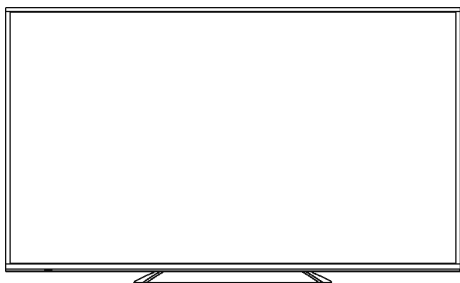


Service Manual

LCD Television

Model No. **TX-42AS650B**
TX-42AS650E

LA51 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.: $U_1 = 1.0 \text{ V}$,

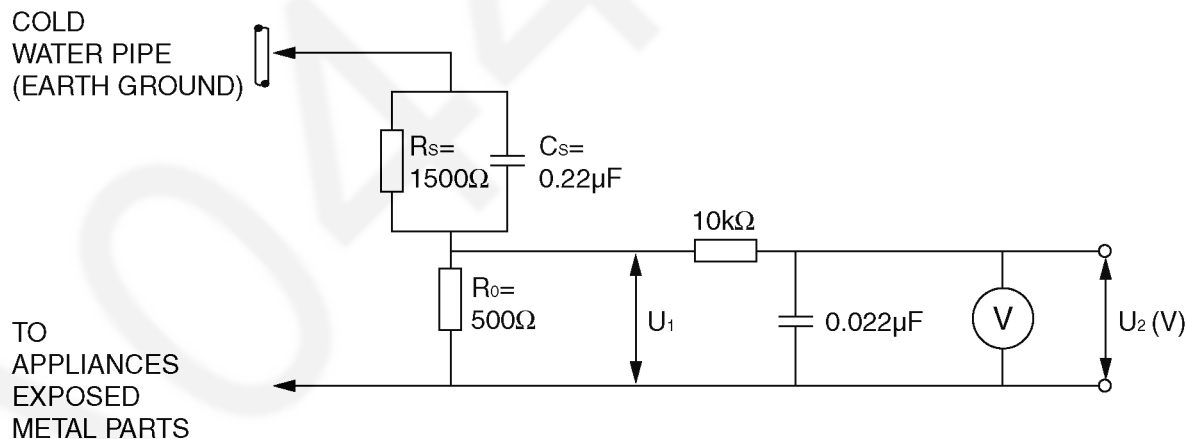
Note:

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).

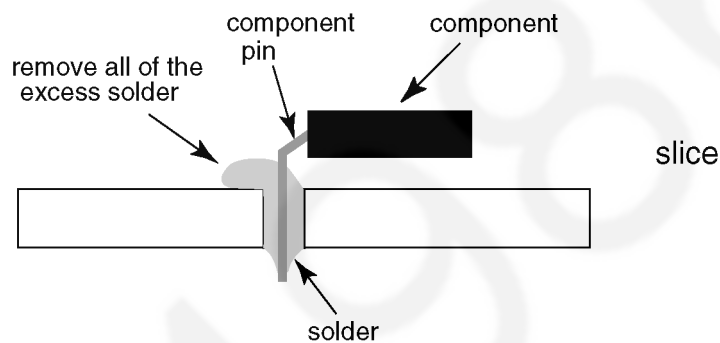
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

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.

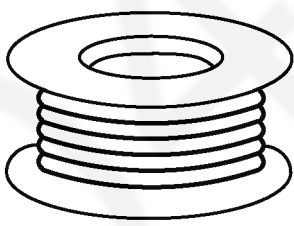
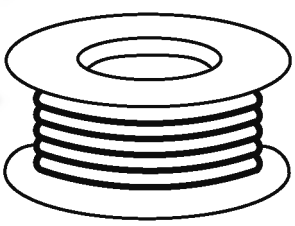
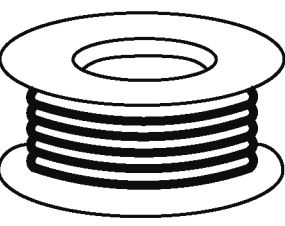
Caution

- 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)



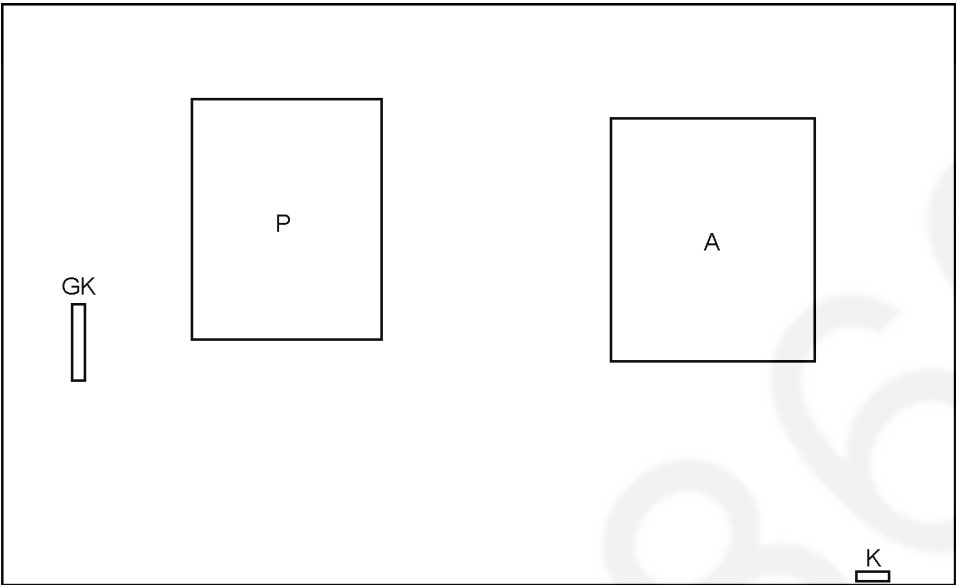
Suggested Pb free solder

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
P-Board	Power
K-Board	IR/LED/CATS
GK-Board	SWITCH

4 Specifications

■ Product fiche

Energy efficiency class	A+
Visible screen size (diagonal)	106 cm / 42 inches
On mode average power consumption	48 W
Annual energy consumption *1	67 kWh
Standby power consumption *2	0.20 W
Off mode power consumption	0.20 W
Screen 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.

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

■ TV

Dimensions (W × H × D)

962 mm × 608 mm × 202 mm (With Pedestal)
962 mm × 562 mm × 54 mm (TV only)

Mass

11.0 kg Net (With Pedestal)
10.0 kg Net (TV only)

Power source

AC 220-240 V, 50 / 60 Hz

Panel

LED LCD panel

Sound

Speaker output

20 W (10 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 input

TYPE A Connectors

HDMI 1 / 3 : 3D, Content Type

HDMI 2 : 3D, Content Type, Audio Return Channel

• This TV supports "HDAVI control 5" function.

Card slot

SD Card slot × 1

Common Interface slot (complies with CI Plus) × 1

ETHERNET

RJ45, IEEE802.3 10BASE-T / 100BASE-TX

USB 1 / 2

USB1 / 2:

DC 5 V, Max. 500 mA [Hi-Speed USB (USB 2.0)]

DIGITAL AUDIO output

PCM / Dolby Digital / DTS, Fibre optic

Receiving systems / Band name (B)

Check the latest information on the available services at the following website.

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

DVB-T / T2

Digital terrestrial services

(UK)

PAL I

UHF E21 - 68

(Ireland)

PAL I

VHF A - J

CATV S1 - S20

UHF E21 - E69

CATV S21 - S41 (Hyperband)

PAL 525/60

Playback of NTSC tape from some PAL Video recorders (VCR) or NTSC disc playback from DVD player and recorder

M.NTSC

Playback from M.NTSC Video recorders (VCR)

NTSC (AV input only)

Playback from NTSC Video recorders (VCR)

Receiving systems / Band name (E)

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

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

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 CATV (S01 - S05) VHF H1 - H2 (ITALY) CATV S1 - S10 (M1 - M10)	VHF A - H (ITALY) CATV S11 - S20 (U1 - U10) UHF E21 - E69 CATV S21 - S41 (Hyperband)
PAL D, K, SECAM D, K	VHF R1 - R2 VHF R6 - R12	VHF R3 - R5 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)	
Aerial input		
(UK)	UHF	
(Ireland) / E	VHF / UHF	
Operating Conditions		
Temperature:	0 °C - 35 °C	
Humidity:	20 % - 80 % RH (non-condensing)	
Built-in wireless LAN		
Standard compliance and Frequency range*1		
IEEE802.11a/n	5.180 GHz - 5.320 GHz, 5.500 GHz - 5.580 GHz, 5.660 GHz - 5.700 GHz	
IEEE802.11b/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*2		
Standard Compliance	Bluetooth 3.0	
Frequency Range	2.402 GHz - 2.480 GHz	

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

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

■ 3D Eyewear

Dimensions (W × H × D)	165 mm × 38 mm × 166 mm
Mass	Approx. 18 g
Usage temperature range	0 °C - 40 °C
Materials	
Main body / Lens section	Resin

Note

- Use Panasonic 3D Eyewear supporting passive 3D system technology.
- Touch Pad Controller uses 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, 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-42AS650B	Yes	Yes	Yes	Yes	Yes	Yes
TX-42AS650E	Yes	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.

6 Service Mode

6.1. How to enter into Service Mode

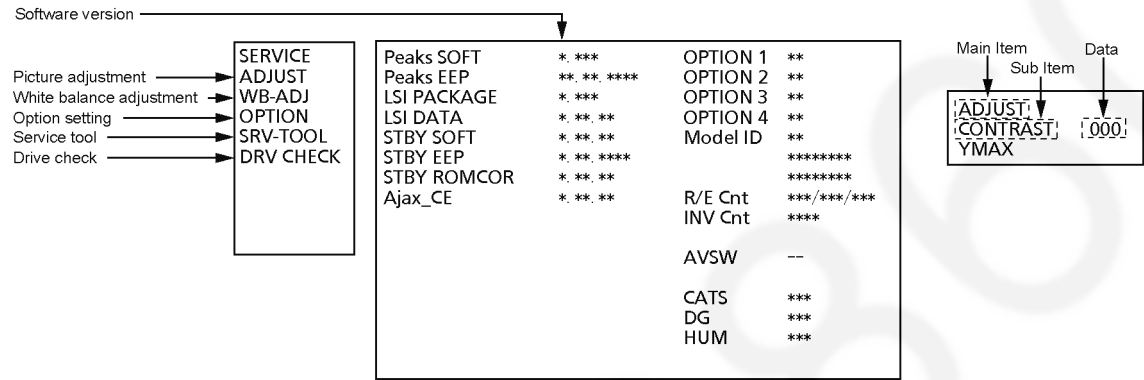
6.1.1. Purpose

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	33	
	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	60	
	B-GAIN	3E	
	R-CENT	76	
	G-CENT	80	
	B-CENT	80	
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	00000000	
	EDID-CLK	MID	
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

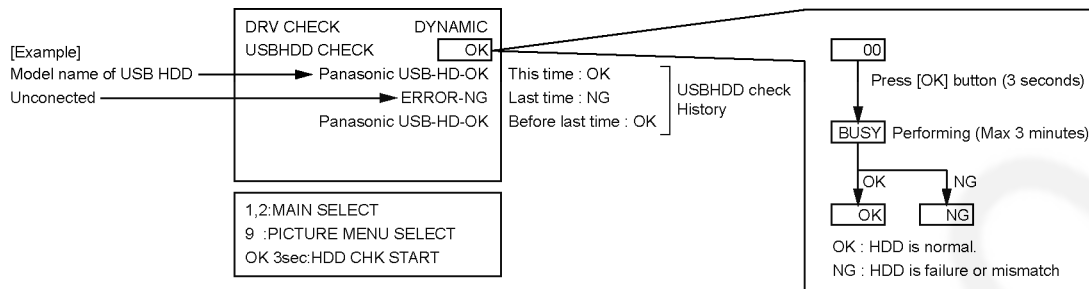
Note : To display TIME/COUNT menu, highlight position, then press MUTE for 3 seconds.
Time : Cumulative power on time, indicated hour : minute by decimal
On/Off : Number of On/Off switching by decimal
Note : This indication will not be cleared by either of the self-checks or any other command.

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

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 (B), DVB-C (E), DVB-T (E), AV1, AV2, HDMI1, HDMI2, HDMI3 • 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

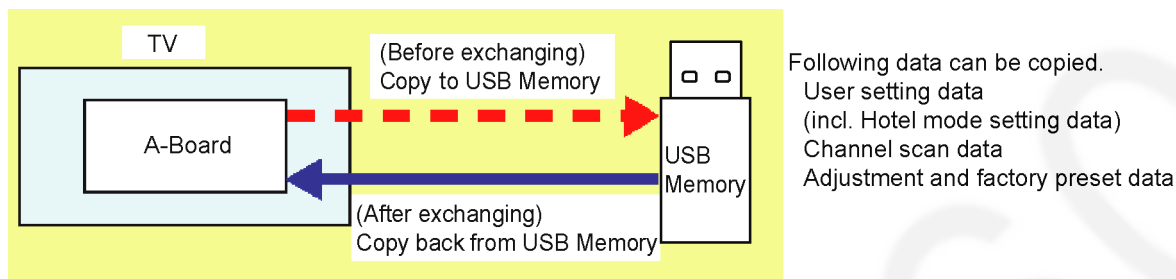
Note:

SD card can not be used for Data Copy.

6.5.1. Purpose

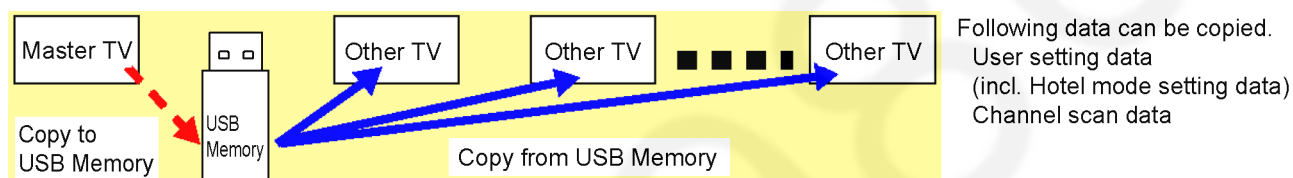
(a) Board replacement (Copy the data when exchanging A-board):

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.

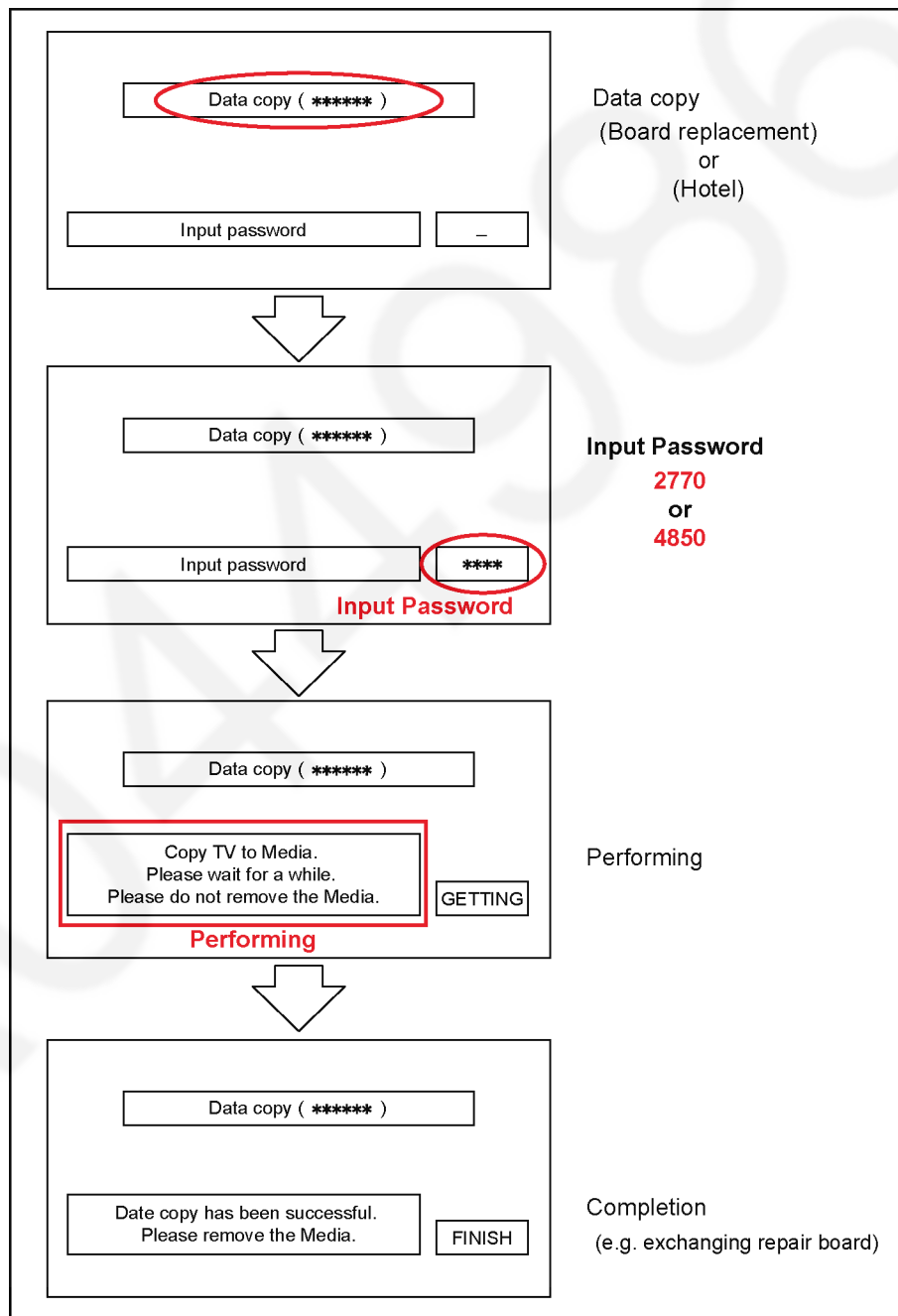
6.5.3. Data copy from TV set to USB Memory

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

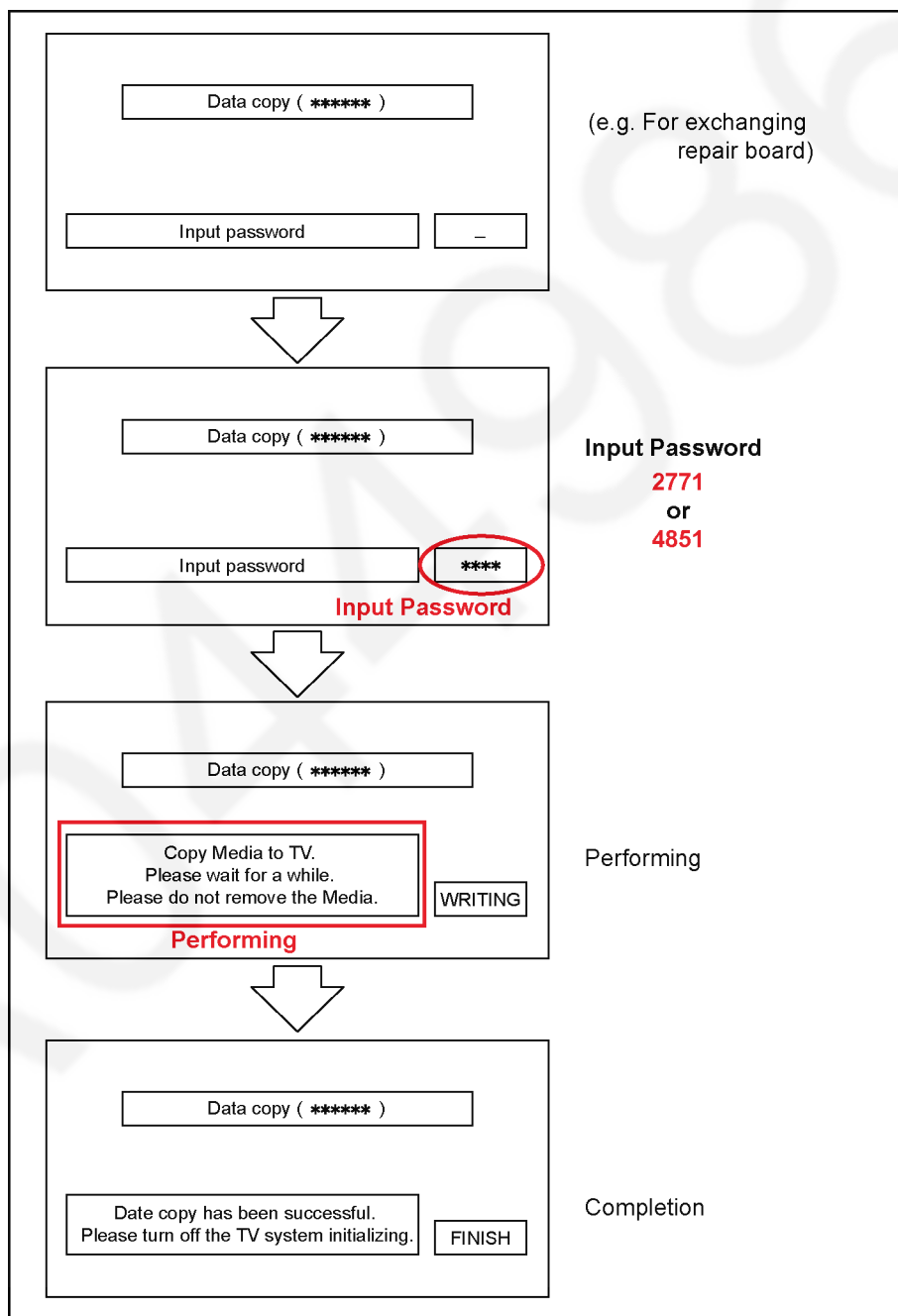


6.5.4. Data copy from USB Memory to TV set

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

42FHD			SELF CHECK COMPLETE		
H14TUN	OK	PEAKS-SOFT	*	***	
H90STBY	OK	PEAKS-EEP	**	**, ****	
H92MEM1	OK	LSI-PACKAGE	*	***	
H91MEM2	OK	LSI-RELEASE	*	**	MODEL ID
H17LAN	OK	STBY-SOFT	*	**, **	*****
H00FE	OK	STBY-EEP	*	**, ****	*****
H96ID	OK				
H97ID2	OK				
H45BT	OK				
H42WiFi	OK				

7.1.3. Check Point

Confirm the following parts if NG was displayed.

DISPLAY	Check Ref. No.	Description	Check Point
H14TUN	TU6705	TUNER	A-BOARD
H90STBY	IC8000	PEAKS-LD6 (STM)	A-BOARD
H92MEM1	IC8000	BLOCK-EEP	A-BOARD
H91MEM2	IC8901	STM EEPROM	A-BOARD
H17LAN	IC8650	ETHERPHY	A-BOARD
H00FE	IC6800	DEM0D	A-BOARD
H96ID		ID	A-BOARD
H97ID2		ID2	A-BOARD
H45BT		BLUETOOTH	A-BOARD/BLUETOOTH
H42WiFi		WiFi	A-BOARD/WiFi

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
7	SUB 3.3V	A-Board
9	SOUND SOS	A-Board Speaker
12	BE SOS	A-Board
13	EMERGENCY SOS	A-Board

7.3. LCD Panel test mode

Purpose:

To find the possible failure point where in LCD Panel or Printed Circuit Board when the abnormal picture is displayed.

How to Enter:

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

How to Exit:

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

How to confirm:

If the abnormal picture is displayed, go into LCD Panel test mode to display the several test patterns.

And then, judge by the following method.

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

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

Remarks:

The test pattern is created by the circuit in LCD Panel.

In LCD Panel test mode, this test pattern is displayed unaffected by signal processing for RF or input signal.

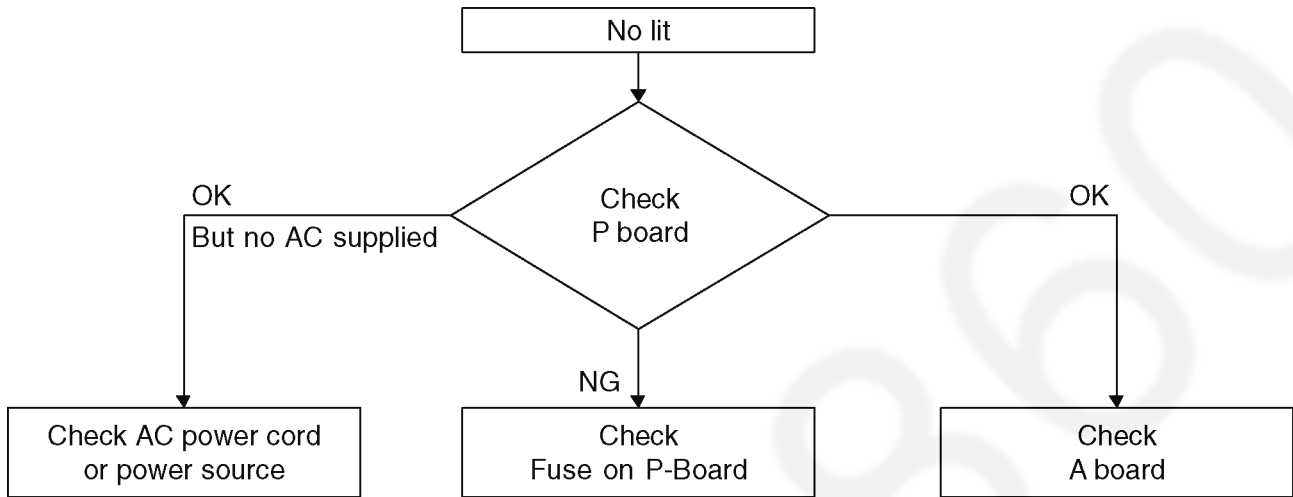
If the normal picture is displayed, LCD Panel must be okay and the cause of failure must be in A board.

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.

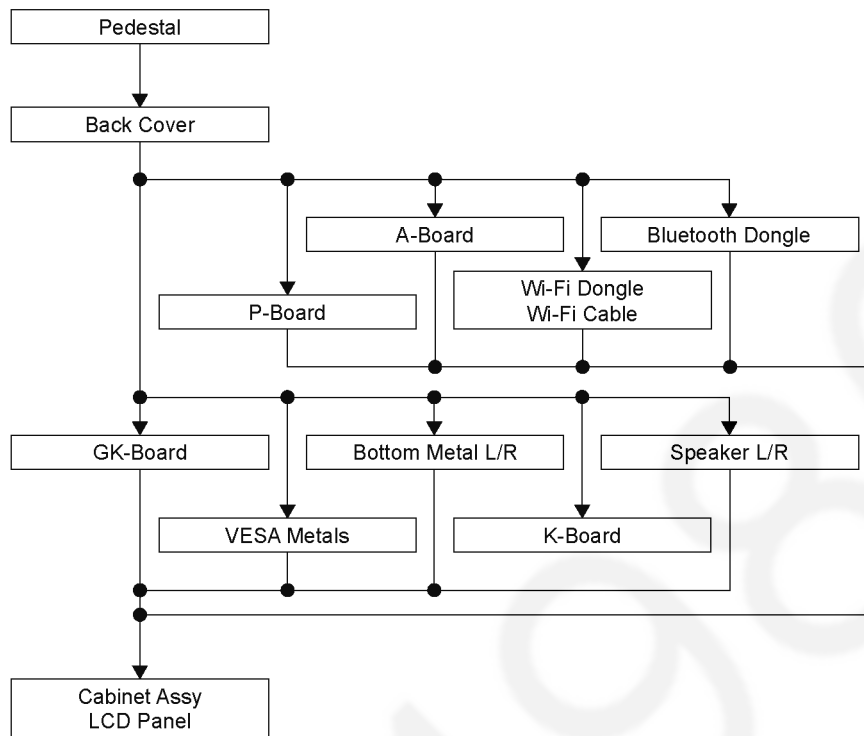


8 Disassembly and Assembly Instructions

8.1. Disassembly Flow Chart for the Unit

This is a disassembly chart.

When assembling, perform this chart conversely.

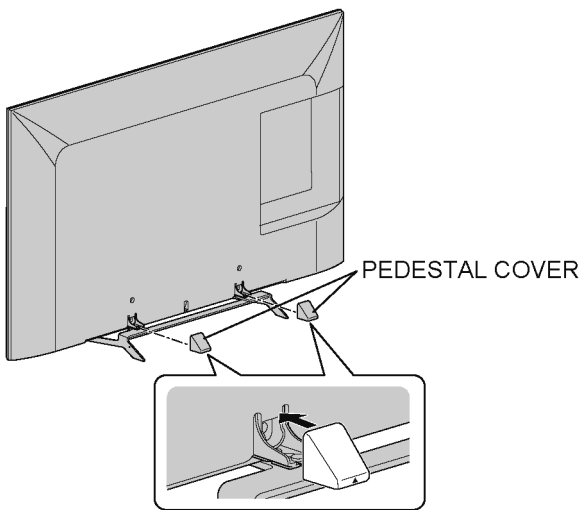


8.2. Disassembly Procedure for the Unit

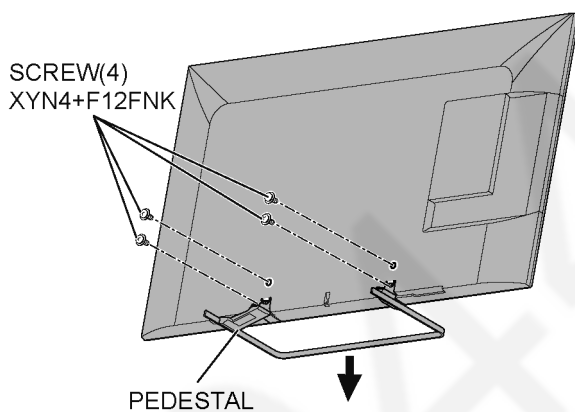
Lay down the unit so that the rear cover faces upward.

8.2.1. Pedestal

1. Remove the 2 Pedestal Cover.

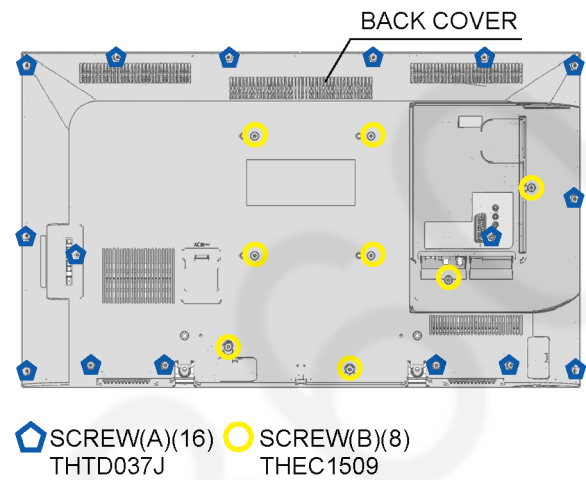


2. Remove the 4 screws.
3. Remove the Pedestal.



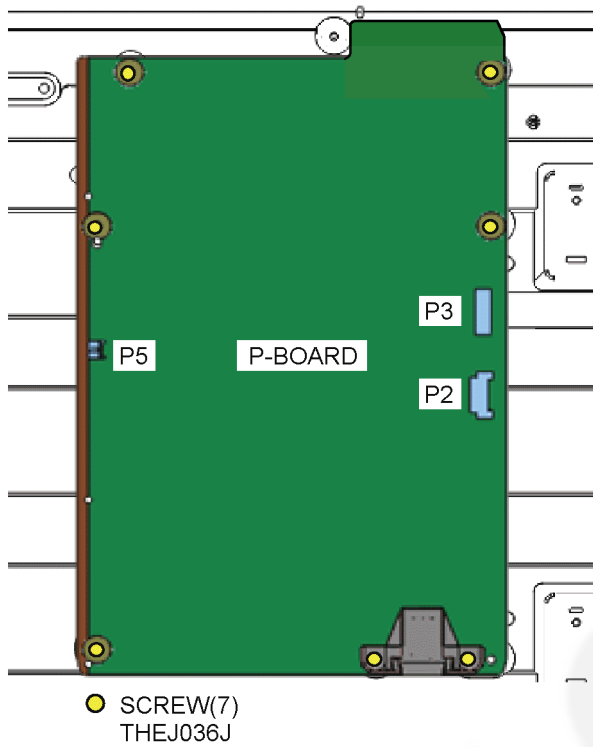
8.2.2. Back Cover

1. Remove the 16 screws (A).
2. Remove the 8 screws (B).
3. Remove the Back Cover.

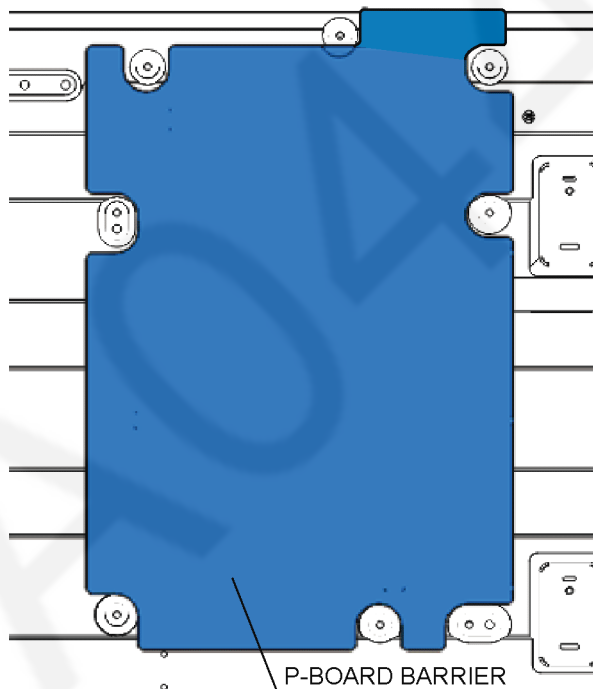


8.2.3. P-Board

1. Remove the 7 screws.
2. Disconnect the connectors (P2, P3 and P5).
3. Remove the P-Board.

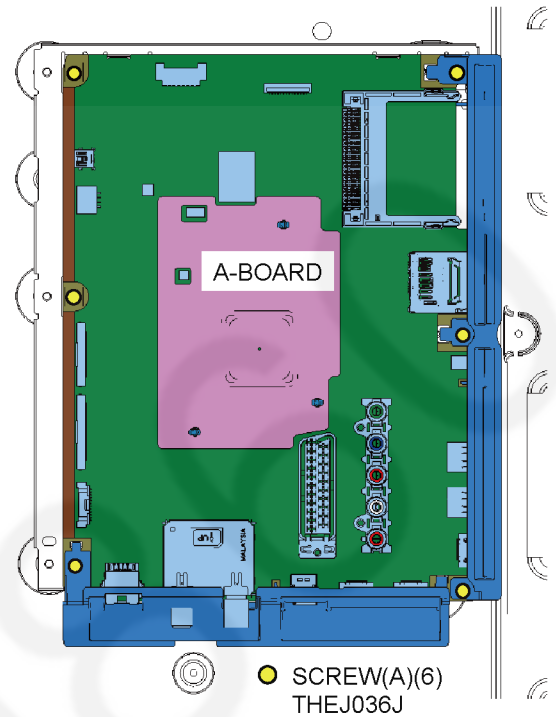


4. Remove the P-Board Barrier.

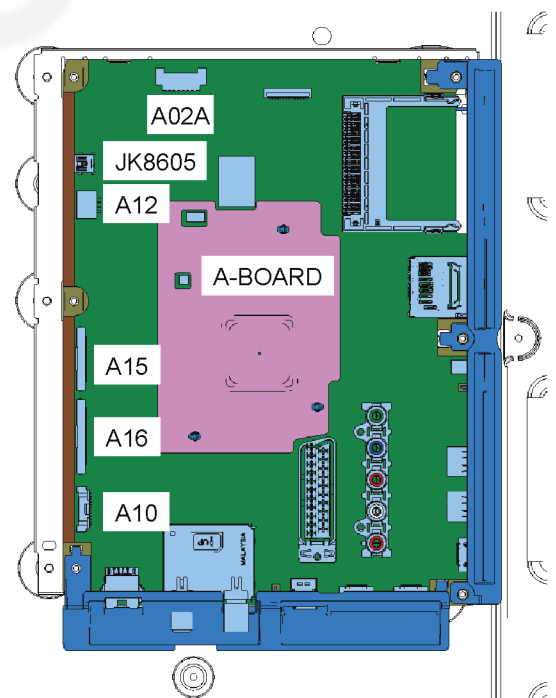


8.2.4. A-Board

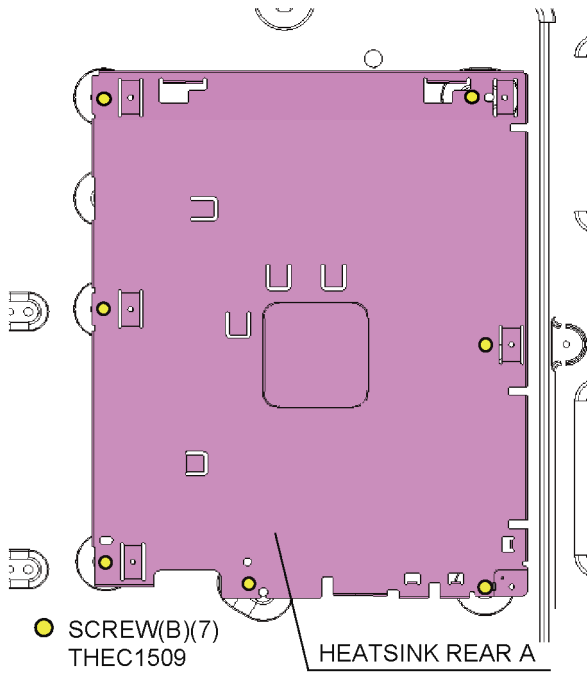
1. Remove the 6 screws (A).



2. Disconnect the connectors (A02A, A10, A12, A15, A16 and JK8605).
3. Remove the A-Board.

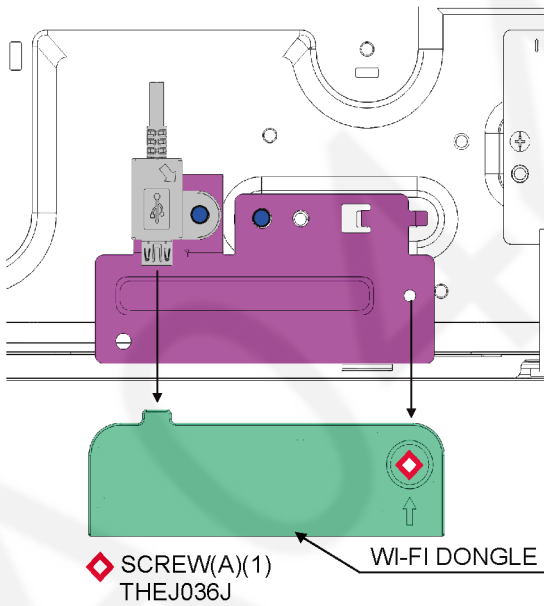


4. Remove the 7 screws (B).
5. Remove the Heatsink Rear A.

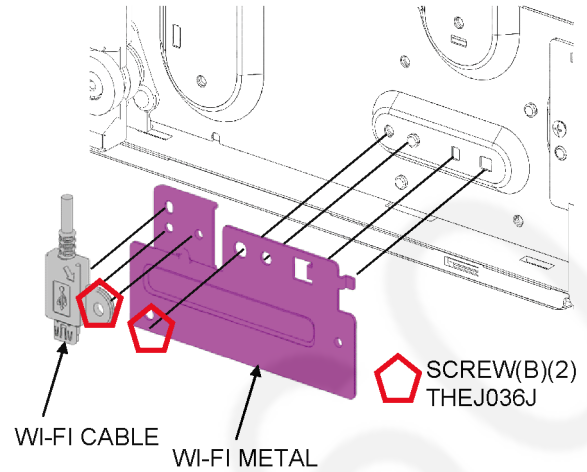


8.2.5. Wi-Fi Dongle and Wi-Fi Cable

1. Remove the 1 screw (A).
2. Remove the Wi-Fi Dongle.

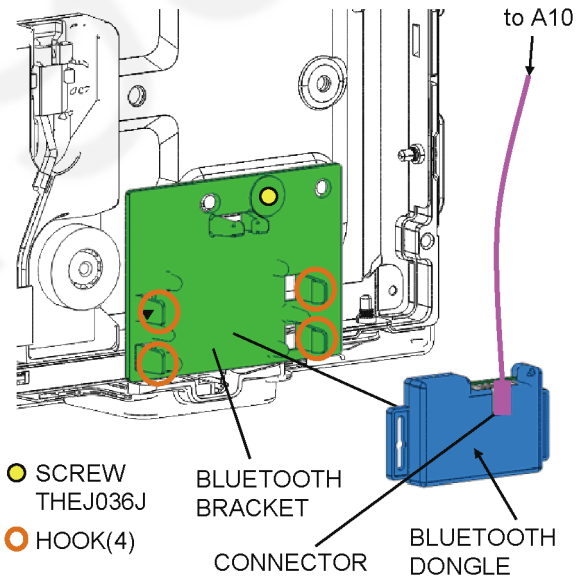


3. Remove the 2 screws (B).
4. Remove the Wi-Fi Cable and the Wi-Fi Metal.



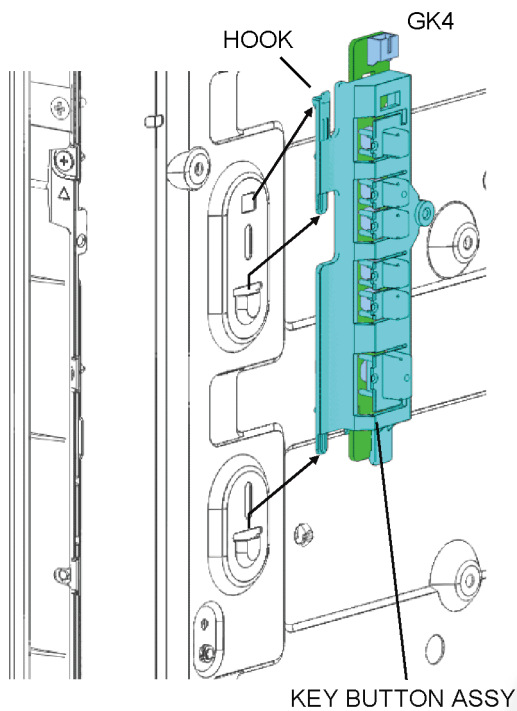
8.2.6. Bluetooth Dongle

1. Disconnect the connector.
2. Remove the 4 hooks.
3. Remove the Bluetooth Dongle.
4. Remove the 1 screw.
5. Remove the Bluetooth Bracket.

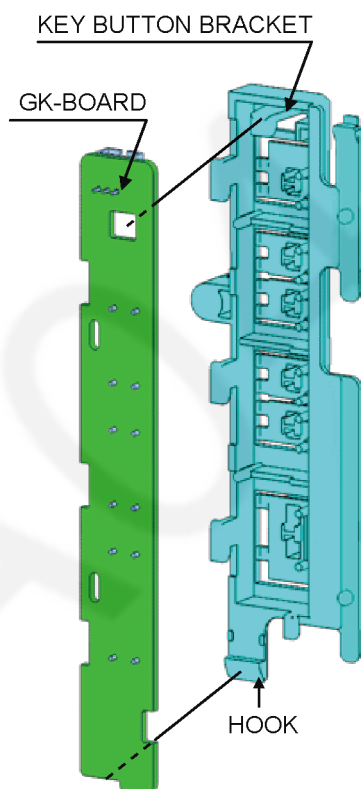


8.2.7. GK-Board

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

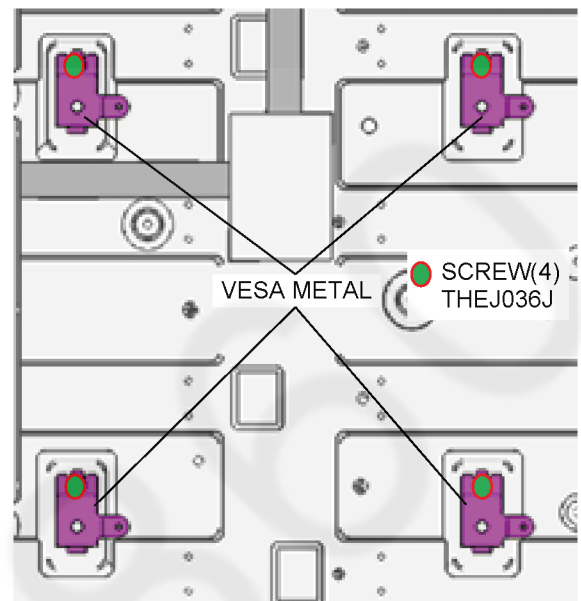


3. Remove the 1 hook.
4. Remove the GK-Board and the Key Button Bracket.



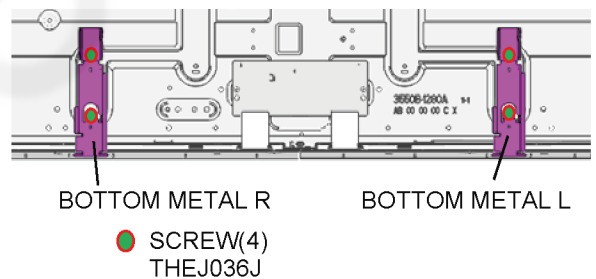
8.2.8. VESA Metals

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



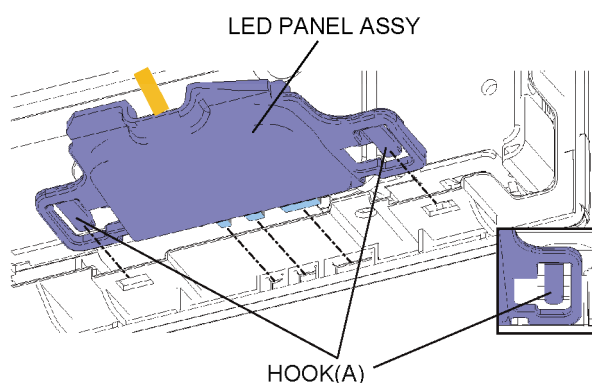
8.2.9. Bottom Metal L/R

1. Remove the 4 screws.
2. Remove the Bottom Metal L/R.

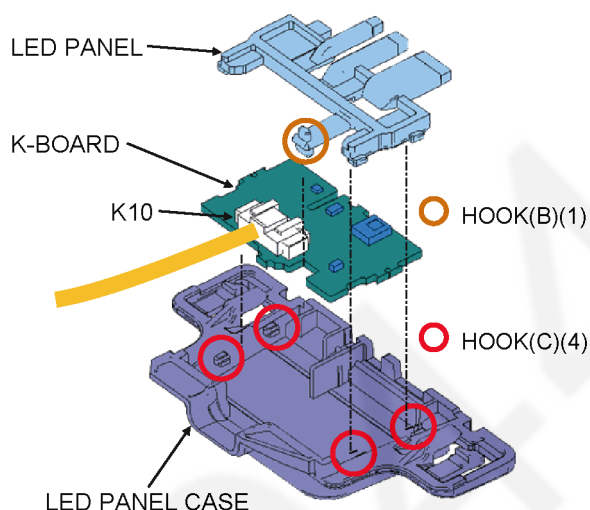


8.2.10. K-Board

1. Remove the 2 hooks (A).
2. Remove the LED Panel Assy.

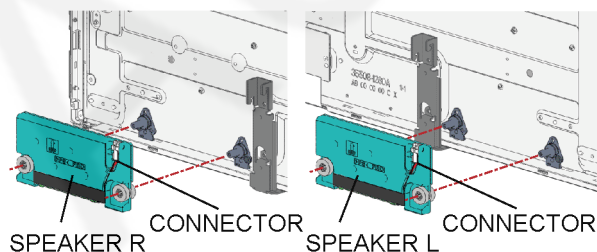


3. Remove the 1 hook (B).
4. Remove the 4 hooks (C).
5. Remove the K-Board and the LED Panel from the LED Panel Case.
6. Disconnect the connector (K10).
7. Remove the K-Board from the LED Panel.

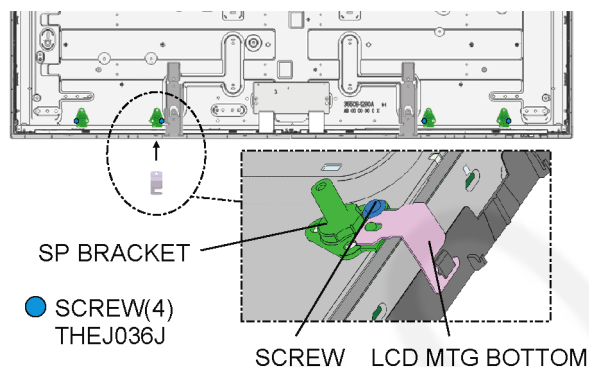


8.2.11. Speaker L/R

1. Disconnect the 2 connectors.
2. Remove the Speaker L/R.

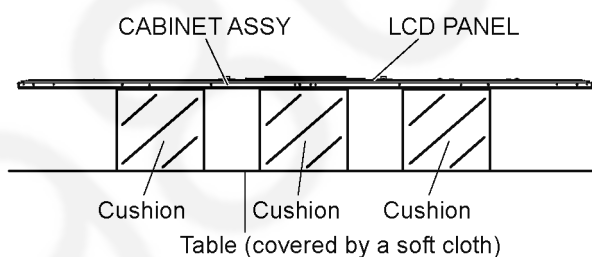


3. Remove the 4 screws.
4. Remove the 4 SP Brackets and the 4 LCD MTG Bottoms.

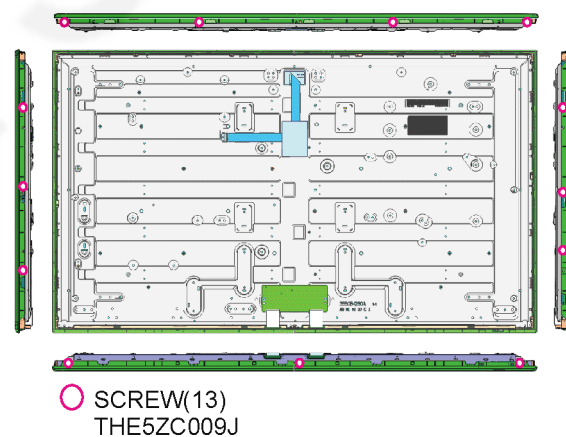


8.2.12. Cabinet Assy and LCD Panel

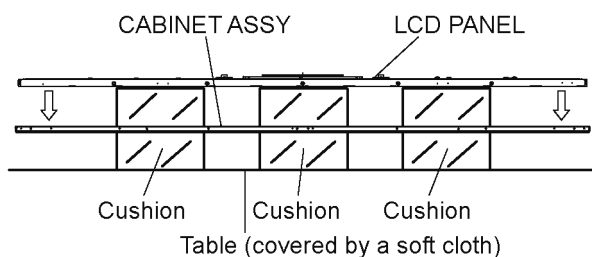
1. Place the Cabinet assy on a flat surface of a table (covered by a soft cloth) and a cushion.



2. Remove the 13 screws.

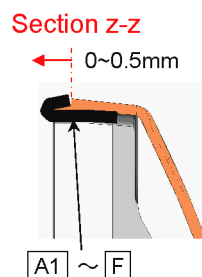
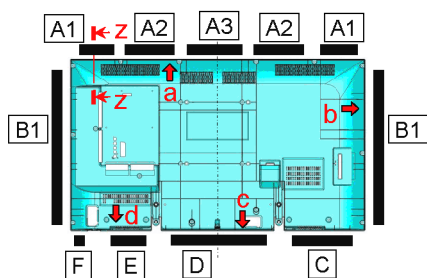


3. Remove the Cabinet Assy and LCD Panel.

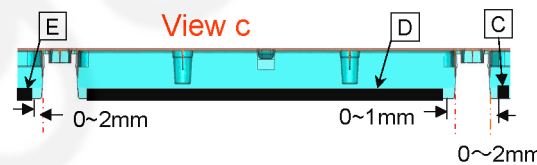
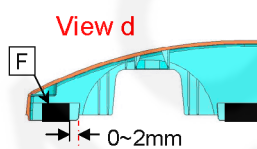
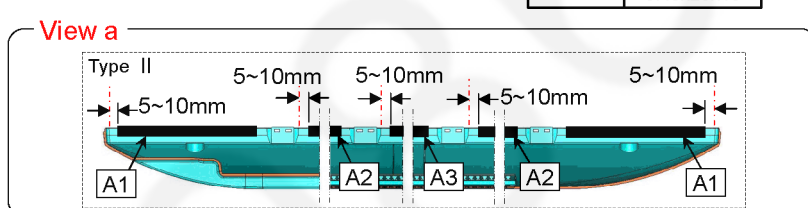
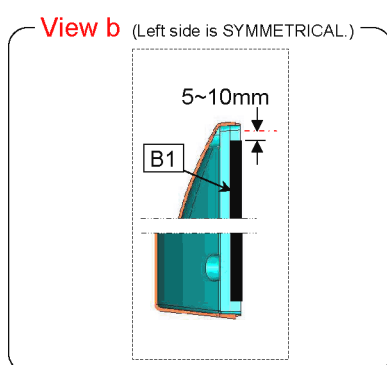


8.3. Specification of EMI countermeasures

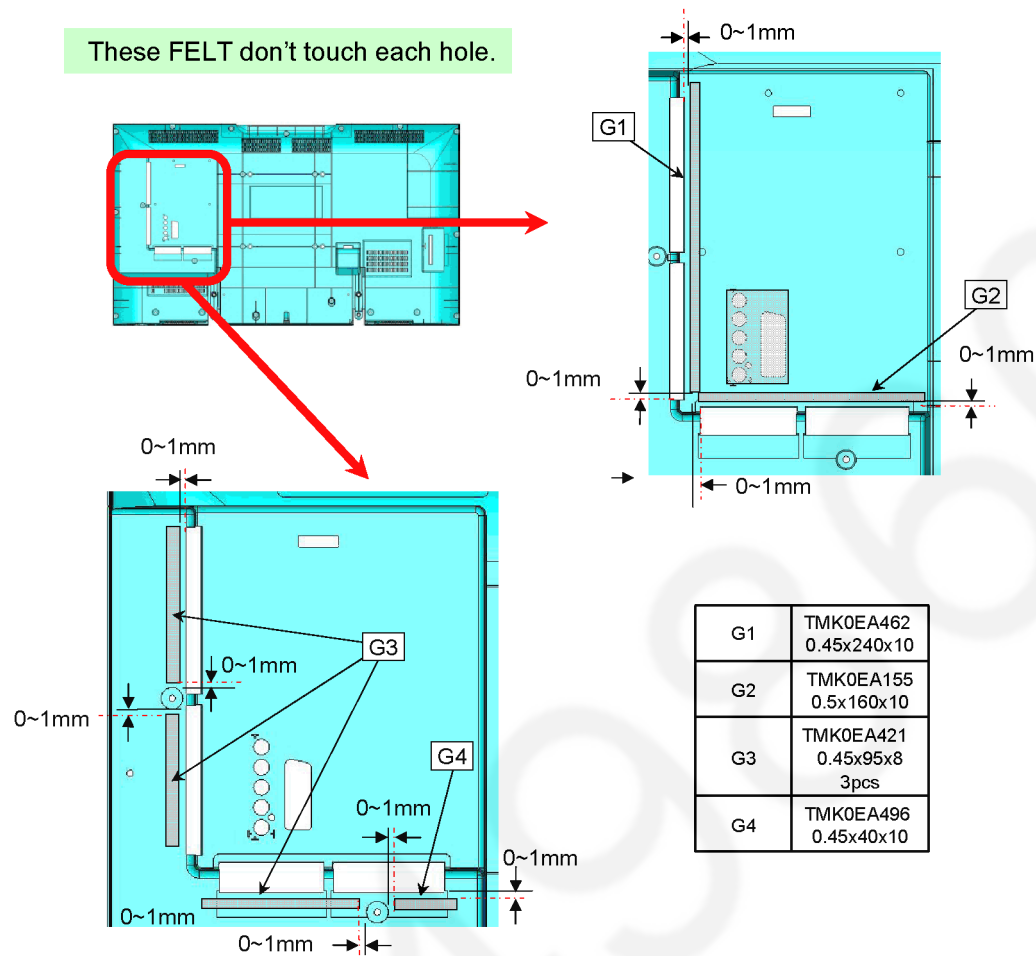
8.3.1. Felt on Back Cover



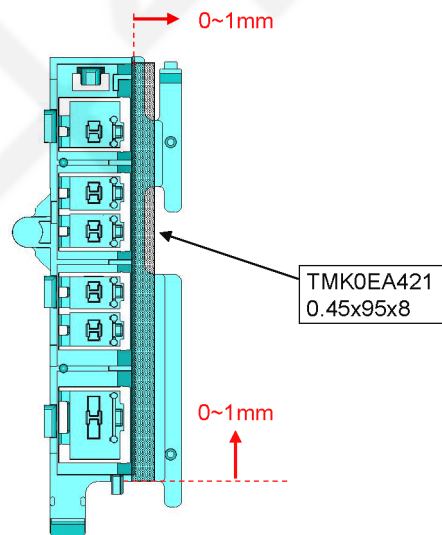
A1	TMK0EA492 0.35x130x10 2pcs
A2	TMK0EA482 0.35x215x10 2pcs
A3	TMK0EA483 0.35x85x10
B1 2pcs	TMK0EA432 0.35x520x10
C	TMK0EA462 0.45x240x10
D	TMK0EA426 0.45x362x10
E	TMK0EA427 0.45x130x10
F	TMK0EA419 0.45x20x10



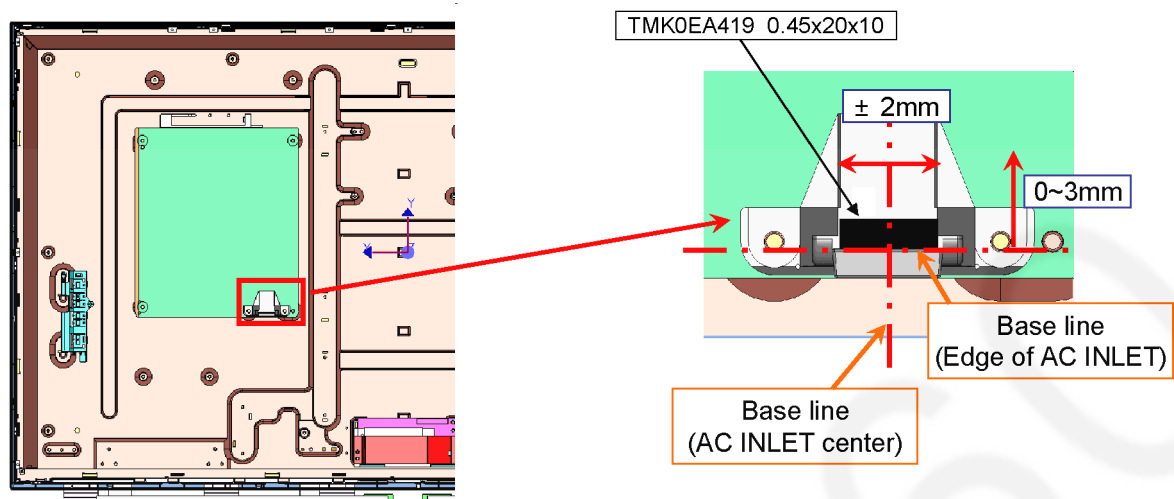
8.3.2. Felt on Back Cover



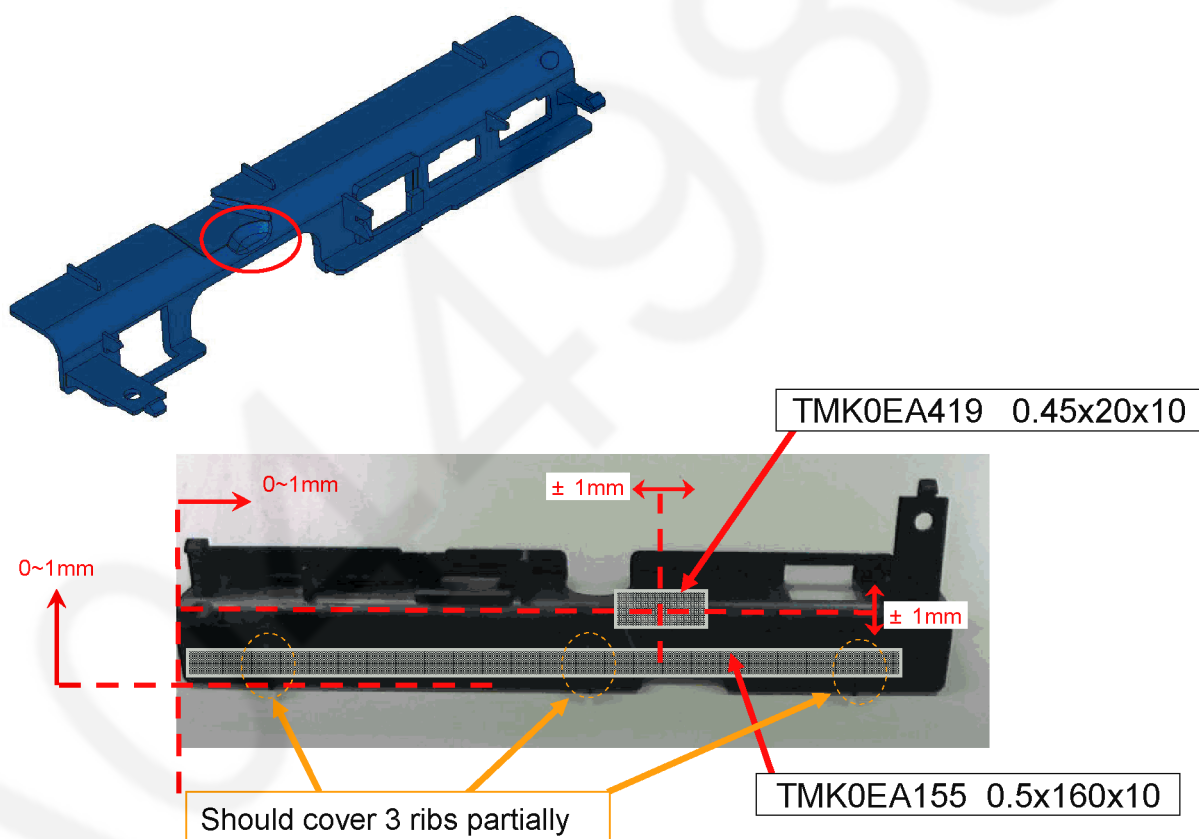
8.3.3. Felt on Key Button



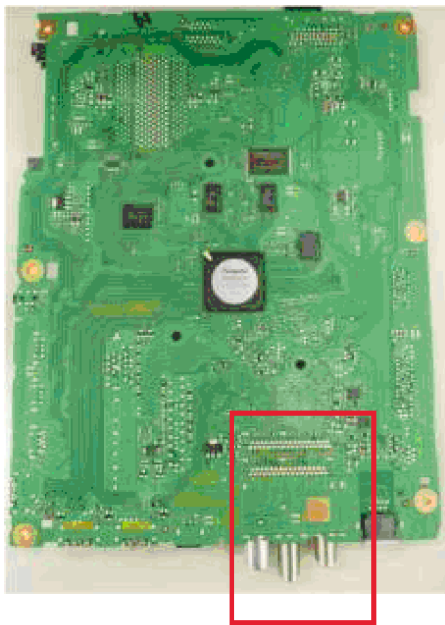
8.3.4. Felt on AC INLET



8.3.5. Felt on BOTTOM AV BRACKET



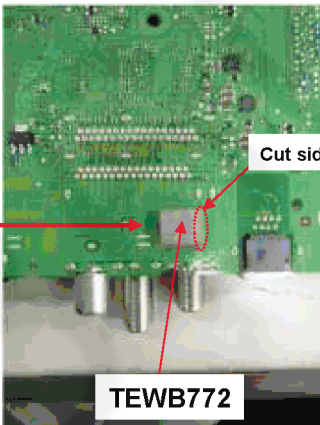
8.3.6. WORK INSTRUCTIONS FOR GASKET POSTING



GASKET

PART No.	SIZE	Qty
TEWB772	T5xW10xL10	1pcs

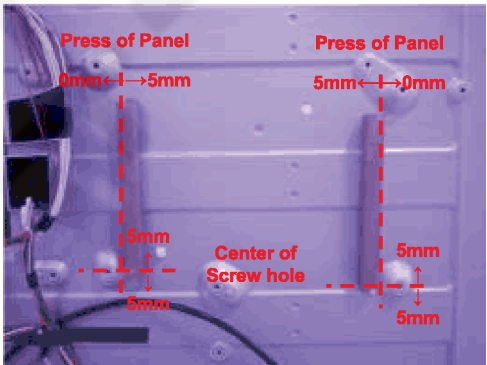
Put a gasket on Resist-stripped point. (Inside of square)



8.3.7. WORK INSTRUCTIONS FOR GASKET POSTING

GASKET

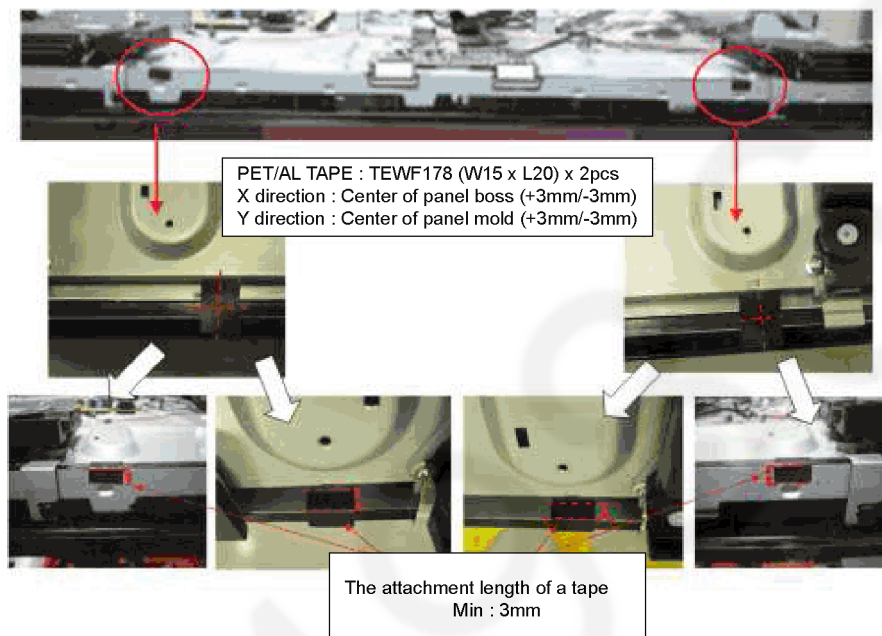
PART No.	SIZE	Qty
TEWB719	T10xW10xL100	2pcs



8.3.8. WORK INSTRUCTIONS FOR PET/AL-Tape POSTING

PET/AL-TAPE

Parts No	SIZE	Qty
TEWF178	W15xL20	2



9 Measurements and Adjustments

9.1. Voltage chart of P-board

Power Supply Name	Test point	Spec
24V	TP7407	23.4 ± 1.2V
16V	TP7411	15.7 ± 0.6V
5VS	TP7501	5.2 ± 0.2V
PFC	TP7201	390 ± 15V

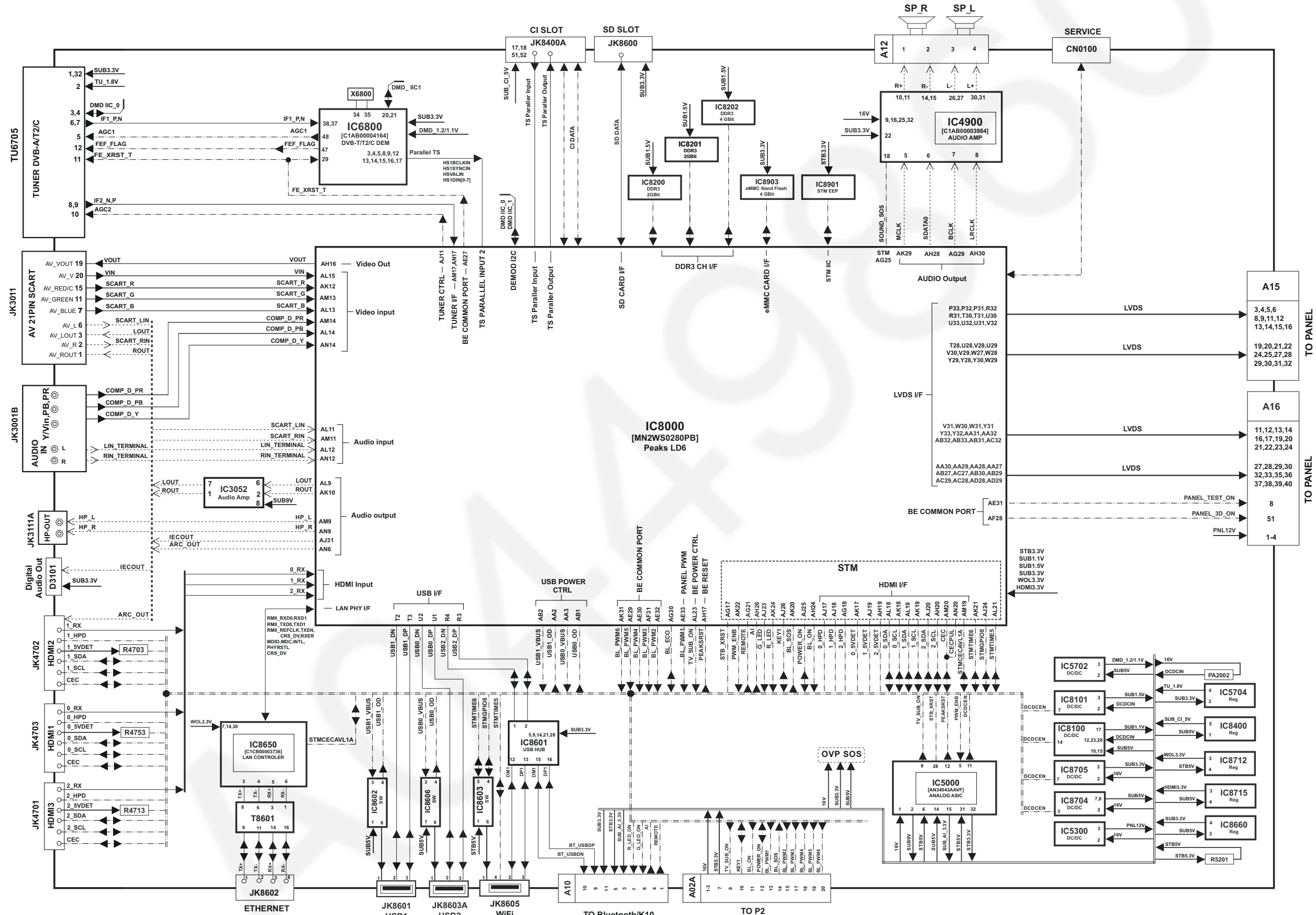
*HOT

9.2. Voltage chart of A-board

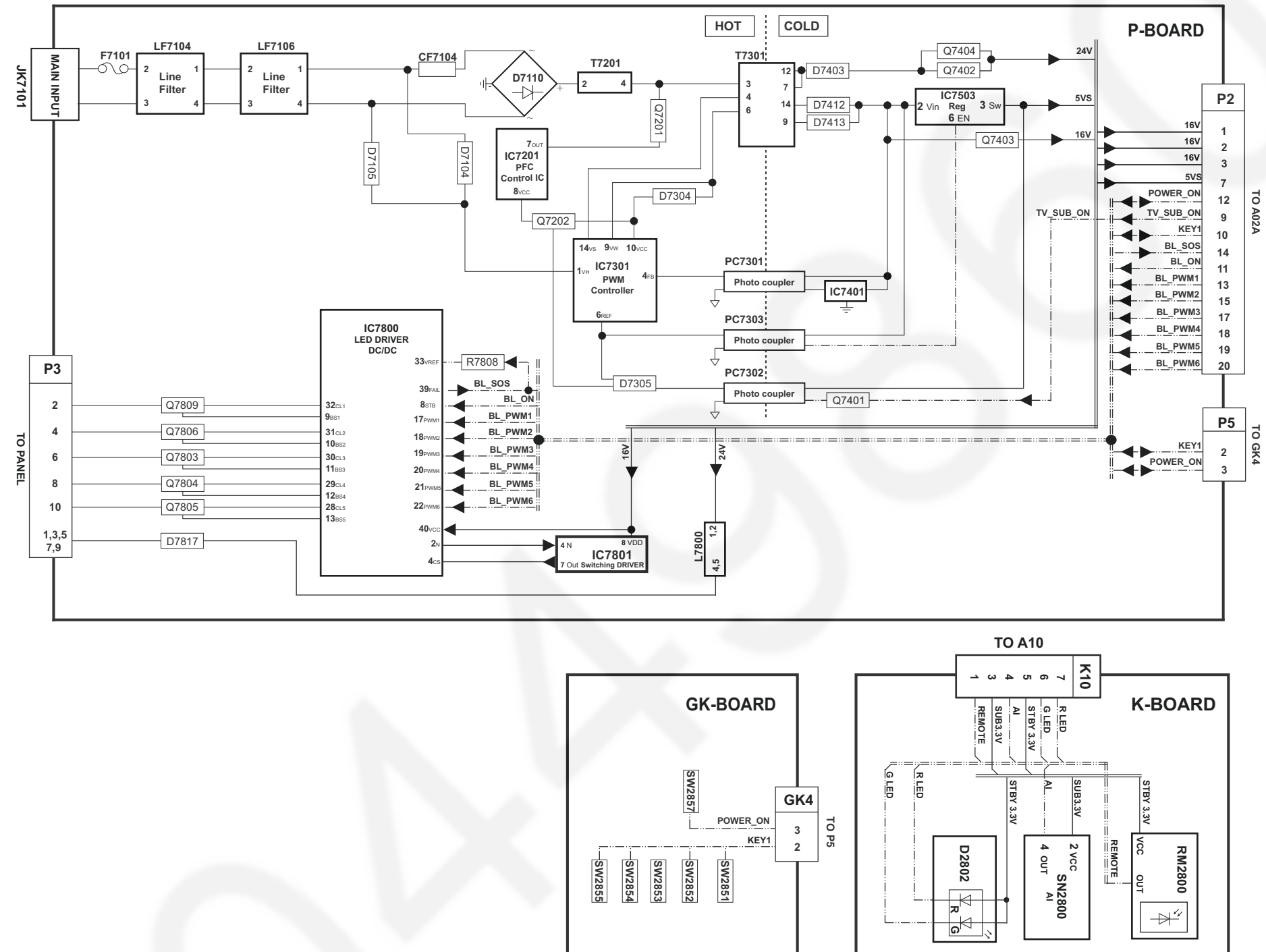
Power Supply Name	Test point	Spec
PNL12V	TP4000, TP4001	12V ± 1.2V
SUB5V	TP8704	5.17V ± 0.25V
SUB3.3V	TP8705	3.39V ± 0.15V
HDMI3.3V	TP8710	3.3V ± 0.17V
SUB_AI_3.3V	TP2206	3.3V ± 0.17V
EU_TU_1.8V	TP5704	1.84V ± 0.1V
SUB1.5V	TP8101	1.52V ± 0.08V
SUB1.1V	TP8100	1.21 ± 0.06V
USB-WiFi	TP8620	5.15 ± 0.20V
LNB_PWR_M	TP6703	18V ± 1.0V
LNB_PWR_S	TP6702	18V ± 1.0V
SUB9V	TP5004	9V ± 0.4V
WOL3.3V	TP8712	3.3V ± 0.17V
SD3.3V	TP8617	3.34V ± 0.17V
DMD 1.1V	TP5703	1.12V ± 0.11V
SUB_CI_5V	TP8400	5.0V ± 0.5V
USB1	TP8615	5.0V ± 0.25V
USB2	TP8611	5.0V ± 0.25V

10 Block Diagram

10.1. Block Diagram (1/2)

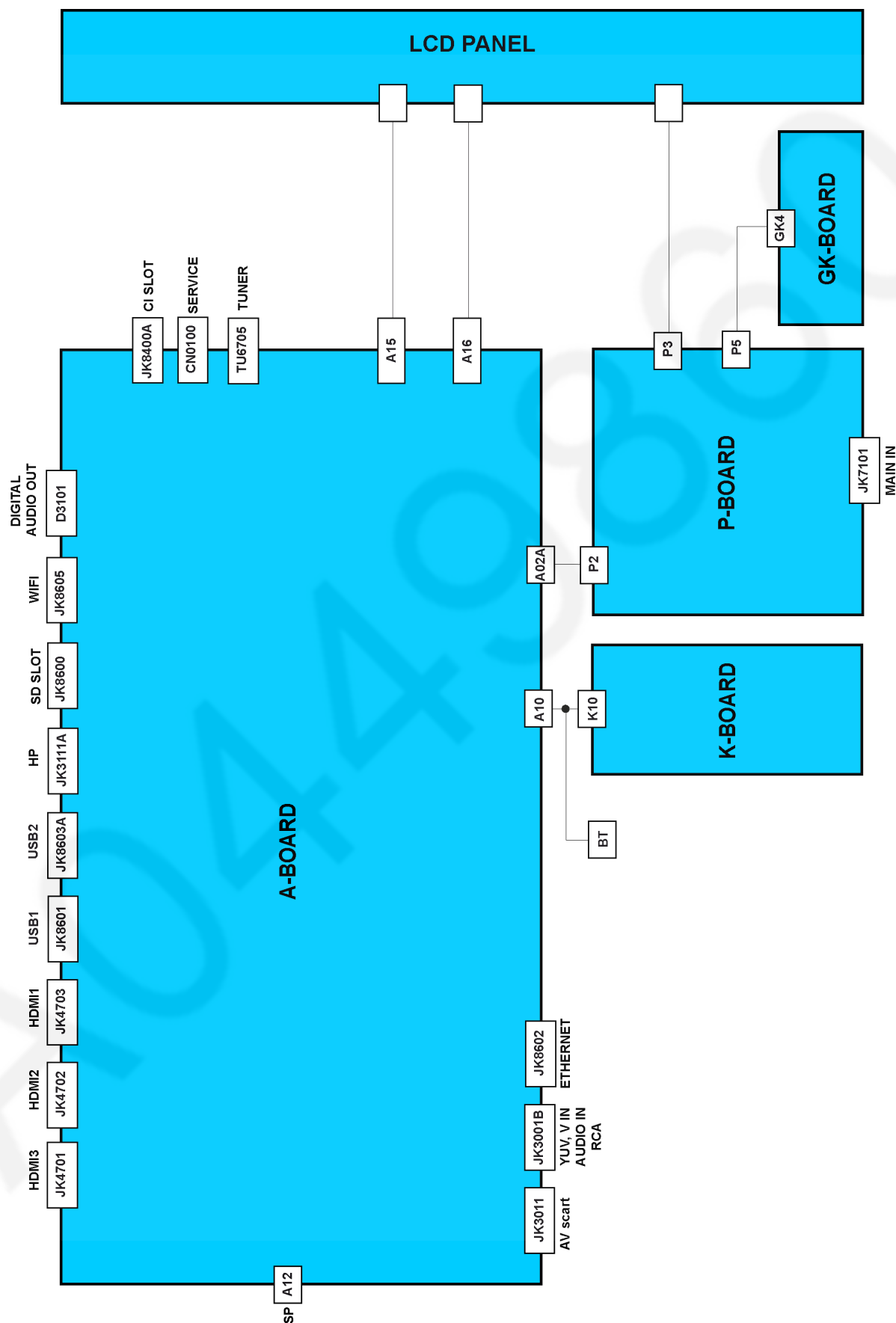


10.2. Block Diagram (2/2)



11 Wiring Connection Diagram

11.1. Wiring Diagram



11.2. Caution statement.

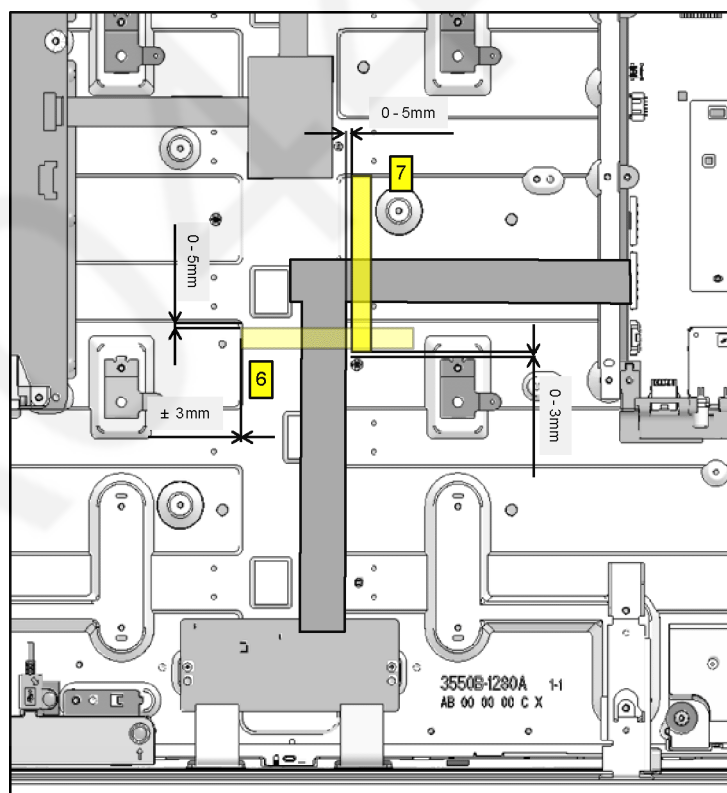
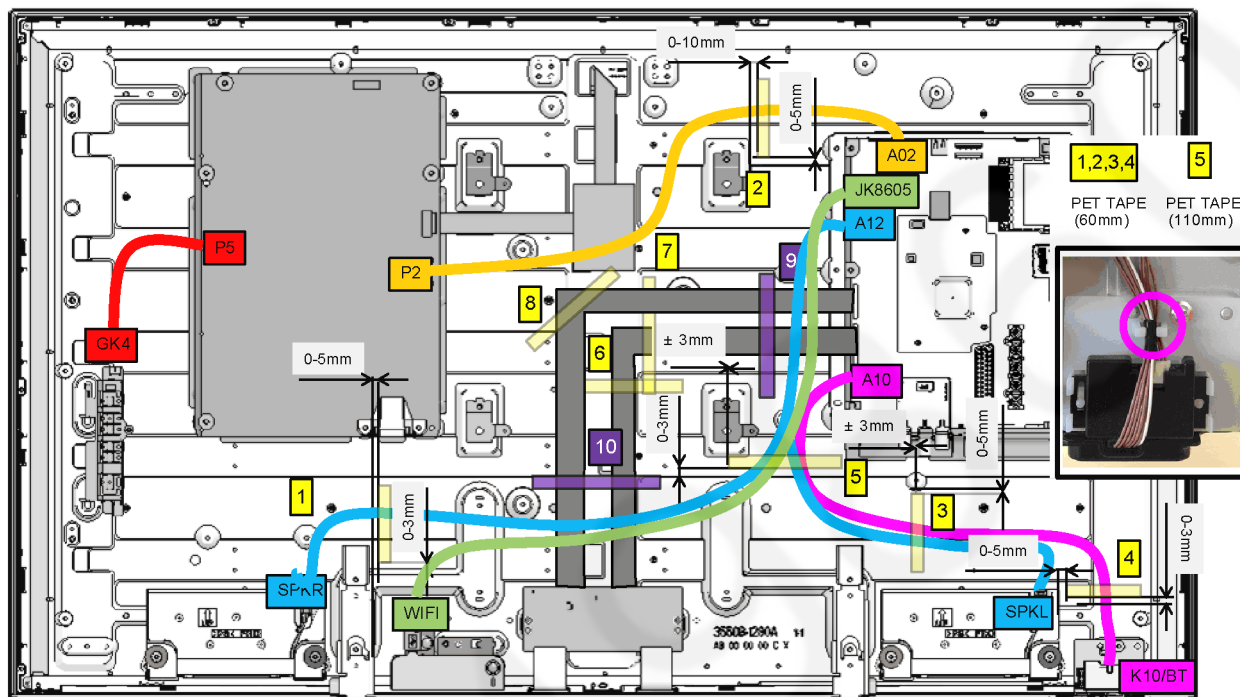
Caution:

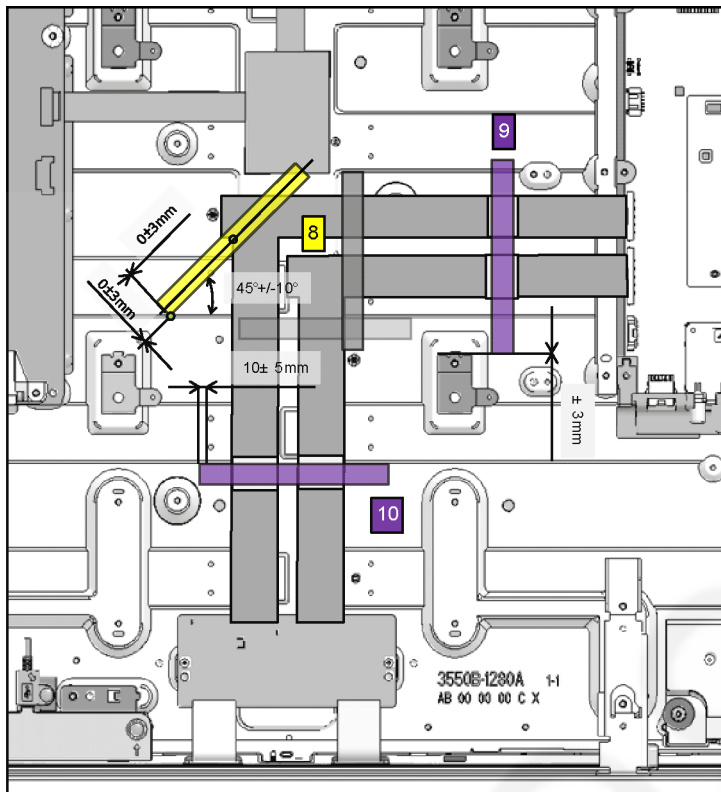
Please confirm that all flexible cables are assembled correctly.

Also make sure that they are locked in the connectors.

Verify by giving the flexible cables a very slight pull.

11.3. Dressing Wire





9,10

ATTENTION: AL/PET TAPE MUST COVER AL TAPE ON LVDS WIRE.



8

PET TAPE
(110mm)

9,10

AL PET TAPE
(120mm)

WIRE No.	TAPE No.									
	1	2	3	4	5	6	7	8	9	10
P5-GK4										
A02-P2		○								
A10-K10/BT			○	○	○					
A12 - SPKR	○				○					
A12-SPKL			○		○					
WIFI-JK8605					○					
FFC 1						○	○		○	○
FFC 2								○	○	○