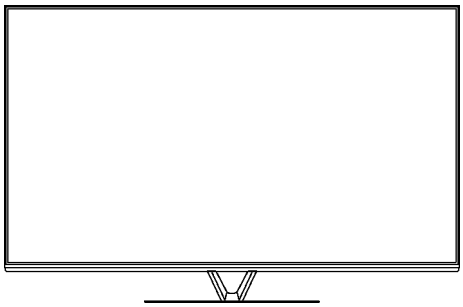
ORDER NO.PCZ1304098CE

Service Manual

Plasma Television



Model No. TX-P65VT60Y
TX-PR65VT60

GPF16D-E Chassis

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety Precautions

1.1. General Guidelines

1. When conducting repairs and servicing, do not attempt to modify the equipment, its parts or its materials.
2. When wiring units (with cables, flexible cables or lead wires) are supplied as repair parts and only one wire or some of the wires have been broken or disconnected, do not attempt to repair or re-wire the units. Replace the entire wiring unit instead.
3. When conducting repairs and servicing, do not twist the Fasten connectors but plug them straight in or unplug them straight out.
4. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
5. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
6. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Touch-Current Check

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a measuring network for touch currents between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use Leakage Current Tester (Simpson 228 or equivalent) to measure the potential across the measuring network.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reserve the AC plug in the AC outlet and repeat each of the above measure.
6. The potential at any point (TOUCH CURRENT) expressed as voltage U_1 and U_2, does not exceed the following values:

   For a. c.: U_1 = 35 V (peak) and U_2 = 0.35 V (peak);

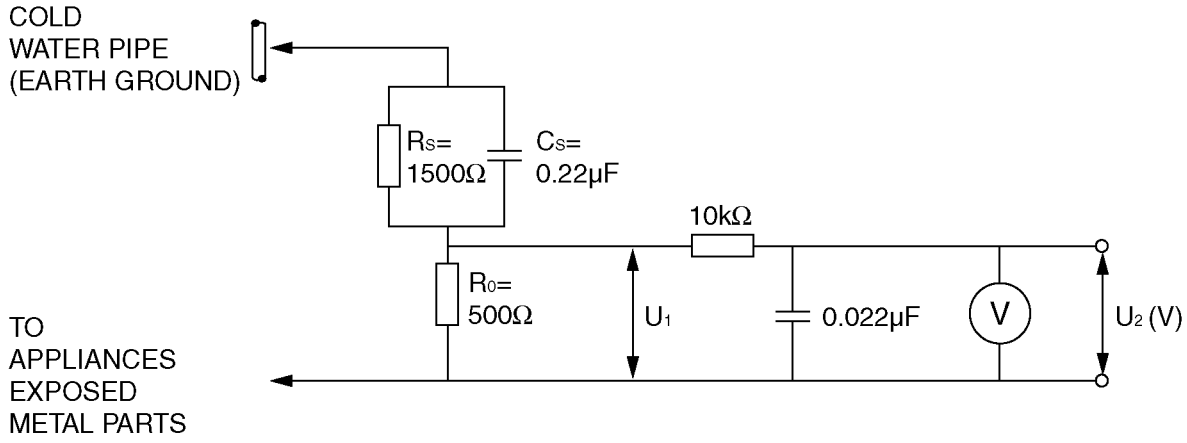
   For d. c.: U_1 = 1.0 V,

   Note:

   The limit value of U_2 = 0.35 V (peak) for a. c. and U_1 = 1.0 V for d. c. correspond to the values 0.7 mA (peak) a. c. and 2.0 mA d. c.

   The limit value U_1 = 35 V (peak) for a. c. correspond to the value 70 mA (peak) a. c. for frequencies greater than 100 kHz.
7. In case a measurement is out of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Measuring network for TOUCH CURRENTS



Resistance values in ohms (Ω)

V: Voltmeter or oscilloscope
(r.m.s. or peak reading)

Input resistance: ≥ 1 MΩ
Input capacitance: ≤ 200 pF
Frequency range: 15 Hz to 1 MHz and d.c. respectively

NOTE - Appropriate measures should be taken to obtain the correct value in case of non-sinusoidal waveforms.

Figure 1

2 Warning

2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor [chip] components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as [anti-static (ESD protected)] can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   Caution
   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise ham less motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

2.2. About lead free solder (PbF)

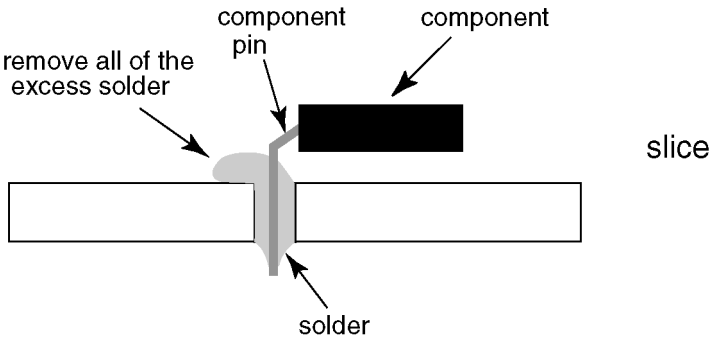
Note: Lead is listed as (Pb) in the periodic table of elements.
In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.
The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

PCBs manufactured using lead free solder will have the PbF within a leaf Symbol **PbF** stamped on the back of PCB.

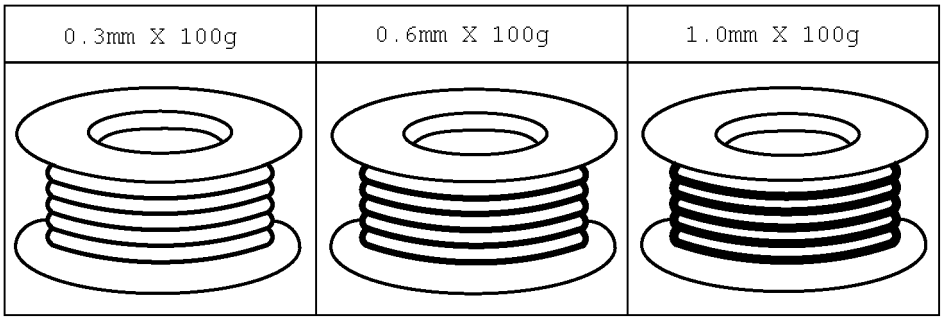
Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30~40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
  If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



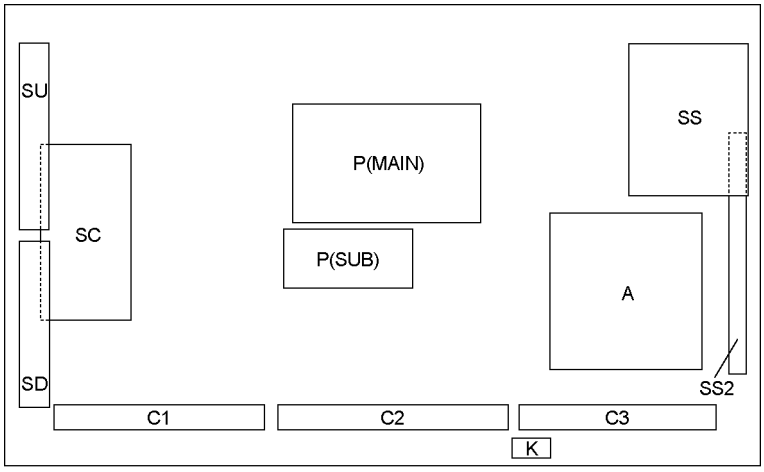
Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.



3 Service Navigation

3.1. PCB Layout



Board Name	Function
P(MAIN)	Power Supply Non serviceable. P(MAIN)-Board should be exchanged for service.
P(SUB)	Power Supply Non serviceable. P(SUB)-Board should be exchanged for service.
A	Main AV input, processing
K	Remote receiver, Power LED, C.A.T.S sensor
C1	Data Driver (Lower Right)
C2	Data Driver (Lower Center)
C3	Data Driver (Lower Left)
SC	Scan Drive
SS	Sustain Drive
SS2	Sustain out (Lower)
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.

4 Specifications

■ **Product fiche**

Energy efficiency class (Y)	C
Visible screen size (diagonal)	165 cm / 65 inches
On mode average power consumption (Y)	321 W
Annual energy consumption*1 (Y)	445 kWh
Rated power consumption	570 W
Standby power consumption*2	0.30 W
Off mode power consumption (Y)	0.25 W
Display resolution	1,920 (W) × 1,080 (H)

*1: Energy consumption XYZ kWh per year, based on the power consumption of the television operating 4 hours per day for 365 days. The actual energy consumption will depend on how the television is used.

*2: When the TV is turned off with the remote control and no function is active.

■ **Other information**

Dimensions (W × H*3 × D)	1,531 mm × 975 mm × 323 mm (With Pedestal)	
	1,531 mm × 887 mm × 51 mm (TV only)	
Mass	50.5 kg Net (With Pedestal)	
	42.0 kg Net (TV only)	
Power source	AC 220-240 V, 50 / 60 Hz	
Panel	Plasma panel	
Sound		
Speaker	Front speaker × 2, Woofer (φ 75 mm) × 1	
Audio output	20 W (5 W + 5 W + 10 W)	
Headphones	M3 (3.5 mm) stereo mini Jack ×1	
Connection terminals		
AV1 input / output	**SCART** (Audio/Video in, Audio/Video out, RGB in)	
AV2 input (COMPONENT / VIDEO)	**VIDEO**:	RCA PIN Type × 1 1.0 V [p-p] (75 Ω)
	AUDIO L-R:	RCA PIN Type × 2 0.5 V [rms]
	Y:	1.0 V [p-p] (including synchronization)
	P_B, P_R:	±0.35 V [p-p]
HDMI1 / 2 / 3 input	TYPE A Connectors	
	HDMI1 / 3 :	3D, Content Type, Deep Colour, x.v.Colour™
	HDMI2 :	3D, Content Type, Audio Return Channel, Deep Colour, x.v.Colour™
	• This TV supports [HDAVI Control 5] function.	
Card slot	SD Card slot × 1	
	Common Interface slot (complies with CI Plus) × 2	
ETHERNET	RJ45, IEEE802.3 10BASE-T / 100BASE-TX	
USB 1 / 2 / 3	USB1 / 2: USB2.0 DC 5 V, Max. 500 mA	
	USB3: USB3.0 DC 5 V, Max. 900 mA	
DIGITAL AUDIO output	PCM / Dolby Digital / DTS, Fiber optic	
Receiving systems / Band name (Y)		
	DVB-S / S2	Digital satellite services (MPEG2 and MPEG4-AVC(H.264)) Receiver frequency range - 950 MHz to 2,150 MHz DiSEqC - Version 1.0
	DVB-C	Digital cable services (MPEG2 and MPEG4-AVC(H.264))
	DVB-T/T2	Digital terrestrial services (MPEG2 and MPEG4-AVC(H.264))
	PAL B, G, H, I, SECAM B, G, SECAM L, L'	
	VHF E2 - E12	VHF H1 - H2 (ITALY)
	VHF A - H (ITALY)	UHF E21 - E69
	CATV (S01 - S05)	CATV S1 - S10 (M1 - M10)
	CATV S11 - S20 (U1 - U10)	CATV S21 - S41 (Hyperband)
	PAL D, K, SECAM D, K	
	VHF R1 - R2	VHF R3 - R5
	VHF R6 - R12	UHF E21 - E69
	PAL 525/60	Playback of NTSC tape from some PAL Video recorders (VCR)
	M.NTSC	Playback from M. NTSC Video recorders (VCR)
	NTSC (AV input only)	Playback from NTSC Video recorders (VCR)
	• Check the latest information on the available services at the following website. (English only) http://panasonic.net/viera/support	
Receiving systems / Band name (R)		
	DVB-S / S2	Digital satellite services (MPEG2 and MPEG4-AVC(H.264)) Receiver frequency range - 950 MHz to 2,150 MHz DiSEqC - Version 1.0

	DVB-C	Digital cable services (MPEG2 and MPEG4-AVC(H.264))
	DVB-T / T2	Digital terrestrial services (MPEG2 and MPEG4-AVC(H.264))
	PAL D, K, SECAM D, K	
	VHF R1 - R2	VHF R3 - R5
	VHF R6 - R12	UHF E21 - E69
	PAL 525/60	Playback of NTSC tape from some PAL Video recorders (VCR)
	M.NTSC	Playback from M.NTSC Video recorders (VCR)
	NTSC (AV input only)	Playback from NTSC Video recorders (VCR)

• Check the latest information on the available services at the following website. (English only)
http://panasonic.net/viera/support

Satellite dish input	Female F-type 75 Ω × 2
Aerial input	VHF / UHF
Operating conditions	
Temperature:	0 °C- 35 °C
Humidity:	20 % - 80 % RH (non-condensing)
Built-in Camera	
Lens:	F2.0 Lens; FOV (D) 50.9° (in HD mode)
Focus:	Fixed focus
Resolution:	1,280 × 720
Built-in wireless LAN	
Standard compliance and	IEEE 802.11a/n
Frequency range*4	5.180 GHz - 5.320 GHz, 5.500 GHz - 5.580 GHz, 5.660 GHz - 5.700 GHz
	IEEE 802.11b/g/n
	2.412 GHz - 2.472 GHz
Security	WPA2-PSK (TKIP/AES) WPA-PSK (TKIP/AES) WEP (64 bit/128 bit)
Bluetooth wireless technology*5	
Standard Compliance	Bluetooth 3.0
Frequency Range	2.402 GHz - 2.480 GHz

*3: With Camera pop-up: +23 mm height

*4: The frequency and channel differ depending on the country.

*5: Not all the Bluetooth compatible devices are available with this TV. Up to 5 devices can be used simultaneously (except the 3D Eyewear and VIERA Touch Pad Controller).

■ **3D Eyewear**

Dimensions (W × H × D)	164.7 mm × 41.0 mm × 170.7 mm
Mass	Approx. 34 g
Lens type	Liquid Crystal Shutter
Usage temperature range	0 °C - 40 °C
Battery	Coin-shaped lithium battery CR2025 Operation time: Approx. 75 hours in continuous use of the battery made by Panasonic
Materials	Main body: Resin Lens section: Liquid crystal glass

Note

- 3D Eyewear and VIERA Touch Pad Controller use Bluetooth wireless technology.
- Design and Specifications are subject to change without notice. Mass and Dimensions shown are approximate.
- For the information of the open source software, refer to [eHELP] (Support > Licence).
- This equipment complies with the EMC standards listed below.
  EN55013, EN61000-3-2, EN61000-3-3, EN55020, EN55022, EN55024

5 Technical Descriptions

5.1. Specification of KEY for CI Plus, DTCP-IP, WIDEVINE, Netflix and One-to-One

5.1.1. General information:

1. NAND Flash (IC8900) for spare parts has the seed of KEY for each DTCP-IP for DLNA, WMDRM for Netflix and Widevine for CinemaNow.
2. The final KEY data will be generated by Main IC (IC8000) when SELF CHECK was done and are stored in both Main IC (IC8000) and NAND Flash (IC8900).

5.1.2. Replacement of ICs:

When Main IC (IC8000) is replaced, NAND Flash (IC8900) should be also replaced with new one the same time.
When NAND Flash (IC8900) is replaced, Main IC (IC8000) is not necessary to be replaced the same time.
After the replacement of IC, SELF CHECK should be done to generate the final KEY data.
How to SELF CHECK: While pressing [VOLUME (-)] button on the main unit, press [MENU] button on the remote control for more than 3 seconds.
TV will be forced to the factory shipment setting after this SELF CHECK.

5.1.3. Model and Keys:

Model No.	Keys				
	One-to-One (For USB Rec.)	CI Plus	DTCP-IP	WIDEVINE	Netflix
TX-P65VT60Y	Yes	Yes	Yes	Yes	Yes
TX-PR65VT60	Yes	Yes	Yes	Yes	Yes

5.2. USB HDD Recording

5.2.1. General information:

Digital TV programmes can be recorded in USB HDD.
A One-to-One key generated in A-board by SELF CHECK binds TV and USB-HDD for communication.
That key is only one key for them. If the key is difference, TV can not access USB-HDD.

Caution:

New key will be generated by following SELF CHECK and previous TV programmes recorded in USB HDD will not be viewed.

SELF CHECK: While pressing [VOLUME (-)] button on the main unit, press [MENU] button on the remote control for more than 3 seconds.

5.3. Service port (M3 mini Jack) Specifications

The Service port (M3 mini Jack) on the following TVs can use as the RS232C terminal which is a standard computer SERIAL interface.

*This operation system should be used by the certified professional dealer.

PC Control of the TV

- The TV can be controlled by a personal computer when connected through an RS232C/ M3 mini jack conversion cable (not supplied).
- The computer will require software which allows sending and receiving of control data through its SERIAL port. Please see required parameters and commands below.

Communication parameters

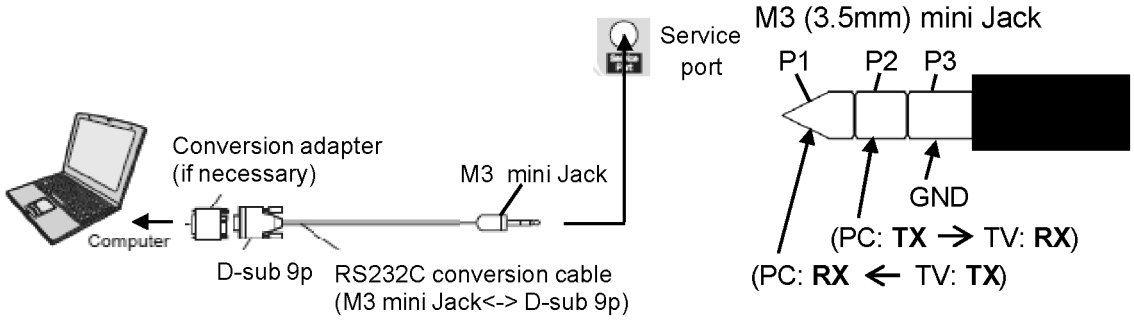
Signal level	RS-232C compliant
Synchronization method	Asynchronous
Baud rate	9600 bps
Parity	None
Character length	8 bits
Stop bit	1 bit
Flow control	-

Basic format for control data

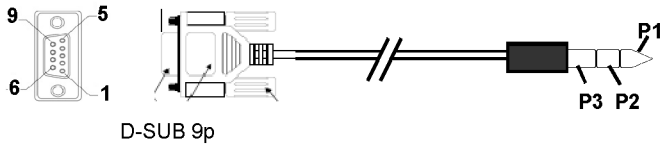
The transmission of control data from the PC starts with a STX signal, followed by the command, the parameters, and lastly an EXT signal in that order. If there are no parameters, then the parameter signal does not need to be sent.

*Please see other side regarding Commands and Parameters.

Connection



(Recommended connection of D-SUB9p / M3 mini jack conversion cable)



Connection

D-sub 9p (Female)	M3 mini Jack
2	P1
3	P2
5, SHELL	P3

Other pins of D-SUB 9p : Open

	Command: 3 byte (fixed)			Colon and Parameter are only sent when necessary					End (03 h): 1 byte
STYX	C1	C2	C3	:	P1	P2	P3	P4	P5	EX.
Start (02 h): 1 byte				Colon: 1 byte	Parameter: 5 bytes maximum (Length depends on Command)					

Notes:

- With standby mode, this TV responds to "PON" and "QPW" commands only.
- Wait for the response of the first command to come from this unit before sending the next command.
- If multiple commands are transmitted, be sure to keep intervals of 250 m sec. Send the command again when the call back command is unusual.
- If an incorrect command is sent by mistake, this TV will send an "ER401" or "ER402" command back to the computer.
- This TV does not respond for 15 seconds when "PON" or "POF" commands are transmitted.
- Send "EXT" commands before sending "IMS:**" commands.
- MUTE commands ("AMT: 0" and "AMT: 1") and "AVL: ***" command are invalid in case of HDMI (CEC) cooperation. However AMT, AUU, AUD commands is effective. (MUTE rotation (toggle), VOLUME UP and VOLUME DOWN controls are possible.)

Main, Input & Picture Control Command

			Control Command	Inquiry Command	Call back Command	Parameter	note
STANDARD CONTROL	POWER ON		PON	QPW	QPW : *	"0"(OFF)/ "1"(ON)	
	POWER OFF		POF				
	VOL	(level)	AVL: ***	QAV	QAV : ***	"000" - "100"	
		(up)	AUU				
		(down)	AUD				
	MUTE		AMT (Toggle)	QAM	QAM : *	"0"(NO MUTED) / "1"(MUTED)	
			AMT: *				
	ASPECT		DAM: ****	QAS	QAS : ****	"FULL" / "JUST" / "NORM"(4:3) / "ZOOM" / "HFIL" / "SJST" / "SZOM" "SELF" (Auto) "14:9"	(480i/480p) Option : Full → Just → 4:3 → Zoom (1080i/720p/1080p) Option : Full → Just → 4:3 → Zoom → H-Fill → Sidecut Just → Sidecut Zoom
			DAM (Toggle)				
INPUT SELECT	CH UP		CHU	--	--	--	
	CH DOWN		CHD	--	--	--	
	TV		IMS : TV	QMI	QMI : **	"TV"	
	Analogue TV		IMS : TVA			"TVA"	
	DVB-T		IMS : TVD			"TVD"	
	DVB-S/Other Sat		IMS : BS1			"BS1"	
	Freesat		IMS : BS2			"BS2"	
	DVB-C		IMS : CAB			"CAB"	
	Video 1		IMS : V1			"V1"	
	Video 2		IMS : V2			"V2"	
	Component 1		IMS : C1			"C1"	
	HDMI 1		IMS : H1			"H1"	
	HDMI 2		IMS : H2			"H2"	
	HDMI 3		IMS : H3			"H3"	
	SD/USB		IMS : SDU			"SDU"	
VIEWING MODE	Dynamic		VPC : VVT	QPC	QPC : ***	"VVT"	
	Normal		VPC : STD			"STD"	
	THX Cinema / THX 3D Cinema		VPC : THX			"THX"	THX : Except PHOTO(JPEG), MUSIC, VIErA Connect & MEDIA SERVER(DLNA/RUI)
	THX Bright Room		VPC : THB			"THB"	
	True Cinema		VPC : CNM			"CNM"	
	Cinema		VPC : THR			"THR"	
	Custom		VPC : CST			"CST"	
	EBU default		VPC : EBU			"EBU"	Only for ZT60 series
	Professional 1 (isf day)		VPC : PR1			"PR1"	When Advance(isfccc) menu is On.
	Professional 2 (isf night)		VPC : PR2			"PR2"	

Else & Remote Controller Key Command

		Control Command	Inquiry Command	Call back Command	Parameter	note
LAST VIEW		LCH				
Information		INF				
		--	QIF	QIF : *****	480i 480p 576i 576p 720p 1080i 1080p	
DIRECT CH INPUT	0	ICH : 0	-	-	-	
	1	ICH : 1	-	-	-	
	2	ICH : 2	-	-	-	
	3	ICH : 3	-	-	-	
	4	ICH : 4	-	-	-	
	5	ICH : 5	-	-	-	
	6	ICH : 6	-	-	-	
	7	ICH : 7	-	-	-	
	8	ICH : 8	-	-	-	
	9	ICH : 9	-	-	-	
MENU FUNCTION	MENU	MEN	-	-	-	
	SELECT	SEL	-	-	-	
	RETURN	RTN	-	-	-	
	EXIT	EXT	-	-	-	
	ARROW LEFT	ARL	-	-	-	
	ARROW RIGHT	ARR	-	-	-	
	ARROW UP	ARU	-	-	-	
	ARROW DOWN	ARD	-	-	-	
	OPTION	OSM	-	-	-	
	RED	RED	-	-	-	
	GREEN	GRN	-	-	-	
	YELLOW	YEL	-	-	-	
	BLUE	BLU	-	-	-	
	APPS	APS	-	-	-	
	HOME	HOM	-	-	-	
	3D	O3D	-	-	-	

6 Service Mode

6.1. How to enter into Service Mode

6.1.1. Purpose

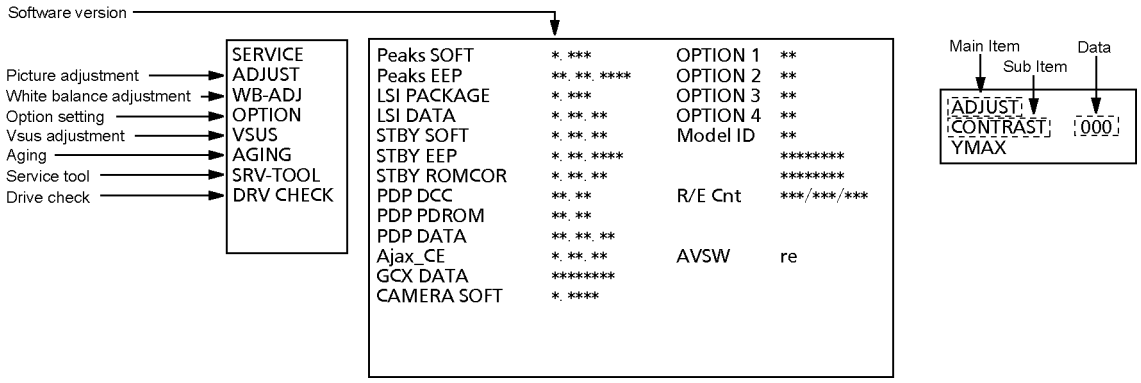
After exchange parts, check and adjust the contents of adjustment mode.

While pressing [VOLUME (-)] button of the main unit, press [RED] button of the remote control three times within 2 seconds.

Note:

Service Mode can not be entered when 3D signal input.

Input 2D signal to enter Service Mode.



6.1.2. Key command

[1] button...Main items Selection in forward direction

[2] button...Main items Selection in reverse direction

[3] button...Sub items Selection in forward direction

[4] button...Sub items Selection in reverse direction

[VOL] button...Value of sub items change in forward direction (+), in reverse direction (-)

6.1.3. How to exit

Switch off the power with the [POWER] button on the main unit or the [POWER] button on the remote control.

6.1.4. Contents of adjustment mode

- Value is shown as a hexadecimal number.
- Preset value differs depending on models.
- After entering the adjustment mode, take note of the value in each item before starting adjustment.

Main item	Sub item	Sample Data	Remark
ADJUST	CONTRAST	277	
	COLOR	36	
	TINT	00	
	SUB-BRT	800	
	H-POS	0	
	H-AMP	0	
	V-POS	0	
	V-AMP	0	
WB-ADJ	R-CUT	80	
	G-CUT	80	
	B-CUT	80	
	R-DRV	EE	
	G-DRV	FF	
	B-DRV	86	
	ALL-CUT	80	
	ALL-DRV	FF	
OPTION	Panel-Type	65FHD	Factory Preset
	Boot	ROM	
	STBY-SET	00	
	EMERGENCY	ON	
	CLK MODE	00	
	CLOCK	000	
	Y/C Delay	0	
	OPT 1	00110100	
	OPT 2	11101110	
	OPT 3	00000001	
	OPT 4	01010010	
	EDID-CLK	MID	
	MIRROR	00 (See Option-Mirror)	
	AMR-SELECT	OFF	
VSUS		LOW	See Vsus selection
AGING	ALL WHITE		Built-in test patterns can be displayed.
	MIDDLE BLUE WITH MAGENTA OUTSIDE FRAME		
	MIDDLE STEP GREEN		
	MIDDLE STEP RED		
	LOW STEP WHITE		
	ALL BLUE		
	ALL GREEN		
	ALL RED		
	WHITE DIAGONAL STRIPE		
	RED DIAGONAL STRIPE		
	GREEN DIAGONAL STRIPE		
	BLUE DIAGONAL STRIPE		
	A-ZONE & B-ZONE		
	1% WINDOW		
	COLOR BAR		
	9 POINTS BRIGHT MEASURE		
	2 DOT OUTSIDE FRAME		
	DOUBLE FIXED 1% WINDOW		
	VERTICAL LINE SCROLL		
	ON/OFF		
	R/G/B/W ROTATION WITH COUNT DISPLAY		
	HALF FIXED ALL WHITE		
	ALL WHITE WITH COUNT DISPLAY		
SRV-TOOL		00	See Service tool mode
DRV CHECK	USBHDD CHECK	00	See DRV Check-USBHDD Check

6.2. Option - Mirror

Picture can be reversed left and right or up and down.
00 : Default (Normal picture is displayed)
01 : Picture is reversed left and right.
02 : Picture is reversed up and down.

00

01

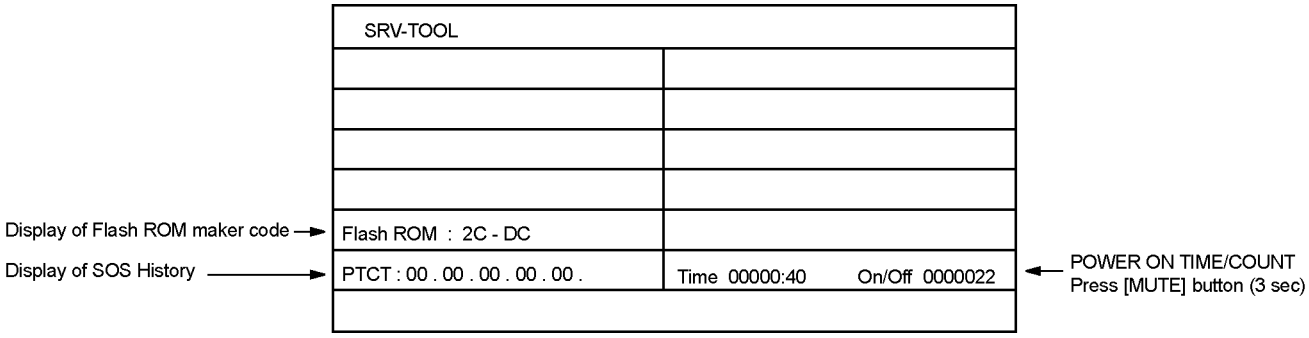
02

Hint : If the defective symptom (e.g. Vertical bar or Horizontal bar) is moved by selection of this mirror, the possible cause is in A-board.

6.3. Service tool mode

6.3.1. How to access

1. Select [SRV-TOOL] in Service Mode.
2. Press [OK] button on the remote control.



6.3.2. Display of SOS History

SOS History (Number of LED blinking) indication.
From left side; Last SOS, before Last, three occurrence before, 2nd occurrence after shipment, 1st occurrence after shipment.
This indication will be cleared by [Self-check indication and forced to factory shipment setting].

6.3.3. POWER ON Time, On/Off

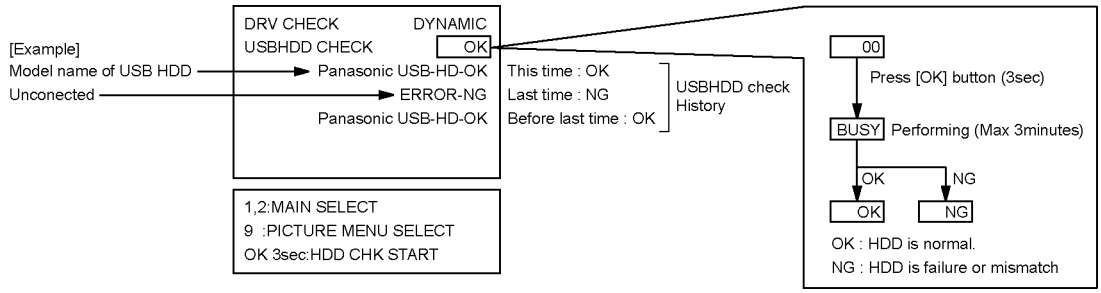
Note : To display TIME/COUNT menu, highlight position, then press MUTE for 3 sec.
Time : Cumulative power on time, indicated hour : minute by decimal
On/Off : Number of On/Off switching by decimal
Note : This indication will not be cleared by either of the self-checks or any other command.

6.3.4. Exit

Disconnect the AC cord from wall outlet or switch off the power with [Power] button on the main unit.

6.4. DRV Check - USBHDD Check

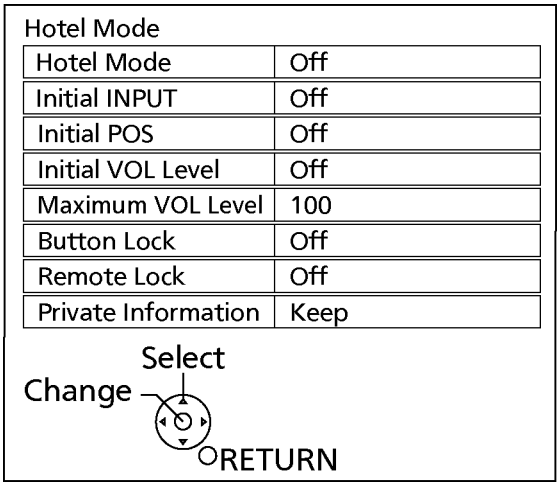
1. Select [DRV Check - USBHDD Check] in Service Mode.
2. Press [OK] button on the remote control for more than 3 seconds.



6.5. Hotel mode

1. Purpose
   Restrict a function for hotels.
2. Access command to the Hotel mode setup menu
   In order to display the Hotel mode setup menu:
   While pressing [VOLUME (-)] button of the main unit, press [AV] button of the remote control three times within 2 seconds.

   Then, the Hotel mode setup menu is displayed.



3. To exit the Hotel mode setup menu
   Switch off the power with the [POWER] button on the main unit or the [POWER] button on the remote control.
4. Explain the Hotel mode setup menu

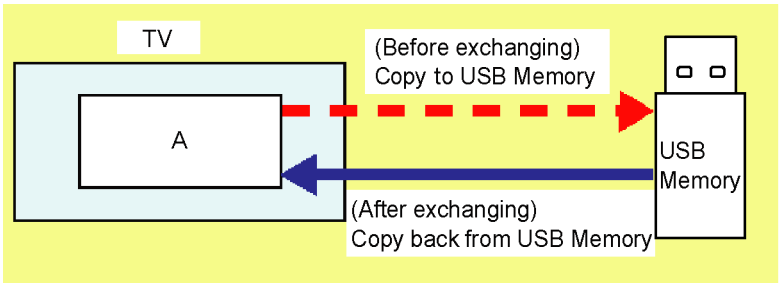
Item	Function
Hotel Mode	Select hotel mode On/Off
Initial INPUT	Select input signal modes. Set the input, when each time power is switched on. Selection : Off,Analogue,DVB-S,DVB-C,DVB-T,AV1,AV2, HDMI1,HDMI2,HDMI3 • Off: give priority to a last memory. However, Euro model is compulsorily set to TV.
Initial POS	Select programme number. Selection : Off/0 to 99 • Off: give priority to a last memory
Initial VOL Level	Adjust the volume when each time power is switched on. Selection/Range : Off/0 to 100 • Off: give priority to a last memory
Maximum VOL Level	Adjust maximum volume. Range : 0 to 100
Button Lock	Select local key conditions. Selection : Off/SETUP/MENU • Off: altogether valid • SETUP: only F-key is invalid (Tuning guide (menu) can not be selected.) • MENU: only F-key is invalid (only Volume/Mute can be selected.)
Remote Lock	Select remote control key conditions. Selection : Off/SETUP/MENU • Off: altogether valid • SETUP: only Setup menu is invalid • MENU: Picture/Sound/Setup menu are invalid
Private Information	Select private information for VIERA Cast is Keep or Reset if Hotel mode is set to [On] when TV power on. Selection : Keep/Reset • Keep: private information for VIERA Cast is keep • Reset: private information for VIERA Cast is reset

6.6. Data Copy by USB Memory

Note:
SD card can not be used for Data Copy.

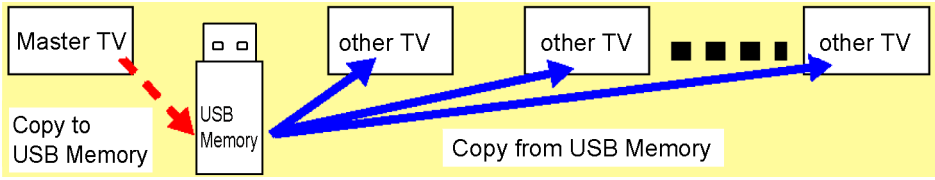
6.6.1. Purpose

(a) Board replacement (Copy the data when exchanging A-board):
When exchanging A-board, the data in original A-board can be copied to USB Memory and then copy to new A-board.



Following data can be copied.
User setting data
(incl. Hotel mode setting data)
Channel scan data
Adjustment and factory preset data

(b) Hotel (Copy the data when installing a number of units in hotel or any facility):
When installing a number of units in hotel or any facility, the data in master TV can be copied to USB Memory and then copy to other TVs.



Following data can be copied.
User setting data
(incl. Hotel mode setting data)
Channel scan data

6.6.2. Preparation

Make pwd file as startup file for (a) or (b) in a empty USB Memory.

1. Insert a empty USB Memory to your PC.
2. Right-click a blank area in a USB Memory window, point to New, and then click text document. A new file is created by default (New Text Document.txt).
3. Right-click the new text document that you just created and select rename, and then change the name and extension of the file to the following file name for (a) or (b) and press ENTER.

File name:
(a) For Board replacement : boardreplace.pwd
(b) For Hotel : hotel.pwd

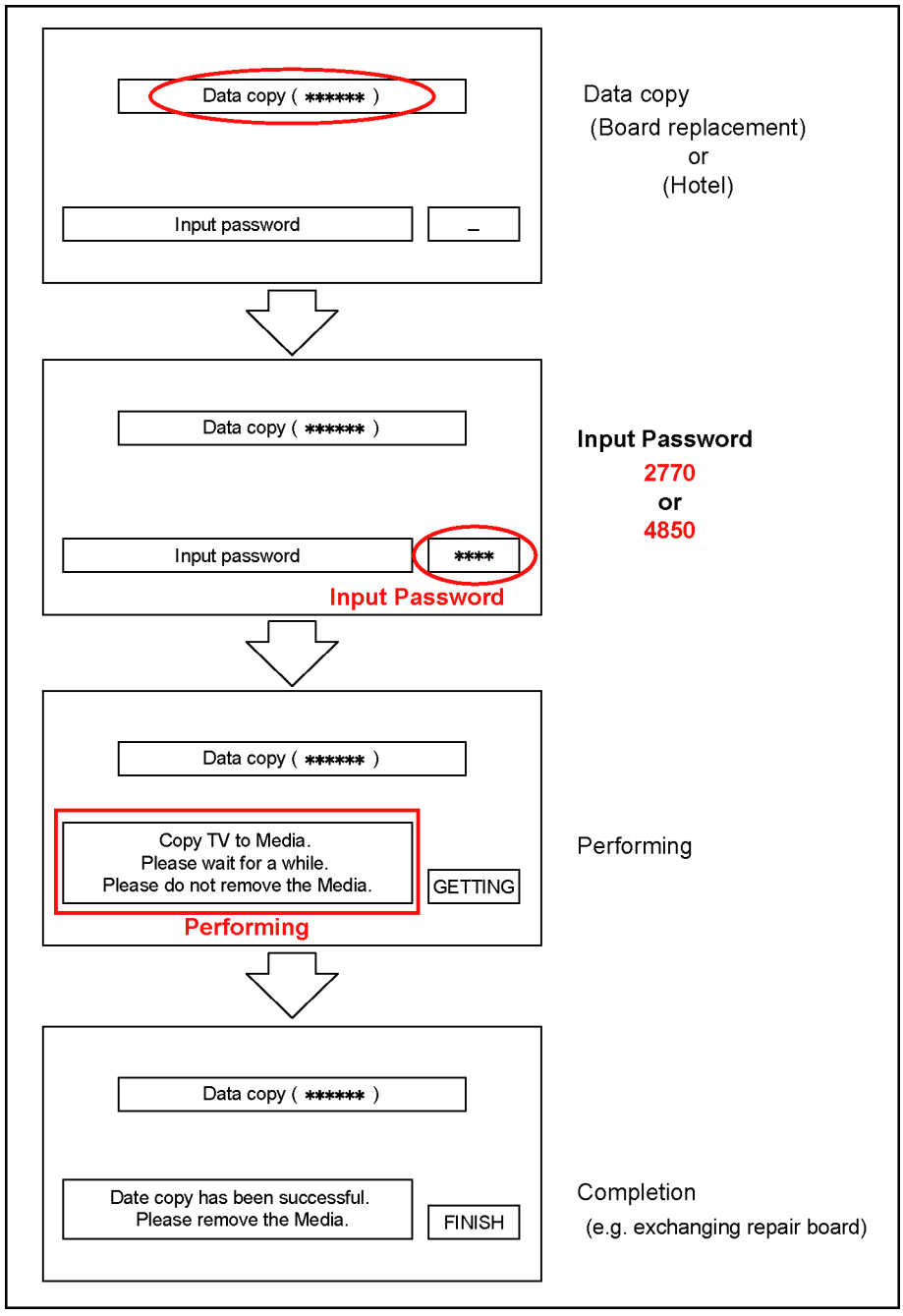
Note:
Please make only one file to prevent the operation error.
No any other file should not be in USB Memory.

6.6.3. Data copy from TV set to USB Memory

1. Turn on the TV set.
2. Insert USB Memory with a startup file (pwd file) to USB terminal.
   On-screen Display will be appeared according to the startup file automatically.
3. Input a following password for (a) or (b) by using remote control.
   (a) For Board replacement : 2770
   (b) For Hotel : 4850
   Data will be copied from TV set to USB Memory.
   It takes around 2 to 6 minutes maximum for copying.
4. After the completion of copying to USB Memory, remove USB Memory from TV set.
5. Turn off the TV set.

Note:

Following new folder will be created in USB Memory for data from TV set.
(a) For Board replacement : user_setup
(b) For Hotel : hotel

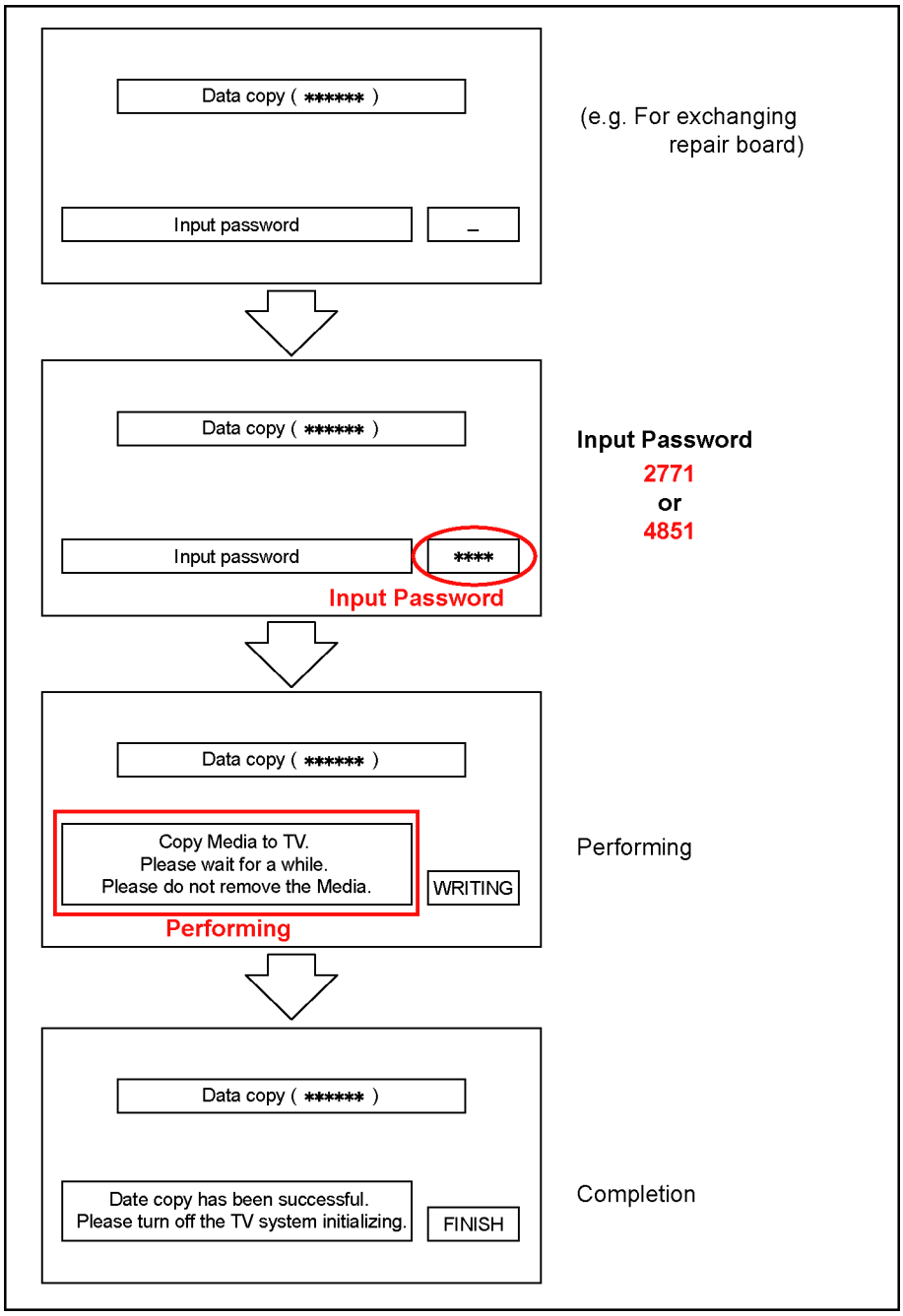


6.6.4. Data copy from USB Memory to TV set

1. Turn on the TV set.
2. Insert USB Memory with Data to USB terminal.
   On-screen Display will be appeared according to the Data folder automatically.
3. Input a following password for (a) or (b) by using remote control.
   (a) For Board replacement : 2771
   (b) For Hotel : 4851
   Data will be copied from USB Memory to TV set.
4. After the completion of copying to USB Memory, remove USB Memory from TV set.
   (a) For Board replacement : Data will be deleted after copying (Limited one copy).
   (b) For Hotel : Data will not be deleted and can be used for other TVs.
5. Turn off the TV set.

Note:

1. Depending on the failure of boards, function of Data copy for board replacement does not work.
2. This function can be effective among the same model numbers.



7 Troubleshooting Guide

Use the self-check function to test the unit.

1. Checking the IIC bus lines
2. Power LED Blinking timing

7.1. Check of the IIC bus lines

7.1.1. How to access

7.1.1.1. Self-check indication only:

Produce TV reception screen, and while pressing [VOLUME (-)] button on the main unit, press [OK] button on the remote control for more than 3 seconds.

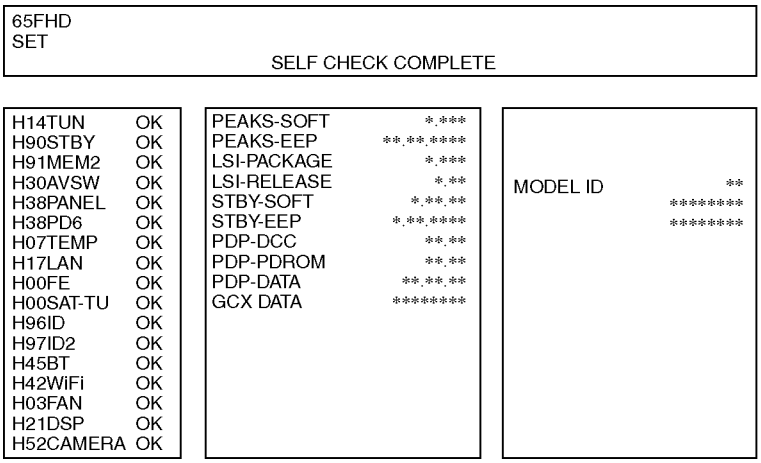
7.1.1.2. Self-check indication and forced to factory shipment setting:

Caution:

New key will be generated and previous TV programmes recorded in USB HDD will not be viewed. (See USB HDD Recording)

Produce TV reception screen, and while pressing [VOLUME (-)] button on the main unit, press [MENU] button on the remote control for more than 3 seconds.

7.1.2. Screen display



7.1.3. Check Point

Confirm the following parts if NG was displayed.

DISPLAY	Check Ref. No.	Description	Check Point
H14TUN	TU6708	TUNER	A-BOARD
H90STBY	IC8000	PEAKS-PRO4 (STM)	A-BOARD
H91MEM2	IC8900	NAND FLASH	A-BOARD
H30AVSW	IC3000	AV SW	A-BOARD
H38PANEL		PLASMA PANEL	A-BOARD/PLASMA PANEL
H38PD6	IC9300	PD6H	A-BOARD
H07TEMP	IC2001	TEMP SENSOR	A-BOARD
H17LAN	IC8650	ETHERPHY	A-BOARD
H00FE	IC6800, 31	DEMODULATOR	A-BOARD
H00SAT-TU	TU6707	SAT-TUNER	A-BOARD
H96ID		ID	A-BOARD
H97ID2		ID2	A-BOARD
H45BT		BLUETOOTH	A-BOARD/BLUETOOTH
H42WiFi		WiFi	A-BOARD/WiFi
H03FAN		FAN	A-BOARD/FAN
H21DSP	IC4900	AUDIO AMP	A-BOARD
H52CAMERA		CAMERA	A-BOARD/CAMERA

7.1.4. Exit

Disconnect the AC cord from wall outlet or press the [POWER] button on the main unit for 3 seconds to turn off and then turn on automatically.

7.2. Power LED Blinking timing chart

1. Subject
   Information of LED Flashing timing chart.
2. Contents
   When an abnormality has occurred the unit, the protection circuit operates and reset to the stand by mode. At this time, the defective block can be identified by the number of blinks of the Power LED on the front panel of the unit.

Blinking Times	Contents	Check point
1	Panel information SOS PD Start SOS	-
2	P15V SOS	A-Board P-Board
6	Driver SOS1 (SC Energy recovery circuit) (A-SC FPC DET)	SC-Board A-SC FPC
7	Driver SOS2 (SU/SD Connector DET) (SU/SD Scan and Logic IC)	SU-Board SD-Board *
8	Driver SOS3 (SS FPC DET) (SS Energy recovery circuit)	SS-Board SS2-Board SS FPC SS2 FPC
9	Discharge Control SOS	A-Board
10	Sub 3.3V SOS Tuner power SOS	A-Board SC-Board SS-Board P-Board
11	Fan SOS	A-Board
12	Sound SOS	A-Board Speaker Woofer
13	Emergency SOS	A-Board

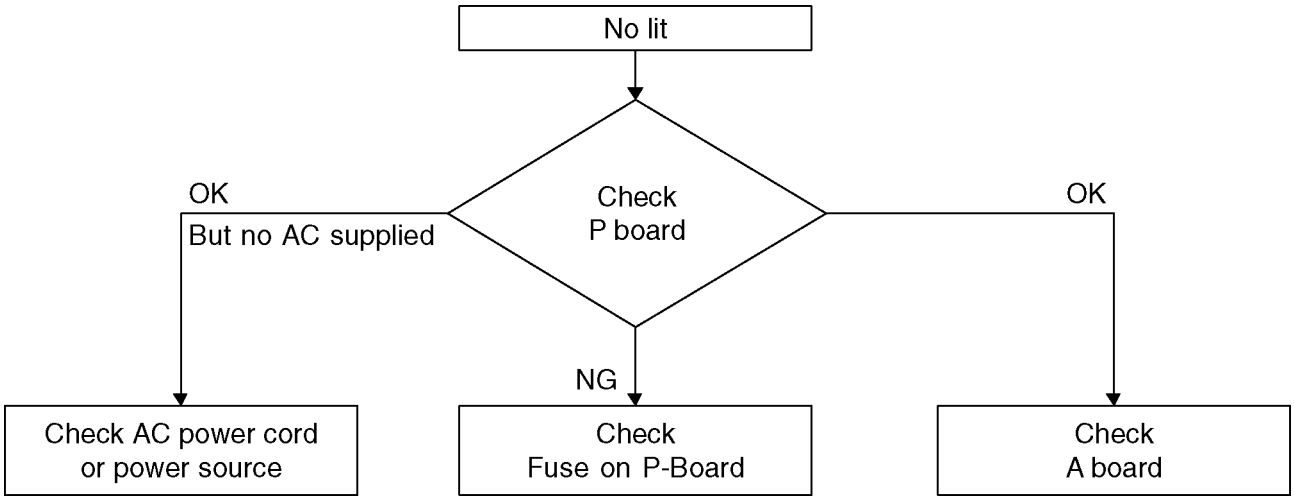
* Use SC jig to isolate the board.

7.3. No Power

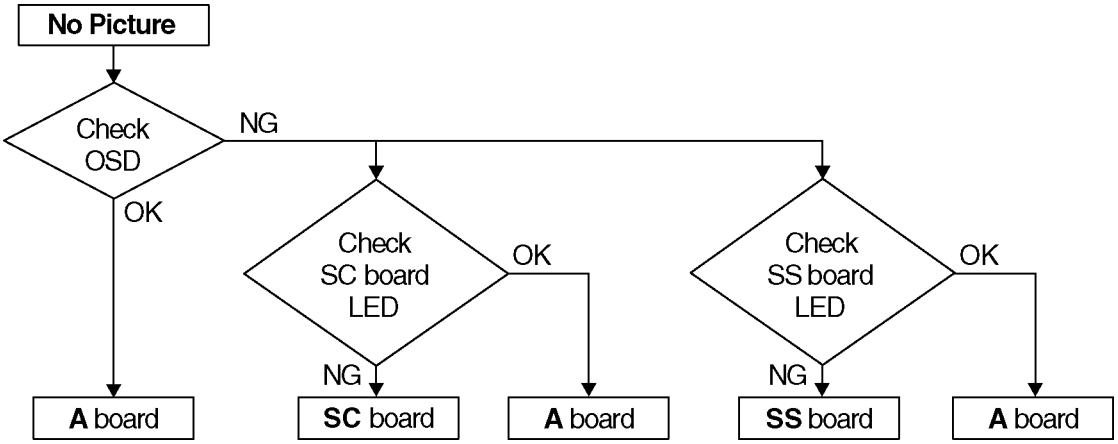
First check point

There are following 3 states of No Power indication by power LED.

1. No lit
2. Green is lit then turns red blinking a few seconds later. (See Power LED Blinking timing chart)
3. Only red is lit.



7.4. No Picture



7.4.1. Drive circuits LED indicator

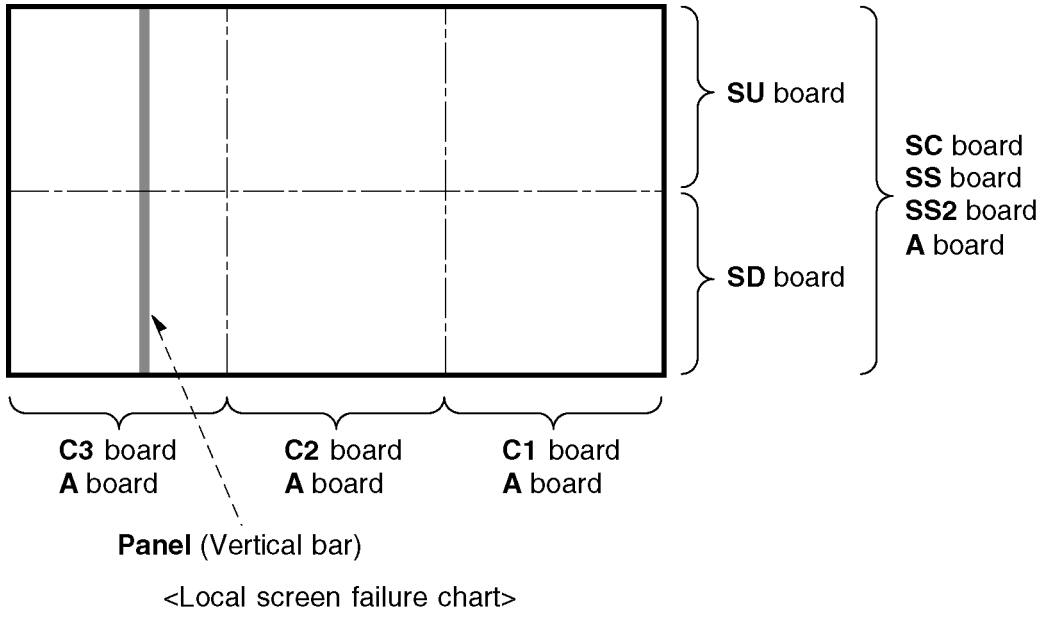
Check that the following LEDs on the SC and SS-Board.

Power recovery LED

	LED for check
SC	D16583
SS	D16254A

7.5. Local screen failure

Plasma display may have local area failure on the screen. Fig-1 is the possible defect P.C.B. for each local area.



<Local screen failure chart>

Fig-1

8 Service Fixture & Tools

8.1. SC jig

Purpose:

To find the failure board (SC or SU/SD) when the power LED is blinking 7 times.

SC jig:

Jumper connector to connect to SC50 connector on SC board

Part number:

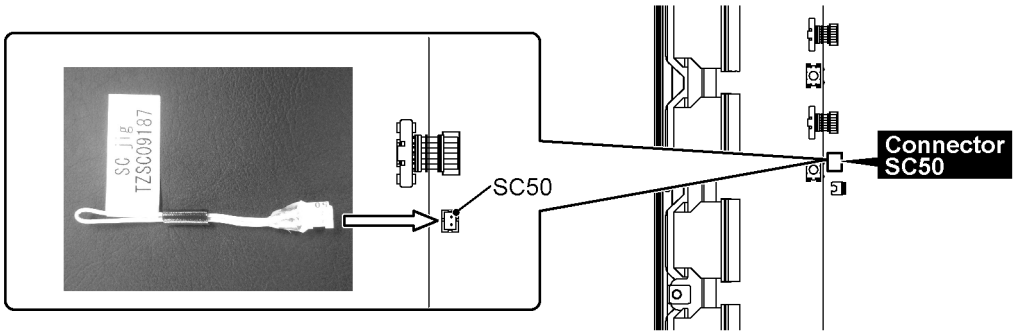
TZSC09187

How to use:

Caution: Remove SC jig from SC board after inspection.

1. Remove the 3 VFG screws from SU and SD board.
2. Remove all connector between SC board and SU/SD board to isolate SC board from both SU and SD board electrically.
   Note: The board will be damaged if all connector is not removed (for example; remove connector only for SU board and stay connecting with SD board. The board will be damaged.)
3. Connect SC jig to connector SC50 at left bottom side of SC board
4. Turn on the TV/Display Unit and confirm the power LED blinking.
   LED blinking: Possible cause of failure is in SC board
   No LED blinking (Lighting or no lighting): Possible cause of failure is in SU or SD board
5. After inspection, turn off the TV/Display Unit and wait a few minutes to discharge.
6. Remove SC jig from SC board.

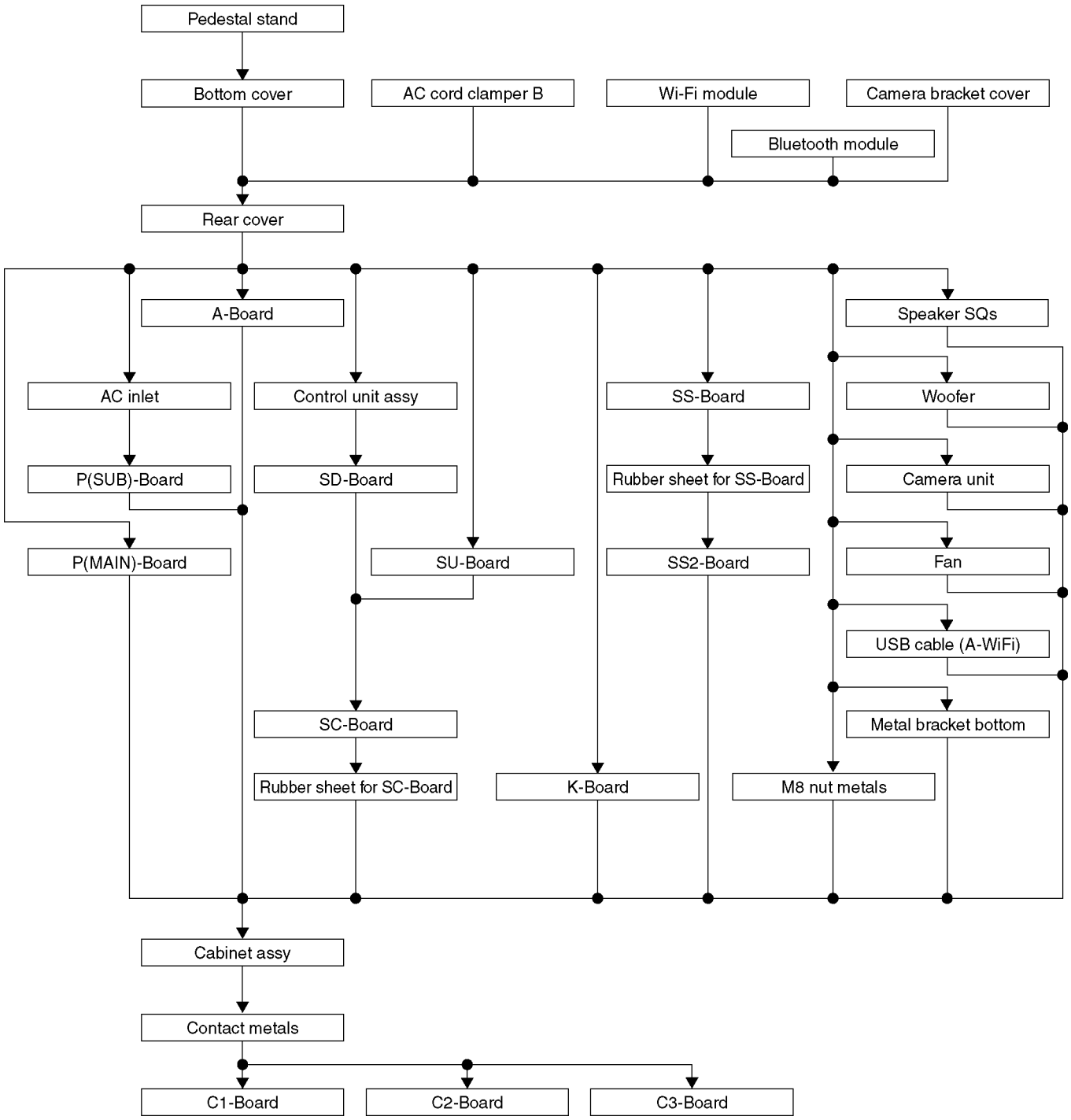
Remark: This SC jig can be used for all 2013 Plasma TV and Plasma Display.



9 Disassembly and Assembly Instructions

9.1. Disassembly Flow Chart for the Unit

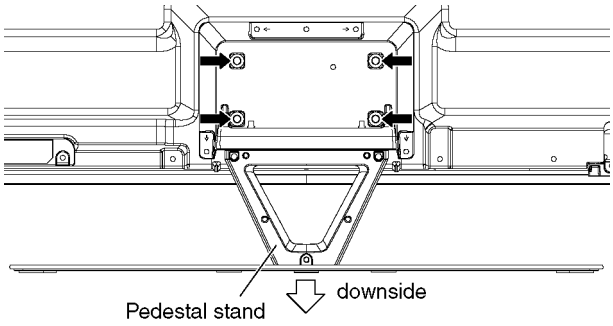
This is a disassembly chart.
When assembling, perform this chart conversely.



9.2. Disassembly Procedure for the Unit

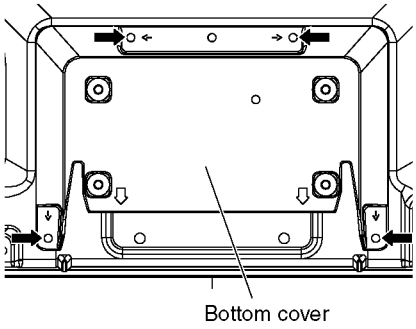
9.2.1. Remove the Pedestal stand

1. Remove the Plasma panel section from the servicing stand and lay on a flat surface such as a table (covered by a soft cloth) with the Plasma panel surface facing downward.
2. Remove the screws (×4 ➡)
3. Slide the Pedestal stand to the downside and remove the Pedestal stand.



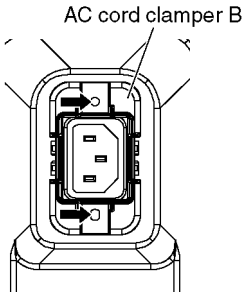
9.2.2. Remove the Bottom cover

1. Remove the screws (×4 ➡) and remove the Bottom cover.



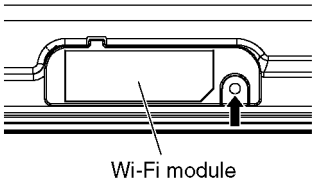
9.2.3. Remove the AC cord clamper B

1. Remove the screws (×2 ➡) and remove the AC cord clamper B.



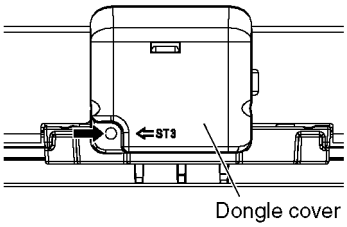
9.2.4. Remove the Wi-Fi module

1. Remove the screw (×1 ➡) and remove the Wi-Fi module.

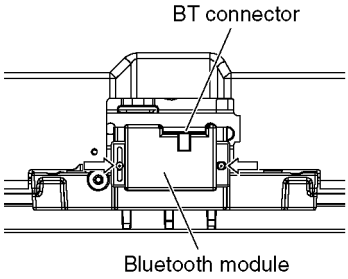


9.2.5. Remove the Bluetooth module

1. Remove the screw (×1 ➡) and remove the Dongle cover.

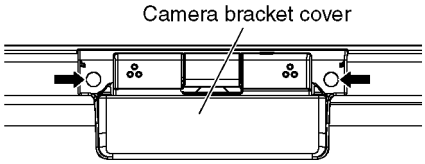


2. Remove the Pin guides (×2 ⇨) and disconnect the BT connector.
3. Remove the Bluetooth module.



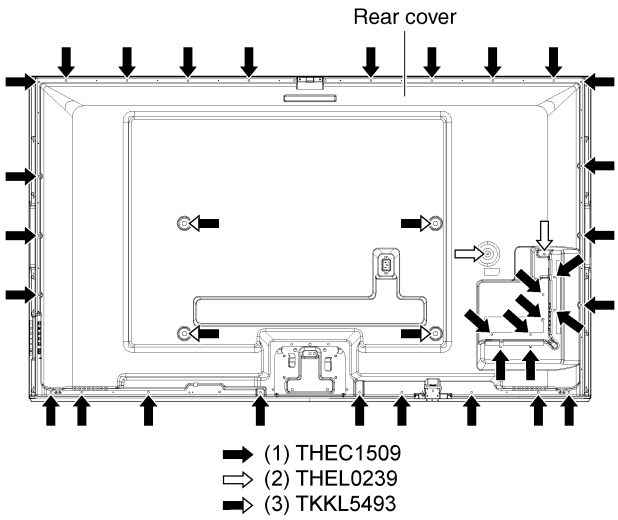
9.2.6. Remove the Camera bracket cover

1. Remove the screws (×2 ➡) and remove the Camera bracket cover.



9.2.7. Remove the Rear cover

1. Remove the screws (×33 ➡, ×2 ⇨).
2. Remove the M8 caps (×4 ➡).
3. Remove the Rear cover.

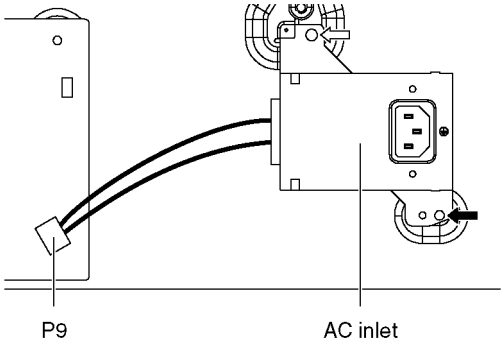


9.2.8. Remove the AC inlet

Caution:

To remove AC inlet wait 1 minute after power was off for discharge from electrolysis capacitors.

1. Disconnect the connector (P9).
2. Remove the screws (×1 ➡, ×1 ⇨) and remove the AC inlet.

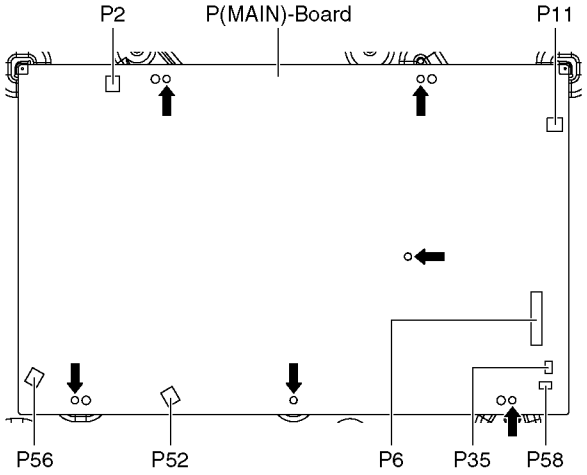


9.2.9. Remove the P(MAIN)-Board

Caution:

To remove P.C.B. wait 1 minute after power was off for discharge from electrolysis capacitors.

1. Unlock the cable clampers and the tapes to free the cables
2. Disconnect the connectors (P2, P6, P11, P35, P52, P56 and P58).
3. Remove the screws (×6 ➡) and remove the P(MAIN)-Board.

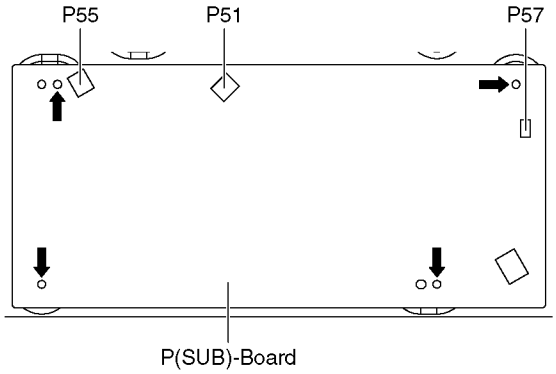


9.2.10. Remove the P(SUB)-Board

Caution:

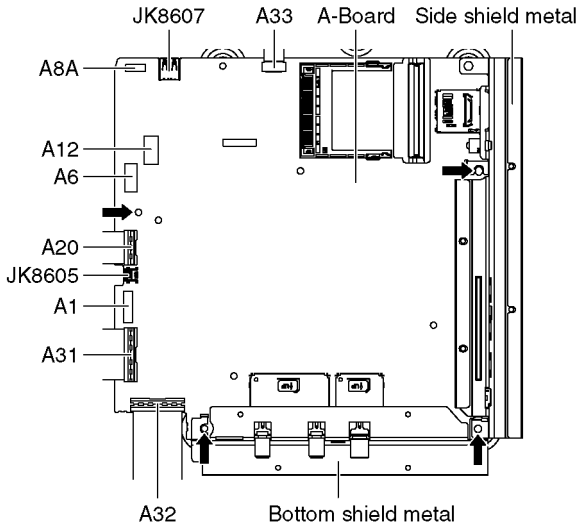
To remove P.C.B. wait 1 minute after power was off for discharge from electrolysis capacitors.

1. Unlock the cable clampers and the tapes to free the cables
2. Disconnect the connectors (P51, P55 and P57).
3. Remove the screws (×4 ➡) and remove the P(SUB)-Board.

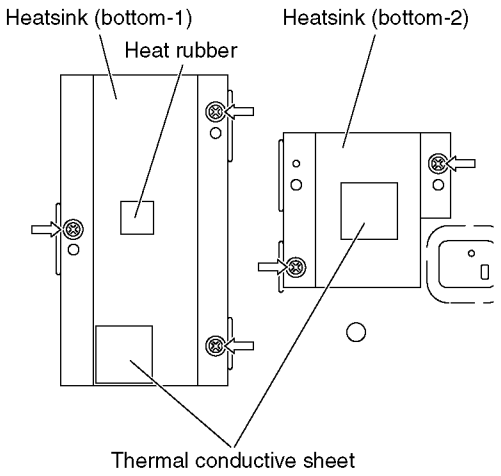


9.2.11. Remove the A-Board

1. Unlock the hooks and the tapes to free the cables.
2. Disconnect the connectors (A1, A6, A8A and A12).
3. Disconnect the USB cables (JK8605 and JK8607).
4. Disconnect the flexible cables (A20, A31, A32 and A33).
5. Remove the screws (×4 ➡).
6. Remove the Side shield metal and the Bottom shield metal.
7. Remove the A-Board.

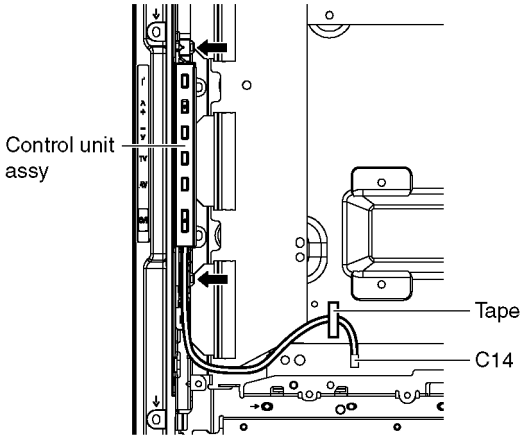


8. Remove the screws (×5 ⇨).
9. Remove the Heatsinks (bottom-1, -2), the Thermal conductive sheets and the Heat rubber.



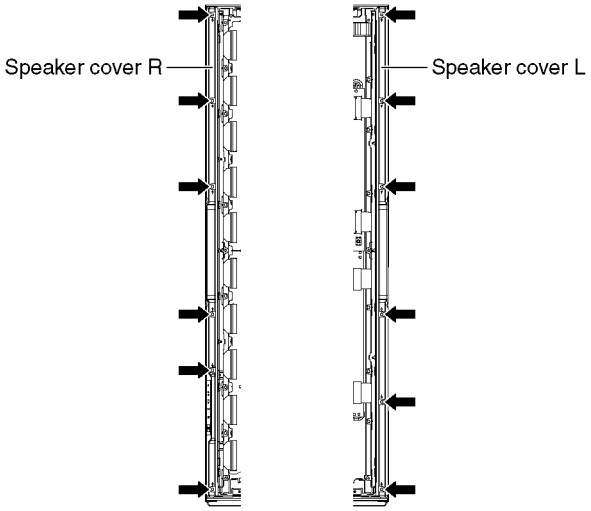
9.2.12. Remove the Control unit assy

1. Unlock the tape to free the cables.
2. Disconnect the connector (C14).
3. Remove the claws (×2 ➡) and remove the Control unit assy.

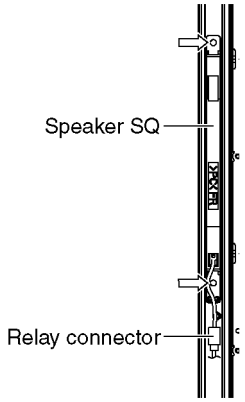


9.2.13. Remove the Speaker SQs

1. Unlock the hooks and the tapes to free the cables.
2. Remove the screws (×6 ➡ each) and remove the Speaker covers (L, R).

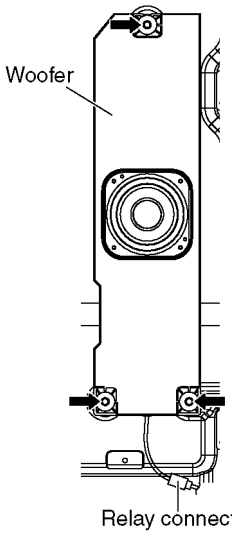


3. Disconnect the Relay connector.
4. Remove the screws (×2 ⇨ each) and remove the Speaker SQs (L, R).



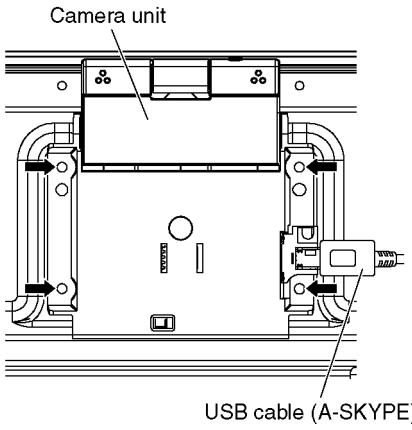
9.2.14. Remove the Woofer

1. Unlock the hooks and the tapes to free the cables.
2. Disconnect the Relay connector.
3. Remove the screws (×3 ➡) and remove the Woofer.



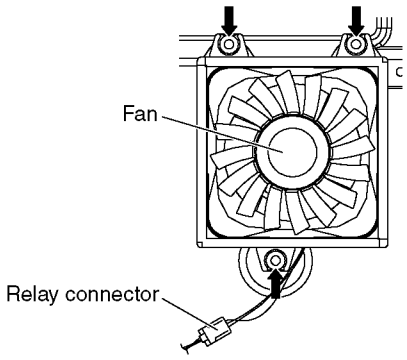
9.2.15. Remove the Camera unit

1. Unlock the hooks and the tapes to free the cables.
2. Disconnect the USB cable (A-SKYPE).
3. Remove the screws (×4 ➡) and remove the Camera unit.



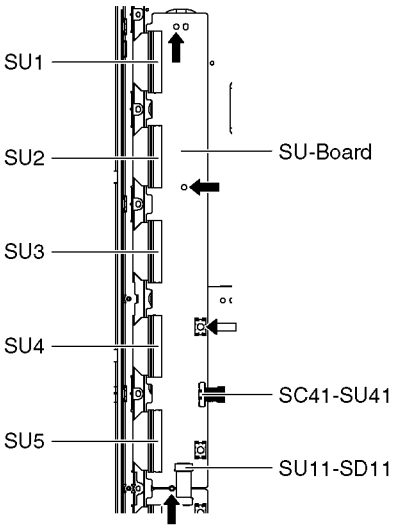
9.2.16. Remove the Fan

1. Unlock the hooks and the tapes to free the cables.
2. Remove the screws (×3 ➡ each).
3. Disconnect the Relay connector and remove the Fans.



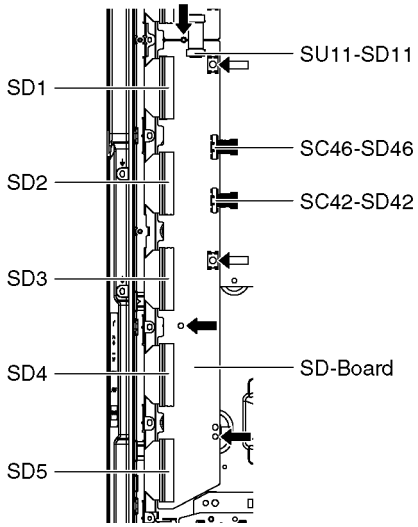
9.2.17. Remove the SU-Board

1. Disconnect the flexible cables (SU1, SU2, SU3, SU4 and SU5) connected to the SU-Board.
2. Disconnect the flexible cable (SU11-SD11) and the bridge connector (SC41-SU41).
3. Remove the screws (×3 ➡, ×1 ⇨) and remove the SU-Board.



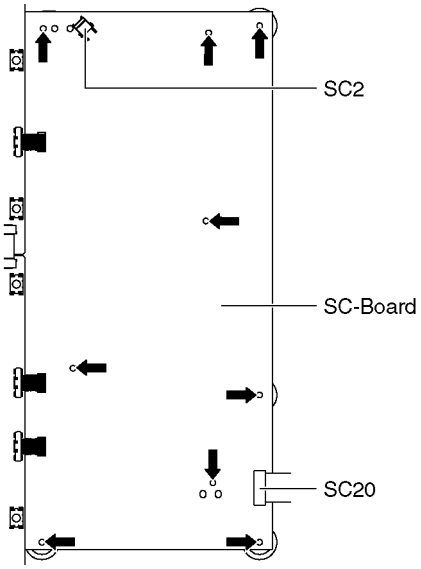
9.2.18. Remove the SD-Board

1. Disconnect the flexible cables (SD1, SD2, SD3, SD4 and SD5) connected to the SD-Board.
2. Disconnect the flexible cable (SU11-SD11) and the bridge connectors (SC42-SD42 and SC46-SD46).
3. Remove the screws (×3 ➡, ×2 ⇨) and remove the SD-Board.



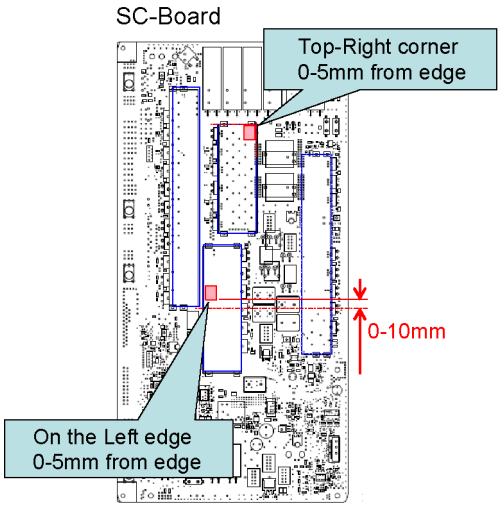
9.2.19. Remove the SC-Board

1. Unlock the tapes to free the cables.
2. Disconnect the connector (SC2).
3. Disconnect the flexible cable (SC20).
4. Remove the screws (×9 ➡) and remove the SC-Board.



9.2.20. Work instructions for the Rubber sheet for SC-Board

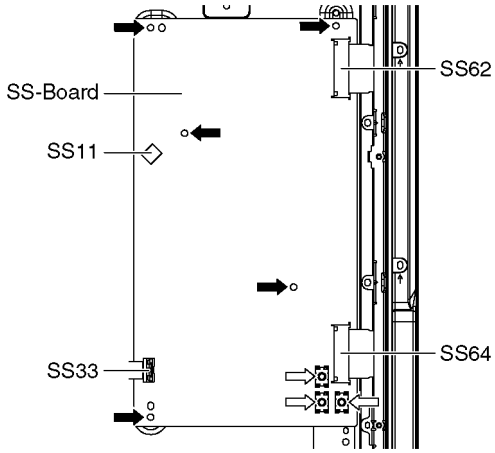
1. Rubber sheets are put between the board and rear cover for EMC requirement and heat radiation. Confirm rubber sheets were placed at each portion when assembling as shown in figure.



TMMJ124	T3 x W7 x L10	2pcs

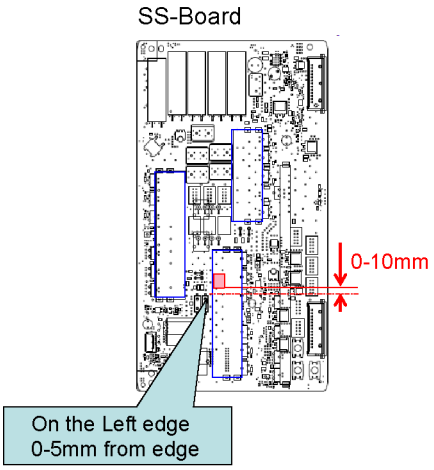
9.2.21. Remove the SS-Board

1. Disconnect the connector (SS11).
2. Disconnect the flexible cable (SS33).
3. Disconnect the flexible cables (SS62 and SS64).
4. Remove the screws (×5 ➡, ×3 ⇨) and remove the SS-Board.



9.2.22. Work instructions for the Rubber sheet for SS-Board

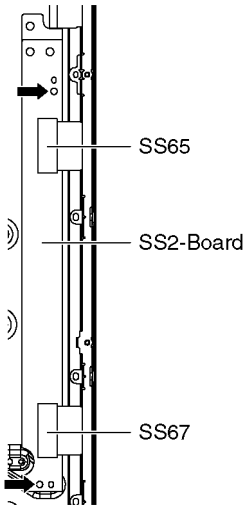
1. Rubber sheets are put between the board and rear cover for EMC requirement and heat radiation. Confirm rubber sheets were placed at each portion when assembling as shown in figure.



TMMJ124	T3 x W7 x L10	1pcs

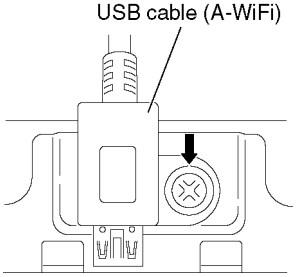
9.2.23. Remove the SS2-Board

1. Disconnect the flexible cable (SS65 and SS67).
2. Remove the screws (×2 ➡) and remove the SS2-Board.



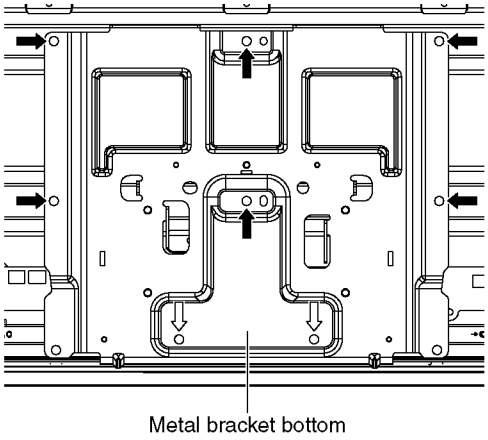
9.2.24. Remove the USB cable (A-WiFi)

1. Remove the screw (×1 ➡).
2. Remove the USB cable (A-WiFi).



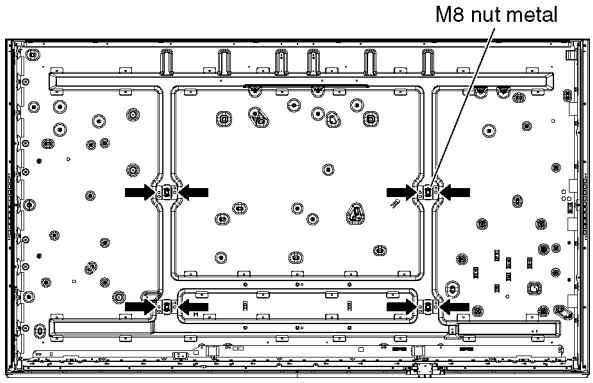
9.2.25. Remove the Metal bracket bottom

1. Remove the screws (×6 ➡, ×2 ⇨) and the Metal bracket bottom.



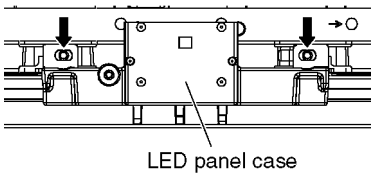
9.2.26. Remove the M8 nut metals

1. Remove the screws (×2 ➡ each) and remove the M8 nut metals.

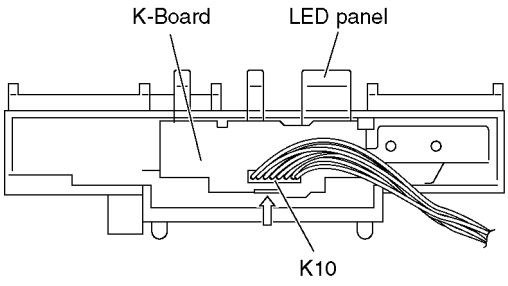


9.2.27. Remove the K-Board

1. Remove the screws (×2 ➡) and remove the LED panel case.

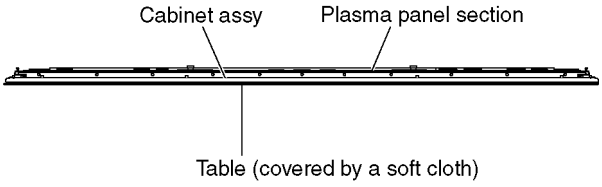


2. Disconnect the connector (K10).
3. Remove the claw (×1 ⇨) and remove the K-Board.
4. Remove the LED panel.

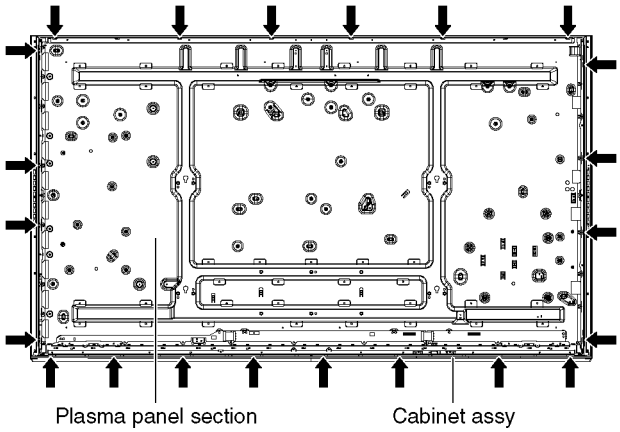


9.2.28. Remove the Cabinet assy from the Plasma panel section

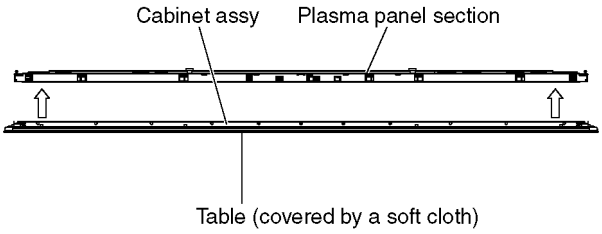
1. Remove the Plasma panel section from the servicing stand and lay on a flat surface such as a table (covered by a soft cloth) with the Plasma panel surface facing downward.



2. Remove the screws (×22 ➡).

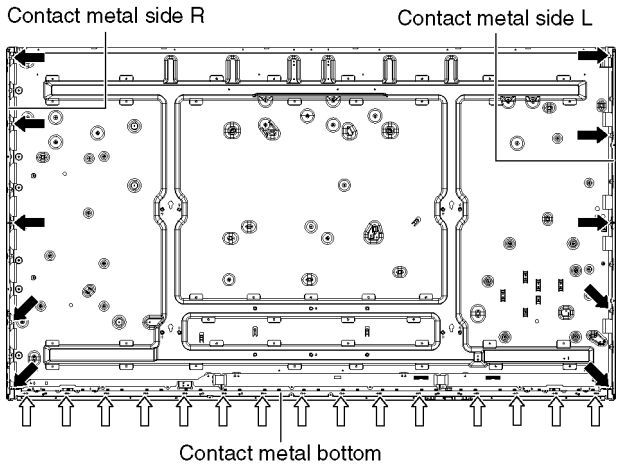


3. Remove the Cabinet assy from the Plasma panel section.



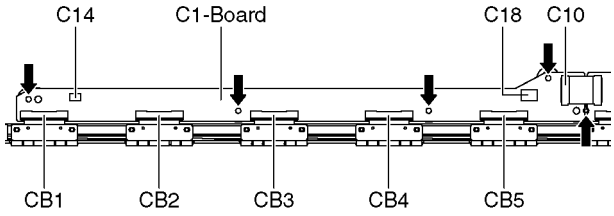
9.2.29. Remove the Contact metals

1. Remove the screws (×10 ➡).
2. Remove the Contact metal side (L, R).
3. Remove the screws (×15 ⇨).
4. Remove the Contact metal bottom.



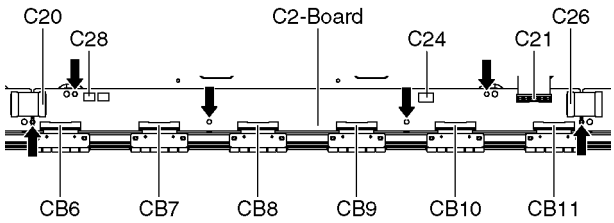
9.2.30. Remove the C1-Board

1. Disconnect the flexible cables (CB1, CB2, CB3, CB4 and CB5).
2. Disconnect the flexible cable (C10).
3. Disconnect the connectors (C14 and C18).
4. Remove the screws (×5 ➡) and remove the C1-Board.



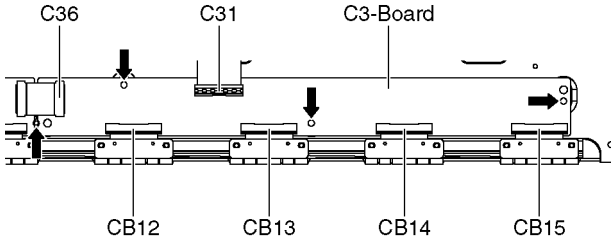
9.2.31. Remove the C2-Board

1. Disconnect the flexible cables (CB6, CB7, CB8, CB9, CB10 and CB11).
2. Disconnect the flexible cables (C20, C21 and C26).
3. Disconnect the connectors (C24 and C28).
4. Remove the screws (×6 ➡) and remove the C2-Board.



9.2.32. Remove the C3-Board

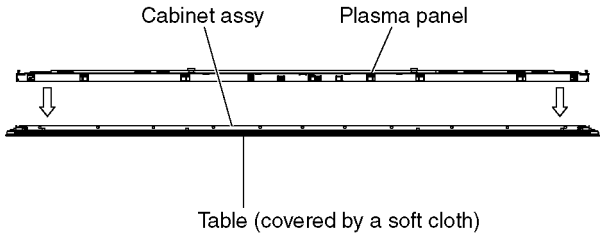
1. Disconnect the flexible cables (CB12, CB13, CB14 and CB15).
2. Disconnect the flexible cables (C31 and C36).
3. Remove the screws (×4 ➡) and remove the C3-Board.



9.2.33. Replace the Plasma panel

Caution:

Remove the Plasma panel section from the servicing stand and lay on a flat surface such as a table (covered by a soft cloth) with the Plasma panel surface facing downward.



A new Plasma panel itself without Contact metals is fragile. To avoid the damage to new Plasma panel, carry a new Plasma panel taking hold of the Contact metals.

1. Place a carton box packed a new Plasma panel on the flat surface of the work bench.
2. Open a box and without taking a new Plasma panel.
3. Attach the Cabinet assy and each P.C.Board and so on, to the new Plasma panel.

10 Measurements and Adjustments

10.1. Adjustment

10.1.1. Vsus selection

Caution:

When Plasma panel or A-board is replaced, Vsus should be set to LOW or HIGH.

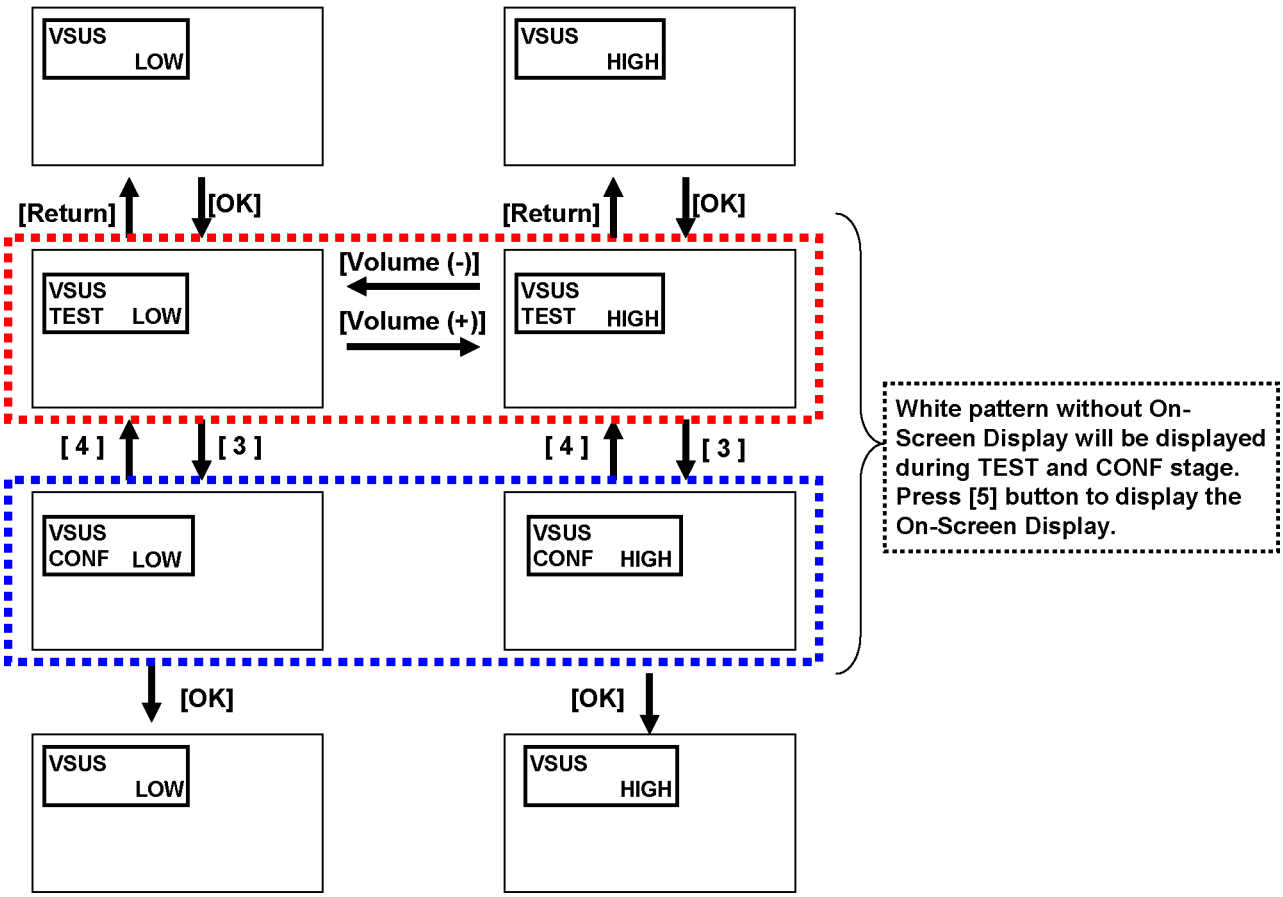
Procedure

1. Go into main item [VSUS] in Service Mode. LOW or HIGH will be displayed.
2. Press [OK] button to go to TEST stage.
   White pattern without On-Screen Display will be displayed during TEST and CONF stage. Press [5] button to display the On-Screen Display.
3. Press [VOL (-)] button to set to LOW.
4. In LOW setting
   a. If no several dead pixel is visible remarkably in white pattern, press [3] button to go to CONF stage.
   b. If the several dead pixels are visible remarkably in white pattern, Set to HIGH by press [VOL (+)] button. Press [3] button to go to CONF stage if the symptom is improved.
5. Press [OK] button in CONF stage to store LOW or HIGH.
6. Exit Service Mode by pressing [Power] button.

Notes:

Do not overwrite because data is written in NAND Flash after executing adjustment of V-SUS Voltage.

Vsus selection in Service mode



10.1.2. White balance adjustment

Name of measuring instrument	Remarks
Color analyzer (Minolta CS-2000 or equivalent)	

Procedure	Remarks

1. Enter the Service mode.
2. Receive the Analog-RF (except for no signal) or set CVBS/YUV/HDMI (no signal is available).
3. Select [WB-ADJ] by using [1] and [2] key in the remote controller.
4. Check that the colour balance and the viewing mode is the values written in table1 and 2.
5. [INNER PATTERN] is displayed by using [5] key by using [5] key in the remote controller.
6. Select [G-CUTOFF] by using the [3] and [4] key in the remote controller, and set the value to [80] by using the volume [+] and [-] key.
   Also, [B-CUTOFF] and [R-CUTOFF] set to [80]
7. Set [G-DRIVE] value to the initial data (ex. D0).
8. Set the color analyzer and adjust color point to the values written in table1 by using [B-DRIVE] and [R-DRIVE]
9. Increase RGB-DRIVE value so that the maximum drive value of one of R-DRIVE or G-DRIVE or B-DRIVE should become [FF]
   ([ALL-DRIVE] set to [FF].)

Table 1 : White Balance Target value

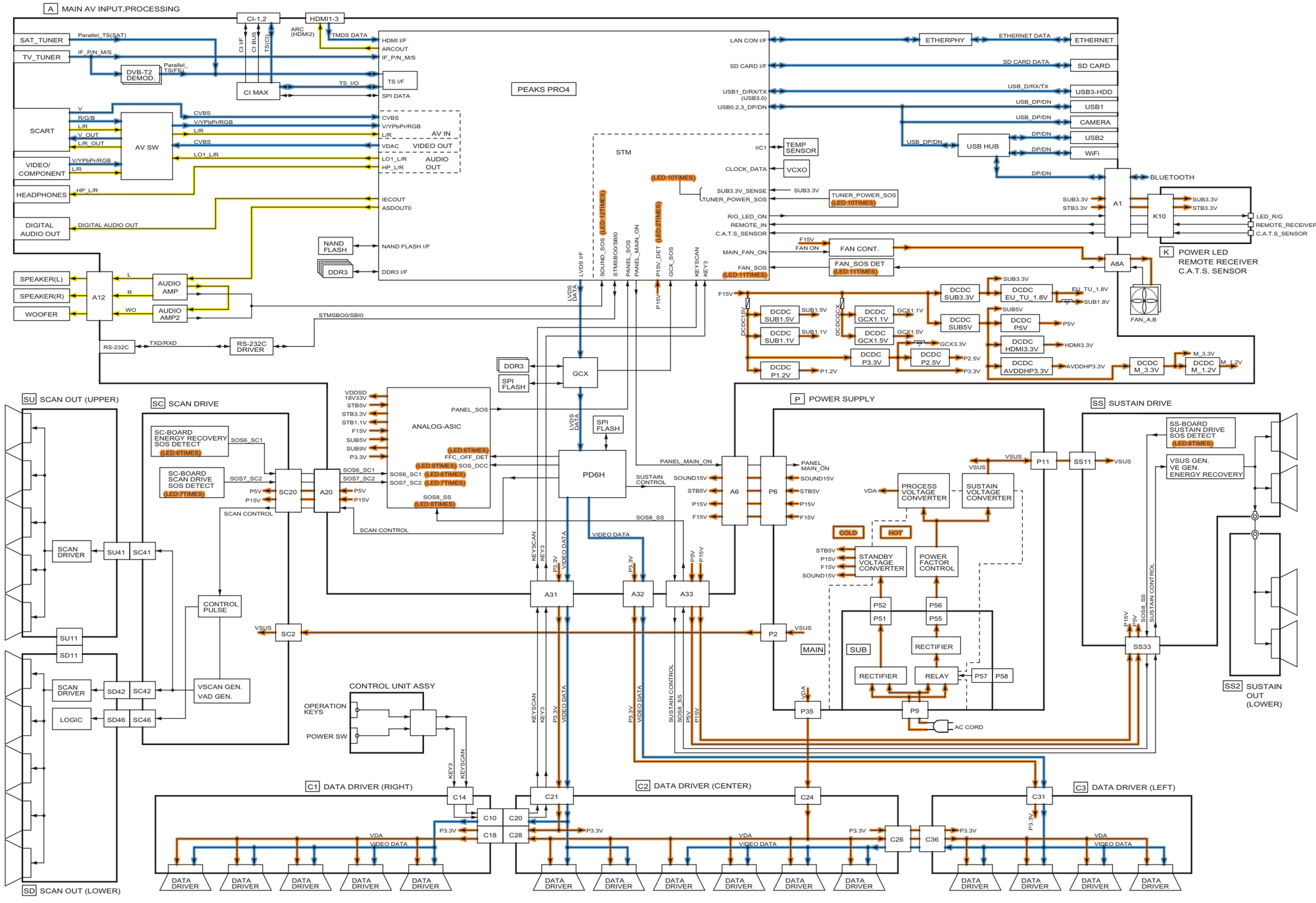
COOL		NORMAL		WARM	
x	y	x	y	x	y
0.277	0.279	0.299	0.314	0.313	0.326

Table2 : Setting of Viewing Mode

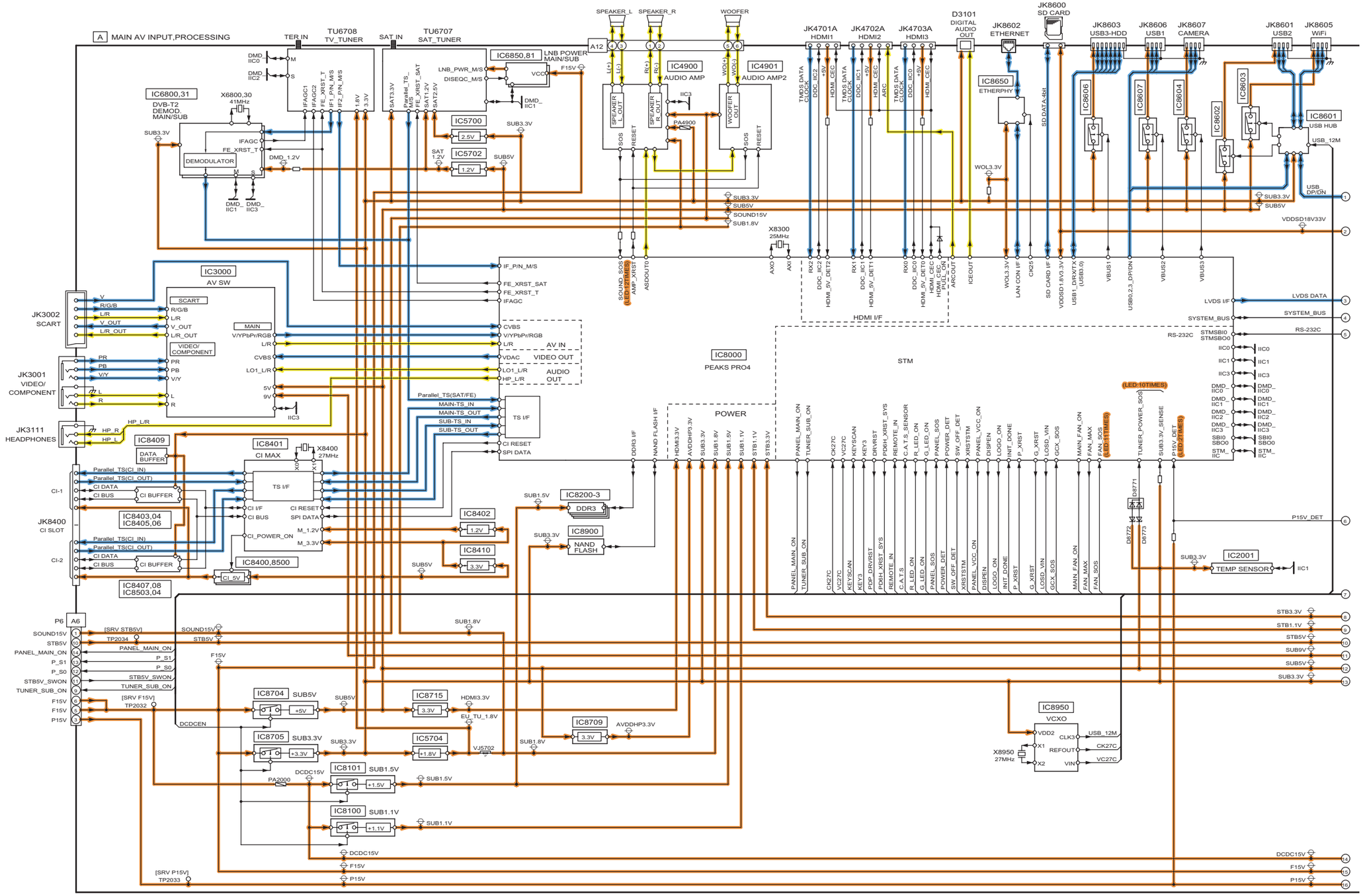
Colour Balance	Viewing Mode
Cool	Dynamic
Normal	Dynamic
Warm	Cinema

11 Block Diagram

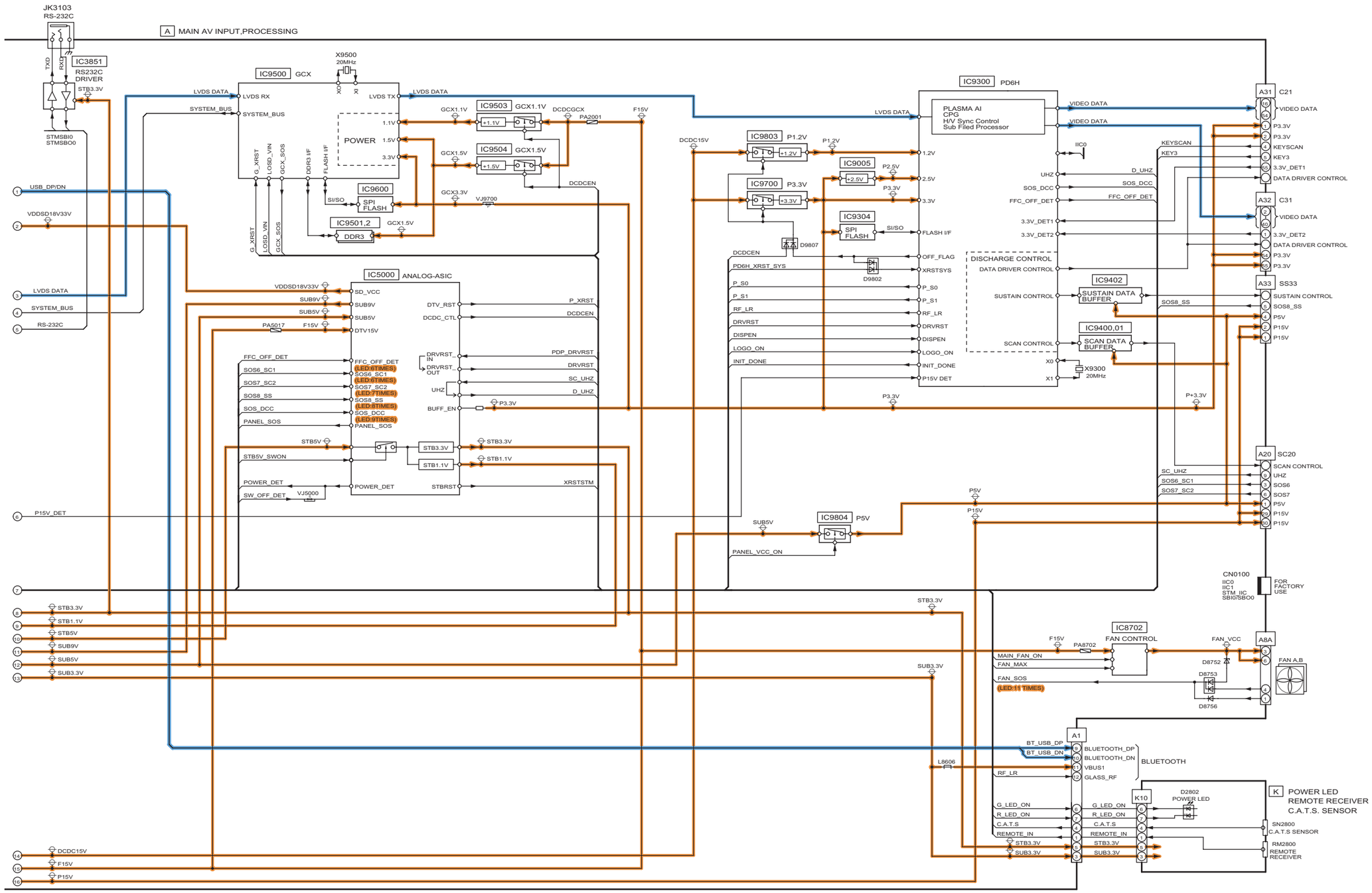
11.1. Main Block Diagram



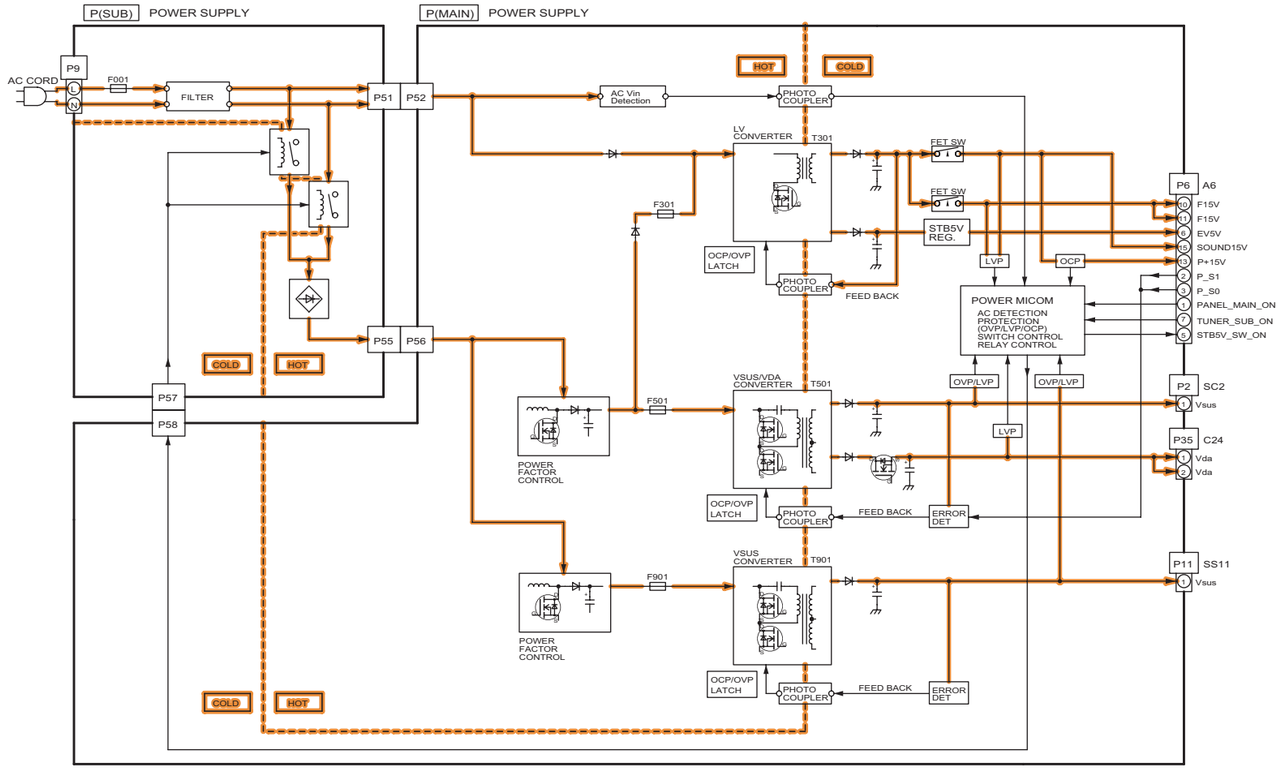
11.2. Block (1/4) Diagram



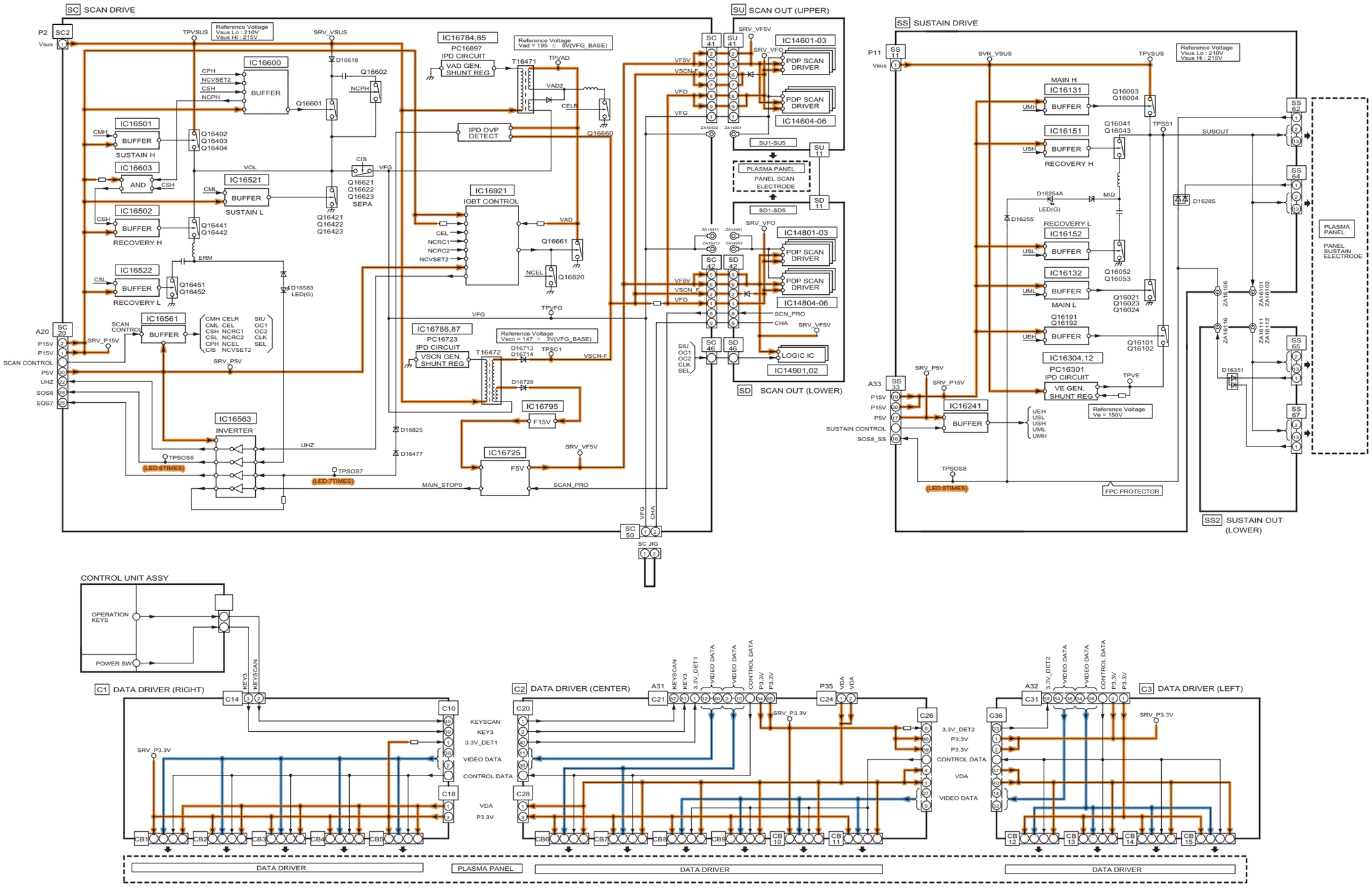
11.3. Block (2/4) Diagram



11.4. Block (3/4) Diagram



11.5. Block (4/4) Diagram



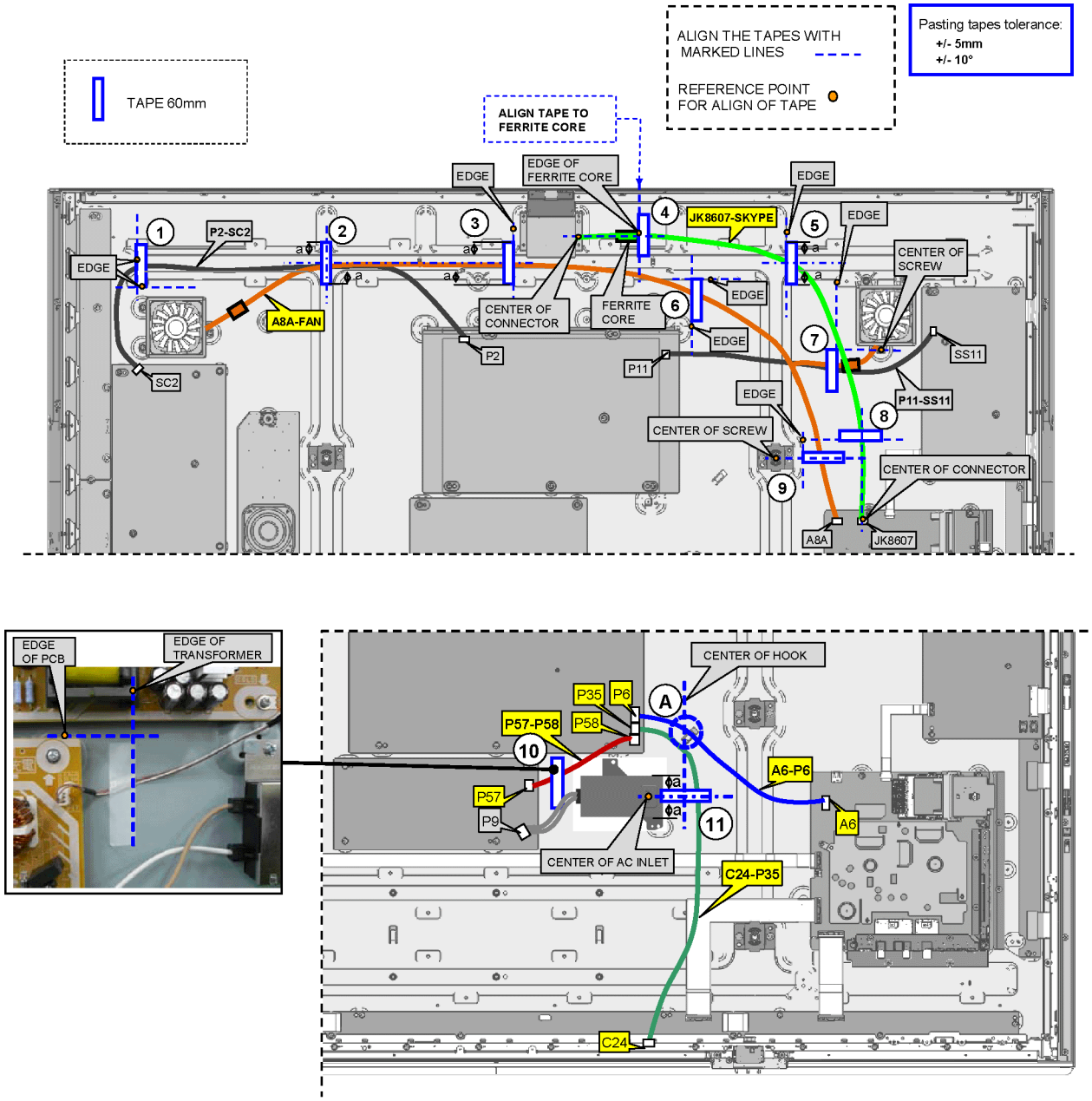
12 Wiring Connection Diagram

12.1. Caution statement.

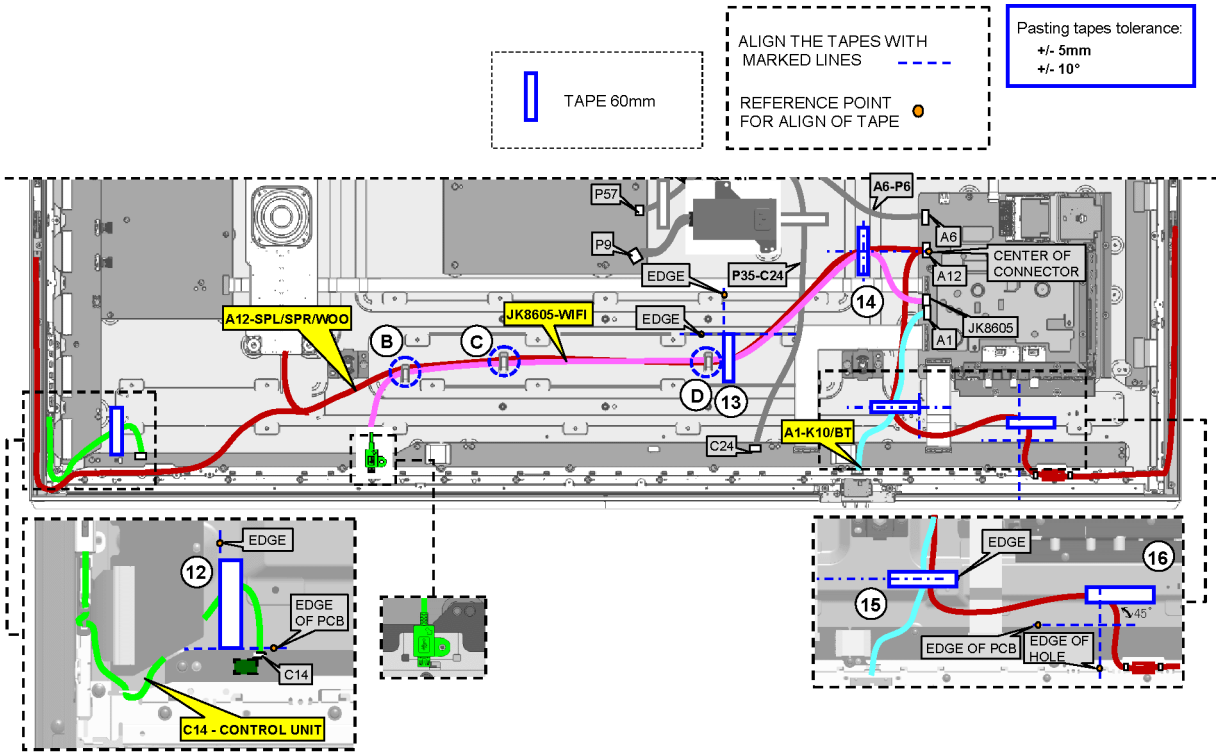
Caution:

Please confirm that all flexible cables are assembled correctly.
Also make sure that they are locked in the connectors.
Verify by giving the flexible cables a very slight pull.

12.2. Wiring (1)

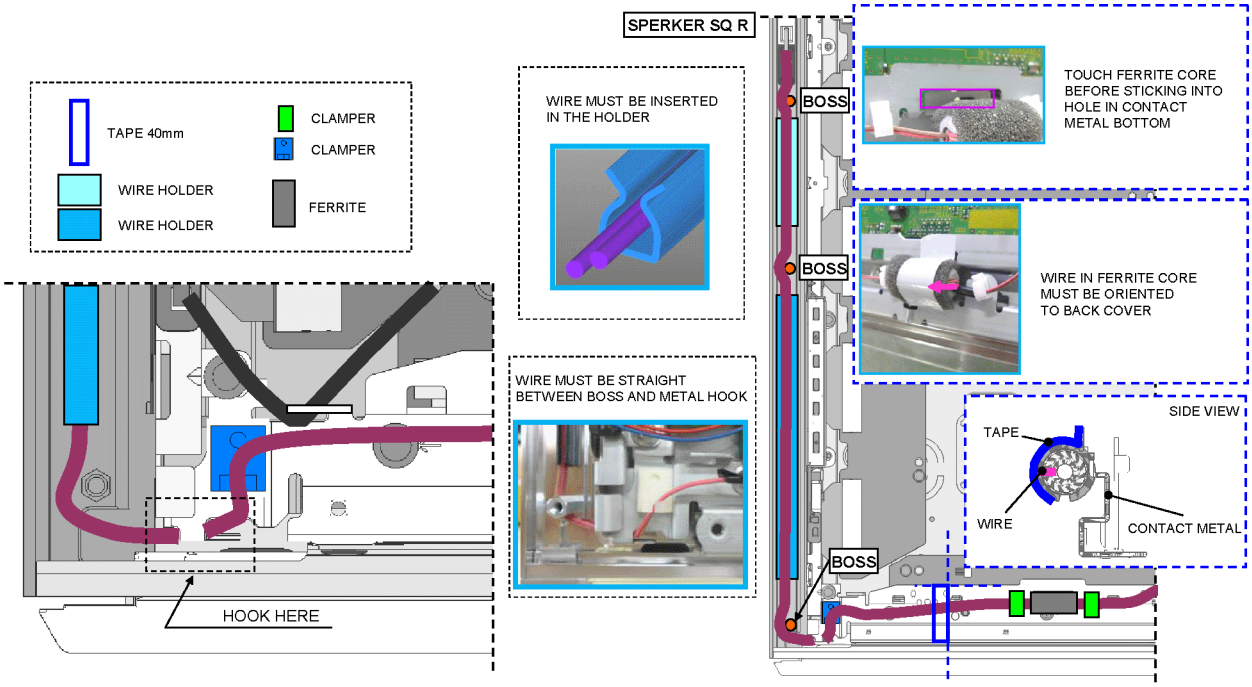


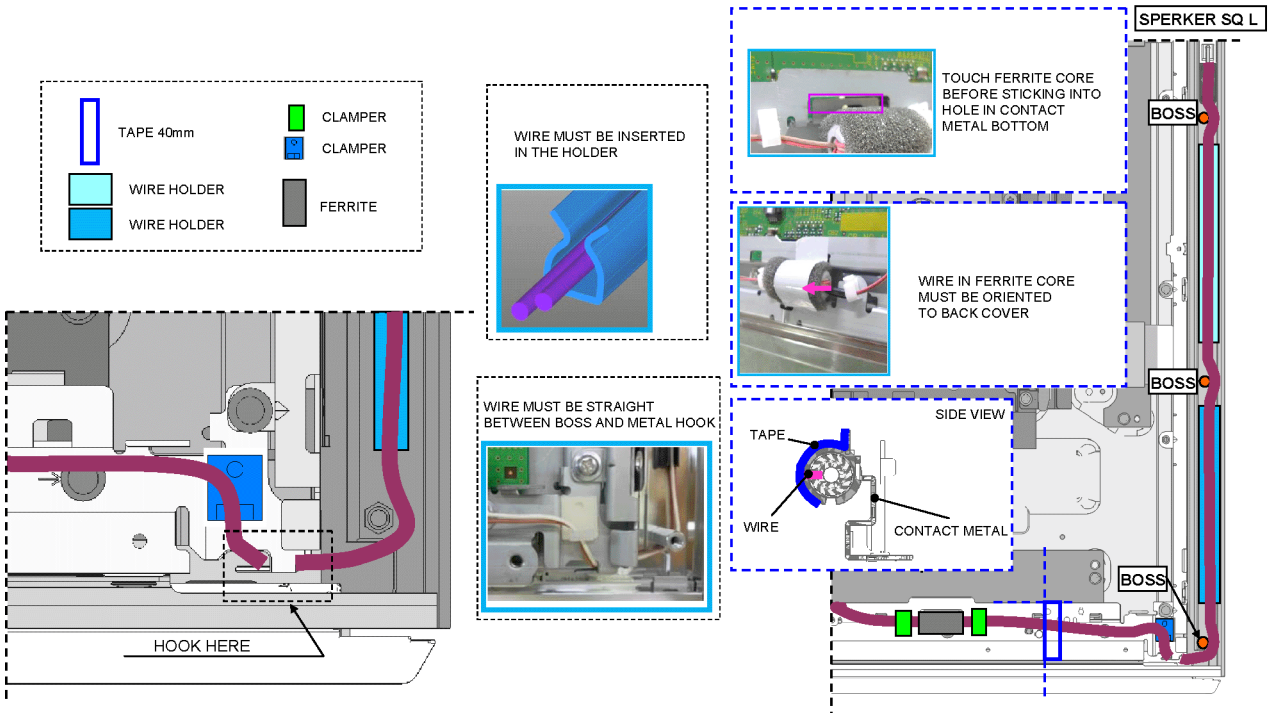
12.3. Wiring (2)



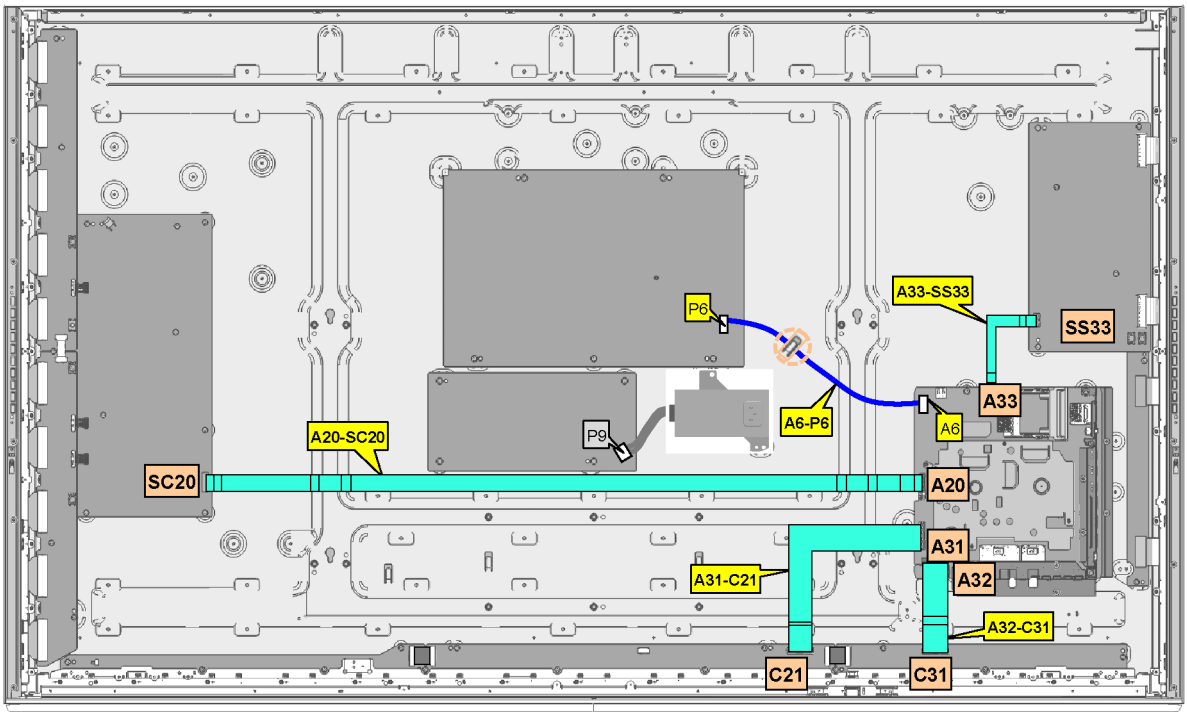
WIRE No.	TAPE No.																HOOK			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	A	B	C	D
P2 - SC2	o	o																		
A8A - FAN		o	o			o	o		o											
JK8607 - SKYPE				o	o			o												
P11 - SS11							o													
P57 - P58										o										
A6 - P6																	o			
C24 - P35											o									
C14 - CONTROL UNIT												o								
A12-SPR/SPL/WOOFER													o	o	o	o		o	o	o
JK8605 - WIFI													o	o				o	o	o
A1 - K10/BT															o					

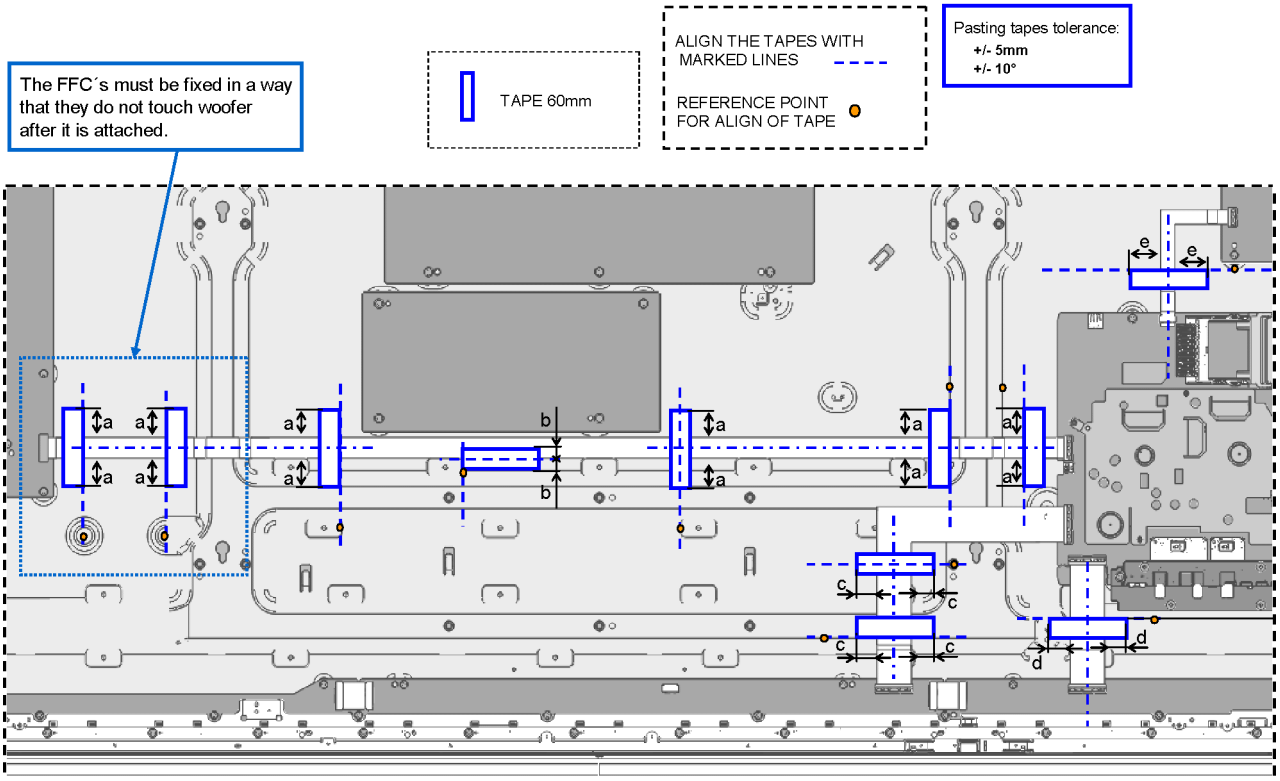
12.4. Wiring (3)


SPERKER SQ R
TAPE 40mm
CLAMPER
CLAMPER
WIRE HOLDER
WIRE HOLDER
FERRITE
WIRE MUST BE INSERTED IN THE HOLDER
WIRE MUST BE STRAIGHT BETWEEN BOSS AND METAL HOOK
HOOK HERE
BOSS
BOSS
BOSS
TOUCH FERRITE CORE BEFORE STICKING INTO HOLE IN CONTACT METAL BOTTOM
WIRE IN FERRITE CORE MUST BE ORIENTED TO BACK COVER
SIDE VIEW
TAPE
WIRE
CONTACT METAL


SPERKER SQ L
TAPE 40mm
CLAMPER
CLAMPER
WIRE HOLDER
WIRE HOLDER
FERRITE
WIRE MUST BE INSERTED IN THE HOLDER
WIRE MUST BE STRAIGHT BETWEEN BOSS AND METAL HOOK
HOOK HERE
BOSS
BOSS
BOSS
TOUCH FERRITE CORE BEFORE STICKING INTO HOLE IN CONTACT METAL BOTTOM
WIRE IN FERRITE CORE MUST BE ORIENTED TO BACK COVER
SIDE VIEW
TAPE
WIRE
CONTACT METAL

12.5. Wiring (4)


P6
A33-SS33
SS33
A33
A6
A6-P6
P9
A20-SC20
SC20
A20
A31
A31-C21
A32
A32-C31
C21
C31


The FFC´s must be fixed in a way that they do not touch woofer after it is attached.
TAPE 60mm
ALIGN THE TAPES WITH MARKED LINES
REFERENCE POINT FOR ALIGN OF TAPE
Pasting tapes tolerance:
+/- 5mm
+/- 10°