Internal Use Only

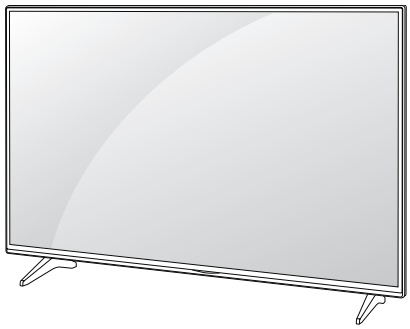
# LED TV
# SERVICE MANUAL

**CHASSIS : UA65R**

**MODEL : 65UH615*** **65UH615*-U***

**65UH6030** **65UH6030-UC**

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



P/NO : MFL69413322 (1607-REV01)

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# SAFETY PRECAUTIONS

## IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

### General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

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

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

**Before returning the receiver to the customer,**

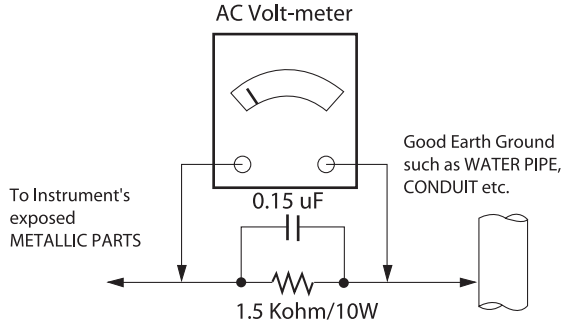
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

**Leakage Current Cold Check(Antenna Cold Check)**
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

**Leakage Current Hot Check** (See below Figure)
Plug the AC cord directly into the AC outlet.

**Do not use a line Isolation Transformer during this check.**
Connect 1.5 K / 10 watt resistor in parallel with a 0.15 uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

**Leakage Current Hot Check circuit**




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

# SERVICING PRECAUTIONS

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

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
   **CAUTION**: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10 % (by volume) Acetone and 90 % (by volume) isopropyl alcohol (90 % - 99 % strength)
   **CAUTION**: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
8. Use with this receiver only the test fixtures specified in this service manual.
   **CAUTION**: Do not connect the test fixture ground strap to any heat sink in this receiver.

**Electrostatically Sensitive (ES) Devices**

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

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

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500 °F to 600 °F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500 °F to 600 °F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500 °F to 600 °F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   **CAUTION**: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

**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 spec sheet is applied to the LED TV used UA65R chassis

## 2. Test condition

Each part is tested as below without special notice.

(1) Temperature : 25 ºC ± 5 ºC(77±9ºF), CST : 40 ºC±5 ºC
(2) Relative Humidity: 65 % ± 10 %
(3) Power Voltage
Standard input voltage (100~240V@ 50/60Hz)
* Standard Voltage of each products is marked by models.
(4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
(5) The receiver must be operated for about 20 minutes prior to the adjustment.

## 3. Test method

(1) Performance: LGE TV test method followed
(2) Demanded other specification
- Safety : UL, CSA, CE, IEC specification
- EMC : FCC, ICES, CE, IEC specification
- Wireless : Wireless HD Specification (Option)

## 4. General Specification

### 4.1. Model Specification

| No | Item | | Specification | Remark |
|---|---|---|---|---|
| 1 | Market | | North America | |
| 2 | Broadcasting system | | ATSC / NTSC-M, 64 & 256 QAM | |
| 3 | Available Channel | | VHF : 2~13 | |
| | | | UHF : 14~69 | |
| | | | DTV : 2-69 | |
| | | | CATV : 1 ~ 135 | |
| | | | CADTV : 1 ~ 135 | |
| 4 | Receiving system | | Digital : ATSC, 64 & 256 QAM<br>Analog : NTSC-M | |
| 5 | Video Input | | NTSC-M | Rear RCA |
| 6 | Component Input | | $Y/C_b/C_r$, $Y/P_b/P_r$ | Rear RCA |
| 7 | HDMI Input | HDMI 3 | DTV format, Support HDCP2.2/ PC<br>(HDMI version 1.4) | Side, |
| | | HDMI 2 | DTV format, Support HDCP2.2/ PC<br>(HDMI version 1.4/2.0) | Side, Support ARC only HDMI2 |
| | | HDMI 1 | DTV format, Support HDCP2.2/ PC<br>(HDMI version 1.4/2.0) | Side, |
| 8 | Audio Input | | Component / AV Audio | L/R Input ; Rear<br>Component and av use same jack ; Rear |
| 9 | SPDIF out(1EA) | | Optical Audio out | Rear (1EA), |
| 10 | USB Input(3EA) | | EMF, DivX HD, For SVC (download) | Side(1)/Rear(2) :JPEG, MP3, DivX HD<br>(Exception, UA65S: USB 1EA) |

## 4.2. Module Specification

| No | Item | Specification | | Remark |
|---|---|---|---|---|
| 1 | Display Screen Device | 65” wide color display module | | LC650EGE-FJM1 (2D,T120)<br>LC650EGE-DJM2 (2D,T120)<br>LC650EGE-FJM3 |
| | | 60” wide color display module | | HC700EQF-VHEQ1 (2D,M120) |
| | | 58” wide color display module | | LC650EQF-FHM1 (2D,T240)<br>LC650EQF-FHM2 (2D,T240)<br>LC650EQF-PHF1 (3D,T240)<br>LC650VQF-FHF1<br>(3D,T240,Curved) |
| | | 55” wide color display module | | LC600EQF-FHM1 (2D,T240)<br>LC600EQF-PHF1 (3D,T240) |
| | | 50” wide color display module | | LC550EQE-FHM1 (2D,T120)<br>LC550EQE-FHM2 (2D,T120)<br>LC550EQE-PHF1 (3D,T120)<br>LC550VQF-FHF1<br>(3D,T240,Curved) |
| | | 49” wide color display module | | LC490EQE-FHM1 (2D,T120)<br>LC490EQE-FHM2 (2D,T120)<br>LC490EQE-XHF1 (3D,T120) |
| | | 43” wide color display module | | LC430EQE-FHM1 (2D,T120)<br>LC430EQE-FHM2 (2D,T120) |
| | | 40” wide color display module | | V400DK1-KE1(2D,T120) |
| 2 | Aspect Ratio | 16:9 | | All |
| 4 | Operating Environment | TFT | 1) Temp. : 0 ~ 40 deg<br>2) Humidity : 0 ~ 85% | LGE SPEC |
| | | ALEF | Temp. : 0 ~ 50 deg<br>Humidity : 20 ~ 90% | |
| 5 | Storage Environment | TFT | Temp. : -20 ~ 60 deg<br>Humidity : 10 ~ 90% | |
| | | ALEF | Temp. : -20 ~ 60 deg<br>Humidity : 10 ~ 90% | |
| 6 | Input Voltage | AC100 ~ 240V, 50/60Hz | | |
| 7 | Display Colors | 1.07 B (10-bit) | | LGD |
| | | 1.07G colors (8-bit+FRC) | | V580DJ2-KS5 |
| | | 1.067G | | V500DJ2-KS5 |
| | Surface Treatment | Hard coating (2H), Anti-glare | | |

# 5. External input format

## 5.1. 2D Mode

### 5.1.1. Component input(Y, CB/PB, CR/PR)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed |
|---|---|---|---|---|---|
| 1 | 720*480 | 15.73 | 60 | 13.5135 | SDTV ,DVD 480I |
| 2 | 720*480 | 15.73 | 59.94 | 13.5 | SDTV ,DVD 480I |
| 3 | 720*480 | 31.50 | 60 | 27.027 | SDTV 480P |
| 4 | 720*480 | 31.47 | 59.94 | 27.0 | SDTV 480P |
| 5 | 1280*720 | 45.00 | 60.00 | 74.25 | HDTV 720P |
| 6 | 1280*720 | 44.96 | 59.94 | 74.176 | HDTV 720P |
| 7 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I |
| 8 | 1920*1080 | 33.72 | 59.94 | 74.176 | HDTV 1080I |
| 9 | 1920*1080 | 67.500 | 60 | 148.50 | HDTV 1080P |
| 10 | 1920*1080 | 67.432 | 59.94 | 148.352 | HDTV 1080P |

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

| No. | Resolution | H-freq(kHz) | V-freq.(kHz) | Pixel clock(MHz) | Proposed | |
|---|---|---|---|---|---|---|
| | HDMI-PC | | | | | DDC |
| 1 | 640*350 | 31.46 | 70.09 | 25.17 | EGA | X |
| 2 | 720*400 | 31.46 | 70.08 | 28.32 | DOS | O |
| 3 | 640*480 | 31.46 | 59.94 | 25.17 | VESA(VGA) | O |
| 4 | 800*600 | 37.87 | 60.31 | 40.00 | VESA(SVGA) | O |
| 5 | 1024*768 | 48.36 | 60.00 | 65.00 | VESA(XGA) | O |
| 6 | 1152*864 | 54.34 | 60.05 | 80.00 | VESA | O |
| 7 | 1280*1024 | 63.98 | 60.02 | 108.00 | VESA (SXGA) | O |
| 8 | 1360*768 | 47.71 | 60.01 | 85.50 | VESA (WXGA) | O |
| 9 | 1920*1080 | 67.5 | 60 | 148.5 | WUXGA(Reduced Blanking) | O |
| 10 | 3840*2160 | 67.5 | 30 | 297.00 | Only UD Model | O |
| 11 | 3840*2160 | 56.25 | 25.00 | 297.00 | Only UD Model | O |
| 12 | 3840*2160 | 54 | 24 | 297.00 | Only UD Model | O |
| 13 | 4096*2160 | 53.95 | 23.97 | 297 | Only UD Model | O |
| 14 | 4096*2160 | 54 | 24 | 297 | Only UD Model | O |

| | HDMI-DTV | | | | |
|---|---|---|---|---|---|
| 1 | 640 * 480 | 31.46 | 59.94 | 25.125 | SDTV 480P |
| 2 | 640 * 480 | 31.5 | 60 | 25.125 | SDTV 480P |
| 3 | 720 * 480 | 31.5 | 60 | 27.027 | SDTV 480P |
| 4 | 720 * 480 | 31.47 | 59.94 | 27.00 | SDTV 480P |
| 5 | 1280*720 | 45.00 | 60.00 | 74.25 | HDTV 720P |
| 6 | 1280*720 | 44.96 | 59.94 | 74.176 | HDTV 720P |
| 7 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I |
| 8 | 1920*1080 | 33.72 | 59.94 | 74.176 | HDTV 1080I |
| 9 | 1920*1080 | 67.50 | 60 | 148.50 | HDTV 1080P |
| 10 | 1920*1080 | 67.43 | 59.94 | 148.35 | HDTV 1080P |
| 11 | 1920*1080 | 27.00 | 24.00 | 74.25 | HDTV 1080P |
| 12 | 1920*1080 | 26.97 | 23.97 | 74.176 | HDTV 1080P |
| 13 | 1920*1080 | 33.75 | 30.00 | 74.25 | HDTV 1080P |
| 14 | 1920*1080 | 33.71 | 29.97 | 74.176 | HDTV 1080P |
| 15 | 3840*2160 | 67.5 | 30.00 | 297.00 | UDTV 2160P |
| 16 | 3840*2160 | 61.43 | 29.97 | 296.703 | UDTV 2160P |
| 17 | 3840*2160 | 56.25 | 25.00 | 297.00 | UDTV 2160P |
| 18 | 3840*2160 | 54.0 | 24.00 | 297.00 | UDTV 2160P |
| 19 | 3840*2160 | 53.95 | 23.98 | 296.703 | UDTV 2160P |
| 20 | 3840*2160 | 135 | 59.94 | 594 | UDTV 2160P |
| 21 | 3840*2160 | 135 | 60 | 594 | UDTV 2160P |
| 22 | 4096*2160 | 53.95 | 23.98 | 296.703 | UDTV 2160P |
| 23 | 4096*2160 | 54 | 24.00 | 297 | UDTV 2160P |
| 24 | 4096*2160 | 56.25 | 25.00 | 297 | UDTV 2160P |
| 25 | 4096*2160 | 61.43 | 29.97 | 296.703 | UDTV 2160P |
| 26 | 4096*2160 | 67.5 | 30.00 | 297 | UDTV 2160P |
| 27 | 4096*2160 | 135 | 59.94 | 594 | UDTV 2160P |
| 28 | 4096*2160 | 135 | 60.00 | 594 | UDTV 2160P |

## 5.2. 3D Mode

### 5.2.1. HDMI Input 1.4b (3D supported mode automatically)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock (MHz) | VIC | 3D input proposed mode | Proposed |
|---|---|---|---|---|---|---|---|
| 1 | 640*480 | 31.46 / 31.5 | 59.94/ 60 | 25.17/25.2 | 1 | Top-and-Bottom<br>Side-by-side(half) | Secondary(SDTV 480P)<br>Secondary(SDTV 480P) |
| | | 62.93 / 63 | 59.94/ 60 | 50.35/50.4 | 1 | Frame packing<br>Line alternative | Secondary(SDTV 480P)<br>(SDTV 480P) |
| | | 31.46 / 31.5 | 59.94/ 60 | 50.35/50.4 | 1 | Side-by-side(Full) | (SDTV 480P) |
| 2 | 720*480 | 31.46 / 31.5 | 59.94 / 60 | 27.00/27.03 | 2,3 | Top-and-Bottom<br>Side-by-side(half) | Secondary(SDTV 480P)<br>Secondary(SDTV 480P) |
| | | 62.93 / 63 | 59.94 / 60 | 54/54.06 | 2,3 | Frame packing<br>Line alternative | Secondary(SDTV 480P)<br>(SDTV 480P) |
| | | 31.46 / 31.5 | 59.94 / 60 | 54/54.06 | 2,3 | Side-by-side(Full) | (SDTV 480P) |
| 3 | 1280*720 | 44.96 / 45 | 59.94 / 60 | 74.18/74.25 | 4 | Top-and-Bottom<br>Side-by-side(half) | Primary(HDTV 720P)<br>Primary(HDTV 720P) |
| | | 89.91 / 90 | 59.94 / 60 | 148.35/148.5 | 4 | Frame packing<br>Line alternative | Primary(HDTV 720P)<br>(HDTV 720P) |
| | | 44.96 / 45 | 59.94 / 60 | 148.35/148.5 | 4 | Side-by-side(Full) | (HDTV 720P) |
| 4 | 1920*1080 | 33.72 / 33.75 | 59.94 / 60 | 74.18/74.25 | 5 | Top-and-Bottom<br>Side-by-side(half) | Secondary(HDTV 1080I)<br>Primary(HDTV 1080I) |
| | | 67.43 / 67.5 | 59.94 / 60 | 148.35/148.5 | 5 | Frame packing<br>Field alternative | Primary(HDTV 1080I)<br>(HDTV 1080I) |
| | | 33.72 / 33.75 | 59.94 / 60 | 148.35/148.5 | 5 | Side-by-side(Full) | (HDTV 1080I) |
| | | 26.97 / 27 | 23.97 / 24 | 74.18/74.25 | 32 | Top-and-Bottom<br>Side-by-side(half) | Primary(HDTV 1080P)<br>Primary(HDTV 1080P) |
| | | 43.94 / 54 | 23.97 / 24 | 148.35/148.5 | 32 | Frame packing<br>Line alternative | Primary(HDTV 1080P)<br>(HDTV 1080P) |
| | | 26.97 / 27 | 23.97 / 24 | 148.35/148.5 | 32 | Side-by-side(Full) | (HDTV 1080P) |
| | | 28.125 | 25 | 74.25 | 33 | Top-and-Bottom<br>Side-by-side(half) | Secondary(HDTV 1080P)<br>Secondary(HDTV 1080P) |
| | | 56.25 | 25 | 148.5 | 33 | Frame packing<br>Line alternative | Secondary(HDTV 1080P)<br>(HDTV 1080P) |
| | | 28.125 | 25 | 148.5 | 33 | Side-by-side(Full) | (HDTV 1080P) |
| | | 33.716 / 33.75 | 29.976 / 30.00 | 74.18/74.25 | 34 | Top-and-Bottom<br>Side-by-side(half) | Primary(HDTV 1080P)<br>Secondary(HDTV 1080P) |
| | | 67.432 / 67.5 | 29.976 / 30.00 | 148.35/148.5 | 34 | Frame packing<br>Line alternative | Primary(HDTV 1080P)<br>(HDTV 1080P) |
| | | 33.716 / 33.75 | 29.976 / 30.00 | 148.35/148.5 | 34 | Side-by-side(Full) | (HDTV 1080P) |
| | | 67.43 / 67.5 | 59.94 / 60 | 148.35/148.50 | 16 | Top-and-Bottom<br>Side-by-side(half) | Primary(HDTV 1080P)<br>Secondary(HDTV 1080P) |

### 5.2.2. HDMI 1.4/2.0(3D Supported mode manaually)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock (MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1. | 720*480 | 31.5 | 60 | 27.03 | SDTV 480P | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Frame Sequential, Row Interleaving, Column Interleaving |
| 2. | 1280*720 | 45.00 | 60.00 | 74.25 | HDTV 720P | |
| 3. | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I | 2D to 3D, Side by Side(Half), Top & Bottom |
| 4. | 1920*1080 | 27.00 | 24.00 | 74.25 | HDTV 1080P | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving |
| 5. | 1920*1080 | 28.12 | 25 | 74.25 | HDTV 1080P | |
| 6. | 1920*1080 | 33.75 | 30.00 | 74.25 | HDTV 1080P | |
| 7. | 1920*1080 | 67.50 | 60.00 | 148.5 | HDTV 1080P | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Single Frame Sequential, Row Interleaving, Column Interleaving |
| 8. | 3840*2160 | 53.95 | 23.976 | 296.703 | HDTV 2160P | |
| 9. | 3840*2160 | 54 | 24.00 | 297.00 | HDTV 2160P | |
| 10. | 3840*2160 | 56.25 | 25.00 | 297.00 | HDTV 2160P | |
| 11. | 3840*2160 | 61.43 | 29.970 | 296.703 | HDTV 2160P | |
| 12. | 3840*2160 | 67.5 | 30.00 | 297.00 | HDTV 2160P | |
| 13. | 4096*2160 | 53.95 | 23.976 | 296.703 | HDTV 2160P | |
| 14. | 4096*2160 | 54 | 24.00 | 297.00 | HDTV 2160P | |
| 15. | 4096*2160 | 56.25 | 25.00 | 297.00 | HDTV 2160P | |
| 16. | 4096*2160 | 61.43 | 29.970 | 296.703 | HDTV 2160P | |
| 17. | 4096*2160 | 67.5 | 30.00 | 297.00 | HDTV 2160P | |
| 18. | 3840*2160 | 135 | 60 | 594 | HDTV 2160P | 2D to 3D, Top & Bottom(half), Side by Side(half), Port3 Only |
| 19. | 4096*2160 | 135 | 60 | 594 | HDTV 2160P | 2D to 3D, Top & Bottom(half), Side by Side(half), Port3 Only |

### 5.2.3. HDMI-PC Input (3D) (3D Supported Mode Manually)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock (MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1. | 1024*768 | 48.36 | 60 | 65 | HDTV 768P | 2D to 3D, Side by Side(half), Top & Bottom |
| 2. | 1360*768 | 47.71 | 60 | 85.5 | HDTV 768P | 2D to 3D, Side by Side(half), Top & Bottom |
| 3. | 1920*1080 | 67.500 | 60 | 148.50 | HDTV 1080P | 2D to 3D, Side by Side(half), Top & Bottom, Checker Board, Single Frame Sequential, Row Interleaving, Column Interleaving |
| 4. | 3840*2160 4096*2160 | 54 | 24.00 | 296.703 | HDTV 2160P | 2D to 3D, Top & Bottom(half), Side by Side(half), |
| | | 56.25 | 25.00 | 297 | | |
| | | 67.5 | 30.00 | 296.703 | | |
| 5. | 3840*2160 4096*2160 | 135 | 60 | 594 | HDTV 2160P | 2D to 3D, Top & Bottom(half), Side by Side(half), Port3 Only |
| 6. | Others | - | - | - | 640*350 720*400 640*480 800*600 1152*864 | 2D to 3D, Side by Side(half), Top & Bottom |

### 5.2.4. RF Input(3D supported mode manually)

| No. | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | 3D input proposed mode |
|---|---|---|---|---|---|---|
| 1 | 1280*720 | 37.500 | 50 | 74.25 | HDTV 720P | 2D to 3D, Side by Side, Top & Bottom |
| 2 | 1920*1080 | 28.125 | 50 | 74.25 | HDTV 1080I | 2D to 3D, Side by Side, Top & Bottom |

### 5.2.5. RF Input (3D supported mode automatically)

| No. | Signal | 3D input proposed mode |
|---|---|---|
| 1 | Frame Compatible | Side by Side(Half), Top & Bottom |

### 5.2.6. USB, DLNA (Movie) Input (3D supported mode manually)

| No. | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | Under 704x480 | - | - | - | 2D to 3D |
| 2 | Over 704x480 interlaced | - | - | - | 2D to 3D, Side by Side(Half), Top & Bottom |
| 3 | Over 704x480 progressive | - | 60 | - | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving, Frame Sequential |
| 4 | Over 704x480 progressive | - | others | - | 2D to 3D, Side by Side(Half), Top & Bottom, Checker Board, Row Interleaving, Column Interleaving |
| 5 | Over 2160P | - | 24/25/30/60 | - | 2D to 3D, Side by Side(Half), Top & Bottom, USB Only |

### 5.2.7. USB, DLNA (Photo) Input (3D supported mode manually)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | USB(Photo) | - | - | - | 2D to 3D, Side by Side(Half), Top & Bottom |

### 5.2.8. USB, DNLA Input (3D supported mode automatically)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | 1080P | 33.75 | 30 | - | Side by Side(Half), Top & Bottom, Checker Board, MPO(Photo) |
| 2 | 2160p | 67.5 | 30 | 297 | MPO(Photo), JPS(Photo) |

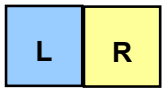
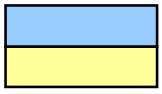
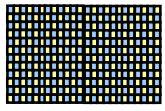
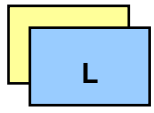
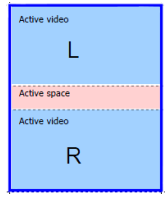
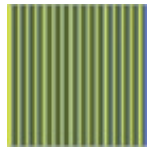
### 5.2.9. Component Input(3D supported mode manually)

| No. | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | Proposed | Remark |
|---|---|---|---|---|---|---|
| 1 | 1280*720 | 45.00 | 60.00 | 74.25 | HDTV 720P | 2D to 3D,<br>Side by Side(Half),<br>Top & Bottom |
| 2 | 1280*720 | 37.500 | 50 | 74.25 | HDTV 720P | |
| 3 | 1920*1080 | 33.75 | 60.00 | 74.25 | HDTV 1080I | |
| 4 | 1920*1080 | 28.125 | 50.00 | 74.25 | HDTV 1080I | |
| 5 | 1920*1080 | 27.00 | 24.00 | 74.25 | HDTV 1080P | |
| 6 | 1920*1080 | 28.12 | 25 | 74.25 | HDTV 1080P | |
| 7 | 1920*1080 | 33.75 | 30.00 | 74.25 | HDTV 1080P | |
| 8 | 1920*1080 | 67.50 | 60.00 | 148.5 | HDTV 1080P | |
| 9 | 1920*1080 | 56.250 | 50 | 148.5 | HDTV 1080P | |
| 10 | Others | - | - | - | SDTV | |

### 5.2.10. Miracast, Widi (3D supported mode manually)

| No | Resolution | H-freq(kHz) | V-freq.(Hz) | Pixel clock(MHz) | 3D input proposed mode |
|---|---|---|---|---|---|
| 1 | 1024X768p | - | 30 / 60 | - | 2D to 3D, Side by Side(Half), Top & Bottom |
| 2 | 1280x720p | - | 30 / 60 | - | |
| 3 | 1920X1080p | | 30 / 60 | | |
| 4 | Others | | - | | 2D to 3D |

### **Remark: 3D Input mode

| No. | Side by Side | Top & Bottom | Checkerboard | Single Frame Sequential | Frame Packing | Line Interleaving | Column Interleaving |
|---|---|---|---|---|---|---|---|
| 1 |  |  |  |  |  |  |  |

# ADJUSTMENT INSTRUCTION

## 1. Application Range

This spec. sheet applies to UA65R Chassis applied LED TV all models manufactured in TV factory

## 2. Specification.

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument
(2) Adjustment must be done in the correct order.
(3) The adjustment must be performed in the circumstance of 25 ±5ºC of temperature and 65±10% of relative humidity if there is no specific designation
(4) The input voltage of the receiver must keep 100~240V, 50/60Hz
(5) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15ºC

- In case of keeping module is in the circumstance of 0°C, it should be placed in the circumstance of above 15°C for 2 hours
- In case of keeping module is in the circumstance of below -20°C, it should be placed in the circumstance of above 15°C for 3 hours

* (Caution) When still image is displayed for a period of 20 minutes or longer (especially where W/B scale is strong. Digital pattern 13ch and/or Cross hatch pattern 09ch), there can some afterimage in the black level area.

## 3. Adjustment items

### 3.1. Main PCB check process

- MAC Address Download
- ADC adjustment : 480i Comp1, 1920*1080 Comp1
- EDID/DDC download

Above adjustment items can be also performed in Final Assembly if needed. Both Board-level and Final assembly adjustment items can be check using In-Start Menu 1.ADJUST CHECK.

### 3.2. Final assembly adjustment

- White Balance adjustment
- RS-232C functionality check
- PING Test
- Factory Option setting per destination
- Ship-out mode setting (In-Stop)

### 3.3. Etc.

- Ship-out mode
- Service Option Default
- USB Download(S/W Update, Option, Service only)
- ISP Download (Option)

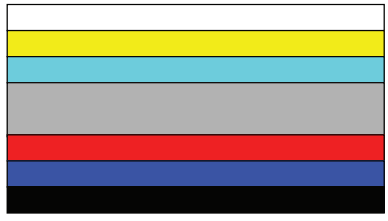
## 4. Automatic Adjustment

### 4.1. ADC Adjustment

ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

#### 4.1.1. Equipment & Condition

(1) USB to RS-232C Jig
(2) MSPG-925 Series Pattern Generator(MSPG-925FA, pattern -65)
- Resolution : 480i Comp1
  1080P Comp1
- Pattern : Horizontal 100% Color Bar Pattern
- Pattern level : 0.7±0.1 Vp-p
- Image



#### 4.1.2. Adjustment method

- Using USB, adjust items listed in 3.1 in the other shown in “4.1.3.3”

#### 4.1.3. Adj. protocol

| Protocol | Command | Set ACK |
|---|---|---|
| Enter adj. mode | aa 00 00 | a 00 OK00x |
| Source change | xb 00 40<br>xb 00 60 | b 00 OK04x (Adjust 480i, 1080p Comp1 )<br>b 00 OK06x (Adjust 1920*1080 RGB) |
| Begin adj. | ad 00 10 | |
| Return adj. result | | OKx (Case of Success)<br>NGx (Case of Fail) |
| Read adj. data | (main)<br>ad 00 20<br><br>(sub )<br>ad 00 21 | (main)<br>00000000000000000000000007c007b006dx<br><br>(Sub)<br>00000007000000000000000007c00830077x |
| Confirm adj. | ad 00 99 | NG 03 00x (Fail)<br>NG 03 01x (Fail)<br>NG 03 02x (Fail)<br>OK 03 03x (Success) |
| End adj. | ad 00 90 | a 00 OK90x |

(Ref.) ADC Adj. RS232C Protocol_Ver1.0

Adj. order
- aa 00 00 [Enter ADC adj. mode]
- xb 00 04
  [Change input source to Component1(480i&1080p)]
- ad 00 10 [Adjust 480i&1080p Comp1]
- xb 00 06 [Change input source to RGB(1024*768)]
- ad 00 10 [Adjust 1920*1080 RGB]
- aa 00 90 End adj.

## 4.2. MAC address, ESN, Widevine, HDCP2.0 key D/L

### 4.2.1. Equipment & Condition

(1) Play file: keydownload.exe

### 4.2.2. Communication Port connection

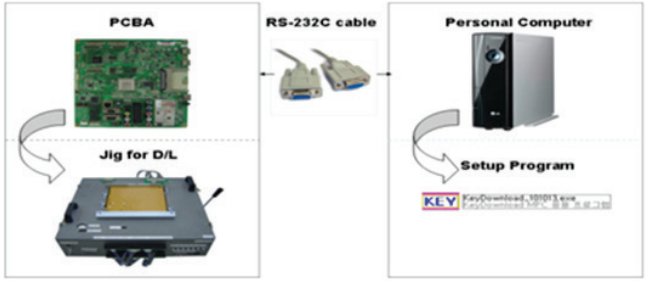
(1) Key Write: Com 1,2,3,4 and 115200 (Baudrate)
(2) Barcode: Com 1,2,3,4 and 9600 (Baudrate)

### 4.2.3. Download process

(1) Select the download items.
(2) Mode check: Online Only
(3) Check the test process : DETECT -> MAC -> Widevine
(4) Play: START
(5) Check of result: Ready, Test, OK or NG

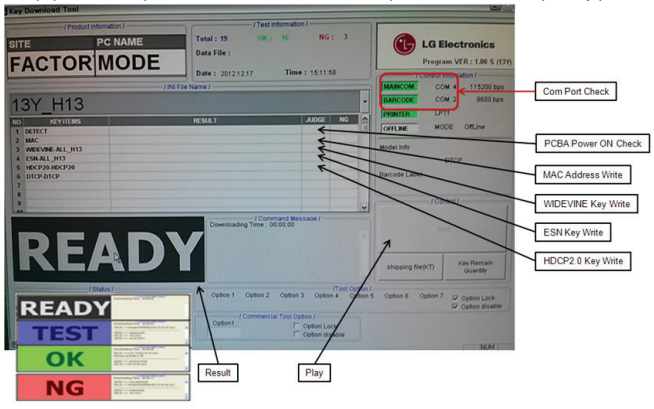
### 4.2.4. Communication Port connection

(1) Connect: PCBA Jig -> RS-232C Port == PC -> RS-232C Port




### 4.2.5. Download

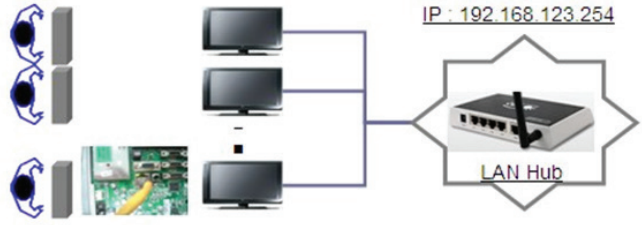
(1) Models(MAC + Widevine + ESN): Korea model(K2Lp)




## 4.3. LAN Inspection

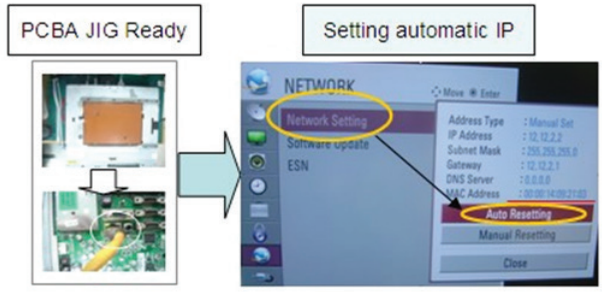
### 4.3.1. Equipment & Condition

▪ Each other connection to LAN Port of IP Hub and Jig




### 4.3.2. LAN inspection solution

▪ LAN Port connection with PCB
▪ Network setting at MENU Mode of TV
▪ Setting automatic IP
▪ Setting state confirmation
- If automatic setting is finished, you confirm IP and MAC Address.



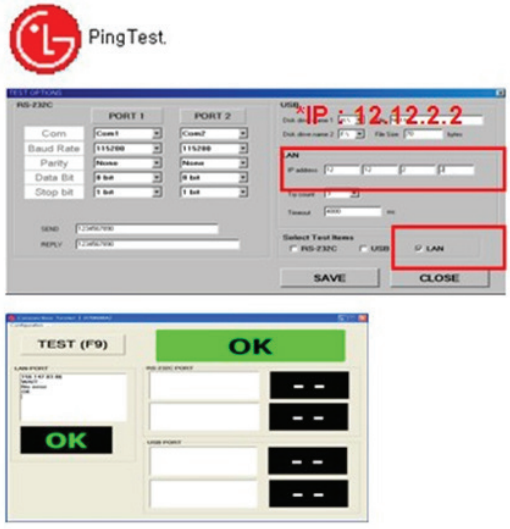

### 4.3.3. LAN PORT INSPECTION (PING TEST)

Connect: SET-> LAN Port == PC-> LAN Port


(1) Play the LAN Port Test PROGRAM.
(2) Input IP set up for an inspection to Test Program.
* IP Number : 12.12.2.2.

### 4.3.4. LAN PORT inspection (PING TEST)

(1) Play the LAN Port Test Program.
(2) connect each other LAN Port Jack.
(3) Play Test (F9) button and confirm OK Message.
(4) remove LAN CABLE




## 4.4. Model name & Serial number Download

### 4.4.1. Model name & Serial number D/L

- Press “Power on” key of service remocon.(Baud rate : 115200 bps)
- Connect RS-232C Signal to USB Cable to USB.
- Write Serial number by use USB port.
- Must check the serial number at Instart menu.

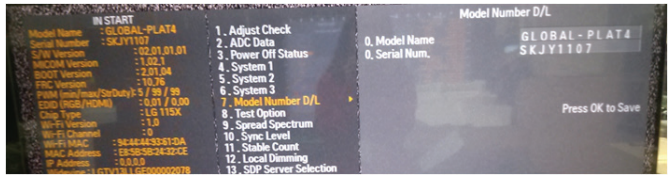
**■ Method & Notice**

A. Serial number D/L is using of scan equipment.
B. Setting of scan equipment operated by Manufacturing Technology Group.
C. Serial number D/L must be conformed when it is produced in production line, because serial number D/L is mandatory by D-book 4.0

* Manual Download (Model Name and Serial Number)

If the TV set is downloaded By OTA or Service man, Sometimes model name or serial number is initialized. ( not always)
It is impossible to download by bar code scan, so It need Manual download.

a. Press the ‘INSTART’ key of ADJ remote controller.
b. Go to the menu ‘7. Model Number D/L’ like below photo.
c. Input the Factory model name or Serial number like below photo.



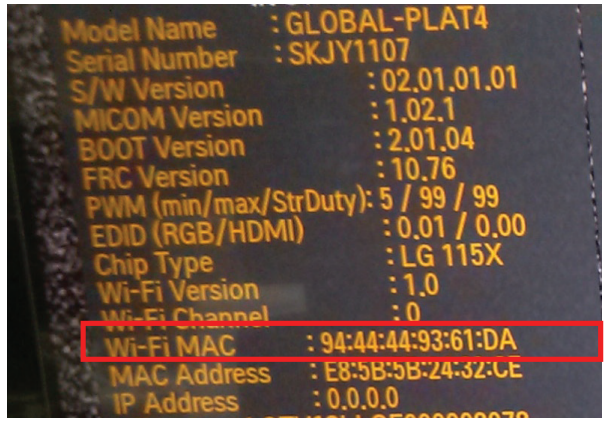

d. Check the model name INSTART menu -> Factory name displayed
e. Check the Diagnostics (DTV country only) -> Buyer model displayed

## 4.5. WIFI MAC ADDRESS CHECK

### 4.5.1. Using RS232 Command

| | Command | Set ACK |
|---|---|---|
| Transmission | [A][I][][Set ID][][20][Cr] | [O][K][x] or [N][G] |

■ Check the menu on in-start



# 5. Manual Adjustment

## 5.1. ADC adjustment is not needed because of OTP (Auto ADC adjustment)

## 5.2. EDID (The Extended Display Identification Data) / DDC (Display Data Channel) download

### 5.2.1. Overview

It is a VESA regulation. A PC or a MNT will display an optimal resolution through information sharing without any necessity of user input. It is a realization of “Plug and Play”.

### 5.2.2. Equipment

- Since embedded EDID data is used, EDID download JIG, HDMI cable and D-sub cable are not need.
- Adjust remocon

### 5.2.3. Download method

(1) Press Adj. key on the Adjust remocon, then select “12.EDID D/L”.
By pressing Enter key, enter EDID D/L menu

(2) Select [Start] button by pressing Enter key, HDMI1 / HDMI2 / HDMI3 / HDMI4 are Writing and display OK or NG.

| For HDMI EDID | |
|---|---|
| **DVI-D to HDMI or HDMI to HDMI** | |
|  |  |

### 5.2.4. EDID DATA

- Reference
- HDMI1 ~ HDMI3
- In the data of EDID, bellows may be different by Input mode

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0x00 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | ⓐ | | ⓑ | | | |
| 0x01 | ⓒ | | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 0x02 | 0F | 50 | 54 | A1 | 8 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 0x03 | 01 | 01 | 01 | 01 | 01 | 01 | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 | 58 | 2C |
| 0x04 | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 |
| 0x05 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 0x06 | 3E | 1E | 53 | 10 | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | ⓓ | | | |
| 0x07 | ⓓ | | | | | | | | | | | | | | 01 | ⓔ1 |
| 0x00 | 02 | 03 | 3A | F1 | 4E | 10 | 9F | 04 | 13 | 05 | 14 | 03 | 02 | 12 | 20 | 21 |
| 0x01 | 22 | 15 | 01 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | ⓕ | | | | | |
| 0x02 | ⓕ | | | | | | | | | | | | | | | |
| 0x03 | ⓕ | | | 10 | 28 | 10 | E3 | 05 | 03 | 01 | 02 | 3A | 80 | 18 | 71 | 38 |
| 0x04 | 2D | 40 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 01 | 1D | 80 | 18 |
| 0x05 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 01 | 1D |
| 0x06 | 00 | 72 | 51 | D0 | 1E | 20 | 6E | 28 | 55 | 00 | 40 | 84 | 63 | 00 | 00 | 1E |
| 0x07 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | ⓔ2 |

ⓐ Product ID
ⓑ Serial No: Controlled on production line.
ⓒ Month, Year: Controlled on production line:
ex) Monthly : ‘01’ -> ‘01’
Year : ‘2016’ -> ‘1A'
ⓓ Model Name(Hex): LGTV
ⓔ Checksum(LG TV): Changeable by total EDID data.
ⓕ Vendor Specific(HDMI)

5.2.4.1. EDID
# DTS HDMI1 (C/S: 9F,B6)_6G_UHD Deep Color ON
EDID Block 0, Bytes 0-127

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 3A | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | 09 | 57 | 07 | 6E |
| 20 | 03 | 0C | 00 | 10 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 |
| 30 | 5D | C4 | 01 | 78 | 80 | 03 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 |
| 40 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 |
| 50 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 |
| 60 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | B6 |

#DTS HDMI1 (C/S: 9F, 11)_3G_UHD Deep Color OFF
EDID Block 0, Bytes 0-127

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |

EDID Block 1, Bytes 128-255

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 02 | 03 | 36 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | 09 | 57 | 07 | 6E |
| 20 | 03 | 0C | 00 | 10 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E |
| 30 | 61 | 66 | E3 | 06 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C |
| 40 | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | 0 | 51 | 00 | 1B | 30 |
| 50 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 11 |

#DTS HDMI2 (C/S: 9F,A6)_6G_UHD Deep Color ON
EDID Block 0, Bytes 0-127

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 02 | 03 | 3A | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | 09 | 57 | 07 | 6E |
| 20 | 03 | 0C | 00 | 20 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 |
| 30 | 5D | C4 | 01 | 78 | 80 | 03 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 |
| 40 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 |
| 50 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 |
| 60 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | A6 |

#DTS HDMI2 (C/S: 9F 01)_3G_UHD Deep Color OFF
EDID Block 0, Bytes 0-127

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |

EDID Block 1, Bytes 128-255

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 02 | 03 | 36 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | 09 | 57 | 07 | 6E |
| 20 | 03 | 0C | 00 | 20 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E |
| 30 | 61 | 66 | E3 | 06 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C |
| 40 | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | 0 | 51 | 00 | 1B | 30 |
| 50 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 01 |

#DTS HDMI3 (C/S: 9F, 96 )_6G_UHD Deep Color ON
EDID Block 0, Bytes 0-127

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |

EDID Block 1, Bytes 128-255

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 02 | 03 | 3A | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | 09 | 57 | 07 | 6E |
| 20 | 03 | 0C | 00 | 30 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 |
| 30 | 5D | C4 | 01 | 78 | 80 | 03 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 |
| 40 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 |
| 50 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 |
| 60 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 96 |

#DTS HDMI3 (C/S: 9F F1)_3G_UHD Deep Color OFF
EDID Block 0, Bytes 0-127

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |

EDID Block 1, Bytes 128-255

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 02 | 03 | 36 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 29 | 3D | 06 | C0 | 15 | 07 | 50 | 09 | 57 | 07 | 6E |
| 20 | 03 | 0C | 00 | 30 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E |
| 30 | 61 | 66 | E3 | 06 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C |
| 40 | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | 0 | 51 | 00 | 1B | 30 |
| 50 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | F1 |

# AC3 HDMI1 (C/S: 9F,BF)_6G_UHD Deep Color ON

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 02 | 03 | 37 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 26 | 15 | 07 | 50 | 09 | 57 | 07 | 6E | 03 | 0C | 00 |
| 20 | 10 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 | 5D | C4 | 01 |
| 30 | 78 | 81 | 03 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 | 07 | 01 | 01 |
| 40 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 |
| 50 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 | 63 |
| 60 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | BF |

# AC3 HDMI1 (C/S: 9F,1A)_ 3G_UHD Deep Color OFF

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 33 | F1 | 50 | 61 | 10 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 26 | 15 | 07 | 50 | 09 | 57 | 07 | 6E | 03 | 0C | 00 |
| 20 | 10 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E | 61 | 66 | E3 |
| 30 | 06 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 |
| 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 |
| 50 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 1A |

# AC3 HDMI2 (C/S: 9F,AF)_ 6G_UHD Deep Color ON

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 37 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 26 | 15 | 07 | 50 | 09 | 57 | 07 | 6E | 03 | 0C | 00 |
| 20 | 10 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 | 5D | C4 | 01 |
| 30 | 78 | 81 | 03 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 | 07 | 01 | 01 |
| 40 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 |
| 50 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 | 63 |
| 60 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | AF |

# AC3 HDMI2 (C/S: 9F,0A)_3G_UHD Deep Color OFF

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 33 | F1 | 50 | 61 | 10 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 26 | 15 | 07 | 50 | 09 | 57 | 07 | 6E | 03 | 0C | 00 |
| 20 | 20 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E | 61 | 66 | E3 |
| 30 | 06 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 |
| 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 |
| 50 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 0A |

# AC3 HDMI3 (C/S: 9F,03)_ 6G_UHD Deep Color ON

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 | 01 |
| 10 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 | 26 |
| 20 | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 | 58 |
| 40 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 | 40 |
| 50 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A | 3A |
| 60 | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC | FC |
| 70 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 37 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 26 | 15 | 07 | 50 | 09 | 57 | 07 | 6E | 03 | 0C | 00 |
| 20 | 10 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 | 5D | C4 | 01 |
| 30 | 78 | 81 | 03 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 | 07 | 01 | 01 |
| 40 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 |
| 50 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 | 63 |
| 60 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 9F |

# AC3 HDMI3 (C/S: 9F,FA)_3G_UHD Deep Color OFF

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 33 | F1 | 50 | 61 | 10 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 26 | 15 | 07 | 50 | 09 | 57 | 07 | 6E | 03 | 0C | 00 |
| 20 | 30 | 00 | B8 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E | 61 | 66 | E3 |
| 30 | 06 | 07 | 01 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 |
| 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 |
| 50 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | FA |

# PCM HDMI1 (C/S: 9F,31)_6G_UHD Deep Color ON

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 34 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 23 | 09 | 57 | 07 | 6E | 03 | 0C | 00 | 10 | 00 | B8 |
| 20 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 | 5D | C4 | 01 | 78 | 80 | 03 |
| 30 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 | 07 | 01 | 01 | 1D | 80 | 18 |
| 40 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 |
| 50 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 31 |

# PCM HDMI1 (C/S: 9F,8C)_3G_UHD Deep Color OFF

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 30 | F1 | 50 | 61 | 10 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 23 | 09 | 57 | 07 | 6E | 03 | 0C | 00 | 10 | 00 | B8 |
| 20 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E | 61 | 66 | E3 | 06 | 07 | 01 |
| 30 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 |
| 40 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 |
| 50 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 8C |

# PCM HDMI2 (C/S: 9F,21)_6G_UHD Deep Color ON

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 34 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 23 | 09 | 57 | 07 | 6E | 03 | 0C | 00 | 20 | 00 | B8 |
| 20 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 | 5D | C4 | 01 | 78 | 80 | 03 |
| 30 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 | 07 | 01 | 01 | 1D | 80 | 18 |
| 40 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 |
| 50 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 21 |

# PCM HDMI2 (C/S: 9F,7C)_3G_UHD Deep Color OFF

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 30 | F1 | 50 | 61 | 10 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 23 | 09 | 57 | 07 | 6E | 03 | 0C | 00 | 20 | 00 | B8 |
| 20 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E | 61 | 66 | E3 | 06 | 07 | 01 |
| 30 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 |
| 40 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 |
| 50 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 7C |

# PCM HDMI3 (C/S: 9F,11)_6G_UHD Deep Color ON

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 |
| 10 | 01 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 |
| 20 | 0F | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 |
| 40 | 8A | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 |
| 50 | 58 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A |
| 60 | 3E | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC |
| 70 | 00 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 34 | F1 | 50 | 61 | 90 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 23 | 09 | 57 | 07 | 6E | 03 | 0C | 00 | 30 | 00 | B8 |
| 20 | 3C | 20 | 00 | 80 | 01 | 02 | 03 | 04 | 67 | D8 | 5D | C4 | 01 | 78 | 80 | 03 |
| 30 | E3 | 05 | C0 | 00 | E3 | 0F | 01 | 10 | E3 | 06 | 07 | 01 | 01 | 1D | 80 | 18 |
| 40 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 | 00 | 9E | 66 | 21 |
| 50 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 | 63 | 00 | 00 | 1E |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 11 |

# PCM HDMI3 (C/S: 9F,6C)_3G_UHD Deep Color OFF

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | FF | FF | FF | FF | FF | FF | 00 | 1E | 6D | 01 | 00 | 01 | 01 | 01 | 01 | 01 |
| 10 | 1A | 01 | 03 | 80 | A0 | 5A | 78 | 0A | EE | 91 | A3 | 54 | 4C | 99 | 26 | 26 |
| 20 | 50 | 54 | A1 | 08 | 00 | 31 | 40 | 45 | 40 | 61 | 40 | 71 | 40 | 81 | 80 | 80 |
| 30 | 01 | 01 | 01 | 01 | 01 | 08 | E8 | 00 | 30 | F2 | 70 | 5A | 80 | B0 | 58 | 58 |
| 40 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 02 | 3A | 80 | 18 | 71 | 38 | 2D | 40 | 40 |
| 50 | 2C | 45 | 00 | 40 | 84 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | FD | 00 | 3A | 3A |
| 60 | 1E | 88 | 3C | 00 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 00 | 00 | 00 | FC | FC |
| 70 | 4C | 47 | 20 | 54 | 56 | 0A | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 01 | 9F | 9F |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 0 | 02 | 03 | 30 | F1 | 50 | 61 | 10 | 22 | 20 | 05 | 04 | 03 | 02 | 01 | 5D | 5E |
| 10 | 5F | 66 | 62 | 63 | 64 | 23 | 09 | 57 | 07 | 6E | 03 | 0C | 00 | 30 | 00 | B8 |
| 20 | 3C | 30 | 00 | 80 | 01 | 02 | 03 | 04 | E3 | 0E | 61 | 66 | E3 | 06 | 07 | 01 |
| 30 | 01 | 1D | 80 | 18 | 71 | 1C | 16 | 20 | 58 | 2C | 25 | 00 | 40 | 84 | 63 | 00 |
| 40 | 00 | 9E | 66 | 21 | 50 | B0 | 51 | 00 | 1B | 30 | 40 | 70 | 36 | 00 | 40 | 84 |
| 50 | 63 | 00 | 00 | 1E | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 60 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 70 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 6C |

* Checksum (HDMI 1/2/3/4)

| 2D ONLY | PCM | |
|---|---|---|
| | 3G | 6G |
| HDMI1 | 0x9F, 0x8C | 0x9F, 0x31 |
| HDMI2 | 0x9F, 0x7C | 0x9F, 0x21 |
| HDMI3 | 0x9F, 0x6C | 0x9F, 0x11 |

| 2D ONLY | AC3 | |
|---|---|---|
| | 3G | 6G |
| HDMI1 | 0x9F, 0x1A | 0x9F, 0xBF |
| HDMI2 | 0x9F, 0x0A | 0x9F, 0xAF |
| HDMI3 | 0x9F, 0xFA | 0x9F, 0x9F |

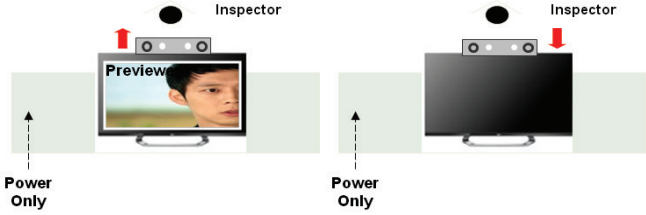
| 2D ONLY | DTS | |
|---|---|---|
| | 3G | 6G |
| HDMI1 | 0x9F, 0x11 | 0x9F, 0XB6 |
| HDMI2 | 0x9F, 0x01 | 0x9F, 0XA6 |
| HDMI3 | 0x9F, 0xF1 | 0x9F, 0x96 |

## 5.3. Camera Port Inspection

(1) Objective : To check how it connects between Camera and PCBA normally, and their Function

(2) Test Method : This Inspection is available only Power-Only Status.

1) Push Camera Up
2) Camera's Preview picture appears on TV Set
3) Push Camera Down




(3) RS-232C Command

| RS-232C COMMAND | | | Explanation |
|---|---|---|---|
| CMD | DATA | ID | |
| Ai | 00 | 23 | Camera Function Start. |
| Ai | 00 | 24 | Camera Function End. |

## 5.4. V-COM Adjust

(ONLY FOR EPI model, 43/49/55UH6600, 43/49/55UH6500)

### 5.4.1. Overview

▪ V-COM adj. Objective & How-it-works

- Objective: To reduce each Panel's V-COM voltage deviation
- How-it-works: When V-COM gain in the adjust-OSD of each SET is at default value, each SET can have flicker by each Panel's V-COM voltage deviation. In order to prevent flicker of each SET, find the desired each Panel's V-COM voltage value.
- Adj. condition: normal temperature
  1) Surrounding Temperature: 25 ºC ± 5 ºC
  2) Warm-up time: About 5 Min
  3) Surrounding Humidity: 20% ~ 80%

### 5.4.2. Equipment

(1) Color Analyzer: CA-310 (LED Module : CH 14) or CM-H505

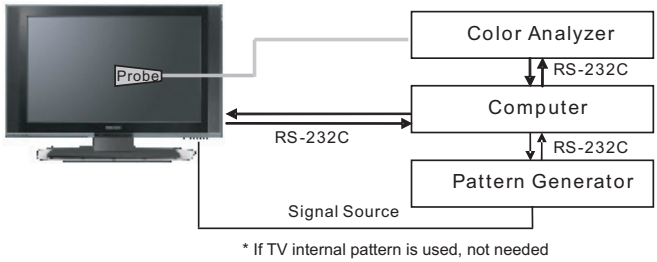
(2) Adj. Computer (During auto adj., RS-232C protocol is needed)

(3) Adjust Remocon

(4) Signal : internal flicker Pattern in SET

▪ Color Analyzer Matrix should be calibrated using CS-100

### 5.4.3. Equipment connection MAP




* If TV internal pattern is used, not needed

### 5.4.4. Adj. Command (Protocol)

<Command Format>
CMD ID DATA CR RF

- CMD: Command
- ID : Command
- Data : Command
  (Ex) [Send: va 00 00\r\n]

(1) RS-232C Command used during auto-adj.

| RS-232C COMMAND | | | Explanation |
|---|---|---|---|
| CMD | DATA | ID | |
| va | 00 | 00 | V-com pattern |
| vb | 00 | 00 ~ FE | V-com adj.(internal Flicker pattern) |
| wb | 00 | FF | V-com adj. completed |

### 5.4.5. Adjustment method

(1) Set TV in POWER-ONLY mode using POWER ONLY key

(2) Zero calibrate probe then place it on the center of the Display

(3) Connect Cable (RS-232C to USB)

(4) Select Model in "V-com adj. Program" and begin "V-com adj."

(5) When V-com adj. is complete (OK)

(6) Remove probe and RS-232C to USB cable to complete adj.

▪ V-com Adj. must begin as start command "va 00 00" , and finish as end command "wb 00 ff"

▪ V-com adjust data

| | 43" inch | | 49" inch | | 55" inch | | 65" inch | |
|---|---|---|---|---|---|---|---|---|
| | V-com Data | | | | | | | |
| | hex | dec | hex | dec | hex | dec | hex | dec |
| Max | B4 | 180 | 8B | 139 | 85 | 133 | AB | 171 |
| Default | 96 | 150 | 6D | 109 | 68 | 104 | 8D | 141 |
| Min | 78 | 120 | 4F | 79 | 49 | 73 | 6F | 111 |

5.4.5.1 Manual adj. method

TBD

## 5.5. White Balance Adjustment

### 5.5.1. Overview

5.5.1.1. W/B adj. Objective & How-it-works

(1) Objective: To reduce each Panel's W/B deviation

(2) How-it-works: When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.

(3) Adj. condition: normal temperature
- Surrounding Temperature: 25±5 °C
- Warm-up time: About 5 Min
- Surrounding Humidity: 20% ~ 80%

### 5.5.2. Equipment

(1) Color Analyzer: CA-210 (LED Module : CH 14)

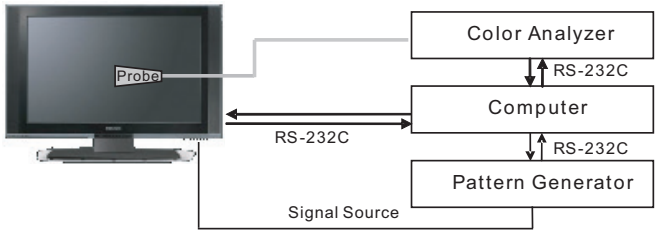
(2) Adj. Computer (During auto adj., RS-232C protocol is needed)

(3) Adjust Remocon

(4) Video Signal Generator MSPG-925F 720p/204-Gray (Model: 217, Pattern: 49)

※ Color Analyzer Matrix should be calibrated using CS-1000

### 5.5.3. Equipment connection MAP




* If TV internal pattern is used, not needed

### 5.5.4. Adj. Command (Protocol)

<Command Format>

START 6E A 50 A LEN A 03 A CMD A 00 A VAL A CS A STOP

- LEN: Number of Data Byte to be sent
- CMD : Command
- VAL : FOS Data value
- CS : Checksum of sent data
- A : Acknowledge

(Ex) [Send: JA_00_DD] / [Ack: A_00_okDDX]

(1) RS-232C Command used during auto-adj.

| RS-232C COMMAND | | | Explanation |
|---|---|---|---|
| CMD | DATA | ID | |
| wb | 00 | 00 | Begin White Balance adj. |
| wb | 00 | 10 | Gain adj.(internal white pattern) |
| wb | 00 | 1f | Gain adj. completed |
| wb | 00 | 20 | Offset adj.(internal white pattern) |
| wb | 00 | 2f | Offset adj. completed |
| wb | 00 | ff | End White Balance adj. (internal pattern disappears ) |

(Ex) wb 00 00 -> Begin white balance auto-adj.
wb 00 10 -> Gain adj.
ja 00 ff -> Adj. data
jb 00 c0
...
...
wb 00 1f -> Gain adj. complete
* (wb 00 20(start), wb 00 2f(endc)) -> Off-set adj.
wb 00 ff -> End white balance auto adj.

(2) Adjustment Map

Applied Model : ALL MODELS

| | Adj. item | Command (lower caseASCII) | | Data Range (Hex.) | | Default (Decimal) |
|---|---|---|---|---|---|---|
| | | CMD1 | CMD2 | MIN | MAX | |
| Cool | R Gain | j | g | 00 | C0 | TBD |
| | G Gain | j | h | 00 | C0 | TBD |
| | B Gain | j | i | 00 | C0 | TBD |
| | R Cut | | | | | TBD |
| | G Cut | | | | | TBD |
| | B Cut | | | | | TBD |
| Medium | R Gain | j | a | 00 | C0 | TBD |
| | G Gain | j | b | 00 | C0 | TBD |
| | B Gain | j | c | 00 | C0 | TBD |
| | R Cut | | | | | TBD |
| | G Cut | | | | | TBD |
| | B Cut | | | | | TBD |
| Warm | R Gain | j | d | 00 | C0 | TBD |
| | G Gain | j | e | 00 | C0 | TBD |
| | B Gain | j | f | 00 | C0 | TBD |
| | R Cut | | | | | TBD |
| | G Cut | | | | | TBD |

### 5.5.5. Adjustment method

5.5.5.1. Auto WB calibration

(1) Set TV in adj. mode using POWER ONNY key

(2) Zero calibrate probe then place it on the center of the Display

(3) Connect Cable (RS-232C to USB)

(4) Select mode in adj. Program and begin adj.

(5) When adj. is complete (OK Sign), check adj. status pre mode(Warm, Medium, Cool)

(6) Remove probe and RS-232C to USB cable to complete adj.

▪ W/B Adj. must begin as start command "wb 00 00" , and finish as end command "wb 00 ff", and Adj. offset if need

5.5.5.2. Manual adj. method

(1) Set TV in Adj. mode using POWER ON

(2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface..

(3) Press ADJ key -> EZ adjust using adj. R/C -> 7. White-Balance then press the cursor to the right (KEY►). (When KEY(►) is pressed 216 Gray internal pattern will be displayed)

(4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.

(5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

** R-fix adjustment

Adjust modes (Cool), Fix the R gain to 210 (default data) and change the others (G/B Gain ).

- Adjust the R gain more than 210 ( If G gain or B gain is less than 0 , R gain can adjust more than 210 ) and change the others ( G/B Gain ).
- Adjust two modes (Medium / Warm), Fix the one of R/G/B gain to 192 (default data) and decrease the others.

▪ If internal pattern is not available, use RF input. In EZ Adj. menu 7.White Balance, you can select one of 2 Test-pattern: ON, OFF. Default is inner(ON). By selecting OFF, you can adjust using RF signal in 216 Gray pattern.

▪ Adj. condition and cautionary items

(1) Lighting condition in surrounding area

Surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.

(2) Probe location

- LCD : Color Analyzer (CA-210) probe should be within 10cm and perpendicular of the module surface (80°~ 100°)

(3) Aging time

- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

### 5.5.6. Reference (White Balance Adj. coordinate and color temperature)

▪ Luminance: 206 Gray

▪ Standard color coordinate and temperature using CS-1000 (over 26 inch)

| Mode | Coordinate | | Temp | △uv |
|---|---|---|---|---|
| | X | Y | | |
| Cool | 0.271 | 0.270 | 13,000K | 0.0000 |
| Medium | 0.283 | 0.289 | 9,300K | 0.0000 |
| Warm | 0.313 | 0.329 | 6,500K | 0.0000 |

▪ Standard color coordinate and temperature using CA-210 (CH 14)

| Mode | Coordinate | | Temp | △uv |
|---|---|---|---|---|
| | X | Y | | |
| Cool | 0.271±0.002 | 0.270±0.002 | 13000K | 0.0000 |
| Medium | 0.286±0.002 | 0.289±0.002 | 9300K | 0.0000 |
| Warm | 0.313±0.002 | 0.329±0.002 | 6500K | 0.0000 |

### 5.5.7. EDGE & IOL LED White balance table

▪ Edge & ALEF LED module change color coordinate because of aging time

▪ apply under the color coordinate table, for compensated aging time

▪ Luminance: 204 Gray, 80IRE

** Except Gumi winter season(Jan~Feb) and except for winter season (Mar ~ Dec) & Global are same as the table below

▪ Standard color coordinate and temperature using CA-210(CH-14) – by aging time

| | Aging time (Min) | Cool | | Medium | | Warm | |
|---|---|---|---|---|---|---|---|
| | | X | Y | X | Y | X | Y |
| | | 271 | 270 | 286 | 289 | 313 | 329 |
| 1 | 0-2 | 282 | 289 | 297 | 308 | 324 | 348 |
| 2 | 3-5 | 281 | 287 | 296 | 306 | 323 | 346 |
| 3 | 6-9 | 279 | 284 | 294 | 303 | 321 | 343 |
| 4 | 10-19 | 277 | 280 | 292 | 299 | 319 | 339 |
| 5 | 20-35 | 275 | 277 | 290 | 296 | 317 | 336 |
| 6 | 36-49 | 274 | 274 | 289 | 293 | 316 | 333 |
| 7 | 50-79 | 273 | 272 | 288 | 291 | 315 | 331 |
| 8 | 80-119 | 272 | 271 | 287 | 290 | 314 | 330 |
| 9 | Over 120 | 271 | 270 | 286 | 289 | 313 | 329 |

* Use only AUO, INX, Sharp, CSOT, BOE
(Cool temp Spec is 13000K)

| | cool | | med | | warm | |
|---|---|---|---|---|---|---|
| | x | y | x | y | x | y |
| spec | 271 | 270 | 286 | 289 | 313 | 329 |
| target | 278 | 280 | 293 | 299 | 320 | 339 |

## 5.6. Local Dimming Function Check

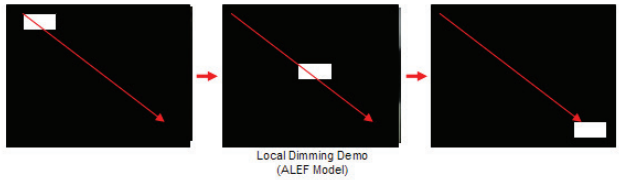
(Step 1) Turn on TV

(Step 2) At the Local Dimming mode, module Edge Backlight moving right to left
Back light of IOP module moving

(Step 3) confirm the Local Dimming mode

(Step 4) Press “exit” Key

Local Dimming Demo
(Edge LED Model)



Local Dimming Demo
(ALEF Model)

## 5.7. Magic Motion Remocon test

- Equipment : RF Remocon for test, IR-KEY-Code Remocon for test
- You must confirm the battery power of RF-Remocon before test
  (recommend that change the battery per every lot)
- Sequence (test)
  a) if you select the 'start key(OK)' on the controller, you can pairing with the TV SET.
  b) You can check the cursor on the TV Screen, when select the 'OK Key' on the controller
  c) You must remove the pairing with the TV Set by select 'Mute + OK Key' on the controller

## 5.8. 3D function test

(Pattern Generator MSHG-600, MSPG-6100 [SUPPORT HDMI1.4])
* HDMI mode NO. 872 , pattern No.83

(1) Please input 3D test pattern like below (HDMI mode NO. 872 , pattern No.83)


Fig.1
<HDMI Mode 872번 , Pattern No. 83>

(2) When 3D OSD appear automatically , then select green button

Fig.3
<OK Key>

(3) Don't wear a 3D Glasses, Check the picture like below


Fig.2

## 5.9 HDMI ARC Function Inspection

### 5.9.1. Test equipment

- Optic Receiver Speaker
- MSHG-600 (SW: 1220 ↑)
- HDMI Cable (for 1.4 version)

### 5.9.2. Test method

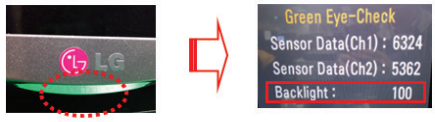
(1) Insert the HDMI Cable to the HDMI ARC port from the master equipment (HDMI2)
(2) Check the sound from the TV Set

(3) Check the Sound from the Speaker or using AV & Optic TEST program (It's connected to MSHG-600)

## 5.10. EYE-Q Green Function Inspection

(Step 1) Turn on the TV.
(Step 2) Press 'EYE button' on the adjustment remote-controller.
(Step 3) Cover 'Eye Q sensor' on the front of set with your hands, hold it for 6 seconds.
(Step 4) Check "the Sensor Data" on the screen, make certain that Data is below 10. If Data isn't below 10 in 6 seconds, Eye Q sensor would be bad. You should change Eye Q sensor.
(Step 5) Uncover your hands from Eye Q sensor, hold it for 6 seconds.
(Step 6) Check "Back Light(xxx)" on the screen, check data increase . You should change Eye Q sensor


STEP(2) STEP(3) STEP(4)




STEP(5) STEP(6)

## 5.11. Ship-out mode check (In-stop)

- After final inspection, press In-Stop key of the Adj. R/C and check that the unit goes to Stand-by mode.

# 6. GND and Internal Pressure check

## 6.1. Method

(1) GND & Internal Pressure auto-check preparation
- Check that Power Cord is fully inserted to the SET. (If loose, re-insert)

(2) Perform GND & Internal Pressure auto-check
- Unit fully inserted Power cord, Antenna cable and A/V arrive to the auto-check process.
- Connect D-terminal to AV JACK TESTER
- Auto CONTROLLER(GWS103-4) ON
- Perform GND TEST
- If NG, Buzzer will sound to inform the operator.
- If OK, changeover to I/P check automatically. (Remove CORD, A/V form AV JACK BOX)
- Perform I/P test
- If NG, Buzzer will sound to inform the operator.
- If OK, Good lamp will lit up and the stopper will allow the pallet to move on to next process.

## 6.2. Checkpoint

(1) Test voltage
- GND: 1.5KV/min at 100mA
- SIGNAL: 3KV/min at 100mA

(2) TEST time: 1 second

(3) TEST POINT
- GND Test = POWER CORD GND and SIGNAL CABLE GND.
- Hi-pot Test = POWER CORD GND and LIVE & NEUTRAL.

(4) LEAKAGE CURRENT: At 0.5mArms

# 7. AUDIO output check

| No | Item | Min | Typ | Max | Unit | Remark |
|---|---|---|---|---|---|---|
| 1 | Audio practical max Output, L/R (Distortion=10% max Output) | | 10.0<br>8.10 | 12.0<br>10.8 | W<br>Vrms | EQ Off<br>AVL Off<br>Clear Voice Off |
| 2 | Speaker (8Ω Impedance) | | 10 | 12 | W | EQ On<br>AVL On<br>Clear Voice On |

*Measurement condition:
(1) RF input: Mono, 1KHz sine wave signal, 100% Modulation
(2) CVBS, Component: 1KHz sine wave signal (0.4Vrms)
(3) RGB PC: 1KHz sine wave signal (0.7Vrms)

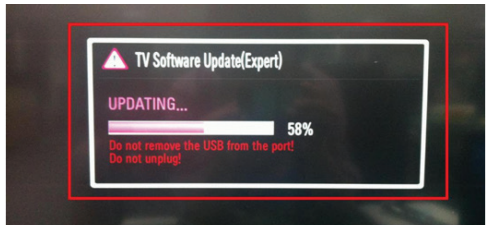
# 8. USB S/W Download (optional, Service only)

(1) Put the USB Stick to the USB socket

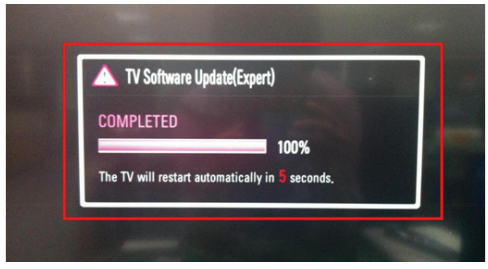
(2) Automatically detecting update file in USB Stick
- If your downloaded program version in USB Stick is lower than that of TV set, it didn't work. Otherwise USB data is automatically detected.

(3) Show the message "Copying files from memory"


(4) Updating is staring




(5) Updating Completed, The TV will restart automatically



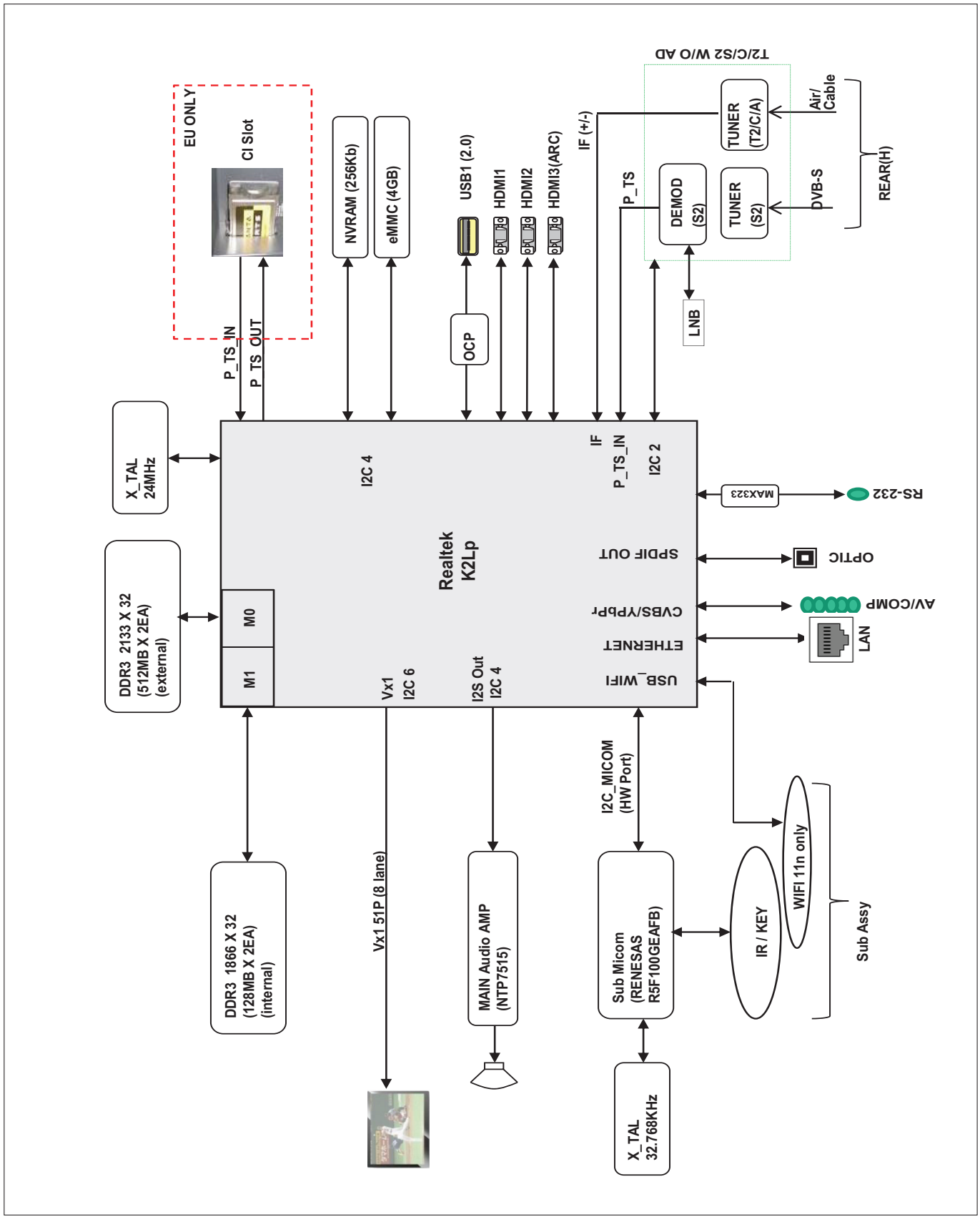

(6) If your TV is turned on, check your updated version and Tool option.

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

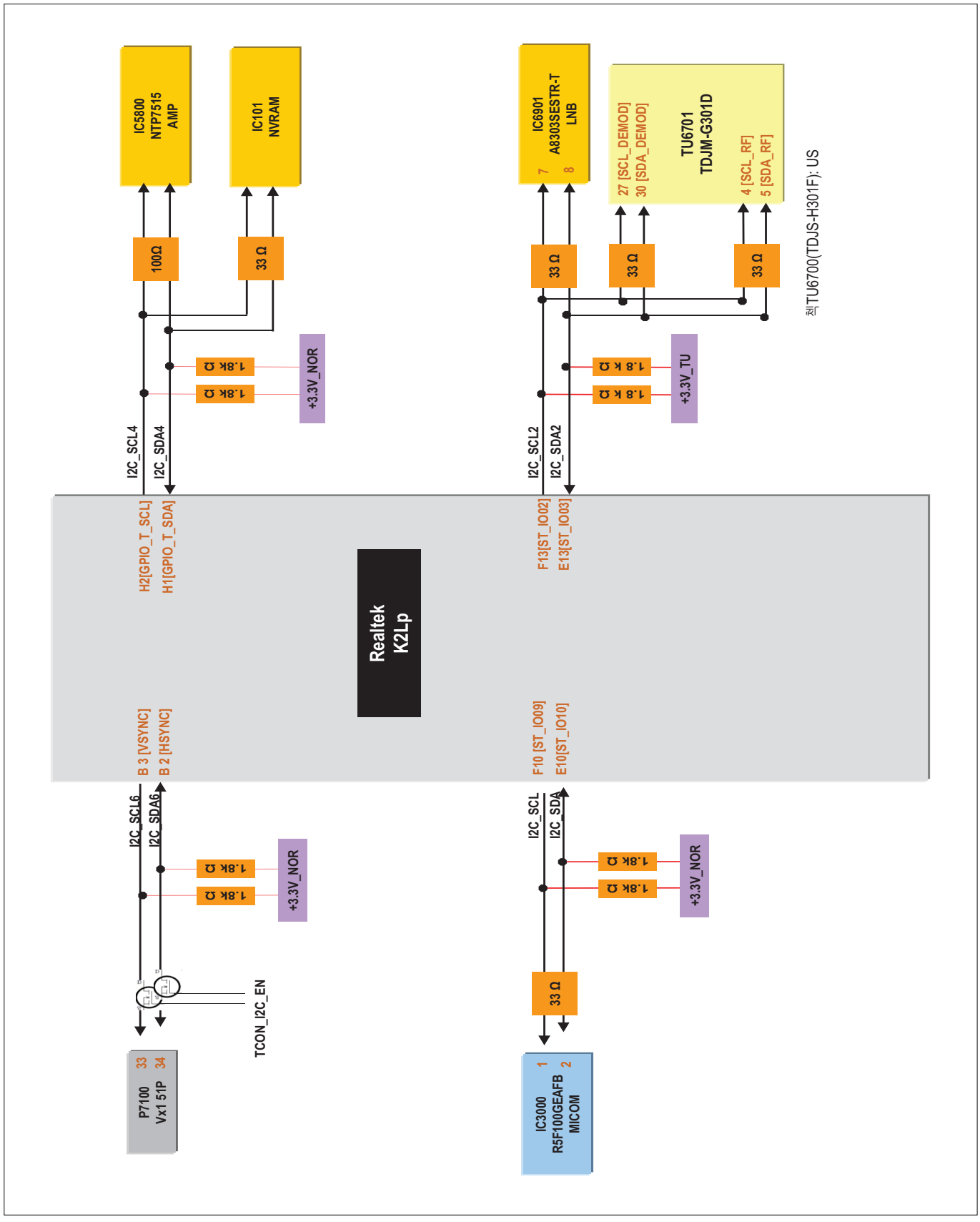
* After downloading, TOOL OPTION setting is needed again.
(1) Push "IN-START" key in service remote controller.
(2) Select "Tool Option 1" and Push "OK" button.
(3) Punch in the number. (Each model has their number.)

# Block Diagram

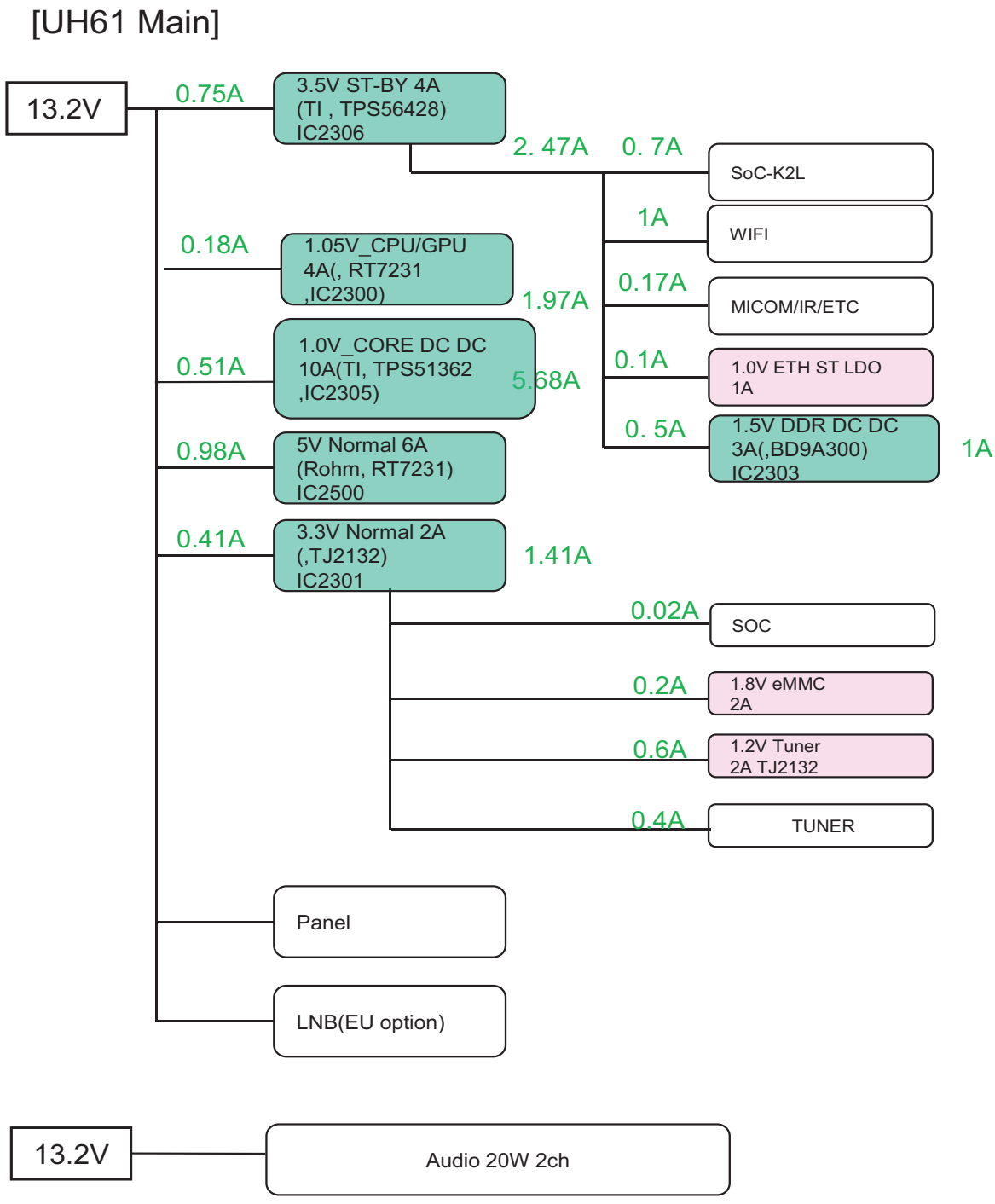
## 1. K2Lp Circuit Block Diagram



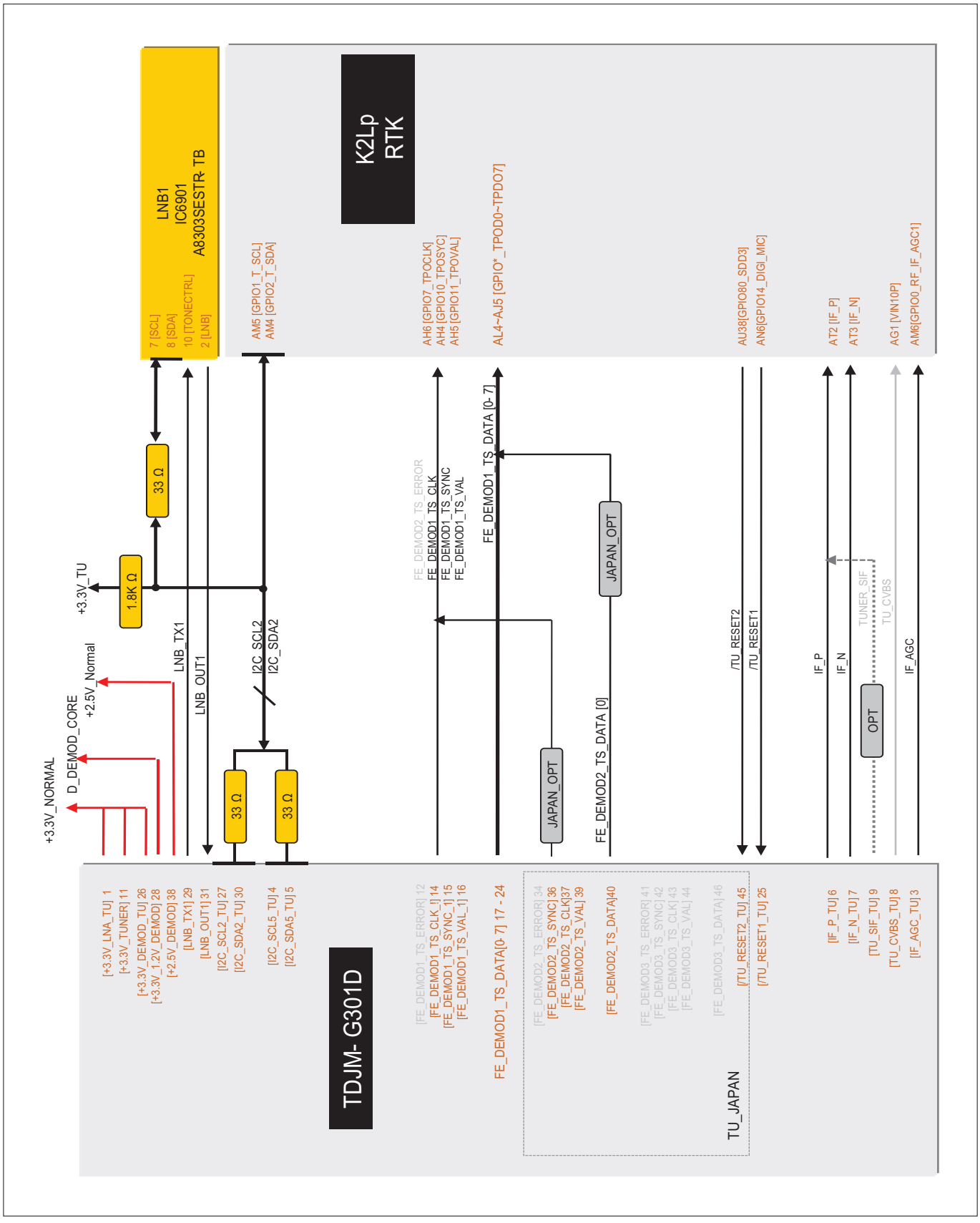
# 2. K2Lp I2C Block Diagram



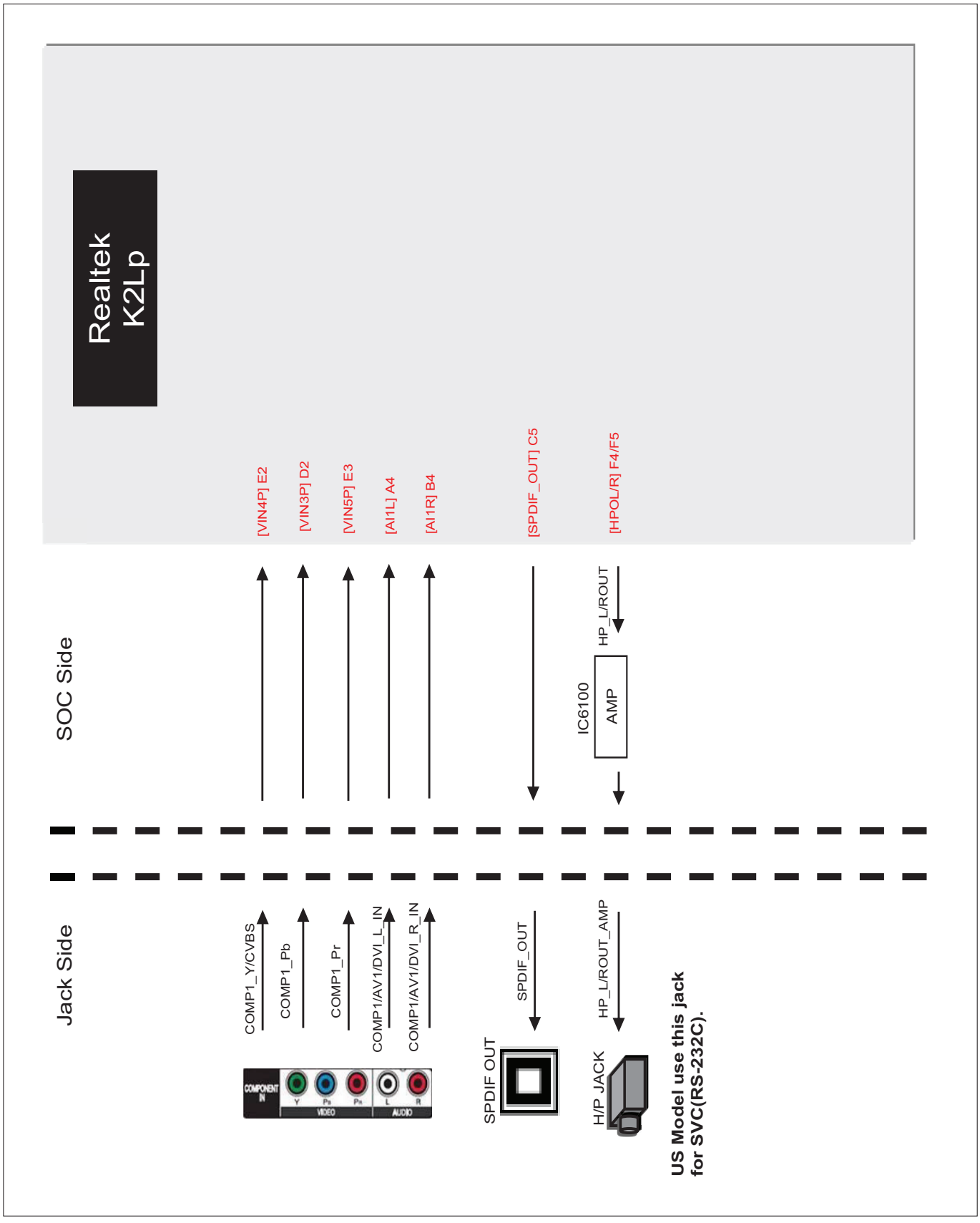
## 3. K2Lp Power Block



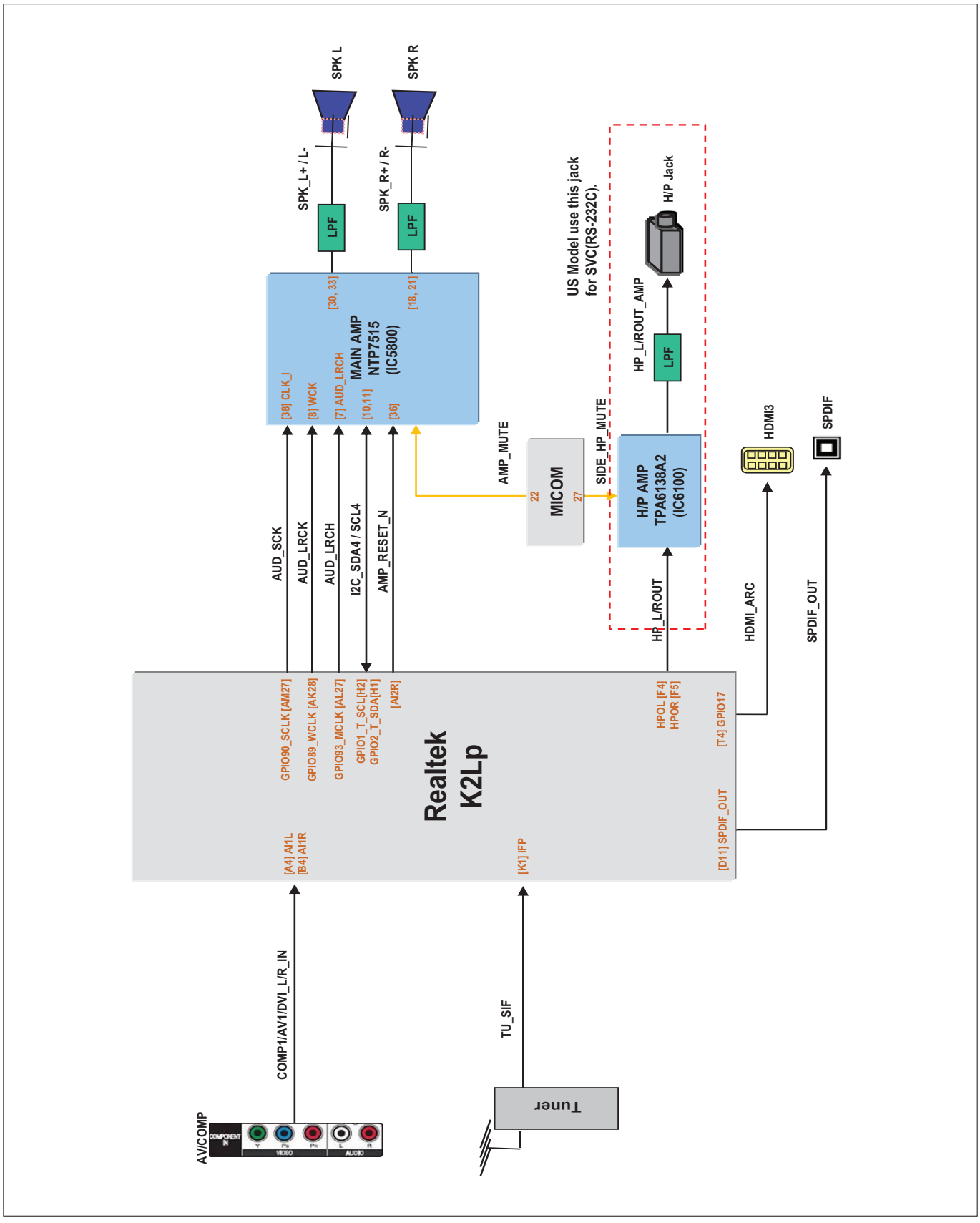
# 4. Tuner/CI Block Diagram



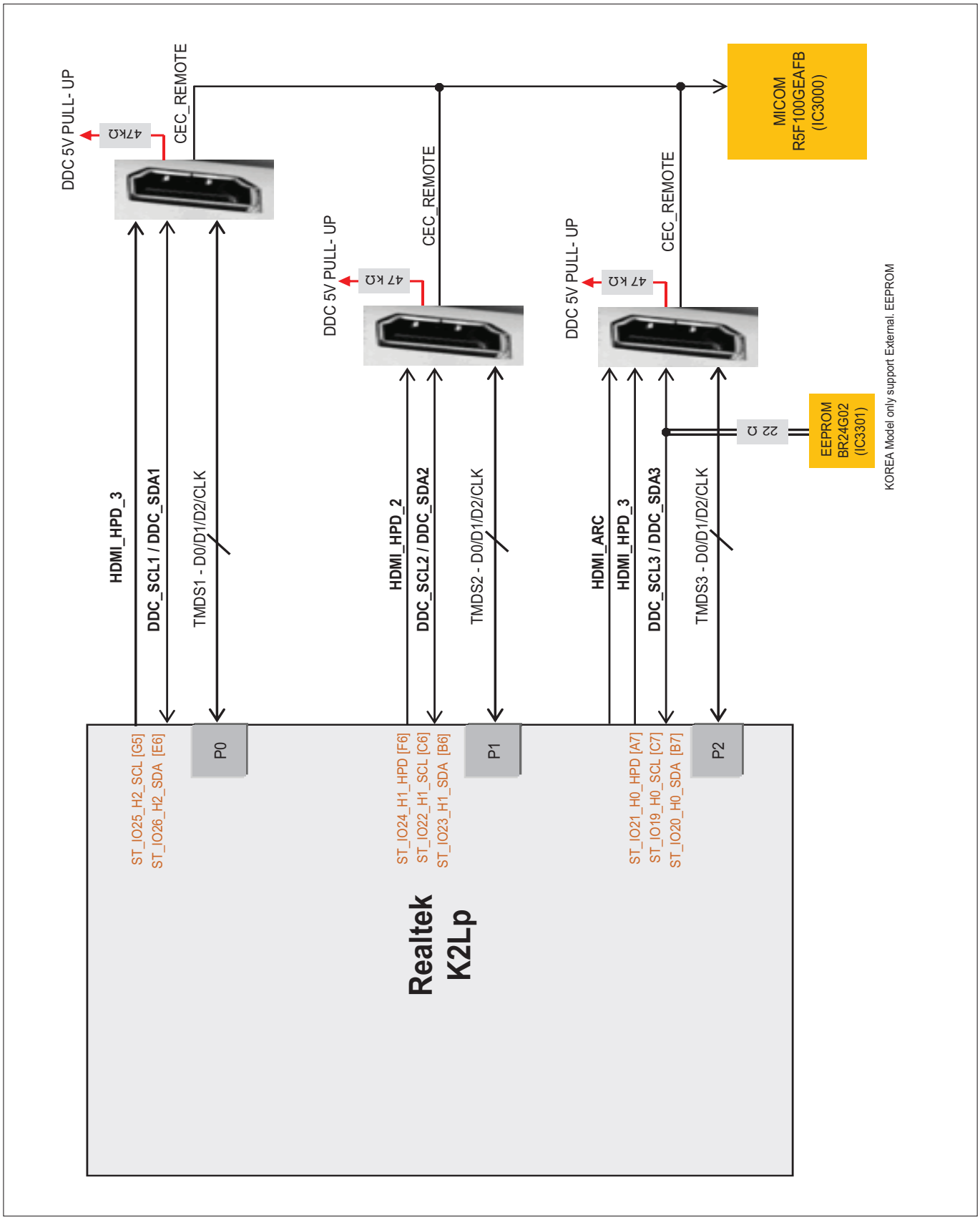
# 5. Video/Audio In Block Diagram



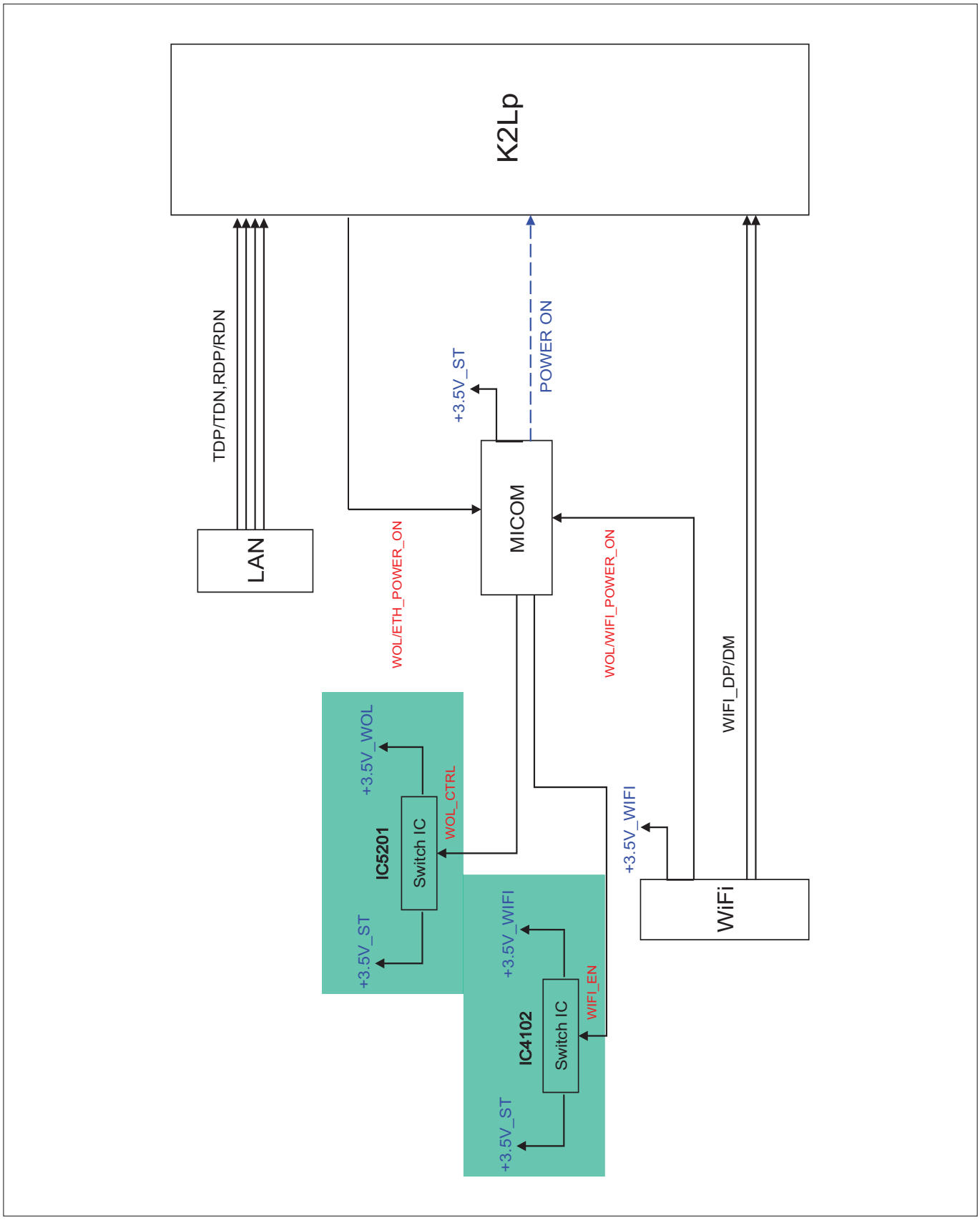
# 6. Audio Out Block Diagram



# 7. HDMI



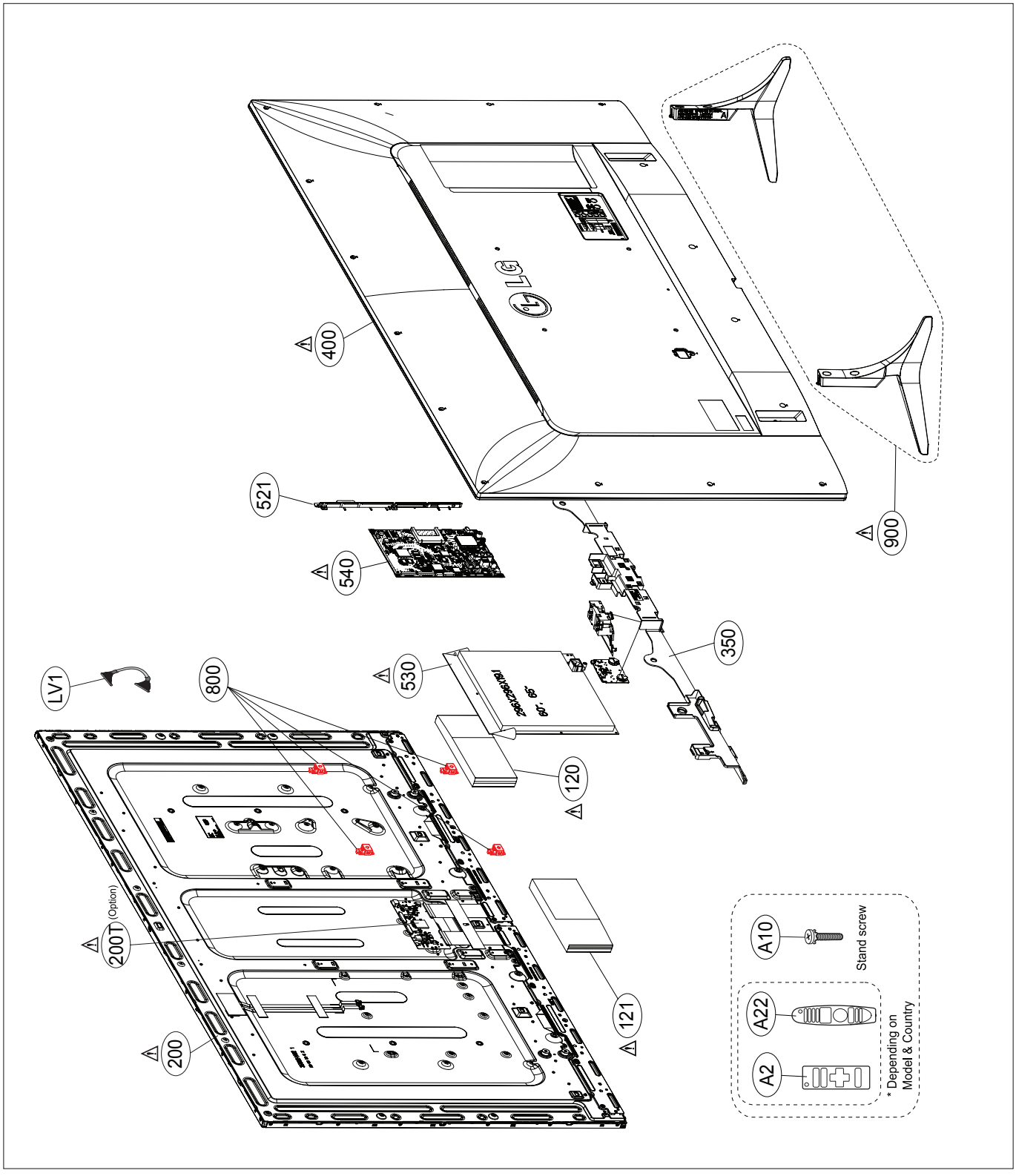
# 8. USB / WIFI / UART



# 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.



# DISASSEMBLY

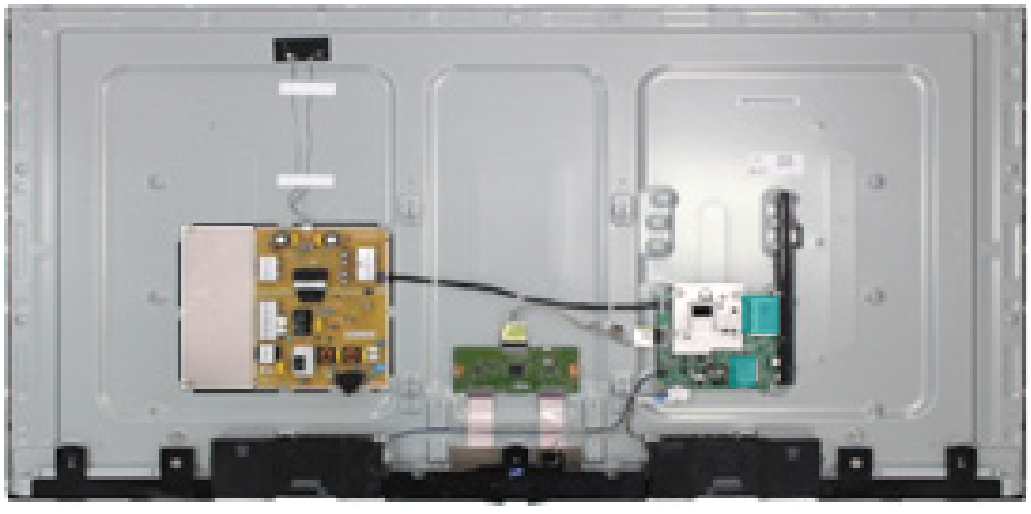
## 1. Disassembly the screw in Back cover

: M3*5.5 18EA
: M4*10 2EA

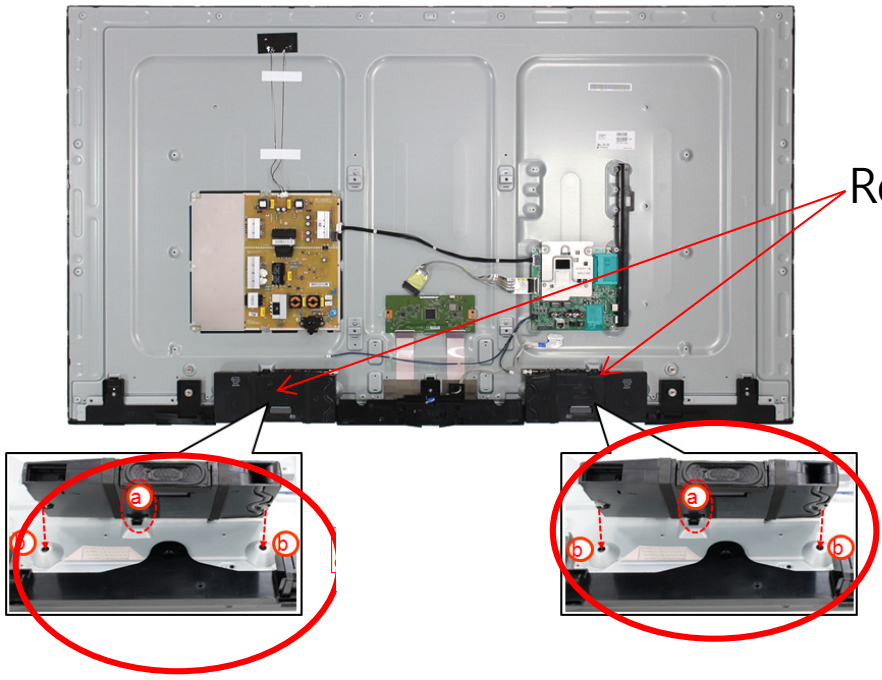
*SCREW TORQUE :
5 ~ 7Kgf.cm

## 2. Disassemble the B/C

- Remove the B/C



### 3. Disassemble Speaker



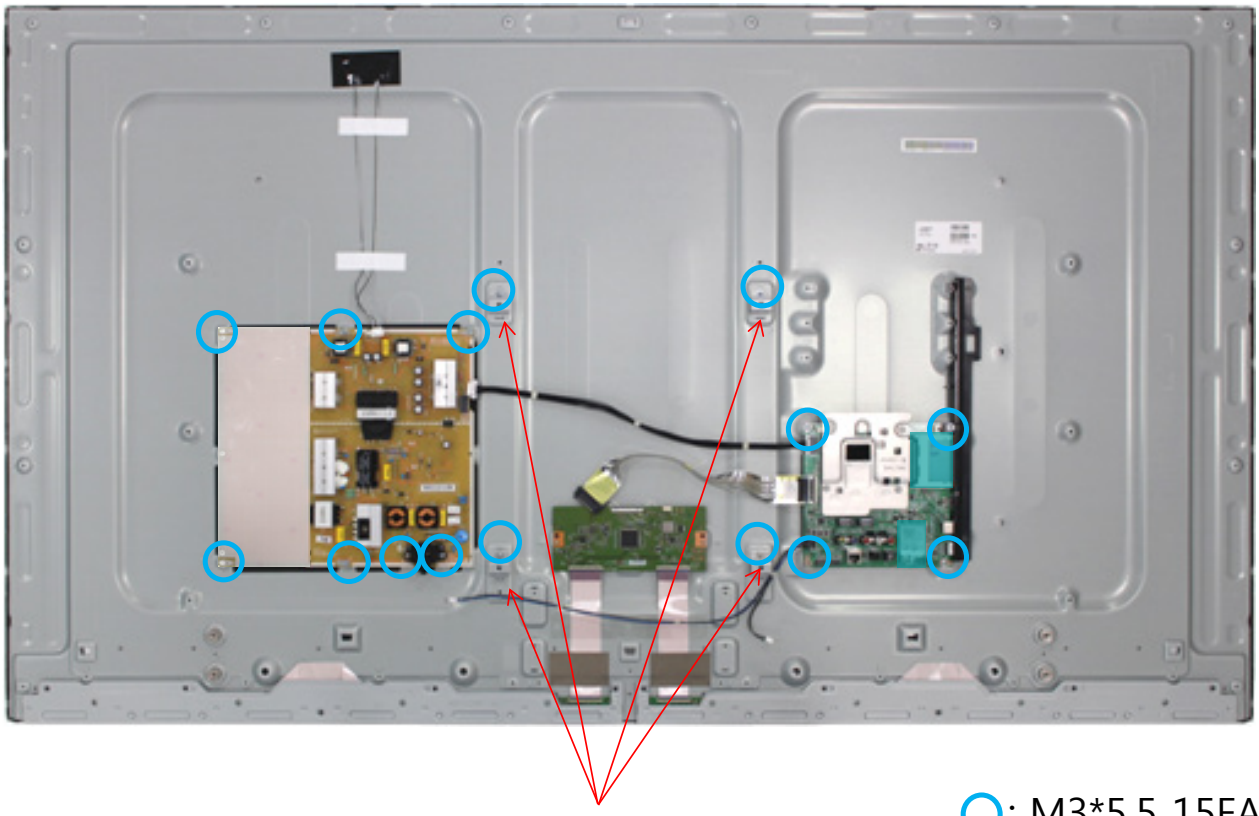

Remove the Speaker

### 4. Disassemble the screw in bottom bracket

○: M3*5.5 2EA

Remove the Bottom bracket

## 5. Disassemble the screw in Module



Remove the VESA bracket (4EA)

○: M3*5.5 15EA

*SCREW TORQUE : 5 ~ 7Kgf.cm

# TROUBLE SHOOTING GUIDE

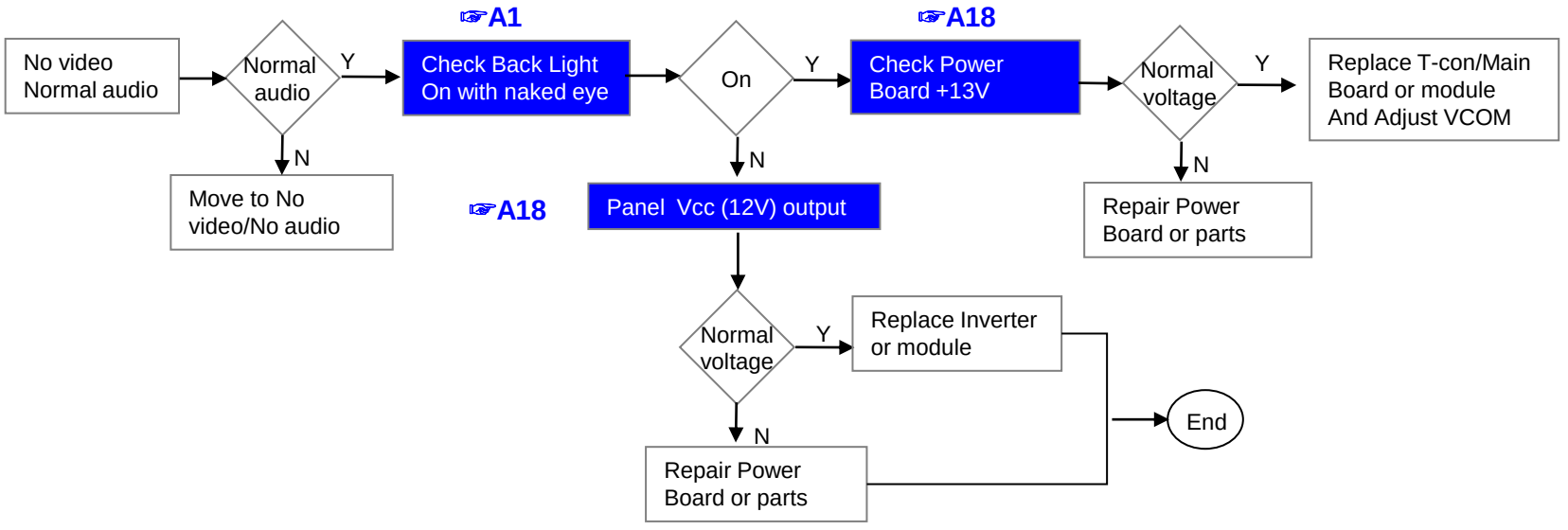
# Contents of Standard Repair Process

| 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 | C. Audio error | No audio/Normal video | 8 | |
| 9 | | Wrecked audio/discontinuation/noise | 9 | |
| 10 | D. Function error | Remote control & Local switch checking | 10 | |
| 11 | | MR15 operating checking | 11 | Not used |
| 12 | | Wifi operating checking | 12 | |
| 13 | | Camera operating checking | 13 | Not used |
| 14 | | External device recognition error | 14 | |
| 15 | E. Noise | Circuit noise, mechanical noise | 15 | |
| 16 | F. Exterior error | Exterior defect | 16 | |

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

| LCD TV | Error symptom | A. Video error | Established date | | |
|---|---|---|---|---|---|
| | | No video/ Normal audio | Revised date | | 1/16 |

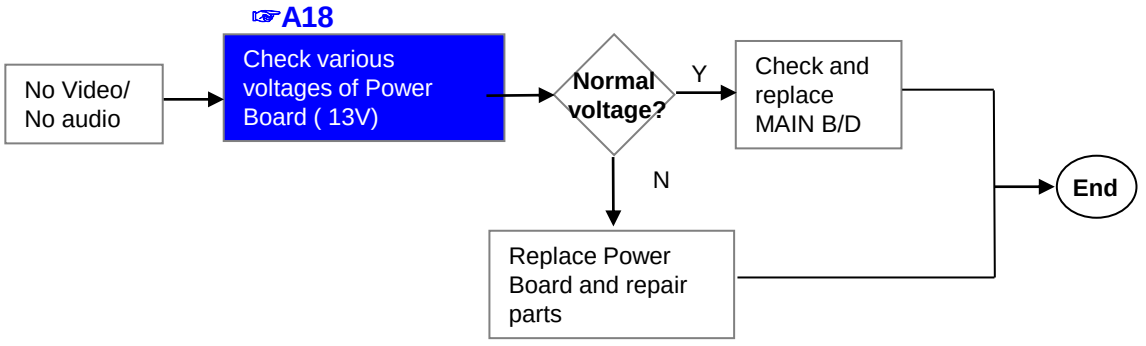
**First of all, Check whether all of cables between board is inserted properly or not.**
**(Main B/D↔ Power B/D, VX1 Cable, Speaker Cable, IR B/D Cable,,,)**



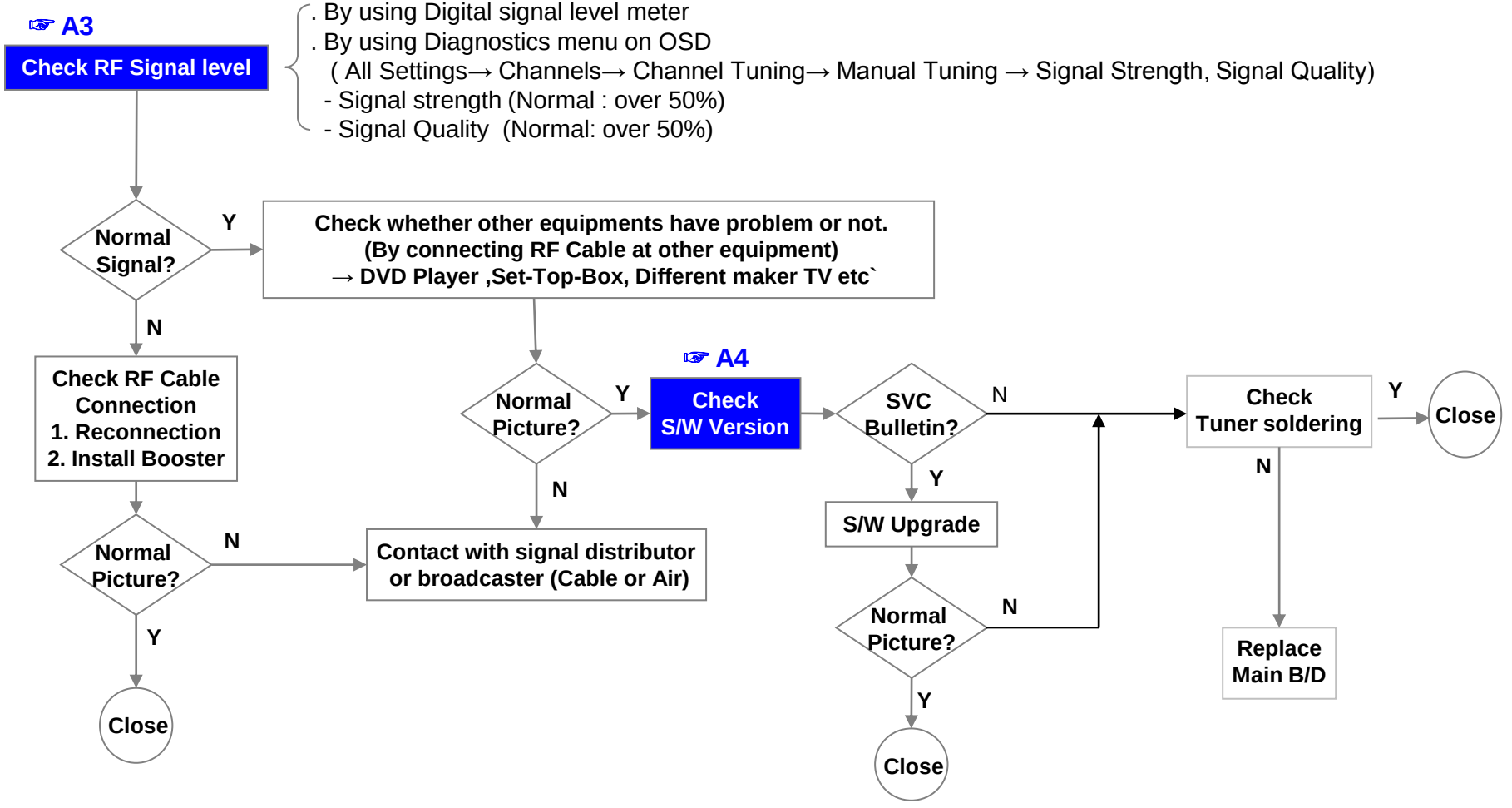

※Precaution ☞A4 & A2

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

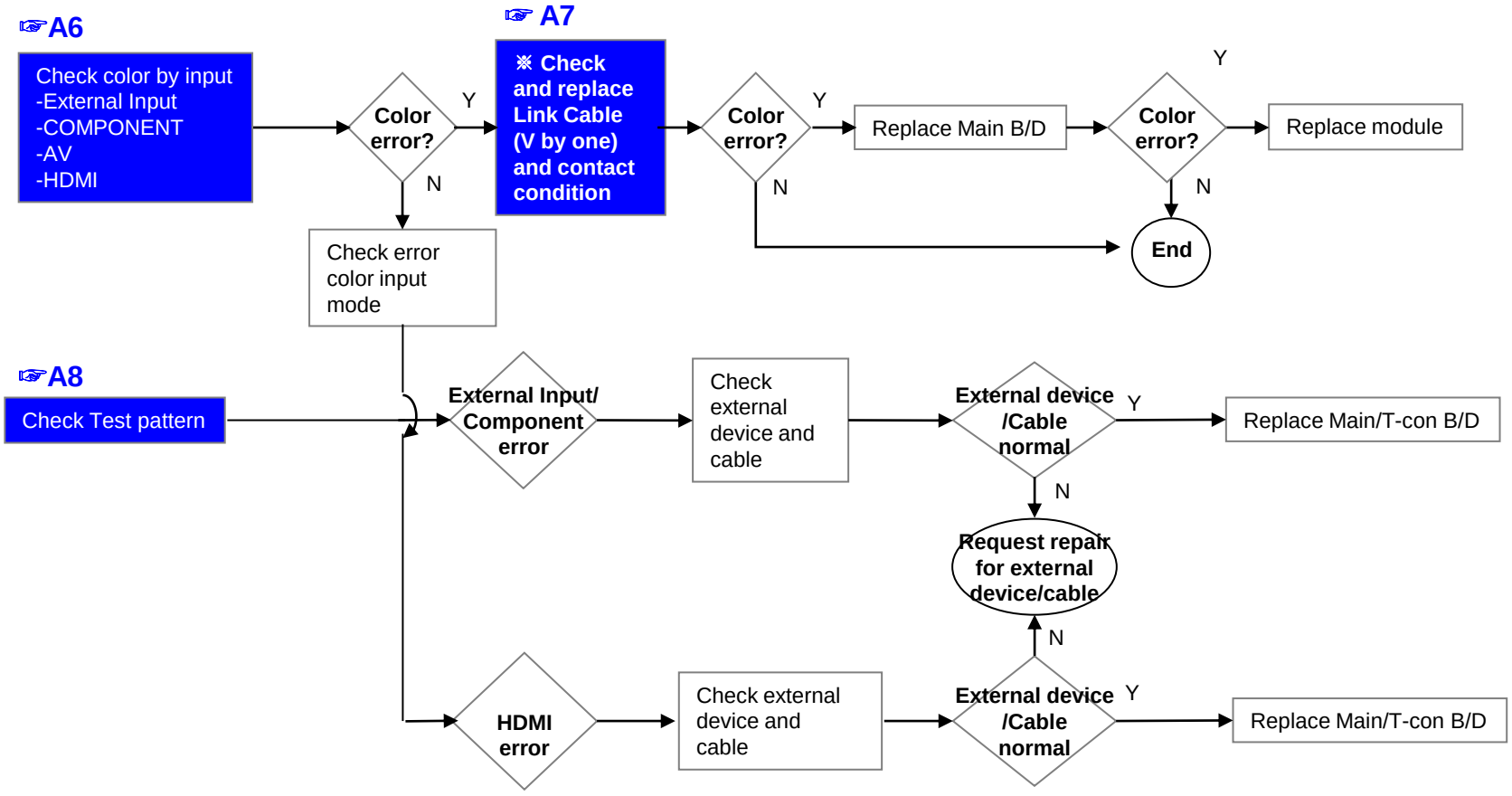
| | Error symptom | A. Video error | Established date | | |
|---|---|---|---|---|---|
| | | No video/ No audio | Revised date | | 2/16 |



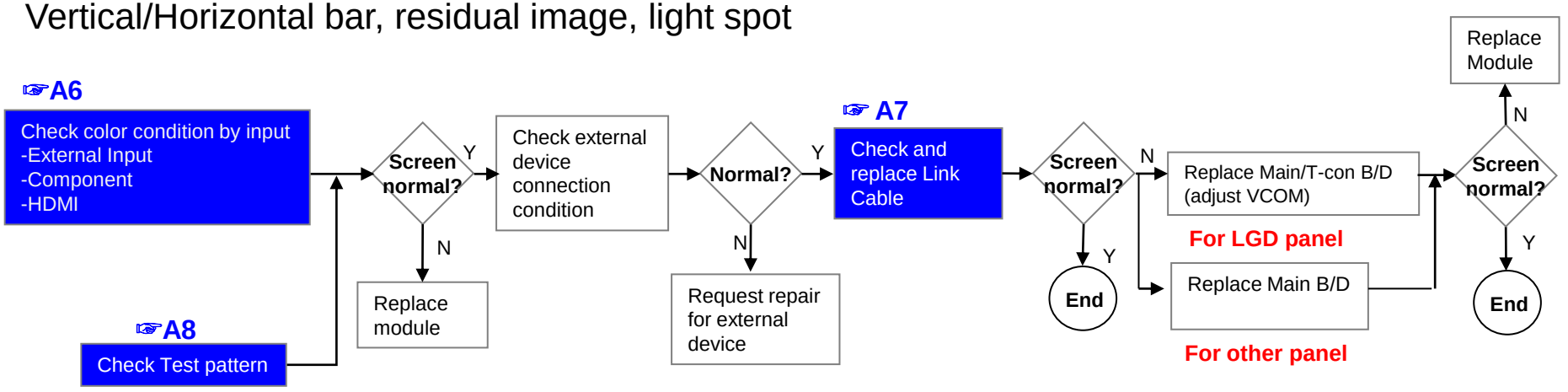
| | Error symptom | A. Video error | Established date | | |
|---|---|---|---|---|---|
| | | Picture broken/ Freezing | Revised date | | 3/16 |



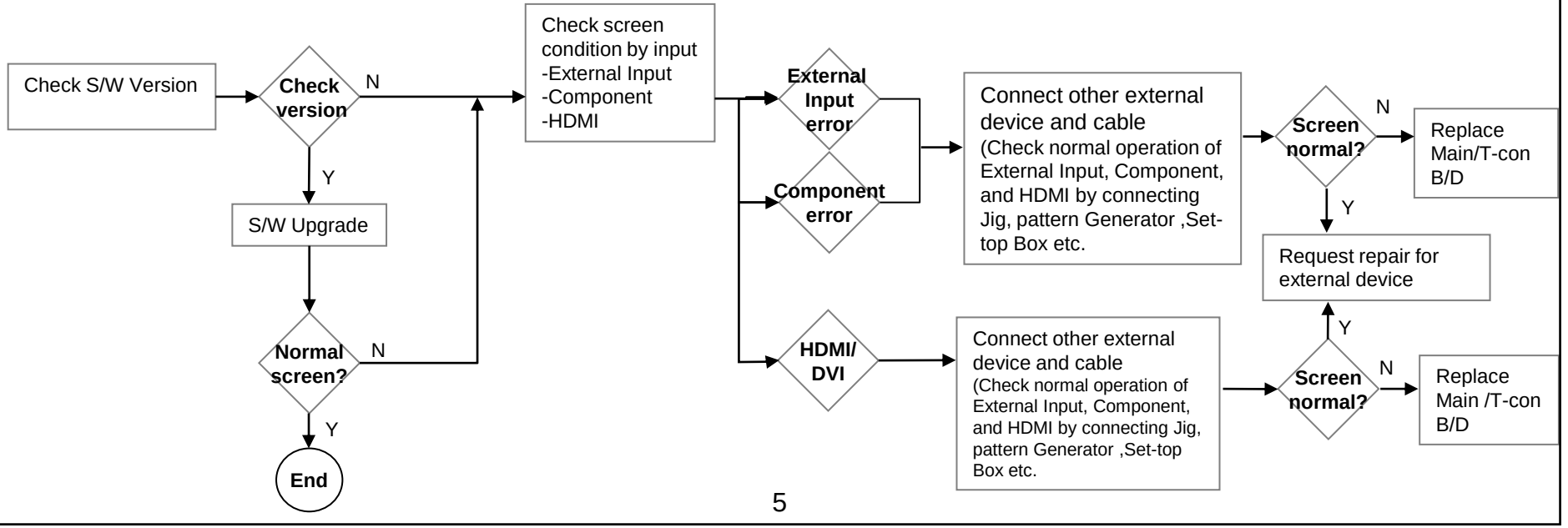
| | Error symptom | A. Video error | Established date | | |
|---|---|---|---|---|---|
| | | Color error | Revised date | | 4/16 |



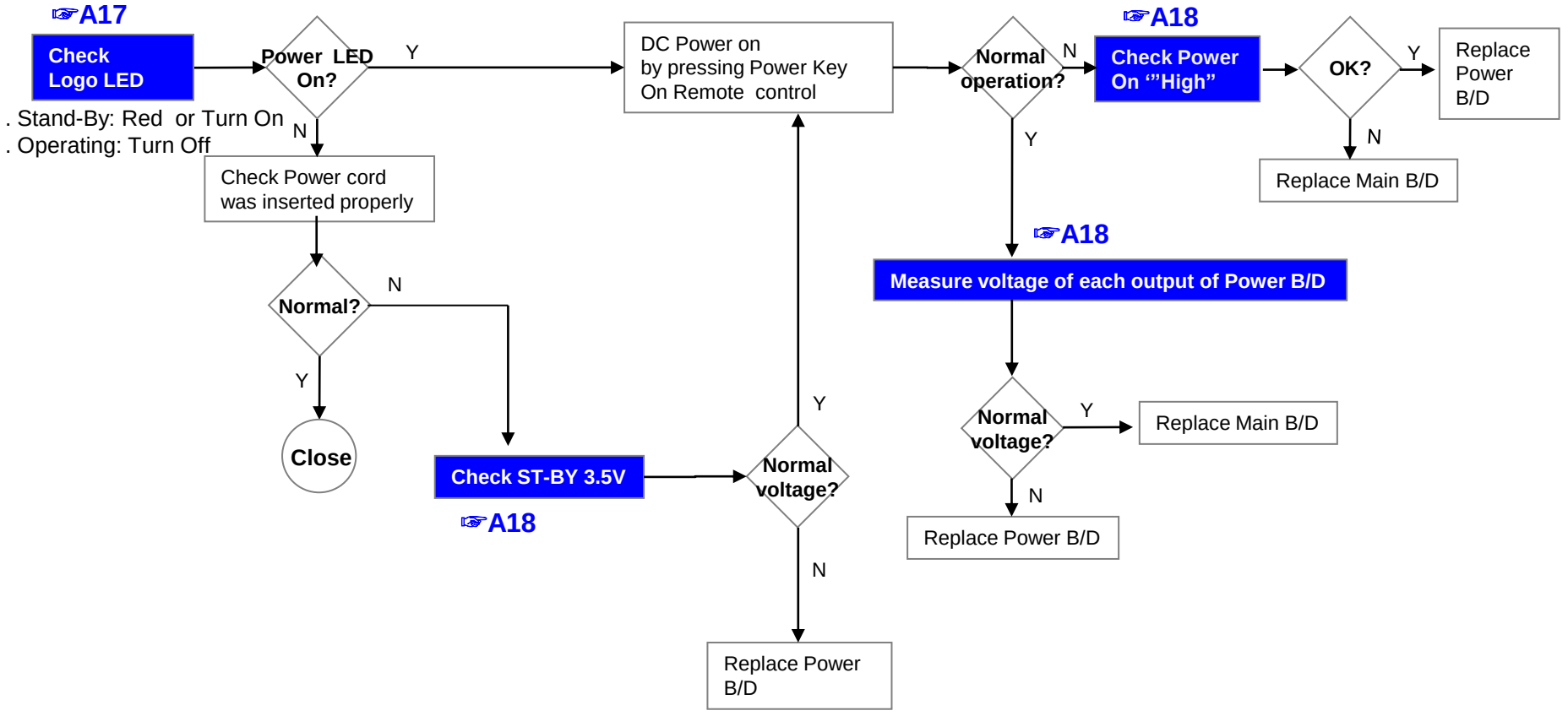
## Vertical/Horizontal bar, residual image, light spot



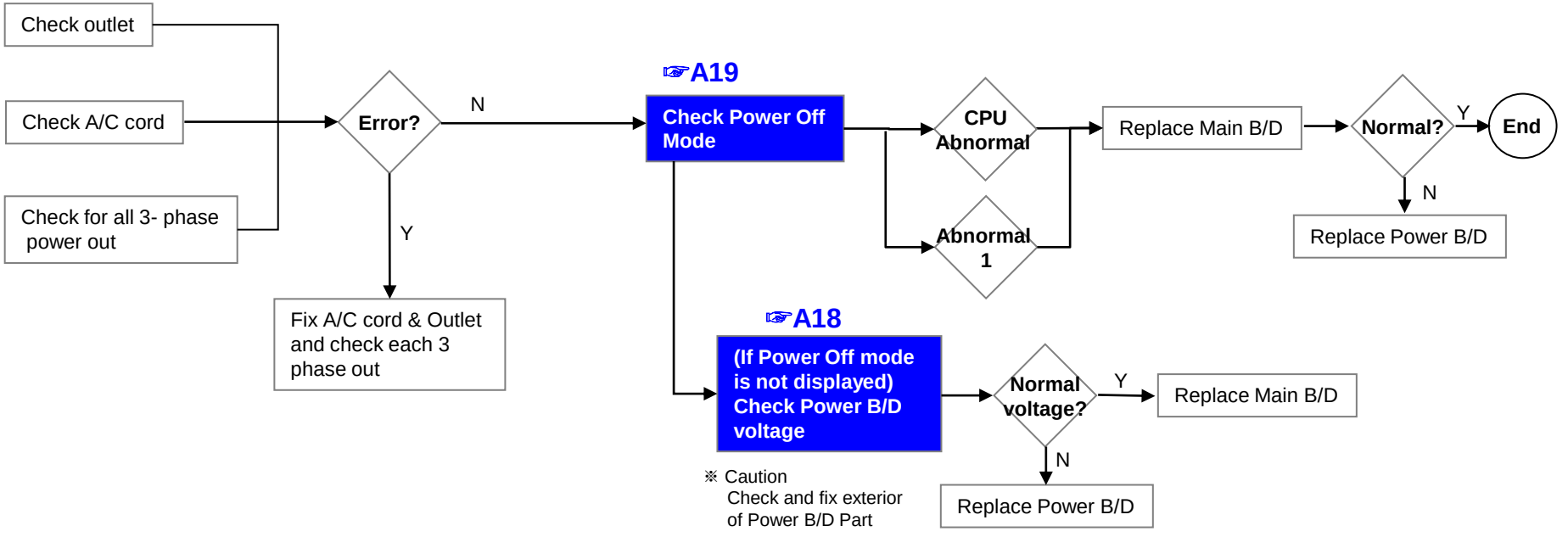

## External device screen error-Color error



| | Error symptom | B. Power error | Established date | | |
|---|---|---|---|---|---|
| | | No power | Revised date | | 6/16 |



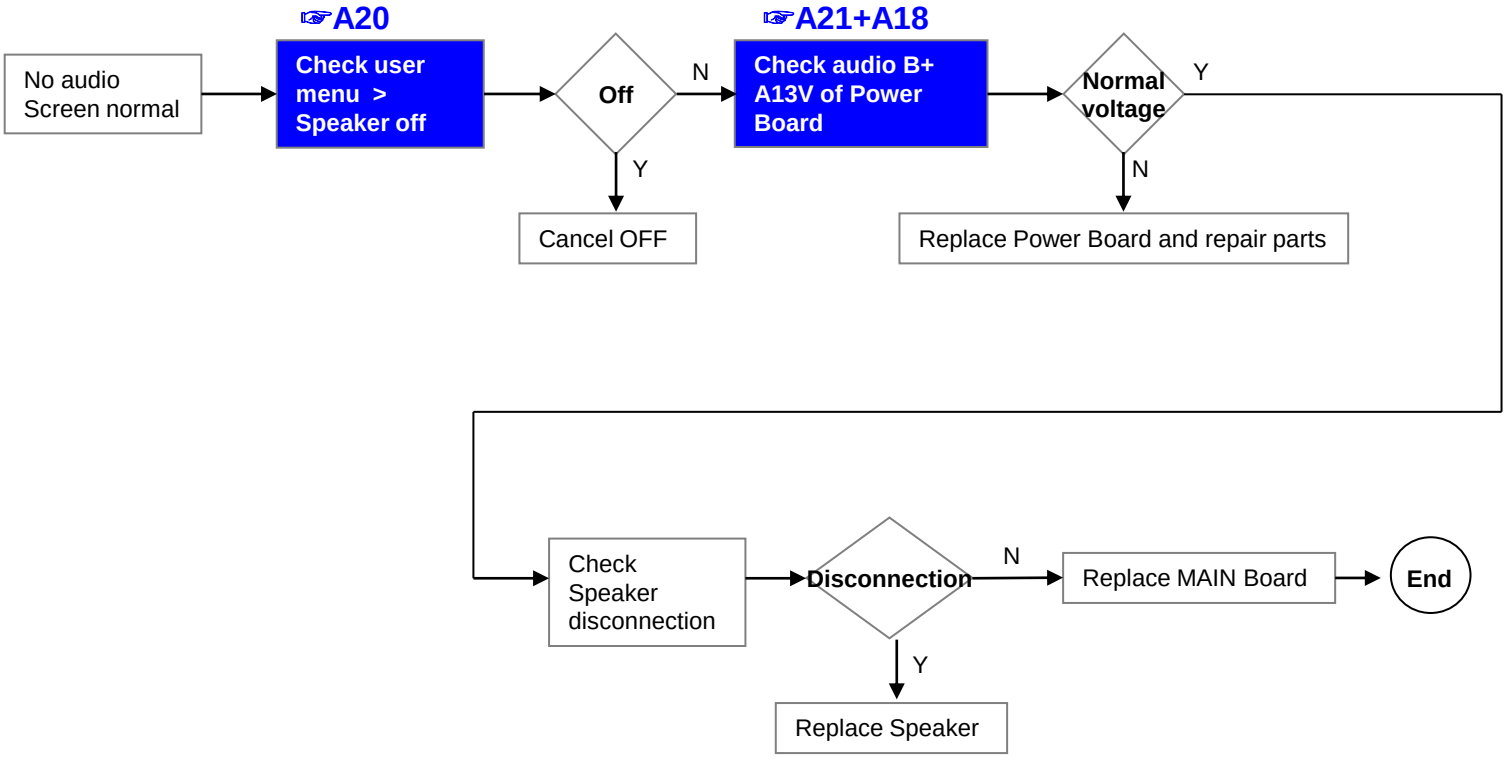
| | Error symptom | B. Power error | Established date | | |
|---|---|---|---|---|---|
| | | Off when on, off while viewing, power auto on/off | Revised date | | 7/16 |



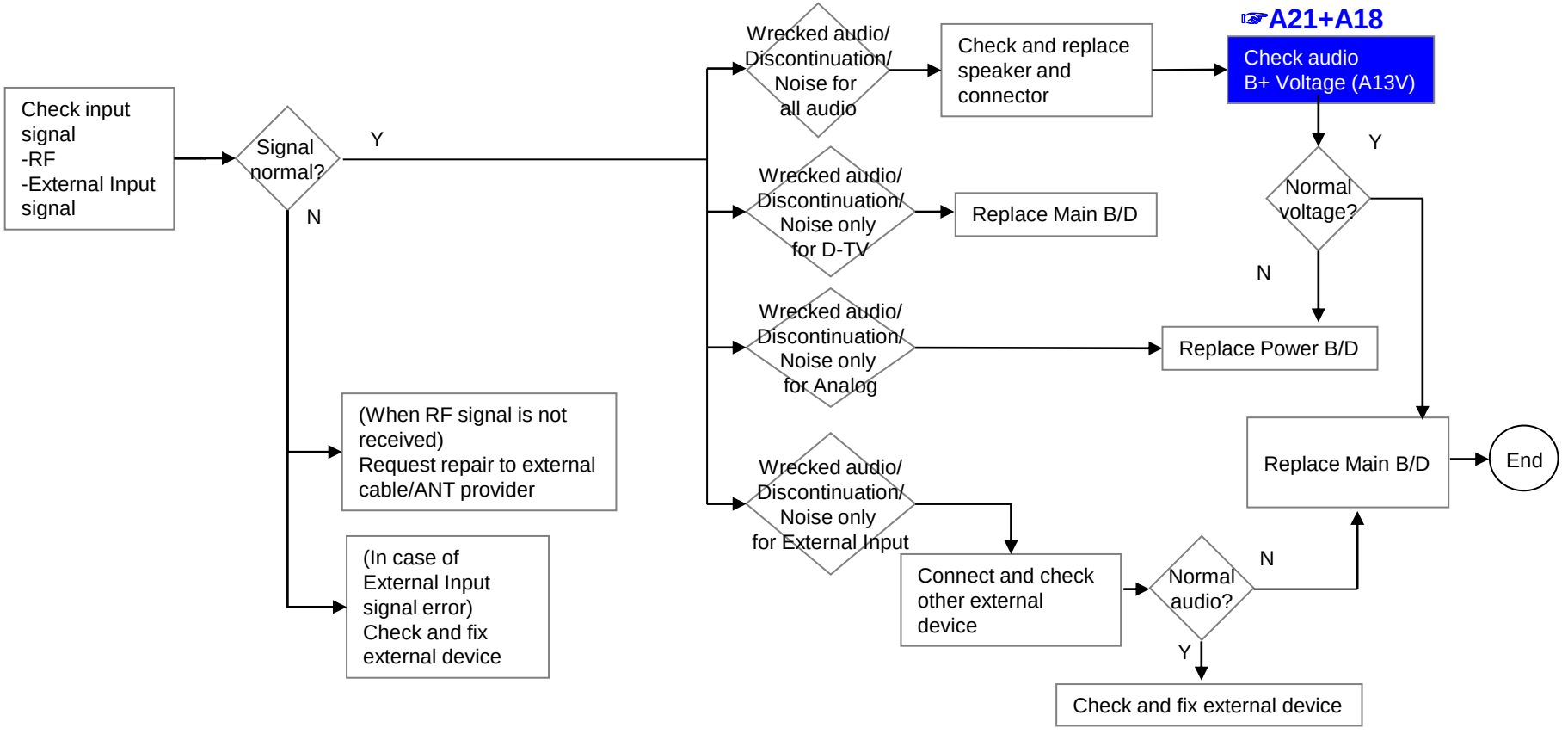

*** Please refer to the all cases which can be displayed on power off mode.**

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

| | Error symptom | C. Audio error | Established date | | |
|---|---|---|---|---|---|
| | | No audio/ Normal video | Revised date | | 8/16 |

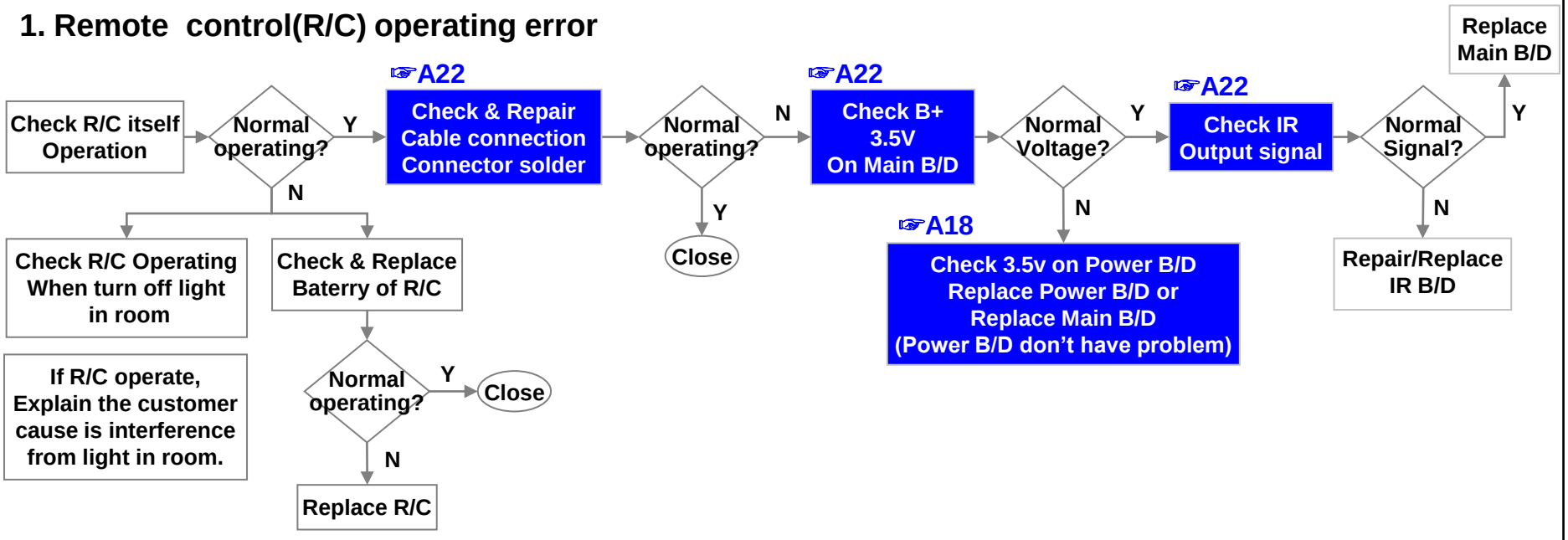


**→ abnormal audio/discontinuation/noise is same after "Check input signal" compared to No audio**

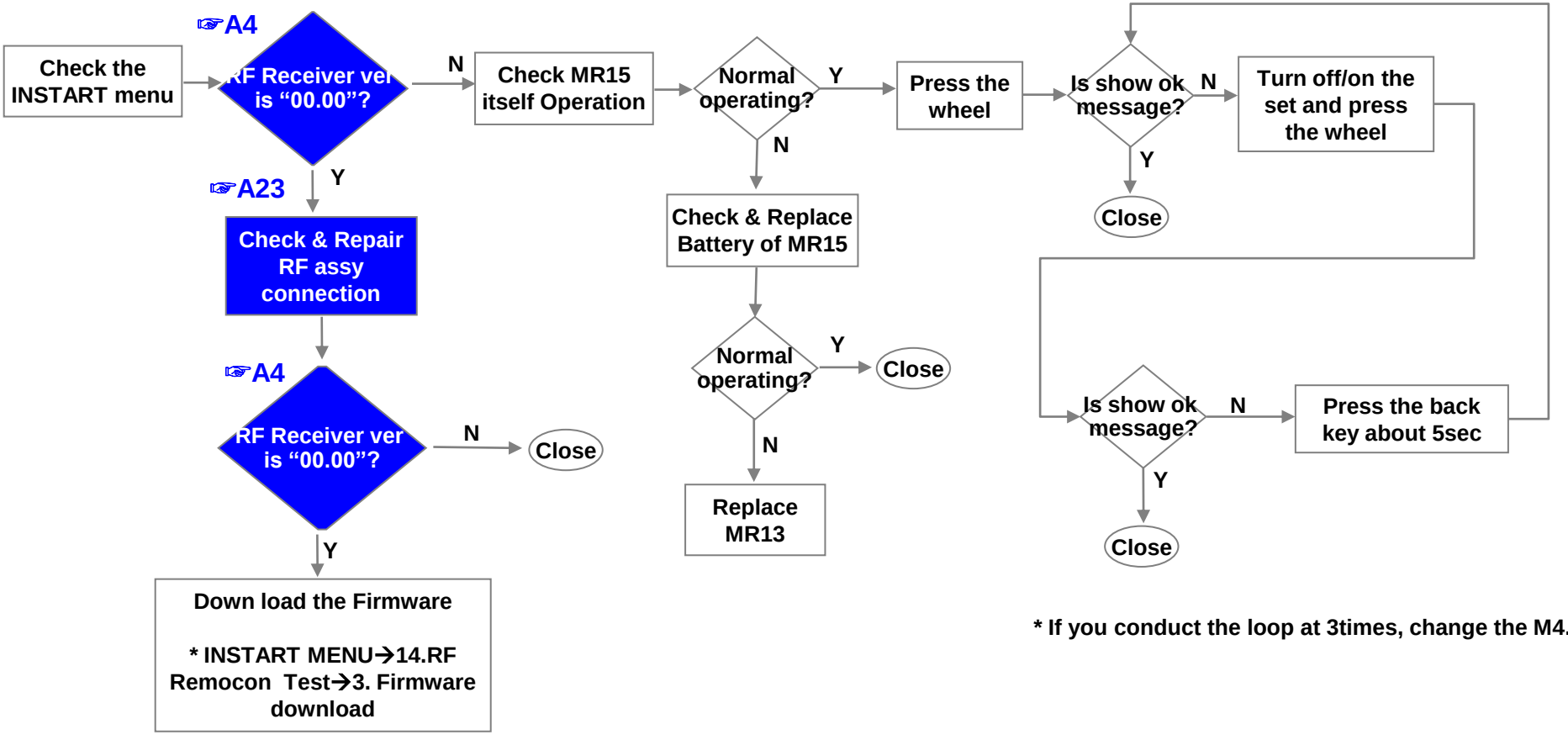


| | Error symptom | D. Function error | Established date | | |
|---|---|---|---|---|---|
| | | Remote control & Local switch checking | Revised date | | 10/16 |

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



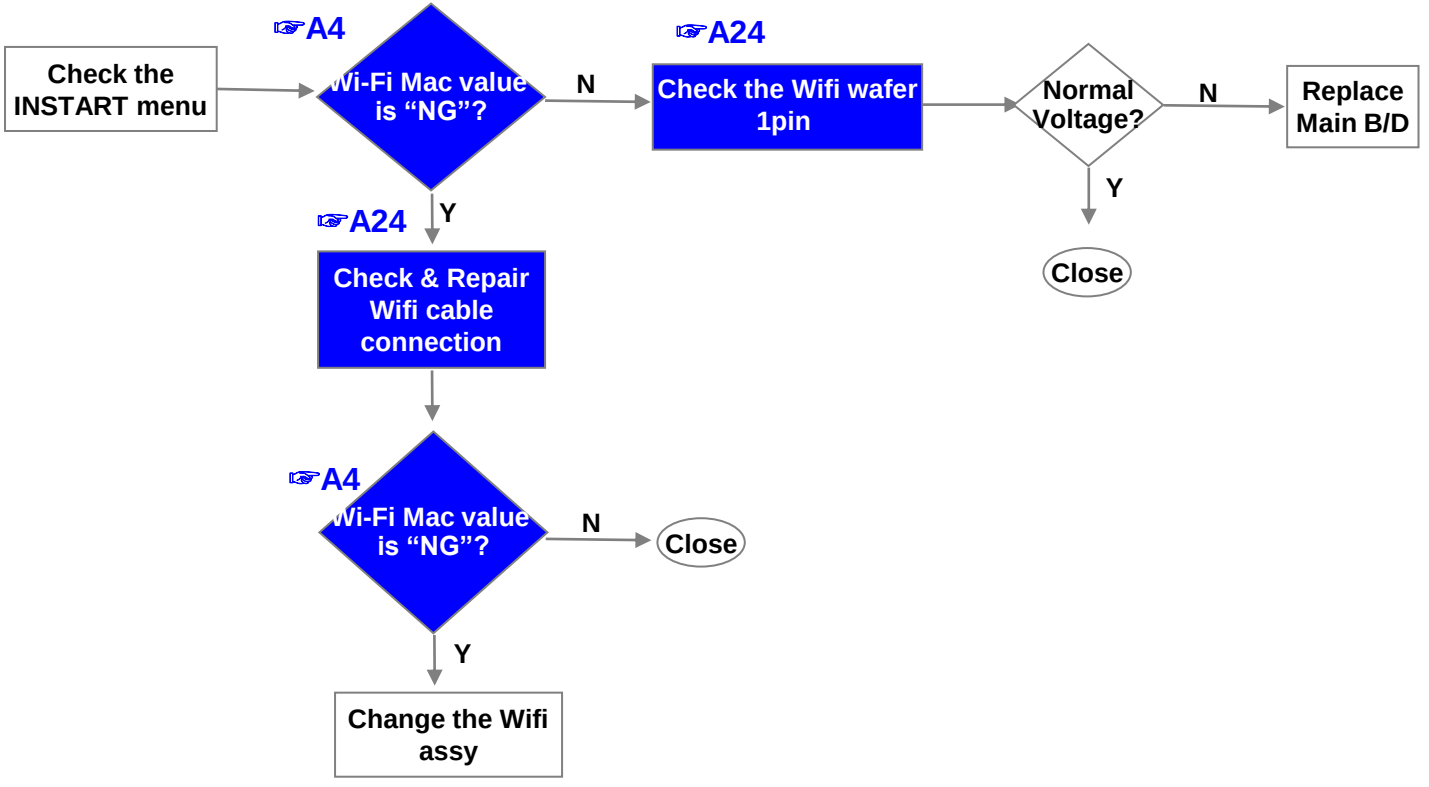
## 2. MR15(Magic Remocon) operating error (*UH61 Model doesn`t support Magic Remocon)*



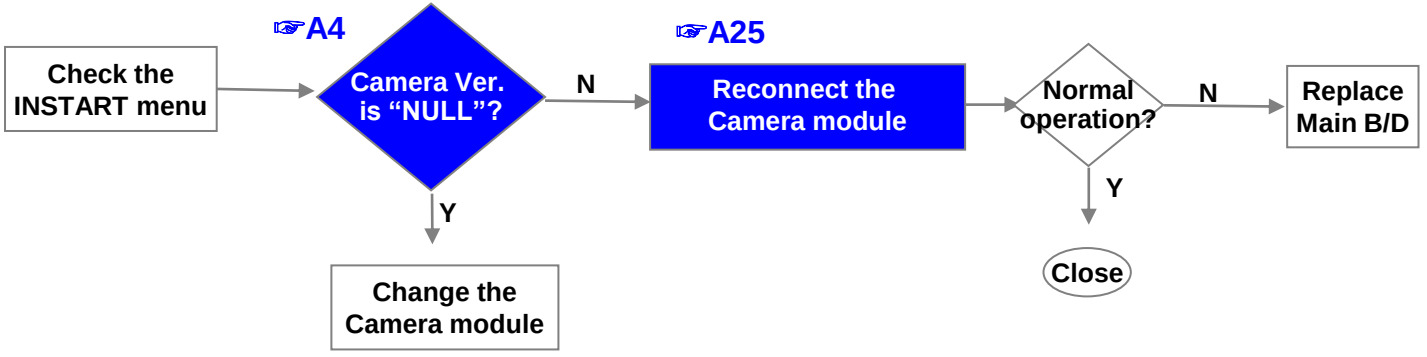

*** If you conduct the loop at 3times, change the M4.**

| | Error symptom | D. Function error | Established date | | |
|---|---|---|---|---|---|
| | | Wifi operating checking | Revised date | | 12/16 |

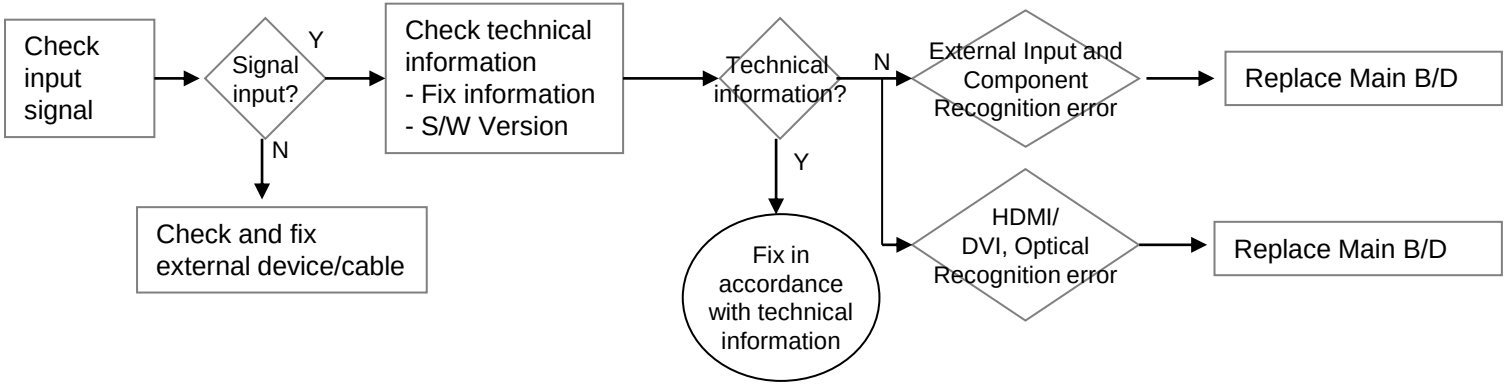
## 3.Wifi operating error



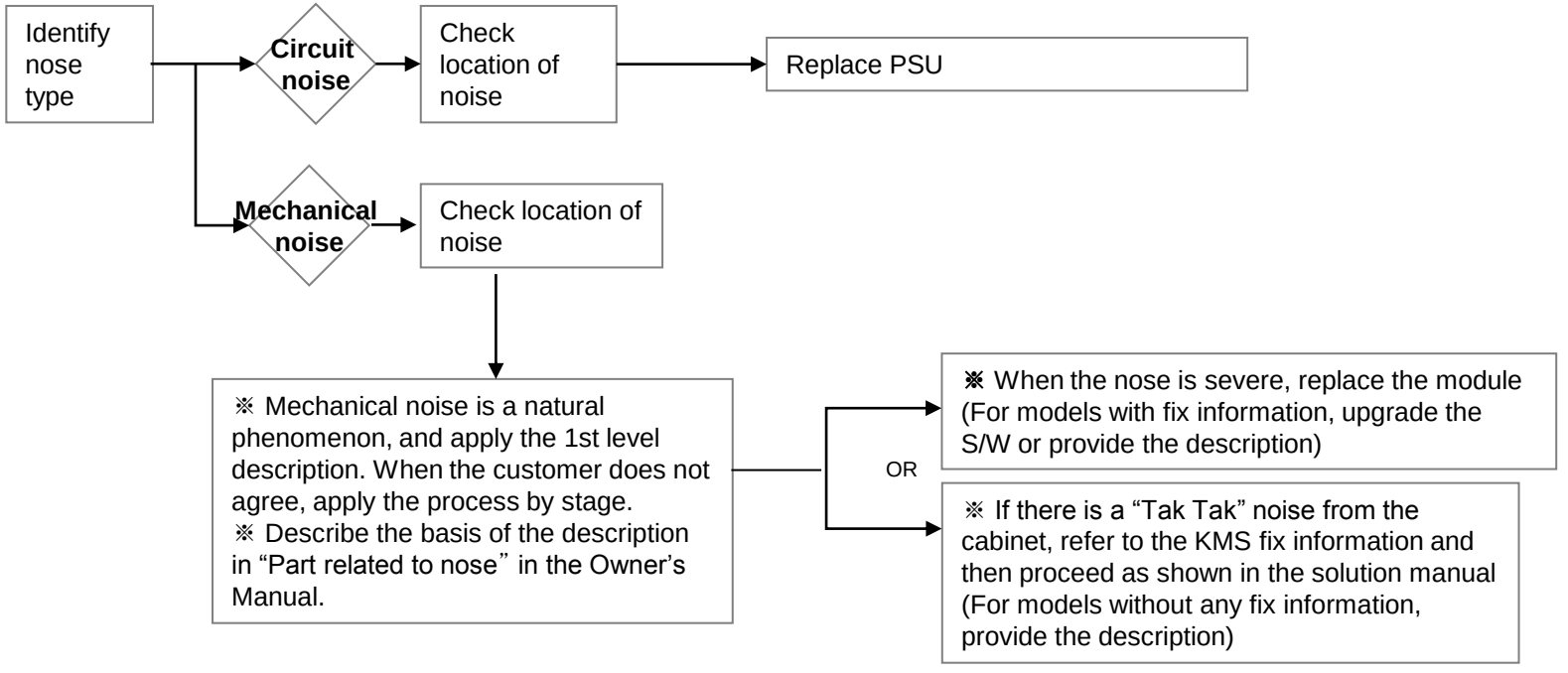
## 4.Camera operating error (*Camera operation is not support)*



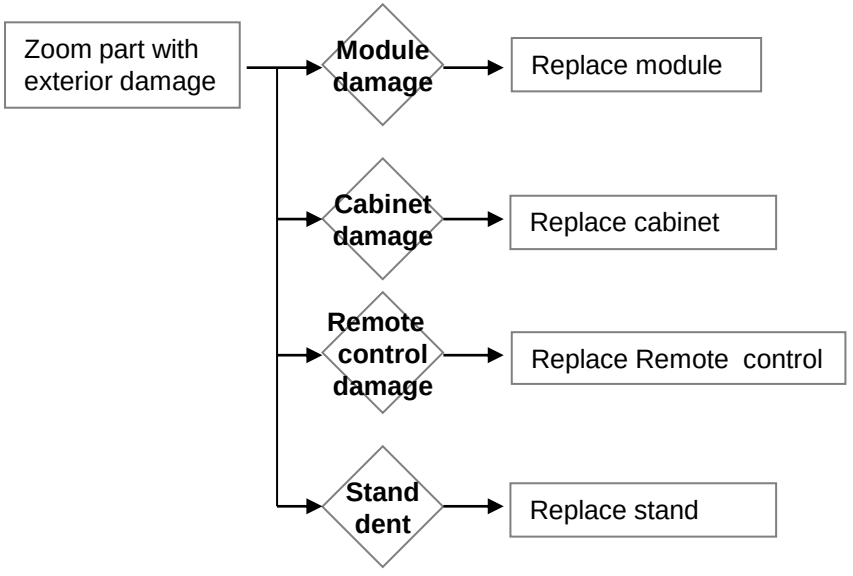
| | Error symptom | D. Function error | Established date | | |
|---|---|---|---|---|---|
| | | External device recognition error | Revised date | | 14/16 |



| | Error symptom | E. Noise | Established date | | |
|---|---|---|---|---|---|
| | | Circuit noise, mechanical noise | Revised date | | 15/16 |



| | Error symptom | F. Exterior defect | Established date | | |
|---|---|---|---|---|---|
| | | Exterior defect | Revised date | | 16/16 |



# 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 reconnection condition | A7 | |
| 8 | | Adjustment Test pattern - ADJ Key | A8 | |
| 9 | <Appendix> Defected Type caused by T-Con/ Inverter/ Module | Exchange Main Board (1) | A-1/5 | |
| 10 | | Exchange Main Board (2) | A-2/5 | |
| 11 | | Exchange Power Board (PSU) | A-3/5 | |
| 12 | | Exchange Module (1) | A-4/5 | |
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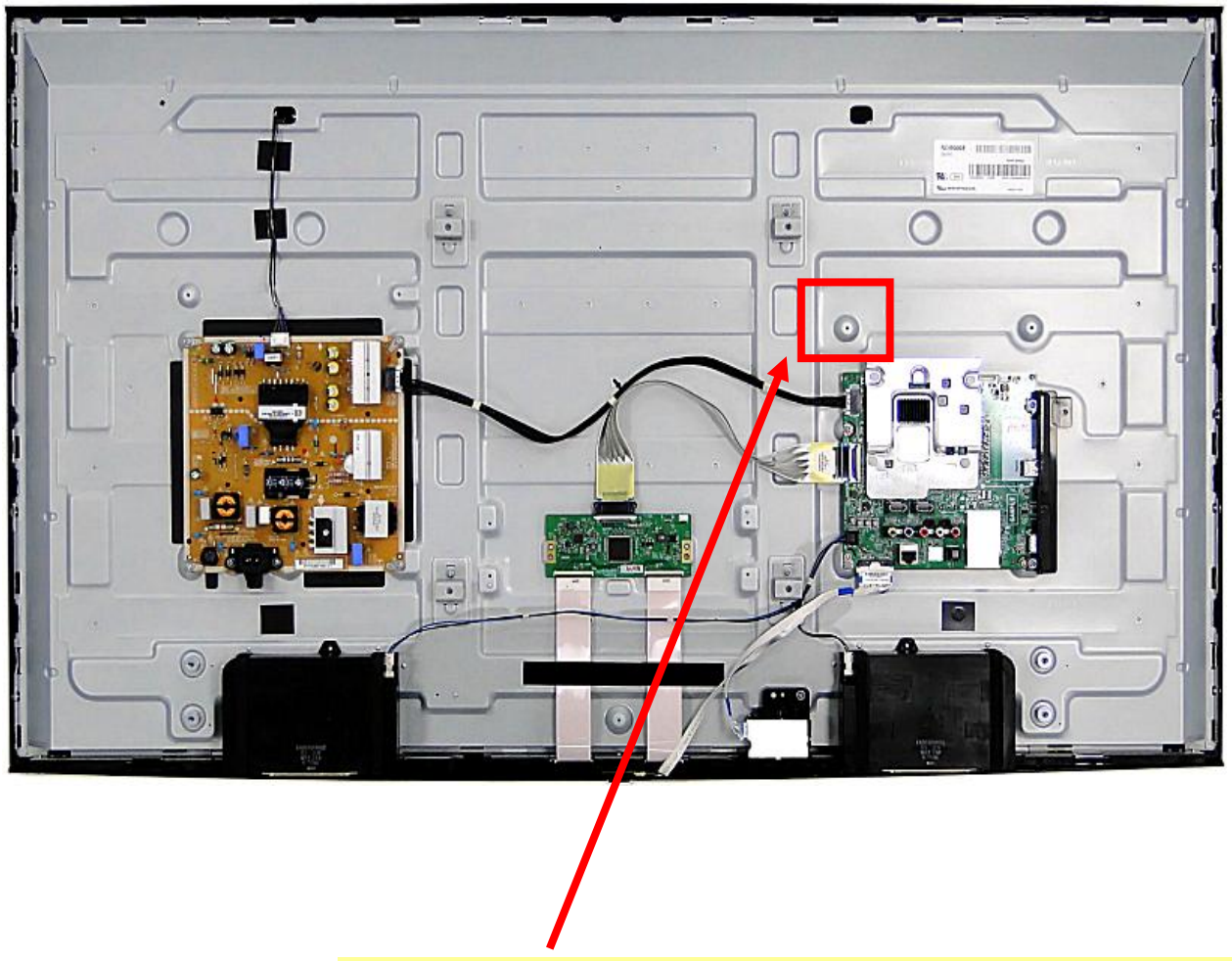
# Contents of Standard Repair Process Detail Technical Manual


| No. | Error symptom | Content | Page | Remarks |
|---|---|---|---|---|
| 14 | B. Power error_ No power | Check front display LED | A17 | |
| 15 | | Check power input Voltage & ST-BY 3.5V | A18 | |
| 16 | B. Power error_Off when on, off while viewing | POWER OFF MODE checking method | A19 | |
| 17 | C. Audio error_ No audio/Normal video | Checking method in menu when there is no audio | A20 | |
| 18 | | Voltage and speaker checking method when there is no audio | A21 | |
| 19 | D. Function error | Remote control operation checking method | A22 | |
| 20 | | Motion Remote operation checking method | A23 | Not Used |
| 21 | | Wifi operation checking method | A24 | |
| 22 | | Camera operation checking method | A25 | Not Used |
| 23 | E. Etc | Tool option changing method | A26 | |

# 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 |

<49UH6100>



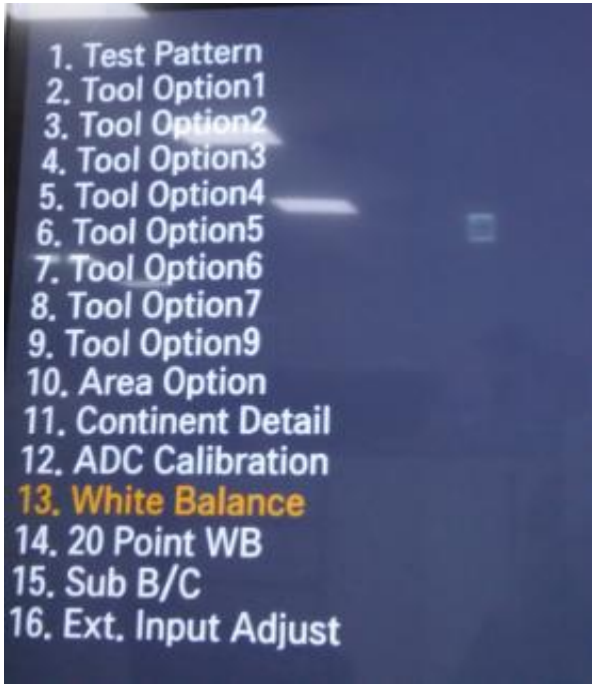
After turning on the power and disassembling the case, check with the naked eye, whether you can see light from locations.

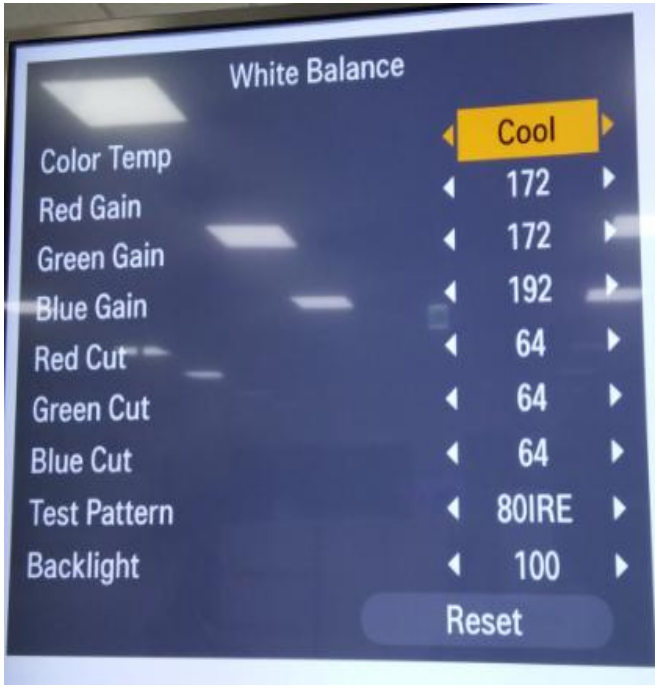
**A1**

# 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.

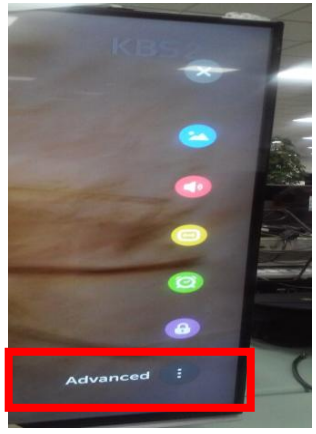
2. Enter into White Balance of item 13.

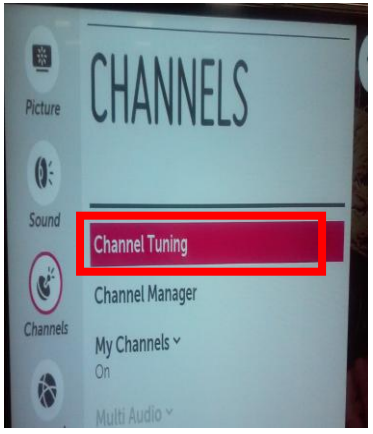
3. After recording the R, G, B (GAIN, Cut) value of Color Temp (Cool/Medium/Warm), re-enter the value after replacing the MAIN BOARD.

# Standard Repair Process Detail Technical Manual

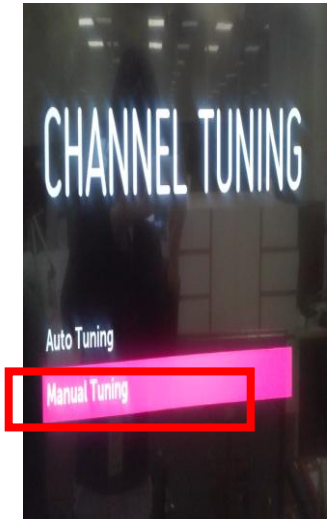
| | Error symptom | A. Video error_Video error, video lag/stop | Established date | | |
|---|---|---|---|---|---|
| | Content | TUNER input signal strength checking method | Revised date | | A3 |

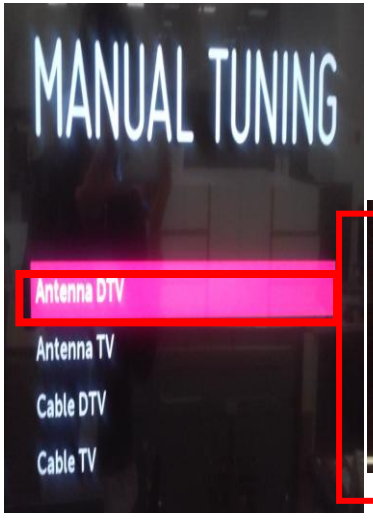
<ALL MODELS>

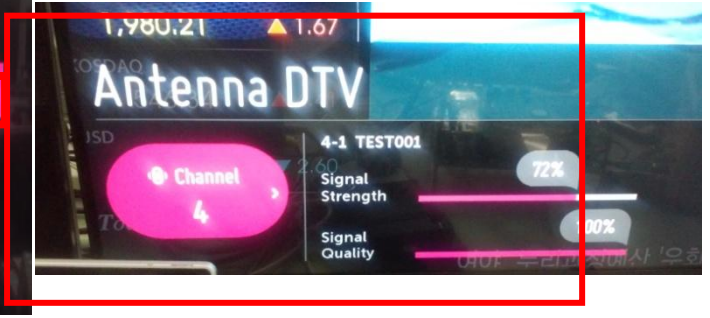



Advanced→ Channels → Channel Tuning→ Manual Tuning



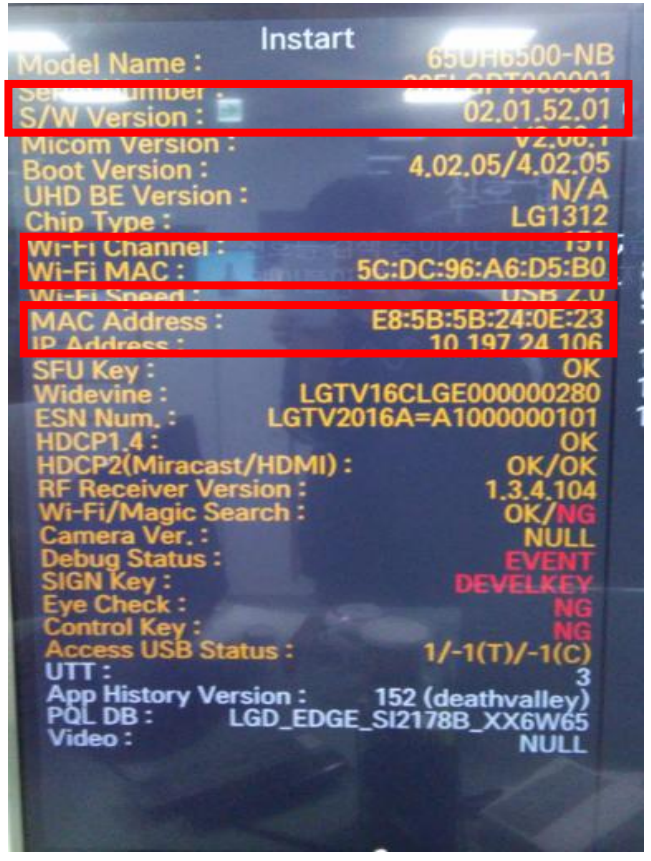




When the signal is strong, use the attenuator (-10dB, -15dB, -20dB etc.)

<ALL MODELS>

## 1. Checking method for Remote control for adjustment

**Version**

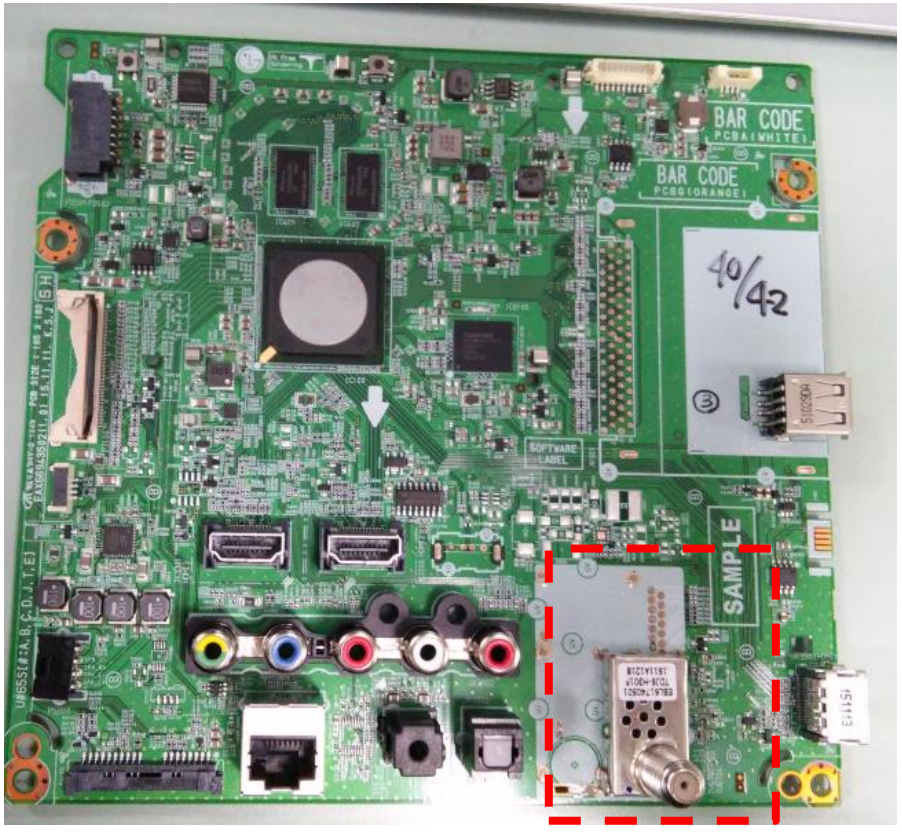



Press the IN-START with the Remote control for adjustment

# 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 |

<ALL MODELS>

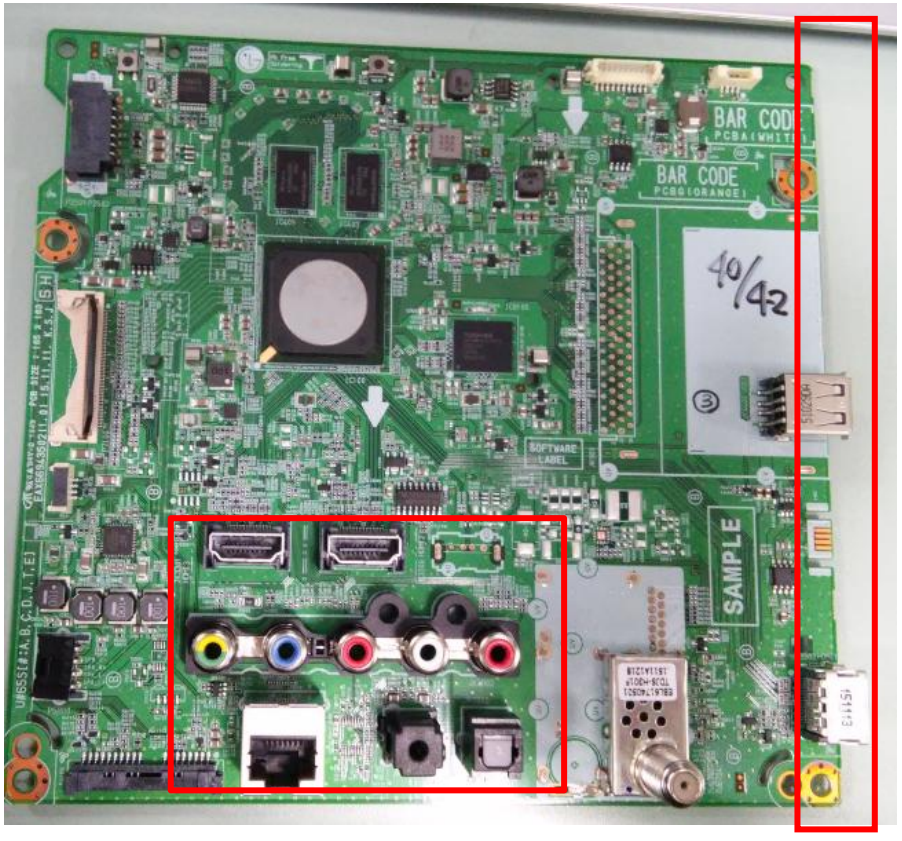



Checking method:
1. Check the signal strength or check whether the screen is normal when the external device is connected.
2. After measuring each voltage from power supply, finally replace the MAIN BOARD.
3. If you can`t see the UHD live TV, please connect signal at left side of jack. (Korea model only)

# Standard Repair Process Detail Technical Manual

| | | | | | |
|---|---|---|---|---|---|
| | Error symptom | A. Video error _Vertical/Horizontal bar, residual image, light spot | Established date | | |
| | Content | connection diagram (1) | Revised date | | A6 |

<ALL MODELS>

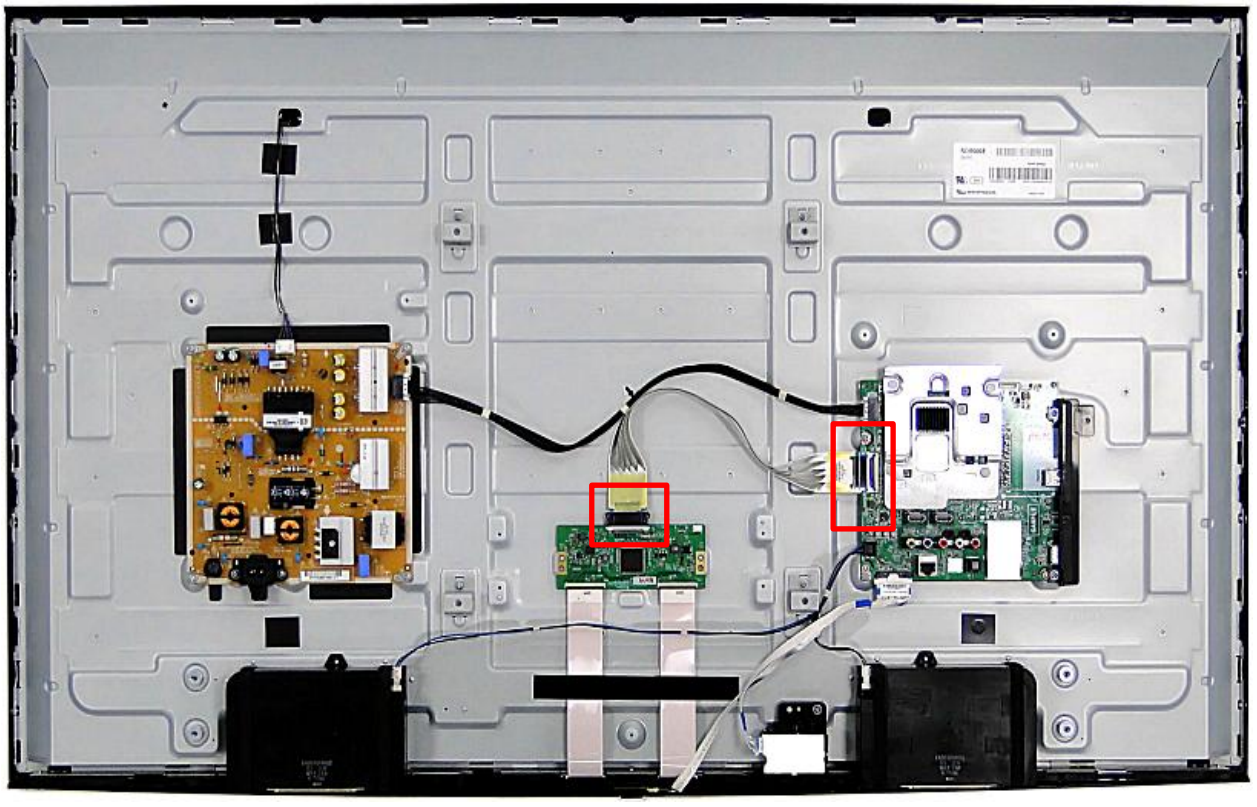



**As the part connecting to the external input, check the screen condition by signal**

# Standard Repair Process Detail Technical Manual

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

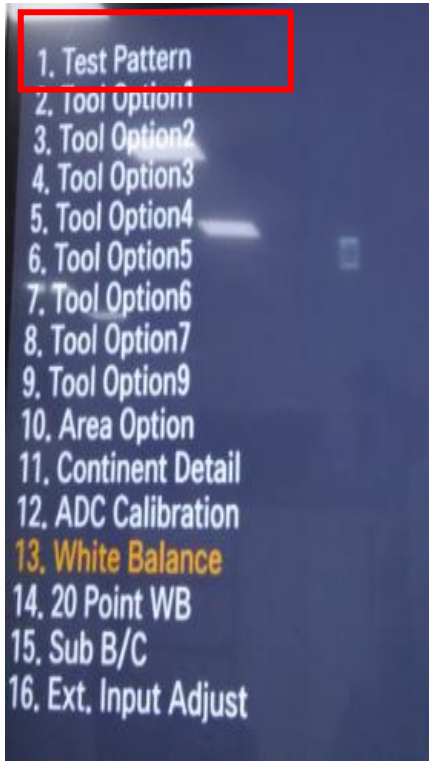
<ALL MODELS>

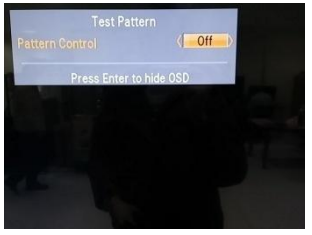


Check the contact condition of the Link Cable, especially dust or mis insertion.

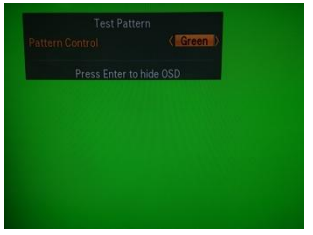
# Standard Repair Process Detail Technical Manual

| | Error symptom | A. Video error_Color error | Established date | | |
|---|---|---|---|---|---|
| | Content | Adjustment Test pattern - ADJ Key | Revised date | | A8 |

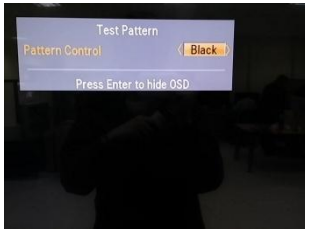











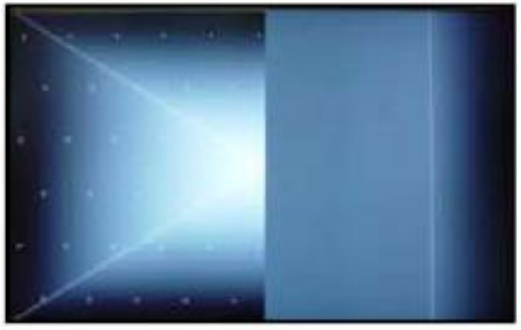



You can view 6 types of patterns using the ADJ Key

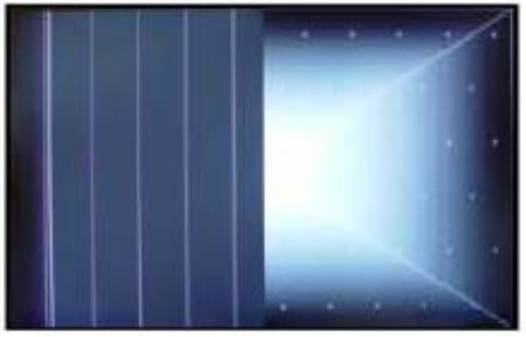
Checking item : 1. Defective pixel 2. Residual image 3. MODULE error (ADD-BAR,SCAN BAR..)
4.Video error (Classification of MODULE or Main-B/D!)

# Appendix : Exchange Main Board (1)

Solder defect, CNT Broken

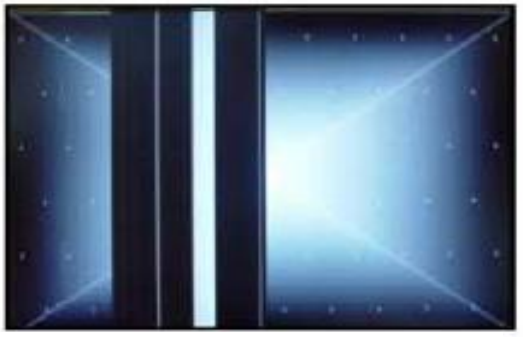


Solder defect, CNT Broken

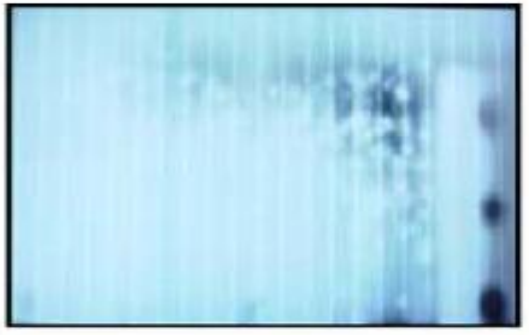


Solder defect, CNT Broken

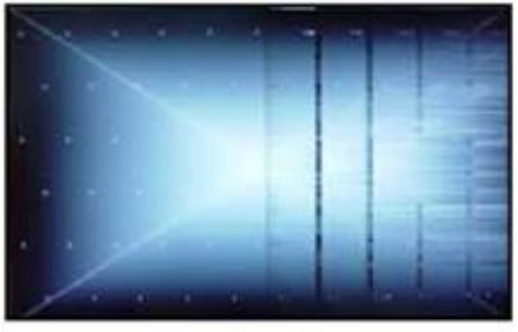
Solder defect, CNT Broken



Solder defect, CNT Broken



Abnormal Power Section

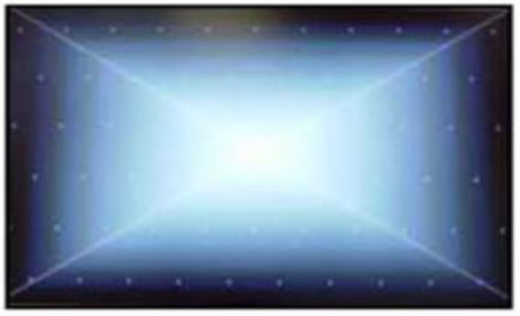


Solder defect, Short/Crack

Abnormal Power Section

Solder defect, Short/Crack

# Appendix : Exchange Main Board (2)



Abnormal Power Section

Abnormal Power Section

Solder defect, Short/Crack

Solder defect, Short/Crack

Fuse Open, Abnormal power section

Abnormal Display

GRADATION


Noise

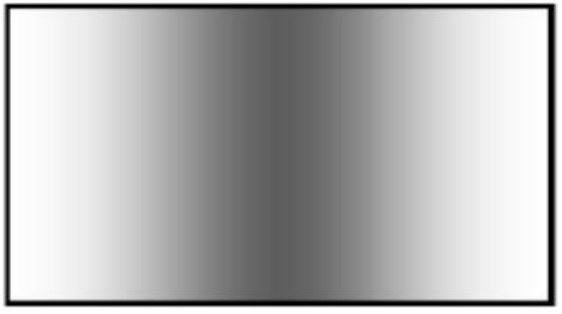
GRADATION

# Appendix : Exchange Power Board (PSU)

No Light

Dim Light

Dim Light



Dim Light

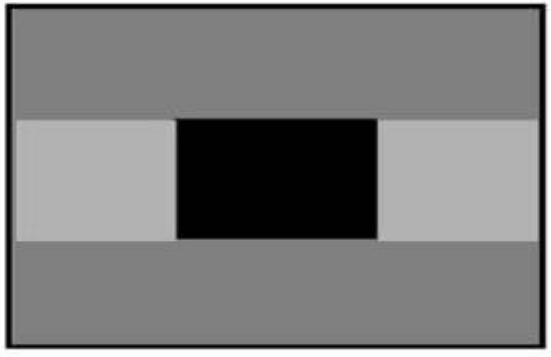

No picture/Sound Ok

# Appendix : Exchange the Module (1)

Panel Mura, Light leakage

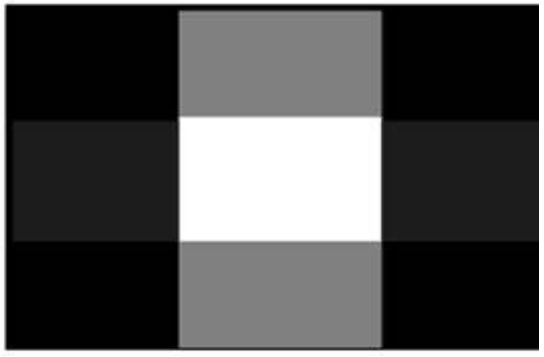
Panel Mura, Light leakage

Press damage



Crosstalk

Press damage



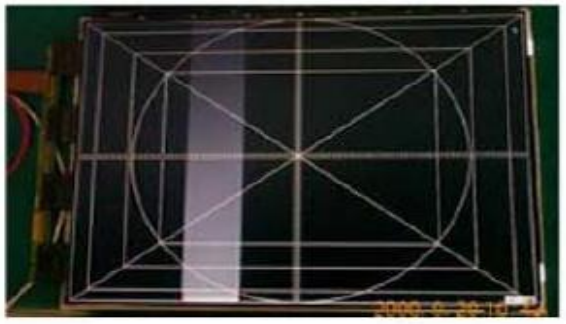
Crosstalk

Press damage

**Un-repairable Cases**

**In this case please exchange the module.**

# Appendix : Exchange the Module (2)

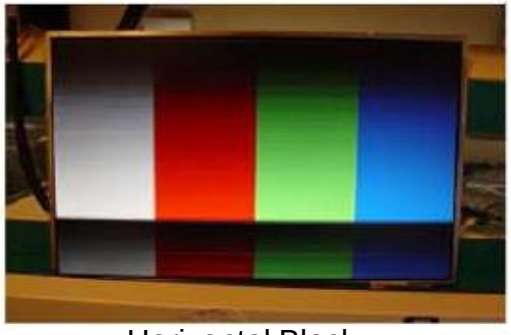


Vertical Block
Source TAB IC Defect

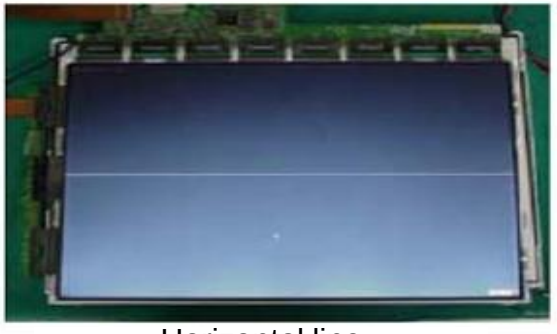
Vertical Line
Source TAB IC Defect

Vertical Block
Source TAB IC Defect

Horizontal Block
Gate TAB IC Defect



Horizontal Block
Gate TAB IC Defect



Horizontal line
Gate TAB IC Defect

Horizontal Block
Gate TAB IC Defect

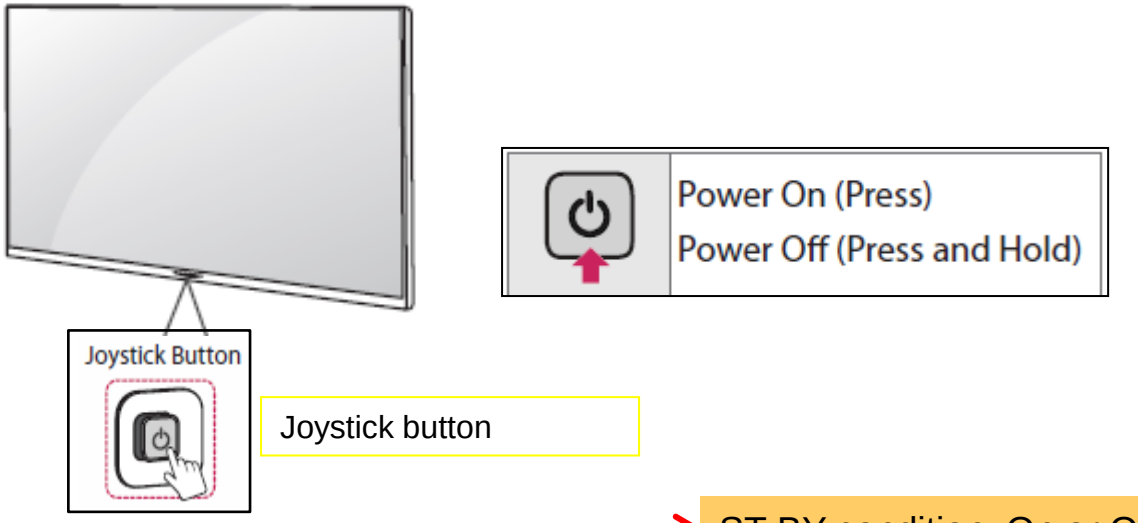
**Un-repairable Cases**

**In this case please exchange the module.**

# Standard Repair Process Detail Technical Manual

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

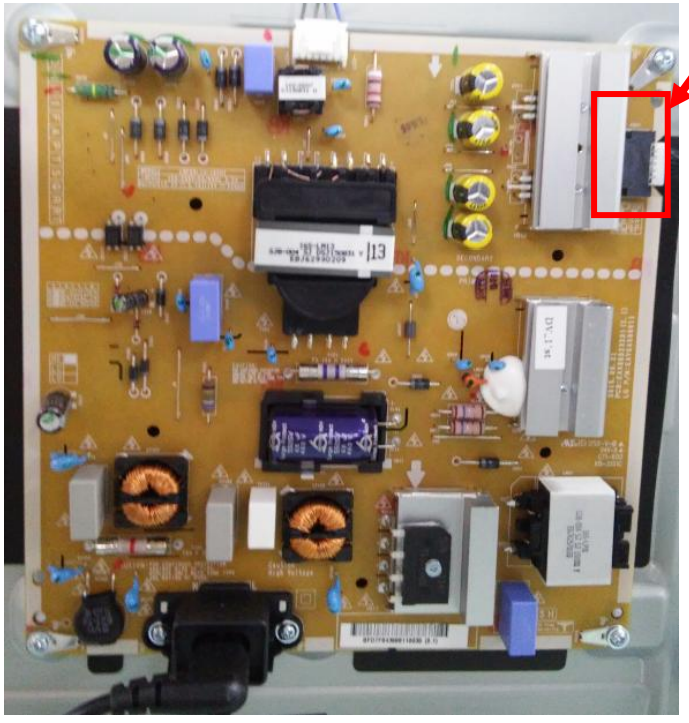
<49UH61>




**North America model doesn`t use lum.sensor**

| | Error symptom | B. Power error _No power | Established date | | |
|---|---|---|---|---|---|
| | Content | Check power input voltage and ST-BY 3.5V | Revised date | | A18 |

Check the DC 13.2V

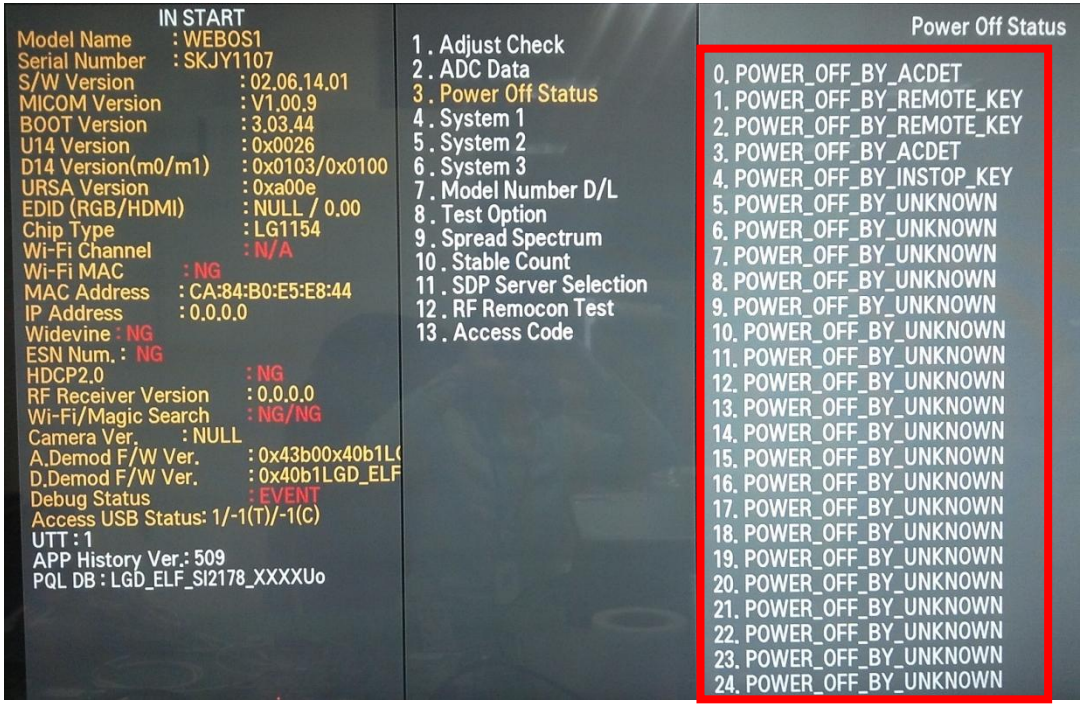


| P201<br>YEONHO<br>(SMAW200-H12S5K) | | | |
|---|---|---|---|
| Pin No. | Assignment | Pin No. | Assignment |
| 1 | PWR-ON | 2 | N.C |
| 3 | GND | 4 | 13.2V |
| 5 | 13.2V | 6 | 13.2V |
| 7 | 13.2V | 8 | 13.2V |
| 9 | GND | 10 | GND |
| 11 | MS | 12 | P-DIM1 |

# 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>



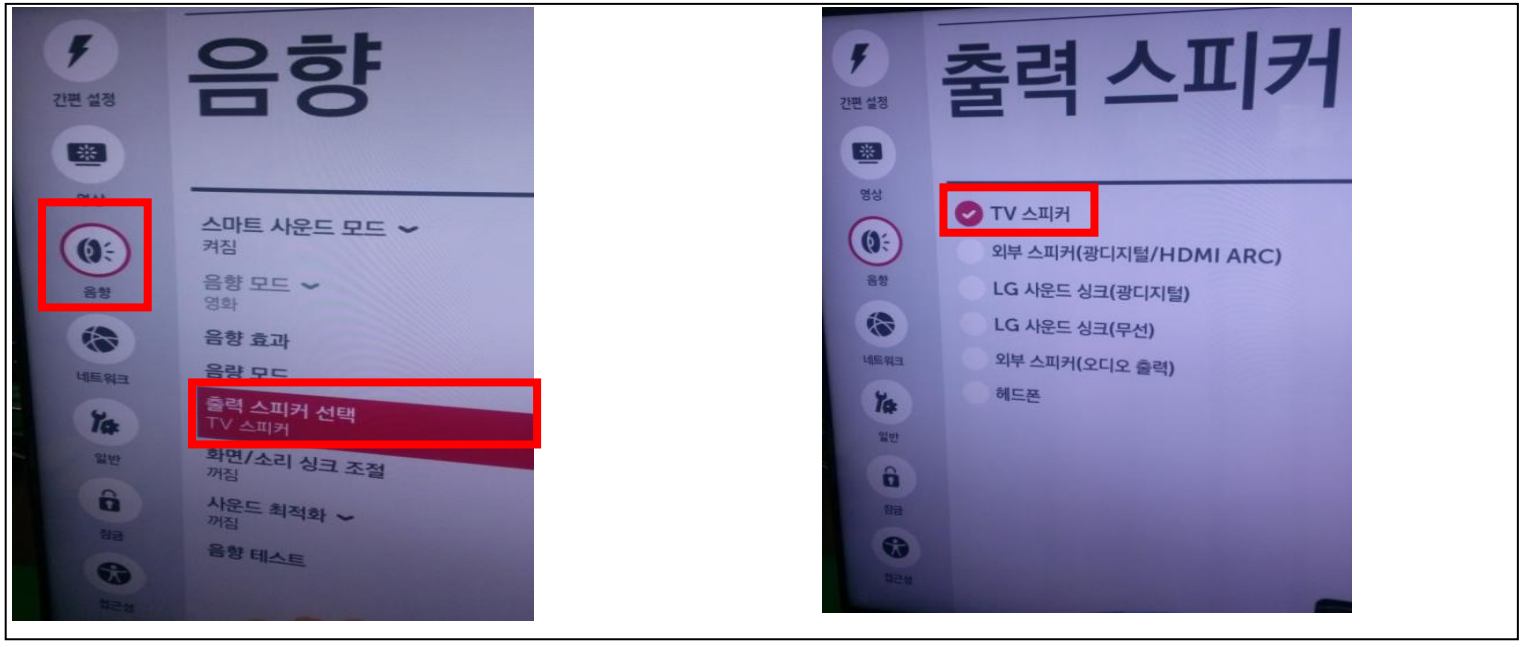

Entry method

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

2. Check the entry into adjustment item 3

| | 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>



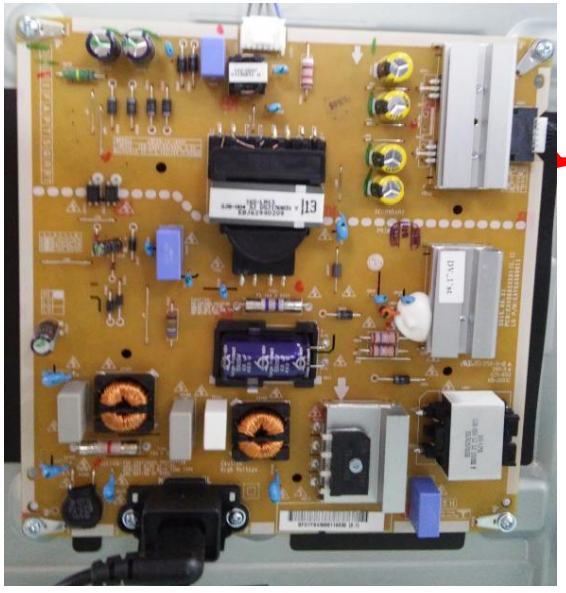

## Checking method

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 |

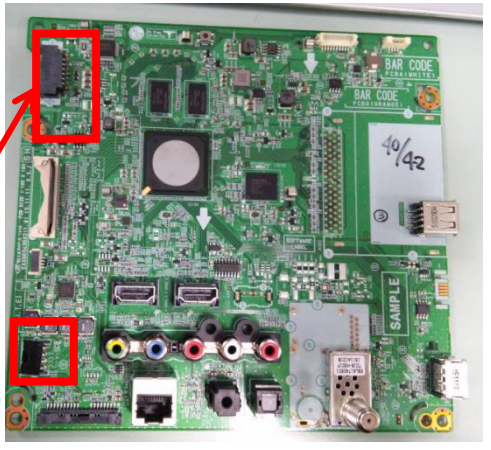
<49UH6100-UH>



② ②

| P201 YEONHO (SMAW200-H12S5K) | | | |
|---|---|---|---|
| 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 | P-DIM1 |

①




③

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

**Checking order when there is no audio**

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

2. Measure the 13V input voltage supplied from Power Board
(If there is no input voltage, remove and check the connector)

3.Connect the tester RX1 to the speaker terminal and if you hear the Chik Chik sound when you touch the GND and output terminal, the speaker is normal.

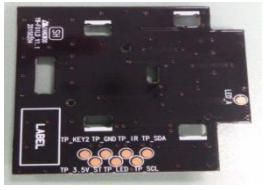
# Standard Repair Process Detail Technical Manual

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

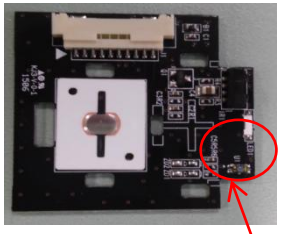
<49UH6100-UH>

①

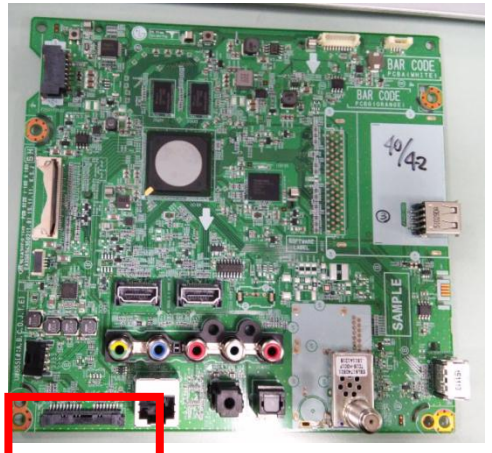
IR & Control Key front



IR & Control Key Rear



IR



②

③

| | |
|---|---|
| 1 | +3.5V_WIFI |
| 2 | WIFI_DM_JACK |
| 3 | WIFI_DP_JACK |
| 4 | GND |
| 5 | WOL/WIFI_POWER_ON_JACK |
| 6 | GND |
| 7 | M-Moudle_RESET |
| 8 | GND |
| 12 | EYE_SDA |
| 13 | EYE_SCL |
| 14 | GND |
| 15 | IR |
| 16 | LED_R_JACK |
| 17 | GND |
| 18 | +3.5V_ST |
| 19 | KEY2_JACK |
| 20 | GND |
| 21 | GND |

**Checking order to check Remote control**

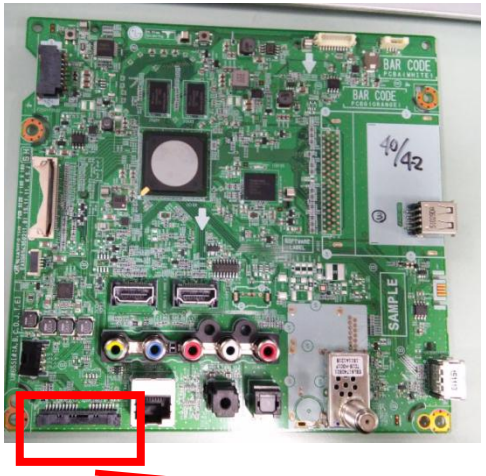
Checking order

1.Check IR cable condition between IR & Main board.( Check picture number① and ②)
2.Check the standby 3.5V on the terminal 18 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.

< 49UH6100-UH>

① Wifi Front

Wifi Rear


| | |
|---|---|
| 1 | +3.5V_WIFI |
| 2 | WIFI_DM_JACK |
| 3 | WIFI_DP_JACK |
| 4 | GND |
| 5 | WOL/WIFI_POWER_ON_JACK |
| 6 | GND |
| 7 | M-Moudle_RESET |
| 8 | GND |
| 12 | EYE_SDA |
| 13 | EYE_SCL |
| 14 | GND |
| 15 | IR |
| 16 | LED_R_JACK |
| 17 | GND |
| 18 | +3.5V_ST |
| 19 | KEY2_JACK |
| 20 | GND |
| 21 | GND |

**Checking order to check wifi**

Checking order

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


LG
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