

Haier

SERVICE MANUAL

Order No. TV1007S003V0

LED TV

Model No. HL37XLE2

Service Model HL37XLE2a

ZORAN745 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.

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Haier Group

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Chapter 1. General Information

1-1. Document Information

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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).

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.

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 genewing 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.

12. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

13. 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.

14. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

15. 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).

16. 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.

17. 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 cover of each product. Software version can be found in the *Spare Parts List*.

2. Spare part No. and description

Spare part No. and description can be found in the *Spare Parts List*.

1-3-8. Photo used in this manual

The illustration and photos used in this Service 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

1-4-1. 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, lose 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.



Chapter 2. Specification

2-1. Specification list

Model	HL37XLE2		
Screen Size	37 inch		
Aspect Ratio	16:9		
Resolution	1920x1080		
Response Time (ms)	6.5 (G TO G)		
Angel of View	178o		
Color Display	16777216		
No. of Preset Channels	181		
OSD Language	English		
Color System	ATSC		
Audio System	NTSC		
Audio Output Power (Built-in) (W)	10W×2		
Audio Output Power (outer) (W)	No		
Total Power Input (W)	90W		
Voltage Range (V)	120V		
Power Frequency (Hz)	60HZ		
Time of Sleep Timer (MINS)	120Min		
Net Weight (KG)	19.69		
Gross Weight (KG)	21.2		
Net Dimension (MM)	910*260*644		
Packaged Dimension (MM)	1200*255*690		

2-2. External pictures (four faces)



Front Side



Left Side



Right Side



Back Side

Chapter 3. Disassemble and Assemble

3-1. Remove the Stand

1. Lay down the unit so that back cover faces upward



2. Remove the five screws from the back cover which are indicated with the circles in the picture above.

3. Remove the stand



3-2. Remove the Back Cover

1. Remove the thirteen screws indicated (See picture right.)



2. Then remove the back cover from the unit.

3-3. Remove the Adhesive Tape

The location of the adhesive tape is shown below.

Remove the adhesive tape.



3-4. Remove the Mainboard

Remove the four screws indicated by the red circles in the picture. (See next page.)



Then put the terminal bracket to the side.
Disconnected the coupler CNE1 CNE2 CN14
CN11 CN17 CON2.

Remove the Mainboard.

3-5. Remove the Power Supply Modules

Remove the four screws indicated by the red circles in below picture.



Then remove the power supply module.

3-6. Remove the Terminal Bracket

Remove the six screws indicated by the red circles in below picture.



3-7. Remove the Remote Control Board

Remove the one screw indicated by red circles in below picture.



Disconnected the coupler CNE3 and CNE2
Remove the remote control board.

3-8. Remove the Speaker

Remove the four rubber bands indicated by the red circles in below picture.

Take out the speakers.



3-9. Remove the Stand Backstop

Remove the six screws indicated by the red circles in below picture.

Take out the stand backstop.



3-10. Remove the Indicator Light

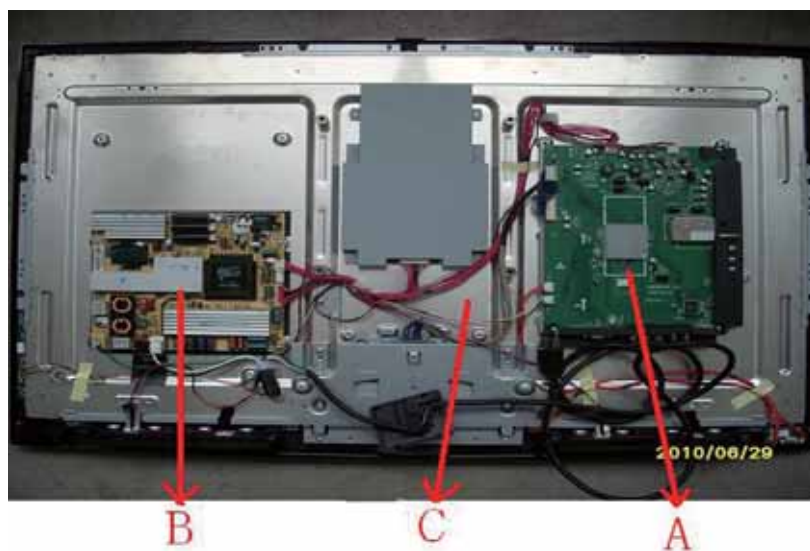
Remove the two screws indicated by red circles in below picture.



Disconnected the coupler CN2,
Remove the indicator light.

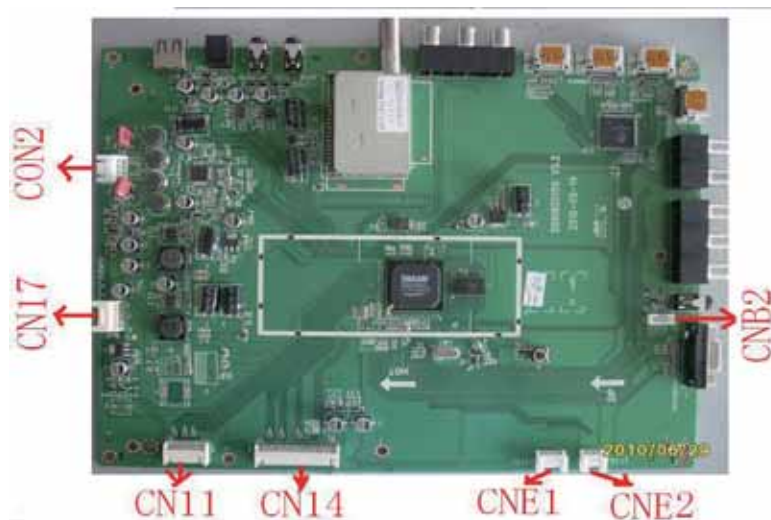
Chapter 4. Location of Controls and Components

4-1. Board Location



No.	Parts number	Description
A	DC1CW0E0100M	Main Board(0090725996)
B	0094001856A	Power Board
C	0094001901DA	Panel

4-2. Main Board & AV Board



4-2-1. Function Description:

Main Board

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

4-2-2. Connector definition

Main board connector

Power connectors (CN17)

CN17			
Pin number	Signal name	Pin number	Signal name
1	+12V	7	5V_STB
2	+12V	8	BRT_CNTL_OUT
3	GND	9	GND
4	+12V	10	SW_POWER
5	GND	11	NC
6	GND	12	BL_ON/OFF

Notes:

CN17-Pin 12: Backlight on/off:

The system can turn on or turn off the backlight of TFT LCD Panel through the power supply unit path.

CN17-Pin 10: System power on / standby

System board will use this pin to control system power.

CN17-Pin 8: Control the luminance of backlight

The system can generate the PWM signal to control the strength of TFT LCD Panel's backlight through this connector

Remote connector (CNE1)

Pin number	Signal name	Description
1	5VS	5V
2	IR-IN	IR
3	LEDR	LAMP RED
4	LEDB	LAMP BLUE
5	GND	GND

Keypad connector (CNE2)

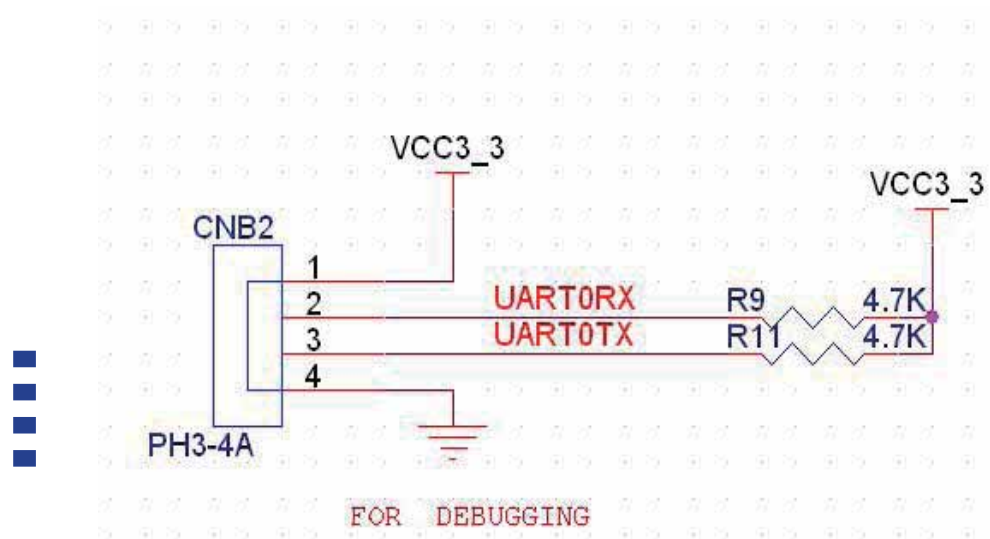
Pin number	Signal name	Description
1	GND	GND
2	KEY0	KEY0
3	KEY1	KEY1
4	3.3VS	3.3V

Speaker connector (CON2)

Pin number	Signal name	Description
1	L+	L+
2	L-	L-
3	R-	R-
4	R+	R+

Other connectors:

CNB2 to Upgrade the program of ZORAN745 (U1) AND FLASH (U3)



4-3. Power Supply Board



4-3-1. Function description:

To supply power for Mainboard, Panel.

4-3-2. Connector definition:

INPUT CONNECTOR (CON2/CON3)

CON2		CON3	
Pin number	Signal name	Pin number	Signal name
1	+12V	1	+24V
2	+12V	2	+24V
3	GND	3	+24V
4	+12V	4	+24V
5	GND	5	+24V
6	GND	6	GND
7	+5VSB	7	GND
8	PWM_DIMMING	8	GND
9	GND	9	GND
10	PW_ON/OFF	10	GND
11	STATUS	11	NC
12	BL_ON/OFF	12	BL_ON/OFF CONTROL SIGNAL
		13	PWM_DIMMING
		14	STATUS

4-4. LCD Panel



T370HW04 V4

4-4-1. Function Description: Display the signal.

4-4-2. Connector definition:

PIN	Symbol	Description	PIN	Symbol	Description
1	GND	Ground	26	GND	Ground
2	NC	No connection	27	GND	Ground
3	Reserved	AUO Internal Use Only	28	CH2_0-	LVDS Channel 2, Signal 0-
4	Reserved	AUO Internal Use Only	29	CH2_0+	LVDS Channel 2, Signal 0+
5	NC	No connection	30	CH2_1-	LVDS Channel 2, Signal 1-
6	Reserved	AUO Internal Use Only	31	CH2_1+	LVDS Channel 2, Signal 1+
7	LVDS_SEL	Open/High(3.3V) for NS, Low(GND) for JEIDA	32	CH2_2-	LVDS Channel 2, Signal 2-
8	Reserved	AUO Internal Use Only	33	CH2_2+	LVDS Channel 2, Signal 2+
9	Reserved	AUO Internal Use Only	34	GND	Ground
10	Reserved	AUO Internal Use Only	35	CH2_CLK-	LVDS Channel 2, Clock -
11	GND	Ground	36	CH2_CLK+	LVDS Channel 2, Clock +
12	CH1_0-	LVDS Channel 1, Signal 0-	37	GND	Ground
13	CH1_0+	LVDS Channel 1, Signal 0+	38	CH2_3-	LVDS Channel 2, Signal 3-
14	CH1_1-	LVDS Channel 1, Signal 1-	39	CH2_3+	LVDS Channel 2, Signal 3+
15	CH1_1+	LVDS Channel 1, Signal 1+	40	Reserved	AUO Internal Use Only
16	CH1_2-	LVDS Channel 1, Signal 2-	41	Reserved	AUO Internal Use Only
17	CH1_2+	LVDS Channel 1, Signal 2+	42	GND	Ground
18	GND	Ground	43	GND	Ground
19	CH1_CLK-	LVDS Channel 1, Clock -	44	GND	Ground
20	CH1_CLK+	LVDS Channel 1, Clock +	45	GND	Ground
21	GND	Ground	46	GND	Ground
22	CH1_3-	LVDS Channel 1, Signal 3-	47	NC	No connection
23	CH1_3+	LVDS Channel 1, Signal 3+	48	V _{DD}	Power Supply, +12V DC Regulated
24	Reserved	AUO Internal Use Only	49	V _{DD}	Power Supply, +12V DC Regulated
25	Reserved	AUO Internal Use Only	50	V _{DD}	Power Supply, +12V DC Regulated
			51	V _{DD}	Power Supply, +12V DC Regulated

CN1 (Header):S14B-PH-SM4-TB (D)(LF)(JST) or equivalent.

LED Driver Connector: CI1114M1HR0-NH (Cvilux)

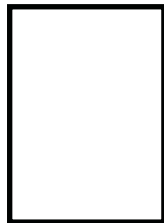
Pin No	Symbol	Description
1	VDDB	Operating Voltage Supply, +24V DC regulated
2	VDDB	Operating Voltage Supply, +24V DC regulated
3	VDDB	Operating Voltage Supply, +24V DC regulated
4	VDDB	Operating Voltage Supply, +24V DC regulated
5	VDDB	Operating Voltage Supply, +24V DC regulated
6	BLGND	Ground and Current Return
7	BLGND	Ground and Current Return
8	BLGND	Ground and Current Return
9	BLGND	Ground and Current Return
10	BLGND	Ground and Current Return
11	DET	BLU status detection Normal : 0~0.8V L Abnormal : Open collector
12	VBLON	BL On-Off control : BL On : High/Open (3.3V~5.5V); BL off : Low (0~0.8V/GND)
13	VDIM(**)	Internal PWM (0~3.3V for 20~100% Duty, open for 100%) < NC ; at External PWM mode>
14	PDIM	External PWM (10%~100% Duty, open for 100%)

Chapter 5. Installation Instructions

5-1. External Equipment Connections



Remote control



Owner's manual



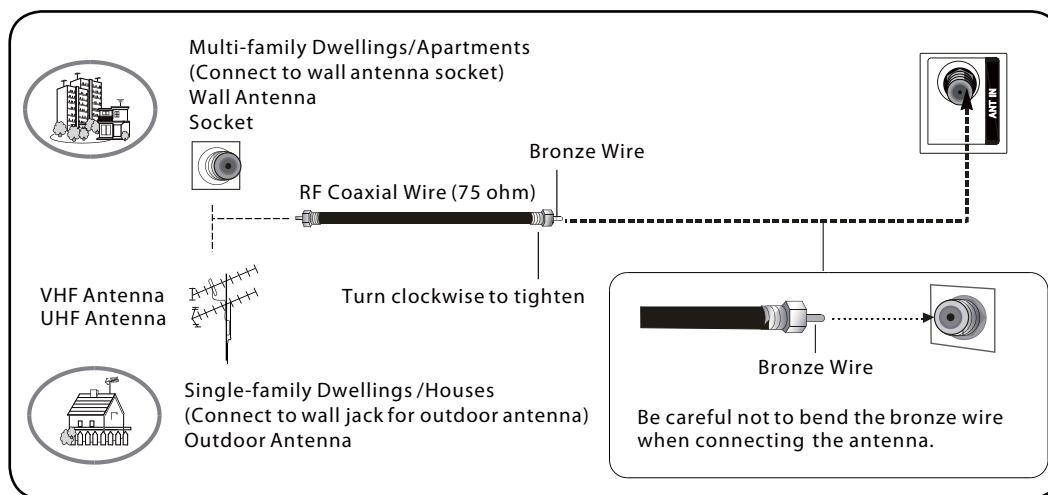
Audio out adapter



Alkaline battery (AAA) x2

Antenna Connection

Over-the-air TV reception quality will depend on your antenna type, antenna location and antenna positioning.



- To improve the picture quality in a poor signal area, please purchase a signal amplifier and install properly.
- If the antenna needs to be split for two TV's, install a "2-Way Signal Splitter" in the connections.
- To install the antenna properly please contact a professional in your area.

Note

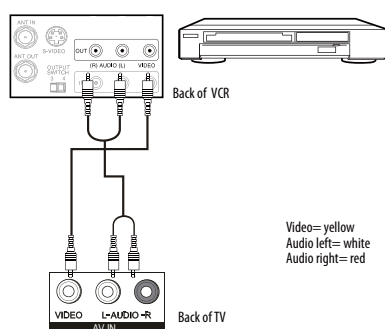
- ❑ All cables shown are not included with the TV.

Choose Your Connection

There are several ways to connect your television, depending on the components you want to connect and the quality of the signal you want to be displayed. The following are examples of some different ways to connect your TV with different input sources.

Connecting a VCR

To avoid picture noise (interference), leave an adequate distance between the VCR and TV.



Connection Option 1

Set VCR output switch to channel 3 or 4 and then tune the TV to the same channel number.

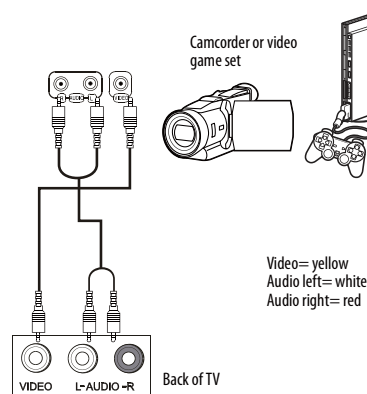
Connection Option 2

- 1** Connect the audio and video cables from the VCR's output jacks to the TV input jacks, as shown in the figure. When connecting the TV to VCR, match the jack colors (Video = yellow, Audio Left = white, and Audio Right = red).
- 2** Insert a video tape into the VCR and press **PLAY** on the VCR. (Refer to the VCR owner's manual.)
- 3** Select the input source with using the **INPUT** button on the remote control, and then press **▲ / ▼** button to select the source, press **ENTER** button to confirm.

External A/V Source Setup

How to connect

- Connect the audio and video cables from the external equipment's output jacks to the TV input jacks, as shown in the figure.
- When connecting the TV to external equipment, match the jack colors (Video = yellow, Audio Left = white, and Audio Right = red).



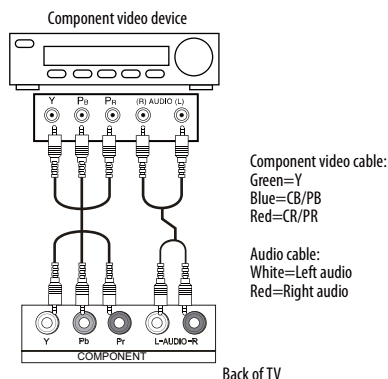
How to use

- 1** Select the input source using the **INPUT** button on the remote control.
- 2** Press the **▲ / ▼** buttons to select the desired source.
- 3** Press the **ENTER** button to confirm.
- 4** Operate the corresponding external equipment.

Connecting a DVD player

How to connect

- 1** Connect the DVD video outputs (COMPONENT) to the Y Pb Pr jacks on the TV and connect the DVD audio outputs to the Y Pb Pr Audio IN jacks on the TV, as shown in the figure.
- 2** Alternatively, you can connect the DVD player to your TV using the audio and video jacks, similar to connecting a VCR (refer to the previously shown VCR figure).



How to use

- 1 Turn on the DVD player, and insert a DVD disc.
- 2 Use the **INPUT** button on the remote control to select component mode.
- 3 Press the **PLAY** button on the DVD player for program play.
- 4 Refer to the DVD player's manual for operating instructions.

■ Component Input ports

To get better picture quality, connect a DVD player to the component input ports as shown below.

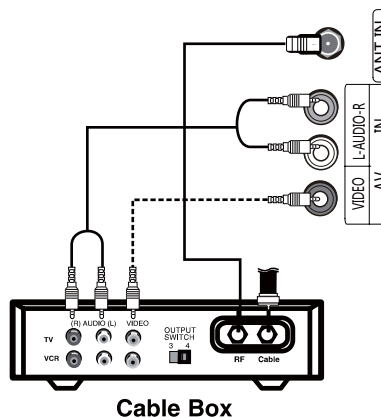
Component ports on the TV	Y	Pb	Pr
Video output ports on DVD player	Y	Pb	Pr
	Y	B-Y	R-Y
	Y	Cb	Cr
	Y	Pb	Pr

Connecting a DTV (digital TV)

This TV can receive Digital Over-the-air TV signals without an external digital set-top box. However, if you do receive Digital signals from a digital set-top box or other digital external device, such as a cable box, refer to the figure below.

How to connect

- Use the TV's COMPOSITE, COMPONENT or HDMI jack for video connections, depending on your set-top box connector. Then, make the corresponding audio connections.



How to use

- 1 Turn on the digital set-top box. (Refer to the owner's manual for the digital set-top box.)
- 2 Use INPUT on the remote control to select COMPONENT, VGA or HDMI source.

Connecting a digital audio output

Send the TV's audio to external audio equipment (stereo system) via the Digital Audio Output (Optical) port.

How to connect

- 1 Connect one end of an optical cable to the TV Digital Audio (Optical) Output port.
- 2 Connect the other end of the optical cable to the digital audio (optical) input on the audio equipment. See the external audio equipment instruction manual for operation.

Note

- When connecting with external audio equipments, such as amplifiers or speakers, please turn the TV speakers off.

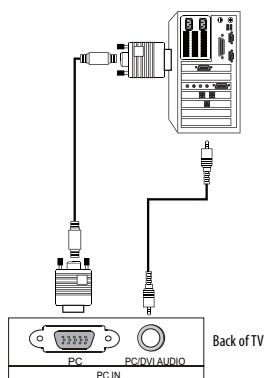
⚠ Caution:

- Do not look into the optical output port. Looking at the laser beam may damage your vision.

Connecting a computer

How to connect

- 1 To get the best picture quality, adjust the VGA graphics card to 1024×768.
- 2 Use the corresponding cable to connect the TV's VGA or DVI (Digital Visual Interface) to the PC's video output, depending on your computer connector.
- 3 Then, make the corresponding audio connection by connecting an audio cable from your PC's audio out or headphone jack to the TV's PC/DVI audio in jack. If using a sound card, adjust the VGA sound as required.



How to use

- 1 Turn on the computer and the TV.
- 2 Use INPUT on the remote control to select VGA or HDMI source.
- 3 Check the image on your TV. There may be noise associated with the resolution, vertical pattern, contrast or brightness in VGA mode. If noise is present, change the VGA mode to another resolution, change the refresh rate to another rate or adjust the brightness and contrast on the menu until the picture is clear. If the refresh rate of the VGA graphic card can not be changed, change the VGA graphic card or consult the manufacturer of the VGA graphic card.

Note

- ❑ Use a DVI cable.
- ❑ Avoid keeping a fixed image on the TV's screen for a long period of time. The fixed image may become permanently imprinted on the screen.
- ❑ The synchronization input form for Horizontal and Vertical frequencies is separate.

Resolution

Resolution	Frame frequency (Hz)
640×480	60Hz
800×600	60Hz
	75Hz
1024×768	60Hz
	75Hz
1280×1024	60Hz
	75Hz
1360×768	60Hz
1920×1080	60Hz

HDMI and DVI input

When the source device (DVD player, Bluray player, or Set Top Box) supports HDMI.

This TV supports HDCP (High-bandwidth Digital Contents Protection) protocol for Digital Contents (480p, 720p, 1080i).

How To Connect

- 1 Connect the source device to the HDMI port of this TV with an HDMI cable (not supplied with this product).
- 2 No separated audio connection is necessary.

How To Use

- If the source device supports the Auto HDMI function, the output resolution of the source device will be automatically set to the appropriate resolution.
- If the source device does not support the Auto HDMI, you need to set the output resolution

appropriately. To get the best picture quality, adjust the output resolution of the source device, if available, to 1280×720 for the 32" TV and 1920 x 1080 for the 37" and 42" TVs.

- Press the INPUT button to select the corresponding HDMI input source.

When the source device (DVD player , Bluray player, or Set Top Box) supports DVI.

How To Connect

- 1 Connect the source device to the HDMI port of the TV with a HDMI-to-DVI cable (not supplied with this product).
- 2 A separated audio connection is necessary.
- 3 If the source device has an analog audio output connector, connect the source device audio output to DVI Audio In port located on the left side of the HDMI port.

How To Use

- If the source device supports the Auto DVI function, the output resolution of the source device will be automatically set to the appropriate resolution 1280×720p for the 32" TV and 1920 x 1080 for the 37" and 42" TVs.
- If the source device does not support the Auto DVI, you need to set the output resolution appropriately. To get the best picture quality, adjust the output resolution of the source device , if available, to 1280×720p for the 32" TV and 1920 x 1080 for the 37" and 42" TVs.
- Press the **INPUT** button to select the corresponding HDMI input source.

Connecting Headphones

You can connect a set of headphones to your set if you wish to watch a TV program without disturbing the other people in the room.



Plug a set of headphones into the 3.5mm mini-jack socket on the side panel of the set.

Note

- ❑ Prolonged use of headphones at a high volume may damage your hearing.
- ❑ You will not receive sound from the speakers when you connect headphones to the system.

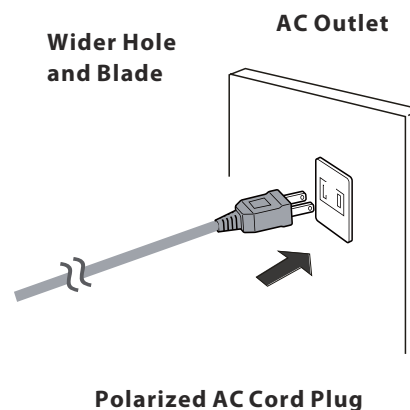
Power source

TO USE AC POWER SOURCE

- Use the polarized AC line cord provided for operation with AC power. Insert the AC cord plug into a standard polarized AC outlet.

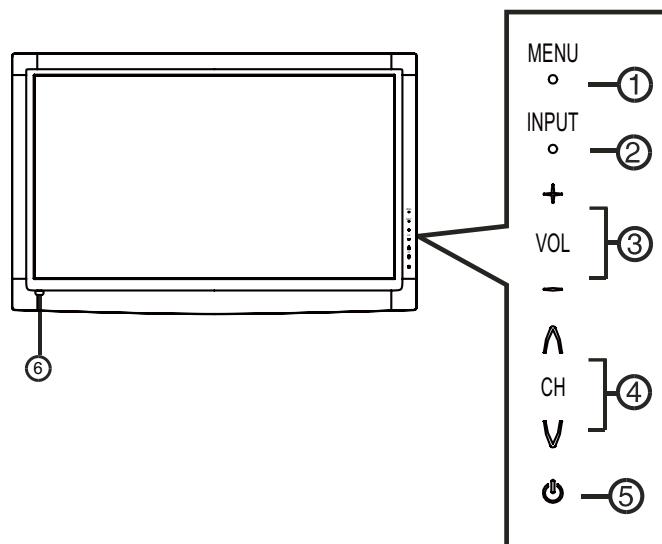
Note

- ❑ Never connect the AC line cord plug to other than the specified voltage. Use the attached power cord only.
- ❑ If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.
- ❑ If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.



Chapter 6. Operation Instructions

6-1. Front Panel Controls



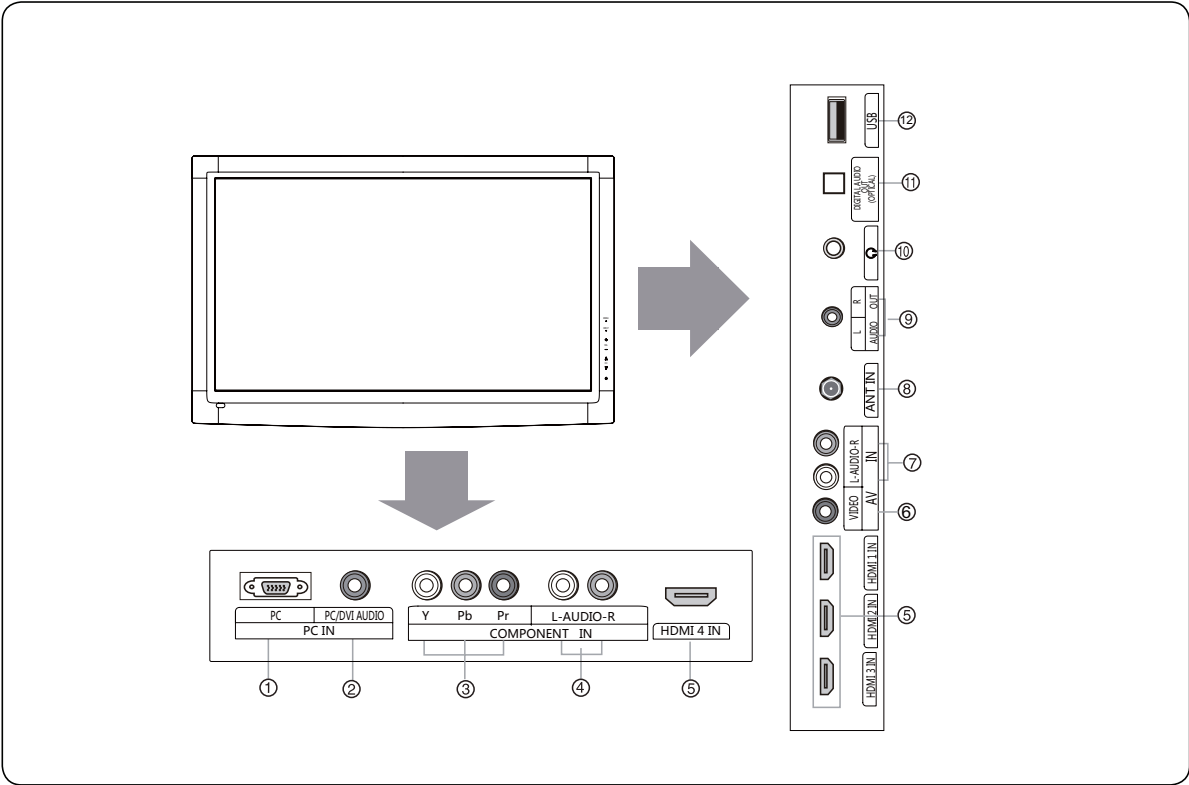
①	MENU	Menu display. Press to access the on-screen menu display.
②	INPUT	Press to access the input source mode. Press repeatedly to change the source to the one you want to watch.
③	VOL +/-	Press to adjust the volume. In the MENU screen, these buttons serve as left/right buttons.

④	CH +/-	Press to scan through channels. To scan quickly through channels, press and hold down either +/- . In the MENU screen, these buttons serve as up/down buttons.
⑤	POWER	Press to turn on and off the TV.
⑥	Remote Sensor	Receives IR signals from the remote control. Do not put anything near the sensor, which may block the remote control signal.

6-2. Back Panel Controls

Connection Options

Back panel connections

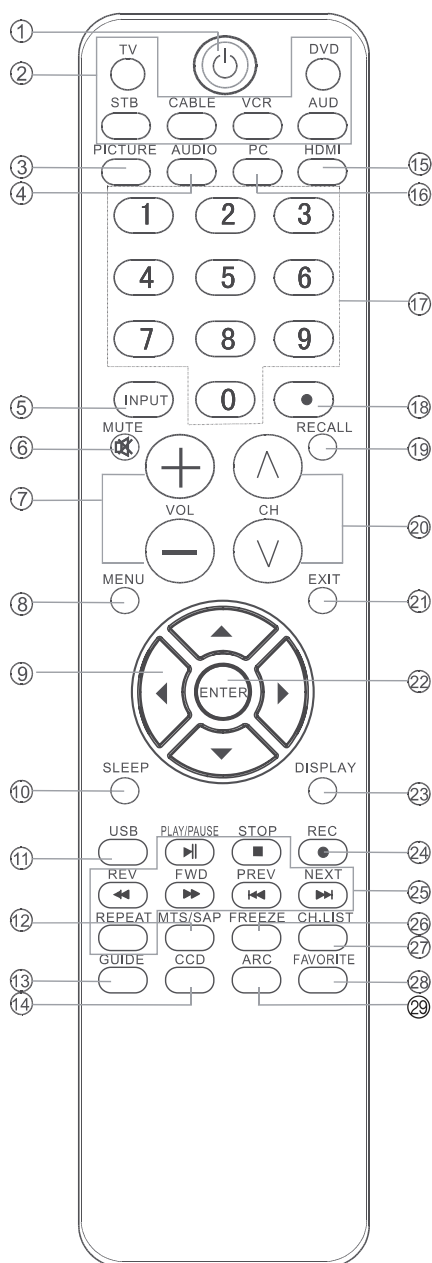


①	PC Video In	Connect a video cable from a computer to this jack.
②	PC/DVI Audio In	Connect the audio L/R cables from a computer to this jack.
③	Component Video In	Connect a component video device to these jacks.
④	COMPONENT AUDIO In	Connect the audio L/R cables from the component video signal source to these jacks.
⑤	HDMI In	Connect a HDMI device to receive digital audio and uncompressed digital video.
⑥	Video In	Connect a composite video device to these jacks.

⑦	AUDIO In	Connect the audio L/R cables from the composite video signal source to these jacks.
⑧	Antenna Input	Connect cable or antenna signals to the TV, either directly or through your cable box.
⑨	AUDIO Out	Use the included adapter to connect the audio L/R cables to your audio equipment.
⑩	Headphone jack	Headphone audio output terminal.
⑪	Digital Audio Output	Connect various types of digital audio equipment. Note <input type="checkbox"/> In standby mode, these ports will not work.
⑫	USB input	Connect a USB flash drive to view JPEG images or listen to MP3 songs.

6-3. Setting Up Your Remote Control

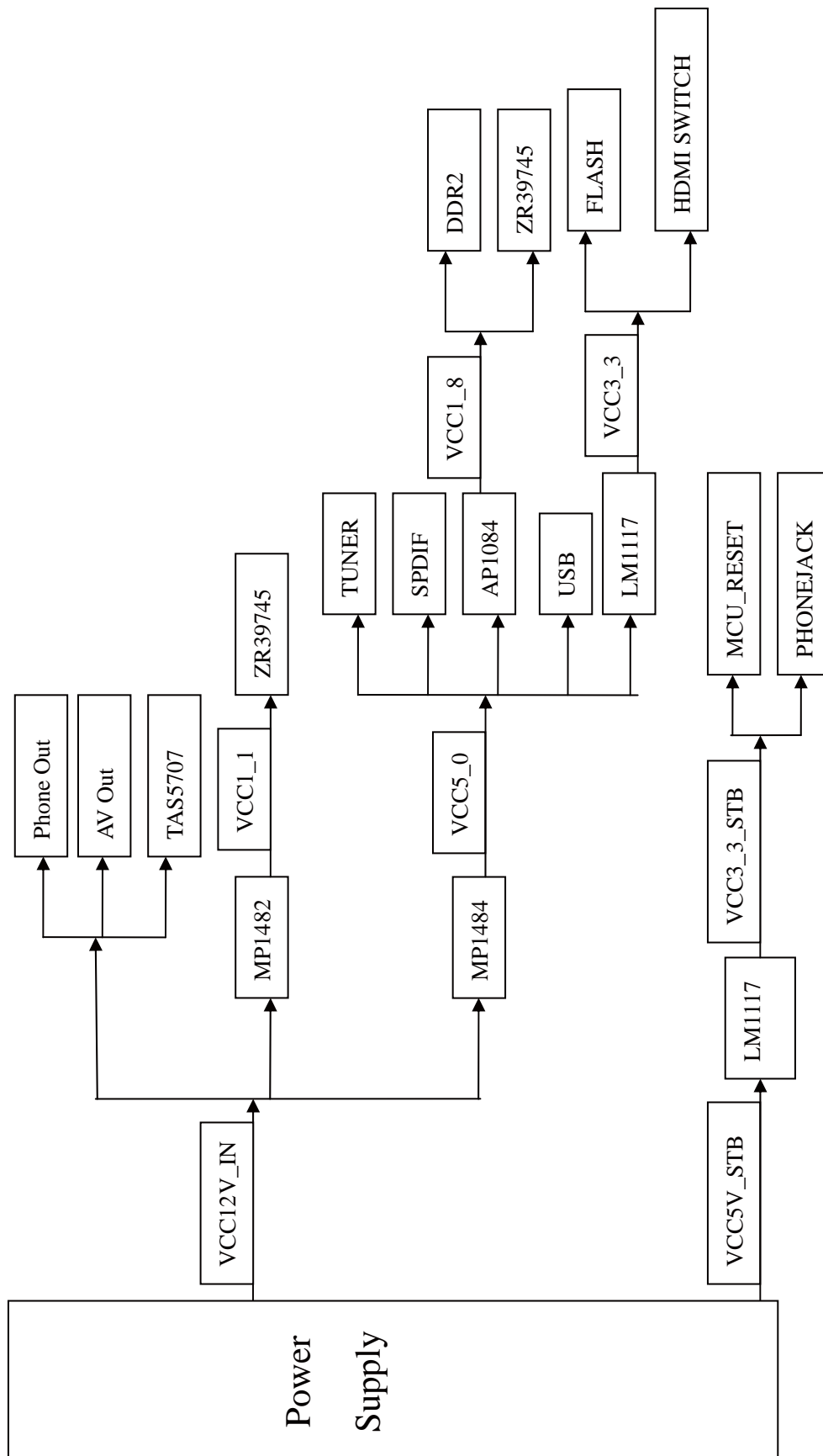
The remote control cannot be operated unless the batteries are properly loaded.
When using the remote control, aim it at the remote sensor on the TV.



①	POWER	Press to turn on and off the TV.
②	TV DVD SETBOX CABLE VCR AUD	To select one of the system modes in which the remote control can be used.
③	PICTURE	Press repeatedly to cycle through the available picture modes.
④	AUDIO	Press to cycle through different sound settings.
⑤	INPUT	Show the input source menu. Use the UP/DOWN buttons to select the desired source and then press the ENTER button.
⑥	MUTE	Switches the video sound on or off.
⑦	VOLUME UP/DOWN	Press to adjust the volume.
⑧	MENU	Press to open the on-screen menu. Press to go back within the on-screen menu.
⑨	THUMBSTICK (Up/Down/Left/Right)	Allows you to navigate the on-screen menus and adjust the system settings to your preference.
⑩	SLEEP button	Press to display the sleep timer option.
⑪	USB	Press to switch input source to USB in.
⑫	MTS/SAP	Selects MTS sound: Mono, Stereo, and SAP in Analog mode. Change the audio language in DTV mode.
⑬	GUIDE	Press to display the guide when you are watching analog or digital channels.
⑭	CCD(closed caption)	Select a closed caption.
⑮	HDMI	Press to select a device connected to the HDMI input.
⑯	PC	Press to select the computer connected to the VGA input.
⑰	Number buttons	Press to change a channel.
⑱	• button	Press to select digital channels. For example, to enter "54-3", press "54", "•" and "3".
⑲	RECALL	Press to jump back and forth between two channels.
⑳	CHANNEL UP/DOWN	Press to scan through channels. To scan quickly between the last two channels, press and hold down either / .
㉑	EXIT	Clears all on-screen displays and returns to TV viewing from any menu.
㉒	ENTER	Accesses the highlighted item in the on-screen menu.
㉓	DISPLAY	Press to display the TV status information on the top of the TV screen.
㉔	• REC	This button has no function for this model.
㉕	USB Functions	Control the USB System. / Rewind / Fast Forward Stop Play/Pause REPEAT
㉖	FREEZE	This button has no function for this model.
㉗	CH.LIST	Open the channel list in TV.
㉘	FAV.LIST	Press to open the favorite channel list in TV.
㉙	ARC(Aspect Ratio Control)	Press to change the aspect ratio.

Chapter 7. Electrical Parts

7-1. Block Diagram



Revision History

[illegible]

Stuffing Options

- A) B) C) D)

Note: * - Default setting.

Sheet Index

- Page 01 - Title Sheet
 Page 02 - DDR1 SDRAM I/F
 Page 03 - SIO I/F
 Page 04 - HDMI I/F
 Page 05 - Tuner & Demodulator
 Page 06 - Analog Video Inputs
 Page 07 - Component & DVD
 Page08 - Audio Inputs
 Page 09 - Audio out
 Page 10 - Audio AMP
 Page 11 - LVDS & TCON I/F
 Page 12 - GPIO I/F
 Page 13 - MCU I/F
 Page 14 - IC POWER I/F 1
 Page 15 - IC POWER I/F 2
 PAGE16- Power & Ground 1
 PAGE17- Power & Ground 2
 PAGE18- GPIO Table

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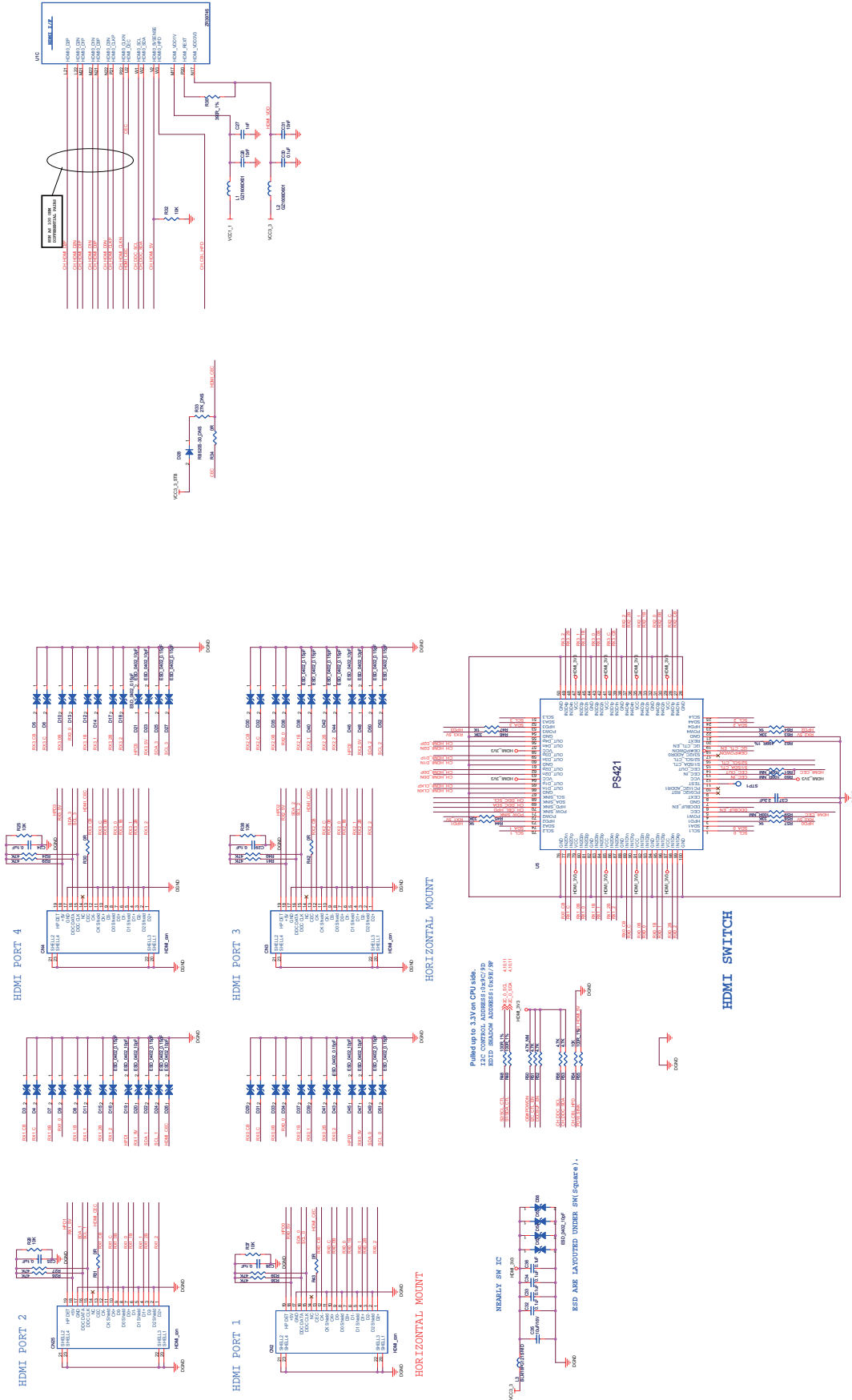
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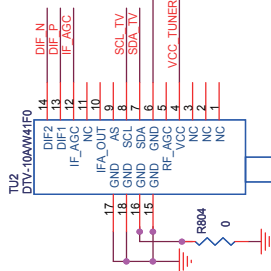
1. All resistors are listed in ohms and are 5%, 1/16W, Metal Film (Q402 form factor)
2. All capacitors are listed in microfarads, and are 10%, 25V, ceramic, X7R (Q402 form factor)
3. All inductors are listed in microhenries, and are 5%, 25V, ceramic (Q403 form factor)
4. "Signal Ports" and "Off Page Connectors" are Global, and transition between sheets.
5. "Signal Names" without "Signal Ports" or "Off Page Connectors" are Local, and only connect like named signals on the same sheet.

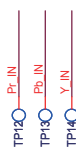
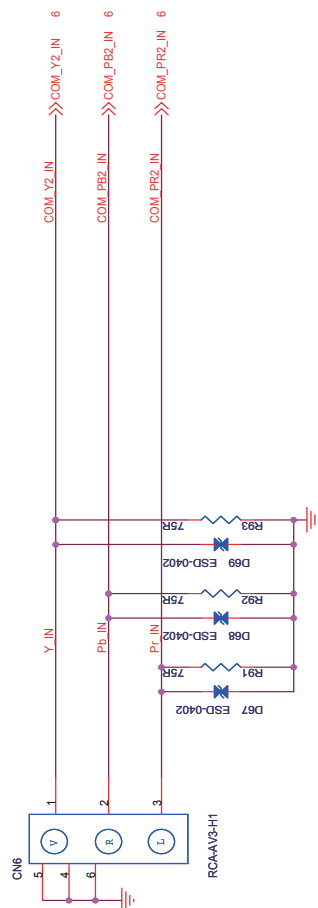


6/F, Block A
Overseas Decoration BLD
22, Zhenhua Road
Shenzhen 518031
<http://www.zoran.com>

Reference:	Release Approval:	Title
sd -<sd #>	Applications	HD745 Ref. Platform
msy -<msy #>	Marketing	Document
gen -<gen #>	General	B 745_Rev_A1.DSN
prod -<prod #>	Product Mgr.	Sheet 1 of 18 Rev A1
		Date: Monday, March 22, 2010

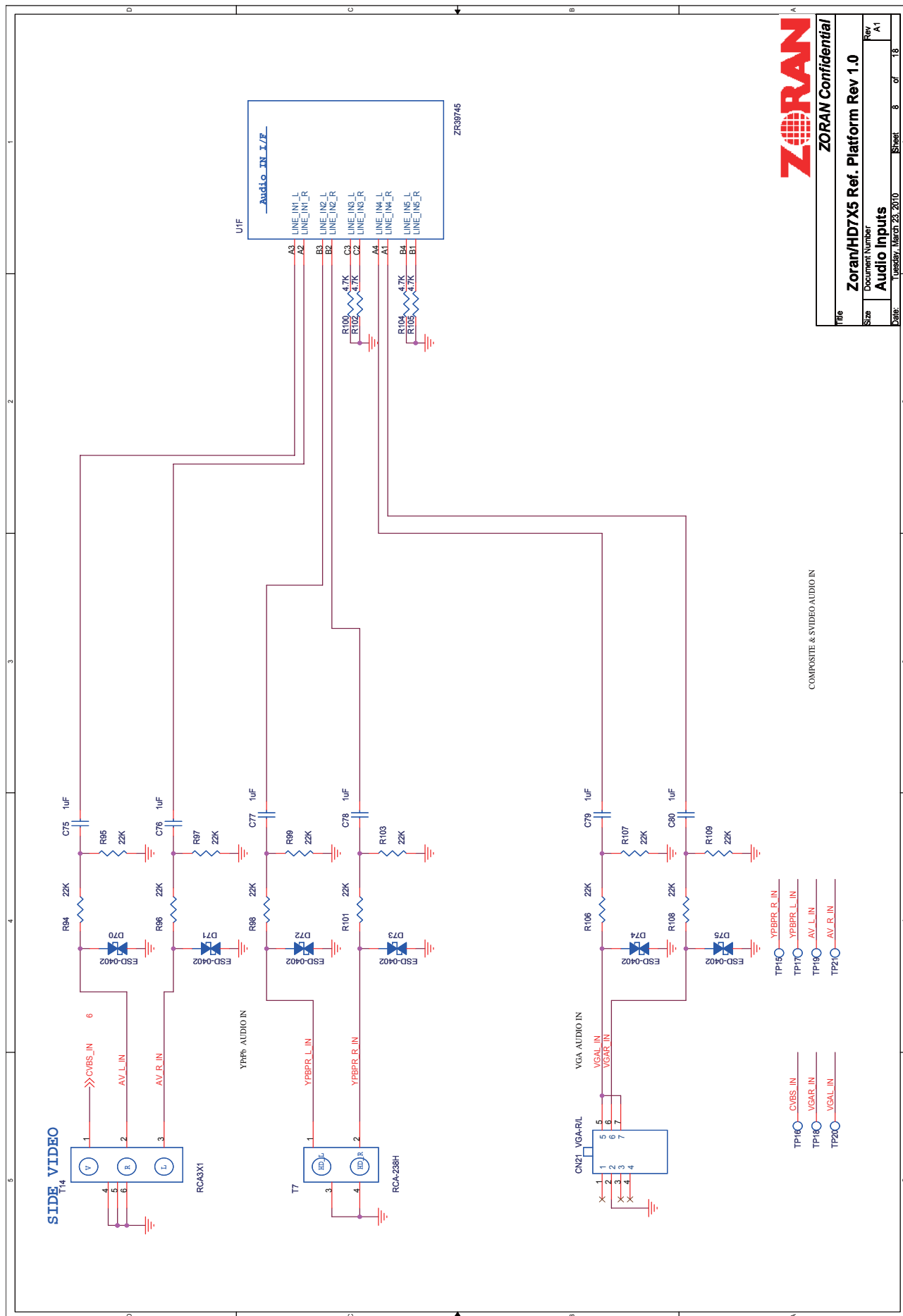






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Title		Zoran/HD7X5 Ref. Platform Rev 1.0	
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Date		Monday, March 22, 2010	
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Zoran/HD7X5 Ref. Platform Rev 1.0

Document Number

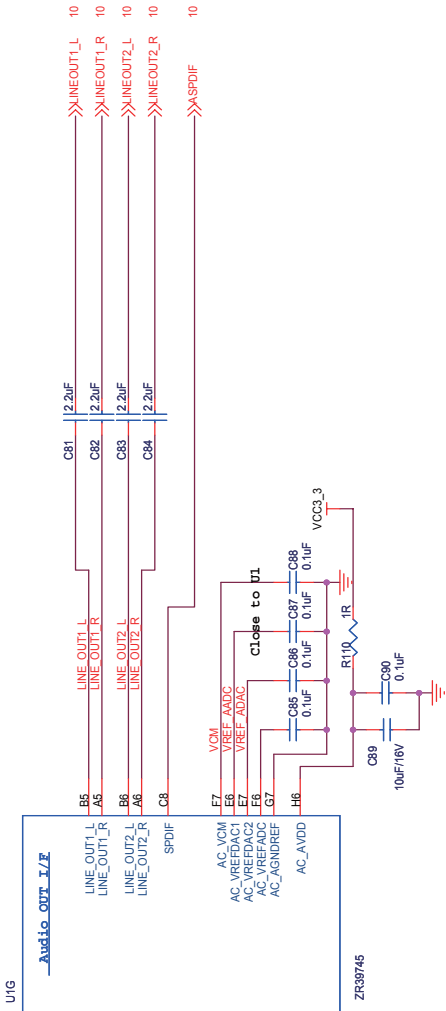
Audio Inputs

Date: Tuesday, March 23, 2010

Sheet 8 of 18

Rev A1

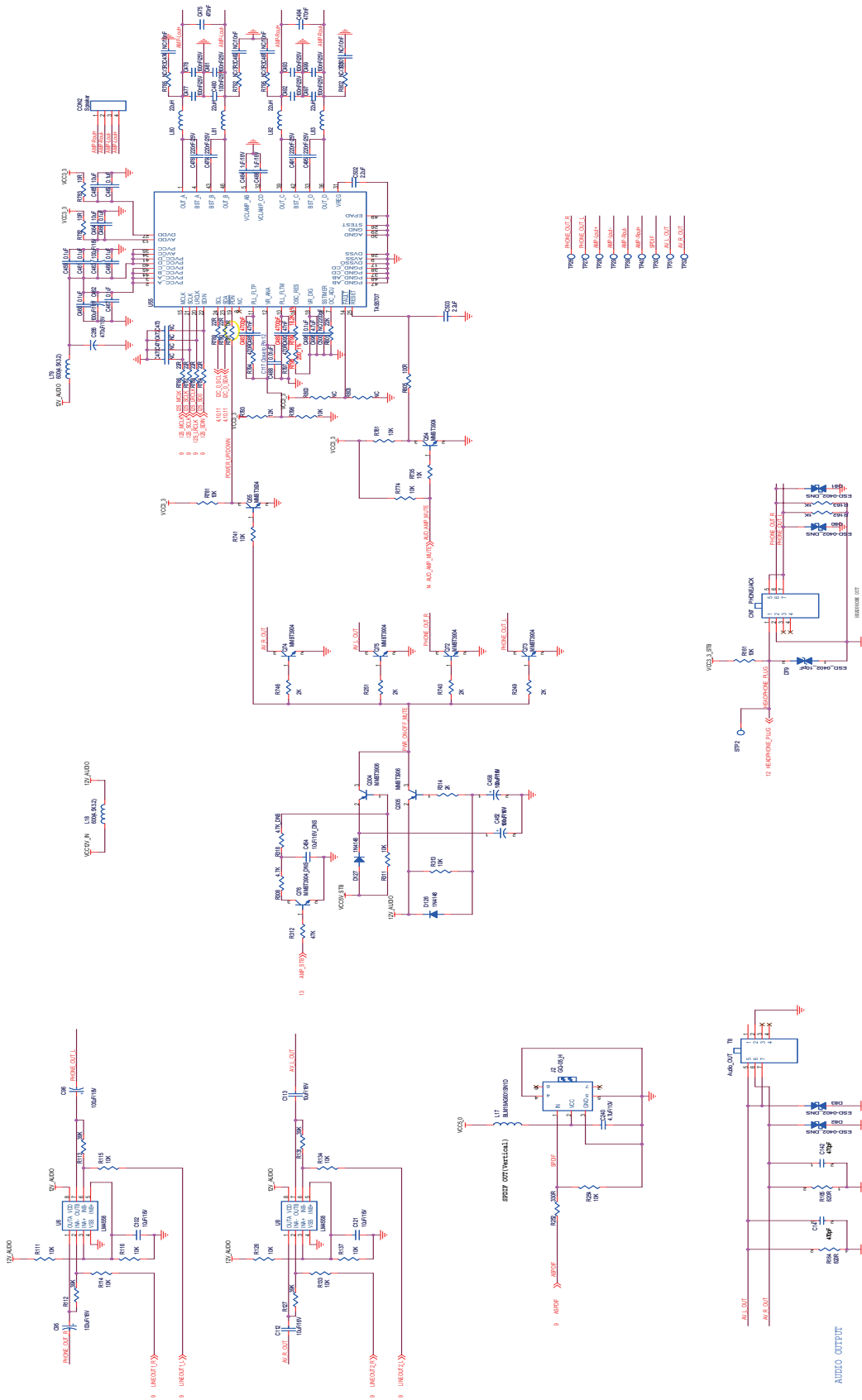
Size



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Title		Zoran/HD7X5 Ref. Platform Rev 1.0	
Size	Document Number	Rev	A1
Date	Thursday, March 23, 2010	Sheet	9 of 18

Rev	1	2	3	4	5	6	7	8	9	10
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Rev	1	2	3	4	5	6	7	8	9	10
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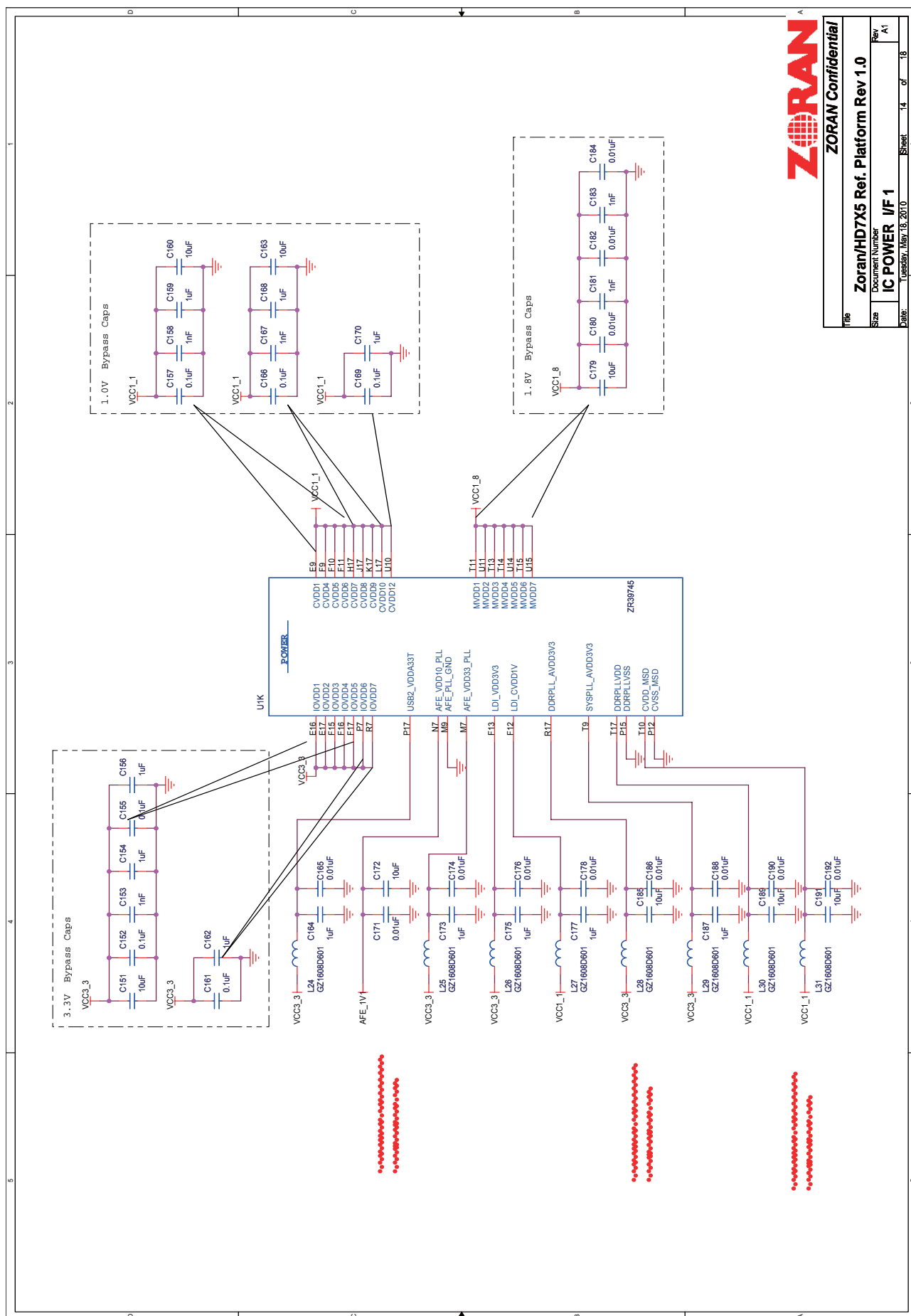
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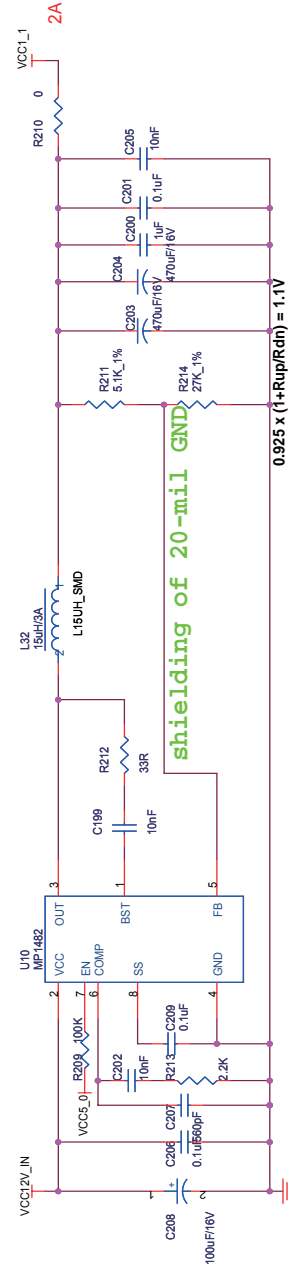
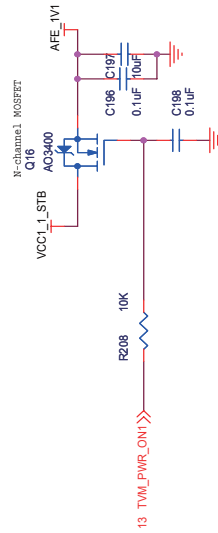
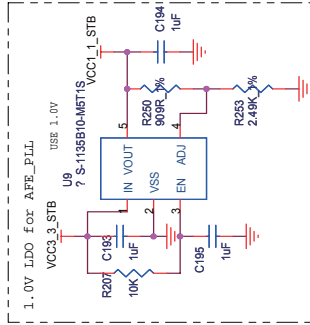
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Size	Document Number	Rev	
	LVDS & TCON I/F	A1	
Date:	Monday, June 21, 2010	Sheet	11 of 18

LVDS Video I/F









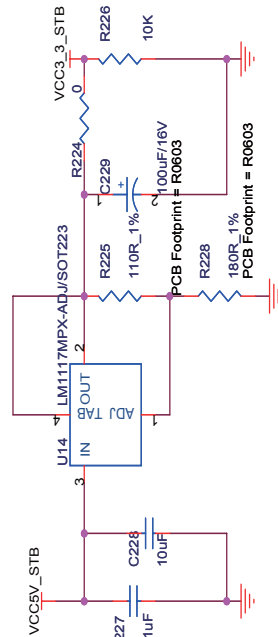
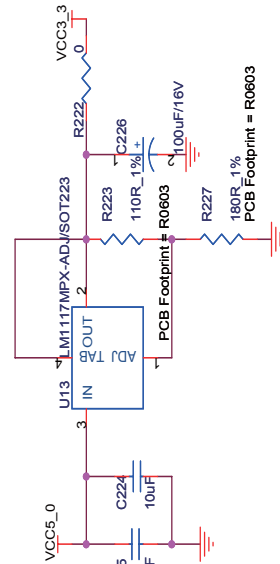
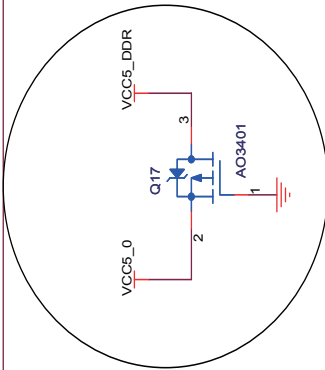
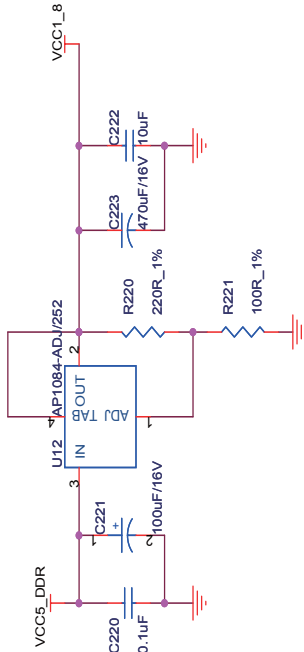
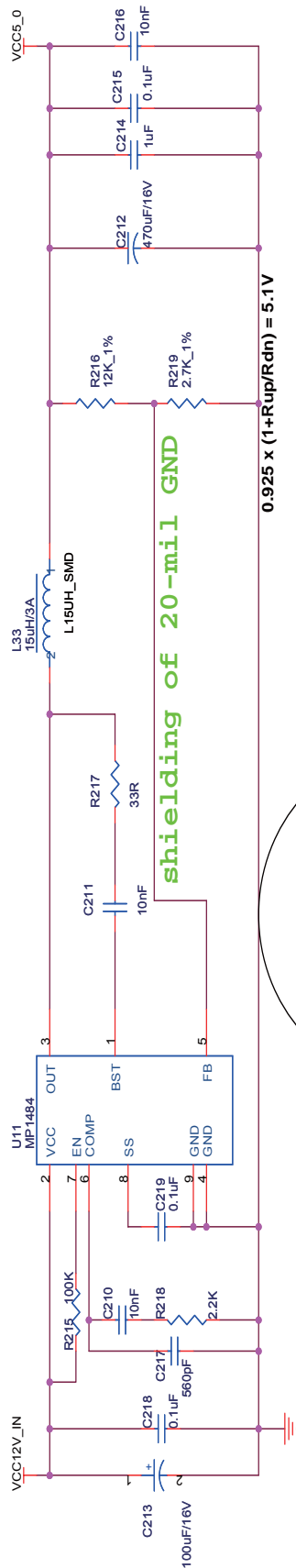
CORE POWER

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Title	Zoran/HD7X5 Ref. Platform Rev 1.0
Size	Document Number
Rev	IC POWER I/F 2
Rev	A1
Date:	Tuesday, May 13, 2010
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5V MAIN POWER



Title		Zoran/HD775 Ref. Platform	
Size	Document Number	Rev	10
Date:	Wednesday, March 31, 2010	Sheet	16 of 18



GPIO Pin Table

Signal	ZR39745 GPIO #	Function	Note
VGA_HSYNC	GPIO_TVP13	VGA wake-up control detection	
AUD_AMP_MUTE	GPIO_TVP23	AMP mute control	Active high
AMP_STB	GPIO_TVP24	AMP standby control	Active high
TVM_PWR_ON2	POWER_CTL1	System power control	Active high
TVM_PWR_ON1	POWER_CTL2	System power control	Active high
DVD_AUTO_SW	GPIO_TVP0		
DVD_STB	GPIO_TVP1		
FP_LED1	GPIO_TVP2		
FP_LED2	GPIO_TVP3		
PWR_SW_DVD	GPIO_TVP4		
VGA_UART_ON/OFF	GPIO_P2		
PWR_SW_USB	GPIO_P3	USB power on/off	Active low
COMP_SW1	GPIO_P4	Select component and DVD	0: Component 1: DVD
SPI_WEN	GPIO_P6	SPI flash protection control	Active low
LCD_POWER_ON	GPIO_P11	Panel power on/off control	Active low
LCD_ON	GPIO_P14	BL on/off	Active high

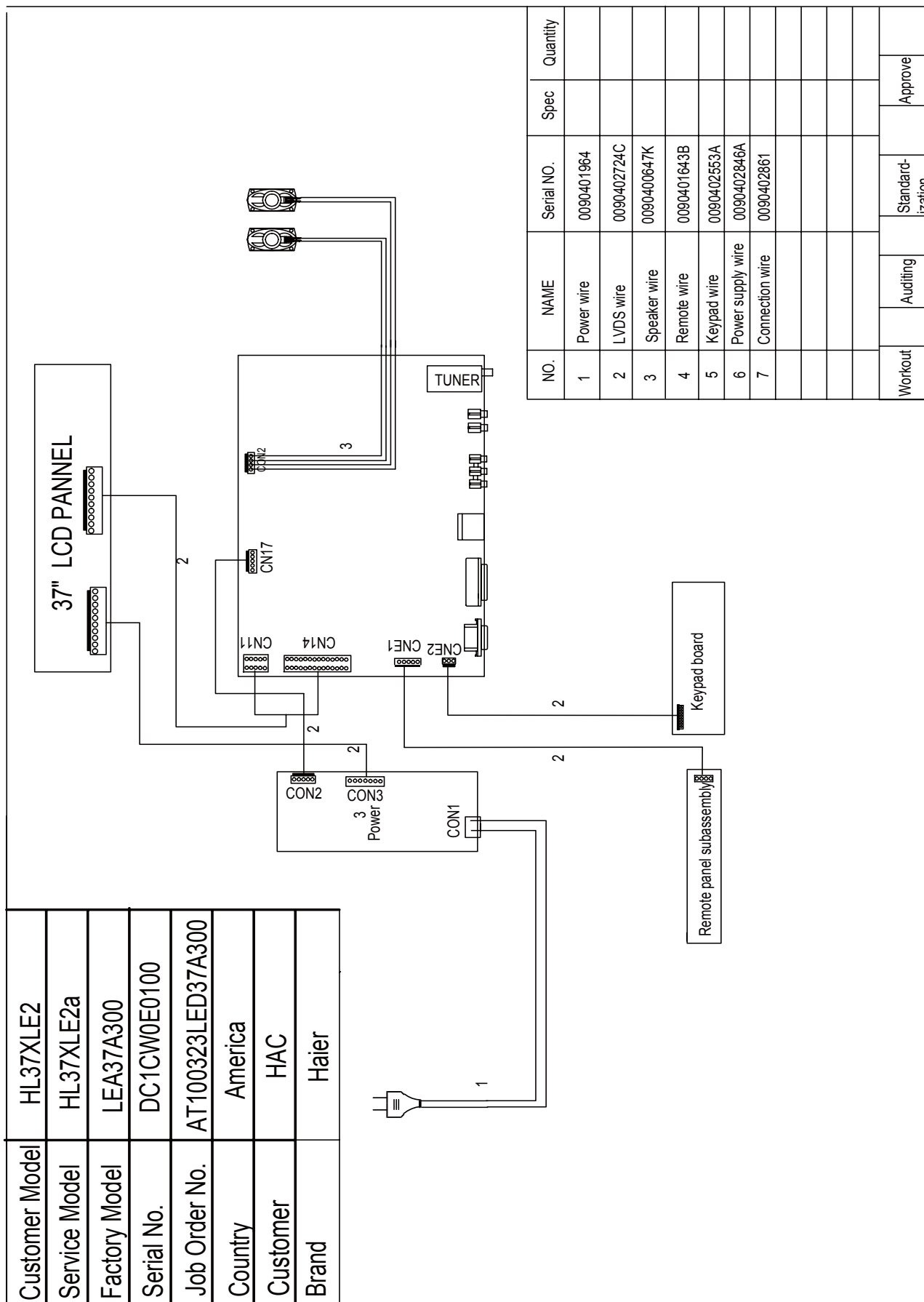
GPIOs Table



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Title		Zoran/HD7X5 Ref. Platform Rev 1.0	
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GPIO Table		Sheet 18 of 18	
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7-2. Circuit Diagram



Chapter 8. Measurements and Adjustments

8-1. Service Mode

8-1-1. How to enter into Service Mode

The way to the factory mode menu:

Step 1: Press the "Menu" button,

Step 1: Select the Audio menu,

Step 2: Input 8893,

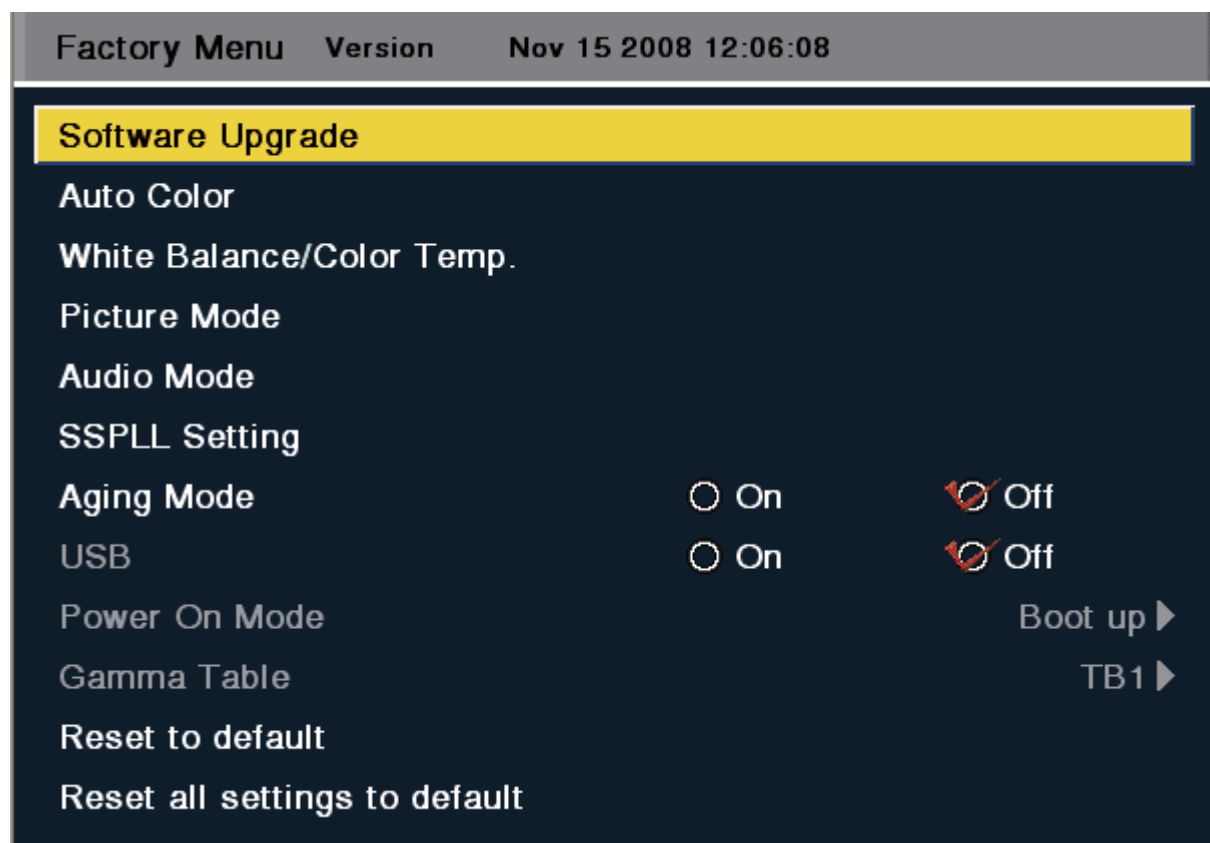
Step 3: Press the "Enter" button.

System will be into the factory mode menu when 4 steps above are done.

8-1-2. How to exit

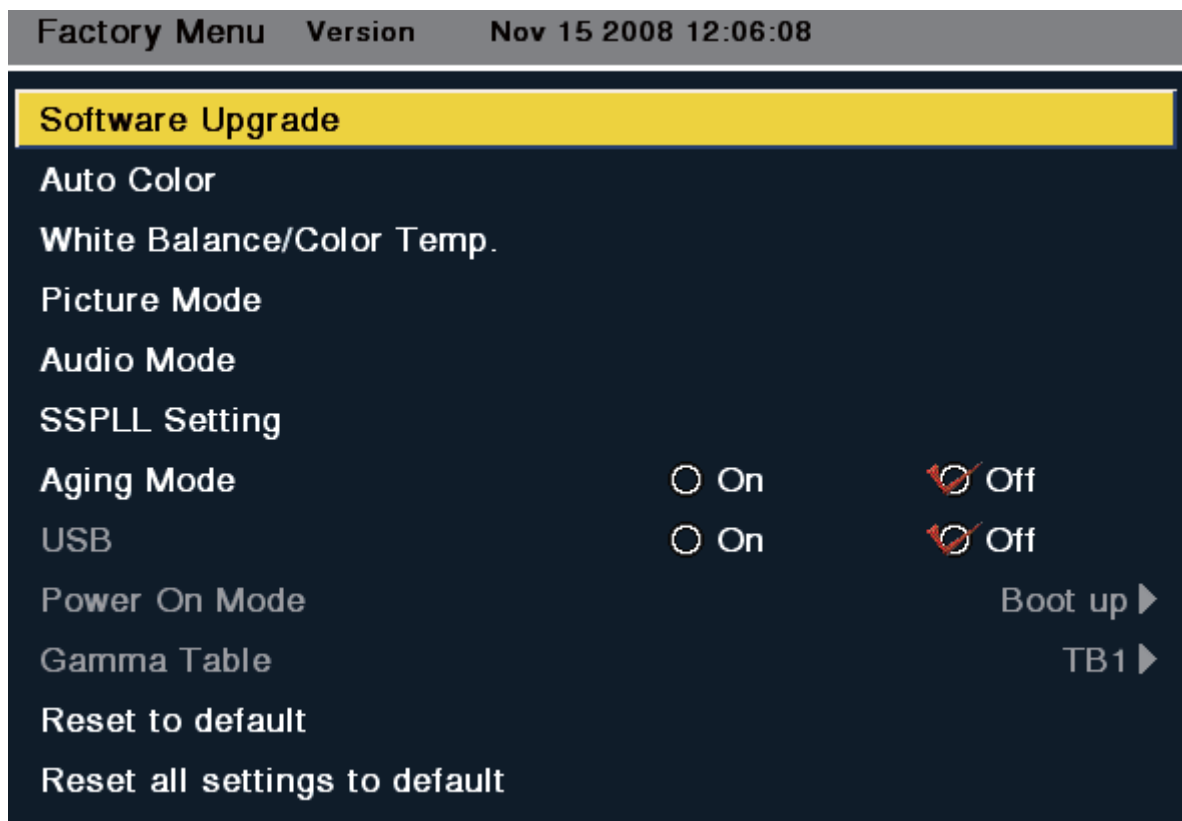
If you want to exit this factory menu, please press the button "Exit" on the remote.

8-2. Measurements and Adjustments



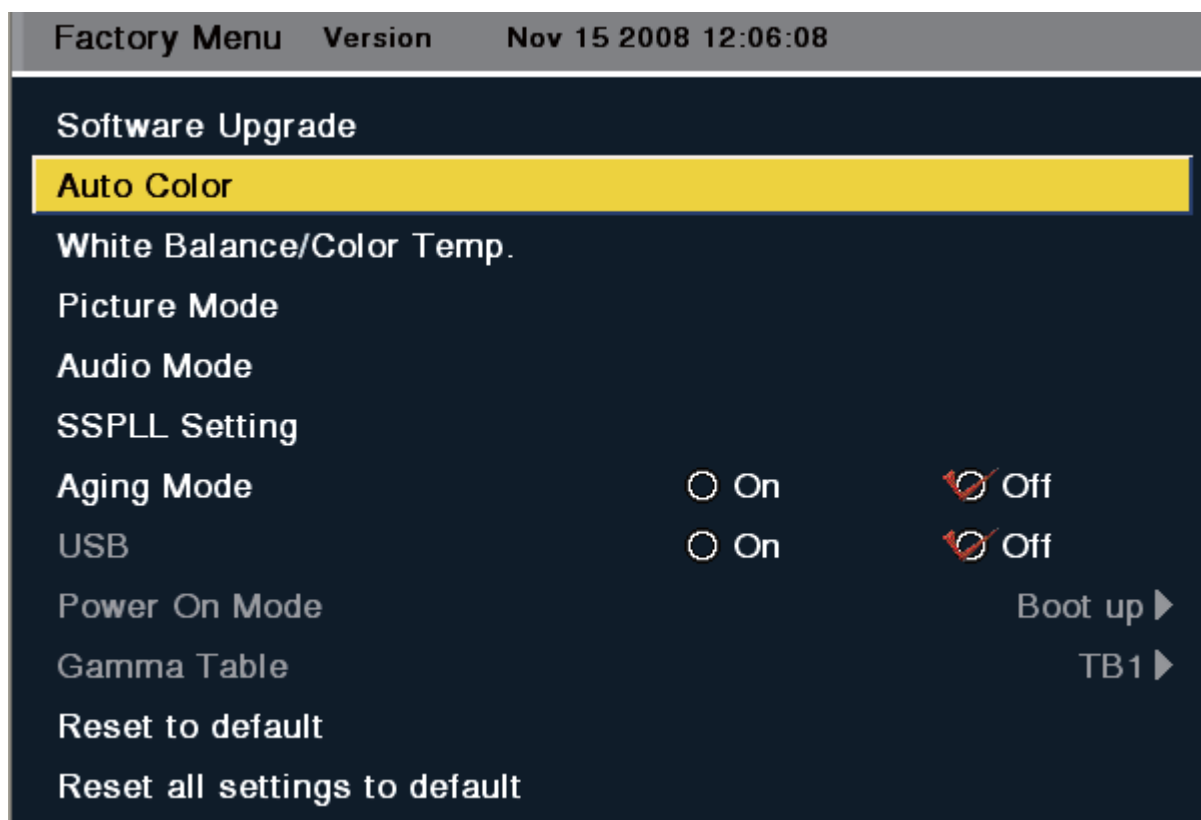
8-2-1. Software Upgrade

(See picture on the next page.)



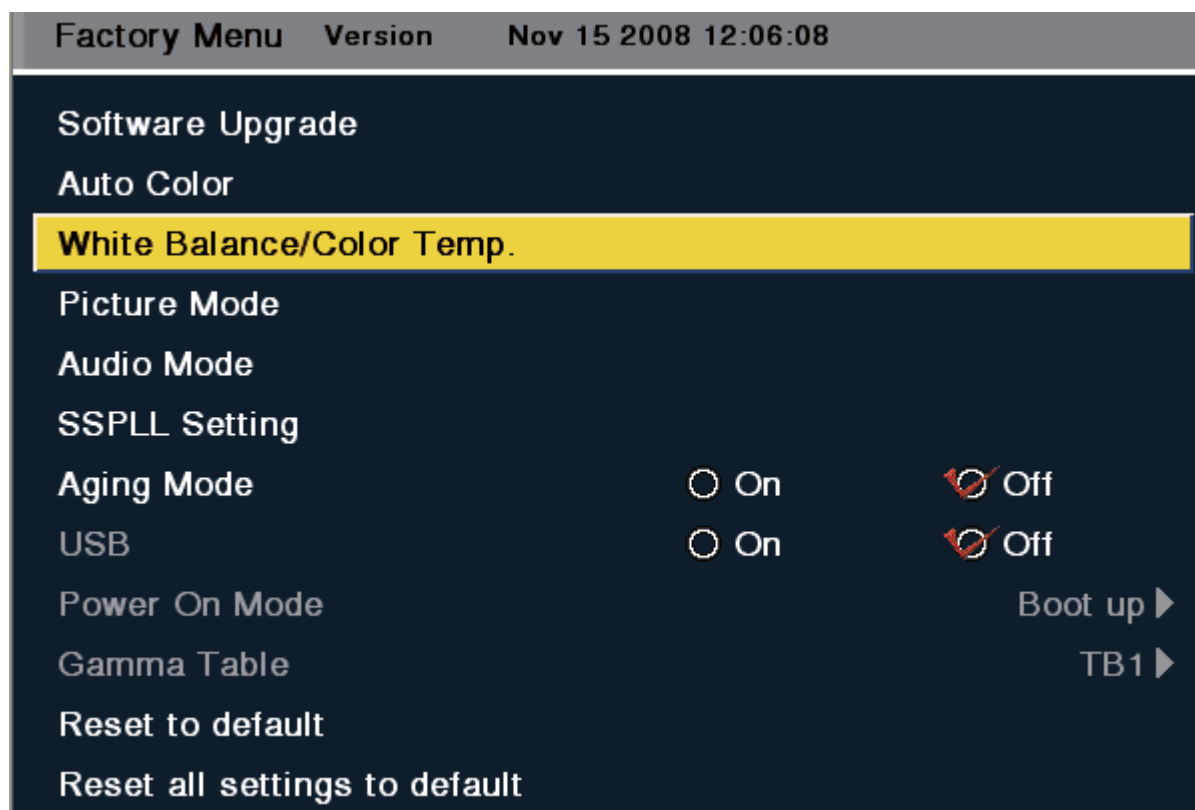
8-2-2. Auto Color

The option could only be used in the VGA and Component model. When we found the color in the two models was abnormal. Then we can use the function to adjust it automatically



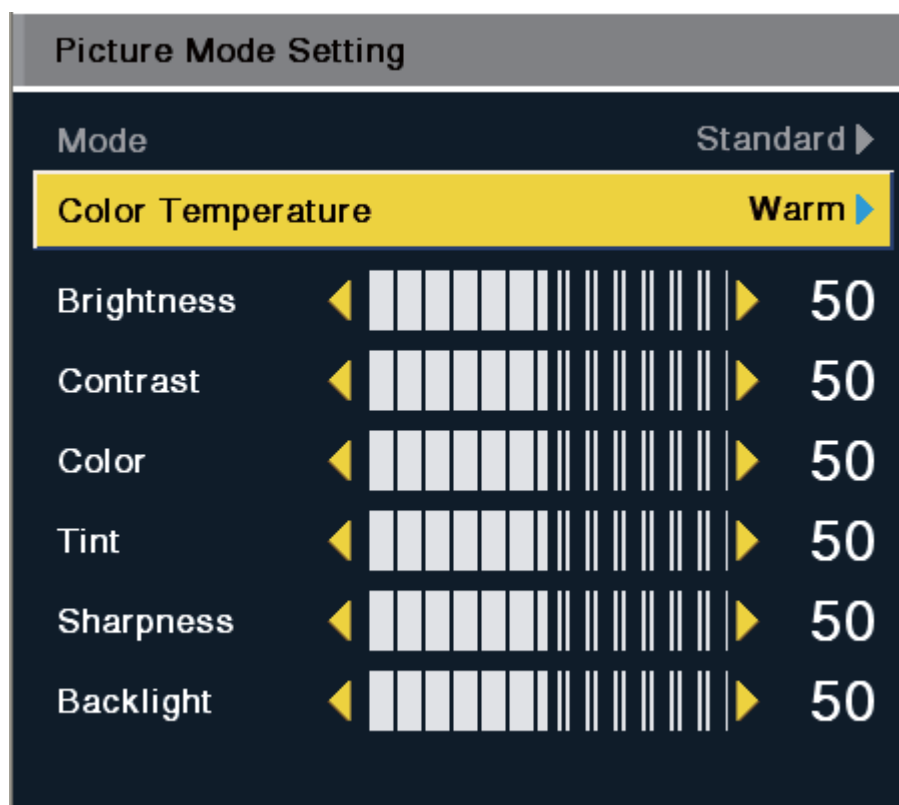
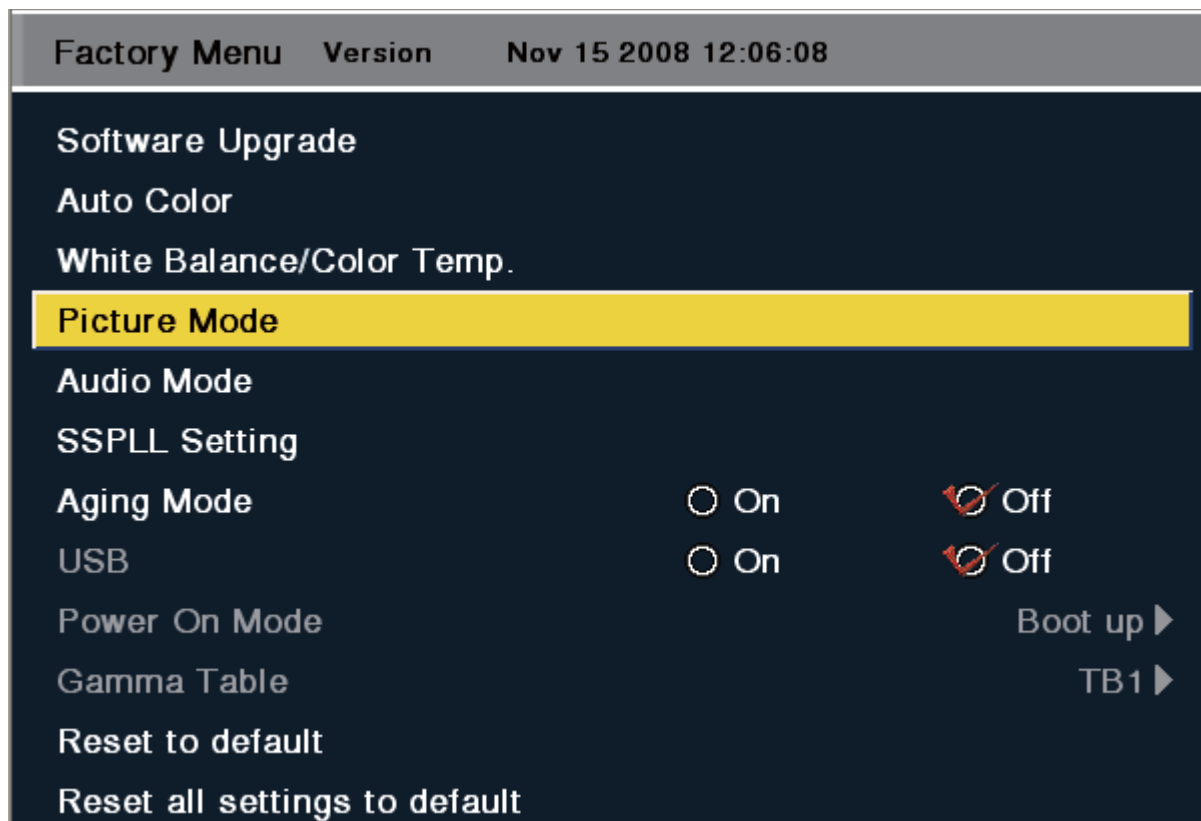
8-2-3. white Balance/Color Temp.

The function could adjust the Color Temperature, used when debugging.

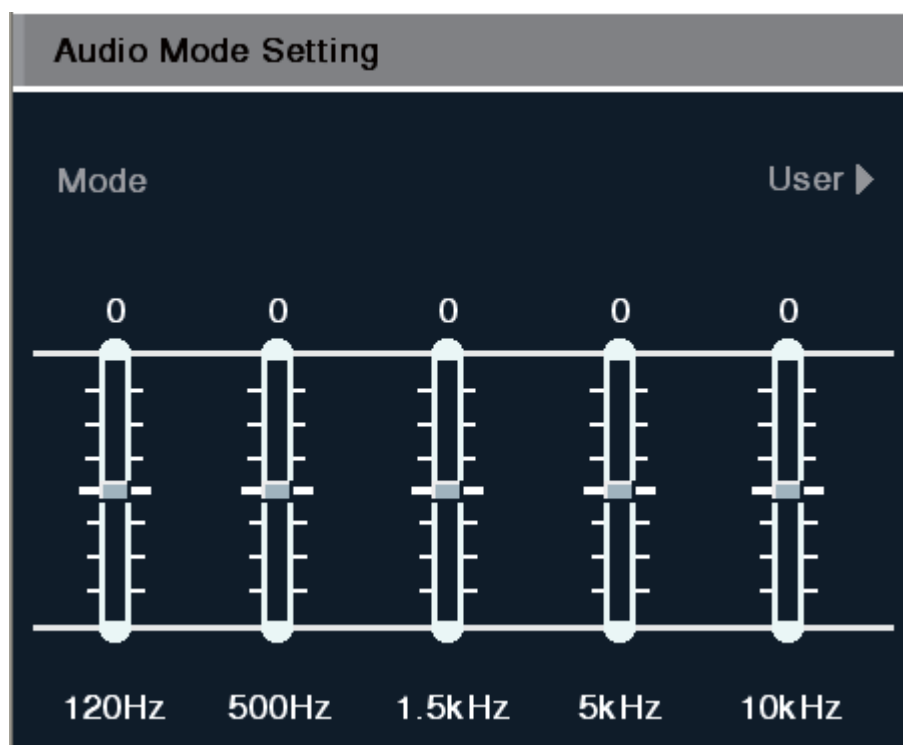
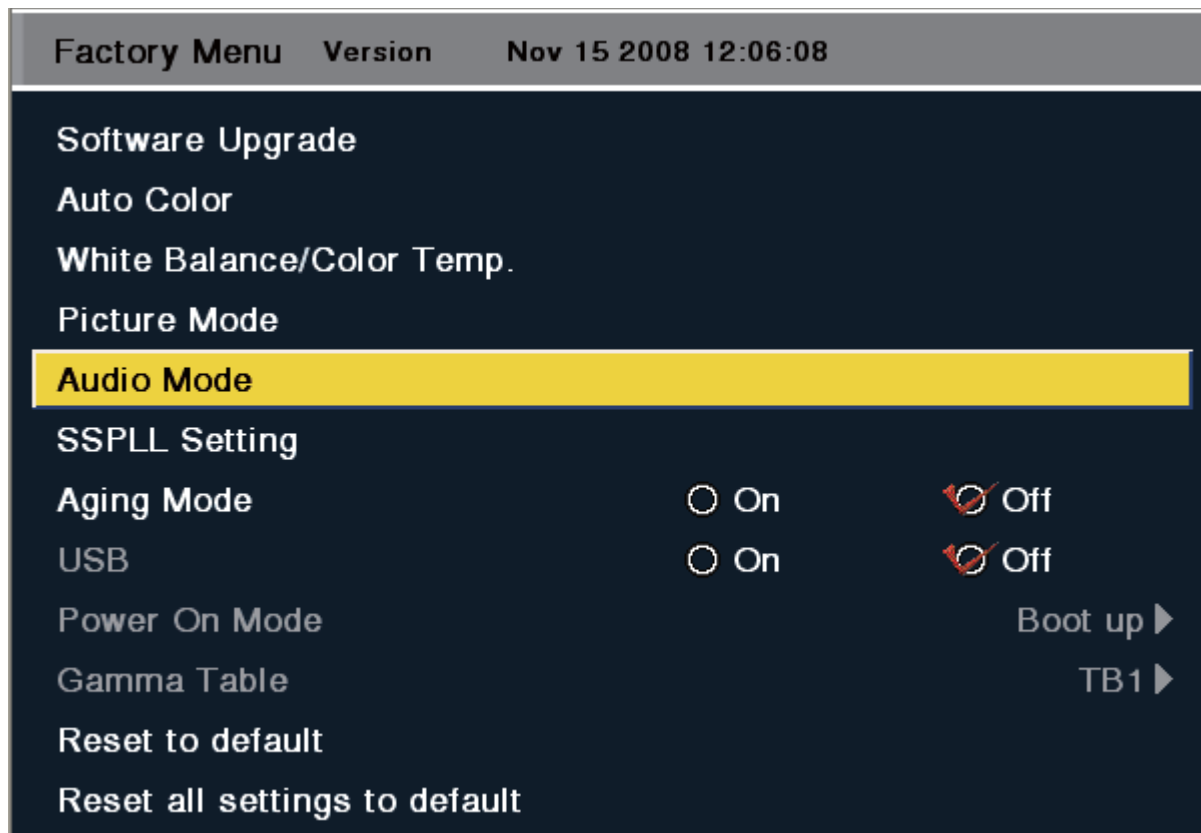


White Balance Setting	
Red Offset	50.0 ▶
Green Offset	50.0 ▶
Blue Offset	50.0 ▶
Red Gain	50.0 ▶
Green Gain	50.0 ▶
Blue Gain	50.0 ▶
Color Temp COOL	50.0 ▶
Color Temp WARM	50.0 ▶
Color Temp NORMAL	50.0 ▶

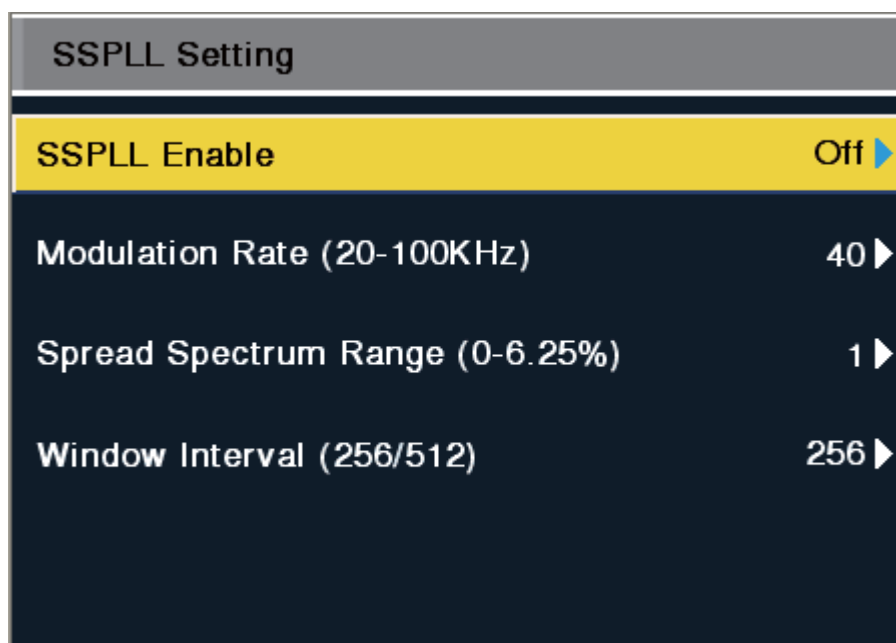
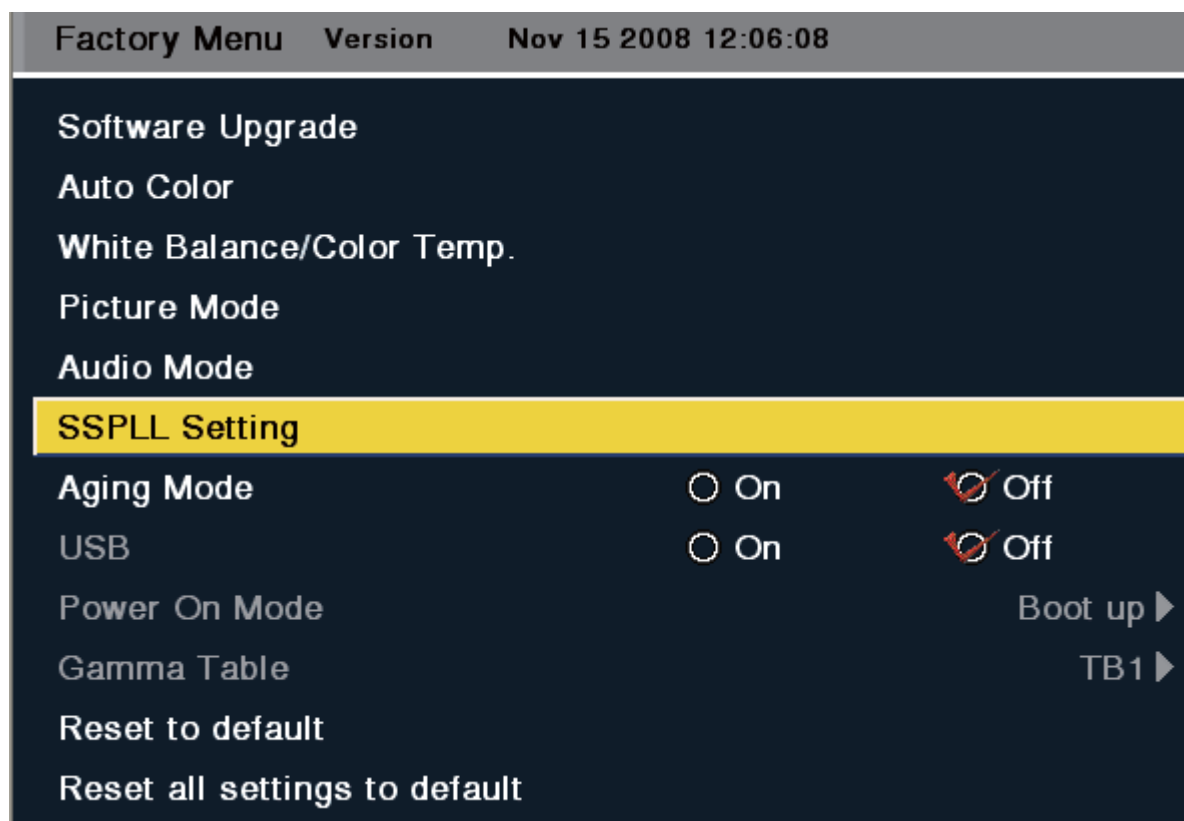
8-2-4. Picture Mode



8-2-5. Audio Mode

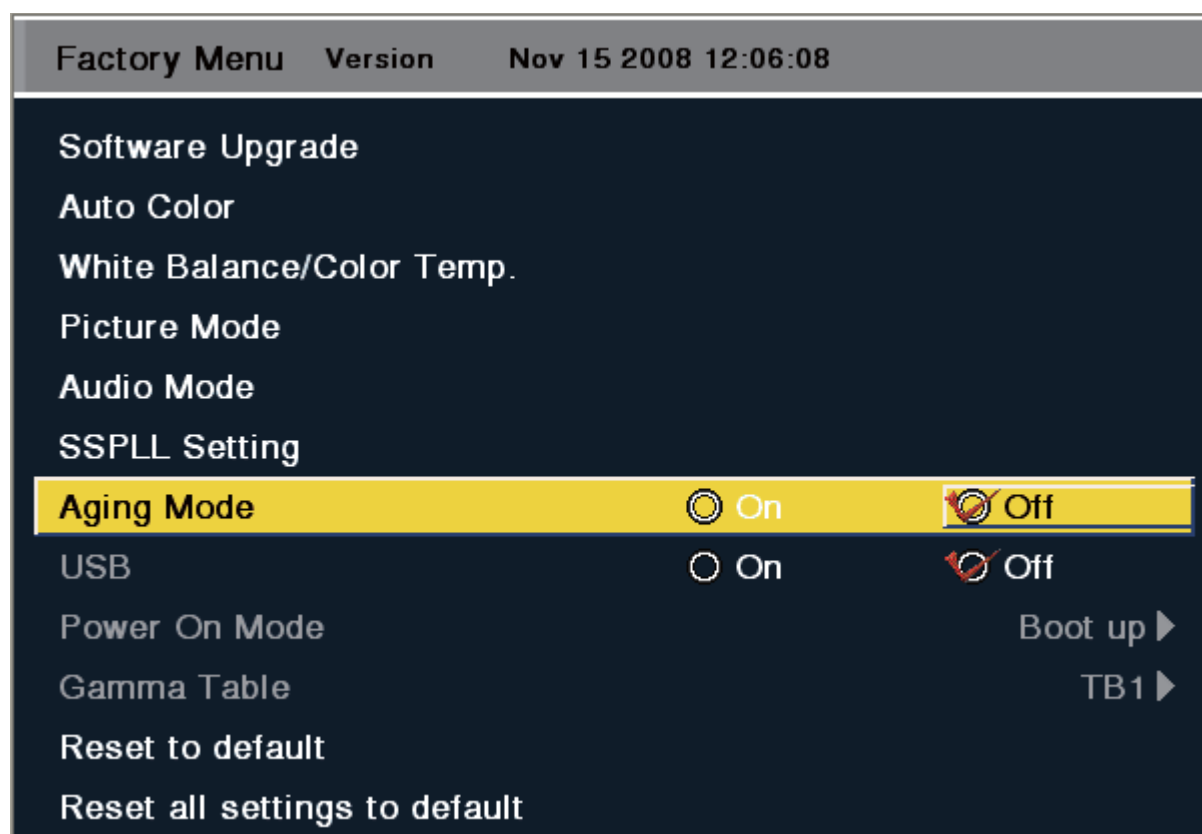


8-2-6. SSPLL Setting



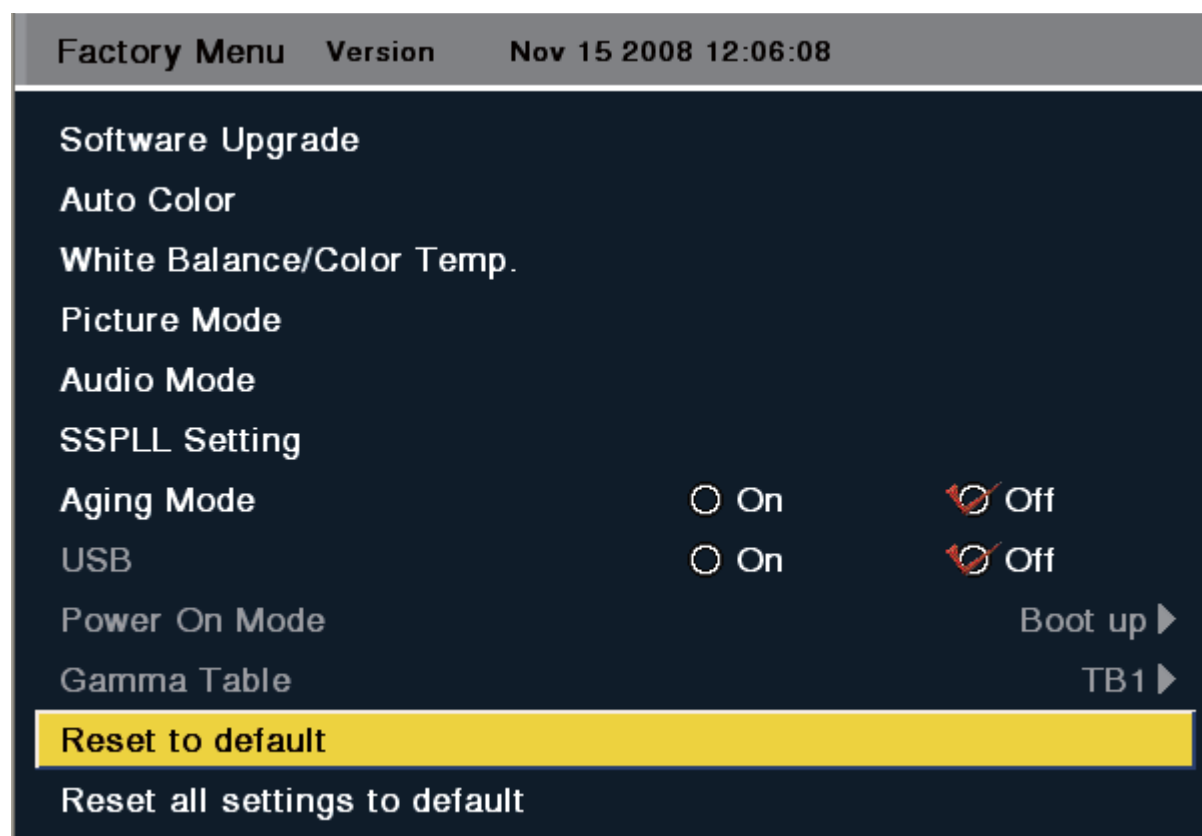
8-2-6. Aging Mode

Turn it "ON" to enter the aging mode,.This is for factory run-in testing.The screen would display red,green,blue and black screen repeatedly.Each color screen could be exam at that time (See picture on the next page.)



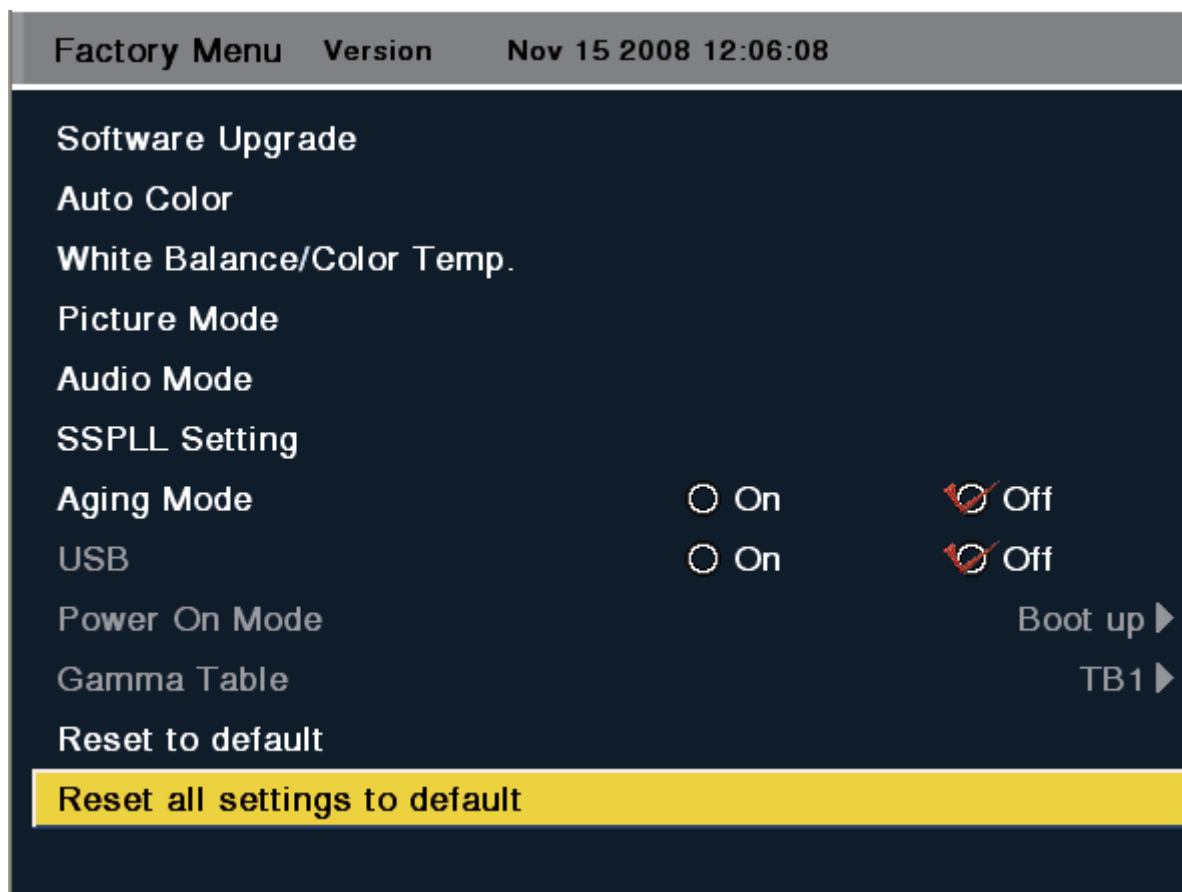
8-2-7. Reset to default

The function could make the adjustment of Service mode turn back to the factory default setting.



8-2-8. Reset all settings to default

The function could make the model turn back to the factory default setting.

**Remark:**

The date of the chart only is an example, please don't adjust the factory mode base on it.

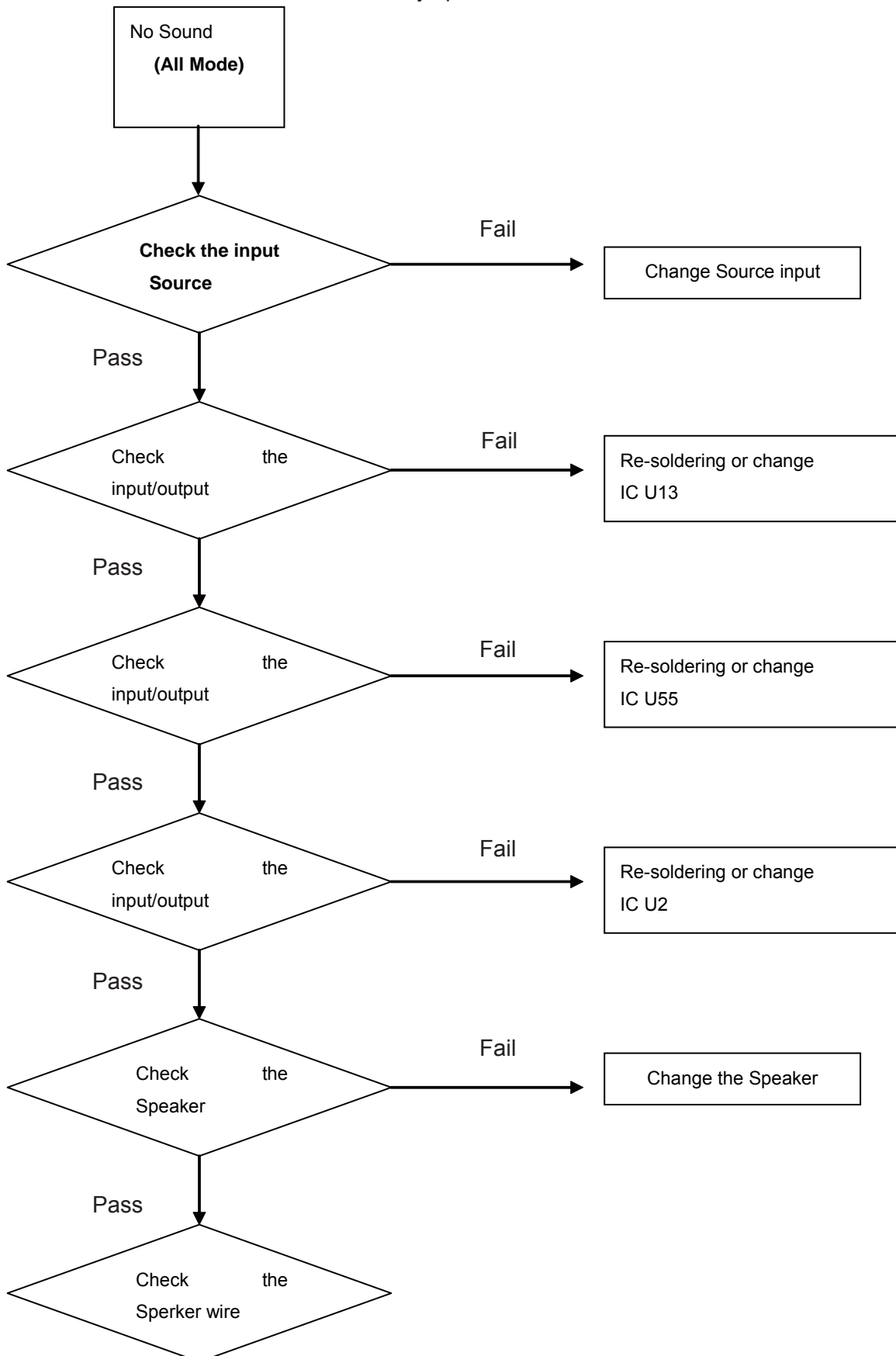
Chapter 9. Trouble shooting

9-1. Simple check

No picture/ No sound	<p>Verify if the television is properly plugged</p> <p>Verify if the television is properly supplied power</p> <p>Verify if electricity is available.</p>
Blank screen	<p>Verify if correct signals are input</p> <p>Press INPUT button to change signal input to TV input</p> <p>Restart the television of power supply is interrupted</p>
No sound	<p>Press Mute button and verify if Mute mode is set.</p> <p>Switch to other channel and verify if the same problem happens.</p> <p>Press VOL+ button to see if the problem can be solved.</p>
Poor sound	<p>Verify if sound system is correct .Refer to some chapter for adjust.</p>
No picture in some channel	<p>Verify if correct channel is selected.</p> <p>Adjust the antenna.</p> <p>Make adjustments by Fine Tune and MANUAL Scan.</p>
No color for some channel program (black and white)	<p>Verify if the same problem exists in other channels.</p> <p>check out of picture and sound system.</p> <p>Refer to relative instructions in the Manual for color adjust.</p>
Spots with some or all pictures	<p>Verify if the antennal is correctly connected.</p> <p>Verify if the antennal is in good condition.</p> <p>Make fine adjustment of channel.</p>
Horizontal/ vertical bars or picture shaking	<p>Check for local interference such as an electrical appliance or power tool.</p>
Television out of control	<p>Disconnect the television from power supply and 10 seconds later, connect the television to the power supply.</p> <p>If the problem still exists, contact authorized after-sales service for technical assistance.</p>





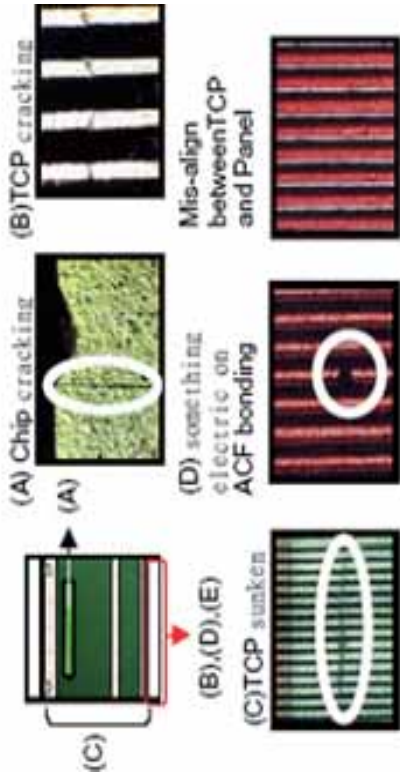

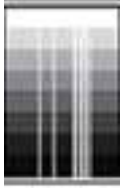
9-2. Mainboard Failure Check






Symptom: No Sound











9-3. Pannel 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
	V Dim	Vertal gray line		:TCP lead cracking :ACF bonding short
	V L/D	Vertical color line(light or dark forever)		:Awful environment and something electric enter into LCD :Mis-align between TCP and Panel :Panel failure :TCP failure
	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/inside Polarizer	Eyewinker inside Polarizer		Eyewinker inside Polarizer
	Abnormal Display	Abnormal Display		1. Chip lose action 2. IC ahort or jointiog bad 3. Pannel and vsc connect bad
Circuit	Flashing	Bright and dark display alternately		

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 jointion bad 3. Pannel and vsc connect bad

Part	Name	Description	Phenomena	Failure cause	
				Caused by	Mechanica noise of backlight unit
	Mechanical Noise	When turn panel, appear cacophony		Caused by between mechanism and pannel	
	Ripple	Connectric circle			
	B/L off	B/L lose action		*Connect badness between wire and electrode	
	B/L dark	B/L brightness darker than normal		*Connect badnessShort 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, balck Rotundity or wirelike		F/M in B/L unit	

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

