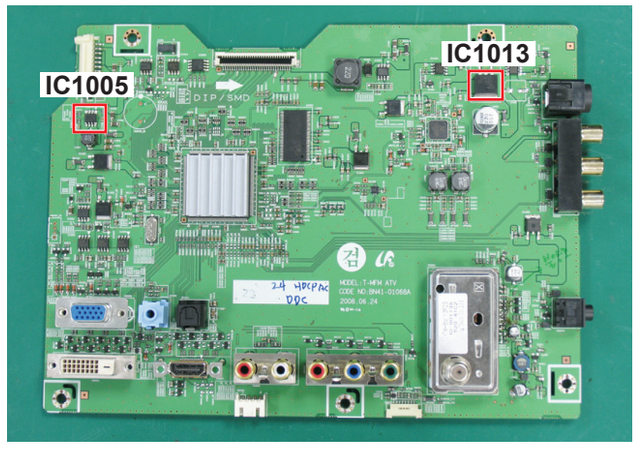
4. Troubleshooting

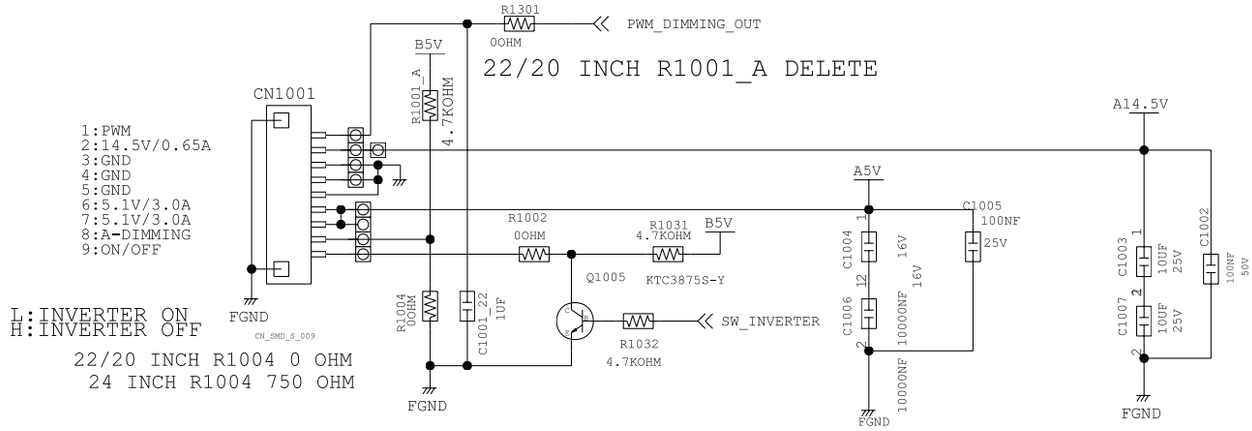
4-1. First Checklist for Troubleshooting

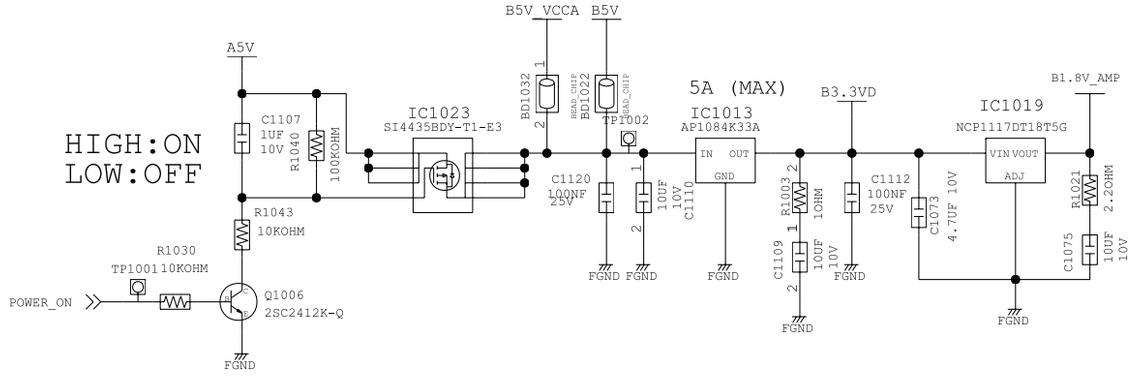
1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected cable connection or a connection is too loose.
   - Check to see if the cables are connected according to the connection diagram.
2. Check the power input to the Main Board.
3. Check the following circuits.
   • No raster appears: Function PBA, Main PBA, I/P PBA
   • 55V develop but no screen: Main PBA
   • 5V does not develop: I/P PBA
4. Check the voltage in and out between the IP↔ Main Board, between the IP↔ Panel, and between the Main LVDS Boards.

4-2. No Power

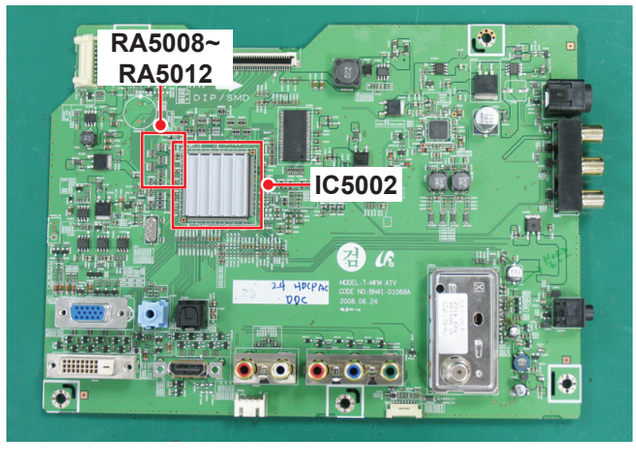
Symptom	– Though the power swtich on, the LED power off and the screen is blank.
Major checkpoints	– Check Power cable. – Check whether the Lamp connector is connected correctly to the IP. – Check whether the power cable is connected correctly to the MAIN. – Check whether the Function cable is connected correctly to the MAIN.
Diagnostics	 Main Board Front Does Power indicator LED Off ? — No → Check a connection a power cable. Yes ↓ Does proper DC 14.5V appear at C1002. — No → Change a Assy PCB Power. Yes ↓ Does proper DC5V appear at C1004? — No → Change a Assy PCB Power. Yes ↓ Does proper DC3.3V, 1.2v appear at 1112, C1052? — No → Check IC1013, IC1005. Change a main PBA. Yes ↓ A power is supplied to set? — No → Check a other function.(No picture part) Replace a lcd panel.
Caution	Make sure to disconnect the power before working on the IP board.

4-2-1. Circuit diagrams when the power does not turn on



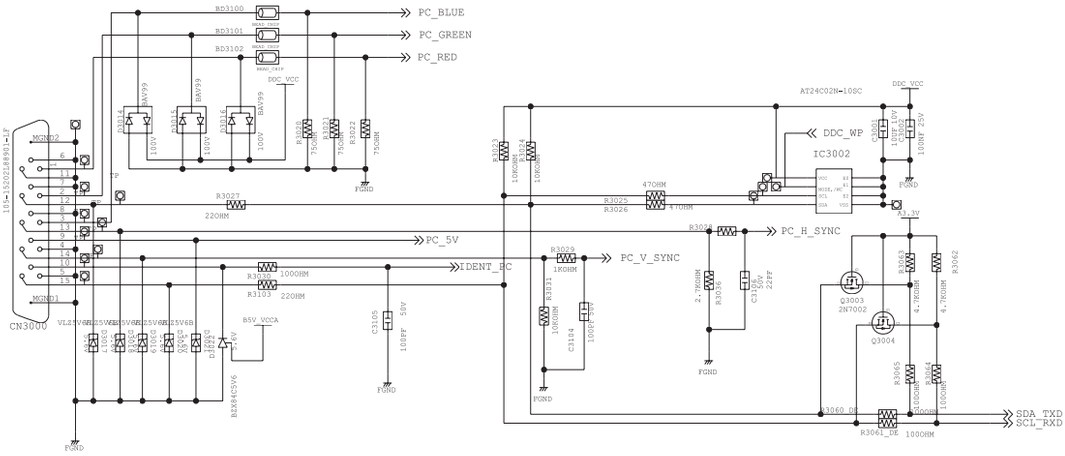


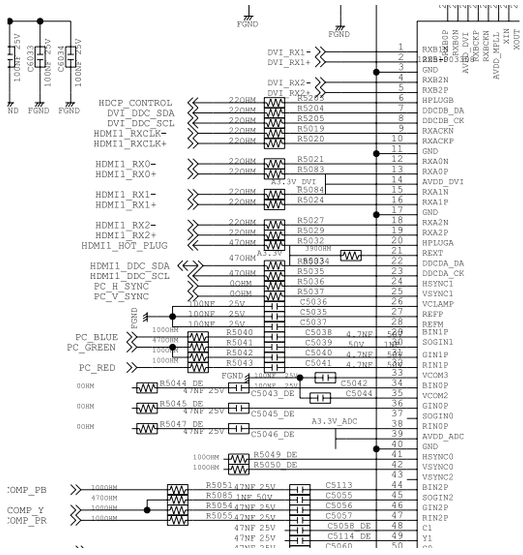
4-3. No Video (Analog PC)

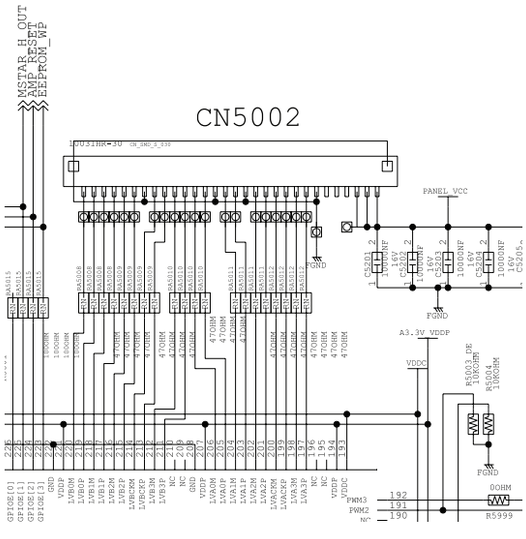
Symptom	– Though the LED power turns on, the screen is blank when connecting the VGA cable.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the VGA cable. – Check the D-sub cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Power Indicator is off. Lamp on, no video. Yes Check a PC source and check the connection of DSUB cable? — No → Input a analog PC signal and connected cable(DPMS). Yes ① Does the sigmal appear at R3020, R3021,R3022? — No → PC cable. Change a PC cable. Change a main PCB ass'y. Yes Does the digital data appear at the output of RA5008~RA5012? — No → Check IC5002. Change a main PBA. Yes Check a LVDS cable? Replace a lcd panel? — No → Please, Call to Samsung Co. LTD.
Caution	Make sure to disconnect the power before working on the IP board.

4-3-1. Circuit diagrams and waveforms (Analog) when no screen is displayed on the monitor

DSUB_INPUT

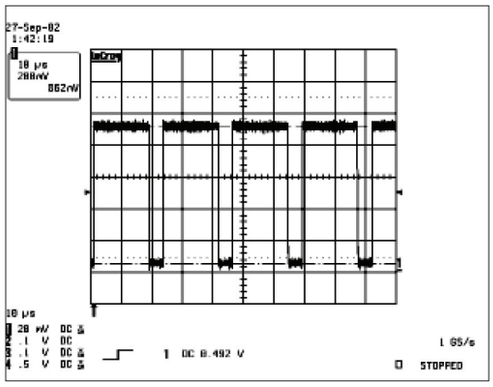




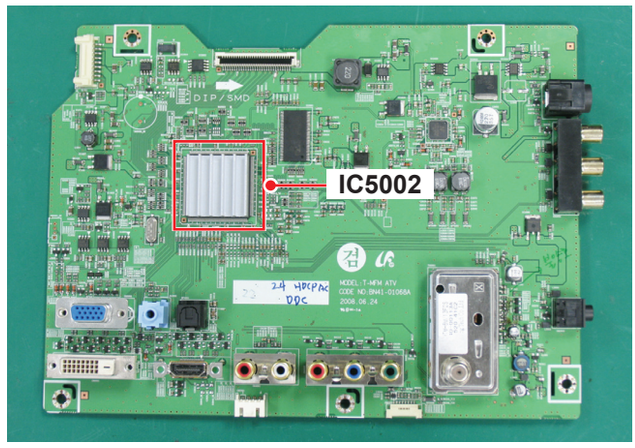


4-3-2. Waveforms when no screen is displayed (Analog PC)

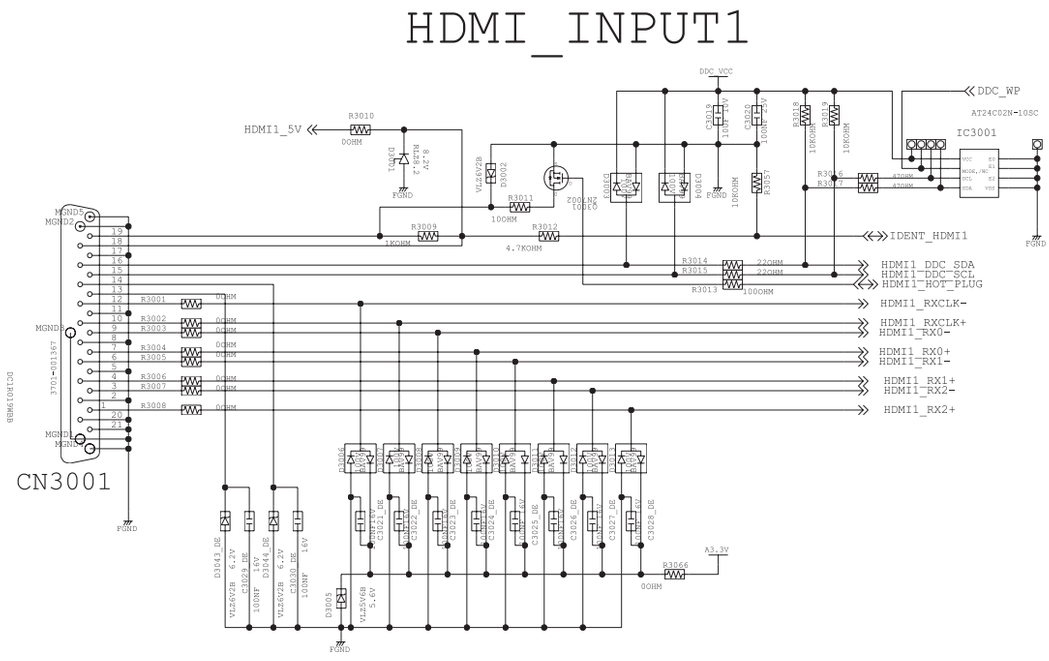
① R,G,B Output Signal of IC5002



4-4. No Video (Digital-HDMI)

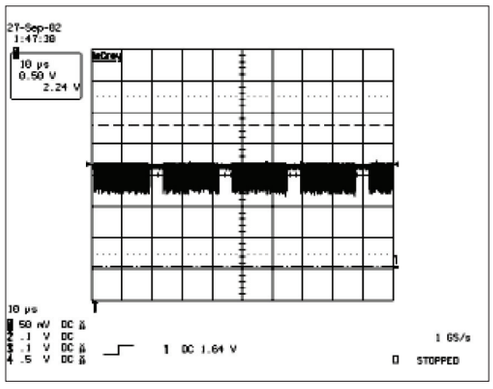
Symptom	– The LED power turns on but the screen is blank when the DVI cable or HDMI cable is connected.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the DVI cable or HDMI cable. – Check the DVI cable or HDMI cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Power Indicator is off. Lamp on, no video. Yes Check the connection of HDMI cable? — No → Input a HDMI cable. Yes ② Does the digital data appear at D3006~D3013 (HDMI1)? — No → Check HDMI cable. Change the cable. Yes Does the digital data appear at output of IC5002? — No → Check the IC5002. Change a main PBA. Yes Check a LVDS cable? Replace lcd panel? — No → Please, Call to Samsung Co. LTD.
Caution	Make sure to disconnect the power before working on the IP board.

4-4-1. Circuit diagrams and waveforms (Digital-HDMI) when no screen is displayed on the monitor

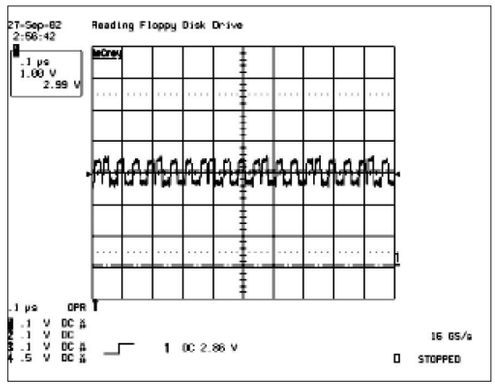


4-4-2. Waveforms when a blank screen is displayed (Digital-HDMI)

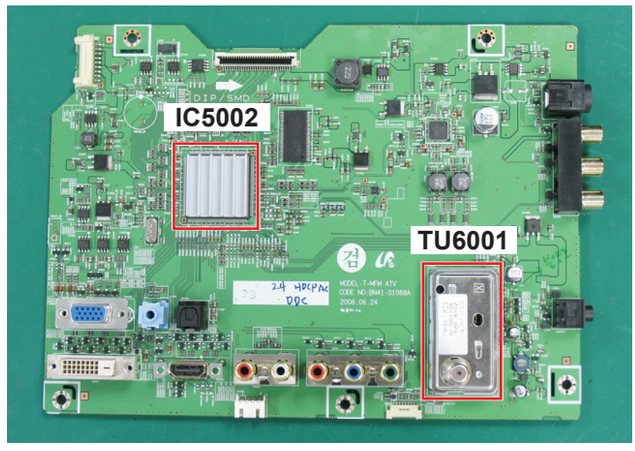
② Digital Output Data of IC3250



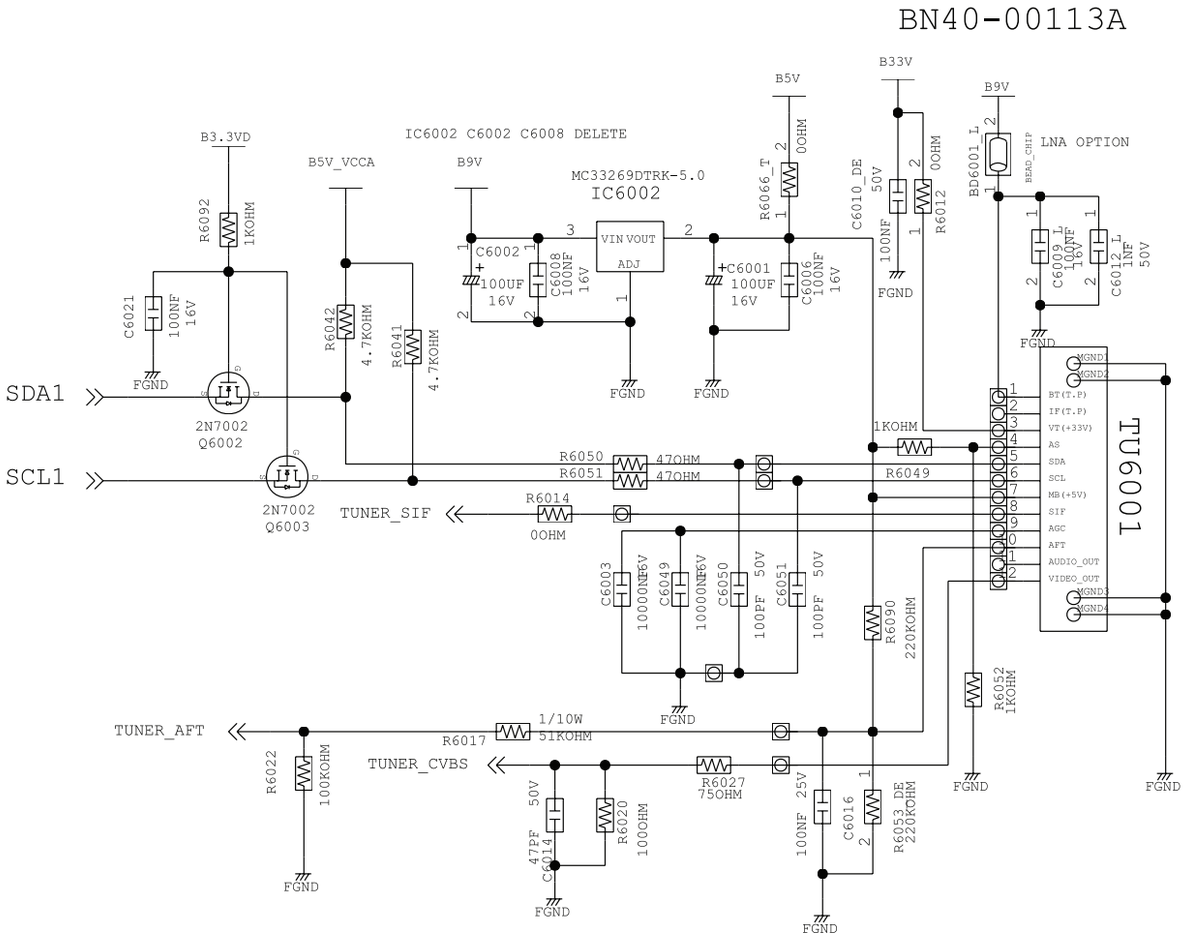
③ Signal of HDMI(Data)



4-5. No Picture (Tuner_CVBS)

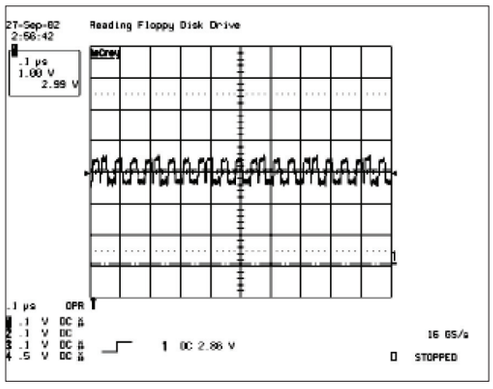
Symptom	– The LED power turns on but the screen is blank when the RF cable is connected.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the RF cable. – Check the RF cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Power Indicator is off. Lamp on, no picure. → No → Connect the RF cable and check RF signal. Yes ④ Does the signal appear at L6001? → No → Check the Tuner Vcc 5V. Change a main PBA. Yes ④ Does the signal appear at #9 of TU6001? → No → Change a main PCB ass'y. Yes ③ Does the digital data appear at output of RA5008 ~RA5012? → No → Check a IC5002. Change a main PCB ass'y. Yes Check a LVDS cable? Replacea lcd panel? → No → Please, Call to Samsung Co. LTD.
Caution	Make sure to disconnect the power before working on the IP board.

4-5-1. Circuit diagrams and waveforms (Tuner_CVBS) when no screen is displayed on the monitor

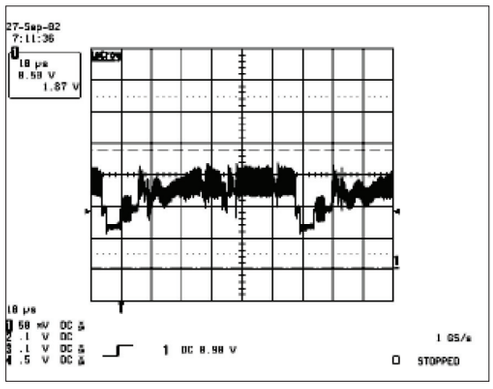


4-5-2. Waveforms when a blank screen is displayed (Tuner_CVBS)

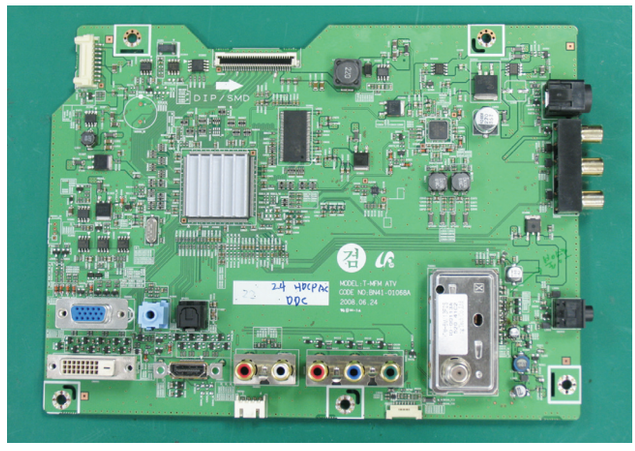
③ CVBS Output Signal



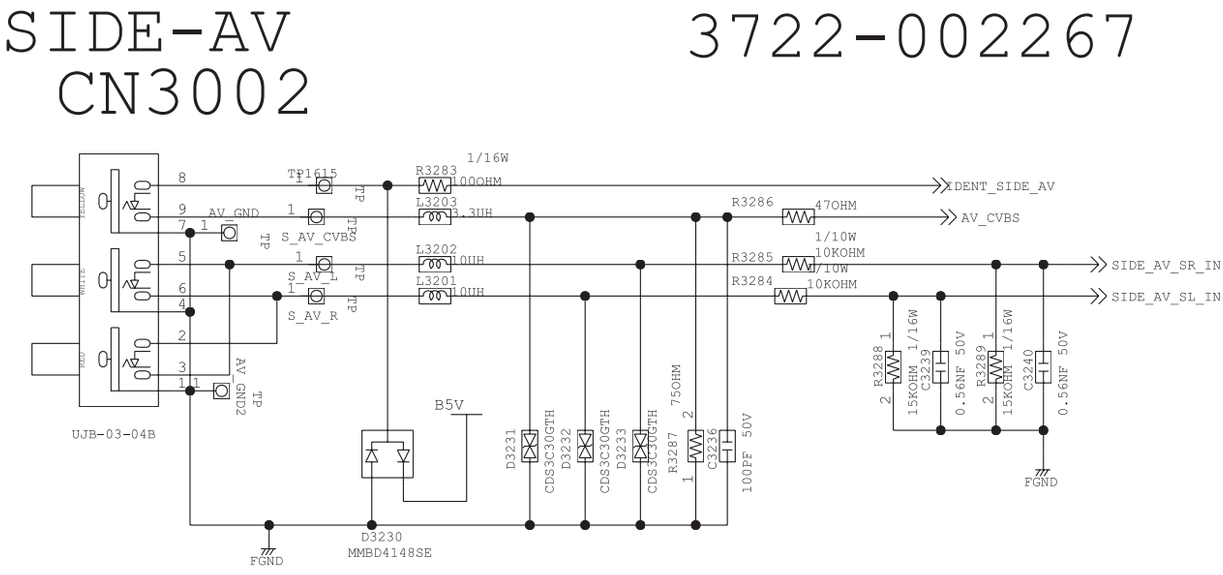
④ Tuner_CVBS Output Signal



4-6. No Picture (AV)

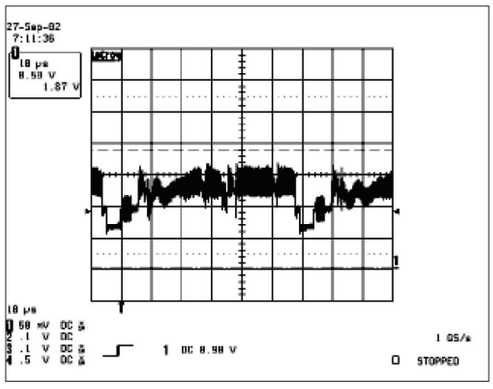
Symptom	– The LED power turns on but the screen is blank when the Antenna Cable is connected.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the Antenna Cable. – Check the Antenna Cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Power Indicator is off. Lamp on, No signal image. → No → check antenna cable ↓ Yes ④ Does the AV signal appear at #52pin of IC5002? → No → check antenna cable Change a main PBA ↓ Yes Check a LVDS cable? Replace lcd panel? → No → Please, Call to Samsung Co. LTD.
Caution	Make sure to disconnect the power before working on the IP board.

4-6-1. Circuit diagrams and waveforms (AV) when no screen is displayed on the monitor

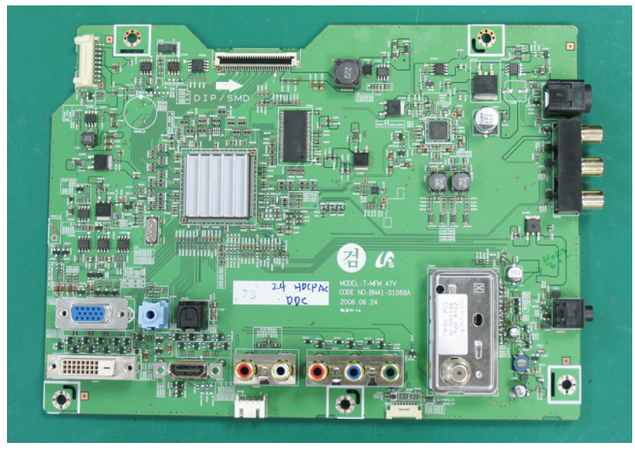


4-6-2. Waveforms when a blank screen is displayed (AV)

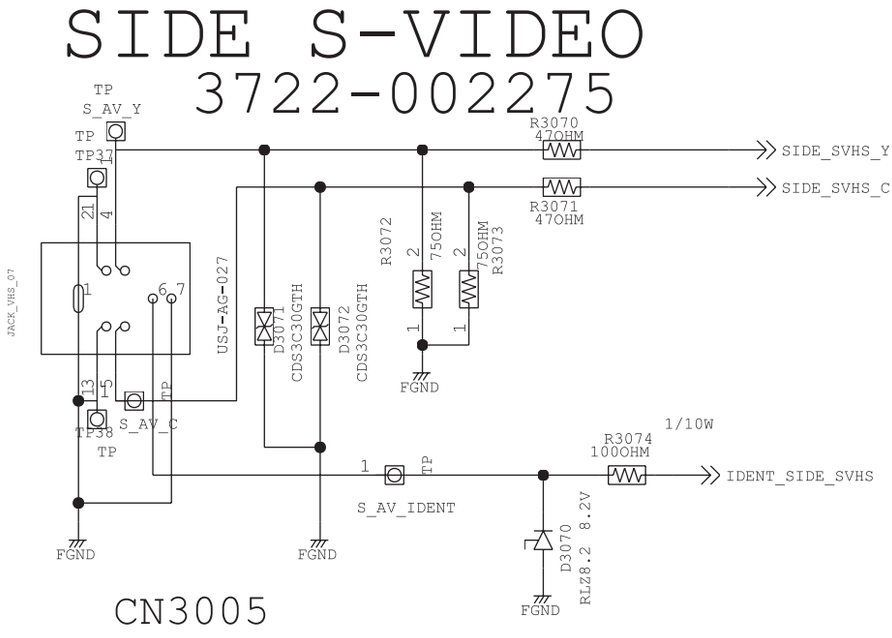
④ CVBS Output Signal



4-7. No Picture (S-VIDEO)

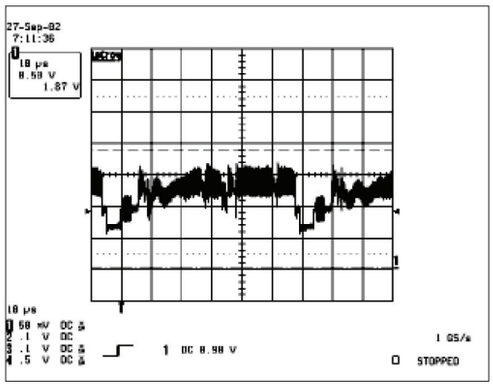
Symptom	– The LED power turns on but the screen is blank when the Antenna Cable is connected.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the Antenna Cable. – Check the Antenna Cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Power Indicator is off. Lamp on, No signal image. → No → check antenna cable ↓ Yes ④ Does the S–VIDEO signal appear at #50, 51 pin of IC5002? → No → check antenna cable Change a main PBA ↓ Yes Check a LVDS cable? Replace lcd panel? → No → Please, Call to Samsung Co. LTD.
Caution	Make sure to disconnect the power before working on the IP board.

4-7-1. Circuit diagrams and waveforms (S-VIDEO) when no screen is displayed on the monitor

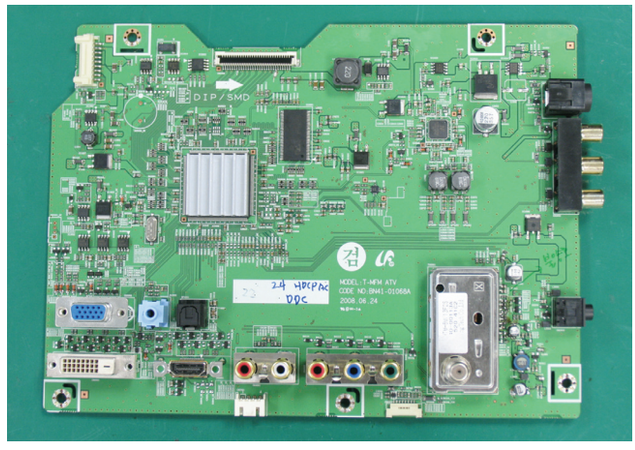


4-7-2. Waveforms when a blank screen is displayed (S-VIDEO)

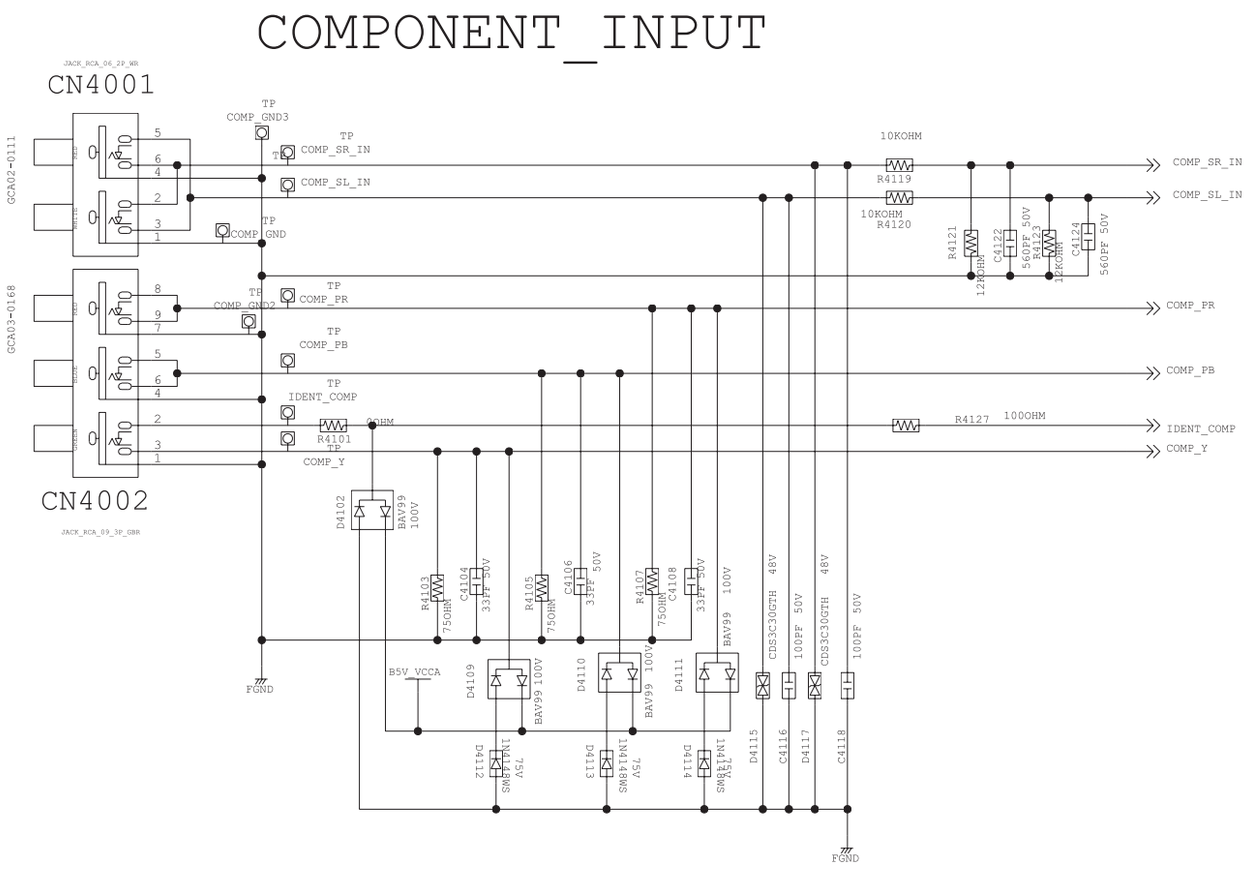
④ CVBS Output Signal



4-8. No Picture (Component)

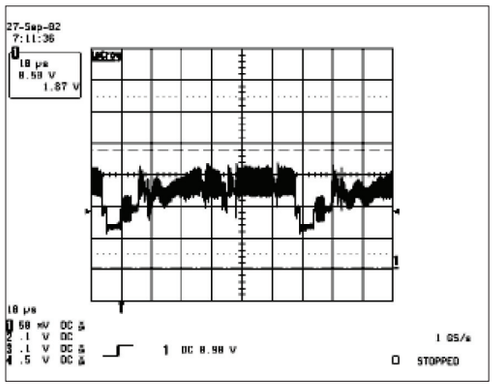
Symptom	– The LED power turns on but the screen is blank when the Antenna Cable is connected.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the Antenna Cable. – Check the Ant enna Cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Power Indicator is off. Lamp on, No signal image. → No → check antenna cable ↓ Yes ④ Does the Component signal appear at #44, 46, 47 pin of IC5002? → No → check antenna cable Change a main PBA ↓ Yes Check a LVDS cable? Replace lcd panel? → No → Please, Call to Samsung Co. LTD.
Caution	Make sure to disconnect the power before working on the IP board.

4-8-1. Circuit diagrams and waveforms (Component) when no screen is displayed on the monitor

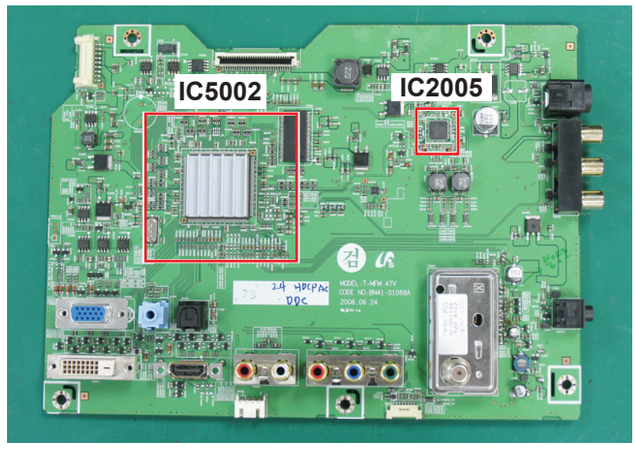


4-8-2. Waveforms when a blank screen is displayed (Component)

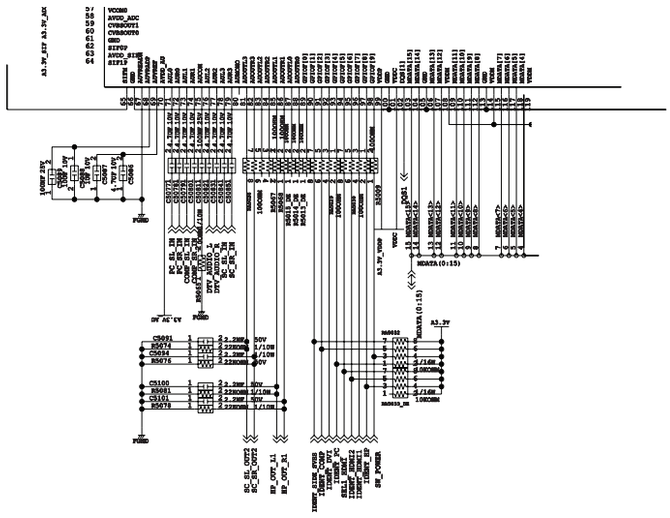
④ CVBS Output Signal

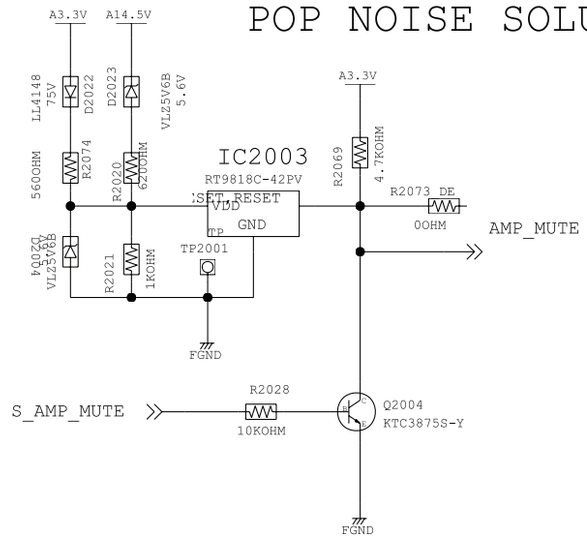


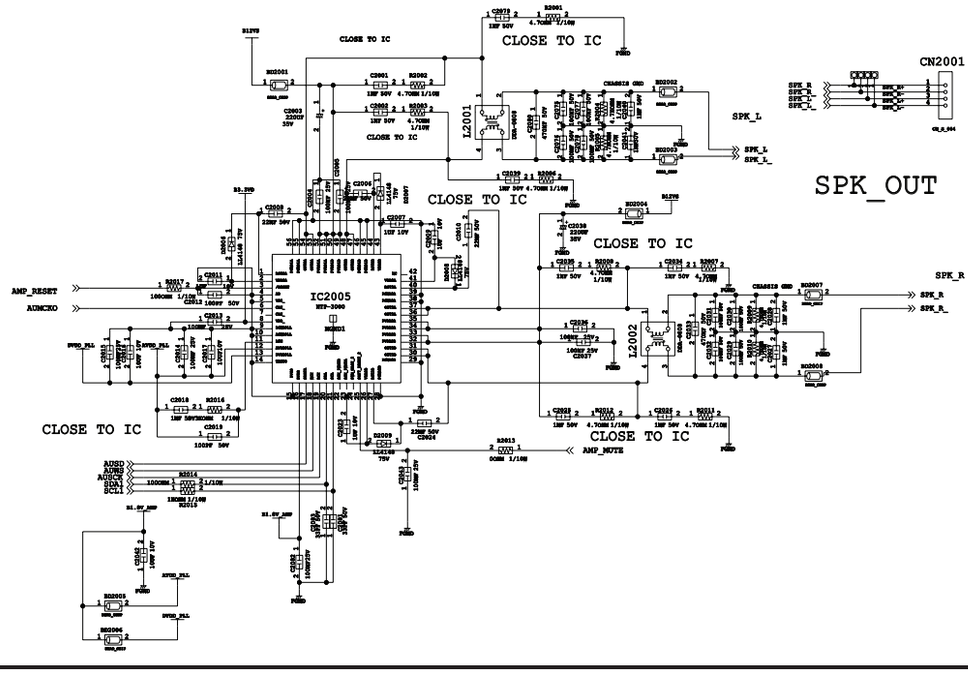
4-9. No Sound

Symptom	– The LED power turns on but the screen is blank when the DVI cable is connected.
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the DVI cable. – Check the DVI cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front Picture is display, no sound. → No → Connect a sound cable. control a volume. ↓ Yes ⑥ Does the signal appear at Pin #71,72,73,74,76,77,78,79 of IC5002? → No → Check a connection harness. ↓ Yes Check the 3.3V of #25 IC2005. → No → check IC2003. Change a main PBA. ↓ Yes ⑦ check output signal of #36,37,31,30,54,53,48,47 of IC2005 → No → check IC2005. ↓ Yes Replace the speaker ass'y?
Caution	Make sure to disconnect the power before working on the IP board.

4-9-1. Circuit diagrams and waveforms (No Sound) when no screen is displayed on the monitor

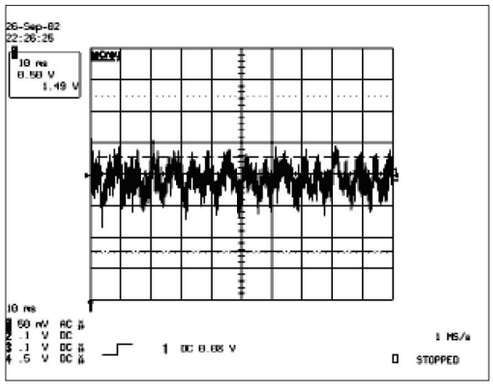




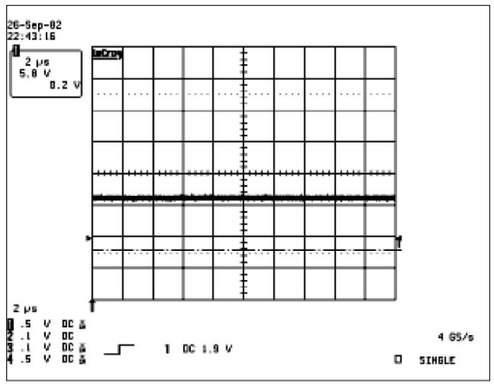


4-9-1. Waveforms when a blank screen is displayed (No Sound)

⑥ The Signal are Inputed to IC5002



⑦ DC 3.3V



4-10. Faults and Corrective Actions

Fault Photo	Symptoms and Corrective Actions	Remarks
	Symptoms: DVI signals are not recognized. Causes: This fault occurs when the PC does not recognize the mode information because the DVI DDC has not been input to the monitor. Corrective Actions: Input the DVI DDC to the monitor.	* Refer to the Training Manual for information on inputting the DVI DDC.
	Symptoms: When the monitor is turned on, only a full white pattern is displayed continually regardless of the signals. Causes: This fault occurs when only the lamp power is supplied and no video signals are input to the panel due to a fault or incorrect connections of the LVDS cable. Corrective Actions: Replace or reconnect the LVDS cable correctly so that video signals can be supplied to the panel.	* A full white pattern is a feature of the TN panel and is displayed when no video signals are supplied.
	Symptoms: When connecting the DVD, noise occurs on the screen. Causes: The HDCP key is not inserted. Corrective Actions: Enter the HDCP key. (See page 4-17.)	

4-11. Adjustment

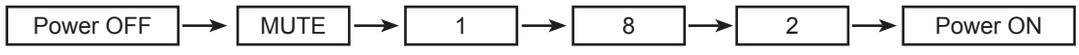
4-11-1. Service Instruction

1. Usually, a color TV-VCR needs only slight touch-up adjustment upon installation.
   Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end
   of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is
   disconnected before replacing any parts.
7. To protect aganist shock hazard, use an isolation transform.

4-12. How to Access Service Mode

4-12-1. Entering Factory Mode

2. To enter “Service Mode” Press the remote -control keys in this sequence :
   - If you do not have Factory remote - control



- If you have Factory remote - control

- The buttons are active in the service mode.

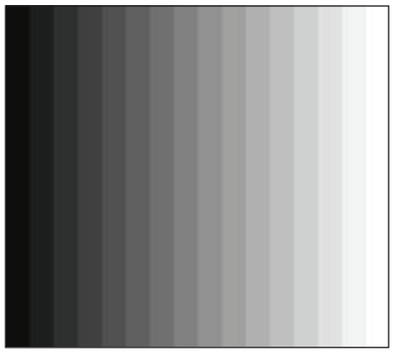
1. Remote - Control Key : Power, Arrow Up, Arrow Down, Arrow Left
   Arrow Right, Menu, Enter, Number Key(0~9)
2. Function - Control Key : Power, CH +, CH -, VOL +, VOL -, Menu, TV/VIDEO(Enter)

4-13. Service Adjustment

4-13-1. White Balance - Calibration

If picture color is wrong, do calibration first.

Equipment : CA210, Patten : chess pattern
Execute calibration in Factory Mode
Source PC : 1024*768/60Hz



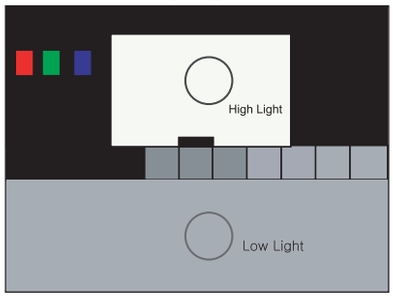
(Gray patten)

4-13-2. White Balance - Adjustment

If picture color is wrong, check White Balance condition.

Equipment : CA210, Patten : Toshiba
Adjust W/B in Factory Mode

Sub brightness and R/G/B Offset controls low light region
Sub contrast and R/G/B Gain controls high light region
Source AV : PAL composite, Component : 1280*720/60Hz
HDMI[DVI] : 1280*720/60Hz



Toshiba Patten

[Test Pattern : MSPG-945 Series Pattern #16]

*Color temperature
1500K +/-500, -6 ~-20 MPCD

*Color coordinate
H/L : 272/278 +/- 2 35.0 Ft +/- 2.0Ft
L/L : 272/278 +/- 3 1.5 Ft +/- 0.2Ft

4-13-3. Conditions for Measurement

1. On the basis of toshiba ABL pattern : High Light level (57 IRE)
- INPUT SIGNAL GENERATOR : MSPG-925LTH

* Mode NO 2 : 744X484@60 Hz
NO 6 : 1280X720@60 Hz
NO 21 : 1024X768@60 Hz

* Pattern NO 36 : 16 Color Pattern
NO 16 : Toshiba ABL Pattern

2. Optical measuring device : CA210 (FL)

Please use the MSPG-925 LTH generator for model LE26M51B/LE32M51B/LE40M51B/LE46M51B.

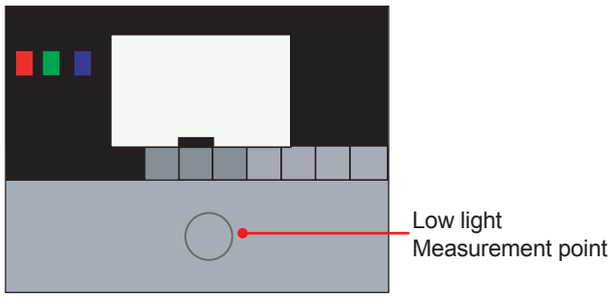
4-13-4. Method of Adjustment

1. Adjust the white balance of AV, Component Modes.
   (AV→Component)
   a) Set the input to the mode in which the adjustment will be made.
      (RF→DTV→PC→DVI).

* Input signal - VIDEO Mode : Model #2 (744*484 Mode), Pattern #16
  - DTV,DVI Mode : Model #6 (1280*720 Mode), Pattern #16
  - HDMI Mode: Model #6(1280*720 Mode), Pattern #16

   b) Enter factory color control, confirm the data.

   c) Adjust the low light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust sub - Brightness to set the 'Y' value.
      - Adjust red offset ('x') and blue offset ('y') to the color coordinates.



Picture 4-2 Toshiba ABL Pattern

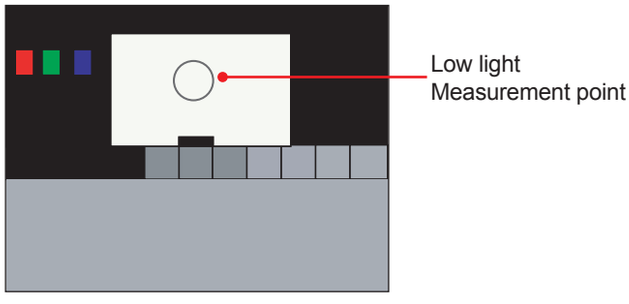
* Do not adjust green offset data.

   d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust red gain ('x') and blue gain ('y') to the color coordinates.

* Do not adjust the green gain and sub-contrast (Y) data.

   d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust red gain ('x') and blue gain ('y') to the color coordinates.

* Do not adjust the green gain and sub-contrast (Y) data.

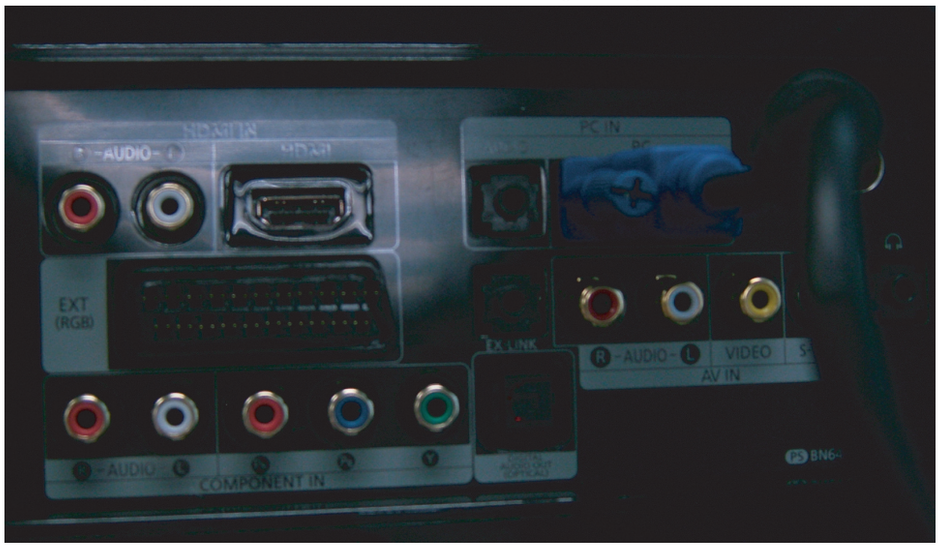


Picture 4-3 Toshiba ABL Pattern

4-14. Software Upgrade

4-14-1. How to Update Flash ROM

1. Install the Flash Downloader
   Connector Set(D-SUB) and D-SUB cable to execute Program Update.



2. Flash Downloader program update
   - Turn on the TV Set
   - Click “Connect” icon on the MSTAR tool.
   - Click “Read”, and Choose a new S/W.
   - Click “Auto”, and “Run”

Memo