



LCD Television Service Manual

Chassis: MT5310

Product Type LHDN32K15TUK

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 these 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.

3. Factory/Service OSD Menu and Adjustment

3.1 To enter the Factory OSD Menu

a) With factory RC (remote control)

1. Press “M” button and enter factory mode.
2. Press “Menu” button and enter factory OSD menu.
3. Press “CH+”/“CH-” button select the function menu, press “VOL+”/“VOL-” enter the selected function menu. Press “VOL+”/“VOL-” button adjust values in the menu.
4. Press “M” button exit factory mode in the factory OSD menu.

When TV outgoing factory, user can not enter factory OSD menu with Factory Remote

b) With user’s RC(remote control)

1. Power TV On
2. Press Menu button and call up User OSD Menu
3. Select Sound-> Balance
4. When Balance value is “0”, Enter 1->9->6 ->9 in sequence.

Note: If necessary, re-do number keys.

5. Factory OSD appears.
6. Press the standby button then AC turn off and restart the TV, 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

Factory Menu
White Balance
Signal Prefabricate
Pattern Test
Factory Option
Version info

White Balance	
R Grain	129
G Grain	128
B Grain	127
R Offset	128
G Offset	128
B Offset	126

Signal Prefabricate

Zhong Shi
Huang Dao
Gui Yang
Liao Ning
Hungary
Australia
France

Pattern Test

Test pattern NULL

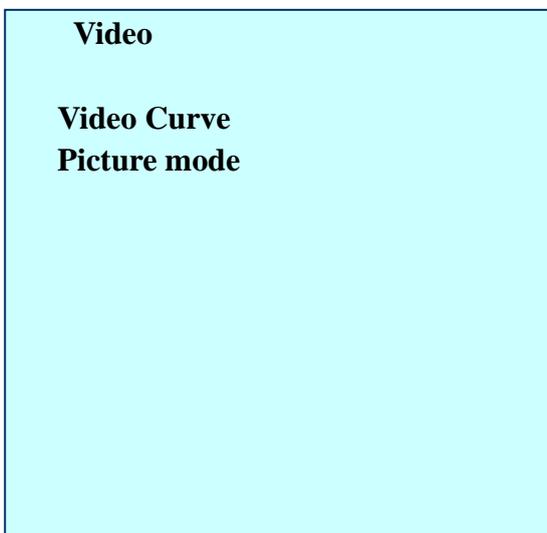
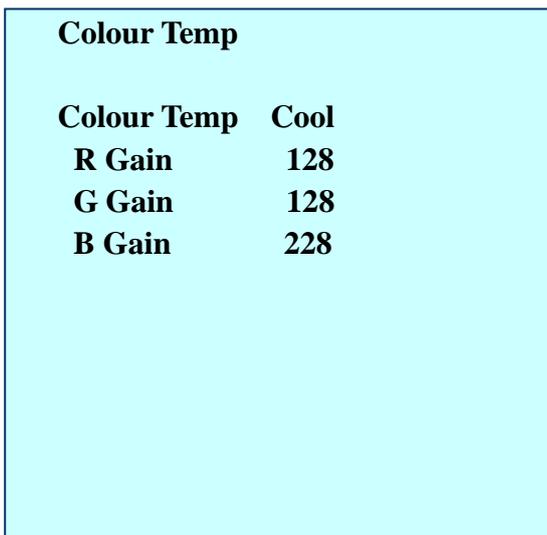
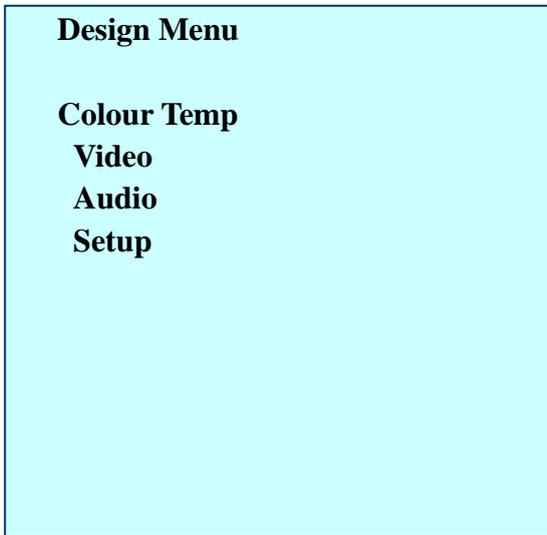
Factory Option

TO FAC **M**
Power Status **Standbv**
Logo Option **Hisense**
LVDS Spread **0**
Panel type **B1**
Clean Protected
Clean ALL

Version info

Model: LHD32K15CSEU
Version V00.01.00a.A1201
Panel type **HIS32**

3.2.2、 Design Menu



Audio

Volume

Audio Mode

Dolby Banner Off

Compression RF

Comp Factory Full

Down mix Stereo

Setup

Event Form Both Form

Note:

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

4. Software Upgrading

The software is upgraded by a burning tool-MtkTool, which can burn the program file *.bin to the main board of the unit.



MTKTool2.48.07+PL-2303 Driver Installer.rar

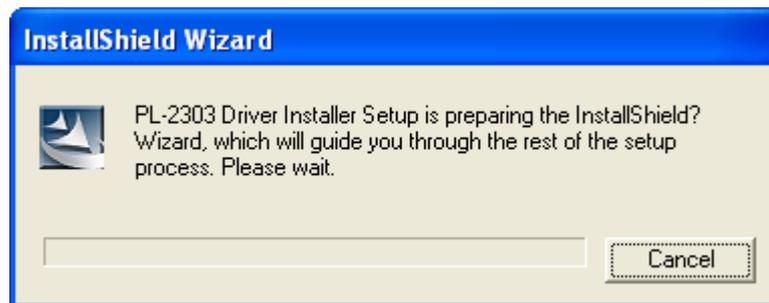
4.1 Get ready for upgrading

4.1.1 Install the driver



PL-2303 Driver
Installer.exe

Double click the icon , install the driver.



Select the default value, the driver will be installed step by step.

4.1.2 Hardware connecting

Connect the unit to your pc with a USB-to-serial port cable. USB port connects to your pc, and serial port to the TV's RS232 port.

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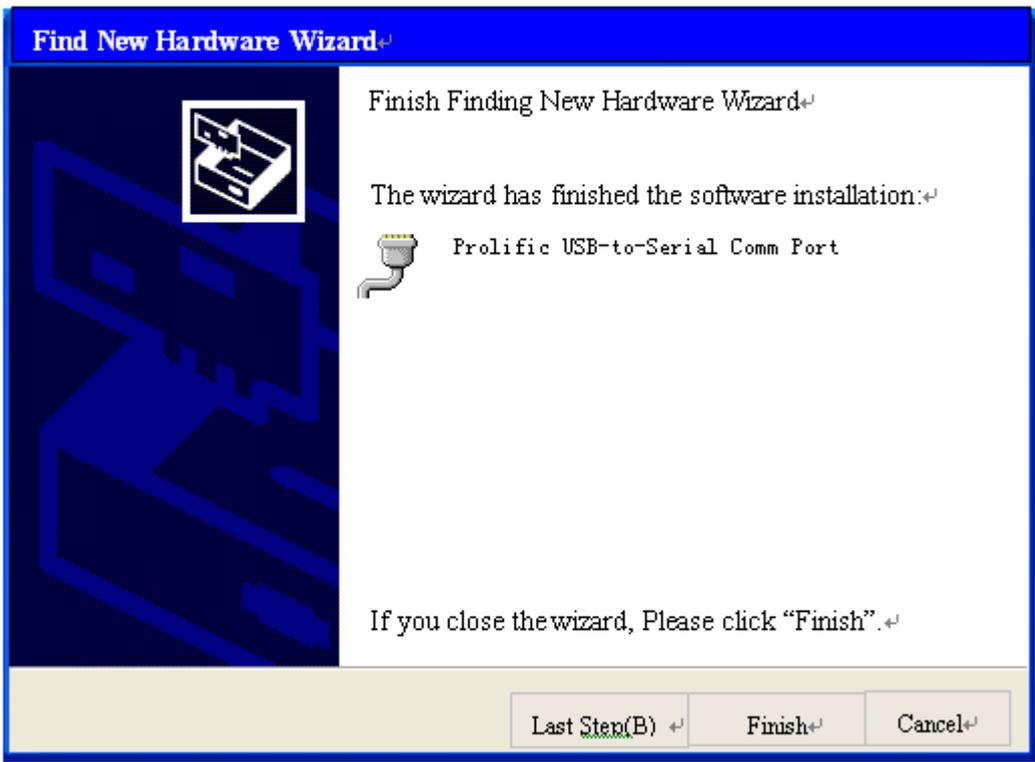


USB connector: to PC.

Serial connector to the main board of TV

For the first connecting, the pc will recognize and automatically install the USB device. The process is just like the installation of a mini disk, see the following picture.





4.2 Upgrading with the MtkTool

4.2.1 Introduction with the upgrading tool MtkTool

MTKtool is a green program needing no installation. It is saved in the folder



. There are seven folders/files in this folder altogether.



Icon, open the MtkTool.

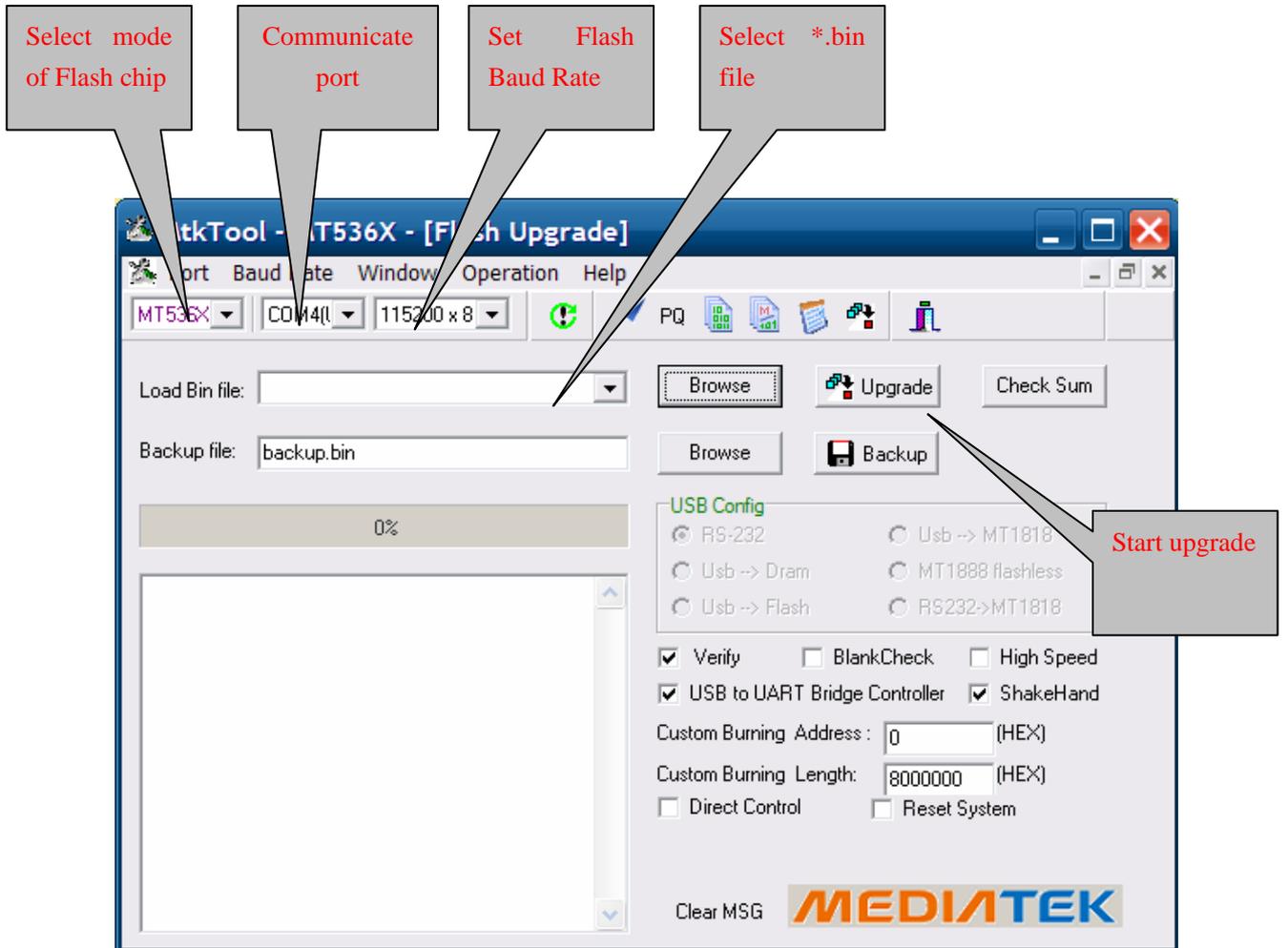
If following error appears, it means the related port is not be set properly.

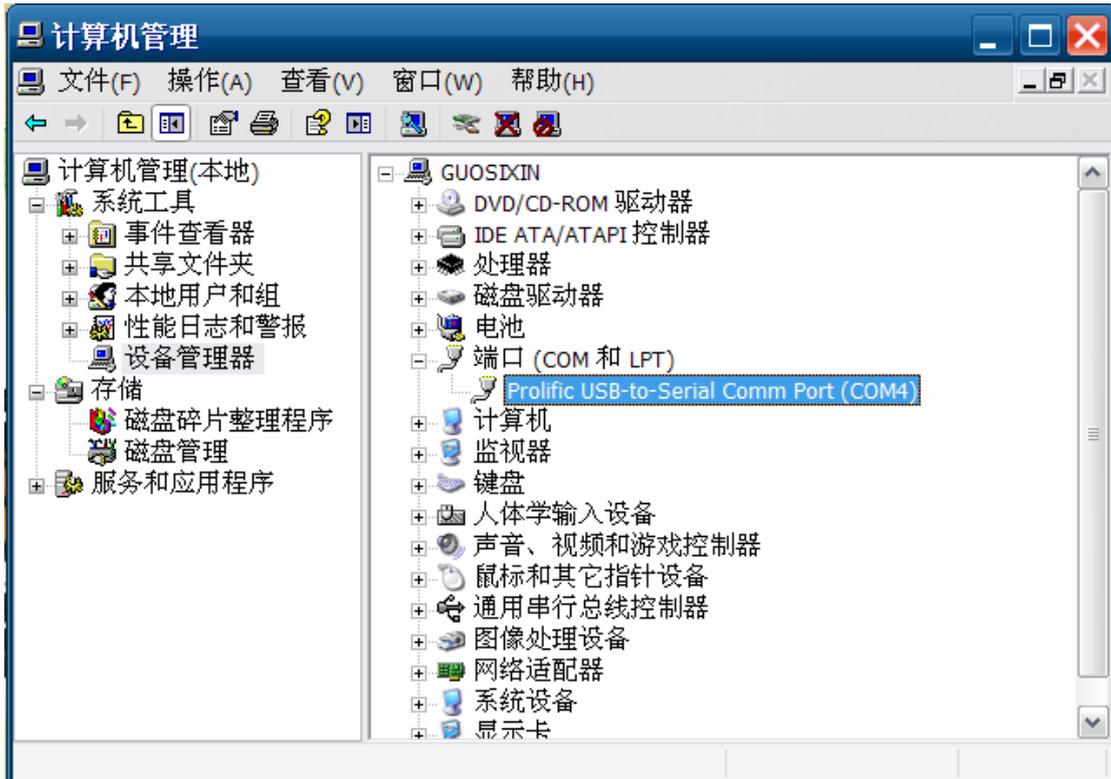


Ignore these errors, click “Confirm” and enter the MtkTool main interface, see the following picture.

Please refer to follow steps to update the software:

1. Select mode of Flash chip to **MT536X** as the below picture.
2. Refer to the next page instruction to select the communicate port.
3. Press the icon beside the baud rate and make sure it is green as the below picture.
4. Set the flash baud rate to 115200 as the below picture.
5. Click the browse button to select the *.bin file that will be updated.
6. Click the “start” button to update software.





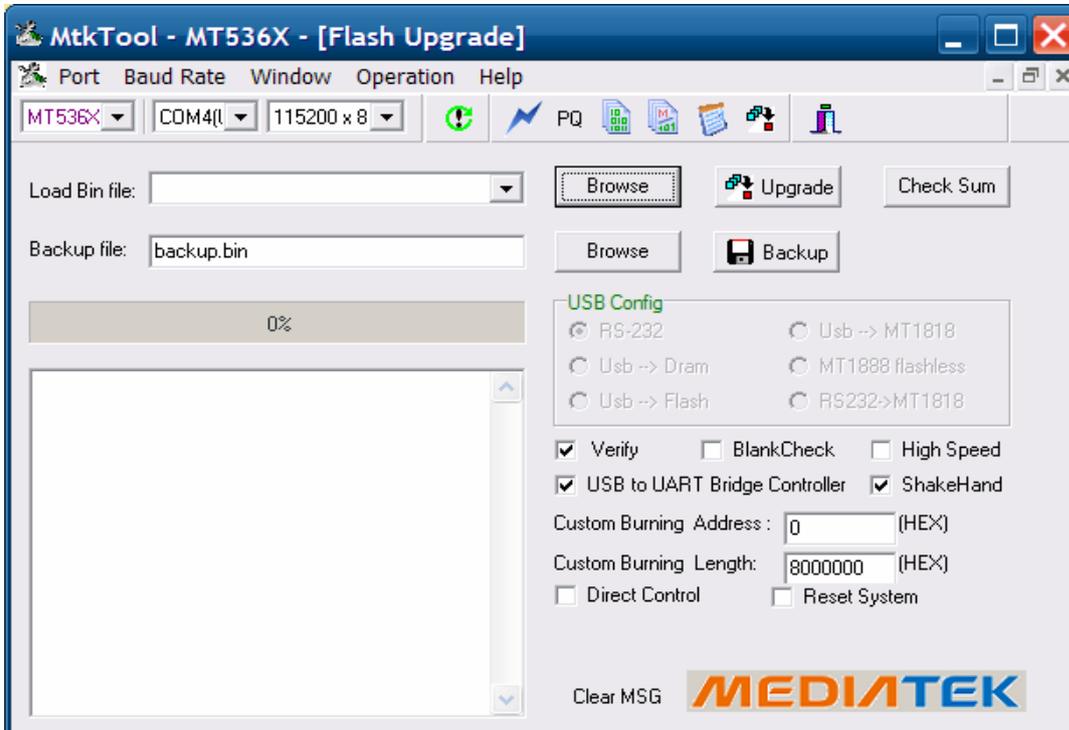
Open “Device Manager” and find which port is connected with the TV. In above picture, COM4 is connected to the TV; so, select “COM4” in the MtkTool main interface. Select the right baud rate according to chip model. For this unit(chip model is **MT536X**), select 115200.*8. “Auto Set Flash BaudRate”

Note: Where or not click the “Auto Set Flash Baud Rate” in the “window” menu depends on the chip type. If the flash chip does not support high speed transport, do not select this option; otherwise, reserve the selected mood.

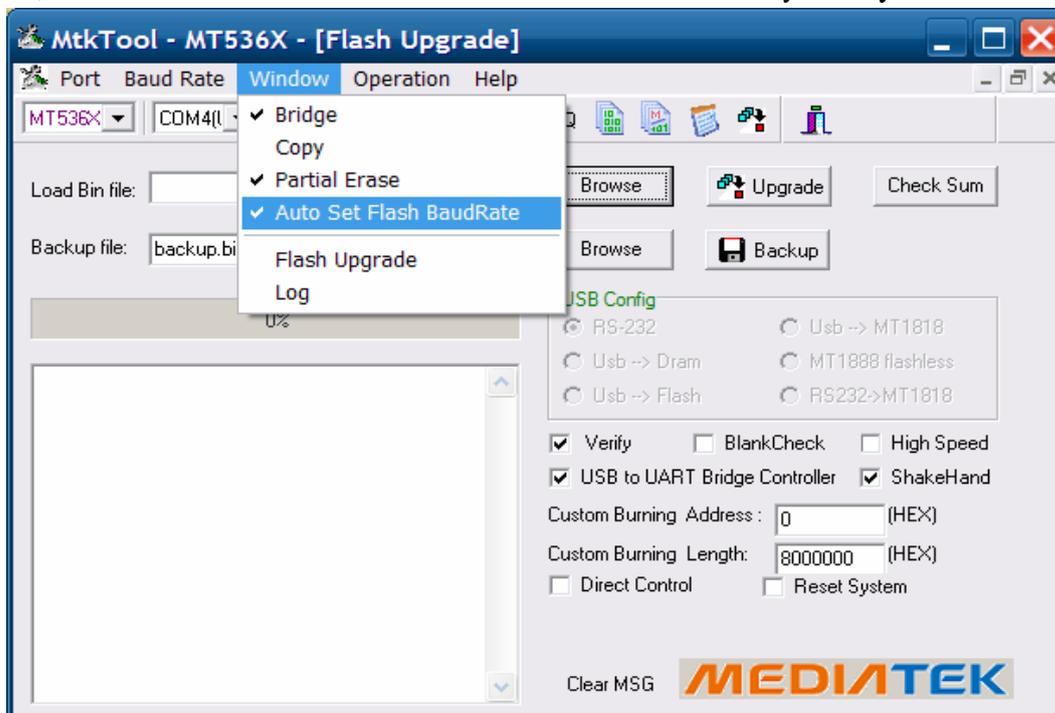
4.2.1 Upgrading Process instruction

Upgrading steps with the MtkTool are as follows:

First , select mode of Flash chip.

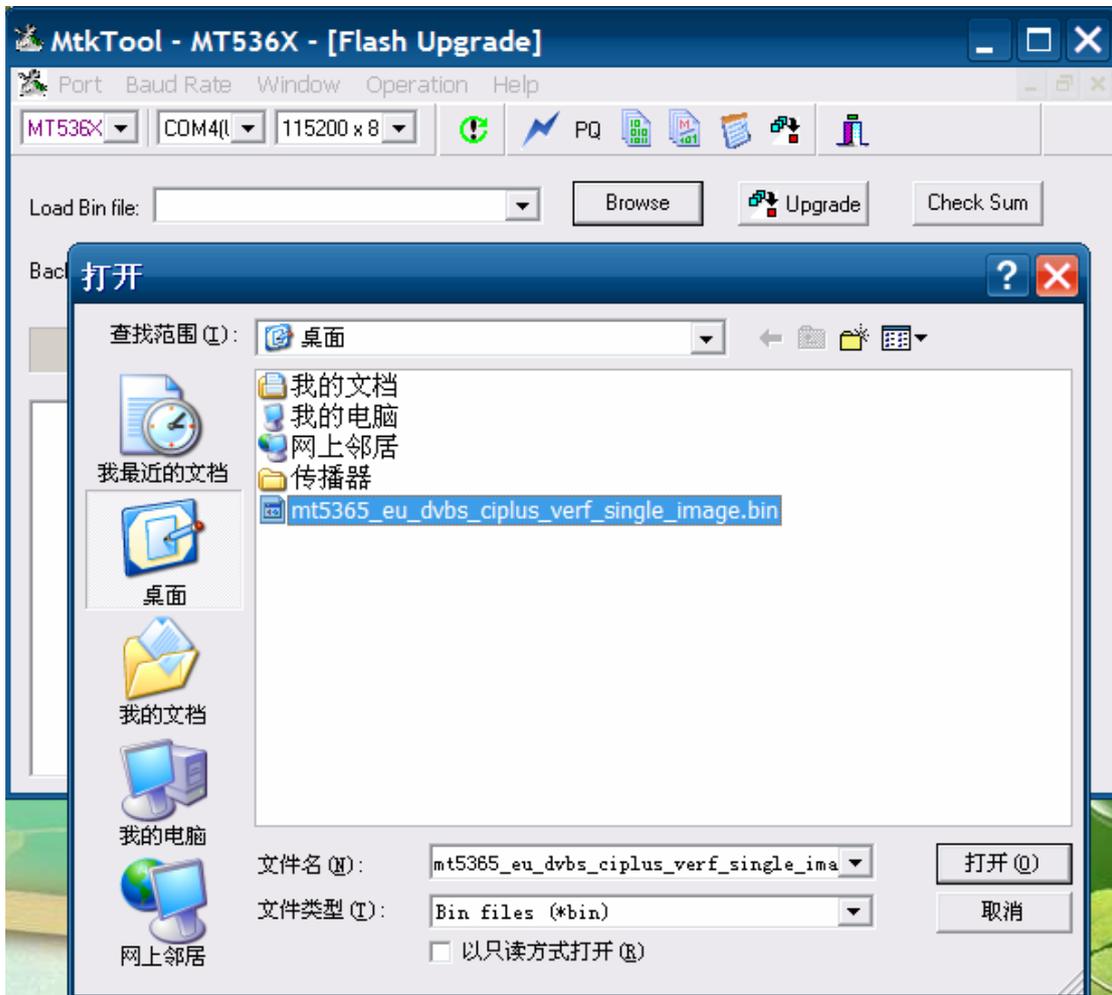


Next, check whether “Auto Set Flash Baud Rate” is marked by the Symbol “✓”.



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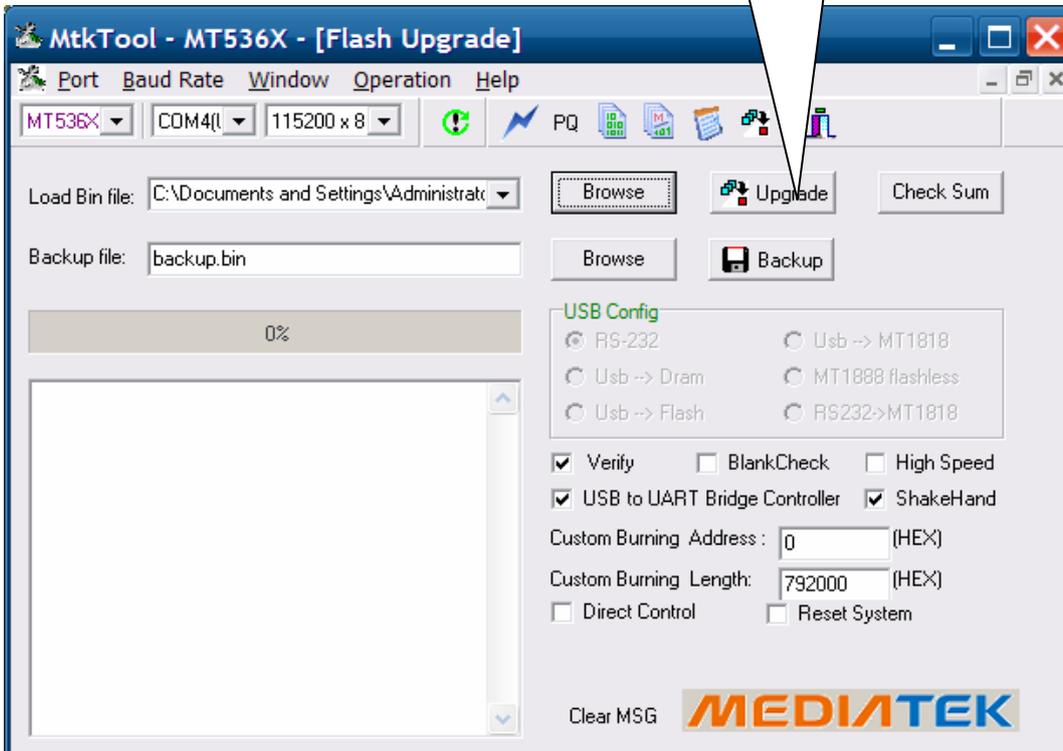
Next, Click “Browse” button, find the upgrading program file, and select it.



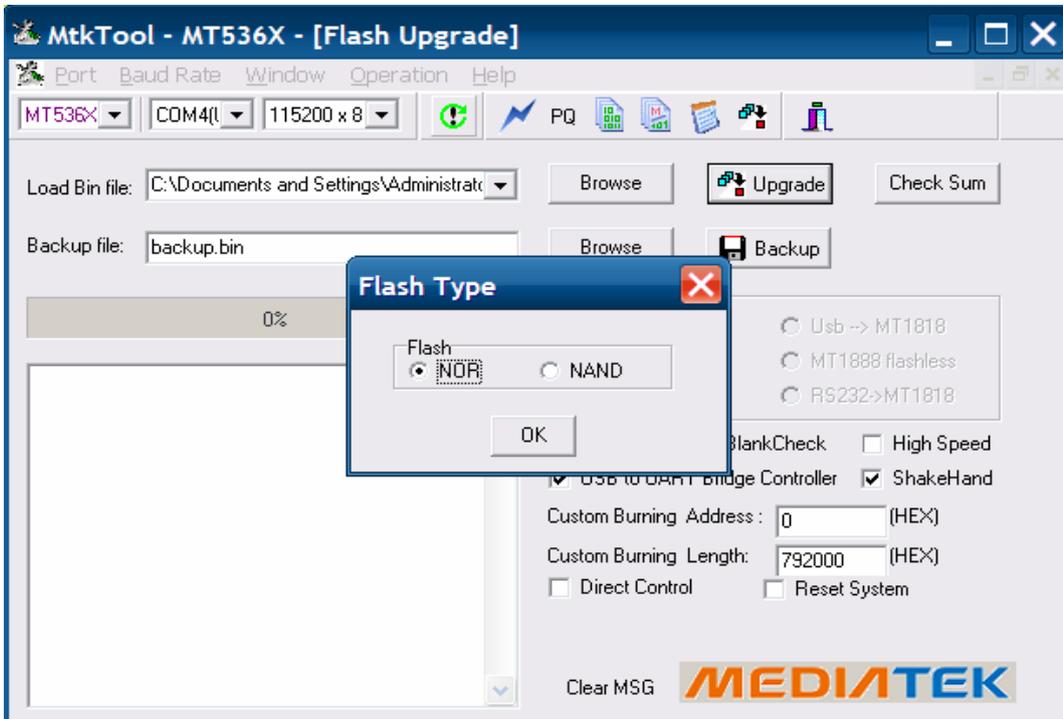
Next, Press “Upgrade” button and start upgrading.

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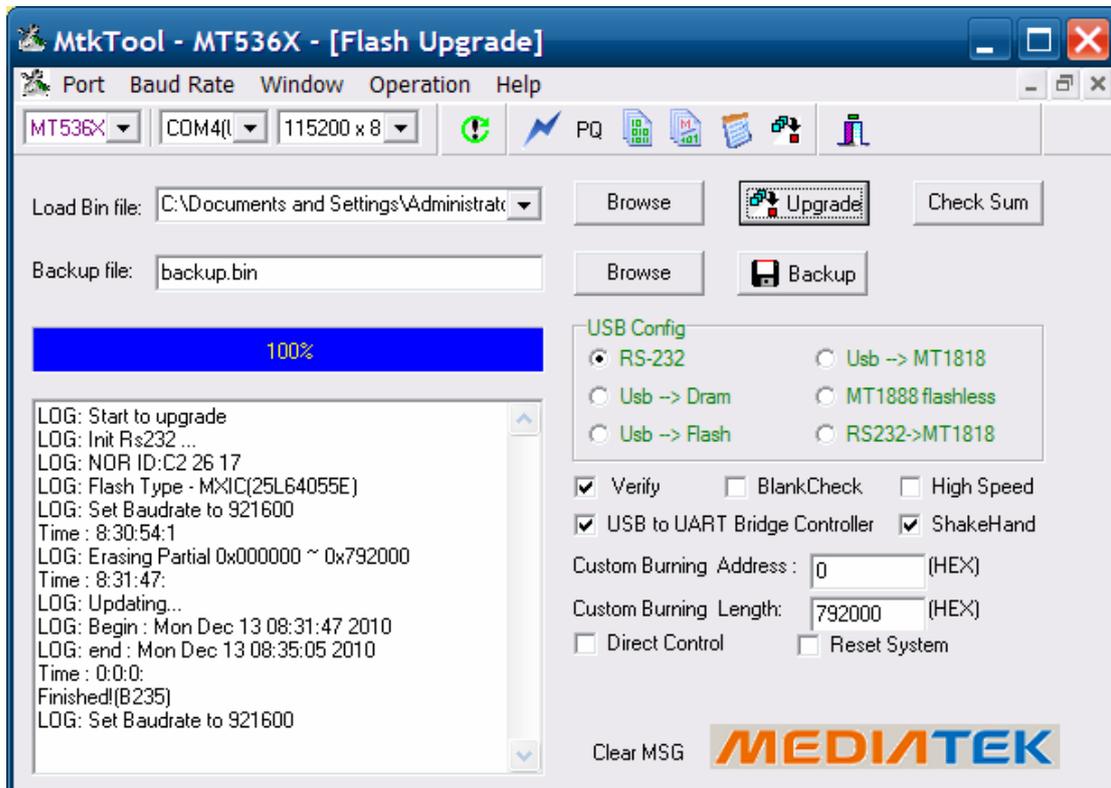
Press the button
"Upgrade"



Next, after the button "Upgrade", the Dialog box will be appeared. Then select the Flash Type.



Finally, the following interface appears on the screen, indicating upgrading successfully.



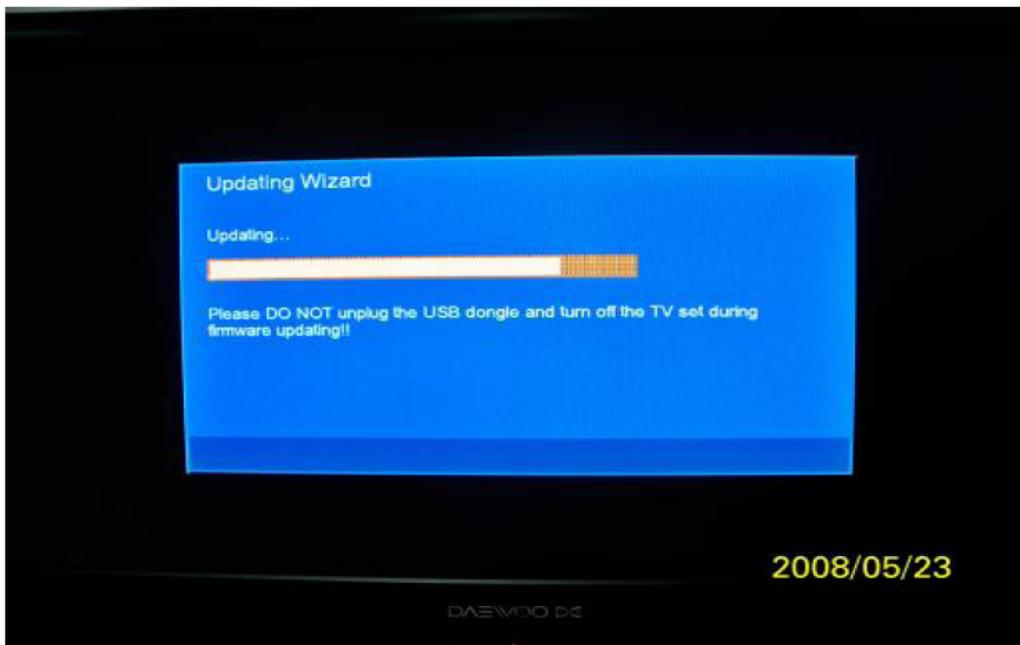
4.2 Upgrading with the USB

MT5310 Series can update with USB directly, the Main software should named his_upgrade.pkg。 Turn on the TV then Insert the USB .

The following appear:



Choose “YES” on the screen and press the ‘OK’ button on the remote control, Starting upgrade About 40 seconds.



After Upgrading, the following appear:



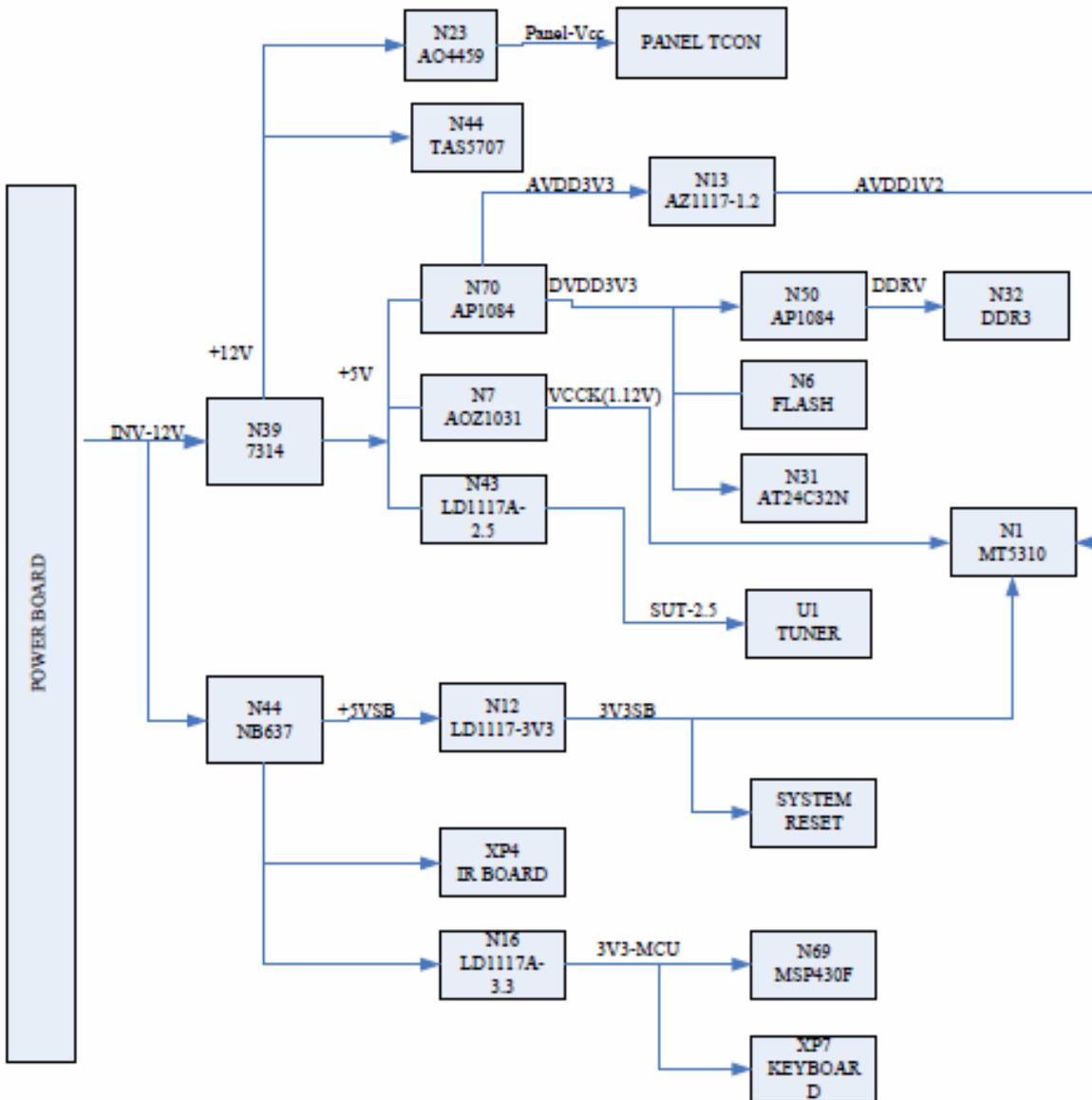
Power off the TV and pull out the USB then restart the TV. The new software start working.

If software upgrading defeated, First turn off the TV. insert the USB and restart the TV.

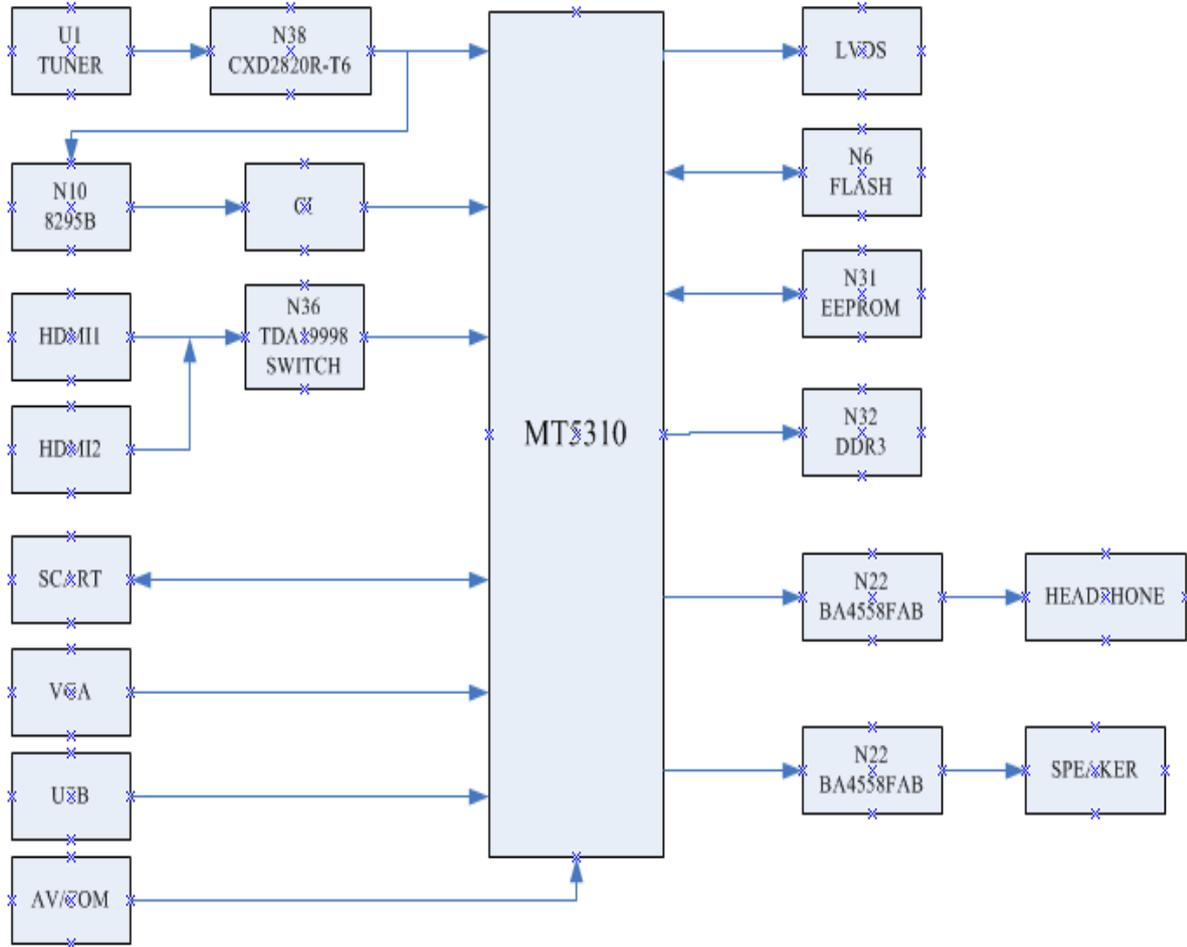
It can automatic upgrade. nothing on the screen ,The indicator led is red. When upgrading is successful , the indicator led turns blue. The system auto start up.

5. Circuit instruction

5.1 Power block diagram

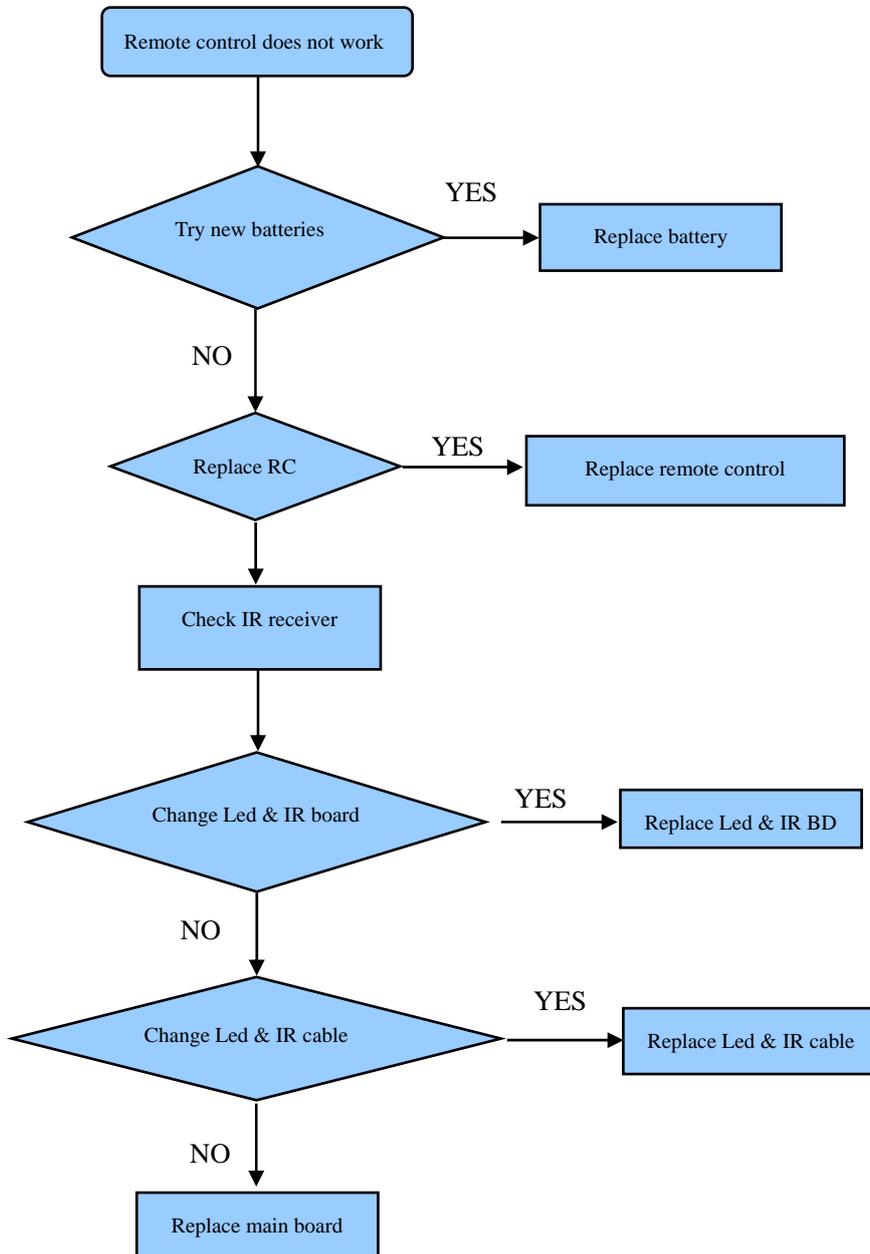


5.2 Image and signal process

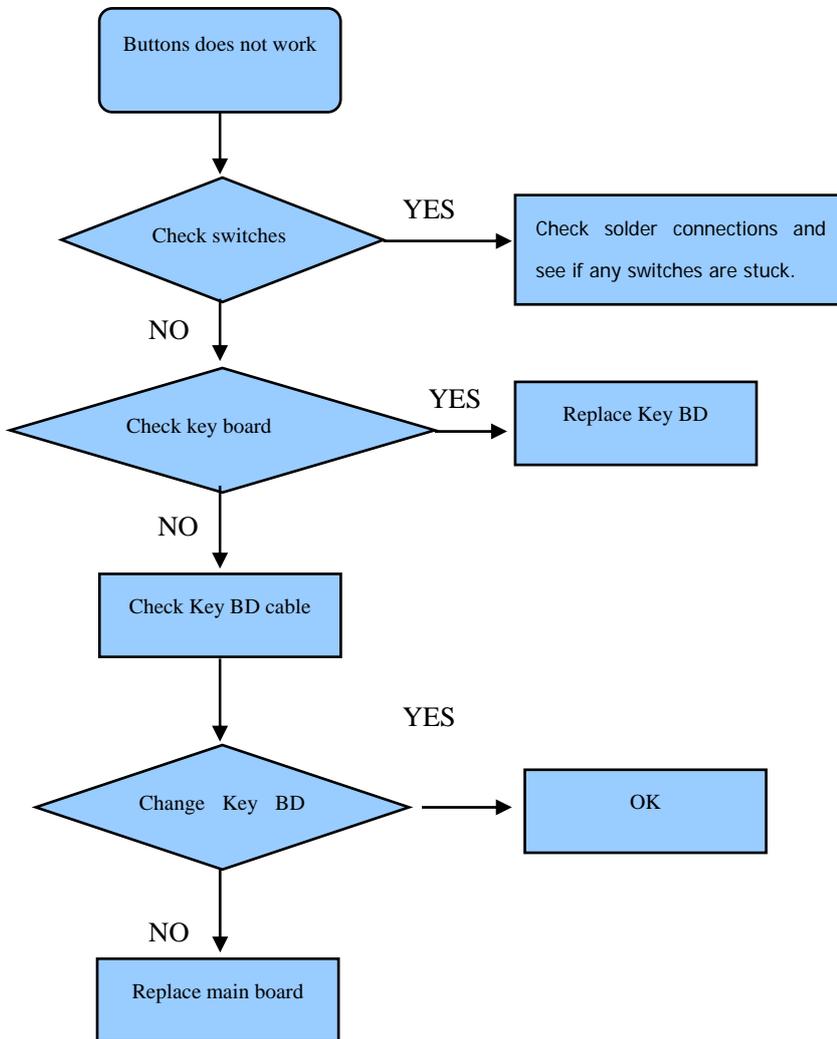


5.4 Troubleshooting

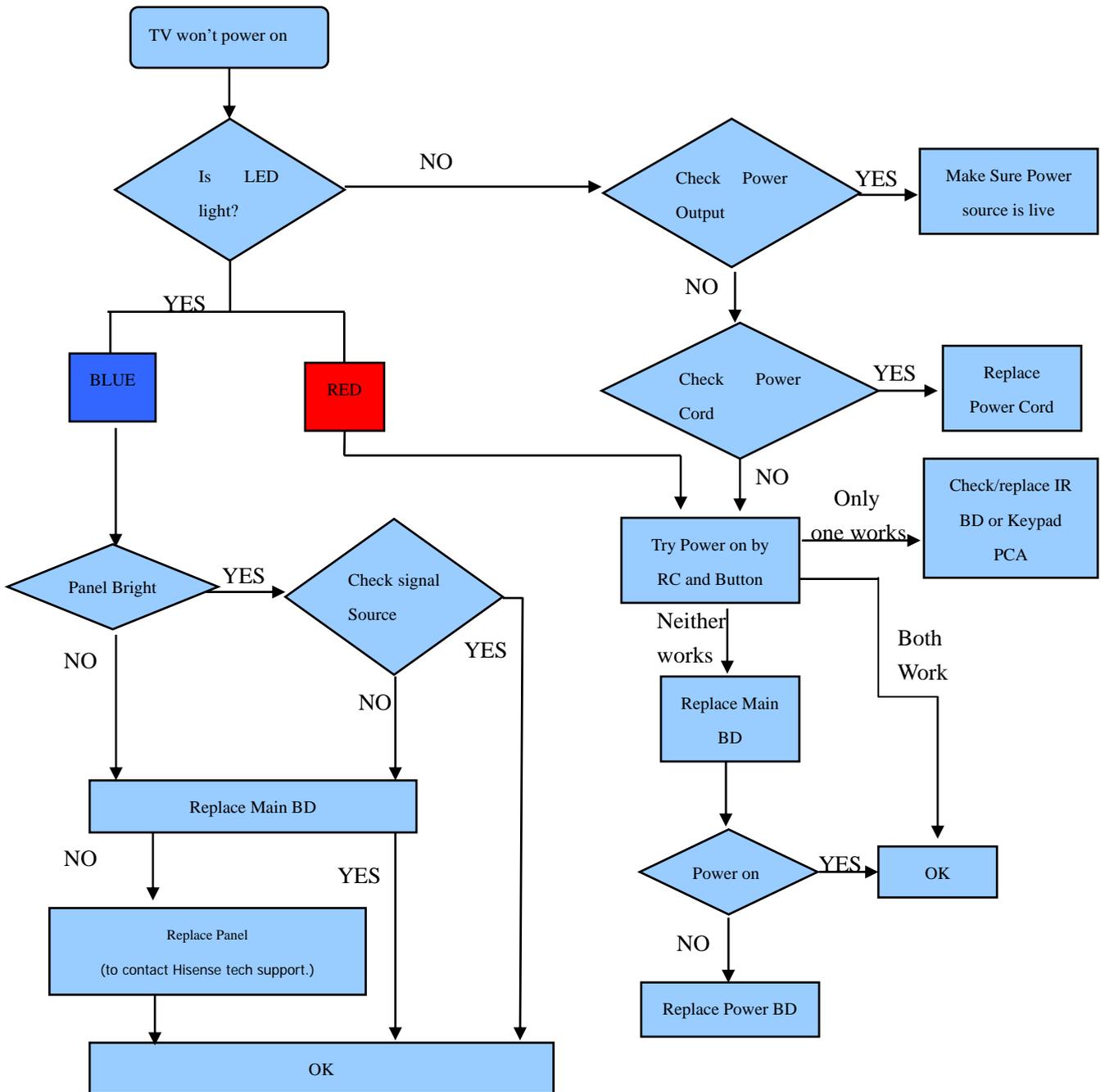
5.4.1 Troubleshooting for Remote Control



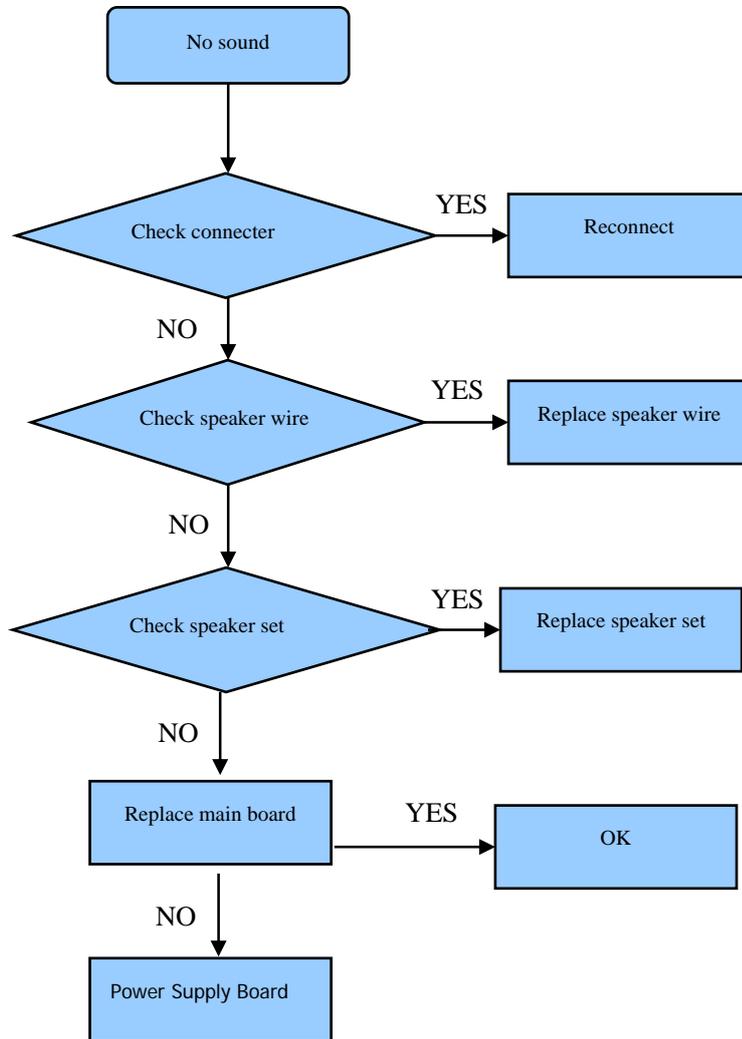
5.4.2 Troubleshooting for Function Key



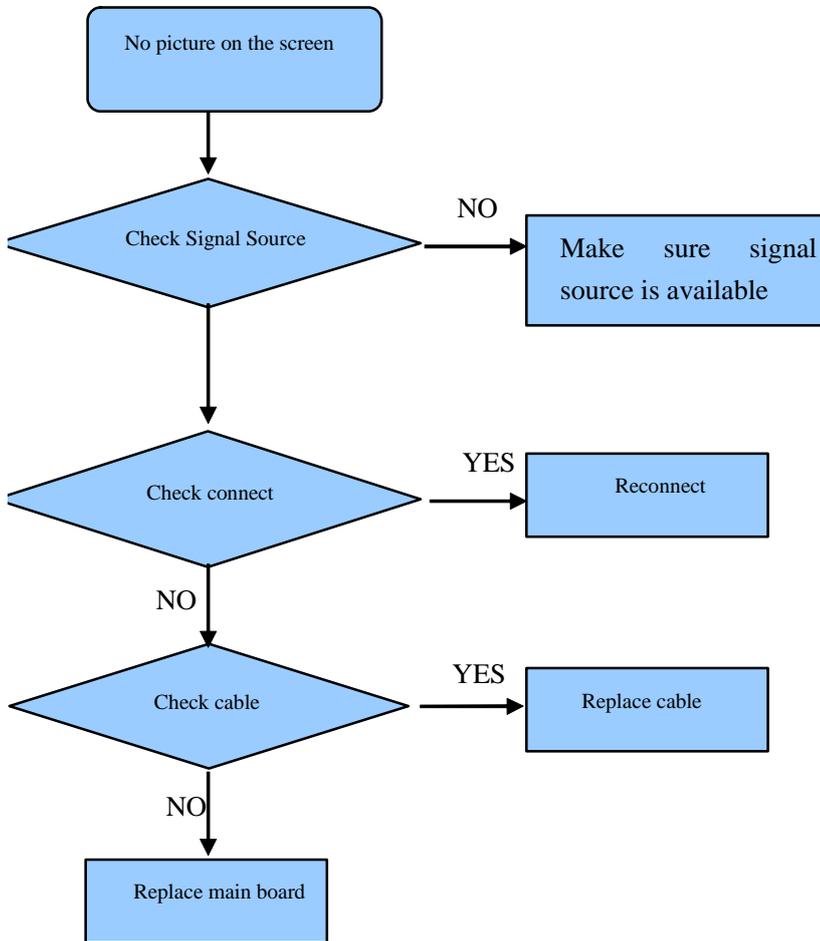
5.4.3 TV won't Power On



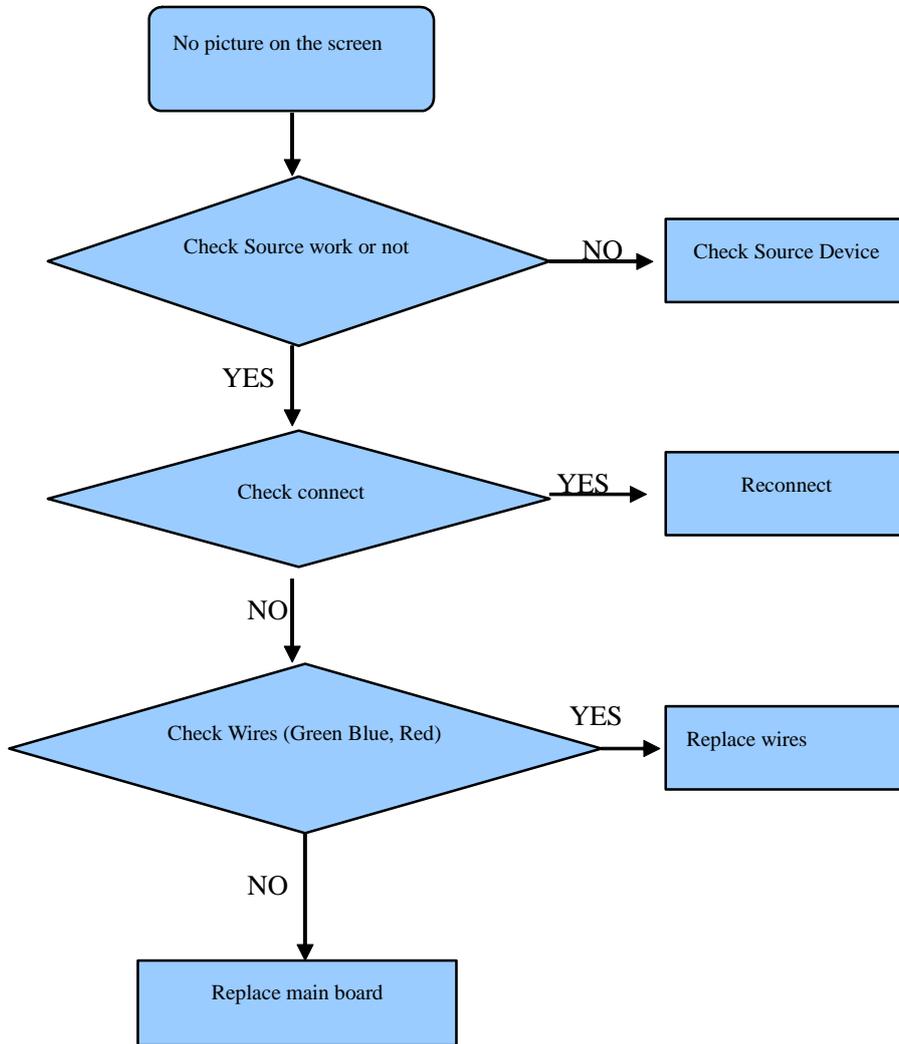
5.4.4 Troubleshooting for Audio



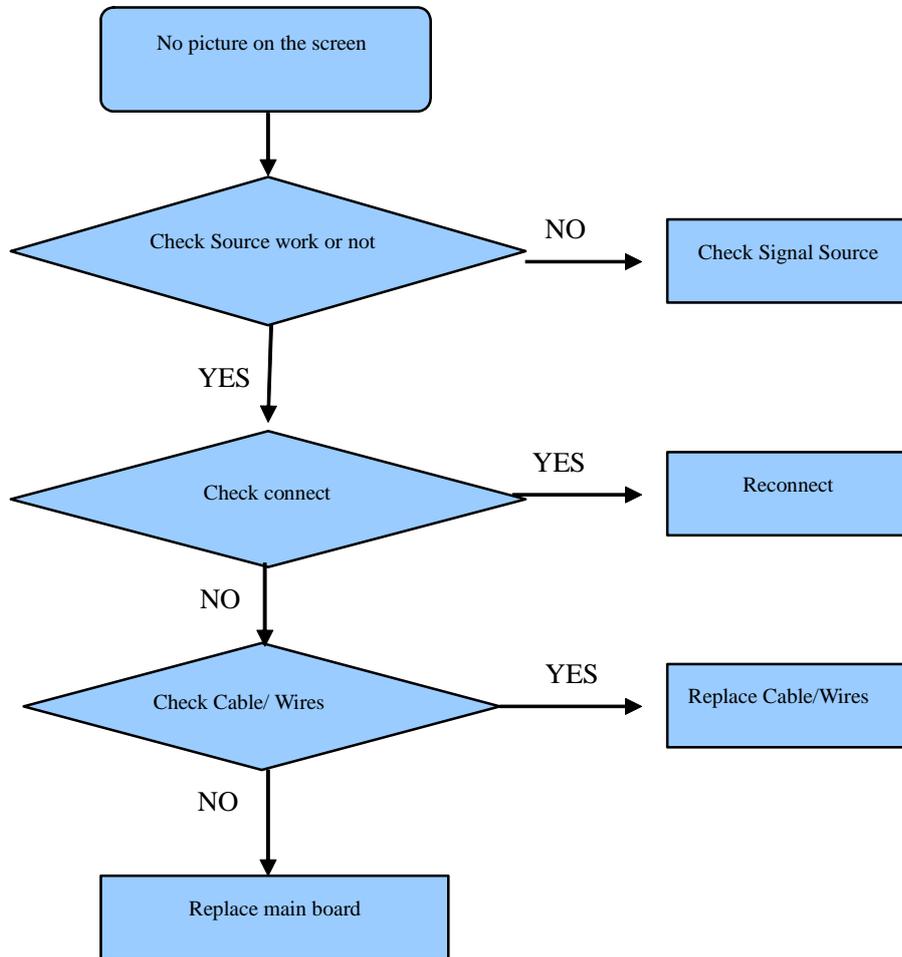
5.4.5 Troubleshooting for TV/VGA/HDMI input



5.4.6 Troubleshooting for YPbPr input

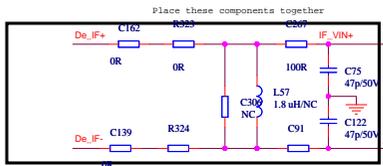


5.4.7 Troubleshooting for Video/S-Video input

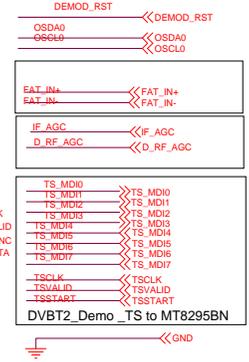
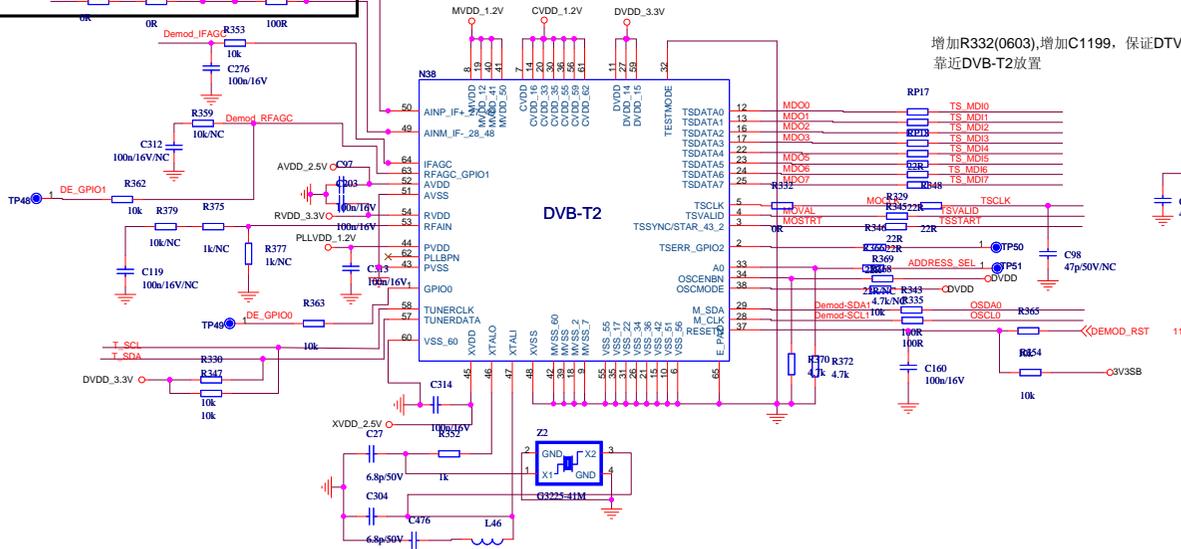


6. Explode View

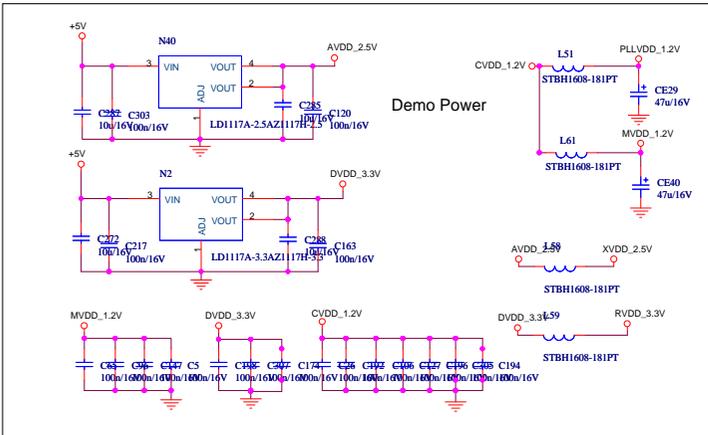
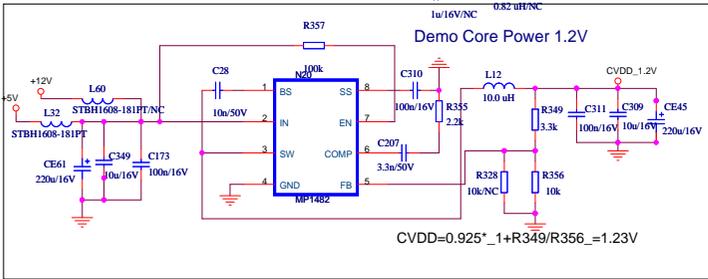
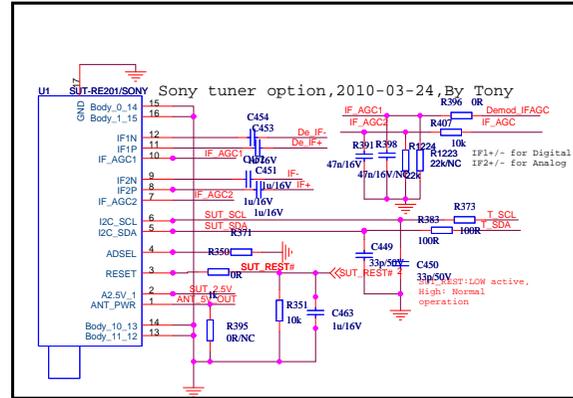
7. Schematic circuit diagram



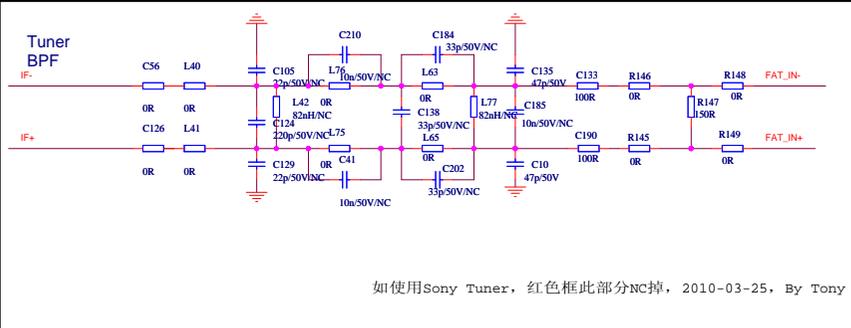
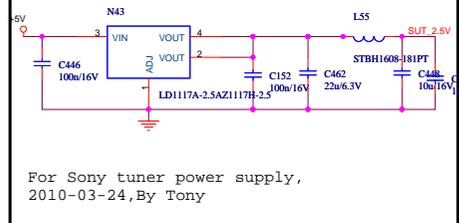
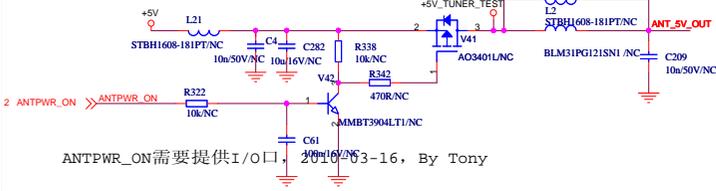
增加R332(0603),增加C1199, 保证DTV-EMC不受clock影响--wangxiao100728
靠近DVB-T2放置



IF_AGC网络错误, Demod_IFAGC应放置在IF_AGC1位置, 并且直接连接到Tuner IF_AGC1 Pin



ANT POWER



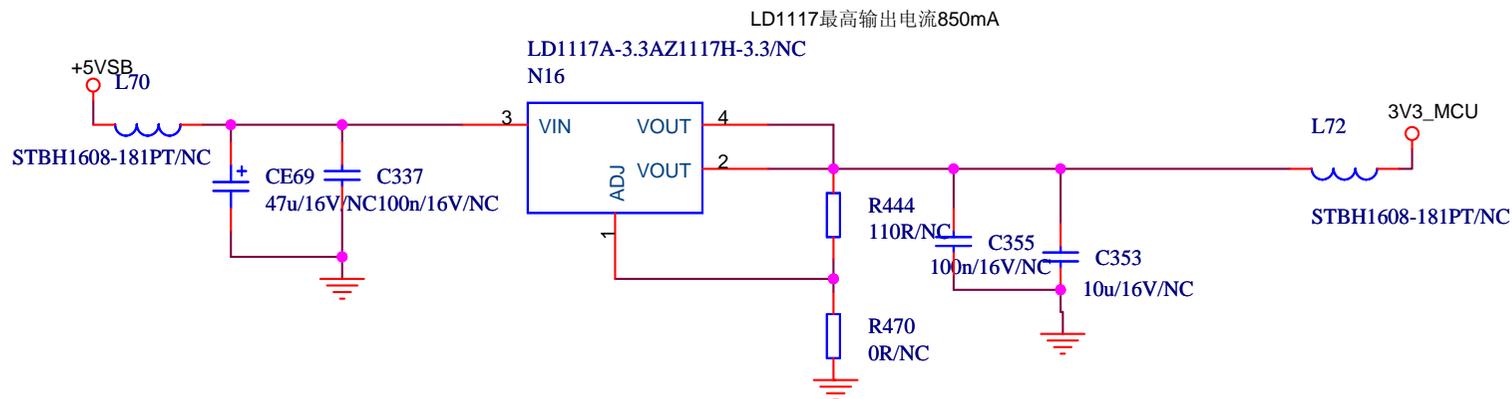
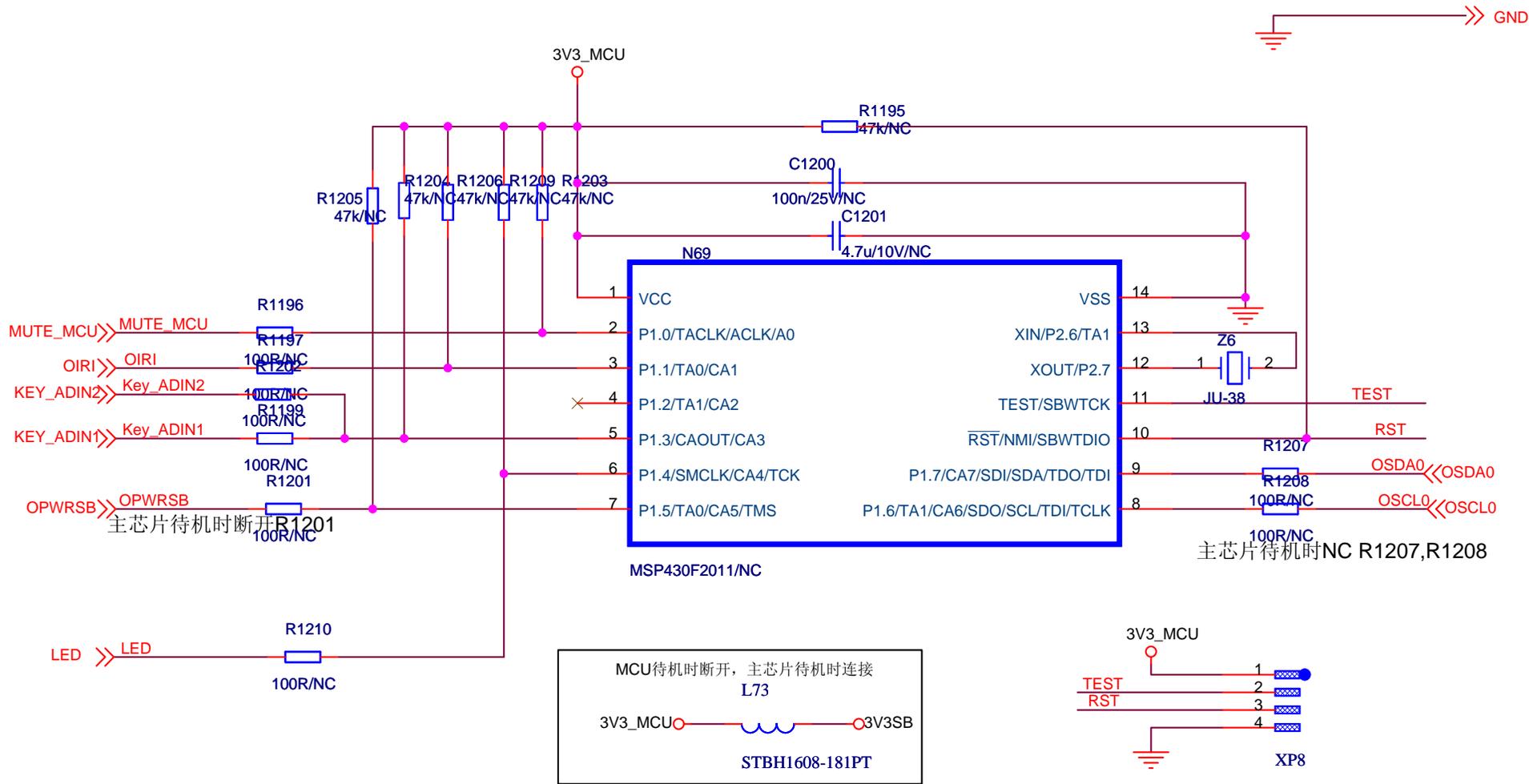
如使用Sony Tuner, 红色框此部分NC掉, 2010-03-25, By Tony

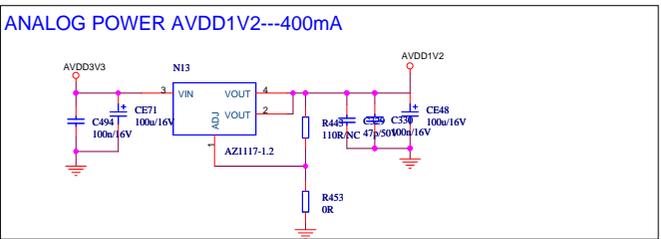
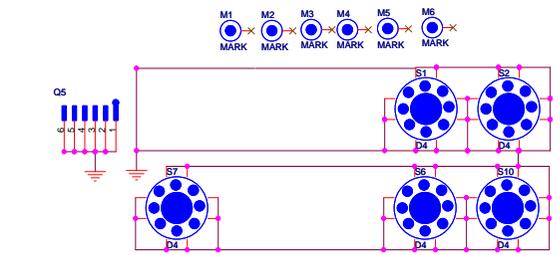
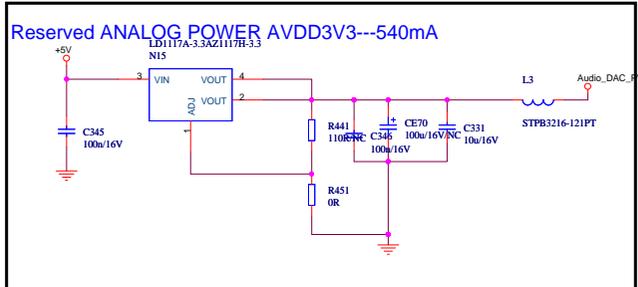
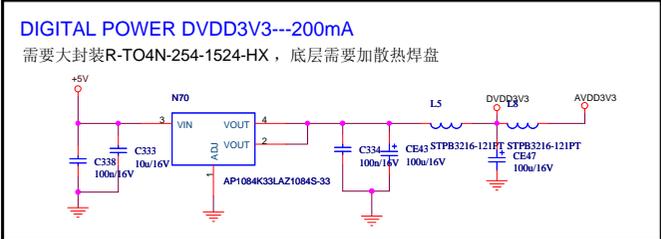
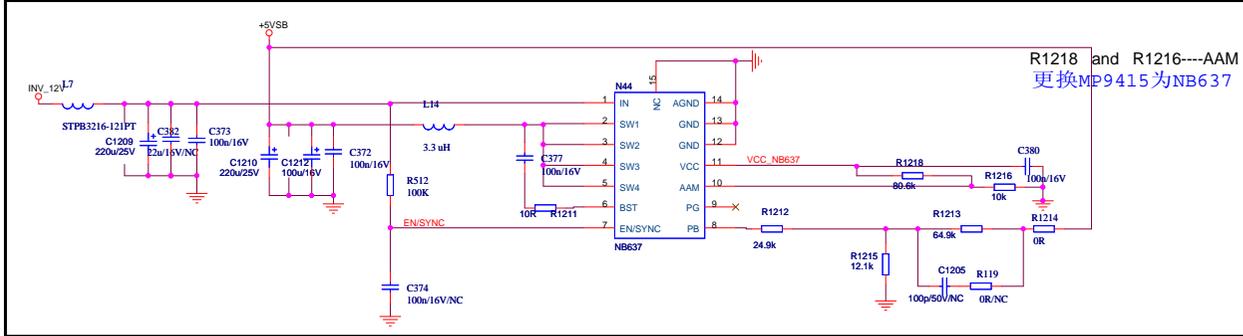
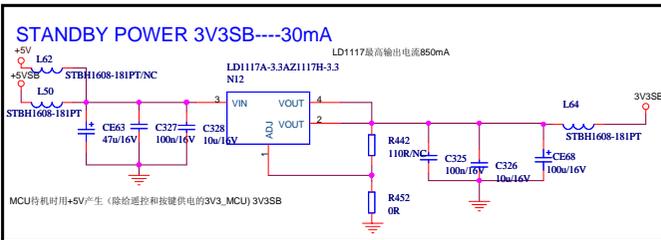
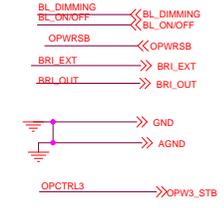
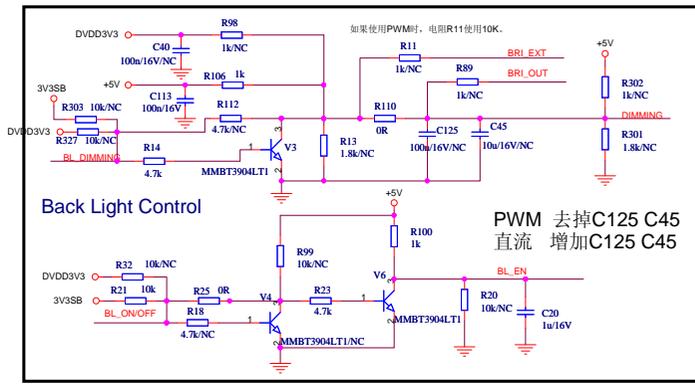
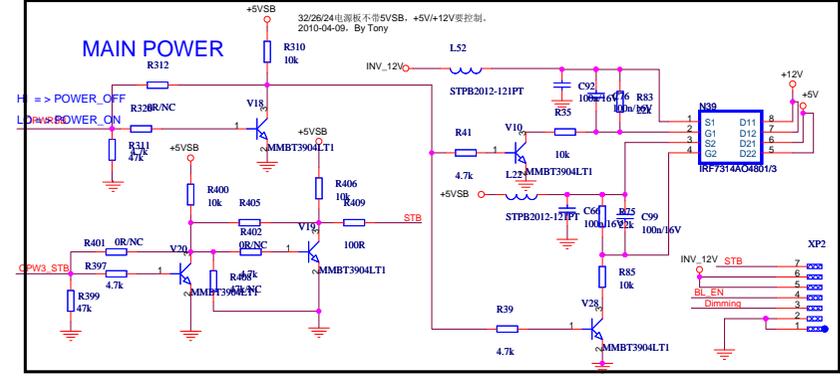
MT5303F_P2V1 _DDR3_VERSION V1.0

- 1、9415还未替换
- 2、IF-AGC电路还需确认

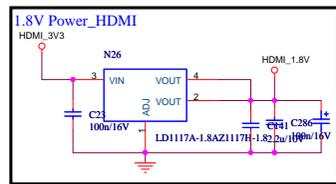
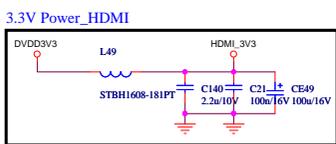
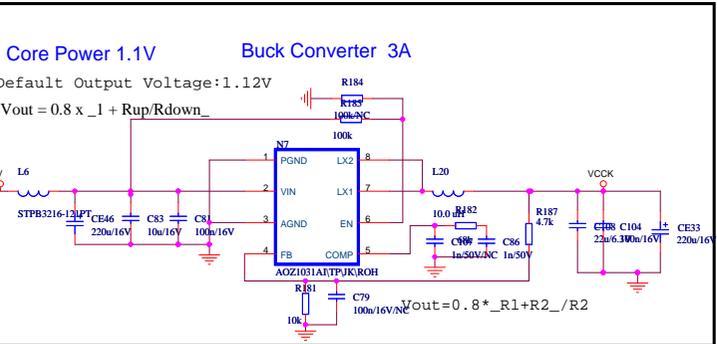
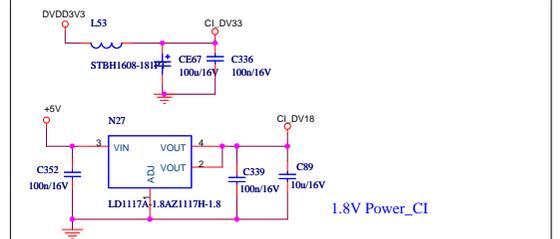
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Date:	Monday, September 13, 2010	Sheet	of





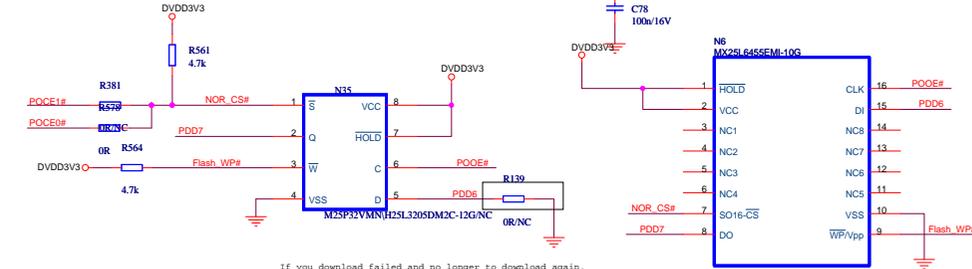
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2010-05-31, By Tony



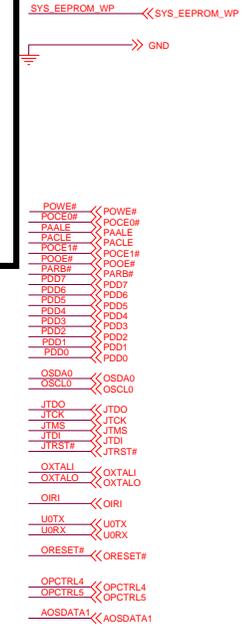
NAND Flash

删除Nand Flash 2010-05-31 By Tony

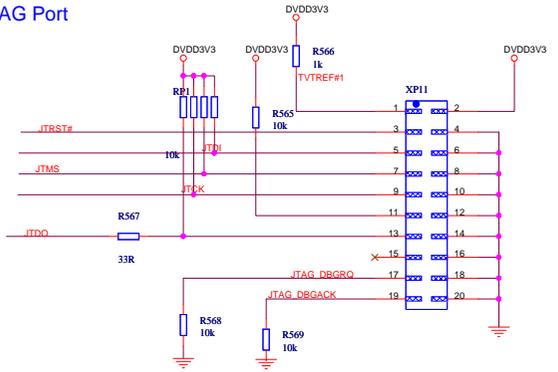
Serial Flash _ Co-Layout _



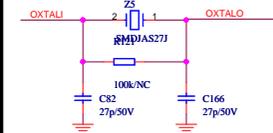
If you download failed and no longer to download again.
Connect R145 could stop flash and then press R837#.



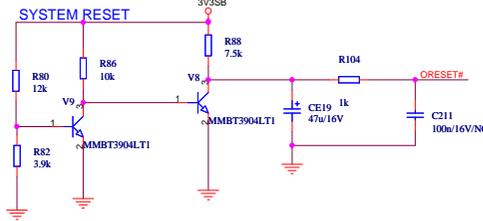
JTAG Port



27MHz CRYSTAL

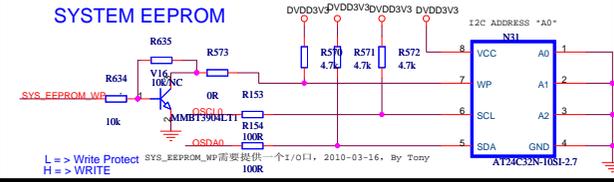


SYSTEM RESET



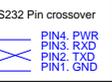
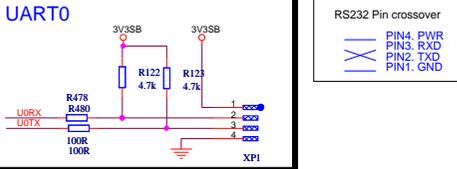
Adjust the power on timing

SYSTEM EEPROM

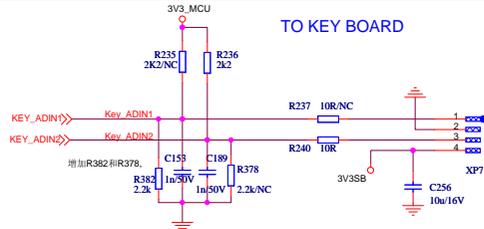


L => Write Protect
H => WRITE

UART0

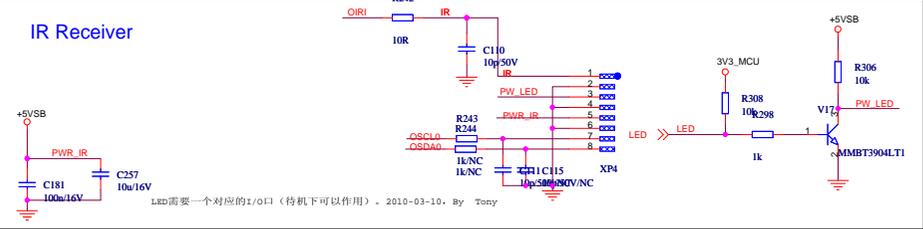


TO KEY BOARD



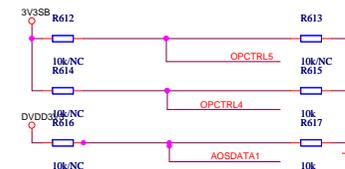
按键盘需要提供两个AD11. 2010-3-10, By Tony

IR Receiver



LED需要一个对应的1/0口 (待机下可以作用). 2010-03-10, By Tony

STRAPPING



Strapping	OPCTRL5(O)	OPCTRL4(O)	AOSDATA1(O)
ICE mode + 27M + serial boot	0	0	0
ICE mode + ROM boot + 27M	0	0	1
ICE mode + 54M + serial boot	0	1	0
ICE mode + ROM boot + 54M	0	1	1
OLT mode	1	0	0
scan mode	1	0	1
cpu model mode	1	1	0
Boundary scan mode	1	1	1

<PIM>

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TEL: 86-97-0766 FAX: 86-97-9710

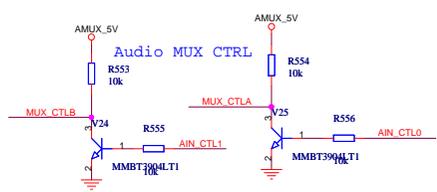
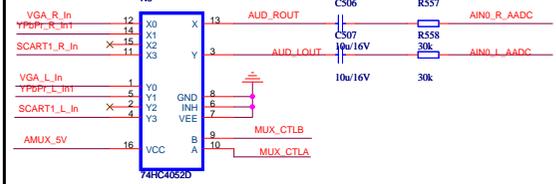
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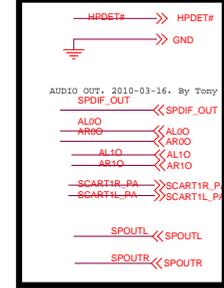
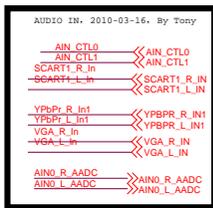
Audio MUX Input



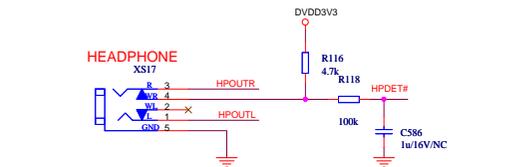
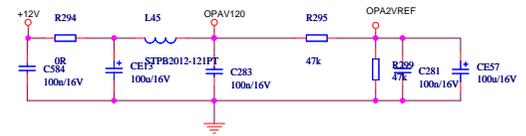
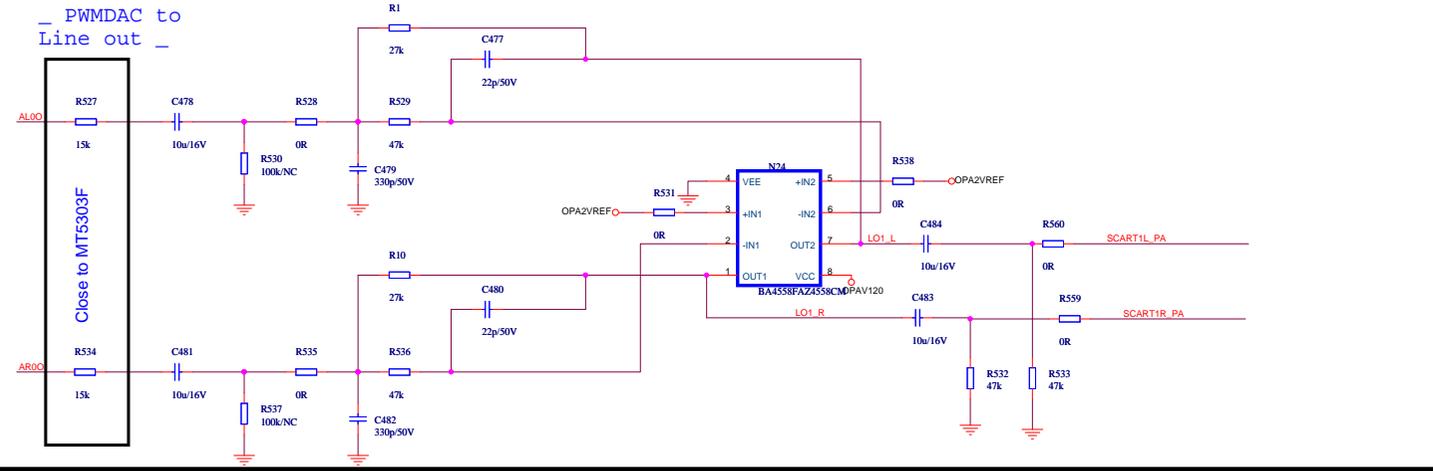
Audio Input select table

	OPCTRL5_CTL2	OPCTRL4_CTL1	ADIN2_CTL0
SLTPWM1	0	0	0
SLTPWM0	0	1	0
AV1	0	1	1
VGA	1	0	0
YPbPr	1	0	1
SCT2	1	1	0
SCT1	1	1	1

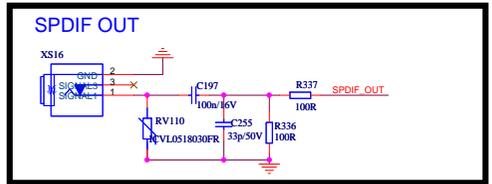
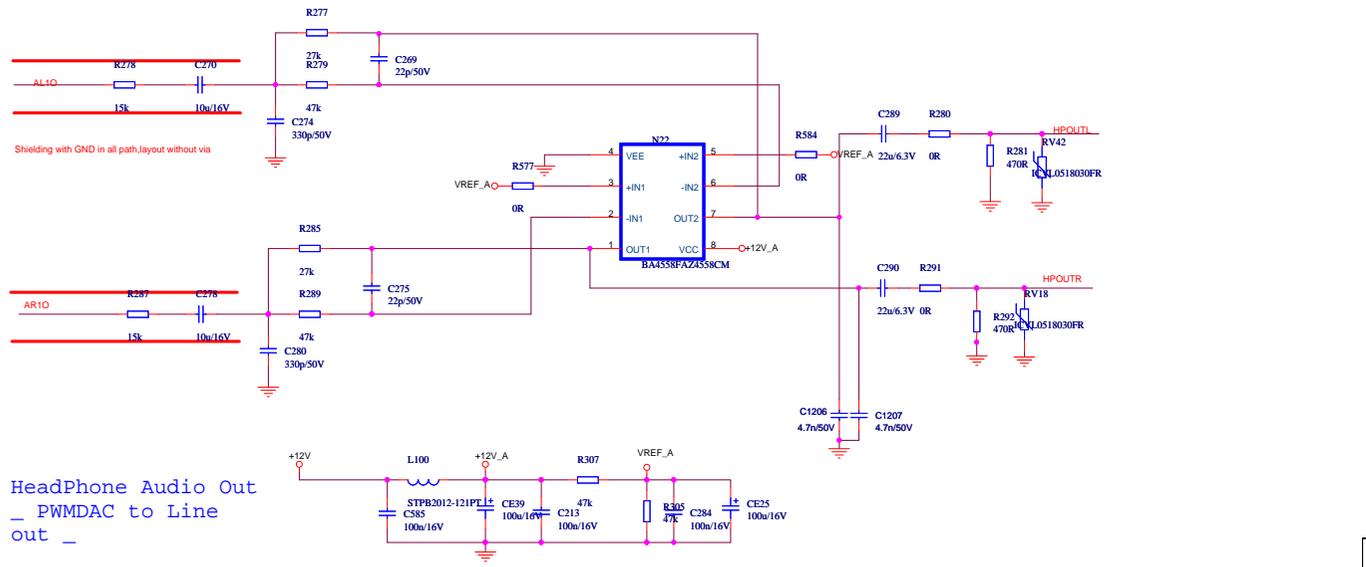
删除CTL2_AIN_CTL2_, 2010-03-16, By Tony



SCT1 Audio Out _ PWM DAC to Line out _

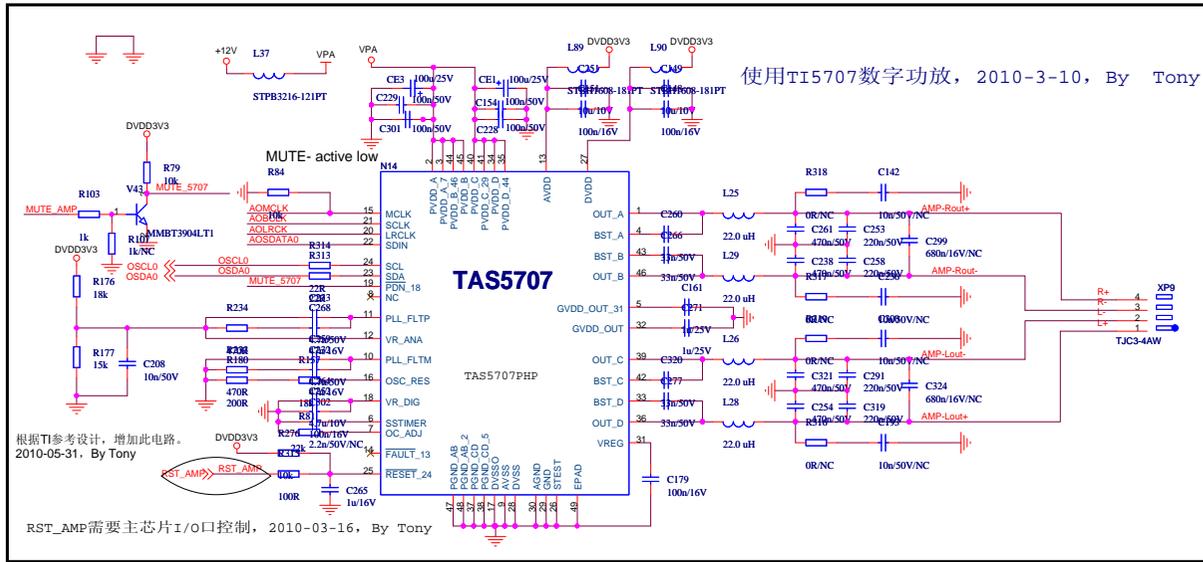


HPDET#需要提供I/O口, 2010-03-16, By Tony

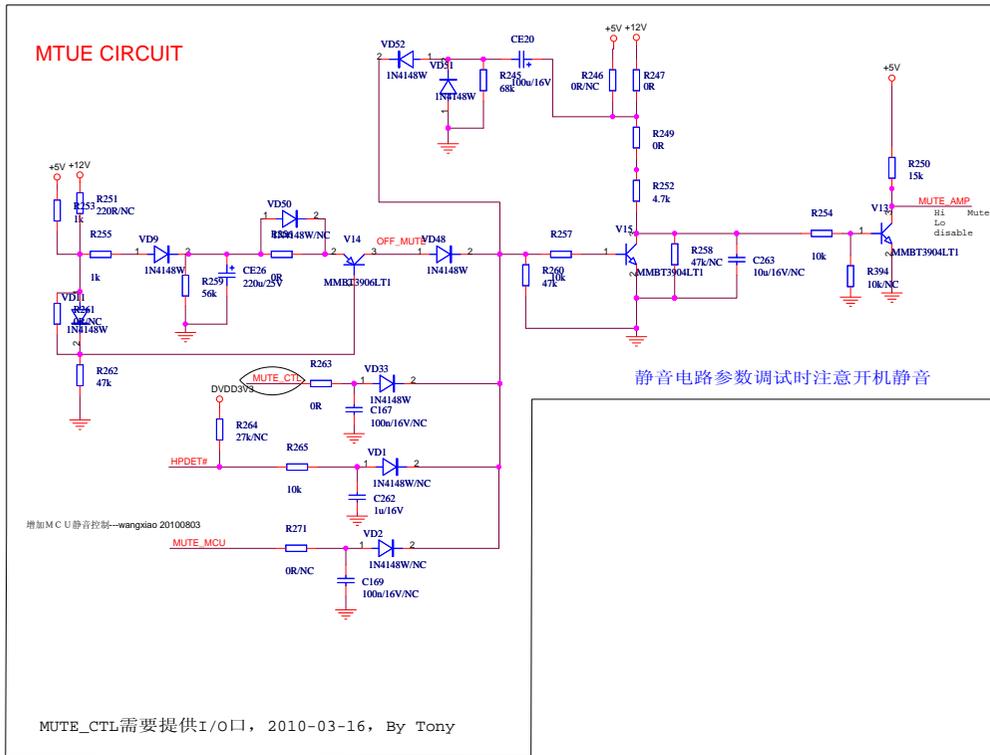


更改光纤输出为同轴---wangxiao20100723

<PIM>



- << AOMCLK << AOMCLK
- << AOBCLK << AOBCLK
- << AOLRCK << AOLRCK
- << AOSDATA0 << AOSDATA0
- << HPDET# << HPDET#
- << MUTE_CTL << MUTE_CTL
- << OSDATA0 << OSDATA0
- << OSCLO << OSCLO
- << GND << GND
- << MUTE_MCU << MUTE_MCU
- << MUTE_AMP << MUTE_AMP
- << R+ << R+
- << R- << R-
- << L- << L-
- << L+ << L+

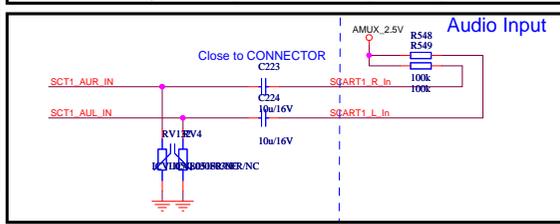
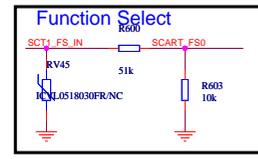
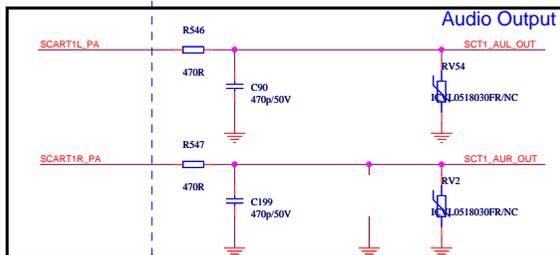
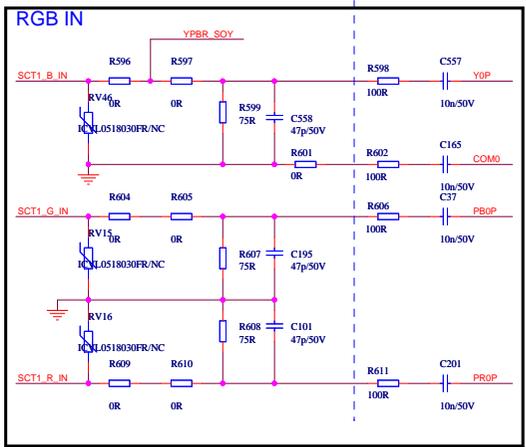
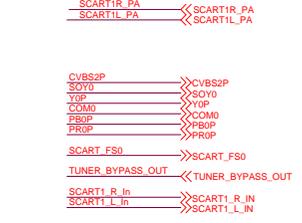
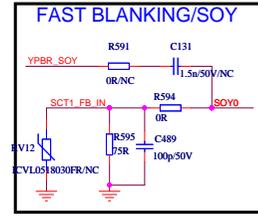
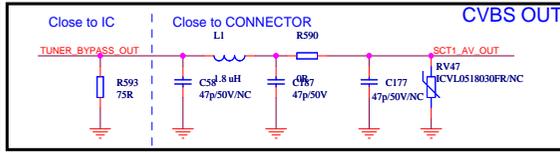
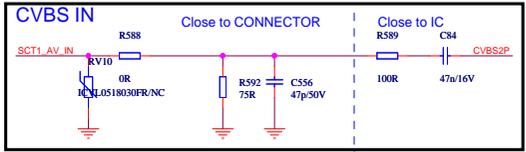
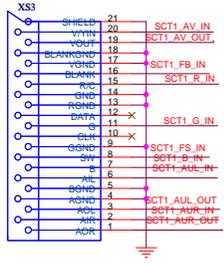


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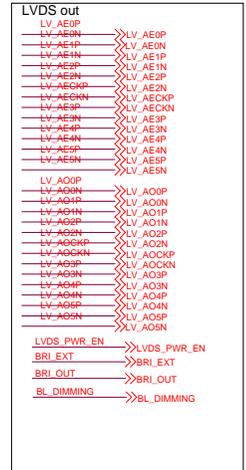
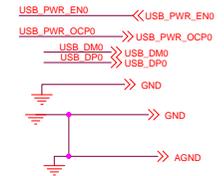
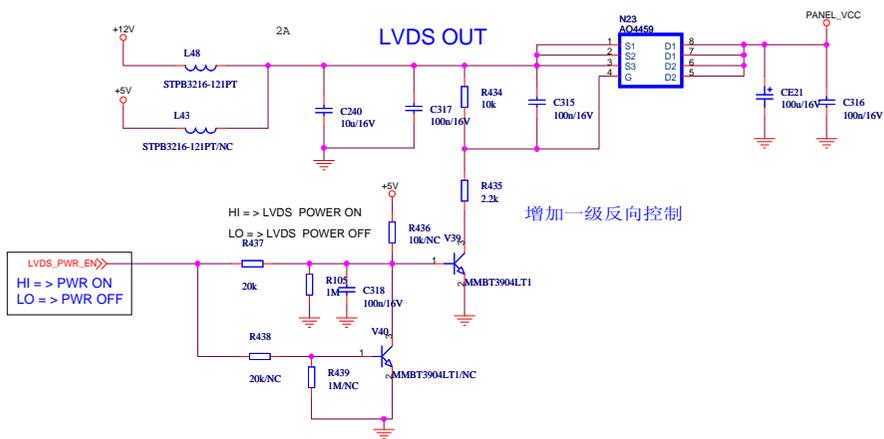
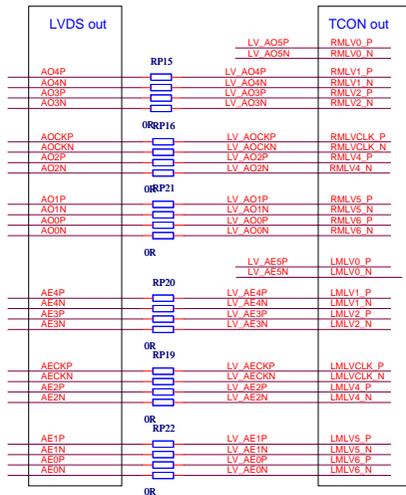
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SCART input

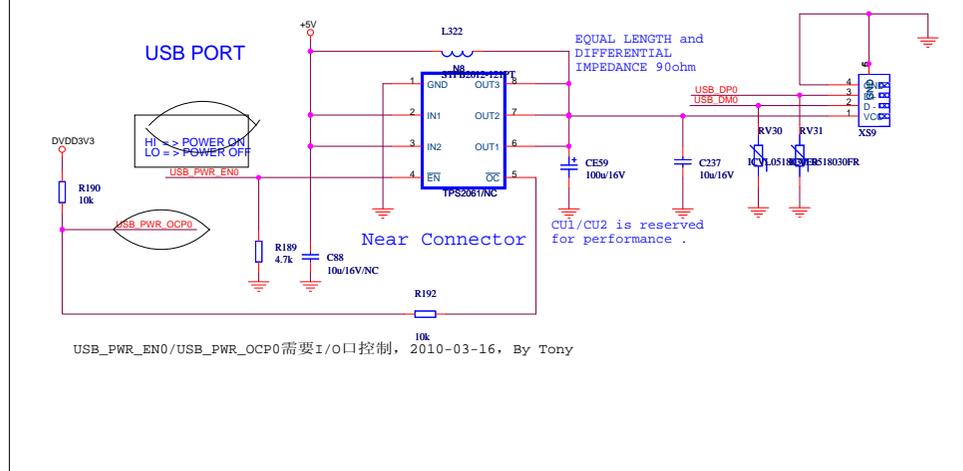


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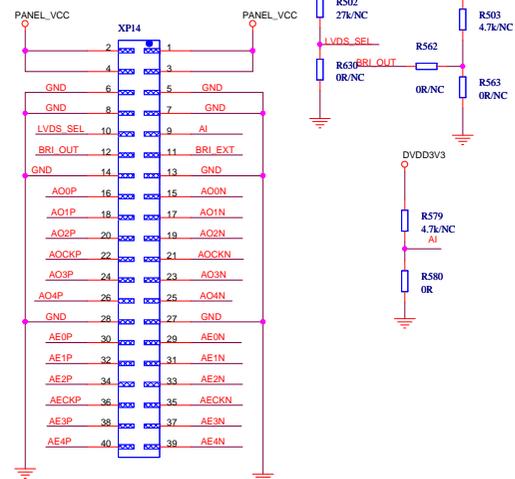
mini LVDS TX to TCON connector



USB PORT 2010-03-12, By Tony

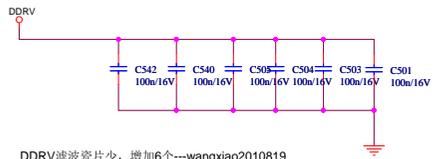
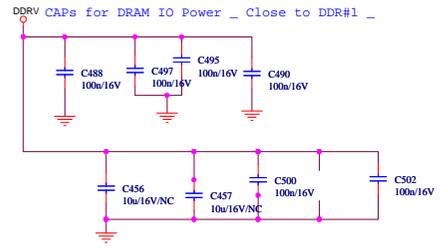
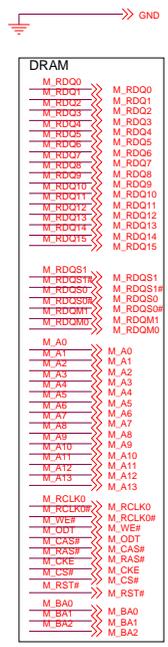
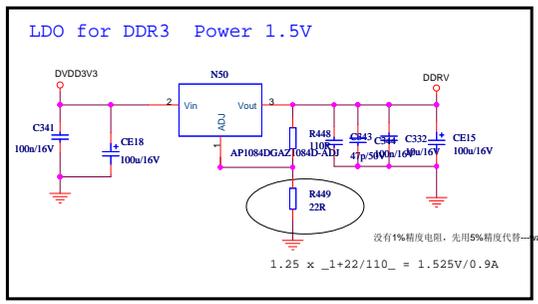
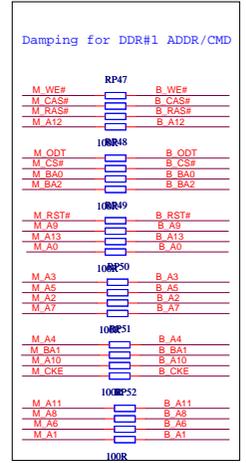
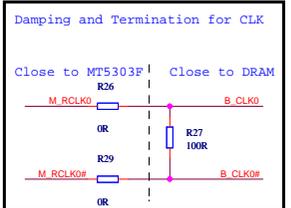
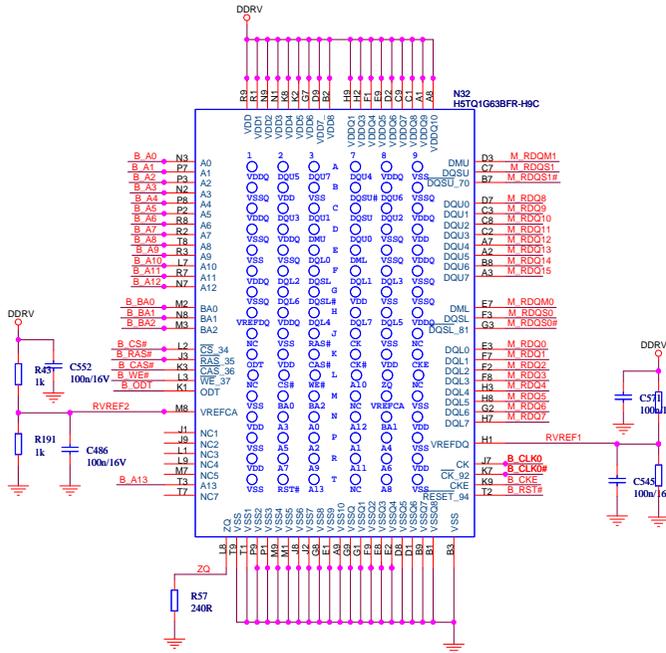


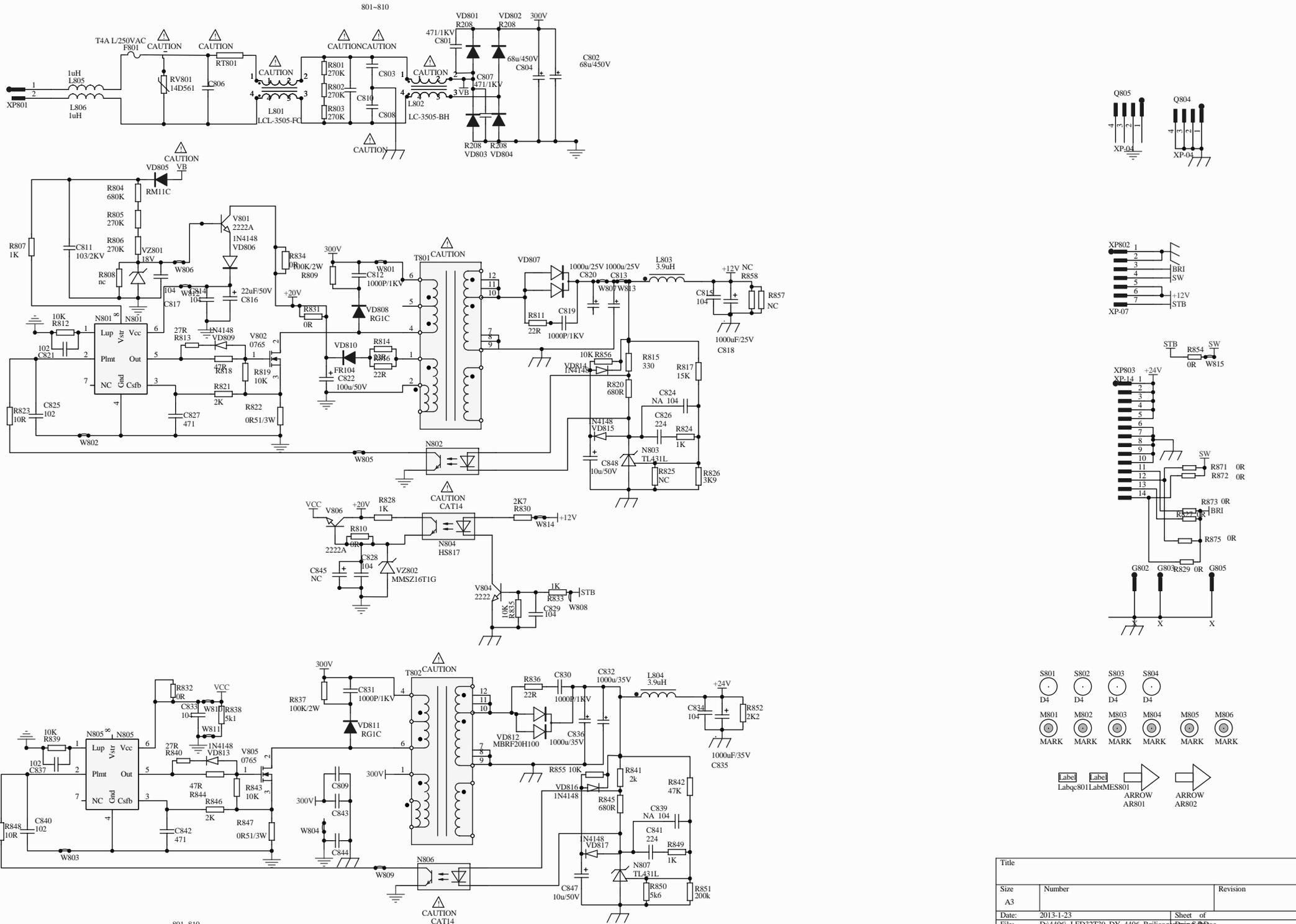
LVDS RX Connector



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DDR3#1-64Mx16-1066MHz





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