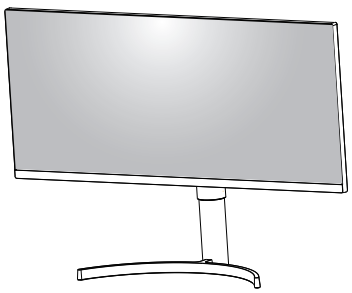
Internal Use Only

IPS LED MONITOR
SERVICE MANUAL

CHASSIS : LM80B

MODEL : 34BL650 34BL650-B

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



P/NO : MFL62449374(1902-REV00)

CONTENTS

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 schematic diagram and 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

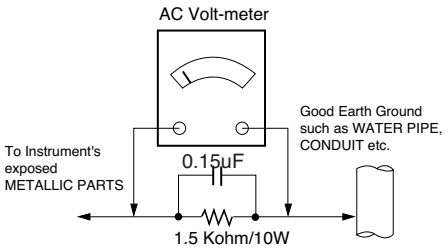
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

⚠WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or LIPS part, must disconnect the AC power 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 Ω
*Base on Adjustment standard

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 re-connecting 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) is opropyl 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 500ºF to 600ºF.
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. (500ºF to 600ºF)
   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 (500ºF to 600ºF)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

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

Removal

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

Replacement

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

"Small-Signal" Discrete TransistorRemoval/Replacement

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

Power Output, Transistor Device Removal/Replacement

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

Diode Removal/Replacement

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

Fuse and Conventional Resistor Removal/Replacement

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

Circuit Board Foil Repair

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

At IC Connections

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

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

At Other Connections

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

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

SPECIFICATION

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

** Provided accessory: #7/#8*

No	Item	Content	Measurement	Result	Remark
1	Customer	BRAND	Checked	OK	BRAND : LGE Product OEM/ODM : Buyer Model
2	User Model Name	34BL650	Checked	OK	
3	Sale region	World Wide	Checked	OK	
4	Feature	34inch WFHD Monitor	Checked	OK	
5	Chassis Name	LM83B	Checked	OK	
6	General Scope – External SW &Adj.	Joystick : Power off , Menu, Input, Exit	Checked	OK	
	General Scope – Function	Picture Mode Ratio, Smart Energy Saving, Six Color, Audio Volume(Speaker)	Checked	OK	
7	Power Cord	Length : 1.55±0.05M	1.56M	OK	Refer to Suffix standard and power cord table
		Weight : 0.17kg±10%,	0.165kg	OK	
		Color : Black	Checked	OK	
8	Cable – DisplayPort	Length : 1.8±0.05 M			EAD63749404
		Weight : 0.11kg±10%,			
		Color : Black			
		Impedance : 1) Cable : 100Ω±10%,			
	Cable – HDMI	Length	1.5M	OK	N/A
		Weight			
		Color	Checked	OK	
		Impedance	Checked	OK	
9	Power (Adapter)	Input: AC100~240V 50~60Hz 1.1A Output: DC 19V 2.1A,40W Adapter Color : Black, Weight : 0.439kg±10%	Checked	OK	EAY62850015
10	Applying module list	P/N : EAJ63850701 / Specification : LM340WW1-SSC1	Checked	OK	

2.Applying module Character

1) Characteristic

No	Item		Content	Remark
1	LCD Module Feature	Maker	LGD	
		Type	IPS	
		Screen Diagonal [mm]	866.14 (34.0”)	
		Active Display Area [mm]	799.8(H) x 334.8(V)	
		Pixel Pitch [um]	0.312 x 0.310mm	
		Electrical Interface	LVDS 4Ch	
		Color Depth	16.7M colors, 8-bits Data input	
		Surface Treatment	Hard coating (3H) & Anti-Glare treatment of the front polarizer	
		Operating Mode	Transmissive mode, Normally Black	
		Back light Unit	White LED	
		R/T [msec]	14(Typ., GTG_AVR)	

*** Standard Measurement Condition**

1) Ambient Luminance Level : dark (< 10 lux)

2) Ambient Temperature : Normal Temperature(10 ~ 25 ℃)

3) Warm-up Time : More than 30min (at Full White Pattern)

4) Input Signal : VESA 2560*1080@60Hz

5) Contrast : 70

6) Brightness : Max. 100

7) 6500K : Color Temperature Setting is 6500 K(if it’s not special specification)

8) Clock/Clock Phase : The Best Setting

9) Another Spec.: Product Specification Standard(LG(55)G1-1034)

10) Cosmetic Spec. : LCD Module IIS Spec.

TIMING CHART

Signal (Video & Sync)

– DisplayPort

mode	section	polarity	DOT CLOCK [MHz]	Frequency [kHz]/[Hz]	Total Period(E)	Display (A)	Front Porch (D)	Sync. (C)	Back Porch (B)	Resolution
1	H(Pixels)	-	25.175	31.469	800	640	16	96	48	640 x 480
	V(Lines)	-		59.94	525	480	10	2	33	
2	H(Pixels)	-	31.5	37.5	840	640	16	64	120	640 x 480
	V(Lines)	-		75	500	480	1	3	16	
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)	+	49.5	46.875	1056	800	16	80	160	800 x 600
	V(Lines)	+		75.0	625	600	1	3	21	
5	H(Pixels)	-	65.0	48.363	1344	1024	24	136	160	1024 x 768
	V(Lines)	-		60.0	806	768	3	6	29	
6	H(Pixels)	+	78.75	60.123	1312	1024	16	96	176	1024 x 768
	V(Lines)	+		75.029	800	768	1	3	28	
7	H(Pixels)	-	81.62	53.697	1520	1152	64	120	184	1152 x 864
	V(Lines)	+		60	895	864	1	3	27	
8	H(Pixels)	+	74.25	45	1650	1280	110	40	220	1280x720
	V(Lines)	+		60	750	720	5	5	20	
9	H(Pixels)	+	108	63.981	1688	1280	48	112	248	1280 x1024
	V(Lines)	+		60.02	1066	1024	1	3	38	
10	H(Pixels)	+	135	79.976	1688	1280	16	144	248	1280 x 1024
	V(Lines)	+		75.025	1066	1024	1	3	38	
11	H(Pixels)	+	108.0	60.00	1800	1600	24	80	96	1600 x 900
	V(Lines)	+		60.00	1000	900	1	3	96	
12	H(Pixels)	-	146.25	65.29	2240	1680	104	176	280	1680 x 1050
	V(Lines)	+		59.954	1089	1050	3	6	30	
13	H(Pixels)	+	148.50	67.50	2200	1920	88	44	148	1920 x 1080
	V(Lines)	-		60	1125	1080	4	5	36	
14	H(Pixels)	-	181.25	66.636	2720	2560	48	32	80	●
	V(Lines)	+		59.98	1111	1080	3	10	18	2560 x 1080
15	H(Pixels)	-	228.25	83.915	2720	2560	48	32	80	2560 x 1080
	V(Lines)	+		74.99	1119	1080	3	10	26	

Main Recommended Timing(HDMI Video input)

	Factory support mode (Preset Mode)	Horizontal frequency (KHz)	Vertical frequency (Hz)
1	480P	31.5	60
2	576P	31.25	50
3	720P	37.5	50
4	720P	45	60
5	1080P	56.25	50
6	1080P	67.5	60

4. Supporting timing

- ● Established I, Established II, Manufacturer timing
- ● Standard Timing
- ● Detailed Timing (1Page)
- ● Detailed Timing (2Page)

EDID 내의 PC Timing								
수평 크기	수직 크기	주파수	HDMI1/2 (1.4)	HDMI1/2 (2.0)	HDMI1/2 FreeSync (2.0)	DisplayPort	DisplayPort FreeSync	
640	480	60	●	●	●	●	●	
		67						
		72						
		75	●	●	●	●	●	
720	400	70						
		88						
720	480	60(59.94)	●			●	●	
800	600	56						
		60	●	●	●	●	●	
		72						
		75	●	●	●	●	●	
832	624	75	●	●	●	●	●	
1024	768	87(I)						
		60	●	●	●	●	●	
		70						
		75	●	●	●	●	●	
		120						
1152	864	60	●	●	●	●	●	
1152	870	75	●	●	●	●	●	
1280	720	60	●	●	●	●	●	
1280	800	60	●	●	●	●	●	
1280	1024	60	●	●	●	●	●	
		75	●	●	●	●	●	
1600	900	60	●	●	●	●	●	
1680	1050	60	●	●	●	●	●	
1920	1080	60	●●	●●	●●	●●	●●	
		75	●	●	●	●	●	
2560	1080	30 (29.99)						
		50 (49.99)						
		60 (59.98)	●	●	●	●	●	
		75 (74.99)	●	●	●	●	●	
VF min (Hz)			56Hz	56Hz	40Hz	56Hz	40Hz	
VF max (Hz)			75Hz	75Hz	75Hz	75Hz	75Hz	
HF min (kHz)			30kHz	30kHz	90kHz	30kHz	90kHz	
HF max (kHz)			90kHz	90kHz	90kHz	90kHz	90kHz	
Clock (MHz)			240MHz	250MHz	250MHz	240MHz	240MHz	

ADJUSTMENT

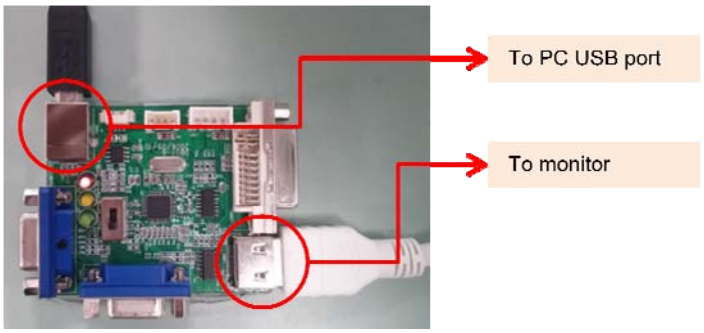
-. “1. How to Enter the SVC mode”

#1) Monitor Power off using the Circle OSD
#2) Move joystick button Left 3 Times and Right 1 Time
#5) DC On (Click the Joystick Power button)
#6) Select the Menu

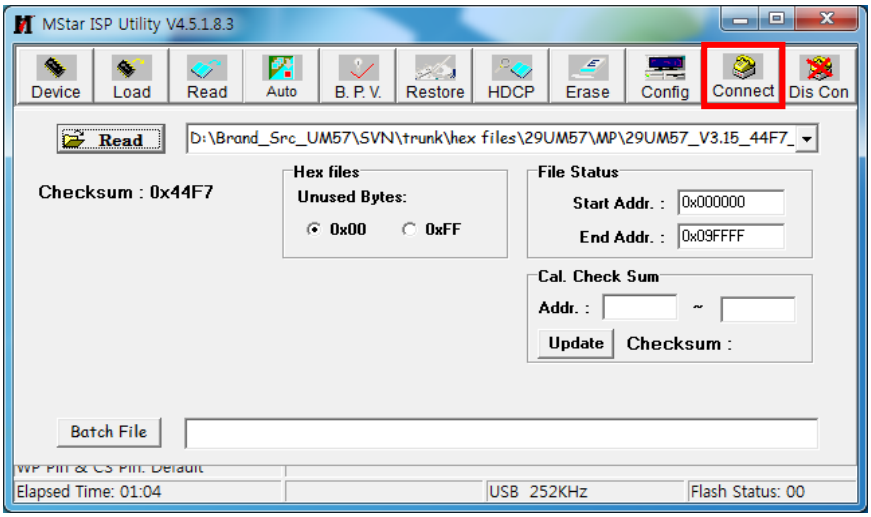
#7) you can see Service Menu at the top left side and you can get information from it.

-. “2. How to update the F/W” (refer to Next Page)

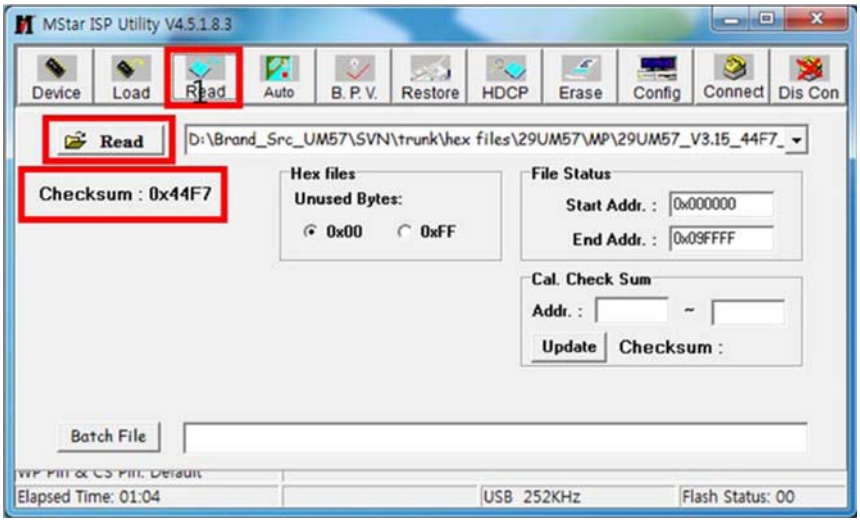
#1). Connect Mstar Jig to monitor and PC.



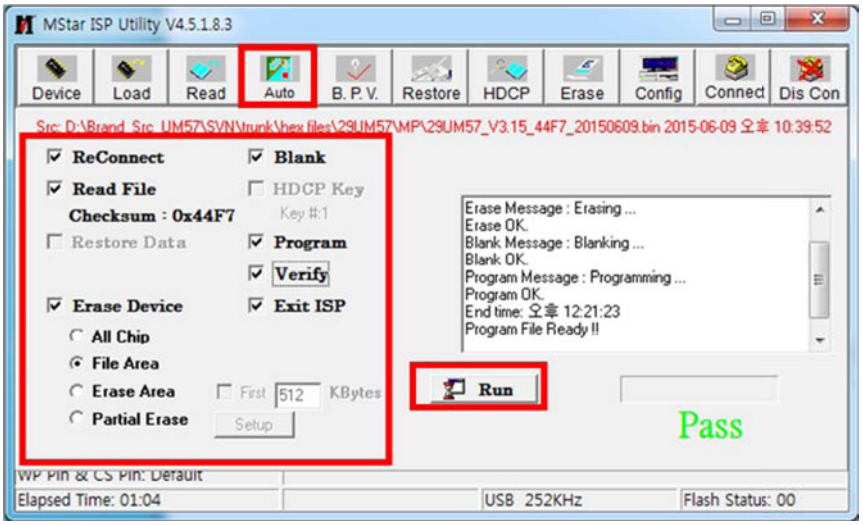
#2). Connect HDMI cable and select “Connect” button.



#3). Select “Read” button(1st) and find bin file(2nd) and then check the checksum value(3th).

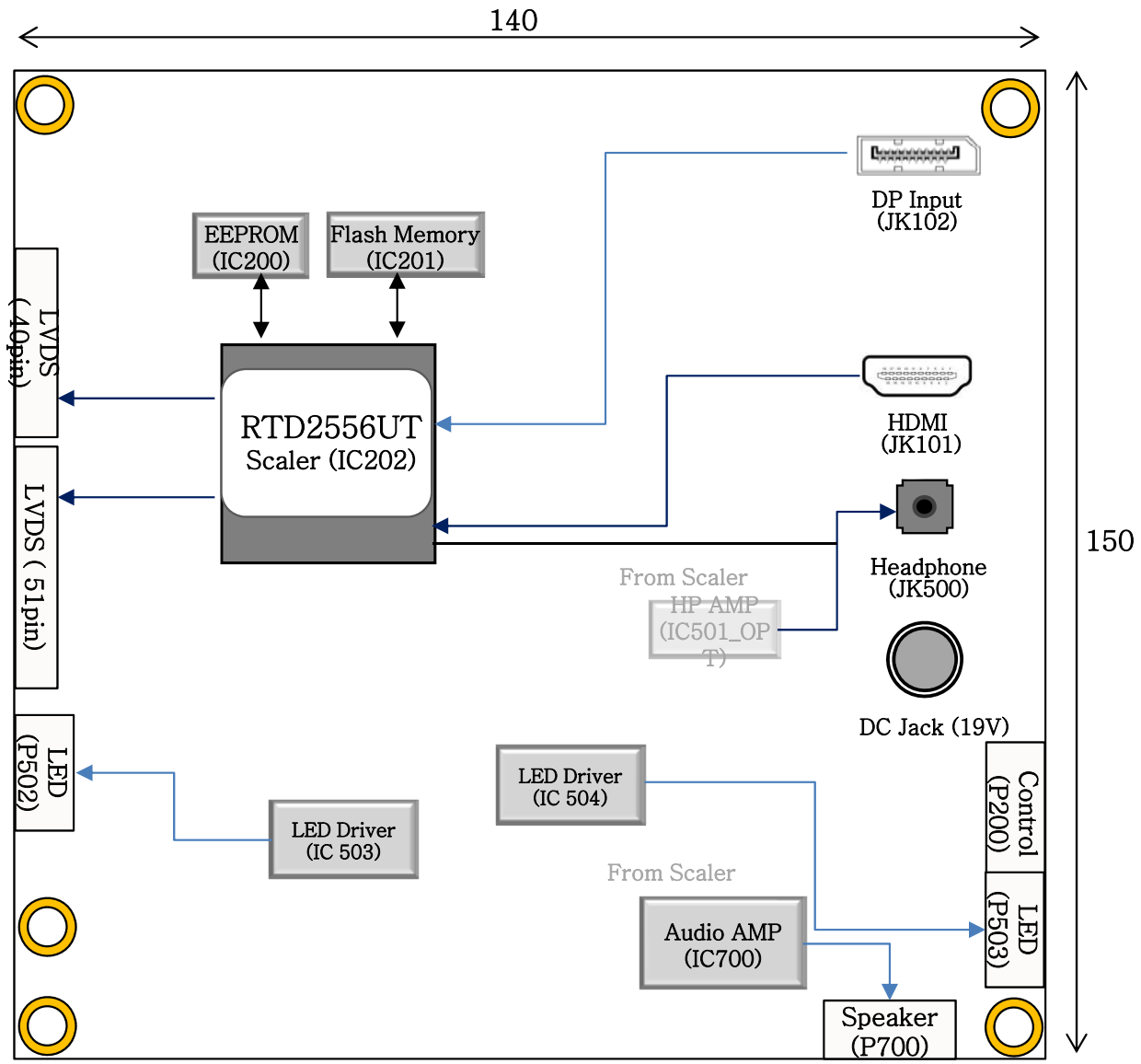


#4). Select “Auto” button(1st) and confirm the checkbox settings(2nd) and then select “Run” button(3th).
*Please make sure that “File Area” option is selected.



#5). After ISP is completed, do factory reset in the OSD main menu.

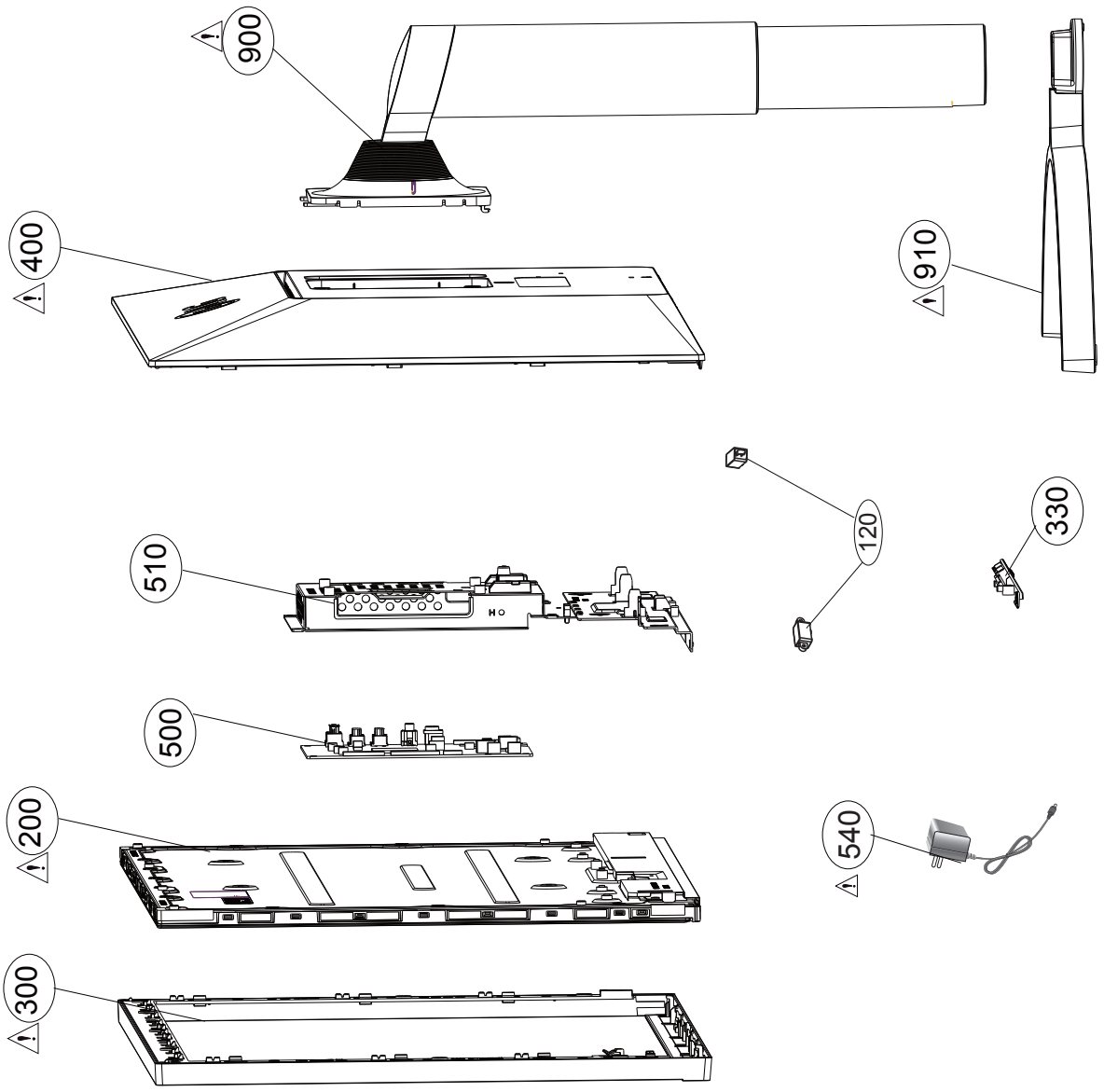
BLOCK DIAGRAM (Main)



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 Schematic Diagram and 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.



Disassemble method

▣ Tool Description

Fig.1 Place the monitor's screen face down on a soft cloth.

Fig.2 Disassemble the Stand body with pulling down the button.

Fig 3 Remove the Screw(4EA) and disassemble the back cover

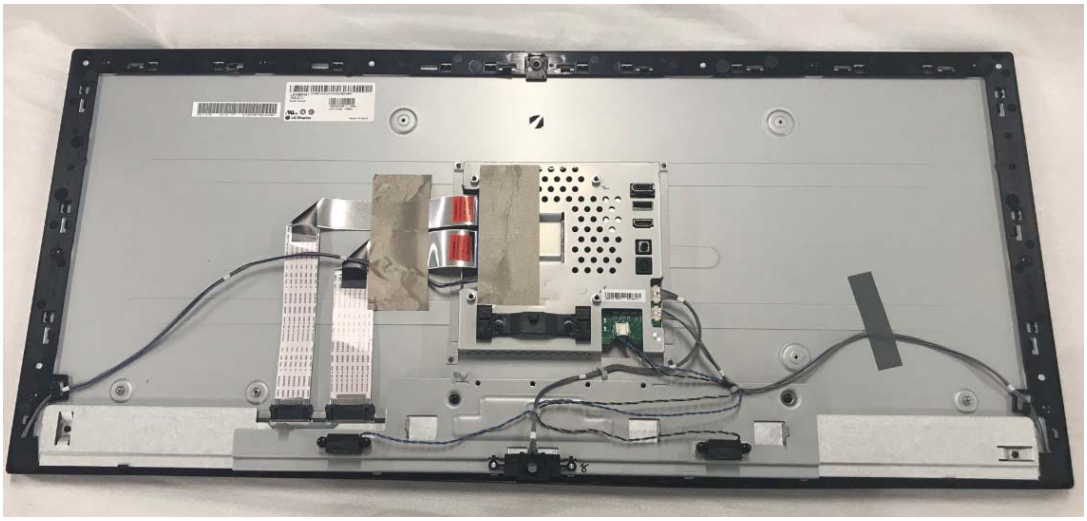


Fig 4 Disassemble the back cover (Latch Type) .

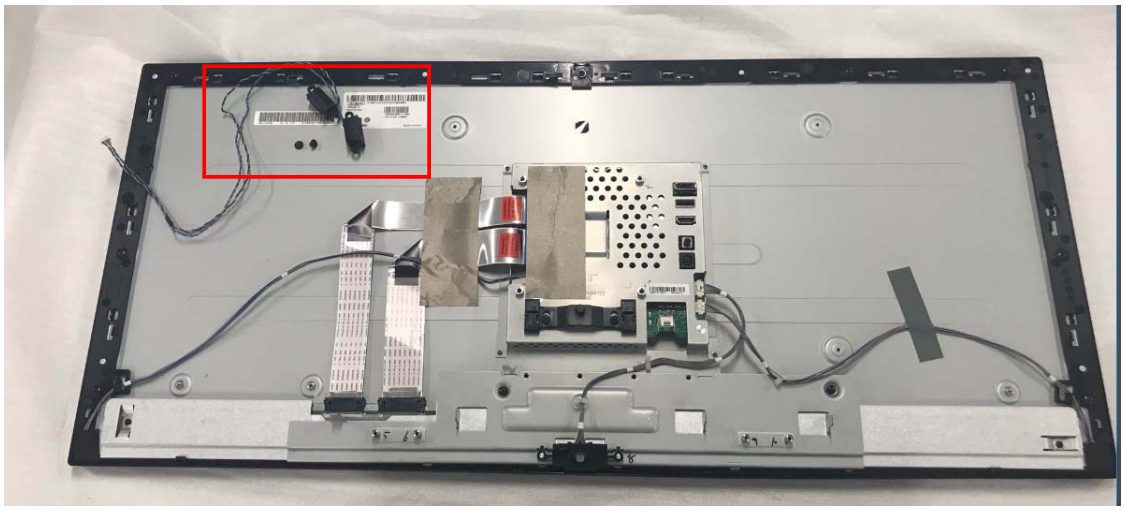


Fig 5 Remove the Speaker (2EA)、Tape(2EA).

Disassemble method

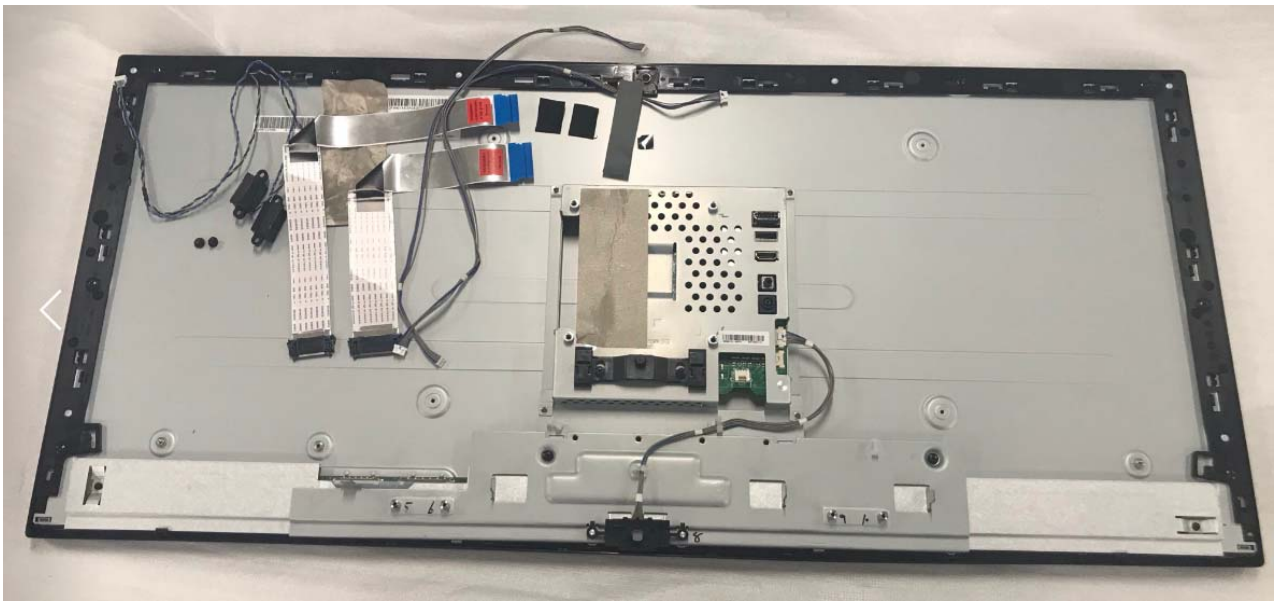


Fig.6 Disassemble the FFC cable (2EA), cable(2EA).

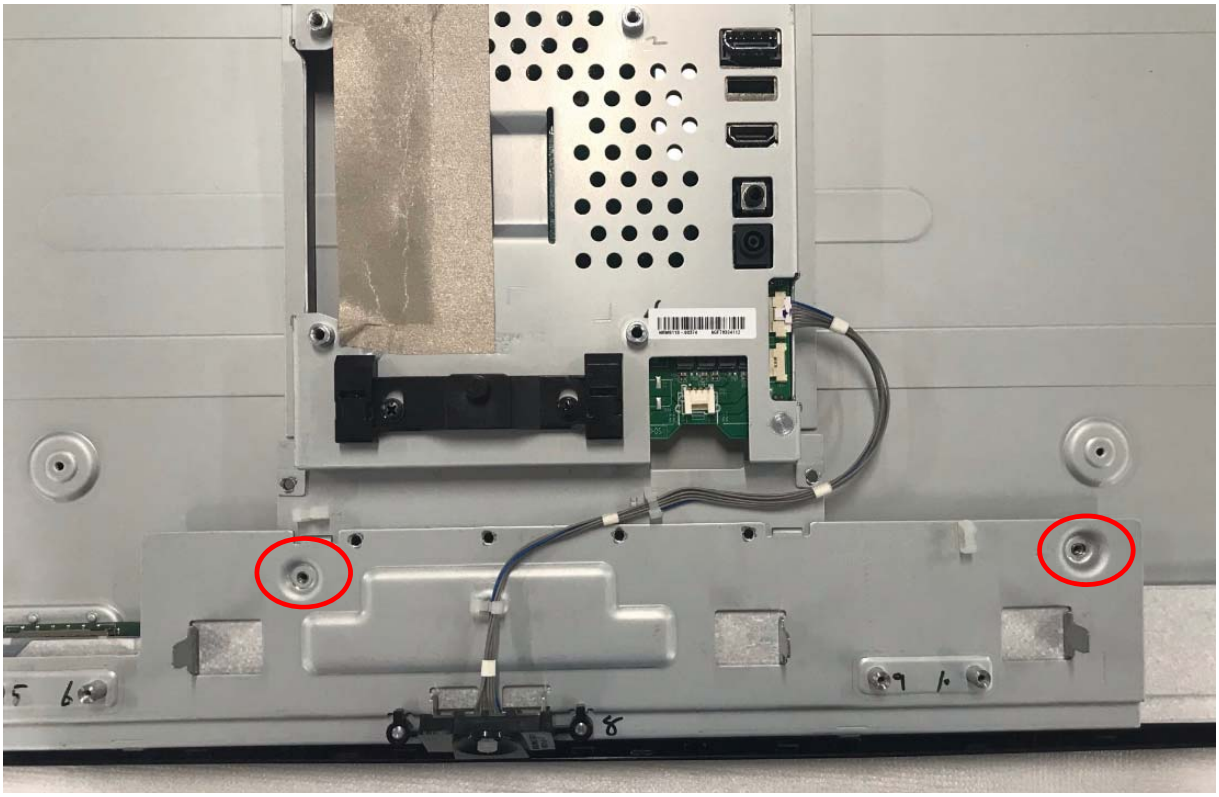


Fig.7 Disassemble the Screw (2EA).

Disassemble method

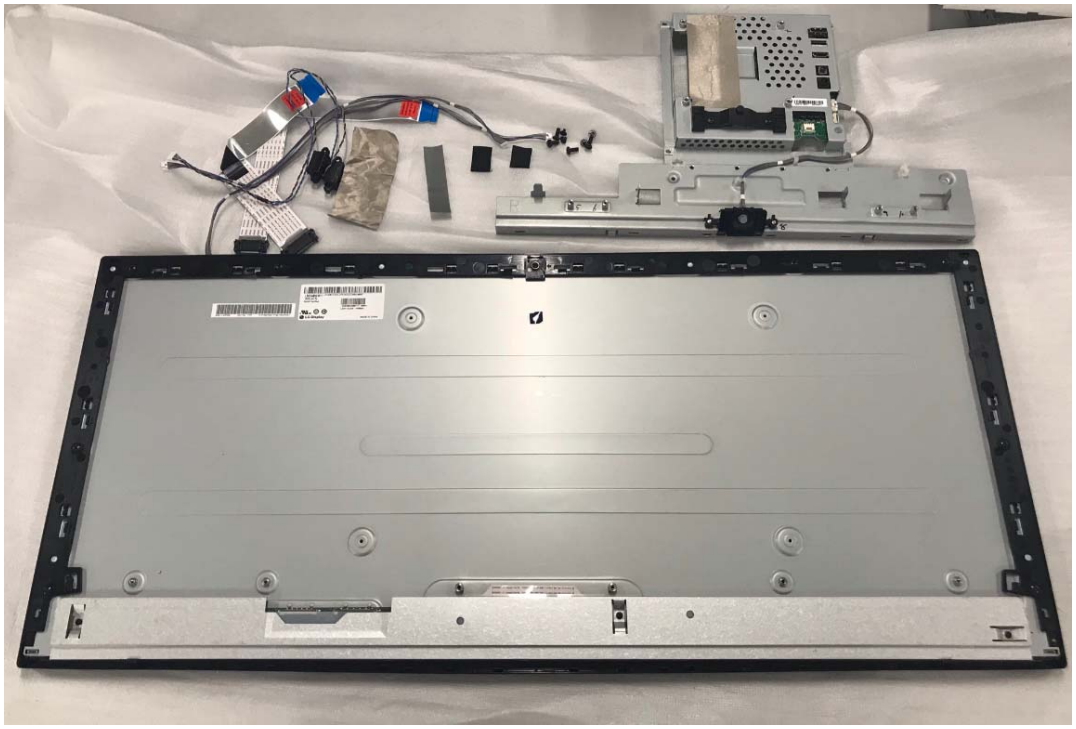


Fig.7 Disassemble the Metal frame assy .

Fig.8 Disassemble the cabinet .

Disassemble method

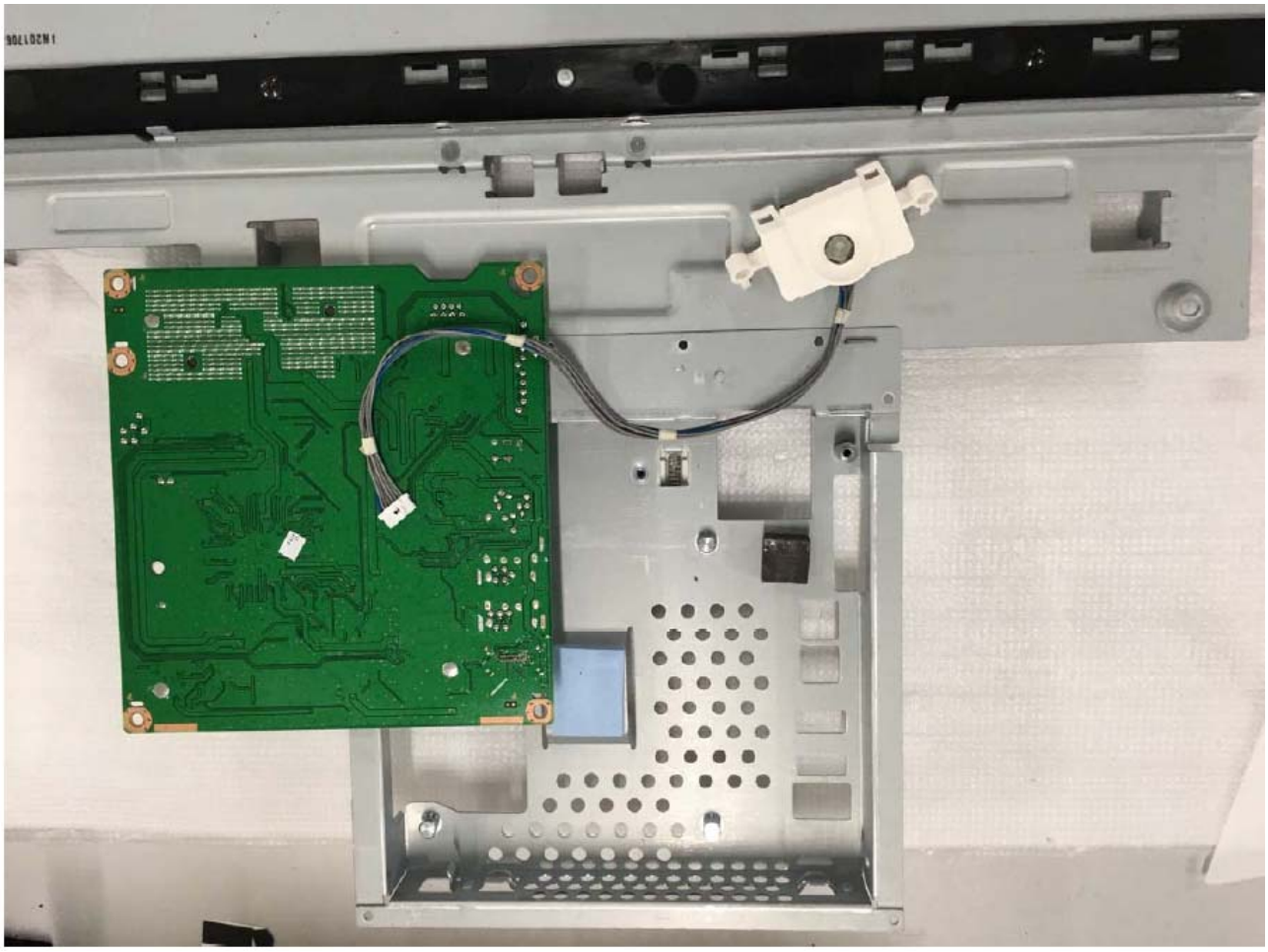
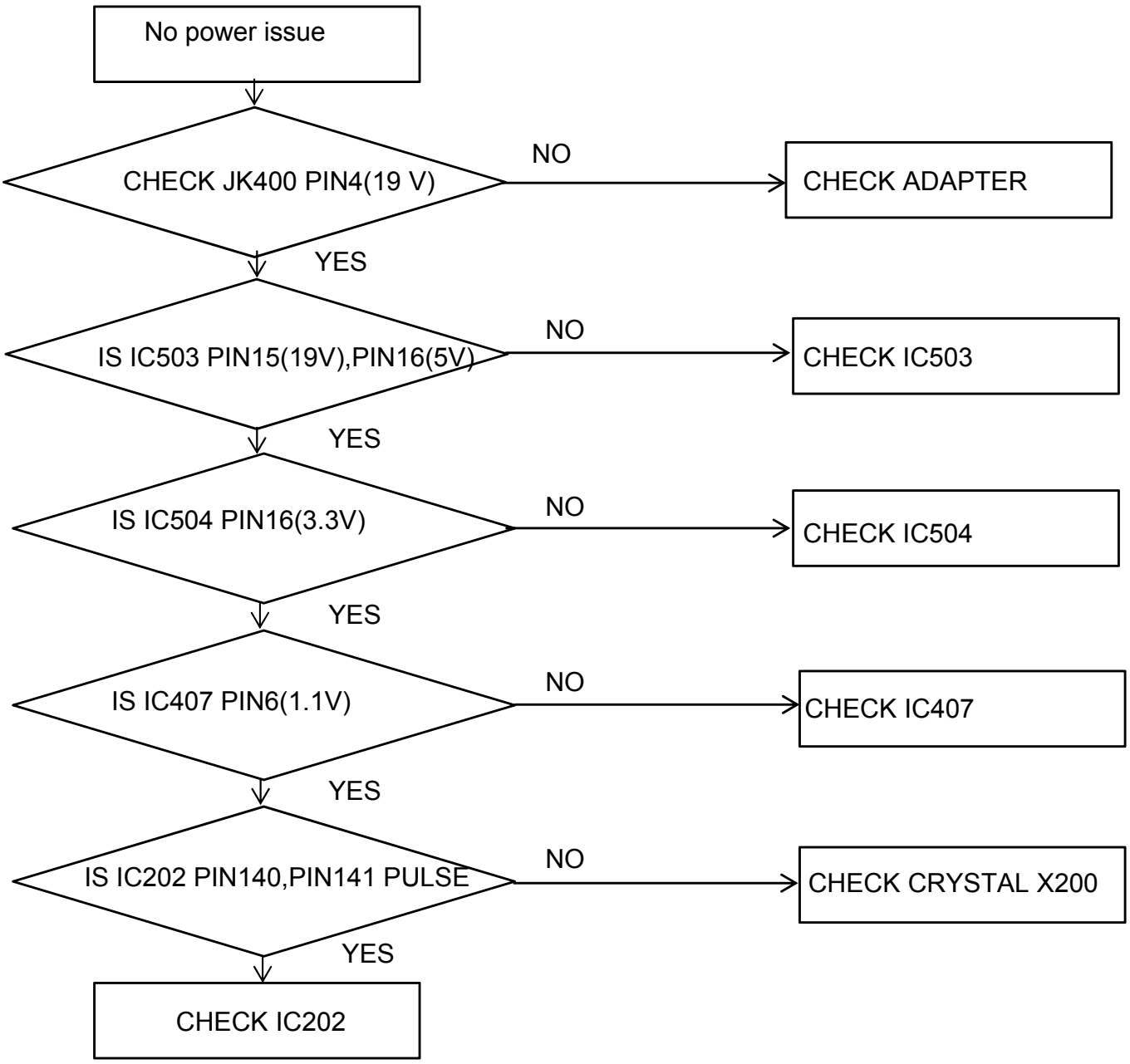


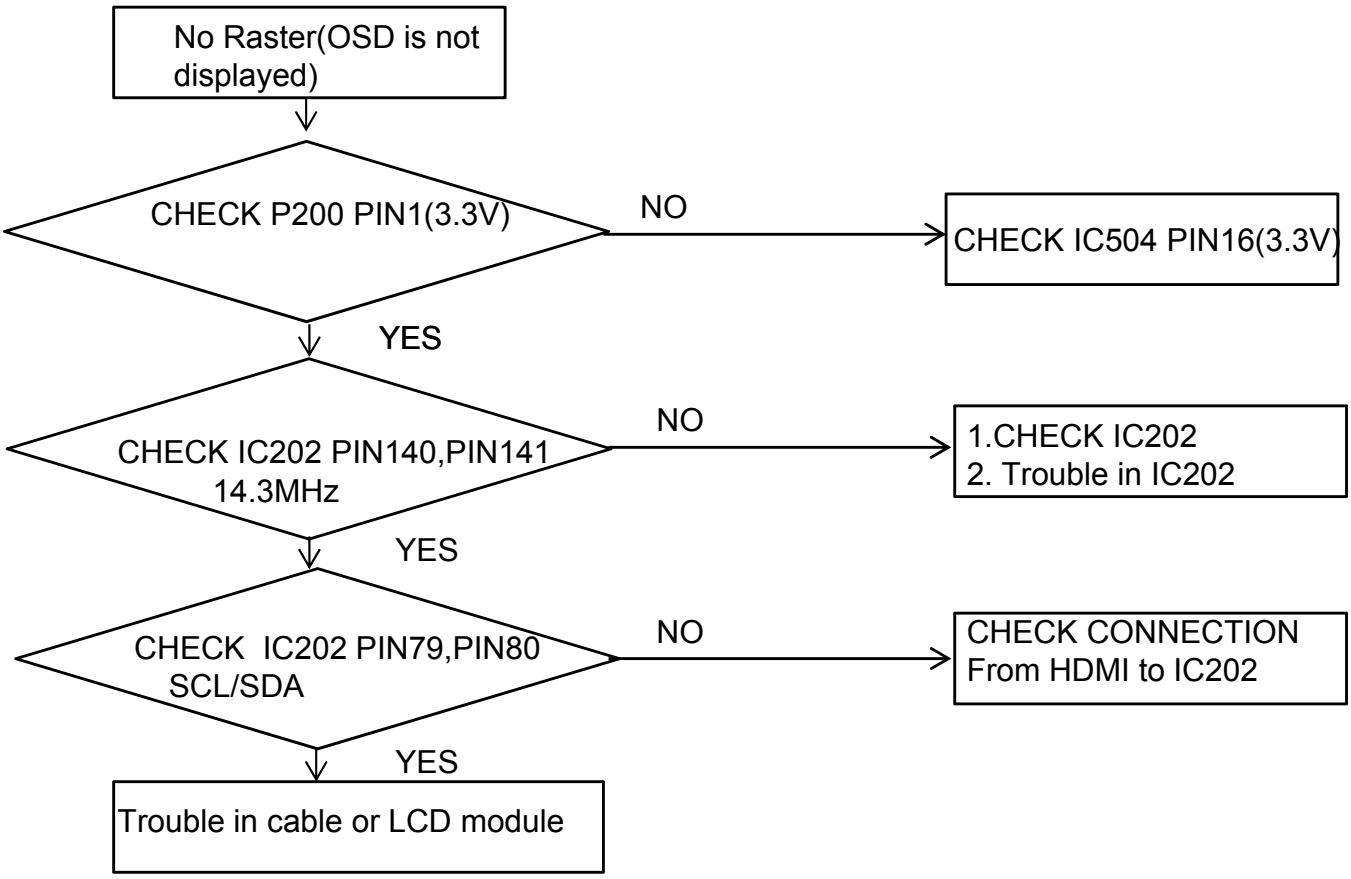
Fig.9 Disassemble the main PCB and joy stick cover .

Trouble shooting : No Power

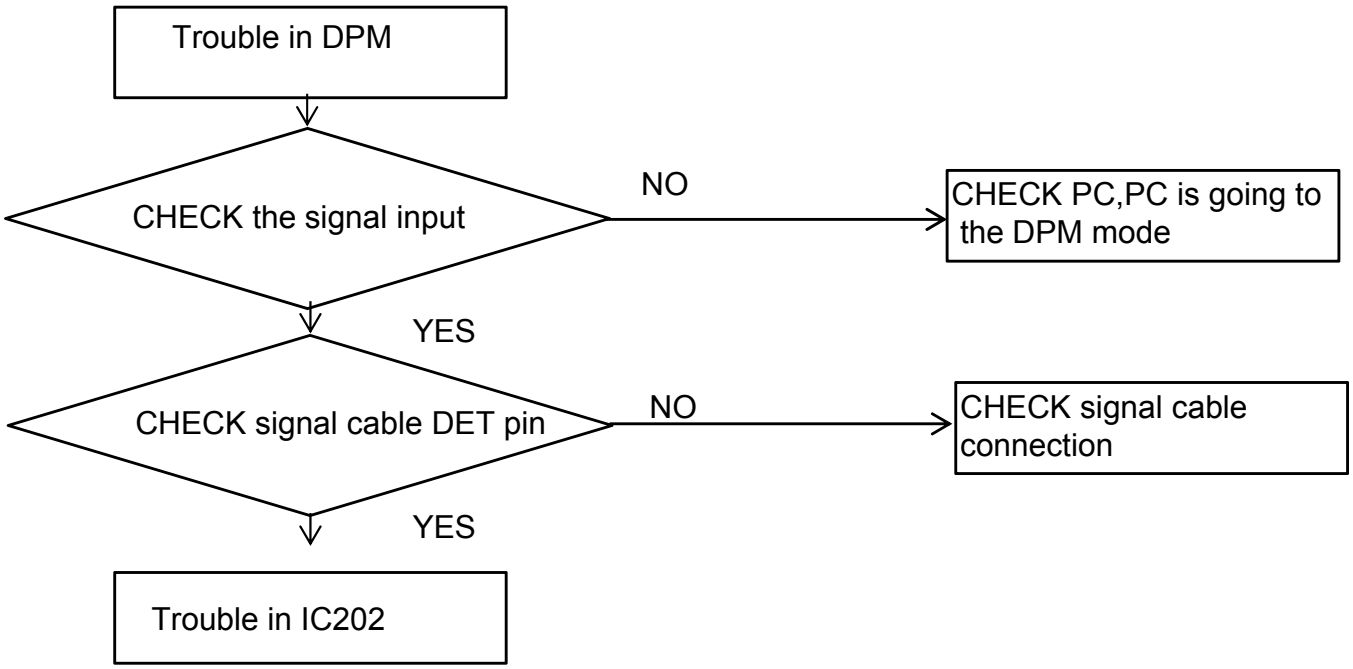
First of all, Check whether there is SVC Bulletin in GCSC System for these model.



Trouble shooting : No Screen on



Trouble shooting :




LG
Life's Good