

Haier SERVICE MANUAL



LED TV



Model No. LE32B8500T

MSD34631 Chassis



WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Chapter 1: General Information

1-1. Table of Contents

1. General Information.....	1
1-1. Table of Contents	1
1-2. General Guidelines	3
1-3. Important Notice	3
1-4. How to Read this Service Manual	5
2. Specifications.....	6
3. Location of Controls and Components.....	7
3-1. Board Location	7
3-2. Main Board	7
3-3. LED Panel	9
3-4. Connector Definition	10
4. Disassemble and Assemble.....	11
4-1 Remove the Stand Base	11
4-2 Remove the Back Cover	11
4-3 Remove the Adhesive Tape	11
4-4 Remove the Main Board	12
4-5 Remove the Speaker	12
4-6 Remove the Remote Control Board	13
5. Installation Instructions.....	14
5-1 External Equipment Connections	14
6. Electrical Parts.....	15
6-1. Block Diagram	15
6-2. Circuit Diagram	16
6-3. Wiring Connection Diagram	25
7. Trouble Shooting.....	26
7-1. Simple Check	26
7-2. Mainboard failure check	27
7-3. Panel Failure	35

1-2. General Guidelines

When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.

After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

- 1) Leakage Current Cold Check
- 2) Leakage Current Hot Check
- 3) Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive

1-3. Important Notice

1-3-1. Follow the regulations and warnings

Most important thing is to list up the potential hazard or risk for the service personnel to open the units and disassemble the units. For example, we need to describe properly how to avoid the possibility to get electrical shock from the live power supply or charged electrical parts (even the power is off).

This symbol indicates that high voltage is present inside. It is dangerous to make any kind of contact with any inside part of this product.

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying the appliance.

1-3-2. Be careful to the electrical shock

To prevent damage which might result in electric shock or fire, do not expose this TV set to rain or excessive moisture. This TV must not be exposed to dripping or splashing water, and objects filled with liquid, such as vases, must not be placed on top of or above the TV.

1-3-3. Electro static discharge (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1-3-4. About lead free solder (PbF)

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repairing of this product.

1-3-5. Use the genuing parts (specified parts)

Special parts which have purposes of fire retardant (resistors), high-quality sound (capacitors), low noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

Safety Component

- Components identified by mark have special characteristics important for safety.

1-3-6 Safety Check after Repairment

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the positions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
 - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
 - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.

CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.

Do not test high voltage by "drawing an arc".

3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength).

CAUTION: This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required. Capacitors may result in an explosion hazard.

5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last. Capacitors may result in an explosion hazard.

8. Use with this receiver only the test fixtures specified in this service manual.

CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

9. Remove the antenna terminal on TV and turn on the TV.

10. Insulation resistance between the cord plug terminals and the external exposure metal should be more than Mohm by using the 500V insulation resistance meter.

11. If the insulation resistance is less than M ohm, the inspection repair should be required. If you have not the 500V insulation resistance meter, use a Tester. External exposure metal: Antenna terminal Headphone jack

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
 2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
 3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
 4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
 5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
 6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it.
(Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
 7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

1-3-7. Ordering Spare Parts

Please include the following informations when you order parts. (Particularly the Version letter)

1. Model number, Serial number and Software Version

The model number and Serial number can be found on the back of each product and the Software Version can be found at the Spare Parts List.

2. Spare Part No. and Description

You can find them in the Spare Parts List

1-3-8. Photo used in this manual

The illustration and photos used in this Manual may not base on the final design of products, which may differ from your products in some way.

1-4. How to Read this Service Manual

Using Icons:

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

Note:

A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.

Caution:

A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart(part of) a procedure.

Warning:

A “warning” is used when there is danger of personal injury.

Reference:

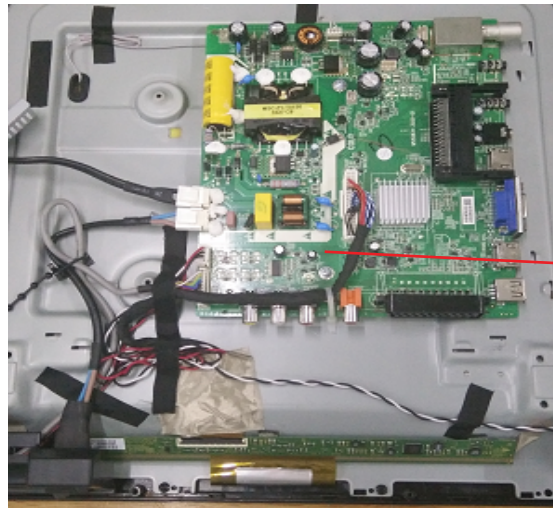
A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

2. Specifications

Model	LE32B8500T
Screen Size	31.5 inch
Aspect Ratio	16:9
Resolution	1366*768
Response Time (ms)	20 (GRAY TO GRAY)
Angel of View	160°/150°
Color Display	16.7M
No. of Preset Channels	500(DTV);100(ATV)
OSD Language	English, Russian
Color System	PAL/SECAM
Audio System	DK, BG, I
Audio Output Power (Built-in) (W)	8W×2
Audio Output Power (outer) (W)	No
Total Power Input (W)	45W
Voltage Range (V)	AC 100-240V
Power Frequency (Hz)	50~60Hz

3. Location of Controls and Components

3-1 Board Location



A Board

No.	Description
A Board	Integration Mainboard

3-2 Main Board



3-2-1 Function Description:

Main Board

Process signal which incept from exterior equipment then translate into signal that panel can display.

3-2-2 Connector definition

Main board connector

Keypad and remote connector (CN201)

Pin number	Signal name	Description
1	GND	
2	NC	
3	KEY0	
4	NC	
5	5V	POWER FOR REMOTE
6	GND	GND
7	IR	REMOTE CONTROL
8	STANDBY	
9	LED_G	LAMP GREEN
10	LED_R	LAMP RED

Speaker connector (CN601)

Pin number	Signal name	Description
1	RSPK+	RSPK+
2	RSPK-	RSPK-
3	LSPK-	LSPK-
4	LSPK+	LSPK+

3-3. LED Panel



SAM LSC320AN09-H

3-4.Connector Definition

Pin	Symbol	Description	Pin	Symbol	Description
1	12V	DC power supply	16	R1B_P	LVDS Signal +
2	12V	DC power supply	17	GND	Ground
3	12V	DC power supply	18	R1C_N	LVDS Signal -
4	12V	DC power supply	19	R1C_P	LVDS Signal +
5	GND	Ground	20	GND	Ground
6	GND	Ground	21	R1CLK_N	LVDS Clock -
7	GND	Ground	22	R1CLK_P	LVDS Clock +
8	GND	Ground	23	GND	Ground
9	LVDS SEL	LVDS Option Note (3)	24	R1D_N	LVDS Signal -
10	NC	NOTE (1)	25	R1D_P	LVDS Signal +
11	GND	Ground	26	GND	Ground
12	R1A_N	LVDS Signal -	27	NC	Note (2)
13	R1A_P	LVDS Signal +	28	NC	Note (2)
14	GND	Ground	29	NC	Note (2)
15	R1B_N	LVDS Signal -	30	GND	Ground

4. Disassemble and assemble

4-1 Remove the Stand Base



- ☐ Lay down the unit so that rear cover faces upward
- ☐ Remove the screw from the rear cover indicated with ○
- ☐ Then remove the pedestal

4-2 Remove the Back Cover



- ☐ Remove these screw indicated on figure above by ○
- ☐ Then remove the back cover from the unit.

4-3. Remove the adhesive tape



Remove the adhesive tape indicated on the figure above

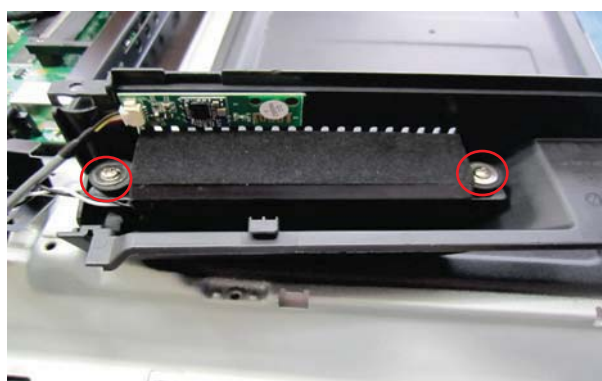
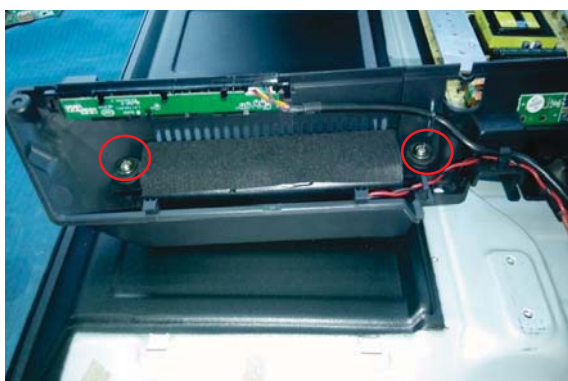
4-4 Remove the Main board



☐ Disconnected the coupler

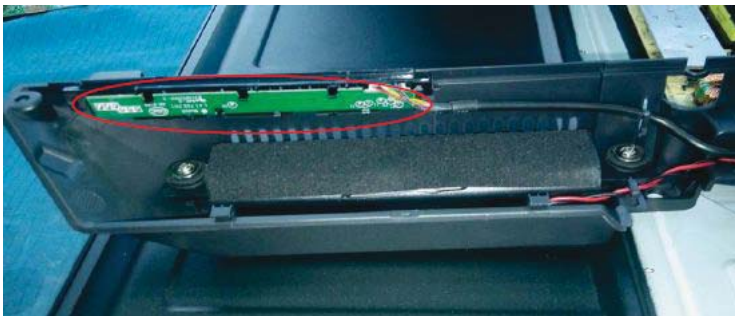
☐ Remove the Main board

4-5 Remove the speaker



Take out the speaker

4-6 Remove the remote control board



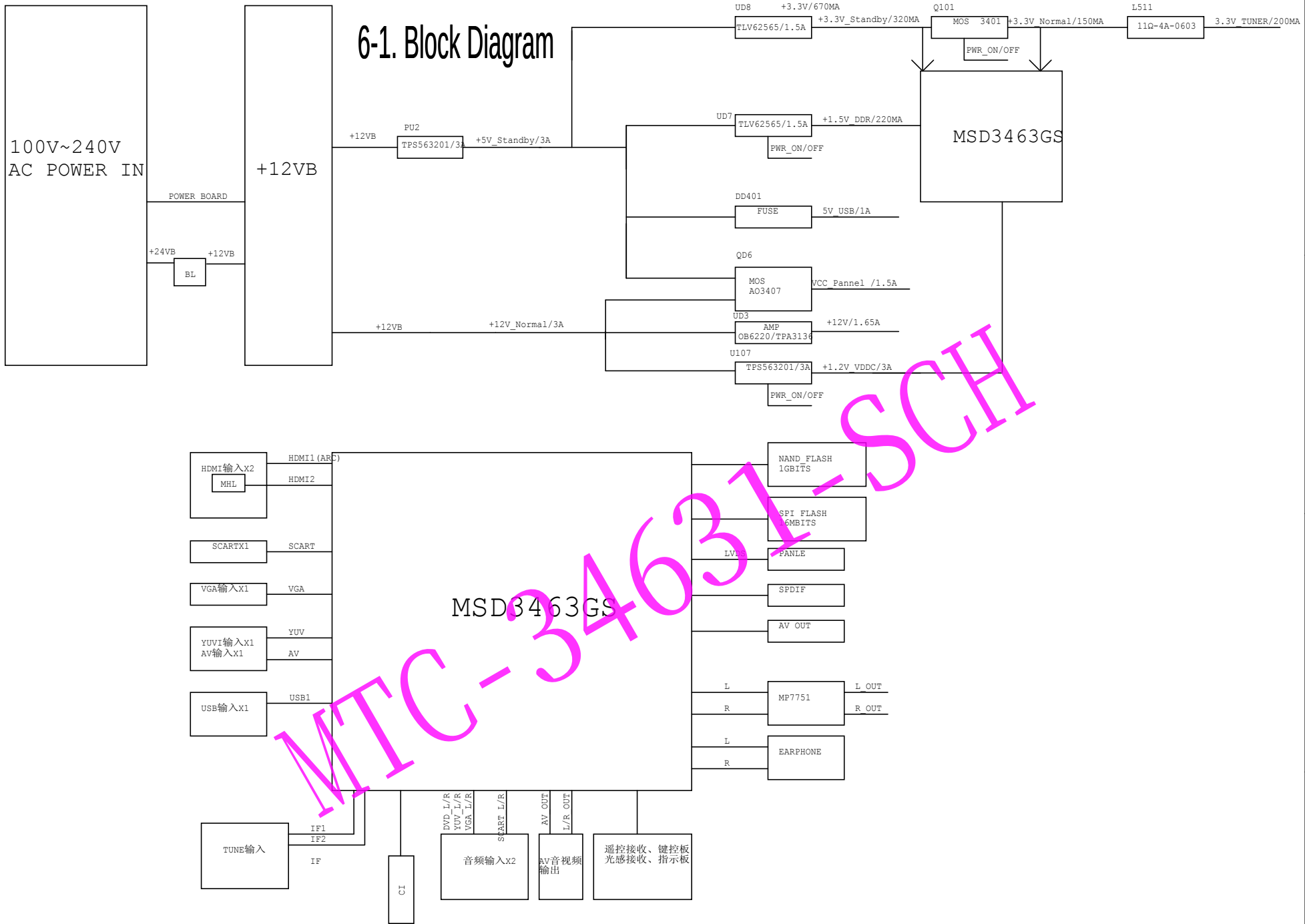
take out the remote controlboard

5. Installation Instructions

5-1 External Equipment Connections

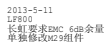
Accessories

Remote control refers to user manual.

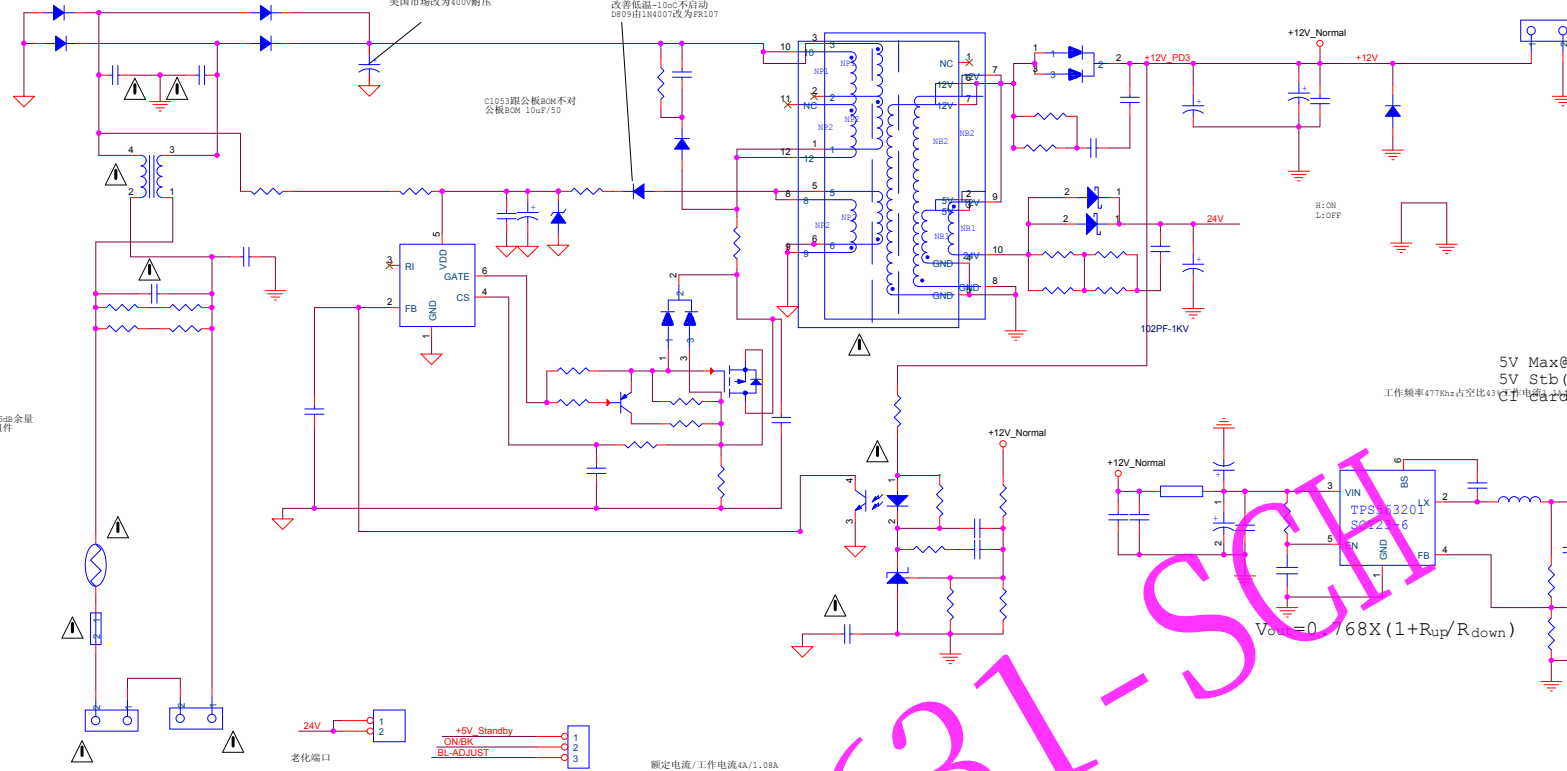


Title			
MSD3643GSA			
Size	Document Number		Rev
Custom	Change list		1.0
Date:	Tuesday, October 11, 2016	Sheet	1 of 10

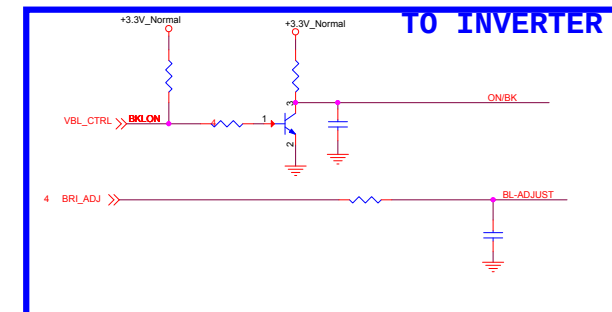
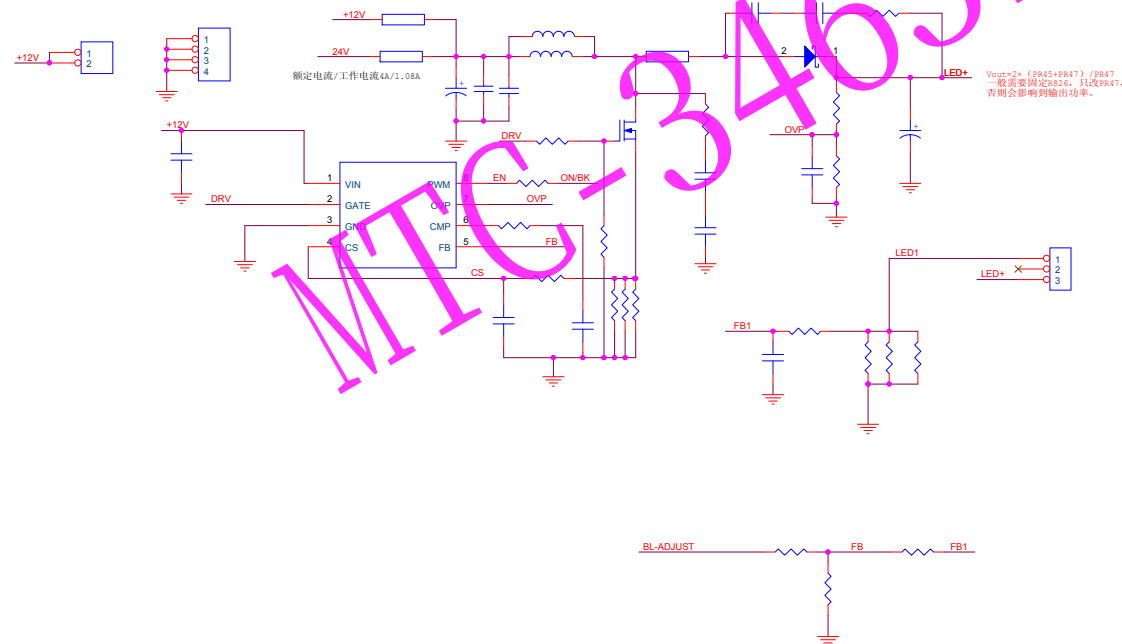
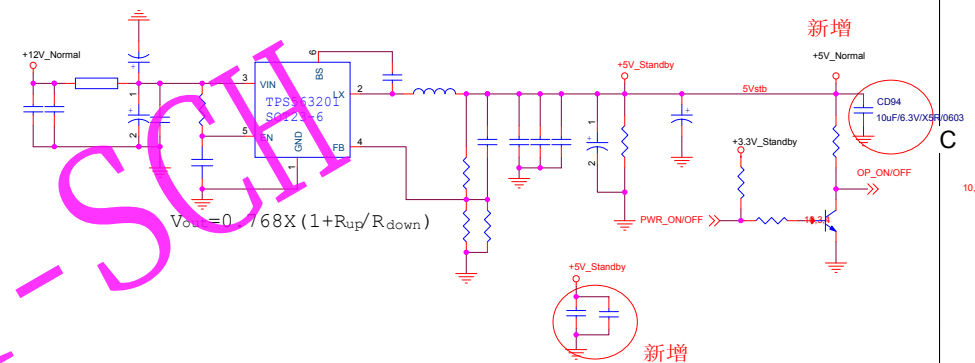
6-2. Circuit Diagram



2012-8-1
RV1位置DCN
统一改为561

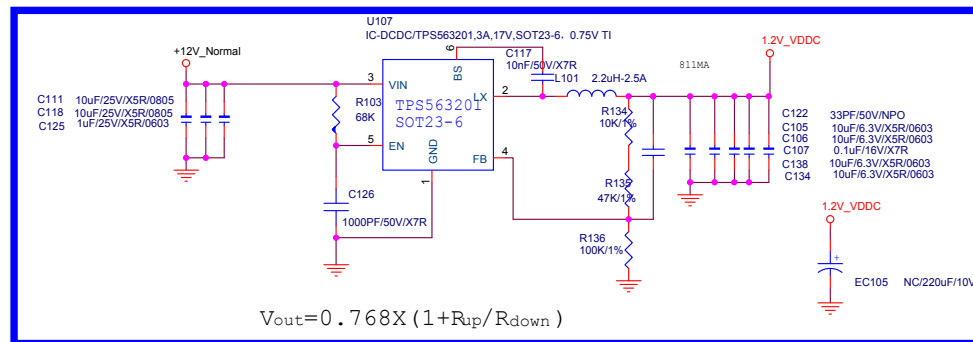


5V Max@DTV(with out CI,USB,DVD,panel)490mA
5V Stb(with out ci card)23mA
工作频率477KHz,占空比43%,供电电压1.5V,纹波100mV
CI card module max 200mA

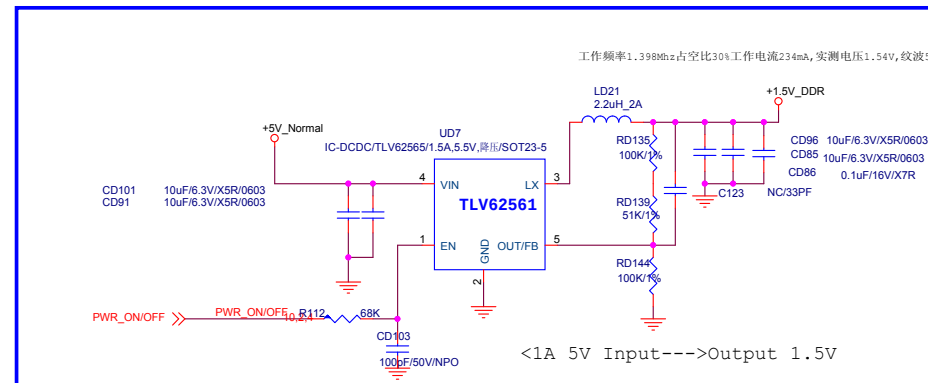


Title				
MSD3643GSA				
Size	Document Number			Rev
Custom	Change list			1.0
Date:	Friday, December 02, 2016		Sheet	2 of 10

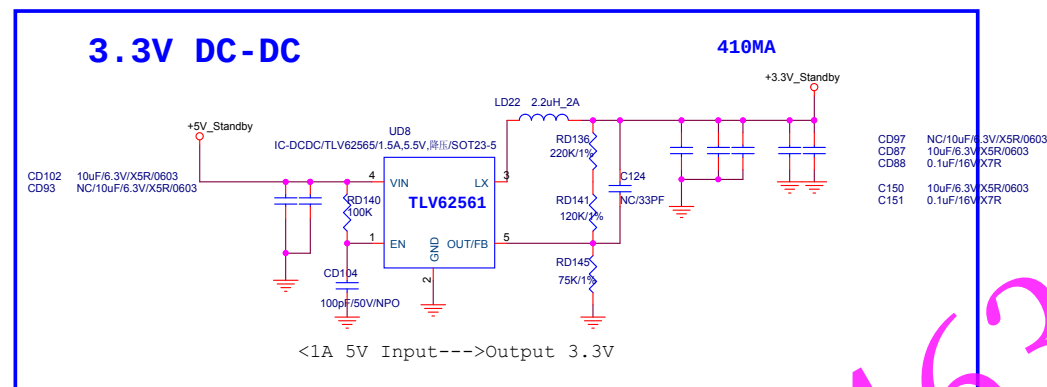
工作频率474Khz占空比10%工作电流800mA,实测电压1.16V,纹波35mV



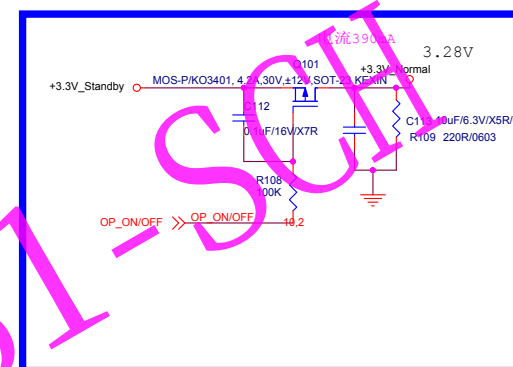
工作频率1.398Mhz占空比30%工作电流234mA,实测电压1.54V,纹波50mV



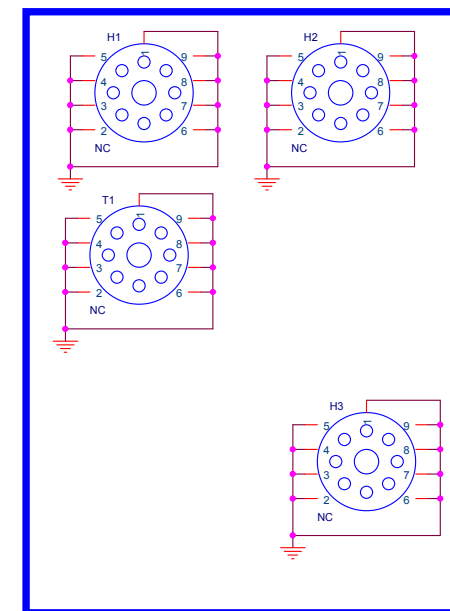
410MA



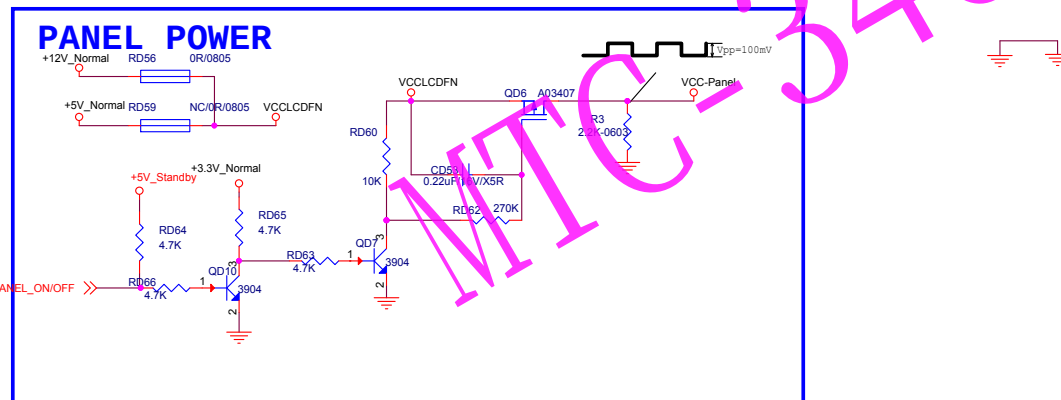
水流390m



MARK

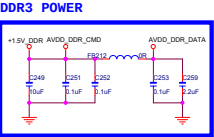
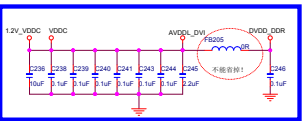


PANEL POWER

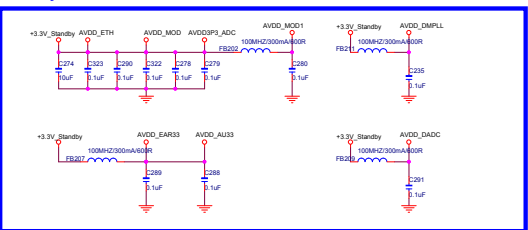


Title				
MSD3643GSA				
Size	Custom	Document Number	Rev	
		Change list		1
Date:	Tuesday, October 11, 2016		Sheet	3 of 10

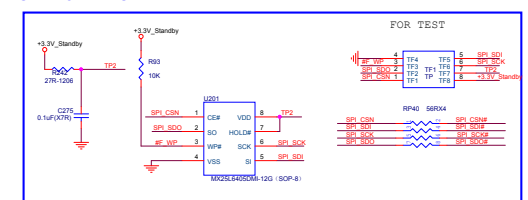
CORE POWER



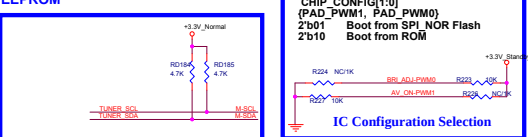
Standby Power 3.3W



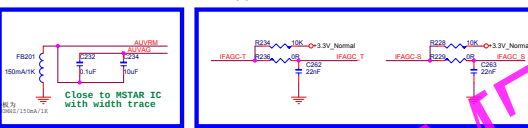
SPI NOR FLASH



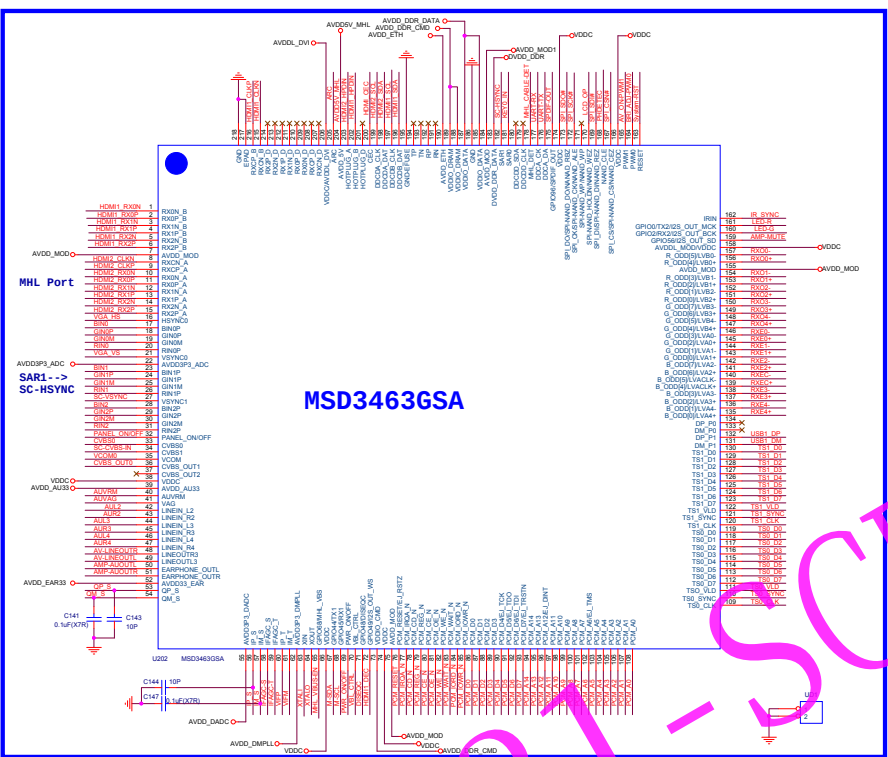
EEPROM

System XTAI_{R237} NC/1M

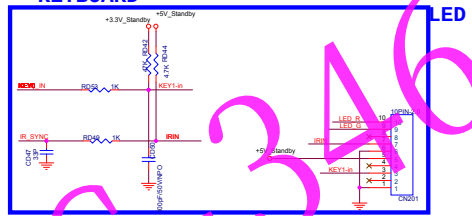
EF AGC



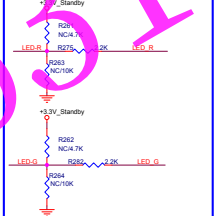
IC



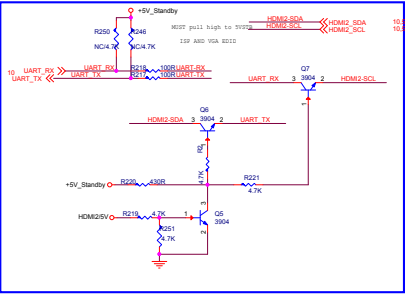
KEYBOARD



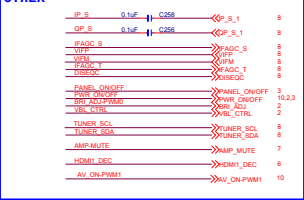
ED



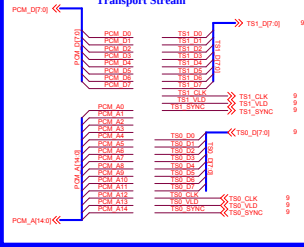
DEBUG_UART



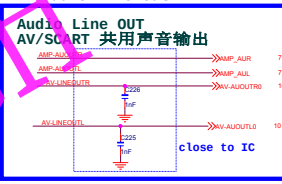
OTHER



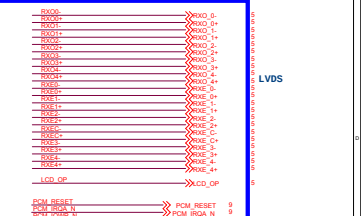
Transport Stream



Audio Line Out



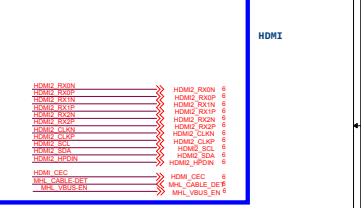
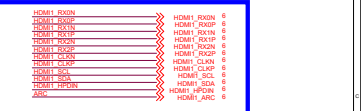
LVDS



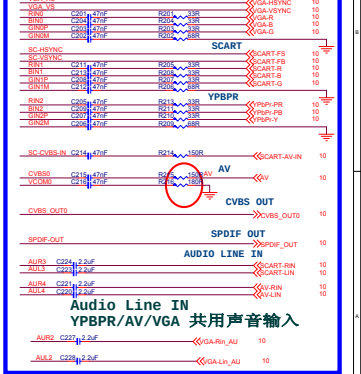
PCMCIA



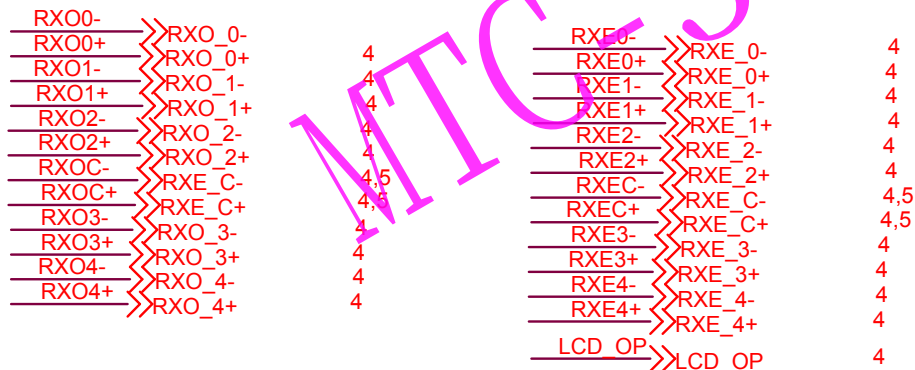
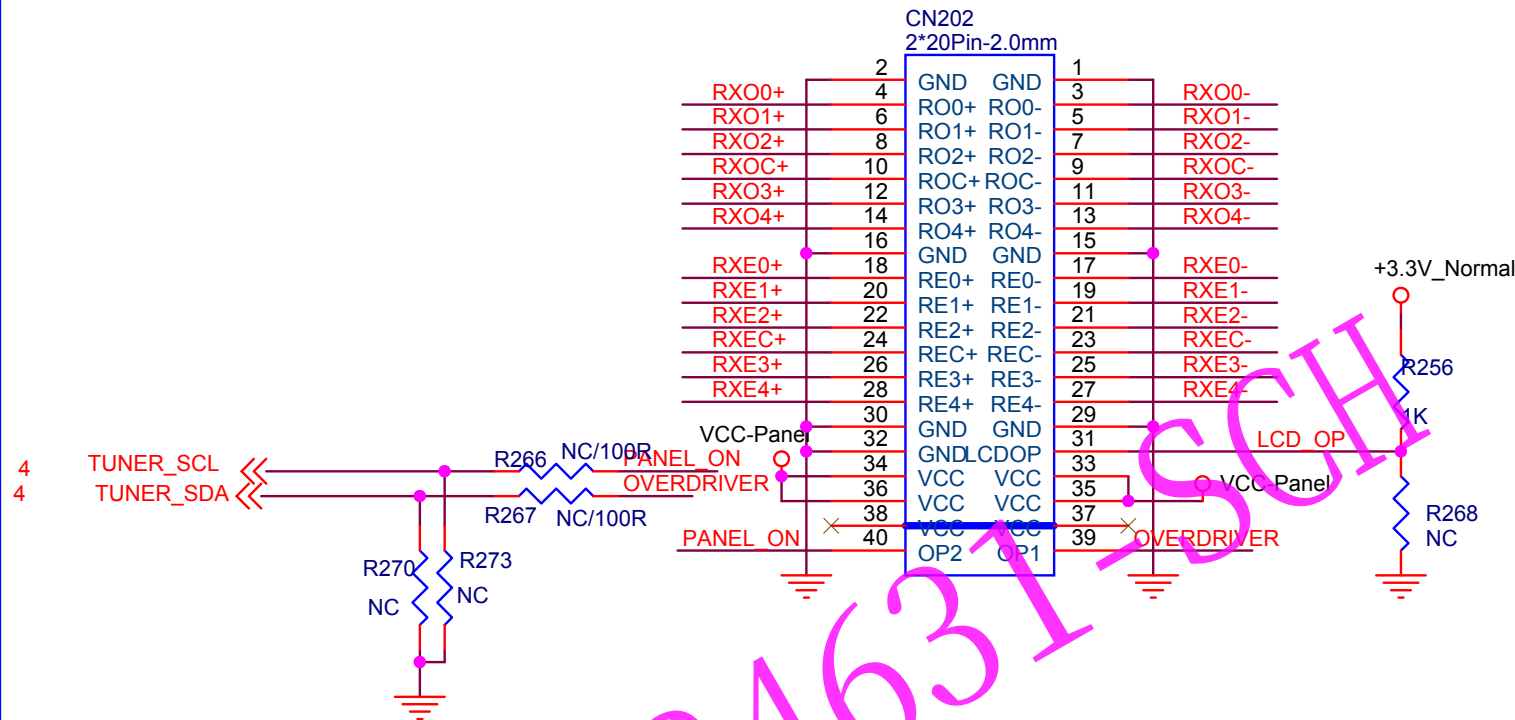
HDMI



VGA

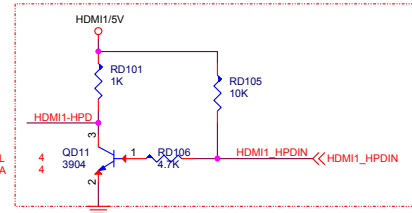
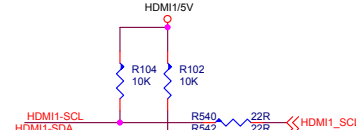
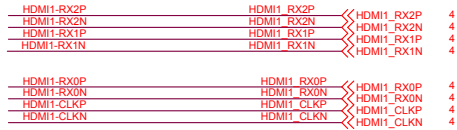
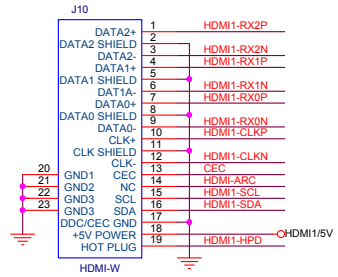


LVDS CONNECTOR

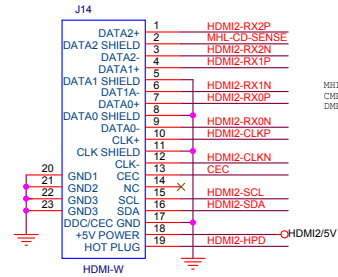


Title			
MSD3643GSA			
Size	Document Number		Rev
Custom	Change list		1.0
Date:	Tuesday, October 11, 2016	Sheet	5 of 10

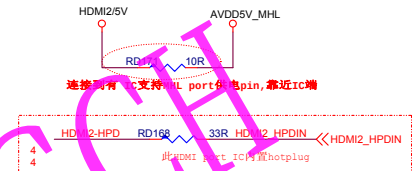
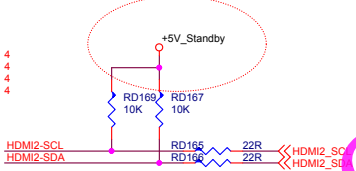
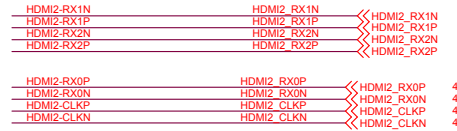
HDMI2 (ARC)



HDMI1 (MHL)



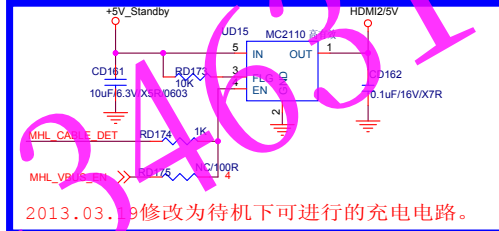
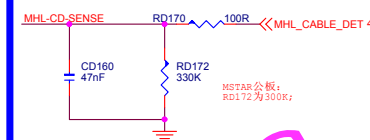
MHL Signal:
CMR:24.57 ~35.54G,
DMR:95.3~115



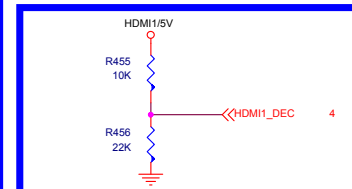
CEC & ARC



MHL

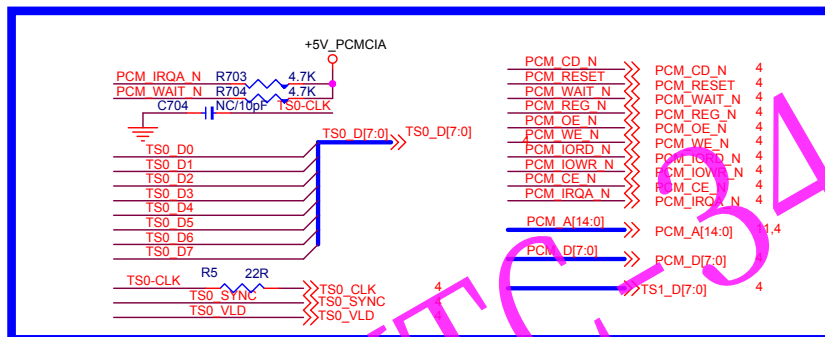
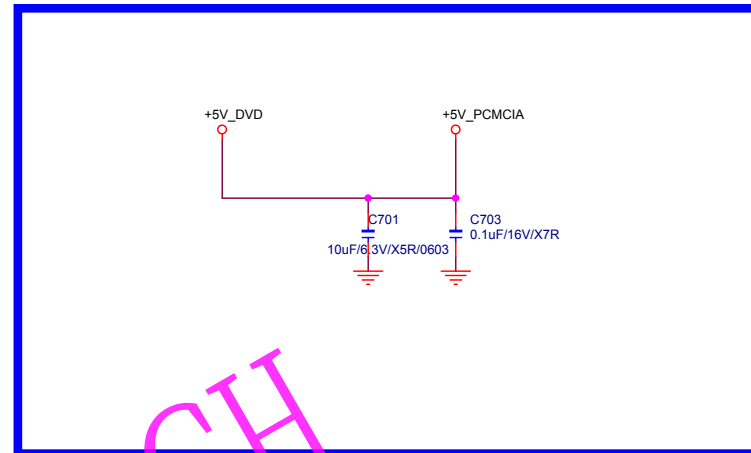
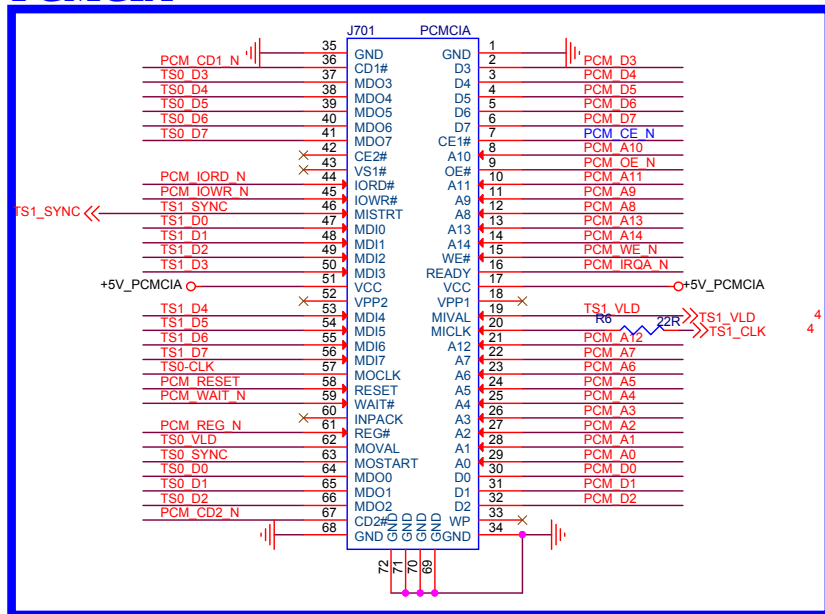


ARC DETECT

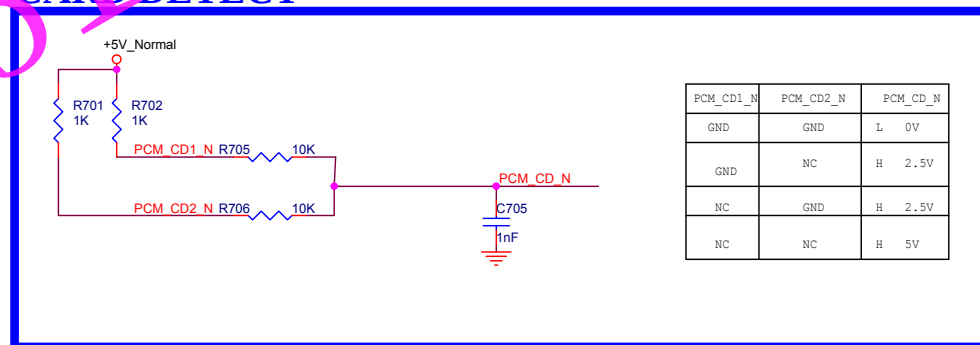


Title			
MSD3643GSA			
Size	Document Number	Rev	
Custom	Change list	1.0	
Date	Tuesday, October 11, 2016	Sheet	6 of 10

PCMCIA

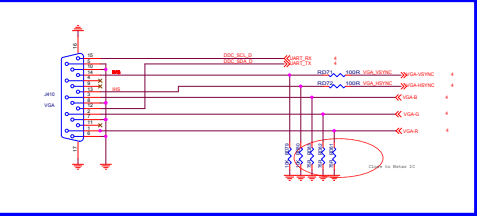


CARD DETECT

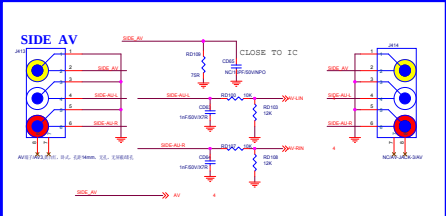


Title			
MSD3643GSA			
Size	Document Number		Rev
B	Change list		1.0
Date:	Tuesday, October 11, 2016	Sheet	9 of 10

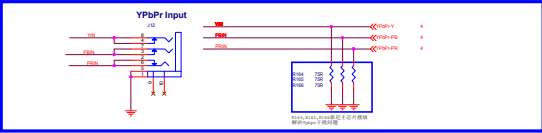
VGA INPUT



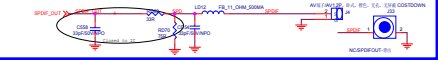
AV INPUT



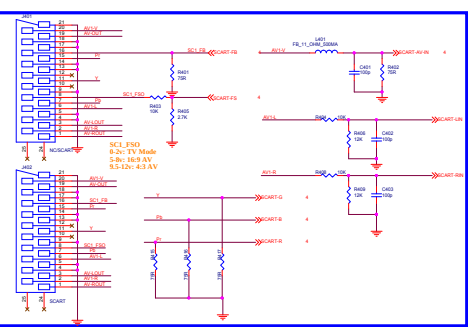
YPbPr



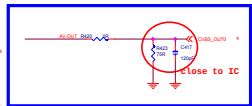
SPDIF Output



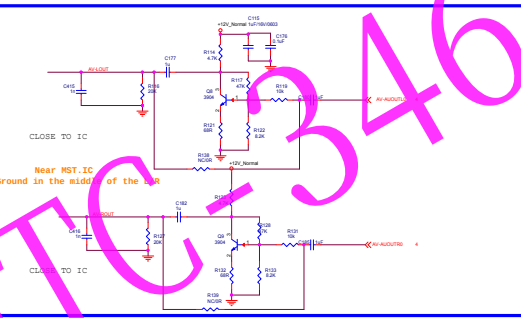
SCART



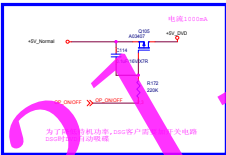
VIDEO OUT



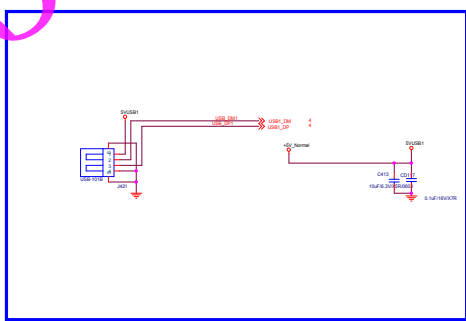
AUDIO OP



DVD Power

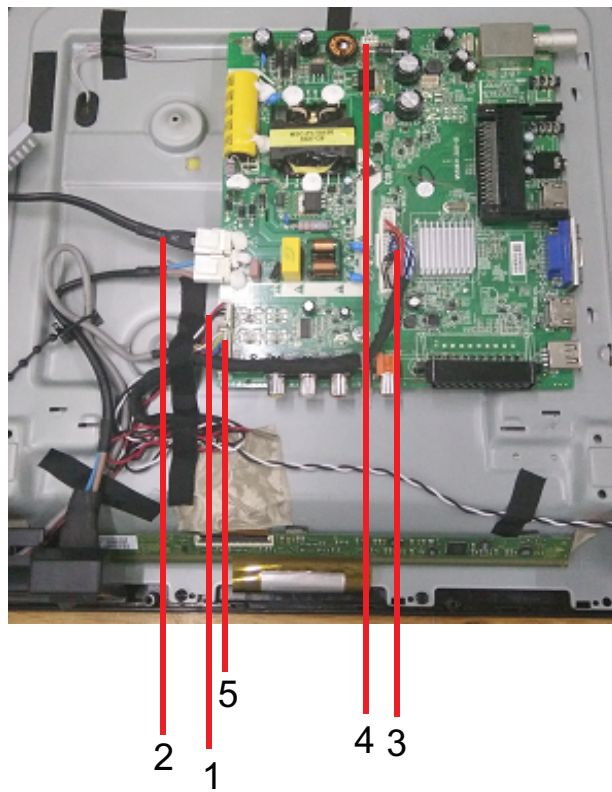


USB Interface



MTG34631-SCH

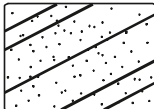
6-3 .Wiring Connection Diagram



NO.	Name
1	Connection Wire(For Speaker)
2	Connection Wire(Power Wire)
3	LVDS Wire
4	Connection wire(Blacklight)
5	Connection Wire(For Keyboard and Remote)

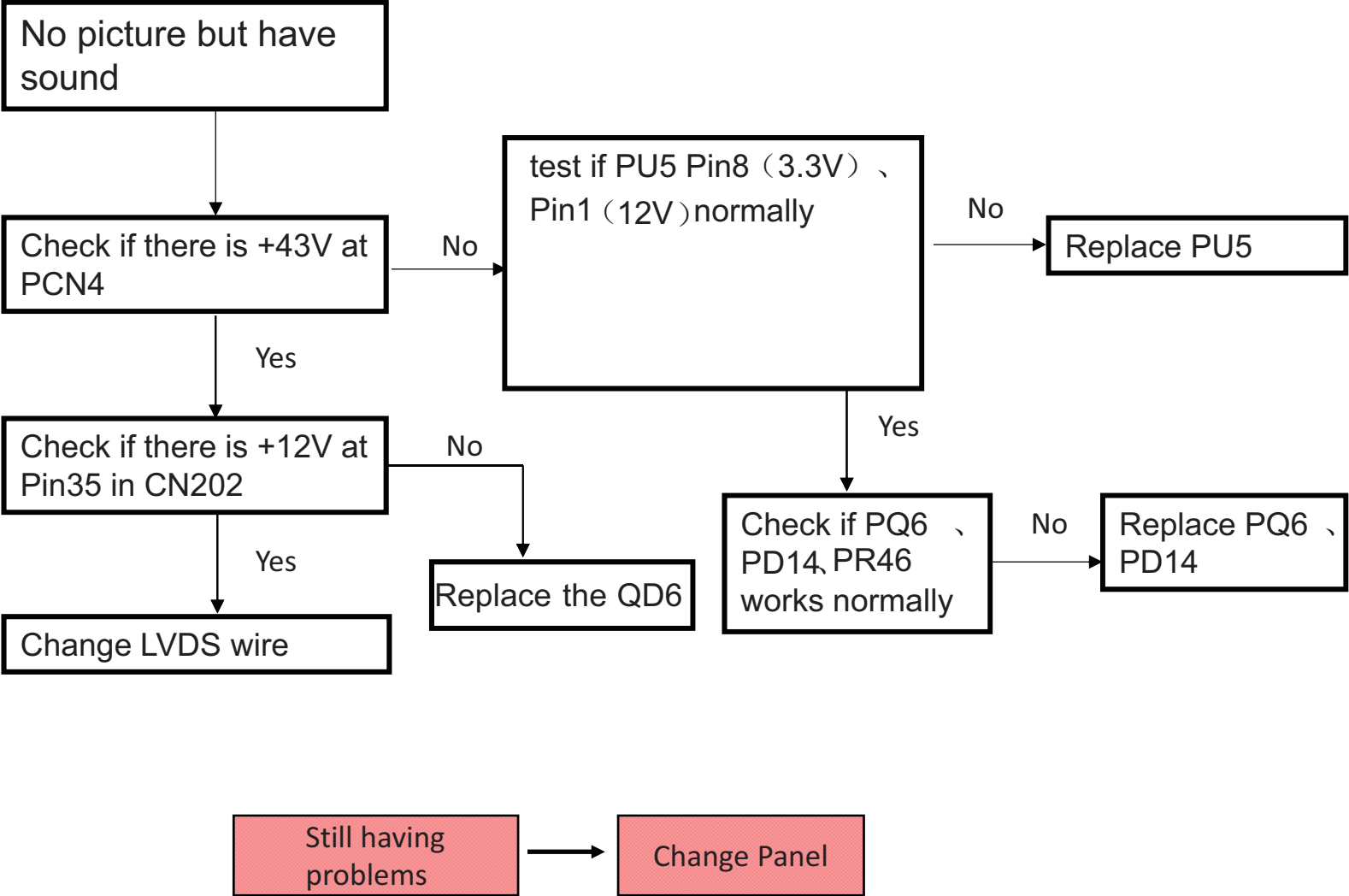
7. Trouble shooting

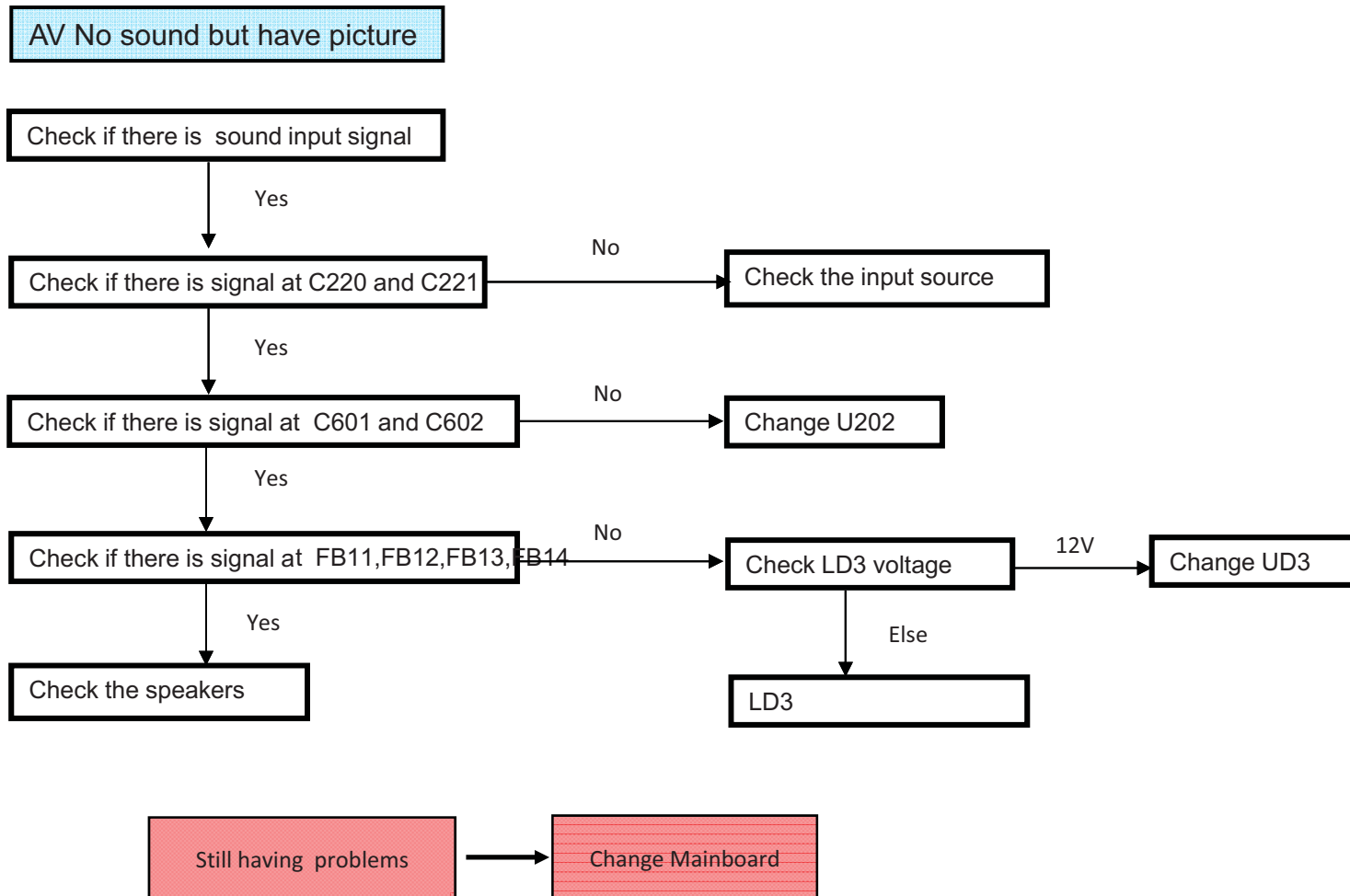
7-1. Simple check

Trouble phenomenon		Inspection
Picture	Audio	
 Snow	 Noise	antenna position, direction or connection
 Ghost	 Normal audio	antenna position, direction or connection
 Interfere	 Noise	electronic equipment, car/ motorcycle, fluorescent light
 Normal Picture	 Mute	Volume (inspect whether the mute function on the remote control are started, or audio system are correct or not)
 No picture	 Mute	Power cord is not inserted Power switch is not opened Contrast and brightness/volume setup Press standby key on the remote control for inspecting
 No color	 Normal audio	color control
 Scramble	 Normal audio or weak	retune channel
 No color	 Noise	Audio system

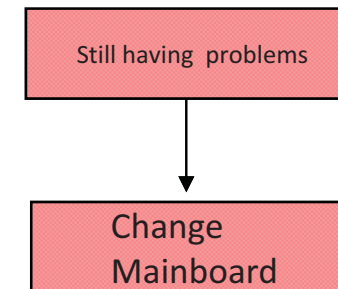
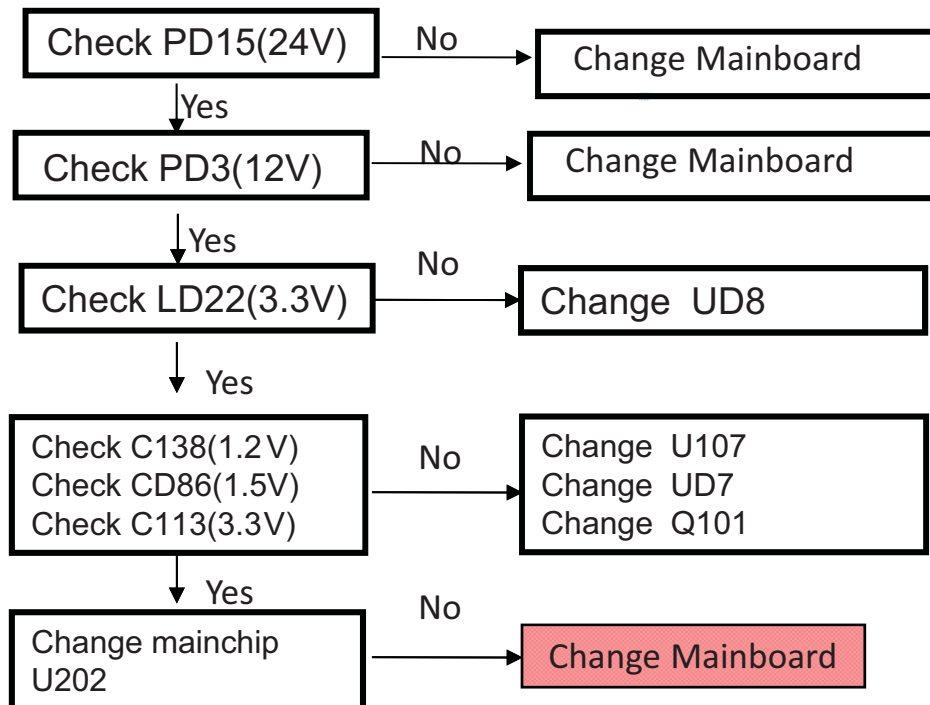
Special Explanation: The accessories such as remote control is not belongs to the guarantee.

7-2. Main board failure check

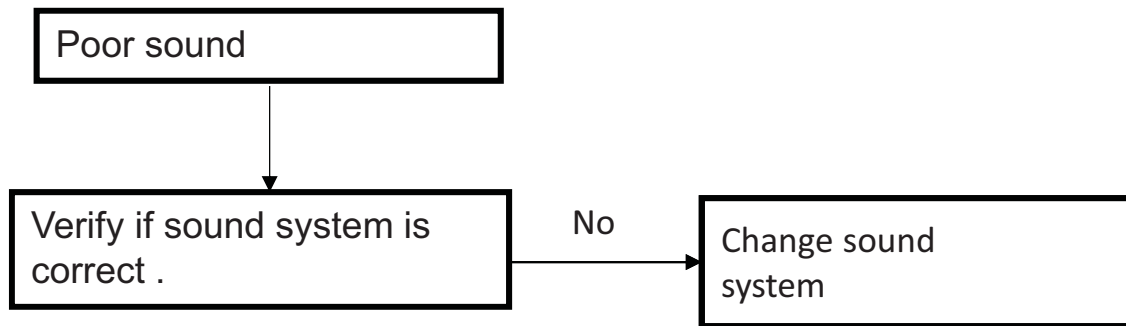




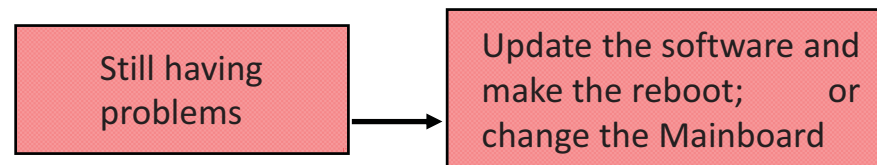
No sound No picture NO LED indicate



Poor sound



For ease of use, recommend that customer format the picture and sound settings in the automatic option.



No color for some channel program (black and white)

No color for some channel program (black and white)

Verify if the same problem exists in other channels

No

Check out of picture and sound system of this channel

Yes

check out of picture and sound system

No

Change the channel to the right sound system (PAL-M/N NTSC-M)

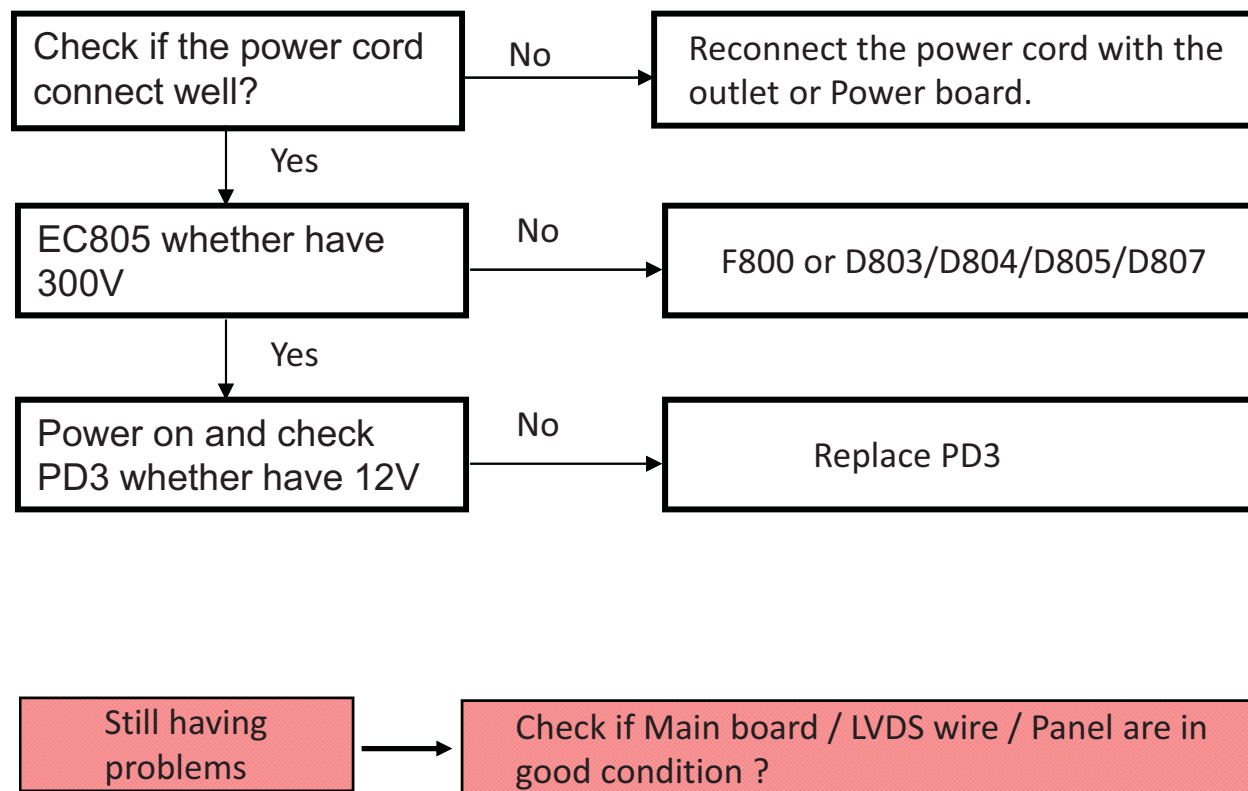
Yes

Refer to relative instructions in the Manual for color adjust

Still having problems

Update the software and make the reboot; or change the motherboard

How to know whether the Power board is broken?



Trouble Shooting



- **Mainboard not work**

- 1. Check the “power board “ in main-board whether has 12V and 5V 5vsb output .
- 2.Verify if the DC/DC convertors havetherightoutput(1.2V,1.5V)
- 3.Verify if IC have the right output (3.3V,1.2V)
- 3.Verify if the Mainchip(MSD3463GSA), DDR, AudioAMP...solder well;
- 4.Verify if the FLASH(U201) has the right software and work well;
- 5.Verify if the Y1(Crystal) has the right frequency

- ❖ **Panel not work**

- ❖ 1. Check the LED Back light “set-up IC ” output and input are working .
- ❖ 2.Verify if the Mainboard output the right On/Off signal to power board;
- ❖ 3.Verify if the Mainboard output the LVDS singal to panel T-con board
- ❖ 4.Verify if the software is the right version of this model.
- ❖ 5.Change the LVDS wire to check if it's broken.

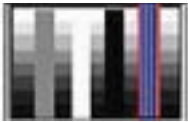
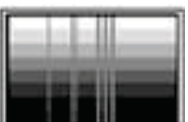
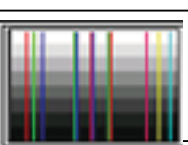
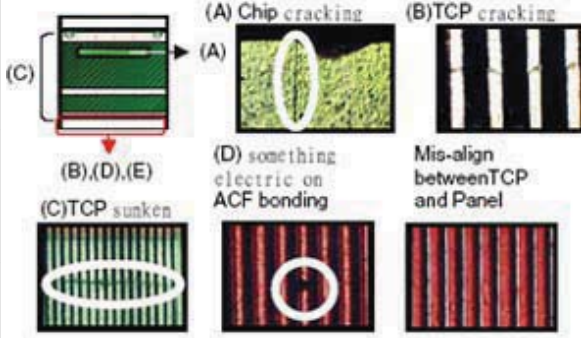
Trouble Shooting

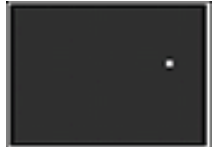
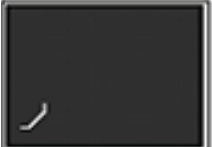
❖ Power board not work

- ❖ 1. Verify if the power cord connect well?
- ❖ Verify the power cord+5V standby is working.
- ❖ 3. Check if voltage of the POWER ON/OFF of the power board part is on the high level voltage
- ❖ 4. +12V/+5V output ;check if there is +12V/+5V output on the power board
- ❖ Check if Main board / LVDS wire / Panel are in good condition ?

7-3. Panel failure

Failure Mode

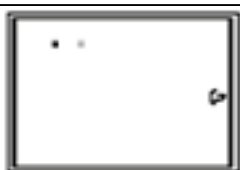
Part	Name	Description	Phenomena	Failure cause
TCP	V B/D	Vertical bar		Block Defect :TCP cracking or cracking Dim or L/D :TCP Sunken :TCP lead cracking :ACF bonding short :Awful environment and something electric enter into LCD :Mis-align between TCP and Panel :Panel failure :TCP failure
	V Dim	Vertal gray line		
	V L/D	Vertical color line(light or dark forever)		
	H B/D	Horizontal bar		
	H Dim	Horizontal gary line		
	H L/D	Horizontal line(light or dark forever)		

Part	Name	Description	Phenomena	Failure cause
Panel or Polarizer	Dot Defect	Bright dot dark dot in pannel		Incoming Inspection Standard
	Polarizer Bubble	Bladder in Polarizer		Bladder between Polarizer and top glass
	Polarizer Scratch	Polarizer Scratch		Tine or rigidity arose
	F / M inside Polarizer	Eyewinker inside Polarizer		Eyewinker inside Polarizer
Circuit	Abnormal Display	Abnormal Display		1.Chip lose action 2.IC ahort or jointiog bad 3.Pannel and vsc connect bad
	Flashing	Bright and dark display alternately		

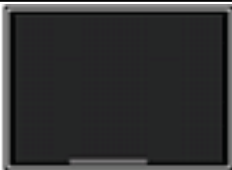
Failure Mode

Part	Name	Description	Phenomena	Failure cause
Circuit	White Screen	B/L normal, only white screen display		Maybe caused by surge current and EDS
	Black Screen	B/L normal, only Black screen display		
	Flicker	Crosstalk		LCD Vcom imbalance
	Abnormal Color	Only color abnormal		Capacitance improper bring crosstalk inside LCD pannel
	Abnormal Color	Only color abnormal		1.Chip lose action 2.IC short or jointment bad 3.Pannel and vsc connect bad

Failure Mode

Part	Name	Description	Phenomena	Failure cause
	Mechanical Noise	When turn panel, appear cacophony		Caused by Mechanical noise of backlight unit
	Ripple	Connectric circle		Caused by between mechanism and pannel
	B/L off	B/L lose action		*Connect badness between wire and electrode
	B/L dark	B/L brightness darker than normal		*Connect badness Short between wire and electrode
	B/L wire damaged	B/L wire damaged		Operation abnormal or systemic noise
	B/L wire open	Without backlight		Operation abnormal or systemic noise
	B/L shut down	B/L shutdown in sometime		Short between lamp housing and wire, Because consume power too much
	F/M	F/M in B/L, white, black Rotundity or wirelike		F/M in B/L unit

Failure Mode

Part	Name	Description	Phenomena	Failure cause
Mechanical or B/L	Light leakage	Brightness at bottom of LCM brighter than normal		B/L unit badness
	Uniformity	B/L brightness asymmetric		Sheet in B/L unit is uneven
	Mount hole	Lack screw or screw damage		*Lack screw Screw damage