HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL (COMMON)

RB2G *CHASSIS*

Segment: HM

Version	Date	Subject
1	01/2014	1st Issue.
2	04/2014	Model Addition : Add 60” Models (Model List , pg 45-46)

LCD TV

SONY

9-888-150-02

For SM - Unique , please refer :

9-888-150-A1 (America)

9-888-150-C1 (China)

9-888-150-E1 (Europe)

9-888-150-P1 (Pan Asia)

SERVICE MANUAL (COMMON)

RB2G *CHASSIS*

Segment: HM

LCD TV

SONY

MODEL LIST

THIS SERVICE MANUAL CONTAINS **COMMON INFORMATION** FOR BELOW REGIONS AND MODELS:

REGION

ASIA *CHINA* *AMERICA* *JAPAN* *EUROPE*

MODEL

KDL-40W580B	*KDL-48W580B*	*KDL-60W600B*
KDL-40W590B	*KDL-48W585B*	*KDL-60W605B*
KDL-40W600B	*KDL-48W590B*	*KDL-60W607B*
KDL-40W605B	*KDL-48W600B*	*KDL-60W608B*
KDL-40W607B	*KDL-48W605B*	*KDL-60W610B*
KDL-40W608B	*KDL-48W607B*	*KDL-60W630B*
	KDL-48W608B	*KDL-60WM15B*
	KDL-48WM15B	

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Please refer Service Manual – Unique for below information :

-Safety Warnings

-Wire Dressing

-Circuit Board Location

-Disassembly and Exploded View.

SECTION 1
SAFETY NOTES

1-1. Warnings and Caution

1) These servicing instructions are for use by qualified service personnel only.
2) 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.
3) 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.
4) 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.

5) Components identified by shading and ⚠ mark on the 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.

1-2. Caution Handling of LCD Panel

When repairing the LCD Panel, make sure you are grounded with a wrist band. When repairing the LCD Panel on the wall, the panel must be secured using the 4 mounting holes on the rear cover.

1) Do not press 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 temperature 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 short circuit within the module.
6) Disconnect the AC power when replacing the backlight (CCFL) or inverter circuit. (High voltage occurs at the inverter circuit at 650Vrms)
7) Always clean the LCD panel with a soft cloth material.
8) Use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short circuit.
9) Protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).
10) During the repair, DO NOT leave the Power On or Burn-in period for more than 1 hour while the TV is face down on a cloth.

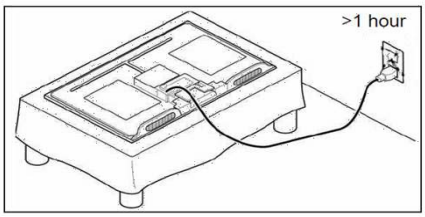


Figure 1. TV is faced down on a cloth during repair.

1-3. Caution About the Lithium Battery

1) Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
2) Outer case broken battery should not contact to water.

1-4. 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 inter board wiring to ensure that no wires are pinched or contact high-wattage resistors.

3)Check all control knobs, shields, covers, ground straps and mounting hardware have been replaced. Be absolutely certain 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, metalized knobs, screws and all other exposed metal parts for AC leakage. Check leakage test as described next.

8. For safety reasons, repairing the Power board and/or Inverter board is prohibited.

1-5.Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis must not exceed 0.5mA (500 microamperes).

Leakage current can be measured by any one of the three methods:-

1) A commercial leakage tester such as the SIMPSON 229 or RCA WT540A. Follow the manufacturers instructions to use those instructions.

2) A battery-operated AC milliampmeter The DATA PRECISION 245 digital multimeter is suitable for this job.

3) Measuring the voltage drop across a resistor by means of a VOM or battery operated AC voltmeter. The 'limit' indication is 0.75V so analog meters must have an accurate low voltage scale. The SIMPSON'S 250 and SANWA SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery operated digital multimeter that have a 2 VAC range are suitable. (see Figure 2.)

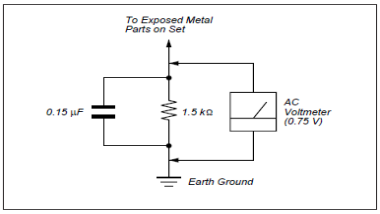


Figure 2. AC voltmeter to check AC leakage

1-6. How to Find a Good Earth Ground

1) A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground.

2) 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.

3) 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 3).

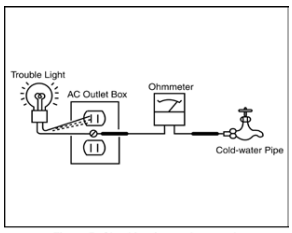


Figure B. Checking for earth ground.

Figure 3. Checking for earth ground.

1-7. Lead Free Information

The circuit boards used in these models have been processed using Lead Free Solder. The boards are identified by the LF logo located close to the board designation.

Figure 4: LF Logo

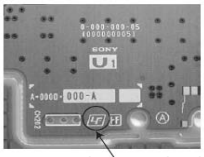
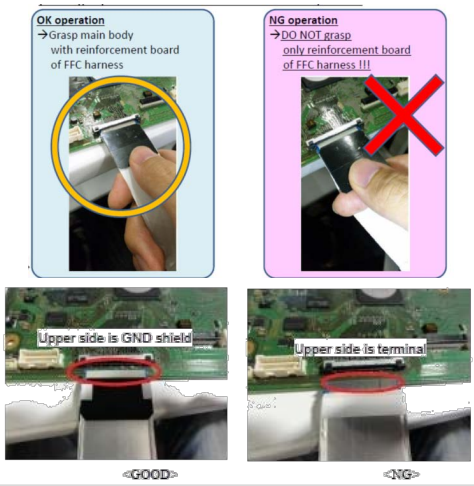


Figure 5: LF logo on circuit board

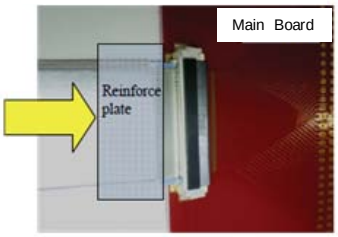
The servicing of these boards requires special precautions. It is strongly recommended to use Lead Free Solder material in order to guarantee optimal quality of new solder joints.

1-8. Handling the FLEXIBLE FLAT CABLE (FFC)

- When you insert / pull out FFC, please grasp a reinforcement board and main body of FFC.

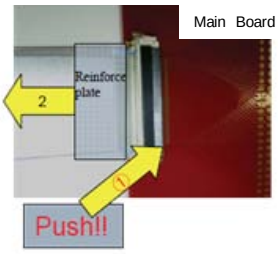


Please hold reinforcement board and plunge it to depths.

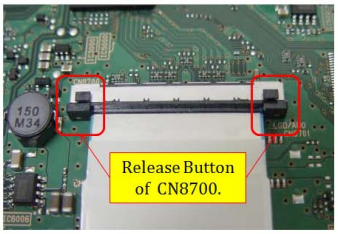


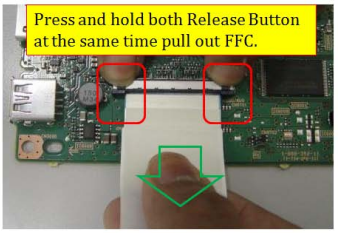
< Insertion>

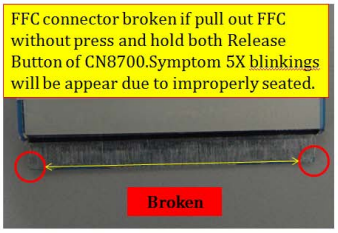
Please pull out FFC while pushing the button of both ends at the same time.

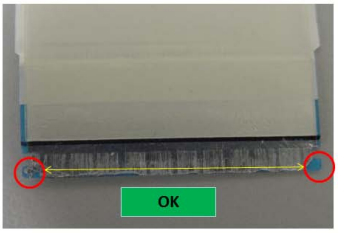


<Pull out>





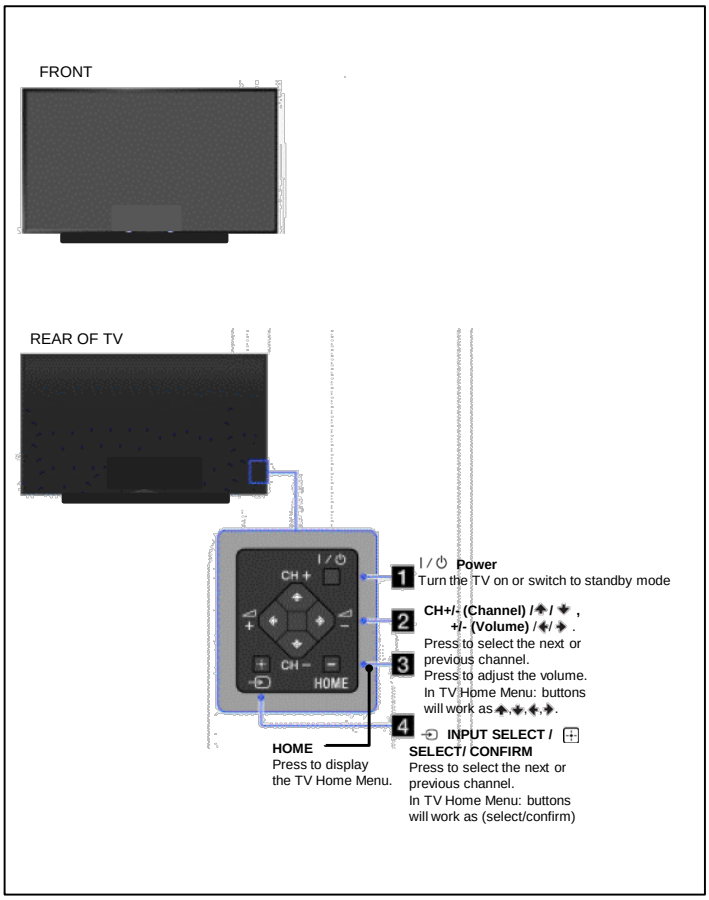




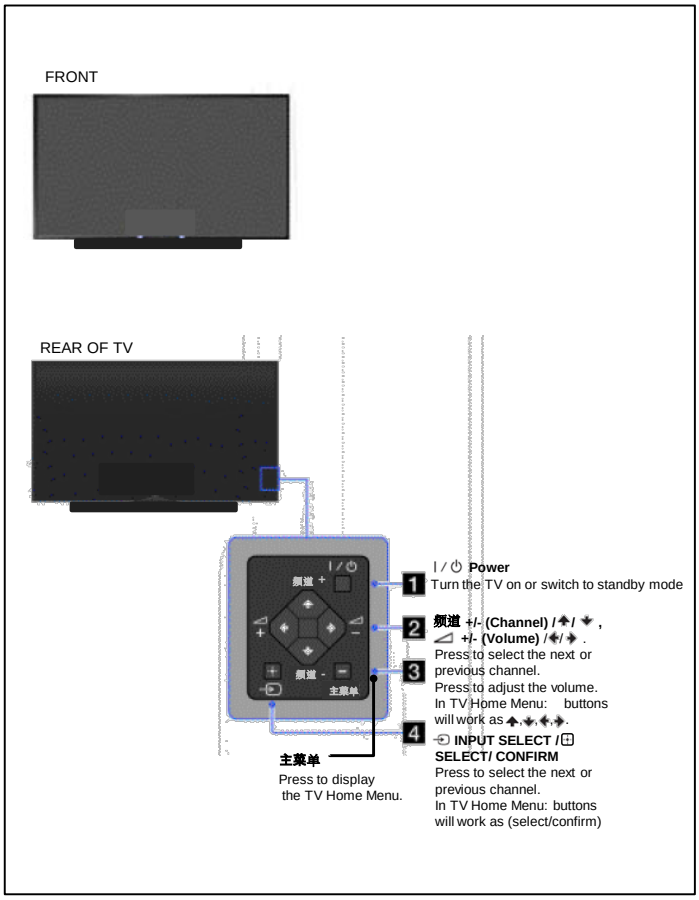
SECTION 2
SELF DIAGNOSTIC FUNCTION

2-1. Overview of Control Buttons

2-1-1. (EXCEPT CHINA)



2-1-2. (CHINA)

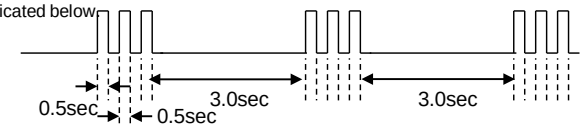


2-2. LED Display Control

Status	White Center LED (applicable for HSC2 only)	Side RGB LED	Side Amber LED	Remarks
Power Off (by power saving switch off and *1)	-	Off	Off	*1 power switch off (by side key)
Power On	-	Green Lit	Off	
STBY/i.LINK STBY/PC STBY (by remote control off only)	-	Off	Off	
Skype Call Receive	-	White one shot	Off	
Picture Off	-	White one shot	Off	
Device Connection	-	Cyan one shot	Off	
Power ON Animation	-	White one shot	Off	
Sleep Timer/On Timer/Reminder/REC Timer/Photo Frame (Power On)	-	Amber Lit*2, *6	Off	*2 One Shot is only user action. *6 The actual data behaviour is "One Shot->Lit" to solve issue related to LED priority.
On Timer/Reminder/REC Timer (Deep Standby)	-	Off	Amber	After 5 minutes, side amber LED On
Failure	-	Red Blinking	Off	The number of LED blinking indicates cause of failure (refer to Led Error / Triage chart)
Aging mode	-	Green Blinking	Off	Blinking:0.5sec On / 0.5sec Off
End of Aging mode	-	Green Blinking	Off	Blinking:3sec On / 3sec Off
Software Updating	-	white blinking	off	
Software Updating finish	-	Blue lit	off	
Test Reset	-	white blinking	Amber blinking	
Error of panel ID	-	Green Blinking	Amber Blinking	Blinking:0.5sec On / 0.5sec Off
REC (SCART REC & HDD REC/LIVE PAUSE) [AEP/J only]	-	Red(Pink) Lit*2, *6	Off	*2 One Shot is only user action. *6 The actual data behaviour is "One Shot->Lit" to solve issue related to LED priority.
ePOP/ Shop Illumination	-	Cyan loop	Off	One shot Center White when feature change.

2-3. LED Pattern

When safety shutdown occurs, Standby LED display reports the cause by using the lightning patterns as indicated below.



Example: The figure above shows LED display when SHUTDOWN is caused by Audio Error. It repeats flashing for a specified number of times in 0.5sec/cycle and has a 3 seconds interval of lighting off. Please note that a 3 seconds interval of lighting off is fixed regardless of abnormal state types.

2-4. Standby LED Error Display

RED LED blinking count	Detection Items	Board Error Item
2x	Main 12V failure [MAIN_POWE] * This failure is not saved	▪ G** Board Error ▪ BAX_L Board Error
3x	Main 5.0/3.3/1.8/1.0/ 1.1V failure [DC_ALERT] * 5.0/1.0V failures are not saved.	▪ BAX_L Board Error
	Audio amp. protection [AUD_ERR]	▪ BAX_L Board Error ▪ Speaker
	HDMI equalizer/switch I2C NACK [HDMI_EQ] * There is Temp. sensor on the same I2C bus.	▪ BAX_L Board Error
	Tuner or demodulator I2C NACK [TU_DEMOD]	▪ BAX_L Board Error ▪ Tuner Board Error
	AFE device I2C NACK [AFE_I2C]	▪ BAX_L Board Error ▪ Tuner Board Error
	AFE device error SPI NACK [AFE_SPI] * only for AEP,CH	▪ BAX_L Board Error ▪ Tuner Board Error
4x	LED driver failure [LD_ERR]	▪LED Driver (LD) Board Error ▪Panel module
	LED voltage error [VLED]]	▪LED Driver (LD) Board Error ▪Panel module
5x	Panel ID EEPROM I2C NACK (Also panel power failure is a suspect) [P_ID_ERR]	▪ Panel module ▪ Tcon board ▪G** Board Error ▪ BAX_L Board Error
6x	Backlight failure [BACKLIGHT]	▪Panel module ▪ G** Board Error ▪ BAX_L Board Error
	Backlight converter OVP [BACKLIGHT]	▪Panel module ▪ Tcon board ▪ G** Board Error ▪ BAX_L Board Error
7x	Over temperature protection [TEMP_ERR] Temp. sensor I2C NACK [TEMP_ERR] * There is HDMI Eq on the same I2C bus.	▪ BAX_L Board Error
8x	Software Error (Also the main board's memory or CAM module is a suspect)	▪ BAX_L Board Error
9x	Tuner Board Error [TU_BOARD]	▪ Tuner Board Error

Size	G** Board Type	Tuner Board	
		America/Pan Asia/China/Europe	Japan
40"	Not applicable	TUS	TUW
48"	Not applicable	TUS	TUW

2-5. Triage Chart

Reference	Symptoms - Shutdown. Power LED blinking red diagnostics sequences									No Power	Video - missing or distorted			Remote	Network	Audio	Skype	Smart Core	Bluetooth (BT)
	2	3	4	5	6	7	8	9	10	No White Power LED & does not reponse to remote (Dead Set)	Stationary colored lines or dots	No video One of Inputs	No video all Inputs	No Remote	Wireless can't connect	No Audio	Skype Can't Work	Smart Core no LED (Set is still alive)	Bluetooth / One Step Remote (OSR) can't connect
B* Board	▲	●		▲	▲	●	●			▲	▲	●	●	▲	▲	●	▲	▲	▲
TU board		▲					▲	●			▲	●	●			▲			
G* Board	●	▲		▲	●					●						▲			
H* Board														●				●	
Speaker		▲														●			
Skype Module																	●		
Camera Module																	▲		
Mic. Module																	●		
Wifi Module							●								●		▲		
BT Module																			●
LD* Board			●										▲						
LVDS FFC				▲	▲						▲		▲						
Tcon			▲	●	▲				▲		▲		▲						
LCD Panel			●	●	●	▲					●		▲						
Problem	Power	Power	LD	Panel (Tcon)	Panel (Backlight)	TEMP	Soft-ware		Emitter										
		Audio				FAN (N/A)													
		Local I2C																	

Size	G** Board Type	TU Board	
		America/Pan Asia/China/Europe	Japan
40"	Not applicable	TUS	TUW
48"	Not applicable	TUS	TUW

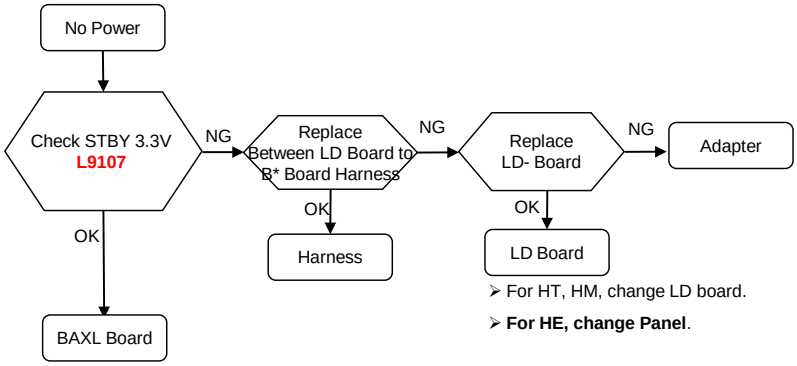
● Most likely defective part

▲ Secondary possible defective part

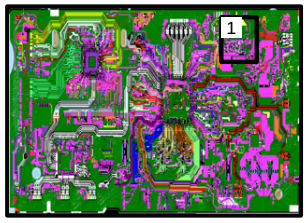
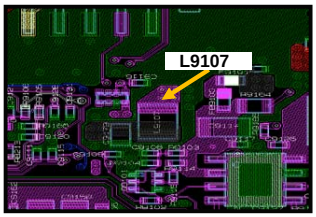
SECTION 3
TROUBLESHOOTING

3-1. NO POWER

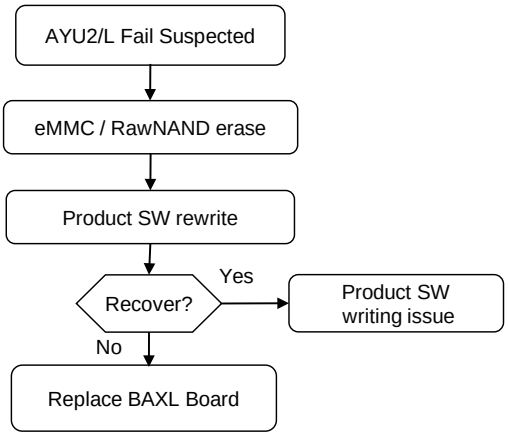
3-1-1. NO POWER→ AC ADAPTER



Note :
-B* Board – BAXL Board

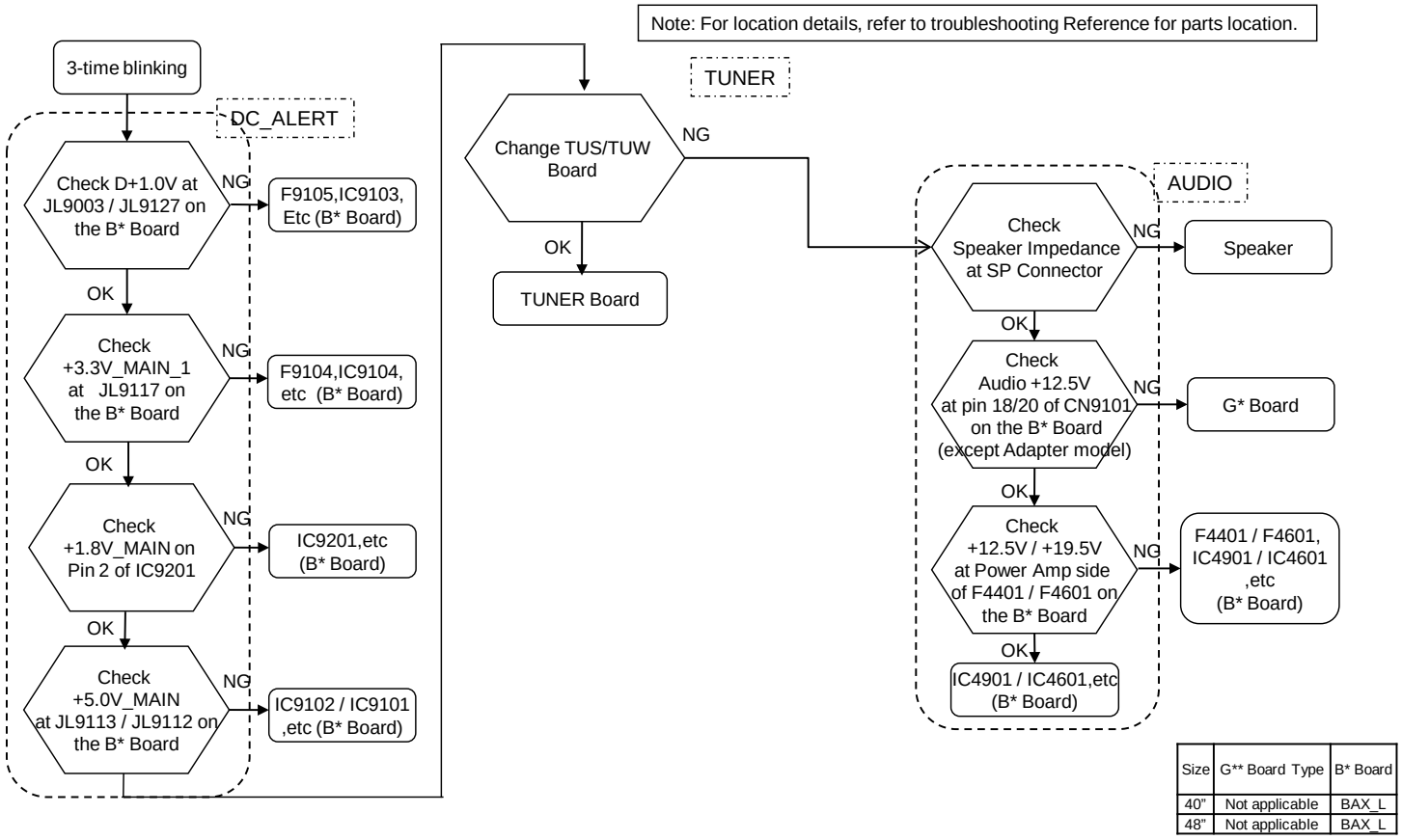
Parts	Board PWB (BAXL- A side)	Detail
(L9107)		

3-1-2. NO POWER – AYU2/AYU2L failure



3-2. LED BLINKING

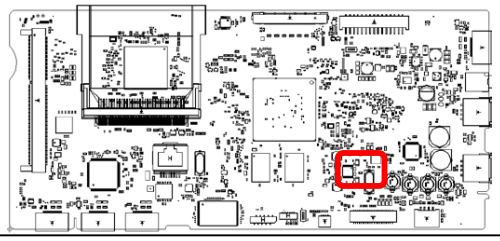
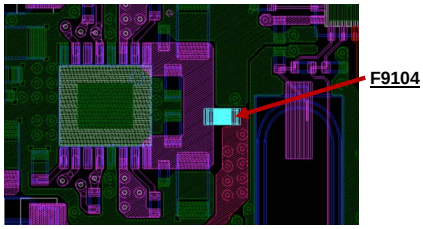
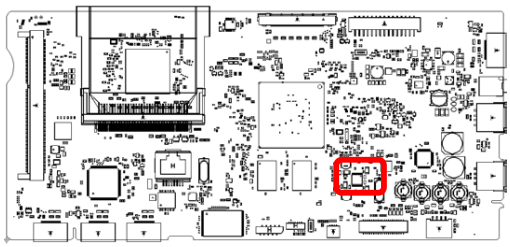
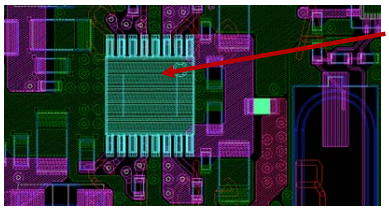
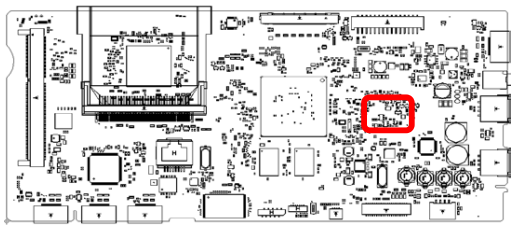
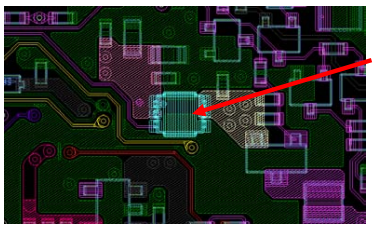
3-2-1. LED Blinking: 3x (DC Alert & Communication Error)



Size	G** Board Type	B* Board
40"	Not applicable	BAX_L
48"	Not applicable	BAX_L

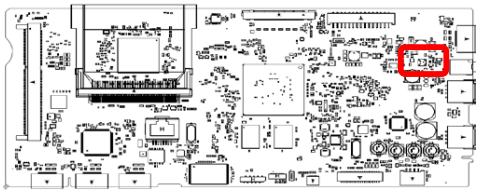
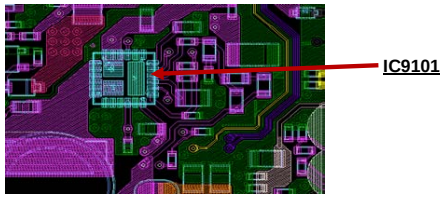
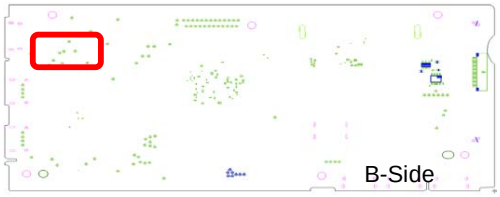
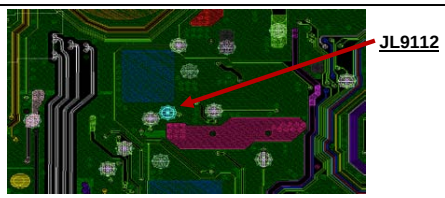
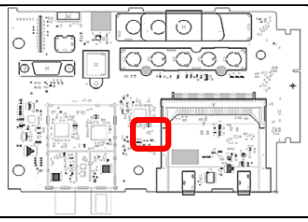
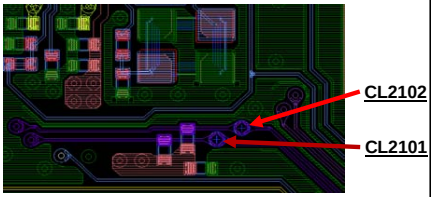
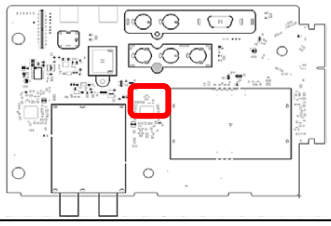
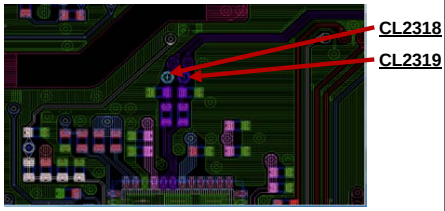
3-2-1. LED Blinking: 3x (DC Alert & Communication Error)

Troubleshooting References (a)

Board / Parts	Board PWB (A side)	Detail
BAXL (F9104)		
BAXL (IC9104)		
BAXL (IC9201)		

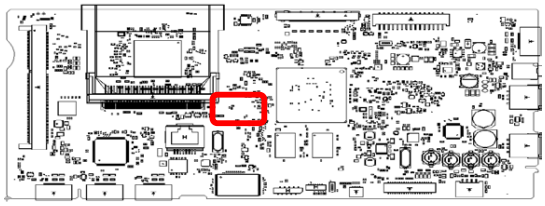
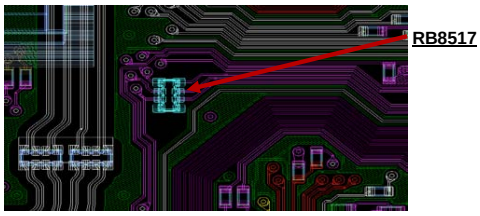
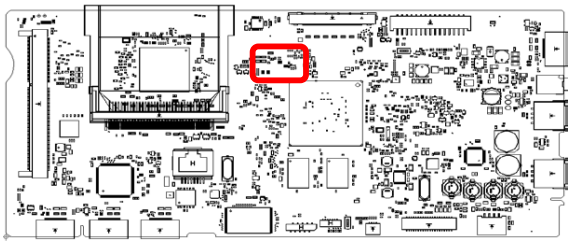
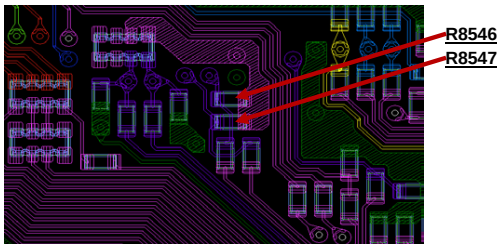
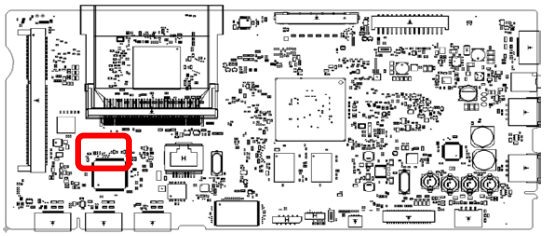
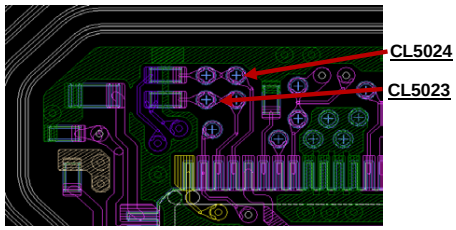
3-2-1. LED Blinking: 3x (DC Alert & Communication Error)

Troubleshooting References (b)

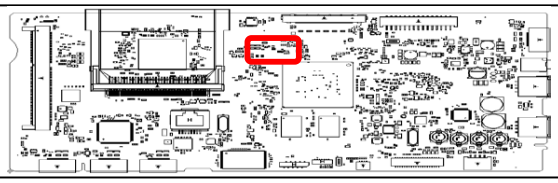
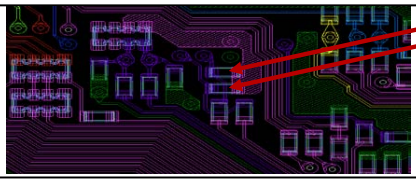
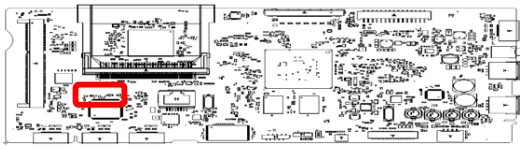
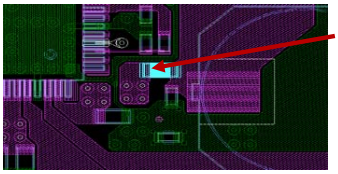
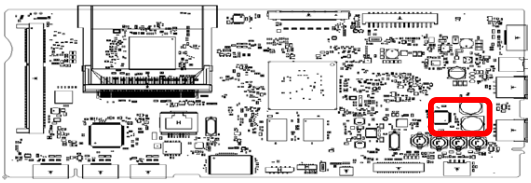
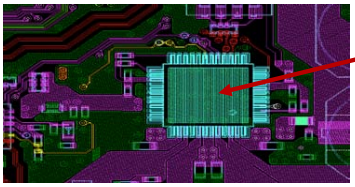
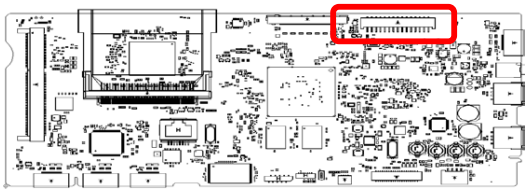
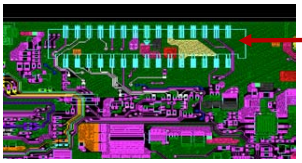
Board / Parts	Board PWB (A side) (B side)	Detail
BAXL (IC9101)		
BAXL (JL9112)		
TU-S (Others) (CL2101, CL2102)		
TU-W (Japan) (CL2318, CL2319)		

3-2-1. LED Blinking: 3x (DC Alert & Communication Error)

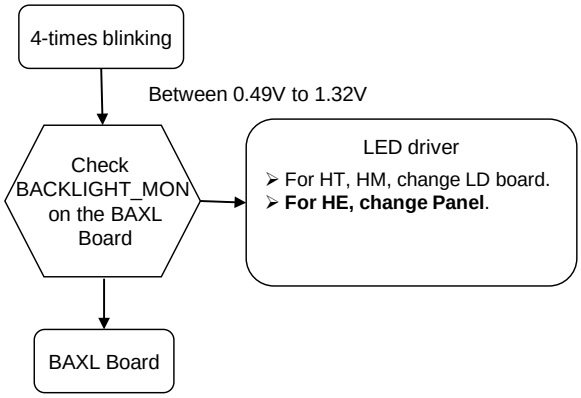
Troubleshooting References (c)

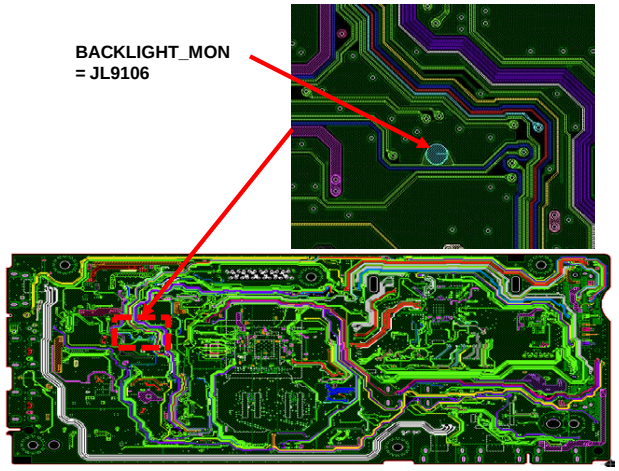
Board /Parts	Board PWB (A side)	Detail
BAXL (RB8517)		
BAXL (R8546, R8547)		
BAXL (CL5023, CL5024)		

3-2-1. LED Blinking: 3x (DC Alert & Communication Error)
Troubleshooting References (d)

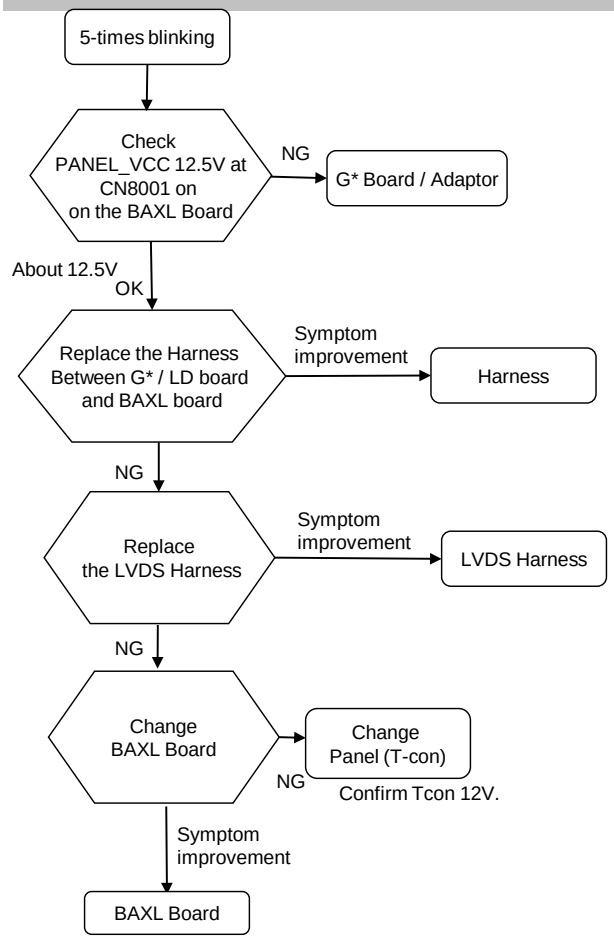
Board /Parts	Board PWB (A side)	Detail
BAXL (R8546, R8547)		
BAXL (CL5023, CL5024)		
BAXL (F4601)		
BAXL (IC4601)		
BAXL (CN9101)		

3-2-3. LED BLINKING 4x (LED Voltage Error)

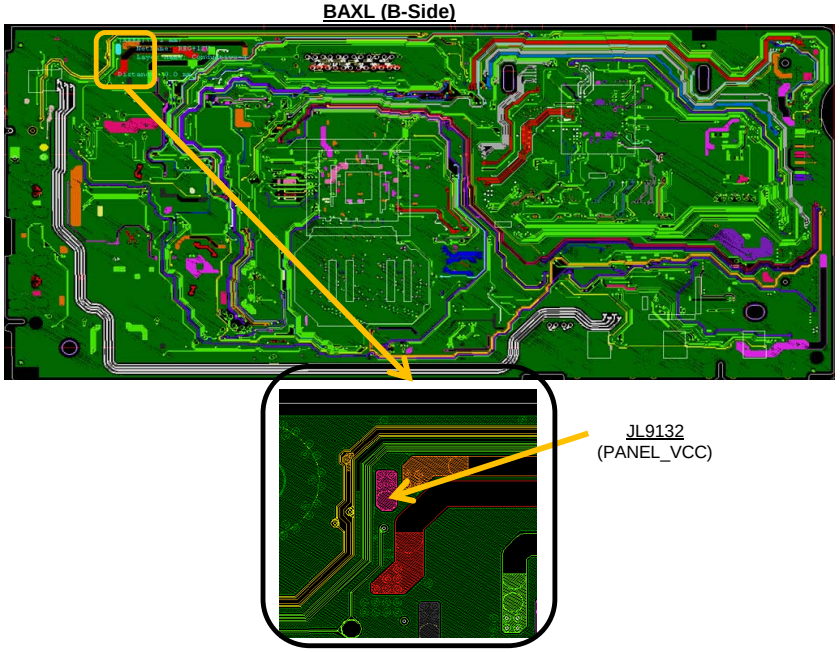


Board /Parts	Board PWB (BAX-L – B SIDE)
BAXL BACKLIGHT_MON = JL9106	

3-2-3. LED BLINKING 5x (T-Con Error)

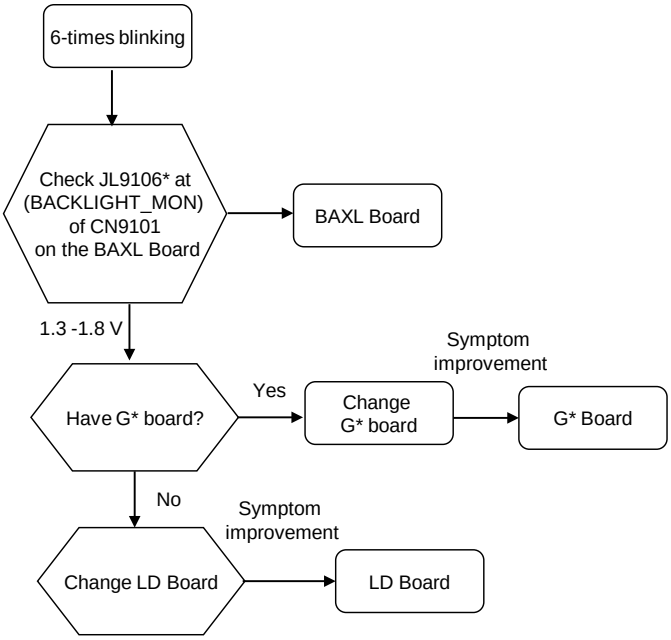


BAXL (B-Side)



Size	G* Board Type
40"	Not applicable
48"	Not applicable

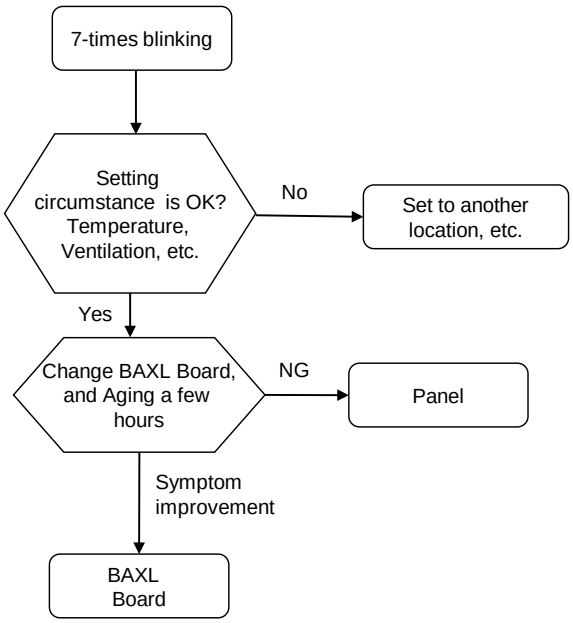
3-2-4. LED BLINKING 6x (Backlight Error)



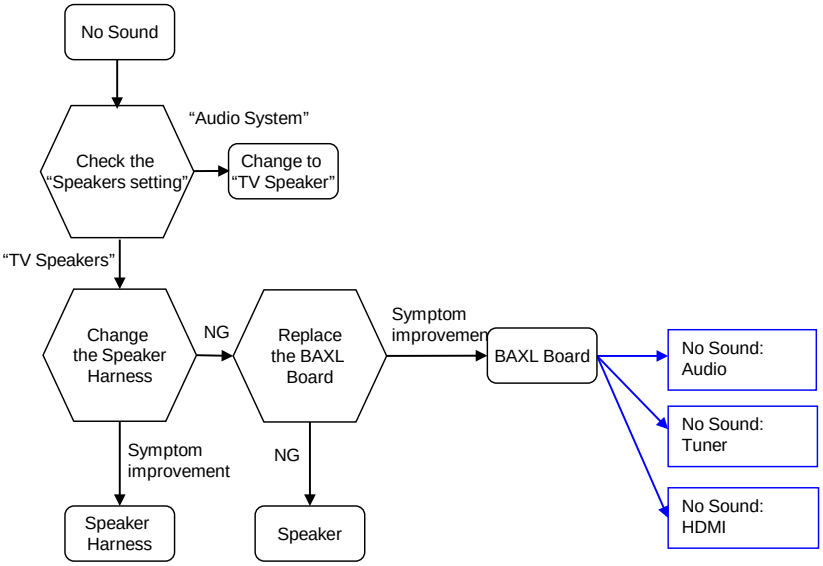
Parts	Board PWB (BAXL- B side)
(JL9106)	

Size	G* Board Type
40"	Not applicable
48"	Not applicable

3-2-5. LED BLINKING 7x (Temperature Error)

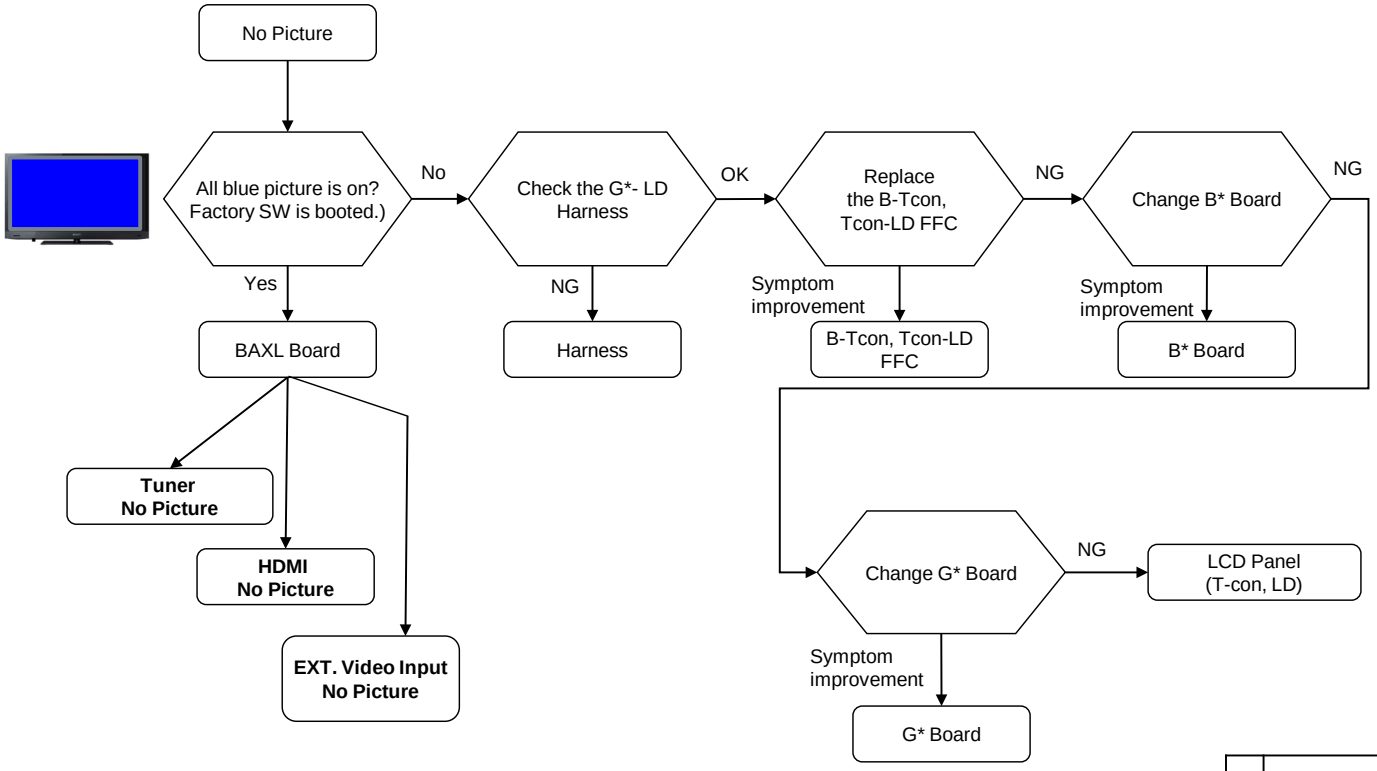


3-3. No Sound



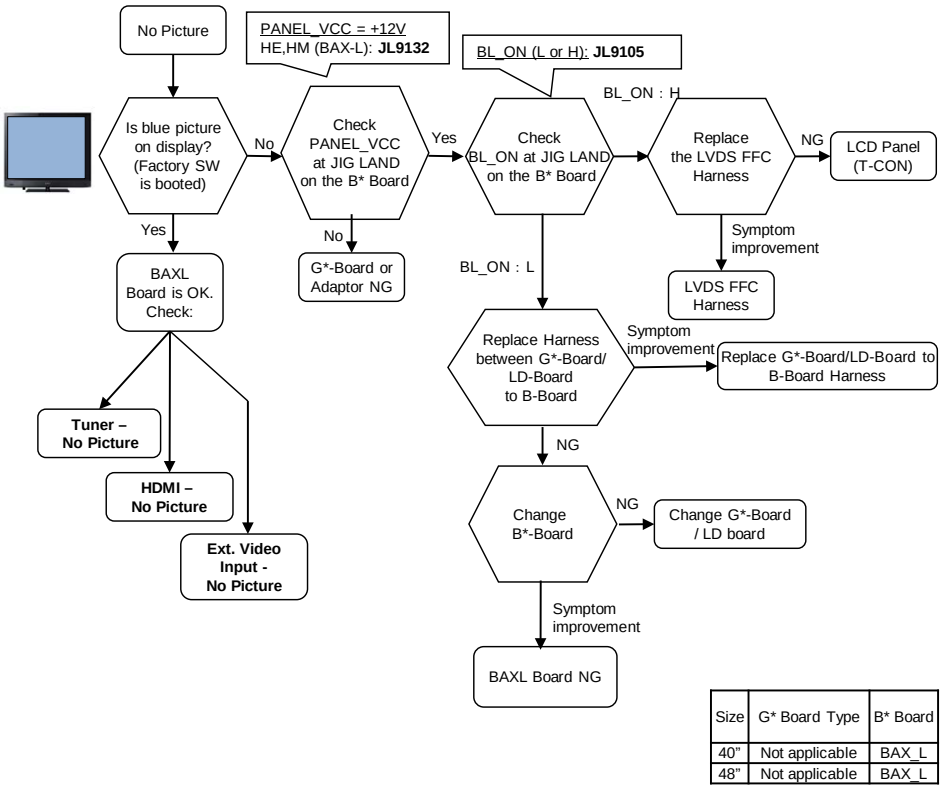
3-4.. NO PICTURE

3-4-1. NO PICTURE: LD Models only

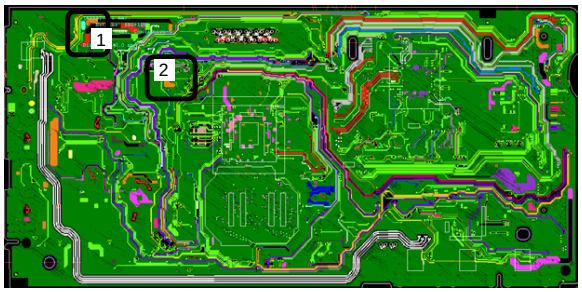


Size	G* Board Type	B* Board
40”	Not applicable	BAX_L
48”	Not applicable	BAX_L

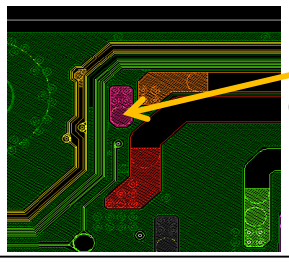
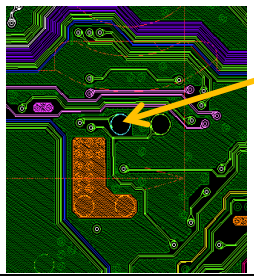
3-4-2. NO PICTURE: (All Model)



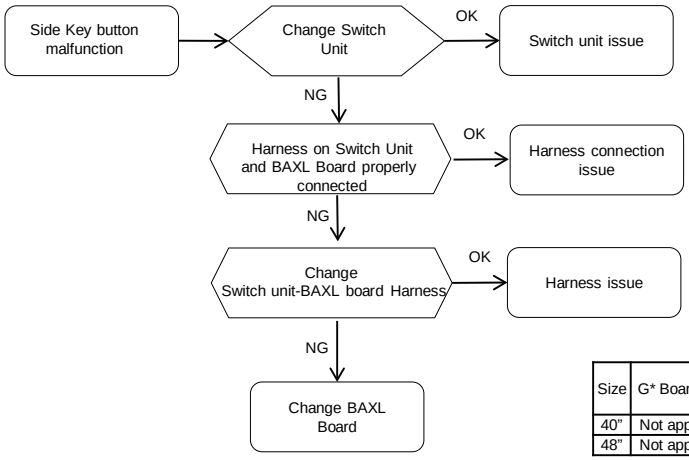
Size	G* Board Type	B* Board
40”	Not applicable	BAX_L
48”	Not applicable	BAX_L



<BAXL- B SIDE>

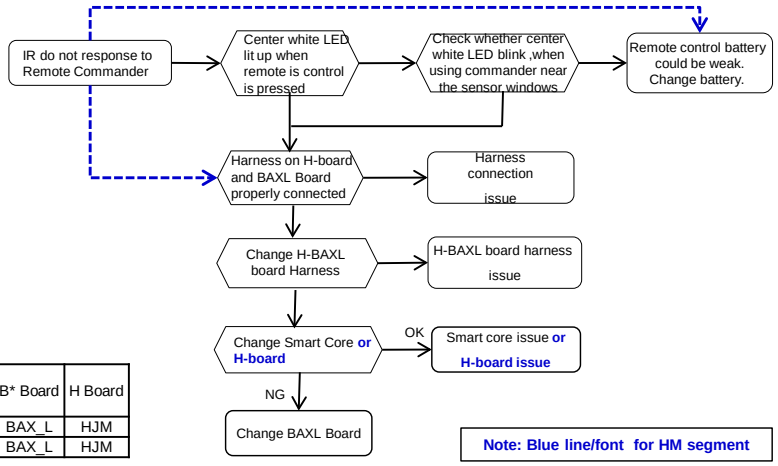
Parts Location/Parts	Detail
(1) (JL9132 (PANEL_VCC)	
(2) JL9105 (BL_ON)	

3-5. SIDE BUTTONS MALFUNCTION

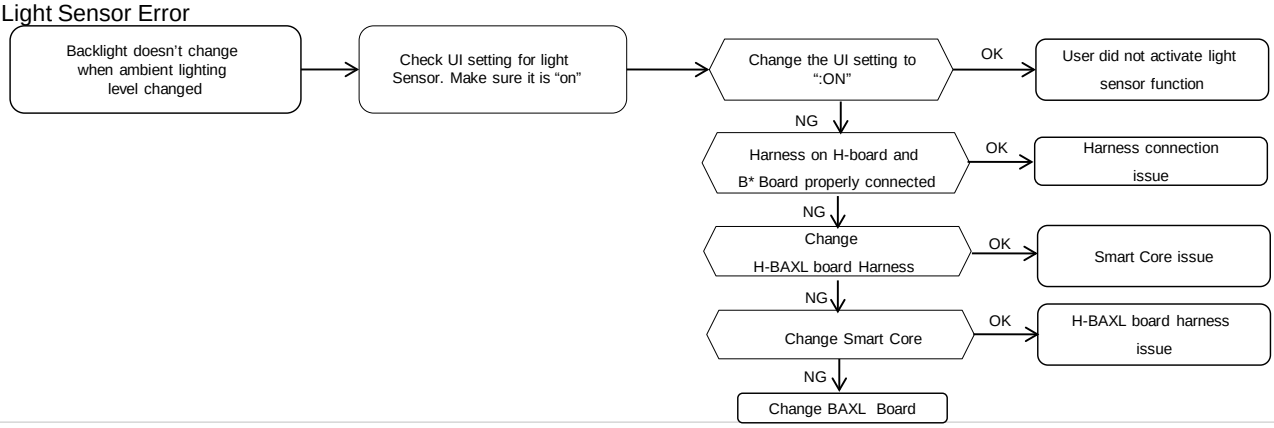


Size	G* Board Type	B* Board	H Board
40"	Not applicable	BAX_L	HJM
48"	Not applicable	BAX_L	HJM

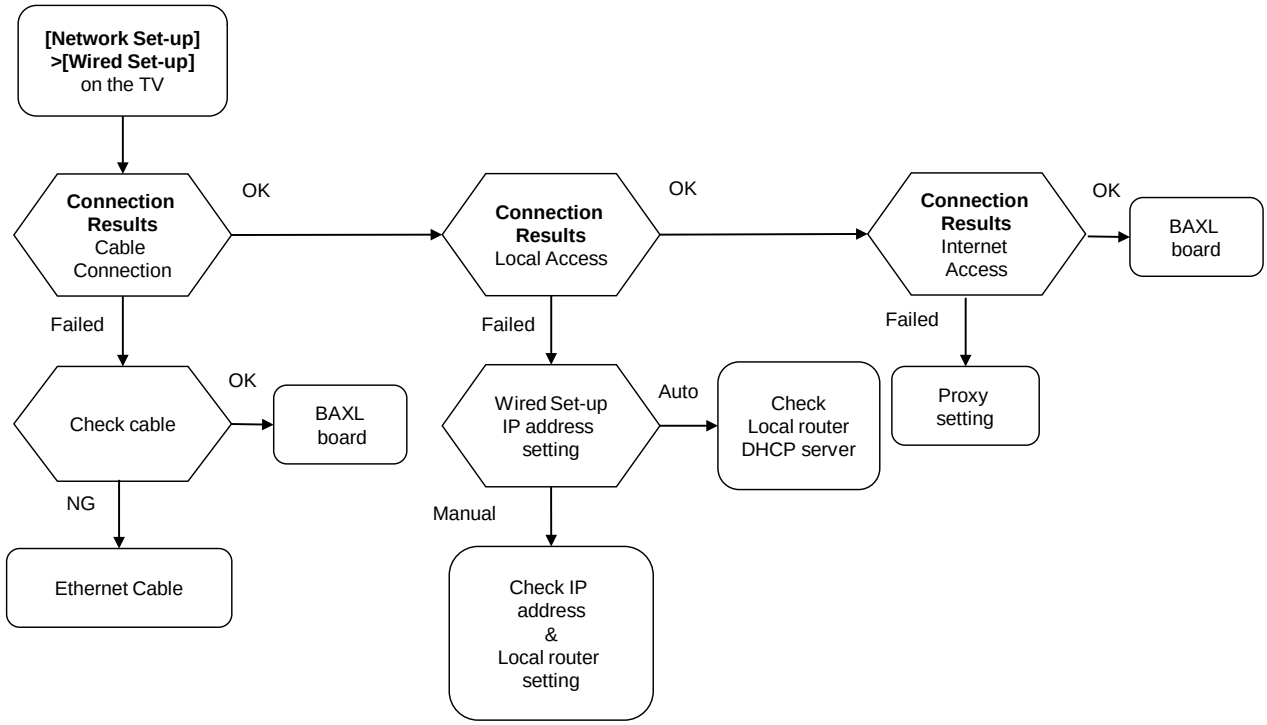
3-6. IR REMOTE COMMANDER MALFUNCTION



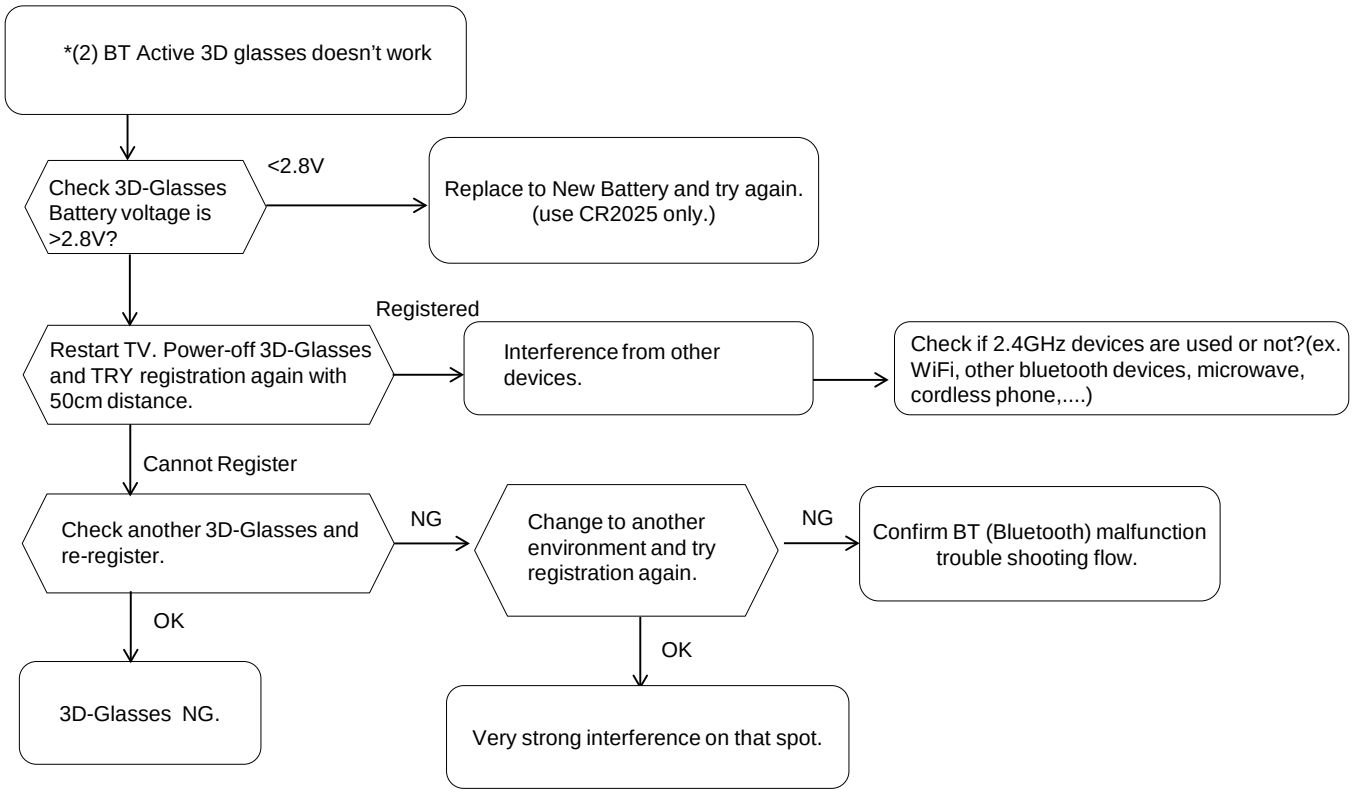
3-7. Light Sensor Error



3-8. Network Malfunction: Ethernet (Wired)

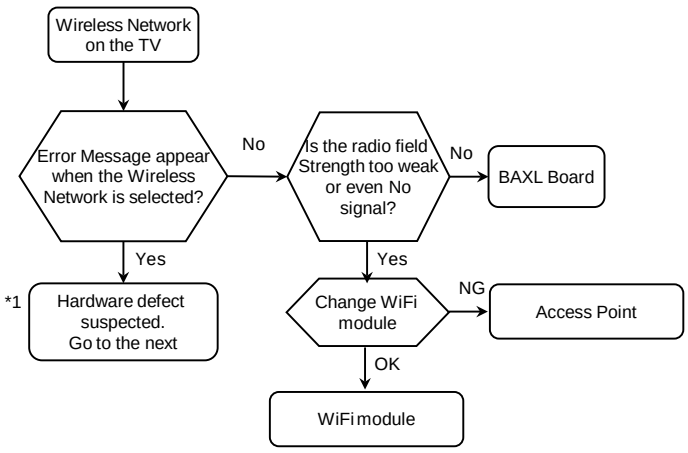


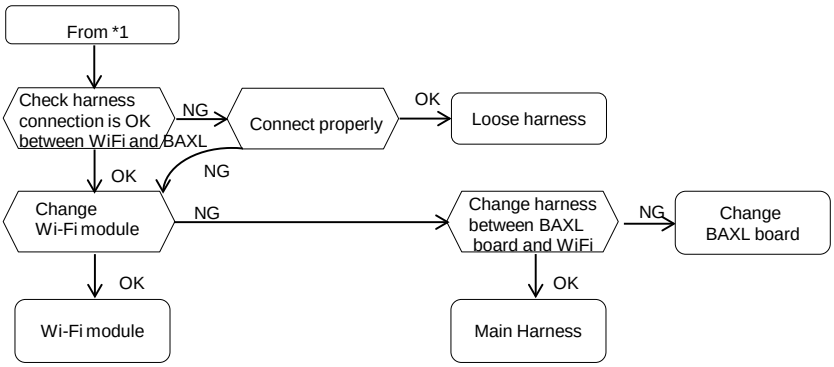
3-9. 3D-Glasses(Active) malfunction



3-10. Wireless Network malfunction

1) Internal Wireless Network malfunction

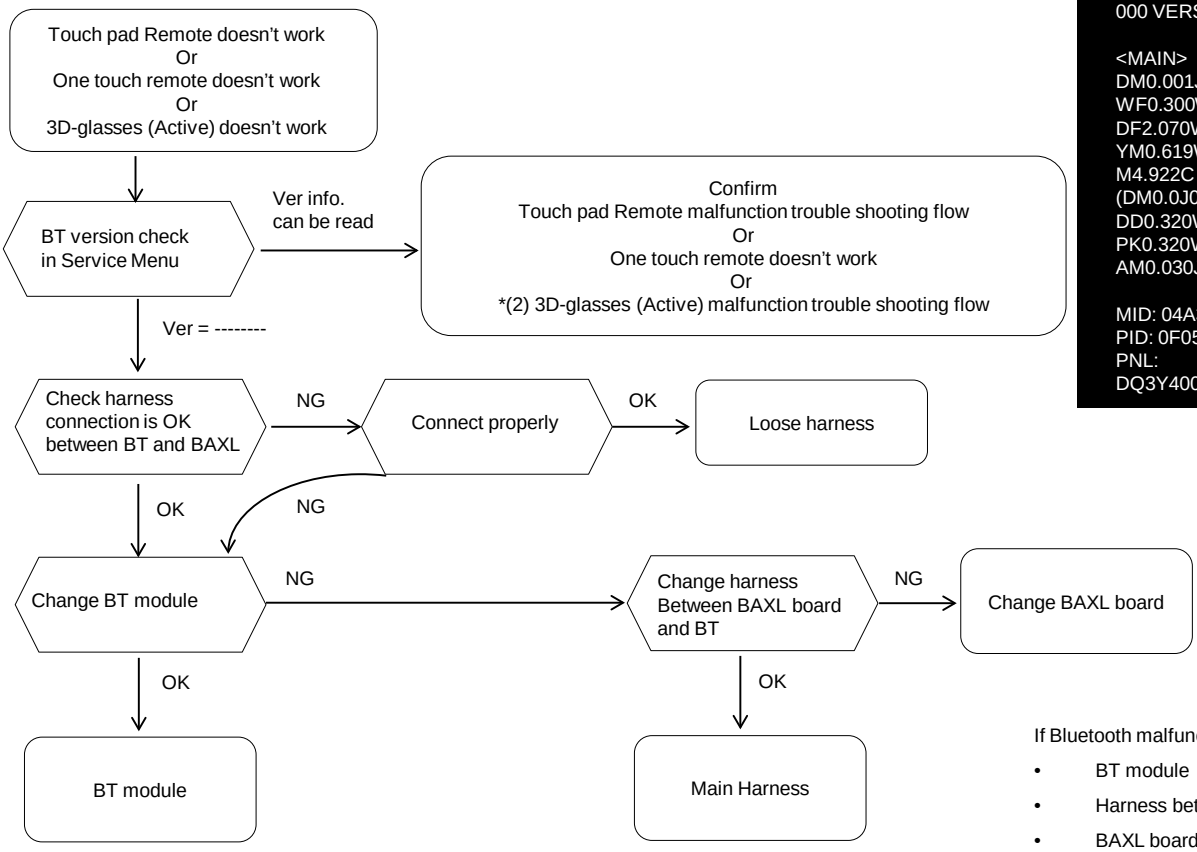


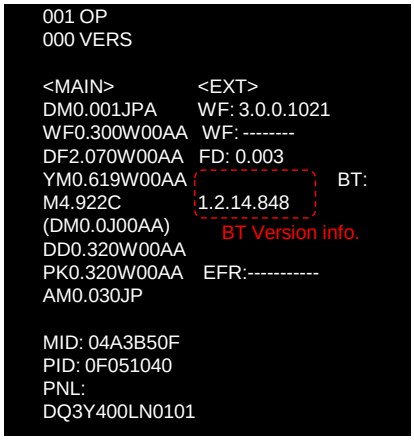


If Wi-Fi malfunction happens,

- Wi-Fi module
- Harness between WiFi and BAXL
- BAXL board are suspected.

3-11.Bluetooth malfunction





If Bluetooth malfunction happens,

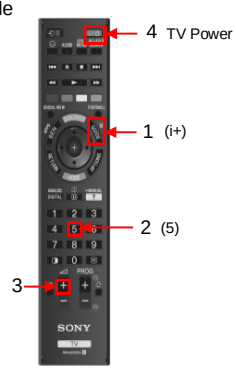
- BT module
- Harness between BT module and BAXL
- BAXL board are suspected.

SECTION 4
SERVICE ADJUSTMENTS

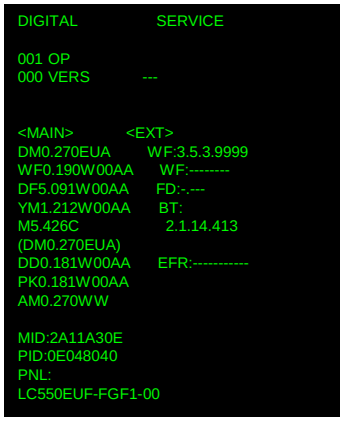
4-1. Accessing Service Mode

1) Go to TV standby condition by remote commander.
2) Press "i+ (info)", "5", "Volume +" then "TV power" on remote.
3) You can see Service Mode on display.

* The above operation should be finished within 15 seconds after the set go to STBY mode



Remote Commander



Screen Sample

4-2. Transition of Each Micro's Service Mode

1. First of all, when you enter Service Mode, you can see "Digital" service mode.
2. Whenever you press "OPTIONS" on remote, service mode is changed according to the flow below:

Digital" -> "Chassis" -> "VPC"

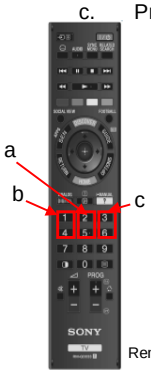
Part A "Chassis" & "VPC"

Part B "Digital" service mode

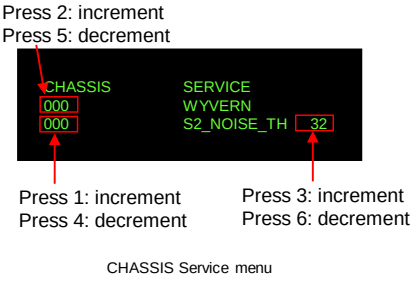
Remote Commander

4-3. Change Data by Service Mode 1 (Part A)

1. Change Data of **"Chassis"** or **"VPC"** service mode
   a. Press "2 / 5" on remote to select (up / down) category.
   b. Press "1 / 4" on remote to select (up / down) Item.
   c. Press "3 / 6" on remote to change (up / down) data.



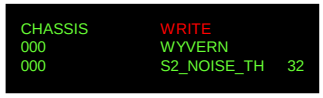
Remote Commander



CHASSIS Service menu

Save Changing Data by Service Mode 1

2. Write data for **"Chassis"** or **"VPC"** service mode.
   a. Press "Mute" on remote.
   It shows green "SERVICE" changes to green "WRITE".
   b. Press "0" on remote. Green "WRITE" changes to red "WRITE". It indicate writing is processing.
   c. After a while, red "WRITE" changes to green "SERVICE". Writing process is done at this point.
3. TV reboot is necessary for applying data change.

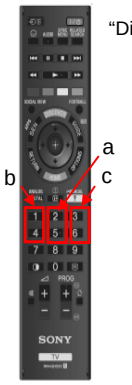


CHASSIS Service menu

Remote Commander

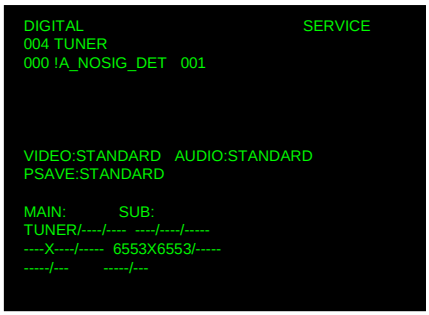
4-4. Change Data by Service Mode 2 (Part B)

1. Change Data of **"Digital"** service mode (except "003 DIG_SRV_MODE" category)
   a. Press "2 / 5" on remote to select (up / down) category.
   b. Press "1 / 4" on remote to select (up / down) Item.
   c. Press "3 / 6" on remote to change (up / down) data.



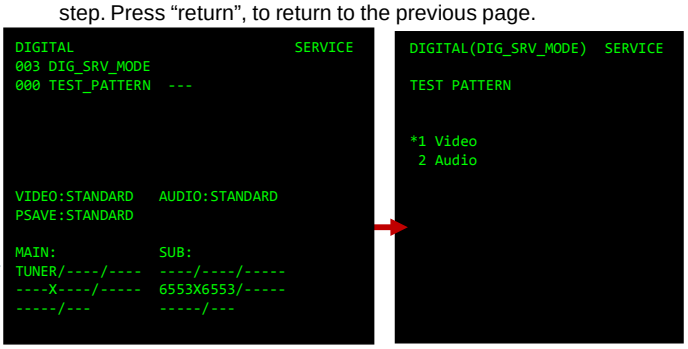
Remote Commander

"Digital" service mode don't have to Save. (except "002 MODEL")

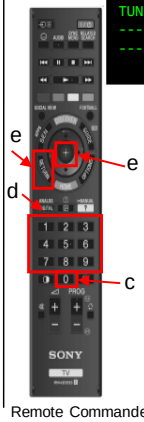


DIGITAL Service menu

2. Change Data of **"Digital"** service mode ("003 DIG_SRV_MODE" category). "003 DIG_SRV_MODE" is one category of "Digital" service mode. Please note because this operation is special.
   a. Press "2 / 5" on remote to select "003 DIG_SRV_MODE".
   b. Press "1 / 4" on remote to select (up / down) Item.
   c. Press "0 / 10" on remote to select item.
   d. Press number key "1"~"9" directly. "*" stamp move.
   e. Press "12 / enter / select" to decide and advance to the next step. Press "return", to return to the previous page.



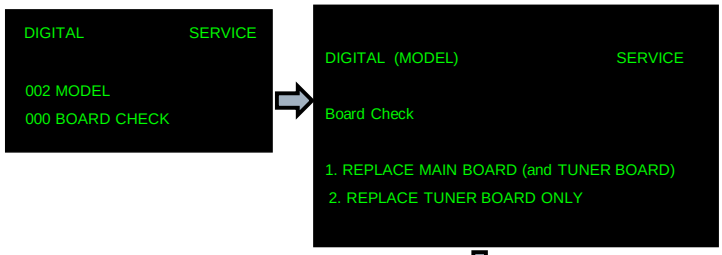
DIGITAL Service menu



Remote Commander

Checking Board Information

1. In **"Digital"** service mode ("002 MODEL" category)
2. Press "0 / 10" on remote to select item.

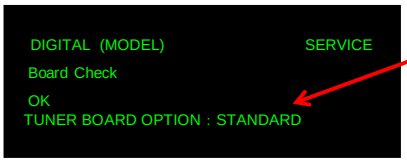


3. Press "1" on Remote.

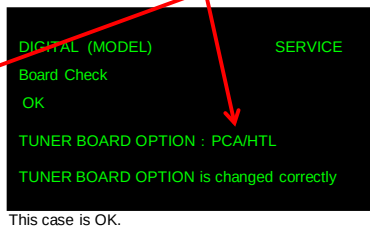
Note : Check the Result. Result 1 : NG , Result 2: OK, Result 3 : OK (With "TUNER BOARD OPTION is changed correctly") comment

This case is NG. The main board is mismatch to the tuner board.
The value of Tuner Board Option was kept.

This value is below;
- Standard
- C4
- PCA
- HTL
- PCA/Dsub
- PCA/Dsub/HTL
- Dsub
- PCA/HTL

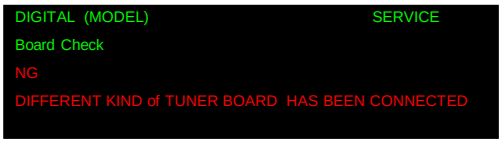


This case is OK.
The value of Tuner Board Option was kept..

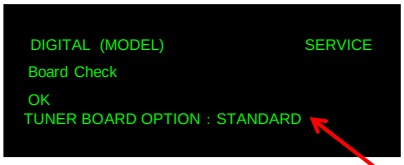


This case is OK.
-Only when TUNER BOARD OPTION part of model ID has been changed
-The value of Tuner Board Option was changed automatically.

4. Press "Return" on Remote
5. Press "2" on Remote.



This case is NG.
The main board is mismatch to the tuner board.
The value of Tuner Board Option was kept.



This case is OK.
The value of Tuner Board Option was kept.
In this case, The value of Tuner Board Option is never changed automatically.

.

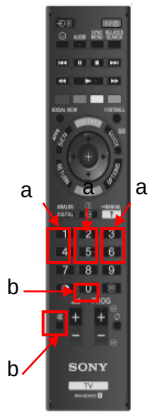
This value is below;
- Standard
- C4
- PCA
- HTL
- PCA/Dsub
- PCA/Dsub/HTL
- Dsub
- PCA/HTL

6. Press "Return" on Remote.

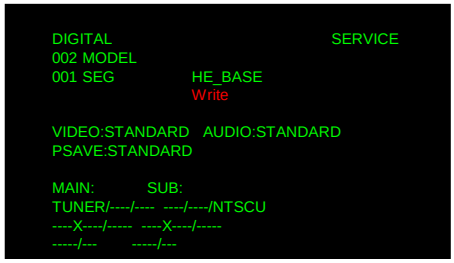
IF "**OK**" Go to
Save Changing Data by Service Mode 2.

Save Changing Data by Service Mode 2 | Only when B* board is replaced.

1. In **"Digital"** service mode ("002 MODEL" category)
   001 SEG Select segment information
   002 DEST Select destination information
   003 MODELNAME Select Model Name
   004 SERIAL Can be set Only Once for the new board
   005 SHIP_CONFIRM...Can set correct Product Code
   006 VAR_TYPE Select variable information
   a. Change data for each model. (Refer to 4-4 Part B)
   b. Press "Mute", "0" on remote sequentially. Red "WRITE" is shown. This indicates writing is in process.
   c. After a while, red "WRITE" disappears. Green Done will be displayed for a while, which means writing process is done.
   d. For the items SEG, DEST, MODELNAME after changing each item, service save ("mute"+"0") is required. For the item SERIAL, after inputting the serial number, press key "12" or "Enter" to save the data.
   – Please save the items according to the sequence "SEG -> DEST -> MODELNAME-> VAR_TYPE"
   – When Saving the item "SEG", sometimes instead of "Writing", the word "Pending" will appear. In this case, skip "SEG", saving "DEST" , "MODELNAME" and "VAR_TYPE" is OK.



Remote Commander

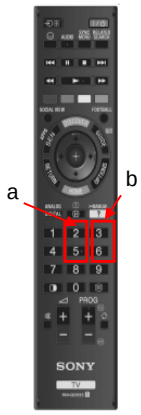


DIGITAL Service menu

4-5. Restore WB / Gamma Adj. Data to B board.

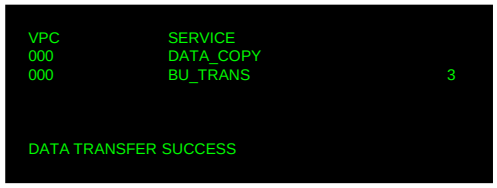
Please apply after USB-DL when B board is replaced. | HE,HS Models

1.in **"VPC"** service mode
   a.Select "000 DATA_COPY" category by pressing "2 / 5" on remote.
   b.Change data from "0" to "1" by pressing "3 / 6" on remote.
   c.Wait until data is changed from 1 to 3.
   d.When data is changed from 1 to 3, restoring process is finished.
   e.In case data is changed from 1 to 2, keep default setting. (No more process is needed.)



Remote Commander

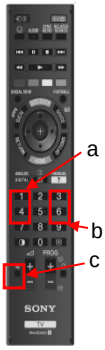
Restore process



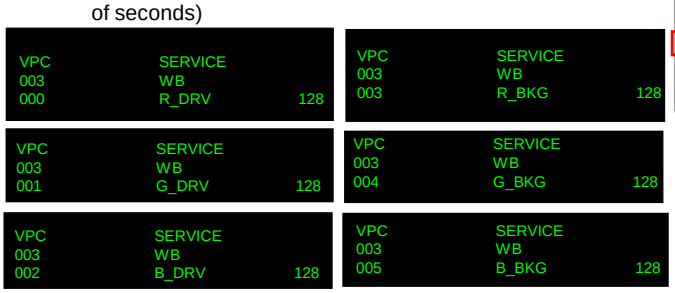
End restore process

4-6. WB Adjustment by Service Mode

1. in **"VPC"** service mode ("004 WB" category)
   a. Press "1" or "4" on remote to select WB adjustment menu.
   b. Change data by pressing "3" or "6". Each range of these items is 0~1023.
   c. Press "mute" +"0" on remote to save the data. "SERVICE" comment is changed to "WRITE", indicating writing process.
   d. After a while, "WRITE" comment returns to "SERVICE", which means writing process is done. (takes about a couple of seconds)



Remote Commander

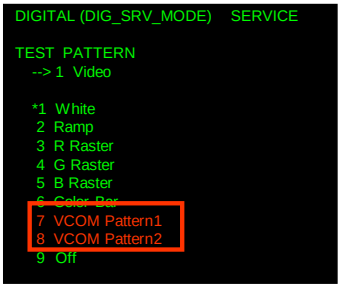


VPC Service menu

4-7. VCOM Adjustment (NFR-AUO/SDC/FXC Panel)

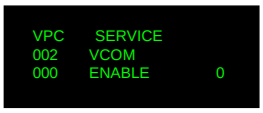
4-7-1. STEP1

1. in "Digital" service mode
   a. Select "003 DIG_SRV_MODE" category by pressing "2 / 5" on remote.
   b. Press "0" to go to "TEST PATTERN" Mode.
   c. Press "Enter" or "12" to go into Video TEST PATTERN.
   d. Press "7" or "8" to select the test pattern
   e. Press "Enter" or "12" twice to show the VCOM TEST PATTERN.



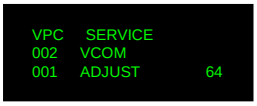
4-7-2. STEP2

2. in "VPC" service mode
   a. Select "002 VCOM" category by pressing "2 / 5" on remote.
   b. Select "000 ENABLE" item by pressing "1 / 4" on remote.
   c. Change ENABLE from "0" to "1" by pressing "3" to enable VCOM adjustment.



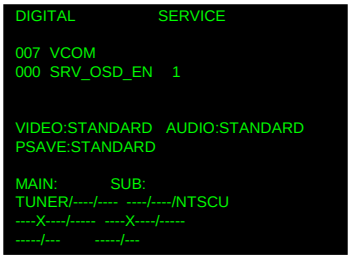
4-7-3. STEP3

3. in "VPC" service mode
   a. Select "002 VCOM" category by pressing "2 / 5" on remote.
   b. Select "001 ADJUST" item by pressing "1 / 4" on remote.
   c. Change data by pressing "3 / 6" on remote.



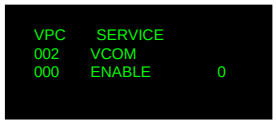
4-7-4. STEP4

4. in "Digital" service mode
   a. Select "007 VCOM" category by pressing "2 / 5" on remote.
   b. Change data from "1" to "0" by pressing "3 or 6 " on remote.
   c. Confirm the final result of the VCOM adjustment .
   d. If OK, Finish the VCOM adjustment. If NG, pressing "3 or 6" to show the OSD again and go back to VCOM adjustment Step 3.



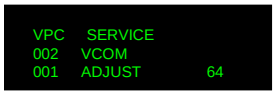
4-8. VCOM Adjustment (HFR-AUO/FXC Panel)

4-8-1. STEP1



1. in "VPC" service mode
   a. Select "002 VCOM" category by pressing "2 / 5" on remote.
   b. Select "000 ENABLE" item by pressing "1 / 4" on remote..
   c. Change ENABLE from "0" to "1" by pressing "3" to enable VCOM adjustment.
   -The Picture is change Vcom Pattern and you can't see OSD

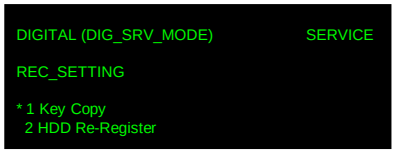
4-8-2. STEP2



2. in "VPC" service mode (There is no OSD.)
   a. Select "002 VCOM" category by pressing "2 / 5" on remote.
   b. Select "001 ADJUST" item by pressing "1 / 4" on remote.
   c. Change data by pressing "3 / 6" on remote.
   d. Finish the adjustment when the picture seems OK.
   e. Select "000 ENABLE" item by pressing "1 / 4" on remote.
   f. Change ENABLE from "1" to "0" by pressing "6" to disable VCOM adjustment. and you can see OSD.

4-9. REC Setting

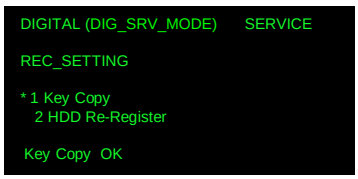
4-9-1. STEP1

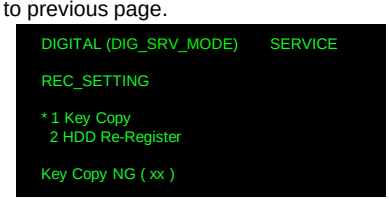


1. in "Digital" service mode
   a.Select "003 DIG_SRV_MODE" category by pressing "2 / 5" on remote.
   b. Select "006 REC_SETTING " item by pressing "1 / 4" on remote.
   c. Press "0" or "10" to go to detailed REC Setting screen.

4-9-2. STEP2

2. in detailed REC setting screen
   a. Press "1" to select "Key Copy" item
   b. Press "Enter" or "12" twice to execute the command.
   c. If OK, show the message "Key Copy OK". If NG, show the message "Key Copy NG (= xx)".
   d. Press "Return" to return to previous page.





xx value representation	
0	copy success
1	decrypt error
2	file acquisition error
3	other

4-9-3. STEP3

3. in detailed REC setting screen
   a. Press "2" to select "HDD Re-Register" Item.
   b. Press "Enter" or "12" twice to execute the command.
   c. If OK, xx= x+1. If NG, xx=x.
   d. Press "Return" to return to previous page.

xx value representation	
0	register success
1	HDD repetition
2	file acquisition error
3	HDD info miss-match
4	other

4-10. Reset Panel Operation Time

Only when Panel is replaced.

1. In Self Diagnosis Display (*refer to How to Enter Self Diagnosis Display*)
   a. Reset Panel Operation Time <7> -> <0>

```
SELF CHECK

002 MAIN_POWE  ------------ ------------ ------------ 00 Model Name      : KDL-RB2
003 AFE_I2C    ------------ ------------ ------------ 00 Serial Number   : 1000008
003 DC_ALERT   ------------ ------------ ------------ 00 Package Number  : PKG0.270EUA
003 AUD_ERR    ------------ ------------ ------------ 00  Device ID       : B0:00:01:EF:4B:C6
003 HDMI_EQ    ------------ ------------ ------------ 00 Wired MAC       : D8:D4:3C:17:84:3E
003 TU_DEMOD   ------------ ------------ ------------ 00 Wireless MAC    : N/A
003 AFE_SPI    ------------ ------------ ------------ 00 USB dongle      : N/A
004 VLED       ------------ ------------ ------------ 00
004 LD_ERR     ------------ ------------ ------------ 00 <MAIN>            <EXT>
005 TCON_ERR   120823132523 ------------ ------------ 01 DM0.270EUA       WF:3.5.3.99
005 P_ID_ERR   ------------ ------------ ------------ 00 WF0.190W0AA      WF:--------
005 FRCTC_I2C  ------------ ------------ ------------ 00 DF5.091W00AA      FD:-.---
006 BACKLIGHT  ------------ ------------ ------------ 00 YM1.212W00AA      BT:2.1.14.413
007 TEMP_ERR   ------------ ------------ ------------ 00 M5.426C
007 FAN_ERR    ------------ ------------ ------------ 00 (DM0.270EUA)      EFR : ----------
008 VPC_WDT    ------------ ------------ ------------ 00 DD0.181W00AA
008 MEPS_WDT   ------------ ------------ ------------ 00 PK0.181W00AA
008 HOST_WDT   ------------ ------------ ------------ 00 AM0.270WW
008 STBY_WDT   ------------ ------------ ------------ 00
008 AFE_WDT    ------------ ------------ ------------ 00 MID:2A11A30E
009 TU_BOARD   ------------ ------------ ------------ 00 PID:0E048040
                                                      PNL:LC550EUF-FGF1
00021-10573-00025   0000000000000600-0000000000000000
```

PANEL OPERATION TIME

Diagnosis Display

4-11. Set to Shipping Condition

1. How to do shipping condition.

Remote Commander

a. Move to **"Digital"** service mode.
b. Press "8" on remote. It shows green "SERVICE" changes to green "RST-".
c. Press "mute" on remote. Added green "EXE" after green "RST-" .
d. Press "0" on remote. Green "EXE-RST" changes to red "EXE-RST". It indicate writing is processing.
e. After a while, red "EXE-RST" changes to green "SERVICE".
f. And blink Smart Core WHITE LED. Writing process is done at this point.

<Another way>

You can set to shipping condition w/o entering Service Mode.
-> "Cursor Up" + "Power Key" on remote.

4-12. Summary of Service Control

Function	The flow of control
Service mode on	<Test>+<TV>/<Display><5><Vol Up><Power>
Service mode off	<Other> / <Power off + on>
Item up / down	<1>/<4>
Category up / down	<2>/<5>
Data up / down	<3>/<6>
Test reset (テストリセット)	<8> + <Mute> + <0>
HDD Deregistration (HDD登録削除)	From UI Menu: HDD登録削除 (JPモデル) HDD Deregistration (AEP Model)
Execute (実行)	<10 or 0>
Write data (書込み)	<Mute> + <0>
Change module (モジュール変更)	<Jump> / <Option>

4-13. Service Menu Tree

4-13-1. Tree 1

"Digital"

- 001 OP
  - 000 VERS …Software version
- 002 MODEL
  - 000 BOARD CHECK ...Check the main board and tuner board combination
  - 001 SEG ...Select segment information
  - 002 DEST ...Select destination information
  - 003 MODELNAME ...Select Model Name
  - 004 SERIAL ...Can be set Only Once for the new board
  - 005 SHIP_CONFIRM ...Can set correct Product Code
  - 006 VAR_TYPE
- 003 DIG_SRV_MODE
  - 000 TEST_PATTERN …Main Chip Test Pattern
  - 001 MONITOR_MODE …Tuner Monitor
  - 002 FACT_SETTING …Factory shipment settings
  - 003 MODEL_DATA
  - 004 NETWORK
  - 005 TT84 …Only for AEP
  - 006 REC_SETTING
- 004 TUNER
  - 000 A_NOSIG_DET …Analog-RF No signal detection
  - 001 SCAN_COPY …Copy the scan data to USB.
  - 003 ASCOT
  - 004 WYVERN_1
- 007 VCOM …Service item for VCOM Adjustment
  - 000 SRV_OSD_EN
- 008 WIFI …Service item for WIFI (only WiFi model)
  - 000 PING
  - 001 MONITOR
- 009 BT MODE
  - 000 MONITOR

4-13-2. Tree 2

"Chassis"

- 000 WYVERN
  - <omission>
- 001 TUNING
  - <omission>
- 002 D_DEMOD
  - <omission>
- 003 SATELLITE
  - <omission>
- 004 AUDIO
  - 000 MPEG_LV …Level OFFSET for MPEG1-L1/L2.
  - 001 HEAAC_LV …Level OFFSET for HE-AAC.
- 005 TEMPSEN No Use for Service
  - <omission>
- 006 DL
  - 000 PID_DATA_MISMAT
- 007 BT_MODE … Service Item for BT (only BT model)
  - 000 FEATURE
  - 001 FIRST_DIS_CH
  - 002 LAST_DIS_CH
  - 003 3D_BEACON_ENABLE1
  - 004 BT_DEBUG
- 008 CAM … Service Item for CI (only AEP/CH/HK model)
  - 000 CAM_TS_FORMAT
- 009 OBI
  - 000 RSTBOT

No use for Service.

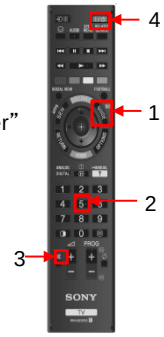
4-13-3. Tree 3

"VPC"

000 DATA_COPY …WB Data Restore Function (Tcon board-to-B board).
000 BU_TRANS
001 DATA_BAKUP ...WB Data Backup Function (B board-to-Tcon board).
000 BU_FLASH
002 DATA_INIT ...WB Data initialization (B board-to-Tcon board).
000 WB_INIT
001 ADJUST
003 VCOM …VCOM Adjustment Function.
000 ENABLE
001 ADJUST
004 WB …W/B adjustment
<omission>
005 TEST_PTN
<omission>
006 PANEL
<omission>

4-14. How to Enter Self Diagnosis Display

1. Go to TV standby condition by remote commander.
2. Press "i+ (info)", "5", "Volume-" then "TV power" on remote.
3. You can see Self Diagnosis Display.
4. To Exit , Press Power Off and On.



Remote Commander

Description on Part i

Description on Part ii

```
SELF CHECK

002 MAIN_POWE  ------------ ------------ ------------ 00  Model Name      : KDL-46W90AA
003 AFE_I2C    ------------ ------------ ------------ 00  Serial Number   : --------
003 DC_ALERT   ------------ ------------ ------------ 00  Package Number  : PKG0.280JPA
003 AUD_PROT   ------------ ------------ ------------ 00  Wired MAC       : 30:F9:ED:04:2C:17
003 HDMI_EQ    ------------ ------------ ------------ 00  Wireless MAC    : F0:F0:02:AA:82:DA
003 TU_DEMOD   ------------ ------------ ------------ 00  USB dongle      : N/A
003 AFE_SPI    ------------ ------------ ------------ 00
004 VLED       ------------ ------------ ------------ 00  <MAIN>            <EXT>
004 LD_ERR     ------------ ------------ ------------ 00  DM1.301JPA        WF:2.0.0.99
005 TCON_ERR   ------------ ------------ ------------ 00  WF1.003W00AA      WF:0B
005 P_ID_ERR   ------------ ------------ ------------ 00  DF1.001W00AA      FD:-.---
006 BACKLITE   ------------ ------------ ------------ 00  YM1.010W00AA      BT:1.2.14.848
007 TEMP_ERR   120823132523 ------------ ------------ 01  M4.992C
007 FAN_ERR    ------------ ------------ ------------ 00  (DM1.301W00AA)
008 VPC_WDT    ------------ ------------ ------------ 00  DD1.016W00AA
008 MEPS_WDT   ------------ ------------ ------------ 00  PK1.016W00AA
008 HOST_WDT   ------------ ------------ ------------ 00  AM01.300JP
008 STBY_WDT   ------------ ------------ ------------ 00
008 AFE_WDT    ------------ ------------ ------------ 00  MID:1C117081
009 TU_BOARD   ------------ ------------ ------------ 00  PID:04020000
010 EMIT_ERR   ------------ ------------ ------------ 00  PNL:LC470EUF-FFP1

00081-000671-00088    00000000000000000570-00000000000000000132
```

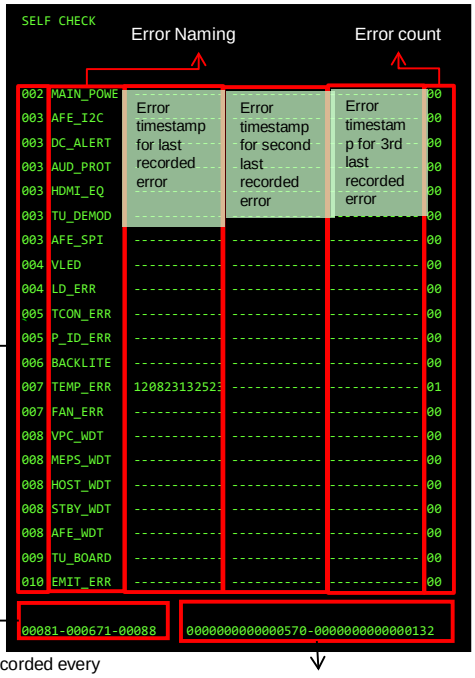
Self Diagnosis Display

Self Diagnosis Display [Part i)

Format of error time stamps
YYMMDDhhmmss (in UTC)
Example:
120823132523 -> Aug 23 2012 13:25:23 UTC
* Only when time is set, an error timestamp is saved.

Error history clear
<8> -> <0>
Panel operation time clear
<7> -> <0>

*Following error is invalid in RB1.
- FAN_ERR
- EMIT_ERR
- TCON_ERR



Smart Core Red LED blinking count

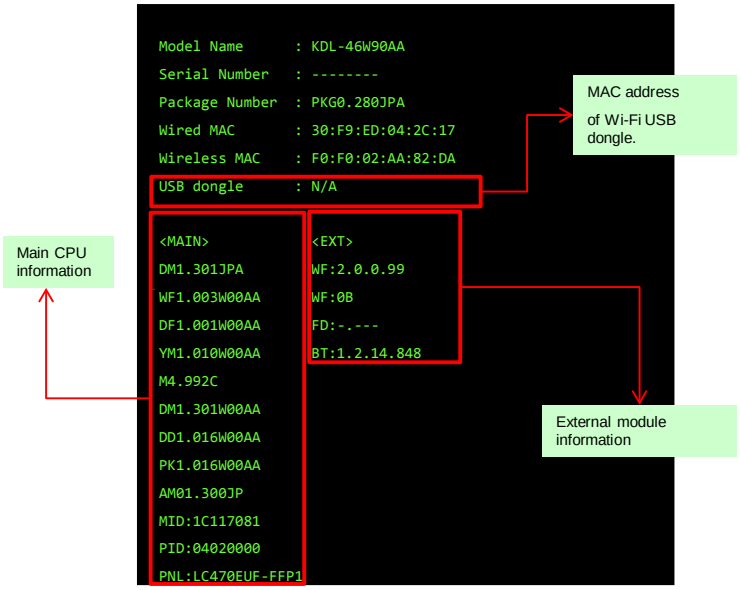
Total Operation Time [hr] – Boot Count – Panel Operation Time [hr]

•Panel Operation Time is recorded every 30 min, but Total Operation Time is recorded every 1 hr. Therefore, the panel op. time might become larger than the total op. time.

Count of writing to NAND device:
As vfat partition– As ext4 partition

Self Diagnosis Display (Part ii)

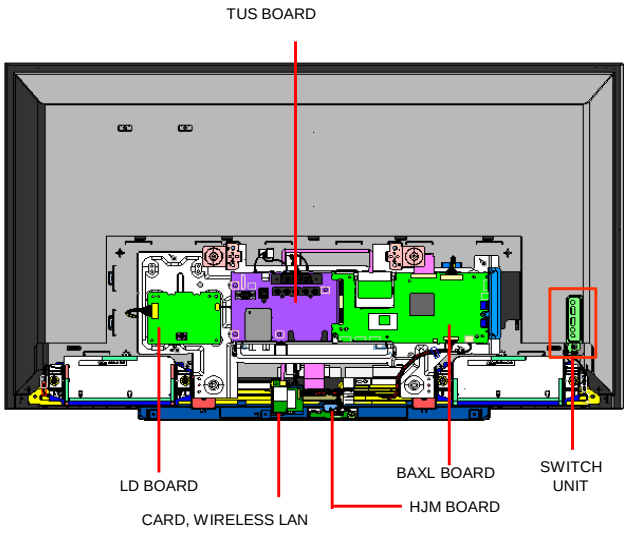
USB dongle:
1. When no Wi-Fi USB dongle is connected, NA is displayed.
2. If you insert/disconnect Wi-Fi USB Dongle during Self Diagnosis Display, press <1> -> <4> on remote commander to refresh MAC address displayed on “USB dongle”.
- Alternatively, you can re-display Self Diagnosis Display to update the information.



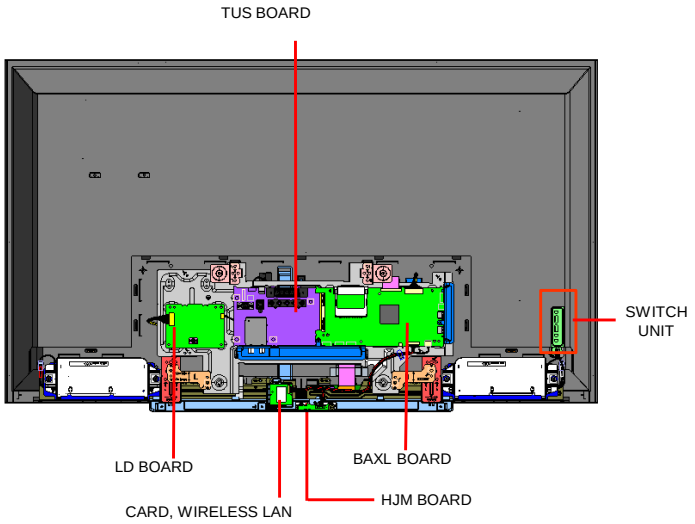
SECTION 5
DIAGRAMS

5-1.CIRCUIT BOARD LOCATION

5-1-1. KDL- 40W*B

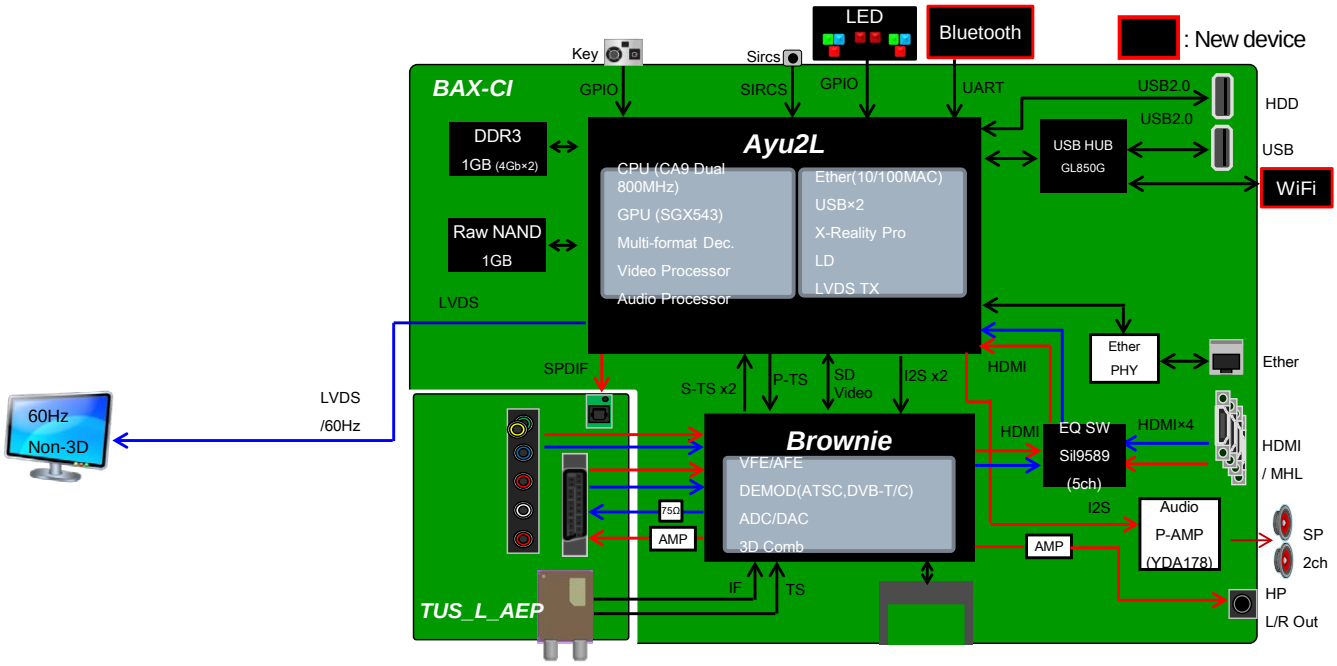


5-1-2. KDL-48W*B



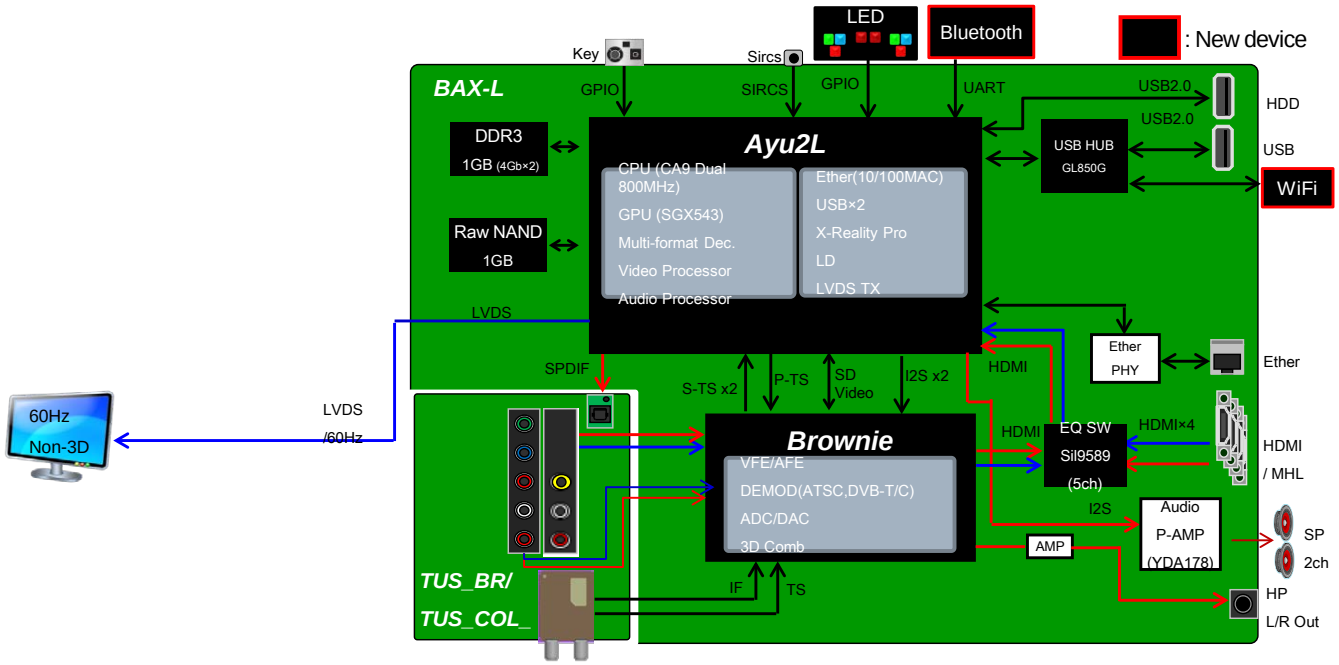
5-2. Block Diagram

5-2-1. AEP based



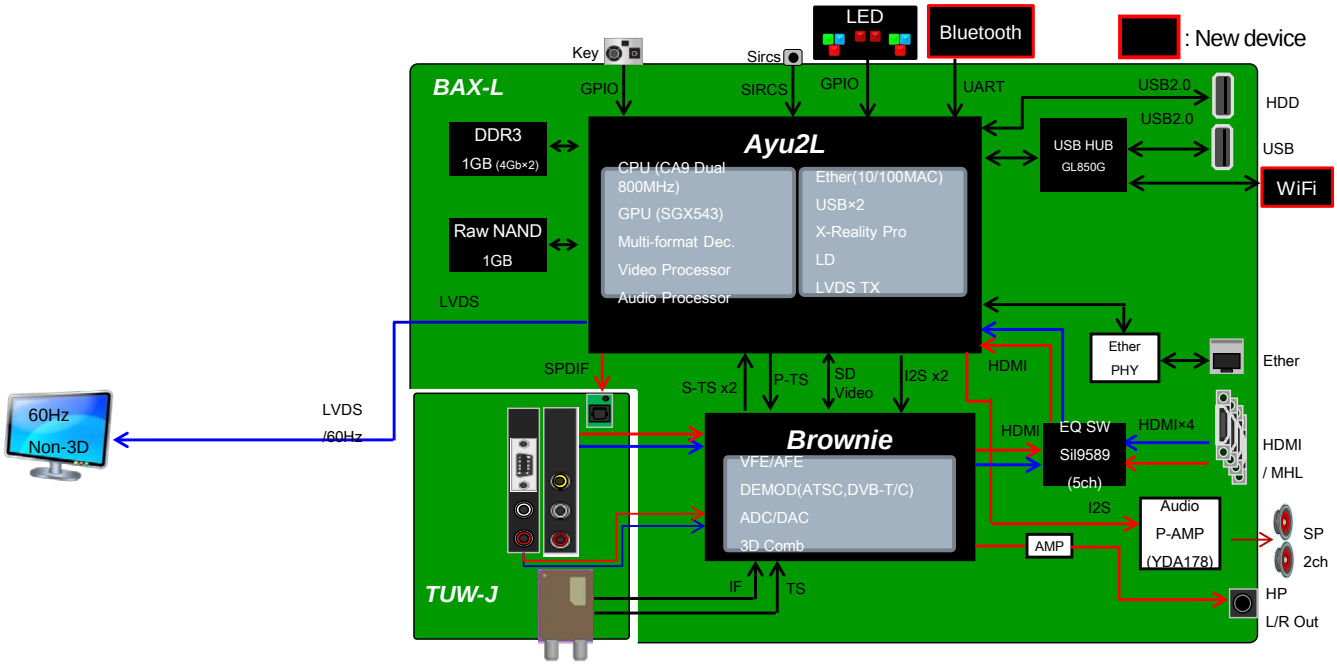
5-2. Block Diagram

5-2-2. BR, AR, LA_ISDB



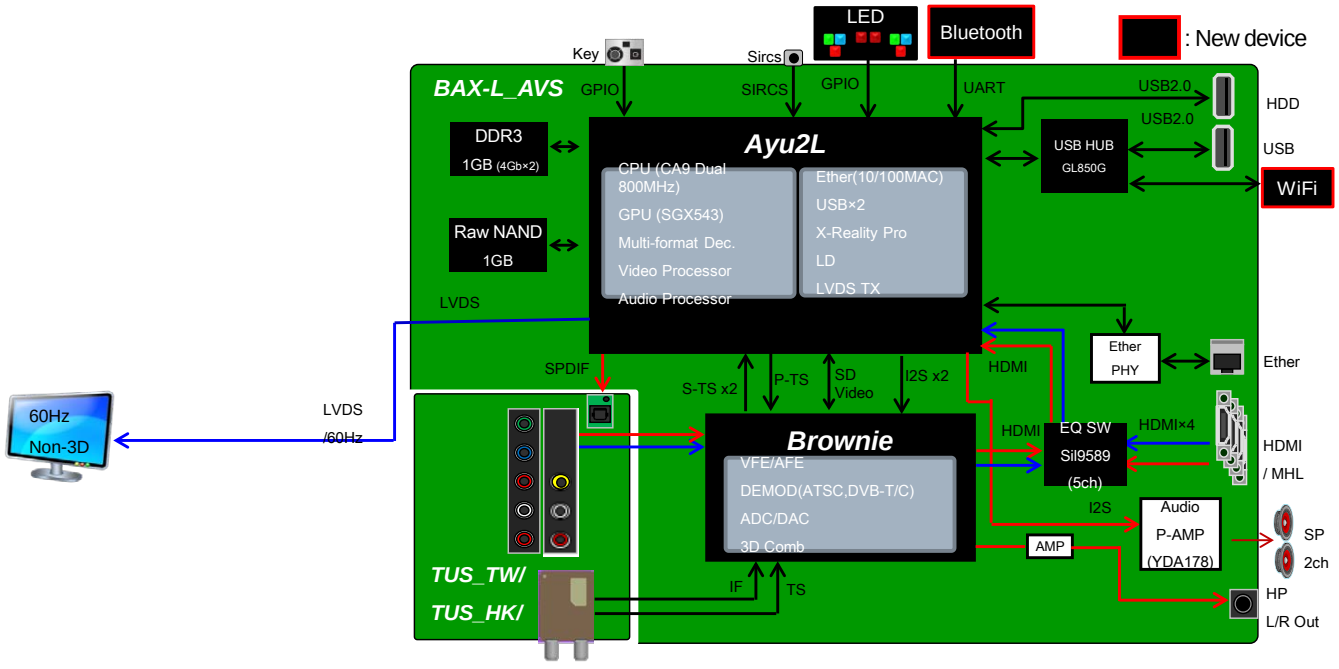
5-2. Block Diagram

5-2-3. JP

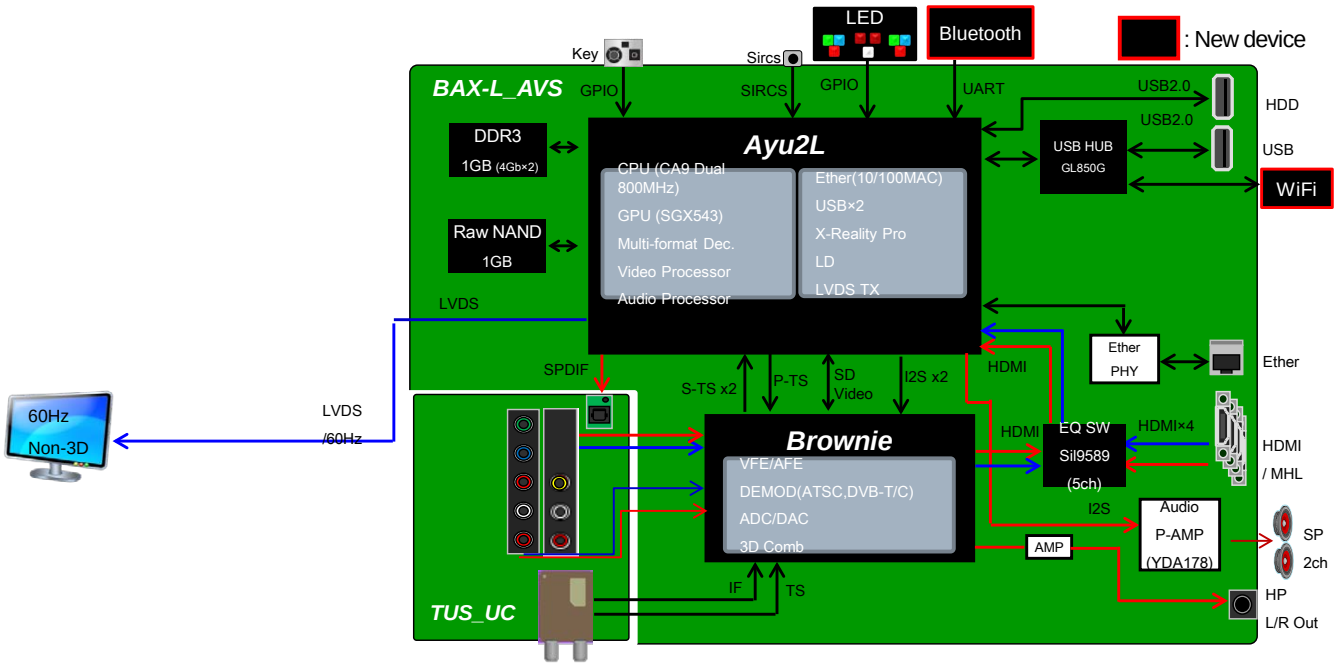


5-2. Block Diagram

5-2-4. CH, HK, TW

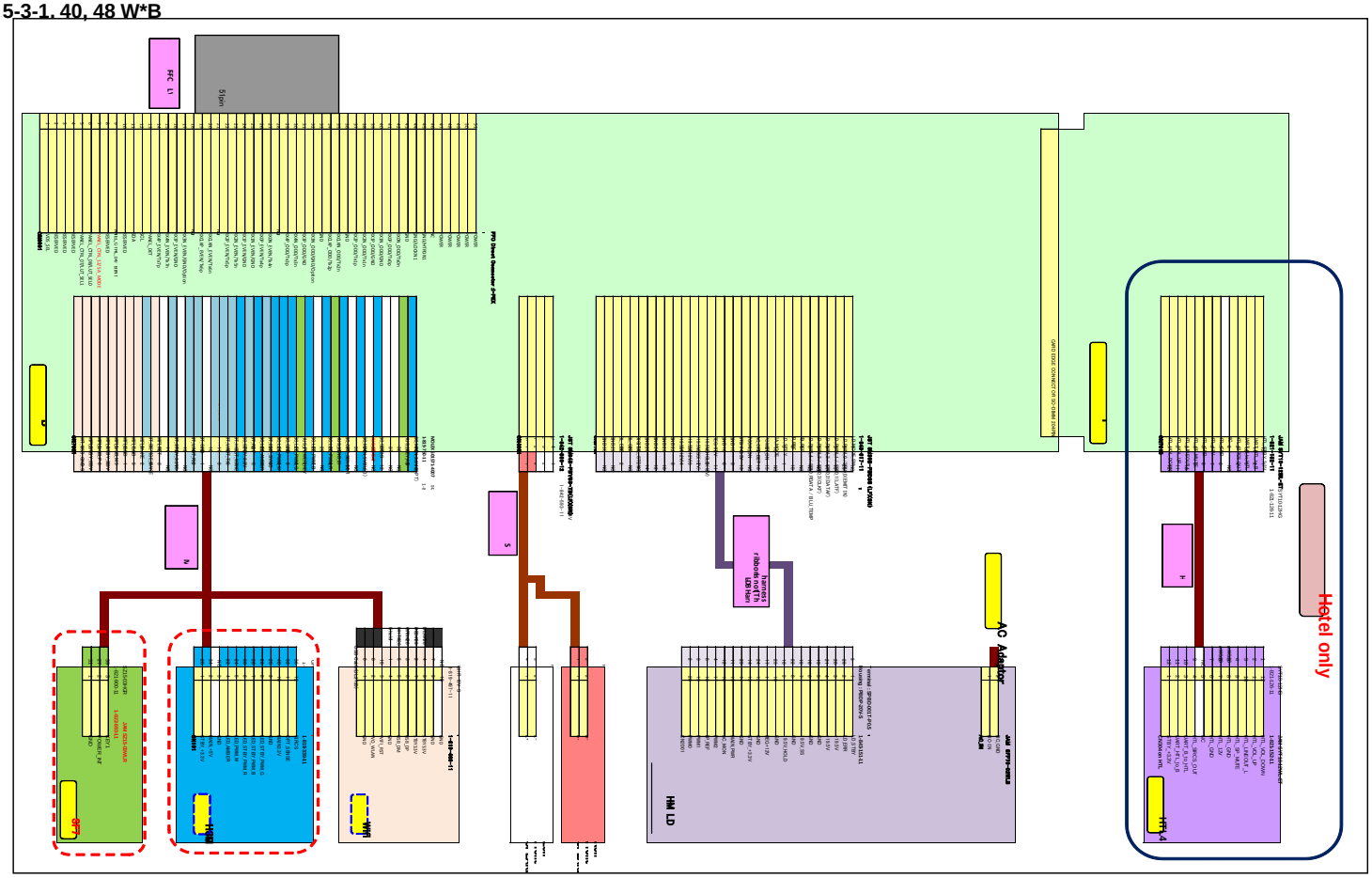


5-2. Block Diagram
5-2-5 UC



5-3. Connector Diagram

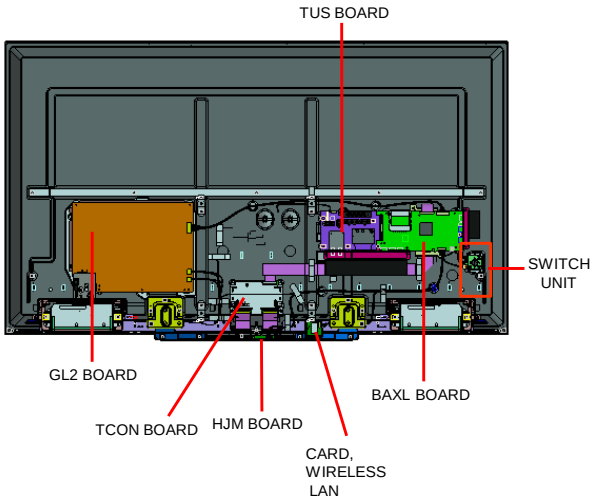
5-3-1. 40, 48 W*B



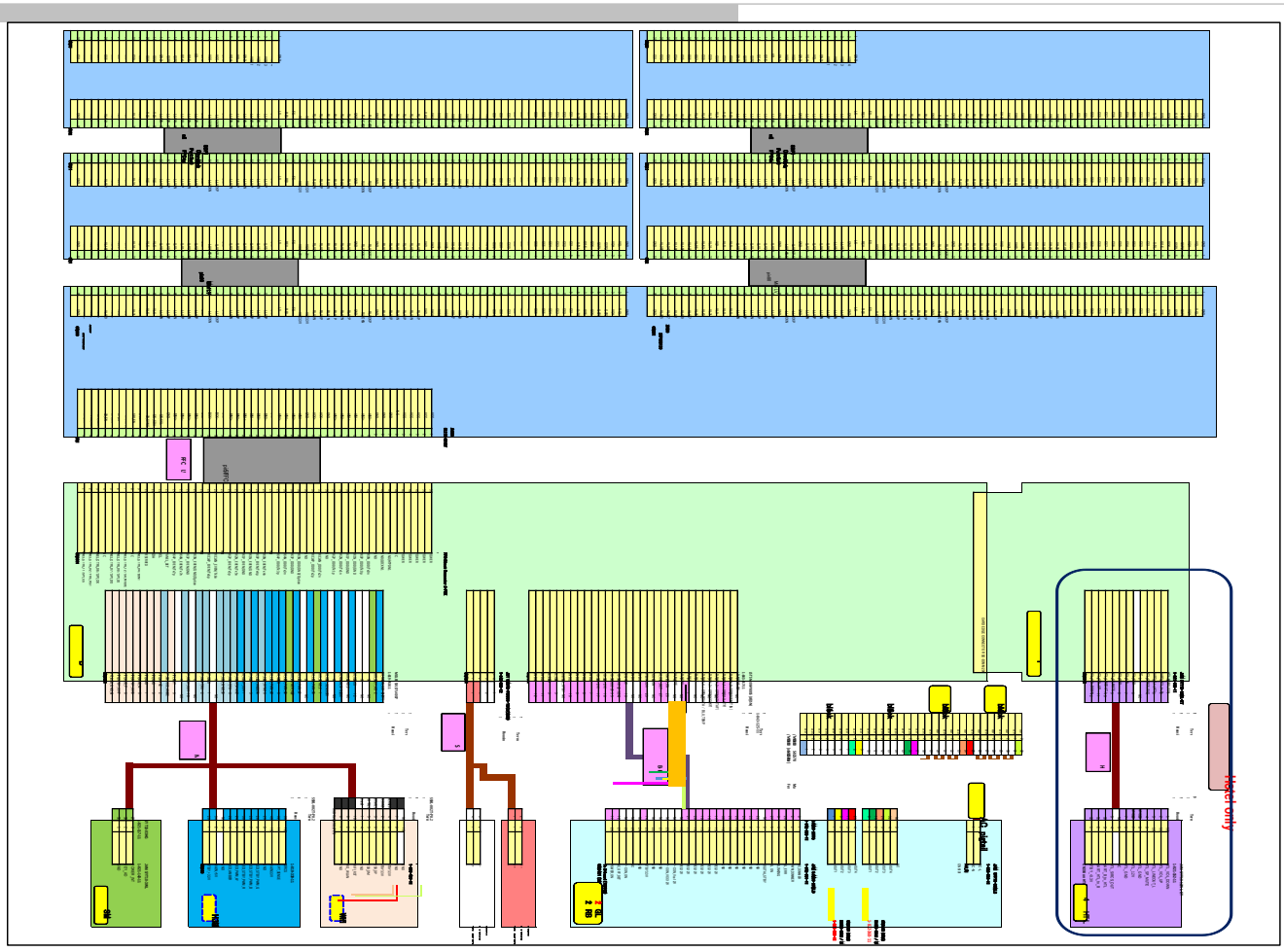
Supp-1: *KDL-60W600B*

5-1.CIRCUIT BOARD LOCATION

5-1-3. KDL- 60W*B



5-3. Connector Diagram
5-3-2. 60” W*B



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