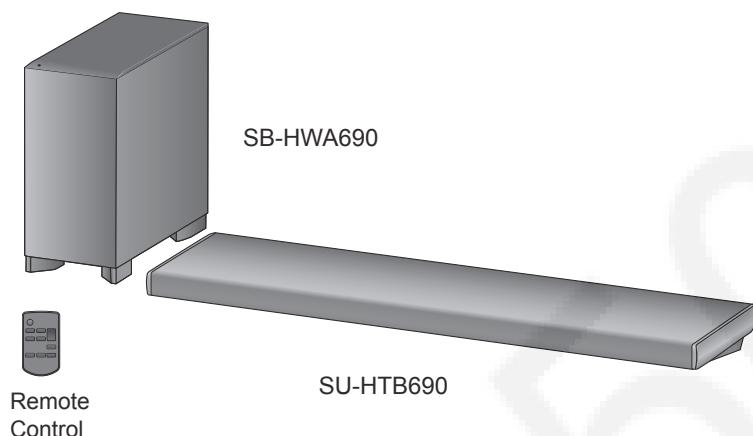


Service Manual

Home Theater Audio System

Model No. **SC-HTB690EB**
SC-HTB690EG
SU-HTB690EB
SU-HTB690EG
SB-HWA690E



Colour:(K).....Black Type

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.

Panasonic®

© Panasonic Corporation 2015
Unauthorized copying and distribution is a violation of law.

TABLE OF CONTENTS

	PAGE
1 Safety Precautions	3
1.1. General Guidelines	3
1.2. Leakage Current Cold Check	3
1.3. Leakage Current Hot Check (See Figure 1.)	3
1.4. Protection Circuitry.....	3
2 Warning	4
2.1. Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices	4
2.2. Caution for AC Cord (For EB).....	5
2.3. Service Caution Based on Legal Restrictions.....	6
3 Service Navigation	7
3.1. Service Information	7
4 Specifications	8
5 Location of Controls and Components	9
6 Service Mode	12
6.1. Service Mode Table 1.....	12
6.2. Service Mode Table 2.....	13
6.3. Service Mode Region Display Table	14
6.4. Service Function Error Code	14
7 Troubleshooting Guide	15
7.1. Main Unit (SU-HTB690).....	15
7.2. Active Subwoofer (SB-HWA690).....	21
8 Wiring Connection and Voltage Data	23
8.1. Main Unit (SU-HTB690).....	23
8.2. Active Subwoofer (SB-HWA690).....	26
9 Disassembly and Assembly Instructions	28
9.1. Disassembly Flow Chart.....	28
9.2. P.C.B. Location.....	29
9.3. Disassembly Procedure of Main Unit (SU-HTB690)	30
9.4. Disassembly Procedure of of Active Subwoofer (SB-HWA690)	35
10 Measurements and Adjustments	36
10.1. When replacing the MAIN P.C.B. and/or NFC P.C.B.	36
11 NFC tag writer software	38

1 Safety Precautions

1.1. General Guidelines

1. IMPORTANT SAFETY NOTICE

- There are special components used in this equipment which are important for safety. These parts are marked by $\triangle$ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.
- An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
- 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.
- After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
- After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

- Unplug the AC cord and connect a jumper between the two prongs on the plug.
- Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 M Ω and 5.2 M Ω . When the exposed metal does not have a return path to the chassis, the reading must be infinity.

1.3. Leakage Current Hot Check (See Figure. 1)

- Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
- Connect a 1.5 k Ω , 10 W resistor, in parallel with a 0.15 μ F capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure. 1.
- Use an AC voltmeter, with 1 k Ω /V or more sensitivity, to measure the potential across the resistor.
- Check each exposed metallic part, and measure the voltage at each point.
- Reverse the AC plug in the AC outlet and repeat each of the above measurements.
- The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside 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.

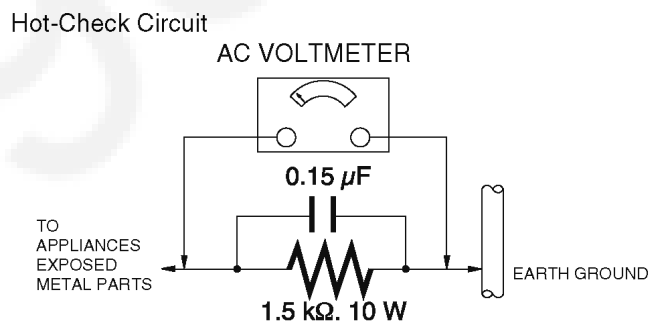


Figure. 1

1.4. Protection Circuitry

The protection circuitry may have operated if either of the following conditions are noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used. If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again

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 IC(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 antistatic solder removal device. Some solder removal devices not classified as "antistatic (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 harmless 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).

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 View 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.

2.2. Caution for AC Cord (For EB)

2.2.1. Information for Your Safety

IMPORTANT

Your attention is drawn to the fact that recording of prerecorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.2.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted after the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safely.

There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt, please consult a qualified electrician.

2.2.2.1. Important

The wires in this mains lead are coloured in accordance with the following code:

Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

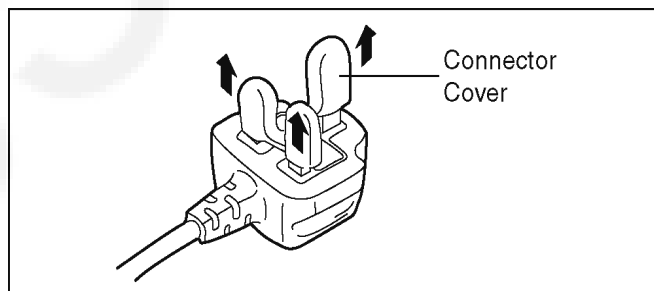
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.



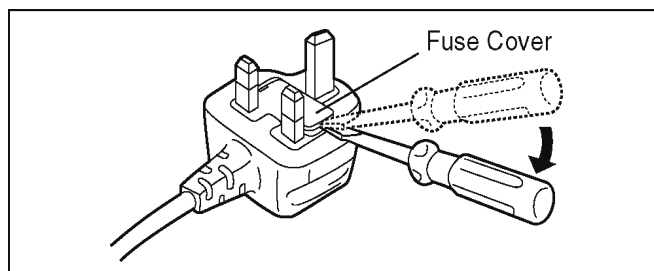
2.2.2.2. Before Use

Remove the Connector Cover as follows:

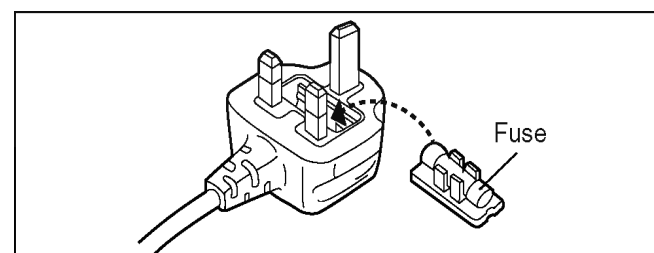


2.2.2.3. How to Replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the Fuse and attach the Fuse cover.



2.3. Service Caution Based on Legal Restrictions

2.3.1 General Description About Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx. 30°C (86°F) more than that of the normal solder.

Distinction of P.C.B. Lead Free Solder being used

The letter of " PbF" is printed either foil side or components side on the P.C.B. using the lead free solder. (See right figure)	PbF
--	-----

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
(Definition: The letter of "PbF" is printed on the P.C.B. using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the P.C.B. cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30°C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
SVKZ000001----- (0.3mm 100g Reel)
SVKZ000002----- (0.6mm 100g Reel)
SVKZ000003----- (1.0mm 100g Reel)

Note

* Ingredient: Tin (Sn) 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%. (Flux cored)

3 Service Navigation

3.1. Service Information

This service manual contains technical information, which allow service personnels to understand and service this model. Please place orders with the numbers in the parts list and not the numbers in the explosion illustration.

If the circuit is changed or modified, the information will be followed by service manual to be controlled with original service manual.

4 Specifications

■ AMPLIFIER SECTION

RMS output power (non-simultaneous drive)

Front ch (L, R ch)

70W per channel (1kHz, 10%, 6Ω)

Centre ch (C ch)

70W per channel (1kHz, 10%, 6Ω)

Subwoofer ch

140W per channel (100Hz, 10%, 3Ω)

Total RMS output pow

350W

■ TERMINAL SECTION

HDAVI Control

This unit supports "HDAVI Control 5" function.

HDMI AV input (BD/DVD)

1

Input connector

Type A (19 pin)

HDMI AV output (TV (ARC))

1

Output connector

Type A (19 pin)

Digital audio input (TV)

Optical digital input

Optical terminal

Sampling frequency

32kHz, 44.1kHz, 48kHz
88.2kHz, 96kHz (only LPCM)

Audio format

LPCM, Dolby Digital, DTS Digital Surround™

IR Blaster

Terminal Type

3.5mm jack

USB Port

For service use only.

■ GENERAL

Power consumption

Main unit

40W

Active subwoofer

30W

In standby condition

Main unit

When "BLUETOOTH STANDBY" is "OFF"

Approx. 0.48W

When "BLUETOOTH STANDBY" is "ON"

Approx. 1.5W

Active subwoofer

Power switch off

Approx. 0.48W

The wireless link is not activated

Approx. 1.0W

Power supply

AC 220V to 240V, 50 Hz

Dimensions (W x H x D)

Main unit

For table top layout

950mm x 55mm x 120mm

For wall mounting layout

950mm x 125.5mm x 57.2mm

Active subwoofer

180mm x 378mm x 303mm

Mass

Main unit

For table top layout

Approx. 2.5kg

For wall mounting layout

Approx. 2.5kg

Active subwoofer

Approx. 4.7kg

Operating temperature range

0°C to +40°C

Operating humidity range

20% to 80%RH(no condensation)

■ SPEAKER SECTION

Front speakers (Built-in, L/R/C)

Full range

6.5cm cone type x 1
(Bass reflex type)

Active subwoofer

Woofer

16cm cone type x 1
(Bass reflex type)

■ WIRELESS SECTION

Frequency Range

2.40335 GHz to 2.47735 GHz

No. of channels

38

■ Bluetooth® SECTION

Bluetooth® system specification

Bluetooth® Ver.2.1 +EDR

Wireless equipment classification

Class 2 (2.5 mW)

Supported profiles

A2DP

Frequency band

2.4 GHz band FH-SS

Operating distancea

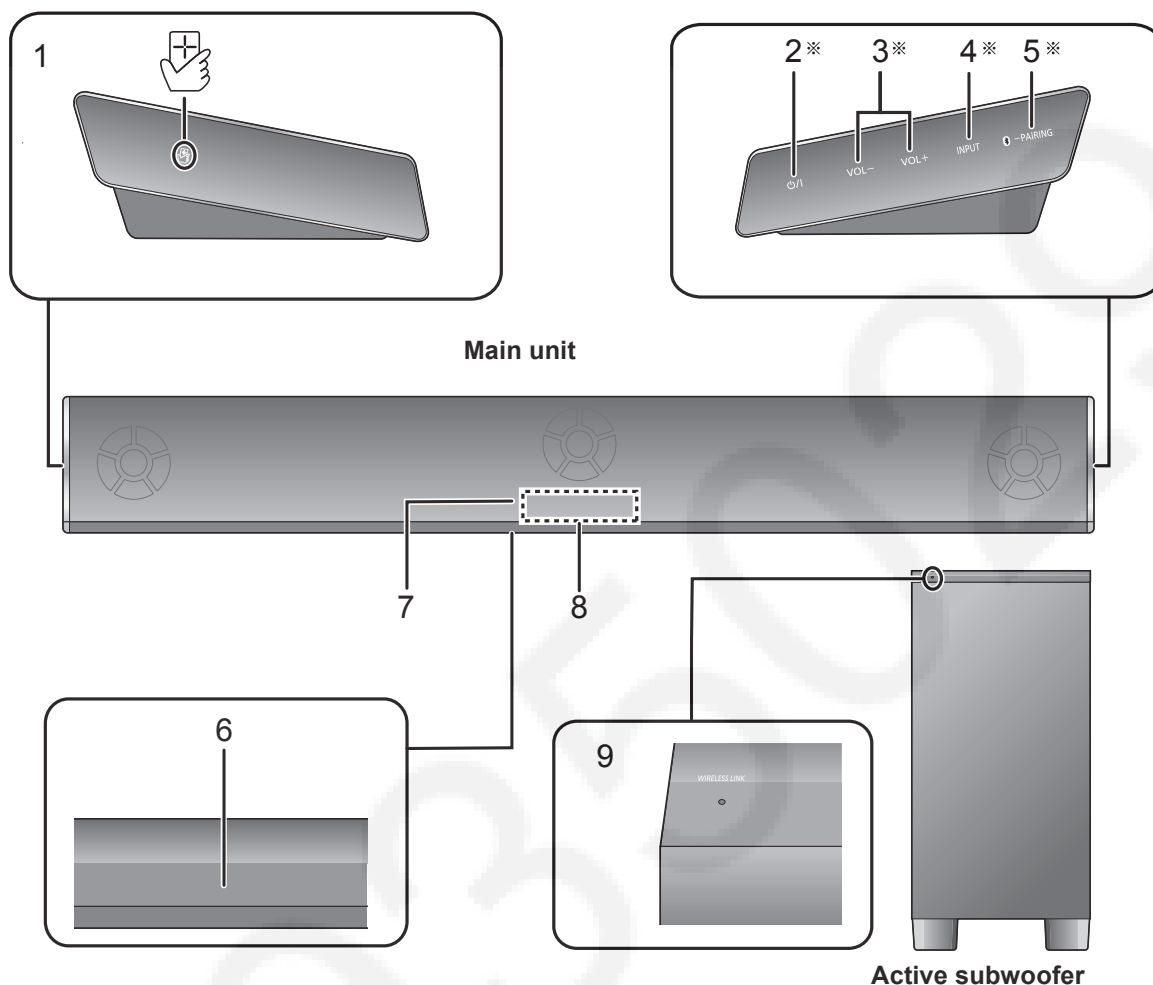
pprox. 10 m Line of Sight

Supported codec

SBC

5 Location of Controls and Components

This system (Front)

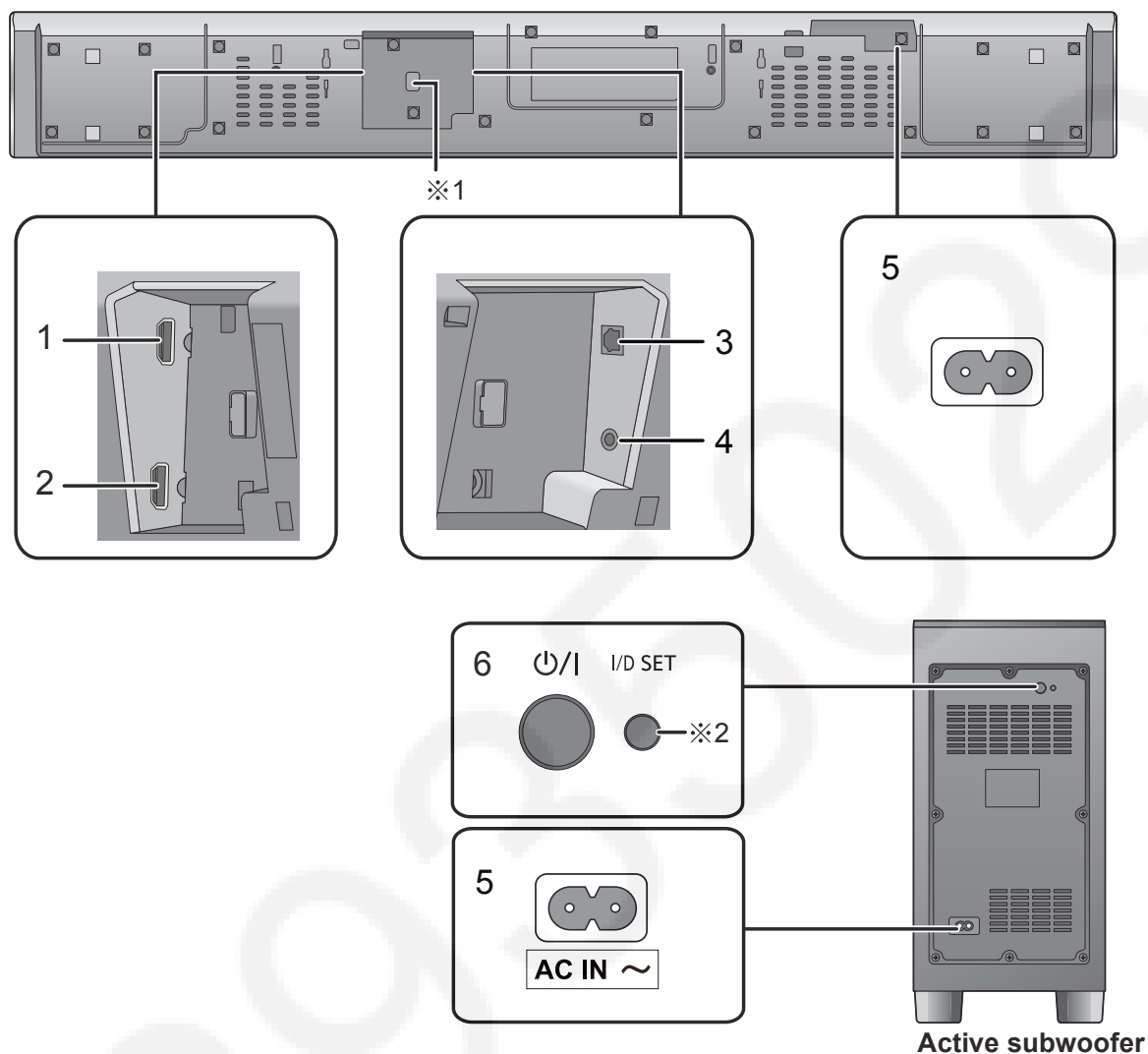


- 1 [NFC] NFC touch area
- 2 [⏻/⏻] **Standby/on switch** (⏻/⏻)
Touch to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- 3 [VOL -] [VOL +] Adjust the volume of this system
- 4 [INPUT] Select the input source
- 5 [Bluetooth] -PAIRING
 - Select the Bluetooth® device as the source
 - Bluetooth® pairing
 - Disconnecting a Bluetooth® device

- 6 Remote control signal sensor for table top layout
- 7 Remote control signal sensor for wall mounting layout
- 8 Display
- 9 WIRELESS LINK indicator
- ※ These switches work just by touching the marks. Each time you touch the switch, there will be a beep sound.
The beep sound setting can be changed.

This system (Rear)

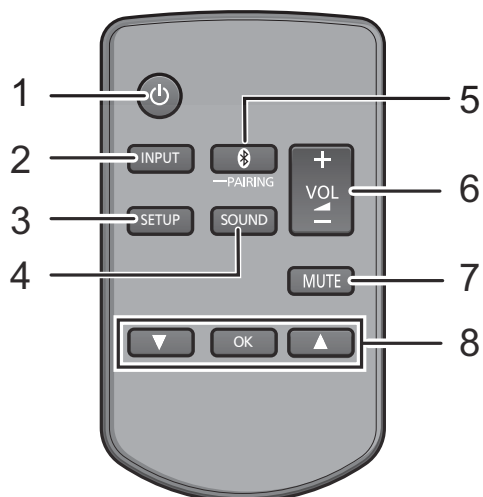
Main unit



- 1 HDMI AV OUT (TV (ARC)) terminal (ARC compatible)
- 2 HDMI AV IN (BD/DVD) terminal
- 3 OPTICAL DIGITAL AUDIO IN (TV) terminal
- 4 Ir SYSTEM terminal
- 5 AC IN terminal
- 6 [⏻/⏻] Active subwoofer on/off button

- ※1 USB port (for service use only)
- ※2 The I/D SET button is only used when the main unit is not paired with the active subwoofer.

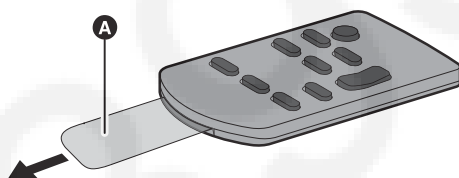
Remote control



- 1 [⏻] Turn the main unit on or off
- 2 [INPUT] Select the input source
- 3 [SETUP] Select the setup menu
- 4 [SOUND] Select the sound menu
- 5 [Ⓛ] -PAIRING
 - Select the Bluetooth® device as the source
 - Bluetooth® pairing
 - Disconnecting a Bluetooth® device
- 6 [- VOL +] Adjust the volume of this system
- 7 [MUTE] Mute the sound
- 8 [▼][OK][▲] Select and confirm the option

Before using for the first time

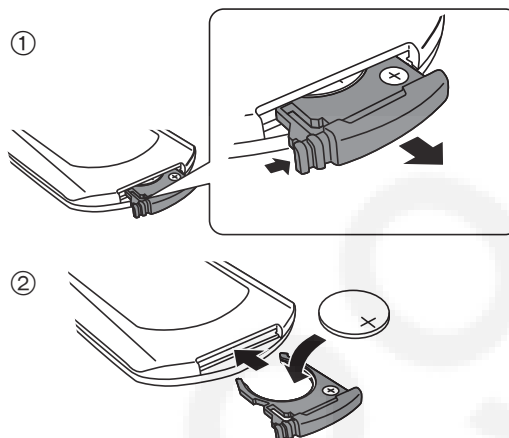
Remove the insulation sheet **A**.



- Dispose of the insulation sheet responsibly after removing it.

To replace a button-type battery

Battery type: CR2025 (Lithium battery)



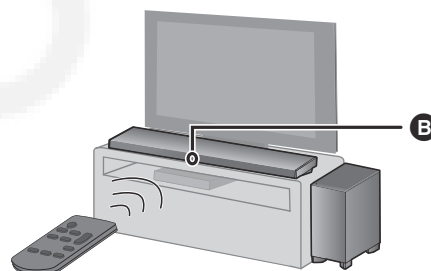
- Set the button-type battery with its (+) mark facing upward.

About remote control signal sensor

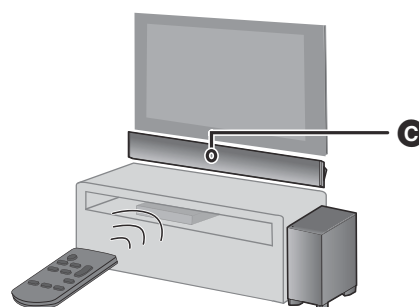
The remote control signal sensor is located on the main unit.

- Use the remote control within the correct operation range.
Distance: Within approx. 7 m directly in front
Angle: Approx. 30° left and right

For table top layout



For wall mounting layout



- B** Remote control signal sensor for table top layout
- C** Remote control signal sensor for wall mounting layout

6 Service Mode

This unit has self-diagnosis function mode that provides errors information for service personnel.

6.1. Service Mode Table 1

Item		FL Display	Key operation
Mode name	Description		
Service Mode	Enter into Service Mode	Example: SVC MODE	While Pressing and holding [VOL-] on the main unit, press [▼] [▲] on the remote control. - To exit, press [⏻] on the main unit or using the remote control. - Unplug the AC cord.
Erro code information	Error History Display by pressing button, it goes back its history list. After Pressing [INPUT] key, display the last encounter Error display, subsequent pressed will displayed the second last Error and so on. (Maximun of 10 display and if the 11th Error occurred, it will replace the 1st error display, First IN First OUT approach) Refer to 6.4 for more information	Example: F61, F76, F70HDMI F61 Example: If already at the last error display (earlier error) or No Error Log, pressing [INPUT] key on the remote control, [NO ERROR] will display NO ERROR The [SVC MODE] display will appear after 3s, SVC MODE	In service mode: Press [INPUT] button on the remote control. To exit, press [⏻] on the main unit or using the remote control.
Software Verison information	Display the current SW version Software Version display is being indicated in FL display in the format of [5CA XXX]. 1) 5 represent the Sales Year 2) C represent the Model Type 3) A represent the ROM Type 4) xxx represent the Version number (Range from 000-999)	Example: 5CA 025 The [SVC MODE] display will appear after 3s, SVC MODE	In service mode: Press [VOL+] button once on the remote control. To exit, press [⏻] on the main unit or using the remote control.
HDMI Version information	Display the HDMI Version number HDMI Version display is being indicated in FL display in the format of [HDMI XXXX]	Example: HDMI 0036 The [SVC MODE] display will appear after 3s, SVC MODE	In service mode: Press [VOL+] button twice on the remote control. To exit, press [⏻] on the main unit or using the remote control.

6.2. Service Mode Table 2

Item		FL Display	Key operation
Mode name	Description		
Model Name information	Display the Model name MODEL: HTB XXX	Example: HTB 690 The [SVC MODE]display will appear after 3s, SVC MODE	In service mode: Press [VOL+] button 3 times on the remote control. • To exit, press [⏻/] on the main unit or using the remote control.
Region information	Region setting Refer to 6.3 for more information	Example: 1:EUROPE The [SVC MODE]display will appear after 3s, SVC MODE	In service mode: Press [VOL+] button 4 times on the remote control. • To exit, press [⏻/] on the main unit or using the remote control.
Wireless Subwoofer Pairing	Pairing Setting Actual Display during Subwoofer Pairing [SUBWOOFER]<->[PAIRING] (Toggle Display) Actual Display after Subwoofer had been Paired [PAIRED]	Example: During Pairing SUBWOOFER ↓ PAIRING Example: Paired PAIRED	Press [SETUP] button on the remote control or Normal Mode: Press and Hold [INPUT] button on the remote control + Press [VOL+] button on the main unit for 4 seconds
Bluetooth information	Bluetooth Setting Display 1st 6 bytes of Bluetooth Module MAC Address for 4sec and followed by last 6 bytes (XX XX XX = 1st 6bytes of mac ID)-LEFT aligned Display last 6 bytes of Bluetooth Module MAC Address for 4sec before return to display the 1st 6bytes (YY YY YY = last 6bytes of mac ID)-RIGHT aligned	Example: BLUETOOTH ↓ 6C 5A B5 ↓ B3 1C 9F	Press [⌂] button on the remote control

6.3. Service Mode Region Display Table

Region Display	FL DISPLAY Position								
	POS9	POS8	POS7	POS6	POS5	POS4	POS3	POS2	POS1
EB/EG/EE	1	:	E	U	R	O	P	E	
Reserve		2	:	R	E	S	V		
P,PC,PP	3	:	U	S	/	C	A	N	
Reserve		4	:	R	E	S	V		
Japan		5	:	J	A	P	A	N	
Reserve		6	:	R	E	S	V		
GN/GS/GT/PH/GK	7	:	G	/	O	T	H	E	R
Reserve		8	:	R	E	S	V		
Reserve		9	:	R	E	S	V		
Reserve		1	0	:	R	E	S	V	

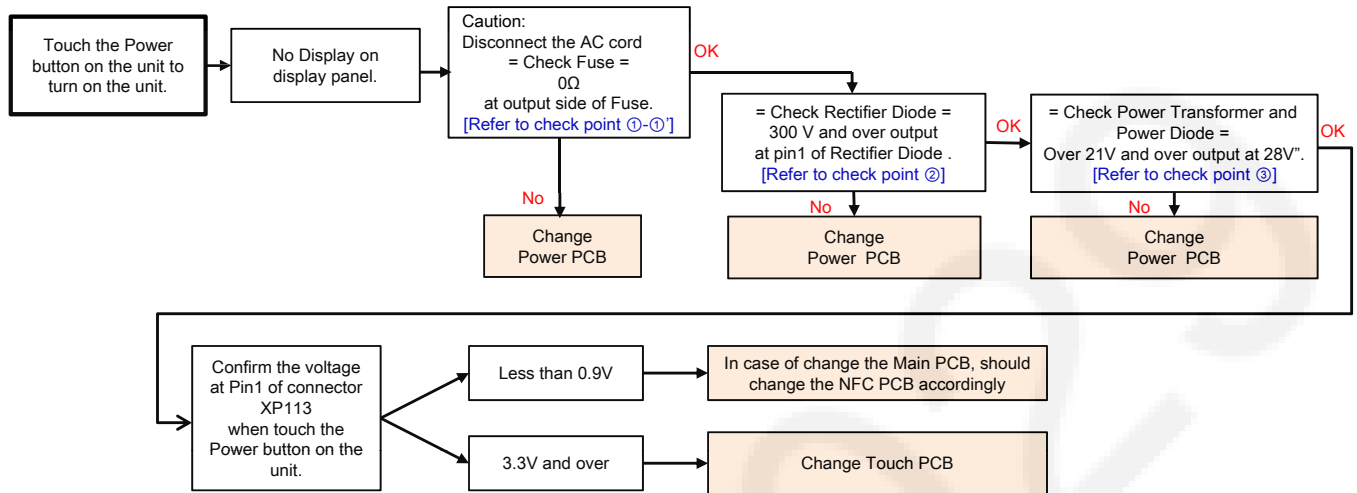
6.4. Service Function Error Code

Error Code	Description of error	FL DISPLAY Position									Diagnostic Contents
		POS9	POS8	POS7	POS6	POS5	POS4	POS3	POS2	POS1	
F76	Power off the unit during blinking.				F	7	6				Abnormality in the stabilized power supply
F61	Power off the unit during blinking.				F	6	1				Power AMP output error
F70 HDMI	Blinking repeatedly unless user power off.	F	7	0		H	D	M	I		Communication error between HDMI Module and Microprocessor
F703	Blinking repeatedly unless user power off			F	7	0	3				Communication error between Bluetooth Module and Microprocessor
F77	Blinking repeatedly when change to Bluetooth Source				F	7	7				(Bluetooth Address error)

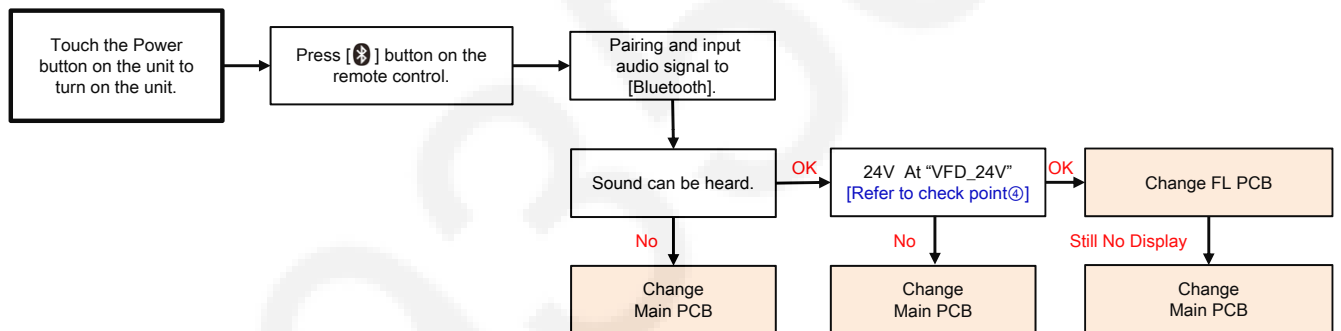
7 Troubleshooting Guide

7.1 Main Unit (SU-HTB690)

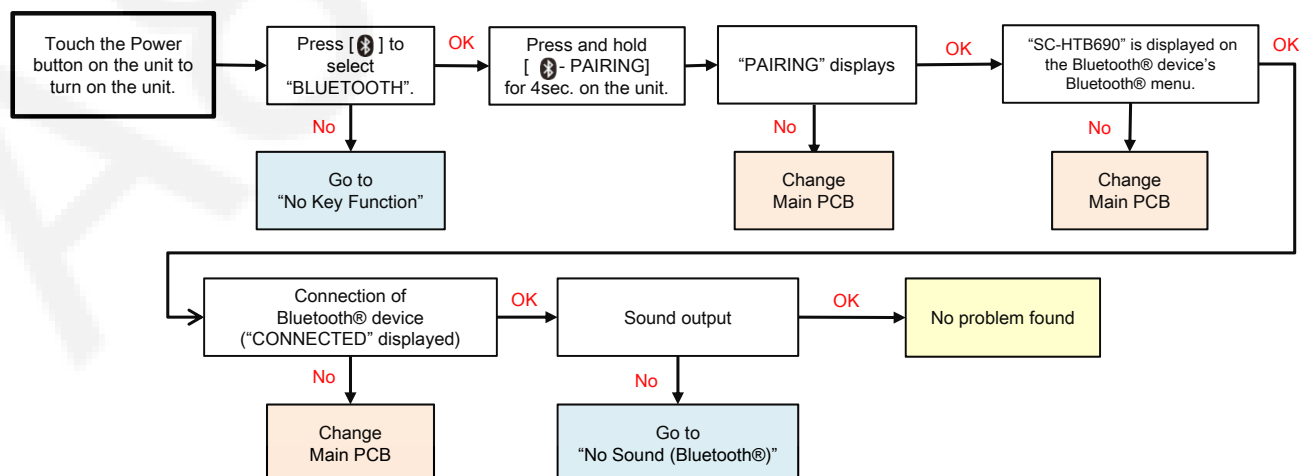
7.1.1 No power



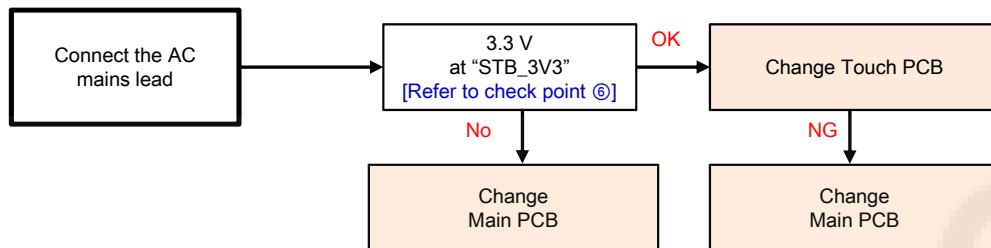
7.1.2. No Display on display panel



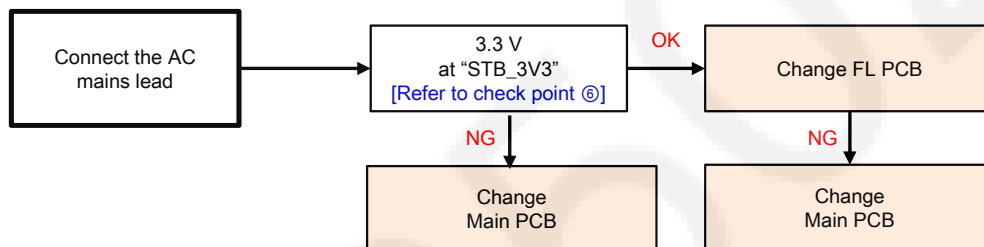
7.1.3. Bluetooth® Pairing failure



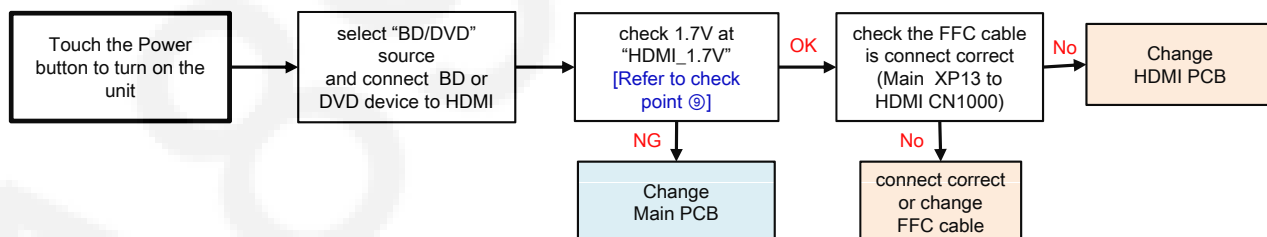
7.1.4. No Key Function



7.1.5. No remote control function

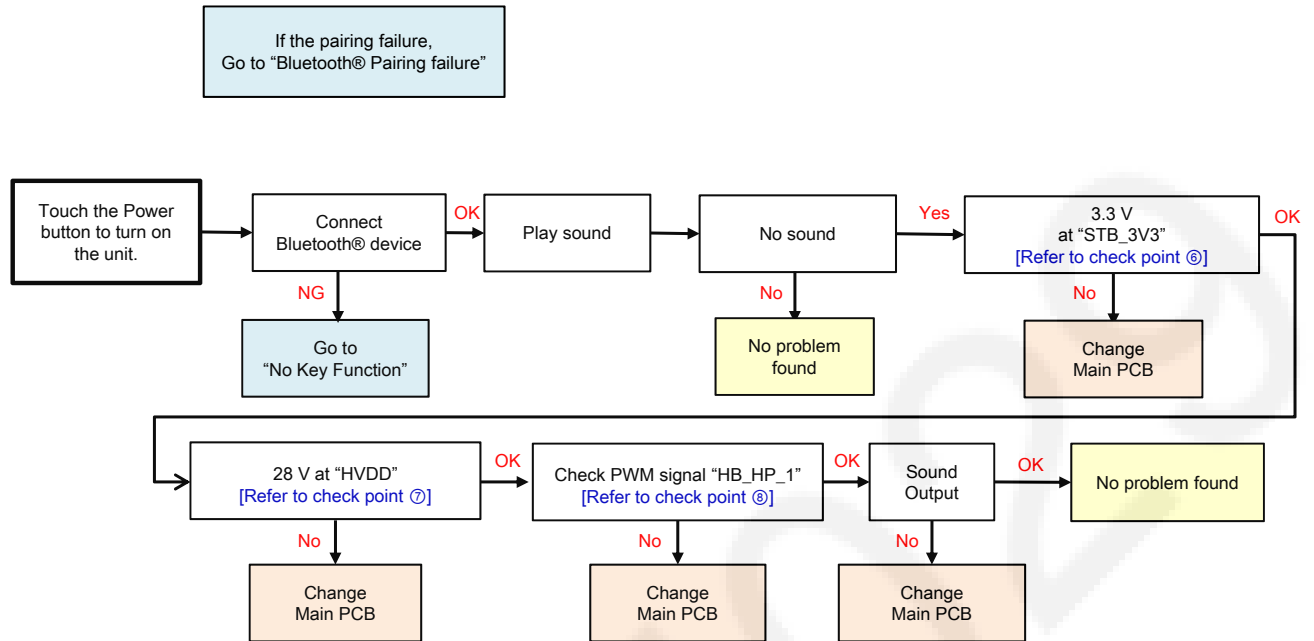


7.1.6. No HDMI out

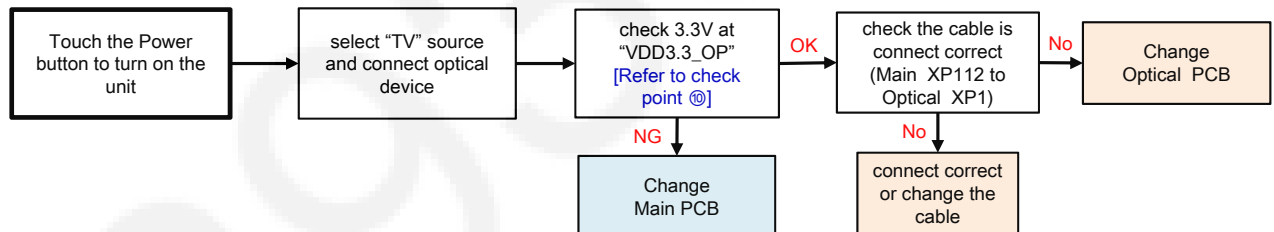


7.1.7. No Sound

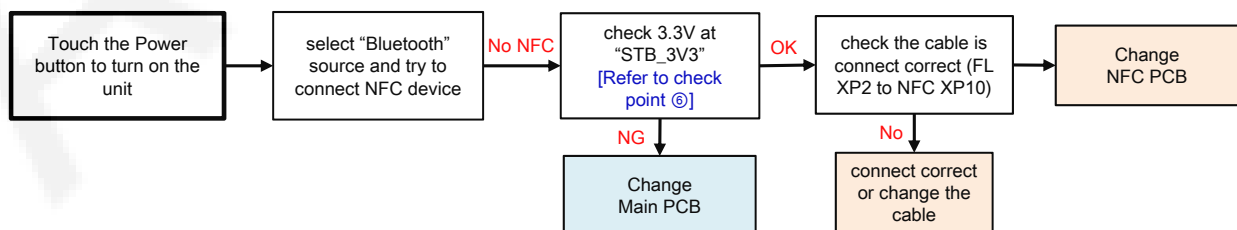
7.1.7.1. No Sound (Bluetooth®)



7.1.7.2. No Sound (Optical)

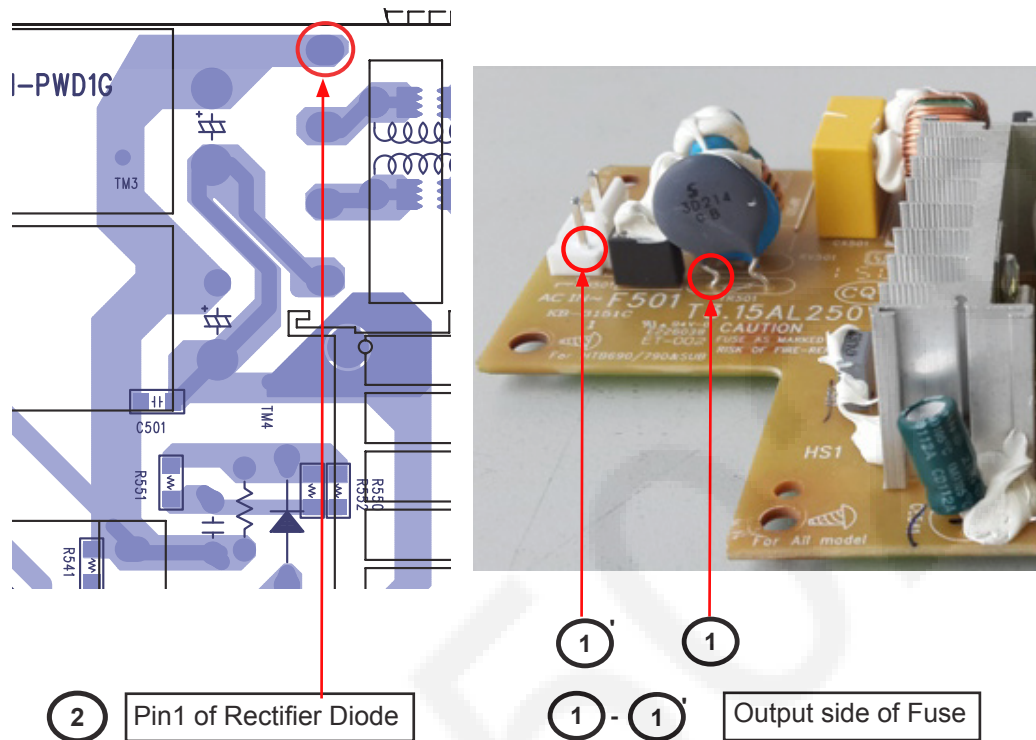


7.1.8. No NFC

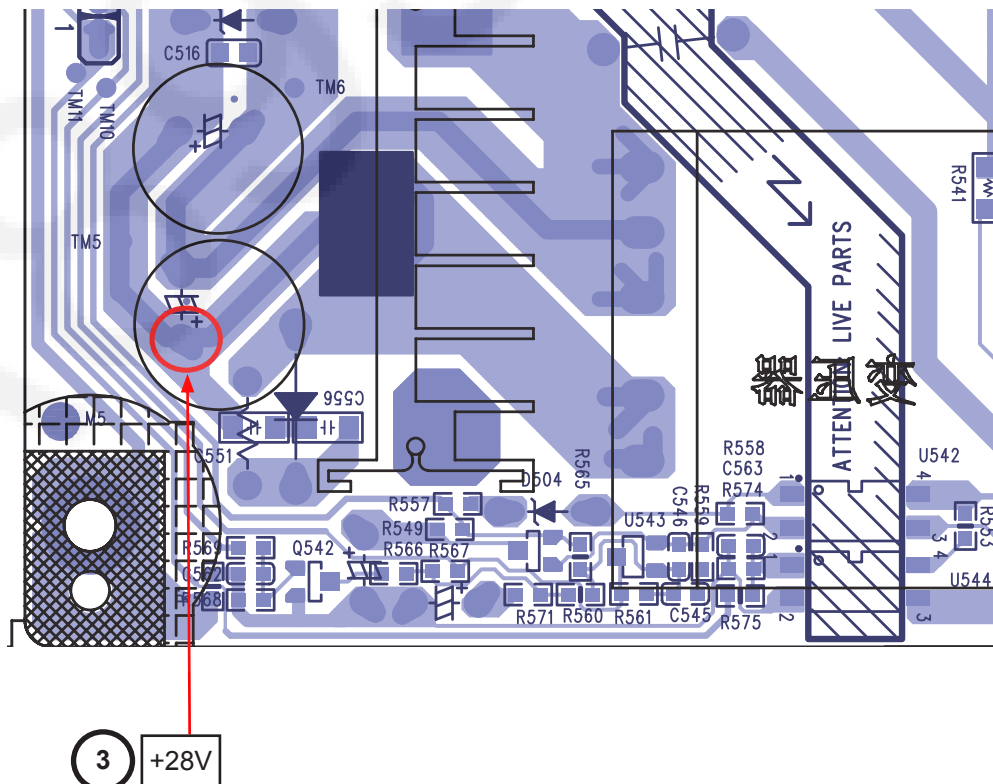


7.1.9. Check Points

POWER P.C.B.



POWER P.C.B.

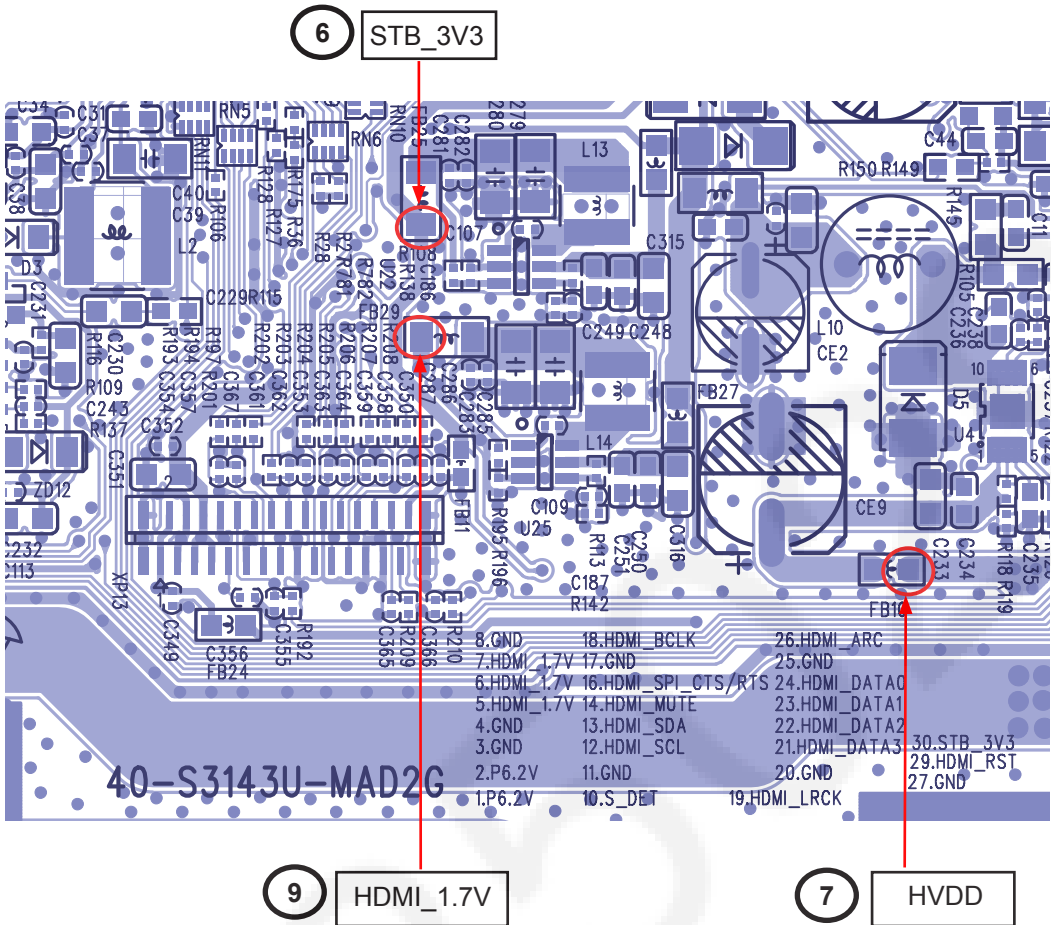


VFD_24V

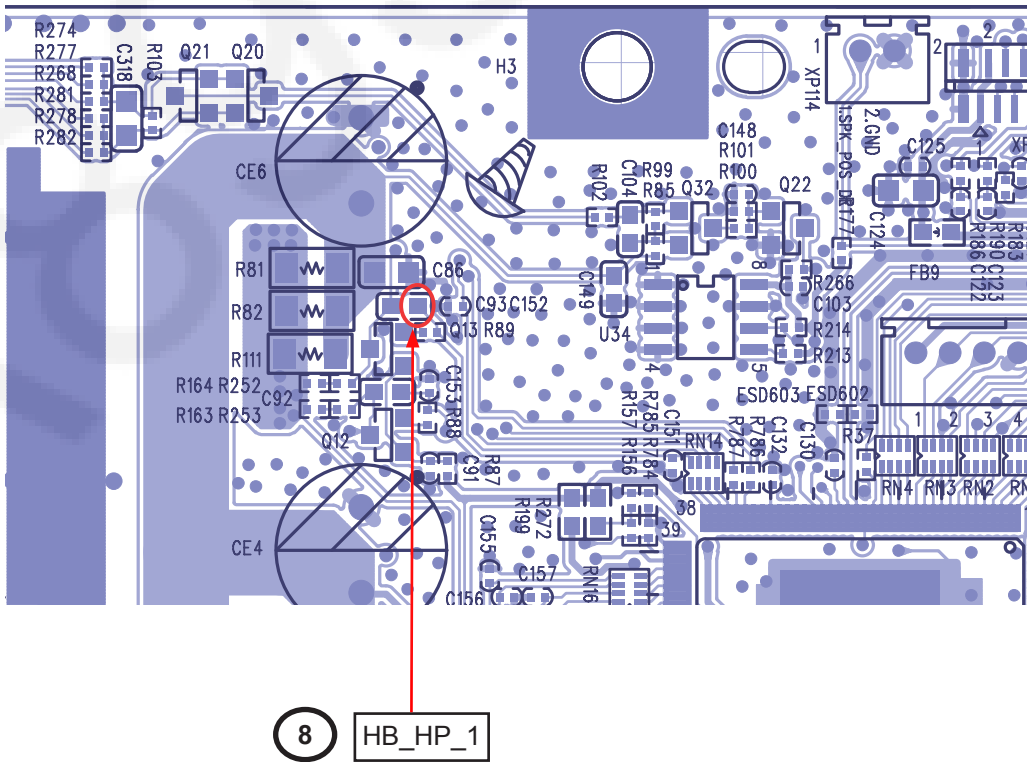
VDD3.3_OP

AP3.3V D

MAIN P.C.B.

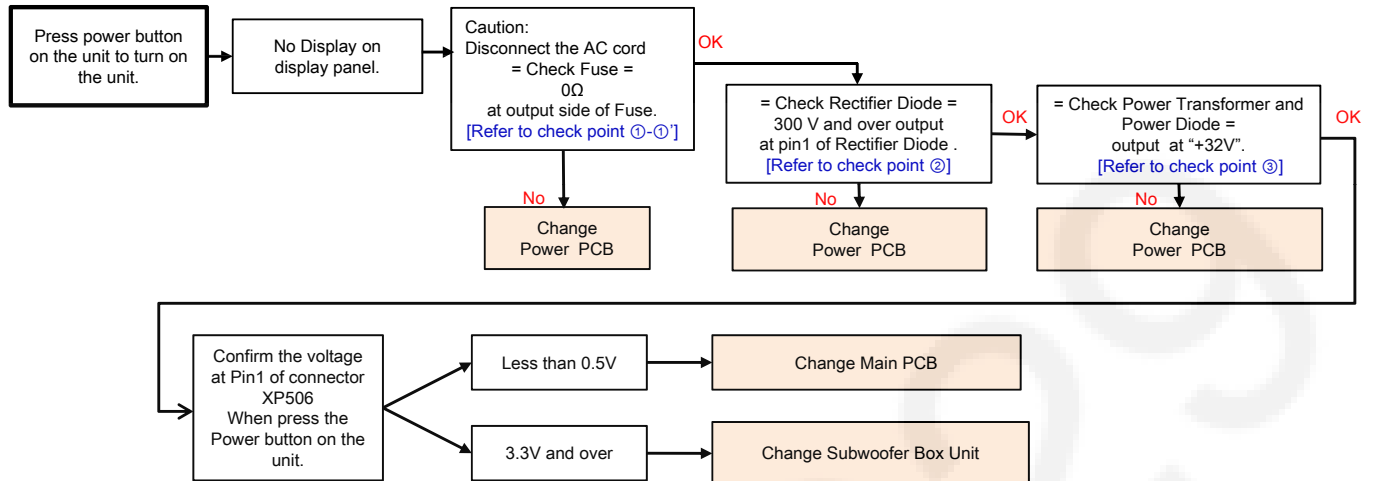


MAIN P.C.B.

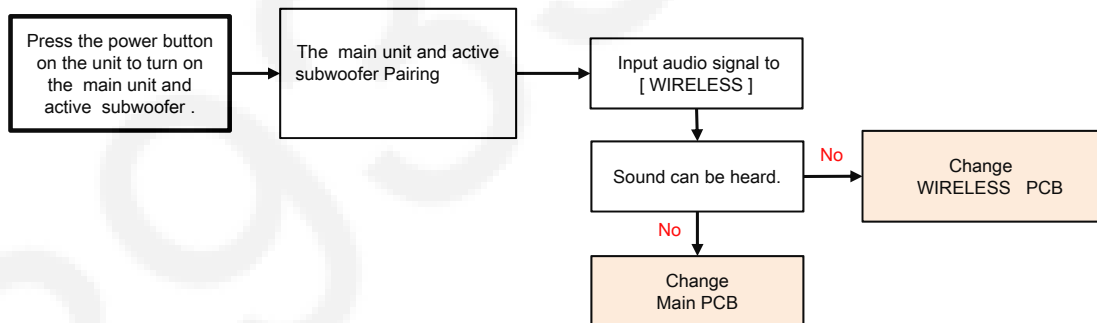


7.2 Active Subwoofer (SB-HWA690)

7.2.1 No power

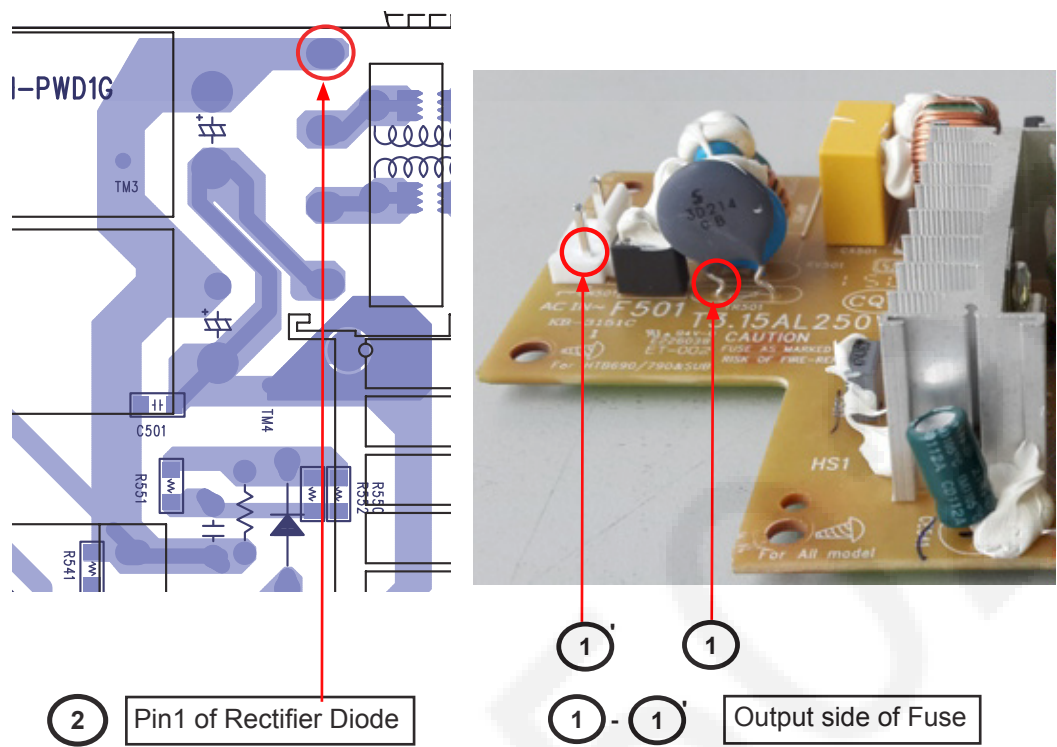


7.2.2 No sound

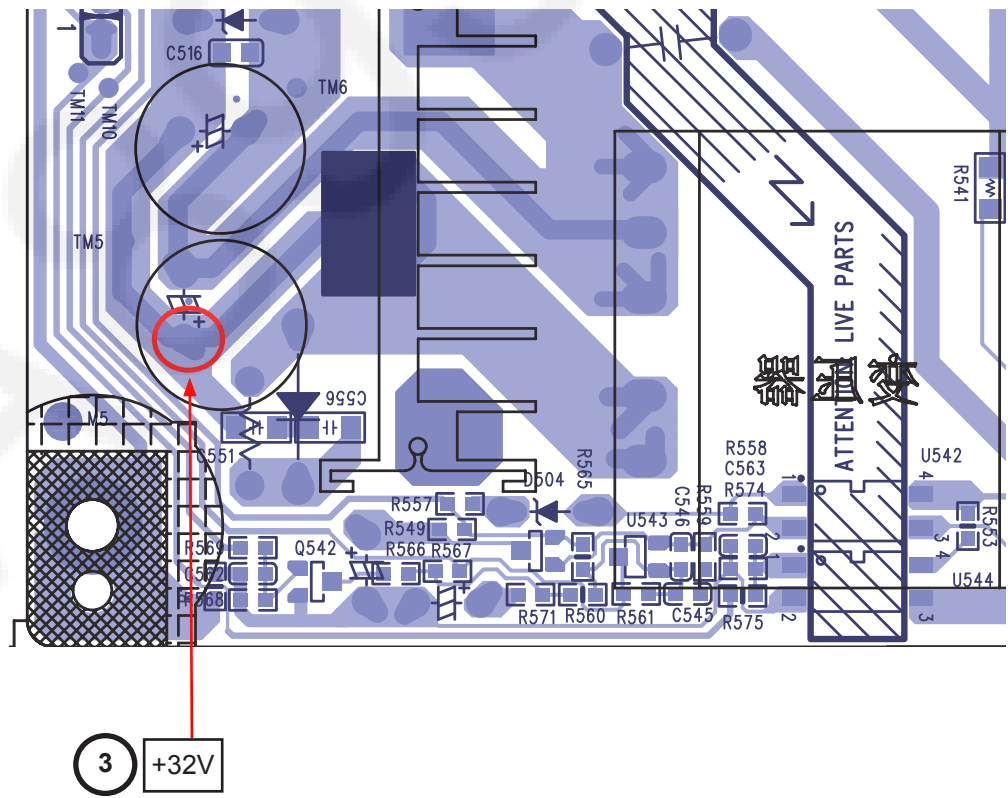


7.2.3. Check Points

POWER P.C.B.

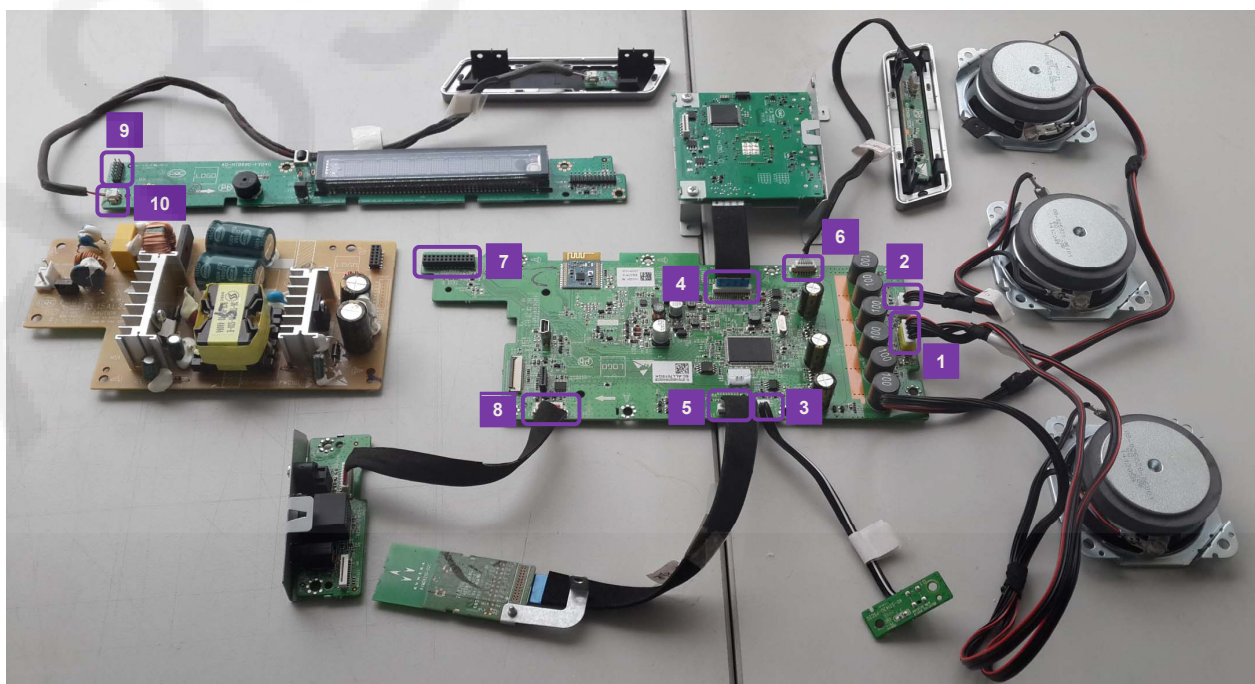
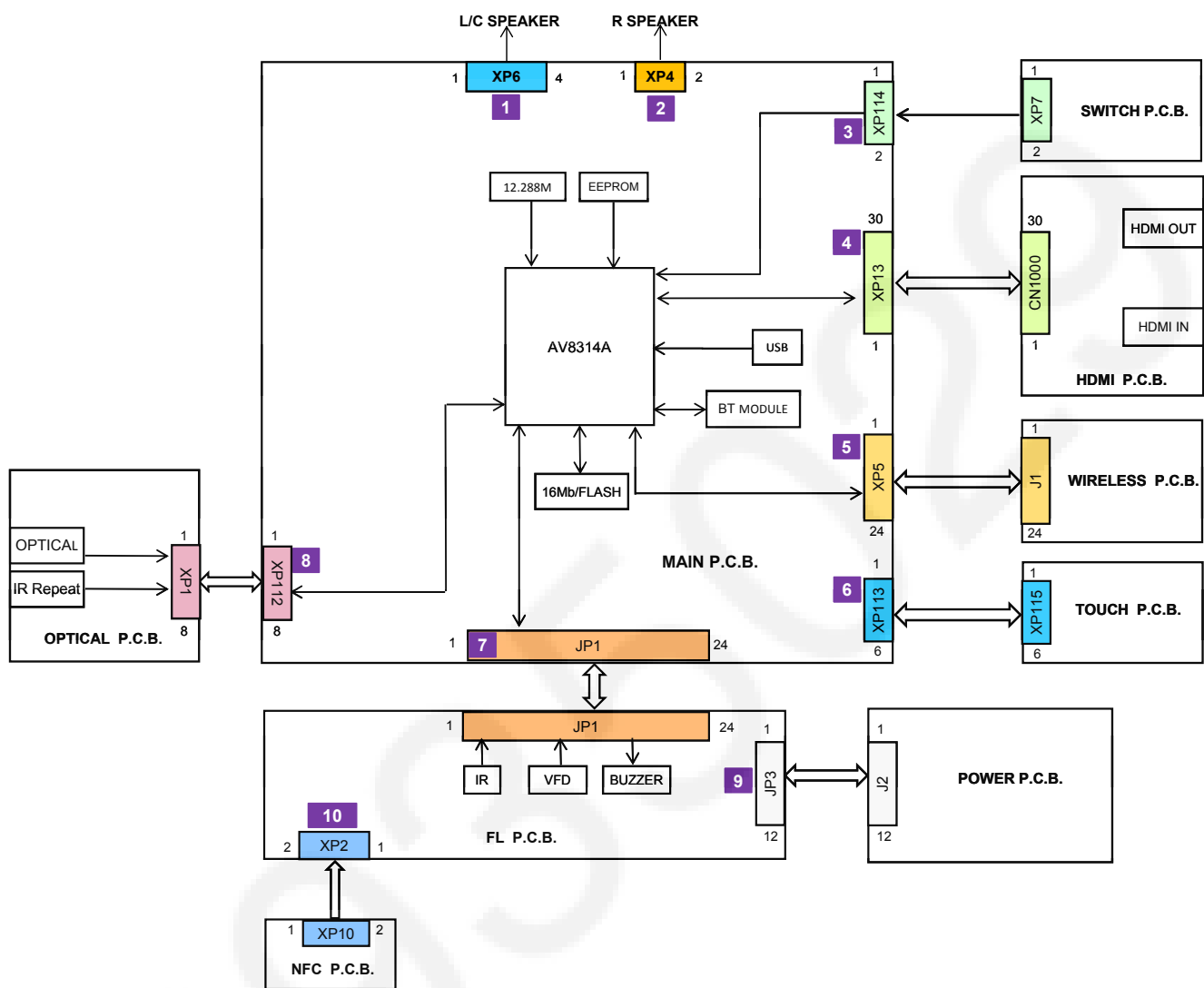


POWER P.C.B.



8 Wiring Connection and Voltage Data

8.1 Main Unit (SU-HTB690)



VOLTAGE DATA (measurement status:Power On and No any external signal input)

1	PIN NO.	VALUE
	1	14.3V
	2	14.3V
	3	14.3V
	4	14.3V

2	PIN NO.	VALUE
	1	14.3V
	2	14.3V

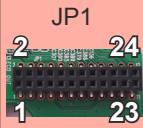
3	PIN NO.	VALUE
	1	3.3V/0V
	2	0V

4	PIN NO.	VALUE
	1	6V
	2	6V
	3	0V
	4	0V
	5	1.7V
	6	1.7V
	7	1.7V
	8	0V
	9	NC
	10	NC
	11	0V
	12	3.3V
	13	3.3V
	14	3.3V
	15	NC
	16	3.3V
	17	0V
	18	0V
	19	0V
	20	0V
	21	3.3V
	22	0V
	23	0V
	24	0V
	25	0V
	26	3.3V
	27	0V
	28	3.3V
	29	3.3V
	30	3.3V

5	PIN NO.	VALUE
	1	5.2V
	2	5.2V
	3	NC
	4	NC
	5	NC
	6	NC
	7	3.3V
	8	3.3V
	9	NC
	10	NC
	11	NC
	12	0V
	13	1.7V
	14	1.7V
	15	0V
	16	0V
	17	1.17V
	18	NC
	19	NC
	20	NC
	21	NC
	22	NC
	23	NC
	24	0V

6	PIN NO.	VALUE
	1	3.3V
	2	0V
	3	3.3V
	4	3.3V
	5	0V
	6	0V

7	PIN NO.	VALUE
	1	28V
	2	28V
	3	28V
	4	28V
	5	0V
	6	0V
	7	0V
	8	0V
	9	0V
	10	24V
	11	3.3V
	12	0V
	13	3.3V/0V
	14	0V
	15	3.3V
	16	3.3V
	17	3.3V
	18	3.3V
	19	3.3V
	20	0.02V
	21	6V
	22	0.01V
	23	0V
	24	3.3V



8	PIN NO.	VALUE
	1	3.3V
	2	3.3V
	3	0V
	4	0.02V
	5	0V
	6	3.3V
	7	-1.2V
	8	3.3V



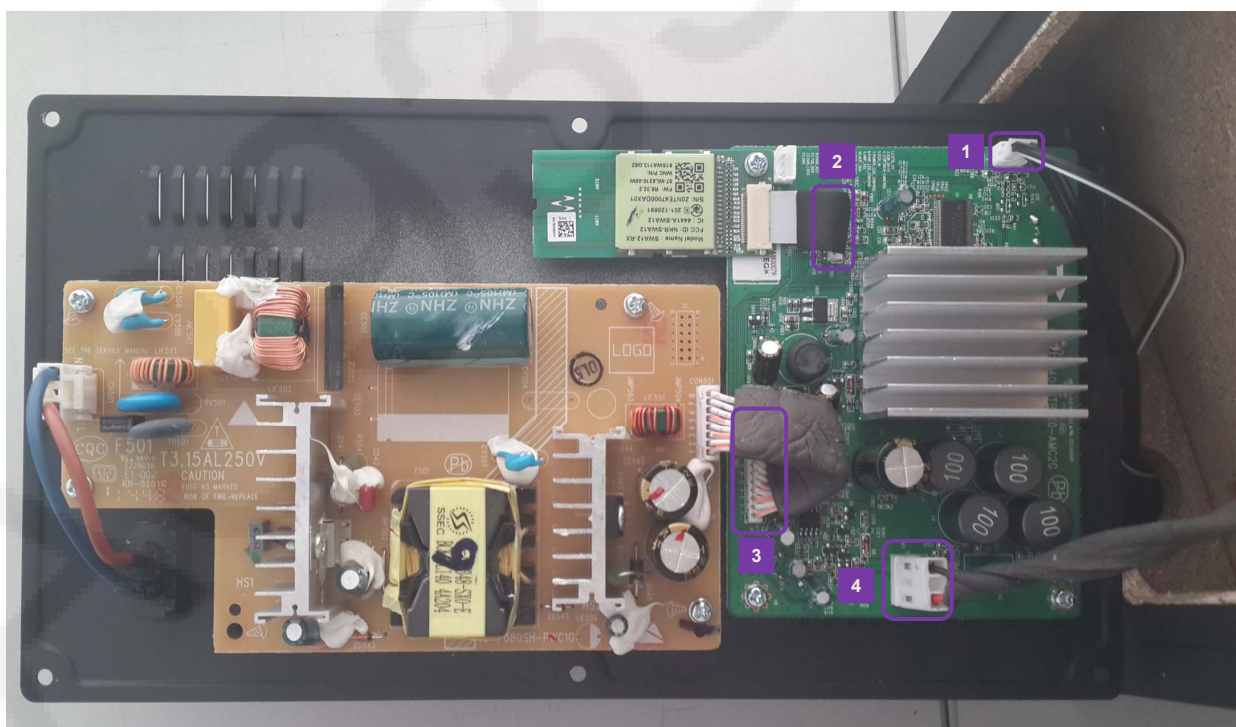
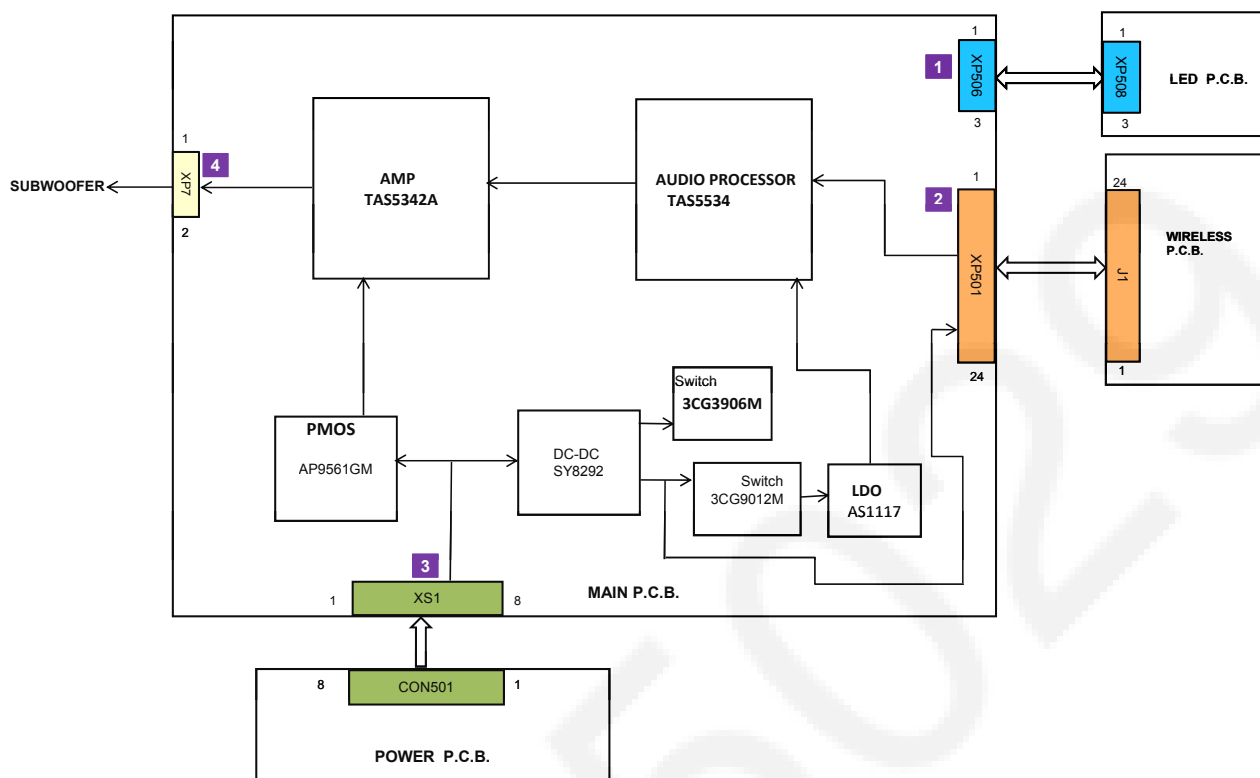
9	PIN NO.	VALUE
	1	0V
	2	0V
	3	3.3V/0V
	4	3.3V/0V
	5	0V
	6	0V
	7	0V
	8	0V
	9	28V
	10	28V
	11	28V
	12	28V



10	PIN NO.	VALUE
	1	0V
	2	3.3V



8.2 Active Subwoofer (SB-HWA690)



VOLTAGE DATA (measurement status:Power On and No any external signal input)

1	PIN NO.	VALUE
	1	0V
	2	3.3V
	3	3.3V

2	PIN NO.	VALUE
	1	5V
	2	5V
	3	0.14V
	4	3.3V
	5	0V
	6	NC
	7	3.3V
	8	3.3V
	9	3.3V
	10	3.3V
	11	3.3V
	12	0V
	13	3.3V
	14	NC
	15	3.3V
	16	1.5V
	17	3.3V
	18	5.1V
	19	5.1V
	20	NCV
	21	NCV
	22	1.6V
	23	1.6V
	24	0V

3	PIN NO.	VALUE
	1	0V
	2	3.3V
	3	0V
	4	0V
	5	0V
	6	32V
	7	32V
	8	32V

4	PIN NO.	VALUE
	1	16V
	2	16V

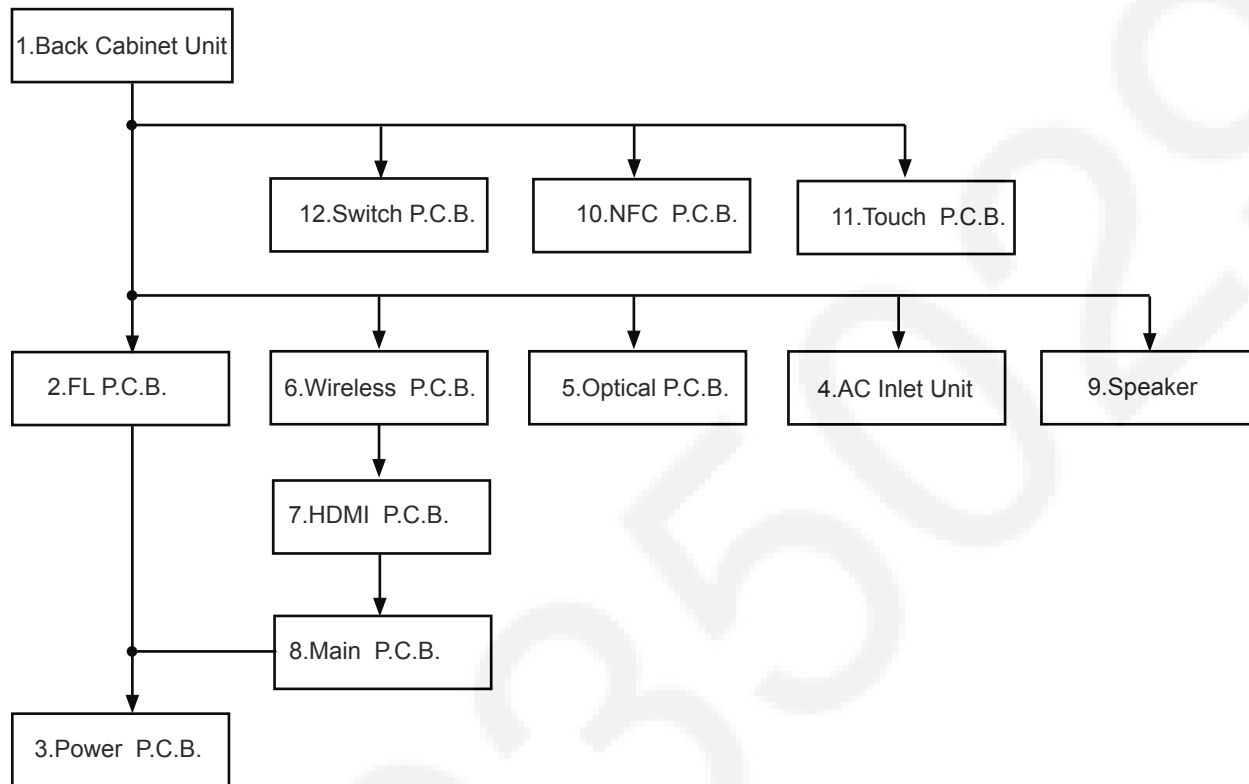
9 Disassembly and Assembly Instructions

9.1. Disassembly Flow Chart

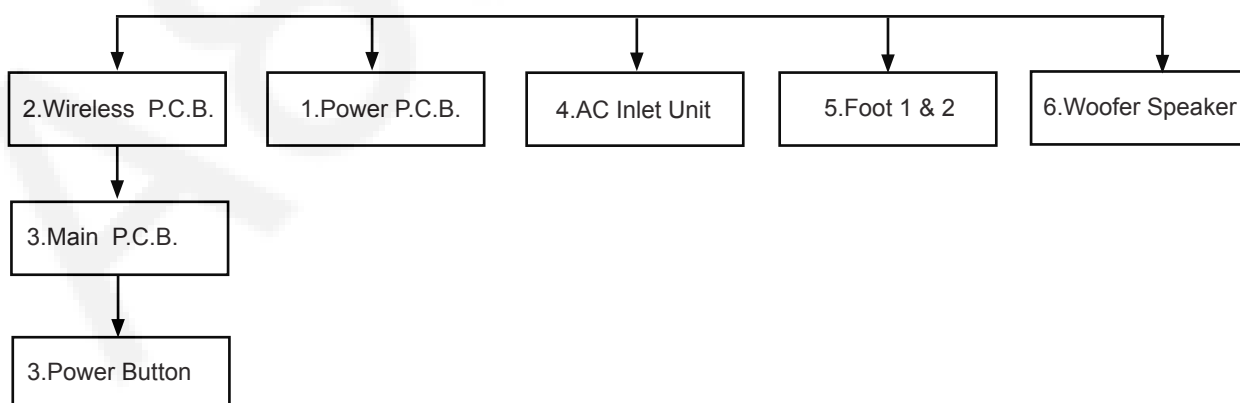
The following chart is the procedure of disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.

9.1.1 Main Unit (SU-HTB690)

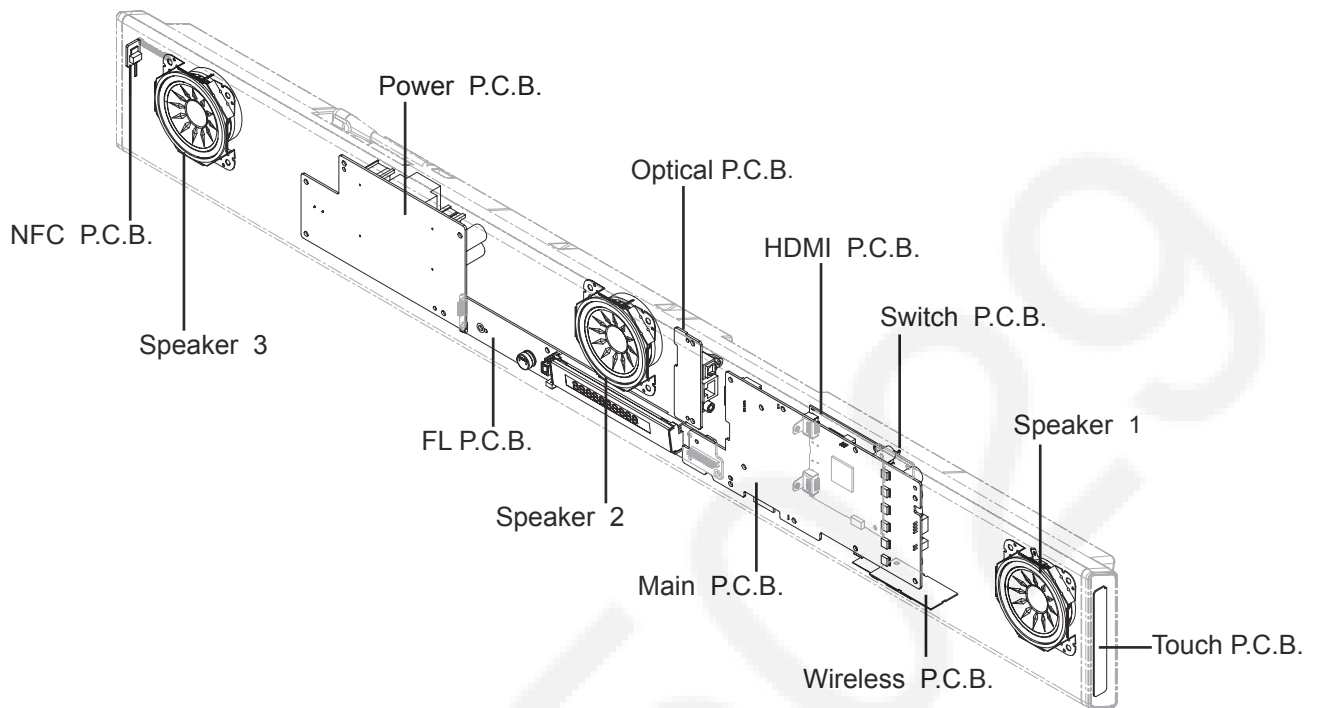


9.1.2 Active Subwoofer (SB-HWA690)

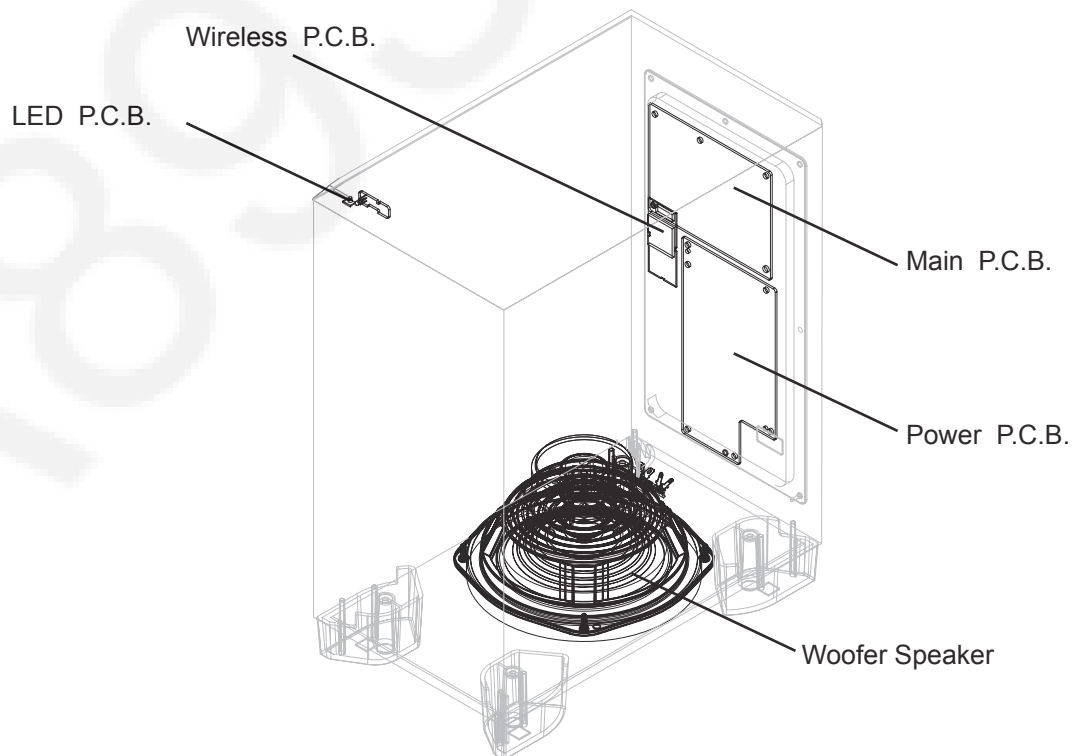


9.2. P.C.B. Positions

9.2.1 Main Unit (SU-HTB690)



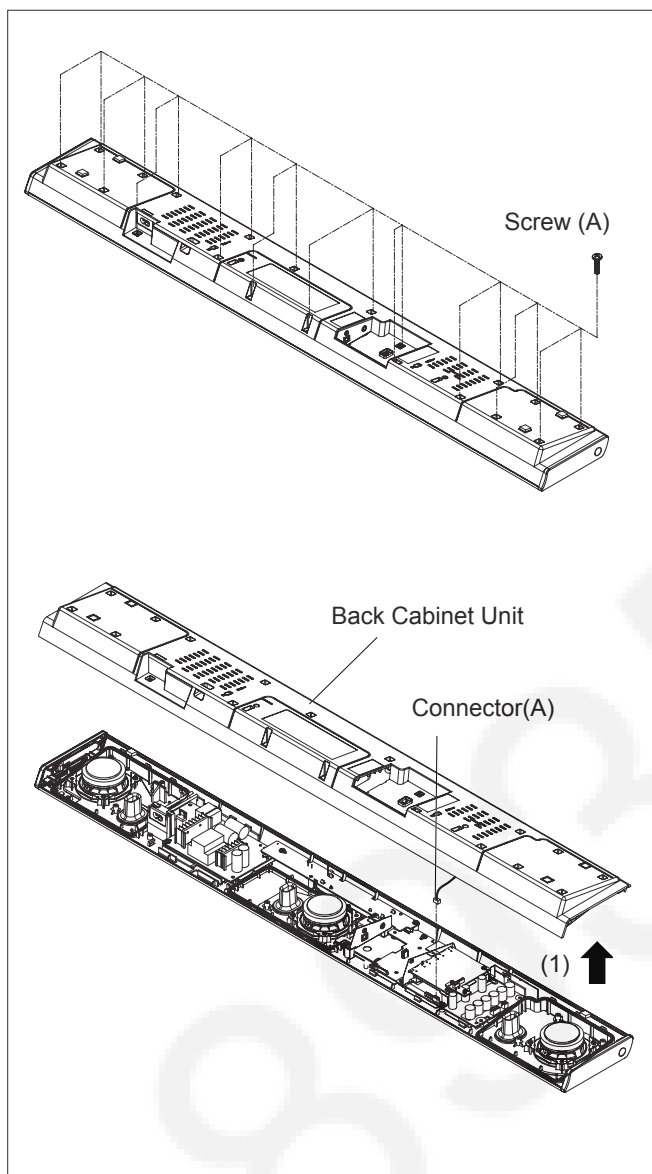
9.2.2 Active Subwoofer (SB-HWA690)



9.3. Disassembly Procedure of Main Unit (SU-HTB690)

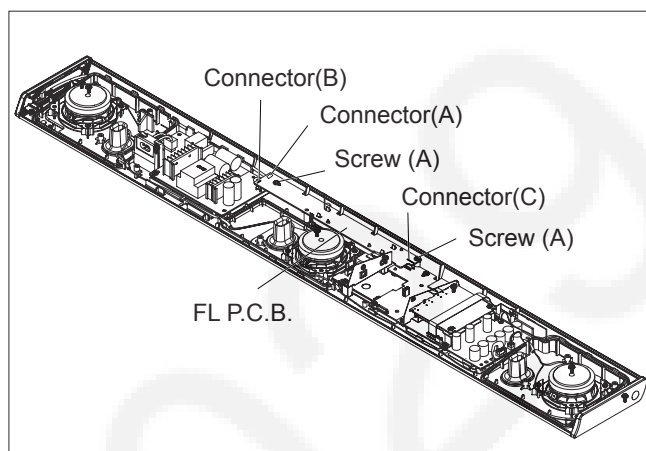
9.3.1. Back Cabinet Unit

1. Remove 20 Screws (A).
2. Disconnect connector (A).
3. Pull the Back Cabinet Unit in the direction of arrow (1).



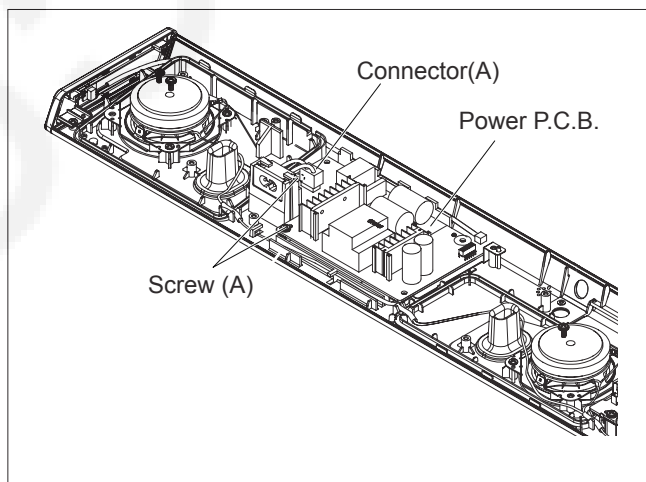
9.3.2. FL P.C.B.

1. Remove the 2 Screws (A).
2. Disconnect connector (A) .
3. Lift up straight upward the FL P.C.B. and disconnect the connector (B),(C) to remove the FL P.C.B..



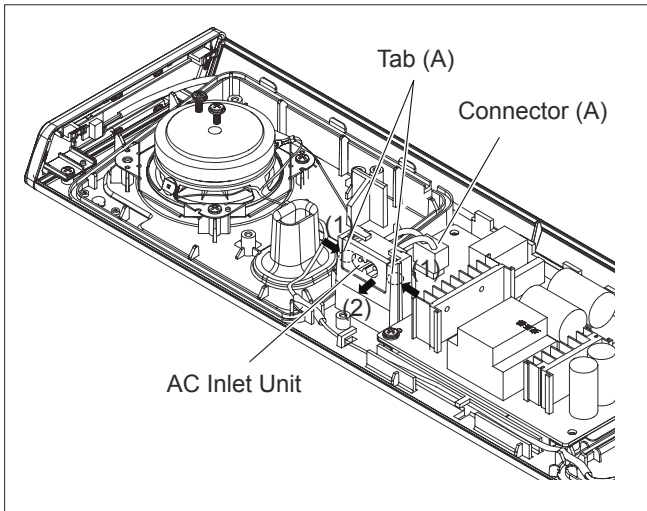
9.3.3. Power P.C.B.

1. Remove the 2 Screws (A).
2. Disconnect connector (A).
3. Remove the Power P.C.B..



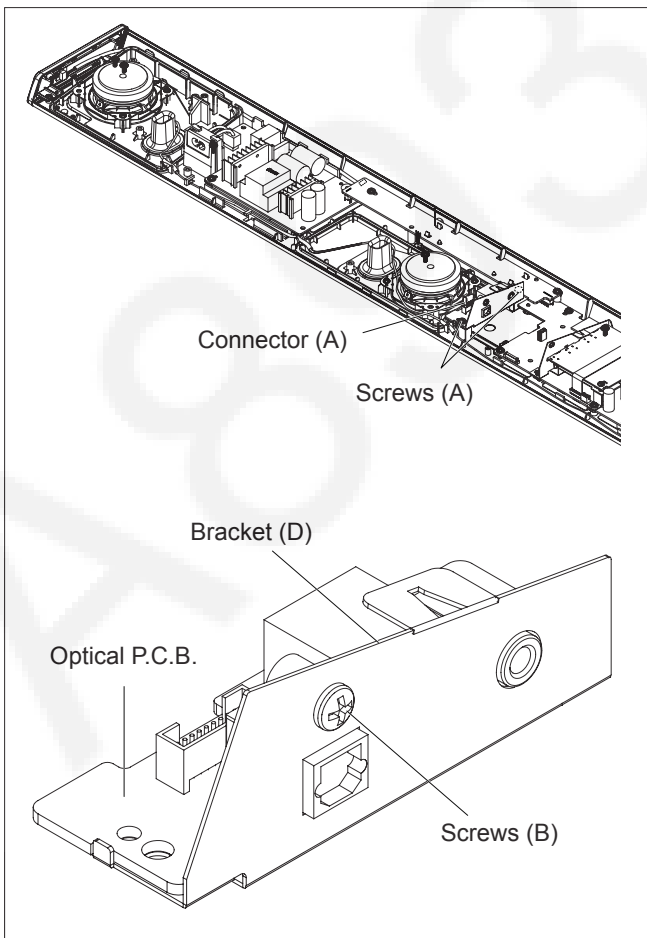
9.3.4. AC Inlet Unit

1. Disconnect connector (A).
2. Press tab (A) on the AC cord connector by thin brade driver simultaneously in the direction of arrows (1) to pull the AC Inlet Unit out from the AC inlet Unit bracket in the direction of arrow (2).



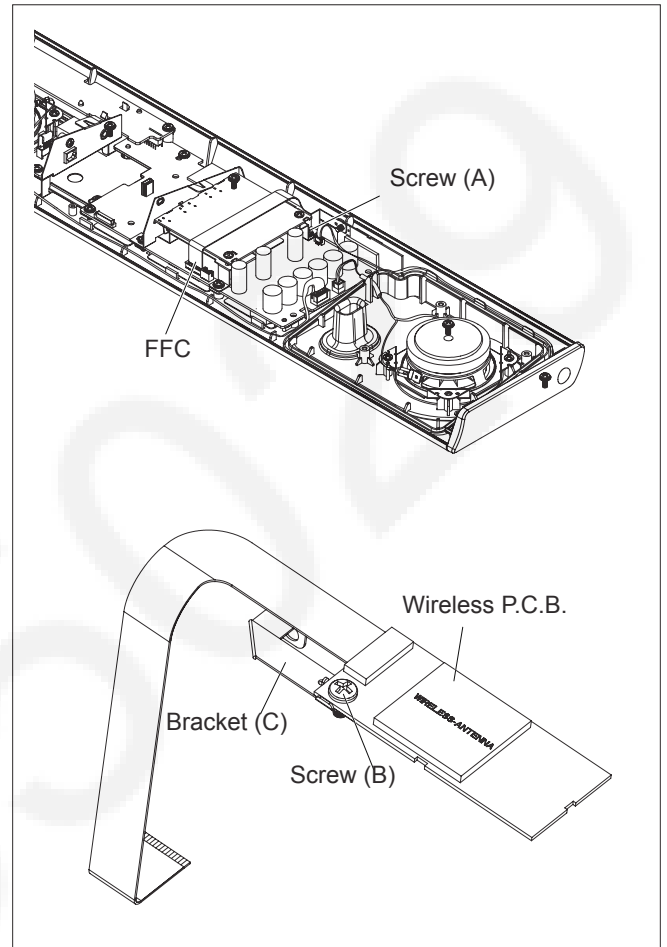
9.3.5. Optical P.C.B.

1. Remove 2 Screws (A).
2. Disconnect connector (A).
3. Remove 1 Screw (B),
4. Remove remove Bracket (D) and the Optical P.C.B..



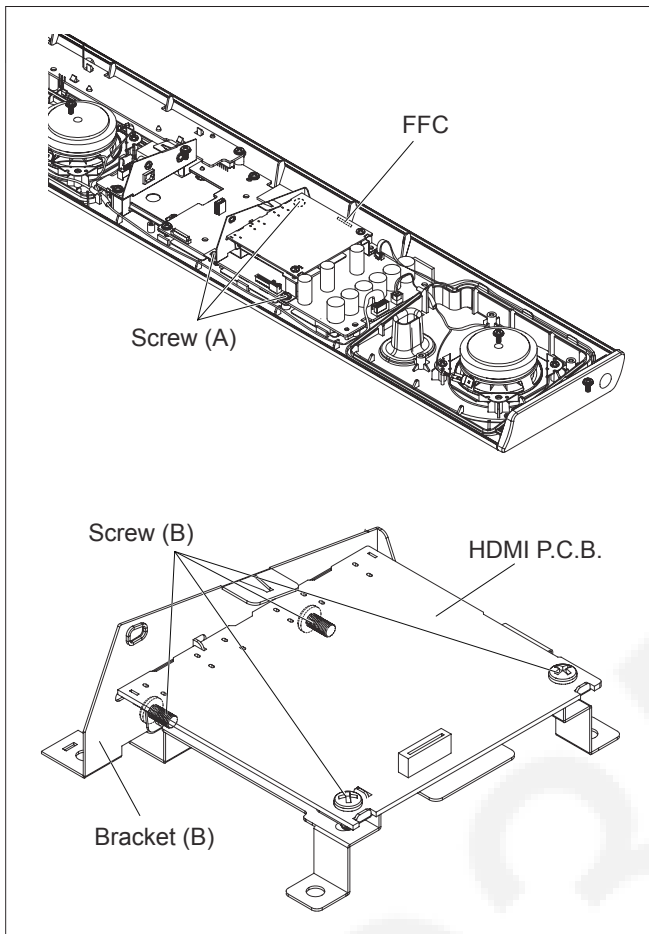
9.3.6. Wireless P.C.B

1. Remove 1 Screw (A).
2. Disconnect FFC cable.
3. Remove 1 Screw (B).
4. Remove Bracket (C) and Wireless P.C.B..



9.3.7. HDMI P.C.B.

- 1.Remove 3 Screws (A).
- 2.Disconnect FFC cable.
- 3.Remove 4 Screws (B).
- 4.Remove Bracket (B) and HDMI P.C.B..

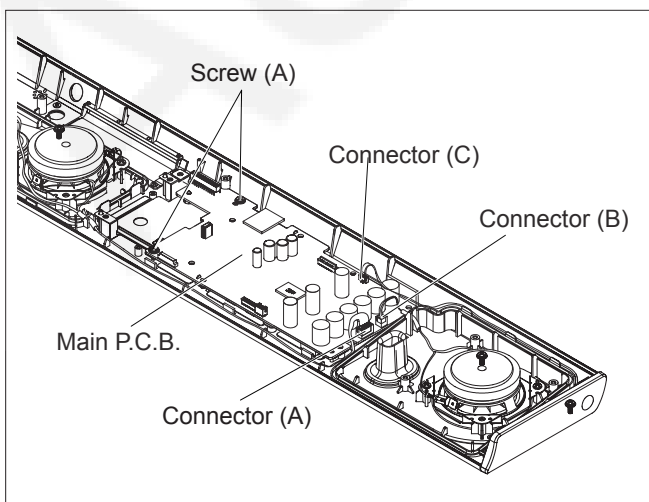


9.3.8. Main P.C.B.

Caution:

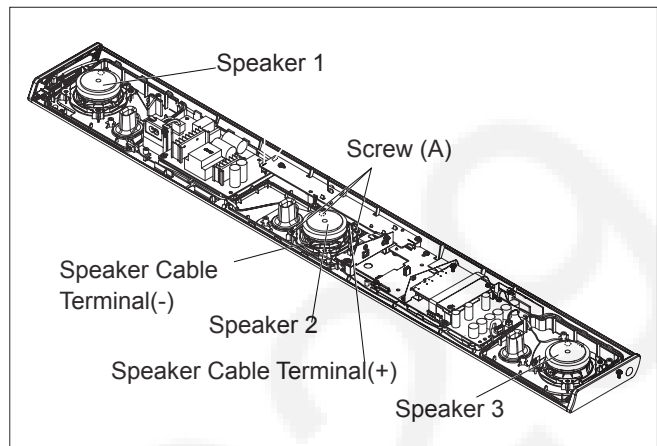
Pair the Main P.C.B. with NFC P.C.B.after replacing the Main PCB. For the pairing operations refer to "10.1. When replacing the MAIN P.C.B. and/or NFC P.C.B..".

- 1.Remove 2 Screws (A).
- 2.Disconnect connector (A),(B),(C).
- 3.Remove the Main P.C.B..



9.3.9. Speaker

- 1.Disconnect 2 Speaker Cable Terminals.
- 2.Remove 3 Screws (A).
- 3.Remove the Speaker 2.
(Remove Speaker 1,3 by the same method.)



9.3.10. NFC P.C.B.

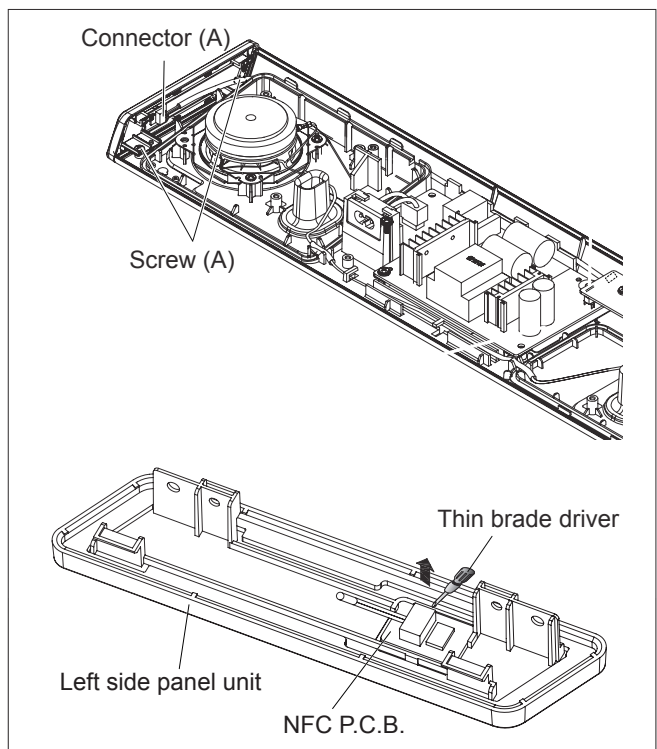
Caution:

Pair the NFC P.C.B. with Main P.C.B.after replacing the NFC PCB. For the pairing operations refer to "10.1. When replacing the MAIN P.C.B. and/or NFC P.C.B..".

- 1.Remove 2 Screws (A).
- 2.Disconnect connector (A).
- 3.Pull out the NFC P.C.B. by thin brade driver in the direction of arrow.

Caution:

Before installment completely wipe off the double sticky tape left on the side panel unit, otherwise the NFC sensitivity will be effected.Moreover when installing press the NFC P.C.B. tightly onto the Left side panel unit.

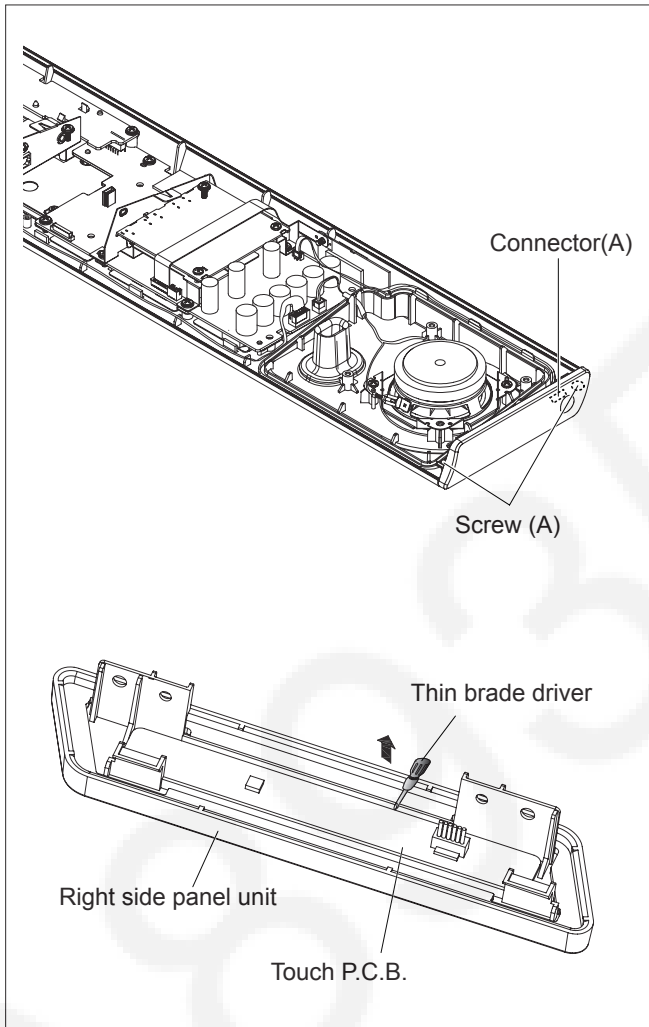


9.3.11. Touch P.C.B.

1. Remove 2 Screws (A).
2. Disconnect connector (A).
3. Pull out the Touch P.C.B. by thin brade driver in the direction of arrow.

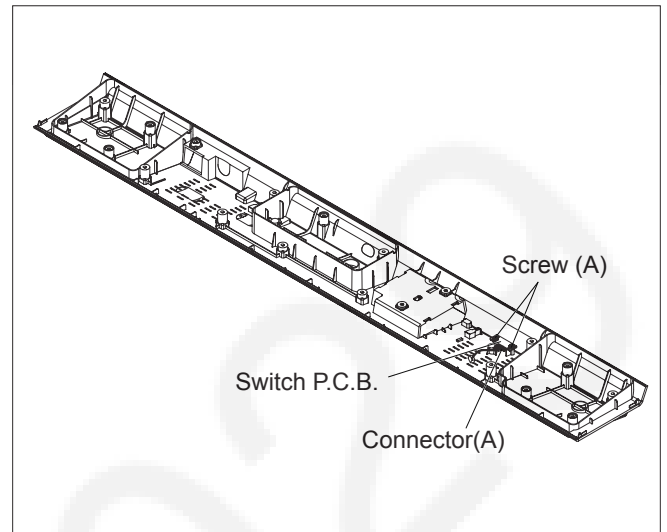
Caution:

Before installment completely wipe off the double sticky tape left on the side panel unit, otherwise the Touch sensitivity will be effected. Moreover when installing press the Touch P.C.B. tightly onto the Right side panel unit.



9.3.12. Switch P.C.B.

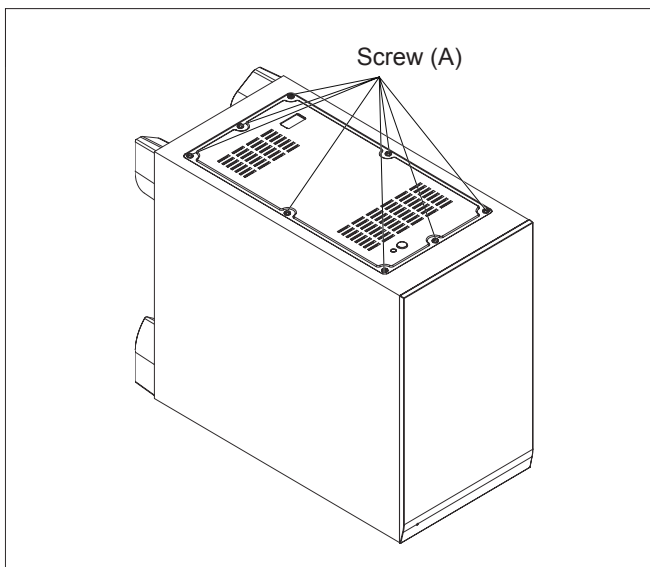
1. Remove 2 Screws (A).
2. Disconnect connector (A).
3. Remove the Switch P.C.B..



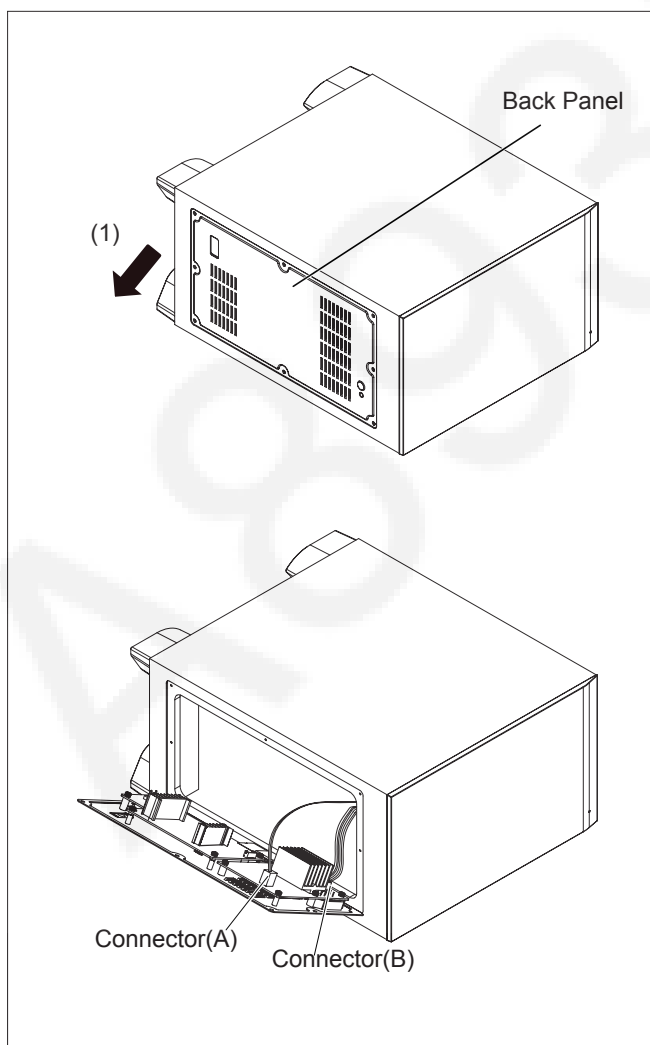
9.4. Disassembly Procedure of Active Subwoofer (SB-HWA690)

9.4.1. Power P.C.B.

1. Remove 8 Screws (A).



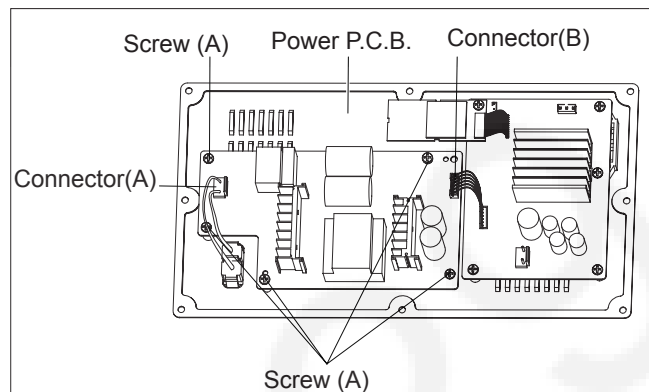
2. Upset Active subwoofer.
3. Pull the Back Panel in the direction of arrow (1).
4. Disconnect connector (A),(B).



5. Remove 5 Screws (A).

6. Disconnect connector (A),(B).

7. Remove the Power P.C.B..

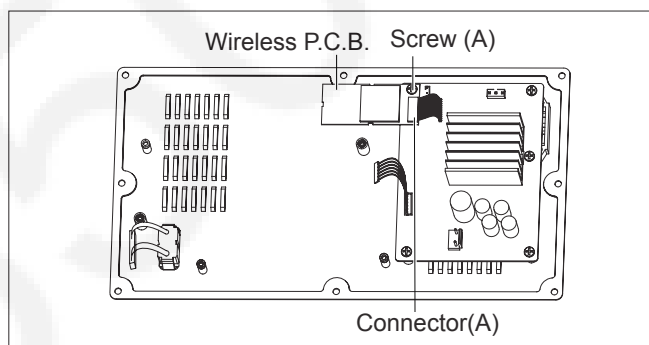


9.4.2. Wireless P.C.B.

1. Remove 1 Screw (A).

2. Disconnect connector (A).

3. Remove the Wireless P.C.B..

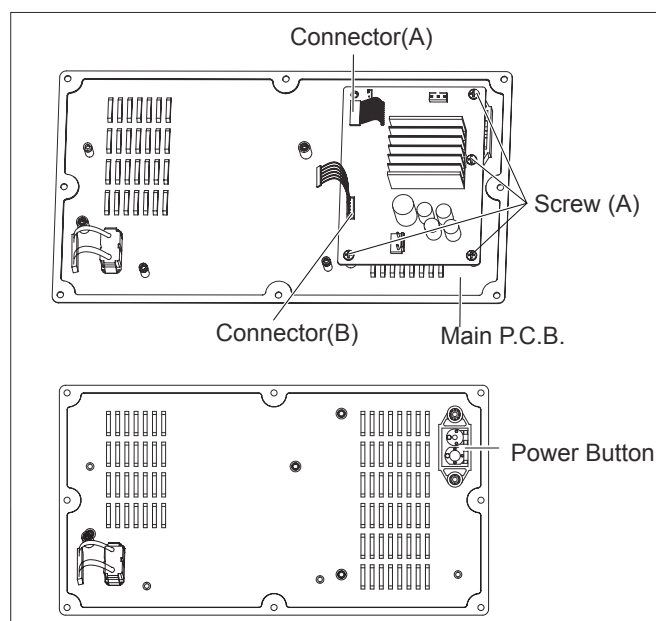


9.4.3. Main P.C.B. and Power Button

1. Remove 4 Screws (A).

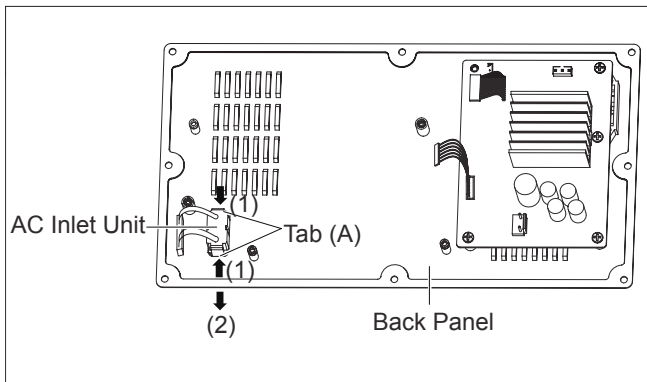
2. Disconnect connector (A),(B).

3. Remove the Main P.C.B. and Power Button.



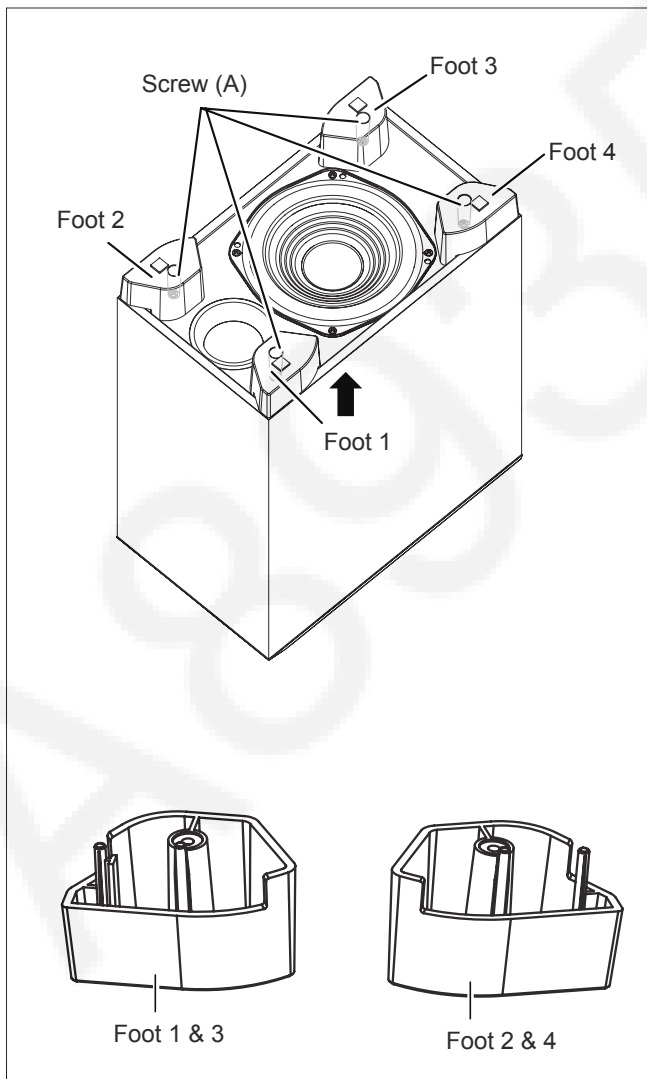
9.4.4. AC Inlet Unit

1. Press tab (A) on the AC cord connector simultaneously in the direction of arrows (1) to pull the AC Inlet Unit out from the Back Panel in the direction of arrow (2).



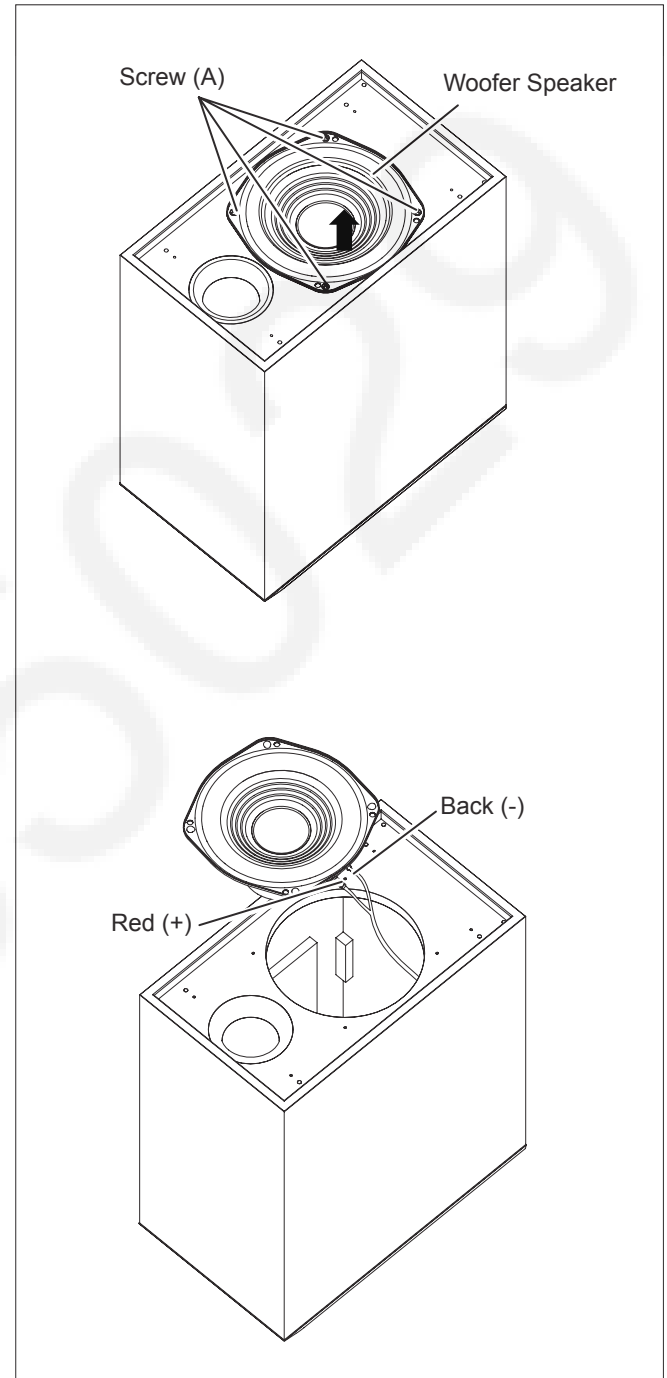
9.4.5. Foot 1 & 2

1. Remove 4 Screws (A).
2. Pull the Foot 1 in direction of arrow.
(Remove Foot 2&3&4 by the same method.)



9.4.6. Woofer Speaker

1. Remove 4 Screws (A).
2. Slightly lift up Woofer Speaker in the direction of arrow.
3. Disconnect speaker wire.
4. Remove Woofer Speaker



10 Measurements and Adjustments

10.1. When replacing the MAIN P.C.B. and/or NFC P.C.B.

When replacing the Main P.C.B., NFC P.C.B. or both, the MAC address of bluetooth module on Main P.C.B. registration to NFC tag on NFC P.C.B.. perform the following procedures to register.

(In this manual, the screenshots are using of Android 4.4.2..The display may vary depending on the version of Android.)

10.1.1. List of Service Tools

10.1.1.1. Commercial Tools Required

No.	Part No.	Uses	Pcs.	Compatibility
1	-	NFC compatible Android device	1	Android 4.1 or higher

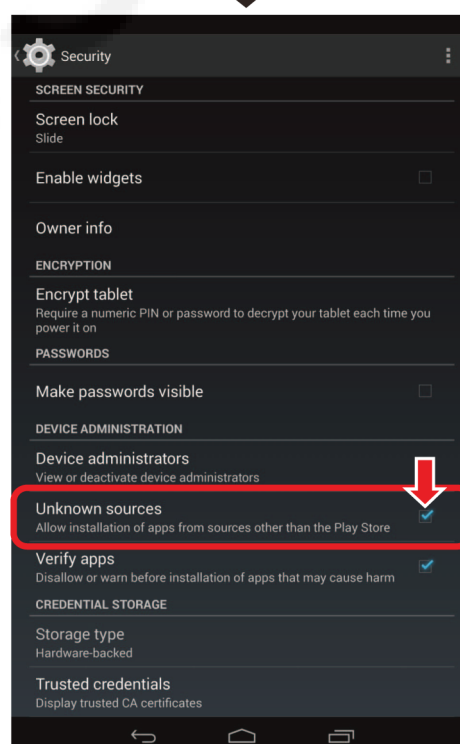
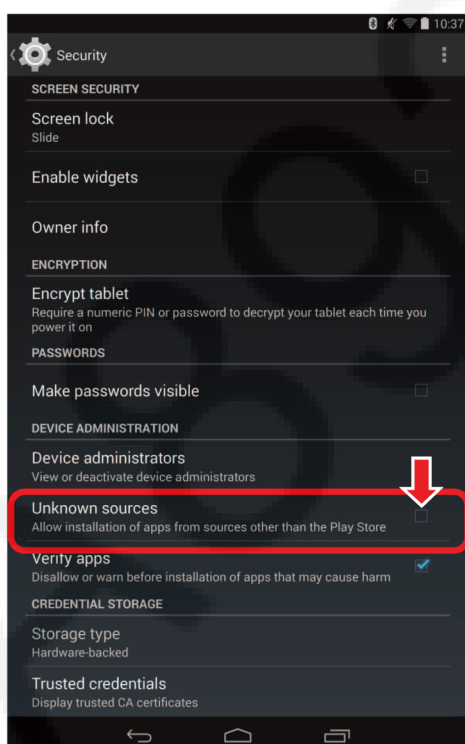
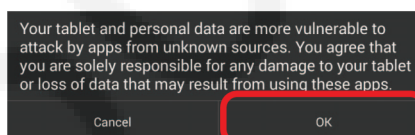
10.1.1.2. Tag writer Software Installation

Preparation:

Download NFC tag writer software (TCL BT TAG writerV1.4.apk) from “11 NFC tag writer software”, then send it to NFC compatible Android device. You can send it as an attachment by email or other methods.

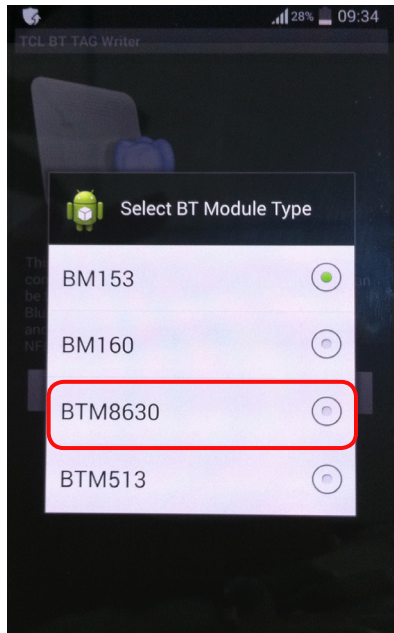
1. Open the [Settings] screen of the Android device, then tap [Security] to open the [Security] screen.
2. Check the ☐ of [Unknown sources].

3. When below confirming information appears, tap [OK].
Make sure the [Unknown sources] being checked.

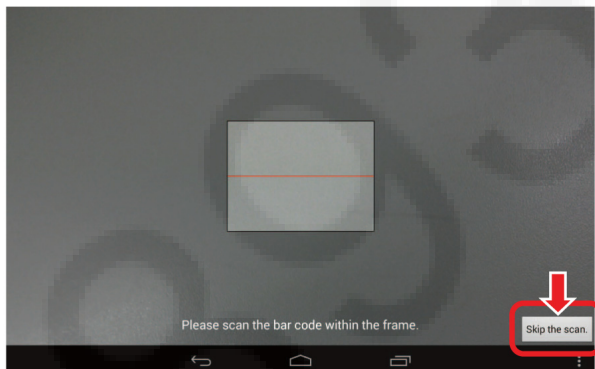


10.1.2. How to write the Blue tooth MAC address to NFC module

1. Tap the "TCL BT TAG Writer" icon () to execute.
2. Select the BT module type (BTM8630 only) and tap it.

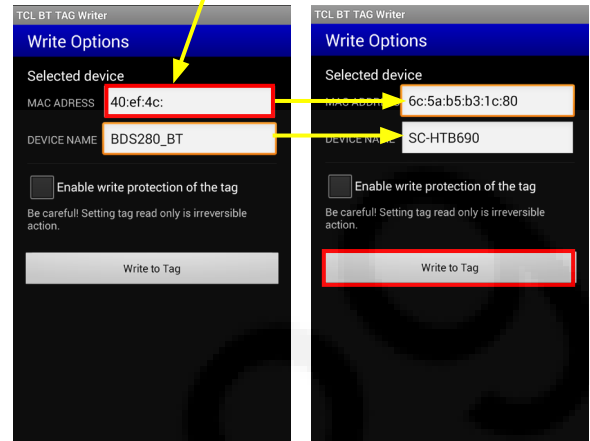


3. After selecting the module type, QR code scan screen is displayed. Tap [Skip the scan.] to skip this screen.

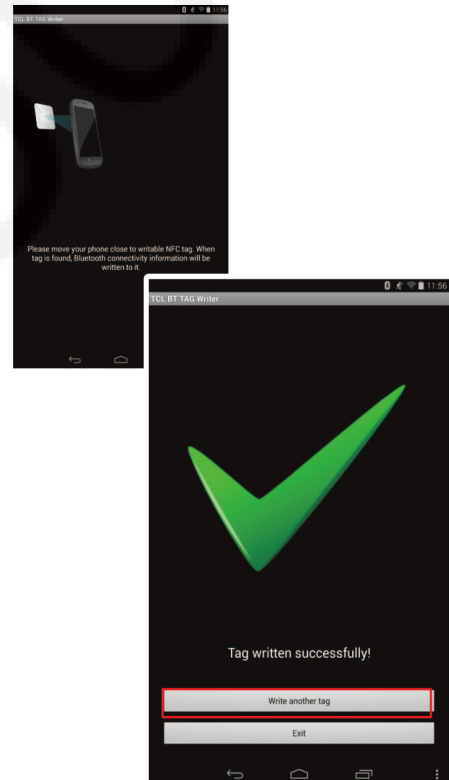


4. MAC Address and Device Name inputting screen appears. Please input 12 digits numbers in MAC ADDRESS column (* the 12 digits numbers are gained at Doct Mode and the ":" will appear automatically when you input.)
DEVICE NAME will appear automatically, but you also can delete it and input "SC-HTB690". (Once you do it after Tag writer software has been installed, the default device name always displayed as "SC-HTB690".)

6C 5A B5 B3 1C 80



5. Tap [Write to Tag]. then move the NFC part of your Android device close to the NFC antenna part of NFC P.C.B. unit and hold it until a beep sound is heard, which means the Android device is recognized by the NFC module.
6. When [Tag written successfully!] appears, Tap [Exit].



*Get the Bluetooth Mac Address at Doct Mode:

Enter Doct Mode:

1. While pressing and holding [Vol-] for 3 seconds on Main unit, then press [Vol+] using the remote control, then release all the presses. "T≡" appears on the Front Panel.
2. Press [] on the remote control, "BLUETOOTH" appears on the front panel, and then the Bluetooth Mac Address appears.

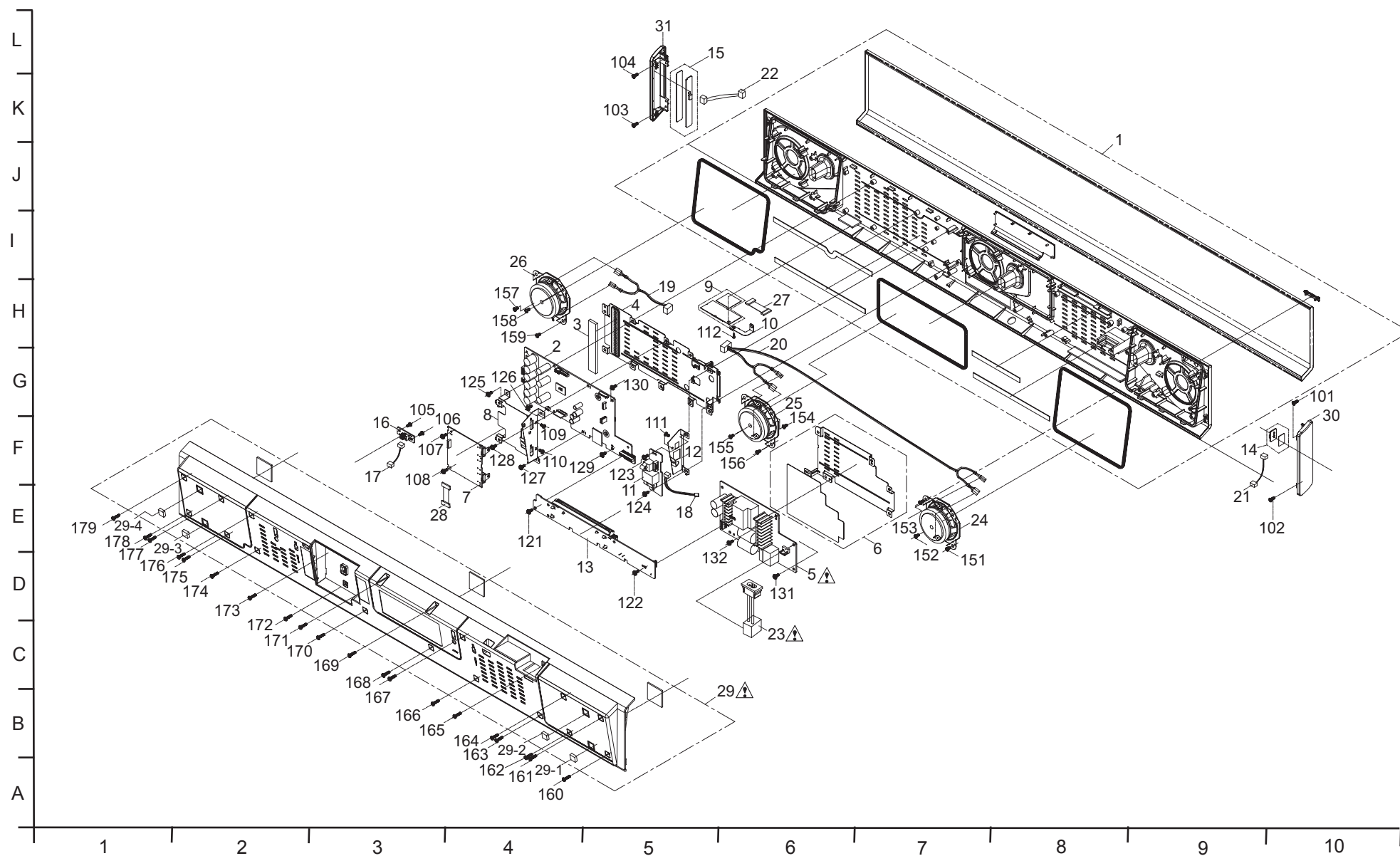
For example:

6C 5A B5 B3 1C 80

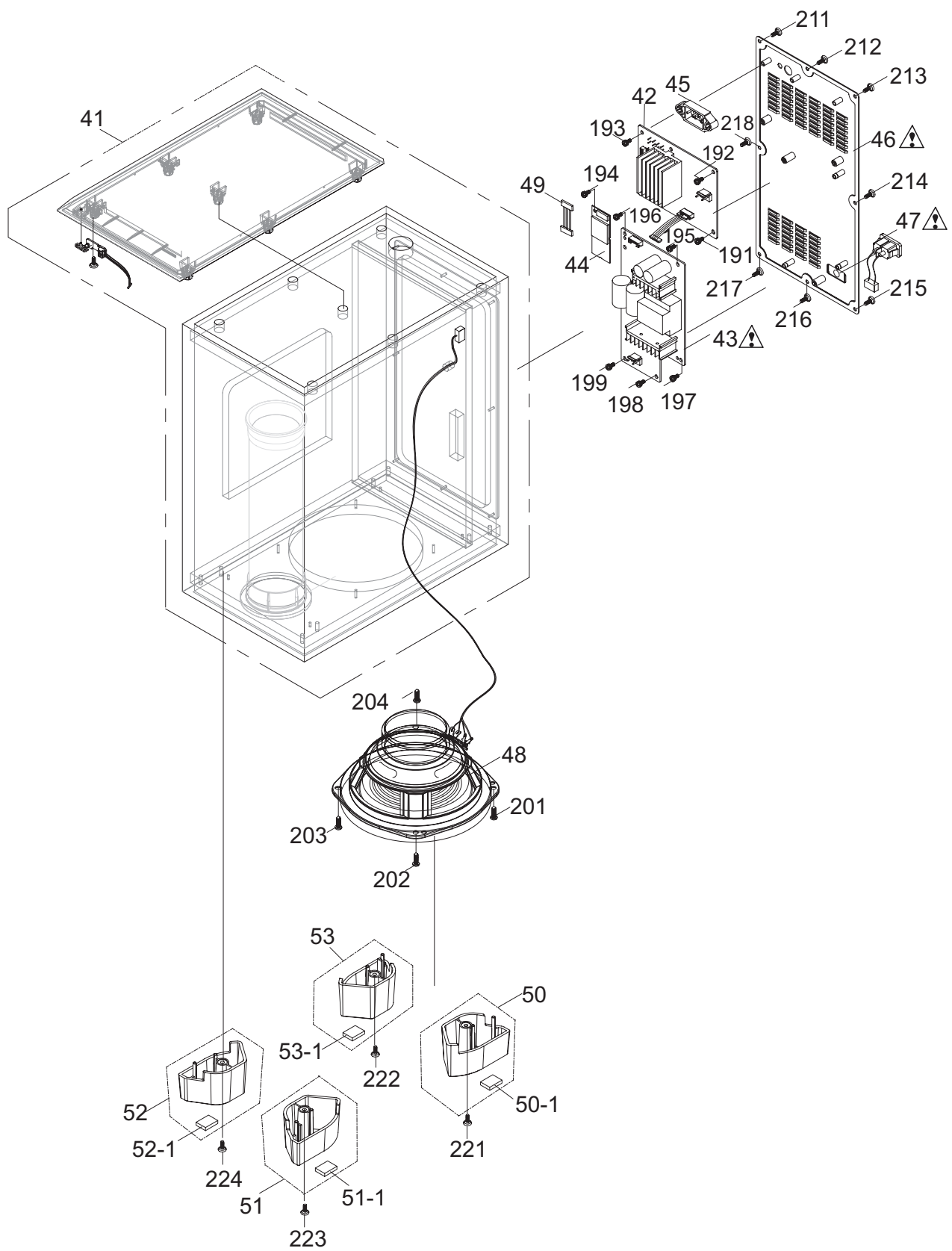
11 NFC tag writer software

 TCL BT TAG writer V1.4.apk

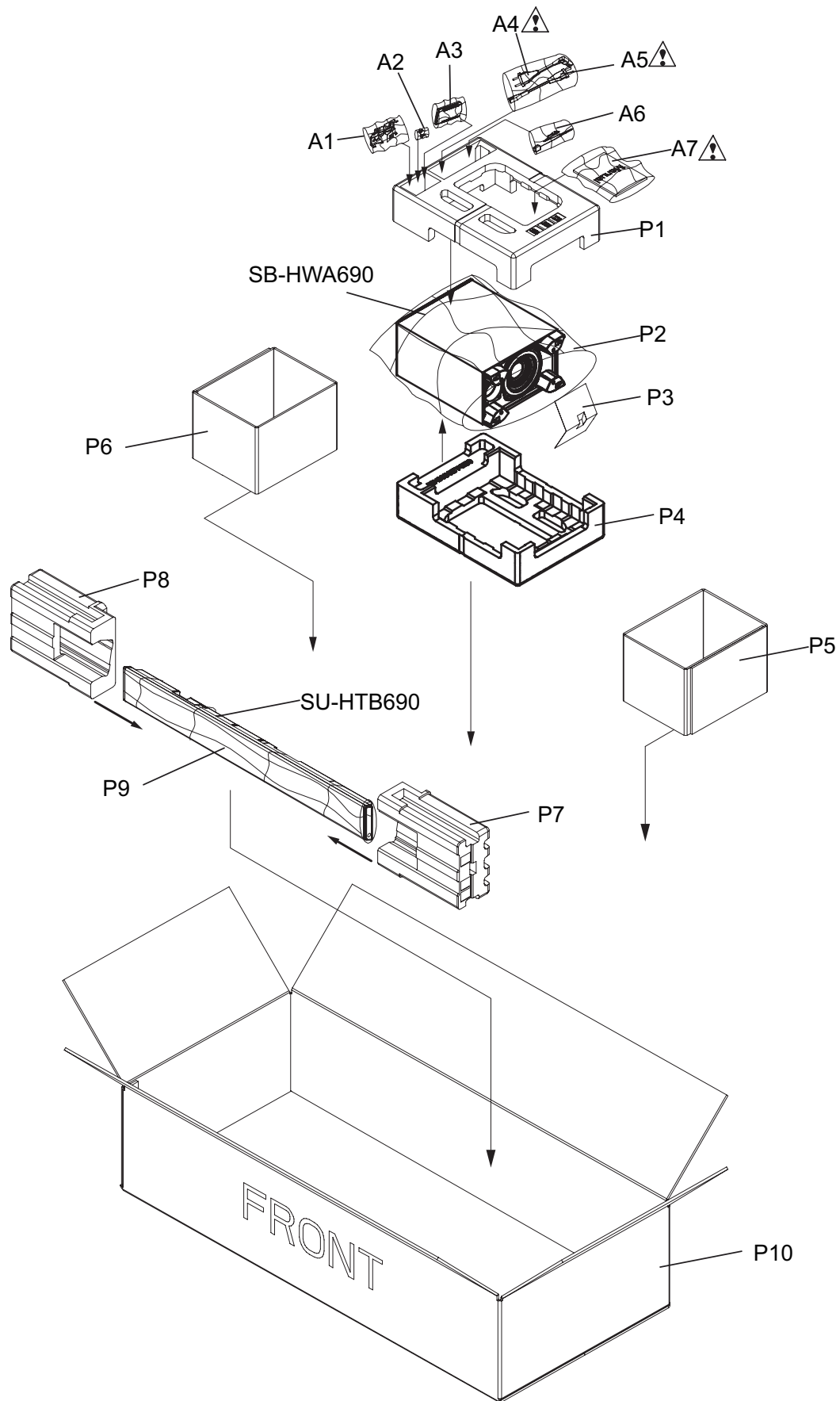
12.1. Casing Parts & Mechanism Section



12.2. Casing Parts & Mechanism Section (SB-HWA690)



12.3. Packing & Accessories Section (SC-HTB690)



12.4. Replacement Parts List

Notes:

*Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

*All Parts are supplied by PHK.

12.4.1. Main Unit (SU-HTB690)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	1	RYP2118-K	FRONT CABINET UNIT	1	
	2	SVKV000003	MAIN P.C.B. KIT	1	EG
	2	SVKV000004	MAIN P.C.B. KIT	1	EB
	3	RMG1029-H	RADIATOR SHEET	1	
	4	RMA2530	BRACKET(A)	1	
⚠	5	REP5199A	POWER P.C.B.	1	
	6	RXA0271	BRACKET UNIT	1	
	7	REP5206A	HDMI P.C.B.	1	
	8	RMA2531	BRACKET(B)	1	
	9	REP5210A	WIRELESS P.C.B.	1	
	10	RMA2532	BRACKET (C)	1	
	11	REP5217A	OPTICAL P.C.B.	1	
	12	RMA2533A	BRACKET(D)	1	
	13	REP5224A	FL P.C.B.	1	
	14	SVKV000009	NFC P.C.B. KIT	1	
	15	REP5237A	TOUCH P.C.B.	1	
	16	REP5244A	SWITCH P.C.B.	1	
	17	REX1865	CORD (A)	1	
	18	REX1866	CORD (B)	1	
	19	REX1868	CORD (D)	1	
	20	REX1869	CORD (E)	1	
	21	REX1870	CORD (F)	1	
	22	REX1871	CORD (G)	1	
⚠	23	REX1872	AC INLET UNIT	1	
	24	RFZA0007	SPEAKER	1	
	25	RFZA0007	SPEAKER	1	
	26	RFZA0007	SPEAKER	1	
	27	REZ2129	FFC (A)	1	
	28	REZ2130	FFC (B)	1	
⚠	29	RYK1904A-K	BACK CABINET UNIT	1	
	29-1	RKA0327-K	RUBBER LEG	1	
	29-2	RKA0327-K	RUBBER LEG	1	
	29-3	RKA0327-K	RUBBER LEG	1	
	29-4	RKA0327-K	RUBBER LEG	1	
	30	RYF1023-H	LEFT SIDE PANEL UNIT	1	
	31	RYF1024-H	RIGHT SIDE PANEL UNIT	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	101	RHD30231	SILVER SCREW (A)	1	
	102	RHD30231	SILVER SCREW (A)	1	
	103	RHD30231	SILVER SCREW (A)	1	
	104	RHD30231	SILVER SCREW (A)	1	
	105	RHD30231	SILVER SCREW (A)	1	
	106	RHD30231	SILVER SCREW (A)	1	
	107	RHD30231	SILVER SCREW (A)	1	
	108	RHD30231	SILVER SCREW (A)	1	
	109	RHD30231	SILVER SCREW (A)	1	
	110	RHD30231	SILVER SCREW (A)	1	
	111	RHD30231	SILVER SCREW (A)	1	
	112	RHD30231	SILVER SCREW (A)	1	
	121	RHD30232	SILVER SCREW (B)	1	
	122	RHD30232	SILVER SCREW (B)	1	
	123	RHD30232	SILVER SCREW (B)	1	
	124	RHD30232	SILVER SCREW (B)	1	
	125	RHD30232	SILVER SCREW (B)	1	
	126	RHD30232	SILVER SCREW (B)	1	
	127	RHD30232	SILVER SCREW (B)	1	
	128	RHD30232	SILVER SCREW (B)	1	
	129	RHD30232	SILVER SCREW (B)	1	
	130	RHD30232	SILVER SCREW (B)	1	
	131	RHD30232	SILVER SCREW (B)	1	
	132	RHD30232	SILVER SCREW (B)	1	
	151	RHD30234	BLACK SCREW (A)	1	
	152	RHD30234	BLACK SCREW (A)	1	
	153	RHD30234	BLACK SCREW (A)	1	
	154	RHD30234	BLACK SCREW (A)	1	
	155	RHD30234	BLACK SCREW (A)	1	
	156	RHD30234	BLACK SCREW (A)	1	
	157	RHD30234	BLACK SCREW (A)	1	
	158	RHD30234	BLACK SCREW (A)	1	
	159	RHD30234	BLACK SCREW (A)	1	
	160	RHD30234	BLACK SCREW (A)	1	
	161	RHD30234	BLACK SCREW (A)	1	
	162	RHD30234	BLACK SCREW (A)	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	163	RHD30234	BLACK SCREW (A)	1	
	164	RHD30234	BLACK SCREW (A)	1	
	165	RHD30234	BLACK SCREW (A)	1	
	166	RHD30234	BLACK SCREW (A)	1	
	167	RHD30234	BLACK SCREW (A)	1	
	168	RHD30234	BLACK SCREW (A)	1	
	169	RHD30234	BLACK SCREW (A)	1	
	170	RHD30234	BLACK SCREW (A)	1	
	171	RHD30234	BLACK SCREW (A)	1	
	172	RHD30234	BLACK SCREW (A)	1	
	173	RHD30234	BLACK SCREW (A)	1	
	174	RHD30234	BLACK SCREW (A)	1	
	175	RHD30234	BLACK SCREW (A)	1	
	176	RHD30234	BLACK SCREW (A)	1	
	177	RHD30234	BLACK SCREW (A)	1	
	178	RHD30234	BLACK SCREW (A)	1	
	179	RHD30234	BLACK SCREW (A)	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	197	RHD30235	SILVER SCREW (A)	1	
	198	RHD30235	SILVER SCREW (A)	1	
	199	RHD30235	SILVER SCREW (A)	1	
	201	RHD30236	BLACK SCREW (A)	1	
	202	RHD30236	BLACK SCREW (A)	1	
	203	RHD30236	BLACK SCREW (A)	1	
	204	RHD30236	BLACK SCREW (A)	1	
	211	RHD30237	BLACK SCREW (B)	1	
	212	RHD30237	BLACK SCREW (B)	1	
	213	RHD30237	BLACK SCREW (B)	1	
	214	RHD30237	BLACK SCREW (B)	1	
	215	RHD30237	BLACK SCREW (B)	1	
	216	RHD30237	BLACK SCREW (B)	1	
	217	RHD30237	BLACK SCREW (B)	1	
	218	RHD30237	BLACK SCREW (B)	1	
	221	RHD30238	BLACK SCREW (C)	1	
	222	RHD30238	BLACK SCREW (C)	1	
	223	RHD30238	BLACK SCREW (C)	1	
	224	RHD30238	BLACK SCREW (C)	1	

12.4.2. Active Subwoofer (SB-HWA690)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	41	RYB0403	SUBWOOFER BOX UNIT	1	
	42	REP5251A	MAIN P.C.B.	1	
⚠	43	REP5254A	POWER P.C.B.	1	
	44	REP5257A	WIRELESS P.C.B.	1	
	45	RGU2988-K	POWER BUTTON	1	
⚠	46	RGR0481A-B	BACK PANEL	1	
⚠	47	REX1873	AC INLET UNIT	1	
	48	RFZA0014	WOOFER SPEAKER	1	
	49	REZ2133	FFC (A)	1	
	50	RGQ0881-K	FOOT 1	1	
	51	RGQ0882-K	FOOT 2	1	
	52	RGQ0881-K	FOOT 1	1	
	53	RGQ0882-K	FOOT 2	1	
	50-1	RKA0327-K	RUBBER LEG	1	
	51-1	RKA0327-K	RUBBER LEG	1	
	52-1	RKA0327-K	RUBBER LEG	1	
	53-1	RKA0327-K	RUBBER LEG	1	
	191	RHD30235	SILVER SCREW (A)	1	
	192	RHD30235	SILVER SCREW (A)	1	
	193	RHD30235	SILVER SCREW (A)	1	
	194	RHD30235	SILVER SCREW (A)	1	
	195	RHD30235	SILVER SCREW (A)	1	
	196	RHD30235	SILVER SCREW (A)	1	

12.4.3. Packaging & Accessories (SC-HTB690)

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	A1	RMQ2281A	WALL MOUNT BRACKET A	1	
	A1	RMQ2281B	WALL MOUNT BRACKET B	1	
	A2	XYN5+J14JK	SCREWS PACK(PAIR)	1	
	A3	N2QAYC000098	REMOTE CONTROLLER	1	
⚠	A4	SFQ0015	AC CORD	1	EG
⚠	A4	SFQ0017	AC CORD	1	EB
⚠	A5	SFQ0016	AC CORD	1	EG (SUBWOOFER)
⚠	A5	SFQ0018	AC CORD	1	EB (SUBWOOFER)
	A6	SFQ0014	IR BLASTER	1	
⚠	A7	SQT0926	OPERATING INSTRUCTIONS	1	EG
⚠	A7	SQT0852	OPERATING INSTRUCTIONS	1	
	P1	RPN2749	POLYFOAM (T)	1	
	P2	RPF0759-1	SUBWOOFER BAG	1	
	P3	RPQ3386	PAPER CARD	1	
	P4	RPN2749	POLYFOAM (B)	1	
	P5	RPQ3385	CARD BOARD	1	
	P6	RPQ3385	CARD BOARD	1	
	P7	RPN2748	POLYFOAM (R)	1	
	P8	RPN2747	POLYFOAM (L)	1	
	P9	RPF0758	MAIN UNIT BAG	1	
	P10	RPG0Q90-2	PACKING CASE	1	EG
	P10	RPG0Q98-2	PACKING CASE		EB