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

CHASSIS : LB91B
MODEL : 37LH50YD  37LH50YD-AA
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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 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

When 25A is impressed between Earth and 2nd Ground for 1 second, Resistance must be less than 0.1 Ω
*Base on Adjustment standard
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 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 is not required.

5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.

6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

   Always remove the test receiver ground lead last.

8. Use with this receiver only the test fixtures specified in this service manual.

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

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

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

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines
1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500°F to 600°F.

2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.

3. Keep the soldering iron tip clean and well tinned.

4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) 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. Carefully crimp and solder the connections.

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

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

1. Application range
This specification is applied to the LCD TV used LB91B 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) Relative Humidity: 65±10%
3) Power Voltage: Standard input voltage (100-240V@50/60Hz)
   * Standard Voltage of each products is marked by models.
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method
1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety: IEC/EN60065
   - EMI: EN55013

4. Electrical specification
(1) Module General Specification

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Specification</th>
<th>Remark</th>
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<tbody>
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<td>Screen Device</td>
<td>37” wide Color Display module</td>
<td>LCD</td>
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<td>Aspect Ratio</td>
<td>16:9</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>LCD Module</td>
<td>37” TFT LCD FHD 100Hz</td>
<td>LGD(FHD/200Hz)</td>
</tr>
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<td>Operating Environment</td>
<td>Temp.: 0 ~ 50°C 240h</td>
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<tr>
<td></td>
<td></td>
<td>Humidity: Ta=40°C, 90%RH, 240h</td>
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<td>5</td>
<td>Storage Environment</td>
<td>Temp.: -20 ~ 60°C 240h</td>
<td></td>
</tr>
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<td>6</td>
<td>Input Voltage</td>
<td>AC100-240V~, 50/60Hz</td>
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<td>7</td>
<td>Power Consumption</td>
<td>Power on (Green)</td>
<td>LCD(Module) + Backlight(Lamp)</td>
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<td></td>
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<td>Module Size</td>
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<td>Back Light</td>
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<td>11</td>
<td>Display Colors</td>
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<td>12</td>
<td>Coating</td>
<td>3H, Semi-glare</td>
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</tr>
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</table>
5. Chroma & Brightness

5.1 Module optical specification

1) Optical characteristics are determined after the unit has been ‘ON’ and stable in a dark environment at 25±2°C
2) Surface luminance is the luminance value at center 1-point across the LCD surface 50cm from the surface with all pixels displaying white.

6. Component Video Input (Y, Cb/Pb, Cr/Pr)

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<tr>
<th>No.</th>
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<th>H-freq(kHz)</th>
<th>V-freq(Hz)</th>
<th>Remark</th>
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### 7. RGB (PC)

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<th>V-freq(Hz)</th>
<th>Pixel Clock(MHz)</th>
<th>Proposed</th>
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<td>720*400</td>
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### 8. HDMI Input (PC/DTV)

#### (1) DTV Mode

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#### (2) PC Mode

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ADJUSTMENT INSTRUCTION

1. Application Range
This specification sheet is applied to all of the LCD TV with LB91B 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±5ºC
   Relative humidity: 65±10%
   Input voltage: 220V, 60Hz
6) Adjustment equipments: Color Analyzer (CA-210 or CA-110), Pattern Generator (MSPG-925L or Equivalent), DDC Adjustment Jig equipment, SVC remote controller
7) Push The “IN STOP KEY” - For memory initialization.

3. Main PCB check process
   * APC - After Manual-Insert, executing APC
   * USB DOWNLOAD(*.epk file download)
     (1) Put the USB Stick to the USB socket.
     (2) Automatically detecting update file in USB Stick.
     - If your downloaded program version in USB Stick is Low, it didn’t work. But your downloaded version is High, USB data is automatically detecting
     (3) Show the message “Copying files from memory”

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 “I n-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.

* 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.
(5) Click “Auto” tab and set as below
(6) Click “Run”.
(7) After downloading, check “OK” message.
(4) Updating is starting.

(5) After updating is complete, The TV will restart automatically.
(6) If TV turns on, check your updated version and Tool option. (refer to the next page about tool option)
* If downloading version is higher than your TV have, TV can lost all channel data. In this case, you have to channel recover. If all channel data is cleared, you didn’t have a DTV/ATV test on production line.

* After downloading, have to adjust Tool Option again.
(1) Enter ‘EZ ADJUST’ mode by pushing ‘ADJ’ key.
(2) Select each ‘Tool Option(1~4)’ and push ‘OK’ or ’G’ key.
(3) Correct the number. (Each model has their number.)
(4) Correction Tool option is complete.

3.1. ADC Process
- Input signal : Component 480i
- Signal equipment displays.

- Component 480i
MODEL: 209 in Pattern Generator(480i Mode)
PATTERN : 65 in Pattern Generator(MSPG-925 SERIES)
* You need not connecting RGB(D-sub) cable. Because ADC in RGB PC mode uses TV internal pattern.

* After enter Service Mode by pushing “ADJ” key,
* Enter Internal ADC mode by pushing ‘G’ key at “5. ADC Calibration”

<Caution> Using ‘power on’ button of the Adjustment R/C , power on TV.

* ADC Calibration Protocol (RS232)

<table>
<thead>
<tr>
<th>Adjust 'Mode In'</th>
<th>CMD1</th>
<th>CMD2</th>
<th>Data0</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADC Adjust</th>
<th>CMD1</th>
<th>CMD2</th>
<th>Data0</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>D</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Adjust Sequence
• aa 00 00 [Enter Adjust Mode]
• xb 00 40 [Component1 Input (480i)]
• ad 00 10 [Adjust 480i Comp1]
• xb 00 60 [RGB Input (1024*768)]
• ad 00 10 [Adjust 1024*768 RGB]
• aa 00 90 End Adjust mode
* Required equipment : factory Service Remote control

3.2. Function Check
(1) Check display and sound
- Check Input and Signal items. (cf. work instructions)
  1) TV
  2) AV 1/2
  3) COMPONENT (480i)
  4) RGB (PC : 1024 x 768 @ 60hz)
  5) HDMI
  6) PC Audio In
* Display and Sound check is executed by remote control.
4. Total Assembly line process

4.1. Adjustment Preparation

- **W/B Equipment condition**
  - CA210 : CH 9, Test signal : Inner pattern (85IRE)

- Above 5 minutes H/run in the inner pattern. ("power on" key of adjust remote control)

  - * 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 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 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 15minutes.
      - Using ‘no signal’ or ‘full white pattern’ or the others, check the back light on.

  - * Auto adjustment Map(RS-232C)*

<table>
<thead>
<tr>
<th>Index</th>
<th>Equipment -&gt; Wireless unit</th>
<th>Wireless unit -&gt; Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMD1</td>
<td>CMD2</td>
<td>Set ID</td>
</tr>
<tr>
<td>Start</td>
<td>w  b 0 00 1F 04 00 00</td>
<td></td>
</tr>
<tr>
<td>Gain start</td>
<td>w  b 0 10</td>
<td>1F 04</td>
</tr>
<tr>
<td>Gain End</td>
<td>w  b 0 1F 04 00 1F</td>
<td></td>
</tr>
<tr>
<td>Offset Start</td>
<td>w  b 0 20</td>
<td>1F 04</td>
</tr>
<tr>
<td>Offset End</td>
<td>w  b 0 2F 1F 04 00 2F</td>
<td></td>
</tr>
<tr>
<td>End</td>
<td>w  b 0 FF 1F 04 00 FF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RS-232C COMMAND [CMD ID DATA]</th>
<th>MIN CENTER (DEFAULT)</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>R Gain</td>
<td>jg  Ja  jd</td>
<td>00</td>
</tr>
<tr>
<td>G Gain</td>
<td>jh  Jb  je</td>
<td>00</td>
</tr>
<tr>
<td>B Gain</td>
<td>ji  Jc  jf</td>
<td>00</td>
</tr>
<tr>
<td>R Cut</td>
<td>64 64 64</td>
<td>128</td>
</tr>
<tr>
<td>G Cut</td>
<td>64 64 64</td>
<td>128</td>
</tr>
<tr>
<td>B Cut</td>
<td>64 64 64</td>
<td>128</td>
</tr>
</tbody>
</table>

** 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)

* Manual W/B process using adjusts Remote control*
  - After enter Service Mode by pushing “ADJ” key,
  - Enter White Balance by pushing “G” key at “3. White Balance”.

- After all adjustments, press “IN START” key and compare Tool 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.

4.2. DDC EDID Write (RGB 128Byte )
  - Connect D-sub Signal Cable to D-sub Jack.
  - Write EDID Data to EEPROM(24C02) by using DDC2B protocol.
  - Check whether written EDID data is correct or not.
* For SVC main Ass’y, EDID have to be downloaded to Insert Process in advance.

4.3. 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 Ass’y, EDID have to be downloaded to Insert Process in advance.
4.4. EDID DATA

1) All Data: HEXA Value
2) Changeable Data:
   *: Serial No: Controlled / Data: 01
   **: Month: Controlled / Data: 00
   ***: Year: Controlled
   ****: Checksum

- Auto Download
  * After enter Service Mode by pushing "ADJ" key,
  * Enter EDID D/L mode.
  * Enter "START" by pushing "OK" key.

- Manual Download
  * Caution
    1) Use the proper signal cable for EDID Download
       - Analog EDID: Pin3 exists
       - Digital EDID: Pin3 exists
    2) Never connect HDMI & D-sub Cable at the same time.
    3) Use the proper cables below for EDID Writing.
    4) Download HDMI1, HDMI2, HDMI3 separately because each data is different.

| Item          | CMD1 | CMD2 | Data0
|---------------|------|------|------
| Download      | A    | A    | 0    0
| 'Mode In'     |      |      |      
| Automatically Download | A | E | 00 10
| (The use of an internal pattern) |      |      |      |

* EDID data and Model option download (RS232)

<table>
<thead>
<tr>
<th>Item</th>
<th>Condition</th>
<th>Data(Hex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer ID</td>
<td>GSM</td>
<td>1E6D</td>
</tr>
<tr>
<td>Version</td>
<td>Digital : 1</td>
<td>01</td>
</tr>
<tr>
<td>Revision</td>
<td>Digital : 3</td>
<td>03</td>
</tr>
</tbody>
</table>
BLOCK DIAGRAM

- DDR2 (1Gbit) Qimonda/Hynix
- NAND Flash (512Mbit)
- Digital Audio (Optic)
- Digital AMP
- NTP3100L
- RS-232C (Ctrl./SVC)
- I2S
- DDR_Data[0:15], DQS, DM...
- Addr.[ ], ctrl. data
- MAX3232 RS232 IC
- Saturn6
- DTV IF +/-
- Component 1
  - Y Pb Pr
  - Audio L/R
- Phone (for RGB)
- SPDI F
- CVBS
- Component 2
  - AV 1
  - AV 2
  - Component
  - RGB
  - Phone (for RGB)
  - Digital Audio (Optic)
  - RS-232C (Ctrl./SVC)
- USB2.0
- MIC2019 O.C. Protector
- +5V
- Serial Flash (2Mbit)
- Serial Flash (32Mbit)
- SPI
- EEPROM (512K)
- CM3212 Sensor
- DDR Data[0:15], DQS, DM...
- Addr.[ ], ctrl. data
- Data[0 … 7]
- Addr[0…1], CS...
- TDA9996 HDMI Switch
- HDMI 1, 2, 3, 4
- 5V_HDMI1, HPD1, DDC SCL/SDA, CLK, DATA
- 5V_HDMI2, HPD2, DDC SCL/SDA, CLK, DATA
- 5V_HDMI3, HPD3, DDC SCL/SDA, CLK, DATA
- 5V_HDMI4, HPD4, DDC SCL/SDA, CLK, DATA
- HDMI Switch
- 9V_HDMI, HPM1, DDC SCL/SDA, CLK
- 9V_HDMI, HPM2, DDC SCL/SDA, CLK
- 9V_HDMI, HPM3, DDC SCL/SDA, CLK
- 9V_HDMI, HPM4, DDC SCL/SDA, CLK

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Only for training and service purposes

LGE Internal Use Only
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.
Zener Diode is close to wafer
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILM AND ELECTRICAL SHOCK DANGERS, WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.
### Contents of LCD TV Standard 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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>No video/Normal audio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>No video/No audio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A. Video error</td>
<td>Video error, video lag/stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Color error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Vertical/Horizontal bar, residual image, light spot, external device color error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>B. Power error</td>
<td>No power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Off when on, off while viewing, power auto on/off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>C. Audio error</td>
<td>No audio/Normal video</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Wrecked audio/discontinuation/noise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>D. Function error</td>
<td>No response in remote controller, key error, recording error, memory error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>External device recognition error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>E. Noise</td>
<td>Circuit noise, mechanical noise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>F. Exterior error</td>
<td>Exterior defect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

- **No video/Normal audio**: Check Back Light On with naked eye
  - On: Check Power Board 12v,5v etc.
    - On: Normal voltage
      - Y: Replace Main Board
      - N: Repair Power Board or parts
    - N: Check Power Board 20V or 24v output
      - Y: Replace Inverter or module
        - Y: Replace Main Board
          - OR: Replace T-con Board or module
        - N: Repair Power Board or parts
      - N: Repair Power Board or parts

- **Move to No video/No audio**: Replace Inverter or module

---

**Precaution**

Always check & record S/W Version and White Balance value before replacing the Main Board.
<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>No video/ No audio</td>
<td>Check various voltages of Power Board (5V, 12V, 20V or 24V...)</td>
<td>2008.3.26</td>
<td>2/13</td>
</tr>
</tbody>
</table>

**Diagram:**
- **No Video/ No audio**
  - Check various voltages of Power Board (5V, 12V, 20V or 24V...)
  - Normal voltage? (Y)
    - Check and replace MAIN B/D
  - Normal voltage? (N)
    - Replace Power Board and repair parts
- **End**
A. Picture Problem

Check RF Signal level

1. By using Digital signal level meter
   - Signal strength (Normal : over 50%)
   - Signal Quality (Normal: over 50%)

2. Check RF Cable Connection 1. Reconnection

Normal Signal?

Y

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

N

Check RF Cable

Y

Normal Picture?

N

Contact with signal distributor or broadcaster (Cable or Air)

Check S/W Version

S/W Upgrade

Normal Picture?

N

Close

N

Check Tuner soldering

Close

Replace Main B/D

N

SVC Bulletin?

Y

Close

Y

Menu→Setup→Booster
**A. Video error**

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

1. **Check color condition by input**
   - External Input
   - Component
   - RGB
   - HDMI/DVI

2. **Screen normal?**
   - Y: Check external device connection condition
   - N: Replace module

3. **Normal?**
   - Y: Check and replace Link Cable
   - N: Replace Main B/D

4. **Screen normal?**
   - Y: End
   - N: Request repair for external device

---

### External device screen error - Color error

1. **Check S/W Version**
   - N: Check screen condition by input
     - External Input
     - Component
     - RGB
     - HDMI/DVI

2. **Check version**
   - Y: S/W Upgrade
   - N: Normal screen?
     - Y: End
     - N: Replace module

3. **External Input error**
   - N: Component error
     - Y: RGB error
       - Y: HDMI/DVI error
       - N: Replace Main B/D
     - N: Request repair for external device
   - N: Replace Main B/D

---

**Other Module**

- Replace T-Con Board
- Replace Module
- Replace module in abnormal displaying after exchanging T-Con B’d
### B. Power 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></td>
<td>No power</td>
<td>2008. 3. 26</td>
<td>6/13</td>
</tr>
</tbody>
</table>

#### Standard Repair Process

- **Check Power LED**
  - Stand-By: Red
  - Operating: Blue

#### Flowchart:

1. **Check Power LED**
   - Power LED On? → **Y**
   - Normal? → **N**
   - Check Power cord was inserted properly
   - **N** → **Replace Power B/D**
   - **Y** → **Normal operation?**
     - **N** → Replace Main B/D
     - **Y** → Measure voltage of each output of Power B/D
       - **Normal voltage?**
         - **Y** → Replace Main B/D
         - **N** → **Replace Power B/D**
       - **N** → **Replace Power B/D**

2. **Check ST-BY 5V**
   - **Y** → Close
   - **N** → Replace Power B/D

### Notes:

- **'09 years new model apply** mechanical power switch to reduce power consumption in stand-by status.
  - If mechanical power switch off
    - Doesn’t turn on by remote control
    - Doesn’t appear LED light
  - Please refer to the A21 Page
B. Power error

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

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>Established date</th>
<th>Revised date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off when on, off while viewing, power auto on/off</td>
<td>2008. 3 .26</td>
<td>7/13</td>
</tr>
</tbody>
</table>

Check outlet

Check A/C code

Check for 3 wave length

Error?

Y

N

Check Power Off Mode

CPU Abnormal

Replace Main B/D

Normal?

Y

End

N

Replace Power B/D

(abnormal 1)

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

Normal voltage?

Y

Replace Main B/D

N

Replace Power B/D

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

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

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

<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>2008. 3.26</td>
<td>8/13</td>
</tr>
</tbody>
</table>

- **No audio**
  - Screen normal
  - Check user menu > Speaker off
  - Check audio B+ 20V or 24V of Power Board
    - Normal voltage
      - Y: Replace Power Board and repair parts
      - N: Cancel OFF and describe
      - Disconnect Speaker disconnection
    - N: Replace MAIN Board
      - Y: Replace Speaker

**End**
Wrecked audio/discontinuation/noise is same after “Check input signal” compared to No audio

- Check input signal
  - RF
  - External Input signal
  - Signal normal?
    - Y
      - Check audio B+ Voltage (20V or 24V)
    - N
      - (When RF signal is not received)
        - Request repair to external cable/ANT provider
      - (In case of External Input signal error)
        - Check and fix external device
  - N
    - Connect and check other external device

- Wrecked audio/Discontinuation/Noise for all audio
  - Check and replace speaker and connector

- Wrecked audio/Discontinuation/Noise only for D-TV
  - Replace Main B/D

- Wrecked audio/Discontinuation/Noise only for Analog
  - Replace Power B/D
  - Normal voltage?
    - Y
      - Replace Main B/D
    - N
      - Normal audio?
        - Y
          - Connect and check other external device
        - N
          - Check and fix external device

- End
1. Remote control (R/C) operating error

Check R/C itself Operation

Check R/C Operating When turn off light in room

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

Check & Repair Battery of R/C

Check & Replace Assembly status (Key PCB + tool)

Check Key Output signal

Check & Repair Cable connection Connector solder

Check B+ 5V On Main B/D

Check IR Output signal

Check & Repair Cable connection Connector solder

Normal operating?

Normal operating?

Normal operating?

Normal operating?

Y

Y

N

N

Check 5v on Power B/D

Replace Power B/D or Replace Main B/D (Power B/D don’t have problem)

Replace Main B/D

Replace IR B/D

Replace R/C

Y

N

Check & Repair Battery of R/C

Check B+ 5V On Main B/D

Normal Operating?

Normal Operating?

Normal Operating?

Normal Operating?

Close

Close

Close

Close

Repair/Replace Local switch B/D

2. Local (Mechanical) switch operating error
**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>
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</thead>
<tbody>
<tr>
<td></td>
<td>External device recognition error</td>
<td></td>
<td>2008. 3 .26</td>
<td>11/13</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**: External Input and Component Recognition error
    - RGB, HDMI/ DVI, Optical Recognition error
      - Replace Main B/D
  - **N**: Fix in accordance with technical information

- Replace Main B/D
E. Noise

Circuit noise, mechanical noise

Identify nose type

Check location of noise

Replace inverter

OR

Replace LIPS B/D

<With Inverter Module>

<Without Inverter Module>

※ 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.

※ 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)
Standard Repair Process

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Error symptom</th>
<th>F. Exterior defect</th>
<th>Established date</th>
<th>Revised date</th>
<th>Electronics 6-3</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td>Exterior defect</td>
<td>2008. 3. 26</td>
<td>13/13</td>
<td></td>
</tr>
</tbody>
</table>

- Zoom part with exterior damage → Module damage → Replace module
- Cabinet damage → Replace cabinet
- Remote controller damage → Replace remote controller
- Stand dent → Replace stand

Established date Electronics 6-3
Revised date 13/13
# LCD TV Repair Process Index

## - Trouble shooting by input block (Component level check)

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<th>Remark</th>
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<td>2</td>
<td></td>
<td>No OSD</td>
<td></td>
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<td>Analog TV</td>
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<td>Video Problem</td>
<td>AV (Scart / CVBS/ S-Video)</td>
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<td></td>
<td>Component</td>
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<td>Analog TV</td>
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<td>AV / Component / RGB, HDMI-PC/ HDMI-DTV</td>
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<tr>
<td>13</td>
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<td>AV Audio out / No Audio (Headphone &amp; SPDIF)</td>
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<tr>
<td>14</td>
<td>USB / Remocon Problem</td>
<td>USB no connect / Remocon</td>
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<tr>
<td>15</td>
<td>Intelligent Sensor</td>
<td>Intelligent Sensor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**LCD TV**

**Symptom**

**No OSD**

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<tr>
<td>Revision</td>
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</tr>
</tbody>
</table>

---

**Flowchart**

1. **P800 Pin #13, 14 = 12V**  
   - **YES**  
   - **NO**  
     - **P800 Pin #20 Voltage level = 2V↑**  
       - **YES**  
       - **NO**  
         - **MAIN B’D L810 = 12V ?**  
           - **NO**  
           - **YES**  
             - **Replace MAIN B’D Q802**  
             - **Replace MAIN B’D Q805**  
           - **Replace LVDS Cable**  
         - **Replace LVDS Cable**  
       - **Replace MAIN B’D Q802**  
     - **Replace Power Board**  
   - **Check Power connector OK ?**  
     - **YES**  
     - **NO**  
       - **Replace Power Board**

---

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## Digital TV Video Problem

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<th>Digital TV Video Problem</th>
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<th>Revision</th>
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<tr>
<td></td>
<td></td>
<td>Check RF Cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B’D L1111 = 5V ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace MAIN B’D IC808</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B’D L1112 = 3.3V ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace MAIN B’D IC1103</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B’D L1113 = 1.8V ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace MAIN B’D IC1105</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B’D X1101 Clock ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace MAIN B’D X1101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Analog TV Video Problem

<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Symptom</th>
<th>MAIN B'D L1111 = 5V?</th>
<th>Replace MAIN B'D IC808</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>YES</td>
<td>Replace MAIN B'D IC1103</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B'D L1112 = 3.3V?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>YES</td>
<td>Replace MAIN B'D IC1105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B'D L1113 = 1.8V?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>YES</td>
<td>Replace MAIN B'D X1101</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAIN B'D X1101 Clock?</td>
<td></td>
</tr>
</tbody>
</table>

*Check RF Cable*

*MAIN B'D L1111 = 5V?*

*MAIN B'D L1112 = 3.3V?*

*MAIN B'D L1113 = 1.8V?*

*MAIN B'D X1101 Clock?*

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**AV2 (CVBS) No Video Problem**

1. Check Signal format Is it supported?
   - **YES**
   - **NO**

2. Check the RCA Cable
   - **YES**
   - **NO**

3. Check MAIN B'D R465 Video Signal?
   - **NO** → MAIN B'D JK402 Check → Replace MAIN B'D JK404
   - **YES**

4. Replace MAIN B'D R465

5. Check MAIN B'D C211 Video Signal?
   - **NO** → Replace MAIN B'D C211
   - **YES**

6. Replace MAIN B'D C211

7. Replace MAIN B'D IC 100
## LCD TV

### Component1 No Video/No Color Problem

<table>
<thead>
<tr>
<th>Check Signal format Is it supported?</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the Component Cable</td>
<td>YES</td>
</tr>
</tbody>
</table>

#### MAIN B'D JK402 Check

<table>
<thead>
<tr>
<th>Video Signal?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

#### Replace MAIN B'D JK402

<table>
<thead>
<tr>
<th>Check MAIN B'D R421 Video Signal?</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

#### MAIN B'D C200, C203, C201 (Y) C202 (Pr) Video Signal?

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>

#### Replace MAIN B'D C200 or C203 or C201 or C202

<table>
<thead>
<tr>
<th>Replace MAIN B'D IC 100</th>
<th>YES</th>
</tr>
</thead>
</table>
Check Signal format
Is it supported?

YES

Check the Component Cable

YES

Check MAIN B'D R422
Video Signal ?

MAIN B'D JK402 Check

NO

Replace MAIN B'D JK402

YES

Replace MAIN B'D IC 100

NO

MAIN B'D C214 or C209 or C215 or C216

Replace

NO

Check MAIN B'D C214, C209 (Y)
C215 (Pb)
C216 (Pr)
Video Signal ?

YES
Check Signal format
Is it supported?

YES

Check the RGB Cable

YES

MAIN B’D JK405 Pin #2
Video signal ?
R446 has Vsync ?
R447 has Hsync ?

NO

MAIN B’D JK405 Check

NO

Replace MAIN B’D JK405

YES

Check MAIN B’D C207 (Video)
R2030 (HSYNC)
R2031 (VSYNC)

NO

Replace
MAIN B’D C207 or R2030 or R2031

NO

YES

Replace MAIN B’D IC 100
Check Signal format
Is it supported?

YES

Check the RGB Cable

YES

MAIN B'D JK405
Pin #3 (BLUE)
Pin #2 (GREEN)
Pin #1 (RED)
Video signal?

NO

MAIN B'D JK405 Check

NO

Replace MAIN B'D JK405

YES

Check MAIN B'D C2016 (RED)
C2017 (GREEN)
C2018 (BLUE)
Video Signal?

NO

Replace MAIN B'D C2016 or C2017 or C2018

YES

Replace MAIN B'D IC 100
**LCD TV Symptom**

**HDMI 1~4 All No Video Problem**

<table>
<thead>
<tr>
<th>Making</th>
<th>2009. 2 . 1</th>
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</thead>
<tbody>
<tr>
<td>Revision</td>
<td>11/25</td>
</tr>
</tbody>
</table>

- **Check Signal format**
  - Is it supported?
  - **YES**
  - **Check the HDMI Cable**
  - **YES**
  - **Check the ADJUST MENU**
    - EDID OK?
    - **NO** → **Download EDID** (Refer to Adjustment Spec)
    - **YES** → **Replace MAIN B’D IC601 (HDCP KEY)**
    - **NO** → **Replace MAIN B’D IC 100**
<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Symptom</th>
<th>HDMI1 or 2 or 3 or 4 No Video Problem</th>
<th>Making</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>2009. 2. 1</td>
<td>12/25</td>
</tr>
</tbody>
</table>

- **Check Signal format Is it supported?**
  - **YES**

- **Check the HDMI Cable**
  - **YES**

- **Check MAIN B’D IC600**
  - **YES**

- **MAIN B’D JACK Check**
  - **JK600 -> HDMI1**
  - **JK601 -> HDMI2**
  - **JK602 -> HDMI3**
  - **JK603 -> HDMI4**

  - **YES**

- **Replace MAIN B’D IC 100**
<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Symptom</th>
<th>Digital TV No Audio Problem</th>
<th>Making</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Digital TV Video OK ?</td>
<td>Revision</td>
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</tbody>
</table>

- Digital TV Video OK?
  - YES
  - Replace MAIN B’D IC 100
<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Symptom</th>
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<tbody>
<tr>
<td></td>
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<td>Analog TV Video OK ?</td>
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<tr>
<td></td>
<td></td>
<td>Check MAIN B'D R2046 Signal (SIF)</td>
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<td>Replace MAIN B'D IC100</td>
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<td></td>
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<td>MAIN B'D L1101 Signal (SIF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace MAIN B'D IC1102</td>
</tr>
</tbody>
</table>
AV1 Video OK?

- Yes
  - Check the RCA Cable
    - Yes
      - Check MAIN B'D JK402
        - No
          - Replace MAIN B'D JK402
        - Yes
          - MAIN B'D C2011 (Right Sound) C2012 (Left Sound) signal?
            - Yes
              - Replace MAIN B'D IC 100
            - No
              - Check MAIN B'D C229, C230
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<th>AV2 No Audio Problem</th>
<th>Making</th>
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<td></td>
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<td>2009.2.1</td>
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</table>

### Diagram:

- **AV2 Video OK?**
  - YES: Check the RCA Cable
    - YES: Check MAIN B'D JK402
    - NO: Replace MAIN B'D JK402
  - NO: Replace MAIN B'D IC 100

- **MAIN B'D C2008 (Right Sound) C2009 (Left Sound) signal?**
  - YES: Replace MAIN B'D IC 100
  - NO: Check MAIN B'D C2008, C2009
## LCD TV

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<td><strong>Check the Component Cable</strong></td>
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<td><strong>Check MAIN B’D JK402</strong></td>
<td><strong>Replace MAIN B’D JK402</strong></td>
</tr>
<tr>
<td><strong>MAIN B’D C229 (Right Sound)</strong></td>
<td><strong>Replace MAIN B’D IC 100</strong></td>
</tr>
<tr>
<td><strong>C230 (Left Sound)</strong></td>
<td><strong>signal ?</strong></td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td><strong>NO</strong></td>
</tr>
<tr>
<td><strong>YES</strong></td>
<td><strong>NO</strong></td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td><strong>YES</strong></td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td><strong>YES</strong></td>
</tr>
</tbody>
</table>

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LCD TV | Symptom | Component2 No Audio Problem | Making | 2009.2.1 |
<table>
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<td></td>
<td>Revision</td>
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</tr>
</tbody>
</table>

Component Video OK?

- YES
  - Check the Component Cable
  - YES
    - MAIN B'D JK402
      - NO
        - Replace MAIN B'D JK402
      - YES
        - MAIN B'D C2013 (Right Sound) C2014 (Left Sound) signal?
          - YES
            - Replace MAIN B'D IC 100
          - NO
            - Check MAIN B'D C2013, C2014
<table>
<thead>
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<th>LCD TV</th>
<th>Symptom</th>
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<table>
<thead>
<tr>
<th>RGB Video OK ?</th>
<th>YES</th>
<th>Check the PC Audio Cable</th>
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</thead>
<tbody>
<tr>
<td>YES</td>
<td>Check MAIN B’D JK401</td>
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<tr>
<td>NO</td>
<td>Replace MAIN B’D JK401</td>
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</tr>
<tr>
<td>YES</td>
<td>Replace MAIN B’D IC 100</td>
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</tr>
<tr>
<td>NO</td>
<td>Check MAIN B’D C2015, C2016</td>
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<tr>
<td>LCD TV</td>
<td>Symptom</td>
<td>HDMI-DTV No Audio Problem</td>
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</tr>
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<td></td>
<td></td>
<td>Revision: 21/25</td>
</tr>
</tbody>
</table>

### Diagram

- **HDMI Video OK?**
  - YES
  - Check the ADJUST MENU EDID OK?
    - NO
      - Download EDID (Refer to Adjustment Spec)
    - YES
      - Check the HDMI Cable
        - YES
          - Replace MAIN B’D IC100
<table>
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<th>LCD TV</th>
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<th>SPDIF No Audio Problem</th>
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<td></td>
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</tr>
</tbody>
</table>

- **Check the SPDIF Cable**
  - **YES**
  - **Check MAIN B'D JK403**
    - **NO**
      - **Replace MAIN B'D JK403**
    - **YES**
      - **Check MAIN B'D R2305**
        - **PWM Signal ?**
          - **YES**
          - **Replace MAIN B'D IC 100**
          - **NO**
            - **Replace MAIN B'D IC 100**
        - **NO**
          - **Replace MAIN B'D JK403**
  - **NO**
    - **Check the Trouble Shooting Guide Related to Audio Problem**
<table>
<thead>
<tr>
<th>LCD TV</th>
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<th>USB No Connect Problem</th>
<th>Making</th>
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<td></td>
<td>Revision</td>
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</tr>
</tbody>
</table>

**Check that the USB Memory & HDD are supported by Spec**
(Refer to User Manual's USB cautions)

- **YES**
  - Check MAIN B'D JK406 OK ?
    - **NO**
      - **Replace MAIN B'D JK406**
    - **YES**
      - Check MAIN B'D JK406 Pin #1 5V ?
        - **YES**
          - **Replace MAIN B'D IC 100**
        - **NO**
          - Check MAIN B'D R826 5V ?
            - **YES**
              - **Replace MAIN B'D IC808**
            - **NO**
              - Check MAIN B'D R848 12V ?
                - **YES**
                  - **Replace POWER B'D**
<table>
<thead>
<tr>
<th>LCD TV</th>
<th>Symptom</th>
<th>Remote Control Problem</th>
</tr>
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<td><strong>Check IR B'D P1 Wafer &amp; Connector</strong></td>
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<td><strong>Check MAIN B'D P5001 Wafer &amp; Connector</strong></td>
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**Revision**: 24/25
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