4. Troubleshooting

4-1 Troubleshooting

4-1-1 First Checklist for Troubleshooting

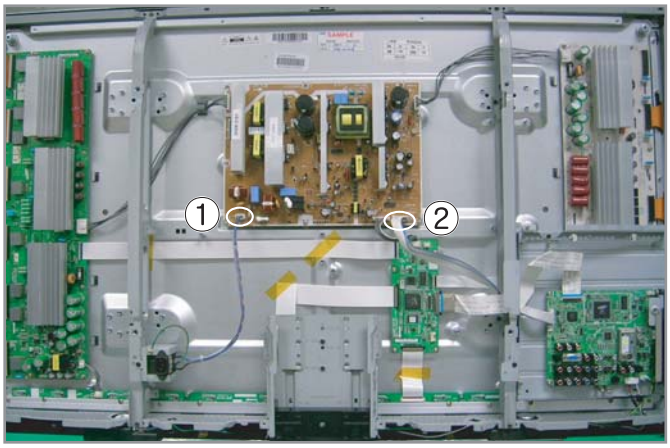
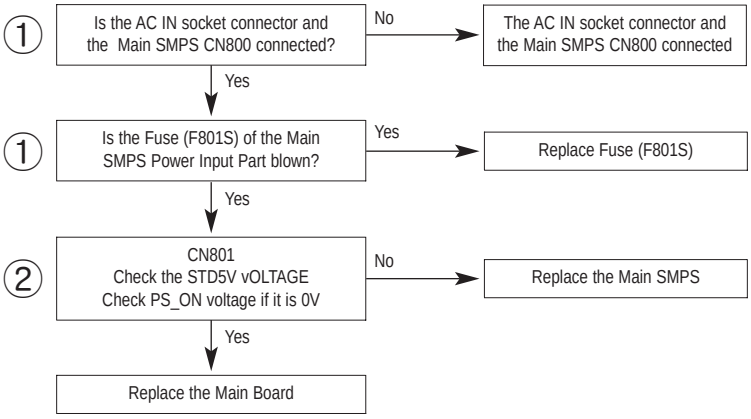
1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected or loose cable connection.
   - Check to see if the cables are connected according to the connection diagram.

2. Check the power input to the Main Board.

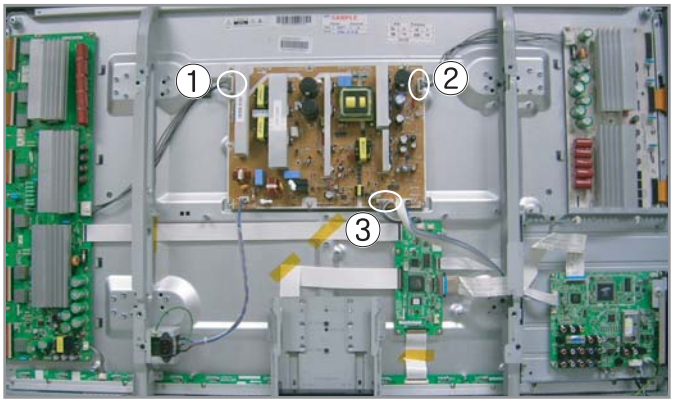
3. Check the voltage in and out between the SMPS ↔ Main Board, between the SMPS ↔ X, Y Main Board, and between the Logic Boards.

4-1-2 Checkpoints by Error Mode

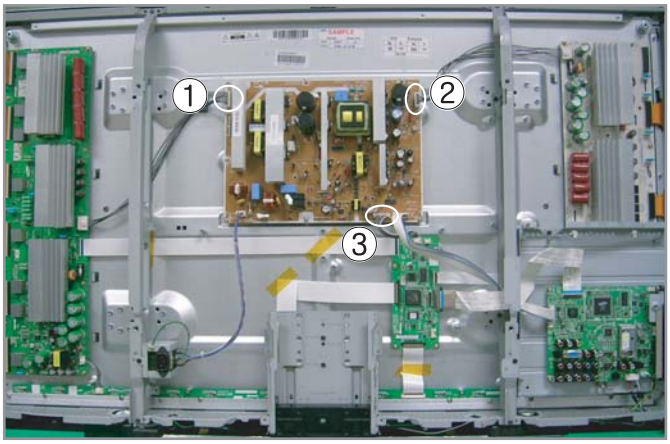
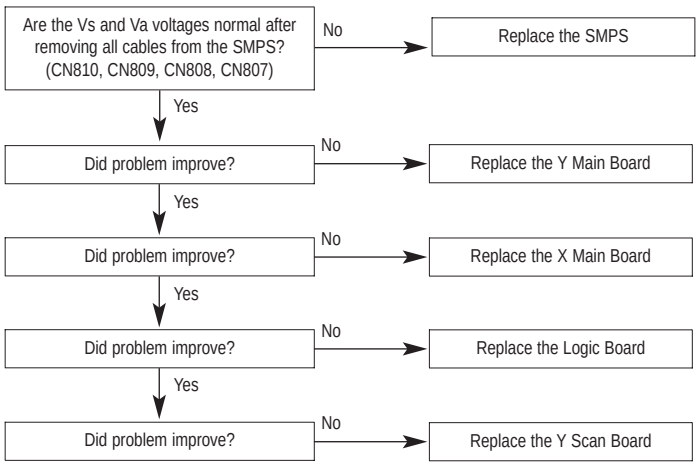
■ No Power

Symptom	- The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The unit appears to be dead.
Major Checklist	The SMPS relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following: - Check the internal cable connection. - Check the fuses. - Check the output voltage of the SMPS. - Replace the Main Board.
Troubleshooting Procedures	 

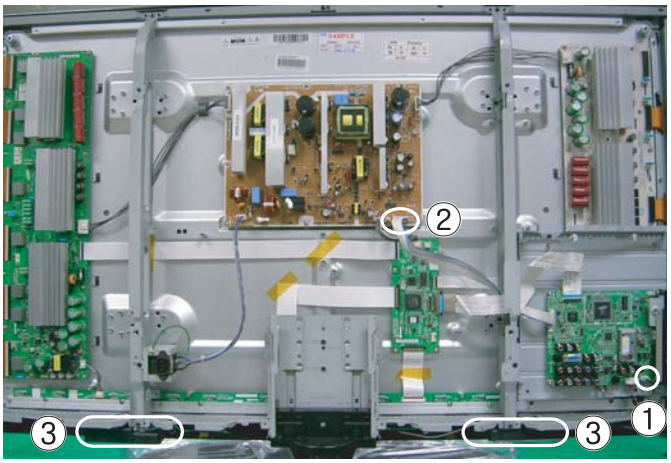
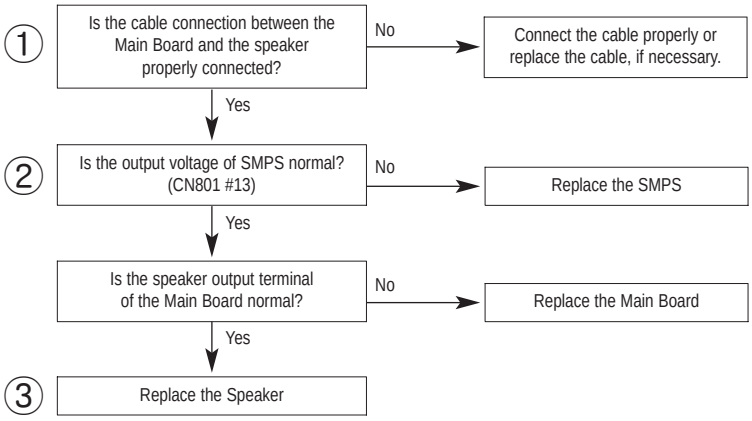
■ When the unit is repeatedly turning on and off

Symptom	- The SMPS relay is repeatedly turning on and off.
Major Checklist	In general, the SMPS relay repeatedly turns on and off by the protection function due to a defect on a board connected to the SMPS. - Disconnect all cables from the SMPS, operate the SMPS alone and check if the SMPS works properly and if each voltage output is correct. - If the symptom continues even when SMPS is operated alone, replace the SMPS. - If the symptom is not observed when operating the SMPS alone, find any defective assemblies by connecting the cables one by one.
Troubleshooting Procedures	 ① Does the symptom continue when connecting the power after removing CN810 from the SMPS? — No → Replace the Y Main Board Yes ↓ ② Does the symptom continue when connecting the power after removing CN809 from the SMPS? — No → Replace the X Main Board Yes ↓ ③ Does the symptom continue when connecting the power after removing CN807 from the SMPS? — No → Replace the Logic Board Yes ↓ Replace the SMPS
Caution	When separating and connecting the cables such as CN810, CN809, CN808, CN807 of the Main SMPS, CN4701 of the X Main Board, and CN5707 of the Y Main Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after disconnecting the power cord from the unit.

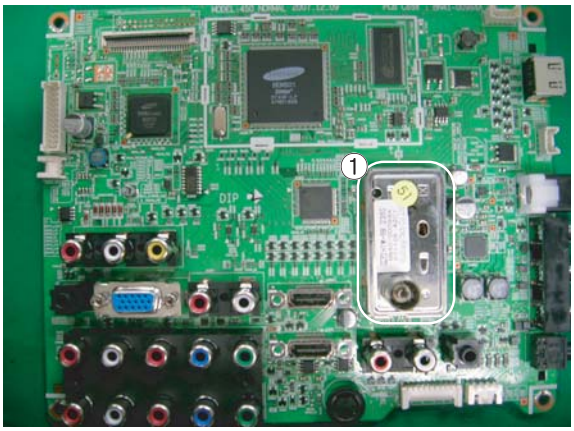
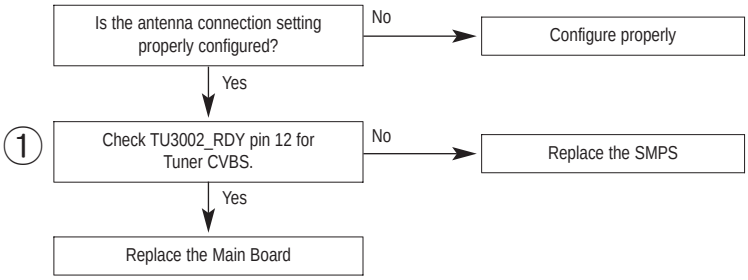
■ No Picture (When audio is normal)

Symptom	- Audio is normal but no picture is displayed on the screen.
Major Checklist	- This may happen when the Main Board is functioning but the X, Y Main Board, Logic Board, or Y Buffer Boards are not. - The output voltage of the Main SMPS. - This may happen when the LVDS cable connecting the Main Board and the Logic Board is disconnected.
Troubleshooting Procedures	 
Caution	When separating and connecting the cables such as CN810, CN809, CN808, CN807 of the Main SMPS, CN4701 of the X Main Board, and CN5707 of the Y Main Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after disconnecting the power cord from the unit.

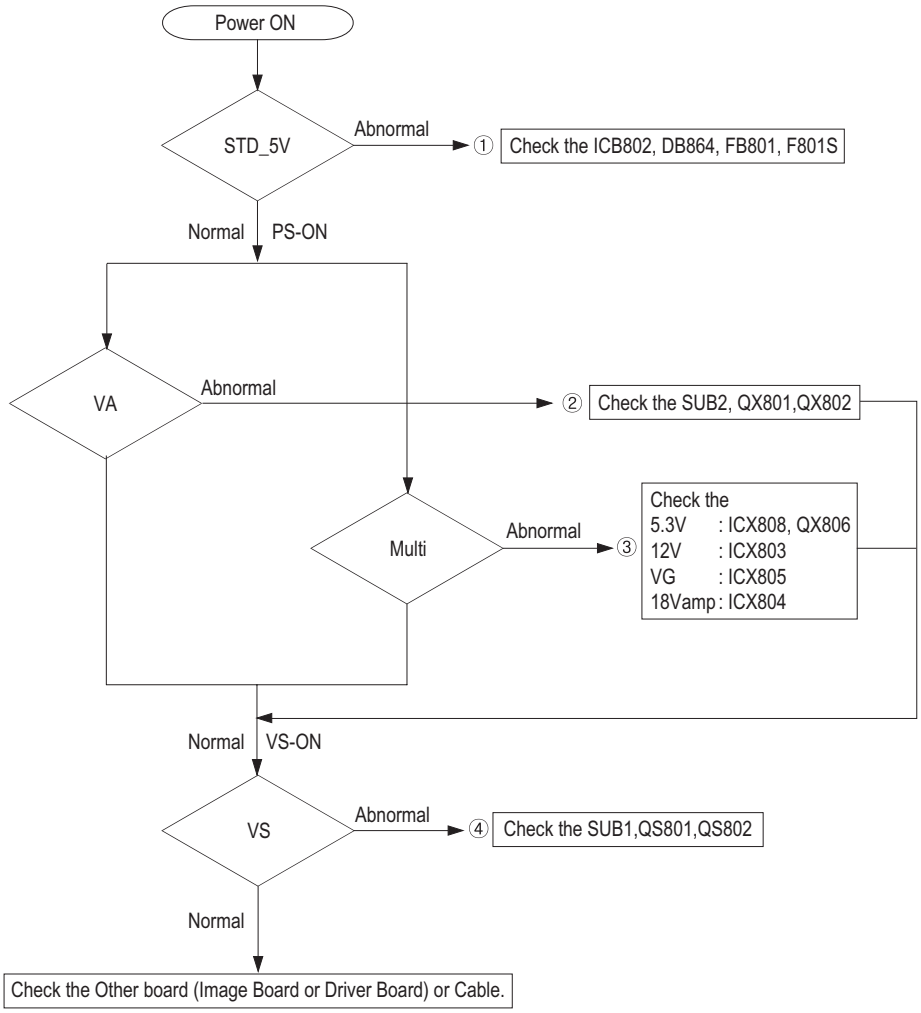
■ No Sound

Symptom	- Video is normal but there is no sound.
Major Checklist	- When the speaker connectors are disconnected or damaged. - When the sound processing part of the Main Board is not functioning. - Speaker defect.
Troubleshooting Procedures	 

■ No Video

Symptom	- A normal/cable network analog broadcast screen is blank or abnormal but OSD is OK.
Major Checklist	- Check the antenna connection settings (Air: NTSC / ATSC, Cable: NTSC) - Check the CVBS cable connection. - Check the power input of the Main board.
Troubleshooting Procedures	 

■ SMPS Troubleshooting



■ Drive Board Troubleshooting

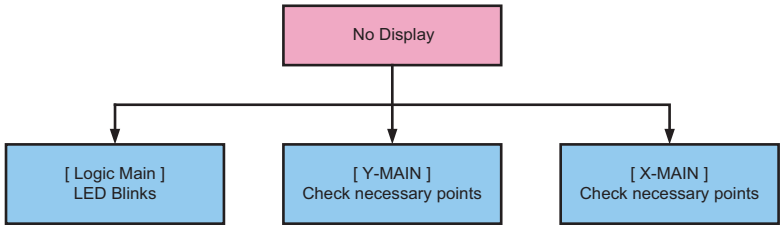
1) Troubleshooting Summary

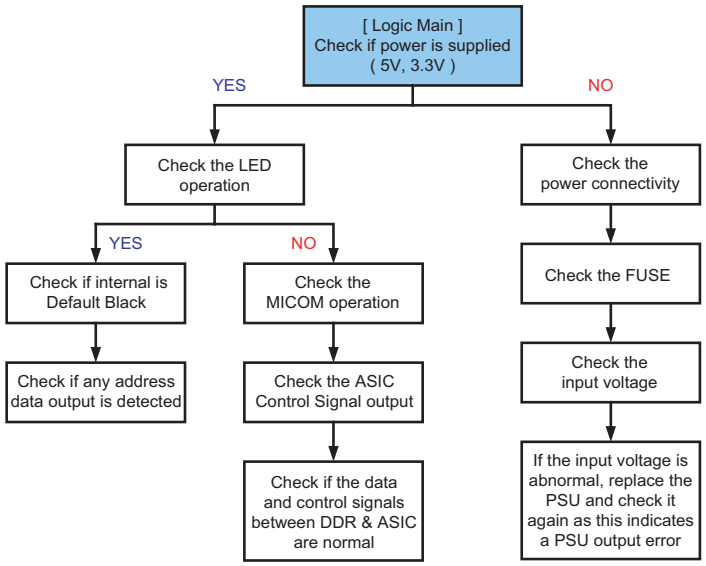
Condition Name	Description	Related Board
No Voltage Output	Operating Voltage don't exist	PSU
No Display	Operating Voltage exist, but an Image doesn't exist on screen	Y-MAIN, X-MAIN, Logic Main, Cable
Abnormal Display	Abnormal Image(not open or short) is no screen	Y-MAIN, X-MAIN, Logic Main
Sustain Open	Some horizontal lines don't exist on screen	Scan IC, FPC of X/Y
Sustain Short	Some horizontal lines appear to be linked on screen	Scan IC, FPC of X/Y
Address Open	Some vertical lines don't exist on screen	Logic Main, Logic Buffer, TCP
Address Short	Some vertical lines appear to be linked on screen	Logic Main, Logic Buffer, TCP

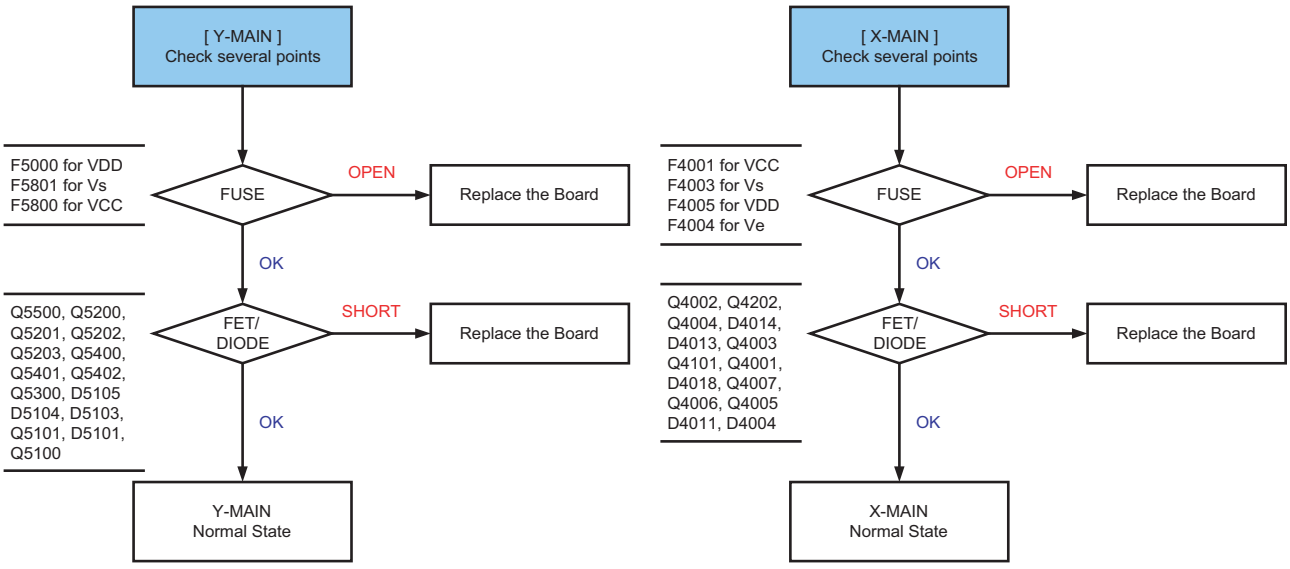
2) Troubleshooting Procedure in Abnormal Conditions

① No Display

▶ No Display is related with Y-MAIN, X-MAIN, Logic Main and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.

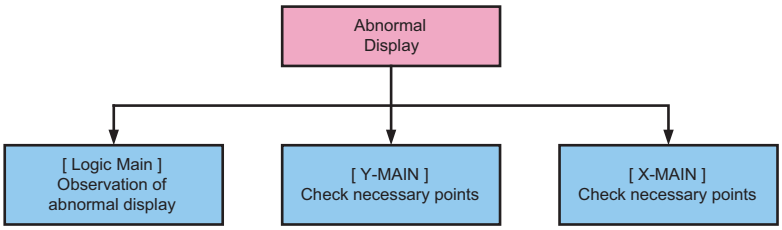


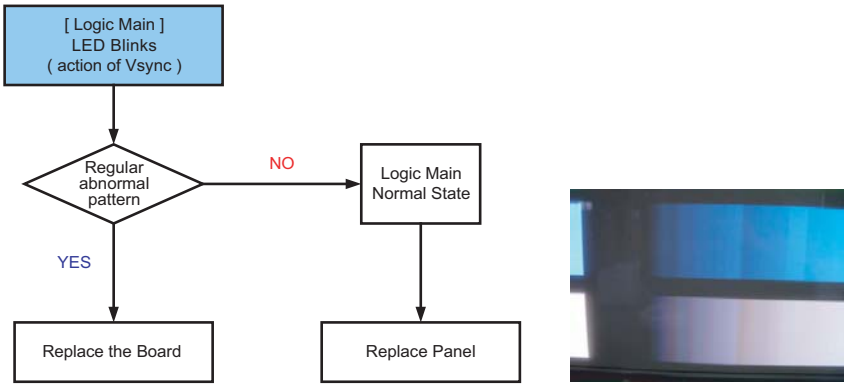


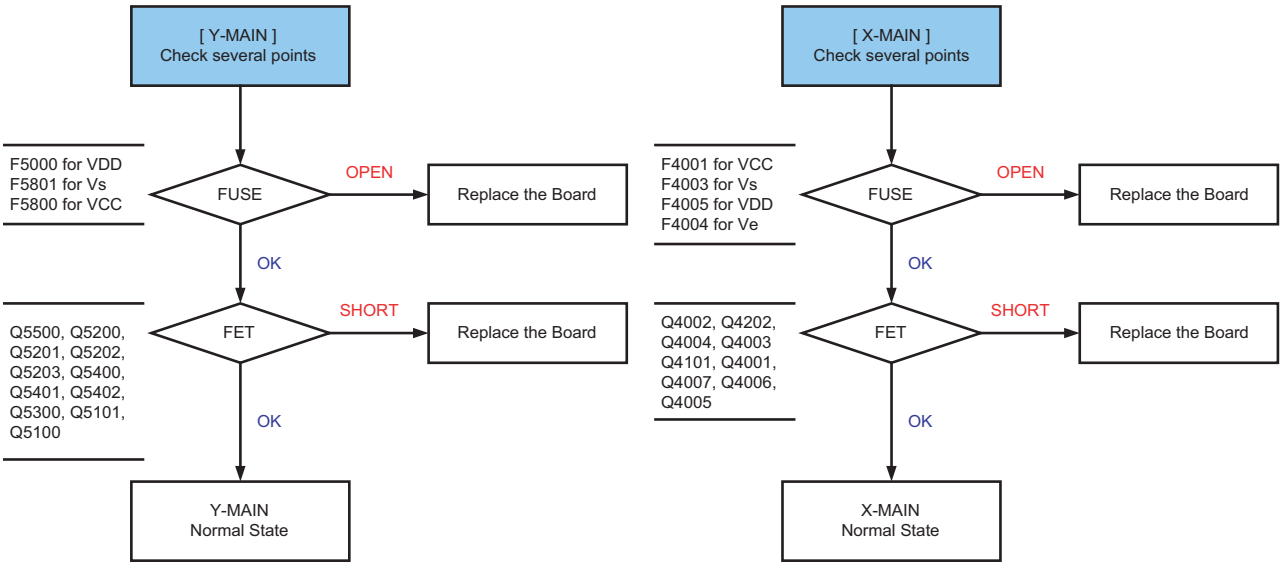


② Abnormal Display(Abnormal Image is on Screen.(except abnormality in Sustain or Address))

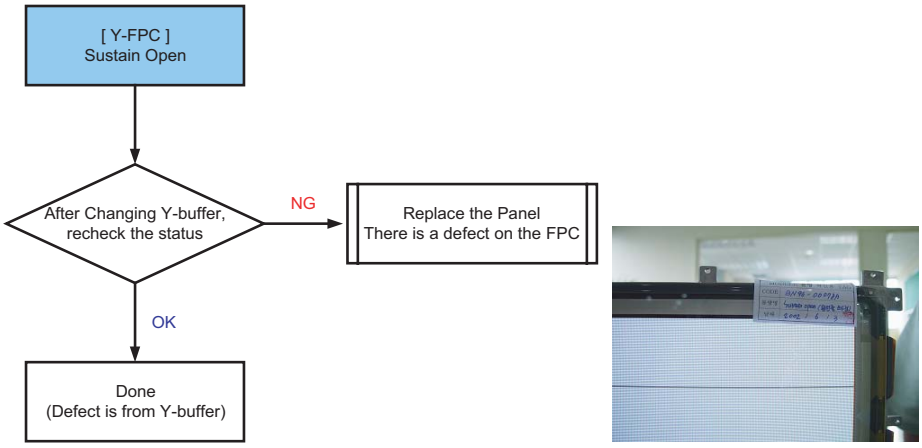
▶ Abnormal Display is related with Y-MAIN, X-MAIN, Logic Main and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.



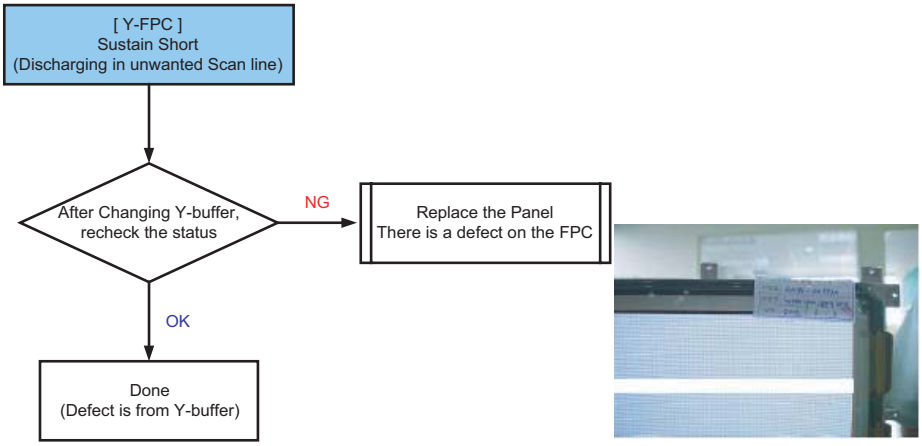




③ Sustain Open (some horizontal lines don't exist on screen)

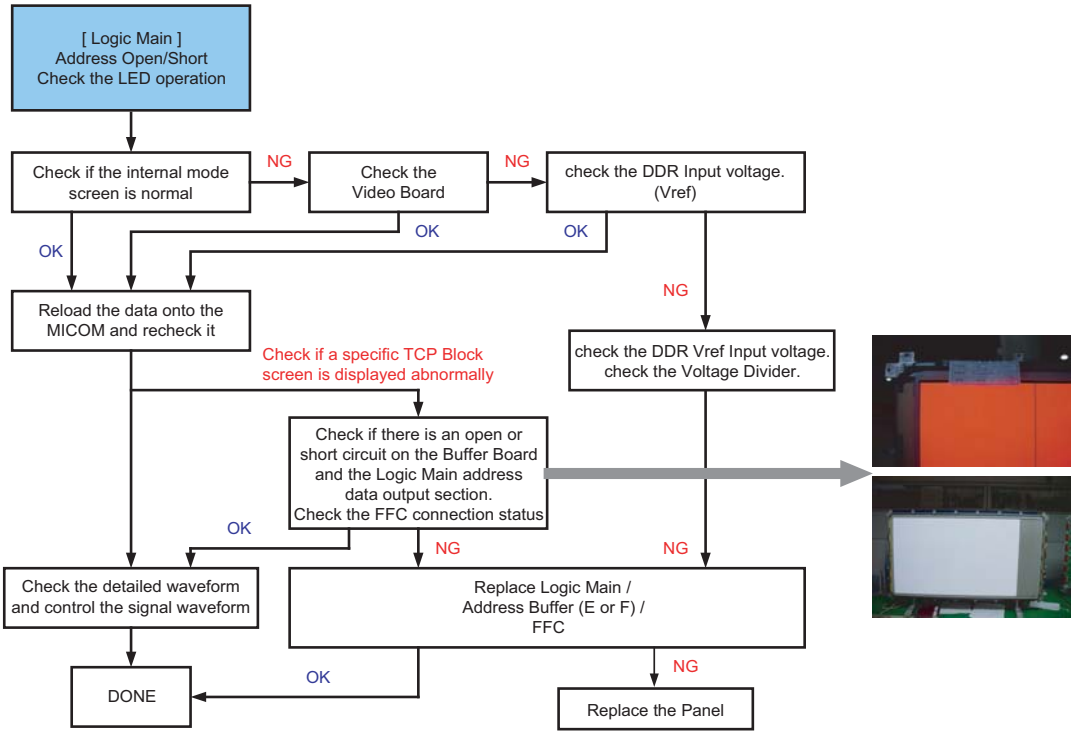


④ Sustain Short (some horizontal lines appear to be linked on Video)

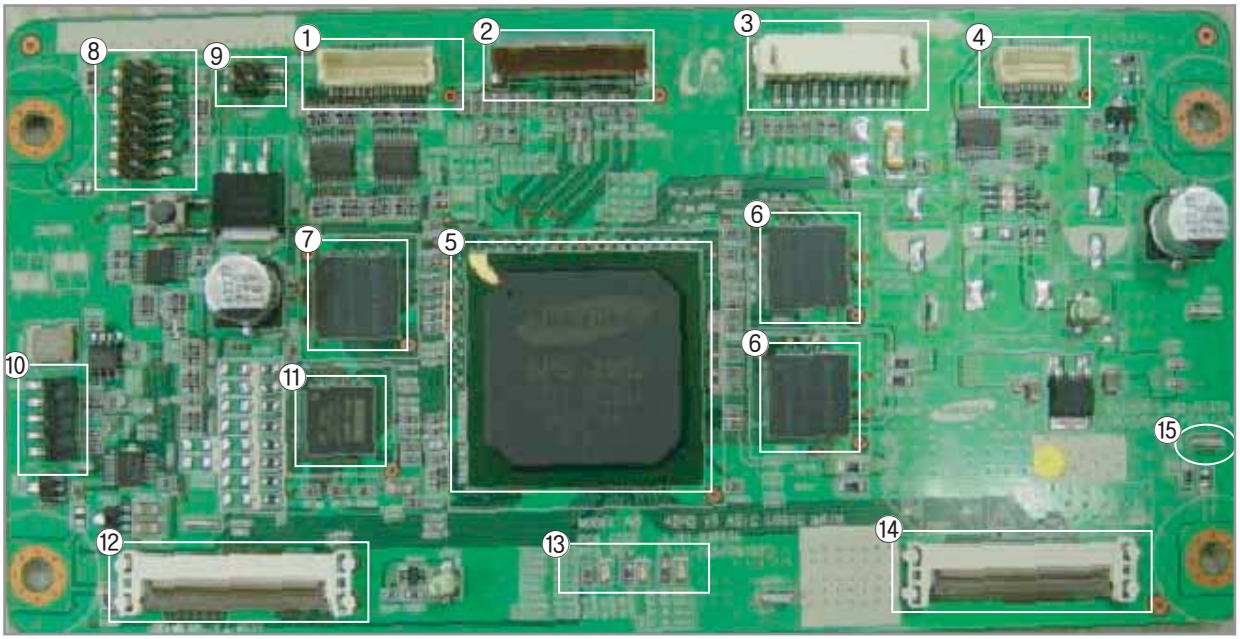


⑤ Address Open, Short

▶ Address Open and Short is related with Logic Main, Logic Buffer, FFC, TCP film and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.

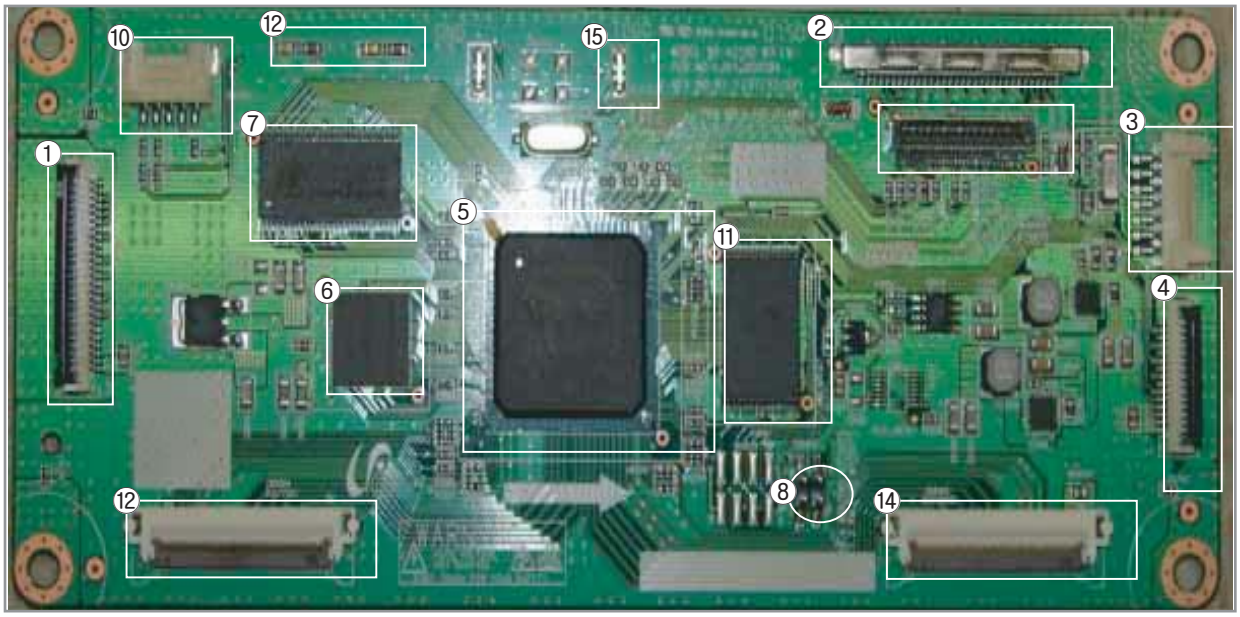


■ Logic board Troubleshooting



50" Logic Board

Item	Name	Description
1	Y Connector	The connector to output the Y Drive Board control signal.
2	LVDS Connector	The connector to receive LVDS-encoded RGB, H, V, DATAEN, and DCLK inputs from the Video Board.
3	Power Connector	The connector to receive power (5V) for the Logic Board.
4	X Connector	The connector to output the X Drive Board control signal.
5	ASIC Chip	The main processor that generates and outputs the logic drive signal and the address data.
6	DDR Memory for MENCON	The memory to save the Address output data to.
7	SDR Memory for Frame Delay	The memory to save FCR-applied data to.
8	JTAG Port	The port for uCOM communication
9	Start Screen Option Pin	Select the NTSC/PAL Mode Rolling Option for the initial screen (CN2007) Internal Black (4 3 / 2 1) Internal NTSC Mode (Rolling) (4 3 / 2 1) Internal PAL Mode (Rolling) (4 3 / 2 1)
10	MICOM Loading 5 Pin Connector or UART Communication Connector	The connector to load the MICOM drive program by connecting GA-WRITER. This connector is also used to load and adjust 512K data and to connect the key-scan board.
11	Flash Memory	The flash memory to save the MICOM data to.
12	Buffer Connection Connector	The connector to output the address data and the control signal to the E-buffer Board at the bottom.
13	Operation LED	The LED indicating that the Sync and clock signals have been received normally by the Logic Board (Normal Status: It blinks at 0.5 second interval.)
14	Buffer Connection Connector	The connector to output the address data and the control signal to the F-buffer Board at the bottom.
15	V-TOGG	The V-SYNC Output Pin



42" Logic Board

Item	Name	Description
1	Y Connector	The connector to output the Y Drive Board control signal.
2	LVDS Connector	The connector to receive LVDS-encoded RGB, H, V, DATAEN, and DCLK inputs from the Video Board.
3	Power Connector	The connector to receive power (5V) for the Logic Board.
4	X Connector	The connector to output the X Drive Board control signal.
5	ASIC Chip	The main processor that generates and outputs the logic drive signal and the address data.
6	DDR Memory for MENCON	The memory to save the Address output data to.
7	SDR Memory for Frame Delay	The memory to save FCR-applied data to.
8	JTAG Port	The port for uCOM communication
9	Start Screen Option Pin	Select the NTSC/PAL Mode Rolling Option for the initial screen (CN2007) Internal Black (4 3 / 2 1) Internal NTSC Mode (Rolling) (4 3 / 2 1) Internal PAL Mode (Rolling) (4 3 / 2 1)
10	MICOM Loading 5 Pin Connector or UART Communication Connector	The connector to load the MICOM drive program by connecting GA-WRITER. This connector is also used to load and adjust 512K data and to connect the key-scan board.
11	Flash Memory	The flash memory to save the MICOM data to.
12	Buffer Connection Connector	The connector to output the address data and the control signal to the E-buffer Board at the bottom.
13	Operation LED	The LED indicating that the Sync and clock signals have been received normally by the Logic Board (Normal Status: It blinks at 0.5 second interval.)
14	Buffer Connection Connector	The connector to output the address data and the control signal to the F-buffer Board at the bottom.
15	V-TOGG	The V-SYNC Output Pin

1) Definition of a Logic Circuit

A Logic Circuit consists of a Logic Main Board, which decodes the video signal encoded on the Video Board, outputs the address data signal, and generates and outputs the X, Y drive signals, and an Address Buffer Board which buffers and outputs the address data output signal to the TCP IC.

Logic Board		Function	Remarks
Logic Main		- A built-in LVDS for video signal processing (W/L, Error Diffusion, APC, FCR, etc.) adopted and 1 ASIC chip. - Outputs the Address Drive IC control signal and data signal to the Buffer Board. - Outputs the X and Y Drive Board control signals. - Monitors the major drive voltages (MICOM circuit part) ; Detects any surge voltage to protect the drive circuit. - Temperature Adaptive Operating Mode (Low Temperature / Room Temperature / High Temperature) ; Optimizes discharges depending on the temperature.	
Buffer Board	Lower Part E Buffer Board	Delivers the data and the control signals to the bottom left TCP.	Single Scan
	Lower Part F Buffer Board	Delivers the data and the control signals to the bottom right TCP.	

2) Waveform for Normal Operations

When the PDP and the Logic Board are normal, the Operating LED blinks at a half second interval. In this case, the V-SYNC and data signals are output normally.

In case of problems with the product, please refer to the troubleshooting procedures described below.

① Visual Inspection: Check if the Operating LED on the Logic Main blinks at a half second interval.

▶ If the frequency of the blinking is too fast or slow, it means that the MICOM has failed to process the data properly. Therefore, you have to reload the data onto the MICOM. Load the data using GA-WRITER when the power is connected to the module.

② If no problem is found during the Visual Inspection, check if the drive waveform and the address data outputs are normal using an oscilloscope. (Checkpoint: The DAMPING R-NET part output of each data output terminal.)

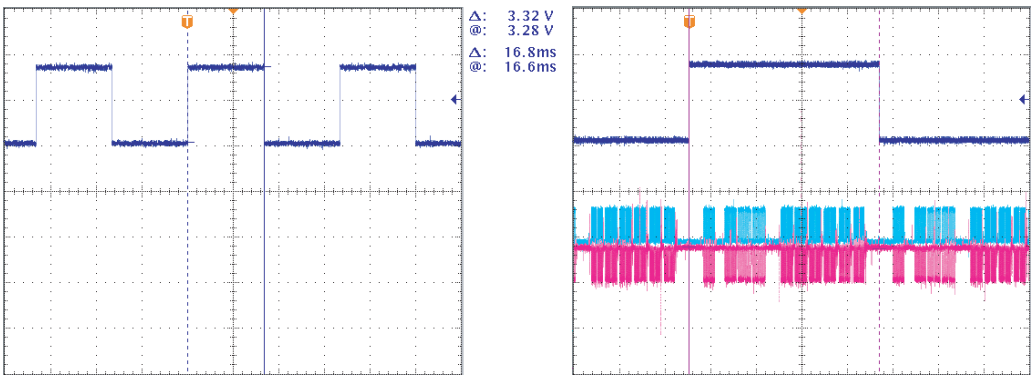
▶ If no drive waveform or address output is measured, this means that there is a drive problem due to MICOM data corruption, which was the reason in the Visual Inspection. Therefore, in this case, reload the data as you did in the Visual Inspection.

▶ When data output is measured but it is abnormal, and the drive waveform is abnormal, it is probably due to a short-circuit of the hardware. If the address data is abnormal, the screen may be abnormal due to abnormal data output by an abnormal operation of the DDR memory due to an abnormal Vref voltage, or the screen may be abnormal due to a short-circuit in the ass'y inside the board. You have to conduct a short-circuit test for each case.

▶ If the Vref voltage (the voltage of the Voltage Divider) is lower than 1.25V, check the resistance of the resistance output part and check if the circuit is normal. If the Vref voltage is normal, the screen operates normally.

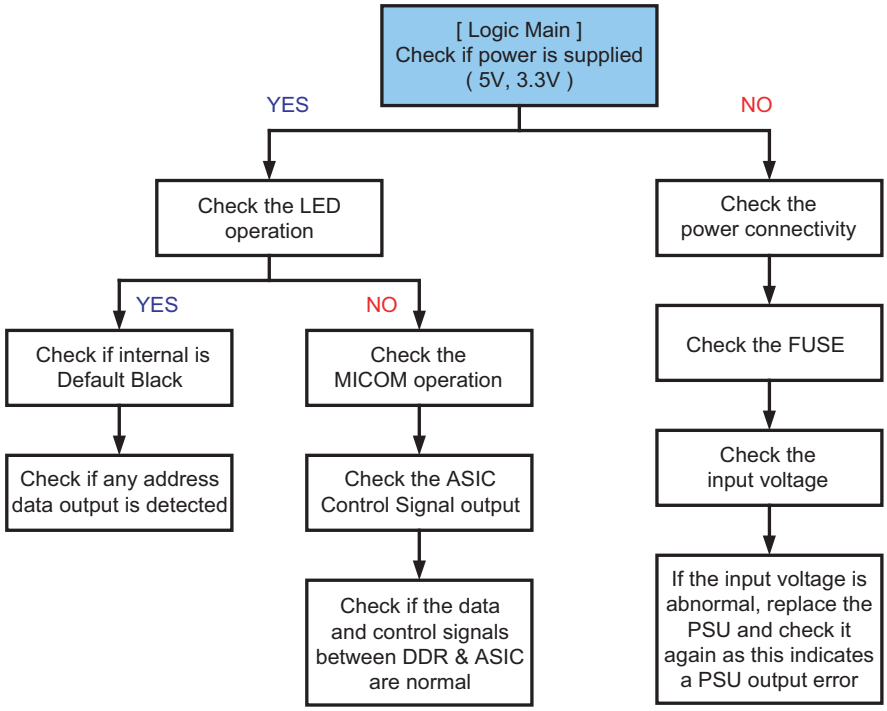
▶ If the screen is abnormal, even though the Vref voltage is normal, check if there is a short circuit by conducting a short-circuit test. If a short-circuit is found, repair it. If the short-circuit is an internal one, replace the board.

▶ The following waveforms represent normal V-sync and address data output waveforms.

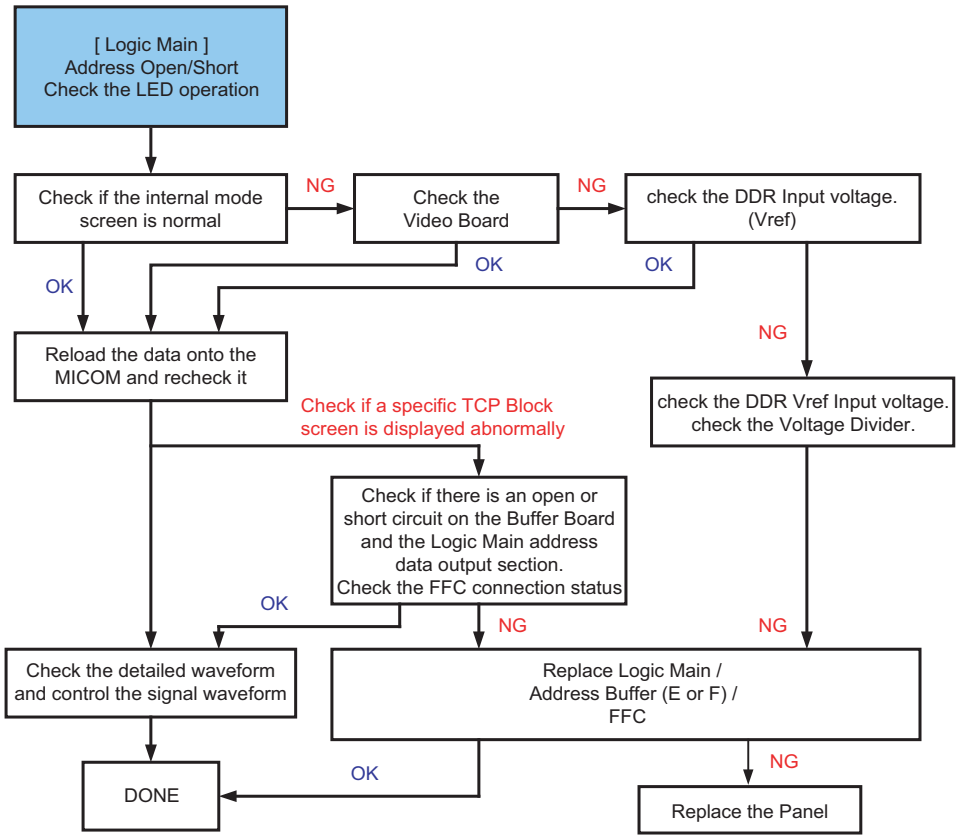


3) Troubleshooting Procedure in Abnormal Conditions

① No Display



② Abnormal Display



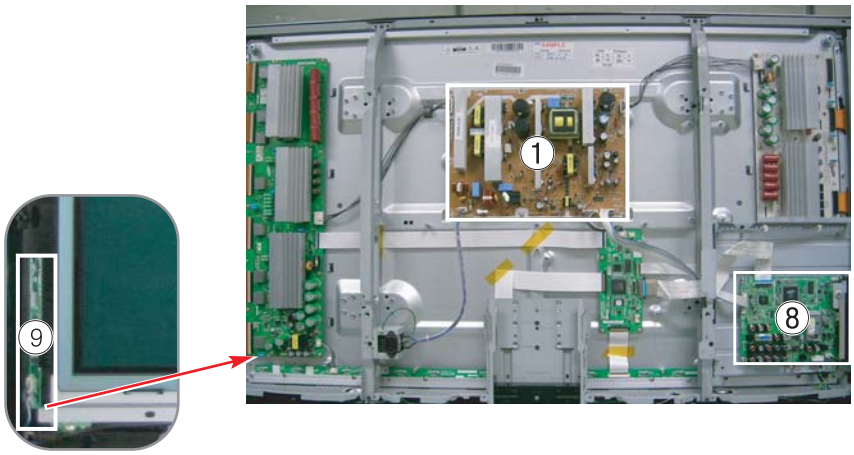
4-1-3 Faults and Corrective Actions

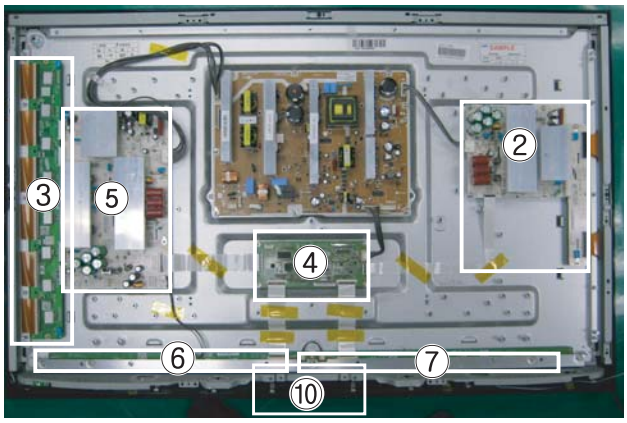
Symptom	Related Image	Causes and Countermeasures
A blank vertical cell (block) appears on the screen.		Address buffer defect - Replace the corresponding upper/lower buffers (E, F) COF defect (burnt) - Replace the module
A green screen appears when the TV is turned on.		The Scale is not reseting - Replace the Main board
The OSD box appears but there is no text.		Incorrect program version - Check the version of each program - Replace the Main board
A blank upper (or lower) block appears on the screen.		Upper/Lower Y Buffer defect - Replace the corresponding upper/lower buffers (E, F)

Symptom	Related Image	Causes and Countermeasures
Either the main or sub picture does not appear.		Replace the Main board
A vertical green line appears on the screen.		The SMPS voltage is incorrect - Adjust the SMPS voltage according to the voltage printed on the module label
Dim screen (blurred in red)		X-Main board defect - Replace the X-Main board
A blank screen appears		- Replace the Y-Main board

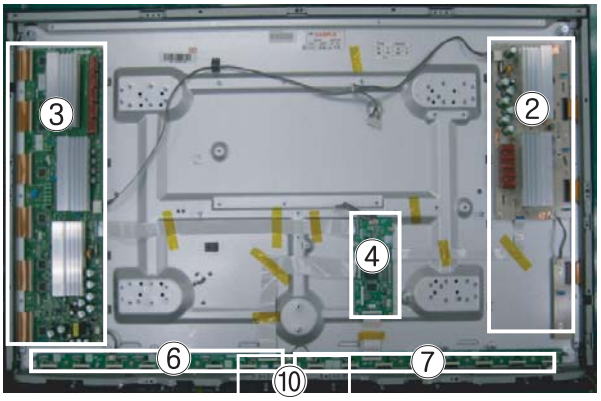
4-1-4 Troubleshooting Procedures by assembly

No	Assembly	Major Symptoms
1	SMPS-PDP TV	No power, Blank screen, the Relay repeats On and Off.
2	ASSY PDP MODULE P-X-MAIN	Blank screen
3	ASSY PDP MODULE P-Y-MAIN	Blank screen
4	ASSY PDP MODULE P-LOGIC MAIN	Blank screen, Screen noise
5	ASSY PDP MODULE P-X-MAIN BUFFER	Row Bar screen is blank
6	ASSY PDP MODULE P-ADDRESS E BUFFER	Corresponding Buffer Board block screen is blank.
7	ASSY PDP MODULE P-ADDRESS F BUFFER	Corresponding Buffer Board block screen is blank.
8	ASSY PCB MISC-MAIN	No Power, Abnormal screen for each input source, PIP screen trouble, Sound trouble
9	ASSY BOARD P-FUNCTION	The side function key does not work properly
10	ASSY BLUE P	The side function key does not work properly. The remote control does not work properly, the LED does not work properly.





< 42" >



< 50" >

4-2 Adjustment

4-2-1 Service Instruction

■ Before Performing After Sales Services

1. Check if the measurement and test equipment is working properly.
2. Secure sufficient work space for disassembling the product.
3. Prepare a soft pad for disassembling the product.

■ Service adjustment item after replacement of Board

<If adjustment equipment is available>

① PDP Option of Factory Mode → set the Factory Data Type item as the suitable value of relevant model.
② Adjust Calibration of Factory Mode for each mode.
③ Adjust White Balance of Factory Mode.

<If adjustment equipment is not available>

① Write down the value of HDMI White Balance of Factory Mode before replacing Board.
② PDP Option of Factory Mode → set the Factory Data Type item as the suitable value of relevant model.
③ Set the value of HDMI White Balance with the value written down before.

4-2-2 How to Access Service Mode

1. General Remote
   1) Stand by
      - Europe: **INFO** → **MENU** → **MUTE** → **POWER ON**
2. Factory Remote
   1) You can enter as pushing Display + Factory in state of power-on.

   2) Push Factory Key again, and you can enter Aging mode. Push Factory Key again, and you can go back Factory mode. (Factory ↔ Aging)

   3) Push Display + 3 Speed Key, and you can enter aging mode.

3. Settings when entering Factory mode
   - Sharp Screen (Dynamic), Color Tone (Cool1), Factory (Dynamic CE Off)

4. The contents to change when entering Service Mode

No	Item	Mode	Remark
1	Picture Mode	Dynamic	
2	Color Tone Mode	Cool 1	
3	Picture Size	Wide	
4	Dynamic Contrast	Off	
5	Digital NR	Off	
6	PIP	Off	
7	Gama	Off	OSD is ON

5. Adjustment Procedures
   - Channel ▲▼ Key: Select an item.
   - Volume ◀▶ Key: Adjust the value up or down.
   - MENU Key: Save the changes to the EEPROM and return to the higher-level mode.
   - Using the Numeric (0~9) keys, you can select a channel.
   - Using the SOURCE key, you can switch AV modes.

5. Initial SERVICE MODE DISPLAY State

```
Panel On Time(Hour)  00003      P34A_R3D      TV    P 1

1.Option Table(Service)  023A 7805 0401 3309 0801 0401
2. WB Adjust
3.Information                              4. Advanced Menu
   Checksum
   T-PRPMEAM-0000.0
    *****
   EDID : Success
   HDCP : Sucess
    Nov 19 2007  Month/Day/Year
    12:51:42       Hour/Min/Sec
```

※ The version of the firmware displayed at the bottom of the screen may differ and the firmware is subject to change for the improvement of product functions.

※ If you have adjusted the settings in Service Mode, you have to reset the product.

4-2-3 Factory Data ★ The underlined are items applied during the service adjustment. None of the others should be adjusted.

1. Option Table(Service)

NO	Item	DEFAULT OPTION	OPTIONS
1	Factory Reset		
2	Country	Default	
3	Ready	Off	On/Off
4	Panel Inch	50	19/22/23/26/27/32/37/40/42/46/50/52/57
5	Dimm Type	INT	
6	Panel Type	32CMO	
7	Model Option	Carnelian	Amber/Coral/Jade/Tanzanite/Pyrope/Carnelian
8	Anynet+	Off	On/Off
9	Light Effect	On	On/Off
10	TTX	On	ON/Off
11	TTX List	FLOF	List/FLOF
12	TTX Group	Lang OSD	W Europe/E Europe/Russia/Greek/Turkey/Arab/Farsi/ArabHbrw/Lang OSD
13	Carrier Mute	Off	On/Off
14	High Devi	Off	On/Off
15	Volume Curve	Small	
16	Hot Plug	On	On/Off
15	HotPlugCtrl	On	On/Off
16	HotPlugDelay	12	0-63
17	Auto Power	On	On/Off
18	LNA Menu	Off	On/Off
19	Hotel Option	Off	"Off or opens the ""Hotel Option"" sub page with the following items:Hotel Mode Off (Off/On)Power on Channel 1 (0-99)Power on Volume 10 (0-99)Max Volume 100 (0-99)OffPower On Source TV/EXT1/AV2/S-Video1/S-Video2/Component1/Component2/PC/HDMI2/HDMI3/HDMI4/Wise LinkVideoMute CH1 2 (0-99)VideoMute CH2 2 (0-99)VideoMute CH3 2 (0-99)"
20	D.Gamma	OFF	OFF; 0.85 32; 0.95 32; 0.85; 0.88; 0,90; 0,93; 0,95; 0,98; 22_19
21	PC Ident	On	On/Off
22	Language	English	"English/Germany/French/Italia/Spain/Netherland/Portuguese/Greek/Czech/Serbian/Croatian/Romanian/Hungarian/Polish/Russian/Bulgarian/Turkish/Swedish/Norwgian/Danish/Finnish"
23	Ch Table	SESK	SUWON/SESK/SEH/TTSEC/SEIN/SDMA/TTSED/SAVINA/Lang OSD
24	DDR	Etron	
25	Shop Mode	Off	On/Off
26	Nordic	On	On/Off
27	NT Conversion	Off	
28	Control		"Opens the ""Control"" sub page with the following items:WM Calib : OffEDID ProtectEDID TypeEDID WriteWB DataEEPROM ResetLogic Download"
29	PDP Filter	50" EU SPU	50" EU MRT/50" EU MESH/50" EU SPU/50" EA MRT/50" EA MESH/50" EA SPU/42" EU MRT/42" EU MESH/42" EU SPU/42" EA MRT/42" EA MESH/42" EA SPU
30	PDP Group	L25E_DS	L25E_DS/L24E_RS/L25E_RS/L24E_DS
31	Spread Spectrum		

2. WB Adjust

No	Item	Sub Page	
1	Calibration	AV Calibration	Failure/Success
		COMP Calibration	Failure/Success
		PC Calibration	Failure/Success
		HDMI Calibration	Failure/Success
2	White Balance	Sub Bright	128
		Red Offset	128
		Green Offset	128
		Blue Offset	128
		Sub Contrast	128
		Red Gain	128
		Green Gain	128
		Blue Gain	128
3	EPA Standard	Std Contr	80
		Std Bright	45
		Std Sharp	50
		Std Color	50
		Std Tint	50
		Std Backlight	7
4	Movie WB	WB Movie	On/Off
		Color Mode	Dynamic/Movie/Standard
		Color Tone	Cool1/Normal/Warm1/Warm2/Cool2
		MSub Brigh	128
		MSub Contr	128
		W1_RGAIN	128
		W1_BGAIN	128
		W1_ROFFS	128
		W2_RGAIN	128
		W2_BGAIN	128
		W2_ROFFS	128
		W2_BOFFS	128
		NO_RGAIN	128
		NO_BGAIN	128
		NO_ROFFS	128
		NO_BOFFS	128
		C2_RGAIN	128
		C2_BGAIN	128
		C2_ROFFS	128
		C2_BOFFS	128
		Movie Contr	128
		Movie Brigh	128
		Movie Color	128
		Movie Sharp	128
		Movie Tint	50
		Mv BkLight	128
		M.Gamma	OFF; 0.85; 0.88; 0.90; 0.93; 0,95; 0,98; 22_19

4. Advanced Menu

NO	Item	SUB PAGE	SUB PAGE	
1	MST68981	ADC Calibration	CVBS Y Offs	128
			CVBS Y Gain	128
			Ana Y/G Offs	127
			Ana U/B Offs	127
			Ana V/R Offs	127
			Ana Y/G Gain	82
			Ana U/B Gain	82
			Ana V/R Gain	82
			RGB R Offs	65
			RGB G Offs	65
			RGB B Offs	65
			RGB R Gain	111
			RGB G Gain	111
			RGB B Gain	111
		Calibration Target	AV ADC Target	
			Low	17
			Hight	234
			Delta	3
			Comp ADC Target	
			Low	17
			Hight	234
			Delta	3
			Pc ADC Target	
			Low	17
			Hight	234
			Delta	3
			All RGB Target	
			Low	2
			Hight	235
			Delta	1
		IPC/MJC		
		Picture Enhance	Sharpness	
			H1 Gain	30
			H2 Gain	24
			H3 Gain	16
			H4 Gain	16
			V1 Gain	24
			V2 Gain	20
			D1 Gain	16
			D2 Gain	16
			Over Shoot2	20
			Over Shoot3	20
			Under Shoot2	20
			Under Shoot3	20
			Sub Color	60

NO	Item	SUB PAGE	SUB PAGE	
		FBE	Pattern Select	0
			B-Slope Gain	80
			B-Tilt Min	20
			B-Tilt Max	150
			LFunc-Basis	110
			Hfunc-Basis	120
			Mean-Offset1	30
			Mean-Offset2	235
			Mean Slope	112
			ACR Offset	15
			ACR Th1	20
			ACR Th2	120
			Skin Enable	1
			Skin Uv	125
			MSkin Uv	125
			Sub Color	145
			MSub Color	135
2	Option Block	FRCS		
		FRCM		
		LD		
		PDPLOGIC	Pattren Select	0-31
			CCD Sw	Off/On
			CCD Strengh Th	0-31
			BRE Sw	Off/On
			FRC Repeat Mode	Off/On
			FRC DBG MarkOn	0-15
			FRC Bypass	Off/On
			CCD L Gain	0-31
			CCD U Gain	0-31
			Panel Type	82
			Panel Inch	50 HD
			Panel Ver.	Nicam Threshold
			Logic Sw Ver.	07Y 10M 23D
			Panel Temp	+ 43

NO	Item	SUB PAGE	SUB PAGE	
3	Sound	Saturation Mute	Off/On	
		FM Prescale	26	
		AM Prescale	24	
		Nicam Prescale	24	
		FM M Prescale	20	
		SC1 Vol	20	
		SC2 Vol	20	
		Audio Delay	On/Off	
		Audio Delay Time	8	
		Ch1 BW	2	
		Ch2 BW	1	
		Num of Check	1	
		Num of Double Check	5	
		Mono Weight	1	
		Stereo Weight	1	
		Dual Weight	1	
		BG M2S Threshold	144	
		DK M2S Threshold	80	
		BG S2M Threshold	176	
		DK S2M Threshold	0	
		FINE VOL	20	
		Detection Threshold	Carier1 Treshold	
			BG Amp On Thr	5
			BG NSR On Thr	13
			DK Amp On Thr	5
			DK NSR On Thr	13
			I Amp On Thr	5
			I NSR On Thr	13
			M Amp On Thr	5
			M NSR On Thr	13
			Carier2 Treshold	
			BG Amp On Thr	4
			BG NSR On Thr	11
			DK Amp On Thr	4
			DK NSR On Thr	11
			Nicam Treshold	
			BG SIG_ERR On Thr	95
			BG SIG_ERR Off Thr	84
			DK SIG_ERR On Thr	95
			DK SIG_ERR Off Thr	84
			I SIG_ERR On Thr	95
			I SIG_ERR Off Thr	84
			L SIG_ERR On Thr	95
			L SIG_ERR Off Thr	84
		Ext Volume Scale	0	
		Ext Prescale Speaker	0	
		R2E Scart2 Offset	0	
		NPT 3000		

NO	Item	SUB PAGE	SUB PAGE	
3	NPT 3000	NTP Master Volume	30	
		NTP PWM Modulation	254	
		NTP DRC Tresh	17	
		NTP Speaker EQ	On/Off	
4	YC Delay	PAL BG	4	
		PAL DK	4	
		PAL I	4	
		SECAM BG	5	
		SECAM DK	5	
		SECAM L	4	
		NTSC 358	17	
		NTSC 443	1	
		AV PAL	1	
		AV SECAM	2	
		AV NT443	1	
		AV PAL60	17	
5	Adjust	Video Mute Time	8	
		Dynamic Dimming	Off/On	
		Dynamic CE	On/Off	
		LNA Plus	RF dB 1 Level	4
			RF dB 2 Level	10
			RF dB 3 Level	20
			RF dB 4 Level	33
		Megazine LNA	Off/On	
		DTV WatchDog	Off/On	
		Main WatchDog	Off/On	
		UART Select	Main/iDTV/LVDS On	
		Debug Mode	MSTAR/RunTime/Normal/NONE	
		BackEndMute	Off/On	
		Tuner Select	ALPS_SLIM/SEMCO_SLIM/SEMCO_CABLE/ALPS_OLD	
		Tuner TOP Semco	10	
		Tuner TOP Alps	13	
		PixelShift Test	Off/On	
		FBE Select	FBE2X/FBE	
		Hp Detect	High/Low	
		?????	OK	
		D WatchDog Count	0	
		PDP FRC	On/Off	
		Visual Test	Off/On	
6	Bus Stop			
7	Defect Log	LogList1	Shows the defect Log if any	
		LogList2	Shows the defect Log if any	
		LogList3	Shows the defect Log if any	

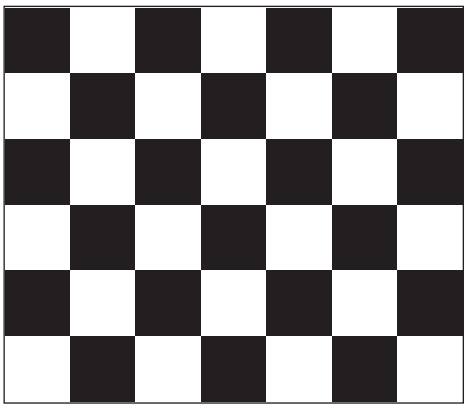
4-2-4 Service Adjustment

■ White Balance - Calibration

If picture color is wrong, do calibration first.

Execute calibration in Factory Mode (AV mode example):
1. Source : VIDEO (AV mode)
2. Setting Video Mode (Timing) : PAL Video (MODE : #2)
3. Setting pattern : Pattern #24 (Chess Pattern)
4. Use Equipment : K-7256 or Equipment of equality level
5. Work order:
    1) Enter Factory Mode and select "2. WB Adjust" → "Calibration"
    2) Select "AV CALIBRATION" and press the right button on the remocon (▶)
    3) After completing calibration, the "Success..." message will be displayed next by "AV CALIBRATION"

For Component/HDMI mode use resolution of 1280x720/60Hz (MODE: #6)
For PC mode use resolution of 1024x768/60Hz (MODE: #21)



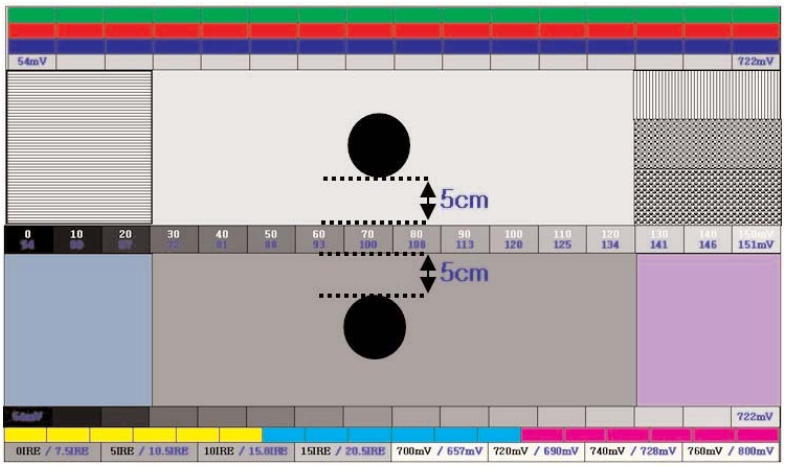
(Chess Pattern)

■ 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



(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

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

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

* Color coordinate
  H/L : 270/280 +/- 2
  L/L : 270/280 +/- 3, 2.1 Ft +/-0.05 Ft

■ 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

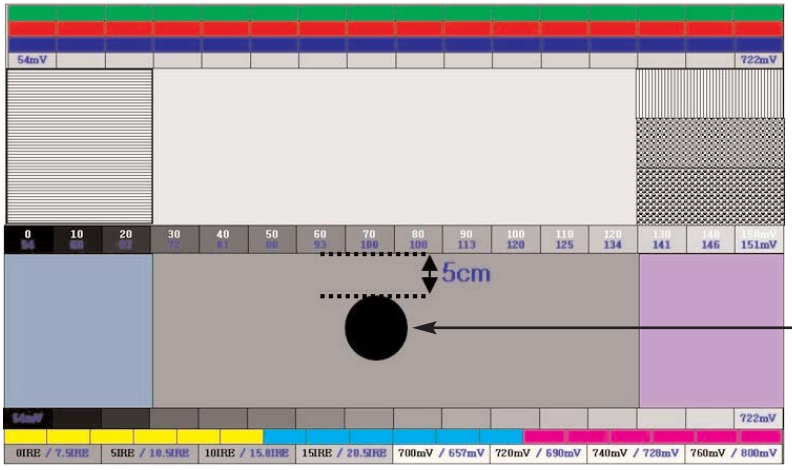
2. Optical measuring device : CA210 (FL)
   Please use the MSPG-925 LTH generator for model PS-42Q96HD, PS-50Q96HD.

■ Method of Adjustment

1. Adjust the white balance of AV, Component and DVI 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.

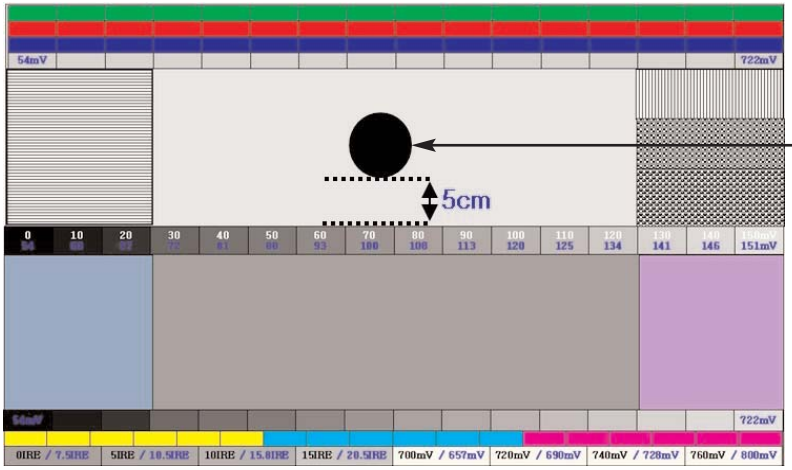
   c) Adjust the low light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust sub - Brightness to set the 'Y' value.
      - Adjust red offset ('x') and blue offset ('y') to the color coordinates.



(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

   * 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.



(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

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

4-2-5 Replacements & Calibration

* PDP 42" Check items listed after changing each

Replaced assembly items	Check Items
ASSY PCB MISC-MAIN	1) Auto Program 2) White Balance Adjust
SMPS-PDP TV	Vs, Va voltage check and adjust
ASSY PDP MODULE P-LOGIC MAIN	Not to be adjusted
ASSY PDP MODULE P-X-MAIN	
ASSY PDP MODULE P-Y-MAIN	
ASSY PDP MODULE P-ADDRESS E BUFFER	
ASSY PDP MODULE P-ADDRESS F BUFFER	

* PDP 50" Check items listed after changing each

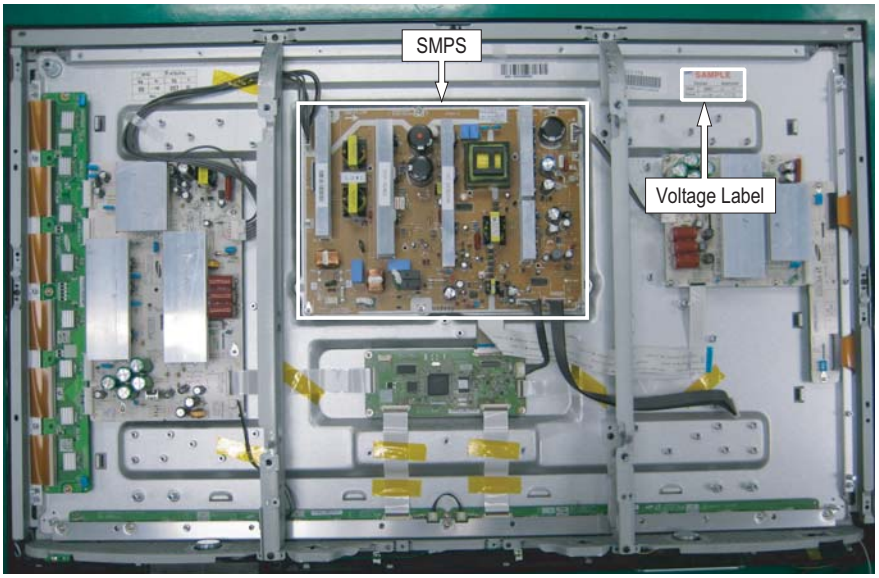
Replaced assembly items	Check Items
ASSY PCB MISC-MAIN	1) Auto Program 2) White Balance Adjust
SMPS-PDP TV	Vs, Va voltage check and adjust
ASSY PDP MODULE P-LOGIC MAIN	Not to be adjusted
ASSY PDP MODULE P-X-MAIN	
ASSY PDP MODULE P-Y-MAIN	
ASSY PDP MODULE P-X-MAIN BUFFER	
ASSY PDP MODULE P-ADDRESS E BUFFER	
ASSY PDP MODULE P-ADDRESS F BUFFER	

※ When replacing the SMPS or PDP panel, you have to check the voltage printed on the panel sticker and adjust it.

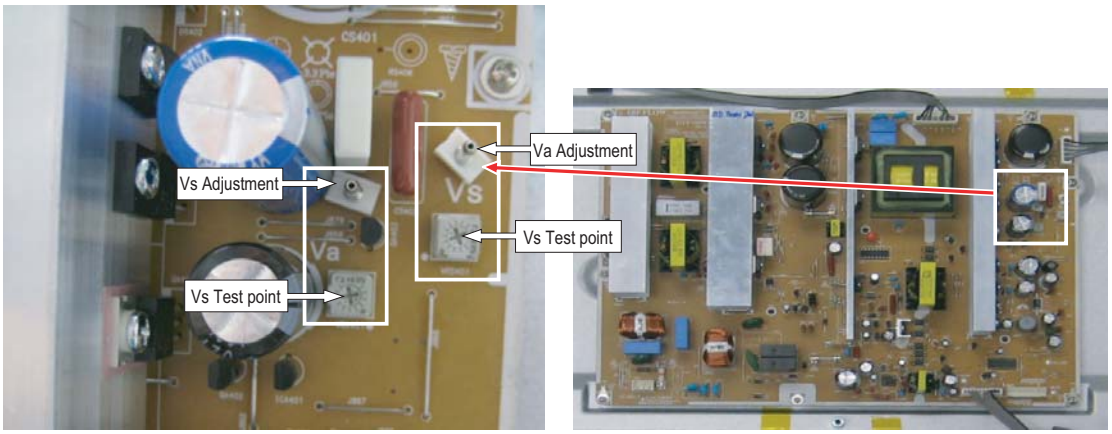
■ Voltage Adjustment

1. After replacing the SMPS or PDP panel, you must adjust the voltage referring to the voltage label printed on the panel.
   (If you do not adjust the voltage, an abnormal discharge symptom may appear.)

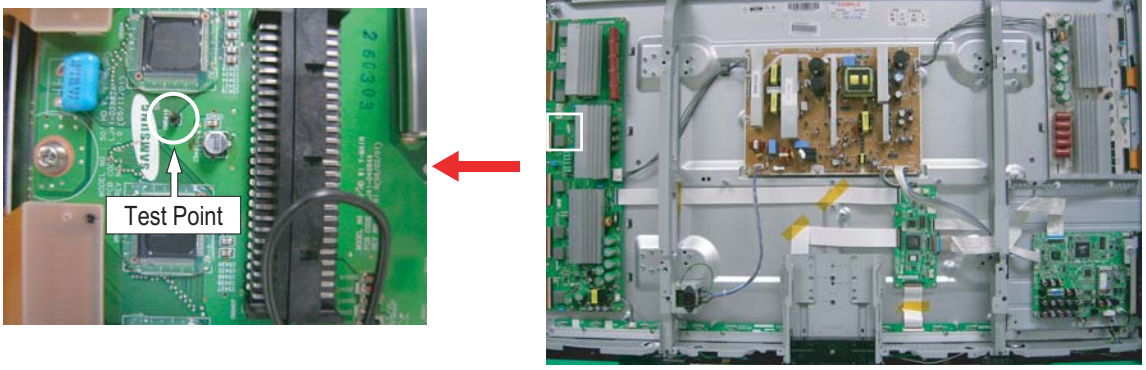
	Value	Board Adjustment
Vs	210	SMPS
Va	63	
Vset	-	
Ve	94	
Vscan	-190	



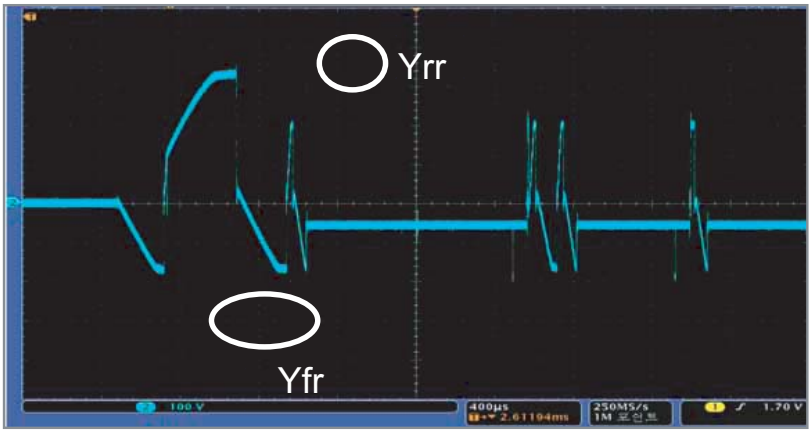
2. A point of adjusting SMPS-MAIN voltage.

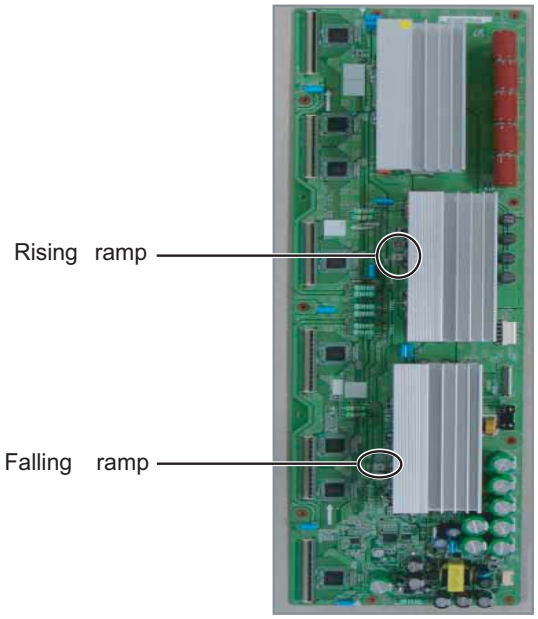


■ Y-RR and Y-FR controls



For the Drive Waveform, adjust the Main Reset (Rising Ramp and Falling Ramp) in the F/W pattern as shown by the figure.





Y-Main

Vs	Vsc_l	Ve	Va
205V	-190V	100V	56V(FIX)

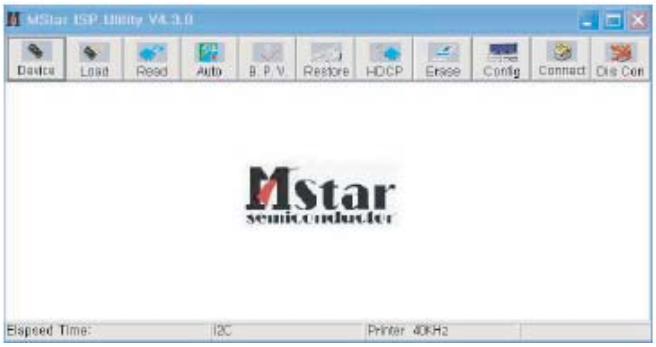
< Voltage Adjustment Specifications >

4-3 Upgrade

4-3-1 How to Update Flash ROM (with RS-232C Cable)

1. Installthe Flash Downloader
   ConnectSet(Service Jack)and Jig 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"



4-3-2 How to Check the Version of the Program

1. Procedures for checking in the Factory Menu.
   When entering Factory Mode, the version of the software is displayed at the bottom of the menu as described on page 4-17.