

LCD Television

Service Manual

Chassis: MSD6308

Product: LHD32K260AM

Ver 1.0

Hisense Electric Co., Ltd.

June 9 , 2015

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REVISION HISTROY				
Version	Page	Section	Description	Date
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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.
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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.

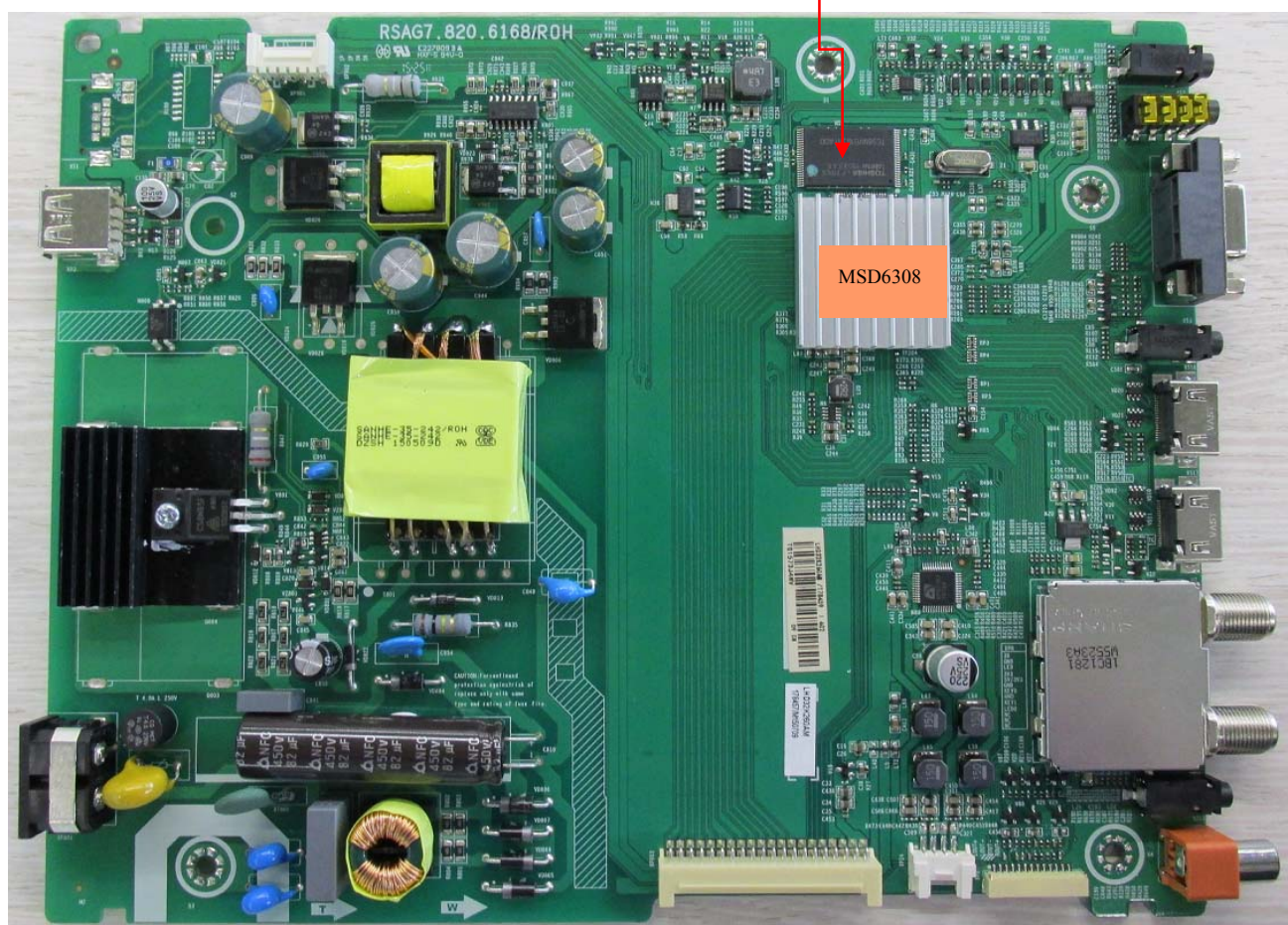
2. Product Specifications

2.1 Main board layout

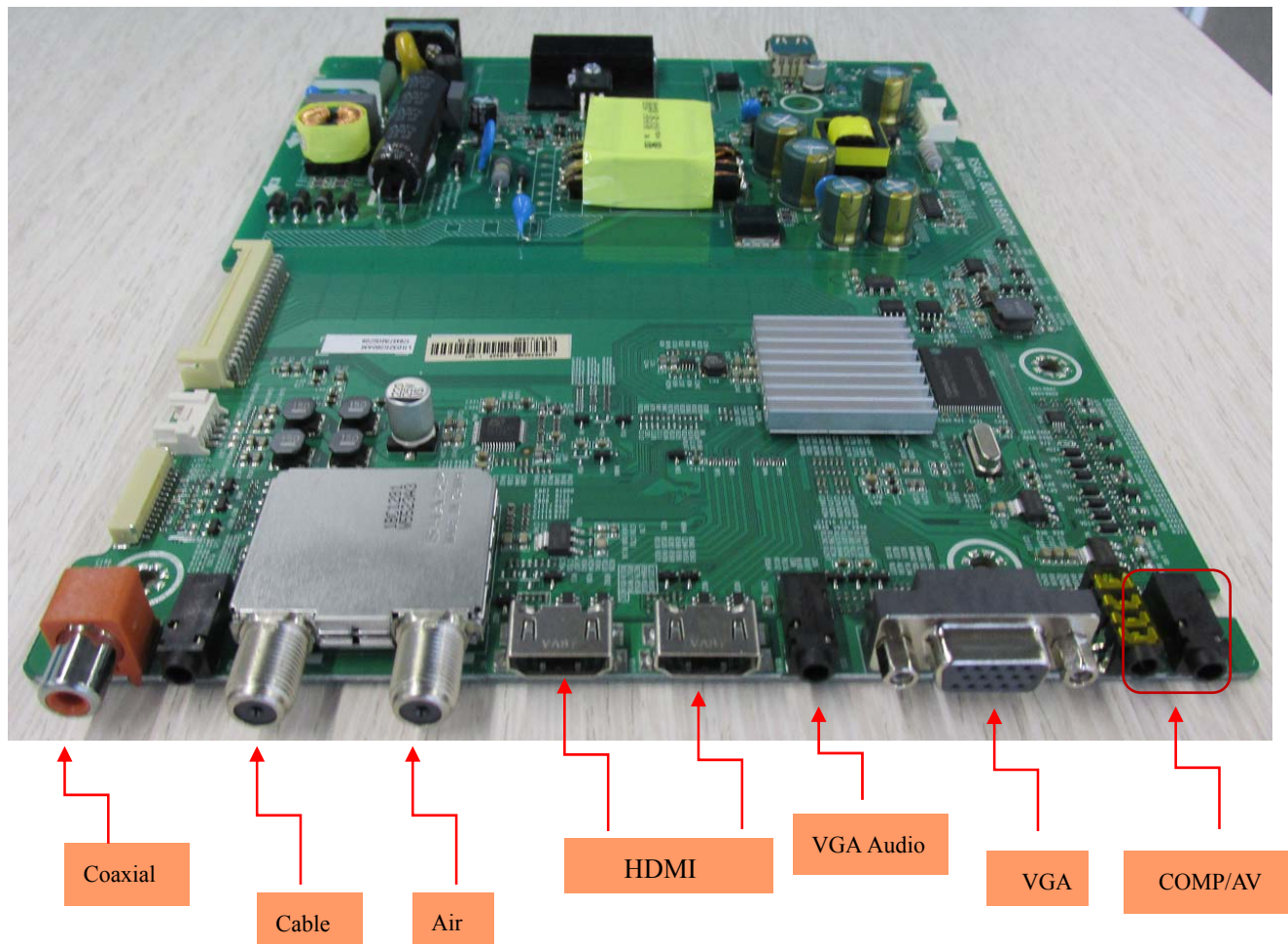
2.1.1 Main board: 6012

Take LHD32K260AM (6168) for example.

Top:



Side terminals:

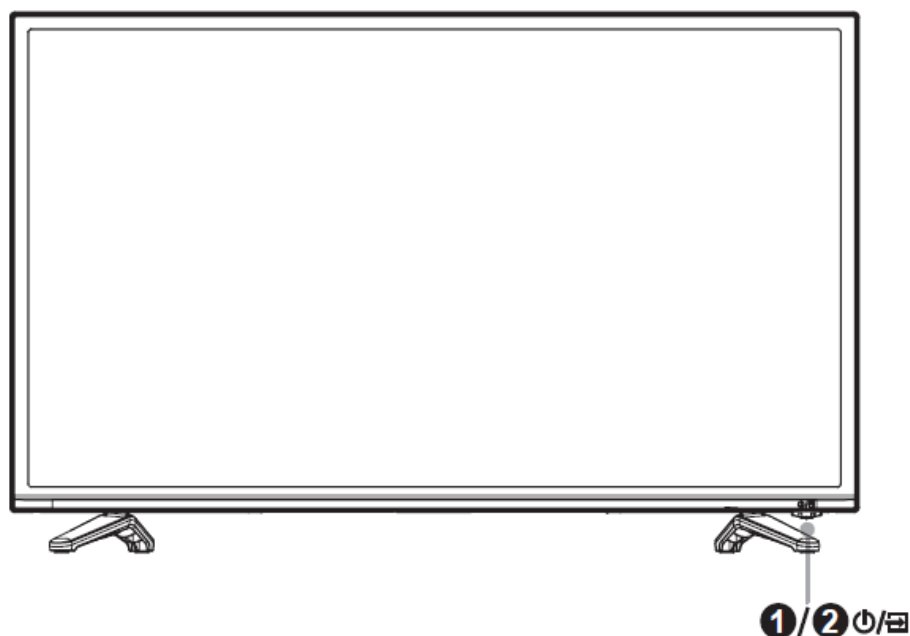




Side terminals:



2.2 TV Front and TV Rear

LHD32K260AM TV Front:

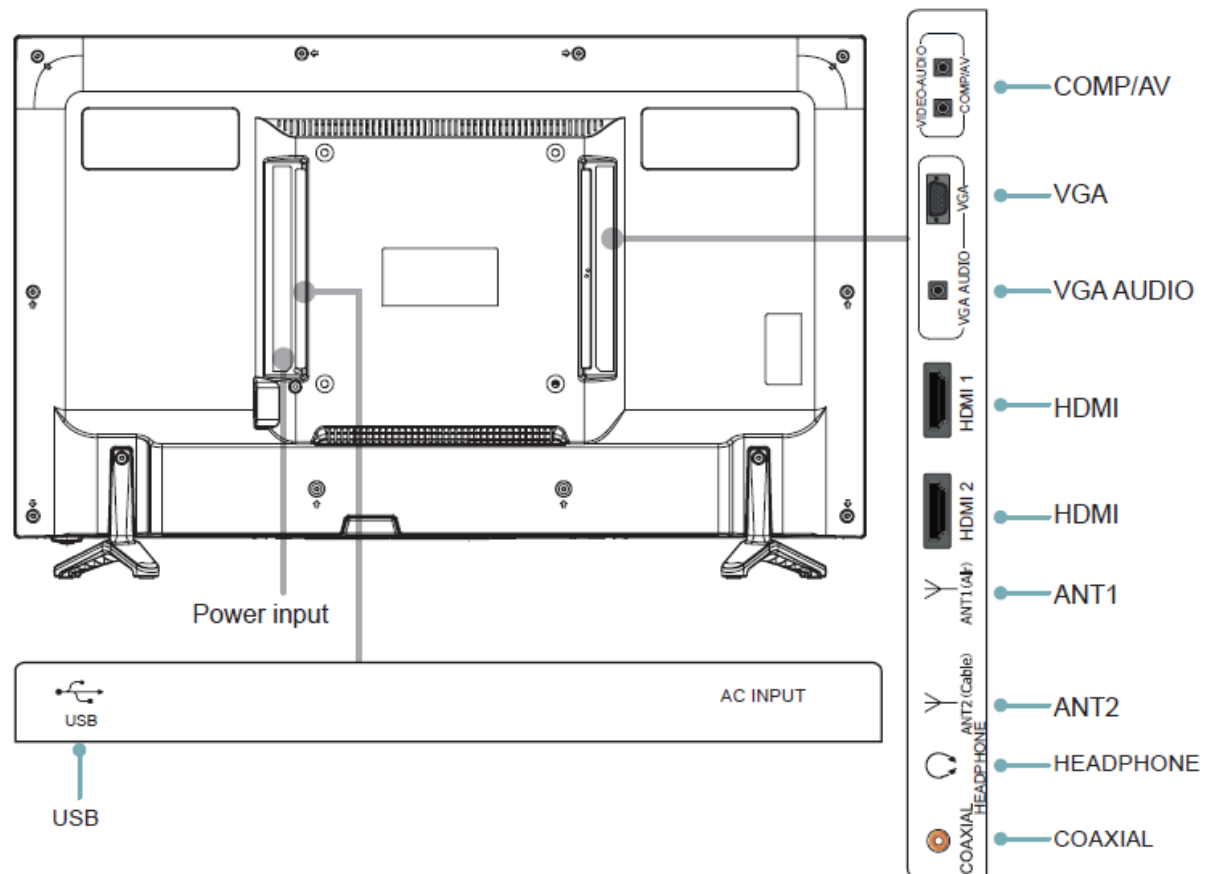


<i>Item</i>		<i>Description</i>
1	Remote sensor	Receives remote signals from the remote control. Do not put anything near the sensor, as its function may be affected.
2	STANDBY  /SOURCE 	In power off mode, press to turn on the TV. In power on mode, press to select among the different sources, press for a few seconds to turn off the TV.

NOTES

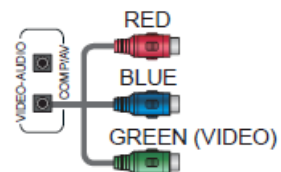
- FOR ILLUSTRATION ONLY.
- Powering up or down the TV requires several seconds of processing time. Do not rapidly turn the TV on/off as abnormal operation may occur.

LHD32K260AM TV Rear



NOTE

- Connect to AV, please use the red, blue, green HD adapter cable, and the green connector corresponds to VIDEO.



2.3 Spec.

LHD32K260AM

Model Name		LHD32K260AM
Dimension (mm)	Without Stand	738 × 435 × 89
	With Stand	738 × 470 × 171
Weight(kg)	Without Stand	4.6
	With Stand	4.8
LCD Panel Minimum size (diagonal)		32 inches (80 cm)
Screen resolution		1366 x 768
Audio power		6W + 6 W
Power consumption		50 W
Power supply		AC 100-240 V, 50/60 Hz
Receiving systems	RF	PAL-M/N, NTSC, ISDB-T
	AV	PAL, NTSC
Environmental conditions		Temperature: 5°C~ 45°C Humidity: 20%-80% RH Atmospheric pressure: 86 kPa - 106 kPa
Component Input		480 I / 60 Hz, 480 P / 60 Hz, 720 P / 60 Hz, 1080 I / 60 Hz, 1080 P / 60 Hz
VGA Input		VGA (640×480 / 60 Hz), SVGA (800×600 / 60 Hz), XGA (1024×768 / 60 Hz)
HDMI Input		RGB / 60 Hz (640×480, 800×600, 1024×768) YUV / 60 Hz (480 I, 480 P, 720 P, 1080 I, 1080 P)

2.4 TV main Parts

TV	Panel Mode	LVDS (Main-Panel)	Main board &Power board	Chassis
LHD32K260AM	HD315DH-F13	HX2-2×20KLB90P\90.0\无\ROH	RSAG2. 908. 6168\ROH	MSD6308RT-A1G

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.

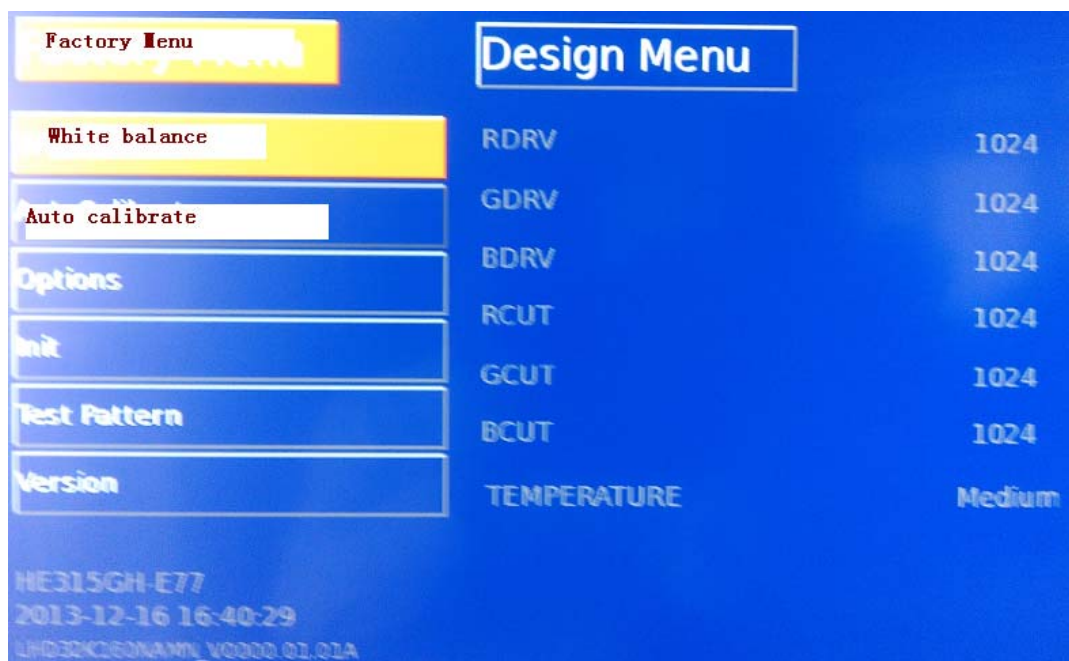
Note: Press “exit” key on the RC, which can exit factory OSD menu.

3.2 Factory OSD Menu

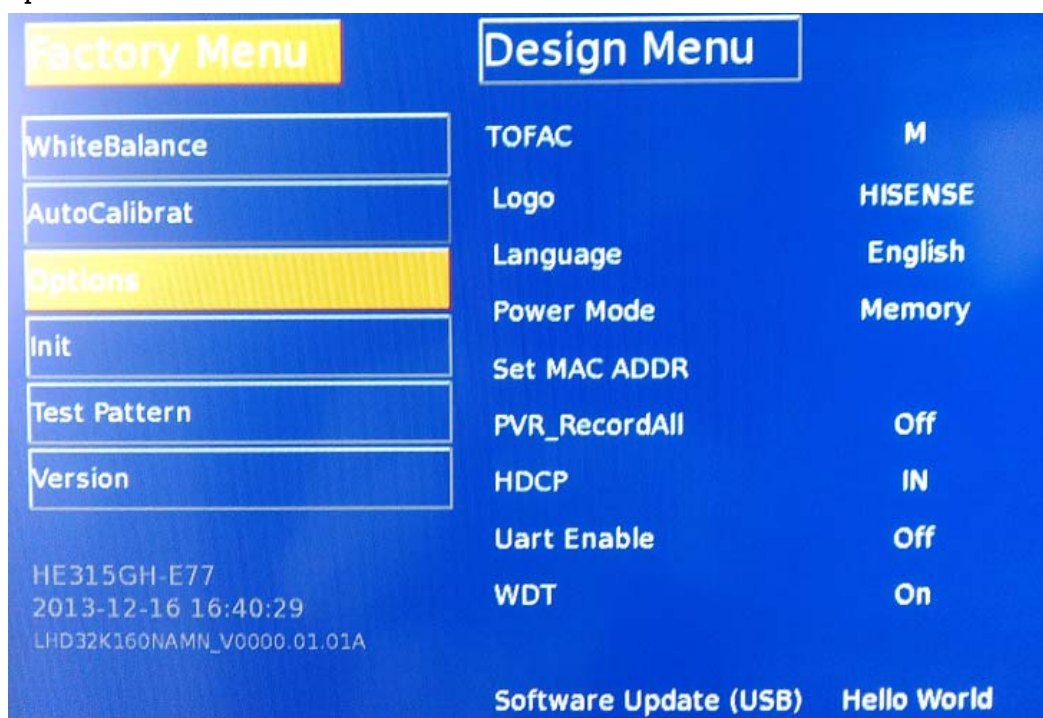
The Factory OSD Menu comprises Factory Menu and Design menu.

3.2.1、 Factory Menu

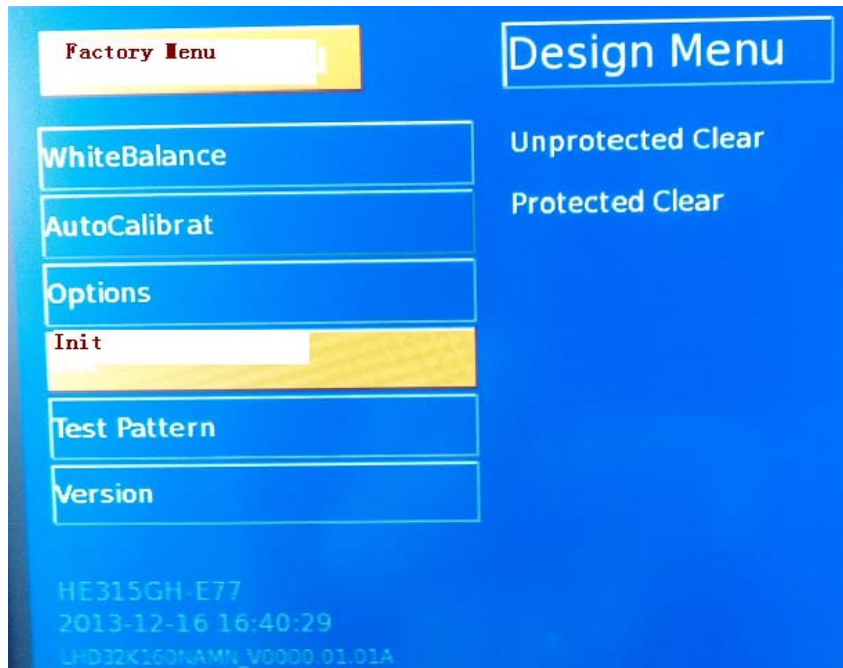
White balance:



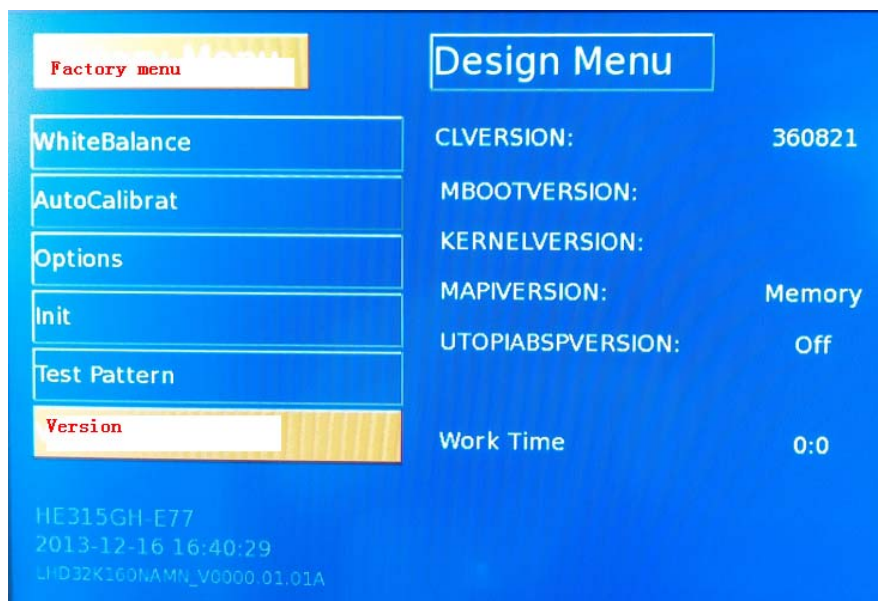
Option:



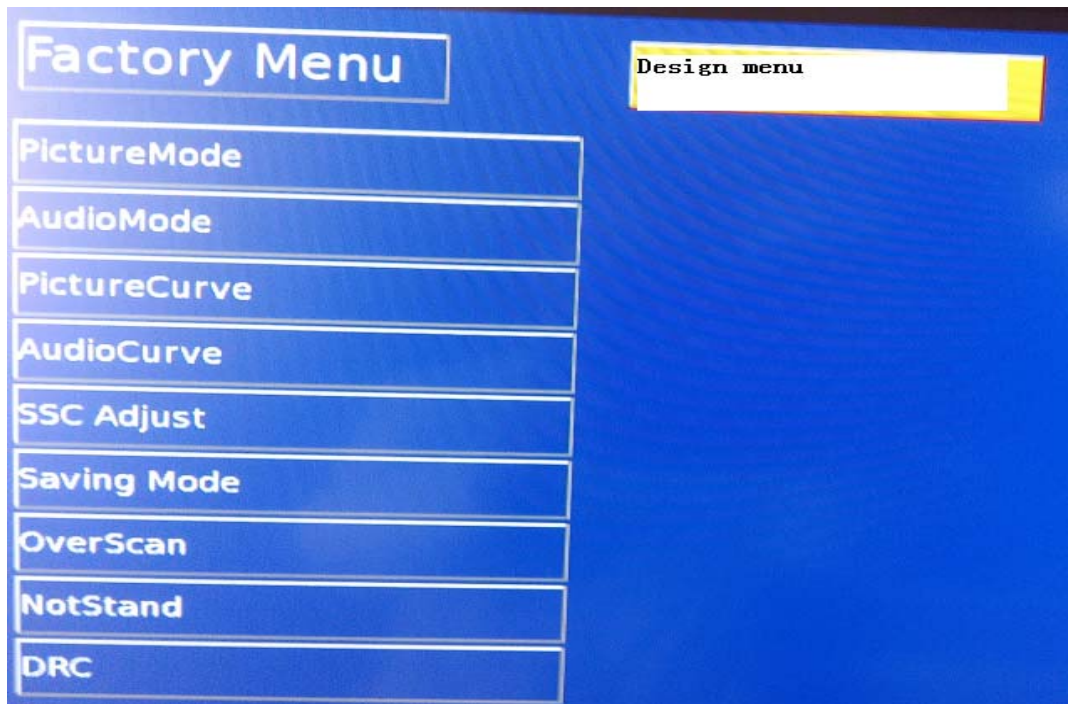
Init:



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

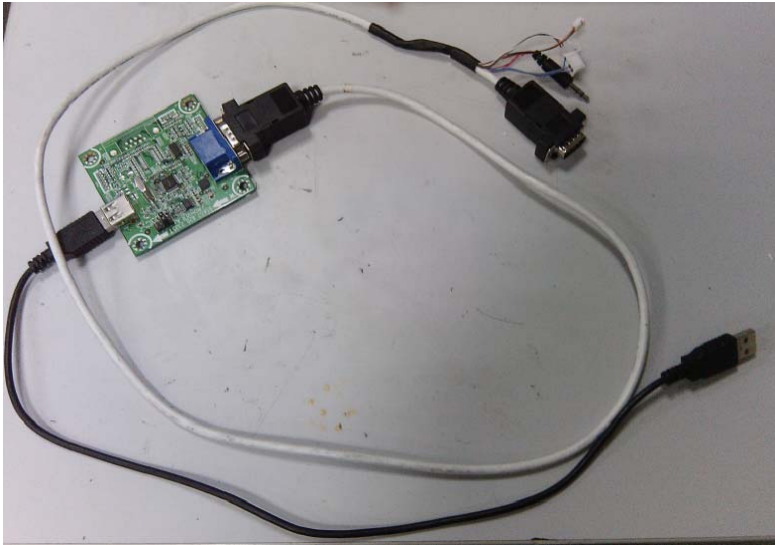
Software updating includes Mboot write and main software update. Usually first write Mboot to nand flash With (MSTV_Tool.exe) then can update main software With SecureCRT.

4.1 Updating main board with SecureCRT

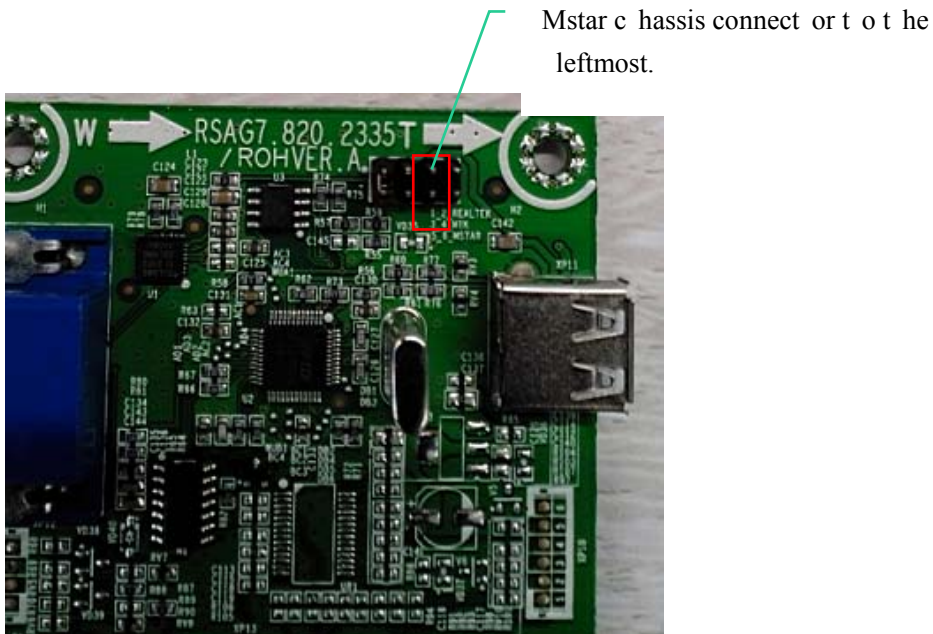
4.1.1 Hardware connecting

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

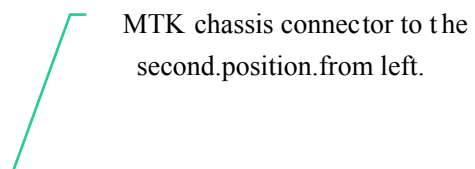
Connect the Debug board to the TV use the RS232 (4 pin), the other USB port to the PC.



For mstar chassis,the bebug boad set as following.



For MTK chassis,the bebug boad set as following.





4.1.2

First use Mstar bebug Tools, and you have to install drive software for bebug board.

If your PC is Windows XP system:

1、 First install FTCUNIN.EXE of FTC100103(MSTAR) rar file in your PC.

This is a drive software of Mstar



Another:

If your PC is Win7 system, you will have to install CDM20802_Setup_WIN7 rar file, and then open the software of SecureCRT in your PC.

Notice:

Chassis MSD6308RT-A1G belong to Mstar

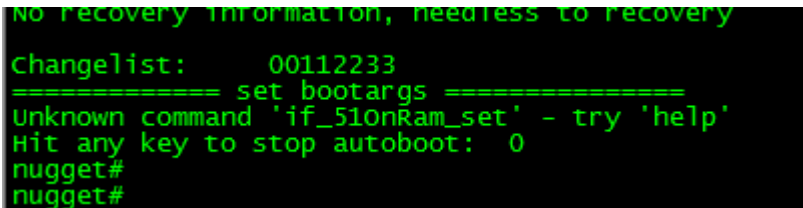
4.1.2 How to update main board with SecureCRT

. For the board which could capture logs, we can use serial command to upgrade the

USBUpgrade.bin.

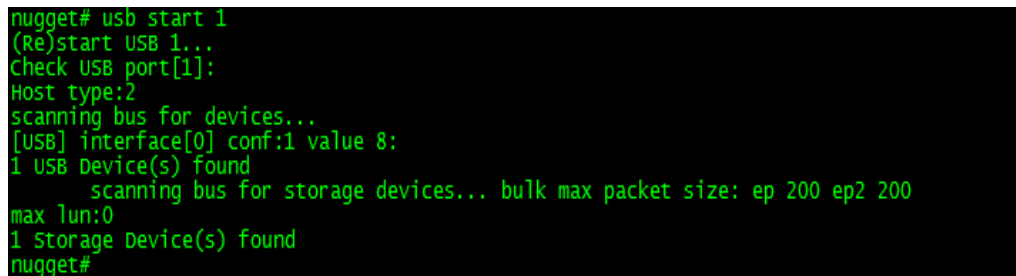
Please follow these steps:

- a) Copy the USBUpgrade.bin to the root directory of an USB disk. Insert the USB disk to the board.
- b) Connect the board with your PC via the debug tool. Open the software of SecureCRT in your PC.
- c) AC power on the board while pressing the Enter key of your PC.
- d) Check that there is a “nugget#” in the SecureCRT window.



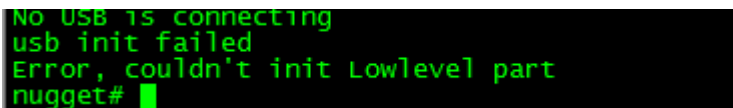
```
No recovery information, needless to recovery
Changelist:      00112233
===== set bootargs =====
Unknown command 'if_51OnRam_set' - try 'help'
Hit any key to stop autoboot:  0
nugget#
nugget#
```

- e) Input “usb start 1” and press Enter key.



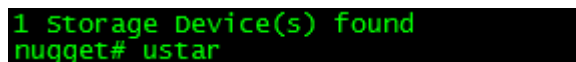
```
nugget# usb start 1
(Re)start USB 1...
Check USB port[1]:
Host type:2
scanning bus for devices...
[USB] interface[0] conf:1 value 8:
1 USB Device(s) found
    scanning bus for storage devices... bulk max packet size: ep 200 ep2 200
max lun:0
1 Storage Device(s) found
nugget#
```

Note: If it says “Error” like below picture, please input “usb start 0” and press Enter key.



```
No USB is connecting
usb init failed
Error, couldn't init Lowlevel part
nugget# █
```

- f) Input “ustar” and press Enter key.



```
1 Storage Device(s) found
nugget# ustar
```

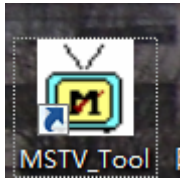
- g) It will be upgraded automatically and restart.

4.2 Write Mboot software to nand flash

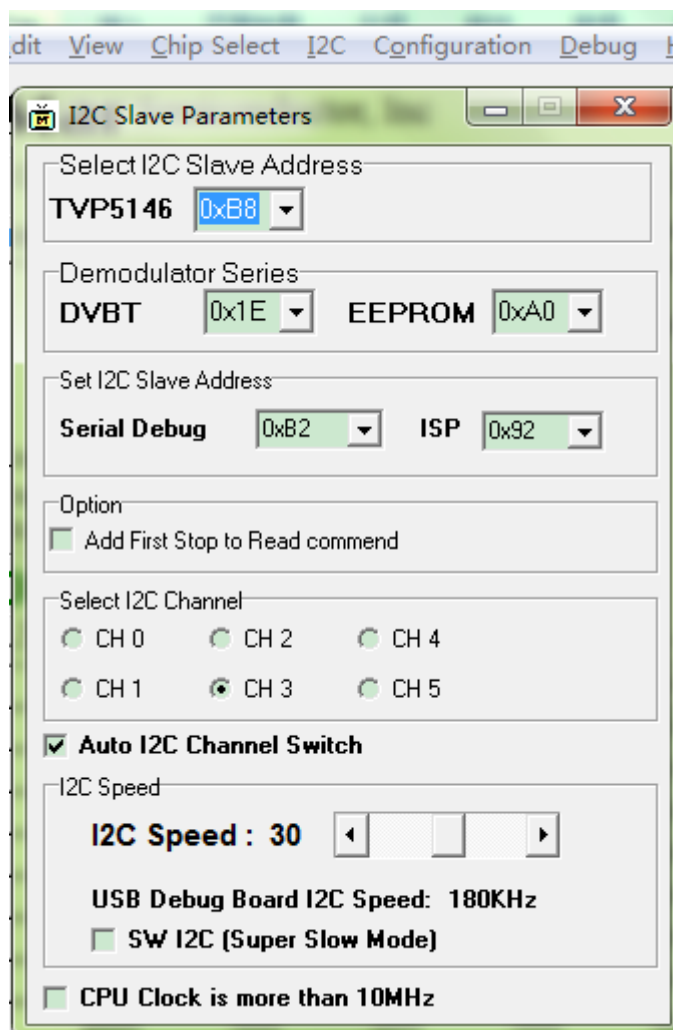
1. For the board which only says “Uart bus off”, we should write the Mboot file firstly and then upgrade the USBUpgrade.bin with serial command following section 1.

For the Mboot file please follow these steps:

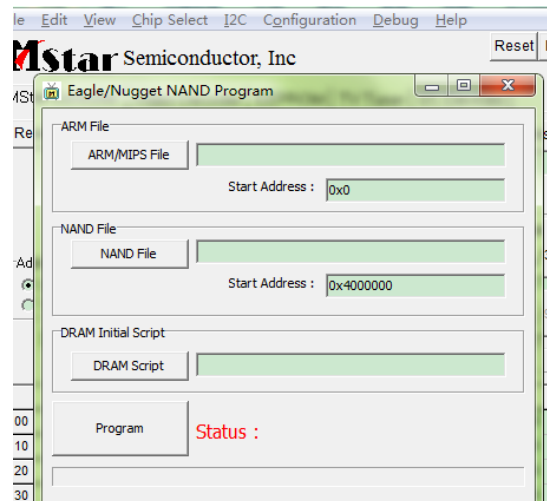
-
- a) Connect the board with your PC via the debug tool. Open the MSTV_Tool in your PC.



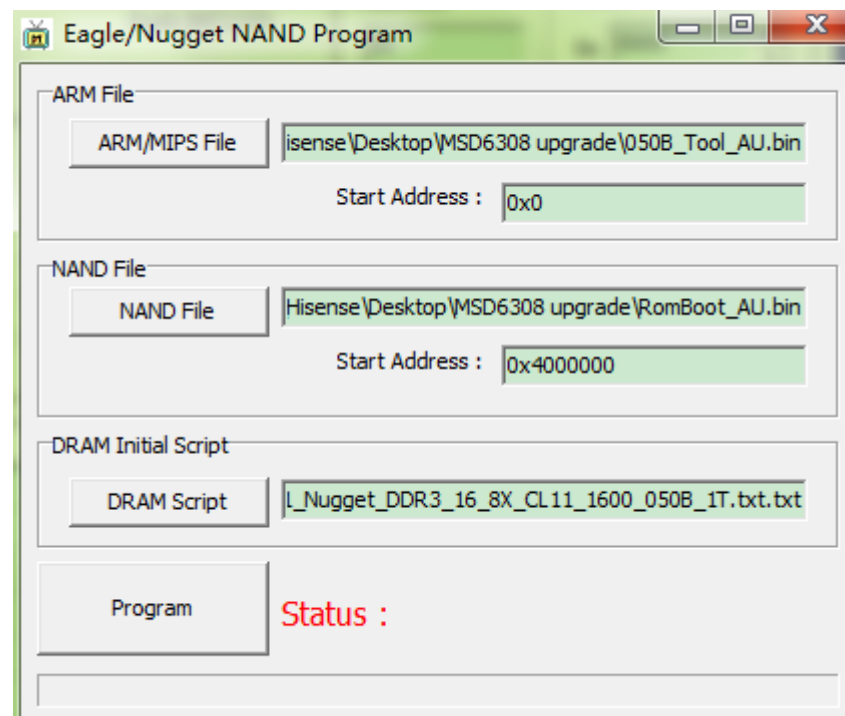
- b) Set I2C parameters.
Click I2C-> Set I2C to open the window of below and adjust the I2C Speed to 30.



- c) Load the Mboot files.
Click View->Eagle/Nugget NAND Program to open the window below.



Load the 3 files to the window as below.



- d) Click Program button above and it will write Mboot files to the Nand flash.
- e) When you see the Status become to "Status: Success, Please reset power", please wait for 2 minutes and then close the MSTV_Tool.
- f) AC power off the board.

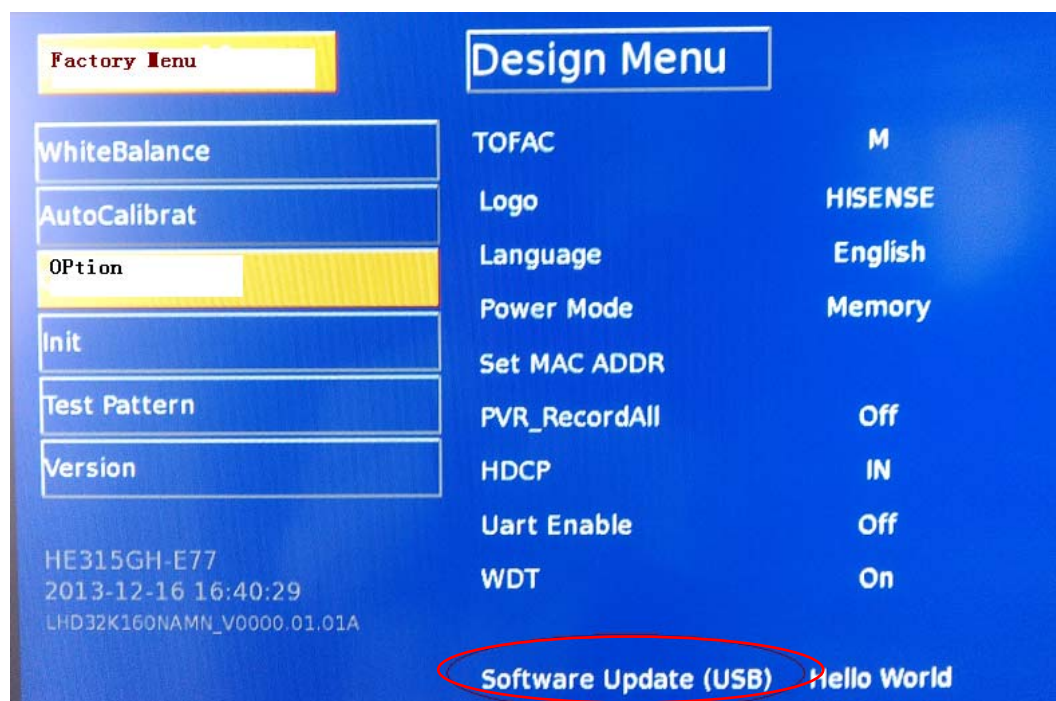
Now you can upgrade the USBUpgrade.bin file with serial command following the steps in section 1.

4.3 Upgrading with the USB disk


4.3.1 TV in normal state

1. Copy the “**USBUpgrade.bin**” file that MBoot and main software named to the root directory of two USB disks respectively.
2. Insert the USB disk into the USB slot of the TV SET.
3. Press “Menu” button of remote control and call up Factory OSD Menu, choose "OPTION "->"Software Update(USB)" item.

Detail see 3.1 ***How to enter the Factory OSD Menu***



4. Press the  key on RC, 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.

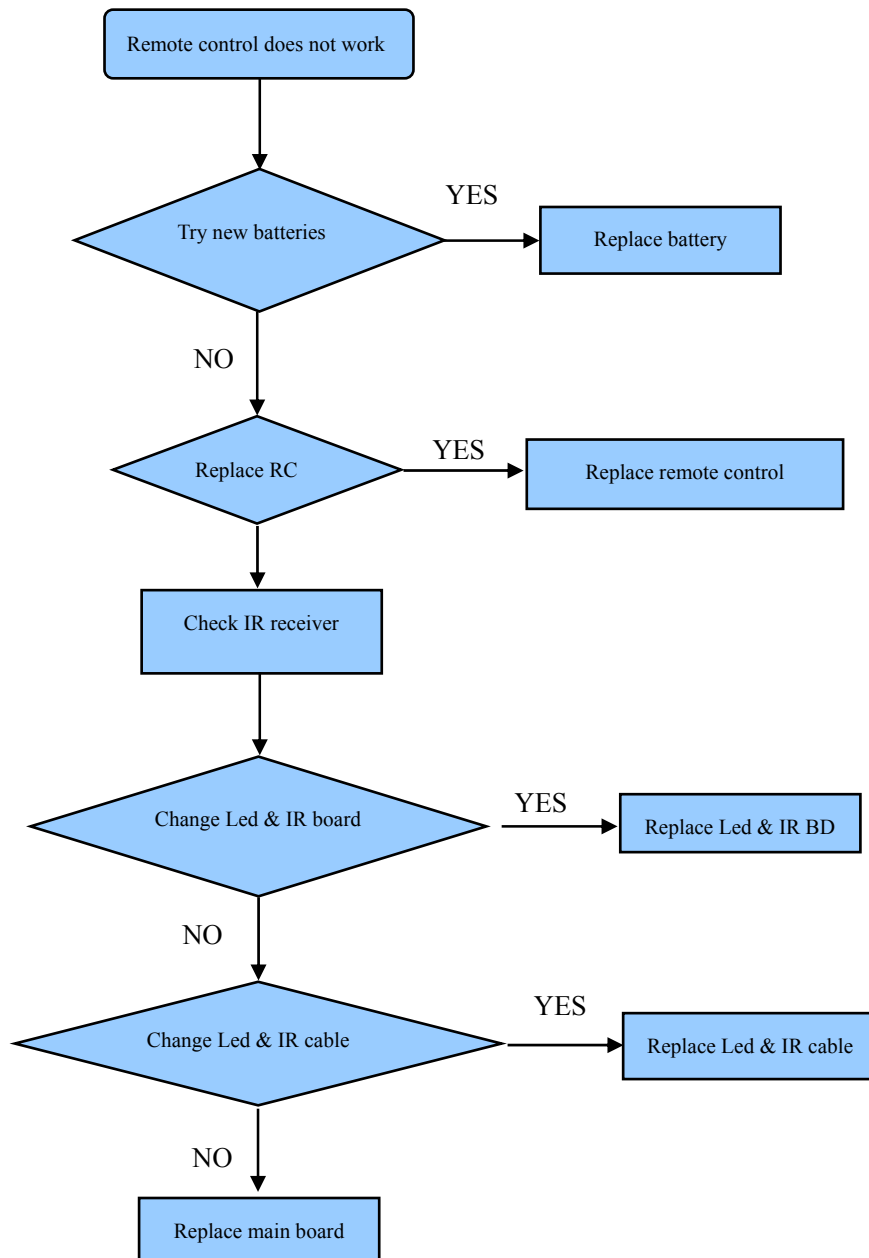
5. Then it will update the software automatically, Please don't power off during the updating process.



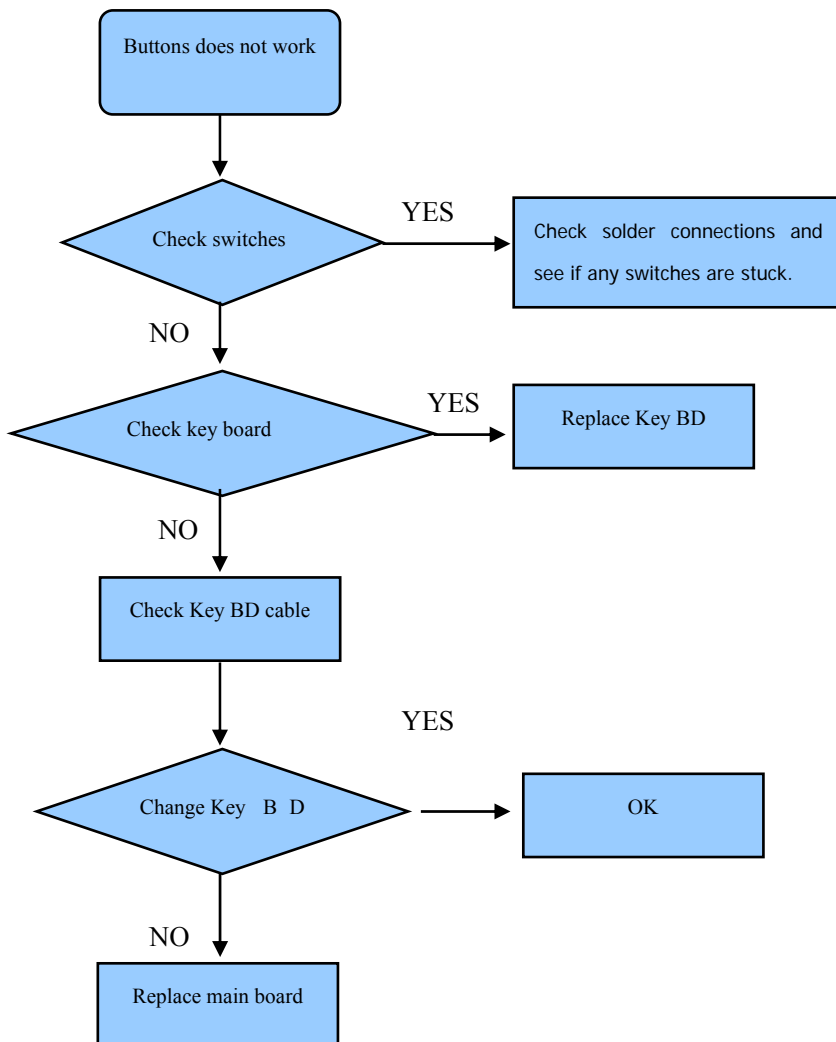
6. After update succeeds, TV SET will restart automatically.
7. First update the Boot software, second update the main software. In order to convenience, prepare two USB disks to save different software respectively.

5.Troubleshooting

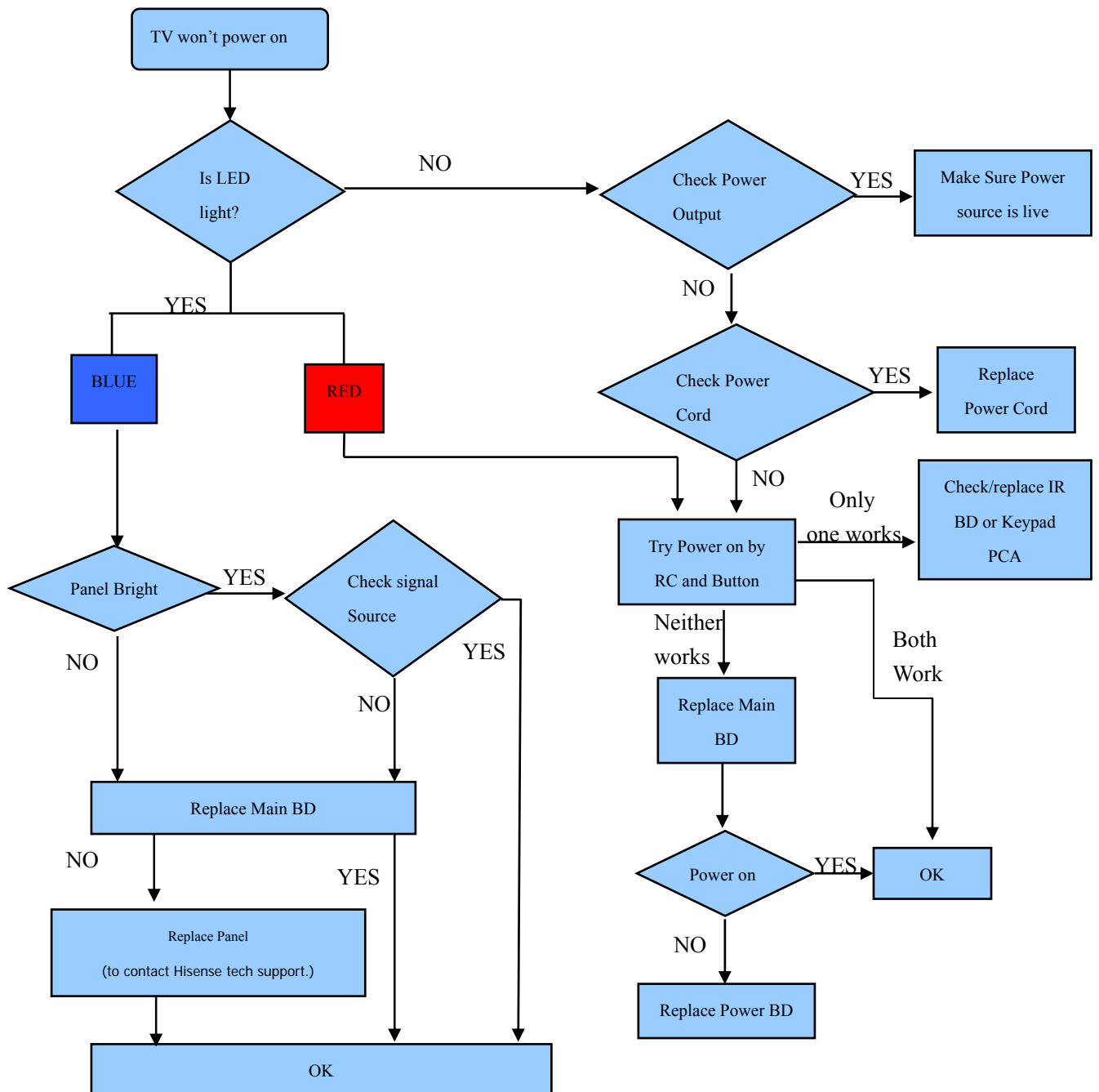
5.1 Troubleshooting for Remote Control



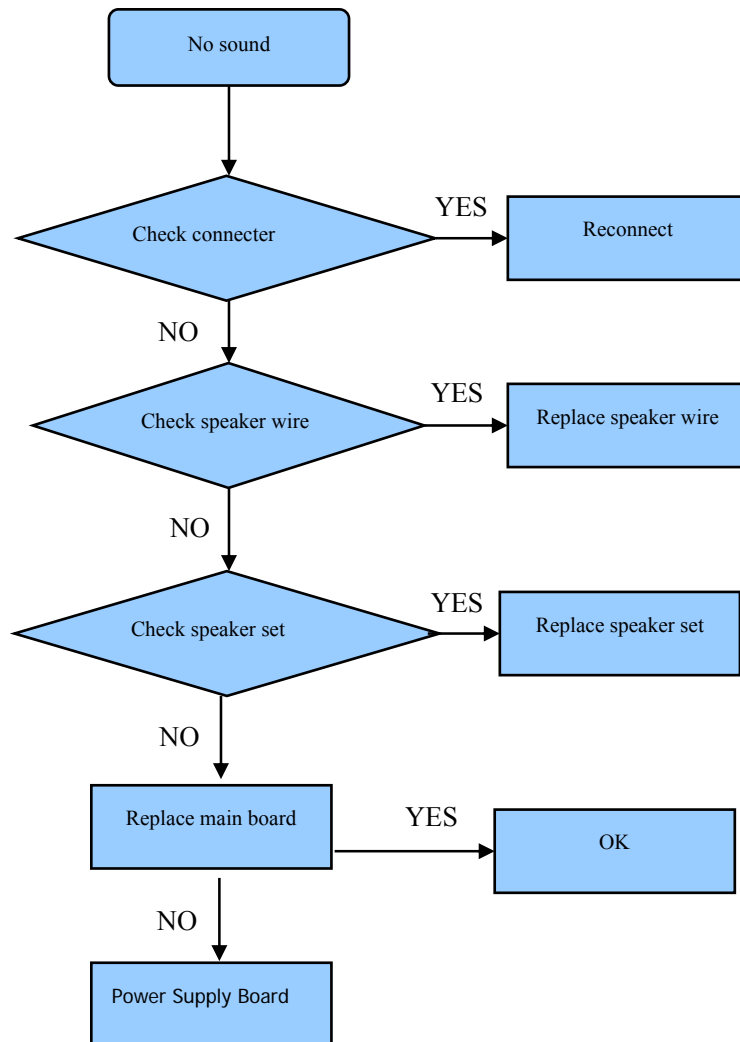
5.2 Troubleshooting for Function Key



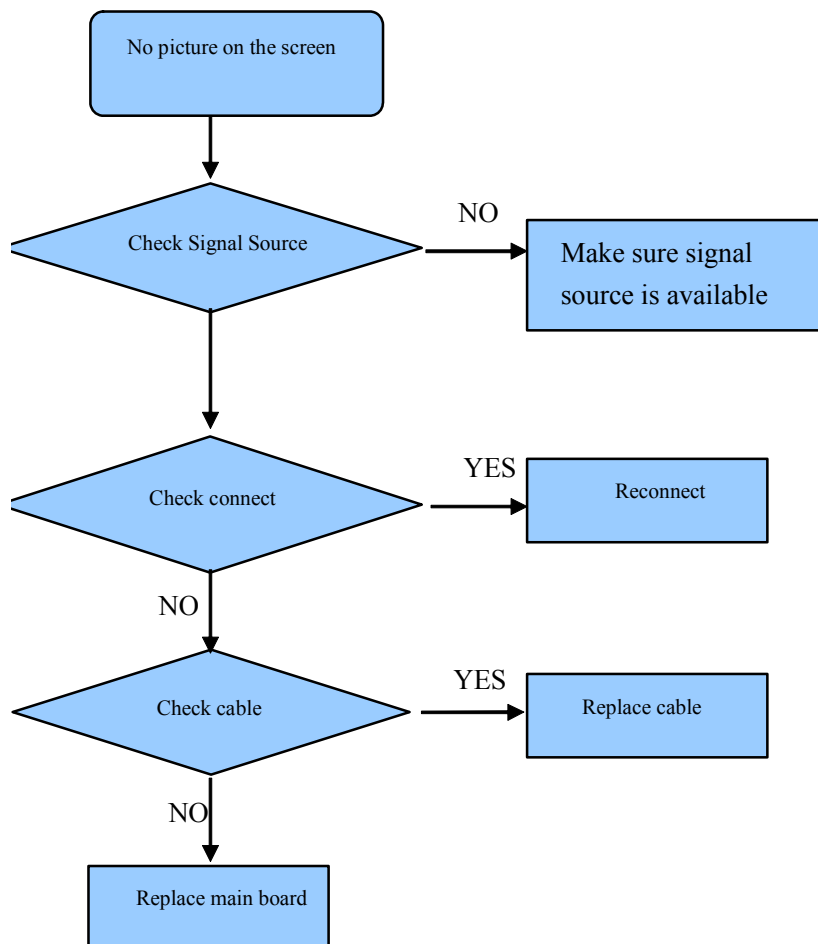
5.3 TV won't Power On



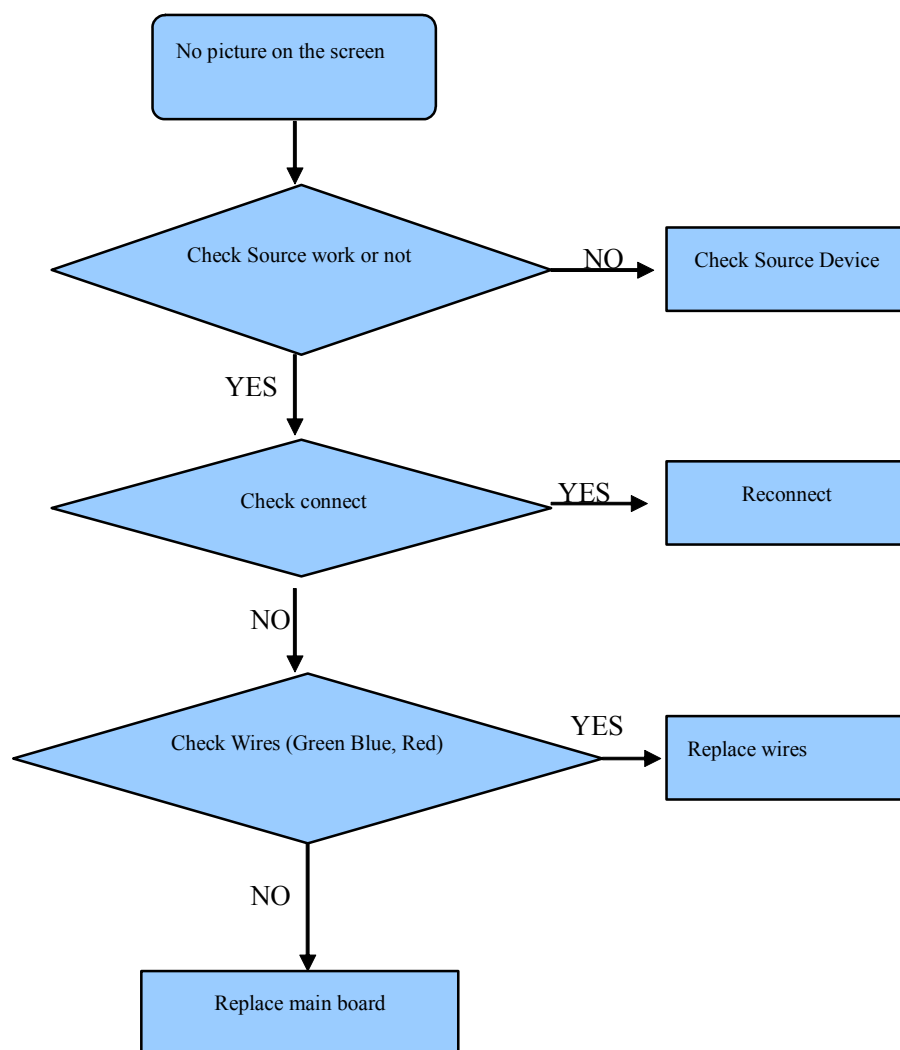
5.4 Troubleshooting for Audio



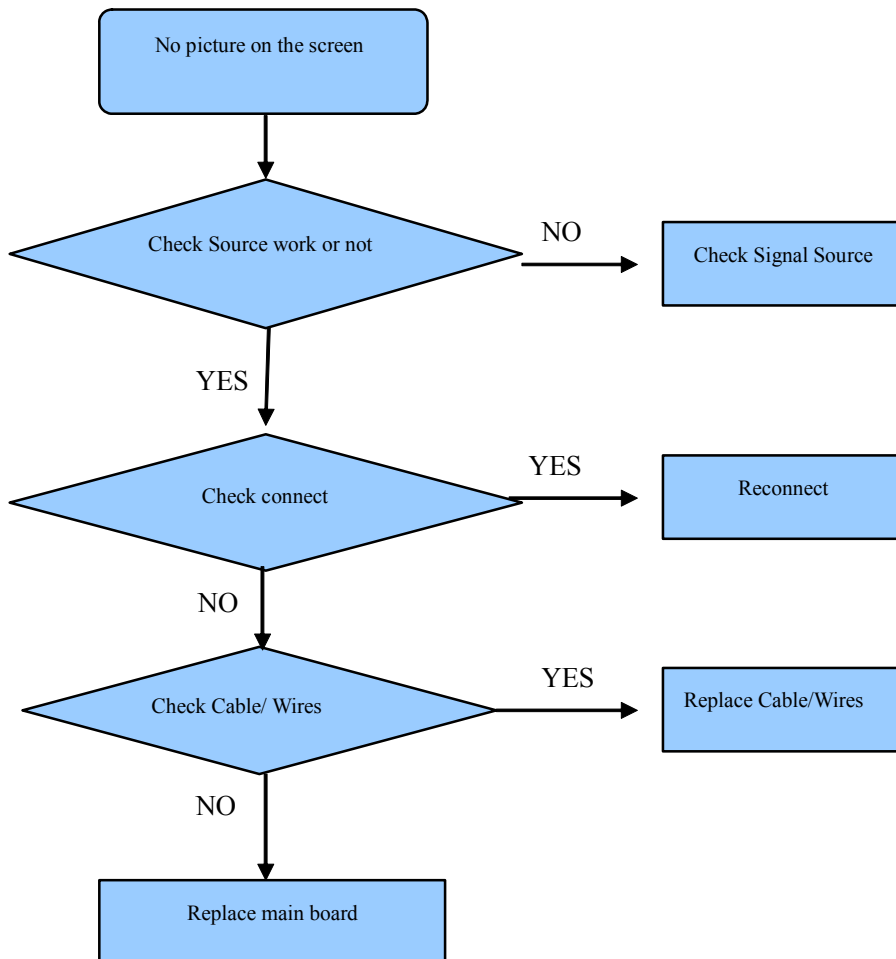
5.5 Troubleshooting for TV/VGA/HDMI input



5.6 Troubleshooting for YPbPr input



5.7 Troubleshooting for Video input

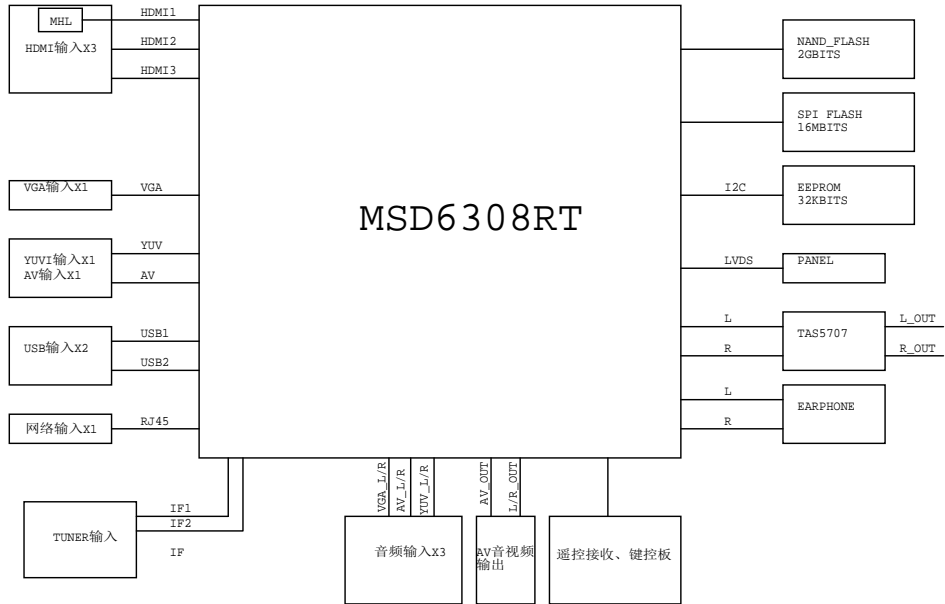
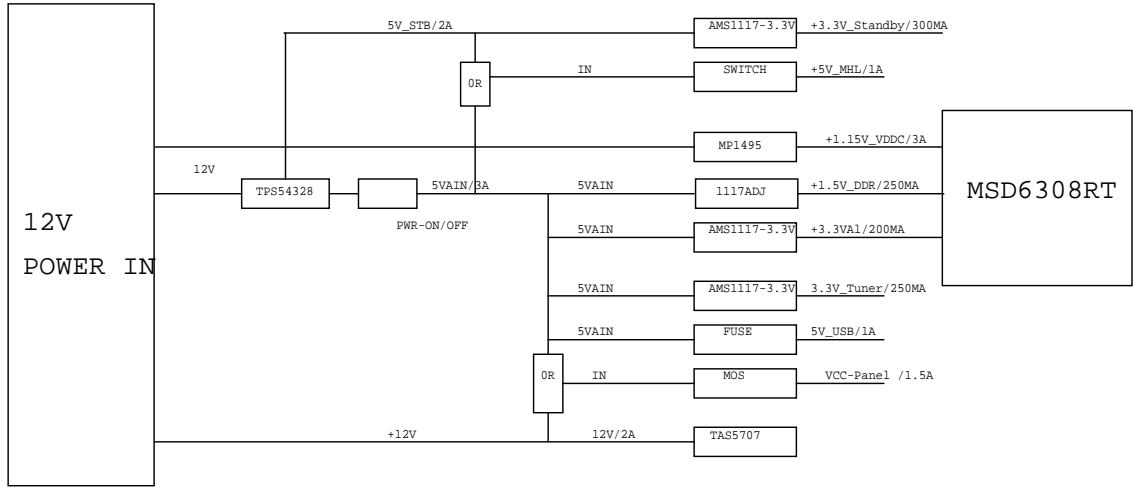


6. Circuit instruction

Board signal process and power tree

7. Schematic circuit diagram

8. Explode View



BL-ON/OFF 1
BL-ADJUST 1

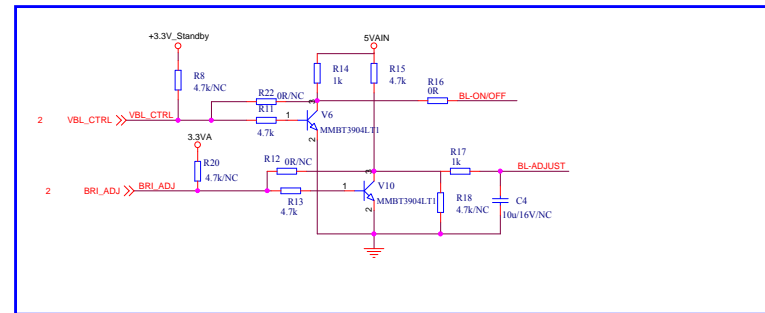
12VS 5VS 5VS 5Vsb

C47 C448

10u/16V 10u/10V

L55

BLM21PG220SN1D

[illegible]

12VS

靠近DC-DC

C230 10u/16V

C228 10u/16V/NC

R235 10k

C225 100u/16V

C211 1u/25V

C212 8.2n/50V

TPS54528

5VS

靠近电感L08和DC-DC放置

C234 22u/6.3V

C233 22u/6.3V

C235 22u/6.3V/NC

R219 27k

R220 27k

R229 140k

L08 4.7uH

计算: $V_{out} = 0.765 \times (1 + R1/R2) = 5.16V$
 $R1 = 130k, R2 = 27k / 140k$

5VS

1.80

BLM18PG121SN1

C48
0.47uF
2.2uF/10V

100nF/16V

N17
ADJ
VOUT

VIN
VOUT
ADJ

SPX1117M3-ADJ/LD1117A-ADJ

R30
10k

R28
180k

+3.3V Standby

C51
10uF/10V

C50
100nF/16V

1.25 * $\frac{1+180}{110}$ = 3.3V

Main IC Max:300mA

The diagram illustrates the timing relationships for an RGB interface and an AV interface connected to an HD 1080i monitor. The horizontal axis represents time, with a 100ns scale bar. The vertical axis shows the signals: VGA (Red, Green, Blue), TRAPEZOIDAL (Hsync, Vsync), and AV (Hsync, Vsync).

RGB Interface: The RGB signals (Red, Green, Blue) are shown as horizontal lines. The TRAPEZOIDAL signal is shown as a series of pulses. The Hsync and Vsync signals are shown as horizontal lines. The RGB signals are labeled with their respective colors and the TRAPEZOIDAL signal is labeled with its type.

AV Interface: The AV signals (Hsync, Vsync) are shown as horizontal lines. The Hsync signal is labeled with its type and the Vsync signal is labeled with its type. The AV signals are shown as horizontal lines.

Timing Diagram: The diagram shows the timing relationships between the RGB and AV signals. The RGB signals are shown as horizontal lines. The TRAPEZOIDAL signal is shown as a series of pulses. The Hsync and Vsync signals are shown as horizontal lines. The RGB signals are labeled with their respective colors and the TRAPEZOIDAL signal is labeled with its type.

Close to MIST IC with wide frame

Close to MIST IC with wide frame

AV Interface

Close to MIST IC with wide frame

[illegible][illegible][illegible]

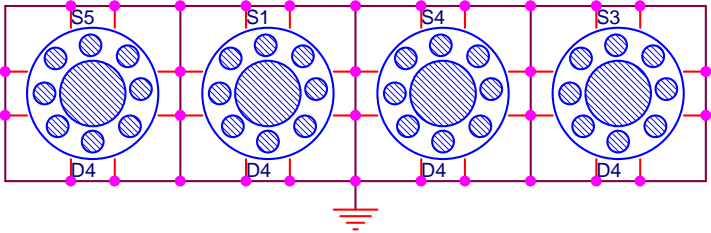
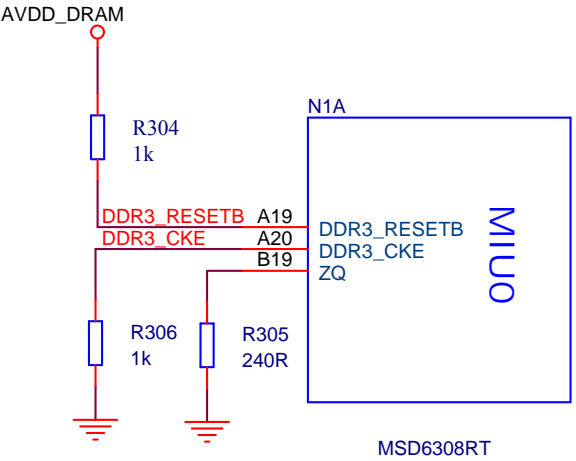
when detect source is from 5V,
change resistance ,make sure
detect power 10VPP.

ARC

ARC_cDNA

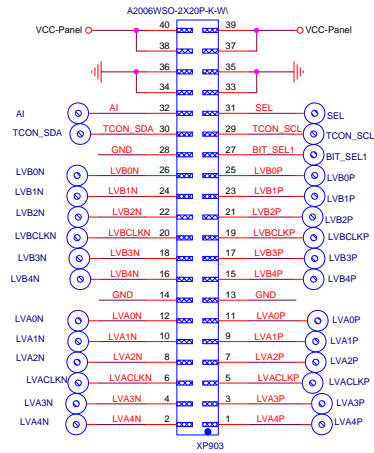
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MSD MIU

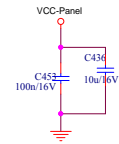


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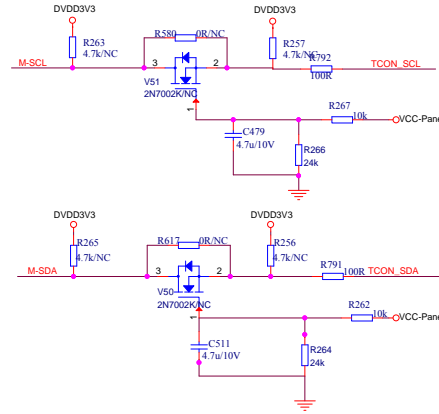
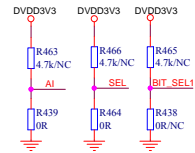
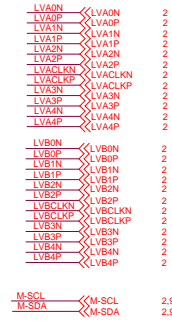
LVDS PORT



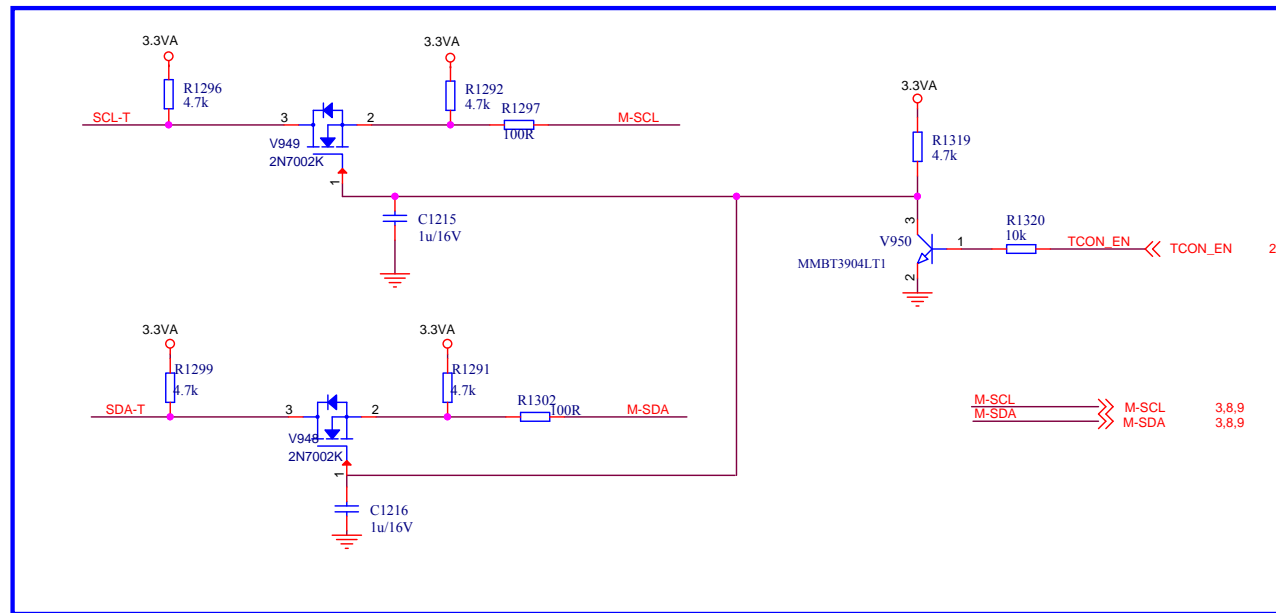
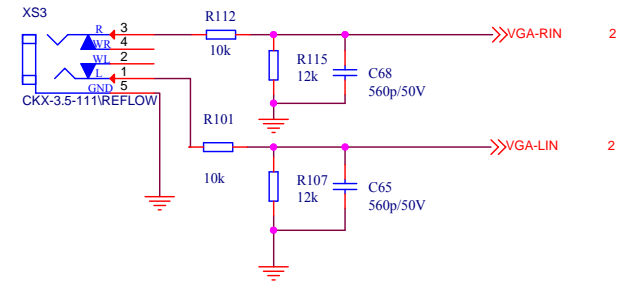
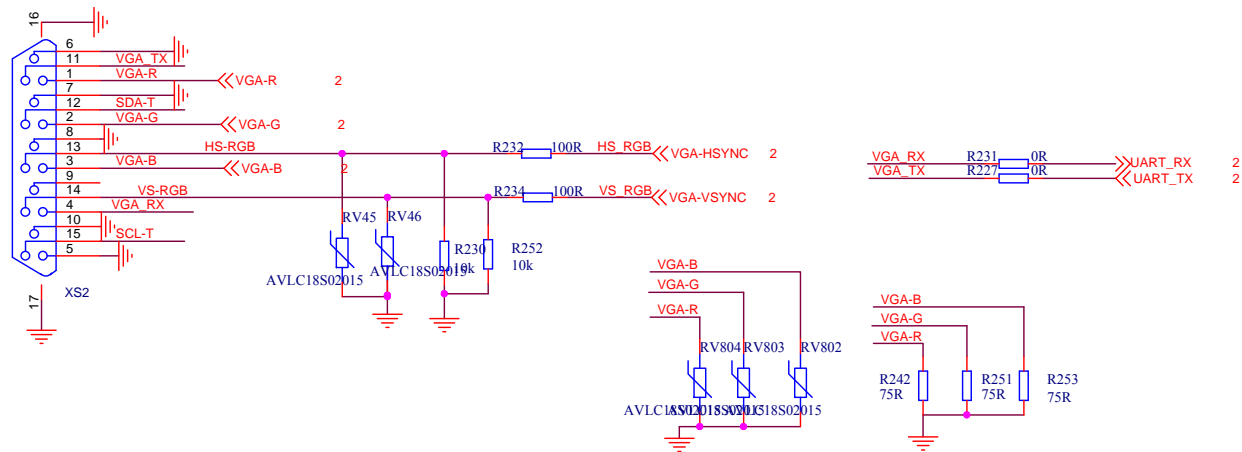
Power decouple




Note: 靠近LVDS插座

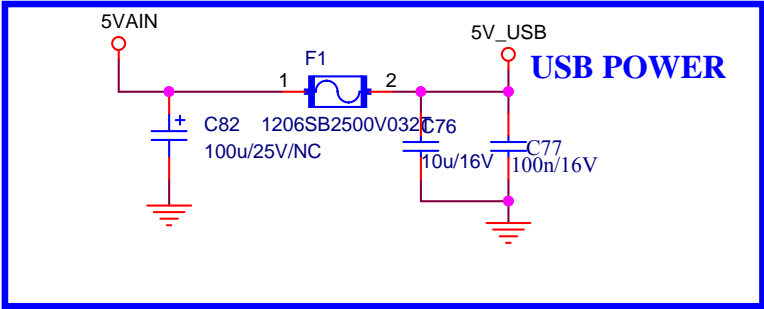
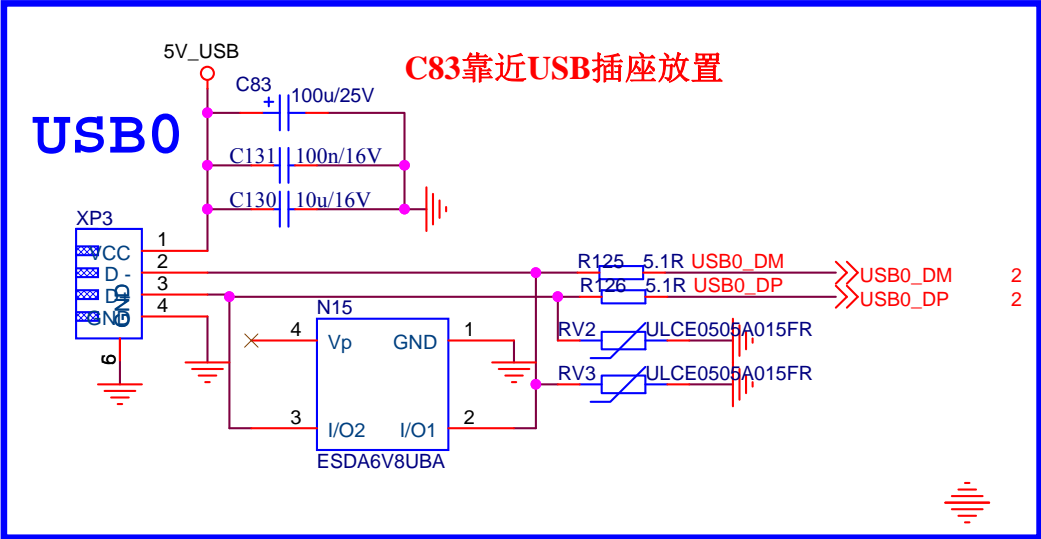


VGA



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USB INTERFACE



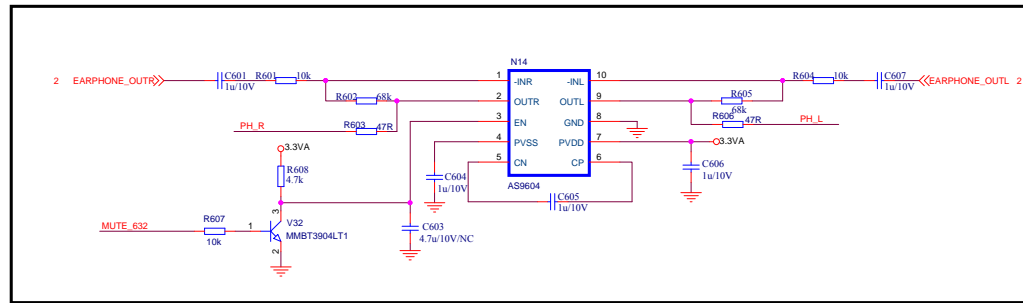
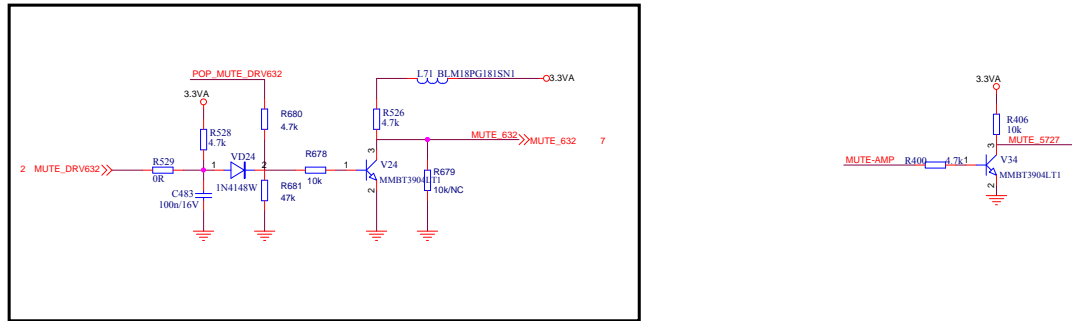
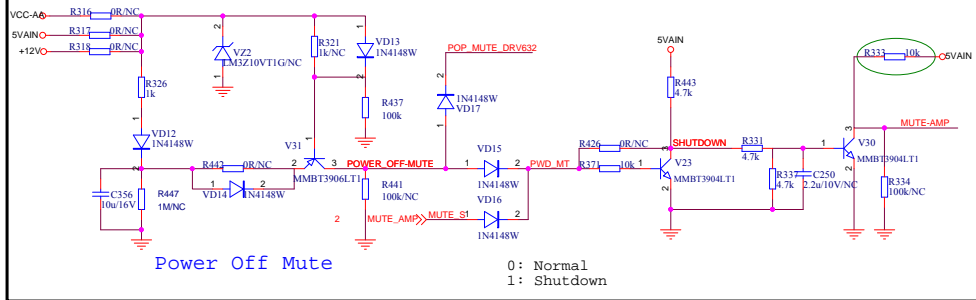
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[illegible]

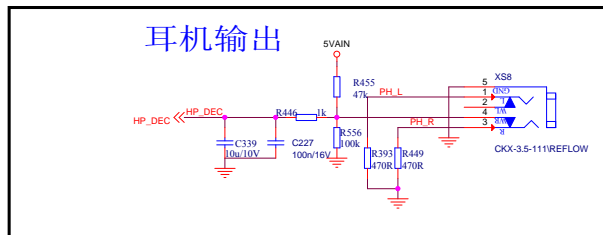
The diagram illustrates the HDML-ARC and CEC protocols. The HDML-ARC protocol is shown as a sequence of bits: HDML-ARC, C001, 12, 2u/10u, HDML-ARC, and HDML-ARC. The CEC protocol is shown as a sequence of bits: CEC, R554, 200R, HDML-CEC, and HDML-CEC.

根據ARC所放的HDMI寬

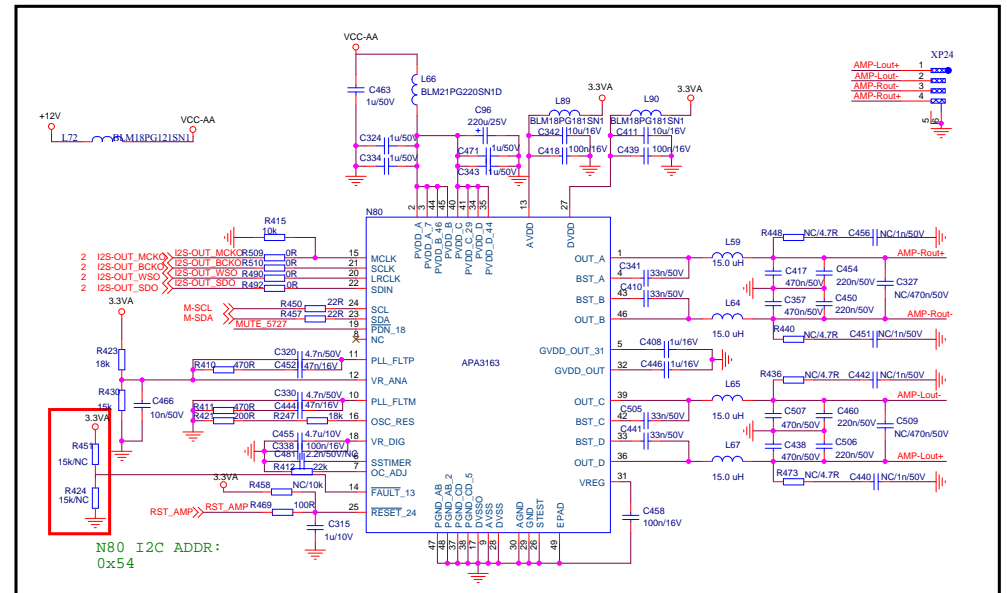
MUTE



耳机输出

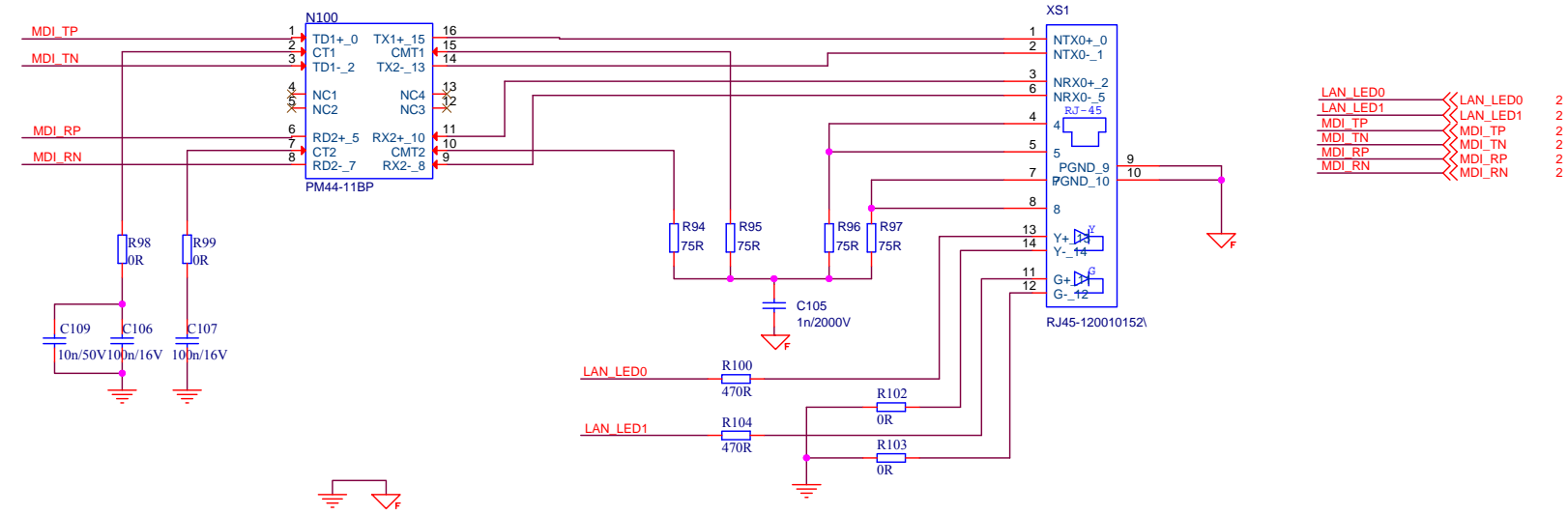



SPEAKER AMP



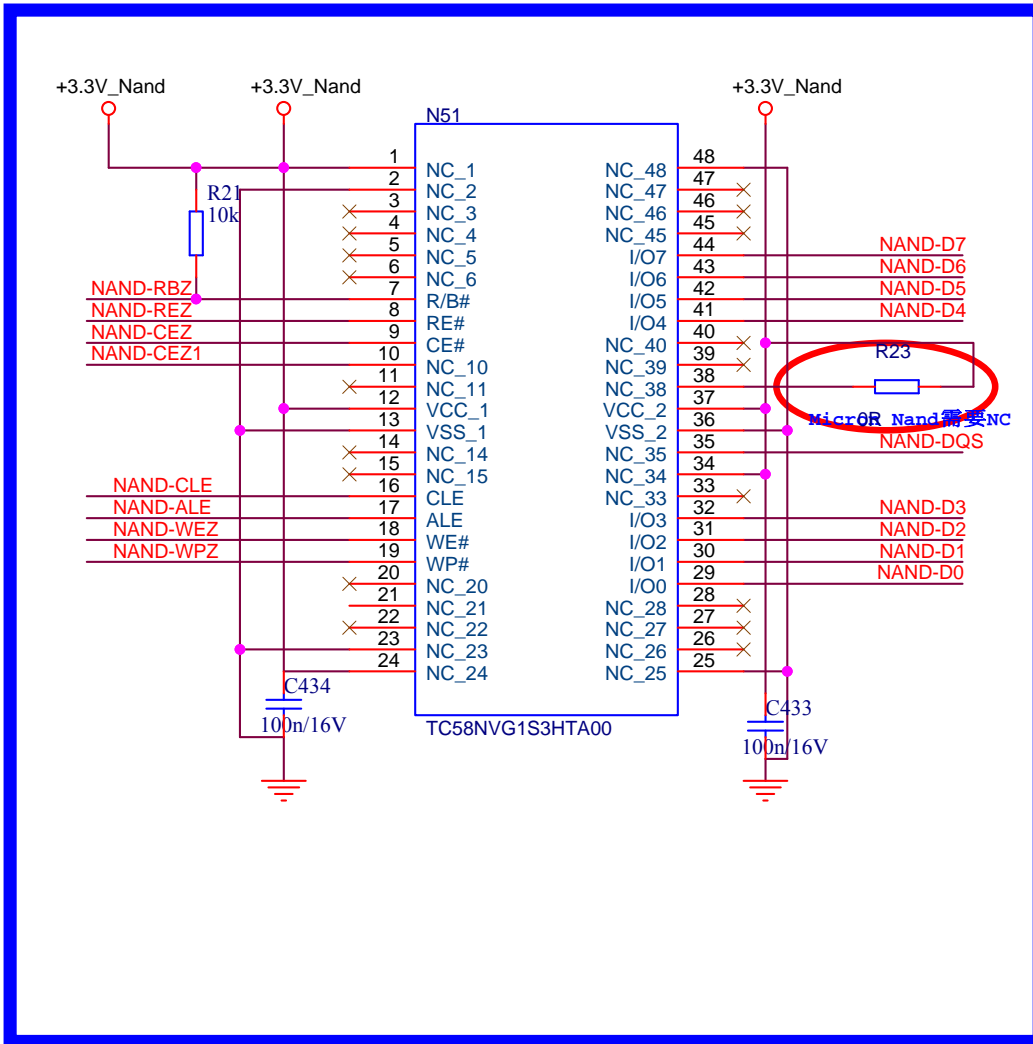
Date	Change List
20140626	Release
20150601	1.增加

ETHERNET PHY

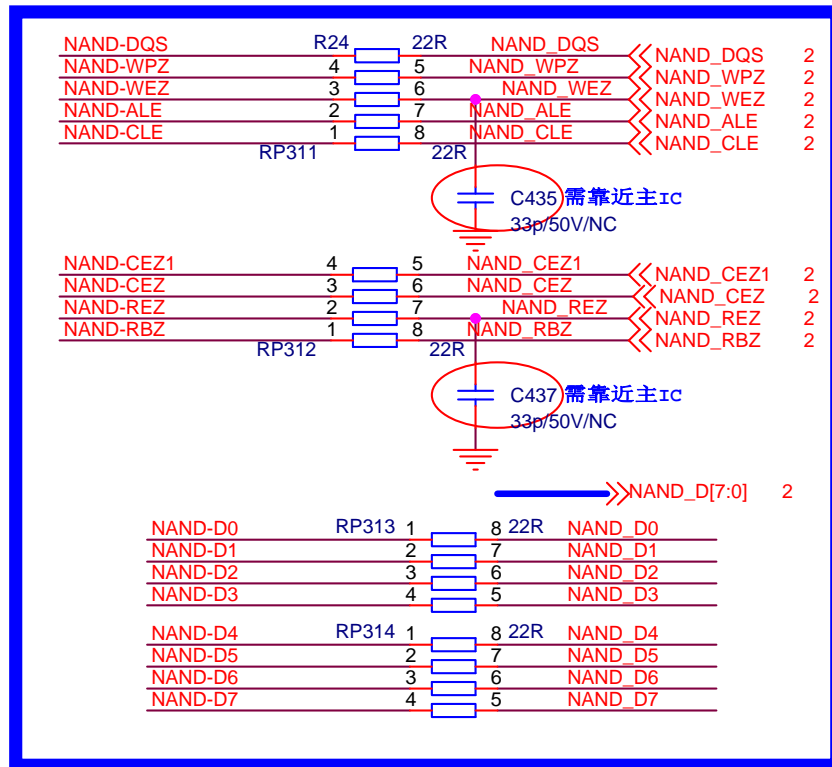
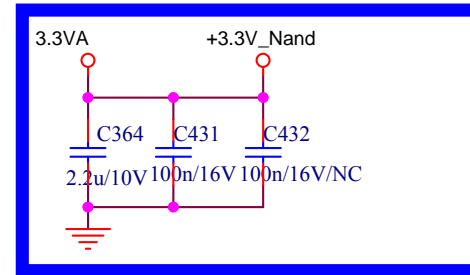


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NAND FLASH



NAND Power



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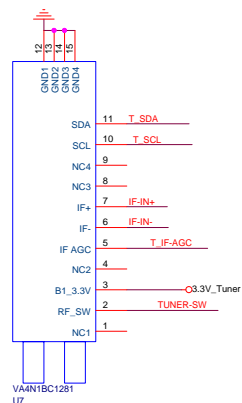
Title	Hisense MSD6308RT
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Size	Schematic Name
A	<Doc>

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1.0

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使用FK1602或VA1P1BF8402时, C364、C367、C359和L32NC掉,
C357=0R, C365=0R, R313=0R, R314=0R, R312=0R, R315=0R

使用FK1602或VA1P1BF8402时， C364、C367、C359和L32NC掉， C357=0R， C365=0R， R313=0R， R314=0R， R312=0R， R315=0R

BPF FOR 38.9MHZ OR 38MHZ

