

LCD Television

Service Manual

Chassis: MSD6308

Product:

N10 series: LHD24N10NAM、LHD32N10NAM

K160 series: LHD32K160NAMN

K20 series: LTDN48K20DAM

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.

Confident

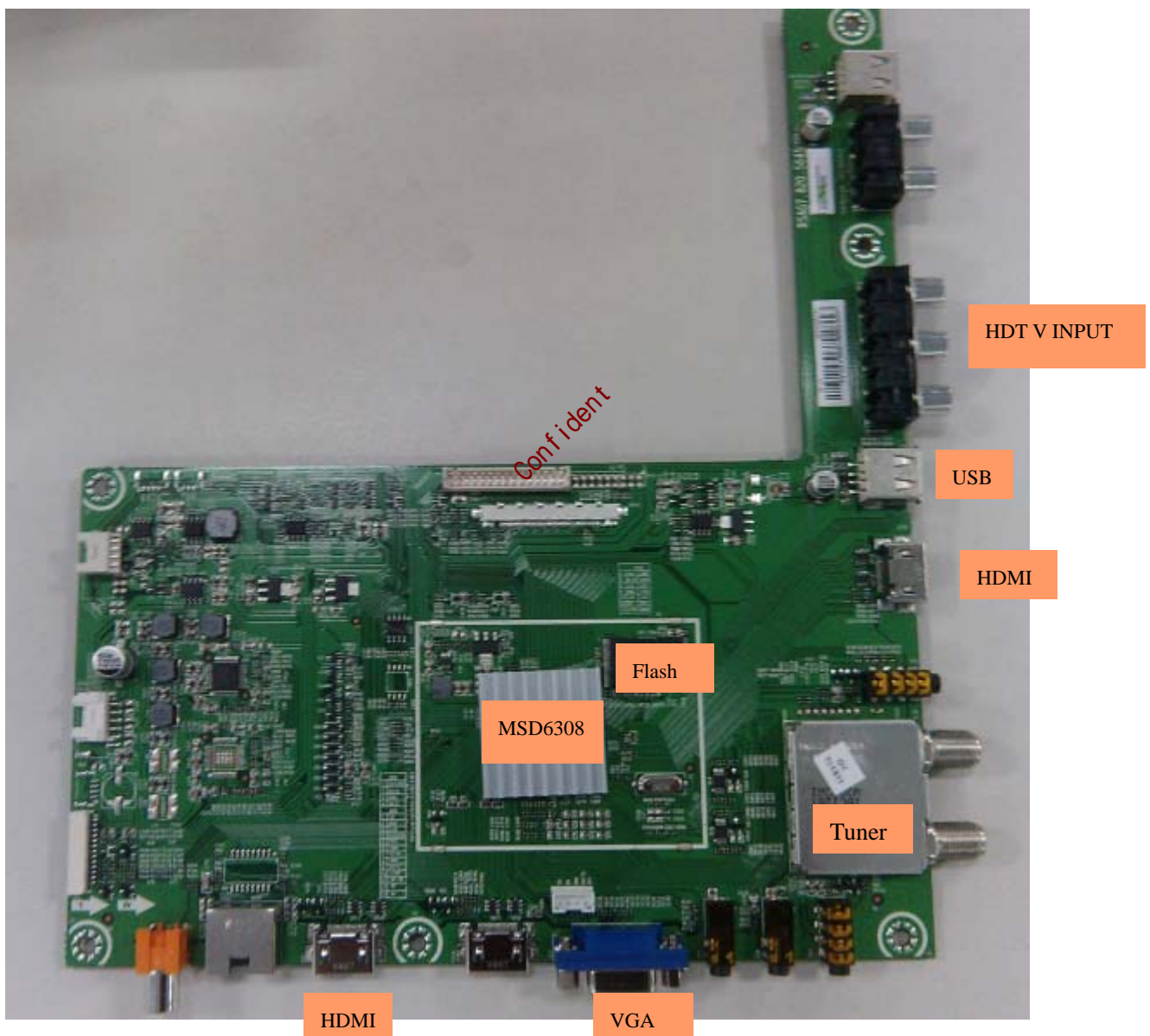
2. Product Specifications

2.1 Main board layout

2.1.1 Main board: 5645

Take LHD32K160NAMN 、LTDN48K20DAM main board (5645) for example:

Top:



Bottom:



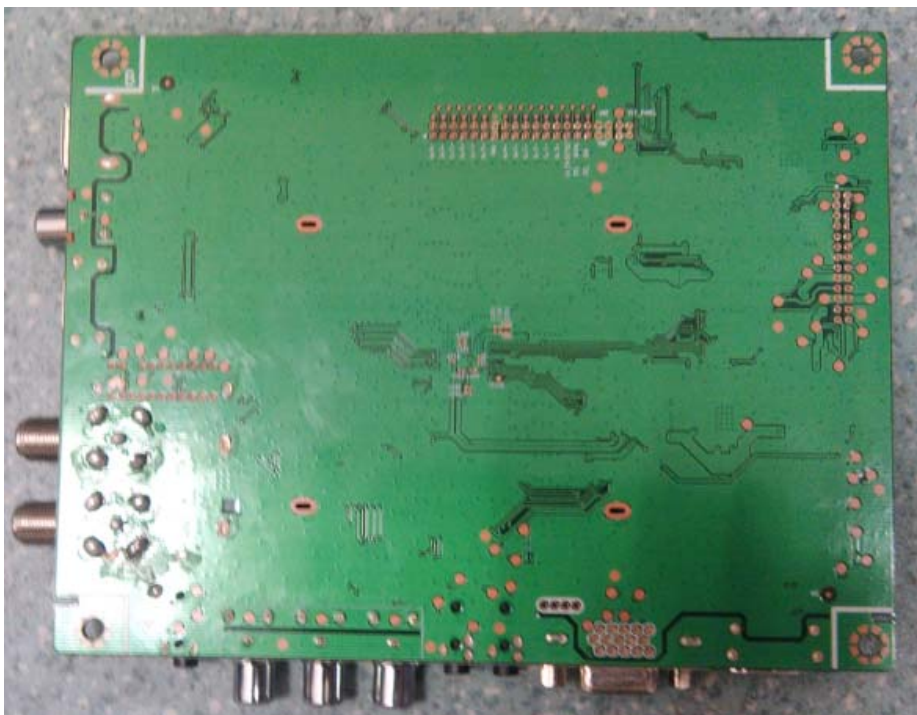
2.1.2 Main board: 5650

Take LHD24N10NAM、LHD32N10NAM 、 main board (5650) for example:

Top:



Bottom:



2.2 MSD6308 includes product

Model	Panel Mode	LVDS (Main-Panel)	Main board	Power board
LHD24N10NAM	V236BJ1-LE2	1、HX2-2×20KLB400-BOE\ROH 2、FFC-12-850\ROH	RSAG7.820.5650	RSAG7.820.5258
LHD32N10NAM	HE315GH-E77	HX2-2×20KLB400-BOE\ROH	RSAG7.820.5650	RSAG7.820.5268
LHD32K160NAMN	HE315GH-E77\ROH	HX2-2X15KLB400P-CMO-3\ROH	RSAG7.820.5645	RSAG7.820.5023
LTDN48K20DAM	HD480DF-B37	HX2-2x22KLB500P-HS-6\ROH	RSAG7.820.5645	RSAG7.820.5482

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.

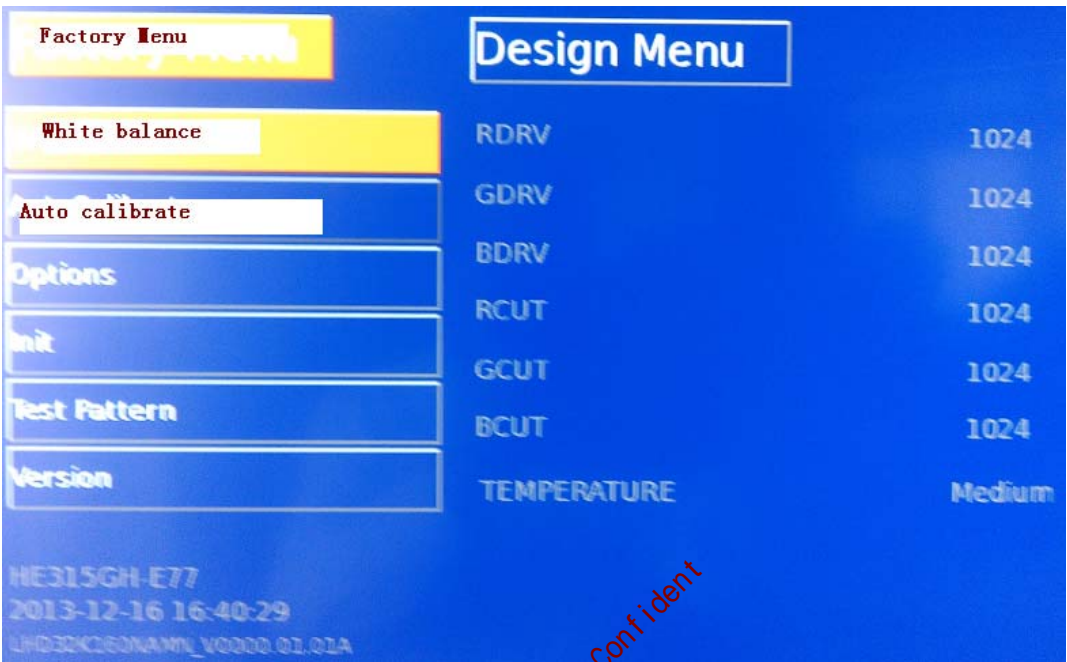
Confident

3.2 Factory OSD Menu

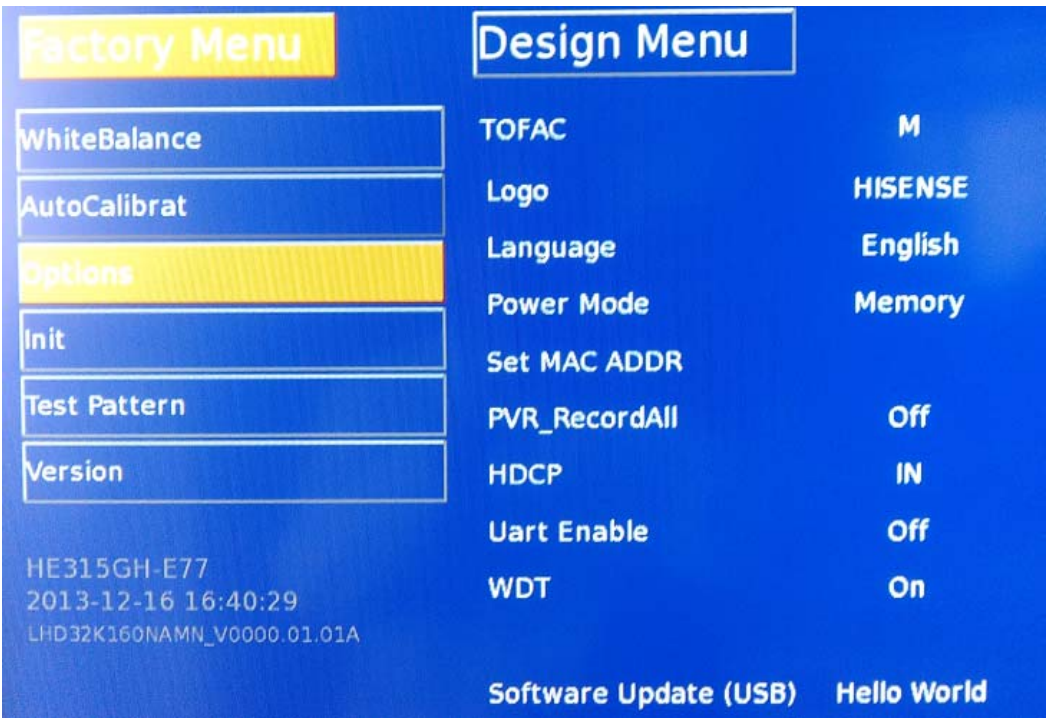
The Factory OSD Menu comprises Factory Menu and Design menu.

3.2.1、 Factory Menu

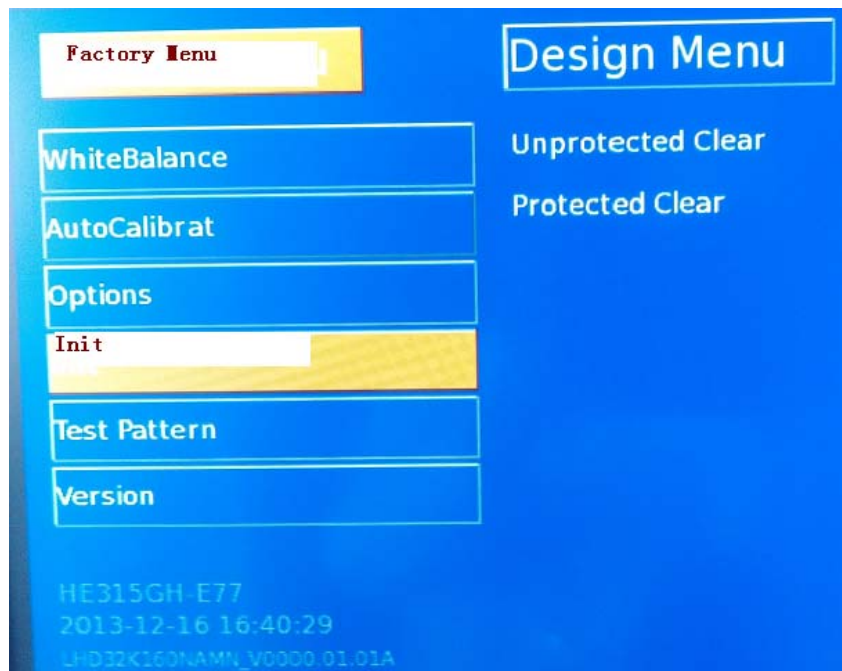
White balance:



Option:



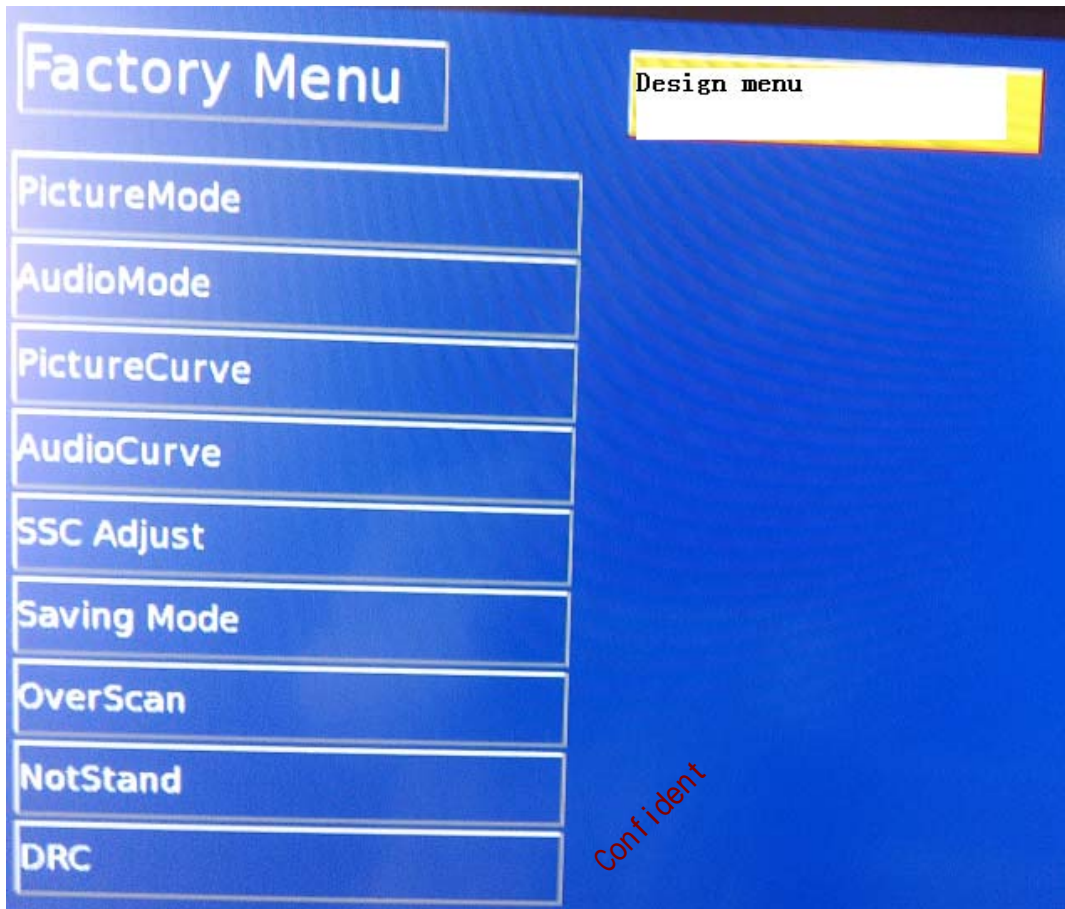
Init:



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.

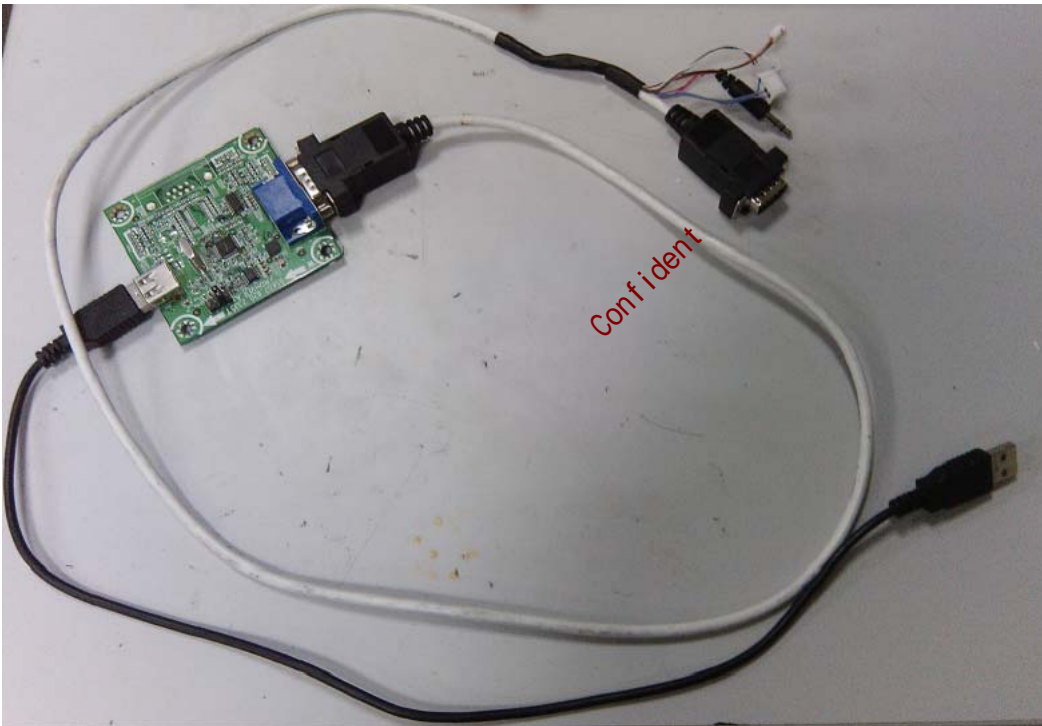
4. Software updating

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

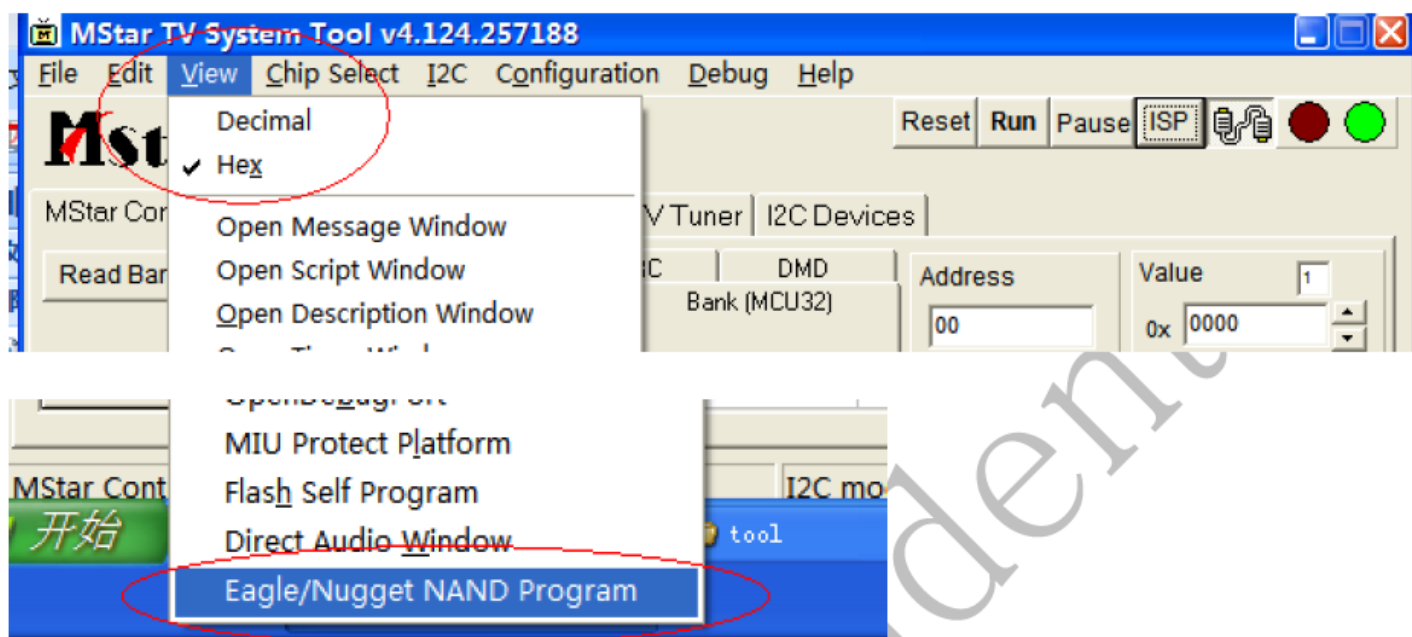
4.1.1 Hardware connecting

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"

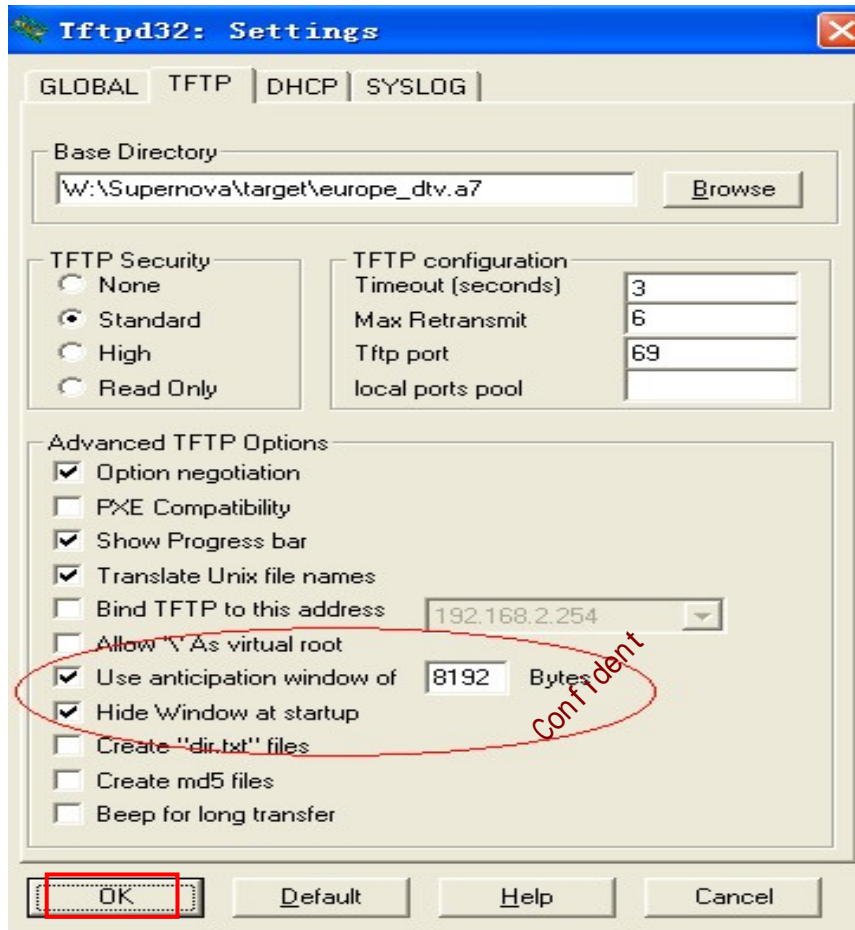


3、Choose “Eagle/Nugget NAND program”, And then a dialog window will show as below.

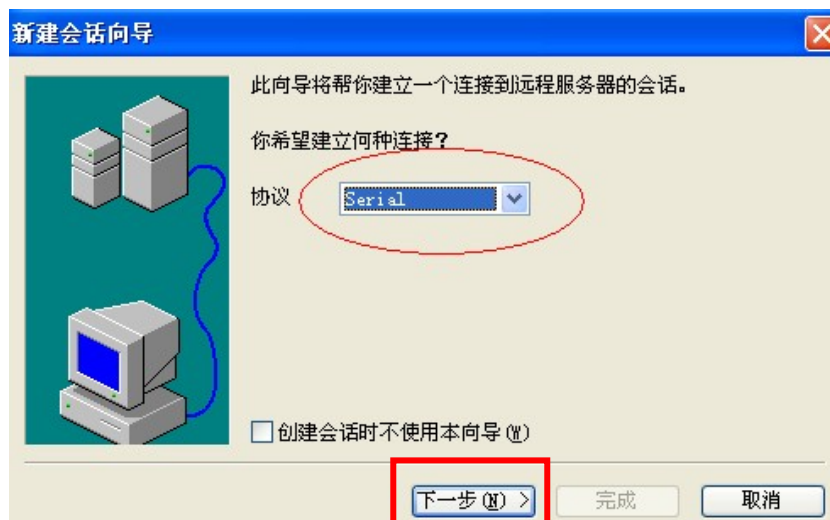


4.2 Upgrading main software with Tftpd32、securecrt

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

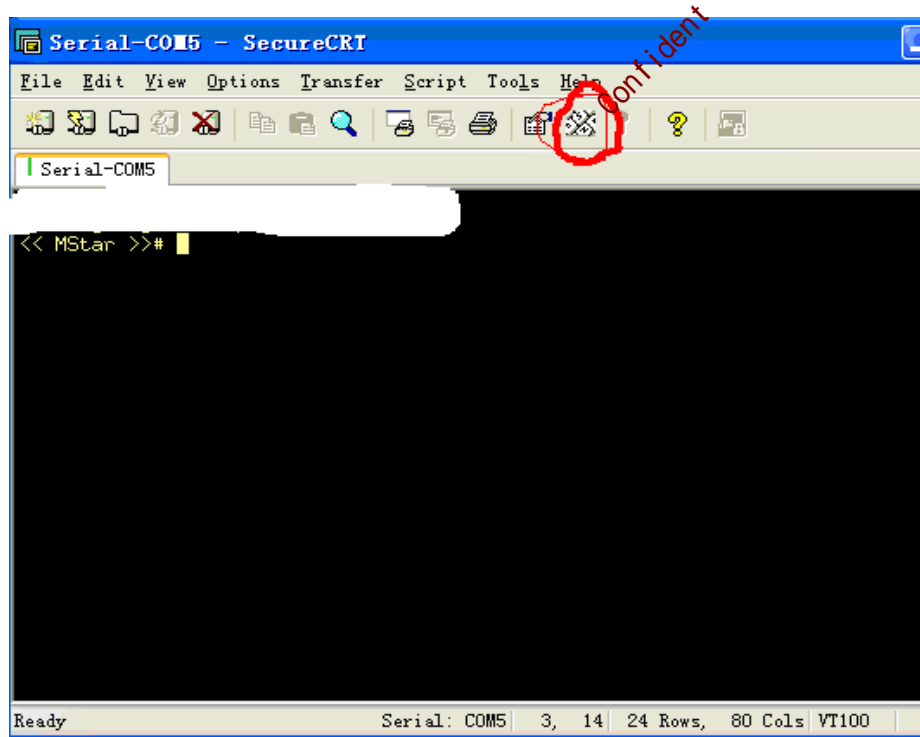


- b) Run **Securecrt.exe** to set up a serial section.
Select File→Connect→New section





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).

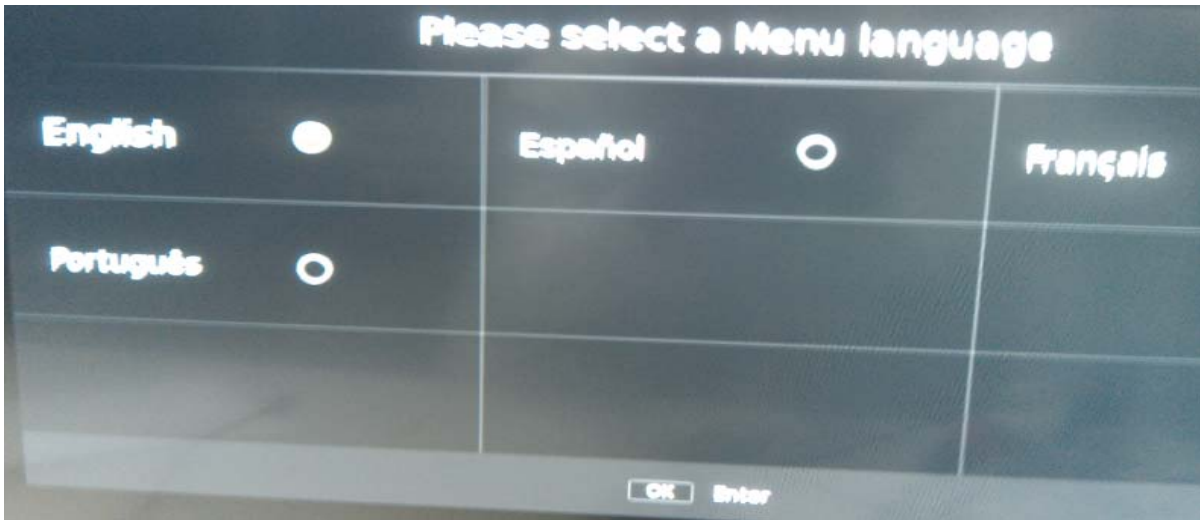


Next input : set ipaddr 192.168.5.200;set serverip 192.168.5.211;saveenv , then press “enter”
key. late input: “mstar mscript/auto_update.txt” to update (the following image).

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 .

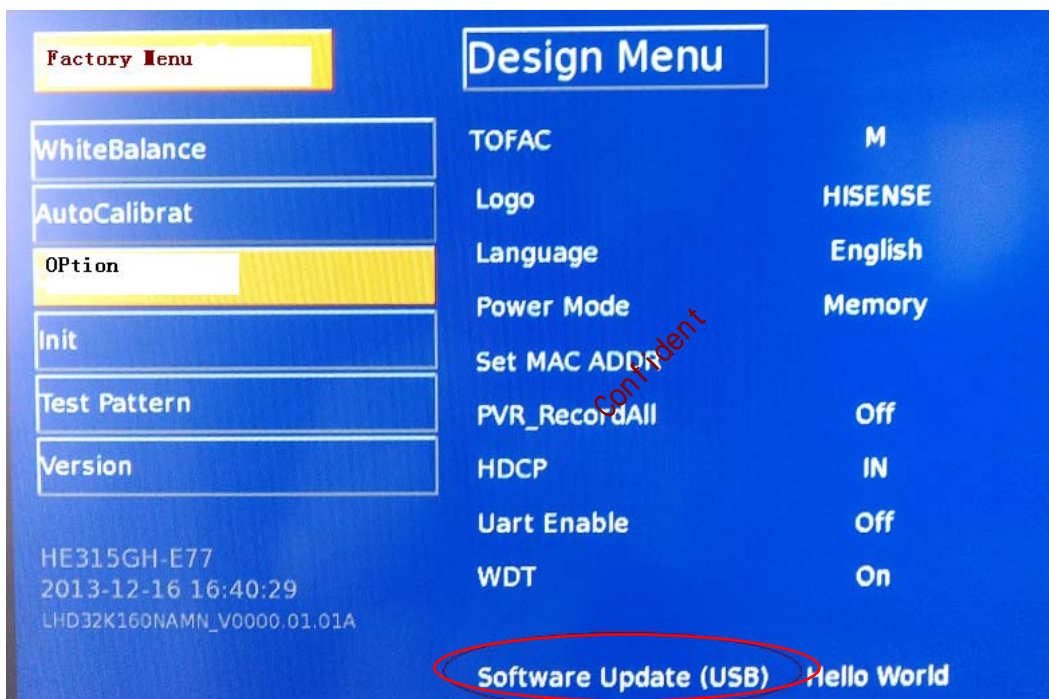
Confident

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.

4.3.2 TV in abnormal state

If the method of **4.3.1** can not update successfully or TV can not power on normally.

You will adopt the force update method. Insert the USB disk **with USBUpgrade.bin** into the USB slot of the TV. AC power on the TV , at the moment ,press the " menu "key of TV keypad.

Longer about 5 seconds. Then the TV will automatically update. If defeat, try again.

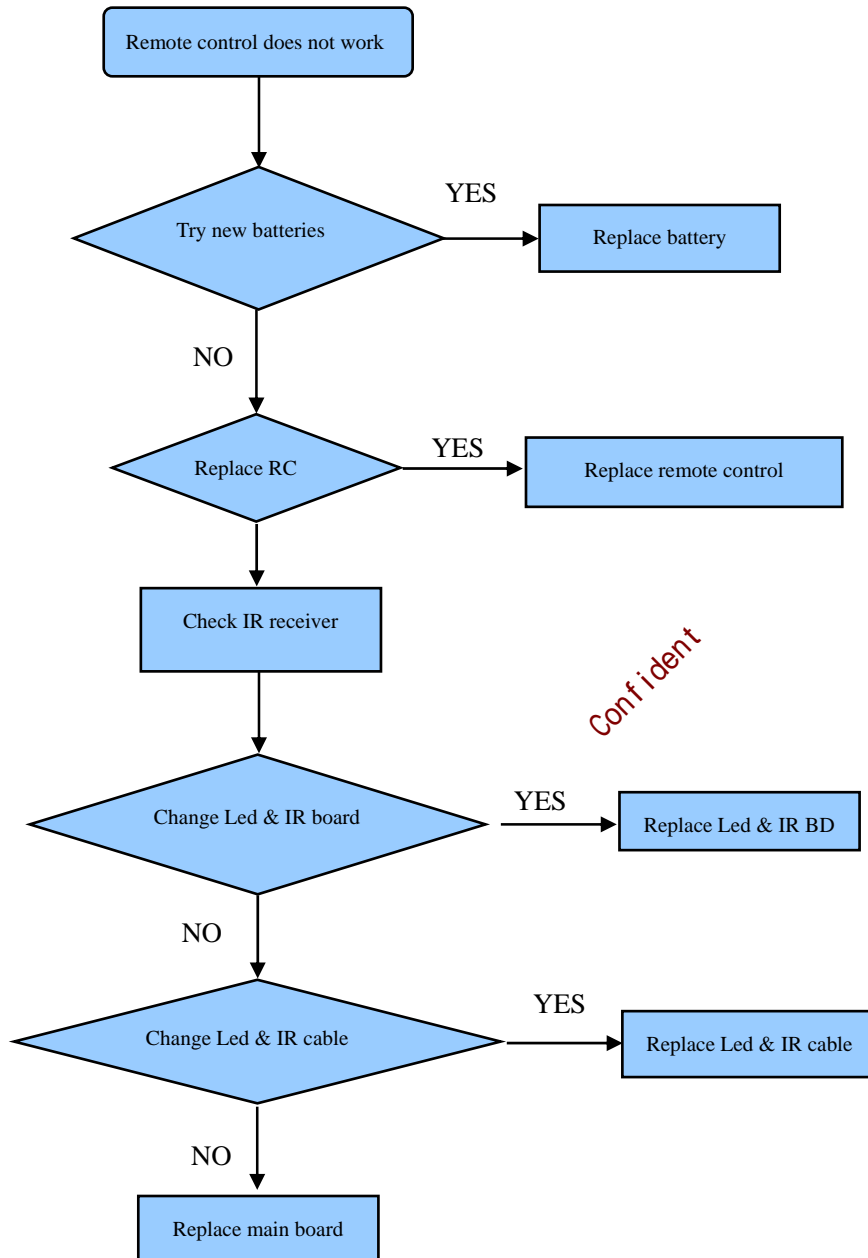
Note:

After update, you must confirm the software version in the "Factory Menu" and you'd better do a " **UnProtected Clear**" in the "Factory Menu".

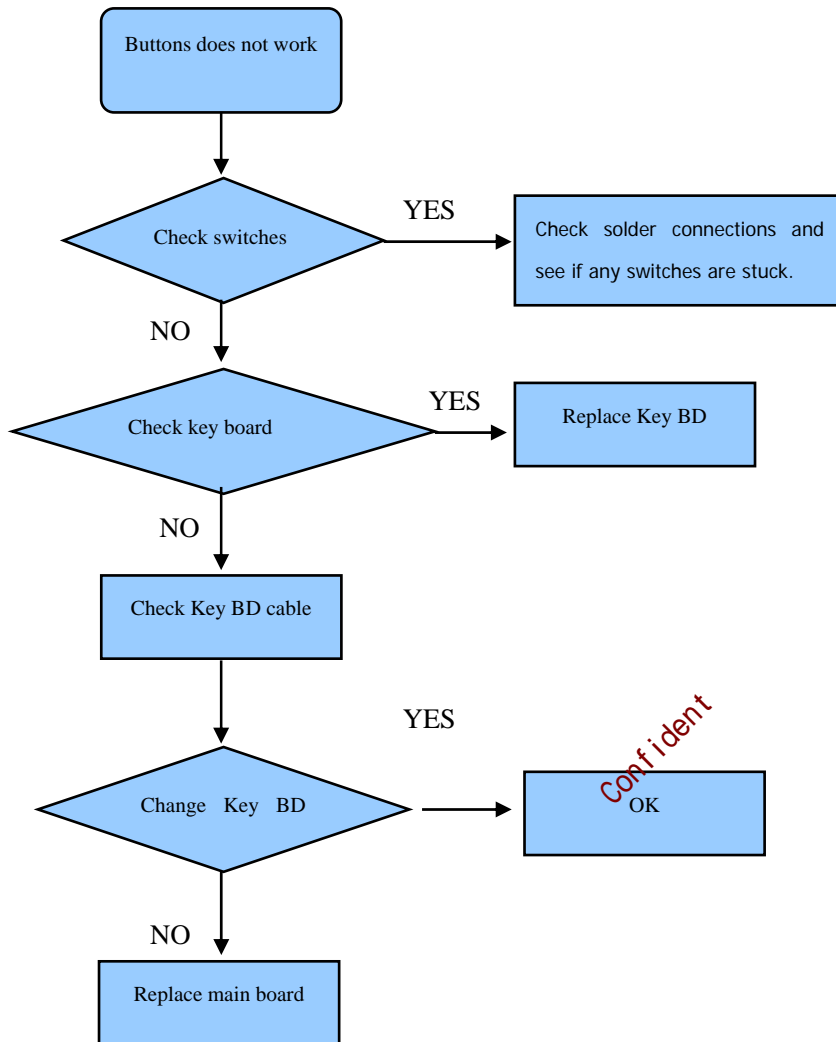
Confident

5.Troubleshooting

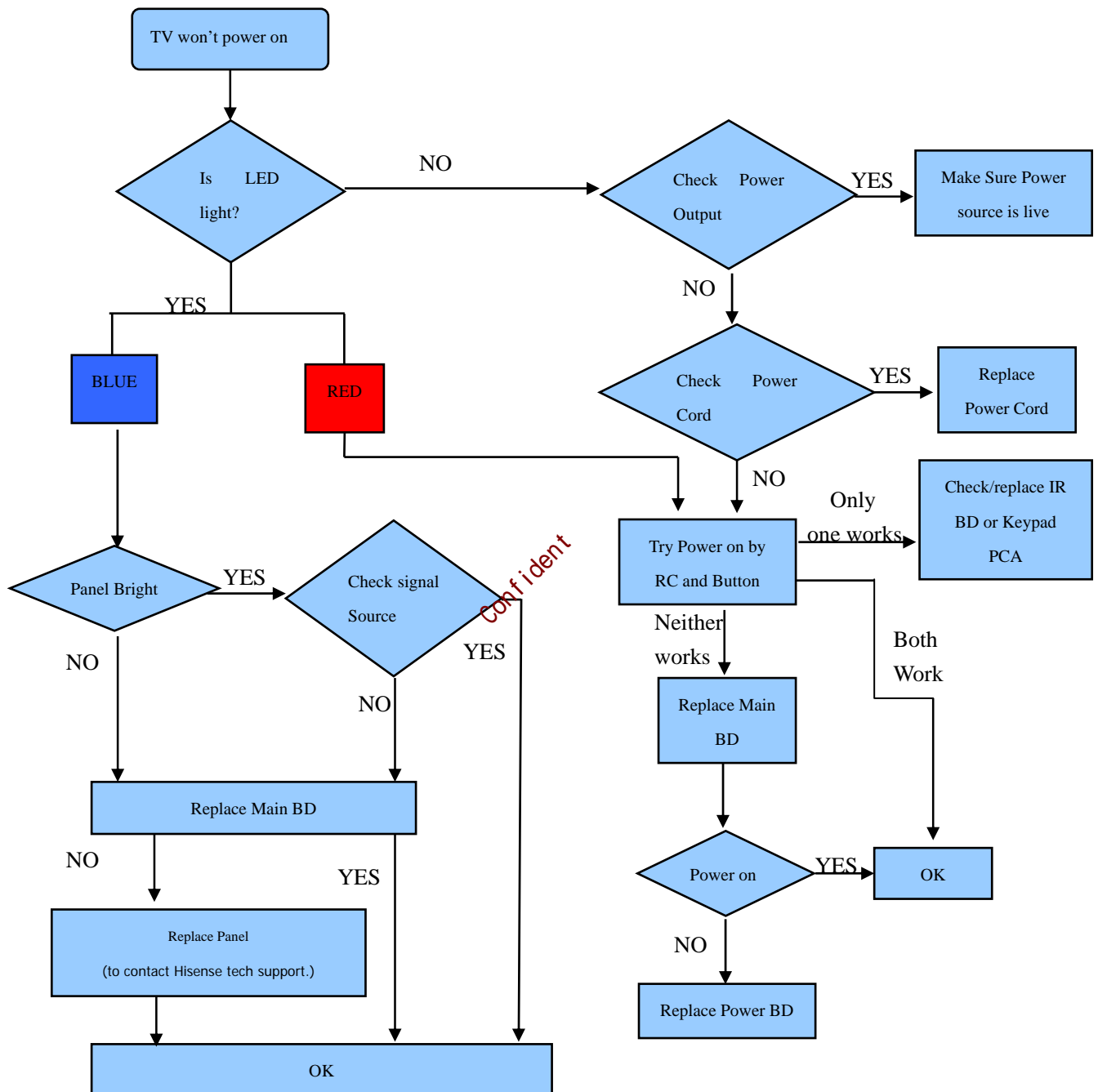
5.1 Troubleshooting for Remote Control



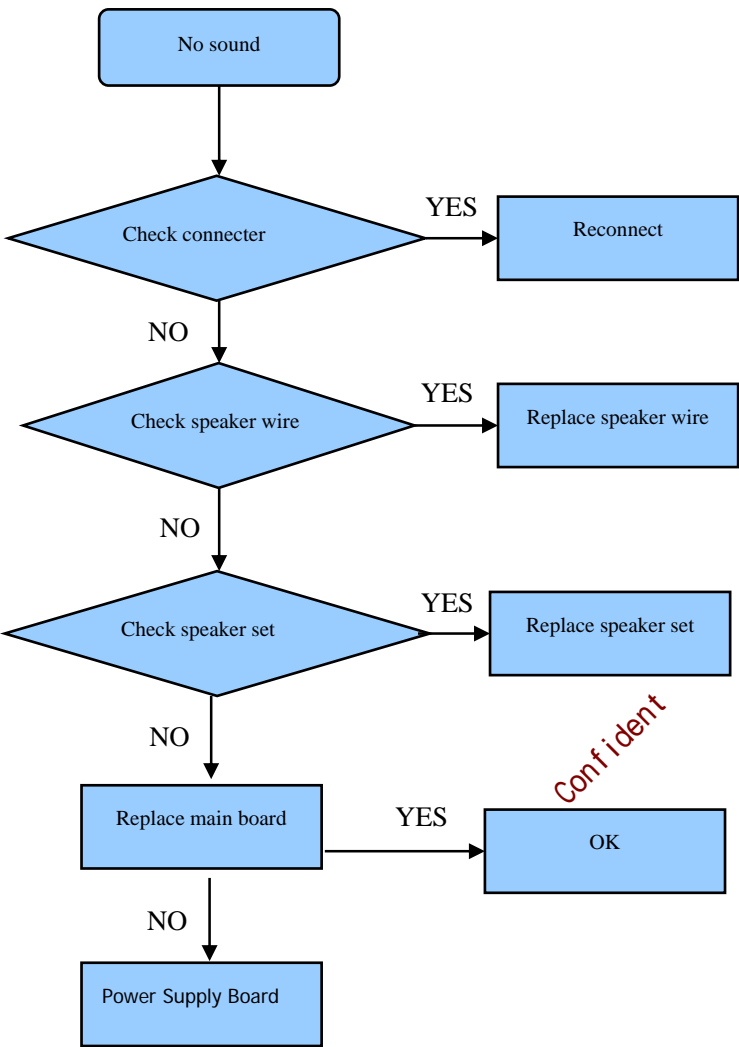
5.2 Troubleshooting for Function Key



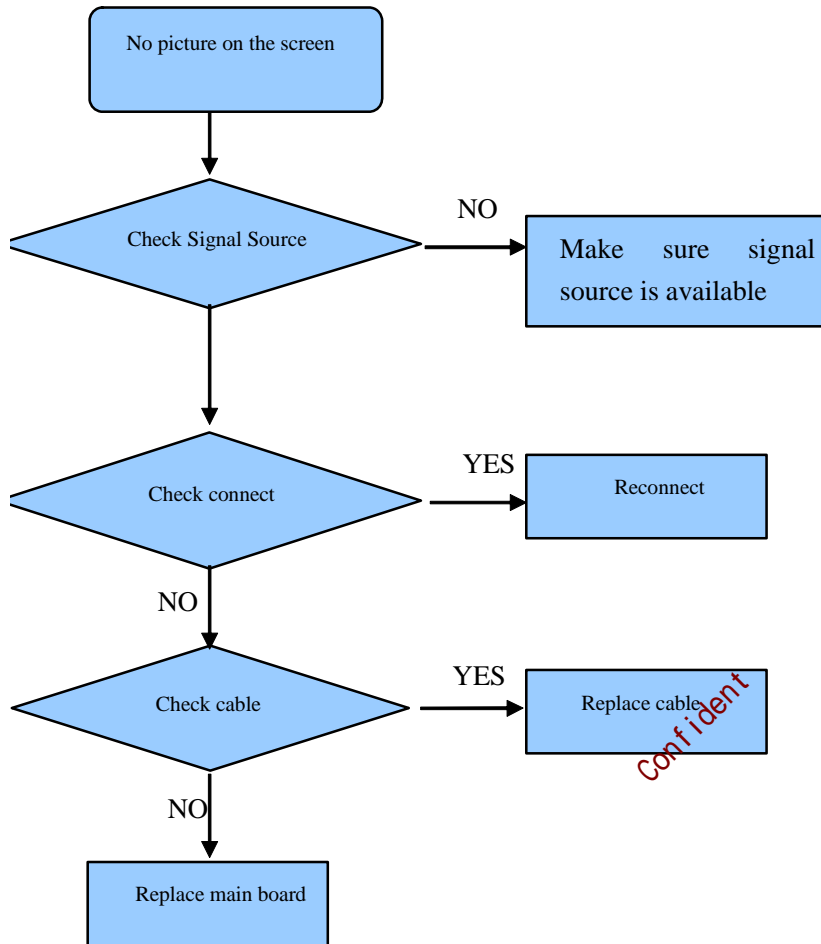
5.3 TV won't Power On



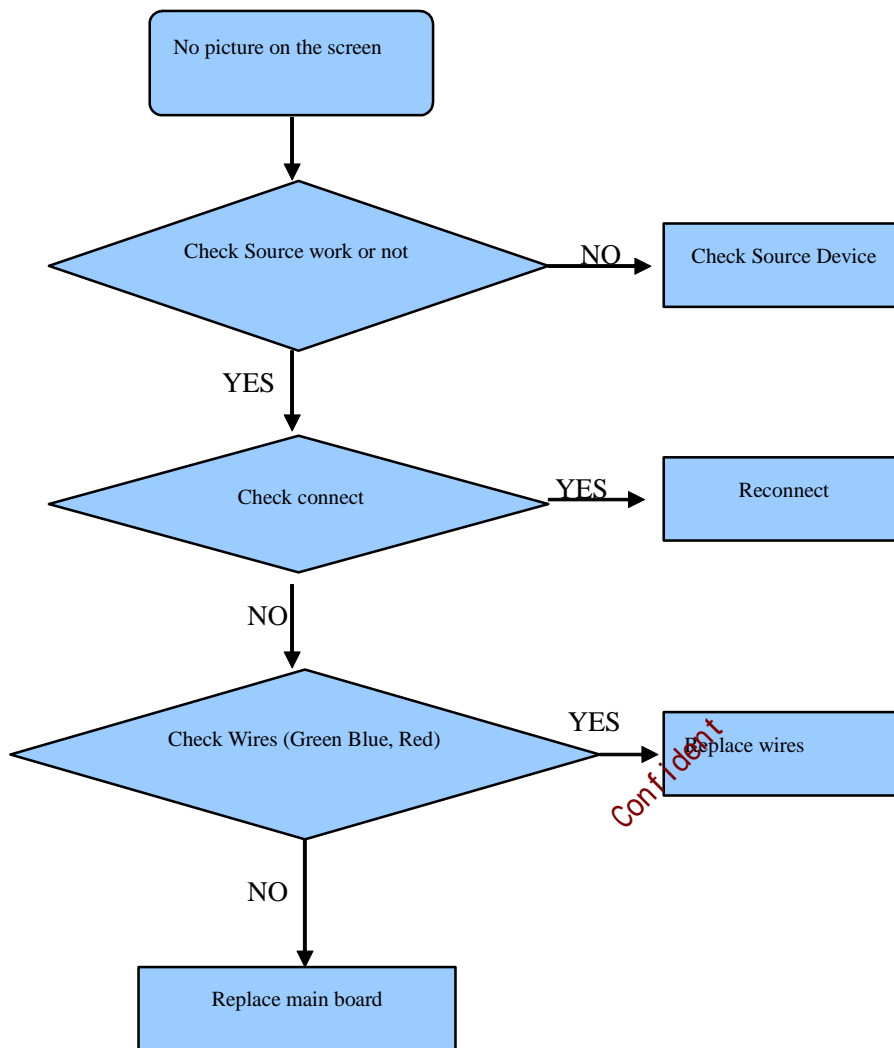
5.4 Troubleshooting for Audio



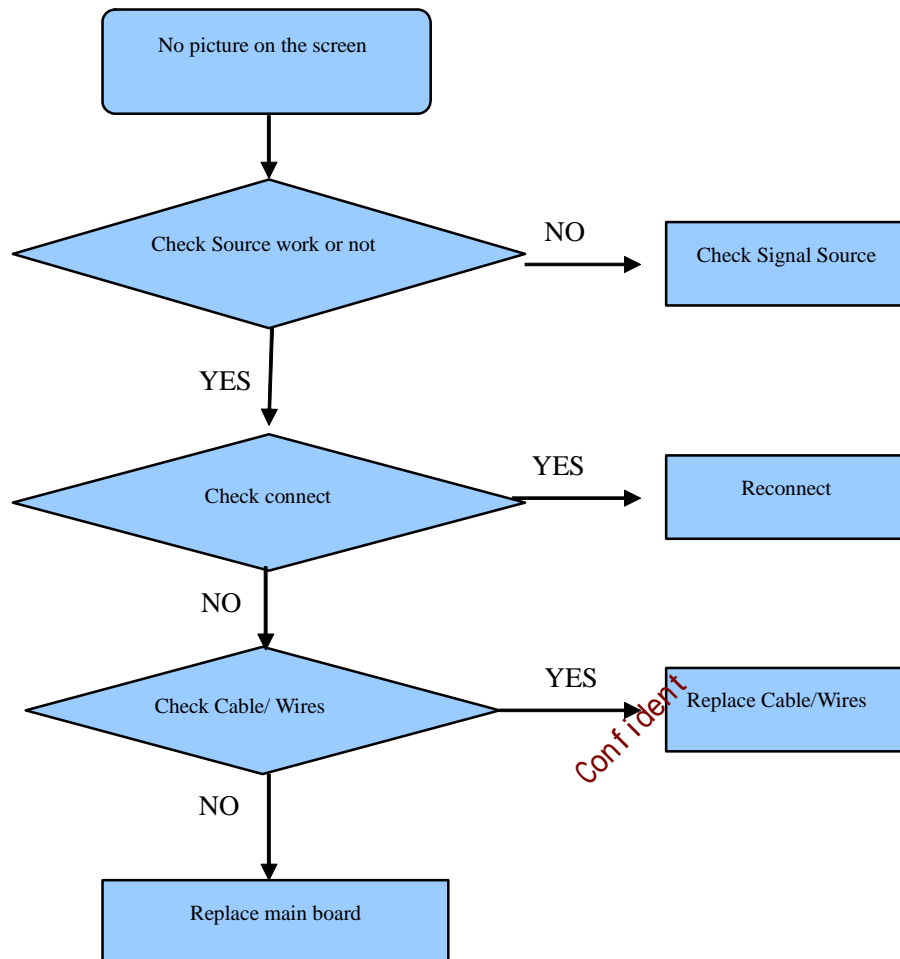
5.5 Troubleshooting for TV/VGA/HDMI input



5.6 Troubleshooting for YPbPr input



5.7 Troubleshooting for Video input



6. Circuit instruction

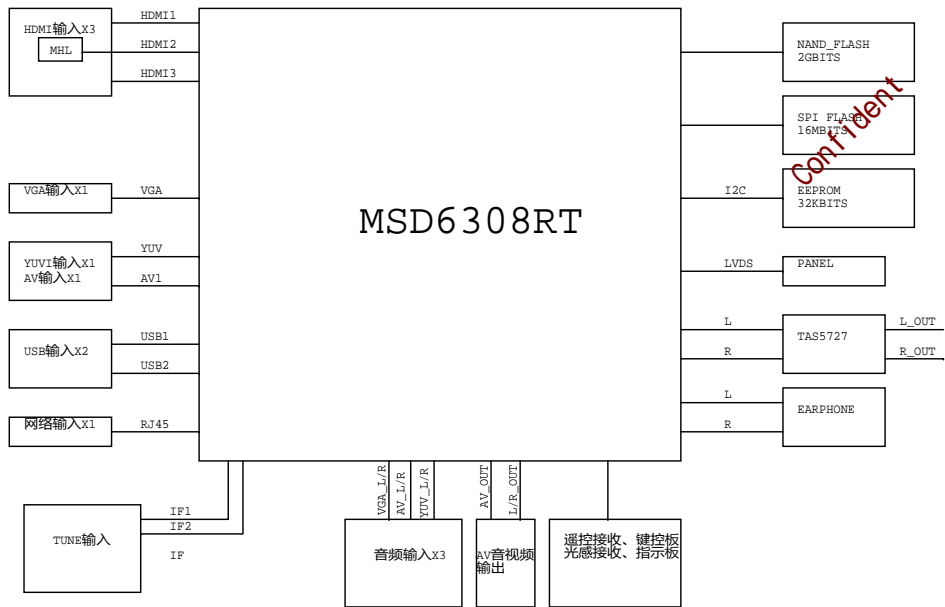
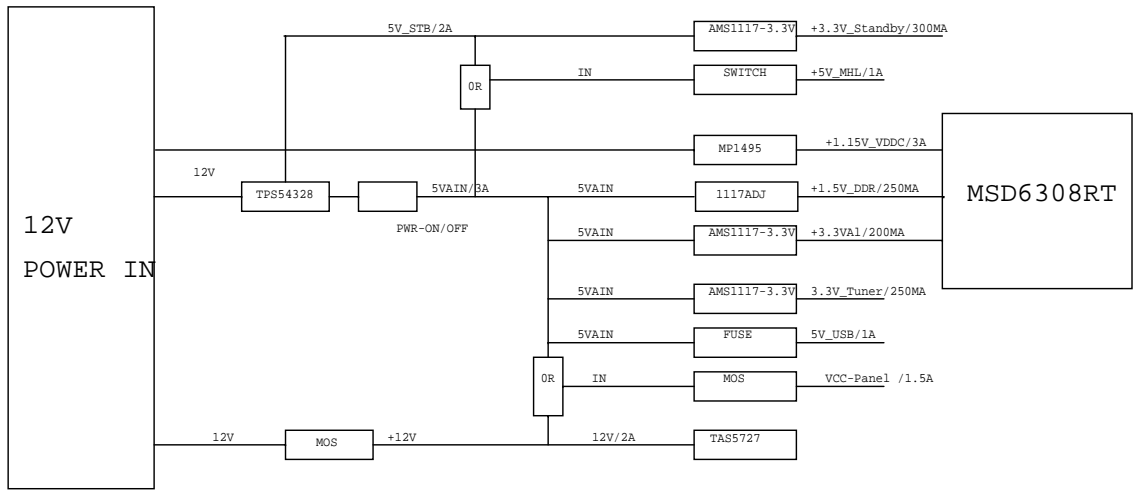
6.1 Power assign and block diagram

6.2 Main board signal process

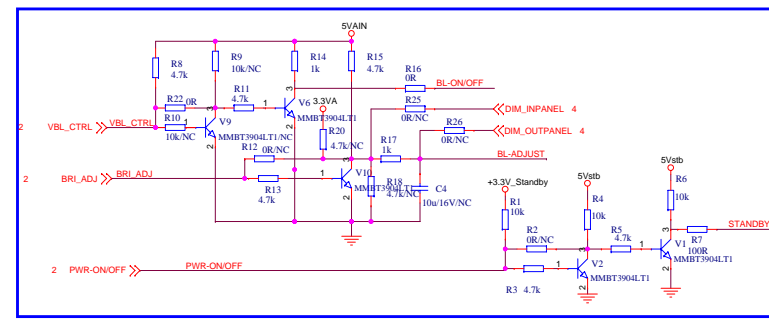
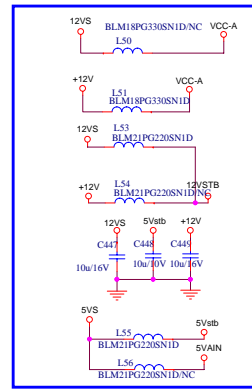
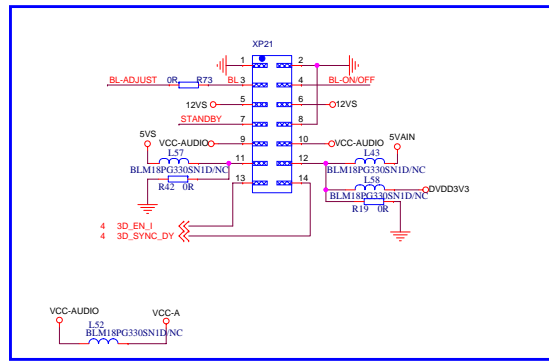
7. Schematic circuit diagram

8. Explode View

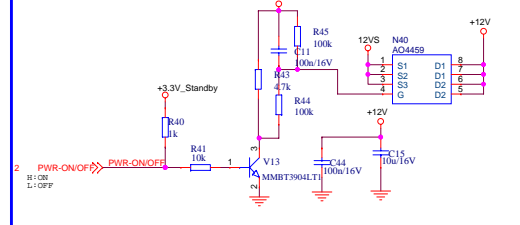
Confident



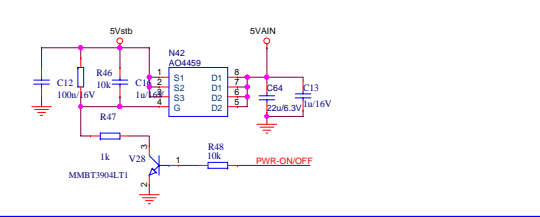
Power Input



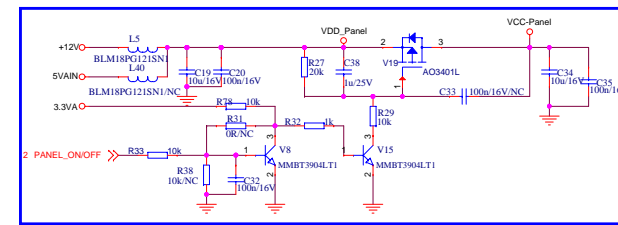
for LED<=32"



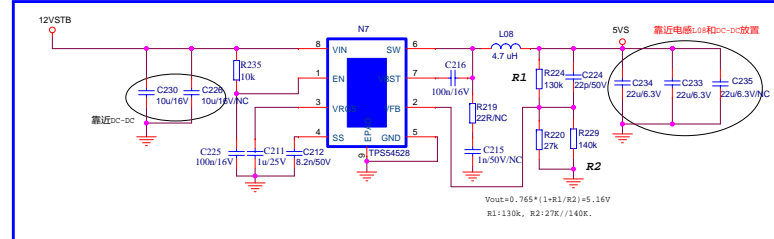
for LED<=32"



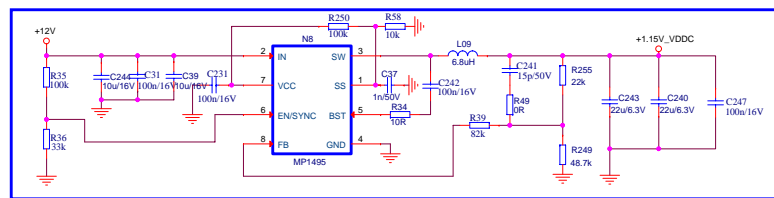
Power for Panel



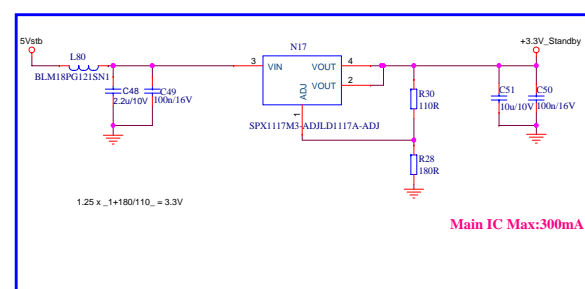
5V Power-12V/5V



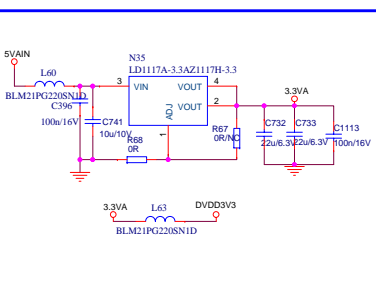
Core Power 1.15V-MP1495(3A)



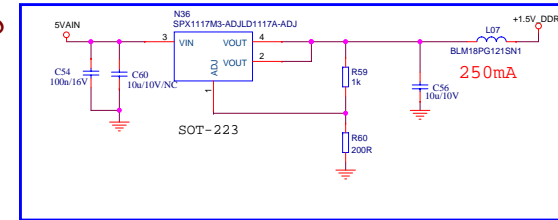
3.3V Standby Power



3.3V Normal Power

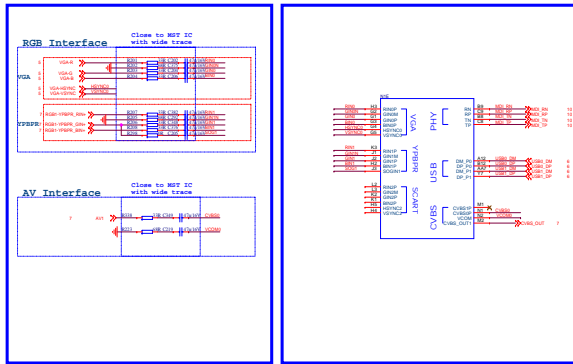


1.5V Normal Power for DDR3

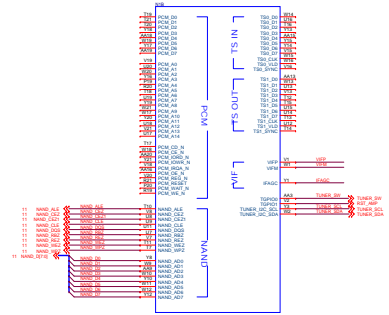


MB:5645

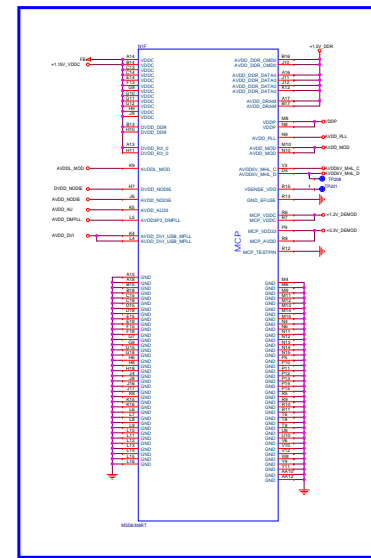
video



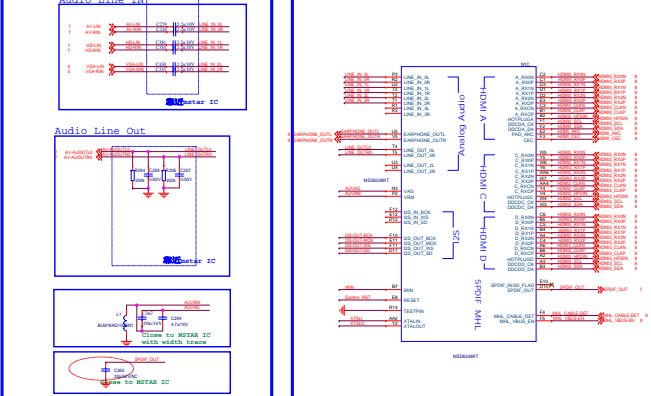
NAND & CI & TS & Front End



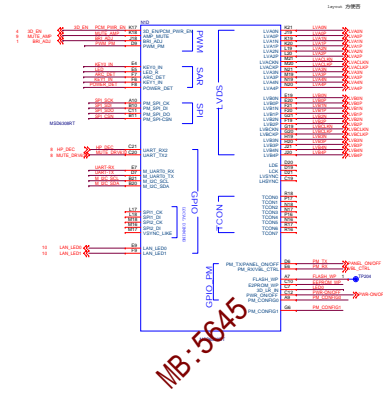
POWER&GND



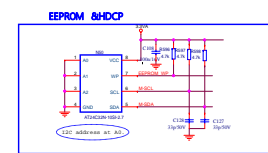
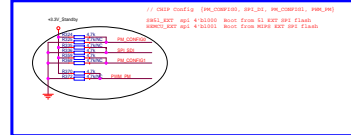
HDMI & Audio



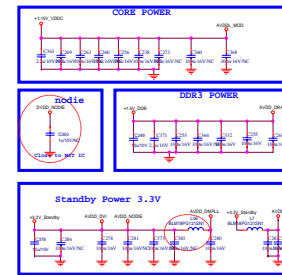
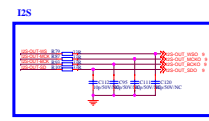
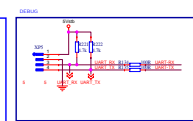
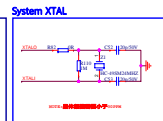
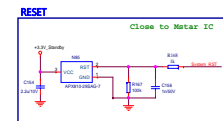
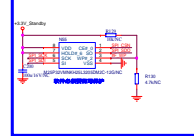
GPIO & LVDS



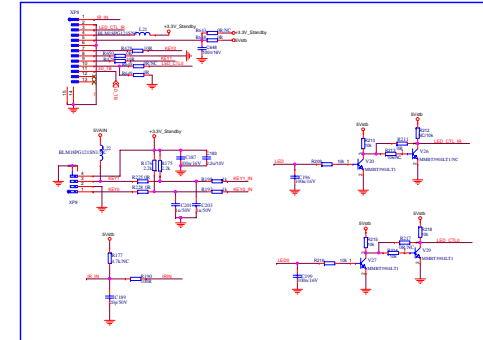
Mode Selection



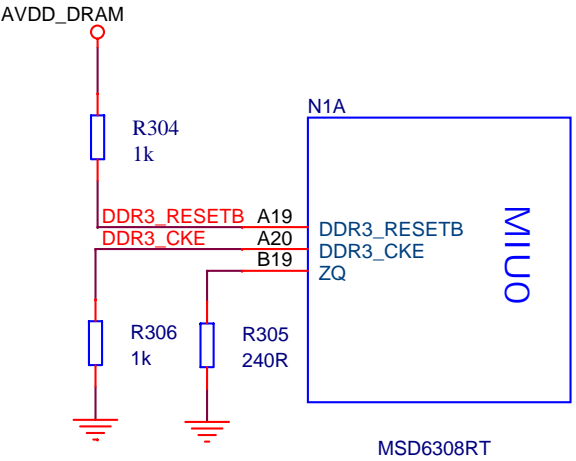
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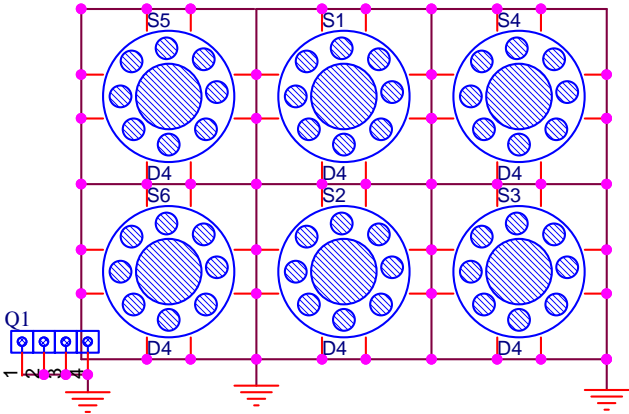
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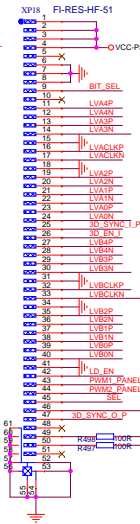
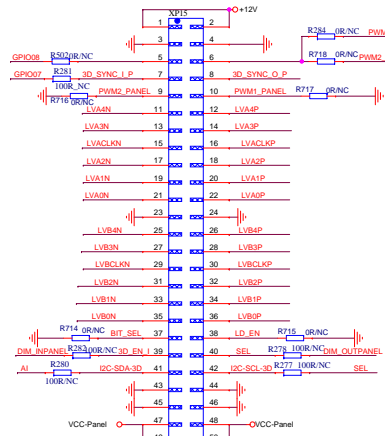
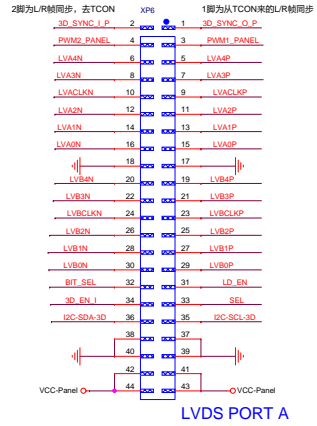
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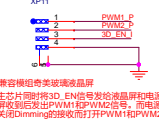
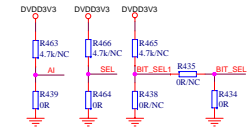
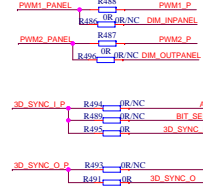
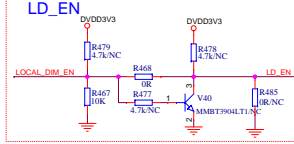
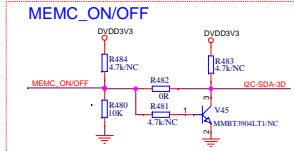
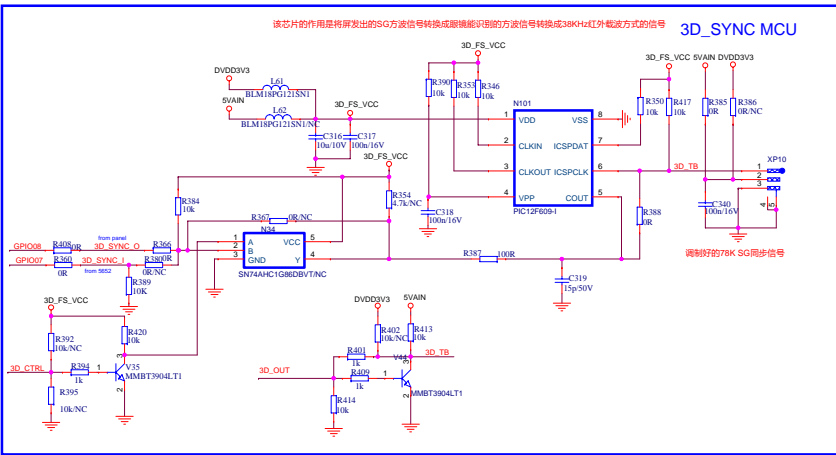
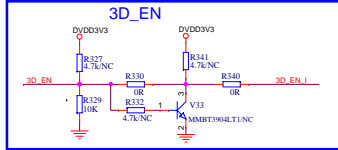
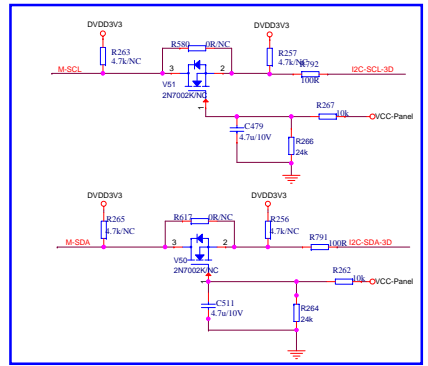
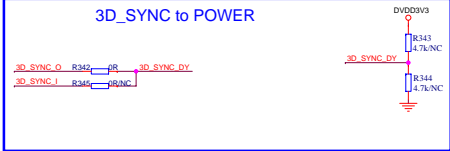
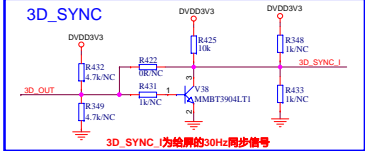
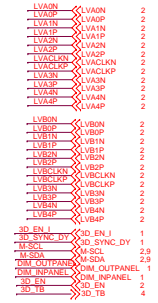
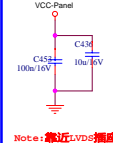
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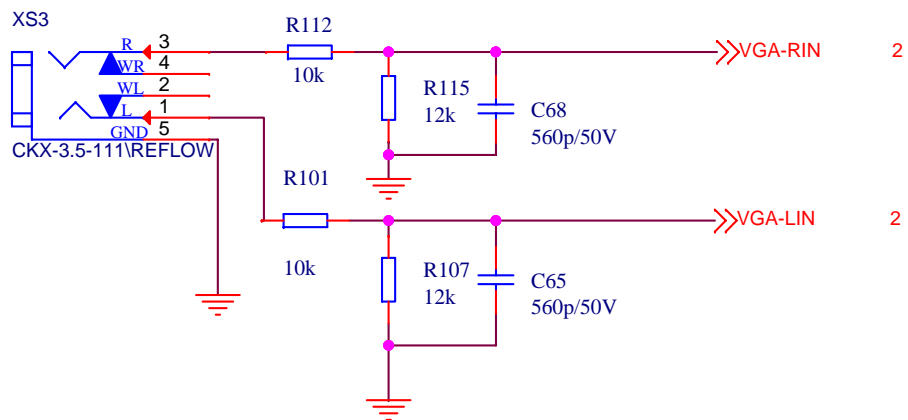
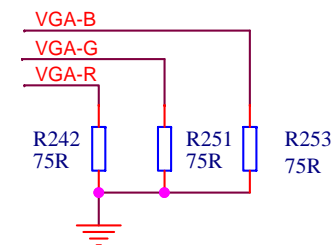
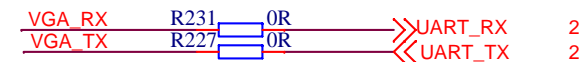
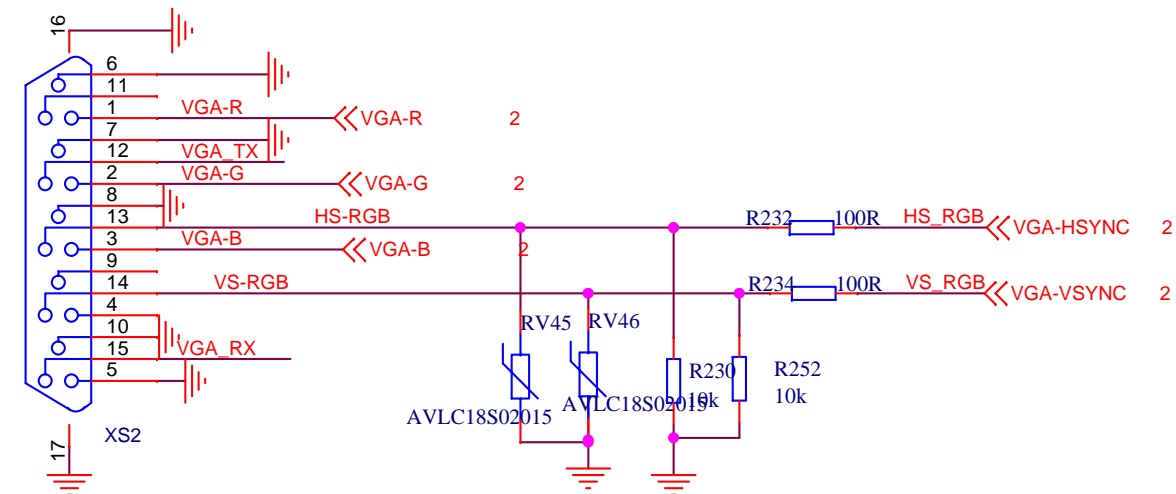


Power decouple




MB:5645

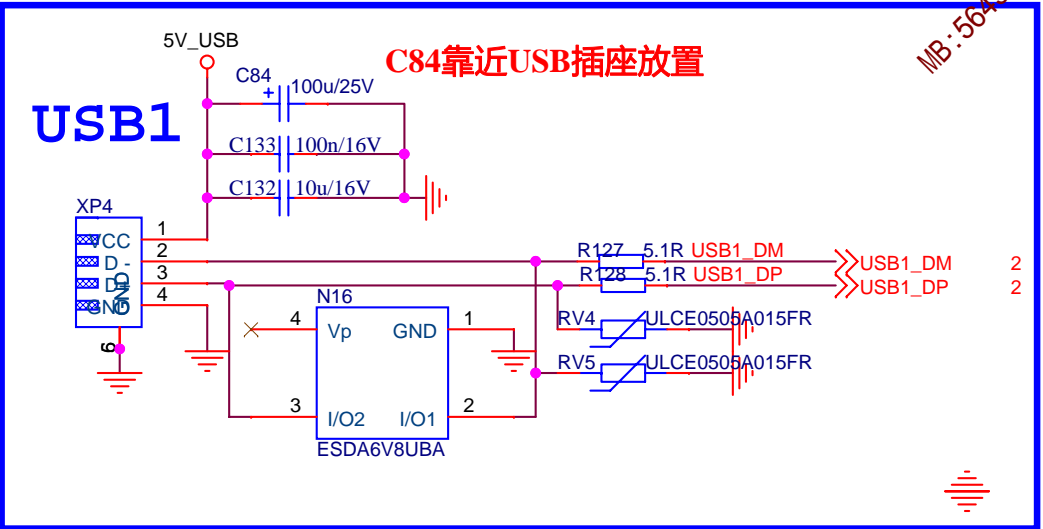
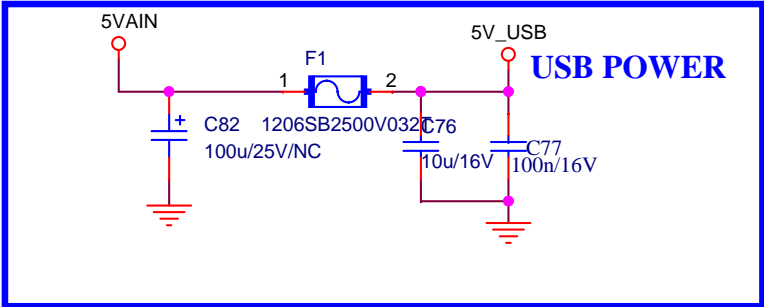
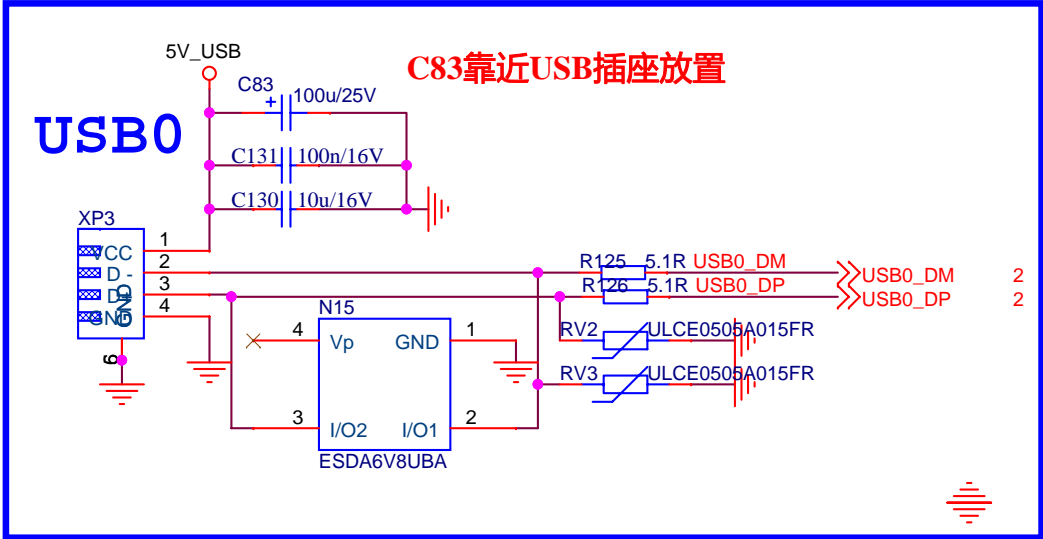
VGA




MB:5645

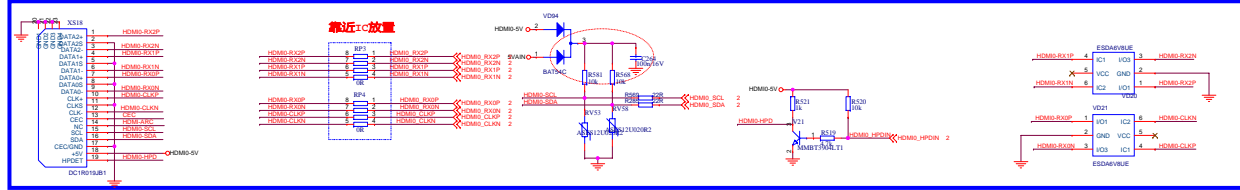
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USB INTERFACE

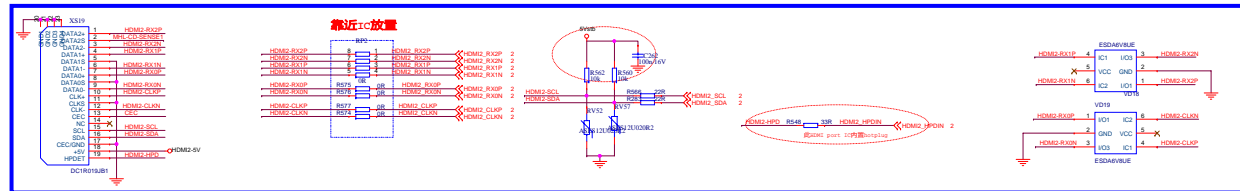


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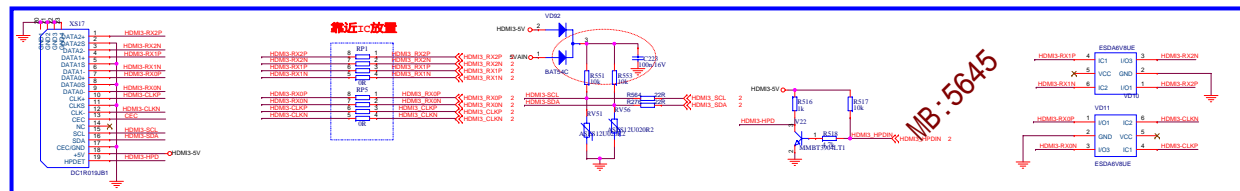
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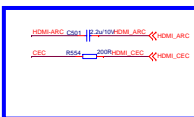
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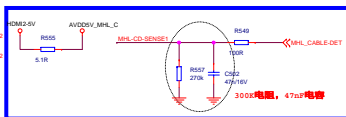
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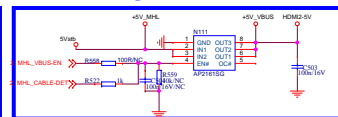
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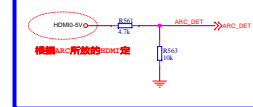
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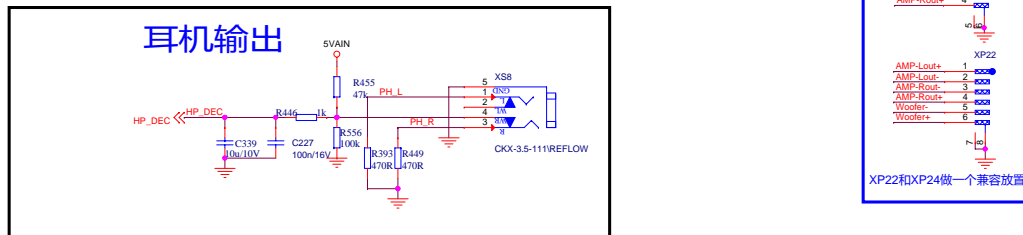
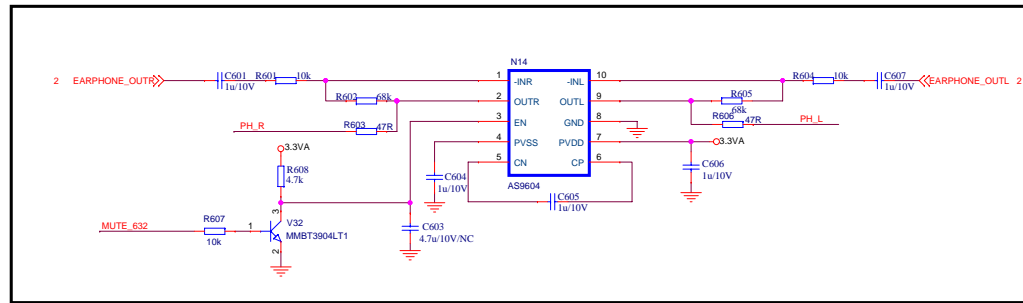
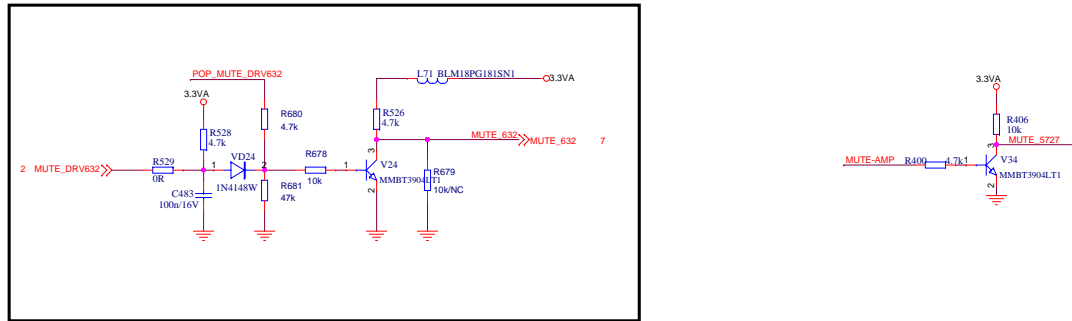
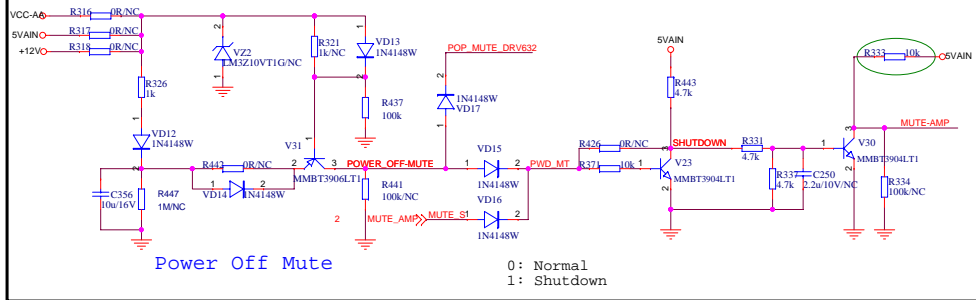
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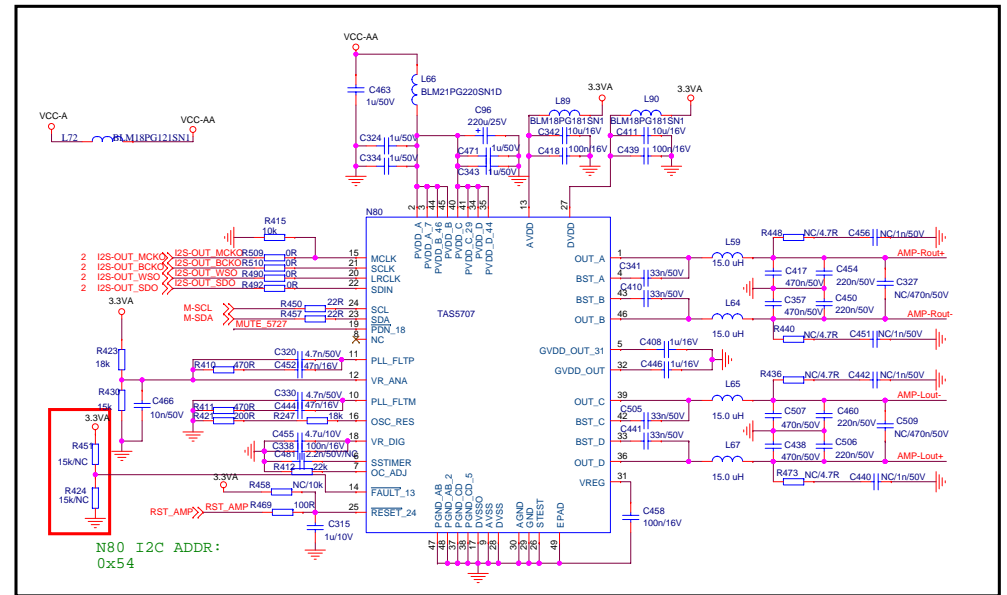
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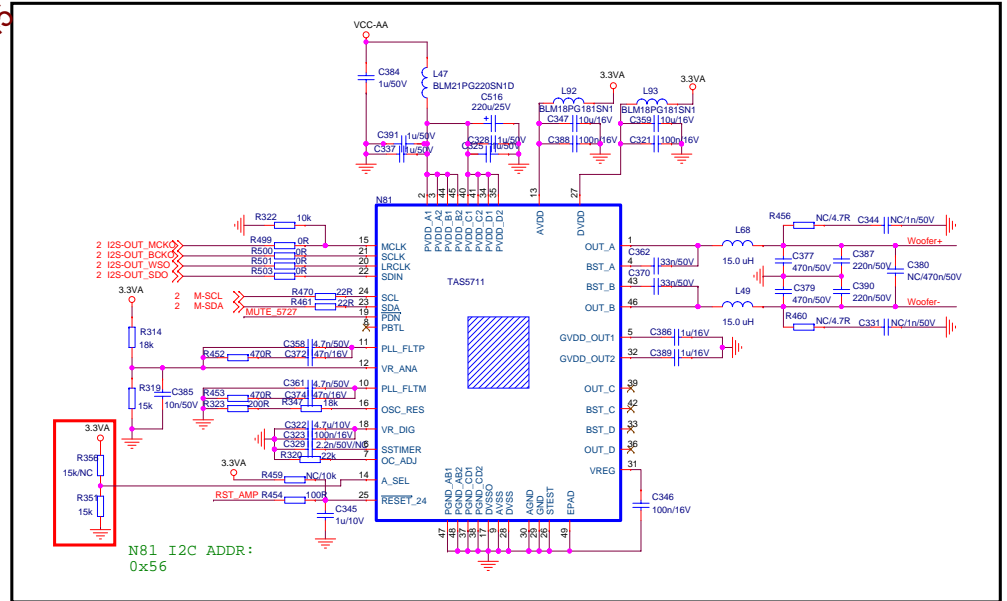
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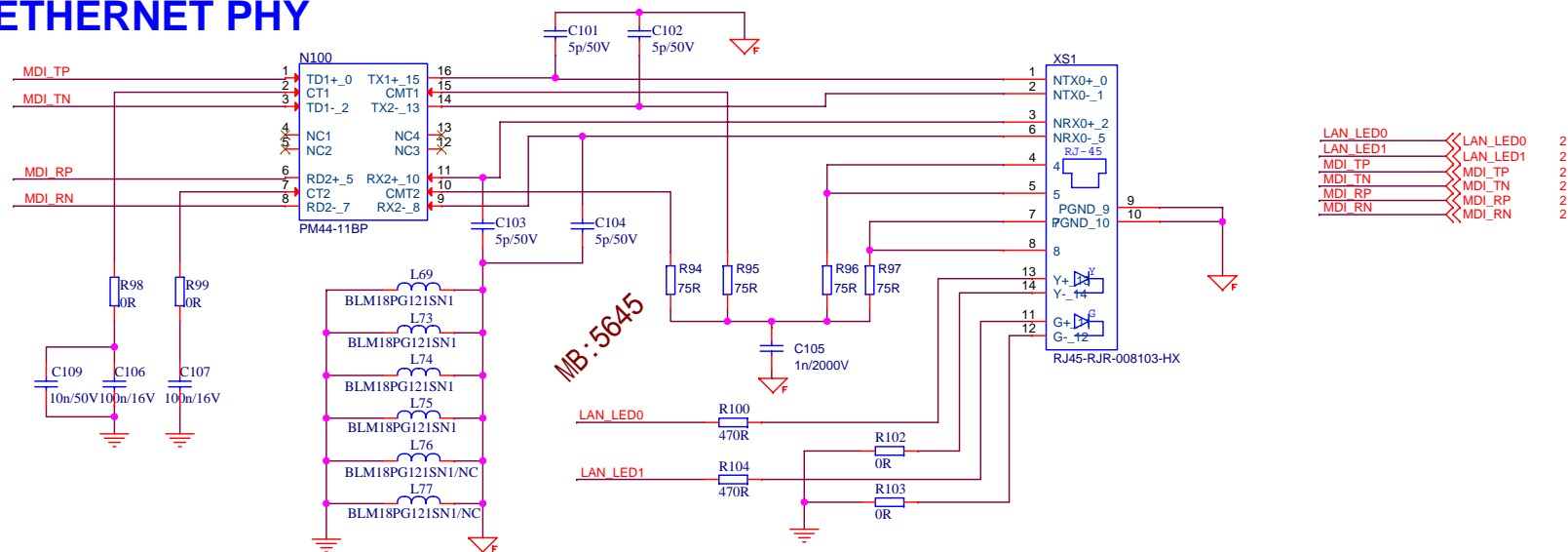
SPEAKER AMP



WOOFER AMP



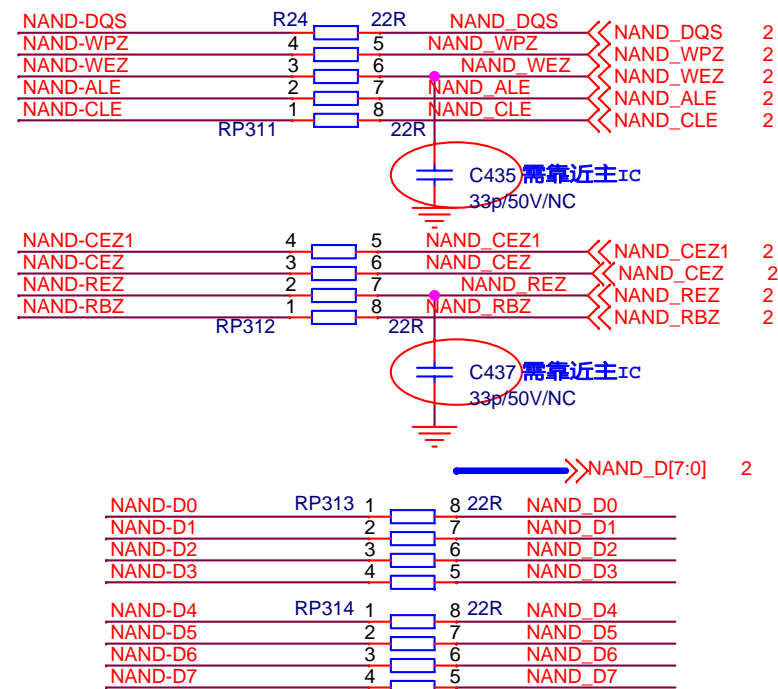
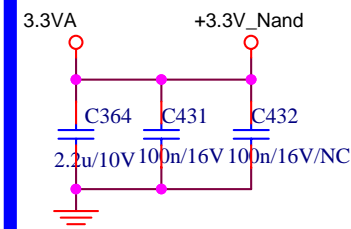
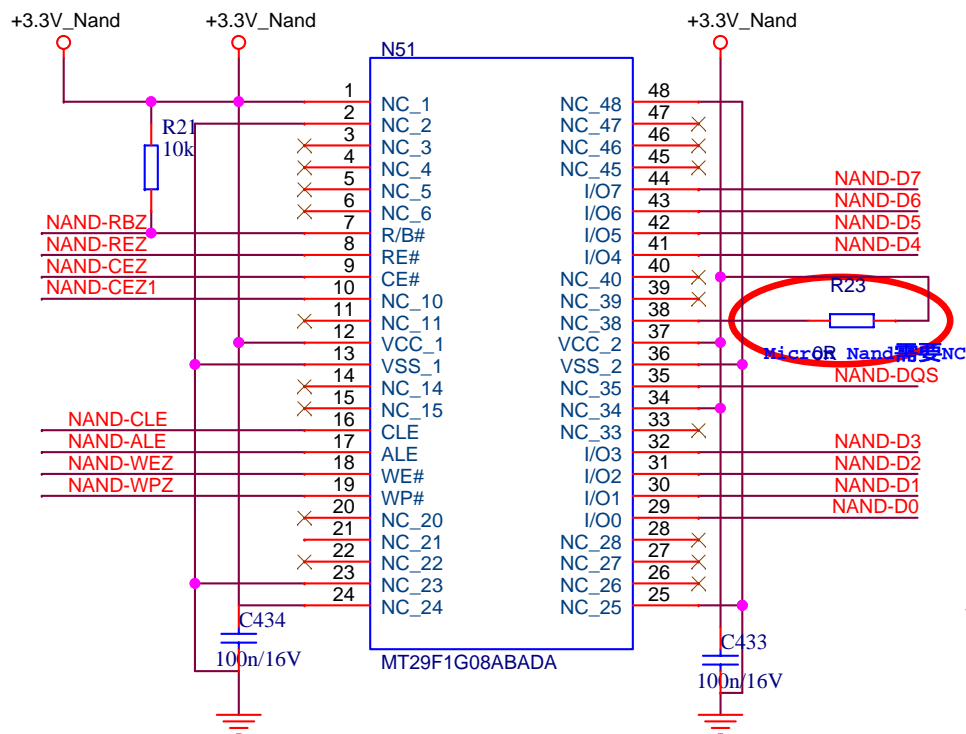
ETHERNET PHY



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NAND FLASH

NAND Power



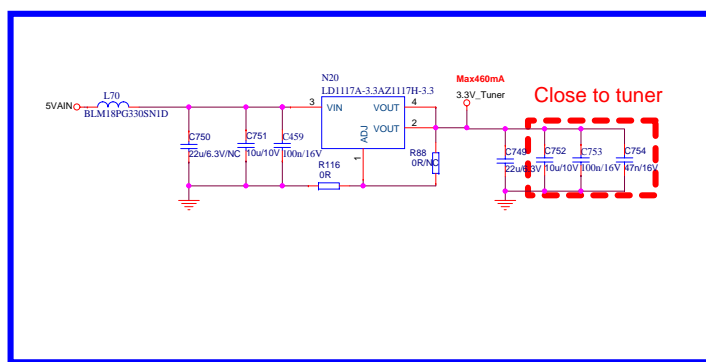
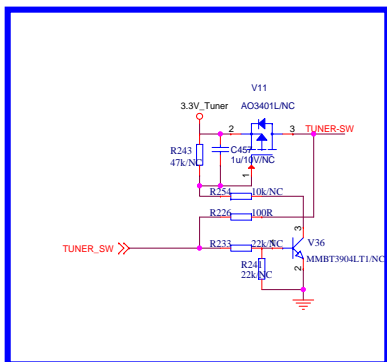
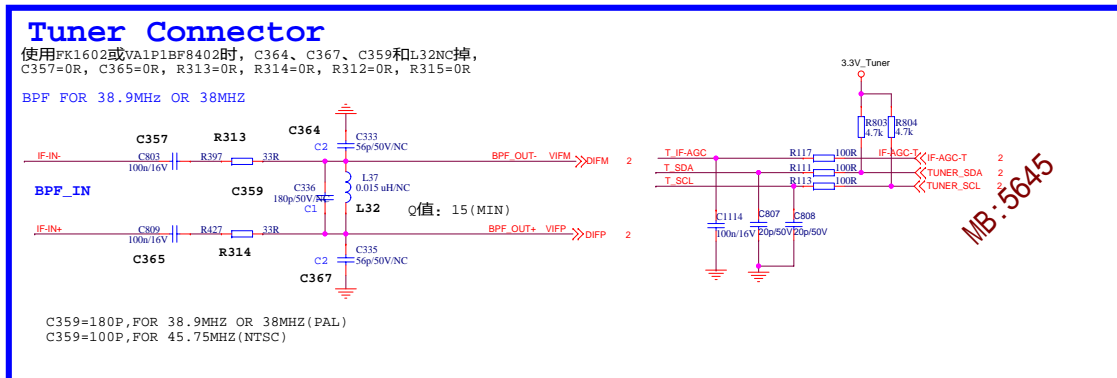
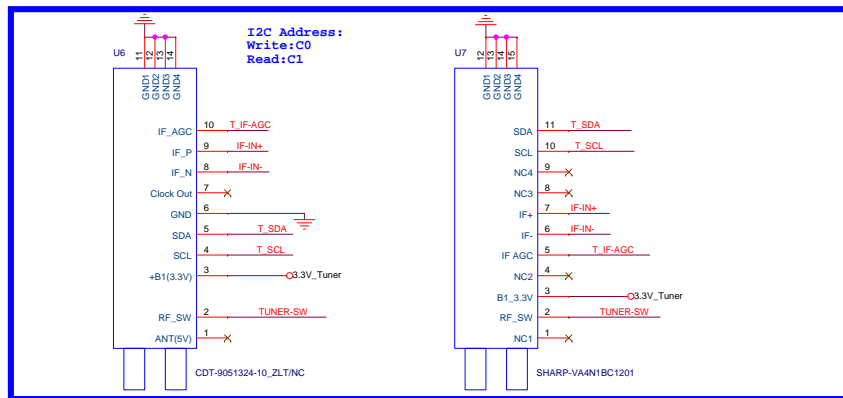
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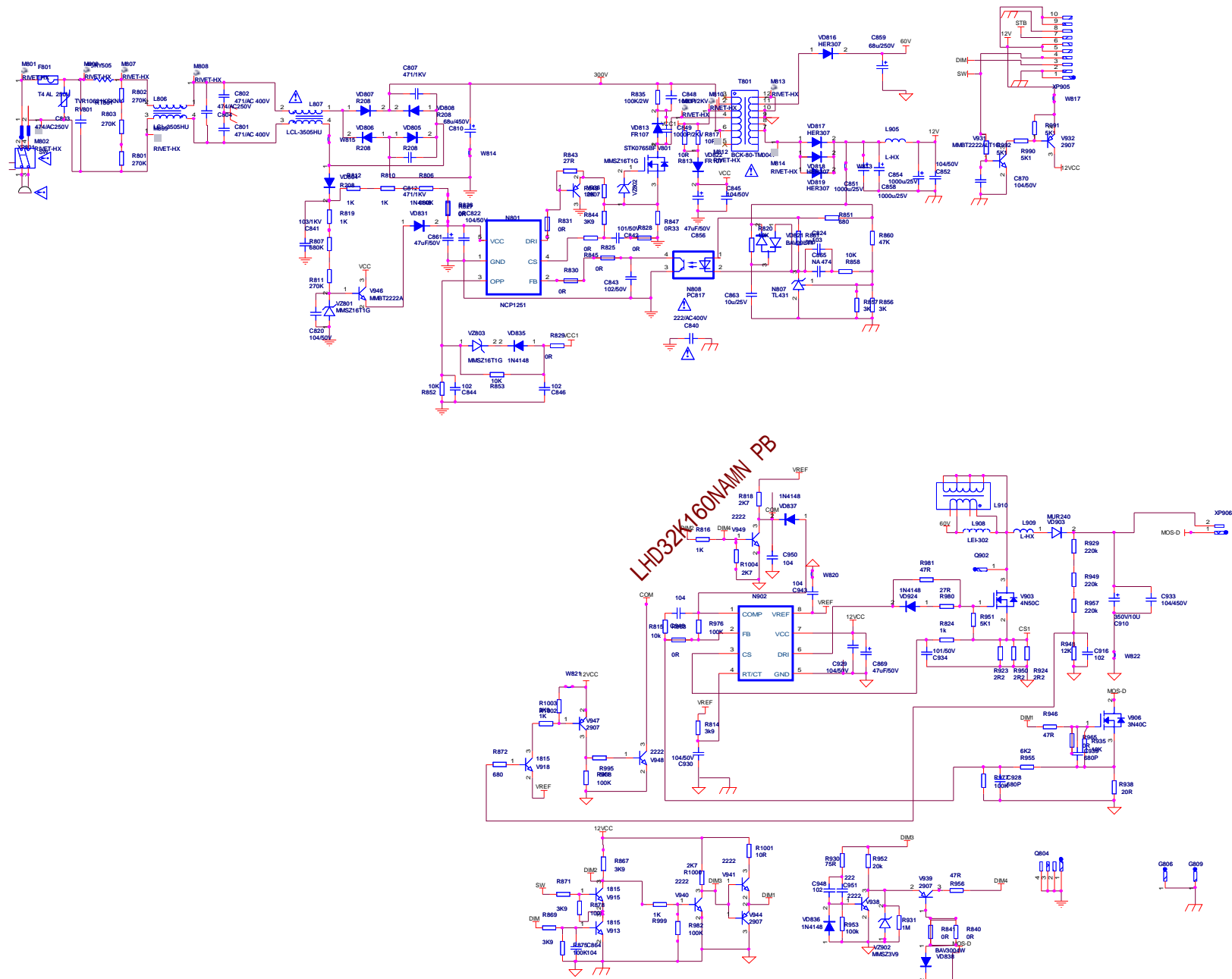
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Schematic Name
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The diagram shows a 5V DC source connected to a 10K resistor. This resistor is connected to a node labeled 'R8'. From 'R8', a 20K resistor is connected to ground. The text 'LTDN48K20DAM' is written diagonally across the diagram.

