contact the hardware and software engineers of project in the first time, so problems can be quickly resolved.

PCBA positive and negative diagram is as below:



2-1 PCBA positive diagram

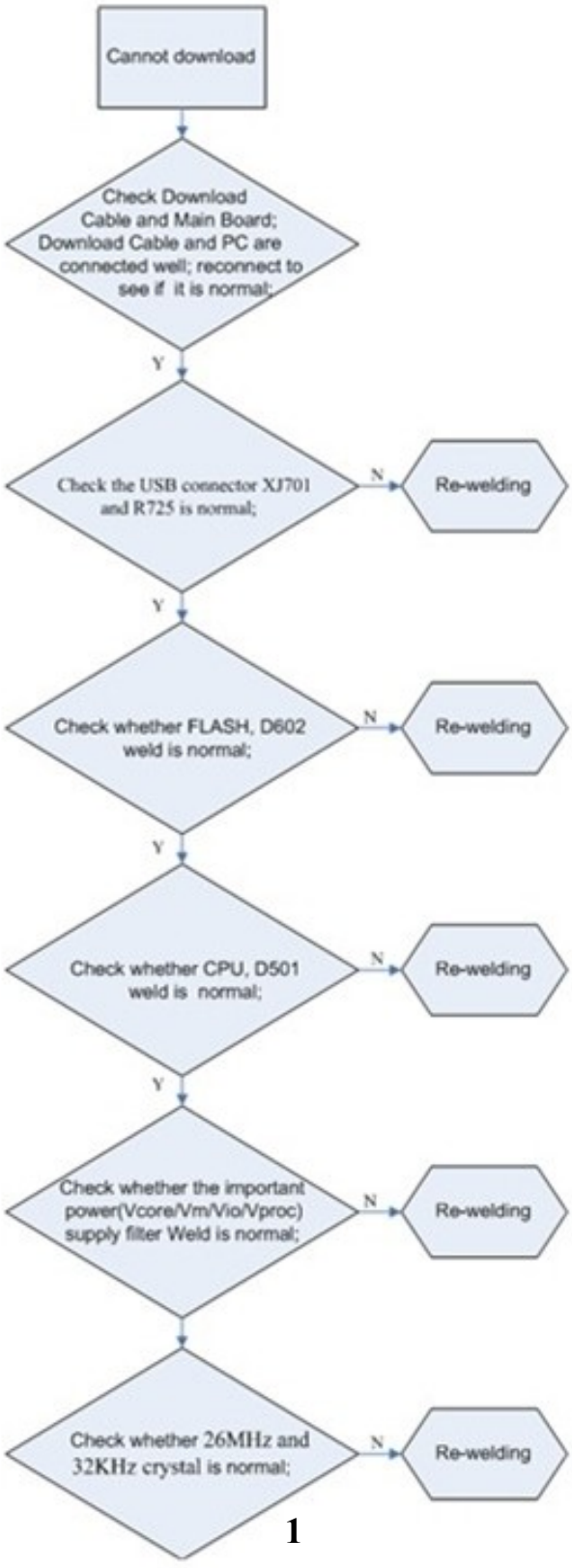


2-2 PCBA negative diagram

The following project will introduce the troubleshooting process of mobile phone of motherboard.

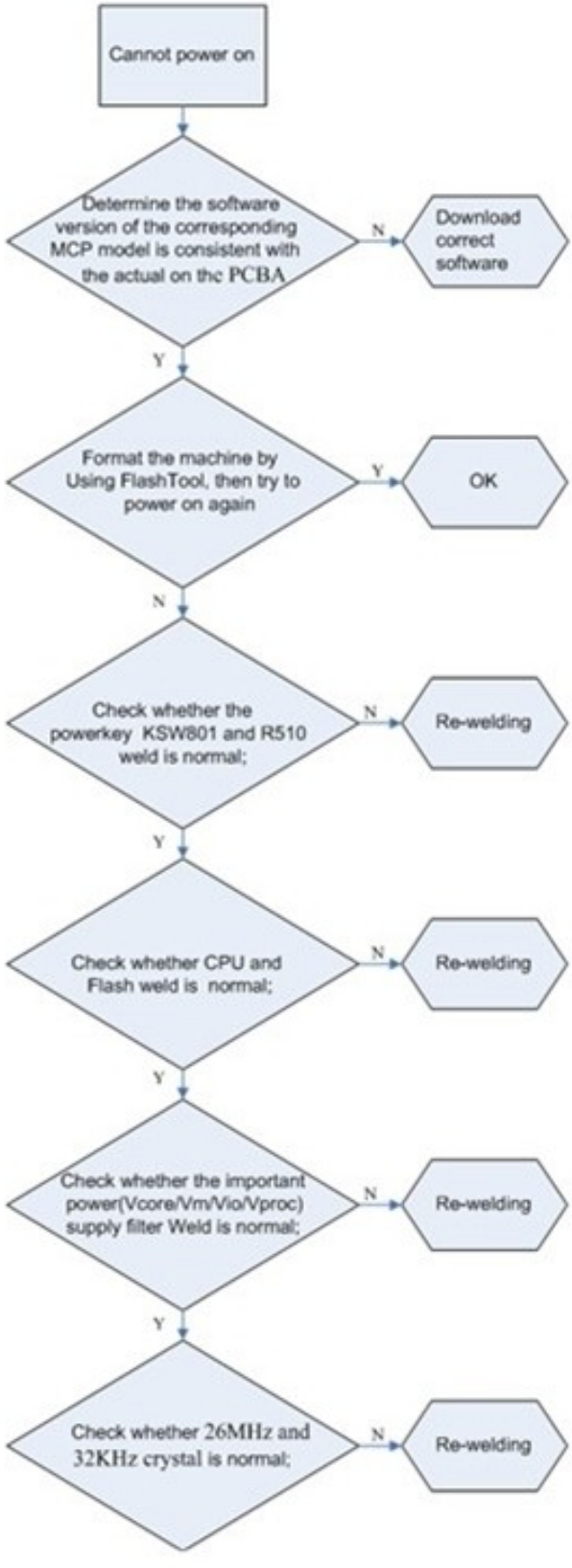
2.1 Baseband Common Fault

2.1.1 "Cannot download" fault check flow



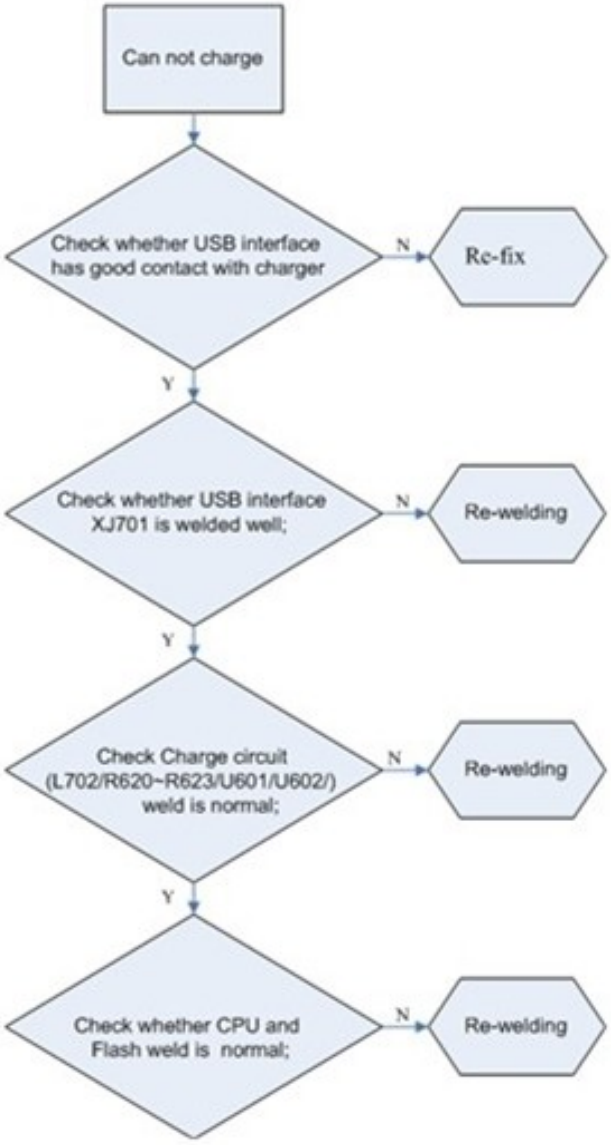
Notice: MTK continuously updated FlashTool, please use the latest Flash Tool.

2.1.2 "Cannot power on" fault check flow

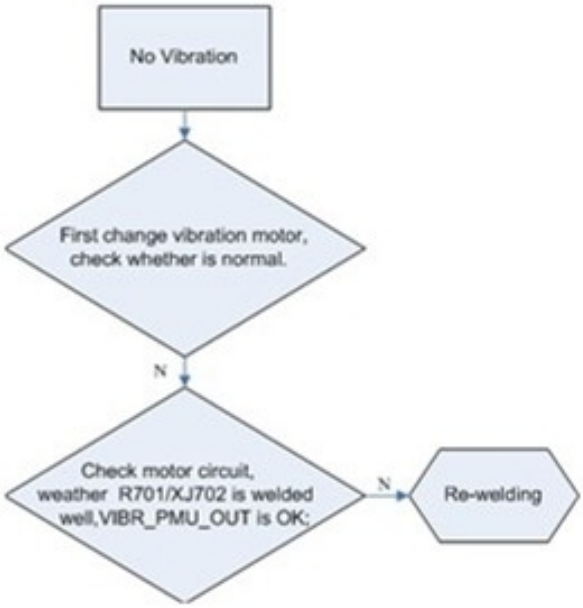


Notice: Before formatting, please save the final calibration measure information of the cell phone, formatting and re-written into the mobile phone after formatting. Or make the final measurement calibration again after formatted.

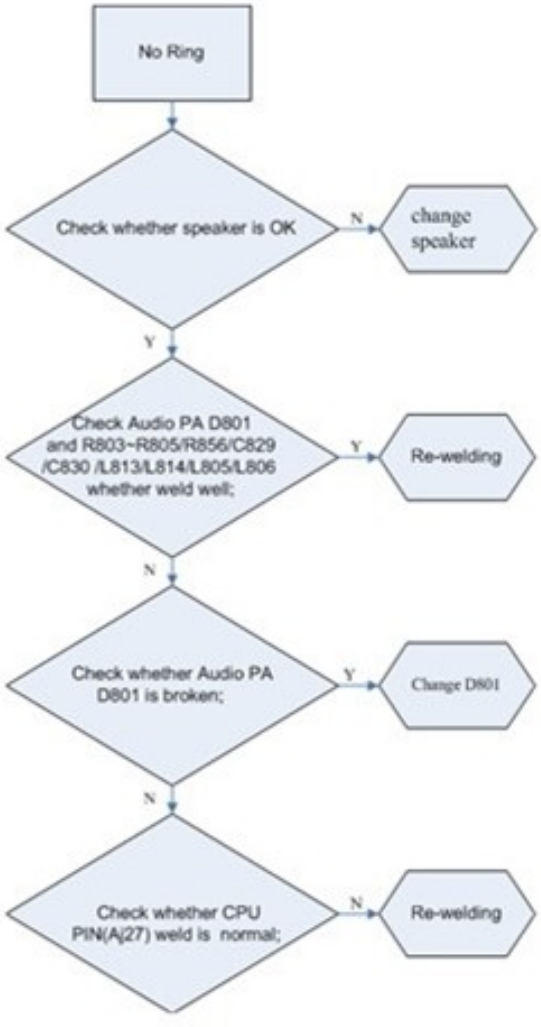
2.1.3 "Cannot charge" fault check flow



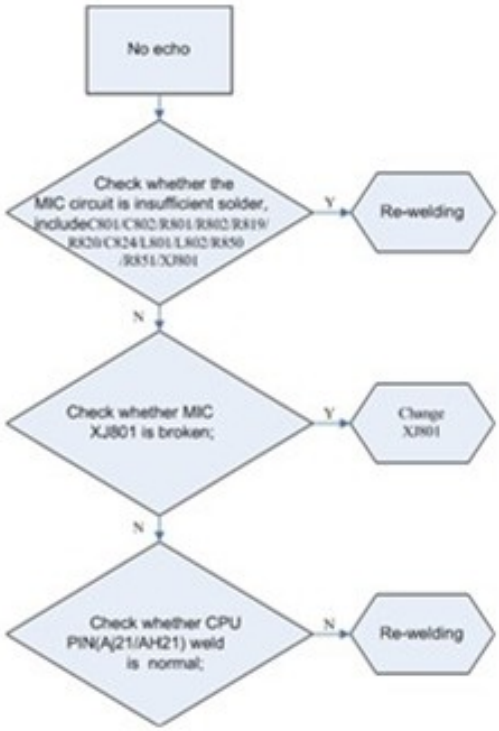
2.1.4 No Vibration



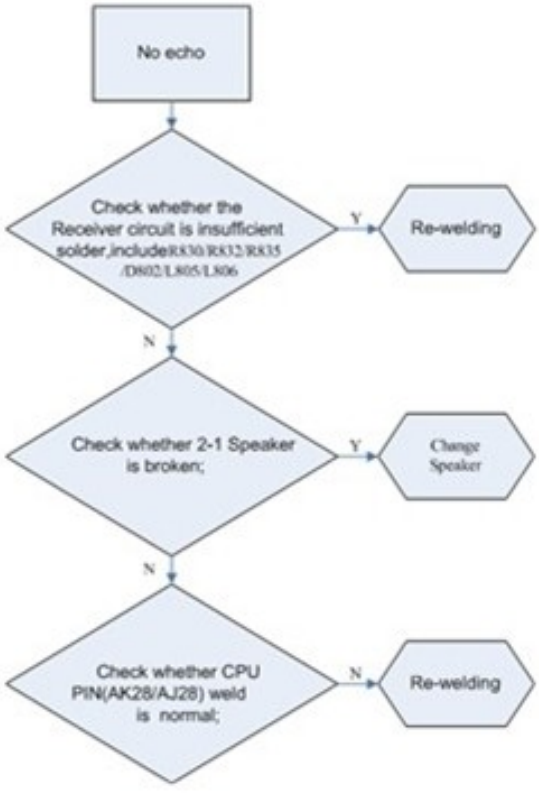
2.1.5 No Ring



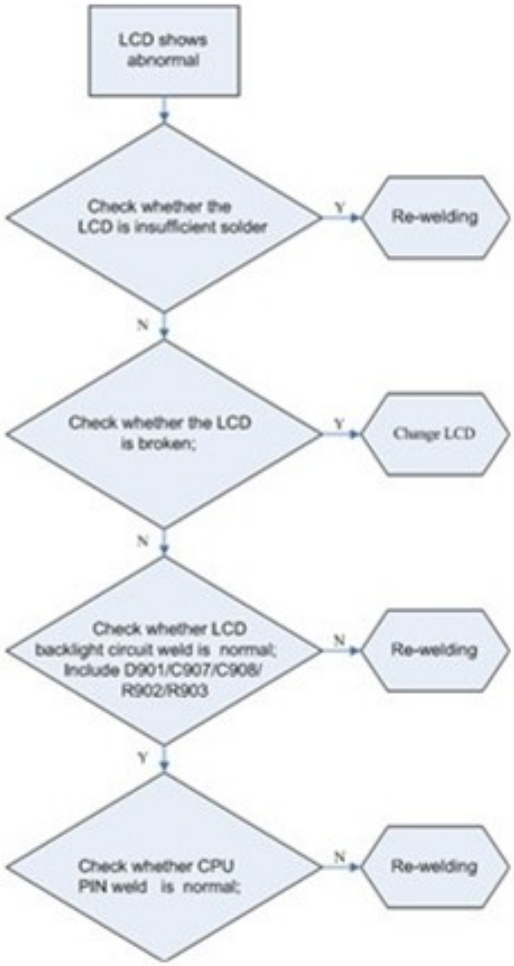
2.1.6 No echo (The other side cannot hear the voice)



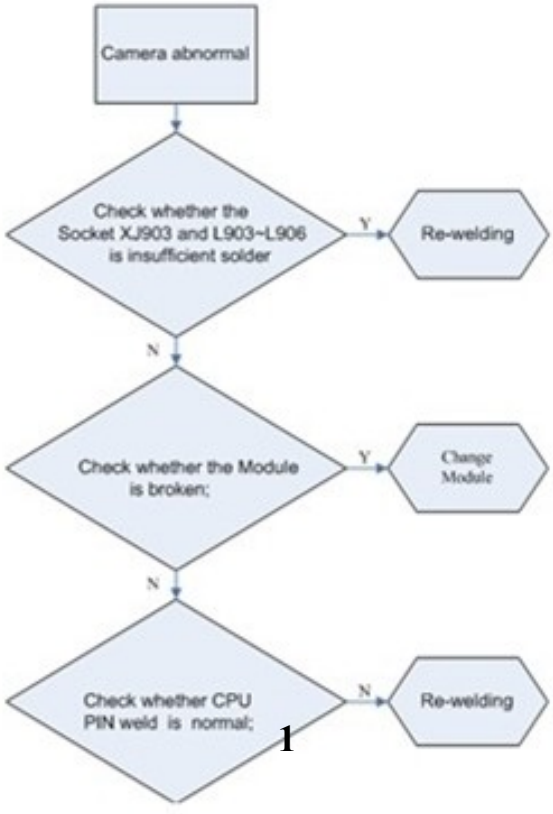
2.1.7 No echo (Cannot hear the other side's voice)



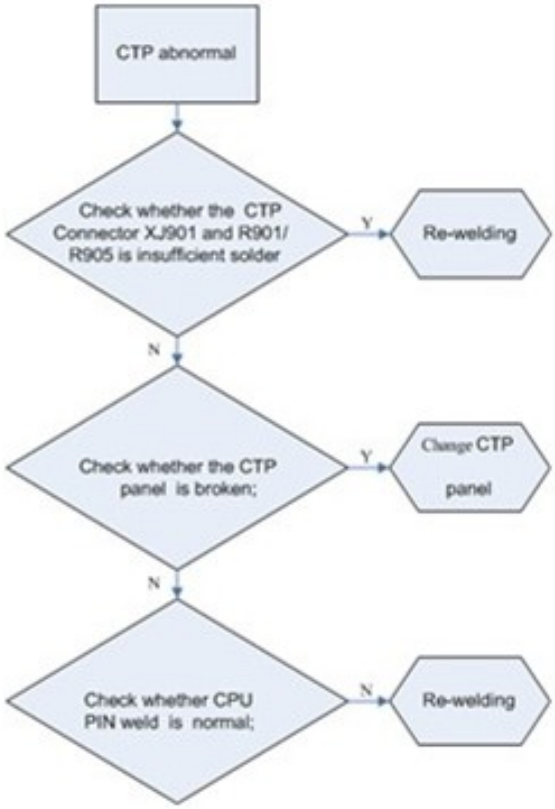
2.1.8 LCD shows abnormal



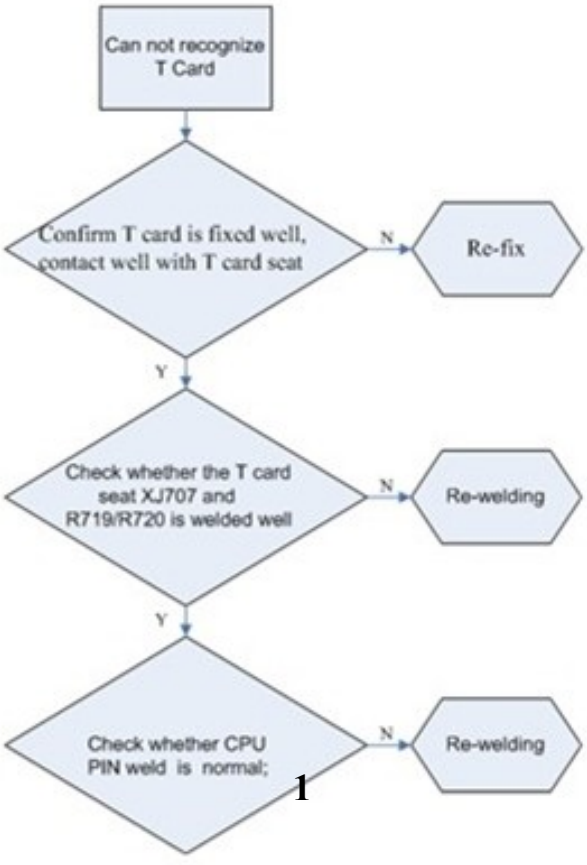
2.1.9 Camera abnormal



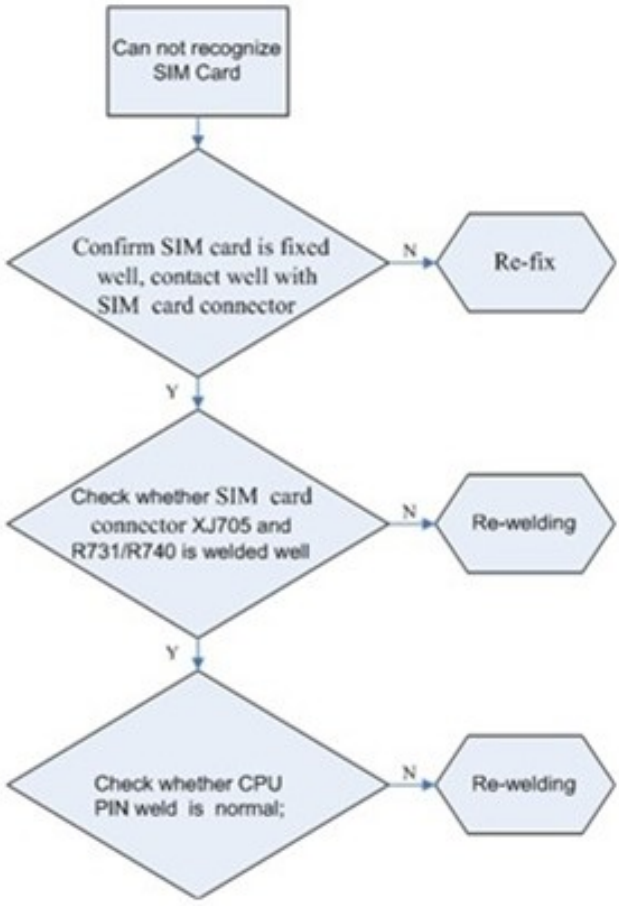
2.1.10 Capacitive Touch Panel abnormal



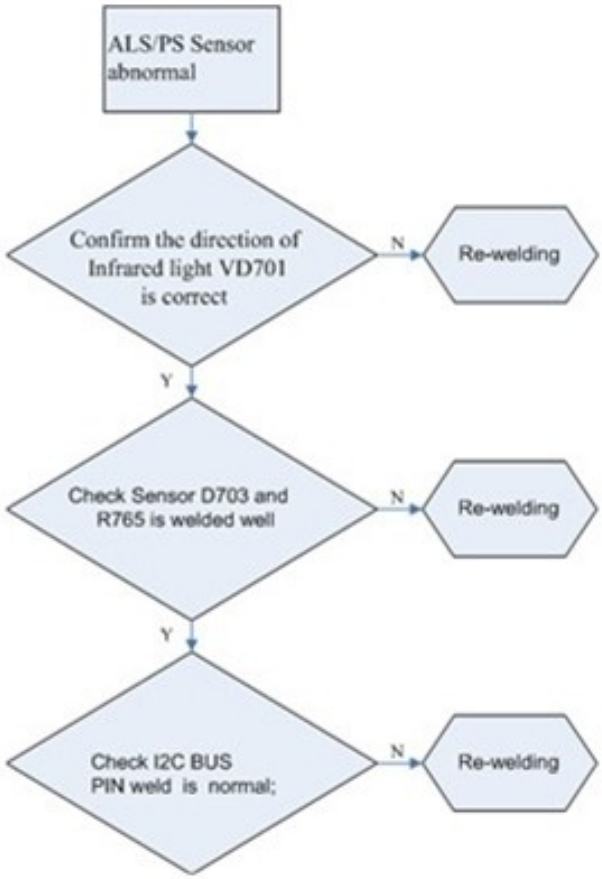
2.1.11 "Can not recognize T Card" fault check flow



2.1.12 “Can not recognize SIM Card” fault check flow

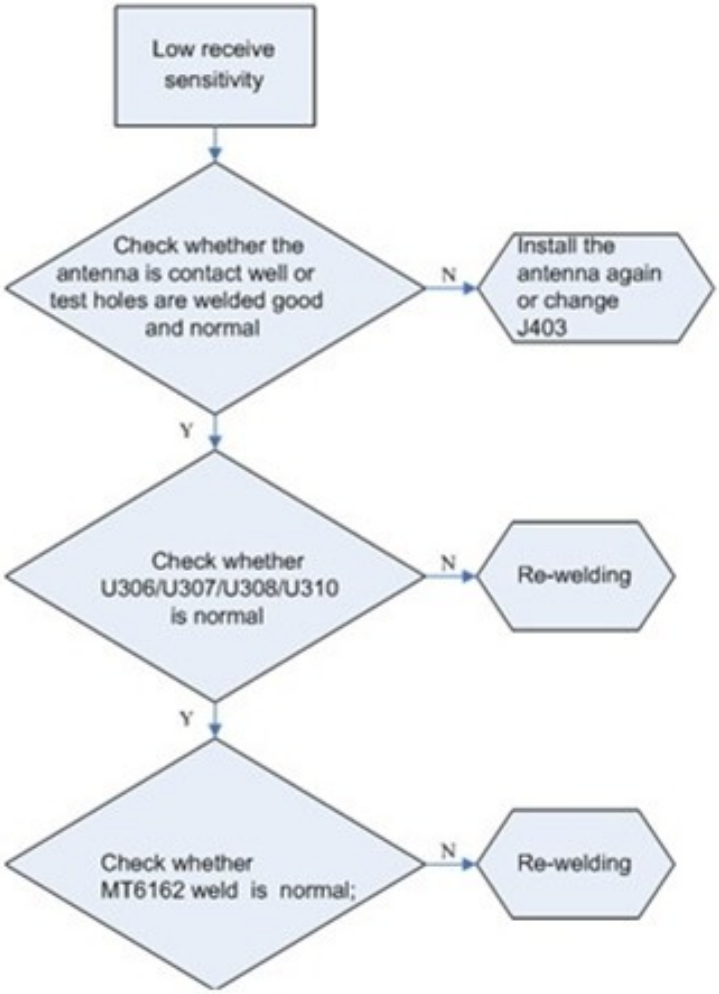


2.1.13 ALS/PS Sensor abnormal

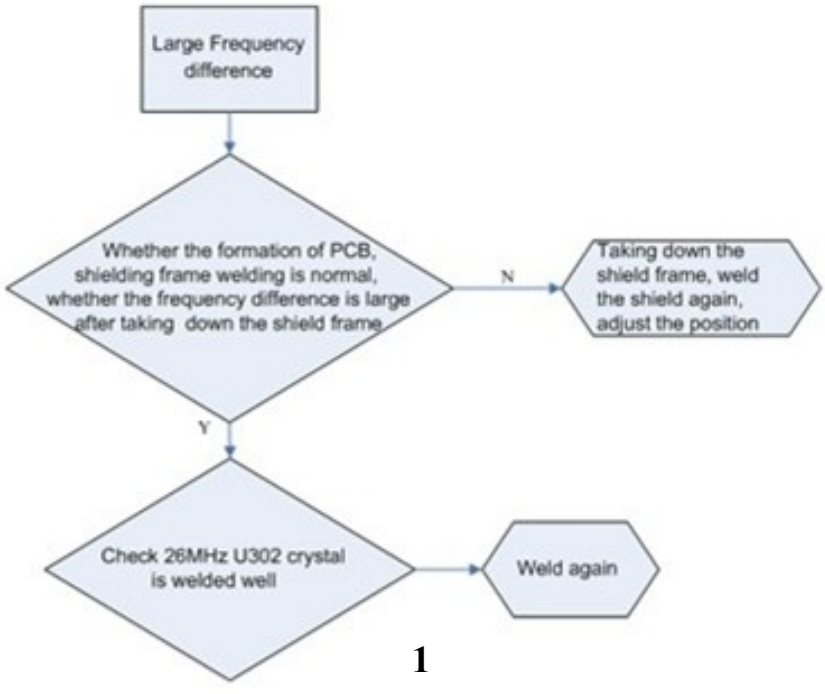


2.2 RF Common Fault

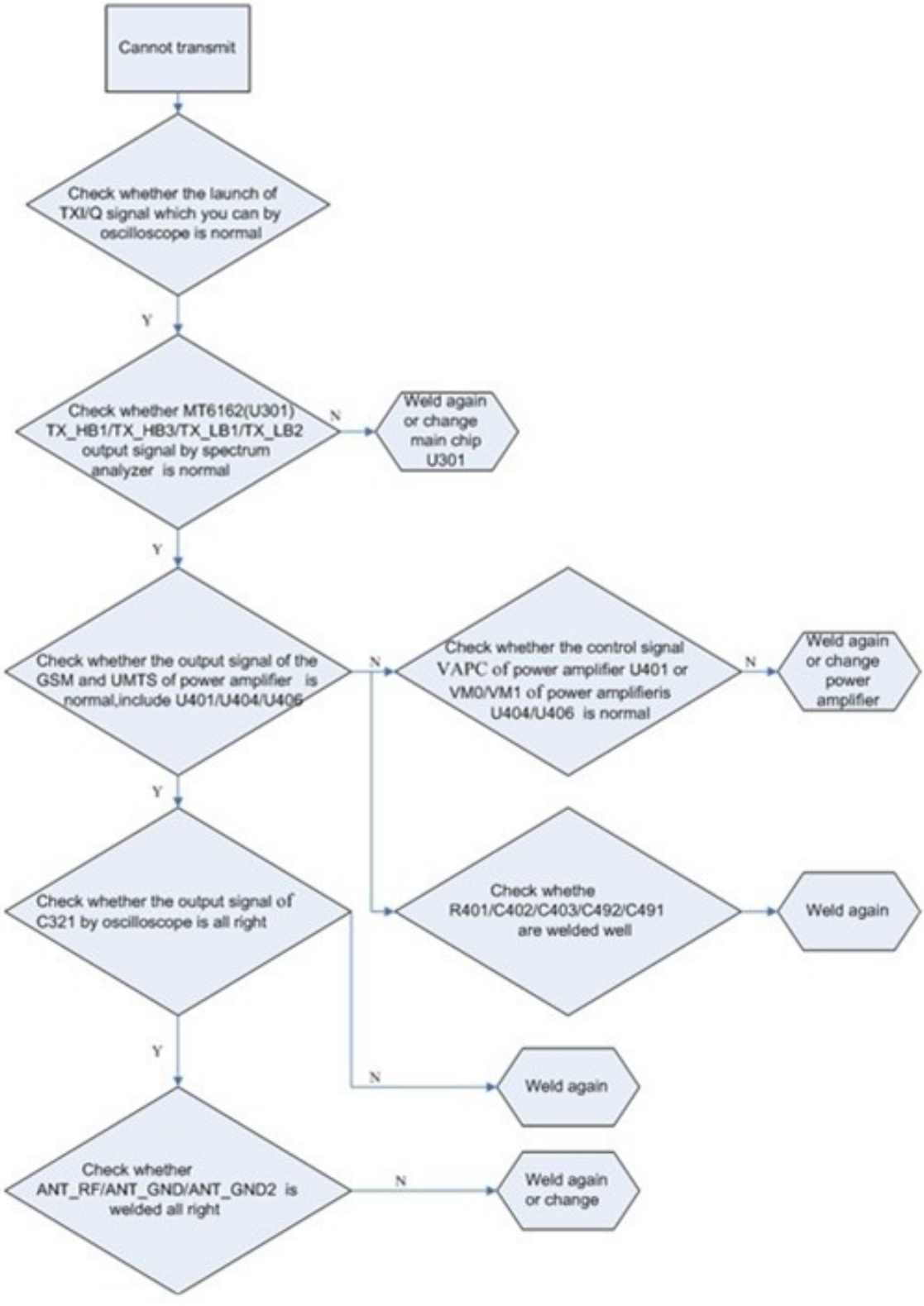
2.2.1 “Low receive sensitivity” fault check flow



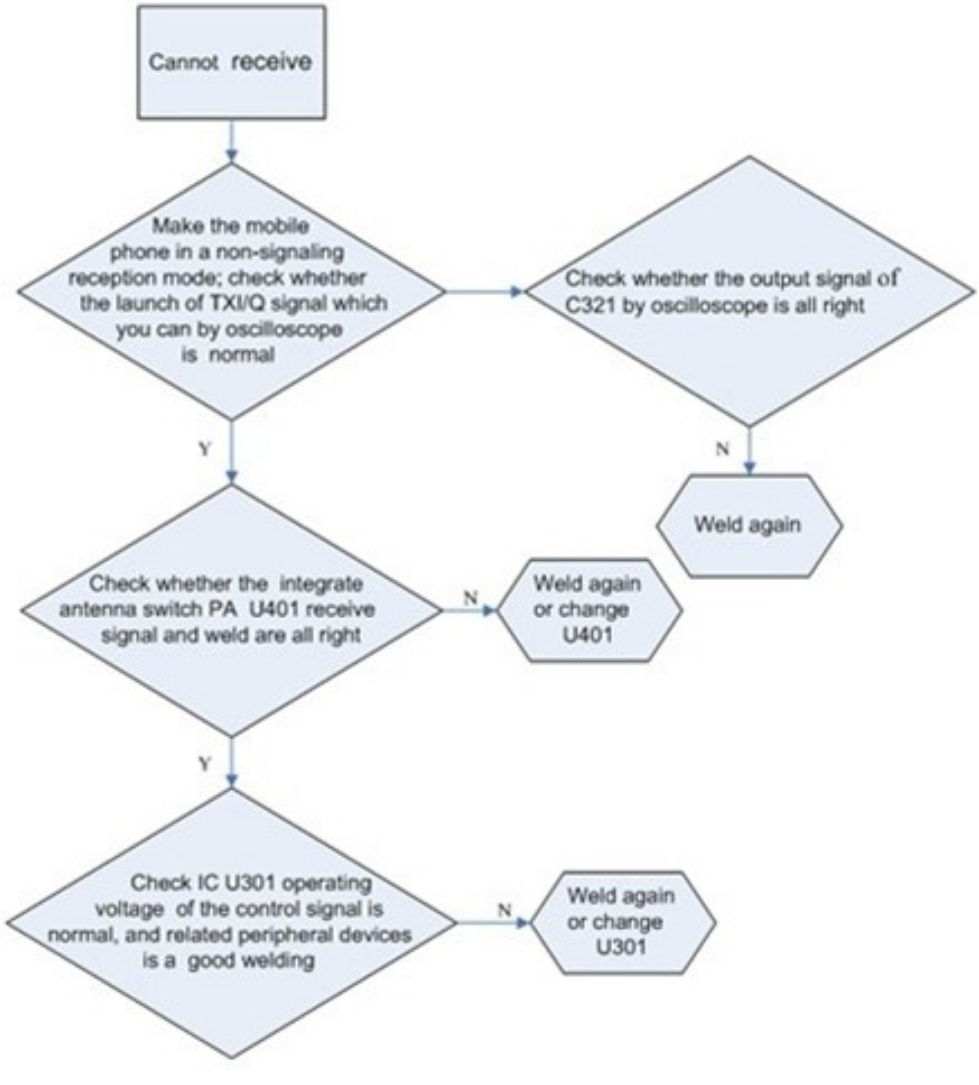
2.2.2 “Large Frequency difference” fault check flow



2.2.3 “Cannot transmit” fault check flow



2.2.4 “Cannot receive” fault check flow



2.3 MT6620 Common Fault

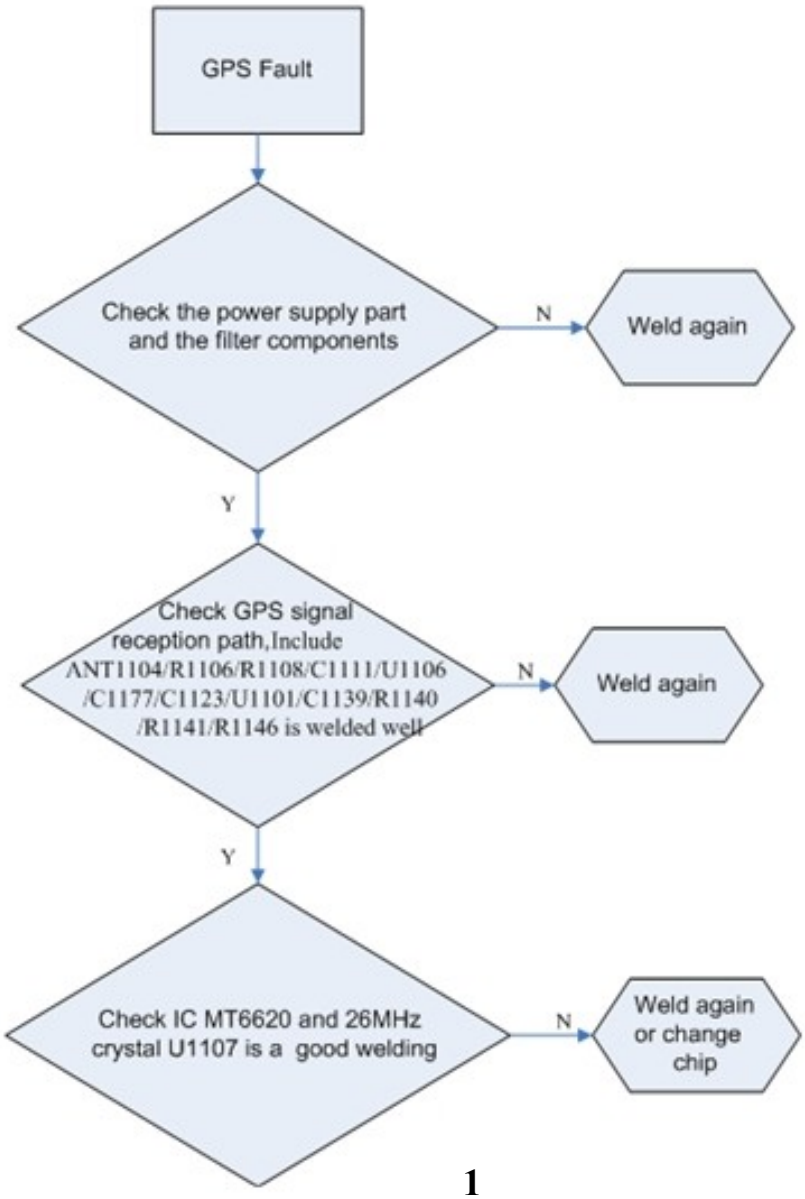
MT6620 is a 4-in-1 wireless communication device which includes

a) WLAN
b) Bluetooth
c) GPS
d) FM Transmitter and Receiver

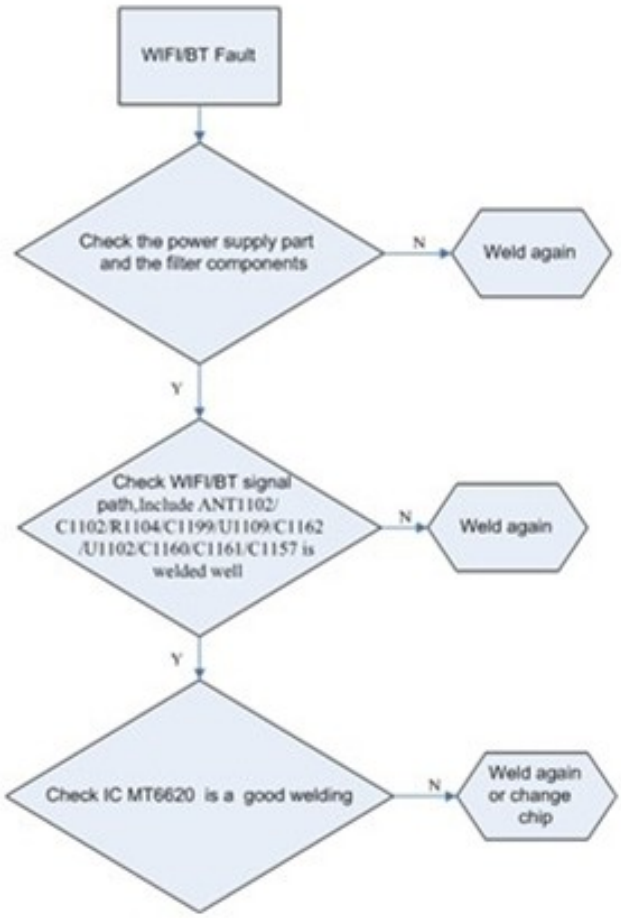
The MT6620 module on the board as shown in Figure 2-3:

2-3 MT6620 module

2.3.1 GPS Fault



2.3.2 WIFI/BT Fault



2.3.3 FM Fault