

MC165_Maintenance Instruction

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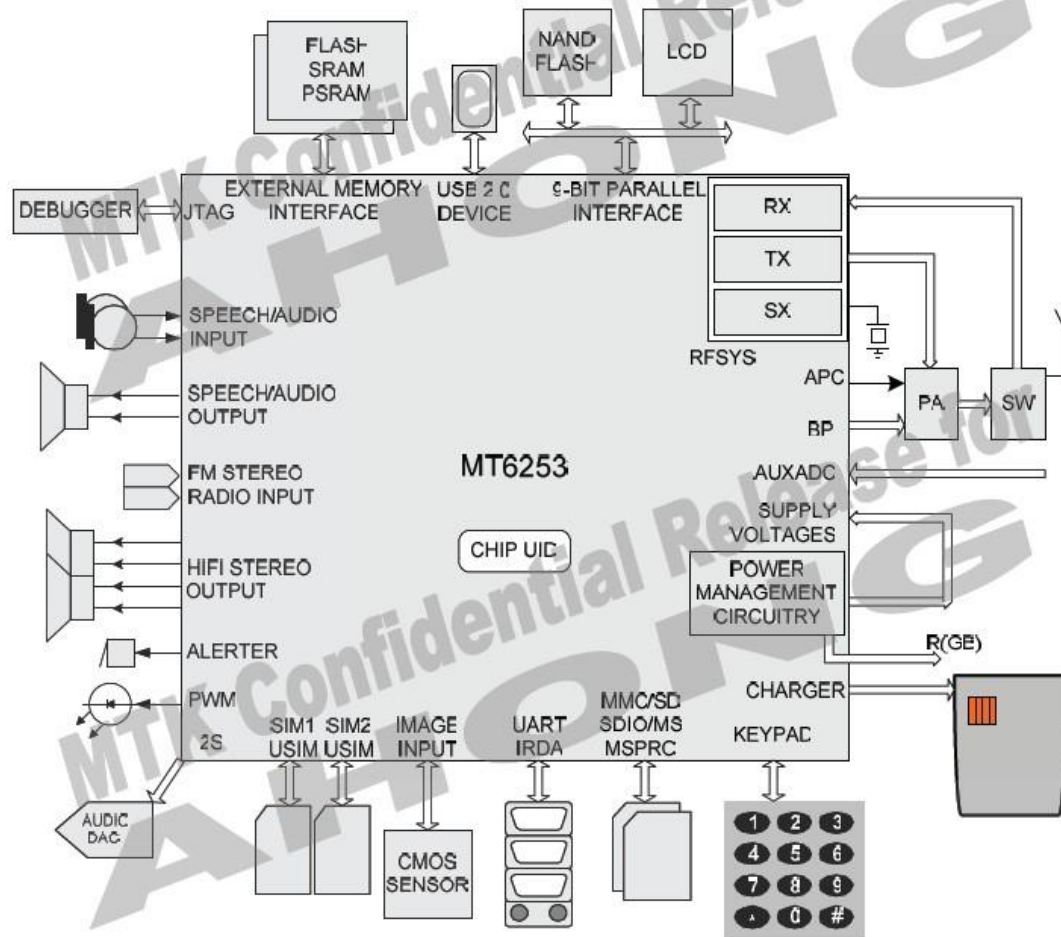
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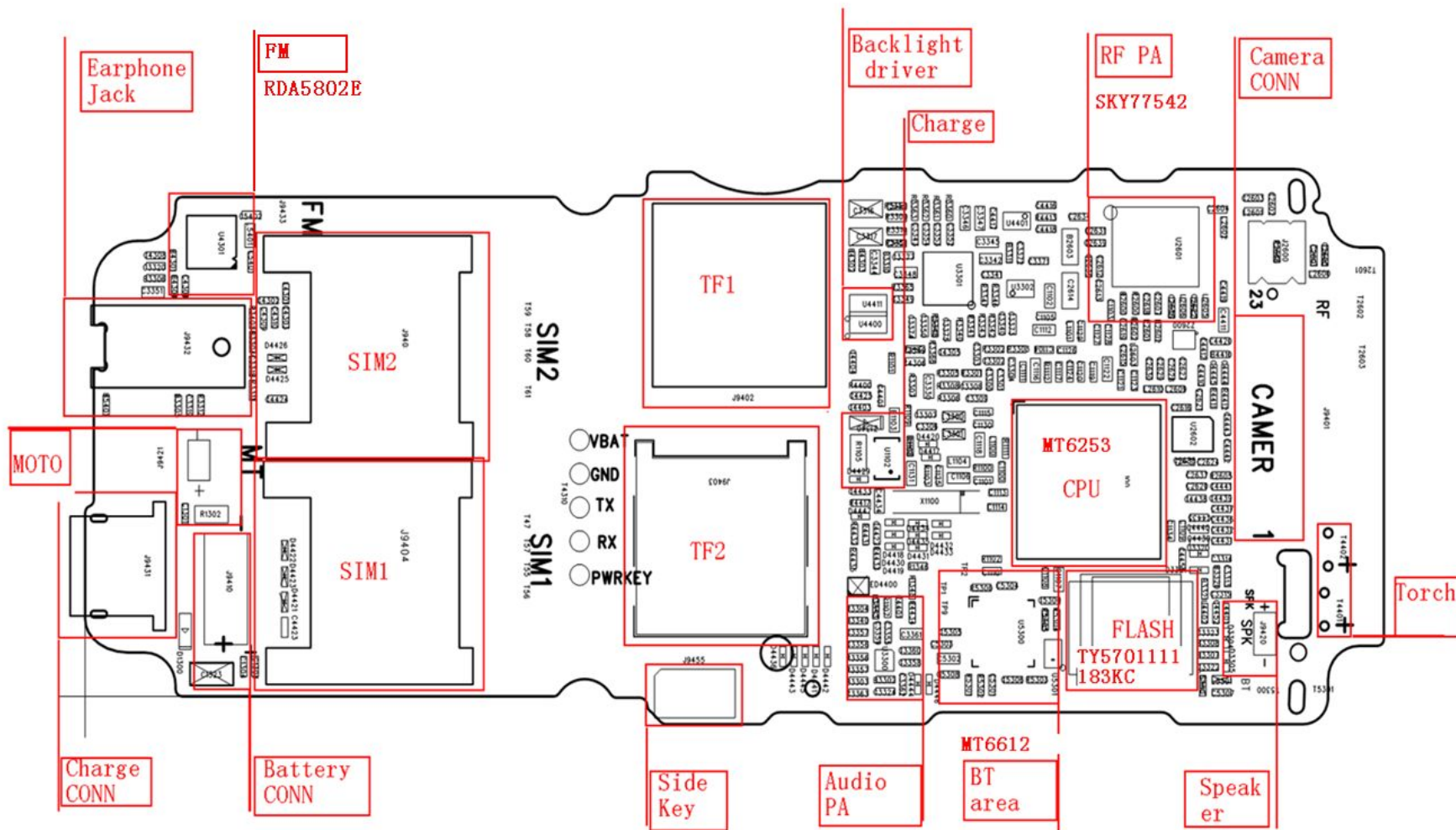
1 Overview MC165

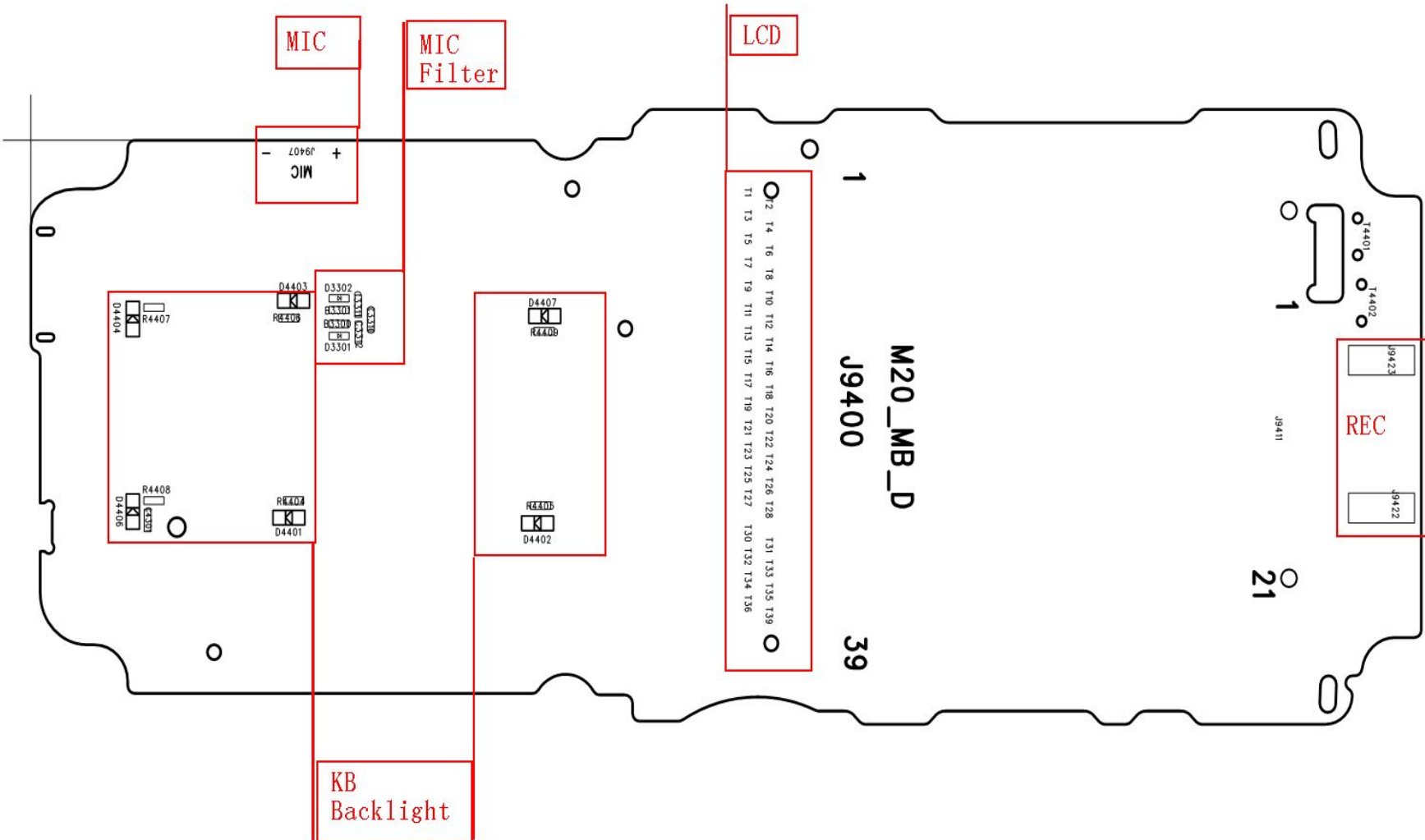
1.1 About MC165 Phone

MC165 mainboard is based on the MTK platform designed to support 2-band which supporting the FM and Bluetooth calls and transmission, the mainboard system consists of the base-band (CPU:MT6253+TY570111183KC) and the RF (MT6253+sky77542).



1.2 Distribution of the mainboard components





2 RF

2.1 RF Overview

RF part mainly consists of transceiver MT6253 (adopts program of near-zero IF receiver, supporting the EGSM / DCS and 26M VCTCXO as the clock input, integrated clock buffer, LO VCO and TX VCO and regulator, only need for external connections of VBAT / AVDD), sky77542 (it supports EGSM / DCS and integrated automatic power control and transceiver switch).

Transceiver (MT6253) with the RF modulation and demodulation functions contains IF frequency synthesizer and VCO RF, which is part of the core component of the RF. PA has a major role in amplification of modulation signal, and it must be controllable and the speed should meet the GSM agreement.

2.2 Transmit

TX is composed of the modulation loop, power amplifier and antenna switch. PLL is mainly in the internal MT6253, I / Q signal first enters into the MT6253, after entering the PLL the signal is modulated to RF, and then it outputs from the chip to PA, converts into electromagnetic energy through antenna by the antenna switch after enlarged.

PA:

This part adopts voltage control to achieve and its role is to amplify the signal power in accordance with the requirements. It is divided to two different power levels through VRAMP signal. The transmit signal of GSM is 5 to 19, power is from 3.2mW to 2W while DCS is 0 ~ 15, power from 1mW ~ 1W. PA is time-sharing work controlled by TX-EN chip, the output power of PA is controlled by VRAMP (APC) through the voltage. PA is intermittent work, by the BS to achieve the choice of frequency bands.

2.3 Receive

Antenna RX - MT6253 (RX_VCO mixer) - band-pass - Amplification - filter - Amplification - RX_VCO mixer - CPU

2.4 Common RF Malfunction

Detection and Maintenance Flow Chart of MS Transmit malfunction

Fig0

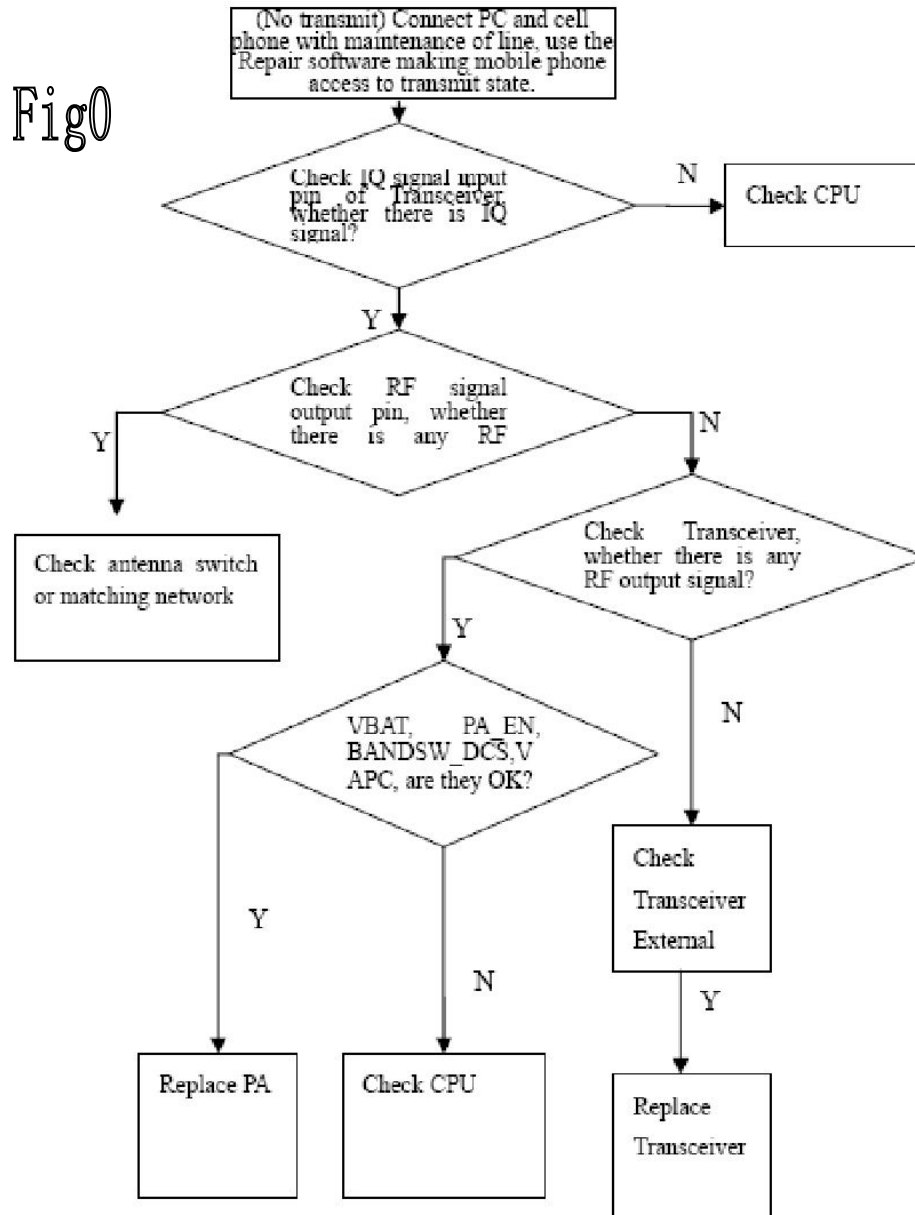
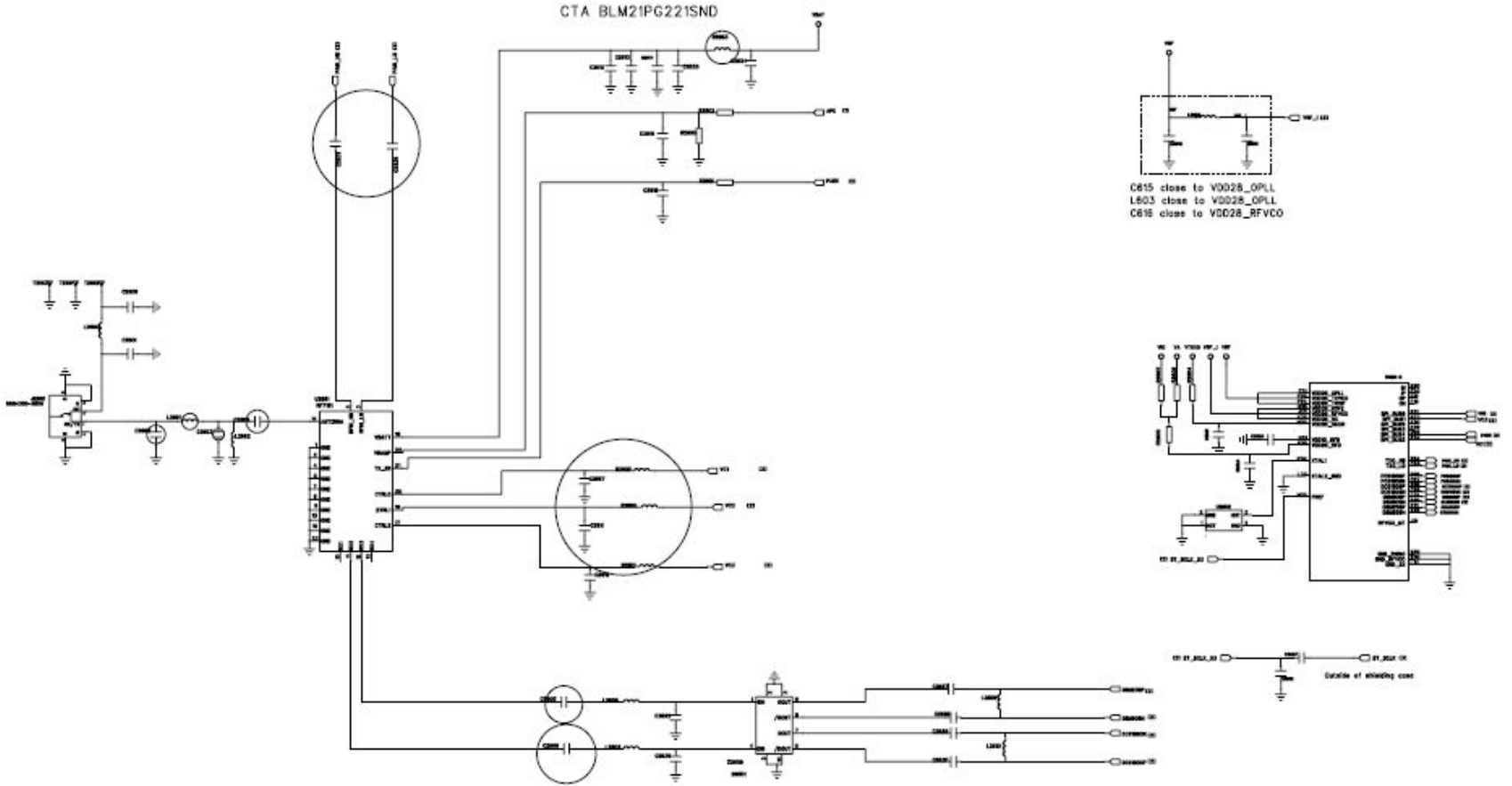


Fig0



3 Baseband

3.1 Baseband Overview

MC165 Baseband consists of CPU MT6253 and Program Memory. MT6253 baseband, the core device of the mainboard, is responsible for the normal work among various parts of mainboard, such as voice processing, image processing, power management as well as MS communications.

MT6253 digital baseband contains ARM7EJ-S 32-bit core and 144Kbyte SRAM. MT6253 which is an enhanced GSM Processor integrated Channel Codec subsystems interiorly including Channel Codec, Intertlace / Deinterleave, Encryption / Decryption and Control Processor subsystems including ARM7EJ-S and its peripheral circuits. There are 25 address lines, 16 data lines, 8 chip select lines, provided 7 external interrupt Interface, 52M/104M operation clock.

Analog baseband contains MT6253 analog baseband chip, audio, baseband codec and power management. Four major functional blocks integrated internal: Audio codec including Voice input / Output channel, Buzzer output; Baseband codec including Differential I, Q input / output, GMSK modulation and A / D, D / A; Auxiliary parts including AFC DAC, RAMP DAC, AGC DAC and a seven-channel A / D. And WATCHDOG interface is set internal to enhance the stability of the system.

3.2 Logic

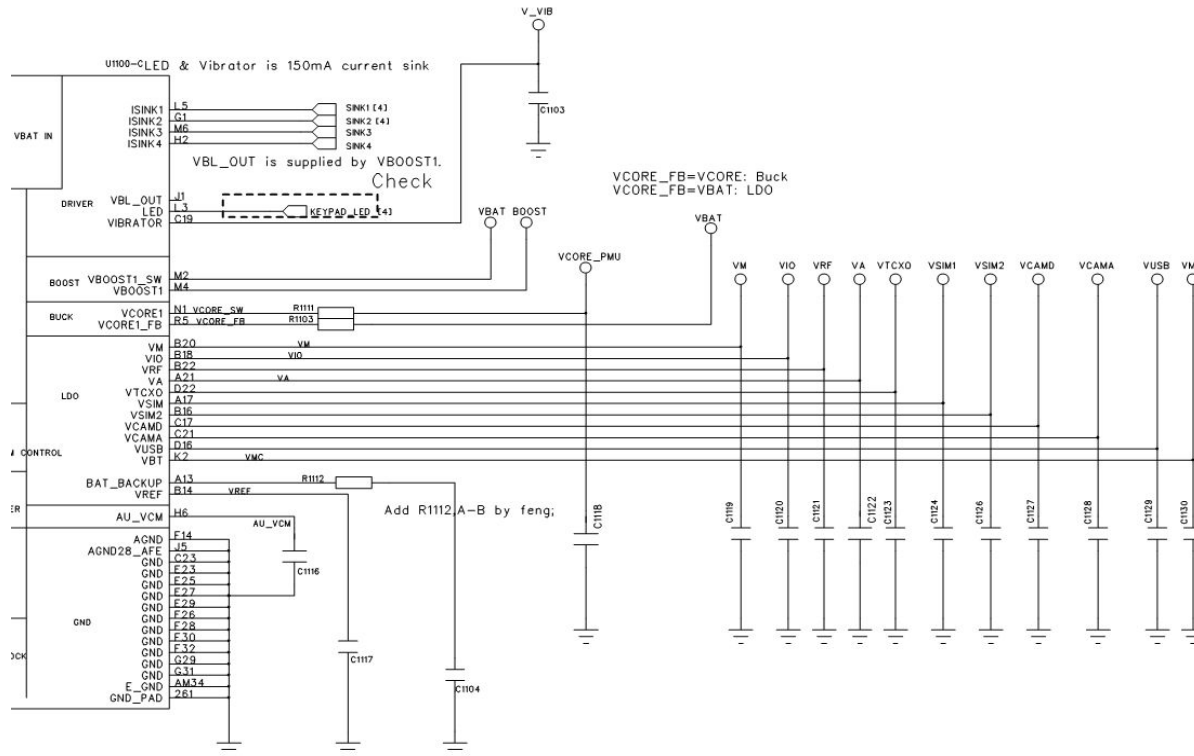
Logic part is composed of MTK base-band management chip MT6253, power management chip MT6253 and Nor Flash.

- CPU : MT6253
- Nor Flash: TY5701111183KC
- PMU : MT6253

3.3 Power management

Power management consists of the charging circuit integrated in MT6253 and the external charging circuit. It provides 11 road LDO voltage. Besides, it completes the logic level conversion of SIM card. The chip also outputs the system reset signal.

Vibrator is LDO mode



Boot process:

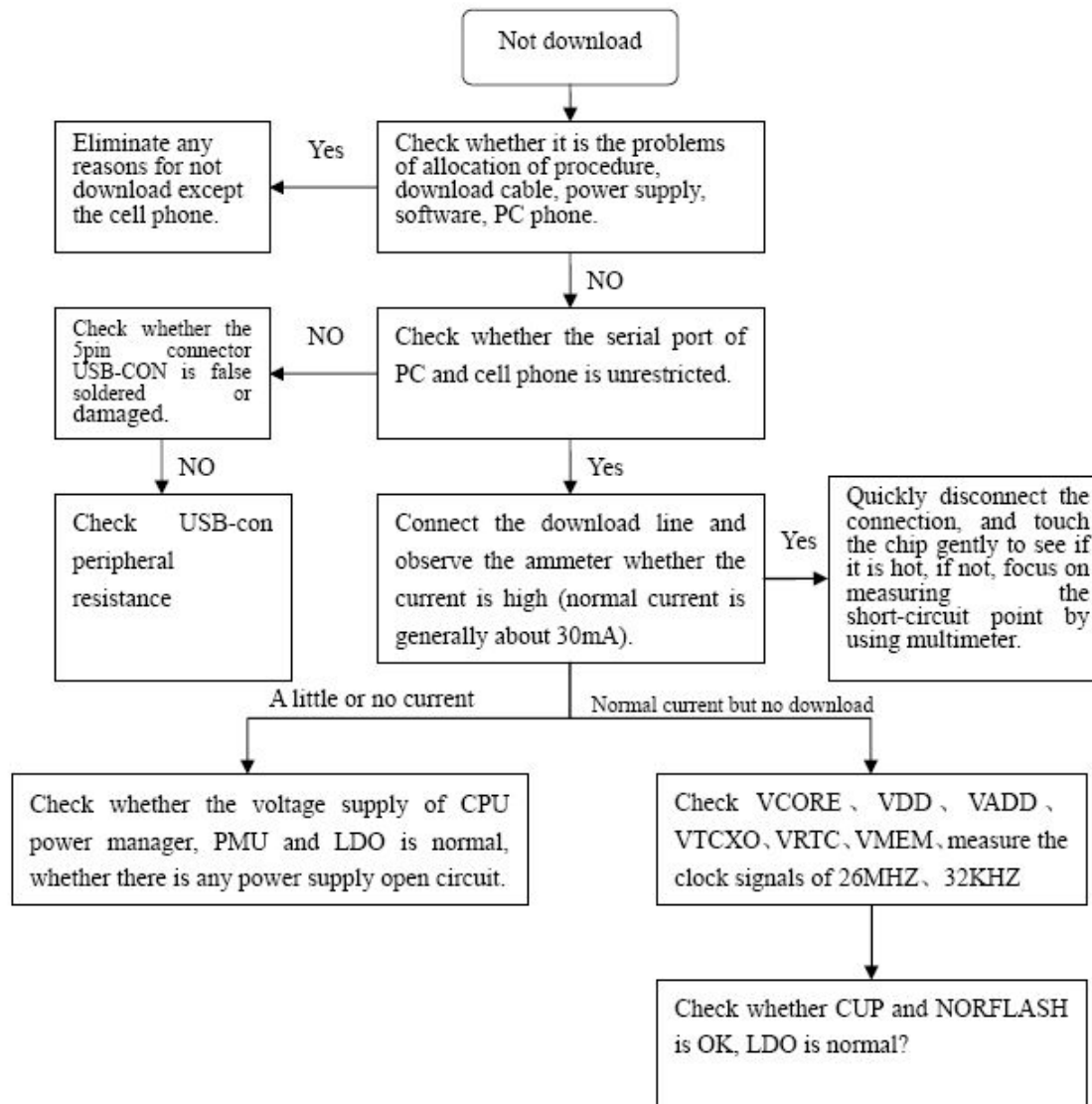
The normal boot is to press boot key which is that the PWRKEY is being dragged down. Once the boot key is pressed, all LDO are open except VSIM. After VCORE opening RESET timer and timer out, RESET is being pitched up to start the digital baseband chip, that is, UMT6253 starts to run and roll polling its ROWX pin, pitch up its PWRONIN pin, then you can release the boot key. This is the initial boot process.

3.4 Baseband common malfunction

3.4.1 Nor Flash programming does not download

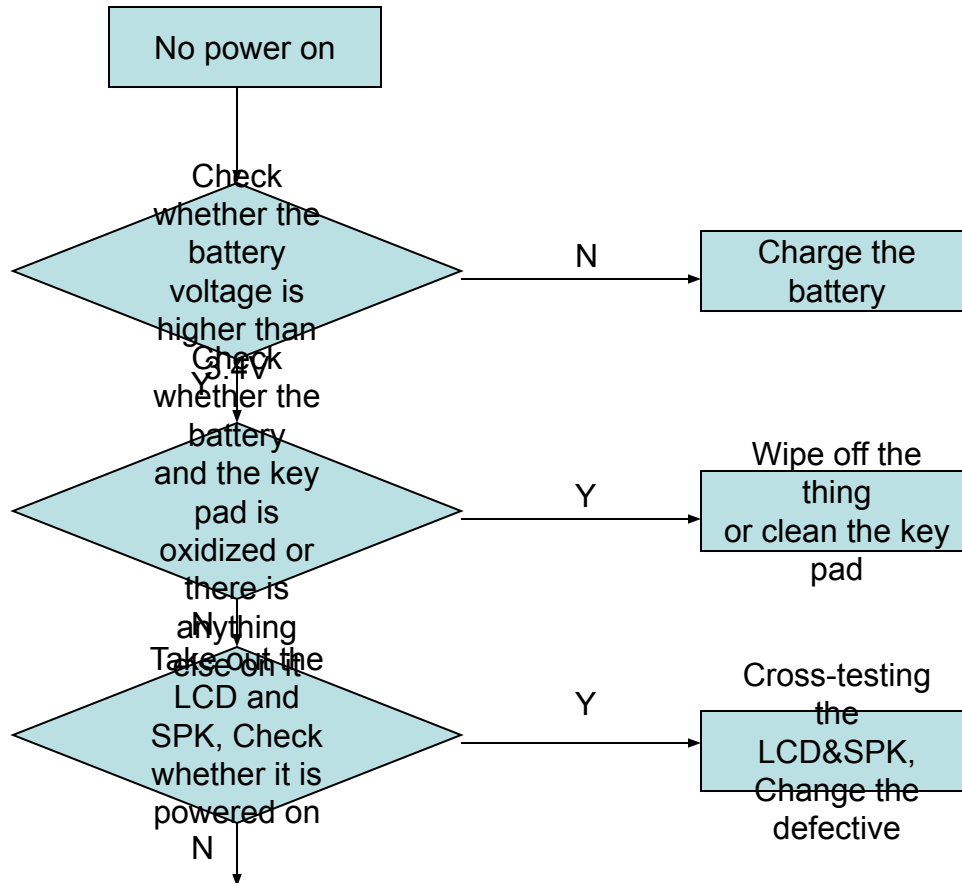
Data lines used for downloading software: VBAT, TX, RX, GND, CHARGE. It is mostly due to the false solder and wire bonding. First check whether the serial port of PC and cell phone is unrestricted, if not, it is caused by being lack of devices or empty solder of power manager, USB-con and peripheral resistance. Measure the TX, RX signals by using AC-coupled oscilloscope to track the signal flow, if a certain period circuit of no signal it may be AC short circuit to ground, or is caused by a short circuit and open circuit. On checking the malfunctions, first should carefully observed the welding of these devices with a magnifying glass, then plug in the download line to observe whether the current is normal, there is short-circuit to ground of VCHG or VBAT if the current is large, at this time cut off power supply as soon as possible, and then find the short-circuit point. It may be the abnormal output power supply of a certain circuit that the current is larger than normal (about 30 mA) but not particularly large, at this time should check whether the voltage of VCORE (1.8V), VDD (2.8V), VADD (2.8 V), VTCXO (2.8V), VRTC (1.5V), VMEM (2.8V) is normal, if not, bad welding can be detected. Focus on checking the welding of PMU and USB-CON if there is a little or no current. Unplug and re-plug the download line to see if it is caused by poor contact; It can test that whether the output of 26MHz clock signal to the CPU is normal by using oscilloscope.

3.4.2 Detection and Maintenance Flow Chart of No download malfunction



4 Reference for maintenance

4.1 No power on



C1119:1.8
V,
C1120:2.8
V,
C1121:2.8
V,
C1122:2.8
V,
C1123:2.8
V,

Fig1

Fig3

Fig2

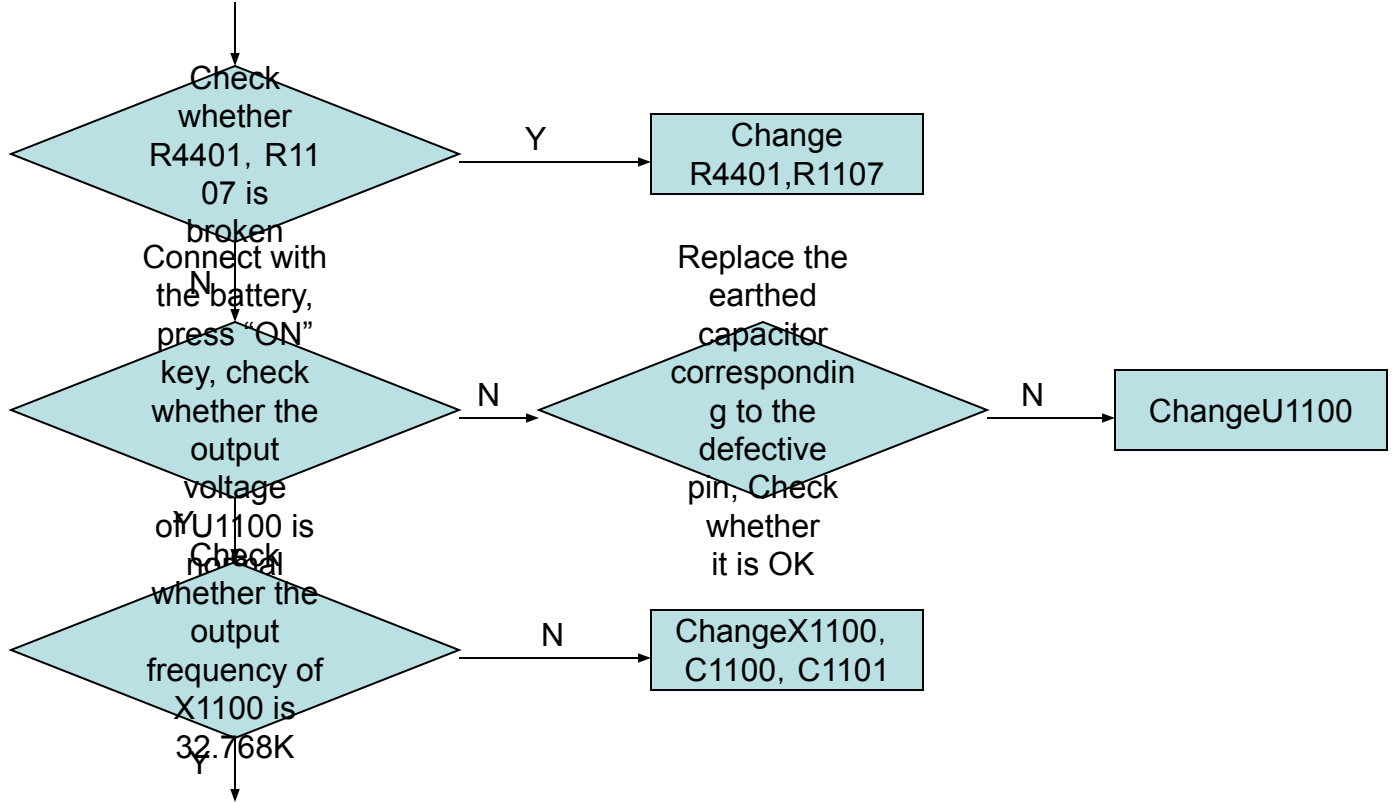


Fig2

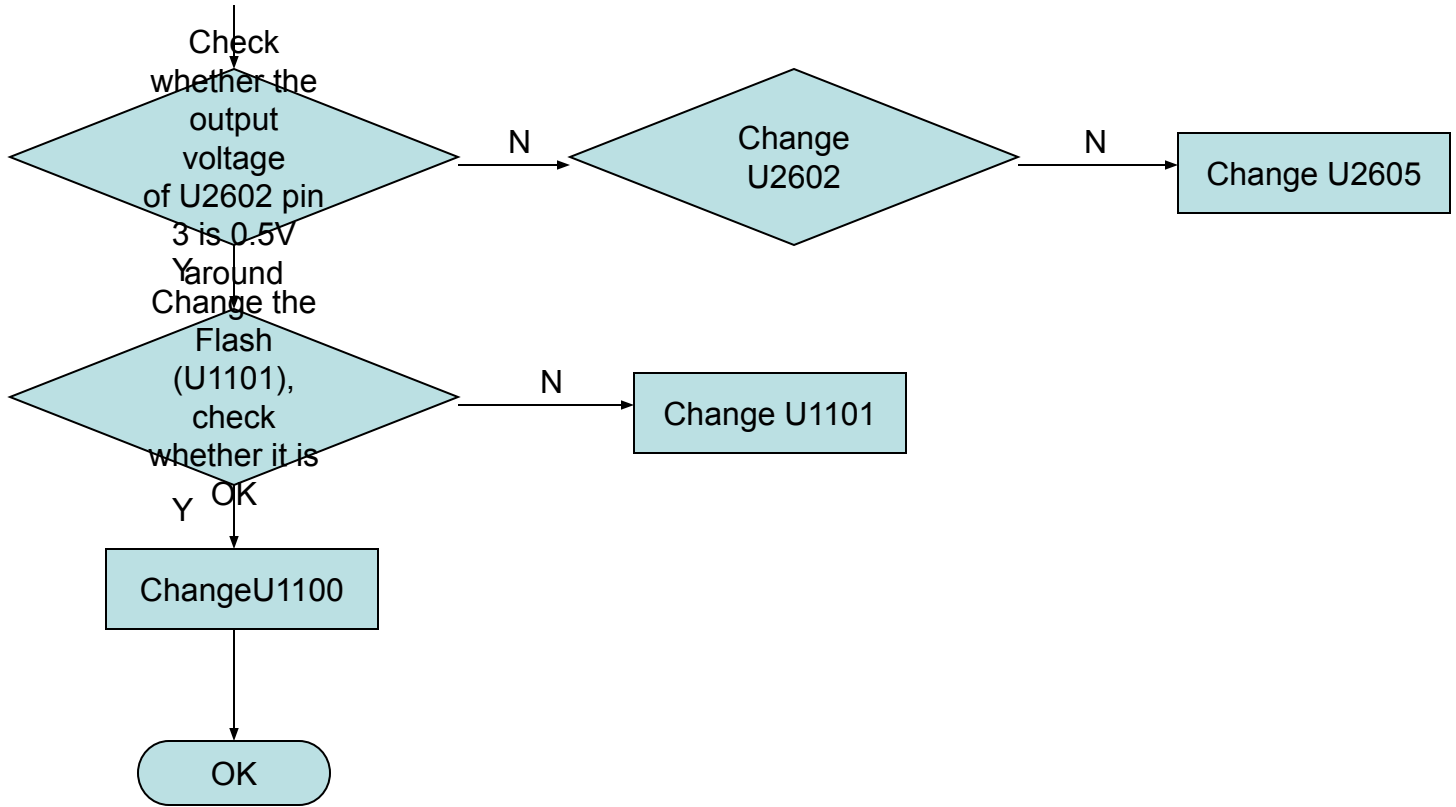
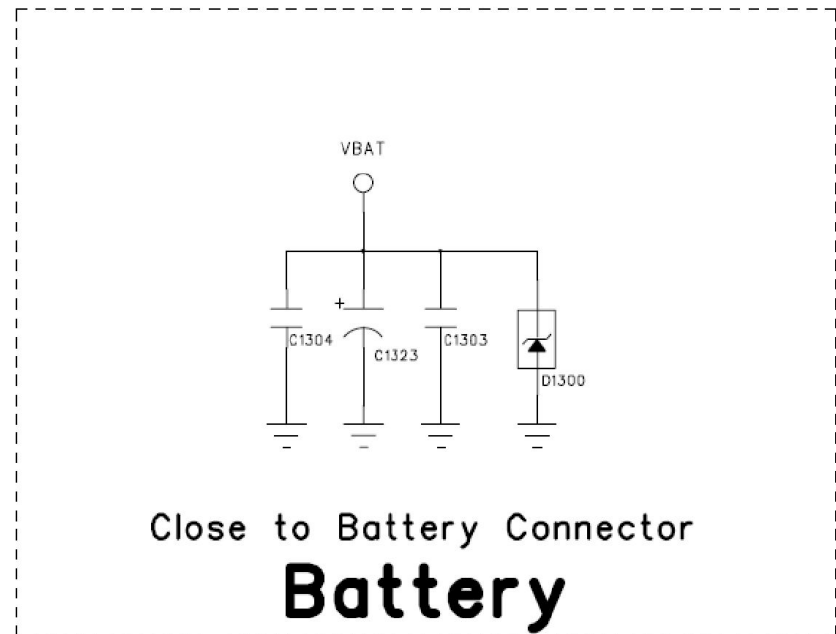
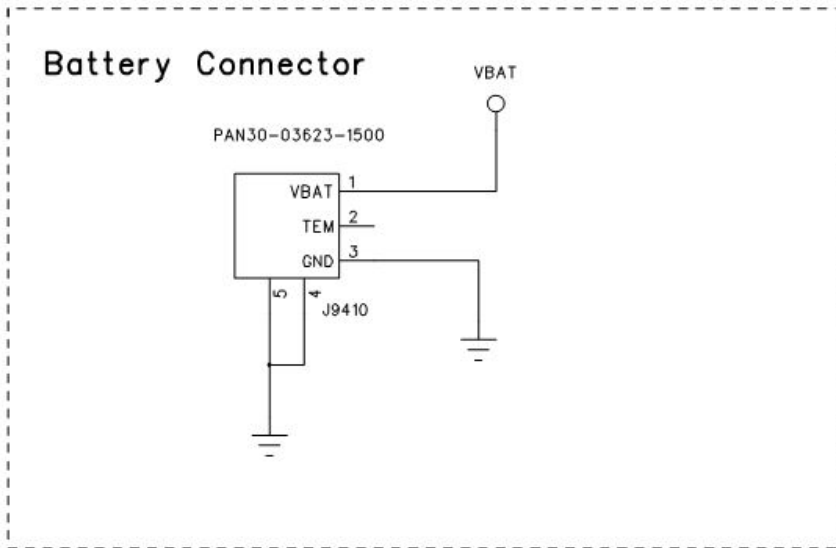
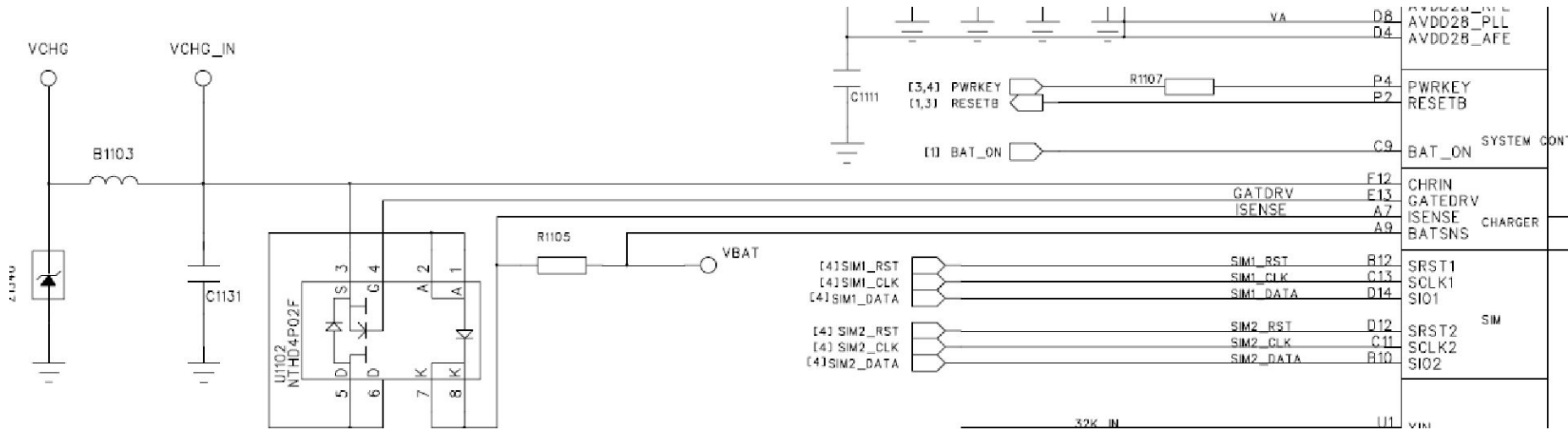
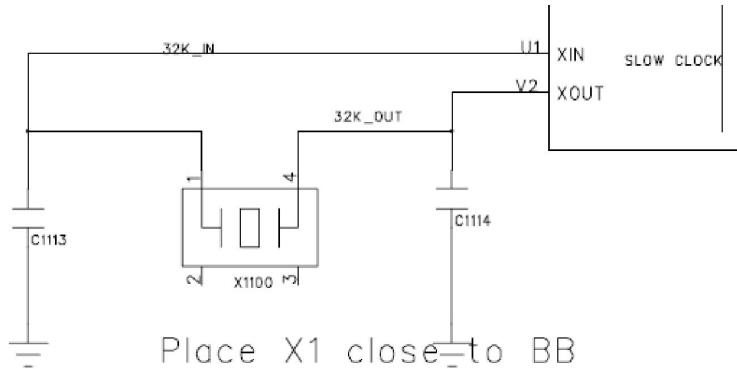
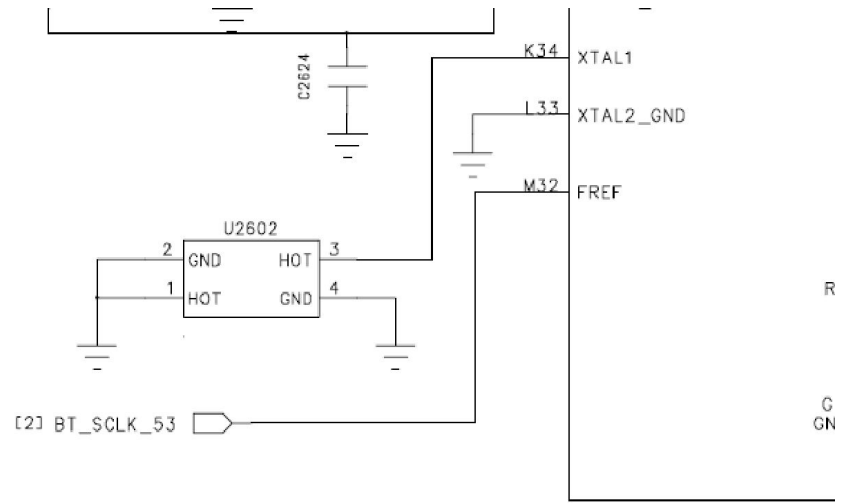


Fig1



Close to Battery Connector
Battery

Fig2



4.2 Shut off automatically

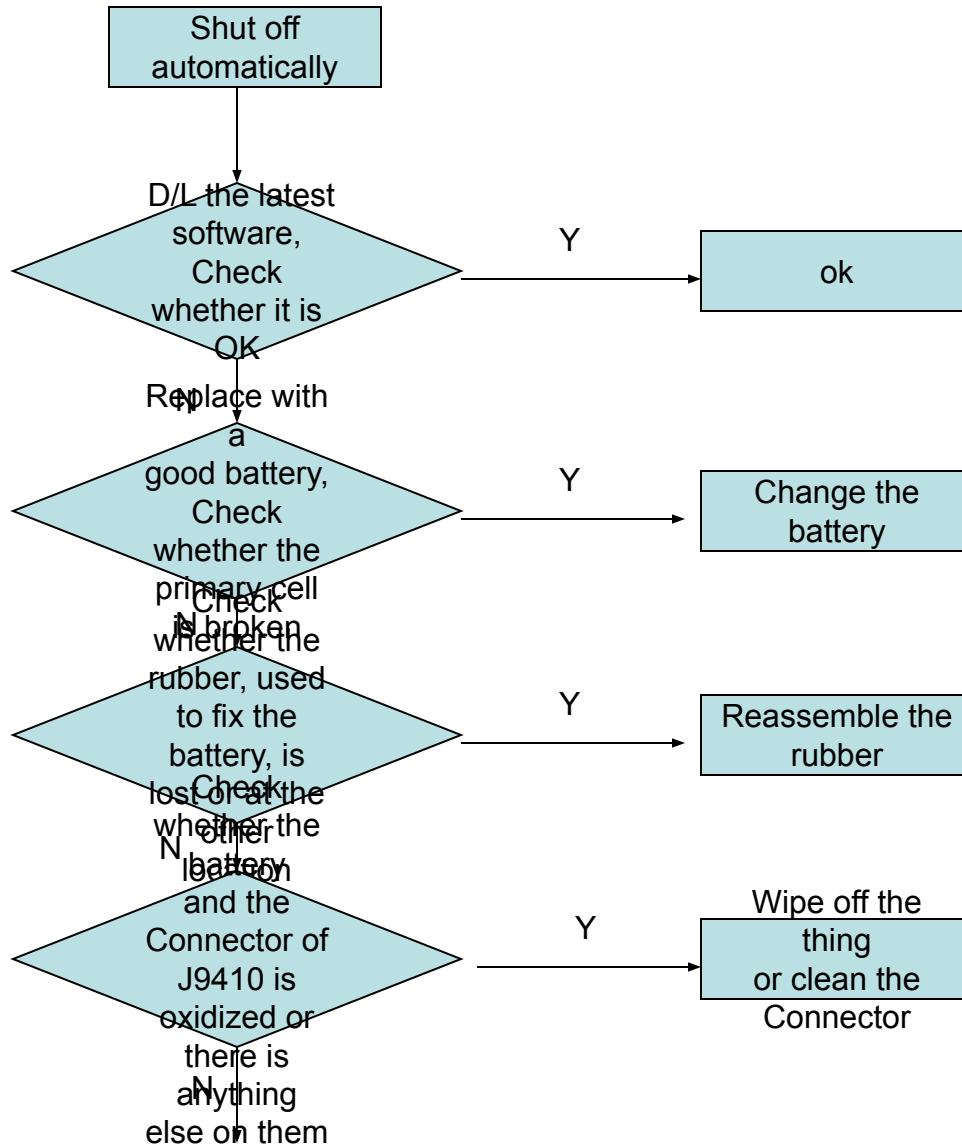


Fig3

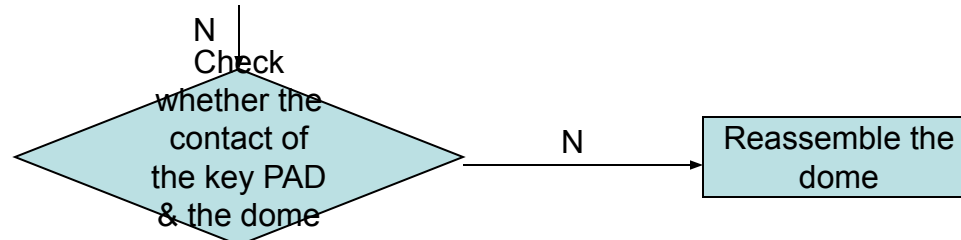


Fig2

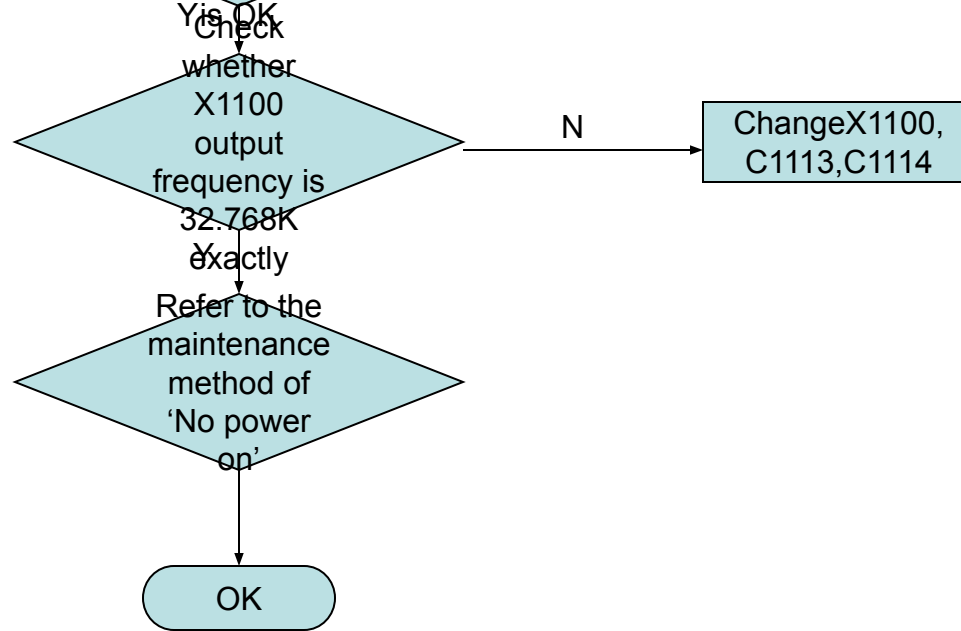
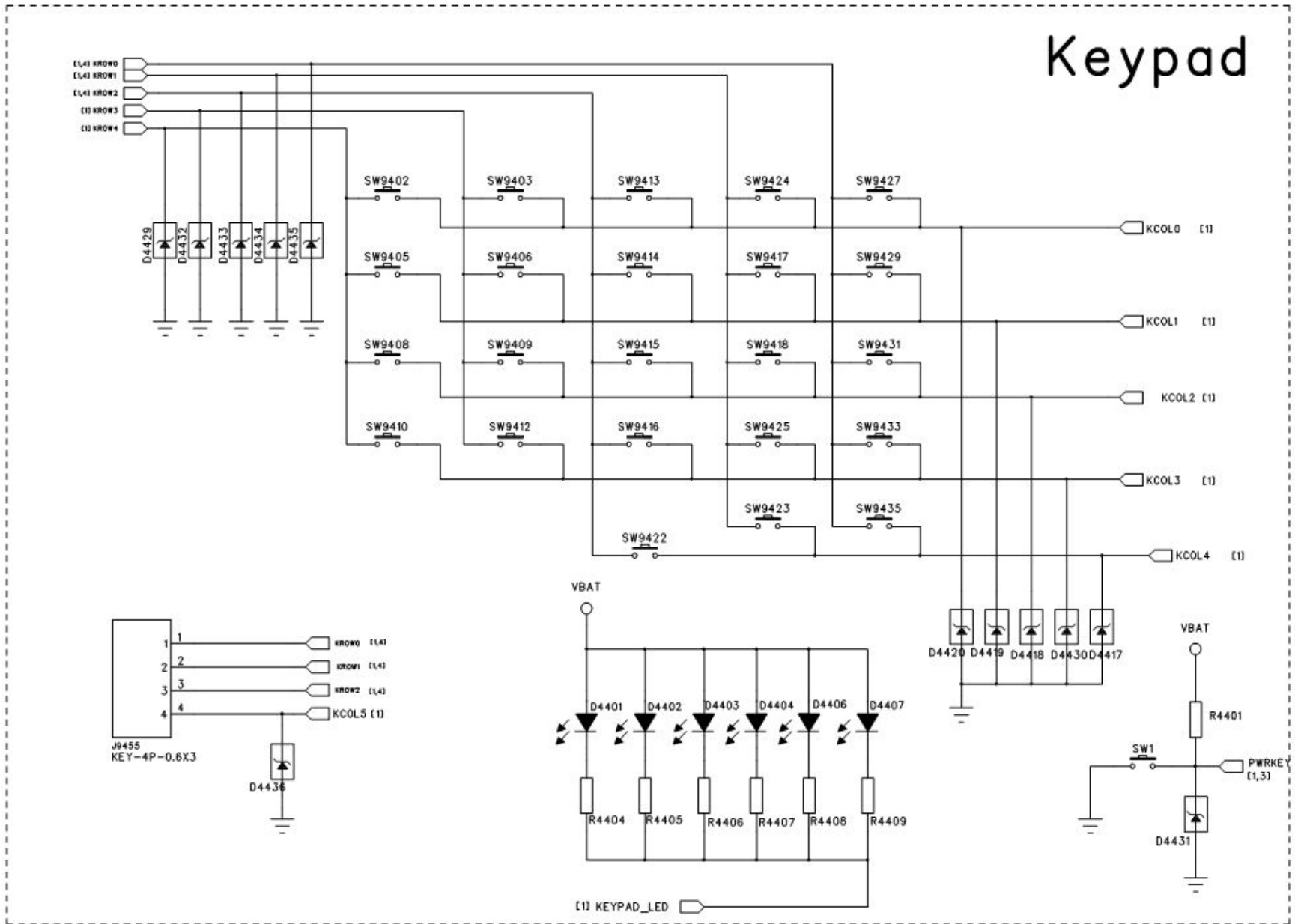


Fig3



4.3 Dead halt

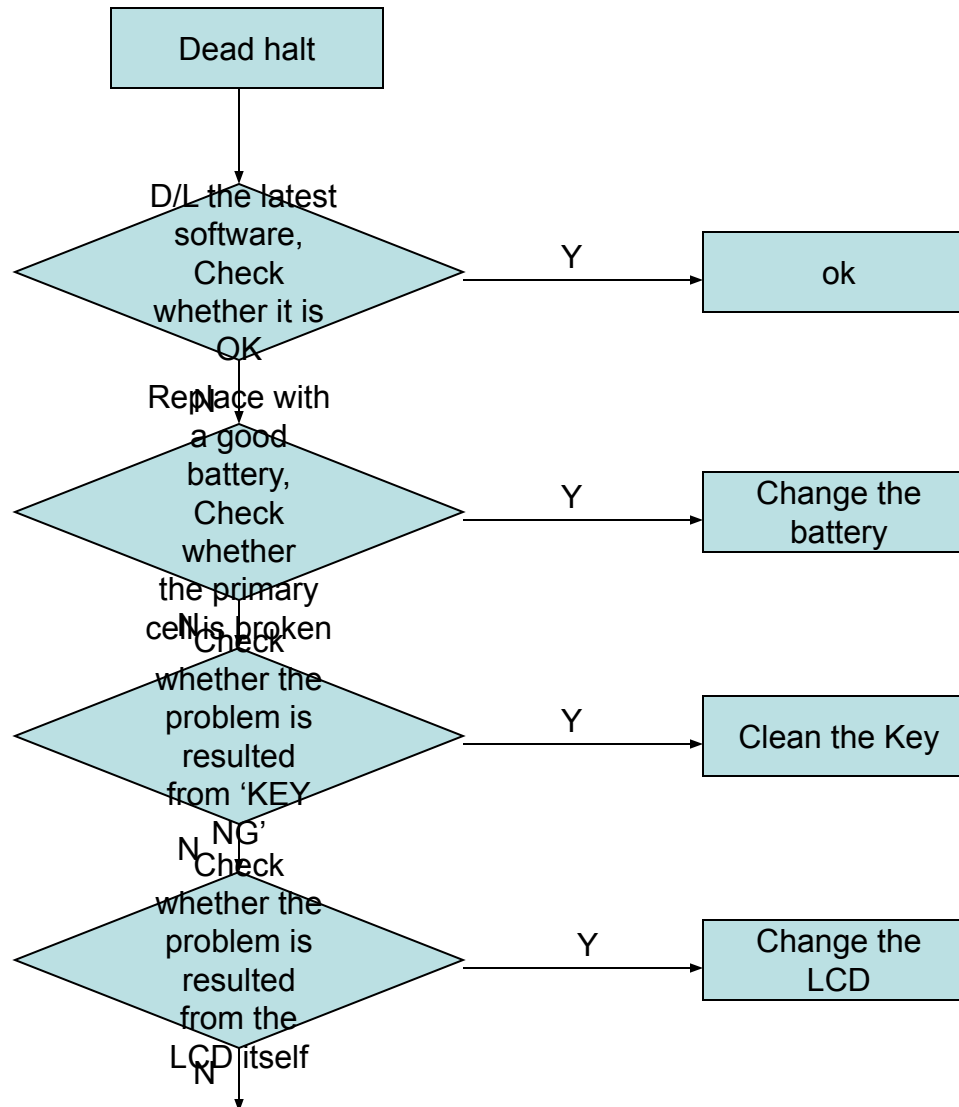


Fig2

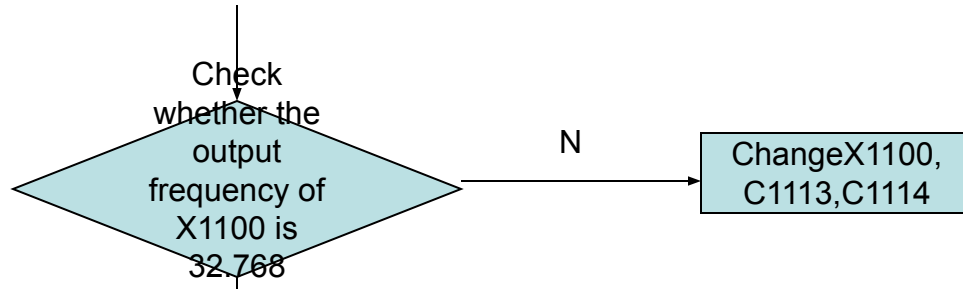
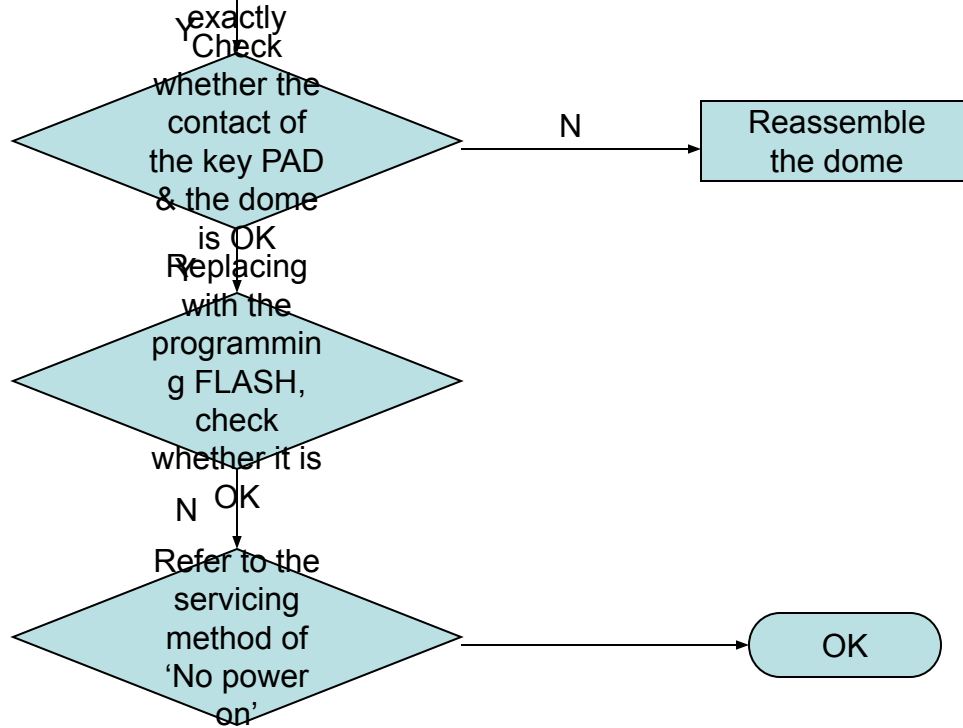


Fig3



4.4 No charge

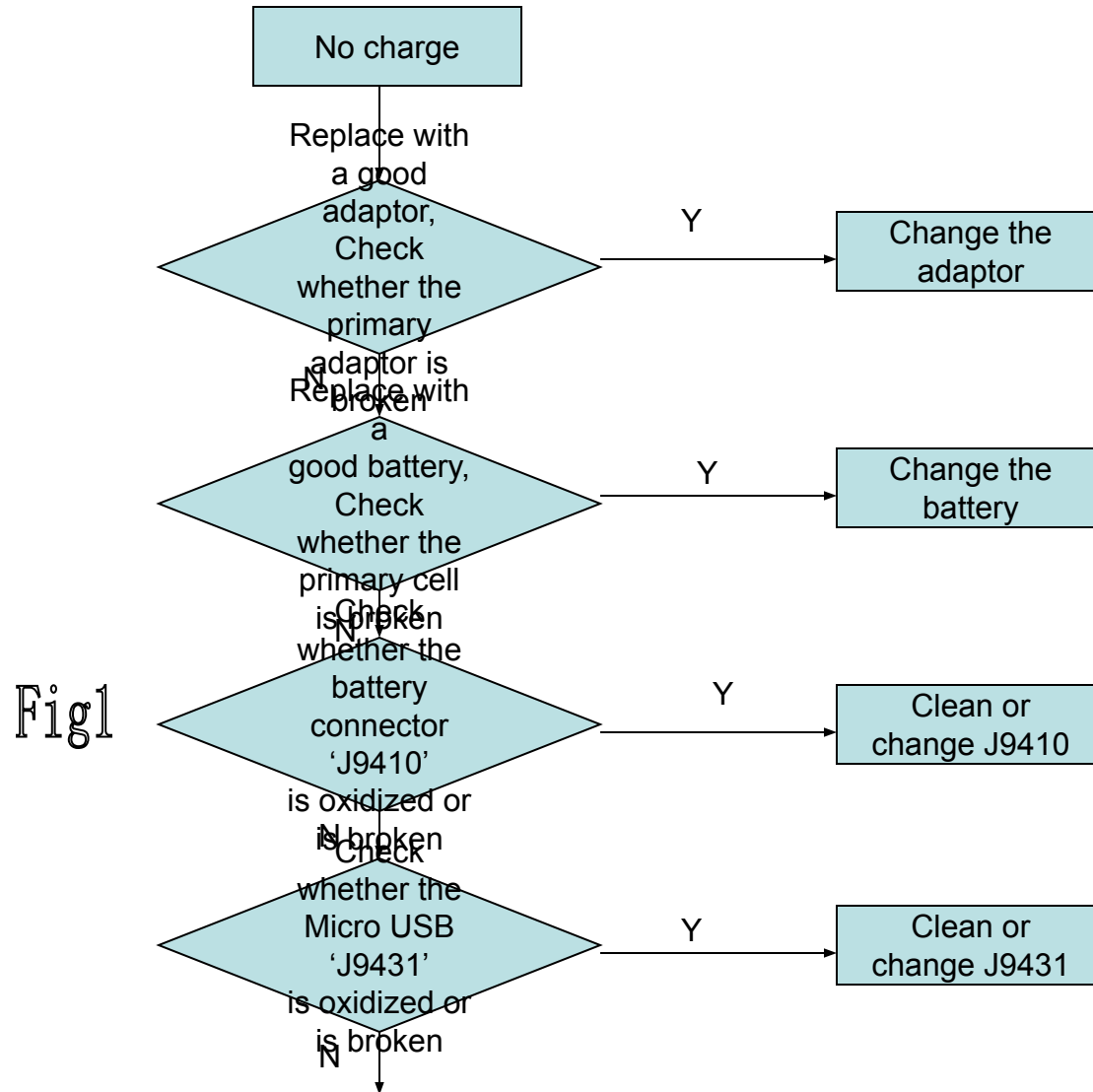


Fig1

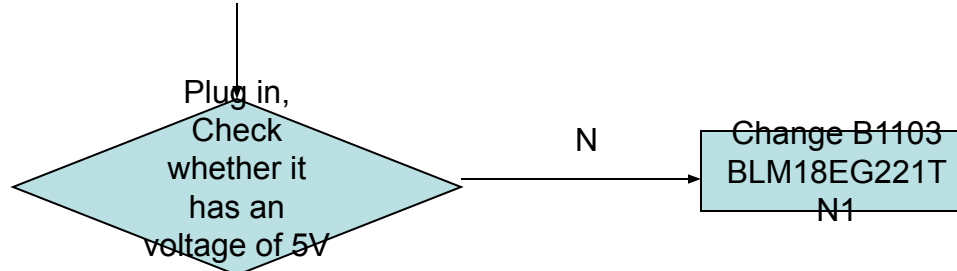
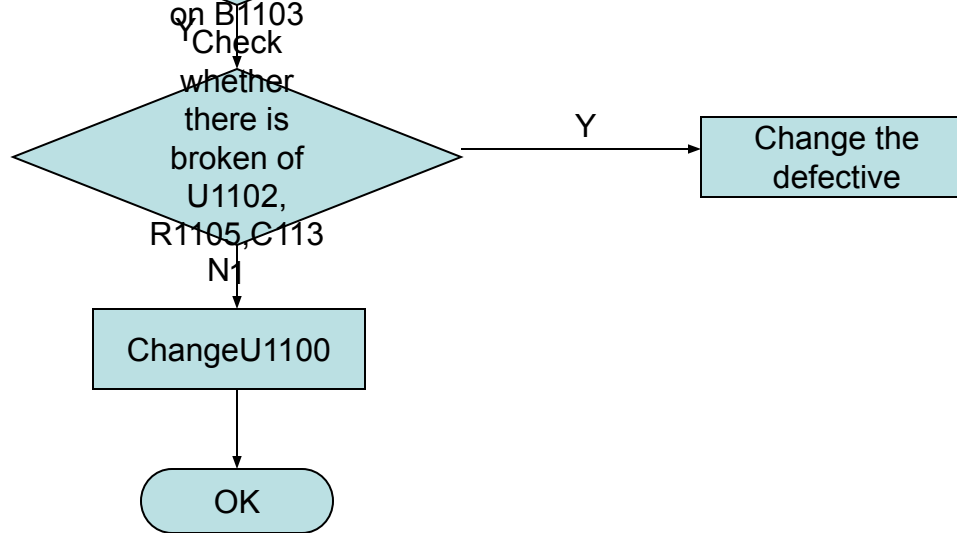


Fig1



4.5 Quantity of electricity faulty detection

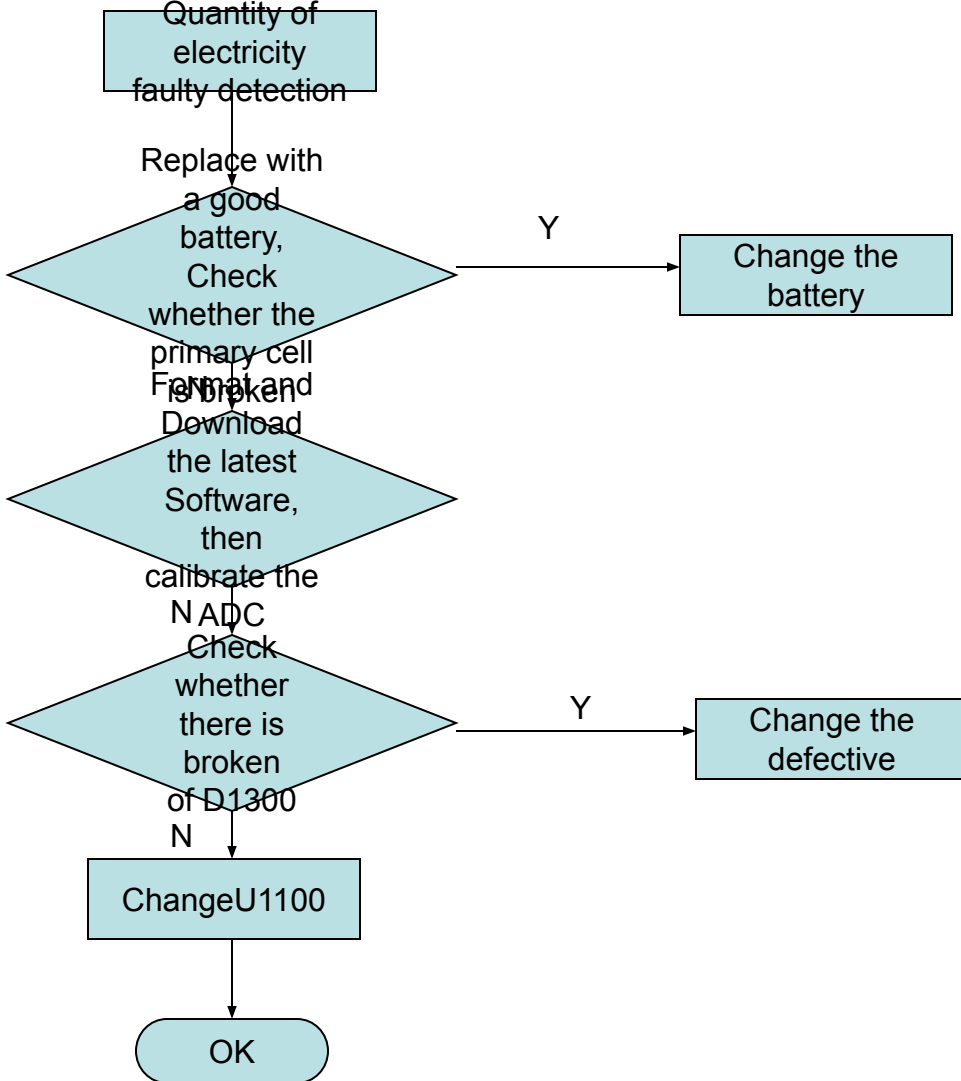


Fig1

4.6 No display

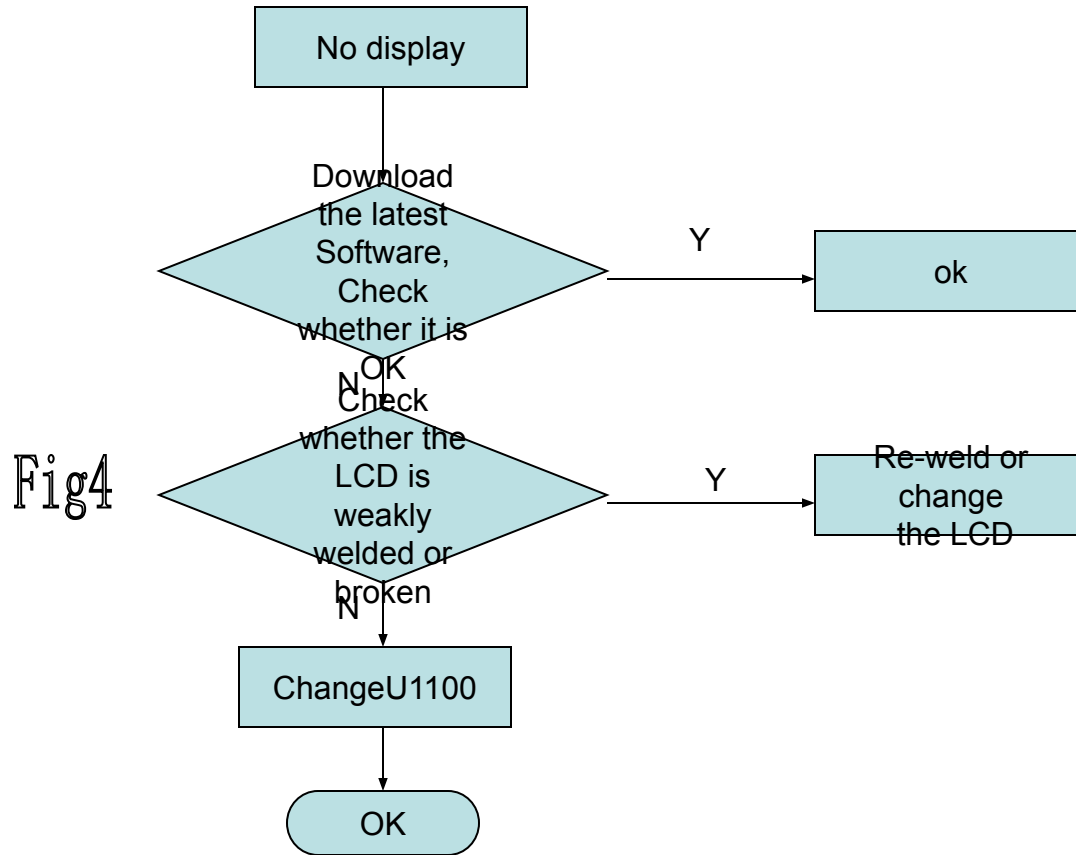
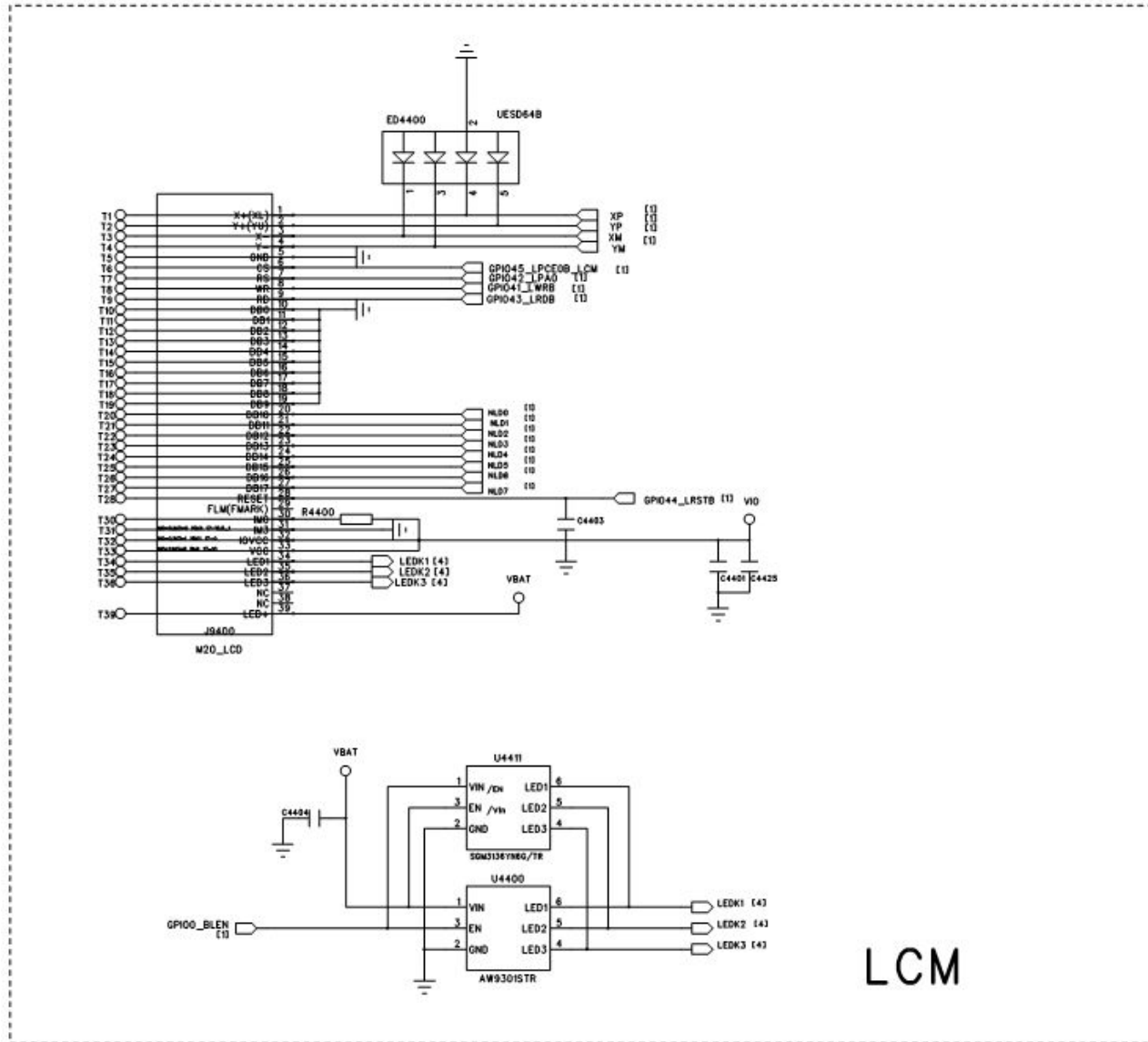
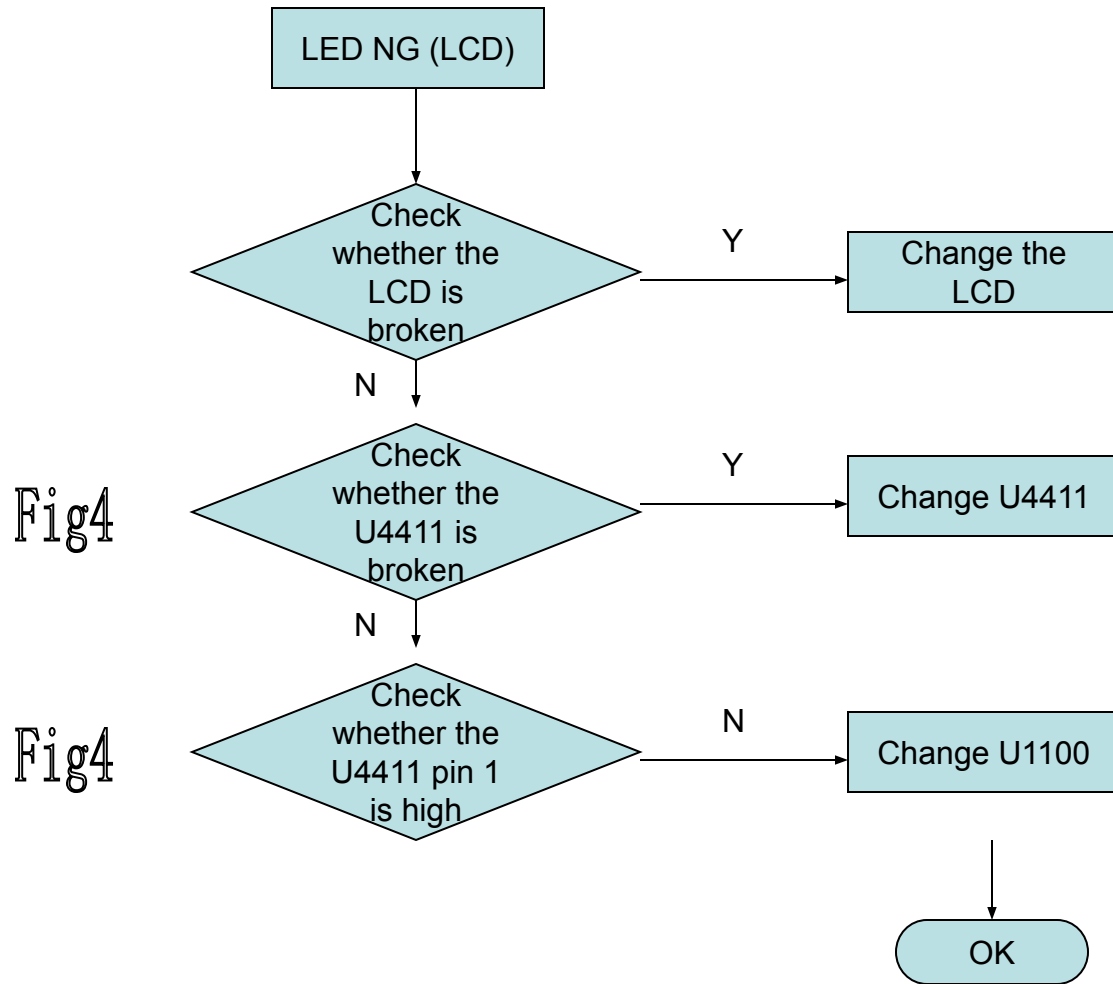


Fig4



LCM

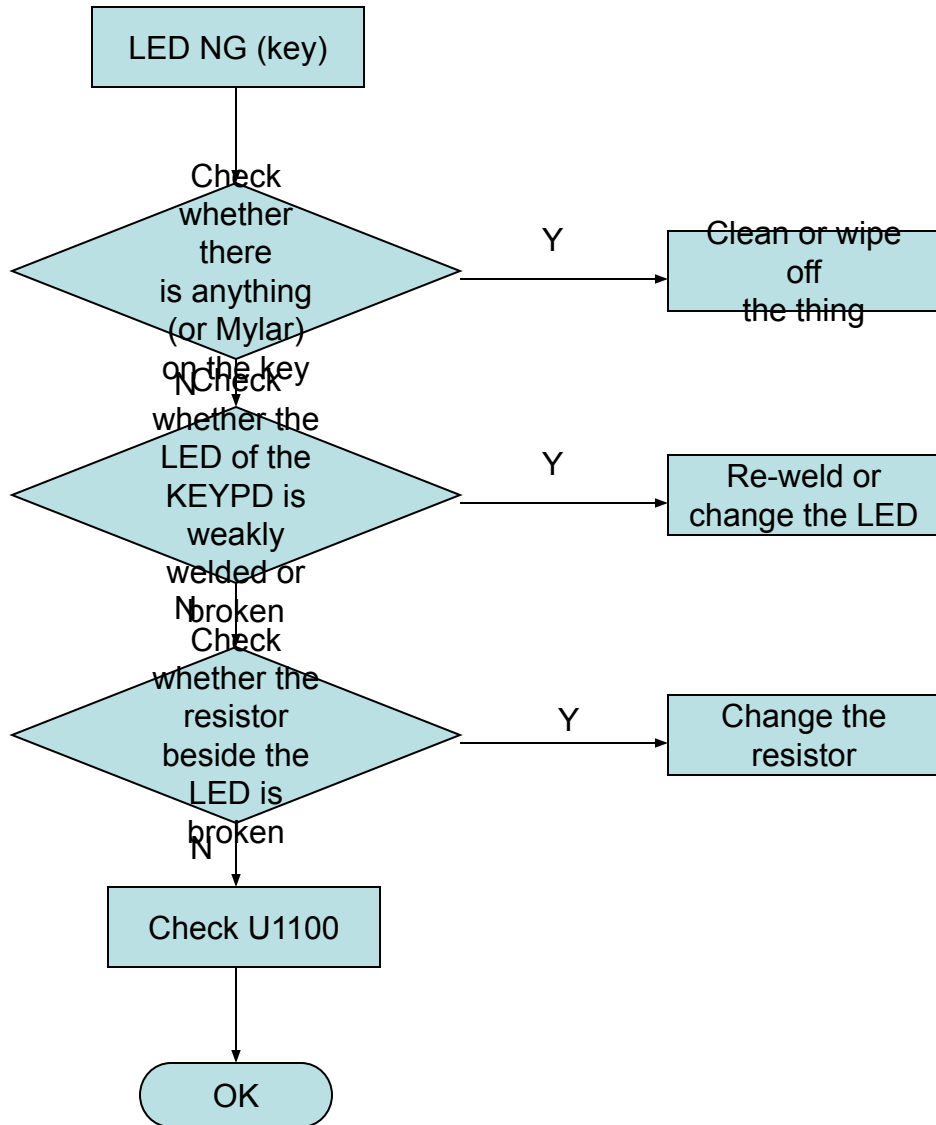
4.7 LED NG (on the LCD)



4.8 LED NG (on the key board)

Checking method:
Crosstesting
the two sides of
LED by Multimeter,
gearing to the short circuit,
if the LED is on at one
direction, it shows good

Fig3



4.9 Key NG

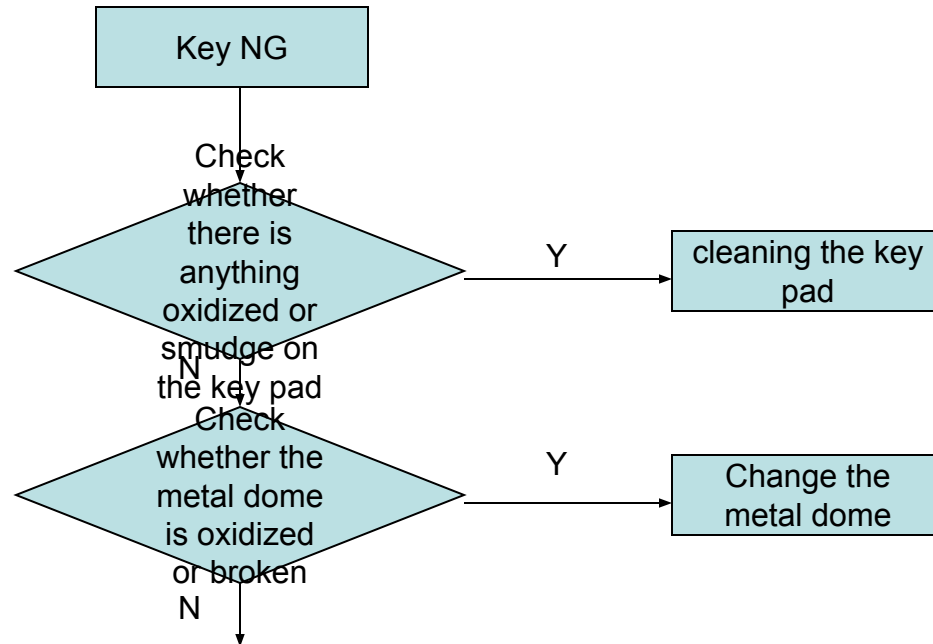
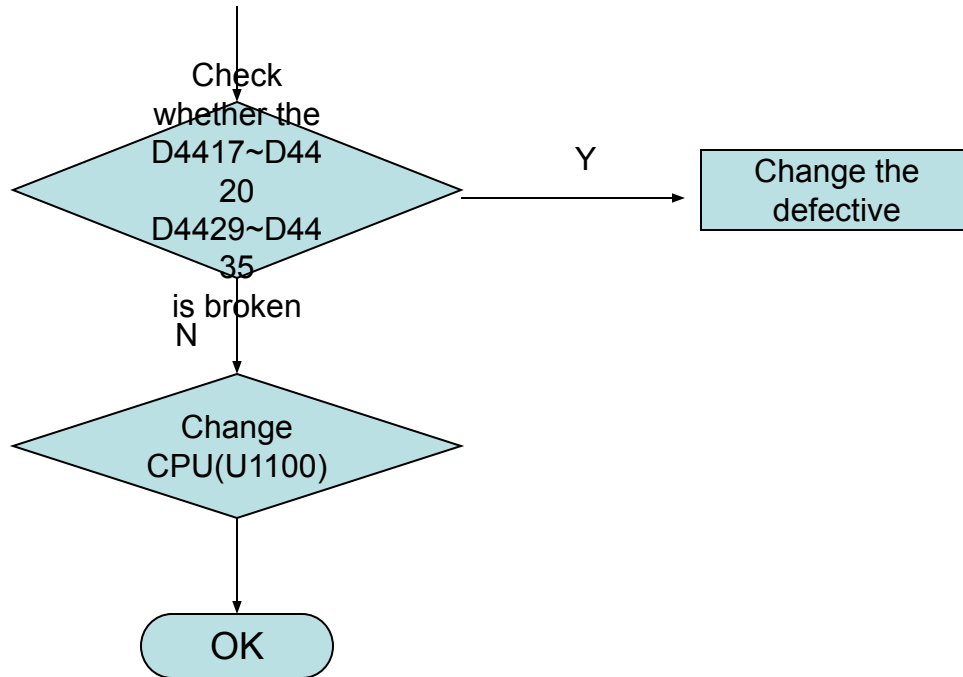


Fig3



4.10 No ring

Checking method □ testing the resistance of the SPK by Multimeter, gearing to the resistance, the resistance of it is 8ohm normally

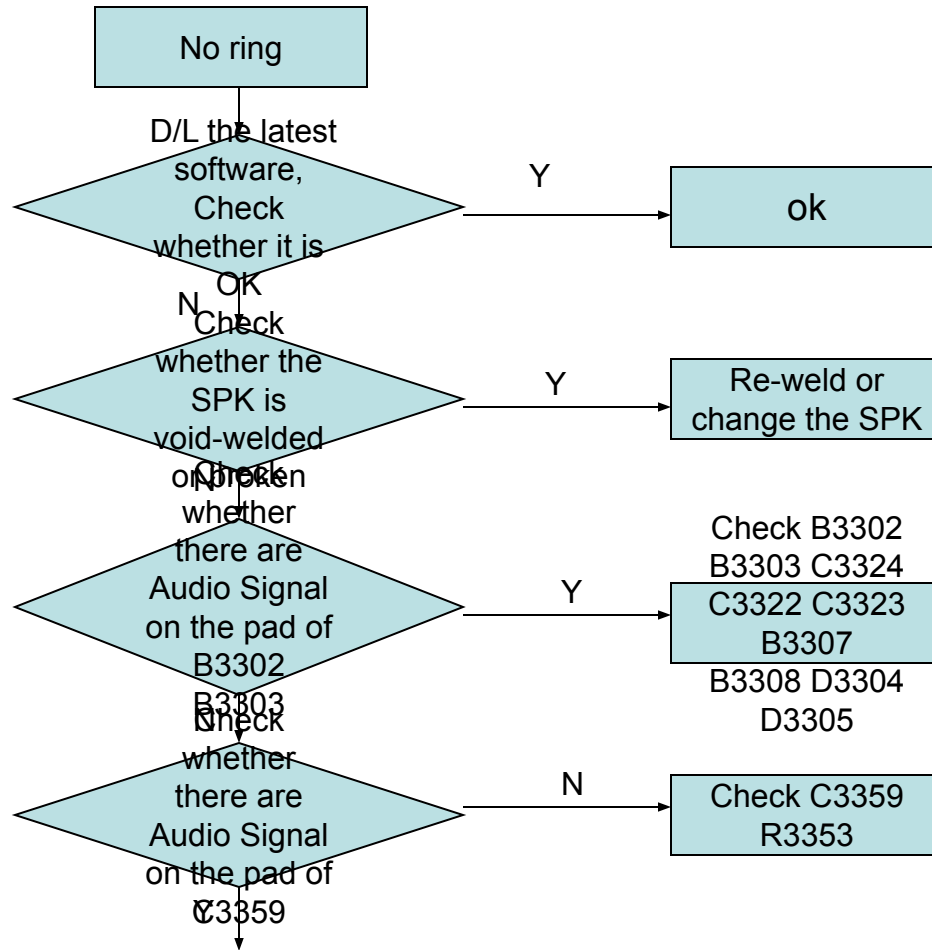


Fig6

Fig5

Fig6

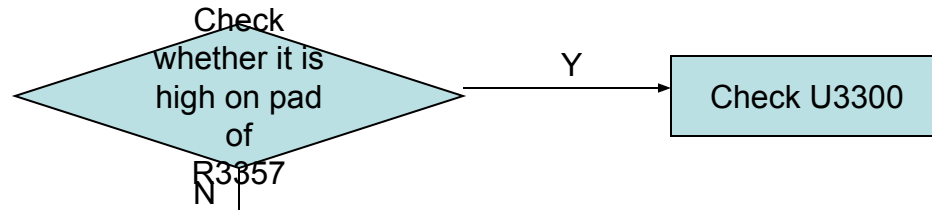


Fig6

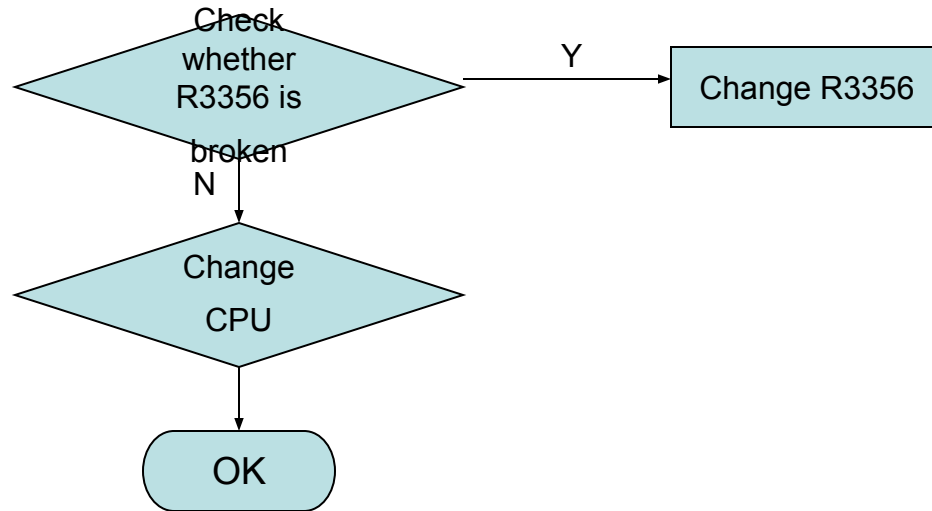


Fig5

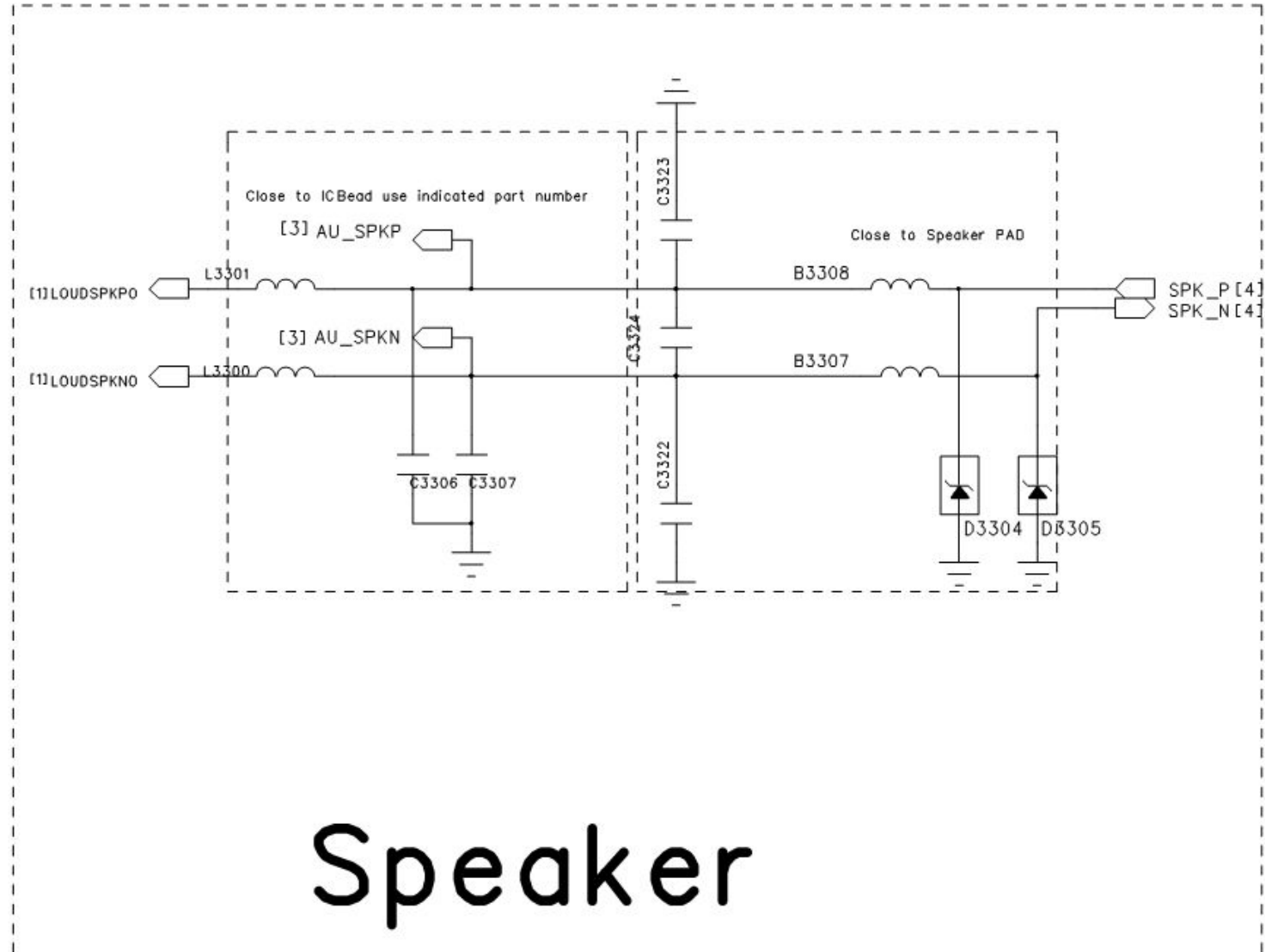
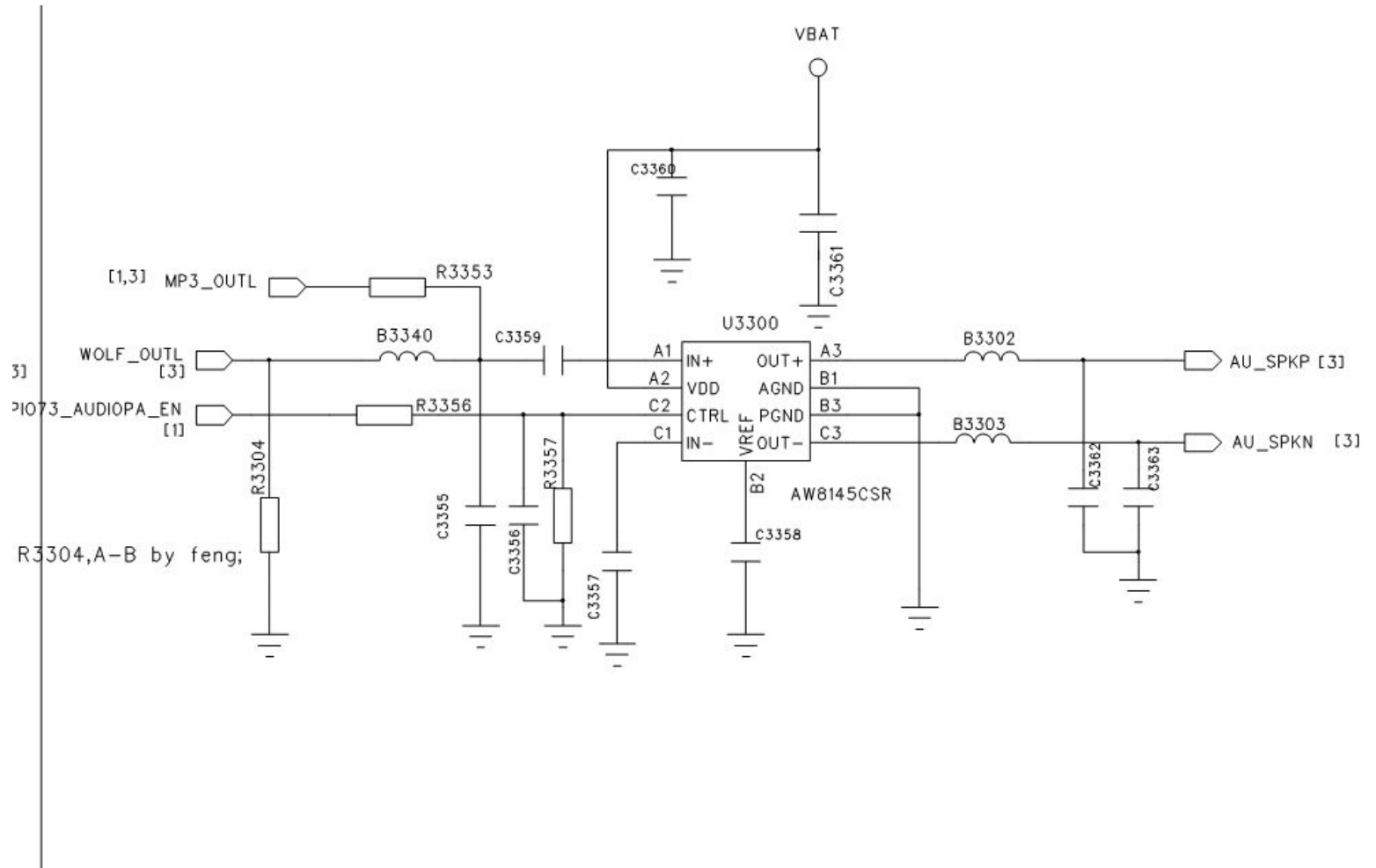


Fig6



4.11 No receiving voice

Checking method □ testing the resistance of the REC by multimeter, gearing to the resistance, the resistance of it is 30ohm around

Fig7

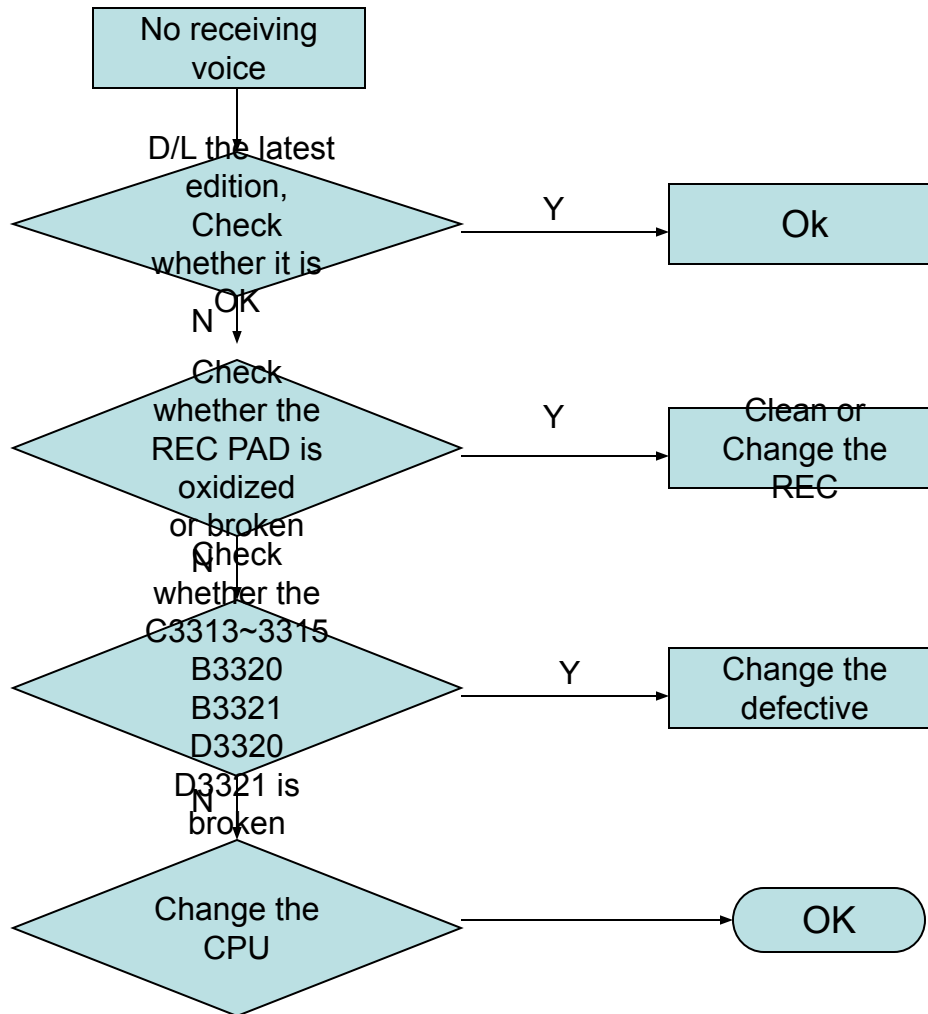
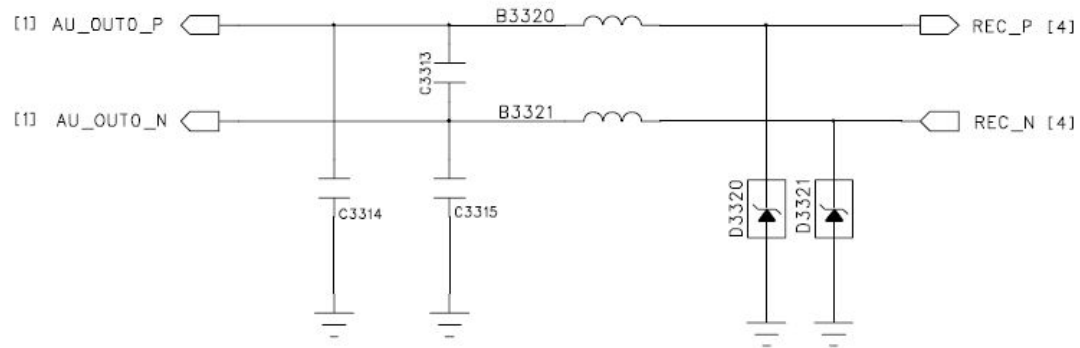
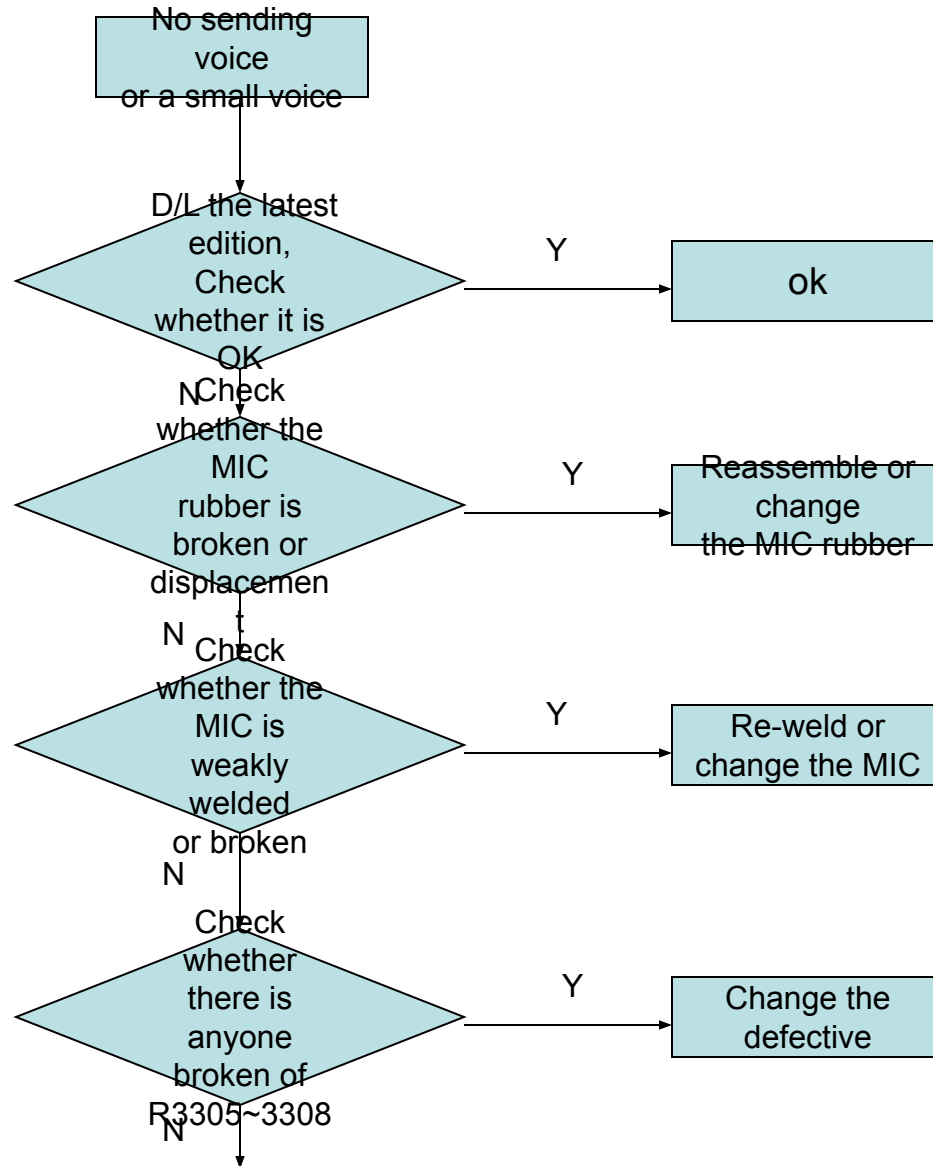


Fig7



Receiver

4.12 No sending voice or the voice is small



Checking method □
testing the resistance of
the MIC by multimeter,
gearing to the
resistance,
the positive resistance
of
it is 1K, the opposite is
0.8K around in general

Fig8

Fig8

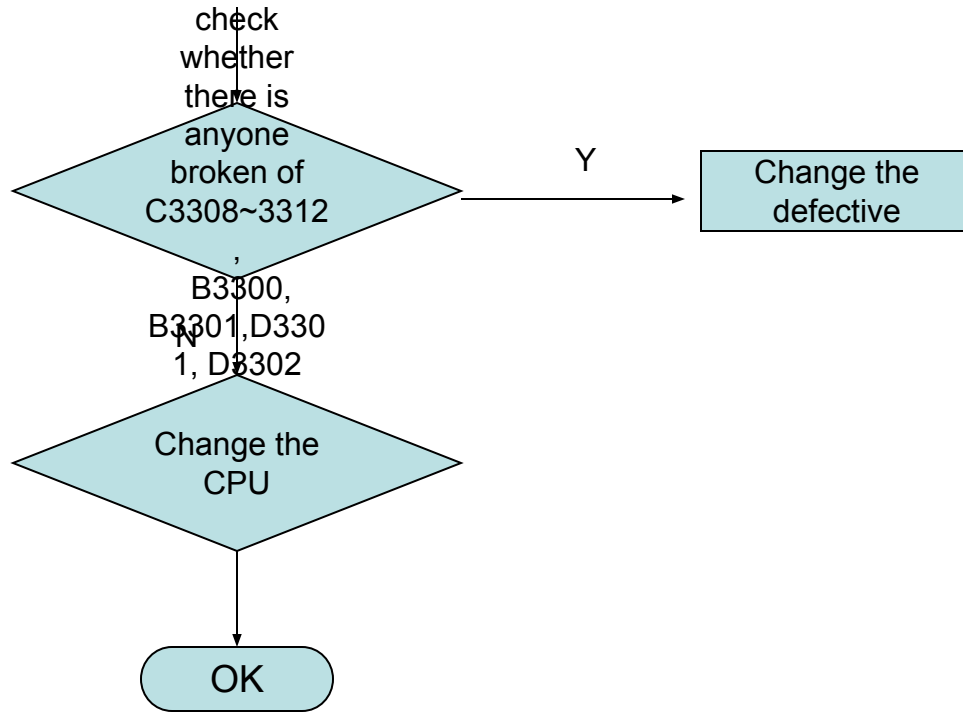
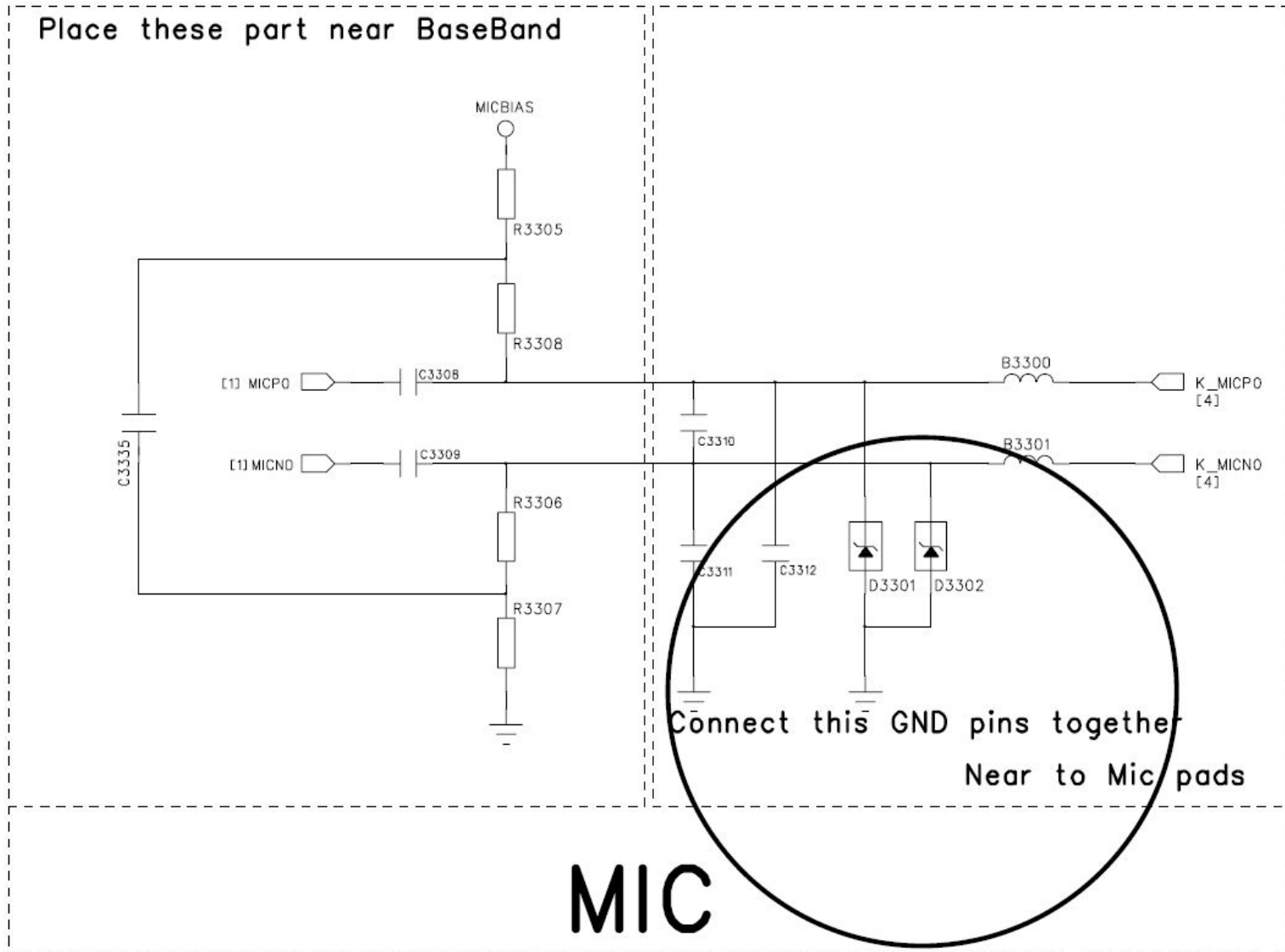
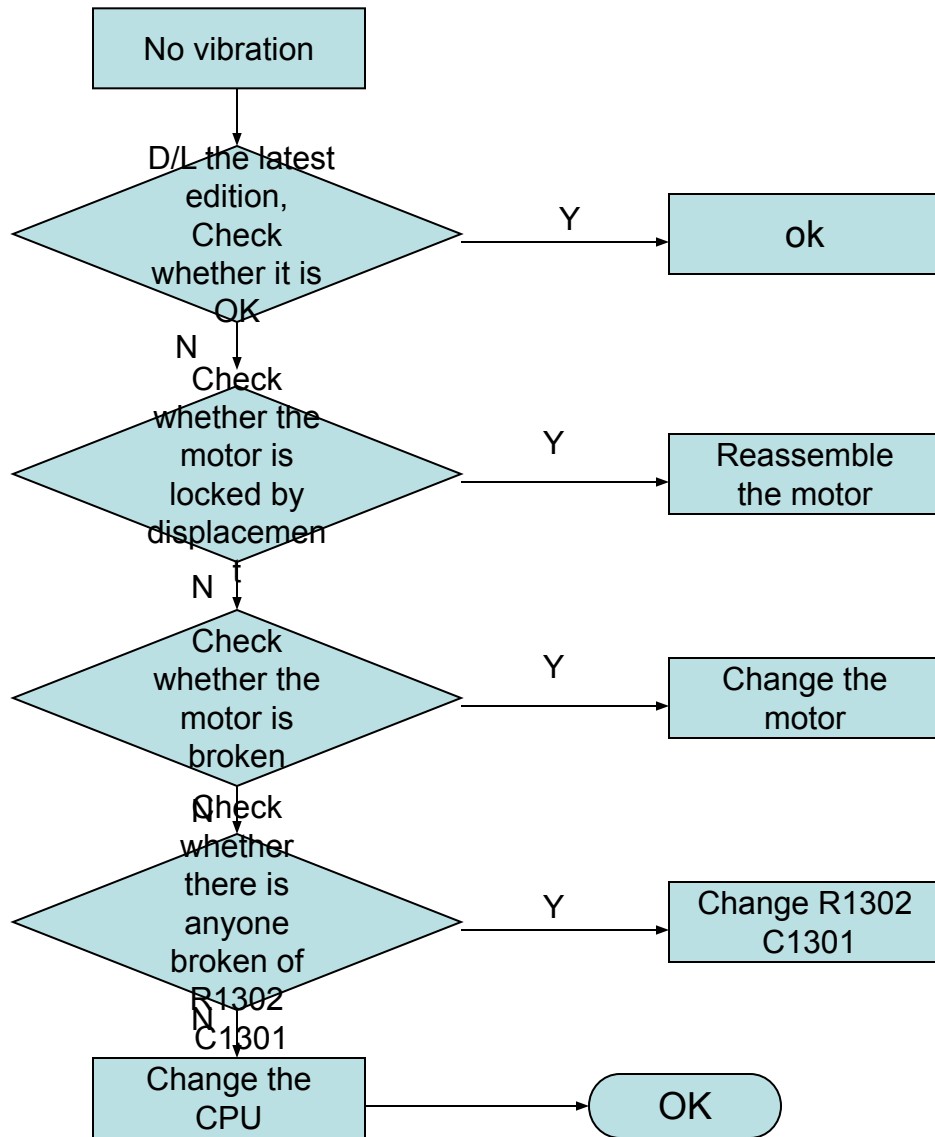


Fig8



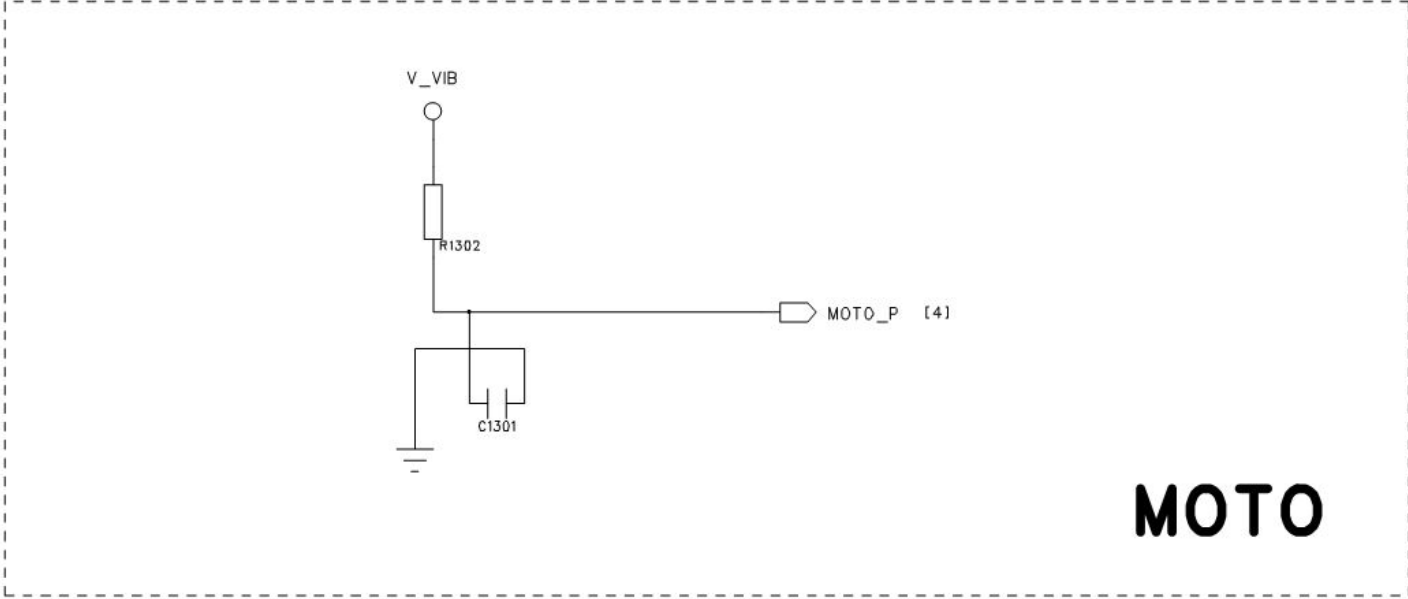
4.13 No vibration



Checking method: testing the resistance of the motor by multimeter, gearing to the resistance, the resistance of it is 22ohm in general.

Fig9

Fig9



4.14 SIM Card inefficacy

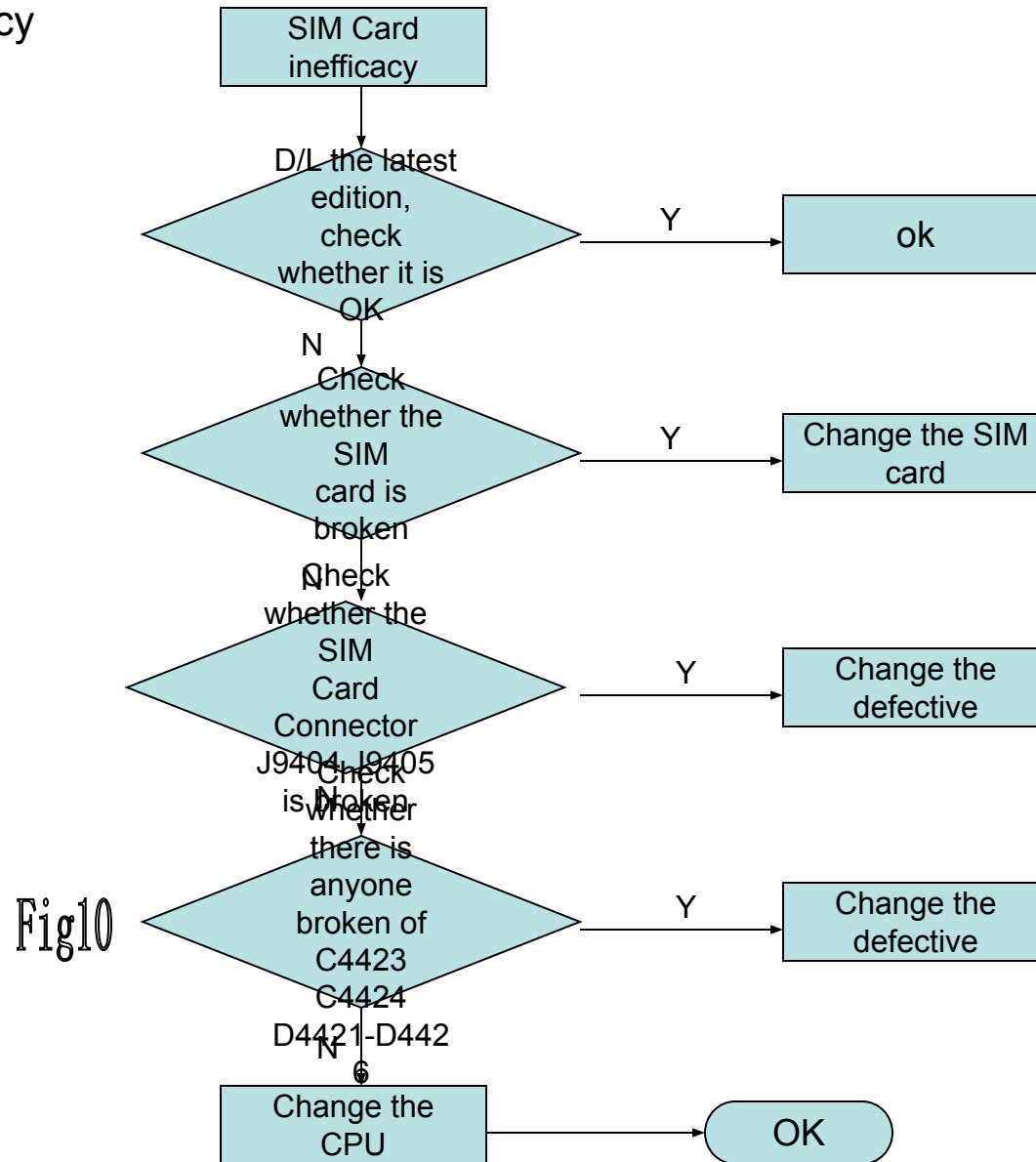
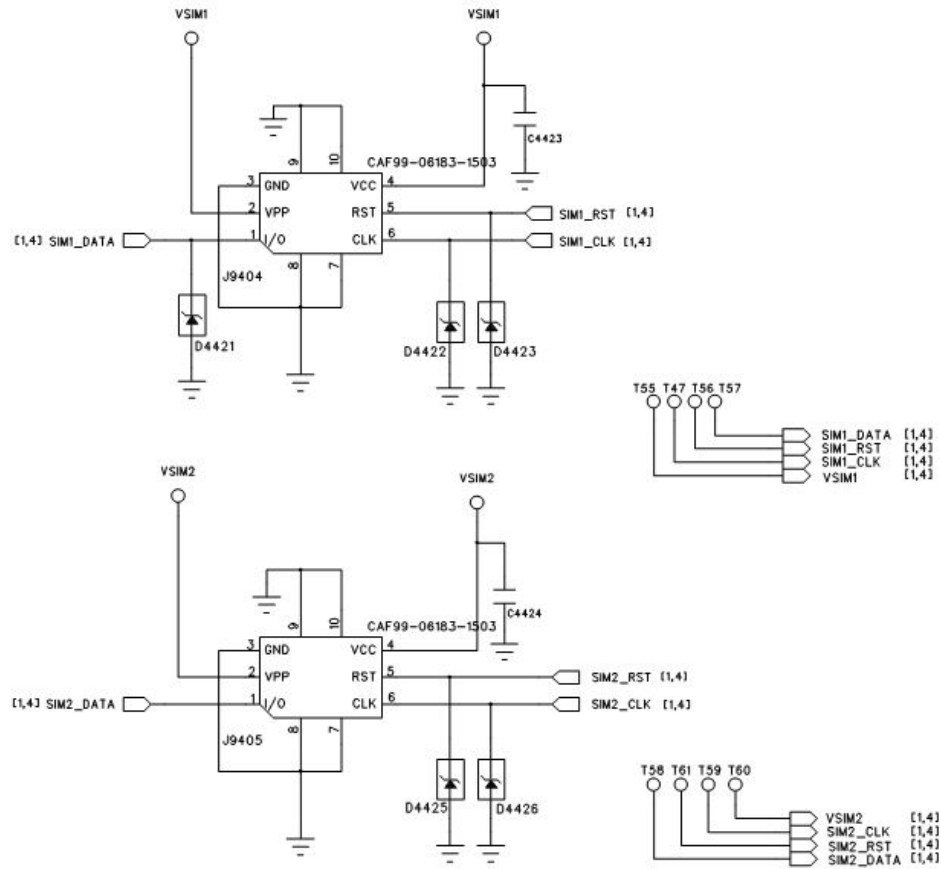


Fig10



SIM CARD

4.15 TF card inefficacy

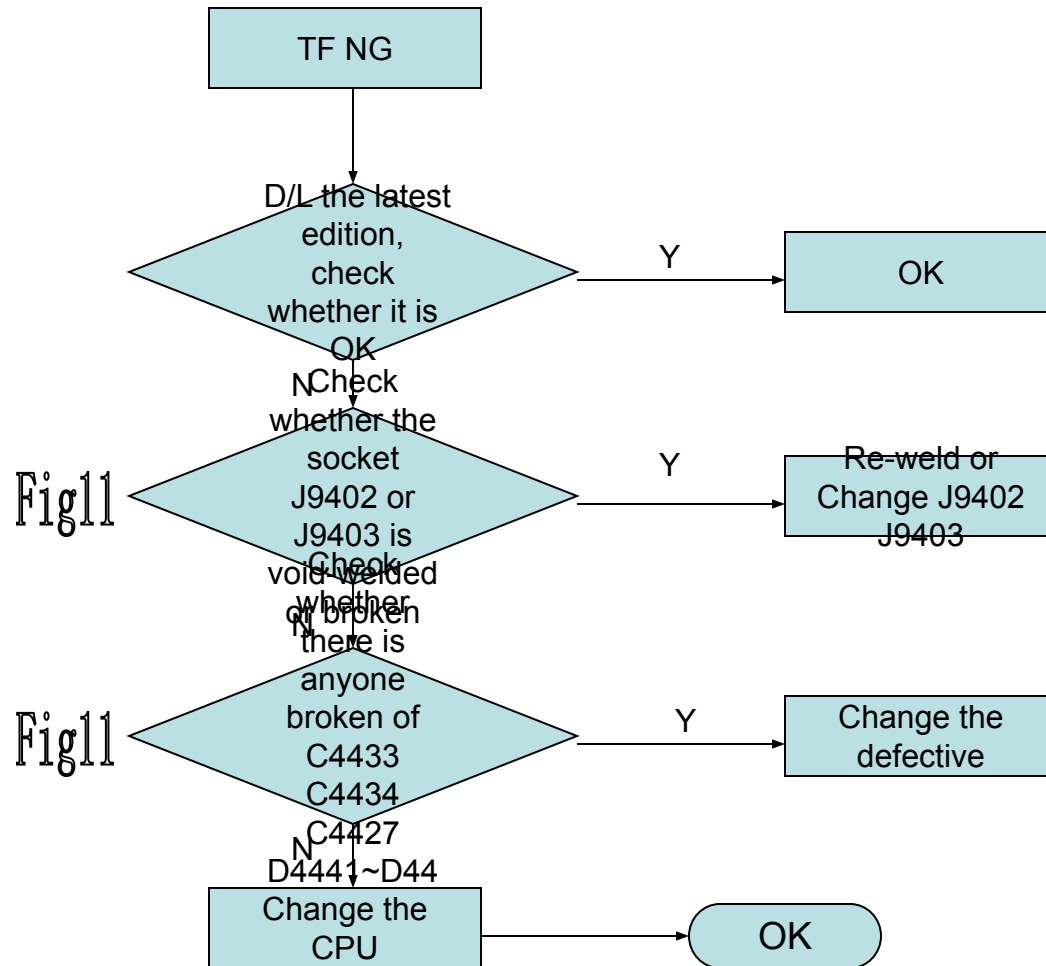
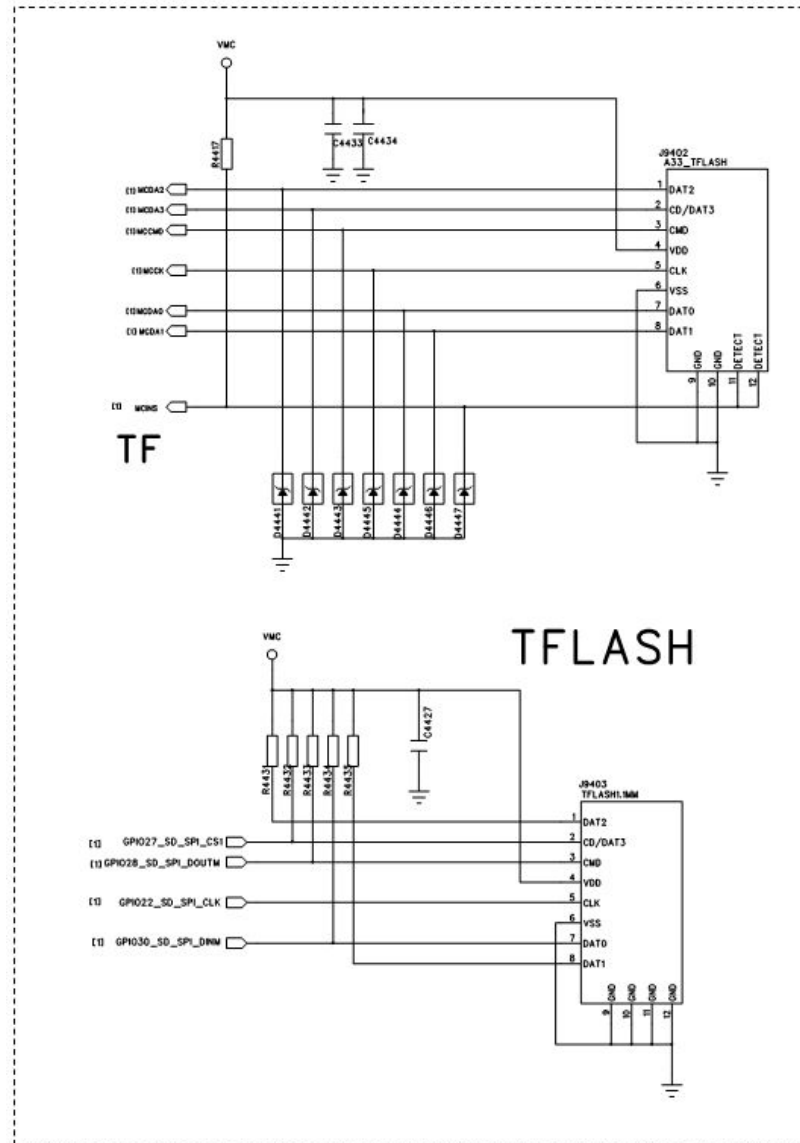


Fig11



4.16 Camera inefficacy

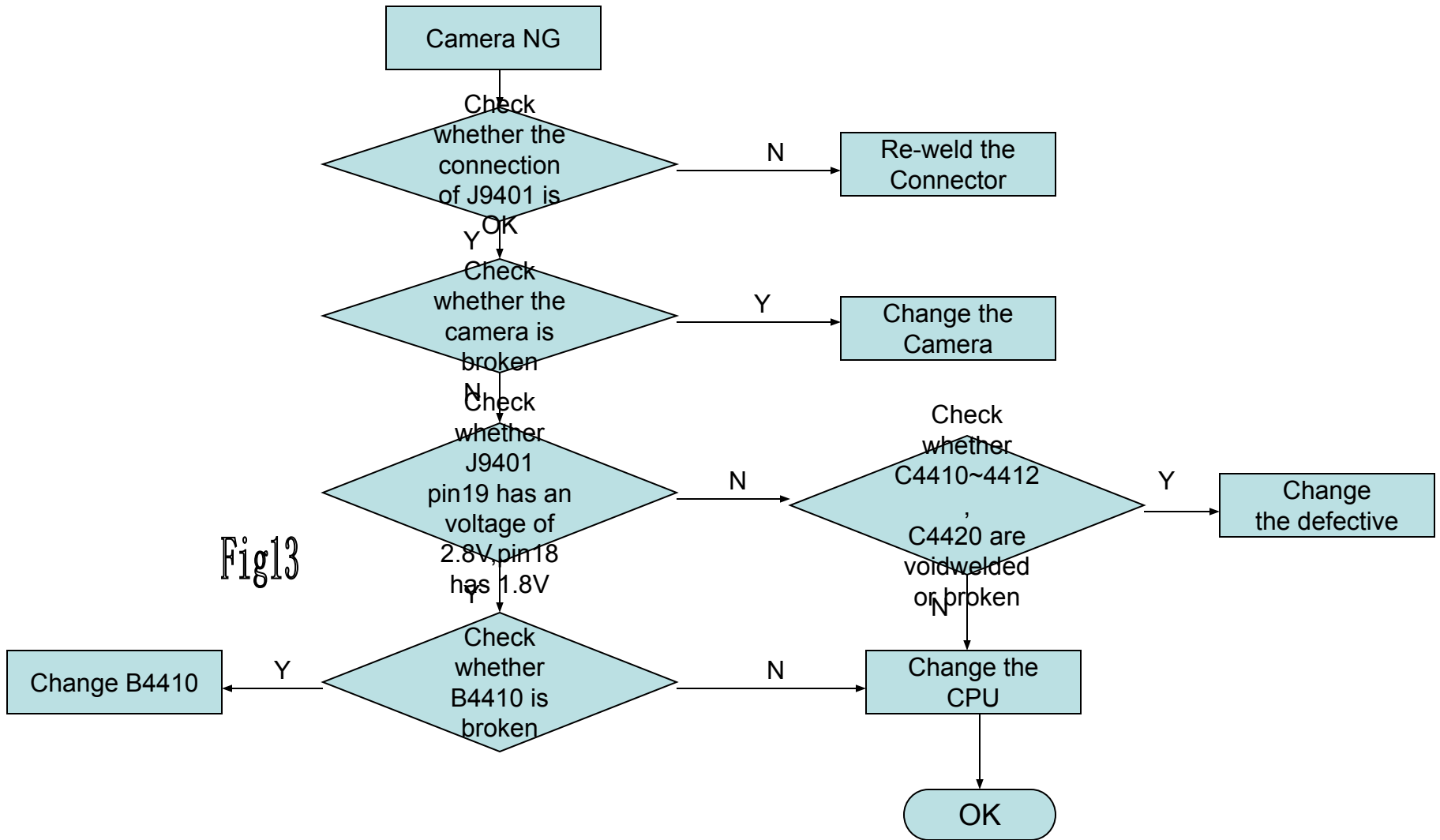
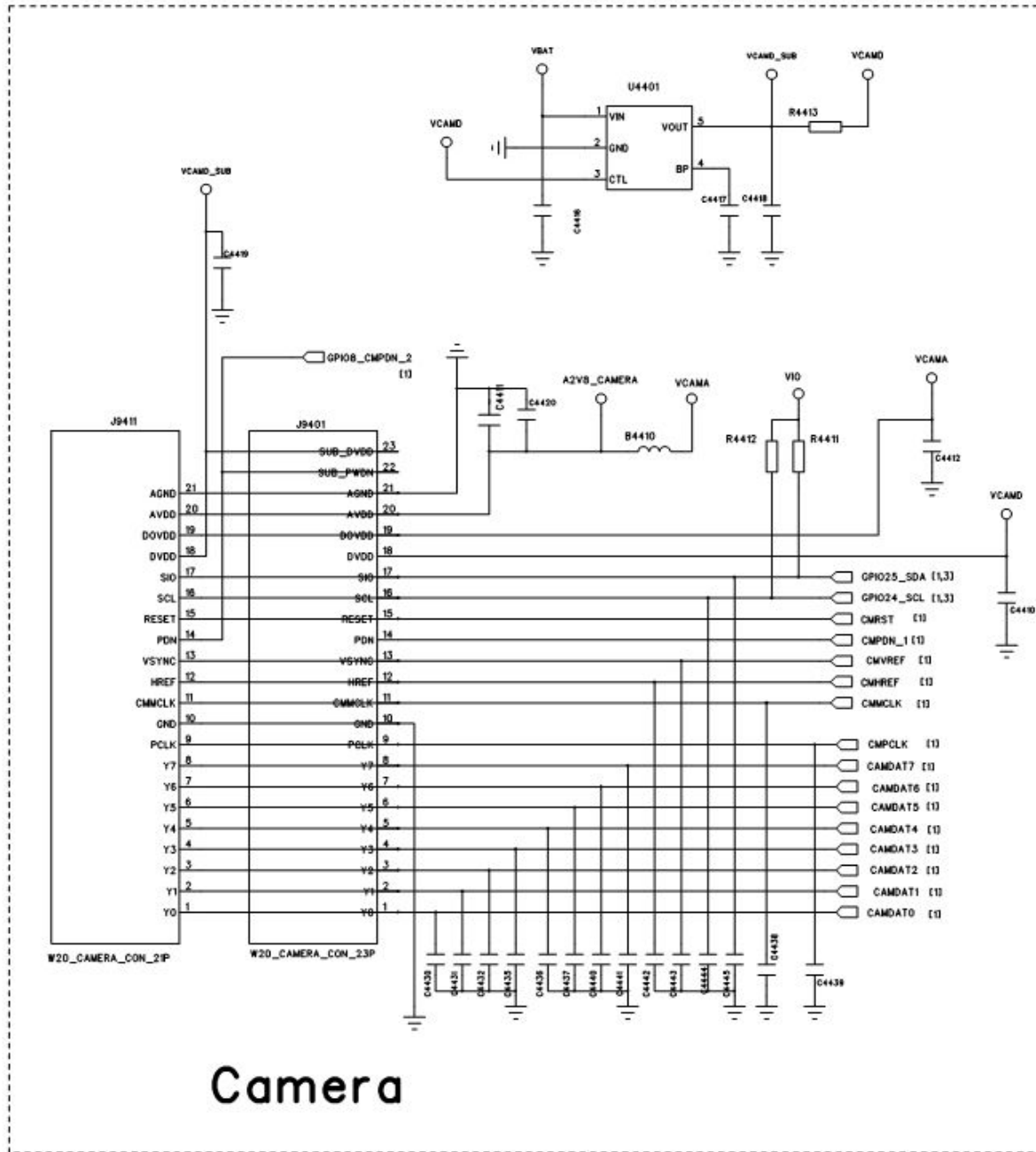


Fig13



4.17 Bluetooth circuit(MT6612)

Bluetooth is a design feature of this cellphone. It is with a matching Bluetooth headset and the phone has a container which can charge up Bluetooth headset through the main board, to accommodate Bluetooth headset. Some of the projects may not have this function, however, the mainboard is compatible. Please first ensure that the power is correct, according to the phenomenon and following schematic diagram to maintain the phone.

4.17 Bluetooth inefficacy

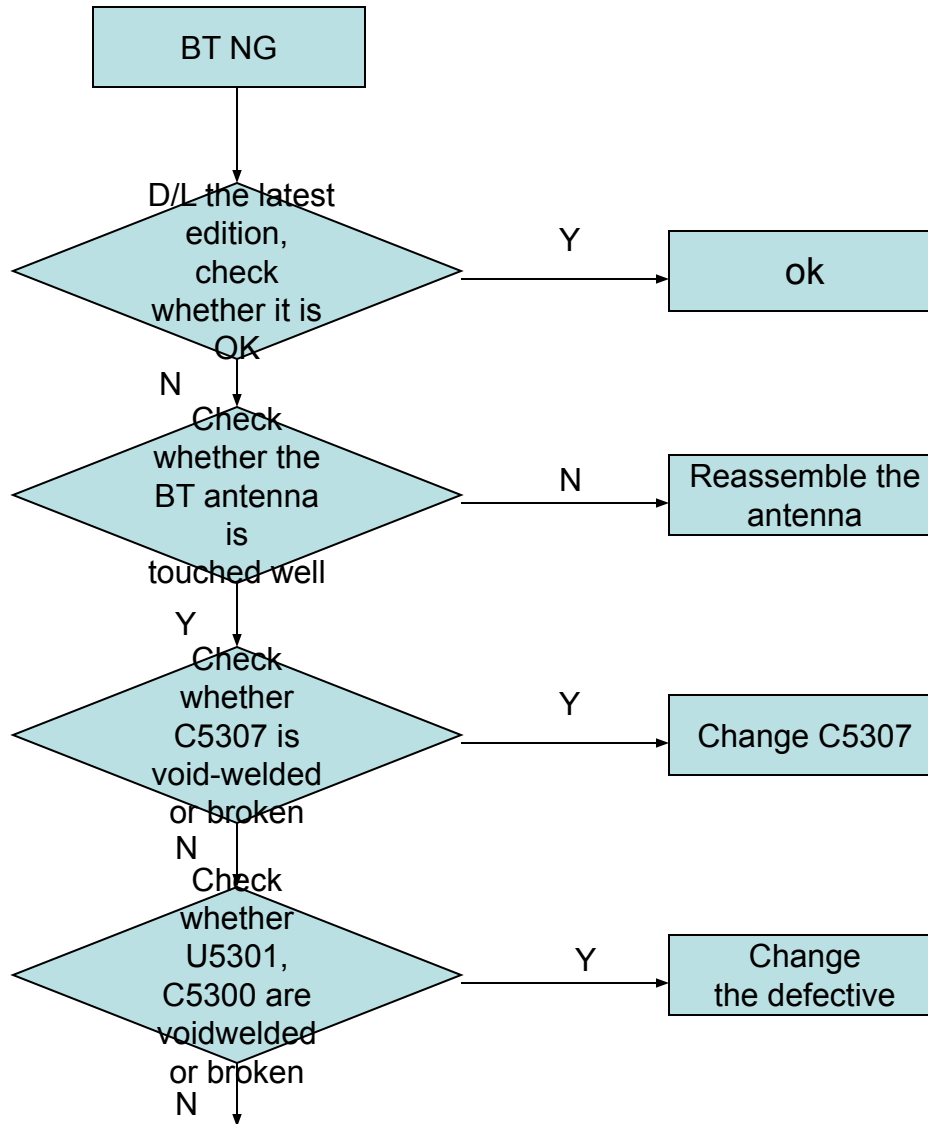


Fig14

Fig13

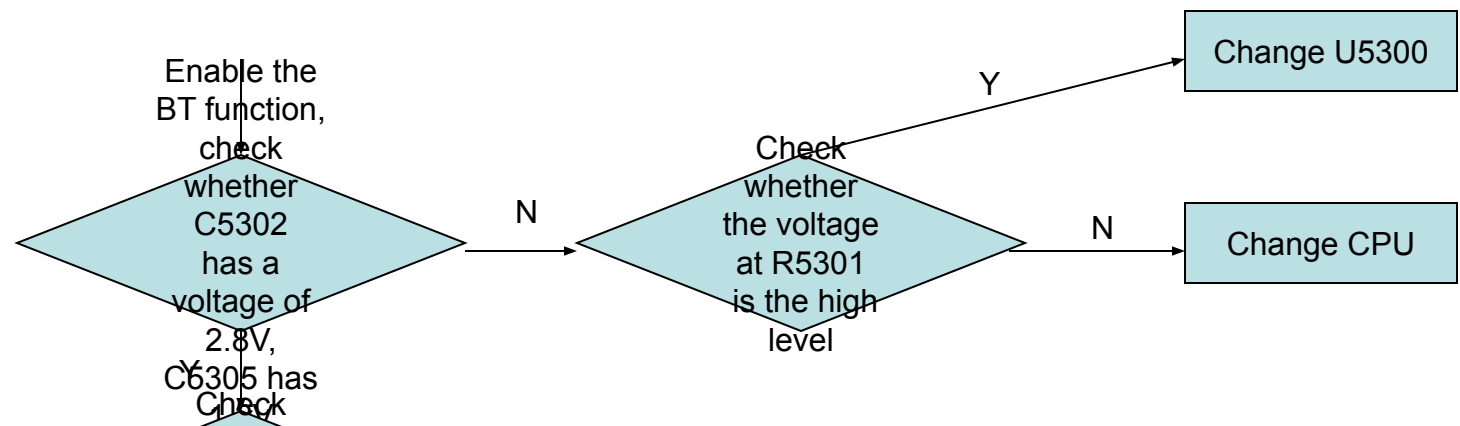


Fig13

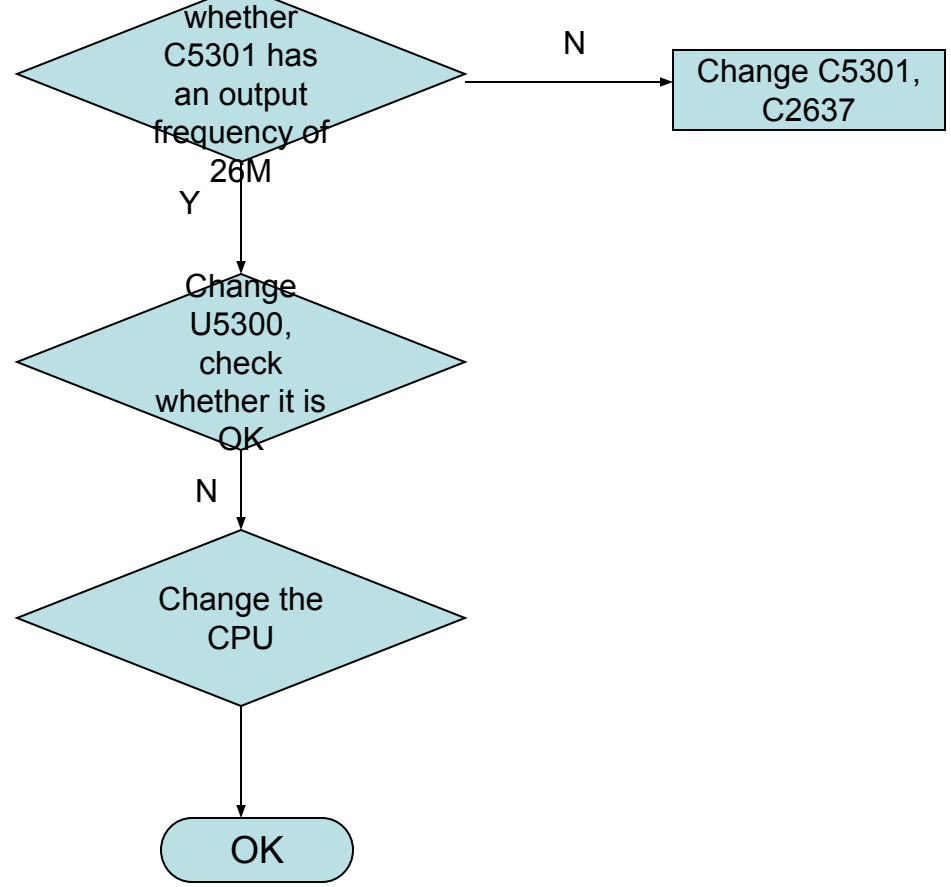
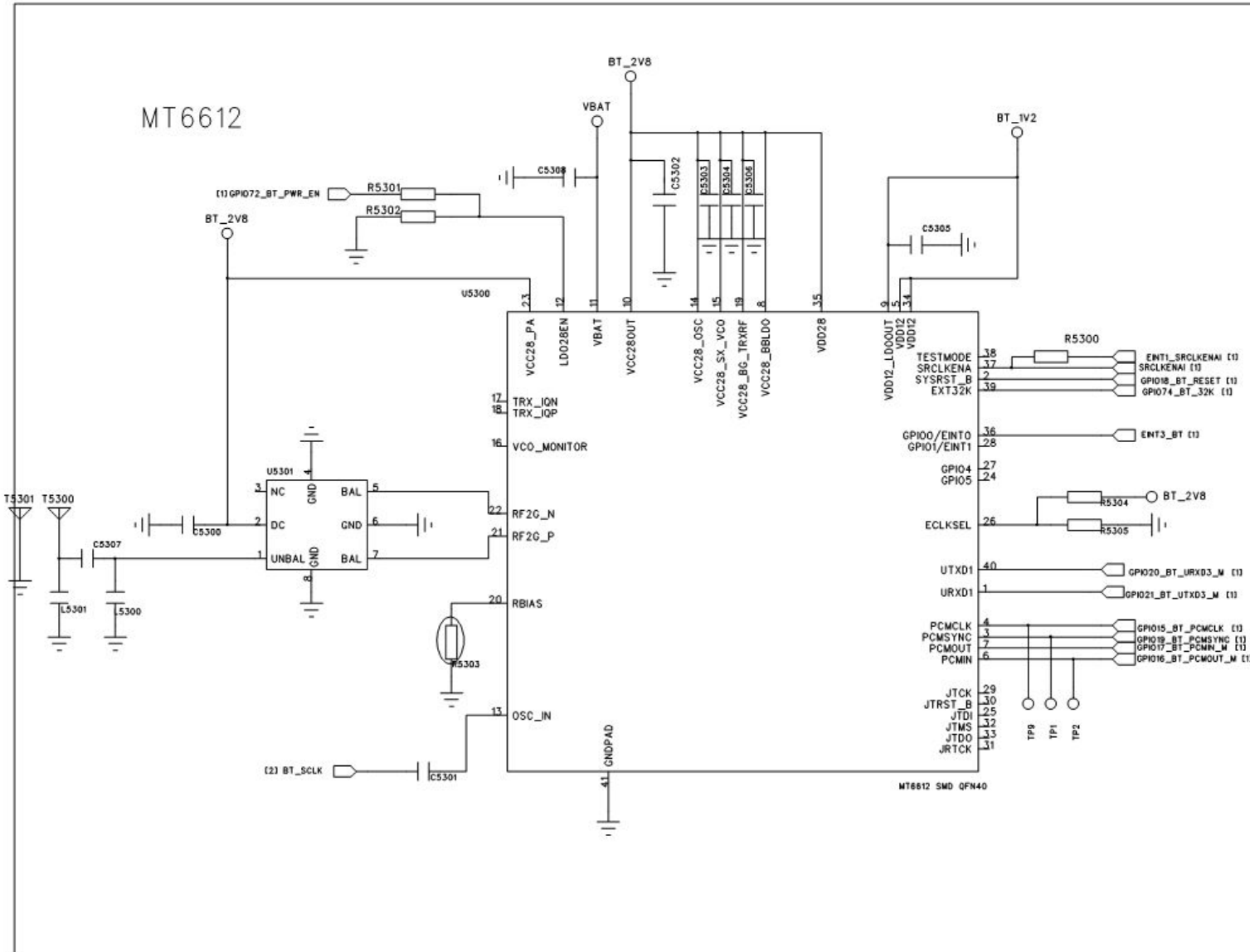
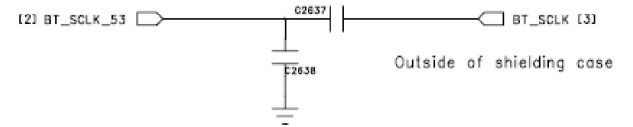


Fig13



4.18 Earphone inefficacy

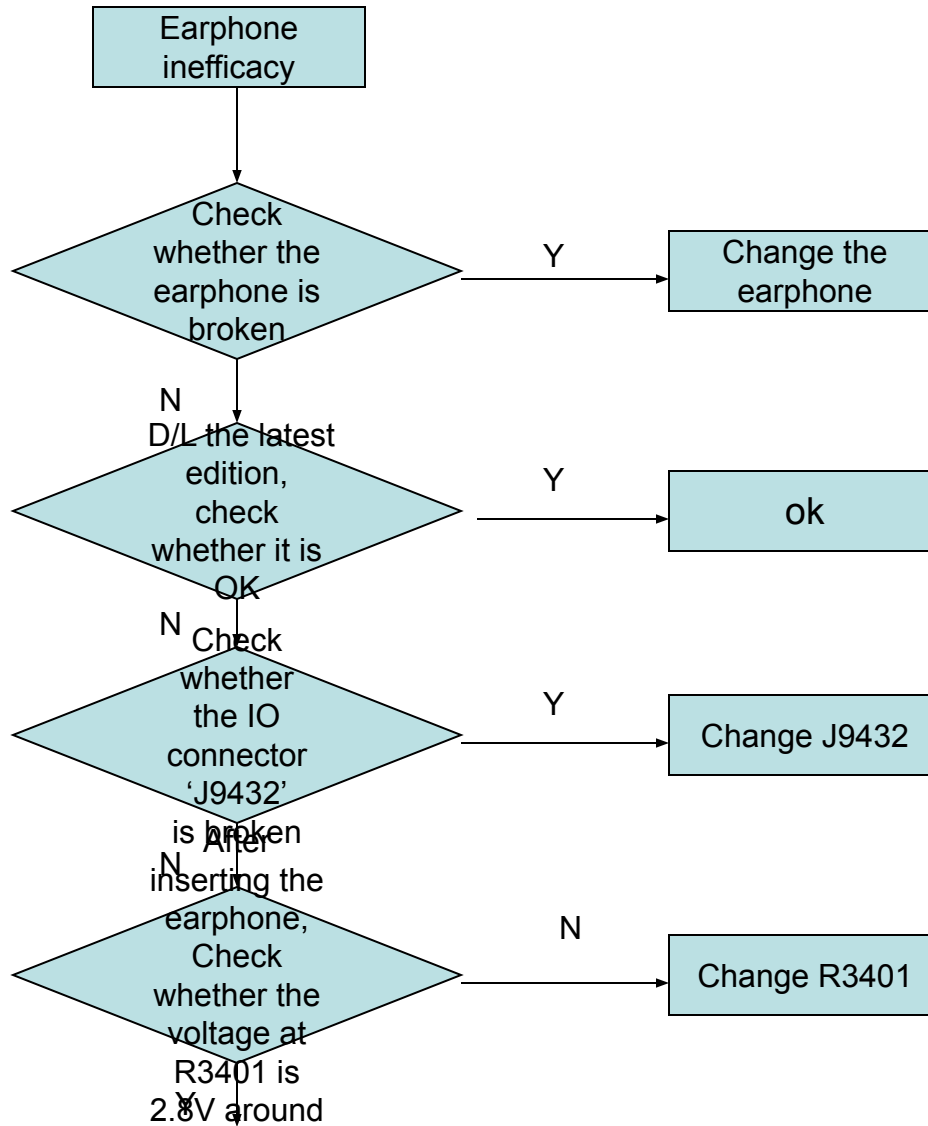


Fig15

Fig15

Fig15

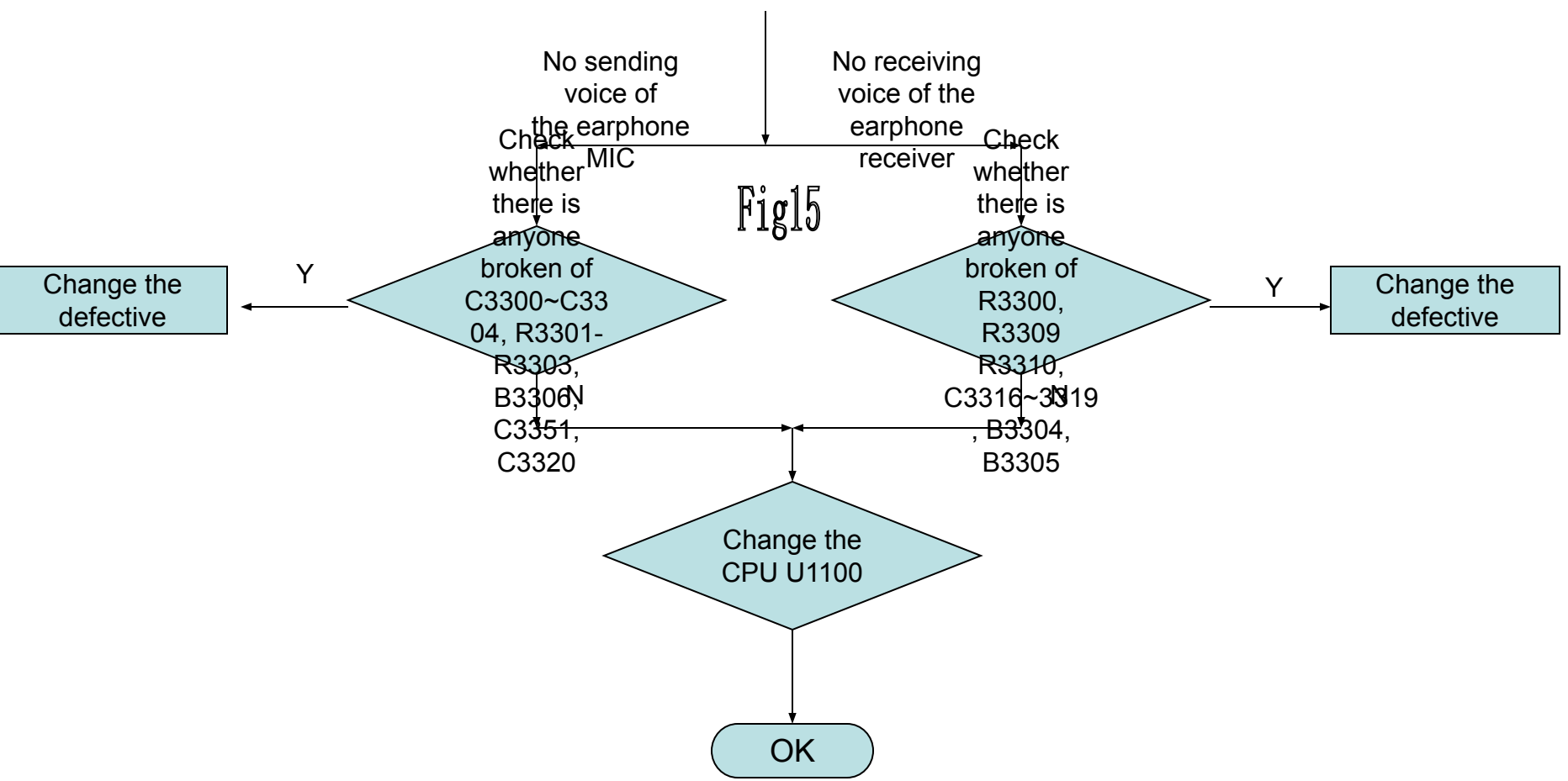
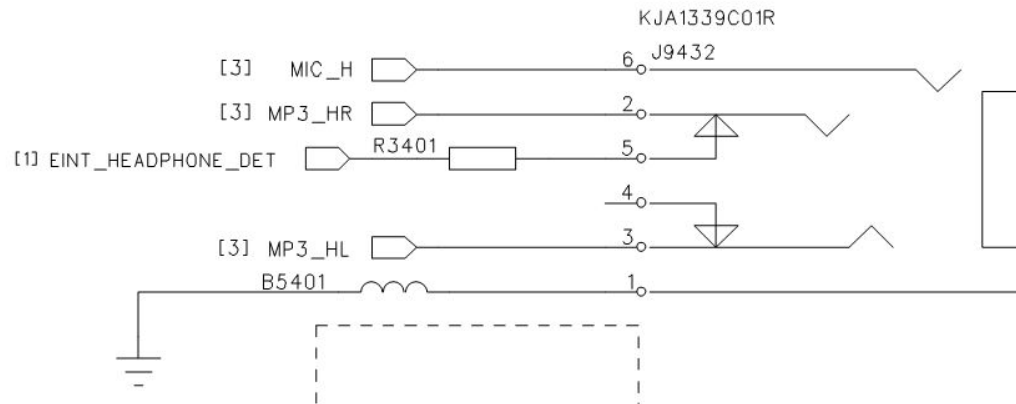
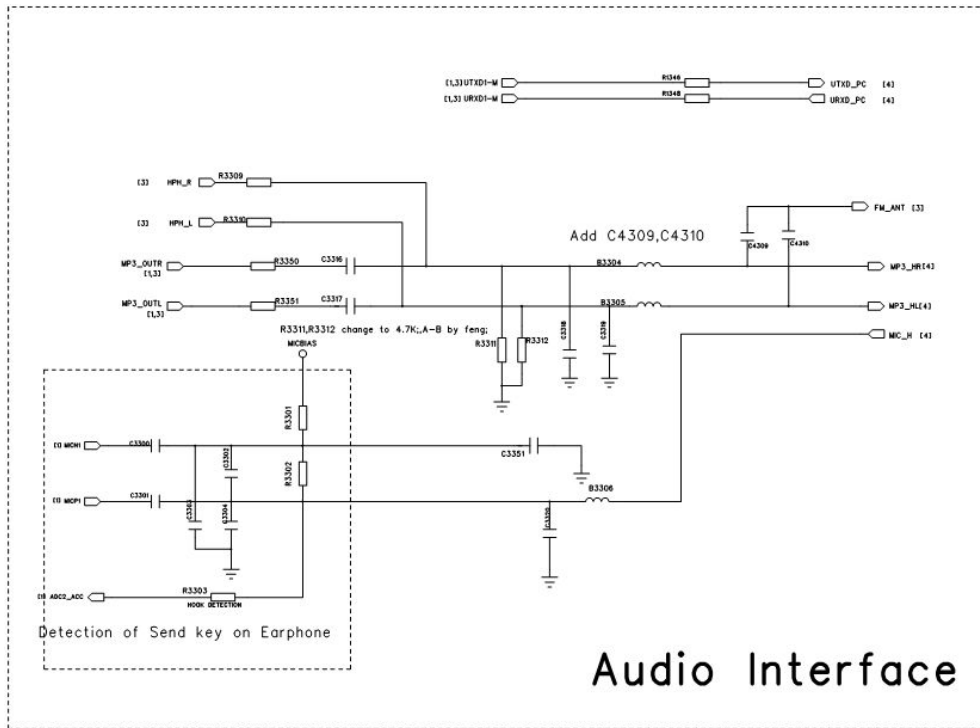


Fig15



4.19 FM inefficacy

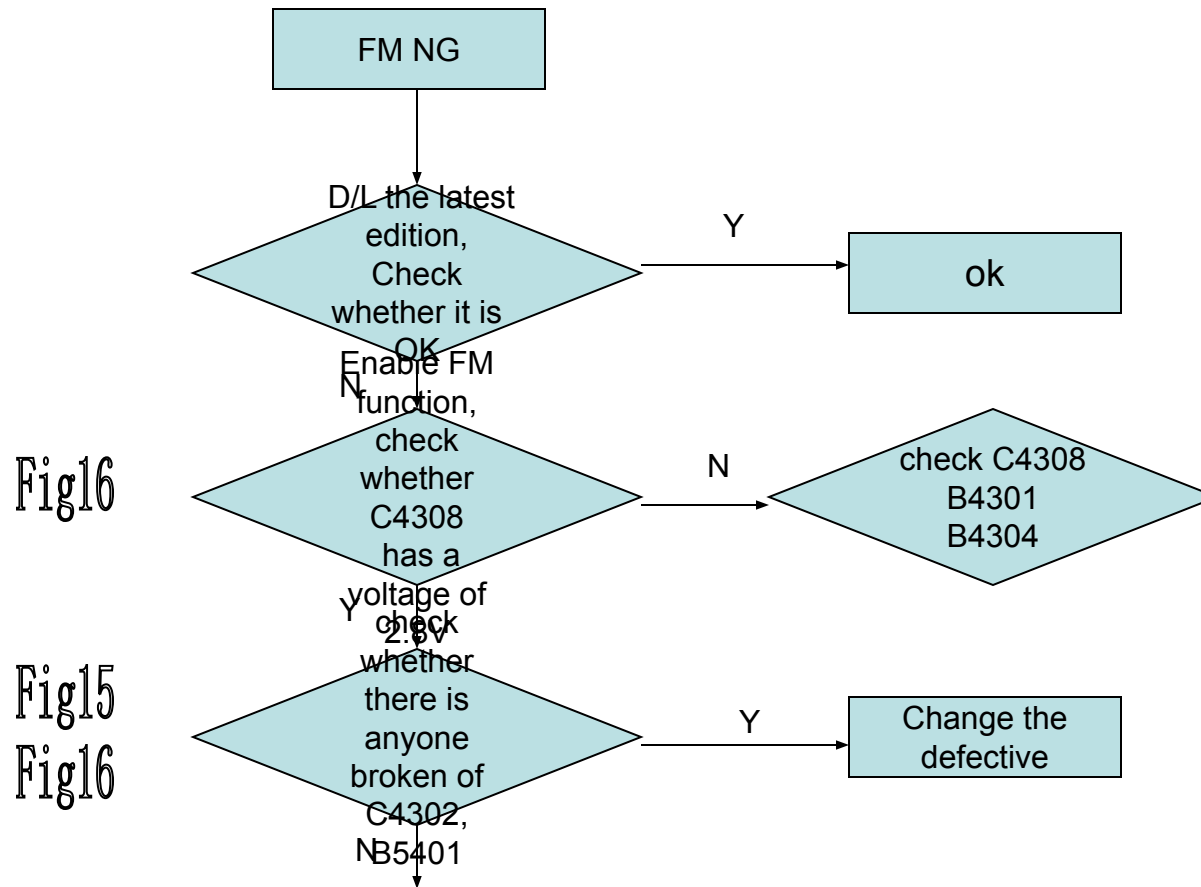


Fig16

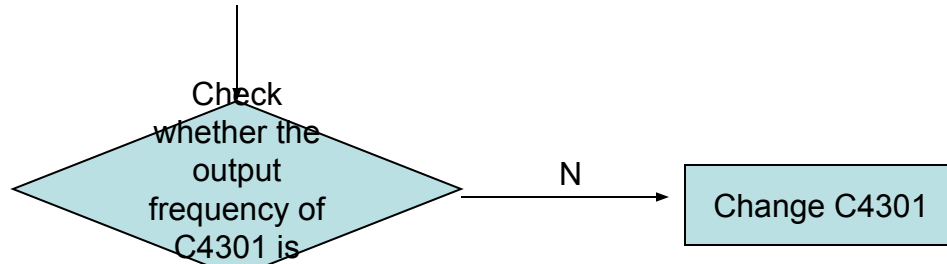
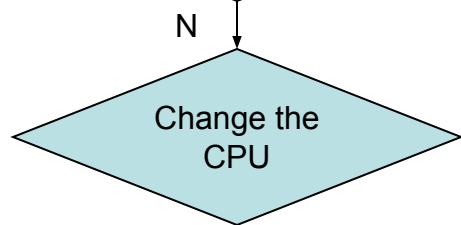
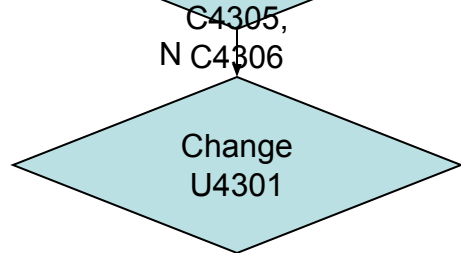
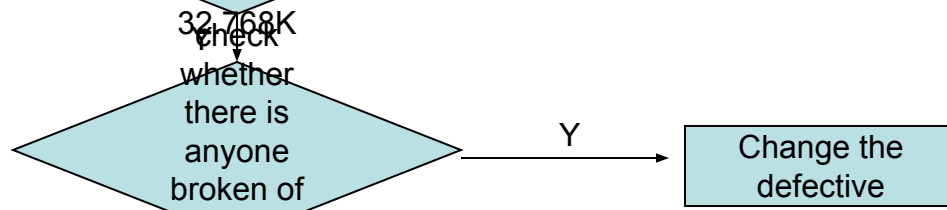
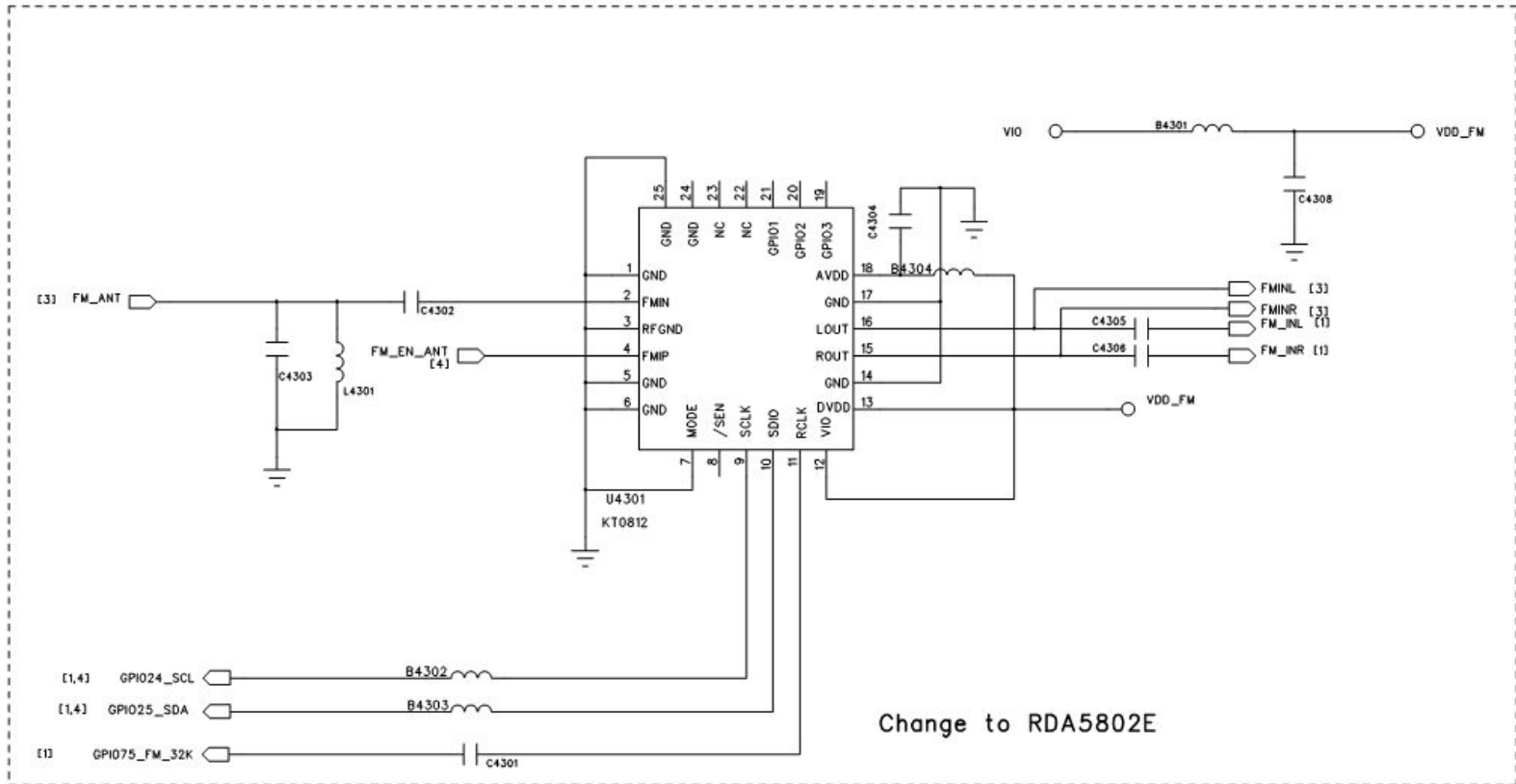


Fig16



OK

Fig16



Thanks!