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

[Diagram of Leakage Current Hot Check]

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

*Base on Adjustment standard
SERVING 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.

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. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.

9. 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.

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

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

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

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

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

Diode Removal/Replacement
1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular 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. Gently 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.

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.

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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.

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SPECIFICATION

1. Application range
This specification is applied to the LED TV used LB43B chassis.

2. Requirement for Test
Each part is tested as below without special appointment.

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

3. Test method
1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety : CE, IEC specification
   - EMC : CE, IEC

4. Model General Specification

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Specification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Market</td>
<td>Asia, Oceania, Africa, Middle East</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(PAL/DVB Market)</td>
<td>DTV LB43B/LB43M support DVB-T</td>
</tr>
<tr>
<td>2.</td>
<td>Broadcasting system</td>
<td>1) PAL/SECAM-B/G/D/K/I</td>
<td>LB43T support DVB-T/T2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) NTSC-M</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) DVB-T/T2</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Channel Storage</td>
<td>ATV - 135EA, DTV - 1000EA</td>
<td>DVB-T</td>
</tr>
</tbody>
</table>
|     |                       |                                           | - Guard Interval (Bitrate Mbit/s)
|     |                       |                                           | 1/4, 1/8, 1/16, 1/32          |
|     |                       |                                           | - Modulation : Code Rate      |
|     |                       |                                           | QPSK  : 1/2, 2/3, 3/4, 5/6, 7/8|
|     |                       |                                           | 16-QAM : 1/2, 2/3, 3/4, 5/6, 7/8|
|     |                       |                                           | 64-QAM : 1/2, 2/3, 3/4, 5/6, 7/8|
|     |                       |                                           | DVB-T2                         |
|     |                       |                                           | - Guard Interval (Bitrate Mbit/s)
|     |                       |                                           | 1/2, 2/5, 2/3, 3/4, 5/6       |
|     |                       |                                           | 16-QAM : 1/2, 2/5, 2/3, 3/4, 5/6|
|     |                       |                                           | 64-QAM : 1/2, 2/5, 2/3, 3/4, 5/6|
|     |                       |                                           | 256-QAM : 1/2, 2/5, 2/3, 3/4, 5/6|
| 4.  | Receiving system      | Analog : Upper Heterodyne                 | DTV                           |
|     |                       | Digital : COFDM(DVB-T)                    |                               |
| 5.  | Video(Composite Input)| PAL, SECAM, NTSC                          |                               |
| 6.  | Component Input       | Y/Cb/Cr, Y/Pb/Pr                          |                               |
| 7.  | HDMI Input            | HDMI1-DTV/DVI                             | Support HDCP                  |
|     |                       | HDMI2-DTV/MHL                             |                               |
| 8.  | SPDIF out             | SPDIF out                                 | Except 32"HD model            |
| 9.  | USB Input             | For My Media(Movie/Photo/Music List) and SVC|
| 10. | Headphone             |                                           |                               |
### 5. Component Video Input (Y, Cb/Pb, Cr/Pr)

<table>
<thead>
<tr>
<th>No.</th>
<th>Resolution</th>
<th>H-freq(kHz)</th>
<th>V-freq(Hz)</th>
<th>Porposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>720×480</td>
<td>15.73</td>
<td>60.00</td>
<td>SDTV, DVD 480i</td>
</tr>
<tr>
<td>2</td>
<td>720×480</td>
<td>15.63</td>
<td>59.94</td>
<td>SDTV, DVD 480i</td>
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<tr>
<td>3</td>
<td>720×480</td>
<td>31.47</td>
<td>59.94</td>
<td>480p</td>
</tr>
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<td>4</td>
<td>720×480</td>
<td>31.50</td>
<td>60.00</td>
<td>480p</td>
</tr>
<tr>
<td>5</td>
<td>720×576</td>
<td>15.625</td>
<td>50.00</td>
<td>SDTV, DVD 625 Line</td>
</tr>
<tr>
<td>6</td>
<td>720×576</td>
<td>31.25</td>
<td>50.00</td>
<td>HDTV 576p</td>
</tr>
<tr>
<td>7</td>
<td>1280×720</td>
<td>45.00</td>
<td>50.00</td>
<td>HDTV 720p</td>
</tr>
<tr>
<td>8</td>
<td>1280×720</td>
<td>44.96</td>
<td>59.94</td>
<td>HDTV 720p</td>
</tr>
<tr>
<td>9</td>
<td>1280×720</td>
<td>45.00</td>
<td>60.00</td>
<td>HDTV 720p</td>
</tr>
<tr>
<td>10</td>
<td>1920×1080</td>
<td>31.25</td>
<td>50.00</td>
<td>HDTV 1080i</td>
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<tr>
<td>11</td>
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<td>33.75</td>
<td>60.00</td>
<td>HDTV 1080i</td>
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<tr>
<td>12</td>
<td>1920×1080</td>
<td>33.72</td>
<td>59.94</td>
<td>HDTV 1080i</td>
</tr>
<tr>
<td>13</td>
<td>1920×1080</td>
<td>56.250</td>
<td>50</td>
<td>HDTV 1080p</td>
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<tr>
<td>14</td>
<td>1920×1080</td>
<td>67.5</td>
<td>60</td>
<td>HDTV 1080p</td>
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</table>

### 6. HDMI Input : Refer to adjust specification about EDID data.

#### 6.1. DTV mode

<table>
<thead>
<tr>
<th>No.</th>
<th>Resolution</th>
<th>H-freq(kHz)</th>
<th>V-freq.(kHz)</th>
<th>Pixel clock(MHz)</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>720*480</td>
<td>31.469 / 31.5</td>
<td>59.94 / 60</td>
<td>27.00/27.03</td>
<td>SDTV 480P</td>
</tr>
<tr>
<td>2</td>
<td>720*576</td>
<td>31.25</td>
<td>50</td>
<td>54</td>
<td>SDTV 576P</td>
</tr>
<tr>
<td>3</td>
<td>1280*720</td>
<td>37.500</td>
<td>50</td>
<td>74.25</td>
<td>HDTV 720P</td>
</tr>
<tr>
<td>4</td>
<td>1280*720</td>
<td>44.96 / 45</td>
<td>59.94 / 60</td>
<td>74.17/74.25</td>
<td>HDTV 720P</td>
</tr>
<tr>
<td>5</td>
<td>1920*1080</td>
<td>33.72 / 33.75</td>
<td>59.94 / 60</td>
<td>74.17/74.25</td>
<td>HDTV 1080i</td>
</tr>
<tr>
<td>6</td>
<td>1920*1080</td>
<td>28.125</td>
<td>50</td>
<td>74.25</td>
<td>HDTV 1080i</td>
</tr>
<tr>
<td>7</td>
<td>1920*1080</td>
<td>26.97 / 27</td>
<td>23.97 / 24</td>
<td>74.17/74.25</td>
<td>HDTV 1080P</td>
</tr>
<tr>
<td>8</td>
<td>1920*1080</td>
<td>33.716/33.75</td>
<td>29.976/30.00</td>
<td>74.25</td>
<td>HDTV 1080P</td>
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<tr>
<td>9</td>
<td>1920*1080</td>
<td>56.250</td>
<td>50</td>
<td>148.5</td>
<td>HDTV 1080P</td>
</tr>
<tr>
<td>10</td>
<td>1920*1080</td>
<td>67.43 / 67.5</td>
<td>59.94 / 60</td>
<td>148.35/148.50</td>
<td>HDTV 1080P</td>
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</table>

#### 6.2. PC mode

<table>
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<tr>
<th>No.</th>
<th>Resolution</th>
<th>H-freq(kHz)</th>
<th>V-freq.(Hz)</th>
<th>Pixel clock(MHz)</th>
<th>Proposed</th>
<th>Remark</th>
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<td>1</td>
<td>640*350 @70Hz</td>
<td>31.468</td>
<td>70.09</td>
<td>25.17</td>
<td>EGA</td>
<td></td>
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<td>2</td>
<td>720*400 @70Hz</td>
<td>31.469</td>
<td>70.08</td>
<td>28.321</td>
<td>DOS</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>640*480 @60Hz</td>
<td>31.469</td>
<td>59.940</td>
<td>25.175</td>
<td>VESA(VGA)</td>
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</tr>
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<td>4</td>
<td>800*600 @60Hz</td>
<td>37.879</td>
<td>60.31</td>
<td>40.000</td>
<td>VESA(SVGA)</td>
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<td>5</td>
<td>1024*768 @60Hz</td>
<td>48.363</td>
<td>60.00</td>
<td>65.000</td>
<td>VESA(XGA)</td>
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<td>6</td>
<td>1152*864 @60Hz</td>
<td>54.348</td>
<td>60.053</td>
<td>80.002</td>
<td>VESA</td>
<td></td>
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<td>1280*1024 @60Hz</td>
<td>63.981</td>
<td>60.020</td>
<td>108</td>
<td>VESA(SXGA)</td>
<td>FHD only(Support to HDMI-PC)</td>
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<td>1360*768 @60Hz</td>
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<td>60.015</td>
<td>85.5</td>
<td>VESA(WXGA)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1920*1080 @60Hz</td>
<td>67.5</td>
<td>60.0</td>
<td>148.5</td>
<td>WUXGA</td>
<td>(Reduced blanking)</td>
</tr>
</tbody>
</table>
ADJUSTMENT INSTRUCTION

1. Application Range
This specification sheet is applied to all of the LED TV with LB43B chassis.

2. Designation
(1) The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
(2) Power adjustment: Free Voltage.
(3) Magnetic Field Condition: Nil.
(4) Input signal Unit: Product Specification Standard.
(5) Reserve after operation: Above 5 Minutes (Heat Run)
   Temperature : at 25 °C ± 5 °C
   Relative humidity : 65 ± 10 %
   Input voltage : 100-220 V~, 50/60 Hz
(6) Adjustment equipment:
   : Color Analyzer(CA-210 or CA-110), Service remote control.
(7) Push the "IN STOP" key - For memory initialization.

3. Main PCB check process
   • APC - After Manual-Insert, executing APC

* Boot file Download
(1) Execute ISP program "Mstar ISP Utility" and then click "Config" tab.
(2) Set as below, and then click "Auto Detect" and check "OK" message.
   If "Error" is displayed, check connection between computer, jig, and set.
(3) Click "Read" tab, and then load download file(XXXX.bin) by clicking "Read"
(4) Click "Connect" tab. If "Can't" is displayed, check connection between computer, jig and set.
(6) Click "Run".
(7) After downloading, check "OK" message.

* USB DOWNLOAD(*.epk file download)
(1) Put the USB Stick to the USB socket.
(2) Automatically detecting update file in USB Stick.
   - If version of update file in USB Stick is lower, it will not work. But version of update file is higher, USB data will be detected automatically.

Case1 : Software version up
   1. After downloading S/W by USB, TV set will reboot automatically.
   2. Push "In-stop" key.
   3. Push "Power on" key.
   4. Function inspection
   5. After function inspection, Push "In-stop" key.

Case2 : Function check at the assembly line
   1. When TV set is entering on the assembly line, Push "In-stop" key at first.
   2. Push "Power on" key for turning it on.
   → If you push "Power on" key, TV set will recover channel information by itself.
   3. After function inspection, Push "In-stop" key.

Please Check the Speed:
   To use speed between 200KHz to 400KHz
4. ADC Process

4.1. ADC
- Enter Service Mode by pushing "ADJ" key.
- Enter Internal ADC mode by pushing "►" key at "8. ADC Calibration".

<Caution> Using "P-ONLY" key of the Adjustment remote control, power on TV.

* ADC Calibration Protocol (RS232)

<table>
<thead>
<tr>
<th>NO</th>
<th>Item</th>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enter Adjust MODE</td>
<td>A</td>
<td>A</td>
<td>0</td>
<td>When transfer the 'Mode In', carry the command.</td>
</tr>
<tr>
<td>ADC adjust</td>
<td>ADC Adjust</td>
<td>A</td>
<td>D</td>
<td>1</td>
<td>Automatically adjustment (The use of a internal pattern)</td>
</tr>
</tbody>
</table>

Adjust Sequence
- aa 00 00 [Enter Adjust Mode]
- xb 00 40 [Component1 Input (480i)]
- ad 00 10 [Adjust 480i Comp1]
- aa 00 90 End Adjust mode
* Required equipment : Adjustment remote control.

4.2. Function Check

4.2.1. Check display and sound
- Check Input and Signal items.
  - (1) TV
  - (2) AV (CVBS)
  - (3) COMPONENT (480i)
  - (4) HDMI
- * Display and Sound check is executed by Remote control.

<Caution> Not to push the "INSTOP" key after completion if the function inspection.
5. Total Assembly line process

5.1. Adjustment Preparation
- W/B Equipment condition
CA210: CH14, Test signal: Inner pattern(80IRE)-LED Module
- Above 5 minutes H/run in the inner pattern. (*power on* key of Adjustment remote control)

* The spec of color temperature and coordinate.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Color Temp</th>
<th>Color coordinate</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool (C50)</td>
<td>13,000 K</td>
<td>X=0.271 (±0.002) Y=0.270 (±0.002)</td>
<td>&lt;Test Signal&gt; - Inner pattern for W/B adjust - External white pattern (80IRE, 204gray)</td>
</tr>
<tr>
<td>Medium(0)</td>
<td>9,300 K</td>
<td>X=0.286 (±0.002) Y=0.289 (±0.002)</td>
<td></td>
</tr>
<tr>
<td>Warm(W50)</td>
<td>6,500 K</td>
<td>X=0.313 (±0.002) Y=0.329 (±0.002)</td>
<td></td>
</tr>
</tbody>
</table>

* W/B Table in process of aging time
- LGD Module

(normal line) March ~ December
<table>
<thead>
<tr>
<th>Aging time(Min)</th>
<th>Cool</th>
<th>Medium</th>
<th>Warm</th>
</tr>
</thead>
<tbody>
<tr>
<td>color coordinate</td>
<td>X</td>
<td>y</td>
<td>X</td>
</tr>
<tr>
<td>Target</td>
<td>271</td>
<td>270</td>
<td>286</td>
</tr>
<tr>
<td>1</td>
<td>0-2</td>
<td>282</td>
<td>289</td>
</tr>
<tr>
<td>2</td>
<td>3-5</td>
<td>281</td>
<td>287</td>
</tr>
<tr>
<td>3</td>
<td>6-9</td>
<td>279</td>
<td>284</td>
</tr>
<tr>
<td>4</td>
<td>10-19</td>
<td>277</td>
<td>280</td>
</tr>
<tr>
<td>5</td>
<td>20-35</td>
<td>275</td>
<td>277</td>
</tr>
<tr>
<td>6</td>
<td>36-49</td>
<td>274</td>
<td>274</td>
</tr>
<tr>
<td>7</td>
<td>50-79</td>
<td>273</td>
<td>272</td>
</tr>
<tr>
<td>8</td>
<td>80-119</td>
<td>272</td>
<td>271</td>
</tr>
<tr>
<td>9</td>
<td>Over 120</td>
<td>271</td>
<td>270</td>
</tr>
</tbody>
</table>

(normal line) January ~ February
<table>
<thead>
<tr>
<th>Aging time</th>
<th>Cool</th>
<th>Medium</th>
<th>Warm</th>
</tr>
</thead>
<tbody>
<tr>
<td>color coordinate</td>
<td>X</td>
<td>y</td>
<td>X</td>
</tr>
<tr>
<td>Target</td>
<td>271</td>
<td>270</td>
<td>286</td>
</tr>
<tr>
<td>1</td>
<td>0-2</td>
<td>286</td>
<td>295</td>
</tr>
<tr>
<td>2</td>
<td>3-5</td>
<td>284</td>
<td>290</td>
</tr>
<tr>
<td>3</td>
<td>6-9</td>
<td>282</td>
<td>287</td>
</tr>
<tr>
<td>4</td>
<td>10-19</td>
<td>279</td>
<td>283</td>
</tr>
<tr>
<td>5</td>
<td>20-35</td>
<td>276</td>
<td>278</td>
</tr>
<tr>
<td>6</td>
<td>36-49</td>
<td>274</td>
<td>275</td>
</tr>
<tr>
<td>7</td>
<td>50-79</td>
<td>273</td>
<td>272</td>
</tr>
<tr>
<td>8</td>
<td>80-119</td>
<td>272</td>
<td>271</td>
</tr>
<tr>
<td>9</td>
<td>Over 120</td>
<td>271</td>
<td>270</td>
</tr>
</tbody>
</table>

- AUO/COST/SHARP/BOE Module which cool spec is 13000 K

<table>
<thead>
<tr>
<th>Spec</th>
<th>Cool</th>
<th>Medium</th>
<th>Warm</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>271</td>
<td>270</td>
<td>285</td>
</tr>
<tr>
<td>y</td>
<td>277</td>
<td>290</td>
<td>300</td>
</tr>
</tbody>
</table>

* Connecting picture of the measuring instrument (On Automatic control)
Inside Pattern is used when W/B is controlled. Connect to auto controller or push Adjustment Remote control POWER ON → Enter the mode of White-Balance, the pattern will come out.

* Auto-control interface and directions
(1) Adjust in the place where the influx of light like floodlight around is blocked. (Illumination is less than 10 lux).
(2) Adhere closely the Color analyzer(CA210) to the module less than 10 cm distance, keep it with the surface of the Module and Color analyzer's prove vertically.(80° ~ 100°).
(3) Aging time
- After aging start, keep the power on (no suspension of power supply) and heat-run over 5 minutes.
- Using 'no signal' or 'full white pattern' or the others, check the back light on.

* Auto adjustment Map(RS-232C)

RS-232C COMMAND

[CMD ID DATA]  
Wb 00 00 White Balance Start  
Wb 00 ff White Balance End

<table>
<thead>
<tr>
<th>RS-232C COMMAND</th>
<th>MIN</th>
<th>CENTER (DEFAULT)</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CMD ID DATA]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wb 00 00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wb 00 ff</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| R Gain          | jg  | Ja               | jd  | 00 | 172 | 192 | 192 | 192 |
| G Gain          | jh  | Jb               | je  | 00 | 172 | 192 | 192 | 192 |
| B Gain          | ji  | Jc               | jf  | 00 | 192 | 192 | 172 | 192 |
| R Cut           | 64  | 64               | 64  | 128|
| G Cut           | 64  | 64               | 64  | 128|
| B Cut           | 64  | 64               | 64  | 128|

<Caution>
Color Temperature : COOL, Medium, Warm.
One of R Gain/G Gain/ B Gain should be kept on 0xC0, and adjust other two lower than C0.(When R/G/B Gain are all C0, it is the FULL Dynamic Range of Module)
  ■ Color analyzer (CA100+, CA210) should be used in the calibrated ch by CS-1000.
  ■ Operate the zero-calibration of the CA100+ or CA-210, then stick sensor to the module when adjusting.
  ■ After enter Service Mode by pushing “ADJ” key.
  ■ Enter White Balance by pushing “►” key at “9. White Balance”.

For manual adjustment, it is also possible by the following sequence.
1) Set TV in Adj. mode using “P-ONLY” key on remote controller and then operate heat run longer than 15 minutes. (If not executed this step, the condition for W/B may be different.)
2) Push “Exit” key.
3) Enter White Balance mode by pushing the ADJ key and select “9. White Balance”. When KEY (►) is pressed, 206 Gray internal pattern will be displayed.
4) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface.
5) Select each items (Red/Green/Blue Gain) using ▲/▼ (CH +/-) key on Remote control.
6) Adjust R/ G/ B Gain using ◄/► (VOL +/-) key on R/C.
7) Adjust three modes all (Cool / Medium / Warm)
   - For All model w/o LS345
     Fix the one of R/G/B gain and change the others
   - For G-FIX model
     Cool Mode
     1) Fix the one of R/G/B gain to 192 (default data) and decrease the others. (If G gain is adjusted over 172 and R and B gain less than 192, Adjust is O.K.)
     2) If G gain is less than 172, Increase G gain by up to 172, and then increase R gain and G gain same amount of increasing G gain.
     3) If R gain or B gain is over 255, readjust G gain less than 172. Conform to R gain is 255 or B gain is 255 Medium / Warm Mode - Fix the one of R/G/B gain to 192 (default data) and decrease the others.
8) When adjustment is completed, exit adjustment mode using EXIT key on Remote control.

* CASE Cool
First adjust the coordinate far away from the target value (x, y).
1) x, y > target
   i) Decrease the R, G.
2) x, y < target
   i) First decrease the B gain,
   ii) Decrease the one of the others.
3) x > target, y < target
   i) First decrease B, so make y a little more than the target.
   ii) Adjust x value by decreasing the R.
4) x < target, y > target
   i) First decrease B, so make x a little more than the target.
   ii) Adjust x value by decreasing the G.
* After You finish all adjustments, Press “in-start” button and compare Tool option and Area option value with its BOM, if it is correctly same then unplug the AC cable. If it is not same, then correct it same with BOM and unplug AC cable.
For correct it to the model’s module from factory JIG model.
* Push the “IN STOP” key after completing the function inspection.

5.2. DDC EDID Write (HDMI 256Byte)
■ Connect HDMI Signal Cable to HDMI Jack.
■ Write EDID DATA to EEPROM(24C02) by using DDC2B protocol.
■ Check whether written EDID data is correct or not.
* For SVC main Assembly, EDID have to be downloaded to Insert Process in advance.

5.3. EDID DATA
1) All Data : HEXA Value
2) Changeable Data :
   *: Serial No : Controlled / Data:01
   **: Month : Controlled / Data:00
   ***: Year : Controlled
   ****: Check sum

- Auto Download
  ■ After enter Service Mode by pushing “ADJ” key,
  ■ Enter EDID D/L mode.
  ■ Enter “START” by pushing “OK” key.
[Caution]
* Use the proper signal cable for EDID Download
  - Analog EDID : Pin3 exists
  - Digital EDID : Pin3 exists

* Edid data and Model option download (RS232)

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Condition</th>
<th>Hex Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manufacturer ID</td>
<td>GSM</td>
<td>1E6D</td>
</tr>
<tr>
<td>2</td>
<td>Version</td>
<td>Digital: 1</td>
<td>01</td>
</tr>
<tr>
<td>3</td>
<td>Revision</td>
<td>Digital: 3</td>
<td>03</td>
</tr>
</tbody>
</table>

(1) HD 8BIT 3D HDMI EDID DATA

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>FF</td>
<td>00</td>
<td>01</td>
<td>02</td>
<td>03</td>
<td>04</td>
<td>05</td>
<td>06</td>
<td>07</td>
<td>08</td>
</tr>
<tr>
<td>20</td>
<td>0F</td>
<td>50</td>
<td>54</td>
<td>A1</td>
<td>08</td>
<td>00</td>
<td>31</td>
<td>40</td>
<td>45</td>
<td>40</td>
<td>61</td>
<td>40</td>
<td>0F</td>
<td>50</td>
<td>54</td>
</tr>
</tbody>
</table>

(2) Detail EDID Options are below

a. Product ID

b. Serial No: Controlled on production line.

c. Month, Year: Controlled on production line:
   - ex) Week: '01' -> '01'
   - Year: '2013' -> '18' fix

d. Model Name(HEX):

cf) TV set's model name in EDID data is below.

<table>
<thead>
<tr>
<th>MODEL NAME</th>
<th>MODEL NAME(HEX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG TV</td>
<td>00 00 00 FC 00 4C 47 20 54 56 0A 20 20 20 20 20 20 20 20 (LG TV)</td>
</tr>
</tbody>
</table>

e. Checksum: Changeable by total EDID data.

f. Vendor Specific

- FHD 8bit/ HD Model

<table>
<thead>
<tr>
<th>Input</th>
<th>Model name(HEX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDMI1</td>
<td>67030C001000</td>
</tr>
<tr>
<td>HDMI2</td>
<td>67030C002000</td>
</tr>
</tbody>
</table>

5.4. Outgoing condition Configuration

- When pressing IN-STOP key by Service remote control, Red LED is blinked alternatively. And then automatically turn off. (Must not AC power OFF during blinking)

5.5. GND and HI-POT Test

5.5.1. GND & HI-POT auto-check preparation

1. Check the POWER CABLE and SIGNAL CABLE insertion condition.

2. Connect the AV JACK Tester.

3. Controller (GWS103-4) on.

4. GND Test (Auto)
   - If Test is failed, Buzzer operates.
   - If Test is passed, execute next process (Hi-pot test).

5. HI-POT test (Auto)
   - If Test is failed, Buzzer operates.
   - If Test is passed, GOOD Lamp on and move to next process automatically.

5.5.2. GND & HI-POT auto-check

1. Pallet moves in the station. (POWER CORD / AV CORD is tightly inserted)

2. Connect the AV JACK Tester.

3. Controller (GWS103-4) on.

4. GND Test (Auto)
   - If Test is failed, Buzzer operates.
   - If Test is passed, execute next process (Hi-pot test).

(Remove A/V CORD from A/V JACK BOX)

5. HI-POT test (Auto)
   - If Test is failed, Buzzer operates.
   - If Test is passed, GOOD Lamp on and move to next process automatically.

5.5.3. Checkpoint

1. Test voltage
   - 1) 3 Poles
     - GND: 1.5 KV/min at 100 mA
     - SIGNAL: 3 KV/min at 100 mA
   - 2) 2 Poles
     - SIGNAL: 3 KV/min at 100 mA

2. TEST time: 1 second

3. TEST POINT
   - 1) 3 Poles
     - GND Test = POWER CORD GND and SIGNAL CABLE GND.
     - Hi-pot Test = POWER CORD GND and LIVE & NEUTRAL.
   - 2) 2 Poles
     - Hi-pot Test = Accessible Metal and LIVE & NEUTRAL.

4. LEAKAGE CURRENT: At 0.5 mArms
6. 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.

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

(3) Don't wear a 3D Glasses, check the picture like below.
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by in the Schematic Diagram and EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.
TP for NON-EU models (except EU and China)

TP for CI slot  |  TP for SCART  |  TP for Headphone
---|---|---

TP for S2  |  TP for FE_TS_DATA
---|---
L14 POWER BLOCK (POWER DETECT 2)

FROM LIPS or POWER B/D

+1.5V_DDR \( \text{Vout} = 1.25 \times (1 + \frac{R2}{R1}) + I_{\text{adj}} \times R2 \)

1.3A

+1.10V_VDDC

Vout = 0.808 \times (1 + \frac{R1}{R2})

+5V_Normal & +5V_USB with OCP

Vout = 0.8 \times (1 + \frac{R1}{R2})
GLOBAL tuner block KR & AJ

THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURED SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURED SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

COMPONENT & AV1 (COMMON), AV2
Headphone
*Option: HEAD_PHONE_EU

The symbol mark on this schematic diagram incorporates special features important for protection from X-radiation, fire, and electrical shock hazards. When servicing, it is essential that only manufacturer specified parts be used for the critical components in the symbol mark of the schematic.
RS-232C 4PIN & MSTAR DEBUG 4PIN

RS-232C 4PIN

MSTAR DEBUG 4PIN
THERMAL
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FIRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

This parts are Located on AVSS area.

Close to Speaker

This parts are Located on AVSS area.

+24V_AMP

+24V

R5607 18K 1%

R5609 470

C5627 330pF 50V

C5628 330pF 50V

C5607 0.1uF

R5601 10K

R5608 2K

C5601 0.1uF 50V

C5604 0.1uF 16V

C5602 1000pF 50V

Q5600 MMBT3904 (NXP)

IC5600 TAS5733

+3.3V_Normal

R5610 470

R5614 18 1/16W

C5617 0.033uF 50V

C5618 0.1uF 50V

C5633 0.1uF 50V

C5639 2200pF 50V

C5624 0.033uF 50V

C5620 10uF 35V

C5614 0.1uF

C5636 2200pF 50V

C5637 2200pF 50V

C5638 2200pF 50V

C5608 0.047uF

C5629 330pF 50V

C5640 4.7uF 50V 3216

C5641 4.7uF 50V 3216

ZD5600 5V

L5600 UBW2012-121F

L5605 AMP_COIL_ABCO 10uH

L5606 AMP_COIL_ABCO 10uH

L5604 AMP_COIL_ABCO 10uH

L5603 AMP_COIL_ABCO 10uH

L5606-*1 10.0uH AMP_COIL_GET

L5605-*1 10.0uH AMP_COIL_GET

L5604-*2 10.0uH AMP_COIL_TAIYO

L5603-*2 10.0uH AMP_COIL_TAIYO

L5605-*2 10.0uH AMP_COIL_TAIYO

L5606-*2 10.0uH AMP_COIL_TAIYO

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Only for training and service purposes

LGE Internal Use Only
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURED SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

---

**L14 MHL SW AND GATE**

---

LGE Internal Use Only
1-1. Power Block Diagram 32 LPB

- LED BLOCK SWITCHING
- RECTIFIER & FILTER
- PHOTO COUPLER
- OUTPUT CC/CV CONTROL
- ON/OFF CONTROL
- LOAD S/W
- LOAD S/W
- ON/OFF CONTROL
- DC/DC CONTROL
- INPUT (AC100-240V)
- EMI FILTER
- PHOTO COUPLER
- OUTPUT F/B CONTROL
- LED Vo
- DRIVER on/off
- 12Vo
- 24Vo
- POWER on/off
- 3.5Vo
2-1. Block Diagram T2/C/S2 3D Model

Main SOC
M1A -128MB 내장 (IC101)
2-2. Block Diagram T2/C/S2 2D Model

Main SOC
M1A -256MB 내장 (IC101)
2-5. Block Diagram 100Hz Model

- **SIDE**
  - USB (JK700)
  - HDMI2 (MHL) (JK903)
  - Headphone (JK1500)

- **REAR**
  - HDMI1 (JK801)
  - SPDIF (Optic) (JK1001)
  - Comp1 & AV1 (JK1701)

- **Main SOC**
  - M1A - 128MB 내장 (IC101)

- **Components**
  - TPS65281
  - SPI_SCK/SDI/SDO/CS
  - Serial Flash (8Mbit)
  - IC1300
  - I2C_SCL/SDA
  - System EEPROM (256Kbit)
  - IC104
  - PCM_A[0-7]...
  - NAND FLASH (1Gbit)
  - IC102
  - DIF
  - TU_SCL/SDA
  - SIF
  - CVBS
  - STA380BW (IC3401)
  - DDR3 SDRAM (1Gbit)
  - IC1201
  - B-MDQL[0-7], B-MDQU[0-7]...
  - AUD_MASTER_CLK, AUD_LRCH, AUD_LRCK, AUD_SCK
  - AMP_SCL/SDA
  - IC1201
  - KEY1/2, LED_R, IR
  - Connector (P600)
  - LGE7438 (IC6101)
  - URSAS8
  - LGE Internal Use Only
2-5. I2C Map

HW I2C 4ea + SW I2C 1ea

2-5. I2C Map

HW_I2C
I2C_SC(D)KM1/GPIO80(81)

SW_I2C
GPIO159(160)

I2C_SC(D)KM3/I2C_DDCR_CK/GPIO76/(77)

SW_I2C
HW_I2C
SDAM2/GPIO55(56)

HW_I2C
SCK(D)M0/GPIO58(59)

TUNER
AMP
DEMOD
LNB
EEPROM
URSA
VCOM
Digital_Eye

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2-6-2. Main Power Block

+12V → L403 → L408 → Q405 → L1800 → Panel_VCC

IC400 (DCDC) 12V->5V → USB 5V Normal

L2701 → IC2701 LNB IC2801 AMP

IC2801 Scart Audio AMP

+24V → L402 → L3401 → IC5600 AMP +24V
3-1. Feature MHL (Mobile High-definition Link)

1. 1080p HD Video & 7.1 Digital Audio
2. Simultaneous usage & charging of the mobile device
3. HDTV Remote control signals can control the connected device
4. Uses easily portable and thin cables
5. Uses the most popular existing digital connectors
   - HDMI Type A at the display
   - Micro USB at the mobile device
6. Industry standard HDCP digital content protection
# 3-2. Feature - DVR

<table>
<thead>
<tr>
<th>Feature</th>
<th>Europe</th>
<th>CIS</th>
<th>China</th>
<th>Hong Kong</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Record</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External HDD</td>
<td>O</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Internal Memory</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>USB</td>
<td>O</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>Time shift</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External HDD</td>
<td>X</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Internal Memory</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>USB</td>
<td>X</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>Watch &amp; Record</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV watch &amp; Record</td>
<td>X</td>
<td></td>
<td>Spec- Out</td>
<td>Spec- Out</td>
</tr>
<tr>
<td>Input list watch &amp; Record</td>
<td>O</td>
<td></td>
<td>Spec- Out</td>
<td>Spec- Out</td>
</tr>
<tr>
<td><strong>Input list Record</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF</td>
<td></td>
<td></td>
<td></td>
<td>DTV only</td>
</tr>
<tr>
<td>AV</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Component</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HDMI</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Schedule Record</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual</td>
<td>O</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Broadcast information</td>
<td>O</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>File system</strong></td>
<td>NTFS</td>
<td></td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
4. Model Cable Dressing Tapes

<table>
<thead>
<tr>
<th>No</th>
<th>Part No</th>
<th>Description</th>
<th>Qty</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RAB33632804</td>
<td>TAPE,POLYESTER</td>
<td>32” 39” : 3EA</td>
<td>POLYESTER 100% FR(FIRE RESISTANCE)/// GRAY 200UM 20mM 80mM SERVEONE CO., LTD.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>42”~ : 2EA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RAB33632803</td>
<td>TAPE,POLYESTER</td>
<td>1</td>
<td>POLYESTER 100% FR(FIRE RESISTANCE)/// GRAY 200UM 30mM 120mM SERVEONE CO., LTD.</td>
</tr>
</tbody>
</table>

- Wearing the Wrist strap while the working.
- Using the clean gloves. (None pollution)
- Scrub the tape about 2~3 times for protecting come off the tape.
- Be careful the taping position.
L14 Repair Process
<table>
<thead>
<tr>
<th>No.</th>
<th>Error symptom (High category)</th>
<th>Error symptom (Mid category)</th>
<th>Page</th>
<th>Remarks</th>
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<tbody>
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<td>No video/Normal audio</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>No video/No audio</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tuning fail, Picture broken/ Freezing</td>
<td></td>
<td>3, 4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Color error</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Vertical/Horizontal bar, residual image, light spot, external device color error</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>B. Power error</td>
<td>No power</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Off when on, off while viewing, power auto on/off</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>C. Audio error</td>
<td>No audio/Normal video</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Wrecked audio/discontinuation/noise</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>D. Function error</td>
<td>Remote control &amp; Local switch checking</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>External device recognition error</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>E. Noise</td>
<td>Circuit noise, mechanical noise</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>F. Exterior error</td>
<td>Exterior defect</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

* First of all, Check whether there is SVC Bulletin in GCSC System for these model.
## Contents of LCD TV Standard Repair Process Detail Technical Manual

<table>
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<th>No.</th>
<th>Error symptom</th>
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<th>Page</th>
<th>Remarks</th>
</tr>
</thead>
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<td>Check LCD back light with naked eye</td>
<td>A1</td>
<td></td>
</tr>
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<td>2</td>
<td></td>
<td>LED driver B+ 24V measuring method</td>
<td>A2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Check White Balance value</td>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Power Board voltage measuring method</td>
<td>A4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>A. Video error_ No video/Video lag/stop</td>
<td>TUNER input signal strength checking method</td>
<td>A5</td>
<td></td>
</tr>
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<td>7</td>
<td></td>
<td>LCD-TV Version checking method</td>
<td>A6</td>
<td></td>
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<td></td>
<td>LCD TV connection diagram</td>
<td>A7</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>A. Video error_Color error</td>
<td>Check Link Cable (LVDS) reconnection condition</td>
<td>A8</td>
<td>A9</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Adjustment Test pattern – ADJ Key</td>
<td>A10</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>LCD TV connection diagram</td>
<td>A8</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>A. Video error_Vertical/Horizontal bar, residual image, light spot</td>
<td>Check Link Cable (LVDS) reconnection condition</td>
<td>A8</td>
<td>A9</td>
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<td>15</td>
<td></td>
<td>Adjustment Test pattern – ADJ Key</td>
<td>A10</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Exchange T-Con Board (1)</td>
<td>A-1/5</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Exchange T-Con Board (2)</td>
<td>A-2/5</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>&lt;Appendix&gt;</td>
<td>Exchange LED driver Board (PSU)</td>
<td>A-3/5</td>
<td>55” : driver board Other : PSU</td>
</tr>
<tr>
<td>19</td>
<td>Defected Type caused by T-Con/Inverter/Module</td>
<td>Exchange Module itself (1)</td>
<td>A-4/5</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Exchange Module itself (2)</td>
<td>A-5/5</td>
<td></td>
</tr>
</tbody>
</table>

Continue to the next page
First of all, Check whether all of cables between board is inserted properly or not. (Main B/D↔ Power B/D, LVDS Cable, Speaker Cable, IR B/D Cable,..)

A. Video error

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td>No video/ Normal audio</td>
<td>2012.01.14</td>
<td>1/14</td>
<td></td>
</tr>
</tbody>
</table>

No video Normal audio

- **A1**: Check Back Light On with naked eye
  - **Y**: Normal Audio
    - **A2**: Move to No video/No audio
  - **N**: Normal Audio

- **A4**: Check Power Board 3.5V, 12V, 24V etc.
  - **Y**: Normal Voltage
    - **A6 & A3**: Replace Inverter or module
  - **N**: Repair Power Board or parts

- **End**: Replace Main Board
  - **Y**: Re-enter White Balance value
  - **N**: Repair Power Board or parts

※ Precaution  A6 & A3

Always check & record S/W Version and White Balance value before replacing the Main Board
A. Video error

No video/ No audio

Check various voltages of Power Board (3.5V, 12V, 24V)

Normal Voltage

Check and replace MAIN B/D

Replace Power Board and repair parts

End

Established date: 2012.01.14
Revised date: 2/14
**A. Video error**

**Check RF Signal level**

- By using Digital signal level meter
- By using Diagnostics menu on OSD
  (Menu→Set up→Support→Signal Test)
- Signal strength (Normal: over 50%)
- Signal Quality (Normal: over 50%)

**Check RF Cable Connection**
1. Reconnection
2. Install Booster

**Check S/W Version**

- Y
- N

**Check whether other equipments have problem or not.**
(By connecting RF Cable at other equipment)
- DVD Player, Set-Top-Box, Different maker TV etc`

**Contact with signal distributor or broadcaster (Cable or Air)**

**Check Tuner soldering**

- Y
- N

**Replace Main B/D**

**End**
A. Video error

Tuning fail, Picture broken/ Freezing

| Established date | 2012. 01.14 | Revised date | 4/14 |

**A5**

- Check RF signal level

  - Check RF signal cable (DVB satellite signal or not)
  - Check whether other equipments have problem or not.

  (By connecting RF Cable at other equipment)

  → Set-Top-Box, Different maker TV etc

- Check satellite setting.
  - Check LNB frequency.
  - Check satellite
  - Check Satellite connection (DiSEqC, motor, etc…)

  Contact with signal distributor or broadcaster (Cable or Air)

- Change satellite setting (match with installed ANT)

- Check S/W Version

  - Check Tuner soldering

  → Replace Main B/D

**A6**

- S/W Upgrade

- Normal Picture

  - Y: End

  - N: Normal Setting

  - Y: Check S/W Version

  - N: SVC Bulletin

  - Y: Check Tuner soldering

  - N: S/W Upgrade

  - N: Normal Picture

  - Y: End

  - N: End

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LGE Internal Use Only
## Standard Repair Process

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>A. Video error</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Color error</td>
<td>2012.01.14</td>
<td>5/14</td>
</tr>
</tbody>
</table>

### Check color by input
- External Input
- COMPONENT
- RGB
- HDMI/DVI

#### A7

- **Color error**
  - Y: Check error color input mode
  - N: Color error

#### A8/A9

- **Color error**
  - Y: Replace Main B/D
  - N: Replace module

#### A8

- **Check and replace Link Cable (LVDS) and contact condition**

#### A9

- **Check external device and cable**
  - Y: Replace Main B/D
  - N: End

### Check Test pattern

#### A10

- **Check external device and cable**
  - Y: Replace Main B/D
  - N: Request repair for external device/cable

- **External device/Cable Normal**
  - Y: Replace Main B/D
  - N: Replace module

- **HDMI error**
  - Y: Replace Main B/D
  - N: Replace module
Vertical/Horizontal bar, residual image, light spot

A7
Check color condition by input
- External Input
- Component/AV
- HDMI

Screen normal
Y
Check external device connection condition
Y
Screen normal
N
Replace module

N
Request repair for external device

A8/ A9
Check and replace Link Cable

Screen normal
N
Replace Main B/D
Screen normal
N
End

A10
Check Test pattern

External device screen error-Color error

Check S/W Version
N
Check Version
Y
S/W Upgrade
Normal Screen
N
Y
End

Check screen condition by input
- External Input
- Component
- RGB
- HDMI/DVI

External Input error
Component error
HDMI error

Connect other external device and cable
(Connect normal operation of External Input, Component, and HDMI by connecting Jig, pattern Generator, Set-top Box etc.)

Screen normal
N
Replace Main B/D
Screen normal
Y
Replace B/D

Request repair for external device

Screen normal
N
Replace Main B/D
**Standard Repair Process**

### LCD TV

<table>
<thead>
<tr>
<th>Error symptom</th>
<th>B. Power error</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td>No power</td>
<td></td>
<td>2012.01.14</td>
<td>7/14</td>
</tr>
</tbody>
</table>

#### A11
Check Power LED
Stand-By: Red

- **A11**
  - Power LED On
    - Y: DC Power on by pressing Power Key On Remote control
      - N: Normal Operation
        - Y: Check Power On "High"
          - N: Replace Main B/D
        - N: Replace Main B/D
    - N: Check Power cord was inserted properly
      - Y: Normal Operation
        - Y: Measure voltage of each output of Power B/D
          - N: Replace Main B/D
        - N: Replace Power B/D
      - N: Replace Power B/D
    - N: Replace Power B/D
  - N:Replace Power B/D

- **A12**
  - Y: Check ST-BY 3.5V
    - N: Normal Operation
      - Y: Replace Main B/D
      - N: Replace Power B/D
    - N: Replace Power B/D

- **A13**
  - Y: OK
  - N: Replace Power B/D
### Standard Repair Process

**B. Power error**

- Off when on, off while viewing, power auto on/off

<table>
<thead>
<tr>
<th>Status</th>
<th>Power off List</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td>&quot;POWEROFF_REMOTKEY&quot;</td>
<td>Power off by REMOTE CONTROL</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_OFFTIMER&quot;</td>
<td>Power off by OFF TIMER</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_SLEEPTIMER&quot;</td>
<td>Power off by SLEEP TIMER</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_INSTOP&quot;</td>
<td>Power off by INSTOP KEY</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_AUTOOFF&quot;</td>
<td>Power off by AUTO OFF</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_ONTIMER&quot;</td>
<td>Power off by ON TIMER</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_RS232C&quot;</td>
<td>Power off by RS232C</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_RESREC&quot;</td>
<td>Power off by Reservated Record</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_RECEND&quot;</td>
<td>Power off by End of Recording</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_SWDOWN&quot;</td>
<td>Power off by S/W Download</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_UNKNOWN&quot;</td>
<td>Power off by unknown status except listed case</td>
</tr>
<tr>
<td><strong>Abnormal</strong></td>
<td>&quot;POWEROFF_ABNORMAL1&quot;</td>
<td>Power off by abnormal status except CPU trouble</td>
</tr>
<tr>
<td></td>
<td>&quot;POWEROFF_CPUABNORMAL&quot;</td>
<td>Power off by CPU Abnormal</td>
</tr>
</tbody>
</table>

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

- Check outlet
- Check A/C cord
- Check for all 3-phase power out

---

* Caution
Check and fix exterior of Power B/D Part

A14
Check Power Off Mode

A13
(If Power Off mode is not displayed)
Check Power B/D voltage

CPU Abnormal
Replace Main B/D

Abnormal
Replace Power B/D

Normal
Replace Main B/D

End

Rev. 01.14
8/14
Standard Repair Process

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>C. Audio error</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No audio/ Normal video</td>
<td></td>
<td>2012. 01.14</td>
<td>9/14</td>
</tr>
</tbody>
</table>

- **A15**: Check user menu ➔ Speaker off
  - Off: N ➔ Cancel OFF
  - Y ➔ Normal Voltage
- **A16**: Check audio B+ 24V of Power Board
  - Normal Voltage: Y ➔ Replace Power Board and repair parts
  - N ➔ Disconnect
- Disconnect: N ➔ Replace MAIN Board ➔ End
- Y ➔ Replace Speaker

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→ abnormal audio/discontinuation/noise is same after “Check input signal” compared to No audio
1. Remote control(R/C) operating error

- Check R/C itself Operation
  - Normal Operating: Y → Check & Repair Cable connection Connector solder → Normal Operating: N → Replace R/C
  - Check R/C Operating When turn off light in room:
    - Normal Operating: Y → End
    - Normal Operating: N → Replace R/C
  - Check & Replace Battery of R/C

- If R/C operate, Explain the customer cause is interference from light in room.

A17

- Check B+ 3.5V On Main B/D: Normal Operating: N → Check IR Output signal: Normal Signal: Y → Replace Main B/D
  - Check IR Output signal: Normal Signal: N → Repair/Replace IR B/D
  - Check 3.5v on Power B/D Replace Power B/D or Replace Main B/D (Power B/D don’t have problem)
Standard Repair Process

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>D. Function error</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>External device recognition error</td>
<td>2012.01.14</td>
<td>12/14</td>
</tr>
</tbody>
</table>

Check input signal

- Signal Input
  - Y: Check technical information
    - Fix information
    - S/W Version
  - N: Check and fix external device/cable

- Technical Information
  - Y: Fix in accordance with technical information
  - N: External Input and Component Recognition error
    - HDMI, Optical Recognition error
      - Replace Main B/D

Replace Main B/D
**E. Noise**

- **Identify nose type**
- **Check location of noise**
  - Circuit noise
  - Mechanical noise

**OR**

- Replace PSU (with LED driver)
- Replace LED driver

- Mechanical noise is a natural phenomenon, and apply the 1st level description. When the customer does not agree, apply the process by stage.
- Describe the basis of the description in “Part related to nose” in the Owner’s Manual.

**OR**

- When the nose is severe, replace the module (For models with fix information, upgrade the S/W or provide the description)
- If there is a “Tak Tak” noise from the cabinet, refer to the KMS fix information and then proceed as shown in the solution manual (For models without any fix information, provide the description)
<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>F. Exterior defect</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Exterior defect</td>
<td>2012.01.14</td>
<td>14/14</td>
</tr>
</tbody>
</table>

**Standard Repair Process**

1. **Zoom part with exterior damage**
   - Module damage → Replace module
2. **Cabinet damage** → Replace cabinet
3. **Remote Controller damage** → Replace remote controller
4. **Stand damage** → Replace stand
<table>
<thead>
<tr>
<th>No.</th>
<th>Error symptom</th>
<th>Content</th>
<th>Page</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>B. Power error_No power</td>
<td>Check front display LED</td>
<td>A11</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>Check power input Voltage &amp; ST–BY 3.5V</td>
<td>A12</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>Checking method when power is ON</td>
<td>A13</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>POWER BOARD voltage measuring method</td>
<td>A4</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>B. Power error_Off when on, off while viewing</td>
<td>POWER OFF MODE checking method</td>
<td>A14</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>C. Audio error_No audio/Normal video</td>
<td>Checking method in menu when there is no audio</td>
<td>A15</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
<td>Voltage and speaker checking method when there is no audio</td>
<td>A16</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>C. Audio error_Wrecked audio/discontinuation</td>
<td>Voltage and speaker checking method in case of audio error</td>
<td>A16</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>D. Function error_ No response in remote controller, key error</td>
<td>Remote controller operation checking method</td>
<td>A17</td>
<td></td>
</tr>
</tbody>
</table>
### A. Video error_No video/Normal audio

<table>
<thead>
<tr>
<th>Error symptom</th>
<th>Content</th>
<th>Established date</th>
<th>Revised date</th>
<th>A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check Back Light On with naked eye</td>
<td></td>
<td>2012. 01.14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**<ALL MODELS>**

- Power On -> disjoint back case -> check lighting at 2 points.
<table>
<thead>
<tr>
<th>LCD  TV</th>
<th>Error symptom</th>
<th>A. Video error_No video/Normal audio</th>
<th>Established date</th>
<th>Revised date</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inverter B+ 24V measuring method</td>
<td>2012.01.14</td>
<td>A2</td>
<td></td>
</tr>
</tbody>
</table>

1. Measure DC 24V applying to inverter PCB from Power Board.

2. Output 24V from Power Board -> supply to inverter PCB. Check Pin contacting statement and connection statement.
Entry method

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

2. Enter into White Balance of item 7.

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.
### A. Video error_No video/ Audio

<table>
<thead>
<tr>
<th>Error symptom</th>
<th>Content</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD TV</td>
<td>Power Board voltage measuring method</td>
<td>2012.01.14</td>
<td>A4</td>
</tr>
</tbody>
</table>

#### Check DC 3.5V, 12V, 24V

<table>
<thead>
<tr>
<th>18 Pin (Power Board ↔ Main Board)</th>
<th>SMAW200-H18S5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Power on</td>
<td>2 DRV ON</td>
</tr>
<tr>
<td>3 3.5V</td>
<td>4 PDIM#1</td>
</tr>
<tr>
<td>5 3.5V</td>
<td>6 3.5V</td>
</tr>
<tr>
<td>7 GND</td>
<td>8 PDIM#2</td>
</tr>
<tr>
<td>9 24V</td>
<td>10 24V</td>
</tr>
<tr>
<td>11 GND</td>
<td>12 GND</td>
</tr>
<tr>
<td>13 12V</td>
<td>14 12V</td>
</tr>
<tr>
<td>15 12V</td>
<td>16 NC</td>
</tr>
<tr>
<td>17 GND</td>
<td>18 GND</td>
</tr>
</tbody>
</table>
### Standard Repair Process Detail Technical Manual

#### LCD TV

<table>
<thead>
<tr>
<th>Error symptom</th>
<th>A. Video error_Video error, video lag/stop</th>
<th>Established date</th>
<th>Revised date</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TUNER input signal strength checking method</td>
<td>2012.01.14</td>
<td>A5</td>
<td></td>
</tr>
</tbody>
</table>

MENU => Press red key Remote controller=>signal test
=> Select channel

When the signal is strong, use the attenuator (-10dB, -15dB, -20dB etc.)
1. Checking method for remote controller for adjustment

Press the IN-START with the remote controller for adjustment
### LCD TV

<table>
<thead>
<tr>
<th>Error symptom</th>
<th>Content</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Video error <em>Vertical/Horizontal bar, residual image, light spot</em></td>
<td>LCD TV connection diagram (1)</td>
<td>2012.01.14</td>
<td>A7</td>
</tr>
</tbody>
</table>

<ALL MODELS> The picture depends on model.

![LCD TV connection diagram](image)

As the part connecting to the external input, check the screen condition by signal
## Standard Repair Process Detail Technical Manual

### LCD TV

<table>
<thead>
<tr>
<th>Error symptom</th>
<th>A. Video error_Color error</th>
<th>Content</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Check and replace Link Cable(LVDS) and contact condition</td>
<td></td>
<td>2012.01.14</td>
<td>A8/A9</td>
</tr>
</tbody>
</table>

<ALL MODELS>

1. Check and replace LVDS Cable
2. Check LVDS connection condition
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!)

<table>
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<th>LCD TV</th>
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<th>A. Video error_Color error</th>
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<th>Content</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Adjustment Test pattern - ADJ Key</td>
<td>2012.01.14</td>
<td>A10</td>
<td></td>
</tr>
</tbody>
</table>
Appendix : Exchange T-Con Board (1)
Appendix : Exchange T-Con Board (2)

- Abnormal Power Section
- Solder defect, Short/ Crack
- Fuse Open, Abnormal power section
- Solder defect, Short/Crack
- Abnormal Display
- GRADATION
- Noise
- GRADATION
Appendix : Exchange PSU (LED driver)

No Light

Dim Light

Dim Light

No picture/Sound Ok
Appendix : Exchange the Module (1)

Un-repairable Cases
In this case please exchange the module.
Un-repairable Cases
In this case please exchange the module.
<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>B. Power error _No power</th>
<th>Established date</th>
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</thead>
<tbody>
<tr>
<td>Content</td>
<td>Check front display LED</td>
<td>2012.01.14</td>
<td></td>
<td>A11</td>
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</tbody>
</table>

ST-BY condition: Red

Front LED control:
Menu → Option → Standby Light → On/Off
Standard Repair Process Detail Technical Manual

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<th>Revised date</th>
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<tbody>
<tr>
<td>Content</td>
<td>Check power input voltage and ST-BY 5V</td>
<td>2012.01.14</td>
<td>A12</td>
</tr>
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</table>

Check DC 3.5V, 12V, 24V

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<td>14 12V</td>
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<td>16 NC</td>
</tr>
<tr>
<td>17 GND</td>
<td>18 GND</td>
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</tbody>
</table>
Checking method when power is ON

**B. Power error _No power**

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<tr>
<th>LCD TV</th>
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<td>B. Power error _No power</td>
<td>Checking method when power is ON</td>
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</table>

Check “power on(Pin 1)” pin is high (about 3.3V)

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</tr>
</thead>
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<td>NC</td>
</tr>
<tr>
<td>17</td>
<td>GND</td>
</tr>
</tbody>
</table>
<ALL MODELS>

### Checking order

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

2. Check the entry into adjustment item 3.
### Checking order

1. Press the MENU button on the remote controller
2. Select the AUDIO function of the Menu
3. Select TV Speaker Check
Checking order

1. Check the contact condition of or 24V connector of Main Board

2. Measure the 24V 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.
Checking order

1. 2. Check IR cable condition between IR & Main board.

3. Check the st-by 3.3V on the terminal 4.

4. When checking the Pre-Amp when the power is in ON condition, it is normal when the Analog Tester needle moves slowly, and defective when it does not move at all.