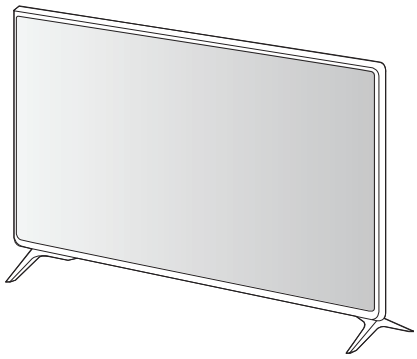
LED TV
SERVICE MANUAL

CHASSIS : UAX2A

MODEL : 55NANO85UNA

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



P/NO : MFL71703902 (2002-REV00)

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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 Exploded View.
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 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

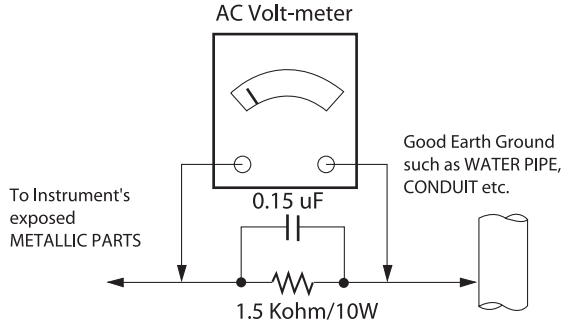
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

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 1 MΩ and 5.2 MΩ.
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 1.5 K / 10 watt resistor in parallel with a 0.15 uF 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 0.5 mA.
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



When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω
*Base on Adjustment standard

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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 1.25 cm) 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 circuit board 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.

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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.

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SPECIFICATION

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

1. Application range

This specification is applied to the LED TV used UAX2A chassis.

2. Test condition

Each part is tested as below without special appointment.

(1) Temperature: 25 °C ± 5 °C, CST: 40 °C ± 2 °C
(2) Relative Humidity: 65 % ± 10 %
(3) Power Voltage
: Standard input voltage (AC 100-240 V~, 50/60 Hz)
* 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 5 minutes prior to the adjustment.

3. Test method

(1) Performance: LGE TV test method followed
(2) Demanded other specification
- Safety : CE, IEC specification
- EMC : CE, IEC

4. General Specification

No	Item			Specification	Remark
1	Market			North America	
2	Broadcasting system			ATSC / NTSC-M, 64 & 256 QAM	
3	Available Channel			VHF : 02~13	
				UHF : 14~69	
				DTV : 02-69	
				CATV : 01~135	
				CADTV : 01~135	
4	Receiving system			Digital : ATSC, 64 & 256 QAM Analog : NTSC-M	
5	Video Input			NTSC-M	Rear (1EA)
6	Component Input			Y/Cb/Cr, Y/ Pb/Pr	Rear (1EA)
7	HDMI Input	UHD	HDMI 1	PC / DTV format	Side, Support 6Gbps
			HDMI 2	PC / DTV format	Side, Support 6Gbps, Support ARC
			HDMI 3	PC / DTV format	Rear, Support 6Gbps
			HDMI 4	PC / DTV format	Rear, Support 6Gbps
8	Audio Input			AV Audio / DVI Audio	L/R Input ; Rear AV and DVI use same jack ;
9	SPDIF out(1EA)			Optical Audio out	Rear (1EA),
10	HeadPhone			HeadPhone out	
11	USB Input			EMF, DivX HD, For SVC (download)	JPEG, MP3, DivX HD

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5. External Input Support Format

5.1. HDMI Input (PC/DTV)

No.	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed	Remarks
	HDMI-PC					
1	640*350	31.46	70.09	25.17	EGA	
2	720*400	31.46	70.08	28.32	DOS	
3	640*480	31.46	59.94	25.17	VESA(VGA)	
4	800*600	37.87	60.31	40	VESA(SVGA)	
5	1024*768	48.36	60	65	VESA(XGA)	
6	1360*768	47.71	60.01	84.75	VESA(WXGA)	
7	1152*864	54.34	60.05	80	VESA	
8	1280*1024	63.98	60.02	109	SXGA	Support to HDMI-PC
9	1920*1080	67.5	60	158.4	WUXGA(Reduced Blanking)	
10	1920*1080	134.86	119.88	296.7	UDTV 2160P	Not Support for FHD.
11	1920*1080	135	120	297	UDTV 2160P	Not Support for FHD.
12	3840*2160	53.95	23.98	296.7	UDTV 2160P	Not Support for FHD.
13	3840*2160	54	24	297	UDTV 2160P	Not Support for FHD.
14	3840*2160	56.25	25	297	UDTV 2160P	Not Support for FHD.
15	3840*2160	61.43	29.97	296.7	UDTV 2160P	Not Support for FHD.
16	3840*2160	67.5	30	297	UDTV 2160P	Not Support for FHD.
17	3840*2160	112.5	50	594	UDTV 2160P	Not Support for FHD.
18	3840*2160	134.86	59.94	593.4	UDTV 2160P	Not Support for FHD.
19	3840*2160	135	60	594	UDTV 2160P	Not Support for FHD.
20	4096*2160	53.95	23.98	296.7	UDTV 2160P	Not Support for FHD.
21	4096*2160	54	24	297	UDTV 2160P	Not Support for FHD.
22	4096*2160	56.25	25	297	UDTV 2160P	Not Support for FHD.
23	4096*2160	61.43	29.97	296.7	UDTV 2160P	Not Support for FHD.
24	4096*2160	67.5	30	297	UDTV 2160P	Not Support for FHD.
25	4096*2160	112.5	50	594	UDTV 2160P	Not Support for FHD.
26	4096*2160	134.86	59.94	593.4	UDTV 2160P	Not Support for FHD.
27	4096*2160	135	60	594	UDTV 2160P	Not Support for FHD.
28	2560*1440	88.78	59.95	241.5	3K	(UHD 60Hz models only), Support only when UHD DeepColor is On
29	2560*1440	182.99	119.99	497.7	3K	(UHD, 8K 120Hz models only), Support only when UHD DeepColor is On

No.	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed	Remarks
	HDMI-DTV					
1	640*480	31.46	59.94	25.12	SDTV 480P	
2	640*480	31.5	60	25.12	SDTV 480P	
3	720*480	31.47	59.94	27	SDTV 480P	
4	720*480	31.5	60	27.02	SDTV 480P	
5	720*576	31.25	50	27	SDTV 576P	
6	1280*720	44.96	59.94	74.17	HDTV 720P	

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No.	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock(MHz)	Proposed	Remarks
7	1280*720	45	60	74.25	HDTV 720P	
8	1280*720	37.5	50	74.25	HDTV 720P	
9	1920*1080	28.12	50	74.25	HDTV 1080I	
10	1920*1080	33.72	59.94	74.17	HDTV 1080I	
11	1920*1080	33.75	60	74.25	HDTV 1080I	
12	1920*1080	26.97	23.97	63.29	HDTV 1080P	
13	1920*1080	27	24	63.36	HDTV 1080P	
14	1920*1080	33.71	29.97	79.12	HDTV 1080P	
15	1920*1080	33.75	30	79.2	HDTV 1080P	
16	1920*1080	56.25	50	148.5	HDTV 1080P	
17	1920*1080	67.43	59.94	148.35	HDTV 1080P	
18	1920*1080	67.5	60	148.5	HDTV 1080P	
19	1920*1080	112.5	100	297	UDTV 2160P	Not Support for FHD.
20	1920*1080	134.86	119.88	296.7	UDTV 2160P	Not Support for FHD.
21	1920*1080	135	120	297	UDTV 2160P	Not Support for FHD.
22	3840*2160	53.95	23.98	296.7	UDTV 2160P	Not Support for FHD.
23	3840*2160	54	24	297	UDTV 2160P	Not Support for FHD.
24	3840*2160	56.25	25	297	UDTV 2160P	Not Support for FHD.
25	3840*2160	61.43	29.97	296.7	UDTV 2160P	Not Support for FHD.
26	3840*2160	67.5	30	297	UDTV 2160P	Not Support for FHD.
27	3840*2160	112.5	50	594	UDTV 2160P	Not Support for FHD.
28	3840*2160	134.86	59.94	593.4	UDTV 2160P	Not Support for FHD.
29	3840*2160	135	60	594	UDTV 2160P	Not Support for FHD.
30	3840*2160	225	100	1188	UDTV 2160P	4K120 model (K6Hp HDMI 3,4 port, O20) or 8K model
31	3840*2160	269.73	119.88	1186.8	UDTV 2160P	
32	3840*2160	270	120	1188	UDTV 2160P	
33	4096*2160	53.95	23.98	296.7	UDTV 2160P	Not Support for FHD.
34	4096*2160	54	24	297	UDTV 2160P	Not Support for FHD.
35	4096*2160	56.25	25	297	UDTV 2160P	Not Support for FHD.
36	4096*2160	61.43	29.97	296.7	UDTV 2160P	Not Support for FHD.
37	4096*2160	67.5	30	297	UDTV 2160P	Not Support for FHD.
38	4096*2160	112.5	50	594	UDTV 2160P	Not Support for FHD.
39	4096*2160	134.86	59.94	593.4	UDTV 2160P	Not Support for FHD.
40	4096*2160	135	60	594	UDTV 2160P	Not Support for FHD.
41	4096*2160	225	100	1188	UDTV 2160P	4K120 model (K6Hp HDMI 3,4 port, O20) or 8K model
42	4096*2160	269.73	119.88	1186.8	UDTV 2160P	
43	4096*2160	270	120	1188	UDTV 2160P	
44	7680*4320	107.89	23.98	1188	8K	8K Model Only.
45	7680*4320	108	24	1188	8K	8K Model Only.
46	7680*4320	110	25	1188	8K	8K Model Only.
47	7680*4320	131.87	29.97	1188	8K	8K Model Only.
48	7680*4320	132	30	1188	8K	8K Model Only.
49	7680*4320	220	50	2376	8K	8K Model Only.
50	7680*4320	263.74	59.94	2376	8K	8K Model Only.
51	7680*4320	264	60	2376	8K	8K Model Only.

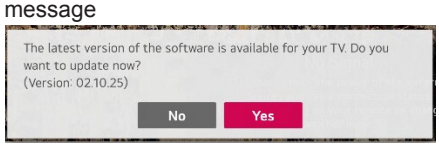
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SOFTWARE UPDATE

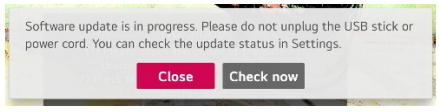
1. USB

(1) Insert the USB memory Stick to the USB port

(2) Automatically detect the SW Version and show the below message

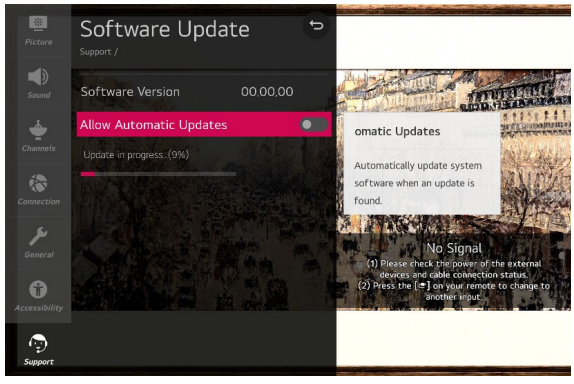


(3) Click [YES]: initiate the download and install of the update.

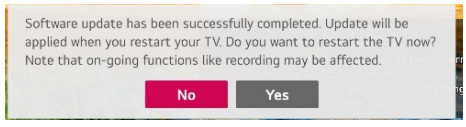


(4) Click [Check Now]: move to “About This TV” page for update

(5) TV is updating



(6) After finished the update, below Pop-up appear



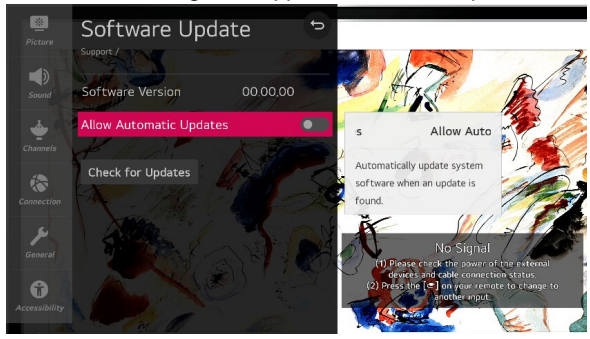
(7) Click [Yes] : TV will be DC OFF -> ON

(8) After TV turned on, Check the updated SW Version and Tool Option

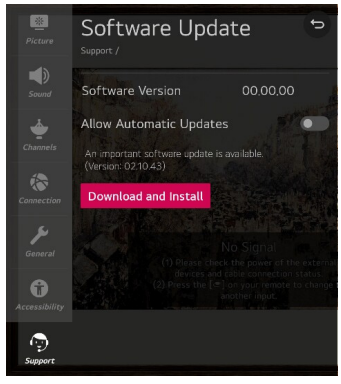
2. NSU

(This Function is needed to connect to the internet)

(1) Menu -> All Settings -> Support -> Software Update

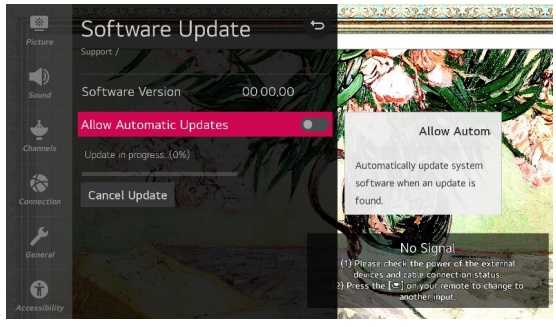


(2) Click [CHEK FOR UPDATES] : system check newest version

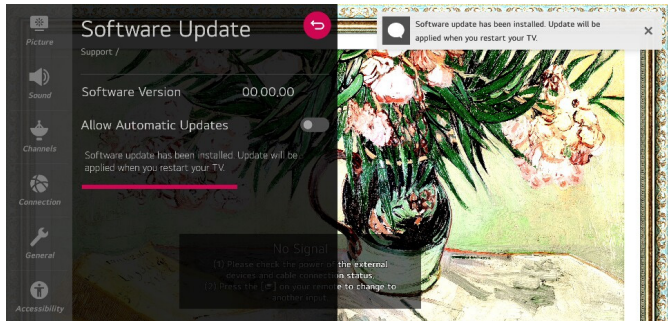


(3) Click [DOWNLOAD AND INSTALL]

(4) TV is updating



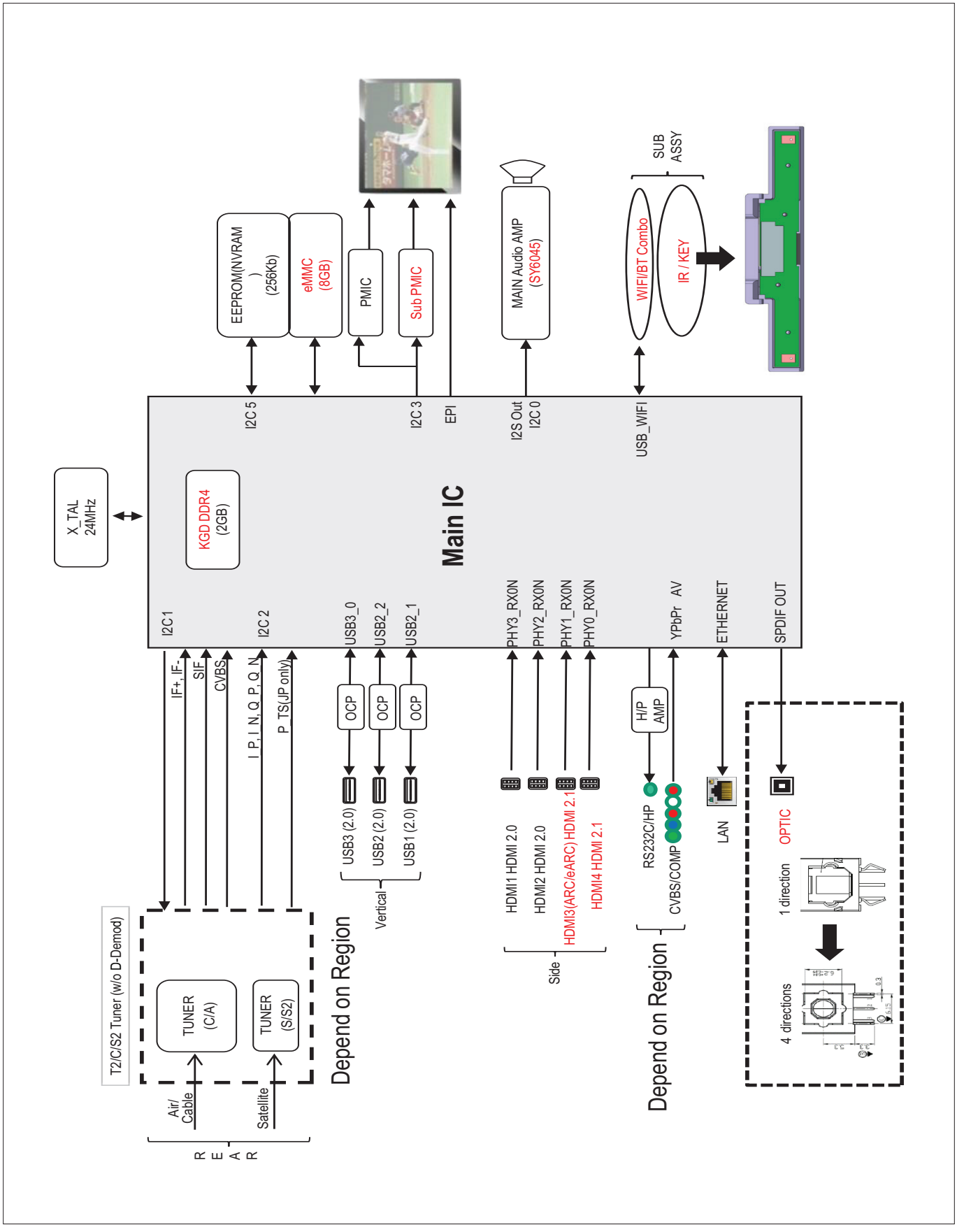
(5) After finished the update, below Pop-up appear



(6) Turn OFF the TV and On. Check the updated SW Version and Tool Option

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BLOCK DIAGRAM

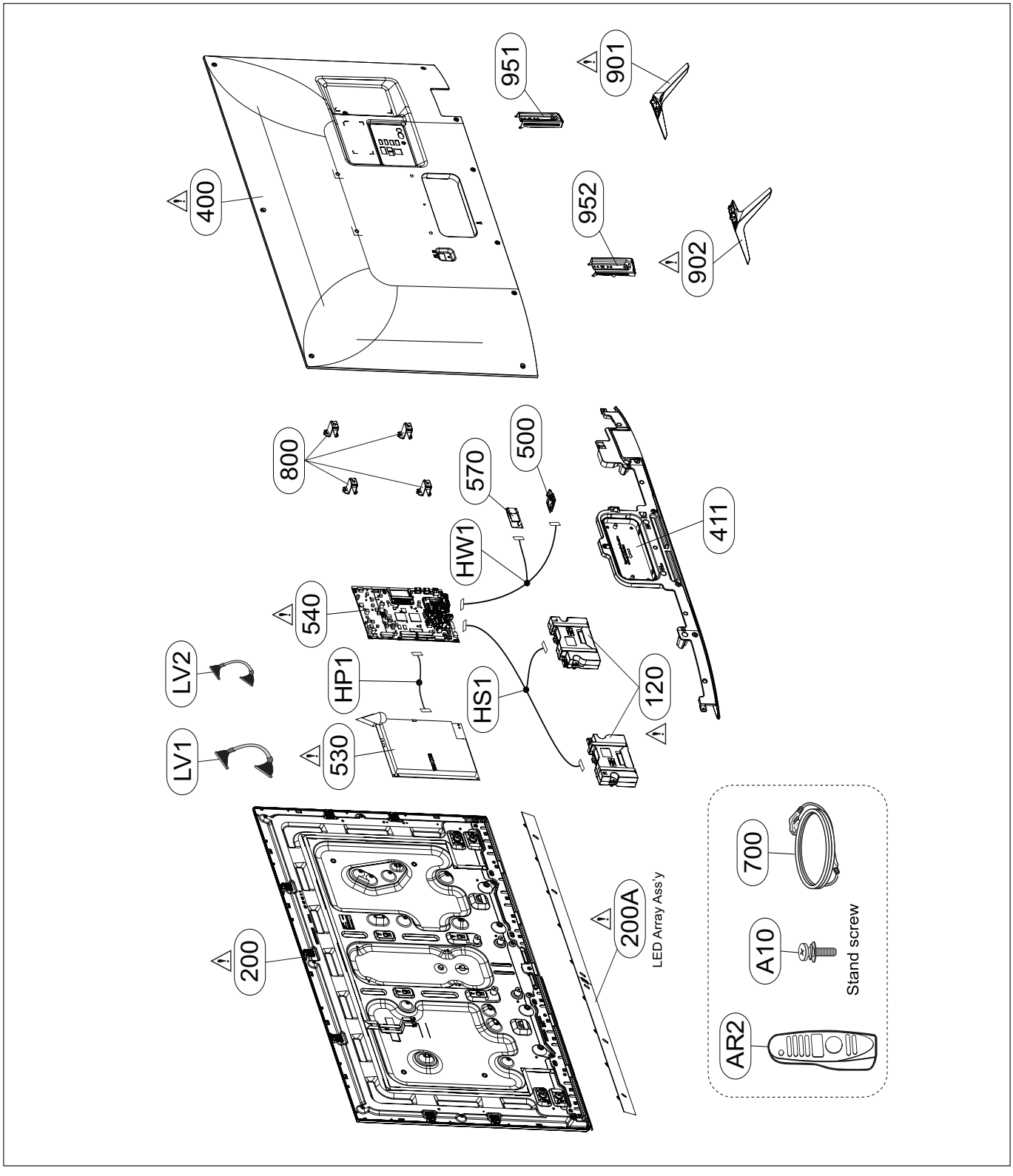


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EXPLODED VIEW (SET)

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the EXPLODED VIEW.
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.

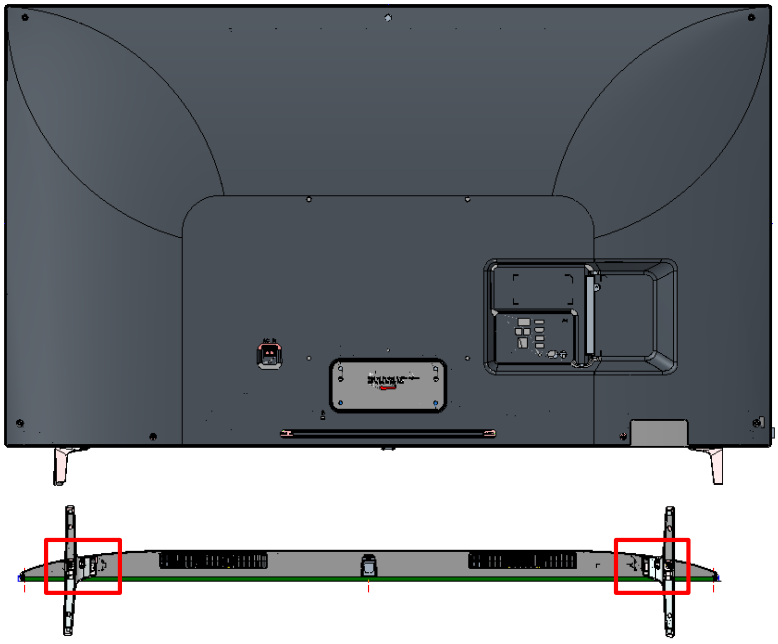


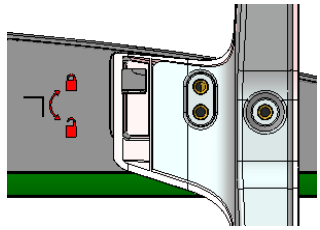
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ASSEMBLY / DISASSEMBLY GUIDE (SET)

[Disassembly Guide]

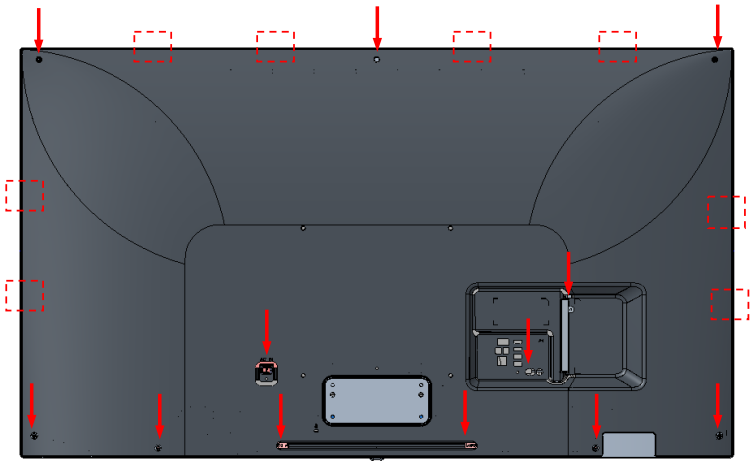
(1) Lay the TV Set on a flat pad and Disassemble Stand Screw.(65” 6ea , 55/49” 4ea)





(2) Disassemble B/C Screw

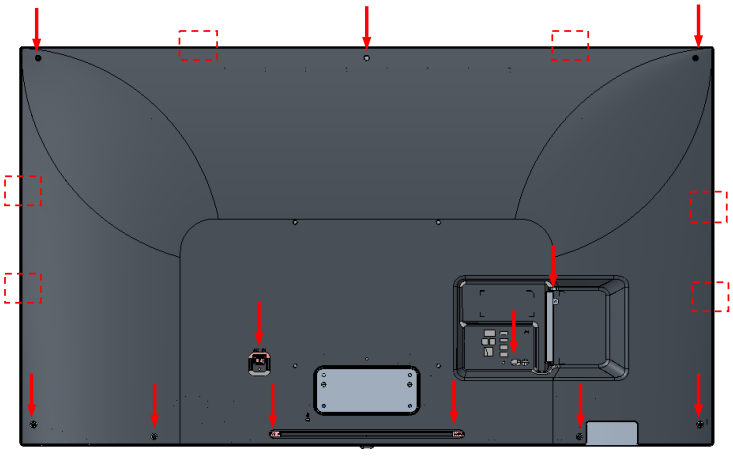
(3) Prepare B/C remove after Checking the Module Holder Position.



65/55"

Screw : 12ea

Holder : 65/55” 8ea, 49” 6ea



49"

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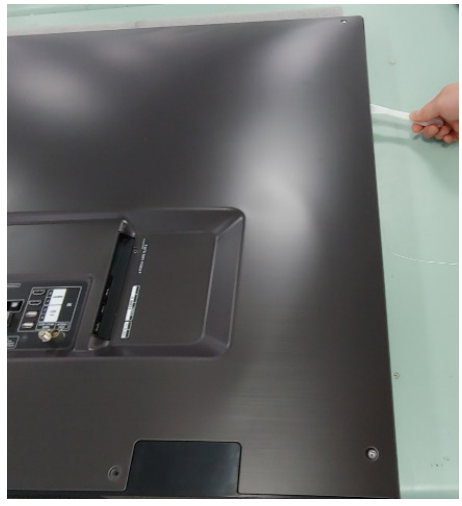
(4) Left Side : Disassemble B/C Using Opener. Put the opener into the gap of guide panel and back cover and move upward.
(We recommend disassembly from the left side)

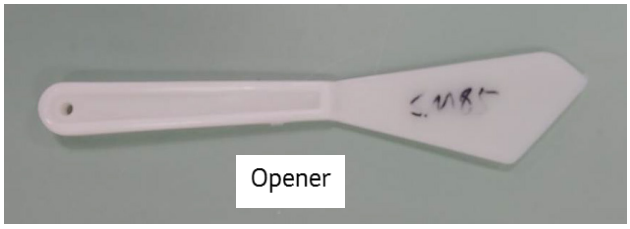




(5) Right Side : Disassemble B/C Using Opener. Put the opener into the gap of guide panel and back cover and move upward.







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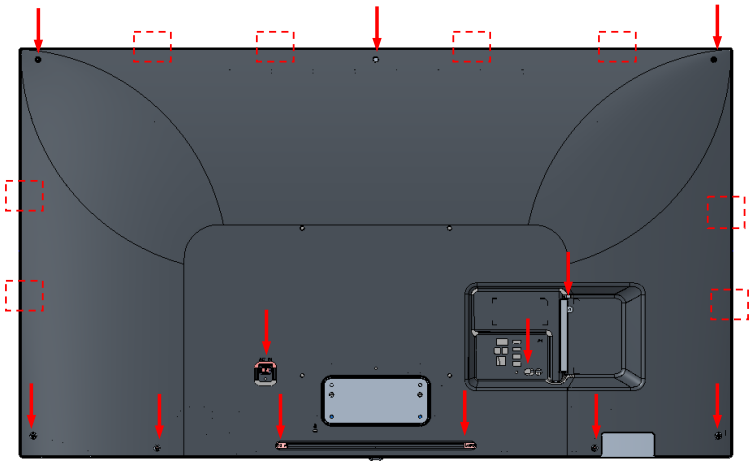
(6) Hold the center of the back cover as shown in the picture and slide it upwards.



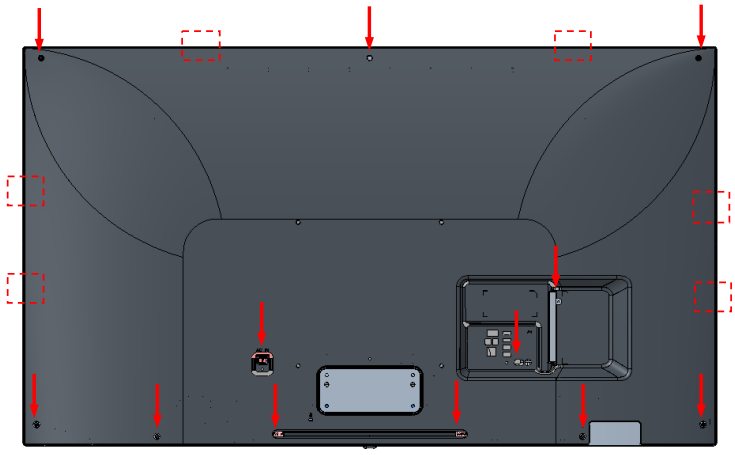
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[Assembly Guide]

(1) Place the B/C on the Module Assy and push the Holder Position
(2) Check the Upper/Left/Right Side gap to make sure the the holder is assembled correctly.
-> If the Holder is not assembled, B/C is opened and easily recognized.
(3) Assemble the Screw of B/C.



65/55”

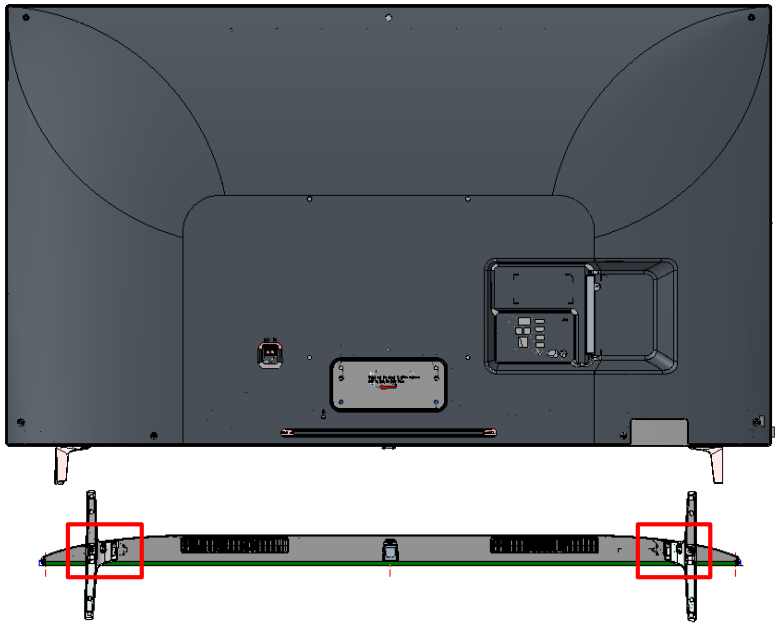


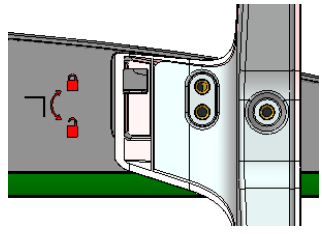
49""

Screw : 12ea

Holder : 65/55” 8ea, 49” 6ea

(4) Assemble Stand Screw.(65” 6ea , 55/49” 4ea)





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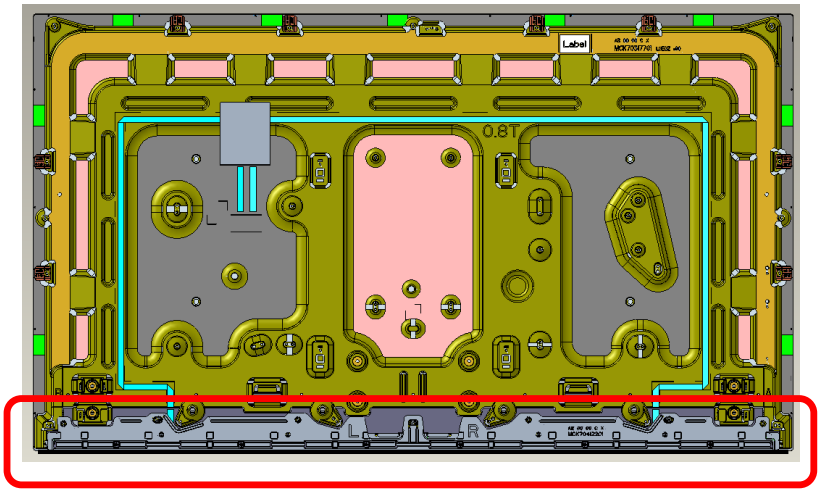
ASSEMBLY / DISASSEMBLY GUIDE (MODULE)

[Module Disassemble]

(1) Disassemble of Cover Shield

Disassemble the Screws

Screw(M3*L3.5)
65inch 10ea,
55inch 7ea,
49inch 7ea

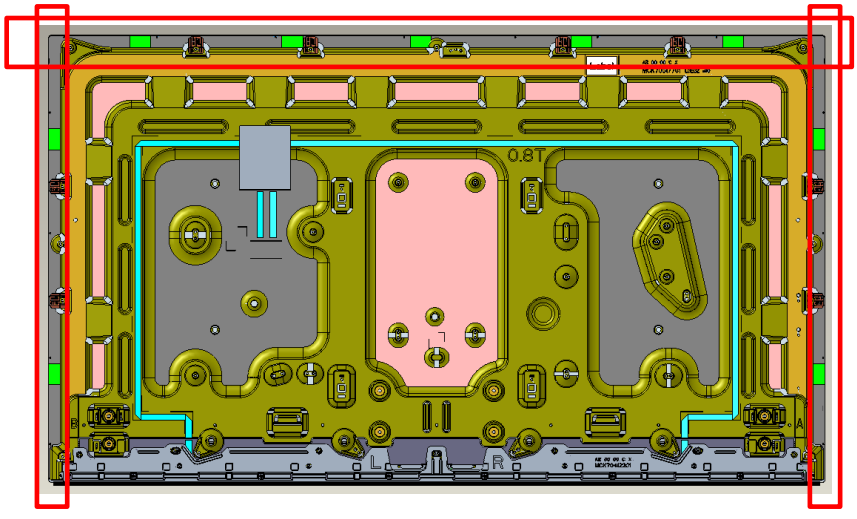






Disassemble the source PCB from the guide

(2) Disassemble of Guide panel screw

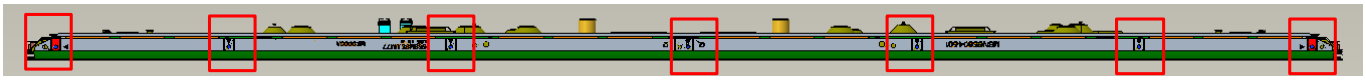




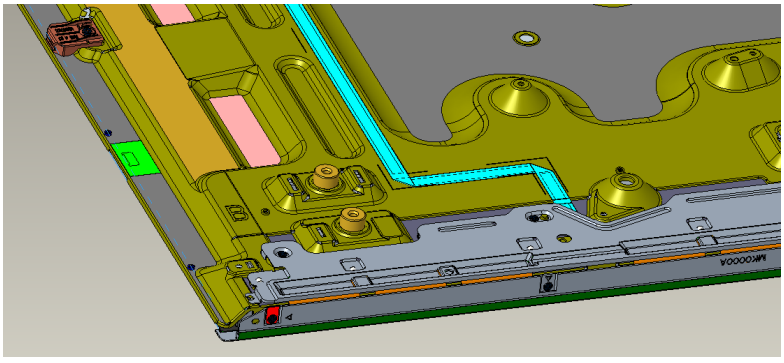
UP/RIGHT/LEFT Tapping Screw(M2*L4)
65inch 18ea,
55inch 17ea,
49inch 15ea

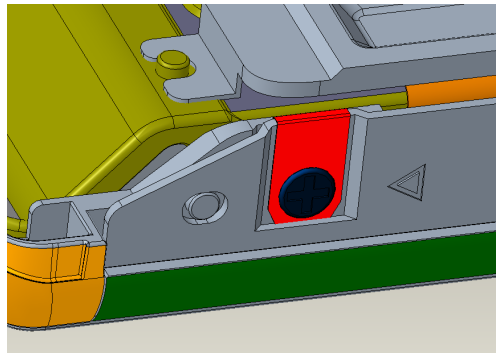
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(3) Disassemble of Case Top screw.



- Screw(M3*L4)
65inch 9ea,
55inch 7ea,
49inch 5ea

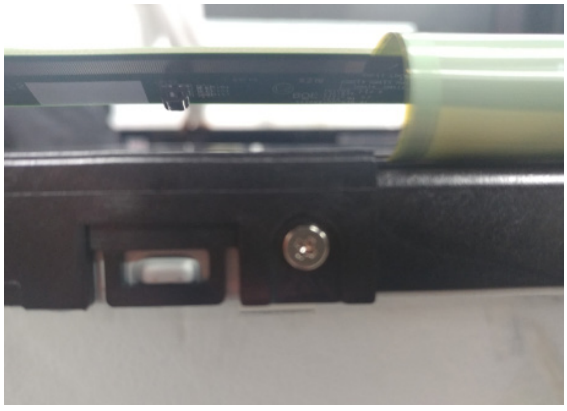


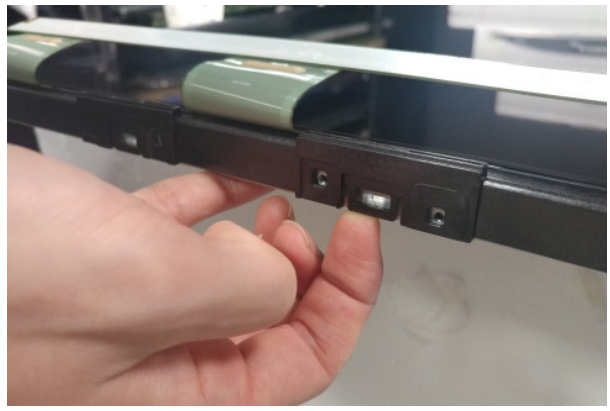


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[Panel assy (with Guide pael) Disassemble]

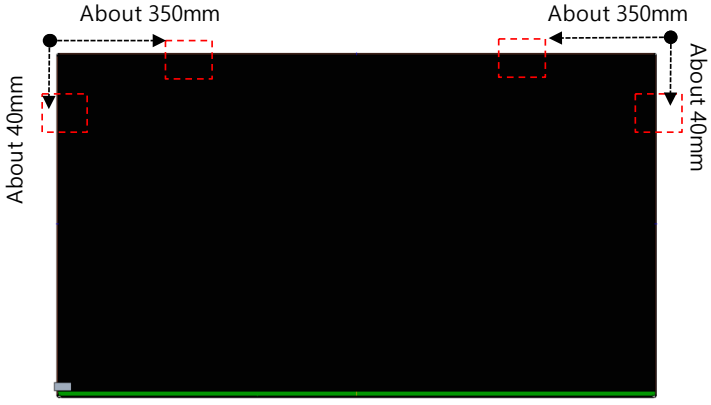
(4) Disassemble of screw(M3*L3.5) 65inch 4ea, 55inch 3ea, 49inch 2ea

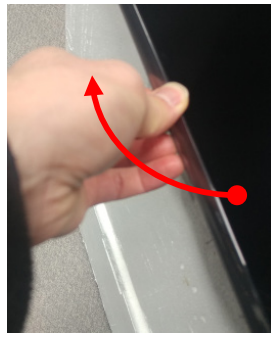


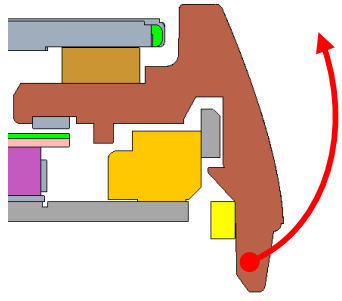


Disassemble Hooks.

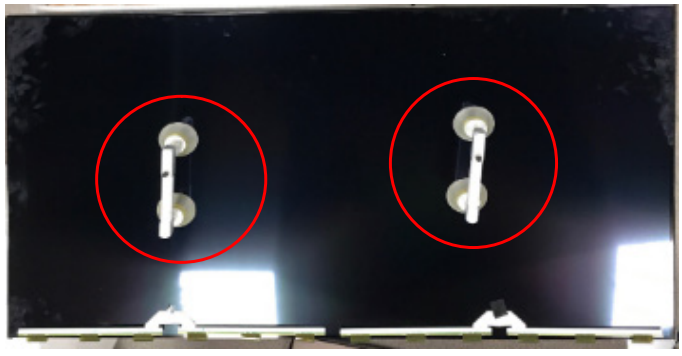
(5) Disassemble Hooks.
(UP 2ea Left/Right each 1ea)

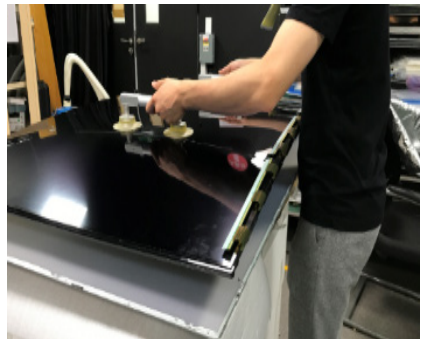






(6) Panel and Guide Panel disassembly (using absorber)

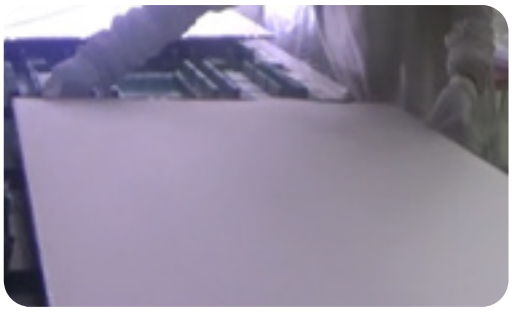




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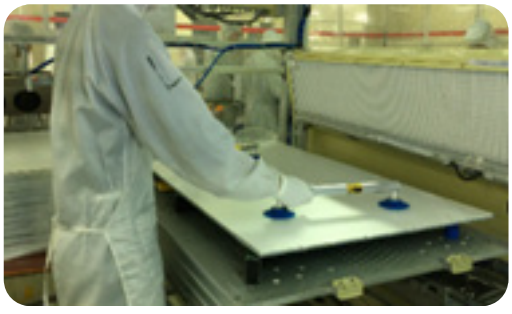
[BLU Disassemble]

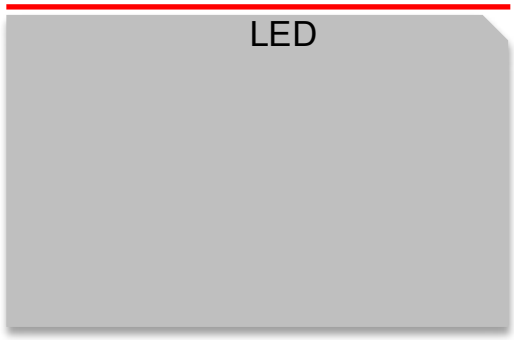
(7) Removal of Sheets





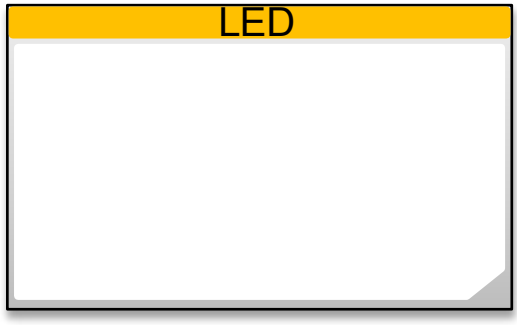
(8) Removal of LGP



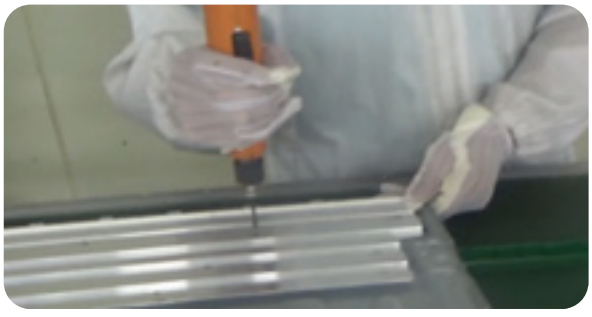


(9) Removal of Reflector





(10) Removal of LED Housing Assy



Screw(Powerlok type, M3*L5)
65inch 23ea,
55inch 14ea,
49inch 13ea

The Guide of BLU/LCM assemble
-> The module assembly can be performed in reverse disassembly order.

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TROUBLE SHOOTING GUIDE

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Contents of Standard Repair Process

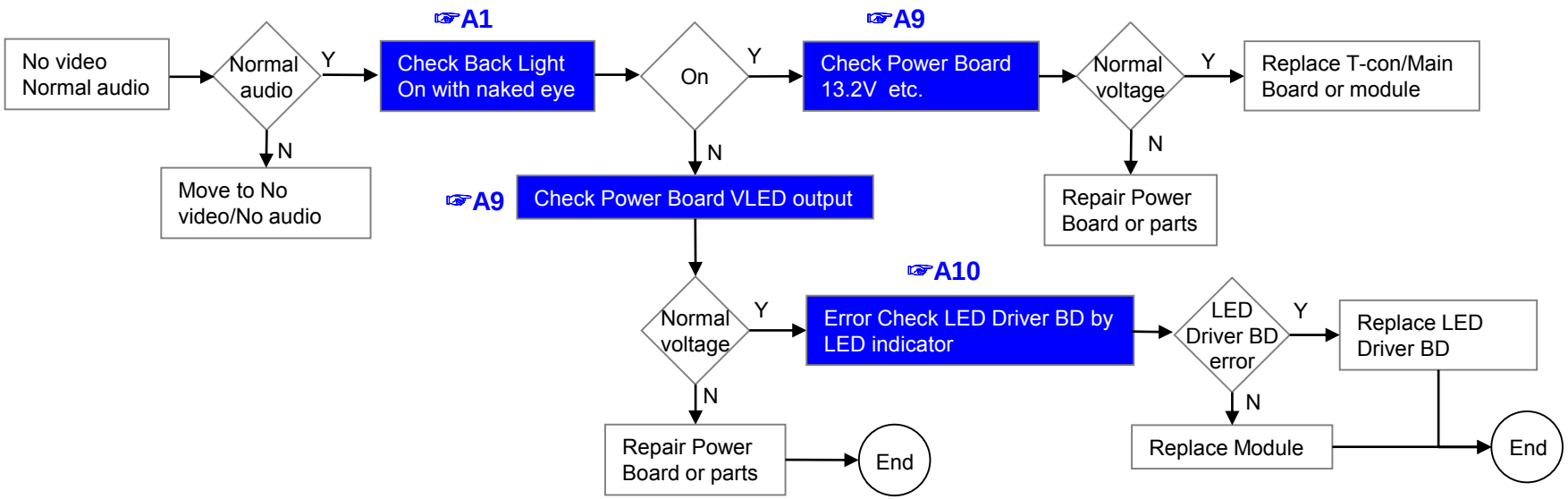
No.	Error symptom (High category)	Error symptom (Mid category)	Page	Remarks
1	A. Video error	No video/Normal audio	1	
2		No video/No audio	2	
3		Picture broken/ Freezing	3	
4		Color error	4	
5		Vertical/Horizontal bar, residual image, light spot, external device color error	5	
6	B. Power error	No power	6	
7		Off when on, off while viewing, power auto on/off	7	
8		Off when on, off while viewing, power auto on/off	8	
9	C. Audio error	No audio/Normal video	9	
10		Wrecked audio/discontinuation/noise	10	
11	D. Function error	Remote control & Local switch checking	11	
12		MR20 operating checking	12	
13		Wifi operating checking	13	
14		External device recognition error	14	
15	E. Noise	Circuit noise, mechanical noise	15	
16	F. Exterior error	Exterior defect	16	

First of all, Check whether there is SVC Bulletin in GSCS System for these model.

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	Error symptom	A. Video error	Established date		
		No video/ Normal audio	Revised date		

First of all, Check whether all of cables between board is inserted properly or not.
(Main B/D↔ Power B/D, Each Cable for Panel, Speaker Cable, IR B/D Cable,,,)

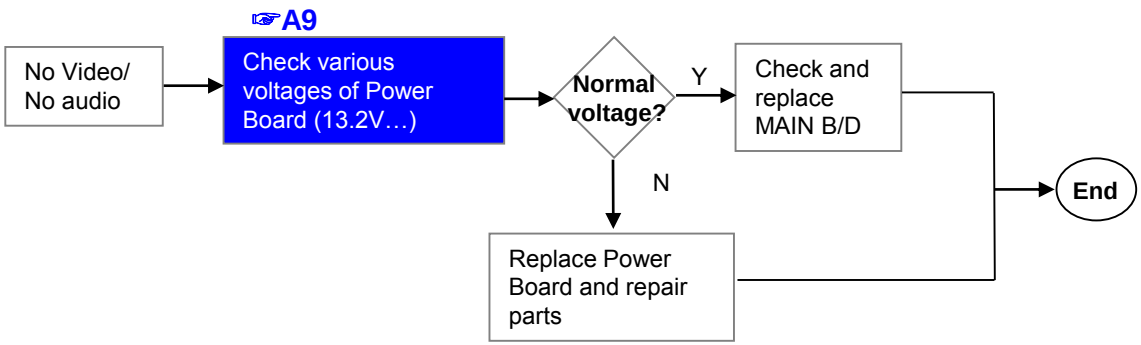


※Precaution ☞A4 & A2

Always check & record S/W Version and White Balance value before replacing the Main Board → Replace Main Board → Re-enter White Balance value

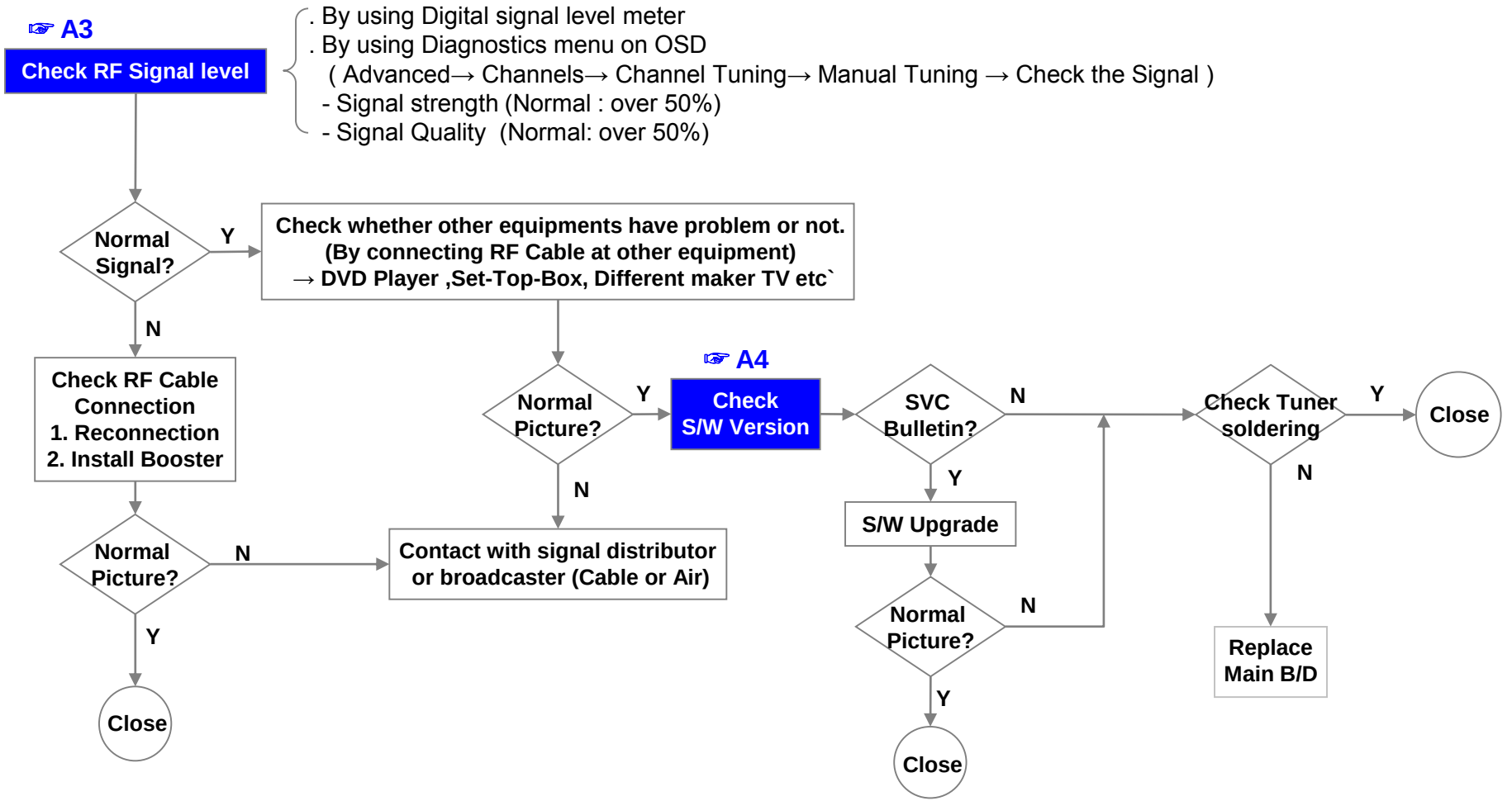
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	Error symptom	A. Video error	Established date		
		No video/ No audio	Revised date		



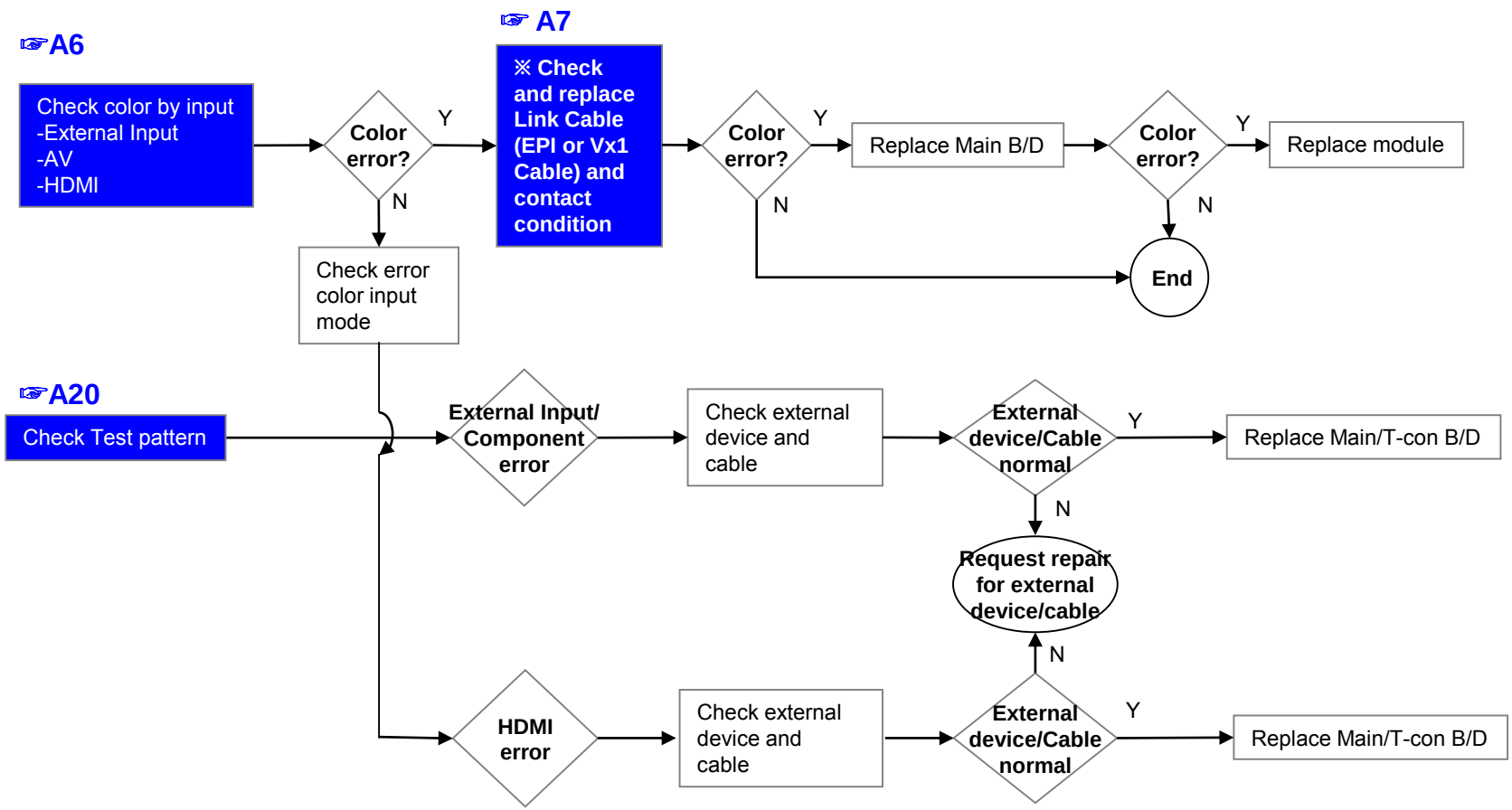
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	Error symptom	A. Video error	Established date		
		Picture broken/ Freezing	Revised date		



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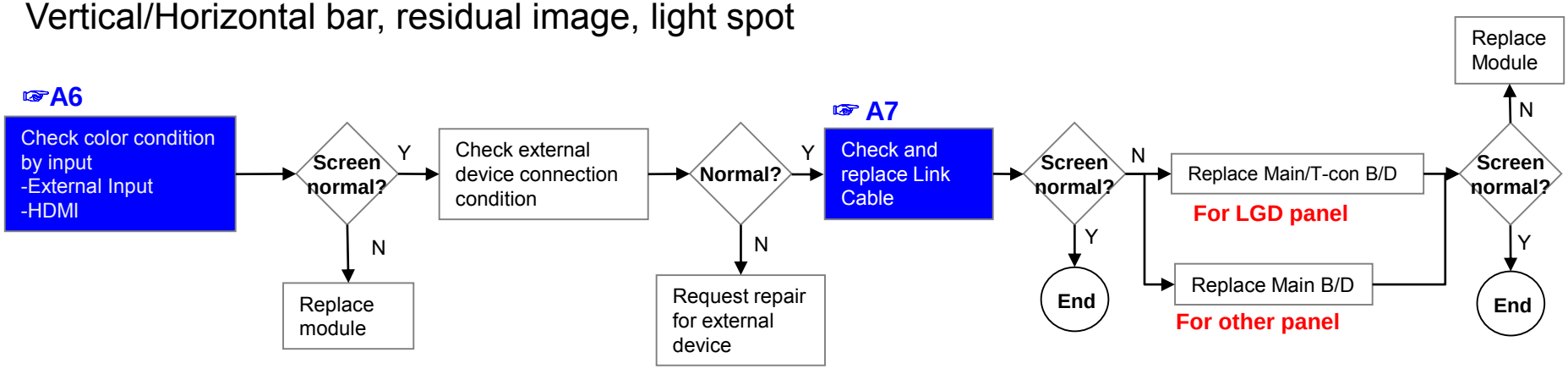
	Error symptom	A. Video error	Established date		
		Color error	Revised date		



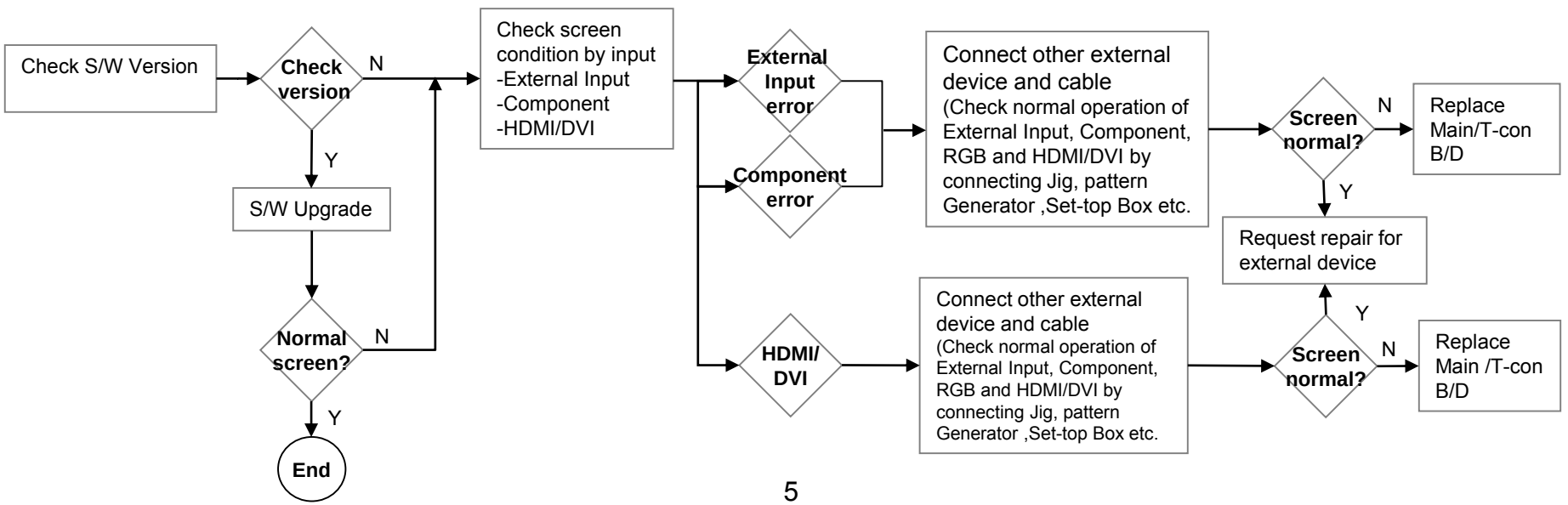
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	Error symptom	A. Video error	Established date		
		Vertical / Horizontal bar, residual image, light spot, external device color error	Revised date		

Vertical/Horizontal bar, residual image, light spot

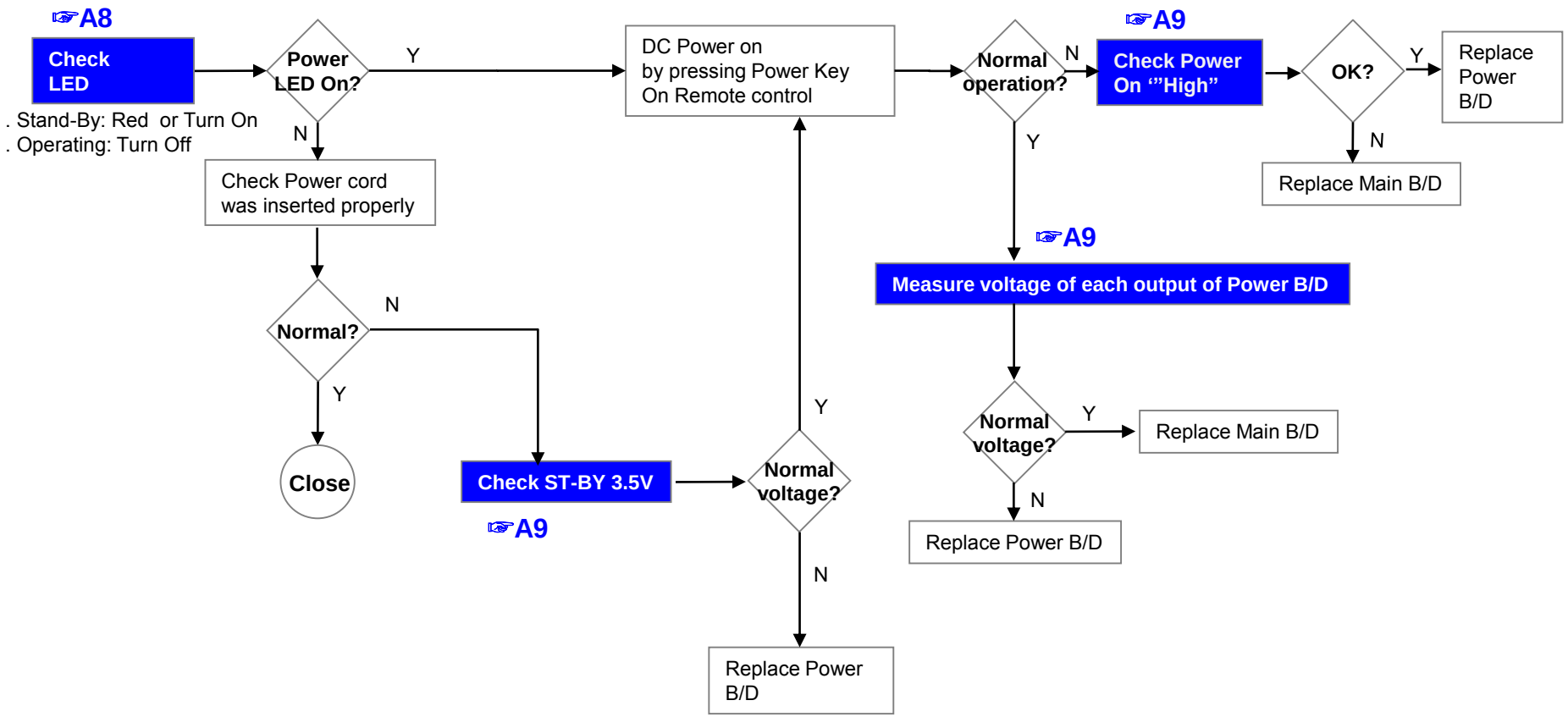


External device screen error-Color error



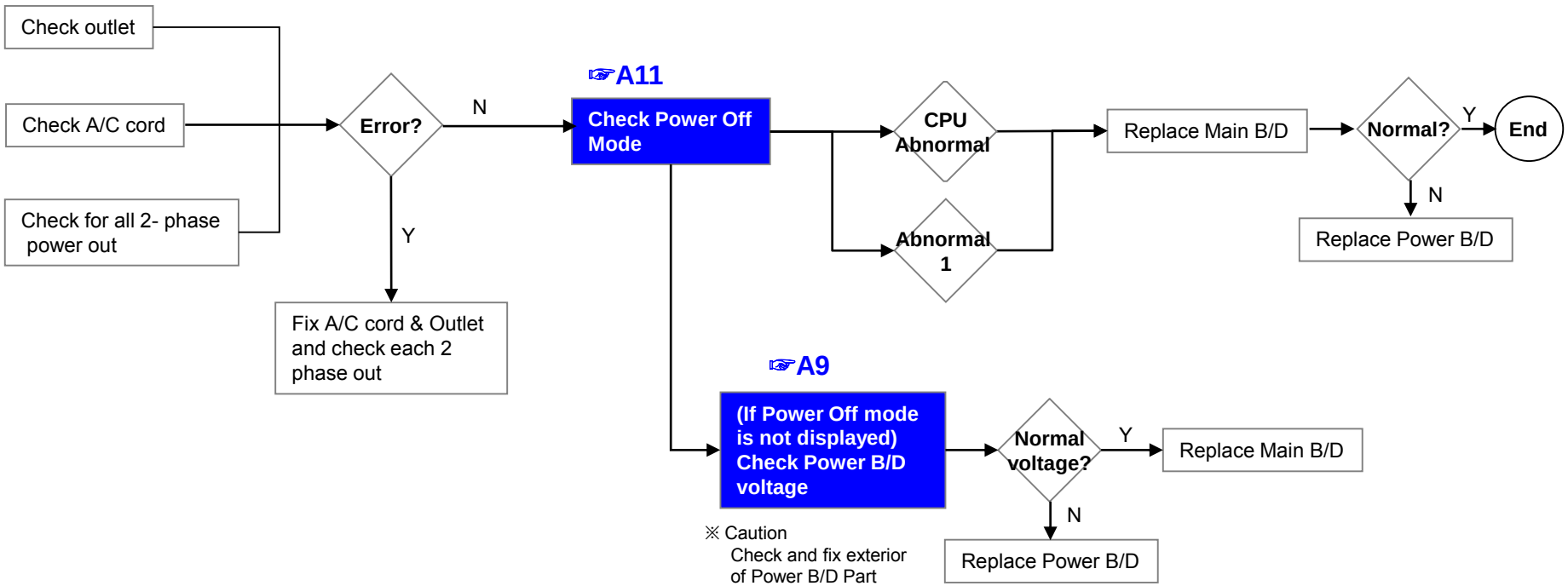
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	Error symptom	B. Power error	Established date		
		No power	Revised date		



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	Error symptom	B. Power error	Established date		
		Off when on, off while viewing, power auto on/off	Revised date		



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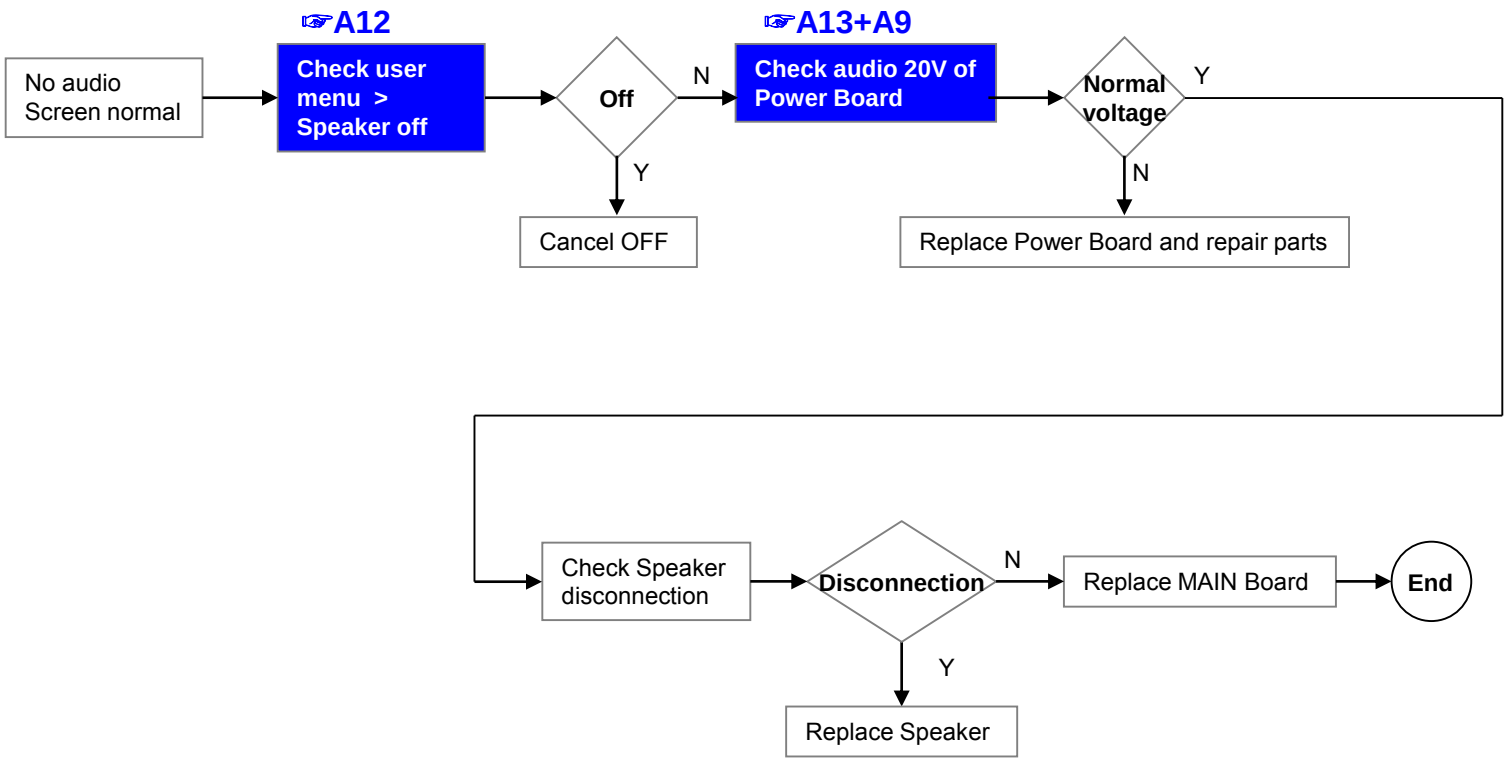
	Error symptom	B. Power error	Established date		
		Off when on, off while viewing, power auto on/off	Revised date		

*** Please refer to the all cases which can be displayed on power off mode.**

Power Off list	Explanation	Action contents
KEYTIMEOUT	Power off when TV is not turned off during a certain time RESULT : micom force to trigger TV power off. CONDITION : When pressing power key while power on/off status, CPU does not response within 8 seconds	Check & Change Main B/D
1SEC Power OFF	Almost the same as Power Off by KEYTIMEOUT. If there is no vaild communication Bet ween CPU and MICOM for more than 5 seconds, the MICOM switcheds off PSU and Records. Power off by 1SEC Power off. In this case, we don't have information where the malfunction exactly occurred. But in in indicates that CPU had stopped and rebooted.	Check & Change Main B/D
ACDET	In case of AC Off (It is normal when the power cord is unplugged.)	Normal
	If there are many ACDETs connected, Power Board is defective	Check & Change Power B/D
5V MNT	Power off by unstable AC power detect. RESULT : micom check the stable power. CONDITION : When AC on or DC on, stabilization check routine (Power Detect High Check) fail after multi power on.	Check & Change Power B/D
CPUABNORMAL	If the CPU attempts to reset in case of abnormal operation and Shut Down in case of failure.	Check & Change Main B/D
NO POLING	Power off when receiving no ack. RESULT : TV power off/on (Reboot) CONDITION : There is no I2C response from CPU for 15 seconds.	Check & Change Main B/D
CPUCMD	Power off by main SoC command.	Check & Change Main B/D
INV_ERROR	Power off by module error (OLED) CONDITION : OLED Module send signal to micom	Check & Change OLED Module
ONRF_FAIL	RESULT : Reboot, CONDITION : OLED module compensation is running but fails.	Check & Change OLED Module
PNWASHFAIL	Power off by panel noise wash function fail case.	Check & Change OLED Module
RESET	When Micom is reset by AC Off	Normal Case
KEY	Power off by Local key	
OFFTIMER	Power off by Off timer	
SLEEPTIMER	Power off by sleep timer	
NOSIG	Power off by No Signal	
FANSTOP	Power off by FAN operation stopped	
INSTOP	Power off by Instop Key	
AUTO OFF	Power off by auto off function	
RESREC	Power off by reserved recording	
RECEND	Power off when recording stops	
SWDOWN	Reboot by SW down load function	
UNKNOWN	No meaning (same as initial value)	
COMP_END	OLED threshold voltage degradation(Compensation) completes.	
PNWASHDONE	Power off by panel noise wash function complited. (OLED)	

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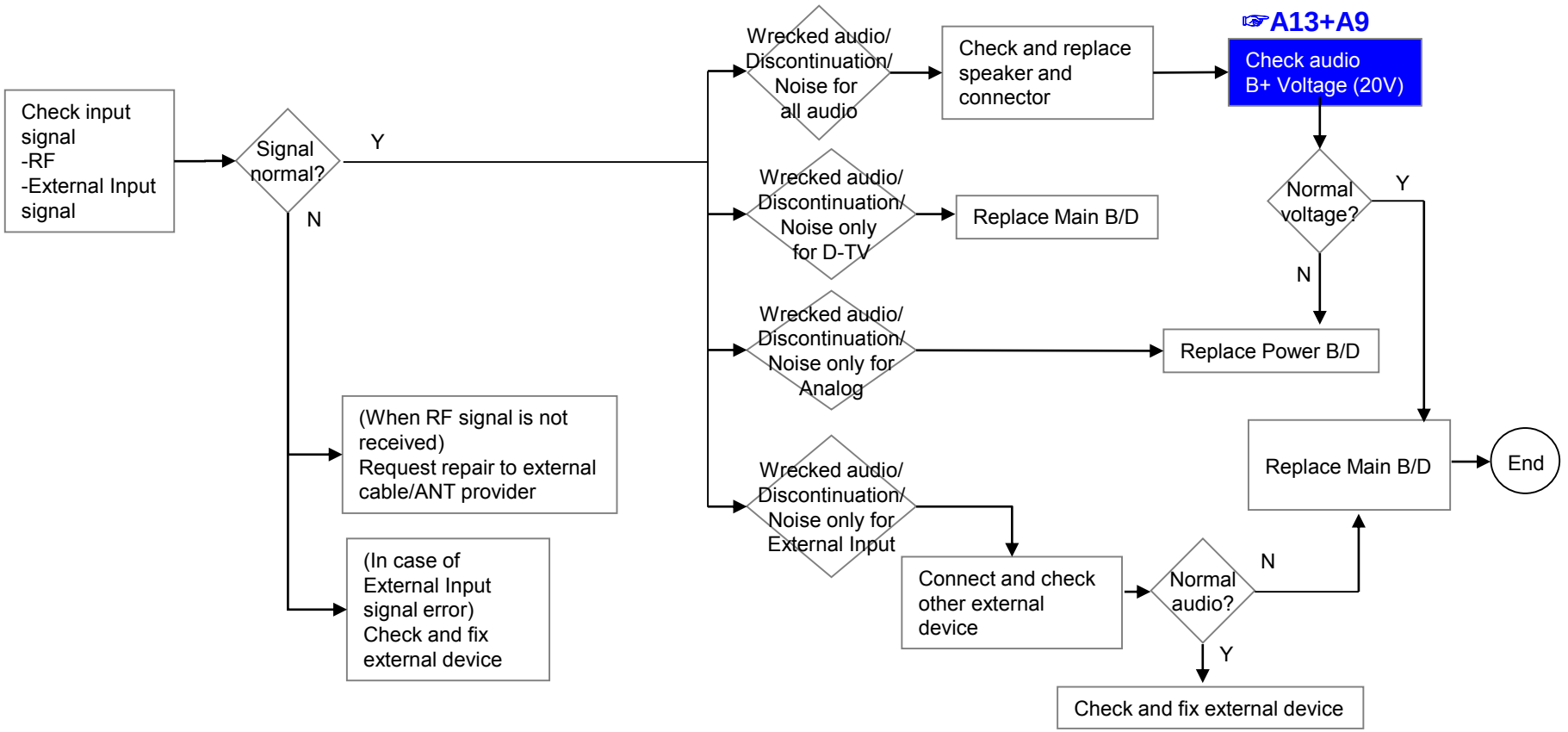
	Error symptom	C. Audio error	Established date		
		No audio/ Normal video	Revised date		



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	Error symptom	C. Audio error	Established date		
		Wrecked audio/ discontinuation/noise	Revised date		

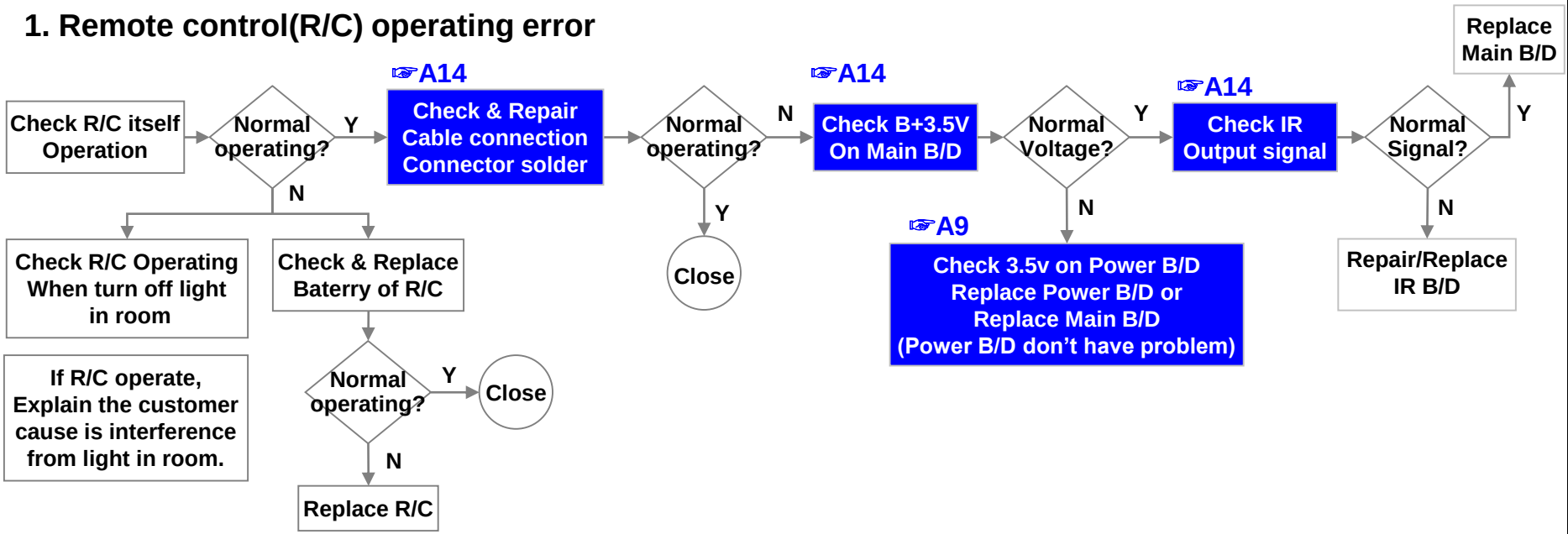
→ abnormal audio/discontinuation/noise is same after "Check input signal" compared to No audio



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	Error symptom	D. Function error	Established date		
		Remote control & Local switch checking	Revised date		

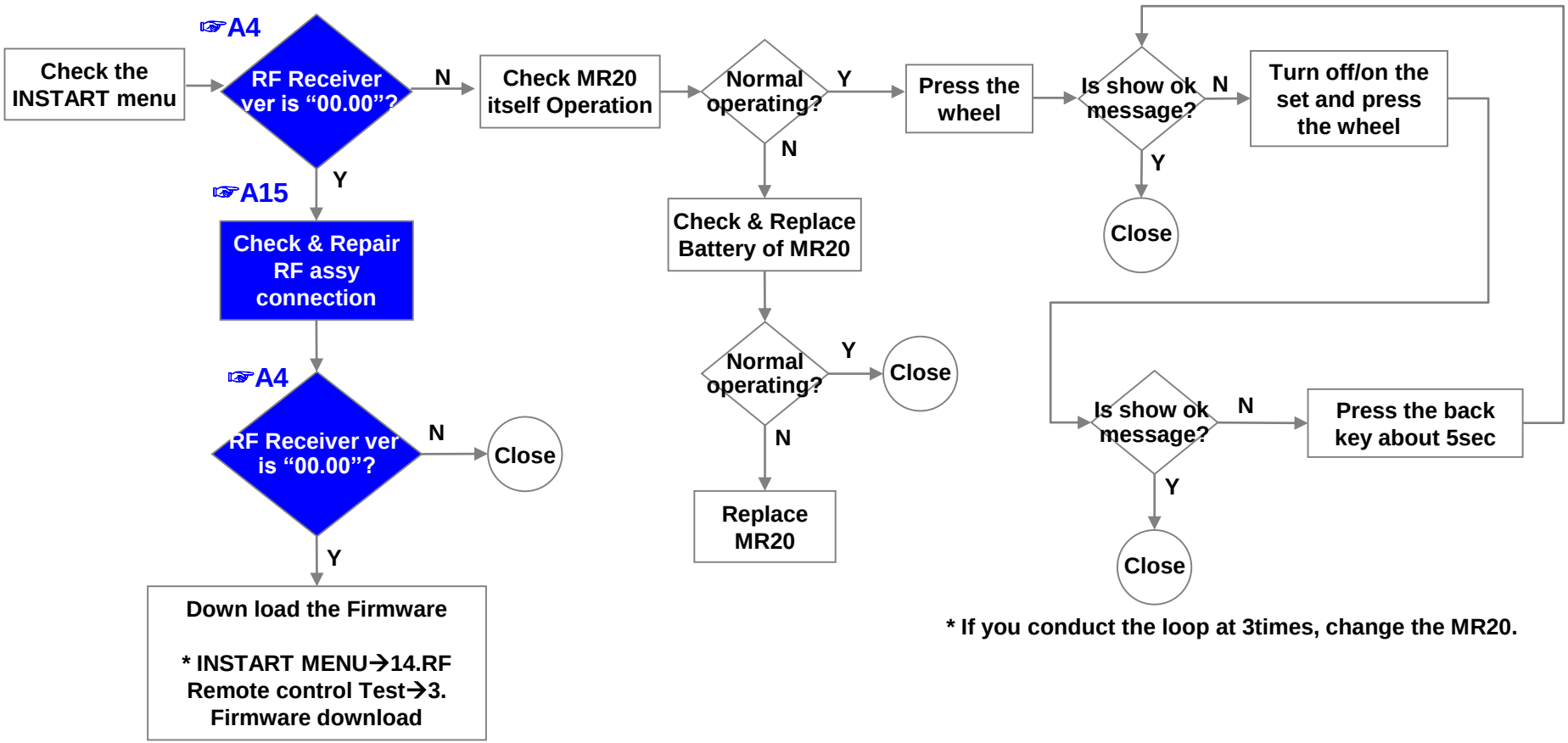
1. Remote control(R/C) operating error



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	Error symptom	D. Function error	Established date		
		MR20 operating checking	Revised date		

2. MR20(Magic Remote control) operating error

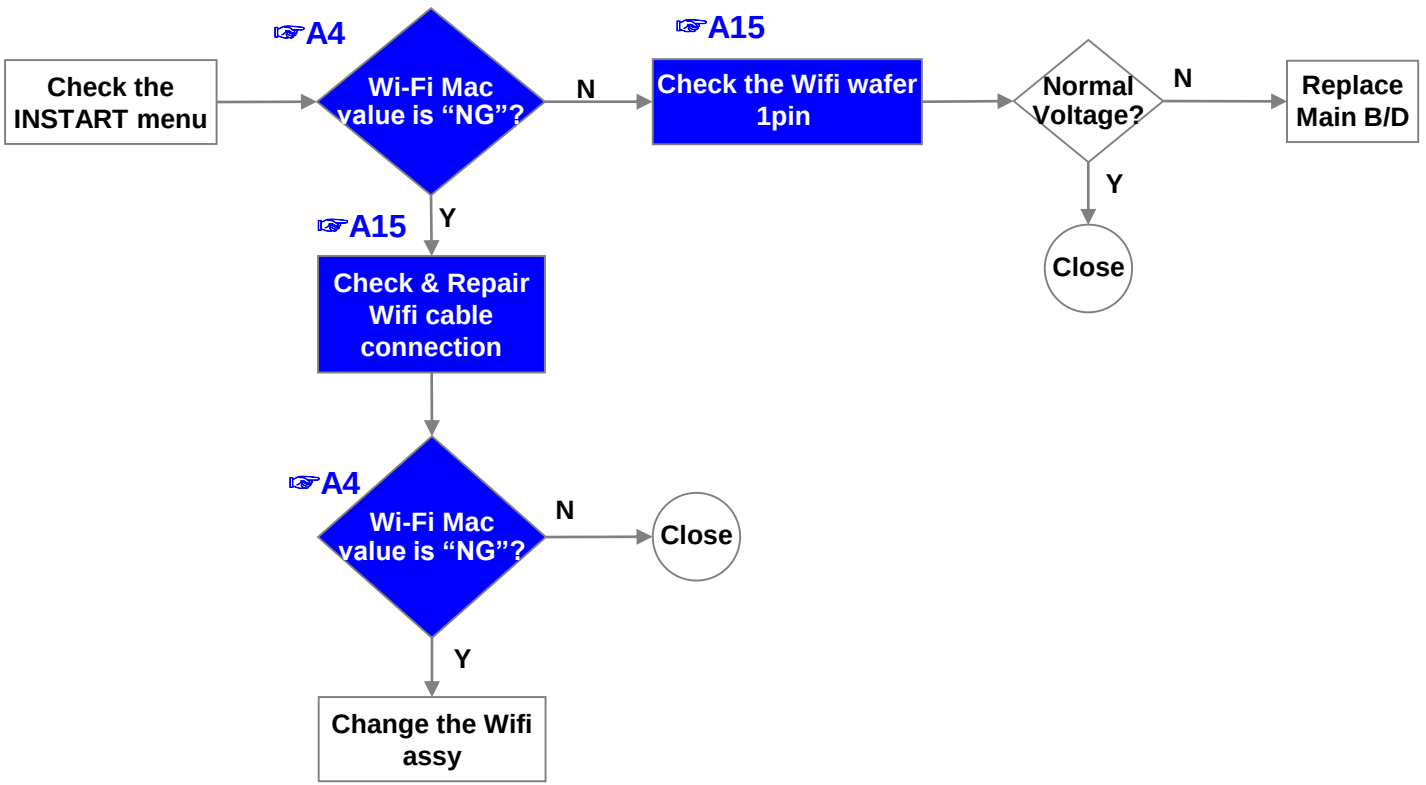


*** If you conduct the loop at 3times, change the MR20.**

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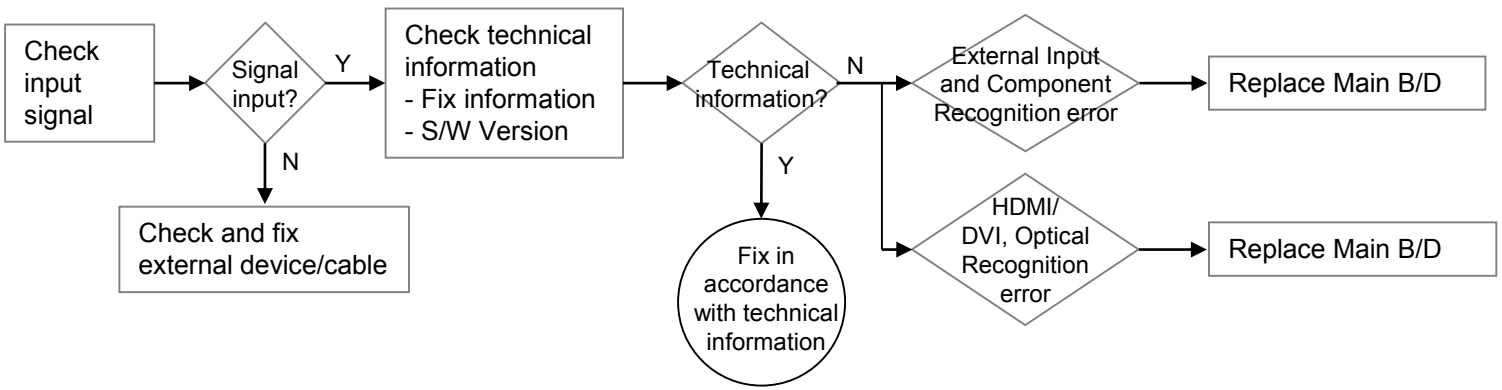
	Error symptom	D. Function error	Established date		
		Wifi operating checking	Revised date		

3. Wifi operating error



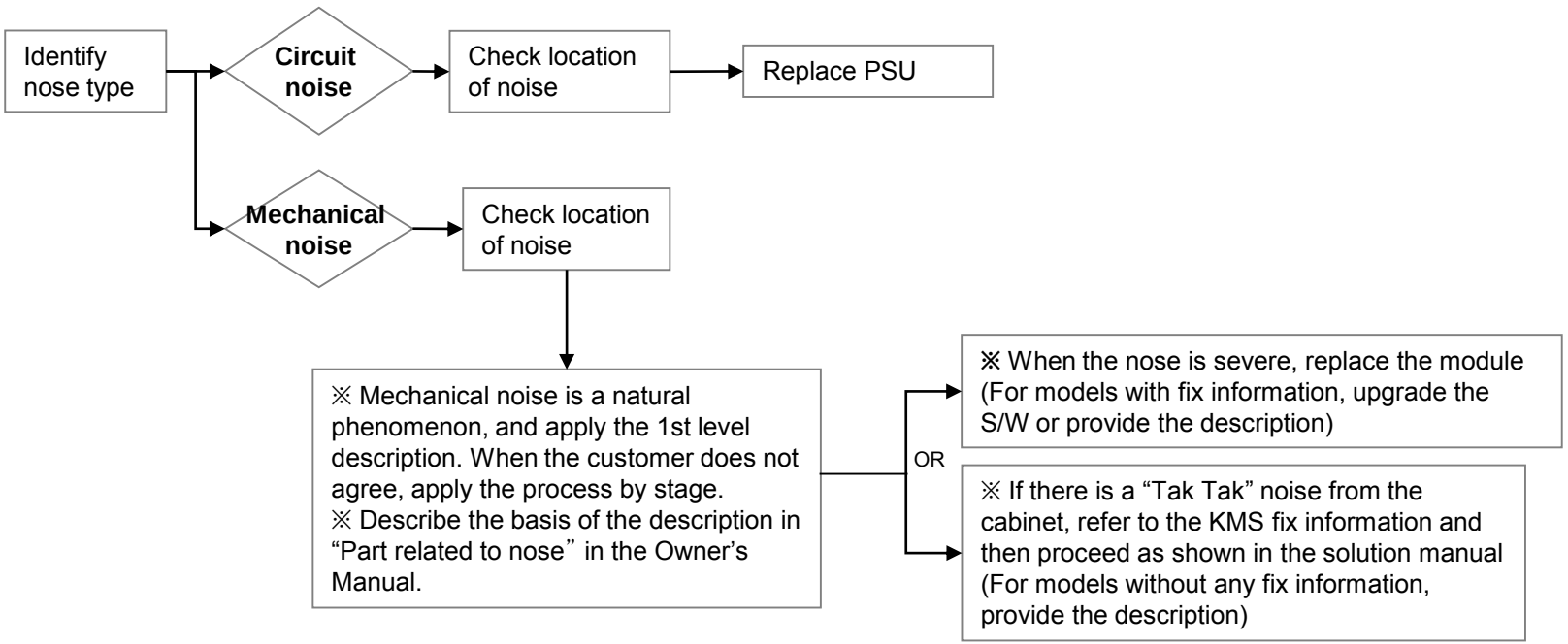
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	Error symptom	D. Function error	Established date		
		External device recognition error	Revised date		



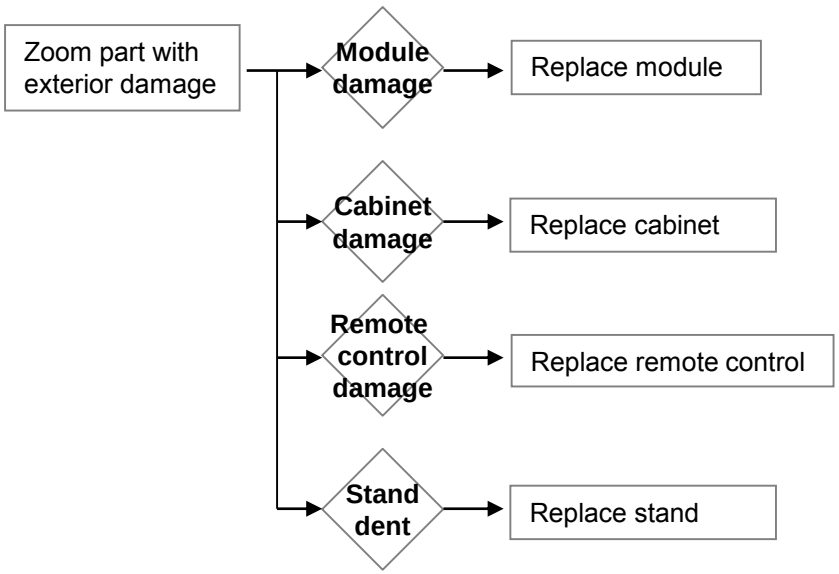
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	Error symptom	E. Noise	Established date		
		Circuit noise, mechanical noise	Revised date		



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	Error symptom	F. Exterior defect	Established date		
		Exterior defect	Revised date		



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Contents of Standard Repair Process Detail Technical Manual

No.	Error symptom	Content	Page	Remarks
1	A. Video error_ No video/Normal audio	Check EPI Lock	A1	
2		Check White Balance value	A2	
3	A. Video error_ video error /Video lag/stop	TUNER input signal strength checking method	A3	
4		Version checking method	A4	
5		Tuner Checking Part	A5	
6	A. Video error _Vertical/Horizontal bar, residual image, light spot	Connection diagram	A6	
7	A. Video error_ Color error	Check Link Cable (Vx1/EPI) reconnection condition	A7	
8	**<Appendix>** Defected Type caused by T-Con/ Inverter/ Module	Check Cable (1) ~ (2)	A-1/11 A-2/11	
		Exchange Main Board (1) ~ (3)	A-3/11 ~ A-5/11	
		Exchange Module (1) ~ (3)	A-6/11 ~ A-8/11	
		Exchange T-Con (1) ~ (2)	A-9/11 ~ A-10/11	
		Exchange Power Board(PSU)	A-11/11	

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No.	Error symptom	Content	Page	Remarks
9	B. Power error_ No power	Check front display LED	A8	
10		Check power input Voltage & ST-BY 3.5V	A9	
11	B. Power error_Off (when on/off, while viewing)	POWER OFF MODE checking method	A11	
12	C. Audio error_ No audio/Normal video	Checking method in menu when there is no audio	A12	
13		Voltage and speaker checking method when there is no audio	A13	
14	D. Function error	Remote control operation checking method	A14	
15		Magic Remote/WiFi operation checking method	A15	
16	E. Etc	How to use the Service remote control	A16-A18	
17		Check items after Main B/D replacement	A19	
18		Adjustment Test pattern – ADJ Key	A20	

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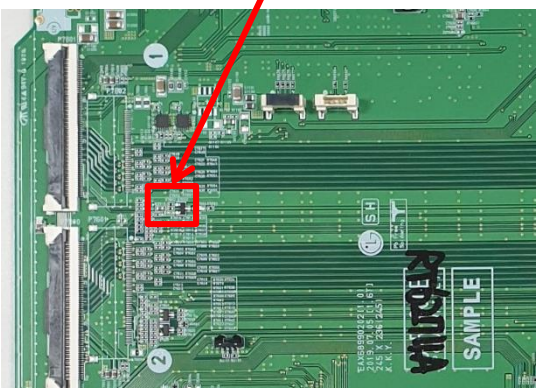
Standard Repair Process Detail Technical Manual

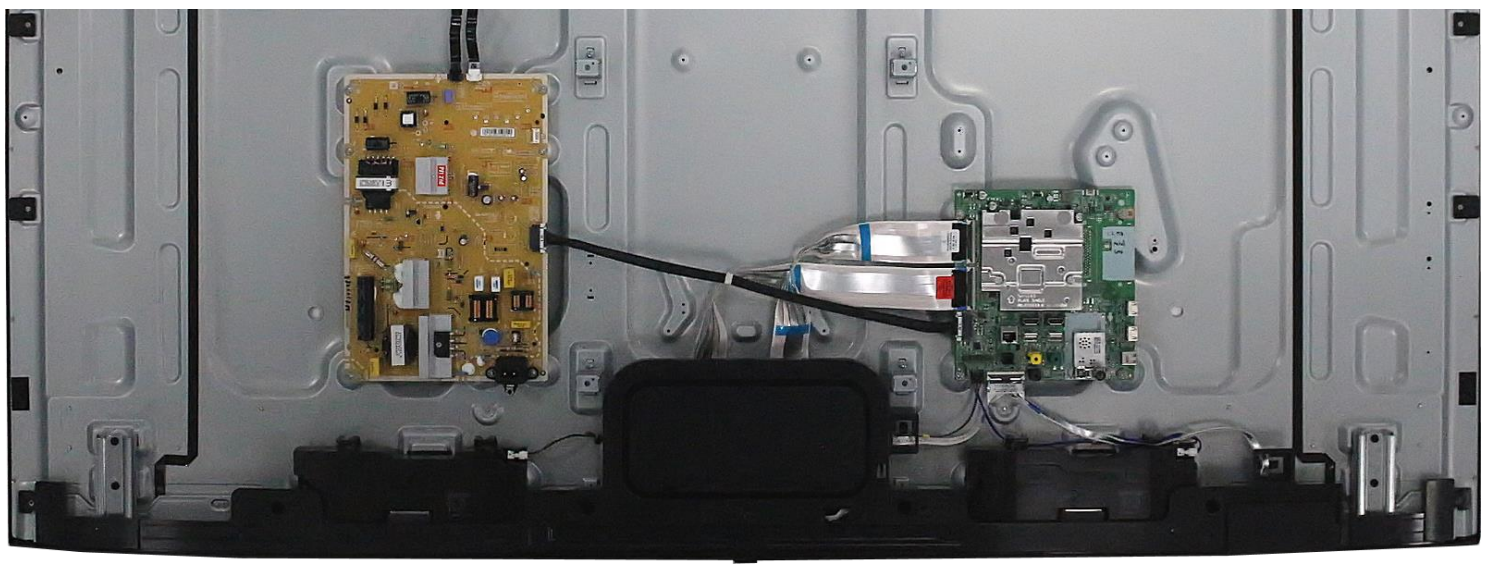
	Error symptom	A. Video error_No video/Normal audio	Established date		
	Content	Check Back Light On with naked eye	Revised date		A1

No Video/Normal audio



R7802: 1.8V (정상)

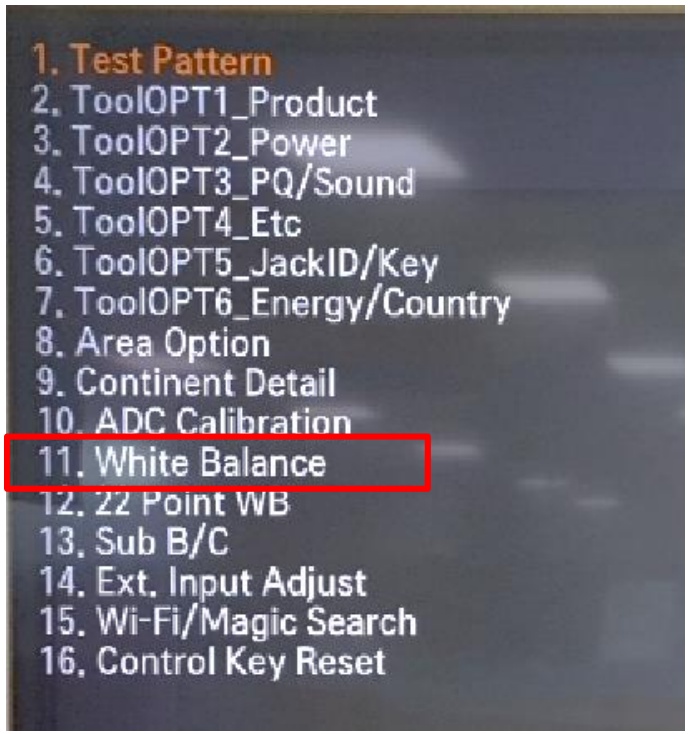




If the Black light LED assemble is ‘OK’, you can see the lights on each points.

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	Error symptom	A. Video error_No video/Normal audio	Established date		
	Content	Check White Balance value	Revised date		A2





Entry method

1. Press the ADJ button on the remote control for adjustment.
2. Enter into White Balance.
3. After recording the R, G, B (GAIN, Cut) value of Color Temp (Cool/Medium/Warm), re-enter the value after replacing the MAIN BOARD.

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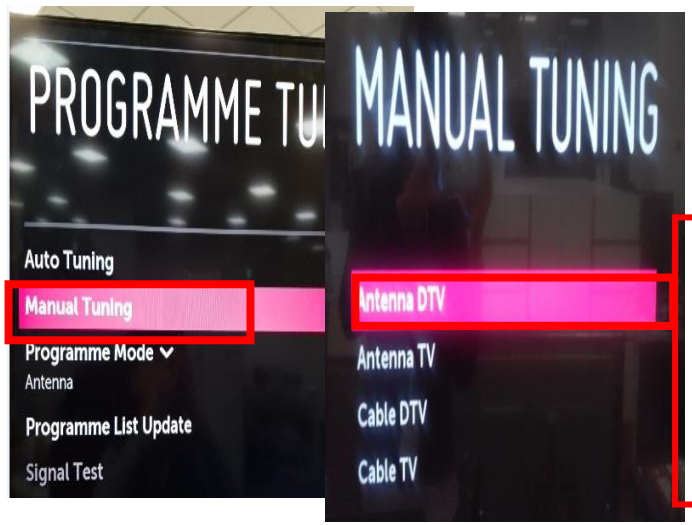
Standard Repair Process Detail Technical Manual

	Error symptom	A. Video error_Video error, video lag/stop	Established date		
	Content	TUNER input signal strength checking method	Revised date		A3





All settings → Programmes → Programme Tuning & settings → Manual Tuning





When the signal is strong, use the attenuator (-10dB, -15dB, -20dB etc.)

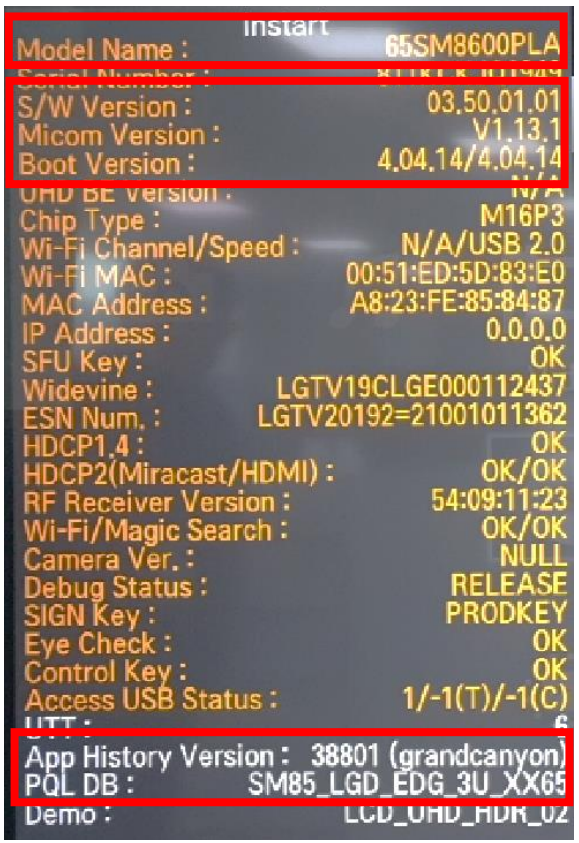


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	Error symptom	A. Video error_Video error, video lag/stop	Established date		
	Content	Version checking method	Revised date		A4

1. Checking method for remote control for adjustment

Version



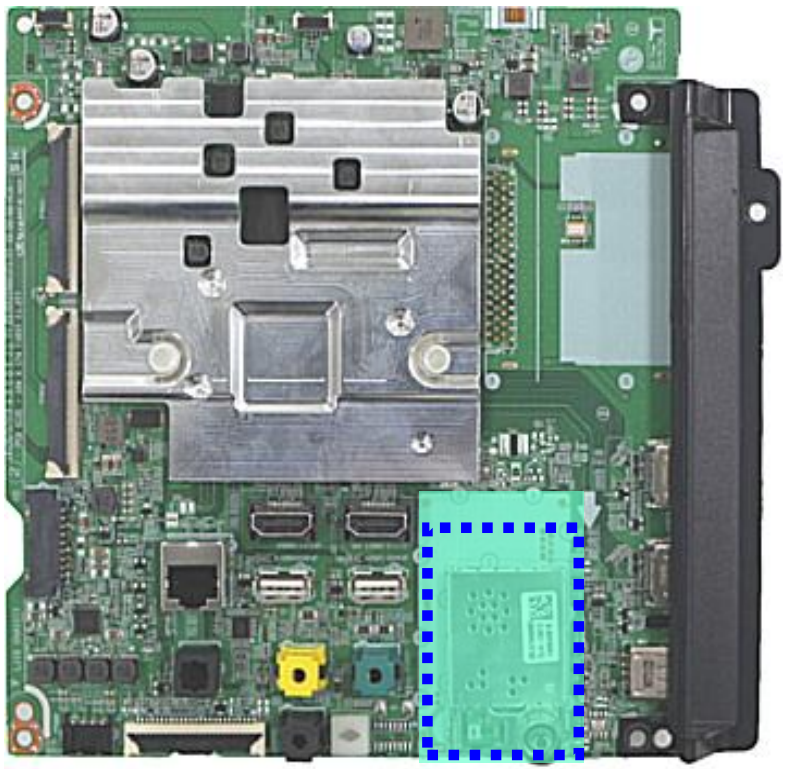


Press the IN-START with the remote control for adjustment

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Standard Repair Process Detail Technical Manual

	Error symptom	A. Video error_Video error, video lag/stop	Established date		
	Content	TUNER checking part	Revised date		A5

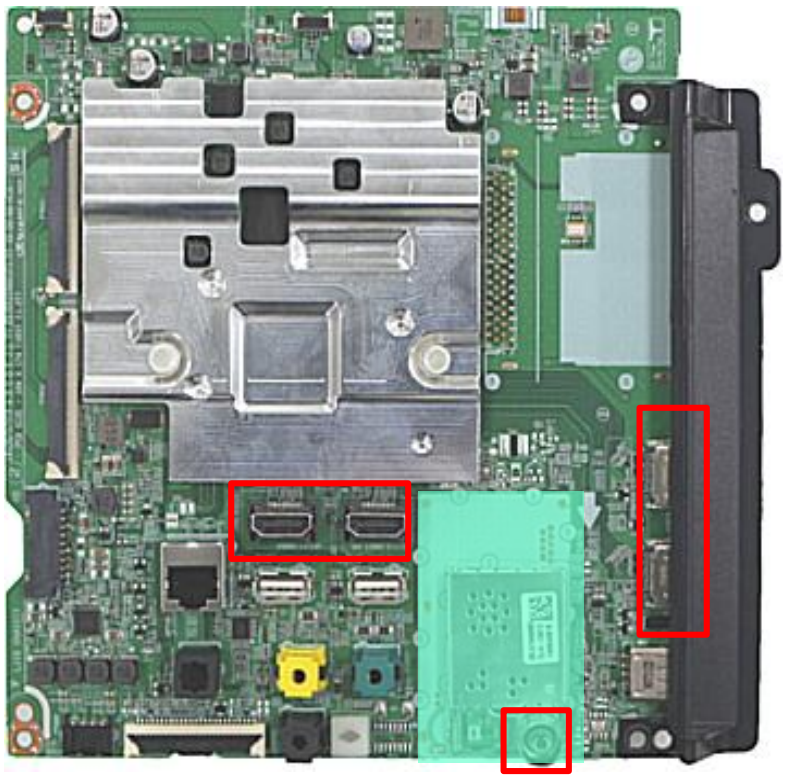


Checking method:
1. Check the signal strength or check whether the screen is normal when the external device is connected.
2. After measuring each voltage from power supply, finally replace the MAIN BOARD.

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	Error symptom	A. Video error _Vertical/Horizontal bar, residual image, light spot	Established date		
	Content	connection diagram	Revised date		A6

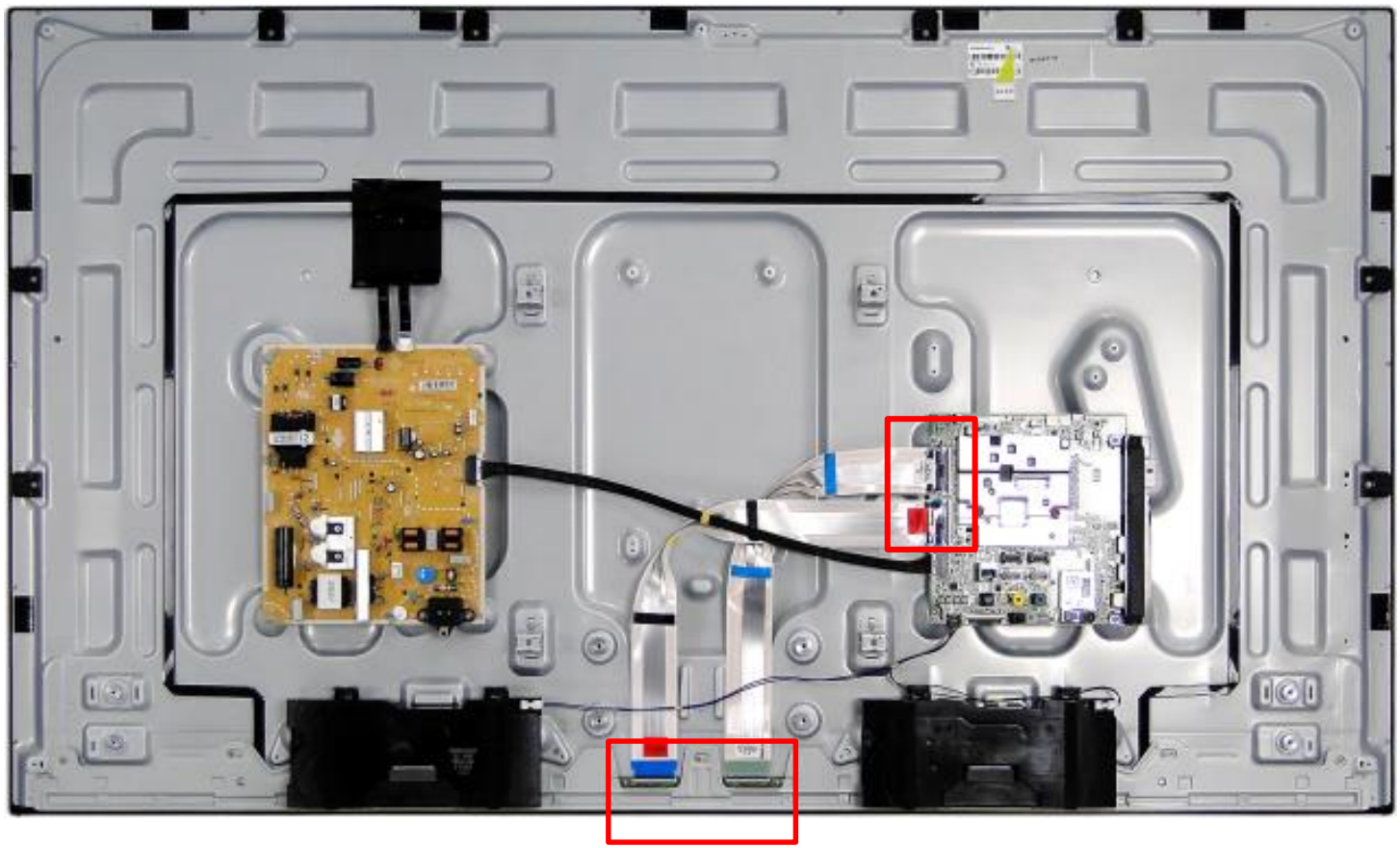


As the part connecting to the external input, check the screen condition by signal

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Standard Repair Process Detail Technical Manual

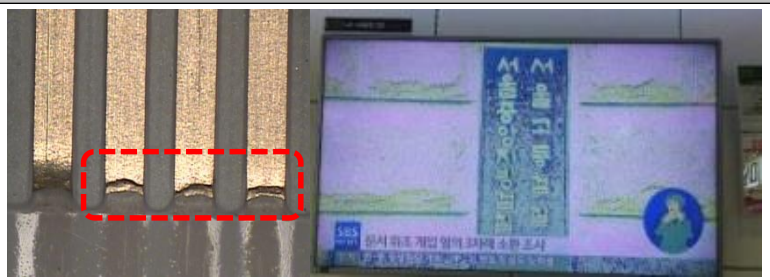
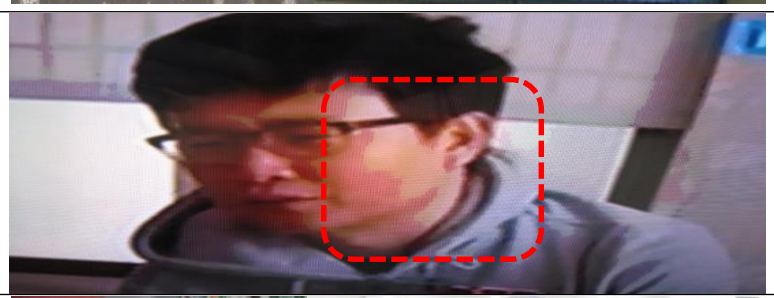
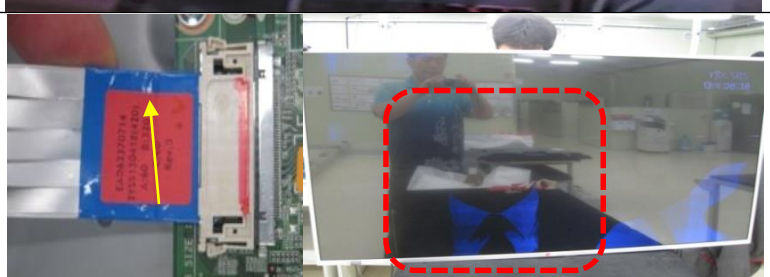
	Error symptom	A. Video error_Color error	Established date		
	Content	Check Link Cable(VX1/EPI) reconnection condition	Revised date		A7



Check the contact condition of the Link Cable, especially dust or mis insertion.

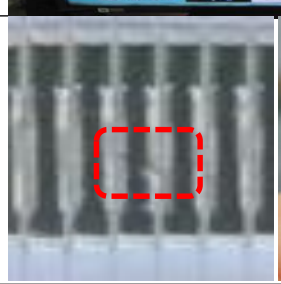
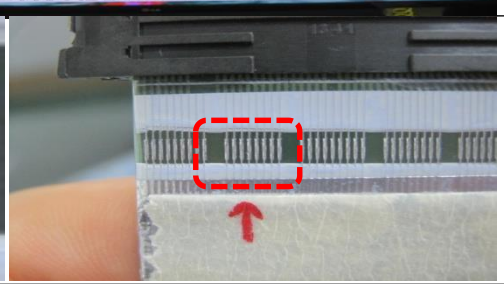
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Appendix. Examples of Symptoms(Image error)

Item	Symptom Name	Cause	Symptom Image
CABLE	Color smear	Poor broken pin of FFC cable	
CABLE	R Color Excessive	Color is Excessive due to FFC Cable Contact.	
CABLE	Screen darkness	screen is dark due to poor contact due to disconnection of the FFC cable pin.	
CABLE	G Color Excessive	G color transient due to poor FFC cable connection	

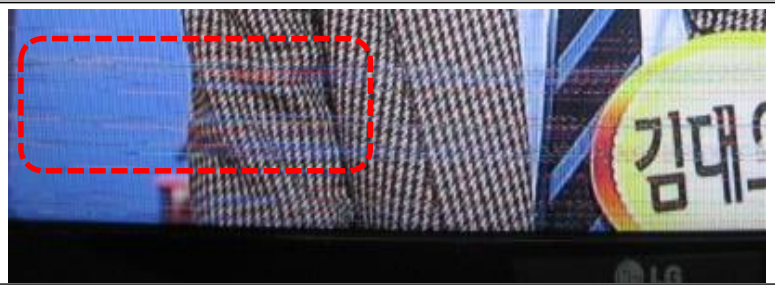
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Appendix. Examples of Symptoms(Image error)

Item	Symptom Name	Cause	Symptom Image
CABLE	Color spread	LVDS cable connection problem	
CABLE	Color spread	LVDS cable connection problem	
CABLE	Color spread	LVDS cable connection problem	
CABLE	Screen stop	Due to foreign substance withi nLVDS cable PIN	 

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Appendix. Examples of Symptoms(Main)

Item	Symptom Name	Cause	Symptom Image
Main	Screen noise	Bit noise from horizontal screen	
Main	Screen noise	Broken screen due to Main IC problem	
Main	Dark picture	Dark left-side screen	
Main	Broken picture	Top/bottom screen part Picture problem due to tuner Inner side quality problem	

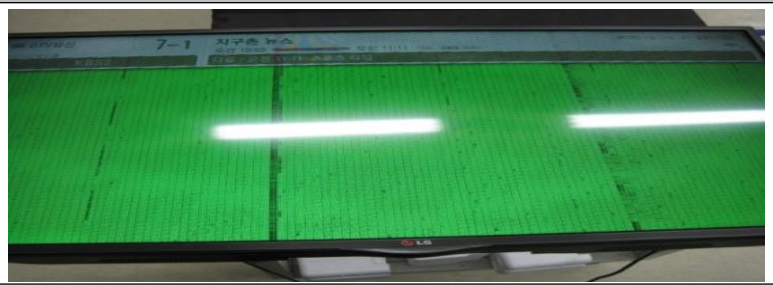
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Appendix. Examples of Symptoms(Main)

Item	Symptom Name	Cause	Symptom Image
Main	Broken screen	Broken screen in a horizontal manner	
Main	Screen spread	Screen corner appears blurry	
Main	Color Spread	Color spread on the screen	
Main	Blurry Screen	Blurry picture on the screen	

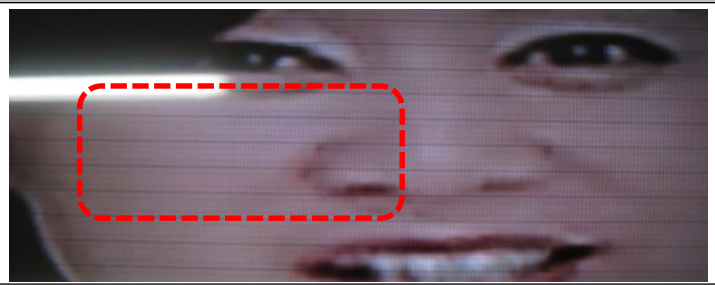
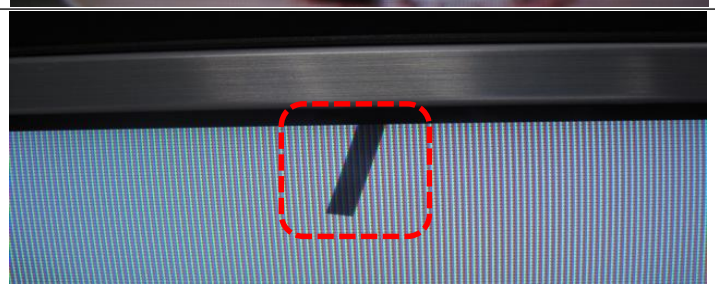
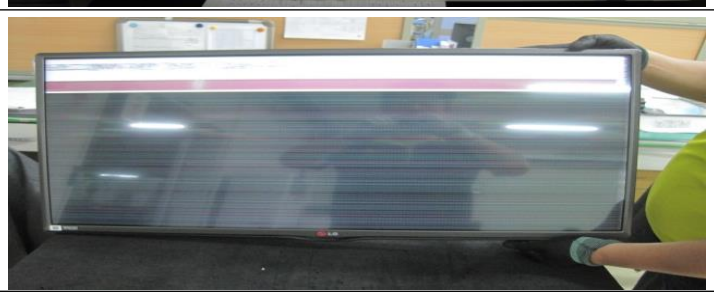
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Appendix. Examples of Symptoms(Main)

Item	Symptom Name	Cause	Symptom Image
Main	Broken picture	No problem at the initial stage, G-color spread after 10 minutes	
Main	Right-side Screen problem	Right-side screen problem	
Main	LG logo Screen problem	Screen picture spread problem	
Main	Right-side picture problem	No problem at the initial stage. During Heat run, right-side picture problem	

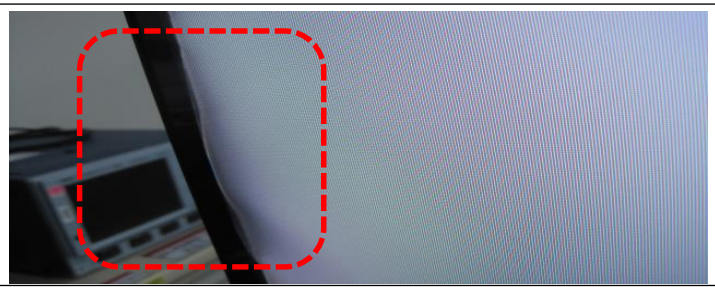
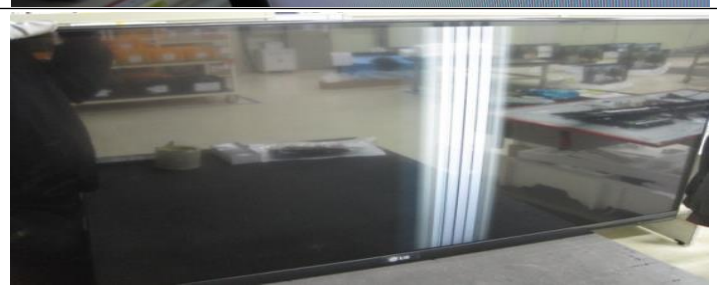
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Appendix. Examples of Symptoms(Module)

Item	Symptom Name	Cause	Symptom Image
MODULE	Isometric Horizontal Bar	Isometric horizontal bars occur throughout the screen	
MODULE	Internal matter	BLU internal foreign matter inflow	
MODULE	Image broken	6 block image broken	
MODULE	Image broken	Screen sync signal broken	

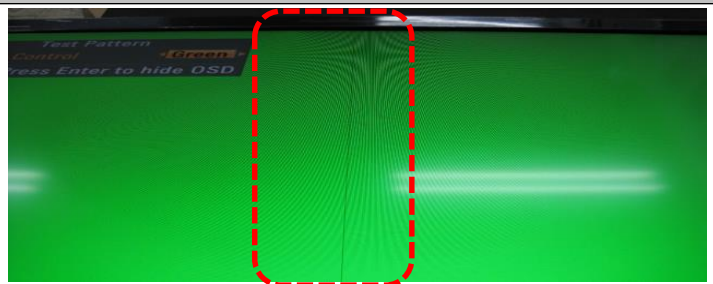
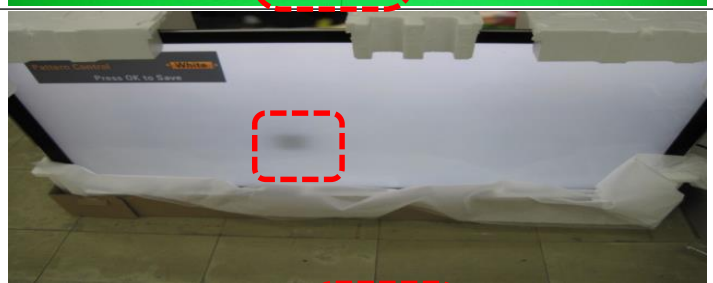
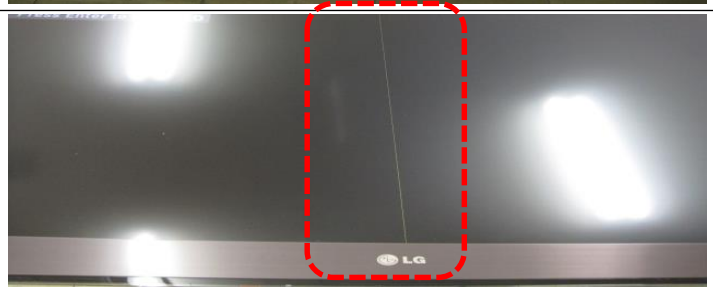
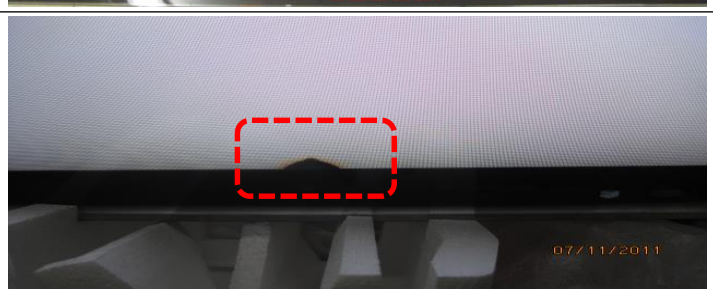
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Appendix. Examples of Symptoms(Module)

Item	Symptom Name	Cause	Symptom Image
MODULE	Image broken	Internal damage and image breakage due to external impact	
MODULE	Bend on the screen	Bending due to lateral external impact and internal bending of BLU	
MODULE	Vertical smear	Vertical spreading on cube screen in no signal	
MODULE	Over color	Screen contour part brightly Over color	

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Appendix. Examples of Symptoms(Module)

Item	Symptom Name	Cause	Symptom Image
MODULE	Vertical bar	Center Vertical Bar	
MODULE	Screen darkness	Center of the screen 1 block dark	
MODULE	Vertical bar	Center Vertical Bar	
MODULE	Darkness at the bottom of the screen	MODULE internal BLU breakage	

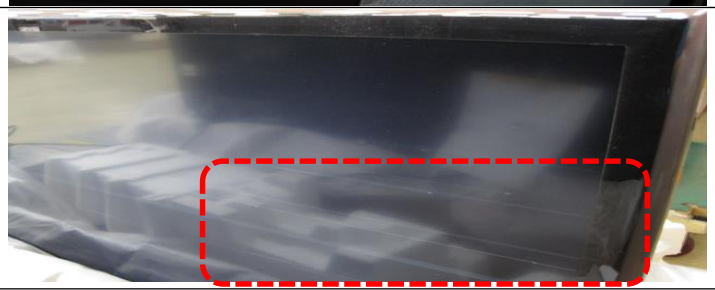
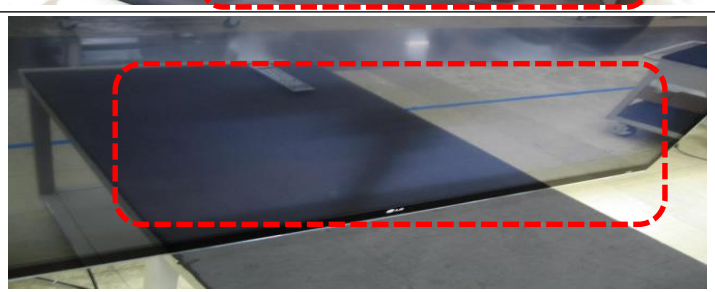
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Appendix. Examples of Symptoms(T-Con)

Item	Symptom Name	Cause	Symptom Image
T-CON	screen lower image broken	T-Con is defective and the picture below the screen is broken	
T-CON	screen lower image broken	T-Con is defective and the picture below the screen is broken	
T-CON	screen lower image broken	T-Con is defective and the picture below the screen is broken	
T-CON	screen lower image broken	T-Con is defective and the picture below the screen is broken	

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Appendix. Examples of Symptoms(T-Con)

Item	Symptom Name	Cause	Symptom Image
T-CON	Image Broken	T-CON Wafer Locking The strength is weak and cable contact failure occurs	
T-CON	Darkness at the top of the screen	Initial normal operation, upper darkness during heat run	
T-CON	Image Broken	The entire screen is dark and bit noise occurs	
T-CON	Image Broken	The entire screen is dark and bit noise occurs	

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Appendix : Exchange Power Board (PSU)



No Light

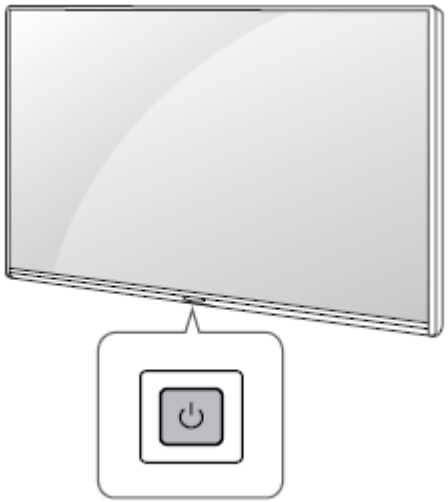


No picture/Sound Ok

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	Error symptom	B. Power error _No power	Established date		
	Content	Check front Power Indicator	Revised date		A8



ST-BY condition: On or Off
Power ON condition: Turn Off

Basic functions

	Power On (Press) Power Off[1] (Press and Hold) Menu Control (Press[2]) Menu Selection (Press and Hold[3])

1 All running apps will close, and any recording in progress will stop. (Depending on country)

2 You can access and adjust the menu by pressing the button when TV is on.

3 You can use the function when you access menu control.

Adjusting the menu

When the TV is turned on, press the ⏻ button one time. You can adjust the Menu items using the button.

⏻	Turns the power off.
⇄	Changes the input source.
+ / −	Adjusts the volume level.
∧ / ∨	Scrolls through the saved programmes.

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	Error symptom	B. Power error _No power	Established date		
	Content	Check power input voltage and ST-BY	Revised date		A9

SET Model	Power P/N, Name
55NANO85	EAY65169911, LGP55-19UL6

Power Check Sequence

1. AC input Check : SK100 (100~240Vac)

2. PWR-ON Check : J43
   - SET On : above 3V
   - SET St-by : 0V

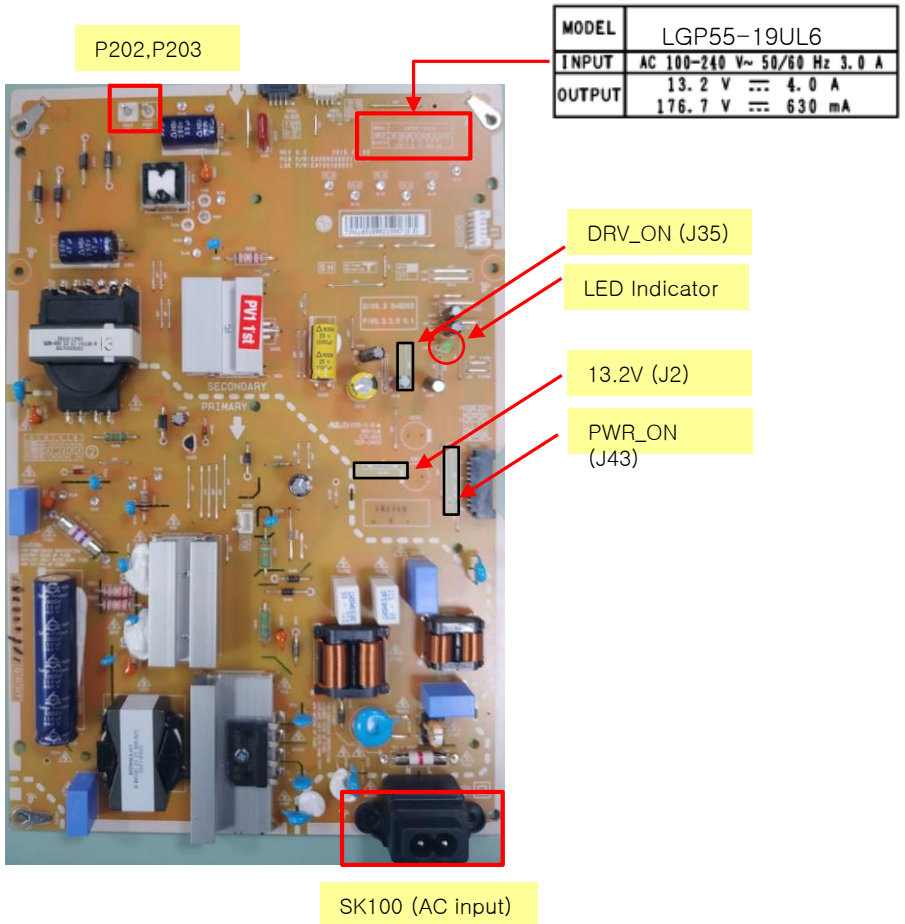
3. 13.2V Level Check : J2
   - SET On : 13.2V
   - SET St-by : 8.4V (swing between 7V to 10V)

4. DRV_ON Check : J35
   - SET On : above 3V
   - SET St-by : 0V

5. LED voltage Check : P202 to P203

Picture Condition : VIVID (Backlight 100)	
Voltage Variable range [V]	Rated Current [Amean]
176.7V (159.0~194.4V)	0.63A (105mA 6string)

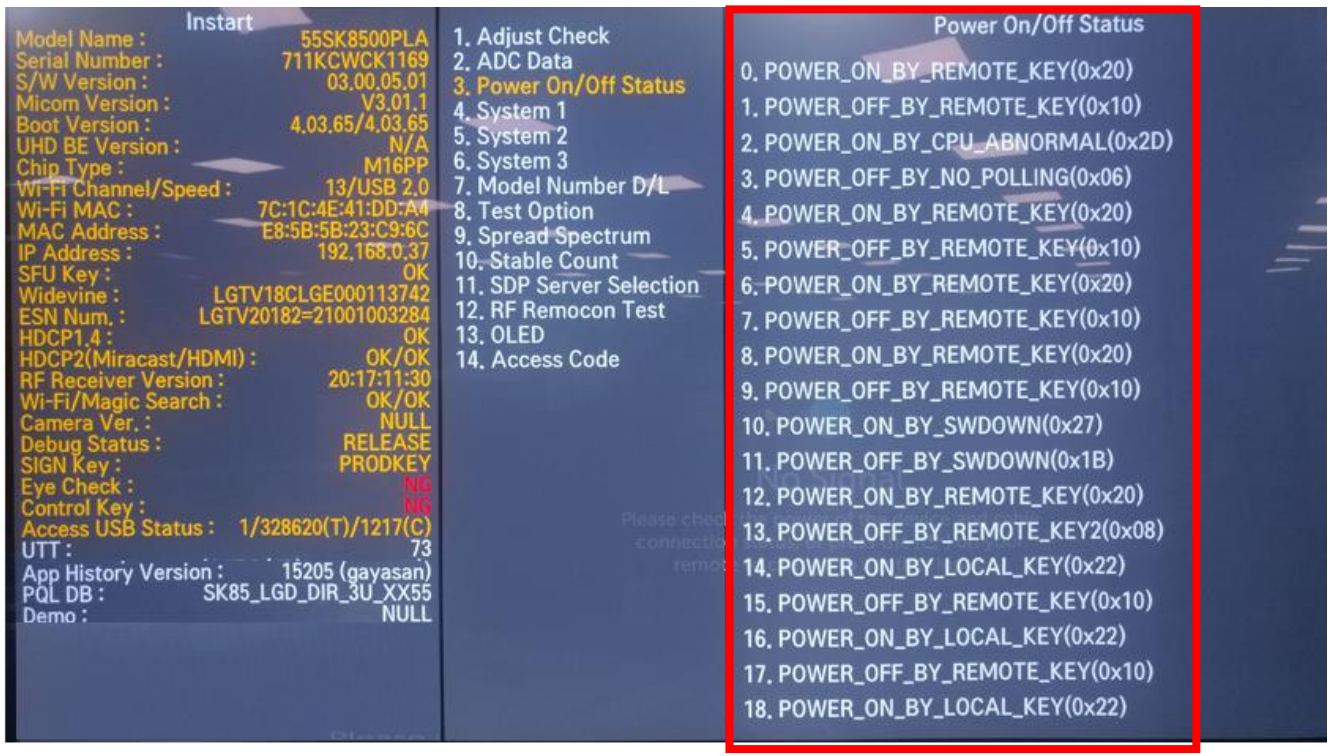
6. LED Indicator Check
   - Normal condition : Not blank
   - Abnormal condition : Blank 1~9 times



All condition meets, Power Board OK.

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	Error symptom	B. Power error _Off when on, off whiling viewing	Established date		
	Content	POWER OFF MODE checking method	Revised date		A11



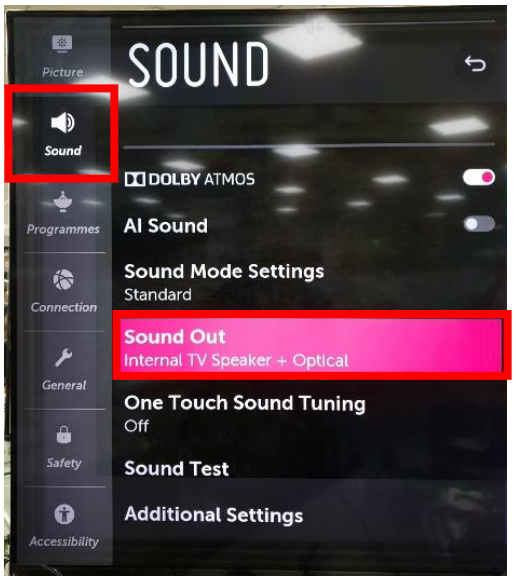
Entry method

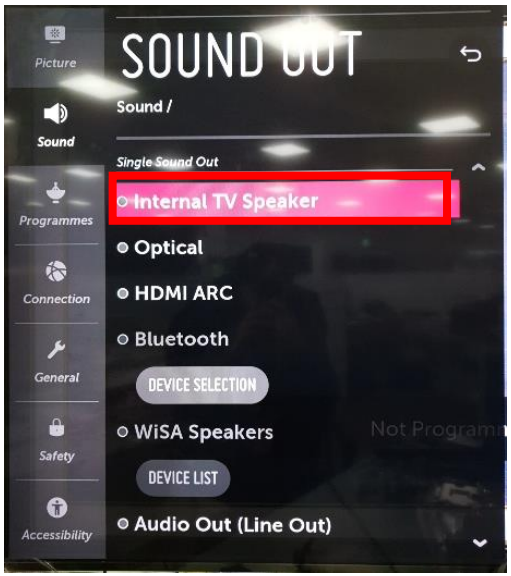
1. Press the IN-START button of the remote control for adjustment.
2. Check the entry into adjustment item 3.

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	Error symptom	C. Audio error_No audio/Normal video	Established date		
	Content	Checking method in menu when there is no audio	Revised date		A12

<ALL MODELS>





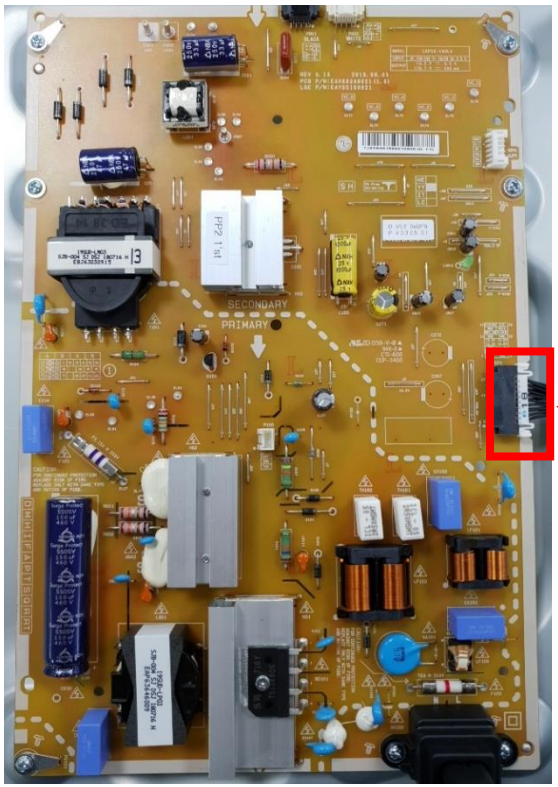
Checking method

1. Press the Setting button on the remote control.
2. Select the Sound function of the Menu.
3. Select the Sound Out.
4. Select TV Speaker.

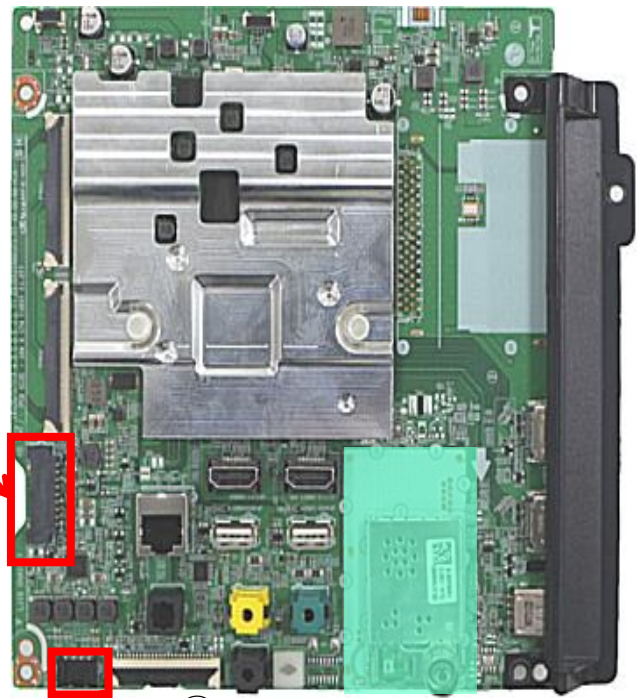
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Standard Repair Process Detail Technical Manual

	Error symptom	C. Audio error_No audio/Normal video	Established date		
	Content	Voltage and speaker checking method when there is no audio	Revised date		A13







Checking order when there is no audio

1	SPK_ R-FT
2	SPK_ R+FT
3	SPK_ L-FT
4	SPK_ L+FT

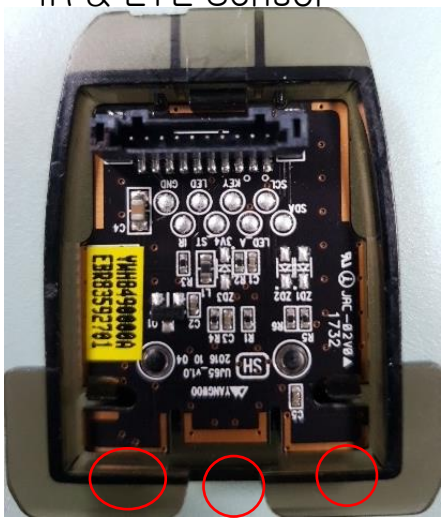
1. Check the contact condition of or 13.2V /20V connector of Main Board.
2. Measure the 13.2V input voltage supplied from Power Board
   (If there is no input voltage, remove and check the connector)
3. Connect the tester RX1 to the speaker terminal and if you hear the 'Chik~ Chik~' sound when you touch the GND and output terminal, the speaker is normal.

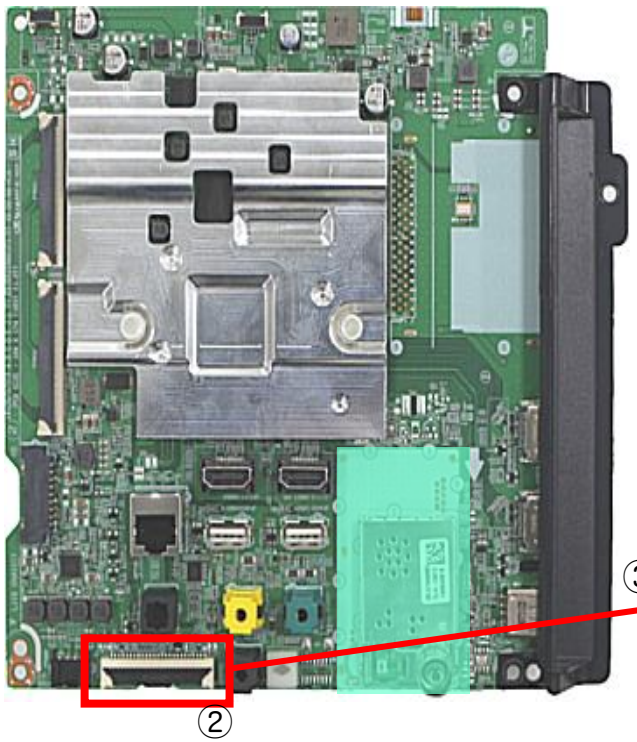
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Standard Repair Process Detail Technical Manual

	Error symptom	D. Function error	Established date		
	Content	Remote control operation checking method	Revised date		A14

①
IR & EYE Sensor





Pin	Pin name
1	+3.5V_WIFI
2	WIFI_DM
3	WIFI_DP
4	GND
5	WOL/WIFI_PWR_ON
6	+3.5V_WIFI
7	RESET
8	GND
9	COMBO_RESET_JACK
10	BT_WAKE_UP_HOST
11	GND
12	+3.5V_WIFI
13	No Connection
14	No Connection
15	No Connection
16	EYE_SDA
17	EYE_SCL
18	GND
19	IR
20	LED_R
21	GND
22	+3.5V_ST
23	KEY2
24	MIC_DATA
25	MIC_CLK

Checking order to check remote control

Checking order

1. Check IR cable condition between IR & Main board.(Check picture number① and ②.)
2. Check the standby 3.5V on the terminal (③).
3. AS checking the Pre-Amp(IR LED light), the power is in ON condition, an Analog Tester needle should move slowly, otherwise, it's defective.

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	Error symptom	D. Function error	Established date		
	Content	Magic Remote/WiFi operation checking method	Revised date		A15

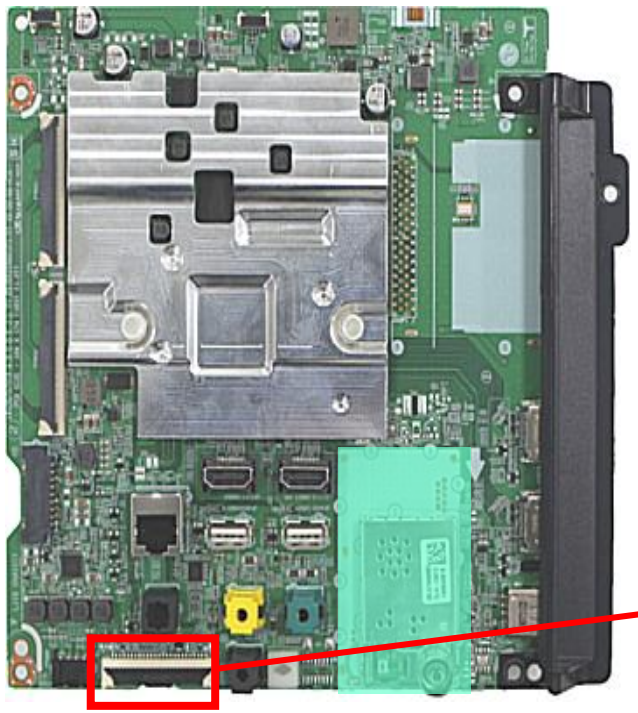
① Wifi & BT Front



Wifi & BT Rear



②



③

Pin	Pin name
1	+3.5V_WIFI
2	WIFI_DM
3	WIFI_DP
4	GND
5	WOL/WIFI_PWR_ON
6	+3.5V_WIFI
7	RESET
8	GND
9	COMBO_RESET_JACK
10	BT_WAKE_UP_HOST
11	GND
12	+3.5V_WIFI
13	No Connection
14	No Connection
15	No Connection
16	EYE_SDA
17	EYE_SCL
18	GND
19	IR
20	LED_R
21	GND
22	+3.5V_ST
23	KEY2
24	MIC_DATA
25	MIC_CLK

Checking order to check motion remote/wifi

Checking order

1.Check BT/Wifi cable condition between BT/Wifi assy & Main board.
2.Check the 3.5V on the terminal 1 pin

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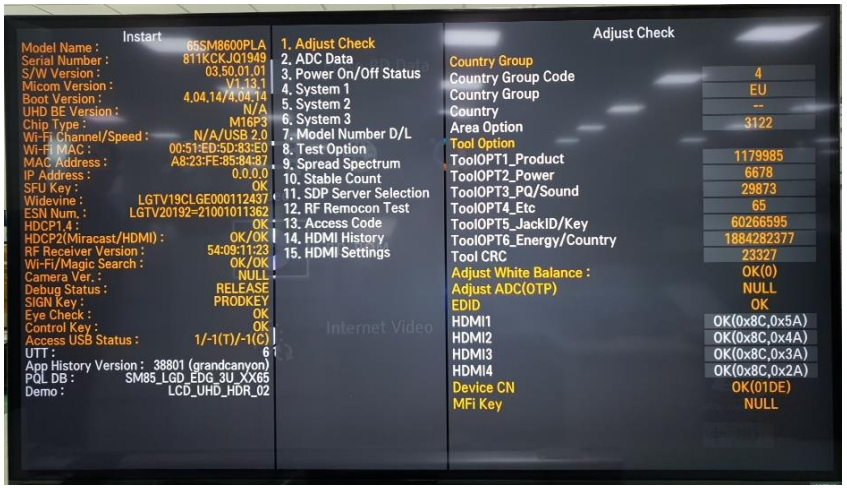
Standard Repair Process Detail Technical Manual

	Error symptom	E. Etc	Established date		
	Content	How to use the Service remote control	Revised date		A16

1. How to access the remote control

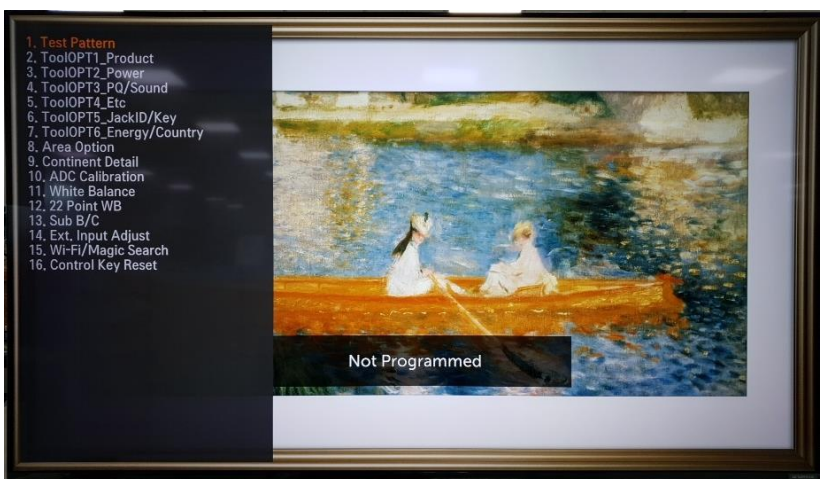












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	Error symptom	E. Etc	Established date		
	Content	How to use the Service remote control	Revised date		A17

2. Remote control part definition



POWER	Power On/Off
ETC (Added Function)	[ETC] Each time pressing the KEY button, Mode gets changed to ETC and P-ONLY each time All KEY function [PIP PR-][PIP PR+][SWAP] [PIP INPUT][DVI] KEY Function
P-ONLY (Added Function)	Changed to factory mode All KEY function &[INFO][STILL][HDMI HOT][USB HOT][HDMI4] KEY Action
INPUT	Change to the external device mode
ARC	Change in the order of 16:9=>Zoom1=>Zoom2=>Cinema Zoom=>Aucto Screen=>4:3=>16:9
PSM	Changes in the order of Bright Picture=>Easy Picture=>Cinema=>Spots=>Game=> Custom PIcture1=>Custom Picture2=>Bright Picture
SSM (Added Function)	Standard(user)=>music=>cinema=>sports=>game=>standard(user)
PIP	Picture In Picture is activated
TEXT	Access to the Power Only mode
CAP	Broadcasting caption(on/off)
MPX	Stereo mode (mono, stereo, foreign language) access
	Used when in factory mode
Simplink (Added Function)	Access to the Simplink-connected device
EYE	Digital EYE function ON/OFF For some Model, access to the Test Pattern
TILT	Used for screen tilting change (Access to the old PDP control mode)

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	Error symptom	E. Etc	Established date		
	Content	How to use the Service remote control	Revised date		A18



B-TOOTH (Added function)	Connected to Blue-Tooth
IN-START	Model Nam ex) 42PG60D-NA Current Model Name S/W Version ex) V03.11.0 Current S/W version MICOM Version ex) V3.05.0 current Mi-Com version UTT ex) User TV total usage time
ADJ	POWER OFF STATUS ex) Shows power-off status Test Pattern (Off=>White=>Red=>Green=>Blue=>Black=>Pattern=>Off) Change
X-STUDIO (Added function)	HDD,USB, external device's HDD screen is activated
MENU	User function gets activated
EXIT	Exit from the current mode
TIME SHIFT (Added function)	Moves forward/backward of recorded contents
MUTE	Mute function (0 Volume)
IN-STOP	SET to factory mode
VOL + -	Volume Up/Down
CH + -	Channel Up/Down
AV1,2,3 (Added function)	Connects to external input 1,2,3
COMP1,2 (Added function)	Connects to Component 1,2
HDMI1,2,3,4 (Add function)	Connects to HDMI 1,2,3,4
DVI (Add function)	Connects to DVI

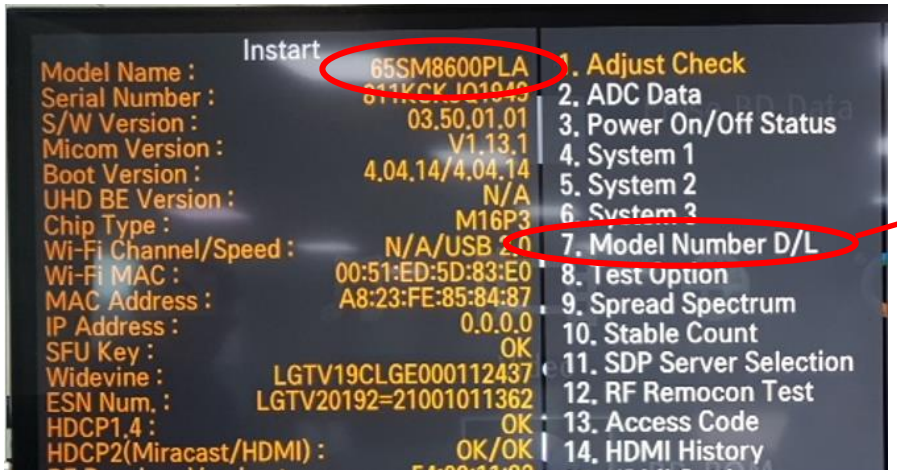
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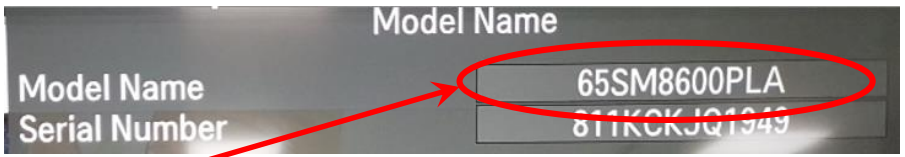
Standard Repair Process Detail Technical Manual

	Error symptom	E. Etc	Established date		
	Content	Check items after Main B/D replacement	Revised date		A19

Check items afer Main B/D(Model Number D/L, White Balance)

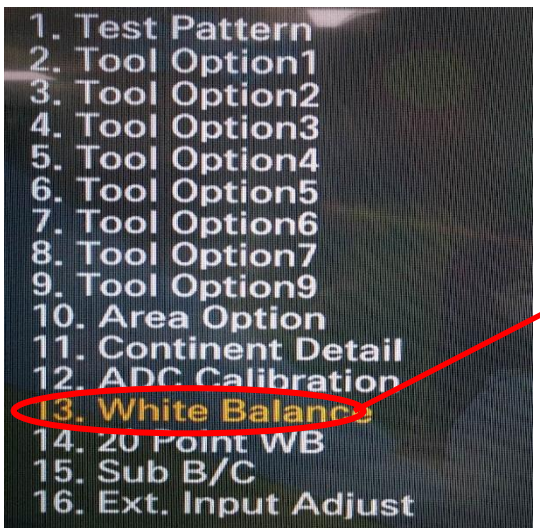
1. Press the Service remote control instart Key.

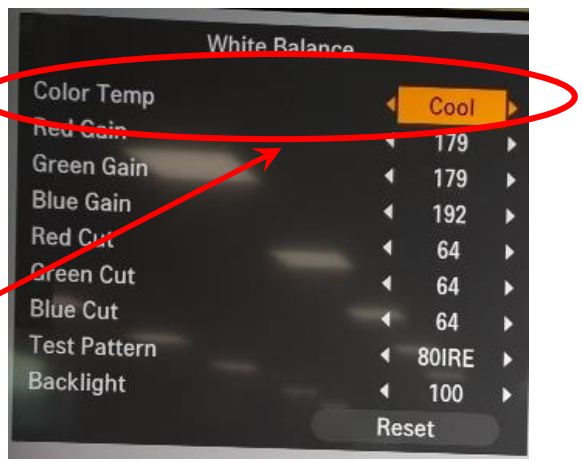




No.7 Select Model Number D/L
- Key in the model name and serial number after checking the ID label on the back cover.

2. Press the Service remote control ADJ Key.



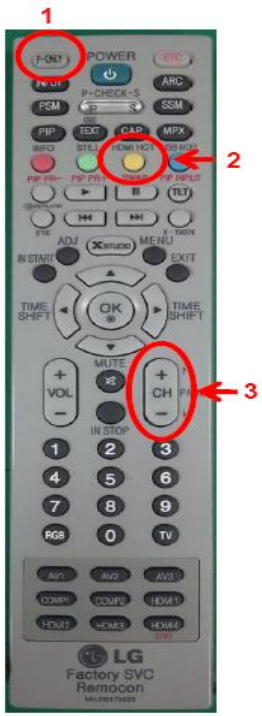


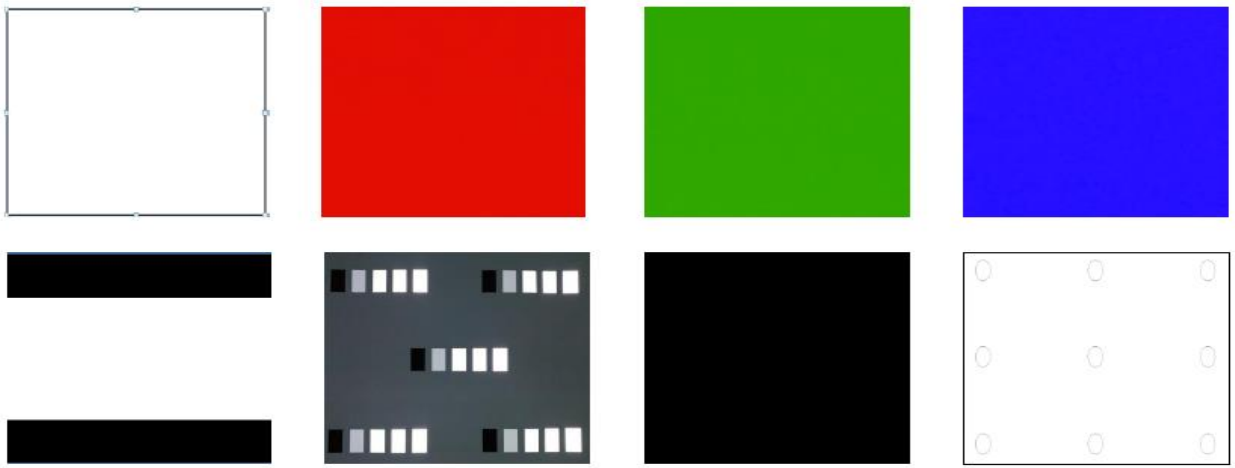
No.13 Select White Balance
- Record the R, G, B (GAIN, Cut) value of the color temperature before main board replacement.
After replacing the main board, key in the recorded value.

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Standard Repair Process Detail Technical Manual

	Error symptom	E. Etc	Established date		
	Content	Adjustment Test pattern - ADJ Key	Revised date		A20





P-ONLY → HDMI HOT(Yellow button) → CH '+' or '-'
You can view 11 types of patterns using the ADJ Key

Checking item :
1. Defective pixel
2. Residual image
3. MODULE error (ADD-BAR,SCAN BAR..)
4. Video error (Classification of MODULE or Main-B/D!)

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