

LCD Television Service Manual

Chassis: MT5659DUHT

Product: Europe Area TV

V 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.

USE ONLY MANUFACTURER SPECIFIED REPLACEMENT PARTS WHEN SERVICING.

USE OF NON-AUTHORIZED PARTS WILL VOID THE MANUFACTURE'S WARRANTY

Proper service and repair is important to the safe, reliable operation of all Hisense 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 and pose risk of personal injury

. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Service should only be performed by an experienced electronics

technician trained in the proper Television safety and service methods and procedures

Hereafter throughout this manual, HISENSE will be referred to.

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 non-manufacturer's recommended parts may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from RCA. Hisense Eassumes no liability, express or implied, arising out of any unauthorized modification of design. Service-tech 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, be sure to use anti-static table mats and properly use a grounding wrist stra. Keep components and tools also at this same potential.

IMPORTANT:

Always disconnect the power cord from AC outlet before replacing parts or modules.

1.1.3

To prevent electrical shock, use only a properly grounded 3 prong outlet or extension cord.

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 and will void the manufacturer's warranty.

1.1.5

Safety regulations require that after a repair the set must be returned in its original condition. In addition, prior to closing set, check that:

-Note:

>All wire harnesses and flex cables are properly routed and secured with factory tape and/or mounted cable clamps.

> All cables and connectors are properly insulated and do not have any bare wires/lead exposed

1.1.6

(1) Do not supply a voltage higher than that specified to this product. This may

damage the product and may cause a fire.

(2) Do not use this product:

> High humidity areas

> In an area where any water could enter or splash into the unit.

High humidity and water could damage the product and cause fire.

(3) 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.

(4) 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.

(5) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.

(6) Do not damage or modify the power cable. It may cause fire or electric shock.

(7) 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.

(8) 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.

(9) 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 may trip the main 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.

- 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.
- 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. TV boards layout:

Main board layout:

2.1.1 The TOP of 7924 (TCON part on the board) :



	Position	Description	Market
1	U11	RF Input	DVB-T2/ S2 SCTS2-85/116H-FJ2\ROH
2	XS5	Headphone	
3	XS6	Debug	
4	XS19	CI Card	
5	XS7	HDMI1	
6	XS8	HDMI2/ARC input	
7	XS15	Digital Audio out	
8	XS14	AV IN	
9	XS23	USB 2(2.0)	
10	XS24	USB 1(2.0)	
11	XS26	LAN	
12	Xp12	Key/IR/Led/WIFI	
13	Xp13	Speaker amplifier	
14	XP16	LVDS	

2.1.2 The TOP of 7924 (TCON part not on the board)



2.2 The TOP of 7953 (Main board complexes power board)




Board	Boards function difference	Suitable TV
7924	1、 complex board(main board part、 power board and inverter part) Side terminals and bottom terminals 2、 Include two styles: One: TCON part on the board The other: TCON part not on the board , It' s on the Panel.	HE32A5600HWTS/HE39A5600FWTS
7953	1、 Base on 7924 board, delete one HDMI. 2、 Change the TCON IC to N36 (N36G1632QA1R) 3、 Only one style ,TCON part on the board.	HE43A5600FWTS

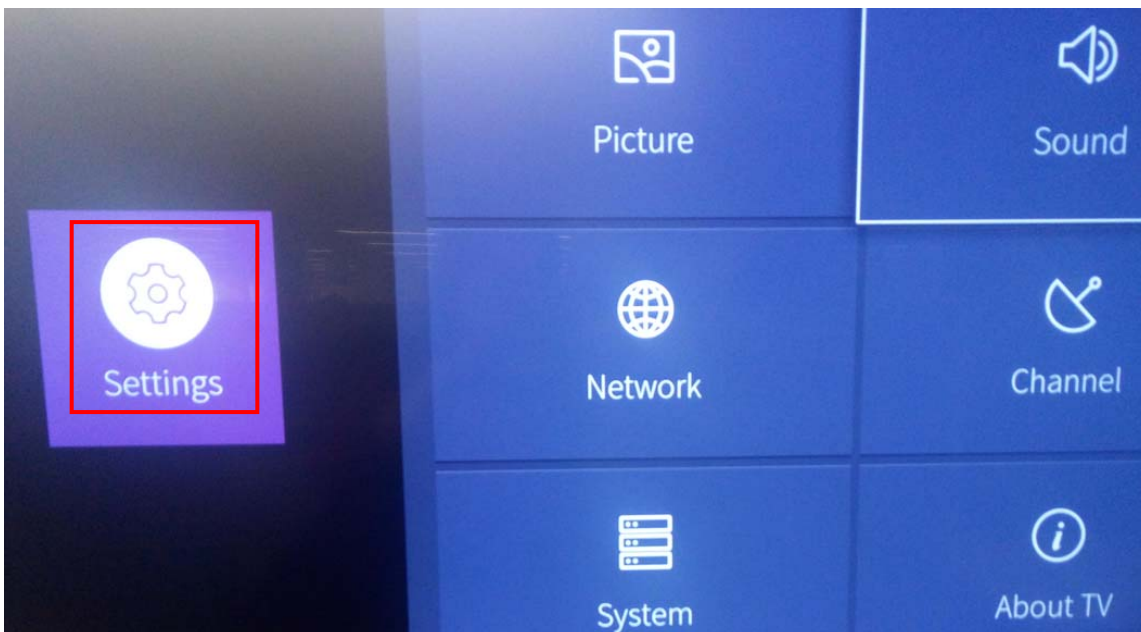
3. Factory/Service OSD Menu and Adjustment

3.1 How to get into the Factory OSD Menu

. With user's RC

1. TV Power on.
2. Press  button on RC and call up Menu.
3. **Setting-> Sound**” button to ensure on RC.
4. Select **Speaker-> Balance**
5. Input 1->9->6->9 in sequence. Note: If necessary, re-enter number keys.
6. Factory OSD appears.
7. DC power off and power on the TV, which can exit Factory OSD.

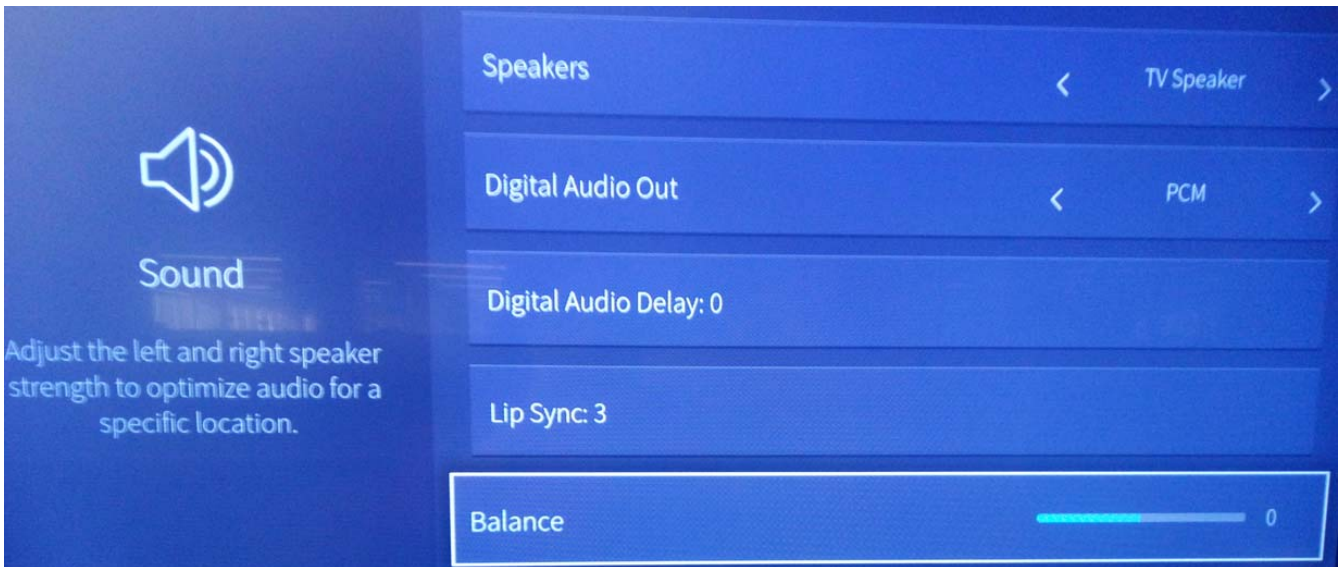
Figures as following:



Next



Next



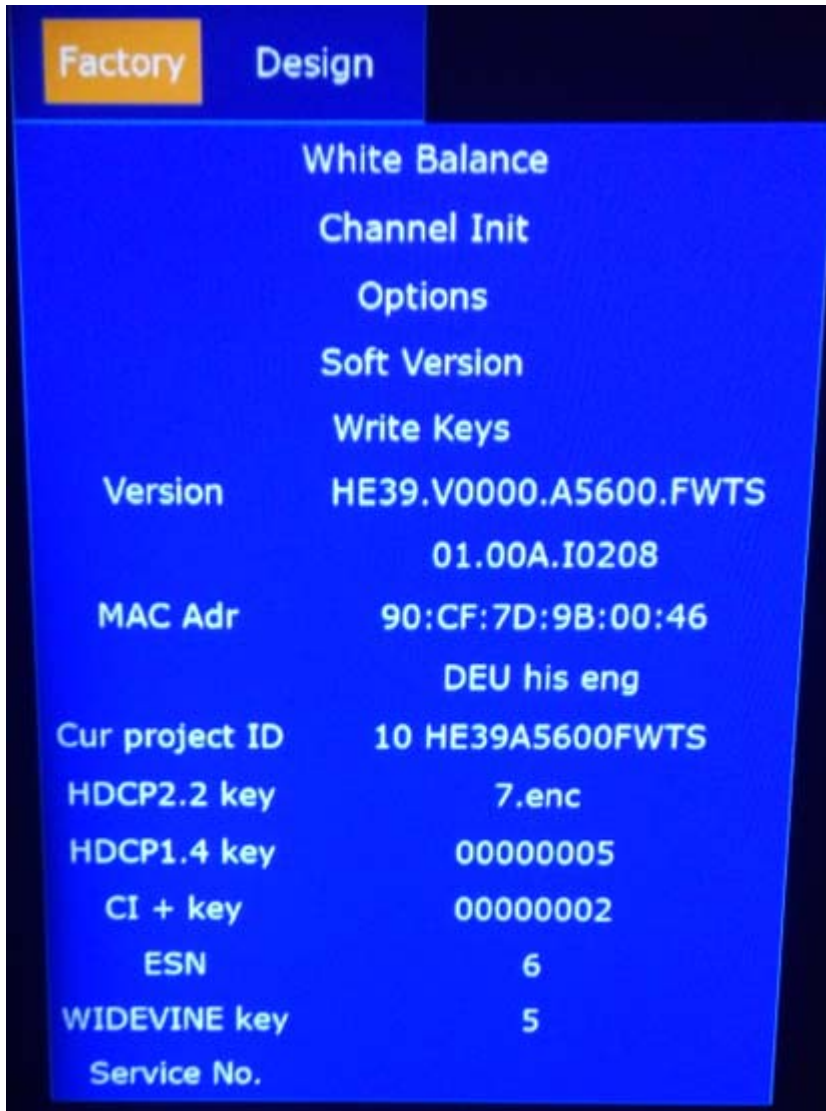
Next

Input figure "1->9->6->9" in sequence.








3.2 Factory OSD Menu






Factory OSD menu (take HE39Axxxx for example)

If you want to learn more about TV, you'd better read it but can't alter the figure and option. Factory menu may have difference for different customer .



	Factory menu	Description	Remark
Meun	White Balance	White Balance data adjusting, different source has different WB values. Before adjusting, please change to desired source.	
	channel Init	TV Produce signal preset, during the factory produce using.	
	Option	can choose	
	soft version	current software version information	
	Version	Current TV Version information	Software information
	MAC Adr:	MAC Adress	
	Cur project ID	HA39Axxxx	Show current TV model
	HDCP2.2 key	HDCP2.2	
	HDCP1.4 key	HDCP1.4	
	CI+ key		
	ESN		
	WIDEVINE key		
	Service No.:		

White Balance	BIN B1 	can choose B1/B2/B3
	R Gain  128	High Brightness Red
	G Gain  128	High Brightness Green
	B Gain  128	High Brightness Blue
	R Offset  128	Low Brightness Red
	G Offset  128	Low Brightness Green
	B Offset  128	Low Brightness Blue
Channel init	Huang Dao	
	Qing Dao	TV Produce signal preset, during the factory produce using.
	

Option	ToFAC M/U	"M" used in factory product. "U" used in exit factory state,
	Clear All	
		
	country	country choose
		
	Language	language choose
		
	Logo	region logo choose
		
	VCOM	Adjust Panel blink
		
	URAT on/off	when choose "on" then can serial port connect with Tool
	Test Pattern	
	Inlay Pattern	
	Running time	

3.2.1 White Balance --->

Note: Different source has different WB values. Before adjusting, please change to desired source.

Factory	Design	Panel	B1
White Balance			
	Channel Init	R Gain	128
	Options	G Gain	128
	Soft Version	B Gain	128
	Write Keys	R Offset	128
Version	HE39.V0000.A5600.FWTS	G Offset	128
	01.00A.I0208	B Offset	128
MAC Adr	90:CF:7D:9B:00:46	Color Temp	Standard
	DEU his eng		
Cur project ID	10 HE39A5600FWTS		
HDCP2.2 key	7.enc		
HDCP1.4 key	00000005		
CI + key	00000002		
ESN	6		
WIDEVINE key	5		
Service No.			

3.2.2 Channel Init--->

Factory	Design	
White Balance		
	Channel Init	Huang Dao
	Options	Qing Dao
	Soft Version	Gui Yang
	Write Keys	Jiang Men
Version	HE39.V0000.A5600.FWTS	Egypt
	01.00A.I0208	South Africa
MAC Adr	90:CF:7D:9B:00:46	Algeria
	DEU his eng	Syria
Cur project ID	10 HE39A5600FWTS	Malaysia
HDCP2.2 key	7.enc	Iran
HDCP1.4 key	00000005	Indonesia
CI + key	00000002	Russia
ESN	6	Poland
WIDEVINE key	5	Czech
Service No.		Nigeria

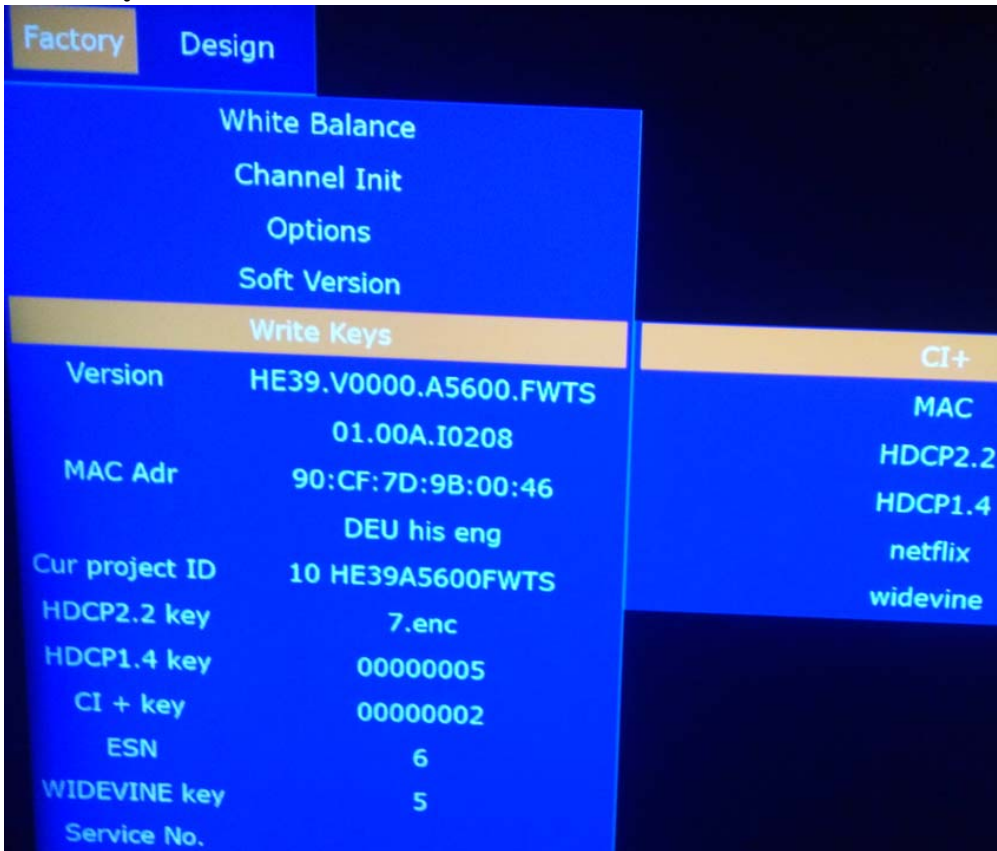
3.2.3 Options---

Factory		Design	
White Balance			
Channel Init			
Options		ToFac	M
Soft Version		LNB power	off
Write Keys		Clear All	
Version	HE39.V0000.A5600.FWTS	Region	Europe
	01.00A.I0208	Country	62 Germany
MAC Adr	90:CF:7D:9B:00:46	Logo	1 Hisense
	DEU his eng	Lang	1 English
Cur project ID	10 HE39A5600FWTS	VCOM	126
HDCP2.2 key	7.enc	UART	On
HDCP1.4 key	00000005	Test Pattern	
CI + key	00000002	Inlay Pattern	
ESN	6	Runing time	0d:0h:12m:0s
WIDEVINE key	5		
Service No.			

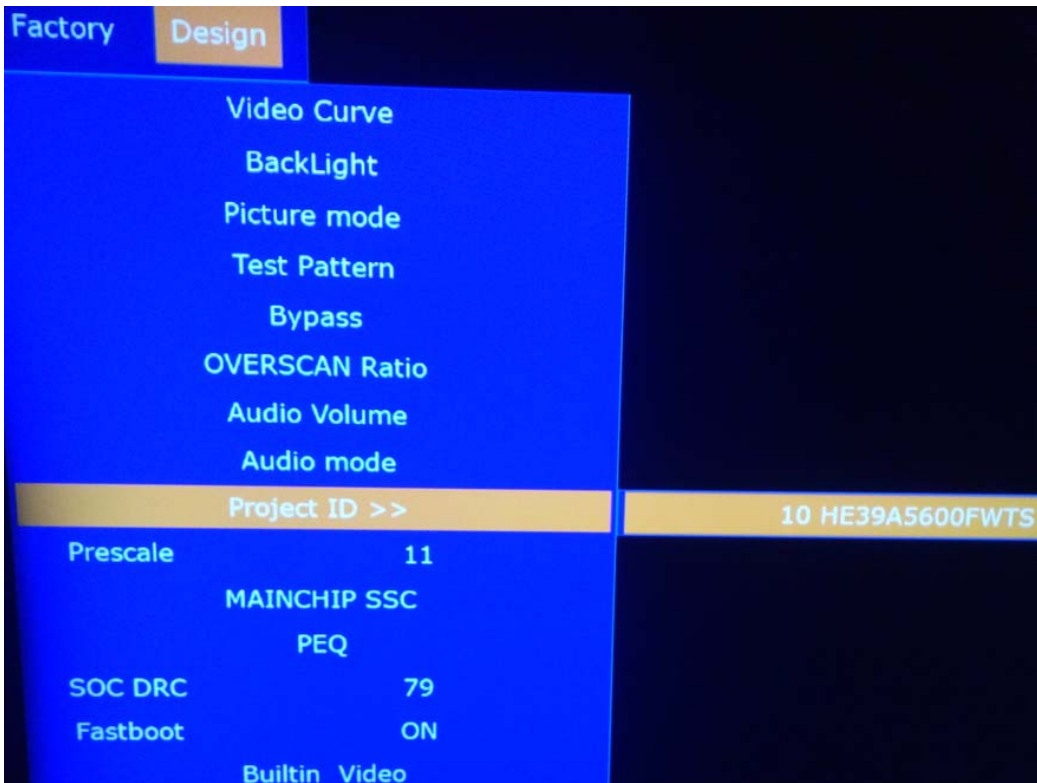
3.2.4 Software Version---

Factory		Design	
White Balance			
Channel Init			
Options			
Soft Version		Serial Name	EA5600F1
Write Keys		Soft Version	HE39.V0000.A5600.FWTS
Version	HE39.V0000.A5600.FWTS		01.00A.I0208
	01.00A.I0208	FRC Version	000000
MAC Adr	90:CF:7D:9B:00:46	BLU Version	NG
	DEU his eng	BLU Status	NG
Cur project ID	10 HE39A5600FWTS	MAC Version	90:CF:7D:9B:00:46
HDCP2.2 key	7.enc		
HDCP1.4 key	00000005		
CI + key	00000002		
ESN	6		
WIDEVINE key	5		
Service No.			

Write keys--->



project ID (Show current TV model)--->



Note: The factory menu data varies according to different sources. In case changing the factory data by error, you can choose to “Clear All”, by which you can resume the default value.



- a. Select the item “Clear all” .
- b. Close the OSD menu after 5 seconds.
- c. Restart the TV.
- d. TV restart, better enter TV factory OSD Menu to ensure the new software Version information. Also the Keys information must be checked, if appear “NG” , then must rewrite key code.

4. Software Upgrading

4.1 USB Upgrading with Remote control in User Menu.

4.1 USB Upgrade main software with Remote control in User Menu.

The main software can be upgraded by USB Disk. take [_HE39AXXXX](#) for example.

- Ensure there are no any “*.pkg” files in USB root directory. copy the [usb_HE39AXXXX.pkg](#) file to the USB Disk then rename to “[upgrade_loader.pkg](#)”
- Insert USB Disk to TV USB port, and then AC power on the TV. at the same time press one time standby button “” on the remote control then tightly press the standby button “” for about 5-10s, until pop the update interface.
- TV will identify automatically: USB Upgrade loading → USB Upgrade Checking → USB Upgrading Installing.
- After “USB Upgrade Installing” process bar is 100%, It indicates the Upgrading complete.

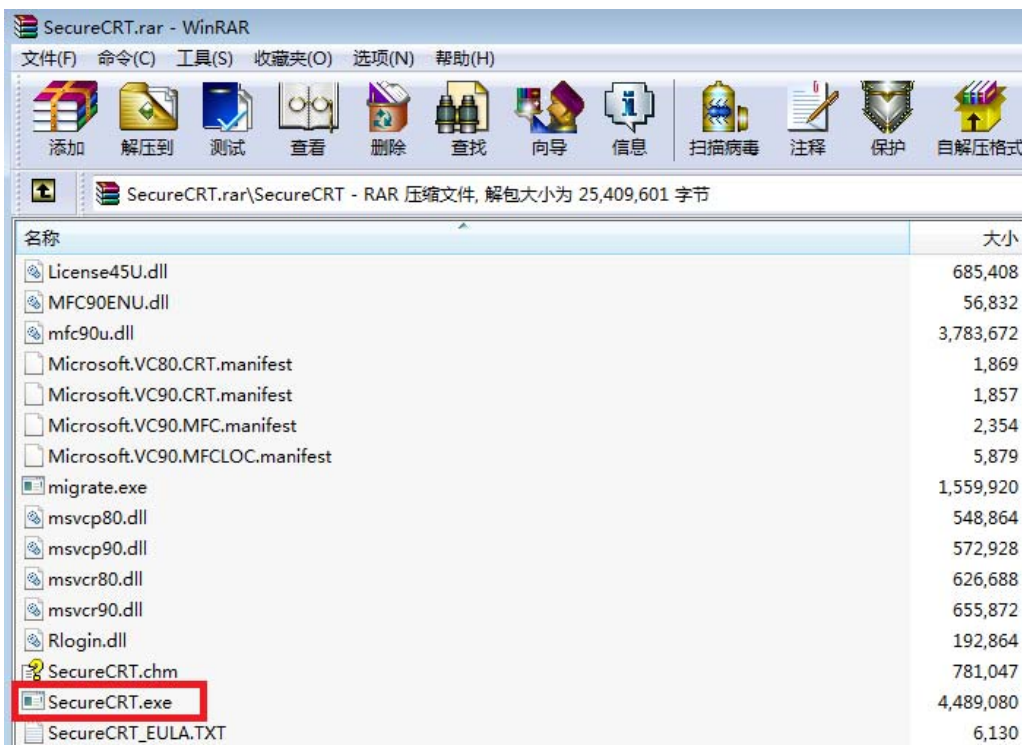
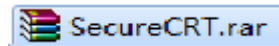


- Update success, TV can automatically restart.

4.2 USB main software upgrading with SecureCRT(forced upgrading)

When USB software upgrading with Remote control fail , We can upgrade with debug serial board Tool and SecureCRT Tool .

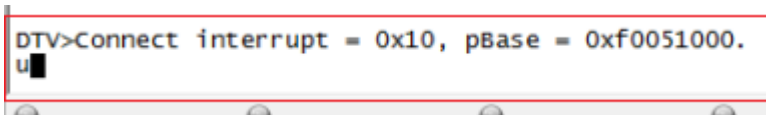
- Run SecureCRT.exe



- AC power on the TV , at the same time tightly press the “ESC” button on the PC until appear character

“DTV>”

Behind the character “DTV>”,Write lower-case letter “u” and press enter key to ensure.as following.



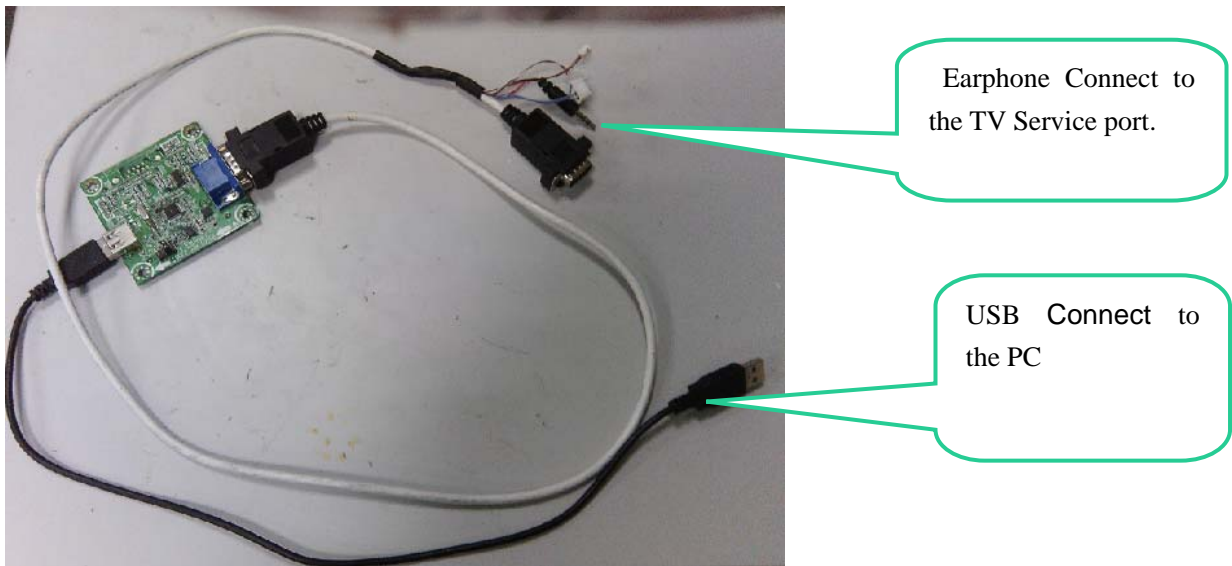
- TV will upgrade automatically ,the TV process as same as 4.1.

4.2 USB upgrade failing

If USB upgrade failing. At last we can burn the emmc flash program file“ *.bin ”to the flash IC then USB disk to upgrade the [upgrade_loader.pkg](#) file.



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 debug port. As following



4.2.1 Install the driver

4.2.1 Install the bebug board driver for first use MTK FlashTool.

Double click the icon  CP210xVCPInstaller_x64.exe  CP210xVCPInstaller_x86.exe, install the driver.

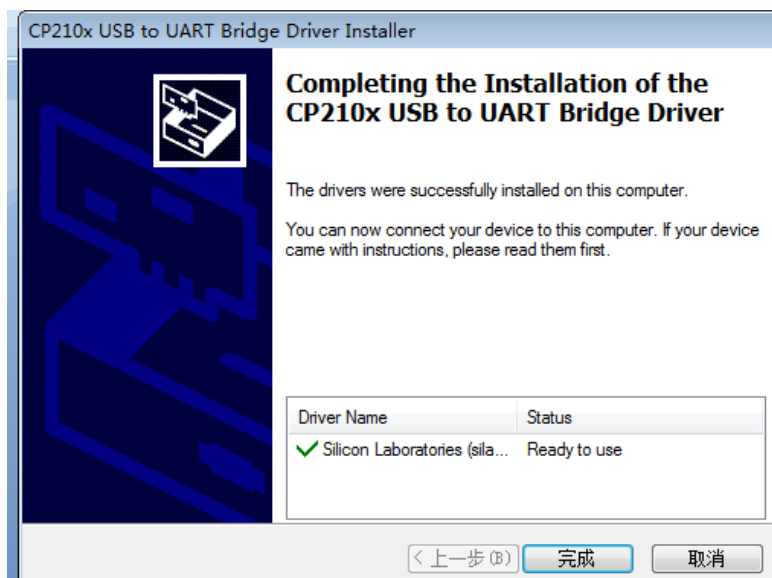
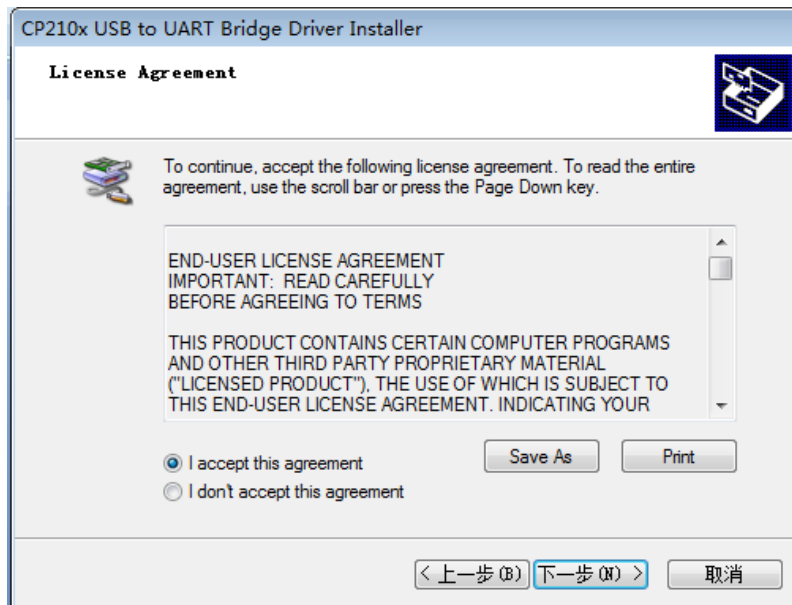
Note:

X64.exe is fit for 64bit system configure of the computer.

X86.exe is fit for 32bit system configure of the computer.

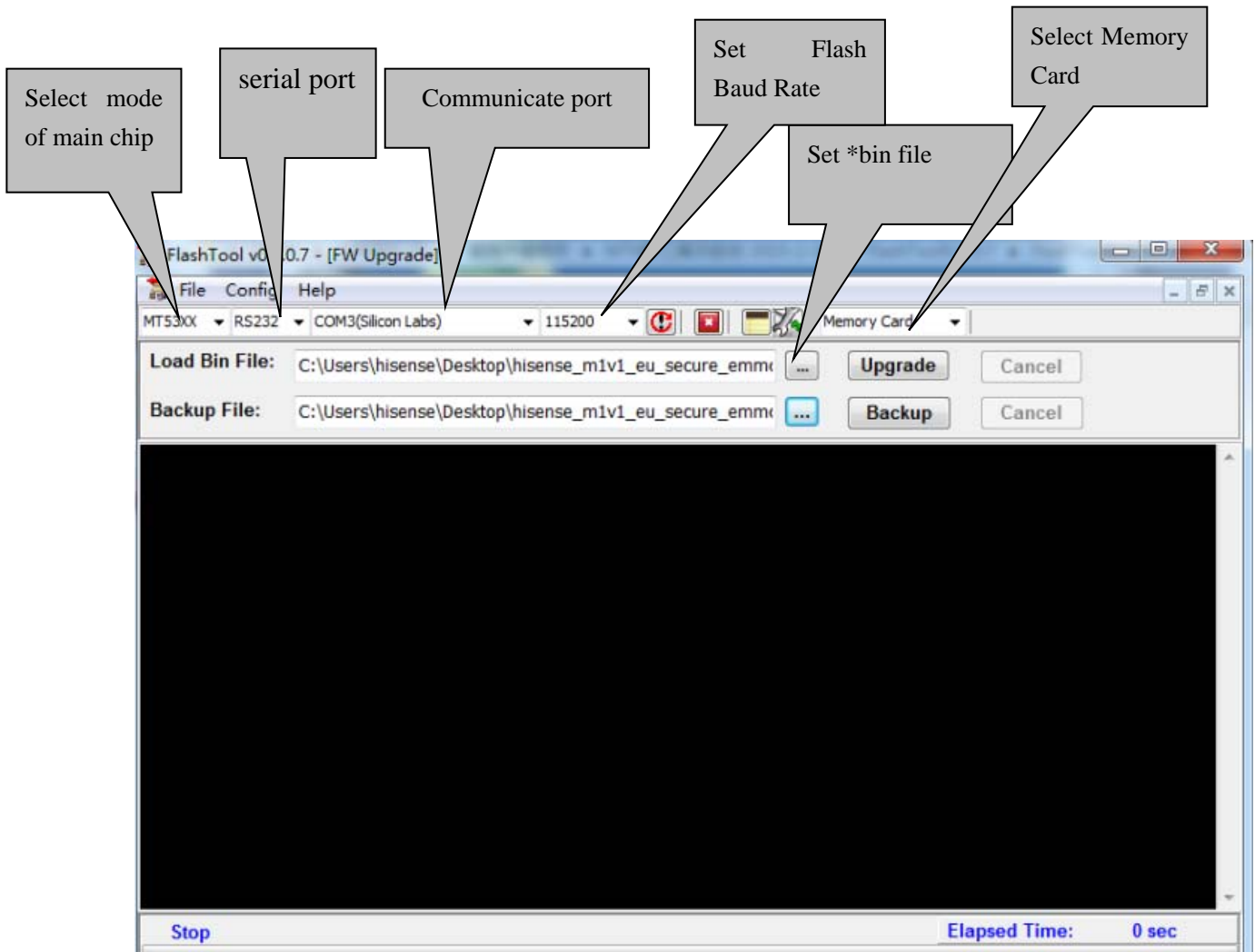


Select the default value, the driver will be installed step by step.

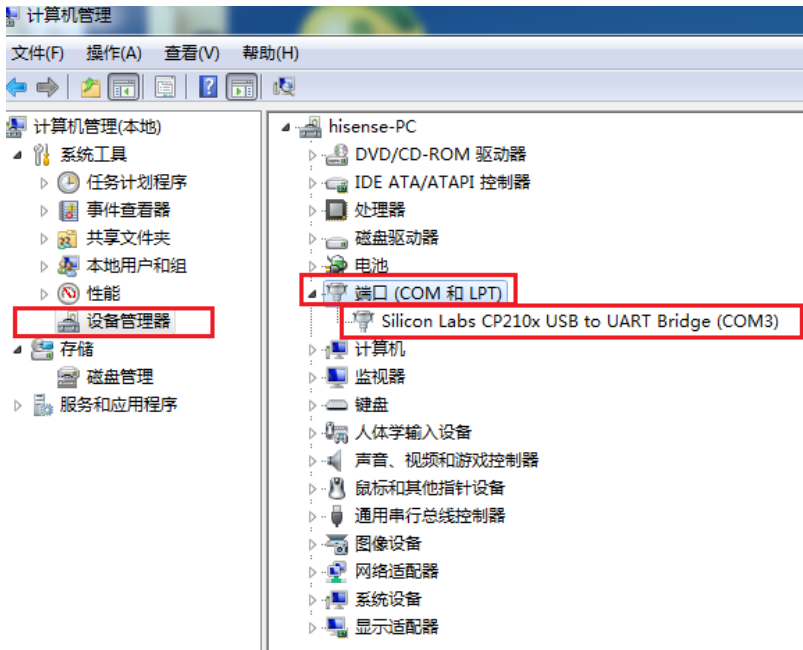


4.3 Upgrading with the FlashTool v0.7.0.7.exe




1、FlashTool is a green program needing no installation. After Connect the unit to your pc with a USB-to-serial port cable, run FlashTool v0.7.0.7.exe. Please refer to the following steps to set.

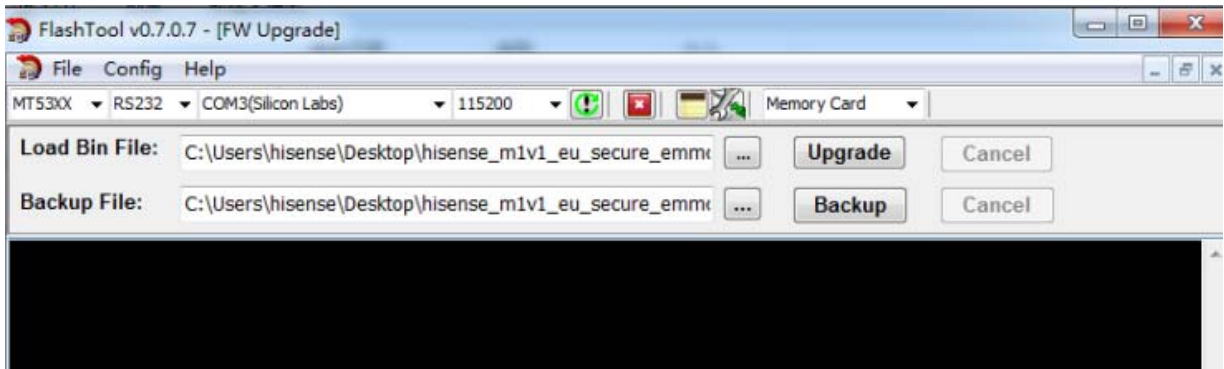



How to choose communicate port and flash baud rate? See the following instruction.



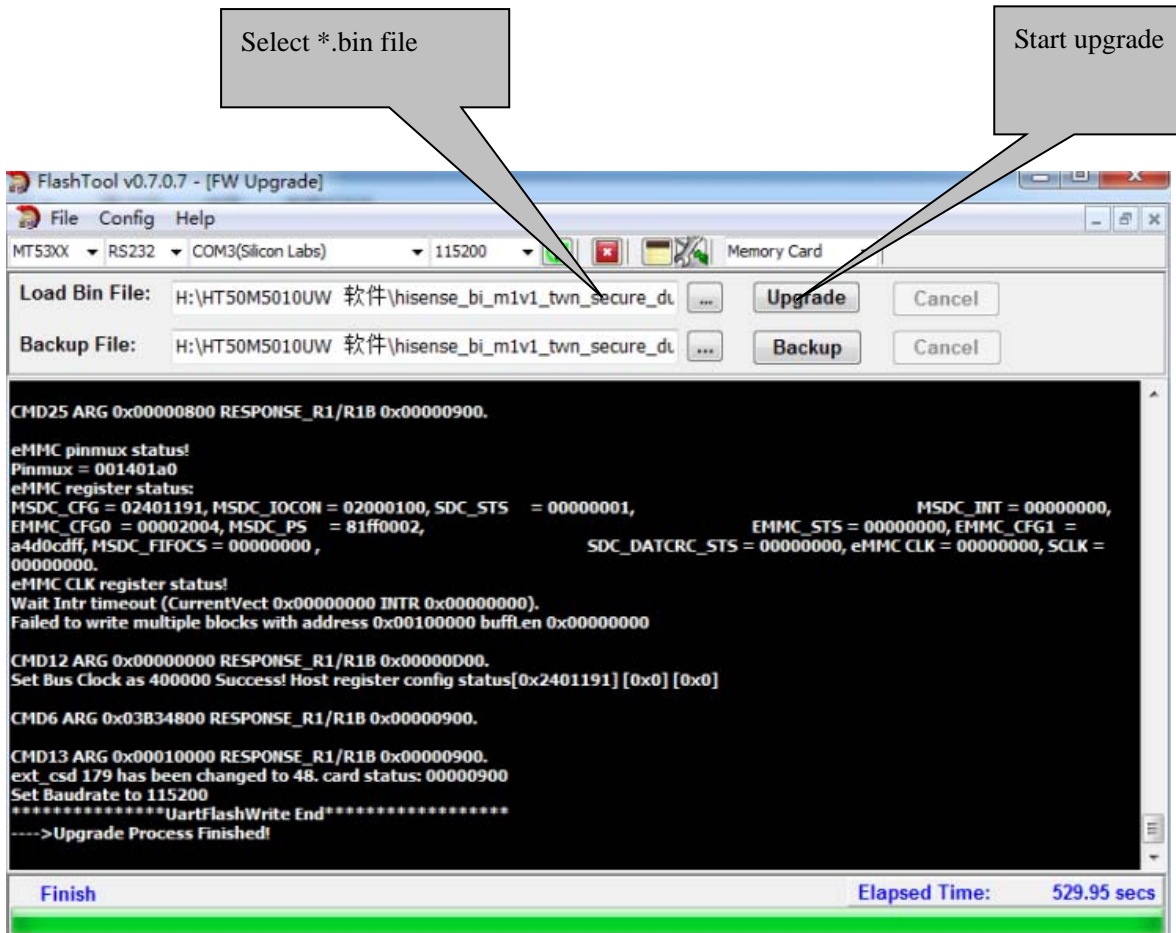
Open “Device Manager” and find which port is connected with the TV. In above picture, COM3 is connected to the TV, so, select “COM3” and if COM6 is connected to the TV, so select “COM6”. Select the right baud rate according to chip model. For this unit(chip model choose MT53XX), select 115200.

2、TV power on ,then Click  to connect, if connect successfully then button  from red turn green .



Click , bounce the following dialog box. Load Bin File: find the upgrading program file, **hisense_m1v1_eu_secure_emmcboot.bin**.

Press “Upgrade” button and start upgrading., if update defeat, try again.



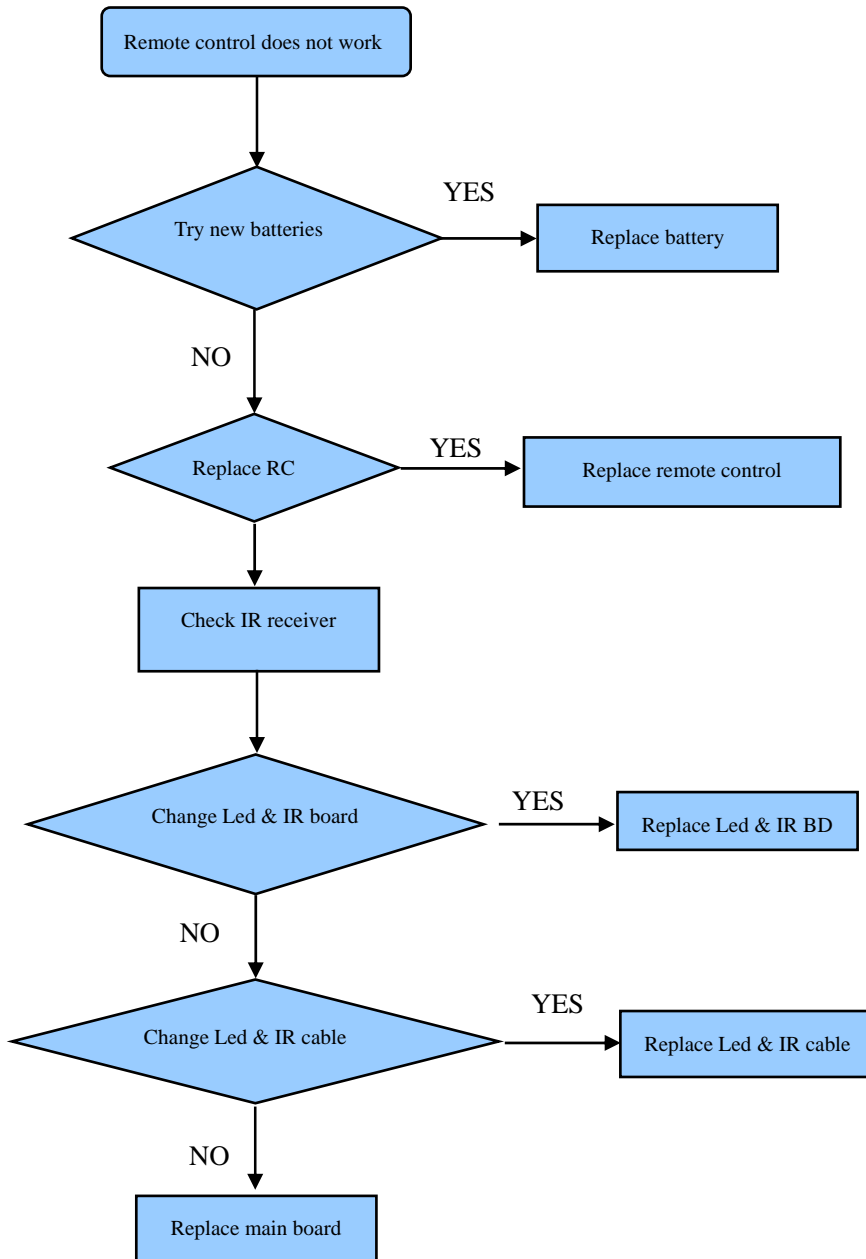
When appear “Upgrade process Finished”, it indicates loader update success.

5. Trouble shooting

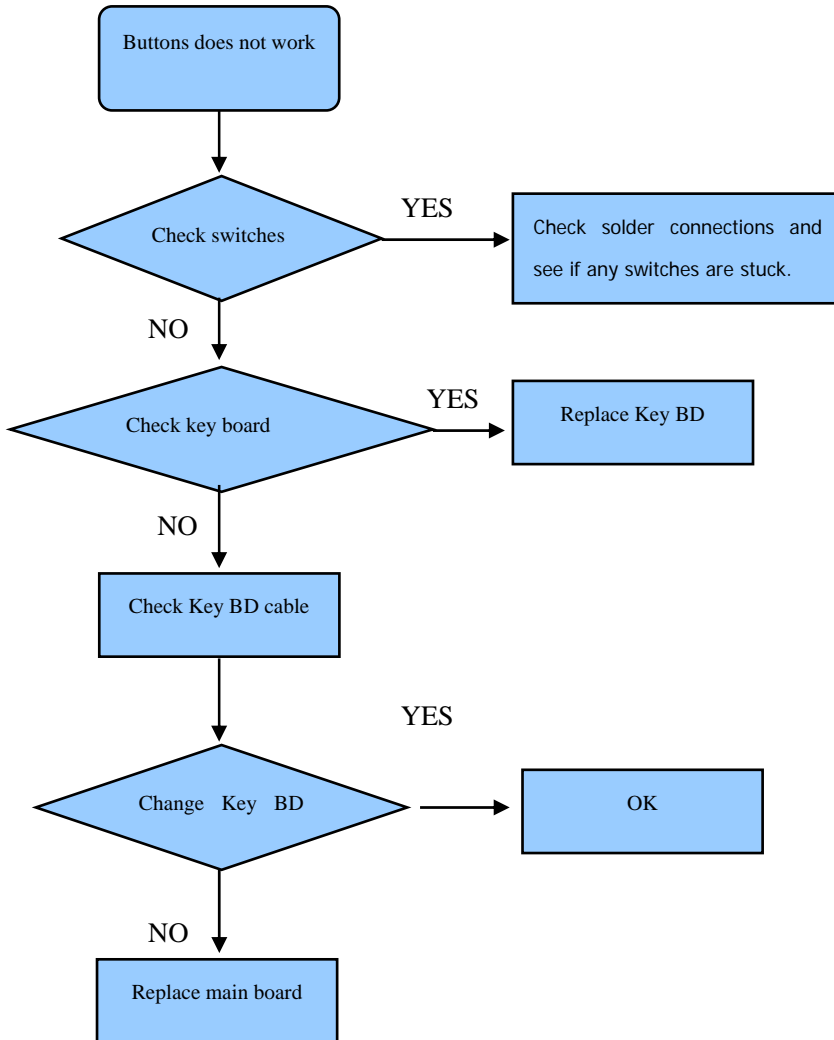
When there is something wrong with your TV, you can try turning off the TV and then restart it. You can also operate according to the follow chart. If the problems still can't be solved, please contact the profession technician.

No sound or picture	<ol style="list-style-type: none"> 1. Check if the power line is in the outlet and if it has electricity. 2. Check if you have pressed Power button on the TV or Power button on the remote control 3. Check the setting of picture brightness and contrast. 4. Check the volume.
The picture is normal but there is no sound	<ol style="list-style-type: none"> 1. Check the volume. 2. Check if Mute mode is set.
No picture and white or black picture	<ol style="list-style-type: none"> 1. Adjust Picture Setting. 2. Check Color System.
The sound and picture are interfered	<ol style="list-style-type: none"> 1 Try to find the appliance affecting TV set, and move it far away from the TV set. 2. Try to insert the power plug of the TV set into another outlet.
Unclear picture or picture with snow	<ol style="list-style-type: none"> 1. Check the direction, position and connection of your antenna. 2. Adjust the direction of your antenna or reset or fine tune the channel
The remote control does not work	<ol style="list-style-type: none"> 1. Change the batteries in the remote control. 2. Clean the upper side of the remote control (radiating window) 3. Check the contacting points of the batteries. 4. Check if there is obstruction between the remote control and the monitor. 5. Check if the batteries are correctly installed.
H/V strip or the picture shaking	Check if there is an interfering source nearby, such as appliance or electric tools.
The cabinet of the TV makes "Click" sound	makes "Click" sound"Sometimes the room temperature change can cause the television cabinet to inflate or contra, which makes this sound. This does not mean the TV breaks down.

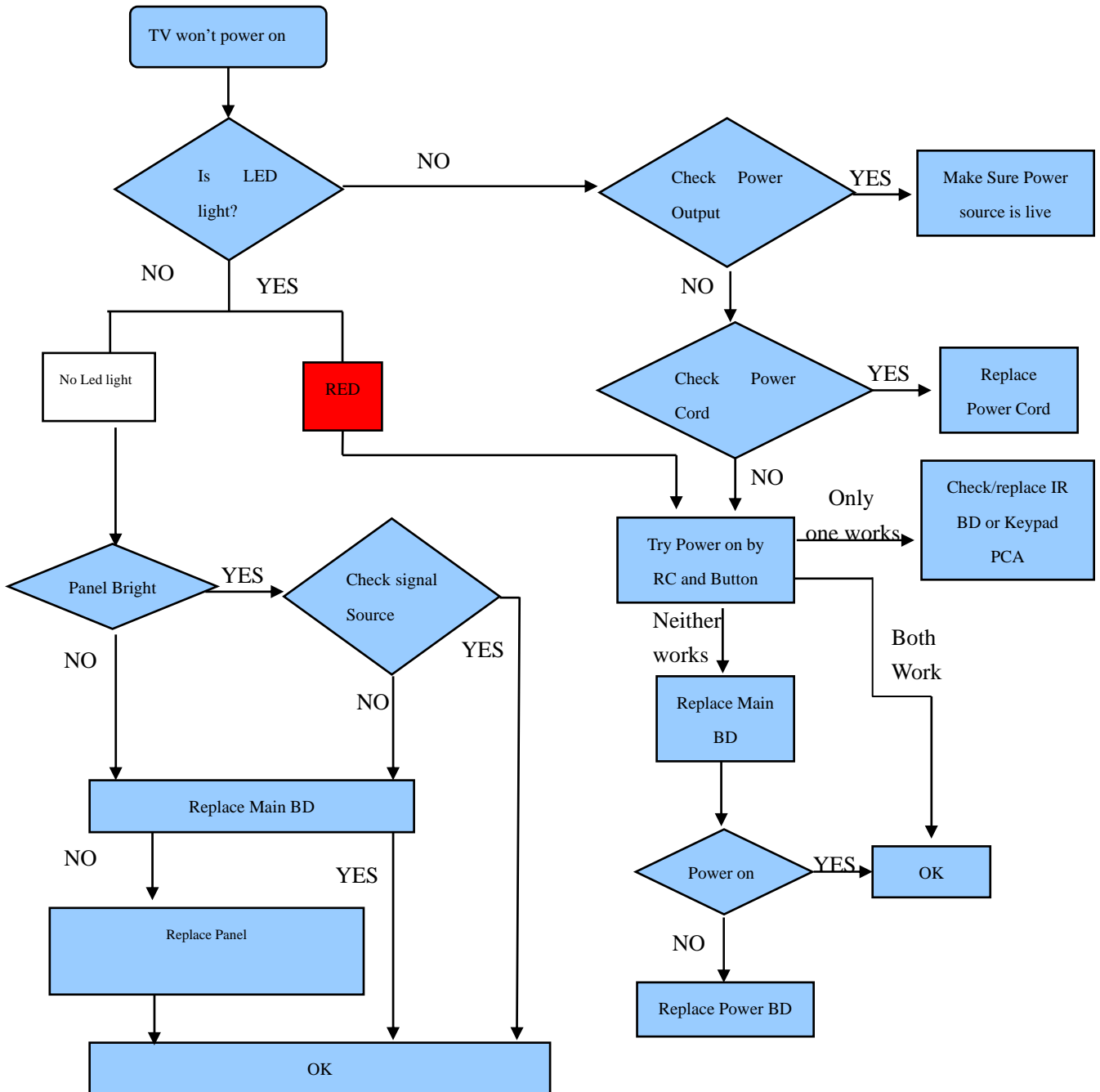
5.1 Troubleshooting for Remote Control



5.2 Troubleshooting for Function Key



5.3 TV won't Power On



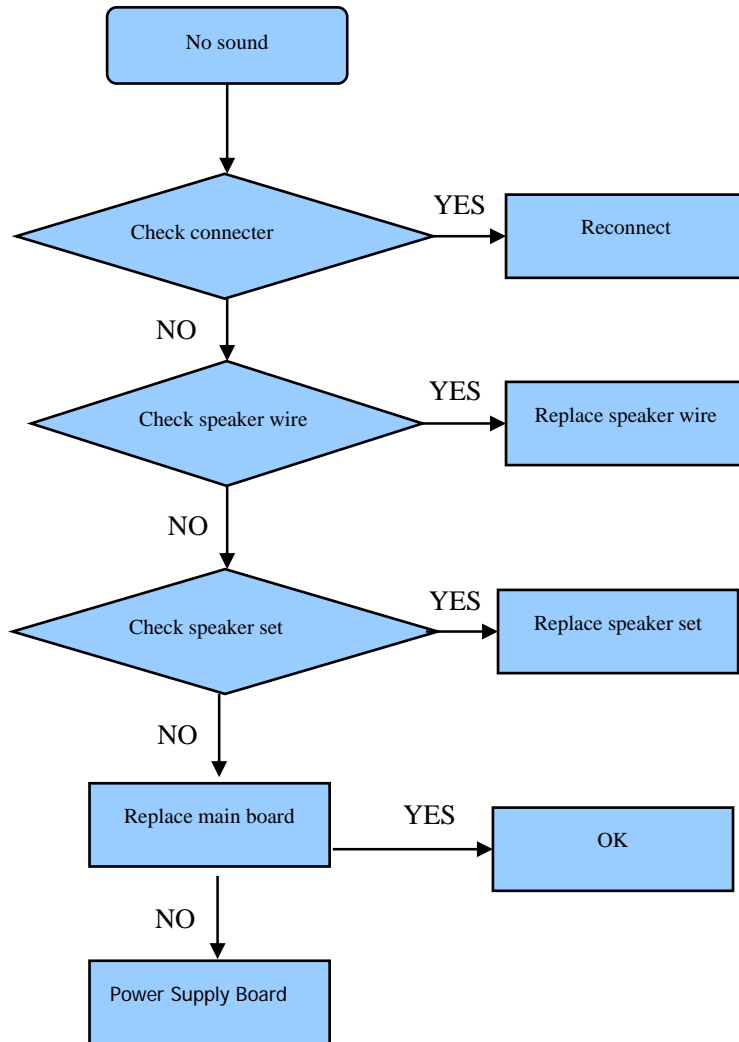
Note:

MTK5659 TV LED feature:
 When TV is in working status, No led light.
 When TV is in standby status, Led light is RED.

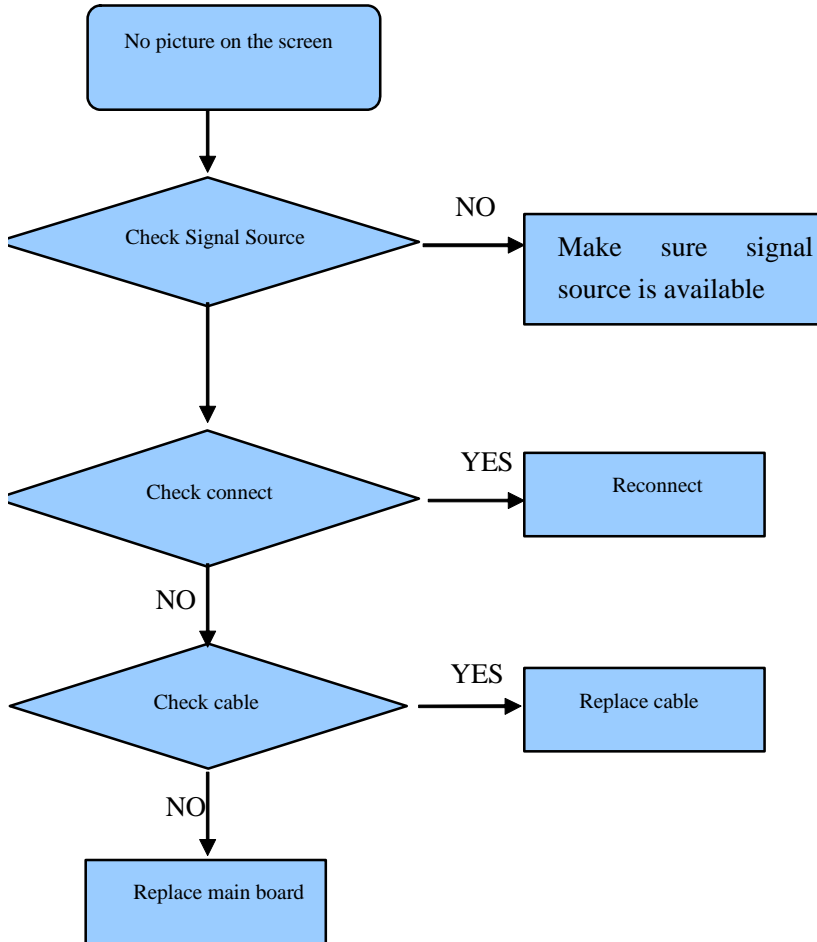
Note:

If main board & power board are one complex board not separately, then replace main board or power board will change the complex board.

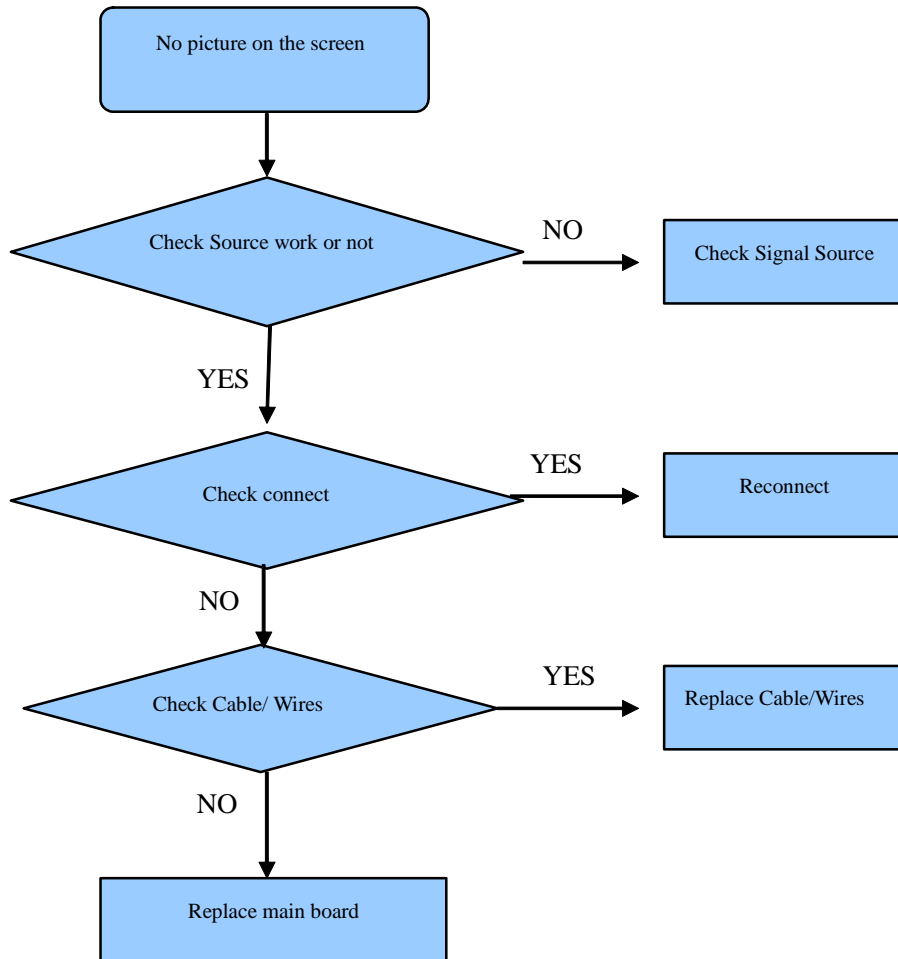
5.4 Troubleshooting for Audio



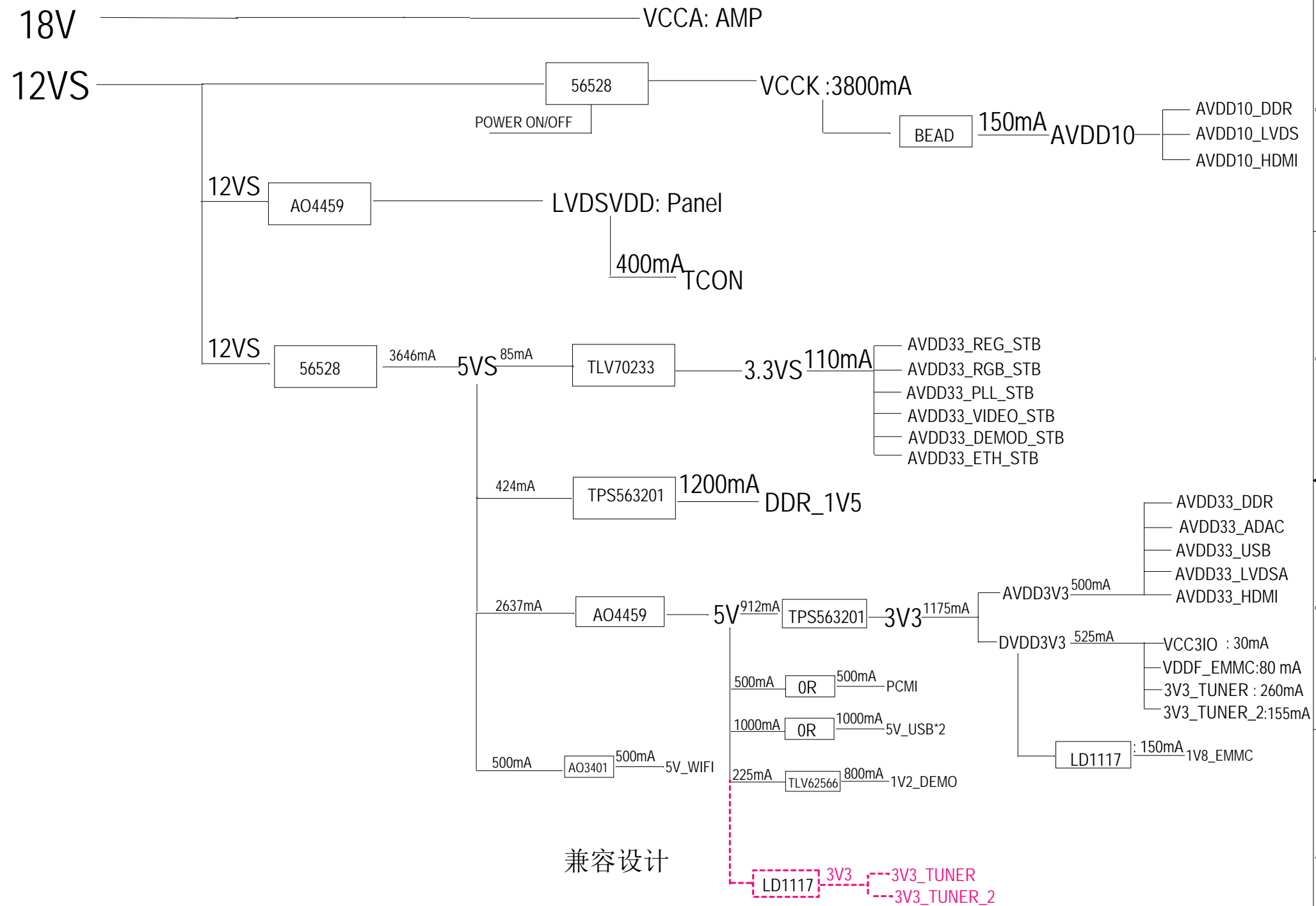
5.5 Troubleshooting for TV/VGA/HDMI input



5.6 Troubleshooting for Video input



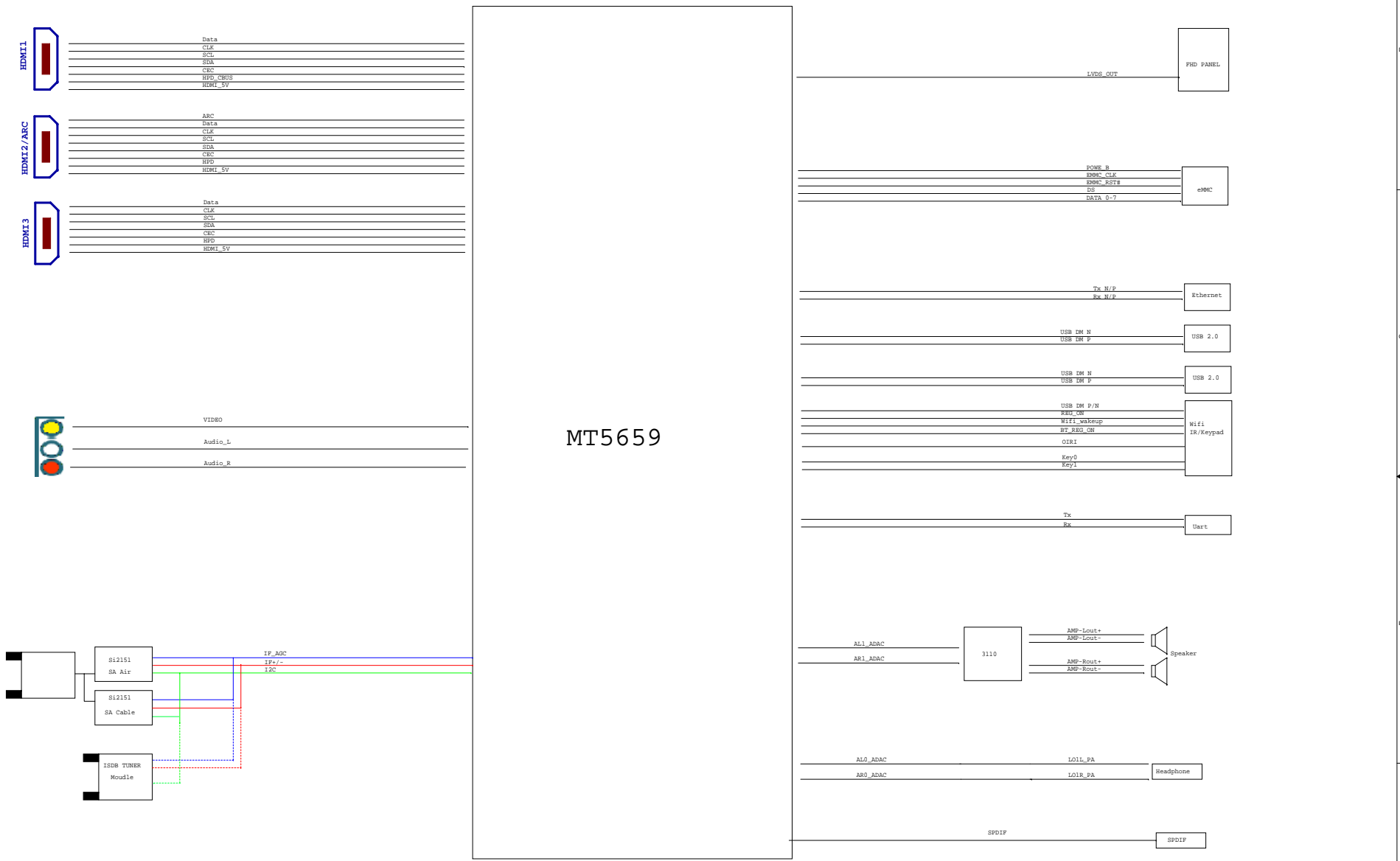
6. Signals Block Diagram & power assign & schematic diagram :



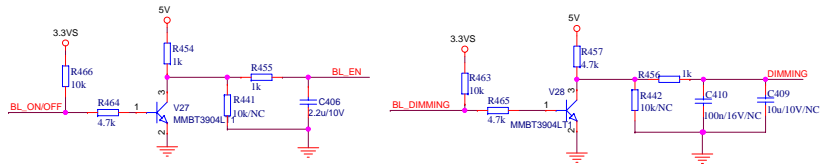
兼容设计



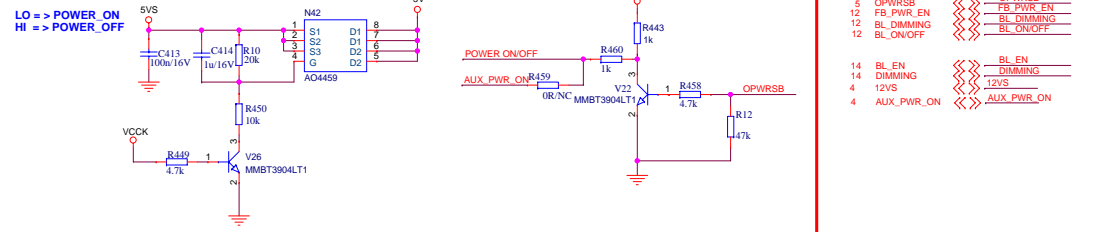
Block Diagram



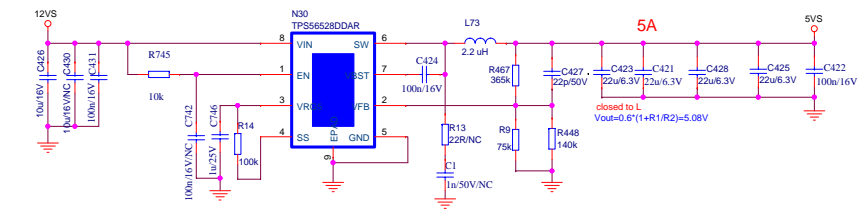
PSU Control



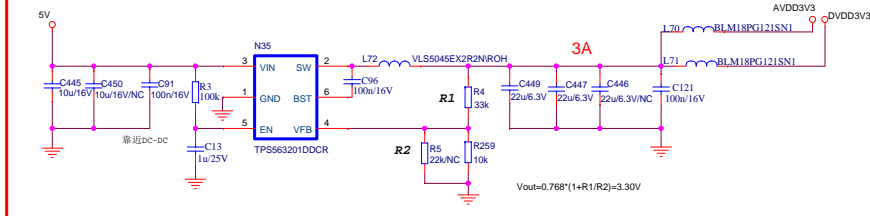
POWER SWITCH



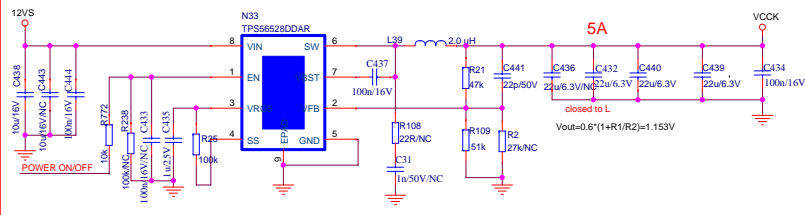
12V-->5VS



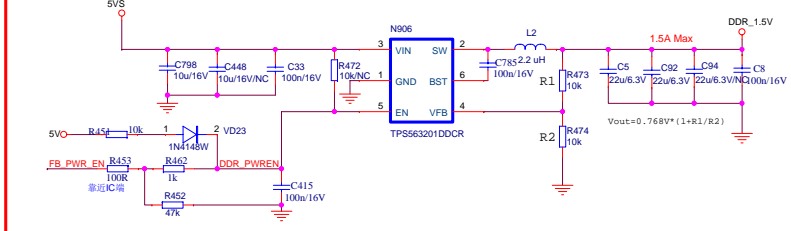
POWER DVDD3V3/AVDD3V3



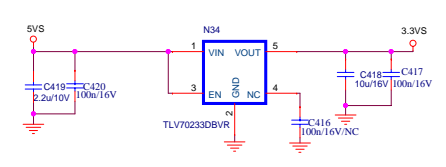
Core Power 1.1V



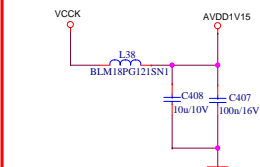
DRAM Power



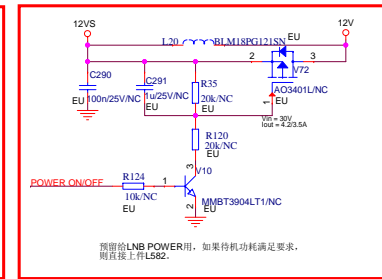
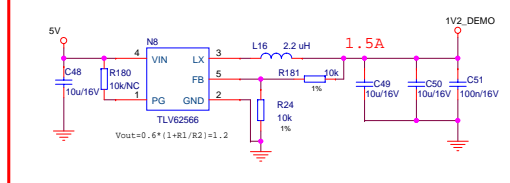
STANDBY POWER 3V3SB



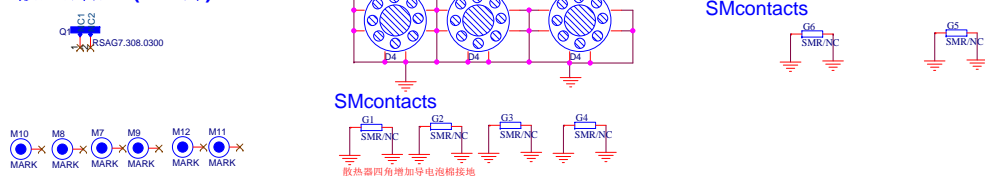
AVDD1V2



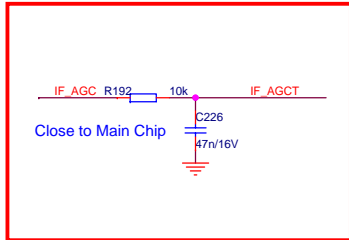
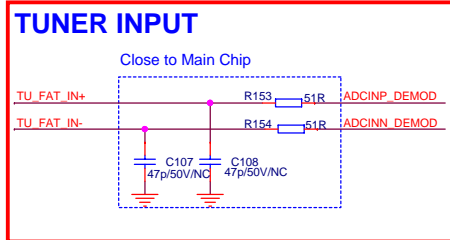
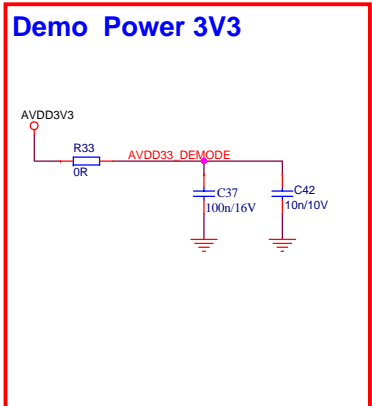
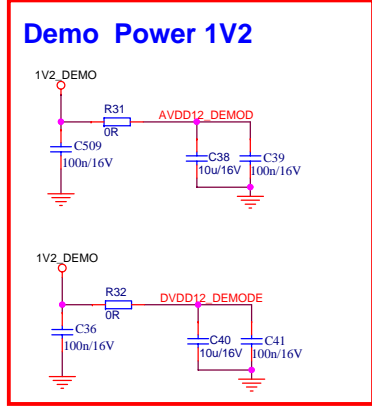
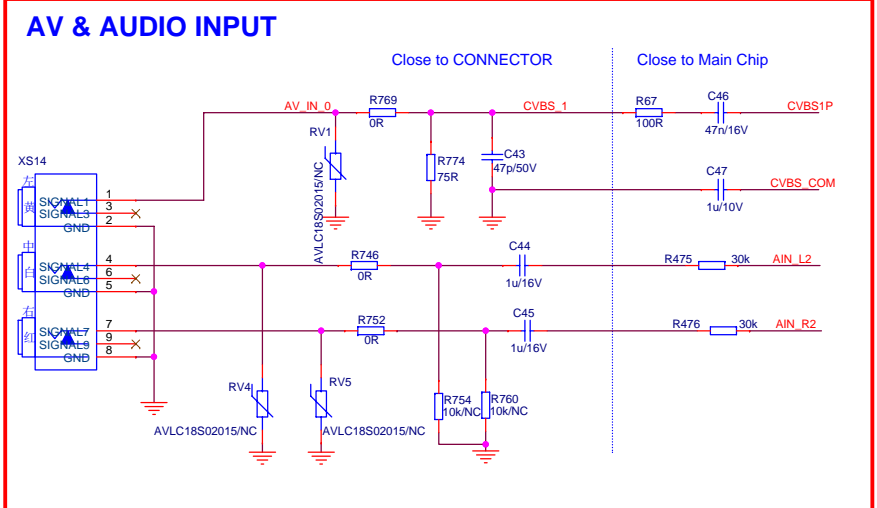
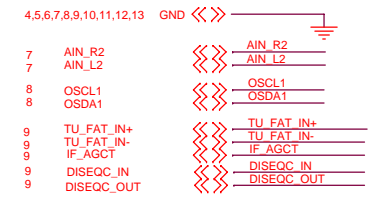
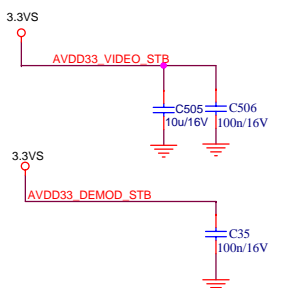
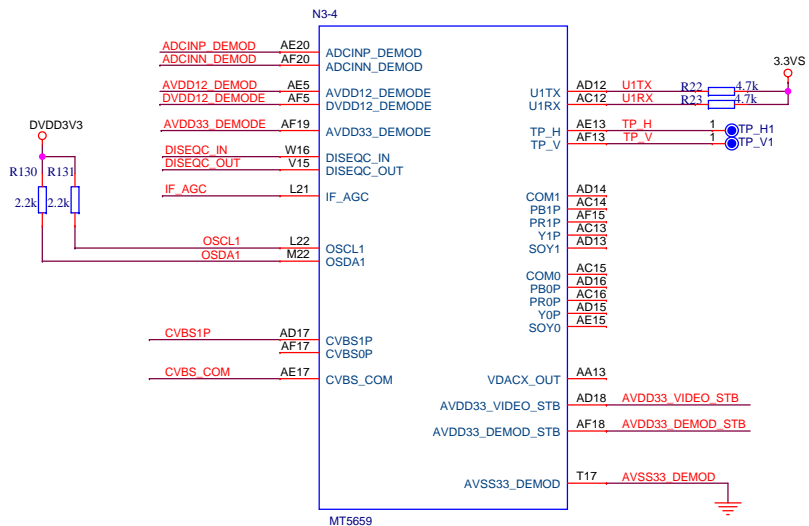
Power of Demodulator



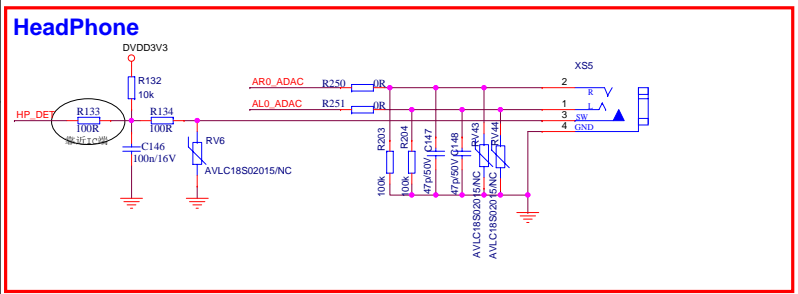
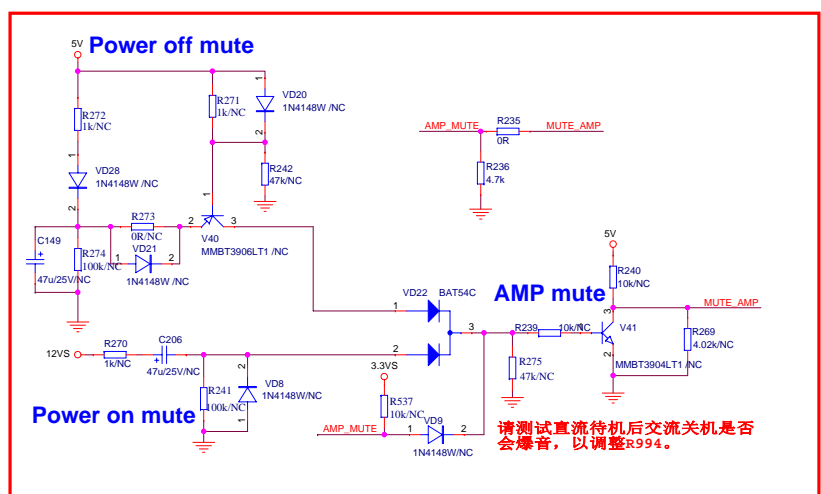
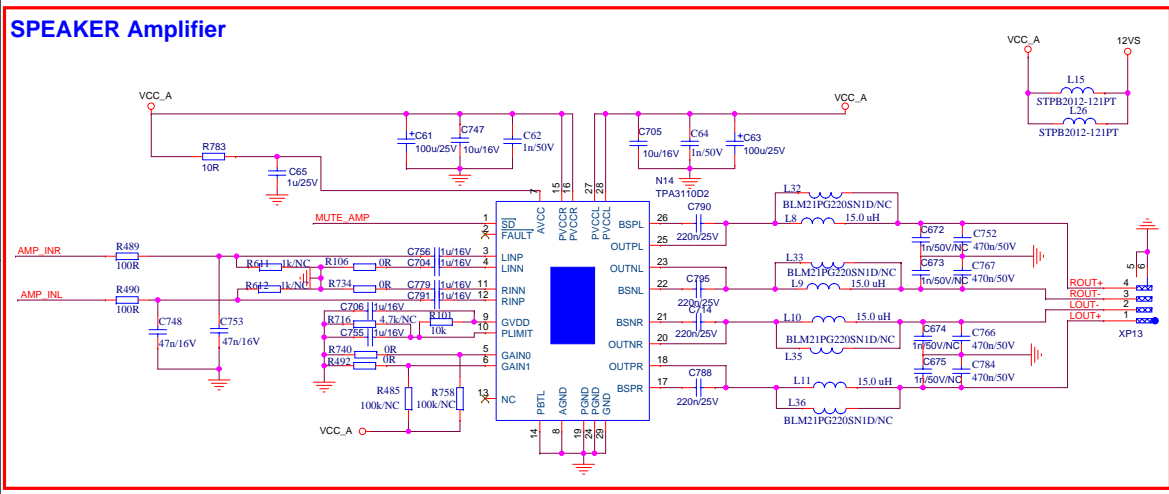
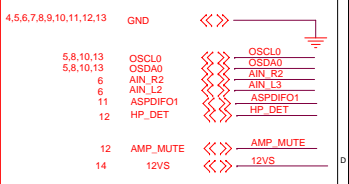
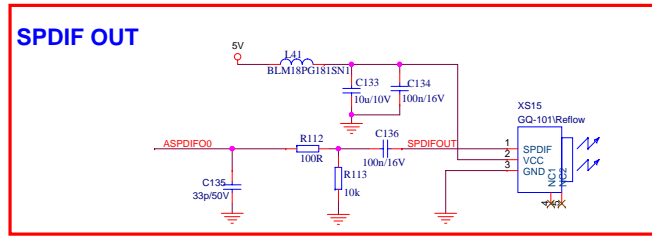
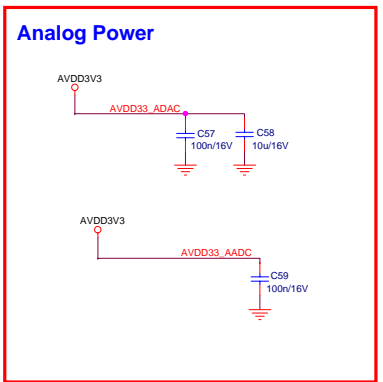
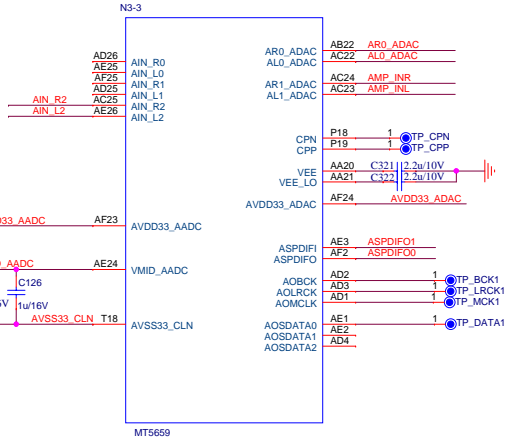
散热器贴N3(主芯片)上



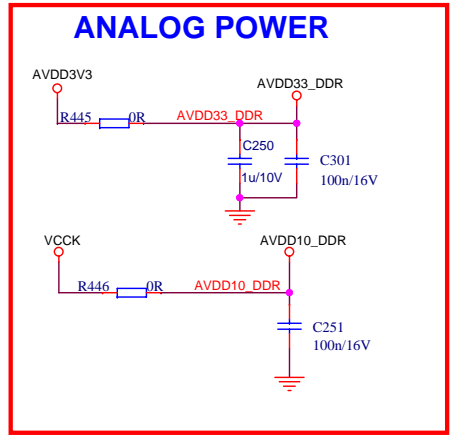
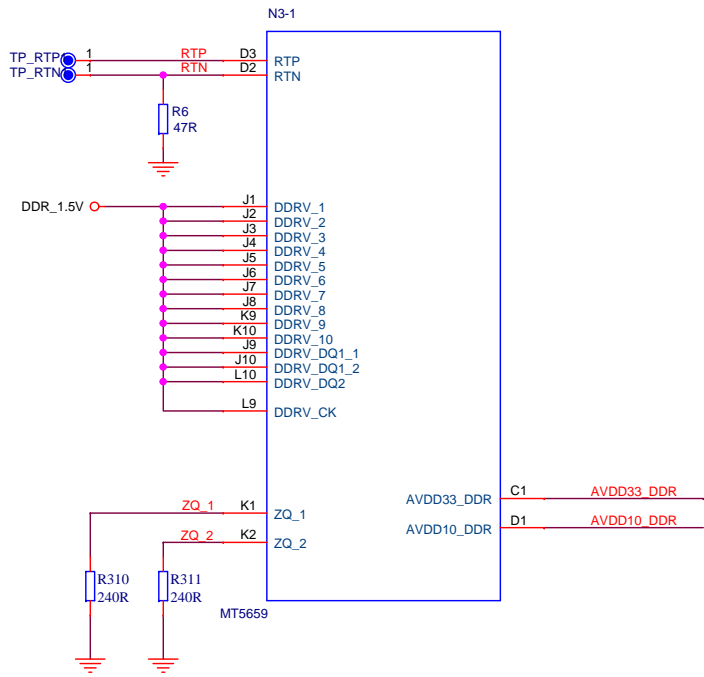
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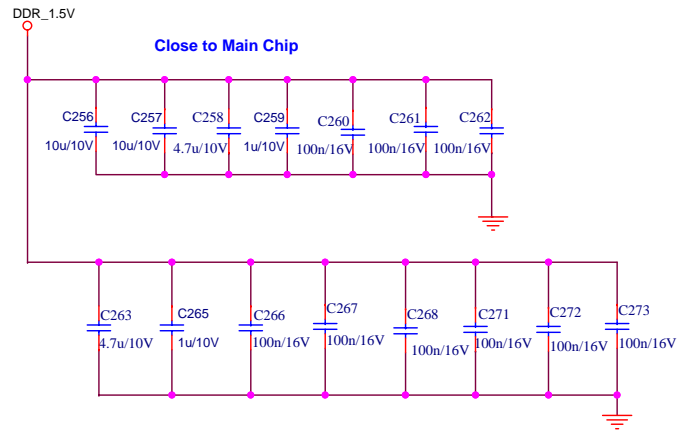
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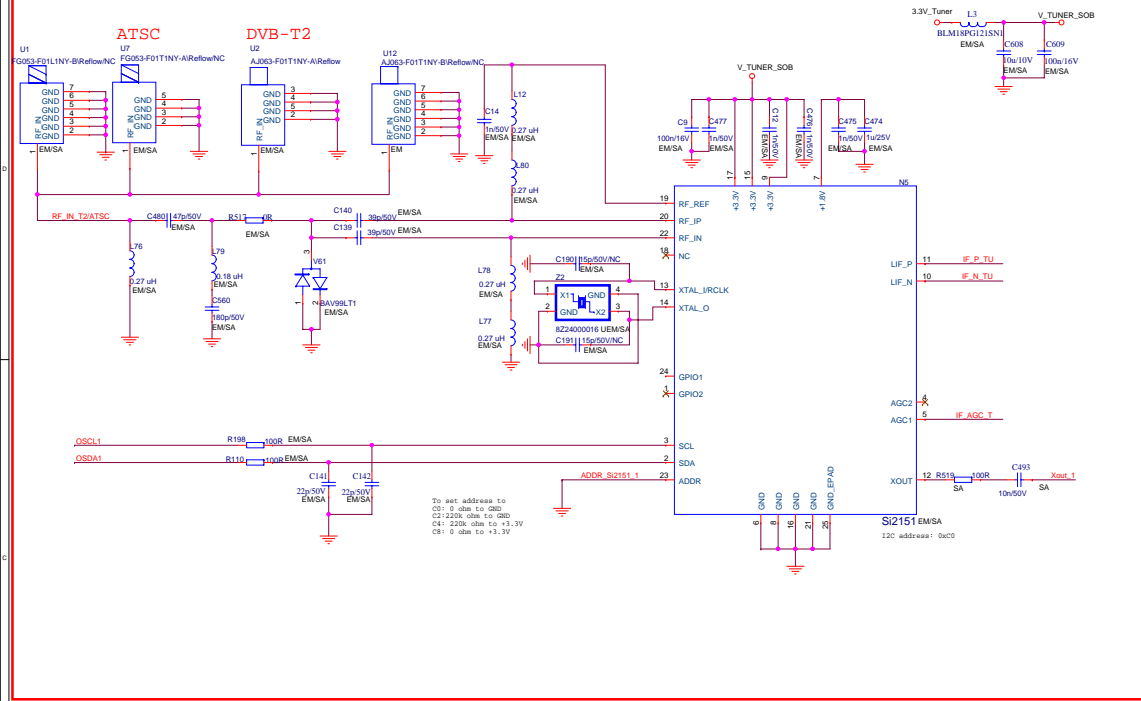


4,5,6,7,8,9,10,11,12,13 GND <<>>

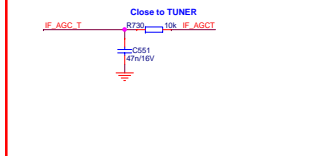


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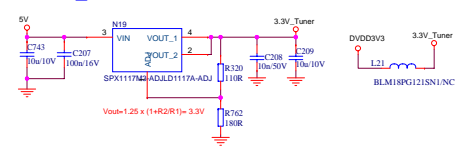
Tuner On Board for SA Air



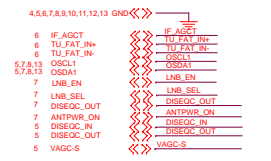
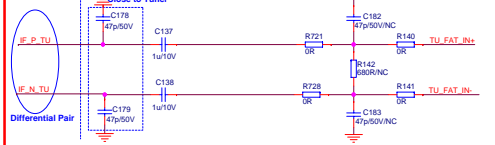
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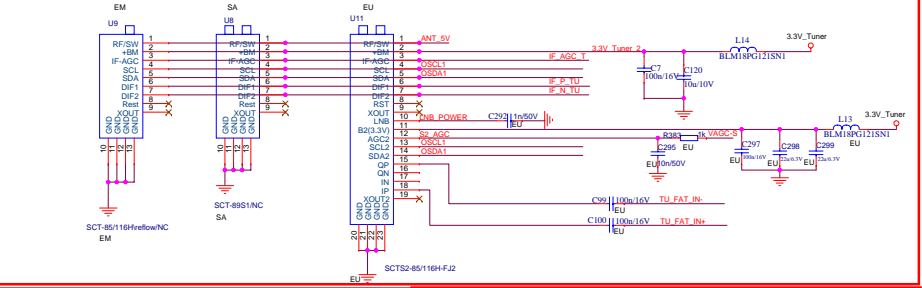
Tuner_POWER



Tuner IF

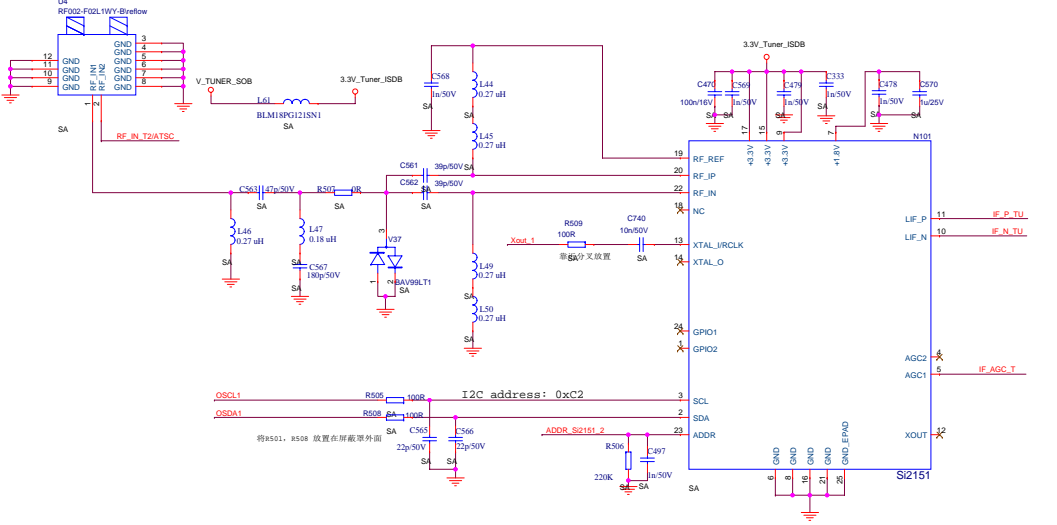


Can tuner for ATSC/DVB-T2/S2/T/S/C/ISDB

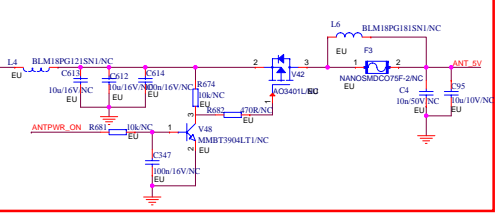
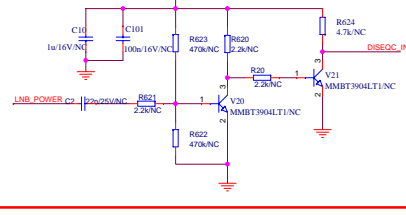


Tuner On Board for SA Cable

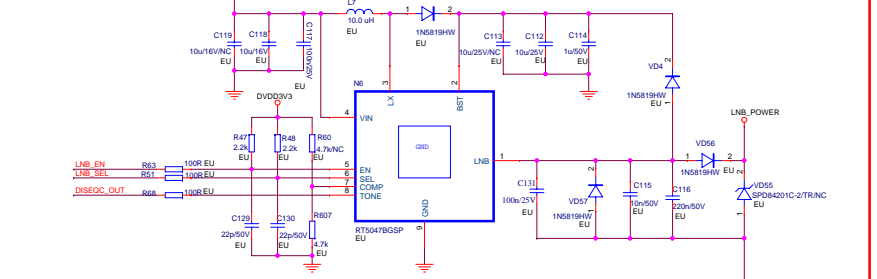
每个tuner预留14mm宽度,28.8mm长度范围内



ANT POWER

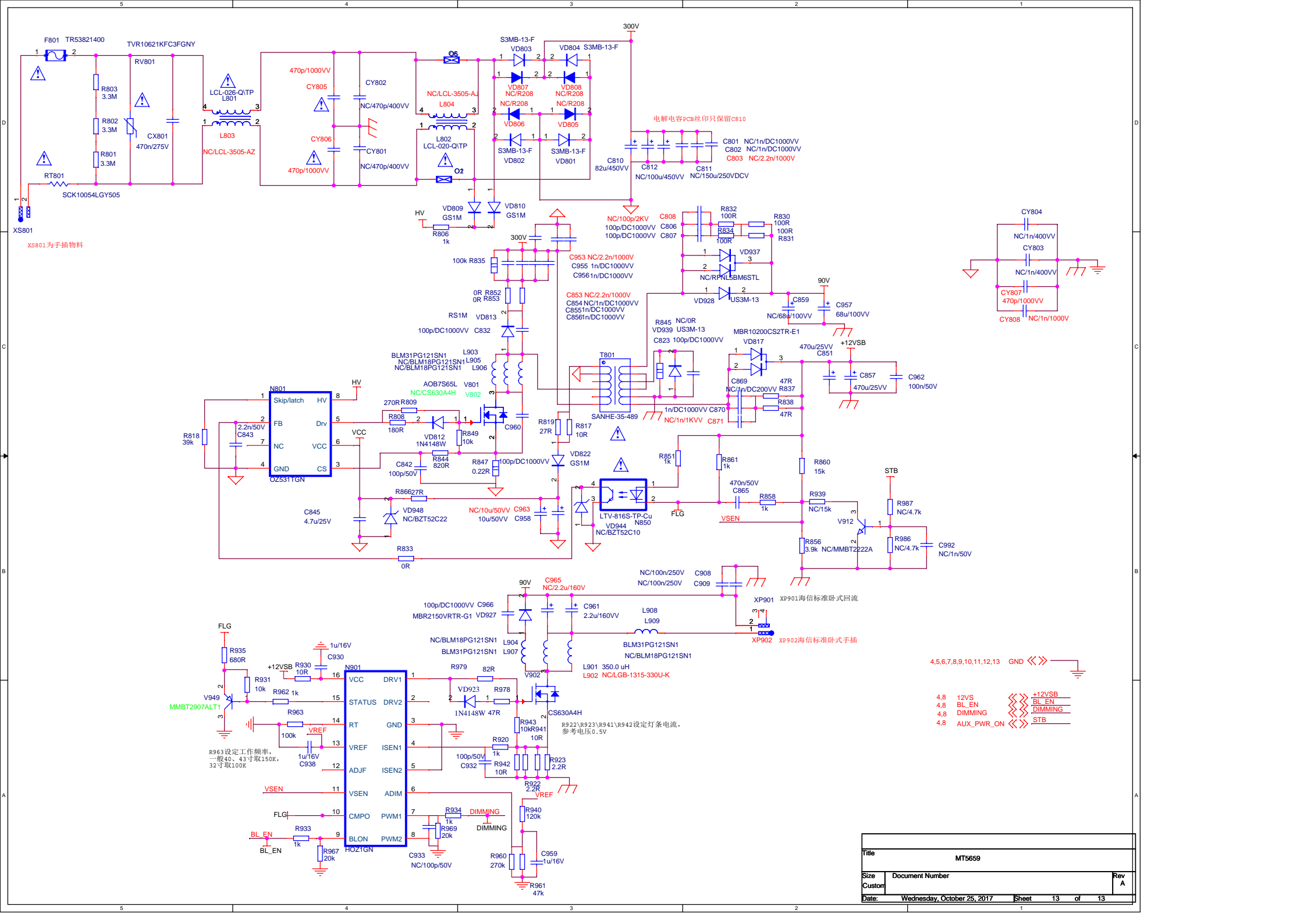


LNB POWER CONTROL



TONE VS LNB 22KHz

SEL pin status	LNB Voltage	EN pin status	LNB Voltage
L	13.3V	L	0
H	18.3V	H	enable



XS801为手插物料

电解电容pcb丝印只保留C810

R963 设定工作频率，一般40、43寸取150k，33寸取100k

R922, R923, R941, R942 设定灯条电流，参考电压0.5V

- 4,5,6,7,8,9,10,11,12,13 GND
- 4,8 12VS
- 4,8 BL_EN
- 4,8 DIMMING
- 4,8 AUX_PWR_ON

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