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

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

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm 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 1MΩ and 5.2MΩ.

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 1.5K/10watt resistor in parallel with a 0.15uF 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 0.5mA.

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
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 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (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.

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.

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.

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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.
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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.

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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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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.

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

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

1. Application range
   This specification is applied to LD88F chassis.

2. Requirement for Test
   Each part is tested as below without special appointment.
   (1) Temperature: 25 ± 5°C (77 ± 9°F), CST: 40 ± 5°C
   (2) Humidity: 65% ± 10%
   (3) Power: 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: CE, IEC Specification
      EMC: CE, IEC

3 General Specification (LCD Module)

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<th>Item</th>
<th>Specification</th>
<th>Remark</th>
</tr>
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<tr>
<td>1</td>
<td>Display Screen Device</td>
<td>47 inch Color TFT-LCD Module (LPL)</td>
<td>LCD</td>
</tr>
<tr>
<td>2</td>
<td>Aspect Ratio</td>
<td>16:9</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PDP Module</td>
<td>Pixel Format: 1920 horiz. by 1080 vert. Pixels RGB stripe arrangement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Operating Environment</td>
<td>13) Temp.: 0 ~ 40 deg</td>
<td>LGE SPEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14) Humidity: 20 ~ 80%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Storage Environment</td>
<td>15) Temp.: -20 ~ 60 deg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16) Humidity: 10 ~ 90%</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Input Voltage</td>
<td>AC100 ~ 240V, 50/60Hz</td>
<td>Maker LG</td>
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## 4. Model Specification

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<th>Item</th>
<th>Specification</th>
<th>Remark</th>
</tr>
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<tr>
<td>1</td>
<td>Market</td>
<td>Austria, Belgium, Bulgaria, Croatia, Czech, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Luxembourg, UK Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, 25 Country -&gt; 27 country</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Broadcasting system</td>
<td>1) PAL/SECAM BG</td>
<td>EU (PAL Market)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) PAL/SECAM DK</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) PAL I/I</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) SECAM L/L’</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) DVB T</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Receiving system</td>
<td>Analog : Upper Heterodyne</td>
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<tr>
<td></td>
<td></td>
<td>Digital : COFDM</td>
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<tr>
<td>4</td>
<td>Scart Jack (2EA)</td>
<td>PAL, SECAM</td>
<td>Scart 1 Jack is Full scart and support RF-OUT(Analog) Scart 2 jack is Half scart and support MNT-OUT.</td>
</tr>
<tr>
<td>5</td>
<td>Video Input (1EA)</td>
<td>PAL, SECAM, NTSC</td>
<td>Side AV</td>
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<tr>
<td>6</td>
<td>S-Video Input (1EA)</td>
<td>PAL, SECAM, NTSC</td>
<td>Side AV</td>
</tr>
<tr>
<td>7</td>
<td>Component Input (1EA)</td>
<td>Y/Cb/Cr, Y/ Pb/Pr</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>RGB Input</td>
<td>RGB-PC</td>
<td>Analog (D-Sub 15Pin)</td>
</tr>
<tr>
<td>9</td>
<td>HDMI Input (4EA)</td>
<td>HDMI-PC</td>
<td>HDMI1/DVI, HDMI2, HDMI3, HDMI4 All HDMI inputs support V1.3 of HDMI</td>
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<td>HDMI-DTV</td>
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<tr>
<td>10</td>
<td>Audio Input (3 EA)</td>
<td>RGB/DVI Audio, Component, AV</td>
<td>L/R Input</td>
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<tr>
<td>11</td>
<td>SPDIF Out(1 EA)</td>
<td>SPDIF Out</td>
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<td>12</td>
<td>USB</td>
<td>For SVC, S/W Download, X-Studio</td>
<td>Side(X-Studio Only Series)</td>
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<tr>
<td>13</td>
<td>Bluetooth</td>
<td>Bluetooth Phone(JPEG), Headset</td>
<td>32/37/42/47/52LG7000 models</td>
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5. Component Video Input \((Y, P_B, P_R)\)

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<tr>
<th>No</th>
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<th>H-freq(kHz)</th>
<th>V-freq.(kHz)</th>
<th>Pixel clock(MHz)</th>
<th>Proposed</th>
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<tr>
<td>1</td>
<td>720*480</td>
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<td>59.94</td>
<td>13.500</td>
<td>SDTV, DVD 480i(525i)</td>
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<td>15.75</td>
<td>60.00</td>
<td>13.514</td>
<td>SDTV, DVD 480i(525i)</td>
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<td>3</td>
<td>720*576</td>
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<td>13.500</td>
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<td>1280*720</td>
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<td>60.00</td>
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<td>1920*1080</td>
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<td>50.00</td>
<td>74.250</td>
<td>HDTV 1080i 50Hz,</td>
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6. RGB input (Analog PC)

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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>25.17</td>
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<td>4</td>
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<td>VESA(XGA)</td>
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<td>84.625</td>
<td>VESA(WXGA)</td>
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<td>121.75</td>
<td>SXGA</td>
<td>FULL HD only</td>
</tr>
<tr>
<td>9</td>
<td>1920*1080</td>
<td>66.587</td>
<td>59.934</td>
<td>138.5</td>
<td>WUXGA</td>
<td></td>
</tr>
</tbody>
</table>
### 7. HDMI DTV

<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>640*480</td>
<td>31.649</td>
<td>59.94</td>
<td>25.175</td>
<td>SDTV 480p 60Hz</td>
</tr>
<tr>
<td>2</td>
<td>640*480</td>
<td>31.469</td>
<td>60</td>
<td>25.20</td>
<td>SDTV 480p 60Hz</td>
</tr>
<tr>
<td>3</td>
<td>720*480</td>
<td>31.47</td>
<td>59.94</td>
<td>27.00</td>
<td>SDTV 480p 60Hz</td>
</tr>
<tr>
<td>4</td>
<td>720*480</td>
<td>31.50</td>
<td>60</td>
<td>27.027</td>
<td>SDTV 480p 60Hz</td>
</tr>
<tr>
<td>5</td>
<td>720*576</td>
<td>31.25</td>
<td>50.00</td>
<td>27.00</td>
<td>SDTV 576p 50Hz</td>
</tr>
<tr>
<td>6</td>
<td>1280*720</td>
<td>37.50</td>
<td>50.00</td>
<td>74.176</td>
<td>HDTV 720p 50Hz</td>
</tr>
<tr>
<td>7</td>
<td>1280*720</td>
<td>44.96</td>
<td>59.94</td>
<td>74.176</td>
<td>HDTV 720p 60Hz</td>
</tr>
<tr>
<td>8</td>
<td>1280*720</td>
<td>45.00</td>
<td>60</td>
<td>74.250</td>
<td>HDTV 720p 60Hz</td>
</tr>
<tr>
<td>9</td>
<td>1920*1080</td>
<td>28.125</td>
<td>50.00</td>
<td>74.250</td>
<td>HDTV 1080i 50Hz</td>
</tr>
<tr>
<td>10</td>
<td>1920*1080</td>
<td>33.72</td>
<td>59.94</td>
<td>74.176</td>
<td>HDTV 1080i 60Hz</td>
</tr>
<tr>
<td>11</td>
<td>1920*1080</td>
<td>33.75</td>
<td>60</td>
<td>74.250</td>
<td>HDTV 1080i 60Hz</td>
</tr>
<tr>
<td>12</td>
<td>1920*1080</td>
<td>27.00</td>
<td>24.00</td>
<td>74.25</td>
<td>HDTV 1080p 24Hz</td>
</tr>
<tr>
<td>13</td>
<td>1920*1080</td>
<td>33.750</td>
<td>30</td>
<td>74.25</td>
<td>HDTV 1080p 30Hz</td>
</tr>
<tr>
<td>14</td>
<td>1920*1080</td>
<td>56.25</td>
<td>50.00</td>
<td>148.50</td>
<td>HDTV 1080p 50Hz</td>
</tr>
<tr>
<td>15</td>
<td>1920*1080</td>
<td>67.433</td>
<td>59.94</td>
<td>148.352</td>
<td>HDTV 1080p 60Hz</td>
</tr>
<tr>
<td>16</td>
<td>1920*1080</td>
<td>67.50</td>
<td>60</td>
<td>148.50</td>
<td>HDTV 1080p 60Hz</td>
</tr>
</tbody>
</table>

### 8. HDMI PC

<table>
<thead>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>720*400</td>
<td>31.468</td>
<td>70.08</td>
<td>28.32</td>
<td>VESA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>640*480</td>
<td>31.469</td>
<td>59.94</td>
<td>25.17</td>
<td>VESA</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>800*600</td>
<td>37.879</td>
<td>60.31</td>
<td>40.00</td>
<td>VESA</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1024*768</td>
<td>48.363</td>
<td>60.00</td>
<td>65.00</td>
<td>VESA(XGA)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1280*768</td>
<td>47.78</td>
<td>59.87</td>
<td>80.125</td>
<td>VESA(WXGA)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1360*768</td>
<td>47.72</td>
<td>59.80</td>
<td>84.625</td>
<td>VESA(WXGA)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1280*1024</td>
<td>63.98</td>
<td>60.02</td>
<td>108.00</td>
<td>SXGA</td>
<td>FULL HD only</td>
</tr>
<tr>
<td>8</td>
<td>1400*1050</td>
<td>65.317</td>
<td>59.979</td>
<td>121.75</td>
<td>SXGA</td>
<td>FULL HD only</td>
</tr>
<tr>
<td>9</td>
<td>1920*1080</td>
<td>66.587</td>
<td>59.934</td>
<td>138.5</td>
<td>WUXGA</td>
<td></td>
</tr>
</tbody>
</table>
1. Application Range
This spec. sheet is applied to all of the LD88F chassis manufactured at LG TV Plant all over the world.

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±5°C 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 15 minutes prior to the adjustment.
- After RGB Full White in HEAT-RUN Mode, the receiver must be operated prior to the adjustment.

3. PCB assembly adjustment method
Caution: Using ‘power on’ button of the Adjustment R/C, power on TV.

** Note 1 & Note 2
- Baud rate : 115200 bps
- RS232 Host : PC
- echo : none

3.1. ADC adjustment

<table>
<thead>
<tr>
<th>Item</th>
<th>CMD1</th>
<th>CMD2</th>
<th>Data0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter</td>
<td>A</td>
<td>D</td>
<td>0</td>
</tr>
<tr>
<td>Adjust Mode</td>
<td>D</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ADC adjust</td>
<td>A</td>
<td>D</td>
<td>1</td>
</tr>
<tr>
<td>Adjust ‘Mode Out’</td>
<td>A</td>
<td>D</td>
<td>9</td>
</tr>
<tr>
<td>Adjustment Confirmation</td>
<td>A</td>
<td>D</td>
<td>9</td>
</tr>
</tbody>
</table>

* ADC Calibration Protocol (RS232)

3.2 PCMCIA CARD Checking Method
You must adjust DTV 29 Channel and insert PCMCIA CARD to socket.
1) If PCMCIA CARD works normally, normal signals display on screen. But it works abnormally, “No CA module” words display on screen.

* Caution: Set up “RF mode” before launching products.
4. EDID (The Extended Display Identification DATA)

* When company internal production (total assembly), EDID data must scan in DDC line.

4.1. EDID Download

Before downloading EDID Data, check the RGB/HDMI cable is disconnected.

1) Press ADJ key on Adjustment R/C.
2) Select "5.EDID D/L" by using D/E (CH +/-) and press ENTER(A).
3) Select "Start" by using F/G (VOL +/-) and press ENTER(A).
4) EDID DownLoad is executed if word "NG" is changed to "OK" about all HDMI ports.

4.2. EDID Data

(1) HDMI1

- Product ID
- Serial No: Controlled on production line.
- Month, Year: Controlled on production line 
  - : ex) Monthly: '09' -> '09'
  - Year: '2006' -> '10'

(2) RGB

- MODEL NAME
- PRODUCT ID
- HEX
- EDID Table

- Serial No: Controlled on production line.
- Checksum: Changeable by total EDID data.
- Port No. 10:HDMI1, 20:HDMI2, 30:HDMI3, 40:HDMI4
5. **Model option download** (Manual method)
   (1) Press 'Adj' key of Adjust Remocon ( p/n : 105-201M).
   (2) Select 'Model Option' by using D/E (CH+/-) key, and press 'VOL+' of 'Enter'.
   (3) Enter the Model number or Select 'Model Name' by using D/E (CH+/-) key.
   32LG7000-ZA -> 7700000
   (4) And then, Press 'Enter' or 'Vol+'.
   (5) The set is turned off and Turned On automatically.

6. **Serial number D/L**

   6.1 **Signal TABLE**

<table>
<thead>
<tr>
<th>CMD</th>
<th>LENGTH</th>
<th>ADH</th>
<th>ADL</th>
<th>DATA_1</th>
<th>...</th>
<th>DATA_n</th>
<th>CS</th>
<th>DELAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0h</td>
<td>84h+n</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20ms</td>
</tr>
</tbody>
</table>

   CMD : A0h
   LENGTH : 85~94h (1~16 bytes)
   ADH : EEPROM Sub Address high (00~1F)
   ADL : EEPROM Sub Address low (00~FF)
   Data : Write data
   CS : CMD + LENGTH + ADH + ADL + DATA_1 + ... + DATA_n
   Delay : 20ms

6.2 **Command Set**

<table>
<thead>
<tr>
<th>No.</th>
<th>Adjust mode</th>
<th>CMD(hex)</th>
<th>LENGTH(hex)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EEPROM WRITE</td>
<td>A0h</td>
<td>84h+n</td>
<td>n-bytes Write (n = 1~16)</td>
</tr>
</tbody>
</table>

   * Description
   FOS Default write : <7mode data> write
   Vtotal, V_Frequency, Sync_Polarity, Htotal, Hstart, Vstart, 0, Phase
   Data write : Model Name and Serial Number write in EEPROM.

6.3 **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.

7. **Adjustment of White Balance**

   7.1 **Test Equipment**
   - Color Analyzer (CS-1000, CA-100+(CH.9), CA-210(CH.9))
   - Please adjust CA-100+ / CA-210 by CS-1000 before measuring
     -> You should use Channel 9 which is Matrix compensated (White, Red, Green, Blue revised) by CS-1000 and adjust in accordance with White balance adjustment coordinate.

   * Color temperature standards according to CSM and Module
   
<table>
<thead>
<tr>
<th>CSM</th>
<th>LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool</td>
<td>11000K</td>
</tr>
<tr>
<td>Medium</td>
<td>9300K</td>
</tr>
<tr>
<td>Warm</td>
<td>6500K</td>
</tr>
</tbody>
</table>

   * Change target luminance and range of the Auto adjustment W/B equipment.

   | Target luminance | 65  |
   | Gamma | 20  |

   * White balance adjustment coordinate and color temperature

<table>
<thead>
<tr>
<th>Cool</th>
<th>CS-1000</th>
<th>CA-100+(CH.9)</th>
<th>CA-210(CH.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>0.276</td>
<td>0.276±0.002</td>
<td>0.276±0.002</td>
</tr>
<tr>
<td>Y</td>
<td>0.283</td>
<td>0.283±0.002</td>
<td>0.283±0.002</td>
</tr>
<tr>
<td>Δuv</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medium</th>
<th>CS-1000</th>
<th>CA-100+(CH.9)</th>
<th>CA-210(CH.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>0.285</td>
<td>0.285±0.002</td>
<td>0.285±0.002</td>
</tr>
<tr>
<td>Y</td>
<td>0.293</td>
<td>0.293±0.002</td>
<td>0.293±0.002</td>
</tr>
<tr>
<td>Δuv</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warm</th>
<th>CS-1000</th>
<th>CA-100+(CH.9)</th>
<th>CA-210(CH.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>0.313</td>
<td>0.313±0.002</td>
<td>0.313±0.002</td>
</tr>
<tr>
<td>Y</td>
<td>0.329</td>
<td>0.329±0.002</td>
<td>0.329±0.002</td>
</tr>
<tr>
<td>Δuv</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

   - PC (for communication through RS-232C) -> UART Baud rate : 115200 bps
   - Luminance Y AV : upper 150 cd/m² (TYP : 350 cd/m²)
   -> Applying to Cool, Medium, Warm mode

7.2. **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 R/C IN-START -> Enter the mode of White-Balance, the pattern will come out.
7.3. Auto White Balance

1) Adjust in the place where the influx of light like floodlight around is blocked. (illumination is less than 10ux).
2) Adhere closely the Color Analyzer (CA210) to the module less than 10cm 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 15 minutes.
   - Using ‘no signal’ or ‘full white pattern’ or the others, check the back light on.

- Auto adjustment Map (RS-232C)

<table>
<thead>
<tr>
<th>RS-232C COMMAND</th>
<th>MIN</th>
<th>CENTER</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[CMD ID DATA]</td>
<td>Cool</td>
<td>Medium</td>
<td>Warm</td>
</tr>
<tr>
<td>R Gain</td>
<td>jg</td>
<td>Ja</td>
<td>jd</td>
</tr>
<tr>
<td>G Gain</td>
<td>jh</td>
<td>Jb</td>
<td>je</td>
</tr>
<tr>
<td>B Gain</td>
<td>ji</td>
<td>Jc</td>
<td>jf</td>
</tr>
<tr>
<td>R Cut</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>G Cut</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>B Cut</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
</tbody>
</table>

7.4. Manual White Balance

(1) Press the ADJ KEY on Adjustment R/C.
   Select “3. Test Pattern” by using D / E (CH +/-) and press ENTER.
   Select “White” by using F / G (VOL +/-) and press ENTER and heat run over 15 minutes.
(2) Zero Calibrate CA-100+ / CA-210, and when controlling, stick the sensor to the center of LCD module surface.
(3) Press the ADJ KEY on Adjustment R/C
(4) Select “2. White Balance” and press G (VOL +)
   Set test-pattern on and display inside pattern.
(5) Control is carried out on three color temperatures, COOL, MEDIUM, WARM.
   (Control is carried out three times)

< Temperature: COOL >
   - R-Cut / G-Cut / B-Cut is set to 64.
   - Gain of Fixed color should be kept on 192, and adjust other two lower than 192.
   - Each gain is limited to 192.

< Temperature: MEDIUM >
   - R-Cut / G-Cut / B-Cut is set to 64.
   - Gain of Fixed color should be kept on 192, and adjust other two lower than 192.
   - Each gain is limited to 192.

< Temperature: WARM >
   - R-Cut / G-Cut / B-Cut is set to 64.
   - Gain of Fixed color should be kept on 192, and adjust other two lower than 192.
   - Each gain is limited to 192.
   - One of R Gain / G Gain / B Gain should be kept on 192, and adjust other two lower than 192.
   (When R/G/B GAIN are all 192, it is the FULL DYNAMIC Range of Module)
TROUBLE SHOOTING

1. Power Board
1-1. The whole flow chart which it follows in voltage output state

Start check

Does not screen whole comes out?

Yes

Is it identical with power off condition?

No

Is the interface signal operated?

Yes

1. Check the Power off condition. 2. Check the interface signal condition.

No

Does not low voltage output comes out?

Yes

Does not the St-by 5V(P-5V) signal comes out?

No

Does not the AC Detect signal comes out?

No

Does not the RL_ON/PWR_ON/OFF comes out?

Yes

3. Check the St_by_5V signal circuit.

No

4. Check the AC detect signal circuit.

5. Check the VSC RL_ON/PWR_ON/OFF signal.

Does not inverter signal output comes out?

Yes

Does not the VSC signal INV_CTL comes out?

No

Does not the INV 24V voltage output comes out?

No

Does not the VSC Low voltage output comes out?

Yes

7. Check the VSC INV_CTL signal?

8. Check the INV 24V voltage output circuit.

No

6. Check the VSC low Voltage output.

Manufacture enterprise meaning of a passage.
1-2. In case of No Power
(1) Symptom
1) It does not charge at module.
2) Front LED does not work.

(2) Check the followings

- **A power cord is plugged in with TV set?**
  - Yes → **Plug the power cord in.**
  - No

- **Is AC-INLET Cable(Red+Blue) connected with the PSU?**
  - Yes → **Connect the AC-INLET Cable.**
  - No

- **Are the fuses OK on the PSU?**
  - Yes → **Replace the fuse.**
  - No → **Replace the fuse.**

- **Is the PSU connected with Main Board through a 24pin cable?**
  - Yes → **Connect a 24pin cable to PSU to Main(P1000)pin.**
  - No

Measure output voltages(16V, 12V, 5V) on the PSU.
-> [Main P1000] pin1,2:16V; pin(5,6):12V; pin(9~12):5V;
If the measured values are not a proper value, replace PSU.
2. Main Board & Sub FRC B/D
2-1. In case of No Raster

- Check LED A'ssy. color.
  - NG: always RED
  - No problem
  - Check remote control Power key off.
    - No problem
    - Check inverter lamp On/Off status.
      - Lamp On status
        - NG
        - Lamp off
          - Replace LED A'ssy.
          - Check P500 VDD voltage (pin1~4) 12V
            - NG
            - No problem
            - Check LVDS data signal(pin11~22, pin27~38)
              - No problem
              - NG
              - Replace T-con board of LCD Module.

- Check LED A'ssy.
  - NG
  - Replace LED A'ssy.

- Check remote control Power key off.
  - NG
  - Replace LED A'ssy.

- Is the inverter OK? (INV_CTL signal: P1000:pin20)
  - NG
  - Re MICOM S/W download -> If not OK then replace IC802
  - NG
  - Replace PSU

- Recheck PSU(+5V, +12V, +16V)
  - No problem
  - NG
  - Replace PSU

- Check LVDS Cable.
  - NG
  - Replace the LVDS Cable.

- Check Q501, L502,500, PANEL_Vcc_EN signal.
  - NG
  - No problem
  - Check Q501, L502,500, PANEL_Vcc_EN signal.

- Check IC502 power block L1200(1.0V), L1213(1.8V)
  IC1204(3.3V), IC1205(3.3V)
  IC1206(1.2V)
  - NG
  - Replace IC100.

- Lamp On status
  - NG
  - Replace the LVDS Cable.

- Check LVDS data signal(pin11~22, pin27~38)
  - NG
  - Replace T-con board of LCD Module.

- Replace the Main B/D.

- Re App S/W download.
  If not OK then replace IC100.

- NG
  - NG
  - NG
  - NG
  - NG
2-2. In case of abnormal display or sound when RF mode

Check Tuner
1. VDD Check -> TU300
   pin22: 1.8V pin21: 3.3V pin4: 5V
2. IIC check -> pin 10, 11

NG : DTV

Check DTV signal
1. TP signal -> Pin 24~34
2. IIC check -> pin 18, 19

NG : DTV

Replace TU300.

Check ATV signal
1. Video signal
   -> TU Main Signal : R336
   -> Tuner V-out: C318

NG : DTV

Check ATV sound signal
1. Sound signal
   -> SIF : R317
   -> SECAM-L sound: R326

No problem

Replace TU300.

Check sound processor
1. IC603 pin50 for SIF(RF sound)
2. IC603 pin47 for SECAM-L sound

NG

Check Digital AMP
1. VDD 16V: IC600 pin 49~52, 32~35
   VDD 1.8V: IC600 pin 2, 13, 16
2. Mute check: IC600 pin 25

No problem

Check App S/W
If App S/W OK then replace IC603.

No problem

Check App S/W
If App S/W OK then replace Main B/D.

NG

Check App S/W
If App S/W OK then replace IC600.
2-3. In case of abnormal display or sound when side AV1 (SCART1) mode

Check Video, Audio

Check AV1 Jack
1. SCART1 LINK check 
   -> R148 or JK100 pin17
   
   Audio NG

Check Audio signal
1. R : JK100 pin2 and C679
2. L : JK100 pin6 and C692

Check App S/W.
If App S/W OK then replace IC603.

Check Digital AMP
1. VDD 16V : IC600 pin49~52, 32~35
   VDD 1.8V : IC600 pin12,13,16
2. Mute check : IC600 pin25

Check App S/W.
If App S/W OK then replace IC600.

Video NG

Check video signal
1. Red : JK100 pin15 and C508
2. Green : JK100 pin11 and C511
3. Blue : JK100 pin7 and C514
4. CVBS : JK100 pin20 and C1909

NG

Check the input source of Equipment.

No problem

Replace IC100.

2-4. In case of abnormal display or sound when side AV2 (SCART2) mode

Check Video, Audio

Check AV2 Jack
1. SCART1 LINK check 
   -> R149 or JK101 pin17
   
   Audio NG

Check Audio signal
1. R : JK101 pin2 and C690
2. L : JK101 pin6 and C627

Check App S/W.
If App S/W OK then replace IC603.

Check Digital AMP
1. VDD 16V : IC600 pin49~52, 32~35
   VDD 1.8V : IC600 pin12,13,16
2. Mute check : IC600 pin25

Check App S/W.
If App S/W OK then replace Main B/D.

NG

Check video signal
1. CVBS : JK101 pin20 and C519

NG

Check the input source of Equipment.

No problem

Replace IC100.
2-5. In case of abnormal display or sound when VGA Input mode

Check Video, Audio

Check RGB Jack
1. RGB LINK check -> R189 or P101 pin10

Check EDID EEPROM
1. IC102 VDD Check -> pin8 : 5V
2. DDC IIC line check -> IC102 pin 6, 5

Check App S/W
If App S/W OK then replace IC102.

Check sink signal
1. H-sync : P101 pin13
2. V-sync : P101 pin14

Check 74HC14D IC103
1. H-sync : pin4
2. V-sync : pin8
3. If problem with IC103 then replace IC103

Check App S/W.
If App S/W OK then replace IC100.

2-6. In case of abnormal display or sound when Component Input mode

Check Video, Audio

Check Component Jack
1. COMP LINK check -> R167 or JK102 pinA4

Check video signal
1. Y : JK102 pin3A and C509
2. Pb : JK102 pin5B and C512
3. Pr : JK102 pin5C and C515

Check App S/W.
If App S/W OK then Replace IC100.

Check Audio signal
1. R : JK102 pin3E and C614
2. L : JK102 pin5D and C613

Check the input source of Equipment.
2-7. In case of abnormal display or sound when side AV3 mode

Check Video, Audio

Check AV3 Jack.
1. AV3 LINK check -> R187 or JK103 pin3

Audio NG

Check Audio signal
1. R : JK103 pin7 and C616
2. L : JK102 pin8 and C615

NG

Check the input source of Equipment.

Check App S/W.
If App S/W OK then replace IC100.

Check video signal
1. CVBS : JK103 pin2 and C517

NG

Check the input source of Equipment.

Check App S/W.
If App S/W OK then replace IC100.

2-8. In case of abnormal display or sound when HDMI1,2,3,4 mode

Check HDMI 5V_DET input
1. HDMI JK201, 202, 203 Pin20

NG

Check HDMI source.
If OK then replace HDMI JACK.

No problem

Check HDMI HPD Output
1. HDMI JK201, 202, 203 Pin19

No problem or No sound

Check App S/W.
If App S/W OK then replace IC100.

Check HDMI source.
If OK then replace HDMI JACK.

No problem

Check EDID EEPROM
1. IC201~4 VDD Check
-> pin8:5V
2. DDC IIC lin check
-> IC201~4 pin8,5

Video NG

Check EDID.
1. Read EDID data.

All data:FF

EDID download and re-check

Check App S/W.
If App S/W OK then replace IC100.

No problem

Check TMDS signal.
1. JK201~3, JK204 pin1~12

No problem : case HDMI1~3

Check App S/W.
If App S/W OK then replace IC100.

No problem

Check TMDS 351 IC(IC200).
1. VDD check -> pin6,12,19,25,40,46,55,61:3.3V
2. HDMI SEL check -> pin33,32

No problem

Check TMDS signal check.
1. Pin17~27

No problem

Check App S/W.
If App S/W OK then replace IC200.

NG

Check App S/W.
If App S/W OK then replace IC100.

No problem
2-9. In case of No sound

(1) Symptom
1) LED is green.
2) Screen display but sound is not output.

(2) Check the followings

- All input(mode) is no sound?
  - Yes: Is the speaker on it menu? 1. Menu > Audio > TV Speaker ON/OFF.
  - No: Set on speaker in menu. (TV Speaker OFF -> ON)

- Only HDMI is No sound?
  - Yes: Download the EDID data.
  - No: Check the Tuner IN/OUT
    SIF : R317, SECAM-L : R326

- Only RF is no sound?
  - Yes: Check the Speaker Cable normal?
    1. Isn’t damage in the Speaker Cable?
    2. Is the Speaker cable connect well form Main B/D to Speaker.
  - No: Change or Reconnect the Speaker Cable.

- Only AV/component/PC input is no sound?
  - Yes: Replace Main B/D.
  - No: Is the speaker Cable normal?
    1. Isn’t damage in the Speaker Cable?
    2. Is the Speaker cable connect well form Main B/D to Speaker.

- IC601 (Audio AMP) operates Normal?
  - Yes: Replace Main B/D.
  - No: Replace Audio AMP IC(IC600).

Check the Input Sound IN/OUT
AV1 (R : JK100 pin2 and C679, L : JK100 pin6 and C692)
AV2 (R : JK101 pin2 and C690, L : JK101 pin2 and C690)
AV3 (R : JK103 pin7 and C616, L : JK103 pin8 and C615)
PC (R : JK102 pin3E and C614, L : JK102 pin5D and C613)
Component
(R : JK102 pin3E and C614, L : JK102 pin5D and C613)
2-10. In case of no connection blue tooth device

(1) Symptom
1) TV set display is fine.
2) TV set don’t search blue Tooth device.

(2) Check the followings

- Check the blue tooth device power.
- The blue tooth device is headset?
- Is it Pairing Mode? (Blue tooth headset device)
- Setting headset to ‘Pairing Mode’ and retry

- Recharge device and power on
- Check connection blue tooth cable on TV set.
- Check P903(main board) 5pin(5V).
- Check P903(main board) 2,3pin signal USB interface

- No problem
- No signal

- Replace IC904 of Main B/D
- Or Replace Main B/D
- Replace Blue Tooth board.
2. FRC

MT8280FG
IC502

RVDS output (10 bit)
First / second channel

LVDS output (10 bit)
Third / fourth channel

Douglas
IC100

LVDS input (10 bit)
Odd / even

LVDS output (10 bit)
First / second channel

LVDS output (10 bit)
Third / fourth channel

MT8280_INT0
MT8280_PWN
MT8280_PRST

UART

I2SSDA/ SCL2
Master

DDR2
400Mhz * 2
IC1100, IC1101

RS-232 Jack
For debugging
P1202

RX
TX

Address bus
Control Bus
Data BUS

Clk in
Data In/out

27Mhz

UART0

Pocket

UART1

4pin water
For download
P1203

Serial
Flash
IC1201

Serial Flash WP

Data BUS
Address bus
Control Bus
Data BUS

TX
RX
3. Bluetooth

Audio : PCM
Picture : JPEG
## 4. SCART 1, 2, AV3

<table>
<thead>
<tr>
<th>SCART 2</th>
<th>SCART 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Audio R L in</td>
<td>1: Audio R L in</td>
</tr>
<tr>
<td>2: Audio L L in</td>
<td>2: Audio L L in</td>
</tr>
<tr>
<td>3: Audio GND</td>
<td>3: Audio GND</td>
</tr>
<tr>
<td>4: Audio L L in</td>
<td>4: Audio L L in</td>
</tr>
<tr>
<td>5: Audio GND</td>
<td>5: Audio GND</td>
</tr>
</tbody>
</table>

- **12V->3.3V Level shifter**

**Scart2 ID**

**Scart1 FB**

**TUNER OUT L/R**

**Rear R**

**Rear L**

**Rear CVBS Link**

**SLASB3157**

**Video S/W**

**TR BUF**

**TR Net**

**MICOM**

**Tuner**

**LGE Internal Use Only**

[Diagram of SCART connections and signal flow]

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Only for training and service purposes
5. Component, RGB, HDMI, RS232
6. Tuner, CI
7. Audio Path (MSP4458, NTP3000A)
8. Reset

9. I2C Control
10-1. Power tree

P_+5V

IC100
Douglas

IC700
IC701
BA33BC
1A

3.3V_EN

+3.3V_TUNER

IC1004AZ1117H-1.8TRE

+1.8V

IC1007
BA33BC

+3.3V_STBY

MICOM

IC1001
BA33BC 1A

3.3V_EN

+3.3V-DOUGLAS

IC1002BA18DD0WHF Rohm

+1.8V, DOUGLAS DDR

1.8V_DOUGLAS_EN

IC1000BD9130 / 2A

+1.2V_DOUGLAS

1.2V_DOUGLAS_EN

MICOM

IC100Douglas

IC700IC701 DDR2

IC800NTP3000A

IC802Micom

IC904

TUNER

IC104

MAX3232

IC200TMDS351

CI Block

For audio block

IC1008
AZ1117H-1.8TRE

160mA

IC1006

+3.3V

IC107

BA33BC

1.8V

IC104

EEPROM

IC801

+3.3V, STBY

480mA

1250mA

IC1001
BA33BC 1A

1250mA

MICOM

3.3V_EN

1.8V, DOUGLAS_DDR

1.8V.DOUGLAS_EN

MICOM

MICOM

1.2V, DOUGLAS_EN

MICOM

MICOM

3.3V_EN

1.8V

MICOM

MICOM

1.2V

MICOM

MICOM

3.3V_EN

480mA

P_+5V
10-2. Power tree
**EXPLODED VIEW**

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**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.