



LCD Television Service Manual

Chassis: MSD309PX

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.

2. Product Specifications:

2.1 Specifications:

32 Inch & 42 Inch:

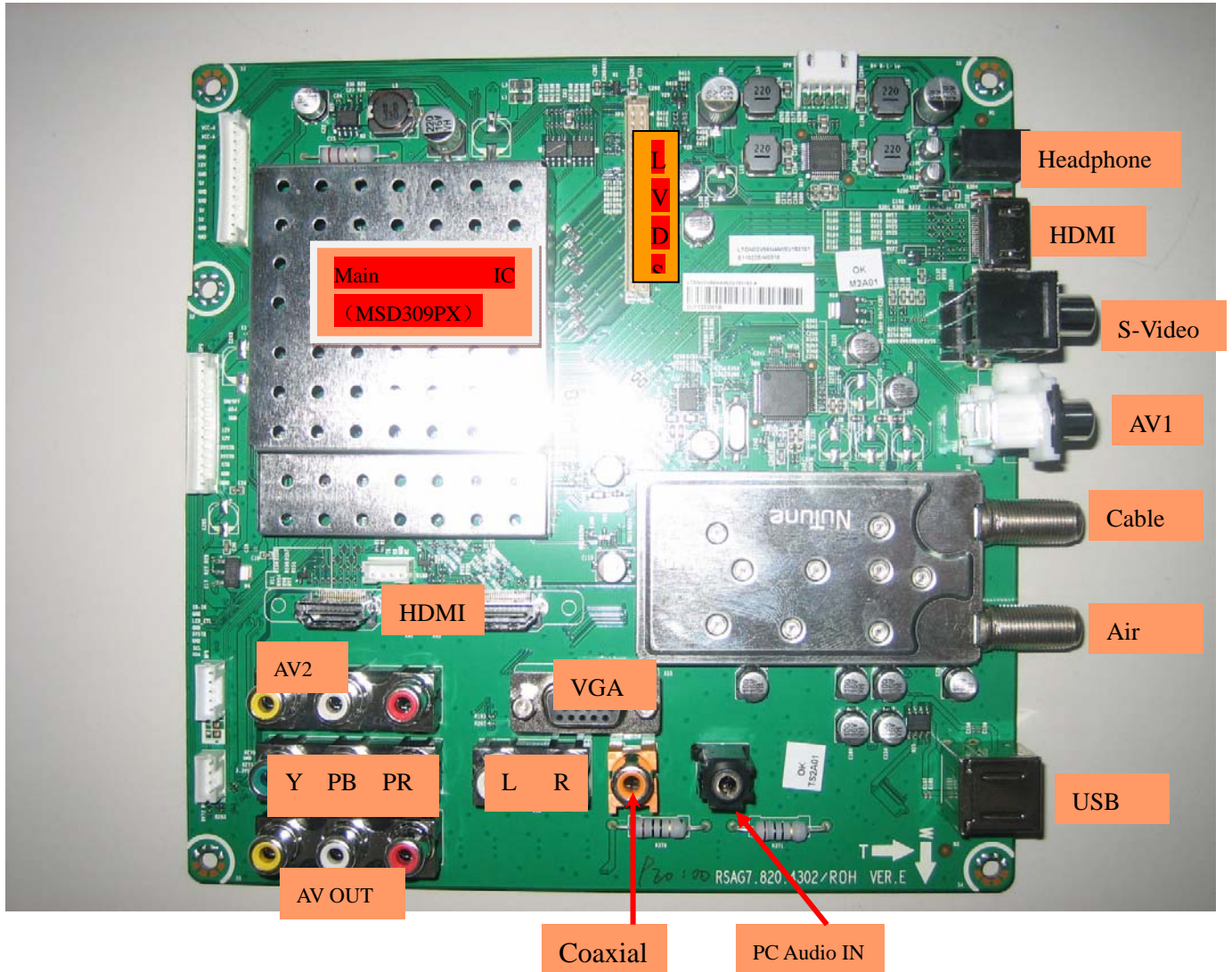
Model	LTDN32V86NAM	/	LTDN42V86NAM
Screen Diagonal Size	32 inches	/	42 inches
Screen Resolution	1920X1080 Pixels	/	1920X1080Pixels
Power Consumption	Refer to the Rating Label		
Power Supply	AC 100V~240V		
Colour System	PAL NTSC		
Television System	PAL M/N NTSC ISDB-T		
Sound Output (RMS)	6W+6W	/	8W+8W
Component mode	(480I/60Hz, 480P/60Hz, 576I/50Hz,576P/50Hz,720P/50Hz		
	720P/60Hz,1080I/50Hz,1080I/60Hz,1080P/50Hz,1080P/60Hz)		
VGA mode	(640X480, 800X600,1024X768,1280X1024 60Hz)		
HDMI mode	(480I/60Hz, 480P/60Hz, 576I/50Hz,576P/50Hz,720P/50Hz,720P/60Hz,		
	1080I/50Hz,1080I/60Hz,1080P/50Hz,1080P/60Hz)		
	(640X480, 800X600,1024X768 60Hz)		
Size with base	788mm×252mm×561mm	/	1020mm×303mm×691mm
Size without base	788mm×101mm×511mm	/	1020mm×106mm×642mm
Weight with base(kg)	12.5kg	/	18.5kg
Weight without base(kg)	10.5kg	/	16kg
Wall Mount size:	200mm x200mm		
Environmental	Temperature 5°C~35°C		
Conditions	Humidity : 20%-80%RH		
Humidity : 20%-80%RH	Atmospheric pressure: 86kPa-106kPa		

NOTE:

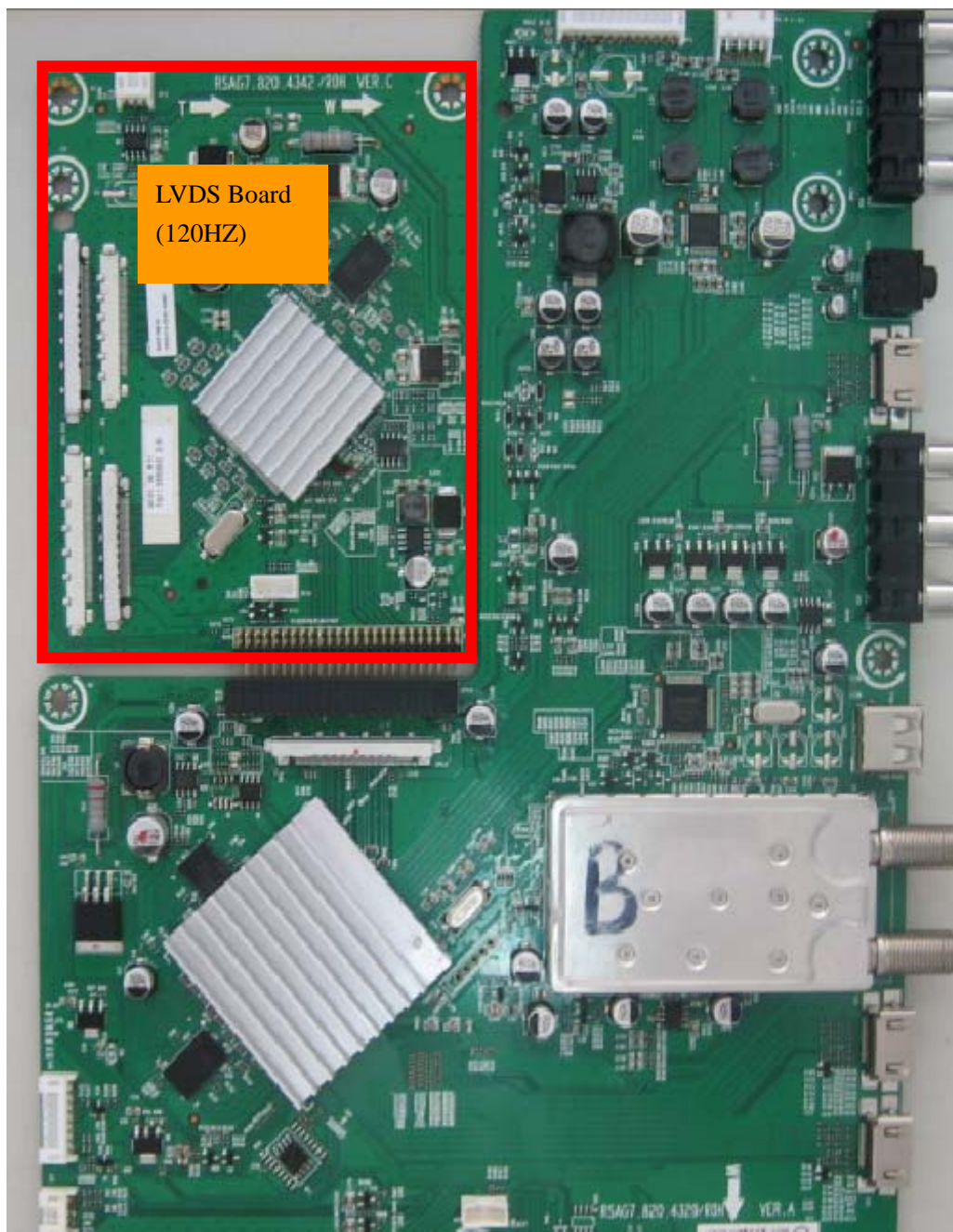
The above Specifications are reference only, other models refer to the actual User manual. Please.

2.2 Main Board:

Board 1: (Panel have not 120HZ refurbish ratio)



Board 2: (Panel have 120HZ refurbish ratio)

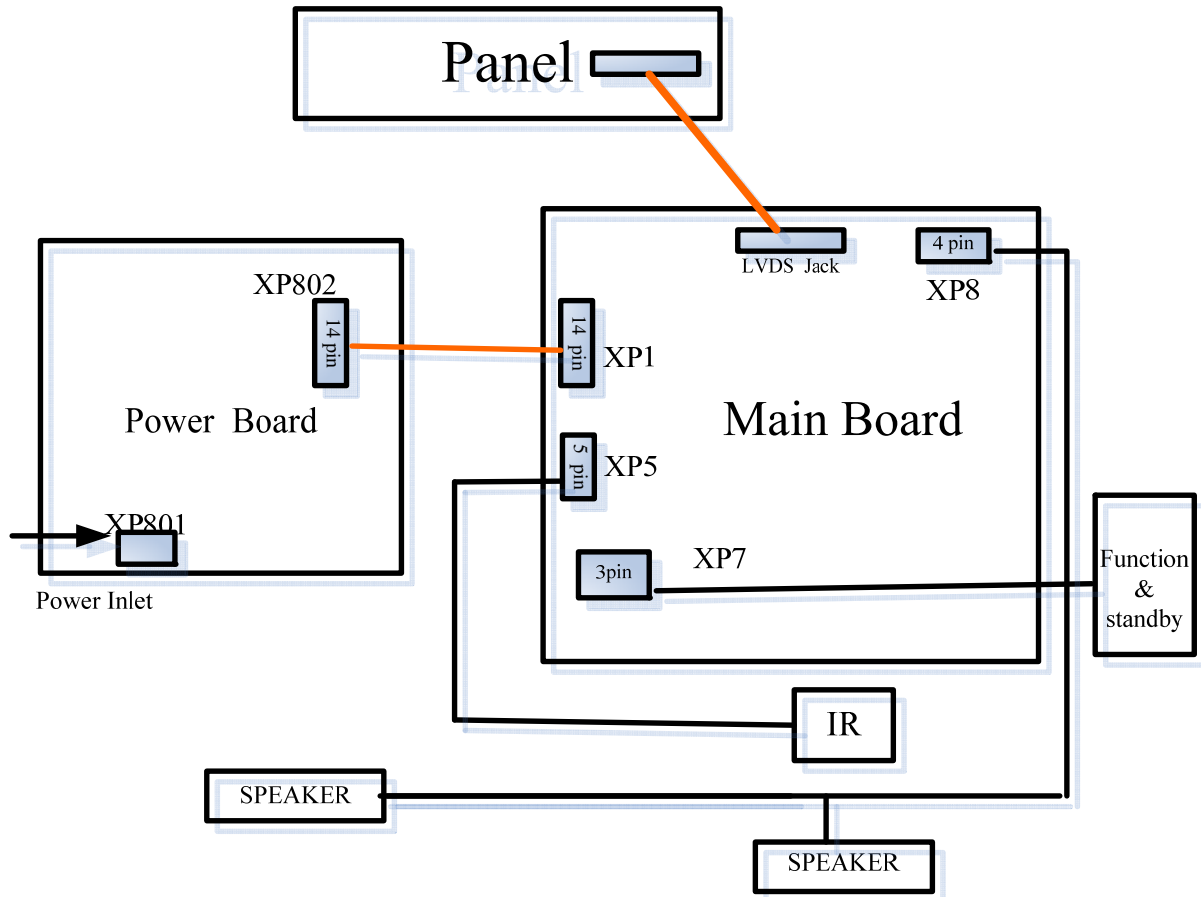


Note:

The above “Main board images” are reference only, different models refer to the actual units to determine the boards.

2.3 Wiring Diagram:

LTDN32V68NAM



Note:

The above Wiring Diagram is reference only, different models refer to the actual units to determine the connectors.

MSD309PX Chassis Series includes model:

Model	Panel Mode	LVDS (Main-Panel)	LVDS Board (120HZ)
LTDN32V86NAM(1)	T315HW04VD\JK\ROH	HX2-2X20KLB350-CMO-1\ROH	NO
LTDN32V68NAM	T315HW04VD\JK\ROH	HX2-2X20KLB350-CMO-1\ROH	NO
LTDN32K26AM	LC320EUN-SDV1\JK\ROH	HX2-2X20KLB300P-LG-4\ROH	NO
LTDN32V88NAM	T315HW04VD\JK\ROH	HX2-2X20KLB350-CMO-1\ROH	NO
LTDN42V86NAM	HC420EF-E01\ROH	HX2-2X20KLB600P-LG-2\ROH	NO
LTDN40K26GAM	LTA400HF24\JK\ROH	FFC-521-51P-2A\ROH	Yes
		FFC-422-41P-2A\ROH	
LTDN46K26GAM	LTA460HJ14\JK\ROH	FFC-521-51P-2A\ROH	Yes
		FFC-422-41P-2A\ROH	
LTDN40T26GAM	LTA400HF16\JK\ROH	FFC-51P-563\ROH	Yes
		FFC-41P-476\ROH	
LTDN40T28NGAM	LTA400HF16\JK\ROH	FFC-51P-563\ROH	Yes
		FFC-41P-476\ROH	

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.(Note1)
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

Note:

1. In the “Factory Menu”, item “Function”->”TOFAC” ,you can select “M” or “U”, default is “U”.
----M-Means you can enter factory mode with factory RC or user RC.
----U-Means you can enter factory mode only with user’s RC.
2. Mode “M” is only used for factory production.

b. With user’s RC

Power on the TV.

1. Press “Menu” button and call up User OSD Menu.
2. Select“ Sound” Menu-> “Balance” item.
3. Press number key 1->9->6 ->9 in sequence when “Balance” item is focused.

Note: If necessary, re-do number keys.

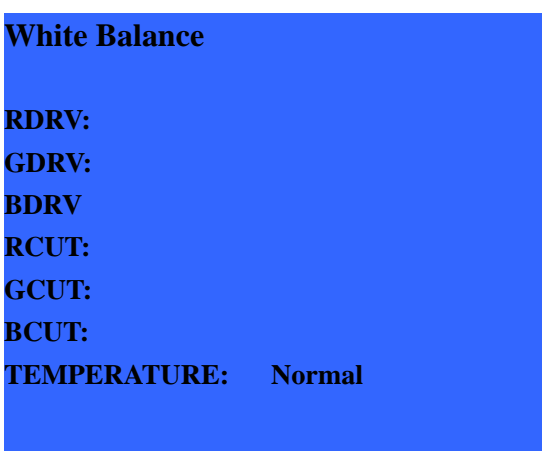
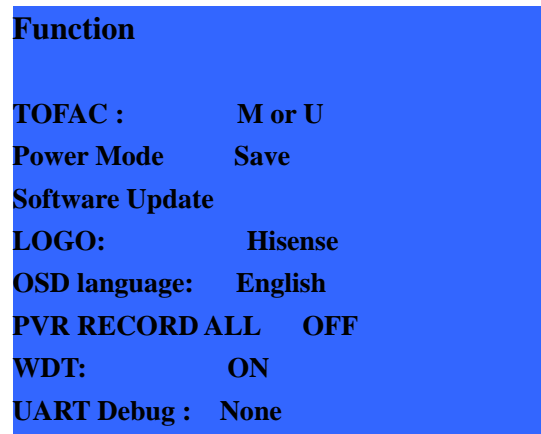
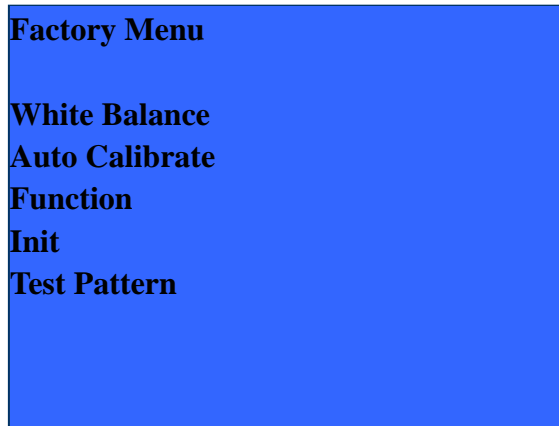
4. Factory OSD appears.

Note: Press the standby button then AC turn off and restart the TV, which can exit factory OSD menu.

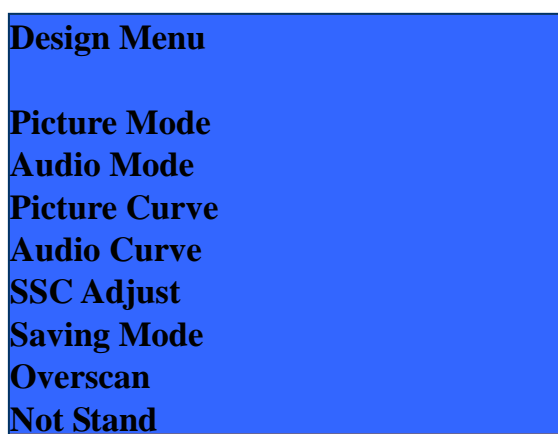
3.2 Factory OSD Menu

The Factory OSD Menu comprises Factory Menu and Design Menu .

3.2.1、 Factory Menu



3.2.2、Design Menu



Note:

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

4. Software Upgrading

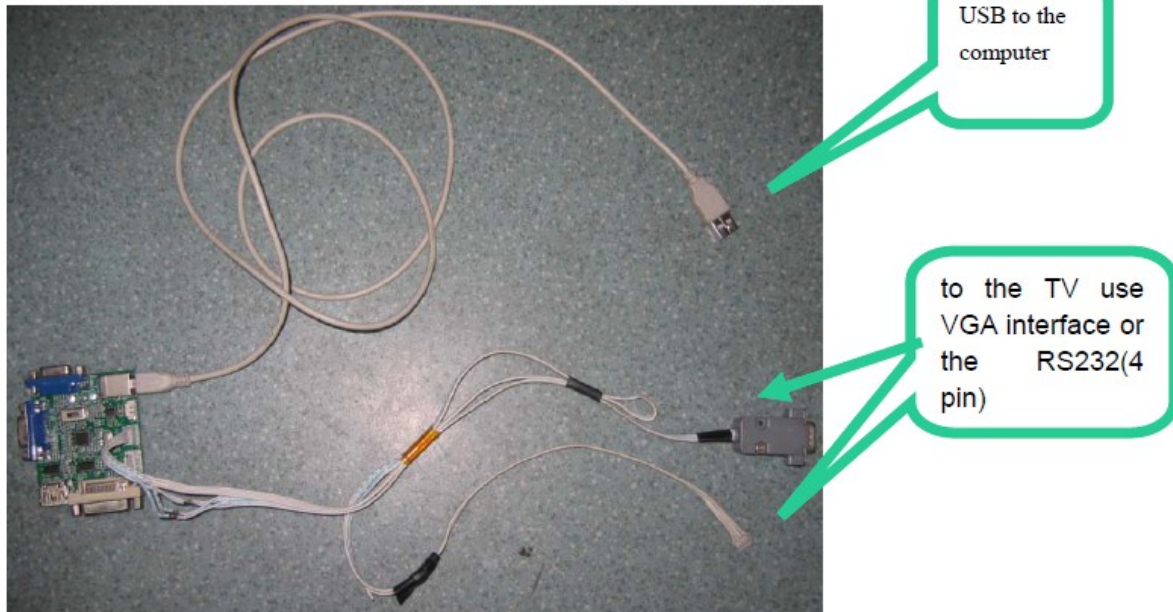
4.1 Upgrading with the ISP_TOOL

4.1.1 Hardware connecting

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

Connect the Debug board to the TV use VGA interface or the RS232 (4 pin), the other USB port to the compute.

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



4.1.2 Install the ISP_TOOL4.5.0.4-----only for the first time update.

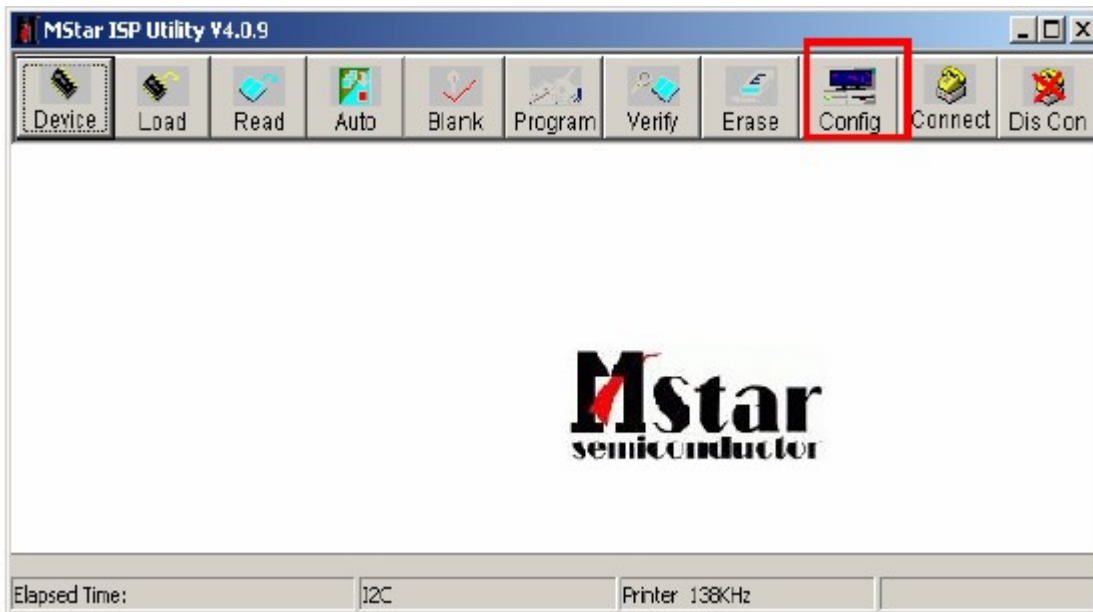
- 1、 The software is upgraded by a burning tool- ISP_TOOL.exe
- 2、 Find the folder where the ISP_TOOL4.5.0.4 lies in.



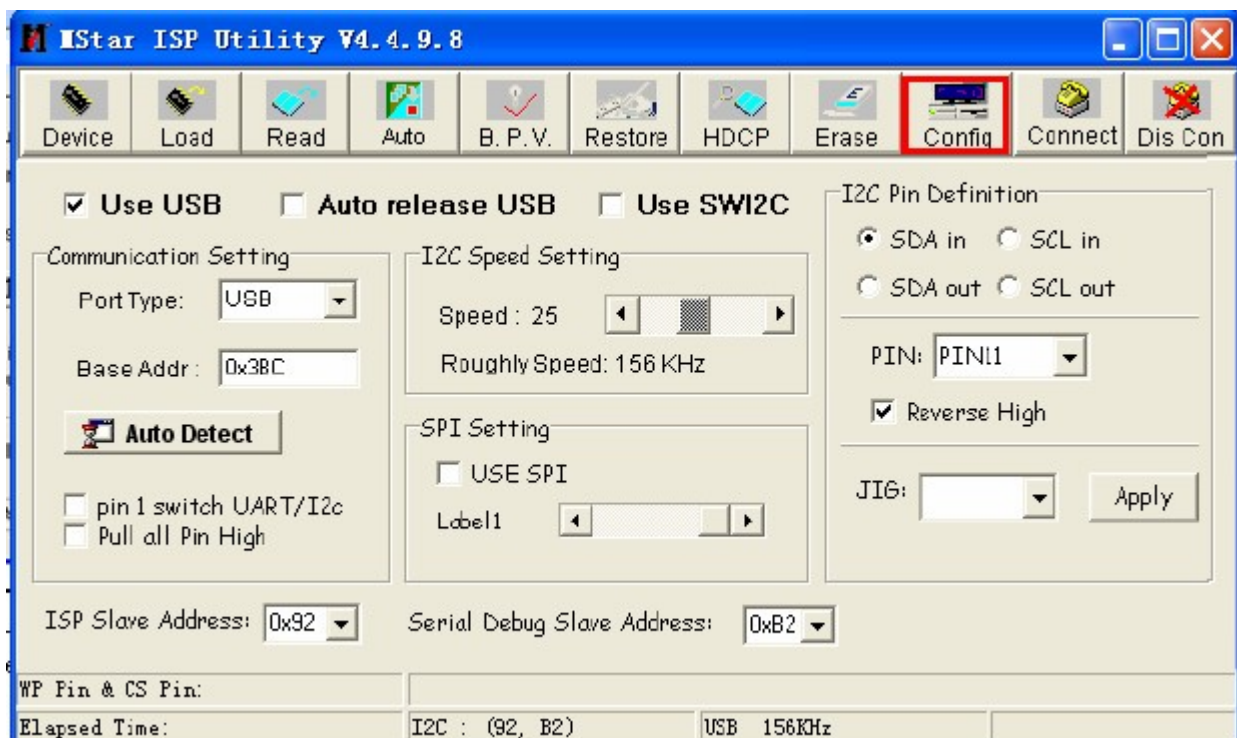
There are three folders/files in this folder together.

DLPORTIO.dll and FTD2XX.DLL must be in the same folder

3、 Double click the ISP_TOOL4.5.0.4 icon, and then a dialog window will show as below.



4、 Click the " **Config** "button. And then a dialog window will show as below.



Draw on the front of "Use USB"

Port Type setting is USB

Base Addr setting is 0x38C

ISP Slave Address choose 0x92

Serial Debug Slave Address choose 0xB2,

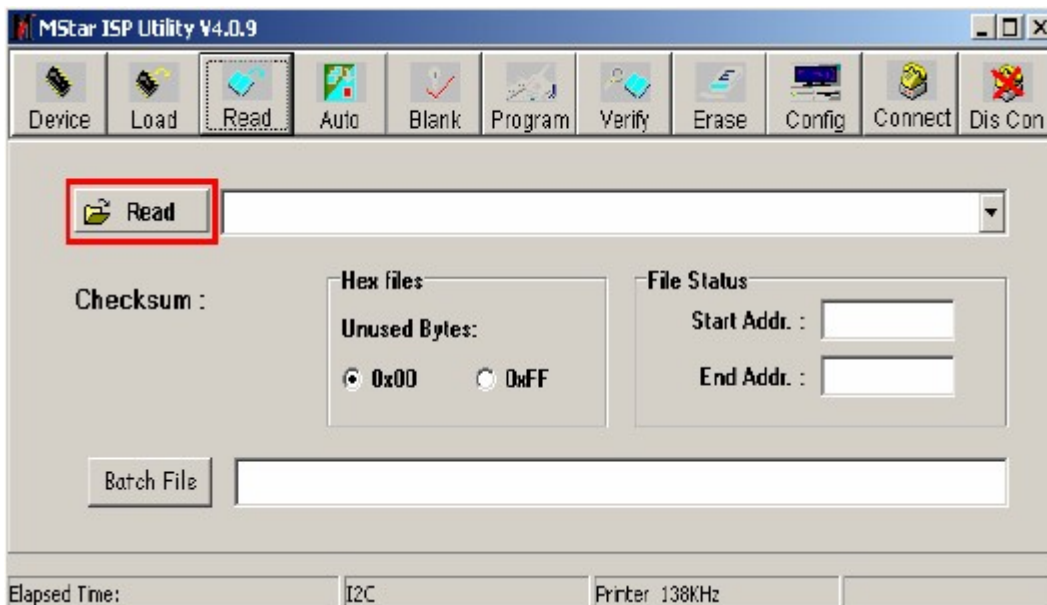
5、Click the “Connect” button, if appear the following figure, It indicates that the ISP_TOOL has connected.(According to the tv set,”Device Type” maybe different.)



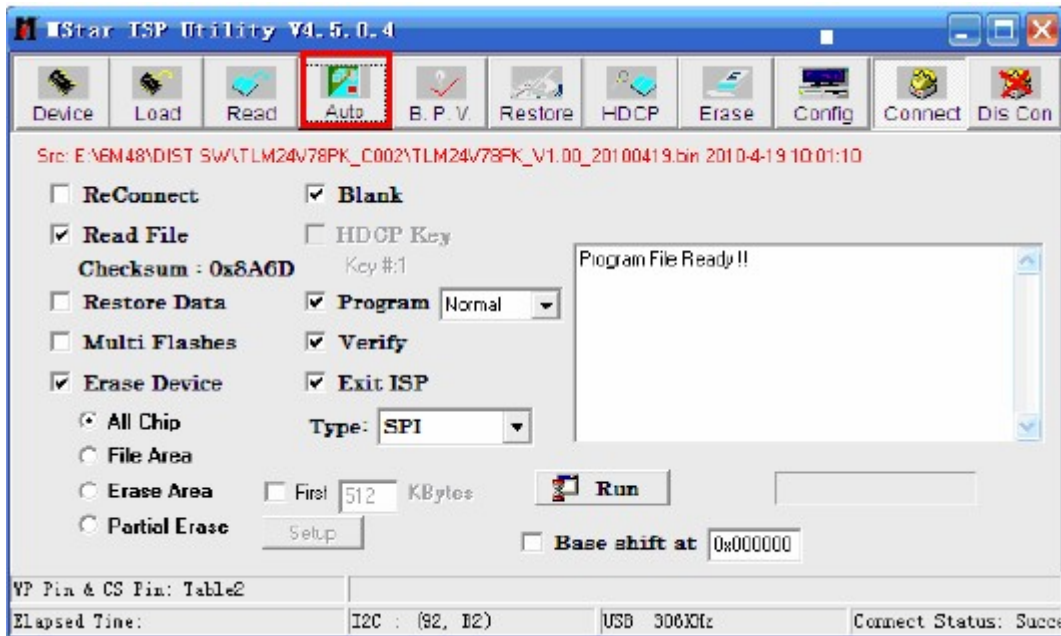
If appear the following figure, It indicates that the ISP_TOOL has not connected. Please click the “DisCon” button and “Connect” button to connect..



6、Click the “Read ” button, **Choose the correct update file。**



7、After the update file has been chosen successfully。
Click the “Auto” button and choose parameters as following。



8、Click the “Run” button and wait update end.

If show any error message , then do “Dis Con” >> “Connect”, and click the “Run” button again, till show the following dialog window。

4.2 Upgrading with the USB

Software can update with USB device:

1. Copy the "*.BIN" file such as "MERGE.BIN" to the root directory of a USB disk.
2. Insert the USB disk into the USB slot of the TV SET.
3. Press "Menu" button and call up User OSD Menu, choose "Channel"-"Software Update(USB)" item. (Note 1)
4. Press "OK", it will show a confirm message box, Press [◀] button to select "yes" in the confirm message box, to start automatic update.
5. Then it will update the software automatically, Please don't power off during the updating process.
6. After the software is successfully upgraded, TV SET will restart automatically.

Note:

1. In some TV SET, "Software Update(USB)" item maybe in "OPTION" menu.
2. After updating, you must confirm the software version in the "Factory Menu" and you'd better do " **UnProtected Clear**" in the "Factory Menu".

5. Circuit instruction

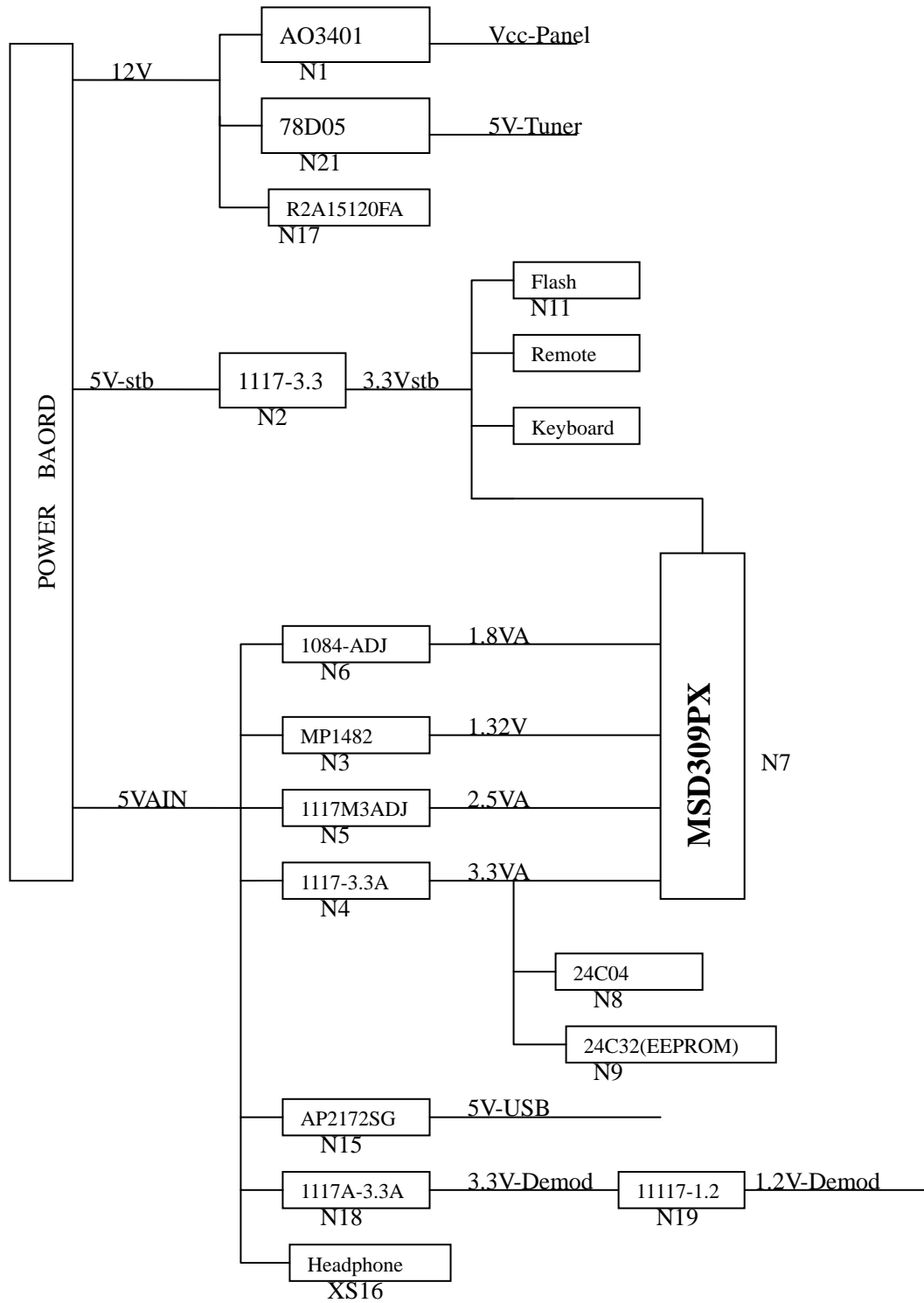
5.1 Power assign and block diagram

Power assign:

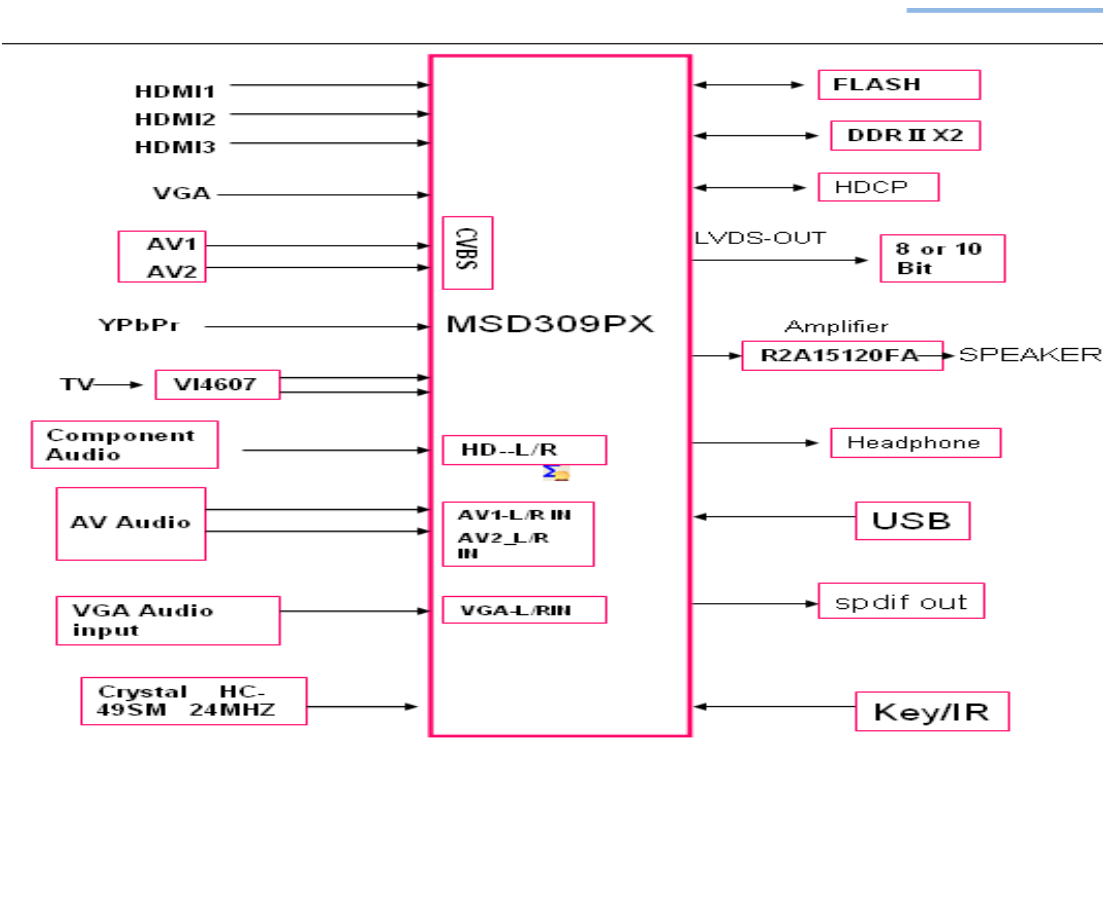
The Power board have 5V&12V output , other voltages are converted from 5V&12V.

- a. Vcc-Panel is converted by N1 from 12V, 5V-Tuner converted by N21 from 12V supplies to tuner.
- b. 3.3Vstb is converted from 5V-stb by N2, It's standby power supply for main IC (N7), Keyboard, Remote board ,Flash (N11) and HDMI CEC.
- c. 12V supplies for Amplifier (N17 R2A15120FA) .
- d. 5VAIN supplies for main IC , Headphone and USB
- e. 3.3VA is converted by N4 from 5VAIN, It supplies for N39(main IC), N8(HDCP),N9(EEPROM).
- f. 2.5VA is converted by N5 form 5VAIN.
- g. 1.32V is converted by N3 from 5VAIN.
- h. 1.8VA is converted by N6 from 5VAIN.
- i. 3.3V_Demod is converted by N18 from 5VAIN, 1.2V_Demod is converted by N19 from 3.3V_Demod.

Block diagram:

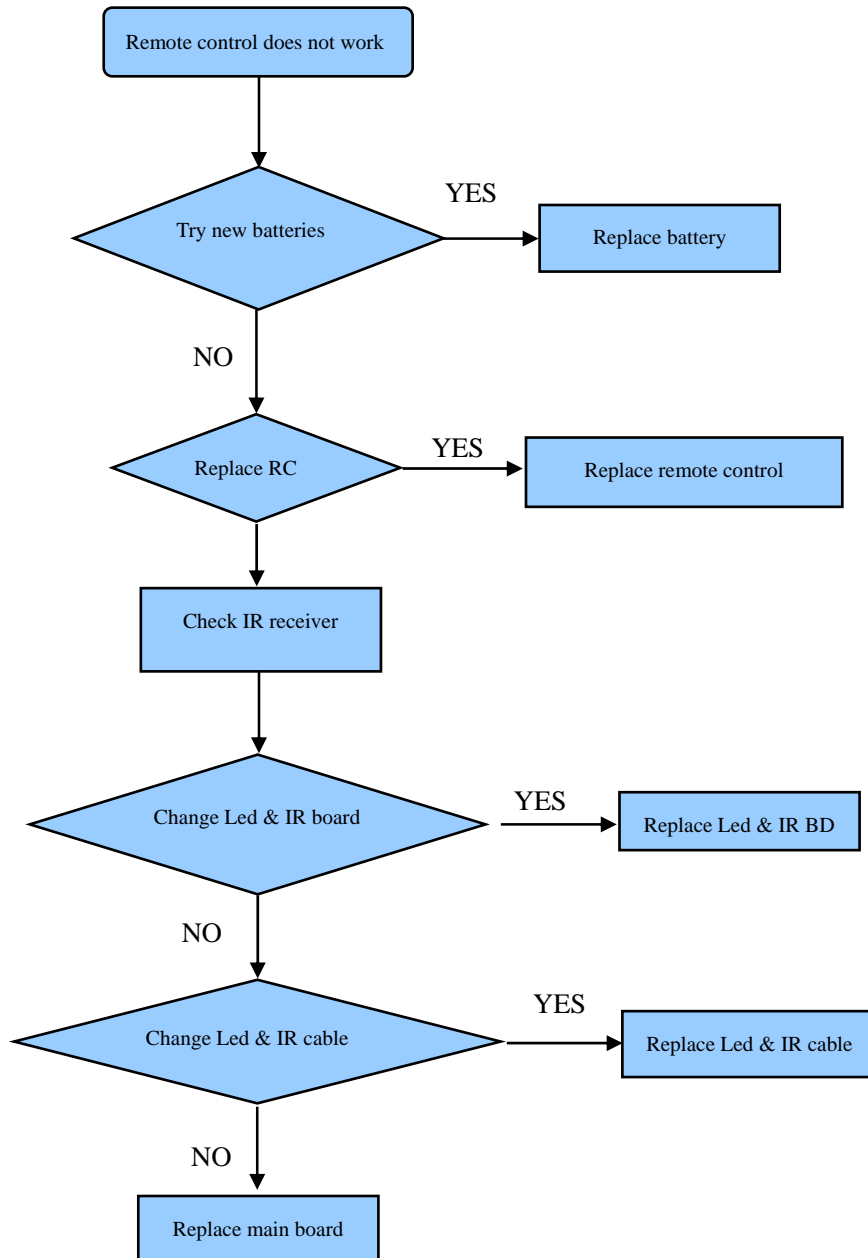


5.2 Image and signal process

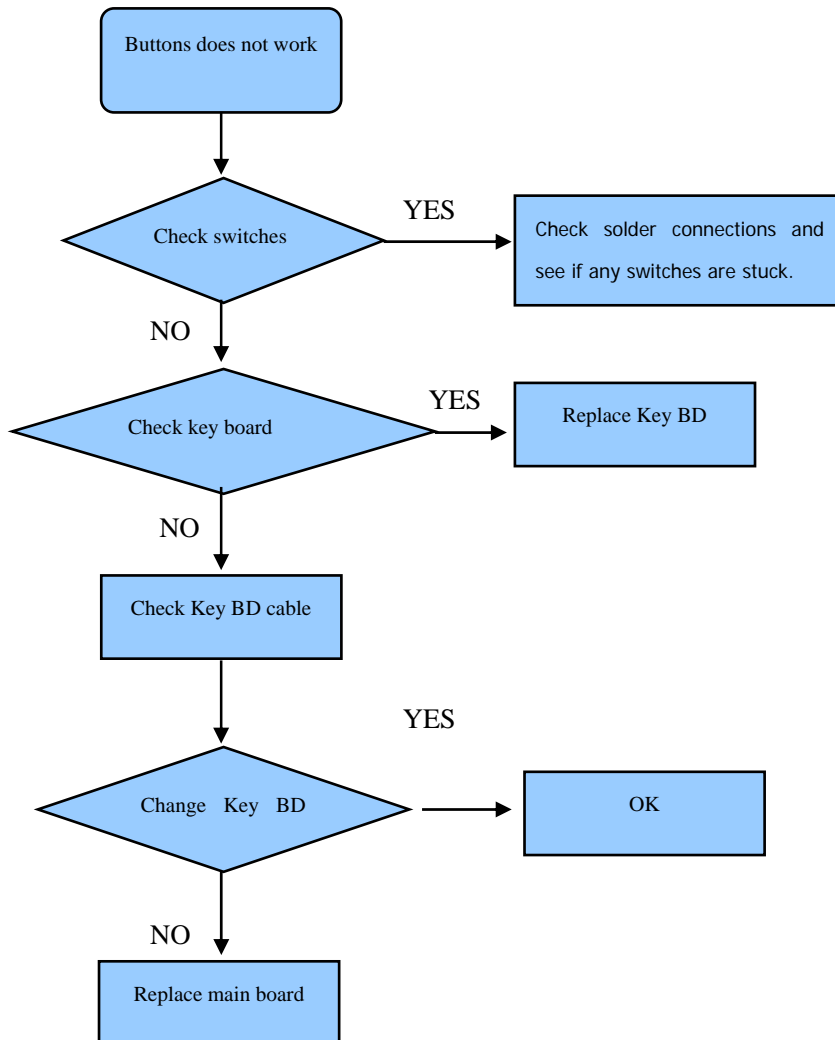


5.3 Troubleshooting

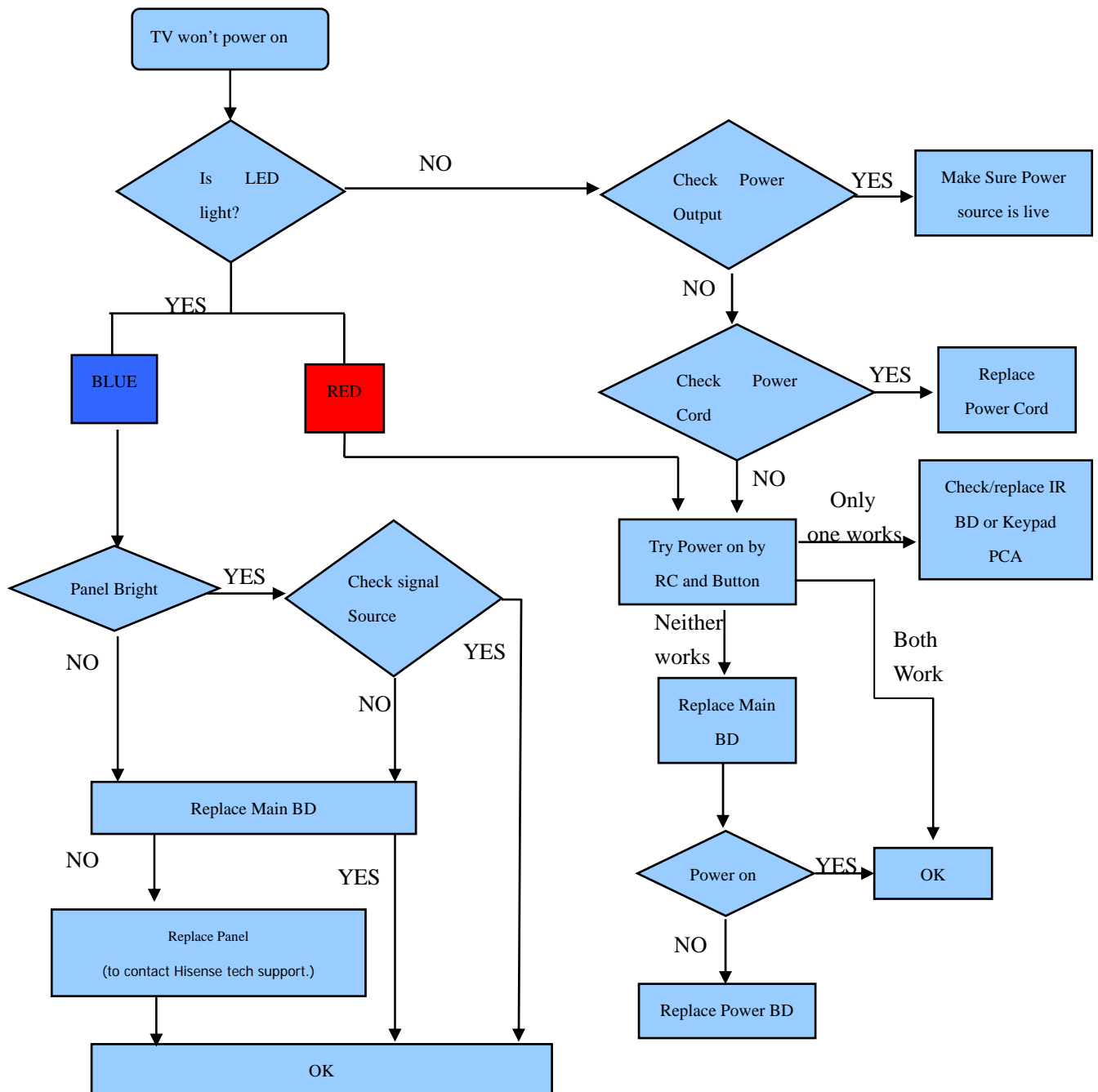
5.3.1 Troubleshooting for Remote Control



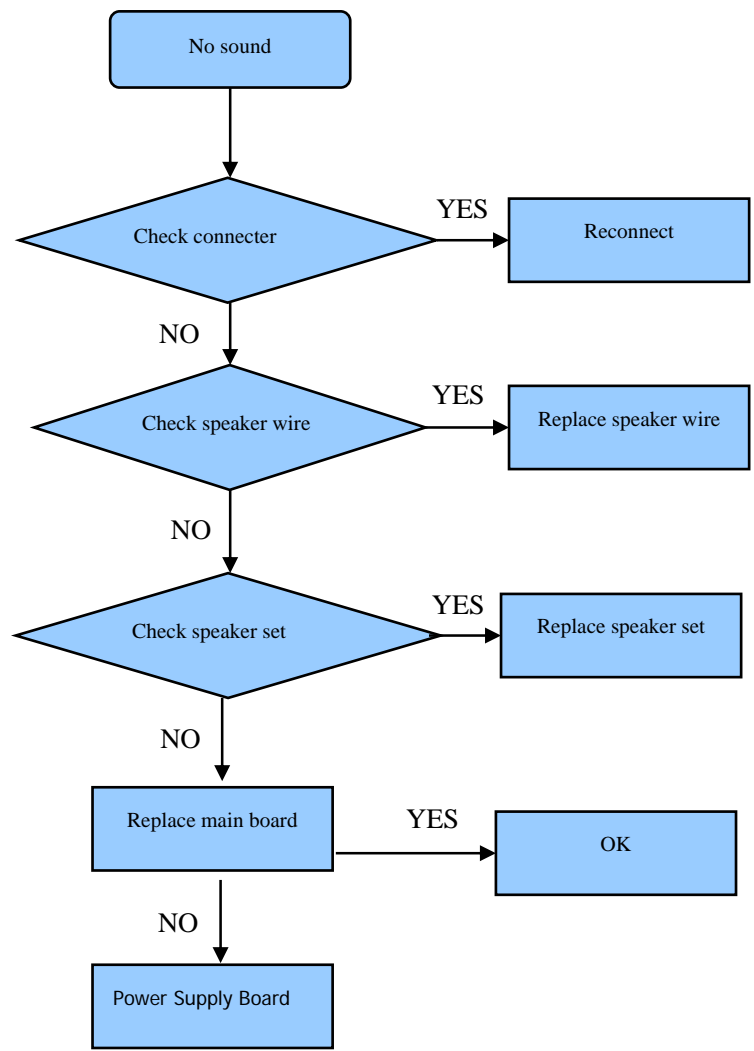
5.3.2 Troubleshooting for Function Key



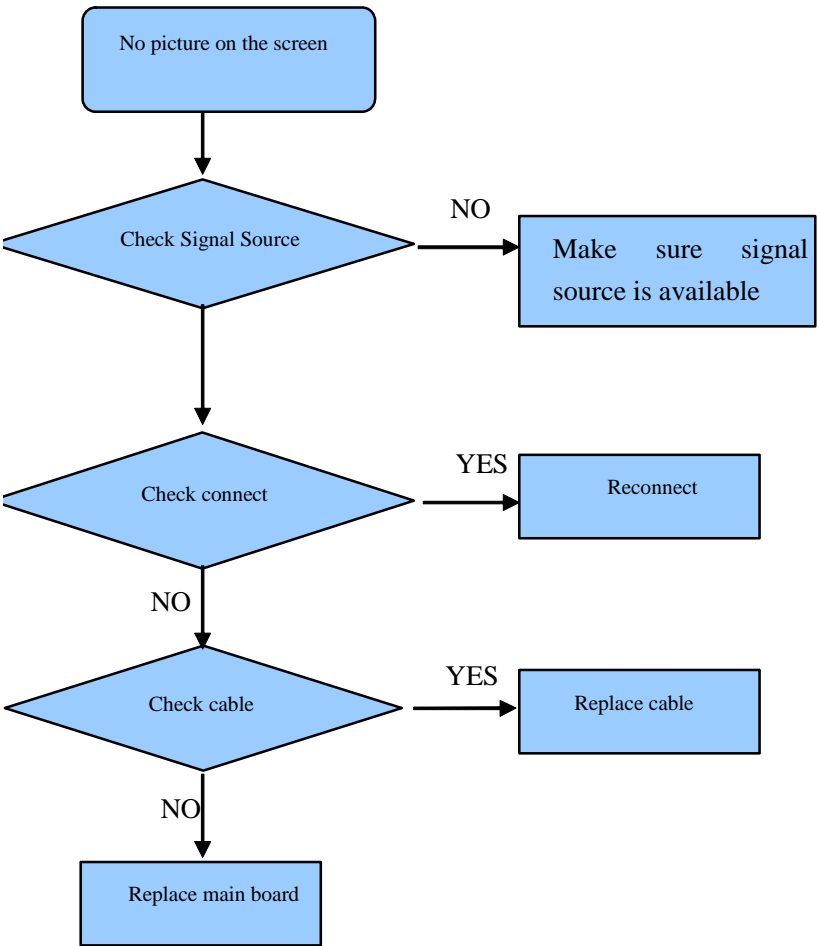
5.3.3 TV won't Power On



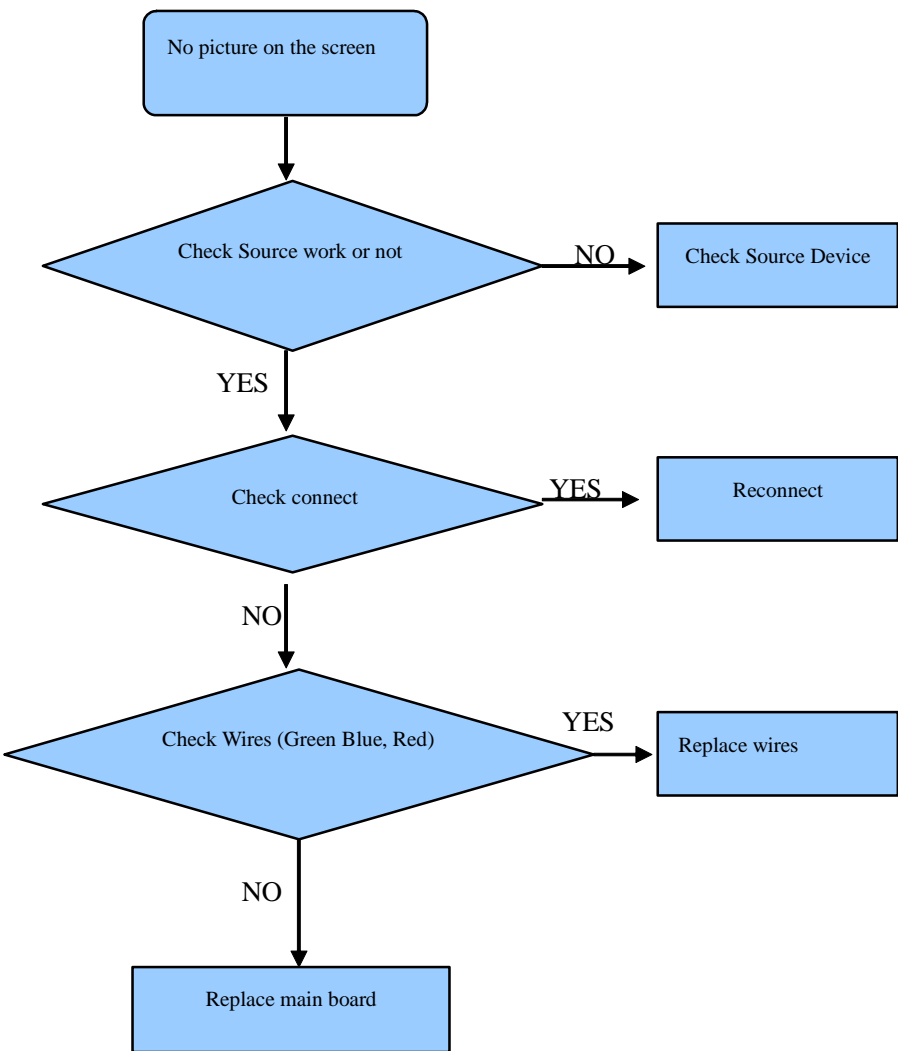
5.3.4 Troubleshooting for Audio



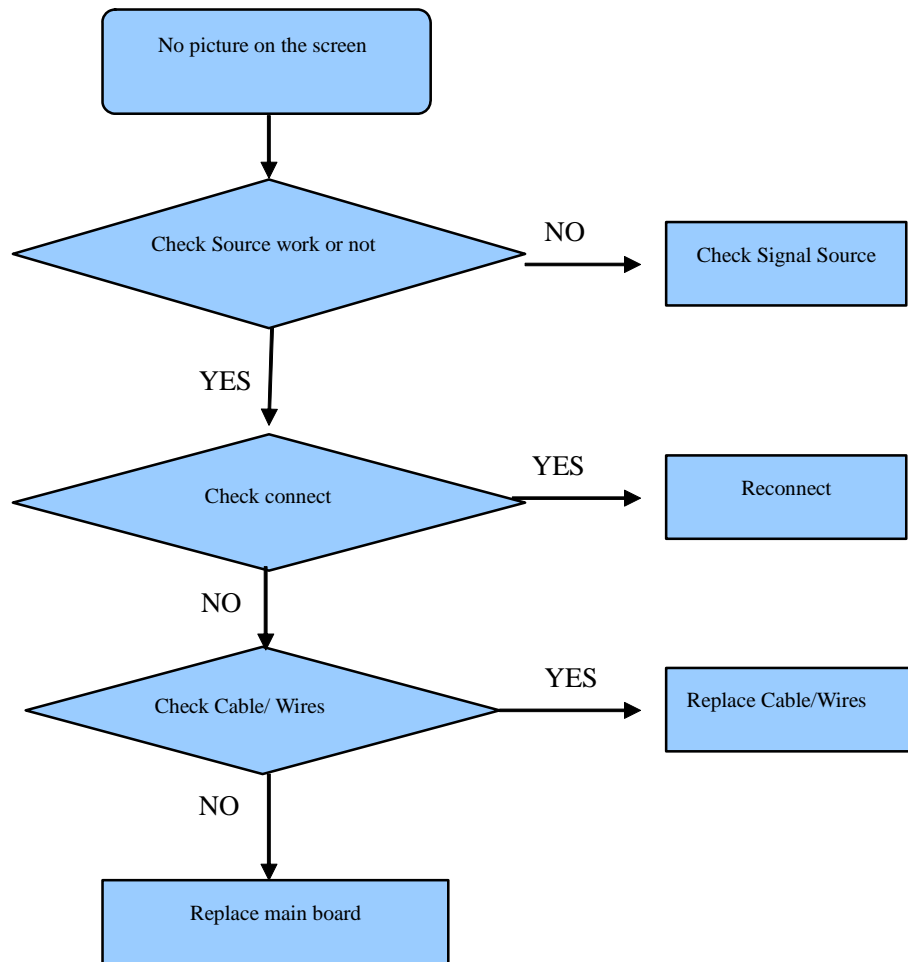
5.3.5 Troubleshooting for TV/VGA/HDMI input



5.3.6 Troubleshooting for YPbPr input

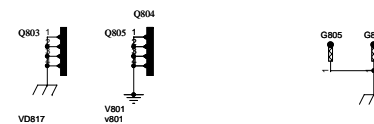
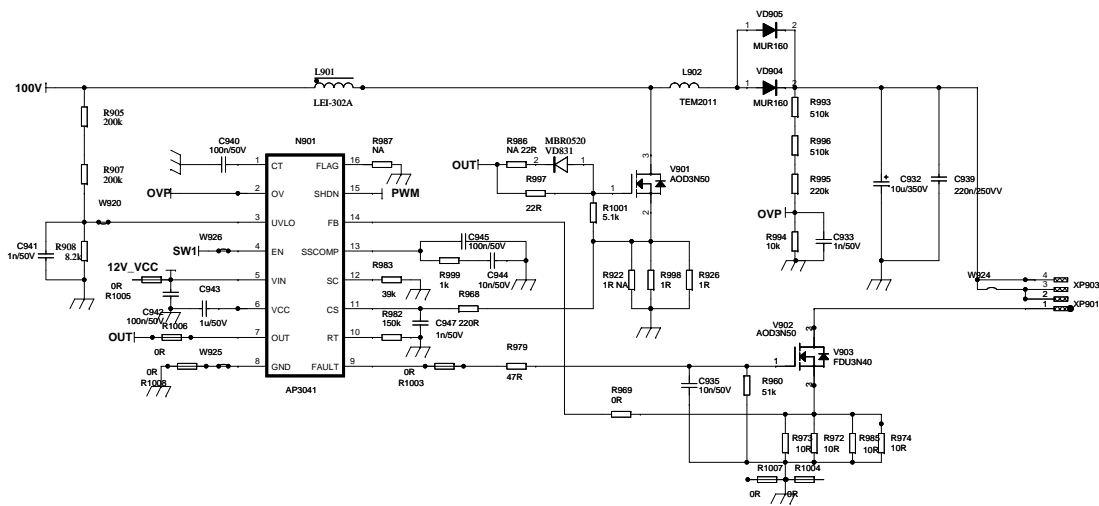
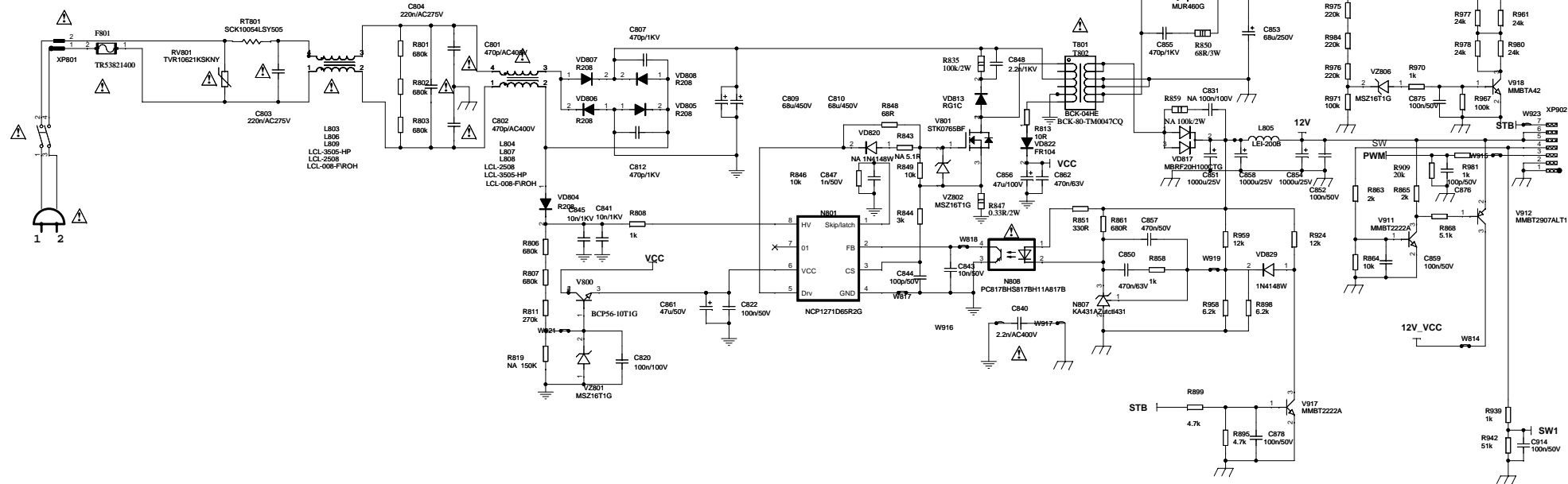


5.3.7 Troubleshooting for Video input

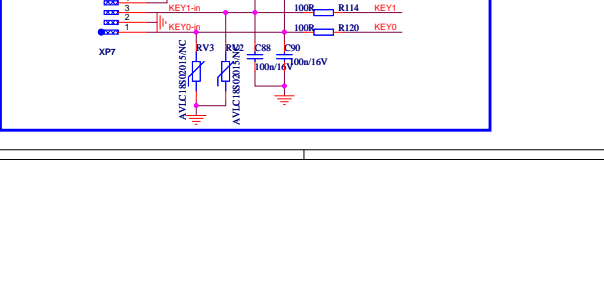
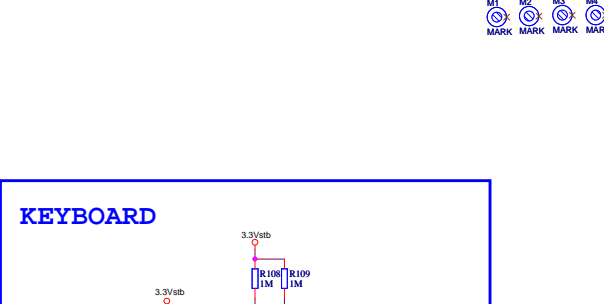
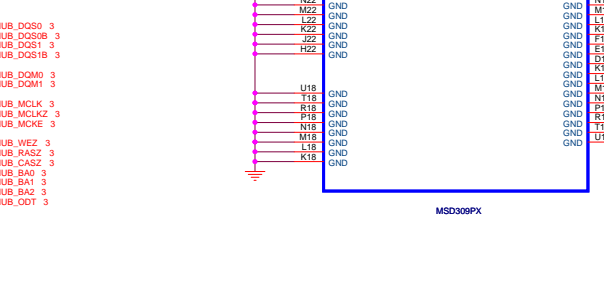
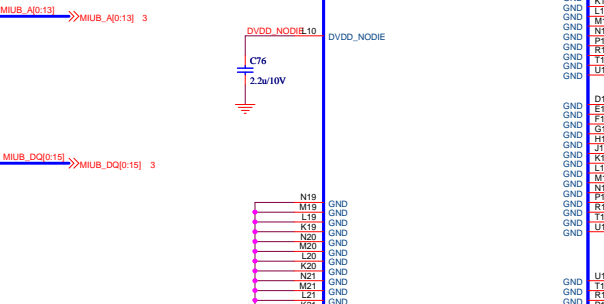
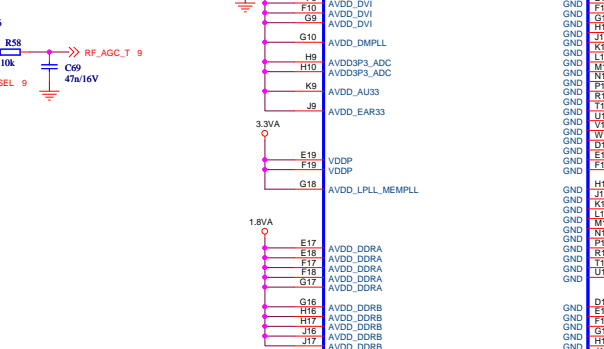
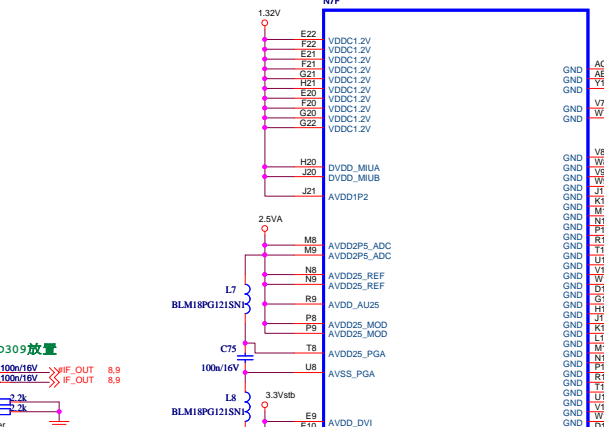
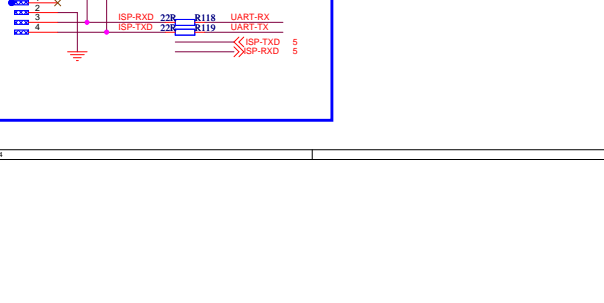
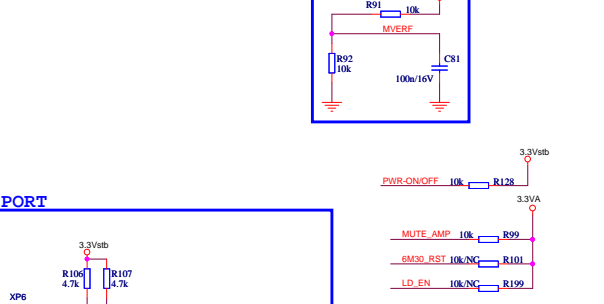
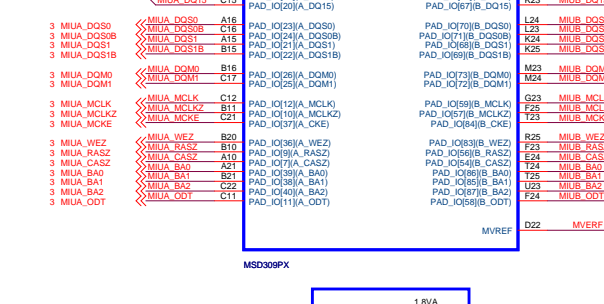
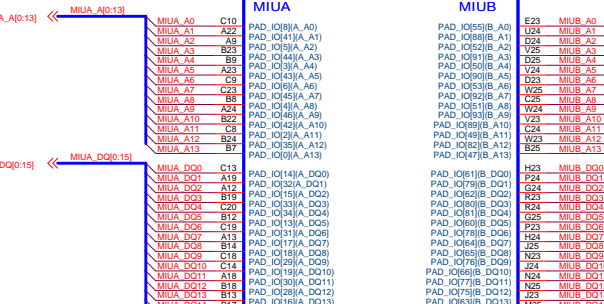
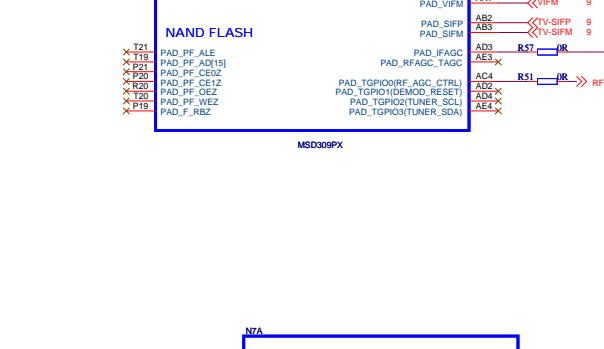
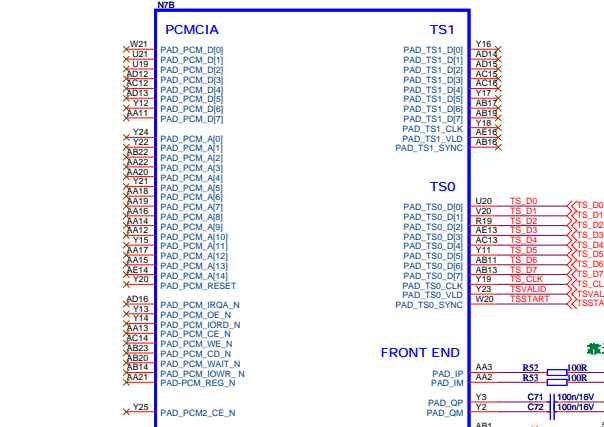
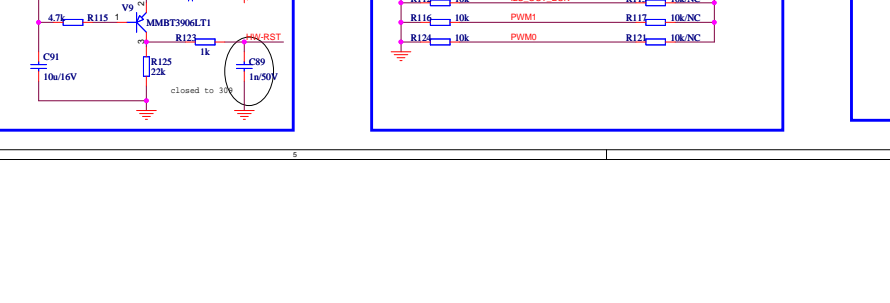
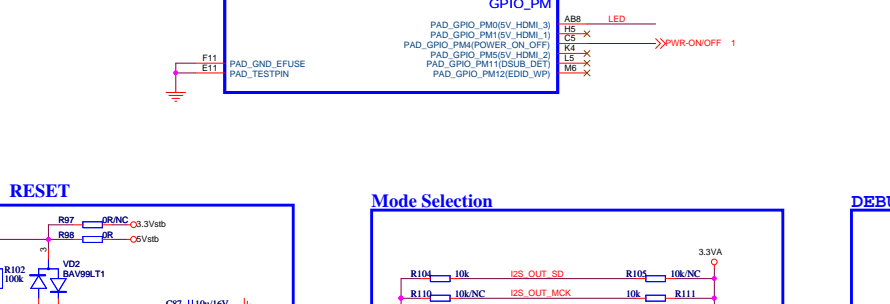
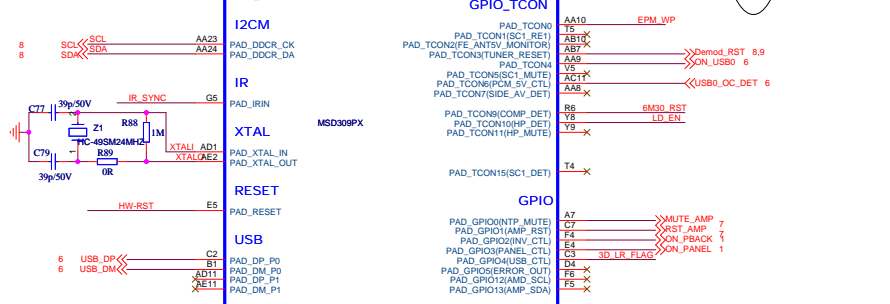
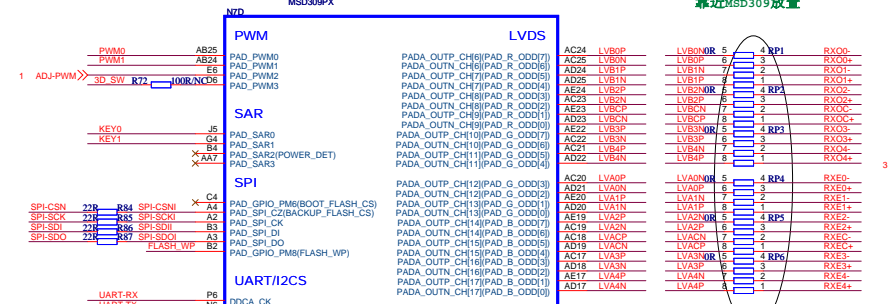
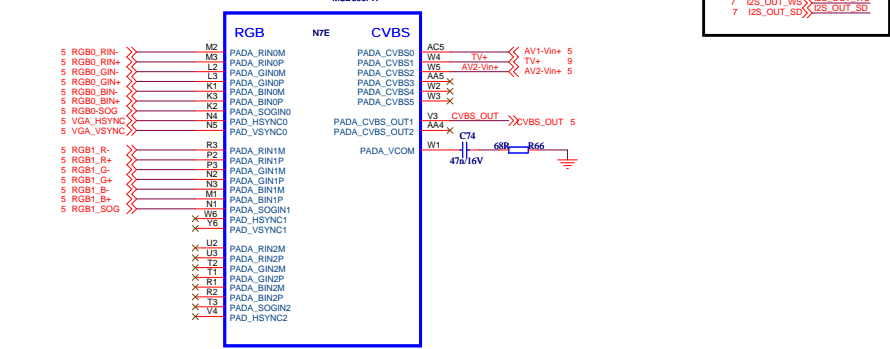
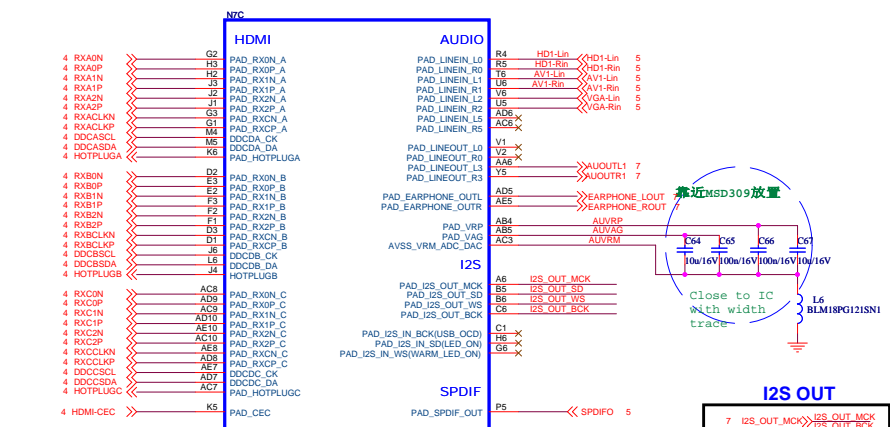


6. Schematic circuit diagram

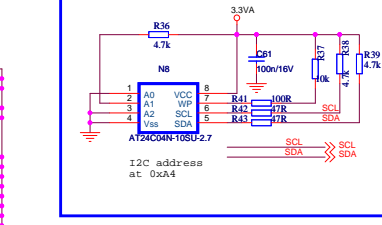
7. Explode View



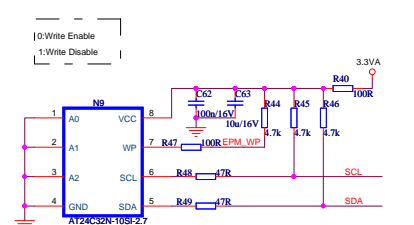
MSD309PX



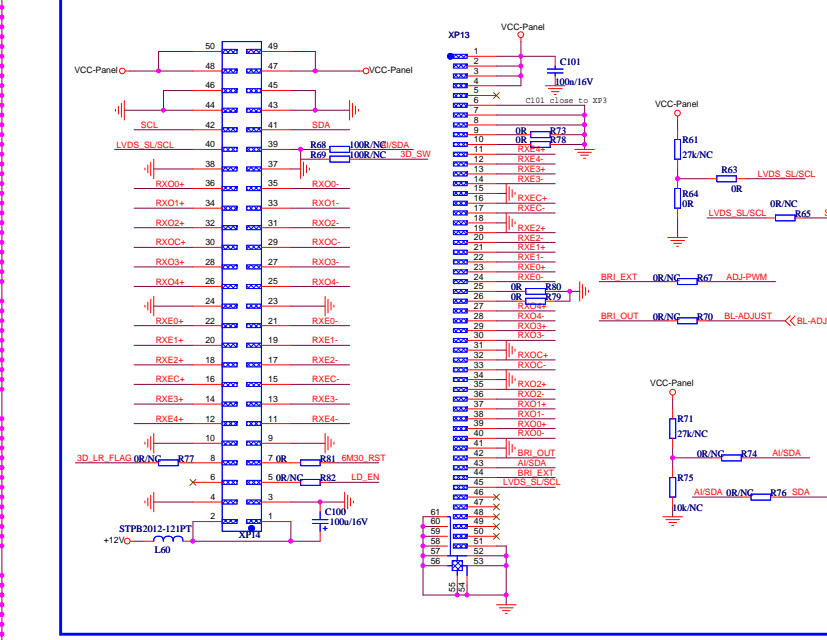
HDCP KEY



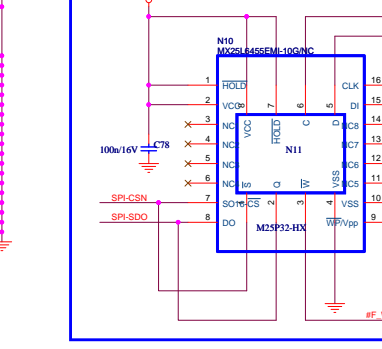
EEPROM



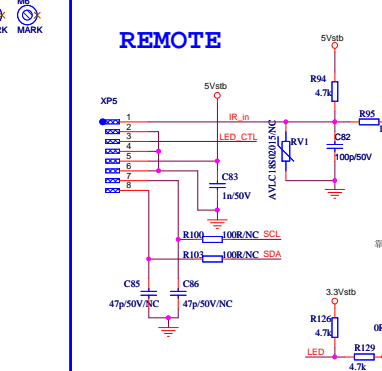
LVDS CONNECTOR



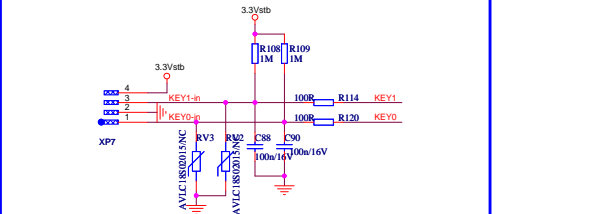
FLASH



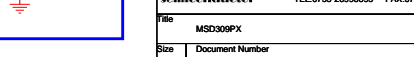
REMOTE



KEYBOARD



Mode Selection



DEBUG PORT



RESET



REVISION HISTORY

Rev	Content
1.0	Initial Release

The schematic diagram illustrates the VIDEO_OUT circuit. It begins with a 5VAIN input connected through an L-match network (BLM18PG121SN1) to a series combination of capacitors C109 and C112. A parallel combination of capacitors C114 and C116 follows. The signal path continues through a network of resistors (R210, R211, R221, R222, R223, R224) and two NPN transistors (MMBT3904LT1 and MMBT3906LT1). The output of the first transistor stage is coupled to the base of the second transistor via capacitor V15. The final output stage uses a resistor divider (R222, R224) and a buffer transistor (RV47) to drive the AVOUT-V pin. A feedback loop is formed by RV41 and RV42, which are connected to LINEOUTL and LINEOUTR pins respectively, and their other ends are tied to ground.

COAXIAL Output

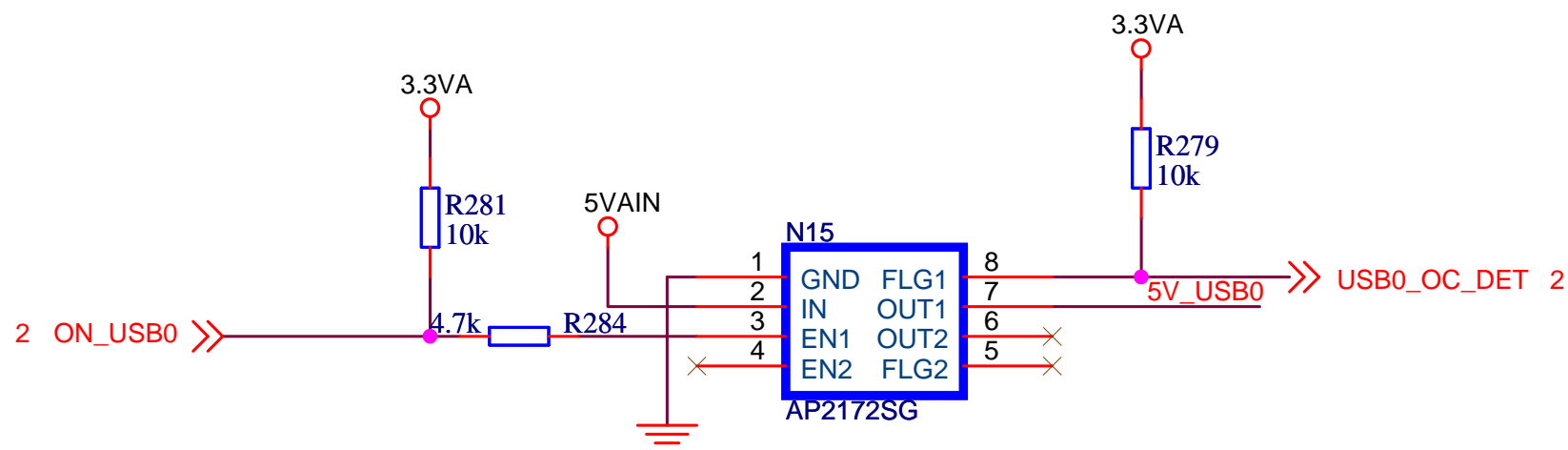
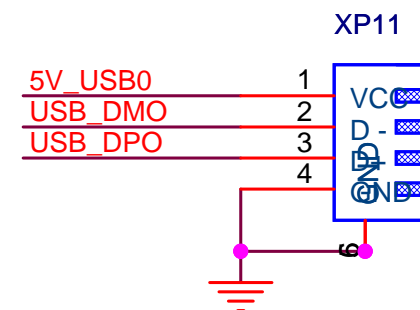
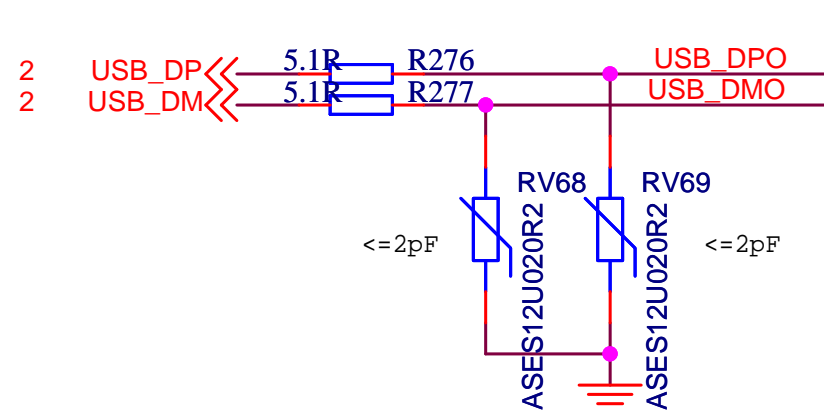
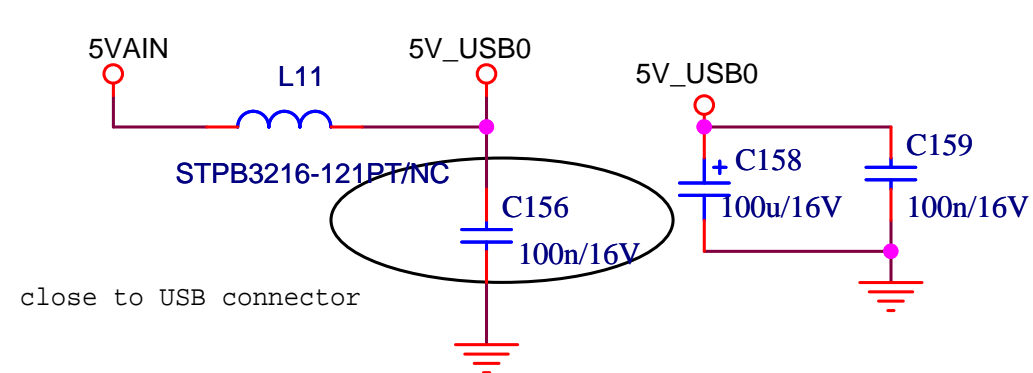
XS13

SIG+ 1
SIG- 2
SIG+ 3
GND

AVTCL8SD2015
RV65
R216 10k
C292 1n/50V
R271 200R
R272 100R
C151 220p/50V/NC

SPDIF 2

CLOSED TO MSD309

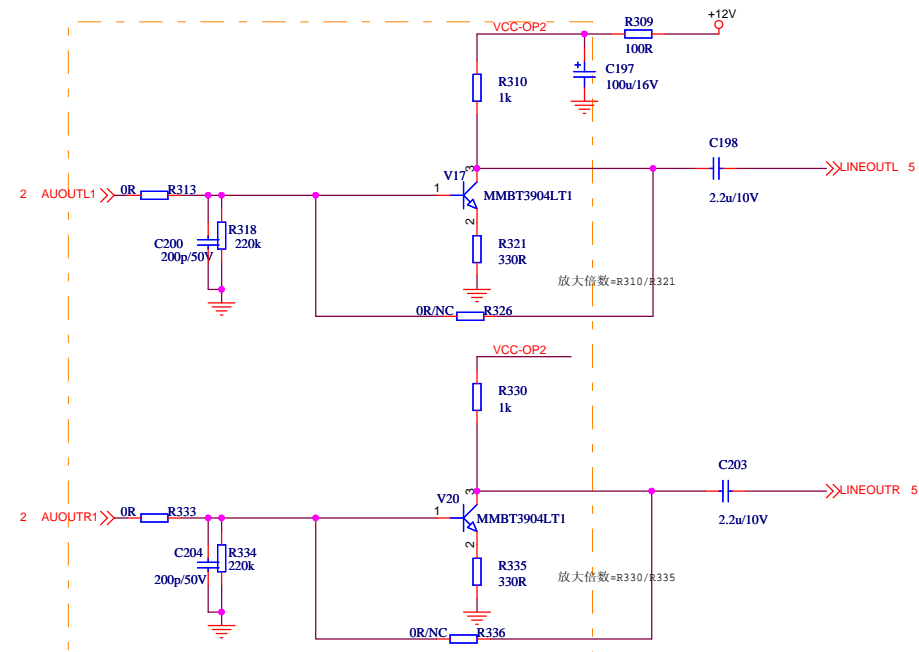
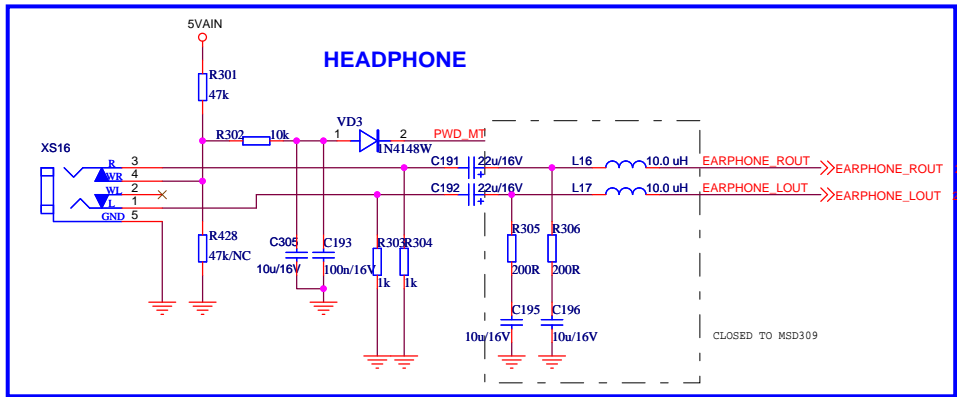
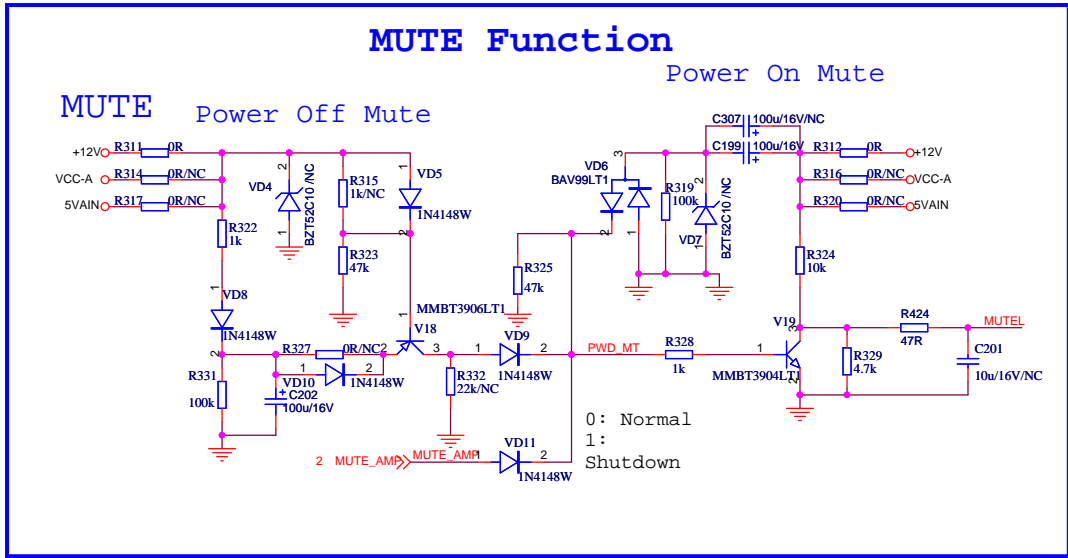


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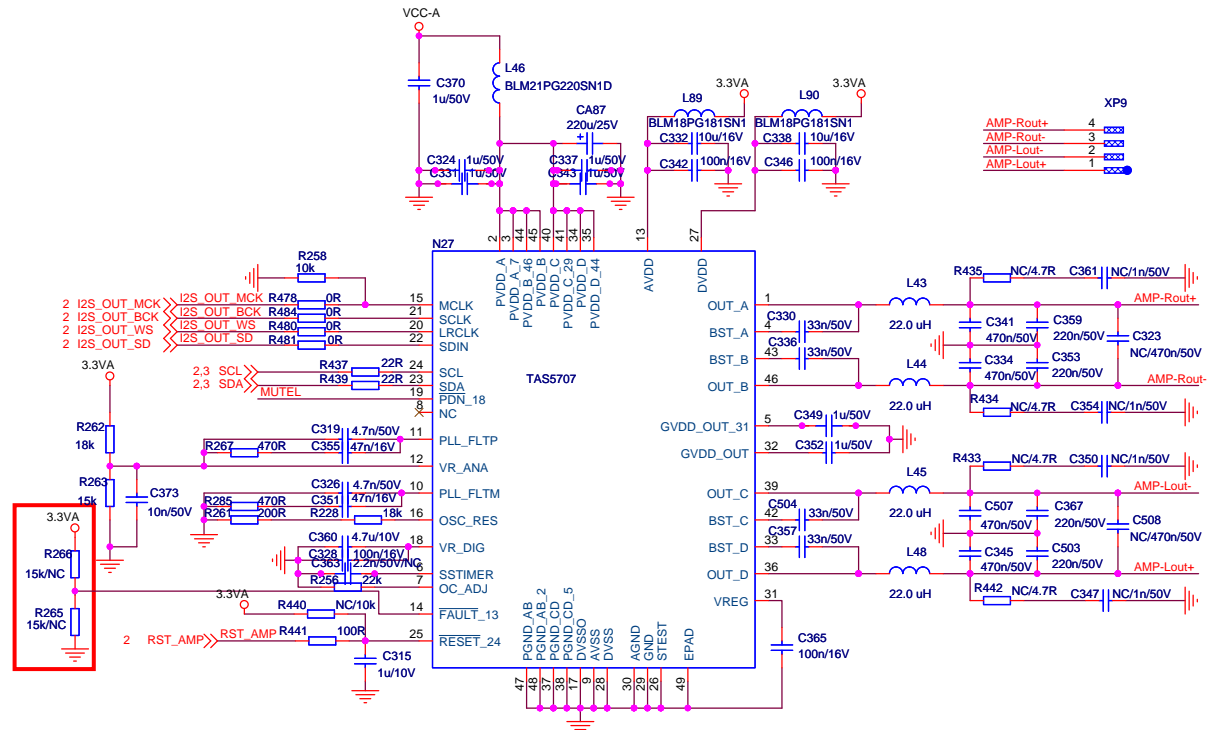
Title		
USB		
Size	Document Number	Rev
		1.0
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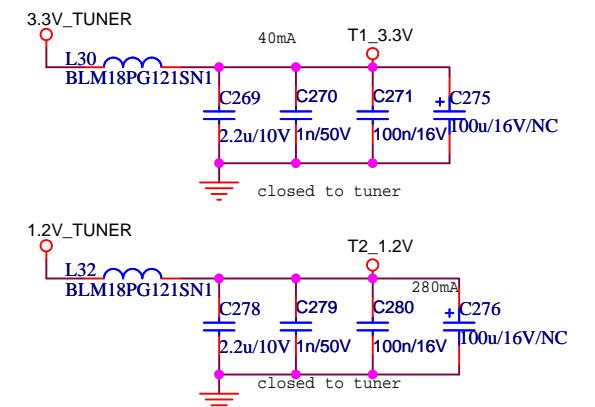
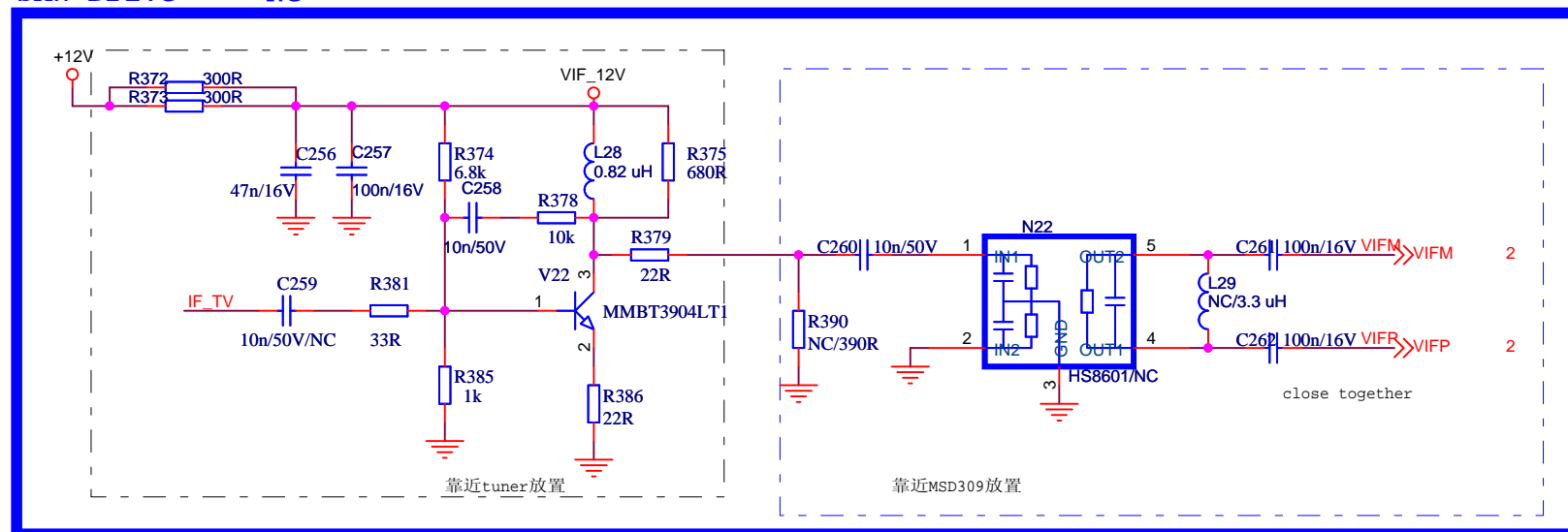
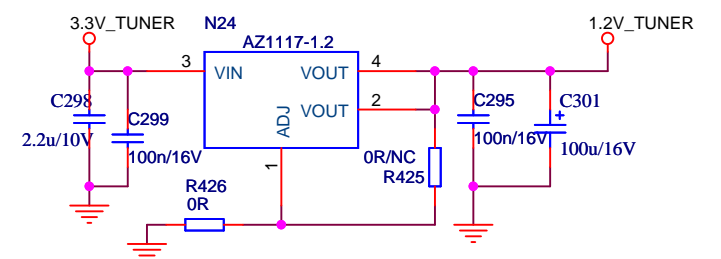
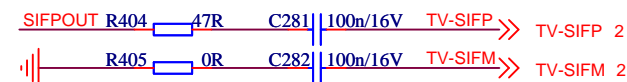
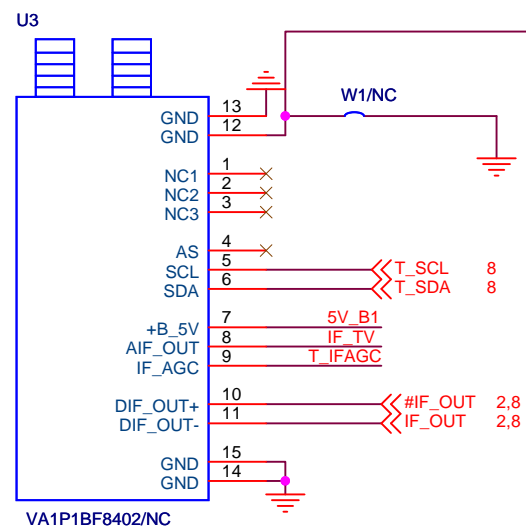
L39,For 32"/37"
L40,For 40"/46"



Near MST.IC
Ground in the middle of the L/R

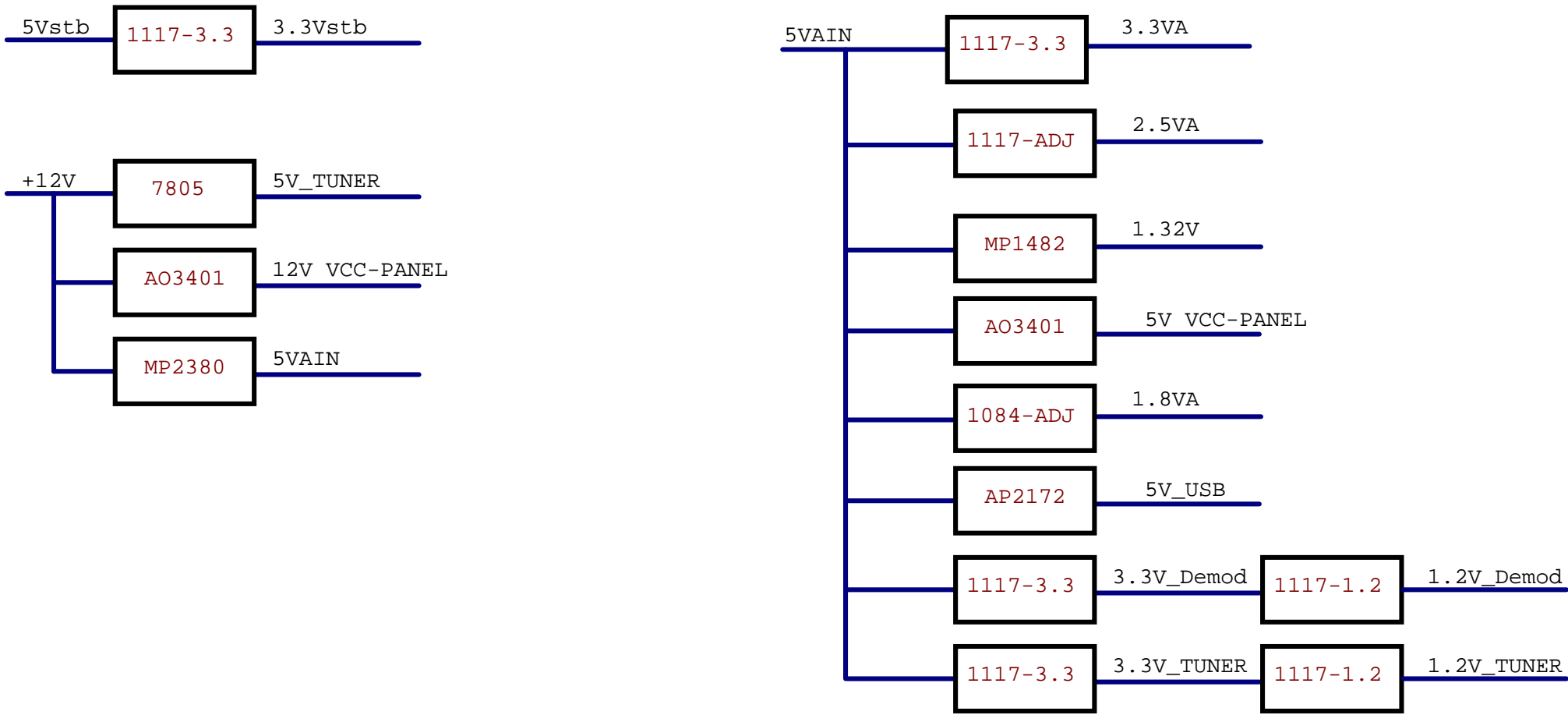
SPEAKER AMP





Title MSD329ZX+MSB123X			
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POWER TREE



Title		
<Title>		
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