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 1 W), keep the resistor 10 mm away from PCB.

Keep wires away from high voltage or high temperature parts.

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

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1 MΩ and 5.2 MΩ. When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

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

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5 mA. In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit

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

*Base on Adjustment standard
SERVICING PRECAUTIONS

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

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

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

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

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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.
1. Application range
   This specification is applied to the LCD TV used LJ03B/D/E/F chassis.

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

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

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<th>Specification</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
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</tr>
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<td>Available Channel</td>
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<td>UHF : 14 ~ 69</td>
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<td>DTV : 07 ~ 69</td>
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<td></td>
<td></td>
<td>CATV : 01 ~ 135</td>
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<td>3</td>
<td>Input Voltage</td>
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<td>Market</td>
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<td>Tuning System</td>
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<td>LC470EUH-SCA1 (Vitiaz 5)</td>
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<td>Sharp 60 FHD T240 IOP LED</td>
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<td></td>
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<td>Humidity : ~ 80 %</td>
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<td>10</td>
<td>Storage Environment</td>
<td>Temp : -20 ~ 60 deg</td>
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<td>Humidity : -85 %</td>
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</table>
### 5. Chrominance & Luminance Specification

#### 1) LJ03D/E (LE5500, LE7500, 42LE8500)

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<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Remark</th>
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</thead>
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<tr>
<td>1.</td>
<td>Max Luminance (Center 1-point / Full White Pattern)</td>
<td>Module</td>
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<td>500</td>
<td>cd/m²</td>
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<td>Set</td>
<td>300</td>
<td>450</td>
<td>500</td>
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<td>Luminance uniformity</td>
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<td>%</td>
<td>Full white</td>
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<td>3.</td>
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<td>Typ. -0.03</td>
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<td>0.647</td>
<td>0.645</td>
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<td>0.332</td>
<td>0.332</td>
<td>0.333</td>
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<td>GREEN X</td>
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<td>Contrast ratio</td>
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<td>1400:1</td>
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<td>6.</td>
<td>Color Temperature</td>
<td>Cool</td>
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<td>0.271</td>
<td>&lt;Test Condition&gt; 85% Full white pattern</td>
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<td>0.275</td>
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<td></td>
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<td>Standard</td>
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<td>0.285</td>
<td>0.287</td>
<td>** The W/B Tolerance is ±0.015 Adjustment</td>
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### 2) LJ03B (32/42/47/55LD650-SA)

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<th>Max (+)</th>
<th>Unit</th>
<th>Remark</th>
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<td>%</td>
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<td>50,000:1</td>
<td>70,000:1</td>
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<td></td>
<td>DCR</td>
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</table>
| 6. | Color Temperature                                        | Cool    | 0.267   | 0.269   | 0.271| <Test Condition>
|    |                                                           |         | 0.271   | 0.273   | 0.275          | 85% Full white pattern |
|    |                                                           | Standard| 0.283   | 0.285   | 0.287| ** The W/B Tolerance is ±0.015 Adjustment |
|    |                                                           |         | 0.291   | 0.293   | 0.295|
|    |                                                           | Warm    | 0.311   | 0.313   | 0.315|
| 7. | Color Distortion, DG                                      |         | 10.0    |         | %    |                 |
| 8. | Color Distortion, DP                                      |         | 10.0    |         | deg  |                 |
| 9. | Color S/N, AM/FM                                          |         | 43.0    |         | dB   |                 |
| 10.| Color Killer Sensitivity                                 |         | -80     |         | dBm  |                 |
### 6. Component Video Input (Y, C\_B/P\_B, C\_R/P\_R)

<table>
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<tr>
<th>No</th>
<th>Resolution</th>
<th>H-freq(kHz)</th>
<th>V-freq.(kHz)</th>
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### 8. RGB Input (PC)

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<th>Pixel clock</th>
<th>Proposed</th>
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</table>

- RGB PC Monitor Range Limits
  - Min Vertical Freq - 56 Hz
  - Max Vertical Freq - 62 Hz
  - Min Horiz. Freq - 30 kHz
  - Max Horiz. Freq - 80 kHz
  - Pixel Clock - 170 MHz
# 9. HDMI input (PC/DTV)

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<th>No</th>
<th>Resolution</th>
<th>H-freq(kHz)</th>
<th>V-freq.(kHz)</th>
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</table>

- **HDMI Monitor Range Limits**
  - Min Vertical Freq - 56 Hz
  - Max Vertical Freq - 62 Hz
  - Min Horiz. Freq - 30 kHz
  - Max Horiz. Freq - 80 kHz
  - Pixel Clock - 170 MHz
ADJUSTMENT INSTRUCTION

1. Application Range
This specification sheet is applied all of the LJ03D/E LCD TV models, which produced in manufacture department or similar LG TV factory.

2. Notice
(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 °C ± 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 AC 100-220 V~ 50 / 60Hz.
(5) Before adjustment, execute Heat-Run for 5 minutes.
   - After Receive 100% Full white pattern (06CH) then process Heat-run (or “8. Test pattern” condition of Ez-Adjust status)
   - How to make set white pattern
     1) Press Power ON button of Service Remocon
     2) Press ADJ button of Service remocon. Select “8. Test pattern” and, after select “White” using navigation button, and then you can see 100% Full White pattern.

   * In this status you can maintain Heat-Run useless any pattern generator
   * Notice: if you maintain one picture over 20 minutes (Especially sharp distinction black with white pattern – 13Ch, or Cross hatch pattern – 09Ch) then it can appear image stick near black level.

3. Adjustment Items
3.1. PCB Assembly Adjustment
   - MAC Address Download
   - Adjust 480i Comp1
   - Adjust 1080p Comp1/RGB
     • If it is necessary, it can adjustment at Manufacture Line
     • You can see set adjustment status at “1. ADJUST CHECK” of the “In-start menu”
   - EDID (The Extended Display Identification Data)/DDC (Display Data Channel) download

3.2. Set Assembly Adjustment
   - Color Temperature (White Balance) Adjustment
   - Using RS-232C
   - PING Test
   - Selection Factory output option

4. PCB Assembly Adjustment
4.1. MAC Address
4.1.1. Equipment & Condition
   • Play file: Serial.exe
   • MAC Address edit
   • Input Start / End MAC address

4.1.2 Download method
4.1.2.1 Communication Prot connection

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

4.1.2.2 MAC Address Download
   • Com 1,2,3,4 and 115200(Baudrate)
   • Port connection button click(1)

   • Load button click(2) for MAC Address write.
   • Start MAC Address write button(3)
   • Check the OK Or NG

4.1.3 Equipment & Condition
   • Each other connection to LAN Port of IP Hub and Jig
4.1.4 LAN inspection solution
- LAN Port connection with PCB
- Network setting at MENU Mode of TV
- Setting automatic IP
- Setting state confirmation
  - If automatic setting is finished, you confirm IP and MAC Address.

4.1.5 LAN Port Inspection (PING Test)

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

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

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

4.2. Using RS-232C
Adjust 3 items at 3.1 PCB assembly adjustments “adjustment sequence” one after the order.

A Adjustment protocol

See ADC Adjustment RS232C Protocol_Ver1.0

A Necessary items before Adjustment items
- Pattern Generator : (MSPG-925FA)
- Adjust 480i Comp1 (MSPG-925FA: model :209 , pattern :65) – Comp1 Mode
- Adjust 1080p Comp1 (MSPG-925FA: model :225 , pattern :65) – Comp1 Mode

* If you want more information then see the below Adjustment method (Factory Adjustment)

A Adjustment sequence
- aa 00 00: Enter the ADC Adjustment mode.
- xb 00 40: Change the mode to Component1 (No actions)
- ad 00 10: Adjust 480i Comp
- ad 00 10: Adjust 1080p Comp
- xb 00 60: Change to RGB-PC mode (No action)
- ad 00 10: Adjust 1080p RGB
- xb 00 90: End of Adjustment
5.1 Manual Adjust Component 480i/1080p RGB 1080p

**Summary:** Adjustment component 480i/1080i and RGB 1080p is Gain and Black level setting at Analog to Digital converter, and compensate the RGB deviation.

**Using instrument**
- Adjustment remocon, 801GF(802B, 802F, 802R) or MSPG925FA pattern generator (It can output 480i/1080i horizontal 100% color bar pattern signal, and its output level must setting 0.7V±0.1V p-p correctly)

![Adjustment pattern: 480i / 1080p 60Hz Pattern](image)

You must make sure its resolution and pattern cause every instrument can have different setting.

**Adjustment method 480i Comp1, Adjust 1080p Comp1/RGB (Factory adjustment)**
- ADC 480i Component1 adjustment
  - Check connection of Component1
  - MSPG-925FA -> Model: 209, Pattern 65
- Set Component 480i mode and 100% Horizontal Color Bar Pattern(HozTV31Bar), then set TV set to Component1 mode and its screen to "NORMAL"
- ADC 1080p Component1 / RGB adjustment
  - Check connection both of Component1 and RGB
  - MSPG-925FA -> Model: 225, Pattern 65
- Set Component 1080p mode and 100% Horizontal Color Bar Pattern(HozTV31Bar), then set TV set to Component1 mode and its screen to "NORMAL"
- After get each the signal, wait more a second and enter the "IN-START" with press IN-START key of Service remocon. After then select "7. External ADC" with navigator button and press "Enter".
- After Then Press key of Service remocon “Right Arrow(VOL+)”
  - You can see “ADC Component1 Success”
  - Component1 1080p, RGB 1080p Adjust is same method.
  - Component 1080p Adjustment in Component1 input mode
  - RGB 1080p adjustment in RGB input mode
  - If you success RGB 1080p Adjust. You can see “ADC RGB-DTV Success”

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

**Summary**
- It is established in VESA, for communication between PC and Monitor without order from user for building user condition. It helps to make easily use realize “Plug and Play” function.
- For EDID data write, we use DDC2B protocol.

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

=> Caution: - Never connect HDMI & D-sub Cable when the user downloading.
- Use the proper cables below for EDID Writing.

![EDID D/L](image)

§ Edid data and Model option download (RS232)
5.2.1 Manual Download

- Write HDMI EDID data
  - Using instruments
    - Jig. (PC Serial to D-Sub connection) for PC, DDC adjustment.
    - S/W for DDC recording (EDID data write and read)
    - D-sub jack
    - Additional HDMI cable connection Jig.
  - Preparing and setting.
    - Set instruments and Jig. Like pic.5), then turn on PC and Jig.
    - Operate DDC write S/W (EDID write & read)
    - It will operate in the DOS mode.

Pic.3) For write EDID data, setting Jig and another instruments.

- EDID data for LJ03B/D/E/R Chassis (Model name = LG TV)
  - HDMI-1 EDID table (0x04, 0x5A)
  - HDMI-2 EDID table (0x04, 0x4A)
  - HDMI-3 EDID table (0x04, 0x3A)
  - HDMI-4 EDID table (0x04, 0x2A)
  - Analog (RGB) EDID table (0x1D)

See Working Guide if you want more information about EDID communication.
5.3 Adjustment Color Temperature (White balance)

A Using Instruments
- Color Analyzer: CA-210 (CH 9)
  - Using LCD color temperature, Color Analyzer (CA-210) must use CH 9, which Matrix compensated (White, Red, Green, Blue compensation) with CS-2100. See the Coordination bellowed one.
- Auto-adjustment Equipment (It needs when Auto-adjustment – It is availed communicate with RS-232C : Baud rate: 115200)
  - Video Signal Generator MSPG-925F 720p, 216Gray (Model: 217, Pattern 78)

A Connection Diagram (Auto Adjustment)
- Using Inner Pattern

A White Balance Adjustment
If you can't adjust with inner pattern, then you can adjust it using HDMI pattern. You can select option at “Ez-Adjust Menu – 7. White Balance” there items “NONE, INNER, HDMI”. It is normally setting at inner basically. If you can’t adjust using inner pattern you can select HDMI item, and you can adjust.

In manual Adjust case, if you press ADJ button of service remocon, and enter “Ez-Adjust Menu – 7. White Balance”, then automatically inner pattern operates. (In case of “inner” originally “Test-Pattern. On” will be selected in The “Test-Pattern. On/Off”.

- Connect all cables and equipments like Pic.5)
- Set Baud Rate of RS-232C to 115200. It may set 115200 orignally.
- Connect RS-232C cable to set
- Connect HDMI cable to set

A RS-232C Command (Commonly apply)

- "wb 00 00": Start Auto-adjustment of white balance.
- "wb 00 10": Start Gain Adjustment (Inner pattern)
- "jb 00 c0":
- ...
- "wb 00 1f": End of Adjustment
  * If it needs, offset adjustment (wb 00 20-start, wb 00 2f-end)
- "wb 00 ff": End of white balance adjustment (inner pattern disappear)
Notice) Adjustment Mapping information

When Color temperature (White balance) Adjustment (Automatically)
- Press “Power only key” of service remocon and operate automatically adjustment.
- Set BaudRate to 115200.

• If it needs, then adjustment “Offset”.

White Balance Adjustment (Manual adjustment)
- Test Equipment: CA-210
  - Using LCD color temperature, Color Analyzer (CA-210) must use CH 9, which Matrix compensated (White, Red, Green, Blue compensation) with CS-2100. See the Coordination bellowed one.

  Manual adjustment sequence is like bellowed one.
  - Turn to “Ez-Adjust” mode with press ADJ button of service remocon.
  - Let CA-210 to zero calibration and must has gap more 10cm from center of LCD module when adjustment.
  - Press “ADJ” button of service remocon and select “7.White-Balance” in “Ez-Adjust” then press “G” button of navigation key.
    (When press “G” button then set will go to full white mode)
  - Adjust at three mode (Cool, Medium, Warm)
  - If “cool” mode
    Let B-Gain to 192 and R, G, B-Cut to 64 and then control R, G gain adjustment High Light adjustment.
  - If “Medium” and “Warm” mode
    Let R-Gain to 192 and R, G, B-Cut to 64 and then control G, B gain adjustment High Light adjustment.
  - All of the three mode
    Let R-Gain to 192 and R, G, B-Cut to 64 and then control G, B gain adjustment High Light adjustment.
  - With volume button (+/-) you can adjust.
  - After all adjustment finished, with Enter (A key) turn to Ez-Adjust mode. Then with ADJ button, exit from adjustment mode

Attachment: White Balance adjustment coordination and color temperature.

Using CA-210 Equipment. (9 CH)
- Contrast value: 216 Gray

White Balance adjustment coordination and color temperature for Edge(IOP)LED (LJ03D/E)

Using CS-1000 Equipment.
- COOL : T=11000K, Δuv=0.000, x=0.276 y=0.283
- MEDIUM : T=9300K, Δuv=0.000, x=0.285 y=0.293
- WARM : T=6500K, Δuv=0.000, x=0.313 y=0.329

Attachment: White Balance adjustment table for Edge (IOP) LED (LJ03D/E)
5.4 EYE-Q function check

1) Turn on TV
2) Press EYE key of Adj. R/C
3) Cover the Eye Q II sensor on the front of the using your hand and wait for 6 seconds
4) Confirm that R/G/B value is lower than 10 of the “Raw Data (Sensor data, Back light)”. If after 6 seconds, R/G/B value is not lower than 10, replace Eye Q II sensor
5) Remove your hand from the Eye Q II sensor and wait for 6 seconds
6) Confirm that “ok” pop up. If change is not seen, replace Eye Q II sensor

5.5 HDCP (High-Bandwidth Digital Contents Protection) Setting

• No Need.

5.6 Test of RS-232C control.

Press In-Start button of Service Remocon then set the “4. Baud Rate” to 115200. Then check RS-232C control and

5.7 Selection of Country option.

Selection of country option is allowed only North American model (Not allowed Korean model). It is selection of Country about Rating and Time Zone.

• Models: All models which use L03X Chassis (See the first page.)
• Press “In-Start” button of Service Remocon, then enter the “Option” Menu with “PIP CH-” Button
• Select one of these three (USA, CANADA, MEXICO) defends on its market using “Vol. +/-” button.

* Caution : Don’t push The INSTOP KEY after completing the function inspection.

6. GND and ESD Testing

6.1 Prepare GND and ESD Testing.

A. Check the connection between set and power cord

6.2 Operate GND and ESD auto-test.

A. Fully connected (Between set and power cord) set enter the Auto-test sequence.
A. Connect D-Jack AV jack test equipment.
A. Turn on Auto-controller(GWS103-4)
A. Start Auto GND test.
A. If its result is NG, then notice with buzzer.
A. If its result is OK, then automatically it turns to ESD Test.
A. Operate ESD test
A. If its result is NG, then notice with buzzer.
A. If its result is OK, then process next steps. Notice it with Good lamp and STOPER Down. Check Items.
A. Test Voltage
   • GND: 1.5KV/min at 100mA
   • Signal: 3KV/min at 100mA
A. Test time: just 1 second.
A. Test point
   • GND test: Test between Power cord GND and Signal cable metal GND.
   • ESD test: Test between Power cord GND and Live and neutral.
A. Leakage current: Set to 0.5mA(rms)

7. Preset Ch information.

In case of POWER ONLY, System color is operated multi system
In case of IN STOP, System color is operated default system (PAN-M)
8. Default Service option.

8.1 ADC-Set.
- R-Gain adjustment Value (default 128)
- G-Gain adjustment Value (default 128)
- B-Gain adjustment Value (default 128)
- R-Offset adjustment Value (default 128)
- G-Offset adjustment Value (default 128)
- B-Offset adjustment Value (default 128)

8.2 White balance. Value.

9. USB DOWNLOAD (*.epk file download)

9.1 Put the USB Stick to the USB socket

9.2 Press Menu key, and move OPTION

9.3 Press “FAV” Press 7 times.

9.4 Select download file (epk file)

9.5 After download is finished, remove the USB stick.

9.6 Press “IN-START” key of ADJ remote control, check the S/W version.
EXPLoded VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \( \Delta \) 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.
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. IT IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.
Panasonic Demodulator Power (3.3V, 1.2V)

IF AGC SELECTION

THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. IT IS ESSENTIAL THAT ONLY MANUFACTURER SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.
**USB2 OPTION**

**THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.**

**THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.**
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THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. IF REPLACE ANY PARTS, USE ONLY MANUFACTURES SPECIFIED PARTS FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.
ALL for SIDE_GENDER option

SIDE CVBS PHONE JACK
(New Item Development)

SIDE COMPONENT PHONE JACK
(New Item Development)
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