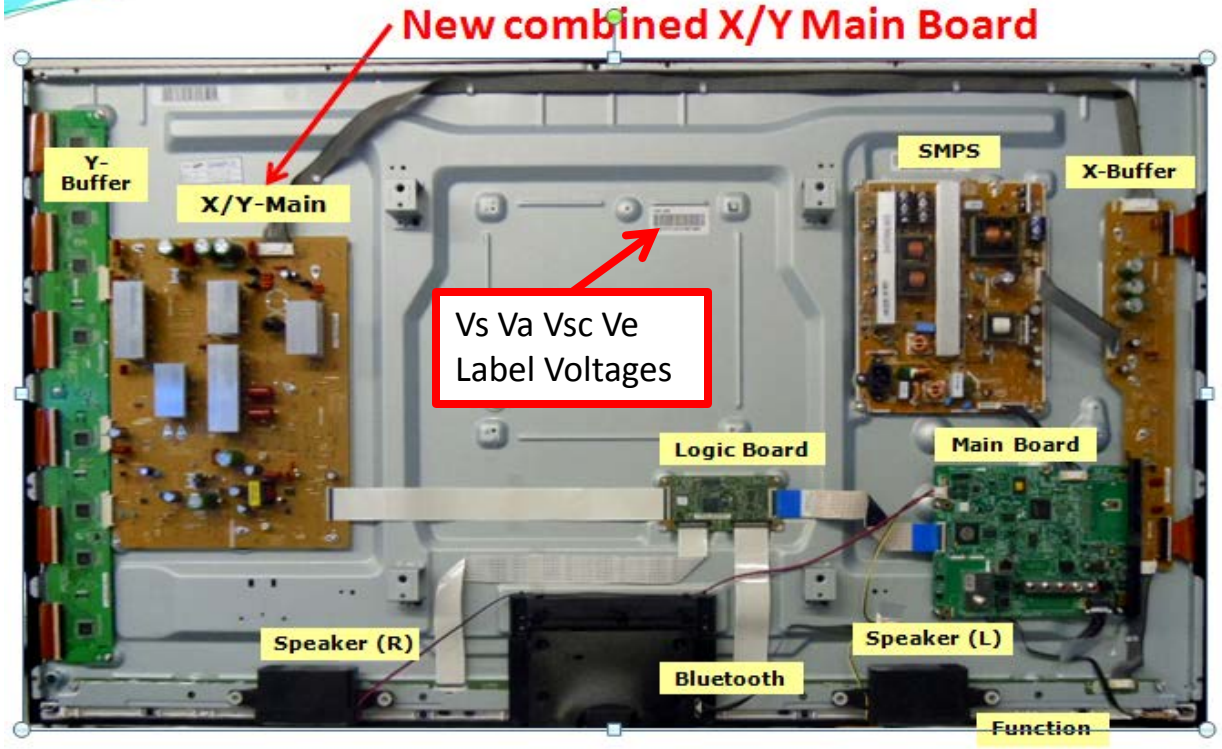
PN51E490B4FXZA Fast Track Troubleshooting Manual – Rev 5/29/12



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.

-New combined X/Y Main Board

FIRMWARE

5/25/12
PL51E490B4FXZP / PN51E490B4FXZA
T-MST9AUSC
Version 1007.1

Avail on GSPN or Samsung,Com

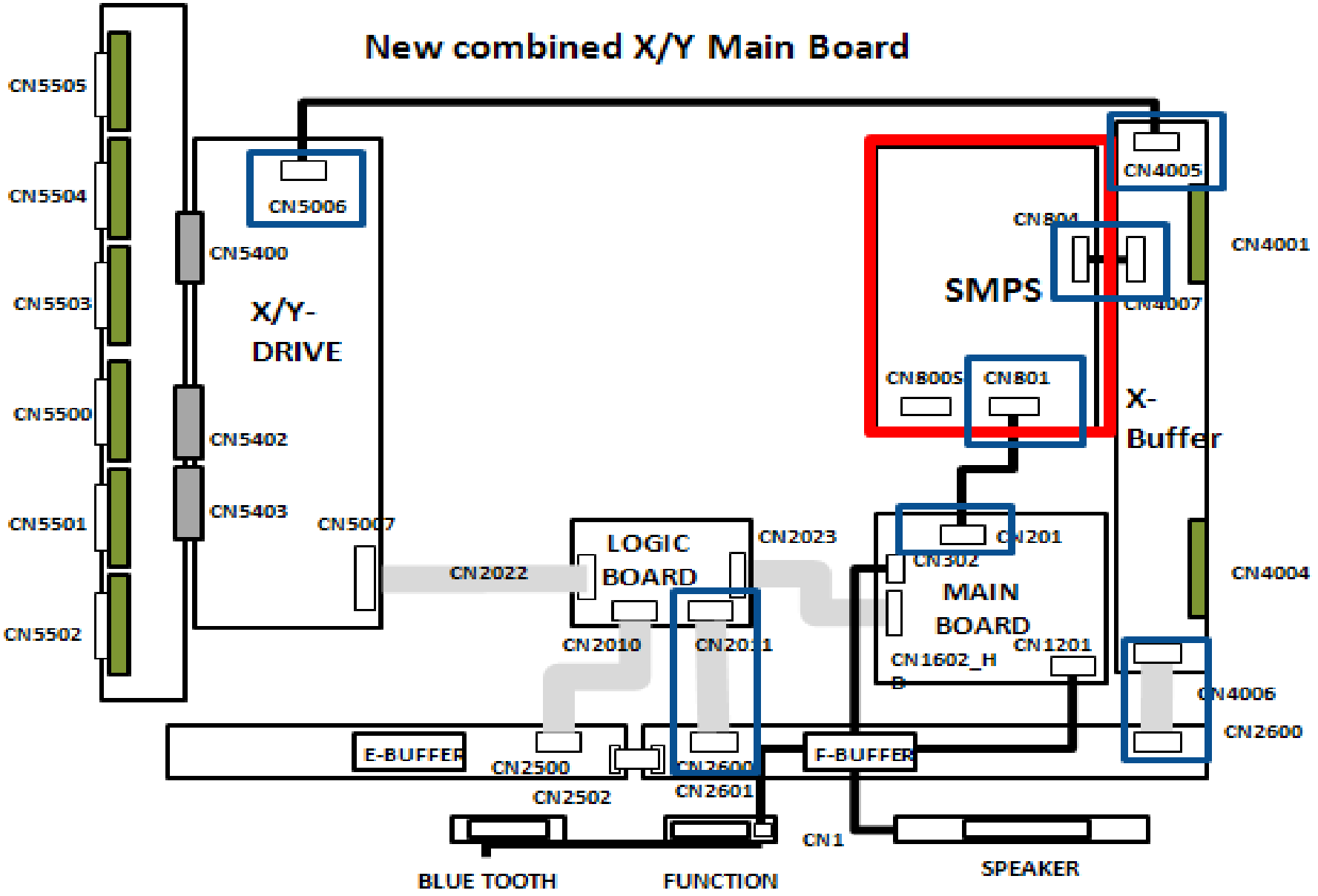
Always check for latest updates

SERVICE BULLETINS

-None listed as of 5/29/12

Quick Parts: Verify before Ordering

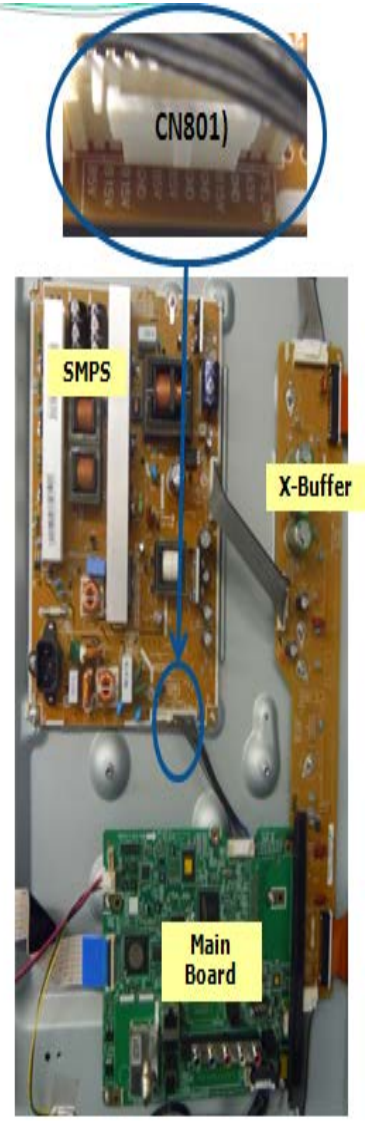
Parts Category	Version	Parts No	Short Description
PCB	TD02	BN44-00509B	SMPS
PCB	TD02	BN94-04640B	Main PCB
PCB	TD02	BN96-21431C	RF module PCB
PCB	TD02	BN96-21529H	Function PCB
PCB	TD02	BN96-22085A	Logic Main PCB
PCB	TD02	BN96-22086A	Buffer E
PCB	TD02	BN96-22089A	Buffer F
PCB	TD02	BN96-22090A	X/Y Main Drive
PCB	TD02	BN96-22093A	Buffer X
PCB	TD02	BN96-22094A	Buffer Y
Display	TD02	BN96-22083A	Panel
Cosmetic	TD02	BN96-21670B	Speaker
Cosmetic	TD02	BN96-21989N	Front Cover
Cosmetic	TD02	BN96-21999J	Rear Cover
Cosmetic	TD02	BN96-22006A	Stand Base
Cosmetic	TD02	BN96-22009A	Stand Guide
Component	TD02	3903-000552	Power Cord
Component	TD02	BN96-13325F	LVDS Cable
Accessory	TD02	4301-000121	Battery
Accessory	TD02	BN63-02368B	Cleaning Cloth
Accessory	TD02	BN81-07013A	3D Glasses


New combined X/Y Main Board
CN5505
CN5504
CN5503
CN5500
CN5501
CN5502
CN5006
CN5400
X/Y-
DRIVE
CN5402
CN5403
CN5007
CN2022
LOGIC
BOARD
CN2023
CN2010
CN2011
CN4005
CN804
CN4001
SMPS
CN4007
CN8005
CN801
X-
Buffer
CN201
CN302
MAIN
BOARD
CN4004
CN1602_H
CN1201
CN4006
CN2600
E-BUFFER
CN2500
CN2502
CN2600
CN2601
F-BUFFER
CN1
BLUE TOOTH
FUNCTION
SPEAKER

E490 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



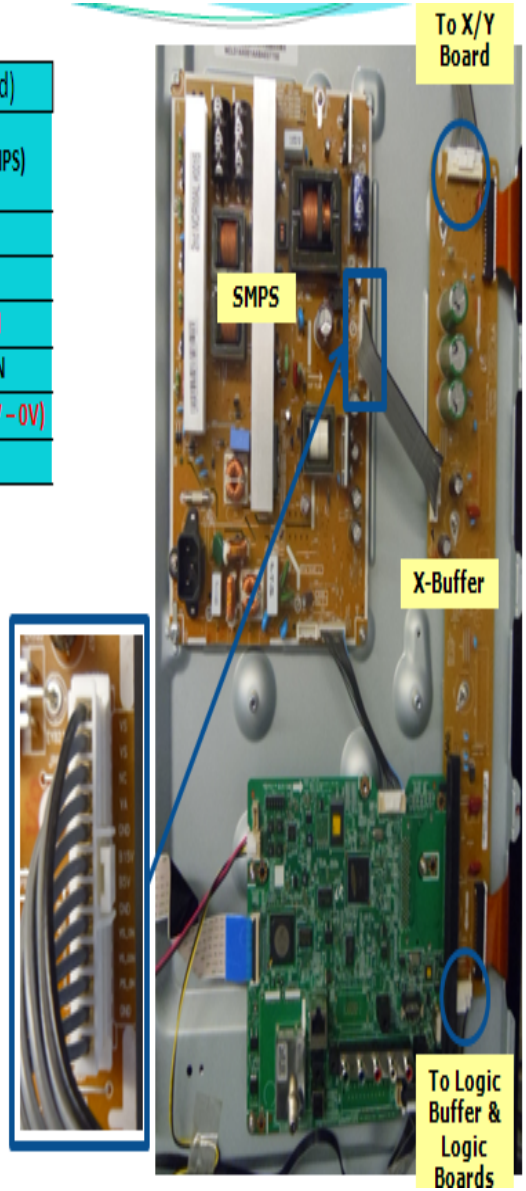
Power On Sequence (SMPS CN801):

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

CN804(SMPS) ↔ CN4007(X Buffer Board)			
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.

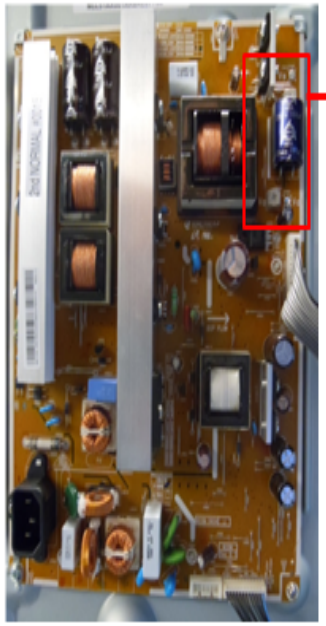


E490 Supply Adjustments

PNE490 Supply Adjustments "Vital Signs"

NTSC		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.

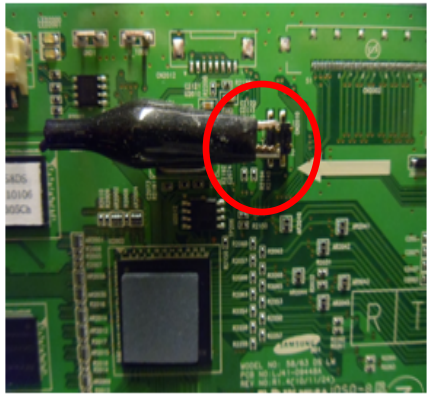
NTSC		NTSC/PAL	
Vs	Va	Vsc	Ve
203	58	-180	70

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

X/Y Main Adj.

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

- ✓ 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.

5 Directional Function Control

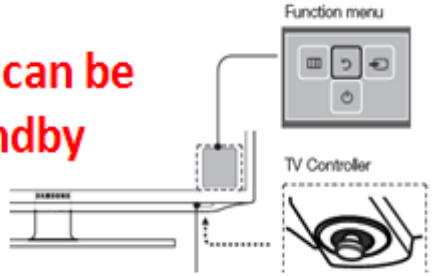
UNEH4000 Sample

CN702 (FUNCTION)

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

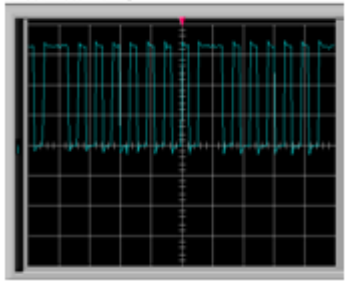
All Functions can be Tested in Standby Mode

(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

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:

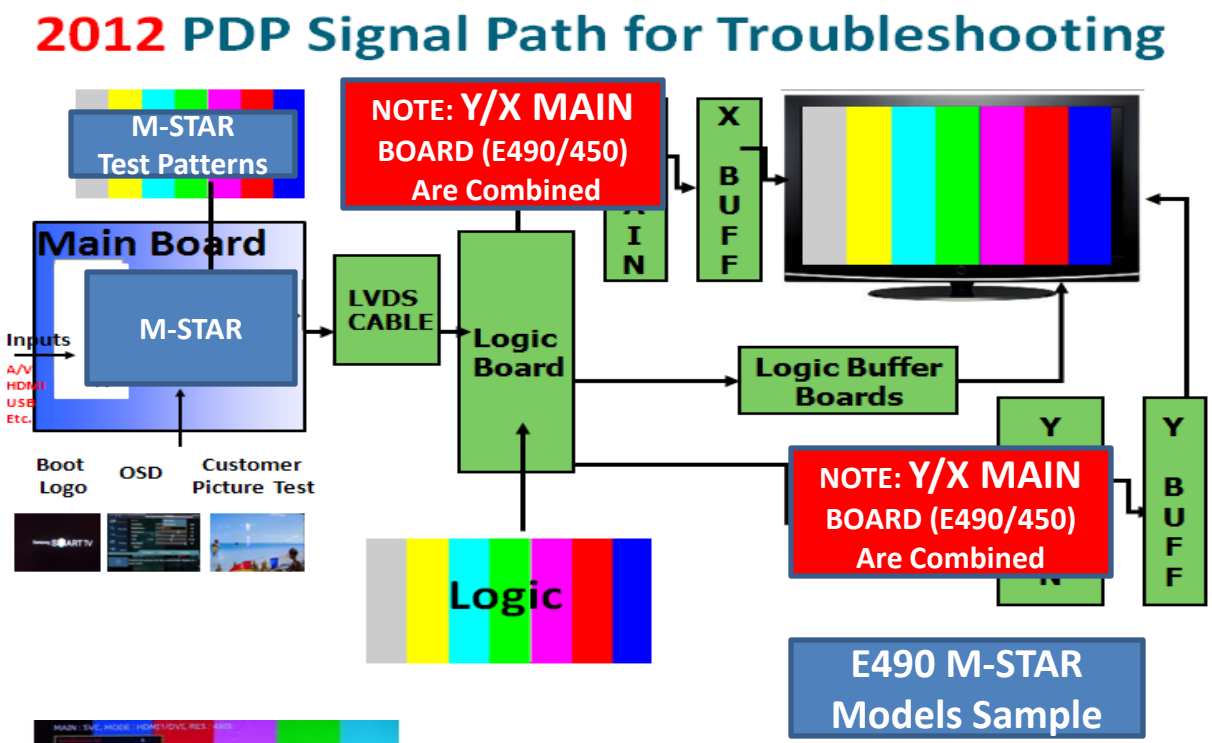
Customer Remote
A. Power off
B. Mute, 182, Power
Factory Remote:
A. Power On
B. Info, Test

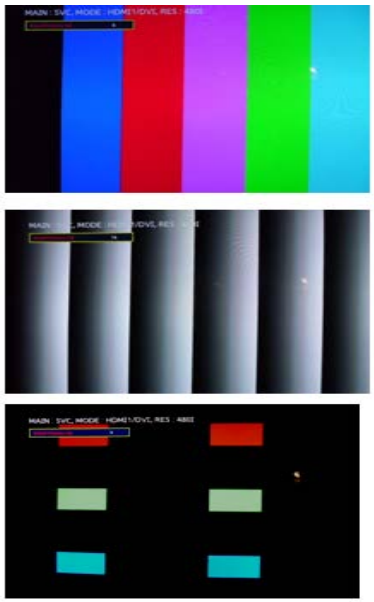
3. Verify M-STAR Patterns

4. Verify Logic Patterns

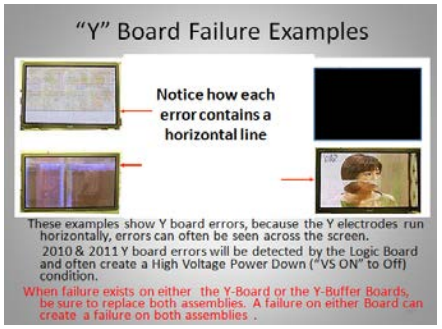
If Logic Patterns are OK and M-Star are noisy, replace the defective LVDS Cable or Main Board.

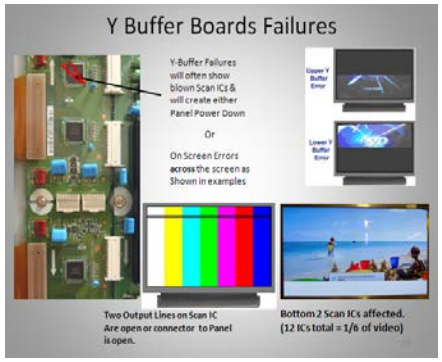
If M-Star and Logic Patterns are both noisy check for specific on screen noise error to determine failure. (next slide)

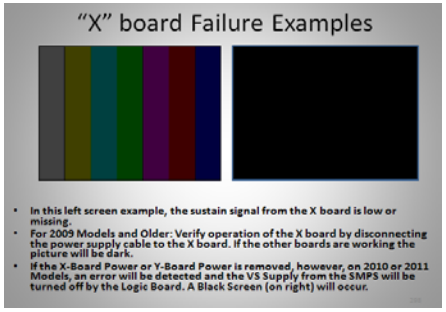


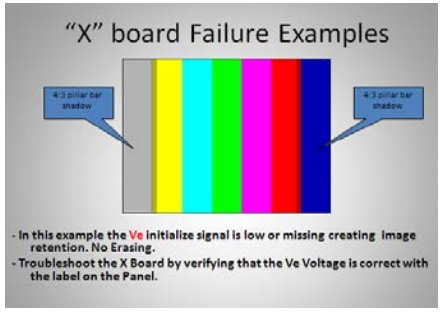


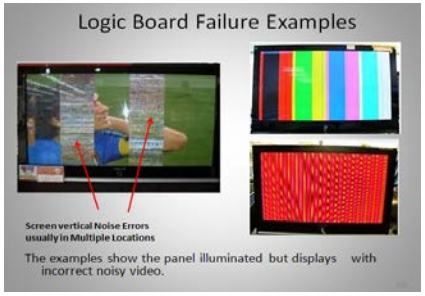
ON SCREEN FAILURE EXAMPLES:
NOTE: X/Y MAIN Combined.

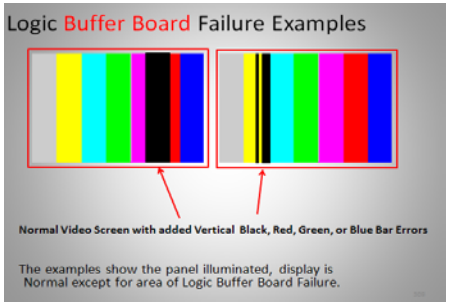


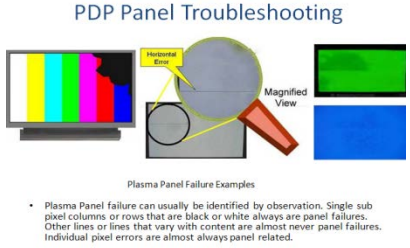












ALIGNMENTS:

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.**

2. **Check/Set Option Bytes:**

Menu	Data
Factory Reset	-
Type	51 DHHcD
Local set	xx
Bagic Model	PE490
SVC Model	0
TUNER	xx
Ch table	NONE
Front Color	T-R-BLK