



PDP-TELEVISION

Chassis: F33A(P_Europe_HD)_Lily
Model : PS42C91HX/XEH

SERVICE *Manual*

PDP-TELEVISION



PS-42C91H

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Refer to the service manual in the GSPN (see the rear cover) for the more information.

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2. Product Specification

2-1 Product Specification

Features			
Block	Specification	Major IC	Remark
RF	Tuner	TCPS3001PD32S(H)	SEMCO
PDP Module	Samsung SDI W2A	42"HD/50"HD	SAMSUNG SDI
Power	Input Voltage: AC 100~240V, 50/60Hz		
Video	Scaler	MT8202FG	MTK
	Video Decoder		
Sound	Sound AMP	NTP3000	Neo Fidelity
	Audio CODEC	MT8291(IC8002)	MTK
Cabinet	C9 Design		
Specification			
Model	PS-42C91H	PS-50C91H	
Screen Size	42 Inches (16:9)	50 Inches (16:9)	
Dimensions (WxHxD)	1055 x 775 x 341 mm (With stand)	1227.1 x 861.3 x 341 mm (With stand)	
Weight	40.4 kg (With stand)	49.7 kg (With stand)	
Voltage	AC 100~240V, 50/60Hz		
Colour System	PAL, SECAM, NTSC4.43, NTSC 3.58		
Sound System	BG, DK, I, M		
PC Resolution	1024 x 768 @ 60/75Hz	1360 x 768 @ 120 Hz	
ANTENNA input	AIR IN (75Ω unbalanced)		
VIDEO input	SCART1, SCART2 AV1, AV2 S-VIDEO COMPONENT1 - 480i/480p/720p/1080i PC HDMI1/2 (DVI Compatible HDMI) (Option)		
AUDIO input	SCART1, SCART2 AV1, AV2 S-VIDEO COMPONENT1 - 480i/480p/720p/1080i PC DVI		
Audio Output	AUDIO (L/R)		
Speaker Output	10W + 10W		

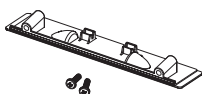
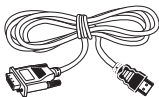
2-2 Specifications Analysis

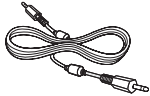
※ ○: application, X: non-application

Model		PS-42C91H (Lily-42HD)	PS-50C91H (Lily-50HD)	PS-42P7HD (Alps-42HD)
Design				
Basic	Display Type	PDP TV	PDP TV	PDP TV
	Built-In Tuner	O	O	O
	PC Resolution	1024 x 768 @60Hz	1360 x 768 @120Hz	1024 x 768 @75Hz
	PDP Module	W2A	W2A	V5.1
	Screen Size	42 inches	50 inches	42 inches
	Aspect Ratio	16 : 9	16 : 9	16 : 9
	Dimensions (WxHxD)	1055 x 775 x 341 mm (With stand)	1227.1 x 861.3 x 341 mm (With stand)	1055 x 775 x 341 mm (With stand)
	Weight	40.4 Kg (With stand)	49.7 Kg (With stand)	40.4 kg (With stand)
Picture	Brightness	1,100 Cd/m2	1,100 Cd/m2	1,100 Cd/m2
	Contrast Ratio	10000:1	10000:1	10000:1
	Image Enhancer	FBE2	FBE2	FBE
Audio	Equalizer	O	O	O
	Auto Volume	O	O	O
	Surround Sound	SRS TruSurround	SRS TruSurround	SRS TruSurround
	Speaker Output	10 W + 10 W	10 W + 10 W	15 W + 15 W
	Speaker	Included	Included	Included
Features	PIP	O	O	O
	Double Screen	O	O	X
	Caption	O	O	X
	Still Image	O	O	O
	My Color Control	O	O	X
	Color Weakness	X	X	X
	Energy Saving	O	O	O
	Screen Burn Protection	O	O	O
Connections	Antenna	1 Input	1 Input	1 Input
	CVBS	1AV (Rear)	1AV (Rear)	1AV(Rear)
	S-Video	1 Input	1 Input	1 Input
	Component(Y/PB/PR)	1 Input	1 Input	1 Input
	PC(D-SUB)	1 Input	1 Input	1 Input
	DVI	O	O	O
	HDMI	2 Input	2 Input	2 Input
	Scart	2 Input	2 Input	2 Input
	Optical	X	X	X
	Coaxial	X	X	X

※ For the power supply and power consumption, refer to the label attached to the product.

2-3 Accessories

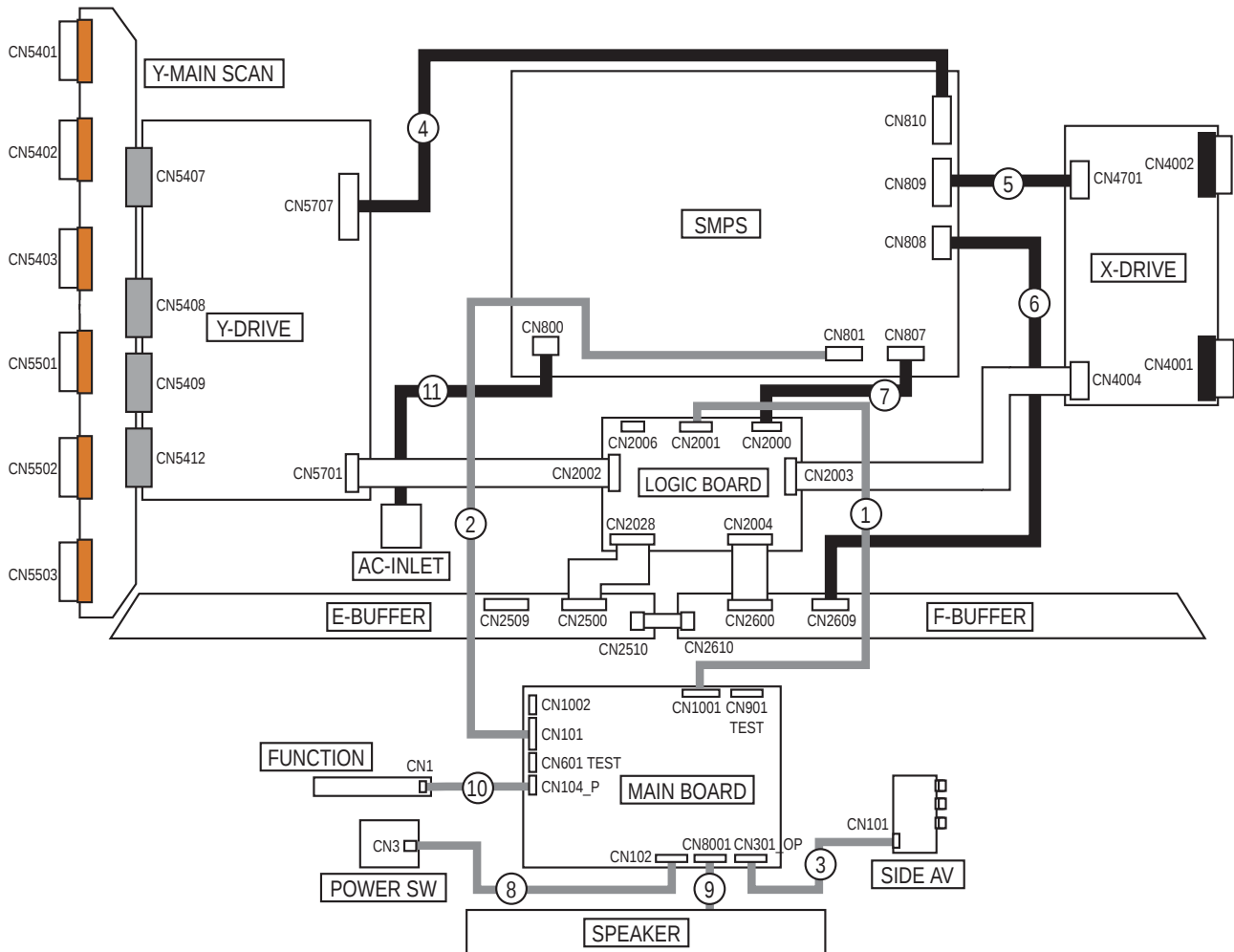
Accessories		Item	Item code	Remark
Supplied Accessories		Remote Control Batteries	BN59-00609A 4301-000103	Samsung Service center
		Power Cord	3903-000145	
		Owner's Instructions	BN68-01171P	
		Registration Card Safety Guide Manual	AA68-03575A AA68-03242E	
		Cloth-Clean	BN63-01798A	
		Ferrite Core for Earphone/Power Cord	3301-001110	
		Ferrite Core for S-VIDEO/Power Cord	3301-001305	
		Cover-Bottom Screws (2ea)	BN63-03055A 6003-001621	
Accessories that can be purchased additionally		S-VIDEO Cable 1200mm	BN39-00149A	Electronics Store/ Internal shopping mall
		HDMI Cable 3000mm	BN39-00641A	
		HDMI/DVI cable 3000mm	BN39-00643A	
		Component Cables (RCA) 1500mm	BN39-00279A	
		Scart Cable	None	

Accessories		Item	Item code	Remark
Accessories that can be purchased additionally		PC Cable 1830mm	BN39-00115A	Electronics Store/ Internal shopping mall
		PC Audio Cable 2000mm	BN39-00061B	
		Antenna Cable 3000mm	BN39-00333A	

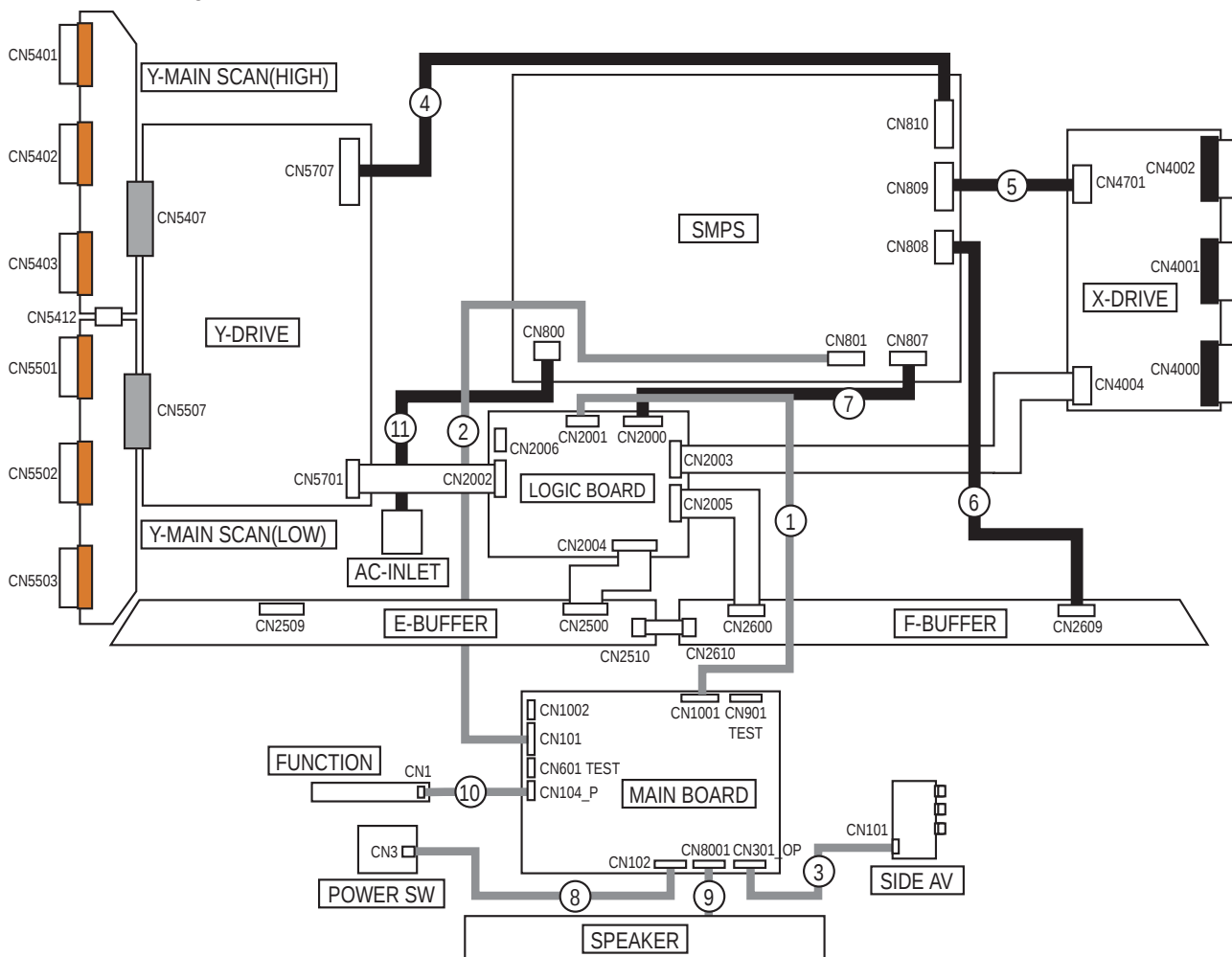
6. Wiring Diagram

6-1 Overall Wiring

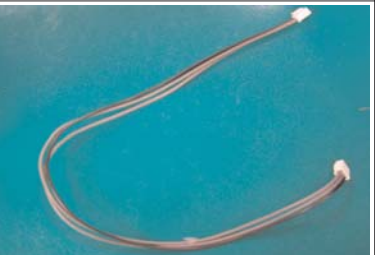
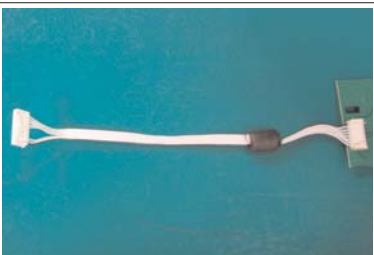
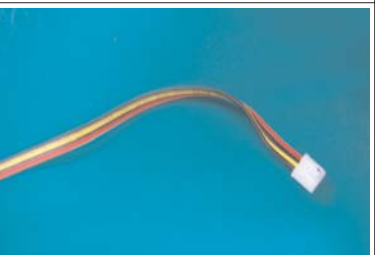
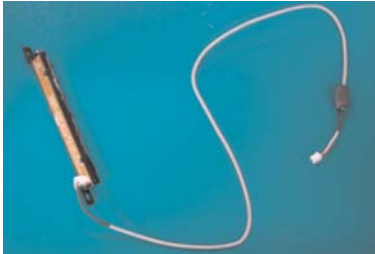
<42" Overall Wiring>



<50" Overall Wiring>



※ The code number of cable(Lead-connector) can be changed, see "5. Exploded View & Part List."

Use	① LVDS 31P-30P	② POWER 24P	③ SIDE
Code	42" - BN39-00859A 50" - BN39-00817A	BN39-00881A	-
Photo			
Use	④ Y Drive	⑤ X Drive	⑥ Address
Code	-	-	-
Photo			
Use	⑦ Logic	⑧ Front	⑨ SPEAKER
Code	-	-	-
Photo			
Use	⑩ FUNCTION	⑪ AC_INPUT	
Code	-	42" - 2901-001378 50" - 2901-001340	
Photo			

① CN1401(MAIN B'D) ↔ CN2010(LOGIC B'D)				② CN101(MAIN B'D) ↔ CN801(SMPS)			
Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	RxIN0-	16	NC	1	PS_ON	13	5V
2	RxIN0+	17	GND	2	N/C (Auto_V)	14	5V
3	RxIN1-	18	WP	3	STBY	15	5V
4	RxIN1+	19	SCL	4	GND_STBY	16	5V
5	RxIN2-	20	SDA	5	GND_18V AMP	17	GND_12V
6	RxIN2+	21	LVDS Opt	6	GND_18V AMP	18	GND_12V
7	RxINCLK-	22	DCC Opt	7	18V AMP	19	12V
8	RxINCLK+	23	GND	8	18V AMP	20	GND_12V
9	RxIN3-	24	GND	9	GND_5V	21	12V
10	RxIN3+	25	GND	10	GND_5V	22	12V
11	NC	26	Vdd	11	GND_5V	23	N.C(FAN_ON)
12	NC	27	Vdd	12	GND_5V	24	N.C(FAN_DET)
13	NC	28	Vdd				
14	NC	29	Vdd				
15	NC	30	Vdd				

③ CN1804(MAIN B'D) ↔ CN105(SIDE AV)							
Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	12	TXC-	23	NC	34	VIDEO_SR_IN
2	TX2+	13	GND	24	NC	35	VIDEO_SL_IN
3	TX2-	14	MICOM_CEC	25	GND	36	HP_IDENT
4	GND	15	GND	26	SVHS_IDENT	37	HP_OUT_R
5	TX1+	16	TSCL	27	SVHS_Y	38	HP_OUT_L
6	TX1-	17	TSDA	28	GND	39	USB_VCC
7	GND	18	LSCL	29	SVHS_C	40	B1.8V
8	TX0+	19	HDMI3_5V	30	GND	41	B3.3V
9	TX0-	20	HPD_SIL9185	31	VIDEO_IDENT		
10	GND	21	DDC_WP	32	VIDEO_CVBS		
11	TXC+	22	GND	33	GND		

④ CN805(SMPS) ↔ CN5015(Y B'D)		⑤ CN804(SMPS) ↔ CN4000(X B'D)		⑥ CN806/CN807(SMPS) ↔ CN2501(E-BUFFER)		⑦ CN803(SMPS) ↔ CN2036(LOGIC B'D)		⑧ CN1701(MAIN B'D) ↔ POWER&IR	
Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	Vg	1	Vg	1	Va	1	STBY	1	IR
2	GND	2	GND	2	GND	2	VS_ON	2	GND
3	GND	3	GND	3	5.3V	3	N/C	3	A5V_1
4	GND	4	Vs			4	PS_ON	4	LED_STB
5	Vs	5	Vs			5	RTN	5	BUZZER
6	Vs					6	5.3V	6	KEY_INPUT1
						7	RTN	7	KEY_INPUT2
						8	RTN	8	GND
						9	5.3V	9	B5V
						10	5.3V	10	LED_CTRL

⑨ CN1201(MAIN B'D) ↔ SPEAKER		⑩ CN1702(MAIN B'D) ↔ FUNCTION		⑪ CN800(SMPS) ↔ AC INLET	
Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	R+_OUT	1	KEY_INPUT1	1	AC Neutral
2	R-_OUT	2	KEY_INPUT2	2	N/C
3	L+_OUT	3	GND	3	AC Live
4	L-_OUT				

6-1-1 Connector role

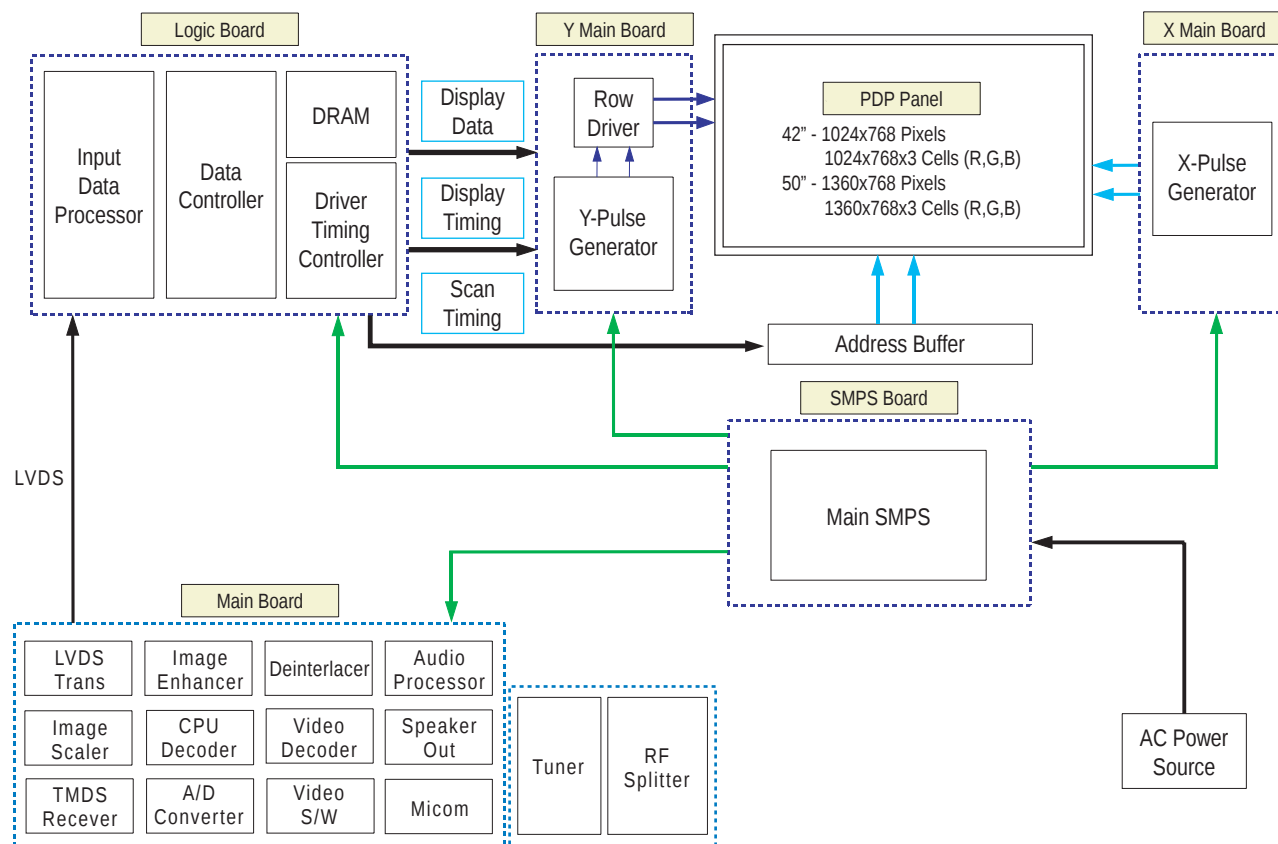
42" Loc. No.	50" Loc. No.	Description
CN5401	CN5401	Module and Y-Main Scan Connect
CN5402	CN5402	Module and Y-Main Scan Connect
CN5403	CN5403	Module and Y-Main Scan Connect
-	CN5412	Y-Main Scan(High) and Y-Main Scan(Low) Connect
CN5501	CN5501	Module and Y-Main Scan Connect
CN5502	CN5502	Module and Y-Main Scan Connect
CN5503	CN5503	Module and Y-Main Scan Connect
CN5407	CN5407	Y-Drive and Y-Main Scan Connect
CN5408	CN5408	Y-Drive and Y-Main Scan Connect
CN5409	CN5409	Y-Drive and Y-Main Scan Connect
CN5412	CN5412	Y-Drive and Y-Main Scan Connect
CN5707	CN5707	Y-Drive and SMPS Connect
CN5701	CN5701	Y-Drive and Logic Board Connect
CN810	CN810	Y-Drive and SMPS Connect
CN809	CN809	X-Drive and SMPS Connect
CN808	CN808	SMPS and F-Buffer Connect
CN807	CN807	SMPS and Logic Board Connect
CN801	CN801	SMPS and Main Board Connect
CN800	CN800	SMPS and AC-Inlet Connect
CN4701	CN4701	SMPS and X-Drive Connect
CN4004	CN4004	Logic Board and X-Drive Connect
CN4002	CN4002	Module and X-Drive Connect
CN4001	CN4001	Module and X-Drive Connect
-	CN4000	Module and X-Drive Connect
CN2000	CN2000	SMPS and Logic Board Connect
CN2001	CN2001	Main Board and Logic Board Connect
CN2002	CN2002	Y-Drive and Logic Board Connect
CN2004	CN2004	Logic Board and F-Buffer Connect
CN2028	CN2028	Logic Board and E-Buffer Connect
CN2500	CN2500	Logic Board and E-Buffer Connect
CN2510	CN2510	E-Buffer and F-Buffer Connect
CN2610	CN2610	E-Buffer and F-Buffer Connect
CN2600	CN2600	Logic Board and F-Buffer Connect
CN2609	CN2609	SMPS and F-Buffer Connect
CN1101	CN1101	SMPS and Main Board Connect
CN2202	CN2202	Main Board and Logic Board Connect
CN1605	CN1605	Function Assy and Main Board Connect
CN1404	CN1404	Side AV Assy and Main Board Connect

42" Loc. No.	50" Loc. No.	Description
CN1606	CN1606	Power SW Assy and Main Board Connect
CN1203	CN1203	Speaker and Main Board Connect
CN101	CN101	Side AV Assy and Main Board Connect
CN1	CN1	Function Assy and Main Board Connect
CN3	CN3	Power SW Assy and Main Board Connect

MEMO

7. Schematic Diagram

7-1 Circuit Description



■ SMPS Board

The SMPS used for the PDP has been designed to be efficient, compact and lightweight. For VS and VA outputs, a LLC converter has been used. For the other outputs, a Flyback converter has been used.

■ LOGIC Board

The logic circuit consists of a Logic Main Board and an Address Buffer Board. The Logic Main Board decodes the video signal encoded by the Video Board, outputs the ADDRESS data signal for each pattern and generates X and Y drive signals. The Address Buffer Board buffers and transfers the ADDRESS data output signal using TCP IC.

- LVDS with built-in video signal processing (W/L, error diffusion, APC, FCR, etc.) applied and 1 ASIC chip.
- Outputs the address Drive IC control and data signals to the Buffer Board.
- Outputs the control signal for the X and Y Drive Boards.
- Monitors major drive voltages (Microm Circuit Block); detects if a surge voltage has been applied and protects the Drive Circuit.
- Temperature Adaptive Operating Mode (Low Temperature/Room Temperature/High Temperature); Discharge optimization for each temperature level.

■ X-MAIN Board

Connects to the X terminal block, 1) provides maintaining voltage waveform (including ERC), and 2) maintains the Ve bias in the Scan section.

■ Y-MAIN Board

Connects to the Y terminal block, 1) provides maintaining voltage waveform (including ERC), 2) provides Y Rising, Falling Ramp waveforms, and 3) maintains the Vscan bias.

■ Address Buffer Board

It delivers the data signal and control signal to the TCP.

MEMO

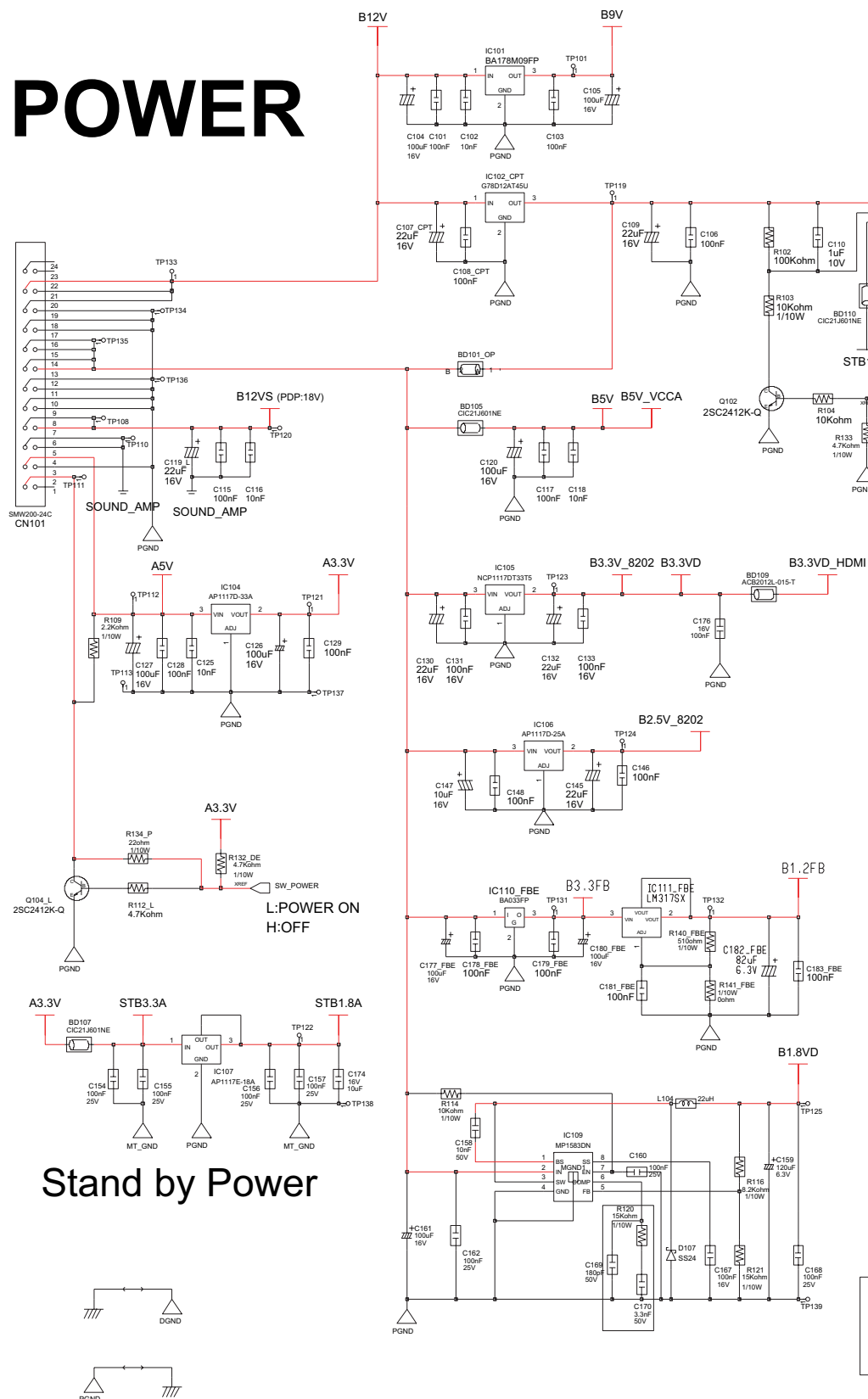
7-2 Schematic Diagram

7-2-1 POWER_ETC

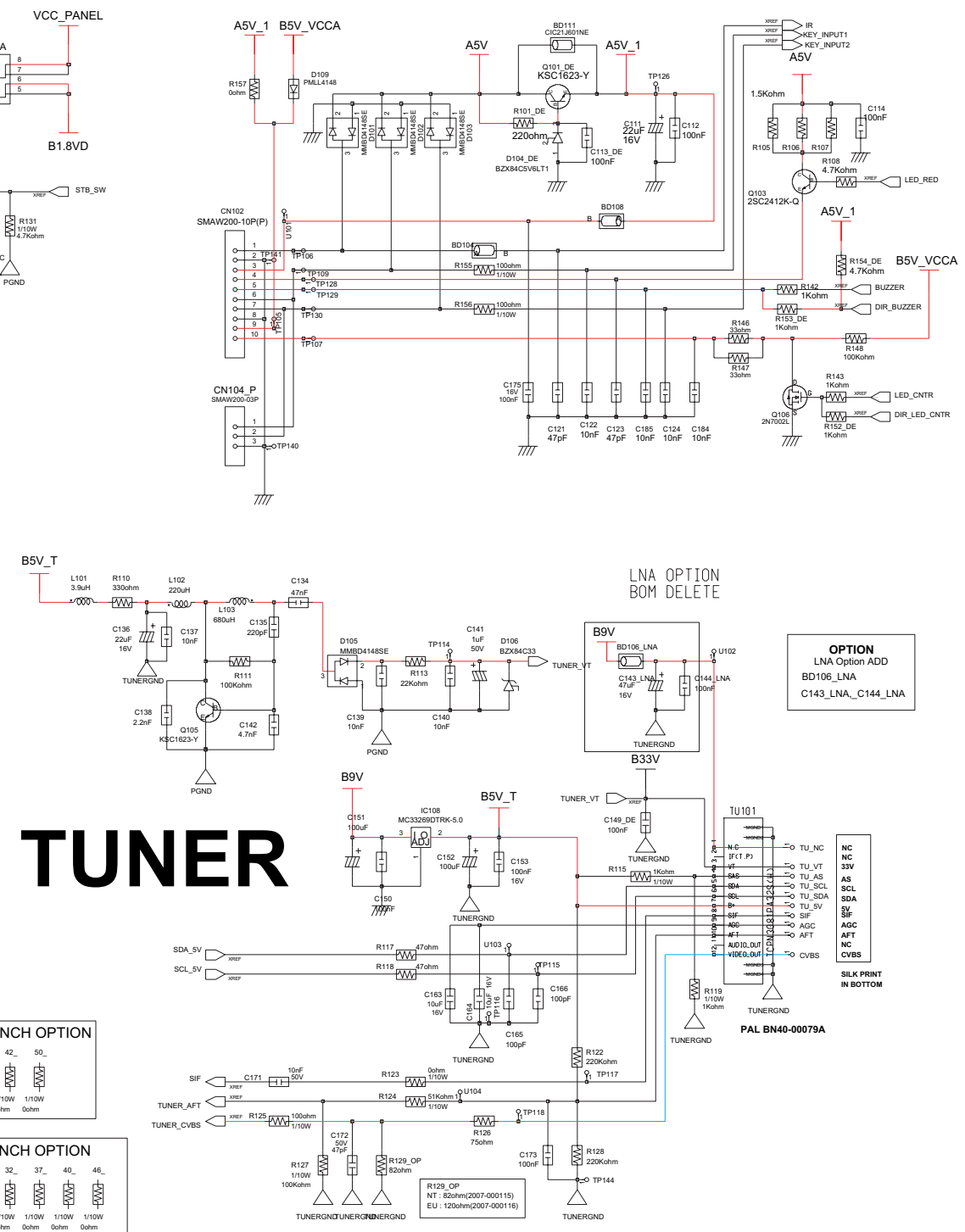
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	Power
	Video
	Audio

POWER

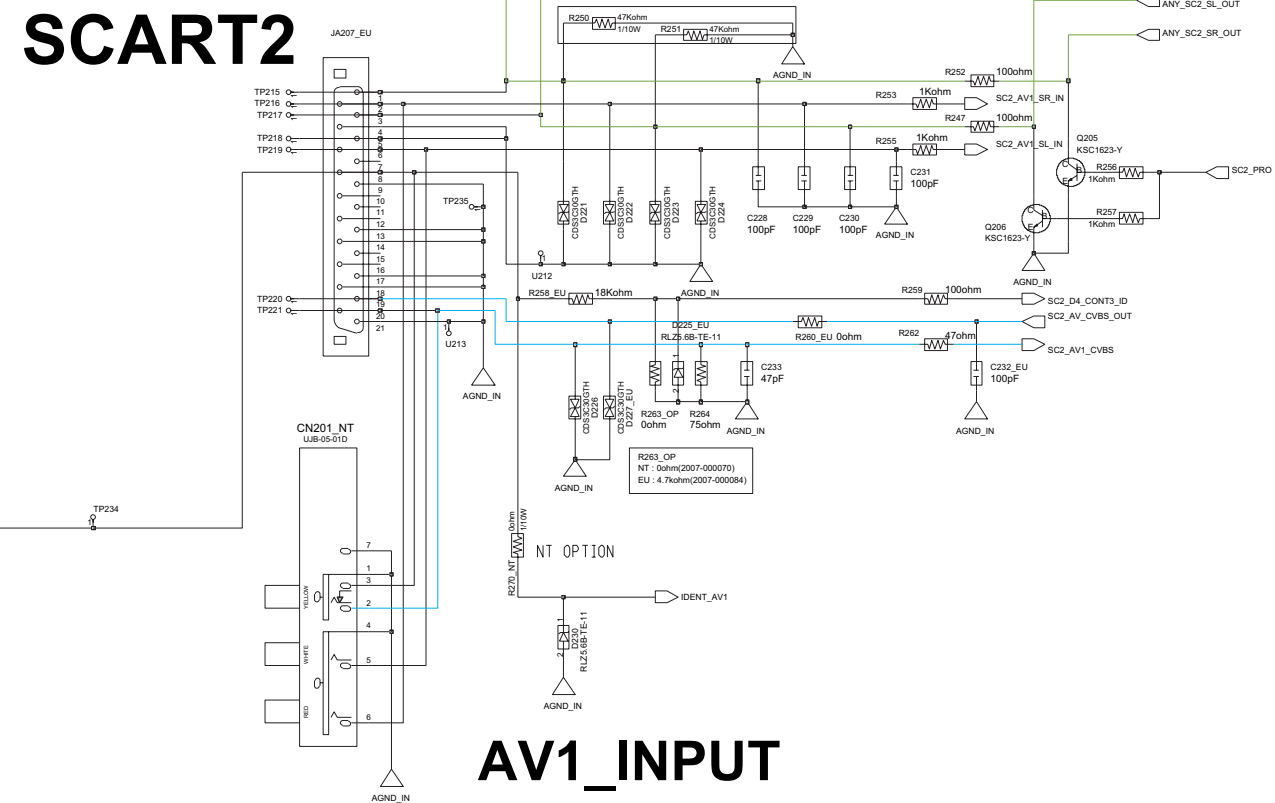
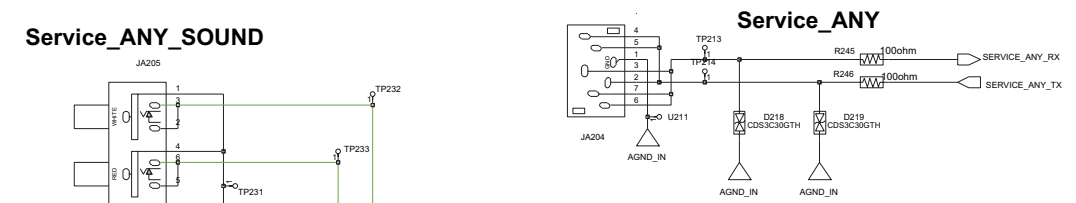
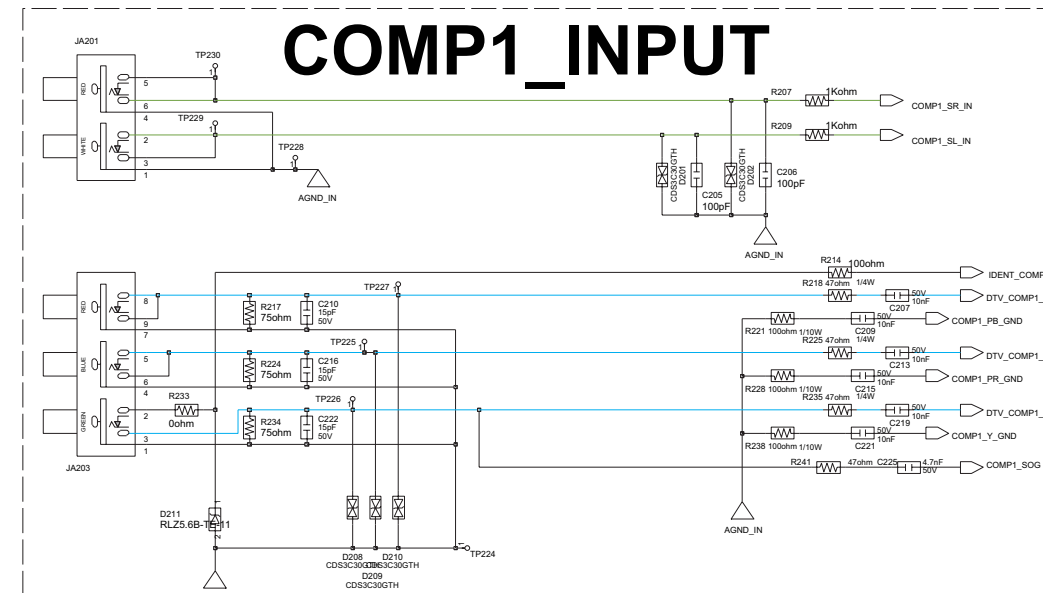


Function



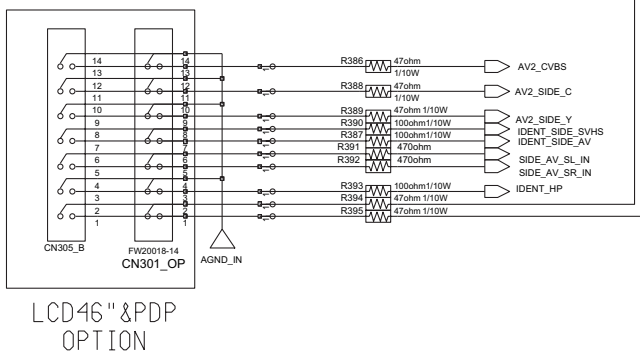
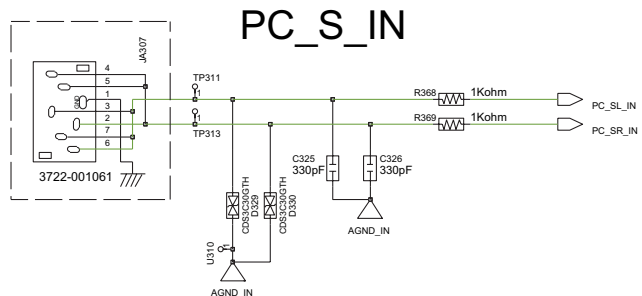
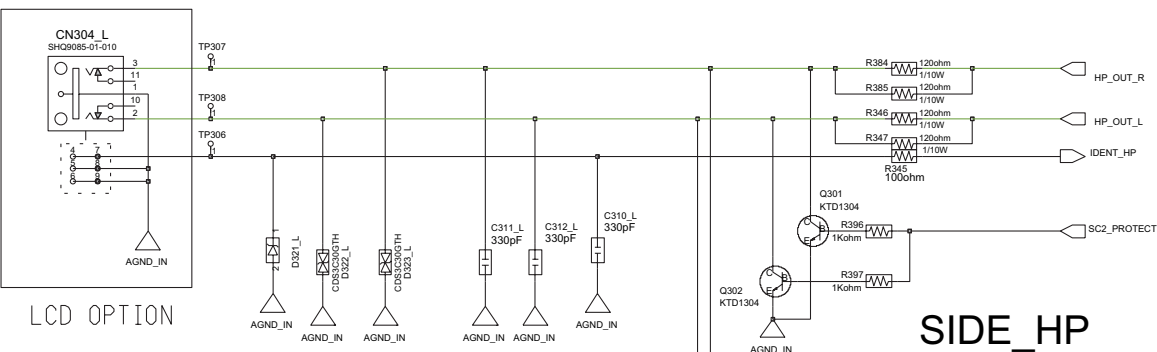
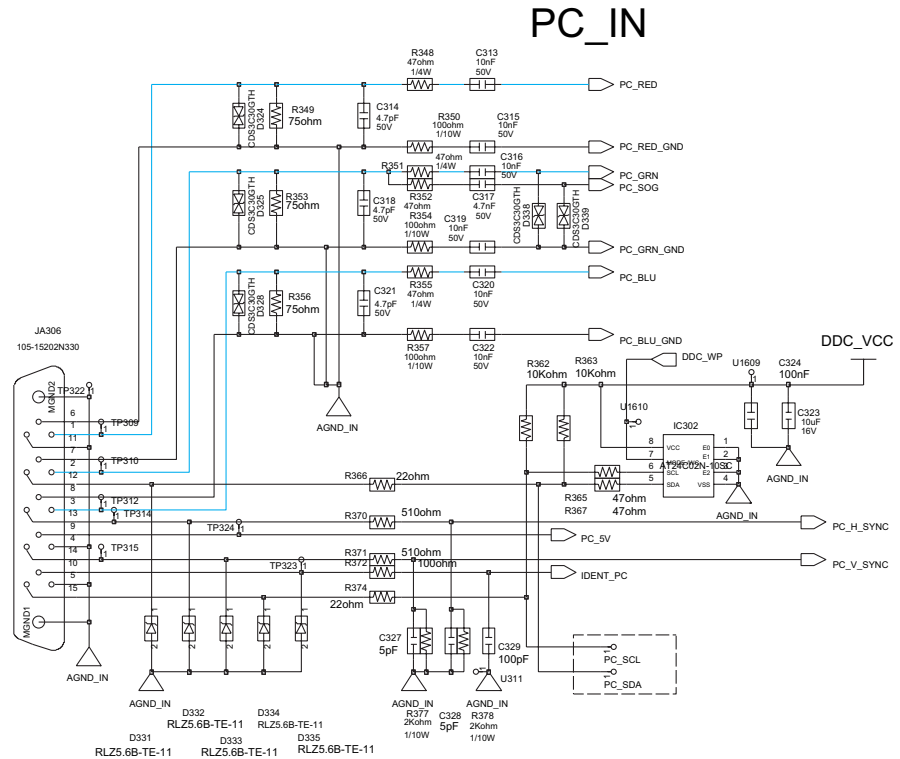
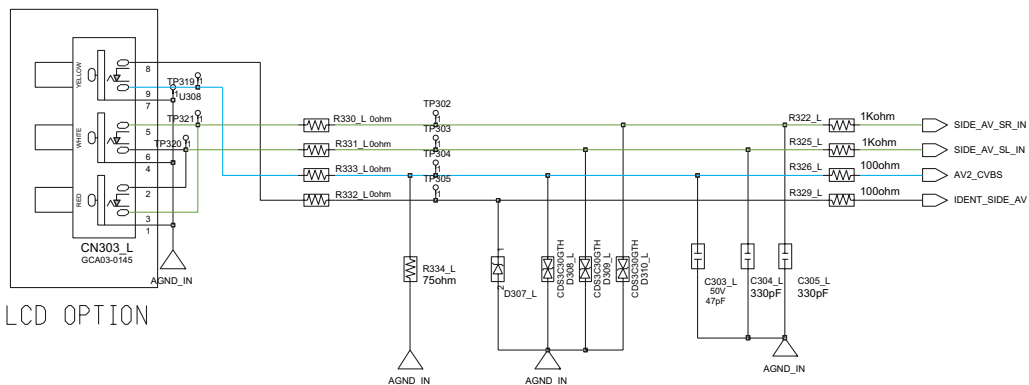
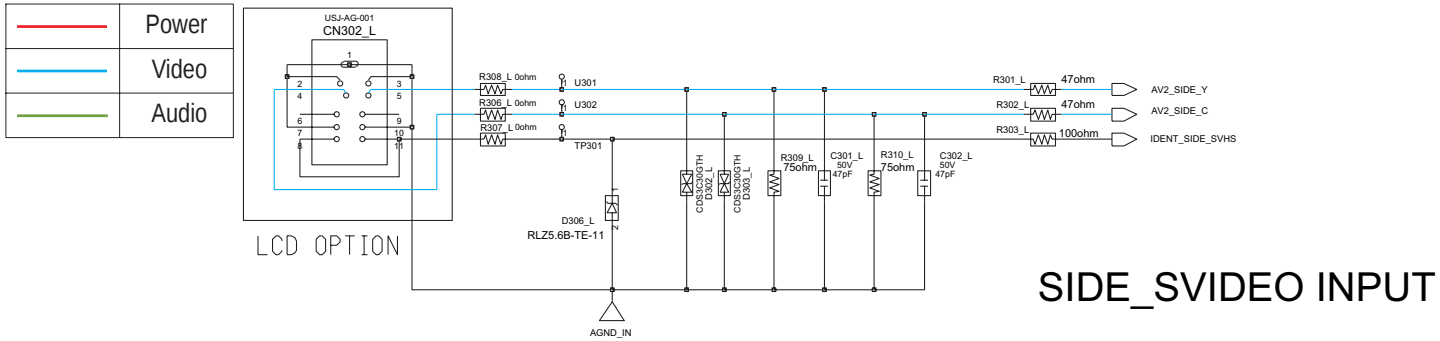
TUNER

	Power
	Video
	Audio



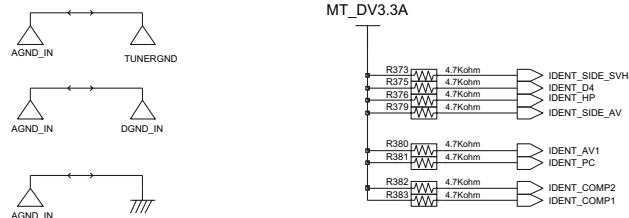
7-2-3 INPUT_JACK2

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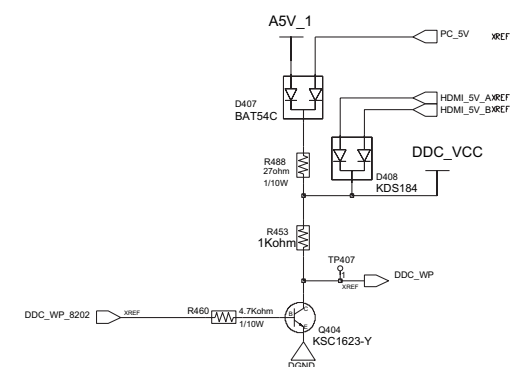
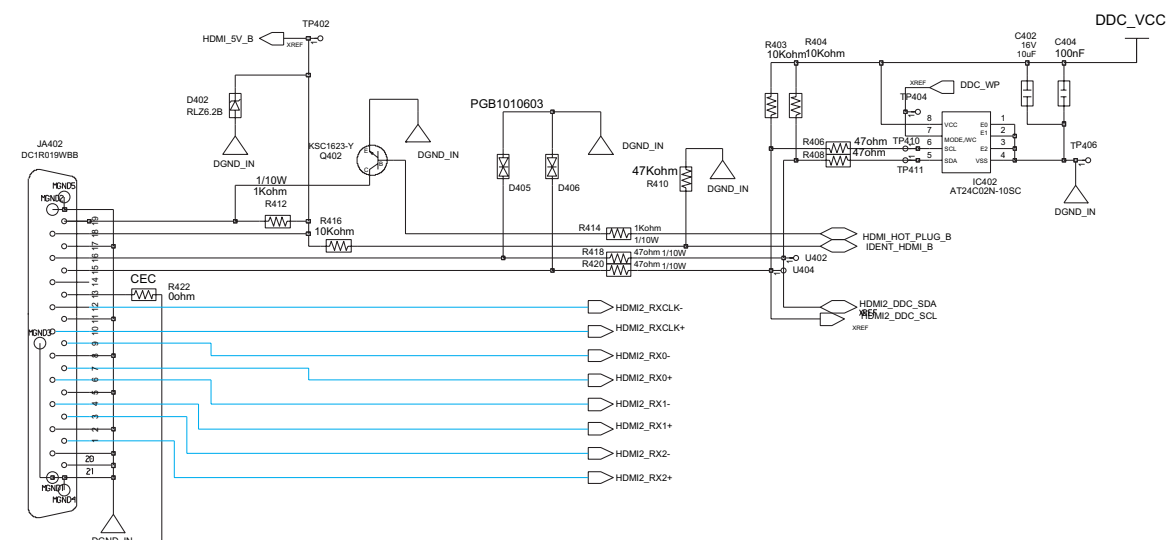
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PAL	O	O			
NT			O	O	
Japan					O

	CN301_OP	CN302_L	CN303_L	CN304_L
LCD		0	0	0
LCD46"&PDP	0			



	Power
	Video
	Audio

HDMI2_INPUT

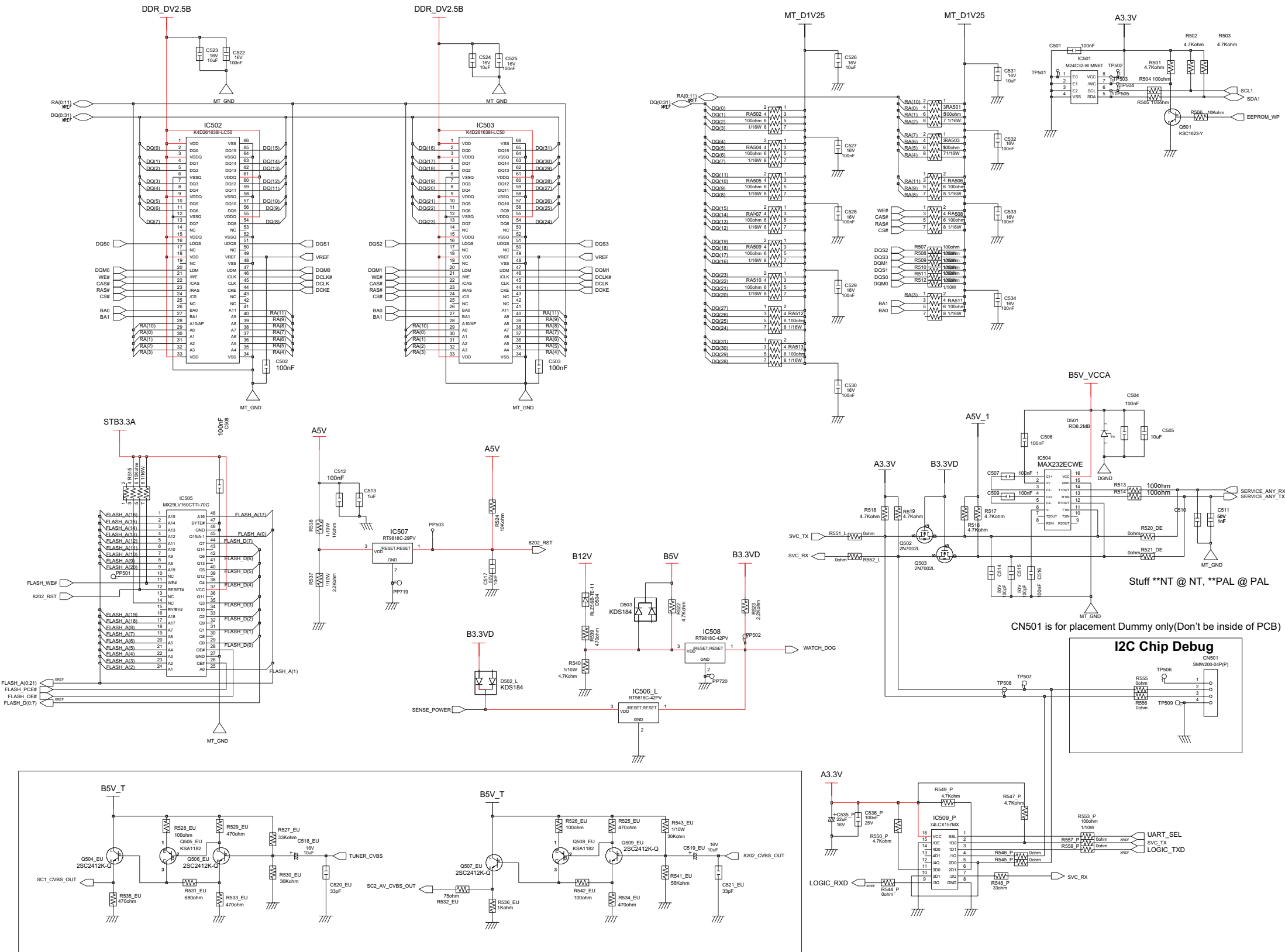


DVI_S_IN

7-2-5 DDR_FLASH

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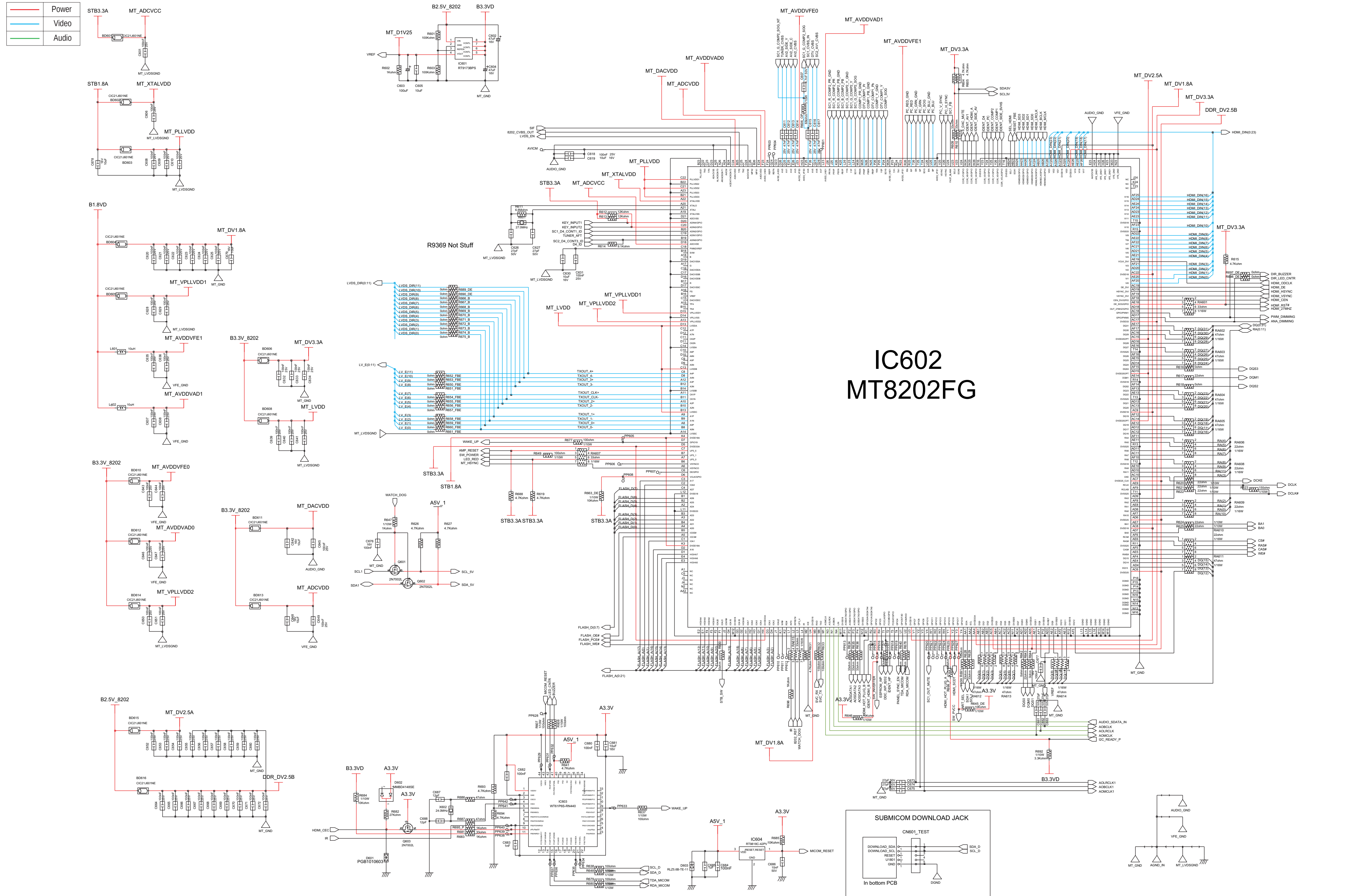
	Power
	Video
	Audio



Scart Option

7-2-6 MT8202

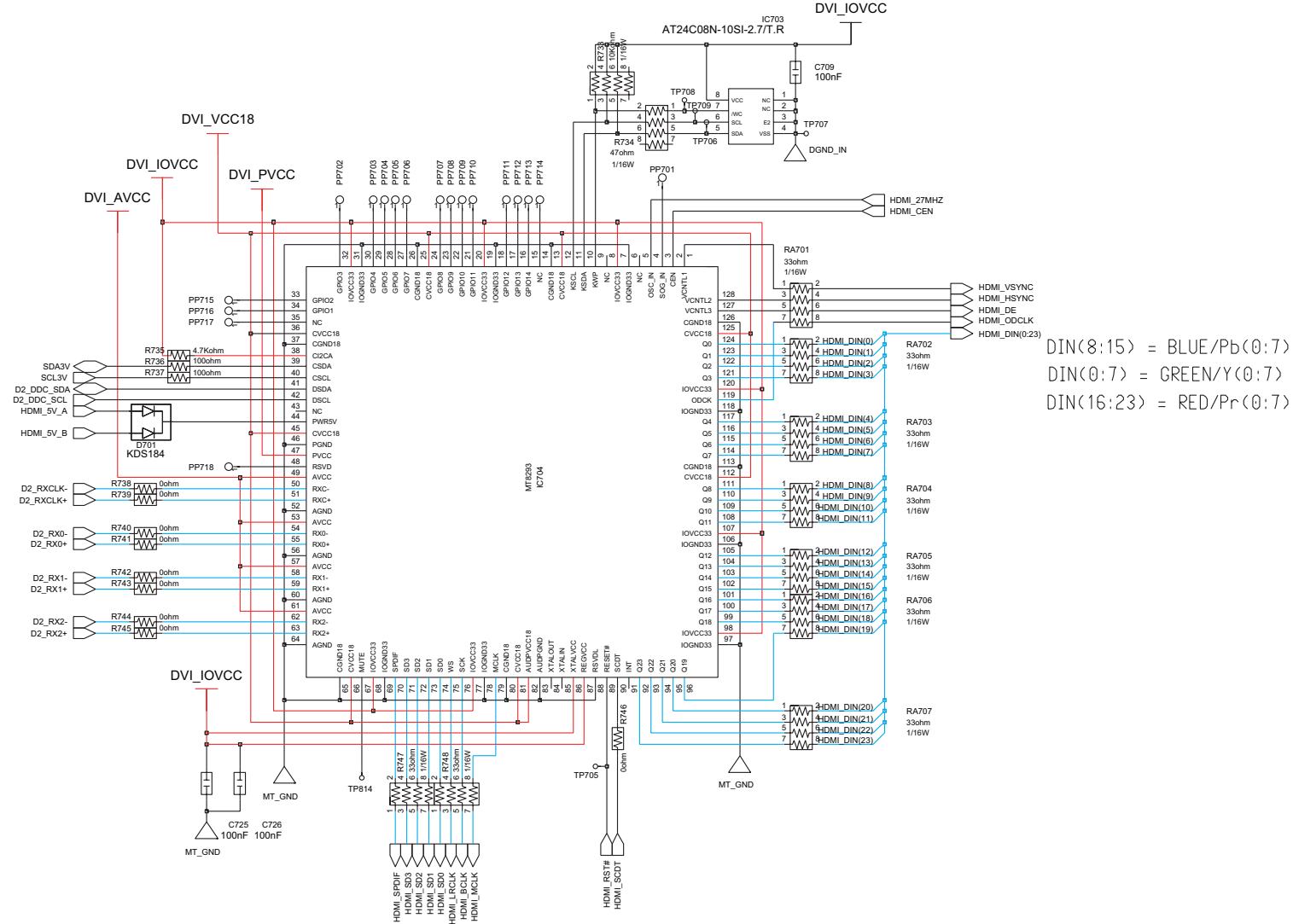
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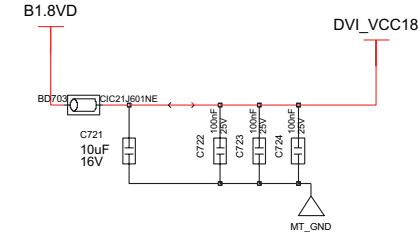
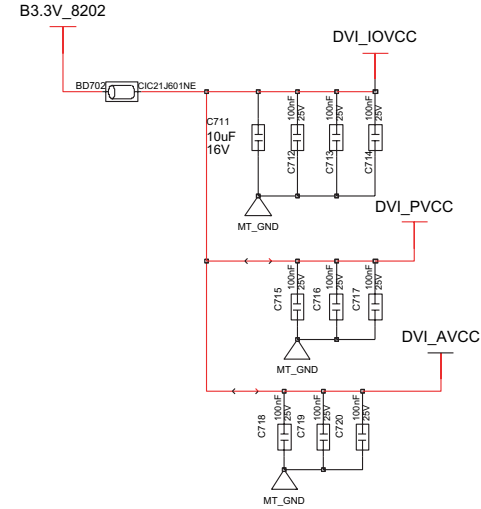
7-2-7 HDMI_MT8293

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	Power
	Video
	Audio



Near to Connector

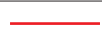


	Power
	Video
	Audio

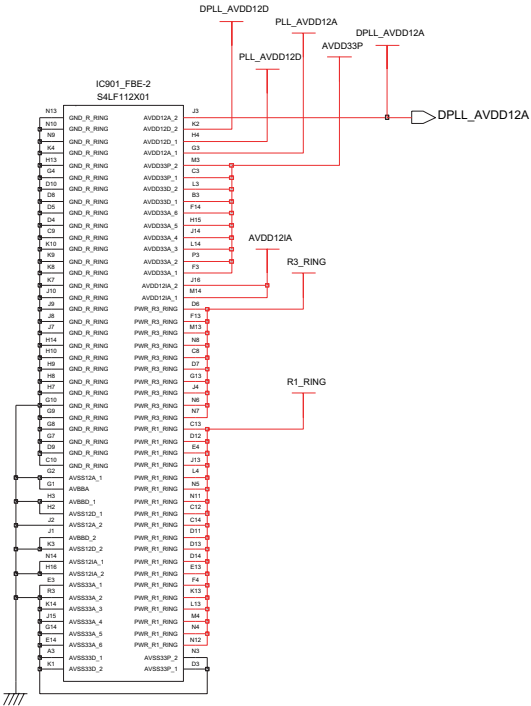
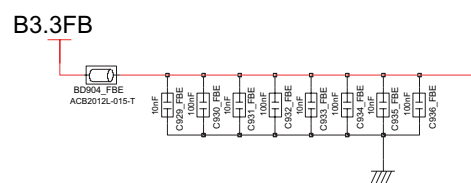
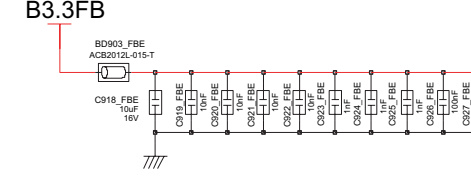
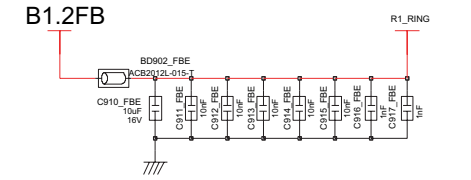
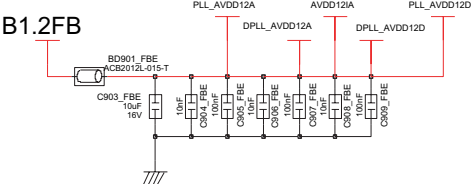
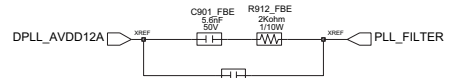
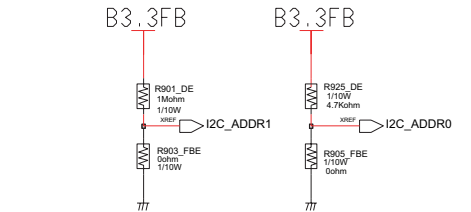
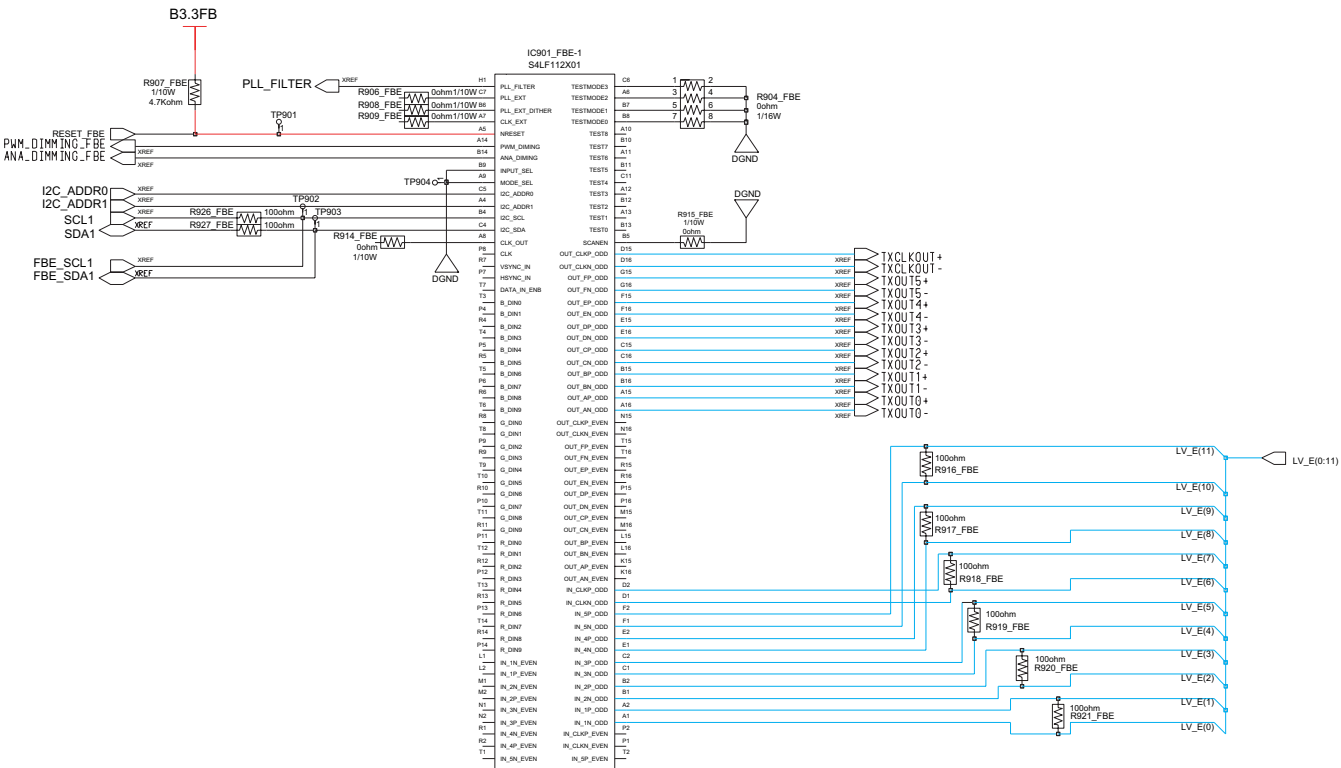
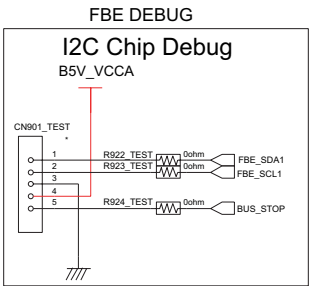


7-2-9 FBE_LVDS

This Document can not be used without Samsung's authorization.

	Power
	Video
	Audio

F B E 2

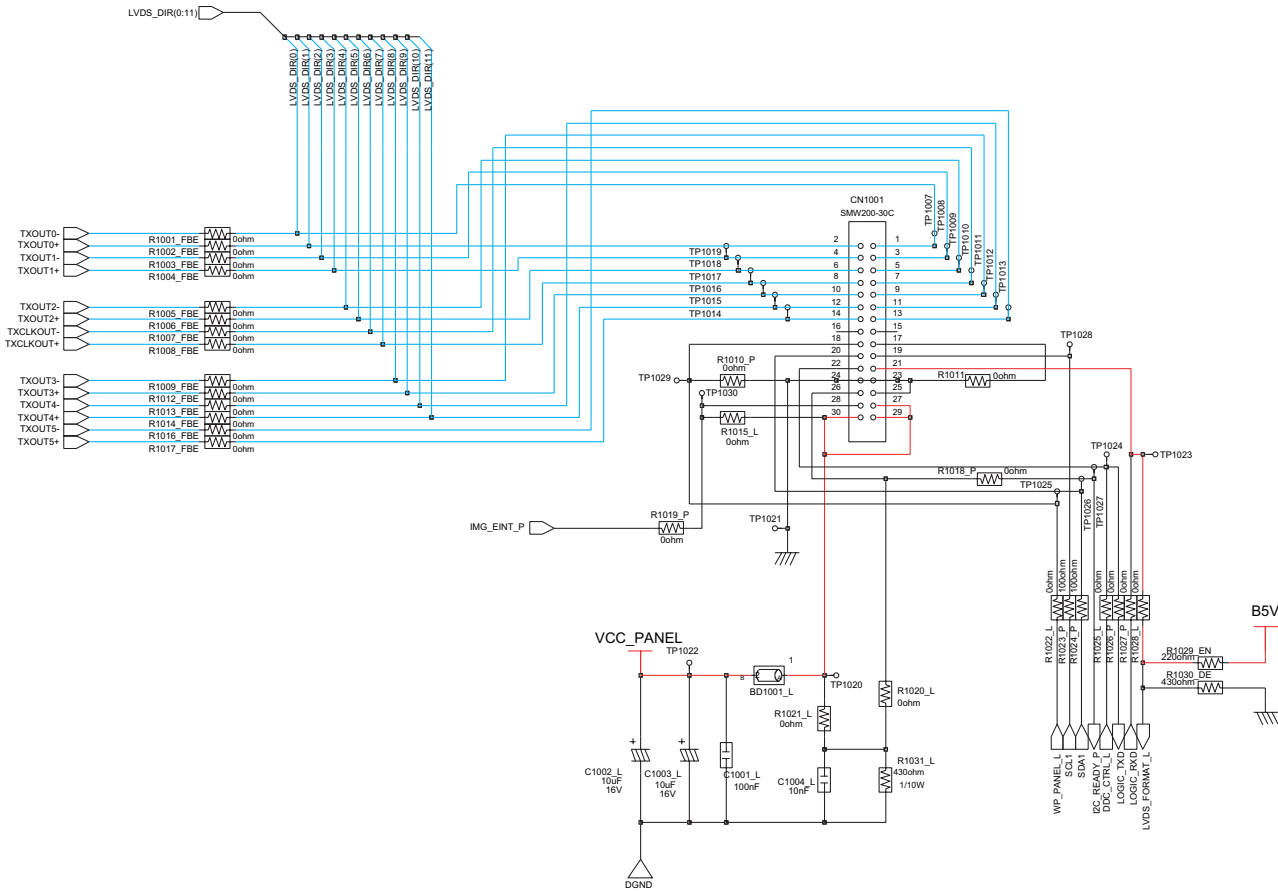


7-2-10 LVDS_TX_LBE

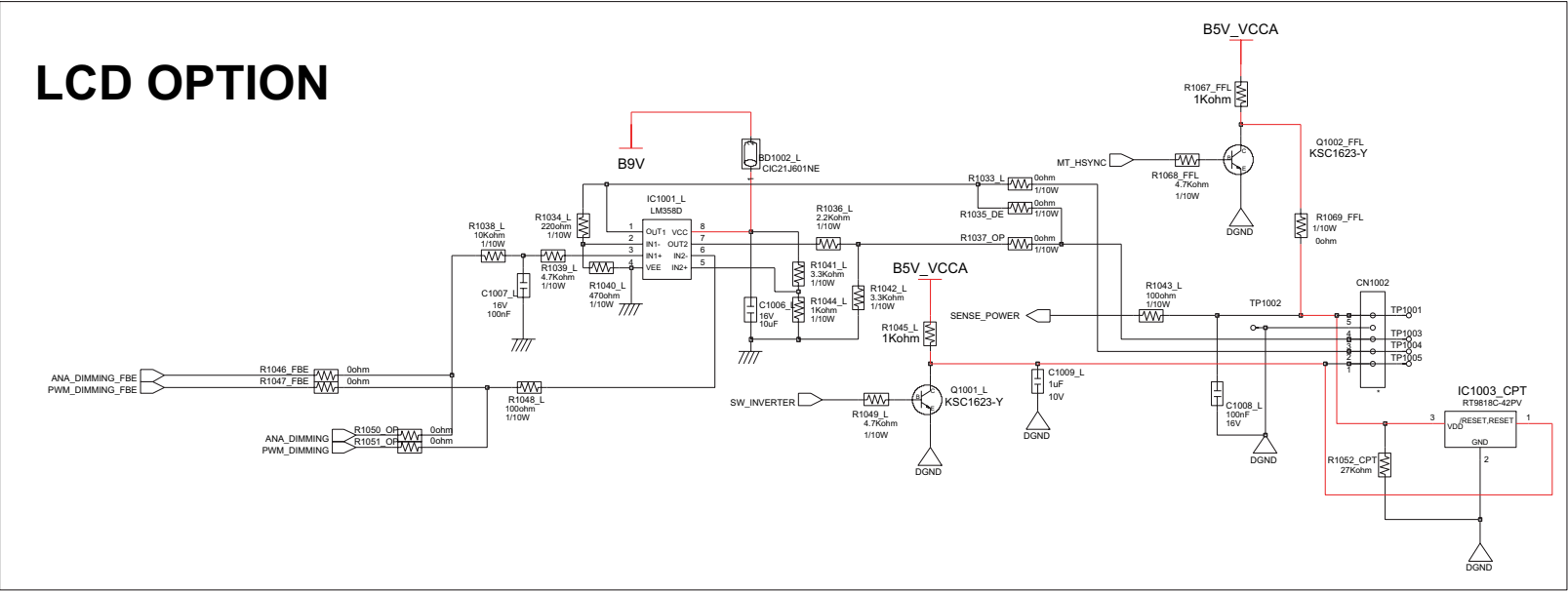
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	Power
	Video
	Audio

LVDS&Dimming

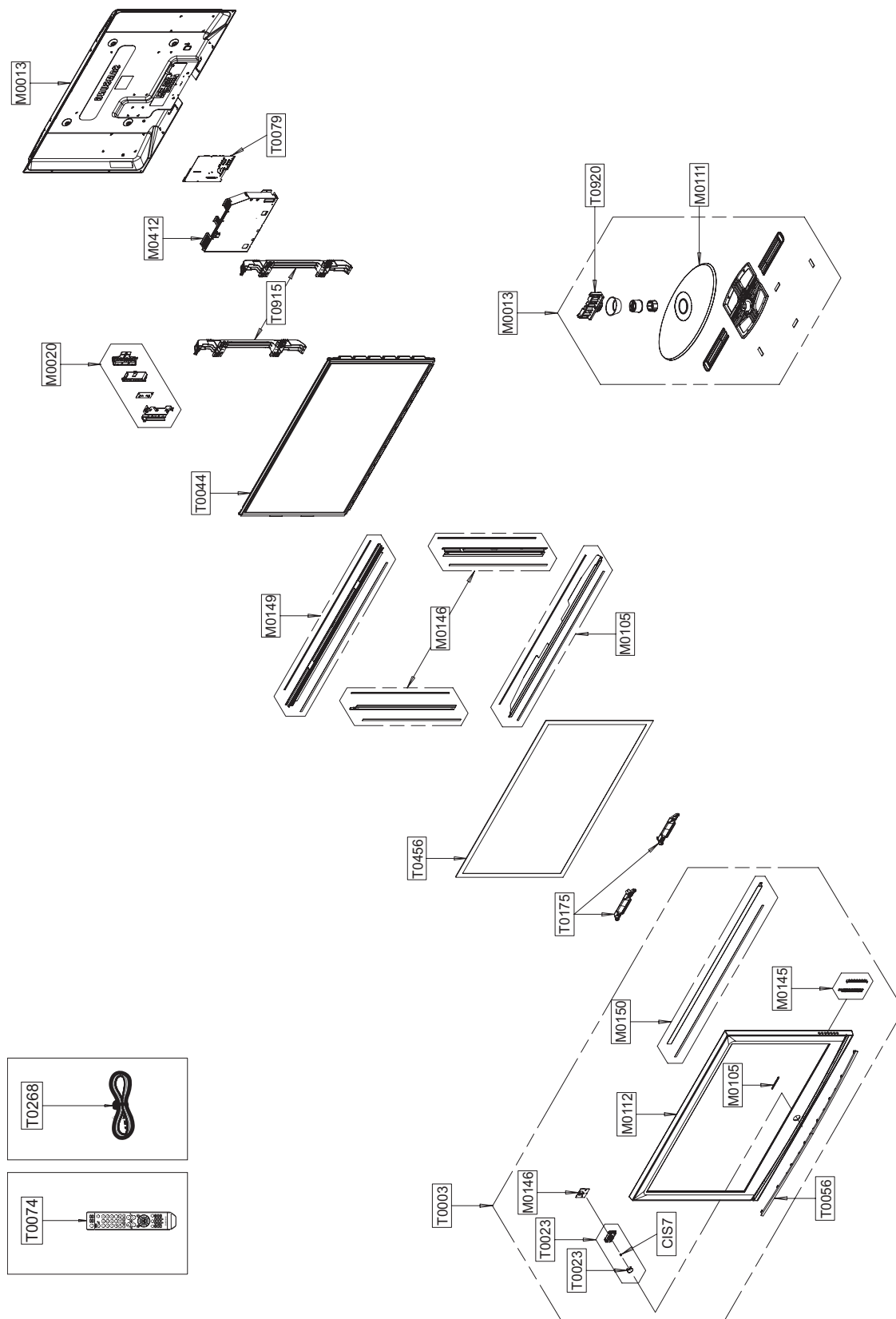


LCD OPTION



5. Exploded View & Part List

5-1 PS42C91HX/XEH Exploded View



Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
CIS7	AA61-60003B	SPRING ETC-CS	-,SUS304,-,-,OD11.2,N7,OD1	1	S.N.A	
M0013	BN96-04714B	ASSY STAND P-BASE	C9/Q9,ABS HB SF-0507,B	1	S.A	
M0013	BN96-04709A	ASSY COVER P-REAR	42Q9/C9,EU(Ready),PCM	1	S.A	
M0020	BN96-04900D	ASSY BOARD P-SIDE A/V	LILY 42",SJ06-01-0	1	S.N.A	
M0105	BN67-00190A	LENS-LED	42Q9,PC,light blue,Material of	1	S.N.A	
M0111	BN63-03049B	COVER-STAND	42Q9,ABS SF-0507,BK23	1	S.N.A	
M0112	BN63-03047C	COVER-FRONT	42C9,ABS,HB,BK23,STEAM MOLD	1	S.N.A	
M0145	BN96-04853B	ASSY BOARD P-FUNCTION	Lily/Calla,CT5000-	1	S.A	
M0146	BN96-04687A	ASSY BRACKET P-FILTER SIDE	42Q9,AL6063,T	2	S.N.A	
M0146	BN96-04861D	ASSY BOARD P-POWER & IR	Lily/Calla,CT500	1	S.A	
M0149	BN96-04685A	ASSY BRACKET P-FILTER TOP	42Q9,AL6063,T1	1	S.N.A	
M0150	BN96-04686A	ASSY BRACKET P-FILTER BOTTOM	42Q9,AL6063	1	S.N.A	
M0150	BN96-04691B	ASSY BRACKET P-SUPPORT FILTER	42Q9,Al 60	1	S.N.A	
M0412	BN96-04903C	ASSY BRACKET P-PCB	42Q9,SECC T0.8	1	S.N.A	
T0003	BN96-04712C	ASSY COVER P-FRONT	42C9,ABS HB,BK23,STEAM	1	S.A	
T0023	BN96-04707A	ASSY COVER P-KNOB POWER	C9/Q9,ABS HB	1	S.N.A	
T0023	BN64-00567A	KNOB POWER	42Q9,PC,VIOLET	1	S.N.A	
T0044	BN96-04592A	ASSY PDP MODULE P-MODULE	42HD W2,PL42AX0	1	S.A	△
T0056	BN63-03091A	COVER-DECORATION	42C9,ABS,HB,BLK	1	S.N.A	
T0074	BN59-00609A	REMOCON	JASMINE / LILY,TM86,samsung 24p+	1	S.A	
T0079	BN94-01224B	ASSY PCB MISC-MAIN	PS-42C91H,EU,F33A,BN4	1	S.N.A	△
T0175	BN96-04704A	ASSY SPEAKER P	8ohm,C9,10W,4P connector,	1	S.A	
T0268	3903-000145	CBF-POWER CORD	DT,EU,FP3/YES,U(IEC C13-R	1	S.A	
T0456	BN67-00188A	GLASS-FILTER EMI	42" C7 HD,Sputter,with	1	S.A	△
T0915	BN61-02894B	HOLDER-MODULE	42Q9,PC ABS	2	S.N.A	
T0920	BN61-02990A	GUIDE-STAND	42Q9,PC GF20%	1	S.N.A	

5-2 PS42C91HX/XEH Service Item

※ This is the list which is available to repair the real material at the time of service.

Loc. No.	Code No.	Description	Specification	Q'ty	Remark
M0013	BN96-04709A	ASSY COVER P-REAR	42Q9/C9,EU(Ready),PCM	1	
M0013	BN96-04714B	ASSY STAND P-BASE	C9/Q9,ABS HB SF-0507,B	1	
M2893	BN39-00827A	LEAD CONNECTOR	LILLY 42"/50",UL1007#26,U	1	
M2893	BN39-00859A	LEAD CONNECTOR	CALLA 50",UL20276#30,UL/C	1	
T0003	BN96-04712C	ASSY COVER P-FRONT	42C9,ABS HB,BK23,STE A	1	
T0044	BN96-04592A	ASSY PDP MODULE P-MODULE	42HD W2,PL42AX0	1	△
T0074	BN59-00609A	REMOCON	JASMINE / LILY,TM86,samsung 24p+	1	
T0079	BN94-01224B	ASSY PCB MISC-MAIN	PS-42C91H,EU,F33A,BN4	1	△
T0175	BN96-04704A	ASSY SPEAKER P	8ohm,C9,10W,4P connector,	1	
T0764	BN44-00161A	SMPS-PDP TV	HPS4253,SEM,AC/DC,370W,AC100	1	△
T1910	BN96-04593A	ASSY PDP MODULE P-X-MAIN	42HD W2,PL42AX0	1	△
T1911	BN96-04594A	ASSY PDP MODULE P-Y-MAIN	42HD W2,PL42AX0	1	△
T1914	BN96-04597A	ASSY PDP MODULE P-ADDRESS-E BU	42HD W2,P	1	
T1915	BN96-04598A	ASSY PDP MODULE P-ADDRESS-F BU	42HD W2,P	1	
T1917	BN96-04596A	ASSY PDP MODULE P-LOGIC MAIN	42HD W2,PL4	1	
T9698	BN96-04595A	ASSY PDP MODULE P-Y-MAIN SCAN	42HD W2,PL	1	

3. Disassembly & Reassembly

3-1 Overall Disassembly & Reassembly

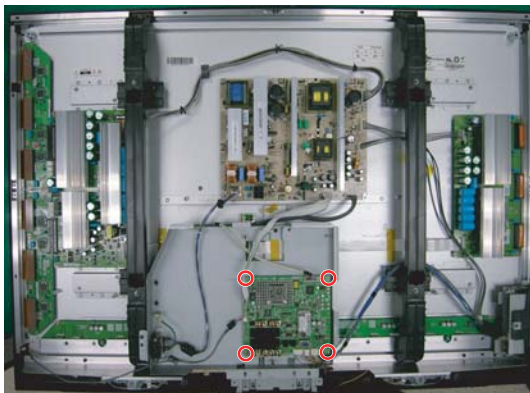
⚠ Notice

- Be sure to separate the power cord before disassembling the unit.
- Discharge the capacitors first when separating PCB's with high capacity capacitors such as SMPS, X Main Board, Y Main Board, etc. (A spark may be generated by the electric charge, and there is danger of electronic shock.)
- Check that the cables are properly connected referring to the circuit diagram when disassembling or assembling the unit taking care not to damage the cables.
- Take care not to scratch the Glass Filter in the front.
- Assemble the boards in the reverse order of the disassembly.
- The plasma must be layed down on a flat padded surface for disassembly and reassembly.

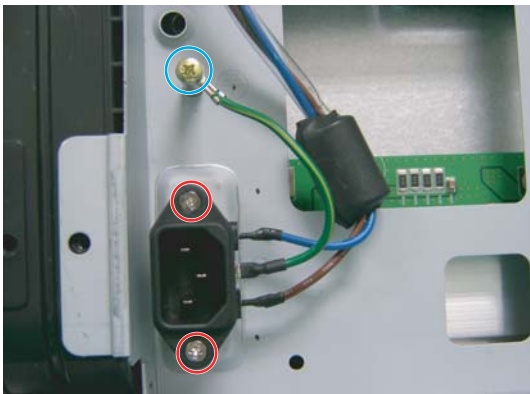
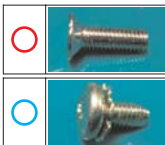
3-1-1 Separation of ASSY COVER P-REAR

Part Name	Description	Description Photo
Cover Rear	① Remove 4 screws. (□) : M8,L16,ZPC(BLK),SWRCH18A,WP ② Remove 15 screws. (○) : BH,+,B,M4,L3,ZPC(BLK) ③ Remove 4 screws. (○) : PH,+,WSP,S,M4,L35,ZPC(BLK) ④ Remove the 2 Hex nuts for the PC input. (□) : #4-40,L6,NI PLT,C3601,- ⑤ Remove the Cover Rear. ⚠: Please lay the PDP unit face down on a soft surface when removing the stand.	    

3-1-2 Separation of ASSY PCB MISC-MAIN

Part Name	Description	Description Photo
Main Board	① Detach all connectors from the Main Board. ② Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove the Main Board.	 

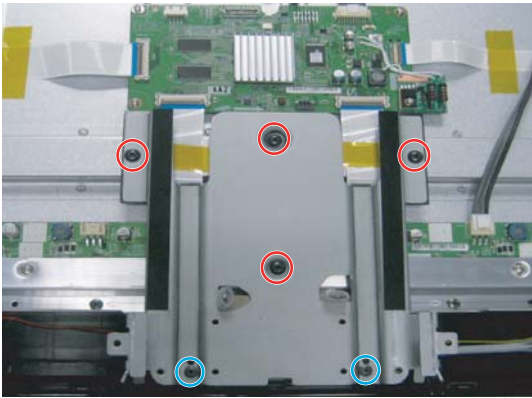
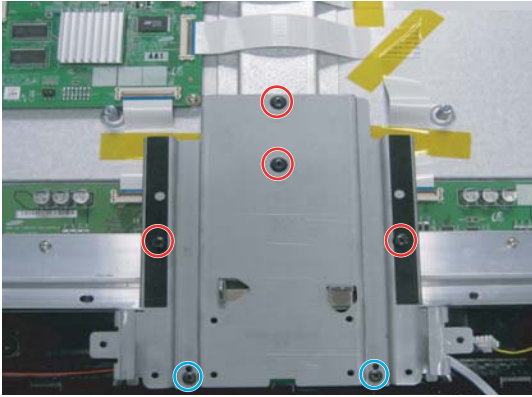
3-1-3 Separation of FILTER-EMI AC LINE

Part Name	Description	Description Photo
FILTER-EMI AC LINE	① Detach connector from Main SMPS. ② Remove 2 screws. (○) : PH,+,WWP,M3,L8,NI PLT ③ Remove a screw. (○) : BH,+,S,M4,L10,ZPC(BLK) ④ Remove FILTER-EMI AC LINE.	 

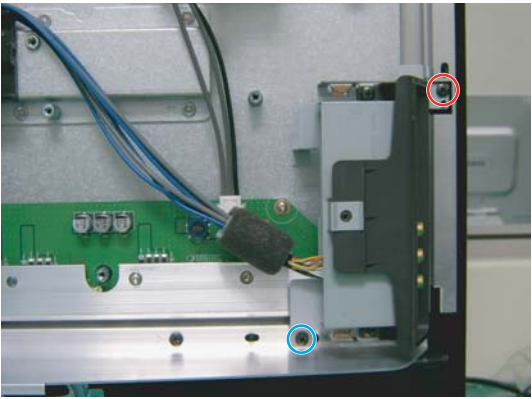
3-1-4 Separation of BRACKET-PCB

Part Name	Description	Description Photo
Bracket PCB	① Remove a screw. : BH,+,S,M4,L10,ZPC(BLK) ② Remove the BRACKET-PCB.	 

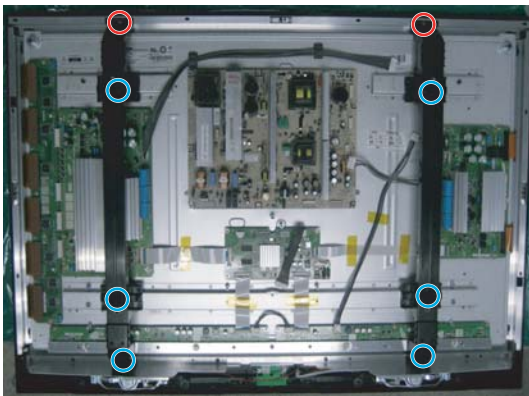
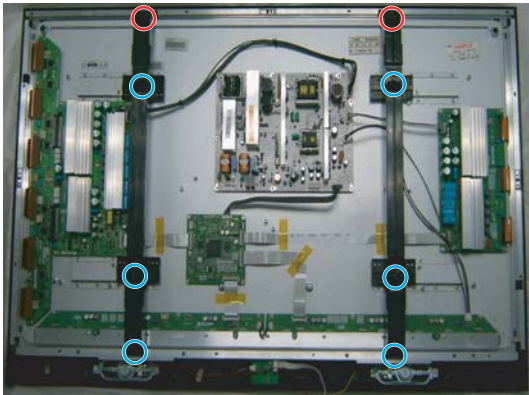
3-1-5 Separation of ASSY BRACKET

Part Name	Description	Description Photo
42" Bracket	① Remove 4 screws. (○) : BH,+,S,M4,L10,ZPC(BLK) ② Remove 2 screws. (○) : BH,+,B,M4,L3,ZPC(BLK) ③ Remove Bracket.	    
50" Bracket	① Remove 4 screws. (○) : BH,+,S,M4,L10,ZPC(BLK) ② Remove 2 screws. (○) : BH,+,B,M4,L3,ZPC(BLK) ③ Remove Bracket.	    

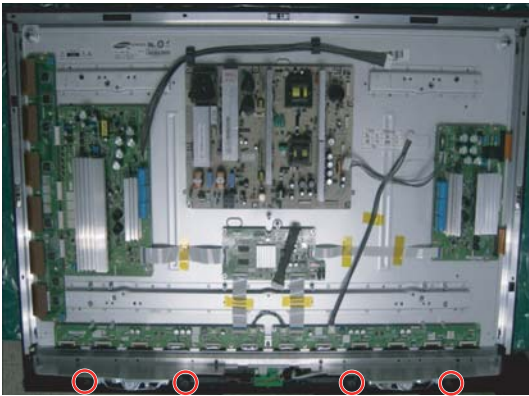
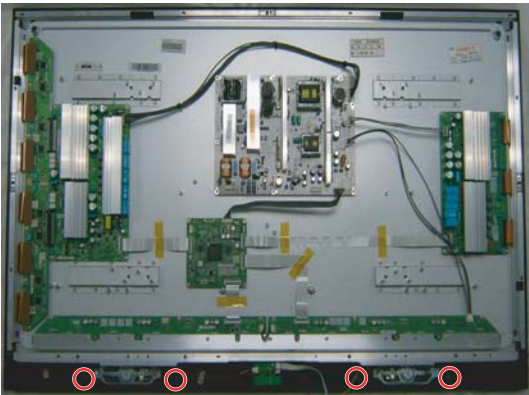
3-1-6 Separation of ASSY BOARD P-SIDE AV

Part Name	Description	Description Photo
Side AV	① Remove a screw. (○) : BH,+,B,M4,L3,ZPC(BLK) ② Remove a screw. (○) : BH,+,S,M4,L10,ZPC(BLK) ③ Remove the Side AV.	    

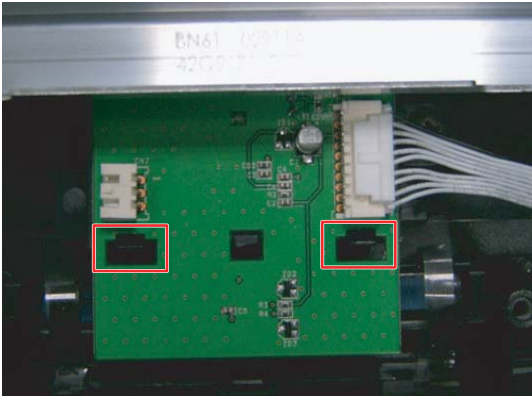
3-1-7 Separation of ASSY BRACKET P-WALL

Part Name	Description	Description Photo
42" Wall Bracket	① Remove 2 screws. (○) : BH,+,B,M4,L3,ZPC(BLK) ② Remove 6 screws. (○) : BH,+,S,M4,L10,ZPC(BLK) ③ Remove Wall Bracket. ⚠: Please lay the PDP panel face down on a soft surface when separating front cover.	  
50" Wall Bracket	① Remove 2 screws. (○) : BH,+,B,M4,L3,ZPC(BLK) ② Remove 6 screws. (○) : BH,+,S,M4,L10,ZPC(BLK) ③ Remove Wall Bracket. ⚠: Please lay the PDP panel face down on a soft surface when separating front cover.	  

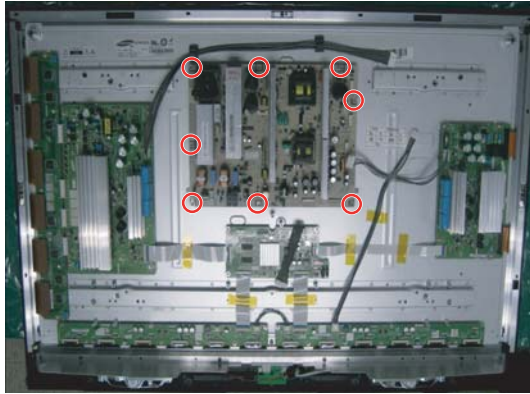
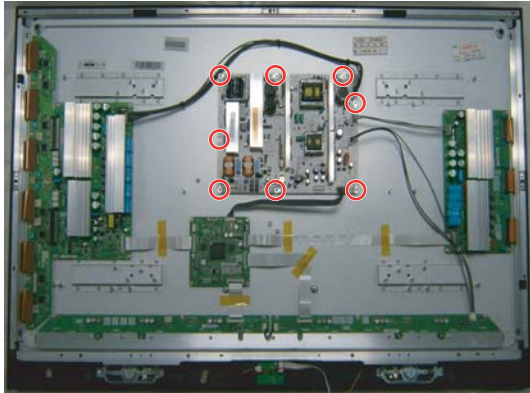
3-1-8 Separation of ASSY SPEAKER P

Part Name	Description	Description Photo
42" Speaker	① Remove 4 screws. : BH,+,WP,B,M4.0,L3,ZPC(BLK), SWRCH18A ② Remove the Speaker.	 
50" Speaker	① Remove 4 screws. : BH,+,WP,B,M4.0,L3,ZPC(BLK), SWRCH18A ② Remove the Speaker.	 

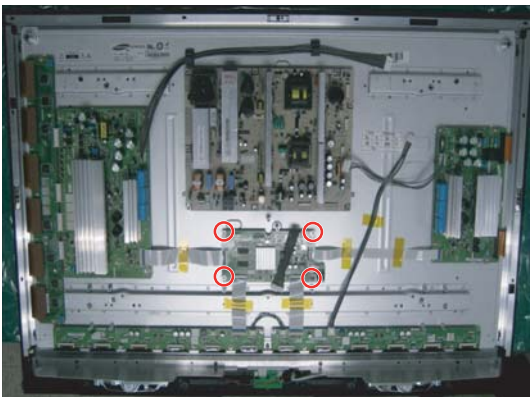
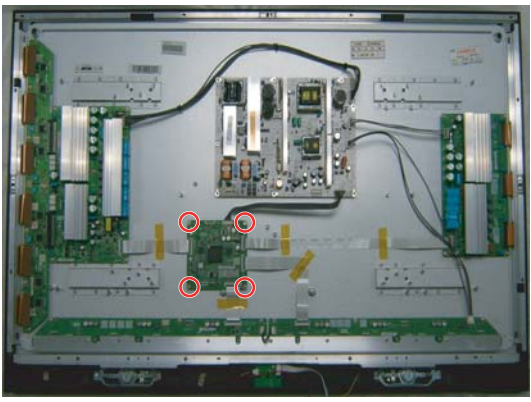
3-1-9 Separation of ASSY BOARD P-POWER&IR

Part Name	Description	Description Photo
Power & IR Board	① Detach all connectors from the Power&IR Board. ② Remove the Power&IR PCB unlocking the 2 holders.	

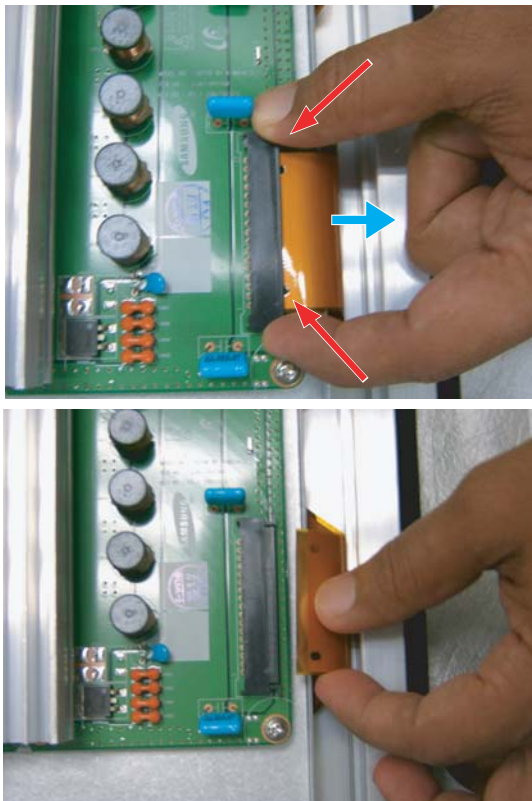
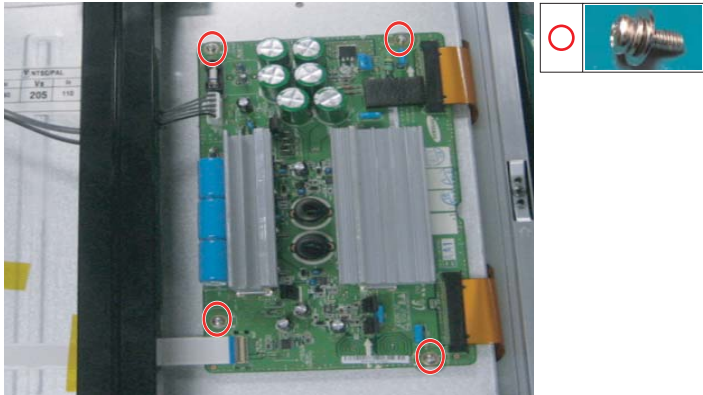
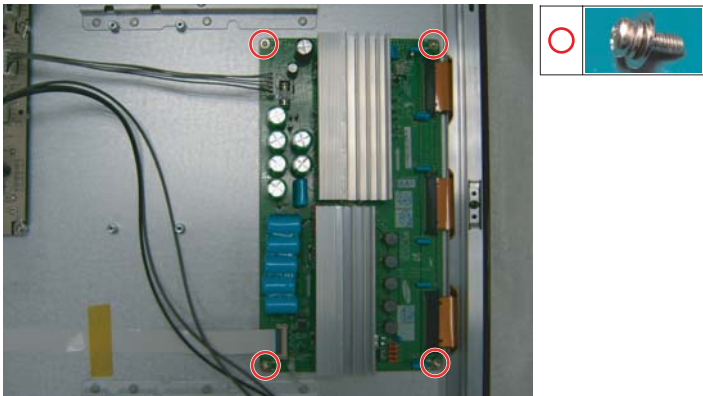
3-1-10 Separation of SMPS-PDP TV

Part Name	Description	Description Photo
42" SMPS	① Detach all connectors from the SMPS. ② Remove 8 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove the SMPS. ⚠: Wear gloves when handling the power board as there may be some remaining electrical charge in the capacitor. Specifically, avoid touching any part of the capacitor.	 
50" SMPS	① Detach all connectors from the SMPS. ② Remove 8 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove the SMPS. ⚠: Wear gloves when handling the power board as there may be some remaining electrical charge in the capacitor. Specifically, avoid touching any part of the capacitor.	 

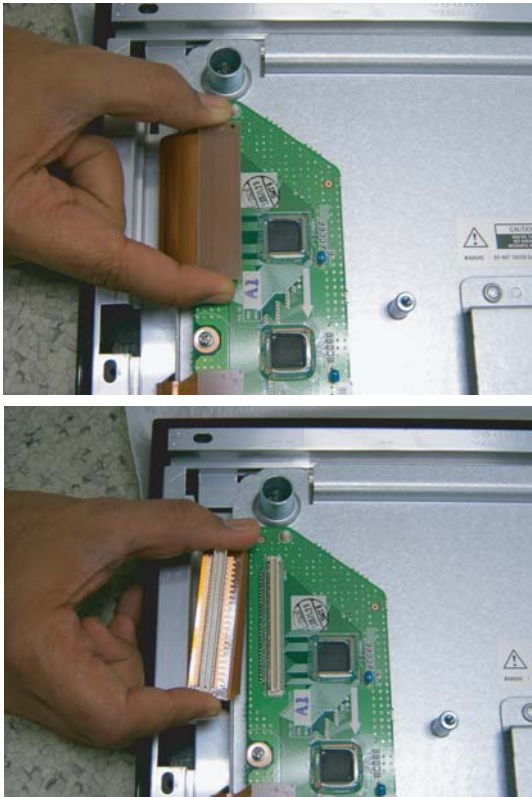
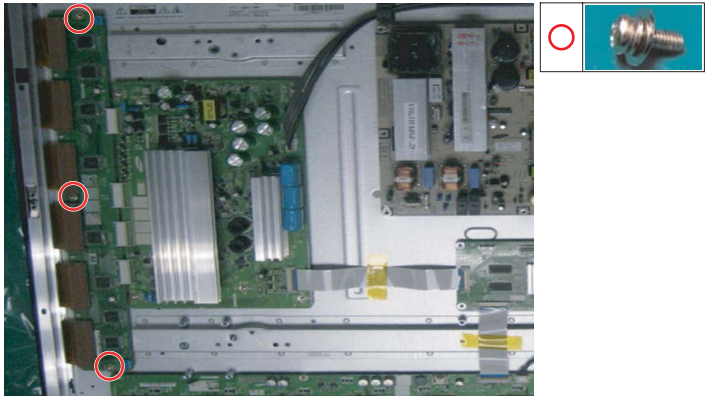
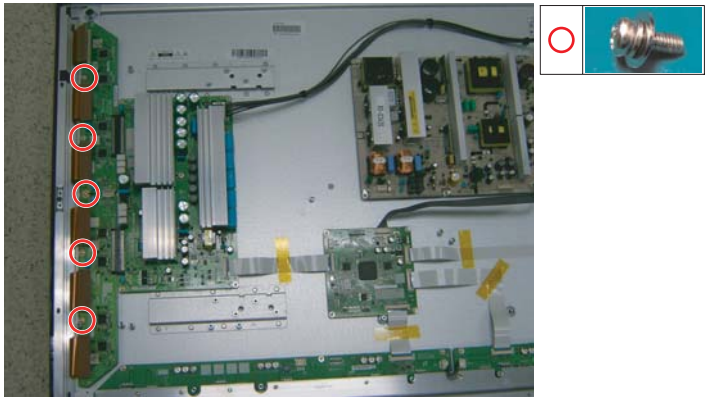
3-1-11 Separation of ASSY PDP MODULE P-LOGIC MAIN BOARD

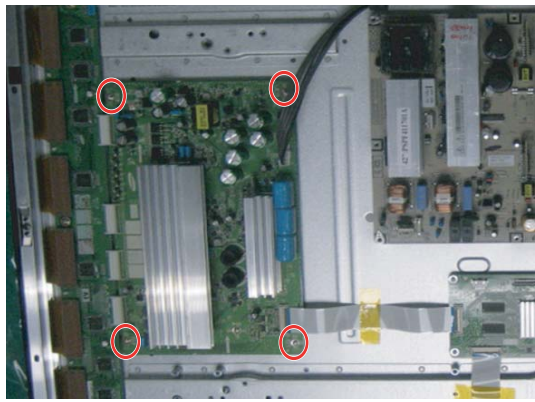
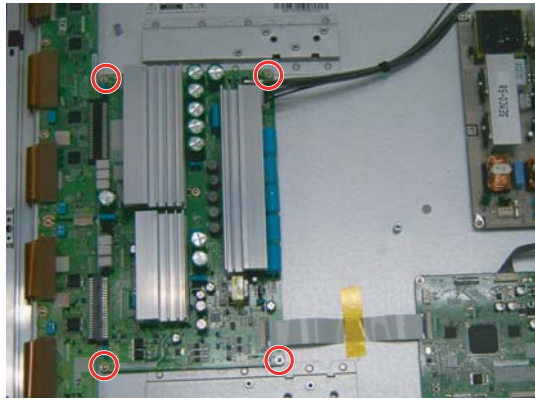
Part Name	Description	Description Photo
42" Logic Board	① Detach all connectors from the Logic Main Board. ② Remove 4 screws. : WSP,PH,+,M3,L8,NI PLT ③ Remove the Logic Main Board.	 
50" Logic Board	① Detach all connectors from the Logic Main Board. ② Remove 4 screws. : WSP,PH,+,M3,L8,NI PLT ③ Remove the Logic Main Board.	 

3-1-12 Separation of ASSY PDP MODULE P-X MAIN BOARD

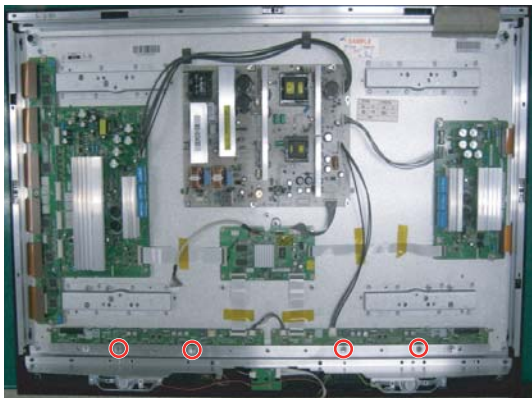
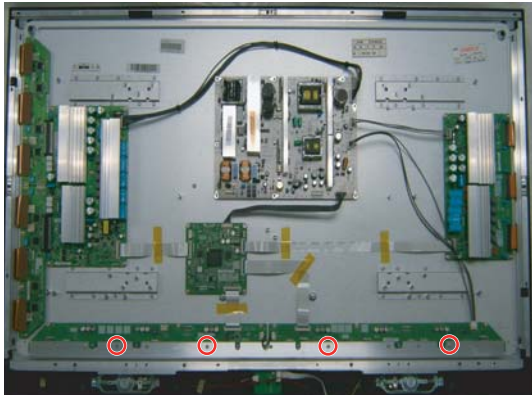
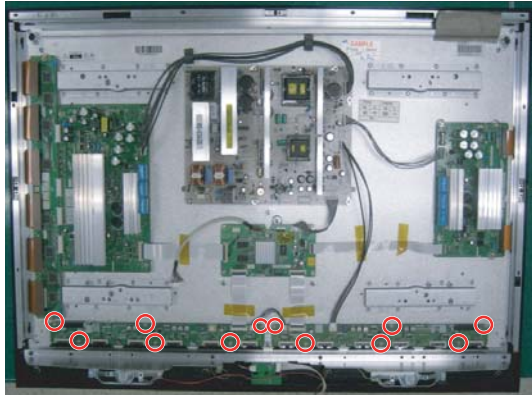
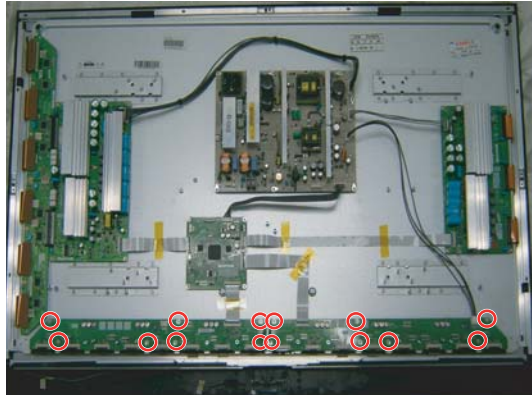
Part Name	Description	Description Photo
Flat Cable	① Detach all Connectors from the X Main Board. ※ To separate the Flat Cable of the X-Board, press the upper and the lower sides of the connector.	
42" X-Main Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove the X-Main Board.	
50" X-Main Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove the X-Main Board.	

3-1-13 Separation of ASSY PDP MODULE P-Y MAIN BOARD

Part Name	Description	Description Photo
Flat Cable	① Detach the 6 scan board connectors from the panel by pulling the holder from both the top and bottom ends.	
42" Y-Scan Board	① Remove 3 screws. : PH,+,WWP,M3,L8,NI PLT	
50" Y-Scan Board	① Remove 5 screws. : PH,+,WWP,M3,L8,NI PLT	

Part Name	Description	Description Photo
42" Y-Main Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Detach all connectors from the Y-Main Board.	 
50" Y-Main Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Detach all connectors from the Y-Main Board.	 

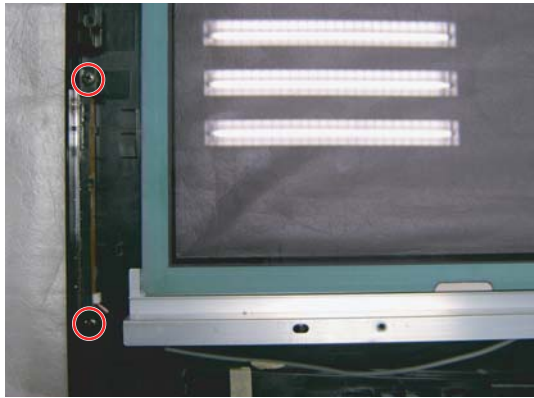
3-1-14 Separation of ASSY PDP MODULE P-ADDRESS BUFFER BOARD

Part Name	Description	Description Photo
42" Still Bar	- Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT - Remove the still bar.	 
50" Still Bar	- Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT - Remove the still bar.	 
42" Buffer Board	- Detach the all connectors from the buffer board. - Remove 3 screws. : PH,+,WWP,M3,L8,NI PLT - Remove the E-Board and F-Board.	 
50" Buffer Board	- Detach the all connectors from the buffer board. - Remove 14 screws. : PH,+,WWP,M3,L8,NI PLT - Remove the E-Board and F-Board.	 

3-1-15 Separation of ASSY PANEL BRACKETS

Part Name	Description	Description Photo
Panel Brackets	① Remove 3 screws. (○) : BH,+,B,M4,L3,ZPC(BLK) ② Remove 4 screws. (○) : BH,+,S,M4,L10,ZPC(BLK) ③ Remove the Side Panel Brackets.	    

3-1-16 Separation of ASSY PCB FUNCTION

Part Name	Description	Description Photo
Function Board	① Remove 2 screws. : BH,+,B,M4,L3,ZPC(BLK) ② Remove the Function Board.	  

1. Precaution

To avoid possible damage, electric shocks or exposure to radiation, follow the instructions below with regard to safety, installation, service and ESD.

1-1 Safety Precautions

1. Make sure all protective devices are properly installed including non-metallic handles and compartment covers when installing or re-installing the chassis or chassis assemblies.
2. Make sure that no gaps exist between the cabinets for children to insert their fingers in to prevent children from receiving electric shocks. Gaps mentioned above include ventilation holes between the PDP module and the cabinet mask, and the improper installation of the rear cabinet.

Errors may occur when the resistance is below $1.0\text{ M}\Omega$ or over $5.2\text{ M}\Omega$.

In these cases, make sure that the device is repaired before sending it back to the customer.

3. Check for Electricity Leakage (Figure 1-1)
Warning: Do not use an insulated transformer for checking the leakage. Use only those current leakage testers or mirroring systems that comply with ANSIC 101.1 and the Underwriter Laboratory's specifications (UL1410, 59.7).

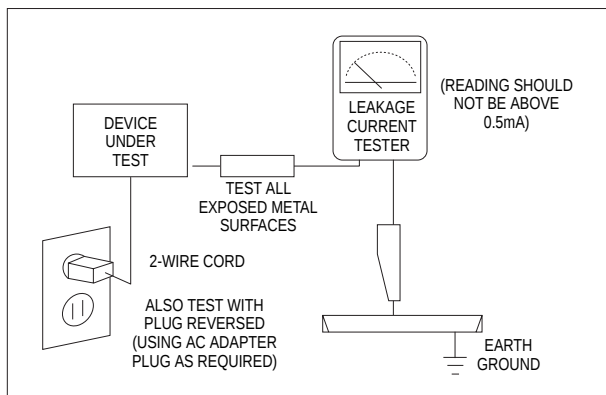


Fig. 1-1 AC Leakage Test

4. A high voltage is maintained within the specified limits using safety parts, calibration and tolerances. When voltage exceeds the specified limits, check each special part.

5. Warning for Engineering Changes:
Never make any changes or additions to the circuit design or the internal part for this product.
Ex: Do not add any audio or video accessory connectors. This might cause physical damage.
Furthermore, any changes or additions to the original design/engineering will invalidate the warranty.
6. Warning - Hot Chassis:
Some TV chassis are directly connected to one end of the AC power cord for electrical reasons.
Without insulated transformers, the product can only be repaired safely when the chassis is connected to the earth end of the AC power source.

To make sure the AC power cord is properly connected, follow the instructions below. Use the voltmeter to measure the voltage between the chassis and the earth ground. If the measurement is over 1.0V, unplug the AC power cord and change the polarity before re-inserting it. Measure the voltage between the chassis and the ground again.

7. Some TV chassis are shipped with an additional secondary grounding system. The secondary system is adjacent to the AC power line. These two grounding systems are separated in the circuit using an unbreakable/unchangeable insulation material.
8. When any parts, material or wiring appear overheated or damaged, replace them with new immediately. When any damage or overheating is detected, correct this immediately and make a regular check of possible errors.
9. Check for the original shape of the lead, especially that of the antenna wiring, any sharp edges, the AC power and the high voltage power. Carefully check if the wiring is too tight, incorrectly placed or loose. Never change the space between the part and the printed circuit board. Check the AC power cord for possible damages. Keep the part or the lead away from any heat-emitting materials.

10. Safety Indication:

Some electrical circuits or device related materials require special attention to their safety features, which cannot be viewed by the naked eye. If an original part is replaced with another irregular one, the safety or protective features will be lost even if the new one has a higher voltage or more watts.

Critical safety parts should be bracketed with ( ).
Use only regular parts for replacements (in particular, flame resistance and dielectric strength specifications).
Irregular parts or materials may cause electric shock or fire.

1-2 Servicing Precautions

Warning 1: First carefully read the "Safety Instruction" in this service manual.

When there is a conflict between the service and the safety instructions, follow the safety instruction at all times.

Warning 2: Any electrolytic capacitor with the wrong polarity will explode.

1. The service instructions are printed on the cabinet, and should be followed by any service personnel.
2. Make sure to unplug the AC power cord from the power source before starting any repairs.
 - (a) Remove or re-install parts or assemblies.
 - (b) Disconnect the electric plug or connector, if any.
 - (c) Connect the test part in parallel with the electrolytic capacitor.
3. Some parts are placed at a higher position than the printed board. Insulated tubes or tapes are used for this purpose. The internal wiring is clamped using buckles to avoid contact with heat emitting parts. These parts are installed back to their original position.
4. After the repair, make sure to check if the screws, parts or cables are properly installed. Make sure no damage is caused to the repaired part and its surroundings.
5. Check for insulation between the blade of the AC plug and that of any conductive materials (i.e. the metal panel, input terminal, earphone jack, etc).
6. Insulation Check Process: Unplug the power cord from the AC source and turn the switch on. Connect the insulating resistance meter (500v) to the AC plug blade.
7. Any B+ interlock should not be damaged.
If the metal heat sink is not properly installed, no connection to the AC power should be made.
8. Make sure the grounding lead of the tester is connected to the chassis ground before connecting to the positive lead. The ground lead of the tester should be removed last.
9. Beware of risks of any current leakage coming into contact with the high-capacity capacitor.
10. The sharp edges of the metal material may cause physical damage, so protect yourself by wearing gloves during the repair.
11. Due to the nature of plasma display panels, partial after-images may appear if a still picture is displayed on the screen for a long period of time.
This is caused by brightness deterioration due to the storage effect of the panel, and to prevent this from happening, we recommend that the brightness and contrast are reduced.
(e.g.) Contrast: 25, Brightness: 50

The insulating resistance between the blade of the AC plug and that of the conductive material should be more than 1 MΩ.

1-3 Static Electricity Precautions

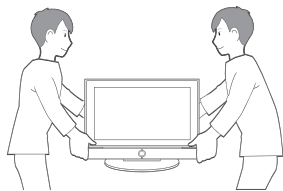
1. Some semi-conductive ("solid state") devices are vulnerable to static electricity. These devices are known as ESD. ESD includes the integrated circuit and the field effect transistor. To avoid any materials damage from electrostatic shock, follow the instructions described below.
2. Remove any static electricity from your body by connecting the earth ground before handling any semi-conductive parts or assemblies. Alternatively, wear a dischargeable wrist-belt.
(Make sure to remove any static electricity before connecting the power source - this is a safety instruction for avoiding electric shock)
3. Remove the ESD assembly and place it on a conductive surface such as aluminum foil to prevent accumulating static electricity.
4. Do not use any Freon-based chemicals.
Such chemicals will generate static electricity that causes damage to the ESD.
5. Use only grounded-tip irons for soldering purposes.
6. Use only anti-static solder removal devices.
Most solder removal devices do not support an anti-static feature. A solder removal device without an anti-static feature can store enough static electricity to cause damage to the ESD.
7. Do not remove the ESD from the protective box until the replacement is ready. Most ESD replacements are covered with lead, which will cause a short to the entire unit due to the conductive foam, aluminum foil or other conductive materials.
8. Remove the protective material from the ESD replacement lead immediately after connecting it to the chassis or circuit assembly.
9. Take extreme caution in handling any uncovered ESD replacements. Actions such as brushing clothes or lifting your leg from the carpet floor can generate enough static electricity to damage the ESD.

CAUTION

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.



2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the high-voltage cable or the antenna falling over may cause fire or electric shock.
7. When connecting the RF antenna, check for a DTV receiving system and install a separate DTV reception antenna for areas with no DTV signal.
8. When installing the product, leave enough space (4") between the product and the wall for ventilation purposes.
A rise in temperature within the product may cause fire.
9. When moving a PDP with removable speakers, detach the speakers first before moving the main body. Moving the PDP main body without separating the speakers may cause the speakers to detach, possibly causing damage or injury.

MEMO

4. Troubleshooting

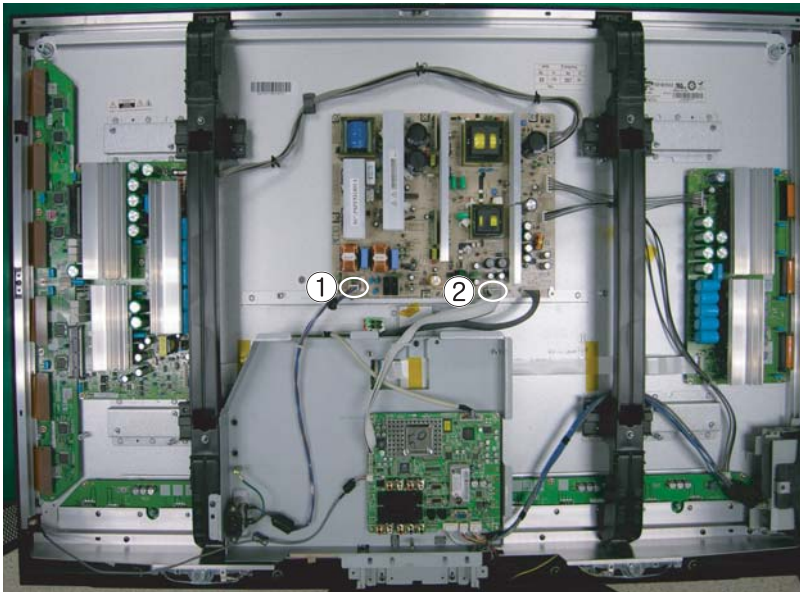
4-1 Troubleshooting

4-1-1 First Checklist for Troubleshooting

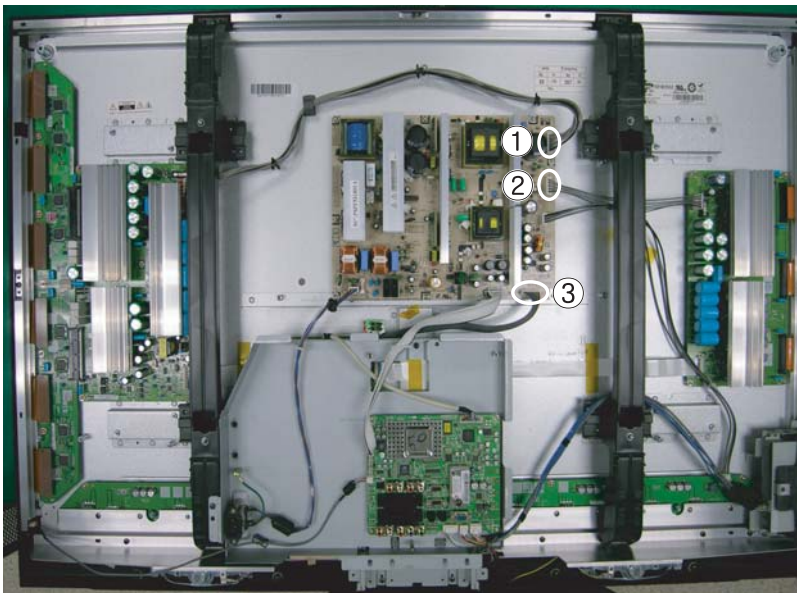
1. Check the various cable connections first.
 - Check to see if there is a burnt or damaged cable.
 - Check to see if there is a disconnected or loose cable connection.
 - Check to see if the cables are connected according to the connection diagram.
2. Check the power input to the Main Board.
3. Check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

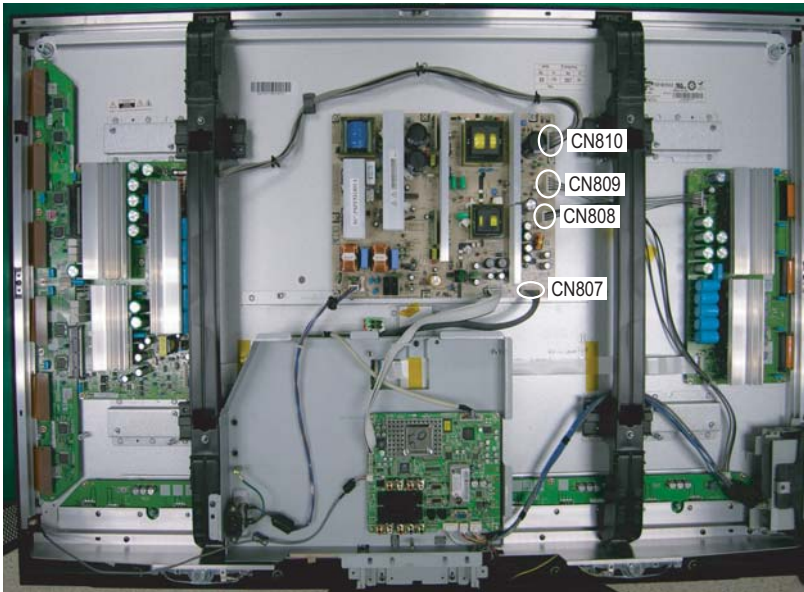
■ No Power

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 voltages of the SMPS. - Replace the Main Board.
Troubleshooting Procedures	 <pre> graph TD Q1_1[1 Is the AC IN socket connector and the SMPS CN800 connected?] -- No --> A1_1[Insert the AC in connector and the SMPS CN800 connector] Q1_1 -- Yes --> Q1_2[1 Is the Fuse (F801S) of the SMPS Power Input Part blown?] Q1_2 -- Yes --> A1_2[Replace Fuse (F801S)] Q1_2 -- No --> Q2_1[2 SMPS CN801 Pin 3 : STB 5V Pin 2 PS-ON : Check to see if it is 0V] Q2_1 -- No --> A2_1[Replace the SMPS] Q2_1 -- Yes --> A2_2[Replace the Main Board] </pre>

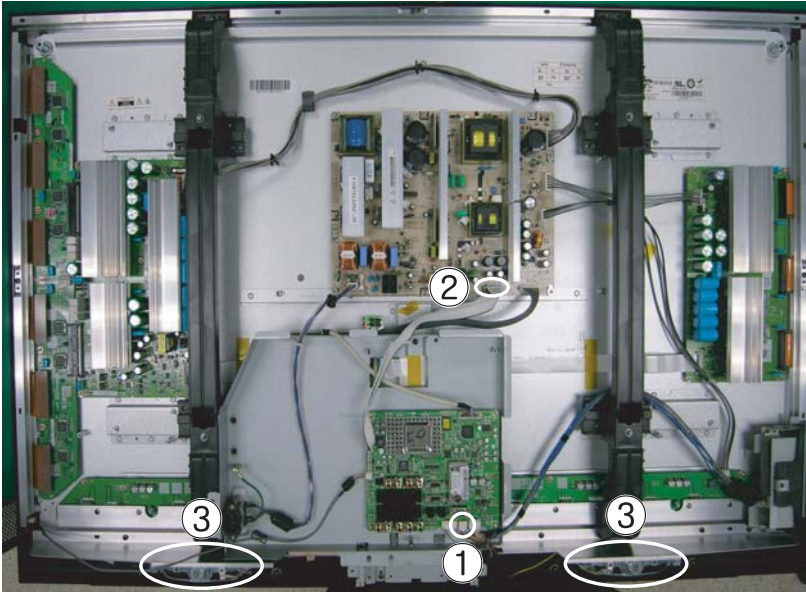
■ When the unit is repeatedly turning on and off

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	 <pre> graph TD Q1["① Does the symptom continue when connecting the power after removing CN810 from the SMPS?"] Q2["② Does the symptom continue when connecting the power after removing CN809 from the SMPS?"] Q3["③ Does the symptom continue when connecting the power after removing CN807 from the SMPS?"] R1["Replace the Y Main Board"] R2["Replace the X Main Board"] R3["Replace the Logic Board"] R4["Replace the SMPS"] Q1 -- No --> R1 Q1 -- Yes --> Q2 Q2 -- No --> R2 Q2 -- Yes --> Q3 Q3 -- No --> R3 Q3 -- Yes --> R4 </pre>
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.

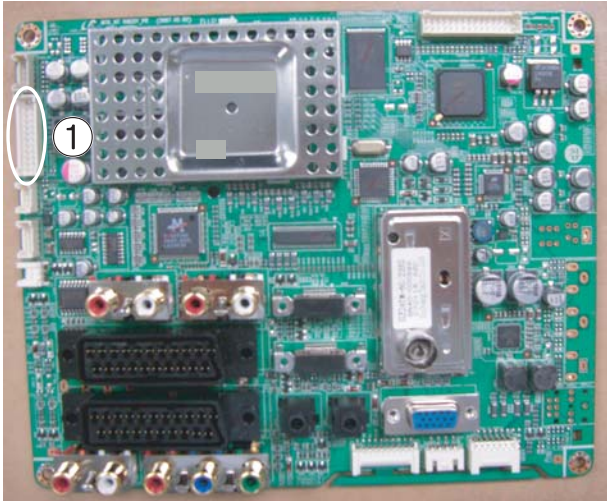
■ No Picture (When audio is normal)

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	 <pre> graph TD Q1[Are the Vs and Va voltages normal after removing all cables from the SMPS? (CN810, CN809, CN808, CN807)] -- No --> A1[Replace the SMPS] Q1 -- Yes --> Q2[Did problem improve?] Q2 -- No --> A2[Replace the Y Main Board] Q2 -- Yes --> Q3[Did problem improve?] Q3 -- No --> A3[Replace the X Main Board] Q3 -- Yes --> Q4[Did problem improve?] Q4 -- No --> A4[Replace the Logic Board] Q4 -- Yes --> Q5[Did problem improve?] Q5 -- No --> A5[Replace the Y Scan Board] </pre>
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.

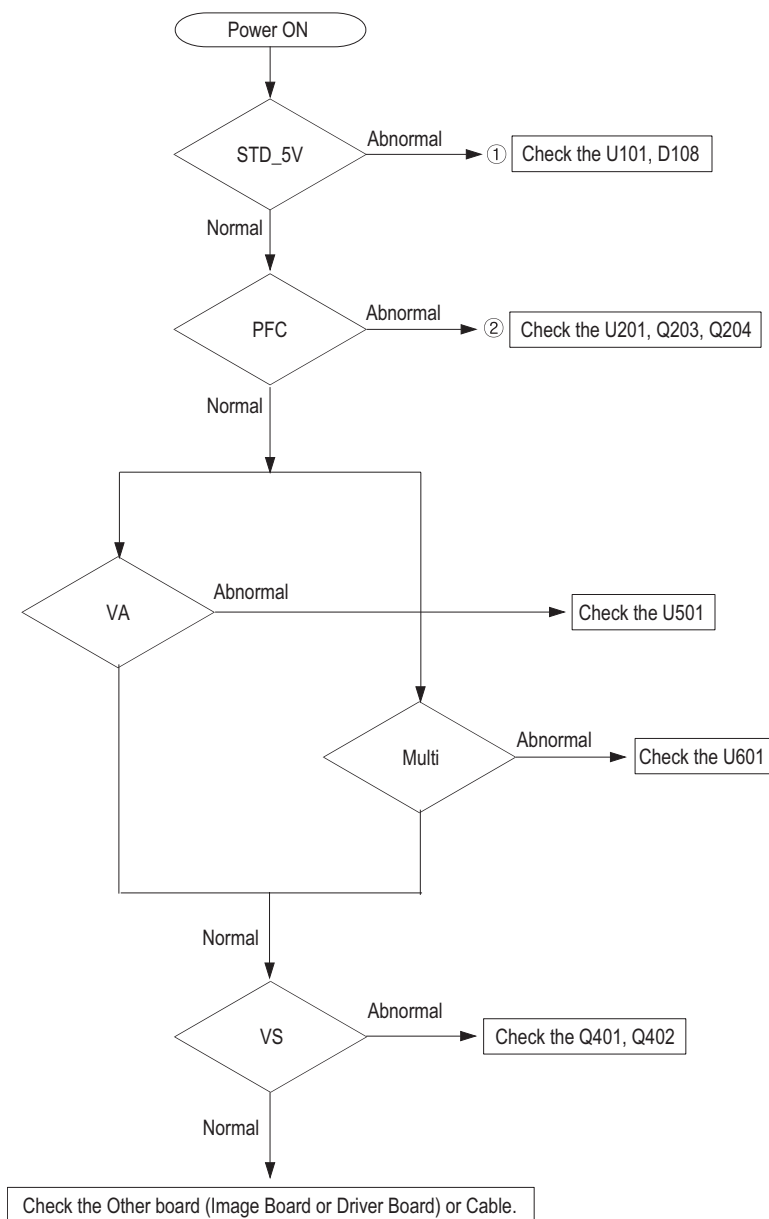
No Sound

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	 The image shows the internal components of a device chassis. Three specific areas are circled and labeled with numbers in white circles: 1 points to a speaker cable connector at the bottom center, 2 points to a power supply unit (SMPS) in the upper center, and 3 points to a speaker driver at the bottom right. 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	 Is the antenna connection setting properly configured? No Configure properly Yes Check CN101 pin2 for +33V No Replace the SMPS Yes Replace the Main Board

■ SMPS Troubleshooting



■ Drive Board Troubleshooting

1) Troubleshooting Summary

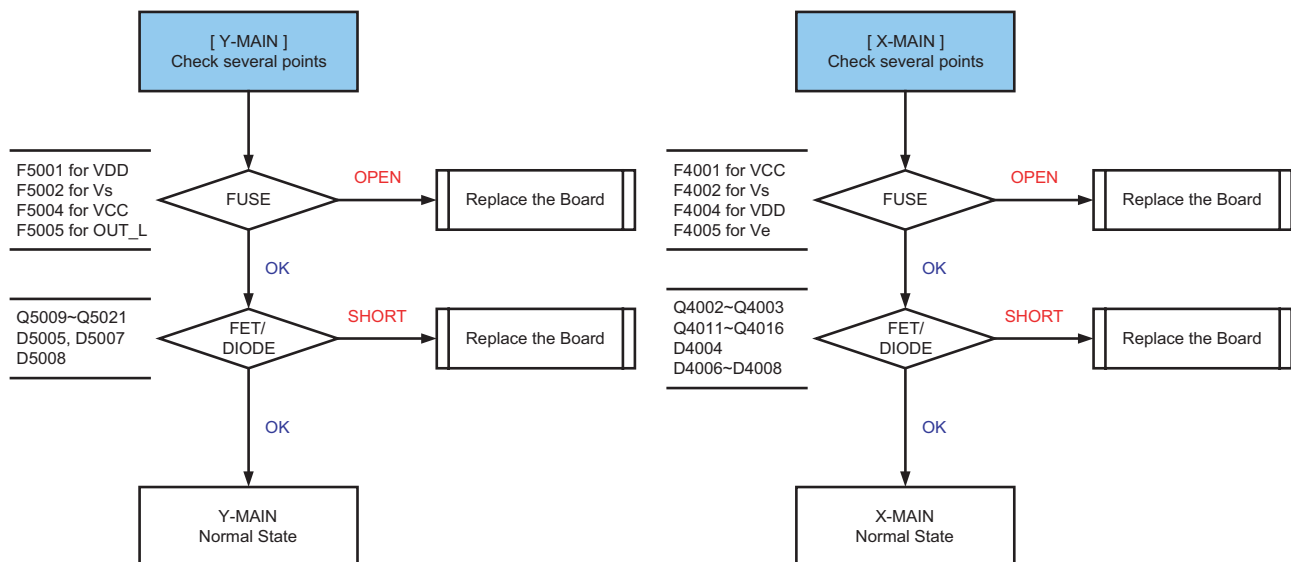
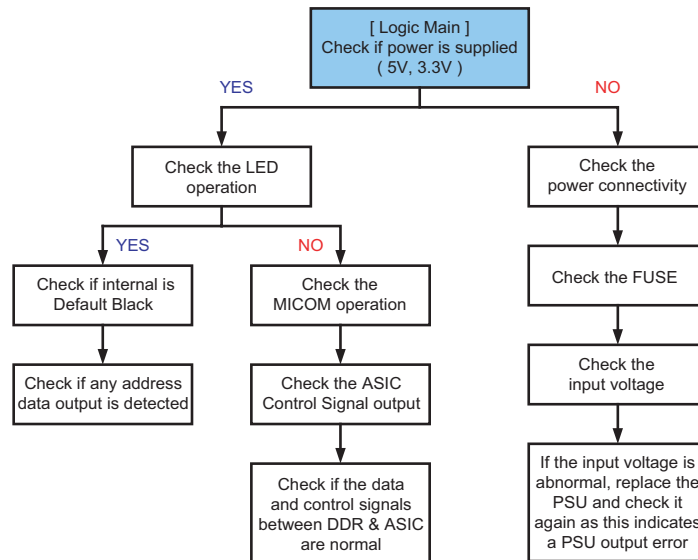
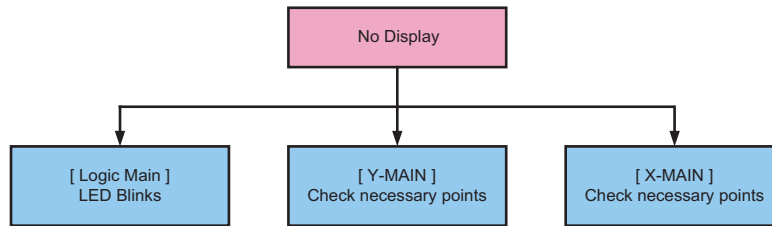
Condition Name	Description	Related Board
No Voltage Output	Operating Voltage don't exist	PSU
No Display	Operating Voltage exist, but an Image doesn't exist on screen	Y-MAIN, X-MAIN, Logic Main, Cable
Abnormal Display	Abnormal Image (not open or short) is no screen	Y-MAIN, X-MAIN, Logic Main
Sustain Open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

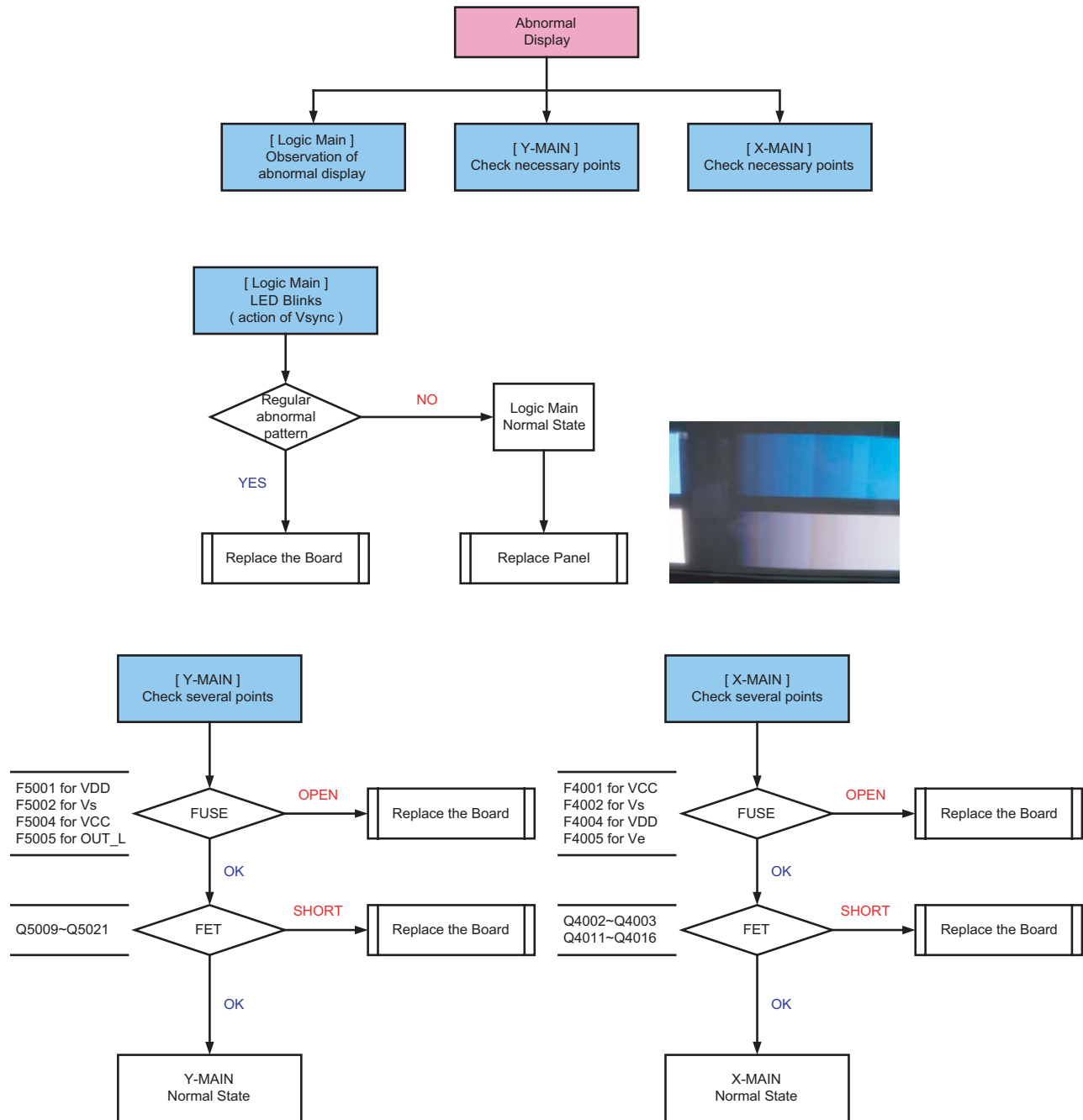
This page shows you how to check the boards, and the following pages show you how to find the defective board.



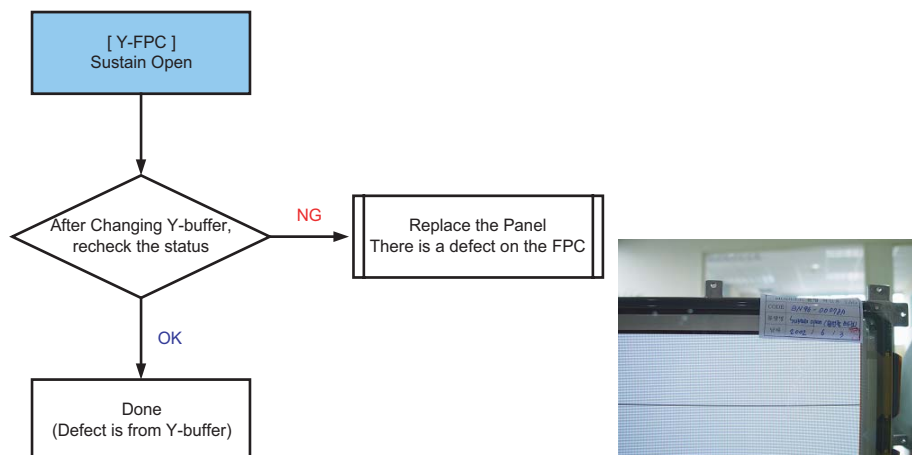
② Abnormal Display(Abnormal Image is on Screen.(except abnormality in Sustain or Address))

- Abnormal Display is related with Y-MAIN, X-MAIN, Logic Main and so on.

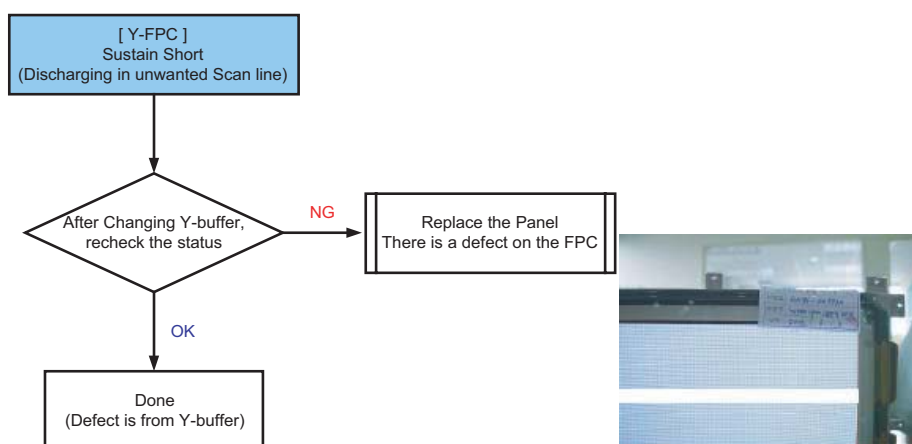
This page shows you how to check the boards, and the following pages show you how to find the defective board.



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



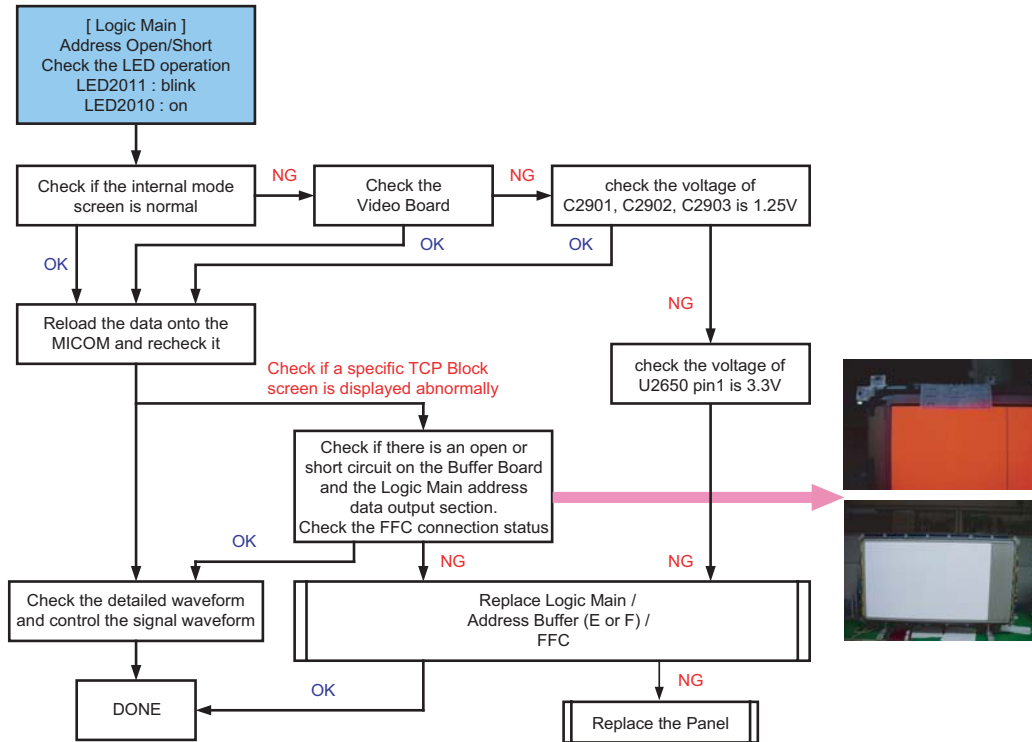
④ Sustain Short (some horizontal lines appear to be linked on Video)



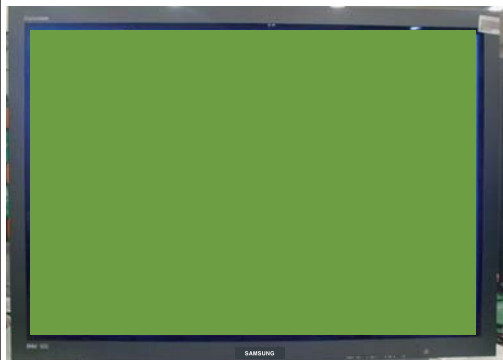
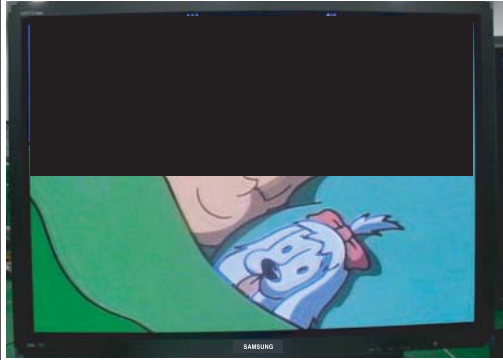
⑤ Address Open, Short

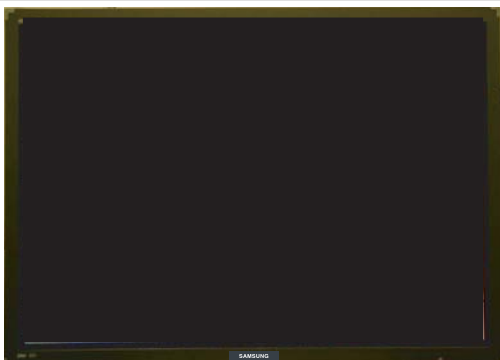
► Address Open and Short is related with Logic Main, Logic Buffer, FFC, TCP film and so on.

This page shows you how to check the boards, and the following pages show you how to find the defective board.



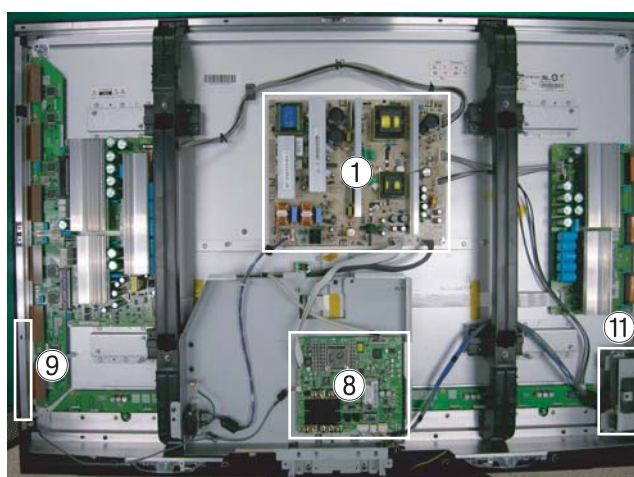
4-1-3 Faults and Corrective Actions

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 resetting - 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

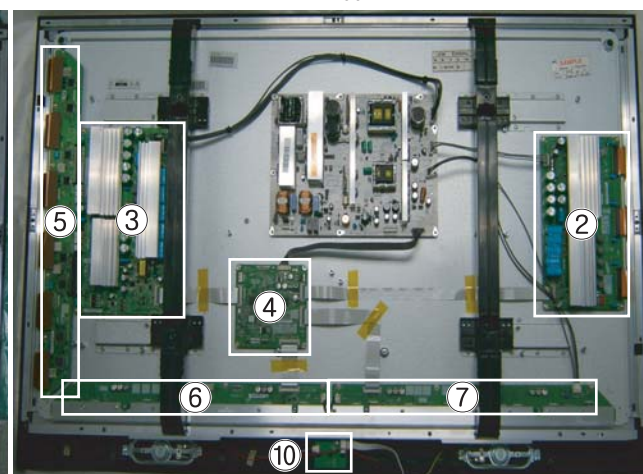
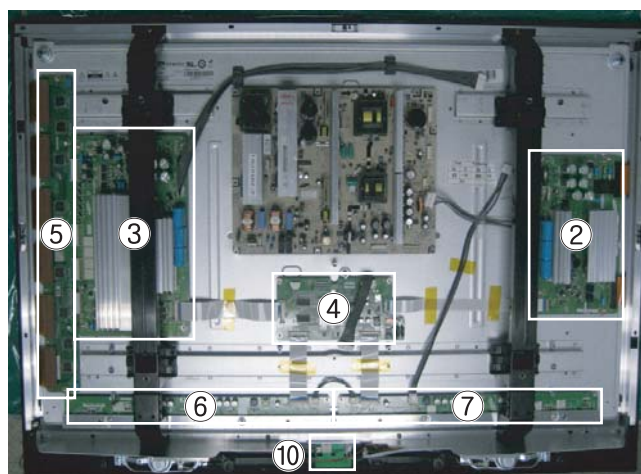
4-1-4 Troubleshooting Procedures by assembly

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-Y-MAIN SCAN 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 BOARD P-POWER&IR	The remote control does not work properly, the LED does not work properly.
11	ASSY BOARD P-SIDE AV	The AV2 and S-VIDEO2 modes do 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

To Enter: **POWER OFF** → **INFO** → **MENU** → **MUTE** → **POWER ON**
(Interval between key strokes: less than 3 sec)

To Exit: **POWER OFF** → **POWER ON**

2. Factory Remote

To Enter: **POWER ON** → **INFO** → **FACTORY Key** (Interval between key strokes: less than 3 sec)

To Exit: **POWER OFF** → **POWER ON**

Press the Factory key twice with a key stroke interval of more than 1 second (Pressing once enters Aging Mode)

3. Settings when entering Factory mode

- Sharp Screen (Dynamic), Color Tone (Cool1), Factory (Dynamic CE Off)

4. 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

1 Calibration	11 Bus Stop
2 Option Byte XXXXXX XXXXXX	12 Password 80 80 80 80
3 W/B	13 CheckSum
4 W/B Movie	14 Dynamic Contrast
5 MTK 8202	15 Spread Spectrum
6 FBE2 option	16 Reset
7 Pdp Logic	
8 SOUND	
9 YC Delay	
10 Adjust	

HDCP Write Success..

T-LIL50PEA-XXXX Month, Date, Year 00:00:00 T-BDPMNSAS-XXXX

Panel On Time(Hour) 0

TV Air 3 0

※ 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. Calibration

ITEM	Data
AV Calibration	Success
Comp Calibration	Success
DTV Calibration	Success
HDMI Calibration	Success

2. Option Byte

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Logic D/L	On/Off	Off	Same as Initial (RF & AV) Data				
Data Type	Depending on Module and Fliter	50"EA SPU					
Gamma	On/Off	Off					
Auto Power	On/Off	On					
Hotel Mode	On/Off	Off					
Shop Mode	On/Off	Off					
High Devi	On/Off	Off					
Carrier Mute	On/Off	Off					
Side Jack	On/Off	On					
V-Chip	On/Off	Flof					
Caption	On/Off	On					
Volume Table	Small/Large	Large					
Sound Wattage	PDP 10W/ PDP 15W/LCD 10W	On					
Initial Color System	Auto/PAL-M/PAL-N/ NTSC-M	Large					
PS Test	Min/Sec	PDP 10W					
Language	English/French/ Spanish Portuguese	Min					
Hp Detect	Active Low/ Active High	English					
PC Ident	On/Off	Active Low					
WM Calib	On/Off	On					
Uart Select	Normal/Debug_DL	Off					
Sub MCU PW Down	On/Off	Debug/DL					

3. W/B

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
<u>Sub Bright</u>	0~255	128	Adjustable				
<u>Red Offset</u>	0~255	128					
Green Offset	0~255	128	128				
<u>Blue Offset</u>	0~255	128	Adjustable				
<u>Sub Contrast</u>	0~255	128					
<u>Red Gain</u>	0~255	128					
Green Gain	0~255	128	128				
<u>Blue Gain</u>	0~255	128	Adjustable				

4. W/B Movie

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
W/B Movie On/Off	On/Off	Off	Off	Off	Off	Off	Off
Service P Mode	Dynamic/Standard /Movie	Movie	Movie	Movie	Movie	Movie	Movie
Service Color Tone	Cool2/Cool1/ Normal/Warm1/ Warm2	Warm2	Warm2	Warm2	Warm2	Warm2	Warm2
MSub Brightness	0~255	128	128	128	128	128	128
Msub Contrast	0~255	128	128	128	128	128	128
Warm1 Red Gain	0~255	140	140	140	140	140	140
Warm1 Blue Gain	0~255	105	105	105	105	105	105
Warm1 Red Offset	0~255	140	140	140	140	140	140
Warm1 Blue Offset	0~255	100	100	100	100	100	100
Warm2 Red Gain	0~255	145	145	145	145	145	145
Warm2 Blue Gain	0~255	90	90	90	90	90	90
Warm2 Red Offset	0~255	145	145	145	145	145	145
Warm2 Blue Offset	0~255	90	90	90	90	90	90
Normal Red Gain	0~255	130	130	130	130	130	130
Normal Blue Gain	0~255	120	120	120	120	120	120
Normal Red Offset	0~255	135	135	135	135	135	135
Normal Blue Offset	0~255	120	120	120	120	120	120
Cool2 Red Gain	0~255	123	123	123	123	123	123
Cool2 Blue Gain	0~255	145	145	145	145	145	145
Cool2 Red Offset	0~255	125	125	125	125	125	125
Cool2 Blue Offset	0~255	128	128	128	128	128	128
Mov.Contrast	0~100	80	80	80	80	80	80
Mov.Brightness	0~100	50	50	50	50	50	50
Mov.Color	0~100	55	55	55	55	55	55
Mov.Sharpness	0~100	45	45	45	45	45	45

5-1. MT8202 (Cal. Adjustment)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
R_Offset	0~255	34	Same as Initial Data				
G_Offset	0~255	13					
B_Offset	0~255	24					
R_Gain	0~255	92					
G_Gain	0~255	82					
B_Gain	0~255	82					
Y_Offset	0~255	21					
Cb_Offset	0~255	35					
Cr_Offset	0~255	22					
Y_Gain	0~255	48					
Cb_Gain	0~255	48					
Cr_Gain	0~255	48					
CVBS Offset	0~255	54					
CVBS Gain	0~255	49					
CVBS U	0~255	0					
CVBS V	0~255	0					
R Offset After	0~255	129					
G Offset After	0~255	129					
B Offset After	0~255	129					
Red Gain	0~255	159					
Green Gain	0~255	159					
Blue Gain	0~255	159					
R Offset Before	0~255	113					
G Offset Before	0~255	113					
B Offset Before	0~255	113					
LVDS Control	0~255	55					

5-2. MT8202 (Cal. Target)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
AV_Offset Target	0~255	15	Same as Initial Data				
AV_Offset Delta	0~255	1					
AV_Gain Target	0~255	220					
AV_Gain Delta	0~255	3					
Comp_Y_Gain Target	0~255	235					
Comp_Y_Gain Delta	0~255	3					
Comp_Y_Offset Target	0~255	16					
Comp_Pb_Offset Target	0~255	128					
Comp_Pr_Offset Target	0~255	128					
Comp_Y_Offset Delta	0~255	2					
Comp_Pb_Offset Delta	0~255	0					
Comp_Pr_Offset Delta	0~255	0					
PC_Offset Target	0~255	1					
PC_Offset Delta	0~255	0					
PC_Gain Target	0~255	254					
PC_Gain Delta	0~255	0					
Black Target	0~255	1					
White Target	0~255	235					

5-3. MT8202 (Picture Enhance2)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
PreLGain_Main	0~191	64	64	64	64	64	64
PreMGain_Main	0~191	64	64	64	64	64	64
PreHGain_Main	0~191	76	76	76	76	76	76
PreLGain_Sub	0~191	64	64	64	64	64	64
PreMGain_Sub	0~191	64	64	64	64	64	64
PreHGain_Sub	0~191	76	76	76	76	76	76
LocalLGain	0~191	72	72	72	72	72	72
LocalMGain	0~191	64	64	64	64	64	64
LocalHGain	0~191	64	64	64	64	64	64
PostLGain	0~191	96	96	96	96	96	96
PostMGain	0~191	96	96	96	96	96	96
PostHGain	0~191	64	64	64	64	64	64
Vgain	0~191	20	20	20	20	20	20
Sub Color	0~100	30	30	30	30	30	30

6. FBE2 Option

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Patt-Sel	0~20	0	0	0	0	0	0
B-Slope gain	0~255	64	64	64	64	64	64
B-Tilt min	0~255	20	20	20	20	20	20
B-Tilt max	0~255	120	120	120	120	120	120
Lfunc-Basis	0~255	75	75	75	75	75	75
Hfunc-Basis	0~255	88	88	88	88	88	88
Mean-Offset1	0~255	64	64	64	64	64	64
Mean-Offset2	0~255	235	235	235	235	235	235
Mean-Slope	0~255	93	93	93	93	93	93
Input-offset	0~255	128	128	128	128	128	128
ACR-Offset	0~127	25	25	25	25	25	25
ACR-Th1	0~255	20	20	20	20	20	20
ACR-Th2	0~255	120	120	120	120	120	120
Skin-Enable	On/Off	On	On	On	On	On	On
Skin-Tu	0~255	128	128	128	128	128	128
Skin-Tv	0~255	128	128	128	128	128	128
M-Skin-Tu	0~255	128	128	128	128	128	128
M-Skin-Tv	0~255	128	128	128	128	128	128
Sub Color	0~255	135	135	135	135	135	135
M-Au-Sub Color	0~255	128	128	128	128	128	128
M-Wi-Sub Color	0~255	128	128	128	128	128	128
MW-Skin-Tu	0~255	128	128	128	128	128	128
MW-Skin-Tv	0~255	128	128	128	128	128	128

7. Pdp Logic

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Pattern Select	0~31	0	0	0	0	0	0
CDC Sw	On/Off	Off	Off	Off	Off	Off	Off
CDC Strength Th	0~31	10	10	10	10	10	10
BRE Sw	On/Off	Off	Off	Off	Off	Off	Off
FRC Repeat Mode	On/Off	Off	Off	Off	Off	Off	Off
FRC DBG MarkOn	0~15	0	0	0	0	0	0
FRC Bypass	On/Off	Off	Off	Off	Off	Off	Off
CDC Lower Gain	0~31	4	4	4	4	4	4
CDC Upper Gain	0~31	6	6	6	6	6	6
Panel Type	Read Only						
Panel Inch	Read Only						
Panel Version	Read Only						
Logic Sw Version	Read Only						
Panel Temp	Read Only						

8. SOUND

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
AM Mute Th_High	0~20	7	Same as Initial Data				
AM Mute Th_Low	0~20	8					
FM Mute Th_High	0~96	14					
FM Mute Th_Low	0~96	7					
NICAM Fine Vol	0~40	20					
FM Fine Vol	0~40	20					
AM Fine Vol	0~40	19					
Fine Tune Vol	0~40	20					
SC1 Fine Vol	0~40	20					
SC2 Fine Vol	0~40	20					
Output Matrix	Bypass/L_Mono/ R_Mono	Bypass					
MTS Num of Check	0~80	50					
MTS Pilot Num	0~50	35					
MTS Pilot Low	64~137	112					
MTS Pilot High	89~160	128					
MTS SAP Num	0~50	20					
MTS SAP Low	69~132	101					
MTS SAP High	101~202	167					
MTS SAP Mute Lvl	0~100	0					
MTS Fine Vol	0~40	20					
MTS SAP Fine Vol	0~40	20					
FM Mute Th_H HDev	0~150	57					
FM Mute Th_L Hdev	0~150	38					
Speaker EQ	On/Off	On					

9. YC Delay

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
RF PAL-B/G	0~10	6	Same as Initial Data				
RF PAL-D/K	0~10	5					
RF PAL-I	0~10	5					
RF PAL-L/L'	0~10	5					
RF SECAM-B/G	0~10	7					
RF SECAM-D/K	0~10	5					
RF SECAM-I	0~10	5					
RF SECAM-L/L'	0~10	5					
RF NTSC3.58	0~10	5					
RF NTSC4.43	0~10	6					
RF PAL-M	0~10	7					
RF PAL-N	0~10	5					
AV PAL	0~10	6					
AV SECAM	0~10	7					
AV NTSC3.58	0~10	6					
AV NTSC4.43	0~10	6					
AV PAL60	0~10	5					
AV PAL-M	0~10	7					
AV PAL-N	0~10	5					

10-1. Adjust (User Control Unit)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
TTX PWM	0~255	30	Same as Initial Data				
Dyn. Contrast	0~255	100					
Dyn. Brightness	0~255	45					
Dyn. Color	0~255	55					
Dyn. Sharpness	0~255	75					
Std. Contrast	0~255	80					
Std. Brightness	0~255	50					
Std. Color	0~255	55					
Std. Sharpness	0~255	50					
Melody Volume	0~100	20					
Brightness Center	0~55	38					
Contrast Gain	0~255	64					
MTK_Dyn. Contrast	On/Off	Off					
DSP Recovery	On/Off	On					
Channel Table	Suwon/Sesk/SEH/ TTSEC	SUWON					
Video Mute Time	0~10	5					
Sound Delay	0~70	0					

10-2. Adjust (LNA Plus)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
LNA PLUS	On/Off	On	Same as Initial Data				
RF_dB0_TH	0~255	5					
RF_dB1_TH	0~255	15					
RF_dB2_TH	0~255	43					
RF_dB3_TH	0~255	64					
NR1_Coring	0~255	16					
NR2_Coring	0~255	32					
NR3_Coring	0~255	32					
NR4_Coring	0~255	32					

10-3. Adjust (Hotel Option)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Power On Channel	0~100	3	Same as Initial Data				
Power On Band	AIR/STD/HRC/IRC	AIR					
Power On Volume	0~100	10					
Max Volume	0~100	100					
Local Key Lock	On/Off	Off					
Power On Source	TV/AV1/AV2/ S-Video/Componet1/ Component2/PC/ HDMI1/HDMI2	TV					

10-4. Adjust (HDMI)

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Hot Plug	On/Off	On	Same as Initial Data				
Clock Control	On/Off	On					
Hot Plug Dly	3~50	9					

11. Bus Stop

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Main Loop	On/Off	Off	Same as Initial Data				
Eeprom	On/Off	Off					
Tuner	On/Off	Off					
Normal	On/Off	Off					
Watch Dog	On/Off	On					

12. Password 80 80 80 80

13. CheckSum 91A8

14. Dynamic Contrast

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Dynamic	On/Off	Off	Same as Initial Data				
Dynamic Dimming	On/Off	Off					
FBE Y_MEAN Read	-	100	Read Only				

15. Spread Spectrum

ITEM	Range	Initial	RF	AV	Componet	PC	HDMI/DVI
Spread Spectrum	On/Off	Off	Fixed Value about each mode.				
Step 480i/576i	0~255	40					
Rang 480i/576i	0~255	50					
Step 480p/576p	0~255	30					
Rang 480p/576p	0~255	50					
Step 720p	0~255	30					
Rang 720p	0~255	40					
Step 1080i	0~255	30					
Rang 1080i	0~255	45					
Step 640*480	0~255	40					
Rang 640*480	0~255	50					
Step 800*600	0~255	40					
Rang 800*600	0~255	55					
Step 1024*768	0~255	40					
Rang 1024*768	0~255	55					
Step 1360*768	0~255	40					
Rang 1360*768	0~255	55					
FBE_Spectrum	1/2/3/4/Off	2					

16. Reset

4-2-4 Service Adjustment

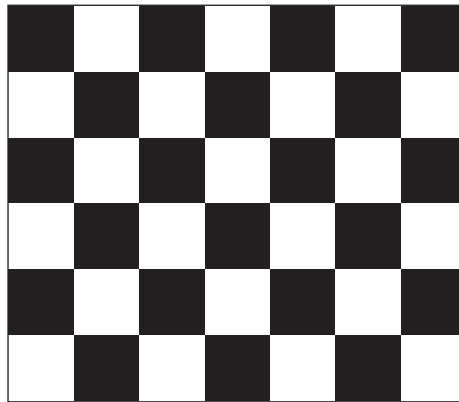
■ White Balance - Calibration

If picture color is wrong, do calibration first.

Execute calibration in Factory Mode

1. Source : VIDEO
2. Setting Mode : PAL Video (MODE : #2)
3. Pattern : Pattern #24 (Chess Pattern)
4. Use Equipment : MSPG945 Series or MSPG925 Series
5. Work order
 - 1) Enter by Factory Mode select "1. CALIBRATION".
 - 2) Select "AV CALIBRATION" again in CALIBRATION MENU.
 - 3) After Completing Calibration, come out "Av success". OSD on the screen (bottom-side) for about 3 seconds.

Source AV : PAL composite, Component : 1280*720/60Hz(720P)
PC : 42" - 1024*768/60Hz
50" - 1360*768/60Hz



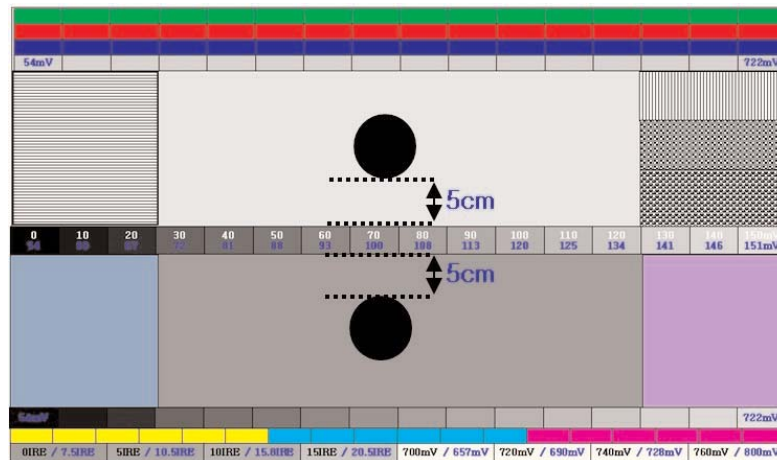
(Chess Pattern)

■ 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 $\pm$ 500, -6 ~ -20 MPCD
- * Color coordinate
H/L : 278/285 $\pm$ 2
L/L : 278/285 $\pm$ 3, 1.9ft $\pm$ 0.05ft
(This Data will be able to be changed according to Picture quality Setting, Please refer to latest data from Factory.)

■ Conditions for Measurement

1. On the basis of toshiba ABL pattern : High Light level (57 IRE)
 - INPUT SIGNAL GENERATOR : MSPG-925SM or MSPG-945FS
 - * MODE No 2 : 744*484@60Hz
No 6 : 1280*720@60Hz(720P)
No 21 : 1024*768
 - * Pattern No 36 : 16 Color Pattern
No 16 : Toshiba ABL Pattern
No 24 : Chessboard Calibration
No 92 : Flat W/B Pattern
2. Optical measuring device : CA210 (FL)
Please use the MSPG Series LTH generator for model PS-42C91H, PS-50C91H.

■ Method of Adjustment

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

(AV → Component)

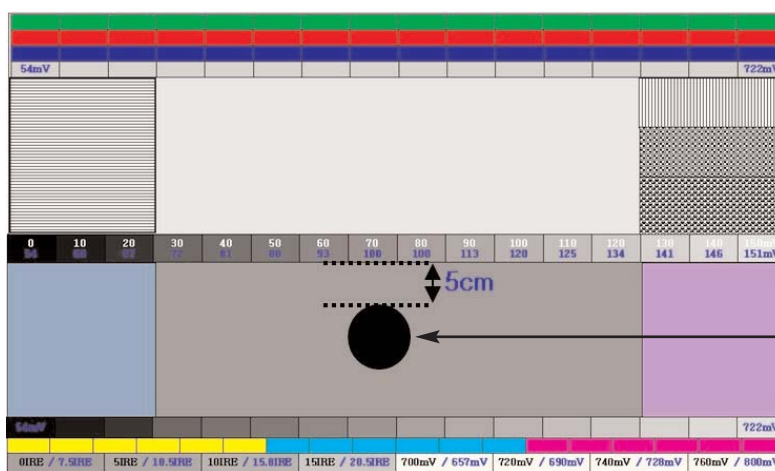
a) Set the input to the mode in which the adjustment will be made (RF → DTV → PC → DVI).

- * Input signal - VIDEO Mode : Model #2 (744*484 Mode), Pattern #92
- DTV, DVI Mode : Model #6 (1280*720 Mode), Pattern #92
- HDMI Mode : Model #6 (1280*720 Mode), Pattern #92

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.

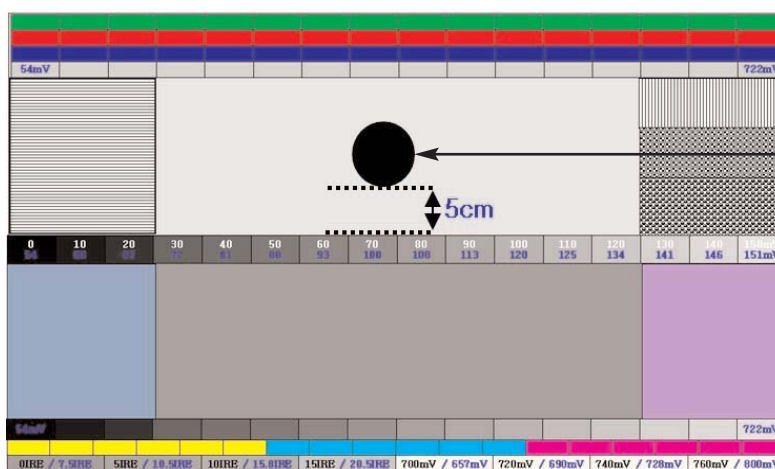


(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

* 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-Y-MAIN SCAN BUFFER	
ASSY PDP MODULE P-ADDRESS E BUFFER	
ASSY PDP MODULE P-ADDRESS F BUFFER	
ASSY BOARD P-SIDE A/V	

* PDP 50" Check items listed after changing each

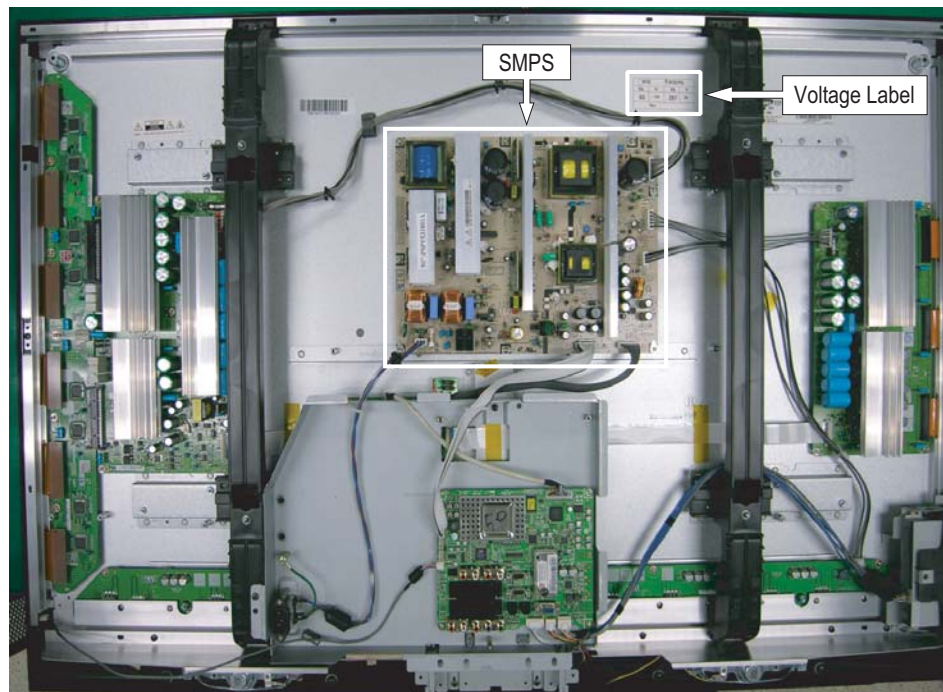
Replaced assembly items	Check Items
ASSY PCB MISC-MAIN	1) Auto Program 2) White Balance Adjust
SMPS-PDP TV	Vs, Va voltage check and adjust
ASSY PDP MODULE P-LOGIC MAIN	Not to be adjusted
ASSY PDP MODULE P-X-MAIN	
ASSY PDP MODULE P-Y-MAIN	
ASSY PDP MODULE P-Y-MAIN SCAN BUFFER	
ASSY PDP MODULE P-Y-MAIN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

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

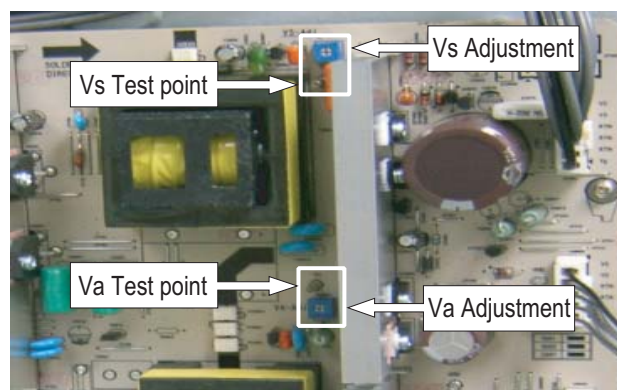
■ Voltage Adjustment

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.)

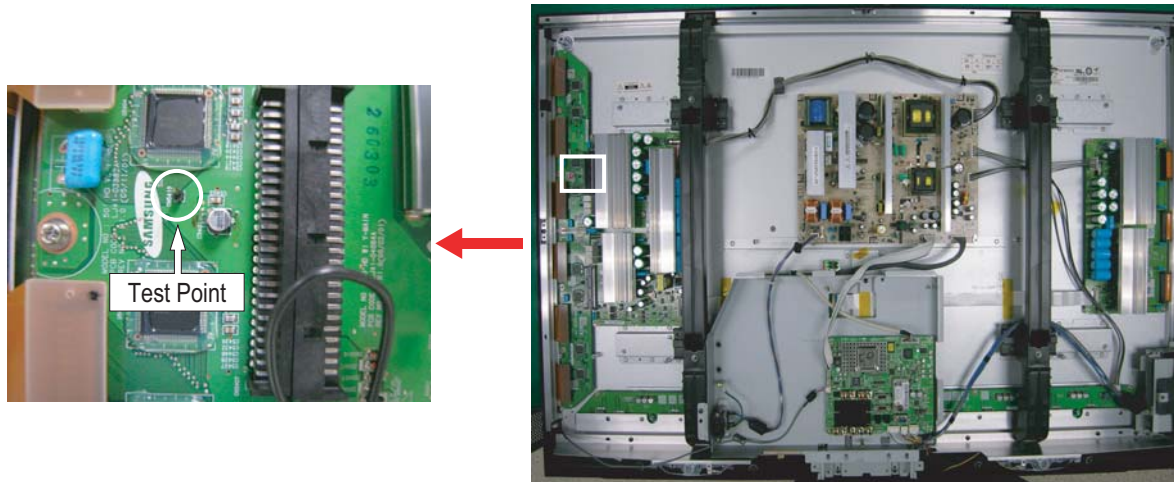
	Value	Board Adjustment
Vs	210	SMPS
Va	63	
Vset	-	
Ve	94	
Vscan	-190	



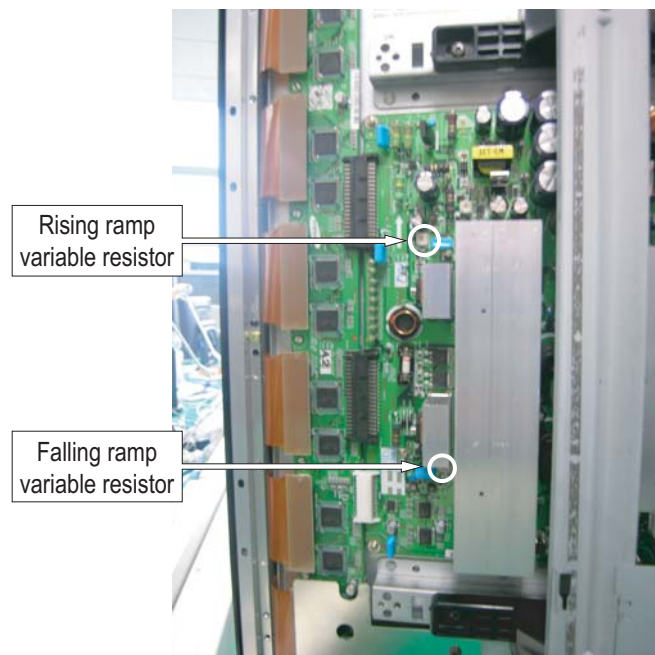
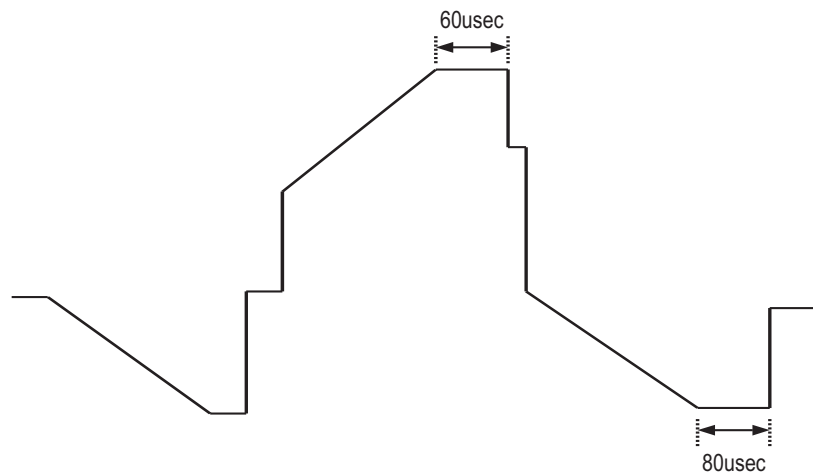
2. A point of adjusting SMPS-MAIN voltage.



■ Y-RR and Y-FR controls



Set the main reset (rising : 60usec, falling : 80usec) by change the value of variable resistor.



4-3 Upgrade

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

1. Install the MTKtool

Connect Set (Service Jack) and Jig Cable to execute Program Update.

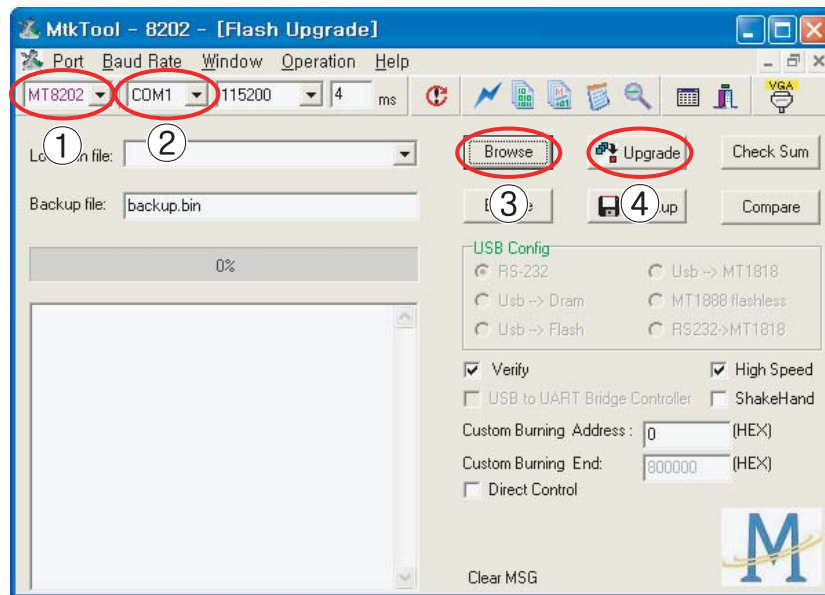


Check In factory menu

2. Option Byte → "Logic D/L" should be "OFF"
 "Uart Select" should be "Debug D/L"

2. Turn on the Set (or on Stand by mode)

- Run "MTKtool"



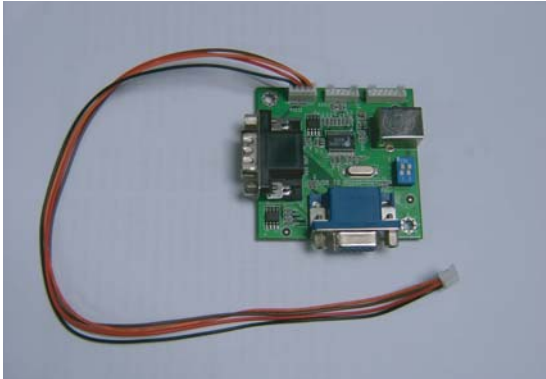
- Click Reset 
- Choose MT8202 ①
- Select Com Port ② (Auto Detect)
- Select Bin file, by browse ③
- Click Upgrade button ④

3. Turn off (= AC Power off) the Set (waiting a few seconds) and turn on again.

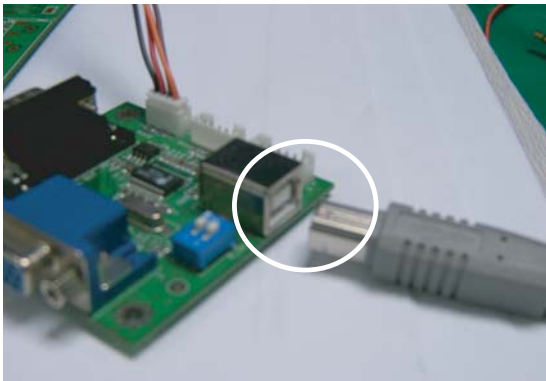
4-3-2 How to Update Flash ROM (with UART JIG)

※ In the usual cases, Update S/W by using RS-232C Cable.

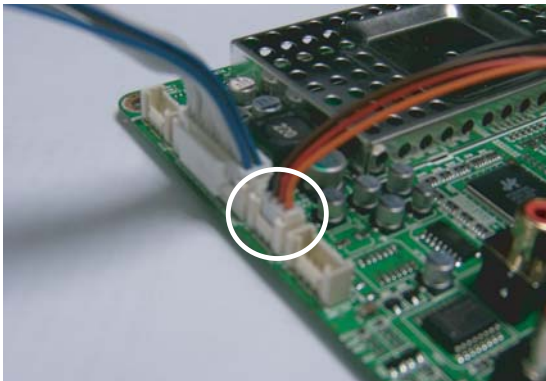
1. If some problems occur under this condition, update S/W by using UART JIG.



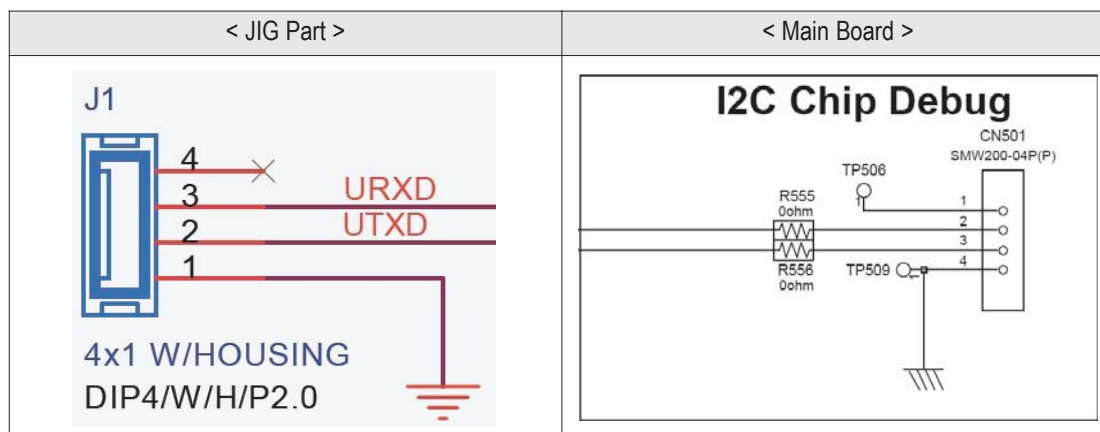
2. You can use UART JIG with USB Connection.



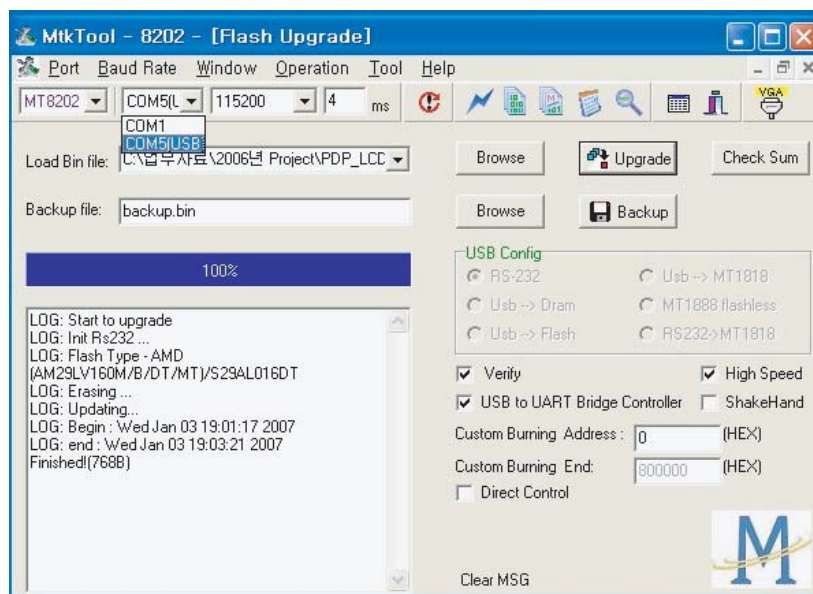
3. Install  PL-2303 Driver Installer in your PC before using the JIG.
Connect 4P Lead connector to Main Board (CN501)



4-3-3 Pin Assignment



1. Turn on the Set (or on Stand by mode)
- Run "MTKtool"

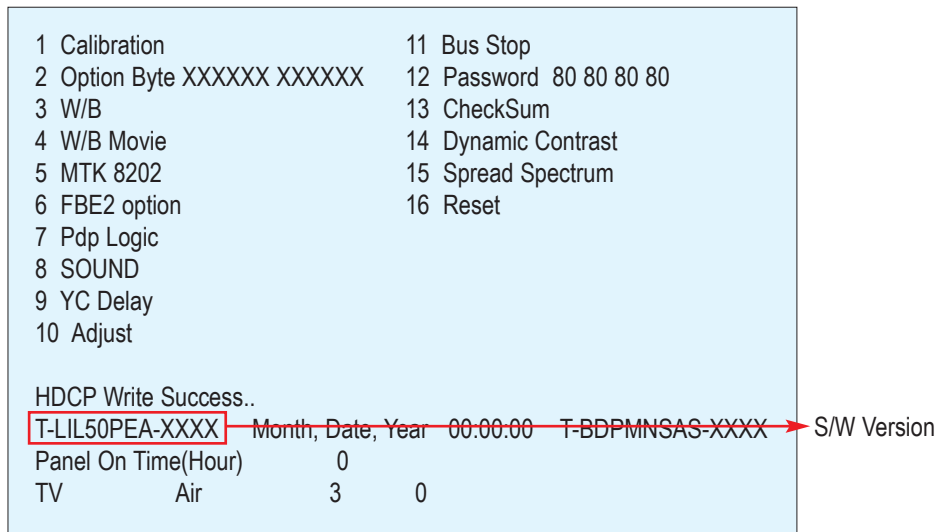


2. When you run "MTKtool", this Program can detect USB port automatically.
Choose USB interface and Update S/W as RS-232C case.

4-3-4 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.



MEMO