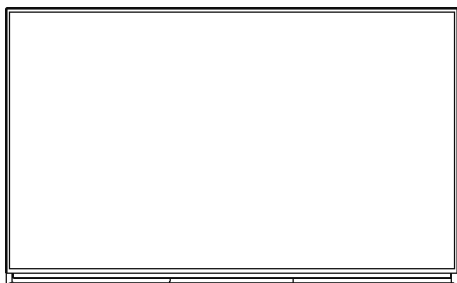


Service Manual

LCD Television

Model No. **TX-58AX800E**
TX-58AXW804
TX-58AXR800

LA53 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.: $U_1 = 35 \text{ V (peak)}$ and $U_2 = 0.35 \text{ V (peak)}$;

For d. c.: $U_1 = 1.0 \text{ V}$,

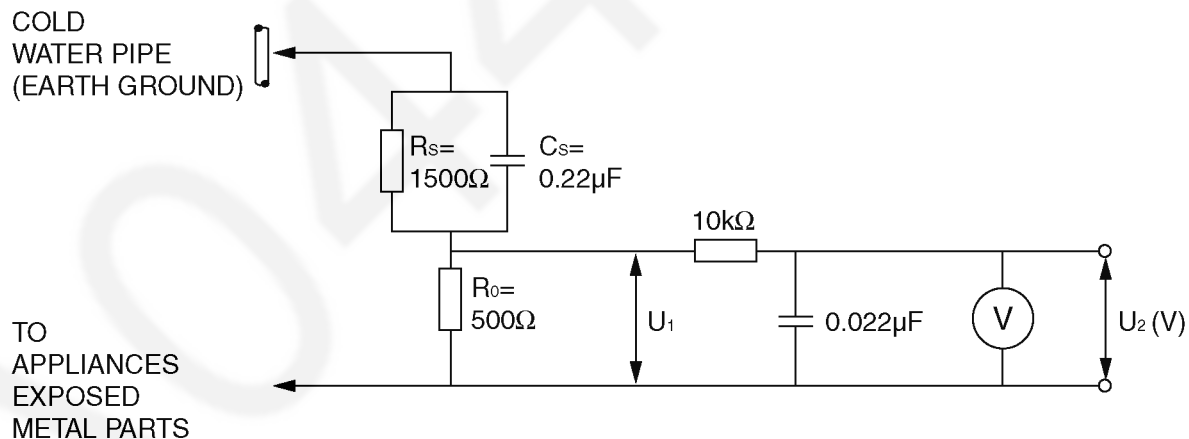
Note:

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

The limit value $U_1 = 35 \text{ V (peak)}$ 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: $\geq 1 \text{ M}\Omega$

Input capacitance: $\leq 200 \text{ pF}$

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).

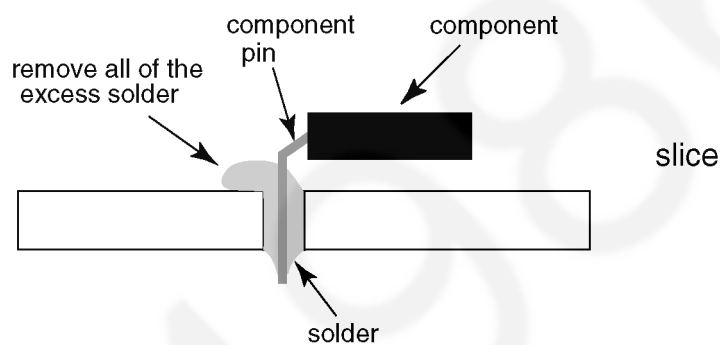
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

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.

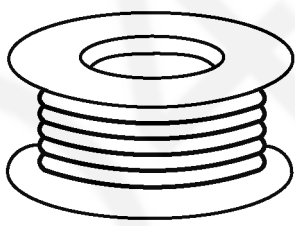
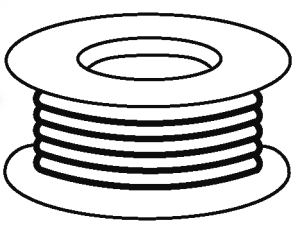
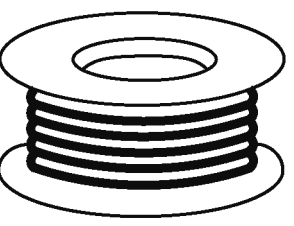
Caution

- 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)



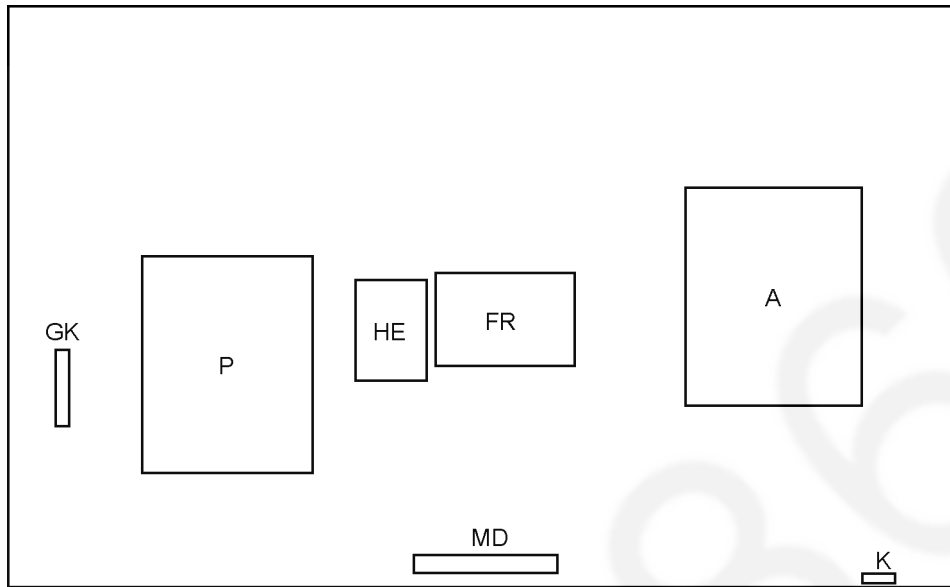
Suggested Pb free solder

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.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

3 Service Navigation

3.1. PCB Layout



Board Name	Function
A-Board	Main
FR-Board	FRC
P-Board	Power
K-Board	IR/LED/CATS
GK-Board	SWITCH
MD-Board	HUMAN ACTIVITY SENSOR
HE-Board	HEVC

4 Specifications

■ Product fiche

Energy efficiency class (E/W)	B
Visible screen size (diagonal)	146 cm / 58 inches
On mode average power consumption (E/W)	182 W
On mode power consumption / screen area (R)	0.020 W / cm ²
Annual energy consumption *1 (E/W)	252 kWh
Standby power consumption *2	0.20 W
Off mode power consumption	0.20 W
Screen resolution	3 840 (W) × 2 160 (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.

For the information of rated power consumption, refer to the label on the TV back cover.

■ TV

Dimensions (W × H*1 × D)	1 306 mm × 803 mm × 294 mm (With Pedestal) 1 306 mm × 779 mm × 42 mm (TV only)
Mass	48.0 kg Net (With Pedestal) 33.0 kg Net (TV only)
Power source	AC 220-240 V, 50 / 60 Hz
Panel	LED LCD panel
Sound	
Speaker output	18 W (4 W + 4 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 synchronisation)
P _B /C _B , P _R /C _R	± 0.35 V [p-p]
HDMI 1 / 2 / 3 / 4 input	TYPE A Connectors HDMI 1 / 3 : 3D, Content Type, Deep Colour, x.v.Colour™ HDMI 2 : 3D, Content Type, Audio Return Channel, Deep Colour, x.v.Colour™ HDMI 4 : 4K, 3D (3D content of 4K format is not supported.), Content Type, Audio Return Channel, Deep Colour, x.v.Colour™ • This TV supports "HDAVI control 5" function.
DisplayPort	VESA DisplayPort (applicable to 4K format)
Card slot	SD Card slot × 1 Common Interface slot (complies with CI Plus) × 2
ETHERNET	RJ45, IEEE802.3 10BASE-T / 100BASE-TX / 1000BASE-T
USB 1 / 2 / 3	
USB1 / 2:	DC 5 V, Max. 500 mA [Hi-Speed USB (USB 2.0)]
USB3:	DC 5 V, Max. 900 mA [SuperSpeed USB (USB 3.0)]
DIGITAL AUDIO output	PCM / Dolby Digital / DTS, Fibre optic

Receiving systems / Band name

Check the latest information on the available services at the following website. (English only)

<http://panasonic.net/viera/support>

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' (E/W)

VHF E2 - E12	VHF A - H (ITALY)
CATV (S01 - S05)	CATV S11 - S20 (U1 - U10)
VHF H1 - H2 (ITALY)	UHF E21 - E69
CATV S1 - S10 (M1 - M10)	CATV S21 - S41 (Hyperband)

PAL D, K, SECAM D, K	VHF R1 - R2	VHF R3 - R5
PAL 525/60	VHF R6 - R12	UHF E21 - E69
M.NTSC	Playback of NTSC tape from some PAL Video recorders (VCR)	
NTSC (AV input only)	Playback from M.NTSC Video recorders (VCR)	
Satellite dish input	Playback from NTSC Video recorders (VCR)	
Aerial input	Female F-type 75 Ω $\times$ 2	
Operating Conditions	VHF / UHF	
Temperature:	0 °C - 35 °C	
Humidity:	20 % - 80 % RH (non-condensing)	
Built-in Camera	Fixed focus	
Focus:	1 920 $\times$ 1 080	
Resolution:		
Built-in wireless LAN		
Standard compliance and Frequency range*2		
IEEE802.11a/n (E/W)	5.180 GHz - 5.320 GHz, 5.500 GHz - 5.580 GHz, 5.660 GHz - 5.700 GHz	
IEEE802.11a/n (R)	5.15 GHz - 5.35 GHz, 5.47 GHz - 5.85 GHz	
IEEE802.11b/g/n (E/W)	2.412 GHz - 2.472 GHz	
IEEE802.11b/g/n (R)	2.400 GHz - 2.4835 GHz	
Security	WPA2-PSK (TKIP/AES), WPA-PSK (TKIP/AES), WEP (64 bit/128 bit)	
Bluetooth wireless technology*3		
Standard Compliance	Bluetooth 3.0	
Frequency Range	2.402 GHz - 2.480 GHz	

*1: With Camera pop-up: +24 mm height

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

*3: 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 $\times$ H $\times$ D)	164.7 mm $\times$ 41.0 mm $\times$ 170.7 mm
Mass	Approx. 34 g
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 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. (E/W)
EN55013, EN61000-3-2, EN61000-3-3, EN55020, EN55022, EN55024 (E/W)

5 Technical Descriptions

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

5.1.1. General information:

1. eMMC (IC8903) for spare parts has the seed of KEY for each.
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 eMMC (IC8903).
All KEY are not generated for all models.
The necessary KEY are only generated and stored depend on the feature of models.

5.1.2. Replacement of ICs:

When Main IC (IC8000) is replaced, eMMC (IC8903) should be also replaced with new one the same time.

When eMMC (IC8903) 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	HDCP2
TX-58AX800E	Yes	Yes	Yes	Yes	Yes	Yes
TX-58AXW804	Yes	Yes	Yes	Yes	Yes	Yes
TX-58AXR800	Yes	Yes	None	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) 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

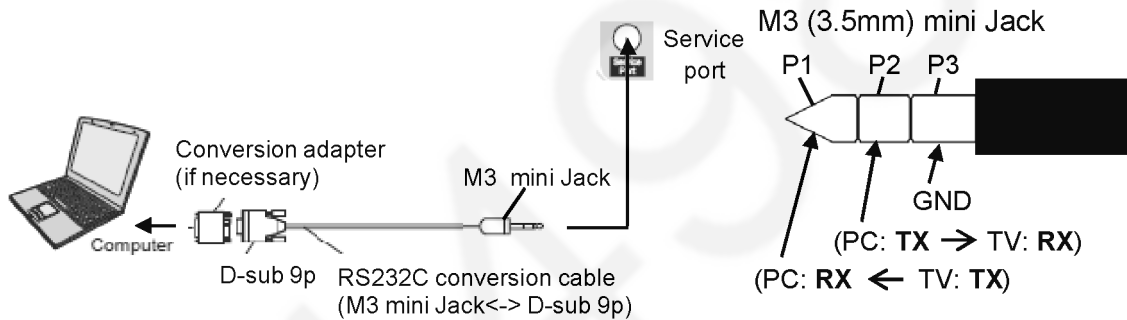
Signal level	RS-232C compliant
Synchronization method	Asynchronous
Baud rate	9600 bps
Parity	None
Character length	8 bits
Stop bit	1 bit
Flow control	-

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



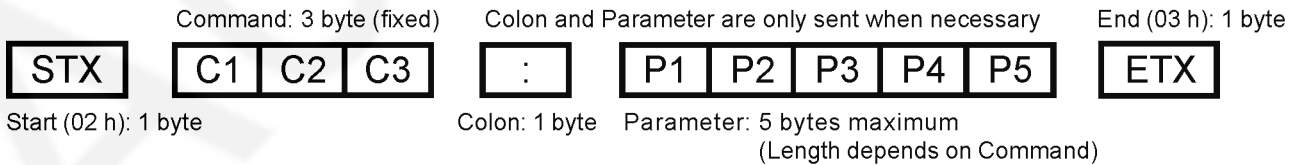
(Recommended connection of D-SUB 9p / M3 mini jack conversion cable)



Connection

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

Other pins of D-SUB 9p : Open



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

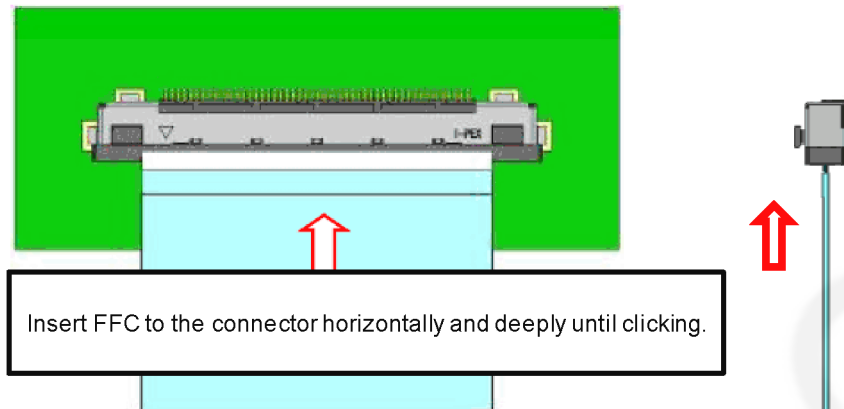
		Control Command	Inquiry Command	Call back Command	Parameter	note
STANDARD CONTROL	POWER ON	PON	QPW	QPW : *	"0"(OFF)/ "1"(ON)	
	POWER OFF	POF				
	VOL	(level) AVL: ***	QAV	QAV : ***	"000" - "100"	
		(up) AUU				
		(down) AUD				
	MUTE	AMT (Toggle)	QAM	QAM : *	"0"(NO MUTED) / "1"(MUTED)	
		AMT: *				
	ASPECT	DAM: ****	QAS	QAS : ****	"FULL" / "JUST" / "NORM"(4:3) / "ZOOM" / "HFIL" / "SJST"/"SZOM" / "SELF" (Auto) / "14:9" / "HFUL" / "VFUL"	[480i/480p] Option : 16:9(Full) → Just → 4:3 → Zoom [1080i/720p/1080p] Option : 16:9(Full) → Just → 4:3 → Zoom → 4:3Full(H-Full) → Sidecut Just → Sidecut Zoom [2560p/3840p(4k format)] : Only 4k models (AX800 series) Option : 16:9(Full) [4096p (4KDCI)] : Only 4k models (AX800 series) Option : 16:9(Full) → H-Full → V-Full
		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"	
	SAT-IP	IMS : SIP			"SIP"	only for AXW804 & ASW804
	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"	
	HDMI 4	IMS : H4			"H4"	
	DisplayPort	IMS : DP1			"DP1"	only for AX800 series
	SD/USB	IMS : SDU			"SDU"	
VIEWING MODE	Dynamic	VPC : VVT	QPC	QPC : ***	"VVT"	
	Normal	VPC : STD			"STD"	
	THX Cinema	VPC : THX			"THX"	THX : Except PHOTO(JPEG), MUSIC, ViEa Connect & MEDIA SERVER(DLNA/RUI)
	THX Bright Room	VPC : THB			"THB"	
	True Cinema	VPC : CNM			"CNM"	
	Cinema	VPC : THR			"THR"	
	Custom	VPC : CST			"CST"	
	Monitor	VPC : MON			"MON"	
	Professional 1 (isf day)	VPC : PR1			"PR1"	
	Professional 2 (isf night)	VPC : PR2			"PR2"	

Else & Remote Controller Key Command

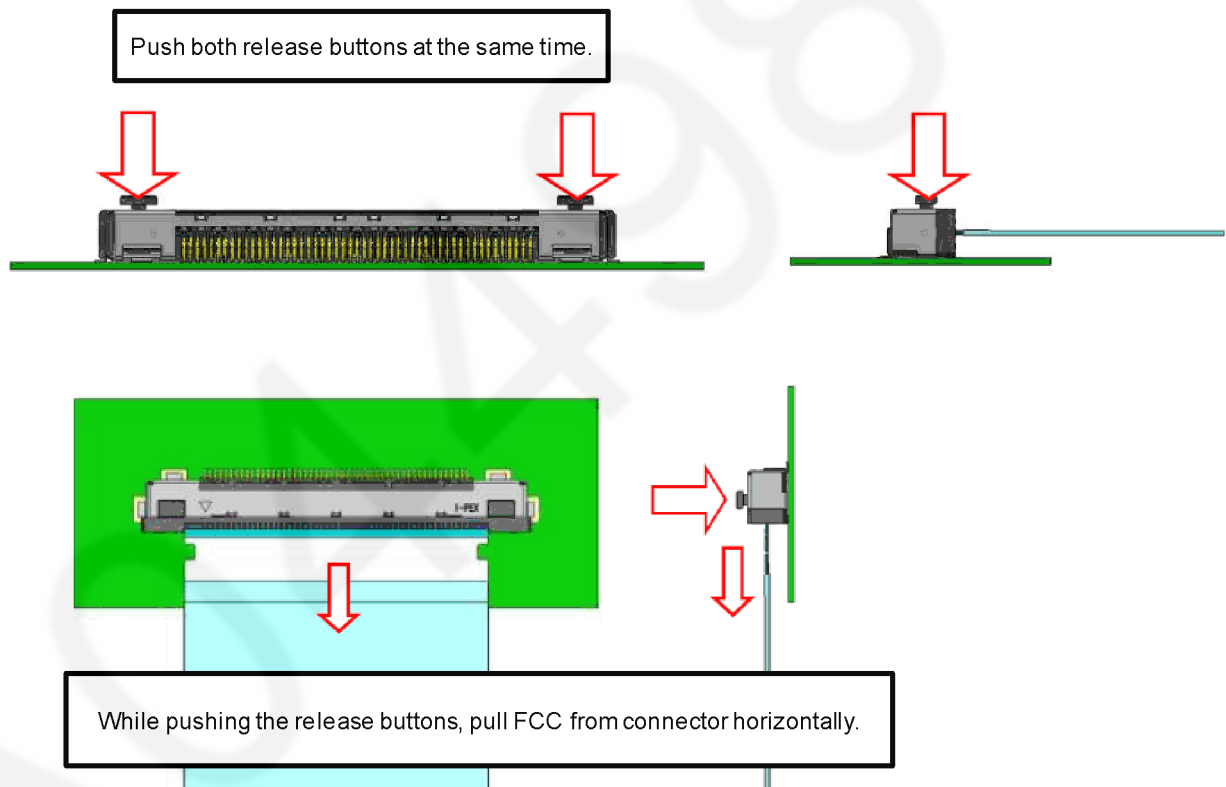
		Control Command	Inquiry Command	Call back Command	Parameter	note
LAST VIEW		LCH				
Information		INF				
		--	QIF	QIF : *****	480i 480p 576i 576p 720p 1080i 1080p 2160pQFHD 2160p4KDCI	"2160pQFHD" & "2160p4KDCI" only for 4k models (AX800 series)
DIRECT CH INPUT	0	ICH : 0	-	-	-	
	1	ICH : 1	-	-	-	
	2	ICH : 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	-	-	-	

5.4. How to connect and disconnect for FR12 and FR13 connectors on FR board

Connection



Disconnection



6 Service Mode

6.1. How to enter into Service Mode

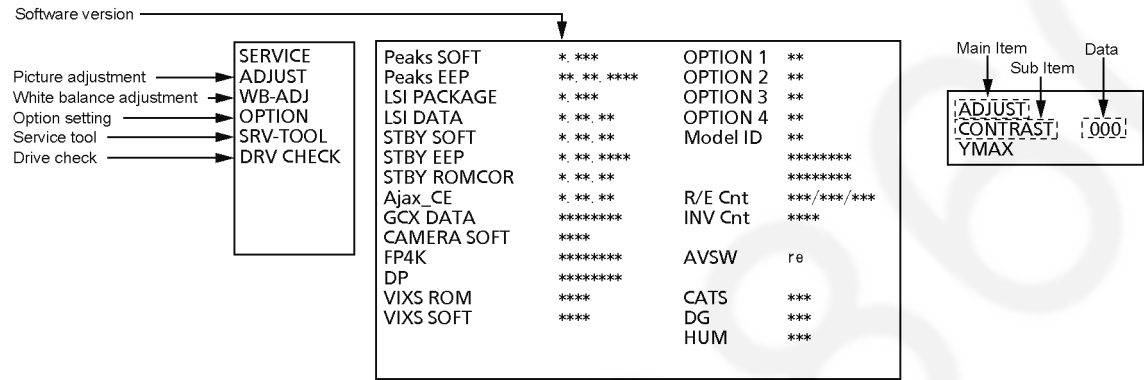
6.1.1. Purpose

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

- Press the [3/4] button to change the adjustment values or function.
- Press the [1/2] button to step up/down through the functions and adjustments.
- Press the numerical button [VOLUME (+/-)] to change of each option item.
- Press the [OK] button after each adjustment has been made to store the required values.

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	24E	
	COLOR	2F	
	TINT	00	
	SUB-BRT	800	
	BACKLGT	FFF	
	H-POS	0	
	H-AMP	0	
	V-POS	0	
	V-AMP	0	
WB-ADJ	R-GAIN	80	
	G-GAIN	78	
	B-GAIN	7D	
	R-CENT	80	
	G-CENT	80	
	B-CENT	87	
OPTION	Boot	ROM	Factory Preset
	STBY-SET	00	
	CLK MODE	00	
	CLOCK	000	
	EMERGENCY	ON	
	Y/C Delay	0	
	OPT 1	00000100	
	OPT 2	11101110	
	OPT 3	00000001	
	OPT 4	00000010	
	EDID-CLK	SHIGH	
SRV-TOOL		00	See Service tool mode
DRV CHECK	USBHDD CHECK	00	See DRV Check-USBHDD Check

6.2. Service tool mode

6.2.1. How to access

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

SRV-TOOL		
Display of Flash ROM maker code →	Flash ROM : 0 - 0	
Display of SOS History →	PTCT : 00 . 00 . 00 . 00 . 00 .	Time 00000:40 On/Off 0000001

POWER ON TIME/COUNT
Press [MUTE] button (3 seconds)

6.2.2. 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 except 2nd and 1st occurrence after shipment will be cleared by [Self-check indication and forced to factory shipment setting].

6.2.3. POWER ON Time, On/Off

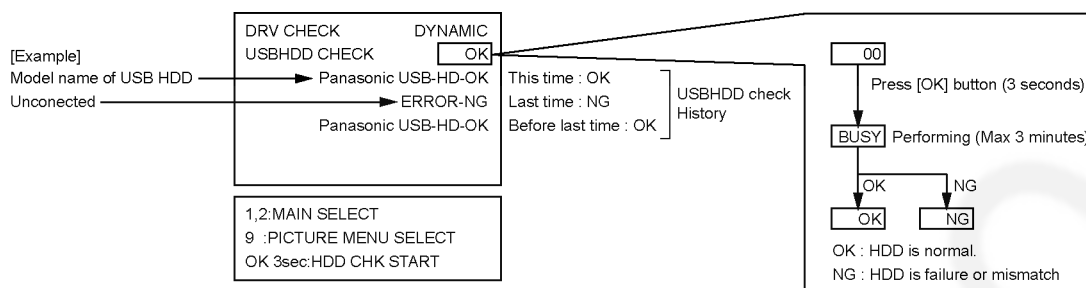
Note : To display TIME/COUNT menu, highlight position, then press MUTE for 3 seconds.
Time : Cumulative power on time, indicated hour : minute by decimal
On/Off : Number of On/Off switching by decimal
Note : This indication will not be cleared by either of the self-checks or any other command.

6.2.4. Exit

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

6.3. 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.



6.4. Hotel mode

6.4.1. Purpose

Restrict a function for hotels.

6.4.2. Access command to the Hotel mode setup menu

In order to display the Hotel mode setup menu, please enter the following command (within 2 seconds).

[TV]: Vol.[Down] + [REMOTE] : AV (3 times)

Then, the Hotel mode setup menu is displayed.

Hotel Mode	
Hotel Mode	Off
Initial INPUT	Off
Initial POS	Off
Initial VOL Level	Off
Maximum VOL Level	100
Button Lock	Off
Remote Lock	Off
Private Information	Keep

Select

Change

RETURN

6.4.3. 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.

6.4.4. 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, HDMI4, DisplayPort • Off: give priority to a last memory.
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

6.5. Data Copy by USB Memory

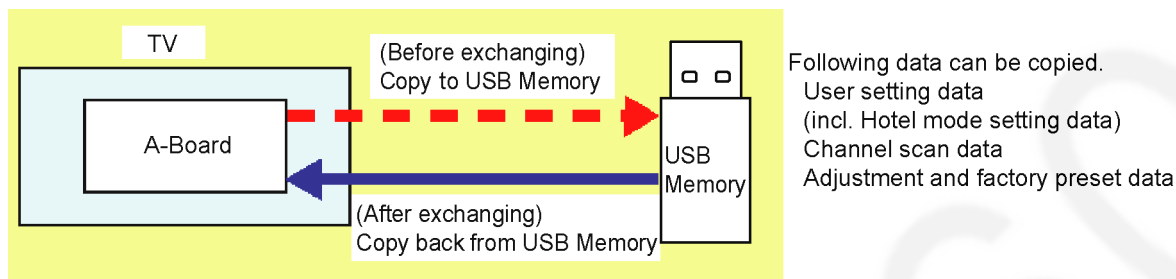
Note:

SD card can not be used for Data Copy.

6.5.1. Purpose

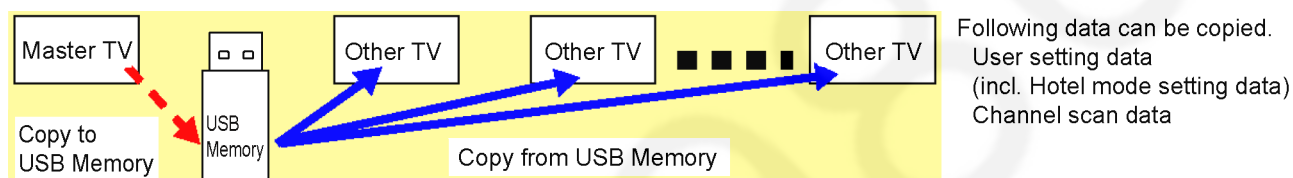
(a) Board replacement (Copy the data when exchanging A-board):

When exchanging A-board, the data in original A-board can be copied to USB Memory and then copy to new A-board.



(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.



6.5.2. 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.

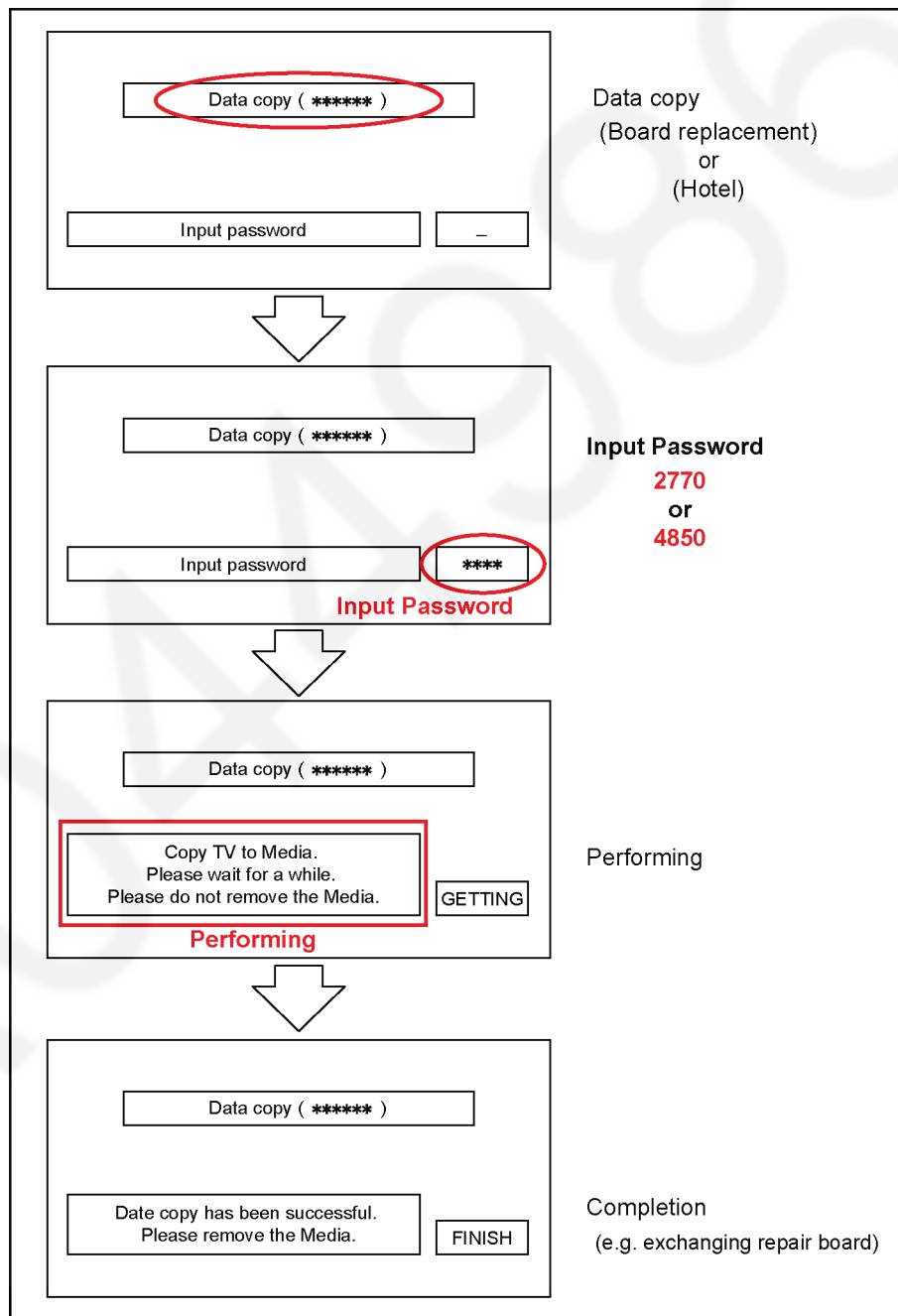
6.5.3. Data copy from TV set to USB Memory

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

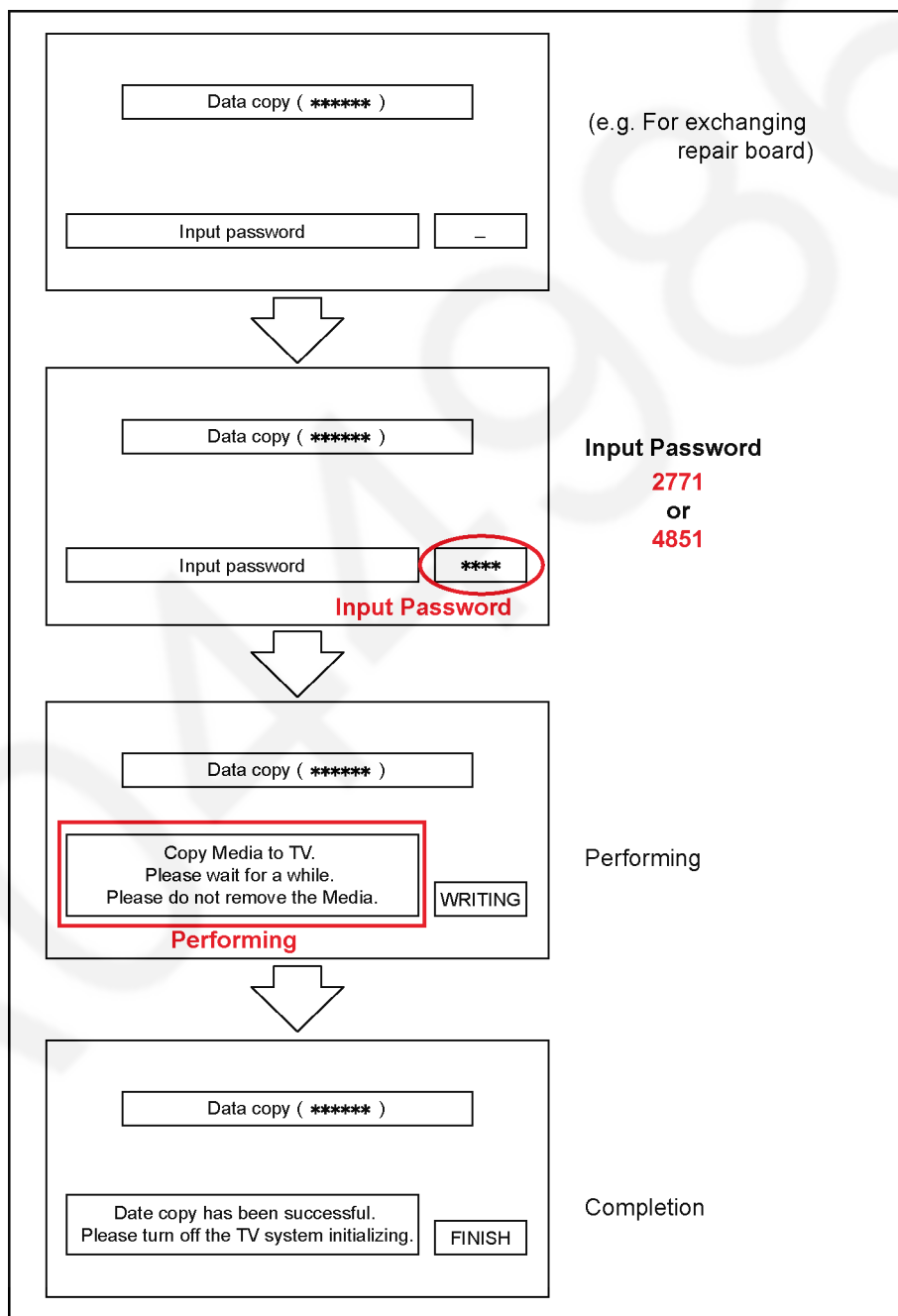


6.5.4. Data copy from USB Memory to TV set

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

58		SELF CHECK COMPLETE	
H14TUN	OK	PEAKS-SOFT	*, ***
H15TUN2	OK	PEAKS-EEP	**, **, ****
H90STBY	OK	LSI-PACKAGE	*, ***
H92MEM1	OK	LSI-RELEASE	*, **
H91MEM2	OK	STBY-SOFT	*, **, **
H30AVSW	OK	STBY-EEP	*, **, ****
H17LAN	OK	GCX DATA	*****
H00FE	OK	CAMERA	****
H00SAT-TU	OK	FP4K DATA	*****
H96ID	OK	DP DATA	*****
H97ID2	OK	VIXS ROM	****
H45BT	OK	VIXS SOFT	****
H42WiFi	OK		
H21DSP	OK		
H52CAMERA	OK		
H36GCX	OK		
H37GCX2	OK		
H80HDMISW1	OK		
H81HDMISW2	OK		
H39FP4K	OK		
H82DP	OK		
H83HEVC	OK		
		MODEL ID	** ***** *****

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
H15TUN2	TU6708	TUNER	A-BOARD
H90STBY	IC8000	PEAKS-PRO4 (STM)	A-BOARD
H92MEM1	IC8000	BLOCK-EEP	A-BOARD
H91MEM2	IC8901	STM EEPROM	A-BOARD
H30AVSW	IC3000	AVSW	A-BOARD
H17LAN	IC8600	ETHERPHY	A-BOARD
H00FE	IC6800	DEM0D1	A-BOARD
H00SAT-TU	IC6803	DEM0D2	A-BOARD
H96ID		ID	A-BOARD
H97ID2		ID2	A-BOARD
H45BT		BLUETOOTH	A-BOARD/BLUETOOTH
H42WiFi		WiFi	A-BOARD/WiFi
H21DSP	IC4900	AUDIO AMP	A-BOARD
H52CAMERA		CAMERA	A-BOARD/CAMERA
H36GCX	IC9500	GCX1-MASTER	FR-BOARD
H37GCX2	IC9600	GCX2-SLAVE	FR-BOARD
H80HDMISW1	IC3603	HDMI IC SWITCH MAIN	A-BOARD
H81HDMISW2	IC1501	HDMI IC SWITCH SUB	A-BOARD
H39FP4K	IC1500	FPGA	A-BOARD
H82DP	IC3500	DP-HDMI	A-BOARD/DISPLAYPORT
H83HEVC	IC6000	HEVC	HE-BOARD

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	BL SOS	LCD PANEL P-Board
3 (fast blinking)	IROM SOS	A-Board
6	FPGA SOS	A-Board
7	SUB 3.3V	A-Board
9	SOUND SOS	A-Board Speaker
10	GCX/FRC SOS	FR-Board
12	BE SOS	A-Board
13	EMERGENCY SOS	A-Board

7.3. LCD Panel / FR test mode

Purpose:

To find the possible failure point where in LCD Panel, FR board or A board when the abnormal picture is displayed.

Procedure:

Step 1. Go into LCD Panel test mode and confirm the symptom

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

The several test patterns generated by LCD Panel are displayed. Judge by the following method.

Still abnormal picture is displayed: The cause must be in LCD Panel. Exit test mode.

Normal picture is displayed: The cause must be in A board or FR board. Go into FR test mode

Step 2. Go into FR test mode and confirm the symptom

During in LCD Panel test mode, press [OK] button on the remote control.

The test pattern generated by FR board is displayed. Judge by the following method.

Abnormal picture is displayed: The cause must be in FR board.

Normal picture is displayed: The cause must be in A board.

Step 3. How to Exit:

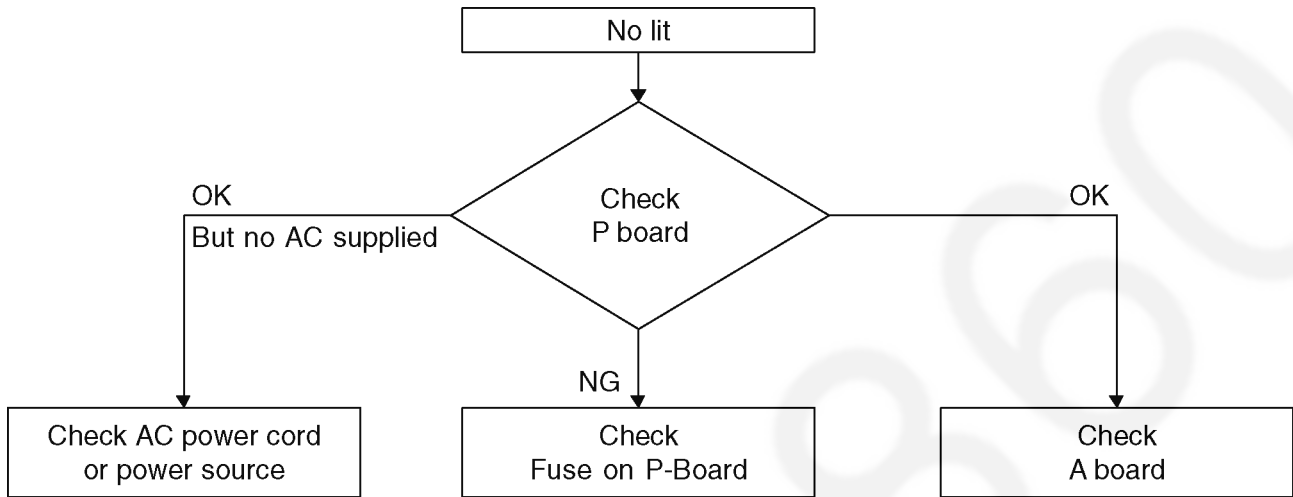
Switch off the power with the [POWER] button on the main unit or the [POWER] button on the remote control in LCD Panel test mode or FR test mode.

7.4. 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.

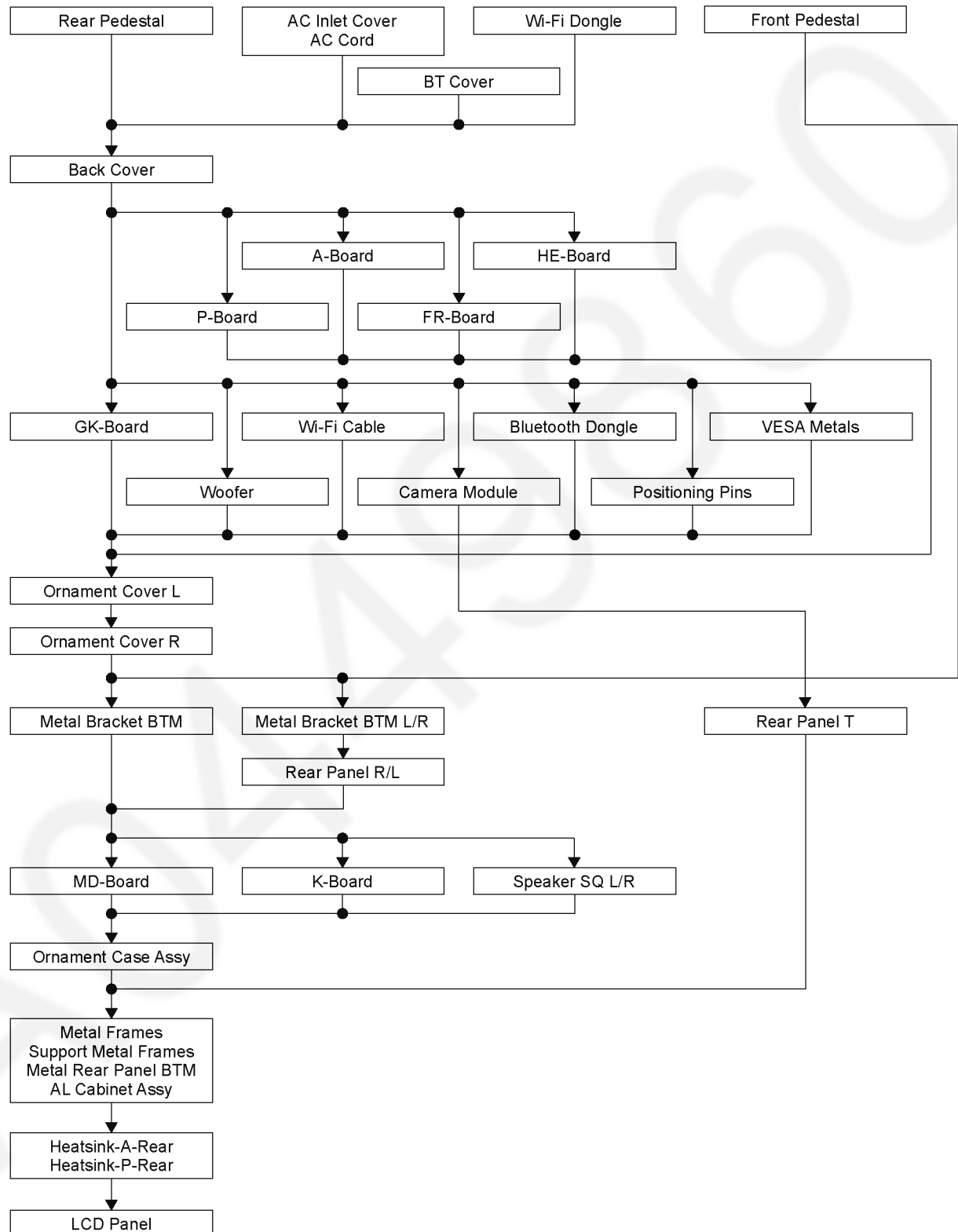


8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart for the Unit

This is a disassembly chart.

When assembling, perform this chart conversely.

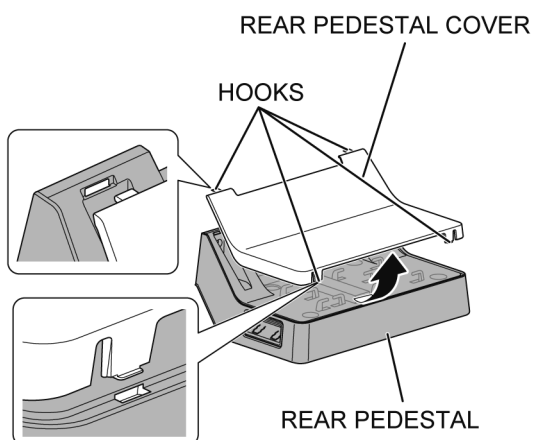


8.2. Disassembly Procedure for the Unit

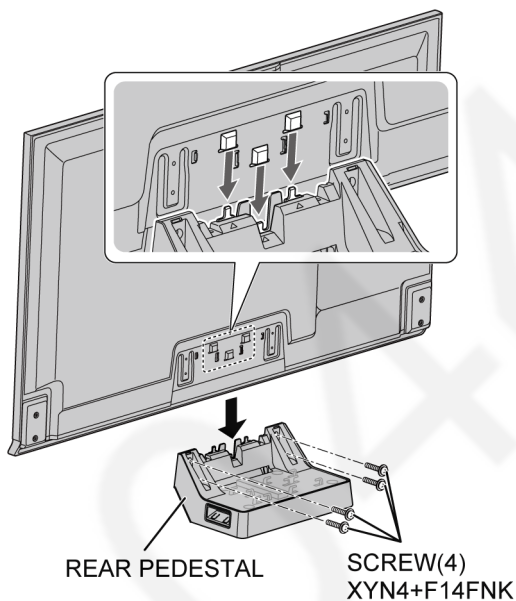
Lay down the unit so that the rear cover faces upward.

8.2.1. Rear Pedestal

1. Remove the 4 hooks.
2. Remove the Rear Pedestal Cover.

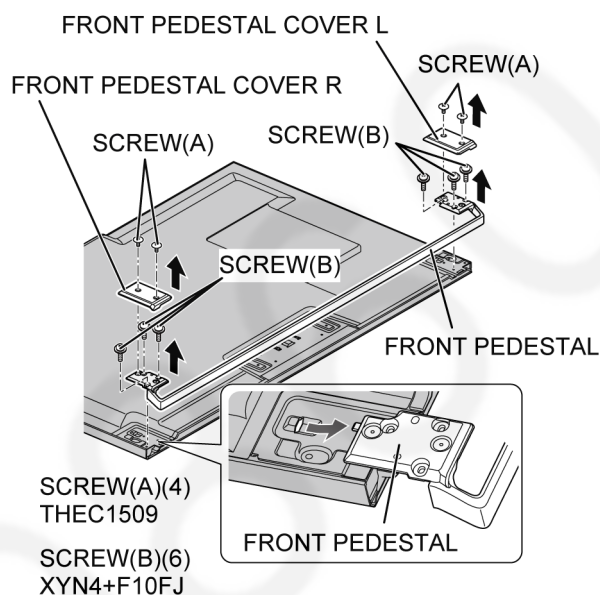


3. Remove the 4 screws.
4. Remove the Rear Pedestal.



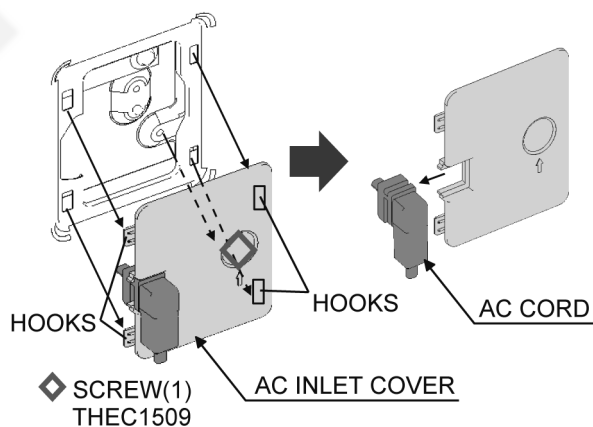
8.2.2. Front Pedestal

1. Remove the 4 screws (A).
2. Remove the Front Pedestal Cover L/R.
3. Remove the 6 screws (B).
4. Remove the Front Pedestal.

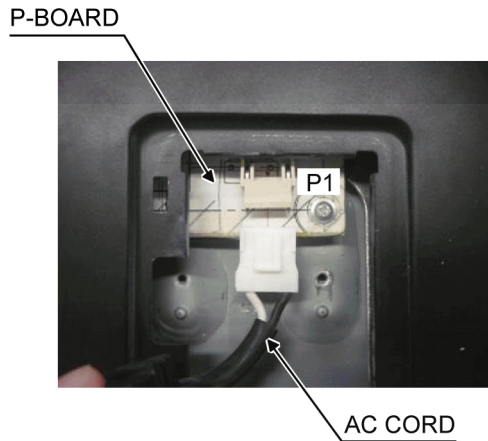


8.2.3. AC Inlet Cover and AC Cord

1. Remove the 1 screw.
2. Remove the 4 hooks.
3. Remove the AC Inlet Cover on AC Cord.

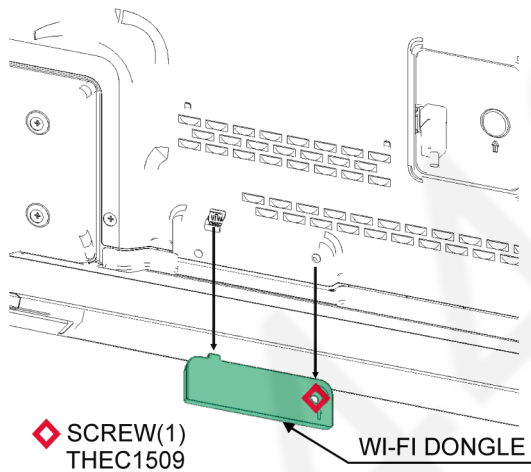


4. Disconnect the connector (P1) on P-Board.
5. Remove the AC Cord on P-Board.



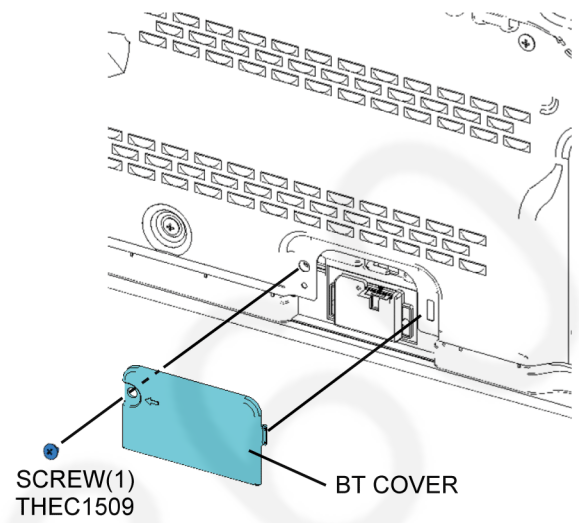
8.2.4. Wi-Fi Dongle

1. Remove the 1 screw.
2. Remove the Wi-Fi Dongle.



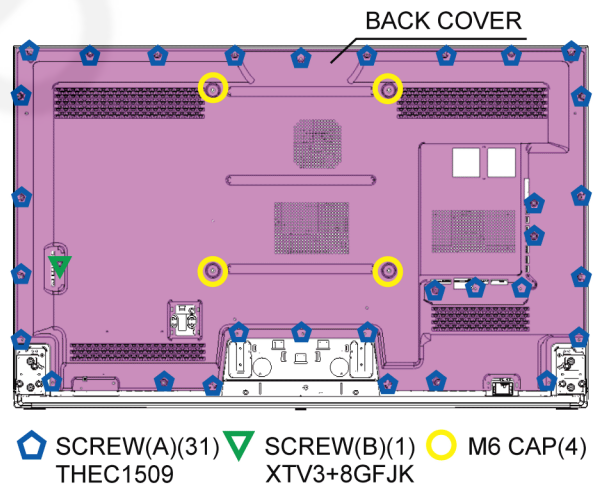
8.2.5. BT Cover

1. Remove the 1 screw.
2. Remove the BT Cover.



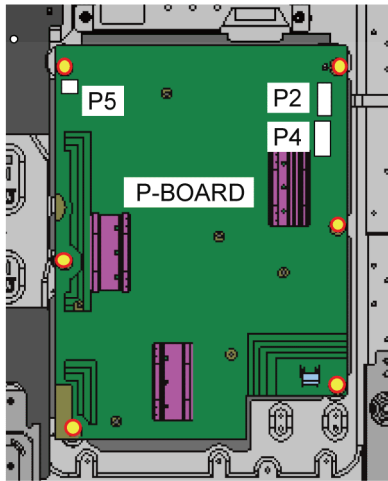
8.2.6. Back Cover

1. Remove the 31 screws (A).
2. Remove the 1 screw (B).
3. Remove the 4 M6 Caps.
4. Remove the Back Cover.



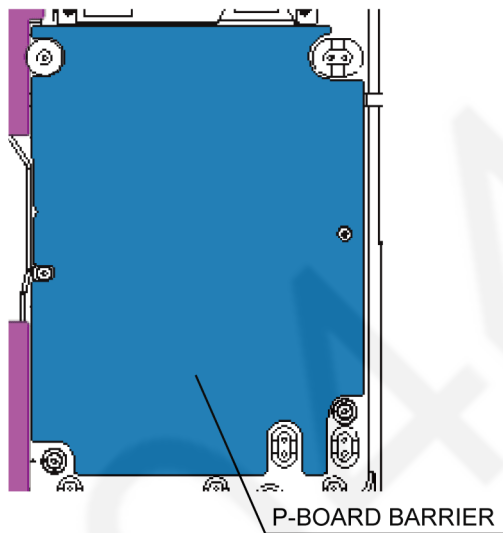
8.2.7. P-Board

1. Remove the 6 screws.
2. Disconnect the connectors (P2, P4 and P5).
3. Remove the P-Board.



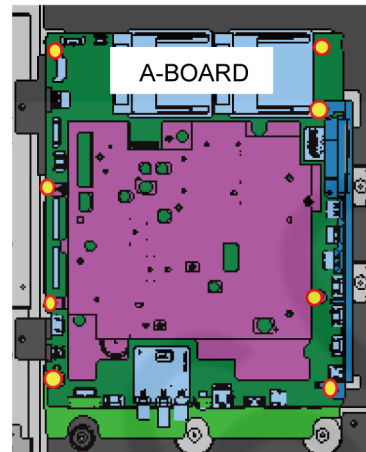
● SCREW(6)
THEJ036J

4. Remove the P-Board Barrier.



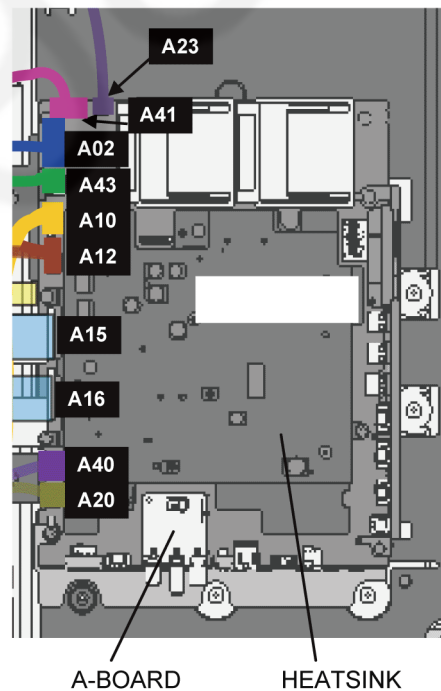
8.2.8. A-Board

1. Remove the 8 screws.



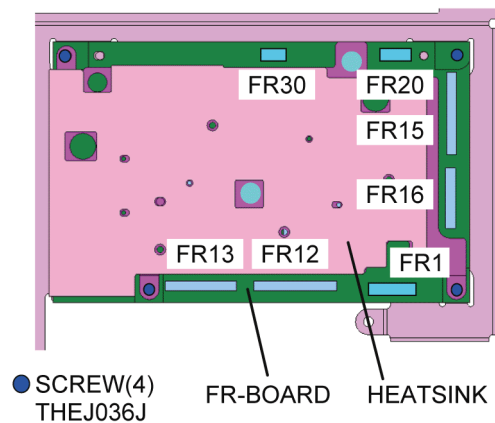
● SCREW(8)
THEJ036J

2. Disconnect the connectors (A02, A10, A12, A15, A16, A20, A23, A40, A41 and A43).
3. Remove the A-Board with the Heatsink.



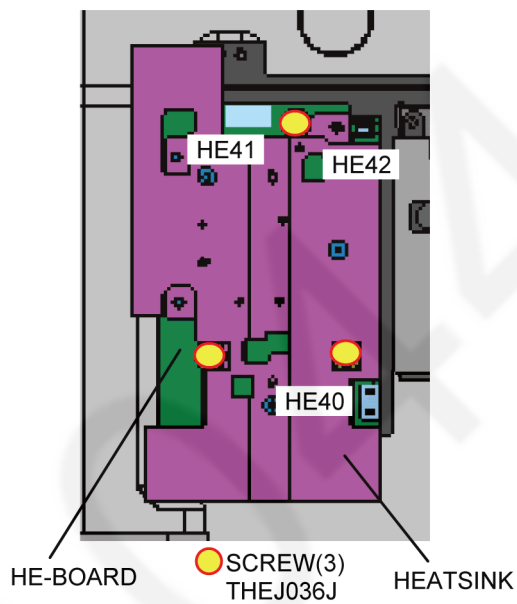
8.2.9. FR-Board

1. Remove the 4 screws.
2. Disconnect the connectors (FR1, FR12, FR13, FR15, FR16, FR20 and FR30).
3. Remove the FR-Board with the Heatsink.

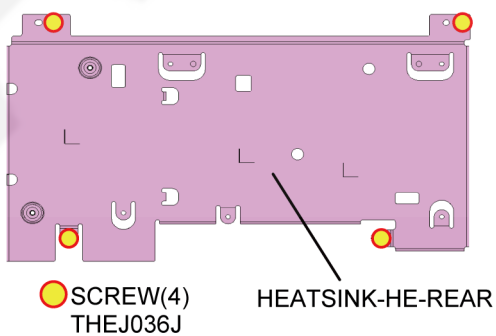


8.2.10. HE-Board

1. Remove the 3 screws.
2. Disconnect the connectors (HE40, HE41 and HE42).
3. Remove the HE-Board with the Heatsink.

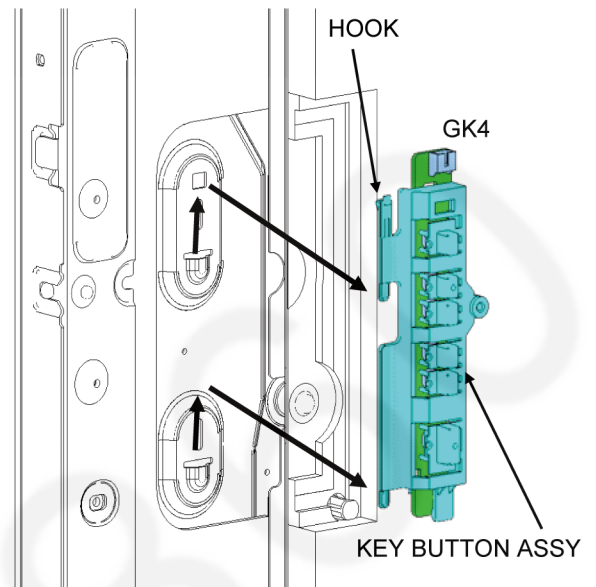


4. Remove the 4 screws.
5. Remove the Heatsink-HE-Rear.

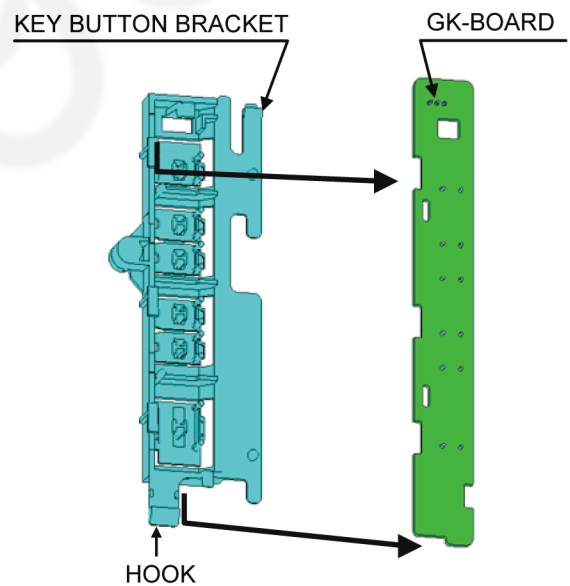


8.2.11. GK-Board

1. Disconnect the connector (GK4).
2. Remove the 1 hook.

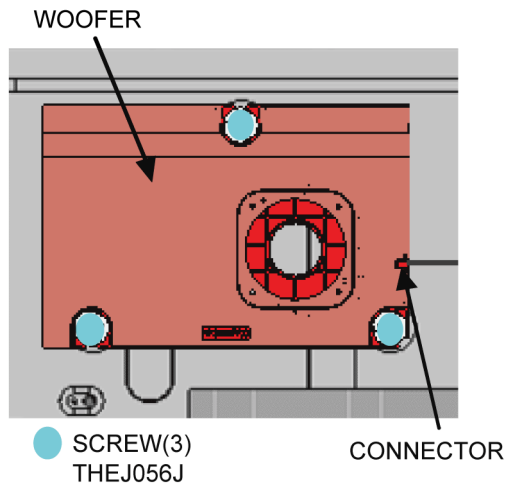


3. Remove the 1 hook.
4. Remove the GK-Board and the Key Button Bracket.



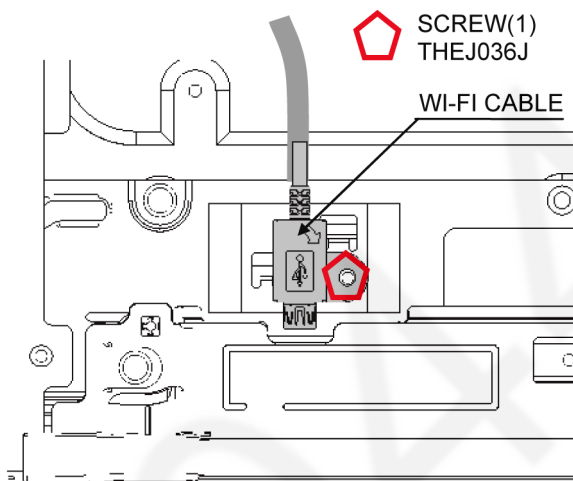
8.2.12. Woofer

1. Disconnect the connector.
2. Remove the 3 screws.
3. Remove the Woofer.



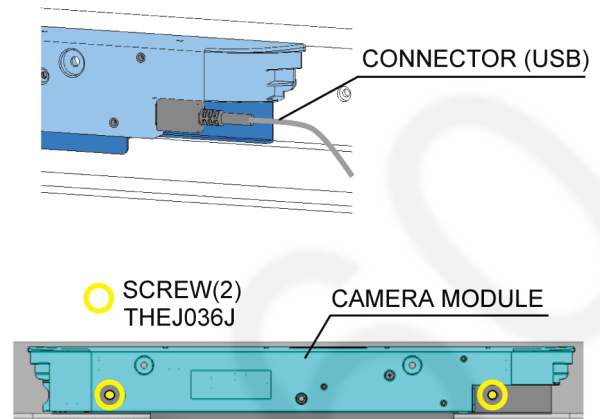
8.2.13. Wi-Fi Cable

1. Remove the 1 screw.
2. Remove the Wi-Fi Cable.



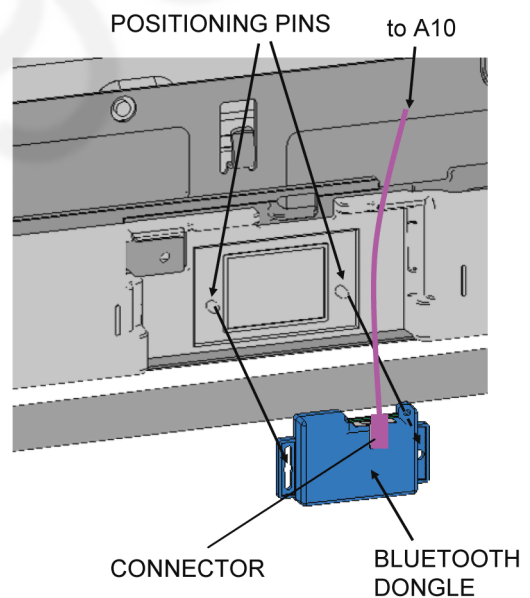
8.2.14. Camera Module

1. Disconnect the connector (USB).
2. Remove the 2 screws.
3. Remove the Camera Module.



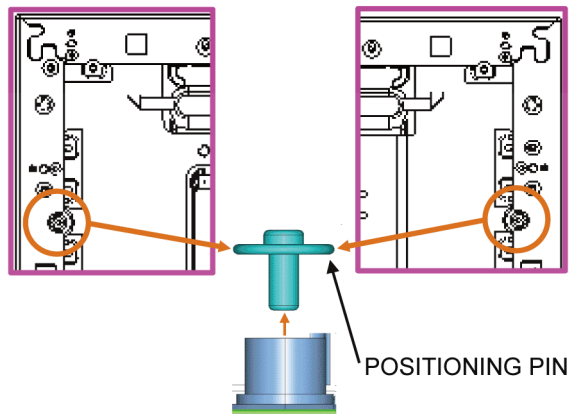
8.2.15. Bluetooth Dongle

1. Disconnect the connector.
2. Remove the Bluetooth Dongle.



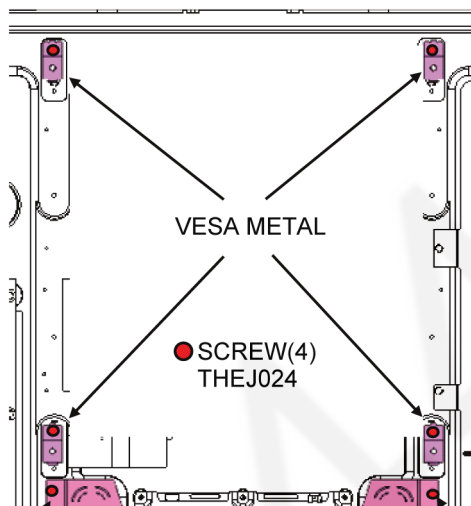
8.2.16. Positioning Pins

1. Remove the 2 Positioning Pins.



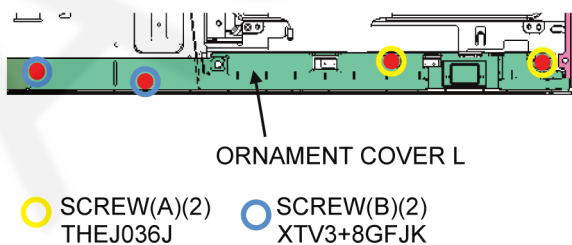
8.2.17. VESA Metals

1. Remove the 4 screws.
2. Remove the 4 VESA Metals.



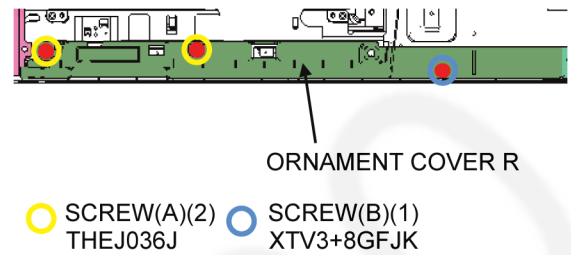
8.2.18. Ornament Cover L

1. Remove the 2 screws (A).
2. Remove the 2 screws (B).
3. Remove the Ornament Cover L.



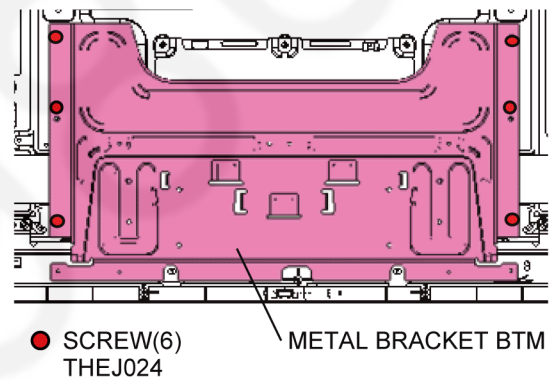
8.2.19. Ornament Cover R

1. Remove the 2 screws (A).
2. Remove the 1 screw (B).
3. Remove the Ornament Cover R.



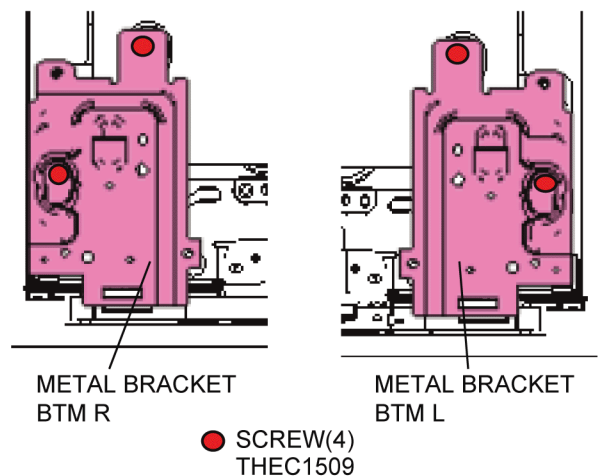
8.2.20. Metal Bracket BTM

1. Remove the 6 screws.
2. Remove the Metal Bracket BTM.



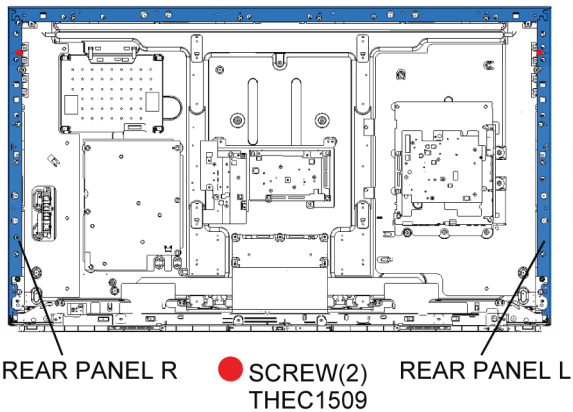
8.2.21. Metal Bracket BTM L/R

1. Remove the 4 screws.
2. Remove the Metal Bracket BTM L/R.



8.2.22. Rear Panel L/R

1. Remove the 2 screws.
2. Remove the Rear Panel L/R.



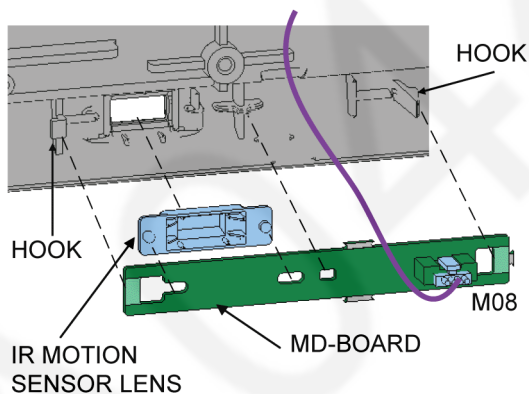
8.2.23. Rear Panel T

1. Remove the 2 screws.
2. Remove the Rear Panel T.



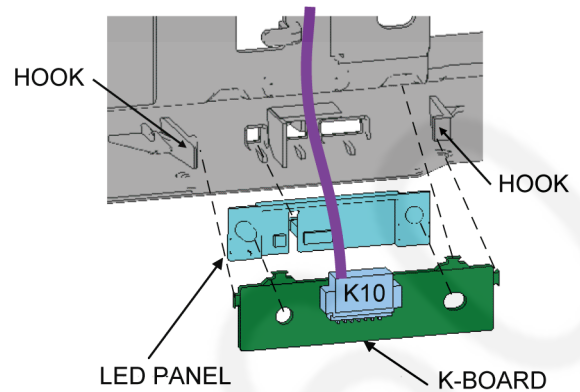
8.2.24. MD-Board

1. Disconnect the connector (M08).
2. Remove the 2 hooks.
3. Remove the MD-Board.



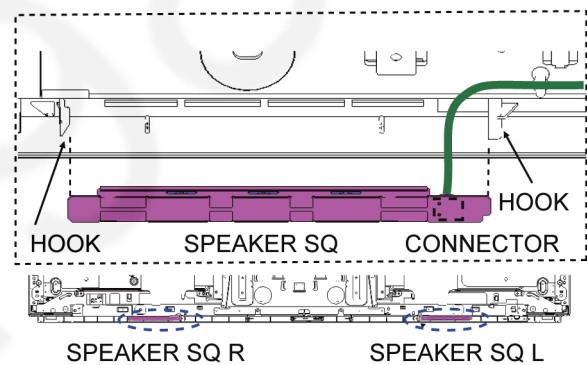
8.2.25. K-Board

1. Remove the 2 hooks.
2. Disconnect the connector (K10).
3. Remove the K-Board.



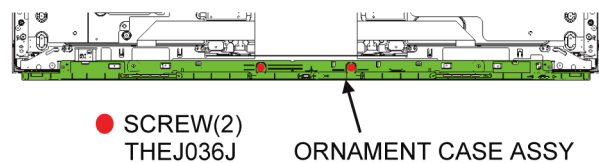
8.2.26. Speaker SQ L/R

1. Remove the 4 hooks.
2. Disconnect the 2 connectors.
3. Remove the Speaker SQ L/R.



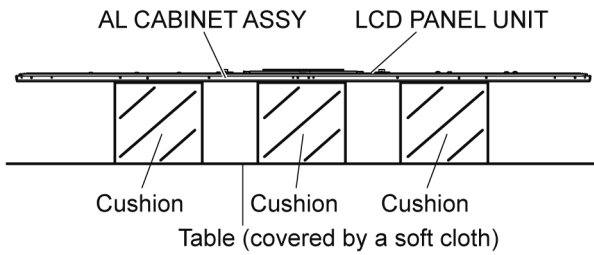
8.2.27. Ornament Case Assy

1. Remove the 2 screws.
2. Remove the Ornament Case Assy.

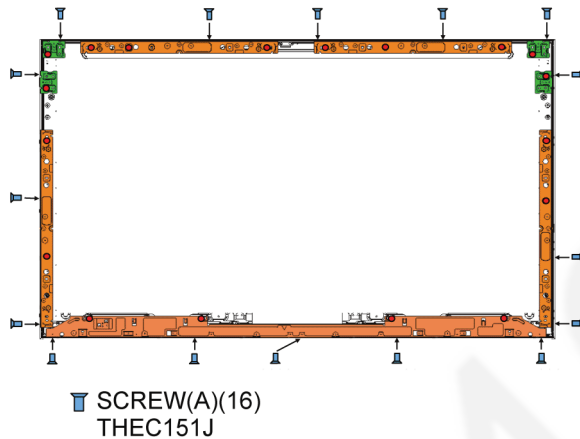


8.2.28. Metal Frames, Support Metal Frames, Metal Rear Panel BTM and AL Cabinet Assy

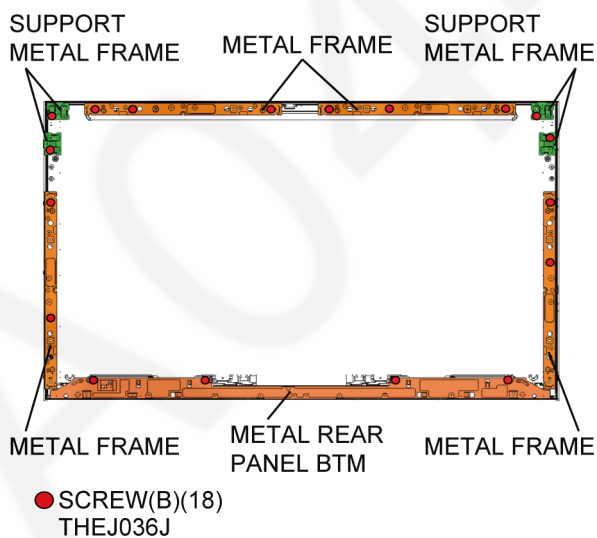
1. Place the Cabinet assy on a flat surface of a table (covered by a soft cloth) and a cushion.



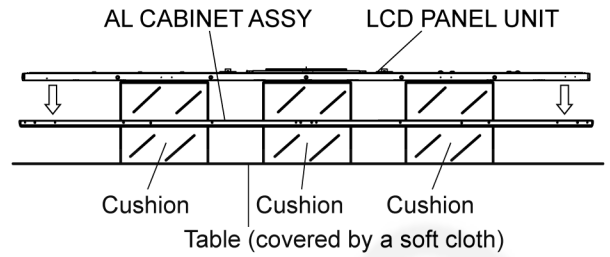
2. Remove the 16 screws (A).



3. Remove the 18 screws (B).
4. Remove the 4 Metal Frames, the 4 Support Metal Frames and the Metal Rear Panel BTM.

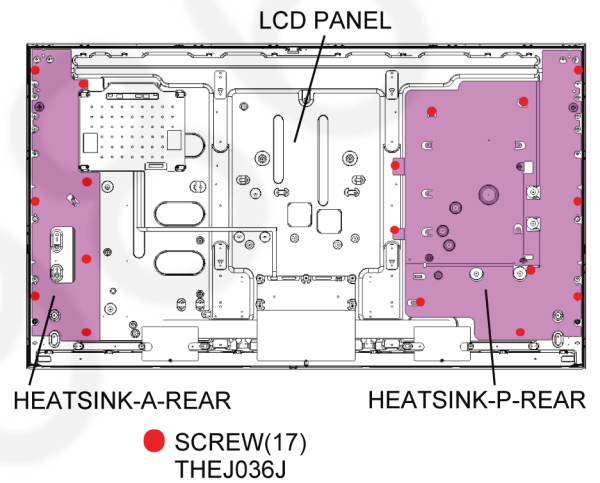


5. Remove the AL Cabinet Assy.



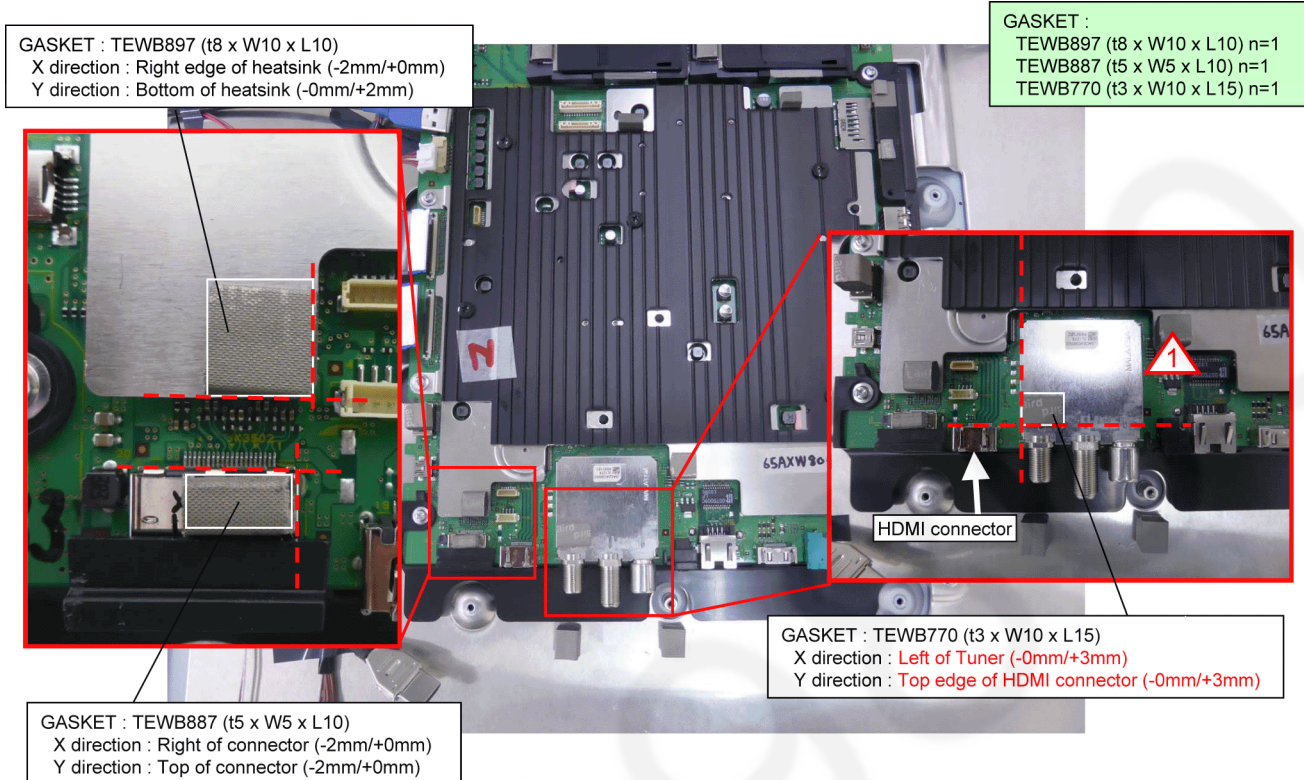
8.2.29. LCD Panel, Heatsink-A-Rear and Heatsink-P-Rear

1. Remove the 17 screws.
2. Remove the LCD Panel, the Heatsink-A-Rear and the Heatsink-P-Rear.

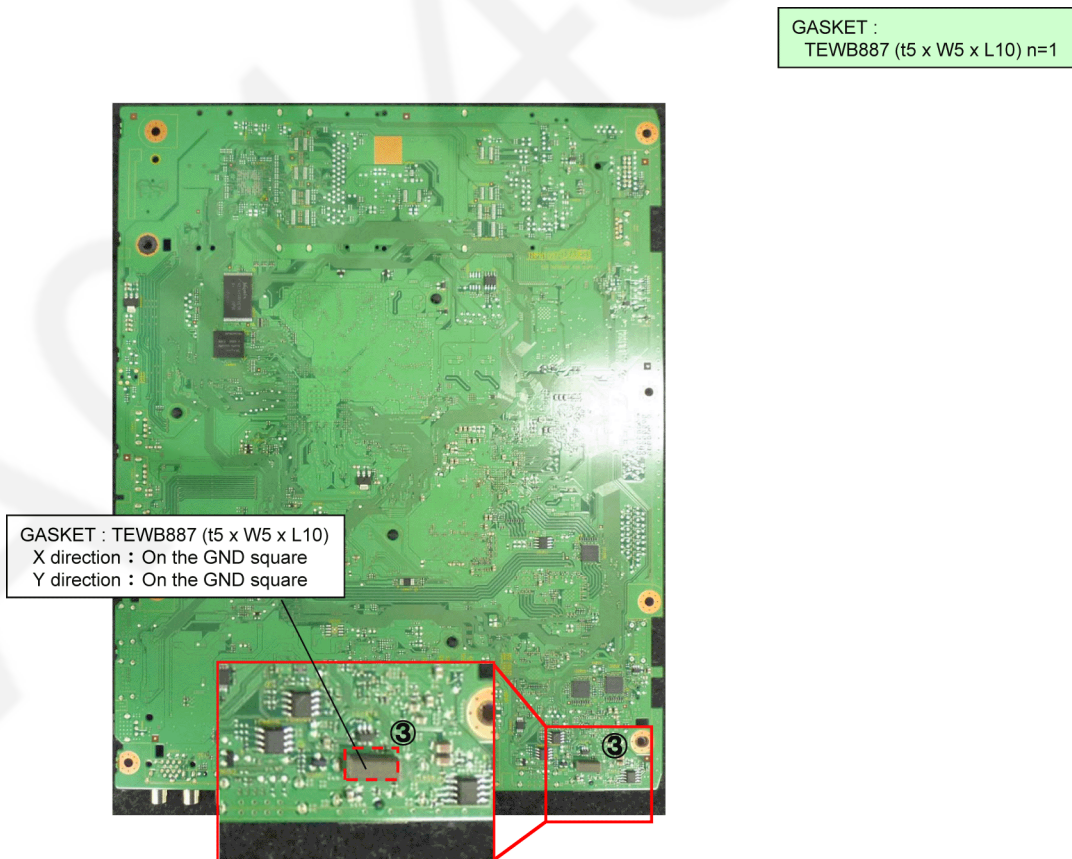


8.3. Specification of EMI countermeasures

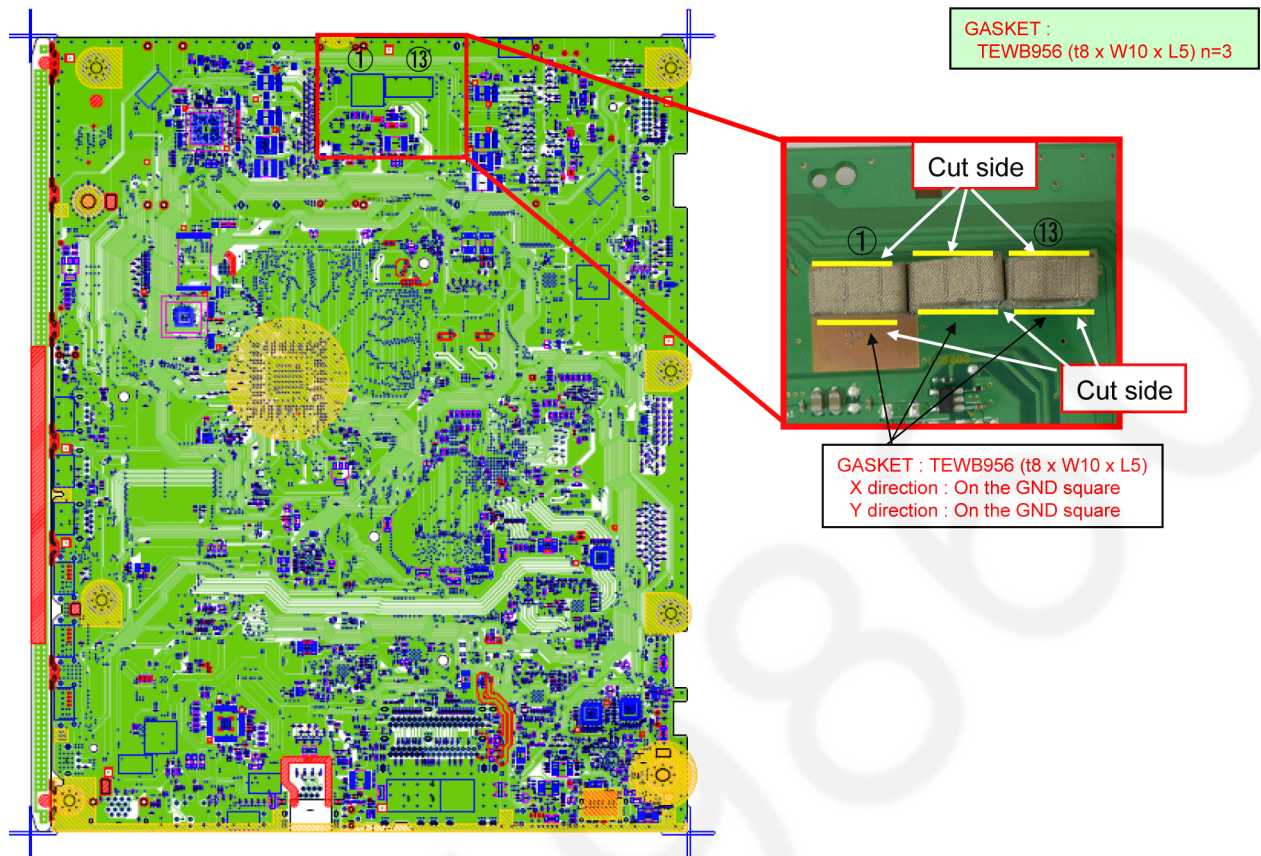
8.3.1. Specification of sticking the gasket (Front side of A-board 1)



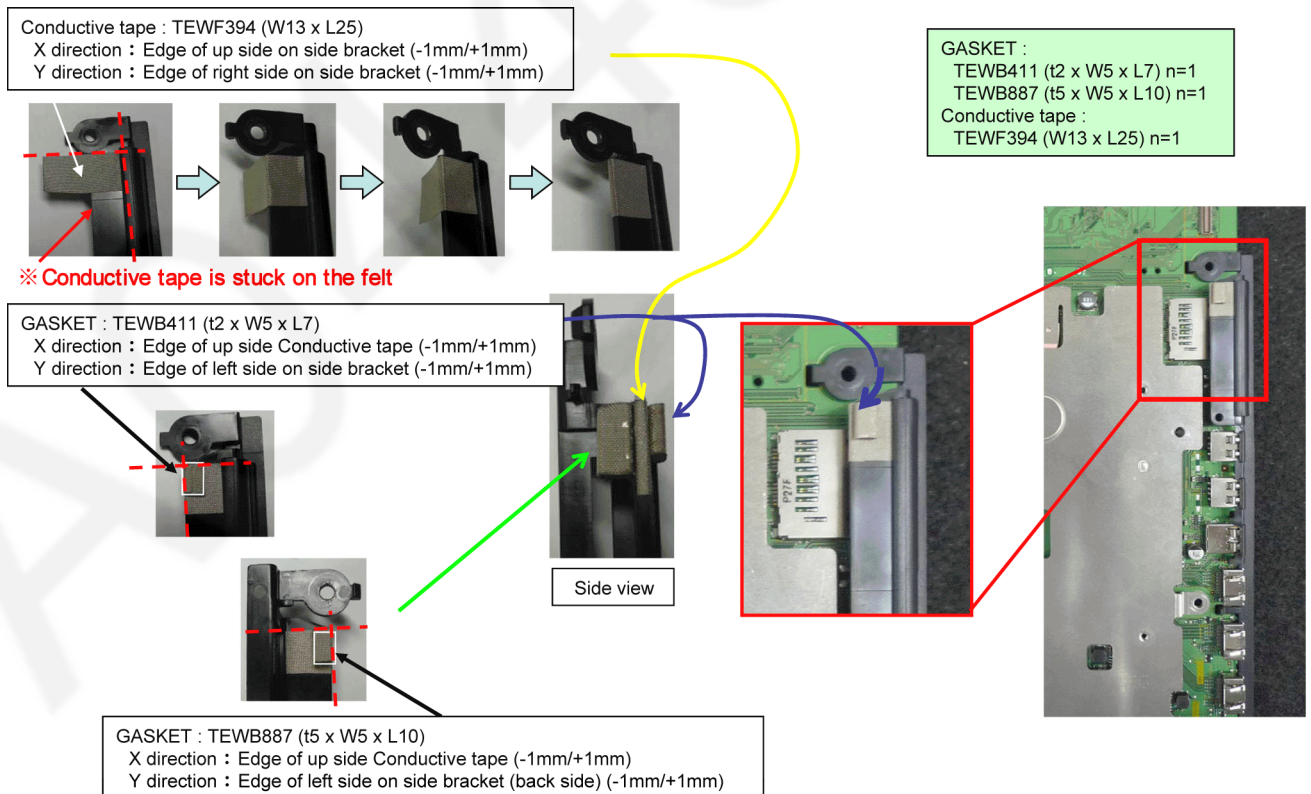
8.3.2. Specification of sticking the gasket (Back side of A-board 1)



8.3.3. Specification of sticking the gasket (Back side of A-board 2)

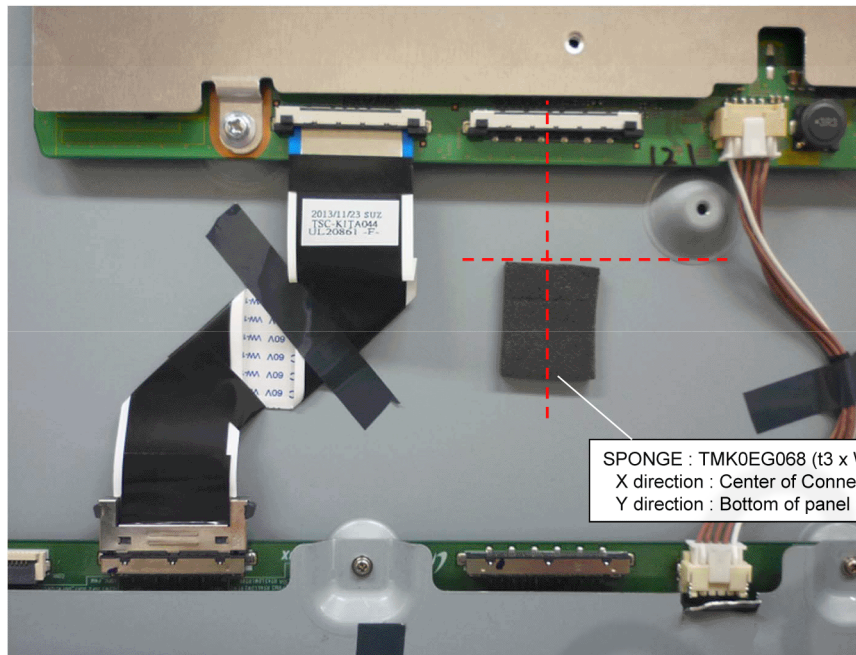


8.3.4. Specification of sticking the gasket and the tape



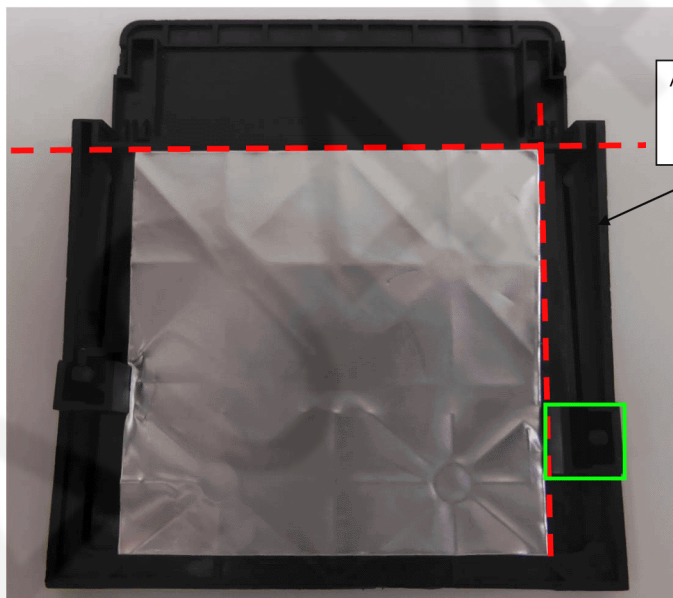
8.3.5. Specification of sticking the sponge

SPONGE:
TMK0EG068 (t3 x W20 x L40) n=1



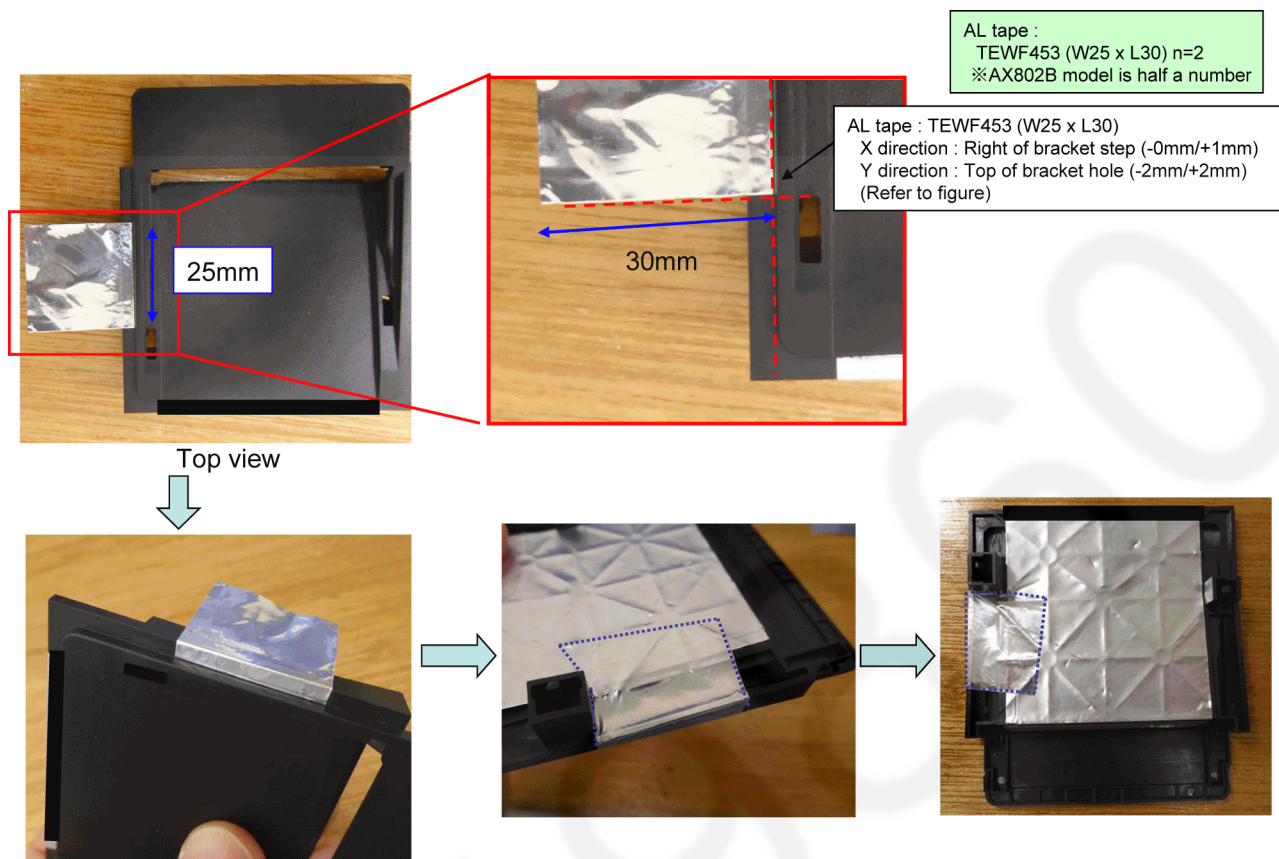
8.3.6. Specification of sticking the AL tape (CI SLOT)

AL tape :
TEWF472 (W50 x L40) n=2
※AX802B model is half a number

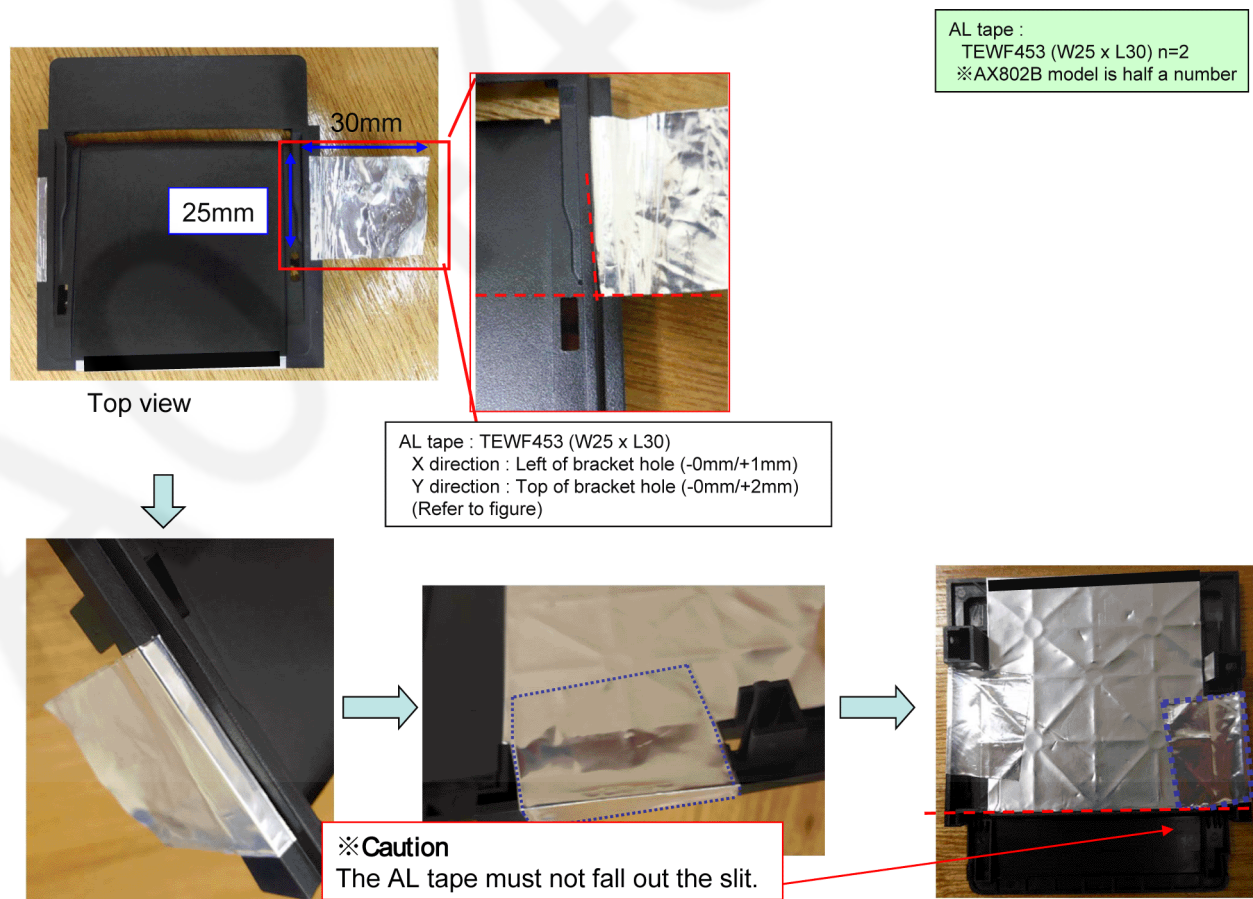


Bracket boss

8.3.7. Specification of sticking the AL tape (CI SLOT)

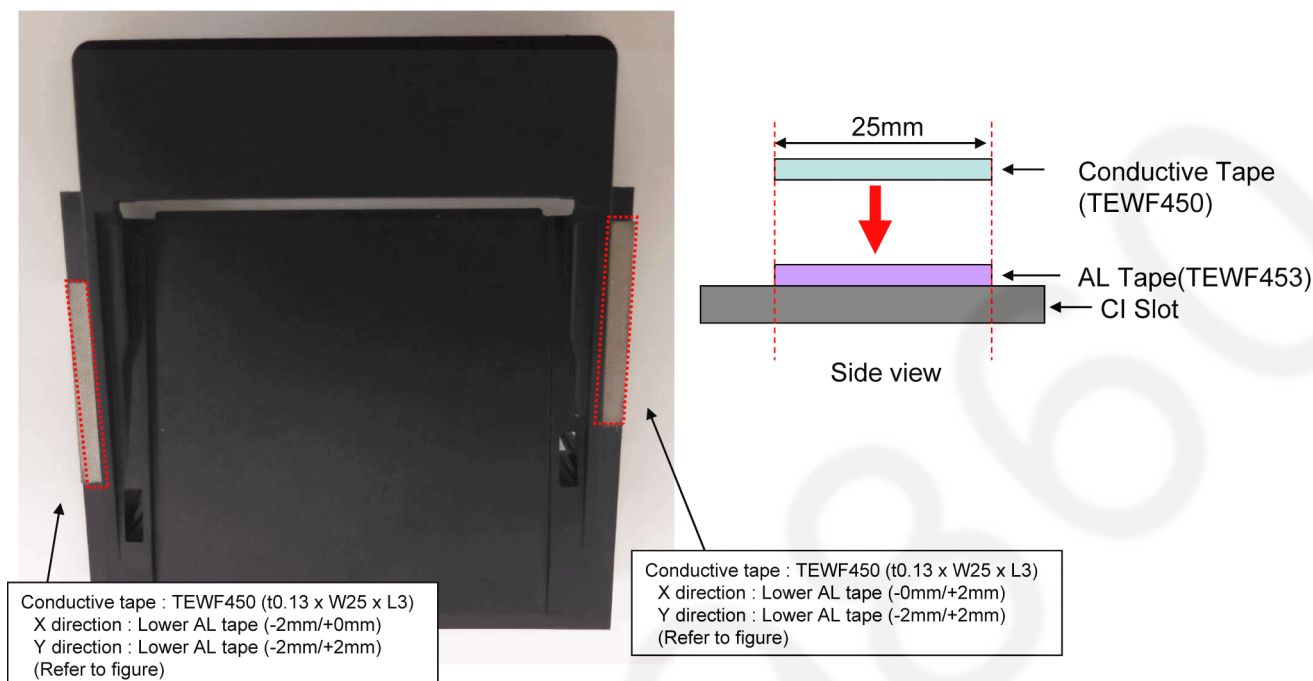


8.3.8. Specification of sticking the AL tape (CI SLOT)



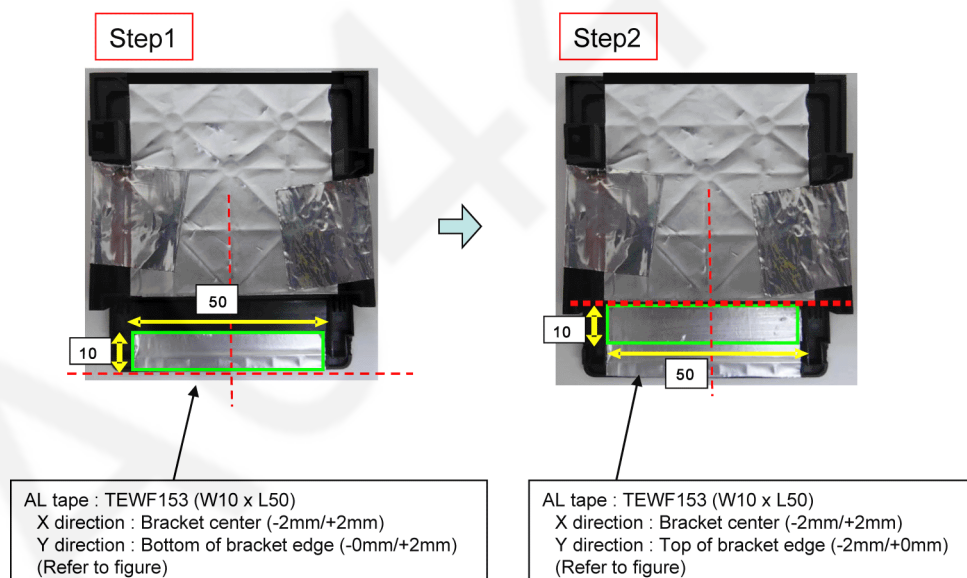
8.3.9. Specification of sticking the Conductive tape (CI SLOT)

Conductive tape :
TEWF450 (W25 x L3) n=4
※AX802B model is half a number

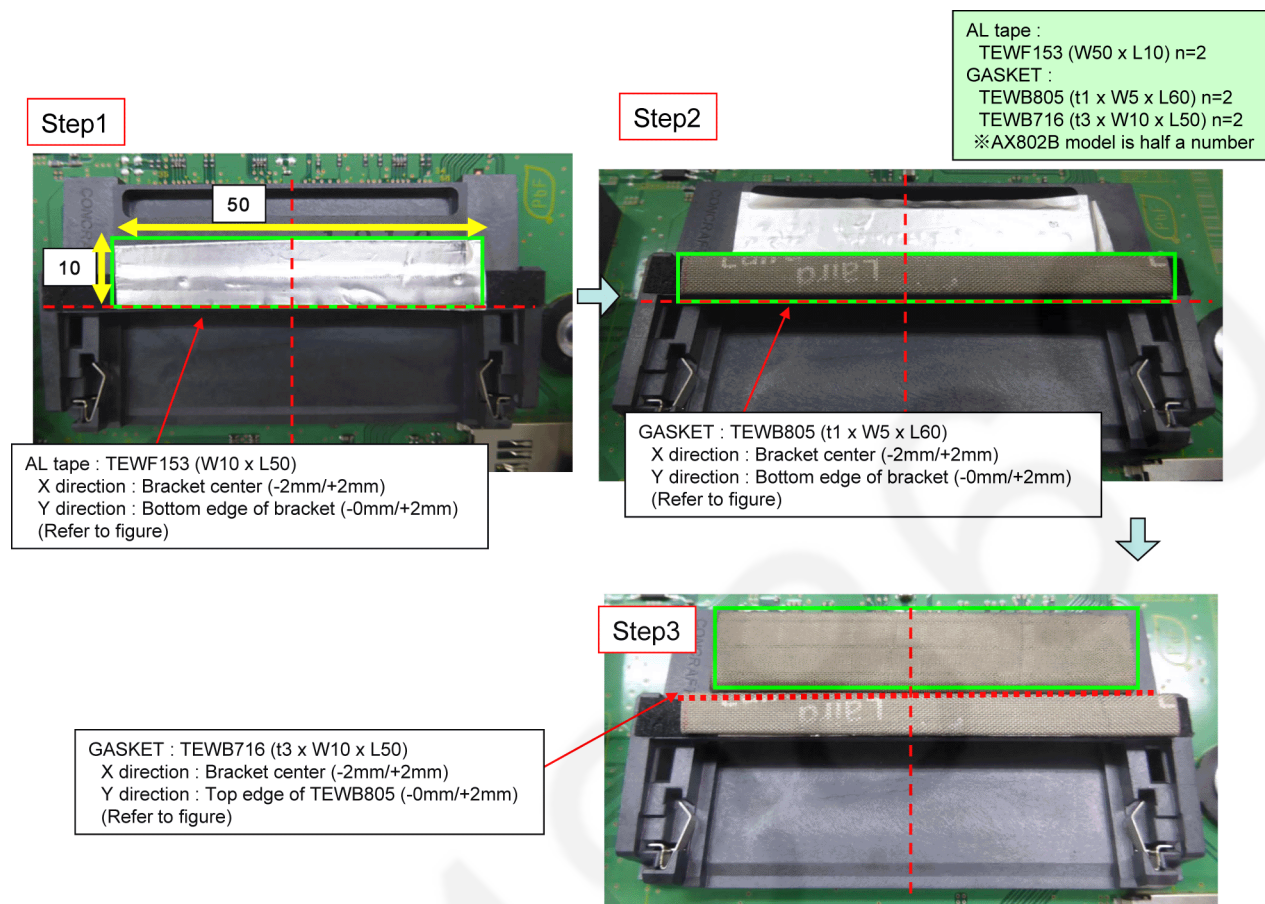


8.3.10. Specification of sticking the AL tape (CI SLOT)

AL tape :
TEWF153 (W10 x L50) n=4
※AX802B model is half a number



8.3.11. Specification of sticking the AL tape & Gasket (CI SLOT)

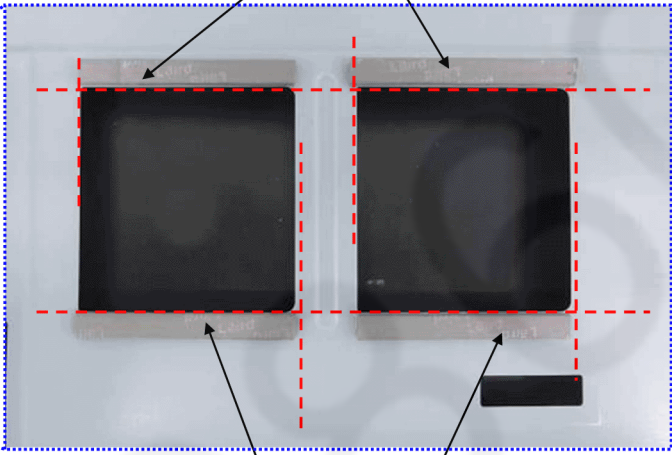
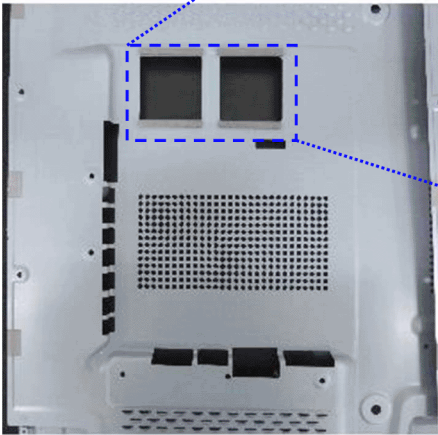


8.3.12. Specification of sticking Gasket (CI SLOT/Back cover side)

GASKET :
TEWB673 (t2 x W5 x L60) n=4
※AX802B model is half a number

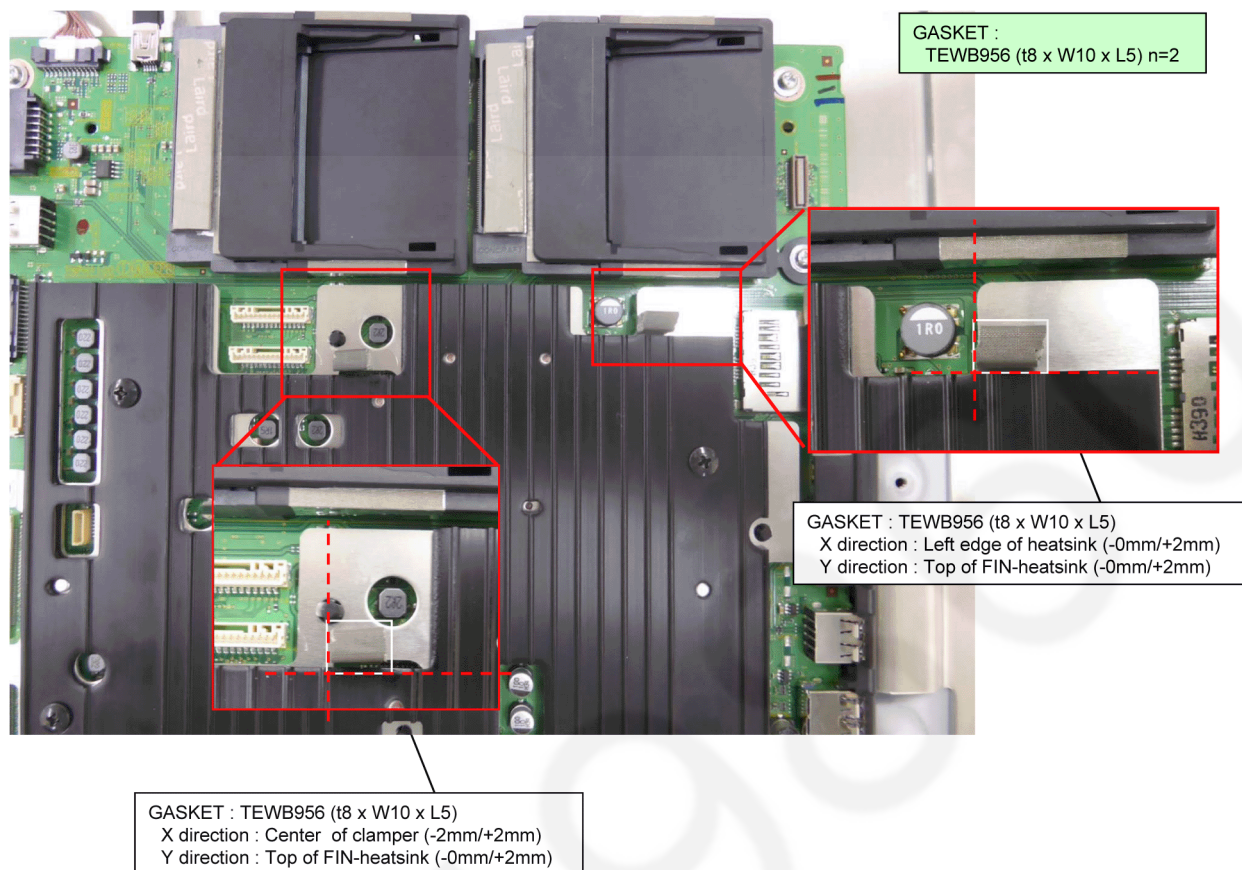
GASKET : TEWB673 (t2 x W5 x L60)
X direction : Left side of Back cover hole (-5mm/+5mm)
Y direction : Top edge of Back cover hole (-1mm/+0mm)
(Refer to figure)

Back cover inner side

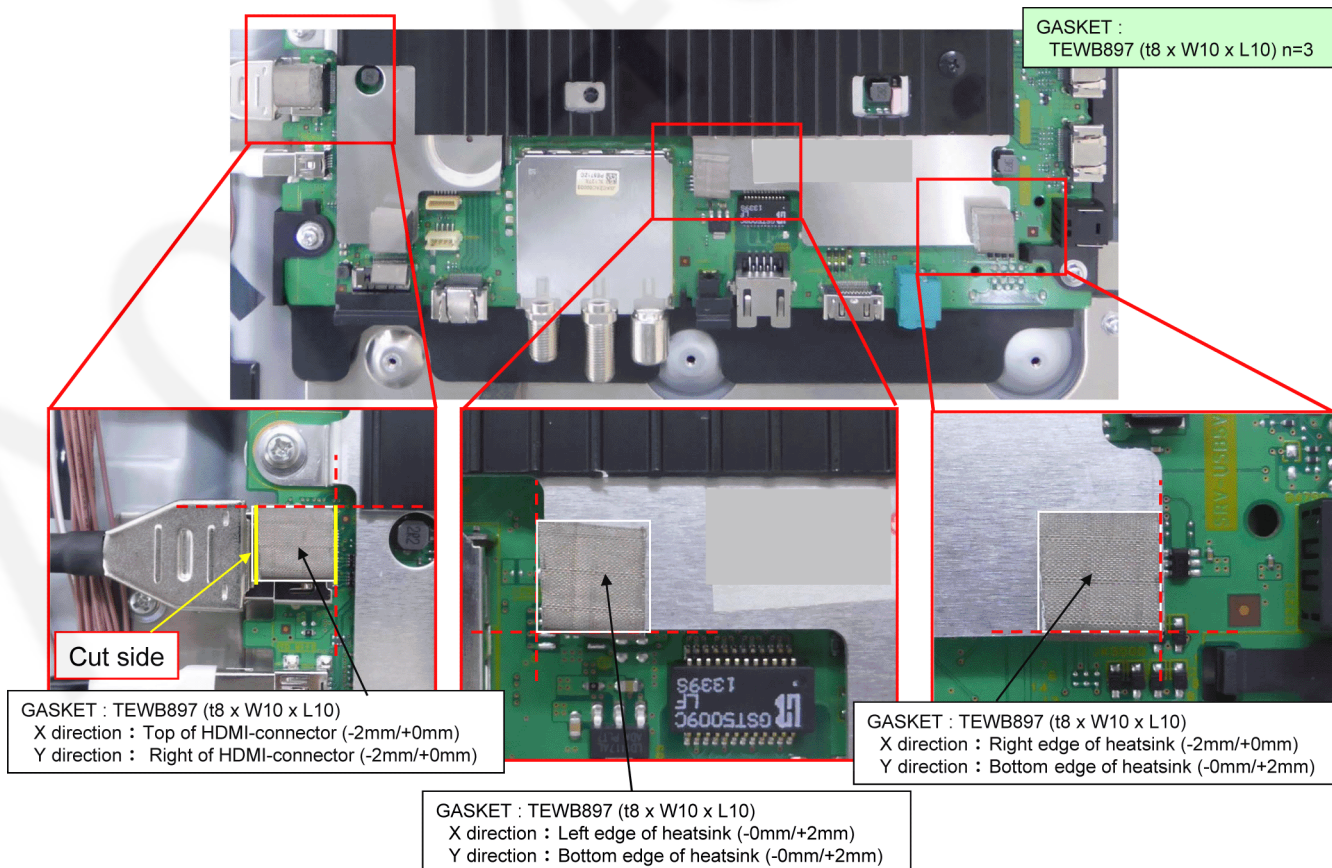


GASKET : TEWB673 (t2 x W5 x L60)
X direction : Right side of Back cover hole (-5mm/+5mm)
Y direction : Bottom edge of Back cover hole (-1mm/+0mm)
(Refer to figure)

8.3.13. Specification of sticking the gasket (Front side of A-board 3)

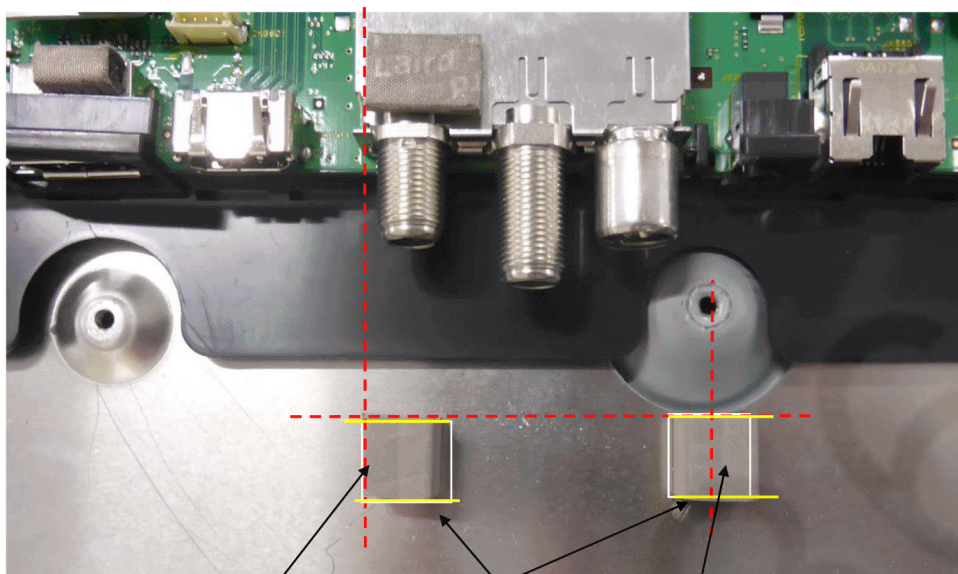


8.3.14. Specification of sticking the gasket (Front side of A-board 4)



8.3.15. Specification of sticking the gasket (near A-board)

GASKET :
TEWB897 (t8 x W10 x L10) n=2



Cut side

GASKET : TEWB897 (t8 x W10 x L10)
X direction : Left of TUNER (-5mm/+5mm)
Y direction : Bottom edge of Boss cutout (-5mm/+3mm)

GASKET : TEWB897 (t8 x W10 x L10)
X direction : Center of Screw hole (-3mm/+3mm)
Y direction : Bottom edge of Boss cutout (-5mm/+0mm)

8.3.16. Specification of sticking the gasket (Back side of A-board 3)

GASKET :
TEWB956 (t8 x W10 x L5) n=7
TEWB897 (t8 x W10 x L10) n=2
TEWB625 (t8 x W10 x L20) n=1

GASKET : TEWB956 (t8 x W10 x L5)
X direction : Left edge of GND square (+2mm/-0mm)
Y direction : On the GND square

GASKET : TEWB956 (t8 x W10 x L5)
X direction : Left edge of GND square (+2mm/-0mm)
Y direction : On the GND square

GASKET : TEWB956 (t8 x W10 x L5)
X direction : Left edge of GND square (+2mm/-0mm)
Y direction : On the GND square

GASKET : TEWB956 (t8 x W10 x L5)
X direction : Left edge of GND square (+2mm/-0mm)
Y direction : On the GND square

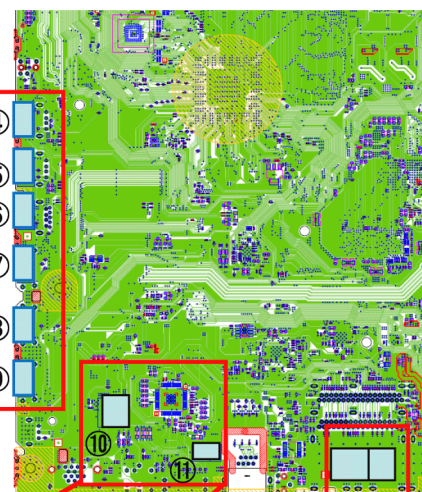
GASKET : TEWB956 (t8 x W10 x L5)
X direction : Left edge of GND square (+2mm/-0mm)
Y direction : On the GND square

GASKET : TEWB956 (t8 x W10 x L5)
X direction : Left edge of GND square (+2mm/-0mm)
Y direction : On the GND square

GASKET : TEWB897 (t8 x W10 x L10)
X direction : On the GND square
Y direction : On the GND square

GASKET : TEWB956 (t8 x W10 x L5)
X direction : On the GND square
Y direction : On the GND square

Cut side

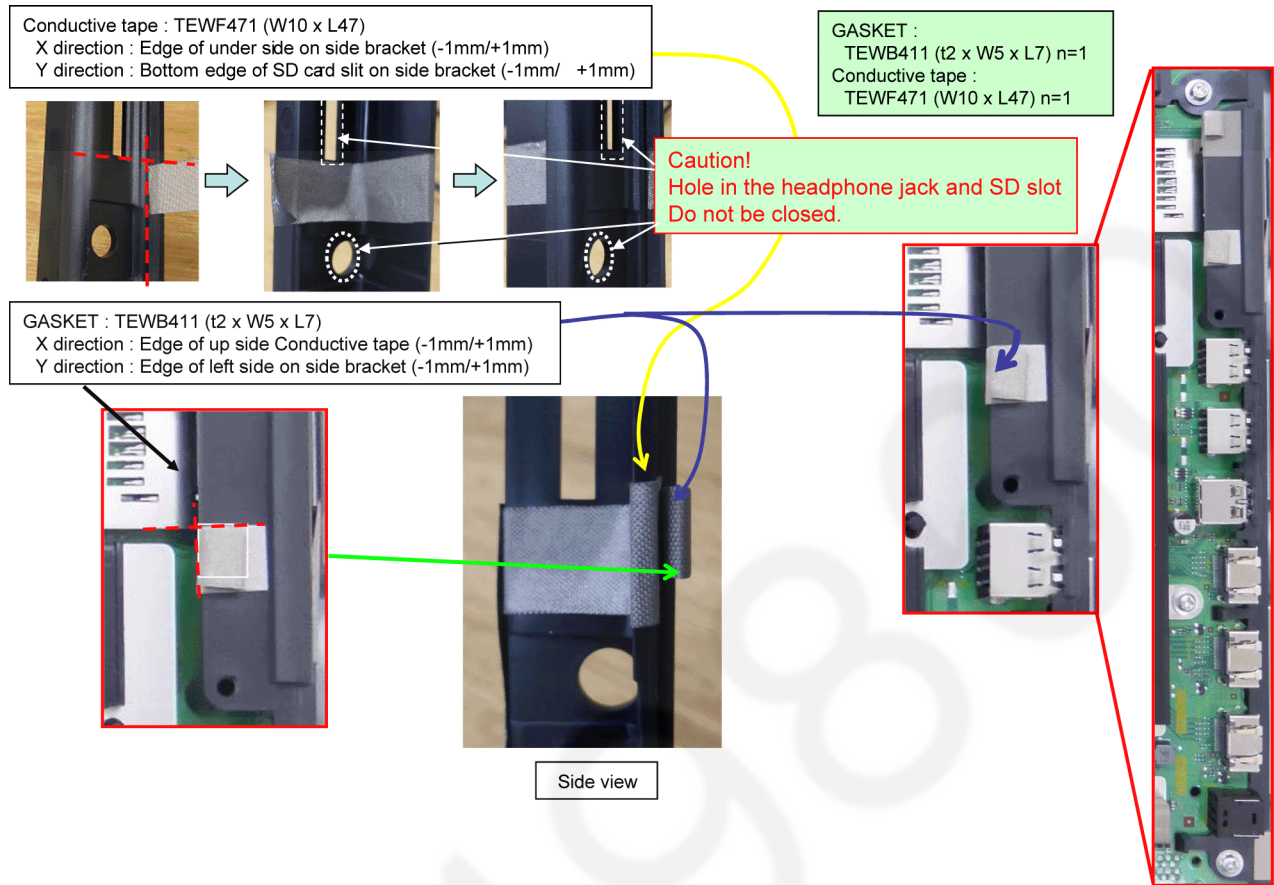


Cut side

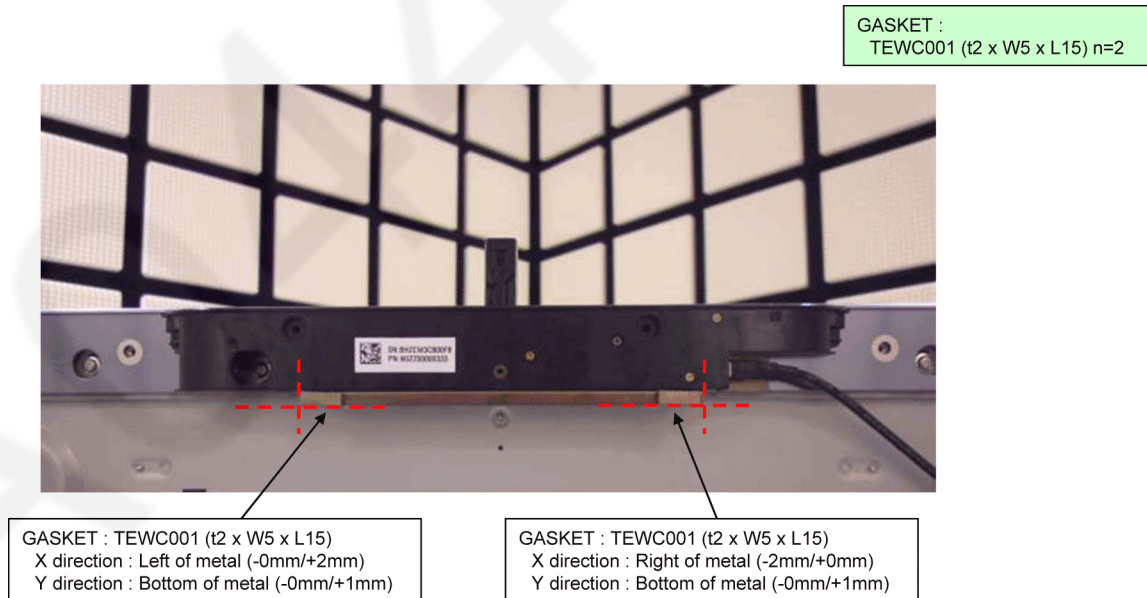
GASKET : TEWB897 (t8 x W10 x L10)
X direction : On the GND square
Y direction : On the GND square

GASKET : TEWB625 (t8 x W10 x L20)
X direction : On the GND square
Y direction : On the GND square

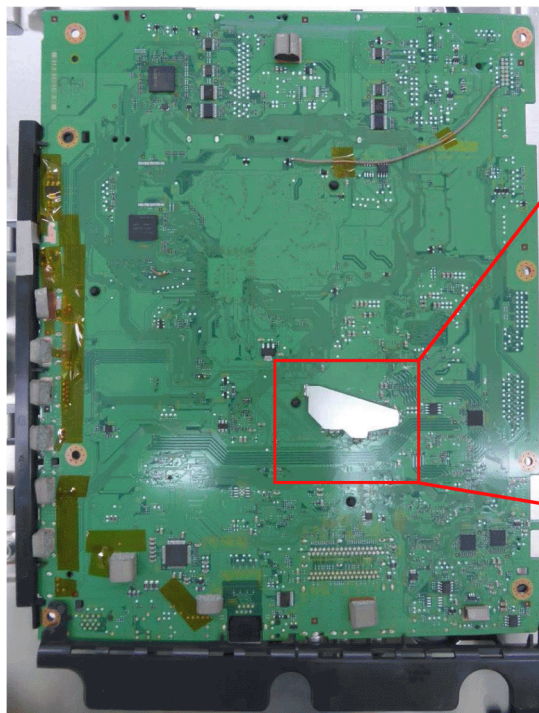
8.3.17. Specification of sticking the gasket and the tape



8.3.18. Specification of sticking the gasket

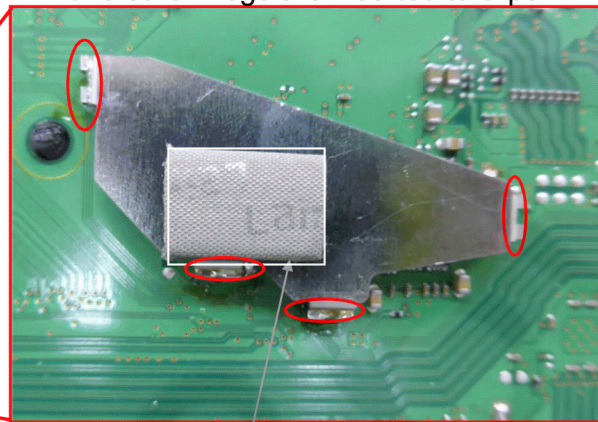


8.3.19. Specification of fixing the shield-case



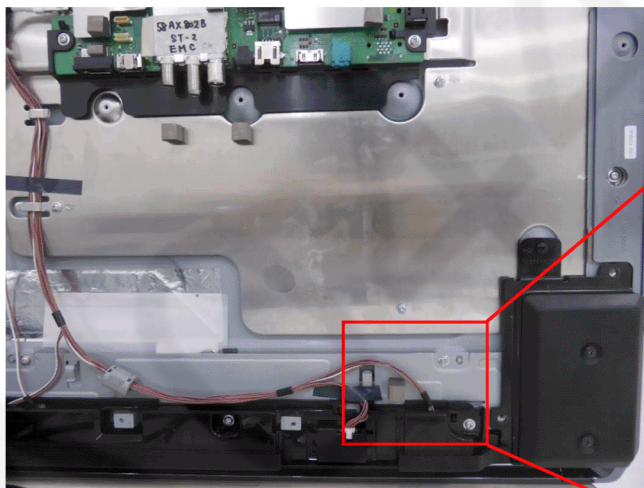
Shield-case :
TUC5ZC50301 n=1
GASKET :
TEWB770 (t3 x W10 x L15) n=1

There are 4 shield-clips.
Make sure 4 legs are inserted to clips.

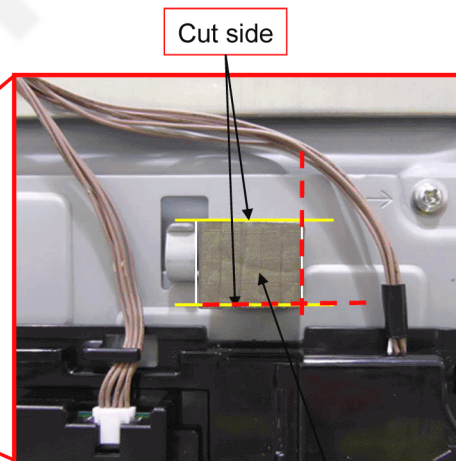


GASKET : TEWB770 (t3 x W10 x L15)
That you have placed on the shield case
(Refer to figure)

8.3.20. Specification of sticking the gasket (near Bluetooth)



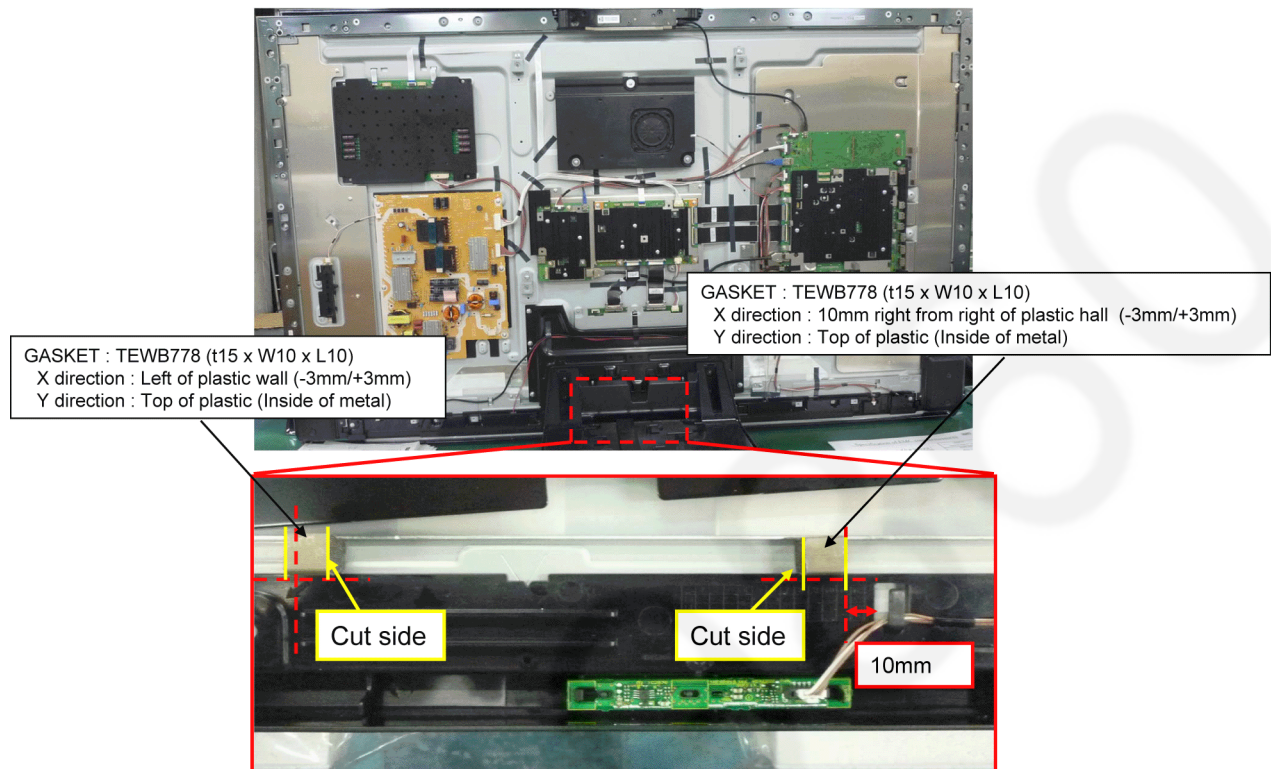
GASKET :
TEWB644 (t18 x W18 x L15) n=1



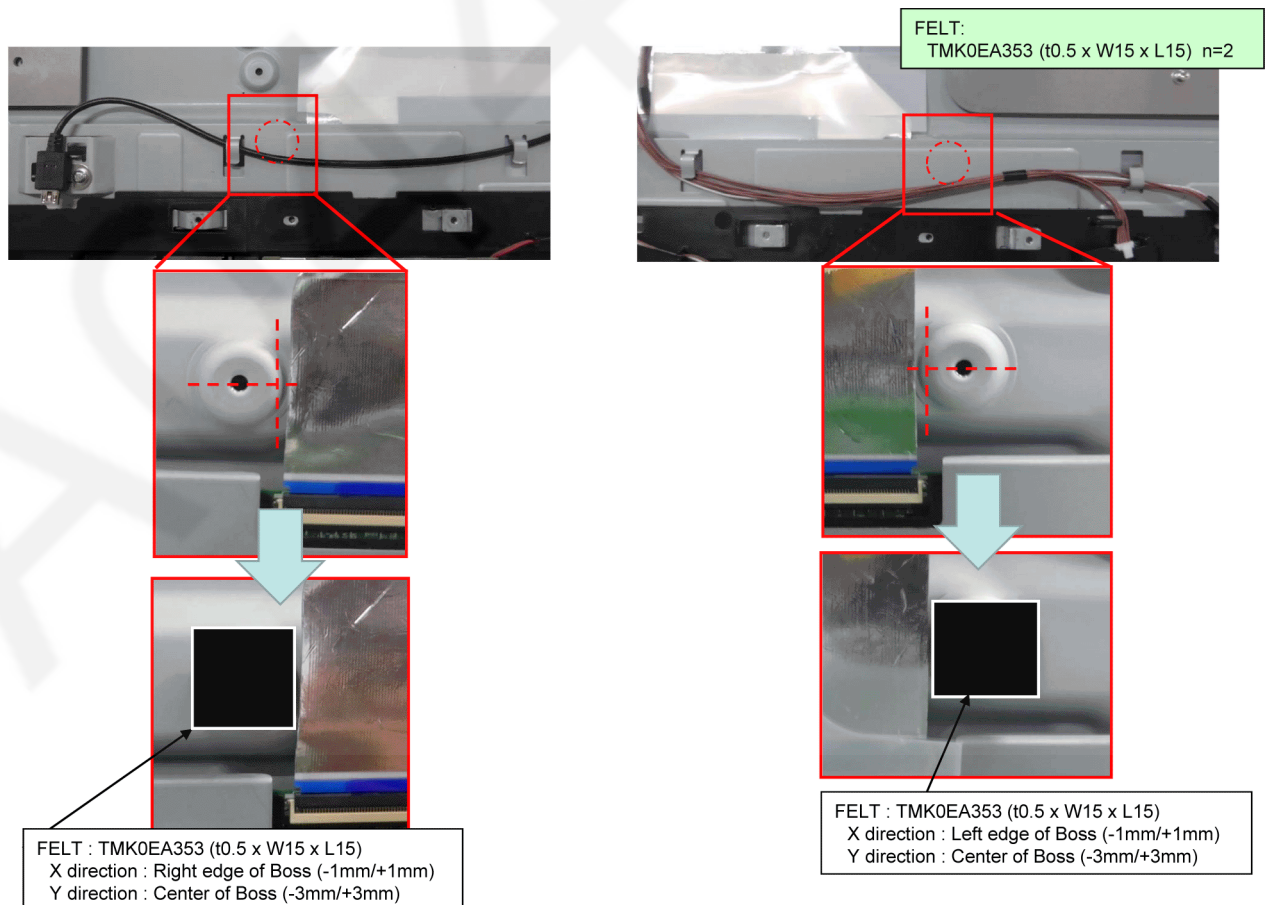
GASKET : TEWB644 (t18 x W18 x L15)
X direction : Step line of metal (-2mm/+0mm)
Y direction : Step line of metal (-0mm/+2mm)

8.3.21. Specification of sticking the gasket

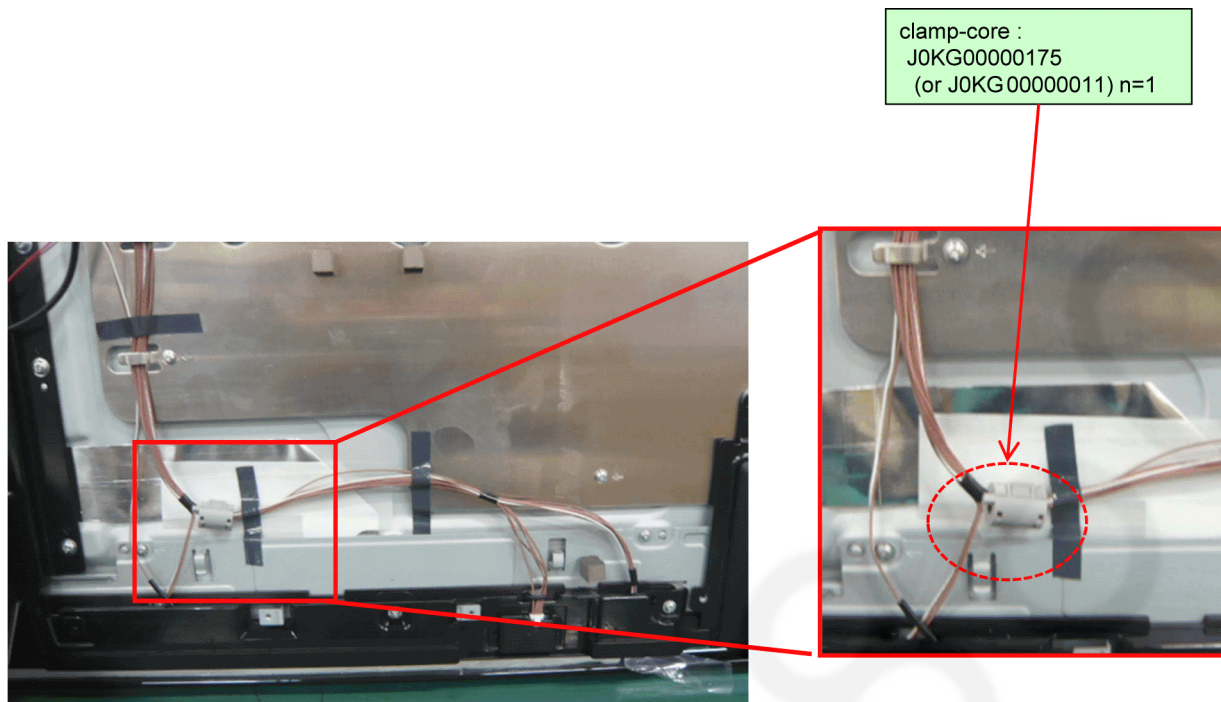
GASKET :
TEWB778 (t15 x W10 x L10) n=2



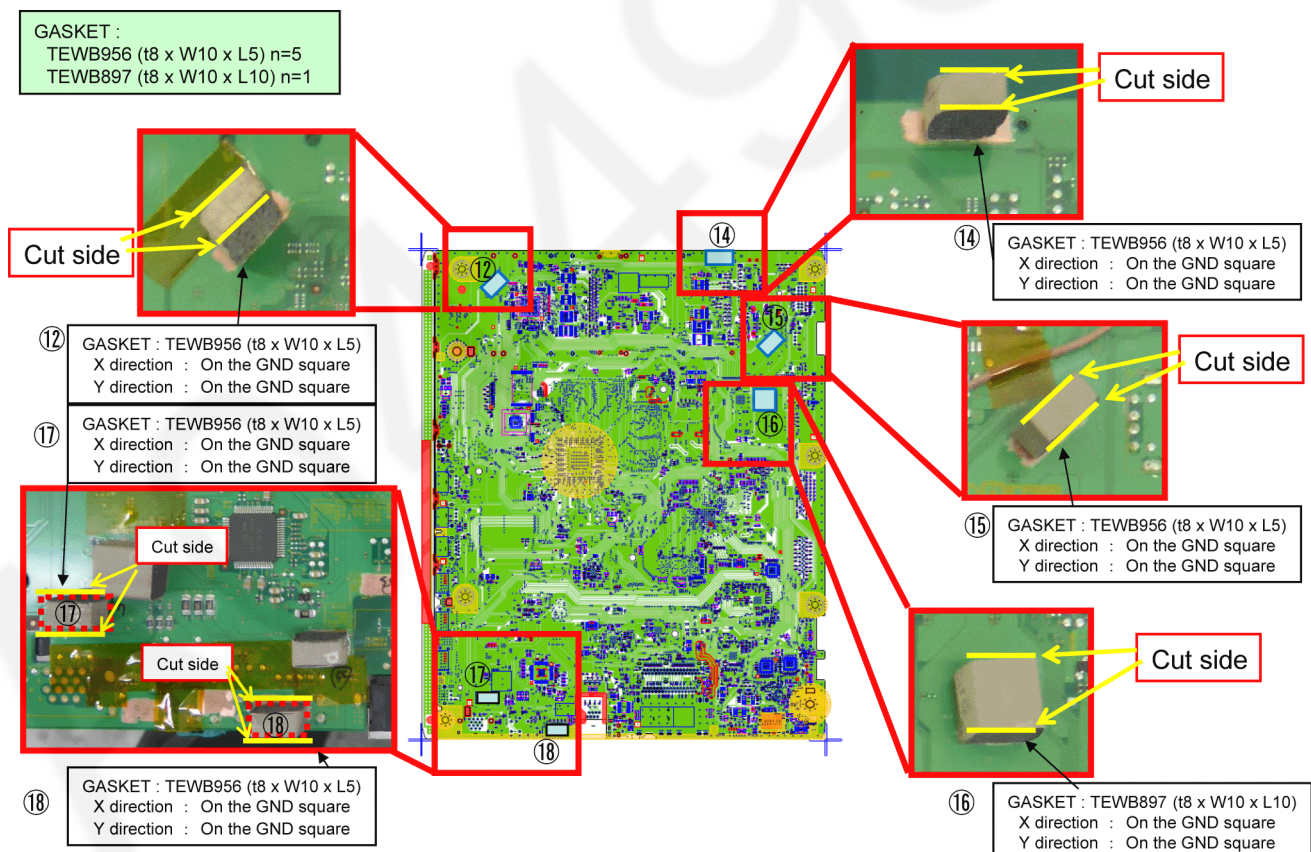
8.3.22. Specification of sticking the FELT (Source-PCB TOP Cover)



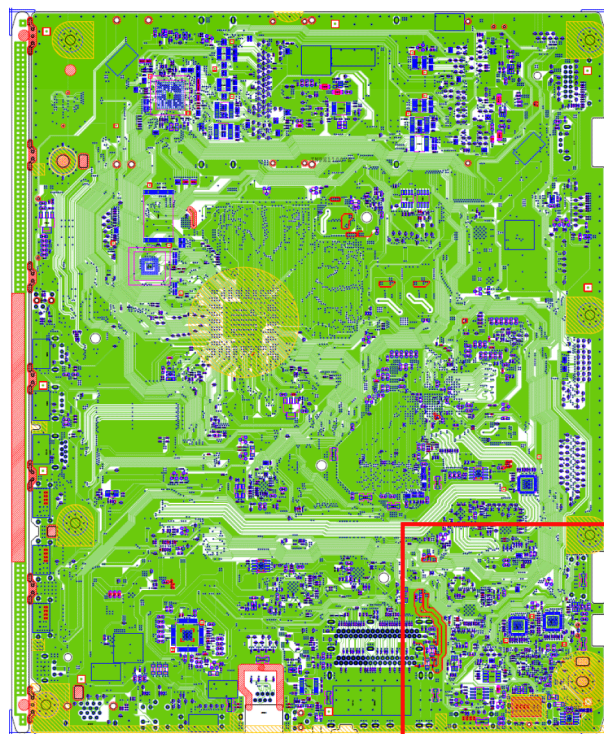
8.3.23. Specification of attaching the clamp-core



8.3.24. Specification of sticking the gasket (Back side of A-board 4)

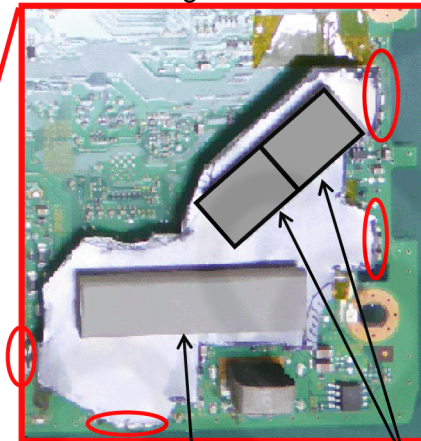


8.3.25. Specification of fixing the shield-case



Shield-case :
TUC5ZC50311 n=1
GASKET :
TEWB770 (t3 x W10 x L15) n=2
TEWB717 (t3 x W10 x L40) n=1

There are 4 shield-clips.
Make sure 4 legs are inserted to clips.



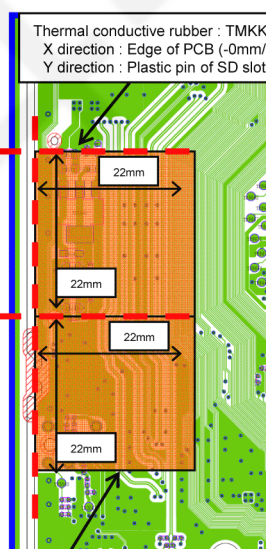
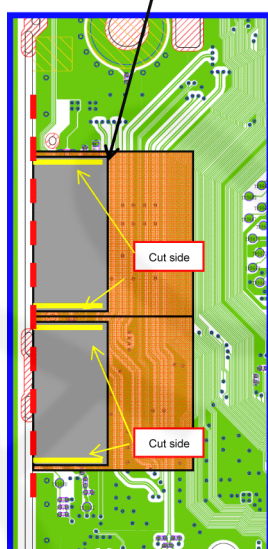
GASKET : TEWB770 (t3 x W10 x L15)
That you have placed on the shield case
(Refer to figure)

GASKET : TEWB717 (t3 x W10 x L40)
That you have placed on the shield case
(Refer to figure)

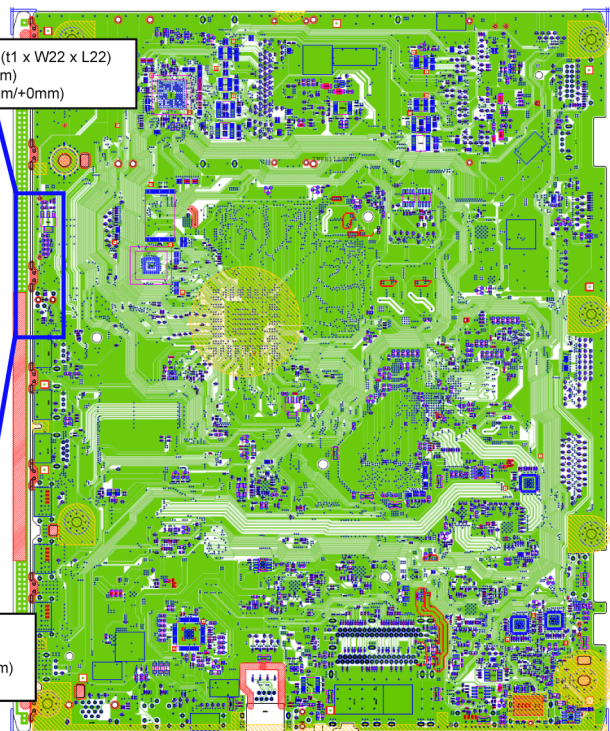
8.3.26. Specification of sticking the rubber and gasket

GASKET : TEWB720 (t7 x W10 x L20) n=2
X direction : Left Edge of thermal conductive rubber (-0mm/+3mm)
Y direction : On each thermal conductive rubber (Refer to figure)

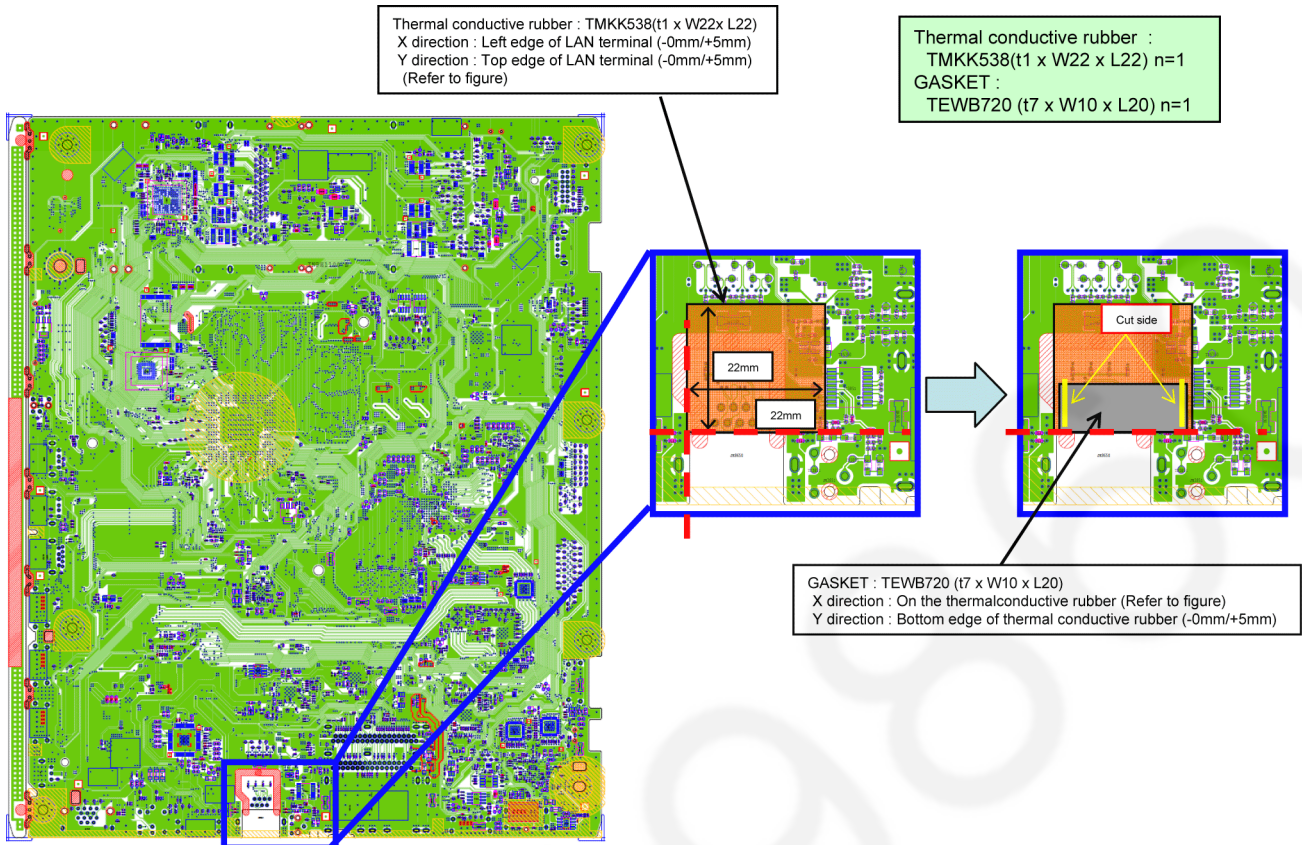
Thermal conductive rubber:
TMKK538 (t1 x W22 x L22) n=2
GASKET :
TEWB720 (t7 x W10 x L20) n=2



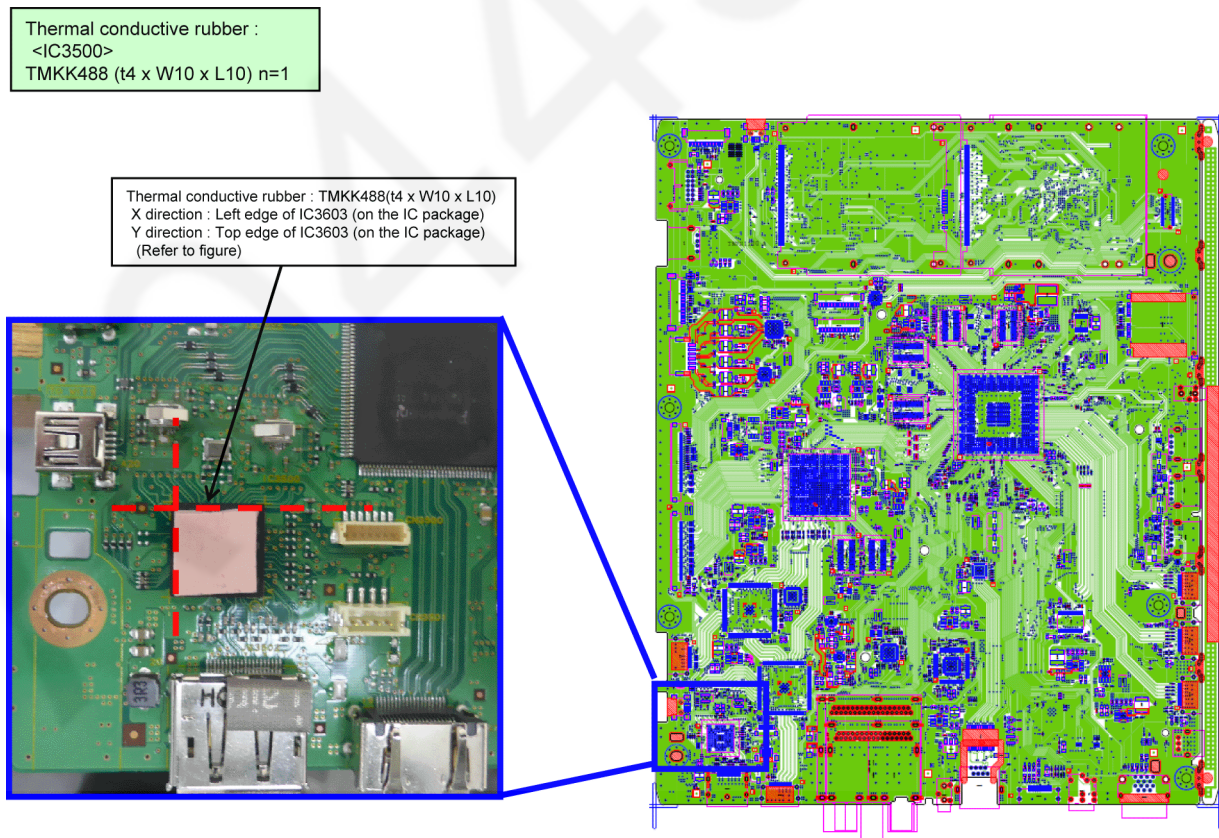
Thermal conductive rubber : TMKK538 (t1 x W22 x L22)
X direction : Edge of PCB (-0mm/+5mm)
Y direction : Edge of thermal conductive rubber(-3mm/+0mm)
(Refer to figure)



8.3.27. Specification of sticking the rubber and gasket

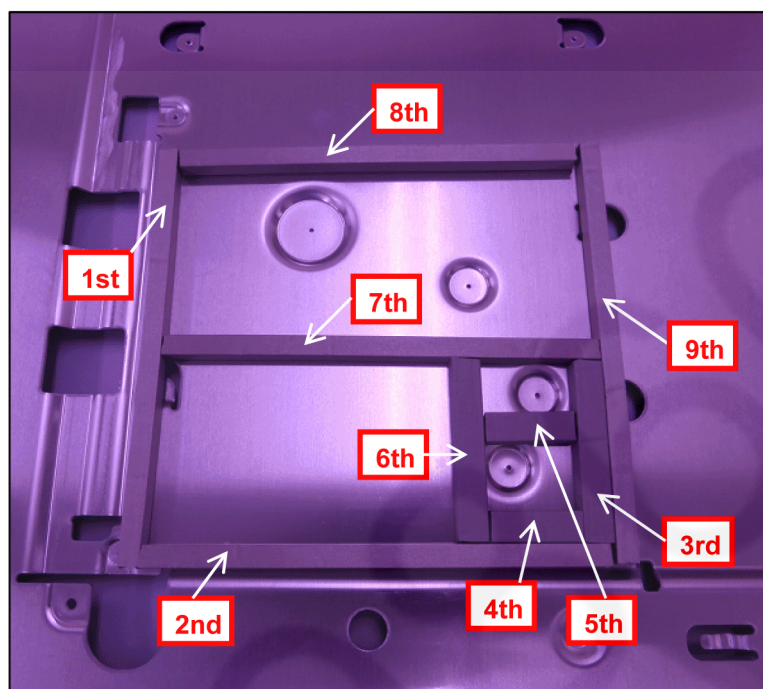


8.3.28. Specification of sticking the rubber



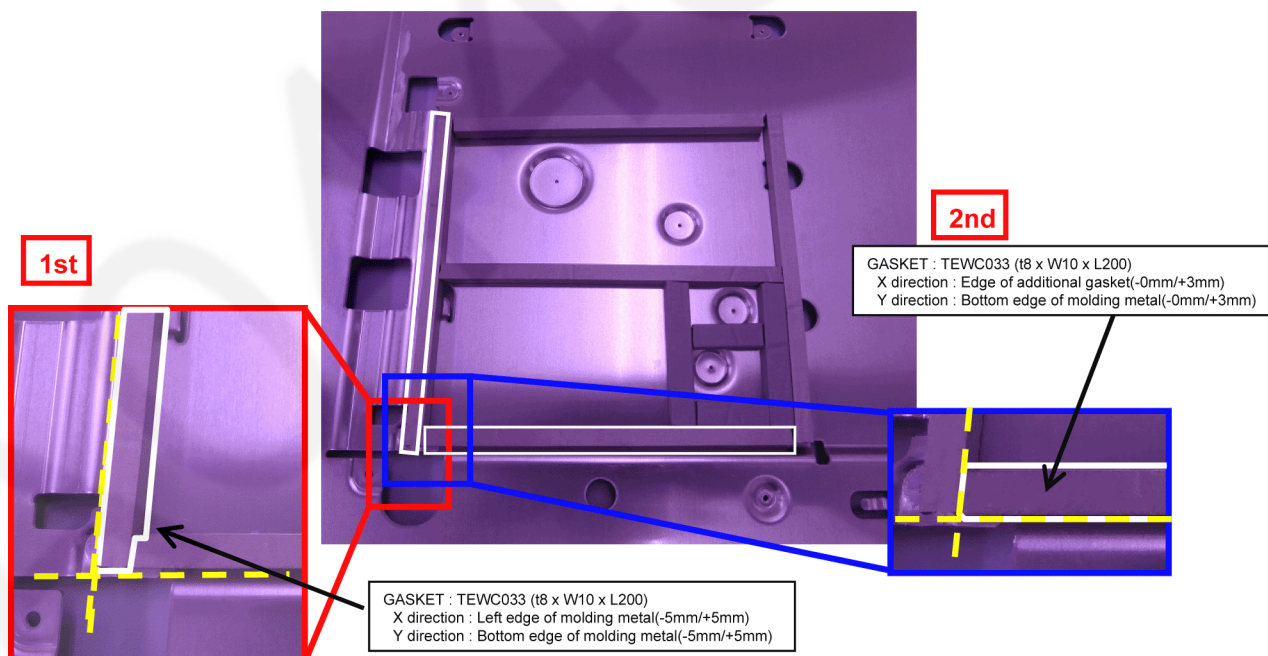
8.3.29. Specification of sticking the gasket

Turn to sticking the gaskets

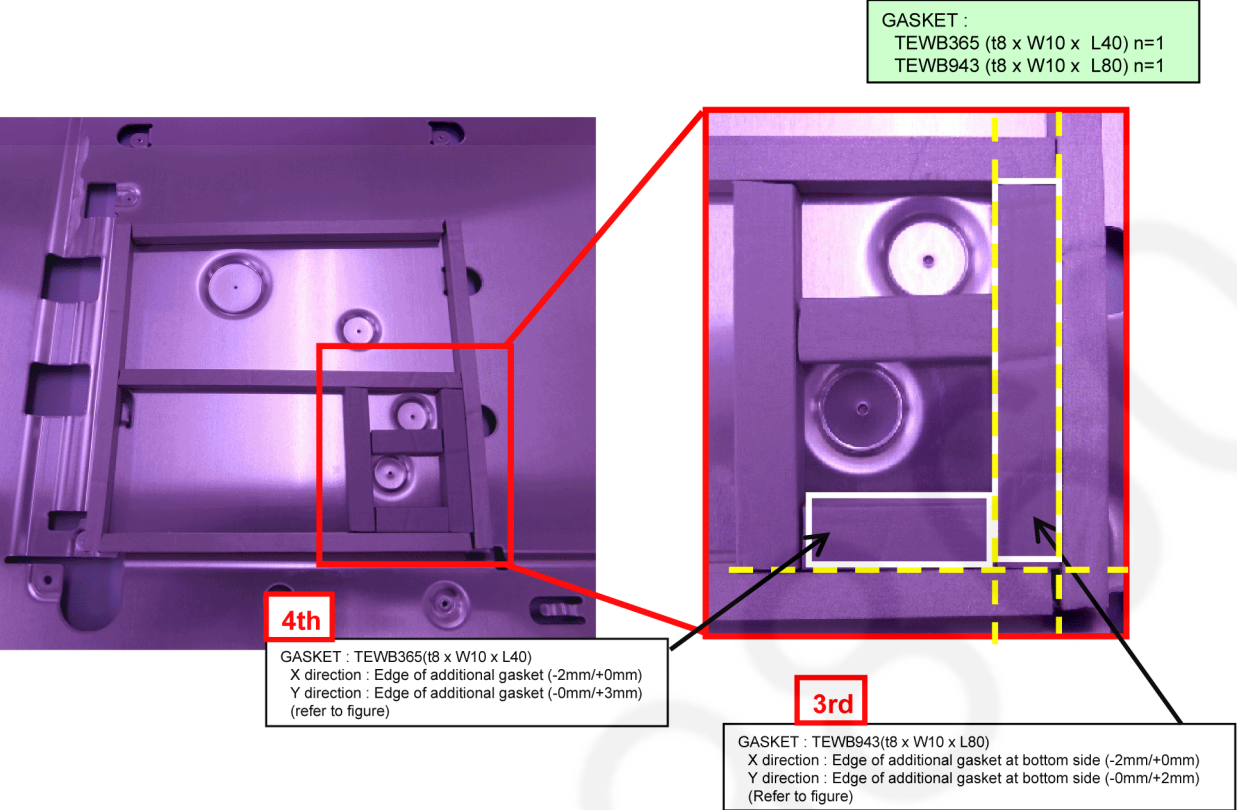


8.3.30. Specification of sticking the gasket

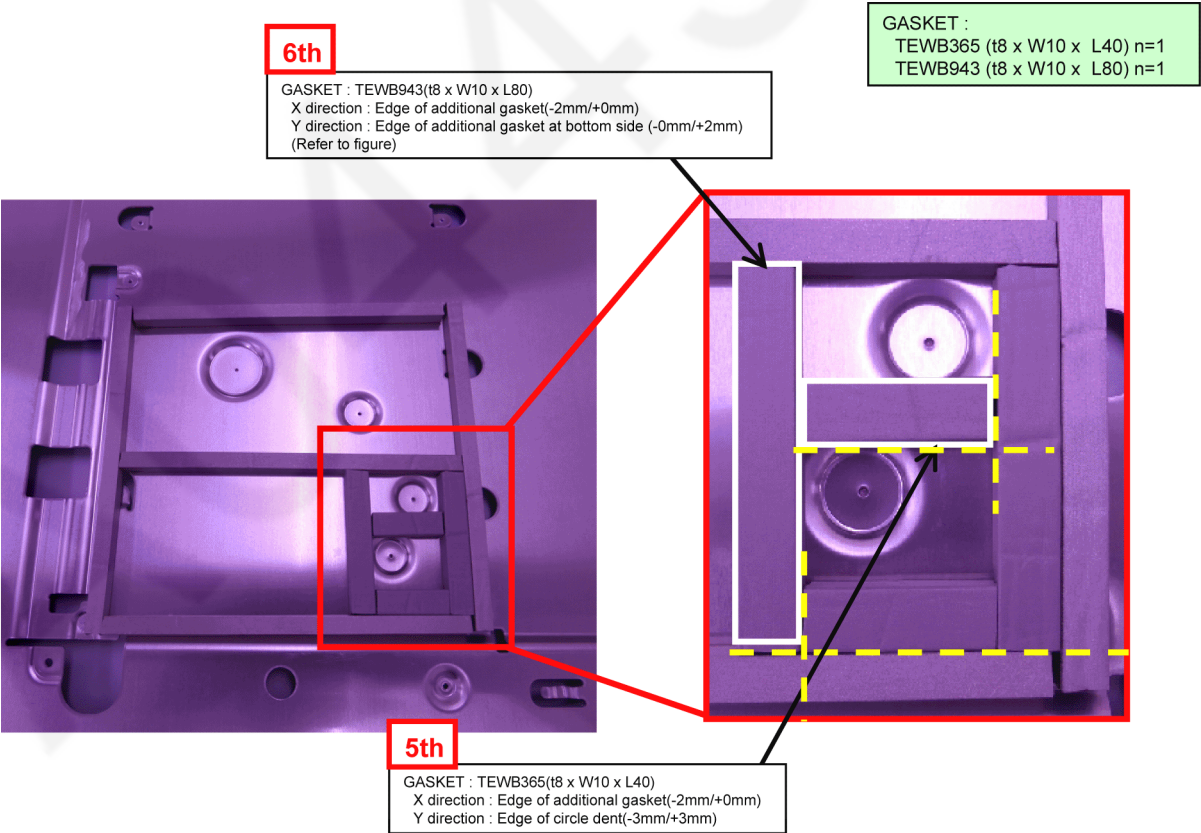
GASKET :
TEWC033 (t8 x W10 x L200) n=2



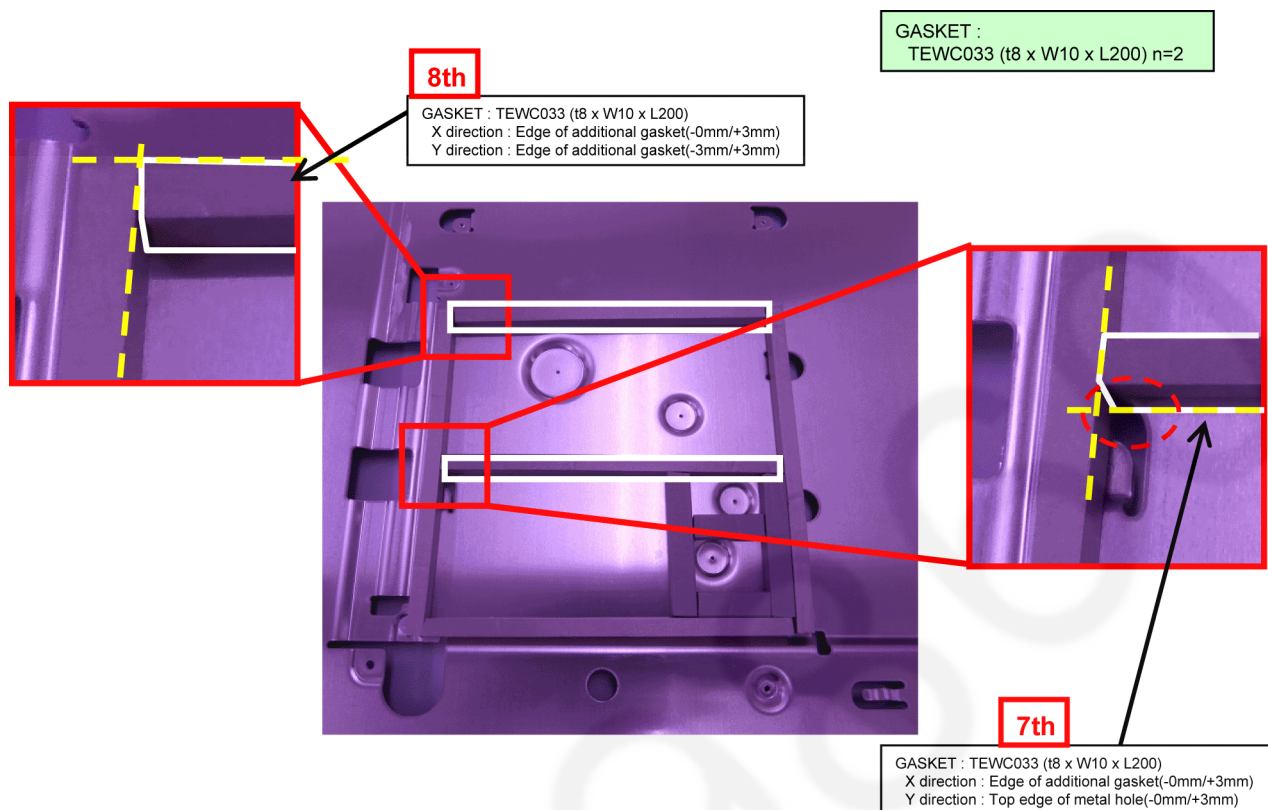
8.3.31. Specification of sticking the gasket



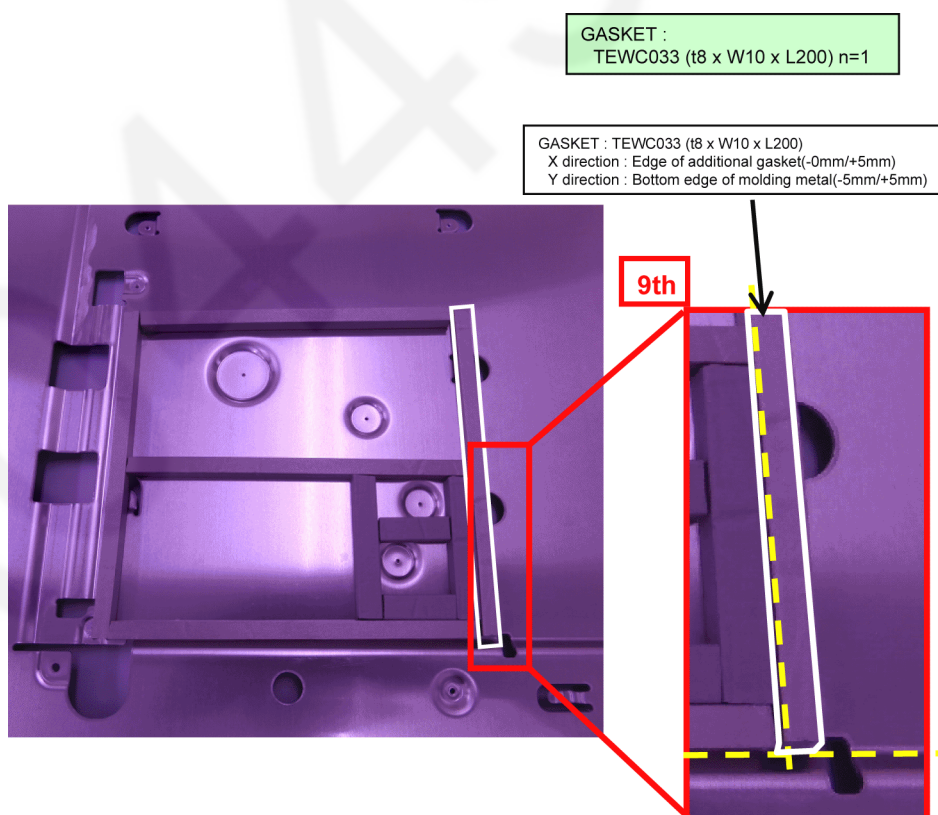
8.3.32. Specification of sticking the gasket



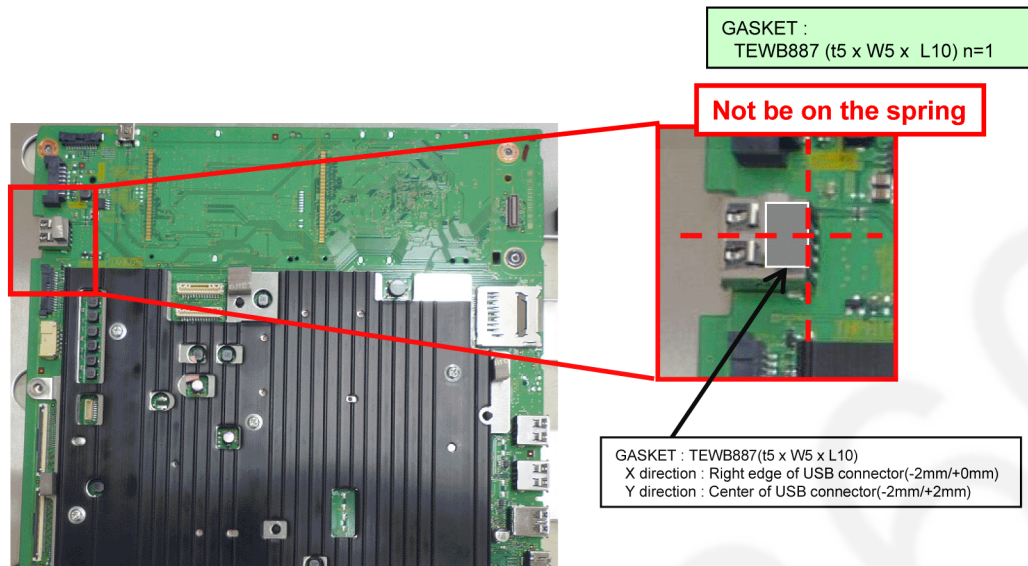
8.3.33. Specification of sticking the gasket



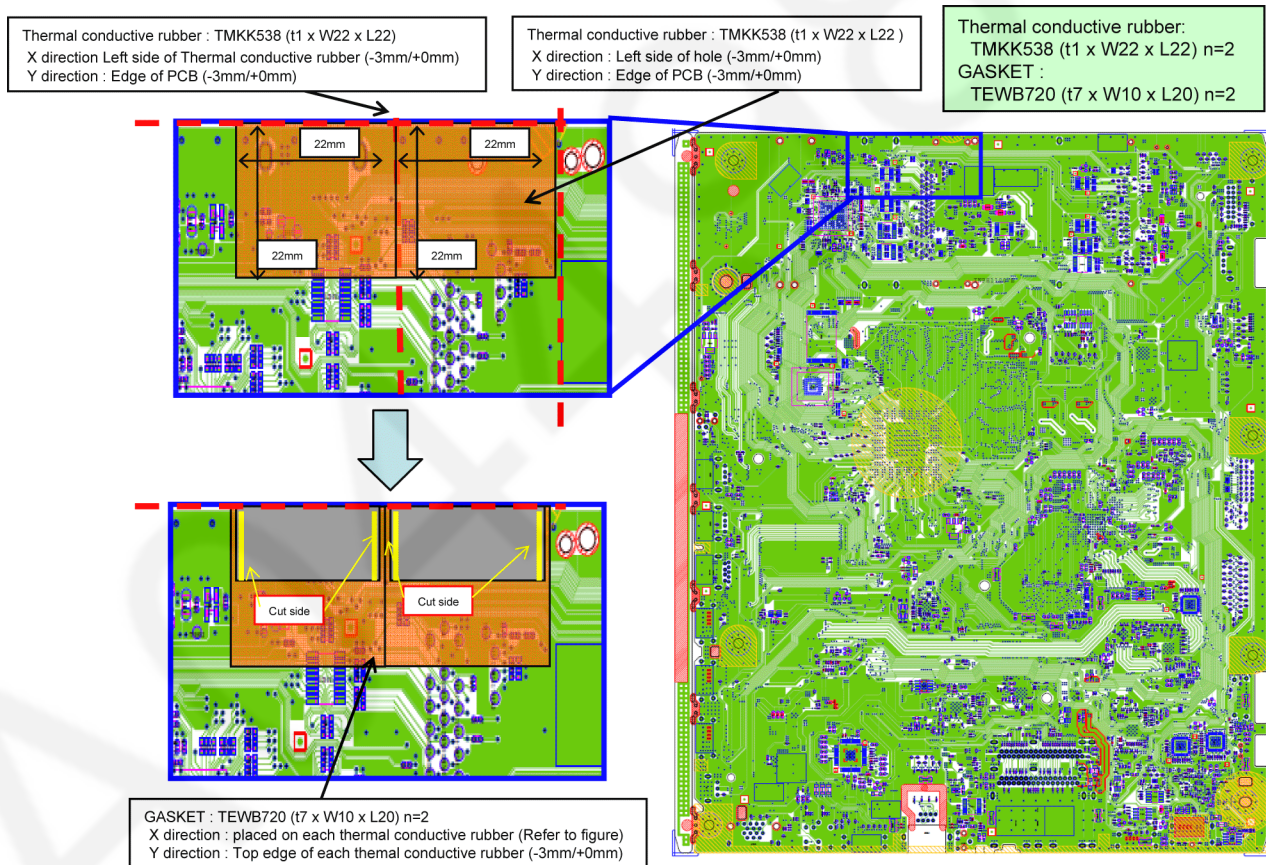
8.3.34. Specification of sticking the gasket



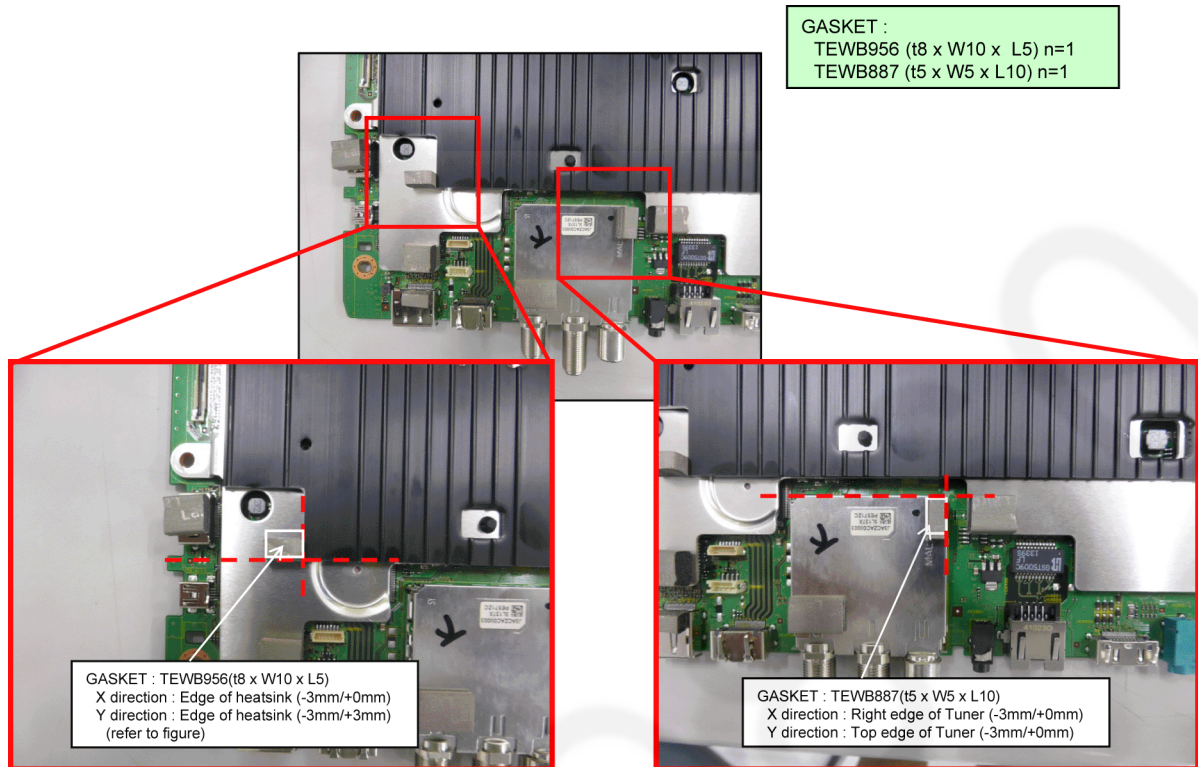
8.3.35. Specification of sticking the gasket



8.3.36. Specification of sticking the rubber and gasket



8.3.37. Specification of sticking the gasket



9 Measurements and Adjustments

9.1. Voltage chart of P-board

Power Supply Name	Test point	Spec
24V	TP7407	24 ± 1.2V
16V	TP7410	16 ± 0.8V
5VS	TP7501	5.25 ± 0.25V
PFC	TP7201 or TP7202	390 ± 15V

*HOT

9.2. Voltage chart of A-board

Power Supply Name	Test point	Spec
SUB5V	TP5420	4.80V - 5.30V
USB5V	TP5440	5.00V - 5.40V
SUB3.3V	TP5401	3.20V - 3.50V
SUB1.5V	TP8101	1.38V - 1.54V
SUB1.1V	TP8100	1.00V - 1.24V
FPGA1.0V	TP1803	0.96V - 1.06V
FPGA1.0V_2	TP1808	0.96V - 1.06V
FPGA1.2V	TP1804	1.14V - 1.26V
FPGA1.5V	TP1807	1.44V - 1.59V
FPGA1.8V	TP1811	1.71V - 1.89V
FPGA1.8V_2	TP1809	1.71V - 1.89V
FPGA2.5V	TP1806	2.38V - 2.63V
DP3.3V	TP1810	3.20V - 3.50V
DP1.2V	TP1830	1.10V - 1.28V
HDMI1.1V	TP1802	1.05V - 1.19V
LNB_PWR	TP6702	12.8V - 14.0V or 17.5V - 19.0V
	TP6703	12.8V - 14.0V or 17.5V - 19.0V
DMD_1.1V_2	TP5704	1.0V - 1.21V
REG_1.8V	TP5702	1.70V - 1.90V

9.3. Voltage chart of FR-board

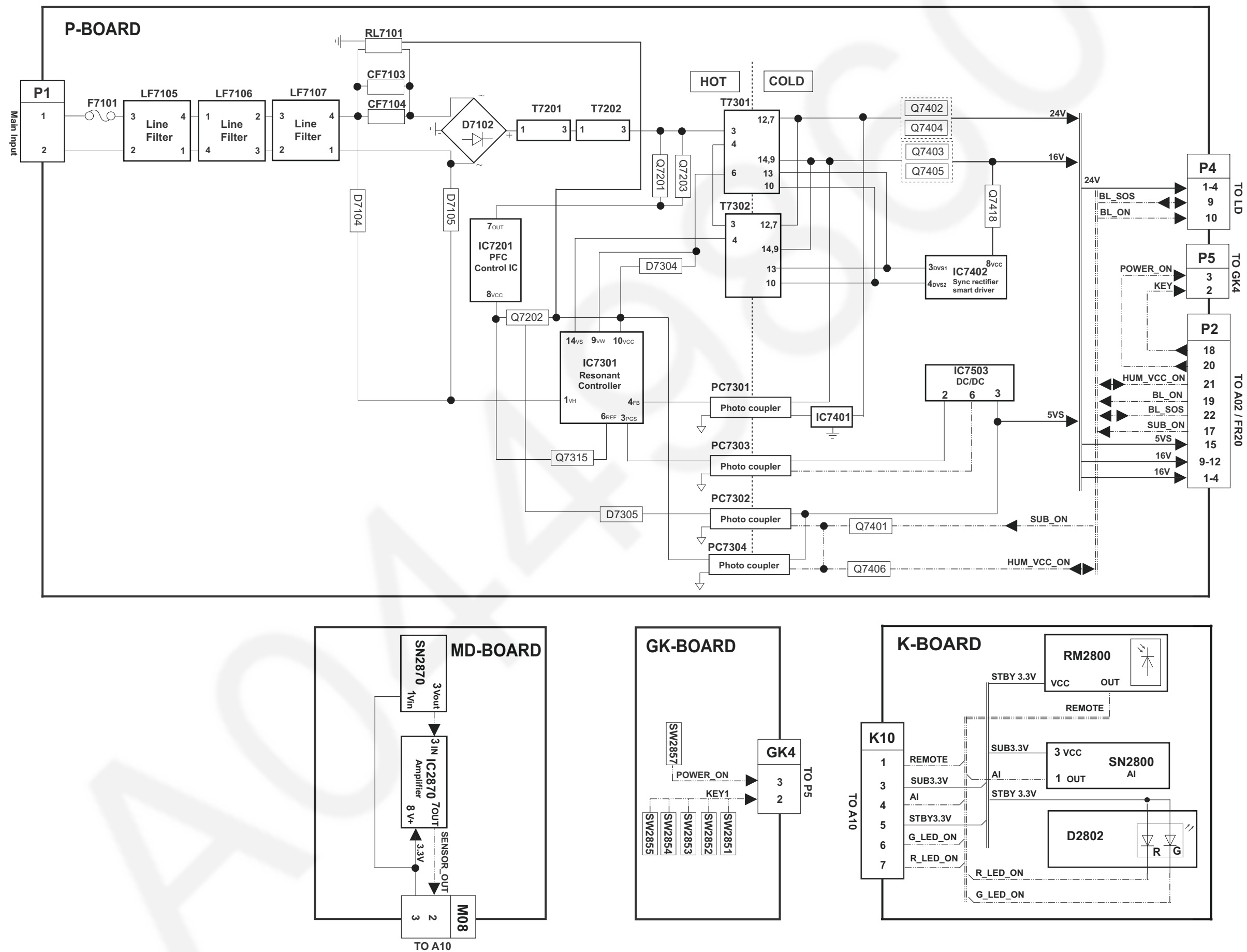
Power Supply Name	Test point	Spec
PNL12V	TP9295 / 9296	11.50V - 12.50V
GCX3.3V	TP9030	3.17V - 3.45V
GCX1.1V	TP9500	1.09V - 1.21V
GCX1.5V	TP9501	1.41V - 1.53V
GCX_2_1.1V	TP9600	1.09V - 1.21V
GCX_2_1.5V	TP9601	1.41V - 1.53V

9.4. Voltage chart of HE-board

Power Supply Name	Test point	Spec
HEVC_1.1V	TP6120	1.050V - 1.150V
HEVC_1.5V	TP6122	1.425V - 1.575V
HEVC_3.3V	TP6123	3.130V - 3.470V
HEVC_2.5V	TP6121	2.370V - 2.630V
HE_5V	TP6531	5.000V - 5.400V

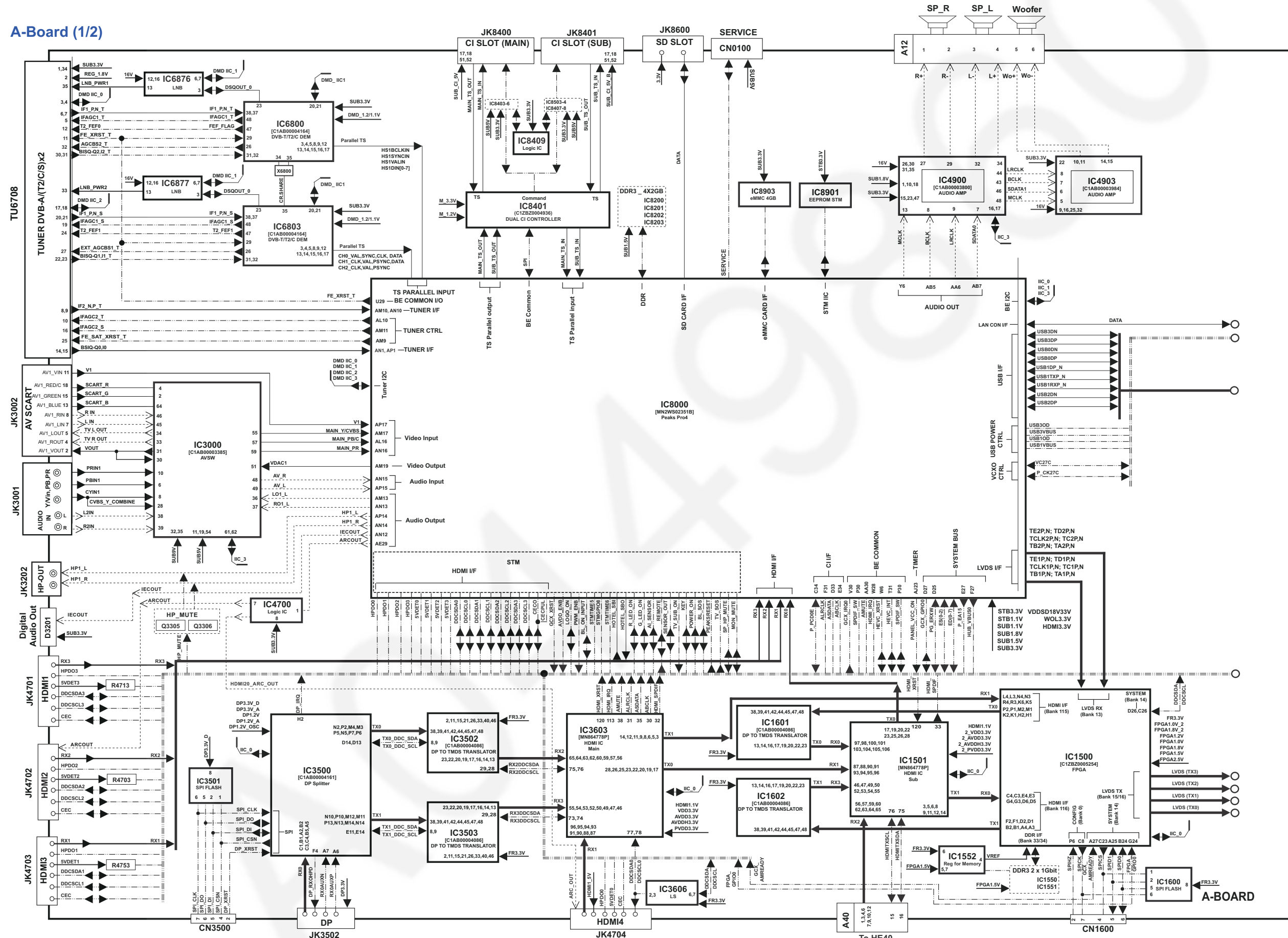
10 Block Diagram

10.1. Block Diagram (1/3)

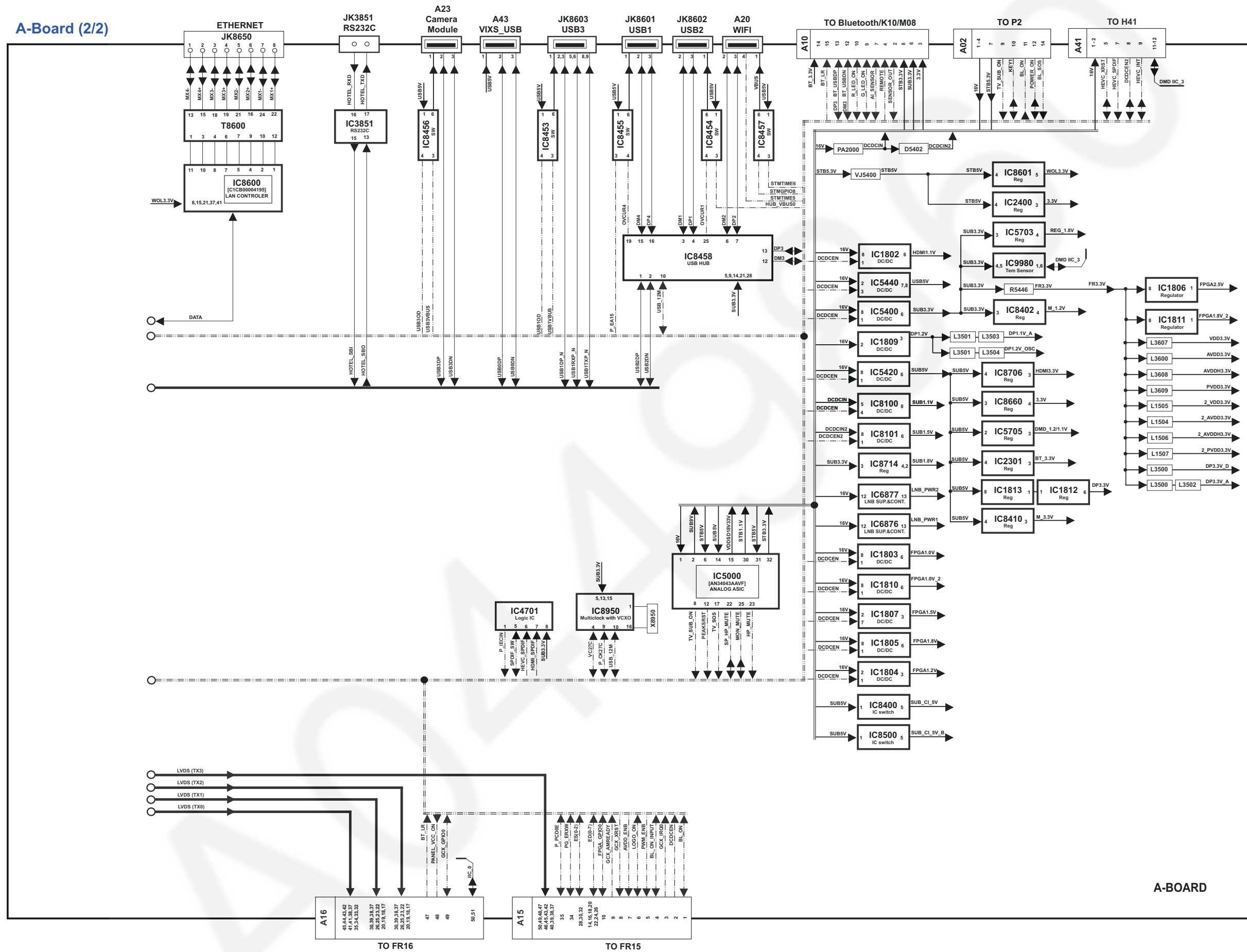


10.2. Block Diagram (2/3)

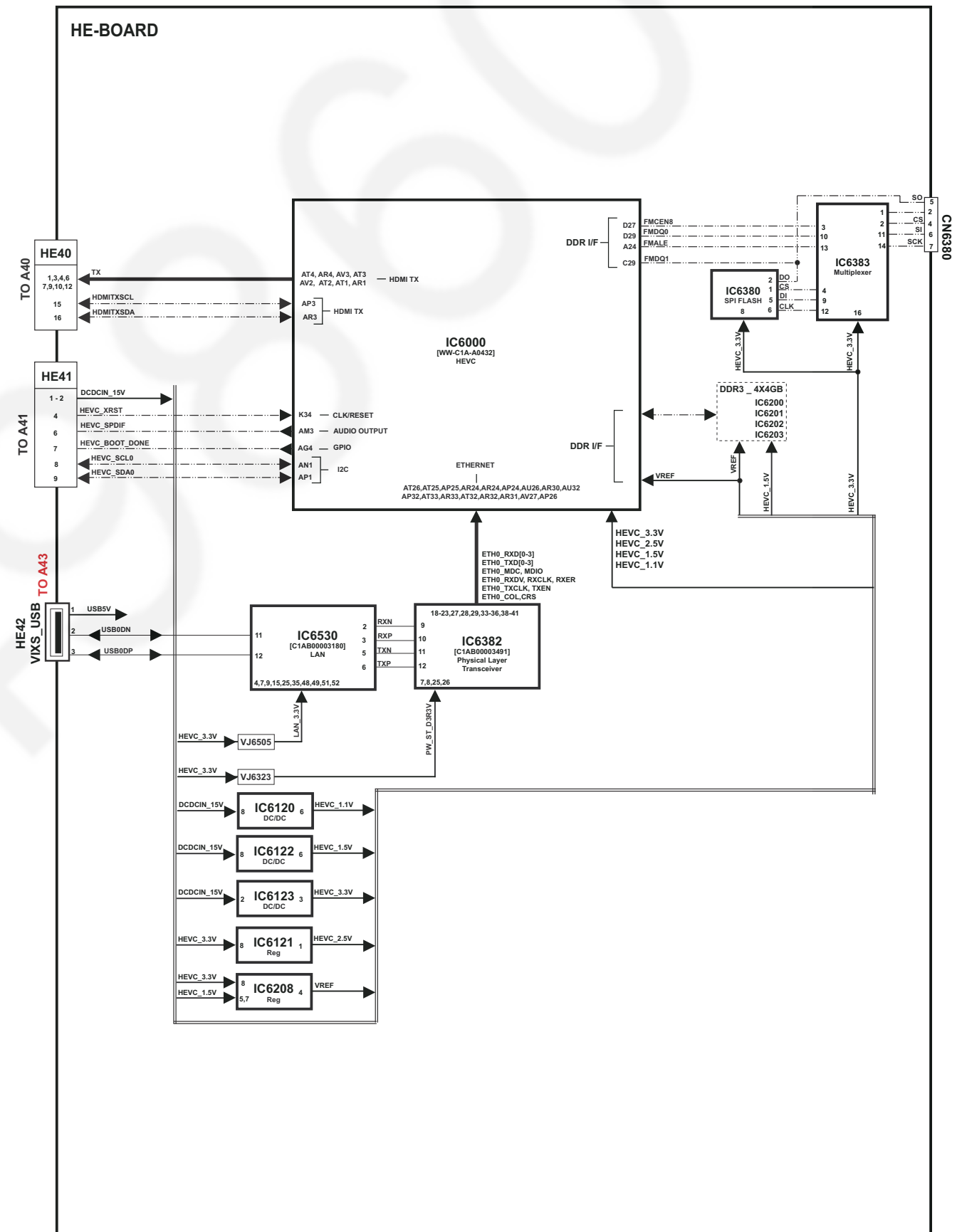
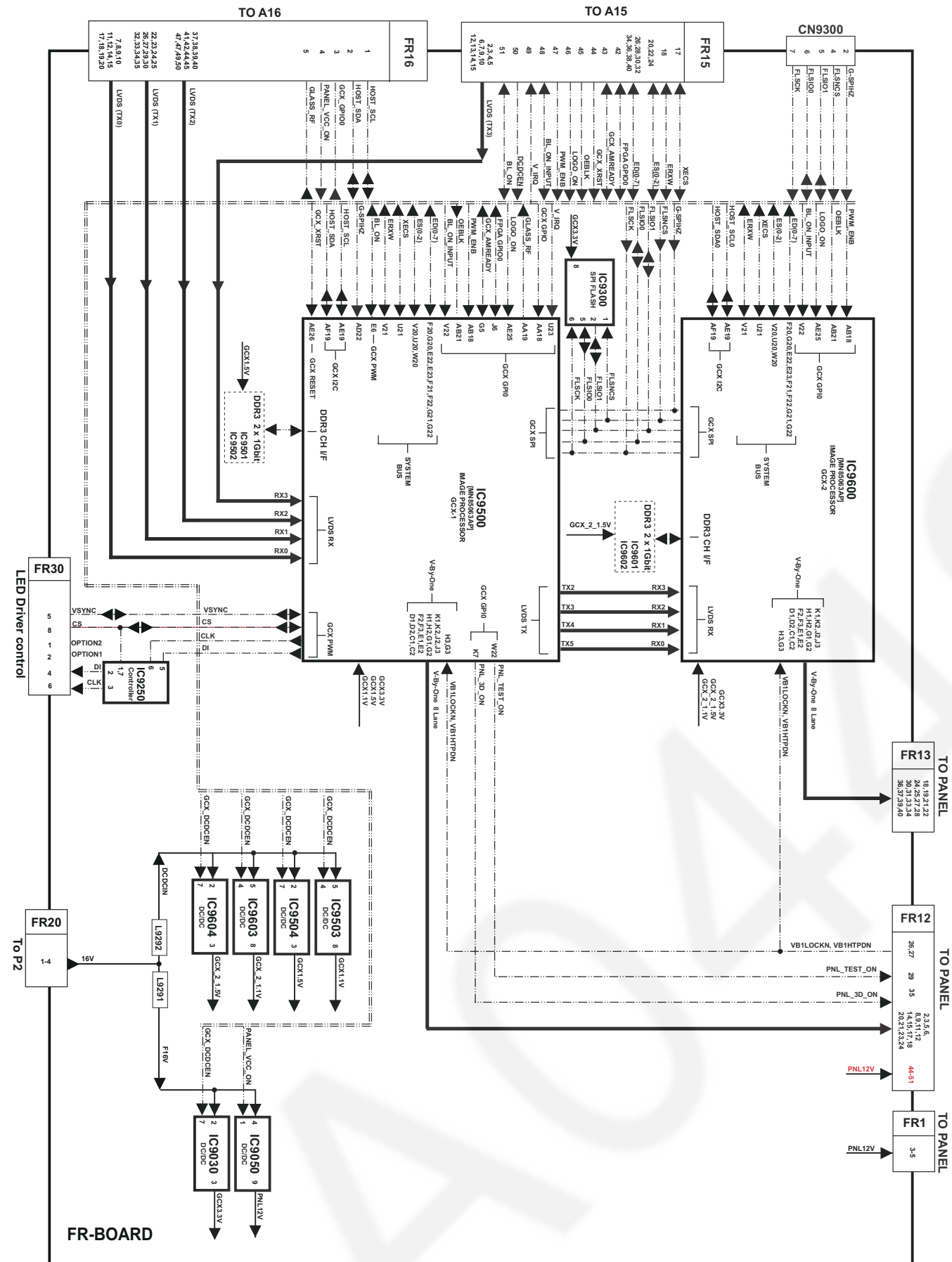
A-Board (1/2)



A-Board (2/2)

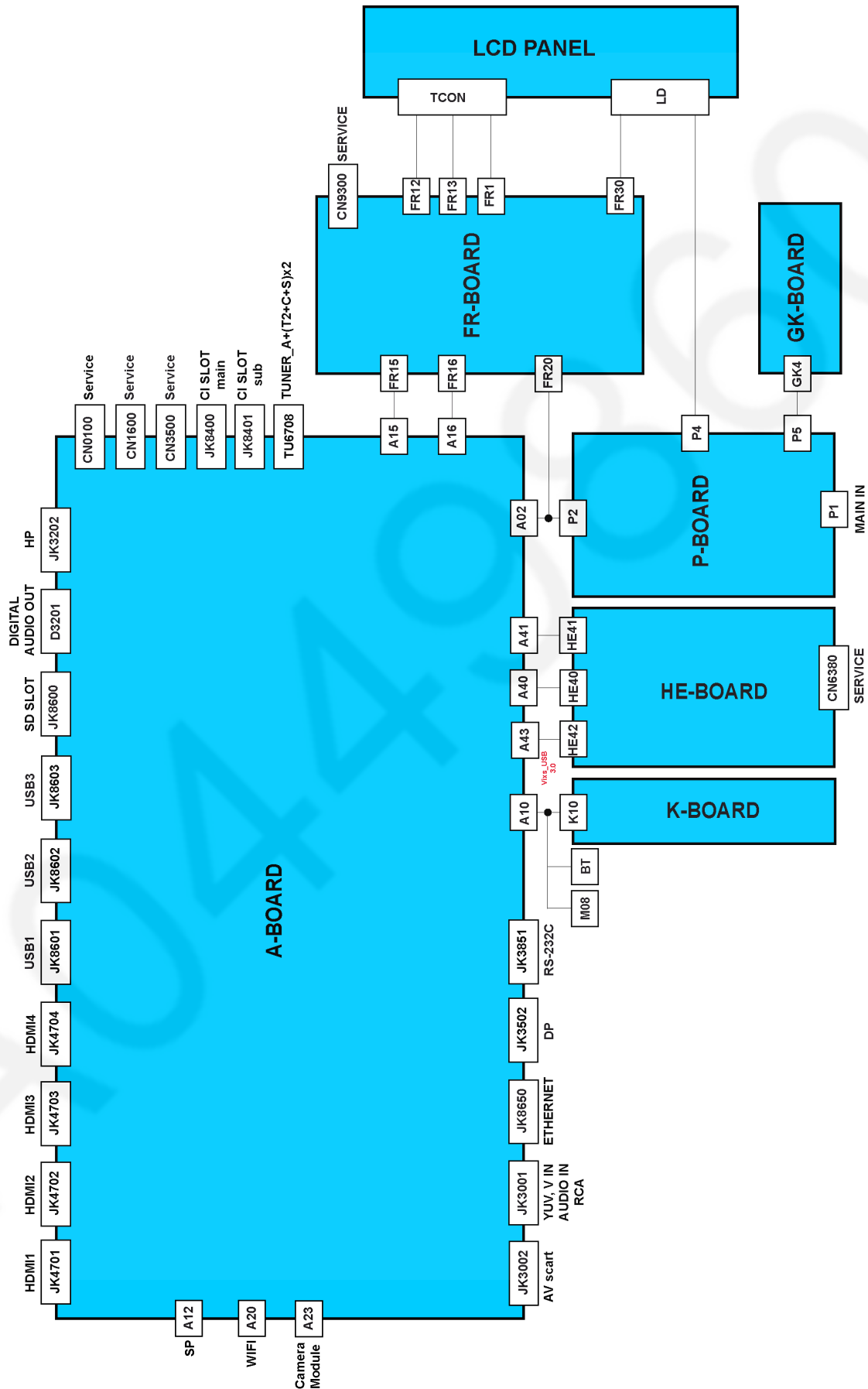


10.3. Block Diagram (3/3)



11 Wiring Connection Diagram

11.1. Wiring Diagram



11.2. 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.

11.3. Dressing Wire

