

SERVICE MANUAL

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ORIGINAL MANUAL ISSUE DATE: 9/2017

Version	Date	Subject
1.0	9/2017	Original manual issue.

GN3TP CHASSIS
KCL Segment

LCD Digital Color TV

SONY®

9-888-743-01

MODEL LIST

<u>MODEL</u>	<u>COLOR</u>	<u>COMMANDER</u>	<u>DEST.</u>
KD-50X690E	Black	RMT-TX300U	UC2

<u>MODEL</u>	<u>COLOR</u>	<u>COMMANDER</u>	<u>DEST.</u>
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WARNINGS AND CAUTIONS - ENGLISH

CAUTION

These servicing instructions are for use by qualified service personnel only.

To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

WARNING!!

An isolation transformer should be used during any service to avoid possible shock hazard, because of live chassis.

The chassis of this receiver is directly connected to the ac power line.

CARRYING THE TV

Be sure to follow these guidelines to protect your property and avoid causing serious injury.

- Carry the TV with an adequate number of people; larger size TVs require two or more people.
- Correct hand placement while carrying the TV is very important for safety and to avoid damages.

SAFETY-RELATED COMPONENT WARNING!!

Components identified by shading and ! mark on the schematic diagrams, exploded views, and in the parts list are critical for safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in supplements published by Sony. Circuit adjustments that are critical for safe operation are identified in this manual.

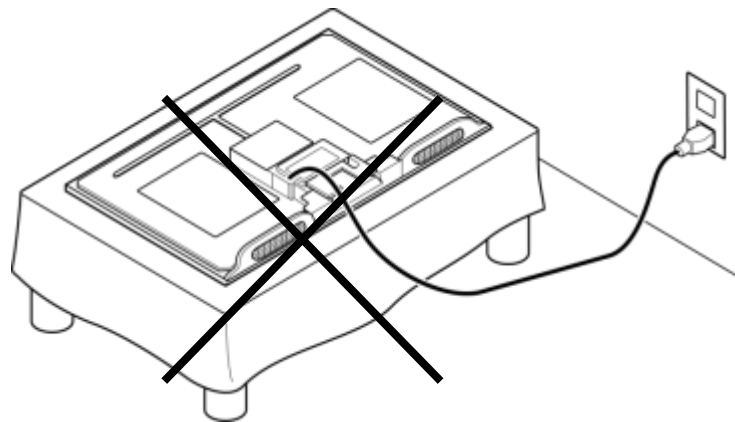
Follow these procedures whenever critical components are replaced or improper operation is suspected.

USE CAUTION WHEN HANDLING THE LCD PANEL

When repairing the LCD panel, be sure you are grounded by using a wrist band.

When repairing the LCD panel on the wall, the LCD panel must be secured using the 4 mounting holes on the rear cover.

- 1) Do not press on the panel or frame edge to avoid the risk of electric shock.
- 2) Do not scratch or press on the panel with any sharp objects.
- 3) Do not leave the module in high temperatures or in areas of high humidity for an extended period of time.
- 4) Do not expose the LCD panel to direct sunlight.
- 5) Avoid contact with water. It may cause a short circuit within the module.
- 6) Always clean the LCD panel with a soft cloth material.
- 7) Use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short.
- 8) Protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).
- 9) It is recommended not to exceed 1 hour of Power-On nor Burn-in period with LCD panel face down condition, in repair activity.
- 10) Disconnect the AC power when replacing the parts.(FFC cable etc.).



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.
8. For safety reasons, repairing the Power board and/or Inverter board is prohibited.

Leakage Test

(To protect electric shock when customer touch the terminal.)

Leakage current can be measured by V: Voltmeter or oscilloscope (r.m.s. or peak reading)

Stabilized power supply instrument and isolated voltage transformer:

Use too much current capacity and isolated voltage transformer does not need to use stabilized power supply equipment

Specification of RMS volt meter: Input resistance > 1 Mohm, Input capacitance < 200 pF,

Frequency range: 15 Hz – 1MHz (Refer Figure 1). Isolated type volt -meter (FLUKE 8921A etc *1)

*1 Not use FLUKE 8920A that connected to protective earth by diode

Leakage current of measurement instrument is less than $10\mu\text{Arms}$ when under test equipment AC plug is opened

Set up the following condition and turn on the set.

Applied voltage: Nominal input voltage (Description on Nameplate)

Measure the leakage current between one phase conductor and neutral for terminal A and terminal B.

Read rms value, and then calculate to peak value $\text{PEAK VALUE} = \sqrt{2} \text{RMS VALUE}$

Comply with the following requirement Class II equipment (2-pin plug): for each terminal, the worst value of measurement must not exceed AC 350uA peak). Note: including AC adaptor, AC adaptor/DC operated unit combination

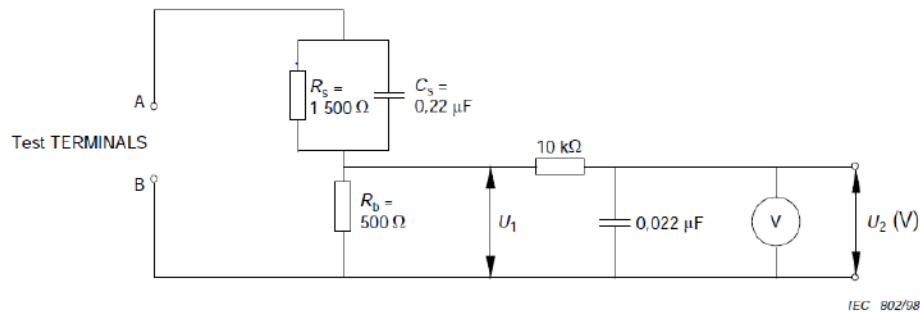


Figure 1 – Measuring network for Leakage Current

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble- light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

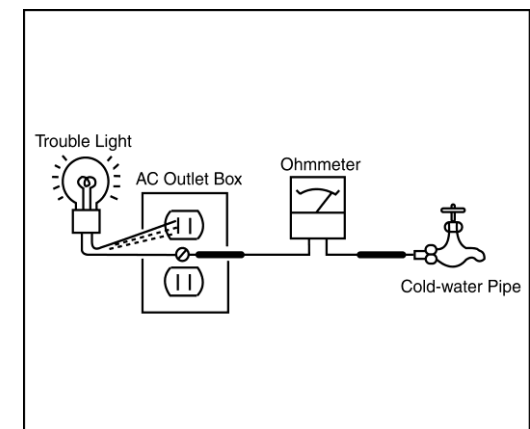


Figure B. Checking for earth ground.

SELF DIAGNOSIS FUNCTION

These models do not support Self Diagnosis Function.

SERVICE POSITION

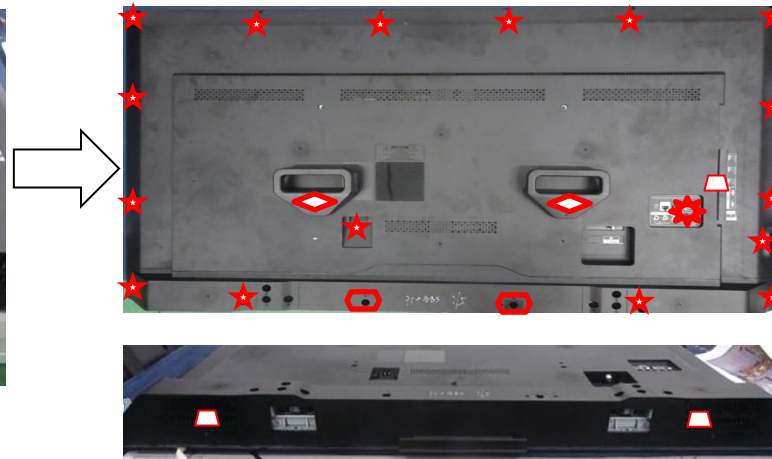
As for this model, the bottom of rear cover is installed between the stand assy and the panel.
Therefore according to the following procedure when performing adjustment and operation check after the part replacement.

<KD-50X690E>

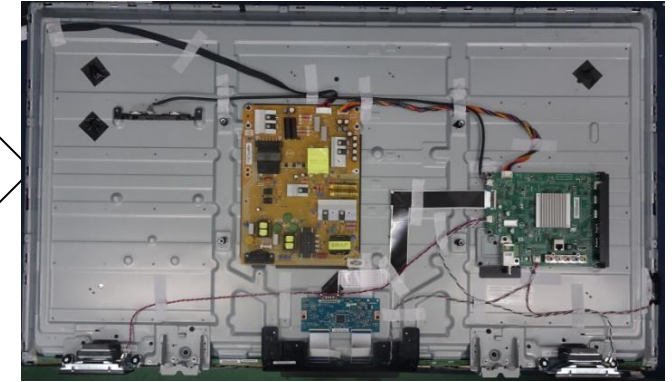
1. Remove all screws on the Stand to main unit (6 screws)



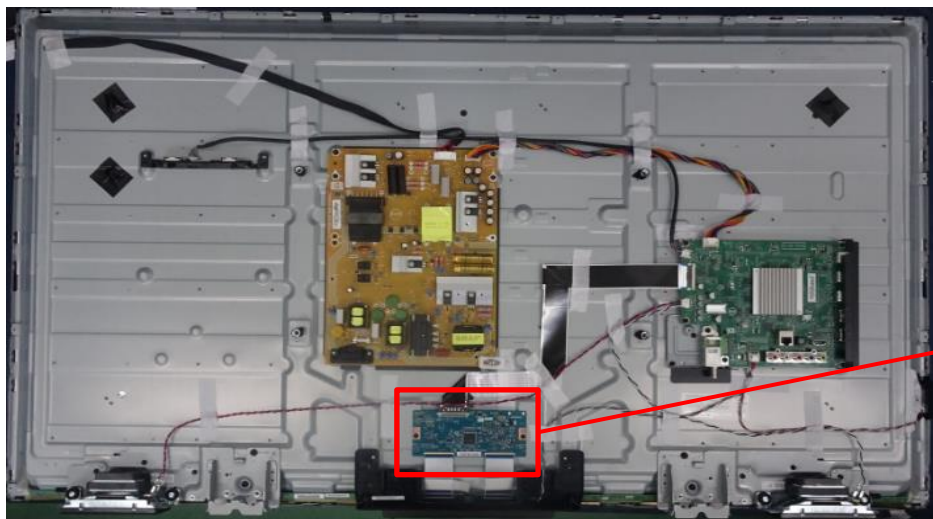
2. Remove all screws on the Rear Cover to Bezel & Main Board & Bracket (24 screws)



3. After removing rear cover, lie down the main unit to a surface for following test repair.



	4-734-425-01	SCREW M4x12
	4-595-215-01	SCREW M3x6
	4-595-223-01	SCREW M6x22
	4-595-221-01	SCREW T3x8
	4-595-213-01	SCREW M3x6
	4-595-219-01	SCREW T3x8




Attention: This photo is based on Sony criteria for appearing standing the main unit after removing back cover and assembling the stand. But considering mechanical design of the models and normal service process, it is not recommended to keep main unit standing by this status for repairing/testing at repair center. Please pay attention for avoiding possible scratch/deformation occurred.

Note: Remove rear cover, then assemble the stand to main unit. This will cause the stand with main unit fit closely, scratch or deformation may occurred easily on the stand or bezel deco.

SEC 1. DISASSEMBLY AND PARTS LIST

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark \triangle are critical for safety. Replace only with part number specified.

The components identified by mark  contain confidential information. Strictly follow the instructions whenever the components are repaired and/or replaced.

1-1. KD-50X690E

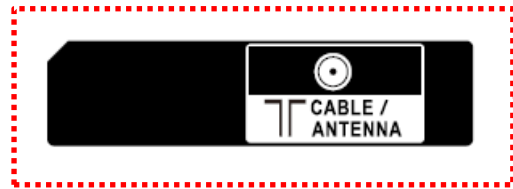
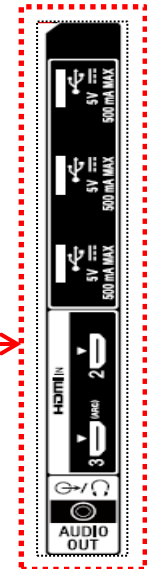
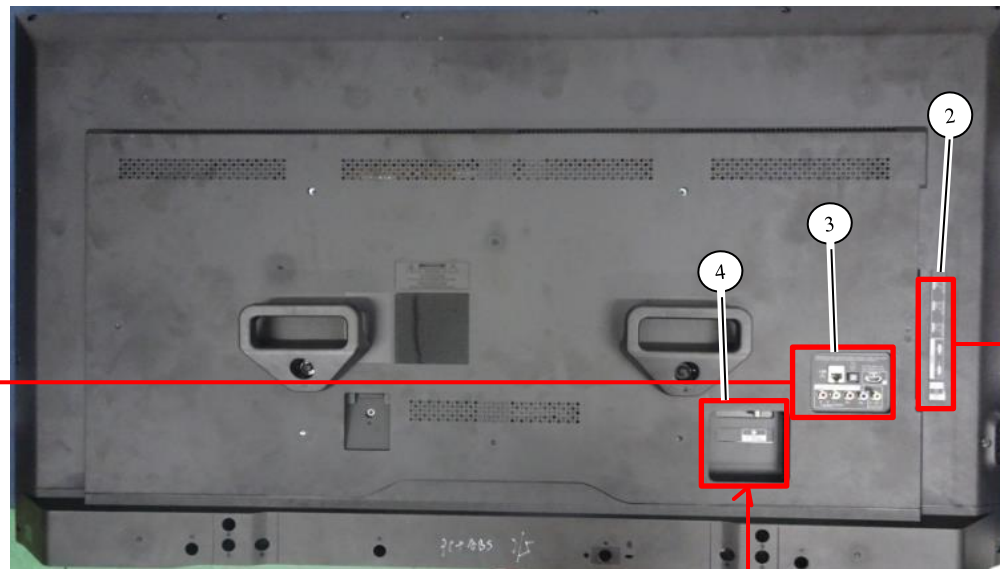
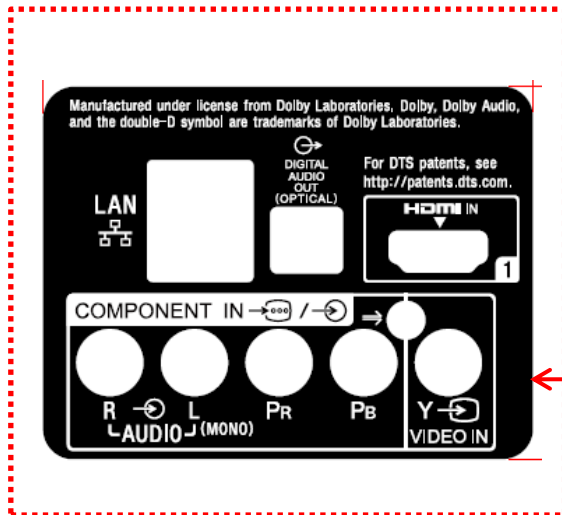
1-1-1. BASE STAND



- 1 A-2198-471-A STAND ASSY
- 2 4-732-163-01 LABEL, SIDE IO
- 3 4-732-164-01 LABEL, BOTTOM IO
- 4 4-732-165-01 LABEL, REAR IO

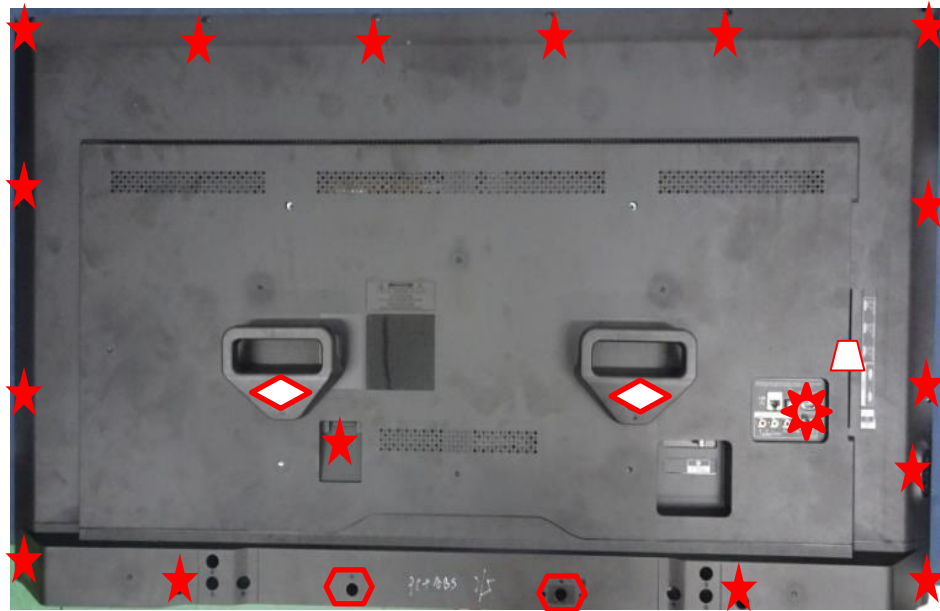
1

+ 4-734-425-01 SCREW M4x12



1-1. KD-50X690E

1-1-2. REAR COVER



REF. No.	PART No.	DESCRIPTION	MARK
5	4-732-155-01	COVER, REAR	

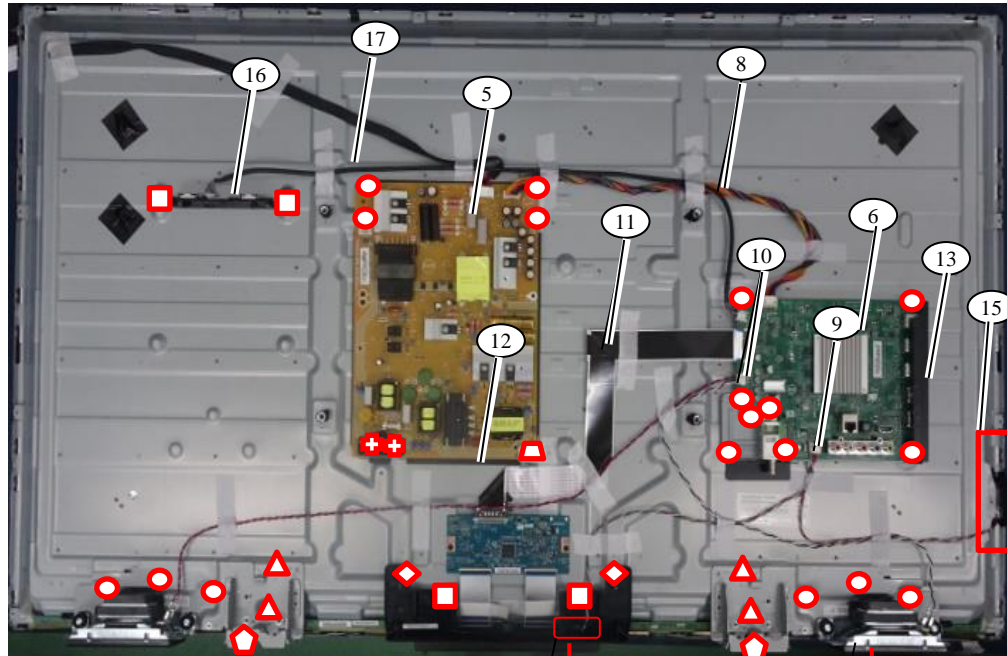
5

★	4-595-215-01	SCREW M3x6
◇	4-595-223-01	SCREW M6x22
⬡	4-595-221-01	SCREW T3x8
▴	4-595-213-01	SCREW M3x6
⚙	4-595-219-01	SCREW T3x8



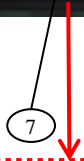
1-1. KD-50X690E

1-1-3. POWER BOARD, A BOARD ,H BOARD,KEY BOARD,SPEAKER AND WIFI ANTENNA



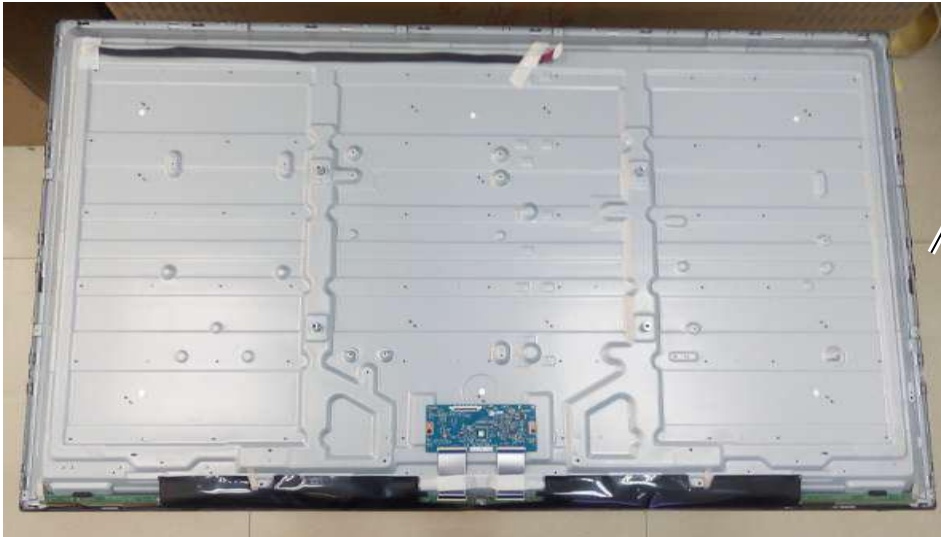
REF. No.	PART No.	DESCRIPTION	MARK
5	1-897-244-11	MOUNTED PWB POWER UNIT (PSU)	
6	1-897-242-11	MOUNTED PWB A (MB)	
7	1-895-806-11	MOUNTED PWB H (IR)	
8	1-910-110-44	CONNECTOR ASSY 16P (MB-PSU)	
9	1-910-113-03	CONNECTOR ASSY (MB-IR-KEY)	
10	1-910-113-02	CONNECTOR ASSY 4P (MB-SP)	
11	1-910-113-05	LVDS CABLE (MB-Panel)	
12	4-732-149-01	SHEET, INSULATION	
13	4-732-154-01	BRACKET, SIDE I/O	
14	1-859-284-11	LOUDSPEAKER (10W)	
15	1-895-957-11	MOUNTED PWB KEY	
16	1-897-243-11	WI-FI MODULE (WITH ANTENNA)	
17	1-910-113-04	CONNECTOR ASSY 8P (MB-WiFi)	

□	4-595-215-01	SCREW M3x6
○	4-595-216-01	SCREW M3X6
△	4-734-426-01	SCREW M4X10
+	4-595-217-01	SCREW M3x8
⬠	4-734-427-01	SCREW T3x6
▱	4-595-221-01	SCREW M3x8
◇	7-682-560-04	SCREW M4X6



1-1. KD-50X690E

1-1-4. LCD PANEL and COVER, BOTTOM



REF. No.	PART No.	DESCRIPTION	MARK
18	A-2198-535-A	LCM ASSY 50 AUO 3.5	
	A-2198-725-A	LCM ASSY 50 AUO 3.7 (2nd)	

1-2. MISCELLANEOUS

PART No.	DESCRIPTION	MARK
1-493-312-11	REMOTE COMMANDER (RMT-TX300U)	
△ 1-846-425-43	CORD SET, POWER-SUPPLY	
4-732-162-01	SCREW, +PSW M4X12	
4-725-925-01	MANUAL, INSTRUCTION	
4-725-926-01	GUIDE, START UP	

1-3. How to disassemble rear cover [KD-50X690E]

PROCEDURE TO REMOVAL OF REAR COVER

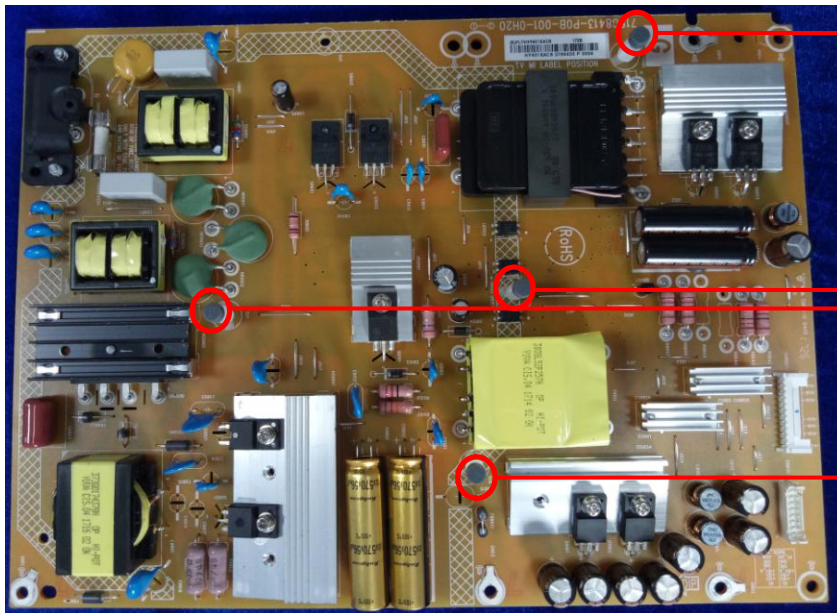
1. Remove all screws on Rear Cover and AC Cover.
2. Open Rear Cover in order as below.



Hold the panel from the middle of bezel, and lift rear cover in the direction of the arrow.

1-4. Assembly the PSU Support pin

1. Assembly the four support pins into the power board. And then check whether the support pins is locked well on the back side of the power board.



Check the support pin is fixed well after power board replacement.



Locked well on the back side of the power board.



Not locked well on the back side of the power board.

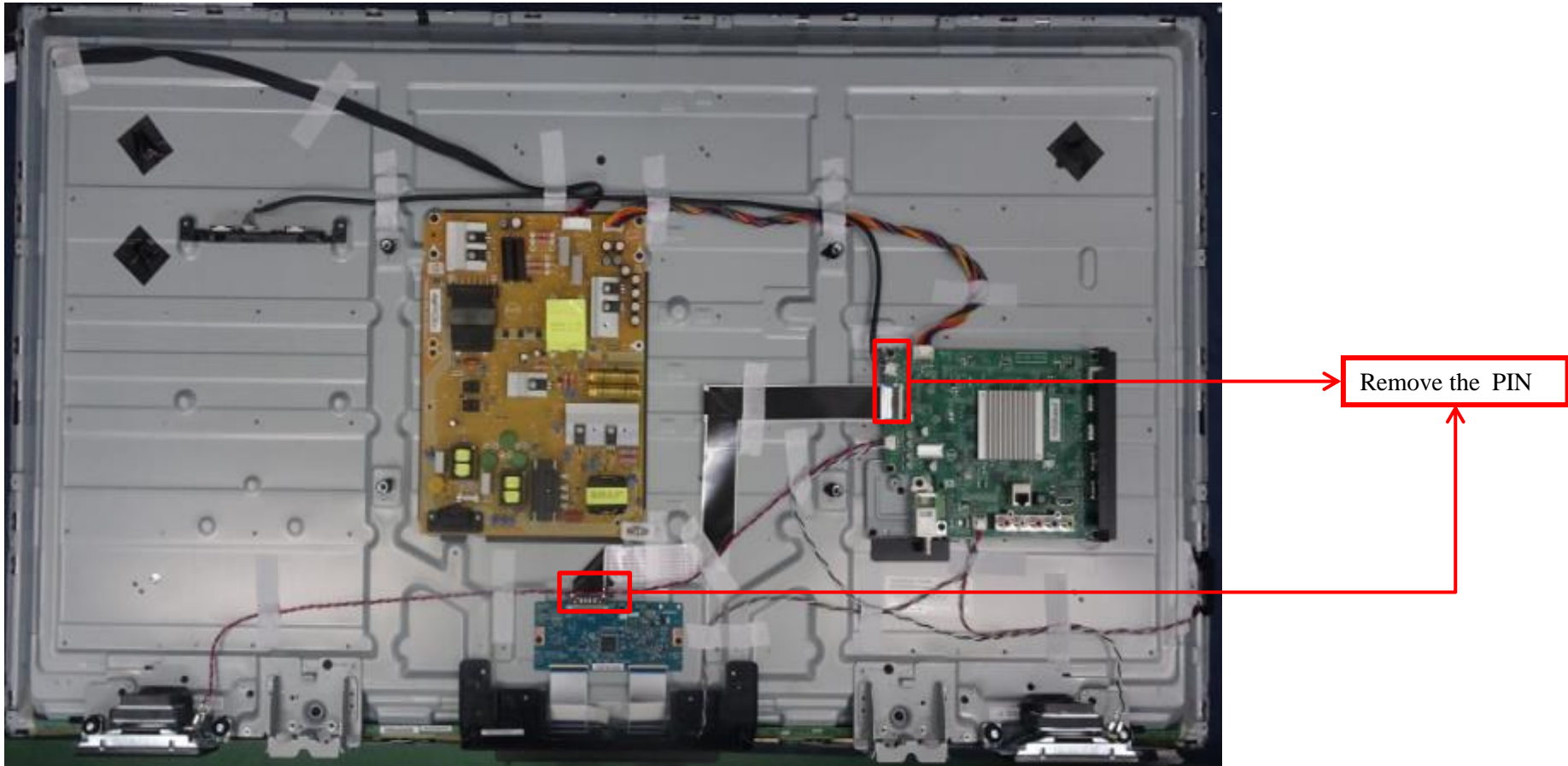
Item	Sony PN	Description	Qty
1	4-571-413-01	SUPPORTER, PWB	4

Caution: Please check the support pin after power board replacement.

1-5. How to disassemble LVDS Cable

1-5-1. How to disassemble FFC Cable

1-5-1-1. PROCEDURE OF REMOVING FFC CABLE ON KD-50X690E

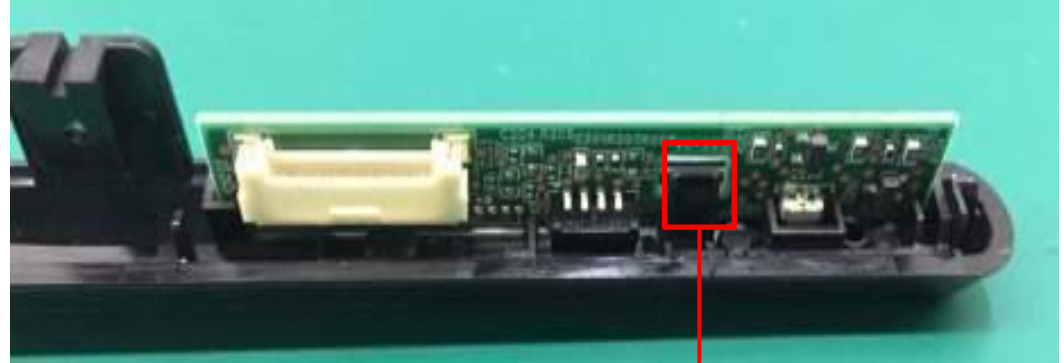


1-6. How to disassemble H Board

PROCEDURE TO REMOVAL OF H Board

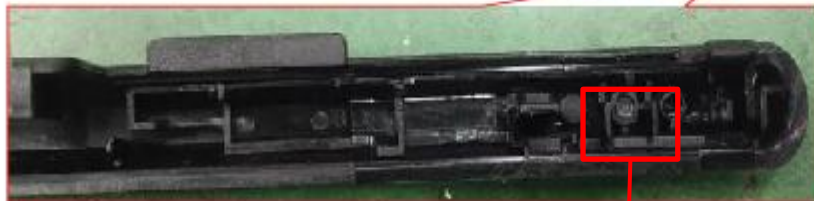


Release hook from H Board



Hook

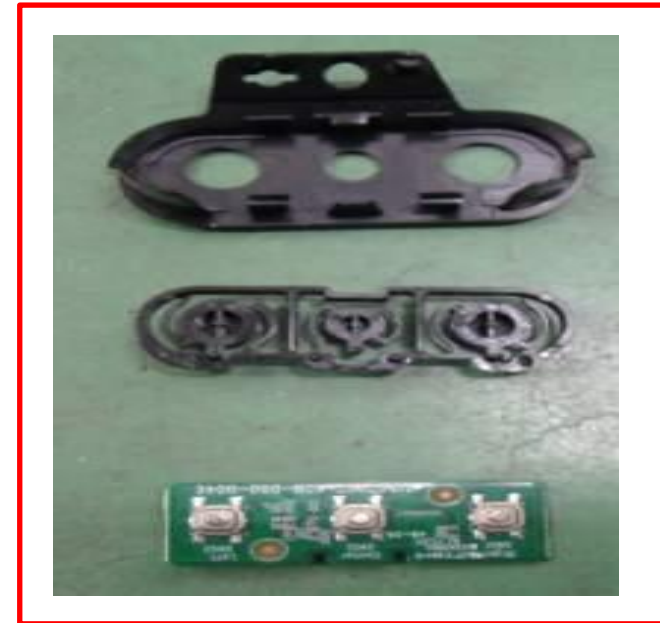
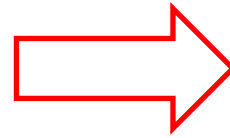
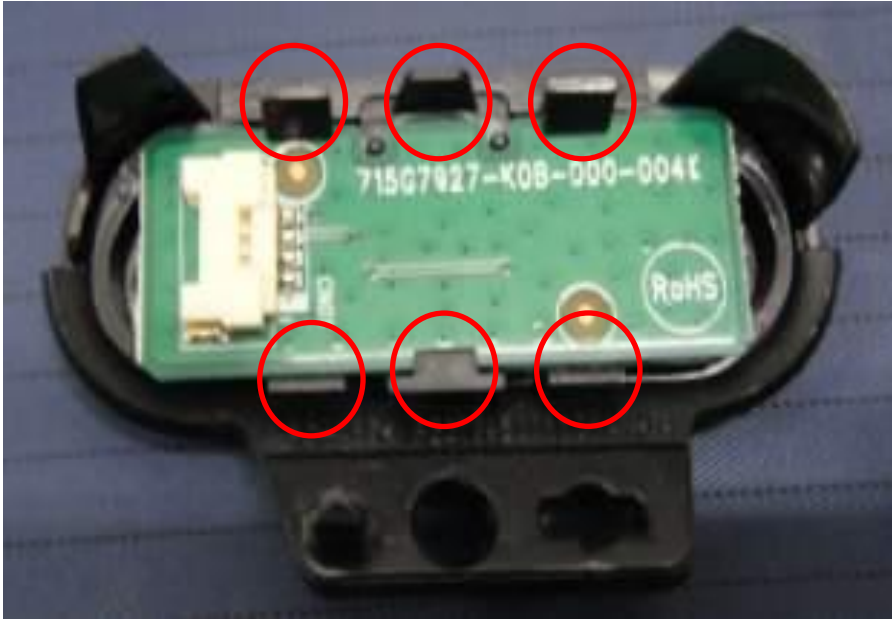
1-7. How to ass'y the LED lens



The LED lens is installed in the hole.
As shown in the picture.

1-8. How to disassemble key Board

PROCEDURE TO REMOVAL OF key Board

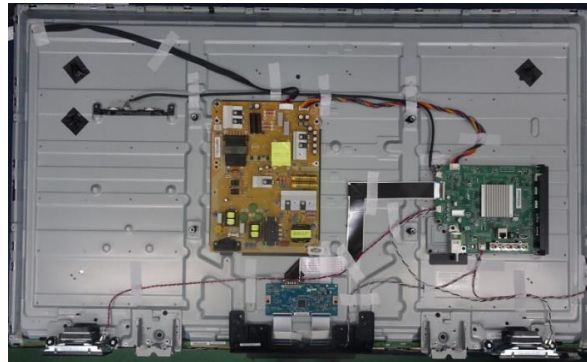


Release hook from Key Board

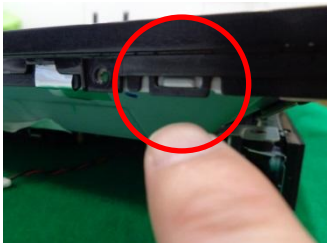
Part Number	Description	Qty	Remark
A-2198-472-A	KEY, BUTTON	1	KEY MODULE ASSY
	KEY, COVER	1	
	MOUNTED PWB KEY	1	

1-9. How to disassemble and assemble the Front Bezel

1. Remove each parts on LCD-Panel.



Remove Aluminum-Tape



Remove Hook



Remove Screw

4-734-428-01

Screw M3xP0.5x5.0 PH For KD-50X690E

4-695-533-01

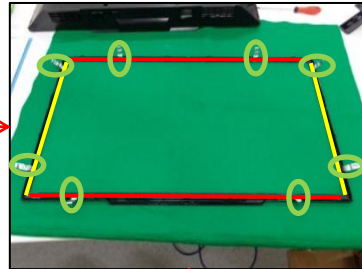
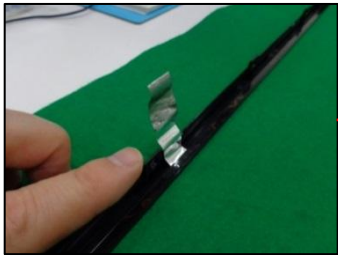
TAPE 45 X 13

For KD-50X690E

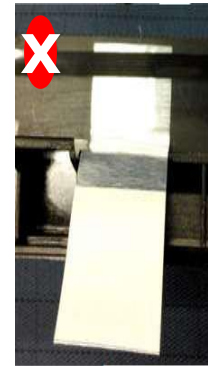
1-9. How to disassemble and assemble the Front Bezel

2. Change the bezel.




Stick Aluminum-Tape and Black-Tape to new bezel

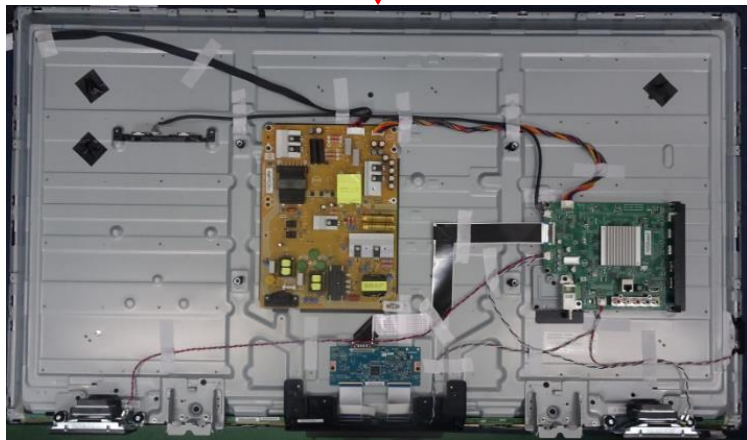


Stick back-tape(cushion) align the red line.
If the back-tape over the bezel,flod it to inside of bezel.



Aluminum-Tape stick on outside,NG

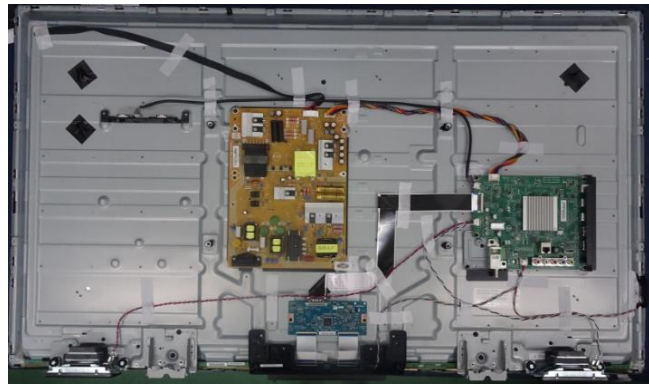
	4-695-533-01	TAPE 45 X 13	For KD-50X690E
	4-695-540-01	CUSHION 615 X 3	For KD-50X690E
	4-695-541-01	CUSHION 1105 X 0.25	For KD-50X690E



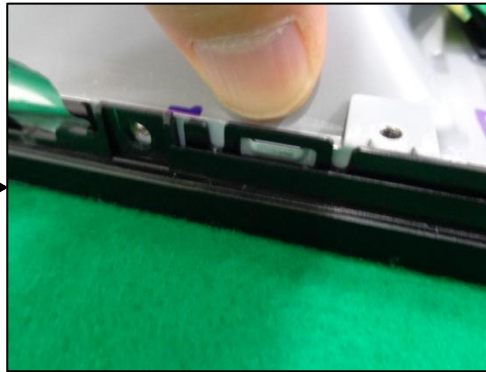
Put LCD-Panel on the bezel

1-9. How to disassemble and assemble the Front Bezel

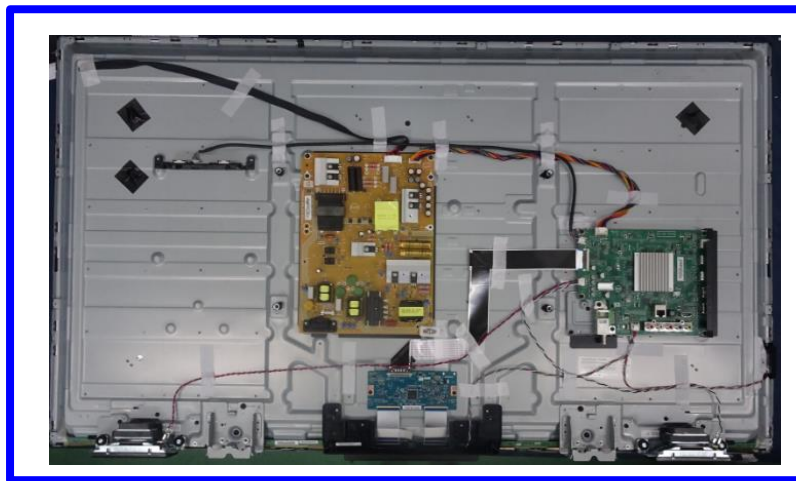
3. Change the bezel.



Hook



Paste Aluminum-Tape to LCD-Panel)



Finish



Install the screw

1-9. How to disassemble and assemble the Front Bezel

< Caution >

* Don't open O-Cell of Panel



** Don't lift up O-Cell of Panel



*** Don't touch COF of the panel



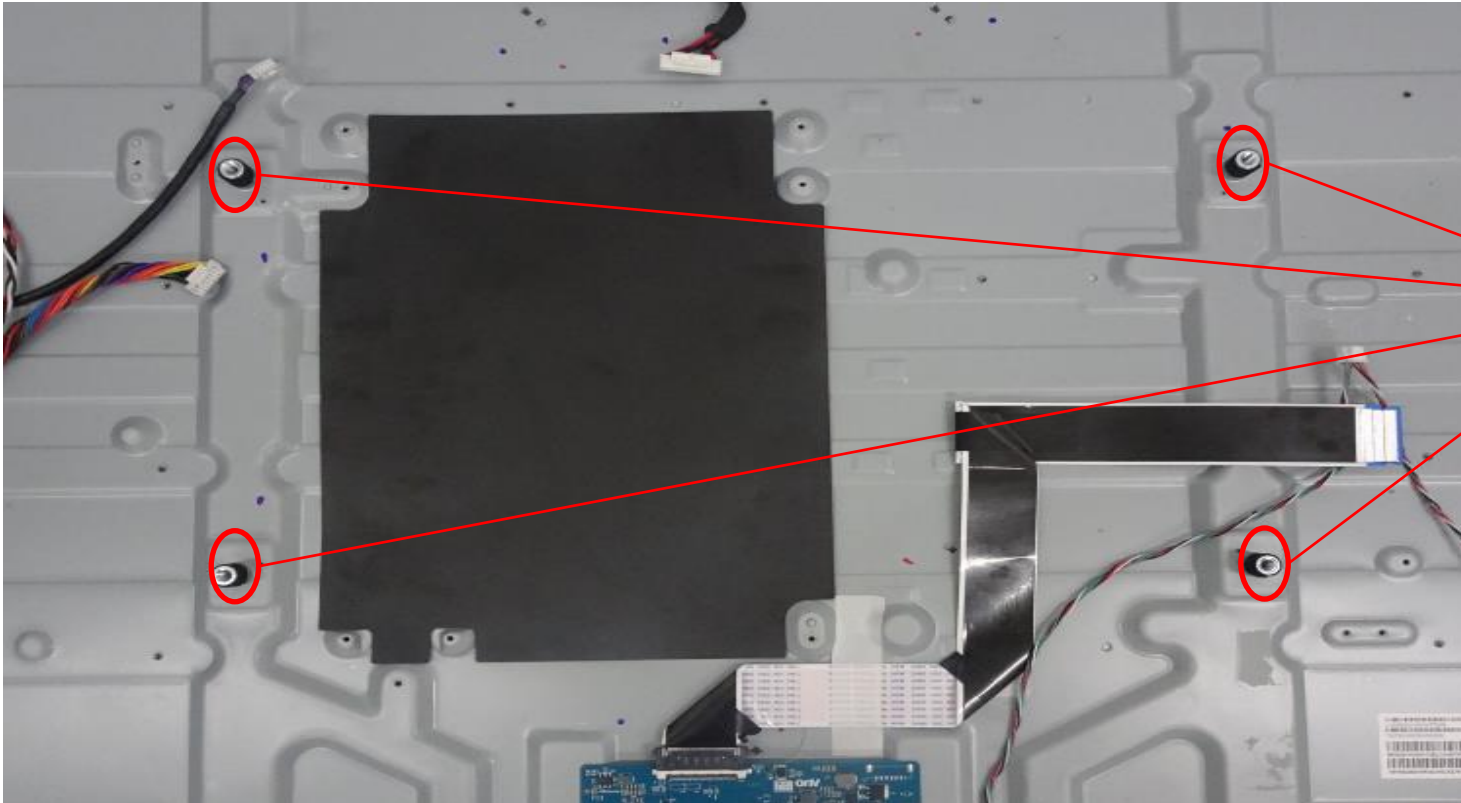
< Check >

* Don't run on the guide of panel



1-10. How to assemble **Himeron Countermeasure** on panel

1-10-1. Stick HIMERON on the Hex-screws.



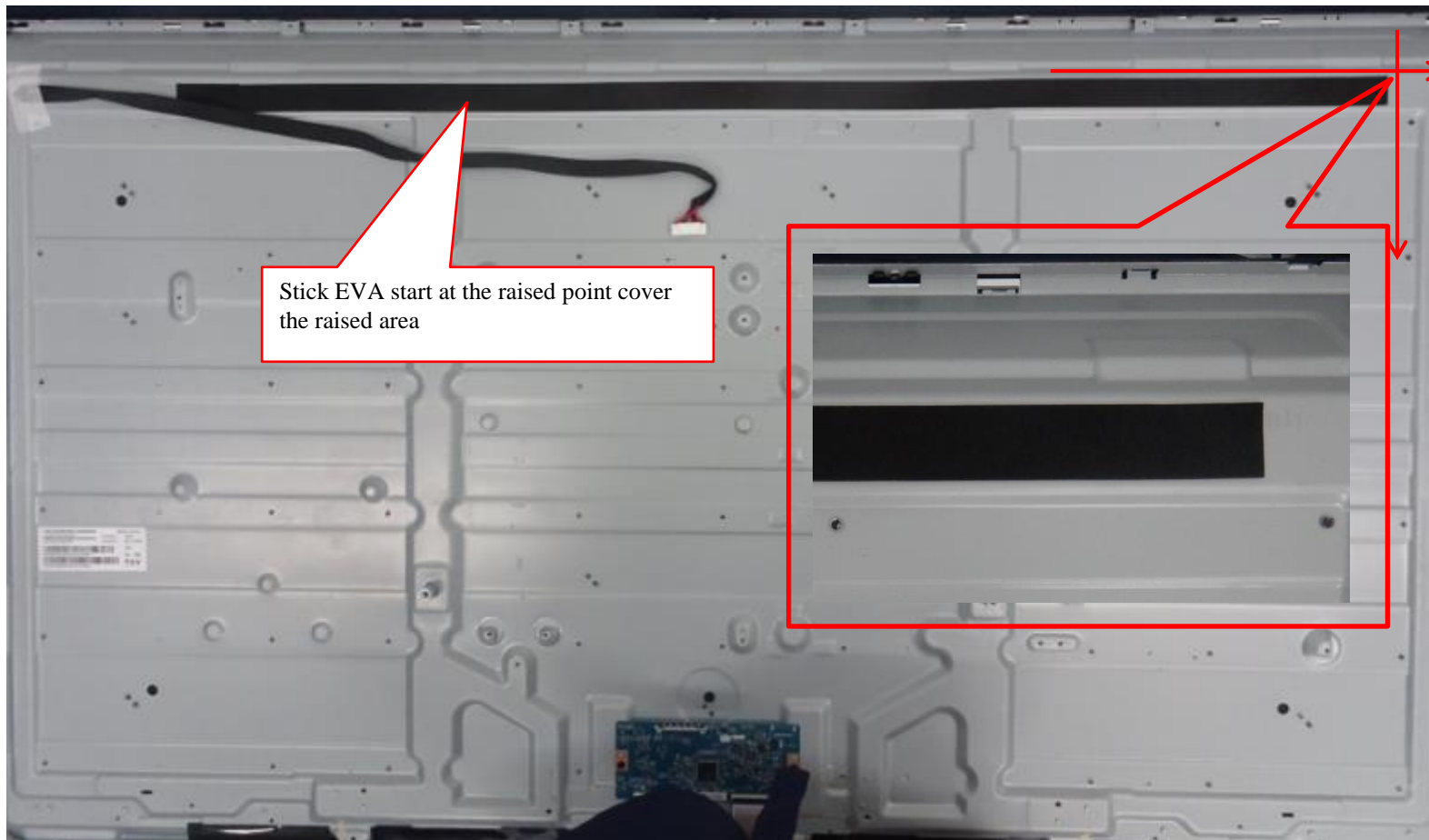
1. Make the Himeron roll the vase and the top of the vase could not be covered

Item	Part number	Description(L*W)(mm)	Qty	Remark
1	4-695-529-01	45mm*10mm*0.25mm	4	Cushion on Hex-screws

CAUTION: MUST APPLY HIMERON TAPE before assemble Panel if NOT AVAILABLE

1-10. How to assemble the **Himeron Countermeasure on panel**

1-10-2. Stick HIMERON on the panel

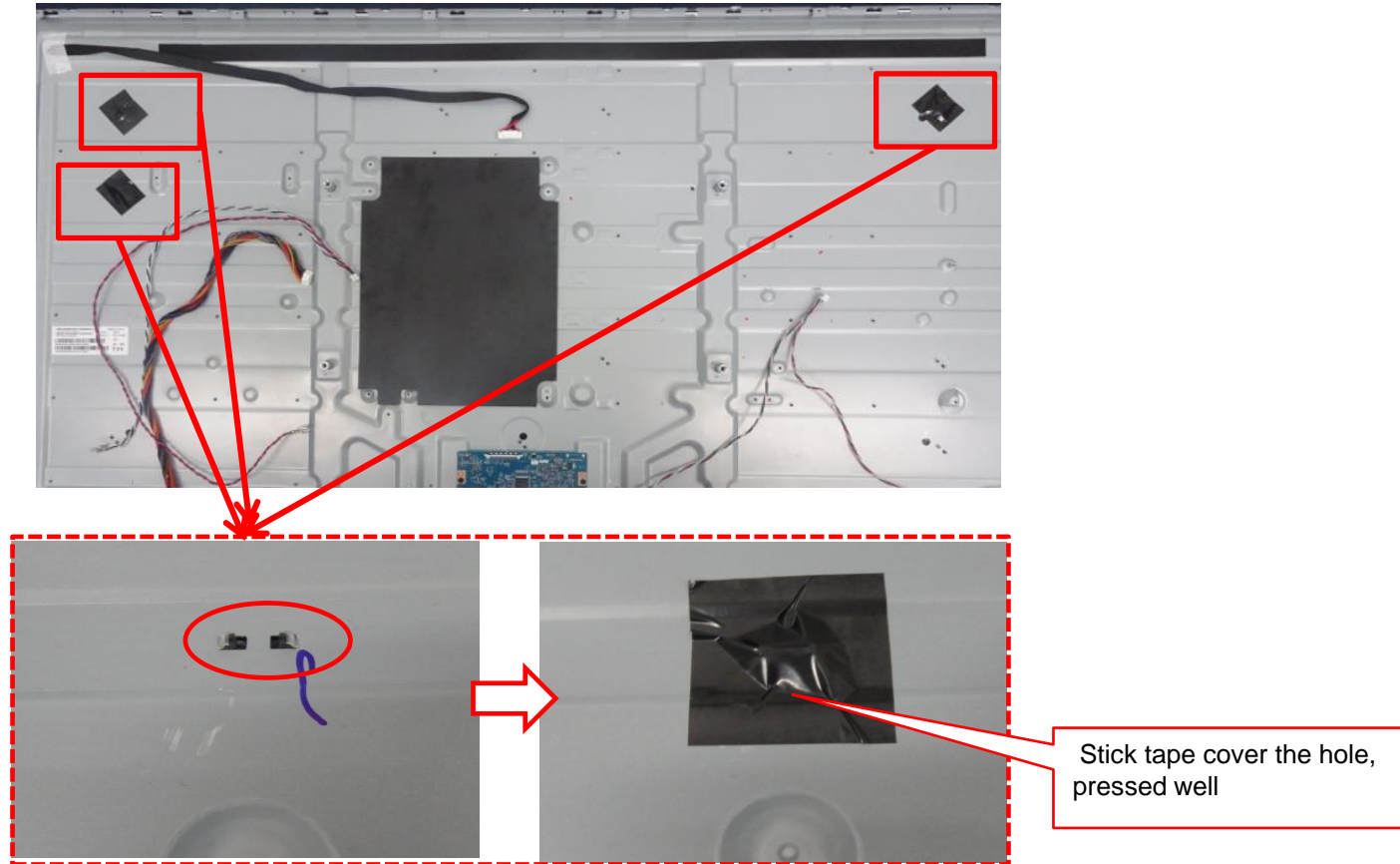


Item	Part number	Description(L*W)(mm)	Qty	Remark
1	4-734-488-01	EVA 855*23*1mm	1	PANEL

CAUTION: MUST APPLY HIMERON TAPE before assemble Panel if NOT AVAILABLE

1-10. How to assemble the Himeron Countermeasure on panel

1-10-3. Stick tape on the panel

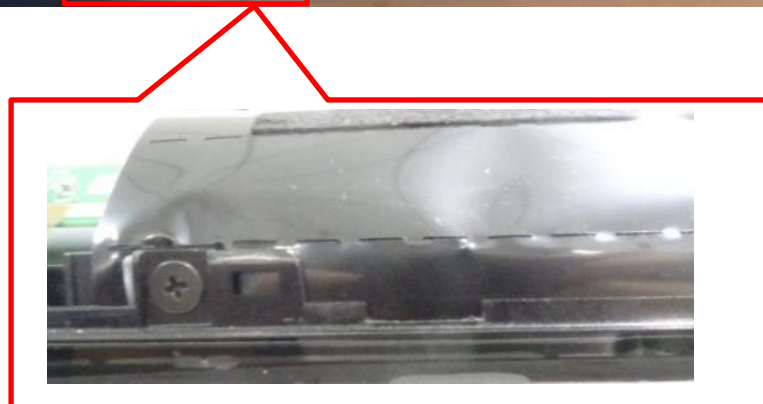
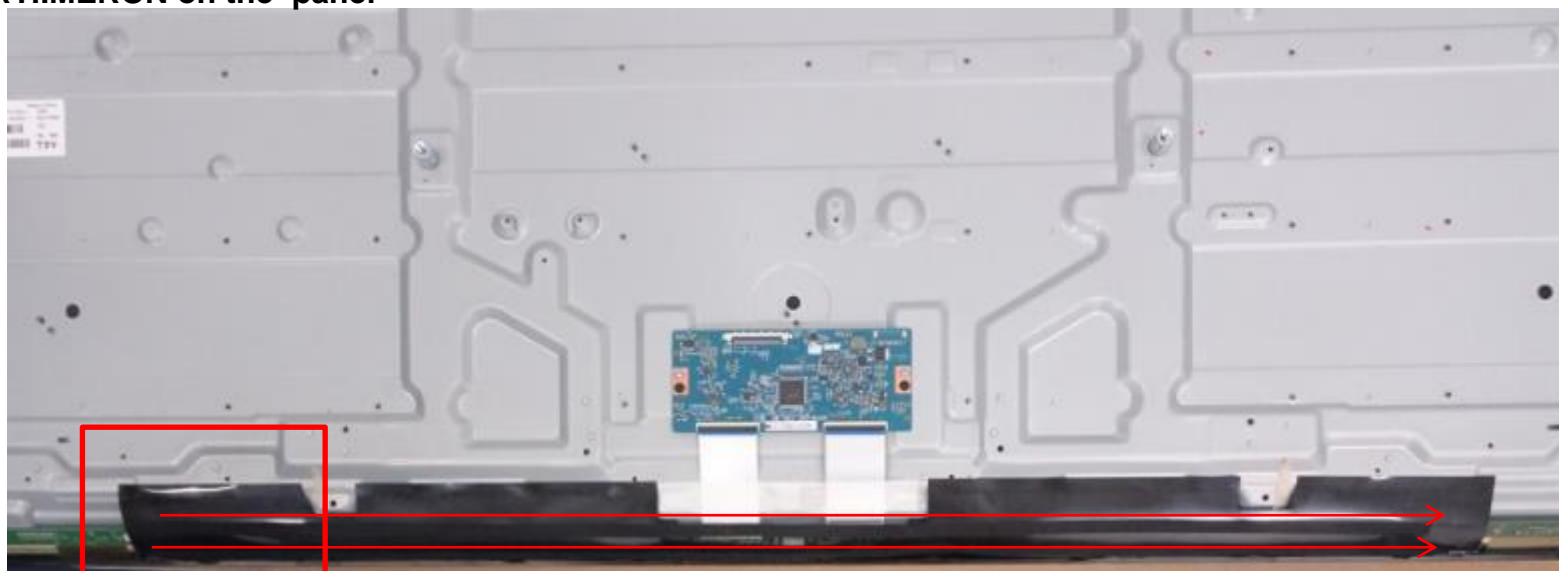


Item	Part number	Description(L*W)(mm)	Qty	Remark
1	4-596-039-01	MYLAR 40X40	3	TAPE

CAUTION: MUST APPLY HIMERON TAPE before assemble Panel if NOT AVAILABLE

1-10. How to assemble the Himeron Countermeasure on panel

1-10-4. Stick HIMERON on the panel

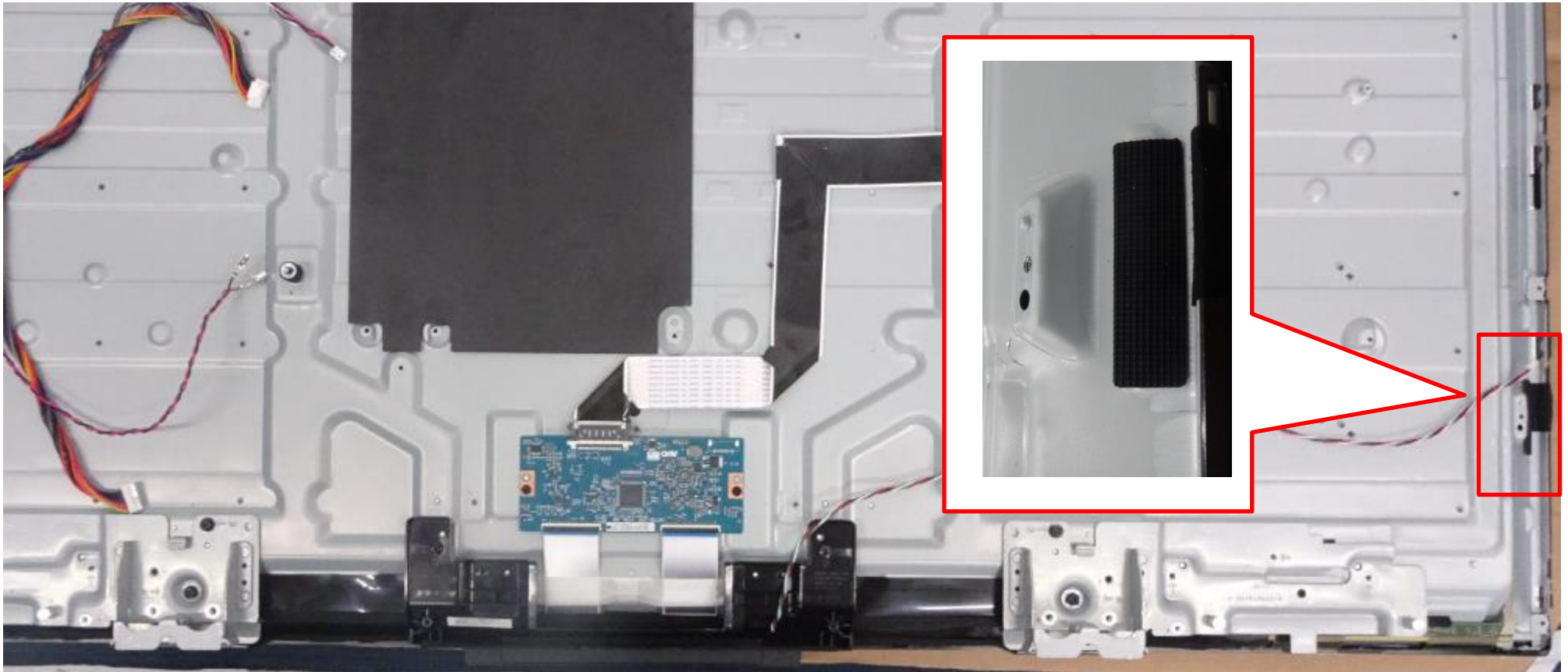


Item	Part number	Description(L*W)(mm)	Qty	Remark
1	4-734-487-01	CUSHION 730 X8X0.25	2	PANEL

CAUTION: MUST APPLY HIMERON TAPE before assemble Panel if NOT AVAILABLE

1-10. How to assemble the **Himeron Countermeasure on panel**

1-10-5. Stick HIMERON on the panel



Item	Part number	Description(L*W)(mm)	Qty	Remark
1	4-734-486-01	CUSHION 30*20*0.3mm	1	PANEL

CAUTION: MUST APPLY HIMERON TAPE before assemble Panel if NOT AVAILABLE

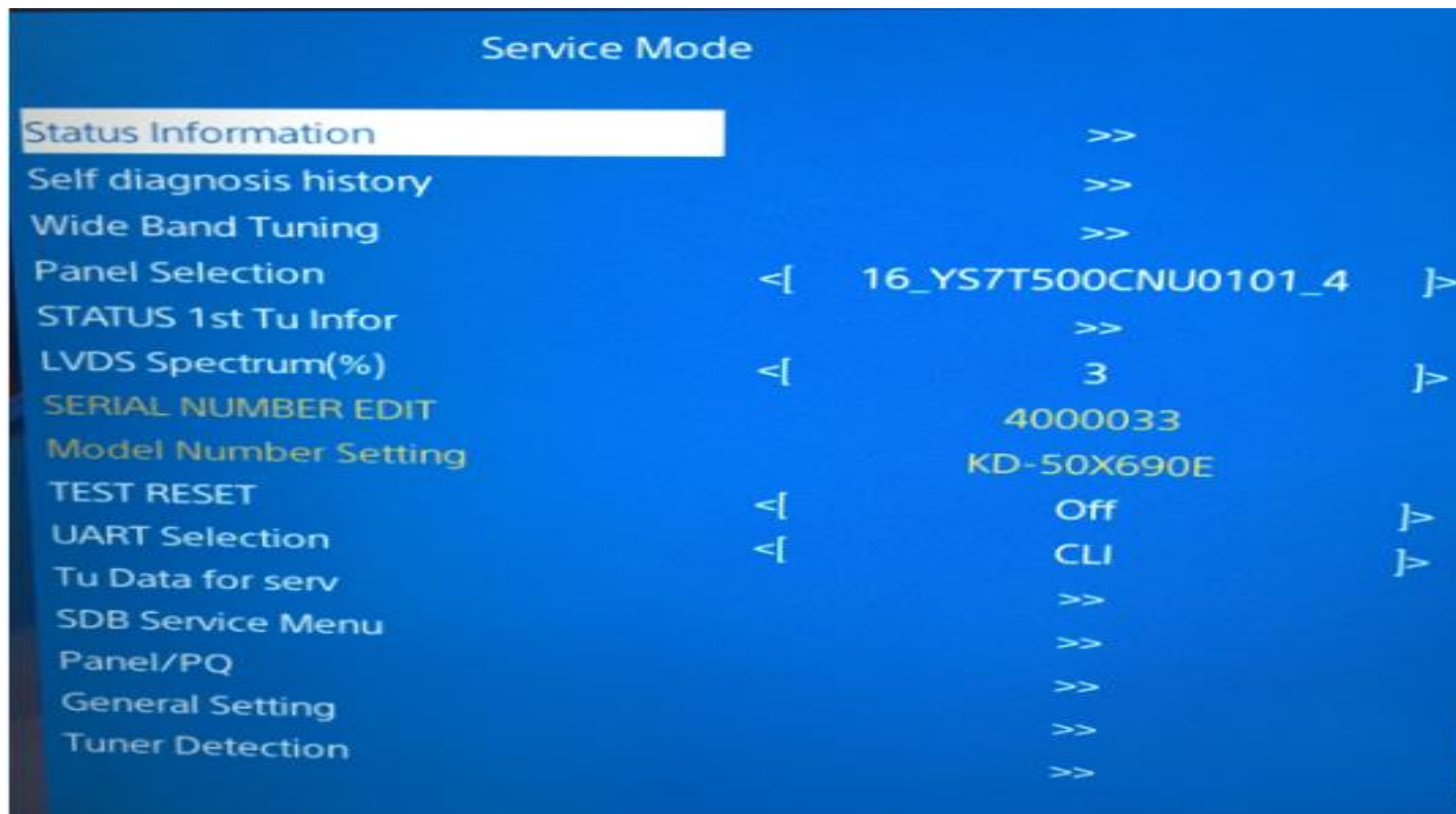
SEC 2. ADJUSTMENT

1. HOW TO ENTERING SERVICE MODE

power on mode

- a . Turn on the main power switch to place this set in Power on mode.
- b . Press the buttons on the remote commander as follows, and entering service mode.

service mode display



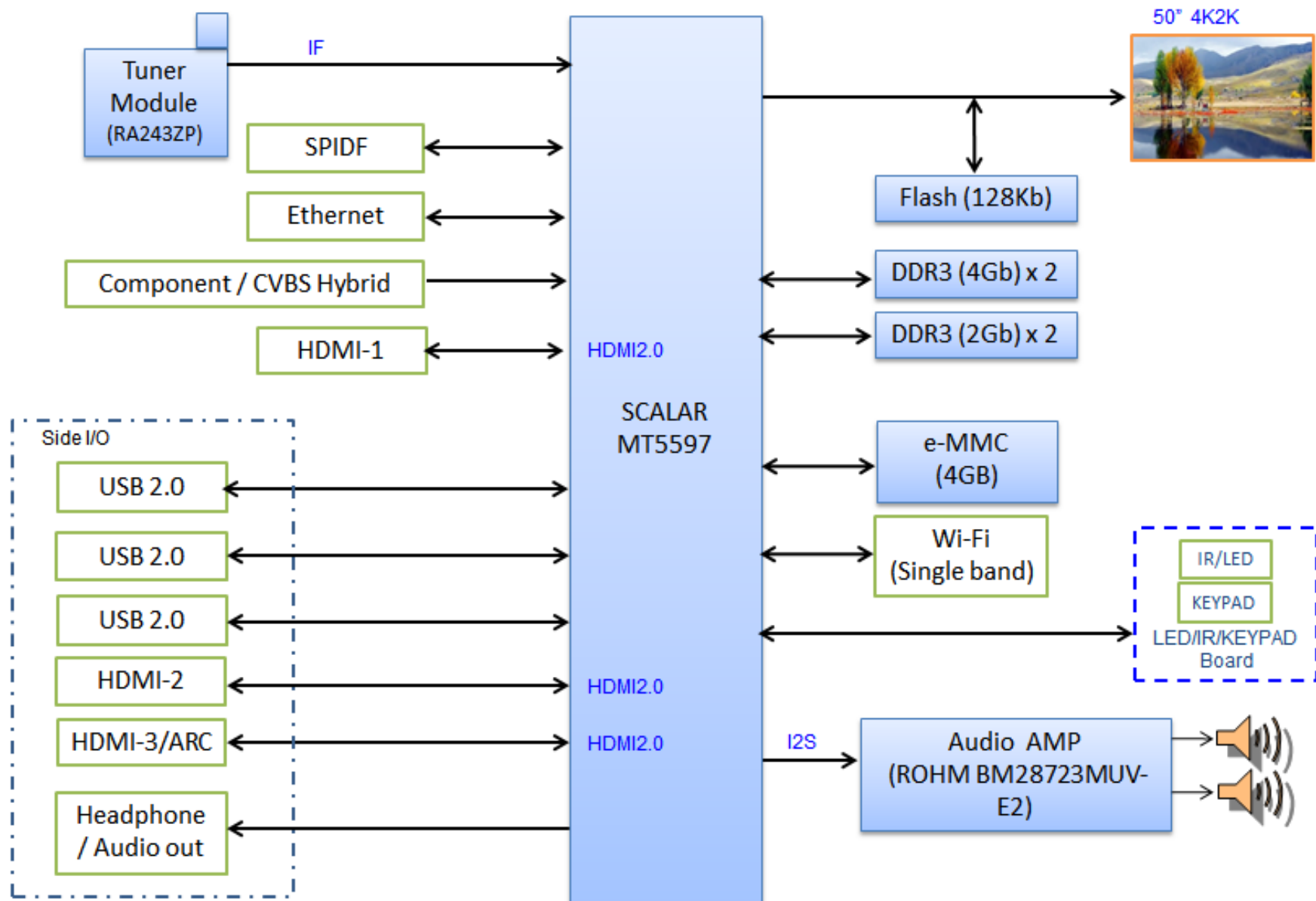
2.How to use the remote commander.

Function	The flow of control
Service mode on	<Left><Right><Mute><Ok (決定)><Mute><VOL+><Home (ホーム)>
Service mode off	<Menu item "Exit">/<Power off-on>
Adjustment Item up / down	/ ↑ ↓
Data Value up / down	/ ← →

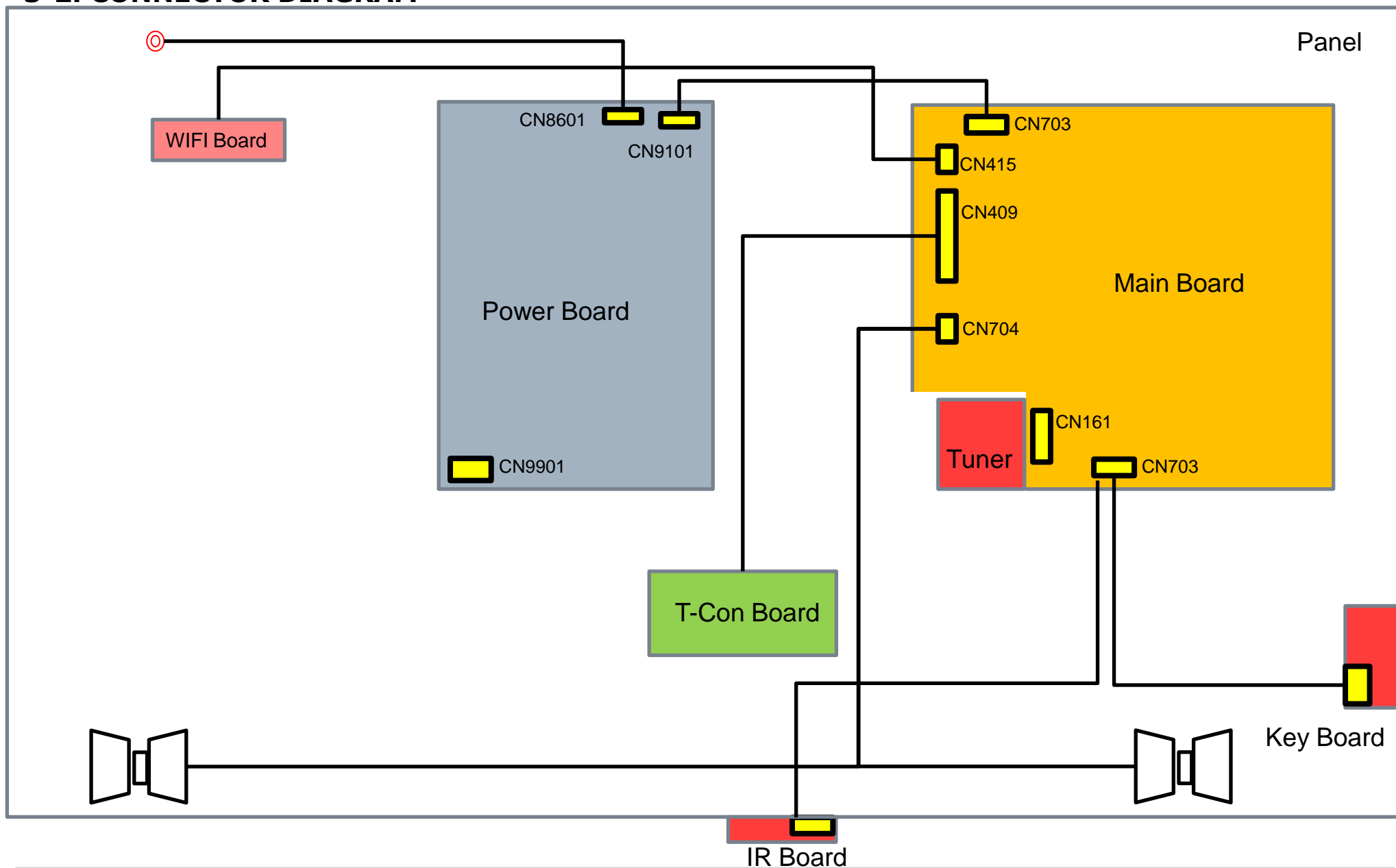
3.After entering service mode, then turn off the power switch.

SEC 3. DIAGRAMS AND CHASSIS STRUCTURE

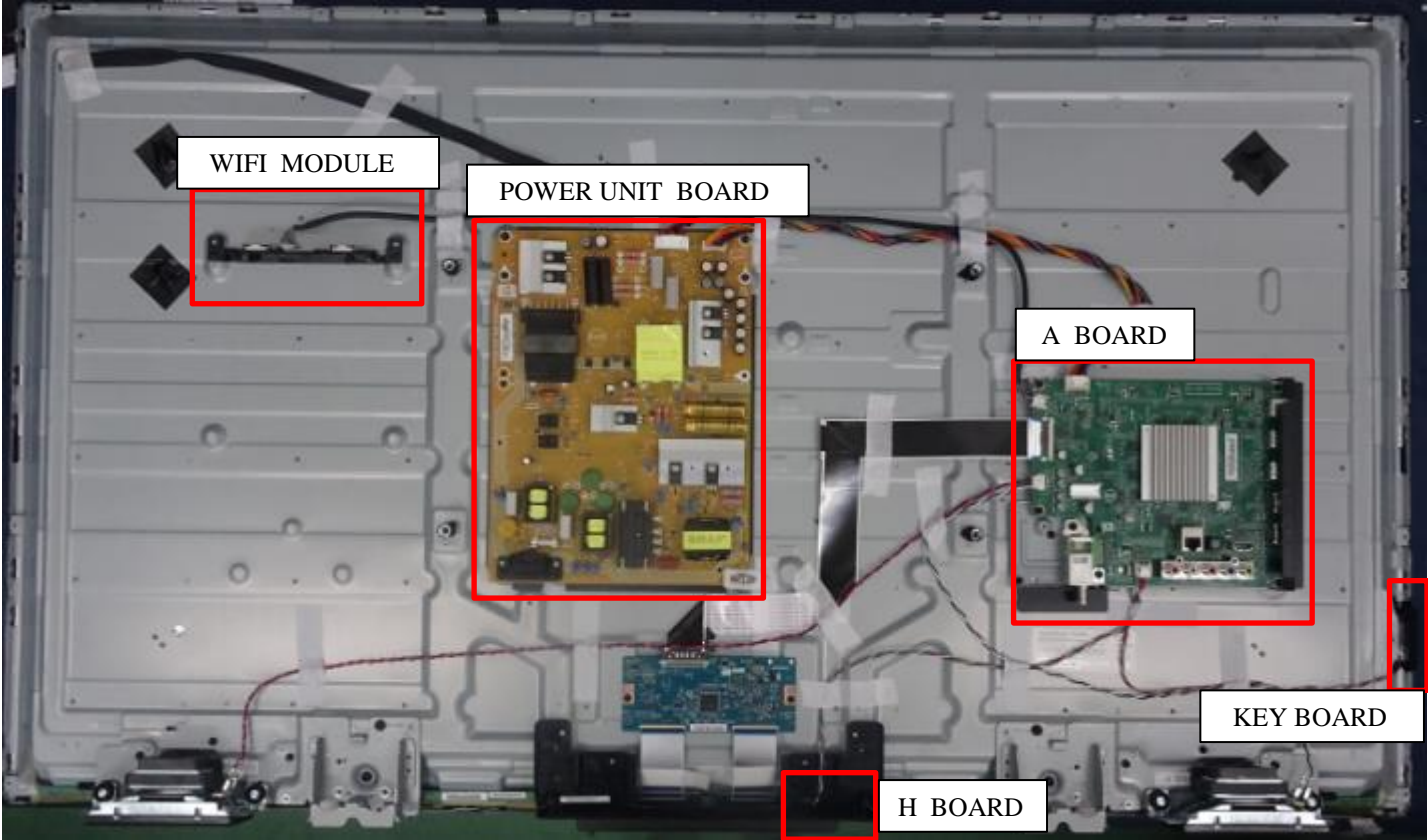
3-1. BLOCK DIAGRAM



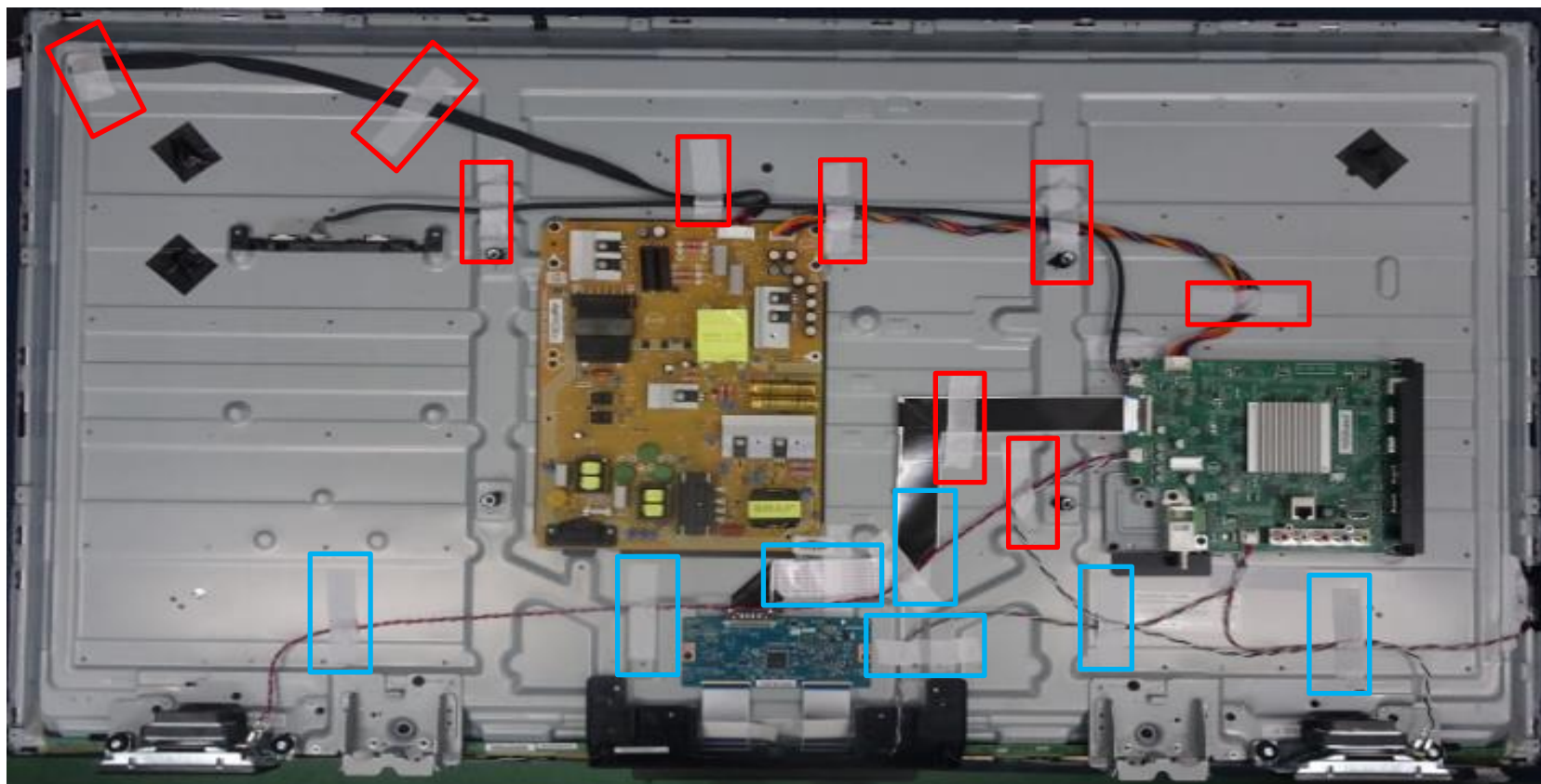
3-2. CONNECTOR DIAGRAM



3-3. CIRCUIT BOARDS LOCATION



3-4. Tape location



KD-50X690E : **25MM*50MM**
 20MM*80MM

Sony PN of the alternative tape is 7-600-036-11 which approved by TPV design team.

The purpose for the tape stick is to make the cables fixed.

END

9-888-743-01

Sony Corporation

APPENDIX-2 Software data update

Software data update for Engineering PKG

The confirmation of the software version of the TV set.

product information of setting menu.

[ホーム], [設定], [受信機情報表示], [ID表示]

Please use the latest software.

1: KD-50X690E

2: V4.000-1.000-05

1. Model Name

2. Software Version


Software Download

store the software Package to USB memory. (Applicable USB memory : Format by FAT32, USB2.0 type)

If the software file is compressed(.zip), please unzip it.

For USB, please store only the following files for software update.

And recommend to use the USB flash disk with the capacity no more than 8G

 sony_fw_2017_4000_UTUSB.pkg	2017/8/15 10:47	PKG 文件	298,579 KB
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APPENDIX-2 Software data update

Software update by USB memory

1. Copy the software into the U disk root
2. Insert the USB memory.
3. Press the keypad power key, wait for about 6s to release the keypad power key.



4. TV power on.

- 1) Lights up green LED about 6s.



2) Orange LED is flashing about 20s and stopping flashing, the Lights up Orange LED.



- 3) Disconnect USB memory.

5. Turn OFF the TV (Unplug the AC power cord)

6. Turn ON the TV (plug in the AC power cord)

- 1) Then the screen will show the software upgrade hint.

Note: During the upgrade period, please do not disturb or lost power. Or some damage might cause to the unit and can not boot up later.

起動処理中です。

このメッセージが消えるまで電源を切らずにお待ちください。(最大約3分)

このメッセージが消えた後システムを再起動します。

一旦画面が暗くなり、その後視聴画面となります。

- 2) About 20s, the TV will restart automatically.

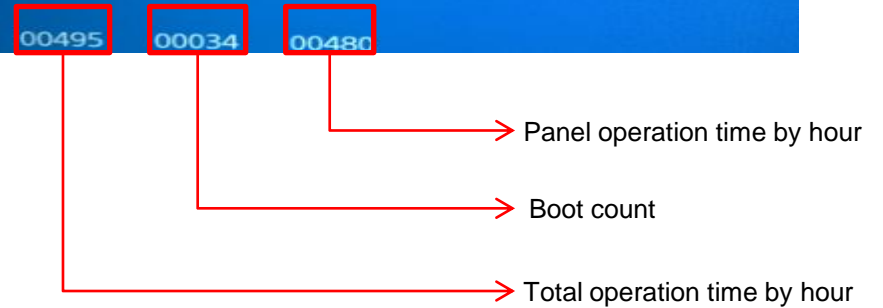
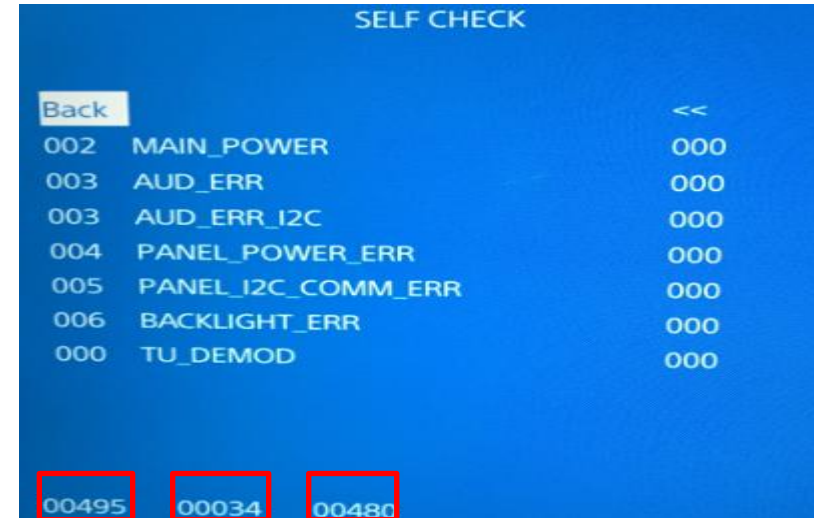
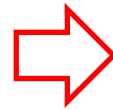
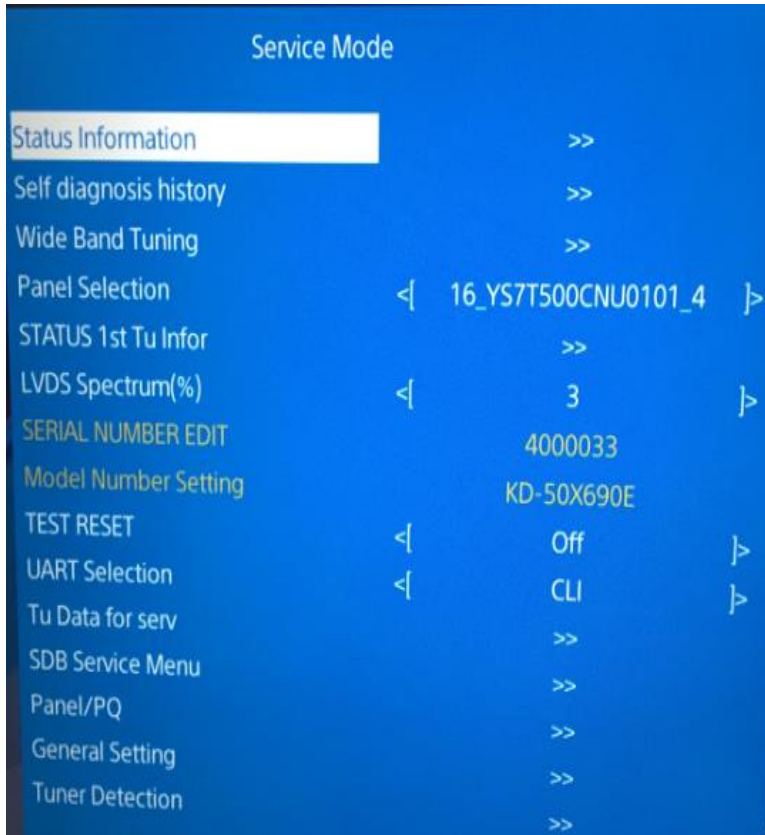
Confirm Software version

Please confirm whether it is the latest software.
product information of setting menu.

[ホーム], [設定], [受信機情報表示], [ID表示]

APPENDIX-3 service mode

Entering service mode as shown below:

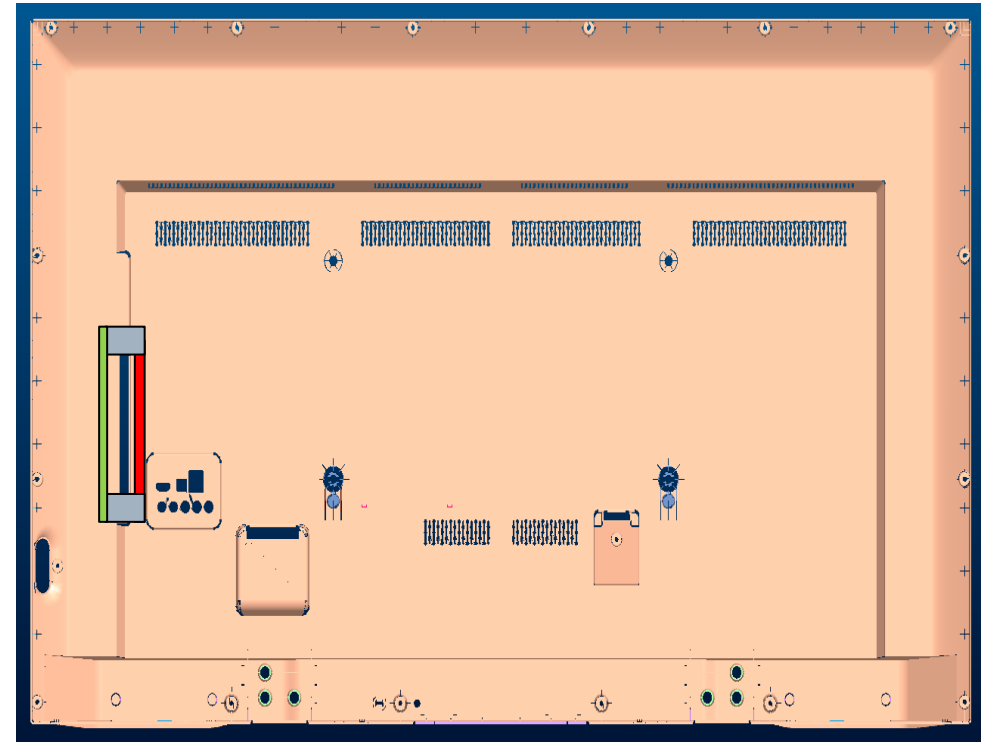
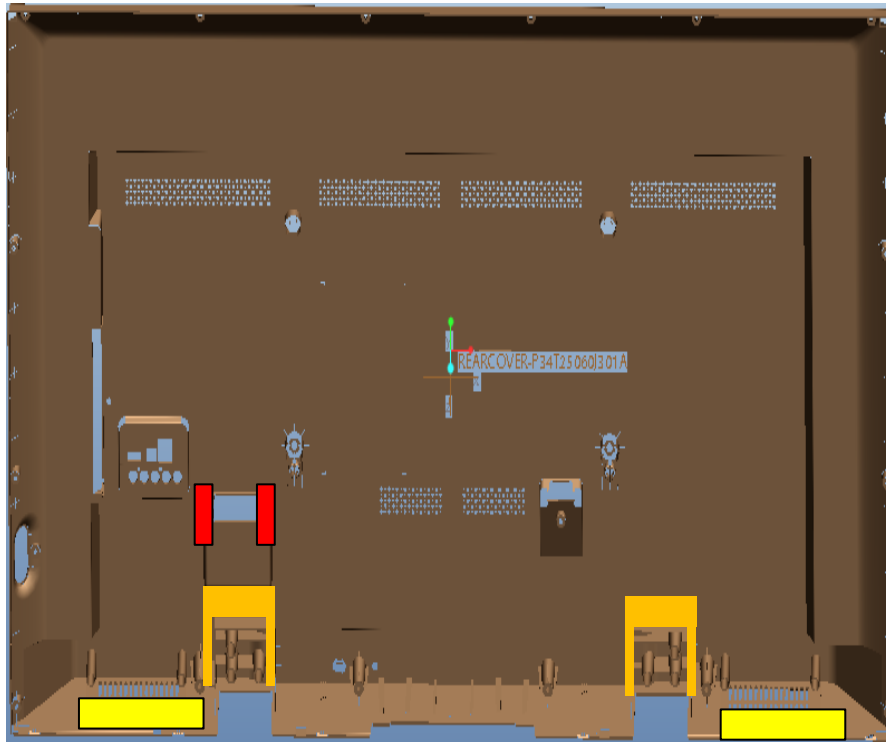


Exiting the Self-diagnostic screen

To exit the Self Diagnostic screen, turn off the power to the TV by pressing the POWER button on the remote or the POWER button on the TV or Remote Control menu item "Exit" or "8".

APPENDIX-4 Assembly Parts

1.Stick HIMERON on the Rear Cover.



Item	Sony PN	Description	Qty	Remark
1	4-732-155-01	220*10*0.25mm	2	Rear Cover Assy
		40*8*0.45mm	2	
		184*10*0.25mm	2	
		30*8*0.45mm	2	
		160*20*0.3mm	1	
		225*8*0.25mm	1	

APPENDIX-4 Assembly KD-50X690E

2.Stick HIMERON on the DECO_RC.



Item	Sony PN	Description	Qty	Remark
1	4-732-156-01	DECO_RC	1	DECO_RC Assy
		250*8*0.3mm	1	

APPENDIX-4 Assembly KD-50X690E

3. Stand Assy



Item	Sony PN	Description	Qty	Remark
1	A-2198-471-A	STAND, COVER	1	Stand Assy
		STAND, R DIECAST	1	
		STAND, L DIECAST	1	
		STAND, FRONT BRACKET	1	
		FOOT, RUBBER	1	
		CUSHION135*15*0.25mm	1	
		Screw	6	