



**LG**  
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# UltraFine 4K MONITOR

## SERVICE MANUAL

CHASSIS : LM6FA

MODEL : 22MD4KA(22MD4KB)

### CAUTION

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



P/NO : MFL68920197 (1803-REV01)

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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  $\triangle$  in 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 its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

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

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 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 M $\Omega$  and 5.2 M $\Omega$ .

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

### Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

### Do not use a line Isolation Transformer during this check.

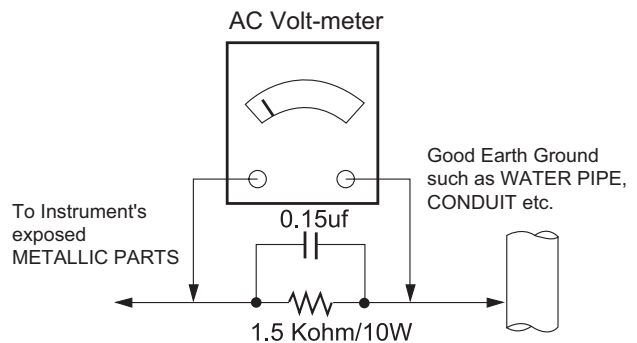
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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 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

\*Base on Adjustment standard

# SPECIFICATION

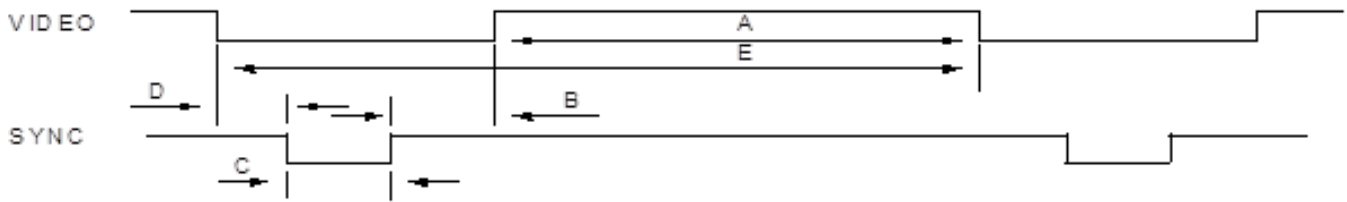
NOTE : Specifications and others are subject to change without notice for improvement.

## 1. General Specification

No	Item		Content	Remark
1	Customer		BRAND	
2	User Model Name		22MD4KA(22MD4KB)	
3	Sale region		World Wide	
4	Feature		22" LCD MONITOR(4K)	
5	Chassis Name		LM6FB	
6	General Scope	External SW &Adj.	5-way joystick switch	
		Function	USB-C Alt mode, Power Delivery, Speaker, Ambient Light Sensor, HDCP2.2	
7	Input	USB-C3	USB-C3 input	USB-C Type
		USB	2.0 communication	In TBT3 Jack
		USB down	USB2.0 Downstream x 3 (USB-C design)	
		Audio	USB data format Audio (48kHz,24bit)	UAC1.0
		ALS	Ambient Light Sensor	Front
8	Power Code		Length : 1.80, Shape : Wall-out, Color : White Weight : 0.17kg P/No : EAD63890501~EAD63890508	Refer to Suffix standard and power cord table
9	Cable	USB Type-C	Length :1.8M, Shape : USB-C , Color: Black, Pin 24 P/No. : EAD63932601	Luxshare
10	Power		Input: AC100~240V 50~60Hz, 2.5A Max Output: DC 20V 7.5A, 150W PSU	Yuyang

## 2. Signal Timing (Resolution)

### 2.1. Signal (Video & Sync)

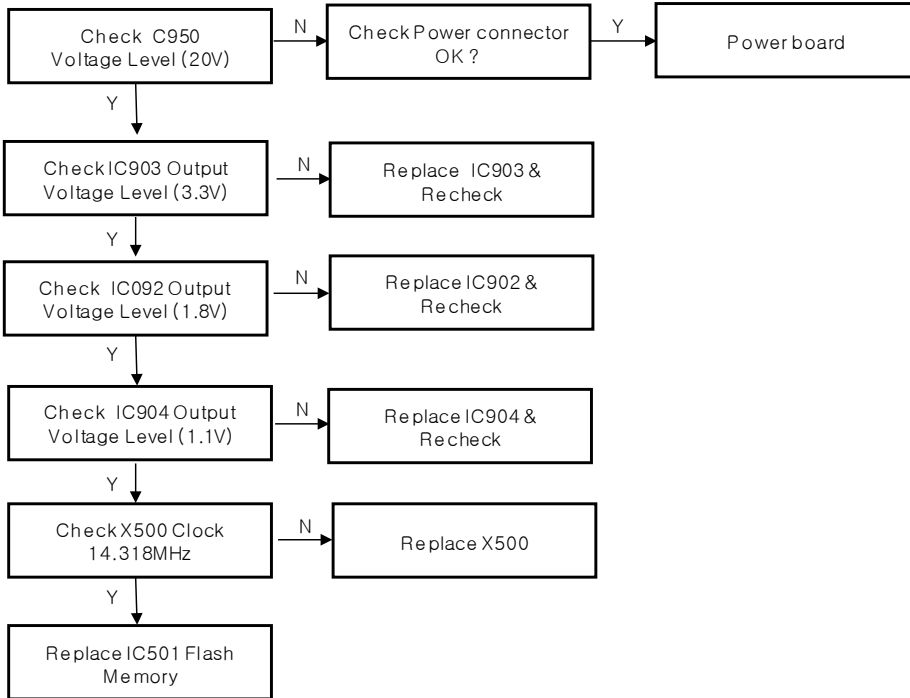


### 3.2. H/V Timing

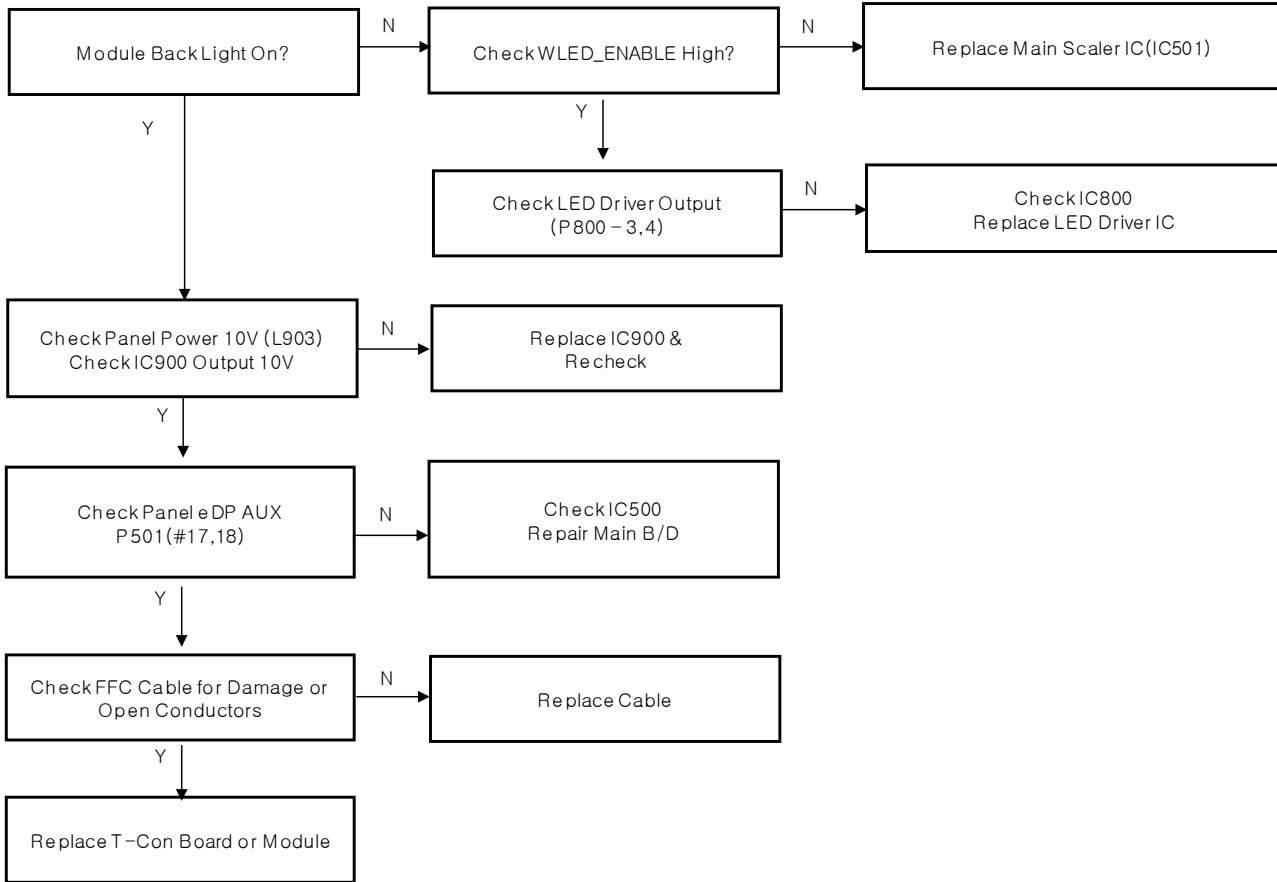
No.	Section	Pol.	Dot Clock [MHz]	Frequen- cy [kHz]/[Hz]	Total Cycle (E)	Dis- play (A)	Front Porch(B)	Sync. (D)	Back Porch(F)	Resolution
1	H(Pixels)	+	472.45	113.13	4176	4096	8	32	40	4096x2304
	V(Lines)	-		48	2357	2304	1	8	44	
2	H(Pixels)	+	522.61	133.32	3920	3840	8	32	40	3840x2160
	V(Lines)	-		60	2222	2160	1	8	23	
3	H(Pixels)	+	234.59	88.86	2640	2560	8	32	40	2560x1440
	V(Lines)	-		60	1481	1440	1	8	23	
4	H(Pixels)	+	593.82	142.2	4176	4096	8	32	40	4096x2304 1)
	V(Lines)	-		60	2370	2304	1	8	57	
5	H(Pixels)	+	292.77	70.11	4176	4096	8	32	40	4096x2304
	V(Lines)	-		30	2337	2304	1	8	24	
6	H(Pixels)	+	257.66	65.73	3900	3840	8	32	40	3840x2160
	V(Lines)	-		30	2191	2160	1	8	22	
7	H(Pixels)	+	401.24	116.64	3440	3360	8	32	40	3360x1890
	V(Lines)	-		60	1944	1890	1	8	45	
8	H(Pixels)	+	133.32	66.66	2000	1920	8	32	40	1920x1080
	V(Lines)	-		60	1111	1080	1	8	22	

# TROUBLE SHOOTING GUIDE

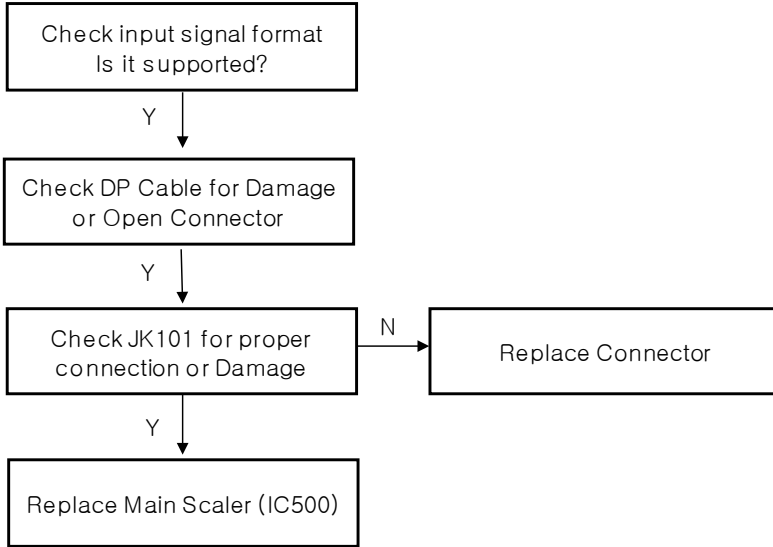
## 1. No Video – USB-C Up



## 2. No Screen on

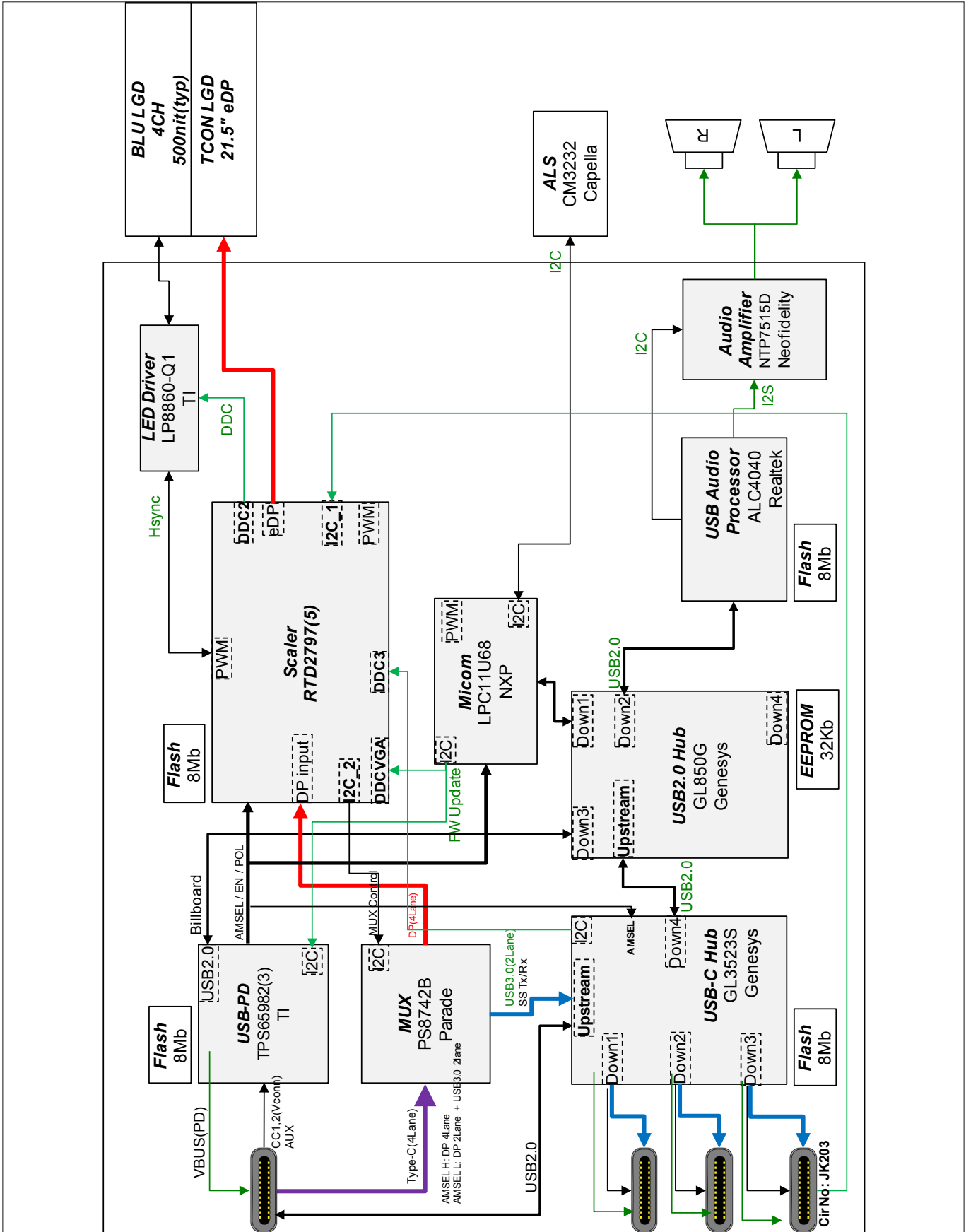


### 3. No Video – USB-C Up





# BLOCK DIAGRAM



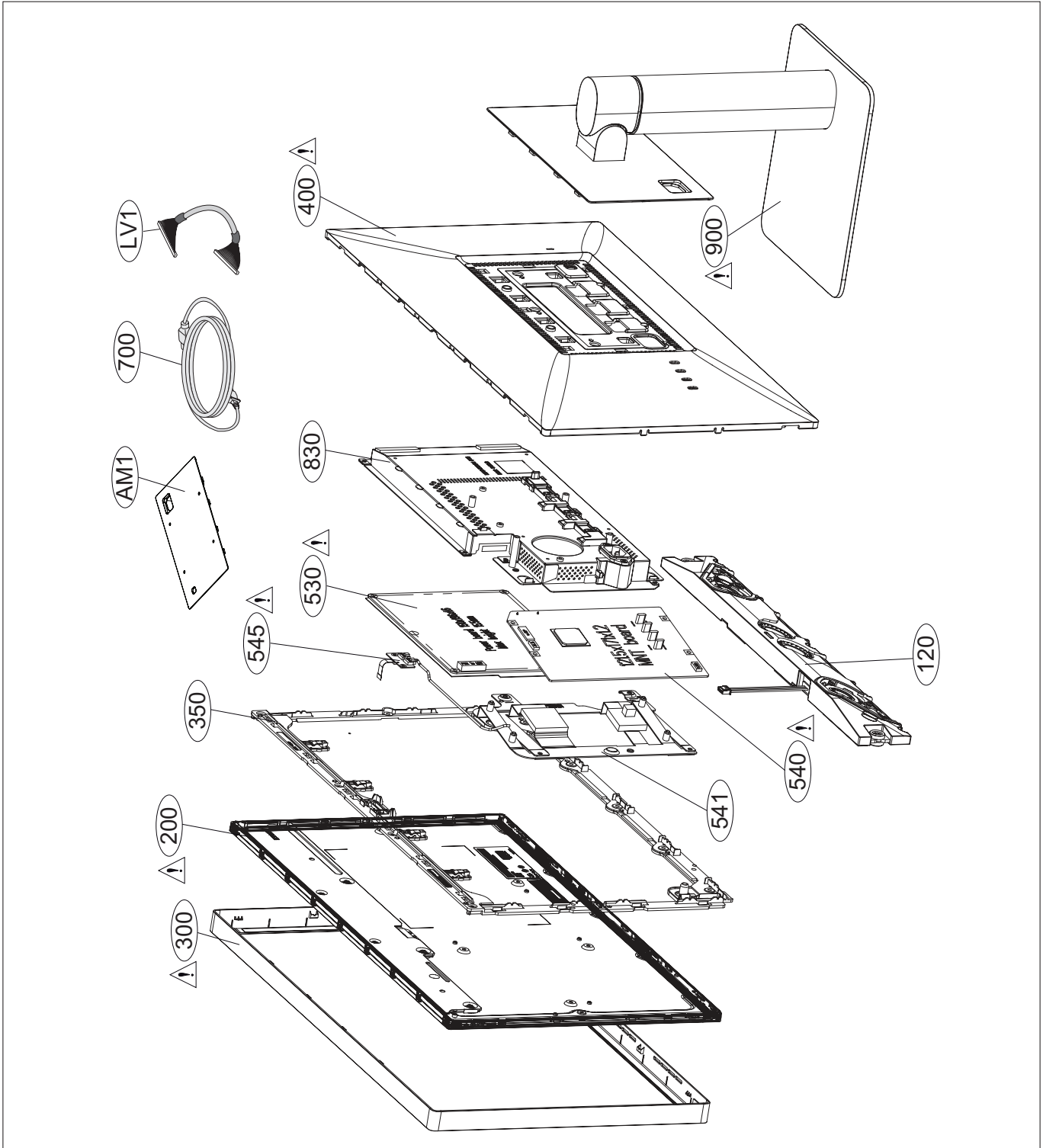
# EXPLODED VIEW

## IMPORTANT SAFETY NOTICE

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

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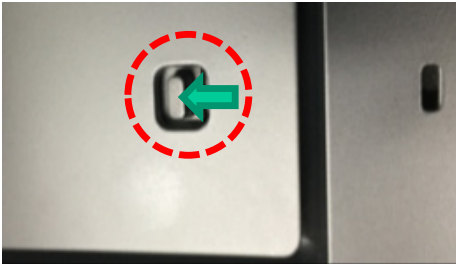


# DISASSEMBLY

1) Open the set from the Box and Put on set on flat place.



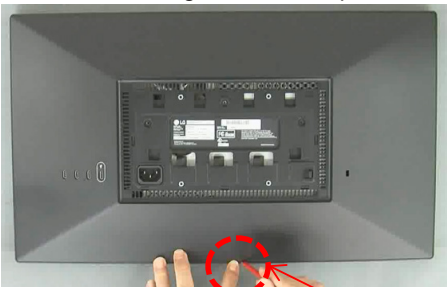
2) Detach the stand moving button.



3) Unscrew the 3EA screw from Back cover.



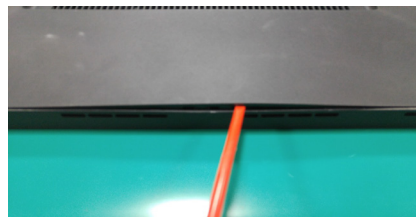
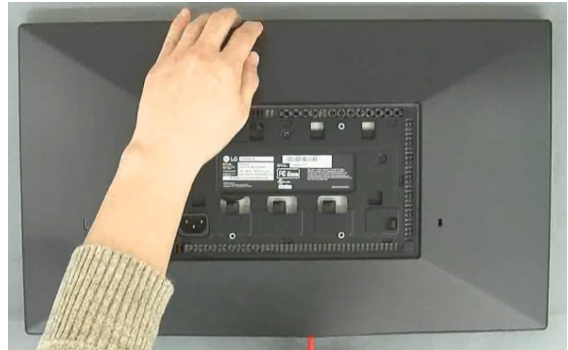
4) Insert plastic adjuster lever between Cabinet and Back cover at the groove of lever position.



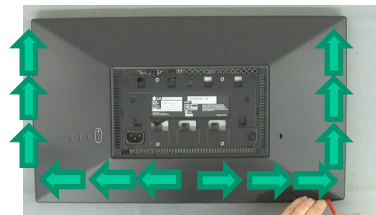
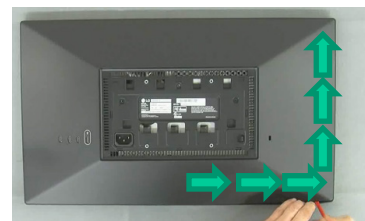
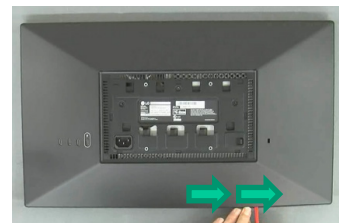
Groove of lever inside of Cabinet.

\*Caution : Handle with care from scratch.

5) Push plastic adjuster lever softly than unlock the Cabinet and Back cover latch.

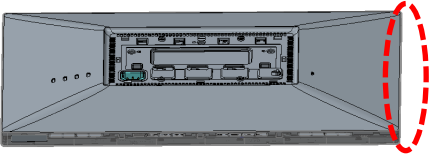


6) Push plastic adjuster lever softly one by one



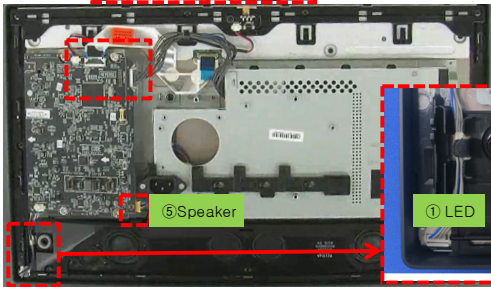
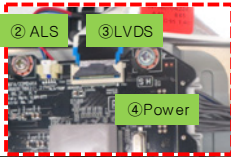
\*Caution : Handle with care from scratch.

7) Open the right side by hand (Need to pull strongly when open the back cover.

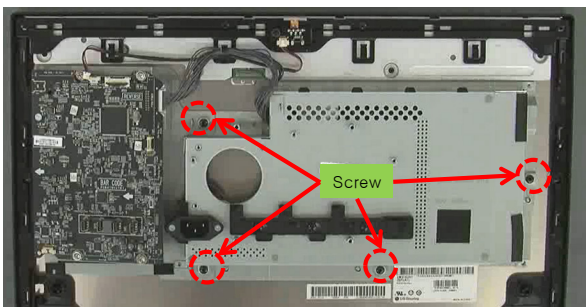


\*Caution : Handle with care from scratch and latch broken Pull back cover softly to disassemble the latch  
 1) Bottom disassemble → 2) Left/Right side disassemble → 3) Top disassemble → 4) Open back cover right side by hand

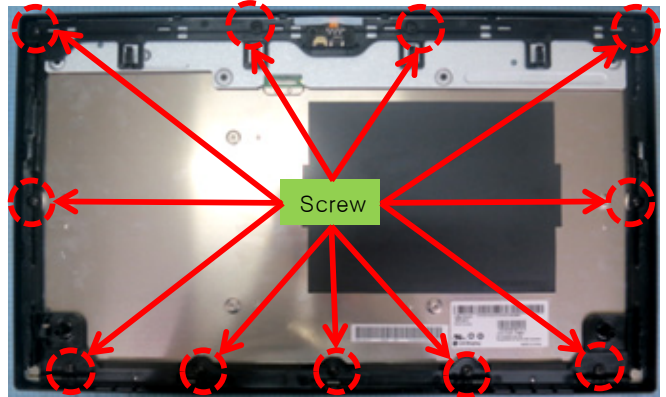
8) Disassemble LED Harness, LVDS cable, ALS cable, power cable and speaker cable.



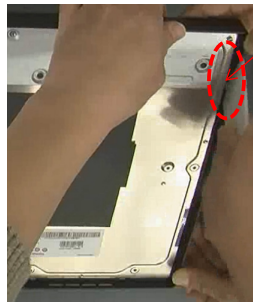
9) Unscrew the 4EA screw to detach Rear shield Assy from LCM.



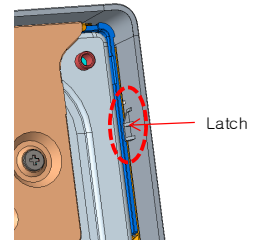
10) Unscrew the 11EA screw to detach middle cabinet from LCM.



11) Detach Cabinet from LCM using plastic jig.



Using plastic jig, disassemble Cabinet and LCM One by one like left sequence. ①~⑧

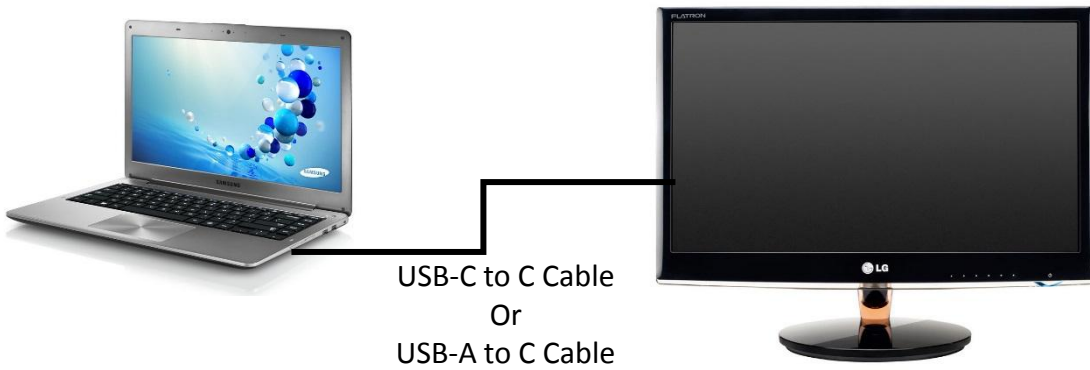


\*Caution : If pull or push the LCM without releasing latch on the cabinet, case top of LCM can be deformation. So, Latch of cabinet and LCM should be released before detach each other.

# CHECK GUIDE



# 0. Connect PC and Monitor

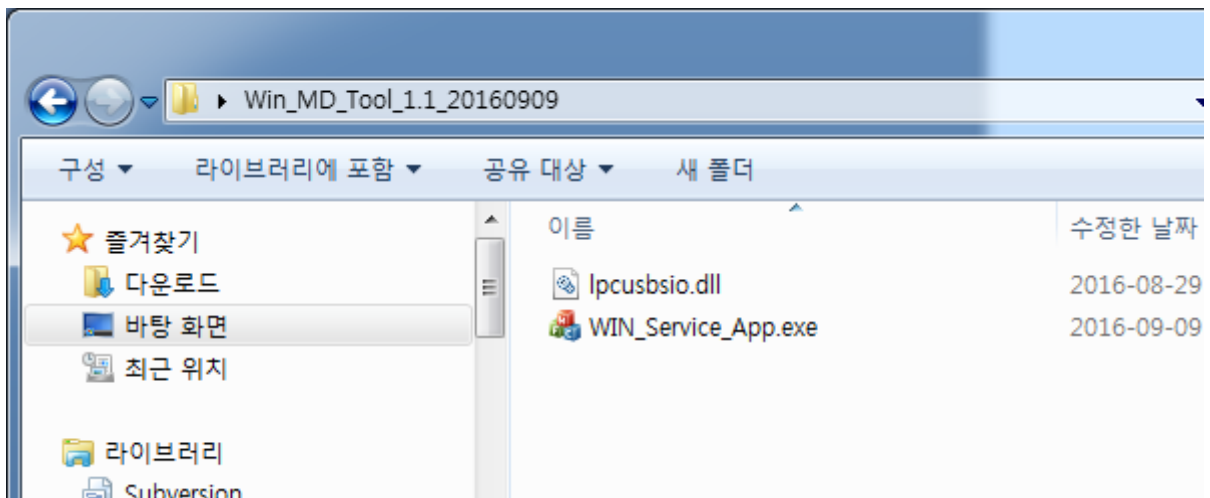


P/N : EAD63932601 (USB C to C Cable)

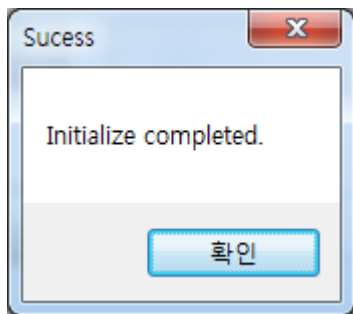
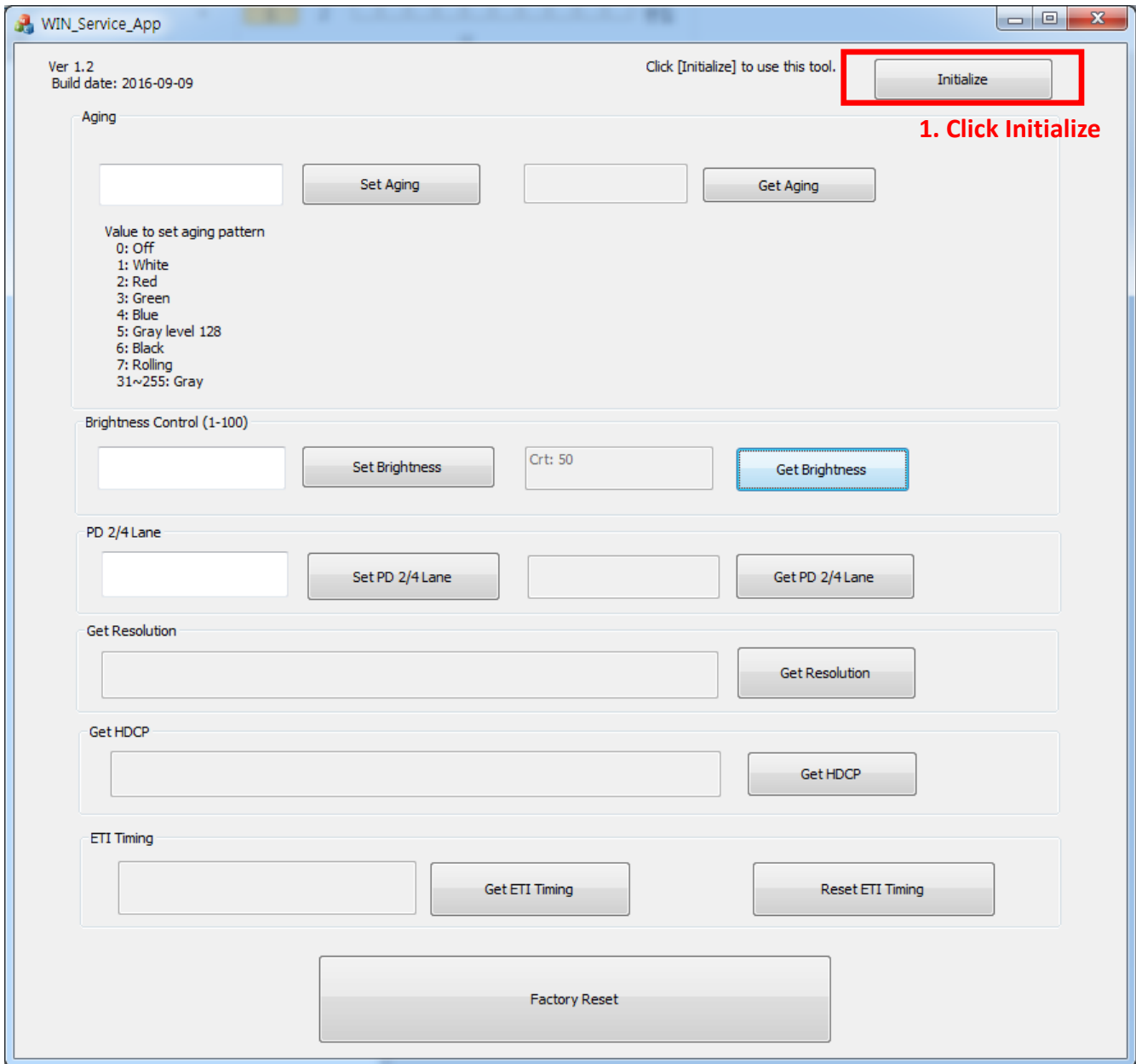
P/N : EAD63809902 (USB A to C Cable)



## 1. Execute "WIN\_Service\_App.exe"



# 2. Connection to monitor



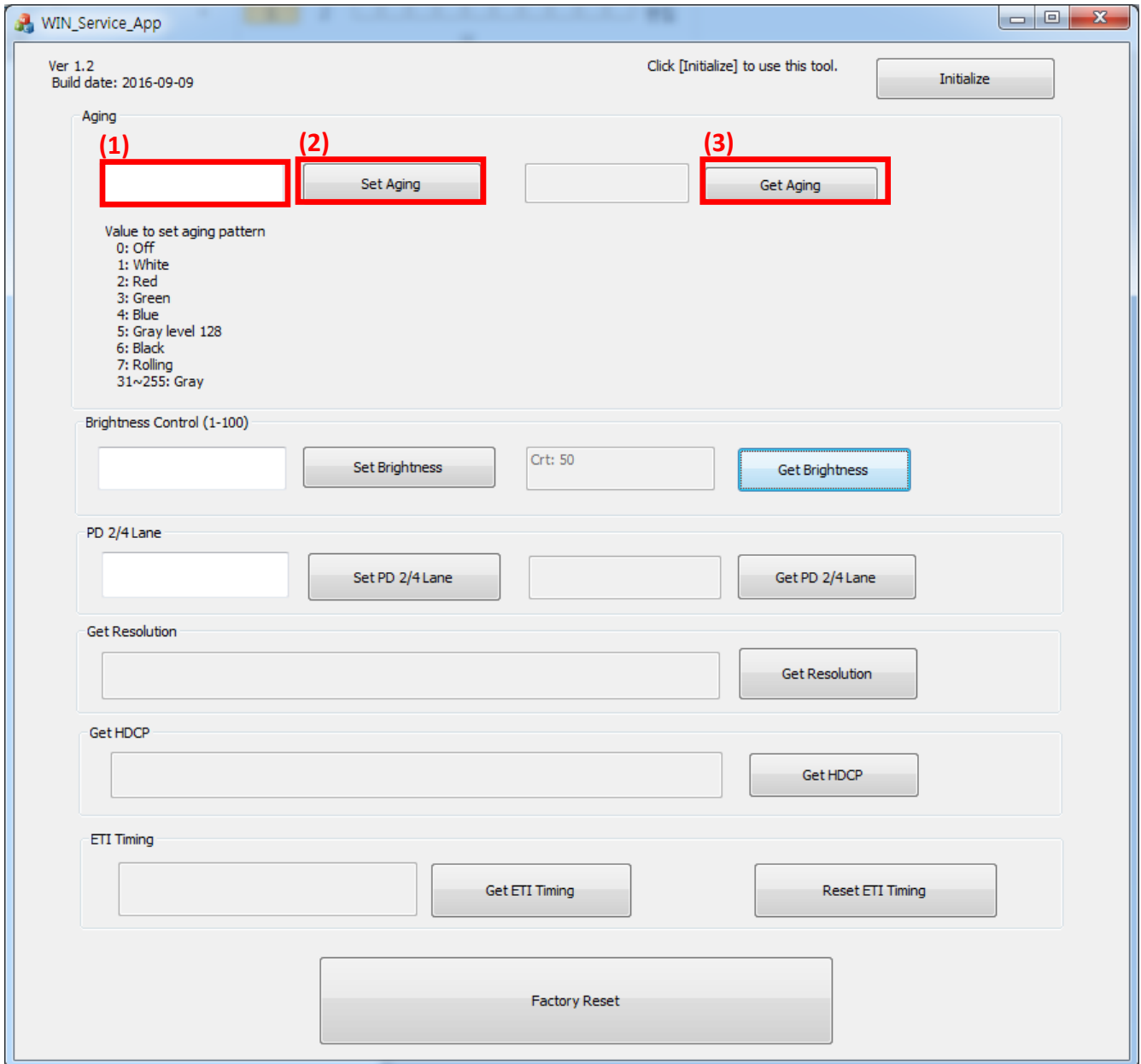
If Initialize succeed, you can see above pop-up.

### 3. Check display (Aging mode)

If you follow below steps, you can set the Aging mode with color pattern.

#### Steps

1. Put number into text box of Set Aging mode. (0: Off, 1: White, 2: Red, ...)
2. Click [Set Aging] button.
3. Click [Get Aging] button.
4. AC Off → On the monitor
5. The pattern what you configured will be shown in monitor screen.



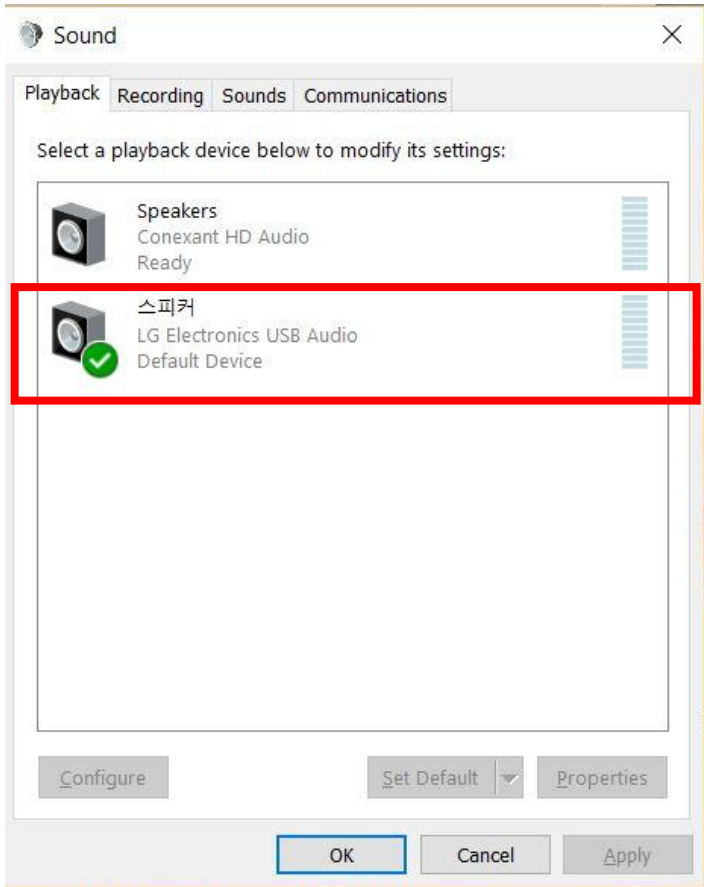
Once you complete to check the screen by using Aging mode, please click [Factory Reset] to reset the monitor.



# 4. Check Audio

① Path: Start → Control Panel → Sound Click

② Before Check speaker, change the playback device as below.



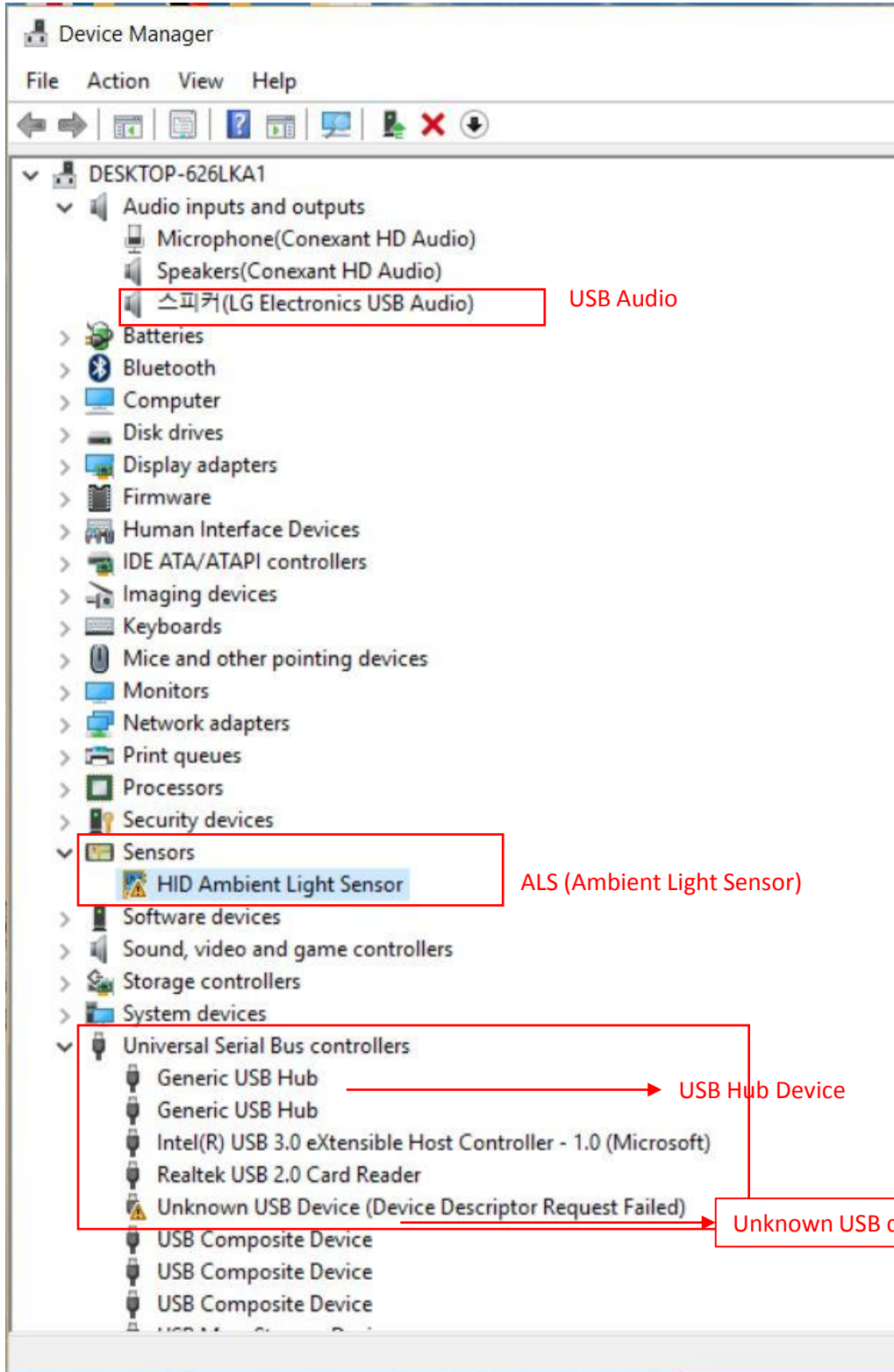
LG Monitor Audio

③ Play MP3 player and check sound and speaker

# 5. Check USB HUB

① Path: Computer → Property → Device Manager

② Check the below 3 items



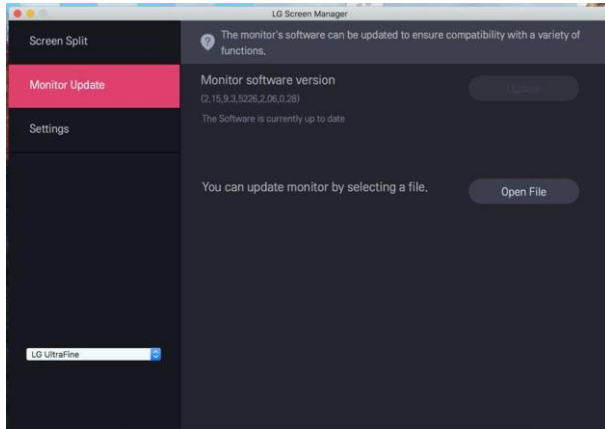
# TRAINING MANUAL

# 1. FW update method

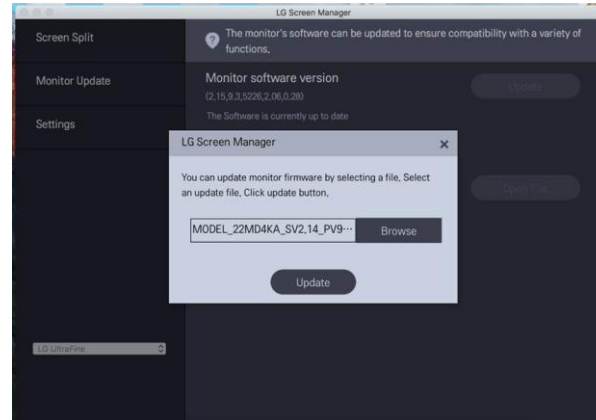
## ► Update the FW by LG Screen Manager

- LG Screen Manager is an application that provides ScreenSplit and monitor software update features.
- You can download and install the latest version from the LGE website ([www.lg.com](http://www.lg.com)). – [LG Screen Manager]

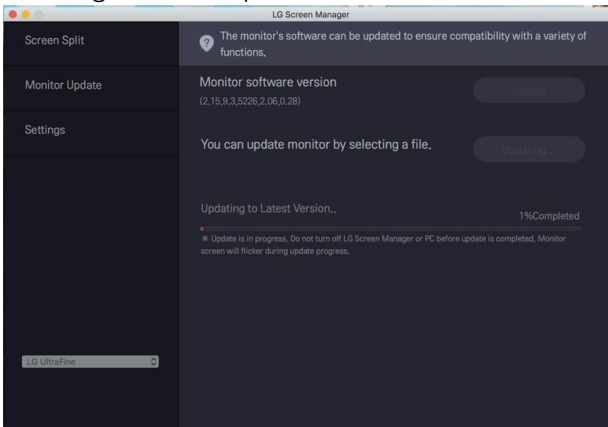
### 1. Select the 'Monitor Update' menu



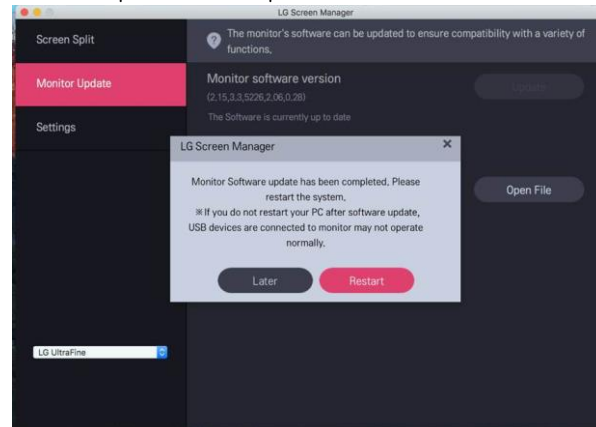
### 2. Select the FW image Zip file



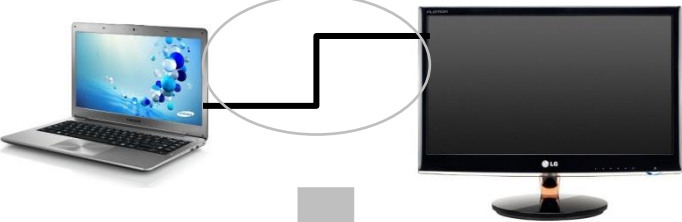


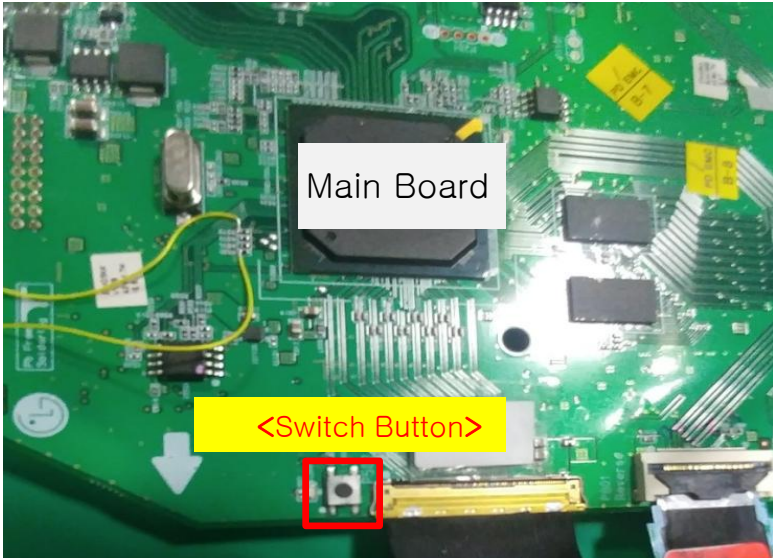
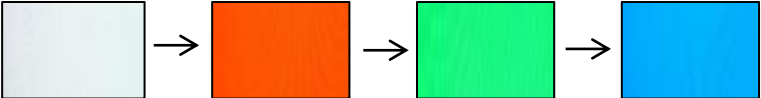
### 3. Progress the update



### 4. Complete the Update. Press the Restart button



## 2. Inspection method about Repaired set

Type	22MD4KA(22MD4KB)	27MD5KA
Issue	<ul style="list-style-type: none"> <li>Since it is USB C-type model, no other input is available.               <ul style="list-style-type: none"> <li>For repair result check-up, USB A to C Cable Jig is Needed.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Since it is Thunderbolt3 exclusive model, no other input is available.               <ul style="list-style-type: none"> <li>For repair result check-up, Thunderbolt3 Host equipment is needed. (Picture and Sound, Camera Function can be checked thru Mac PC)</li> </ul> </li> </ul>
Check Guide After Repair	<ul style="list-style-type: none"> <li>Cable Window PC : picture, voice, Interface               <ul style="list-style-type: none"> <li>USB A to C Cable , USB C to C Cable</li> <li>Testing is possible by installing pattern program in Windows PC</li> </ul> </li> </ul> <p style="text-align: center; color: green;">USB-C to C Cable Or USB-A to C Cable</p>  <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>P/N : EAD63932601 (USB C to C Cable)</p> </div> <div style="text-align: center;">  <p>P/N : EAD63809902 (USB A to C Cable)</p> </div> </div>	<ul style="list-style-type: none"> <li>Switch embedded to the Main Board : Picture Testing is possible               <ul style="list-style-type: none"> <li>Function : Press 1 time. WRGB Rolling Pattern is automatically displayed.</li> <li>Disable : Press the Switch again one more time or AC Power off/on</li> </ul> </li> </ul>  <div style="text-align: center; margin-top: 10px;">  </div>

