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LCD TV

SERVICE MANUAL

CHASSIS : LP62E
FACTORY MODEL : 32LB2R-ZH

MODEL : 32LB2R

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



CONTENTS

CONTENTS.....	2
SAFETY PRECAUTIONS	3
SPECIFICATION	6
ADJUSTMENT INSTRUCTION.....	11
SERVICE REMOTE CONTROL.....	16
TROUBLE SHOOTING.....	17
BLOCK DIAGRAM.....	23
EXPLODED VIEW.....	24
EXPLODED VIEW PARTS LIST	25
REPLACEMENT PARTS LIST	26
SVC. SHEET	

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \triangle 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 its 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 $1M\Omega$ and $5.2M\Omega$.

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.

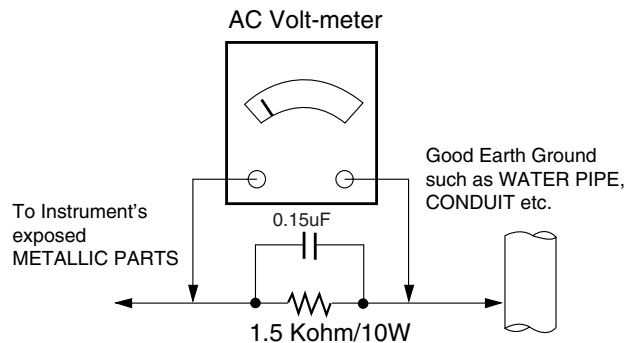
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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 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 is 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 specification is applied to LP62E chassis.

2. Requirement for Test

Testing for standard of each part must be followed in below condition.

- (1) Temperature : 25°C±5°C(77±9°F), CST : 40±5
- (2) Humidity : 65%±10%
- (3) Power : Standard input voltage (100-240V~, 50/60Hz)
*Standard Voltage of each products is marked by models.
- (4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
- (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. General TV Specification

No	Item	Specification	Remark
1.	Video input applicable system	PAL-D/K, B/G, I, NTSC-M, SECAM, NTSC 4.43	
2.	Receivable Broadcasting System	1) PAL/SECAM BG	
		2) PAL/SECAM DK	
		3) PAL I/I	
		4) SECAM L/L'	only ZH
		5) PAL-N/M	
		6) NTSC M	only TH
3.	RF Input Channel	VHF : E2 ~ E12	PAL
		UHF : E21 ~ E69	
		CATV : S1 ~ S20	
		HYPER : S21~ S47	
		L/L' : B, C, D	FRANCE
		VHF : 2~13	NTSC
		UHF : 14~69	
		CATV : 1~125	
4.	Input Voltage	100 ~ 240V~ /50Hz, 60Hz	
5.	Market	Worldwide	
6.	Active Screen Size	800.4 mm(diagonal)	31.51 inches
		940.3 mm(diagonal)	37.02 inches
		1067.308 mm (diagonal)	42.02 inches
7.	Tuning System	FVS 100 program FS	
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	32"/37" : AUO 42" : LPL

5. General Specification

No	Item		Specification			Remark		
1	Panel		37", 42" TFT WXGA LCD					
2	Frequency range		H : 31 ~ 61Khz, V : 56 ~ 75Hz			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)		Y/Pb/Pr : 1EA Y/Pb/Pr : 2EA			ZH TH		
5	Power ON		LED	Power consumption				
	Stand by		White	$\leq 170W(32")$ $\leq 200W(37")$ $\leq 230W(42")$				
6	LCD Module	Outline Dimension	32"	760.0 x450.0 x 48.0				
			37"	877.0 x 516.8 x 55.5		(H)mmx(V)mmx(D)mm		
			42"	1006 x 610 x 56				
		Pixel Pitch	32"	0.1702 x0.5107 x RGB				
			37"	0.200 x 0.600 x RGB				
			42"	0.227 x 0.681 x RGB				
		Pixel Format		1366 x 768 Pixels RGB strip arrangement				
		Coating		Hard coating(3H), Anti-glare treatment of the front polarizer				
		Back Light	32"	20CCFL		TBD		
37"	16CCFL							

6. Set Optical Feature(AUO 32" Module)

No	Parameter	Symbol		Value			Unit	Remark
				Min	Typ	Max		
1.	Contrast Ratio	CR	32"	800	1200			- 100IRE Full white window pattern - APC : Clear (Dynamic)
2.	Surface Luminance, white	LWH	32"	360	450		Cd/m ²	- 100IRE Full white window pattern - APC : Clear (Dynamic)
3.	White Coordinate	Normal	X axis	0.280	0.283	0.286		- 85IRE Full White Pattern - APC : Standard
			Y axis	0.295	0.298	0.301		
		Cool	X axis	0.271	0.274	0.277		
			Y axis	0.283	0.286	0.289		
		Warm	X axis	0.300	0.303	0.306		
			Y axis	0.316	0.319	0.322		
4.	Color Temperature	Normal		8300	9300	10300		- 85IRE Full White Pattern - APC : Standard
		Warm		6200	7200	8200		
		Cool		10000	11000	12000		
5.	Color pull in Range	PAL		-500		+500	Hz	
		NTSC		-500		+500	Hz	
6.	Color killer Sensitivity					-80	dBm	

7. Model Specification

No	Item	Specification	Remark
1.	Market	EU	
2.	Broadcasting system	PAL BG/I/DK, SECAM	
3.	Available Channel	BAND	PAL
		VHF/UHF	C1 ~ C69
		CATV	S1 ~ S47
4.	Receiving system	Upper Heterodyne	
5.	SCART Jack(2EA)	PAL, SECAM, NTSC	4 System : PAL, SECAM, NTSC, PAL60
6.	Video Input (2EA)	PAL, SECAM, NTSC	4 System : PAL, SECAM, NTSC, PAL60
7.	S-Video Input (2EA)	PAL, SECAM, NTSC	4 System : PAL, SECAM, NTSC, PAL60
8.	Component Input (1EA)	Y/Cb/Cr, Y/ Pb/Pr	
9.	RGB Input (1EA)	RGB-PC, RGB-DTV	
10.	HDMI Input (2EA)	HDMI-PC HDMI-DTV	
11.	Audio Input (3 EA)	PC Audio, Component (1EA), AV (1EA)	L/R Input
12.	Audio variable out(1EA)		

8. Component Video Input (Y, PB, PR)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Remarks
1.	720 x 480	15.73	59.94	13.500	SDTV, DVD 480I(525I)
2.	720 x 480	15.75	60.00	13.514	SDTV, DVD 480I(525I)
3.	720 x 576	15.625	50.00	13.500	SDTV, DVD 576I(625I)
4.	720 x 480	31.47	59.94	27.000	SDTV 480P
5.	720 x 480	31.50	60.00	27.027	SDTV 480P
6.	720 x 576	31.25	50.00	27.000	SDTV 576P
7.	1280 x 720	44.96	59.94	74.176	HDTV 720P
8.	1280 x 720	45.00	60.00	74.250	HDTV 720P
9.	1280 x 720	37.50	50.00	74.25	HDTV 720P 50Hz
10.	1920 x 1080	33.72	59.94	74.176	HDTV 1080I
11.	1920 x 1080	33.75	60.00	74.250	HDTV 1080I
12.	1920 x 1080	28.125	50.00	74.250	HDTV 1080I 50Hz

9. RGB Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Remarks
1.	720 x 400	31.469	70.08	28.32	DOS
2.	640 x 480	31.469	59.94	25.17	VESA(VGA)
3.	640 x 480	37.500	75.00	31.50	VESA(VGA)
4.	800 x 600	37.879	60.31	40.00	VESA(SVGA)
5.	800 x 600	46.875	75.00	49.50	VESA(SVGA)
6.	832 x 624	49.725	74.55	57.28	Macintosh
7.	1024 x 768	48.363	60.00	65.00	VESA(XGA)
8.	1024 x 768	56.476	70.06	75.00	VESA(XGA)
9.	1024 x 768	60.023	75.02	78.75	VESA(XGA)
10.	1280 x 768	47.693	59.99	80.125	WXGA(42XGA,50", 60")
11.	1360 x 768	47.700	60.00	84.62	WXGA(42XGA,50", 60")
12.	1366 x 768	47.700	60.00	84.62	WXGA(42XGA,50", 60")

10. RGB input (DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Remarks
1.	720 x 480	31.47	59.94	27.000	SDTV 480P
2.	720 x 480	31.50	60.00	27.027	SDTV 480P
3.	720 x 576	31.25	50.00	27.000	SDTV 576P
4.	1280 x 720	44.96	59.94	74.176	HDTV 720P
5.	1280 x 720	45.00	60.00	74.250	HDTV 720P
6.	1280 x 720	37.50	50.00	74.25	HDTV 720P 50Hz
7.	1920 x 1080	33.72	59.94	74.176	HDTV 1080I
8.	1920 x 1080	33.75	60.00	74.250	HDTV 1080I
9.	1920 x 1080	28.125	50.00	74.250	HDTV 1080I 50Hz

11. HDMI Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Remarks
1.	720 x 400	31.469	70.08	28.32	DOS
2.	640 x 480	31.469	59.94	25.17	VESA(VGA)
3.	640 x 480	37.500	75.00	31.50	VESA(VGA)
4.	800 x 600	37.879	60.31	40.00	VESA(SVGA)
5.	800 x 600	46.875	75.00	49.50	VESA(SVGA)
6.	832 x 624	49.725	74.55	57.28	Macintosh
7.	1024 x 768	48.363	60.00	65.00	VESA(XGA)
8.	1024 x 768	56.476	70.06	75.00	VESA(XGA)
9.	1024 x 768	60.023	75.02	78.75	VESA(XGA)
10.	1280 x 768	47.693	59.99	80.125	WXGA(42XGA,50", 60")
11.	1360 x 768	47.700	60.00	84.62	WXGA(42XGA,50", 60")
12.	1366 x 768	47.700	60.00	84.62	WXGA(42XGA,50", 60")

12. HDMI input (DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Remarks
1.	720 x 480	31.47	59.94	27.000	SDTV 480P
2.	720 x 480	31.50	60.00	27.027	SDTV 480P
3.	720 x 576	31.25	50.00	27.000	SDTV 576P
4.	1280 x 720	44.96	59.94	74.176	HDTV 720P
5.	1280 x 720	45.00	60.00	74.250	HDTV 720P
6.	1280 x 720	37.50	50.00	74.25	HDTV 720P 50Hz
7.	1920 x 1080	33.72	59.94	74.176	HDTV 1080I
8.	1920 x 1080	33.75	60.00	74.250	HDTV 1080I
9.	1920 x 1080	28.125	50.00	74.250	HDTV 1080I 50Hz

13. Mechanical Specification

No	Item	Content				Remark	
1.	Product Dimension	Width	Length	Height	Unit	SET(With Stand)	
		Before Packing	911.4	259	599		mm
		After Packing	1018	340	741		mm
2.	ProductWeight	Only SET	22.6			Kg	
		With BOX	27.1			Kg	
3.	Container Loading Quantity	Individual or Palletizing	20ft		40ft		
			Indi	Wooden	Indi	Wooden	
			102	96	201	204	
4.	Stand Assy	Type	Attached (detachable)				Without Tilt function
		Size(W x D x H)	560	259	155.2	mm	
		Tilt Degree	-				
		Tilt force	-				
		Swivel Degree	+ 30°(±1) / -30°(±1)				
		Swivel Force	1.3kgf (+/-0.2kgf)				
5.	Appearance	General	Refer to Standard of LG(55)G1-1020				

ADJUSTMENT INSTRUCTION

1. Application Range

This spec. sheet is applied to all of the LP62E chassis(H3-High) manufactured at LG TV Plant all over the world.

2. Specification

- 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) Adjustment must be done in the correct sequence.
- 3) The adjustment must be performed at 25±5°C temperature and 65±10% relative humidity if there is no specified designation.
- 4) The input voltage of the receiver must be kept between 100-220V, 50/60Hz.
- 5) Before adjustment, execute Heat-Run for 30 minutes at RF no signal

3. Adjustment items

3.1. PCB assembly adjustment items

- Channel memory
 - Download the channel data from BOM to EEPROM by using LGIDS.
- Option adjustment following BOM
 - Tool Option1
 - Tool Option2
 - Area Option

LP62E	
Cortez Version	x.xx
Panel Used XX hr.	
Tool Option1	7
Tool Option2	161
Area Option	16
:	
:	

(Fig. 1)

- 1) Push the ADJ key in the Adjust Remote control.
 - 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 ▲/▼(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 AV(ZH-AV3, TH-AV1) Color Balance
- Aging (by Power on key)
- Adjustment of White Balance
- Auto Component Color Balance adjustment
 - Standard equipment : MSPG925FA
- Auto RGB Color Balance adjustment
 - Standard equipment : MSPG925FA

4. EDID

△ Caution

- * Use the proper signal cable for EDID Download
 - 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.



4.1. EDID Data

No.	Item	Data
1	Manufacturer ID	1E6D
2	Version	01
3	Revision	03

(1) ANALOG(256 Bytes)

● BLOCK1 (128BYTE)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	FF	1E	6D	a			b		
10	c	01	03	01	46	27	78	EA	D9	B0	A3	57	49	9C	25	
20	11	49	4B	A5	6E	80	31	40	01	01	01	01	45	40	01	01
30	61	40	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	38
60	4B	1F	3D	09	00	0A	20	20	20	20	20	20		d		
70	d														00	99

(2) HDMI(256 Bytes)

● BLOCK1 (128BYTE)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F		
00	00	FF	FF	FF	FF	FF	FF	FF	1E	6D	a			b				
10			01	03	80	46	27	78	EA	D9	B0	A3	57	49	9C	25		
20	11	49	4B	A5	6E	80	31	40	01	01	01	01	45	40	01	01		
30	61	40	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				d				
60	d														00	00	00	FD
70	00	38	4B	1F	3D	09	00	0A	20	20	20	20	20	20	01	14		

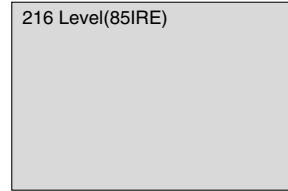
● BLOCK2 (128BYTE)

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	02	03	24	F1	49	85	04	02	01	03	11	12	13	14	23	09
10	07	07	23	09	07	07	23	09	07	07	83	01	00	00	65	03
20	0C	00	10	00	01	1D	00	80	51	D0	1C	20	40	80	35	00
30	BC	88	21	00	00	1E	8C	0A	D0	8A	20	E0	2D	10	3E	
40	96	00	13	8E	21	00	00	18	2A	12	00	10	41	43	17	20
50	28	60	35	00	00	00	32	00	00	1C	01	1D	80	18	71	1C
60	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	6B

(1) Method of Auto RGB Color Balance

- 1) Input the PC 1024x768 @ 60Hz with 100% color bar pattern like Fig.2. into RGB.
- 2) Set the PSM to Standard 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.

- 9) Adjust it until color coordination becomes as below.
 X-axis : 0.283±0.003
 Y-axis : 0.298±0.003
 (R/G/B gain and R/G/B offset Default values are different in according to using module)
- 10) Adjust High light with R/B Gain.



<Fig. 3>

6. White Balance

=> **Caution : Before White-balance, the AV ADC should be done. (ZH:AV3, TH:AV1, MH:VIDEO1)**

=> **After Aging, When the procedure is changed White balance adjustment, it will be canceled Heat_run mode auto.**

Notice : Before White-balance, change input mode.
 Move to AV3(ZH) or AV1(TH) or VIDEO1(MH) by using the FRONT-AV KEY on Remote controller.

White balance		ZH(AV3), TH(AV1)	MH(VIDEO1)
MSPG925FA	216 Level (85IRE)	Model : 202	Model : 201
	Full screen pattern	• Pal Video	• NTSC Video

- <Caution>
- System control RS-232 Host should be "PC" for adjustment.
 - AV ADC(ZH: AV3, TH : AV1, MH: VIDEO1) should be done before White-balance.

* Test Equipment
 Color Analyzer (CA-110)
 PC(For communication through RS-232C)
 =>UART Baud rate : 115200
 Pattern Generator (MSPG-925FA etc.)

*Target Value [PSM: Standard(ZH/TH), CSM: Normal]
 - Normal(9300K±1000K) x:283±0.015, y: 298±0.015
 -Luminance(Y)
 AV : Min. 250 Cd/m2 (LPL)
 AV : Min. 200Cd/m2 (AUO)

- => Reference Value(Automatically fixed)
- Cool(11000K±1000K)
 - Warm(7200K±1000K)

6.2 Auto white Balance (AV)

1) LPL Module

	Command1	Command2	Set ID	Data	
				Min	Max
Input Select	XB	B	00	00h	90h
R-Gain	J	A	00	00h	E0h
G-Gain	J	B	00	00h	E0h
B-Gain	J	C	00	00h	E0h
R-Offset	J	D	00	00h	90h
G-Offset	J	E	00	00h	90h
B-Offset	J	F	00	00h	90h

2) AUO Module

	Command1	Command2	Set ID	Data	
				Min	Max
Input Select	XB	B	00	00h	90h
R-Gain	J	A	00	00h	E0h
G-Gain	J	B	00	00h	E0h
B-Gain	J	C	00	00h	E0h
R-Offset	J	D	00	00h	90h
G-Offset	J	E	00	00h	90h
B-Offset	J	F	00	00h	90h

6.1. Manual white Balance (AV)

- 1) Execute CA-110 Zero Calibration.
- 2) Execute the SET Heat Run for 30minutes.
- 3) As below Fig.3, Supply 216Level (85 IRE) full screen pattern to Video input.
 32LB2R-ZH, 37LB2R-ZH, 42LB2R-ZH: AV3/AV4 (Input 50Hz)
- 4) Press the FRONT-AV KEY on R/C for converting input mode.
- 5) Set the PSM to Standard mode in Picture menu.
- 6) Enter the White Balance adjustment mode by pressing the INSTART key twice(White Balance) on R/C.
- 7) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using ▲/▼(CH+/-) key on R/C.
- 8) Adjust Only High Light with R Gain/B Gain using ◀/▶ (VOL +/-) key on R/C.

* Input Select Data

RF(10), AV1~4(20,21,22,23), SAV(30), COMP(40), DVI(50or60), HDMI(90)

* Command Set (SET ID : 0-> ALL , 1~99 -> each SET)

Adjustment	CMD	SET ID	VAL	Remark
POWER ON/OFF	KA(ka)	0~99	0~1	0: OFF, 1:ON
MAIN INPUT	XB(xb)	0~99	10~90	RF(10), AV1~4(20,21,22,23), SAV(30), COMP(40), RGB(50 or 60), HDMI(90)
ARC	KC(kc)	0~99	0~6	SPECTACLE, FULL, ORIGINAL 4:3, 16:9, 14:9, ZOOM
SCREEN MUTE	KD(kd)	0~99	0~1	0: MUTE, 1: MUTE OFF
AUDIO MUTE	KE(ke)	0~99	0~1	0: MUTE, 1: MUTE OFF
VOLUME	KF(kf)	0~99	0~64	0: 0, 64 : 100 (Hexadecimal)
CONTRAST	KG(kg)	0~99	0~64	0: 0, 64 : 100 (Hexadecimal)
BRIGHTNESS	KH(kh)	0~99	0~64	0: 0, 64 : 100 (Hexadecimal)
COLOR	KI(ki)	0~99	0~64	0: 0, 64 : 100 (Hexadecimal)
TINT	KJ(kj)	0~99	0~64	0: R50, 64 : G50 (Hexadecimal)
SHARPNESS	KK(kk)	0~99	0~64	0: 0, 64 : 100 (Hexadecimal)
OSD ON/OFF	KL(kl)	0~99	0~1	0: OFF, 1: ON
CHILD LOCK	KM(km)	0~99	0~1	0: LOCK, 1: OFF
PIP MODE	KN(kn)	0~99	0~3	PIP_OFF, PIP, DW1, DW2
PIP ARC	KO(ko)			NOT USED
PIP POSITION	KQ(kq)			NOT USED
TREBLE	KR(kr)	0~99	0~64	0:0, 64:100
BASS	KS(ks)	0~99	0~64	0:0, 64:100
BALANCE	KT(kt)	0~99	0~64	0:L50, 64:R50
COLOR TEMP.	KU(ku)	0~99	0~3	COOL, NORMAL, WARM, USER
RED LEVEL	KV(kv)	0~99	0~60	0: -30, 60 : 30
GREEN LEVEL	KW(kw)	0~99	0~60	0: -30, 60 : 30
BLUE LEVEL	K\$(k\$)	0~99	0~60	0: -30, 60 : 30
PIP INPUT	XY(xy)	0~99	10~90	RF(10), AV1~4(20,21,22,23), SAV(30), COMP(41), DVI(50 or 60), ,HDMI(61)
CURRENT STATE	KZ(kz)	0~99	FF	ACK : 0 - With signal ACK : 1 -> Without signal ACK : 2 -> Power Off

Adjustment	CMD	SET ID	VAL	Remark
White Balanc ^o J ^o (A~F)				
RED GAIN	JA	0~99	0~3F	0:0, 3F:3F, FF : the state marking
GREEN GAIN	JB	0~99	0~3F	0:0, 3F:3F, FF : the state marking
BLUE GAIN	JC	0~99	0~3F	0:0, 3F:3F, FF : the state marking
RED OFFSET	JD	0~99	0~3F	0:0, 3F:3F, FF : the state marking
GREEN OFFSET	JE	0~99	0~3F	0:0, 3F:3, FF : the state marking
BLUE OFFSET	JF	0~99	0~3F	0:0, 3F:3F, FF : the state marking
AUTO CONFIG.	JU	0~99	01	If Auto Adjust Condition is not, send the NACK.
TUNER CONTROL				
SELECT PR.	MA	0~99	0~C7	0: Pr. 0, C7: Pr.199
SELECT SUB PR.	MB	0~99	0~C7	0: Pr. 0, C7: Pr.199
FACTORY IR				
IR CODE	MC	0~99	↑ F0	IR CODE 0, BITMASK = 0X01
ADC Calrblation				
Red,Blue,Green Gain	Ja,Jb,Jc	direction :00<E0	Min:00 Max:fe Min:00	Initial data : red -0x79 blue -0x6f green -0x80
Red,Blue,Green offset	Jd,Je,Jf	00<90	Max:fe	Initial data : red -0x80 blue -0x82 green -0x80

7. Detail list of SVC option data

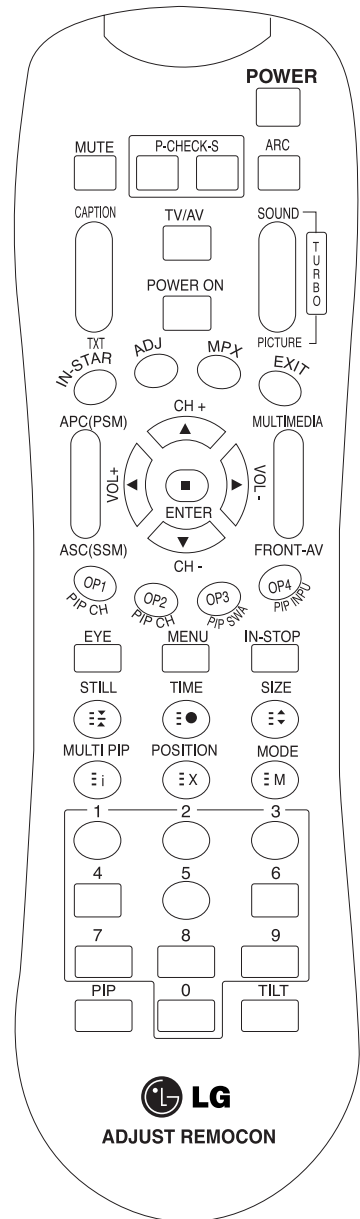
Option	Detail list	Data	
Tool Option1	Side AV	0/1	
	BOOST	0/1	
	Woofer	0/1	
	SoundSettings	32LB/37LB	
Tool Option2	Tuner Num.	No/1/2 Tuner	
	EYE	0/1	
	INDEX	0/1	
	VFD	0/1	
	FULL	0/1	
	HDMI Type (S or A)	None/1-HDMI/2-HDMI	
Area Option	Option1	200PR	0/1
		ACMS	0/1
		TEXT	Off/Top/Flop
		CH+AU	0/1
	Option2	SYS	BGIDKL / BGIDKM
		A2 ST	0/1
		I II SAVE	0/1
		HDEV	0/1
		V-Curve	0/1
		MONO	0/1
	Option3	Scart	2 Scarts / 2 Components
		CSM	Normal / Warm / Cool
	Option4	Default Lang.	English
		LANG	EU-ALL/ EU / EU-8/ EU-North / EU-East/ Non-EU 8/ Non-EU etc
		T LANG	0~4

8. Shipping Conditions

No	Item		Condition	Remark	
1	Power		Off		
2	Volume Level		30		
3	Main Picture Input		TV		
4	Main Last Channel		Pr 01		
5	Mute		Off		
6	ARC		16 : 9		
7	Station	Auto Programme			
		Manual Programme			
		Programme Edit			
		Favorite Programme	None		
8	Picture	PSM	Dynamic		
		Dynamic	Contrast	100	
			Brightness	50	
			Colour	50	
			Sharpness	50	
		CSM	Normal		
		XD	Auto		
		Advanced			
Reset					
9	Sound	SSM	Flat		
			Off		
		AVL	Off		
		Balance	0		
			50		
			50		
Speaker	On				
10	Time	Clock	--:--	User control	
		Off time	Off		
		On time	Off		
		Auto sleep	Off		
11	Special	Language	English	Area management	
		Child Lock	Off		
		Set ID	1		
		XD Demo	To start		
12	Screen	Auto config.	Variable by each mode		
		Manual config.			
		XGA/VGA mode			
		ARC			
		PPF Transparency			
		Reset			

SERVICE REMOTE CONTROL

NO	KEY	FUNTION	REAMARK
1	POWER	To turn the TV on or off	
2	POWER ON	To turn the TV on automatically if the power is supplied to the TV. (Use the POWER key to deactivate): It should be deactivated when delivered.	
3	MUTE	To activate the mute function.	
4	P-CHECK	To check TV screen image easily.	Shortcut keys
5	S-CHECK	To check TV screen sound easily	Shortcut keys
6	ARC	To select size of the main screen (Normal, Spectacle, Wide or Zoom)	Shortcut keys
7	CAPTION	Switch to closed caption broadcasting	
8	TXT	To toggle on/off the teletext mode	
9	TV/AV	To select an external input for the TV screen	
10	TURBO SOUND	To start turbo sound	
11	TURBO PICTURE	To start turbo picture	
12	IN-START	To enter adjustment mode when manufacturing the TV sets.	Use the AV key to enter the screen W/B adjustment mode.
		To adjust the screen voltage (automatic): In-start→mute→Adjust→AV(Enter into W/B adjustment mode) W/B adjustment (automatic): After adjusting the screen→W/B adjustment→Exit two times(Adjustment completed)	
13	ADJ	To enter into the adjustment mode. To adjust horizontal line and sub-brightness.	
14	MPX	To select the multiple sound mode (Mono, Stereo or Foreign language)	
15	EXIT	To release the adjustment mode	
16	APC(PSM)	To easily adjust the screen according to surrounding brightness	
17	ASC(SSM)	To easily adjust sound according to the program type	
18	MULTIMIDIA	To check component input	Shortcut keys
19	FRONT-AV	To check the front AV	Shortcut keys
20	CH ^{°æ}	To move channel up/down or to select a function displayed on the screen.	
21	VOL ^{°æ}	To adjust the volume or accurately control a specific function.	
22	ENTER	To set a specific function or complete setting.	
23	PIP CH-(OP1)	To move the channel down in the PIP screen. To use as a red key in the teletext mode	
24	PIP CH+(OP2)	To move the channel in the PIP screen To use as a green key in the teletext mode	
25	PIP SWAP(OP3)	To switch between the main and sub screens To use as a yellow key in the teletext mode	
26	PIP INPUT(OP4)	To select the input status in the PIP screen To use as a blue key in the teletext mode	
27	EYE	To set a function that will automatically adjust screen status to match the surrounding brightness so natural color can be displayed.	
28	MENU	To select the functions such as video, voice, function or channel.	
29	IN-STOP	To set the delivery condition status after manufacturing the TV set.	
30	STILL	To halt the main screen in the normal mode, or the sub screen at the PIP screen. Used as a hold key in the teletext mode (Page updating is stopped.)	
31	TIME	Displays the teletext time in the normal mode Enables to select the sub code in the teletext mode	
32	SIZE	Used as the size key in the PIP screen in the normal mode Used as the size key in the teletext mode	
33	MULTI PIP	Used as the index key in the teletext mode (Top index will be displayed if it is the top text.)	
34	POSITION	To select the position of the PIP screen in the normal mode Used as the update key in the teletext mode (Text will be displayed if the current page is updated.)	
35	MODE	Used as Mode in the teletext mode	
36	PIP	To select the simultaneous screen	
37	TILT	To adjust screen tilt	Shortcut keys
38	0~9	To manually select the channel.	

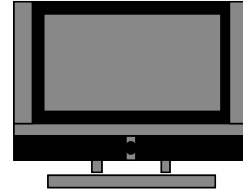


TROUBLESHOOTING

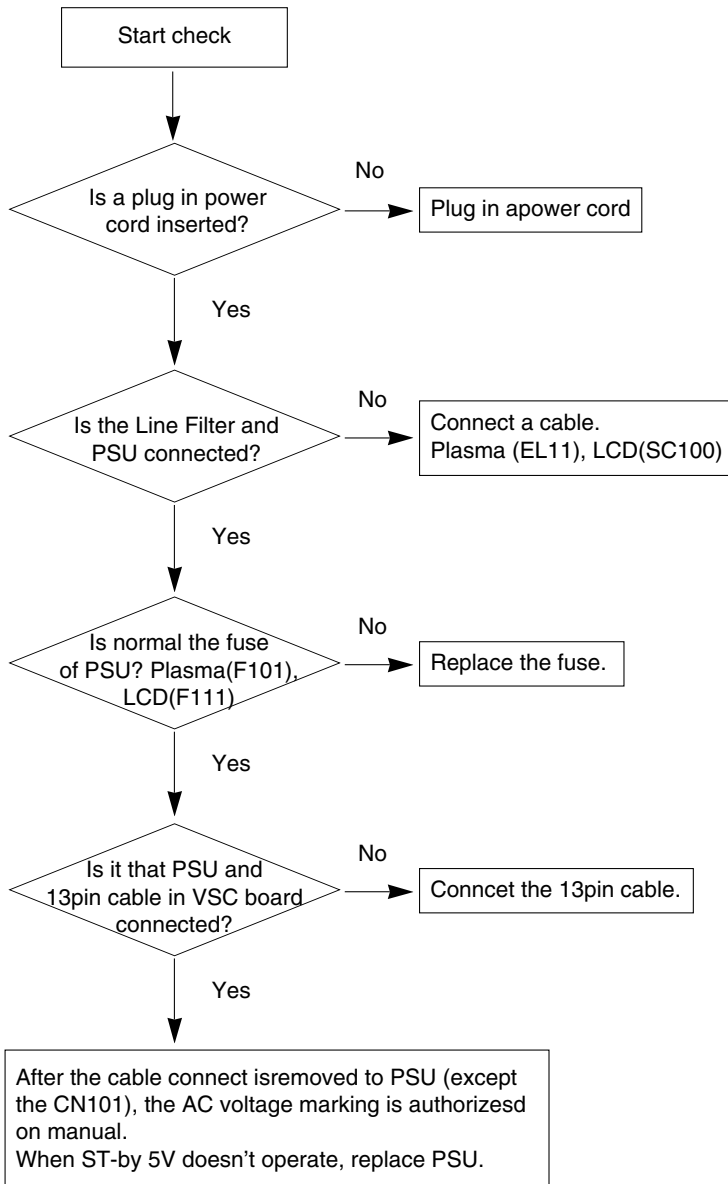
1. No power

(1) Symptom

- 1) It is not discharged minutely from the module.
- 2) Light does not come in into the front LED.



(2) Check following

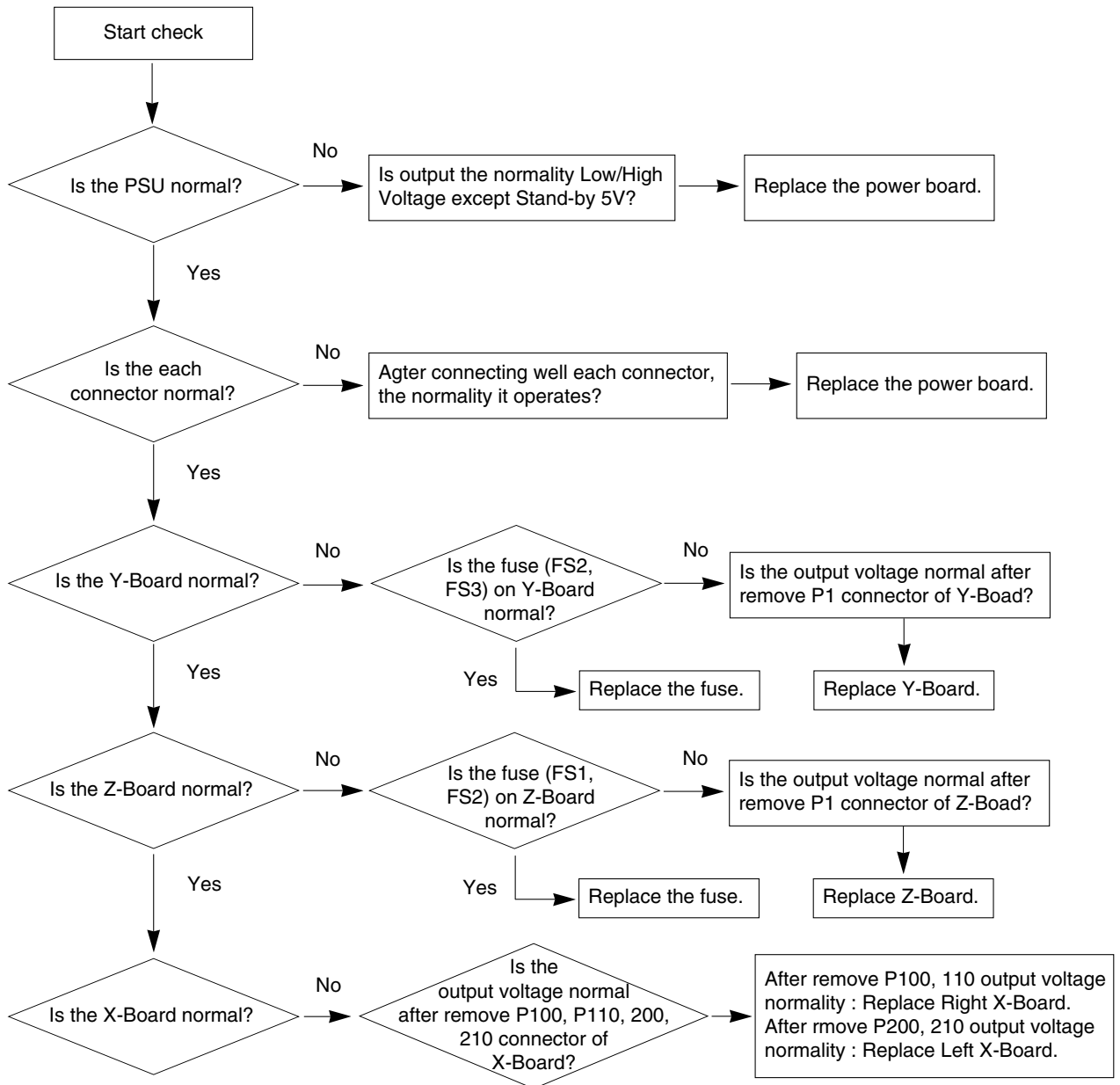


2. Protection mode

(1) Symptom

- 1) Minute discharge doesn't occur at module.
- 2) Front LED doesn't come into action

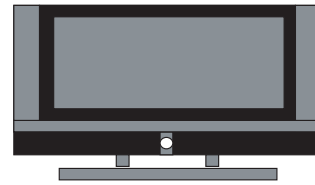
(2) Check following



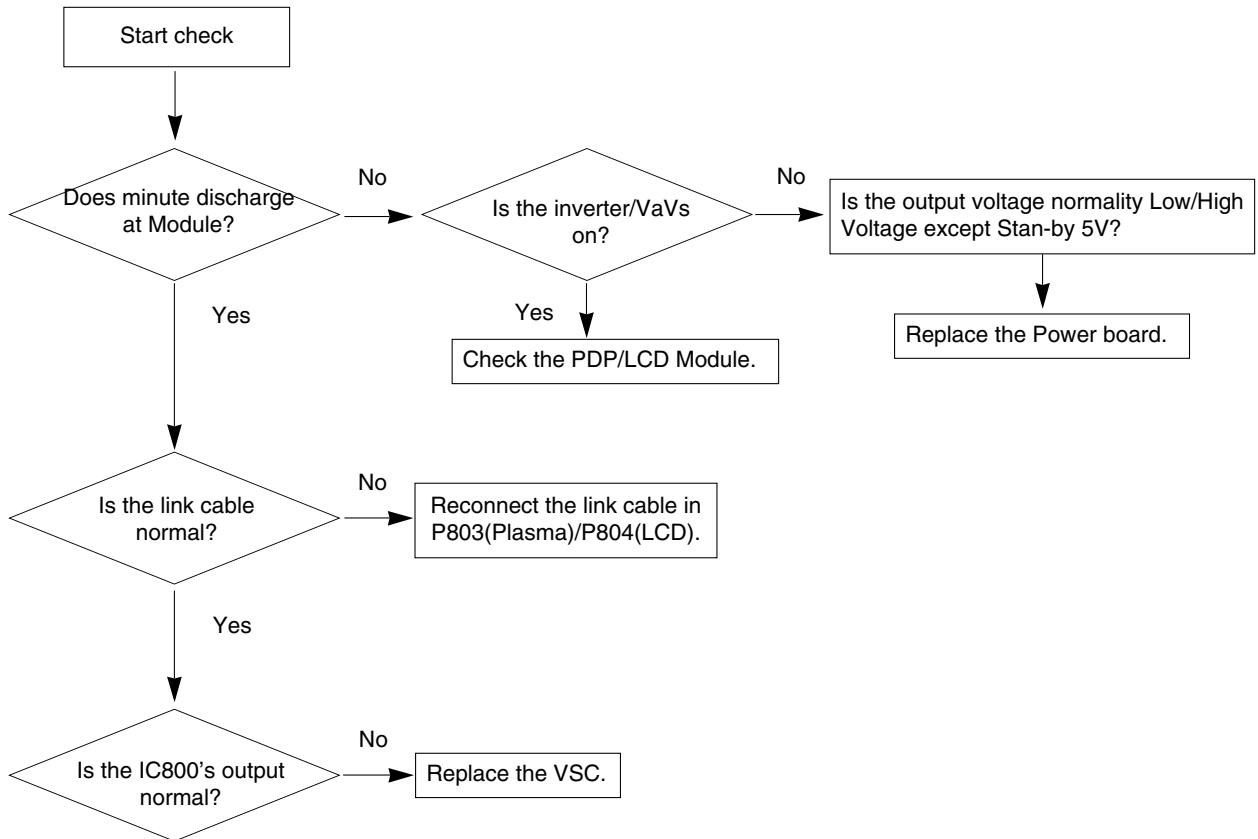
3. No Raster

(1) Symptom

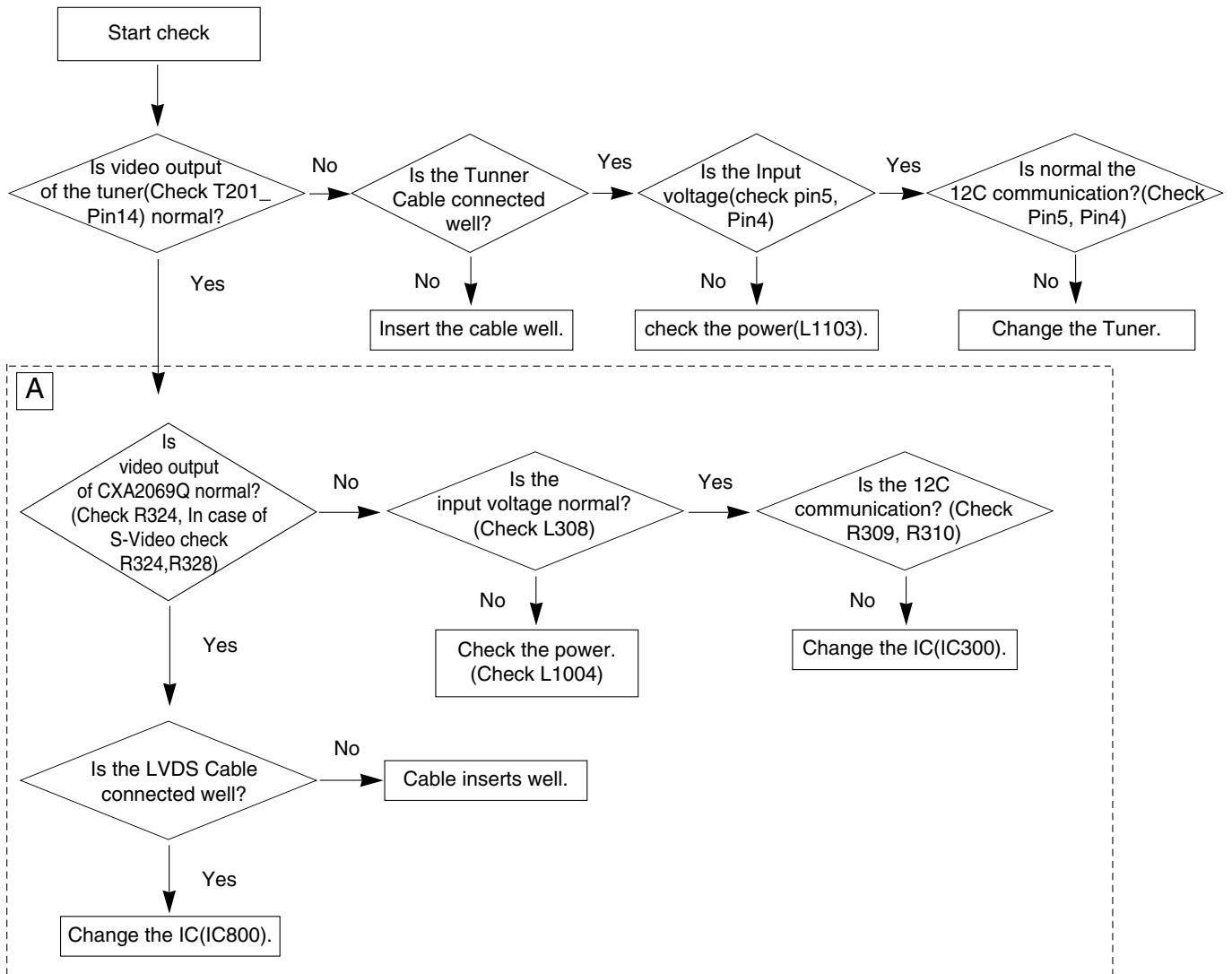
- 1) No OSD and image occur at screen.
- 2) It maintains the condition where the front LED is normal.



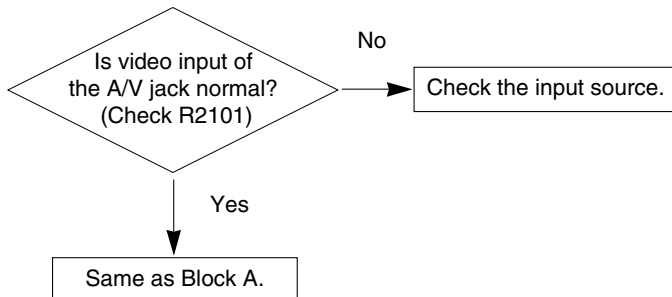
(2) Check following



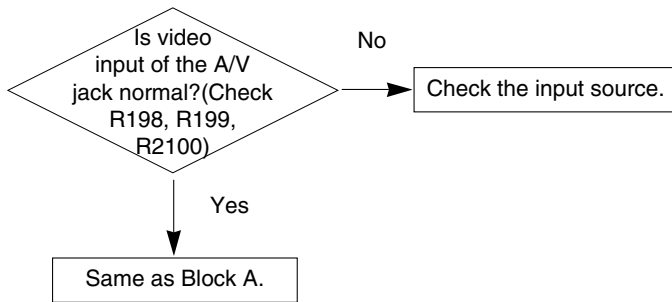
4. In case of becomes unusual display from RF mode(Main)



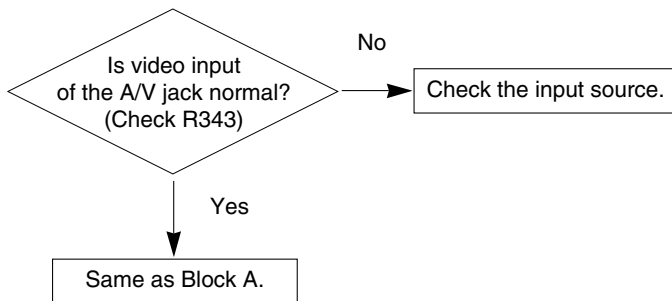
5. In the case of becomes unusual display from rear AV mode(main)



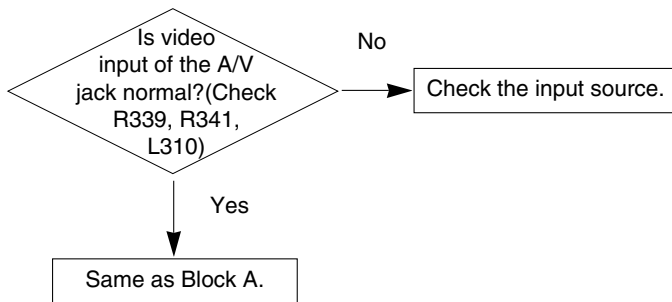
6. In the case of becomes unusual display from rear S-Video mode(main)



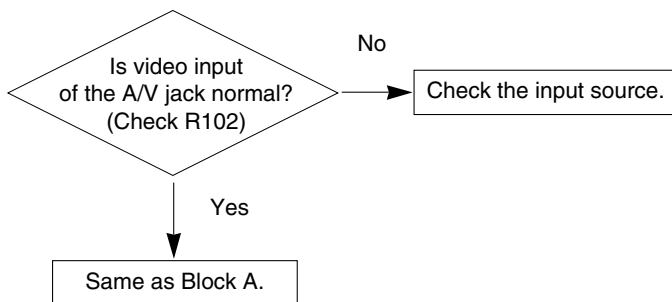
7. In the case of becomes unusual display from rear AV mode(main)



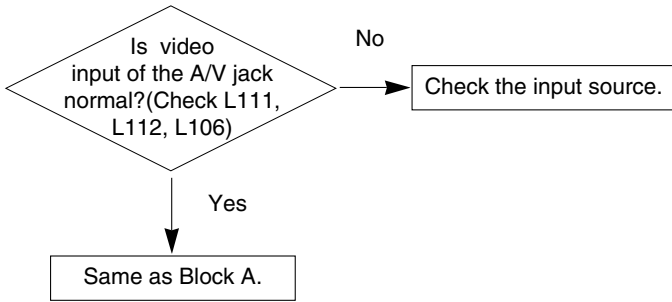
8. In the case of becomes unusual display from side S-Video mode(main)



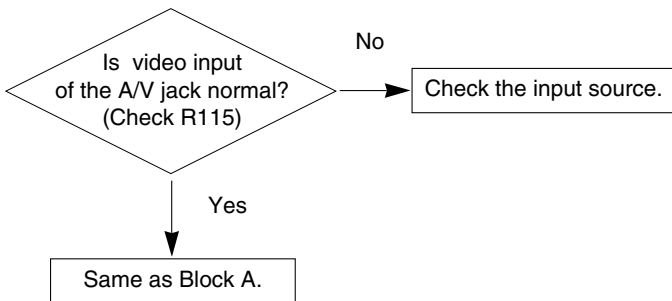
9. In the case of becomes unusual display from SCART 1 mode(main)



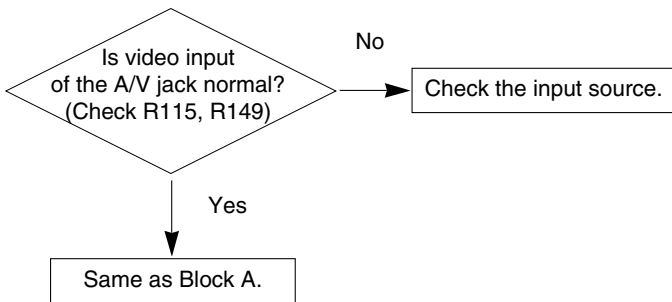
10. In the case of becomes unusual display from SCART 1_RGB mode(main)



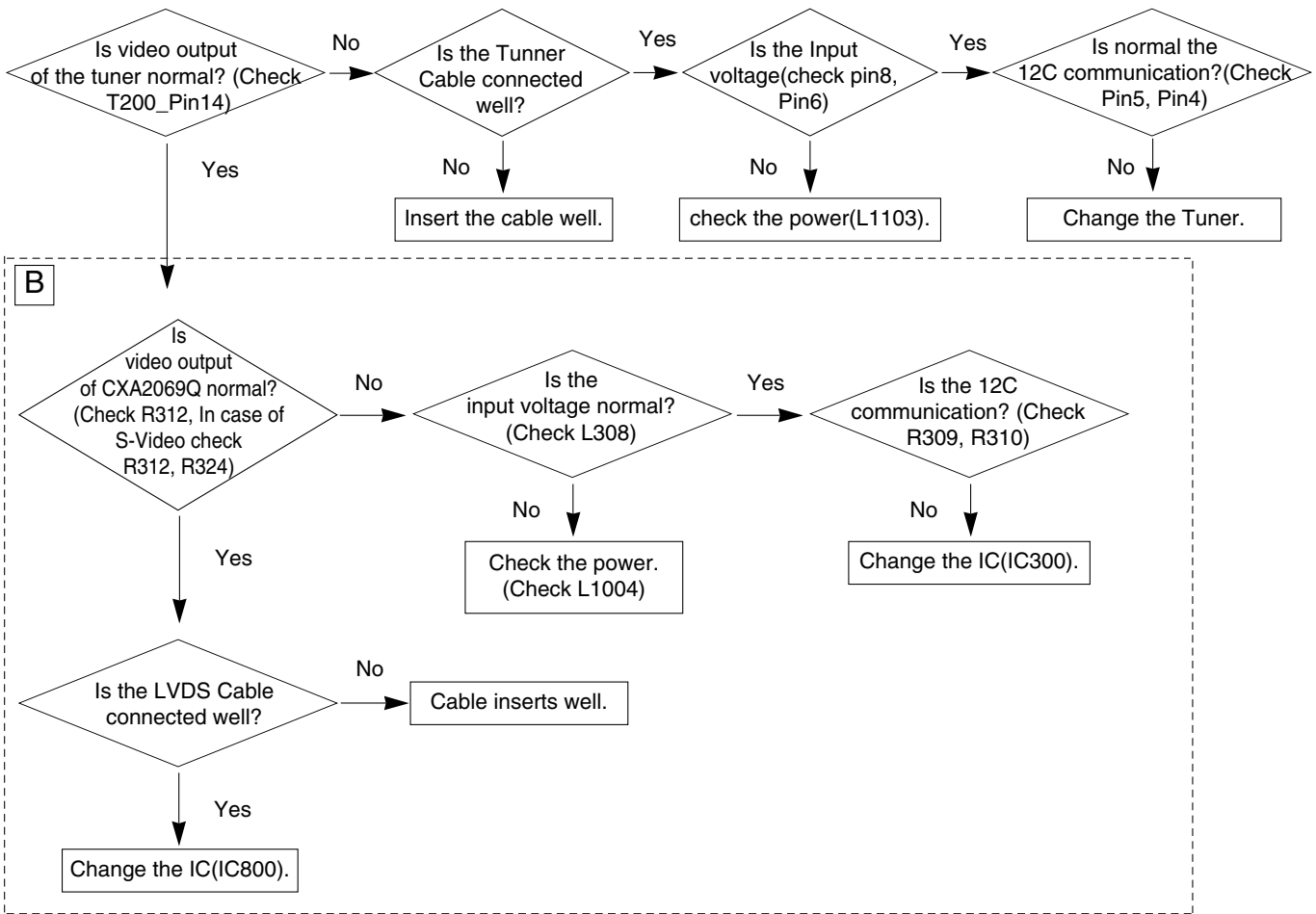
11. In the case of becomes unusual display from SCART 2 mode(main)



12. In the case of becomes unusual display from SCART 2_YC mode(main)



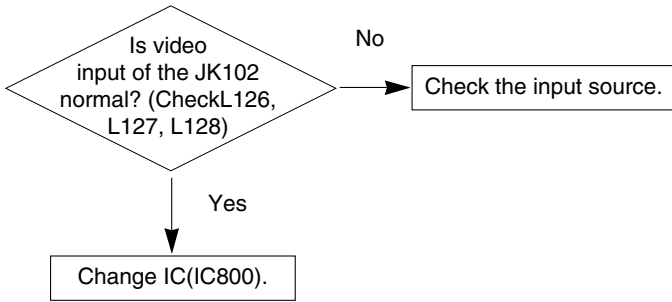
13. In case of becomes unusual display from RF mode(Sub)



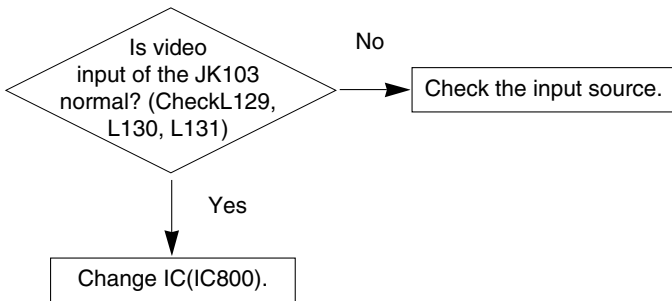
14. In the case PIP doesn't display from other modes (Sub)

- Same as the case of main except block A should be change to B.

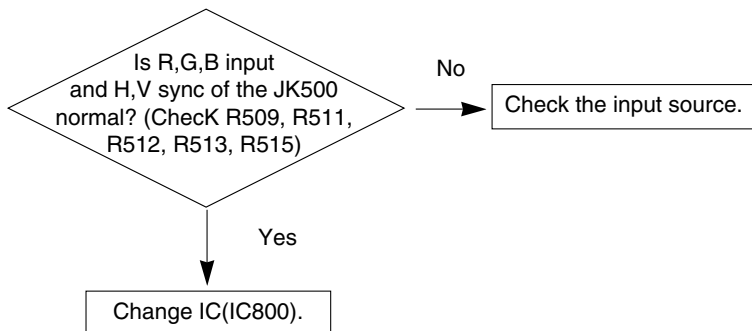
15. In the case of becomes unusual display from component 1 mode(main)



16. In the case of becomes unusual display from component 2 mode(main/sub)



17. In the case of becomes unusual display from RGB mode(main/sub)

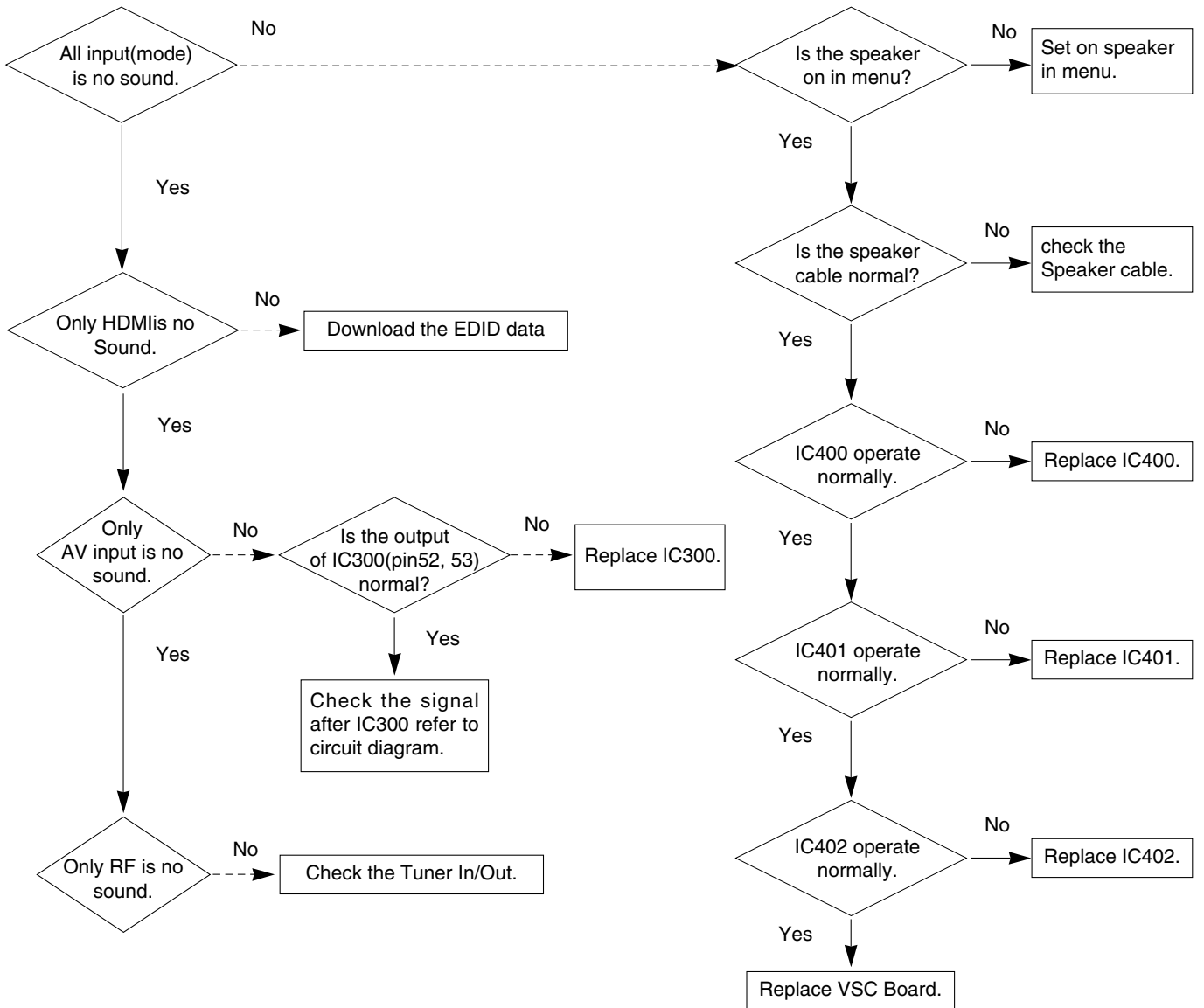


18. No sound

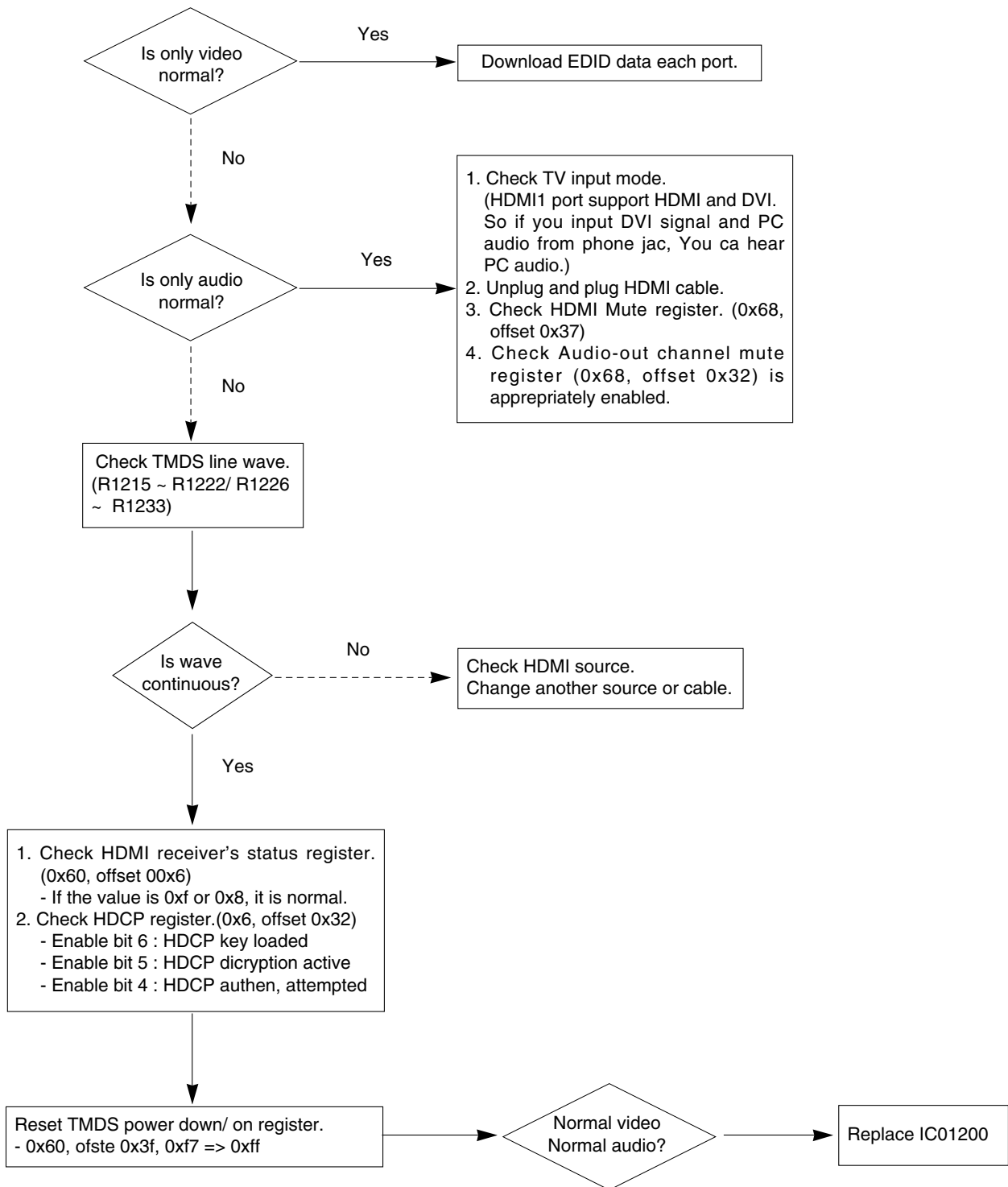
(1) Symptom

- 1) LED is white
- 2) Screen is existent, but sound isn't output.

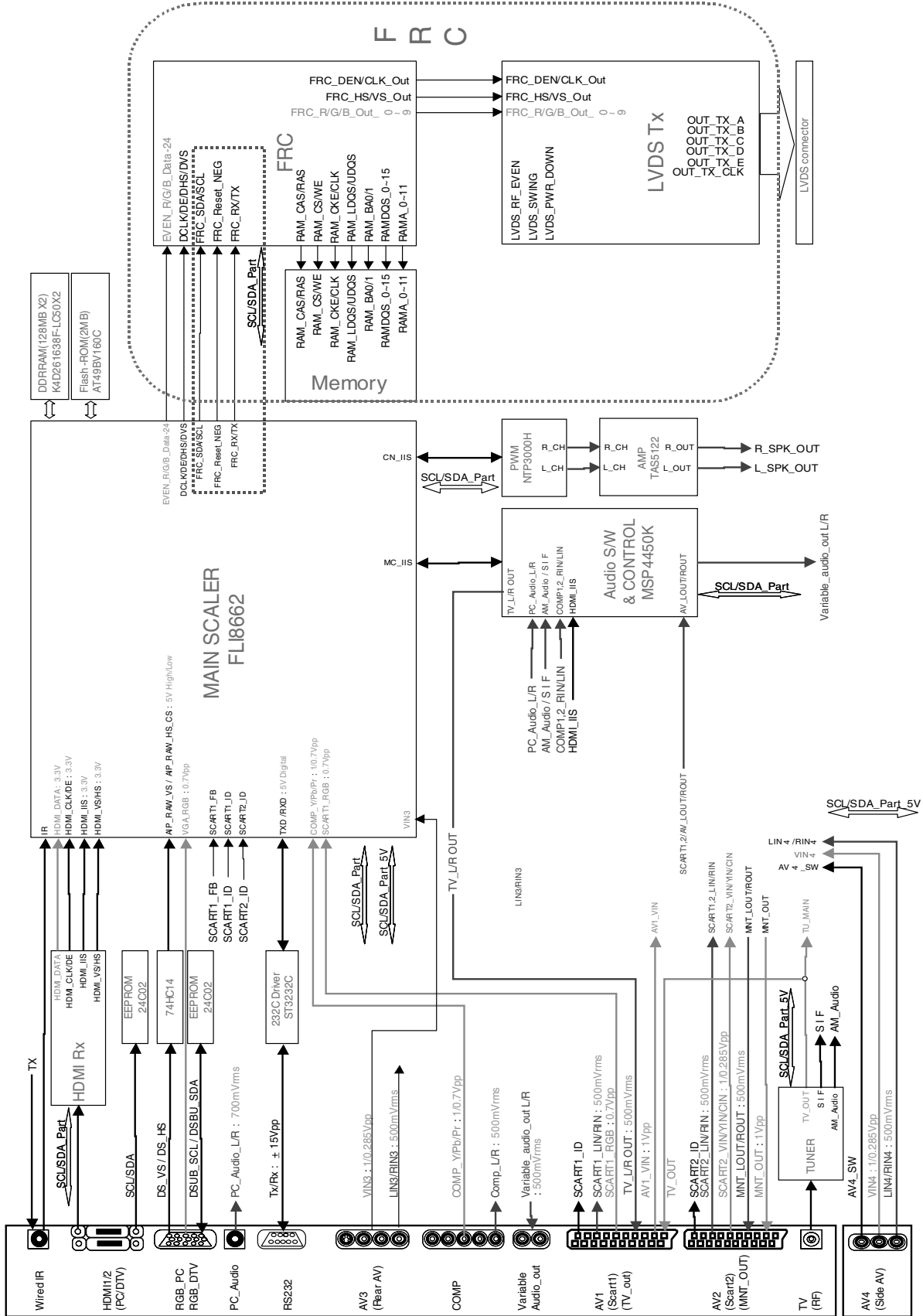
(2) Check following



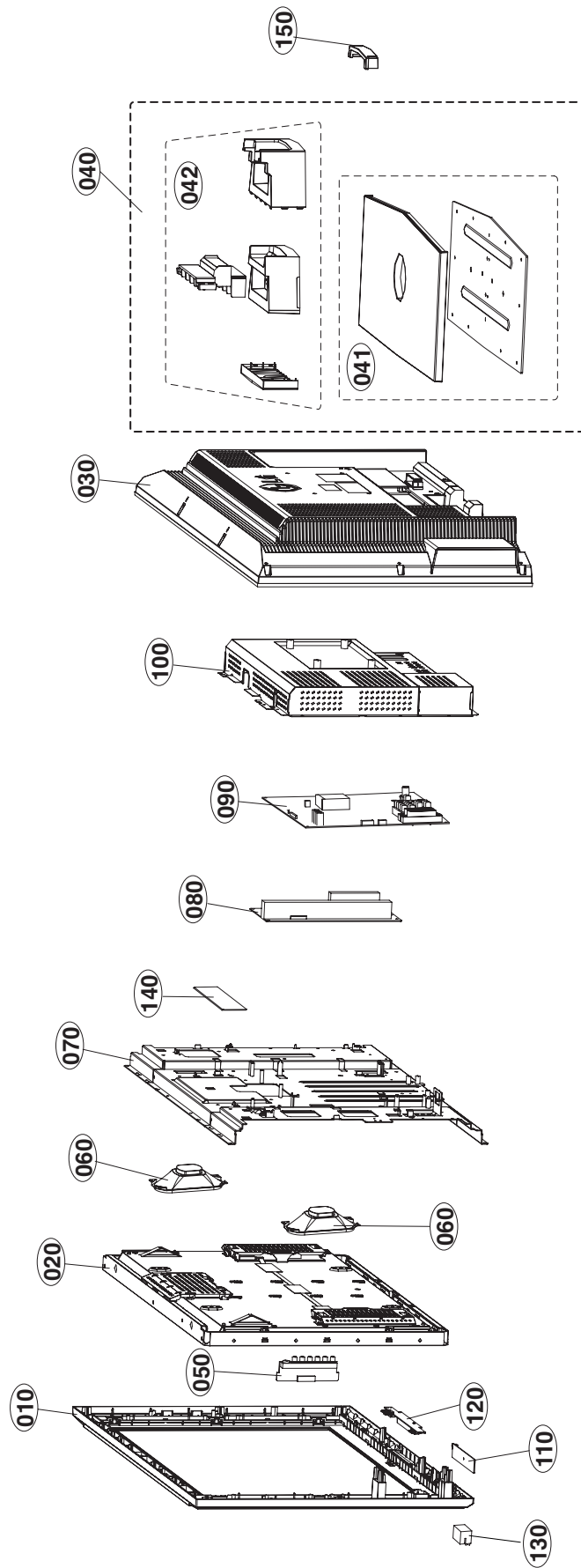
19. HDMI mode



BLOCK DIAGRAM



EXPLODED VIEW





P/NO : MFL36037301

Oct., 2006
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