PLASMA TV
SERVICE MANUAL
CHASSIS : PD11K
MODEL : 50PT350/351/351A/351K/
        50PT351N/352/
        50PT353/353A/353K/353N
        50PT350-ZD/50PT351/351A/351K-ZC/
        50PT351N-ZC/50PT352-ZB/
        50PT353/353A/353K/353N-ZA

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

P/NO : MFL67013001(1101-REV00)
Printed in Korea
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 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 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 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 it's Neck.

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

![Leakage Current Hot Check circuit](image)
SPECIFICATION

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

Application Range
This spec is applied to PDP TV used PD11K Chassis.

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Market</th>
<th>Brand</th>
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</thead>
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<tr>
<td>50PT350-ZD</td>
<td>Albania, Austria, Belgium, Bosnia, Bulgaria, Coratia, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, UK</td>
<td>LG</td>
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<td>50PT351/351A/351K/351N-ZC</td>
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<tr>
<td>50PT352-ZB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50PT353/353A/353K/353N-ZA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specification
Each part is tested as below without special appointment.
1) Temperature : 25 °C ± 5 °C (77 °F ± 9 °F), CST : 40 ± 5
2) Relative Humidity: 65 % ± 10 %
3) Power Voltage: Standard Input voltage (100 V - 240 V ~, 50 / 60 Hz)
   * 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 : CE, IEC specification, EMC : CE, IEC

<table>
<thead>
<tr>
<th>Model Name</th>
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<th>Appliance</th>
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<td>Safety : IEC/EN60065 EMI : EN55013 EMS : EN55020</td>
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<td>50PT353/353A/353K/353N-ZA</td>
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Module Specification
(1) 2D - 50” HD

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Specification</th>
<th>Remark</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Screen Device</td>
<td>127 cm (50 inch) wide Color Display Module</td>
<td>PDP</td>
</tr>
<tr>
<td>2</td>
<td>Aspect Ratio</td>
<td>16:9</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PDP Module</td>
<td>PDP50T3####*, RGB Closed (Well) Type, Glass Filter (38%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pixel Format: 1024 horiz. By 768 ver</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Operating Environment</td>
<td>1) Temp. : 0 deg ~ 40 deg</td>
<td>LGE SPEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Humidity : 20 % ~ 80 %</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Storage Environment</td>
<td>3) Temp. : -20 deg ~ 60 deg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Humidity : 10 % ~ 90 %</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Input Voltage</td>
<td>AC 100 V ~ 240 V, 50 / 60 Hz</td>
<td>Maker LG</td>
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</table>
## Model General Specification

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Specification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Market</td>
<td>Albania, Austria, Belgium, Bosnia, Bulgaria, Croatia, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Slovakia, Switzerland, Turkey, Ukraine, UK</td>
<td>36 Country</td>
</tr>
</tbody>
</table>
| 2  | Broadcasting system   | 1) PAL/SECAM BG  
2) PAL/SECAM DK  
3) PAL I /II  
4) SECAM L/L’  
5) DVB T  
6) DVB C | EU (PAL Market)            |
| 3  | Receiving system      | Analog : Upper Heterodyne  
Digital : COFDM |                           |
| 4  | Scart Jack (1EA)      | PAL, SECAM |                           |
| 5  | Video Input (1EA)     | PAL, SECAM, NTSC | Side AV                  |
| 6  | Component Input (1EA) | Y/Cb/Cr, Y/Pb/Pr |                           |
| 7  | RGB Input             | RGB-PC | Analog (D-Sub 15Pin)    |
| 8  | HDMI Input (4EA)      | HDMI-PC  
HDMI-DTV | HDMI/DVI, HDMI2, HDMI3 |
| 9  | Audio Input (3 EA)    | RGB/DVI Audio, Component, AV | L/R Input                |
| 10 | SPDIF Out(1 EA)       | SPDIF Out |                           |
| 11 | USB(1EA)              | For SVC, S/W Download, DivX |                           |
| 12 | LAN                   | For UK models |                           |
1. Application Range
This spec sheet is applied to all of the PDP TV with PD11K chassis.

2. Specification
(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. (100 V ~ 240 V, 50 Hz / 60 Hz.)
(3) Magnetic Field Condition: Nil.
(4) Input signal Unit: Product Specification Standard.
(5) Reserve after operation: Above 5 Minutes (Heat Run)
   Temperature : at 25 °C ± 5 °C
   Relative humidity 65 % ± 10 %
   Input voltage : 220 V, 60 Hz.
(6) Adjustment equipments : Color Analyzer (CA-210 or CA-110), DDC Adjustment Jig equipment, SVC remote controller.
(7) The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15 °C
   - In case of keeping module is in the circumstance of 0 °C, it should be placed in the circumstance of above 15 °C for 2 hours
   - In case of keeping module is in the circumstance of below -20 °C, it should be placed in the circumstance of above 15 °C for 3 hours.

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

3-1. 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.

(8) Push The “IN STOP KEY” - For memory initialization.
   Case1 : Software version up
      1) After downloading S/W by USB, TV set will reboot automatically
      2) Push “In-stop” key
      3) Push “Power on” key
      4) Function inspection
      5) After function inspection, Push “In-stop” key.
   Case2 : Function check at the assembly line
      1) When TV set is entering on the assembly line, Push “In-stop” key at first.
      2) Push “Power on” key for turning it on.
         -> If you push “Power on” key, TV set will recover channel information by itself.
      3) After function inspection, Push “In-stop” key.
4. 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”
(4) Uploading is staring.
(5) Updating Completed, The TV will restart automatically.
(6) If your TV is turned on, check your updated version and Tool option. (explain the Tool option, next stage)
   * If downloading version is more high 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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Module</th>
<th>Tool option1</th>
<th>Tool option2</th>
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</tbody>
</table>

5. ADC Process

5-1. ADC
- Enter Service Mode by pushing “ADJ” key,
- Enter Internal ADC mode by pushing “►” key at “5. ADC Calibration”

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

<table>
<thead>
<tr>
<th>EZ ADJUST</th>
</tr>
</thead>
</table>

5. ADC Calibration

<table>
<thead>
<tr>
<th>ADC Comp 480i</th>
<th>ADC Comp 1080p</th>
<th>ADC RGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>NG</td>
<td>NG</td>
<td>NG</td>
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</tbody>
</table>

Start  Reset
**ADC Calibration Protocol (RS232)**

<table>
<thead>
<tr>
<th>NO</th>
<th>Item</th>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter Adjust Mode</td>
<td>Adjust Mode In'</td>
<td>A</td>
<td>A</td>
<td>0</td>
</tr>
<tr>
<td>ADC Adjust</td>
<td>ADC Adjust</td>
<td>A</td>
<td>D</td>
<td>1</td>
</tr>
</tbody>
</table>

When transfer the Mode In' Carry the command.

Automatically adjustment (The use of a internal pattern)

**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 : Adjustment R/C.

**6. Function Check**

**6-1. Check display and sound**
- Check Input and Signal items. (cf. work instructions)
  1. TV
  2. AV (SCART1/SCART2/ CVBS)
  3. COMPONENT (480i)
  4. RGB (PC : 1024 x 768 @ 60hz)
  5. HDMI
  6. PC Audio In

* Display and Sound check is executed by Remote controller.

* Caution : Not to push the INSTOP KEY after completion if the function inspection.

**7. Total Assembly line process**

**7-1. POWER PCB Assy voltage adjustment (Vs voltage adjustment)**

- Required Equipment for adjustment
  - D.M.M
- Condition for adjustment
  - No signal with the snow noise in RF mode

**7-2. Adjustment Preparation**

- Required Equipment
  - Remote controller for adjustment
  - Color Analyzer (CS-1000, CA-100, CA-210 or same product : CH 10 (PDP)
  - Please adjust CA-210, CA-100+ by CS-1000 before measuring
  - Auto W/B adjustment instrument(only for Auto adjustment)
  - 9 Pin D-Sub Jack(RS232C) is connected to the AUTO W/B EQUIPMENT.

Before Adjust of White Balance, Please press POWER ONLY key

Adjust Process will start by execute RS232C Command.

* Color temperature standards according to CSM and Module

<table>
<thead>
<tr>
<th>CSM</th>
<th>Color Coordinate</th>
<th>Temp</th>
<th>±Color Coordinate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool</td>
<td>0.276 0.283</td>
<td>11000K</td>
<td>0.002</td>
</tr>
<tr>
<td>Medium</td>
<td>0.285 0.293</td>
<td>9300K</td>
<td>0.002</td>
</tr>
<tr>
<td>Warm</td>
<td>0.313 0.329</td>
<td>6500K</td>
<td>0.002</td>
</tr>
</tbody>
</table>

* Connecting picture of the measuring instrument (On Automatic control)
  - Inside PATTERN is used when W/B is controlled. Connect to auto controller or push Adjustment 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. Measure and adjust after sticking the Color Analyzer (CA-100+, CA210 ) to the side of the module.
  3. Aging time
    After aging start, keep the Power on (no suspension of power supply) and heat-run over 5 minutes

**RS-232C COMMEND CENTER**

<table>
<thead>
<tr>
<th>RS-232C COMMAND</th>
<th>CENTER</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CMD ID DATA]</td>
<td>[CMD ID DATA]</td>
<td>[CMD ID DATA]</td>
</tr>
<tr>
<td>Wb 00 00</td>
<td>White Balance Start</td>
<td>Wb 00 fl</td>
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<table>
<thead>
<tr>
<th>RS-232C COMMAND</th>
<th>CENTER</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool</td>
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<td>Warm</td>
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<td>G Gain</td>
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<td>B Gain</td>
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<td>R Cut</td>
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<td>64</td>
</tr>
<tr>
<td>B Cut</td>
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</tr>
</tbody>
</table>
7-4. DDC EDID Write (RGB 128Byte )

-> Not used any more, Use Auto D/L

(1) Connect D-sub Signal Cable to D-Sub Jack.
(2) Write EDID DATA to EEPROM(24C02) by using DDC2B protocol.
(3) Check whether written EDID data is correct or not.
* For SVC main Ass’y, EDID have to be downloaded to Insert Process in advance.

7-5 DDC EDID Write (HDMI 256Byte)

-> Not used any more, Use Auto D/L

(1) Connect HDMI Signal Cable to HDMI Jack.
(2) Write EDID DATA to EEPROM(24C02) by using DDC2B protocol.
(3) Check whether written EDID data is correct or not.
* For SVC main Ass’y, EDID have to be downloaded to Insert Process in advance.

7-6. EDID DATA

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

7-7. EDID DATA Auto Download

(1) Press Adj. key on the Adj. R/C,
(2) Select EDID D/L menu.
(3) By pressing Enter key, EDID download will begin
(4) If Download is successful, OK is display, but If Download is failure, NG is displayed.
(5) If Download is failure, Re-try downloads.

*Caution: Never connect HDMI & D-sub Cable when EDID downloaded.

Edid data and Model option download (RS232)

<table>
<thead>
<tr>
<th>NO</th>
<th>Item</th>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enter download Mode</td>
<td>download</td>
<td>Mode In</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>EDID data Model option download</td>
<td>download</td>
<td>A</td>
<td>E</td>
</tr>
</tbody>
</table>

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Only for training and service purposes
7-8. Manual Download

* Caution
* Use the proper signal cable for EDID Download
  - Analog EDID : Pin3 exists
  - Digital EDID : Pin3 exists

* Caution:
  - Never connect HDMI & D-sub Cable at the same time.
  - Download HDMI1, HDMI2 separately because HDMI1 is different from HDMI2.

7-9. EDID DATA

(1) 2D - HD RGB EDID data

(2) 2D - HD HDMI1 EDID data

(3) 2D - HD HDMI2 EDID data

(4) 2D - HD HDMI3 EDID data

-Checksum: Changeable by total EDID data.
8. Checking the EYE-Q Operation.

(1) Press the EYE Key on the adjustment remote controller.
(2) Check the Sensor DATA (It must be under 10) and keep the data longer than 1.5s
(3) Check “OK”

<table>
<thead>
<tr>
<th>Green Eye-Check(Factory Mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor Data</td>
</tr>
<tr>
<td>Power saving mode</td>
</tr>
<tr>
<td>OK</td>
</tr>
</tbody>
</table>

(Sensor DATA 0 ~ 4095, Power Saving Mode 0 ~ 12)
* IF you press IN-STAP Button, change Green Eye-check OSD.

9. Ping TEST
(DVB T2 model only, PP11B/L)

* This test is to check Network operation.
(1) Connect LAN cable from Computer to TV Set
(2) When network operates normally, you can see “OK” on Computer

10. 3D Function Test

(Pattern Generator MSPG-3233, HDMI mode NO. 371, pattern No. 81)

(1) Please input 3D test pattern like below

(2) Enter 3D mode, then select side by side
(If you don’t wear a 3D Glasses, you will see the picture like below)

(3) Put on the 3D Glasses, And block the right side of Glasses (LEFT:OPEN[TEST], RIGHT:CLOSED)
And check the middle sides of picture, RED -> normal, others -> abnormal

(4) Put on the 3D Glasses, And block the right side of Glasses (LEFT:CLOSED, RIGHT:OPEN[TEST])
And check the middle sides of picture, BLUE -> normal, others -> abnormal

11. Model name & Serial number download

11-1. Model name & Serial number D/L

(1) Press “Power on” key of service remocon.(Baud rate: 115200 bps)
(2) Connect RS232 Signal Cable to RS-232 Jack.
(3) Write Serial number by use RS-232.
(4) Must check the serial number at signal test of customer support. (Refer to below).
11-2. 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>A0h</td>
<td>85~94h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CMD : A0h
LENGTH : 85~94h (1~16 bytes)
ADH : EEPROM Sub Address high (00~1F)
ADL : EEPROM Sub Address low (00~FF)
Data : Write data
CS : CMD + LENGTH + ADH + ADL + Data_1 + ... + Data_n
Delay : 20ms

11-3. Command Set

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

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

11-4. Method & notice

(1) Serial number D/L is using of scan equipment.
(2) Setting of scan equipment operated by Manufacturing Technology Group.
(3) Serial number D/L must be conformed when it is produced in production line, because serial number D/L is mandatory by D-book 4.0
* Manual Download (Model Name and Serial Number)
  - If the TV set is downloaded By OTA or Service man, Sometimes model name or serial number is initialized. (Not always)
  - There is impossible to download by bar code scan, so It need Manual download.

1) Press the ‘instart’ key of ADJ remote controller.
2) Go to the menu ‘5.Model Number D/L’ like below photo.
3) Input the Factory model name(ex 42LD450-TA) or Serial number like photo.
4) Check the model name Instant menu ? Factory name displayed (ex 42LD450-TA)

5) Check the Diagnostics (DTV country only) ? Buyer model displayed (ex 42LD450)

12. CI+ Key Download

12-1. Download Procedure

(1) Press “Power on” button of a service R/C.(Baud rate : 115200 bps)
(2) Connect RS232-C Signal Cable.
(3) Write CI+ Key through RS-232-C.
(4) Check whether the key was downloaded or not at ‘In Start’ menu. (Refer to below)

-> Check the Download to CI+ Key value in LGset.

12-2. Check the method of CI+ Key value

(1) check the method on Instant menu
(2) check the method of RS232C Command  
1) into the main ass’y mode (RS232 : aa 00 00)

<table>
<thead>
<tr>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>0</td>
</tr>
</tbody>
</table>

2) check the key download for transmitted command  
(RS232 : ci 00 10)

<table>
<thead>
<tr>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

3) result value  
- normally status for download : OKx  
- abnormally status for download : NGx

12-3. Check the method of CI+ Key value  
(RS232)

(1) into the main ass’y mode (RS232 : aa 00 00)

<table>
<thead>
<tr>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>0</td>
</tr>
</tbody>
</table>

(2) Check the method of CI+ key by command  
(RS232 : ci 00 20)

<table>
<thead>
<tr>
<th>CMD 1</th>
<th>CMD 2</th>
<th>Data 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

(3) result value

![](CI+ Key Value)

13. SW Download Guide.

* Put a *.bin to USB Stick and Turn on TV

(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”

(4) Updating is staring.

(5)0 Updating Completed, The TV will restart automatically.  
After turn on TV, Please press’ IN-STOP’ button on ADJ Remote-control.  
* IF you don’t have ADJ R/C, enter’ Factory Reset’ in OPTION MENU.

(6) When TV turn on, check the Updated version on Diagnostics MENU.
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.
PDP TV Repair Guide

< Applicable Model >
- PD11A/B/L/K
# PDP TV Repair Process Index

<table>
<thead>
<tr>
<th>No.</th>
<th>Symptom (L)</th>
<th>Symptom (M)</th>
<th>Page</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A. Picture Problem</td>
<td>No Picture/Sound OK</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>No Picture/No sound</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A. Picture Problem</td>
<td>Mal-discharge/Noise/dark picture</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>B. Power Problem</td>
<td>Picture broken/Freezing</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>B. Power Problem</td>
<td>Vertical bar/ Horizontal Bar</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>B. Power Problem</td>
<td>No Power (Not turn on)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>B. Power Problem</td>
<td>Turn off (Instant, under watching)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>C. Sound Problem</td>
<td>No sound/ Sound distortion</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>E. General function Problem</td>
<td>Remote control &amp; Local Key checking</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>E. General function Problem</td>
<td>RF emitter checking</td>
<td>10</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 cable between board was inserted properly or not.
(Main B/D ↔ Power B/D, Power B/D ↔ Y-sus B/D, Power B/D ↔ Z-Sus B/D(for 60Inch), LVDS Cable, Speaker Cable, IR B/D Cable)

A1
Check Module pattern by using "TILT" key on SVC R/C

A2
Check Sound

A3
Check VS, Va

A5~A6
Check voltage
- V_y
- V_sc
- V_zb

A8~A11
Move Power problem Section
1. Check Y-Sus/ Z-Sus Board
2. Replace defective B/D

A12
Check B+ Voltage on Power Board / Control Board .Check B+(5V)

A13
1. Check Control Board
  . LED on
  . Crystal(X2), 3.3V, 5V
  . Rom update
2. Replace Control B/D

※ Refer to the Module label for each voltage
PDP TV | Symptom | A. Picture Problem | Making | 2010. 11. 16 | 전자 - 6-2 | Revision | 2/10
---|---|---|---|---|---|---|---
No Picture/No Sound | | | | | | | 

**Repair Process**

**A1**
Check Module pattern by using “TILT” key on SVC R/C

- **A2**
  - Normal
  - Y: Check Sound
  - N: Move No Picture/ Sound Ok Section

- **A6**
  - Check Video

- **A6**
  - Check “Speaker ON/Off” setting in OSD Menu

- **A6**
  - Normal Sound?
  - Y: Close
  - N: Check Speaker jack connection & Speaker Cable open

- **A6**
  - Normal Sound?
  - Y: Close
  - N: Check 17V (Audio IC B+) on Power B/D

- **A6**
  - SVC Bulletin?
  - Y: Apply SVC Bulletin (S/W Upgrade etc)
  - N: Normal Sound?
  - Y: Close
  - N: Check Audio IC Short Replace Main B/D

- **A6**
  - Check Power B/D Replace Power B/D
A. Picture Problem

Mal-discharge/Noise/dark picture

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
<th>Revision</th>
</tr>
</thead>
</table>

Mal-discharge/Noise/dark picture

1. Check Control B/D
2. Replace Board

Check Picture problem Type

⇒ A14
Mal-discharge

Check Picture problem Type

⇒ A15
Check CTRL ROM Ver. and Rom Upgrade

⇒ A16
Check Y Drive B/D & Replace B/D

⇒ A9
1. Check Z-Sus Board
2. Replace Board

⇒ A13
1. Check Control B/D
2. Replace Board

⇒ A11
Normal Picture?

⇒ A5
Check voltage \(-V_Y / V_Sc\) (Y-Sus B/D)

⇒ A12
Normal Picture?

⇒ A10
Normal Picture?

⇒ A8
Normal Picture?

⇒ A7
Normal Picture?

⇒ A6-1, 2
Check RF Cable Connection

⇒ A1
Normal Picture?

⇒ A0
Normal Picture?

⇒ A2
Normal Picture?

⇒ A3
Normal Picture?

⇒ A4
Normal Picture?

⇒ A14
Mal-discharge

⇒ A15
Check CTRL ROM Ver. and Rom Upgrade

⇒ A16
Check Y Drive B/D & Replace B/D

⇒ A9
1. Check Z-Sus Board
2. Replace Board

⇒ A13
1. Check Control B/D
2. Replace Board

⇒ A11
Normal Picture?

⇒ A5
Check voltage \(-V_Y / V_Sc\) (Y-Sus B/D)

⇒ A12
Normal Picture?

⇒ A10
Normal Picture?

⇒ A8
Normal Picture?

⇒ A7
Normal Picture?

⇒ A6-1, 2
Check RF Cable Connection

⇒ A1
Normal Picture?

⇒ A0
Normal Picture?

⇒ A2
Normal Picture?

⇒ A3
Normal Picture?

⇒ A4
Normal Picture?
A. Picture Problem

### PDP TV Symptom

**Picture broken/Freezing**

#### Repair Process

- **Check RF Signal level**
  - By using Digital signal level meter
  - By using Diagnostics menu on OSD (Menu→Press red key on R/C→Signal TEST)
  - Signal strength (Normal: over 50%)
  - Signal Quality (Normal: over 50%)

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

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

- **Check S/W Version**

- **Check SVC Bulletin?**
  - Booster menu
    - On→Off: Check
    - Off→On: Check

- **Check Tuner & replace Main B/D**

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

### Notes

- **A21**
- **A6-1, 2**
A. Picture Problem

Vertical bar/ Horizontal Bar

Check defect type

Vertical Line/Bar

Regular Vertical Line / Bar

Check Module pattern by using "TILT" key on SVC R/C

Normal Pattern?

Y Replace Module

N

Irregular Vertical Line / Bar

Check connection of Connector (COF,TCP) on CTRL B/D, X B/D

Normal Y

Normal Pattern?

Y Replace Module

N

Normal Picture?

Y 1.Check CTRL B/D 2.Replace Board

N 1.Check CTRL B/D 2.Replace Board

Close

Check Main B/D (If Main B/D doesn’t cause)

A19

A18

A20

Half No picture

1.Check X B/D 2.Replace Board

Normal Picture?

N Replace Module

Y Close

A16

A20

Horizontal Line/Bar

Check connection of Connector (FFC) on Y Drive B/D

Normal Y

1. Check Y Drive B/D 2. Replace Board

Normal Picture?

N Replace Module

N

1. Check CTRL B/D 2. Replace Board

Normal Picture?

Y Replace Module

N

Close

※ H-Line’s Cause is rare CTRL B/D

A13

※ CTRL B/D: Control board

1.Connector re-connection
2.Eliminate foreign material on Connector

1. Connector re-connection
2. Eliminate foreign material on Connector

Check connection of Connector (FFC) on Y Drive B/D

1. Connector re-connection
2. Eliminate foreign material on FFC

Normal

N

Replace Module
### B. Power Problem

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Repair Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Power (Not turn on)</td>
<td>Power LED ON? &lt;br&gt; DC Power on by pressing Power Key on Remote control &lt;br&gt; Check R/C IR Operation &lt;br&gt; Check ST-BY 5V on Power Board</td>
</tr>
<tr>
<td></td>
<td>Power cord was inserted properly</td>
</tr>
<tr>
<td></td>
<td>Normal? &lt;br&gt; AC DET Signal on Power B/D &lt;br&gt; RL_ON Signal on Power B/D &lt;br&gt; Check the other pin’s Output voltage on Power B/D</td>
</tr>
<tr>
<td></td>
<td>Normal Voltage? &lt;br&gt; Signal?</td>
</tr>
<tr>
<td></td>
<td>Normal Signal? &lt;br&gt; Normal Signal? &lt;br&gt; Normal Signal?</td>
</tr>
<tr>
<td></td>
<td>Repair/Replace IR B/D &lt;br&gt; Replace Power B/D</td>
</tr>
<tr>
<td></td>
<td>Replace Main B/D</td>
</tr>
<tr>
<td></td>
<td>Close</td>
</tr>
</tbody>
</table>

- Stand-By: Red <br> Operating: Blue

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**B. Power Problem**

Turn off (Instant, under watching)

### Repair Process

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>B. Power Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
<th>Revision</th>
<th>7/10</th>
</tr>
</thead>
</table>

**To check Power B/D Protection**

1. Instant Turn off
2. Check Power B/D Protection
3. Check Y-Sus/ Z-Sus Board (especially Short or Open)
4. Replace defective B/D

**Check Power Off History**

- RCU Off
- KEY Off
- 2HOUR Off
- NO Signal Off

- Don’t appear Power Off History
- Move No Power problem Section

This is not problem Normal operation
1. No sound (If HDMI input only have no sound, upload EDID data)

- Check "Speaker ON/Off" setting in OSD Menu
  - Normal Sound? Y ➞ Close
  - Normal Sound? N ➞ Check Speaker jack connection & Speaker Cable open
    - Normal Sound? Y ➞ Close
    - Normal Sound? N ➞ Check 17V (Audio IC B+) on Power B/D
      - Normal Voltage? Y ➞ Replace Power B/D
      - Normal Voltage? N ➞ Apply SVC Bulletin (S/W Upgrade etc)

2. Sound distortion & sound drop

- Check Input signal → Cable connection → Cable open - RF & external (HDMI, SCART,..)
  - Normal Sound? Y ➞ Close
  - Normal Sound? N ➞ Check AVL off/on
    - Problem in all input
      - Problem in only DTV
        - Problem in external input (SCART, HDMI,..)
          - Check whether Problem happen in same output of other equipments or not.
            - DVD Player, Set-Top-Box, different maker TV etc

- Check Audio IC
  - Replace Main B/D

Explain customer that
  Cause is RF Signal's problem (Case 1)
  Cause is Equipment's problem (case 2)
1. Remote controller (R/C) operating error

- Check R/C itself Operation
- Check & Repair Cable connection Connector solder
- Check R/C Operating When turn off light in room
- Check & Replace Battery of R/C
- Normal operating?
  - Y: Check & Repair Cable connection Connector solder
  - N: Close
- If R/C operate, Explain the customer cause is interference from light in room.
- Replace R/C

2. Local KEY operating error

- Check local key Operation
- Check & Repair Cable connection Connector solder
- Normal operating?
  - Y: Check & Repair Cable connection Connector solder
  - N: Move Power problem Section
- Normal operating?
  - Y: Check Key Output signal
  - N: Normal Operating?
    - Y: Normal Signal?
      - Y: Normal Signal?
      - N: Repair/Replace Local Key B/D
    - N: Replace Main B/D
  - N: Repair/Replace IR B/D

- A26 Check B+ 5V On Main B/D
- A12 Check 5V on Power B/D Replace Power B/D or Replace Main B/D (Power B/D don't have problem)
3. RF emitter operating error

- Check RF emitter Operation
- Check the signal between the RF emitter and Main board
- Normal Signal?
  - Y: Check the RF emitter SW Ver. at SVC menu
  - N: Replace RF emitter board

  ✠ A28
  
  Check & Repair
  
  Cable connection
  
  Connector solder

- Normal operating?
  - Y: Close
  - N: Replace Main B/D

  ✠ A28
  
  Normal operating?
<table>
<thead>
<tr>
<th>No.</th>
<th>Symptom</th>
<th>Detail</th>
<th>Page</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Picture Problem</td>
<td>Check Module pattern by Tilt key</td>
<td>A1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Audio check method</td>
<td>A2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Check Va, Vs on Power Board</td>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>PDP Module Label Information</td>
<td>A4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Check &amp; Adjust –VY,VSC,VZB voltage - 50R3 –VY,VSC(Y-Sus) / VZB(Z-Sus)</td>
<td>A5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Video Check Method</td>
<td>A6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Fuse Checking Method</td>
<td>A7</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Y-Sus Board Checking Method(50R3)</td>
<td>A8</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Z-Sus Board Checking Method(50R3)</td>
<td>A9</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Check 5V on Power B/D</td>
<td>A12</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Control Board Checking Method(50R3)</td>
<td>A13</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Mal discharge Symptom Picture</td>
<td>A14</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>PDP Module Rom Ver. Checking method</td>
<td>A15</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Y Drive B/D Checking method</td>
<td>A16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>(Half picture) X- B/D Checking method</td>
<td>A18</td>
<td></td>
</tr>
</tbody>
</table>
# PDP TV Repair Process Reference data Index

<table>
<thead>
<tr>
<th>No.</th>
<th>Symptom</th>
<th>Detail</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Picture Problem</td>
<td>Defect type cause by PDP Module</td>
<td>A19</td>
</tr>
<tr>
<td>19</td>
<td>Picture Problem</td>
<td>Connector Type on PDP Module</td>
<td>A20</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>RF Signal level Checking method</td>
<td>A21</td>
</tr>
<tr>
<td>21</td>
<td>Power Problem</td>
<td>Check voltage on Power board</td>
<td>A22</td>
</tr>
<tr>
<td>22</td>
<td>Power Problem</td>
<td>Power board Checking Method</td>
<td>A23</td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>Check Power off History</td>
<td>A24</td>
</tr>
<tr>
<td>24</td>
<td>Sound Problem</td>
<td>Speaker cable checking method</td>
<td>A25</td>
</tr>
<tr>
<td>25</td>
<td>General Function Problem</td>
<td>Check Remote control IR operation</td>
<td>A26</td>
</tr>
<tr>
<td>26</td>
<td>General Function Problem</td>
<td>Check Local Key operation</td>
<td>A27</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>Check RF emitter operation</td>
<td>A28</td>
</tr>
</tbody>
</table>
You can see 20 types patterns by using TILT Key on SVC Remote controller (except Old model)

< CHECK Item >
5. In case of no picture, you can judge defect cause (Module or Main B/D)
   - If patterns appear, defect cause is Main B/D
# Repair Process - Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
<th>Revision</th>
<th>A2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Audio check method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## A2

### 1. Audio check method

1. Check Audio output by using oscilloscope
   
   \[ \text{GND} \leftrightarrow \text{R- or R+ or L- or L+} \]

   ![Audio output waveform](image)

2. Check whether speaker jack was inserted properly or not.

   ![Jack for Speaker connection](image)
Make sure you can’t hear any audio

Y

Check speaker for damage.

Y

Check Connector P301

N

Replace the Speaker

N

Replace P301

Y

Check IC303 Power
17V(C340), 3.3V(R365,R374)

Y

Check IC700 Status
PDN(#23) / Reset(#31) is High?

Y

Check SCL, SDA
R359, R360

Y

Check Mstar I2S Output
#27, 28, 29, 30 on IC303

Y

Replace AMP(IC303)

N

Replace R359, R360

N

Check 17V (P600 #1,2),
3.3V (IC606 #2)

N

Check Reset (R380) / PDN (R374)
They must be High (3.3V)

Replace MSTAR(IC400).
Digital TV / HDMI Audio Problem

- Digital TV
  - Check video output
    - Y: Follow procedure All source audio trouble shooting
    - N: Follow procedure digital TV video trouble shooting

- HDMI
  - Check video output
    - Y: Follow procedure HDMI video trouble shooting
    - N: Re-download EDID data
      - N: Follow procedure All source audio trouble shooting
Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Input Block</th>
<th>Analog TV Audio Problem</th>
<th>Making</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2010. 11. 16</td>
<td>전자 - 6-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A2-3</td>
</tr>
</tbody>
</table>

- Defend on the input signal.

Follow procedure analog TV video trouble shooting

Check video output

Follow procedure all source audio trouble shooting

Check #3 on TU300 for 5V

Check IC605 output Voltage

Check SIF signal C301

Replace TU300

Check SIF signal (C301)

Check SIF line

Replace MSTAR IC (IC400)
Check Connector and cables
JK210 (Component)
JK100, JK101 (SCART)
JK208 (RGB)
JK207 (Side AV)

Replace connector or cable if found damaged

Check signal
JK210 (Component) : R261, R262
JK100, JK101 (SCART) : R128, R131, R193, R194
JK208 (RGB) : R215, R216
JK207 (Side AV) : R1201, R1202

Replace the Resistor

Check IC400 signal
JK210 (Component) : C441, C442
JK100, JK101 (SCART) : C435, C436, C437, C438
JK208 (RGB) : C443, C444
JK207 (Side AV) : C439, C440

Replace the Capacitor

Follow procedure
All source audio trouble shooting
## Repair Process - Reference Data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Input Block</th>
<th>Optical Audio Problem</th>
<th>Making</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2010. 11. 16</td>
<td>전자 - 6-2</td>
</tr>
</tbody>
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### Check Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Check Signal (JK204 #3)</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>Check 5V #2 on JK204</td>
<td>N</td>
</tr>
<tr>
<td>3</td>
<td>Check SPDIF signal (R296)</td>
<td>N</td>
</tr>
<tr>
<td>4</td>
<td>Check P601 Output (L604, L605)</td>
<td>Y</td>
</tr>
<tr>
<td>5</td>
<td>Replace MSTAR(IC400)</td>
<td></td>
</tr>
</tbody>
</table>

- Defend on the input signal.

![SPDIF Waveform - Sample](image-url)
A. Picture Problem

Check Va, Vs on Power Board

- **Check Va & Adjust Va Voltage**
  (Refer to the Module label for Va specification)

- **Check Vs & Adjust Vs Voltage**
  (Refer to the Module label for Vs specification)

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>Revision</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Check Va, Vs on Power Board</td>
<td></td>
<td></td>
<td>A3</td>
<td></td>
</tr>
</tbody>
</table>

![PDP TV diagram with labeled boards: PDP Module Label, Power Board, Z-Sus Board, Y-Sus Board, Control Board, Main Board. Diagram includes specific points for checking and adjusting voltages.](image-url)
## Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
<th>Revision</th>
<th>A4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PDP Module Label Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PDP Module Label Information.

![Label Image]

- **①** Model Name
- **②** Bar Code  
  (Code 128, Contains the manufacture No.)
- **③** Manufacture No.
- **④** Adjusting Voltage(DC Va, Vs)
- **⑤** Adjusting Voltage (Set up/-Vy/Vsc/Ve/Vzb)
- **⑥** The trade name of LG Electronics
- **⑦** Manufactured date(Year & Month)
- **⑧** Warning
- **⑨** UL Approval Mark
- **⑩** UL Approval No.
- **⑪** Model Name
- **⑫** Max. Watt
- **⑬** Max. Volts
- **⑭** Max. Amps

2010. 11. 16
## A. Picture Problem

**Check & Adjust –\( V_Y, V_{SC}, V_{ZB} \) voltage (50R3)**

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Check &amp; Adjust –( V_Y, V_{SC}, V_{ZB} ) voltage (50R3)</td>
<td>2010. 11. 16</td>
<td>A5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revision</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Voltage Check & Adjustment: 50R3

#### <Module Label>

![Module Label Image]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Check Point</th>
<th>Adjustment Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{SC} ) (150V)</td>
<td>R324</td>
<td>VR301</td>
</tr>
<tr>
<td>( V_Y ) (-190V)</td>
<td>R334</td>
<td>VR302</td>
</tr>
</tbody>
</table>

#### YSUS board

![YSUS board Image]

1. \( V_{SC} \) (150V) on Y-Sus B/D
   - Check Point: R324
   - Adjustment Point: VR301

2. \( V_Y \) (-190V) on Y-Sus B/D
   - Check Point: R334
   - Adjustment Point: VR302
A. Picture Problem

Check & Adjust –V_Y,V_sc,V_ZB voltage(50R3)

Voltage Check & Adjustment: **50R3**

- **Check Point:** R156
- **Adjustment Point:** VR204

3. **VZB (115V)** on Z-Sus B/D
   - Check Point: **R156**
   - Adjustment Point: **VR204**
<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Input Block</th>
<th>Digital TV Video Problem</th>
<th>Making</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2010. 11. 16</td>
<td>전자 - 6-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A6-1</td>
</tr>
</tbody>
</table>

- **Check RF Cable**
- **Check TU300 Power 5V(C304), 3.3V(C302), 1.2V(C300)**
- **Check Video Color**
- **Check IIC Line**
- **Check other input / OSD**
- **Change MSTAR(IC400)**
- **Check Voltage 5V : IC605 Output 3.3V : IC600 Output 1.2V : IC301 Output**
- **Check Monitor Out Video (Scart out)**
- **Check TU_SCL/SDA Line**
- **Replace Tuner**

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<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Input Block</th>
<th>Analog TV Video Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Check RF Cable</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Check 5V voltage on TU300(Pin3)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Check IC605 Output Voltage(L610)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Check CVBS signal TU601 #11 Pin</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Replace Tuner(TU300)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Replace MSTAR(IC400)</strong></td>
</tr>
</tbody>
</table>

- Defend on the input signal.

< CVBS waveform – sample >

- Defend on the input signal.
## PDP TV Input Block

### Component Video Problem

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Check input signal format &lt;br&gt;Is it supported?</td>
</tr>
<tr>
<td></td>
<td>Yes → Check Component Cable</td>
</tr>
<tr>
<td></td>
<td>Yes → Check signal on R411,C413,C415</td>
</tr>
<tr>
<td></td>
<td>No → Check the damage of JK210 &lt;br&gt;And Replace Connector</td>
</tr>
<tr>
<td></td>
<td>Yes → Replace MSTAR(IC400)</td>
</tr>
</tbody>
</table>

※ Measured signals depend on the input signal.
## Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Input Block</th>
<th>RGB(D-Sub) Video Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Revision</td>
<td></td>
<td>A6-4</td>
</tr>
</tbody>
</table>

### Check input signal format
- **Is it supported?**
  - **Y**

### Check RGB Cable conductors for damage
- **Y**

### Check P205
  - **N**
  - Replace connector (P205).
  - **Y**

### Check signal, Hsync, Vsync
- R218, R219
  - **Y**

### Check signal
- R404, R406, R408
  - **N**
  - Replace R404, R406, R408
  - **Y**

### Replace MSTAR(IC400)

---

※ Measured signals depend on the input signal.

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Check input signal format
Is it supported?

Y → Check AV Cable for damage or open conductors

Y → Check AV port of JK207(Side), JK100, JK101(Rear)

N → Replace connector

Y → Check signal line
JK207-Video : C425
JK100-Video : C408, C410, C412(RGB), C423(CVBS)

N → Replace Capacitor

Y → Replace MSTAR(IC400)

※ Measured signals depend on the input signal.
HDMI Video Problem

Check input signal format
Is it supported?

Y

Check HDMI Cable for damage or open conductors

Y

Check EDID D/L

N

Re-Download EDID

Y

Check JK200 / J201 / J202 for proper connection or damage

N

Replace Connector

Y

Replace MSTAR(IC400)
### A. Picture Problem

#### Fuse Checking Method

1. Sound comes, the fuse is OK.
2. If Fuse is defects, it should check again voltage of 5V, Va, Vs after replacing the fuse.
3. In case there are no voltage of 5V, Va, Vs, the board is failure, it need to replace the board.

---

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fuse Checking Method</td>
<td>Revision</td>
<td>A7</td>
<td></td>
</tr>
</tbody>
</table>
### A. Picture Problem

#### Y-Sus Board Checking Method (50R3)

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>revision</th>
</tr>
</thead>
</table>

#### Check Method

1. Check input voltages (5V, Va, Vs) at P103 connector.
2. Check if it is short or not between Vs and GND at P103 connector.
3. Check all of fuses open. (FS201, FS202, FS203, FS501)
4. Check voltage of diode, FET by using digital multi-meter.

#### Measurement method

<table>
<thead>
<tr>
<th>Circuit No.</th>
<th>Position</th>
<th>Direction</th>
<th>Q561, Q607</th>
<th>Q608, Q609</th>
</tr>
</thead>
<tbody>
<tr>
<td>D610</td>
<td>HS601</td>
<td>Forward</td>
<td>0.35V ~ 0.45V</td>
<td>0.45V ~ 0.55V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
<td></td>
</tr>
<tr>
<td>D604, D605</td>
<td>HS602</td>
<td>Forward</td>
<td>0.35V ~ 0.45V</td>
<td>0.45V ~ 0.55V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
<td></td>
</tr>
<tr>
<td>D602</td>
<td>HS603</td>
<td>Forward</td>
<td>0.35V ~ 0.45V</td>
<td>0.35V ~ 0.45V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
<td></td>
</tr>
</tbody>
</table>

#### Specifications

<table>
<thead>
<tr>
<th>Position</th>
<th>Direction</th>
<th>Circuit No.</th>
<th>Position</th>
<th>Direction</th>
<th>Circuit No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS601</td>
<td>Forward</td>
<td>D610</td>
<td>HS602</td>
<td>Forward</td>
<td>D604, D605</td>
</tr>
<tr>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
</tr>
<tr>
<td>HS603</td>
<td>Forward</td>
<td>D602</td>
<td>HS601</td>
<td>Forward</td>
<td>D603, D605</td>
</tr>
<tr>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
<td></td>
<td>Reverse</td>
<td>O.L. (Overload)</td>
</tr>
</tbody>
</table>
A. Picture Problem

Z-Sus Board Checking Method(50R3)

① Check input voltages (5V, Va, Vs) at P203 connector.
② Check it is short or not between Vs and GND at P203 connector.
③ Check all of fuses open. (FS202)
④ Check voltage of diode, FET by using digital multi-meter.

Measuring Method

Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HS101</td>
<td>Forward</td>
<td>D114,D118</td>
<td>Q107, Q110</td>
<td>Q106, Q109</td>
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<tr>
<td></td>
<td>Reverse</td>
<td></td>
<td></td>
<td>O.L. (Overload)</td>
</tr>
<tr>
<td>HS102</td>
<td>Forward</td>
<td>D109,D110,D108,D111</td>
<td>Q104,Q113,Q114</td>
<td>Q102,Q103</td>
</tr>
<tr>
<td></td>
<td>Reverse</td>
<td></td>
<td></td>
<td>O.L. (Overload)</td>
</tr>
</tbody>
</table>
A. Picture Problem

Check 5V, 17V on Power B/D

1. Measure 5V voltage

2. Measure 17V voltage

<table>
<thead>
<tr>
<th>Power Board</th>
<th>P813</th>
<th>P600</th>
</tr>
</thead>
</table>

<table>
<thead>
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<td>16</td>
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<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

Wafer: SMAW200-H1852

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## A. Picture Problem

### Checking Method

1. Check input voltages (5V of P105 / 18V of P2) at control board.
2. Check LED is on.
3. If LED doesn’t work, check crystal X1 output.
4. Check 3.3V, 5V IC.
5. Check MCM at VS_DA by using digital multi meter.

### MCM Check point

- (+) VS_DA / (-) GND (Normal: 3.3V)
- Pin 14, 15 : 18V
- Pin 14, 15 : 18V

### IC Check

- IC53
- IC51

### Oscillation of Crystal

(Normal: 25 MHZ)
## Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mal discharge Symptom</td>
<td>Revision</td>
<td></td>
<td>A14</td>
</tr>
</tbody>
</table>

- **A. Picture Problem**

  - **Dot type Mal-discharge symptom**

  - ![Dot type Mal-discharge symptom](image1)

  - **Scan type Mal-discharge symptom**

  - ![Scan type Mal-discharge symptom](image2)

- **Dark picture caused by Mal-discharge**

  - ![Dark picture caused by Mal-discharge](image3)
## Repair Process - Reference data

### A. Picture Problem

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PDP Module Rom Ver. Checking method</td>
<td></td>
<td></td>
<td>A15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revision</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Check by using Rom Label on control board**

- **Check by using SVC Remote controller**
  - Press "In-start" → Press "0413"
  - Select Panel Control → Check Module Rom ver.

- Refer to the Module Rom upgrade manual for Rom upgrade.

*USB Type Jig*
### Repair Process - Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Y Drive B/D Checking method(50R1)</td>
<td>2010. 11. 16</td>
<td>A16</td>
</tr>
</tbody>
</table>

#### Y drive board

- **Scan IC**
- **Input signal connector**

**Check all output pins of scan IC (connector) using DMM.**
### A. Picture Problem

#### Half / partly display (or abnormal display)
- Check Va input voltage.
  (P121, P120, P220, P221, P320 : Power connector of the X board)
- Check cables between CTRL board and X board.
- Replace the X B/D.
- Check TCP connection after X B/D replacement.

#### Connections between panel and X B/D
- Right display (Picture 1.) ↔ Check/replace right X B/D
- Both ends display (Picture 2.) ↔ Check/replace center X B/D
- Left display (Picture 3.) ↔ Check/replace left X B/D

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Half display</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(abnormal)</td>
<td>abnormal</td>
<td>abnormal</td>
<td>abnormal</td>
</tr>
</tbody>
</table>

※ Check connections (TCP - X board, CTRL board - X board)
# Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>Revision</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
<th>A19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Defect type cause by PDP Module</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

First of all, Check whether all of cable between board was inserted properly or not.
Next, Check whether there is foreign material on connector.

<table>
<thead>
<tr>
<th>Symptom picture</th>
<th>defects description</th>
<th>To action</th>
</tr>
</thead>
</table>
| ![Regular vertical lines](image1) | Regular vertical lines | 1. Check connection (CTRL B/D, X B/D)  
2. Check CTRL B/D  
3. Replace CTRL B/D |
| ![Vertical lines or Bar](image2) | Vertical lines or Bar | 1. Check connection (CTRL B/D, X B/D)  
2. Check CTRL B/D  
3. Replace CTRL B/D |
| ![Many irregular vertical lines](image3) | Many irregular vertical lines | 1. Check connection (CTRL B/D, X B/D)  
2. Check CTRL B/D  
3. Replace CTRL B/D |
| ![Horizontal Line or Bar](image4) | Horizontal Line or Bar | 1. Check connection (Y-Sus B/D ↔ Panel)  
2. Check Y-Sus B/D  
3. Replace Y-Sus B/D |
## Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Connector Type on PDP Module</td>
<td>2010. 11. 16</td>
<td>A20</td>
</tr>
</tbody>
</table>

### COF Type

- 96 Out Put

1. Check foreign & Connection status
2. Check bad soldering on Chip resistance

### TCP Type

- 192 Out Put

TCP (Tape Carrier Package) is film for IC connect with Electrode pattern (Direct Bonding) on X B/D

### FFC Type

Connector to connect between Electrode PAD Of PANEL and Y Drive B/D, Z-Sus B/D

### Defect symptom

- Connector type images with defects described.
<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>A. Picture Problem</th>
<th>Making</th>
<th>2010. 11. 16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RF Signal level Checking method</td>
<td>Making</td>
<td></td>
<td>전자 - 6-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revision</td>
<td></td>
<td>A21</td>
</tr>
</tbody>
</table>

**A21**

**MENU → Press Red Button on R/C → Signal TEST → Diagnostics**

1. Check whether Signal Strength, Signal Quality is over 50% or not.
2. If Signal Strength, Signal Quality is under 50%, install the Booster to increase signal level.
### B. Power Problem

**Check voltage on Power board**

#### Pin Map

Power B/D ↔ Main B/D

<table>
<thead>
<tr>
<th>No.</th>
<th>Checking Point</th>
<th>Spec</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STBY</td>
<td>5V</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5V</td>
<td>5V</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>17V</td>
<td>17V</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>AC DET</td>
<td>High(3.3V~5V)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>RL_ON</td>
<td>High(3.3V~5V)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>M_ON</td>
<td>High(3.3V~5V)</td>
<td></td>
</tr>
</tbody>
</table>

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**B. Power Problem**

- Check soldering status on each major component.
- Check there is problem on major component or not by eye. (CONDENSER, FET, IC, Resistor)
- Check FUSE.
- Check 5V, Va, Vs voltage
- PSU Maker: 1) LGIT 2) LITEON 3) YUYANG
- If happen Power board Protection, check whether there is Short or Open on Y-SUS, Z-SUS B/D or not.

**Power B/D ↔ Y-Sus B/D(P811)**

- Check 5V, Va, Vs voltage

---

**Checking Method**

- Check soldering status on each major component.
- Check there is problem on major component or not by eye. (CONDENSER, FET, IC, Resistor)
- Check FUSE.
- Check 5V, Va, Vs voltage

---

**Adjust way**

- [Va Voltage ADJ](#)

- [Vs Voltage ADJ](#)
### B. Power Problem

#### Check Power off History

- **Check Power off History by using SVC Remote controller**
  - Press “In-start” → Press “0000” → Select “Power Off History” → Pop up Module Rom ver.

<table>
<thead>
<tr>
<th>LAST HISTORY 1~5</th>
<th>Appear Power off history 5ea. (1 is the latest history)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCU OFF</td>
<td>Power off by Remote control</td>
</tr>
<tr>
<td>KEY OFF</td>
<td>Mechanical power switch off</td>
</tr>
<tr>
<td>2HOUR OFF</td>
<td>After turn on by OnTimer, There is no operation for 2hours</td>
</tr>
<tr>
<td>NO SIGNAL OFF</td>
<td>In case that there is no signal for 15minutes</td>
</tr>
<tr>
<td>PDP TV</td>
<td>Symptom</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Check whether speaker jack was inserted properly on Main B/D side & speaker side or not.
2. Check whether speaker cable have problem (disconnection wire) or not.
### Repair Process-Reference data

<table>
<thead>
<tr>
<th>PDP TV</th>
<th>Symptom</th>
<th>D. General function defect</th>
<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Check Remote control IR operation</td>
<td>Revision</td>
<td>A26</td>
<td></td>
</tr>
</tbody>
</table>

#### Checking method

1. Check connector was inserted properly on Main board and IR board.
2. Check +3.3V_ST Voltage at Pin10
3. Check whether appear voltage on multi meter when operate remote control.

※ Test Condition for case 3
- Check Point: Pin 1( IR)
- TV: power on status
- Multi meter: Select DC 10V

![IR Board Schematic Diagram]

**IR & Local key Board for 2/3/4/550 TOOL**
## Repair Process - Reference data

<table>
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<th>Making</th>
<th>2010. 11. 16</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Check Local Key operation</td>
<td></td>
<td></td>
<td>A27</td>
</tr>
</tbody>
</table>

### D. General function defect

1. Check connector was inserted properly on Main board and IR board.
2. Check whether appear voltage on multi meter when operate Local switch.
   * Test Condition for case 3
     → Check Point: Pin 2,3( Key1,Key2)
     → TV: power on status
     → Multi meter: Select DC 10V

---

**IR & Local key Board for 2/3/4/550 TOOL**

<table>
<thead>
<tr>
<th>IR</th>
<th>GND</th>
<th>KEY1</th>
<th>KEY2</th>
<th>LED-RED</th>
<th>GND</th>
<th>SCL</th>
<th>SDA</th>
<th>GND</th>
<th>3.3V ST</th>
<th>NC</th>
<th>NC</th>
<th>TOUCH_VER_CHK</th>
<th>NC</th>
<th>NC</th>
</tr>
</thead>
</table>

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Repair Process-Reference data

<table>
<thead>
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<th>PDP TV</th>
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<th>D. General function defect</th>
<th>Making</th>
<th>전자 - 6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Check RF emitter operation</td>
<td></td>
<td>A28</td>
</tr>
</tbody>
</table>

1. Check connector was inserted properly on Main board and RF emitter board.
2. Check whether appear voltage on multi meter when operate RF emitter board.
   ※ Test Condition for case 3
   → Check Point: Pin 12
   → TV: power on status
   → Multi meter: Select DC 10V