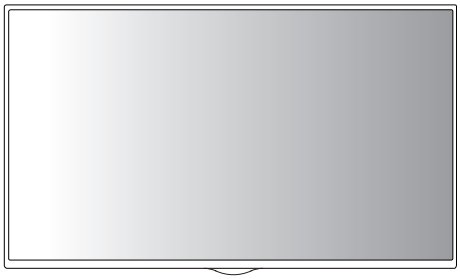
CONFIDENTIAL

LG Digital Signage
SERVICE MANUAL

CHASSIS : LW79A

MODEL : 49SM5KD 49SM5KD-BH

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



P/NO : MFL67261246 (1706-REV00)

Any reproduction, duplication, distribution (including by way of email, facsimile or other electronic means), publication, modification, copying or transmission of this Service Manual is STRICTLY PROHIBITED unless you have obtained the prior written consent of the LG Electronics entity from which you received this Service Manual. The material covered by this prohibition includes, without limitation, any text, graphics or logos in this Service Manual.

Copyright © 2017 LG Electronics Inc. All rights reserved. Only training and service purposes.

CONTENTS

CONTENTS 2

PRECAUTION 3

SERVICING PRECAUTIONS 4

SPECIFICATION 6

SOFTWARE UPDATE 10

BLOCK DIAGRAM 11

EXPLODED VIEW 12

TROUBLE SHOOTING GUIDE ..... APPENDIX

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. ***These parts are marked ⚠ on the Exploded View.*** It is essential that these critical parts should be replaced with the manufacturer' s specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person' s body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

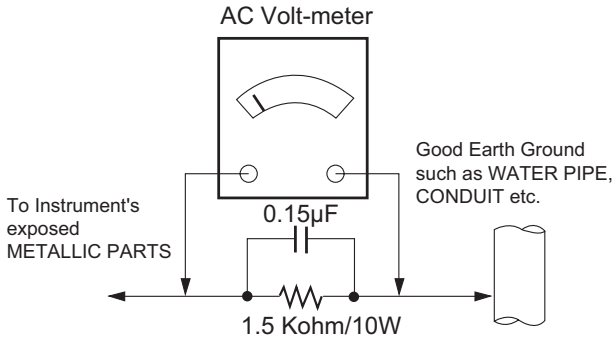
⚠ CAUTION
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

⚠ WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

Leakage Current Hot Check Circuit



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

- **Replaceable batteries**

⚠ CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE.

ADVARSEL
Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

注意

電池を誤って交換すると爆発する危険があります。

必ず同一又は同等のタイプのものと交換して下さい。

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

SERVICING PRECAUTIONS

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

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
8. Use with this receiver only the test fixtures specified in this service manual.
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

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

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

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500 ˚F to 600 ˚F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500 ˚F to 600 ˚F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the 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.

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

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.*

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

SPECIFICATION

1. Application range

This specification is applied to the LW79A chassis.

2. Test Specification

Each part is tested as below without special appointment.

1) Temperature: 25 °C ± 5 °C(77 °F ± 9 °F),
CST: 40 °C ± 5 °C
2) Relative Humidity: 65 % ± 10 %
3) Power Voltage
: Standard input voltage (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 20 minutes prior to the adjustment.

3. General Specification

3.1. RGB, DVI-D, HDMI, Display Port (PC) Specification

No.	Item	Specification			Remarks
1	Supported Sync. Type	Separate Sync, Digital			
2	Operating Frequency	Analog	Horizontal	30 ~ 83 kHz	
			Vertical	56 ~ 75 Hz	
		Digital	Horizontal	30 ~ 83 kHz	
			Vertical	56 ~ 60 Hz (DVI-D,OPS)	
				30Hz,56 ~ 60Hz (HDMI1/2,DP)	
3	Resolution	Analog	Max	1920×1080 @ 60Hz(RGB/DVI/OPS) 3840x2160@30Hz(HDMI1/2,DP)	
			Recommend	1920×1080 @ 60Hz	
		Digital	Max	1920×1080 @ 60Hz(RGB/DVI/OPS) 3840x2160@30Hz(HDMI1/2,DP)	
			Recommend	1920×1080 @ 60Hz	

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

3.2. General Specification

No.	Item		Content		Remark	
1	Input	HDMI	2	3840x2160@30Hz, HDMI1.4b	HDCP2.2 Supporting color format (8 Bits) - RGB444 - YCbCr444, YCbCr422	
		DP	1	3840x2160@30Hz, DP1.2a	HDCP1.3 Supporting color format (8 Bits) - RGB444 - YCbCr444	
		DVI	1	2K@60Hz,DVI-D	Supporting color format (8 Bits) - RGB444	
		RGB	1	Aanlog	DSUB 15P Supporting color format (8 Bits) - RGB444	
		OPS	1	2K@60Hz	Supporting color format (8 Bits) - RGB444	
		USB	1	EMF, DVIX HD, For SVC(Download)	USB3.0, Device: Memory stick, Mouse	
		Audio In	1	PC/DVI Audio In(L/R), Stereo	3P, 3.5mm Phone Jack	
2	Output	DP	1	SST	Support HDMI1.4 - DP Daisy Chain : Not supported HDCP	
		Speaker Out	2	BTL(L+/-, R+/-), 6 ohm, Max. 10W	3P, 3.5mm Phone Jack	
		Audio Out	1	SE, Stereo L/R, 0.5Vrms	3P, 3.5mm Phone Jack	
3	External	RS232C IN/ OUT	1/1	UART Comm. w/ IR Daisy Chain	4P, 3.5mm Phone Jack	
		IR/Bright-ness Sensor	1	External box type	5P, 3.5mm Phone Jack	
		LAN	1	RJ45, 10/100Base-T	SuperSign Premium / SuperSign Link	
4	Special Feature	Temp. Sen-sor	1		Built-in	
		Pixel Sensor	1		Optional	
		Wi-Fi	1	802.11n	Built-in	
		Media Player Com-patibility	OPS Ready			
			External Media player Attatchable			
		Logo De-tachable	Yes			
		3G/4G USB Dongle	Download : 1Mbps, Upload : 0.5Mbps Over		Indonesia Only (Continent Index : 82) Support Dongles : Sierra - Aircard 320U, Hua-wei - E3372/E1550 Support SIM : Telcomsel / Indosat / XL	
5	Remote control		Wireless Remote Control		LG Code	
6	Local Key		INPUT, MENU, ∧, ∨, <, >, AUTO/SET, Φ/I		8 keys	
7	Set Installation		Wall Mount / Desk top		Wall Mount	Desk top
					32/43: LSW230B 200*200 49/55/65: LSW350B 400*400	32/43:ST-432T 43/49/55:ST-432T 65:ST-652T
8	PIP / PBP Mode		2			
9	SSC (Split Screen) Mode		X			

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

4. Signal Timing (Supporting Resolution)

4.1. RGB (PC Mode)

No.	Section	Pol.	Dot Clock [MHz]	Frequency [kHz]/[Hz]	Total Cycle (E)	Display (A)	Front Porch(B)	Sync. (D)	Back Porch(F)	Resolution
1	H(Pixels)	-	28.321	31.468	900	720	18	108	54	720 X 400
	V(Lines)	-		70.8	449	400	12	2	35	
2	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480
	V(Lines)	-		59.94	525	480	10	2	33	
3	H(Pixels)	+	40.0	37.879	1056	800	40	128	88	800 x 600
	V(Lines)	+		60.317	628	600	1	4	23	
4	H(Pixels)	-	65.0	48.363	1344	1024	24	136	160	1024 x 768
	V(Lines)	-		60.0	806	768	3	6	29	
5	H(Pixels)	+	74.5	44.772	1664	1280	64	128	192	1280 x 720
	V(Lines)	+		59.855	748	720	3	5	20	
6	H(Pixels)	+	108	60	1800	1600	24	80	96	1600 x 900
	V(Lines)	+		60	1000	900	1	3	96	
7	H(Pixels)	+	108.0	63.981	1688	1280	48	112	248	1280 x 1024
	V(Lines)	+		60.02	1066	1024	1	3	38	
8	H(Pixels)	-	146.25	65.290	2240	1680	104	176	280	1680 x 1050
	V(Lines)	+		59.954	1089	1050	3	6	30	
9	H(Pixels)	+	148.5	67.5	2200	1920	88	44	88	1920 x 1080
	V(Lines)	+		60	1125	1080	4	5	46	

4.2. DVI/HDMI/DP/OPS (PC Mode)

No.	Section	Pol.	Dot Clock [MHz]	Frequency [kHz]/[Hz]	Total Cycle (E)	Display (A)	Front Porch(B)	Sync. (D)	Back Porch(F)	Resolu-tion	Support
1	H(Pixels)	+	40	37.879	1056	800	40	128	88	800 x 600	O
	V(Lines)	+		60.317	628	600	1	4	23		
2	H(Pixels)	-	65	48.363	1344	1024	24	136	160	1024 x 768	O
	V(Lines)	-		60	806	768	3	6	29		
3	H(Pixels)	+	74.5	44.772	1664	1280	64	128	192	1280 x 720	O
	V(Lines)	+		59.855	748	720	3	5	20		
4	H(Pixels)	-	85.86	47.7	1800	1366	72	144	216	1366 x 768	O
	V(Lines)	-		60	795	768	1	3	23		
5	H(Pixels)	+	108	63.981	1688	1280	48	112	248	1280 x 1024	O
	V(Lines)	+		60.02	1066	1024	1	3	38		
6	H(Pixels)	-	146.25	65.29	2240	1680	104	176	280	1680 x 1050	O
	V(Lines)	+		59.954	1089	1050	3	6	30		
7	H(Pixels)	+	148.5	67.5	2200	1920	88	44	88	1920 x 1080	O
	V(Lines)	+		60	1125	1080	4	5	46		
8	H(Pixels)	+	297	67.5	4400	3840	176	88	296	3840 x 2160	HDMI1/ HDMI2/ DP
	V(Lines)	+		30	2250	2160	8	10	72		

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

4.3. HDMI/DP/OPS (DTV Mode)

No.	H-freq(kHz)	V-freq(Hz)	Remarks	Resolution	Support
1	31.5	60	EDTV 480p	480/60P	O
2	31.25	50	EDTV 576p	576/50P	O
3	37.5	50	HDTV 720p	720/50P	O
4	45	60	HDTV 720p	720/60P	O
5	28.1	50	HDTV 1080i 50Hz	1080/50i	O
6	33.75	60	HDTV 1080i 60Hz	1080/60i	O
7	56.25	50	HDTV 1080P 50Hz	1080/50P	O
8	67.432	59.94	HDTV 1080P 60Hz	1080/60P	O
9	67.5	60	HDTV 1080P 60Hz	1080/60P	O
10	67.5	30	UD 2160P 30Hz	2160/30P	HDMI1/2/DP

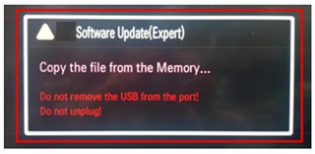
Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

SOFTWARE UPDATE

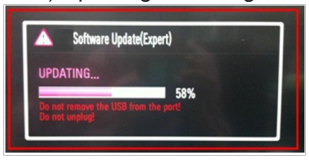
1. USB Download

1) Put the USB Stick to the USB socket
2) Automatically detecting update file in USB Stick
- If your downloaded program version in USB Stick is Lower, it didn't work. But your downloaded version is Higher, USB data is automatically detecting (Download Version High & Power only mode, Set is automatically Download)

3) Show the message "Copying files from memory"



4) Updating is starting.



5) Updating Completed, The Signage Set will restart automatically

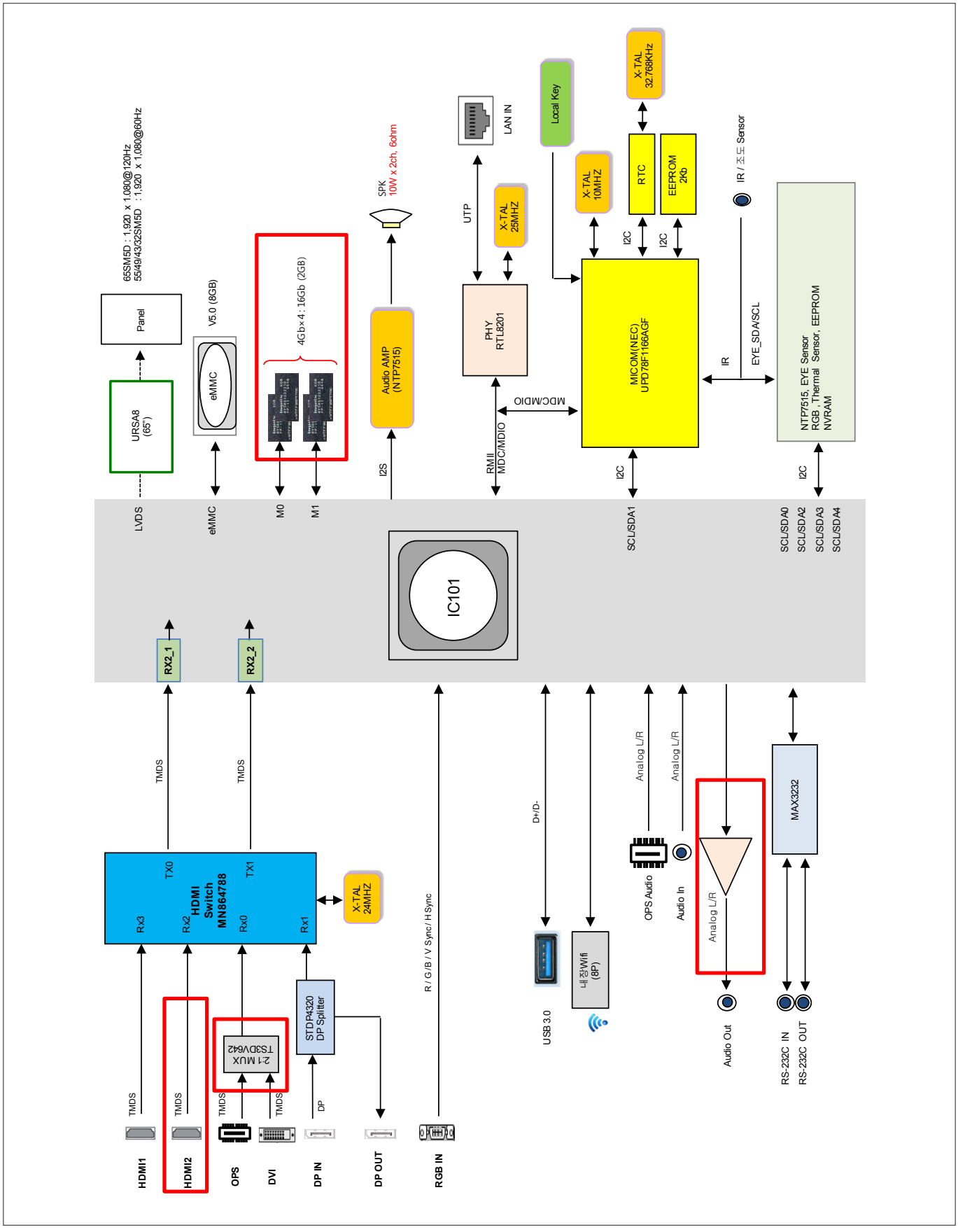
6) If your SIGNAGE SET is turned on, check your updated version and Tool option. (explain the Tool option, next stage)

* If downloading version is more high than your SIGNAGE SET have, SIGNAGE SET can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

* After downloading, have to adjust TOOL OPTION again.
1) Push "IN-START" key in service remote control.
2) Select "Tool Option 1" and Push "OK" button.
3) Punch in the number. (Each model has their number.)

Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

BLOCK DIAGRAM

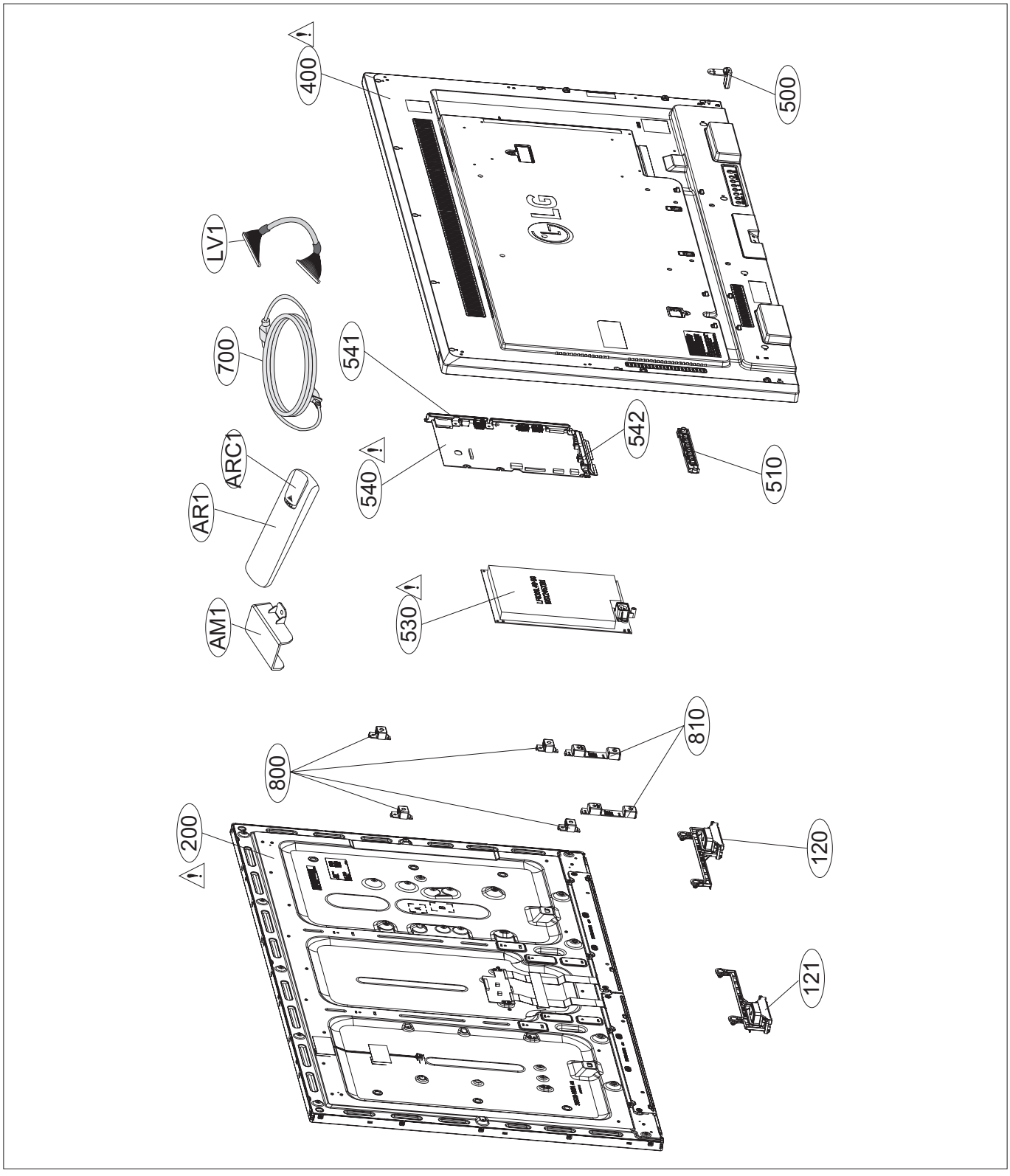


Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

EXPLODED VIEW

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.



Copyright © 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

TROUBLE SHOOTING GUIDE

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Contents of Monitor Signage Standard Repair Process

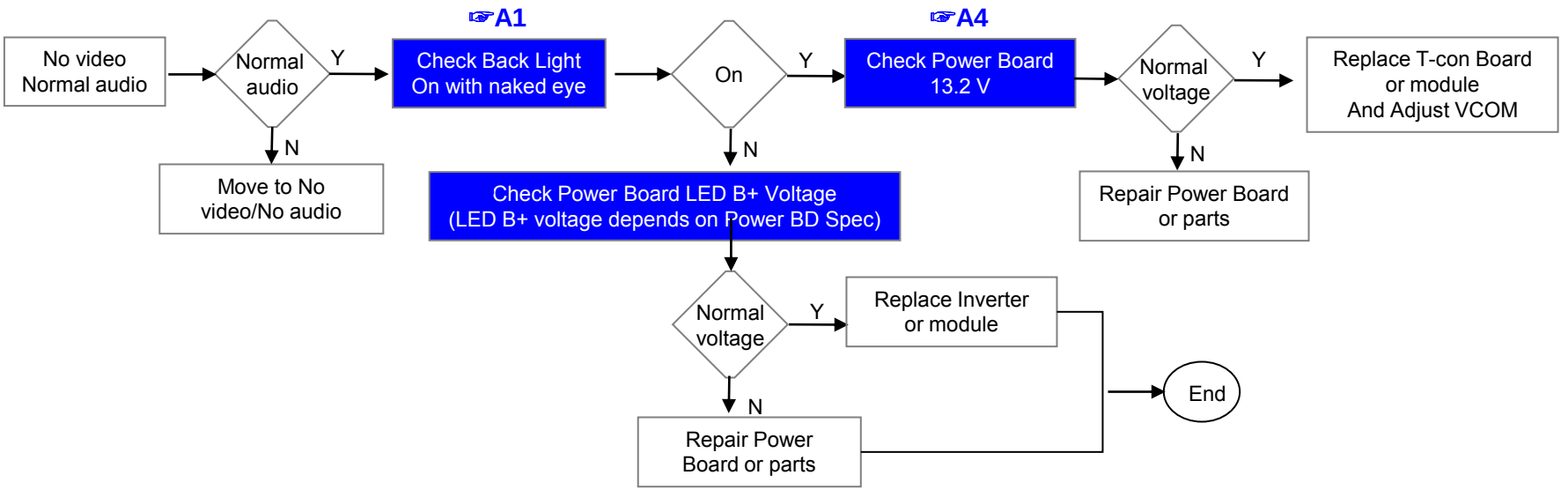
No.	Error symptom (High category)	Error symptom (Mid category)	Page	Remarks
1	A. Video error	No video/Normal audio	1	
2		No video/No audio	2	
3		Color error	3	
4	B. Power error	No power	4	
5		Off when on, off while viewing, power auto on/off	5	
6	C. Audio error	No audio/Normal video	6	
7		Wrecked audio/discontinuation/noise	7	
8	D. Function error	Remote control & Local switch checking	8	
9		External device recognition error	9	
10	E. Noise	Circuit noise, mechanical noise	10	
11	F. Exterior error	Exterior defect	11	

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

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	A. Video error	Established date		
		No video/ Normal audio	Revised date		1/11

First of all, Check whether all of cables between board is inserted properly or not.
(Main B/D↔ Power B/D, Power Cable, FFC LVDS Cable, Key Cable,,,)

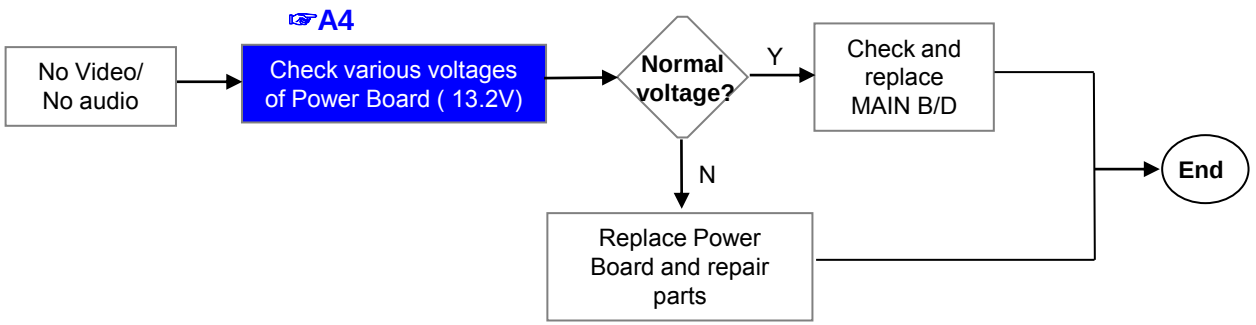


※Precaution ☞A5 & A3

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

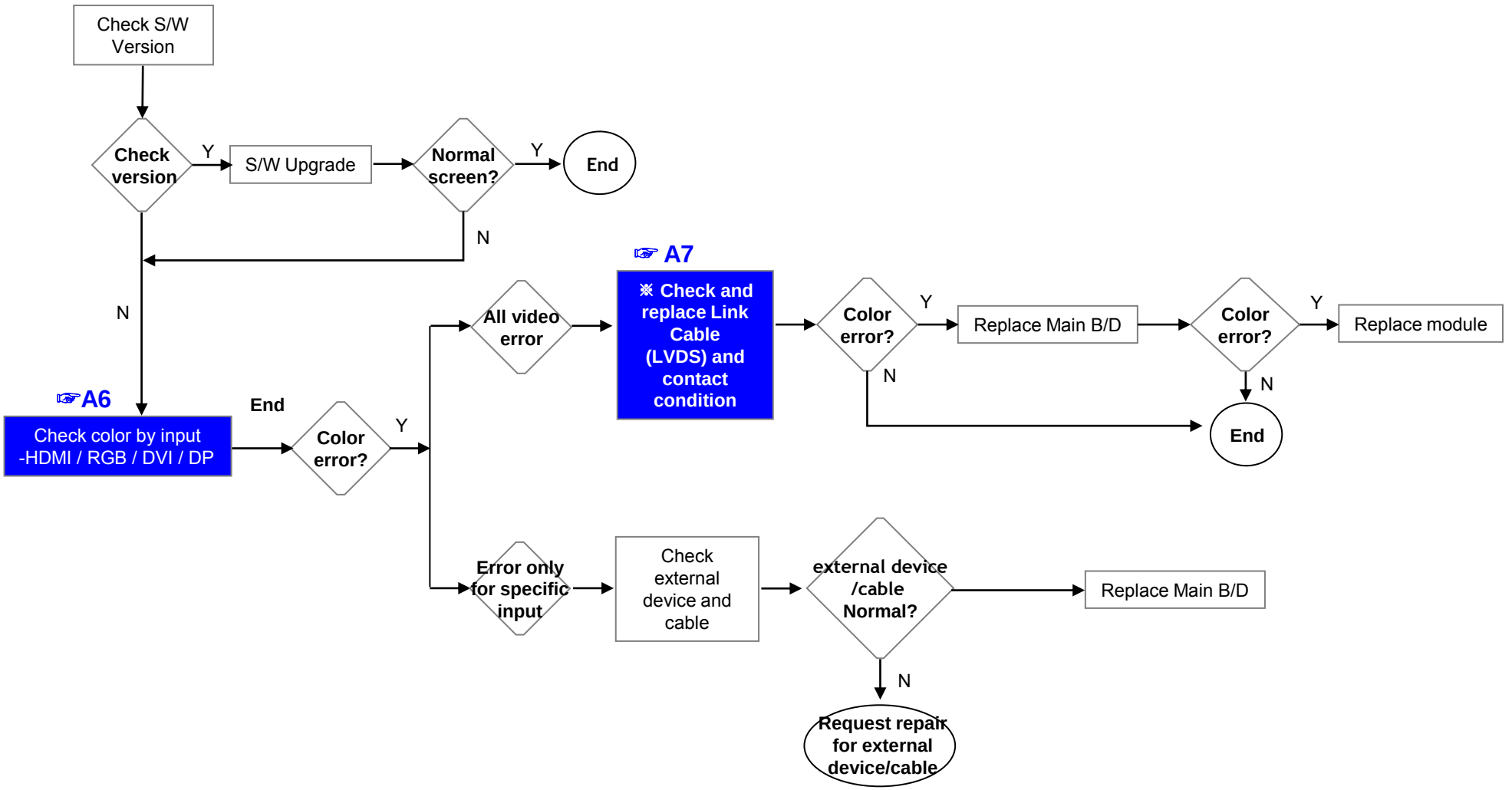
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	A. Video error	Established date		
		No video/ No audio	Revised date		2/11



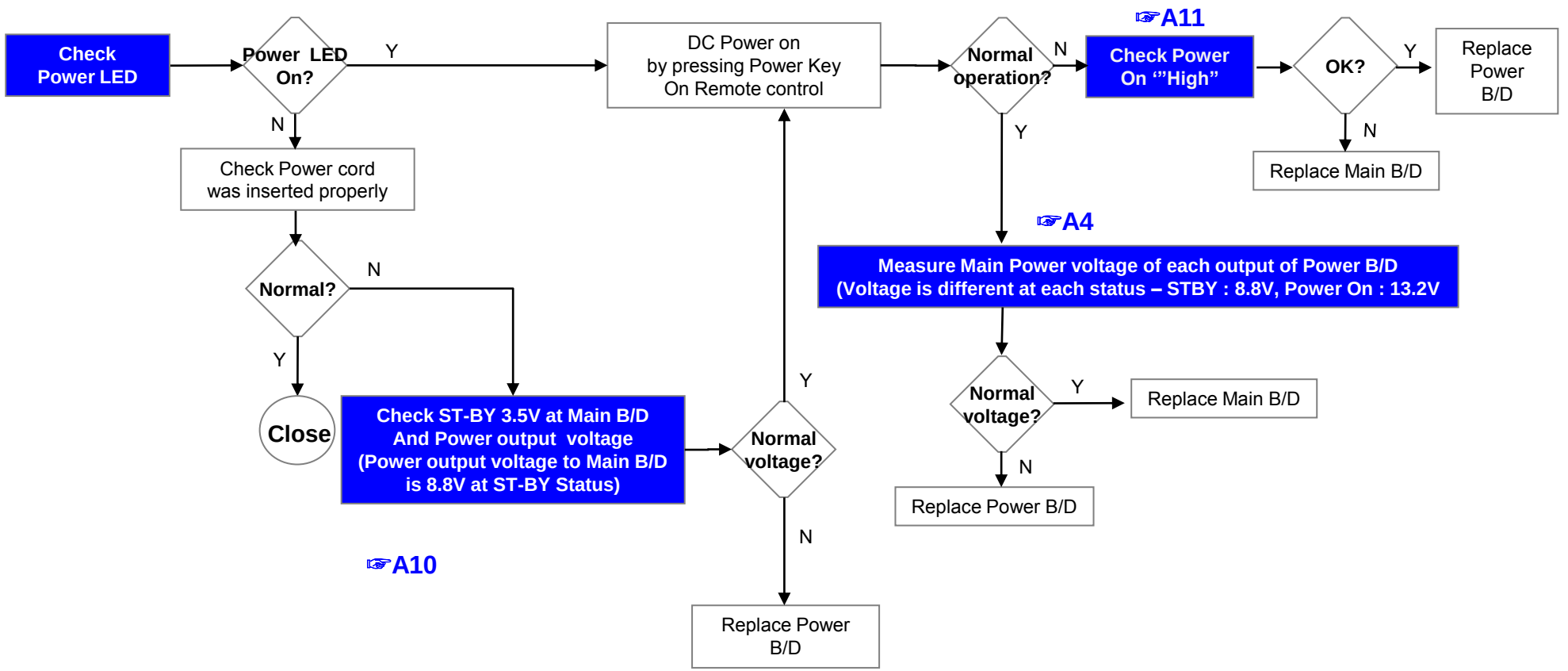
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	A. Video error	Established date		
		Color error	Revised date		3/11



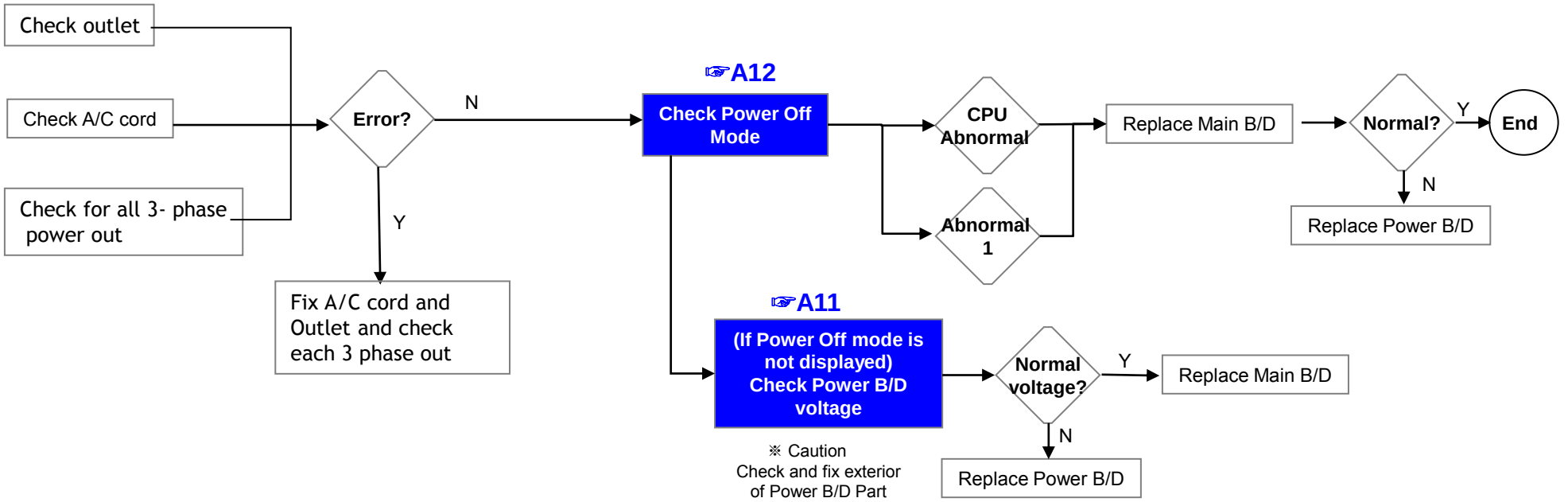
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	B. Power error	Established date		
		No power	Revised date		4/11



Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	B. Power error	Established date		
		Off when on, off while viewing, power auto on/off	Revised date		5/11

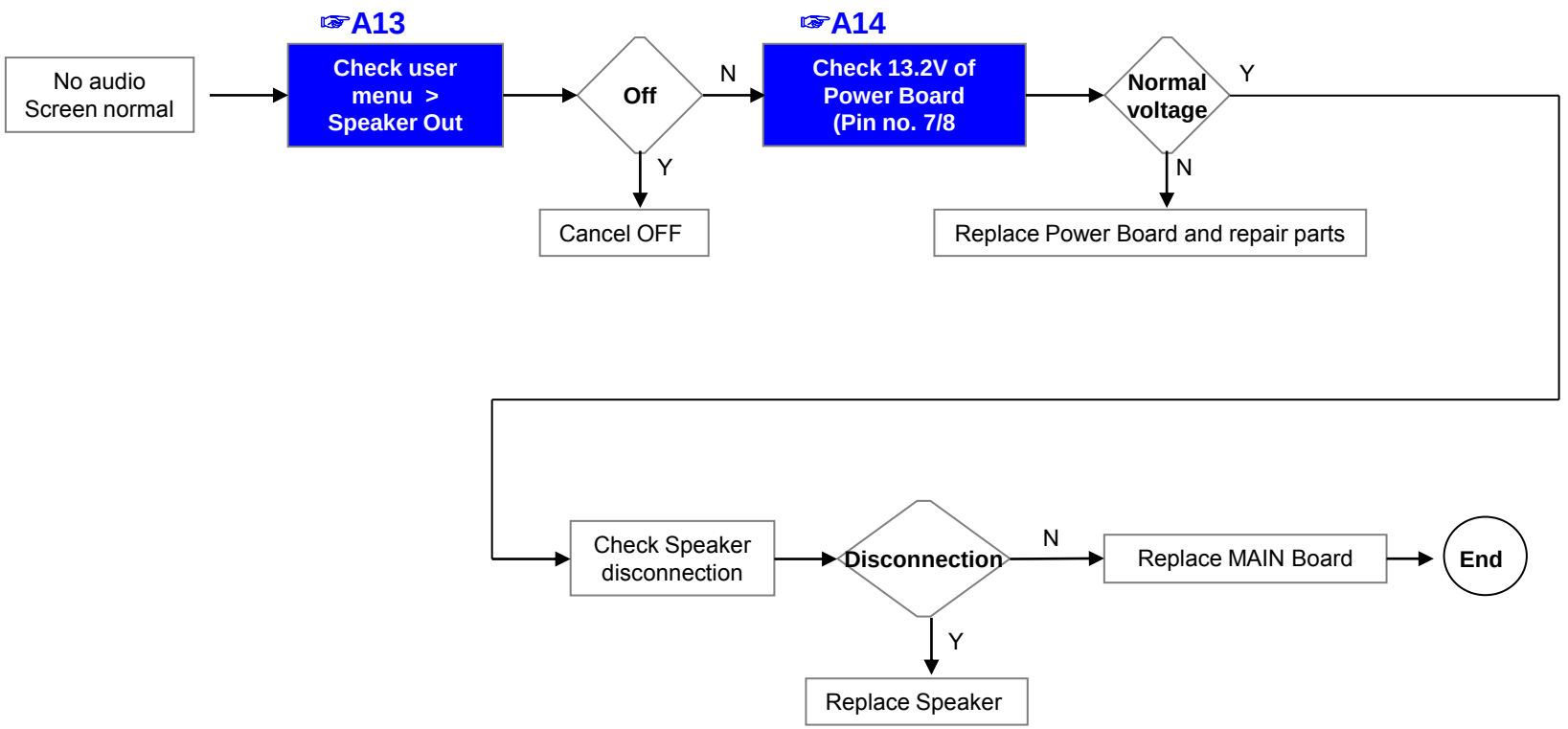


*** Please refer to the all cases which can be displayed on power off mode.**

Status	Power off List	Explanation
Normal	"POWEROFF_REMOTEKEY"	Power off by REMOTE CONTROL
	"POWEROFF_OFFTIMER"	Power off by OFF TIMER
	"POWEROFF_SLEEPTIMER"	Power off by SLEEP TIMER
	"POWEROFF_INSTOP"	Power off by INSTOP KEY
	"POWEROFF_AUTOOFF"	Power off by AUTO OFF
	"POWEROFF_ONTIMER"	Power off by ON TIMER
	"POWEROFF_RS232C"	Power off by RS232C
	"POWEROFF_RESREC"	Power off by Reservated Record
	"POWEROFF_RECEND"	Power off by End of Recording
	"POWEROFF_SWDOWN"	Power off by S/W Download
	"POWEROFF_UNKNOWN"	Power off by unknown status except listed case
Abnormal	"POWEROFF_ABNORMAL1"	Power off by abnormal status except CPU trouble
	"POWEROFF_CPUABNORMAL"	Power off by CPU Abnormal

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

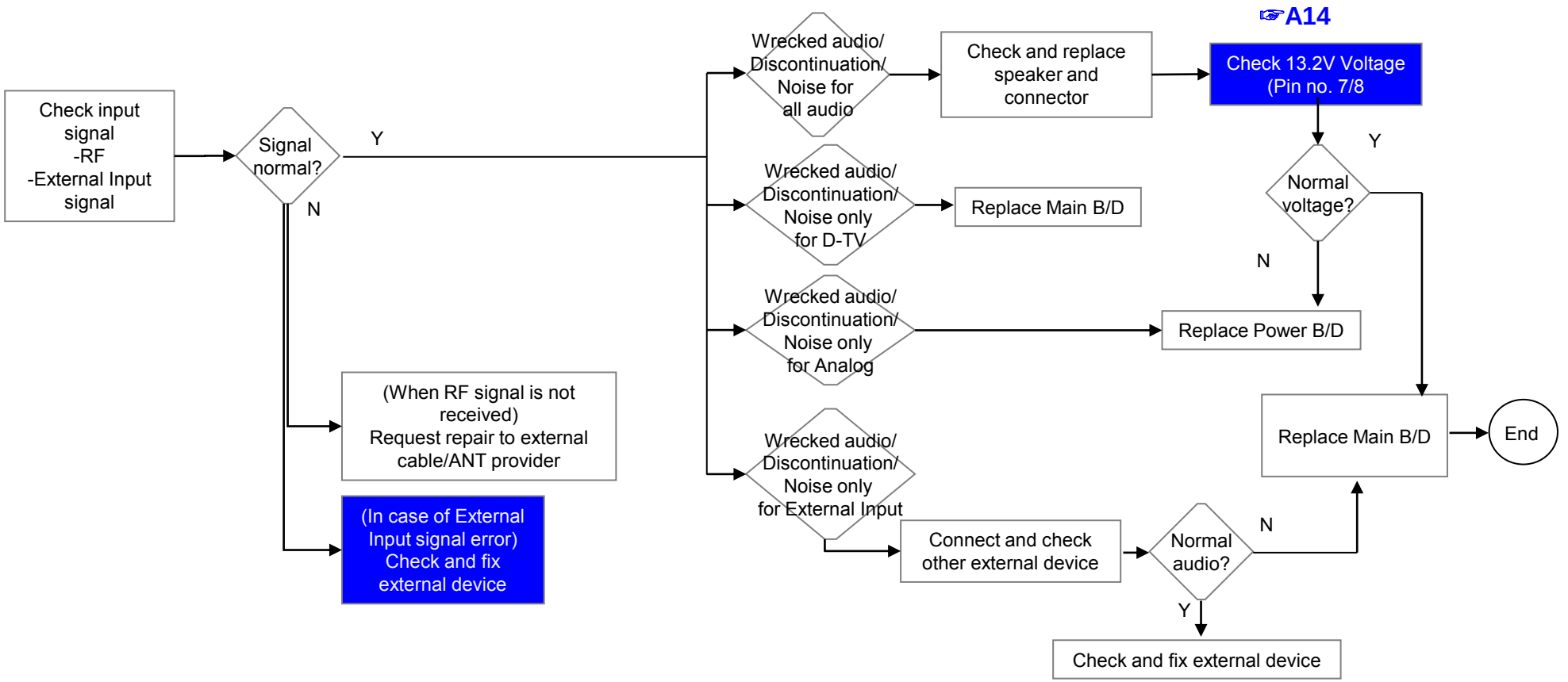
Monitor Signage	Error symptom	C. Audio error	Established date		
		No audio/ Normal video	Revised date		6/11



Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	C. Audio error	Established date		
		Wrecked audio/ discontinuation/noise	Revised date		7/11

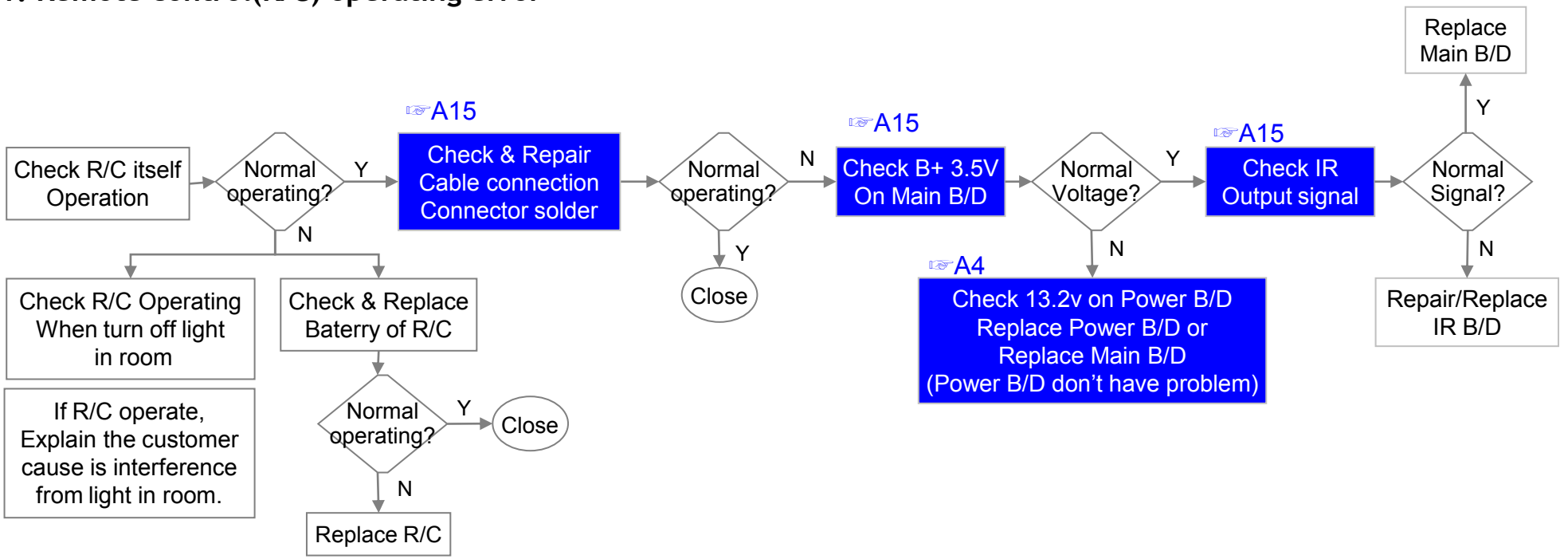
→ abnormal audio/discontinuation/noise is same after "Check input signal" compared to No audio



Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

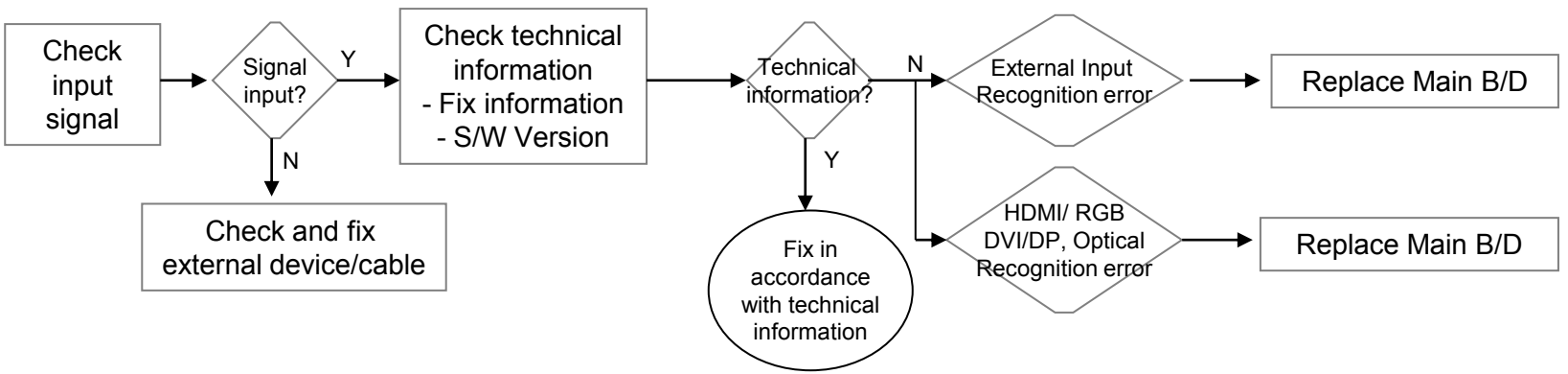
Monitor Signage	Error symptom	D. General Function Problem	Established date		
		Remote control & Local switch checking	Revised date		8/11

1. Remote control(R/C) operating error



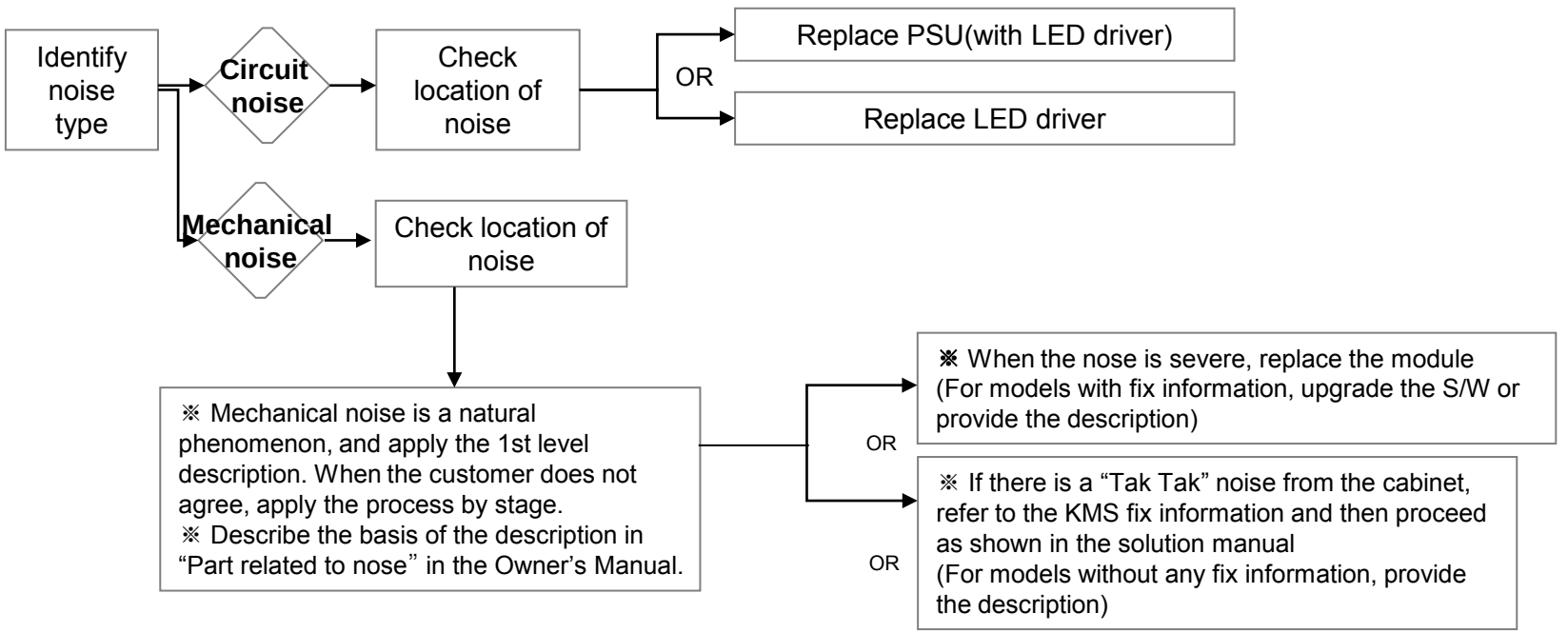
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	D. Function error	Established date		
		External device recognition error	Revised date		9/11



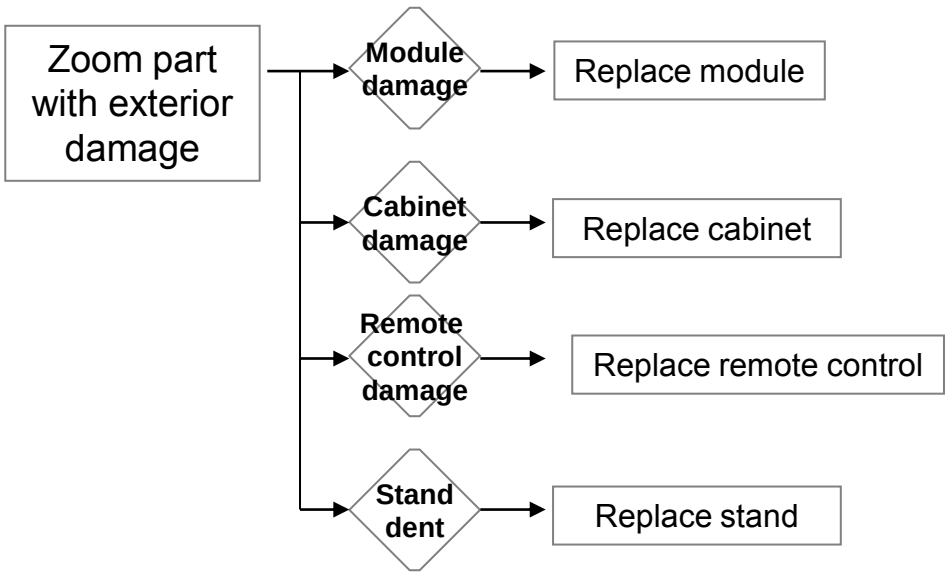
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	E. Noise	Established date		
		Circuit noise, mechanical noise	Revised date		10/11



Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Monitor Signage	Error symptom	F. Exterior defect	Established date		
		Exterior defect	Revised date		11/11



Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Contents of LCD TV Standard Repair Process Detail Technical Manual

No.	Error symptom	Content	Page	Remarks
1	A. Video error_ No video/Normal audio	Check LCD back light with naked eye	A1	
2		LED driver B+ measuring method	A2	
3		Check White Balance value	A3	
4		Power Board voltage measuring method	A4	
5	A. Video error_Color error	LCD-TV Version checking method	A5	
6		LCD TV connection diagram	A6	
7		Check Link Cable (LVDS) reconnection condition	A7	
8		Adjustment Test pattern - ADJ Key	A9	
9	A. Video error_Vertical/Horizontal bar, residual image, light spot	Check Link Cable (LVDS) reconnection condition	A7	
10		Adjustment Test pattern - ADJ Key	A9	
11	**<Appendix>** Defected Type caused by Main/ Inverter/ Module	Exchange LED driver Board (PSU)	A-3/5	
12		Exchange Module itself (1)	A-4/5	
13		Exchange Module itself (2)	A-5/5	

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Contents of LCD TV Standard Repair Process Detail Technical Manual

Continued from previous page

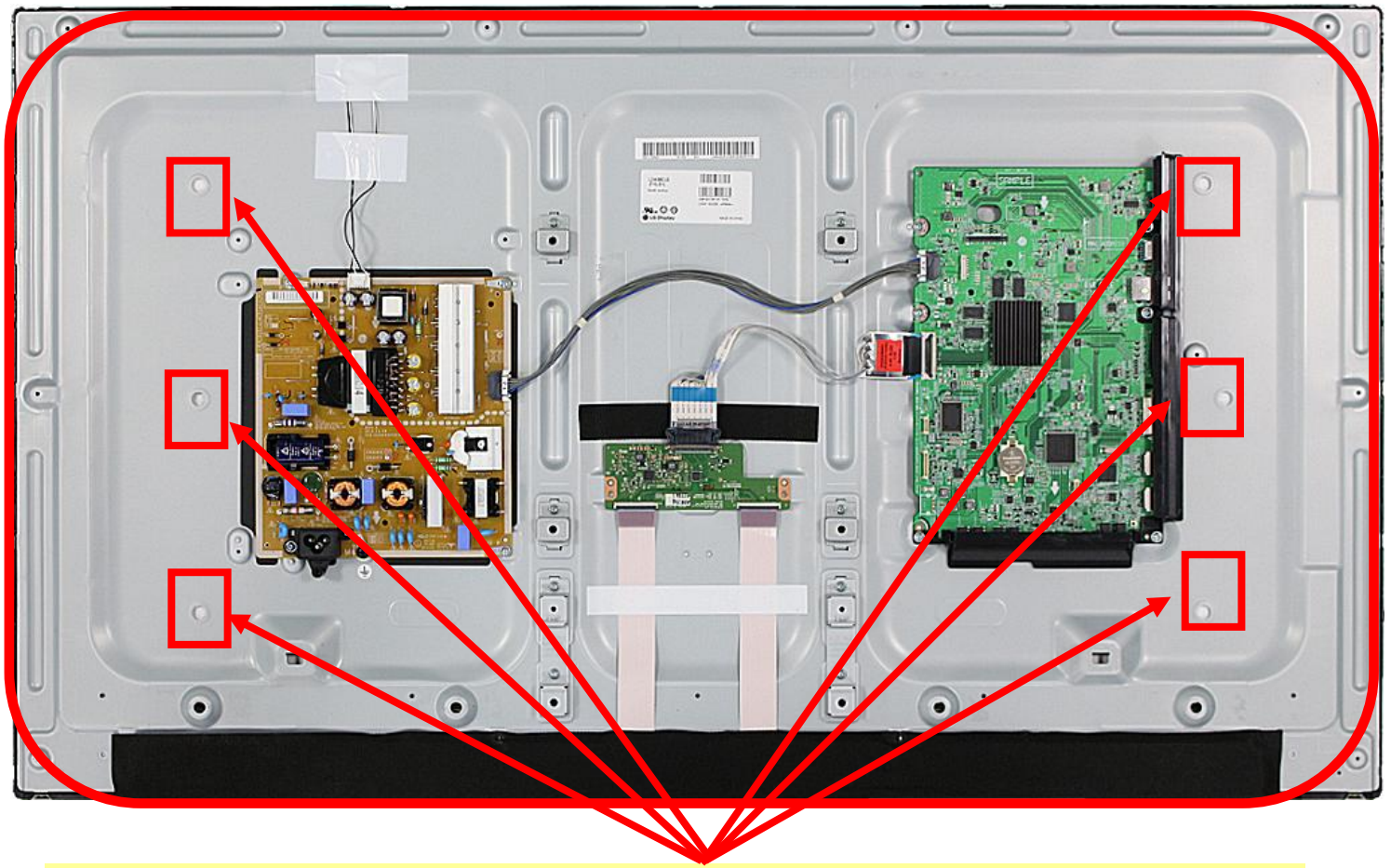
No.	Error symptom	Content	Page	Remarks
14	B. Power error_No power	Check power input Voltage & ST-BY 3.5V	A10	
15		Checking method when power is ON	A11	
16	B. Power error_Off when on, off while viewing	POWER OFF MODE checking method	A12	
17	C. Audio error_No audio/Normal video	Voltage and speaker checking method when there is no audio	A13	
18	D. Function error_ No response in remote control, key error	Remote control operation checking method	A14	

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	A. Video error_No video/Normal audio	Established date		
	Content	Check LCD back light with naked eye	Revised date		A1

<All MODELS>

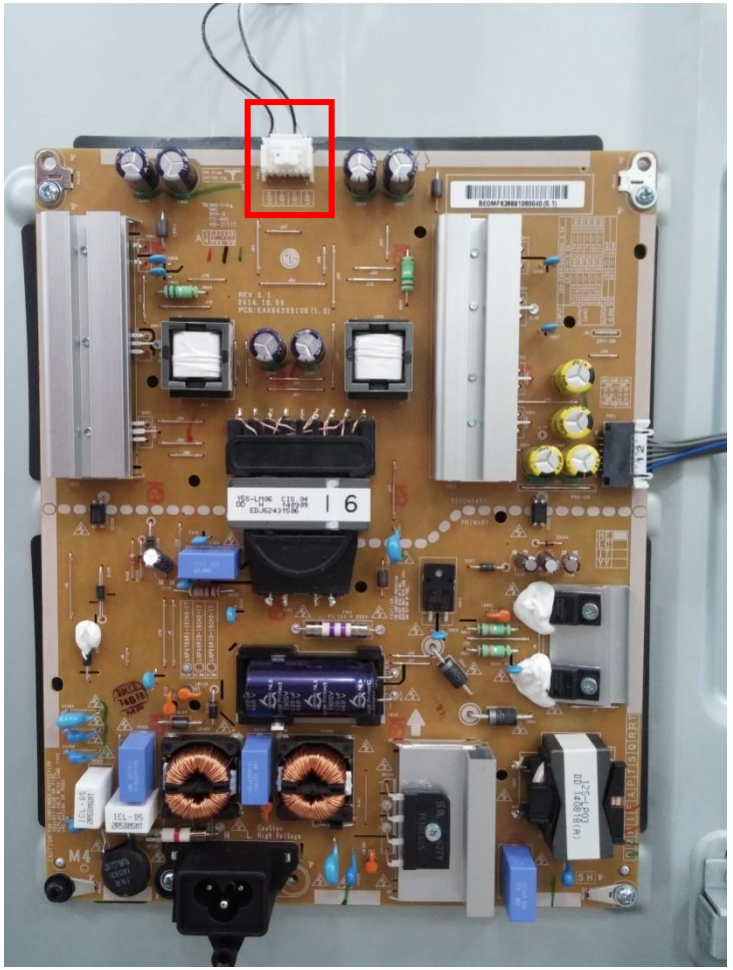


After turning on the power and disassembling the case, check with the naked eye, whether you can see light from module holes.

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	A. Video error_No video/Normal audio	Established date		
	Content	LED driver B+ measuring method	Revised date		A2



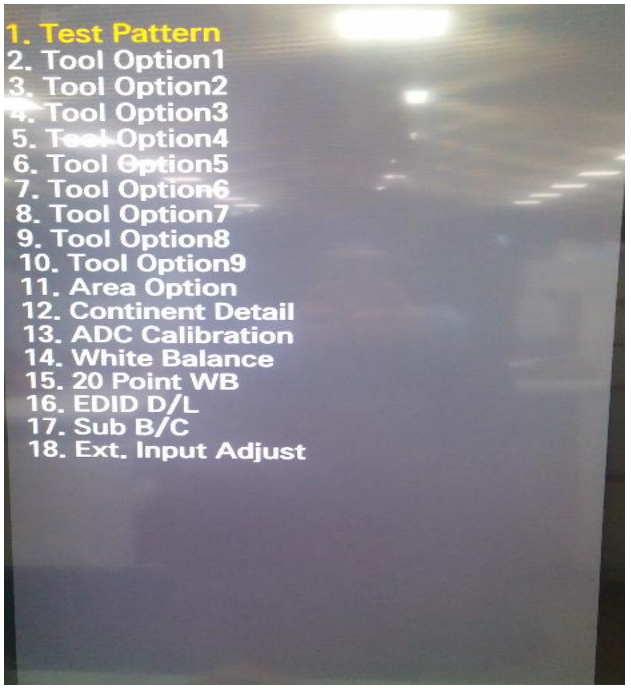
1. Check the Voltage between LED+ / LED-
2. The Voltage spec is in Power B/D spec sheet
3. Refer to the Power B/D Spec sheet

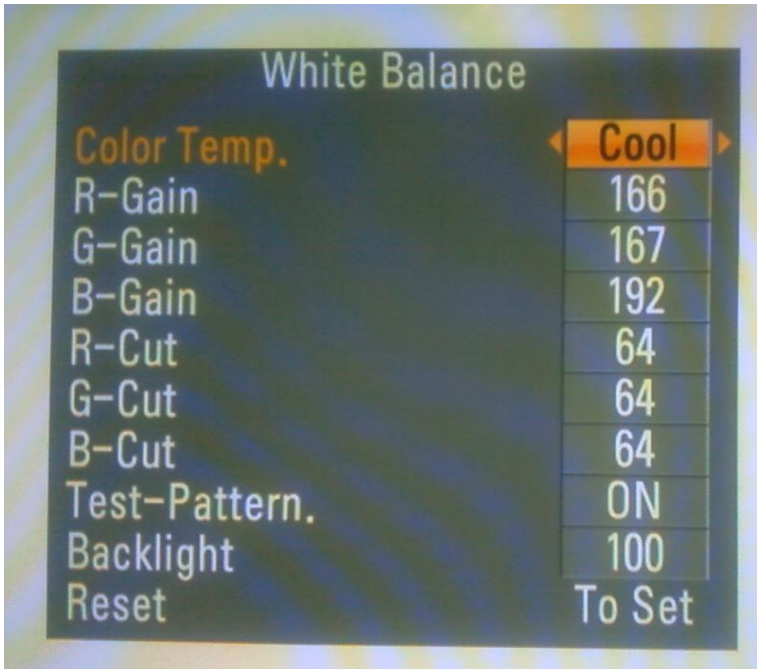
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	A. Video error_No video/Normal audio	Established date		
	Content	Check White Balance value	Revised date		A3

<ALL MODELS>





Entry method

1. Press the ADJ button on the remote control for adjustment.

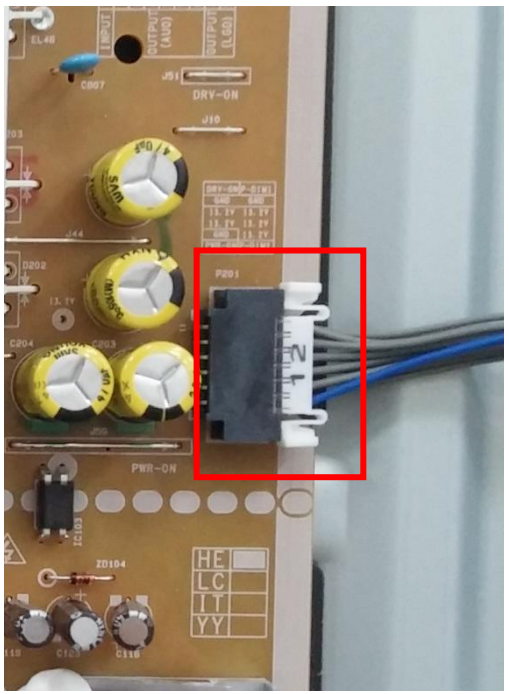
2. Enter into White Balance of item 14.

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.

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	A. Video error_No video/ Audio	Established date		
	Content	Power Board voltage measuring method	Revised date		A4



Check the 13.2V for Audio

12 Pin (Power Board ↔ Main Board)			
SMAW200-H12S5K(BK)			
1	PWR On	2	PWM #2
3	GND	4	D 13.2 V
5	D 13.2 V	6	D 13.2 V
7	A 13.2 V	8	A 13.2 V
9	GND	10	GND
11	DRV On (Inverter –On)	12	PWM #1

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	A. Video error_Video error, video lag/stop	Established date		
	Content	Monitor Signage Version checking method	Revised date		A5

<ALL MODELS>

1. Checking method for remote control for adjustment

Version

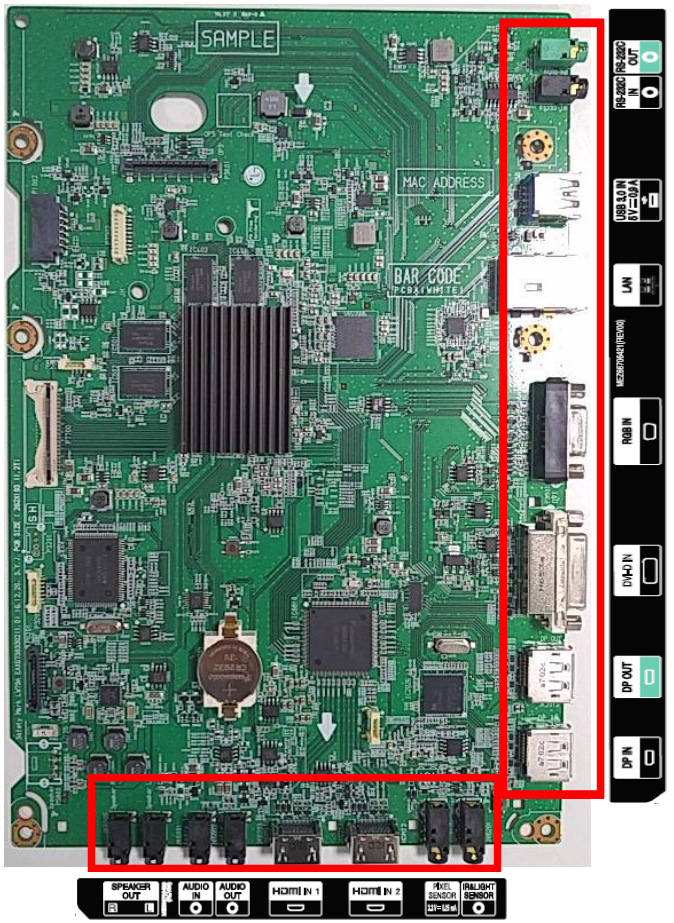
Press the IN-START with the remote control for adjustment

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

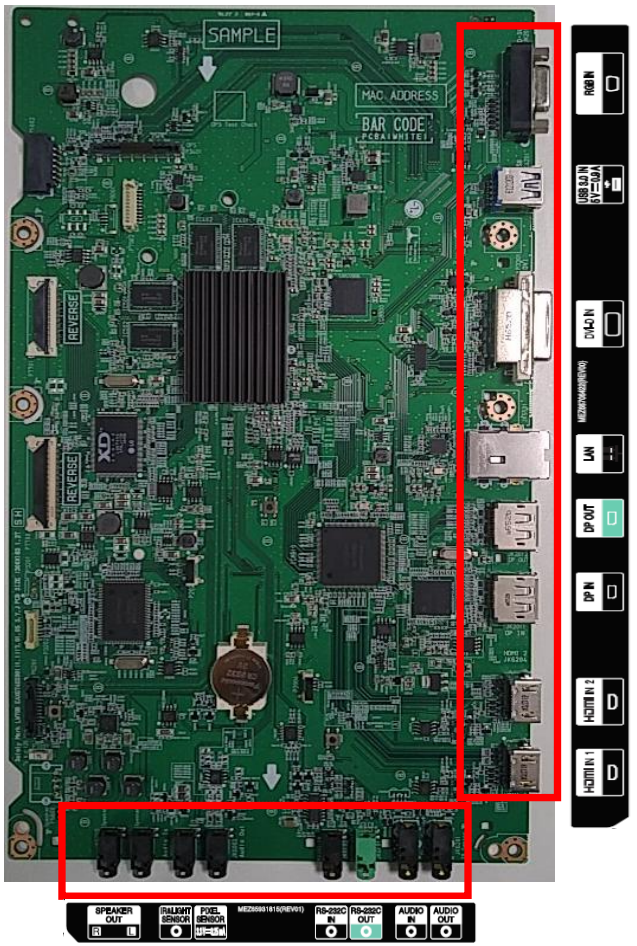
Standard Repair Process Detail Technical Manual

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

[32/43/49/55SM5D]



[65SM5D]

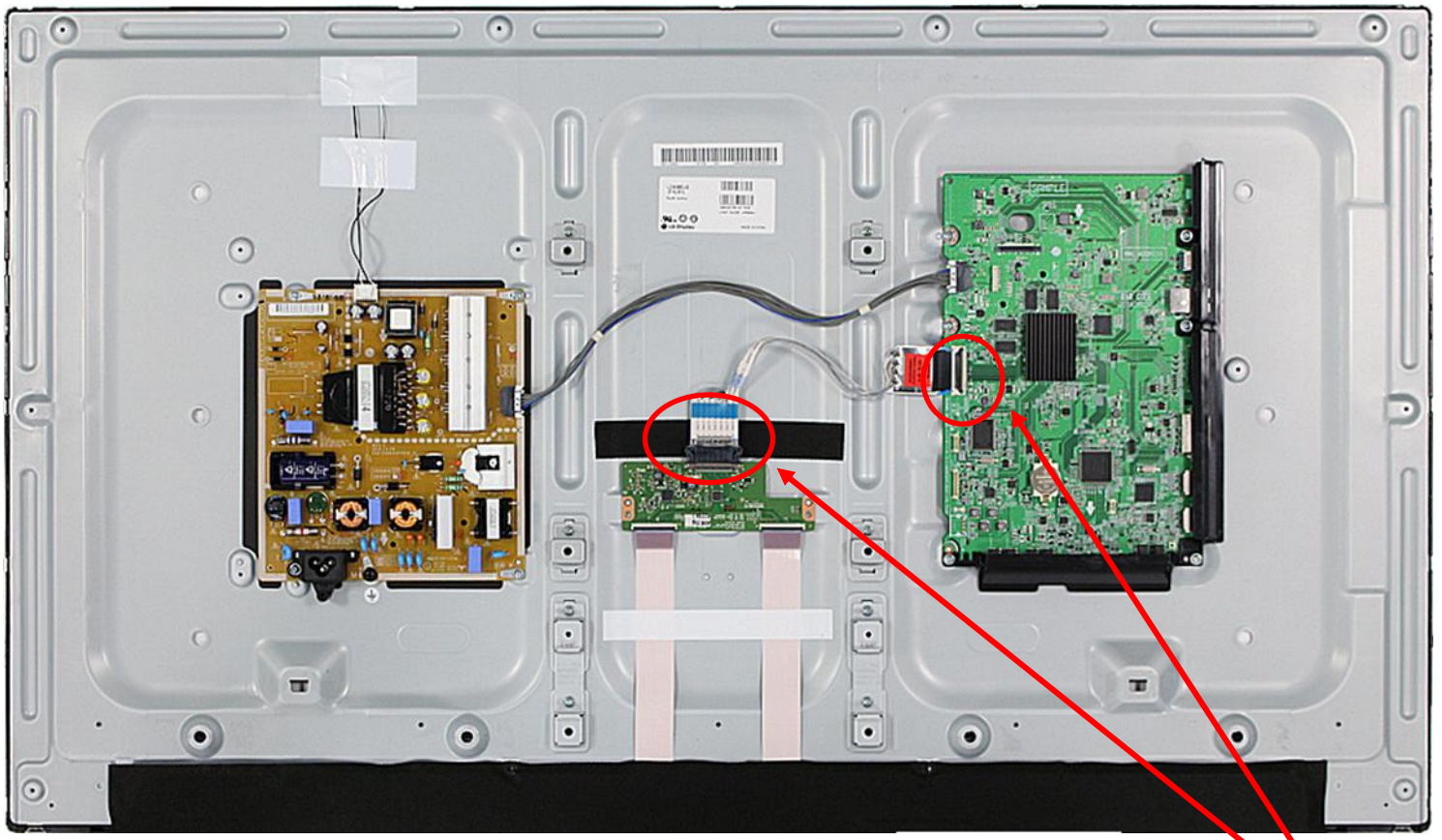


As the part connecting to the external input, check the screen condition by signal

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	A. Video error_Color error	Established date		
	Content	Check Link Cable reconnection condition	Revised date		A7

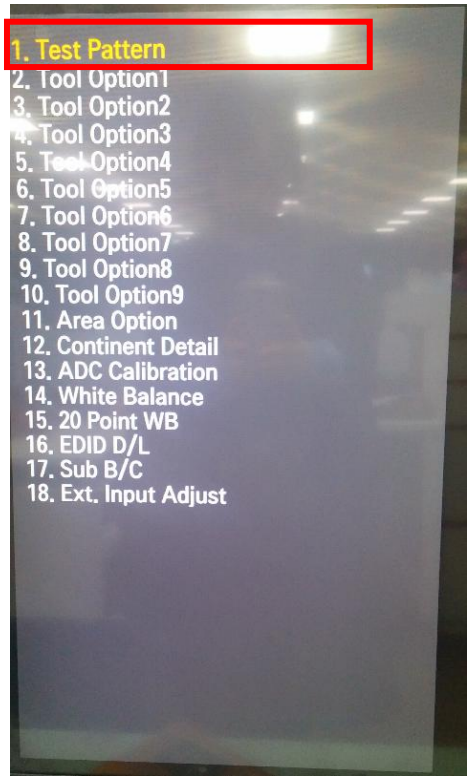


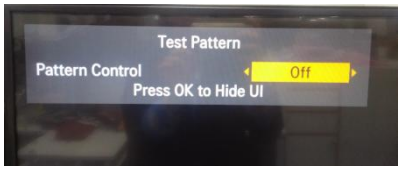
Check the contact condition of the Link Cable, especially dust or mis insertion.

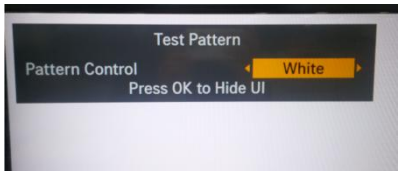
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

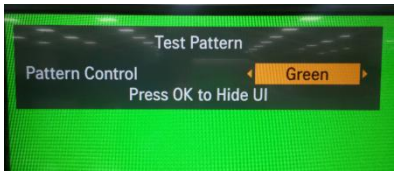
Standard Repair Process Detail Technical Manual

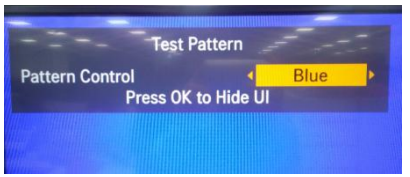
Monitor Signage	Error symptom	A. Video error_Color error	Established date		
	Content	Adjustment Test pattern - ADJ Key	Revised date		A9

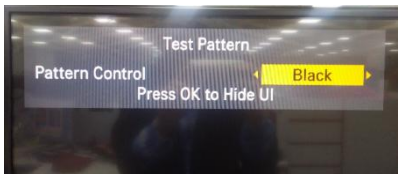


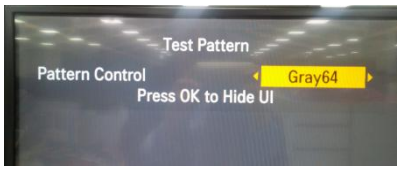


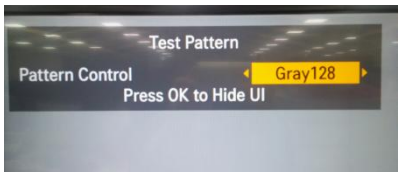


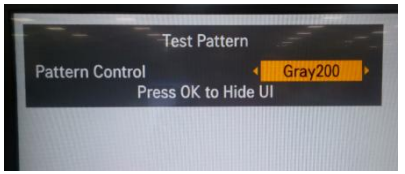












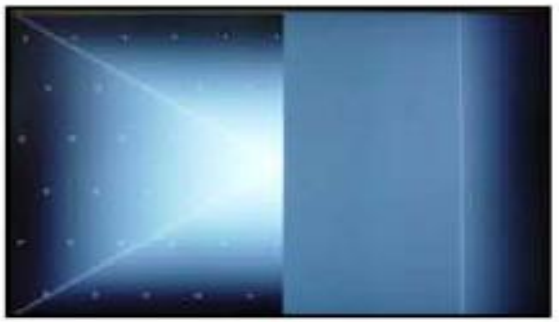
You can view 8 types of patterns using the ADJ Key

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)

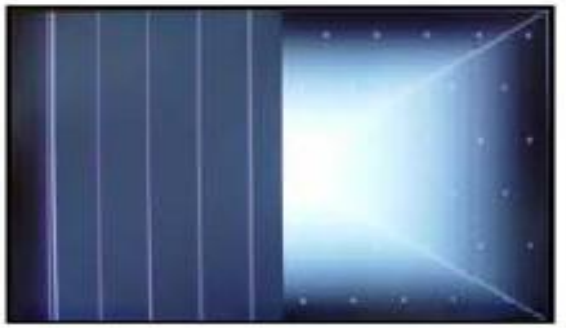
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Appendix : Exchange LVDS Cable or Main B/D (1)

Solder defect, CNT Broken

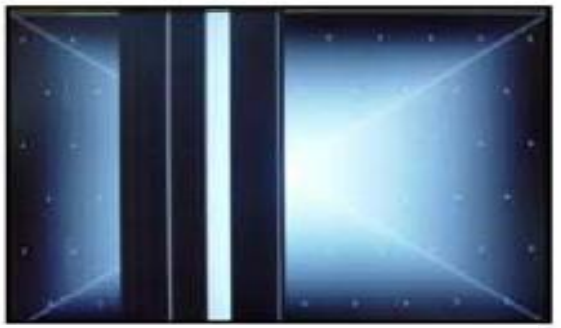


Solder defect, CNT Broken



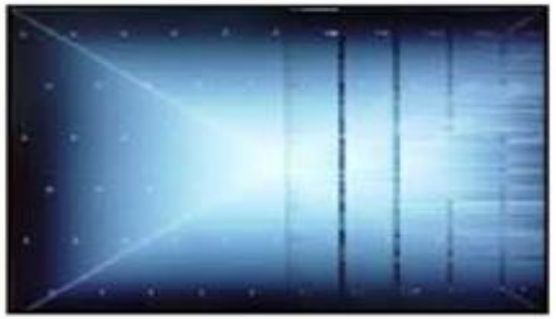
Solder defect, CNT Broken

Solder defect, CNT Broken



Solder defect, CNT Broken

Abnormal Power Section



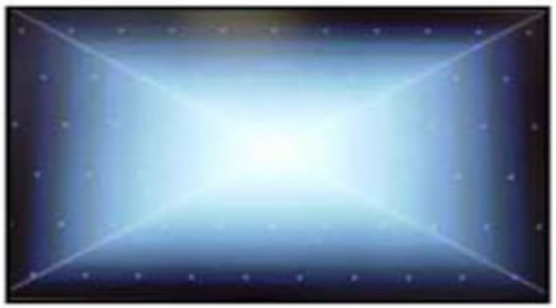
Solder defect, Short/Crack

Abnormal Power Section

Solder defect, Short/Crack

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Appendix : Exchange LVDS Cable or Main B/D (2)



Abnormal Power Section

Abnormal Power Section

Solder defect, Short/Crack

Solder defect, Short/Crack

Fuse Open, Abnormal power section

Abnormal Display

GRADATION

Noise

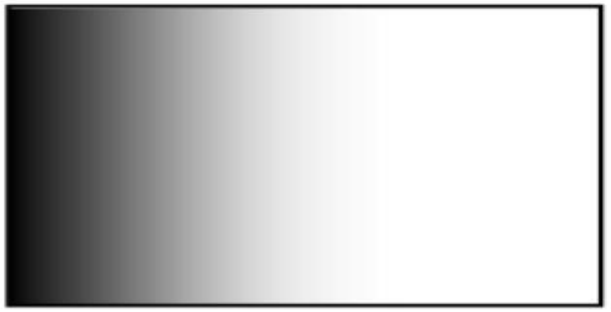
GRADATION

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

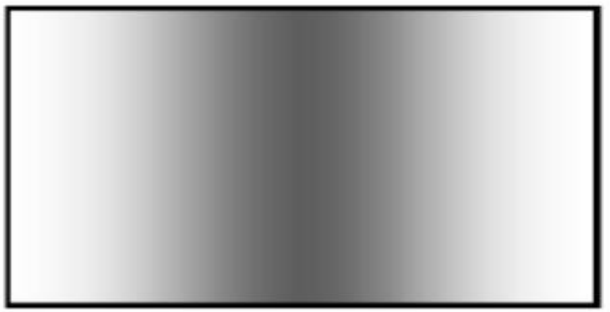
Appendix : Exchange Power Board

No Light

Dim Light



Dim Light



Dim Light

No picture/Sound Ok

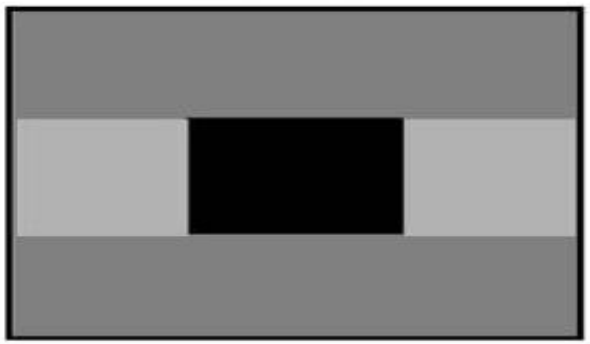
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Appendix : Exchange the Module (1)

Panel Mura, Light leakage

Panel Mura, Light leakage

Press damage



Crosstalk

Press damage

Crosstalk

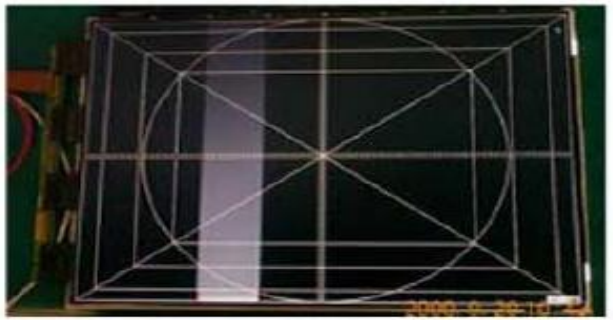
Press damage

Un-repairable Cases

In this case please exchange the module.

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Appendix : Exchange the Module (2)



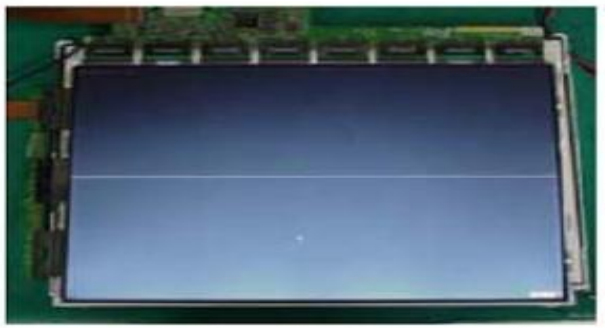
Vertical Block
Source TAB IC Defect

Vertical Line
Source TAB IC Defect

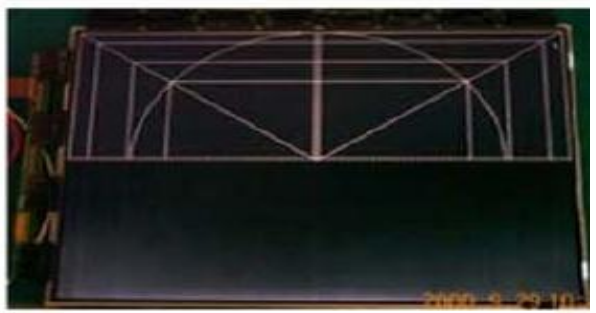
Vertical Block
Source TAB IC Defect

Horizontal Block
Gate TAB IC Defect

Horizontal Block
Gate TAB IC Defect



Horizontal line
Gate TAB IC Defect



Horizontal Block
Gate TAB IC Defect

Un-repairable Cases

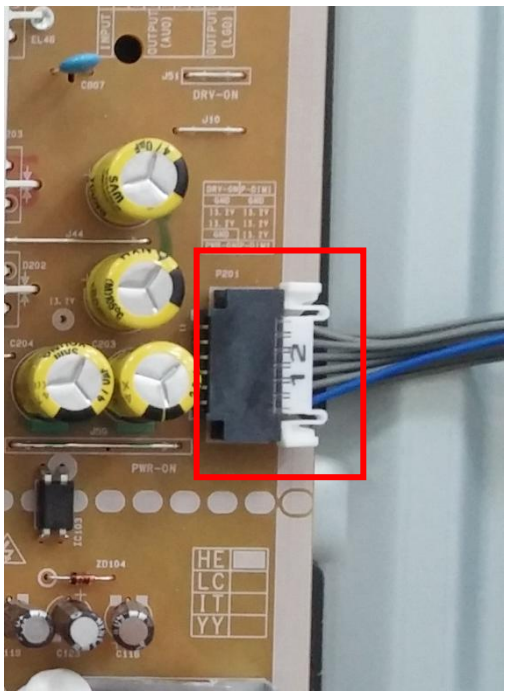
In this case please exchange the module.

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	B. Power error _No power	Established date		
	Content	Check power input voltage and ST-BY 3.5V	Revised date		A10

Check the Main Power Voltage (4,5,6 Pin)
Power On (DC On) Status : 13.2 V
STBY Status : 8.8 V

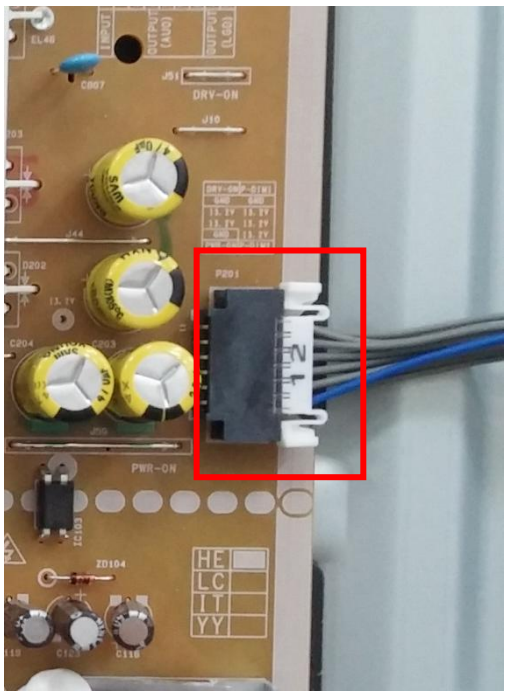


12 Pin (Power Board ↔ Main Board)			
SMAW200-H12S5K(BK)			
1	PWR-On	2	PWM#2
3	GND	4	D 13.2 V
5	D 13.2 V	6	D 13.2 V
7	A 13.2 V	8	A 13.2 V
9	GND	10	GND
11	DRV-On (Inverter -On)	12	PWM#1

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	B. Power error _No power	Established date		
	Content	Checking method when power is ON	Revised date		A11



Check “power on(Pin 1)” pin is high

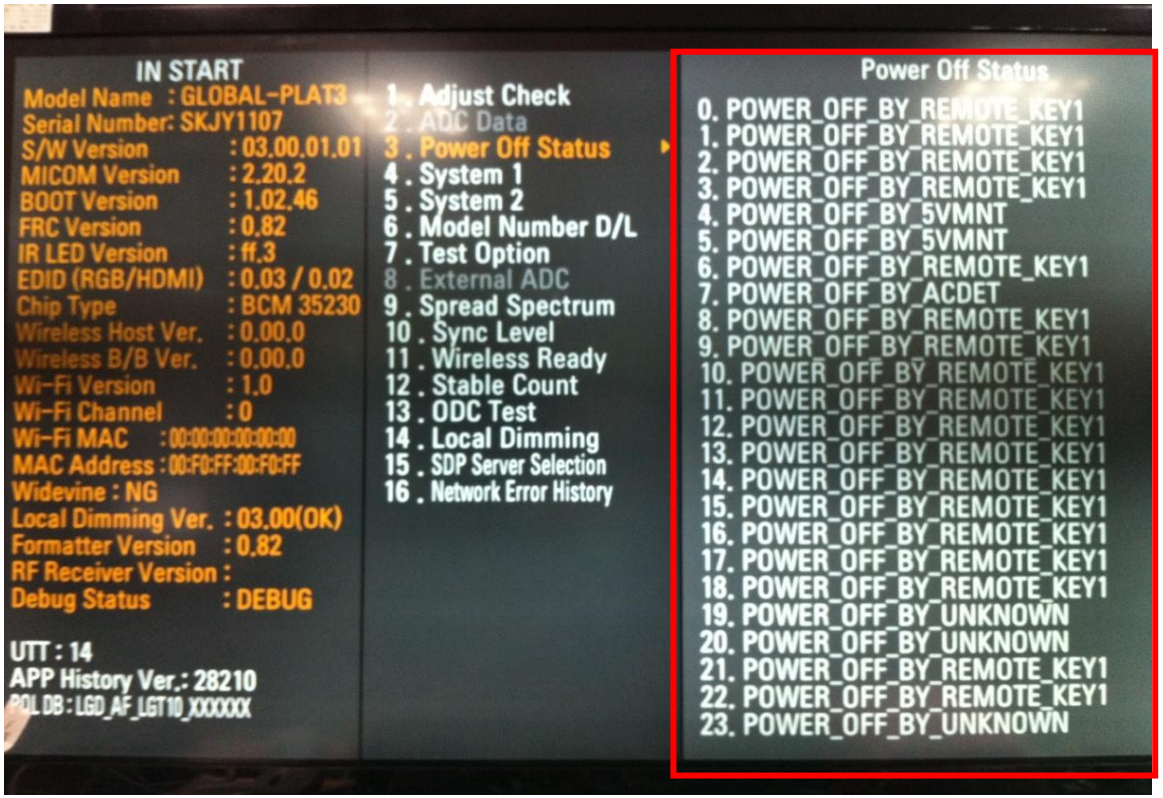
12 Pin (Power Board ↔ Main Board)			
SMAW200-H12S5K(BK)			
1	PWR-On	2	PWM#2
3	GND	4	D 13.2 V
5	D 13.2 V	6	D 13.2 V
7	A 13.2 V	8	A 13.2 V
9	GND	10	GND
11	DRV-On (Inverter -On)	12	PWM#1

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	Error symptom	B. Power error _Off when on, off whiling viewing	Established date		
	Content	POWER OFF MODE checking method	Revised date		A12

<ALL MODELS>



Entry method

1. Press the IN-START button of the remote control for adjustment

2. Check the entry into adjustment item 3

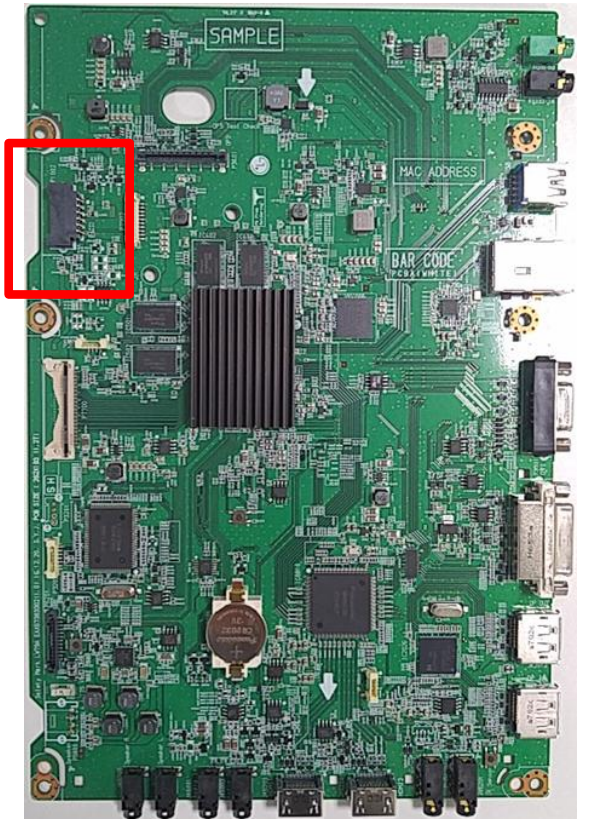
Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

Standard Repair Process Detail Technical Manual

Monitor Signage	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

[SM5D]

12 Pin (Power Board ↔ Main Board)			
SMAW200-H12S5K(BK)			
1	PWR-On	2	PWM#2
3	GND	4	D 13.2 V
5	D 13.2 V	6	D 13.2 V
7	A 13.2 V	8	A 13.2 V
9	GND	10	GND
11	DRV-On (Inverter -On)	12	PWM#1



< Main Ass'y>

Checking order when there is no audio

① Check the contact condition of or 13V connector of Main Board

② Measure the 13V 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.

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

[SM5D Models]

JK6201	
M7	GND
M4	+3.5V_ST
M3	NC
M1	IR
M6	EYE_SCL
M5	EYE_SDA

Checking order

1. Check IR cable condition between IR & Main board
2. Check the stand-by 3.5V on the terminal M1.
3. When checking the Pre-Amp when the power is in ON condition, it is normal when the Analog Tester needle moves slowly, and defective when it does not move at all.

Copyright ⓒ 2017 LG Electronics Inc. All rights reserved.
Only training and service purposes.

LG
Life's Good