

FIRMWARE
 6/11/ 12 T-MST10PAUSC for 51 Scan IC
 Issue Version 1012.9
 (4 firmware upgrades – listed is latest as of
 6/25/12) **Check for any new additional.**

Quick Parts: Verify before Ordering

1	Version	Parts No	Description
2	SS01	BN44-00510A	SMPS
3	TS02	BN44-00510A	SMPS
4	TD03	BN44-00510B	SMPS
5	ALL	BN94-04644B	Main PCB
6	ALL	BN96-21431C	RF module PCB
7	ALL	BN96-21749B	Function PCB
8	ALL	BN96-22104A	Logic Main PCB
9	ALL	BN96-22105A	Buffer E
10	ALL	BN96-22106A	Buffer F
11	ALL	BN96-22107A	X/Y Main Drive
12	ALL	BN96-22108A	X upper
13	ALL	BN96-22109A	X lower
14	ALL	BN96-22110A	Buffer Y
15	SS01	BN96-21349A	Panel
16	TS02	BN96-22098A	Panel
17	TD03	BN96-22099A	Panel
18	ALL	BN96-16847A	Stand Base
19	ALL	BN96-18195A	Stand Guide
20	ALL	BN96-21994A	Front Cover
21	ALL	BN96-21999U	Rear Cover
22	ALL	BN96-22009A	Stand Guide
23	ALL	3903-000552	Power Cord
24	ALL	AA59-00579A	Remote
25	ALL	BN96-21672A	Speaker
26	ALL	BN96-22728E	LVDS Cable
27	ALL	4301-000103	Battery
28	ALL	BN63-02368B	Cleaning Cloth
29	ALL	BN81-07013A	3D Glasses

HELP : 888-751-4086; 866-894-0637 FE)

GSPN

<http://gspn3.samsungcsportal.com>

PLUS ONE

<http://my.plus1solutions.net/clientPortals/samsung>

HOT TIPS

- New 2012 Model... always check for latest bulletins and firmware updates.
- Check Tips for new 2012 Option Bytes Table.
- New combined X/Y Main Board.

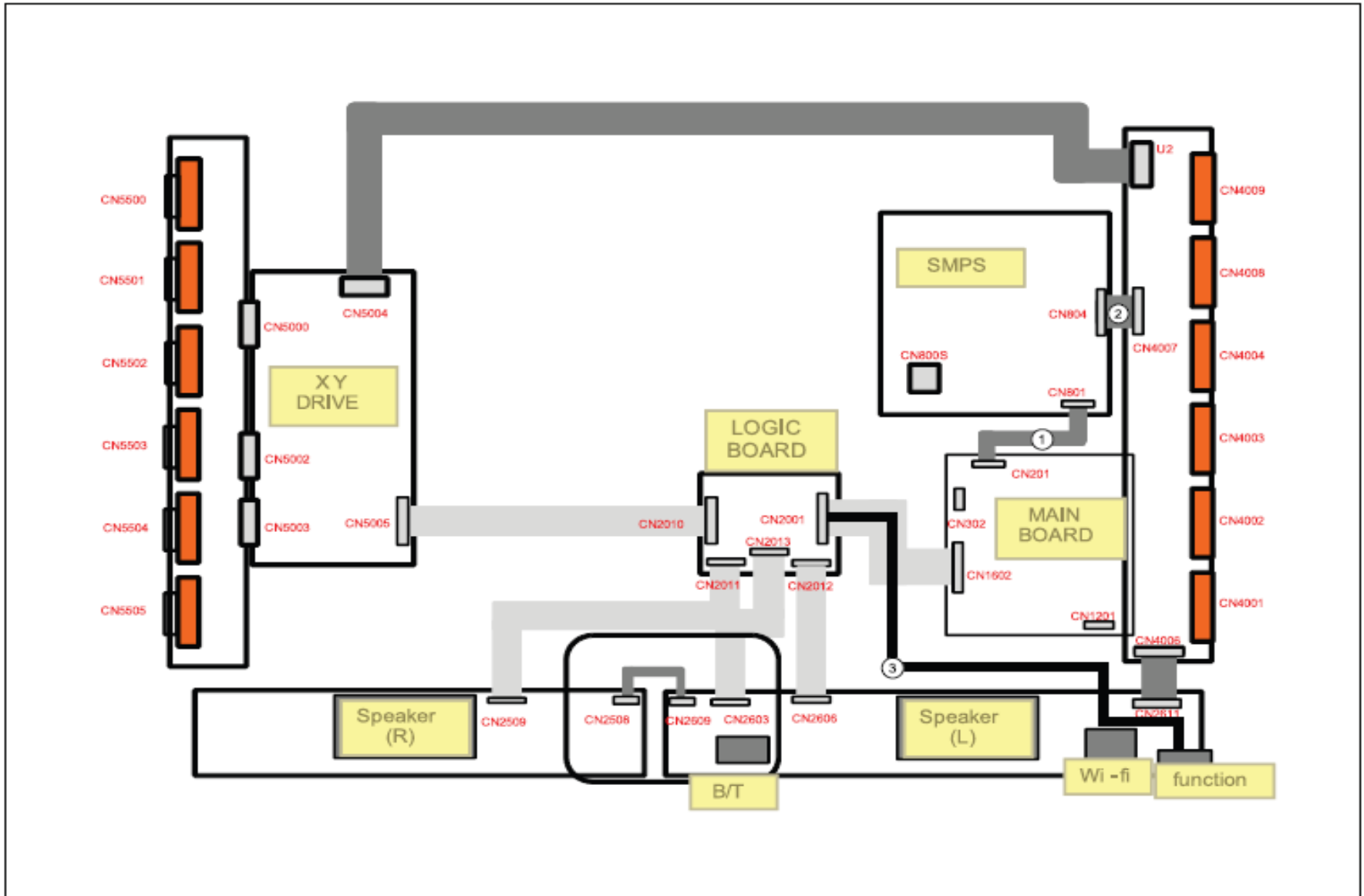
SERVICE BULLETINS

- 6/11/12 ASC20120611001
Y-Buffer Failure
- 6/6/12 ASC20120606001: Improve Eco Sensor, replace Function Board & Upgrade Firmware
- 5/16/12 ASC20120515001: How to send TV's emergency data WD & AR data to SEA

**Always check for latest Bulletins ,
 Tips & Firmware updates!!**

**Jog
 Func.**

■ 51" FHD Overall Wiring



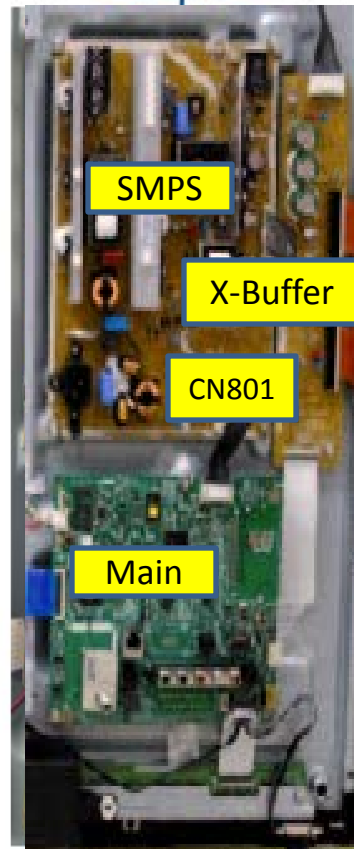
Power On Sequence

SMPS (CN801) to/Fro Main Board (CN201)

CN801(SMPS) ↔ CN201(Main Board)	
Pin No. (SMPS)	Signal(SMPS)
1	PS-ON (3.3V - 0V)
2	STBY (5.3V)
3	GND
4	D15V
5	GND
6	GND
7	D5.3V
8	D5.3V
9	GND
10	D15V
11	D15V
12	D5.3V

Power On Sequence (SMPS CN801):

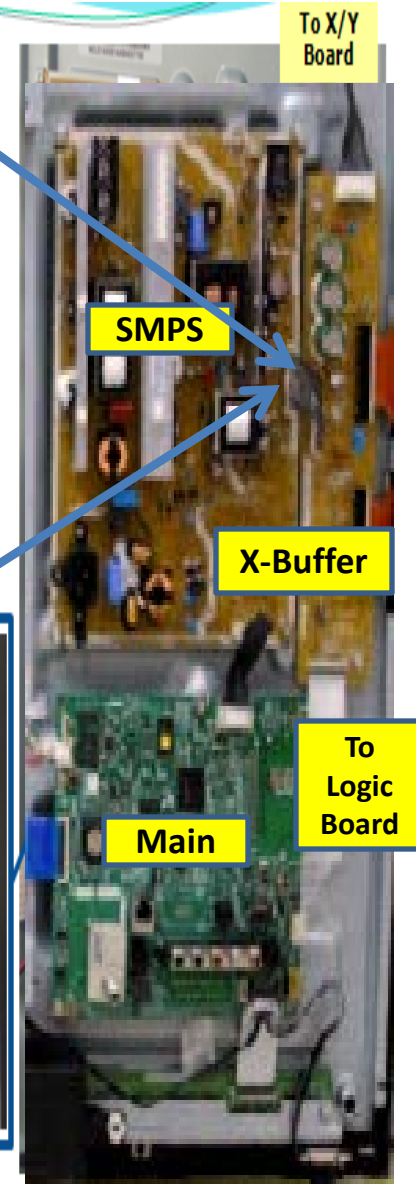
1. Standby Power : **STBY (5.3V)**
2. Power On: **PS-ON (3.3V - 0V)**
3. Low Voltages On: **D15V, D5.3V**



CN804 (SMPS) – CN4005			
Pin No.(SMPS)	Signal(SMPS)	Pin No. (SMPS)	Signal (SMPS)
1	VS	7	D5.3V
2	VS	8	GND
3	N.C	9	VS_ON
4	VA	10	VS_CON
5	GND	11	PS_ON (3.3V - 0V)
6	D15V	12	GND

Power On Sequence Continued:

4. The PS ON signal, (3.3V- 0V) also at this connector, as it passes through the X- Buffer and the Logic Buffer Boards on its way to the Logic Board.
5. The **VS_ON** command returns from Logic Board turning on the VS & VA on the SMPS.
6. SMPS sends **VS** through X-Buffer Board to X/Y Main & **VA** through X-Buffer to the Logic Buffer Boards.



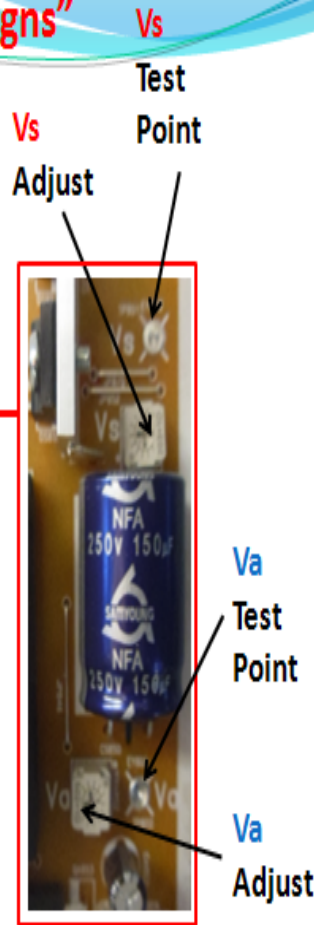
Locations may slightly vary with model/size/version

Supply Adjustments

PNE490 Supply Adjustments "Vital Signs"

<input type="checkbox"/> NTSC	<input checked="" type="checkbox"/> NTSC/PAL		
Vs	Va	Vsc	Ve
203	58	-180	70

1. Record Readings on PANEL LABEL
2. Go to SMPS Power Board
3. Measure/Adjust Vs Voltage
4. Measure/Adjust Va Voltage



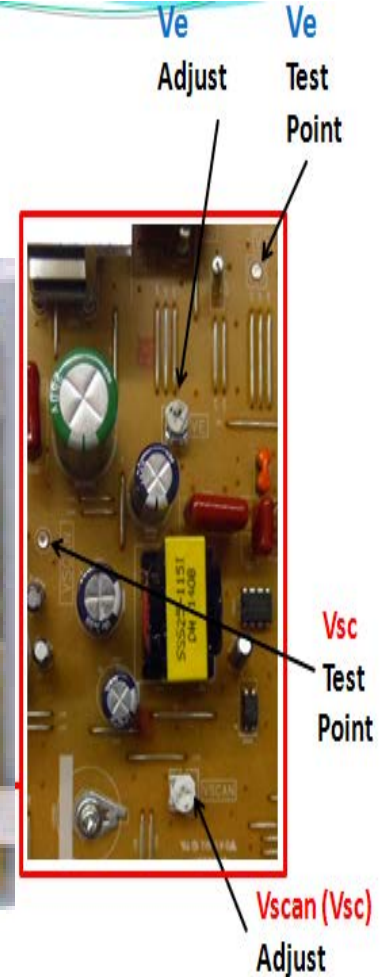
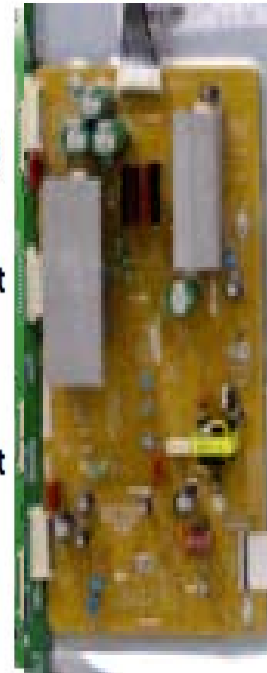
SMPS Adj.

<input type="checkbox"/> NTSC	<input checked="" type="checkbox"/> NTSC/PAL		
Vs	Va	Vsc	Ve
203	58	-180	70

Panel Label

X/Y Main Board

5. Go to X/Y Board
6. Measure/Adjust Ve Voltage
7. Measure/Adjust Vsc Voltage



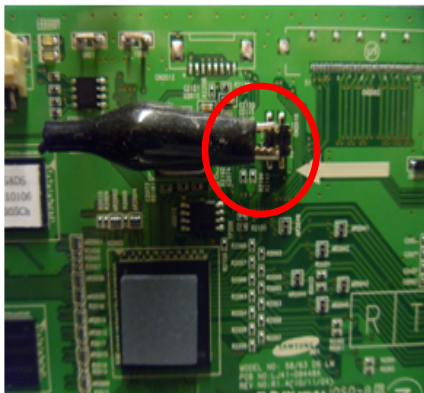
X/Y Main Adj.

Adjustment locations may slightly vary with model/size/version

Activating Power & Logic Board Test Patterns without Main Board:

1. Remove Power Cord to Panel
2. Short Highest 2 Pin #s on Logic Board Test Jig (Can be 4 Pin or 6 Pin)

3. Remove Power Connector at Main Board (keeping connection to SMPS)
4. Short "Power On" Pin to Circuit Ground on Power Connector to SMPS.
5. Connect Power Cord to Panel



Note: Some TVs may just have PC Pads instead of pins on Logic Test Jig. Simply connect to the 3 & 4 pads.

Power Supply Trouble Shooting Notes:

2010/2011/2012 models

Will not be run when the "X" or "Y" or "Y/X" Main are disconnected. The SMPS will shut down immediately. However if a meter is first connected to the test point when power is applied it will read the correct voltage briefly before shutting down. (You have enough time to check key voltages!)

CAUTION: Do not reconnect any connectors to SMPS or Y/X Board(s) until power has been turned off long enough for Vs to drop below 10V or damage will occur to X/ Y Board(s).

VITAL SIGNS check Vs, Va, Vsc & Ve

When troubleshooting, It's very important to first check **Vs, Va, Vsc & Ve**

If **Vs** is missing (0V), disconnect power and check for short. Use ohm meter to measure resistance while disconnecting Y/X-Board supply feed.

Turn Power On and Test SMPS with short connector removed for correct Vs voltage verification. (It may only come up briefly but to full level). Again be careful not to reconnect Power Connectors until Vs falls below 10V.

If **Va** is low or missing, disconnect Supply Feed to Logic Buffer Boards and check to see if SMPS Supply is restored. .

If **Vsc** is low or missing and Vs was OK, the failure is with the **Y/X-Board** since the Y-Board section generates the Vsc voltage from the Vs supplied by the SMPS.

If **Ve** is low or missing and Vs is OK, the failure is with the **Y/X-Board** since the Ve is generated by the X-Board section from the Vs supplied by the SMPS

Other SMPS Voltages:

Check Low Voltage feeds to the Main Board and other supplied Assemblies.

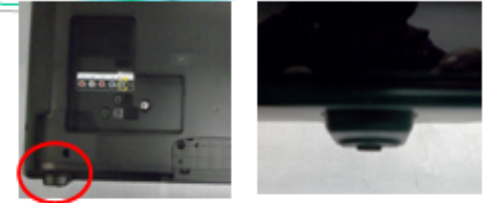
Over Current Protection

For the SMPS Power Supply... If a short circuit occurs on either the VS or VA voltage lines, the SMPS stops operating, but should not fail. When the short circuit is removed from the source line, the Power Supply will operate normally again. **Many SMPS Supplies are replaced needlessly!**

Function Control Troubleshooting

5 Directional Function Control

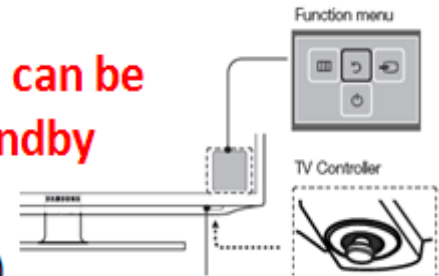
UNEH4000 Sample



CN702 (FUNCTION)			
1	IR	5	MSDA
2	GND	6	KEY1
3	A3.3V	7	KEY2
4	MSCL	8	GND

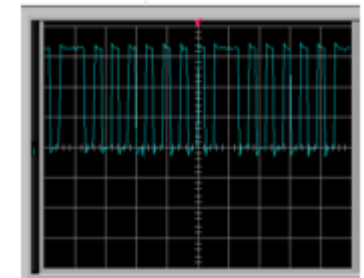
All Functions can be Tested in Standby Mode

(Standby Voltage)



Command	PIN	Signal	DC Voltage/Notes
IR	1	IR	3.3V to 2.5V DC with any Remote Control Commands
Press	6	Key 1	3.3V to 0.0V DC
Left	7	Key 2	3.3V to 1.6V DC
Right	7	Key 2	3.3V to 2.5V DC
Up	7	Key 2	3.3V to 0.0V DC
Down	7	Key 2	3.3V to 0.8V DC

Actual IR Signal



4V P-P Data

✓ Standby **A3.3V** on Function Connector, Pin 3.

✓ All Pins should read **3.3V** before commands.

✓ **Press**, at Key 1, Pin 6. **3.3V** to **0.0V** DC

✓ **Left, Right, Up, Down** at Key 2, Pin 7. Check **specific voltages** on chart.

TROUBLESHOOTING VIDEO PROBLEMS

1. Verify Video Operation:

- A. Customer Picture Test
- B. "Display"
- C. If display & Customer Picture Test are OK source is suspected
- D. Substitute with known good source and cabling.

2. Using Test Patterns in Service Mode:

Customer Remote

- A. Power off
- B. Mute, 182, Power

Factory Remote:

- A. Power On
- B. Info, Test

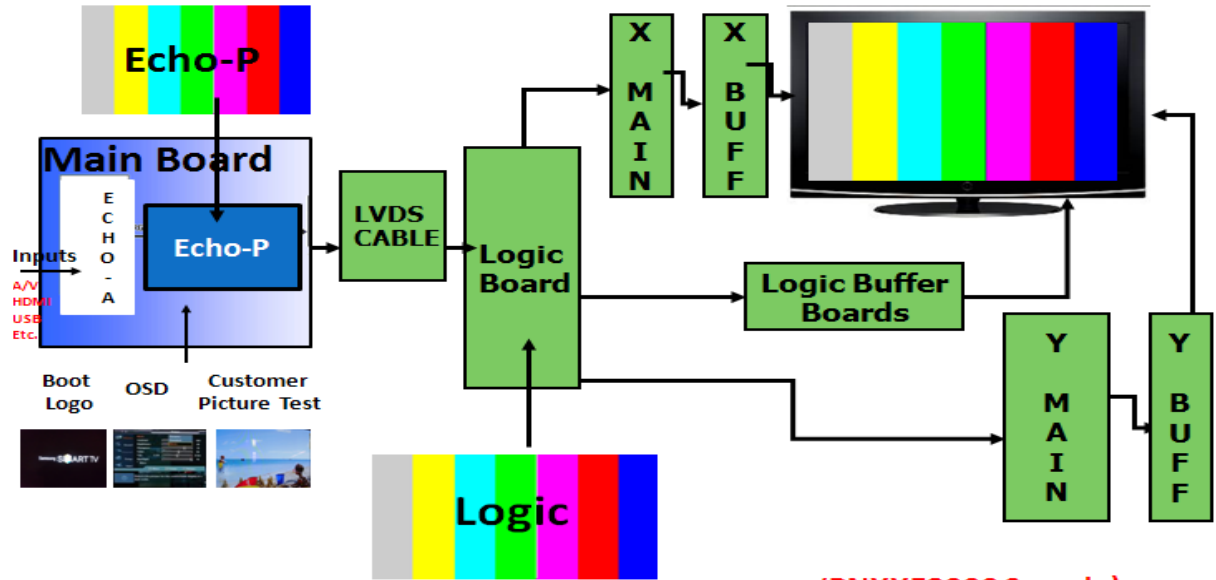
3. Verify Echo-P Patterns

4. Verify Logic Patterns

If Logic Patterns are OK and Echo-P are noisy, replace the defective LVDS Cable or Main Board.

If Echo-P and Logic Patterns are both noisy check for specific on screen noise error to determine failure. (next slide)

2012 PDP Signal Path for Troubleshooting



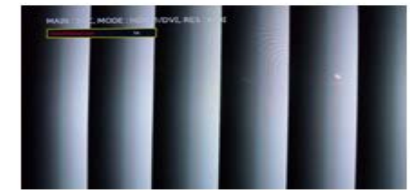
(PNXXE8000 Sample)

LOGIC Pattern Sel	13
LOGIC Level Sel	255
EchoP Pattern Sel	0
Echo-FP Pre Test Pattern	0
Echo-FP Post Test Pattern	0

Main Board Patterns Test
Select: EchoP Pattern Sel

LOGIC Pattern Sel	13
LOGIC Level Sel	255
EchoP Pattern Sel	0

Logic Board Patterns Test
Select: LOGIC Pattern Sel



ON SCREEN FAILURE EXAMPLES:

NOTE: X/Y MAIN Combined.

"Y" Board Failure Examples

Notice how each error contains a horizontal line

These examples show Y board errors, because the Y electrodes run horizontally, errors can often be seen across the screen.

2010 & 2011 Y board errors will be detected by the Logic Board and often create a High Voltage Power Down ("VS ON" to Off) condition.

When failure exists on either the Y-Board or the Y-Buffer Boards, be sure to replace both assemblies. A failure on either Board can create a failure on both assemblies.

Y Buffer Boards Failures

Y-Buffer Failures will often show blown Scan ICs & will create either Panel Power Down

Or

On Screen Errors across the screen as shown in examples

Upper Y Buffer Error

Lower Y Buffer Error

Two Output Lines on Scan IC Are open or connector to Panel is open.

Bottom 2 Scan ICs affected. (12 IC's total = 1/6 of video)

ALIGNMENTS:

1. Check/Adj. VS, VA, VE, & VSC according to Panel Label and Diffusion test. (see bulletins for any special notes before making changes)



DIFFUSION TEST/ADJ. (cell miss-firing)

- Allow the unit to warm up 15 to 20 minutes
- Access the Burn Protect Sig. Pattern in Cust. Menu.
- Adjust the Vs volts until screen errors are gone in both dark and bright areas.
- Adjust the Vs volts within +/- 10V on the panel label.
- **NOTE: Diffusion may appear with aging panels.**
- **New panels with Diffusion consult bulletins and/or report problem.**

"X" board Failure Examples

- In this left screen example, the sustain signal from the X board is low or missing.
- For 2009 Models and Older: Verify operation of the X board by disconnecting the power supply cable to the X board. If the other boards are working the picture will be dark.
- If the X-Board Power or Y-Board Power is removed, however, on 2010 or 2011 Models, an error will be detected and the VS Supply from the SMP5 will be turned off by the Logic Board. A Black Screen (on right) will occur.

"X" board Failure Examples

- In this example the Ve Initialize signal is low or missing creating image retention. No Erasing.
- Troubleshoot the X Board by verifying that the Ve Voltage is correct with the label on the Panel.

Logic Board Failure Examples

Screen vertical Noise Errors usually in Multiple Locations

The examples show the panel illuminated but displays with incorrect noisy video.

Logic Buffer Board Failure Examples

Normal Video Screen with added Vertical Black, Red, Green, or Blue Bar Errors

The examples show the panel illuminated, display is Normal except for area of Logic Buffer Board Failure.

Model Code	Side Label	Type	Basic Model	SVC Model	Option				
					Tuner	Region	Ch Table	Front Color	Local Set
PN51E550D1FXZA	SS01	51EFHcD	PE550D	PE550D	-	-	SAMEX	P-T-C-BK	US
PN51E550D1FXZA	TS02	51EFHcD	PE550D	PE550D	-	-	SAMEX	P-T-C-BK	US
PN51E550D1FXZA	TD03	51EFHcD	PE550D	PE550D	-	-	SAMEX	P-T-C-BK	US
PN51E550D1FXZA	SD04	51EFHcD	PE550D	PE550D	-	-	SAMEX	P-T-C-BK	US

Main Board Failure Symptoms

- Main Board errors are similar to logic errors but the problem can be on a single source such as the tuner.
- If the Menu also shows the defect the main board is suspected

PDP Panel Troubleshooting

Plasma Panel Failure Examples

- Plasma Panel failure can usually be identified by observation. Single sub pixel columns or rows that are black or white always are panel failures. Other lines or lines that vary with content are almost never panel failures. Individual pixel errors are almost always panel related.