PLASMA TV
SERVICE MANUAL

CHASSIS : PA01A
MODEL : 50PJ350 50PJ350-AB

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

P/NO : MFL62882001(1012-REV01)  Printed in Korea
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</tbody>
</table>
SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \(\mathbb{A}\) 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.

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 monitor 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.

Due to high vacuum and large surface area of picture tube, extreme care should be used in handling the Picture Tube. Do not lift the Picture tube by its Neck.

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 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 1MQ and 5.2MQ. 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.
SPECIFICATIONS

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

### Application Range
This spec is applied to the PDP TV used PA01A Chassis.

### Specification
Each part is tested as below without special appointment.
1. Temperature: 25±5°C (77±9°F), CST: 40±5
2. Relative Humidity: 65±10%
3. Power Voltage: Standard Input voltage (100-240V~, 50/60Hz)
   * Standard Voltage of each product is marked by models.
4. Specification and performance of each parts are followed each drawing and specification by part number in accordance with SBOM.
5. The receiver must be operated for about 20 minutes prior to the adjustment.

### Test Method
1. Performance: LGE TV test method followed.
2. Demanded other specification
   - Safety: CB specification
   - EMC: CISPR 13 specification

### Test Method

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Specification</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Broadcasting system</td>
<td>PAL-B/B, DTV : DVB-T</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Available Channel</td>
<td>1) DTV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- VHF: 6 ~ 12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- UHF: 27 ~ 69</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) ATV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- VHF: 0 ~ 20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- UHD: 21 ~ 75</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tuner IF</td>
<td>1) PAL: 38.90MHz (Picture), 34.40MHz (Sound)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) DVB-T: 36.125MHz</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Input Voltage</td>
<td>AC 100 ~ 240 V, 50/60Hz</td>
<td>Mark: 240V, 50Hz</td>
</tr>
<tr>
<td>5</td>
<td>Screen Size</td>
<td>42 inch XGA (1024 x 768)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 inch Wide (1365 x 768)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 inch Wide (1920 x 1080)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 inch Wide (1920 x 1080)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Aspect Ratio</td>
<td>16:9</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Module</td>
<td>42/50T1, 50/60R1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Operating Environment</td>
<td>1) Temp: 0 ~ 40 deg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Humidity: ~ 80 %</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Storage Environment</td>
<td>1) Temp: -20 ~ 60 deg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Humidity: ~ 85 %</td>
<td></td>
</tr>
</tbody>
</table>
# Chroma & Brightness

(1) FHD Module (50T1 Module, 38% Glass Filter)

* Warning: When measuring following test items, Dynamic Colour & Dynamic Contrast should be turned off.

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>White peak brightness</td>
<td>369</td>
<td>410</td>
<td>-</td>
<td>cd/m²</td>
<td>(*) Peak Brightness Mode</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-1/100 white Window pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Typically 1% Window size)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-100IRE (255Gray)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Picture: Vivid (Medium)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Input: HDMI-PC(1920*1080 60Hz)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*Peak Brightness Condition may Slightly different between sets.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>158</td>
<td>173</td>
<td></td>
<td></td>
<td>-25/100 white Window pattern</td>
</tr>
<tr>
<td>2.</td>
<td>White average brightness</td>
<td>44</td>
<td>50</td>
<td></td>
<td>cd/m²</td>
<td>- 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-100IRE(255Gray)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-Picture: Vivid(Medium)</td>
</tr>
<tr>
<td>3.</td>
<td>Brightness uniformity</td>
<td>-10</td>
<td>0</td>
<td>+10</td>
<td>%</td>
<td>- 85IRE(216Gray) 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Picture: Vivid(Medium)</td>
</tr>
<tr>
<td>4.</td>
<td>Color Coordinate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- White : 85IRE(216Gray) 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- R/G/B : 100IRE(255Gray) 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Picture: Vivid(Medium)</td>
</tr>
<tr>
<td></td>
<td>White X</td>
<td>0.270</td>
<td>0.285</td>
<td>0.300</td>
<td></td>
<td>- 100% Window</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.278</td>
<td>0.293</td>
<td>0.303</td>
<td></td>
<td>- Picture: Vivid(Medium)</td>
</tr>
<tr>
<td></td>
<td>Red X</td>
<td>0.635</td>
<td>0.640</td>
<td>-</td>
<td></td>
<td>- 100% Window</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.318</td>
<td>0.333</td>
<td>0.345</td>
<td></td>
<td>- Picture: Vivid(Medium)</td>
</tr>
<tr>
<td></td>
<td>Green X</td>
<td>0.242</td>
<td>0.300</td>
<td>0.305</td>
<td></td>
<td>- 100% Window</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.595</td>
<td>0.600</td>
<td>-</td>
<td></td>
<td>- Picture: Vivid(Medium)</td>
</tr>
<tr>
<td></td>
<td>Blue X</td>
<td>-</td>
<td>0.150</td>
<td>0.158</td>
<td></td>
<td>- 100% Window</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>0.065</td>
<td>0.075</td>
<td></td>
<td>- 100% Window</td>
</tr>
<tr>
<td>5.</td>
<td>Color coordinate uniformity</td>
<td>-0.01</td>
<td>Average</td>
<td>+0.01</td>
<td></td>
<td>- 85IRE 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Average</td>
<td>+0.01</td>
<td></td>
<td>- Picture: Vivid(Medium)</td>
</tr>
<tr>
<td>6.</td>
<td>Contrast ratio at dark room</td>
<td>100k: 1</td>
<td>1,000k: 1</td>
<td></td>
<td></td>
<td>-1/100 white window pattern(Peak mode)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,000k: 1</td>
<td></td>
<td></td>
<td>-100IRE(255Gray)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Picture: Vivid(Medium)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Input: HDMI-PC (1920*1080 60Hz)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Color Temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- 85IRE 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Warm : ColorGamut =&gt; WIDE</td>
</tr>
<tr>
<td></td>
<td>Cool X</td>
<td>0.261</td>
<td>0.276</td>
<td>0.291</td>
<td></td>
<td>- 85IRE 100% Window White Pattern</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.268</td>
<td>0.283</td>
<td>0.298</td>
<td></td>
<td>Warm : ColorGamut =&gt; WIDE</td>
</tr>
<tr>
<td></td>
<td>Medium X</td>
<td>0.270</td>
<td>0.285</td>
<td>0.300</td>
<td></td>
<td>Cool : Color temperature C30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.278</td>
<td>0.293</td>
<td>0.308</td>
<td></td>
<td>Cool : Color temperature C30</td>
</tr>
<tr>
<td></td>
<td>Warm X</td>
<td>0.298</td>
<td>0.313</td>
<td>0.328</td>
<td></td>
<td>Cool : Color temperature C30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.314</td>
<td>0.329</td>
<td>0.344</td>
<td></td>
<td>Cool : Color temperature C30</td>
</tr>
</tbody>
</table>
ADJUSTMENT INSTRUCTION

1. Application Range
This spec. sheet is applied to all of the PA01A chassis manufactured at LG TV Plant all over the world.

2. Designation
Caution: The module keeping condition
1. The module keeping condition: The normal temperature condition (more than 15°C)
  → Immediately the line supply.
2. The module keeping condition: 0°C
  → The module must be kept for more than 2 hours at the normal temperature.
3. The module keeping condition: -20°C
  → The module must be kept for more than 3 hours at the normal temperature.
4. The case of Gu-mi factory at the winter season.
  → The module must be kept for more than 5 minutes at the heating zone (40°C~45°C).

(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) If there is no specific designation, the adjustment must be performed in the circumstance of 25 ±5°C of temperature and 65±10% of relative humidity.
(3) The input voltage of the set must keep 100~240V, 50/60Hz.
(4) Input signal Unit: Product Specification Standard.
(5) The set must be operated for about 5 minutes prior to the adjustment.

* After turning on RGB Full Window pattern in HEAT-RUN Mode, the receiver must be operated.
* Single color patterns (RED / BLUE / GREEN) of HEAT RUN MODE are used to check a plasma panel.
* Caution: If you turn on a still screen more than 20 minutes (Especially digital pattern, cross hatch pattern), an after image may be made in the black level part of the screen.

3. Update S/W using auto download through the USB.
Caution: S/W version of USB file (xxx.epk) must be bigger than one which is downloaded previously.
1. Insert the USB stick to the USB socket
2. A downloaded file in USB stick will be detected automatically.
3. If S/W version of previously downloaded file is bigger than one which is downloaded previously, the message, “Copying files from memory”, will appear.
4. If an update procedure was completed, TV set will be turned off and on automatically.
5. If TV set is turned on, check an updated version.
* If a downloaded version is more bigger than one of which TV set had, TV set can lost channel data. In this case, you have to scan channels again.

4. After downloading S/W, adjust TOOL OPTION.
(1) Push "IN-START" button on a service R/C.
(2) Select "Tool Option 1" and Push "OK" button.
(3) Put the number of a below table in order of a suffix of the “Tool Option(X)".
   (Each model has a different number.)

<table>
<thead>
<tr>
<th>Model</th>
<th>Tool Option1</th>
<th>Tool Option2</th>
<th>Tool Option3</th>
<th>Tool Option4</th>
</tr>
</thead>
<tbody>
<tr>
<td>42PJ350-AB</td>
<td>25024</td>
<td>2632</td>
<td>51404</td>
<td>4384</td>
</tr>
<tr>
<td>42PJ650-AA</td>
<td>24896</td>
<td>2632</td>
<td>51408</td>
<td>4384</td>
</tr>
<tr>
<td>50PJ350-AB</td>
<td>37312</td>
<td>2632</td>
<td>51404</td>
<td>4384</td>
</tr>
<tr>
<td>50PJ650-AA</td>
<td>37184</td>
<td>2632</td>
<td>51408</td>
<td>4384</td>
</tr>
<tr>
<td>50PK550-AA</td>
<td>36992</td>
<td>2632</td>
<td>51404</td>
<td>4384</td>
</tr>
<tr>
<td>60PK550-AA</td>
<td>49280</td>
<td>2632</td>
<td>51404</td>
<td>4384</td>
</tr>
</tbody>
</table>

Caution
- Use 'power on' button of a service R/C to power on TV set.
- Do not connect any external input cable if there is no any specifics.
5. ADC Calibration Procedure

(1) Input the component (480i/Horizontal Color Bar) signal to a TV set.
   1) Input Signal Timing: Component 480i
      (Other external connection is unnecessary except the component before executing ADC calibration.)
   2) Input Signal Pattern

   <Horizontal Color Bar pattern>

   @ MODEL: 209 in Pattern Generator(480i Mode)
   @ PATTERN : 65 in Pattern Generator(MSPG-925 SERISE)

(2) Push “ADJ” button on a service R/C.
(3) Enter internal ADC mode by selecting ‘5. ADC Calibration’.
(4) If you select ‘Start’ on a dialog box of the screen, ADC calibration will be begun.

Caution: Don’t connect any external input cable except the component input(480i/Horizontal_COLOR_Bar) to adjust ADC calibration

● Auto ADC Calibration Map(RS-232C)

<table>
<thead>
<tr>
<th>NO</th>
<th>Item</th>
<th>CMD1</th>
<th>CMD2</th>
<th>Data0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enter Adjust</td>
<td>Mode</td>
<td>In</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjust</td>
<td>A</td>
<td>A</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ADC Adjust</td>
<td>A</td>
<td>D</td>
<td>1</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

6. EDID Download Procedure

(1) Push “ADJ” button on a service R/C.
(2) Enter EDID auto download mode by selecting ‘8. EDID D/L’.
(3) If you select ‘Start’ on a dialog box of the screen, EDID download will be begun automatically.

(4) Press ‘EXIT’ button on a service R/C.

(5) EDID Data
   1) HDMI (HD Models, 256 bytes)

   2) RGB (HD Models, 128 bytes)

# EDID Data detailing (”, “, “, “, “)
7. POWER Supply Unit PCB Ass’y
Va/Vs Voltage Adjustment

Caution: Both Vs and Va voltage adjustment are necessary.

7-1. Va/Vs Adjustment Procedure
(1) Connect positive(+) terminal of DMM to Vs/Va pin, connect negative(-) terminal to GND.
(2) Turning ‘Vs/Va Adjust’ and adjust Vs/Va voltages to a value which is written on a right/top label of a module. (deviation ; ±0.5V)

Caution
- Each Power Supply Unit PCB assembly must be checked by check JIG set. (Because power PCB Ass’y damages to PDP Module, especially be careful)
- Set up “RF mode(noise)” before a voltage adjustment.
- Test equipment: DMM 1EA

8. White Balance Adjustment

Caution: Press the POWER ON KEY on R/C before W/B adjustment.

- Test Equipment
  Color Analyzer (CS-1000, CA-100+(CH.10), CA-210(CH.10))
- Please adjust CA-100+ / CA-210 by CS-1000 before measuring
  You should use Channel 10 which is Matrix compensated (White, Red, Green, Blue revised) by CS-1000 and adjust in accordance with White balance adjustment coordinate.

8-1. Color Temperature Standards According to CSM and Module(TBD)

<table>
<thead>
<tr>
<th>CSM</th>
<th>PLASMA</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>
8-2. Change Target Luminance and Range of the Auto Adjustment W/B Equipment

<table>
<thead>
<tr>
<th>Target luminance</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>20</td>
</tr>
</tbody>
</table>

8-3. White Balance Adjustment Coordinate and Color Temperature

<table>
<thead>
<tr>
<th>Target luminance</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>20</td>
</tr>
</tbody>
</table>

8-4. White Balance Adjustment Coordinate and Color Temperature

<table>
<thead>
<tr>
<th>Cool</th>
<th>CS-1000</th>
<th>CA-100+/ (CH10)</th>
<th>CA-210 (CH10)</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+/ (CH10)</th>
<th>CA-210 (CH10)</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+/ (CH10)</th>
<th>CA-210 (CH10)</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>0.003</td>
<td>0.003</td>
<td>0.003</td>
</tr>
</tbody>
</table>

---

* PC (for communication through RS-232C) ? UART Baud rate : 115200 bps

8-5. Automatic W/B Adjustment

1. Internal PATTERN should be used when W/B is adjusted. Connect to auto controller like below.

2. Start White-Balance adjustment, then the full white window pattern will appear on the screen.

3. Adjust in the place where the influx of light like floodlight around is blocked. (illumination is less than 10ux).

4. Measure and adjust after sticking the Color Analyzer (CA-100+, CA210) to the side of the module.

---

8-6. Manual W/B Adjustment

1. Execute the zero calibration of CA-100+/ CA-210.
2. Press the 'ADJ.' button on a service R/C and enter EZ ASJUST by selecting '6. White Balance'.
3. Then, 216 gray pattern will appear on the screen.
4. Change the R/G/B-Gain as passing in 3 color coordinates and temperatures, COOL, MEDIUM and WARM.
   - Temperature: COOL>
     - R-Cut / G-Cut / B-Cut is set to 64
     - Control R-Gain and G-Gain.
     - Each gain is limited to 192
   - Temperature: MEDIUM>
     - R-Cut / G-Cut / B-Cut is set to 64
     - Control R-Gain and G-Gain.
     - Each gain is limited to 192
   - Temperature: WARM>
     - R-Cut / G-Cut / B-Cut is set to 64
     - Control G-Gain and B-Gain.
     - Each gain is limited to 192
5. Press 'EXIT' button on a service R/C
<Notice> Module Heat-Run Condition for W/B
1. The adjustment must be performed in the circumstance of 25±5°C of temperature and 65±10% of relative humidity if there is no any specifics.
2. Before an W/B adjustment, the module which will be used should be placed in the circumstance of 15°C~25°C for above 2 hours.
3. If a module was placed in the circumstance of below 15°C, it should be placed in the circumstance of 15°C~25°C for above 2 hours or be run for above 5 minutes in an aging environment of 60°C.
4. Before an W/B adjustment, TV set should be run for 5 minutes at least.

9. Serial Number Download

9-1. Download Procedure
(1) Press “Power on” button of a service R/C. (Baud rate : 115200 bps)
(2) Connect RS232-C Signal Cable.
(3) Write Serial number through RS-232C.
(4) Check the serial number at the Diagnostics of 'SETUP' menu. (Refer to below).

Caution : Don’t download HDMI/RGB EEPROM to write a model name. Model name dos unnecessary because this model use ‘Tool Option’ to call a model name.

9-2. 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>CMD</td>
<td>A0h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LENGTH</td>
<td>85<del>94h (1</del>16 bytes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADH</td>
<td>EEPROM Sub Address high (00~1F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADL</td>
<td>EEPROM Sub Address low (00~FF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>Write data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>CMD + LENGTH + ADH + ADL + Data_1 + ... + Data_n</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delay</td>
<td>20ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9-3. Command Set
[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.

10. Check Information (Serial No. & Model name)
(1) Push the menu button in DTV mode.
(2) Select the SETUP -> Diagnostics -> To set
(3) Check the Serial Numbe

11. SET factoring condition
(1) This Adjustment result is set through factory shipment mode.
(2) Push the ‘IN-STOP’ button on a service R/C before the factory shipment and power button mush be pushed.
Caution: If ‘IN-STOP’ button is pushed, preset CH map will be lost.

Copyright ©2010 LG Electronics Inc. All rights reserved. - 10 -
1. Power Board
1-1. The whole flowchart which it follows in voltage output state

Start check

- Doesn't the screen whole come out?
  - Yes
    - It is identical with power off condition?
      - Yes
        - 1. Check the Power off condition
      - No
        - Is the breakless signal operate?
          - Yes
            - 2. Check the Interface signal condition
          - No
            - Doesn't the Y,3D Module Input connector, output high tension output voltage drop occur?
              - Yes
                - 3. Check the Y,3D Module input connector, output high tension output voltage drop
              - No
                - Manufacture enterprise meaning of a passage

- Doesn't the low pressure output come out?
  - Yes
    - Doesn't the Stby 5V signal come out?
      - Yes
        - 4. Check the 5V Monitor signal circuit
      - No
        - Doesn't the 5V monitor signal come out?
          - Yes
            - 5. Check the VSC Vc_ON signal
          - No
            - Doesn't the VSC Vc_ON come out?
              - Yes
                - 6. Check the VSC low pressure output
              - No
                - Doesn't the Y,3D Module Input connector, output high tension output voltage drop occur?
                  - Yes
                    - 7. Check the VSC Vc_ON signal
                  - No
                    - Manufacture enterprise meaning of a passage

- Doesn't the high tension output come out?
  - Yes
    - Doesn't the VSC signal Vc_ON come out?
      - Yes
        - 8. Check the VSC Vc_ON signal
      - No
        - Doesn't the Vc_ON voltage output come out?
          - Yes
            - 9. Check the Y,3D Module output circuit
          - No
            - Manufacture enterprise meaning of a passage

High tension output Voltage drop it occurs?

- Yes
  - When remove the Y,3D Module Input connector, Power Board high tension output voltage drop it occurs?
    - Yes
      - 10. Check the Y,3D Module output circuit
    - No
      - Manufacture enterprise meaning of a passage

- No
  - Manufacture enterprise meaning of a passage
2. Input/Output pin assignment

### AC Inlet

<table>
<thead>
<tr>
<th>SC101</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC(N)</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>AC(L)</td>
</tr>
<tr>
<td>Water</td>
<td>SMW-600-0081</td>
</tr>
</tbody>
</table>

### PSU ↔ PDP Module

<table>
<thead>
<tr>
<th>Pin</th>
<th>50FHD</th>
<th>51F12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V1</td>
<td>V1</td>
</tr>
<tr>
<td>2</td>
<td>V1</td>
<td>V1</td>
</tr>
<tr>
<td>3</td>
<td>V1</td>
<td>V1</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>V2</td>
<td>V2</td>
</tr>
<tr>
<td>7</td>
<td>V2</td>
<td>V2</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>9</td>
<td>M5V</td>
<td>M5V</td>
</tr>
<tr>
<td>10</td>
<td>M5V</td>
<td>M5V</td>
</tr>
</tbody>
</table>

### PSU ↔ VSC Board

<table>
<thead>
<tr>
<th>P014</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17V</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td>5V</td>
</tr>
<tr>
<td>7</td>
<td>5V</td>
</tr>
<tr>
<td>9</td>
<td>GND</td>
</tr>
<tr>
<td>11</td>
<td>GND</td>
</tr>
<tr>
<td>13</td>
<td>STBY</td>
</tr>
<tr>
<td>15</td>
<td>AC DET</td>
</tr>
<tr>
<td>17</td>
<td>AUTO_GND</td>
</tr>
</tbody>
</table>

| 2    | 17V |
| 4    | GND |
| 6    | 5V  |
| 8    | 5V  |
| 10   | GND |
| 12   | GND |
| 14   | STBY|
| 16   | RL_ON |
| 18   | M_ON |

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Only for training and service purposes.
2. No Power

- **Symptom**
  1) Doesn't minute discharge at module.
  2) Non does not come in into the front LED.

- **Check the followings**

  A power cord is plugged into a TV set?
  - Yes →
  - No →

  AC-INLET is connected with the power board?
  - Yes →
  - No →

  Are the fuses(F101) normal on the power board?
  - Yes →
  - No →

  Is the power board connected with VSC Board through a cable?
  - Yes →
  - No →

Measure output voltages(17V, 12V, 5V) on the power board. If the measured values is not normal, replace power board.
3. Protect Mode

- **Symptom**
  1. After once shining, it does not discharge minutely from module.
  2. The Rely falls (The sound is audible "click").
  3. If you push key on remote controller or local key, the front LED is blinking with white.

- **Check the followings**

  - Is normal the Power Board?
    - Yes
    - No
      - Is output the normality Low/High voltage except Stand-by 5V?
        - No
          - Replace Power Board.
        - Yes
          - After connecting well each connector, the normality it operates?
            - No
              - Replace connector.
            - Yes
              - Is normal the Fuse(FS302) on Y-B/D? (In case of open is replace)
                - No
                  - Is normal the output voltage after remove P302 connector of Y-B/D?
                    - Yes
                      - Replace Y-Board.
                    - No
                      - Is normal the Fuse(FS102) on Z-B/D? (In case of open is replace)
                        - Yes
                          - Is normal the output voltage after remove P101 connector of Z-B/D?
                            - Yes
                              - Replace Z-Board.
                            - No
                              - Is normal the output voltage after remove P121 connector of X-B/D?
                                - Yes
                                  - After remove P121 output voltage normality: Replace Right X-B/D
                                - No
                                  - Is normal the output voltage after remove P2, P200 connector of Ctrl-B/D?
                                    - Yes
                                      - Replace Ctrl-B/D
                                    - No
                                      - Is normal the output voltage after remove P800 of VSC Board?
                                        - Yes
                                          - After remove P800 normal operation: Replace VSC Board
                                        - No
                                          - Is normal the COF of X,Y,Z?
                                            - Yes
                                              - After crisis COF of each board, check the normality operates. If in case normality operates, correspondence COF Fail is replace the module.
                                            - No

4. No Raster

- **Symptom**
  1) No OSD and image occur at screen.
  2) If you push key on remote controller or local key, the front LED is blinking with white.

- **Check the followings**

  1. **Does minute discharge At Module?**
     - Yes
     - No
     - **Is the Vavs normal?**
       - Yes
       - No
       - **Is output the normality Low/High voltage except stand-by 5V?**
         - Yes
         - No
         - Replace the Power board.

  2. **Is the LVDS cable connect well from Ctrl Board to VSC Board?**
     - Yes
     - No
     - Reconnect the LVDS cable

  3. **Is normal the VSC Board?**
     - Yes
     - No
     - **Operates the MSD3369GV-LF(IC100)?**
       1. Check the Monitor OUT by SCART2 : Connect the another TV SET
       2. Check the LVDS clock(R437, R430) on the VSC Board by Oscilloscope?
     - Yes
     - No
     - Replace MSD3369GV-LF IC(IC100).
5. In case of occur strange screen into specific mode

1) In case of does not display the OSD

- Symptom
  1) If you push key on remote controller or local key, the front LED is blinking with white.
  2) The minute discharge continuously becomes accomplished from module

- Check the followings

1. Is damage in the LVDS cable?
2. Isn’t the LVDS cable connect well from Ctrl Board to VSC Board?

   Yes → 1. Replace cable
   No → 2. LVDS Cable connect well from Ctrl Board to VSC Board

Is normal the VSC Board?

   Yes → Operates the MSD3369GV-LF IC(IC100)?
   No → Replace VSC B/D

   1. Check the Monitor OUT by SCART2 : Connect another TV SET
   2. Check the LVDS clock(R431, R437) on the VSC Board by Oscilloscope?

Is normal the Ctrl Board of Module?

   Yes → Replace MSD3369GV-LF IC(IC100)
   No → Replace Ctrl B/D.

   1. Check the LED on the Ctrl Board
   2. Check the 5V_ON on the Power Board by the DMM.
2) **In case of doesn't display the screen into specific mode**

- **Symptom**
  1) The screen does not become the display from specific input mode (RF, AV, Component, RGB, DVI/HDMI).

- **Check the followings**
  1) Check the all input mode should become normality display.

- **In case of unusual display for RF mode.**

![Flowchart Diagram](image-url)
In the case of unusual display for side **S-video / AV mode**.

- Is Video input of the AV Jack (JK902, 906) normal?
  1. Check the CVBS signal in AV jack by Oscilloscope

  Yes: Same as Block A

  No: Check the input source of Equipment.

In the case of unusual display for **Component, RGB mode**.

- Is R,G,B input and H,V Sync of the JK901, 1101 normal?
  1. Check the RGB signal/H(V)SYNC in the RGB Cable

  Yes: Same as Block A

  No: Check the input source of Equipment

In the case of unusual display for **HDMI mode**.

- Is the HDMI switch (IC604) normal?

  Yes: Same as Block A

  No: Is the TMDS waveform between the IC and HDMI jacks normal?

    No: Replace IC604

    Yes: Same as Block A

In the case of unusual display for **SCART mode**.

- Is video input of A/V jack normal?

  Yes: Same as Block A

  No: Check the input source.
6. In case of no sound

- Symptom
  1) Screen display but sound is not output

- Check follow

  ![Diagram]

  - 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 Δ ON)
    - No: Download the EDID data.

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

  - Only RF is no sound?
    - Yes: IC701(Audio AMP) operates Normal?
      1. Check 3.3V, 16V input Voltage (R718, C721)
      2. Check the IIC communication (SDA/SCL : IC701 33pin, 34pin)
      3. Check the Audio Signal is normal.(SPK_L/R : R760, R761, R762, R763)
    - No: Replace VSC BD

  - Only AV/component/PC input is no sound?
    - Yes: Check the Input Sound IN/OUT
      AV1(R.C229, L.C230)
      AV2(R.C2008, L.C2009)
      AV3(R.C2011, L.C2012)
      PC(R.C2015, L.C2016)
      Component (R.C2013, L.C2014)
    - No: Replace VSC BD

  - Replace Audio AMP IC (IC701).
7. In case of no tuning

- **Symptom**
  1) Not working remote control
  2) Not working local key

- **Check follow(1)**
  1. Battery of Remote control is good condition?

- **Check follow(2)**
  1. Is good local key box?

- **Flow Chart**
  - Change the IC100
  - Change IR to VSC board Cable
  - Change IR Board
  - Change L405 of VSC board
  - Change the Local Key Board
  - Change the Local Key box
  - Change Remote control
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \[ \triangle \] 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, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

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