LG

Wireless Sound Bar
SERVICE MANUAL

MODEL: LASC58R (LASC58R, SPJ4B-W), SPJ4-S (SPJ4-S, S65S3-S)

CAUTION

BEFORE SERVICING THE UNIT, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL.

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LG

CONTENTS

SECTION 1
GENERAL

CONTENTS

ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, 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 ESD 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 ESD devices.

4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will by installed.

**CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.**

8. Minimize bodily motions when handing unpackaged replacement ESD 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 sufficient to damage an ESD device).

CAUTION. GRAPHIC SYMBOLS

|	
⚡	THE LIGHTNING FLASH WITH APROWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
⚠	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

NAME OF EACH COMPONENT

• Front Panel
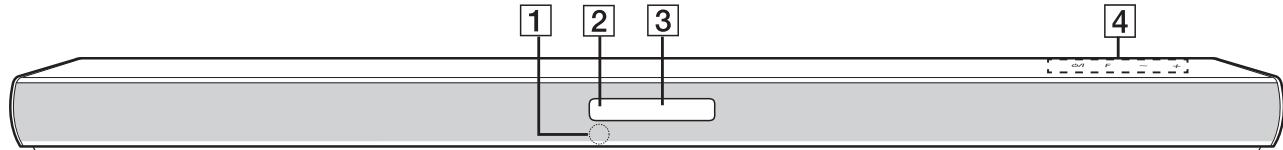
1 Remote sensor
2 Standby LED (Red)
3 Function LED (White)

4 **The buttons are located on the rear.**

• Rear Panel
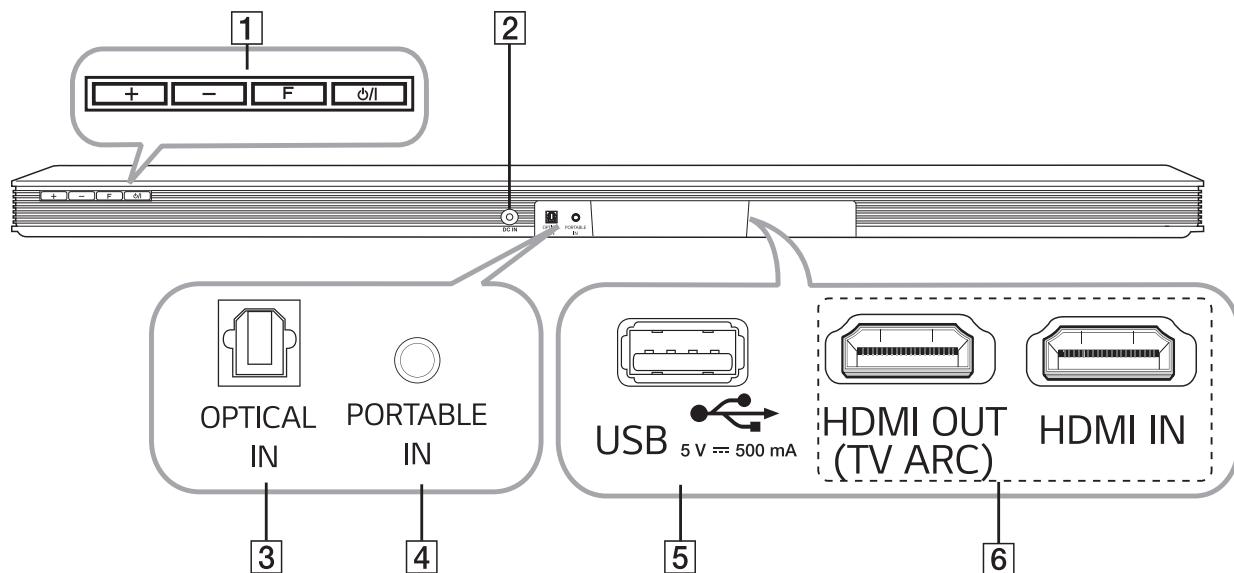
1 ＋/－ : (Volume) **:** Adjusts volume level

F (Function) **:** Selects the function and input source.

⏻/❘ (Standby/On)

2 **DC IN :** AC adapter input
3 **OPTICAL IN :** Optical input
4 **PORTABLE IN :** Portable input
5 **USB** •⤓
6 **HDMI OUT (TV ARC) / IN :** HDMI output / input

WIRELESS SUBWOOFER CONNECTION

LED indicator of wireless subwoofer

| LED Color	Status
Green (Blink)	Attempting to make connection.
Green	The connection is completed.
Red	The wireless subwoofer is in standby mode or the connection is failed.
Off (No display)	The power cord of wireless subwoofer is disconnected.

Setting up the wireless subwoofer for the first time

1. Connect the power cord to the subwoofer and plug the power cord into a power outlet.
2. Turn on the main unit : The sound bar and wireless subwoofer will be **automatically** connected.
   - Green LED on the rear of wireless subwoofer turns on.

Manually pairing wireless subwoofer

When your connection is not completed, you can check red LED on the wireless subwoofer and the wireless subwoofer does not make sound. To solve the problem, follow the steps below.

1. Press **Pairing** button on the rear of the wireless subwoofer.
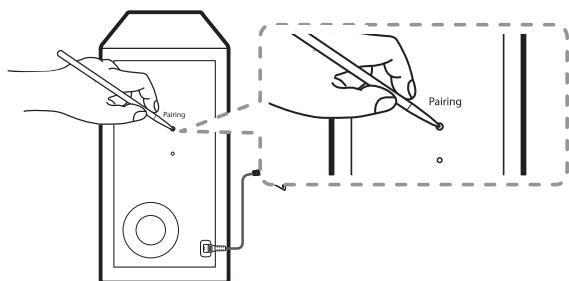
   - The green LED on the rear of the wireless subwoofer blinks quickly.

2. Turn on the main unit.
3. Pairing is completed.
   - The green LED on the rear of the wireless subwoofer turns on.

Note:
- It takes a few seconds (and may take longer) for the main unit and the subwoofer to communicate with each other and make sounds.
- The closer the main unit and the subwoofer, the better sound quality. It is recommended to install the main unit and the subwoofer as close as possible and avoid the cases below.
  - There is a obstacle between the main unit and the subwoofer.
  - There is a device using same frequency with this wireless connection such as a medical equipment, a microwave or a wireless LAN device.
  - Keep the sound bar and the subwoofer away from the device (ex. wireless router, microwave oven, etc.) over 1 m to prevent wireless interference.

REAR SPEAKERS CONNECTION

Connecting the rear speakers

1. Connect the black stripe wire to the terminal marked - (minus) and the other end to the terminal marked + (plus).
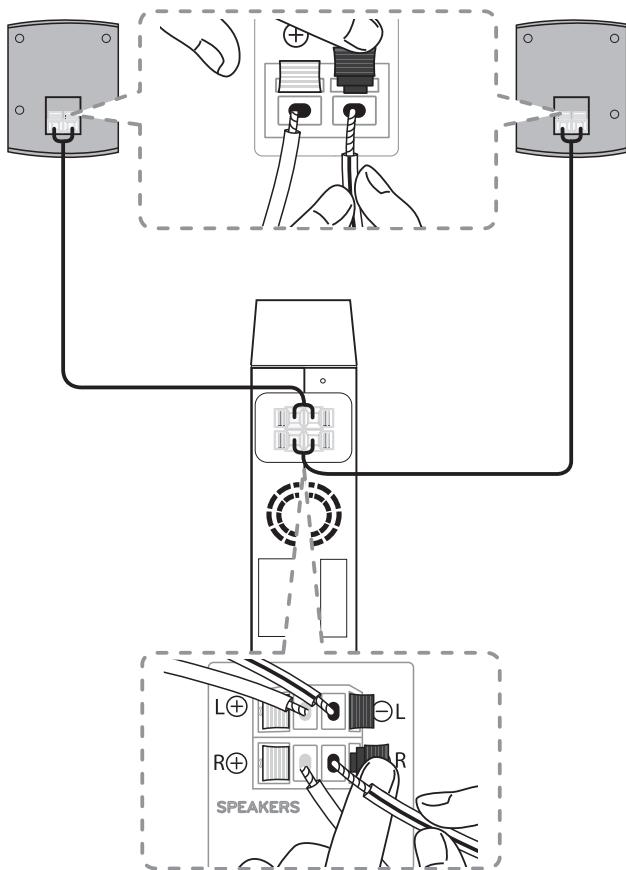
2. Connect the wireless receiver and the rear speakers (right, left) with the speaker cables.

Color	Position
Grey	Rear right
Blue	Rear left

Caution :
• Use the speaker supplied with this unit only. Using any other speaker may cause malfunction.
• Be sure to match the speaker cable to the appropriate terminal on the components: + to + and – to –. If the cables are reversed, the sound will be distorted and will lack bass.

LED indicator of wireless receiver

| LED Color	Status
Yellow - green	The wireless receiver is receiving the signal from the sound bar.
Red	The wreless receiver is in standby mode.
Off (No display)	The power cord of wireless receiver is disconnected

Setting up the wireless receiver for the first time

1. Connect the power cord to the wireless receiver to the outlet.
2. Turn on the main unit : The sound bar and wireless receiver will be **automatically** connected.
   - Yellow - green LED on the wireless receiver turns on.

Manually pairing wireless receiver

When your connection is not completed, you can see the red LED on the wireless receiver and rear speakers are not made sound. To solve the problem, follow the below steps.
1. Press **PAIRING** button on the rear of the wireless receiver.
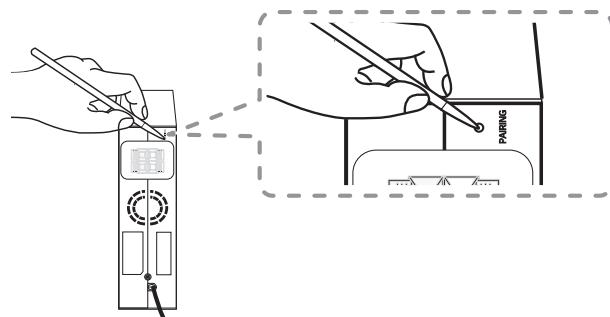
   - The yellow - green LED on the wireless receiver blinks quickly.
2. Turn on the main unit
3. Paring is completed.
   - The yellow - green LED on the wireless receiver turns on.

ABOUT LED CONDITION

| LED	Condition	Description
OPTICAL ● USB ○ BT ○ (ARC) LG TV ○ HDMI IN ○ (PORTABLE)	OPTICAL LED turns on.	OPTICAL function is selected.
OPTICAL ☀ → OPTICAL ●	OPTICAL LED blinks twice and turns on.	LG sound sync (Optical) function is selected.
OPTICAL ○ USB ● BT ○ (ARC) LG TV ○ HDMI IN ○ (PORTABLE)	USB LED turns on.	USB function is selected.
OPTICAL ○ USB ☀ BT ○ (ARC) LG TV ○ HDMI IN ○ (PORTABLE)	USB LED blinks.	Paused USB playback.
OPTICAL ○ USB ○ BT ● (ARC) LG TV ○ HDMI IN ○ (PORTABLE)	BT (**Bluetooth**) LED turns on.	Paired with **Bluetooth** device.
OPTICAL ○ USB ○ BT ☀ (ARC) LG TV ○ HDMI IN ○ (PORTABLE)	BT (**Bluetooth**) LED blinks.	Waiting for **Bluetooth** connection.
OPTICAL ○ USB ○ BT ○ (ARC) LG TV ● HDMI IN ○ (PORTABLE)	LG TV LED turns on.	LG Sound Sync (Wireless) function is selected.
OPTICAL ○ USB ○ BT ○ (ARC) LG TV ○ HDMI IN ● (PORTABLE)	HDMI IN LED turns on.	HDMI IN function is selected.
OPTICAL ○ USB ○ BT ○ (ARC) LG TV ● HDMI IN ● (PORTABLE)	LG TV and HDMI IN LEDs turn on.	PORTABLE function is selected.
OPTICAL ○ USB ● BT ● (ARC) LG TV ○ HDMI IN ○ (PORTABLE)	USB and BT (**Bluetooth**) LEDs turn on.	ARC function is selected

> 🛈 Note
>
> - When you press any button, standby LED (Red) on the main unit blinks.
> - When you press ✕ (Mute) button, standby LED (Red) blinks slowly.
> - When this unit reaches minimum volume, standby LED (Red) turns on for 2 seconds and blinks slowly.
> - When this unit reaches maximum volume, standby LED (Red) turns on for 2 seconds.
> - When you press volume (✚/━) button continually, standby LED (Red) blinks quickly.

HIDDEN KEY MODE

Preparation:
 Please connect Display Jig to the Main Board CN106.

| HIDDEN MODE	KEYS
EEPROM CLEAR (Initialize)	Main unit ' ▬ (Volume)' + Remote control '**ASC**' for more than 3 seconds.
VERSION CHECK	Main unit ' ▬ (Volume)' + Remote control ' ▶ǁ (Play/Pause)' for more than 3 seconds. Next : Forward Skip / Previous : Backward Skip Exit : Power off
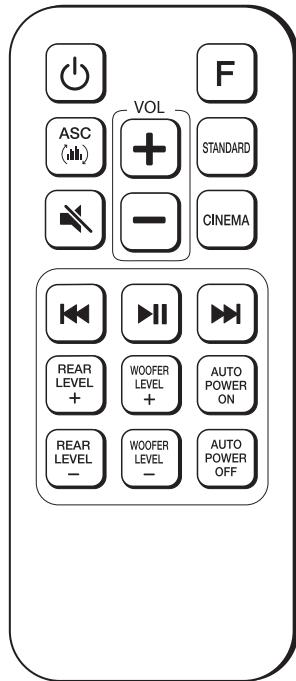
SOFTWARE UPDATE GUIDE

1. Using USB

1-1. Preparation

- Remote control.
- Do format USB Memory to FAT32 File system.
- USB : **Update file exist only in the USB Memory stick.**

  Ex) SJ4 :

MAIN	⇨ **E:₩DSP_MAIN_SJ4.ROM** (if USB driver is E:₩)
MICOM	⇨ **E:₩MICOM_SJ4.HEX** (if USB driver is E:₩)
BLUETOOTH	⇨ **E:₩BT_SJ4.BIN** (if USB driver is E:₩)
MEQ	⇨ **E:₩MEQ.BIN** (if USB driver is E:₩)
PEQ	⇨ **E:₩EQ_PRG.BIN** (if USB driver is E:₩)
OPTION	⇨ **E:₩OPT.BIN** (if USB driver is E:₩)
WOOFER WIRELESS TX	⇨ **E:₩WIRELESS_TX.bin** (if USB driver is E:₩)
WOOFER WIRELESS RX	⇨ **E:₩WIRELESS_RX.bin** (if USB driver is E:₩)
REAR WIRELESS TX	⇨ **E:₩WIRELESS_REAR_TX.BIN** (if USB driver is E:₩)
REAR WIRELESS RX	⇨ **E:₩WIRELESS_REAR_RX.BIN** (if USB driver is E:₩)
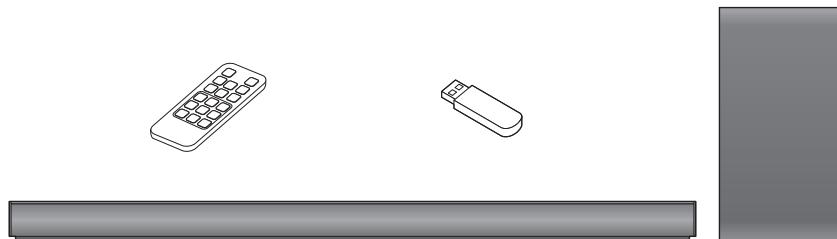
1-2. Update

1) Power on.
2) Select the USB function.
3) Insert USB.
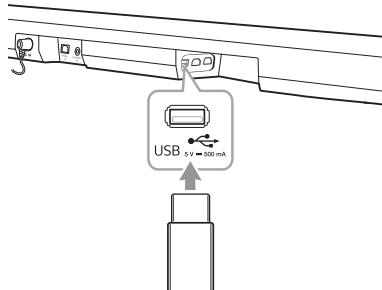
4) Never remove USB or AC cord while updating.
5) After update finish, power will be off automatically.

2. Using APP (FOTA : Firmware update Over The Air)

2-1. Run BT App (Music Flow Bluetooth)
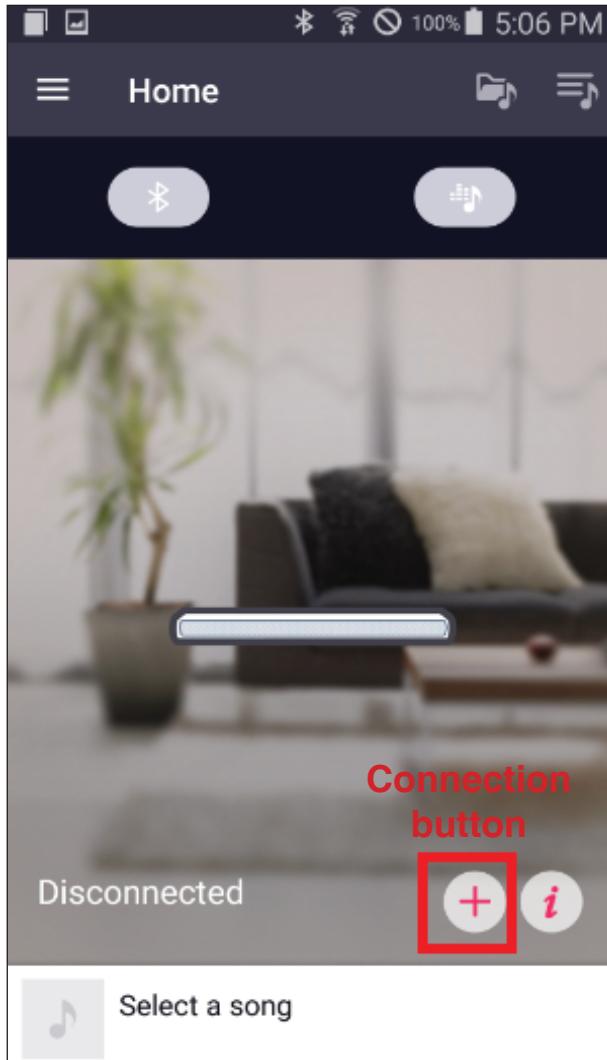
2-2. Connect Bluetooth

Connection button

Disconnected

Select a song

< Not Connected >

Menu button

LG SJ5(26)

LG SJ5(26) is connected

Select a song
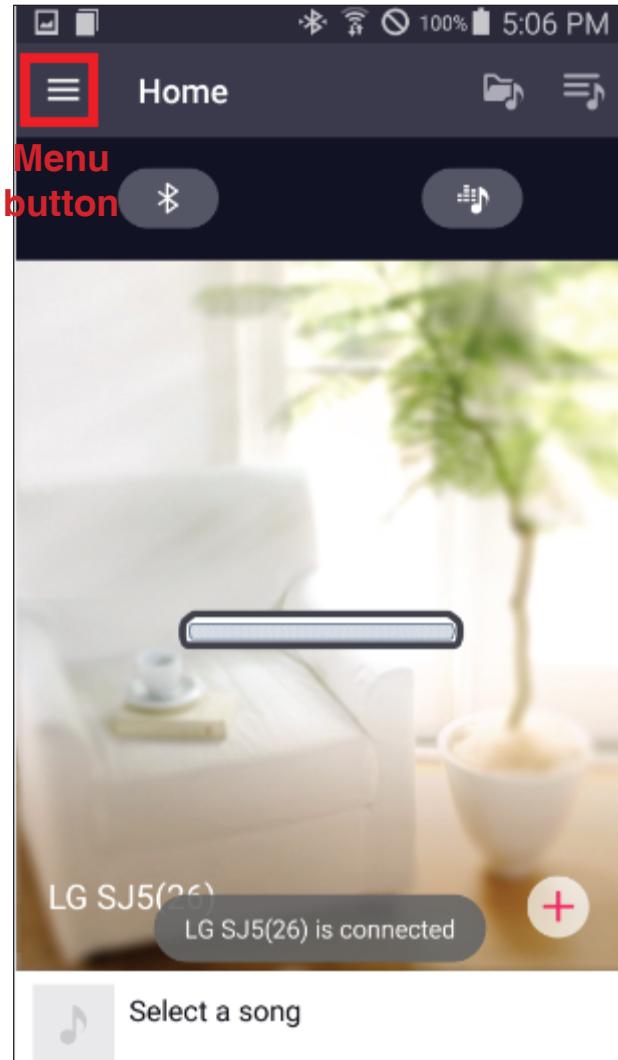
< Connected >

Using APP (FOTA : Firmware update Over The Air)

2-3. Setting Menu

Setting button
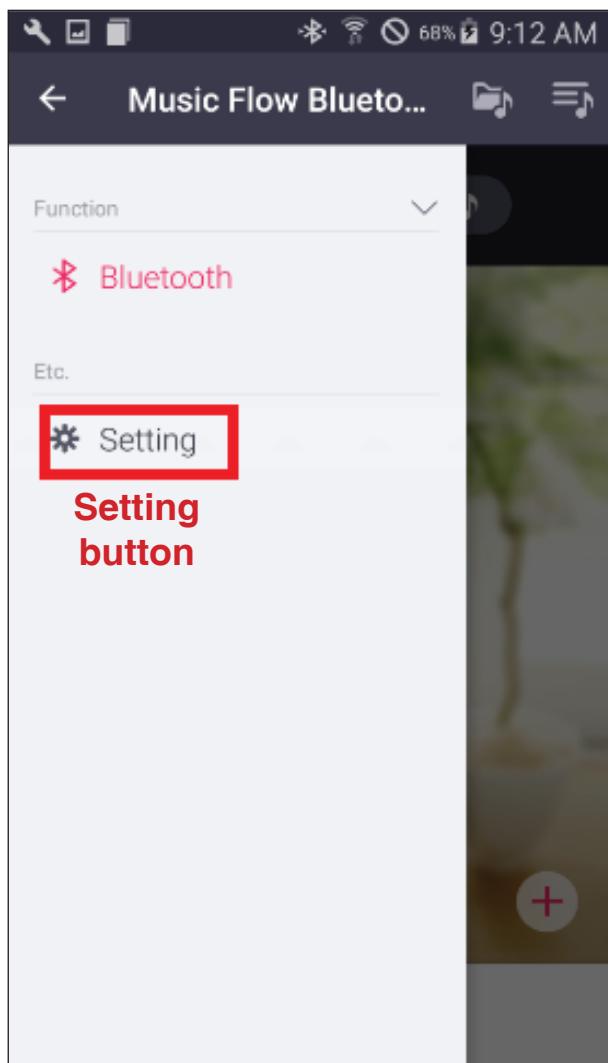
< Connected >

2-4-1. FOTA Start Button
(Phone should be available internet, Wi-Fi, LTE, 3G)
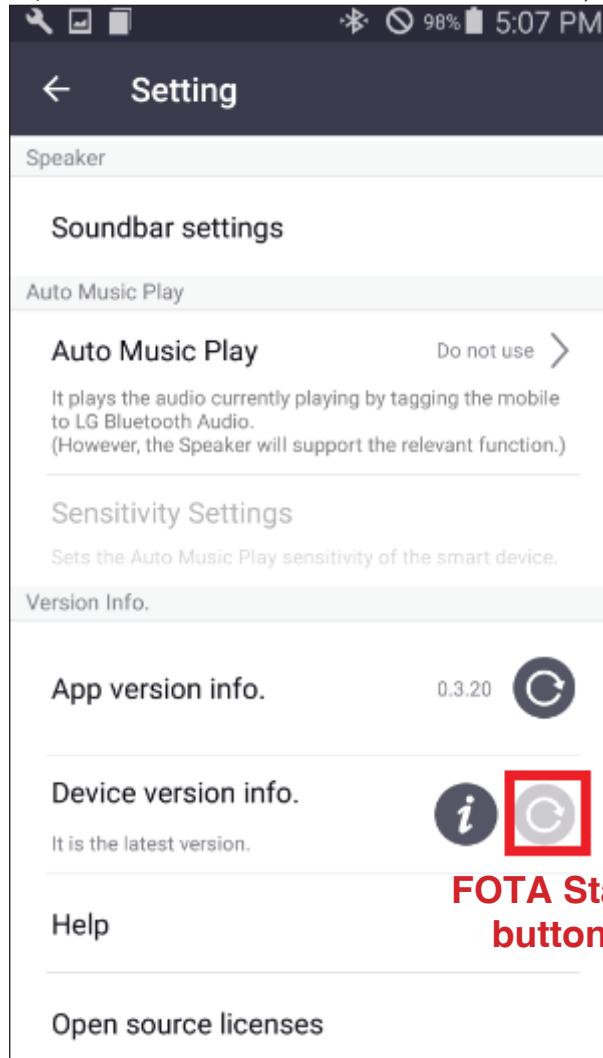
FOTA Start button

< Internet not Connected >

• Some Country(ex China) can not access to CDN Server. And can not use FOTA. So, This Button can not enable in that country.

Using APP (FOTA : Firmware update Over The Air)

2-4-2. FOTA Start Button
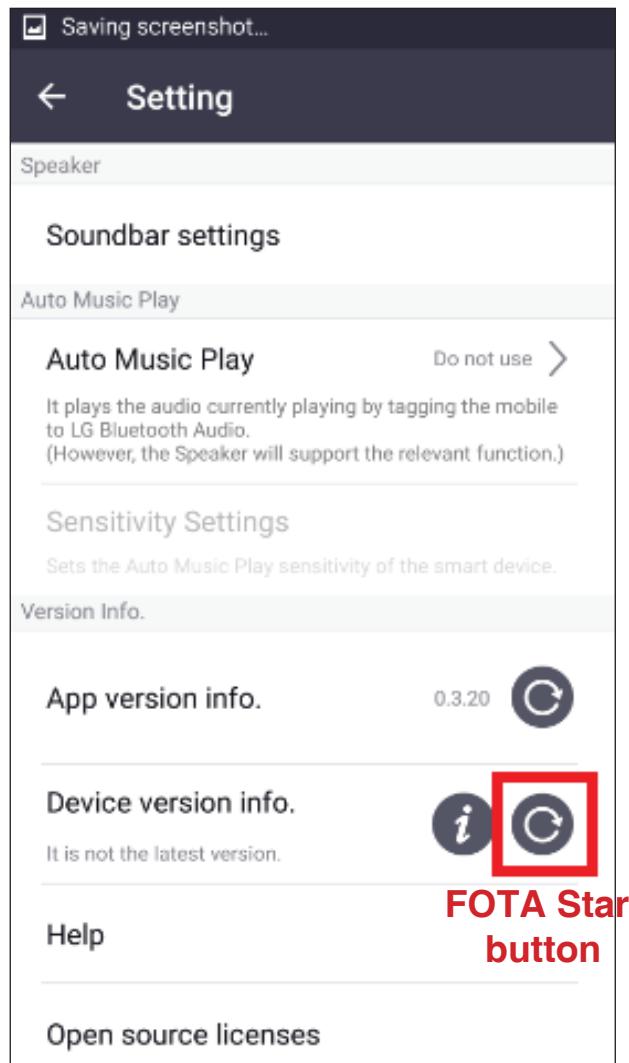
< Internet Connected >

2-5. FOTA Caution
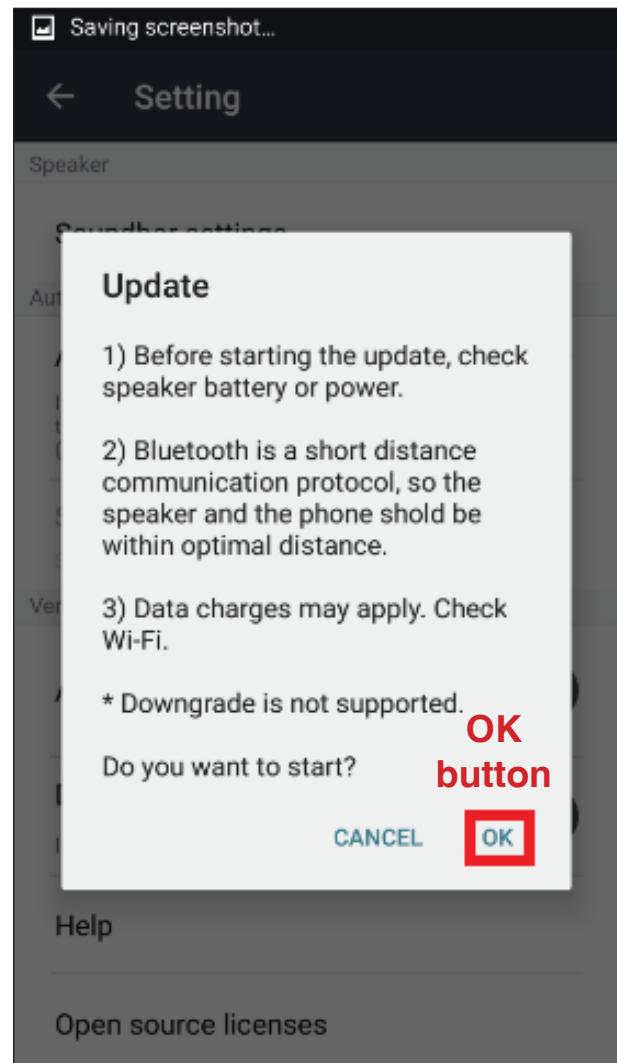
Using APP (FOTA : Firmware update Over The Air)

2-6. FOTA - CDN Download
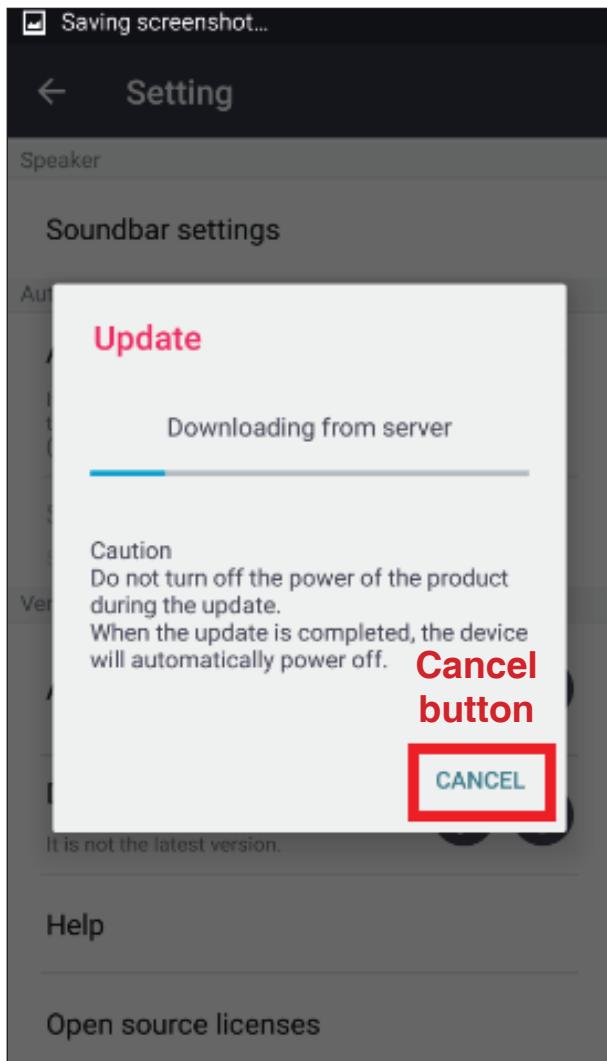
Cancel Button is available
When CDN downloading.

2-7. FOTA - OPP Download
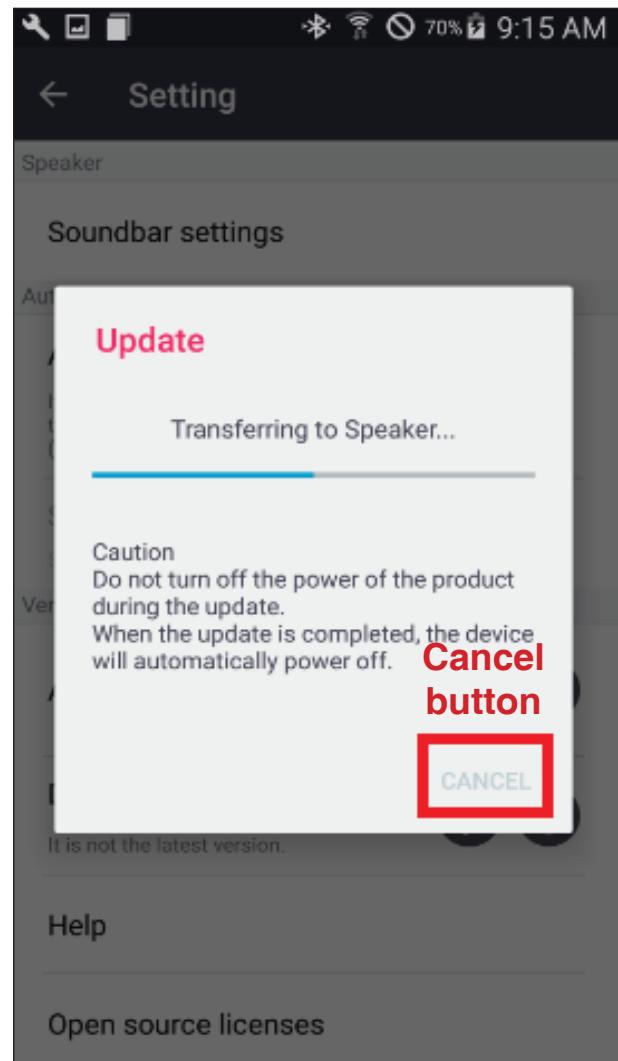
Cancel Button is not available
When OPP downloading.

Using APP (FOTA : Firmware update Over The Air)

2-8. FOTA - Write Flash
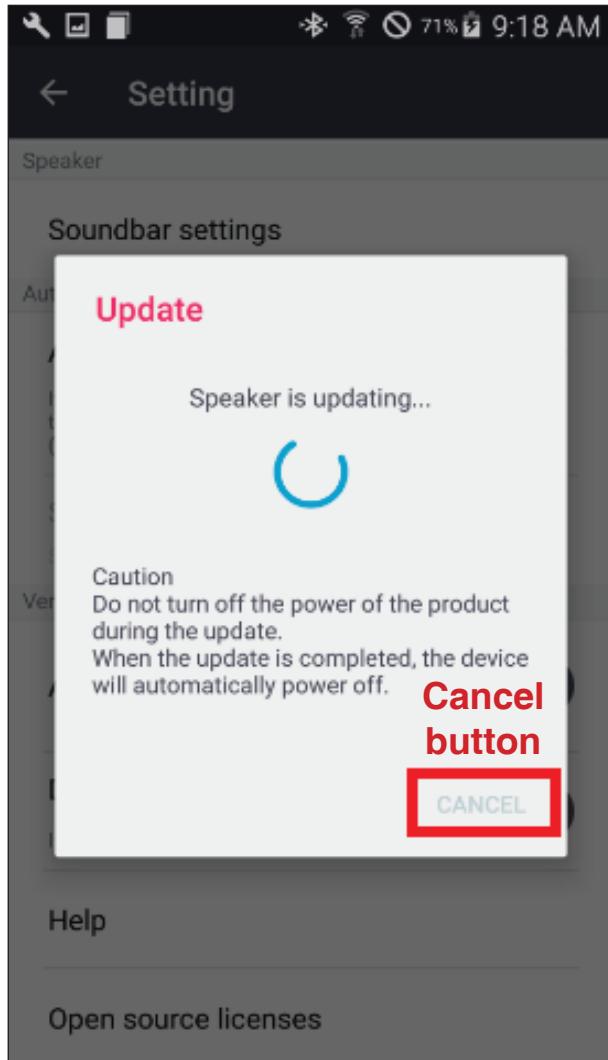
Cancel Button is not available
When Flash writing.

2-9. FOTA - Finish
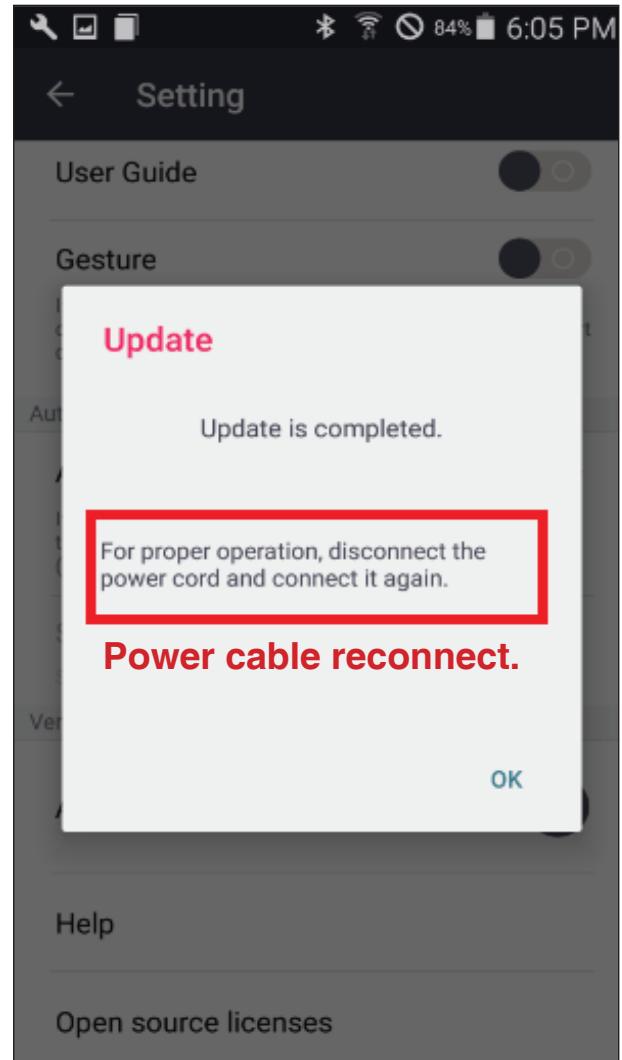
SPECIFICATIONS

• **GENERAL**

Power consumption	Refer to the main label.
	Networked standby : 0.5 W (If all network ports are activated.)
AC adapter	Model : DA-38A25
	Manufacturer : Asian Power Devices Inc.
	Input : 100 - 240 V ~ 50 - 60 Hz 1.2 A
	Output : 25 V ⎓ 1.52 A
Dimensions (W x H x D)	Approx. 890 mm X 55 mm X 85 mm With foot
Operating temperature	5 °C to 35 °C
Operating humidity	5 % to 90 %
Bus Power Supply	5 V ⎓ 500 mA
Available Digital Audio In Sampling Frequency	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
Available Digital Audio In format	Dolby Audio, DTS Digital Surround, PCM

• **INPUT/OUTPUT**

OPTICAL IN (Digital audio in)	3 V (p-p), Optical jack x 1
PORTABLE IN (Portable in)	0.5 Vrms (3.5 mm stereo jack) x 1
HDMI IN	19 Pin (Type A, HDMI™ connector) x 1
HDMI OUT	19 Pin (Type A, HDMI™ connector) x 1

• **AMPLIFIER (RMS OUTPUT)**

Total	300 W RMS
Front	60 W RMS x 2 (4 Ω at 1 kHz, THD 10%)
Subwoofer	180 W RMS (3 Ω at 80 Hz, THD 10%)

• **WIRELESS SUBWOOFER**

Power requirements	Refer to the main label on the wireless subwoofer.
Power consumption	Refer to the main label on the wireless subwoofer.
Type	1 Way 1 Speaker
Impedance	3 Ω
Rated Input Power	180 W RMS
Max. Input Power	360 W RMS
Dimensions (W x H x D)	Approx. 171 mm x 320 mm x 252 mm

• **WIRELESS RECEIVER**

Power requirements	Refer to the main label on the wireless receiver.
Power consumption	Refer to the main label on the wireless receiver.
Rear	60 W RMS x 2 (3 Ω at 1 kHz, THD 10%)
Dimensions (W x H x D)	Approx. 60 mm x 220 mm x 175 mm

• **REAR SPEAKERS (EACH)**

Type	1 Way 1 Speaker
Impedance	3 Ω
Rated Input Power	60 W RMS
Max. Input Power	120 W RMS
Dimensions (W x H x D)	Approx. 88 mm x 122 mm x 81 mm

• Designs and specifications are subject to change without prior notice.

MEMO

SECTION 2

CABINET & MAIN CHASSIS

CONTENTS

DISASSEMBLY INSTRUCTIONS

1. HOW TO DISASSEMBLE THE MAIN UNIT

※ Before begin, position the Main Unit upside down.

1-1. Case Bottom Assembly

1) Remove the 19 screws.
2) Remove the Case Bottom Assembly.
3) Remove the 2p harness cable (key) connected to the MAIN PCB Assembly.
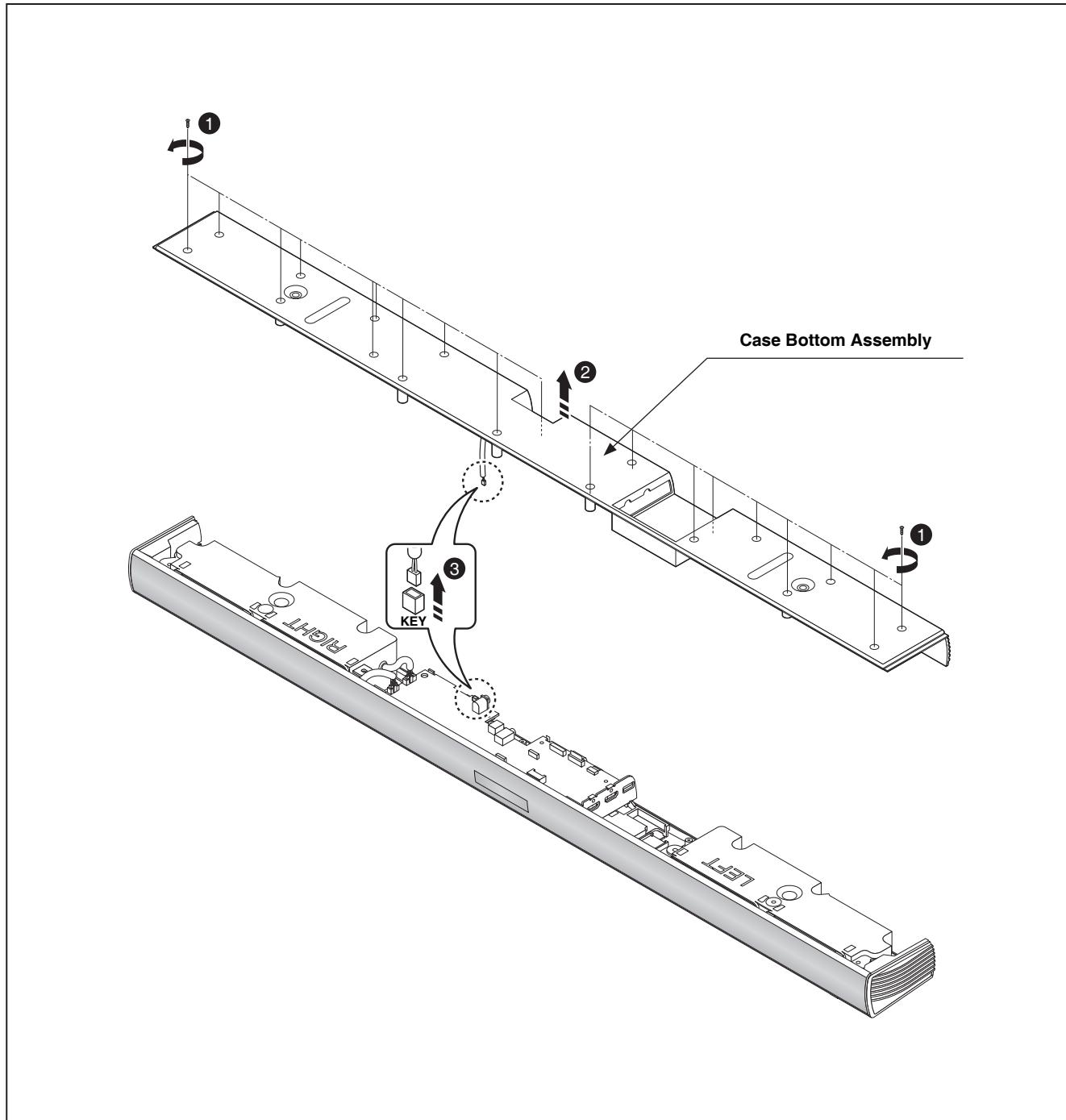
Figure 1-1

HOW TO DISASSEMBLE THE MAIN UNIT

1-2. Main Frame Assembly

1) Disconnect the 2 harness cables from the Main PCB Assembly.
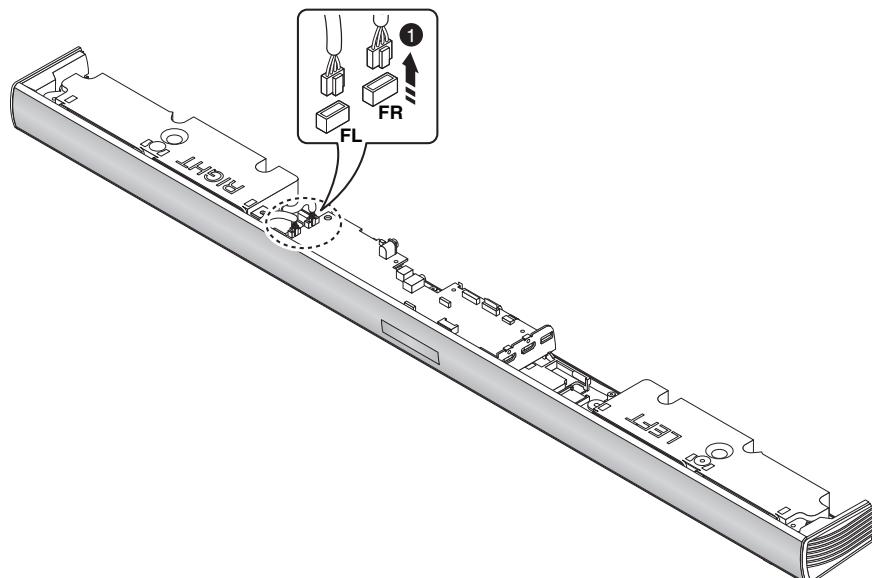
Figure 1-2 (1)

2) Remove the screw.
3) Remove the Main Frame Assembly (Main Chassis + PCBA).
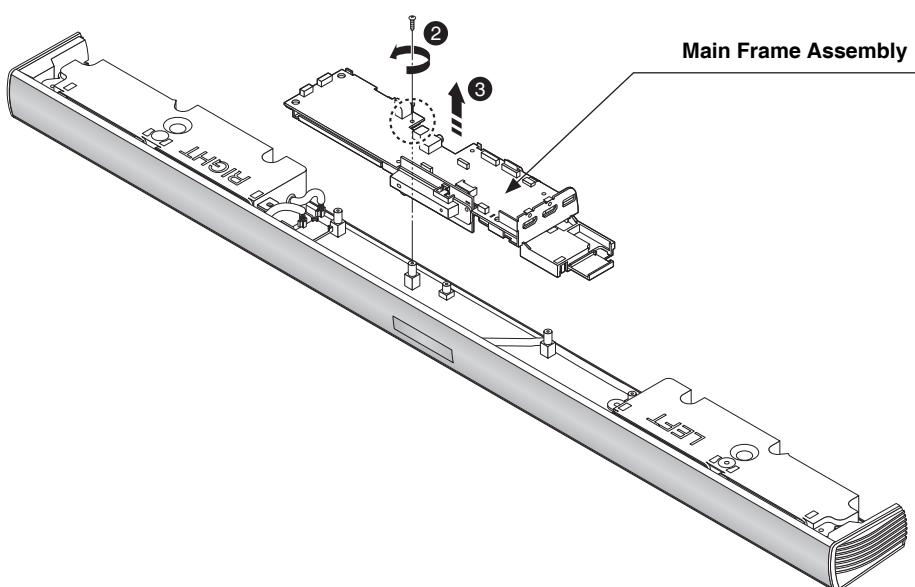
Figure 1-2 (2)

HOW TO DISASSEMBLE THE MAIN UNIT

1-2-1. Front PCB Assembly
1) Remove the 2 screws.
2) Remove the Front PCB Assembly.
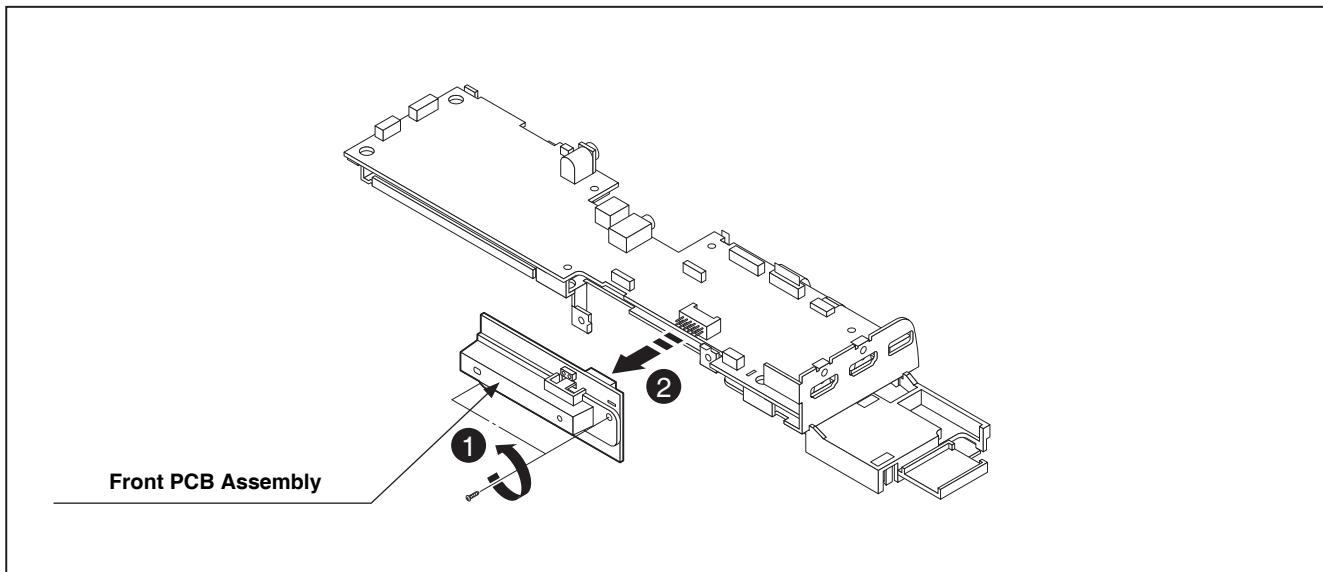
Front PCB Assembly

Figure 1-2-1

1-2-2. Main PCB Assembly
1) Detach the cables from the Main chassis.
2) Disconnect the FFC cables from the Main PCB.
3) Remove the 3 screws (Main + HDMI Jack).
4) Remove the Main PCB Assembly.

Main Chassis

Main PCB Assembly
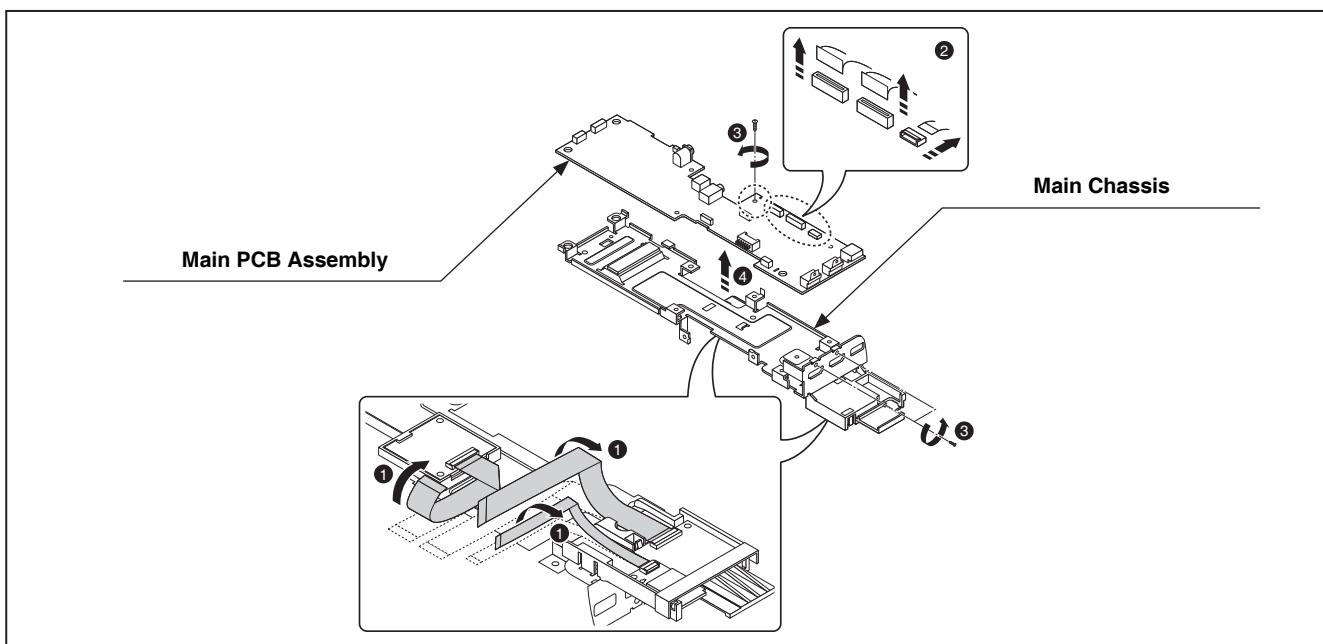
Figure 1-2-2

HOW TO DISASSEMBLE THE MAIN UNIT

1-2-3. BT and WIRELESS Module

1) Disconnect the FFC cable from the BT module.
2) Remove the BT module.
3) Disconnect the FFC cable from the WIRELESS module.
4) Disconnect the 2 Hooks.
5) Remove the WIRELESS module.
6) Disconnect the FFC cable from the WIRELESS module(RECEIVER).
7) Remove the WIRELESS module(RECEIVER).

WIRELESS Module
(RECEIVER)

BT Module   WIRELESS Module
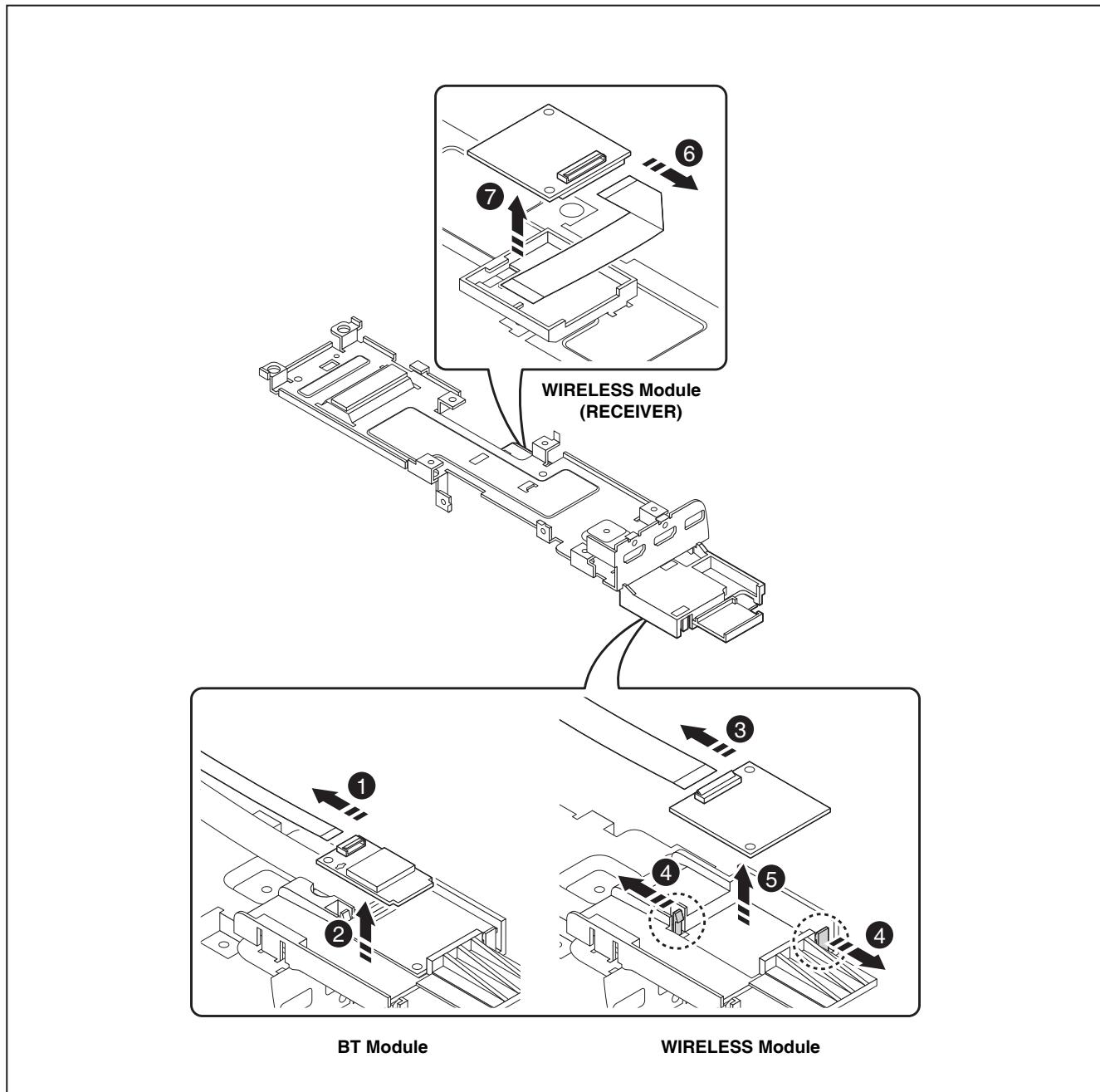
Figure 1-2-3

HOW TO DISASSEMBLE THE MAIN UNIT

1-3. SPEAKER CHAMBER L/R Assembly

1) Remove the Speaker Chamber L/R Assembly.

Speaker Chamber Right Assembly

Speaker Chamber Left Assembly
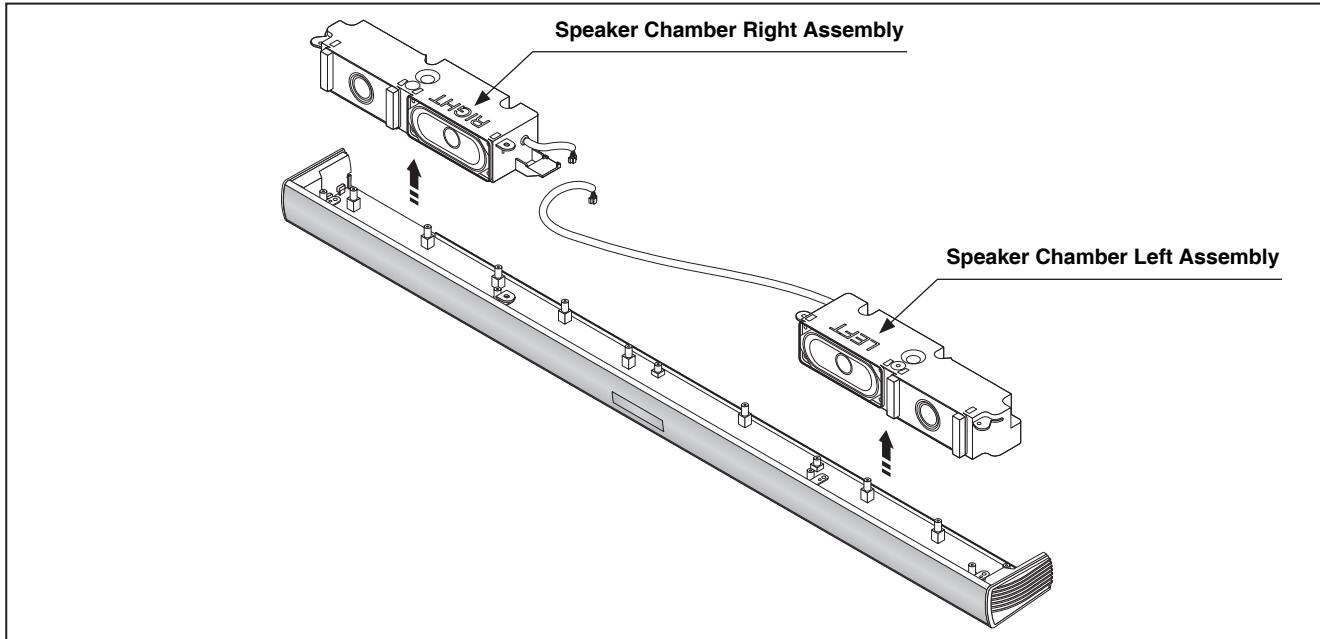
Figure 1-3

1-4. KEY PCB Assembly

1) Remove the 2 screws.
2) Remove the Key PCB Assembly.

Key PCB Assembly
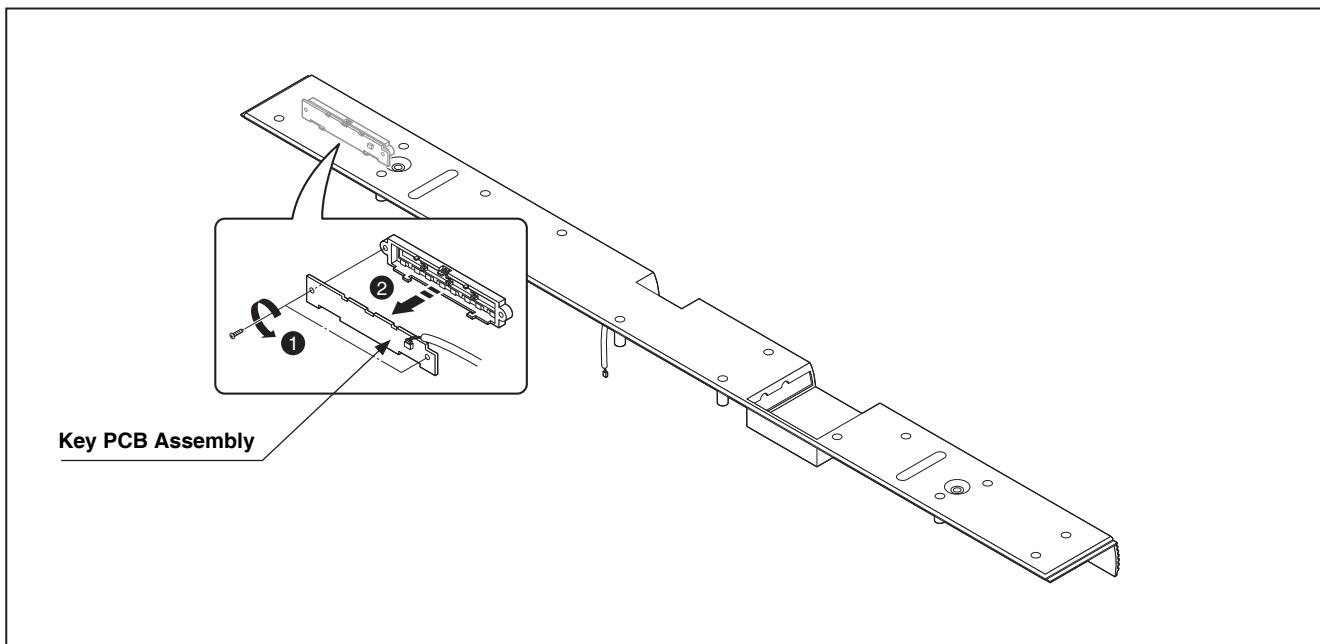
Figure 1-4

HOW TO DISASSEMBLE THE MAIN UNIT

1-5. How to organize cables

When assembling, place the cables (Speaker network cables and Key cable) as shown in the figure below.
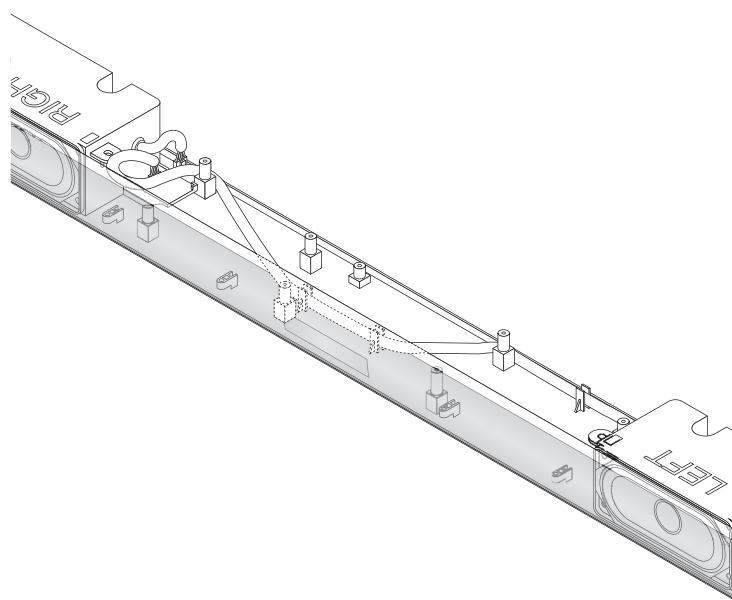
Figure 1-5 (1). < Speaker network cable from SPK Chamber L/R Assembly to MAIN PCB >
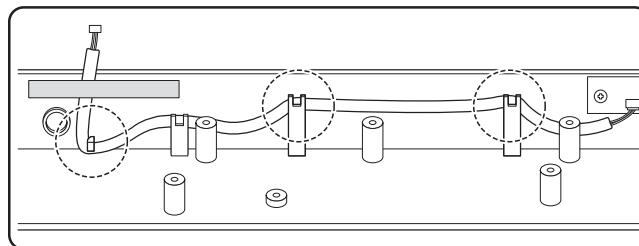
Figure 1-5 (2). < Harness cable from KEY PCB to MAIN PCB >

2. HOW TO DISASSEMBLE THE SUBWOOFER

2-1. Rear Panel Assembly

1) Remove the 13 screws.
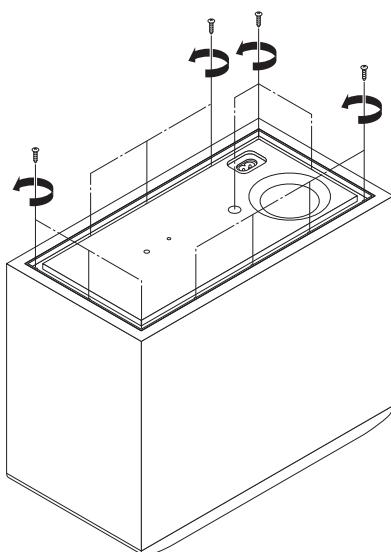
Figure 2-1 (1)

2) Pull out the Rear Panel Assembly and disconnect the SPK cable.

Rear Panel Assembly

SPK cable
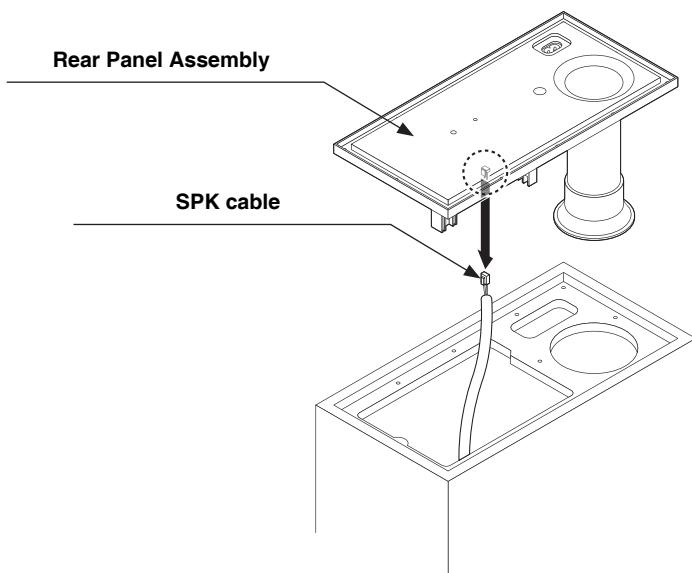
Figure 2-1 (2)

HOW TO DISASSEMBLE THE SUBWOOFER

2-2. WIRELESS Module

1) Disconnect the FFC cable.
2) Remove the EVA sheet (0.15T) covered the WIRELESS module.
3) Remove the WIRELESS module.
4) Remove the EVA gasket (1.0T) covered the WIRELESS module.
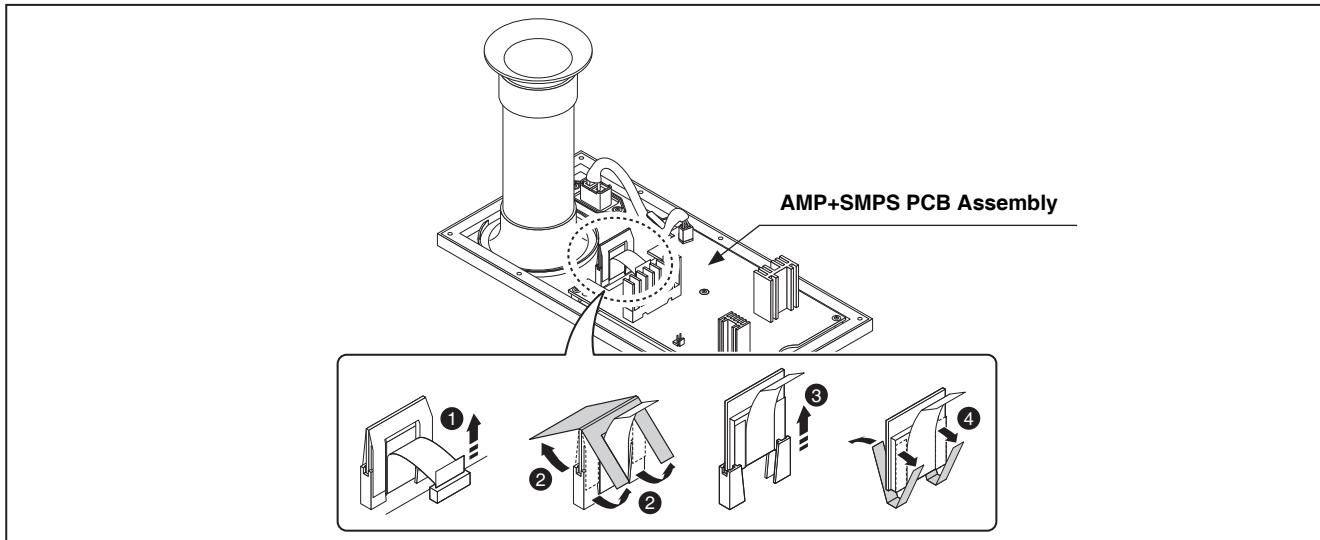
Figure 2-2 (1)

⚠ Caution when assembling the WIRELESS Module

1) Attach the EVA gaskets (1.0T) to both sides of the WIRELESS module.
2) Assemble the WIRELESS module into the wireless holder.
3) Attach the EVA sheet (0.15T) to the WIRELESS module.
4) Connect the FFC cable.
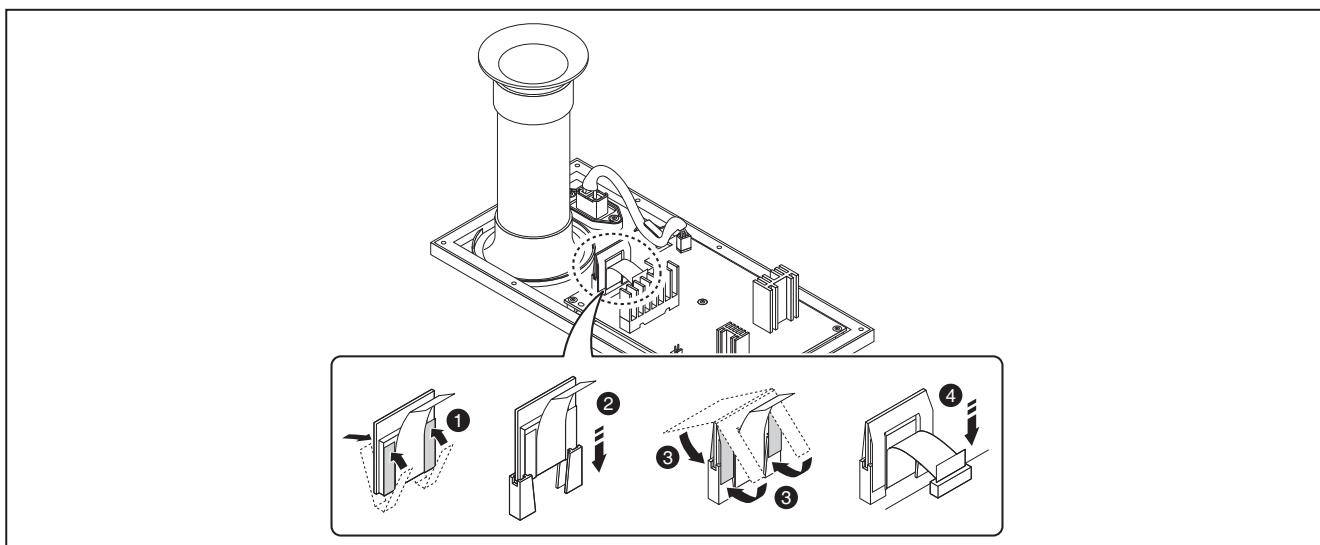
Figure 2-2 (2)

HOW TO DISASSEMBLE THE SUBWOOFER

2-3. AMP+SMPS PCB Assembly

1) Disconnect the Power inlet socket cable.
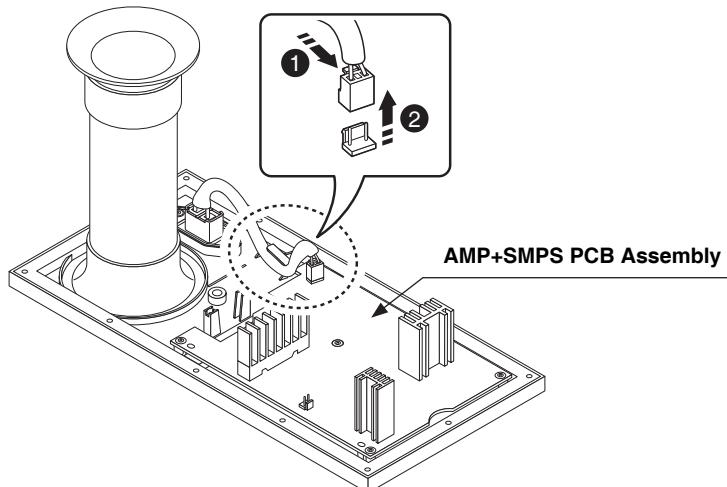
Figure 2-3 (1)

2) Remove the 5 screws.
3) Remove the AMP+SMPS PCB Assembly.

Figure 2-3 (2)

EXPLODED VIEWS

1. MAIN UNIT SECTION
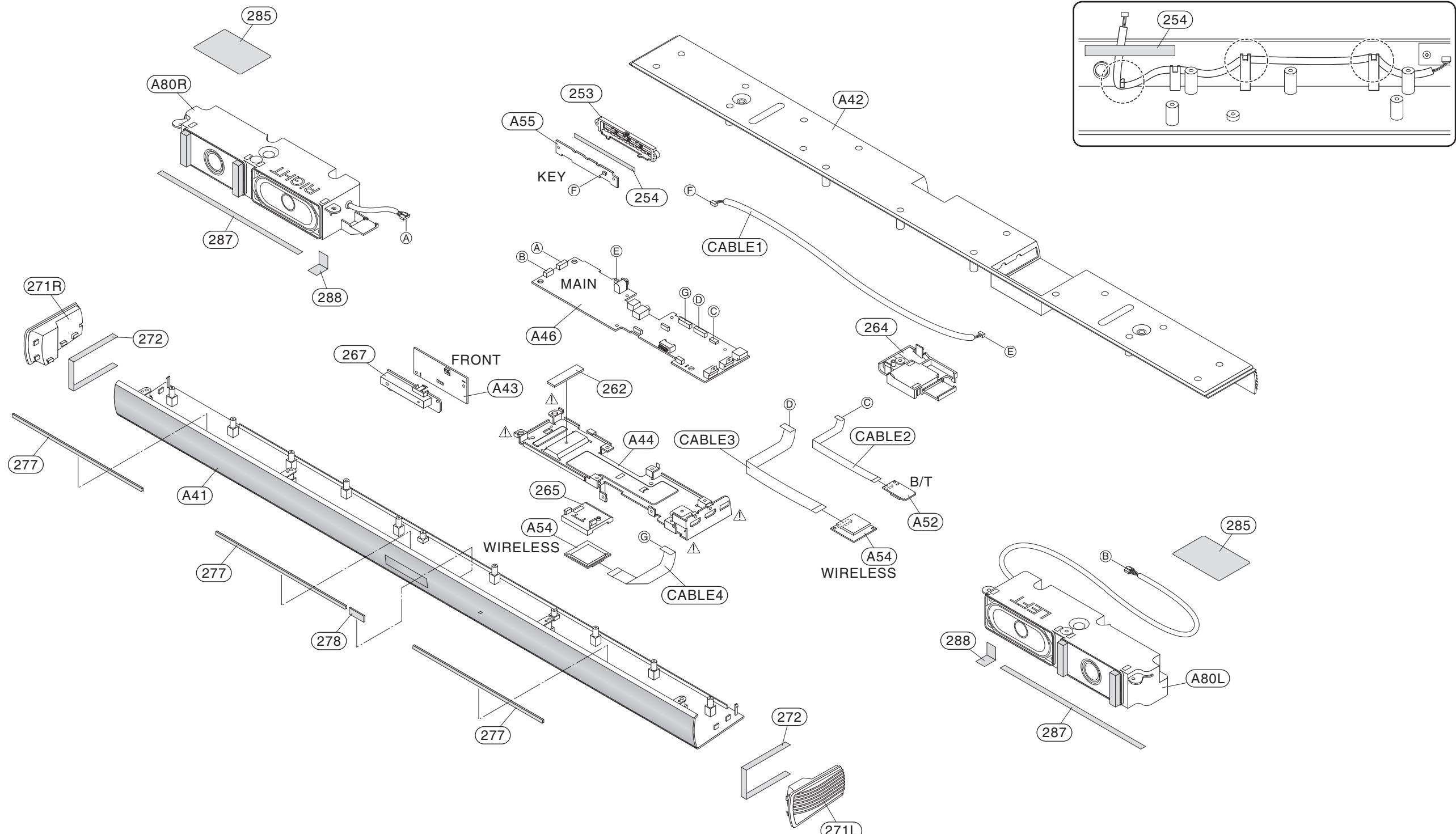
2. WIRELESS SUBWOOFER SECTION
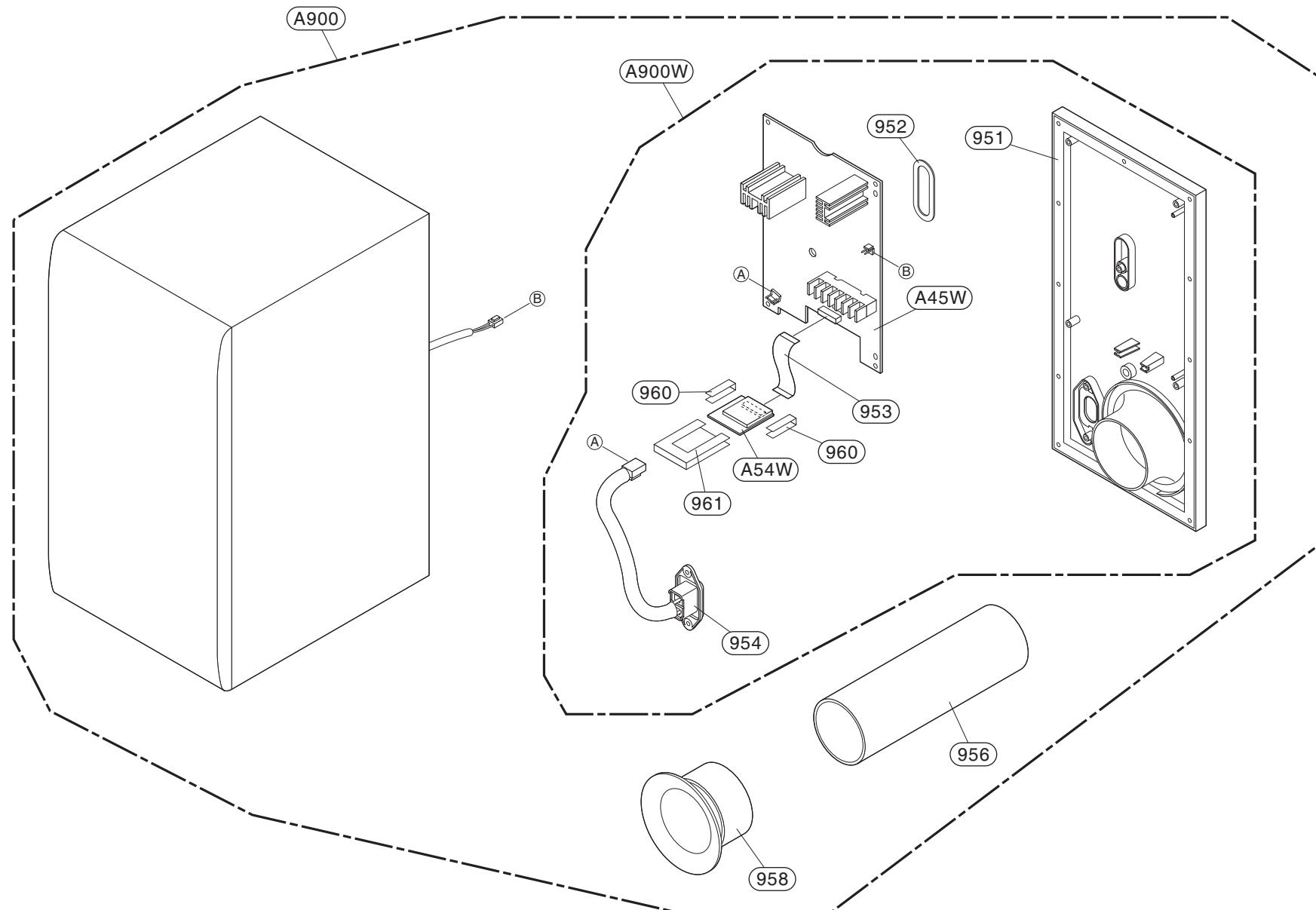
3. WIRELESS RECEIVER SECTION
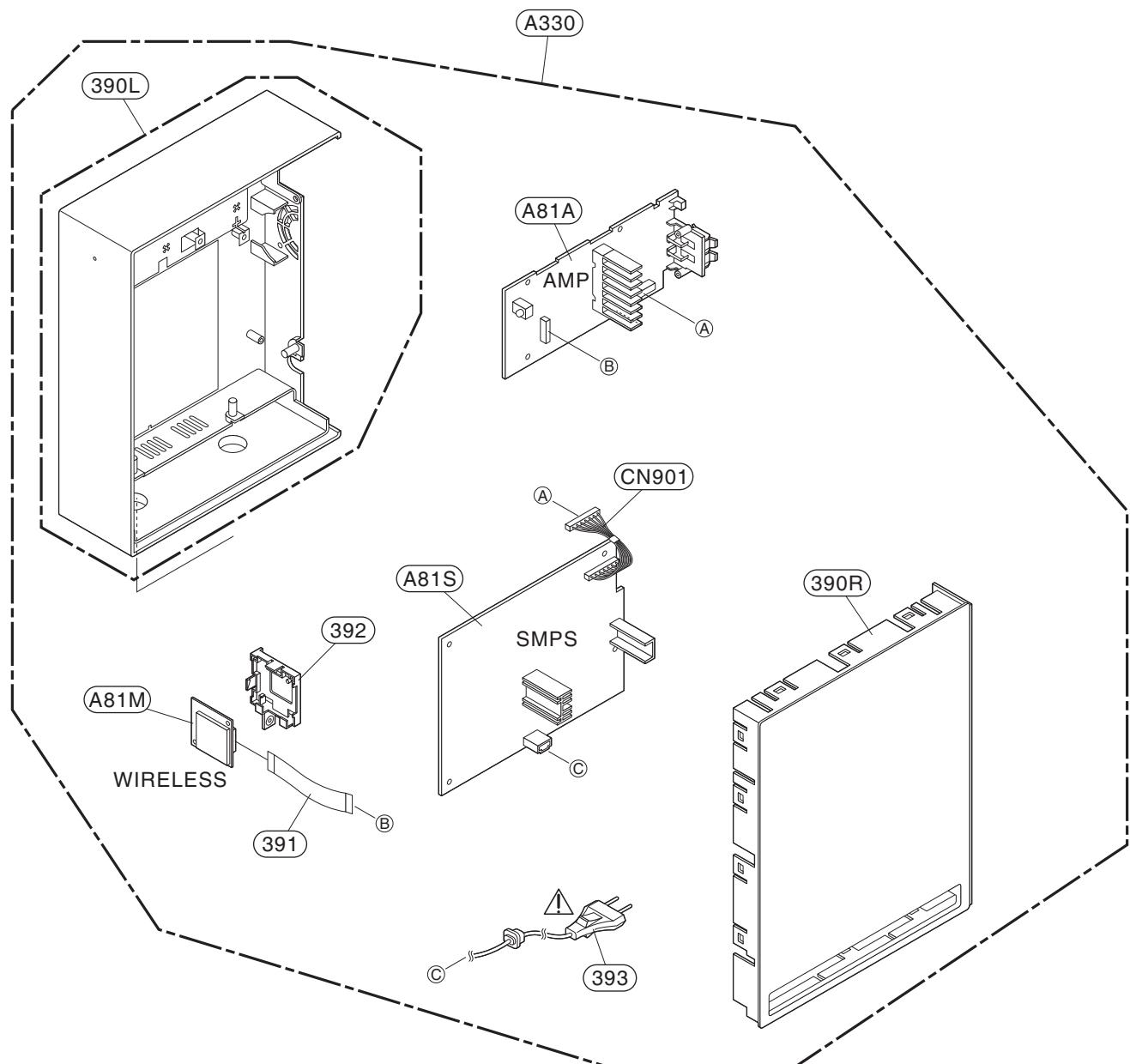
4. REAR SPEAKER SECTION

A600
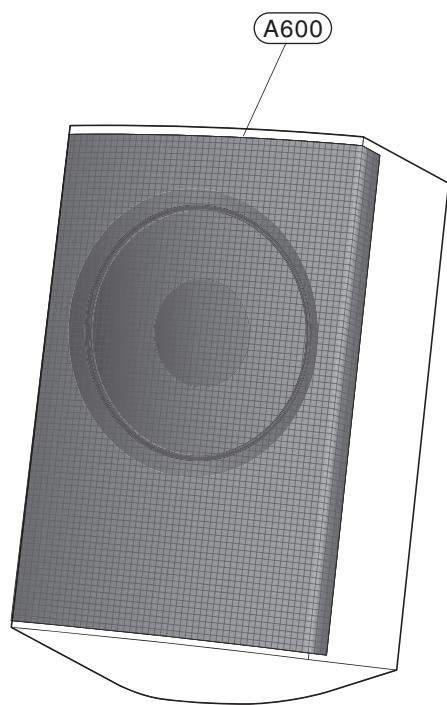
5. PACKING ACCESSORY SECTION

806 Optical cable

900 Remote control

833 AC adapter

300 Power cord

835 Wall bracket

836 Screws (2)

* Accessory

826 Filter (Ferrite Core)

WIRE60 SPK cable (Rear Left)
WIRE61 SPK cable (Rear Right)
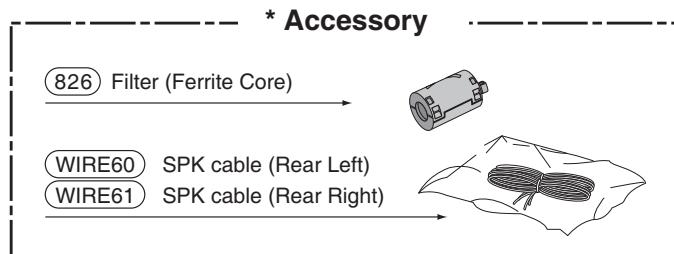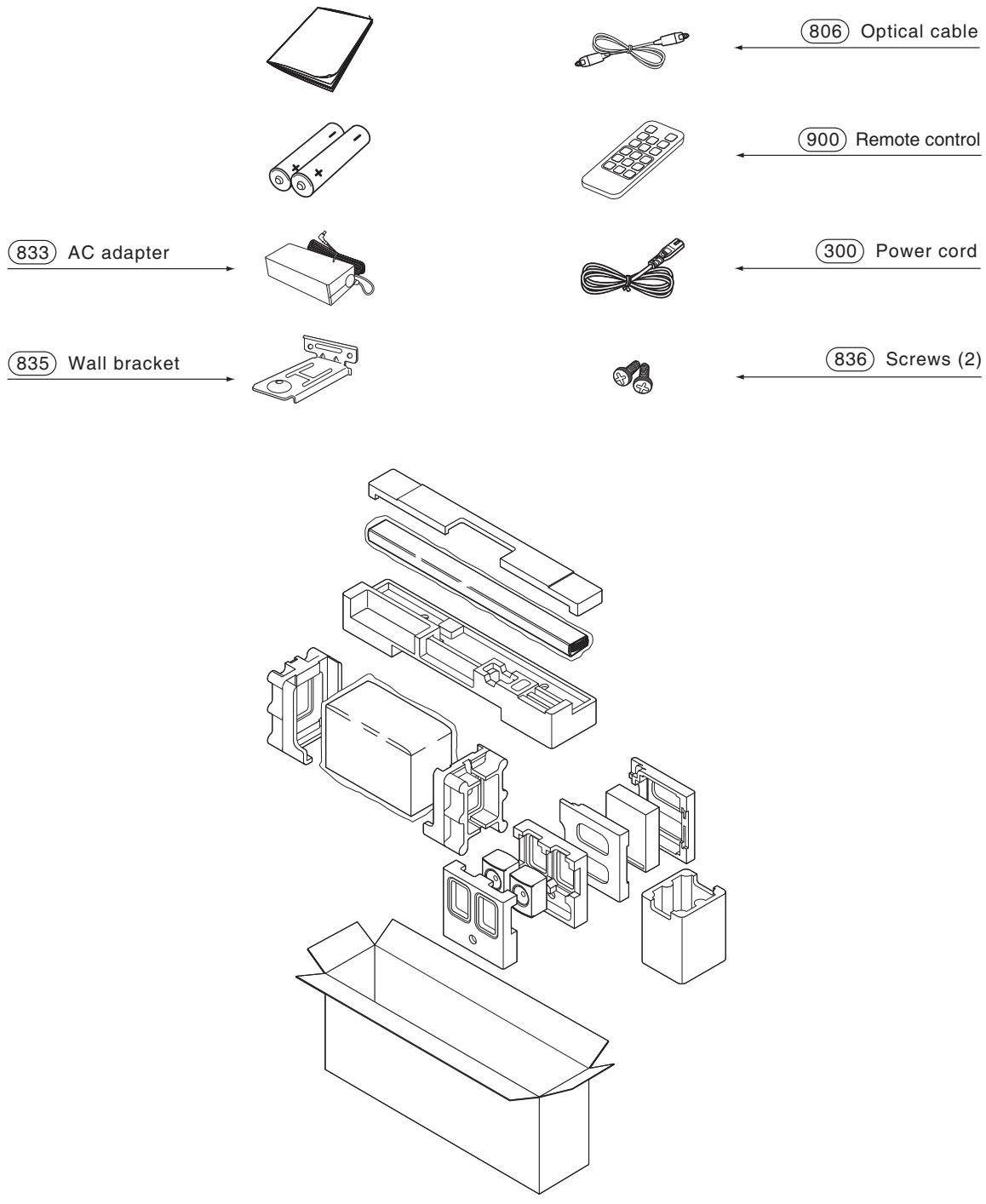
MEMO

SECTION 3
ELECTRICAL

CONTENTS

WIRING DIAGRAM

SPK (FL)

SPK (FR)

4P Harness

5P Harness

CN703

CN704

MAIN
(FR4 Epoxy 4layer 1.2T 234x59.5)
Array size: 242x133

CN103 — 2P Harness — CNK01 KEY (CEM-1 1.6T)

CN108 — 26P FFC — Rear Wireless

CN107 — 26P FFC — Wireless

CN102 — 12P FFC — BT

FRONT
(CEM-1 1.6T 128.5x55)
Array size: 257x128

CNF02 — 12P B to B — CN101

BLOCK DIAGRAMS

1. SYSTEM BLOCK DIAGRAM
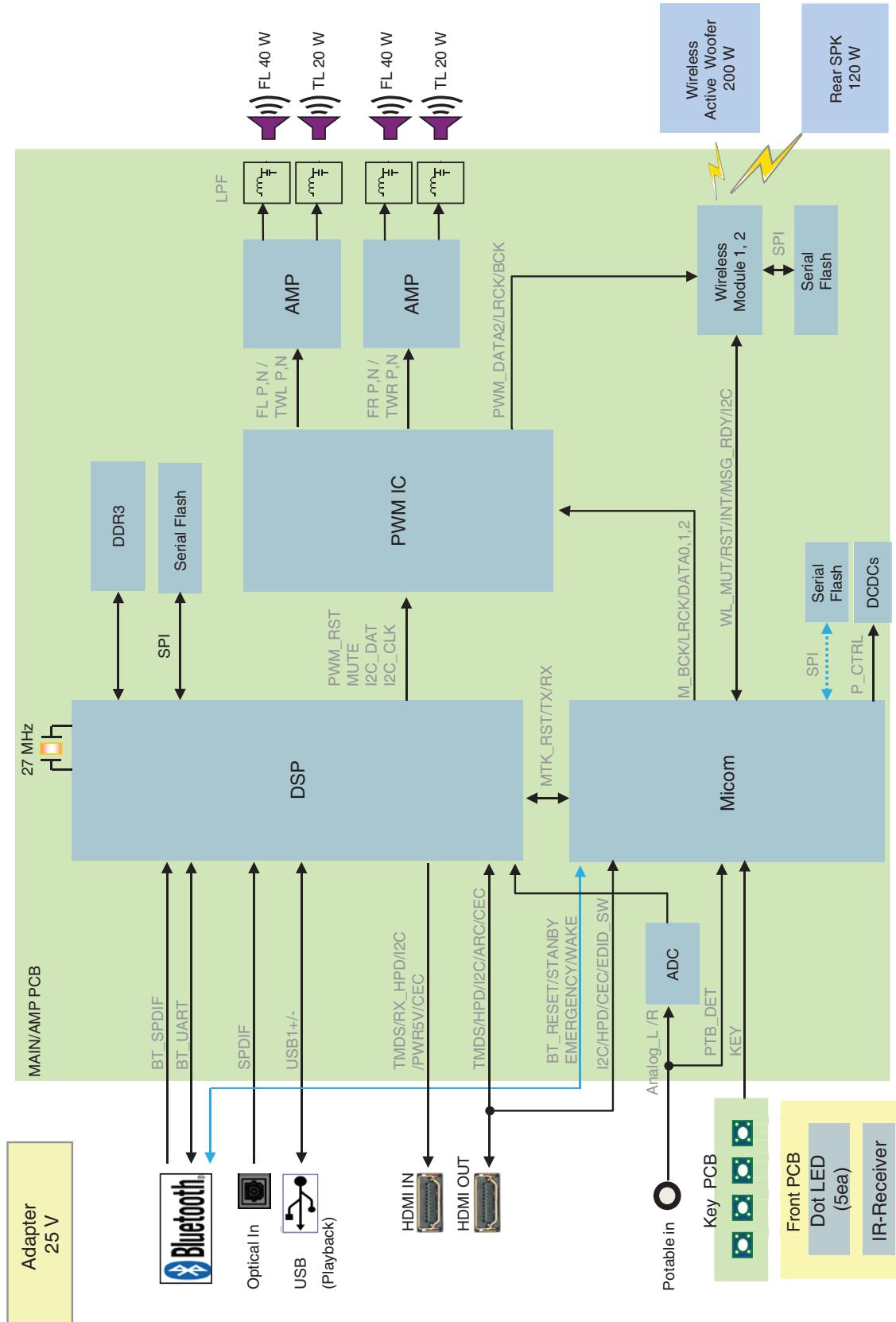
2. POWER BLOCK DIAGRAM
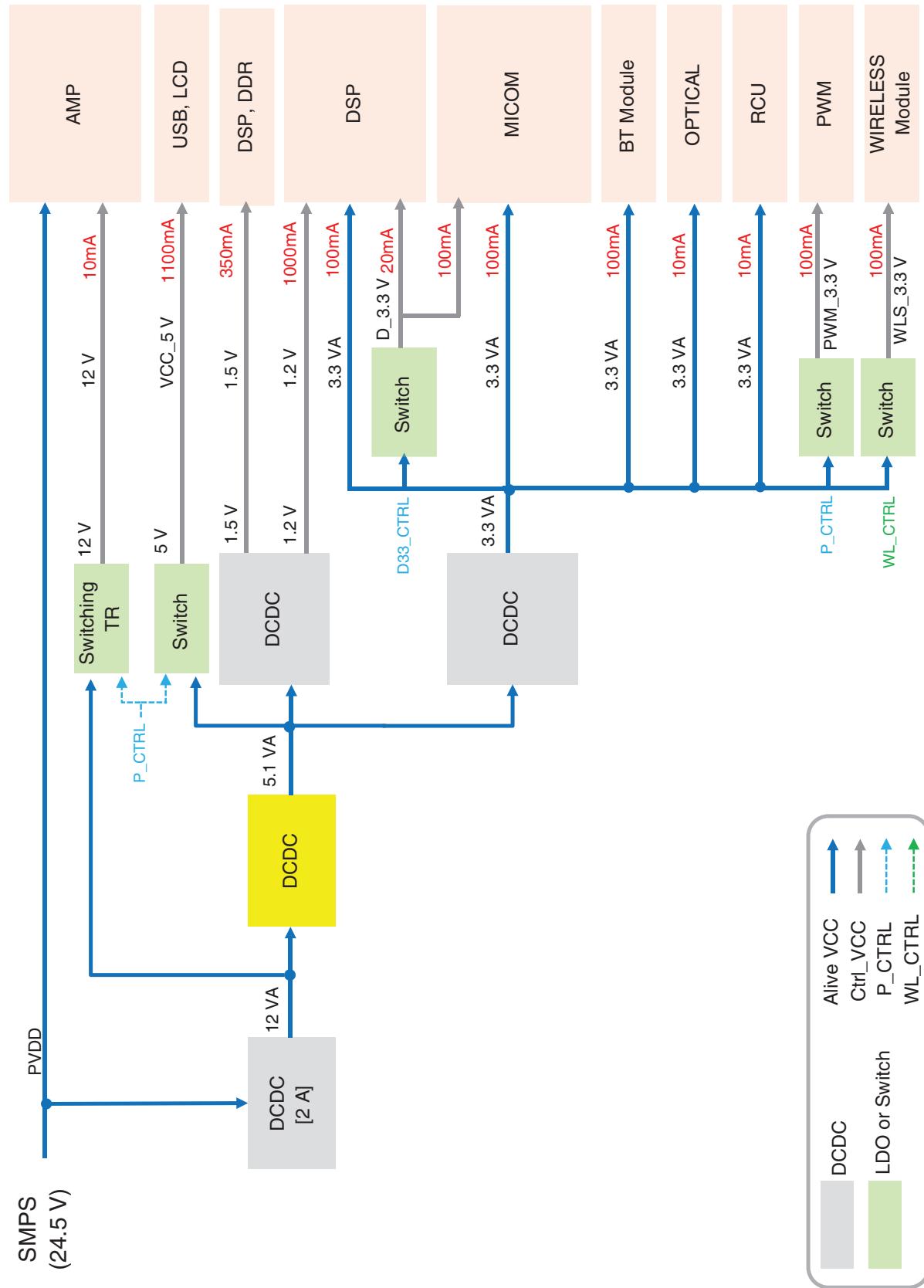
ONE POINT REPAIR GUIDE

1. SET DOESN'T BOOTING WHEN YOU TURN ON THE SET
Front LED doesn't work.

### 1-1. IC302 System 12 VA (No 12 VA)
1-1-1. Solution

Replace MAIN board.

1-1-2. How to troubleshoot (Countermeasure)
1) Please check 25 VA of IC302 pin2 (VIN).
2) If 25 VA is abnormal, please check adapter.
3) If 25 VA is OK, but 12 VA is abnormal pin3 of IC302 (VOUT), replace MAIN board.

1-1-3. Service hint (Any picture / Remark)
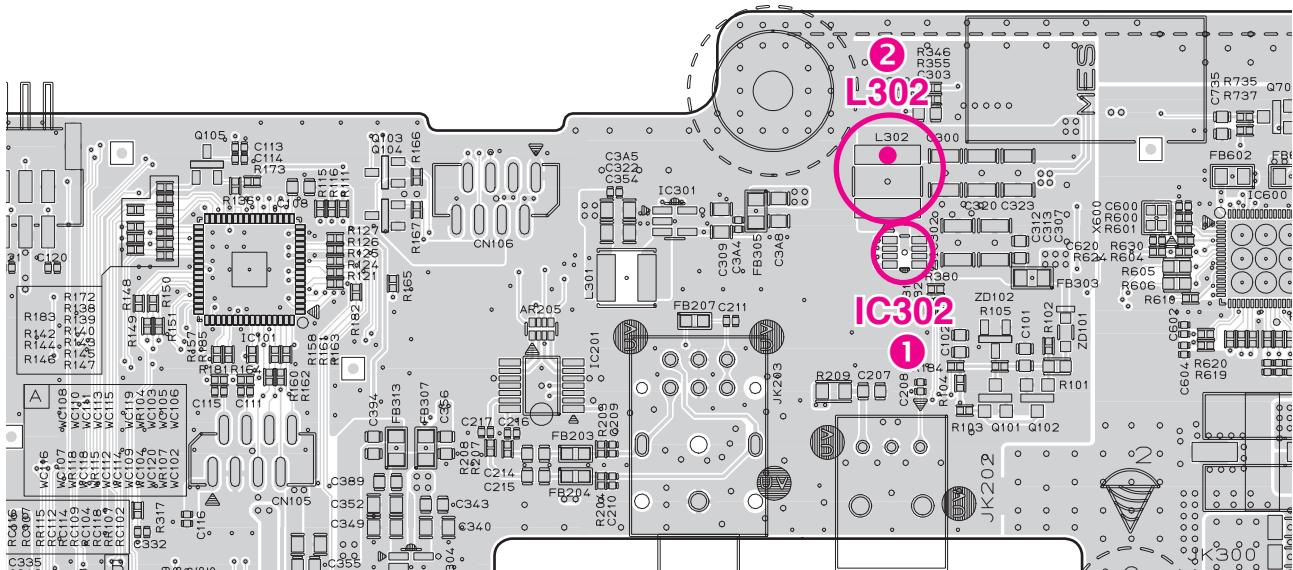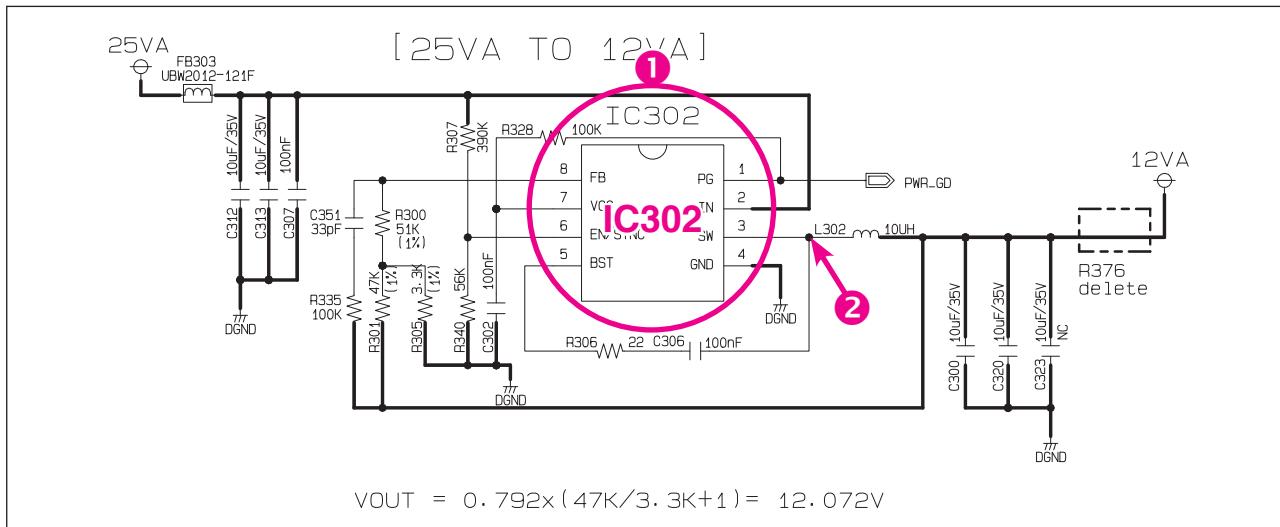
$$VOUT = 0.792 \times (47K/3.3K + 1) = 12.072V$$

< MAIN board top view >

ONE POINT REPAIR GUIDE

SET DOESN'T BOOTING WHEN YOU TURN ON THE SET
Front LED doesn't work.

### 1-2. IC301 System 3.3 V (No 3.3 VA)
1-2-1. Solution

Replace MAIN/ FRONT board.

1-2-2. How to troubleshoot (Countermeasure)
1) Please check 3.3 VA of IC301 pin3.
2) If 3.3 VA is abnormal, replace MAIN board.
3) If 5.1 VA is OK, replace FRONT board.

1-2-3. Service hint (Any picture / Remark)
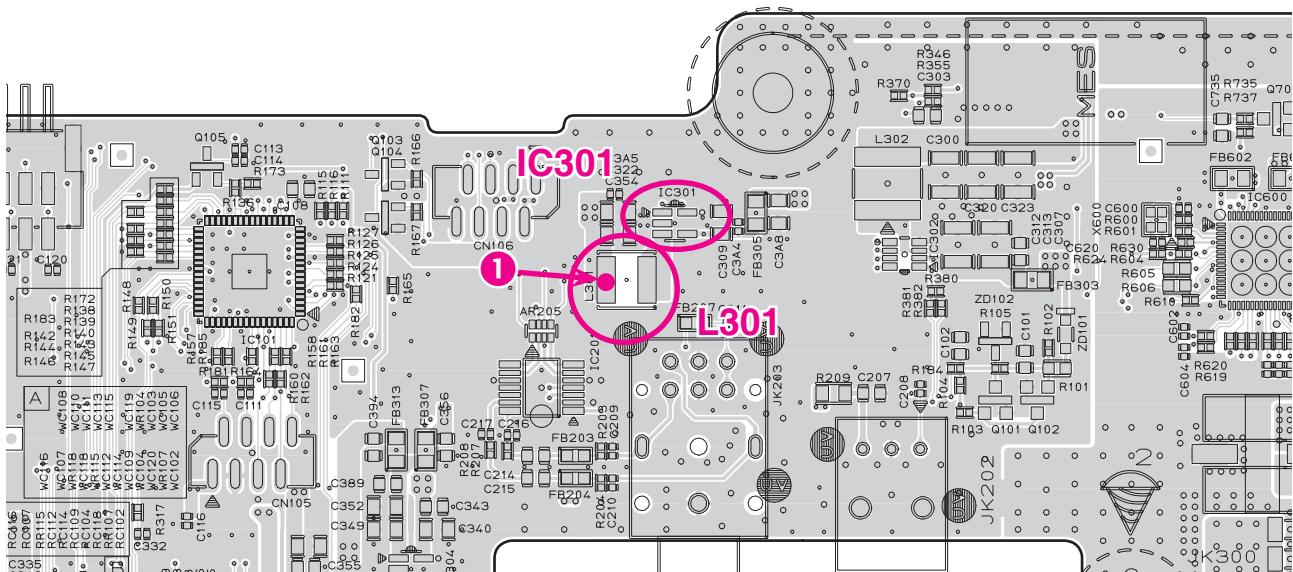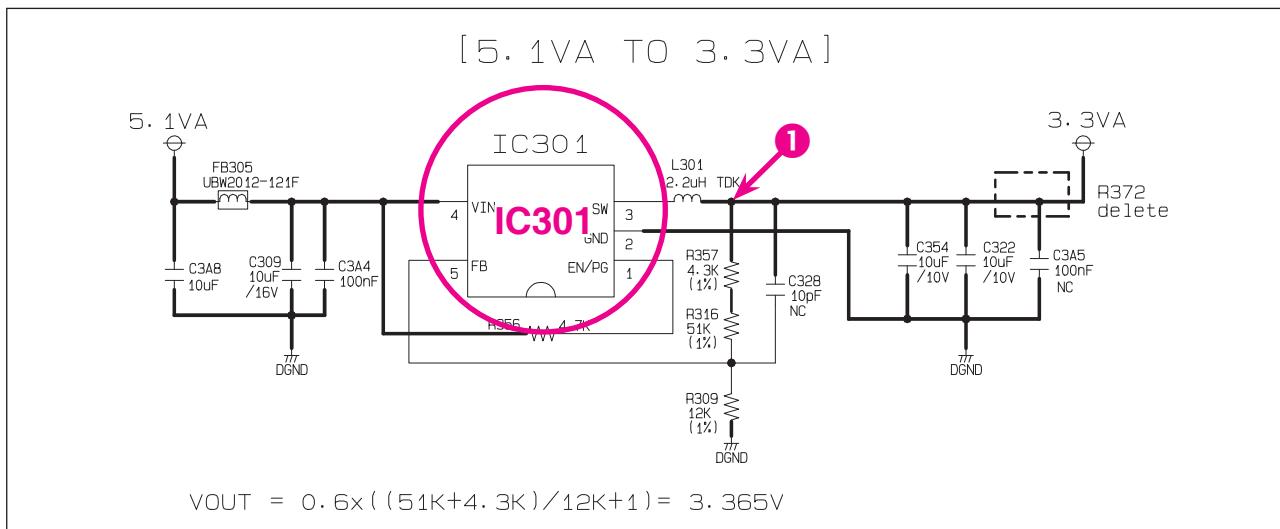
$$VOUT = 0.6 \times ((51K+4.3K)/12K+1) = 3.365V$$

< MAIN board top view >

ONE POINT REPAIR GUIDE

SET DOESN'T BOOTING WHEN YOU TURN ON THE SET
Front LED doesn't work.

### 1-3. LED System power 5 V, 3.3 VA (No 5 V, 3.3 VA)
1-3-1. Solution
Replace MAIN/ FRONT board.

1-3-2. How to troubleshoot (Countermeasure)
1) Please check 3.3 VA, 5 V of CNF02 pin10, pin6.
2) If 3.3 VA, 5 V is abnormal, replace MAIN board.
3) If 3.3 VA, 5 V OK, replace FRONT board.

1-3-3. Service hint (Any picture / Remark)
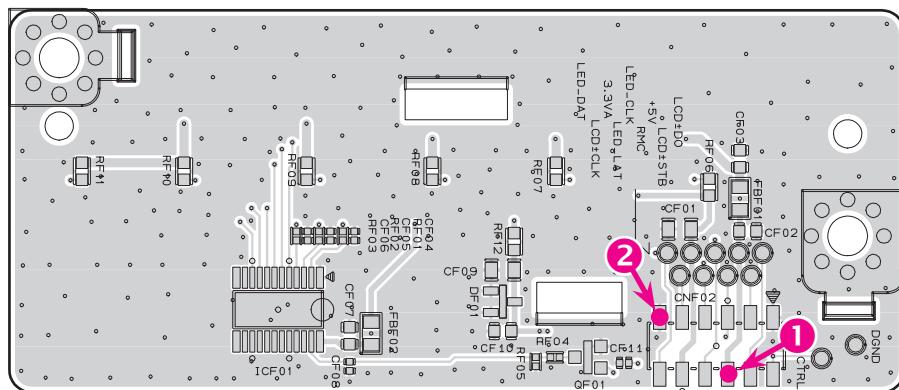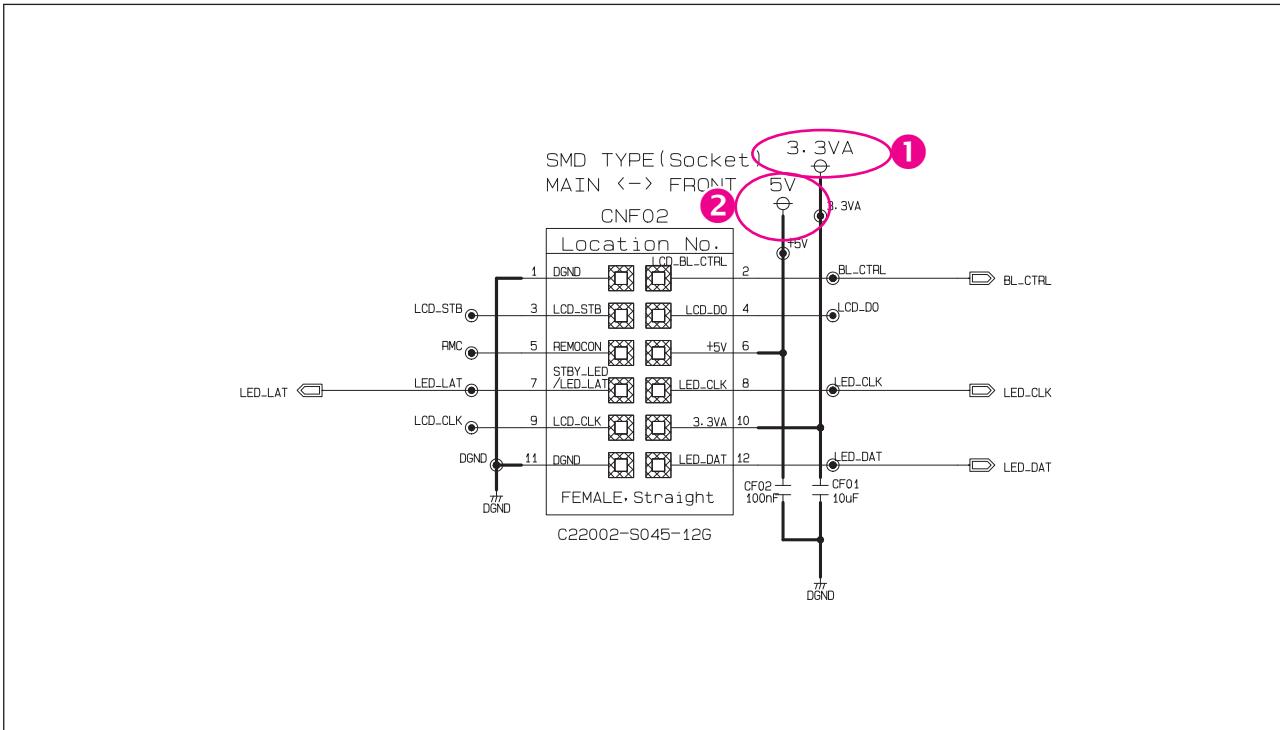
< FRONT board bottom view >

ONE POINT REPAIR GUIDE

2. NO SOUND

2-1. BLUETOOTH

2-1-1. Solution
Replace MAIN board.

2-1-2. How to troubleshoot (Countermeasure)
1) Please check status of Bluetooth cable connection. (at CN102 and BT module)
2) Please check 3.3 VA (at pin1 of CN102).
   If 3.3 V is OK, please check BT_RST, BT_SPDIF, BT_RX, BT_TX (pin2, 4, 11, 12).
   If no signal, please replace MAIN board.

2-1-3. Service hint (Any picture / Remark)
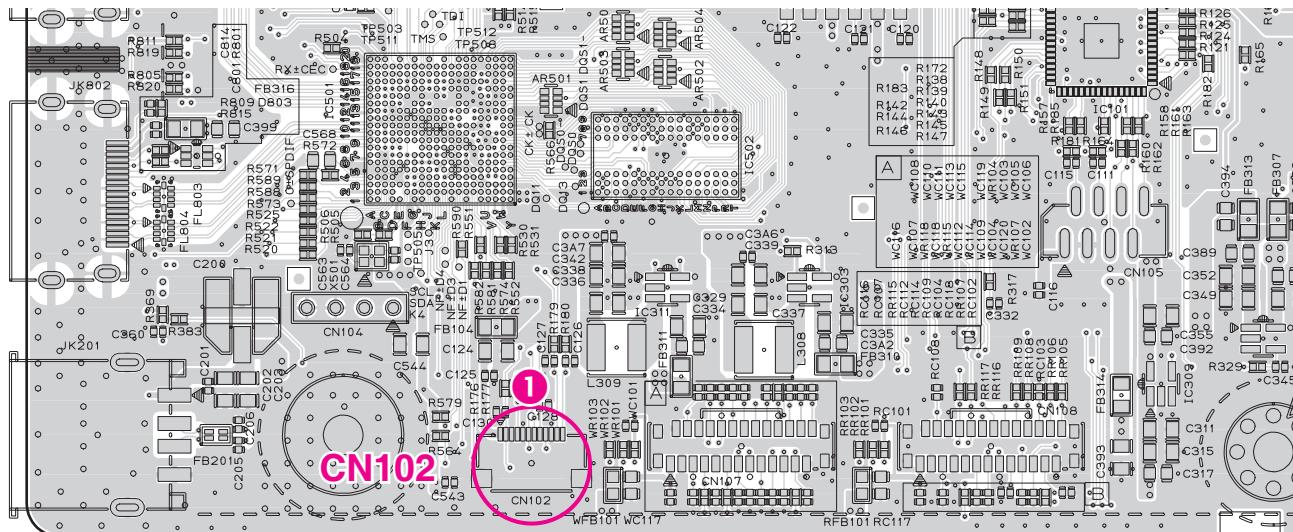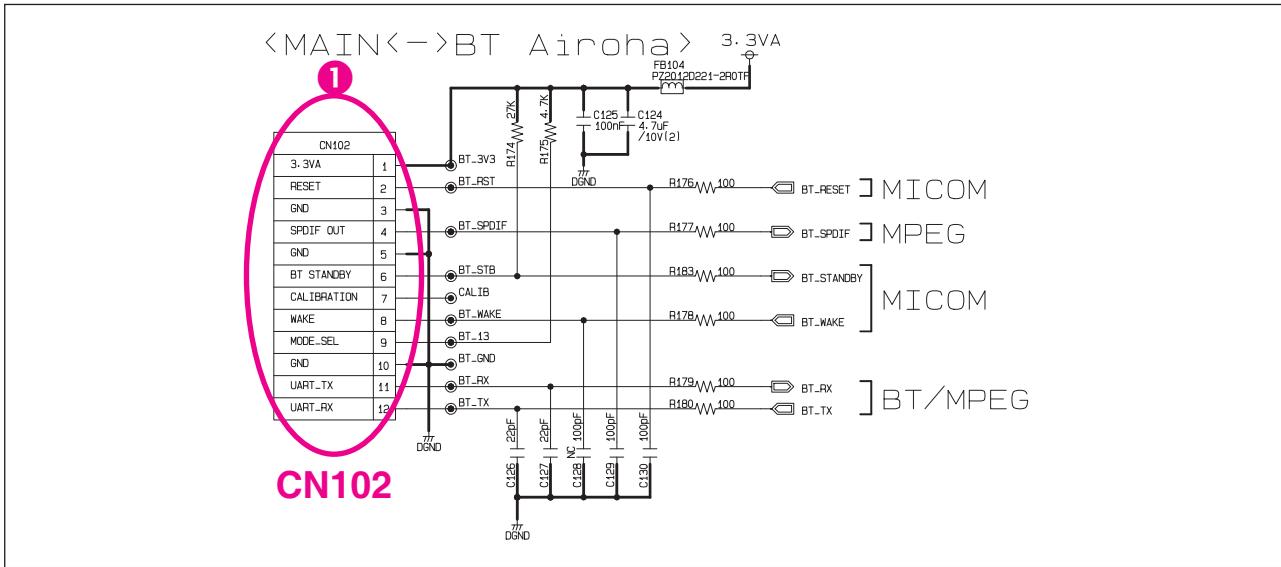
< MAIN board top view >

ONE POINT REPAIR GUIDE

NO SOUND

2-2. OPTICAL
2-2-1. Solution
Replace MAIN board.

2-2-2. How to troubleshoot (Countermeasure)
1) Please check 3.3 VA at R209.
2) If 3.3 VA is ok, please check OPT_IN signal (C208) when OPTICAL mode.
3) If signal is abnormal, replace MAIN board.

2-2-3. Service hint (Any picture / Remark)
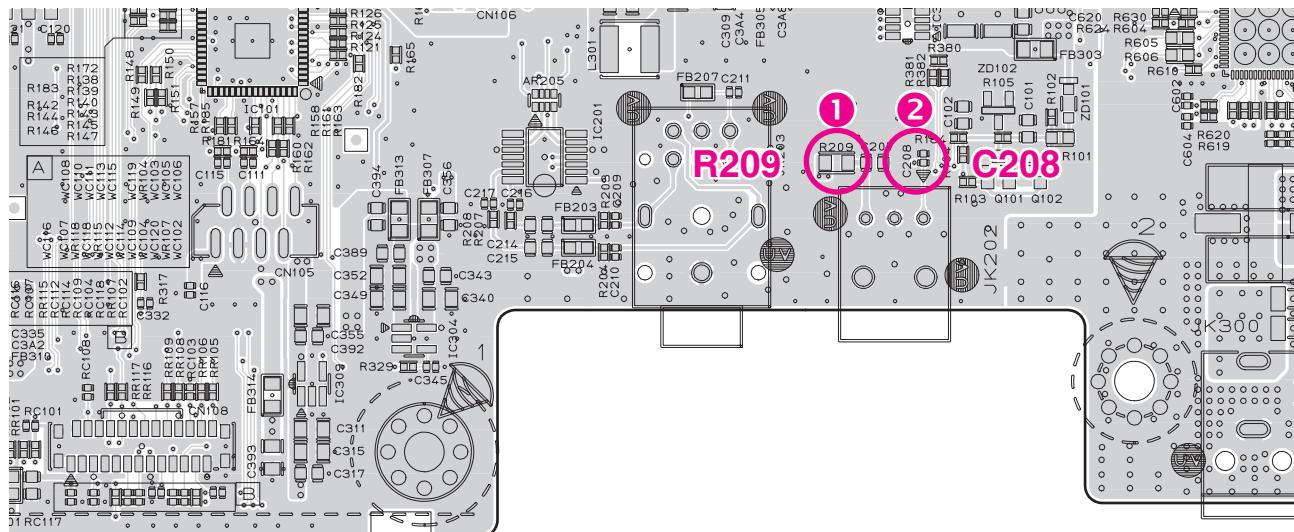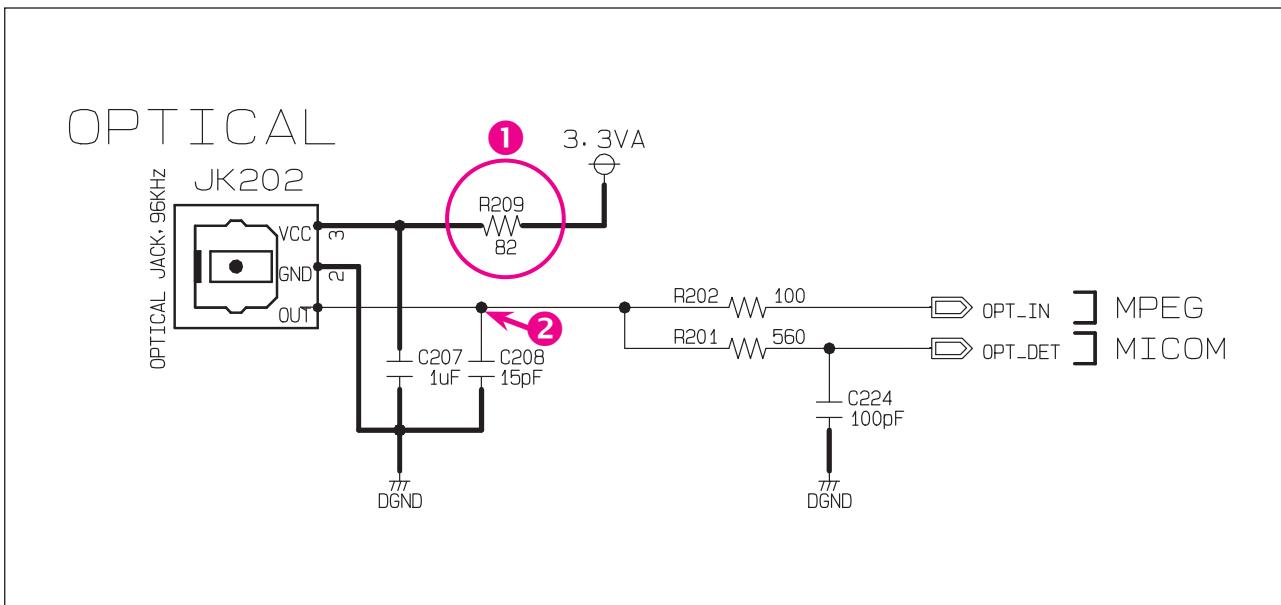
< MAIN board top view >

# ONE POINT REPAIR GUIDE

NO SOUND

2-3. HDMI
2-3-1. Solution
Replace MAIN board.

2-3-2. How to troubleshoot (Countermeasure)
1) Please check soldering status of HDMI jack and check HDMI_5.1VA at IC308 pin1.
2) If soldering status and 5.1 VA are abnormal, replace MAIN board.

2-3-3. Service hint (Any picture / Remark)
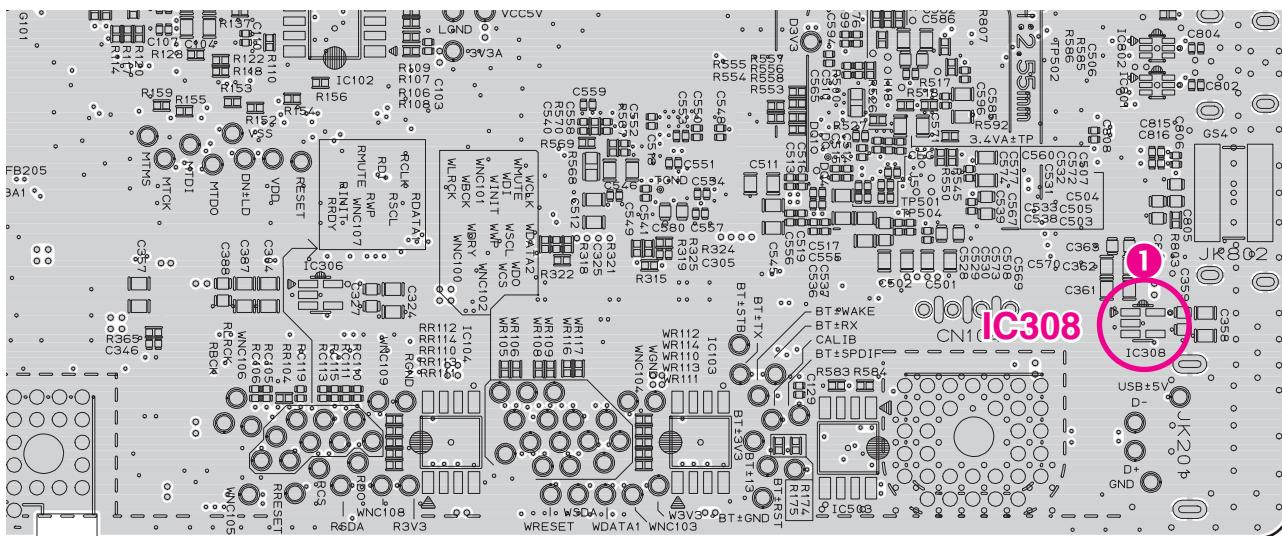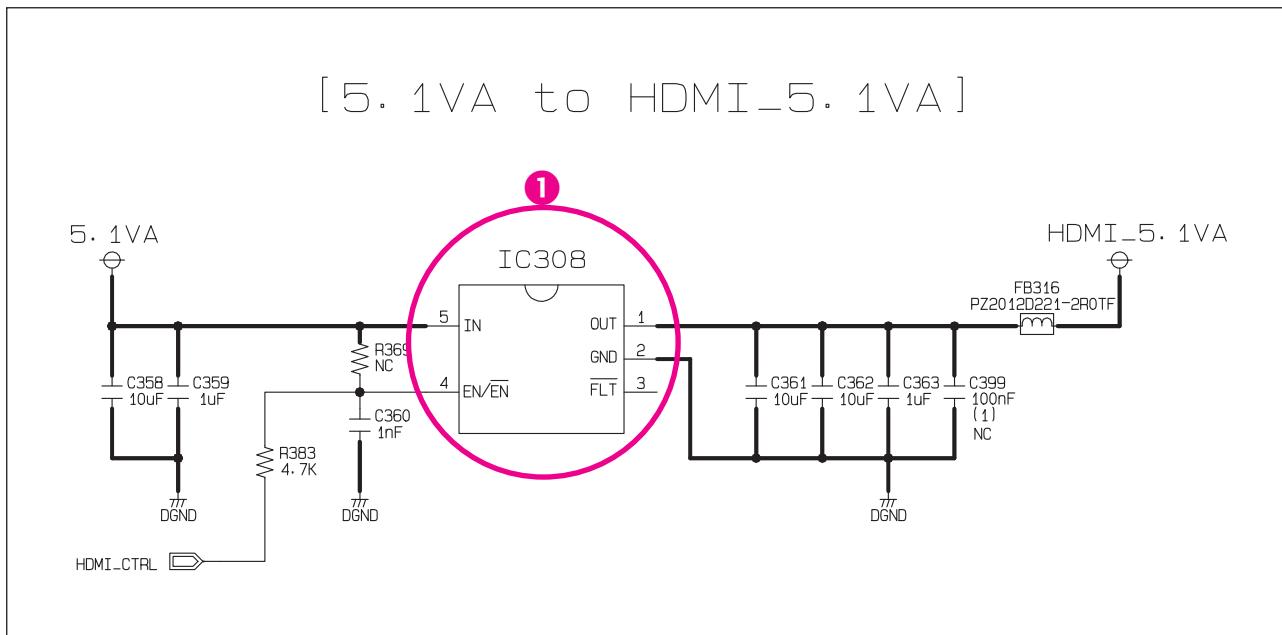
< MAIN board bottom view >

# ONE POINT REPAIR GUIDE

NO SOUND

2-4. PORTABLE

2-4-1. Solution
Replace MAIN board.

2-4-2. How to troubleshoot (Countermeasure)
1) Please check the soldering status of portable jack and check IC201 pin3 (VCC_5V), pin4 (D_3.3V).
2) If portable jack and voltage has abnormal status, replace MAIN board.

2-4-3. Service hint (Any picture / Remark)
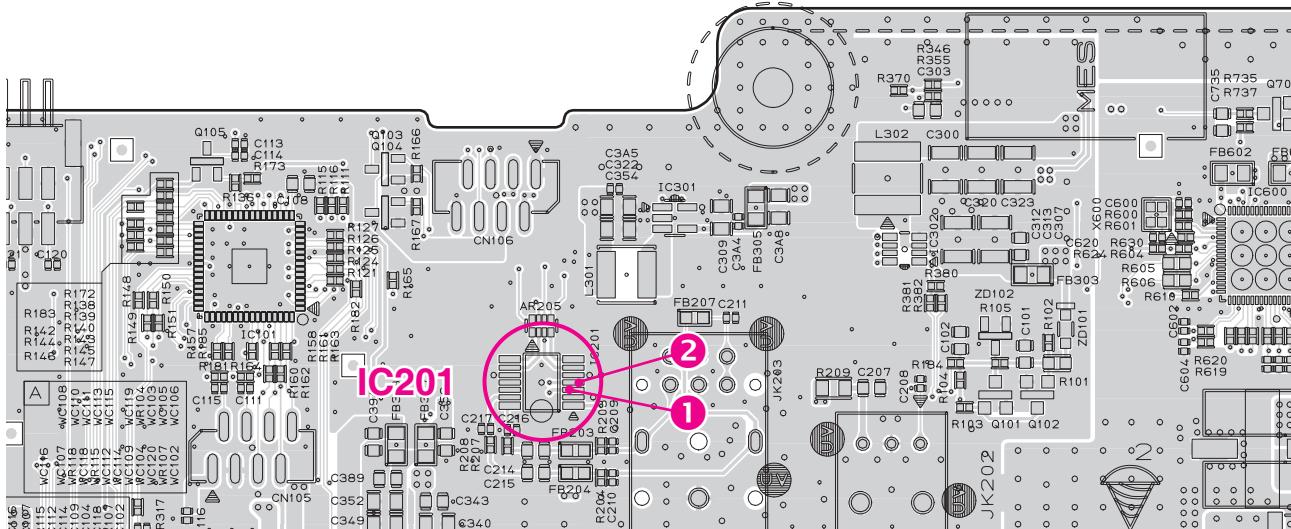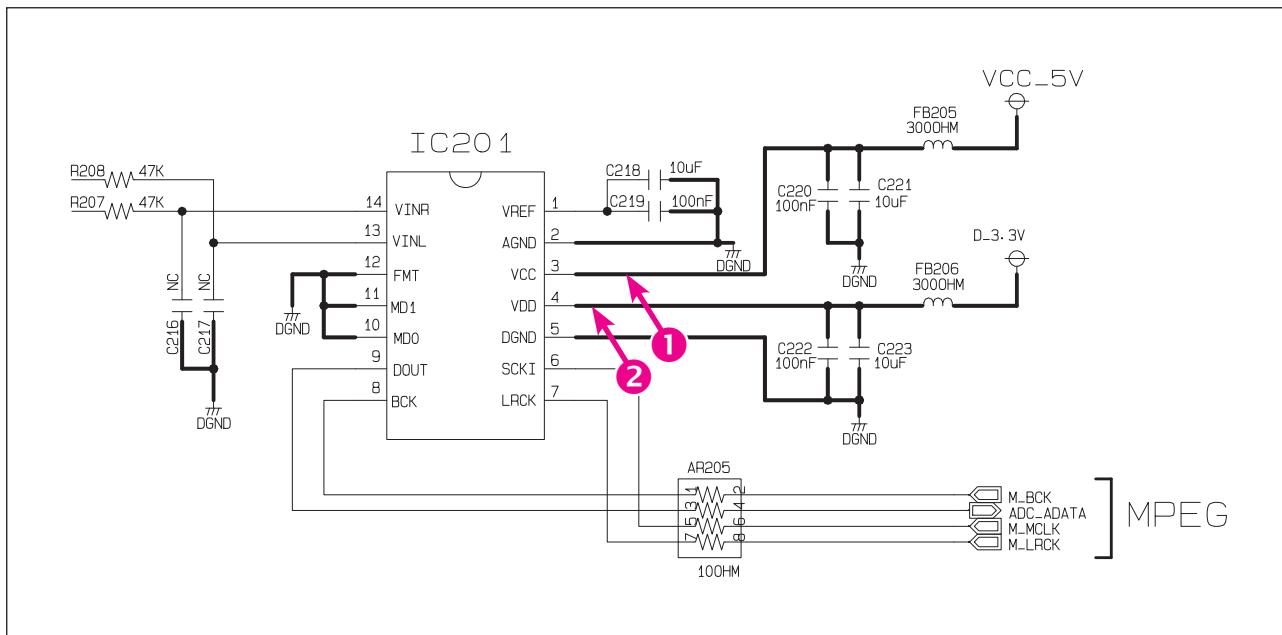
< MAIN board top view >

# ONE POINT REPAIR GUIDE

NO SOUND

2-5. USB

2-5-1. Solution
Replace MAIN board.

2-5-2. How to troubleshoot (Countermeasure)
1) Please check USB Jack and FB201 soldering status. And check 5 V at JK201 pin1.
2) If soldering status and voltage has abnormal status, replace MAIN board.

2-5-3. Service hint (Any picture / Remark)
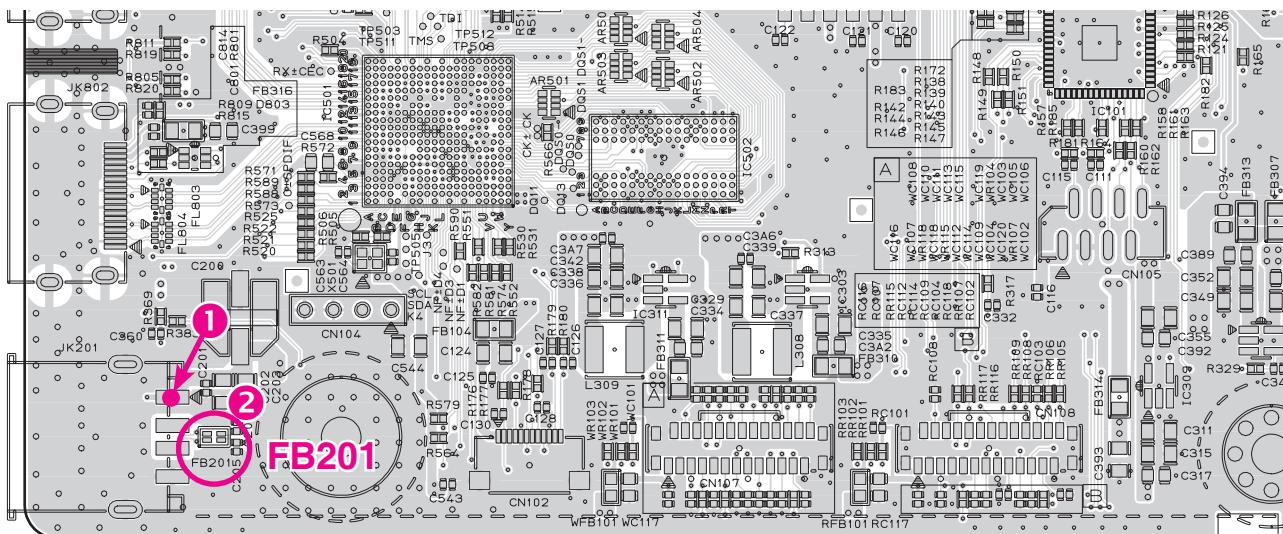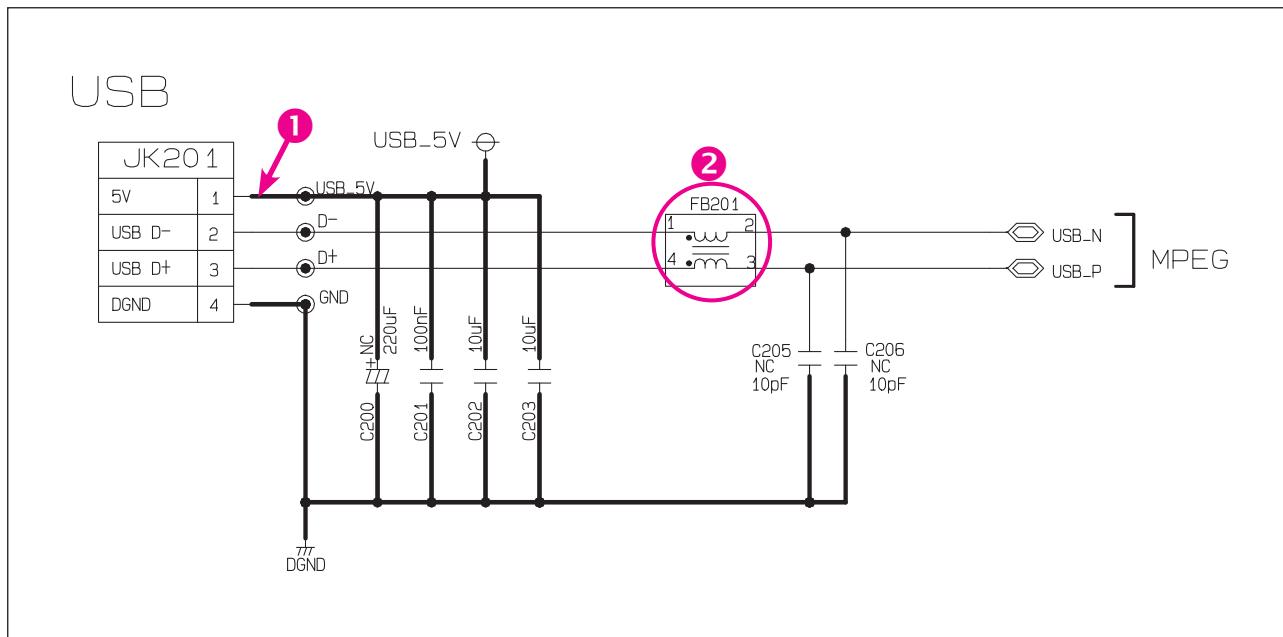
< MAIN board top view >

ONE POINT REPAIR GUIDE

3. PROTECTION ERROR
**No display or No Sound.**

3-1. D(DC) PROTECTION
3-1-1. Solution

Replace MAIN board.

3-1-2. How to troubleshoot (Countermeasure)

1) Check DC Voltage of speaker out FL+/-, TWL+/- (CN703 pin1, 2, 3, 4)
   and FR+/-, TWR+/- (CN704 pin1, 2, 4, 5).
2) Check resistor crack, cold solder of PWM IC out (AR601, AR602)
3) If PWM IC out is ok and speaker out (FL+/-, FR+/-, TWL+/-, TWR+/-) has DC voltage,
   replace MAIN board.

3-1-3. Service hint (Any picture / Remark)

< MAIN board top view >
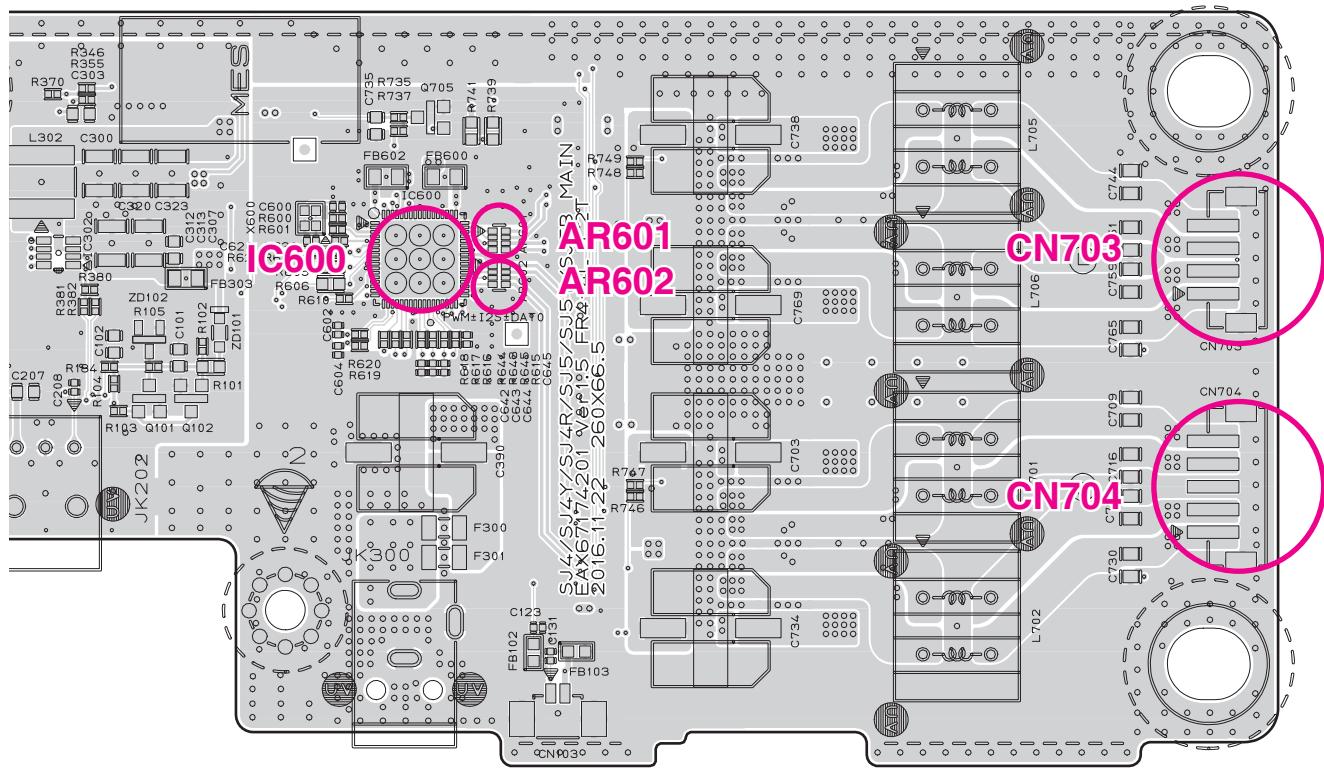
ONE POINT REPAIR GUIDE

PROTECTION ERROR
No display or No Sound.

3-2. S(SHUT DOWN) PROTECTION

3-2-1. Solution
Replace MAIN board.

3-2-2. How to troubleshoot (Countermeasure)
1) Check PVDD voltage (25 V) of IC700, IC701 pin38, 37, 36.
   - If PVDD voltage has 8.5 V under, refer to STEP 1-1.
2) Check GVDD, VDD voltage (12 V) of IC700, IC701 pin1, 2.
   - If GVDD, VDD voltage has 8.5 V under, refer to STEP 1-1.
3) Check impedance (4 Ω) of speaker unit.
   - If impedance of speaker unit has 1 Ω under, replace speaker unit.
4) If check point 1), 2), 3) is ok, replace MAIN board.

3-2-3. Service hint (Any picture / Remark)
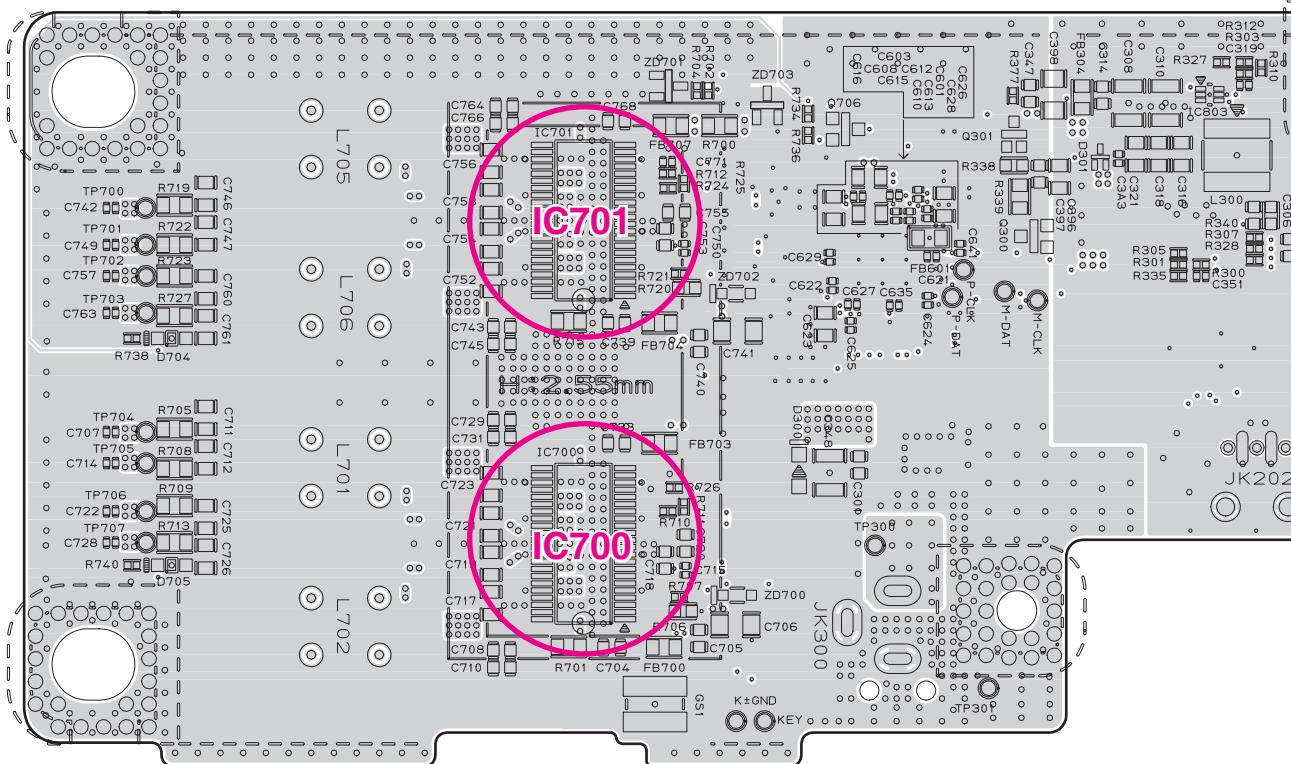
< MAIN board bottom view >

ONE POINT REPAIR GUIDE

PROTECTION ERROR
**No display or No Sound.**

3-3. B(BURNT) PROTECTION
3-3-1. Solution
Replace MAIN board.

3-3-2. How to troubleshoot (Countermeasure)
1) Check voltage 12 V of IC700, IC701 at pin1 ~ 2, if 12 V has problem refer to STEP 1-1.
2) If 12 V is OK, replace MAIN board.

3-3-3. Service hint (Any picture / Remark)
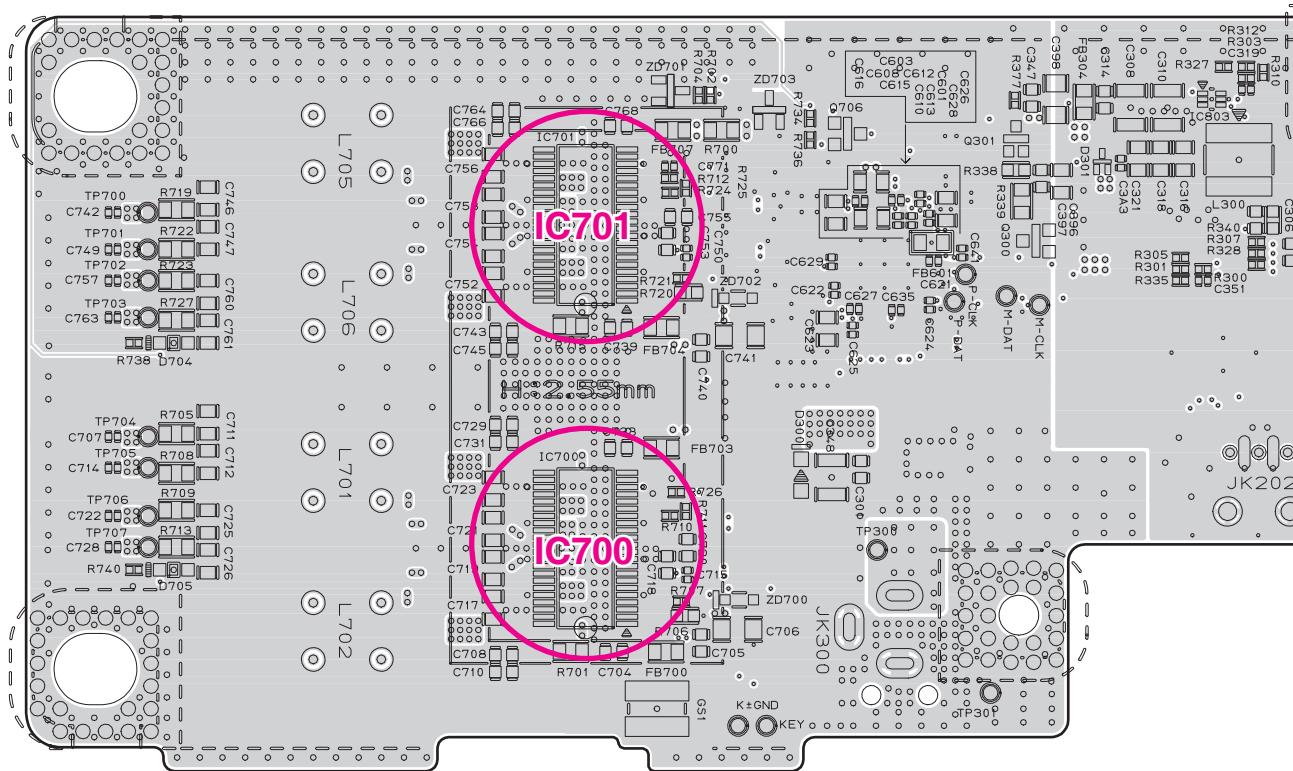
< MAIN board bottom view >

# WAVEFORMS OF MAJOR CHECK POINT

1. CRYSTAL
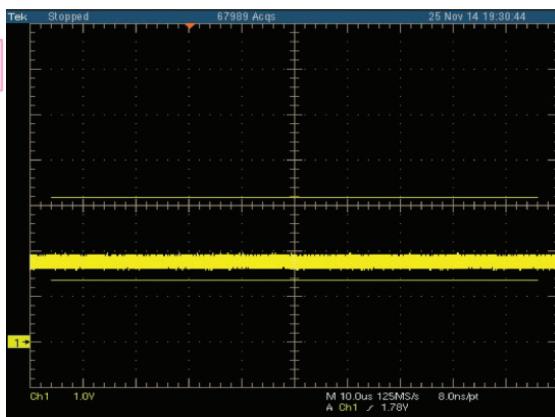
FIG 1-1. X501 (27 MHz)
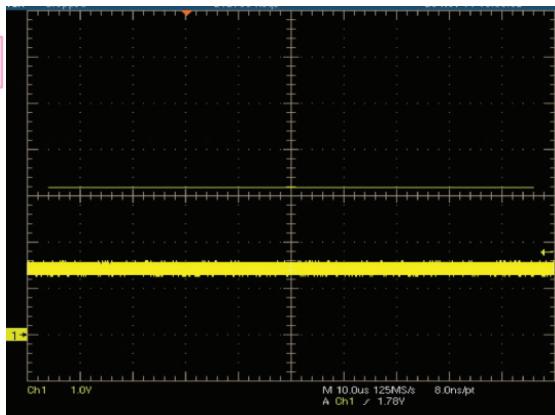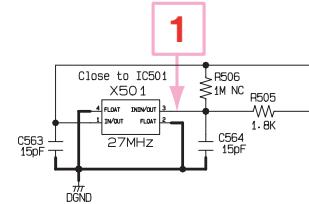
FIG 1-2. X600 (24.576 MHz)
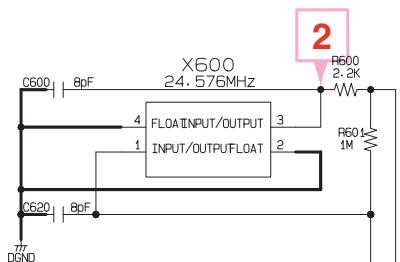
2. FLASH MEMORY
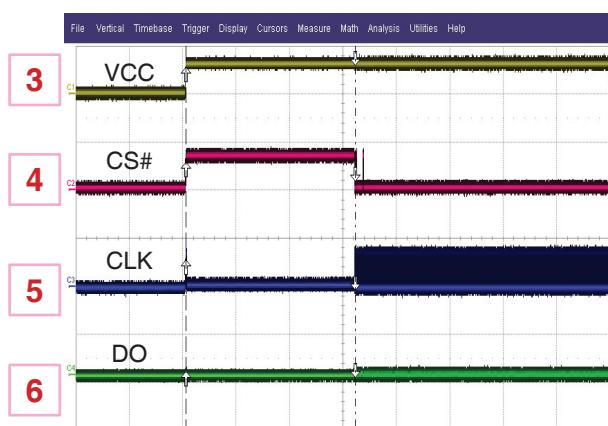
**FIG 2. VCC, CS#, CLK, DO**
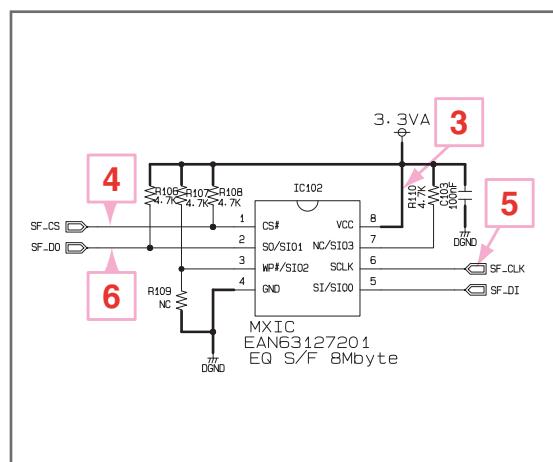
3. TACT KEY

FIG 3-1. Press Power Key

FIG 3-2. Press FUNC Key

FIG 3-3. Press VOL - Key
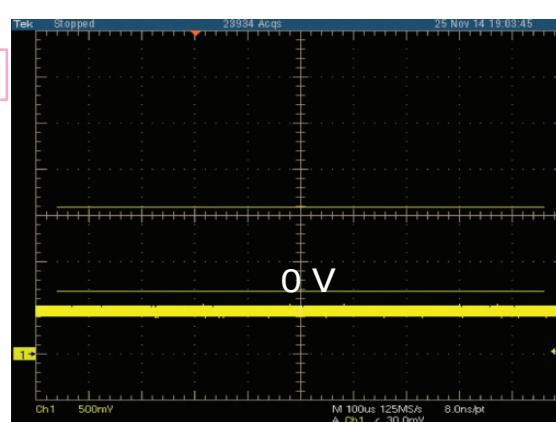
FIG 3-4. Press VOL + Key
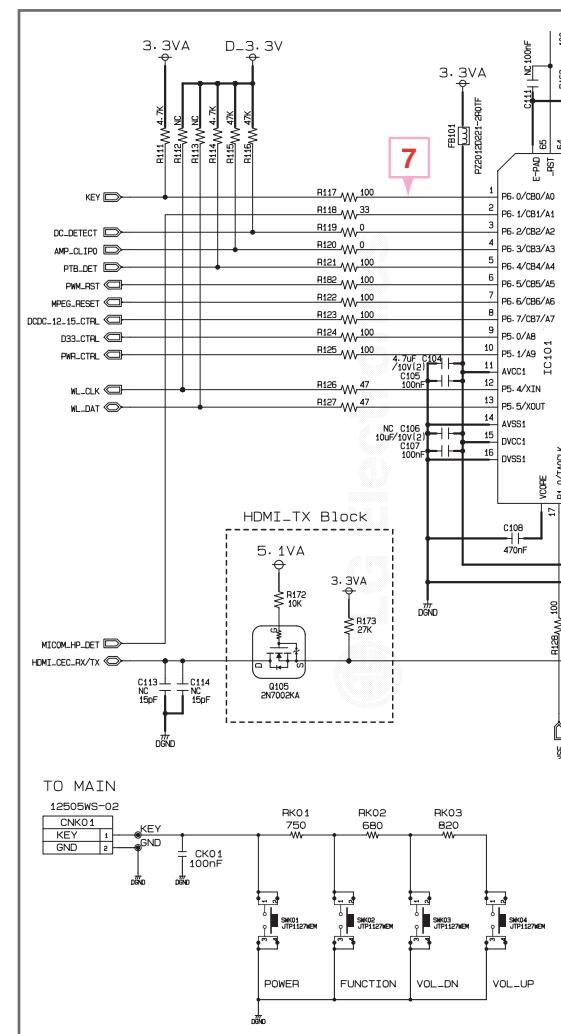
4. USB
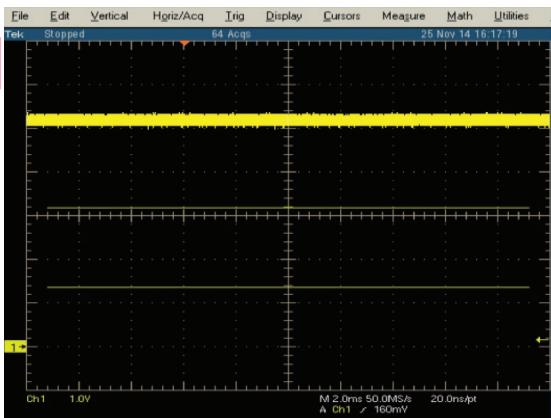
FIG 4-1. 5 V Voltage
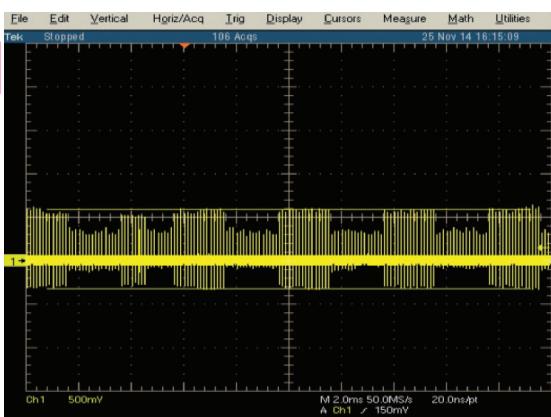
FIG 4-2. USB D+
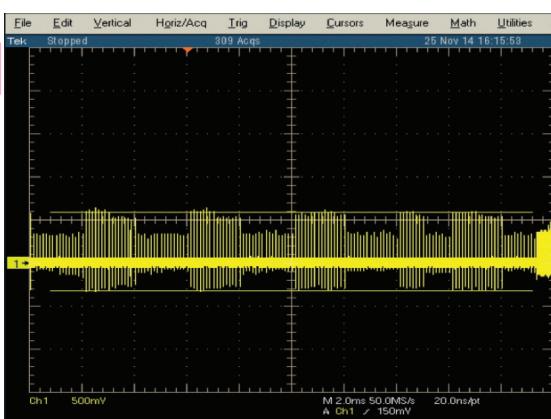
FIG 4-3. USB D-
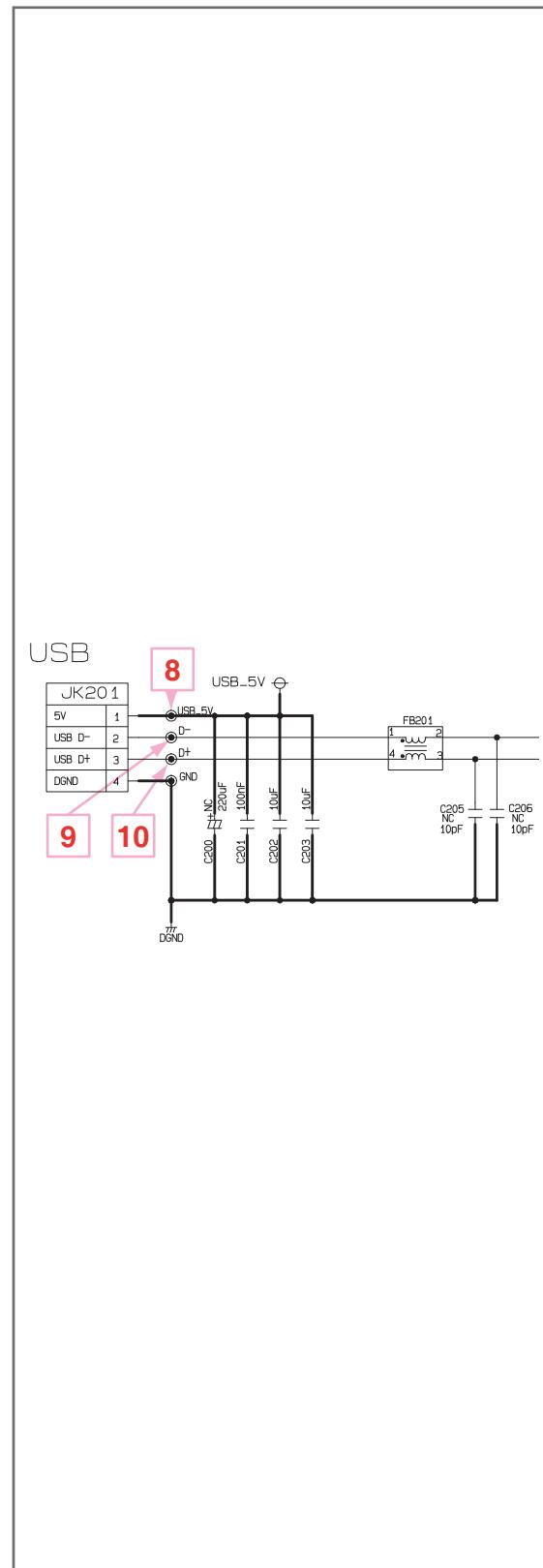
5. REMOTE CONTROL
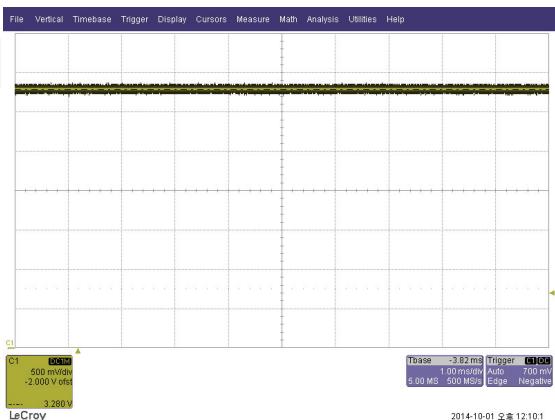
FIG 5-1. Input Voltage
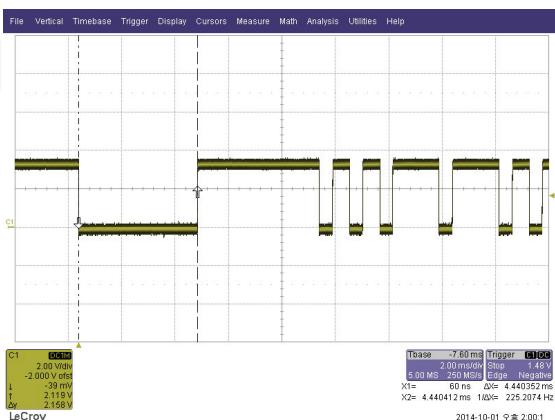
FIG 5-2. Low Timing
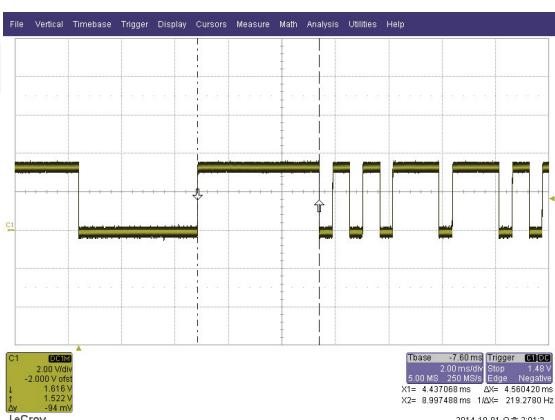
FIG 5-3. High Timing
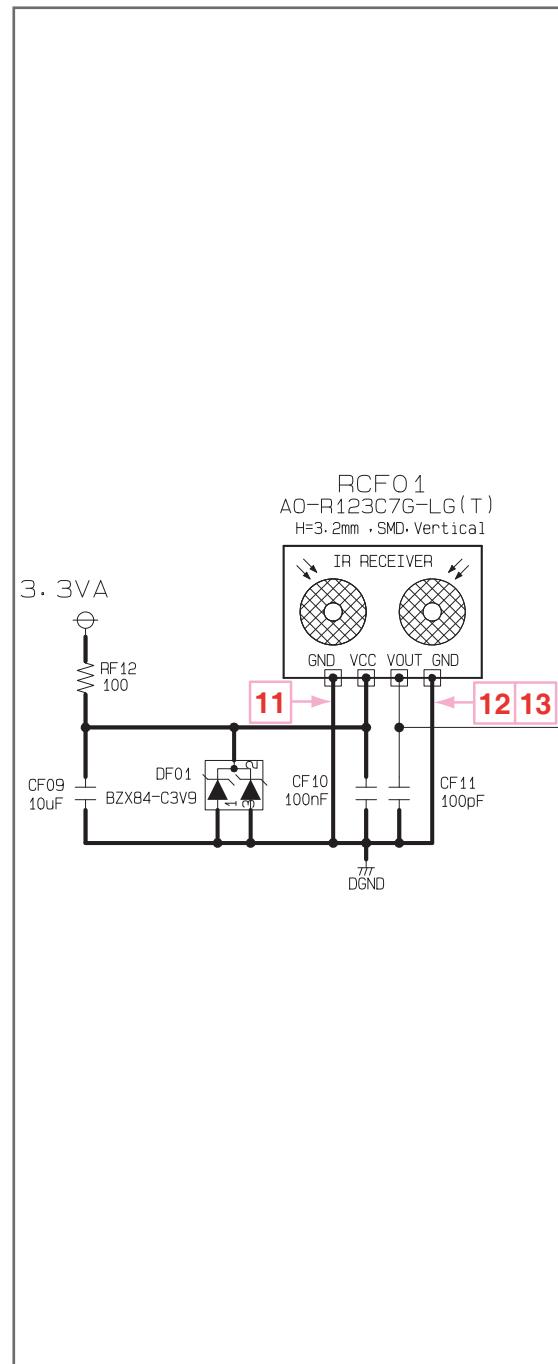
Item	Measured	Spec.
Input Level	3.3 V	IR Receiver Spec: 2.7 ~ 5.5 V
" Low" Timing	4.4 ms	3.6 ms ~ 5.04 ms
" High" Timing	4.48 ms	4.08 ms ~ 5.04 ms

6. OPTICAL

FIG 6-1. OPT_IN

FIG 6-2. OPT_DET
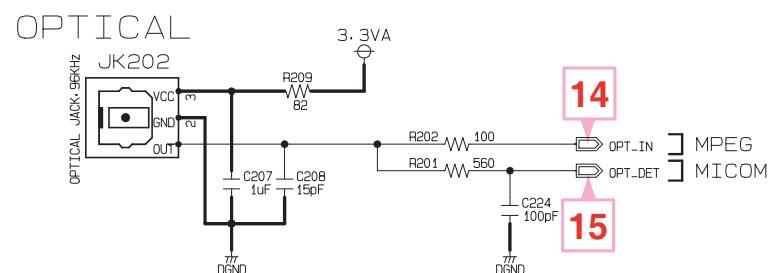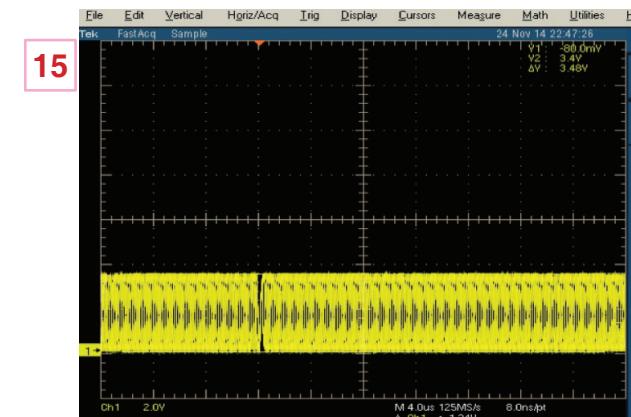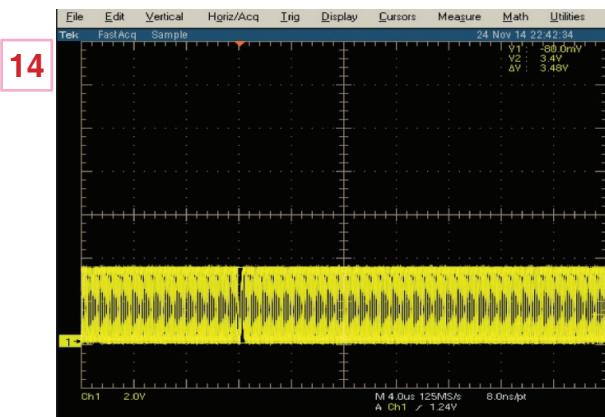
7. PORTABLE
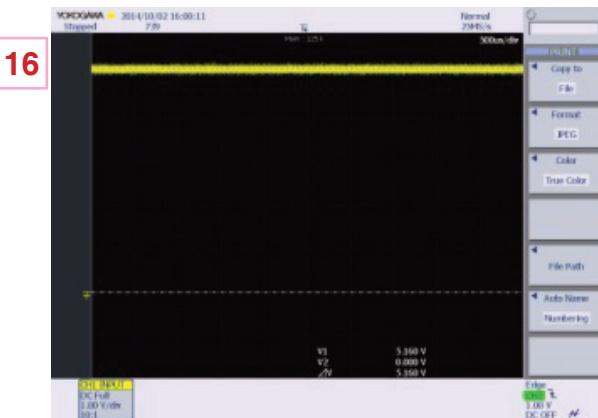
FIG 7-1. ADC IC 5 V
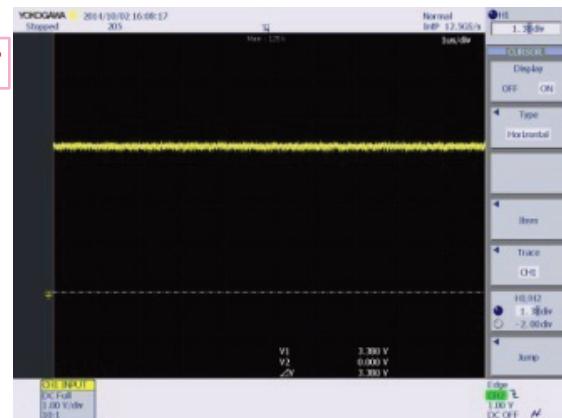
FIG 7-2. ADC IC 3.3 V
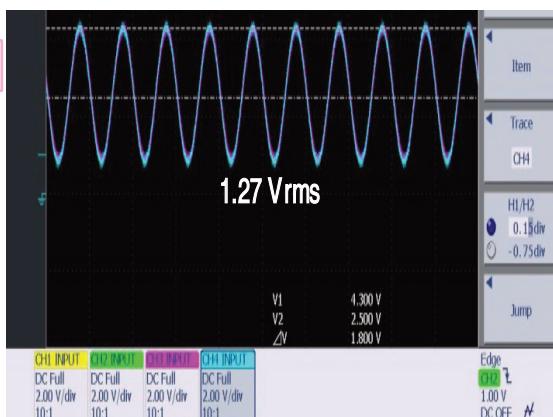
FIG 7-3. Analog Input Voltage
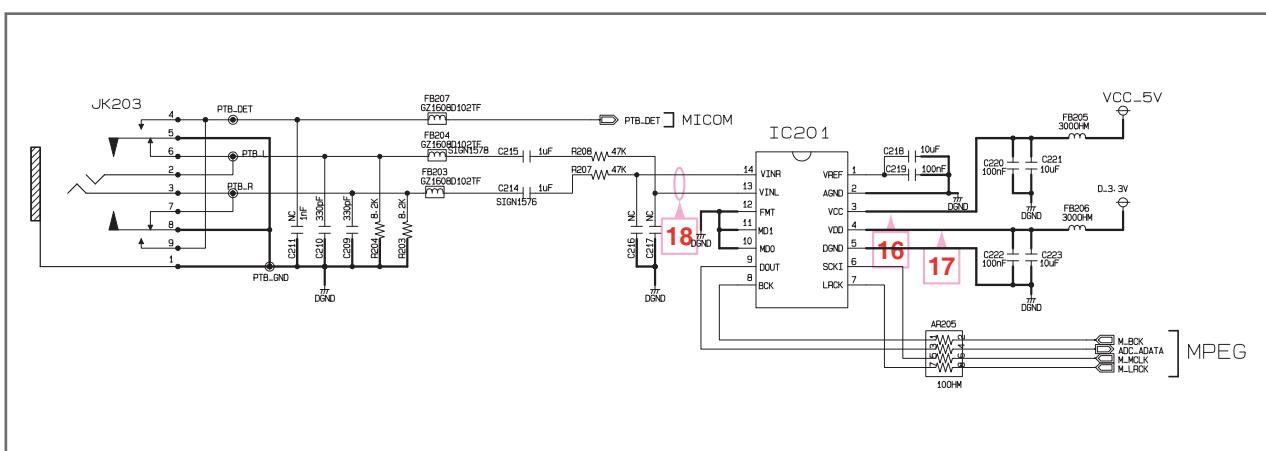
MEMO

CIRCUIT VOLTAGE CHART

1. IC VOLTAGE

| Designator	Description	Pin No	Pin Name	Voltage Spec	Measured Voltage	Temperature Spec.
IC101	IC,Microcontrollers	11	AVCC	1.8 V ~ 3.6 V	3.34 V	85 °C
		15, 40	DVCC	1.8 V ~ 3.6 V	3.34 V	
IC102	IC,Serial Flash Memory	8	VCC	2.7 V ~ 3.6 V	3.34 V	85 °C
IC103	IC,Serial Flash Memory	8	VCC	2.7 V ~ 3.6 V	3.33 V	85 °C
IC201	IC,A/D Converter	3	VCC	4.5 V ~ 5.5 V	5.15 V	125 °C
		4	VDD	2.7 V ~ 3.6 V	3.32 V	
IC301	IC,DC,DC Converter	4	VIN	2.7 V ~ 5.5 V	5.16 V	125 °C
		3	SW	0.6 V ~ 5.225 V	3.37 V	
IC302	IC,DC,DC Converter	2	VIN	+ 4.0 V ~ + 36 V	25.2 V	125 °C
		3	VOUT	0.8 V ~ 33 V	12.08 V	
IC303	IC,DC,DC Converter	4	VIN	2.7 V ~ 5.5 V	5.15 V	125 °C
		3	SW	0.6 V ~ 5.225 V	1.51 V	
IC304	IC,Analog Switch	5	VIN	2.5 V ~ 5.5 V	5.16 V	125 °C
		1	VOUT	0 V ~ 5.5 V	D_3.34V / PWM3.34V	
IC306	IC,Analog Switch	5	VIN	4.5 V ~ 5.5 V	5.17 V	110 °C
		1	VOUT		5.17 V (USB 5.16 V)	
IC308	IC,Analog Switch	5	VIN	4.5 V ~ 5.5 V	5.16 V	110 °C
		1	VOUT		5.14 V	
IC309	IC,Analog Switch	5	VIN	2.5 V ~ 5.5 V	5.16 V	125 °C
		1	VOUT	0 V ~ 5.5 V	D_3.34V	
IC311	IC,DC,DC Converter	4	VIN	2.7 V ~ 5.5 V	5.15 V	125 °C
		3	SW	0.6 V ~ 5.225 V	1.205 V	
IC501	IC,Video Processors		DVCC12_K	1.14 V ~ 1.26 V	1.21 V	95 °C
			DVCC33_IO	3.15 V ~ 3.45 V	3.32 V	
			DDRVCCIO1	1.425 V ~ 1.575 V	1.51 V	
			AVDD33	3.15 V ~ 3.45 V	3.32 V	
			AVDD12	1.14V ~ 1.26 V	1.21 V	
IC502	IC,DDR3 SDRAM	B2, D9, G7, K2, K8, N1, N9, R1, R9	VDD	1.5 V (± 0.075 V)	1.51 V	95 °C
		A1, A8, C1, C9, D2, E9, F1, H2, H9	VDDQ	1.5 V (± 0.075 V)	1.51 V	
IC503	IC,NOR Flash Memory	8	VCC	2.7 V ~ 3.6 V	3.32 V	85 °C
IC600	IC,Sound/Audio Processor	17, 52	VDD_IO	2.97 V ~ 3.63 V	3.33 V	85 °C
		6, 25	VDD_CORE	1.08 V ~ 1.32 V	1.24 V	
		34	VIN33_REG1	2.97 V ~ 3.63 V	3.33 V	
		66	VIN33_REG2	2.97 V ~ 3.63 V	3.3 V	
		68	VDD_PLL	1.08 V ~ 1.32 V	1.24 V	
IC700	IC,Audio Amplifier	1	GVDD_AB	-0.3 V ~ 13.2 V	11.7 V	125 °C
		22	GVDD_CD	-0.3 V ~ 13.2 V	11.7 V	
		36, 37, 38	PVDD_AB	-0.3 V ~ 50 V	25.5 V	
		29, 30, 31	PVDD_CD	-0.3 V ~ 50 V	25.5 V	
		2	VDD	-0.3 V ~ 13.2 V	11.9 V	
		8	DVDD	-0.3 V ~ 4.2 V	3.306 V	
		13	13 AVDD	-0.3 V ~ 8.5 V	7.8 V	
IC701	IC,Audio Amplifier	1	GVDD_AB	-0.3 V ~ 13.2 V	11.7 V	125 °C
		22	GVDD_CD	-0.3 V ~ 13.2 V	11.7 V	
		36, 37, 38	PVDD_AB	-0.3 V ~ 50 V	25.5 V	
		29, 30, 31	PVDD_CD	-0.3 V ~ 50 V	25.5 V	
		2	VDD	-0.3 V ~ 13.2 V	11.9 V	
		8	DVDD	-0.3 V ~ 4.2 V	3.304 V	
		13	AVDD	-0.3 V ~ 8.5 V	7.8 V	
IC803	IC,DC,DC Converter	1	VIN	4.2 V ~ 17 V	12.1 V	125 °C
		2	SW	0.8 V ~ 10 V	5.17 V	

2. CAPACITOR VOLTAGE

| Designator	Description	SPEC	Real Value (#1, #2)/ V					Temperature Spec.
C390, C734, C769	Capacitor,AL,Chip	330 uF/ 35 V	25.76	25.75	25.78	25.81	25.76	-40 ~ 105 °C/ 2000 HR
WC706	Capacitor,AL,Chip	100 uF/ 16 V	3.42	3.41	3.42	3.42	3.41	-55 ~ 105 °C/ 2000 HR
WC904	Capacitor,AL,Radial	100 uF/ 460 V	155.3	155.4	155.4	155.29	155.4	-25 ~ 105 °C/ 2000 HR
WC917	Capacitor,AL,Chip	47 uF/ 50 V	20.15	20.22	20.22	20.16	20.2	-55 ~ 105 °C/ 2000 HR
WC924, WC925, WC926	Capacitor,AL,Radial	1000 uF/ 50 V	34.9	34.88	34.9	34.93	34.88	-55 ~ 105 °C/ 2000 HR

3. CONNECTOR VOLTAGE

CN102 (MAIN <-> BT)			
Power	MAIN	BT module	SPEC
3.3 VA	3.33 V	3.32 V	3.3 VA (1.7 V ~ 3.6 V)
CN107 (MAIN <-> Wireless)			
Power	MAIN	Wireless module	SPEC
WL_3V3	3.308 V	3.304 V	3.3 V (3.15 V ~ 3.45 V)
CN108 (MAIN <-> Rear Wireless)			
Power	MAIN	Wireless module	SPEC
3.3 VA	3.33 V	3.302 V	3.3 V (3.15 ~ 3.45 V)

# PRINTED CIRCUIT BOARD DIAGRAMS

## 1. MAIN P. C. BOARD DIAGRAM

(TOP VIEW)
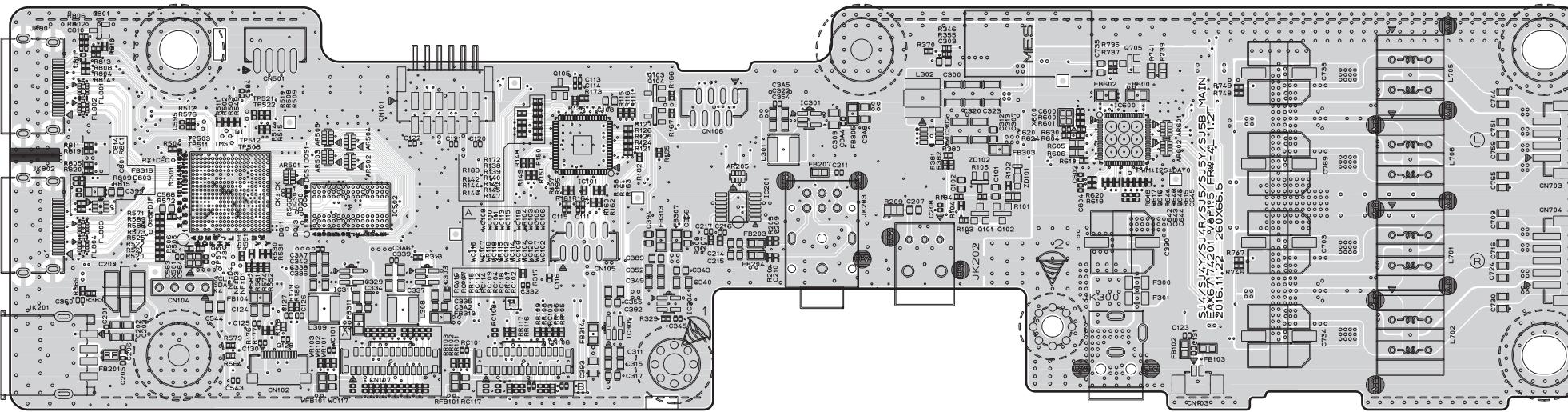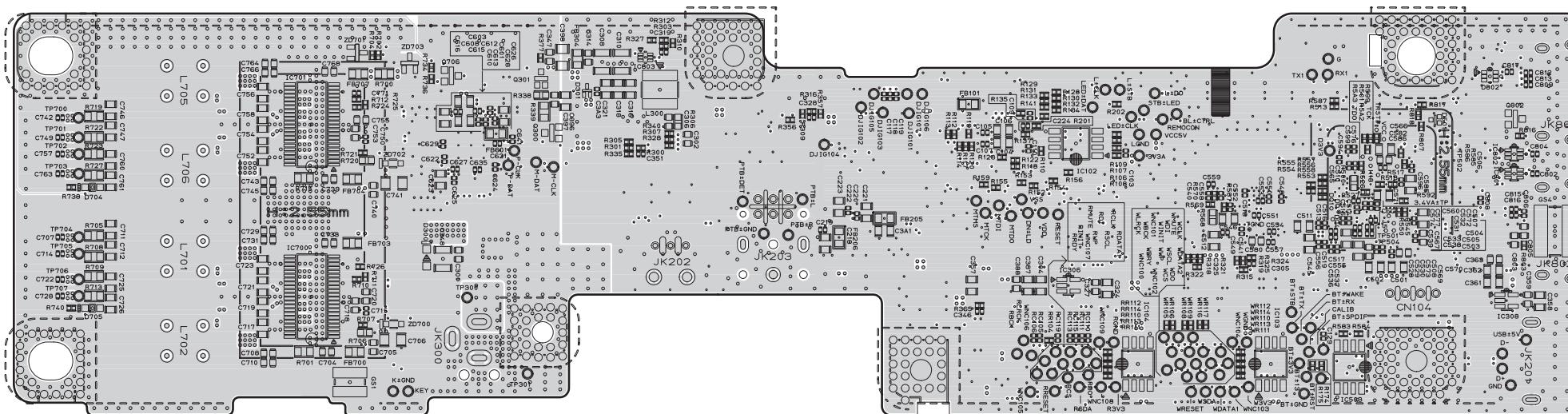
(BOTTOM VIEW)

2. FRONT P. C. BOARD DIAGRAM

(TOP VIEW)
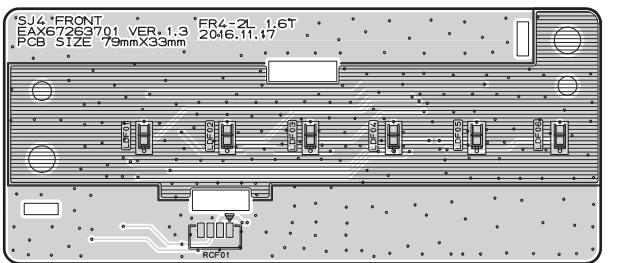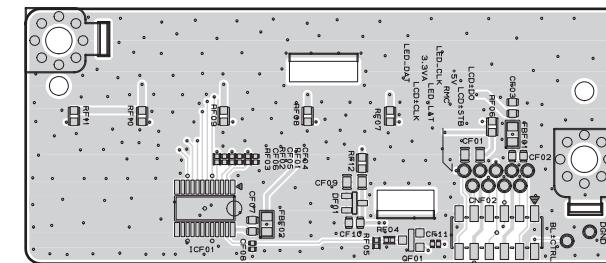
(BOTTOM VIEW)

3. KEY P. C. BOARD DIAGRAM

(TOP VIEW)
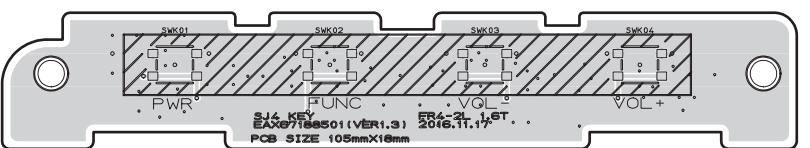
(BOTTOM VIEW)
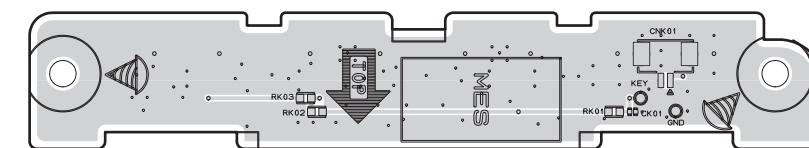
MEMO

SECTION 4

WIRELESS SUBWOOFER PART

CONTENTS

WIRING DIAGRAM

2P, 3.96mm
ST, Non Lock SMD

26P, 0.5mm
ST, Non Lock SMD

Wireless

2P, 3.96mm
ST, Non Lock , SMD

Power

BLOCK DIAGRAM

Wireless TX

LED (RED, GREEN)

Wireless RX

AMP_PDN

AMP_SD

PAIRING

Reset KEY

I2C

I2S

PWM IC

SW+/SW-

AMP IC

LPF

FL

LPF

FR

ONE POINT REPAIR GUIDE

1. POWER ON ERROR
Fundamental power check points.

1-1. 12 V
1) Check 12 V at WL708.
2) If 12 V is not checked at the point, then find PVDD at pin7 of WIC704.
3) 1), 2) is NG ➡ Replace WIC704.

If you can't check PVDD voltage, then replace the PCB board.
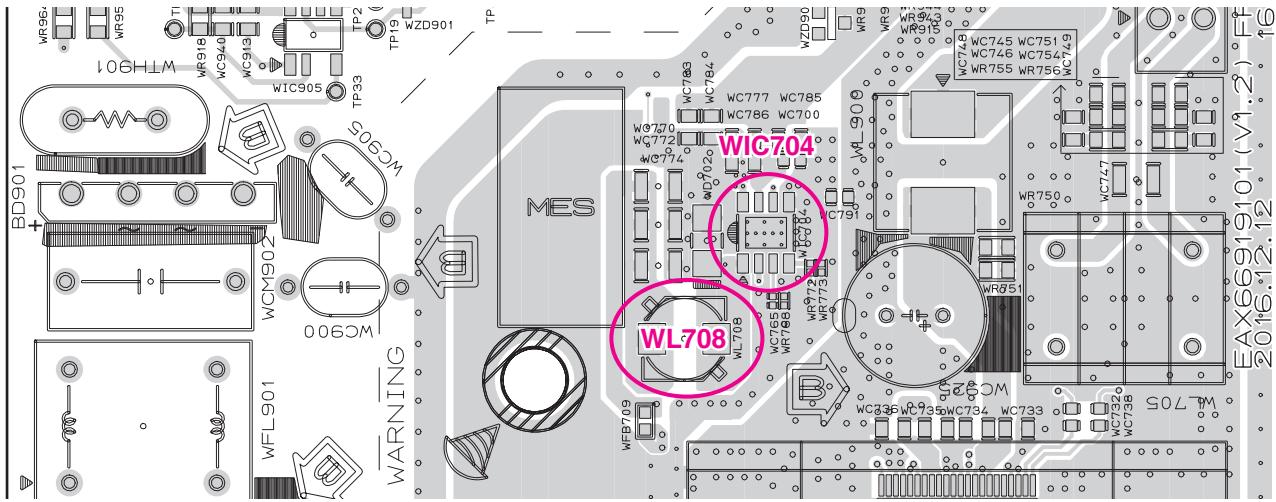
< Woofer SMPS & AMP board top view >

1-2. 3.3 VA
1) Check 3.3 VA at WL707 coil.
2) If 3.3 VA is not checked at the point, then find 12 VA at pin3 of WIC705.
3) 1), 2) is NG ➡ Replace WIC705.

If you can't check 12 VA voltage, refer to the step 1-1.
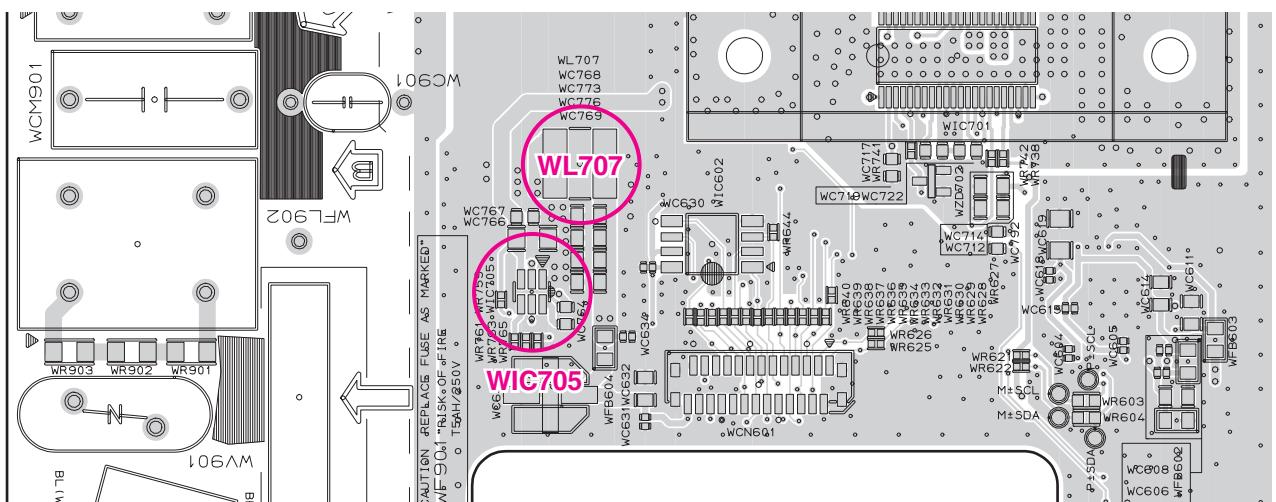
< Woofer SMPS & AMP board top view >

ONE POINT REPAIR GUIDE

POWER ON ERROR
Fundamental power check points.

1-3. 3.3 VA
1) Check 3.3 VA at pin1 of WIC703.
2) Check 3.3V_PWM at pin6 of WIC703.
3) 1), 2) is NG ➡ Replace WIC703.

If you can't check PVDD voltage, then replace the PCB board.

< Woofer SMPS & AMP board bottom view >
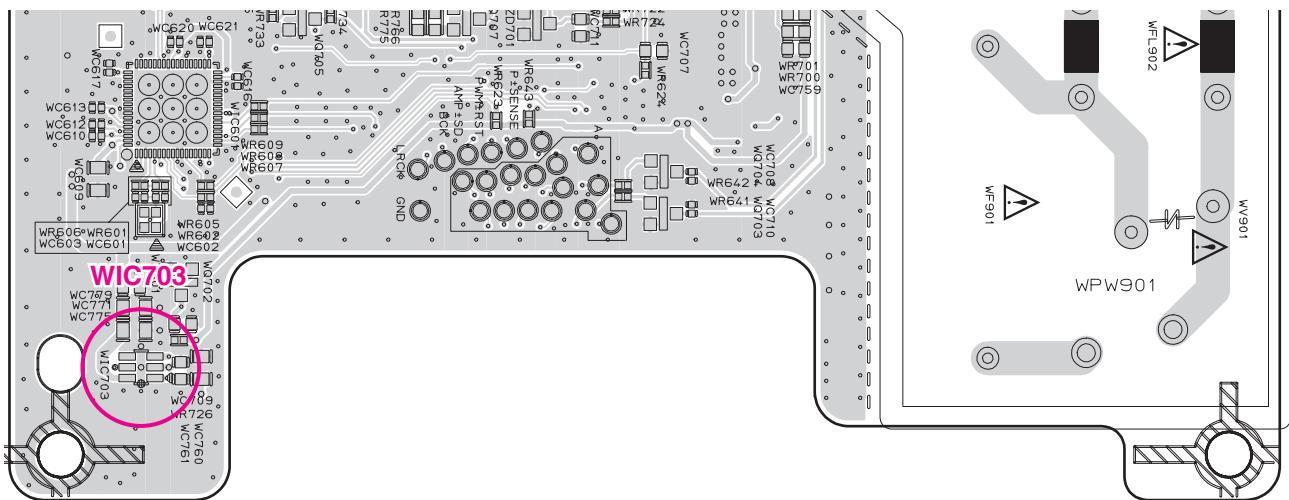
ONE POINT REPAIR GUIDE

2. WIRELESS CONNECTION
Wireless connection malfunction.

2-1. 3.3 VA
1) Check 3.3 VA at WFB604.

2-2. Connection
1) Wireless module connection closely.
2) Implement Wireless Factory Reset.
  ➡ MAIN SET : Soundbar vol MIN and push Mute key (sustain 3 ~ 5 seconds).
  ➡ Subwofer :   ❶ Press **Pairing** button on the rear of the wireless subwoofer.
                ❷ The LED of of the wireless subwoofer blink red and green, pull out power cord.
                ❸ The main set and the wireless subwoofer are factory reset mode, then power on.
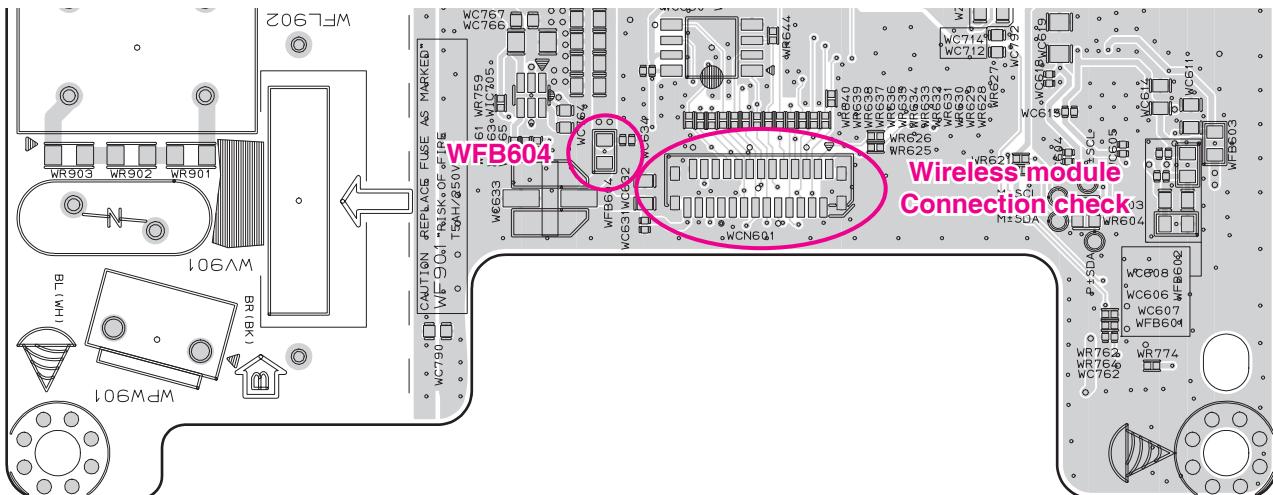
< Woofer SMPS & AMP board top view >

WAVEFORMS OF MAJOR CHECK POINT

1. CRYSTAL
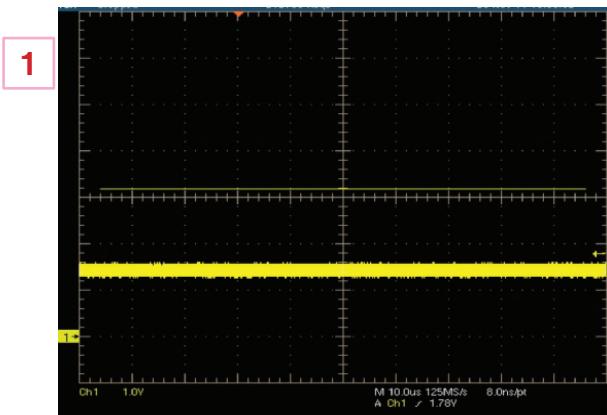
FIG 1. WX601 (24.576 MHz)
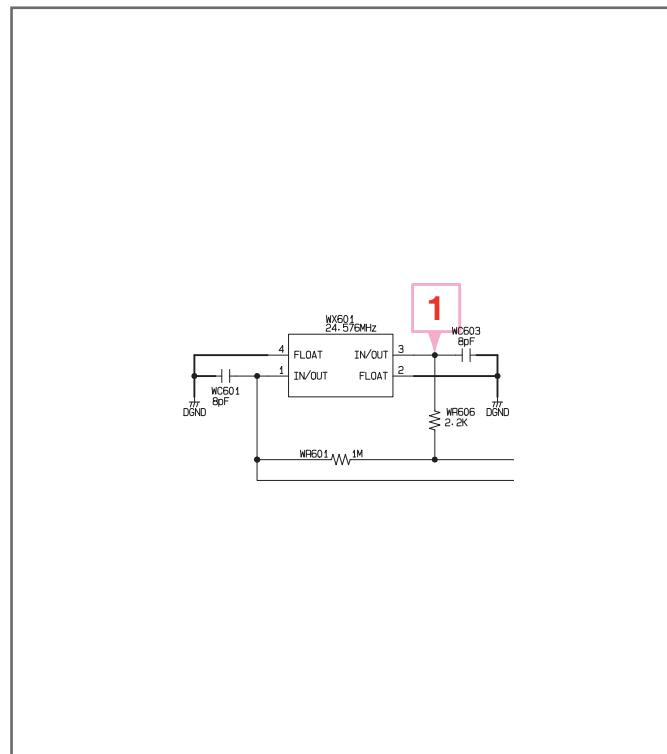
2. FLASH MEMORY
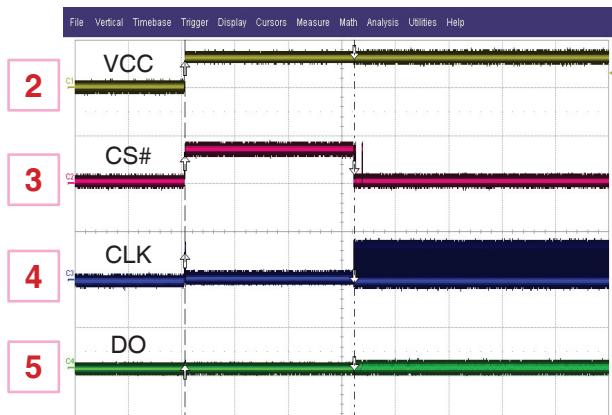
FIG 2. VCC, CS#, CLK, DO
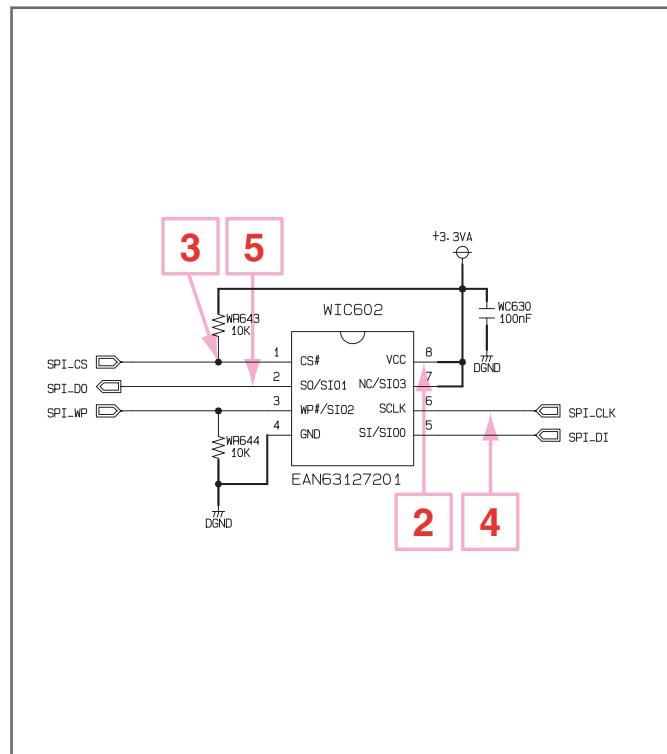
3. VOLTAGE

FIG 3-1. Woofer PVDD

FIG 3-2. Woofer 12 VA

FIG 3-3. Woofer 3.3 VA

FIG 3-4. Woofer 3.3V_PWM

[PVDD TO 12VA]

FREQ = 629kHz (R609 = 150KOHM)
VOUT = 0.8Vx(1+(R14/R615)) = 12.514V

[12VA TO 3.3VA]

VOUT = 0.765x(1+(R604+R605)/R603))= 3.381V

[+3.3V_PWM]

RLIM
20Kohm = ABOUT 1000 mA
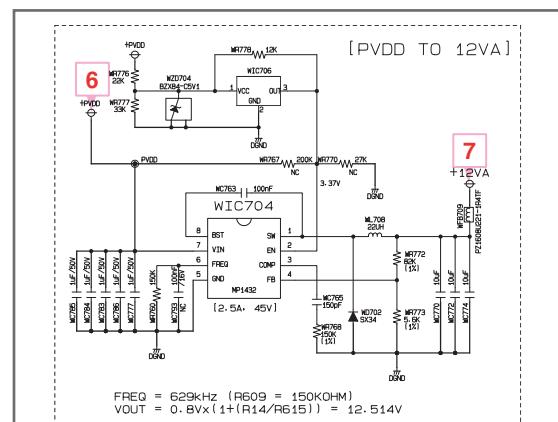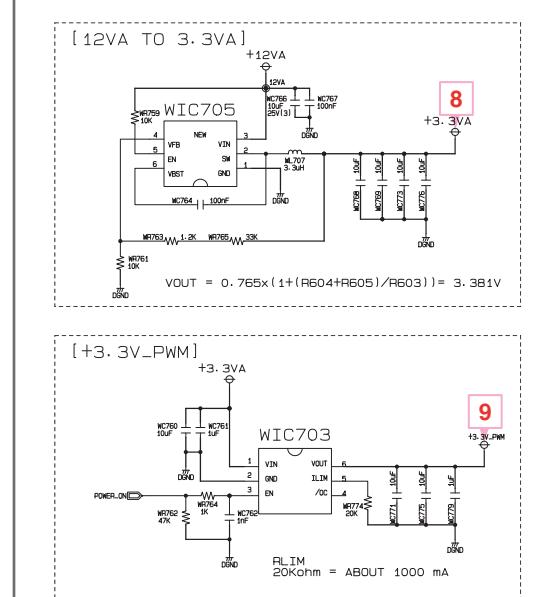
4. AMP VOLTAGE

FIG 4-1. AMP PVDD

FIG 4-2. AMP_12V
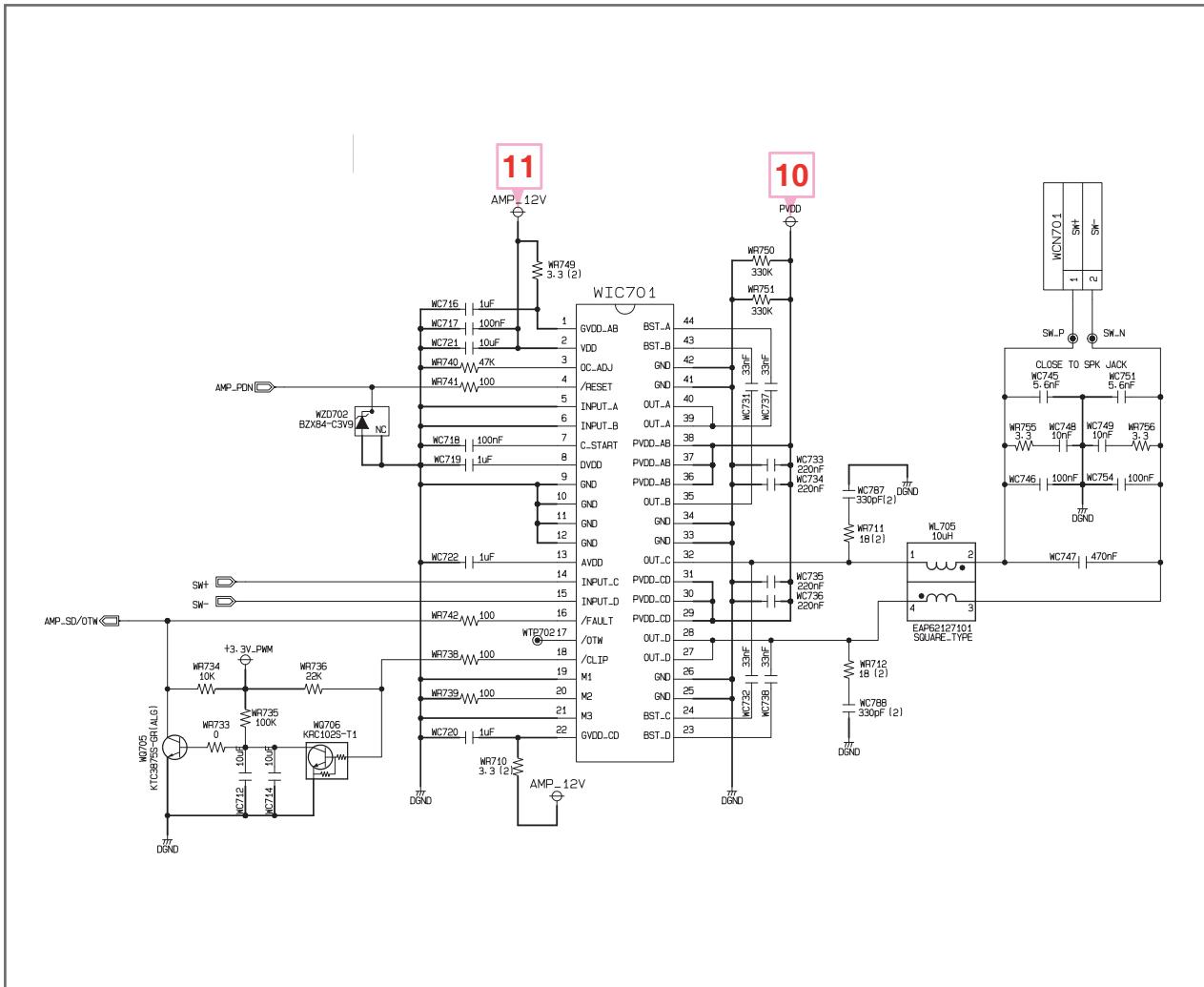
5. PWM
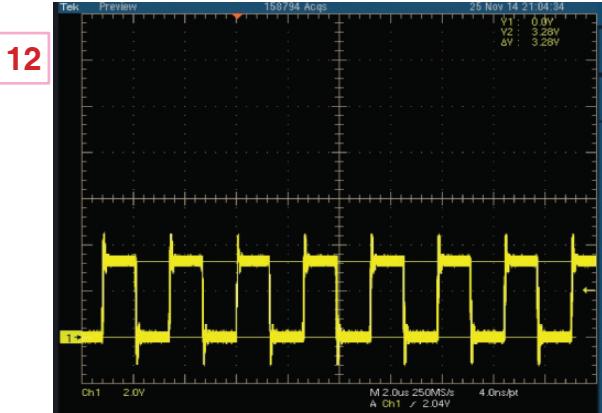
FIG 5-1. Woofer PWM SW+ Signal
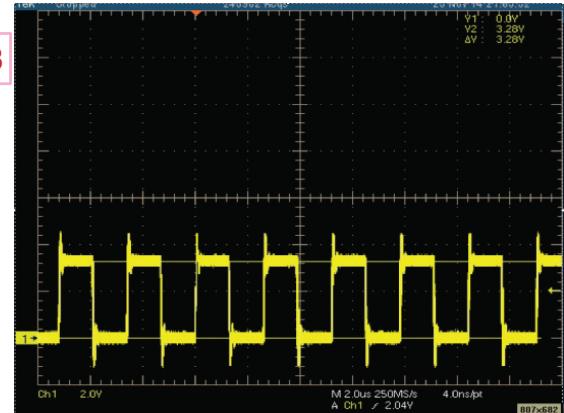
FIG 5-2. Woofer PWM SW- Signal
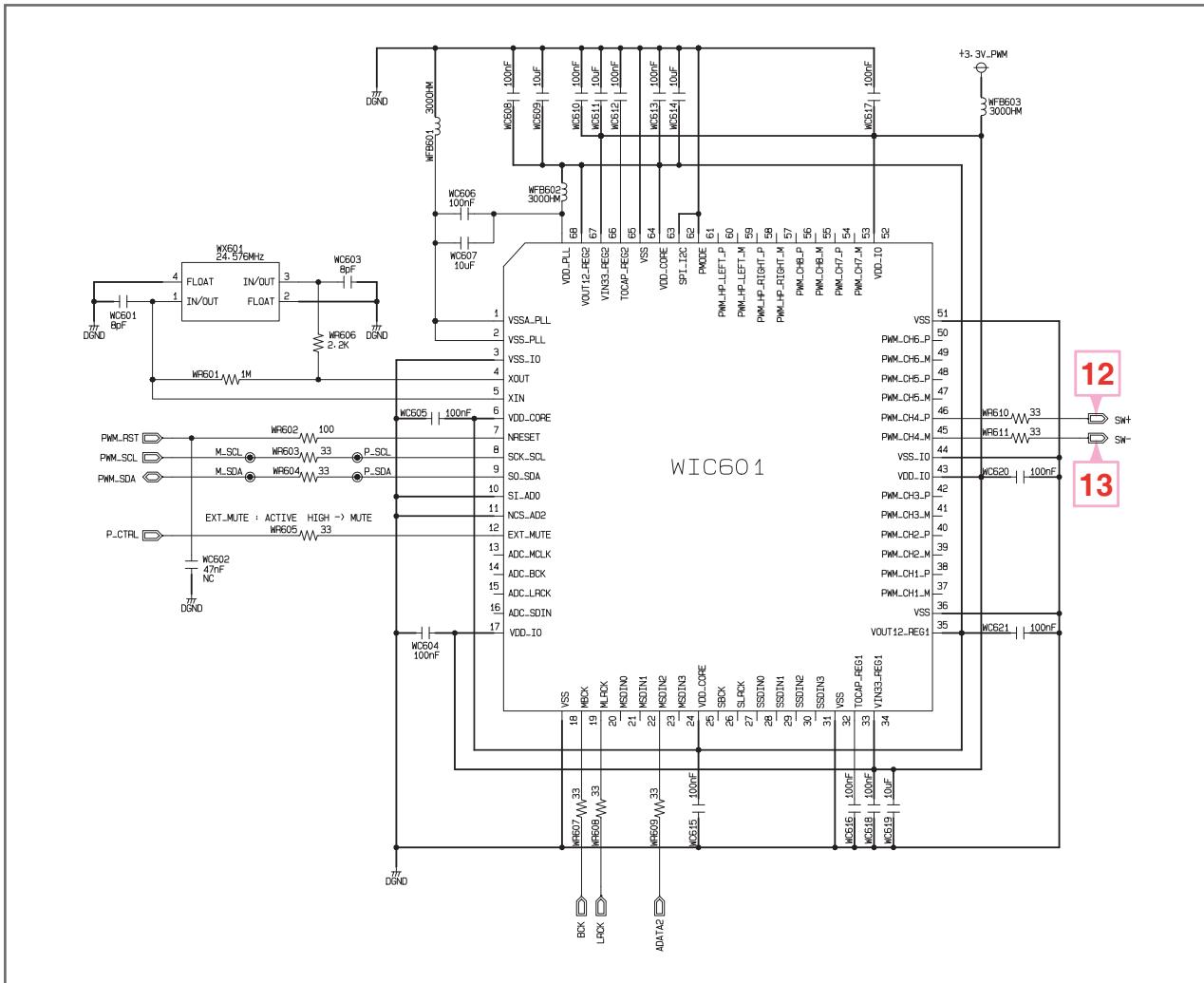
6. LED

FIG 6-1. Pairing Off Status ➡ Red LED
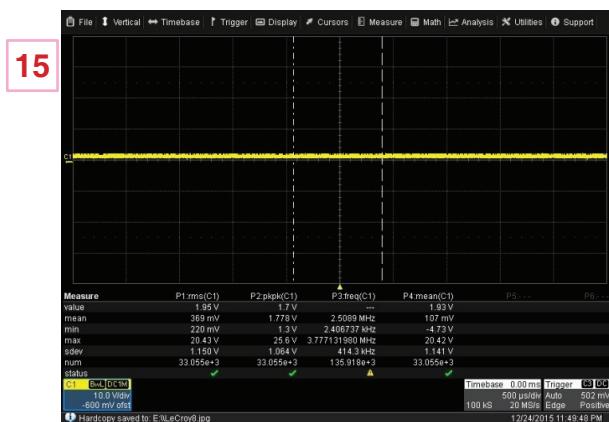
FIG 6-2. Pairing On Status ➡ Green LED
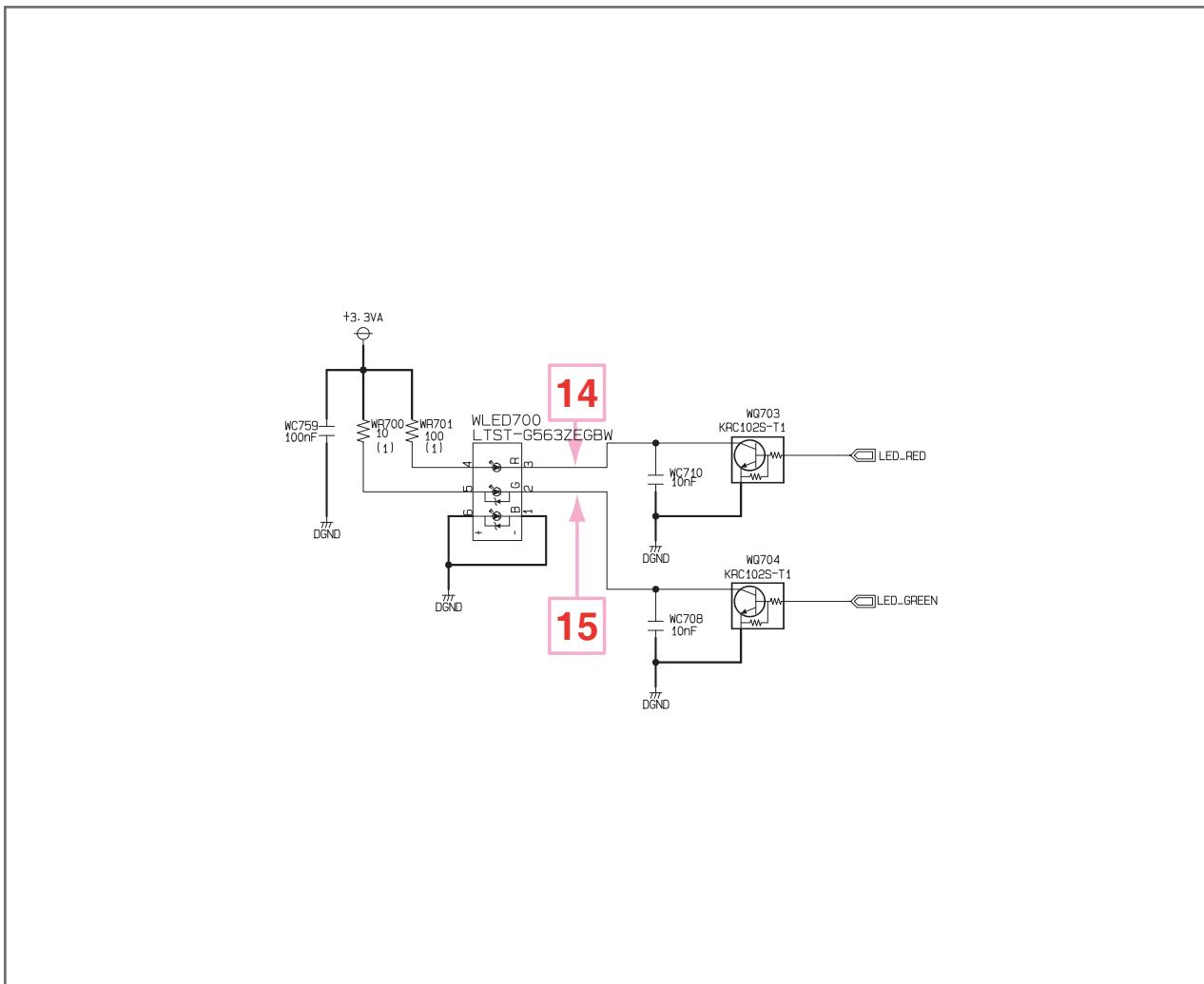
MEMO

CIRCUIT VOLTAGE CHART

| Location No.	Description	Pin Number	Specification	Real Value (#1, #2)	
WIC601	IC, Sound/Audio Processor	VDD _IO: #17, 43, 52	VDD_IO: 2.97 V ~ 3.63 V	3.37 V	3.37 V
		VDD_CORE: #6, 25, 63	VDD_CORE: 1.08 V ~ 1.32 V	1.27 V	1.27 V
		VDD_PLL: #68	VDD_PLL: 1.08 V ~ 1.32 V	1.28 V	1.28 V
WIC701	IC, Audio Amplifier	PVDD: #29, 30, 31, 36, 37, 38	PVDD: 12 V ~ 34 V	20.61 V	20.64 V
		GVDD: #1, 22	GVDD: 10.8 V ~ 13.2 V	12.41 V	12.42 V
		VDD: #2	VDD: 10.8 ~13.2V	12.47 V	12.47 V
WIC703	IC, Analog Switch	VIN: #1	VIN: 2.8 V ~ 5.5 V	3.42 V	3.42 V
		VOUT: #6	VOUT: 2.8 V ~ 5.5 V	3.41 V	3.41 V
WIC704	IC, DC,DC Converter	VIN: #7	VIN: 4.5 V ~ 45 V	34.61 V	34.64 V
		SW: #1	VOUT: 0.8 V ~ 42 V	12.53 V	12.53 V
WIC705	IC, DC,DC Converter	VIN: #3	VIN: 4.5 V ~ 17 V	12.52 V	12.52 V
		SW: #2	VOUT: 0.76 V ~ 7 V	3.42 V	3.42 V

MEMO

PRINTED CIRCUIT BOARD DIAGRAMS

1. WOOFER SMPS & AMP P. C. BOARD

(TOP VIEW)

(BOTTOM VIEW)

SECTION 5

WIRELESS RECEIVER PART

CONTENTS

WIRING DIAGRAM

SPK(RR/RL)

SPK terminal

RJK301

RCN301

10P Harness

CN901

Rear AMP

SMPS

RCN303

26P FFC

Wireless

BLOCK DIAGRAM

Wireless TX

Wireless RX

LED (RED, GREEN)

Reset KEY

PAIRING

AMP_PDN

AMP_SD

I2C   I2S

PWM IC

RL+,-/RR+,-

AMP

LPF   RL

LPF   RR

ONE POINT REPAIR GUIDE

1. How to Duplicate Problem

Wireless rear speaker doesn't output a sound.

1-1. Solution
Replace SMPS board (No PVDD).

1-2. How to troubleshoot (Countermeasure)

```
┌──────────────────────────────┐
│   Check LED color of RX BOX.  │
└──────────────────────────────┘
               │
               ▼
       ╱────────────────╲                    ┌────────────────────────┐
      ╱  Color is yellow? ╲──── YES ───────▶ │  Replace SMPS board.    │
       ╲────────────────╱                    └────────────────────────┘
               │
              NO
               │
               ▼
┌──────────────────────────────┐
│   Try to remate or reset.     │
└──────────────────────────────┘
```
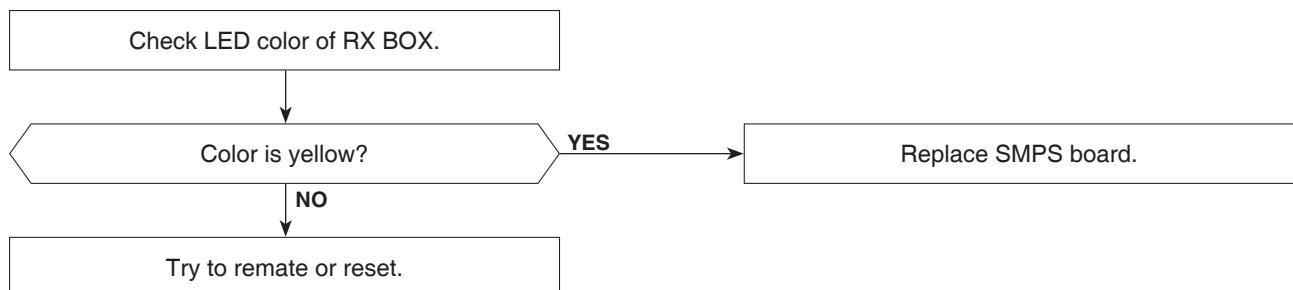
2. How to Duplicate Problem

Wireless rear speaker doesn't output a sound.

2-1. Solution
Replace AMP board (No 12 V).

2-2. How to troubleshoot (Countermeasure)

```
   ╱────────────╲              ╱────────────╲
  ╱   AMP 12 V    ╲           ╱    14 VA      ╲              ┌──────────────────────┐
 ╱ (RIC308 pin4)   ╲─ YES ──▶╱ (RIC308 pin2)   ╲── YES ───▶ │  Replace SMPS board.  │
  ╲  no output.   ╱           ╲  no input.    ╱              └──────────────────────┘
   ╲────────────╱              ╲────────────╱
        │                            │
       NO                           NO
        │                            │
        ▼                            ▼
┌──────────────────┐        ┌──────────────────────┐
│   Check 3.3 V.    │        │   Replace AMP board.  │
└──────────────────┘        └──────────────────────┘
```

2-3. Service hint (Any picture / Remark)

< AMP board top view >
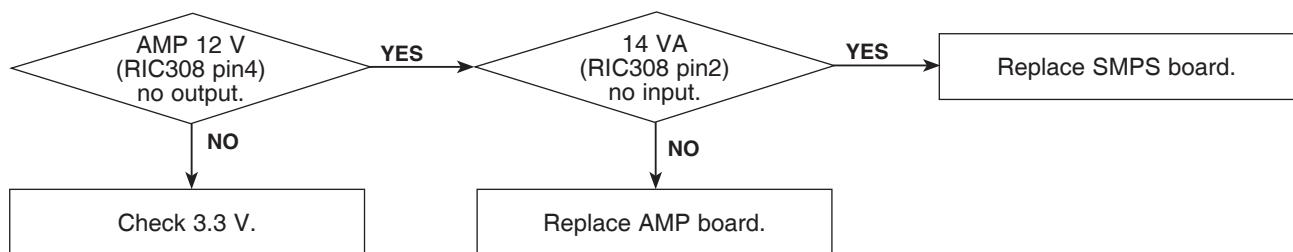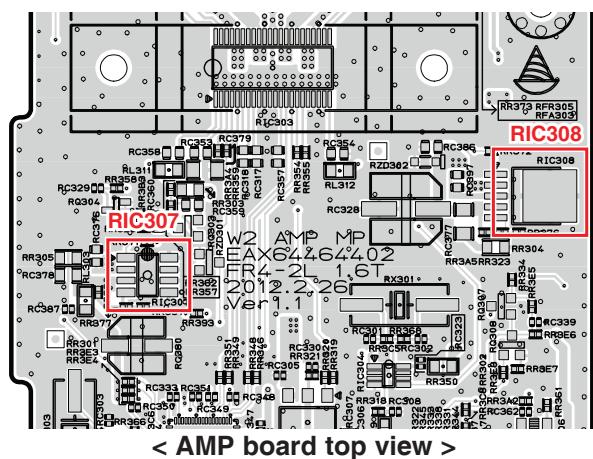
ONE POINT REPAIR GUIDE

3. How to Duplicate Problem

Wireless rear speaker doesn't output a sound.

3-1. Solution

Replace AMP board (No 3.3 V).

3-2. How to troubleshoot (Countermeasure)

PWM 3.3 V
(RIC307 pin3)
no output. ──**YES**──► 5 VA
(RIC307 pin2)
no input. ──**YES**──► Replace SMPS board.

│ **NO**   │ **NO**

▼   ▼

Check Module or connection.   Replace AMP board.

3-3. Service hint (Any picture / Remark)
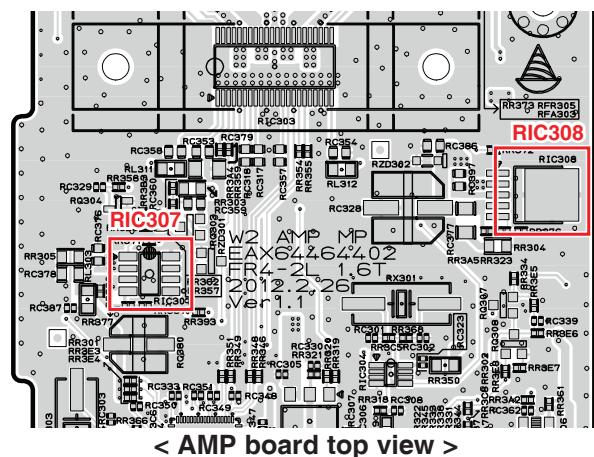
< AMP board top view >

ELECTRICAL TROUBLESHOOTING GUIDE

No Pairing

Check LED status.

Yellow LED blinks irregularly. — **YES** → interference. → Turn off the equipment that gives interference.

NO

Red LED is turned on. — **YES** → Remate.

NO

Check SMPS board or Module connection.

No Sound

Check sound status.

Sound cut off irregularly. — **YES** → interference. → Turn off the equipment that gives interference.

NO

Check LED status.

LED is Red. — **YES** → Remate.

NO

AMP PVDD (RCN301 pin9, 10) no output. — **YES** → Check SMPS board.

NO

AMP 12 V (RIC308 pin4) no output. — **YES** → Check RIC308.

NO

3.3 V (RIC307 pin3) no output. — **YES** → Check RIC307.

NO

Check Module or Connection.

WAVEFORMS

1. AUDIO PART (I2S)

RCN303 pin1 : I2S LRCK
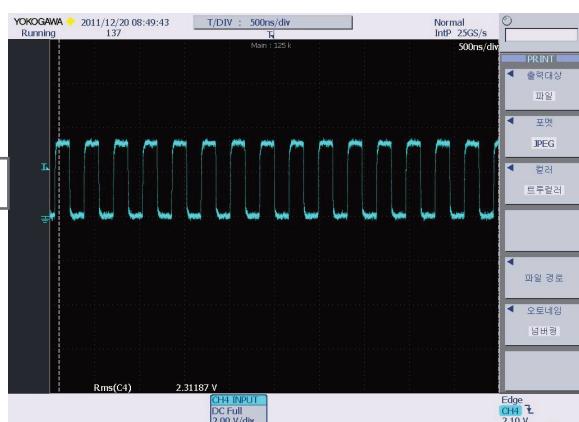
RCN303 pin3 : I2S BCK
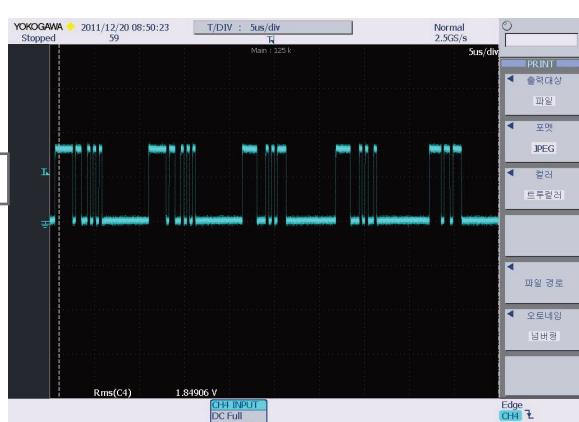
RCN303 pin20 : I2S Audio Data
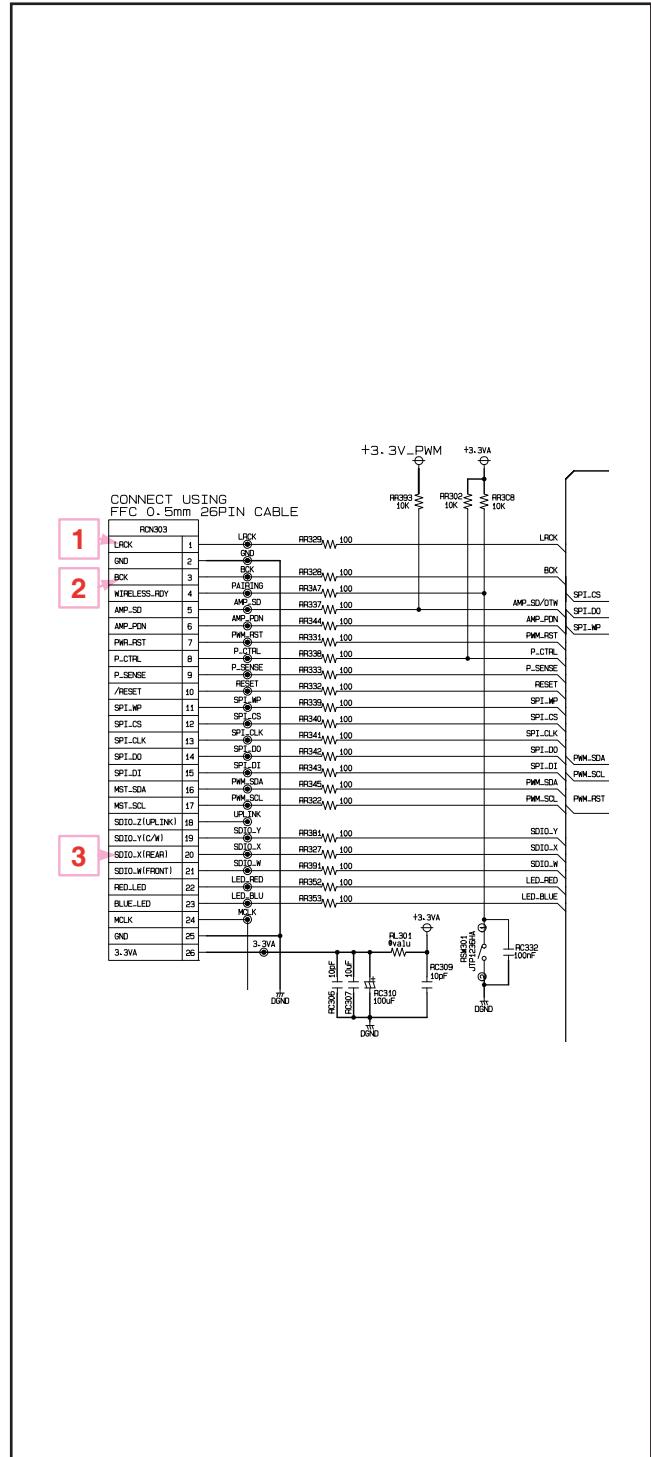
MEMO

PRINTED CIRCUIT BOARD DIAGRAMS
1. WIRELESS RECEIVER SMPS P. C. BOARD

(TOP VIEW)
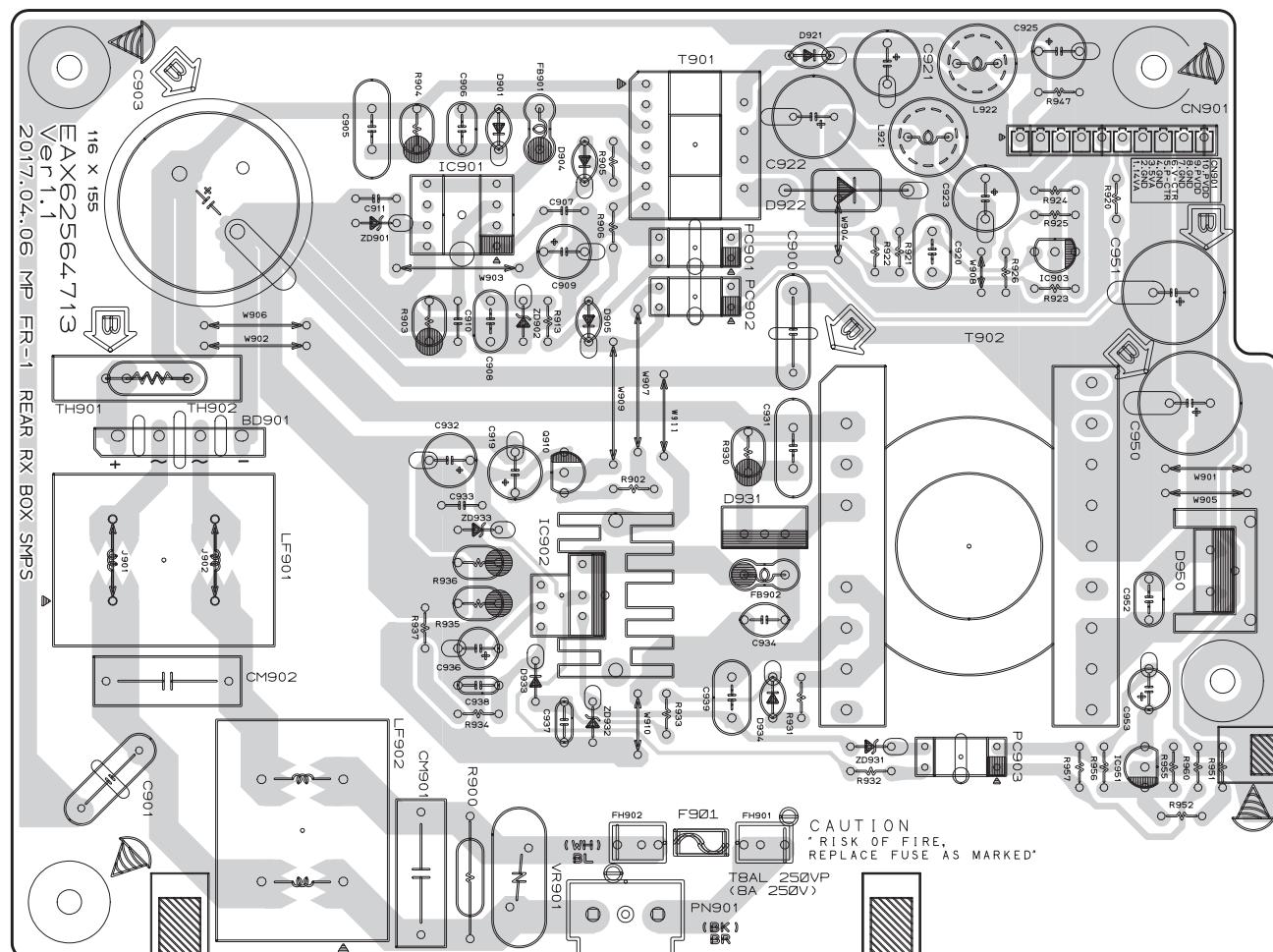
(BOTTOM VIEW)
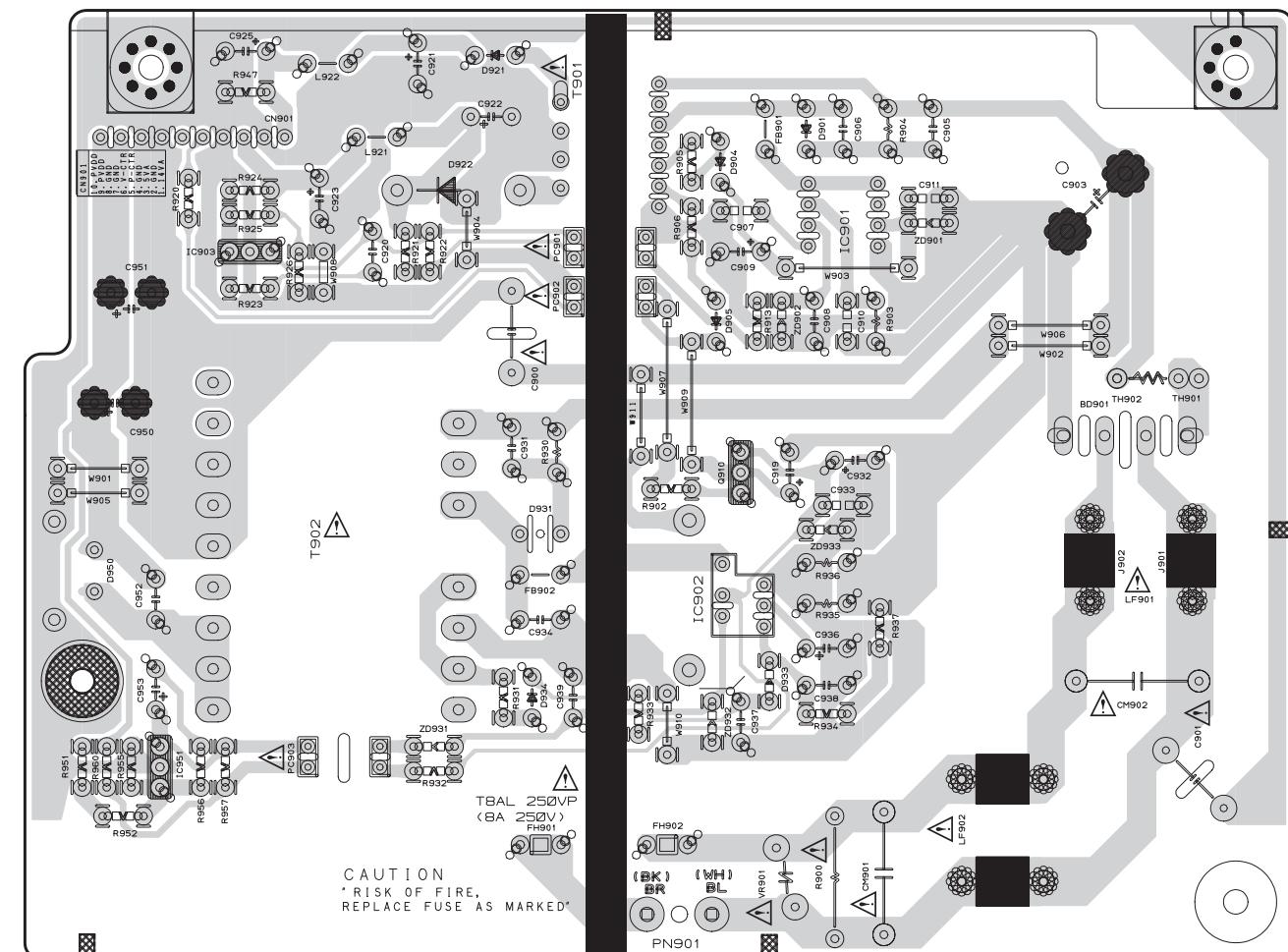
2. WIRELESS RECEIVER AMP P. C. BOARD

(TOP VIEW)

(BOTTOM VIEW)