Internal Use Only

website:http://biz.LGservice.com

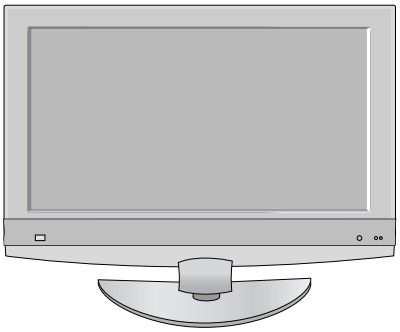
LCD TV
SERVICE MANUAL

CHASSIS : LP7AB

MODEL : 47LB9R1 47LB9R1-TB

CAUTION

BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

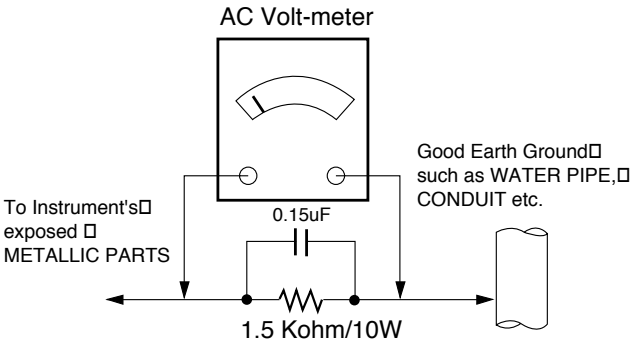
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.
NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

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 in not required.
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.
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.

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.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500 °F to 600 °F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500 °F to 600 °F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuitboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500 °F to 600 °F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application Range.

This spec sheet is applied to the 47" LCD TV used LP7AB chassis

2. Requirement for Test

Each part is tested as below without special appointment

2.1 Temperature : 25 ±5°C (77 ± 9°F), CST: 40±5
2.2 Relative Humidity : 65 ±10%
2.3 Power Voltage : Standard input voltage (100~240V@ 50/60Hz)
• Standard Voltage of each products is marked by models
2.4 Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM .
2.5 The receiver must be operated for about 20 minutes prior to the adjustment.

3. Test method

3.1 Performance : LGE TV test method followed.
3.2 Demanded other specification
Safety : CE, IEC specification
EMC : CE, IEC

4. Electrical Specification

No	Item	Specification	Remark
1.	Video input applicable system	NTSC, PAL, SECAM	China & Asia
2.	Receivable Broadcasting System	PAL-D/K, B/G, I, NTSC-M, SECAM-BG/DK	China & Asia
3.	Available Channel	VHF : E2 ~ E12	China & Asia
		UHF : E21 ~ E69	
		CATV : S1 ~ S20	
		HYPER : S21~ S47	
4.	Input Voltage	AC 100 ~ 240 V/50Hz, 60Hz	
5.	Market	Asia(Containing China)	
6.	Active Screen Size	46.96 inch (1192.78mm) diagonal	47"
7.	Tuning System	FVS 100 program FS	
		200program	China & Asia
8.	Operating Environment	1) Temp : 0 ~ 40 deg	
		2) Humidity : 10 ~ 90 %RH	
9.	Storage Environment	1) Temp : -20 ~ 50 deg	
		2) Humidity : 10 ~ 90 %RH	
10.	Display	LCD Module	47": LPL

5. Mechanical Spec.

No	Item		Content				Remark
1.	Dimensiones del Producto		Width	Length	Height	Unit	
		Before Packing	1144.3	306.4	825.5	mm	SET(With Stand)
		After Packing	1230	386	902	mm	
2.	Peso del Producto	Only SET	37.6			Kg	
		With BOX	41.5			Kg	

6. General Specification

No	Item		Specification		Remark
1	Panel		47" TFT WXGA LCD		
2	Frequency range		H: 28~78 Khz. V: 47~63 Hz.		PC Input
3	Control Function		(1) Contrast/Brightness (2) H-Position / V-Position (3) Tracking : Clock / Phase (4) Auto Configure (5) Reset		
4	Component Jack (480i/576i/480p/576p/720p/1080i/1080		Y/Pb/Pr: 2EA		
5	Power ON		LED	Power consumption	
			Green	≤ 310W(47inch)	
	Stand by		Red	≤ 1W	
6	LCD Module	Outline Dimension	1.096,0mm x 640,0mm x 51,0mm.		47 inch
		Pixel Pitch	0,76125mm x 0,76125mm x RGB		47 inch
		Pixel Format	1366 horiz. by 768 vert. Pixels, RGB stripe arrangement		
		Coating	Hard coating(3H), Anti-glare treatment of the front polarizer,		
		Back Light	24CCFL		

7. Set Optical Feature

No	Parameter	Symbol		Value			Unidad	Remark
				Min	Typ	Max		
1.	Contrast Ratio	CR		500	800			- 100IRE Full white pattern - APC : Clear(Dynamic) - LC TOOL PC Mode
		Dynamic CR		8000	10000			- 100IRE Full white pattern - APC : Clear(Dynamic - Measure after 30 seconds in full black(spec) - LC TOOL Except PC Mode
2.	Surface Luminance, white	L_{BL}		350	450		Cd/m^2	(*) Normal Mode - 100IRE Full white window pattern - APC : Clear (Dynamic)
3.	White Coordinate	Medium	X axis	0,283	0,285	0.287		- 85IRE Full White Pattern - APC : Standard
			Y axis	0.291	0.293	0.295		
		Cool	X axis	0.274	0.276	0.278		
			Y axis	0.281	0.283	0.285		
		Warm	X axis	0.311	0.313	0.315		
			Y axis	0.327	0.329	0.331		
4.	Color Temperature	Medium		8300	9300	10300		- 85IRE Full White Pattern - APC : Standard
		Warm		5500	6500	7200		
		Cool		10000	11000	12000		
5.	Color pull in Range	PAL		-500		+500	Hz	
		NTSC		-500		+500	Hz	
6.	Color killer Sensitivity					-80	dBm	

8. Chroma & Brightness(Module-SLA1)

No	Parameter	Symbol		Value			Unit	Remark
				Min	Typ	Max		
1.	Contrast Ratio	CR		700	1000			(*) Normal Mode - 100IRE Full white window pattern
		CR with DCR		1400	2000			(*) Normal Mode - 100IRE Full white window pattern
2.	Surface Luminance, white	L_{BL}		400	500	Cd/m2		(*) Normal Mode - 100IRE Full white window pattern
3.	Luminance Variation	5_{WHITE}	5P			1,3		
4.	Response Time	Rise Time	Tr_R		8	16	ms	
		Decay Time	Tr_D		8	16	ms	
		Gray to Gray			18		ms	
5.	Color Coordinates[CIE1931]	RED	Rx	Typ	0.638	Typ		- 100IRE Full white pattern
			Ry	-0.03	0.342	+0.03		
		GREEN	Gx		0.286			
			Gy		0.615			
		BLUE	Bx		0.144			
			By		0.064			
		WHITE	Wx		0,279			
			Wy		0,292			
6.	Viewing Angle (RC > 10)	X axis righ. (4)=0°)	θr	85	89	-	degree	
		X axis left. (<l)=180°)	θl	85	89	-		
		X axis up arriba (o=90°)	θu	85	89	-		
		X axis down (o=270°)	θd	85	89	-		
7.	Gray Scale	Without AI						
		With AI						

• **Standard Test Condition**

1) Surrounding Brightness Level : dark
2) Surrounding Temperature : 25±2°C
3) Warm-up Time : 30 Min
4) Input Signal : VESA XGA 60Hz
5) Contrast, Brightness : Max.
6) Clock/Clock Phase : Accurate adjustment

9. Component Video Input (Y, P_B, P_R)

No	Resolution	H-freq (kHZ)	V-freq (Hz)	Pixel clock (MHz)	Proposed
1.	720*480	15,73	59,94	13,500	SDTV, DVD 480I(525I)
2.	720*480	15,75	60,00	13,514	SDTV, DVD 480I(525I)
3.	720*576	15,625	50,00	13,500	SDTV, DVD 576I(625I)
4.	720*480	31,47	59,94	27,000	SDTV480P
5.	720*480	31,50	60,00	27,027	SDTV480P
6.	720*576	31,25	50,00	27,000	SDTV 576P
7.	1280*720	44,96	59,94	74,176	HDTV 720P
8.	1280*720	45,00	60,00	74,250	HDTV 720P
9.	1280*720	37,50	50,00	74,25	HDTV 720P
10.	1920*1080	33,75	60,00	74,250	HDTV 1080I
11.	1920*1080	67,5	60,00	148,5	HDTV 1080P
12.	1920*1080	28,125	50	74,25	HDTV 1080I
13.	1920*1080	56,25	50	148,5	HDTV 1080P

10. RGB Input (PC)

No	Resolution	H-freq (kHZ)	V-freq (Hz)	Pixel clock (MHz)	Proposed
1.	720*400	31,469	70,08	28,32	DOS
2.	640*480	31,469	59,94	25,17	VESA(VGA)
3.	800*600	37,879	60,31	40,00	VESA(SVGA)
4.	1024*768	48,363	60,00	65,00	VESA(XGA)
5.	1280*768	47,776	59,870	79,50	VESA(WXGA)
6.	1360*768	47,720	59,799	84,75	VESA(WXGA)
7.	1366*768	47,700	60,00	84,62	VESA(WXGA)

11. HDMI Input (PC)

No	Resolution	H-freq (kHZ)	V-freq (Hz)	Pixel clock (MHz)	Proposed
1.	720*400	31,469	70,08	28,32	DOS
2.	640*480	31,469	59,94	25,17	VESA(VGA)
3.	800*600	37,879	60,31	40,00	VESA(SVGA)
4.	1024*768	48,363	60,00	65,00	VESA(XGA)
5.	1280*768	47.776	59.870	79.50	VESA(WXGA)
6.	1360*768	47,720	59,799	84,75	VESA(WXGA)
7.	1366*768	47,700	60,00	84,62	VESA(WXGA)

12. HDMI input (DTV)

No	Resolution	H-freq (kHZ)	V-freq (Hz)	Pixel clock (MHz)	Proposed
1.	720*480	31,47	59,94	27,000	SDTV 480P
2.	720*480	31,50	60,00	27,027	SDTV 480P
3.	720*576	31,25	50,00	27,000	SDTV 576P
4.	1280*720	44,96	59,94	74,176	HDTV 720P
5.	1280*720	45,00	60,00	74,250	HDTV 720P
6.	1280*720	37,50	50,00	74,25	HDTV 720P
7.	1920*1080	33,75	60,00	74,250	HDTV 1080I
8.	1920*1080	67,5	60,00	148,5	HDTV 1080P
9.	1920*1080	28,125	50	74,25	HDTV 1080I
10.	1920*1080	56,25	50	148,5	HDTV 1080P

ADJUSTMENT INSTRUCTION

1. Application Range

This spec. sheet is applied to all of the LP7AB chassis(H4) manufactured at LG TV Plant all over the world.

2. Specification

2.1 Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help to protect test instruments.
2.2 Adjustment must be done in the correct sequence.
2.3 The adjustment must be performed at 25 ± 5°C temperature and 65 ± 10%, relative humidity if there is no specified designation.
2.4 The input voltage of the receiver must be kept between 100~220V, 50/60Hz.
2.5 Before adjustment, execute Heat-Run for 30 minutes at FULL WHITE MODE(power on key)

3. Adjustment items

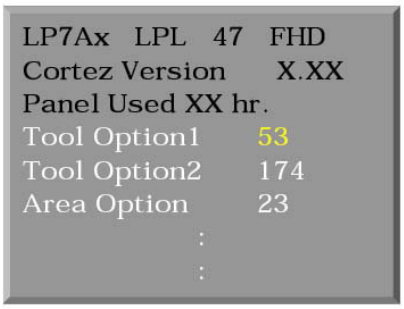
3.1 PCB assembly adjustment items

• I Channel memory

- Download the channel data from BOM to EEPROM by using LGIDS.

• I Option adjustment following BOM

- Tool Option1
- Tool Option2
- Area Option



(Fig. 1)

1) Push the ADJ key in the Adjust Remocon.
2) Input the Option Number that was specified in the BOM, into the Shipping area
3) Select "Tool Option1/ Tool Option2/ Area Option" by using ▲/▼ °„/°Â(CH+/-) key , and press the number key(0~9) consecutively

ex) If the value of Tool Option1 is 7, input the data using number key "7" (Fig. 1)

3.2 SET assembly adjustment items

• Auto AV1 Color Balance

• Adjustment of White Balance

• Auto Component Color Balance adjustment
- standard equipment : MSPG925FA

• Auto RGB Color Balance adjustment
-standard equipment : MSPG925FA

4. EDID

4.1 Caution
* Use the proper signal cable for EDID Downloa.
- Analog EDID : Pin3 exists
- Digital EDID : Pin3 exists

*Caution: - Never connect HDMI & DVI-D & DVI-A Cable at the same time.
- Use the proper cables below for EDID Writing
- Write 8bit using DDC2B protocol to input ANALOG,HDMI EDID.

4.1.1 EDID Data

No	Item	Condition	16 Data
1	Manufacturer ID	GSM	1E6D
2	Version	Digital: 1	01
3	Revision	Digital: 3	03

4.2 Data

4.2.1. 47LC7R-TA ANALOG

• BLOCK1 (128BYTE)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	CF	9C	01	01	01	01
10	03	0F	01	03	01	46	27	78	EA	D9	B0	A3	57	49	9C	25
20	11	49	4B	A1	08	00	31	40	45	40	61	40	81	80	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	BC	88	21	00	00	1C	4E	1F	00	80	51	00	1E	30
50	40	80	37	00	BC	88	21	00	00	18	00	00	00	FD	00	39
60	3F	1F	4B	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	5E

4.2.2. 47LC7R-TA HDMI1

• BLOCK1 (128BYTE)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	D0	9C	01	01	01	01
10	03	0F	01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25
20	11	49	4B	A1	08	00	01	01	81	80	01	01	01	01	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	BC	88	21	00	00	1C	4E	1F	00	80	51	00	1E	30
50	40	80	37	00	BC	88	21	00	00	18	00	00	00	FD	00	2F
60	3F	1C	4B	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	58	0A	20	20	20	20	20	20	20	01	7B

• BLOCK2 (128BYTE)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	02	03	25	F1	4E	85	04	02	01	03	11	12	13	14	10	1F
10	20	21	22	23	09	07	07	23	09	07	07	83	01	00	00	65
20	03	0C	00	10	00	01	1D	00	80	51	D0	1C	20	40	80	35
30	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10
40	3E	96	00	13	8E	21	00	00	18	2A	12	00	10	41	43	17
50	20	28	60	35	00	00	00	32	00	00	1C	01	1D	80	18	71
60	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	0D

4.2.3. 47LC7R-TA HDMI2

- BLOCK1 (128BYTE)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	FF	FF	FF	FF	FF	FF	00	1E	6D	D0	9C	01	01	01	01
10	03	0F	01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25
20	11	49	4B	A1	08	00	01	01	81	80	01	01	01	01	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	BC	88	21	00	00	1C	4E	1F	00	80	51	00	1E	30
50	40	80	37	00	BC	88	21	00	00	18	00	00	00	FD	00	2F
60	3F	1C	4B	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	7B

- BLOCK2 (128BYTE)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	02	03	25	F1	4E	65	04	02	01	03	11	12	13	14	10	1F
10	20	21	22	23	09	07	07	23	09	07	07	83	01	00	00	65
20	03	0C	00	20	00	01	1D	00	80	51	D0	1C	20	40	80	35
30	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	10
40	3E	96	00	13	8E	21	00	00	18	2A	12	00	10	41	43	17
50	20	28	60	35	00	00	00	32	00	00	1C	01	1D	80	18	71
60	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	FD

=> Detail EDID Options are below (a, b, c, d, e).

a. Product ID

Model Name	Product ID	Product ID		
		Dec.	Hex.	EDID Tabla
47LC7R-TA	40143(A)	40143	9CCF	CF9C
	40144(D)	40144	9CD0	D09C

b. Serial No: Controlled on production line

c. Month, Year: Controlled on production line:

ex) Montly: '03' => '03'

Year: '2005' => '0F'

d. Model Name/Monitor Name

Model																		
47LC7R	00	00	00	FC	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20

e. Checksum: Changeable by total EDID data

5. ADC Calibration

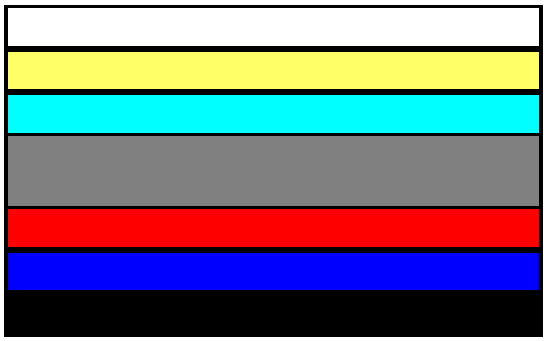
5.1 Adjustment of AV

* Required Equipments

- Remote controller for adjustment
- 802F Pattern Generator, Master (MSPG-925FA), etc
- MSPG-925FA Pattern Generator

(Which has Video Signal: 100% Color Bar Pattern shown in Fig. 1)

=> Model: 202 / Pattern: 65 (PAL : CH).
Model: 207 / Pattern : 65 (NTSC-J).



(Fig. 1)

5.1.1 Method of Auto AV Color Balance

1) Press the FRONT-AV KEY on R/C for converting input mode.
2) Input the Video Signal: 100% Color Bar signal into AV(MA/TA)
3) Set the PSM to Dynamic mode in the Picture menu
4) Press INSTART key on R/C for adjustment
5) Press the ▶(Vol. +) key to operate the set, then it becomes automatically
6) Auto-RGB OK means the adjustment is completed

5.1.2 Requirement

- This AV color balance adjustment should be performed before White Balance Adjustment.

5.2 Adjustment of Component.

* Required Equipments

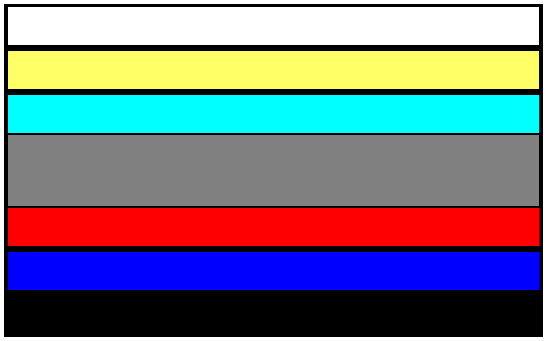
- Remote controller for adjustment.
- 802F Pattern Generator, Master (MSPG-925FA), etc.
- MSPG-925FA Pattern Generator

(Which has 720p@50Hz YPbPr signal : 100% Color Bar Pattern shown in Fig. 2).

=> Model: 215 / Pattern: 65

- It is very import to use correct adjustment pattern like Fig. 2.

If Minimum Black Level and/or Maximum White Level is not correct, Do select 100% Color Bar Pattern.



(Fig. 2)

5.2.1 Method of Auto Component Color Balance

1) Input the Component 720p 100% Color Bar(MSPG-925FA model:215, pattern:65) signal into Component (ZA : component , TA/MA : component 1 or 2)
2) Set the PSM to Dynamic mode in the Picture menu.
3) Press the INSTART key on R/C for adjustment.
4) Press the ▶(Vol. +) key to operate the set , then it becomes automatically.
5) Auto-RGB OK means the adjustment is completed

5.3 Adjustment of RGB)

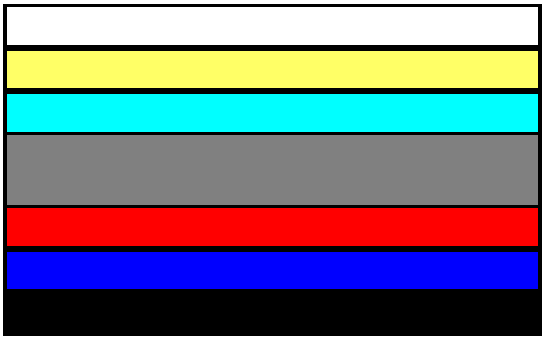
* Required Equipments

- Remote controller for adjustm
- 802F Pattern Generator, Master (MSPG-925FA), etc
- MSPG-925FA Pattern Generator

(Which has XGA [1024*768] 60Hz PC Format output signal : 100% Color Bar Pattern shown in Fig. 3)

- It is very import to use correct adjustment pattern like Fig. 10.

If Minimum Black Level and/or Maximum White Level is not correct, Do select 100% Color Bar Pattern.



(Fig. 3)

5.3.1 Method of Auto RGB Color Balance

1) Input the PC 1024x768 @ 60Hz with 100% color bar pattern like Fig.3. into RGB.
2) ▶ Set the PSM to Dynamic mode in Picture menu
3) Press the INSTART key on R/C for adjustment.
4) Press the ▶(Vol. +) key operate To set , then it becomes automatically
5) Auto-RGB OK means adjustment is completed

6. White Balance

*Notice
- Do the white balance adjustment under the 10LUX.
- Before white balance,press the In-start key 2times and do the reset like Fig1
- Use the cortez inner pattern(216 gray pattern)
- To enter White-balance mode,press the IN-START key 2times
  => Caution : - System control RS-232 Host should be "PC" for adjustment

* Test Equipment
  - Color Analyzer (CA-210)
  - PC (for communication through RS-232C) => UART Baud rate : 115200
  - Pattern Generator (MSPG-925FA etc.)

* Color Temperature & Color Coordinates Setting
  : When adjusting the Color Temperature of LCD, Color AnalyzerCA-210(Matrix should be corrected through CH9 of CS-1000) should be used.
  Adjust the Color Temperature based below adjustment color coordinates.
  Even if CH9 of CA-210 is corrected with Matrix, there may be many character of Module and Filter.
  Therefore Refer to the below Color Coordinates Target.
  But,in case of WCG module,use the CH12 of CA-210.

6.1 Manual white Balance (INNER PATTERN)

1) Execute CA-210(9CH) Zero Calibration
2) Execute the SET Heat Run for 30minutes
3) Use cortez inner pattern as below Fig. 4, Supply 216Level (85 IRE) full screen pattern
4) Enter the White Balance adjustment mode by pressing the INSTART key twice(White Balance) on R/C.
5) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using ▲/▼(CH+/-) key on R/C.
6) Adjust with R / G / B Gain using ◀/▶ key on R/C.
7) Adjust it until color coordination becomes as below.

*Color Temperature : Cool, Medium, Warm

One of R/G.B Gain should be fixed at 80 and adjust two Gain Value with decreasing the Default values from 80.
-When R Gain is Fixed at Default value(80)
Adjust G gain and B gain with decreasing Default values from 80
-When B Gain is Fixed at Default value(80)
Adjust R gain and G gain with decreasing Default values from 80
-When G Gain is Fixed at Default value(80)
Adjust R gain and B gain with decreasing Default values from 80

R/G/B Gain and R/G/B Offset Default Value
Red Gain : 80 , Green Gain : 80, Blue Gain : 80

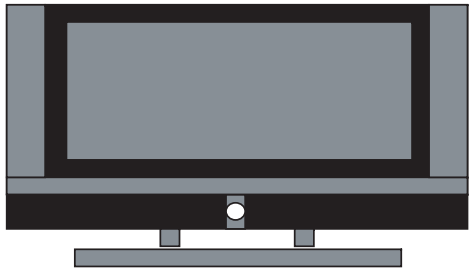
(Fig. 4)

6.2 Auto white Balance (INNER PATTERN)

	command1	command2	Set ID	Data		
						MODE
Input Select	x	b	00	00h		DTV-Air
				01h		Cable
				10h		RF-Air
				11h		Cable
				20h		AV1
				21h		AV2
				40h		COMP1
				41h		COMP1
				60h		RGB-PC
				90h		HDMI
				Min	Max	INIT
R-Gain_Normal	j	a	00	00h	80h	80h
G-Gain_Normal	j	b	00	00h	80h	80h
B-Gain_Normal	j	c	00	00h	80h	80h
R-Gain_Warm	j	d	00	00h	80h	80h
G-Gain_Warm	j	e	00	00h	80h	80h
B-Gain_Warm	j	f	00	00h	80h	80h
R-Gain_Cool	j	g	00	00h	80h	80h
G-Gain_Cool	j	h	00	00h	80h	80h
B-Gain_Cool	j	i	00	00h	80h	80h
R-Offset_Normal	l	j	00	00h	80h	
G-Offset_Normal	l	k	00	00h	80h	
B-Offset_Normal	l	l	00	00h	80h	
R-Offset_Warm	l	m	00	00h	80h	
G-Offset_Warm	l	n	00	00h	80h	
B-Offset_Warm	l	o	00	00h	80h	
R-Offset_Cool	l	p	00	00h	80h	
G-Offset_Cool	l	q	00	00h	80h	
B-Offset_Cool	l	r	00	00h	80h	
COLOR TEMP.	k	u	00	00h	03h(Cool,Normal,Warm,User)	
Signal Inside Pattern	w	b	00	00 10 ff	W/B Adjustment Start Using Internal Pattern W/B Adjustment Comletion	

TROUBLESHOOTING

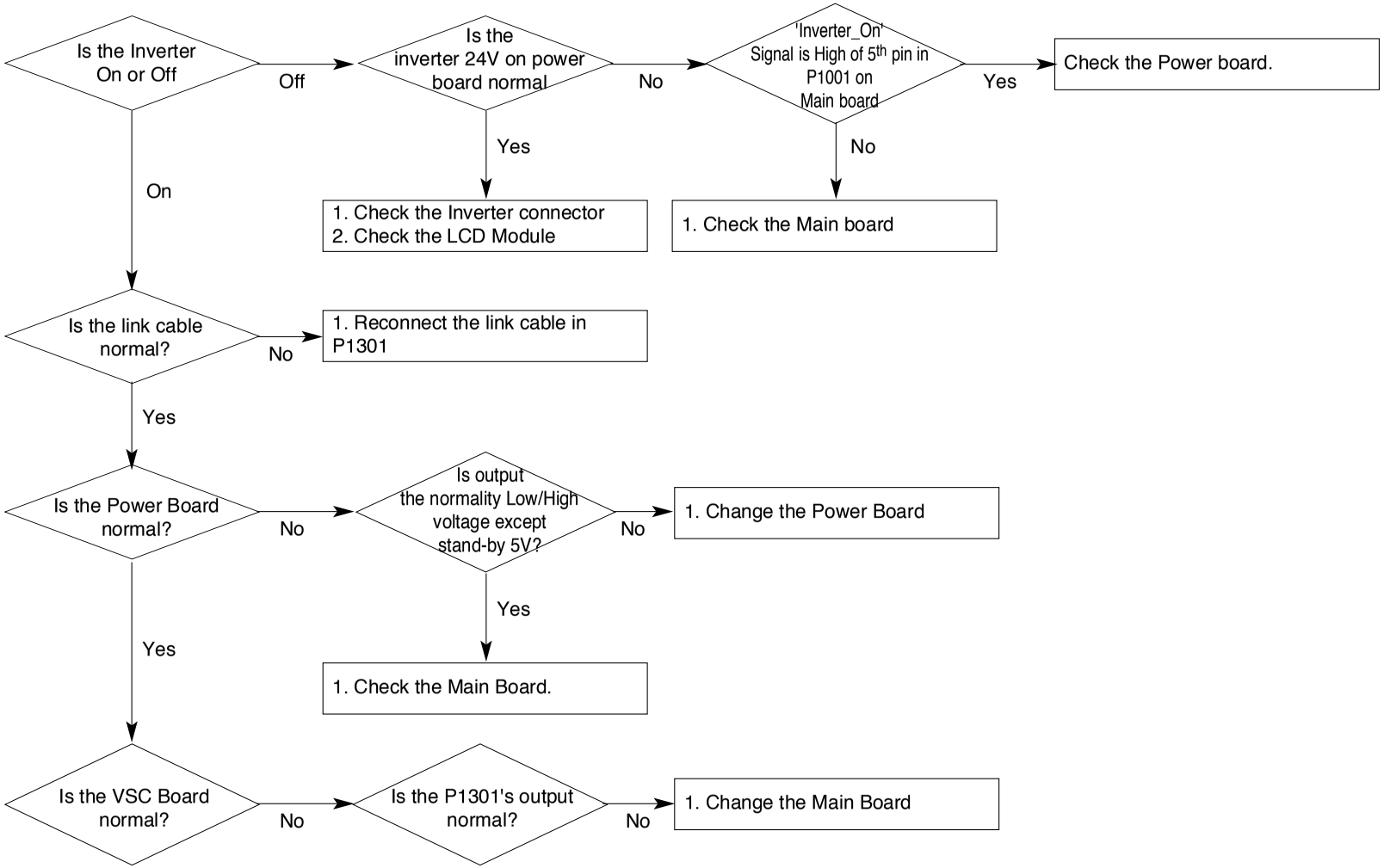
1. No Raster - LCD



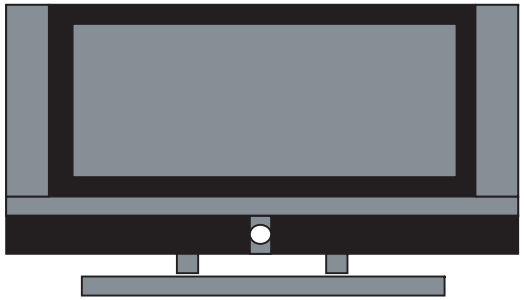
(1) Symptom

1) Does't minute discharge at module.
2) It maintains the condition where the front LED is normal.

(2) Check follow



2. In case of occur strange screen into specific mode

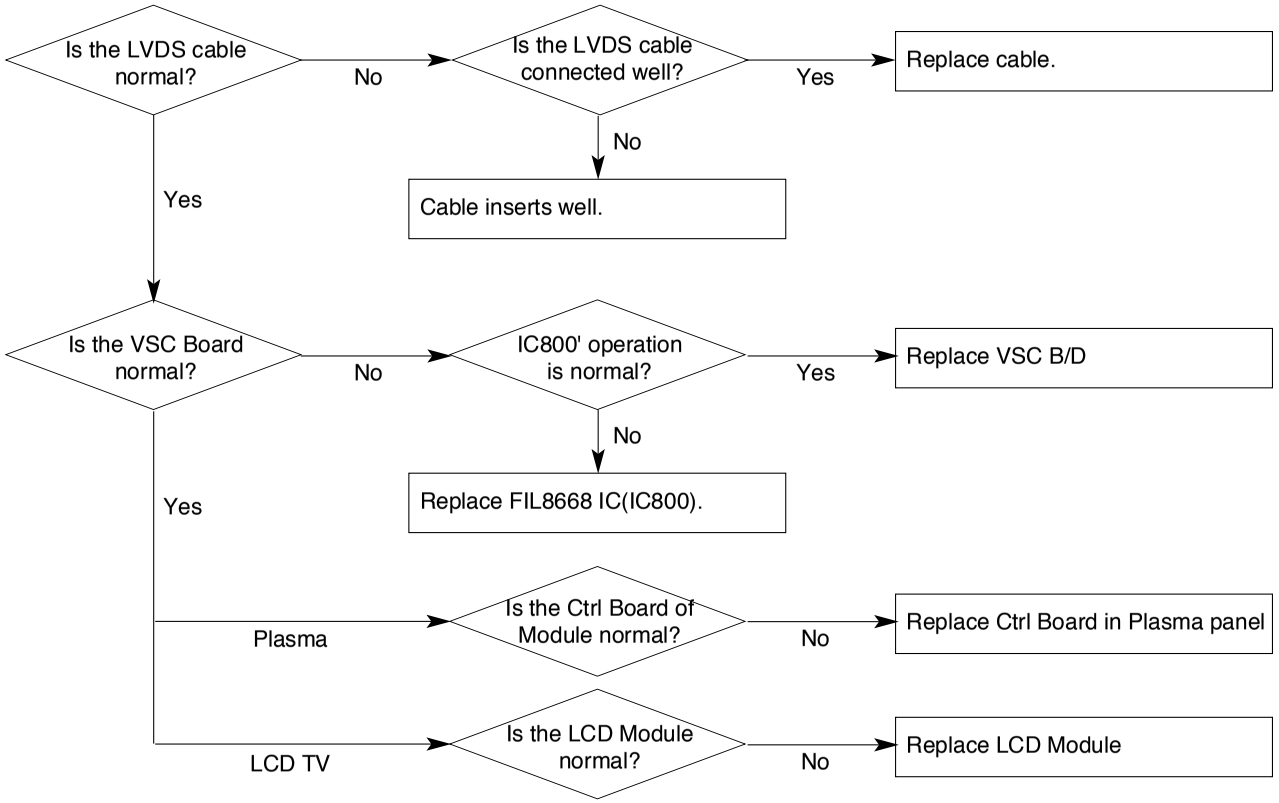


2-1. In case of doesn't display the OSD

(1) Symptom

1) LED is White
2) The minute discharge work continuously

(2) Check follow



2-2. In the case of doesn't work normally at specific input mode

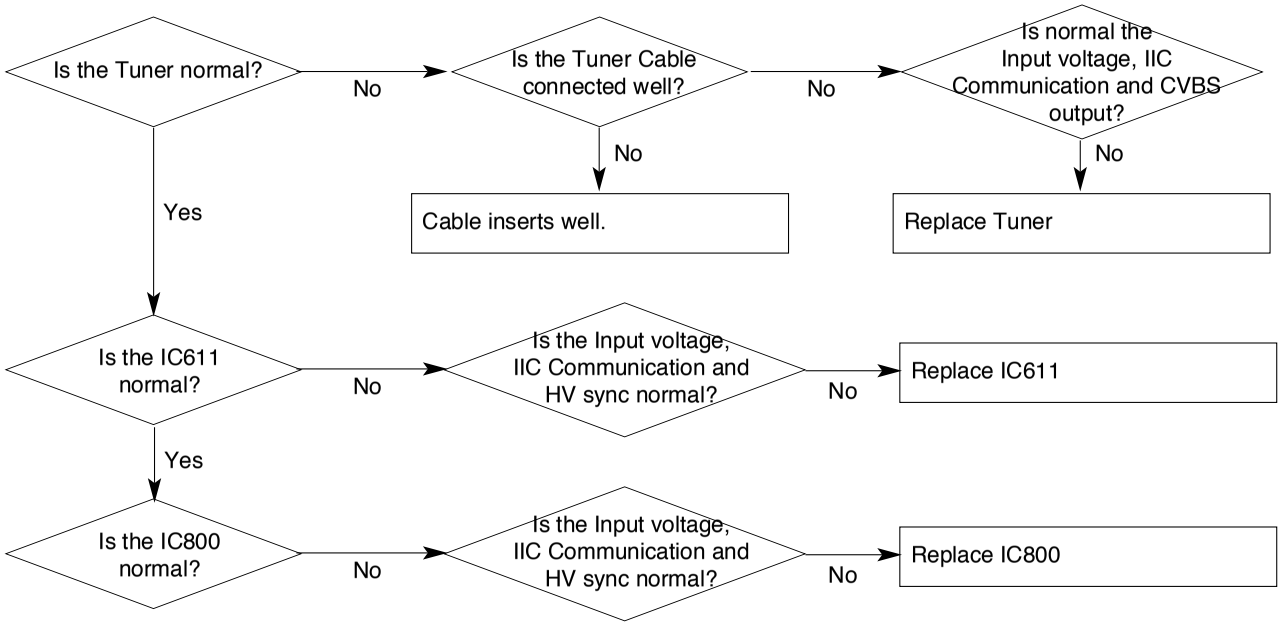
(1) Symptom

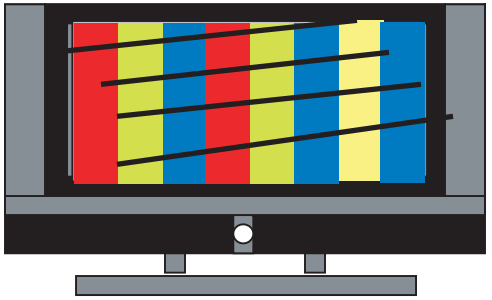
1) The screen doesn't work normally at specific input mode (RF, AV, Component, RGB, HDMI)

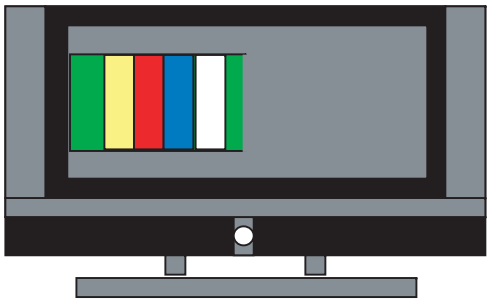
(2) Check follow

1) Check the all input model if all input display normally.
2) Check the PIP and Double Window if it display normally.(Re-Check it Swap)

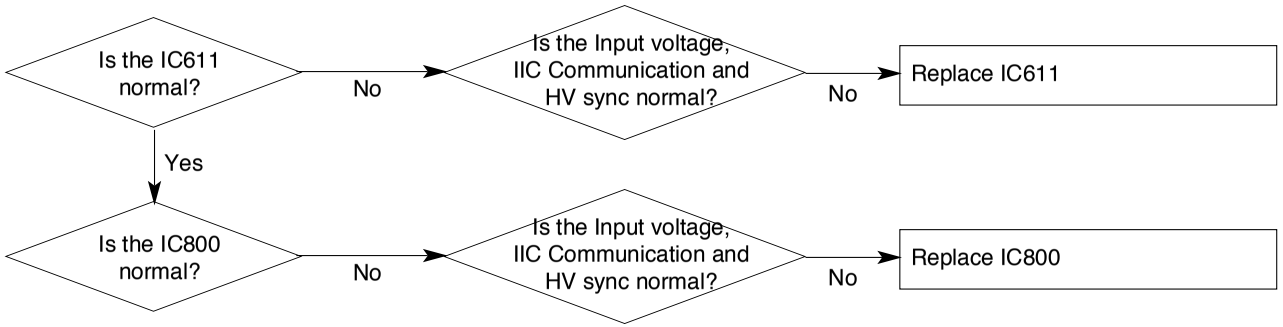
(3) In case of unusual situation from RF mode



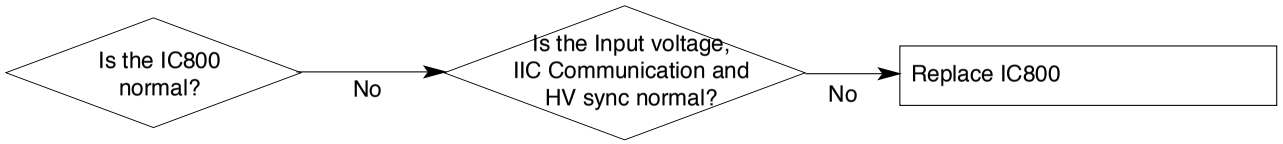




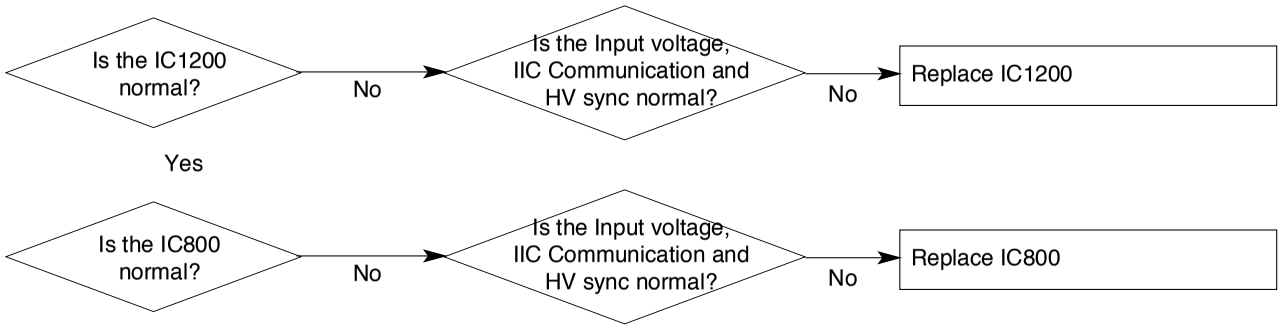
(4) When set doesn’t display normally at RF , AV mode



(5) When set doesn't display nromally at Component, RGB mode



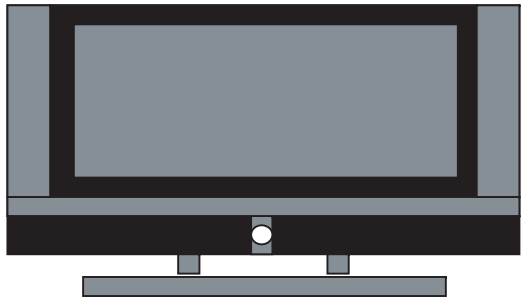
(6) In the case of becomes unusual display from HDMI mode

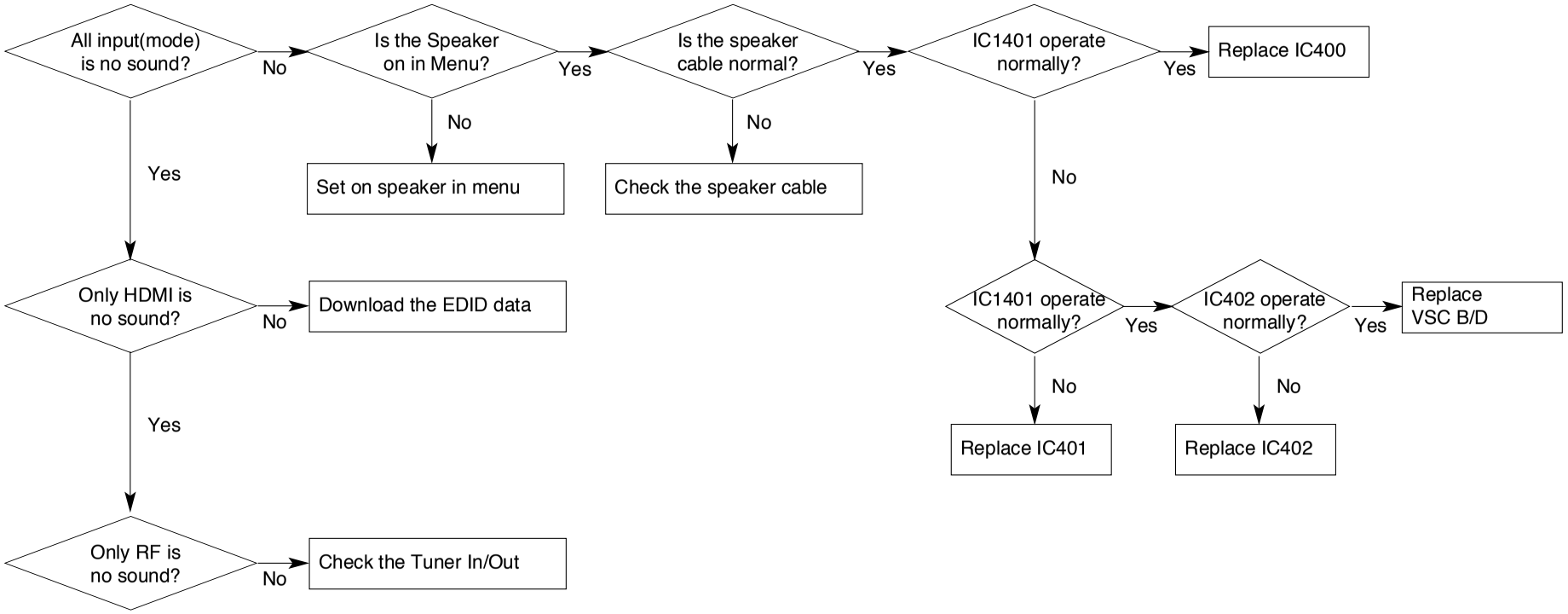


3. In case of no sound

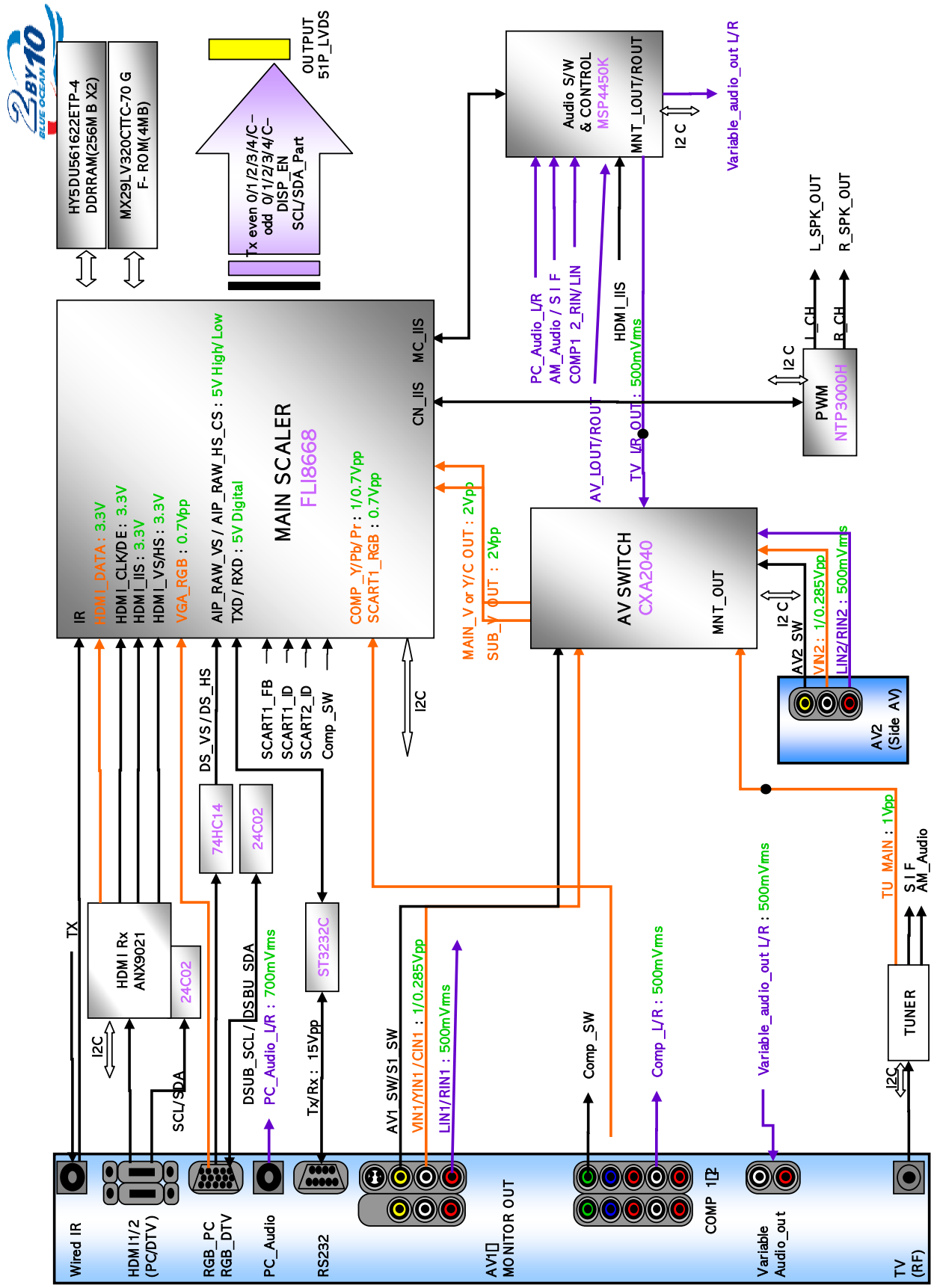
(1) Symptom
1) LED is White
2) Screen existent, but Sound isn't

(2) Check follow

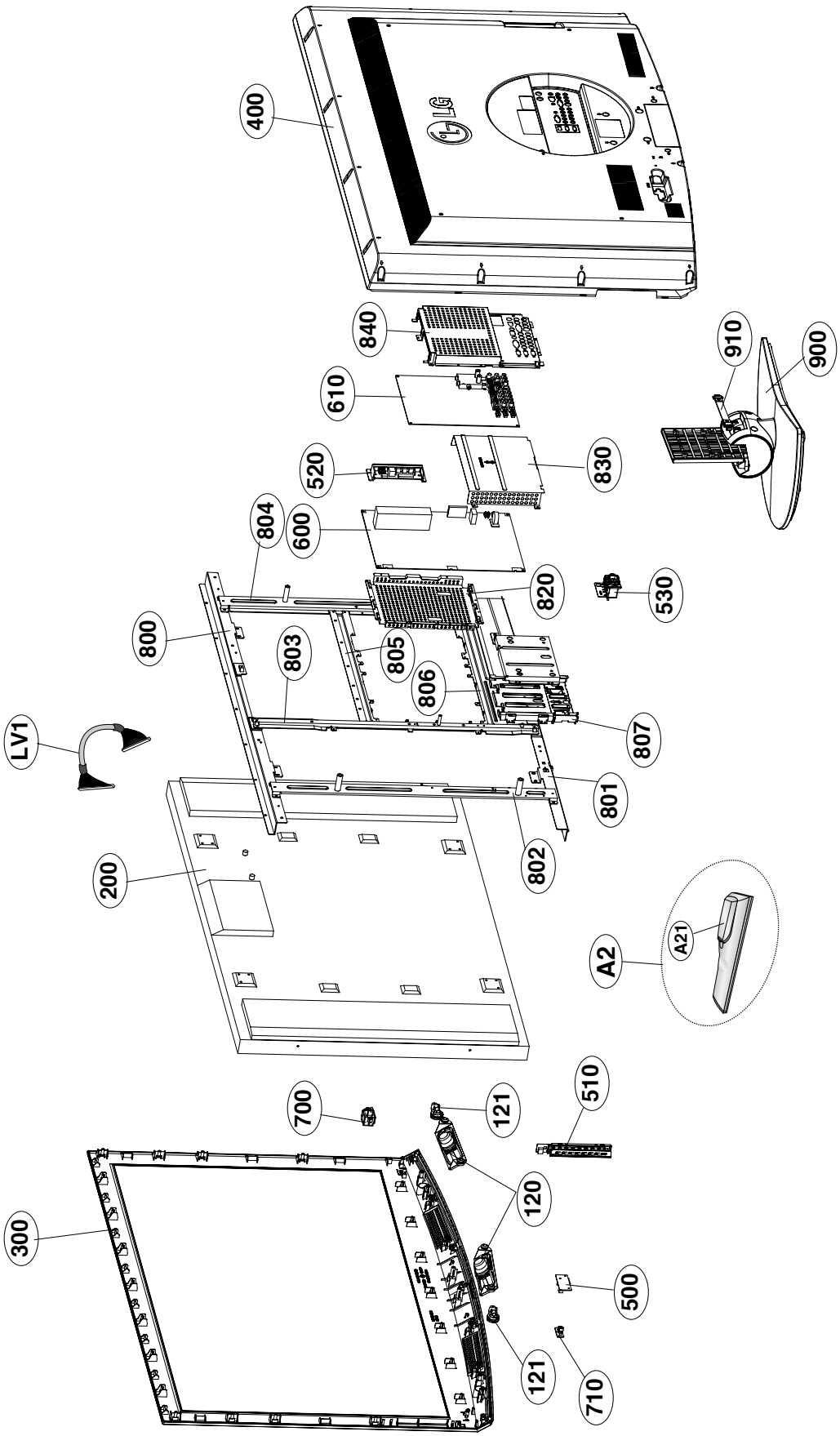


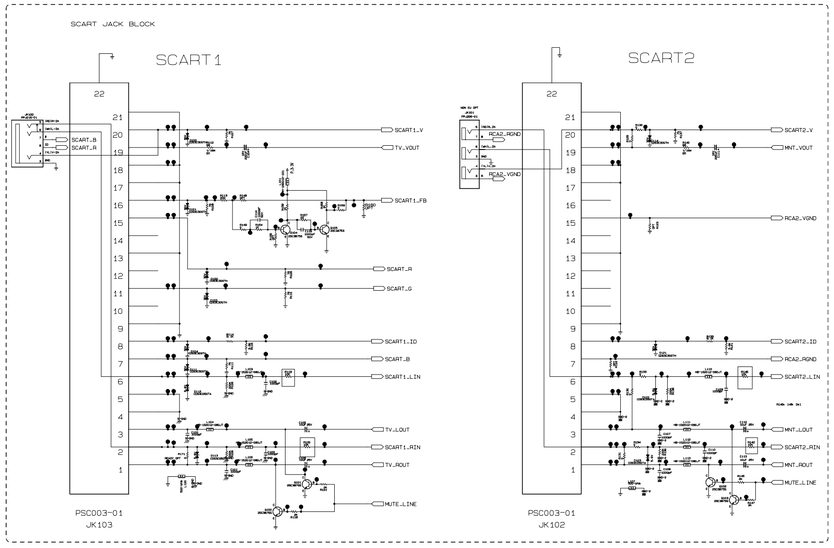


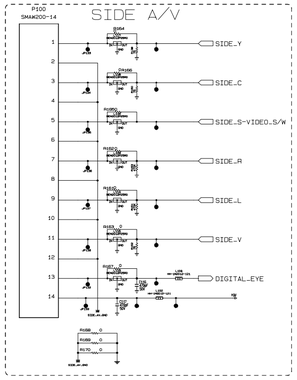
BLOCK DIAGRAM

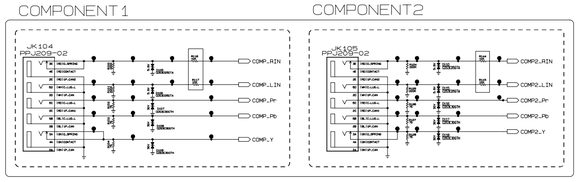


EXPLODED VIEW



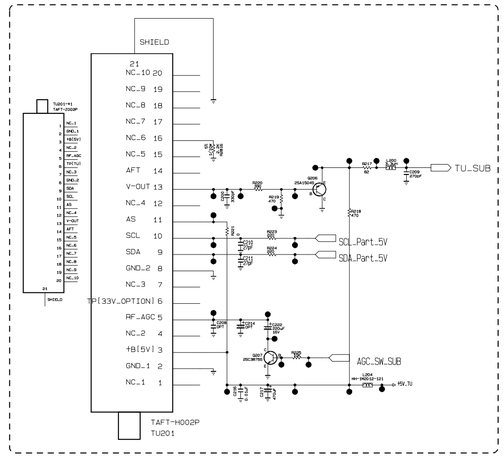


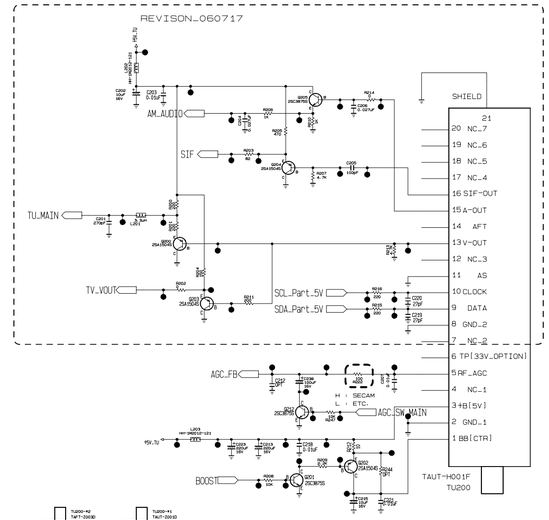


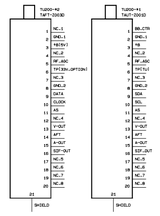


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS- WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

2. TUNER







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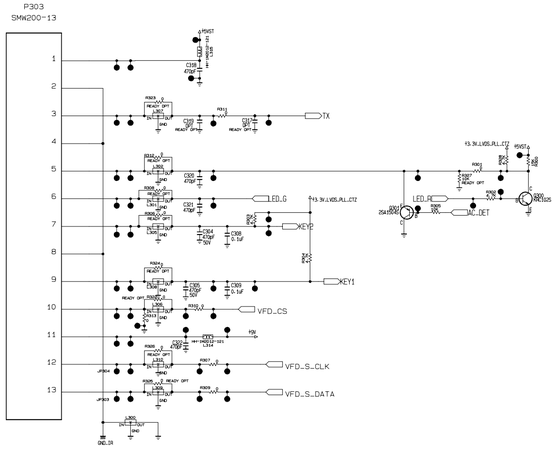
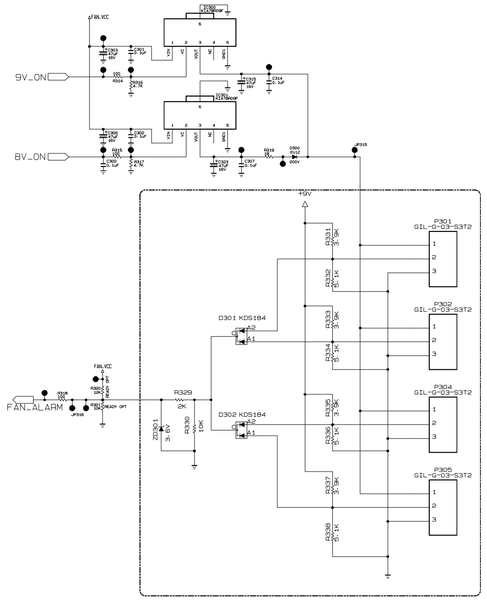
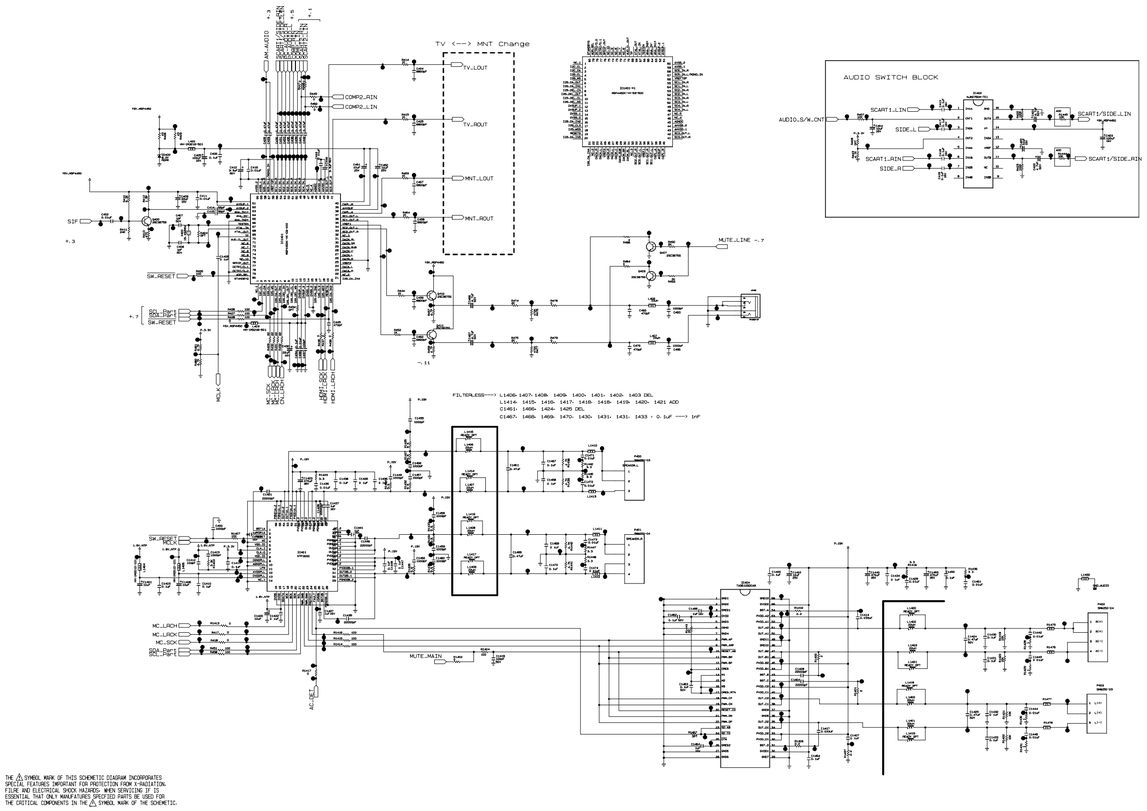
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

Pre-amp, VFD, Index, wafer block







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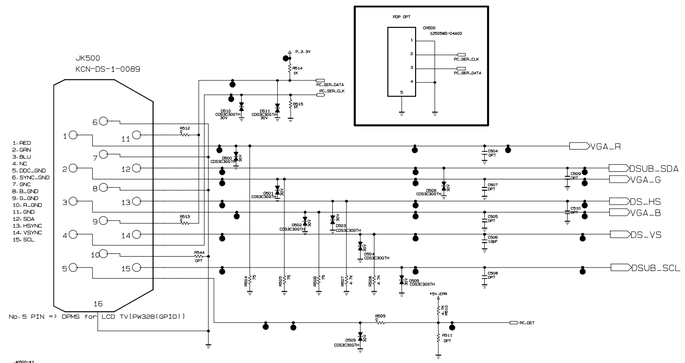
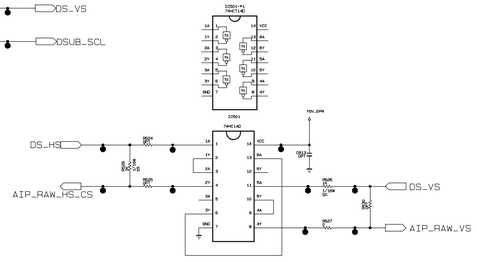
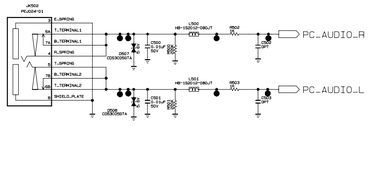
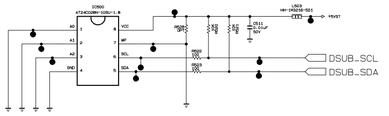
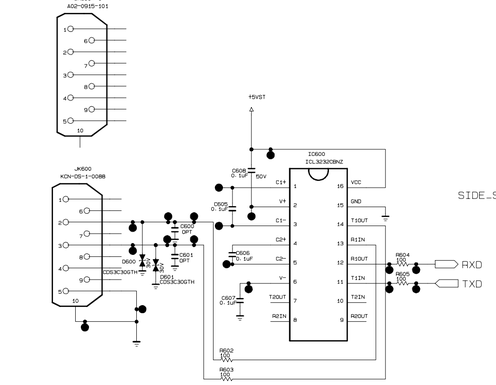


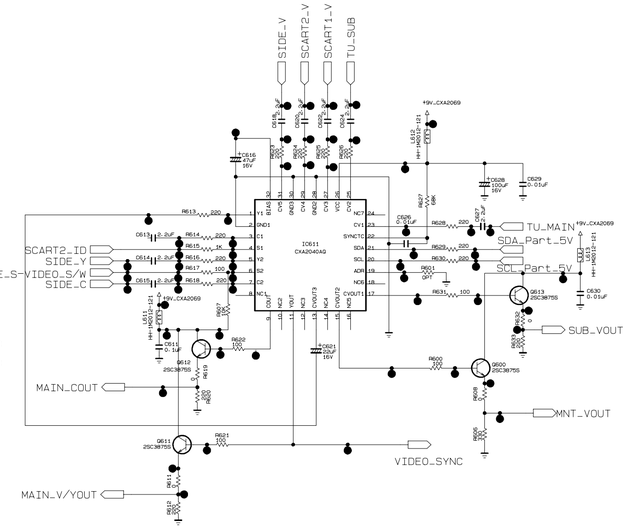




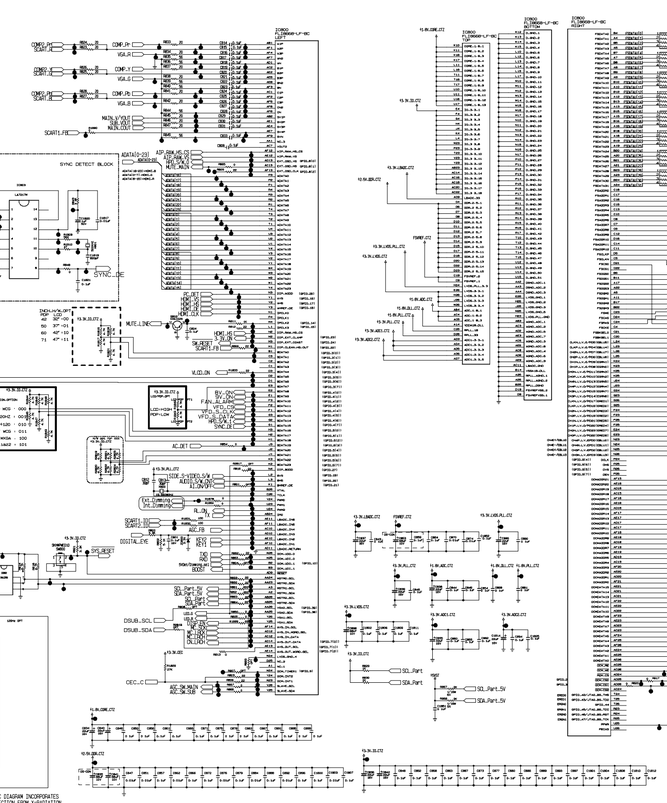


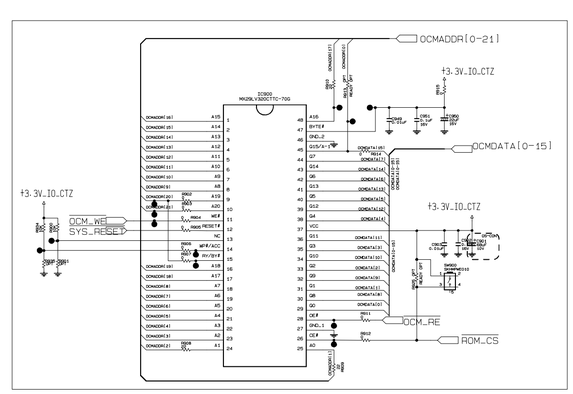
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

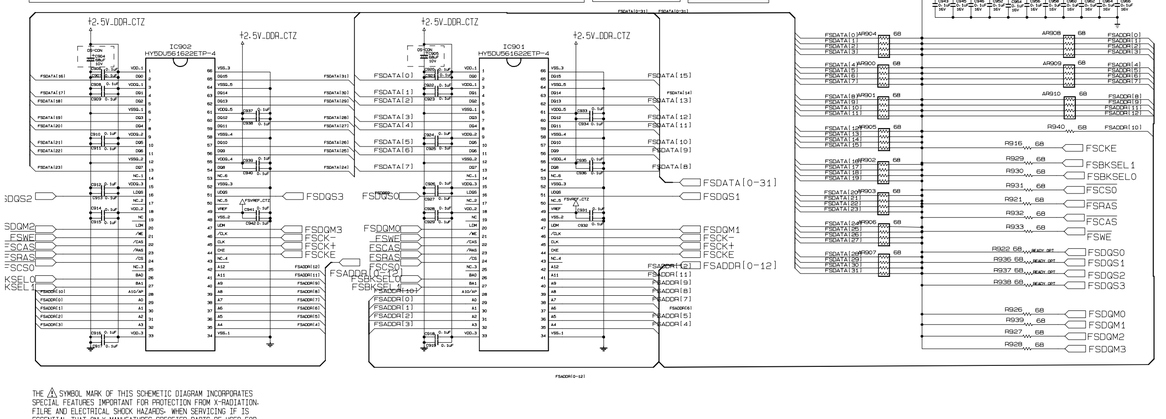




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.







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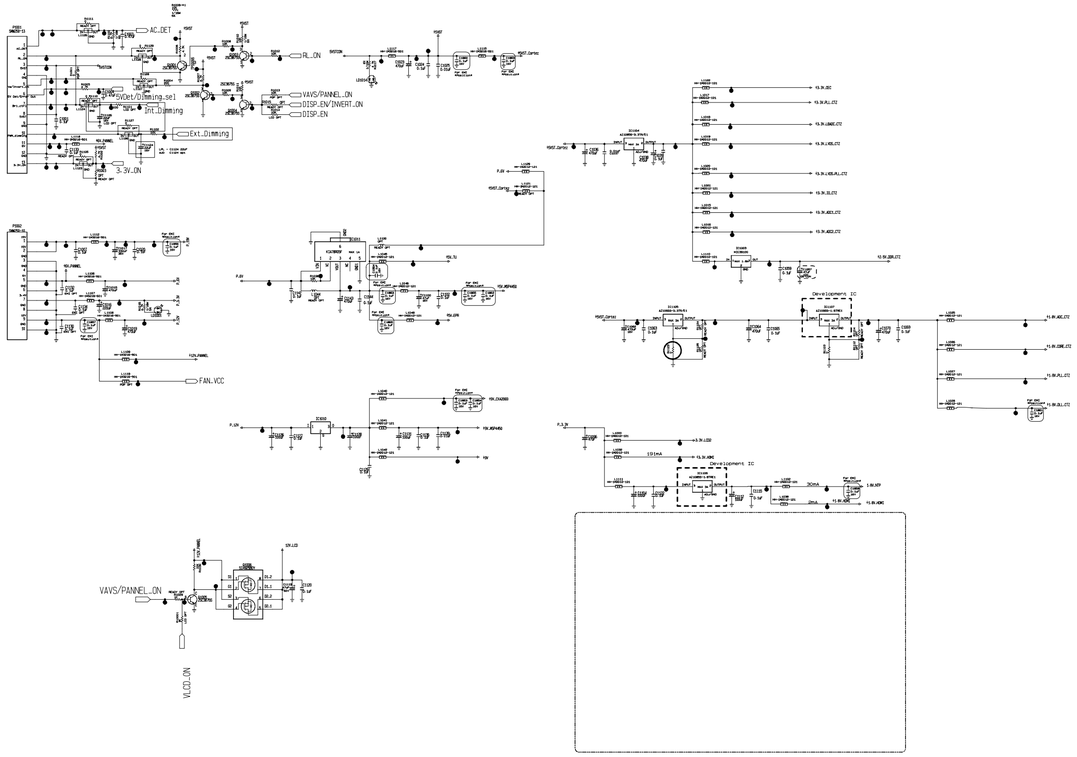

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