BLU™

PRODUCTS

Neo 4.5

Service Manual

Contents

1. Introduction

1.1 Objective

The manual is not a general publication but only edited for experienced technician. The main purpose is to provide basic foundation for the electrical & mechanical maintenance.

1.2 General Safety notice

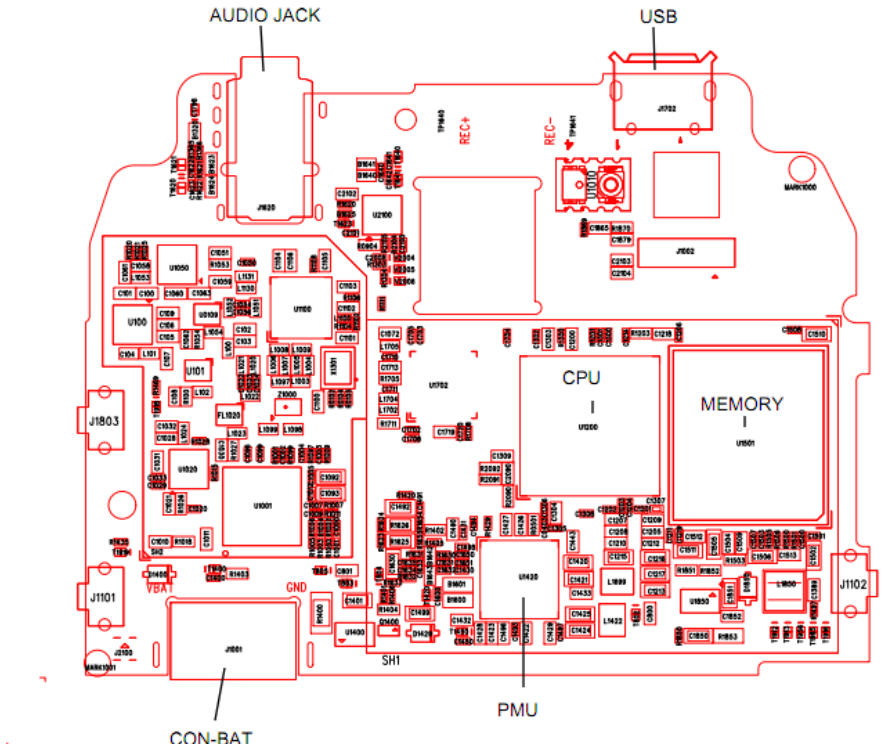
1) Only experienced technician can repair with this guide during product is power on. Any maintenance by other non-technicians will cause serious damage of the handset. Neither short circuit nor counter-polarity connection is allowed for any electronic part in the handset.
3) Be careful of ESD protection during maintenance to avoid the damage of electrostatic sensitive components on the handset.
4) If disassembling operation is necessary for repairing, comply with mechanical structure disassembling work instruction. Otherwise, disassembling operation will make the handset damaged.

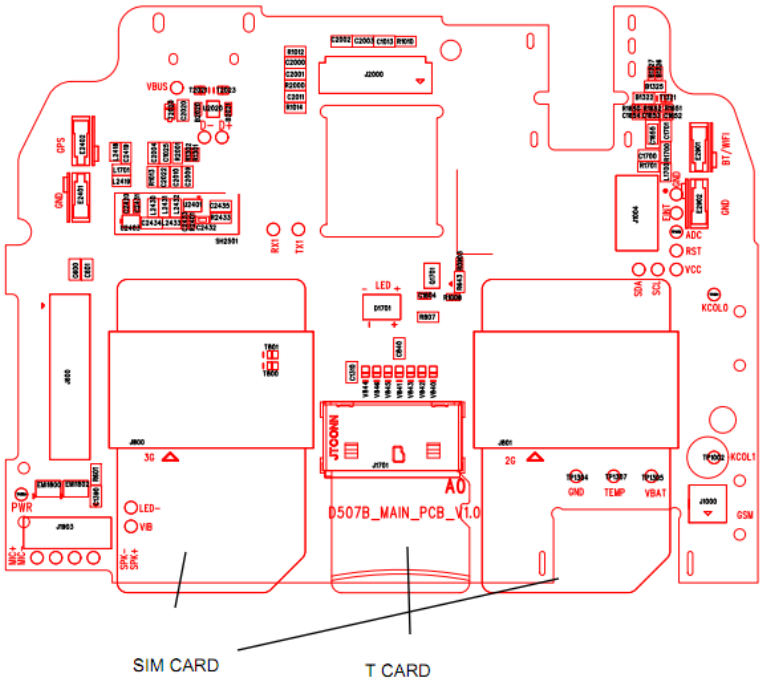
1.3 Use Instruction

1) Avoid using handset in conditions following:
   - Where there is any caustic liquid or gas
   - Where there is any high-temperature or fire circumstance
   - Where there is any flammable liquid or gas
2) Do not use handset while driving for your safety;
3) Please comply with corresponding rules in some special occasions (like in operating room, in airplane)
4) Accessory purchasing or changing should comply with model matching;
5) If need clean handset surface, please use cloth dipping a little clean water. Do not use soluble cleanser.

2. Technology summarize

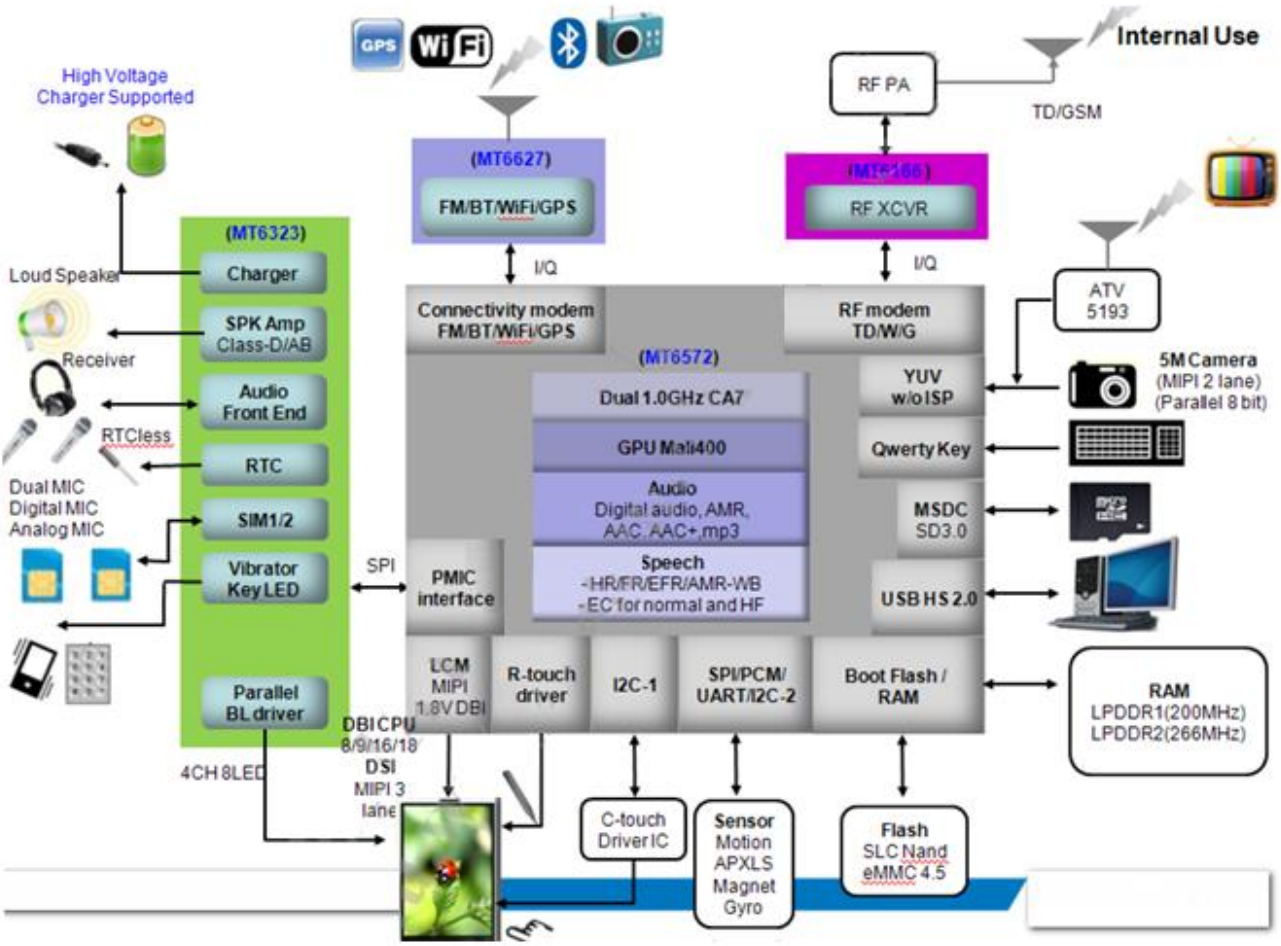
2.1 Description of main board component map





2.2 MT6572 circuit system

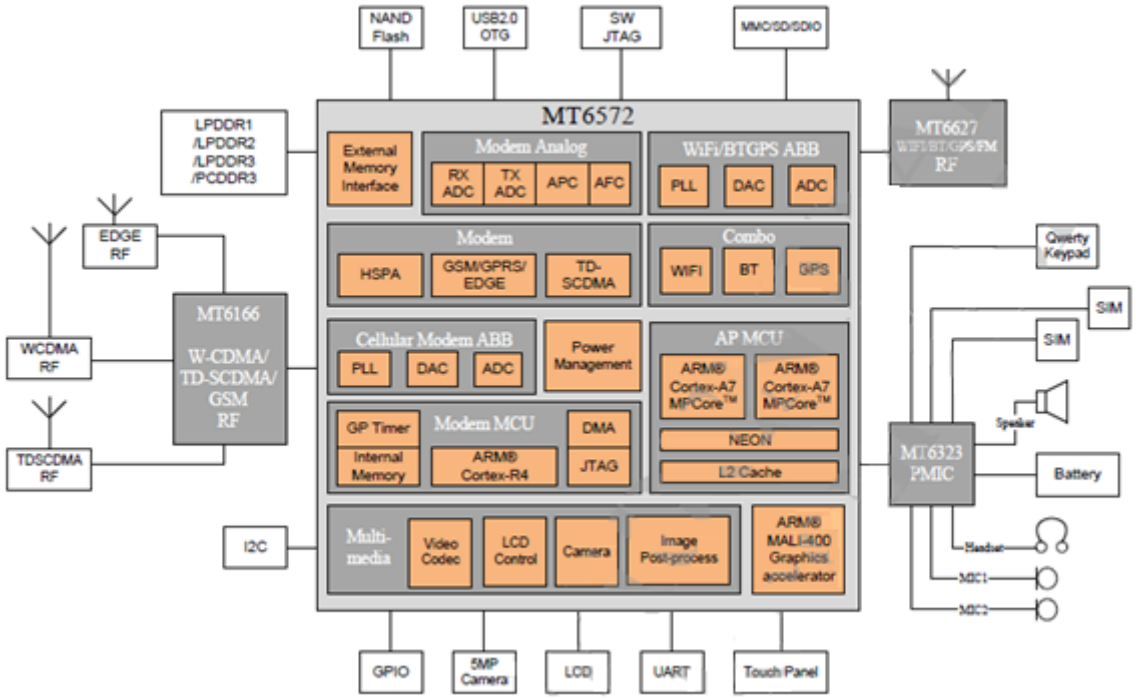
MT6572 functional block diagram as following:



MT6572 functional system is made of three parts as below:
Digital baseband function: Memory, LCM, GPIO interface, Keypad interface etc.
Analog baseband function: AUDIO（including MIC, Receiver, Speaker）,Camera, Video, Ambient light and Proximity sensor, Power management, RTC, Charge control, etc.
RF function: RF transceiver, GSM/WCDMA/TD communication system, etc.

2.3 Base band circuit

MT6572 baseband System Architecture as following:



Platform Features:

- ◆ General:
  - 1） Smartphone,3 MCU subsystems architecture
  - 2） eMMC boot support
  - 3） Supports LPDDR-1/LPDDR-2/LPDDR-3/PD-DDR3
- ◆ AP MCU subsystem
  1) Dual-core ARM Cortex-A7 MP Core operating at 1.3GHz
  2) NEON multimedia processing engine with SIMDv2/VFPv4 ISA support
  3) 32KB L1 I-cache and 32KB L1 D-cache
  4) 256KB unified L2 cache
  5) DVFS technology with adaptive operating voltage from 1.05V to 1.26V
- ◆ MD MCU subsystem
  1) ARM Cortex-R4 processor with maximum 480MHz operation frequency
  2) 32KB I-cache, 16KB D-cache
  3) 256KB TCM (tightly-coupled memory)
  4) DSP for running modem/voice tasks, with maximum 245.76MHz operation frequency
  5) High-performance AXI and AHB bus
  6) General DMA engine and dedicated DMA channels for peripheral data transfer
  7) Watchdog timer for system error recovery
  8) Power management for clock gating control
- ◆ MD external interfaces
  1) Supports dual SIM/USIM interface
  2) Interface pins with RF and radio-related peripherals

3) UART for modem logging/debugging purpose

◆ External memory interface.

1) Supports LPDDR1/2/3, PC-DDR3 up to 2GB
2) 32-bit data bus width
3) Memory clock up to 333MHz
4) Supports self-refresh/partial self-refresh mode
5) Low-power operation
6) GPIOs
7) 2 sets of memory card controllers supporting SD/SDHC/MS/MSPRO/MMC and SDIO2.0/3.0 protocols

◆ Operating conditions

1) Core voltage: 1.15V
2) Processor DVFS voltage: 1.15V ~ 1.26V (Typ. 1.15V; sleep mode 1.05V)
3) Processor SRAM voltage: 1.15V ~ 1.26V (Typ. 1.15V; sleep mode 1.05V)
4) GPU voltage: 1.15V
5) I/O voltage: 1.8V/2.8V/3.3V
6) Memory: 1.2V/1.8V/1.35V/1.5V
7) LCM interface: 1.8V
8) Clock source: 26MHz,

◆ Peripherals

1) USB2.0 high-speed OTG supporting 8 Tx and 8 Rx endpoints
2) USB2.0 full-speed host
3) 1 UART for debugging and applications
4) SPI for external device
5) 2 I2C to control peripheral devices, e.g. G sensor, LCM or FM receiver module
6) Maximum 5 PWM channels (depending on system configuration/IO usage)
7) I2S for connection with optional external hi-end audio codec

3. Trouble Shooting

3.1 Fail to startup/power on

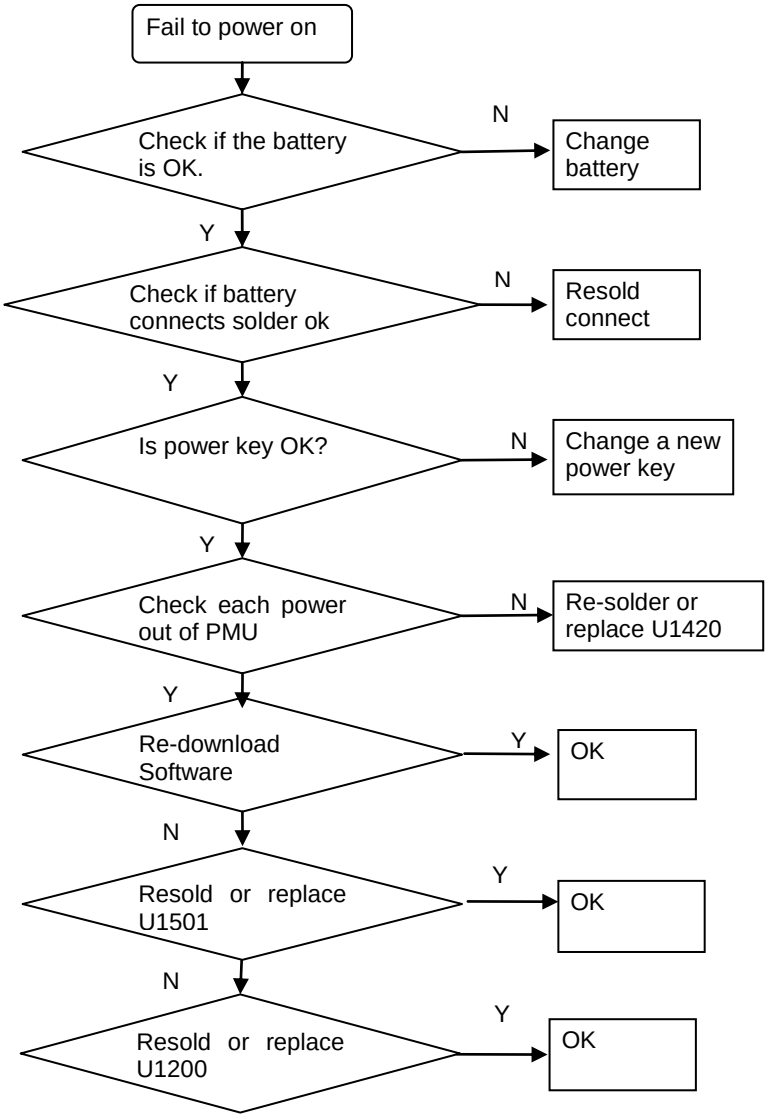
The following conditions may cause boot fail: battery low, battery connector is damaged or bad welding, components bad weld/short-circuit or damaged

First, change a fully charged battery test, still startup fail, check battery connector ok or not, if connector damaged change a new one;

Second, connect to DC power supply, if the boot process is no current, we should check power key solder ok or not;

Third, if the boot current is very small and cannot maintain ,connect the power on test point to GND, then check below voltage in sequence, BBWAKEUP， VRTC， VPROC(VCORE,VSRAM)，VSYS，VIO18/VEMC3V3，VA28/VIO28，VM，VUSB，VMC/VMCH, VTCXO, RESETB ok not.

Fourth, if the current stay in 80mA, we should check the circuit around flash, when CPU calling program from flash fail, the current will stay in 80mA, re-download the software or change a new flash or CPU.



3.2 Fail to charge

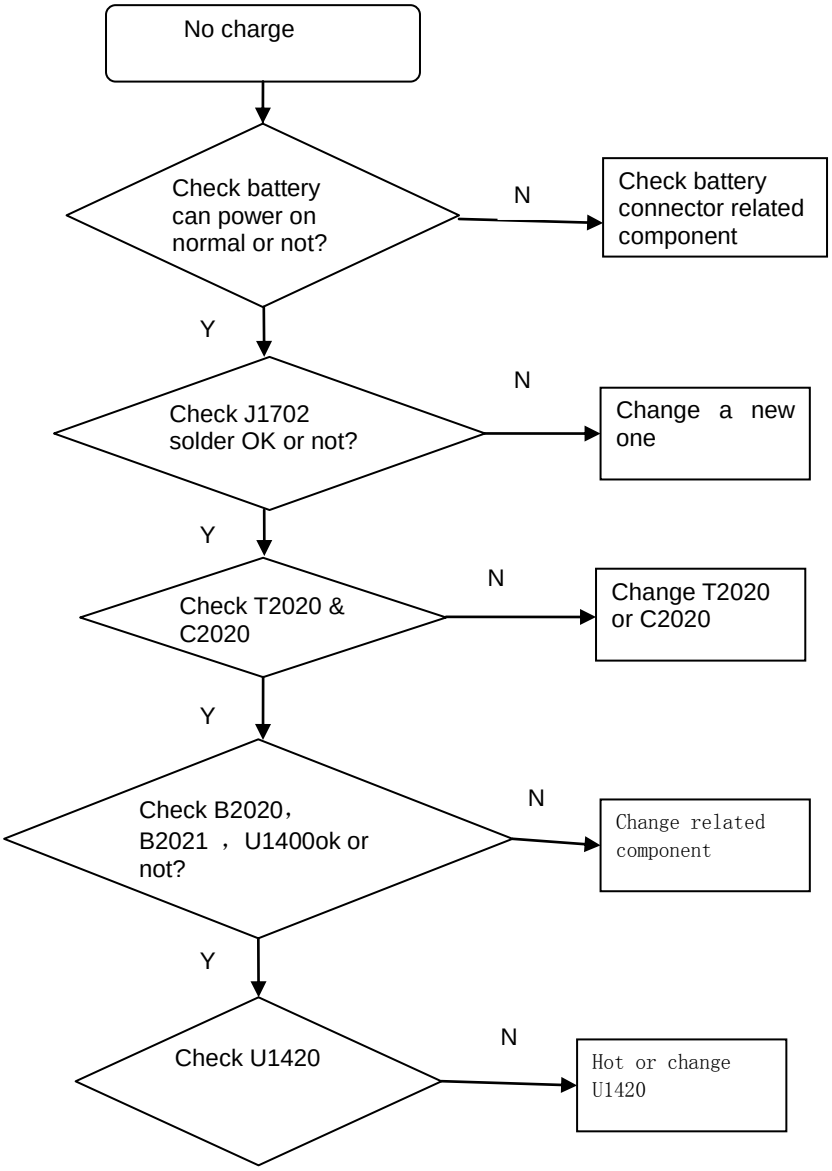
Check charging circuit related component, check below information in sequence:

First, checks whether boot normal use the battery, if not check battery connector solder ok or not;

Second, check USB connector on board solder ok or not;

Third, check T2020 whether reverse, check C2020 resistance is very big or not, check B2020、B2021 solder ok or not;

Fourth, check U1420 solder ok or not, re-hot U1420 or change a new one.



3.3 Fail to display

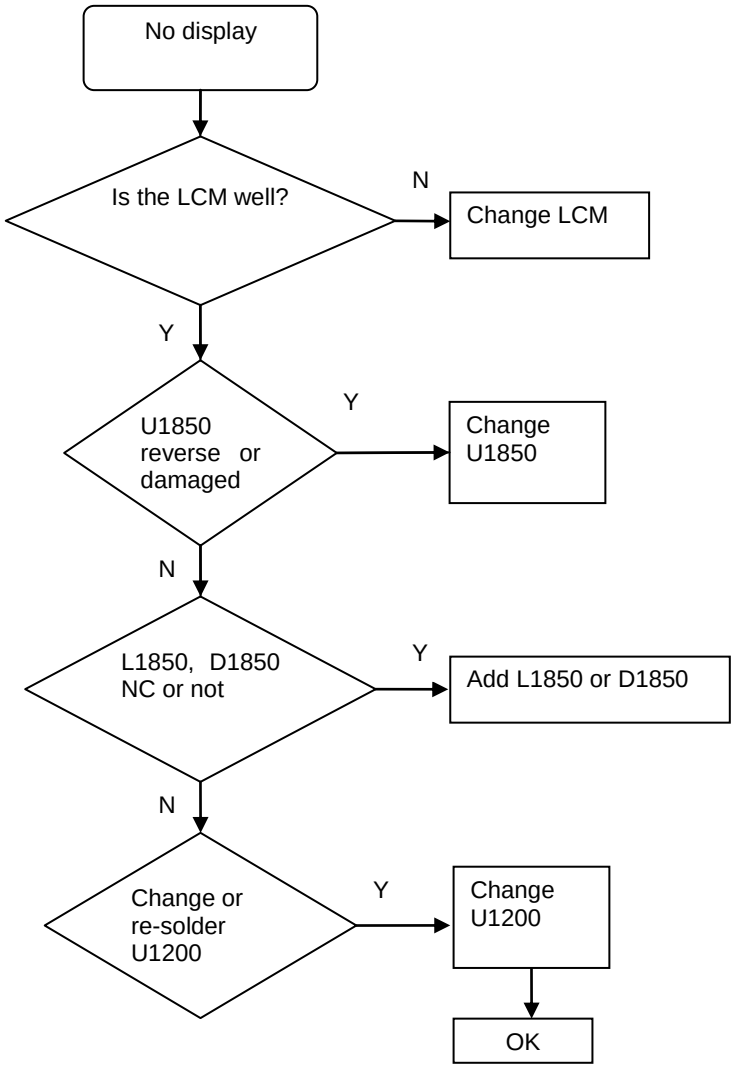
The screen dose not shines or shows white:

First, use DC power supply to start-up, check the board whether power on normal, ensure main board can power on normal

Second, check LCD module, change a new module, check whether can display normal,

Third, check L1850, D1850, U1850 solder ok or not

Fourth, use oscilloscope to test LCD_BACKLIGHT_EN, check it whether high, if not, check U1200 solder ok or not, re-hot U1200 or check a new one.



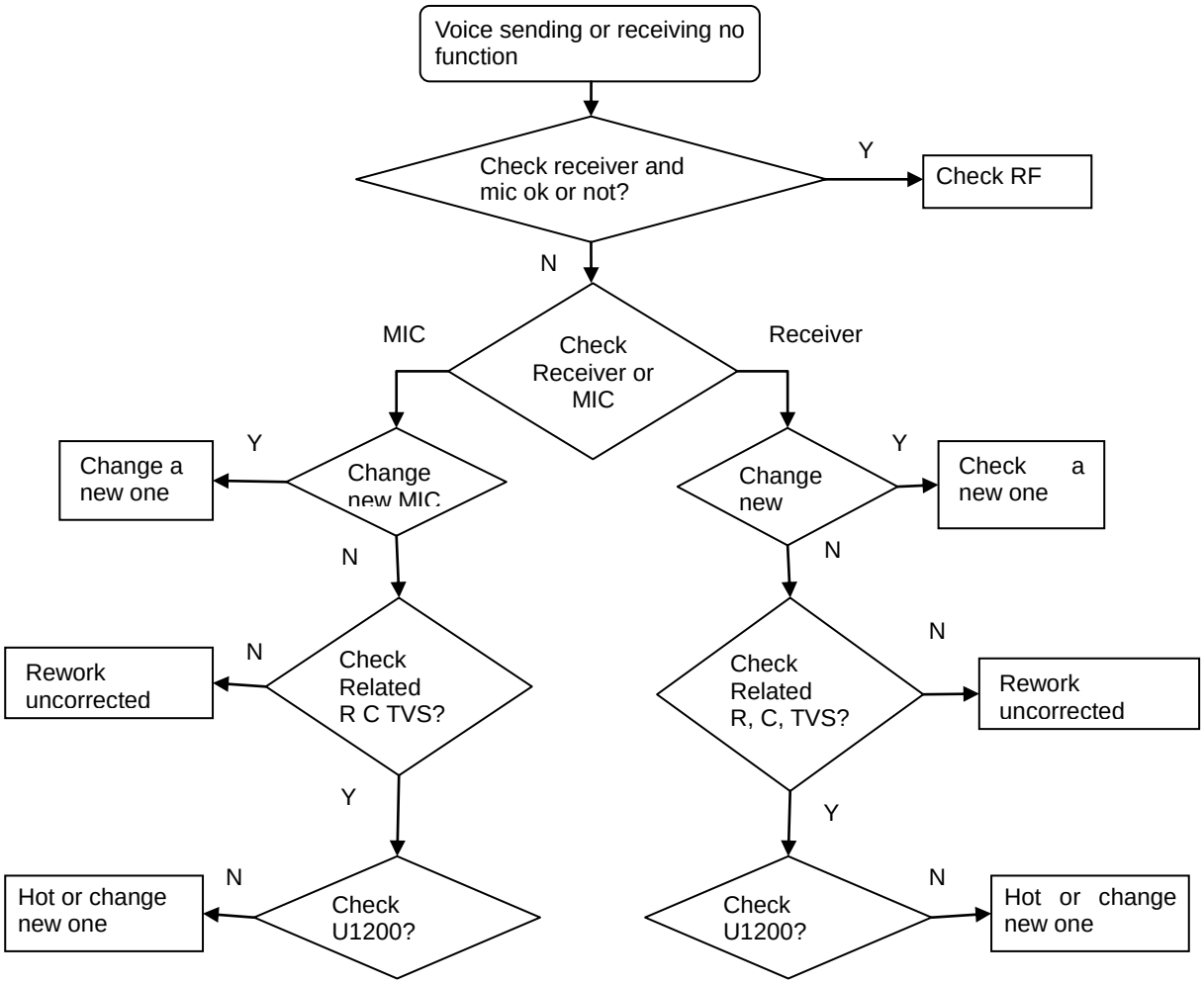
3.4 Fail to call

When call with somebody, we cannot hear what he says or he cannot hear what we say:

This fail may cause by receiver or microphone fail, should to check mic or receiver problem ， if ok, it may RF fail, if fail, we need to make sure is receiver or microphone fail.

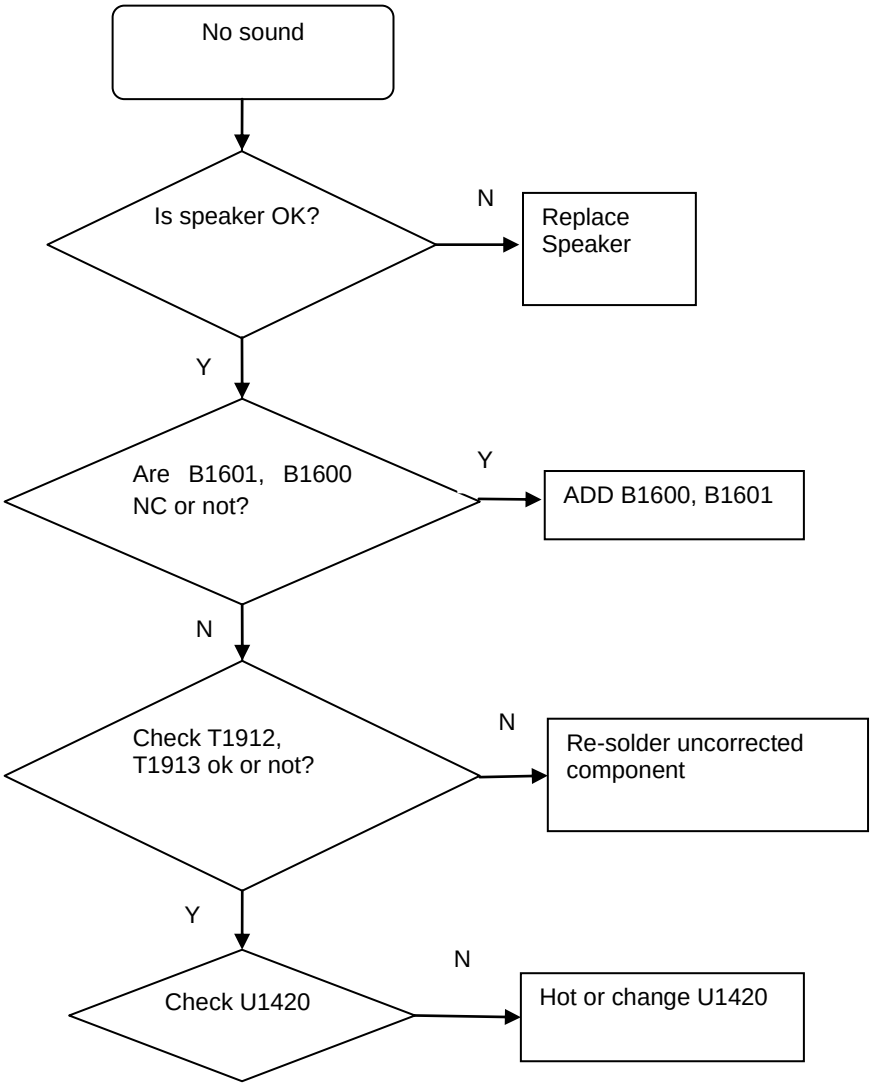
Call 112, if cannot hear voice, it may receiver problem, check microphone related circuit ,check B1640, B1641 , C1640, C1641, C1642, T1640, T1641 solder ok or not, if all ok, change a new microphone, also fail, check CPU, re-hot U1200 or change a new one.

Call 112, if can hear voice, it may microphone problem, change a new receiver, check C1631, C1632, C1633, R1631, R1632 ok or not, if ok, check CPU, re-hot U1200 or change a new one.

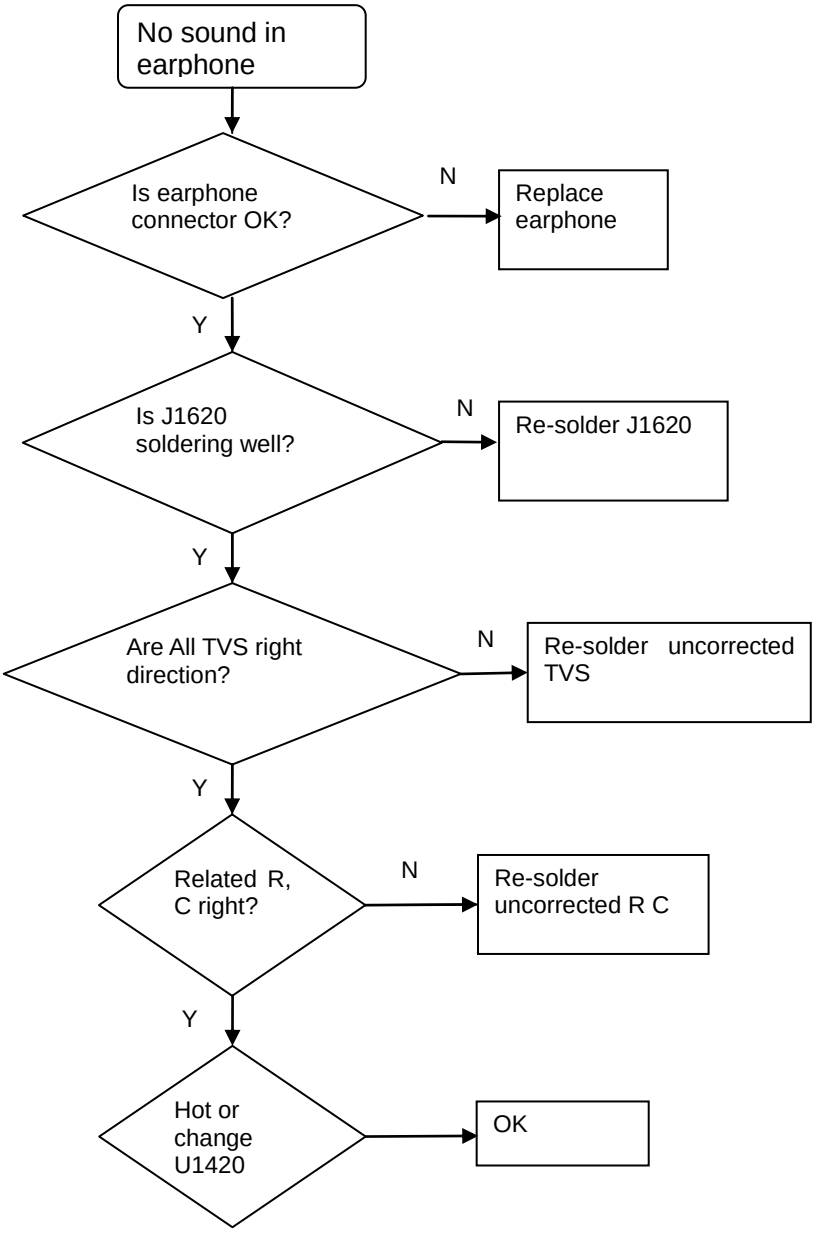


3.5 Speaker no sound

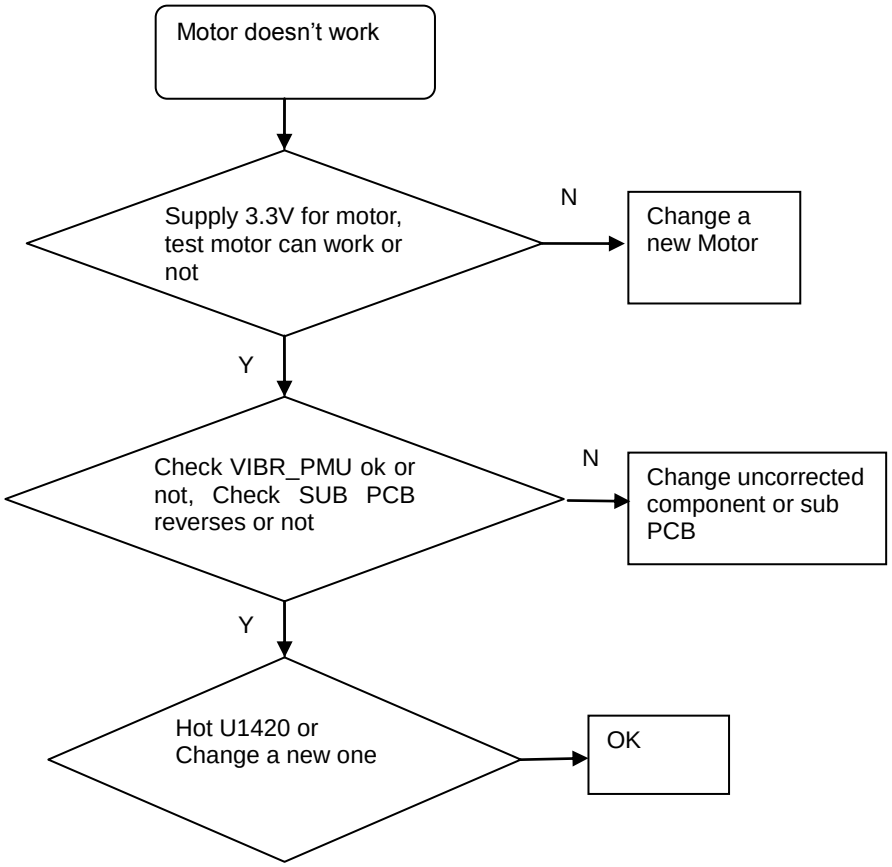
First, check speaker ok or not, change a new one;
Second, check B1601, B1600, T1912, T1913 solder ok or not;
Third, check U1420, re-hot or change a new one.



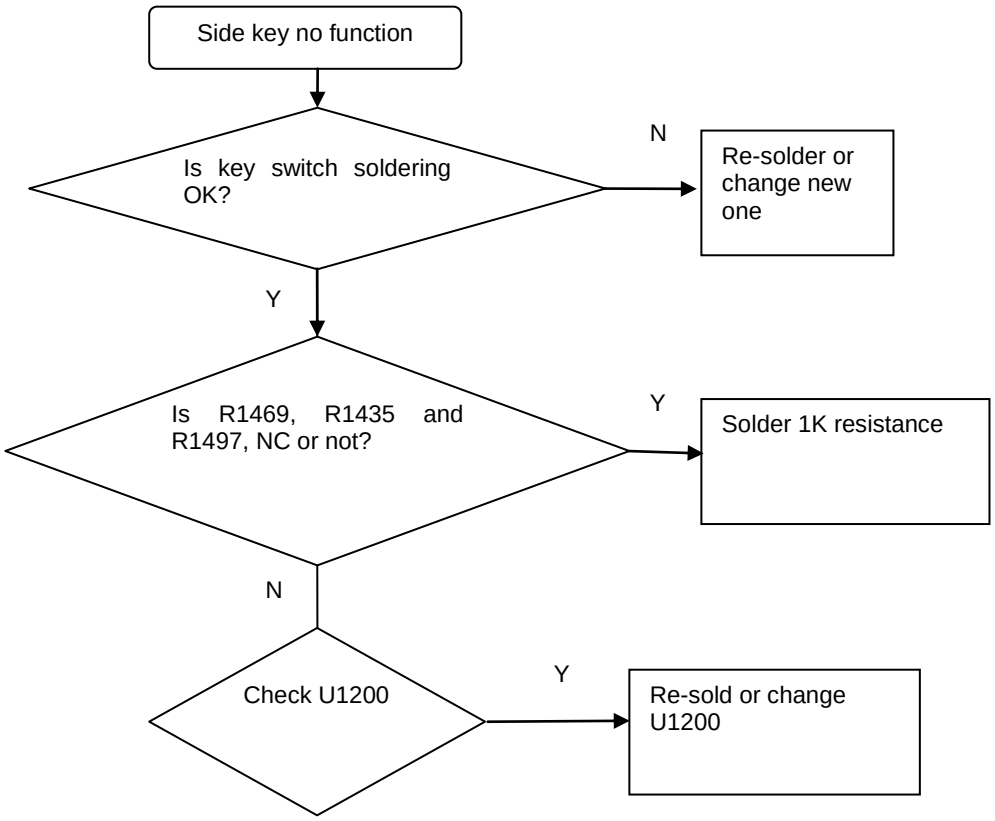
3.6 Earphone fail



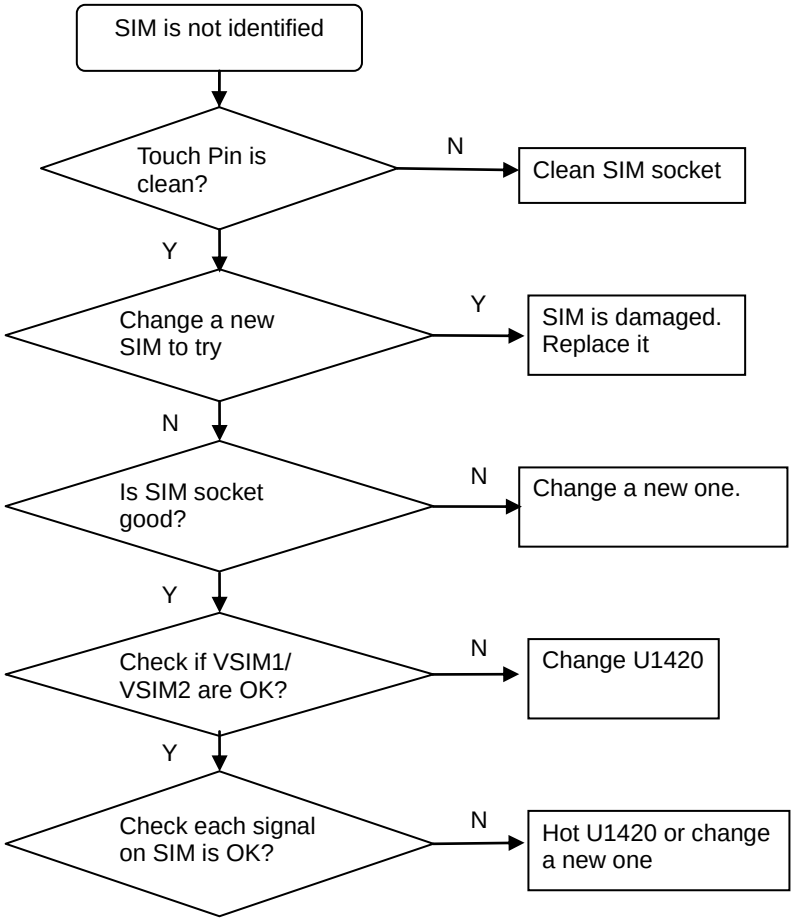
3.7 Vibrator fail



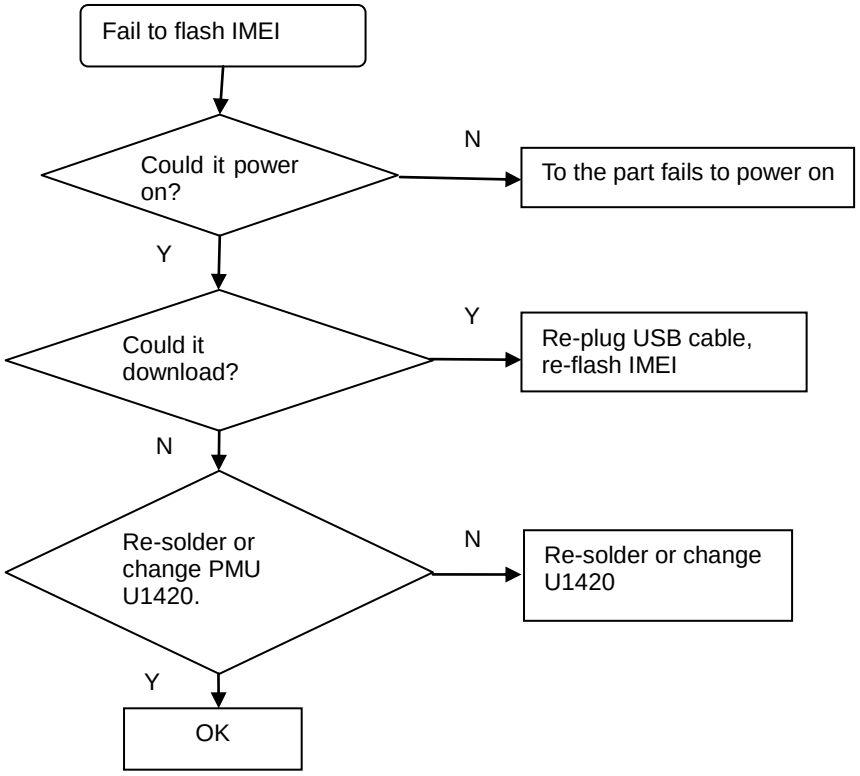
3.8 Side key fail



3.9 Failure to identify SIM card

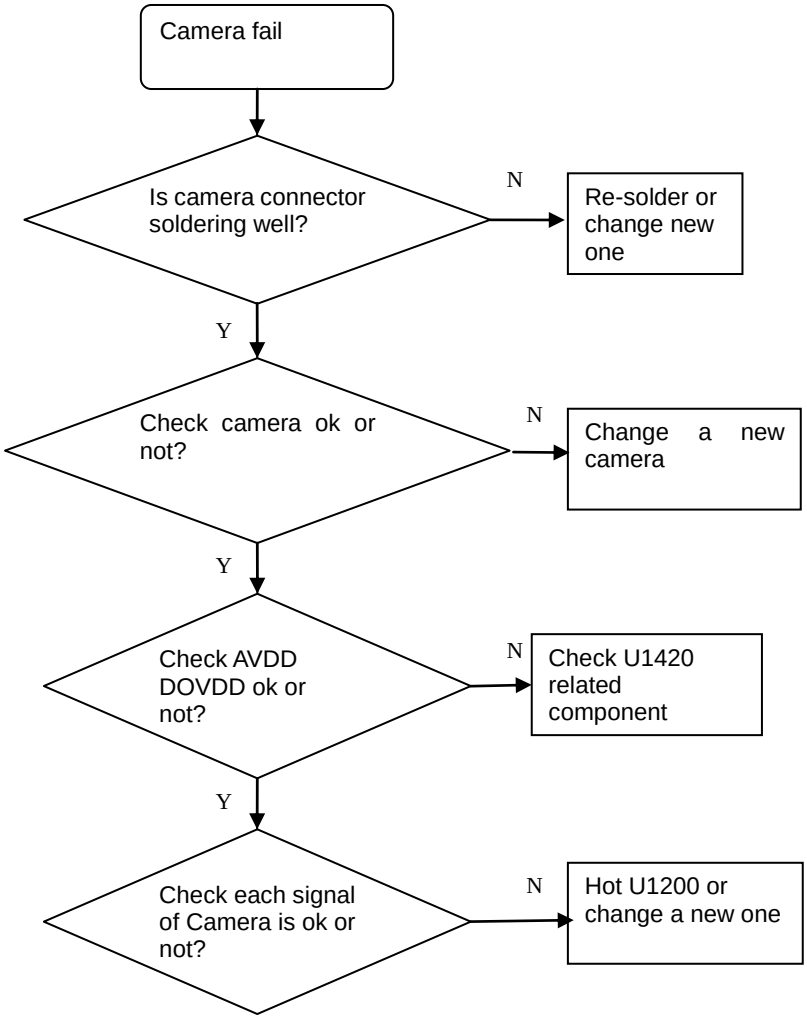


3.10 Failure to write IMEI



3.11 Camera fail

First, change a new camera module, check camera connector ok or not;
Second, check AVDD, DOVDD, if fail check U1420
Third, use oscilloscope to test I2C, CAM_RST, CAM_MCLK, CAM_PCLK, MIPI_DATA, and MIPI_CLK. If signals abnormal check U1200, re-hot or change a new one.



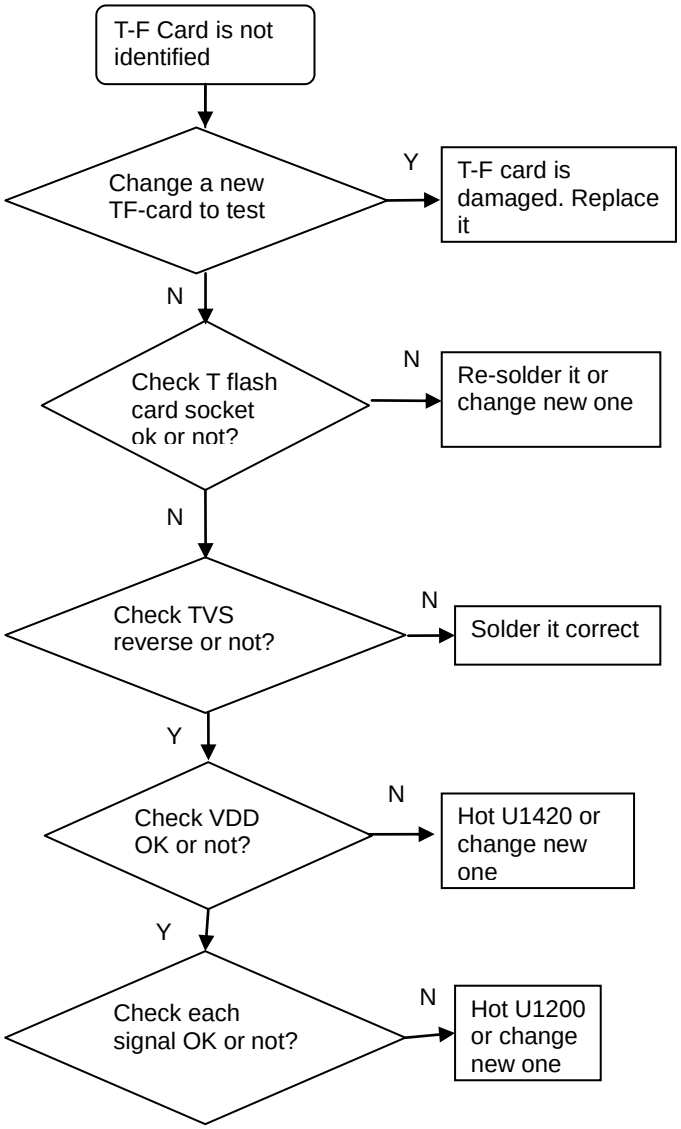
3.12 Failure to read T-flash card

First, change another T flash card, check whether T flash card bad or not

Second, check card connector solder ok or not, if fail, re-solder or change a new one

Third, check TVS reserved or not, check VDD whether normal

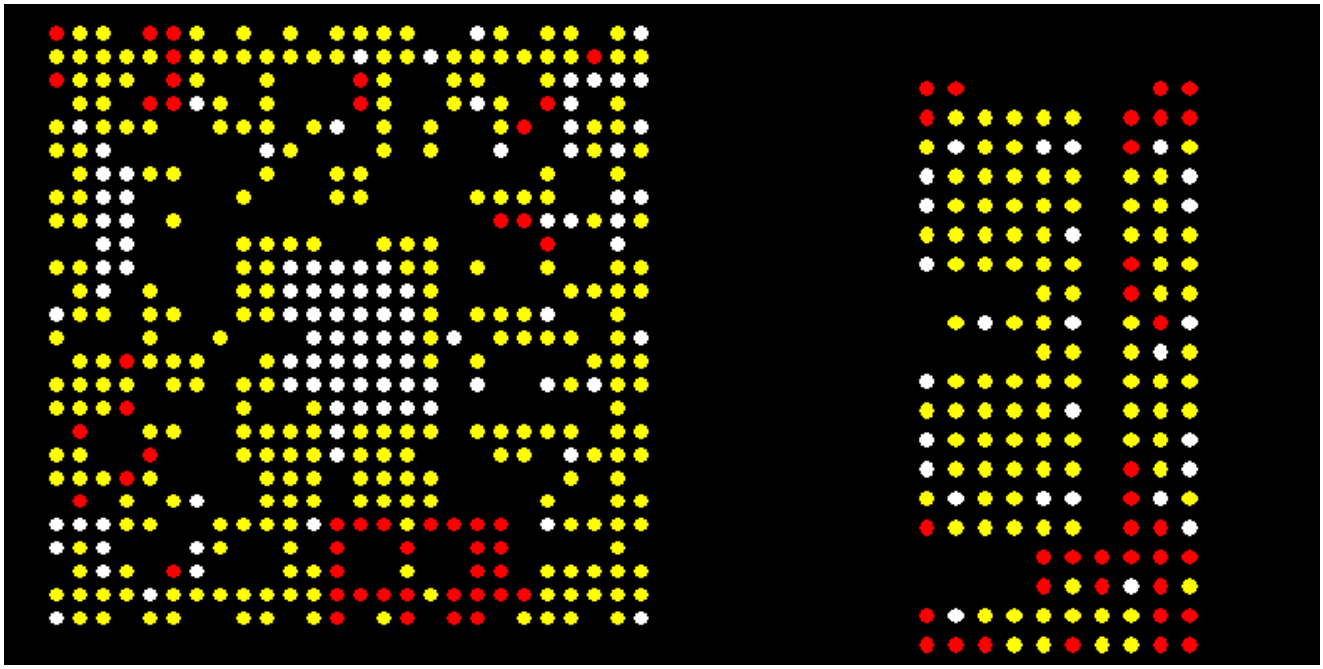
Fourth, test related signals, such as MCCK, MCCM0, MCDA0, MCDA1…MCDA3, if abnormal, check U1200, re-hot or change a new one.



4. BGA related GND or no function pad

Red---------no function pad
White------GND pad

4.1 CPU and memory pin map



4.2 PMU pin map