4. Troubleshooting

4-1 Troubleshooting

4-1-1 First Checklist for Troubleshooting

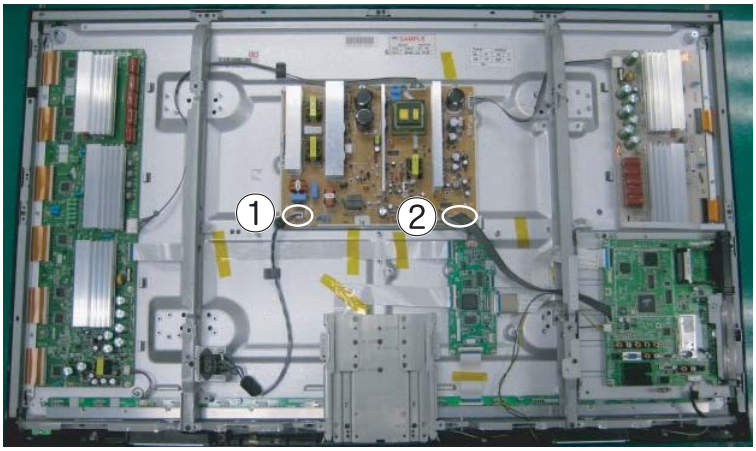
1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected or loose cable connection.
   - Check to see if the cables are connected according to the connection diagram.

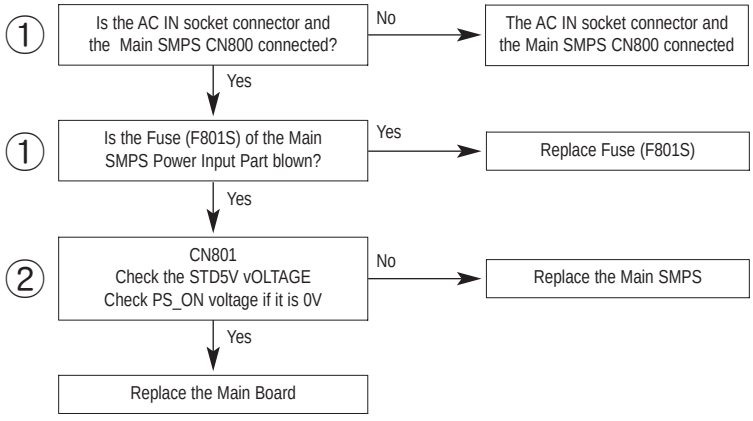
2. Check the power input to the Main Board.

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

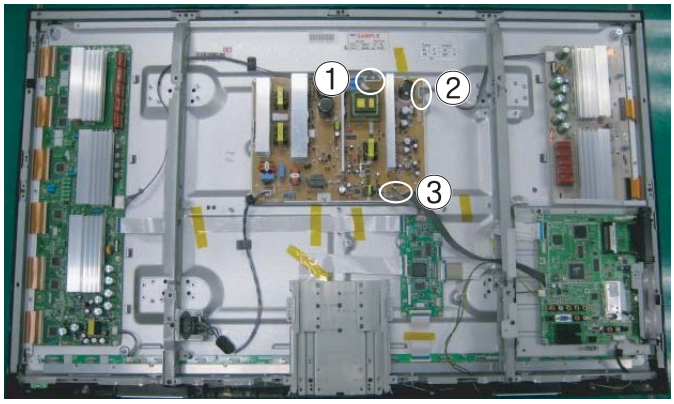
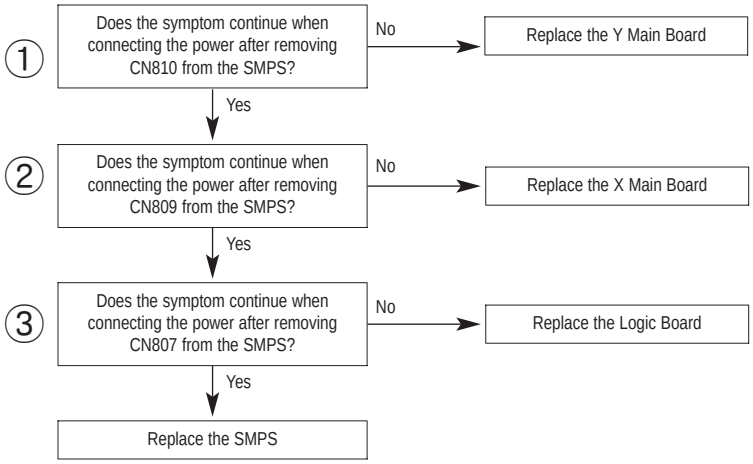
4-1-2 Checkpoints by Error Mode

■ No Power

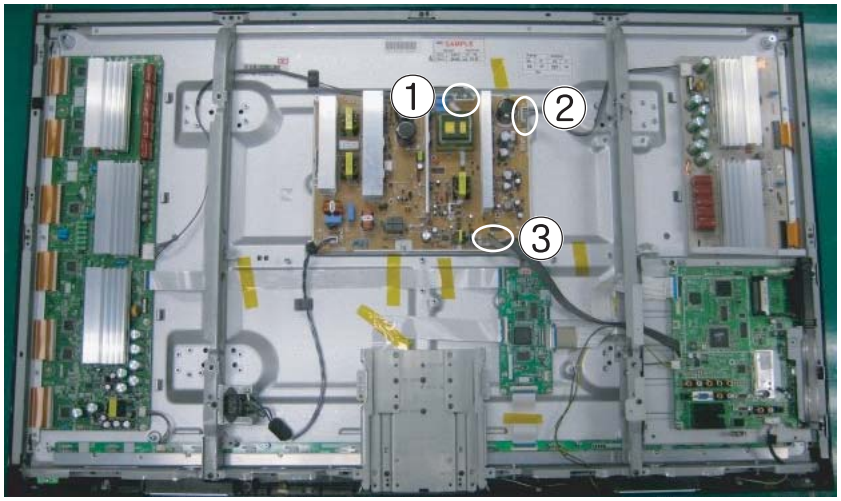
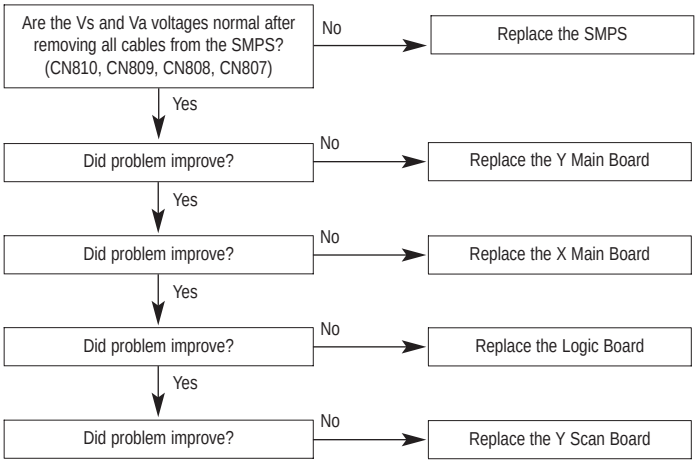
Symptom	- The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The unit appears to be dead.
Major Checklist	The SMPS relay or the LEDs on the front panel does not work when connecting the power cord if the cables are 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	



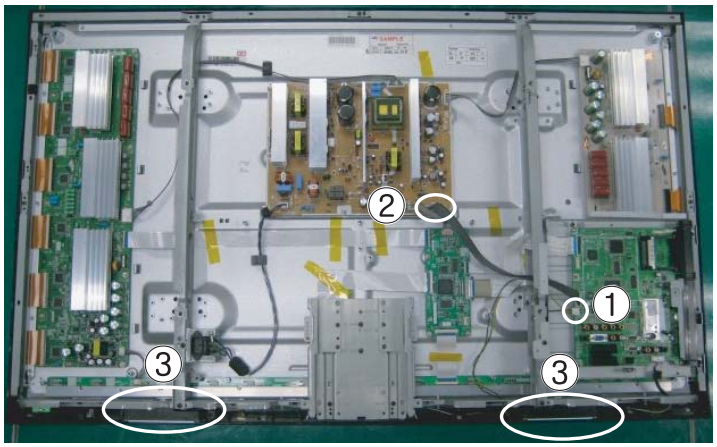
■ When the unit is repeatedly turning on and off

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	 
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.

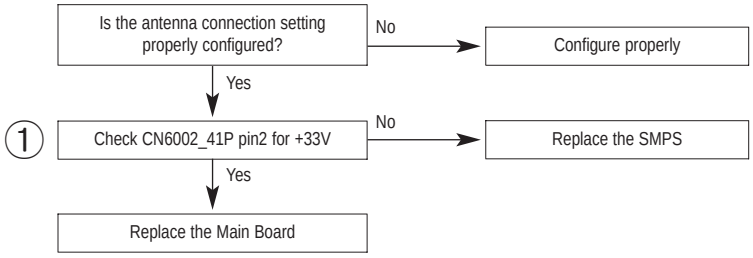
■ No Picture (When audio is normal)

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.

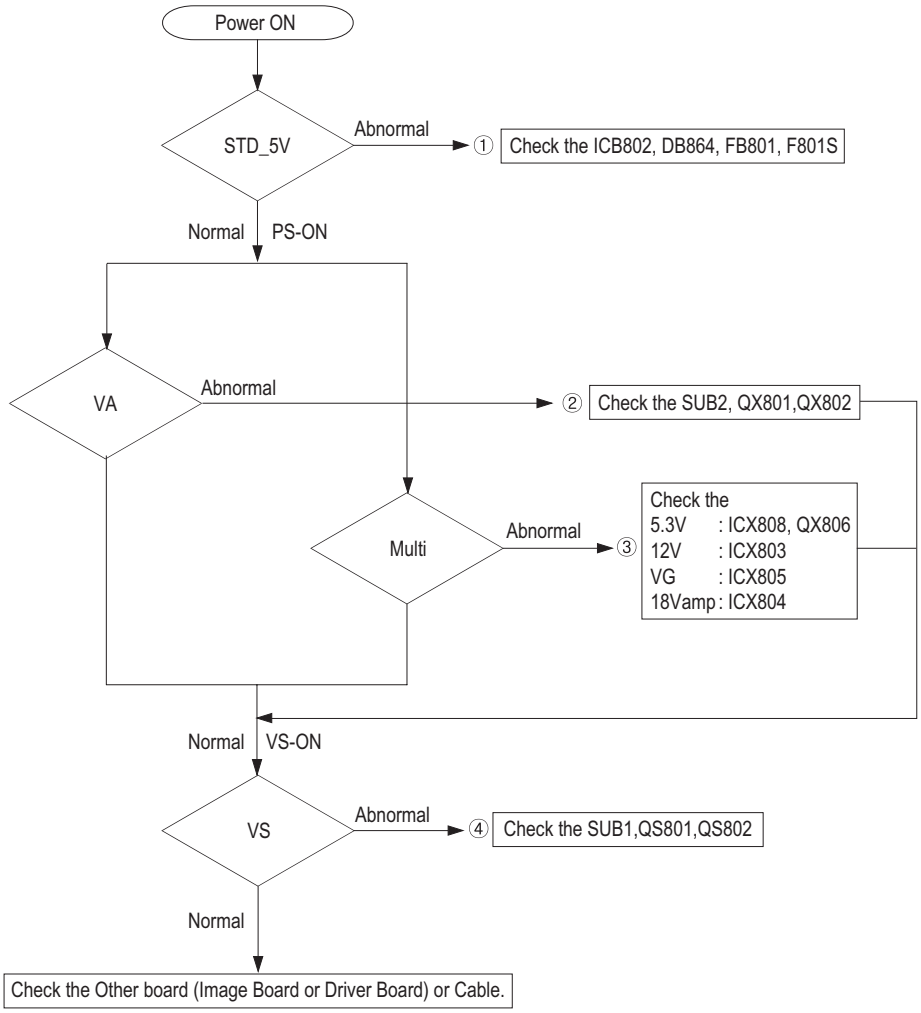
■ No Sound

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	 ① Is the cable connection between the Main Board and the speaker properly connected? — No → Connect the cable properly or replace the cable, if necessary. Yes ② Is the output voltage of SMPS normal? (CN801 #13) — No → Replace the SMPS Yes Is the speaker output terminal of the Main Board normal? — No → Replace the Main Board Yes ③ Replace the Speaker

■ 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

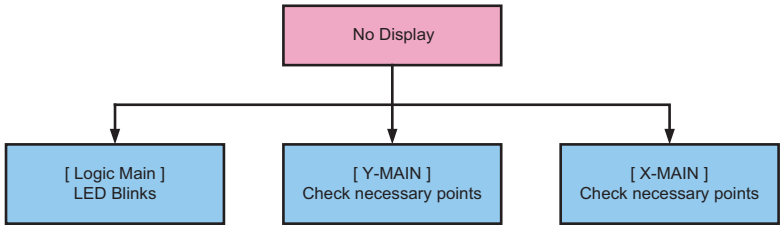
1) Troubleshooting Summary

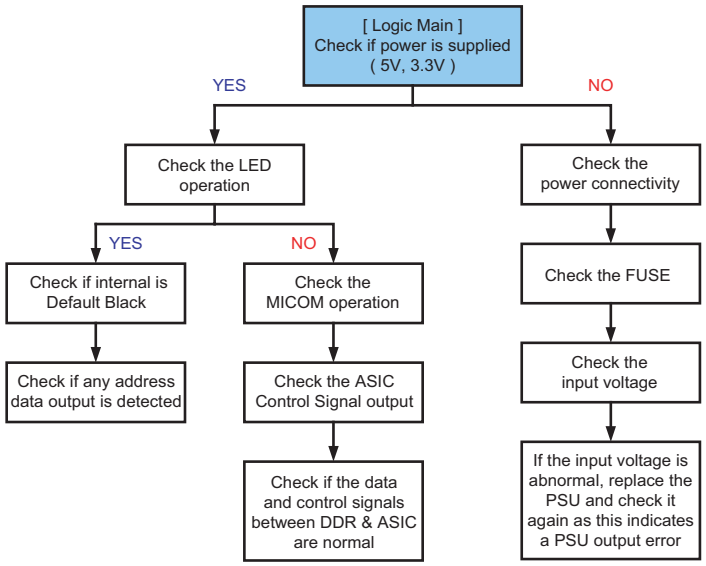
Condition Name	Description	Related Board
No Voltage Output	Operating Voltage don't exist	PSU
No Display	Operating Voltage exist, but an Image doesn't exist on screen	Y-MAIN, X-MAIN, Logic Main, Cable
Abnormal Display	Abnormal Image(not open or short) is no screen	Y-MAIN, X-MAIN, Logic Main
Sustain Open	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

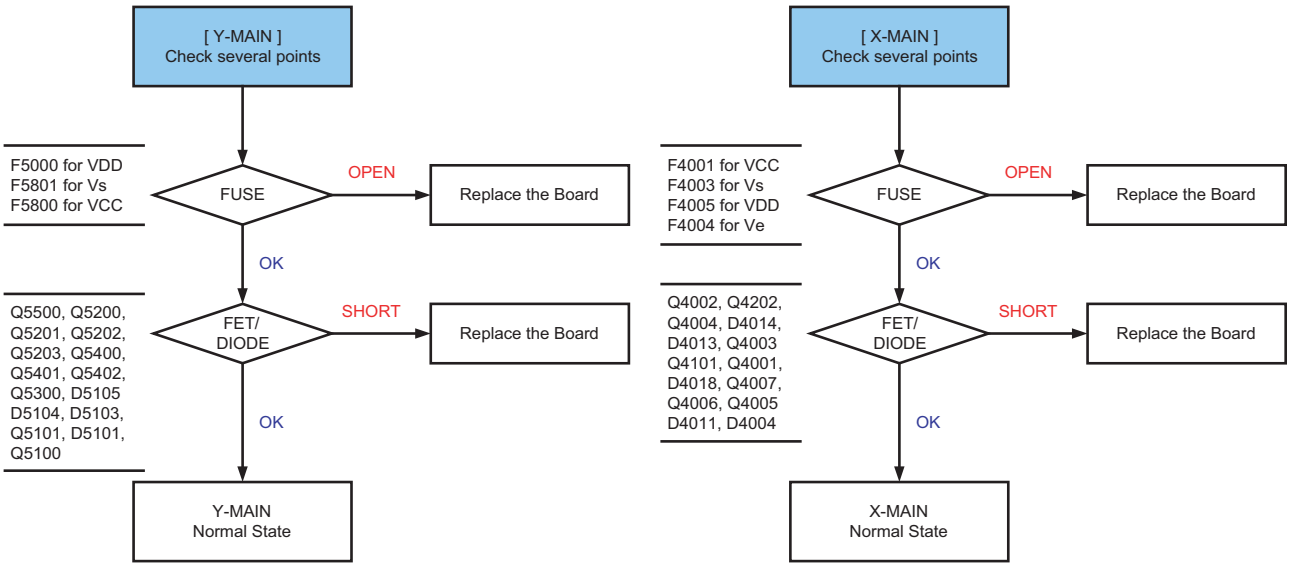
2) Troubleshooting Procedure in Abnormal Conditions

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.

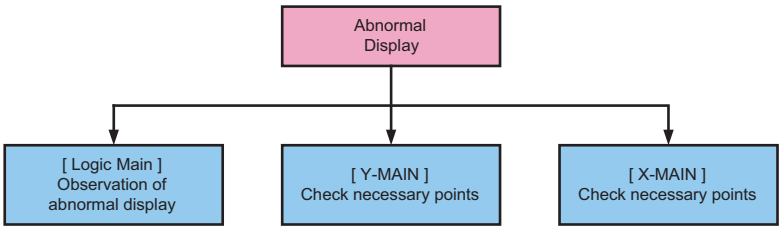


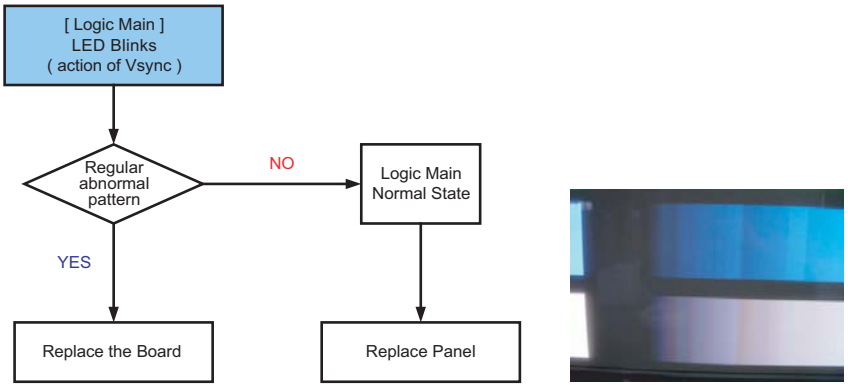


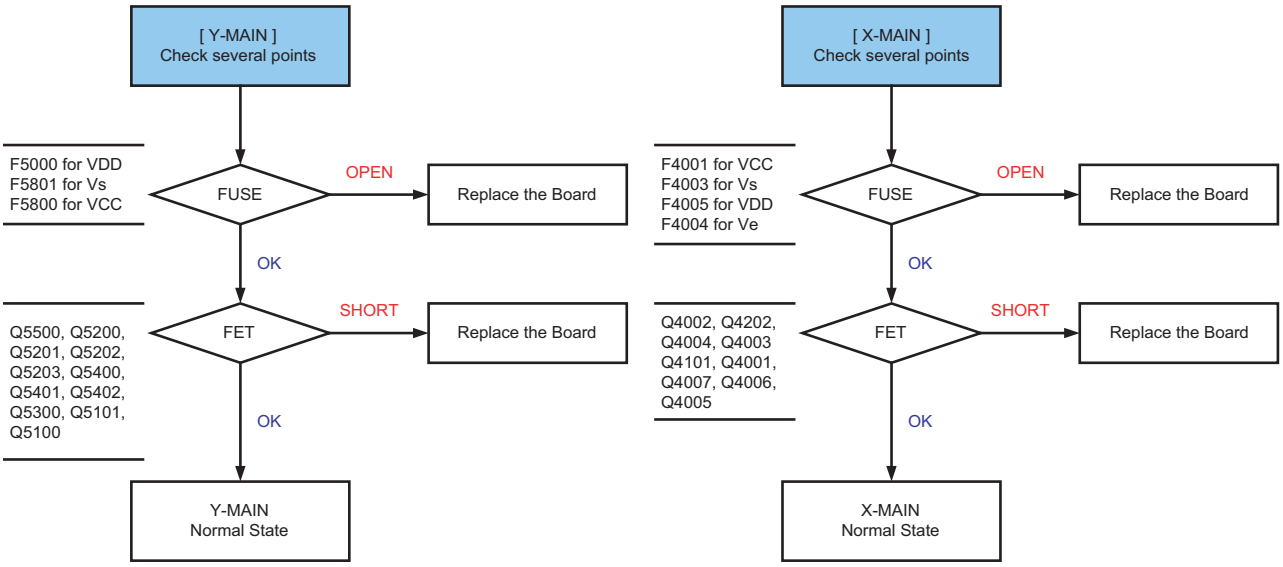


② Abnormal Display(Abnormal Image is on Screen.(except abnormality in Sustain or Address))

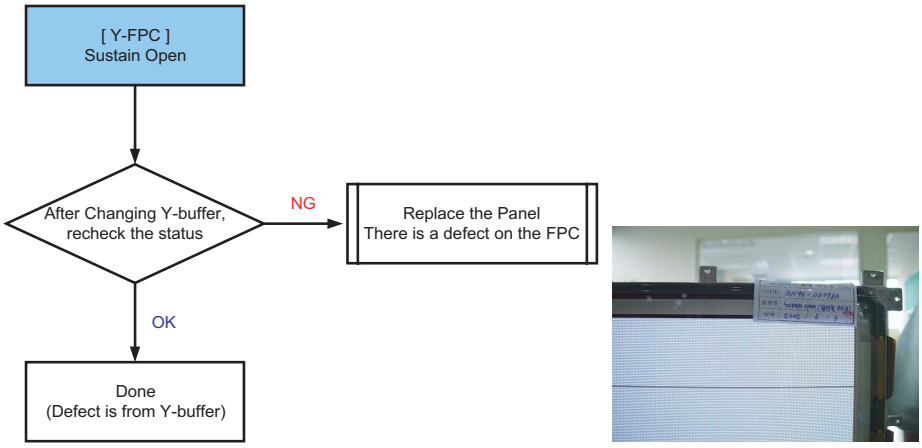
▶ Abnormal Display is related with Y-MAIN, X-MAIN, Logic Main and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.



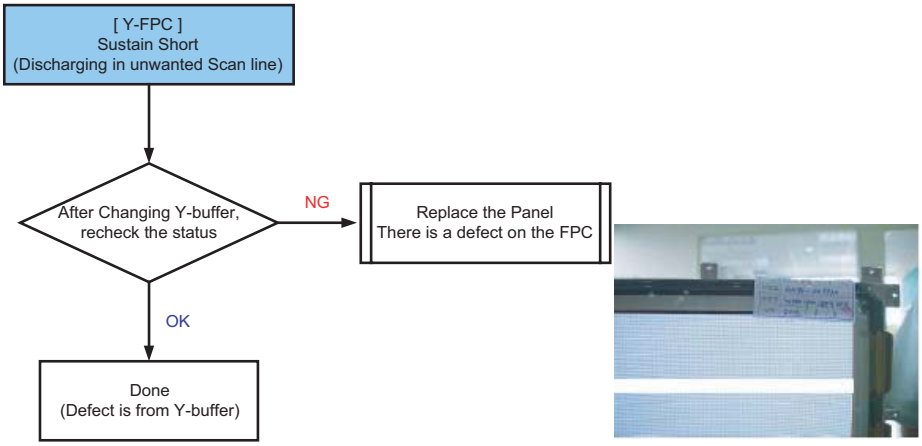




③ Sustain Open (some horizontal lines don't exist on screen)

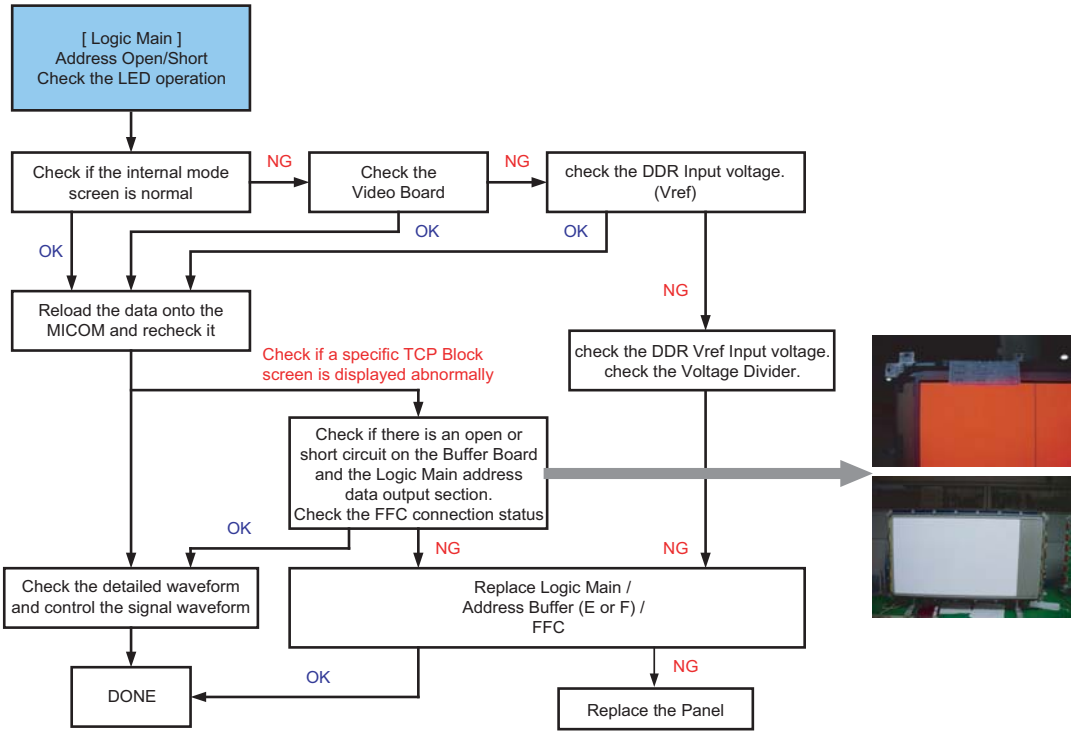


④ Sustain Short (some horizontal lines appear to be linked on Video)

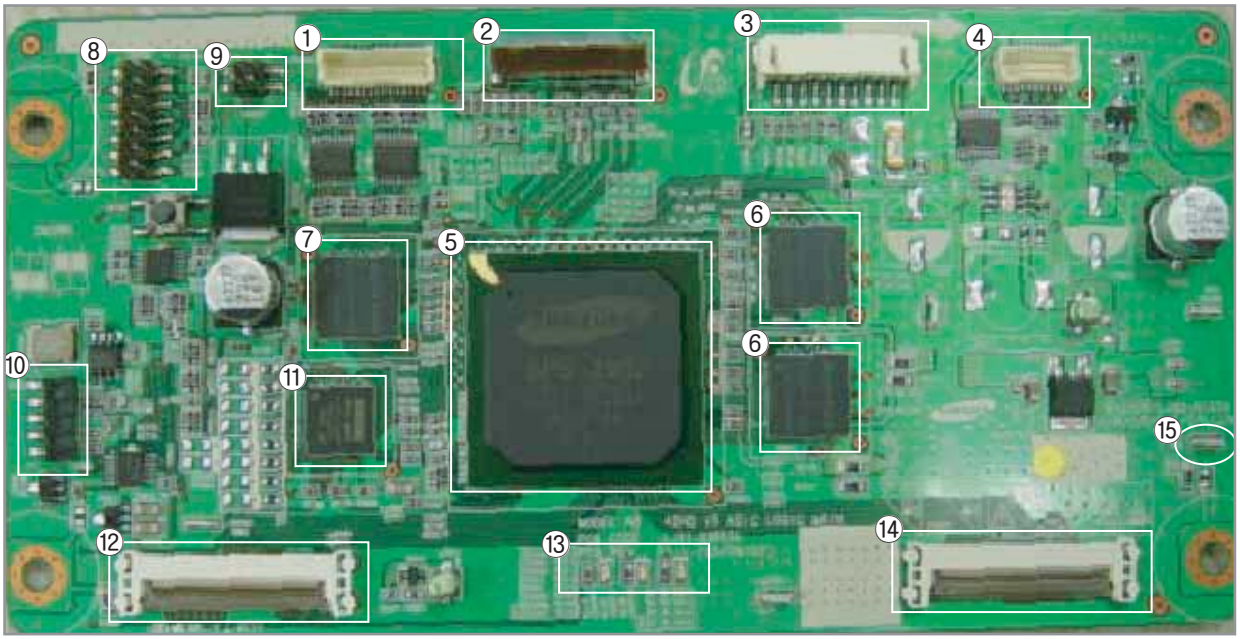


⑤ Address Open, Short

▶ 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.

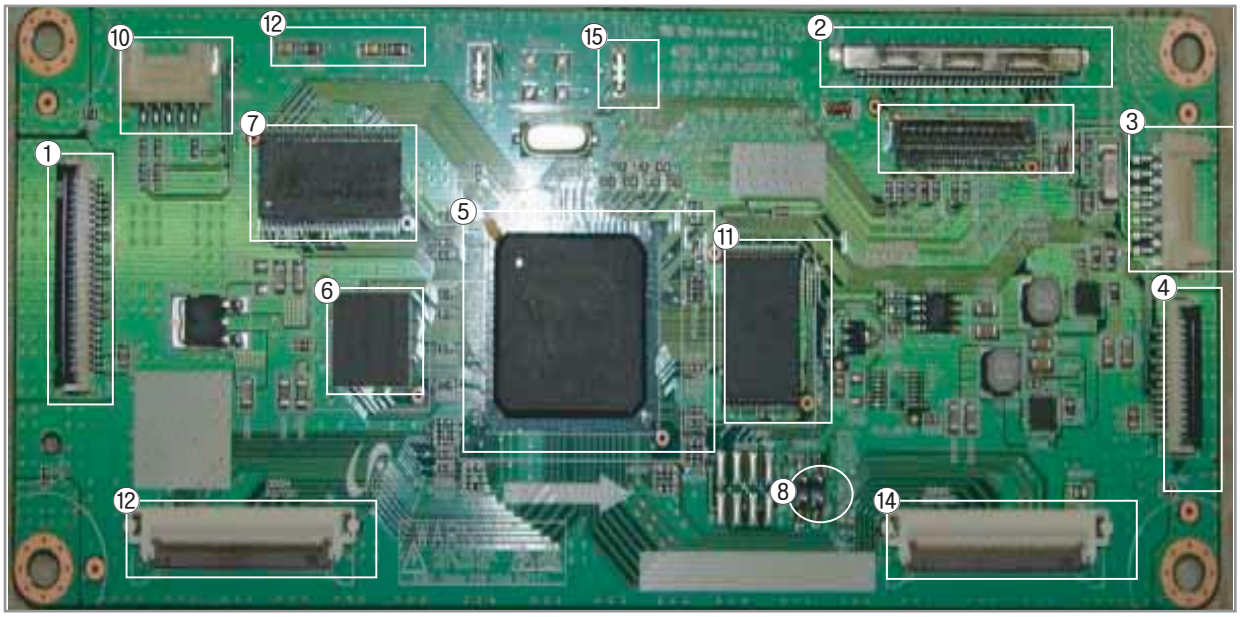


■ Logic board Troubleshooting



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.)

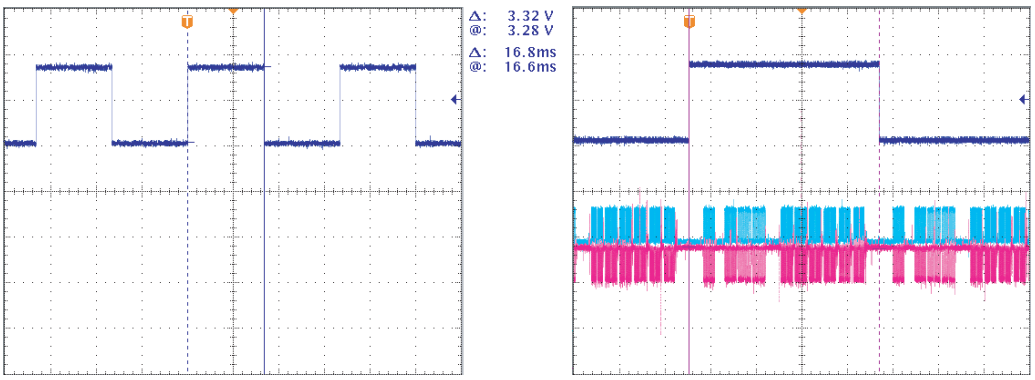
▶ If no drive waveform or address output is measured, this means that there is a drive problem due to MICOM data corruption, which was the reason in the Visual Inspection. Therefore, in this case, reload the data as you did in the Visual Inspection.

▶ 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.

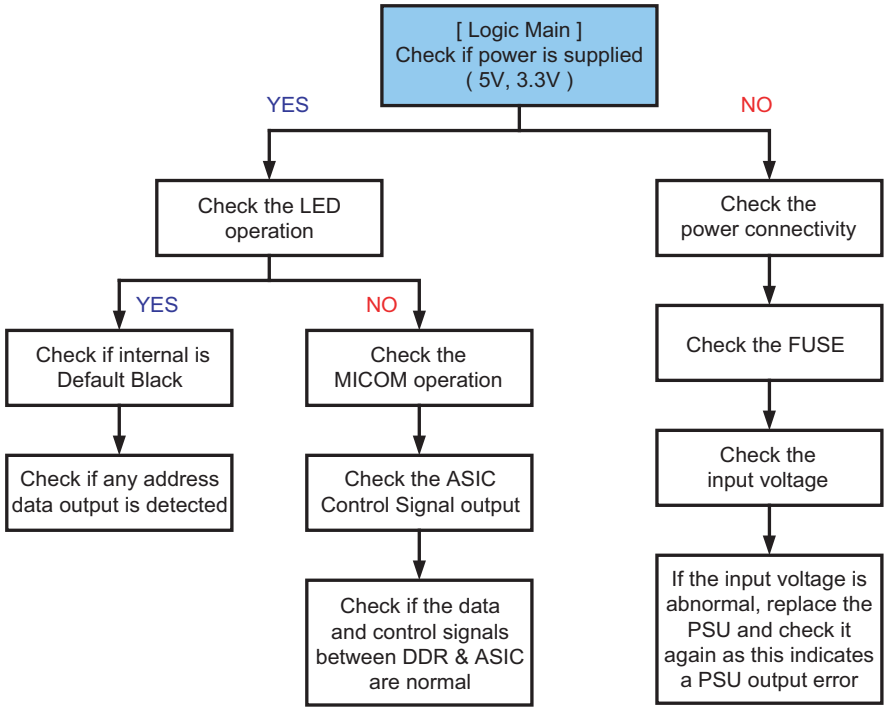
▶ If the screen is abnormal, even though the Vref voltage is normal, check if there is a short circuit by conducting a short-circuit test. If a short-circuit is found, repair it. If the short-circuit is an internal one, replace the board.

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

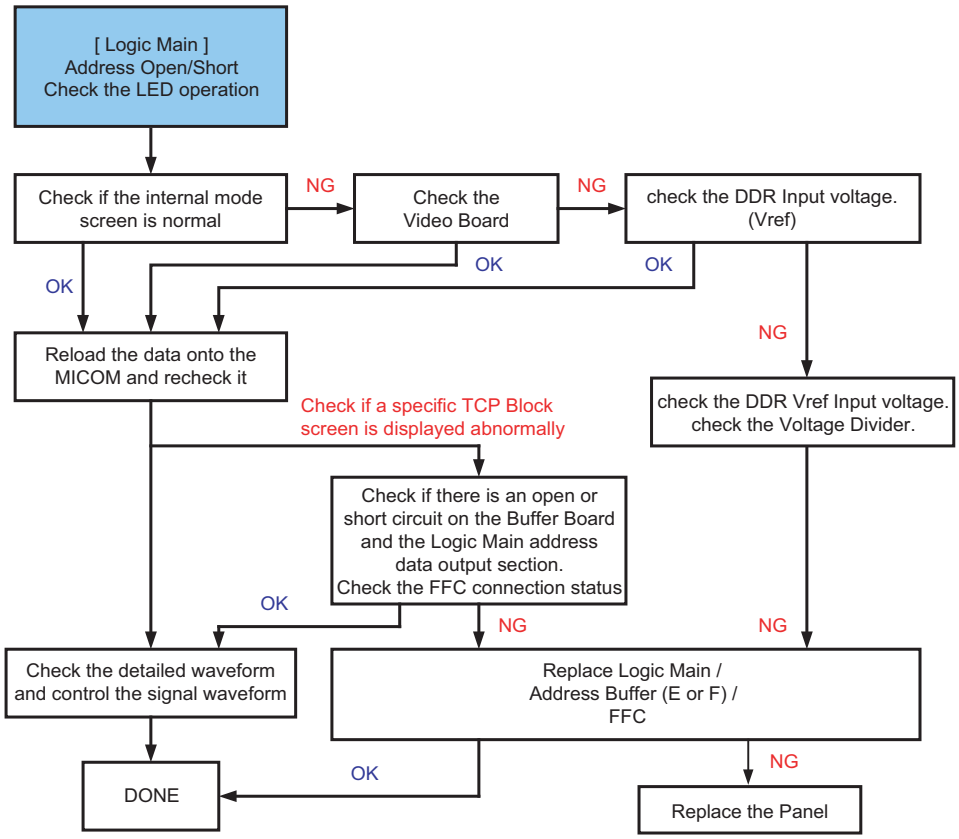


3) Troubleshooting Procedure in Abnormal Conditions

① No Display



② Abnormal Display



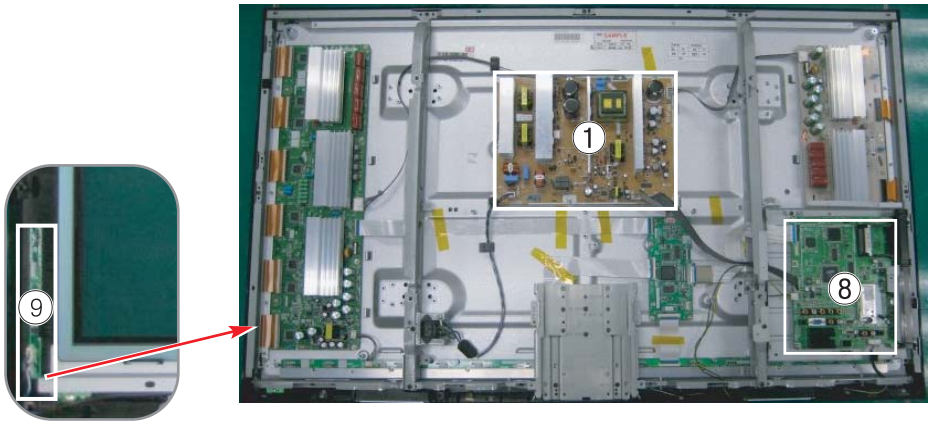
4-1-3 Faults and Corrective Actions

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)

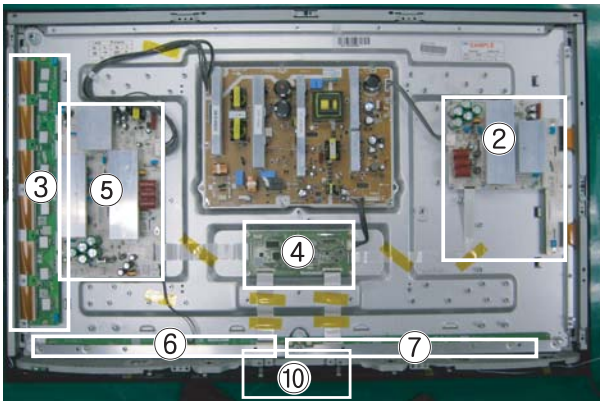
Symptom	Related Image	Causes and Countermeasures
Either the main or sub picture does not appear.		Replace the Main board
A vertical green line appears on the screen.		The SMPS voltage is incorrect - Adjust the SMPS voltage according to the voltage printed on the module label
Dim screen (blurred in red)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

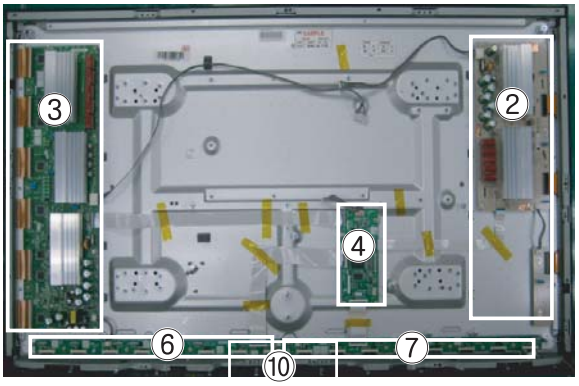
No	Assembly	Major Symptoms
1	SMPS-PDP TV	No power, Blank screen, the Relay repeats On and Off.
2	ASSY PDP MODULE P-X-MAIN	Blank screen
3	ASSY PDP MODULE P-Y-MAIN	Blank screen
4	ASSY PDP MODULE P-LOGIC MAIN	Blank screen, Screen noise
5	ASSY PDP MODULE P-X-MAIN BUFFER	Row Bar screen is blank
6	ASSY PDP 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.



<PDP 42”>



<PDP 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

5. Adjustment Procedures

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

- 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

```
Option
Calibration
WB
CHECKSUM          OxOOOO
Advanced
Font Data Viewer

T-AMBDRFC-xxxx
T-AMBDEUM-xxxx.x
T-AMBDEUS-xxxx
Not Display
Year/Month/Day
xxxx xxxx xxxx xxxx xxxx xxxx xx
EDID
```

※ 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. Main

No	Item	Name	Range
1	Option	Factory Reset	
		Country	Others-0, Others-1, Others-2, Others-3, Russia-4, Russia-5, Nordic-6, Nordic-7, Nordic-8, Nordic-8, Nordic-9
		Inch	19", 22", 23", 26", 32", 37", 40", 46", 52", 57", 27", 42", 50"
		Dimm Type	INT, INT_NEG, EXT_POS, EXT_NEG, EXT
		Type	
		MODEL OPTION	PEARL_P1,PEARL_P2,PEARL_P3,PEARL_P4,AMBER,P410,P450,P470,P550,CORAL
		Anynet+	On/Off
		WM Calib	On/Off
		TTX	On/Off
		TTX List	Flof/List
		TTX Group	UserOSD, WestEurope, EastEurope, Russian, Greek, Turkey, Arab/Hbrw, Farsian, Arablic
		Carrier Mute	On/Off
		High Devi.	On/Off
		VOL Table	EU, Non EU
		Hotplug	On/Off
		Hot Plug Ctrl	On/Off
		Hotplug Delay	3~50
		Manual Store	On/Off
		Auto Power	On/Off
		D-Gamma	OFF, 0.85, 0.88, 0.90, 0.93, 0.95, 0.98
		PC Ident	On/Off
		Language	English, Germany, French, Italian, Spain, Netherlands, Portuguese, Greek, Czech, Serbian, Croatian, Romanian, Hungarian, Polish, Russian, Bulgarian, Turkish, Slovak, Swedish, Norwgian, Danish, Finnish
		LNA On/Off	Auto,On,Off
		LVDS Format	
		LVDS Bit	
		CH Table	SUWON, SESK, SHE, TTSEC
		DDR	SAMSUNG, QIMONDA
		Store Demo	On/Off
		Nordic	On/Off
		NT Conversion	On/Off
		PDP Filter	
		PDP Group	
		Armani TV	
		Panel Time	
2	Calibration	AV Calibration	Success, Failure
		Comp Calibration	Success, Failure
		PC Calibration	Success, Failure
		HDMI Calibration	Success, Failure

No	Item	Name	Range
3	WB Adjust	Sub Brightness	0~255
		R_Offset	0~255
		G_Offset	0~255
		B_Offset	0~255
		Sub Contrast	0~255
		R_Gain	0~255
		G_Gain	0~255
		B_Gain	0~255
4	Checksum		
5	Advanced		
6	Font Data Viewer		

2. Advanced

No	Item	Name	Range
1	Control	EDID On/Off	On/Off
		EDID Type	L13_1920_1080,L12_1920_1080,L12_1680_1050,L12_1366_768,L12_1360_768, L12_1024_768
		EDID Write	Failure,Success
		WB Data Reset	On/Off
		EEPROM Reset	
		Logic Download	On/Off
		Service Select	Normal/ Debug/DL
		HDMI EQ	Middle, High, Strong, Low
		PwrOn Update	On/Off
2	Calibration Target	AV Offset	0~255
		AV Delta	0~255
		AV Gain	0~255
		Y Offset	0~255
		Y Delta	0~255
		Y Gain	0~255
		PC Offset	0~255
		PC Delta	0~255
		PC Gain	0~255
		2nd_Offset	0~255
		2nd_Delta	0~255
		2nd_Gain	0~255
3	Calibration Adjust	R Offset	0~255
		G Offset	0~255
		B Offset	0~255
		R Gain	0~255
		G Gain	0~255
		B Gain	0~255
		Y Offset	0~255
		Cb Offset	0~255
		Cr Offset	0~255
		Y Gain	0~255
		Cb Gain	0~255
		Cr Gain	0~255
		CVBS Offset	0~255
		CVBS Gain	0~255
		Red Offset	0~255
		Green Offset	0~255
		Blue Offset	0~255
		Red Gain	0~255
		Green Gain	0~255
		Blue Gain	0~255

No	Item	Name	Range
4	EPA Standard	Standard Contrast	0~100
		Standard Brightness	0~100
		Standard Sharpness	0~100
		Standard Color	0~100
		Standard Tint	0~100
		Standard Color Tone	0~100
		Standard Backlight	0~100
5	Movie WB	W/B Moive	On/Off
		Mode	Dynamic, Movie
		Color Tone	Cool1, Warm2
		Msub Contrast	0~255
		Msub Brightness	0~255
		C2_R_Gain	0~255
		C2_B_Gain	0~255
		C2_R_Offset	0~255
		C2_B_Offset	0~255
		NO_R_Gain	0~255
		NO_B_Gain	0~255
		NO_R_Offset	0~255
		NO_B_Offset	0~255
		W1_R_Gain	0~255
		W1_B_Gain	0~255
		W1_R_Offset	0~255
		W1_B_Offset	0~255
		W2_R_Gain	0~255
		W2_B_Gain	0~255
		W2_R_Offset	0~255
		W2_B_Offset	0~255
		Movie Contrast	0~255
		Movie Brightness	0~255
		Movie Color	0~255
		Movie Sharpness	0~255
		Movie Tint	0~255
		Movie Backlight	0~10
		Movie Gamma	On/Off
6	Scart RGB	R-Offset	0~255
		G-Offset	0~255
		B-Offset	0~255
		R-Gain	0~255
		G-Gain	0~255
		B-Gain	0~255

No	Item	Name	Range
7	TVD/Comb	Manual AGC	On/Off
		MIN_HWIDTH	0~15
		MAX_HWIDTH	0~63
		TH_HIGH	0~255
		TH_SUPER	0~255
		Colour system	
		Noise level	
8	IPC/MJC	IPC_Film	
		MJC_Film	
		MJC status	
		Rand X Gain L	0~7
		Rand Y Gain L	0~7
		Vsi X Gain L	0~7
		Vsi Y Gain L	0~7
		Fbck Vsi Th L	0~255
		Fbck Vsi Th2 L	0~255
		Mv DownScale L	0~5
		Rand X Gain M	0~7
		Rand Y Gain M	0~7
		Vsi X Gain M	0~7
		Vsi Y Gain M	0~7
		Fbck Vsi Th M	0~255
		Fbck Vsi Th2 M	0~255
		Mv DownScale M	0~5
		Rand X Gain H	0~7
		Rand Y Gain H	0~7
		Vsi X Gain H	0~7
		Vsi Y Gain H	0~7
		Fbck Vsi Th H	0~255
		Fbck Vsi Th2 H	0~255
		Mv DownScale H	0~5
9	Picture Enhance	Low Gain	0~255
		Middle Gain	0~255
		High Gain	0~255
		Local Low	0~255
		Local Middle	0~255
		Local High	0~255
		Gain1	0~255
		Gain2	0~255
		Gain3	0~255
		Gain4	0~255
		Gain5	0~255
		Gain6	0~255
		Gain7	0~255
		Gain8	0~255

No	Item	Name	Range
9	Picture Enhance	Limit Pos All	0~255
		Limit Neg All	0~255
		LTI Gain	0~255
		ECTI Gain	0~7
		SCTI Cgain	0~7
		SCTI Fgain	0~63
		Color Mid Value	0~255
		Clip Th	0~255
10	FBE3	Pattern_sel	
		B-Slope Gain	0~255
		B-Tilt Min	0~255
		B-Tilt Max	0~255
		LFunc-Basis	0~255
		HFunc-Basis	0~255
		Mean-Offset1	0~255
		Mean-Offset2	0~255
		Mean-Slope	0~255
		ACR-Offset	0~127
		ACR-th1	0~255
		ACR-th2	0~255
		Skin-Enable	On/Off
		Skin-UV	0~255
		M Skin UV	0~255
		Sub Color	0~255
		M Sub Color	0~255
11	FRCM	FW Version	
		EEPROM State	
		SSC On/Off	On/Off
		SSC Width	0~30
		SSC Freq	0~70
		PATT Before DDR	0~9
		PATT After DDR	0~7
		FMD DEMO	On/Off
		Video Judder Low	0~32
		Video Judder Med	0~32
		Video Judder High	0~32
		Film Low SD 22	0~32
		Film Low SD 32	0~32
		Film Medi SD 22	0~32
		Film Medi SD 32	0~32
		Film High SD 22	0~32
		Film High SD 32	0~32
		Film Low HD 22	0~32
		Film Low HD 32	0~32

No	Item	Name	Range
11	FRCM	Film Medi HD 22	0~32
		Film Medi HD 32	0~32
		Film High HD 22	0~32
		Film High HD 32	0~32
12	FRCM Advance	ENMCFallBack	
		HorVerSel	
		mcFallBackVis	
		L_horStart	
		M_horStart	
		H_horStart	
		L_verStart	
		M_verStart	
		H_verStart	
		L_horLimit	
		M_horLimit	
		H_horLimit	
		L_verLimit	
		M_verLimit	
		H_verLimit	
		L_horMCoff	
		M_horMC0ff	
		H_horMCoff	
		L_verMCoff	
		M_verMCoff	
		H_verMCoff	
		L_horHyster	
		M_horHyster	
		H_horHyster	
		L_verHyster	
		M_verHyster	
		H_verHyster	
		HorLimitVideo	
		verLimitVideo	
13	PDP Logic	Pattern Sel	0 ~ 31
		FRC Mode	Repeat / 100Hz
		FRC DBG MarkOn	0 ~31
		FRC Bypass	On/Off
		FRC MV Force	On/Off
		MB SW	On/Off
		MB Offset1	0 ~ 255
		Ve Sig Control	On/Off
		DRC	Off / Mode1 / Mode2 / Mode3

No	Item	Name	Range
14	Sound	AM Mute TH_High	0~20
		AM Mute TH_Low	0~20
		FM Mute TH_High	0~96
		FM Mute TH_Low	0~96
		Correct Threshold	1~7
		Sync Loop	1~1000
		Error Threshold	2~40
		Parity Error Thrd	1~128
		Every Num Frames	
		Num of Check	1~60
		Num of Double Chk	5~60
		Mono Weight	1~20
		Stereo Weight	1~20
		Dual Weight	1~20
		M2S Threshold	1~20
		S2M Threshold	1~20
		NICAM Fine Vol	1~40
		FM Fine Vol	1~40
		AM Fine Vol	1~40
		Fine Tune Vol	1~40
		SC1 Fine Vol	1~40
		SC2 Fine Vol	1~40
		Output Matrix	Bypass, L Mono, R Mono
		AMP Master Vol	0~48
		AMP PWM Mode	0~255
		DRC Threshold	0~127
		Speaker EQ	On/Off
		Audio Delay	0~100
		Game Audio Delay	0~100
		Speaker Type	Side, Bottom
15	YC Delay	RF PAL-B/G	0~10
		RF PAL-D/K	0~10
		RF PAL-I	0~10
		RF PAL-L/L'	0~10
		RF SECAM-B/G	0~10
		RF SECAM-D/K	0~10
		RF SECAM-I	0~10
		RF SECAM-L/L'	0~10
		RF NTSC3.58	0~10
		RF NTSC4.43	0~10
		AV PAL	0~10
		AV SECAM	0~10
		AV NTSC3.58	0~10
		AV NTSC4.43	0~10
		AV PAL60	0~10

No	Item	Name	Range
16	Adjust	?????	Success, Failure
		PixelShift Test	Min, Sec
		Video Mute Time	0~10 → Video mute time
		Dynamic Dimming	On/Off
		Dynamic CE	On/Off
		Megazine LNA	On/Off
		WatchDog	On/Off
		UART Select	Off, Main, IDTV, PDP Lvds On
		BUS Stop	On/Off
		MJC/PDP FRC	All On, All Off, MJC only, FRC only
		Visual test	On/Off
		FBE Mute	On/Off
17	User Control Init	TTX PWM	0~255
		Dyn. Contrast	0~255
		Dyn. Brightness	0~255
		Dyn. Color	0~255
		Dyn. Sharpness	0~255
		Std. Contrast	0~255
		Std. Brightness	0~255
		Std. Color	0~255
		Std. Sharpness	0~255
		Melody Volume	0~55
		Brightness Center	0~55
		Contrast Gain	0~255
		DSP Recovery	On/Off
		Sound Delay	0~70
18	LNA Plus	NR1_Coring	0~255
		NR2_Coring	0~255
		NR3_Coring	0~255
		NR4_Coring	0~255
		RF_dB0_Th	0~255
		RF_dB1_Th	0~255
		RF_dB2_Th	0~255
		RF_dB3_Th	0~255
		AGC1	0~255
		AGC2	0~255
		AGC3	0~255
		AGC4	0~255
		FBE NR1	0~511
		FBE NR2	0~511
		FBE NR3	0~511
		FBE NR4	0~511

No	Item	Name	Range
19	Tuner	SNR	
		BER	
		Signal Strength	
		Frequency	
		LNA Status	
		Bandwidth	
		FFT	
		Modulation	
		Code Rate	
		GI	
		Hier Modualtion	
		Frequency Offset	
		Timing Offset	
		AGC	
		UCB	
		PLL Type	
		DEMOD Type	
		TPS Lock	
		RS Lock	
20	Hotel Option	Hotel Mode	On/Off
		Power On Channel	Power On
		Power On Band	AIR
		Power On Volume	0~100
		Max Volume	0~100
		Local Key Lock	On/Off
		Power On Source	TV, Ext1, Ext2, AV, S-Video, Component, PC, HDMI1, HDMI2, HDMI3, HDMI4, IDTV
21	Spread Spectrum	Spectrum On/Off	On/Off
		Step RF	0~255
		Range RF	0~80
		Step 480p/576p	0~255
		Range 480p/576p	0~80
		Step Comp	0~255
		Range Comp	0~80
		Step HDMI/DTV	0~255
		Range HDMI/DTV	0~80
		Step PC	0~255
		Range PC	0~80
		FBE Spectrum	On/Off
		FBE Range	0~15

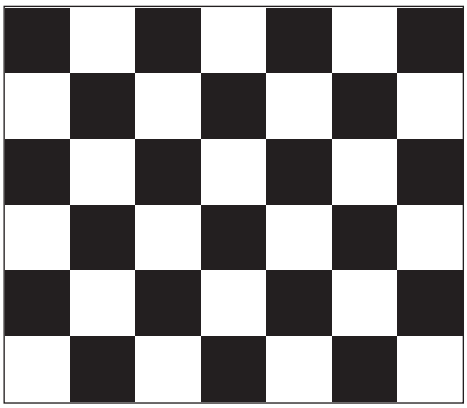
4-2-4 Service Adjustment

■ 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)



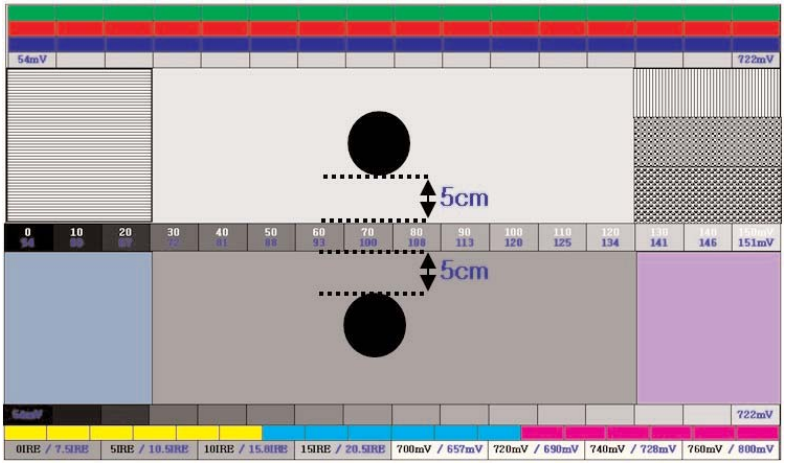
(Chess Pattern)

■ 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

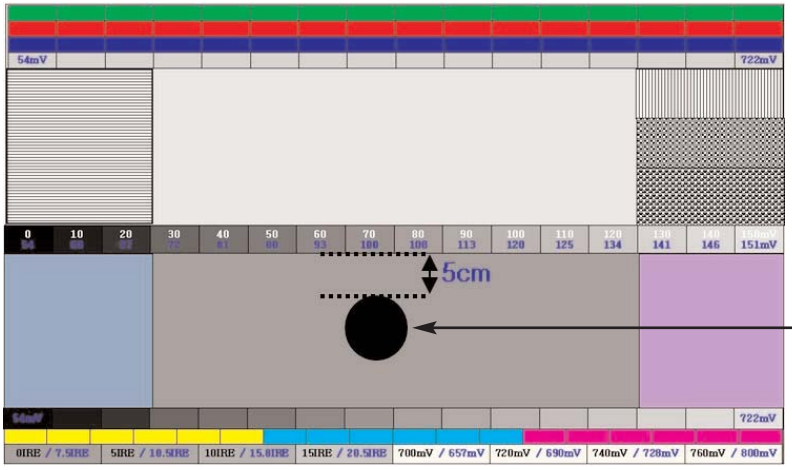
2. Optical measuring device : CA210 (FL)
   Please use the MSPG-925 LTH generator for model PS-42Q96HD, PS-50Q96HD.

■ 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.

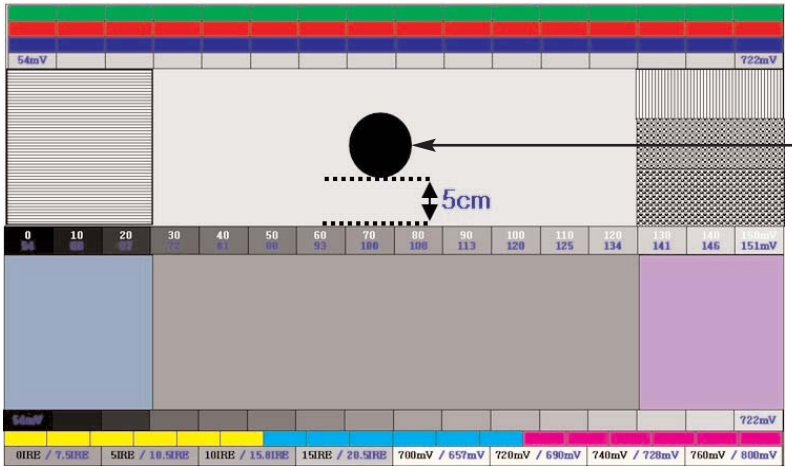
   c) Adjust the low light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust sub - Brightness to set the 'Y' value.
      - Adjust red offset ('x') and blue offset ('y') to the color coordinates.



(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

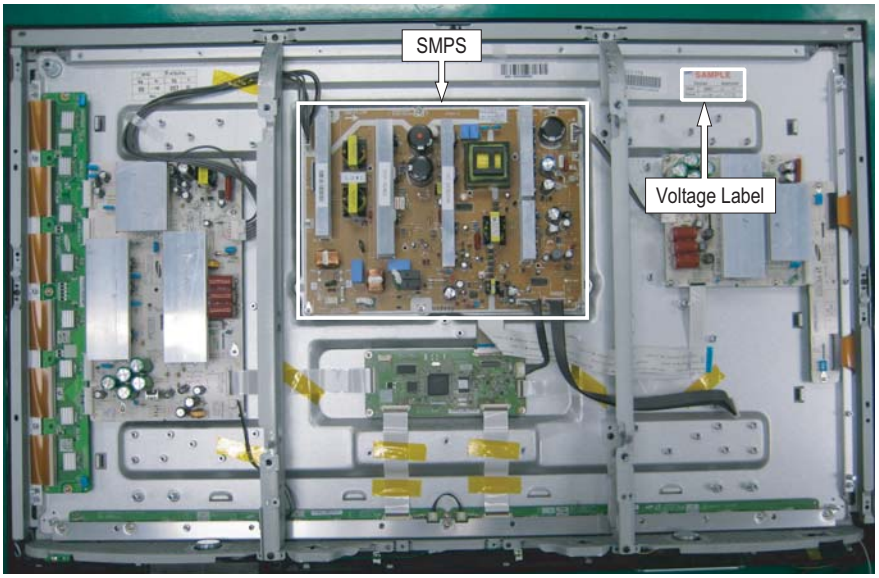
Replaced assembly items	Check Items
ASSY PCB MISC-MAIN	1) Auto Program 2) White Balance Adjust
SMPS-PDP TV	Vs, Va voltage check and adjust
ASSY PDP MODULE P-LOGIC MAIN	Not to be adjusted
ASSY PDP MODULE P-X-MAIN	
ASSY PDP MODULE P-Y-MAIN	
ASSY PDP MODULE P-X-MAIN BUFFER	
ASSY PDP MODULE P-ADDRESS E BUFFER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

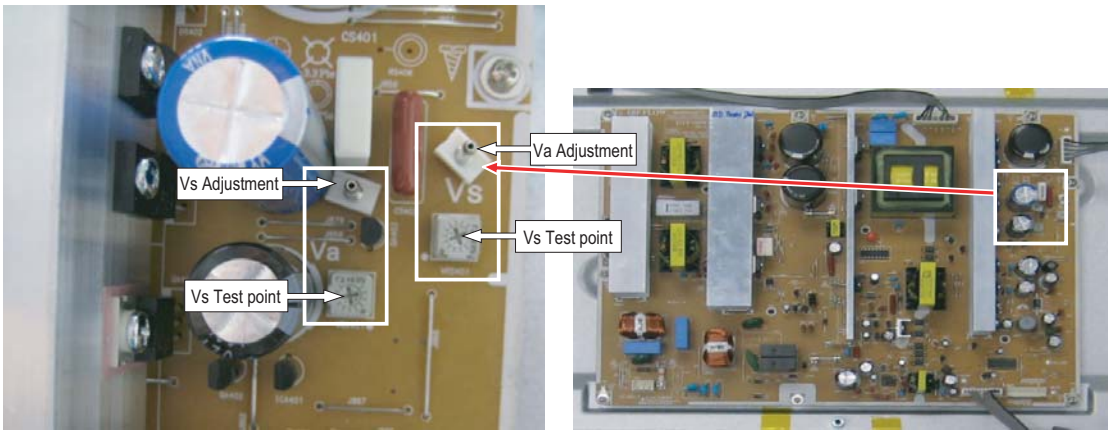
■ Voltage Adjustment

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.)

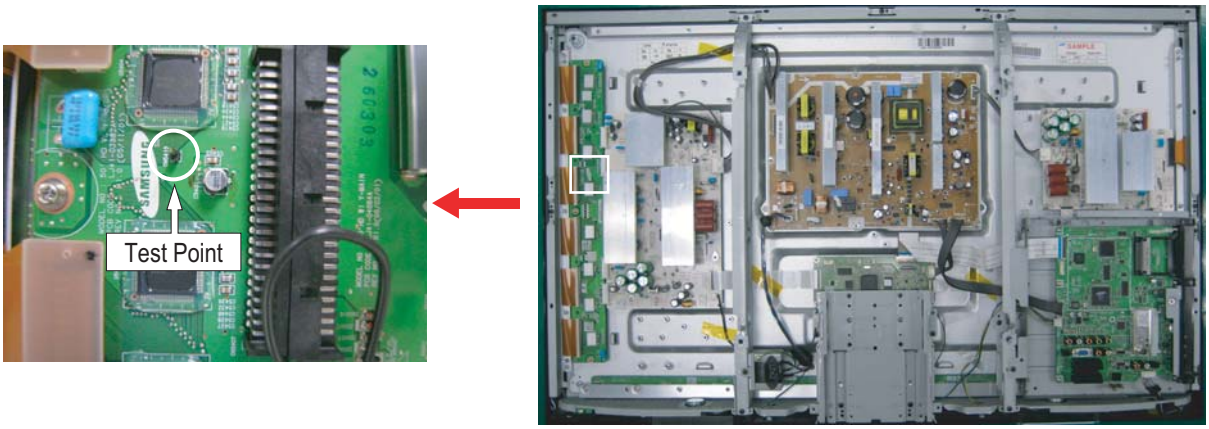
	Value	Board Adjustment
Vs	210	SMPS
Va	63	
Vset	-	
Ve	94	
Vscan	-190	



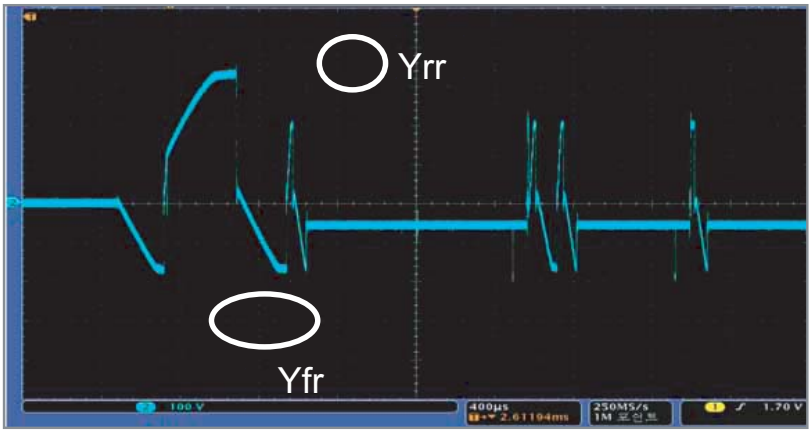
2. A point of adjusting SMPS-MAIN voltage.

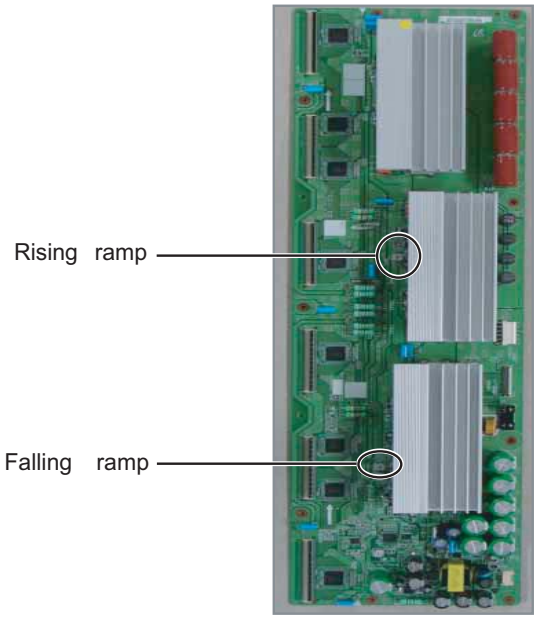


■ Y-RR and Y-FR controls



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)

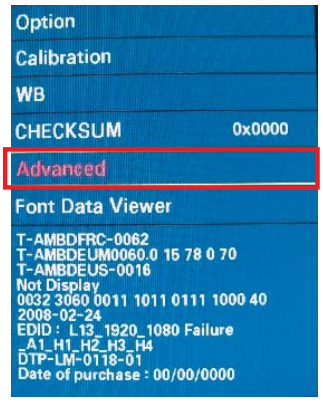
< Voltage Adjustment Specifications >

4-3 Upgrade

4-3-1 How to Update Main Program (with RS-232C Cable)

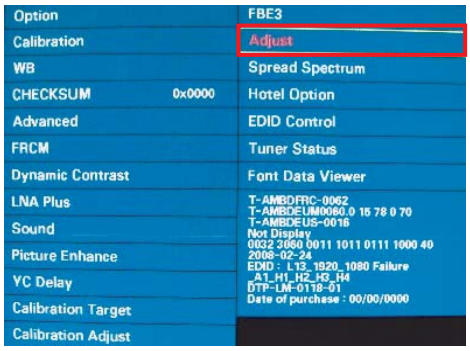
1. Before S/W Update, set the value " Watchdog & UART "
   To set the value, enter to " Factory mode → Advanced → Hidden Menu → Adjust "

2. Enter to Factory Mode
   - On Stand by Mode,
     INFO > Menu > Mute > Power On
   - With Factory Remote Controller Power on Main Board,
     then press the button (INFO + Factory).

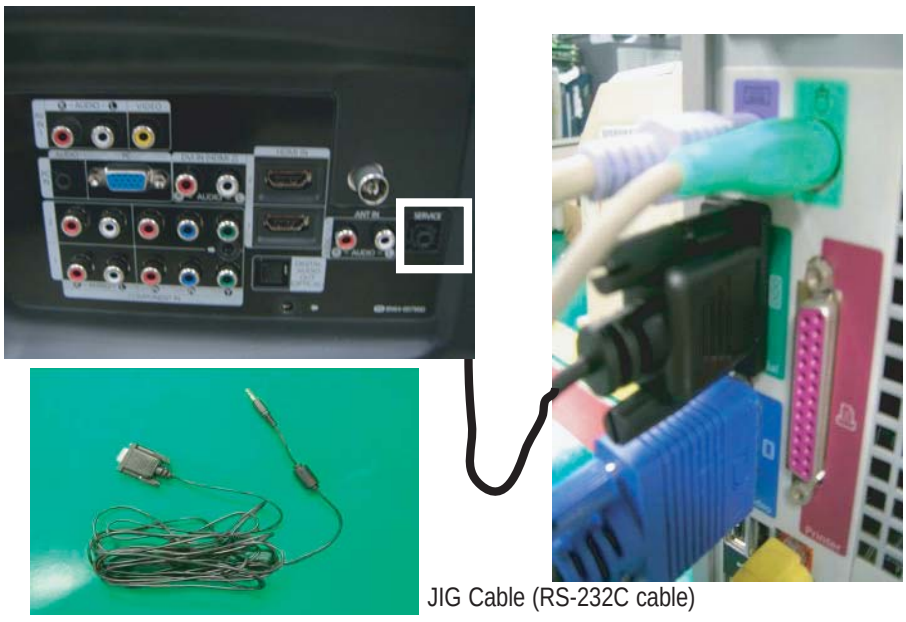


3. To make " Hidden Menu ",
   we have to press the Password
   when cursor is on Adjust.
   (now, Password is " 0000")

4. Set the value " Watchdog OFF " and " UART Select MTK "

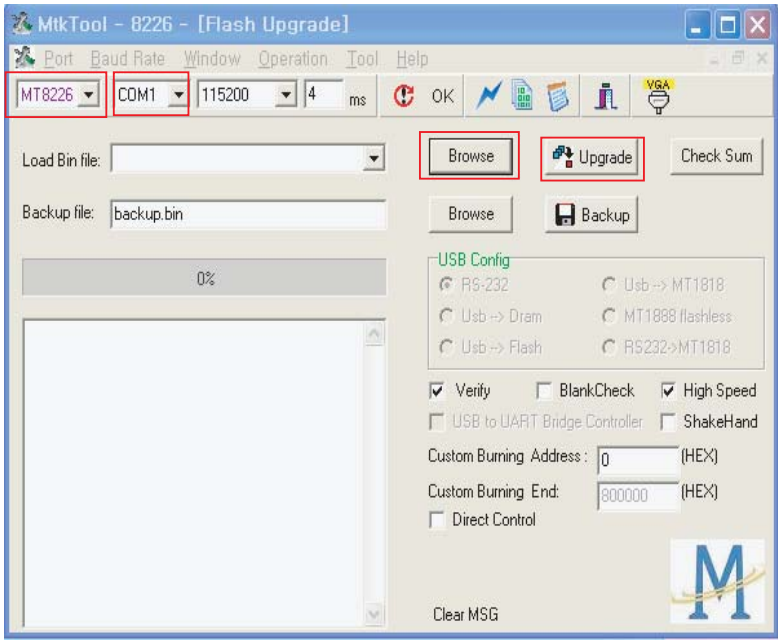


5. Install the MTK Tool
   - Connect Set (Service JACK) and JIG Cable to execute Program Update.



JIG Cable (RS-232C cable)

6. Turn on the Set (or on Stand by mode)
   - Run "MTK Tool"

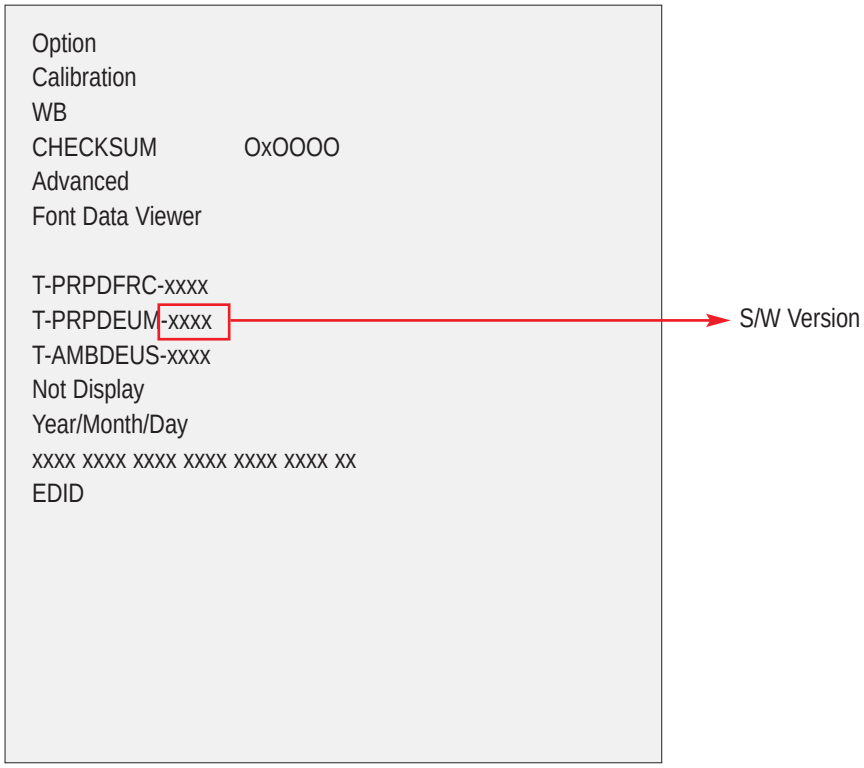


- Click Reset
- Choose MT8226
- Select Com Port
  (Auto Detect)
- Select Bin file
  (to update new S/W version file), by Browse
- Click Upgrade button

7. If Upgrade is finished, Turn off (=AC Power off) the Set (waiting a few seconds) and turn on again.

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 4-21.



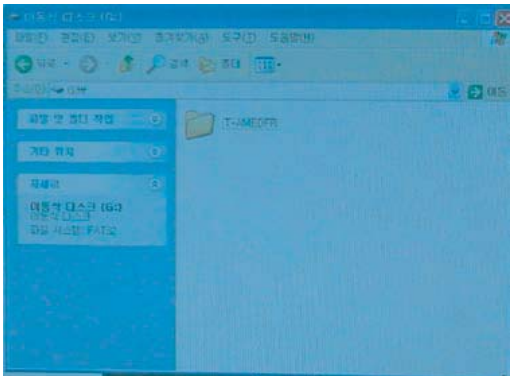
50"
T-CRLDAUC-xxxx
T-CRLDAUM-xxxx

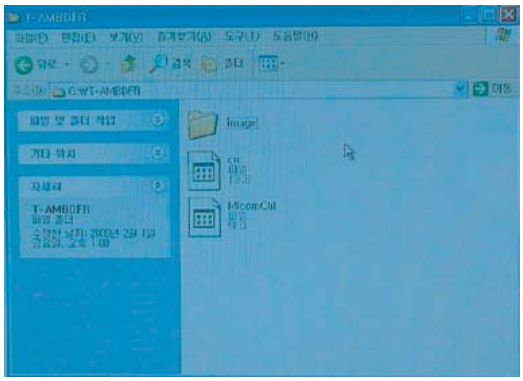
42"
T-PRPDAUC-xxxx
T-PRPDAUM-xxxx

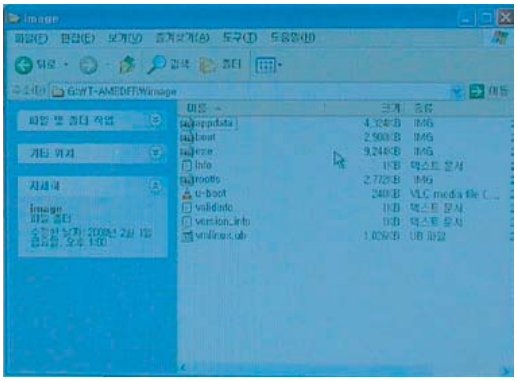
4-3-3 USB Download Method

※ Samsung may offer upgrades for TV's firmware in the future. Please contact the Samsung call center at 1-800-SAMSUNG (7267864) to receive information about downloading upgrades and using a USB drive. Upgrades will be possible by connecting a USB drive to the USB port located on located on the back of your TV.

1. Insert a USB drive containing the firmware upgrade into the wiselink port on the side of the TV. (USB drive make folder "42' T-PRPDFRC" "50' T-CRLDFRC" and this folder download micom program.)





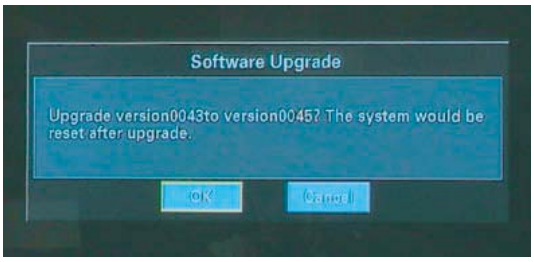


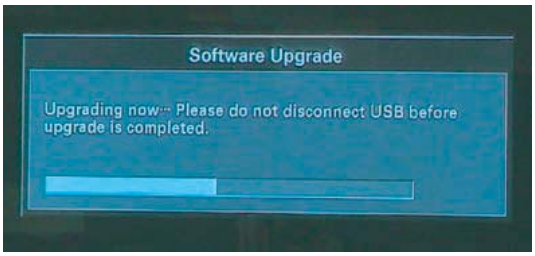
2. Insert USB drive.
   Menu → Setup → SW Update then press the ENTER button.
   The message "Scanning for USB. It may take up to 30 seconds."
   Please be careful to not disconnect the power or remove the USB drive while upgrade is being applied.
   The message "Upgrade version XXXX to version XXXX ? The system would be reset after upgrade."
   Press the left, right button to select "OK". The TV will shut off after completing the firmware upgrade.
   Please check the firmware version after the upgrade is complete.

* How to check Program Version
1. To enter Factory mode
2. Check the micom version

1) 50"
T-CRLDAUC-xxxx
T-CRLDAUM-xxxx

2) 42"
T-PRPDAUC-xxxx
T-PRPDAUM-xxxx





MEMO