



# LG

Life's Good

# LED TV

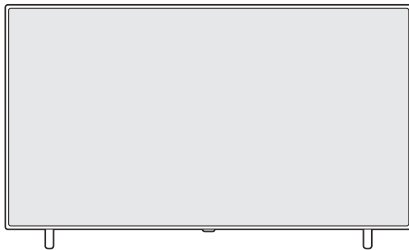
# SERVICE MANUAL

**CHASSIS : UJ13D**

**MODEL : 55UQ8000PSB**  
**55UQ8050PSB**

## CAUTION

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



P/NO : MFL71916003 (2202-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  $\triangle$  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 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.

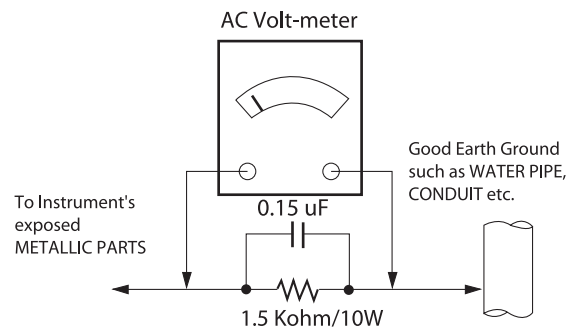
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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  $\Omega$

\*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 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, FET-VOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10 % (by volume) Acetone and 90 % (by volume) isopropyl alcohol (90 % - 99 % strength)

**CAUTION:** This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last.
8. Use with this receiver only the test fixtures specified in this service manual.

**CAUTION:** Do not connect the test fixture ground strap to any heat sink in this receiver.

## Electrostatically Sensitive (ES) Devices

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

## General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 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.

### IC Remove/Replacement

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

#### Removal

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

#### Replacement

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

### "Small-Signal" Discrete Transistor

#### Removal/Replacement

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

### Power Output, Transistor Device

#### Removal/Replacement

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

### Diode Removal/Replacement

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

### Fuse and Conventional Resistor

#### Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.

3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

### Circuit Board Foil Repair

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

#### At IC Connections

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

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

#### At Other Connections

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

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

CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

# SPECIFICATION

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

## 1. Application range

This specification is applied to the LED TV used UJ13D 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              |        | Brazil / South&Central AMERICA   |                            |
| 2  | Broadcasting system |        | Digital : SBTVD                  |                            |
|    |                     |        | Digital : DVB-T, DVB-T2          |                            |
| 3  | Available Channel   |        | BAND                             | NTSC                       |
|    |                     |        | VHF                              | 2 ~ 13                     |
|    |                     |        | UHF                              | 14 ~ 69                    |
|    |                     |        | DTV                              | 2 ~ 69                     |
|    |                     |        | CATV                             | 1 ~ 135                    |
| 4  | Receiving system    |        | Digital : ISDB-T                 |                            |
|    |                     |        | Analog : NTSC-M/PAL-N/PAL-M      |                            |
| 5  | HDMI Input          | HDMI 1 | PC / DTV Format                  | Support 6Gbps              |
|    |                     | HDMI 2 | PC / DTV Format                  | Support 6Gbps, Support ARC |
|    |                     | HDMI 3 | PC / DTV Format                  | Support 6Gbps, Support ARC |
|    |                     | HDMI 4 | PC / DTV Format                  | Support 6Gbps              |
| 6  | Audio out           |        | SPDIF out                        | Rear                       |
| 7  | USB Input(3EA)      |        | EMF, DivX HD, For SVC (download) | JPEG, MP3, DivX HD         |

## 5. External Input Support Format

### 5.1. HDMI Input (PC/DTV)

| No. | Resolution | H-freq(kHz) | V-freq.(kHz) | Pixel clock(MHz) | Proposed                   | Remarks                                                                  |
|-----|------------|-------------|--------------|------------------|----------------------------|--------------------------------------------------------------------------|
|     | 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,<br>Not Support for FHD.                              |
| 9   | 1920*1080  | 67.5        | 60           | 158.4            | WUXGA(Reduced<br>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                 | (UHD 60Hz models only),<br>Support only when UHD<br>DeepColor is On      |
| 28  | 2560*1440  | 88.78       | 59.95        | 241.5            | 3K                         | (UHD, 8K 120Hz models<br>only), Support only when<br>UHD DeepColor is On |
| 29  | 2560*1440  | 182.99      | 119.99       | 497.7            | 3K                         |                                                                          |

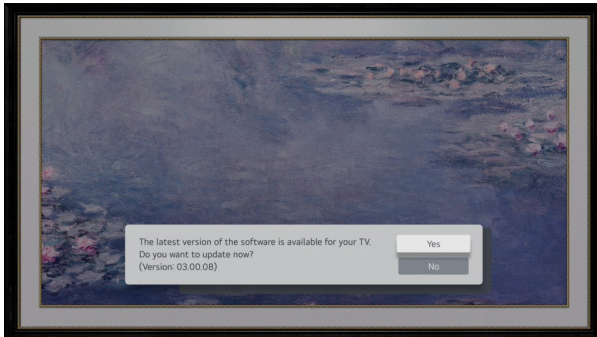
| No. | Resolution | H-freq(kHz) | V-freq.(kHz) | Pixel clock(MHz) | Proposed   | Remarks                                         |
|-----|------------|-------------|--------------|------------------|------------|-------------------------------------------------|
|     | DTV        |             |              |                  |            |                                                 |
| 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  |                                                 |
| 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 (LM21U HDMI port, O20N) 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.                            |

| No. | Resolution | H-freq(kHz) | V-freq.(kHz) | Pixel clock(MHz) | Proposed   | Remarks                                         |
|-----|------------|-------------|--------------|------------------|------------|-------------------------------------------------|
|     | DTV        |             |              |                  |            |                                                 |
| 41  | 4096*2160  | 225         | 100          | 1188             | UDTV 2160P | 4K120 model (LM21U HDMI port, O20N) 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.                                  |

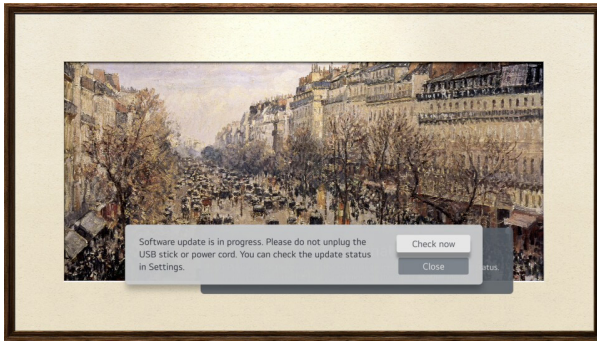
# SOFTWARE UPDATE

## 1. USB DOWNLOAD

- (1) Plug in the USB to the TV
- (2) If there are update-able files in the USB, the TV would ask that the user want to process the SW upper version update.



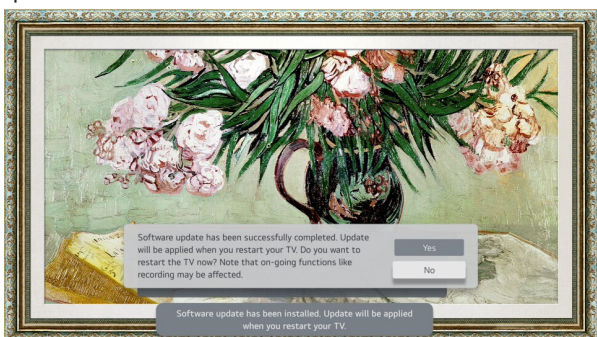
- (3) Click "Yes" button : Start Update



- (4) Click "Check Now" : Go to SW Update menu for monitoring
- (5) TV has been starting SW update



- (6) After finishing the update, it will show a pop-up below the picture.



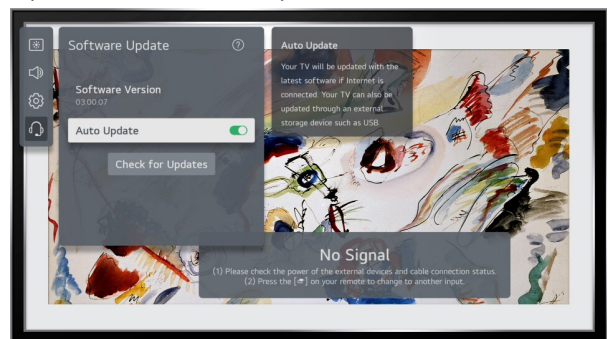
- (7) Click "Yes" : Tv will be turn off and on itself

## 2. NSU DOWNLOAD

(This Function is needed to connect to the internet.)

### Case 1) Auto Update On

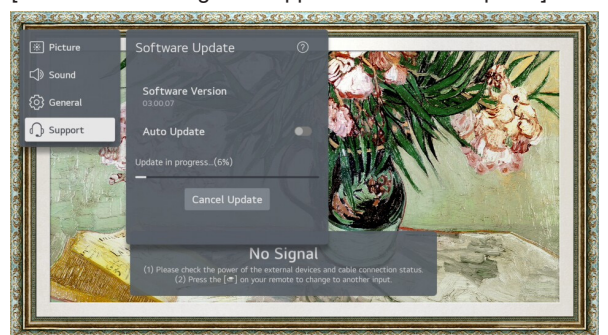
- (1) Go to Menu → All Settings → Support → Software Update, then check Auto update is turned on.



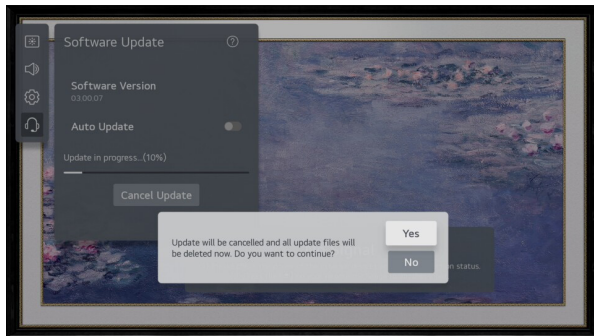
- (2) After the update complete, the user can check a pop-up below the picture, which indicated update is complete and the new version will be applied after the TV turn off and on.



- (3) If the user want to check the process of updating [Menu → All Settings → Support → Software Update]

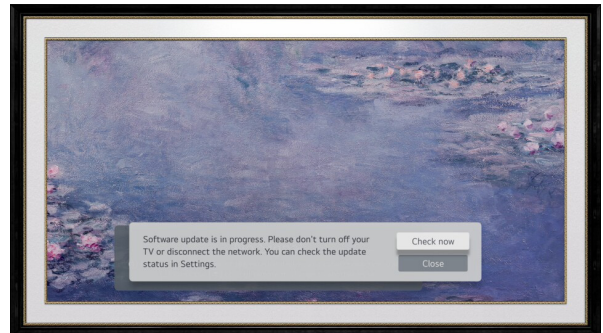


(4) If it needs to cancel the update, click “cancel update” button



(5) [“No”] : update continue  
[“Yes”] : update cancel

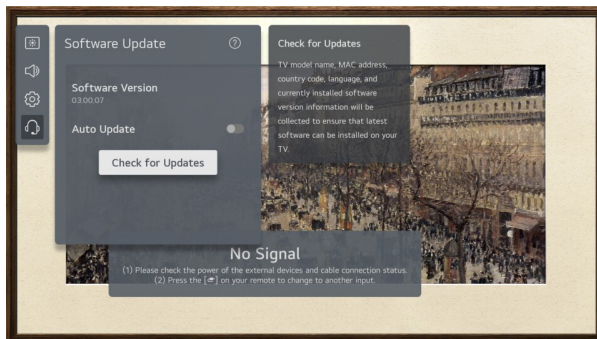
(4) If the user started the update, the TV shows a pop-up below the picture.



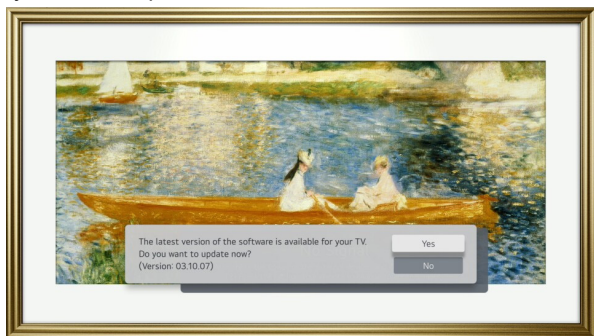
(5) [CHECK NOW] : Just start the update  
[Close] : Close the pop-up

## Case 2) NOT Allow Automatic Updates Toggle Item

(1) Go to Menu → All Settings → Support → Software Update



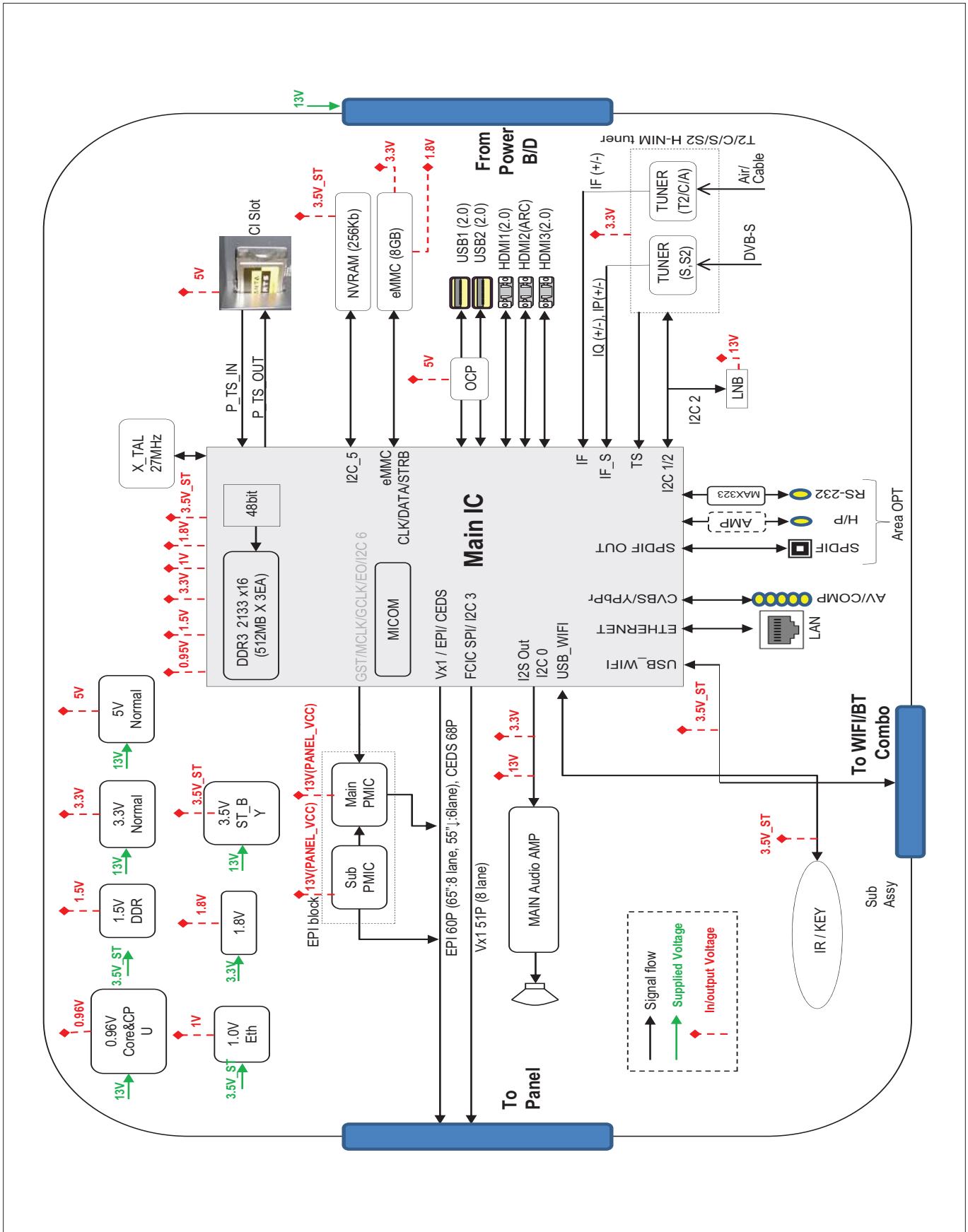
(2) If it found upper version SW than the TV SW version, TV would show a pop-up like below the picture.  
“The latest version of the SW is available for your TV. Do you want to update now”



(3) [Yes] : update starts.  
[No] : Close the pop-up, check out later



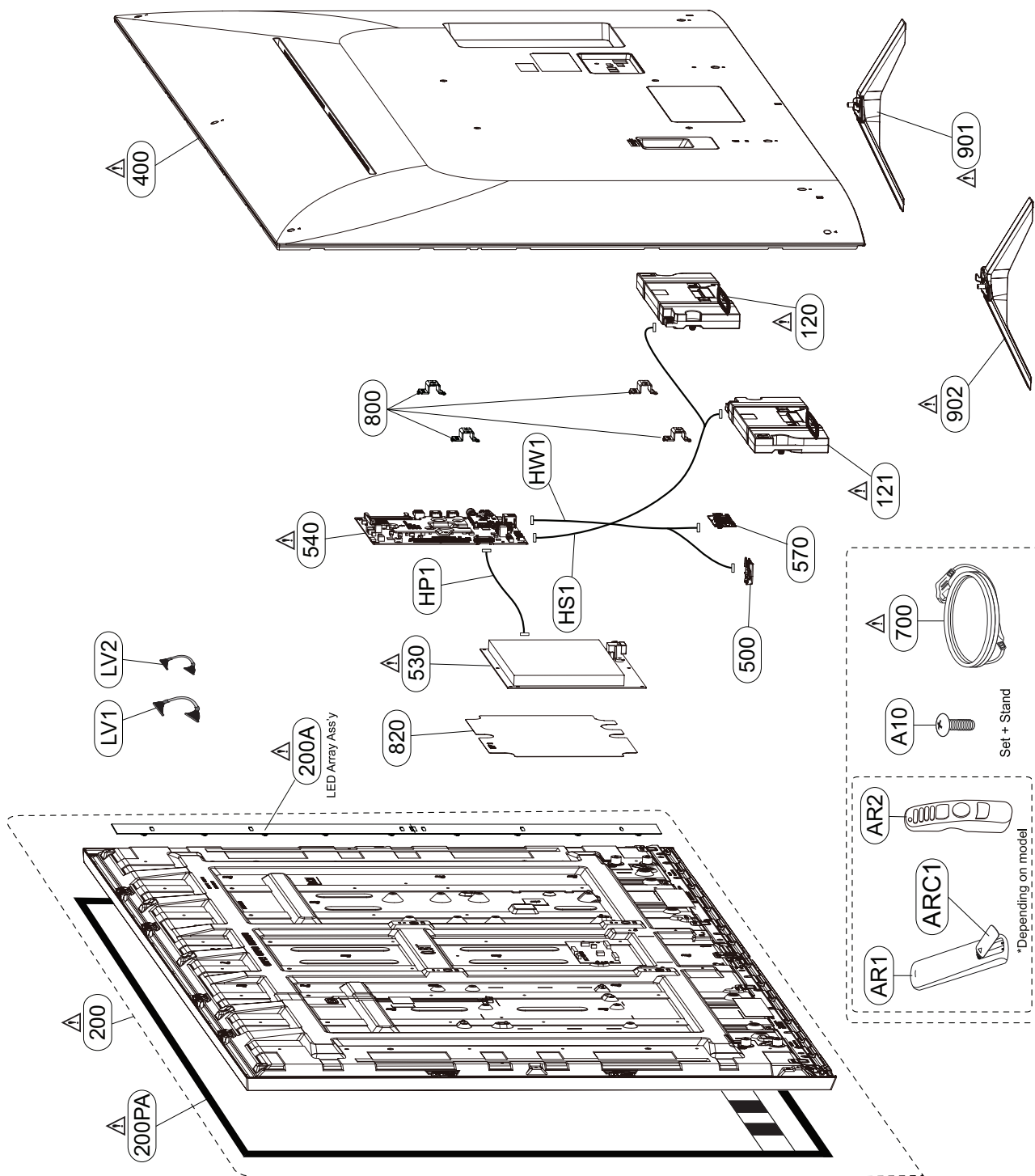
# BLOCK DIAGRAM



# EXPLODED VIEW

## IMPORTANT SAFETY NOTICE

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

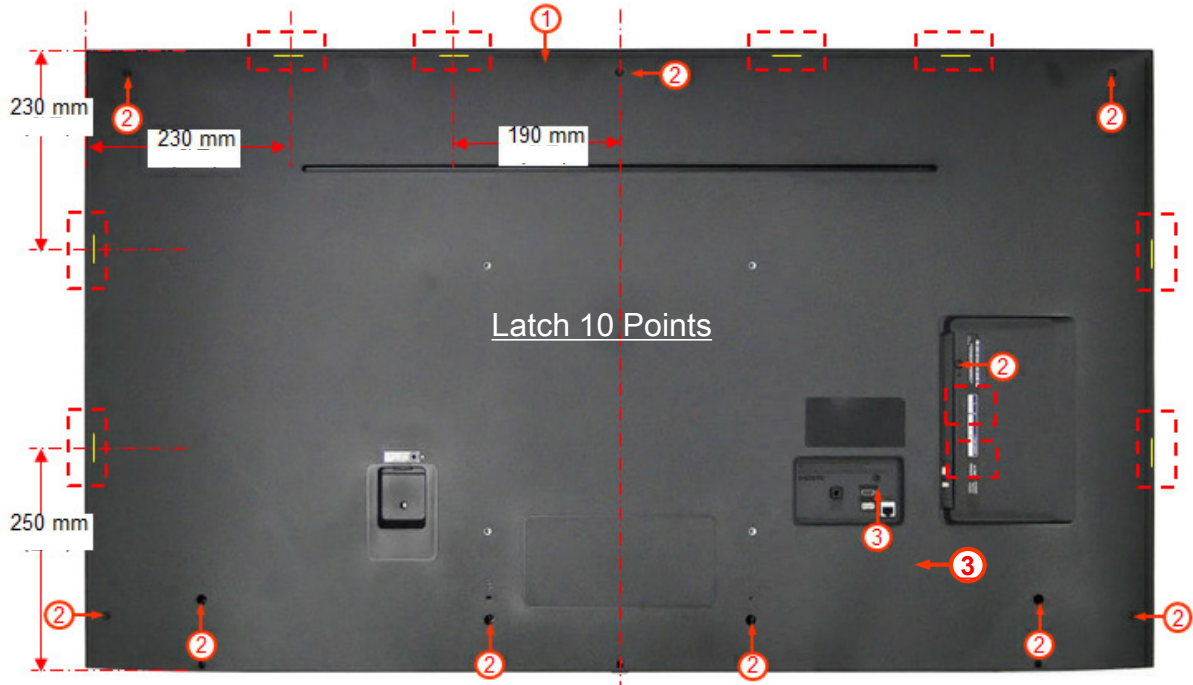


# ASSEMBLY / DISASSEMBLY GUIDE (SET)

## ■ Disassemble

### 1. After Screw & Holder Disassemble, please remove Cover Assy., Rear from Module.

(1) Remove the screw.

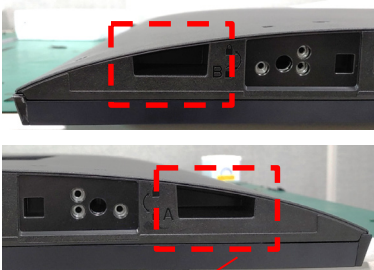


② Screw 10EA(M3\*5.5)

③ Screw 2EA(P4\*10)



(2) Remove Latch(Holder)



It is easy to pull it to put your finger in the groove.

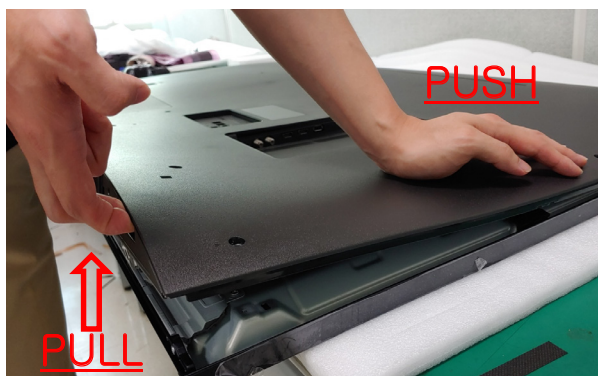
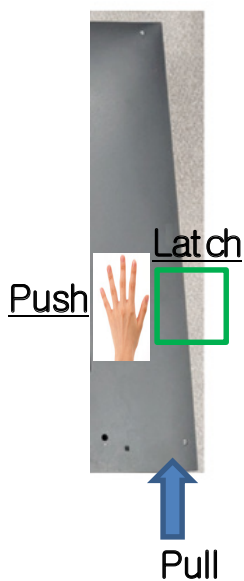


An illustrative photograph

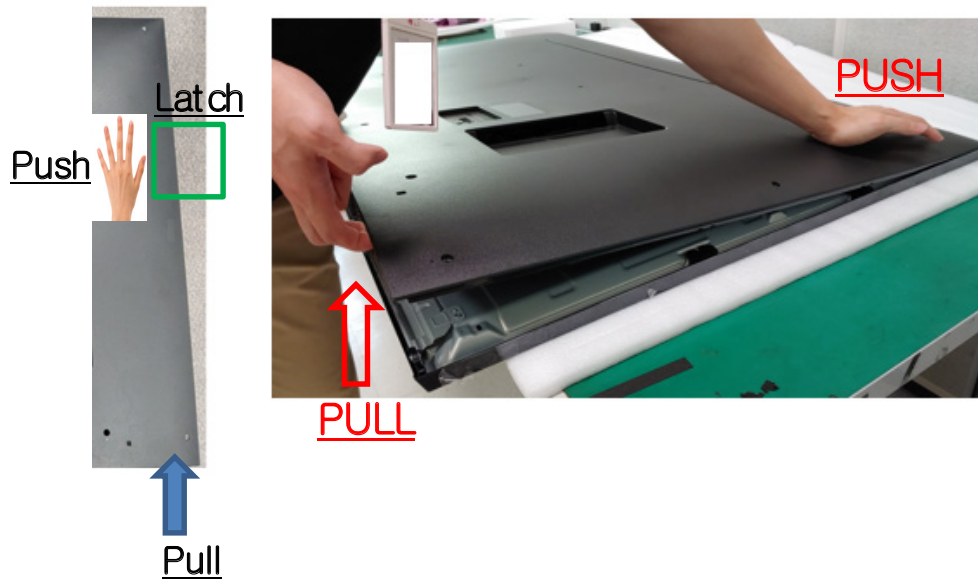
\* Remove both the right side latch and left side latch.  
Hold the Right(Left) bottom handle and lift the B/C.  
At the same time, gently pushing the push points.  
(Separate the B/C from bottom to top direction)  
(first lower side, and then the upper side.)

\* If push with strong force from left side, Side Latch will break.

Step1) Lower Right(Left) Side

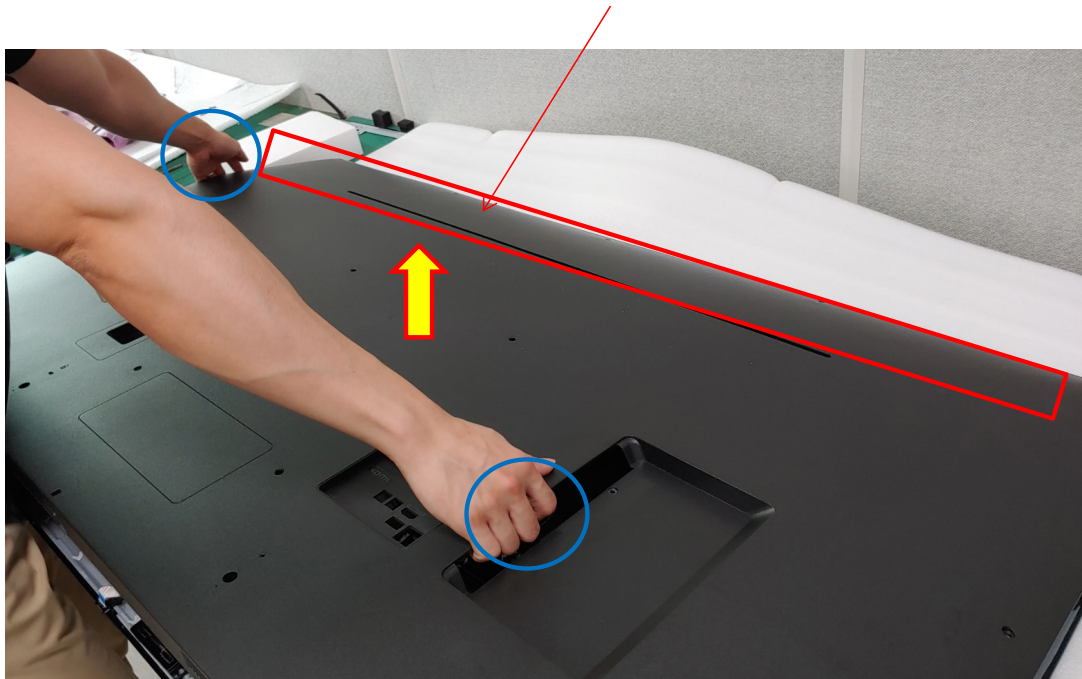


Step2) Upper Right(Left) Side

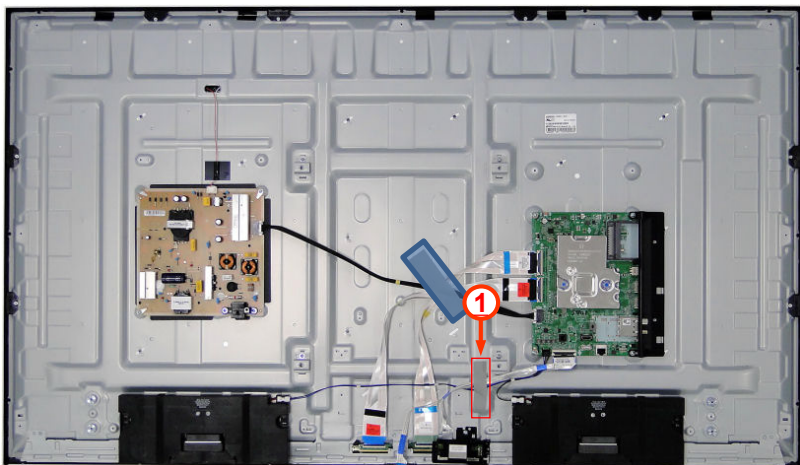


\* After holding the mark(O) and lift the bottom of the B/C, push the B/C in the upward direction .

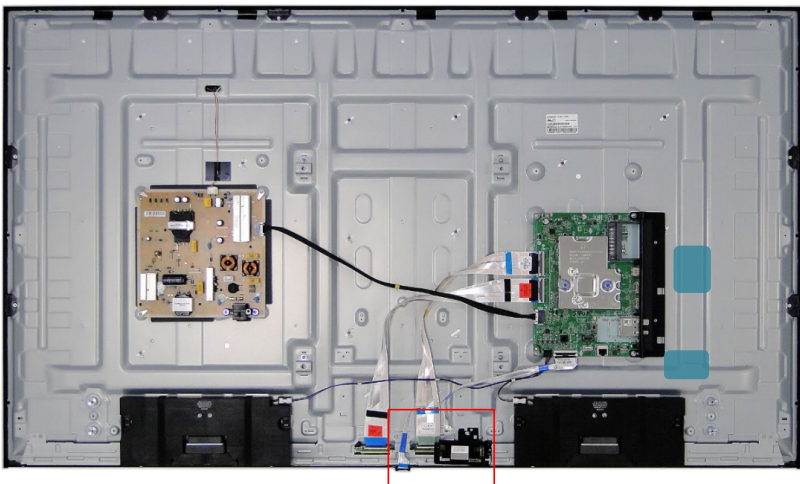
\* Caution : Latch can be separated on the top position, don't pull it hard for upward. Latch can be have damage.  
Must be refer to disassembly Video



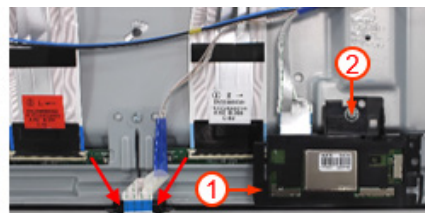
## 2. Detach Tape.



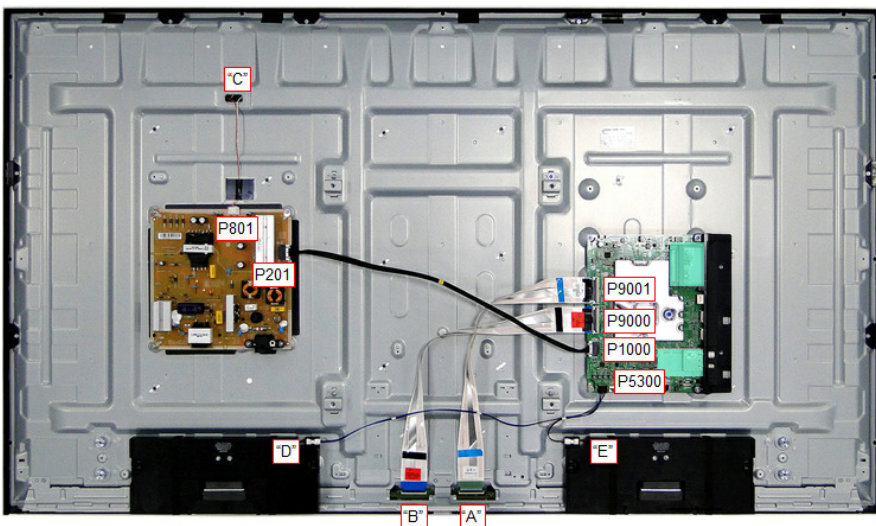
## 3. After Screw Disassemble, please remove IR&WIFI bracket and Harness.



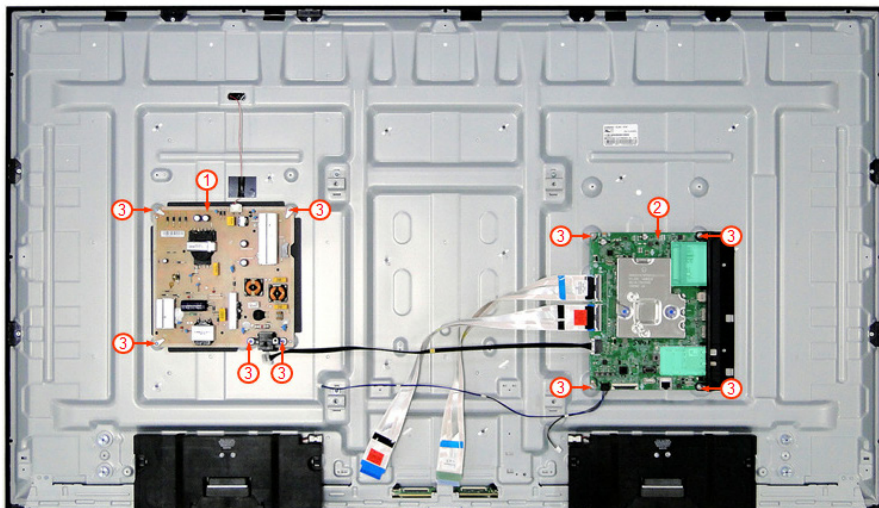
② Screw 1EA(M3\*5.5)



## 4. Remove all sort of cable



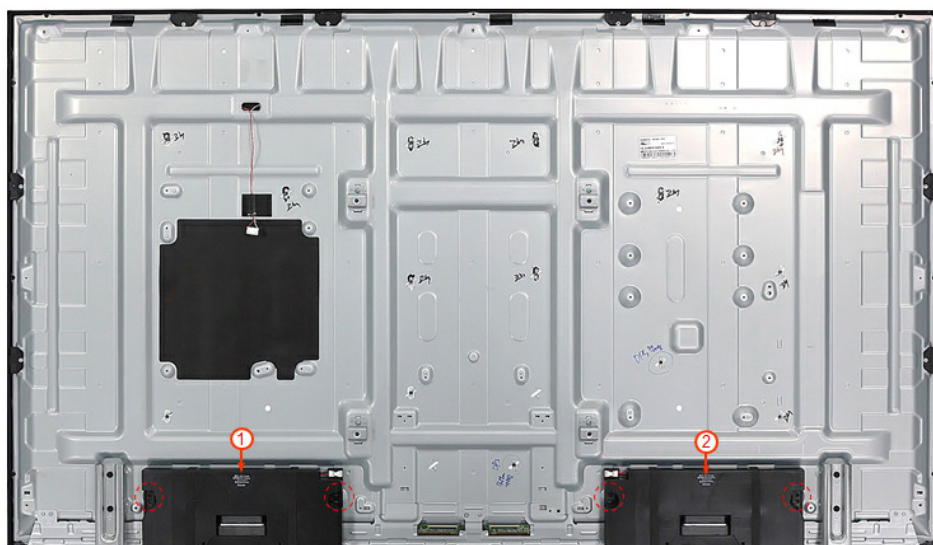
**5. After Screw Disassemble, remove POWER / MAIN PCB.**



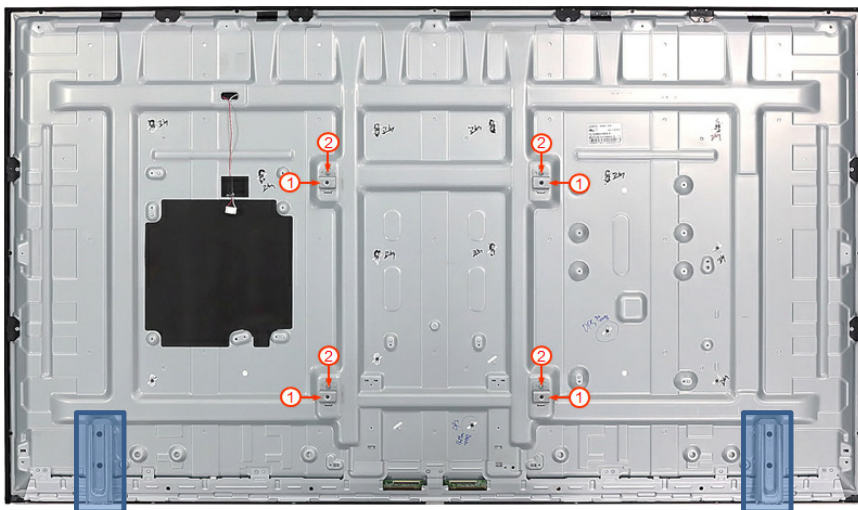
**③ Screw 9EA(M3\*5.5)**

**\*SCREW TORQUE**  
**NO3 SCREW : 5 ~ 7Kgf.cm**

**6. Remove Speaker.**



7. After Screw Disassemble, remove the Vesa SUPPORTER and 2Pole Supporter.



② Screw 4EA(M3\*5.5)

\*SCREW TORQUE

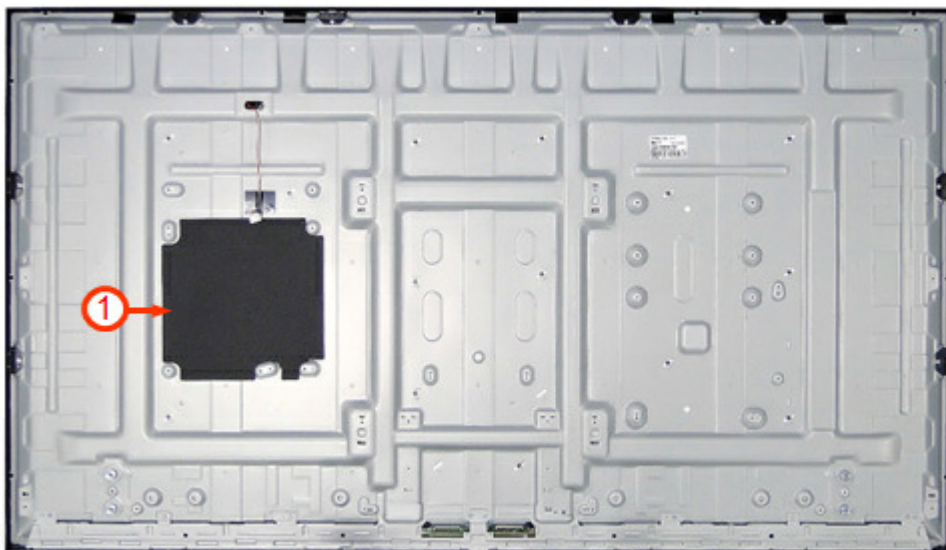
NO2 SCREW : 5 ~ 7Kgf.cm

NO4 SCREW : 8 ~ 12Kgf.cm



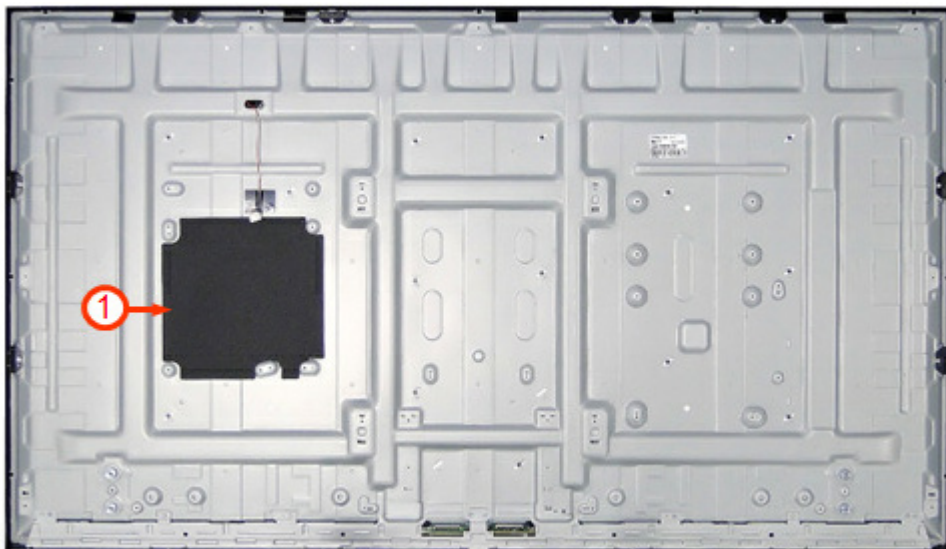
None Use

8. Remove Insulator

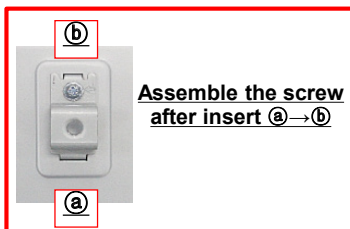
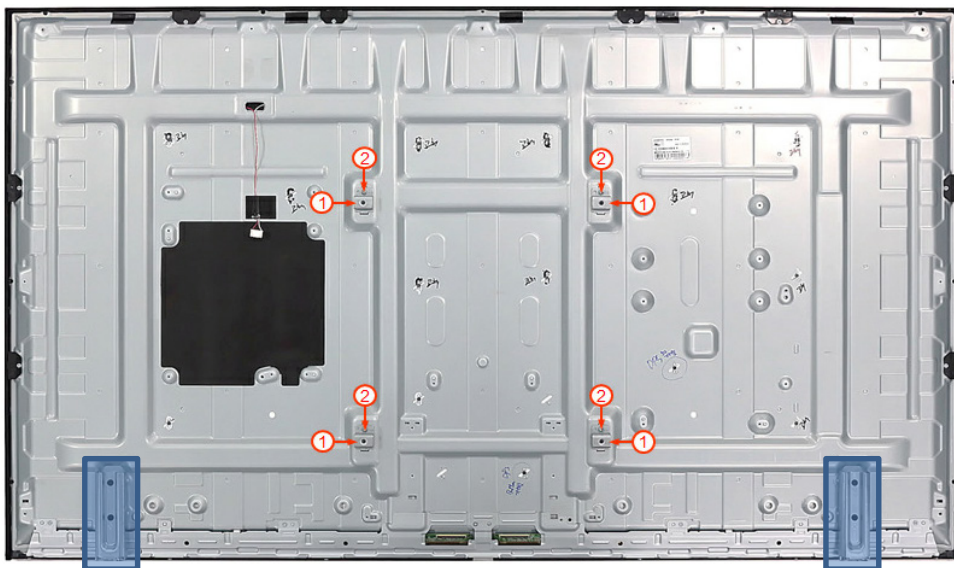


## ■ Assemble

### 1. Attach the INSULATOR.



### 2. Assemble/Fix the Vesa SUPPORTER.



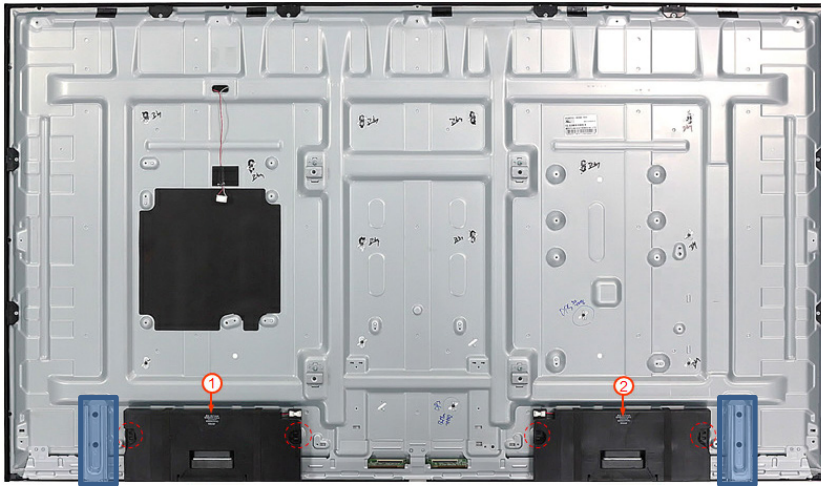
**② Screw 4EA(M3\*5.5)**

**\*SCREW TORQUE**  
NO2 SCREW : 5 ~ 7Kgf.cm



None Use

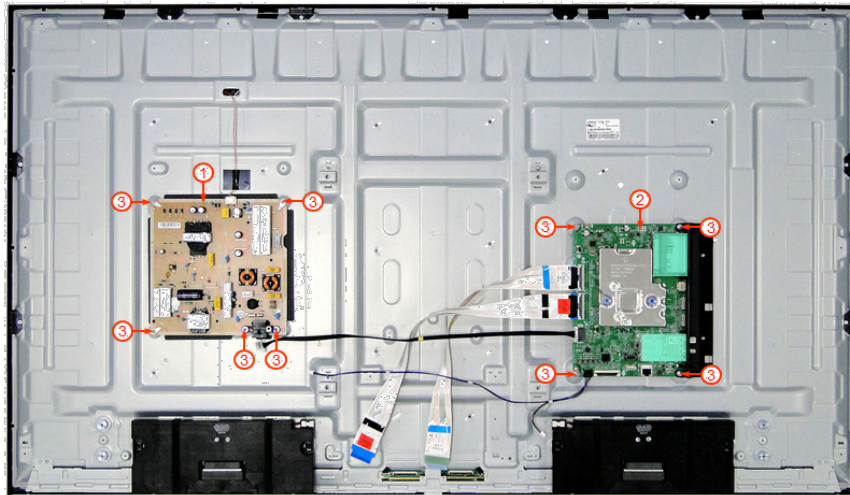
### 3. Assemble SPEAKER.



Press the  edge of mark rubbing it using palm to insert Rubber

 None Use

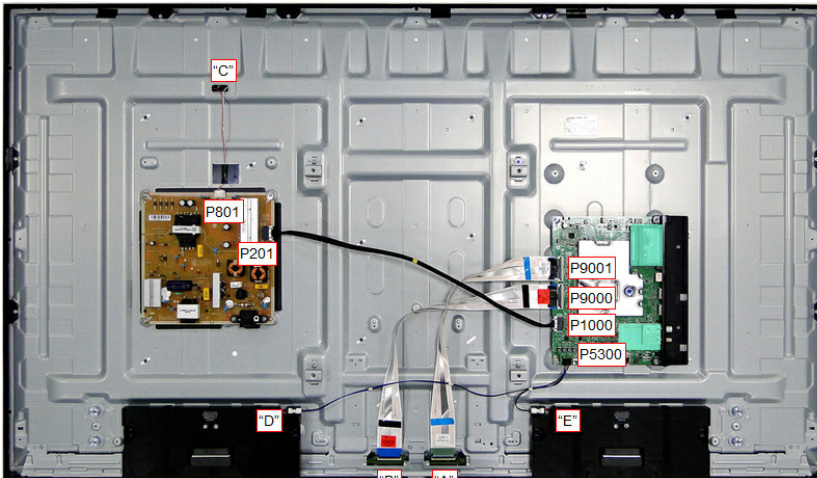
### 4. Assemble/Fix the POWER / MAIN PCB.



**③ Screw 9EA(M3\*5.5)**

\*SCREW TORQUE  
NO3 SCREW : 5 ~ 7Kgf.cm

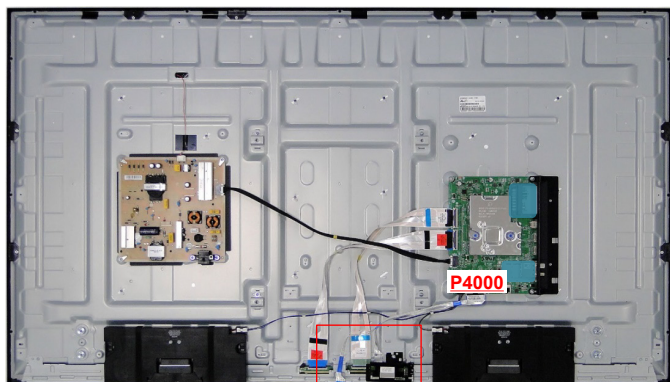
### 5. Insert the HARNESS



#### 1.Insert the HARNESS

- 1) MAIN P9101 -> MODULE "A"
- 2) MAIN P9100 -> MODULE "B"
- 3) MODULE "C" -> POWER P801
- 4) MAIN P1000 -> POWER P201
- 5) MAIN P5300 -> SPEAKER "D"  
SPEAKER "E"

## 6. Assemble /Fix the IR&WIFI BRACKET and HARNESS

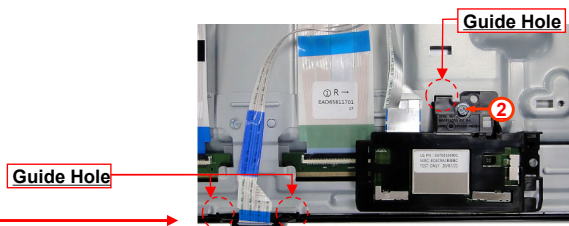


② Screw 1EA(M3\*5.5)

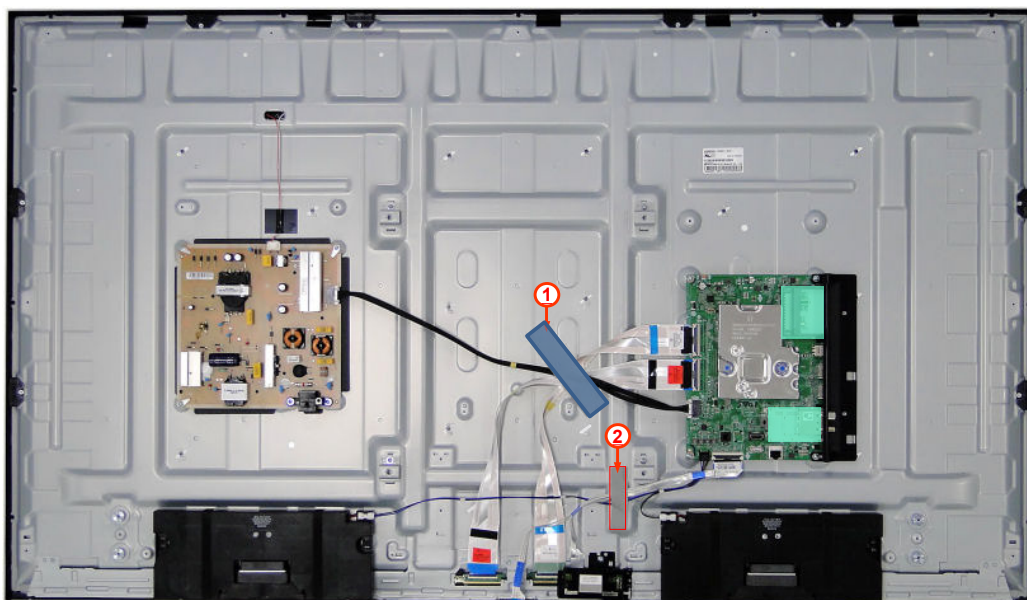
\*SCREW TORQUE  
NO2 SCREW : 5 ~ 7Kgf.cm

\* Insert the HARNESS

1)BRACKET HARNESS -> MAIN P4000



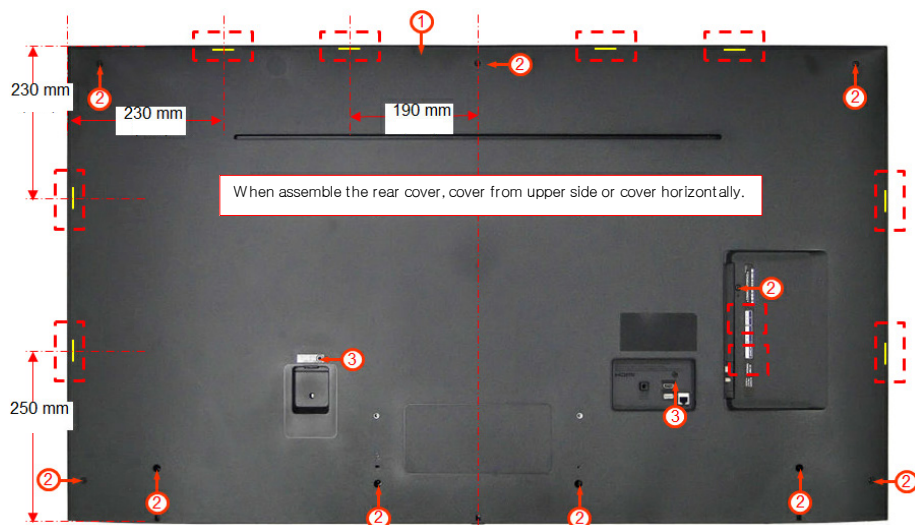
## 7. Arrange the harness[Attach the Tape]



None Use

## 8. Assemble/Fix the COVER Assy., REAR

Press the  edge of mark rubbing it using palm to insert CLIP.



② Screw 10EA(M3\*5.5)

③ Screw 2EA(P4\*10)

\*SCREW TORQUE  
NO2, 3 SCREW : 5 ~ 7Kgf.cm



※ Caution  
Latch is not assembled properly.  
If the latch is not assembled properly,  
the latch must be pressed again.

# ASSEMBLY / DISASSEMBLY GUIDE (MODULE)

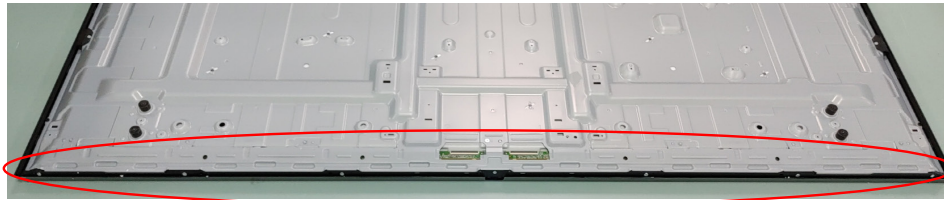
## ■ LCM Service Assembly / Disassembly Guide

(1) LCM status

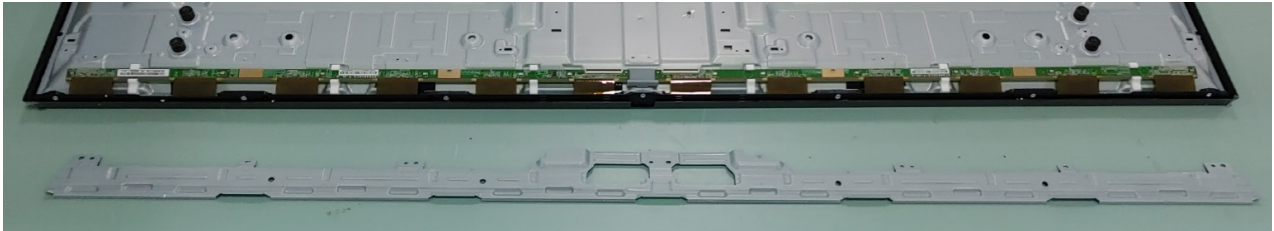
- Panel face on flat surface LCM located to floor (such as a table where the entire outside of C/Top can be supported)



(2) Disassemble SPCB Cover shield screws 5ea. (Use General Screw Driver)

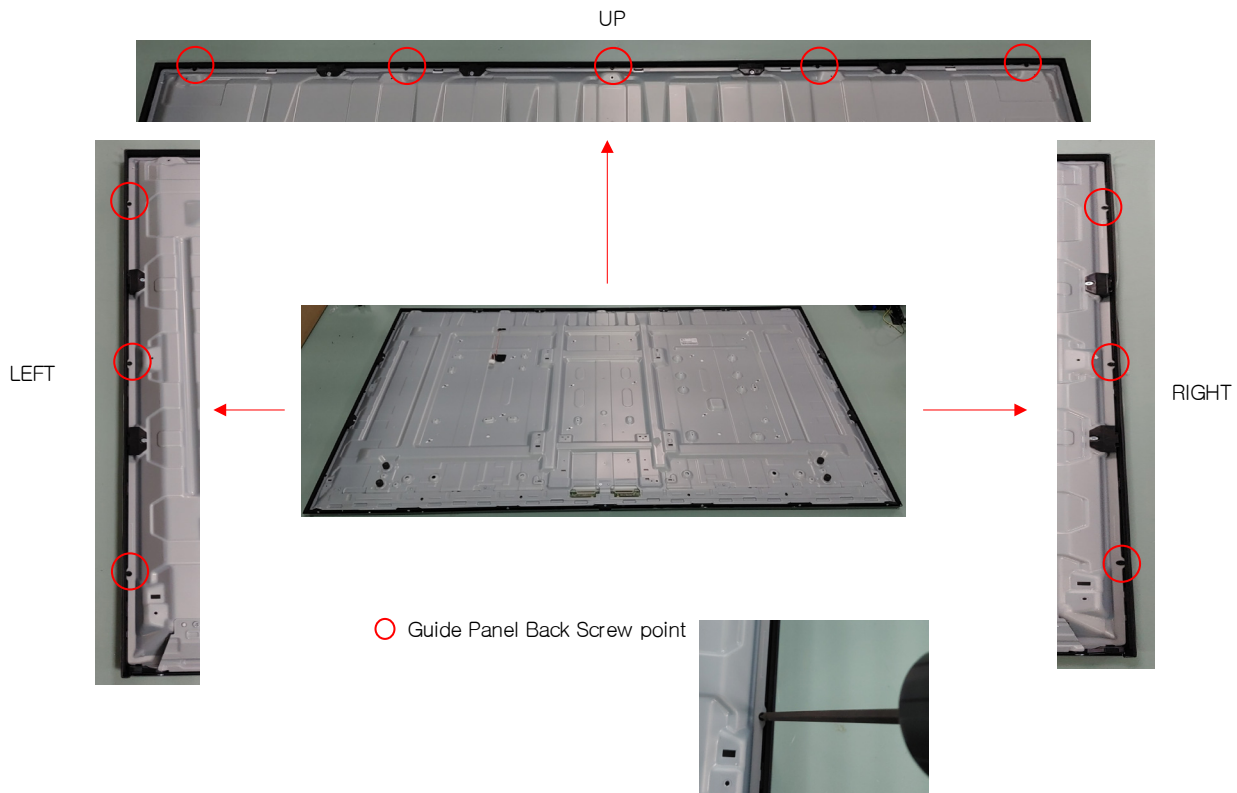


(3) Disassemble the screw, and then move each SPCB cover field L/R upward to disassemble it.



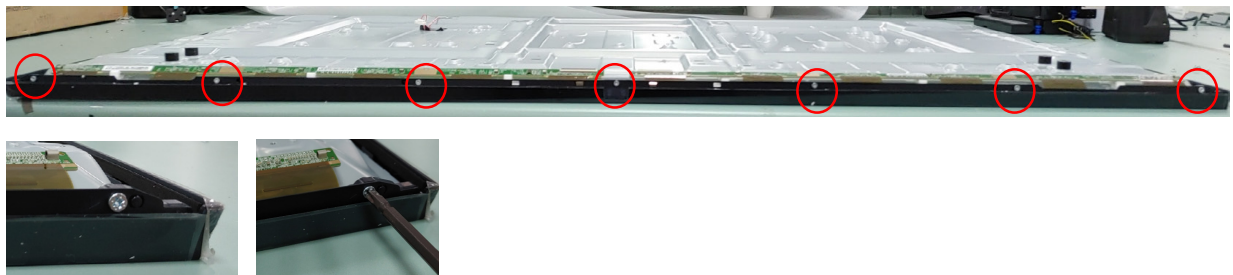
(4) Loosen the Guide Panel tightening screw.(Guide Panel Back 3-sided)

- Screw Spec : M3\*5.0mm Tapping Screw(BLACK)
- Location : Up(5ea)/Left(3ea)/Right(3ea)
- Driver : Normal size screw TIP Driver is available.



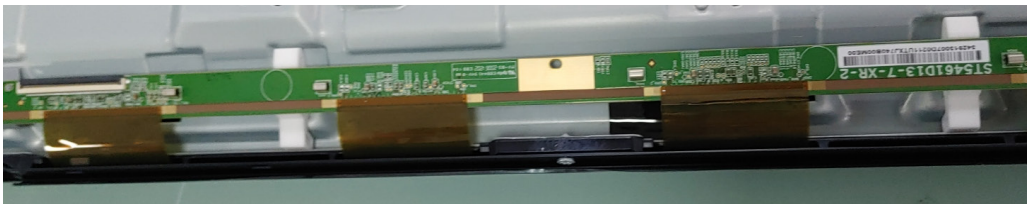
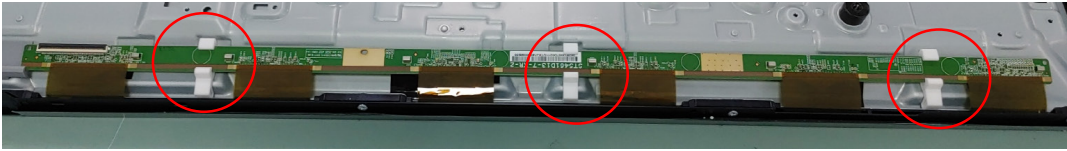
(5) Disassemble 7screws on the lower side of the C/top.

- Screw Spec: M3\*8 (Silver)
- Driver : Normal size screw TIP Driver is available.



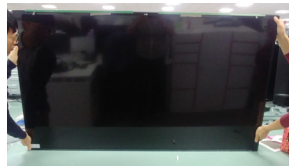
(6) Disassemble Panel SPCB L/R from the SPCB Holder.

- Grasp the top side of the SPCB and pull it to release the top side hook of the holder, and then disassemble the SPCB from the bottom side of the hook of the holder.



(7) Reverse LCM.

- Must be worked more than two people, one on the left and one on the right side with both hands reverse 180 degrees.



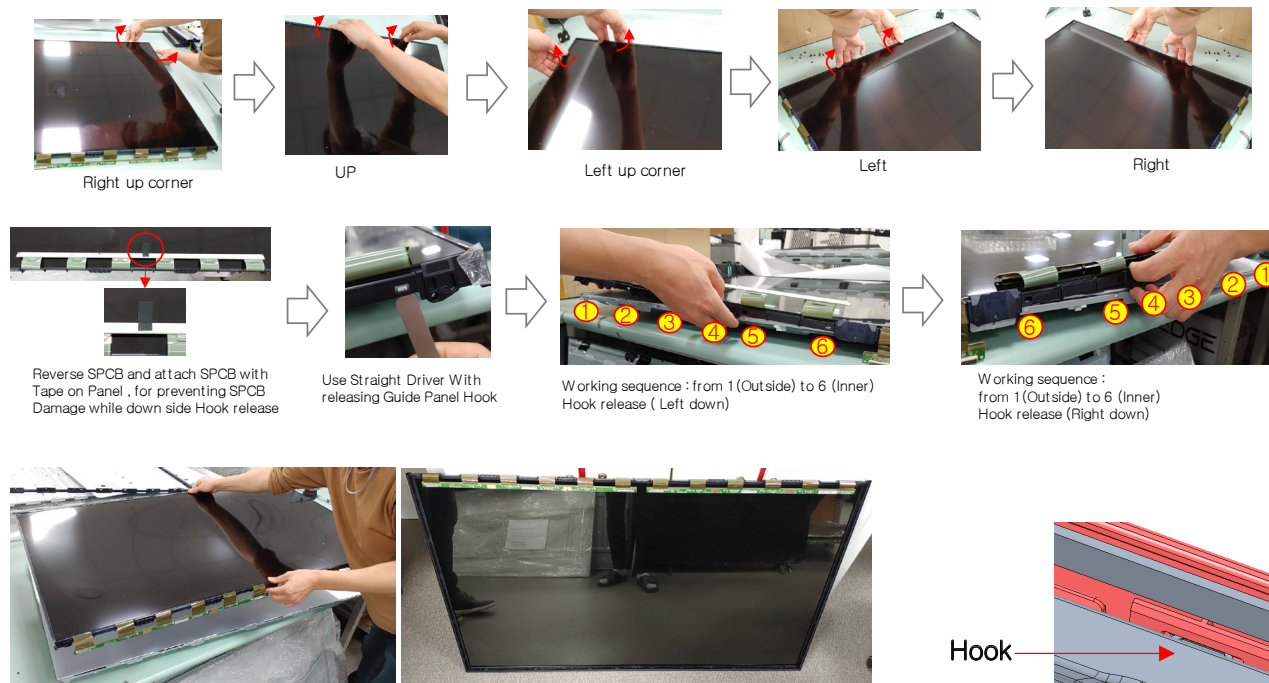
(Case Top down Screw already released, so be caution Case top down falling when Reverse LCM)

(8) Case Top Down release

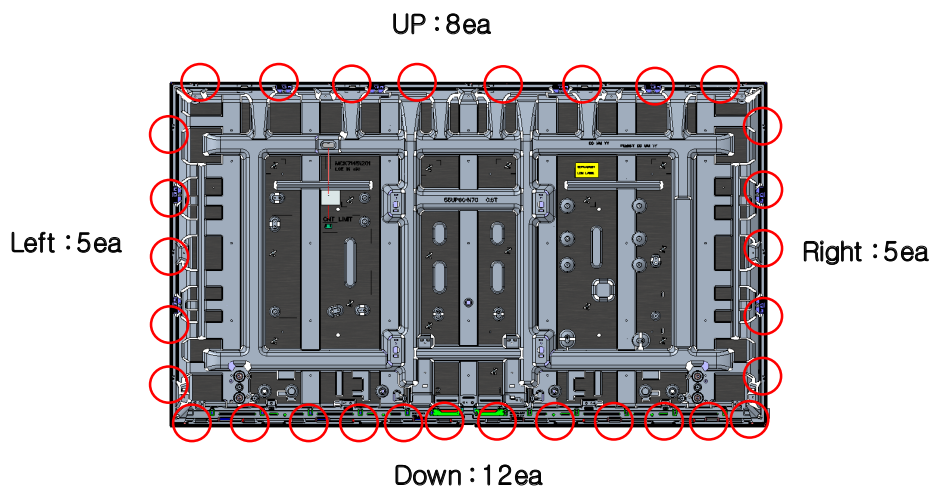
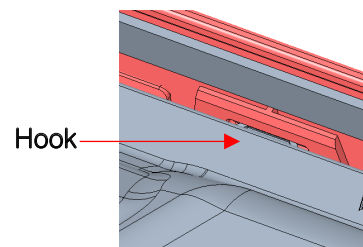
- Disassembly horizontally side direction



(9) Release sequence : Right UP Corner Hook → UP Hook → Left UP Corner Hook → Left Hook → Right Hook → Left Down (From outside to Inner) → Right Down ( From outside to Inner)

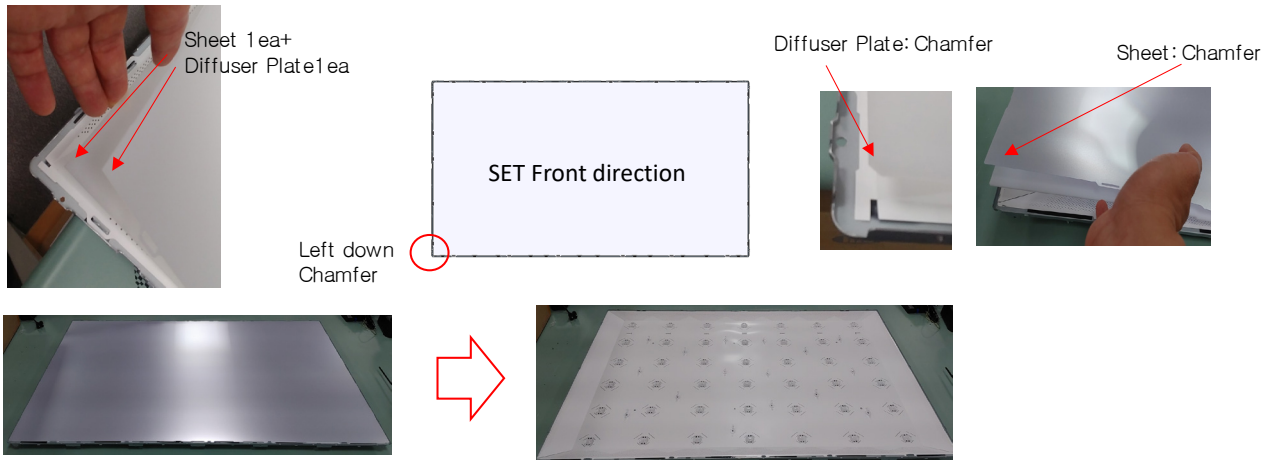


After Releasing Guide Panel all rounded hook,  
Remove Guide Panel-Board assy with UP Direction



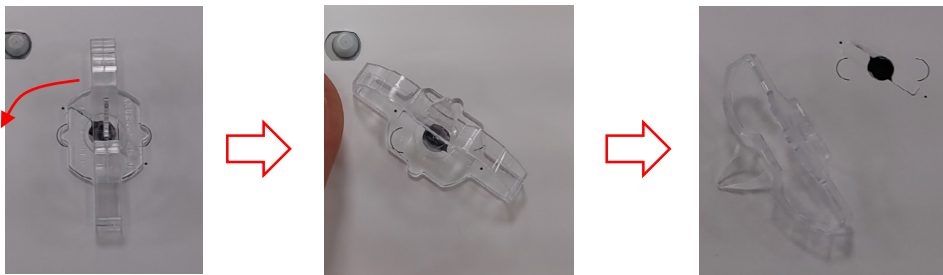
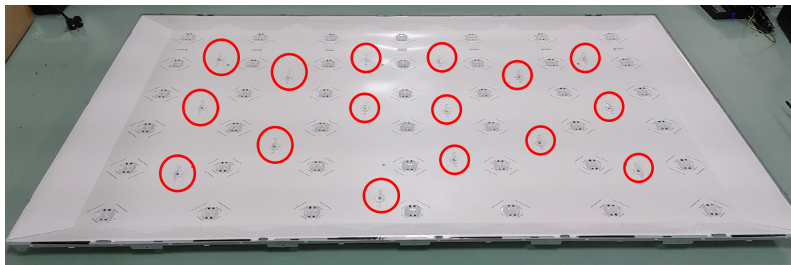
(10) Disassemble Sheet (1 sheet) and Diffuser Plate.

- Remove 1 sheets and one Diffuser Plate by lifting them at the same time.
- Assembly direction is divided by the chamfer shape of the Sheets/Diffuser Plate on the front left down side of SET. (other than that, the corners are Rounded)



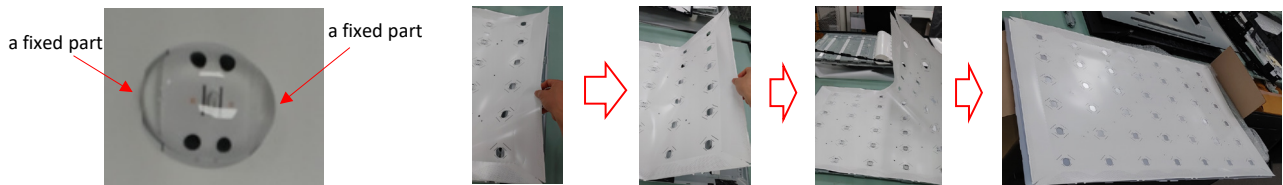
(11) Disassembly of 16 Support Diffuser Plates.

- Rotate the Support DP counterclockwise 45 degrees to align it to the assembly hole and lift it upwards to disassemble. (Total 16 EA)



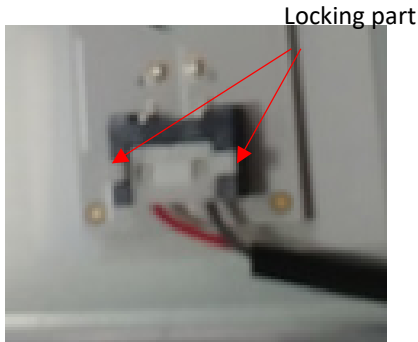
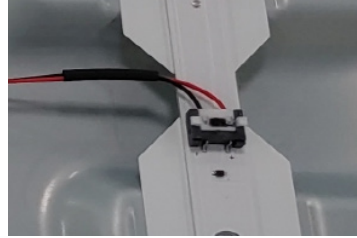
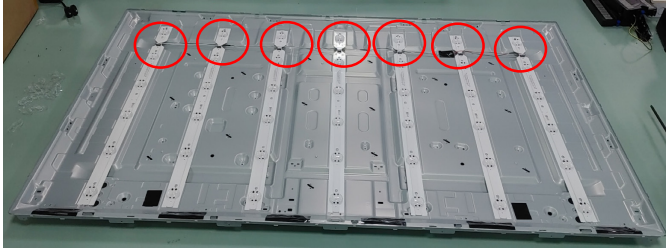
(12) Disassemble the Reflector Sheet.

- As the reflector hole is fixed to the lens, disassemble the reflector by release the the fixation of lens from the end on the right.



(13) Release the Led array connector.

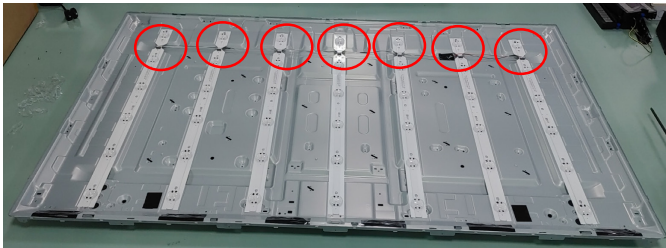
- Press the left/right locking part of the wire connector at the same time and lift it up and release it. (Total 7 EA)



(14) Disassemble the Led Array and Attach the New Led Array.

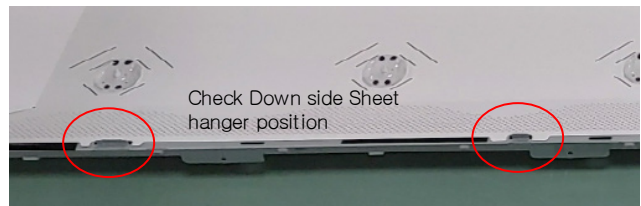
- Disassemble the Led Array Bar (Led Array and Cover Bottom are fixed with two-sided tape, so use appropriate force to cover the Led Array.  
Take it off and attach a new Led Array.

(15) Assembly of the Led array connector- Attach the connector on the wire ass'y by pushing it upward and downward.



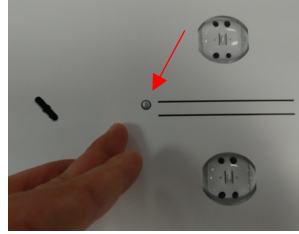
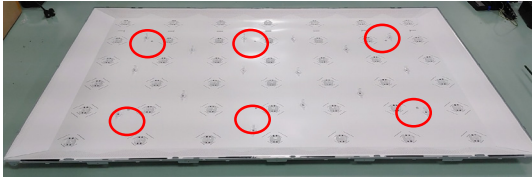
(16) Attach the reflector sheet.

- Check Down side Sheet hanger position.



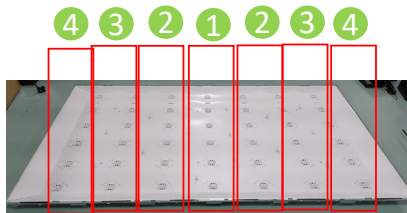
(17) Position the Reflector sheet

- Align the reflector with the reflector guide hole at 6ea locations on the center/bottom of the reflector and assemble two support plates first.

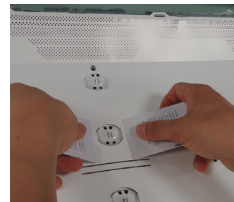
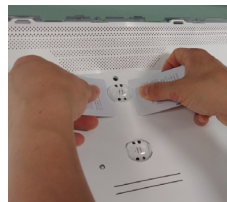


(18-1) Fixing the Reflector Lens Hole

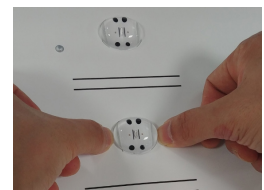
- Tighten the reflector hole to the lens in order of No. 1 → 2 → 3 → 4 in the figure below. (Use Card or nail to insert the reflector sheet into the bottom of the lens.)  
It is recommended to push the reflector sheet into the bottom of the lens using tools such as a card, as it may be difficult to tighten when using nails



Using tools

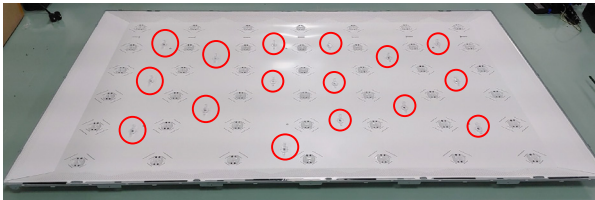


Using nails



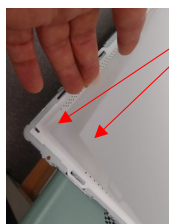
(18-2) Assembly of 16 Support Diffuser Plates

- Insert the Support DP into the Support DP Hole on the Cover Bottom and rotate it clockwise 45 degrees (total 16ea), After assembly, the Support DP is vertical Position to the LCM.



(19) Assembly of Sheet (1 sheets) and Diffuser Plate

- Place 1 sheets + 1 Diffuser Plate on top of Cover Bottom
- Assemble the sheet shape (Chamfer) on the front left side of the SET.



Sheet 1 ea+  
Diffuser Plate 1 ea

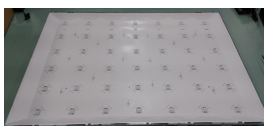
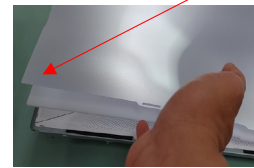
The Left down  
Chamfer



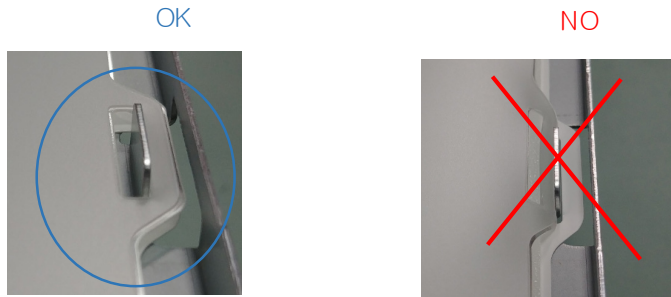
Diffuser Plate: Chamfer



Sheet: Chamfer

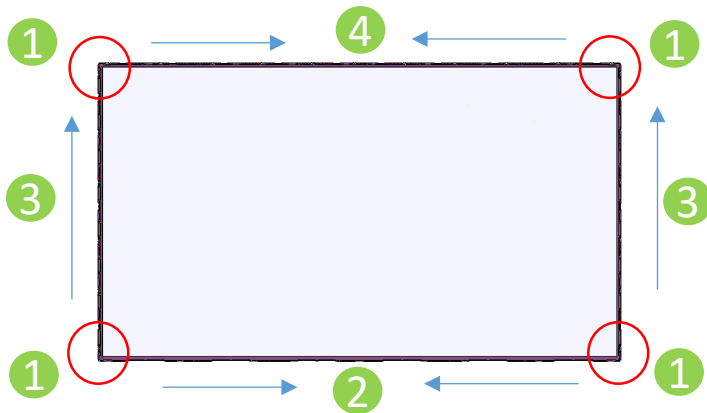


- Precautions: Check that the sheet hanging hole on the upper/lower/left/right outer is properly seated on the cover Bottom Sheet hanging.



(20) Assembly the Guide Panel

- Press the guide panel 4 side down in the upper and lower direction in line with the cover Bottom face to tighten it, and then tighten it in order of 2 and 3.
- Check Hook fastening. (Gap of Sheet and guide panel)



(21) Case Top Down assembly

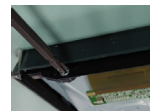
- Insert Side direction.



(22) C/Top Lower side Screw 9ea assemble

- Screw Spec: M3\*8 (Silver)
- Driver : M3 Screw Module Driver available.

\* Caution : While Screw assembly, be care SPCB COF damage from driver Tip.



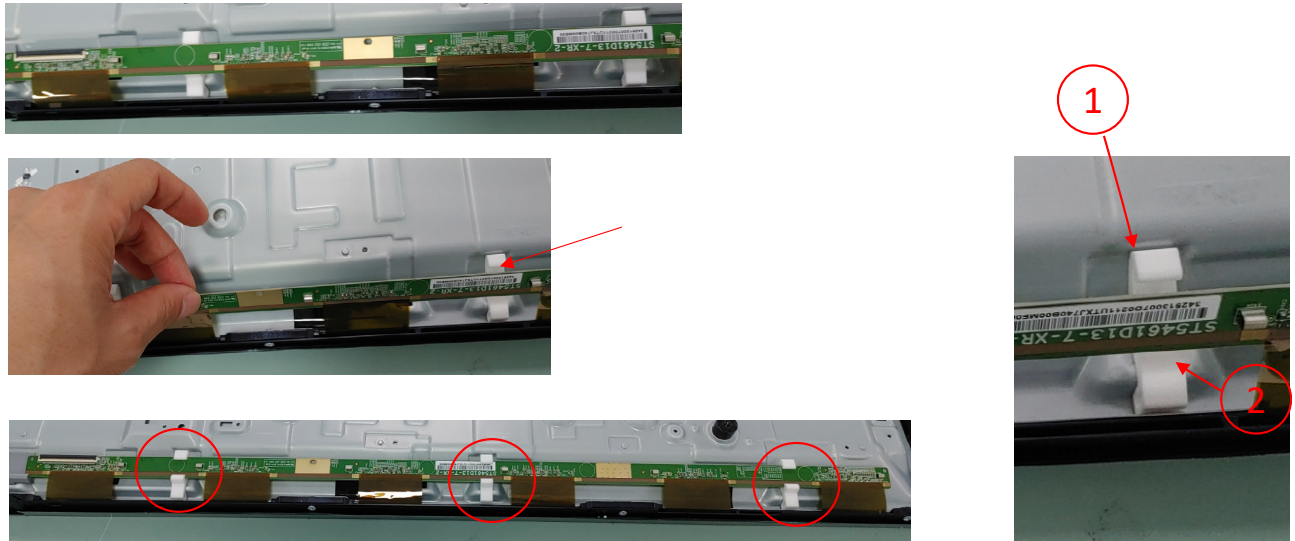
(23) Reverse LCM.

- Must be worked more than 2 people, one on the left and one on the right side with both hands reverse 180 degrees.



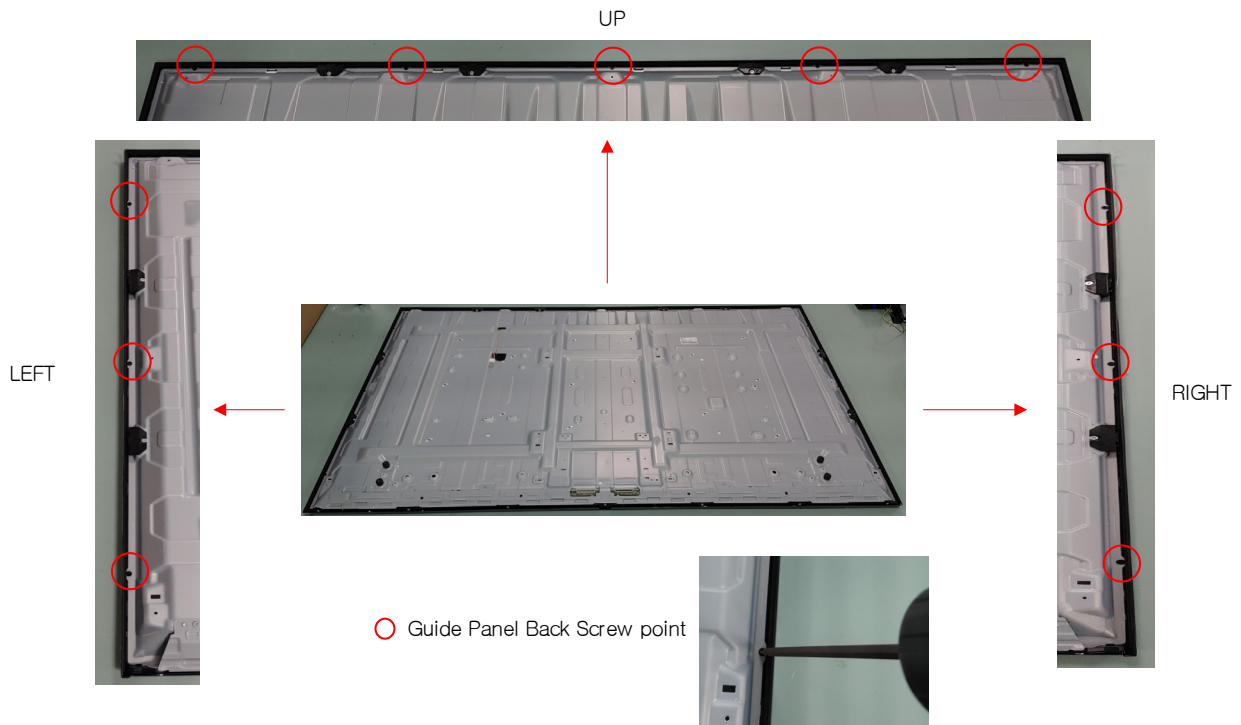
(24) Assemble the Panel SPCB L/R to the SPCB Holder.

- First, enter the upper part of the holder and then press the lower part of the holder to tighten the SPCB.

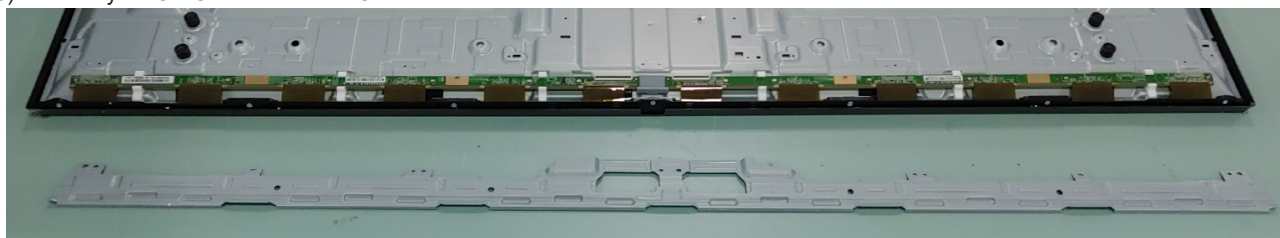


(25) Assembly the Guide Panel tightening screw.(Guide Panel Back 3-sided)

- Screw Spec : M3\*5.0mm Tapping Screw(BLACK)
- Location : Up(5ea)/Left(3ea)/Right(3ea)
- Driver : Normal size screw TIP Driver is available.



(26) Assemble SPCB Cover shield to Cover Bottom.



(27) Assemble SPCB Cover shield screws 5ea. (Use M3 Screw module Driver)



M3 Screw 5ea

FINISH



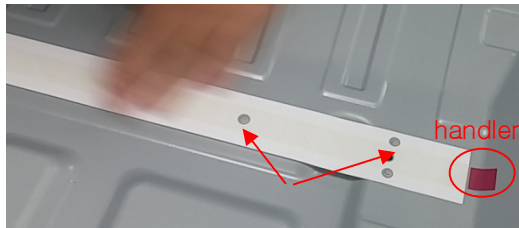
## ■ LED Array disassemble



- (1) Disassemble the CNT form LED Array.
  - (2) Separate the LED Array from Cover Bottom.
  - (3) Remove the double tape form Cover Bottom.
- \* After removing LED array once, You should not use it again.

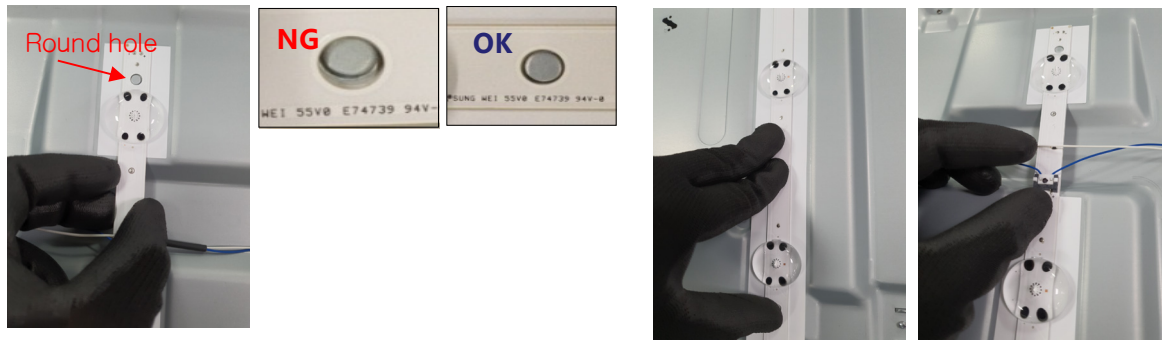
## ■ LED Array assemble

### Step 1. Attach the Double Tape.



- (1) Attach the double tape to the round hole on Cover Bottom embo.
  - (2) Remove the protect film of Double Tape with taking off the handler.
- \* Required LED Array Quantity : 7 EA

### Step 2. Attach the LED Array on the double tape.



- (1) Attach LED Array to the round hole on Cover Bottom embo.
- (2) Press LED Array on the surface of Cover Bottom.
- (3) Connect the CNT to the LED Array.



\* Finish the Attached LED Array (7ea)

# **TROUBLE SHOOTING GUIDE**

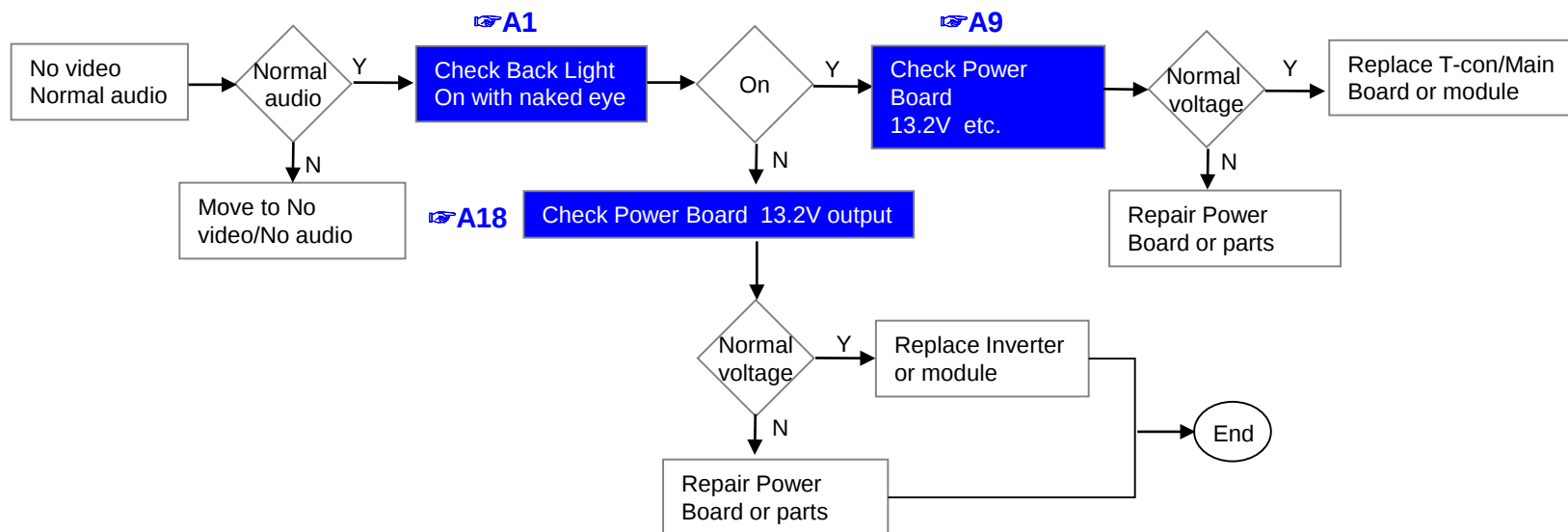
# Contents of Standard Repair Process

| 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  |         |
| 8   | C. Audio error                | No audio/Normal video                                                            | 9    |         |
| 9   |                               | Wrecked audio/discontinuation/noise                                              | 10   |         |
| 10  | D. Function error             | Remote control & Local switch checking                                           | 11   |         |
| 11  |                               | MR22 operating checking                                                          | 12   |         |
| 12  |                               | Wifi operating checking                                                          | 13   |         |
| 13  |                               | External device recognition error                                                | 14   |         |
| 14  | E. Noise                      | Circuit noise, mechanical noise                                                  | 15   |         |
| 15  | F. Exterior error             | Exterior defect                                                                  | 16   |         |

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

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

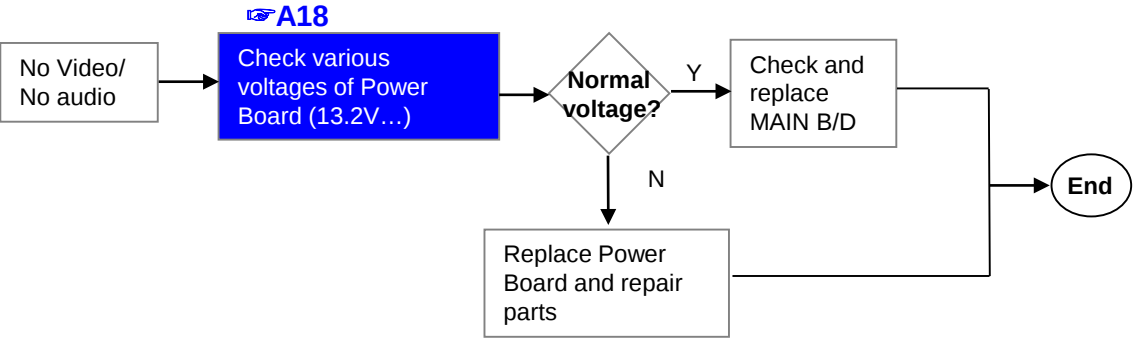
**First of all, Check whether all of cables between board is inserted properly or not.  
(Main B/D↔ Power B/D, LVDS or EPI or CEDS Cable, Speaker Cable, IR B/D Cable,,,) )**



※Precaution **A4 & A2**



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

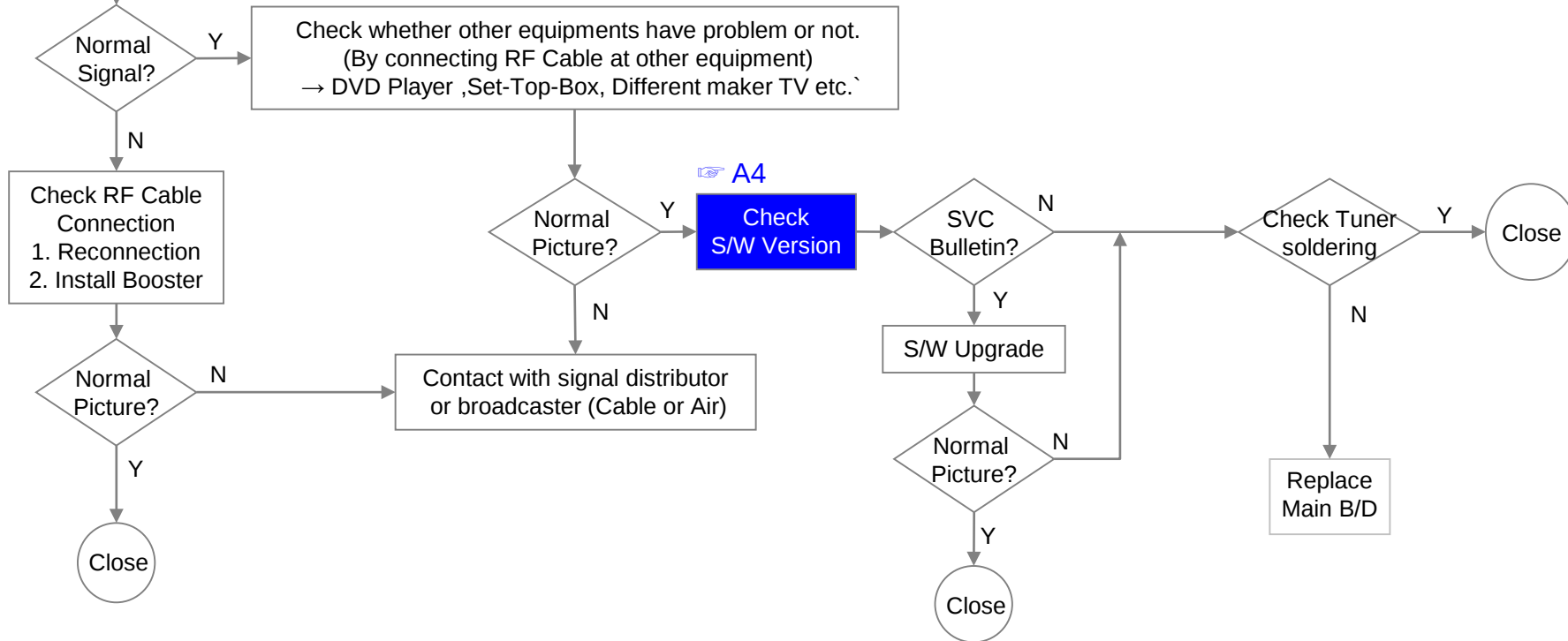


|  | Error symptom | A. Video error           | Established date |  |  |
|--|---------------|--------------------------|------------------|--|--|
|  |               | Picture broken/ Freezing | Revised date     |  |  |

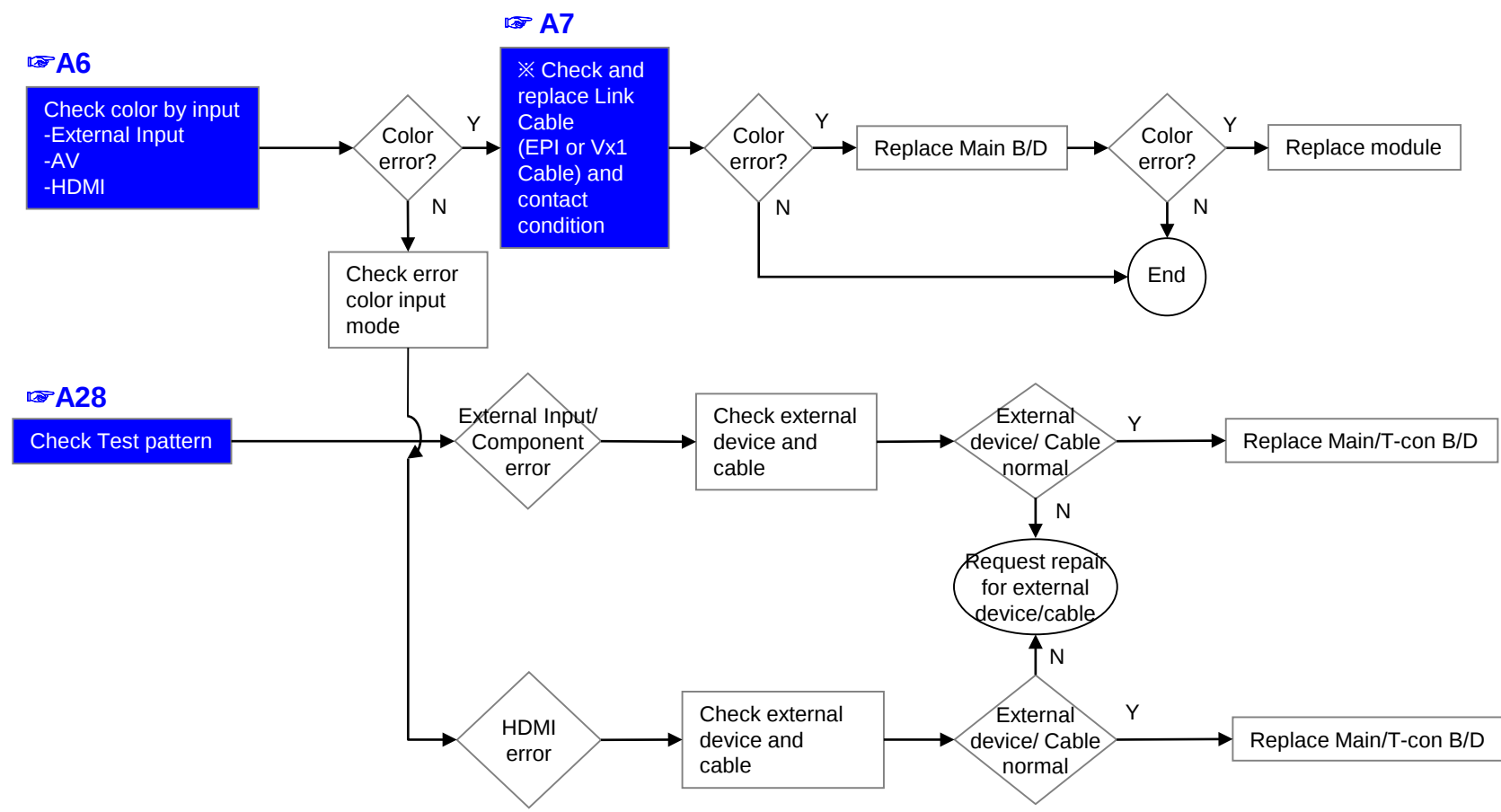
 A3

Check RF Signal level

- . By using Digital signal level meter
- . By using Diagnostics menu on OSD  
( Advanced → Channels → Channel Tuning → Manual Tuning → Check the Signal )
- Signal strength (Normal : over 50%)
- Signal Quality (Normal: over 50%)



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

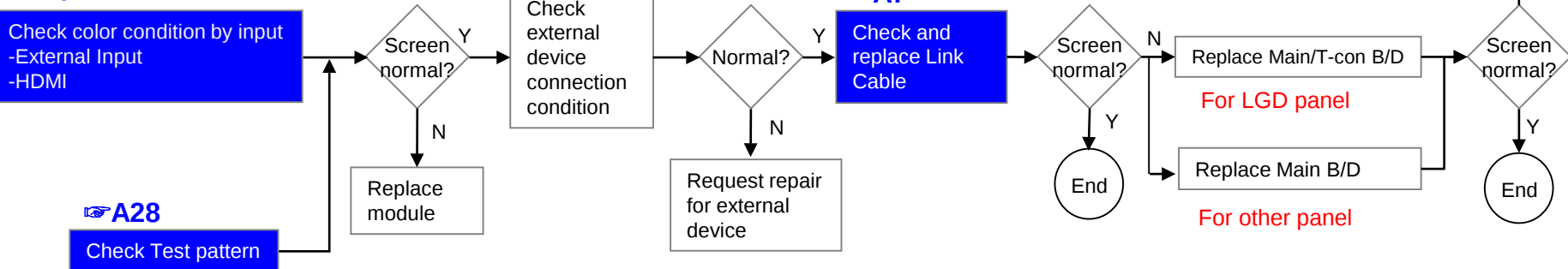


|  | Error symptom | A. Video error                                                                     | Established date |  |  |
|--|---------------|------------------------------------------------------------------------------------|------------------|--|--|
|  |               | Vertical / Horizontal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

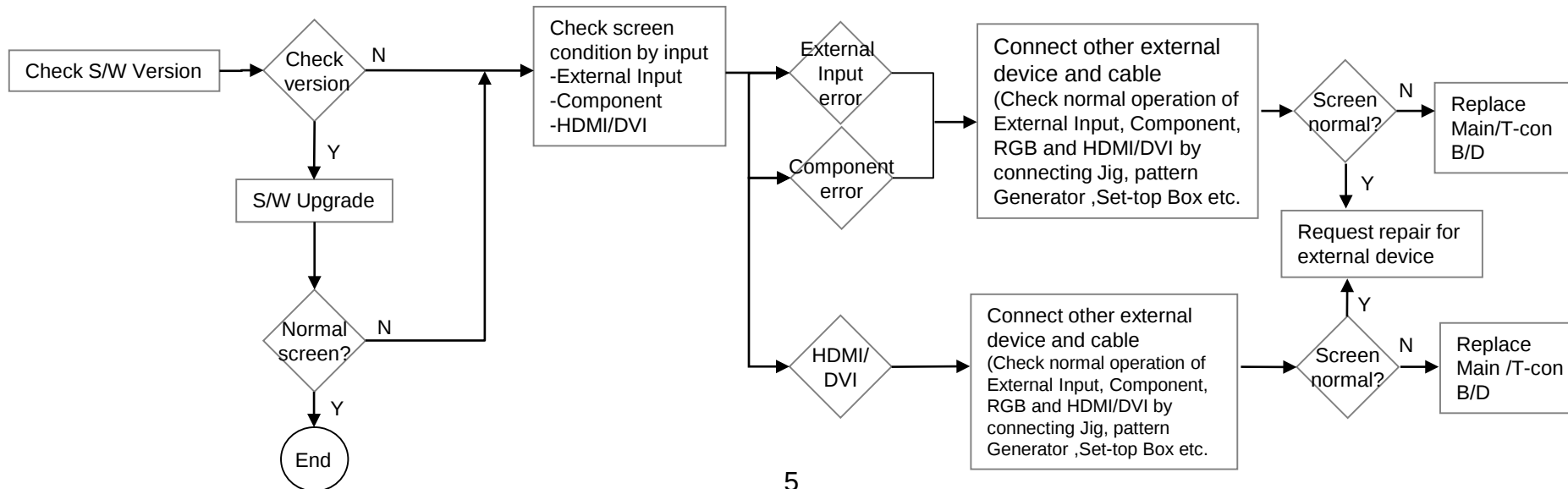
## Vertical/Horizontal bar, residual image, light spot

## A6

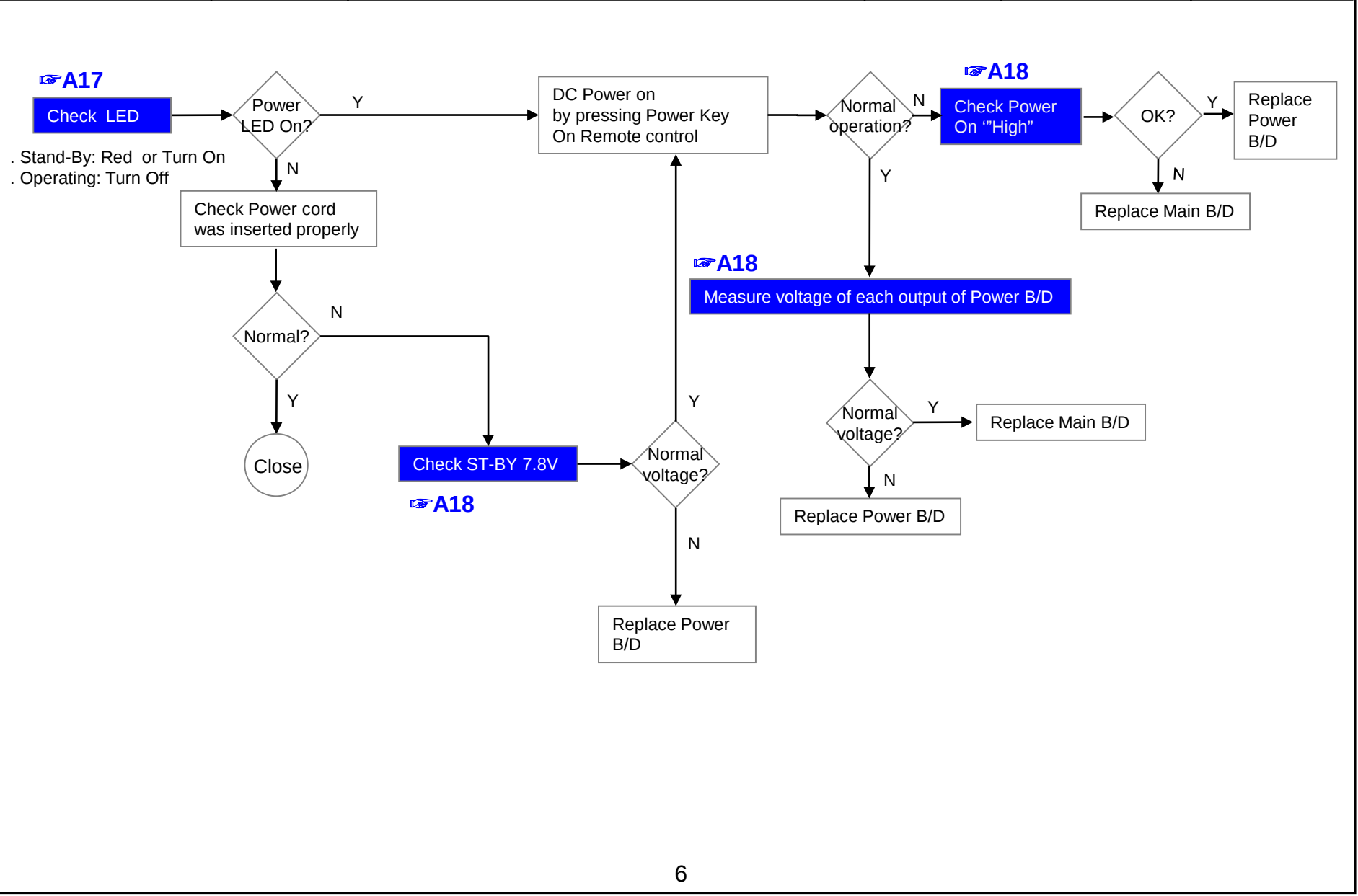
Check color condition by input  
-External Input  
-HDMI



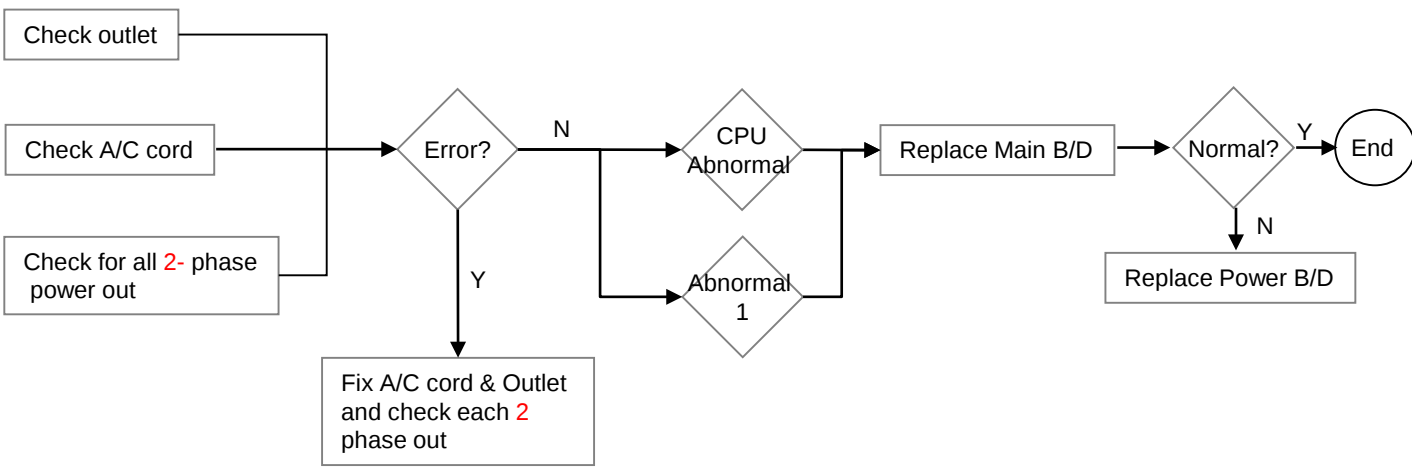
## External device screen error-Color error



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



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

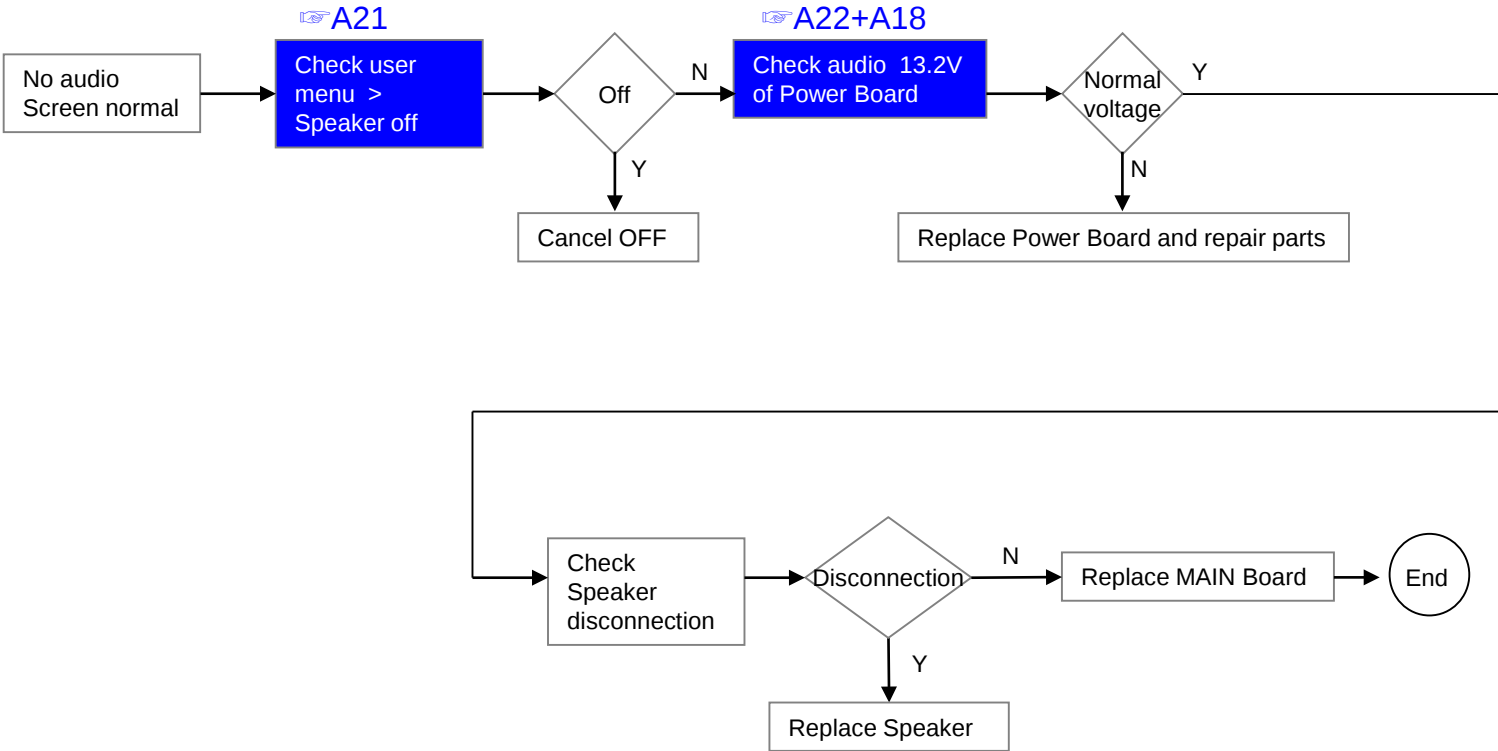


|  | Error symptom | B. Power error                                    | Established date |  |  |
|--|---------------|---------------------------------------------------|------------------|--|--|
|  |               | Off when on, off while viewing, power auto on/off | Revised date     |  |  |

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

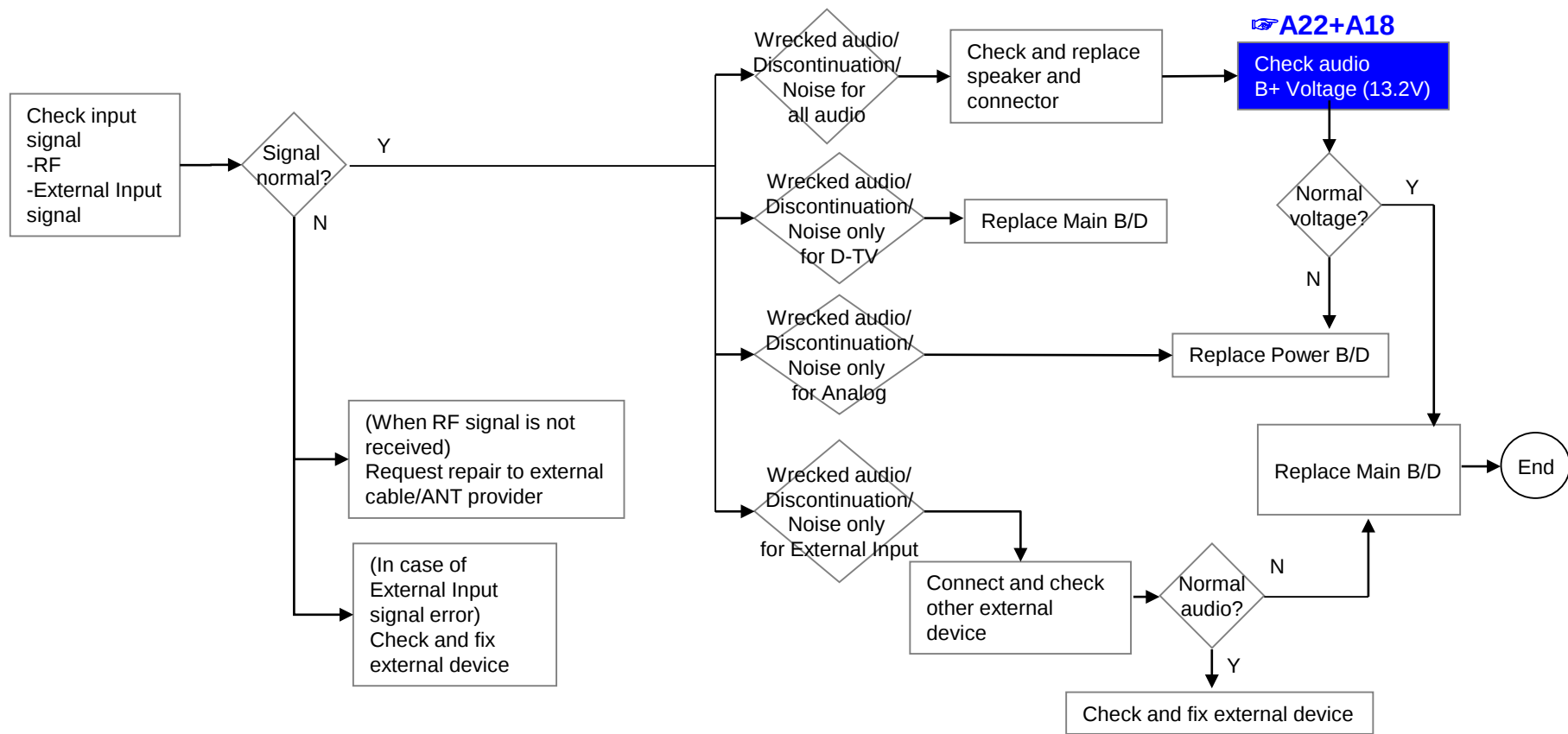
| Power Off list | Explanation                                                                                                                                                                                                                                                                                                                            | Action contents            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| KEYTIMEOUT     | Power off when TV is not turned off during a certain time<br>RESULT : micom force to trigger TV power off.<br>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 valid communication between CPU and MICOM for more than 5 seconds, the MICOM switches off PSU and Records. Power off by 1SEC Power off. In this case, we don't have information where the malfunction exactly occurred. But it 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   |
| 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.<br>RESULT : TV power off/on (Reboot)<br>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)<br>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 completed. (OLED)                                                                                                                                                                                                                                                                               |                            |

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



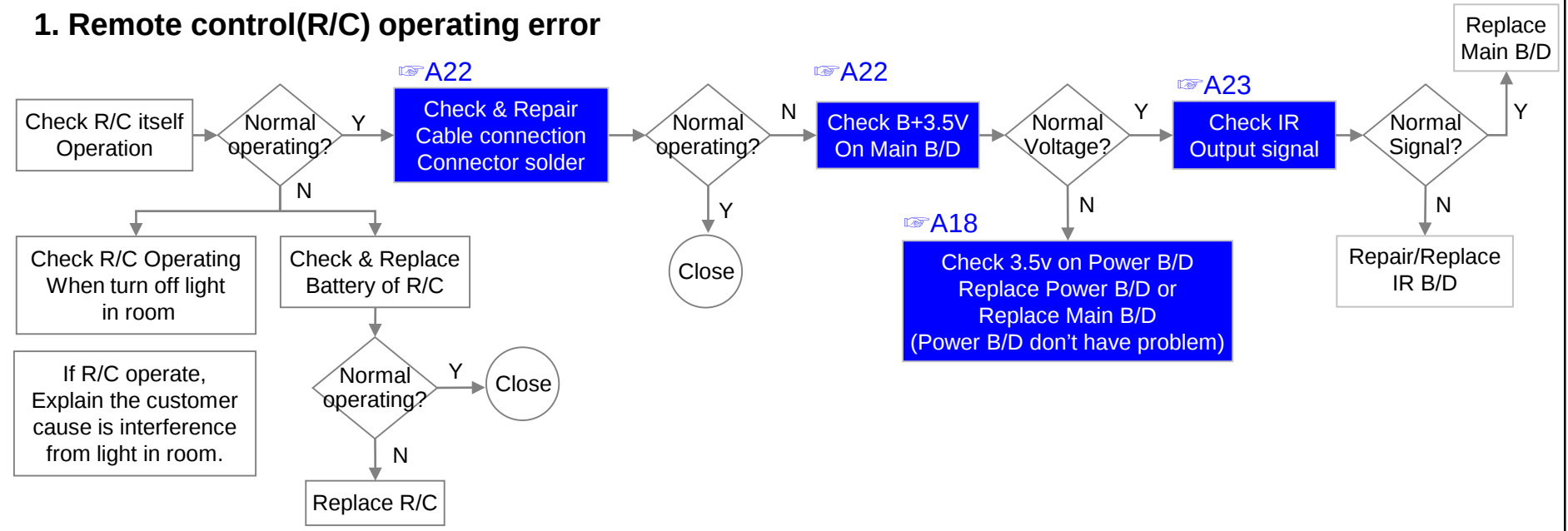
|  | Error symptom | C. Audio error                       | Established date |  |  |
|--|---------------|--------------------------------------|------------------|--|--|
|  |               | Wrecked audio/ discontinuation/noise | Revised date     |  |  |

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



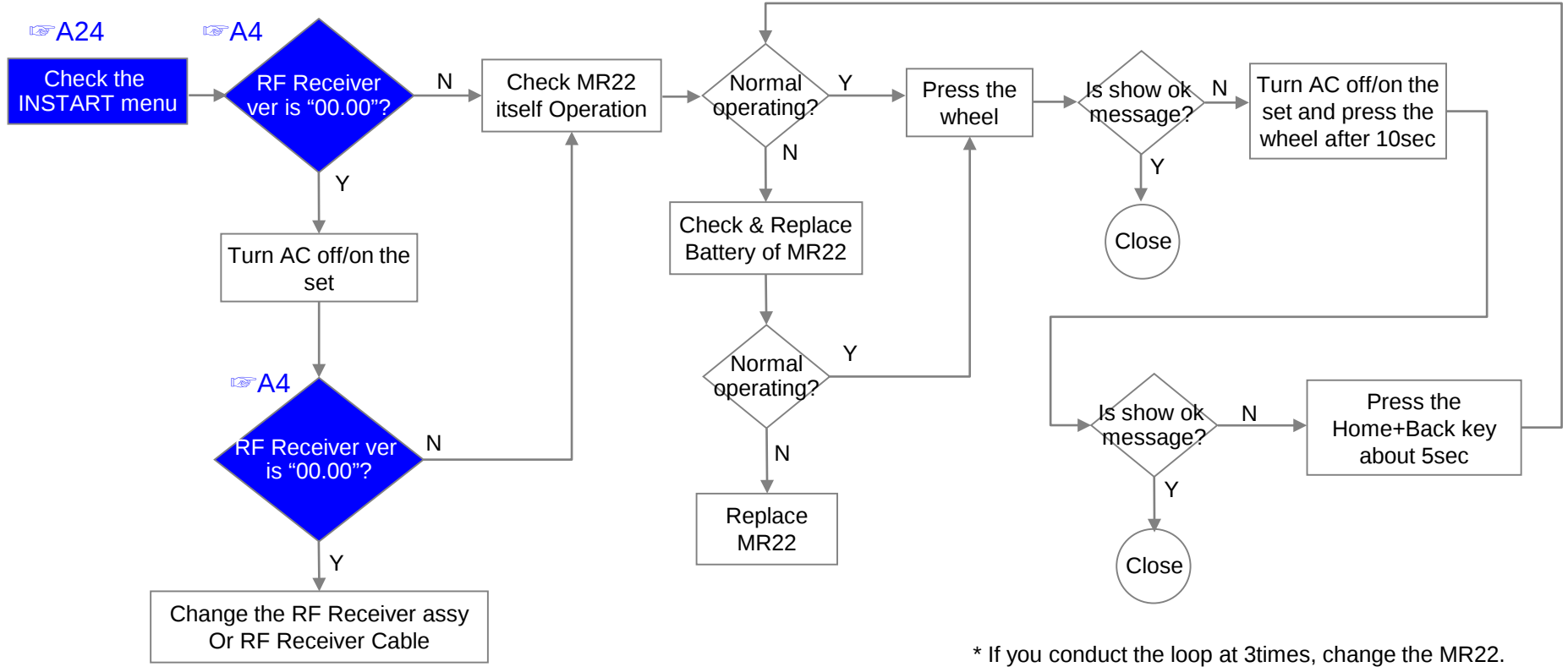
|  | Error symptom | D. Function error                      | Established date |  |  |
|--|---------------|----------------------------------------|------------------|--|--|
|  |               | Remote control & Local switch checking | Revised date     |  |  |

# 1. Remote control(R/C) operating error



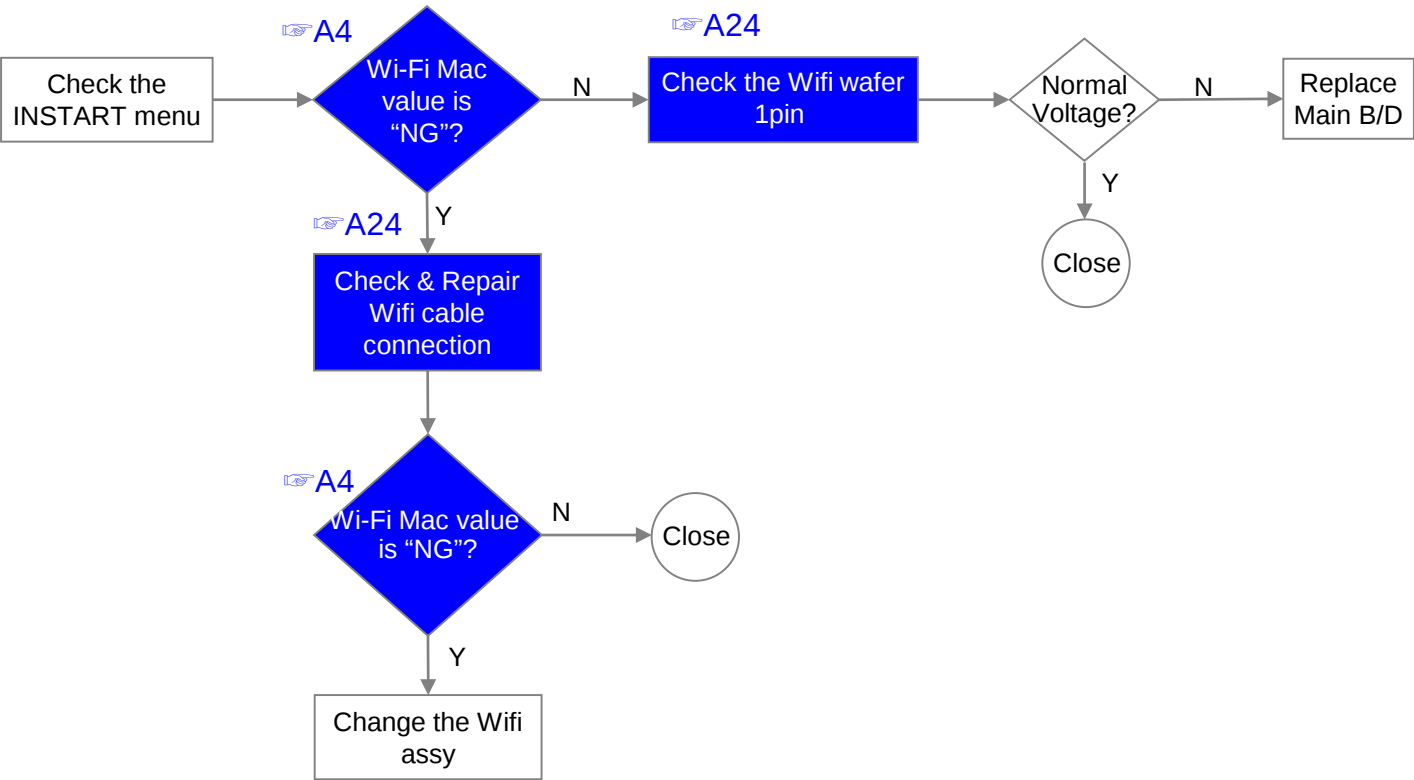
|  | Error symptom | D. Function error       | Established date |  |  |
|--|---------------|-------------------------|------------------|--|--|
|  |               | MR22 operating checking | Revised date     |  |  |

## 2. MR22(Magic Remote control) operating error

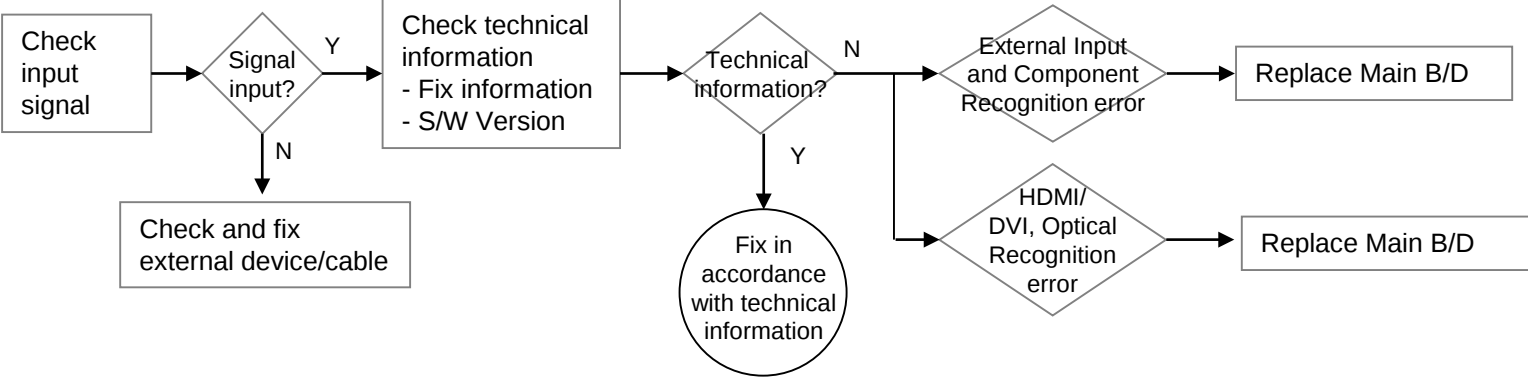


|  | Error symptom | D. Function error       | Established date |  |  |
|--|---------------|-------------------------|------------------|--|--|
|  |               | Wifi operating checking | Revised date     |  |  |

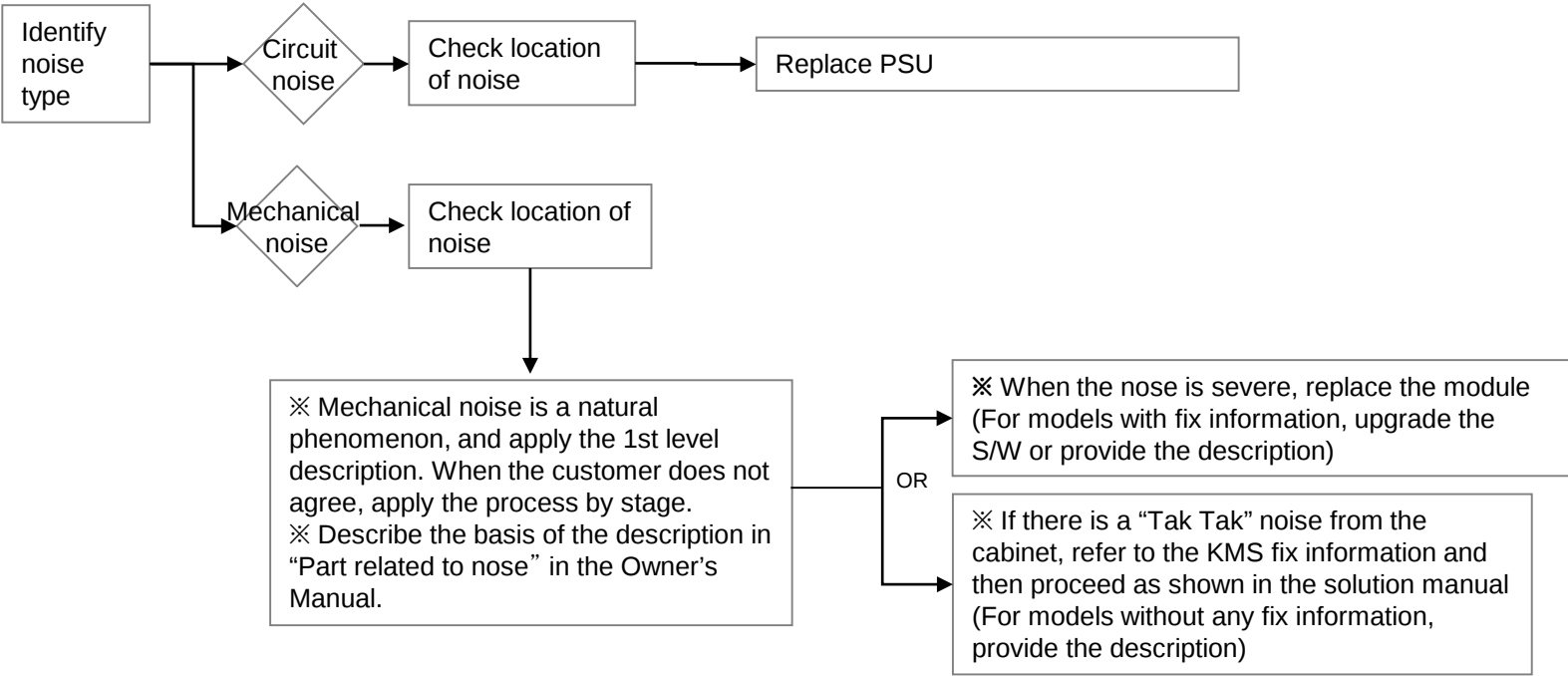
### 3. Wifi operating error



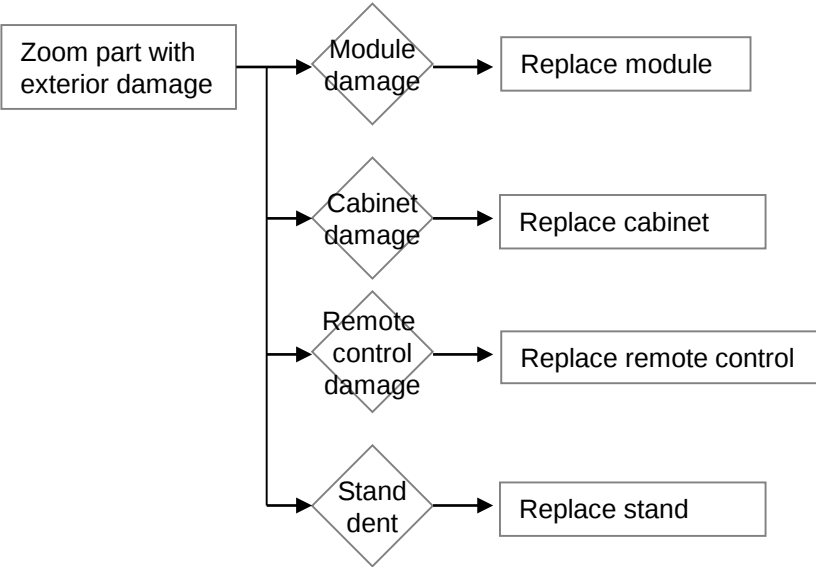
|  | Error symptom | D. Function error                 | Established date |  |  |
|--|---------------|-----------------------------------|------------------|--|--|
|  |               | External device recognition error | Revised date     |  |  |



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



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



# Contents of 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   |                                                                     | 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><br>Defected Type caused by T-Con/<br>Inverter/ Module    | Check Cable (1) ~ (2)                             | A-1/11<br>A-2/11    |                           |
| 9   |                                                                     | Exchange Main Board (1) ~ (3)                     | A-3/11 ~<br>A-5/11  |                           |
| 10  |                                                                     | Exchange Module (1) ~ (3)                         | A-6/11 ~<br>A-8/11  |                           |
| 11  |                                                                     | Exchange T-Con (1) ~ (2)                          | A-9/11 ~<br>A-10/11 | Only using<br>T-con model |
| 12  |                                                                     | Exchange Power Board(PSU)                         | A-11/11             |                           |

**Continue to the next page**

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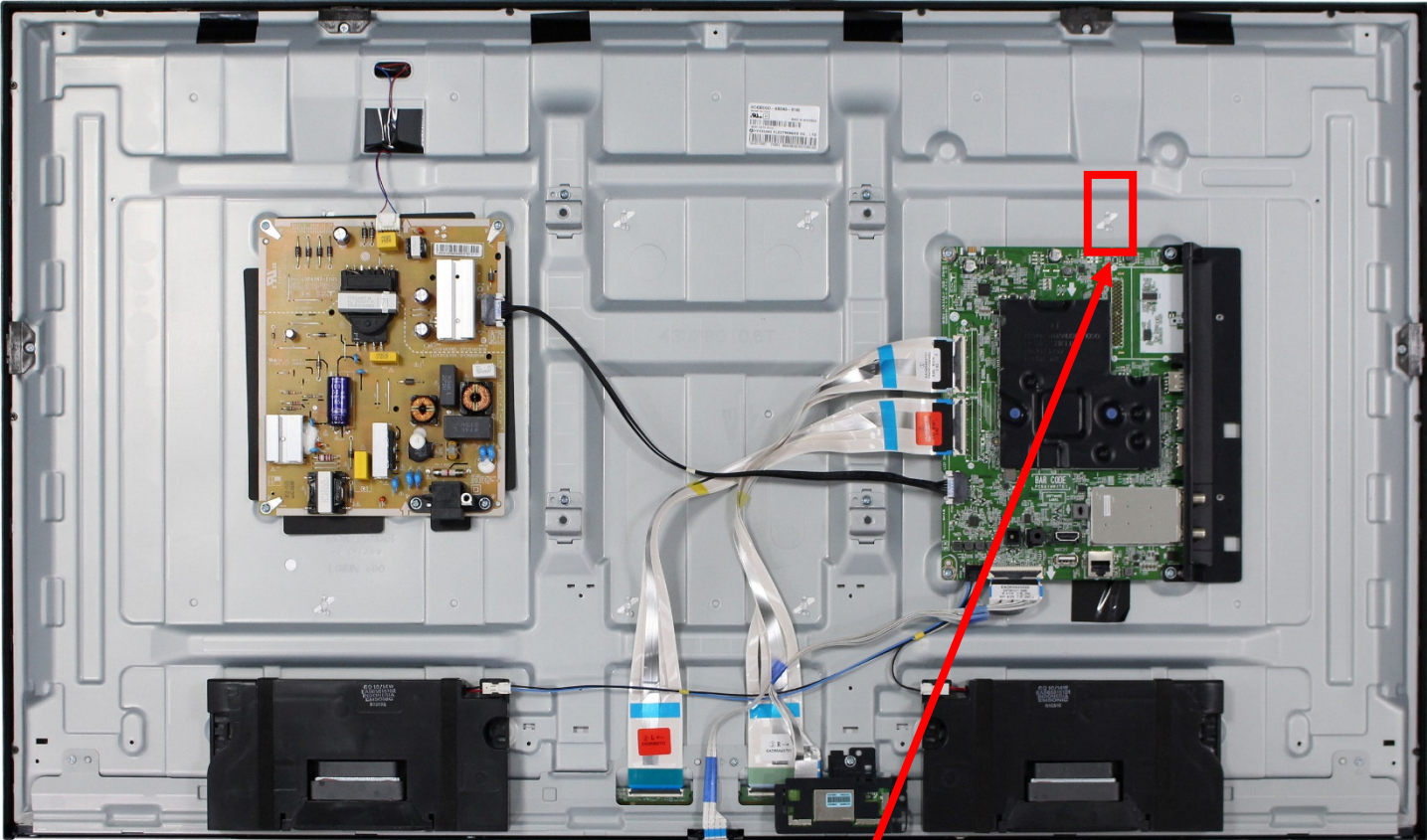
Continued from previous page

| No. | Error symptom                                 | Content                                                    | Page    | Remarks |
|-----|-----------------------------------------------|------------------------------------------------------------|---------|---------|
| 13  | B. Power error_ No power                      | Check front display LED                                    | A17     |         |
| 14  |                                               | Check power input Voltage & ST-BY 7.8V                     | A18     |         |
| 15  | B. Power error_Off when on, off while viewing | POWER OFF MODE checking method                             | A19     |         |
| 16  | C. Audio error_ No audio/Normal video         | Checking method in menu when there is no audio             | A20     |         |
| 17  |                                               | Voltage and speaker checking method when there is no audio | A21     |         |
| 18  | D. Function error                             | Remote control operation checking method                   | A22     |         |
| 19  |                                               | Motion Remote operation checking method                    | A23     |         |
| 20  | E. Etc                                        | How to use the Service remote control                      | A24-A26 |         |
| 21  |                                               | Check items after Main B/D replacement                     | A27     |         |
| 22  |                                               | Adjustment Test pattern - ADJ Key                          | A28     |         |

# Standard Repair Process Detail Technical Manual

|  |               |                                      |                  |  |    |
|--|---------------|--------------------------------------|------------------|--|----|
|  | 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 locations.

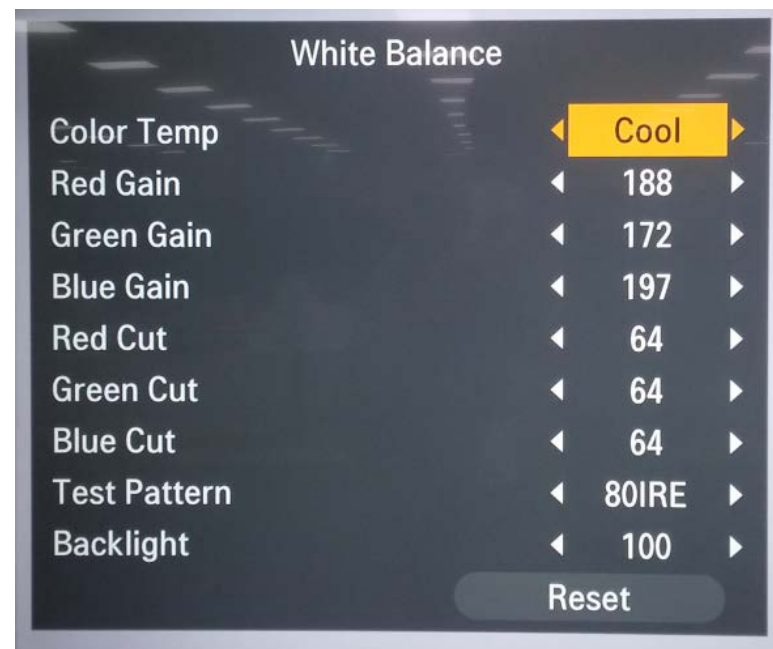
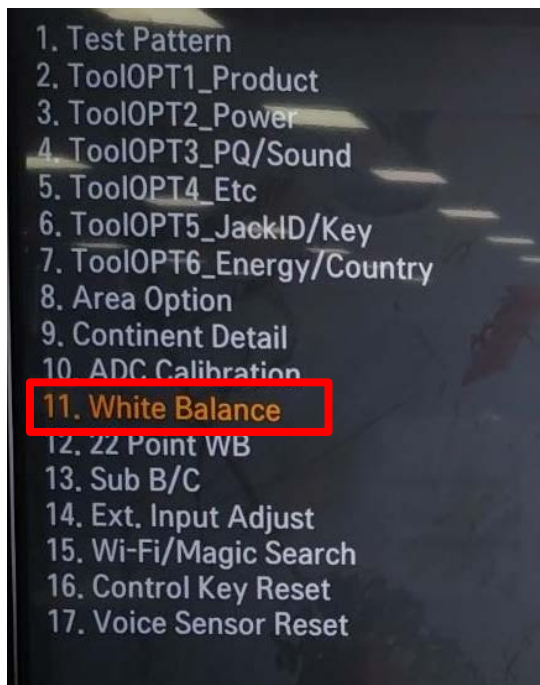
A1



# Standard Repair Process Detail Technical Manual

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

<ALL MODELS>



## Entry method

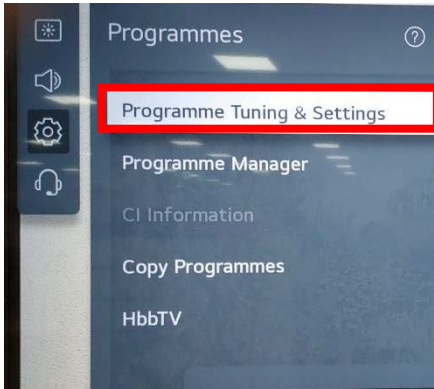
1. Press the ADJ button on the remote control for adjustment.
2. Enter into White Balance.
3. After recording the R, G, B (GAIN, Cut) value of Color Temp( Cool/Medium/Warm), re-enter the value after replacing the MAIN BOARD.



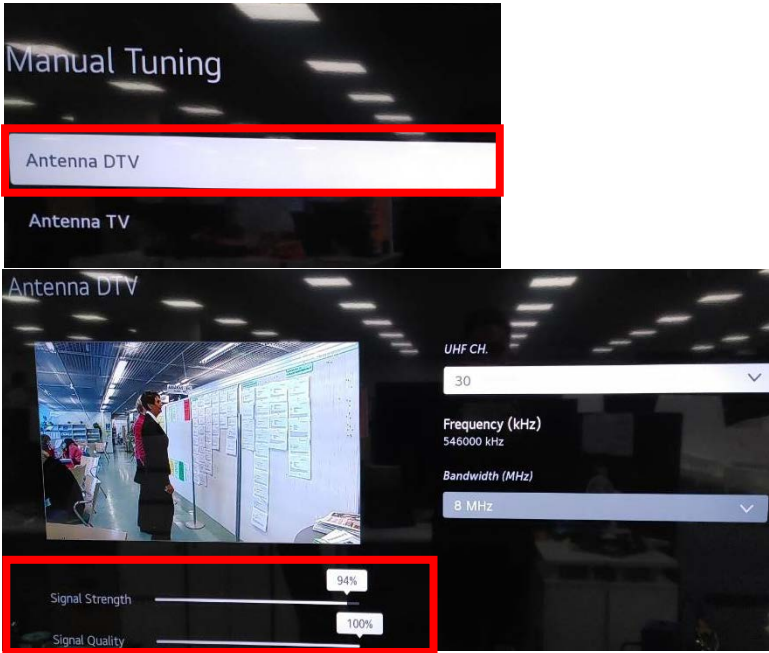
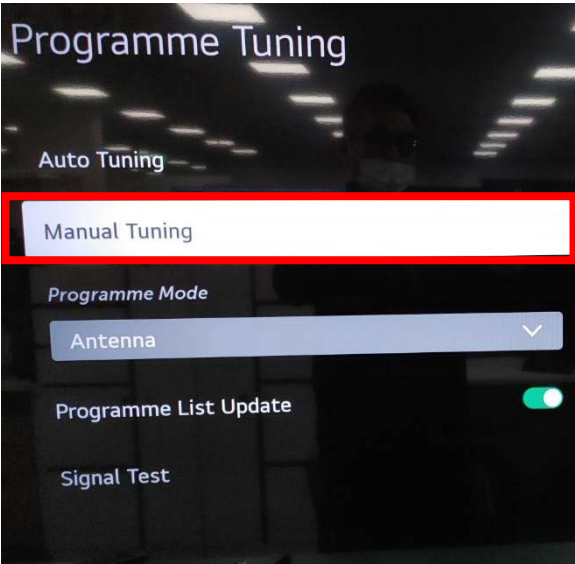
Standard Repair Process Detail Technical Manual

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

<ALL MODELS>



All Setting → General → Programmes  
→ Programme Tuning & Settings  
→ Manual Tuning



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



# Standard Repair Process Detail Technical Manual

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

<ALL MODELS>

## 1. Checking method for remote control for adjustment

Version

```

Instart
Model Name : 65NANO906PA
Serial Number : KEY00000002E
S/W Version : 03.00.10.01
Micom Version : V3.02.5
Boot Version : 0.01.179/0.01.179
UHD BE Version : N/A
Chip Type : LM21U
Wi-Fi Channel/Speed : N/A/USB 2.0
Wi-Fi MAC : EC:6C:9A:5F:54:30
MAC Address : 58:FD:B1:7E:62:DA
IP Address : 0.0.0.0
SFU Key/TPMB Key : OK/OK
Widevine : LGTV21CMTK100103337
ESN Num. : LGTV20214=41001002036
HDCP2(Miracast/HDMI) : OK/OK
RF Receiver Version : 20:15:10:12
Wi-Fi/Magic Search : OK/OK
Debug Status : RELEASE
SIGN Key : PRODKEY
Far Field Voice : NULL
Eye Check : OK
Control Key : OK
Access USB Status : 1/-1(T)/-1(C)
UTT : 7
App History Version : 10 (kalaupapa)
    
```

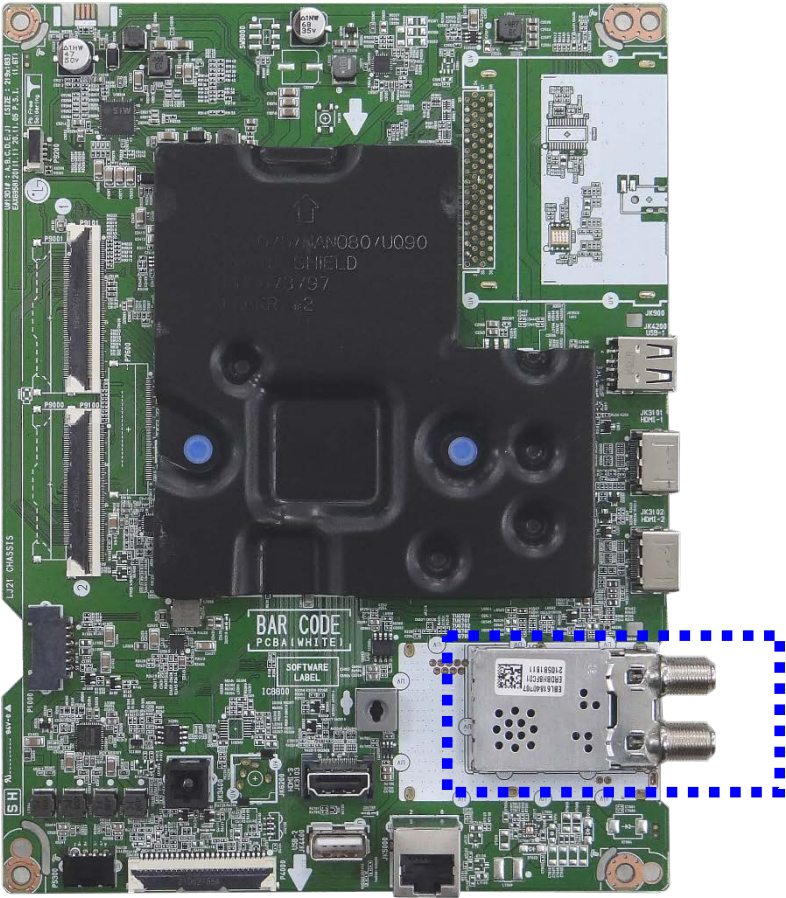


Press the IN-START with the remote control for adjustment.

A4

# 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 |

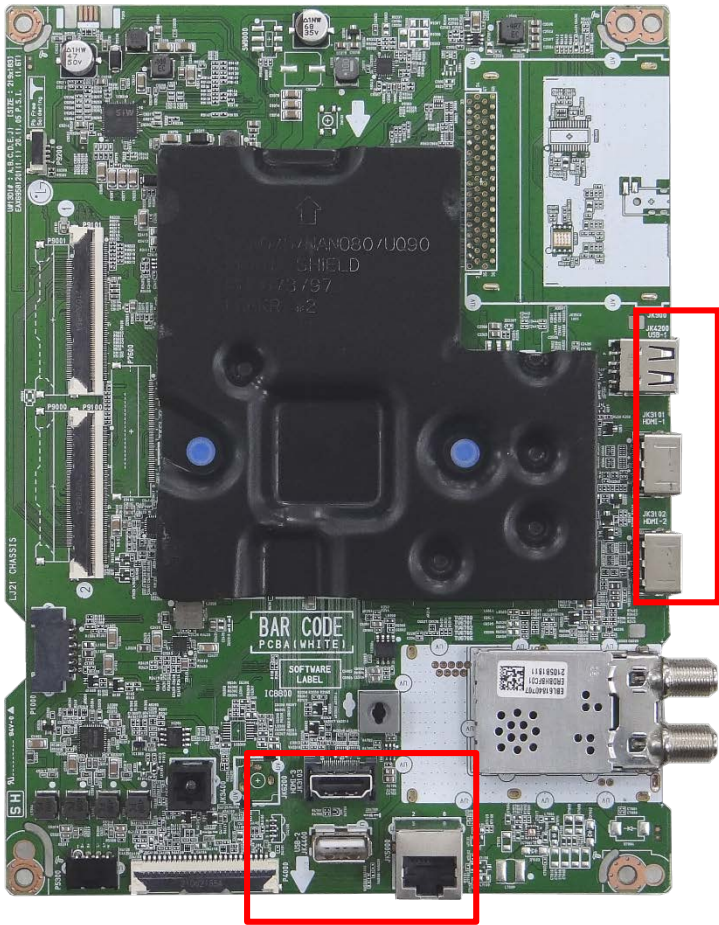


- Checking method:
1. Check the signal strength or check whether the screen is normal when the external device is connected.
  2. After measuring each voltage from power supply, finally replace the MAIN BOARD.

# Standard Repair Process Detail Technical Manual

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

<ALL MODELS>

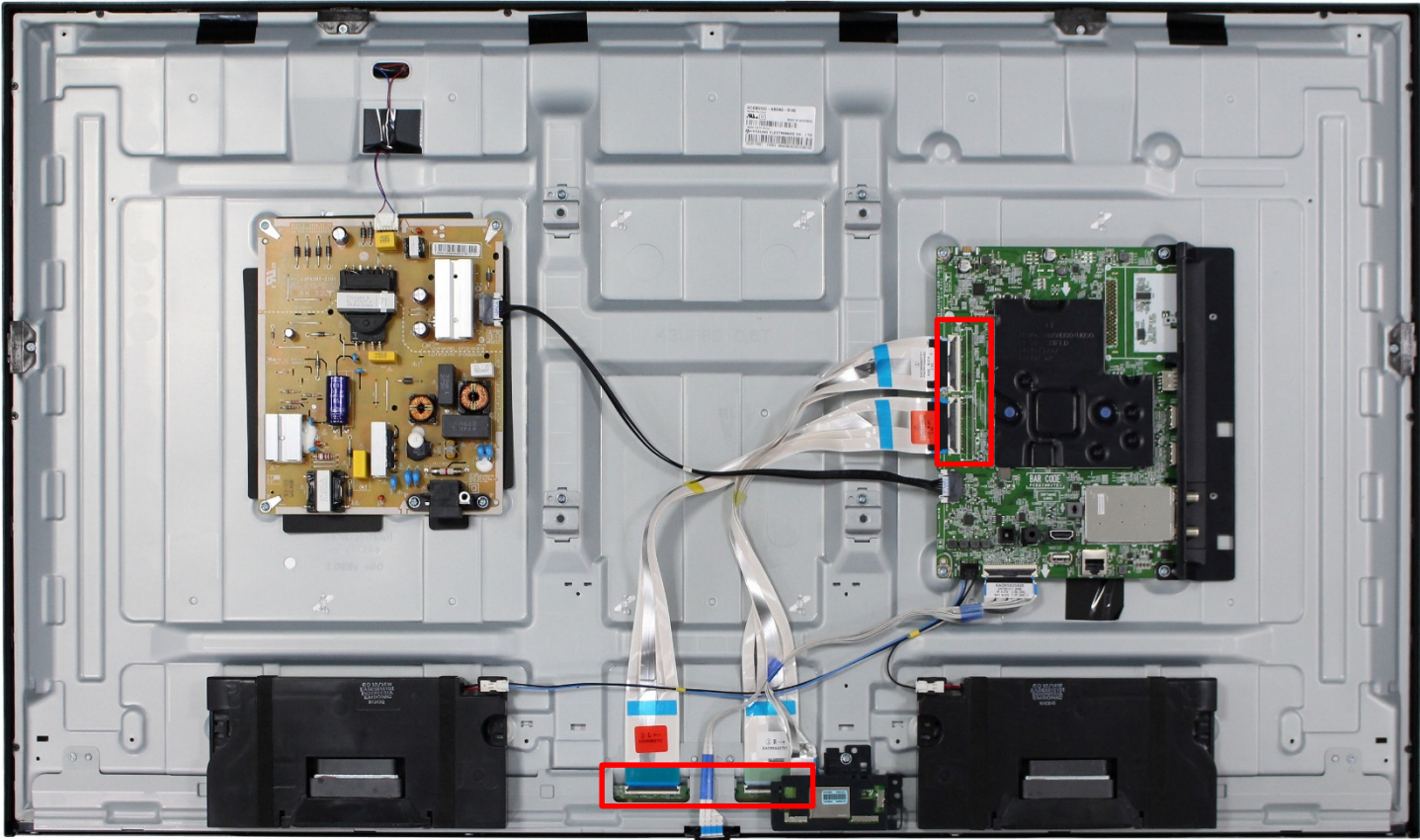


As the part connecting to the external input, check the screen condition by signal



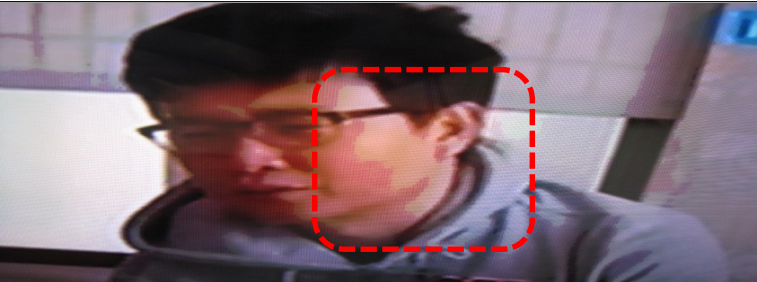
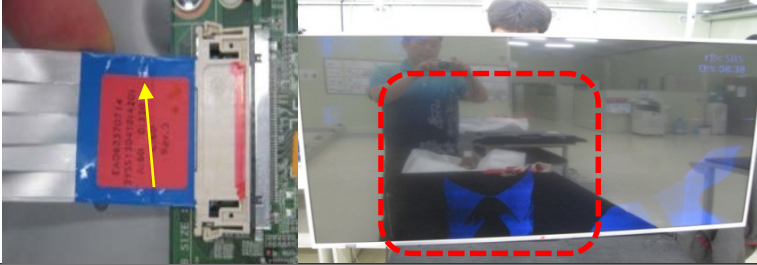
# Standard Repair Process Detail Technical Manual

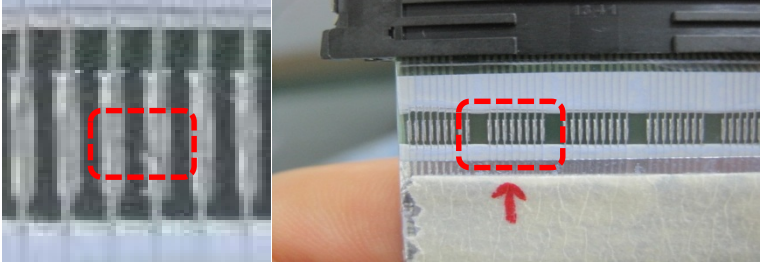
|  |               |                                                       |                  |  |    |
|--|---------------|-------------------------------------------------------|------------------|--|----|
|  | Error symptom | A. Video error_Color error                            | Established date |  |    |
|  | Content       | Check Link Cable(Vx1/EPI/CEDS) reconnection condition | Revised date     |  | A7 |

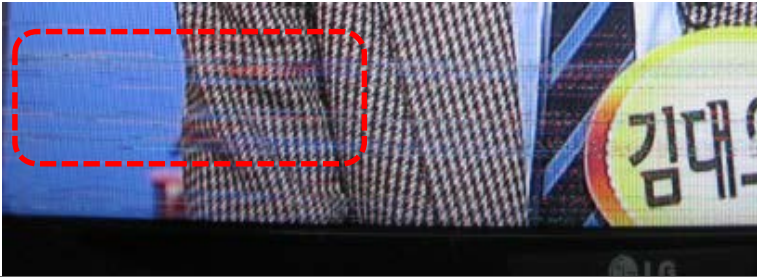
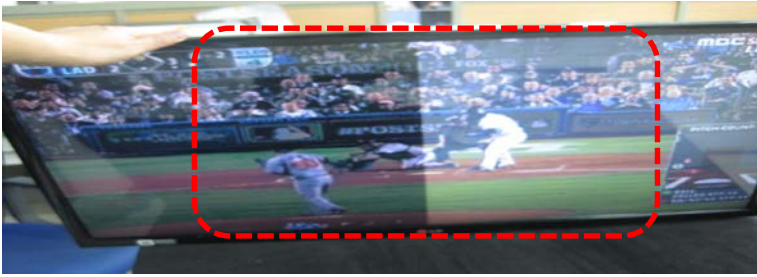
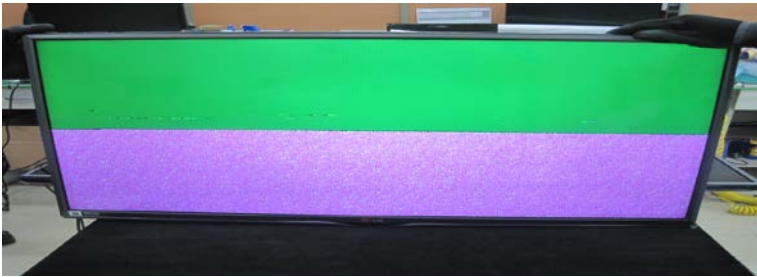


Check the contact condition of the Link Cable, especially dust or mis insertion.



| 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                            |  |

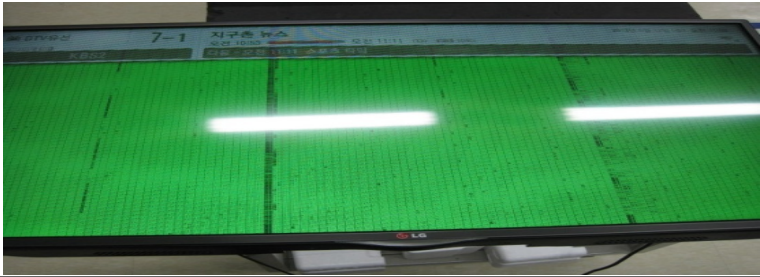
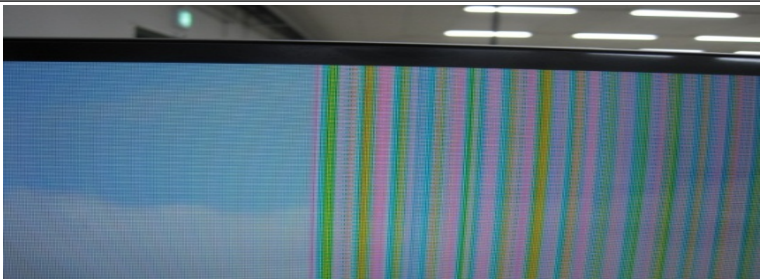
| Item  | Symptom Name | Cause                                   | Symptom Image                                                                         |
|-------|--------------|-----------------------------------------|---------------------------------------------------------------------------------------|
| CABLE | Color spread | FFC connection problem                  |    |
| CABLE | Color spread | FFC connection problem                  |    |
| CABLE | Color spread | FFC connection problem                  |   |
| CABLE | Screen stop  | Due to foreign substance within FFC PIN |  |

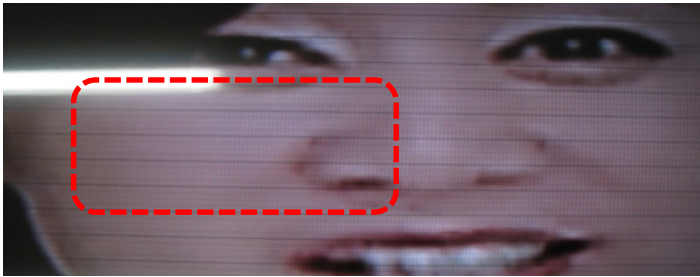
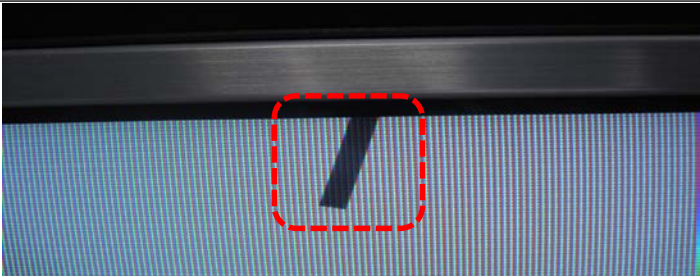
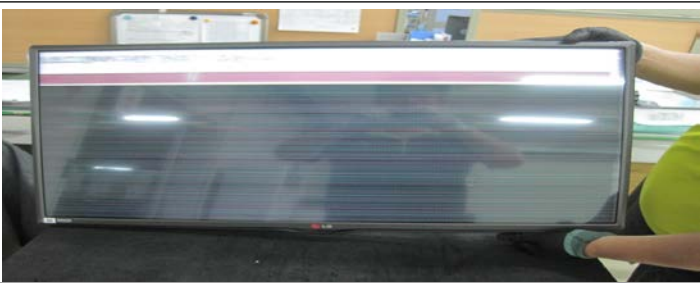
| Item | Symptom Name   | Cause                                                                                | Symptom Image                                                                         |
|------|----------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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<br>Picture problem due to tuner<br>Inner side quality problem |  |

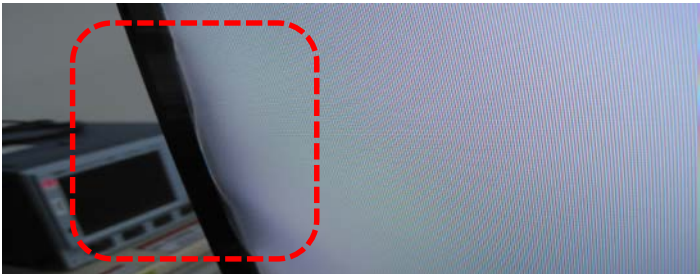
# Appendix. Examples of Symptoms(Main)

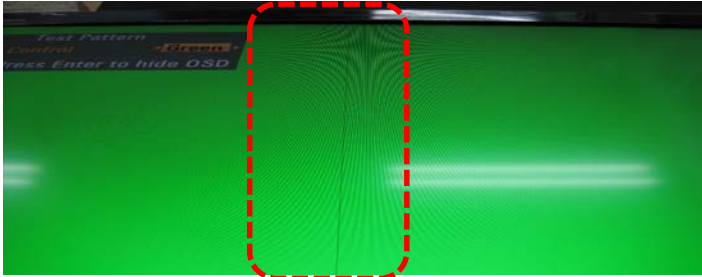
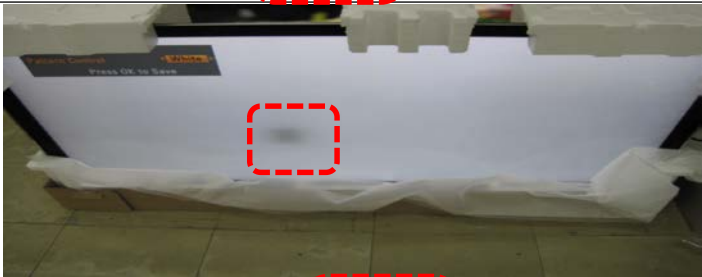
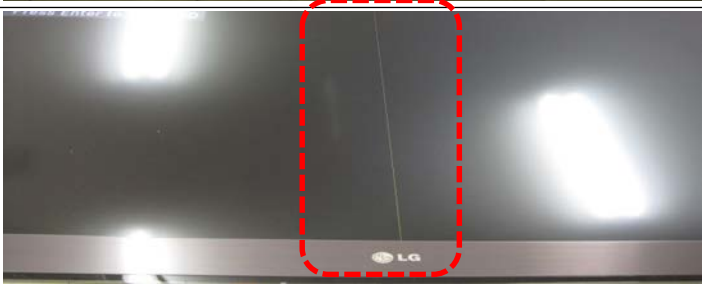
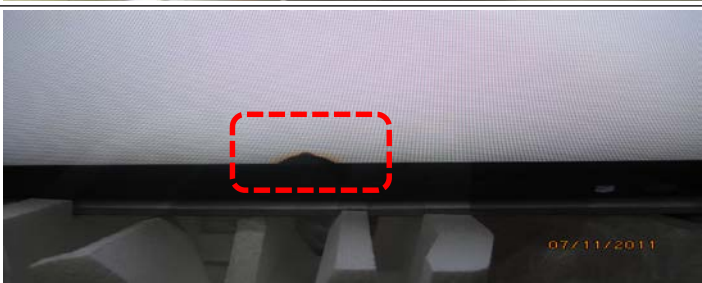
Check parts by symptom

| 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         |  |

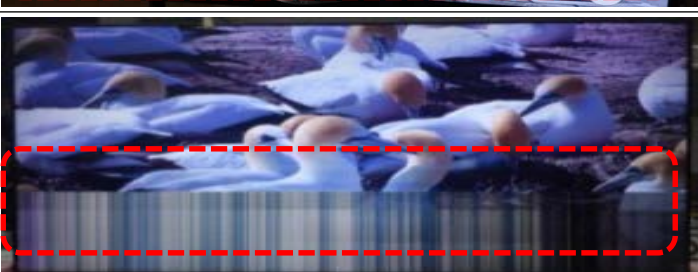
| Item | Symptom Name               | Cause                                                                           | Symptom Image                                                                         |
|------|----------------------------|---------------------------------------------------------------------------------|-------------------------------------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

| 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                             |  |

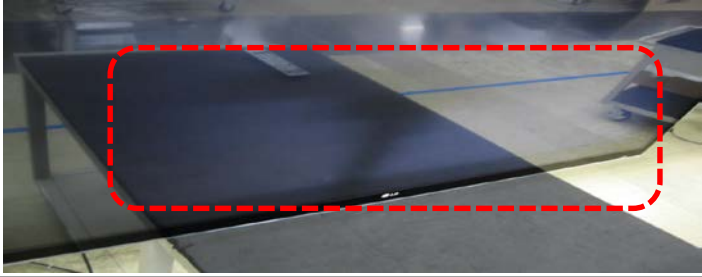
| Item   | Symptom Name       | Cause                                                              | Symptom Image                                                                         |
|--------|--------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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                            |  |

| 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      |  |

Appendix. Examples of Symptoms(Only if using T-con Board) Check parts by symptom

| 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 |  |

**Appendix. Examples of Symptoms(Only if using T-con Board)**    Check parts by symptom

| 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                            |  |

## Appendix : Exchange Power Board (PSU)



No Light

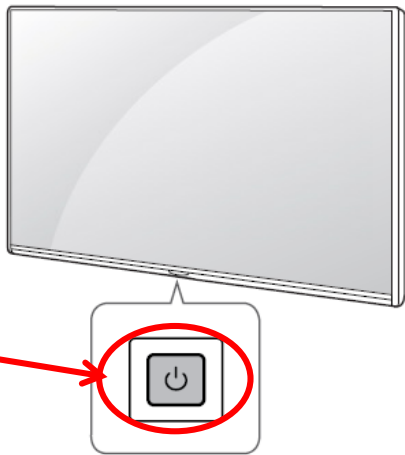


No picture/Sound Ok

# Standard Repair Process Detail Technical Manual

|  |               |                             |                  |  |     |
|--|---------------|-----------------------------|------------------|--|-----|
|  | Error symptom | B. Power error _No power    | Established date |  |     |
|  | Content       | Check front Power Indicator | Revised date     |  | A17 |

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



## Using button



Power On (Press)  
Power Off<sup>1)</sup> (Press and Hold)  
Menu Control (Press<sup>2)</sup>)  
Menu Selection (Press and Hold<sup>3)</sup>)

- 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.



# Standard Repair Process Detail Technical Manual

|  |               |                                          |                  |  |     |
|--|---------------|------------------------------------------|------------------|--|-----|
|  | Error symptom | B. Power error _No power                 | Established date |  |     |
|  | Content       | Check power input voltage and ST-BY 7.8V | Revised date     |  | A18 |

| SET Model        | Power P/N, Name          |
|------------------|--------------------------|
| 55UQ80/81 Series | EAY65895612, LGP55T-21U1 |

## Power Check Sequence

1. AC input Check : SK100 (100~240Vac)
2. PWR-ON Check :
  - SET On : above 3V
  - SET St-by : 0V
3. 13.2V DC Check :
  - SET On : 13.2V
  - SET St-by : 7.8V
4. MS Level Check : MS

| MS Level | Range [V]   | LED On/Off      |
|----------|-------------|-----------------|
| MS (0V)  | 0 ~ 0.25    | Off             |
| MS (2V)  | 1.75 ~ 2.25 | On (Home mode)  |
| MS (3V)  | 2.75 ~ 3.25 | On (Store Mode) |

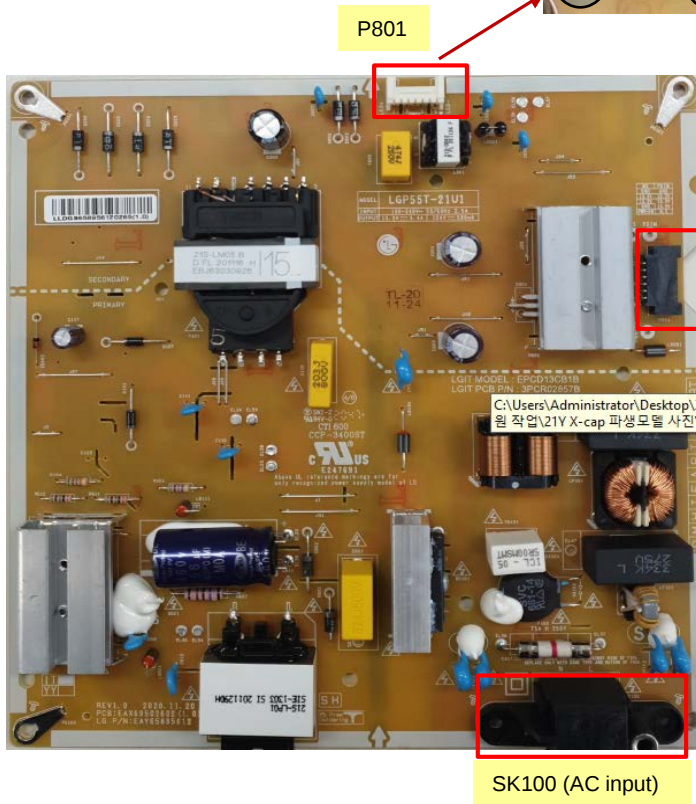
※ Home mode : General Customer  
Store mode : use Store

5. LED voltage Check : P801, Pin 1-7

| Picture Condition : VIVID (Back light 100) |        |
|--------------------------------------------|--------|
| Min                                        | Max    |
| 111.6V                                     | 136.4V |

all condition meets, Power Board OK.

| P801<br>Type : SMAW200A-H07AA2(WH)<br>Maker : YEONHO |            |
|------------------------------------------------------|------------|
| Pin No.                                              | Assignment |
| 1                                                    | LED-       |
| 2                                                    | Remove     |
| 3                                                    | N.C        |
| 4                                                    | Remove     |
| 5                                                    | N.C        |
| 6                                                    | Remove     |
| 7                                                    | LED+       |



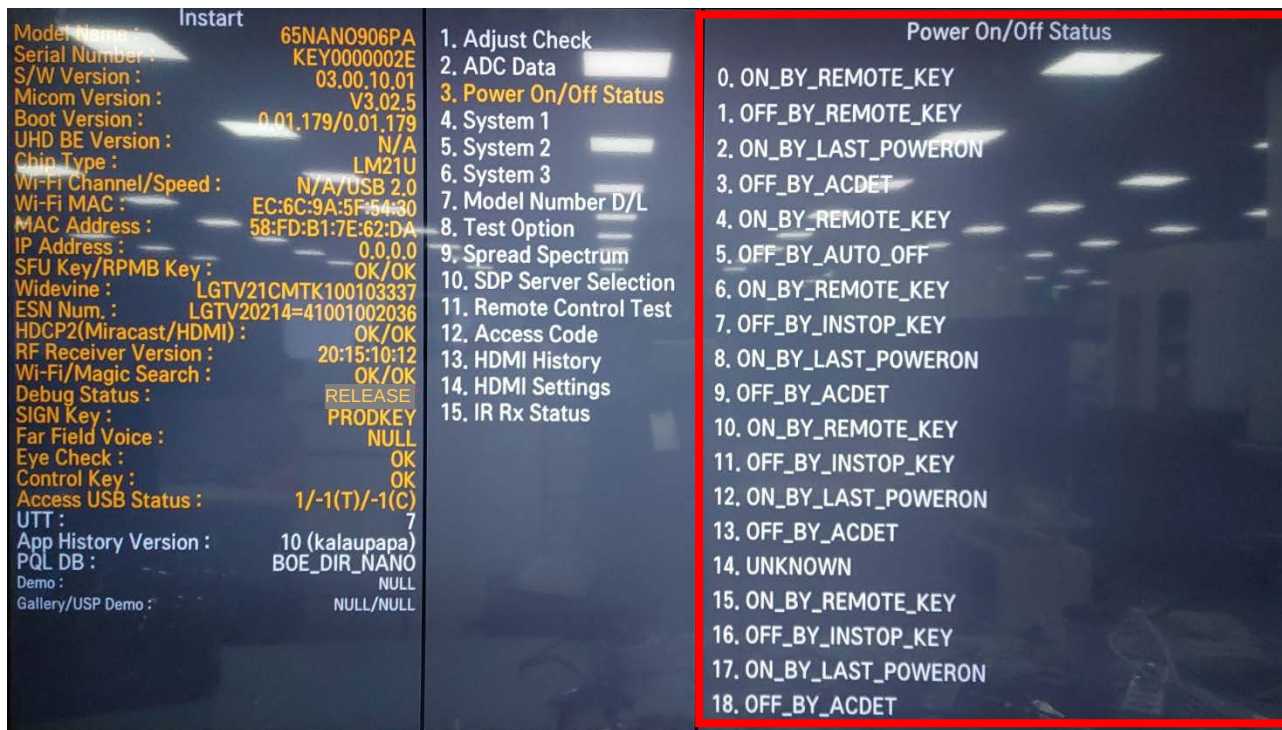
| P201<br>YEONHO<br>(SMAW200-H1255K) |            |         |            |
|------------------------------------|------------|---------|------------|
| Pin No.                            | Assignment | Pin No. | Assignment |
| 1                                  | PWR-ON     | 2       | N.C        |
| 3                                  | GND        | 4       | 13.2V      |
| 5                                  | 13.2V      | 6       | 13.2V      |
| 7                                  | 13.2V      | 8       | 13.2V      |
| 9                                  | GND        | 10      | GND        |
| 11                                 | MS         | 12      | PDIM       |

※ Depending on Model Power Board is different.  
But Interface(P801, P201) and Spec is same

# Standard Repair Process Detail Technical Manual

|  |               |                                                  |                  |  |     |
|--|---------------|--------------------------------------------------|------------------|--|-----|
|  | Error symptom | B. Power error _Off when on, off whiling viewing | Established date |  |     |
|  | Content       | POWER OFF MODE checking method                   | Revised date     |  | A19 |

<ALL MODELS>



## Entry method

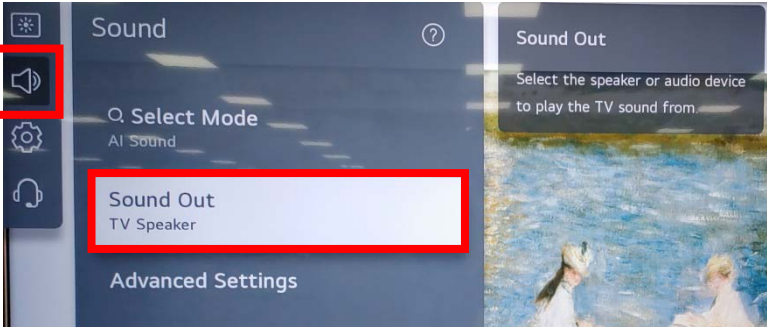
1. Press the IN-START button of the remote control for adjustment.
2. Check the entry into adjustment item 3.



# Standard Repair Process Detail Technical Manual

|  |               |                                                |                  |  |     |
|--|---------------|------------------------------------------------|------------------|--|-----|
|  | Error symptom | C. Audio error_No audio/Normal video           | Established date |  |     |
|  | Content       | Checking method in menu when there is no audio | Revised date     |  | A20 |

<ALL MODELS>



## Checking method

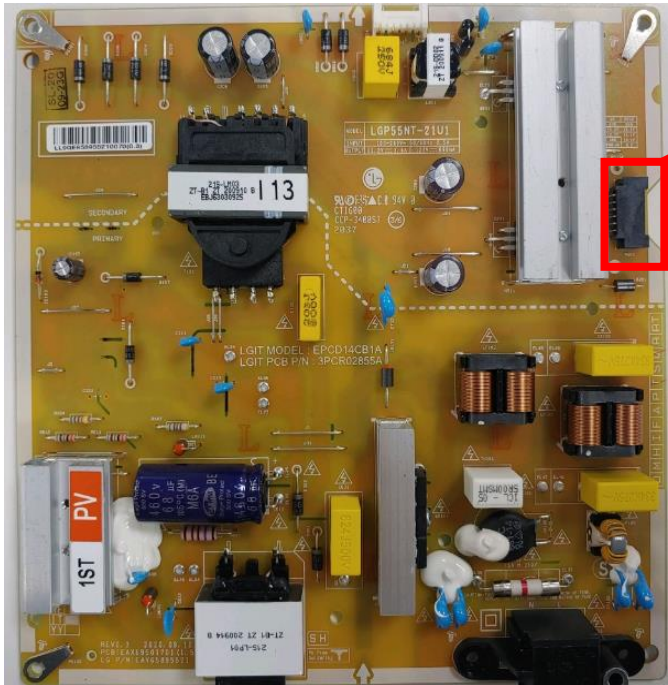
1. Press the Setting button on the remote control.
2. Select the Sound function of the Menu.
3. Select the Sound Out.
4. Select TV Speaker.



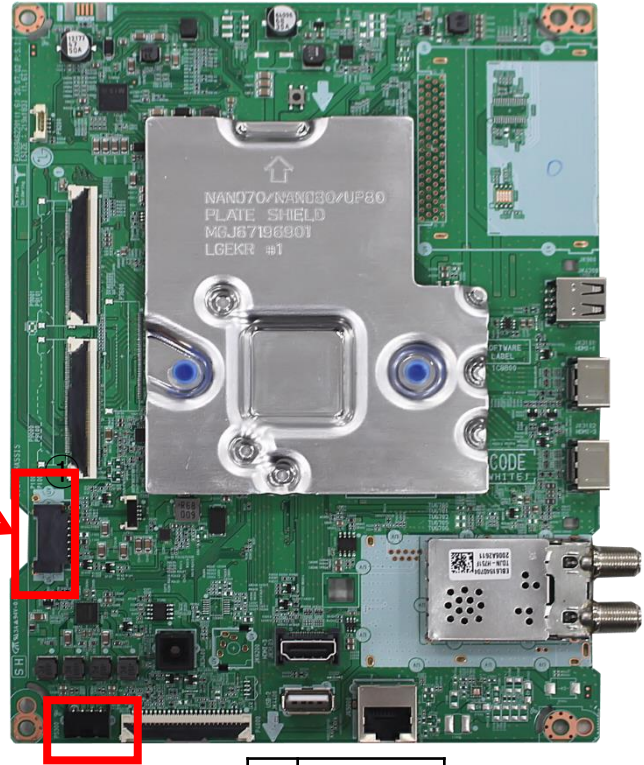
# Standard Repair Process Detail Technical Manual

|  |               |                                                            |                  |  |     |
|--|---------------|------------------------------------------------------------|------------------|--|-----|
|  | Error symptom | C. Audio error_No audio/Normal video                       | Established date |  |     |
|  | Content       | Voltage and speaker checking method when there is no audio | Revised date     |  | A21 |

| SET Model     | Power P/N, Name           |
|---------------|---------------------------|
| 55UQ80 Series | EAY65895522, LGP55NT-21U1 |



②



③

|   |          |
|---|----------|
| 1 | SPK_R-FT |
| 2 | SPK_R+FT |
| 3 | SPK_L-FT |
| 4 | SPK_L+FT |

Checking order when there is no audio

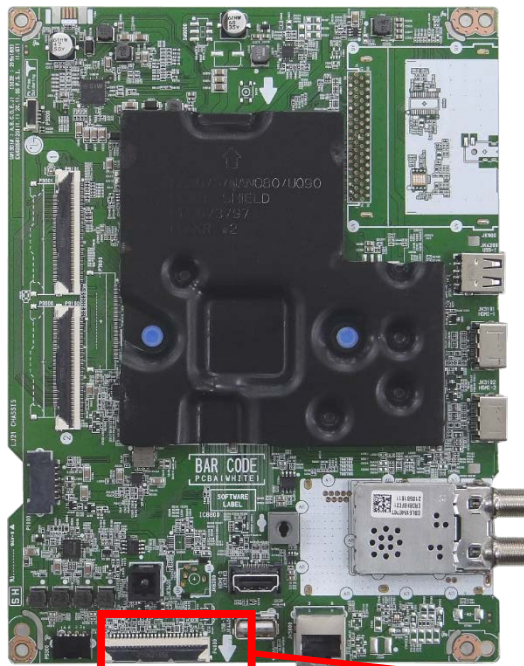
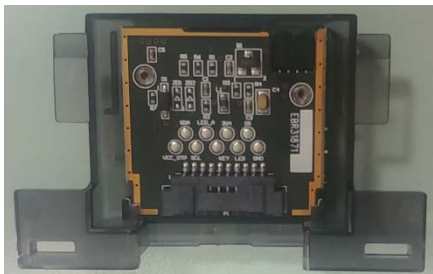
1. Check the contact condition of or 13.2V connector of Main Board.
2. Measure the 13.2V input voltage supplied from Power Board.  
(If there is no input voltage, remove and check the connector.)
3. Connect the tester RX1 to the speaker terminal and if you hear the Chik Chik sound when you touch the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

# Standard Repair Process Detail Technical Manual

|  |               |                                          |                  |  |     |
|--|---------------|------------------------------------------|------------------|--|-----|
|  | Error symptom | D. Function error                        | Established date |  |     |
|  | Content       | Remote control operation checking method | Revised date     |  | A22 |

①

IR & EYE Sensor



②

| Pin | Pin name            |
|-----|---------------------|
| 1   | VCC                 |
| 2   | WIFI_DM             |
| 3   | WIFI_DP             |
| 4   | GND                 |
| 5   | WOL/WIFI_ON         |
| 6   | VCC                 |
| 7   | WIFI_SUSPEND/RESUEM |
| 8   | GND                 |
| 9   | COMBO_RESET         |
| 10  | BT_WAKEUP_HOST      |
| 11  | GND                 |
| 12  | VCC                 |
| 13  |                     |
| 14  |                     |
| 15  |                     |
| 16  | EYE_SDA             |
| 17  | EYE_SCL             |
| 18  | GND                 |
| 19  | IR                  |
| 20  | LED_R               |
| 21  | GND                 |
| 22  | VCC                 |
| 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 22 pin. (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.

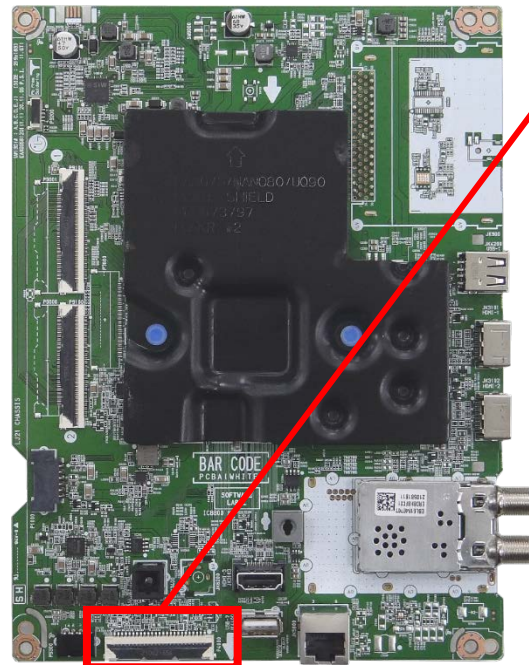
# Standard Repair Process Detail Technical Manual

|  |               |                                          |                  |  |     |
|--|---------------|------------------------------------------|------------------|--|-----|
|  | Error symptom | D. Function error                        | Established date |  |     |
|  | Content       | Remote control operation checking method | Revised date     |  | A23 |

## ① Wifi & BT Front



## Wifi & BT Rear



③

| Pin | Pin name            |
|-----|---------------------|
| 1   | VCC                 |
| 2   | WIFI_DM             |
| 3   | WIFI_DP             |
| 4   | GND                 |
| 5   | WOL/WIFI_ON         |
| 6   | VCC                 |
| 7   | WIFI_SUSPEND/RESUEM |
| 8   | GND                 |
| 9   | COMBO_RESET         |
| 10  | BT_WAKEUP_HOST      |
| 11  | GND                 |
| 12  | VCC                 |
| 13  |                     |
| 14  |                     |
| 15  |                     |
| 16  | EYE_SDA             |
| 17  | EYE_SCL             |
| 18  | GND                 |
| 19  | IR                  |
| 20  | LED_R               |
| 21  | GND                 |
| 22  | VCC                 |
| 23  | KEY2                |
| 24  | MIC_DATA            |
| 25  | MIC_CLK             |

## Checking order to check motion remote/wifi

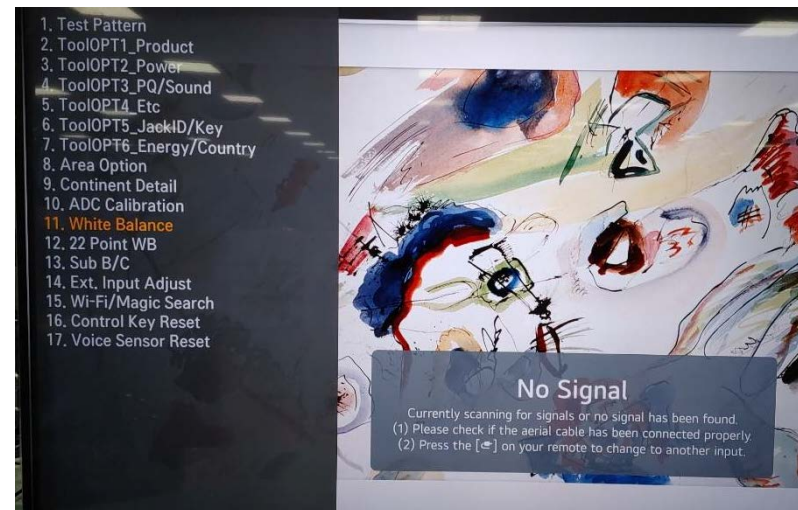
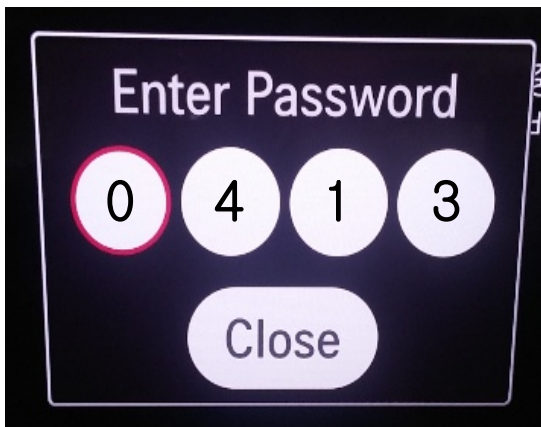
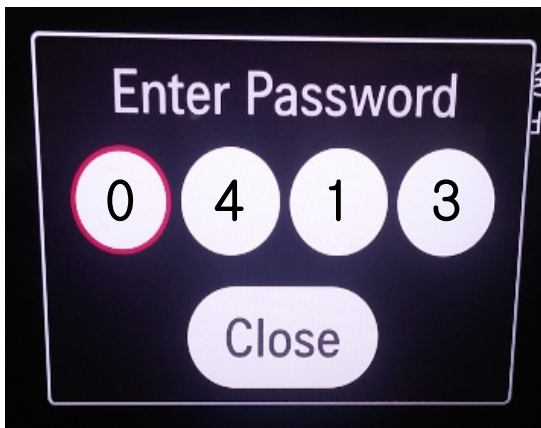
### Checking order

1. Check BT/Wifi cable condition between BT/Wifi assy & Main board.( Check ① and ②)
2. Check the 3.5V on the terminal 1. (③)

# Standard Repair Process Detail Technical Manual

|  |               |                                       |                  |  |     |
|--|---------------|---------------------------------------|------------------|--|-----|
|  | Error symptom | E. Etc                                | Established date |  |     |
|  | Content       | How to use the Service remote control | Revised date     |  | A24 |

## 1. How to access the remote control



# Standard Repair Process Detail Technical Manual

|  |               |                                       |                  |  |     |
|--|---------------|---------------------------------------|------------------|--|-----|
|  | Error symptom | E. Etc                                | Established date |  |     |
|  | Content       | How to use the Service remote control | Revised date     |  | A25 |

## 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<br>All KEY function [PIP PR-][PIP PR+][SWAP]<br>[PIP INPUT][DVI] KEY Function |
| P-ONLY (Added Function)   | Changed to factory mode<br>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=>Auto Screen=>4:3=>16:9                                                                                       |
| PSM                       | Changes in the order of Bright Picture=>Easy Picture=>Cinema=>Spots=>Game=><br>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<br>For some Model, access to the Test Pattern                                                                                            |
| TILT                      | Used for screen tilting change (Access to the old PDP control mode)                                                                                                  |

A25

# Standard Repair Process Detail Technical Manual

|  | Error symptom | E. Etc                                | Established date |  |     |
|--|---------------|---------------------------------------|------------------|--|-----|
|  | Content       | How to use the Service remote control | Revised date     |  | A26 |



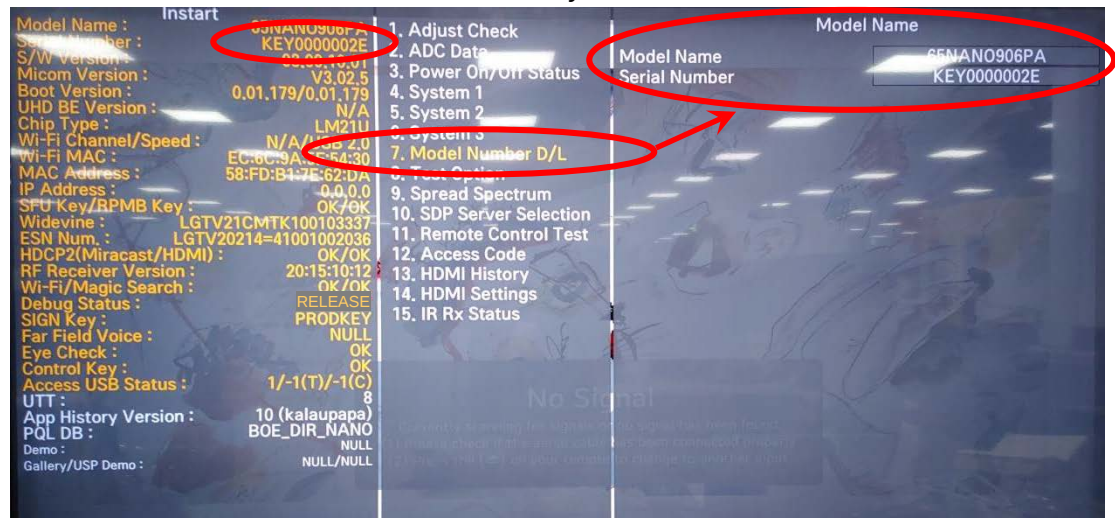
|                               |                                                                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B-TOOTH<br>(Added function)   | Connected to Blue-Tooth                                                                                                                                                          |
| IN-START                      | Model Nam ex) 42PG60D-NA Current Model Name S/W Version ex)<br>V03.11.0 Current S/W version<br>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<br>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<br>(Add function) | Connects to HDMI 1,2,3,4                                                                                                                                                         |
| DVI (Add function)            | Connects to DVI                                                                                                                                                                  |

# Standard Repair Process Detail Technical Manual

|  |               |                                        |                  |  |     |
|--|---------------|----------------------------------------|------------------|--|-----|
|  | Error symptom | E. Etc                                 | Established date |  |     |
|  | Content       | Check items after Main B/D replacement | Revised date     |  | A27 |

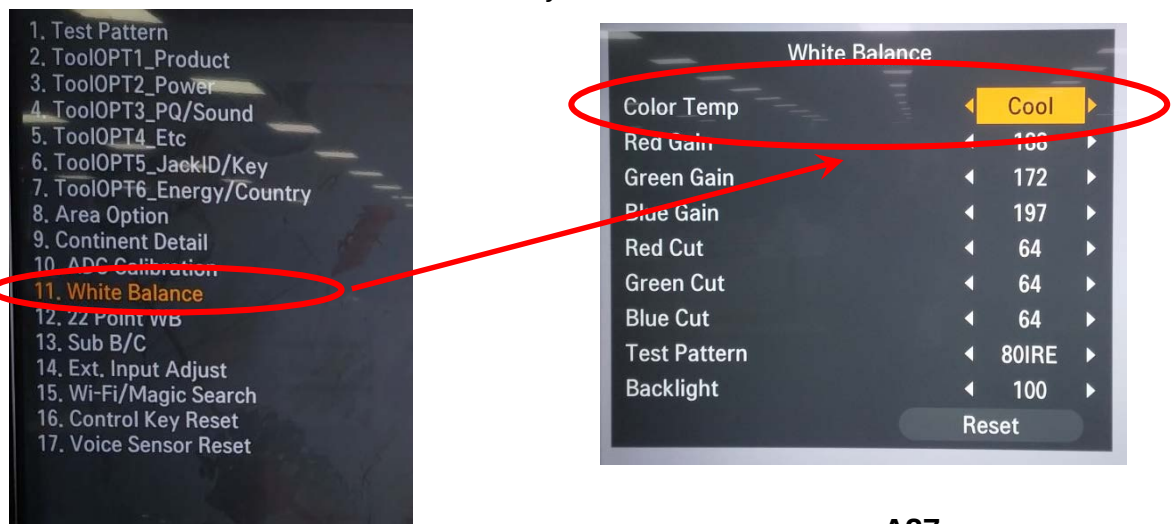
Check items after Main B/D(Model Number D/L, White Balance)

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.



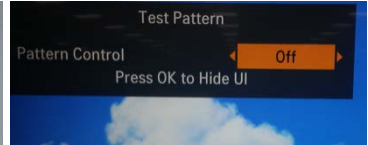
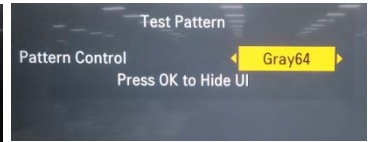
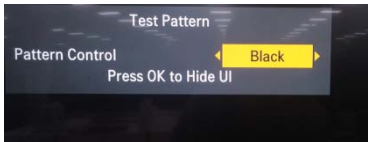
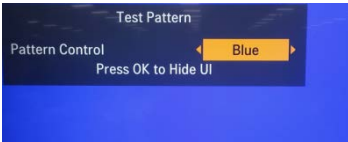
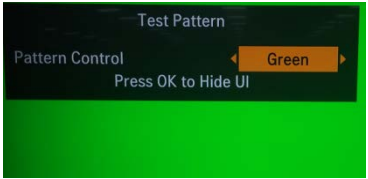
No.11 Select White Balance  
- Record the R, G, B (GAIN, Cut) value of the color temperature before main board replacement.  
After replacing the main board, key in the recorded value.

# Standard Repair Process Detail Technical Manual

|  |               |                                   |                  |  |     |
|--|---------------|-----------------------------------|------------------|--|-----|
|  | Error symptom | E. Etc                            | Established date |  |     |
|  | Content       | Adjustment Test pattern - ADJ Key | Revised date     |  | A28 |



1. Test Pattern
2. ToolOPT1\_Product
3. ToolOPT2\_Power
4. ToolOPT3\_PQ/Sound
5. ToolOPT4 Etc
6. ToolOPT5\_JackID/Key
7. ToolOPT6\_Energy/Country
8. Area Option
9. Continent Detail
10. ADC Calibration
11. White Balance
12. 22 Point WB
13. Sub B/C
14. Ext. Input Adjust
15. Wi-Fi/Magic Search
16. Control Key Reset
17. Voice Sensor Reset



You can view 9 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!)



