

LCD Television

Service Manual

Chassis: MSD6308RT

Product:

LHD32K220WSEU & LHD32K220WCEU & LTDN40K220WCEU

& LTDN40K220WSEU

Ver 1.0

Hisense Electric Co., Ltd.

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Service Manual

1. Precautions and notices

BEFORE SERVICING THE LCD TV, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

WHEN REPLACEMENT PARTS ARE REQUIRED, BE SURE TO USE REPLACEMENT PARTS SPECIFIED BY THE MANUFACTURER.

Proper service and repair is important to the safe, reliable operation of all Hisense Electric Co., Ltd Equipment. The service procedures recommended by Hisense and described in this Service Guide are effective methods of performing service operations. Some of service

operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Hisense could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Hisense has not

undertaken any such broad evaluation. Accordingly, a serviceman that uses a service procedure or tools, which are not recommended by Hisense, must first satisfy himself thoroughly that neither his safety nor the safe of the equipment will be jeopardized by the service method selected.

Hereafter throughout this manual, Hisense Electric Co., Ltd will be referred to as Hisense.

1.1 Warning

1.1.1

Critical components having special safety characteristics are identified with a ▲ by the Ref. No. in the parts list. Use of substitute replacement parts, which do not have the same specified safety characteristics, may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from Hisense. Hisense assumes no liability, express or implied, arising out of any unauthorized modification of design. Serviceman assumes all liability.

DANGER CAUTION

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE GUIDE.

1.1.2.

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that

you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

1. Never replace modules or other components while the unit is switched on.

2. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

1.1.3

To prevent electrical shock, do not use this polarized ac plug with an extension cord, receptacle, or the outlet unless the blades can be fully inserted to prevent blade exposure.

To prevent electrical shock, match wide blade or plug to wide slot, fully insert.

1.1.4

When replacement parts are required, be sure to use replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

1.1.5

Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.

-Note: The wire trees should be routed correctly and fixed with the mounted

cable clamps.

-The insulation of the mains lead should be checked for external damage.

1.1.6

(1) Do not touch Signal and Power Connector while this product operates. Do not touch EMI ground part and Heat Sink of Film Filter.

(2) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.

(3) Do not use this product in locations where the humidity is extremely high, where it may be splashed with water, or where flammable materials surround it. Do not install or use the product in a location that does not satisfy the specified environmental conditions. This may damage the product and may cause a fire.

(4) If a foreign substance (such as water, metal, or liquid) gets inside the panel module, immediately turn off the power. Continuing to use the product may cause fire or electric shock.

(5) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power. Continuing to use the product, it may cause fire or electric shock.

(6) Do not disconnect or connect the connector while power to the product is on. It takes some time for the voltage to drop to a sufficiently low level after the power has been turned off. Confirm that the voltage has dropped to a safe level before disconnecting or connecting the connector.

-
- (7) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.
- (8) Do not damage or modify the power cable. It may cause fire or electric shock.
- (9) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.
- (10) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.
- (11) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

1.2 Notes

Notes on Safe Handling of the LCD panel and during service

The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.

- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source of the TV during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and

removing

the power board, start servicing at least 2 minutes after the main power has been turned off.

- While the main power is on, do not touch any parts or circuits other than the ones specified.

If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.

- When installing the LCD module in, and removing it from the packing carton, be sure to have at least two persons perform the work.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials.

Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.

- When handling the circuit board, be sure to remove static electricity from your body before handling the circuit board.
- Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not stack the circuit boards. Failure to observe this precaution may result in

problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.

- Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are fixed in position with the wire clamps so that the wires do not move, thereby ensuring that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.
- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the set.

2. Product Specifications

2.1 Main board layout

2.1.1 Main board: 5867

(1) Take LHD32K220WCEU & LTDN40K220WCEU (5867) for example:

The board has one tuner SIDT-10A2/111A24\ROH (digital system: DVB-T+C)

(2) Take LHD32K220WSEU & LTDN40K220WSEU (5867) for example:

The board has two tuners one is SIDT-10A2/111A24\ROH (digital system: DVB-T+C)

the other is BS2S7HZ6A01\JK\ROH (digital system: DVB-S/S2)



2.1.2 Main board: 5842

- 1、LTDN50K220WTEU only one tuner SIDT-10A2/111A24\ROH
- 2、LTDN50K220WSEU have two tuners.



Tuner:
BS2S7HZ6A01\JK\ROH
DVB-S2

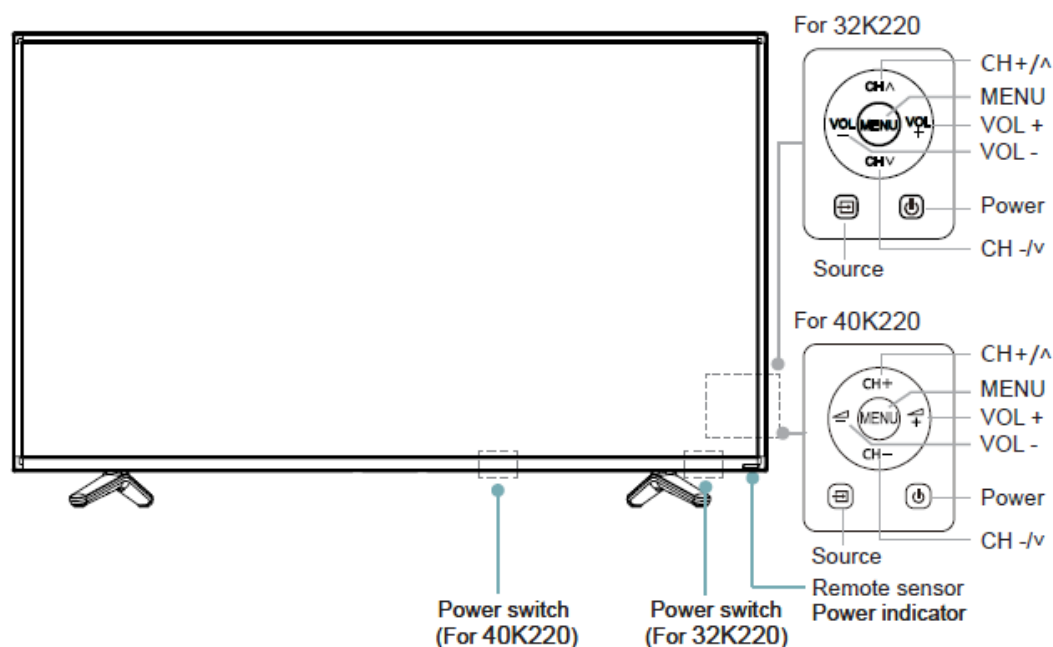
Tuner:
SIDT-10A2/111A24\ROH
DVB-T+C


2.2 Includes products

Product	Main & power board	Digital system	Panel	LVDS cable
LHD32K220W ^{CEU}	5867	DVB-T+C	HD315DH-B21	HX2-2X15KLB300-LG-2\ROH
LTDN40K220W ^{CEU}	5867		HD400DF-B31\ROH	HX2-2X20-SAM-K\300.0\黑\ROH
LHD32K220W ^{SEU}	5867	DVB-T+C+S+S2	HD315DH-B21	HX2-2X15KLB300-LG-2\ROH
LTDN40K220W ^{SEU}	5867		HD400DF-B31	HX2-2X20-SAM-K\300.0\黑\ROH
LTDN50K220WTEU	5842、5687	DVB-T+C	HD500DF-B54	HX2-2X20KLB300P-AUO-K\ROH
LTDN50K220WSEU	5842、5687	DVB-T+C+S2	HD500DF-B54	HX2-2X20KLB300P-AUO-K\ROH

2.3 TV Front and Rear

TV Front

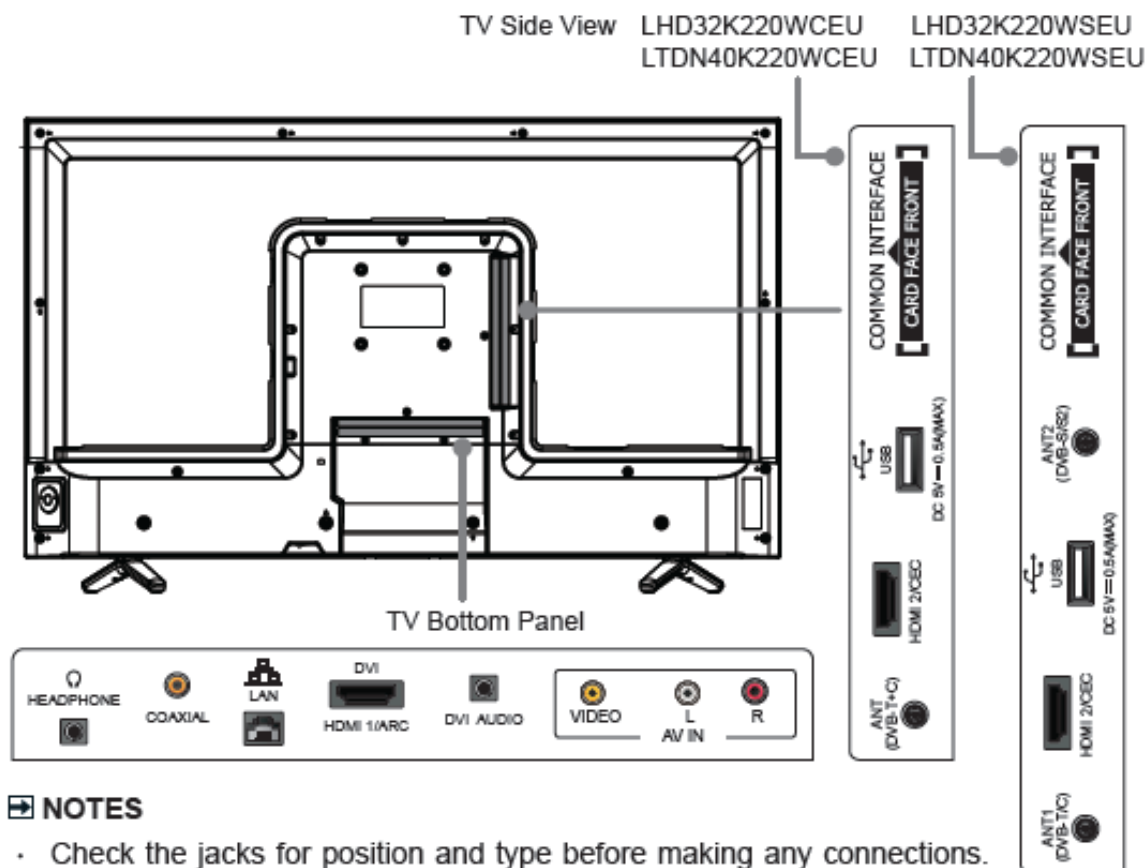


Item	Description
Power switch	Turn the main power ON or OFF.
Remote sensor	Receives remote signals from the remote control. Do not put anything near the sensor, as its function may be affected.
Power indicator	The light is blue when turned on, and it is red in standby mode.
MENU	Display an on-screen menu to setup your TV's features.
Source	Select among the different input signal sources.
VOL + VOL -	Adjust the volume.
CH +/\u00b5 CH -/v	Select the channel.
Power button 	Turn on the TV or put the TV in standby mode. Caution: The TV continues to receive power even in standby mode. Unplug the power cord to disconnect power.

NOTES

- The Picture is Only for Reference.
- Powering on the TV requires several seconds to load program. Do not rapidly turn the TV off as it may cause the TV to work abnormally.

TV Back



NOTES

- Check the jacks for position and type before making any connections. Loose connections can result in image or color problems. Make sure that all connections are tight and secure.
- Not all A/V devices have the ability to connect to a TV, please refer to the user's manual of your A/V device for compatibility and connections procedure.
- Before connecting external equipment, remove the mains plug from the wall socket. This may cause electric shock.

2.4 Specification

Model Name		LHD32K220WCEU LHD32K220WSEU	LTDN40K220WCEU LTDN40K220WSEU
Dimension	Without Stand	Width: 28.7 inches (729 mm) Height: 16.9 inches (429 mm) Depth: 3.5 inches (90 mm)	Width: 35.9 inches (913 mm) Height: 20.2 inches (531 mm) Depth: 3.2 inches (82 mm)
	With Stand	Width: 28.7 inches (729 mm) Height: 18.2 inches (463 mm) Depth: 6.7 inches (170 mm)	Width: 35.9 inches (913 mm) Height: 22.6 inches (574 mm) Depth: 7.4 inches (189 mm)
Weight	Without Stand	10.4 lbs (4.7 kg)	18.3 lbs (8.3 kg)
	With Stand	10.8 lbs (4.9 kg)	18.7 lbs (8.5 kg)
Active Screen Size(Diagonal)		32 inches	40 inches
Screen resolution		1366×768	1920×1080
Audio power		6W +6W	7W +7W
Power consumption		Please refer to the rating label.	
Power supply		Please refer to the rating label.	
Receiving systems	Analog	PAL-D/K, B/G, I SECAM-D/K, B/G, L/L'	
	Digital	DVB-T, DVB-C, DVB-S/S2 (only for LHD32K220WSEU/ LTDN40K220WSEU)	
Environmental conditions		Temperature: 41°F - 95°F (5°C - 35°C) Humidity: 20% - 80% RH Atmospheric pressure: 86 kPa - 106 kPa	
HDMI Input		RGB / 60 Hz (640×480, 800×600, 1024×768) YUV / 60 Hz (480 I, 480 P, 720 P, 1080 I, 1080 P) YUV / 50 Hz (576 I, 576 P, 720 P, 1080 I, 1080 P)	

3. Factory/Service OSD Menu and Adjustment

3.1 How to enter the Factory OSD Menu

With user's RC

Power on the TV.

1. Press "Menu" button and call up User OSD Menu.
2. Select "Sound" -> "Balance" item.
3. Press number key 1->9->6 ->9 in sequence when "Balance" item is focused.
Note: If necessary, re-do number keys.
4. Factory OSD appears.

Note: Press "EXIT" key on the remote control, which can exit factory OSD menu.

3.2 Factory OSD Menu

The Factory OSD Menu comprises Factory Menu and Design menu.

3.2.1、Factory Menu

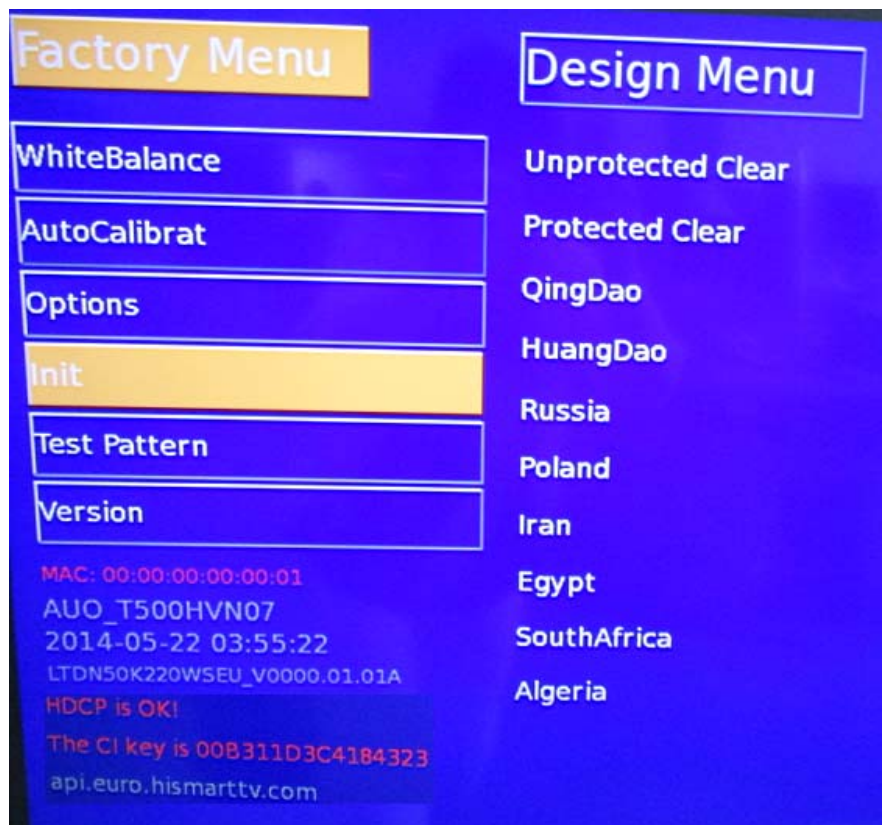
White Balance:



Option:



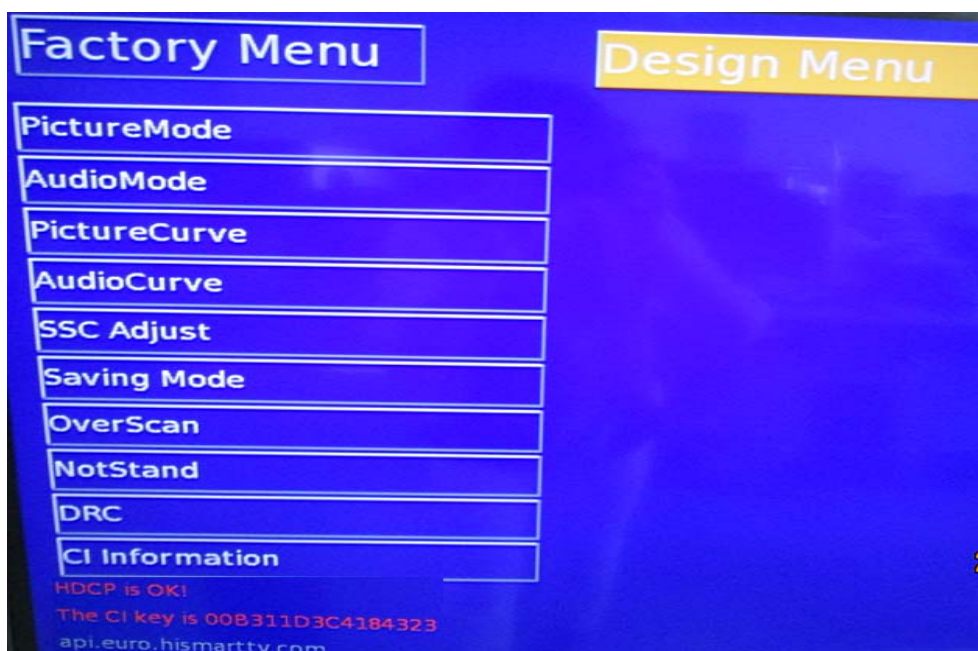
Init:



Version:



3.2.2、Design Menu



Note:

The above “Factory/Service OSD Menus” are reference only, please refer to the actual unit to determine the appearances.

4. Software updating

Software updating includes boot write and main software update. Usually first write boot to nand flash

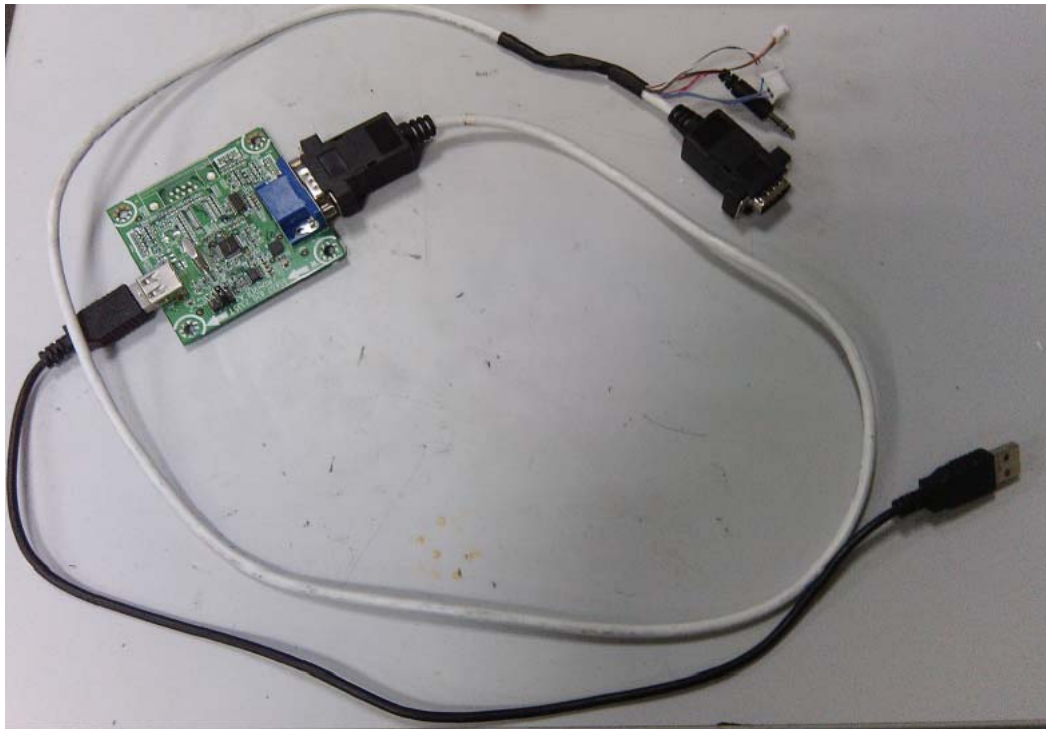
With **Mstar Tool**(MSTV_Tool.exe), then update main software With ISP_Tools、Tftp and SecureCRT upgrading Tools.

4.1 Write boot software to nand flash

4.1.1 Hardware connecting

You can update the software through a special tool (as following)

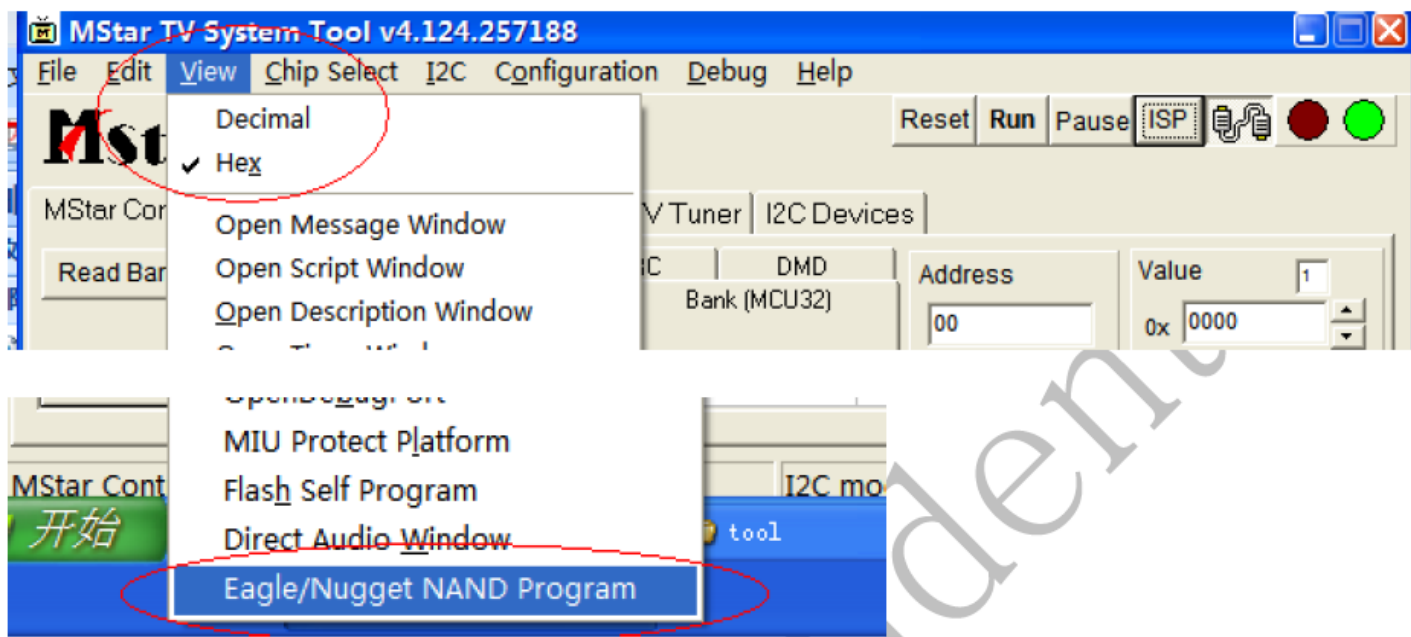
Connect the Debug board to the TV use the RS232 (4 pin), the other USB port to the PC.



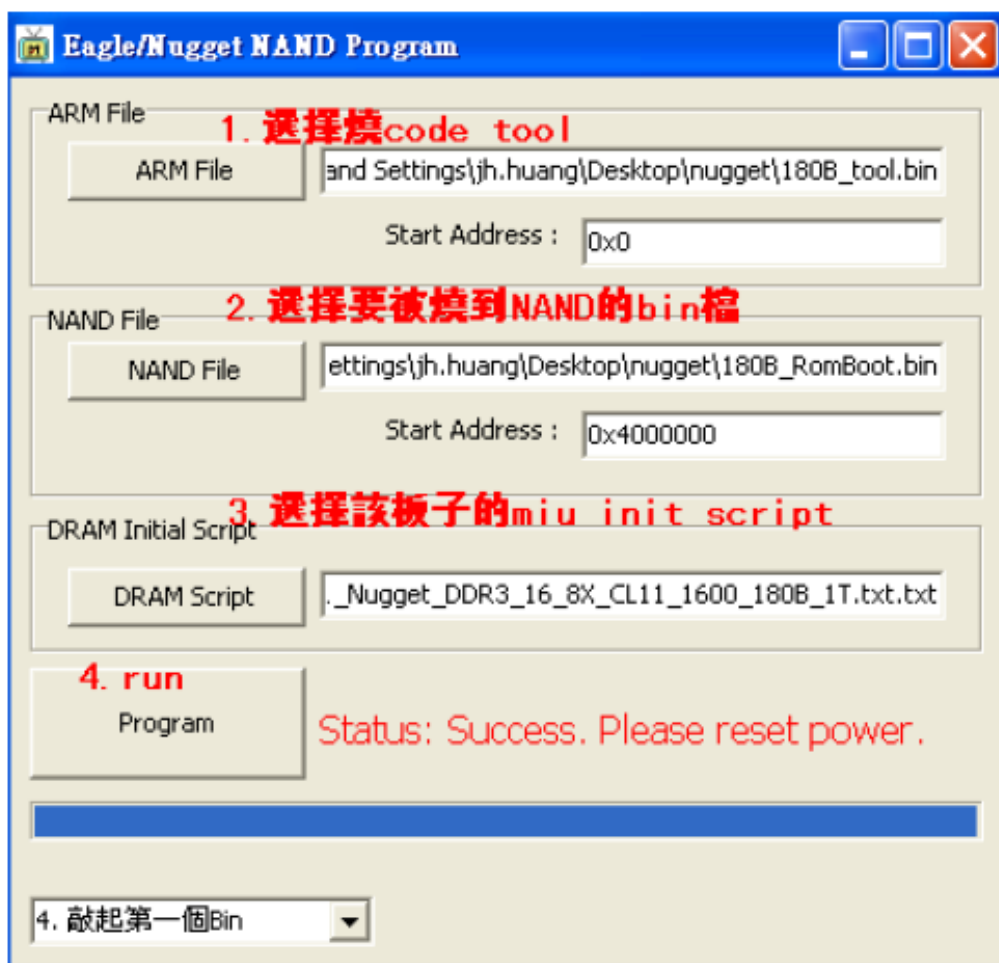
4.1.2 Mstar Tool (MSTV_Tool.exe) to write boot

1、 Power on the TV ->connect the USB-series port Tool.-> double click the MSTV_Tool.exe Icon(path:supernova\target\isdb.nugget\boot\CreatRomBoot_050B_256x1\tool), and then a dialog window will show as below.

2、 Click the "view" button. And then a dialog window will show as below.
Draw on the front of "Hex"



3、 Choose “Eagle/Nugget NAND program”, And then a dialog window will show as below.



Now, introduce how to choose the file.

ARM \MIPS File button:

Load :supernova\target\isdb.nugget\boot\CreatRomBoot_050B_256x1\050B_TOOL.bin.

NAND File button:

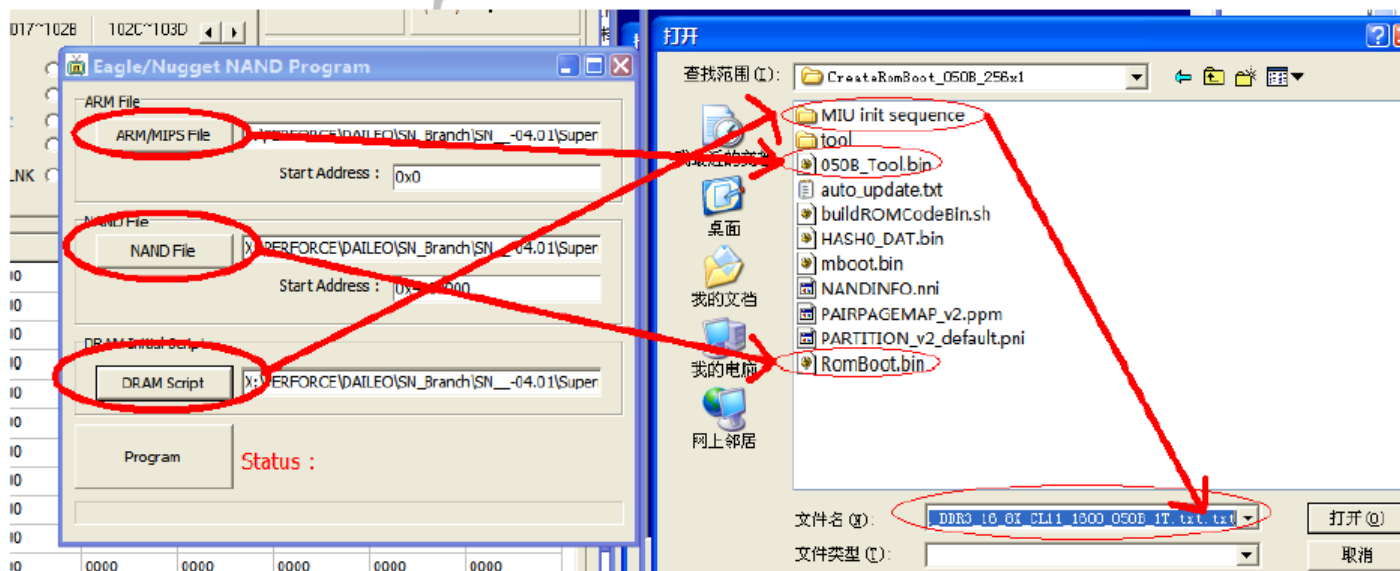
Load: supernova\target\isdb.nugget\boot\CreatRomBoot_050B_256x1\RomBoot.bin.

DRAM Script button:

Load : supernova\target\isdb.nugget\boot\CreatRomBoot_050B_256x1\MIU init sequence\
DDR3_16_8X_CL11_1600_050B_1T_TOOL.bin.txt.txt

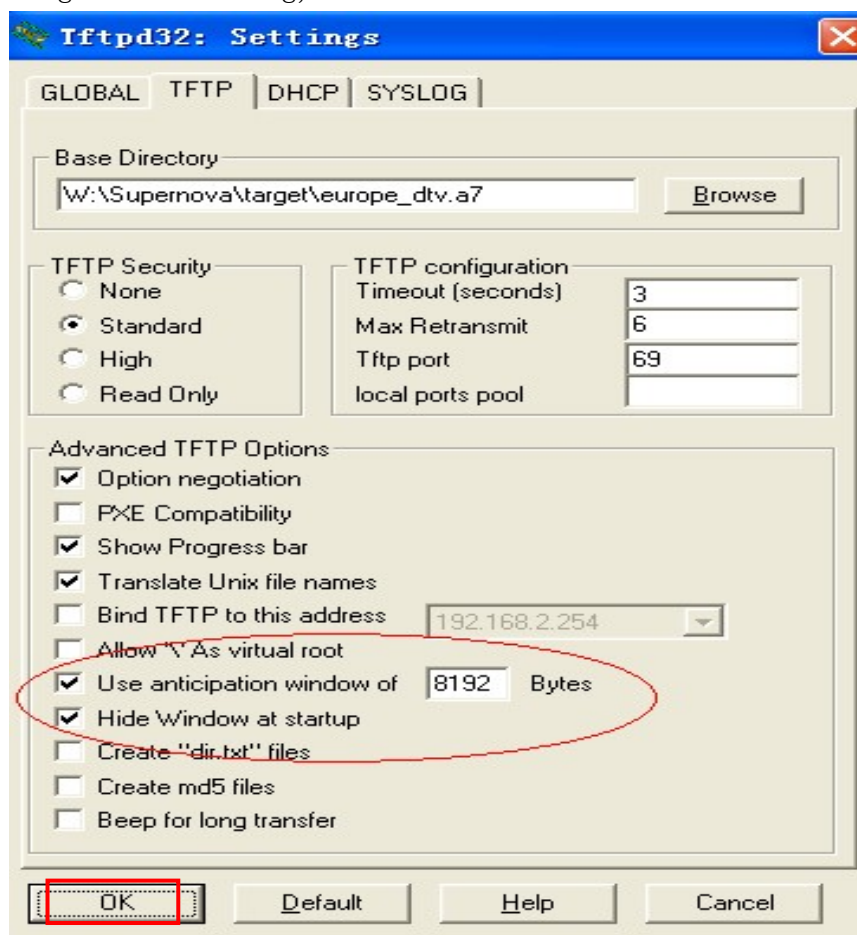
Program button:

After above all have chosen, then Click the “**Program**” button and wait write end. If “**status**” shows ***success,please reset power***, it indicates successful.



4.2 Upgrading main software with Tftpd32、securecrf

- a) Run Tftpd32.exe. Browse the Base Directory file “*_dtv.a7”
Settings as following, late click “OK”.

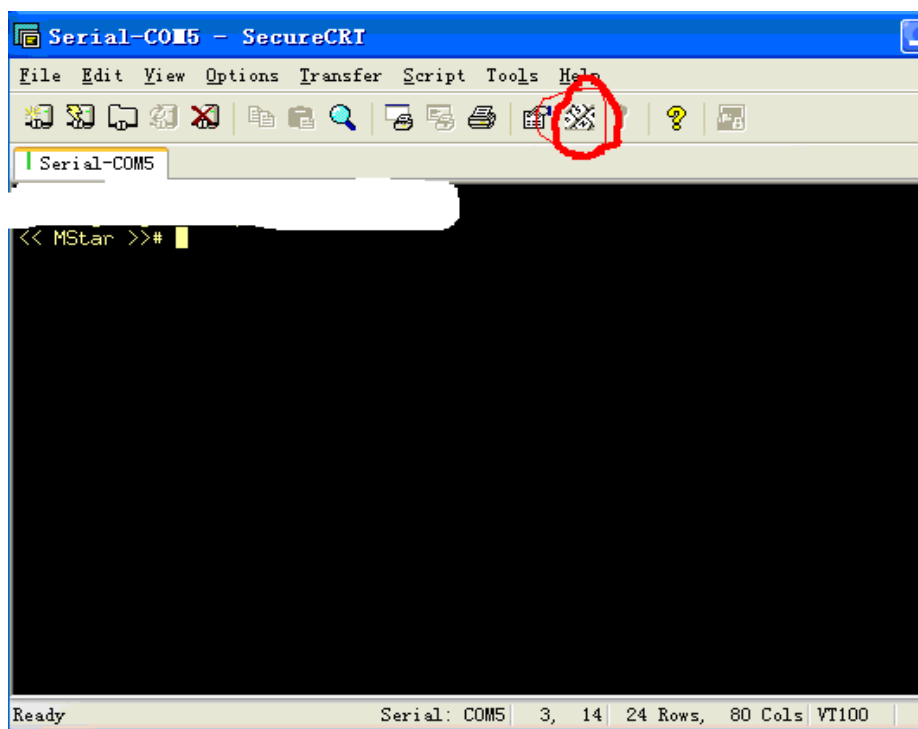


- b) Run Securecrf.exe to set up a serical section.
Select File→Connect→New section





AC power off the TV, this time the mouse must lies on the SecureCRT interface.
then AC power on the TV, at the same time press “enter” key.
you will see “<<mstar>>#” on the SecureCRT interface.
(the following image).



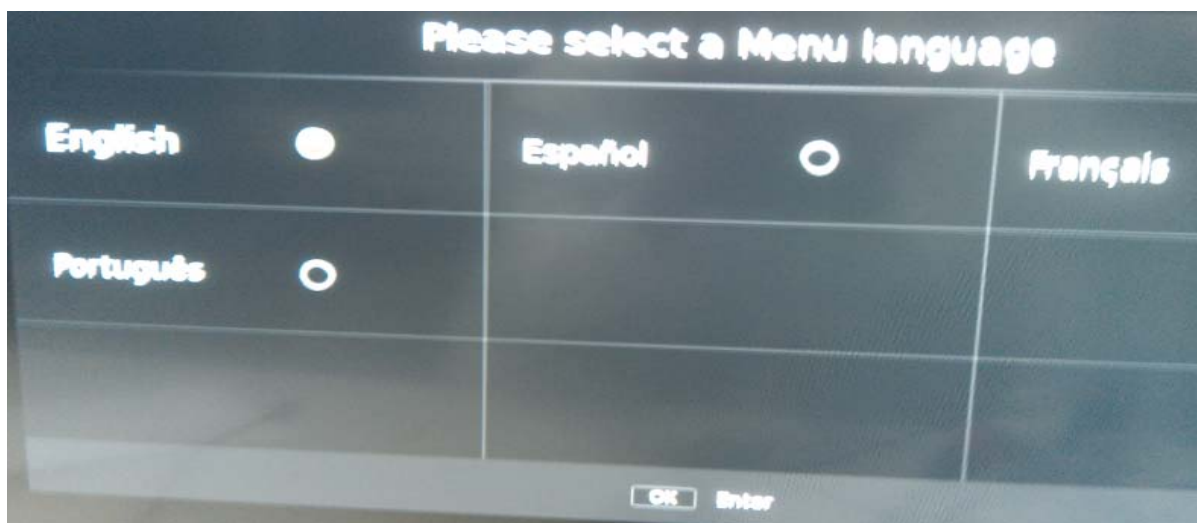
Next input : set ipaddr 192.168.5.200;set serverip 192.168.5.211;saveenv , then press
“enter” key. late input: “mstar mscript/auto_update.txt” to update (the following

image).

Note1

```
<< MStar >>#  
<< MStar >>#  
<< MStar >># set ipaddr 192.168.5.200;set serverip 192.168.5.211;saveenv  
Saving Environment to spiflash...  
Flash is detected (0x0507, 0xC2, 0x20, 0x15)  
Write addr=0x001E0000, size=0x00010000  
Write addr=0x001F0000, size=0x00010000  
<< MStar >>#
```

After software update has finished, the TV OSD appears following.



Note2:

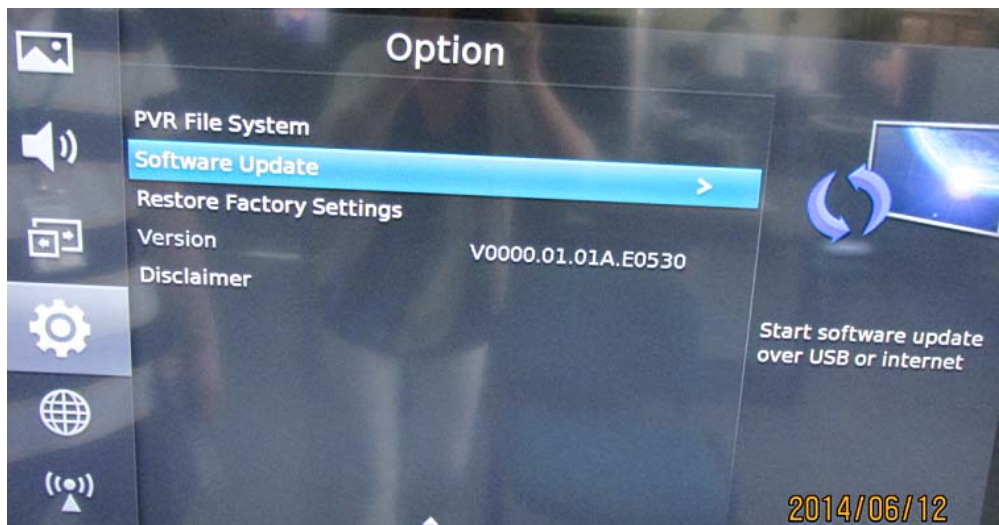
- 1) Serverip "192.168.5.211" is PC LAN IP address. When update the main software.
- 2) you must replace you PC IP address with 192.168.5.211, and net mask with 255.255.255.0 .

4.3 Upgrading with the USB disk

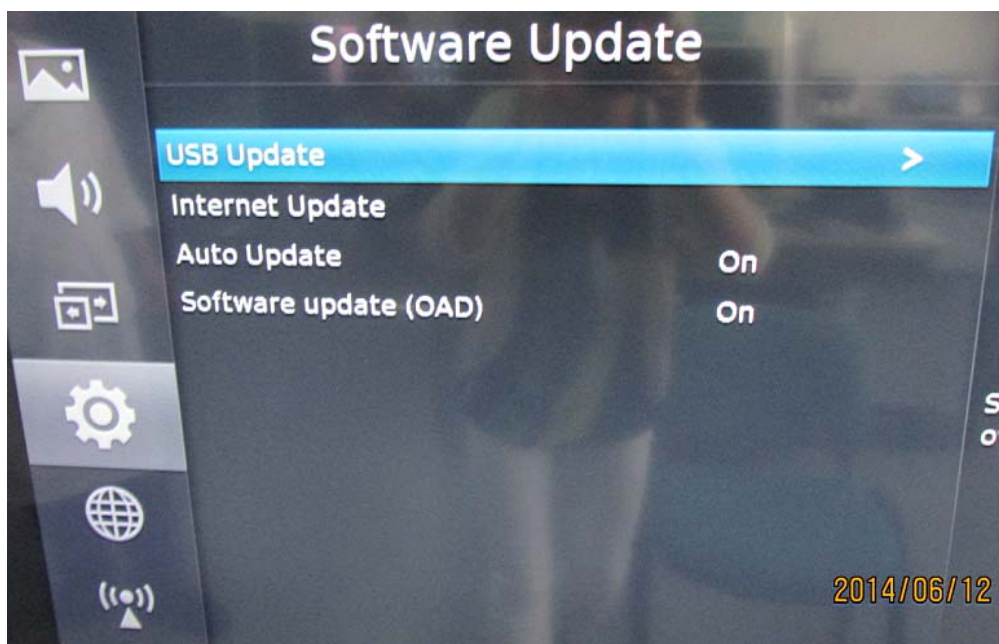
4.3.1 TV in normal state


Take LTDN50K220WSEU for example.


1. Copy the "**USBUpgrade.bin**" file to the root directory of USB disk.
2. Insert the USB disk into the USB slot of the TV SET.
3. Press "Menu" button of remote control and call up User Menu, choose "OPTION" -> "Software Update" -> USB Update



next



4. Press the  key on Remote Control , it will show a confirm message box, **Are you sure?**

Press  button to select “yes” in the confirm message box, then **TV will** automatic update.

5. Then it will update the software automatically, Please don't power off during the updating process.

Screen display:

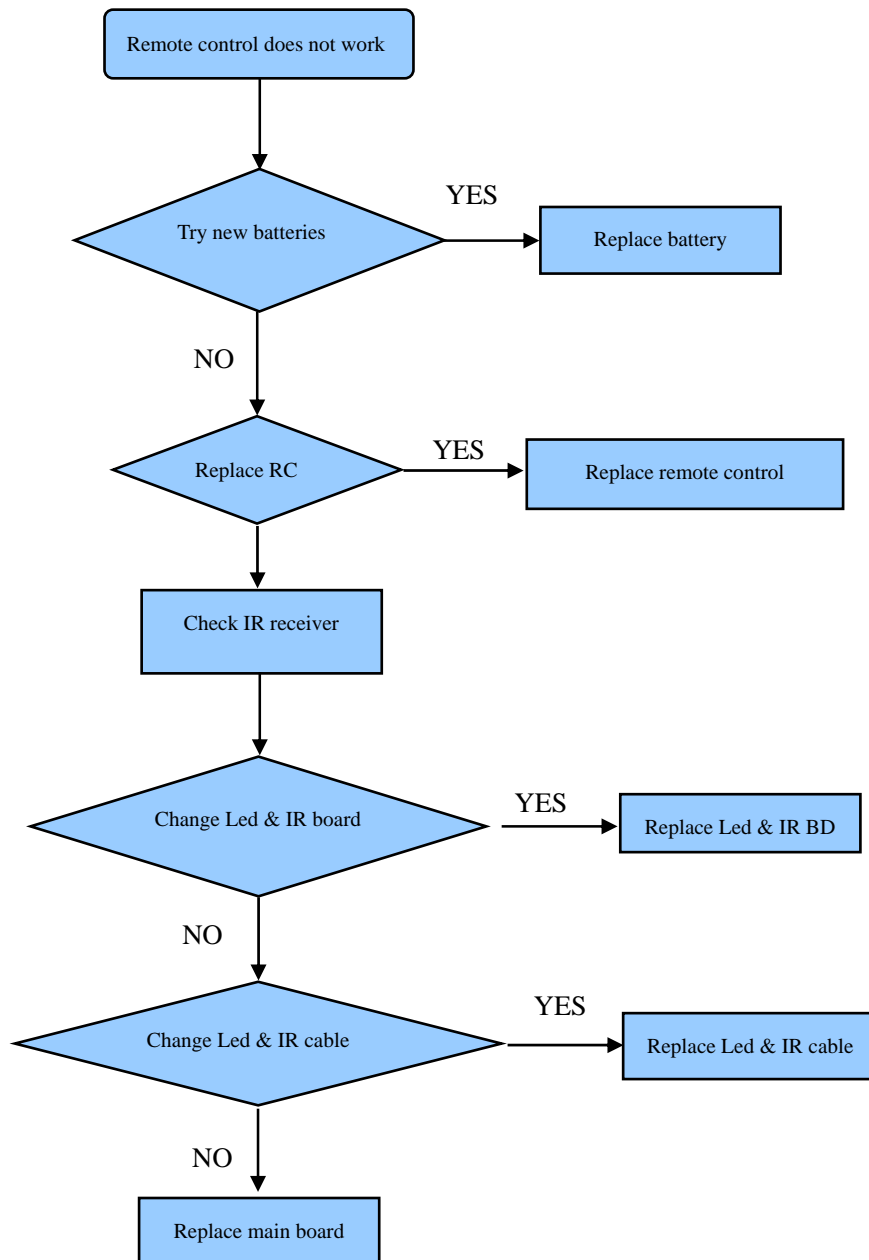
“Software Upgrading, Please Wait.....”

6. After update succeeds, TV SET will restart automatically.

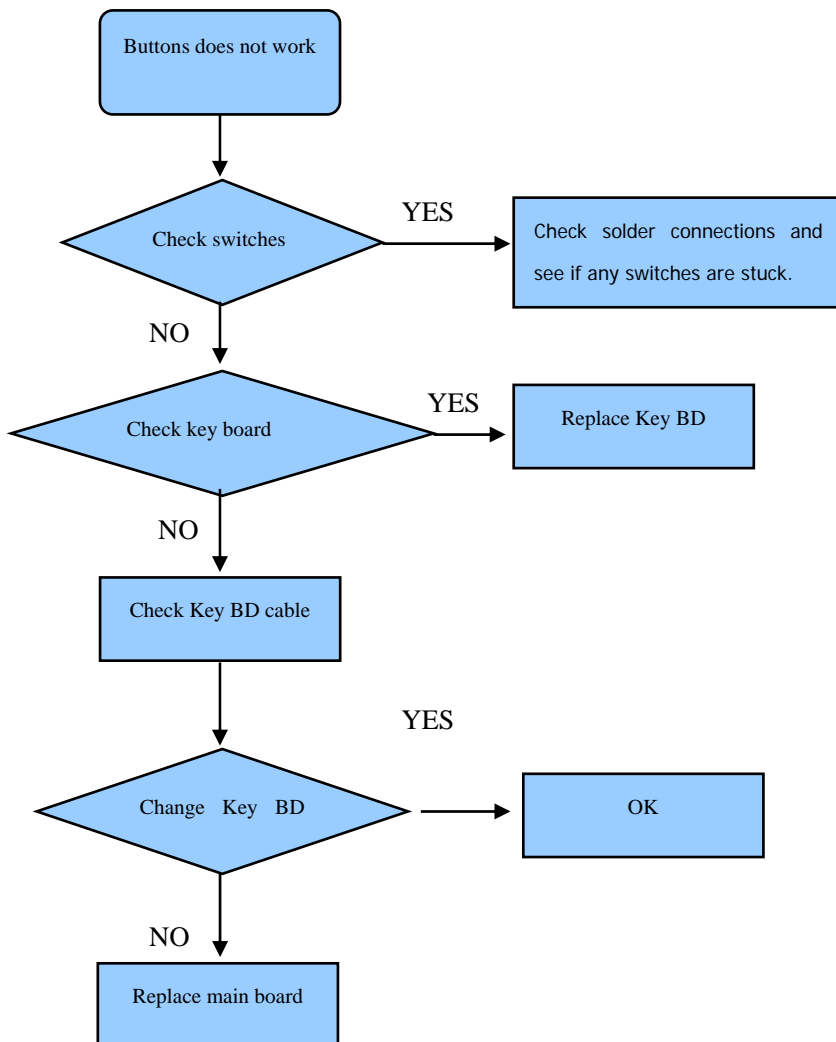
7. “Factory OSD MENU”→ “init” → “Unprotect clear”, TV SET will restart automatically.

5. Troubleshooting

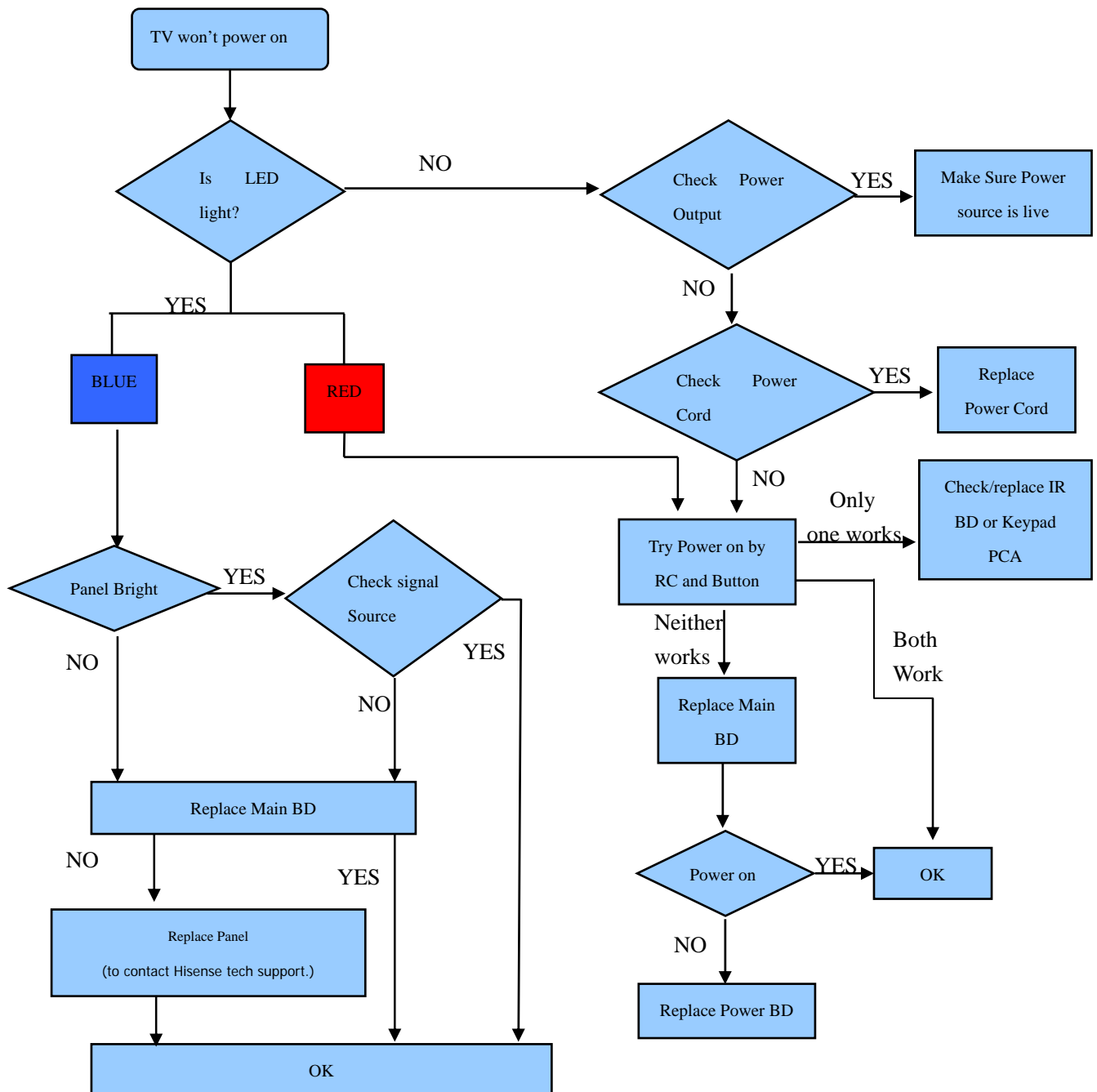
5.1 Troubleshooting for Remote Control



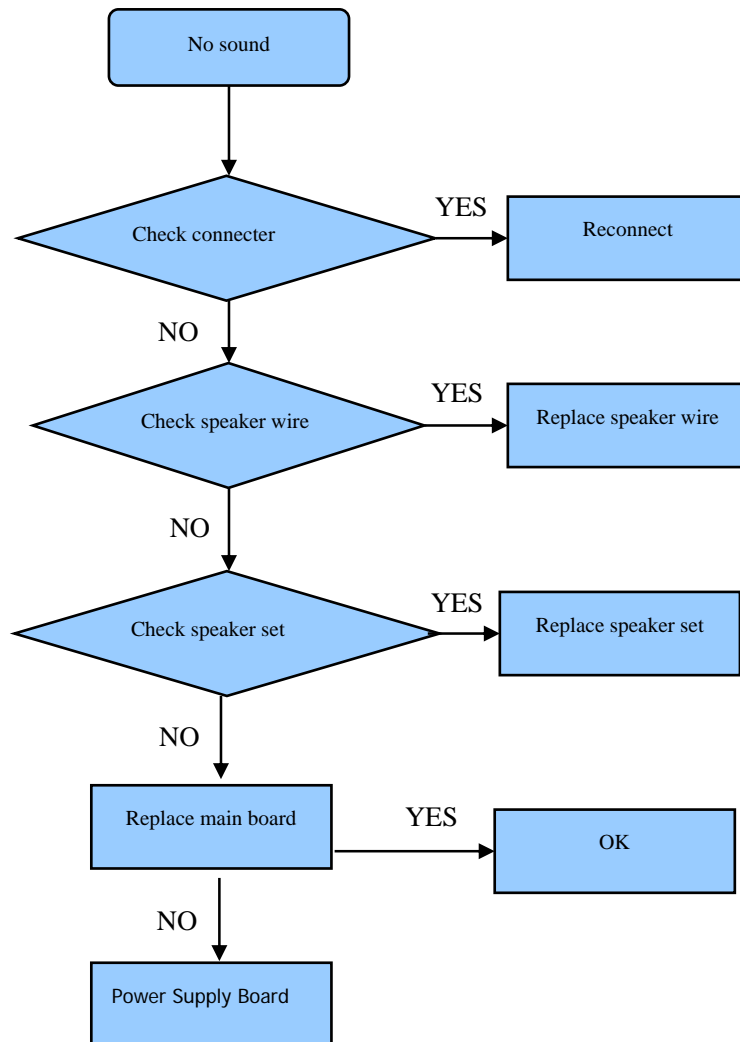
5.2 Troubleshooting for Function Key



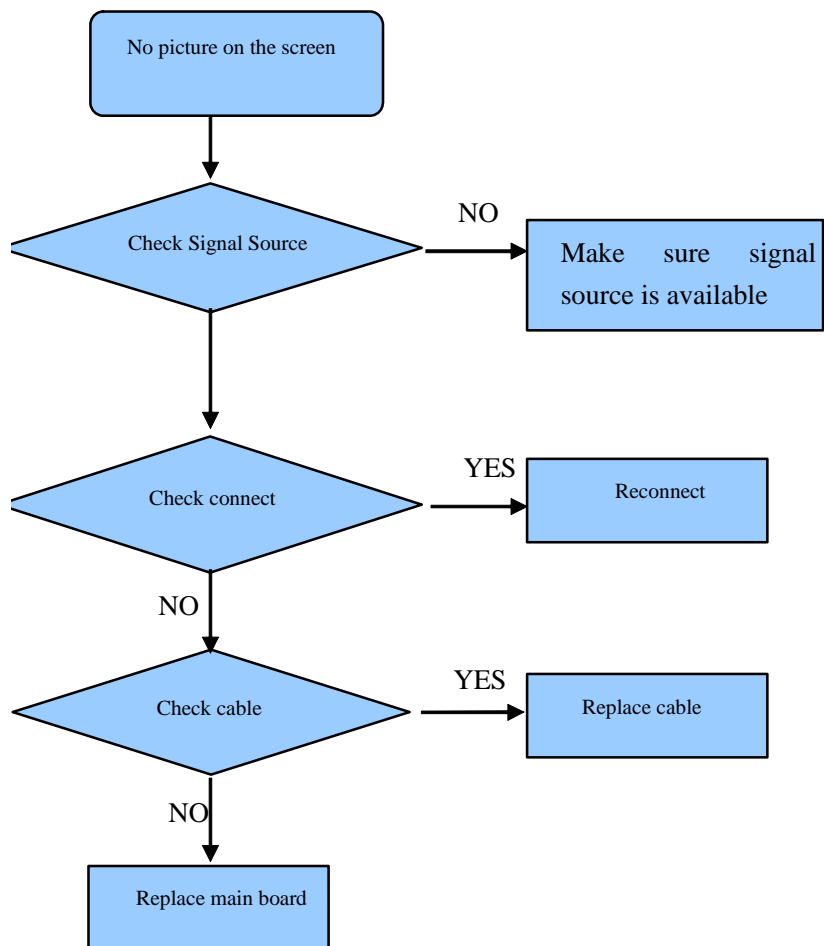
5.3 TV won't Power On



5.4 Troubleshooting for Audio

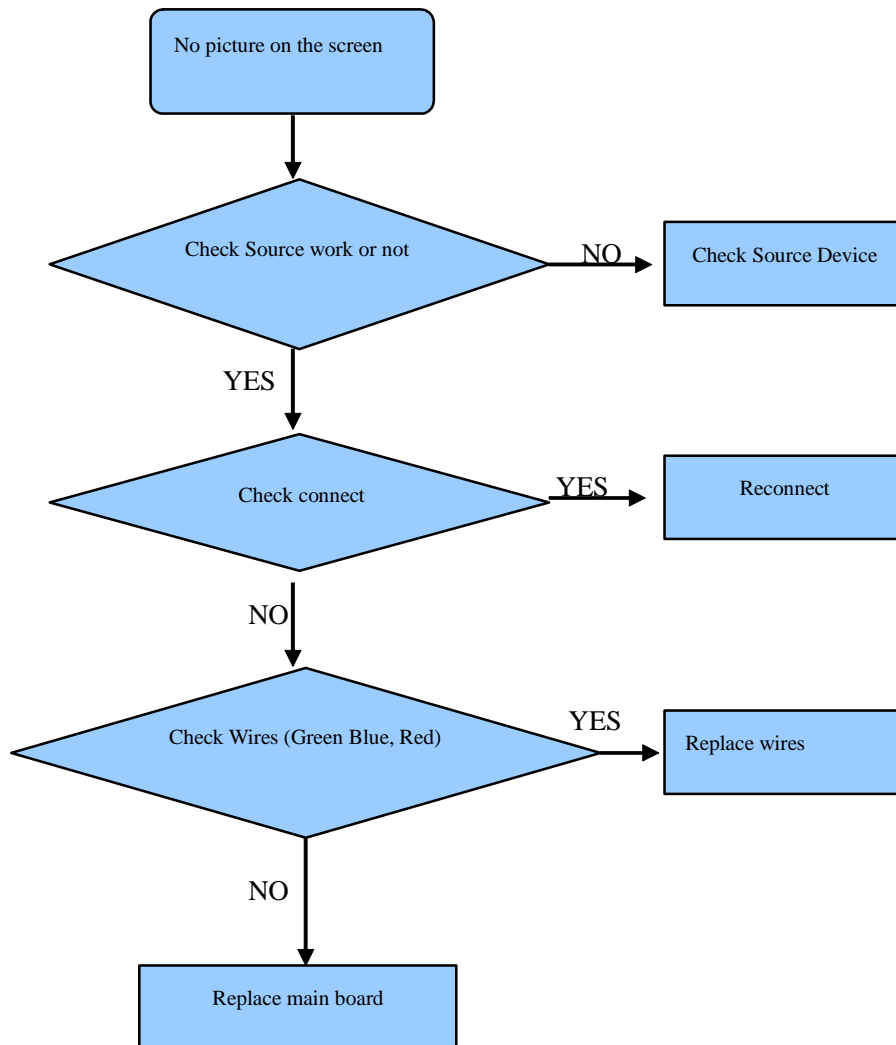


5.5 Troubleshooting for TV/VGA/HDMI input

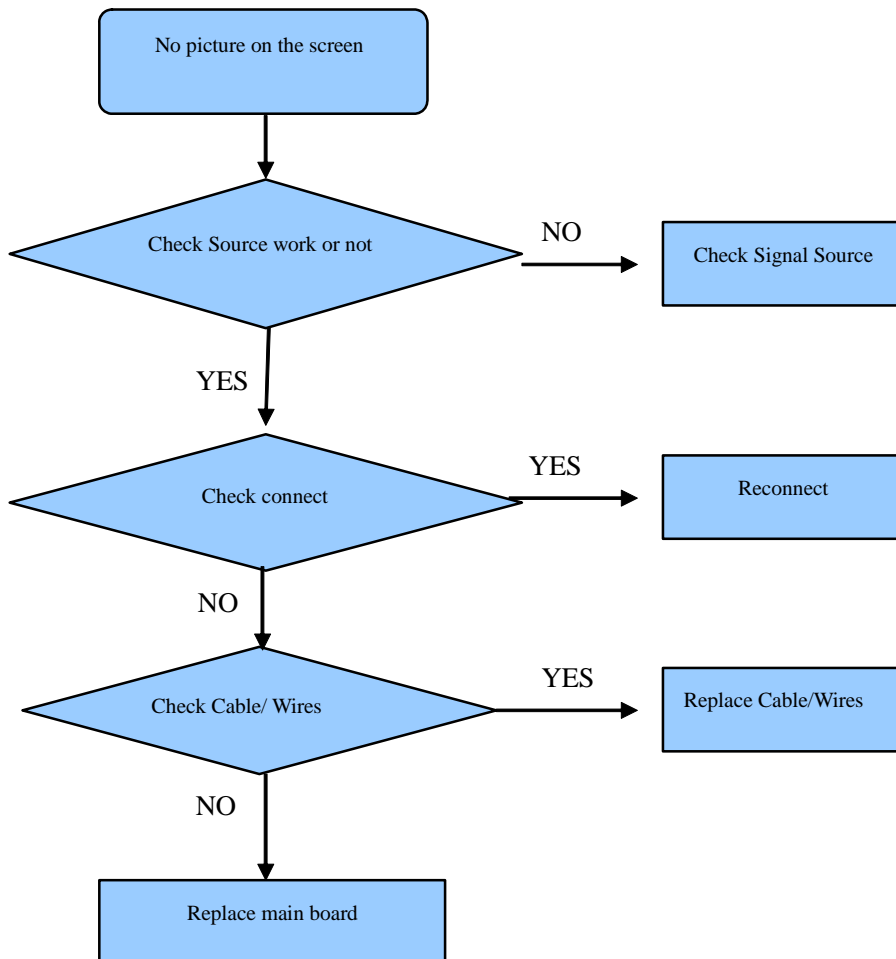


5.6 Troubleshooting for YPbPr input

Note: (The K220 mould TV has not YPbPr input)



5.7 Troubleshooting for Video input

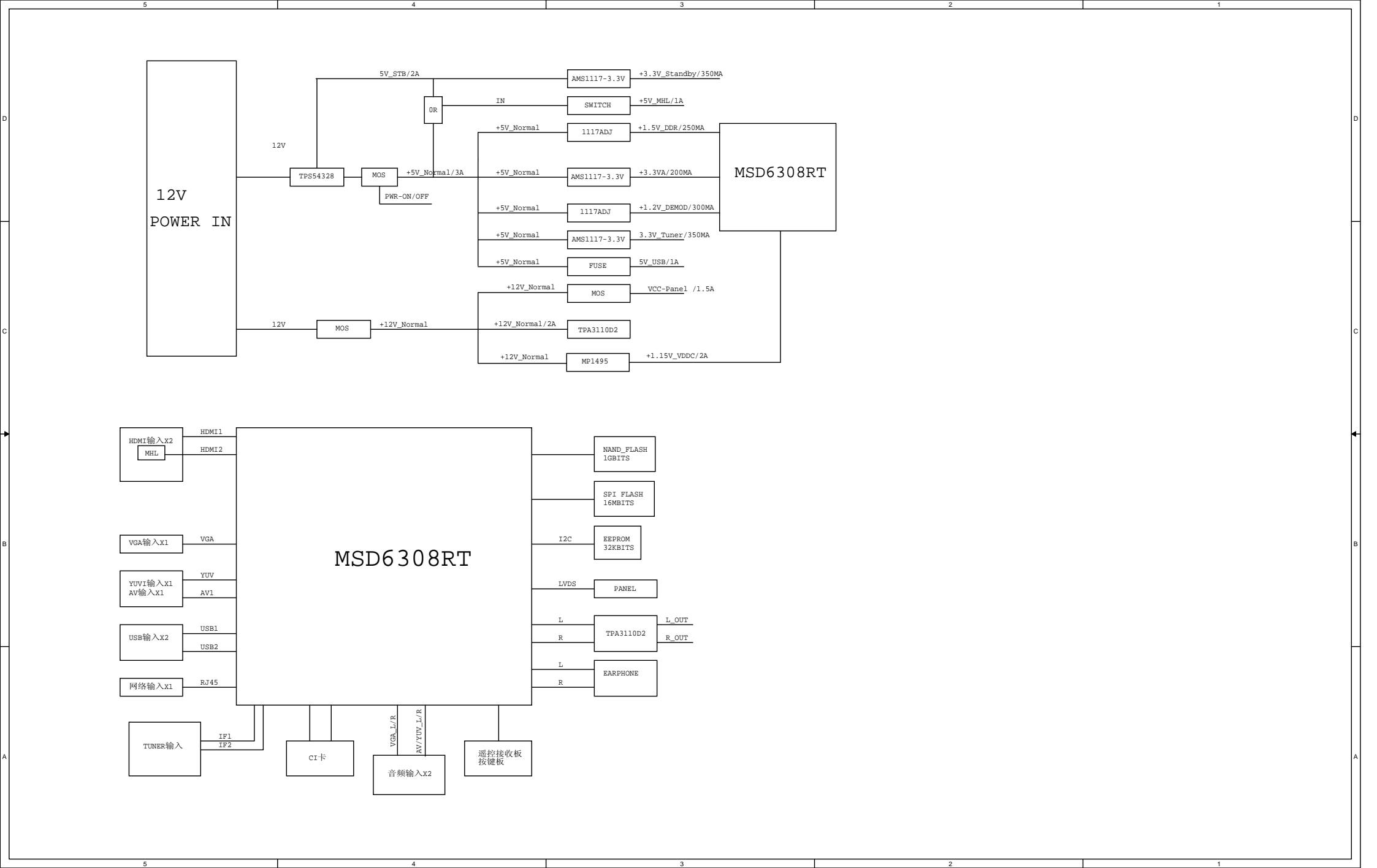


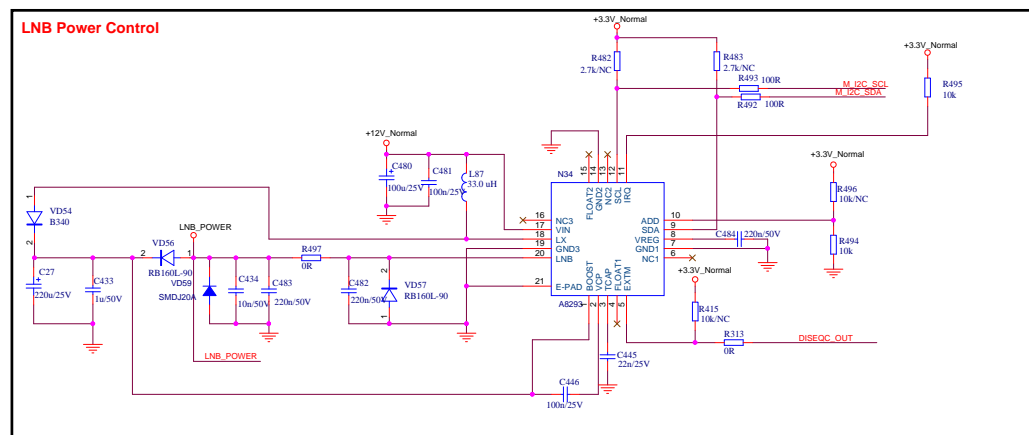
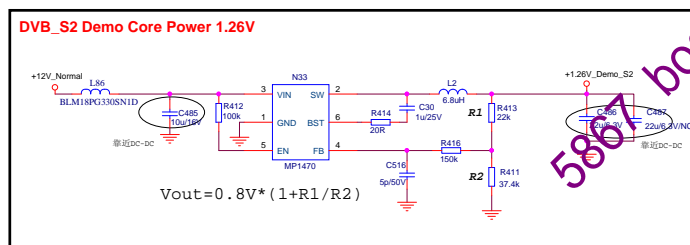
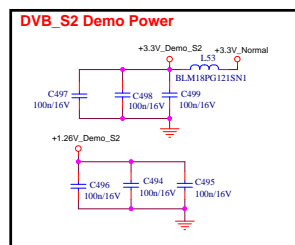
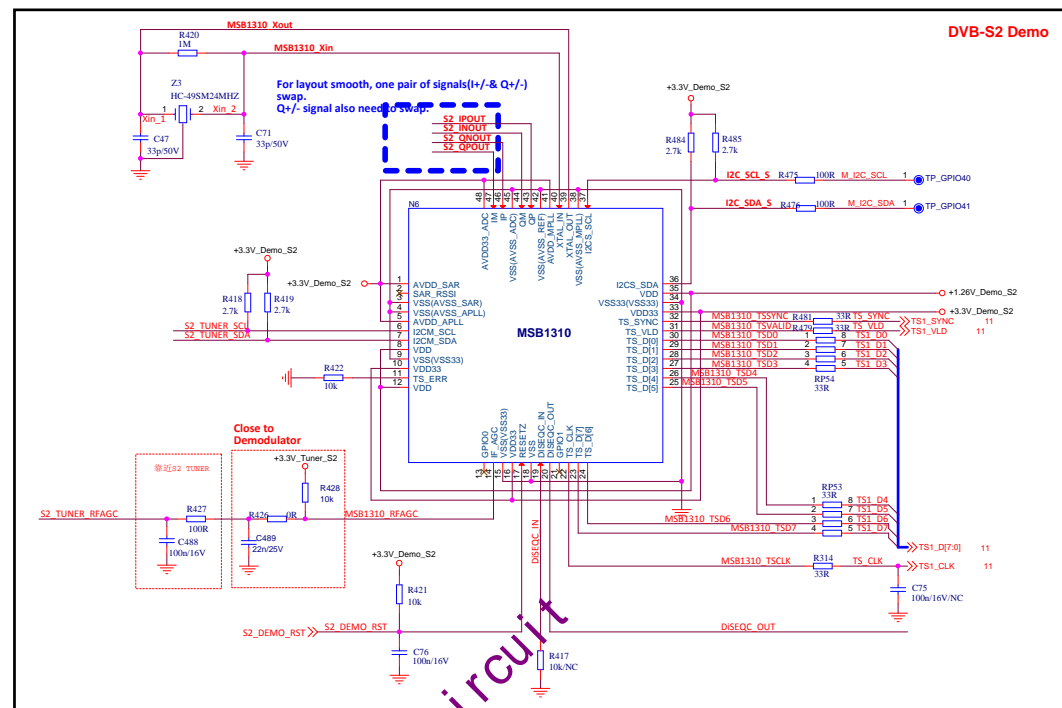
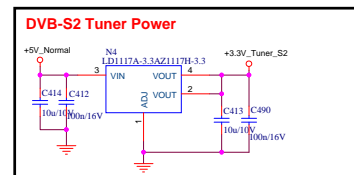
6. Circuit instruction

Power assign and Main board signal process

7. Schematic circuit diagram

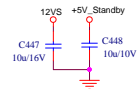
8. Explode View



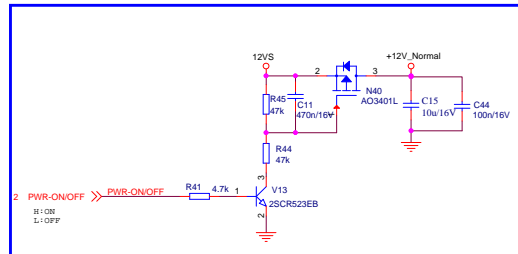


Power Input

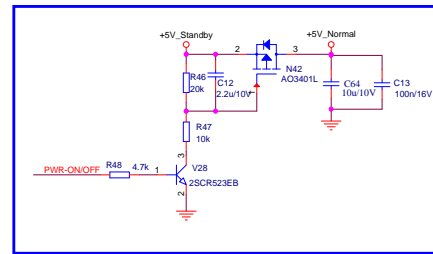
14 BL-ON/OFF <>> BL-ON/OFF
14 BL-ADJUST <>> BL-ADJUST



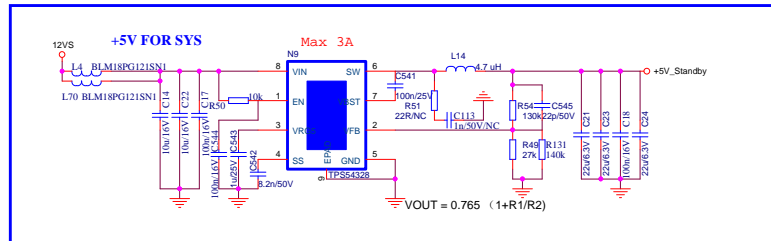
12V Stanby Switch



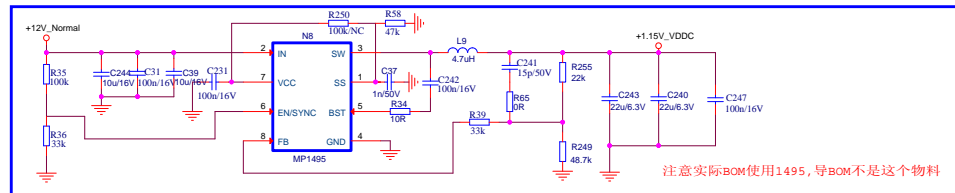
5V Stanby Switch



5V Power-12V/5V

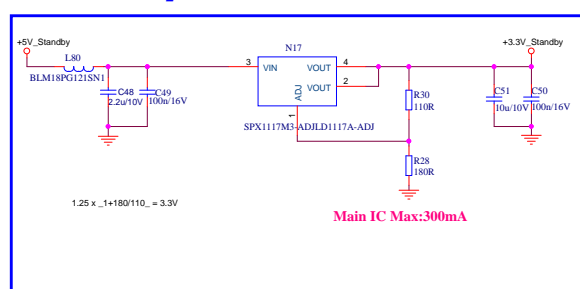


Core Power 1.15V-MP1495(3A)



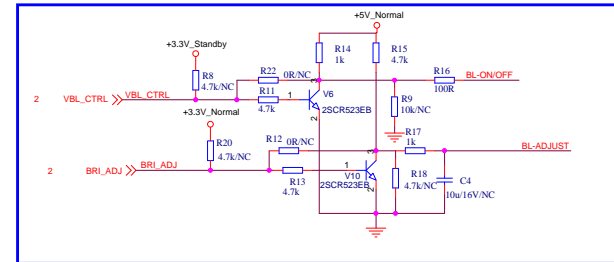
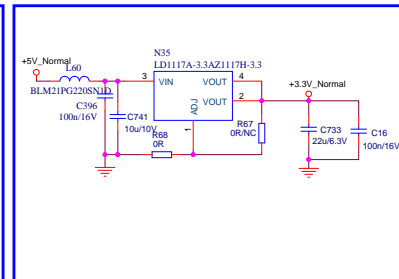
注意实际BOM使用1495, 导BOM不是这个物料

3.3V Standby Power

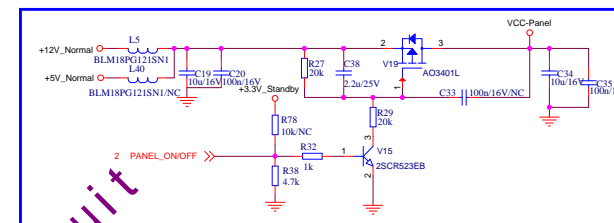


Main IC Max:300mA

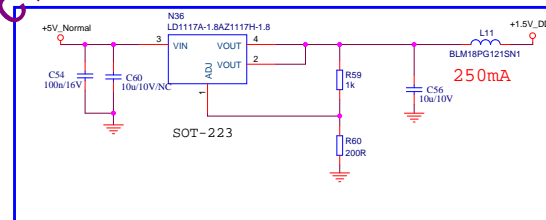
3.3V Normal Power



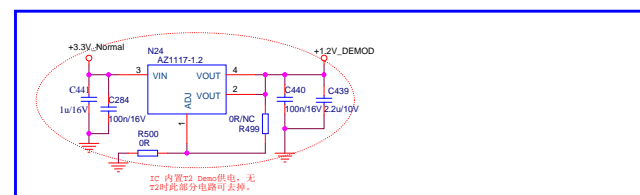
Power for Panel



5V Normal Power for DDR3



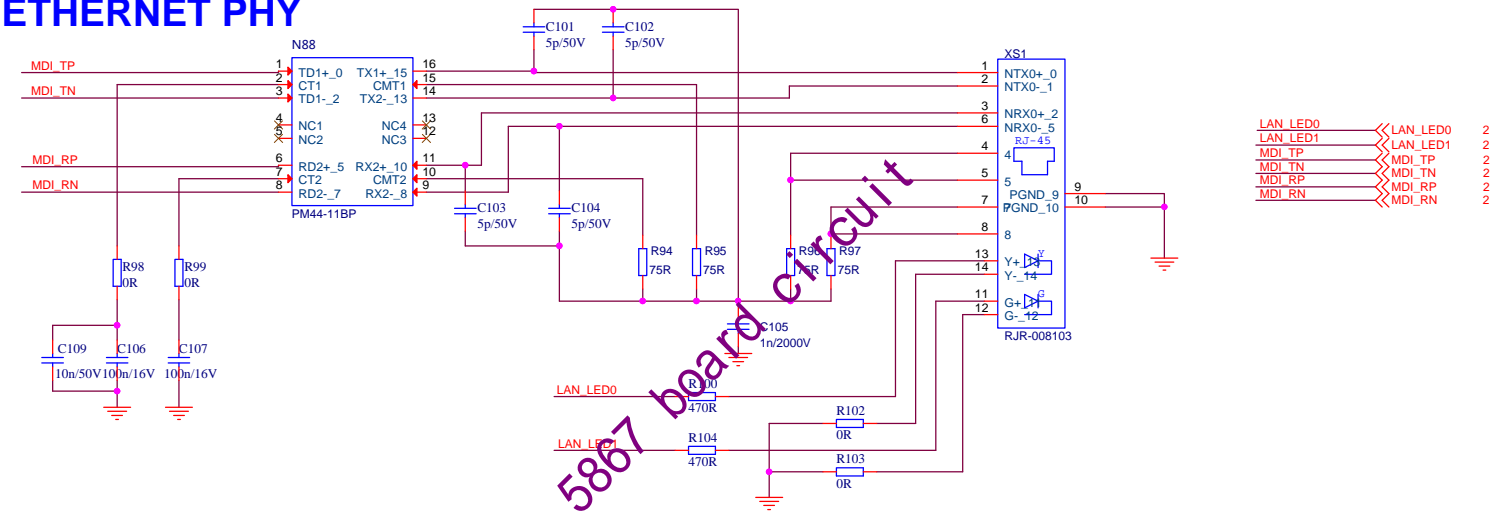
1.2V Demod Power

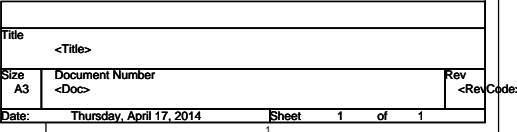


IC 内置2.2V Demod供电, 无2.2V时此部分电路可去除。

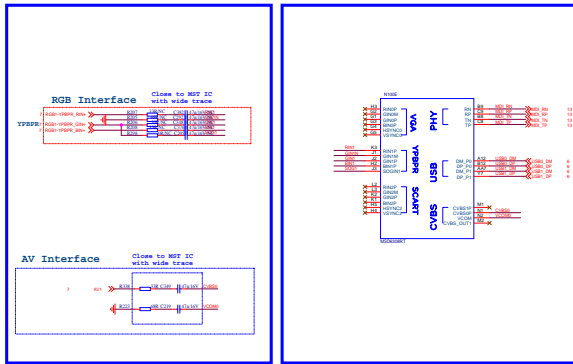
M1 MARK M2 MARK M3 MARK M4 MARK

ETHERNET PHY

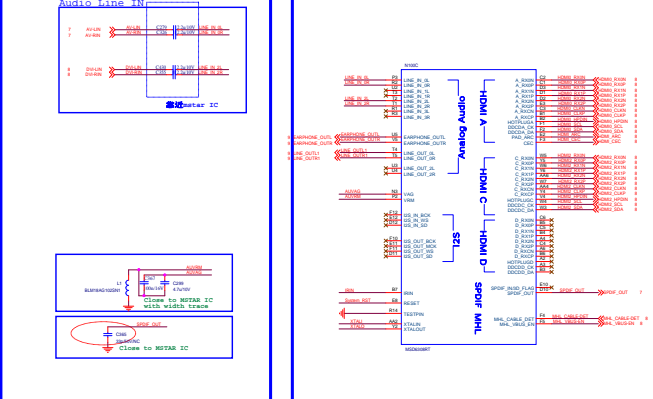




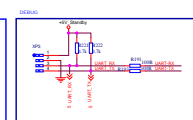
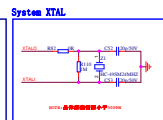
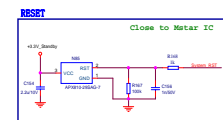
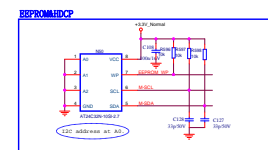
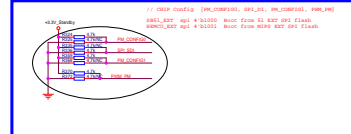
video



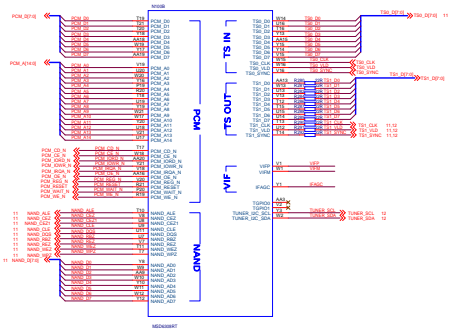
HDMI & Audio



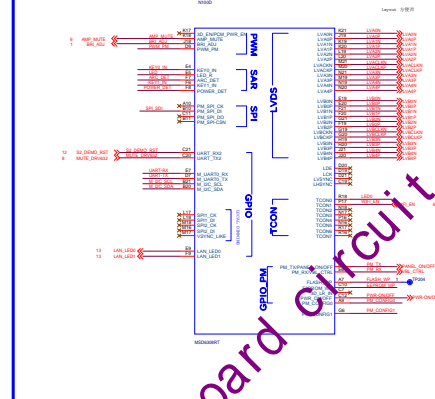
Mode Selection



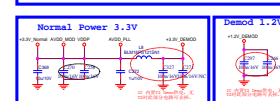
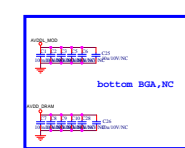
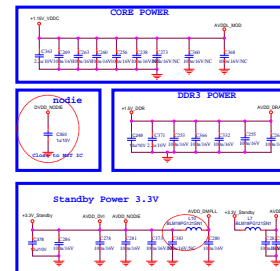
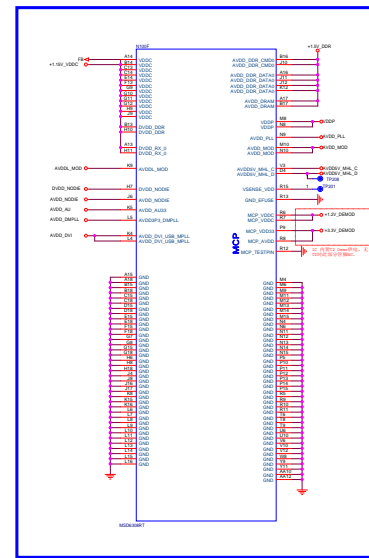
NAND & CI & TS & Front End



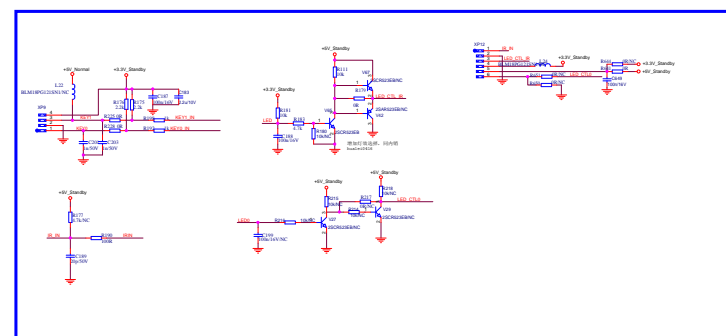
GPIO & LVDS



POWER&GND

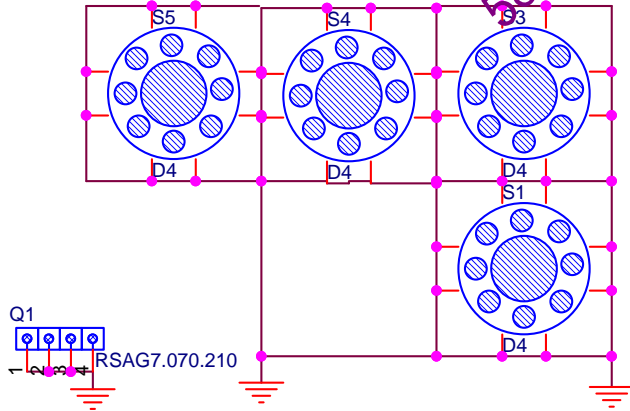
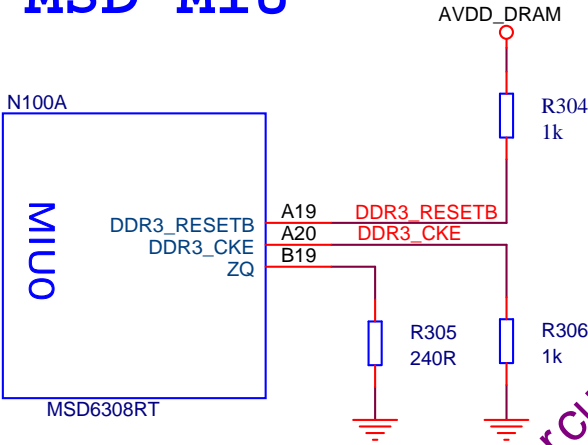


KEY PAD& IR



5867 board circuit

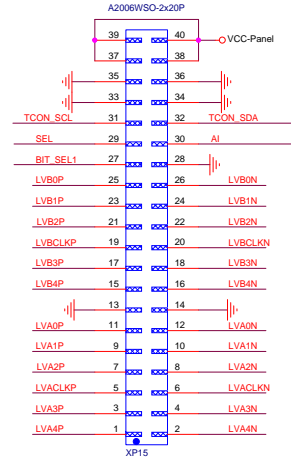
MSD MIU



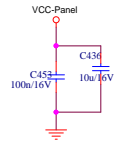
Hisense Electric Co.,Ltd.
No.11,Jiangxi Road,Qingdao,China
WWW.HISENSE.COM

Title Hisense MSD6308RT		
Size A	Schematic Name <Doc>	Rev 1.0
Date: Thursday, April 17, 2014	Sheet 3	of 12

LVDS PORT

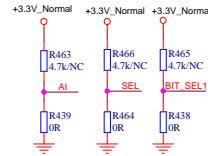
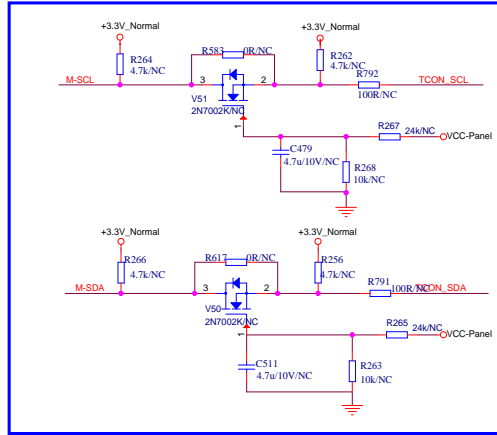


Power decouple



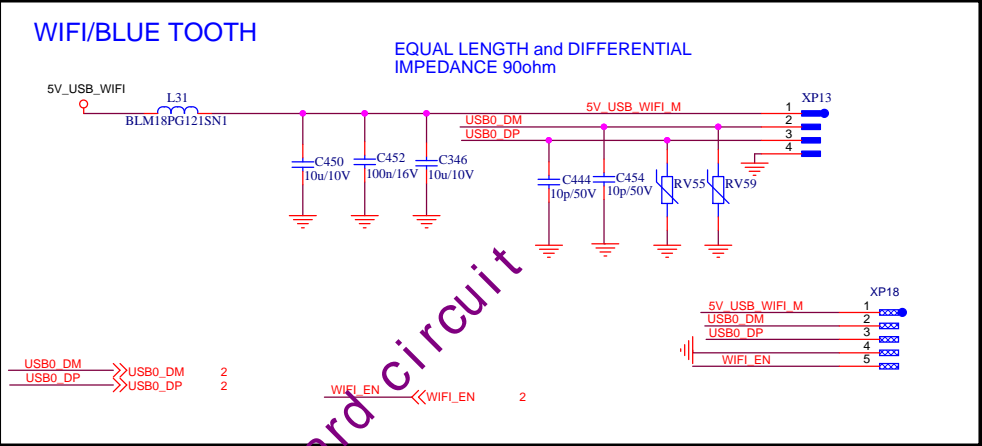
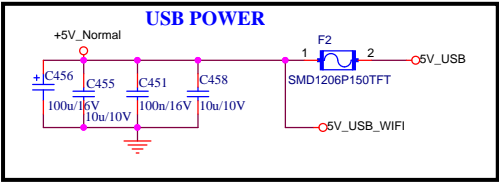
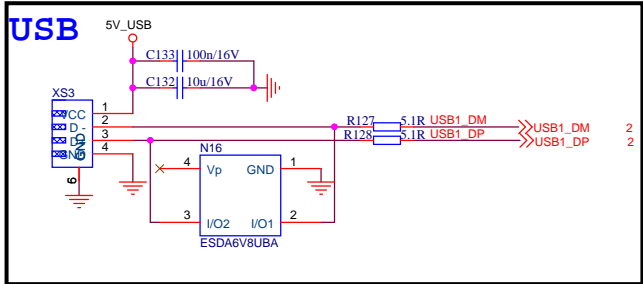
Note: 靠近LVDS插座

LVA0N	LVA0N	2
LVA0P	LVA0P	2
LVA1N	LVA1N	2
LVA1P	LVA1P	2
LVA2N	LVA2N	2
LVA2P	LVA2P	2
LVA3N	LVA3N	2
LVA3P	LVA3P	2
LVA4N	LVA4N	2
LVA4P	LVA4P	2
LVB0N	LVB0N	2
LVB0P	LVB0P	2
LVB1N	LVB1N	2
LVB1P	LVB1P	2
LVB2N	LVB2N	2
LVB2P	LVB2P	2
LVB3N	LVB3N	2
LVB3P	LVB3P	2
LVB4N	LVB4N	2
LVB4P	LVB4P	2
M-SCL	M-SCL	2,9
M-SDA	M-SDA	2,9

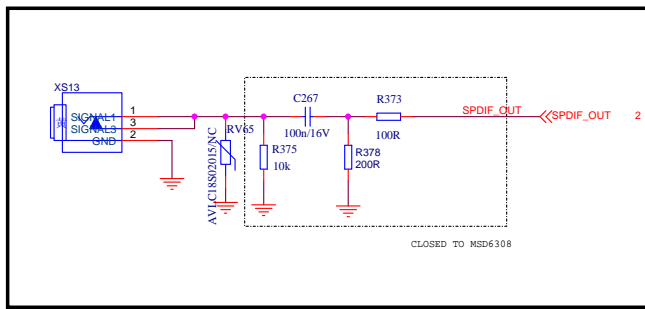


5867 board circuit

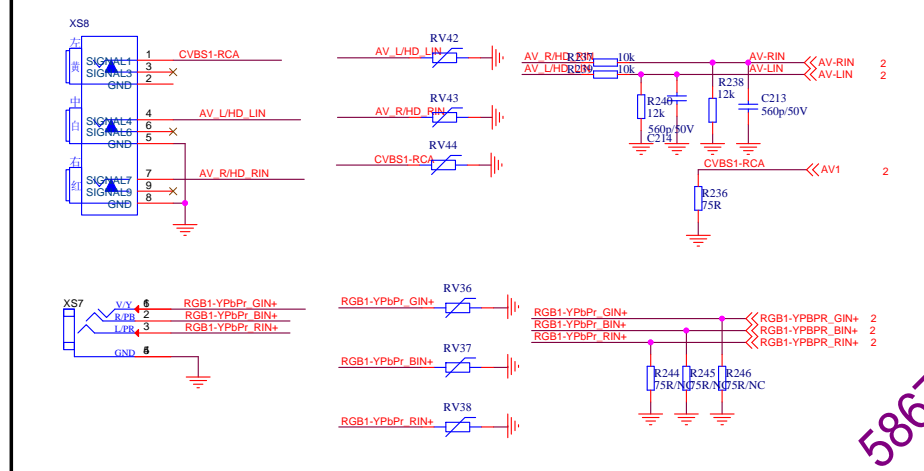
USB INTERFACE



COAXIAL OUT



HDTV & AV Input



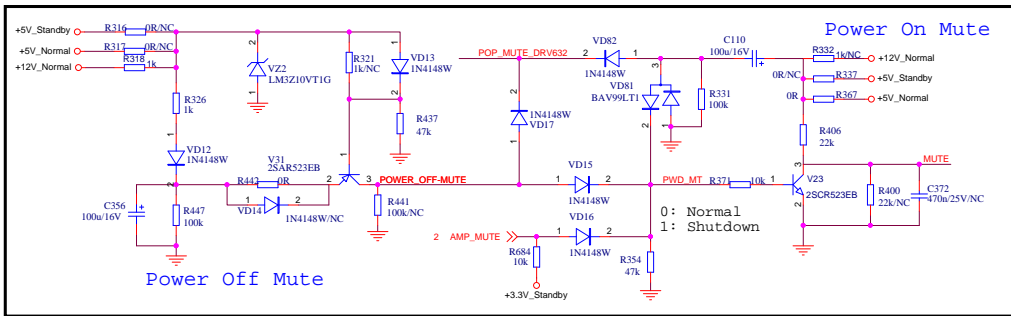
5867 board circuit

Diagram illustrating the MHL CC-Sense1 circuit. The circuit includes a 5V signal source connected to a 5.1k resistor (R555) and the AVDD5V_MHL_C pin. The MHL_CC-Sense1 pin is connected to a 300k resistor (R557) and a 47nF capacitor (C42) to ground. The MHL_Cable_DET pin is connected to a 100k resistor (R542) to the 5V source.

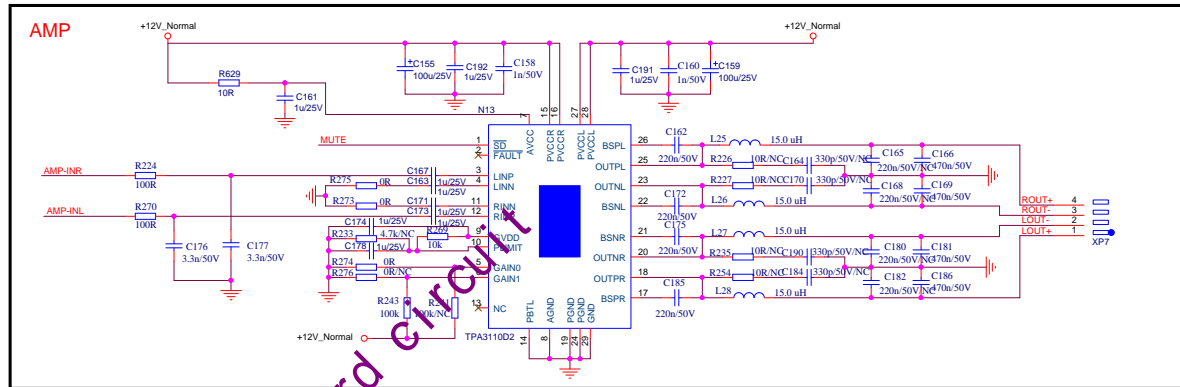
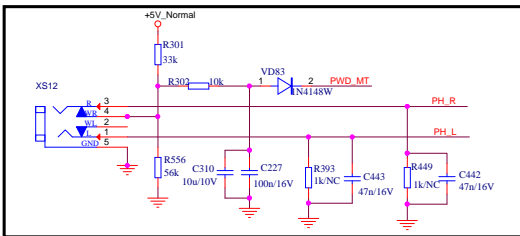
[illegible]

根據ARC所放的HDMI是

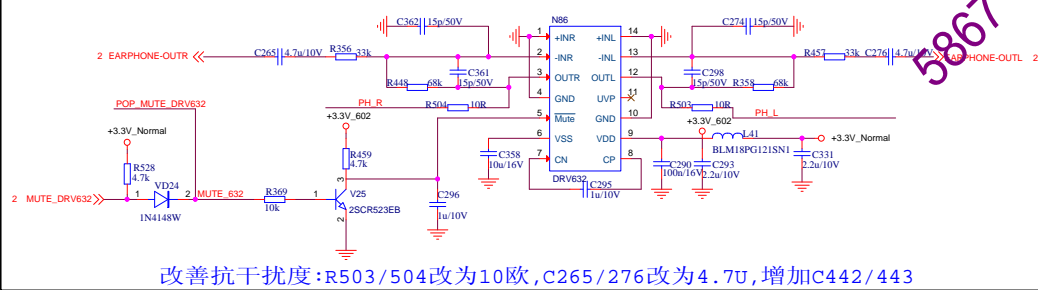
MUTE



耳机输出

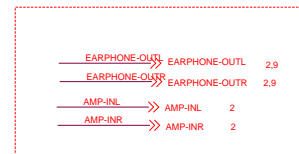


audio pre. AMP

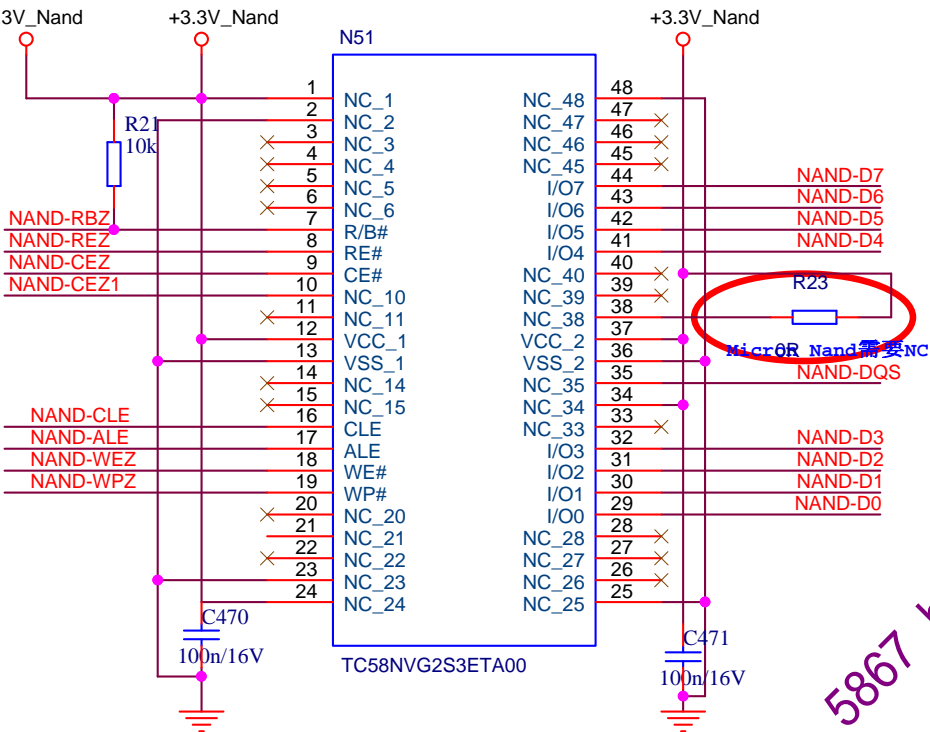


改善抗干扰度:R503/504改为10欧,C265/276改为4.7u,增加C442/443

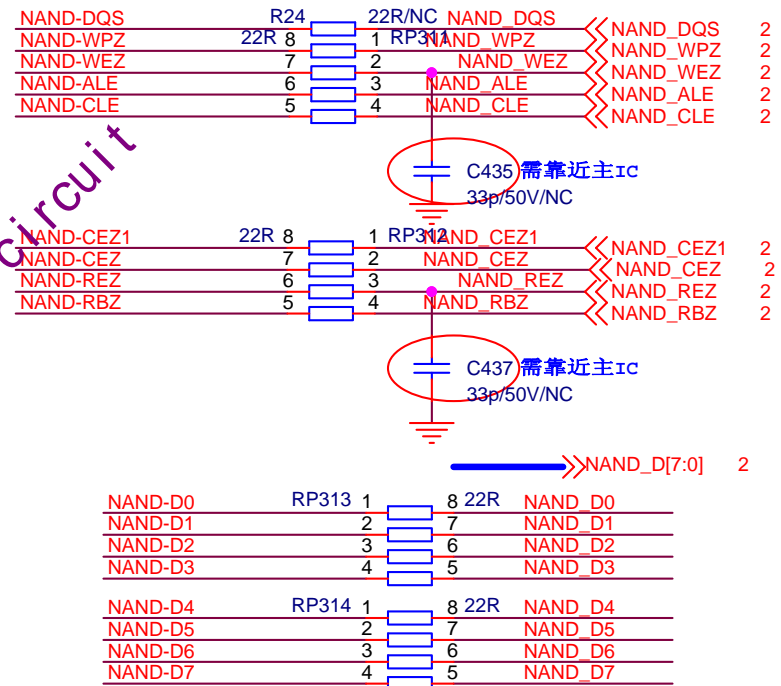
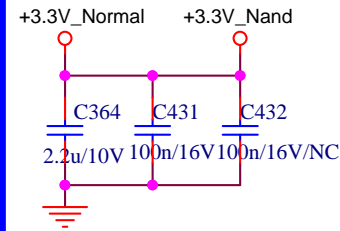
AUDIO IN



NAND FLASH



NAND Power



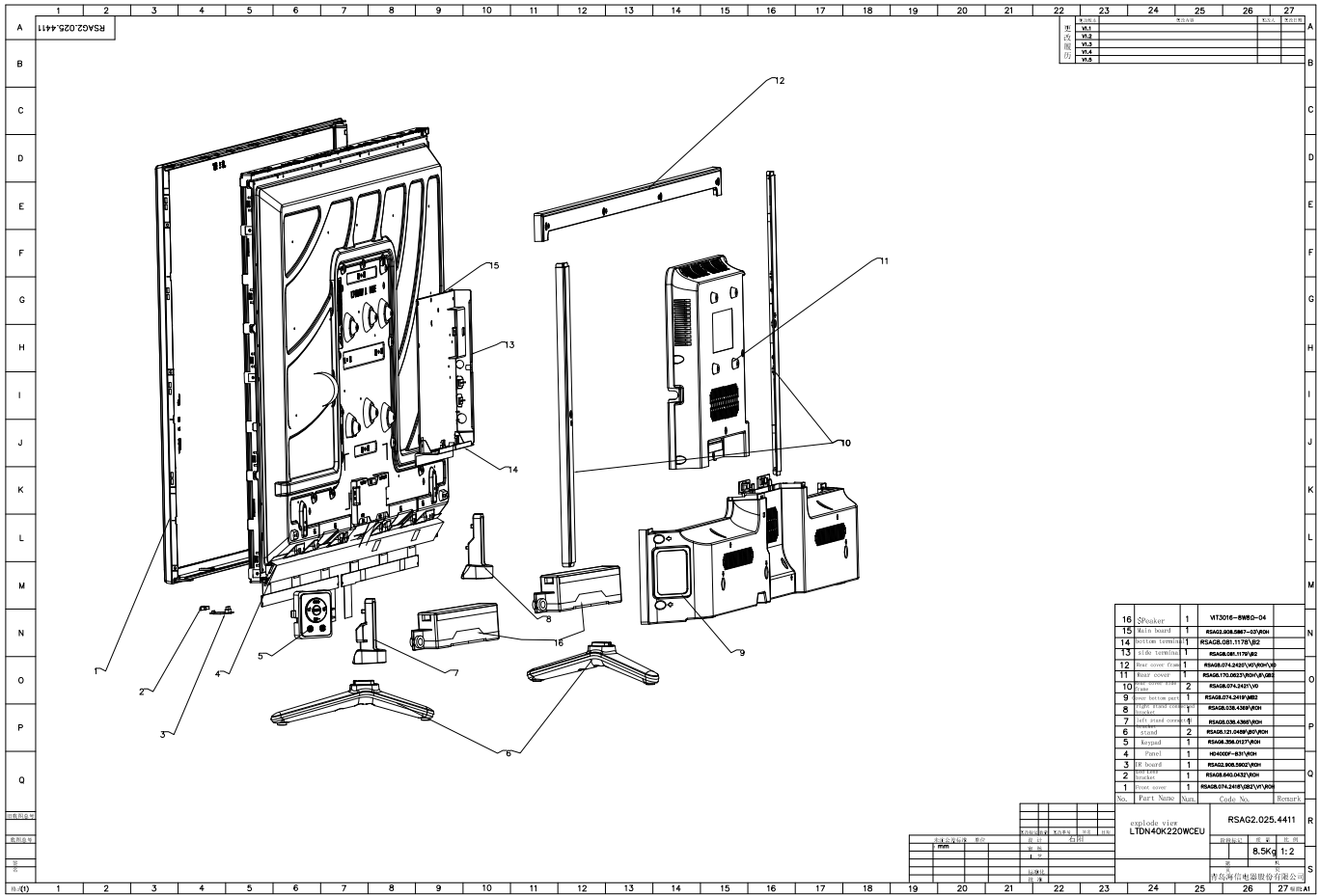
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Size	Schematic Name
A	<Doc>

Rev
1.0

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No.	Part Name	Qty	Code No.	Remark
16	Speaker	1	MT2016-BWBD-04	
15	Bezel board	1	RSAG2.025.4411-01-00H	
14	Bezel board	1	RSAG2.025.4411-01-00H	
13	Bezel board	1	RSAG2.025.4411-01-00H	
12	Bezel board	1	RSAG2.025.4411-01-00H	
11	Bezel board	1	RSAG2.025.4411-01-00H	
10	Bezel board	2	RSAG2.025.4411-01-00H	
9	Bezel board	1	RSAG2.025.4411-01-00H	
8	Bezel board	1	RSAG2.025.4411-01-00H	
7	Bezel board	1	RSAG2.025.4411-01-00H	
6	Bezel board	2	RSAG2.025.4411-01-00H	
5	Bezel board	1	RSAG2.025.4411-01-00H	
4	Bezel board	1	RSAG2.025.4411-01-00H	
3	Bezel board	1	RSAG2.025.4411-01-00H	
2	Bezel board	1	RSAG2.025.4411-01-00H	
1	Bezel board	1	RSAG2.025.4411-01-00H	

No.	Part Name	Qty	Code No.	Remark
16	Speaker	1	MT2016-BWBD-04	
15	Bezel board	1	RSAG2.025.4411-01-00H	
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13	Bezel board	1	RSAG2.025.4411-01-00H	
12	Bezel board	1	RSAG2.025.4411-01-00H	
11	Bezel board	1	RSAG2.025.4411-01-00H	
10	Bezel board	2	RSAG2.025.4411-01-00H	
9	Bezel board	1	RSAG2.025.4411-01-00H	
8	Bezel board	1	RSAG2.025.4411-01-00H	
7	Bezel board	1	RSAG2.025.4411-01-00H	
6	Bezel board	2	RSAG2.025.4411-01-00H	
5	Bezel board	1	RSAG2.025.4411-01-00H	
4	Bezel board	1	RSAG2.025.4411-01-00H	
3	Bezel board	1	RSAG2.025.4411-01-00H	
2	Bezel board	1	RSAG2.025.4411-01-00H	
1	Bezel board	1	RSAG2.025.4411-01-00H	

exploded view
LTD40K220WCEU
RSAG2.025.4411
8.5kg 1:2
青岛海信电器股份有限公司

[illegible]