



SERVICE MANUAL

MODEL: LAS454B (LAS454B, S55A3-D)

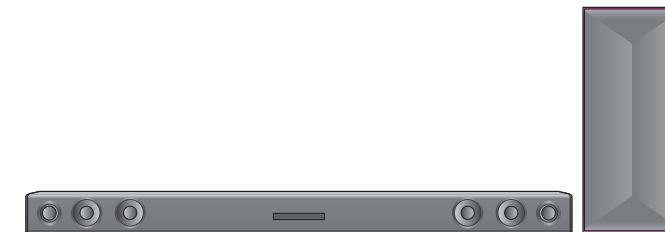
# 2.1 ch Wireless Sound Bar

## SERVICE MANUAL

**MODEL: LAS454B**  
(LAS454B, S55A3-D)

**CAUTION**

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



## **CONTENTS**

- SECTION 1 ..... GENERAL**
- SECTION 2 ..... CABINET & MAIN CHASSIS**
- SECTION 3 ..... ELECTRICAL**
- SECTION 4 ..... WIRELESS SUBWOOFER PART**
- SECTION 5 ..... REPLACEMENT PARTS LIST**

# SECTION 1 GENERAL

## CONTENTS

ESD PRECAUTIONS.....	1-3
WIRELESS SUBWOOFER CONNECTION.....	1-4
HIDDEN KEY MODE .....	1-5
MCS / EQ HIDDEN KEY GUIDE .....	1-6
MCS / EQ PROGRAM UPDATE GUIDE.....	1-7
SPECIFICATIONS .....	1-8

# 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 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 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

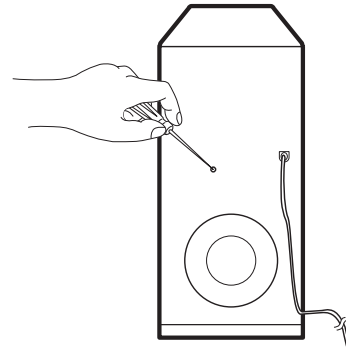
	THE LIGHTNING FLASH WITH APROWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS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



# WIRELESS SUBWOOFER CONNECTION

## LED indicator of wireless subwoofer

LED Color	Status
Yellow-green (Blink)	The connection is trying.
Yellow-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 of the wireless subwoofer to the outlet.
2. Turn on the main unit : The main unit and wireless subwoofer will be automatically connected.

## Manually pairing wireless subwoofer

When your connection is not completed, you can see the red LED or the blinking of yellow-green LED on the wireless subwoofer and the subwoofer does not make sound. To solve the problem, follow the below steps.

1. Adjust volume level of the main unit to minimum by pressing **VOL -** button repeatedly until standby LED on the main unit blinks slowly.
2. Press and hold **Mute** on the remote control for about 3 seconds.
  - The standby LED on the main unit blinks quickly.
3. If the LED of the wireless subwoofer already blinks in yellow-green continually, you can skip this step. Press and hold **PAIRING** on the back of the wireless subwoofer for more than 5 seconds.

- The LED of the wireless subwoofer lights up alternately in red and yellow-green.
4. Disconnect the power cord of the main unit and the wireless subwoofer.
  5. Connect them again after the LED of the main unit and the wireless subwoofer is fully turned off. The main unit and the wireless subwoofer will be paired automatically when you turn on the main unit.
    - When the connection is completed, you can see the yellow-green LED on the subwoofer.

### 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.

# HIDDEN KEY MODE

HIDDEN MODE	KEYS
<b>USB Mode/ UPDATE</b>	Main unit '-' (Volume)' + Remote control ' <b>VOL +</b> '
<b>EEPROM EDIT</b>	Main unit '-' (Volume)' + Remote control ' <b>CINEMA</b> '
<b>EEPROM CLEAR (Initialize)</b>	Main unit '-' (Volume)' + Remote control ' <b>VOICE</b> '
<b>VERSION CHECK</b>	Main unit '-' (Volume)' + Remote control ' <b>STANDARD</b> '
<b>CLIP OFF</b>	Main unit '-' (Volume)' + Remote control ' <b>F (Function)</b> '
<b>CLIP ON</b>	
<b>CLIP ON GAIN MONITERING</b>	
<b>MAX Volume Edit</b>	Enter : Main unit '-' (Volume)' + Remote control ' <b>AUTO POWER OFF</b> ' Setting : <b>VOL +/-</b> Exit : <b>STANDARD</b>
<b>CLIP Algorithm Edit</b>	Main unit '-' (Volume)' + Remote control ' <b>VOL -</b> '
<b>Wireless RF Change</b>	Main unit '-' (Volume)' + Remote control ' <b>WOOFER LEVEL +</b> '
<b>BYPASS Sound Effect</b>	Main unit '-' (Volume)' + Remote control ' <b>DRC ON</b> '
<b>APD Time Display</b>	Main unit '-' (Volume)' + Remote control ' <b>DRC OFF</b> '
<b>APD On/Off</b>	Main unit '-' (Volume)' + Remote control ' <b>AUTO POWER ON</b> '
<b>Up</b>	<b>VOL +</b>
<b>Down</b>	<b>VOL -</b>
<b>Right</b>	<b>VOICE</b>
<b>Left</b>	<b>STANDARD</b>
<b>Enter</b>	<b>CINEMA</b>
<b>TV Remote ON</b>	Remote control ' <b>DRC ON</b> ' for 3 seconds.
<b>TV Remote OFF</b>	Remote control ' <b>DRC OFF</b> ' for 3 seconds.
<b>USB Log Out</b>	Main unit '-' (Volume)' + Remote control ' <b>(Power)</b> '
<b>Wireless Demo Mode</b>	Main unit '-' (Volume)' + Remote control ' <b>WOOFER LEVEL +</b> '

# MCS / EQ HIDDEN KEY GUIDE

## 1. Version & Option Check

※ Please connect the Display Jig to the main unit.

- 1) Power on.
- 2) Press main unit "-" (volume -) key and remote control **STANDARD** key during 3 seconds.
- 3) Check MCS version.

Ex)

**P1411182**

- 4) Press remote control **VOICE** key 1 time.  
Check Wireless Tx version.

Ex)

**TX150303**

- 5) Press remote control **VOICE** key 1 time.  
Check Wireless Rx version.

**It's possible to connect wireless subwoofer.**

Ex)

**RX000000**

- 6) Press remote control **VOICE** key 1 time.  
Check EQ version.

Ex)

**Q1411170**

- 7) Press remote control **VOICE** key 1 time.  
Check option.

Press remote control **VOL + (Up), VOL - (Down), STANDARD (Left), VOICE (Right)** key.

Ex)

**OP00-00**

- 8) Power cord unplug.

## 2. EEPROM Initialize

※ Please connect the Display Jig to the main unit.

- 1) Power on.
- 2) Press main unit "-" (volume -) key and remote control **VOICE** during 3 seconds.
- 3) Display VFD "E2P CLR".
- 4) Power off automatically.
- 5) Power cord unplug.

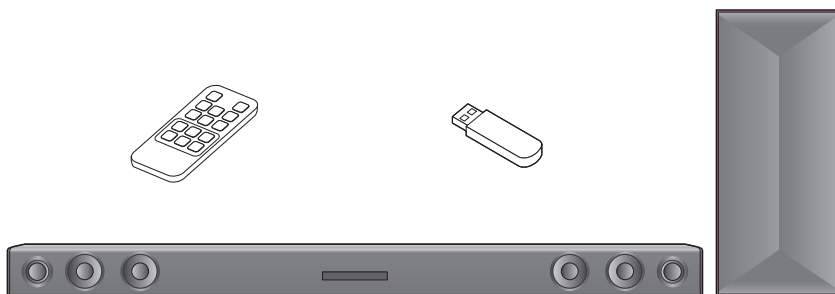
# MCS / EQ PROGRAM UPDATE GUIDE

## 1. Preparation

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

Ex ) LAS454B :

<b>MCS</b>	⇒ E:\PG540_FW_LAS454B_Ver.bin (if USB driver is E:\)
<b>EQ</b>	⇒ E:\EQ_PRG.BIN (if USB driver is E:\)
<b>Wireless Tx</b>	⇒ E:\WIRELESS_TX_150011.bin (if USB driver is E:\)
<b>Wireless Rx</b>	⇒ E:\WIRELESS_RX_150303.bin (if USB driver is E:\)



## 2. Update

※ **Please connect the Display Jig to the main unit.**

- 1) Power on.
- 2) Press main unit “-” (volume -) key and remote control “VOL +” during 3 seconds. (USB Mode)
- 3) Insert USB.
- 4) Display in VFD.
  - MCS : “MCS UP” ⇒ “FINISH” ⇒ Power off.
  - EQ : “EQ UP” ⇒ “FINISH” ⇒ Power off.
  - Wireless Tx : “UPDATE” ⇒ “WR XX”(Progress) ⇒ “FINISH” ⇒ Power off.
  - Wireless Rx : “UPDATE” ⇒ “SEND XX”(Progress) ⇒ “FINISH” ⇒ Power off.
- 5) Loading is shown while updating.
  - Never remove USB or AC cord.
- 6) After update finish, show FINISH in VFD and power of automatically.
- 7) Power cord un-plug.

# SPECIFICATIONS

## • GENERAL

Power requirements	120 V ~ 60 Hz
Power consumption	27 W
	Networked standby : 0.5 W (If all network ports are activated.)
Dimensions (W x H x D)	Approx. 950 mm x 71 mm x 47 mm (37.4 inch x 2.8 inch x 1.9 inch)
Net Weight	Approx. 2.47 kg (5.4 lb)
Operating temperature	41 °F to 95 °F (5 °C to 35 °C)
Operating humidity	5 % to 90 %

## • INPUTS

Digital audio in (OPTICAL IN)	3 V (p-p), Optical jack x 1
Portable in (PORT. IN)	0.5 Vrms (3.5 mm stereo jack) x 1
Available Digital Input Audio Sampling Frequency	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
Available Digital Input Audio format	Dolby Digital, DTS Digital Surround, PCM

## • AMPLIFIER (RMS OUTPUT POWER)

Total	300 W
Front	50 W + 50 W (4 $\Omega$ at 1 kHz, 10% THD)
Subwoofer	200 W (3 $\Omega$ at 80 Hz, 10% THD)

## • WIRELESS SUBWOOFER (S55A3-D)

Power requirements	120 V ~ 60 Hz
Power consumption	33 W
Type	1 Way 1 Speaker
Impedance	3 $\Omega$
Rated Input Power	200 W
Max. Input Power	400 W
Dimensions (W x H x D)	Approx. 171 mm x 390 mm x 261 mm (6.7 inch x 15.3 inch x 10.2 inch)
Net Weight	Approx. 5.6 kg (12.3 lb)

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

# SECTION 2

## CABINET & MAIN CHASSIS

### CONTENTS

**EXPLODED VIEWS** ..... 2-3

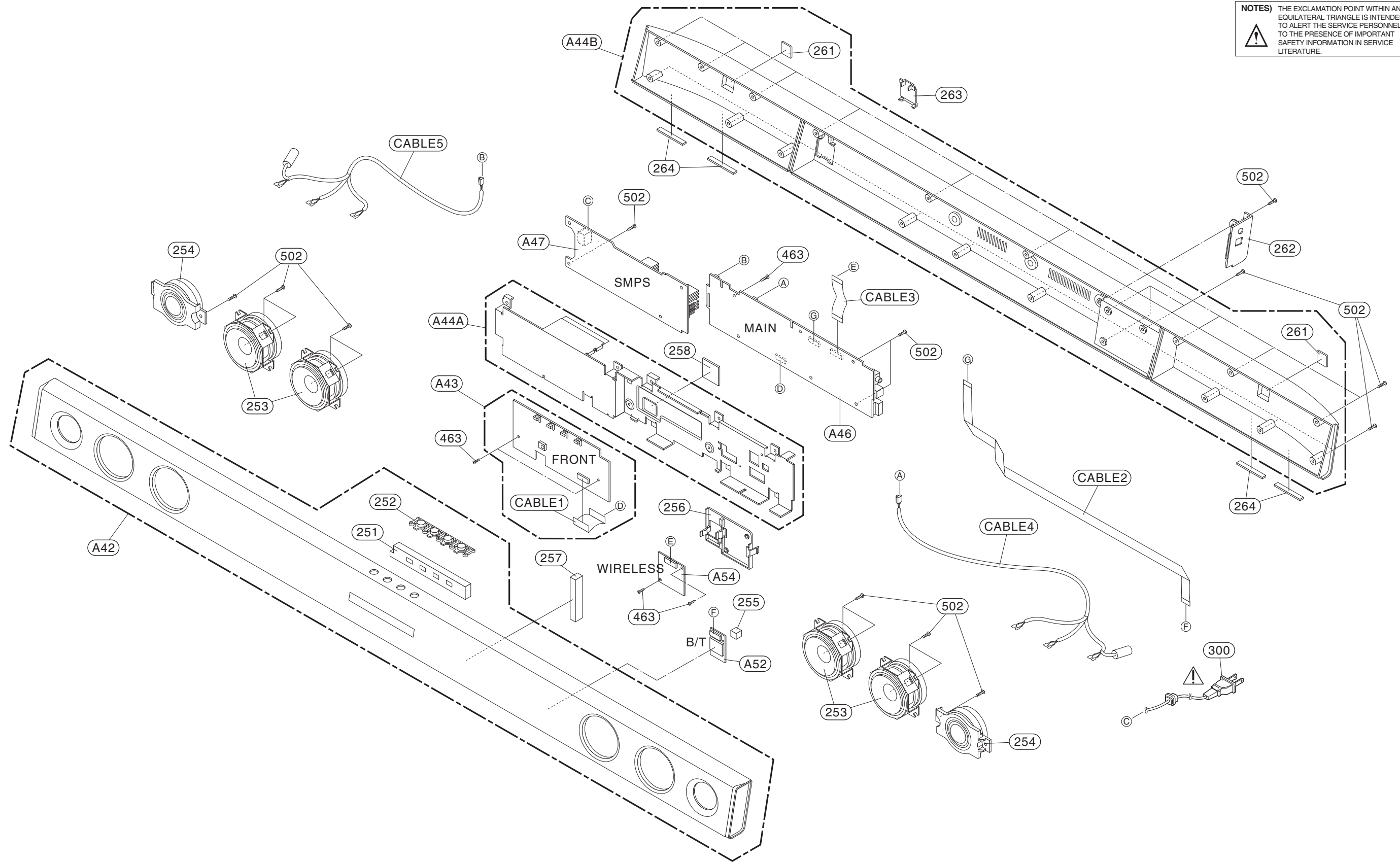
- 1. MAIN SET SECTION ..... 2-3
- 2. WIRELESS SUBWOOFER SECTION ..... 2-5
- 3. PACKING ACCESSORY SECTION ..... 2-7



# EXPLODED VIEWS

## 1. MAIN SET SECTION

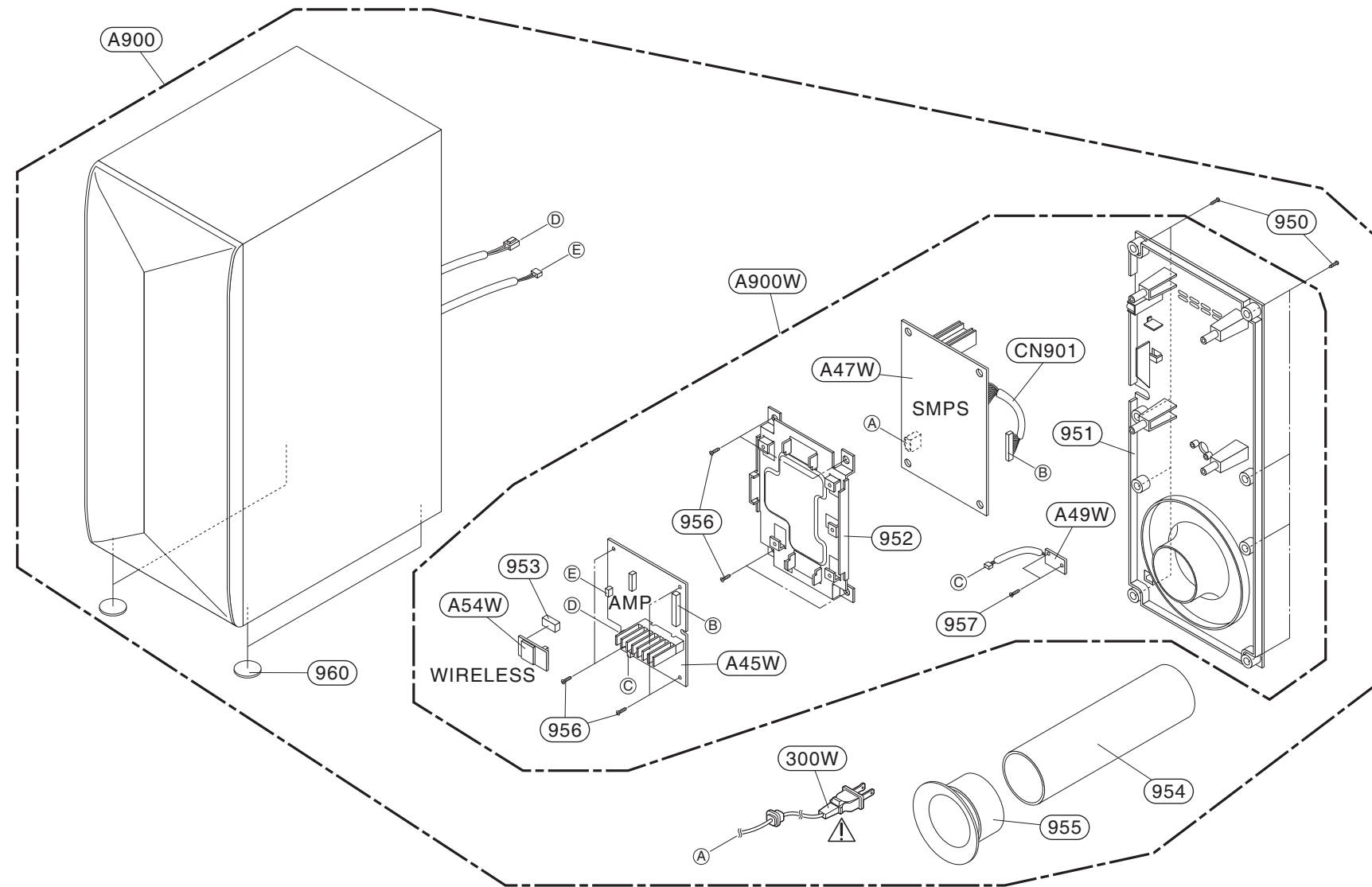
**NOTES)** THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.



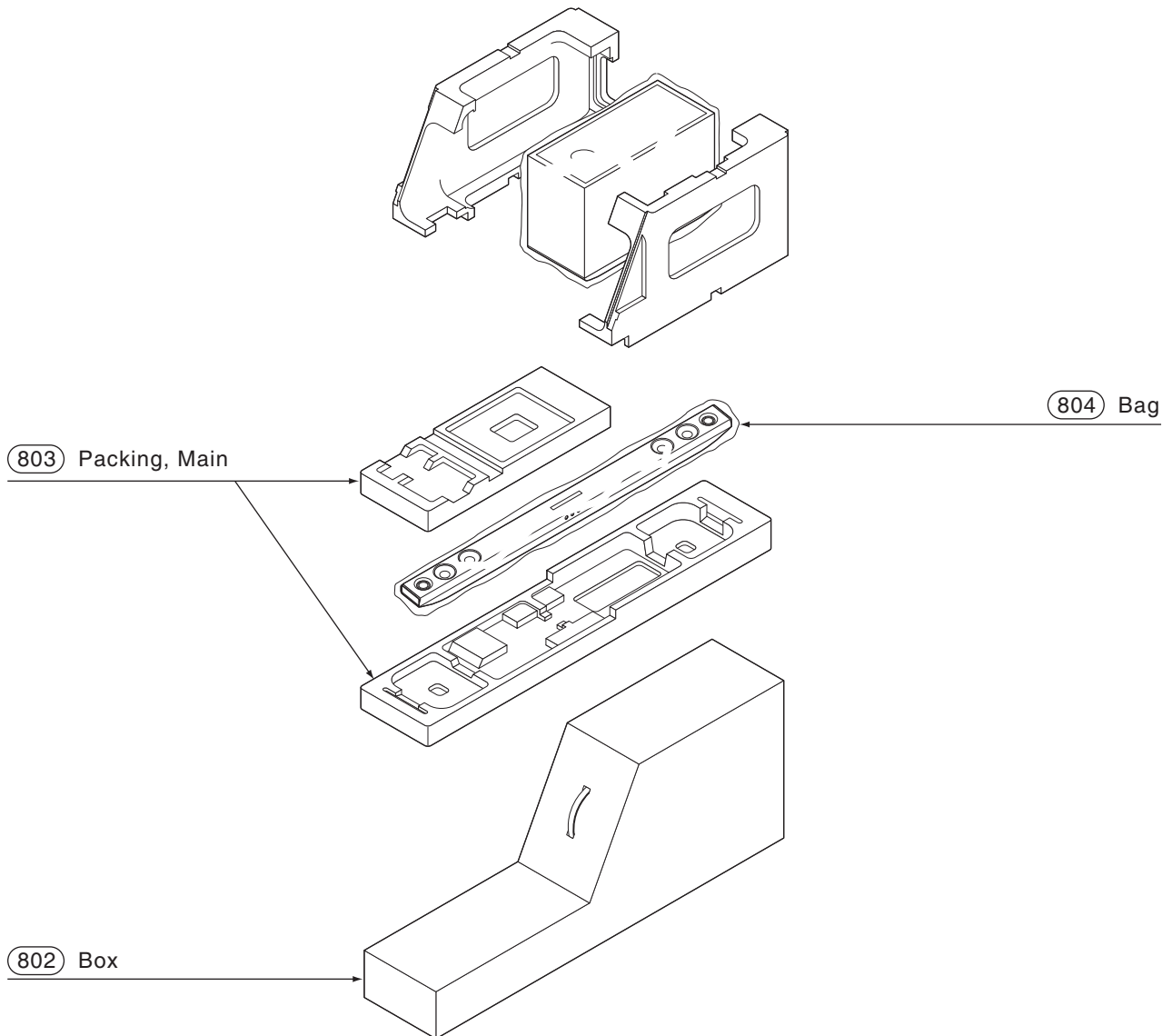
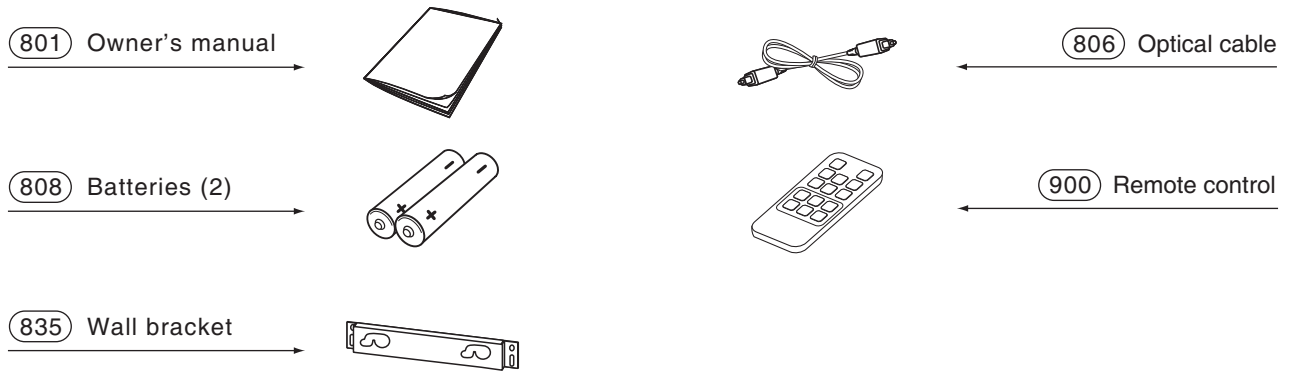


## 2. WIRELESS SUBWOOFER SECTION

**NOTES)** THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.



### 3. PACKING ACCESSORY SECTION





# SECTION 3 ELECTRICAL

## CONTENTS

<b>ONE POINT REPAIR GUIDE</b> .....	<b>3-2</b>
1. NO POWER PROBLEM (PVDD) .....	3-2
2. POWER ON ERROR .....	3-3
3. NO SOUND (PORTABLE FUNCTION) .....	3-4
4. NO WIRELESS .....	3-5
5. NO BLUETOOTH .....	3-6
6. NO SOUND (OPTICAL) .....	3-7
7. D(DC) PROTECTION .....	3-8
8. S(SHUT DOWN) PROTECTION .....	3-9
9. B(BURNT) PROTECTION .....	3-10
<b>WAVEFORMS OF MAJOR CHECK POINT</b> .....	<b>3-11</b>
1. CRYSTAL .....	3-11
2. FLASH MEMORY .....	3-12
3. TACT KEY .....	3-13
4. USB .....	3-14
5. REMOTE CONTROL .....	3-15
6. OPTICAL .....	3-16
7. PORTABLE .....	3-17
8. AUDIO PWM .....	3-18
9. AUDIO AMP .....	3-20
<b>WIRING DIAGRAM</b> .....	<b>3-21</b>
<b>BLOCK DIAGRAMS</b> .....	<b>3-23</b>
1. SYSTEM BLOCK DIAGRAM .....	3-23
2. POWER BLOCK DIAGRAM .....	3-25
<b>CIRCUIT DIAGRAMS</b> .....	<b>3-27</b>
1. SMPS CIRCUIT DIAGRAM .....	3-27
2. MAIN - DSP CIRCUIT DIAGRAM .....	3-29
3. MAIN - INTERFACE CIRCUIT DIAGRAM .....	3-31
4. MAIN - PWM & AMP CIRCUIT DIAGRAM .....	3-33
5. MAIN - POWER CIRCUIT DIAGRAM .....	3-35
6. FRONT CIRCUIT DIAGRAM .....	3-37
<b>CIRCUIT VOLTAGE CHART</b> .....	<b>3-39</b>
1. ICs .....	3-39
2. CONNECTORS .....	3-41
<b>PRINTED CIRCUIT BOARD DIAGRAMS</b> .....	<b>3-43</b>
1. SMPS P. C. BOARD DIAGRAM .....	3-43
2. MAIN P. C. BOARD DIAGRAM .....	3-45
3. FRONT P. C. BOARD DIAGRAM .....	3-47

# ONE POINT REPAIR GUIDE

## 1. NO POWER PROBLEM (PVDD)

No power problem occurs when you power on the unit.

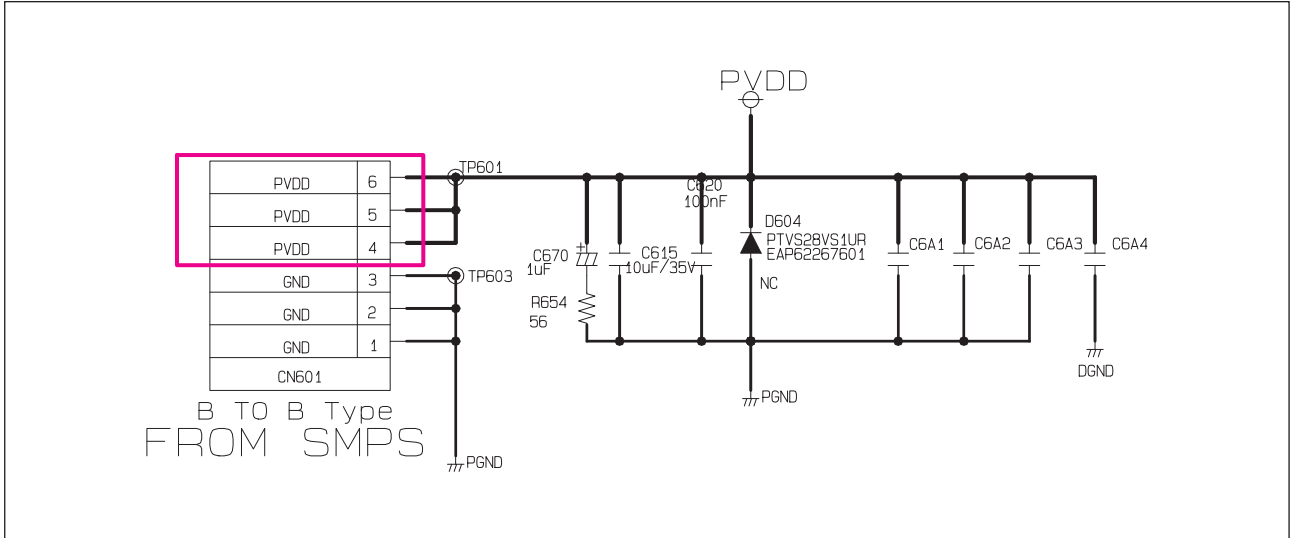
### 1-1. Solution

Replace SMPS board.

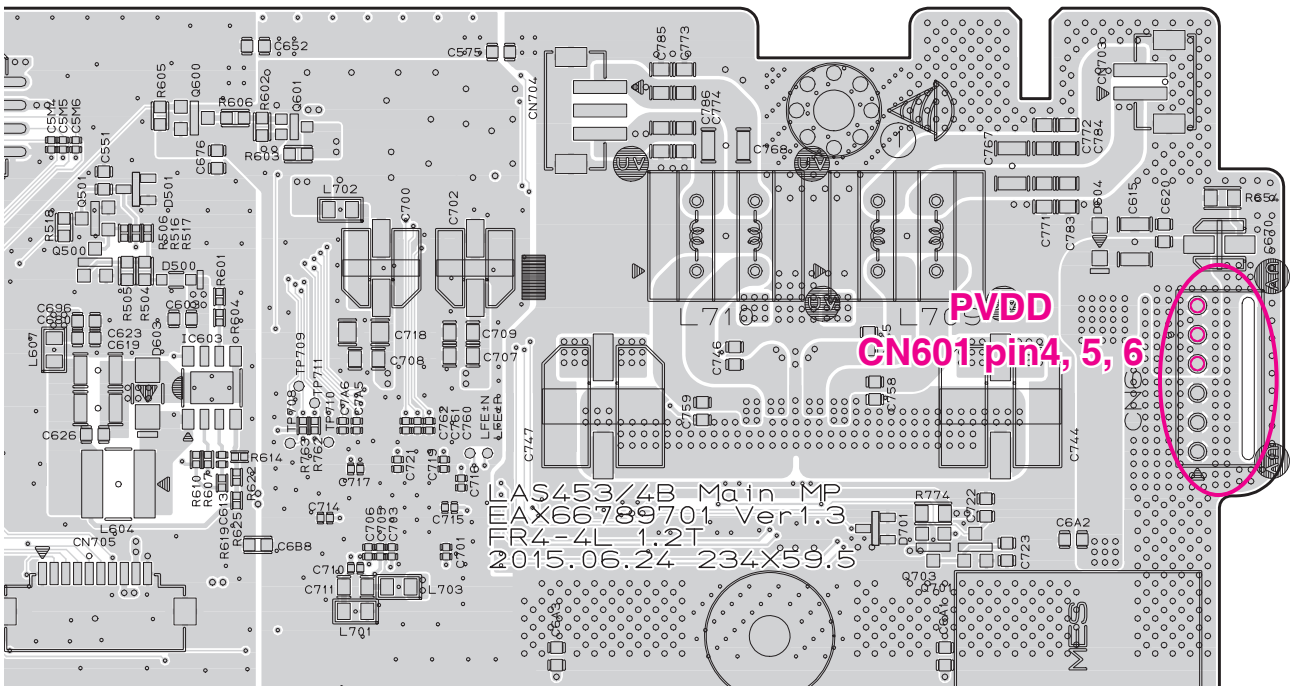
### 1-2. How to troubleshoot (Countermeasure)

1) Check the PVDD voltage 24 V at pin4, 5, 6.

When you check the no power at this point, then replace SMPS board.



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



< MAIN board top view >

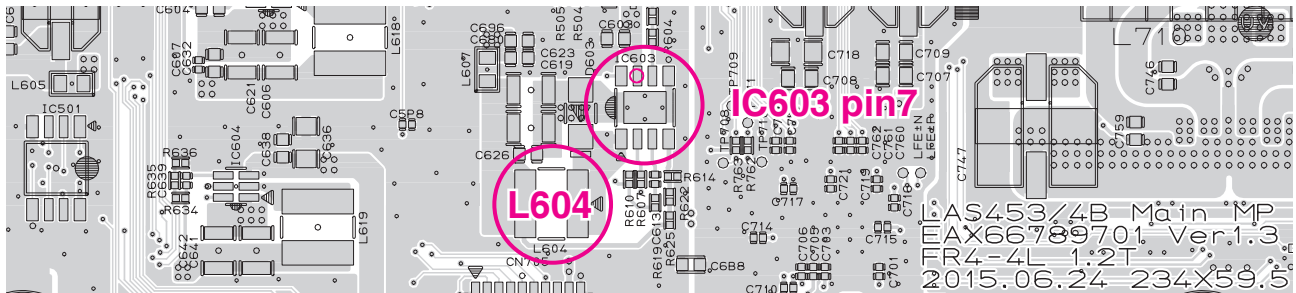
# ONE POINT REPAIR GUIDE

## 2. POWER ON ERROR

No display or Not working.

### 2-1. IC603

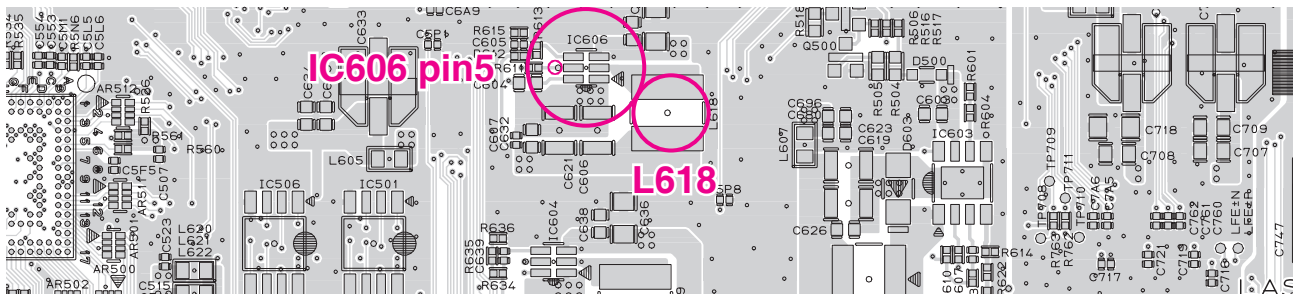
- 1) Check 12 VA at L604.
- 2) If 12 VA is not checked at the point, then find 24 V at pin7 of IC603.
- 3) 1), 2) is NG. ➔ Replace IC603.



< MAIN board top view >

### 2-2. IC606

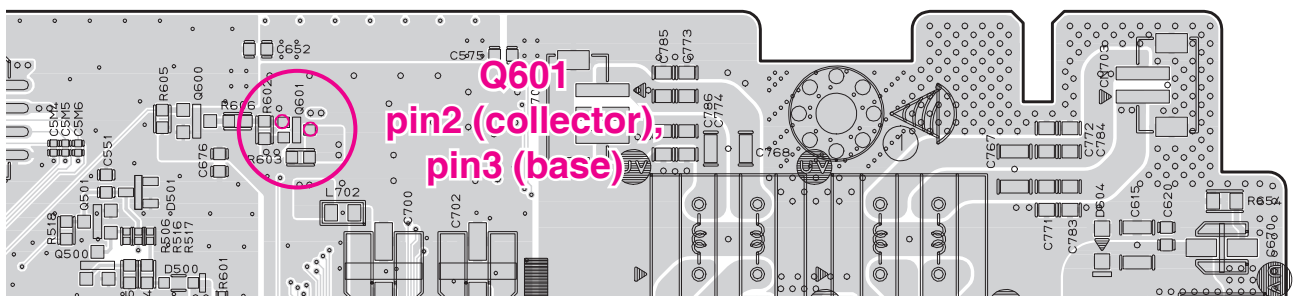
- 1) Check 3.3 VA at L618.
- 2) If 3.3 VA is not checked at the point, then find 12 V at pin5 of IC606.
- 3) 1), 2) is NG. ➔ Replace IC606.



< MAIN board top view >

### 2-3. Q601

- 1) Check 12 V at the Collector of Q601 (pin2).
- 2) If 12 V is not checked at the point, then find 11 V at the Base of Q601 (pin3).
- 3) 1), 2) is NG. ➔ Replace Q601.



< MAIN board top view >

# ONE POINT REPAIR GUIDE

## 3. NO SOUND (PORTABLE FUNCTION)

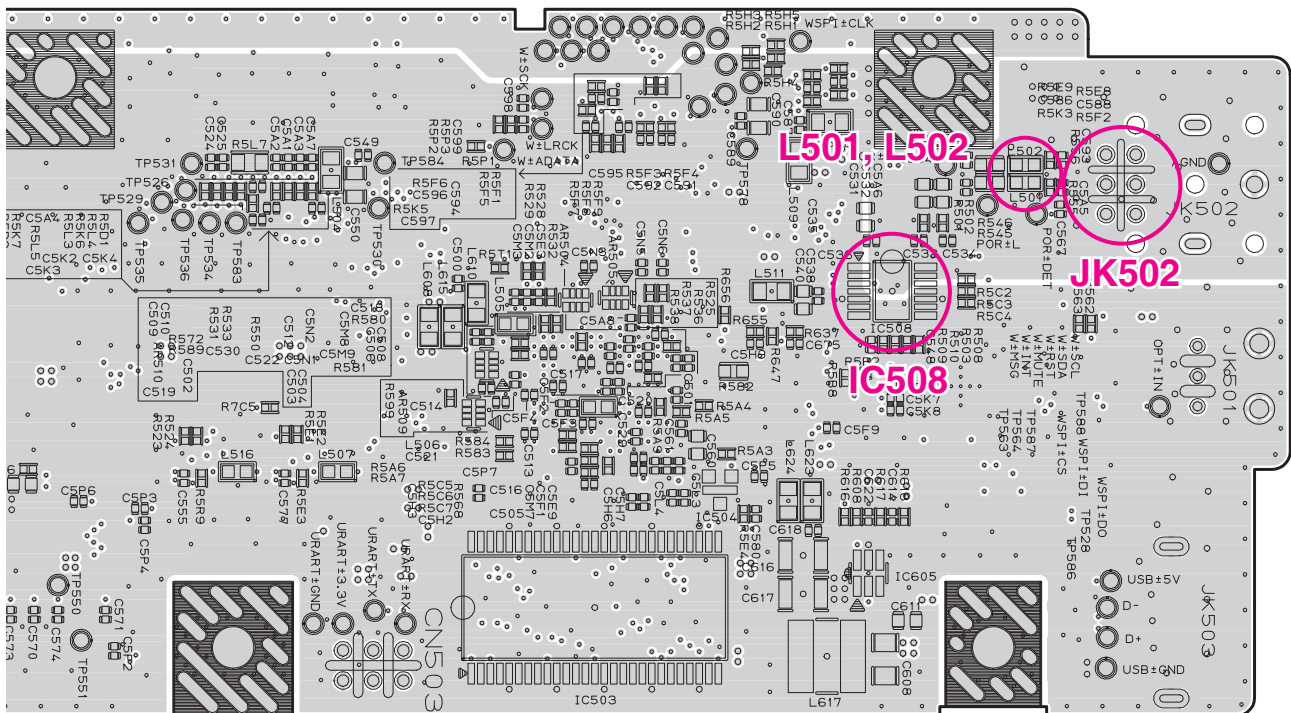
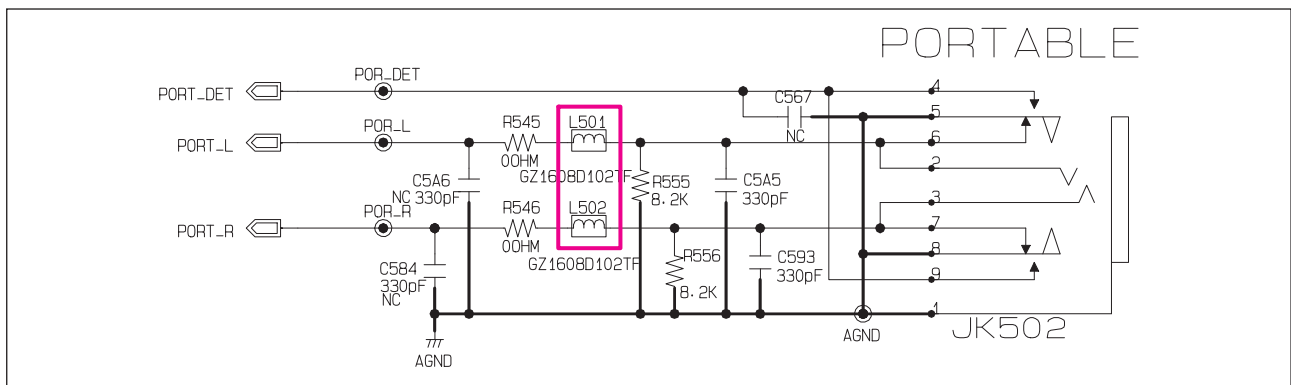
### 3-1. Solution

Replace IC508 or portable jack (JK502).

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

- 1) Please check the soldering status of JK502.
- 2) Please check L501, L502 (POR\_L, POR\_R signal) of portable jack (JK502).  
If you can't find input signal, replace JK502.
- 3) If you can find input signal, check pin13, 14 of IC508.
- 4) If you can't find signal at pin13, 14 of IC508, replace IC508.

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



< MAIN board bottom view >



# ONE POINT REPAIR GUIDE

## 4. NO WIRELESS

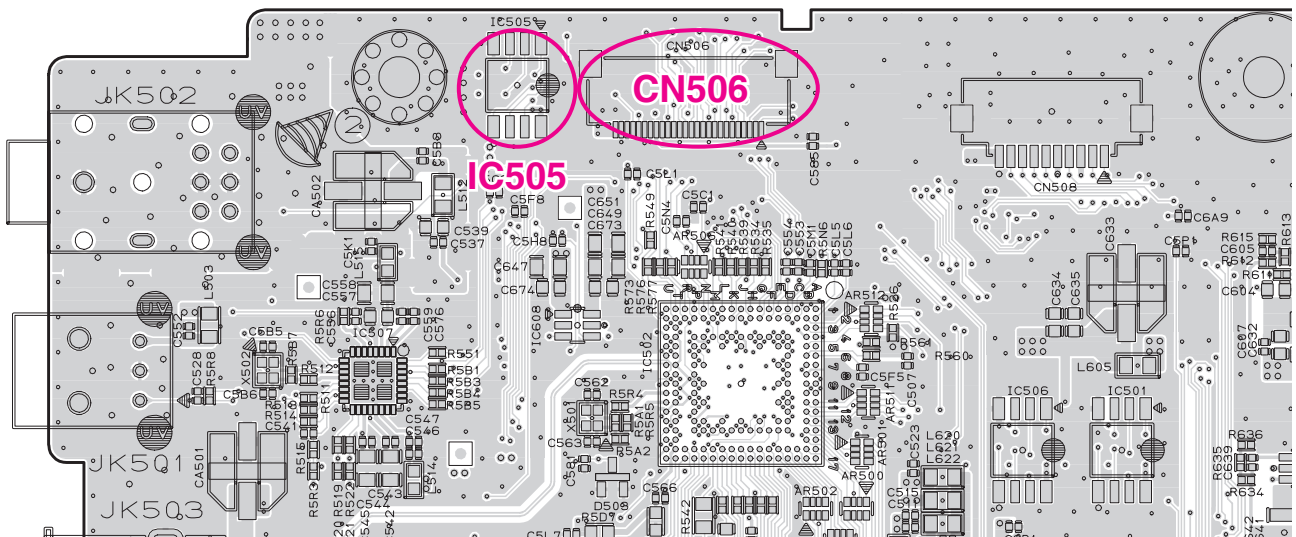
### 4-1. Solution

Replace IC505 on MAIN board.(No 3.3 V)

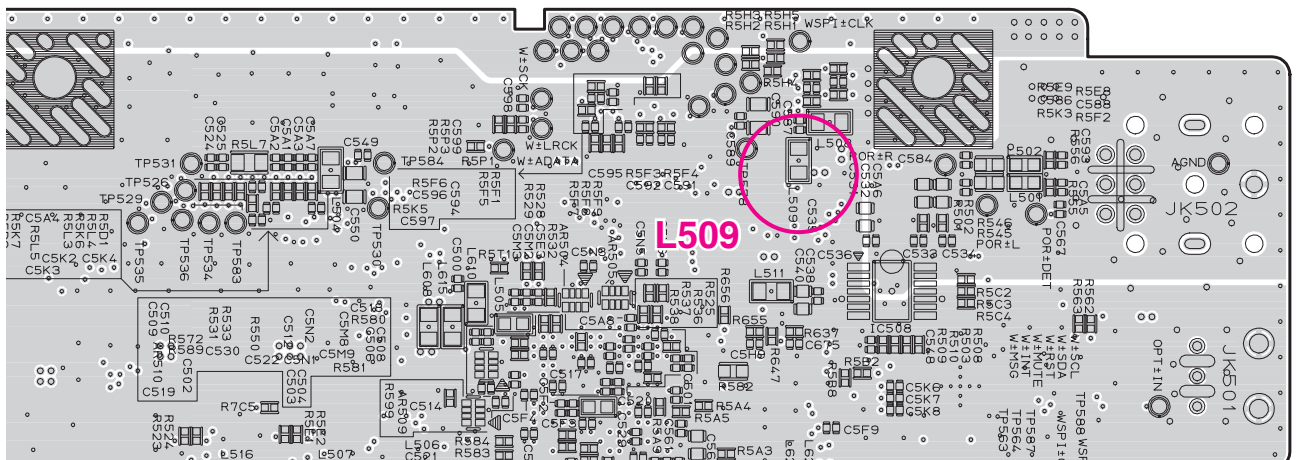
### 4-2. How to troubleshoot (Countermeasure)

- 1) Please check externally status of Wireless board to board connection on your eyes.  
(at CN506 and Wireless module)
- 2) Please check 3.3 V of WL\_3V3 (at L509).  
If 3.3 V is ok at L509, please check SPI signal (WL\_SPI\_CS/D0/WP/DI/CLK) of IC505 (pin1, 2, 3, 5, 6).
- 3) If you can't have no signal, please replace IC505.
- 4) If 3) is OK, then proceed S/W update.  
Update Wireless TX (Main set) and Wireless RX (Subwoofer) each.

### 4-3. Service hint (Any picture / Remark)



< MAIN board top view >



< MAIN board bottom view >



# ONE POINT REPAIR GUIDE

## 5. NO BLUETOOTH

### 5-1. Solution

Replace IC502 on MAIN board.(No 3.3 V)

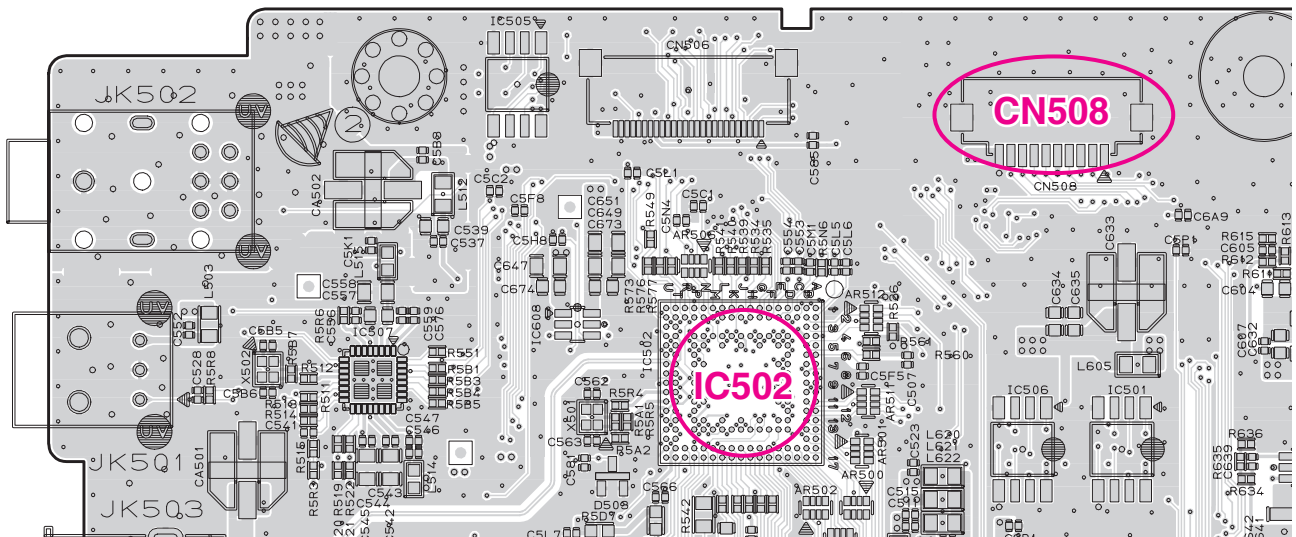
### 5-2. How to troubleshoot (Countermeasure)

- 1) Please check externally status of Bluetooth cable connection on your eyes.(at CN508 and Bluetooth module)
- 2) Please check 3.3 V of 3.3VA (at L504).

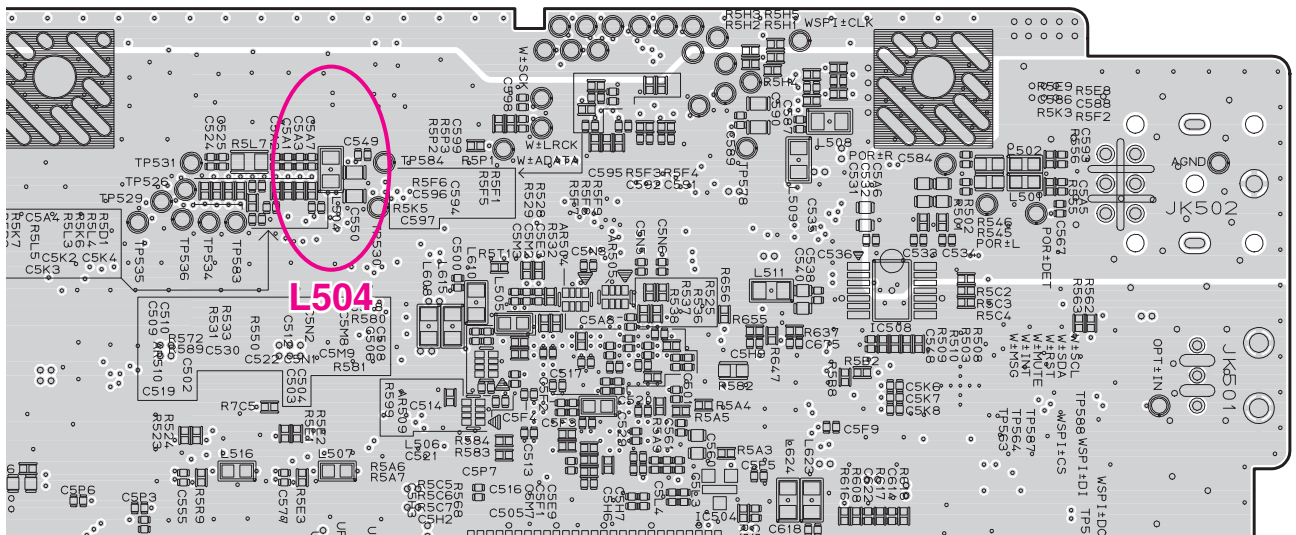
If 3.3 V is OK at L504, please check BT\_SDA, BT\_SCL, BT\_RST (pin53, 51, 25) of IC502 and BT\_RX, BT\_TX (pin29, 27).

If you have no signal, please replace IC502.

### 5-3. Service hint (Any picture / Remark)



< MAIN board top view >



< MAIN board bottom view >

# ONE POINT REPAIR GUIDE

## 6. NO SOUND (OPTICAL)

### 6-1. Solution

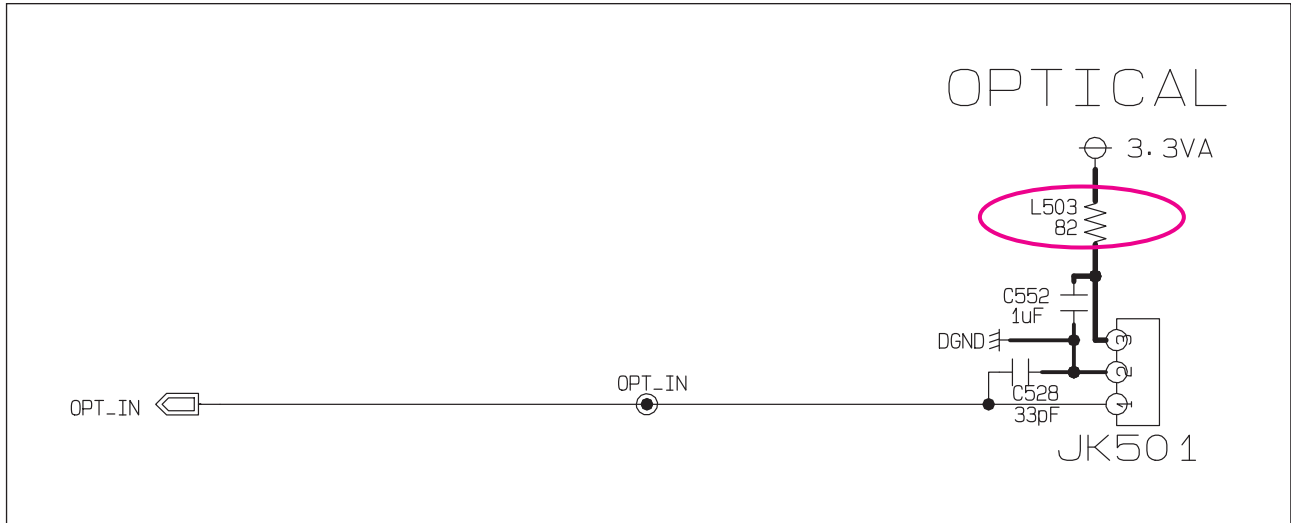
Replace IC507 on MAIN board.

### 6-2. How to troubleshoot (Countermeasure)

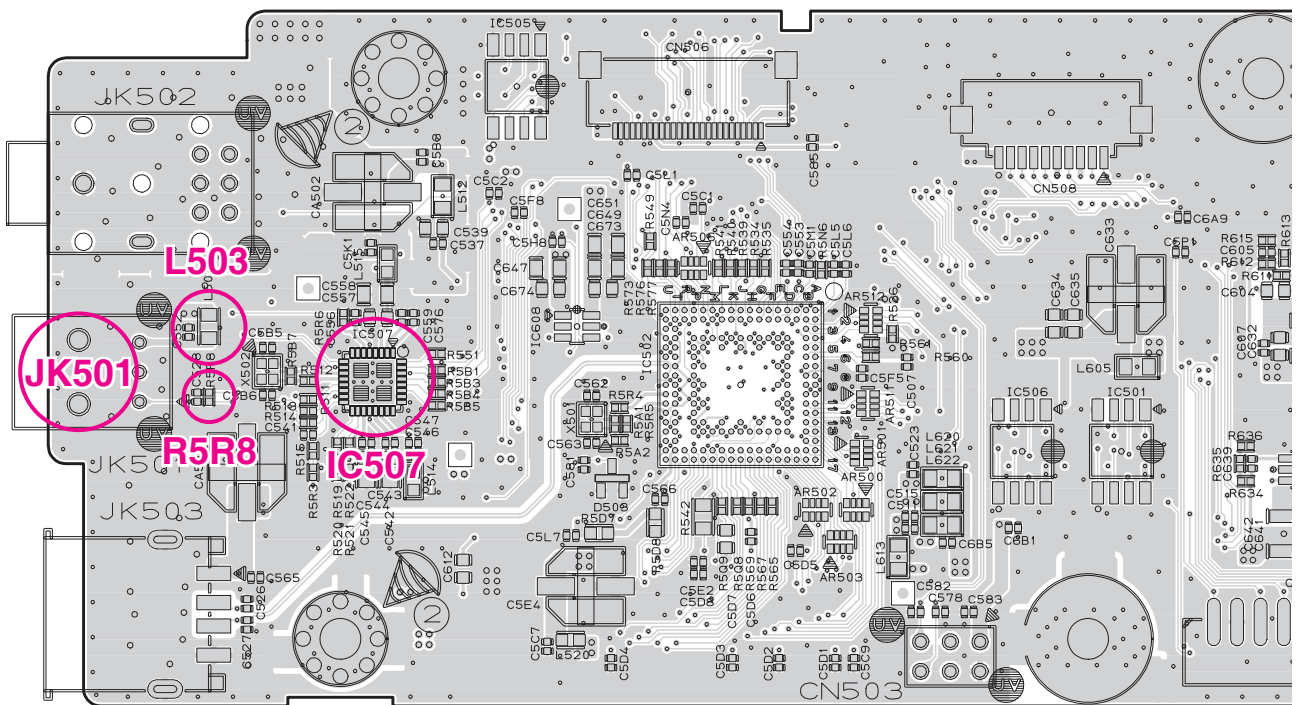
1) Please check 3.3 V of 3.3VA at L503.

If you can check 3.3 V, please confirm OPT\_DET signal (R5R8) in MAIN board when optical mode.

2) In spite of process 1), set has abnormal output, then replace IC507.



### 6-3. Service hint (Any picture / Remark)



< MAIN board top view >

# ONE POINT REPAIR GUIDE

## 7. D(DC) PROTECTION

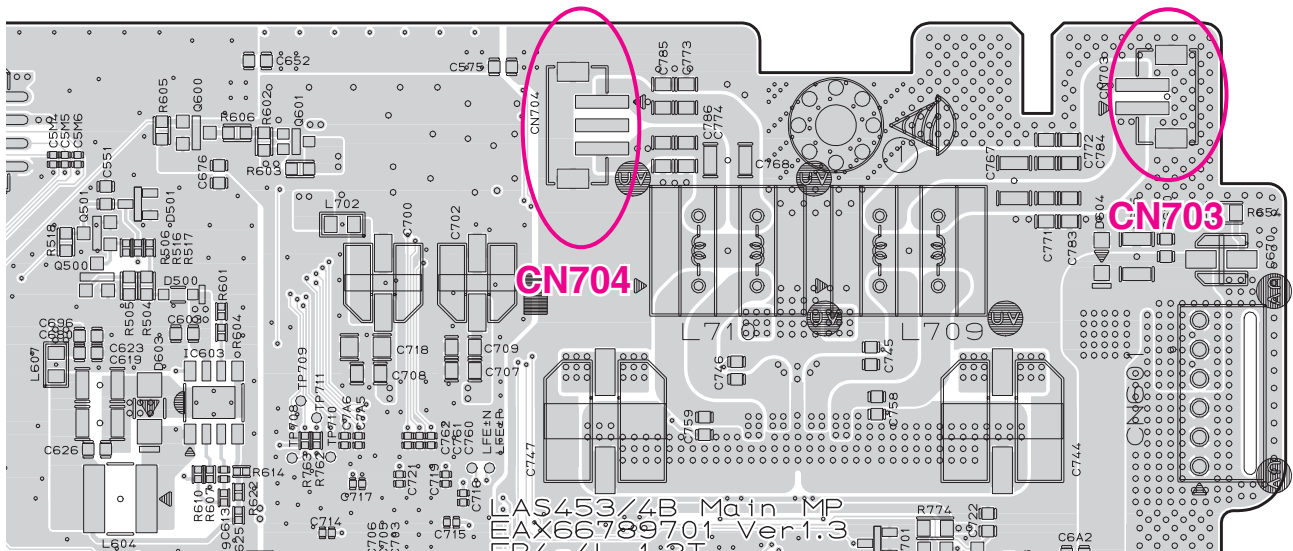
### 7-1. Solution

Replace IC703 (AMP IC) on MAIN board.

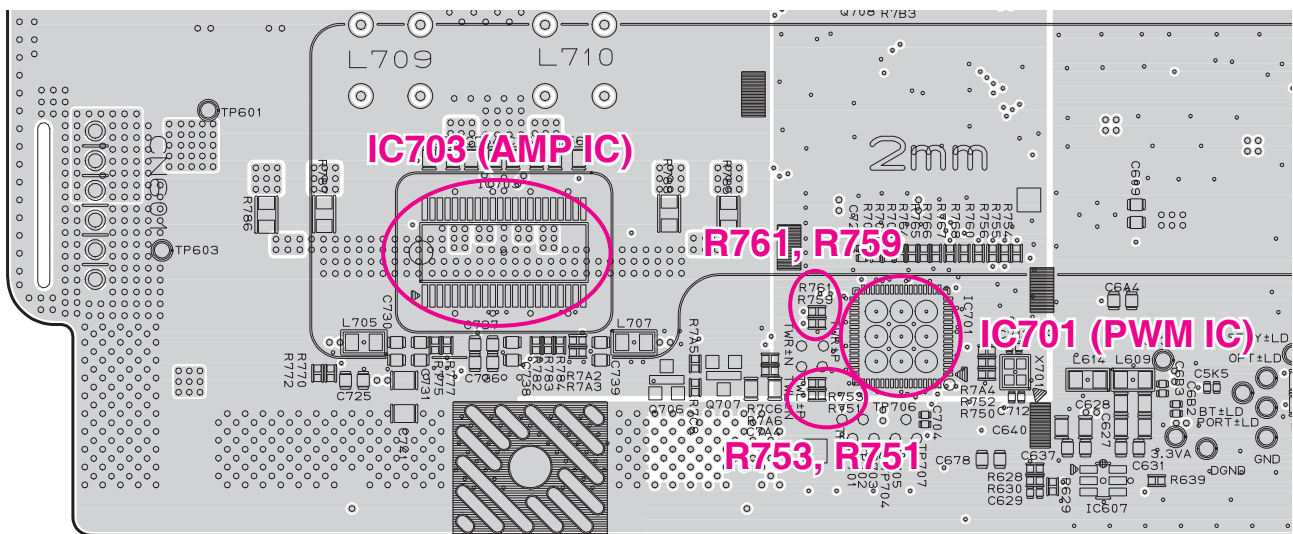
### 7-2. How to troubleshoot (Countermeasure)

- 1) After MAIN SET power off, check Red LED blink at intervals of 1 sec. (D Protection or S Protection)
- 2) Turn MAIN SET power on again.
- 3) Check DC Voltage of speaker out FL+/- (CN703 pin1, 2), FR+/- (CN704 pin1, 3).
- 4) Check resistor crack, cold solder of PWM IC out (R751, R753, R759, R761).
- 5) If PWM IC out is ok and speaker out (FL+/-, FR+/-) has DC Voltage,  
Replace IC703 (AMP IC) on MAIN bottom board.

### 7-3. Service hint (Any picture / Remark)



< MAIN board top view >



< MAIN board bottom view >

# ONE POINT REPAIR GUIDE

## 8. S(SHUT DOWN) PROTECTION

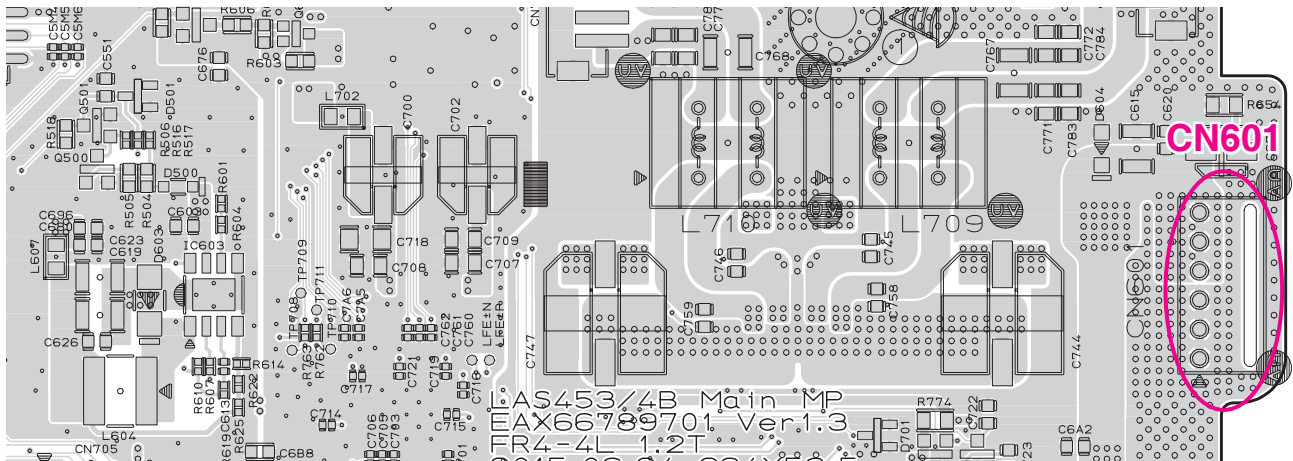
### 8-1. Solution

Replace IC703 (AMP IC) on MAIN board.

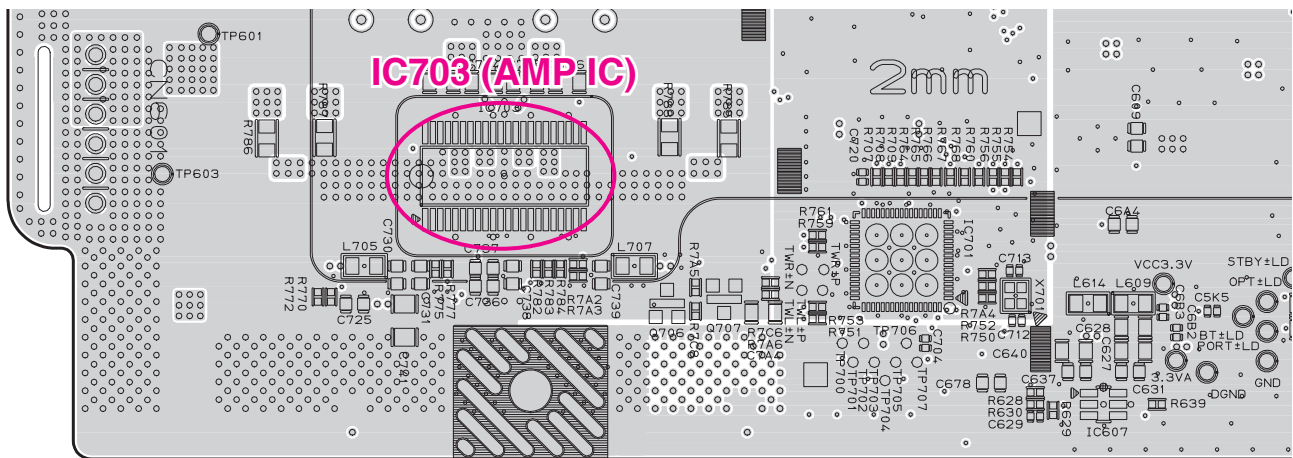
### 8-2. How to troubleshoot (Countermeasure)

- 1) After MAIN SET power off, check Red LED blink at intervals of 1 sec. (D Protection or S Protection)
- 2) Turn MAIN SET power on again.
- 3) Check PVDD voltage (24 V) of CN601 pin4, 5, 6.
  - If PVDD voltage has 8.5 V under, refer to SMPS board repair guide. (page 3-2.)
- 4) Check GVDD, VDD voltage (12 V) of IC703 pin1, 2.
  - If GVDD, VDD voltage has 8.5 V under, refer to 12 V no power repair guide. (page 3-3.)
- 5) Check impedance (4  $\Omega$ ) of speaker unit.
  - If impedance of speaker unit has 1  $\Omega$  under, replace speaker unit.
- 6) If check point 3), 4), 5) is ok, replace IC703 (AMP IC) on MAIN bottom board.

### 8-3. Service hint (Any picture / Remark)



< MAIN board top view >



< MAIN board bottom view >













# 4. USB

11

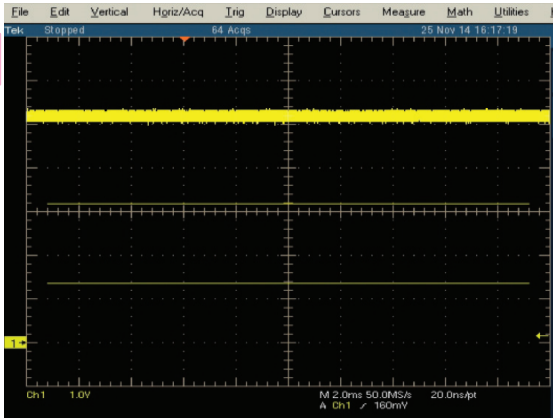


FIG 4-1. USB\_5V

12

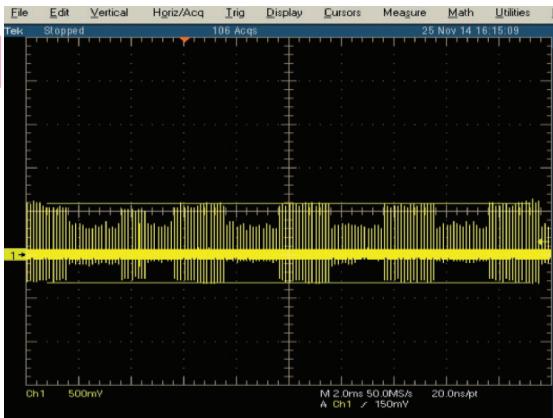


FIG 4-2. USB D+

13

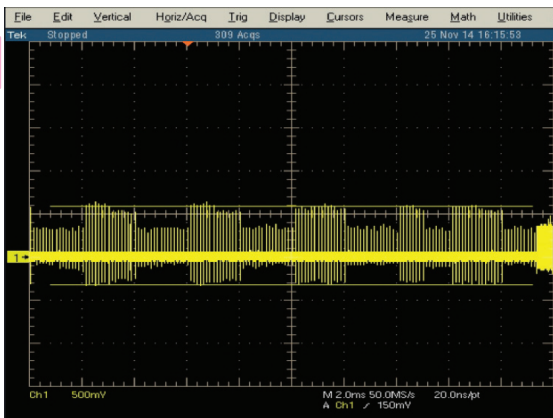
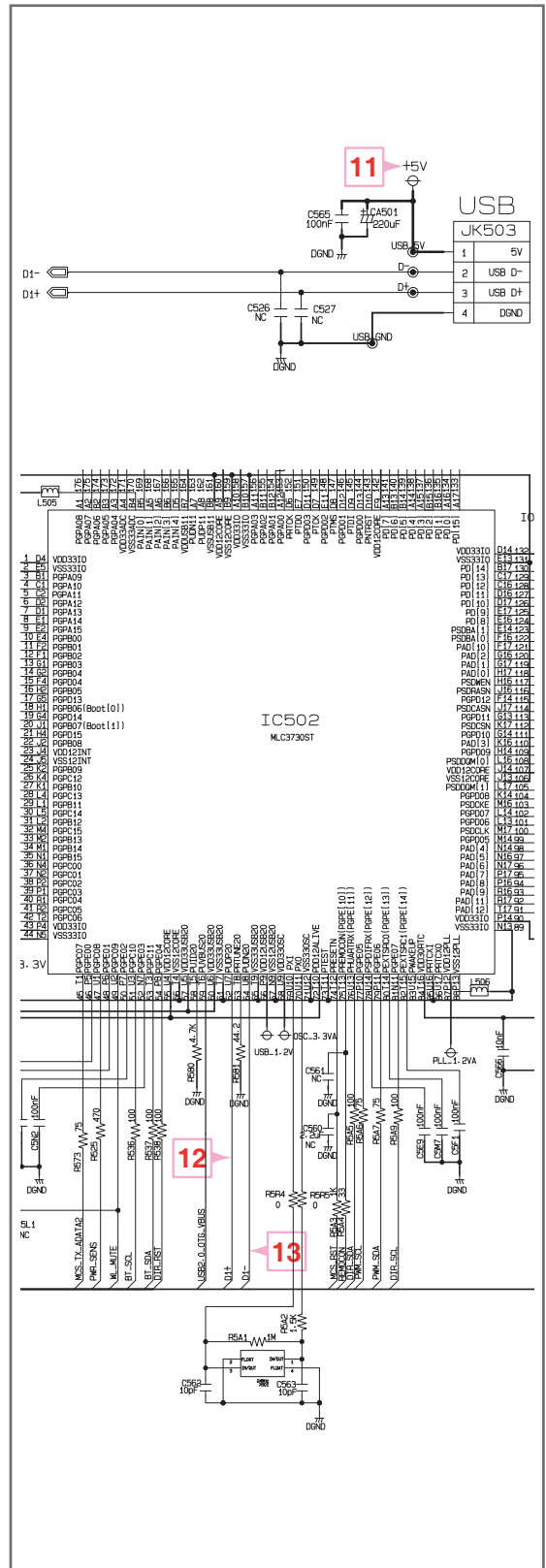


FIG 4-3. USB D-



## 5. REMOTE CONTROL

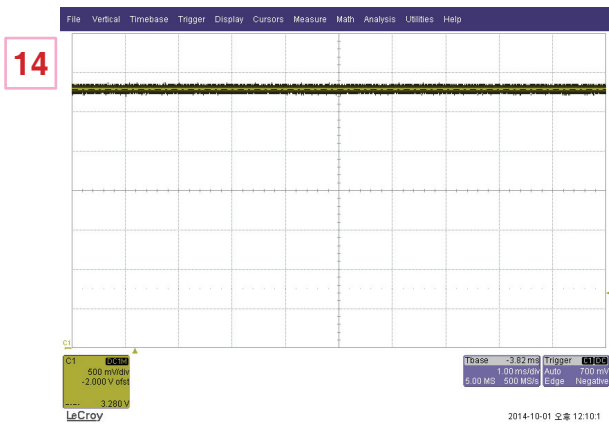


FIG 5-1. Input Voltage

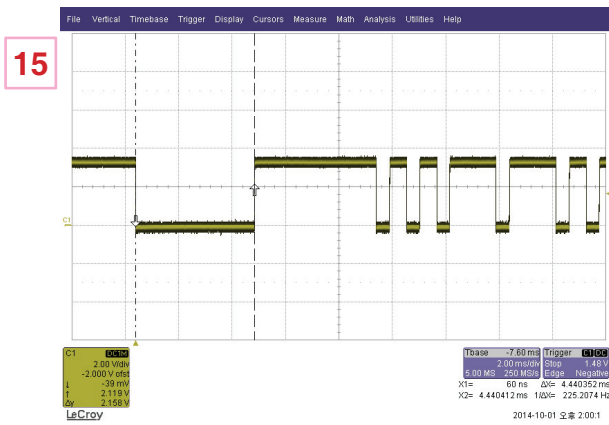


FIG 5-2. Low Timing

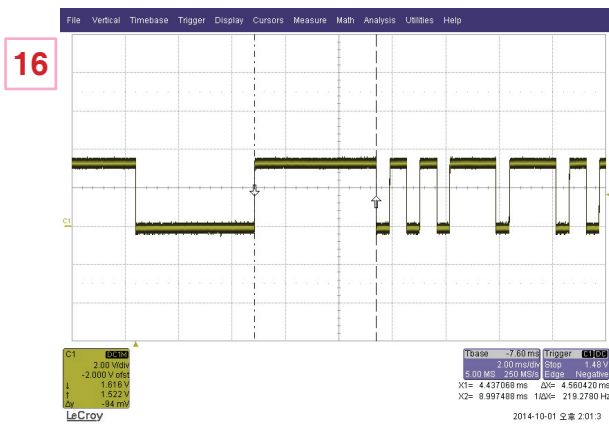
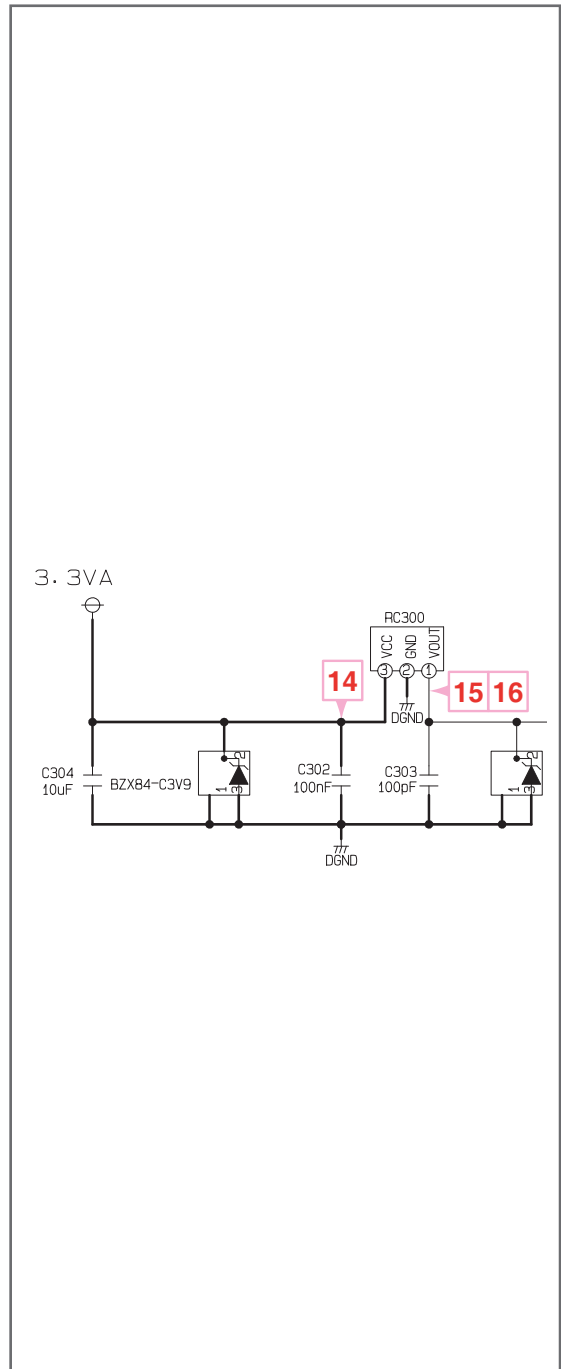


FIG 5-3. High Timing



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

17

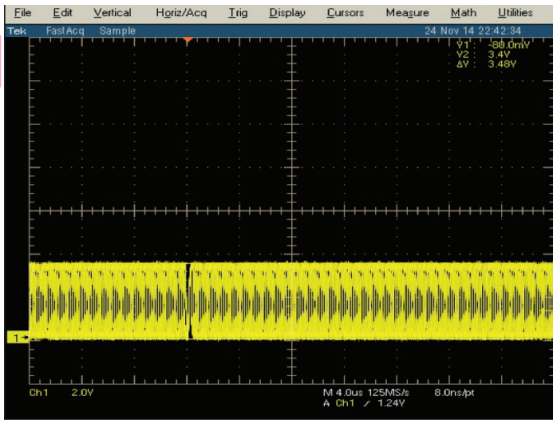


FIG 6-1. OPT\_IN

18

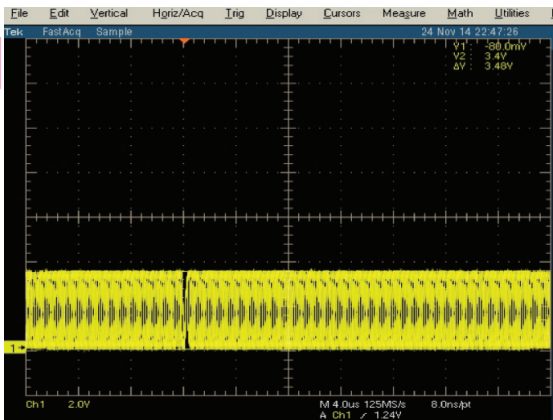
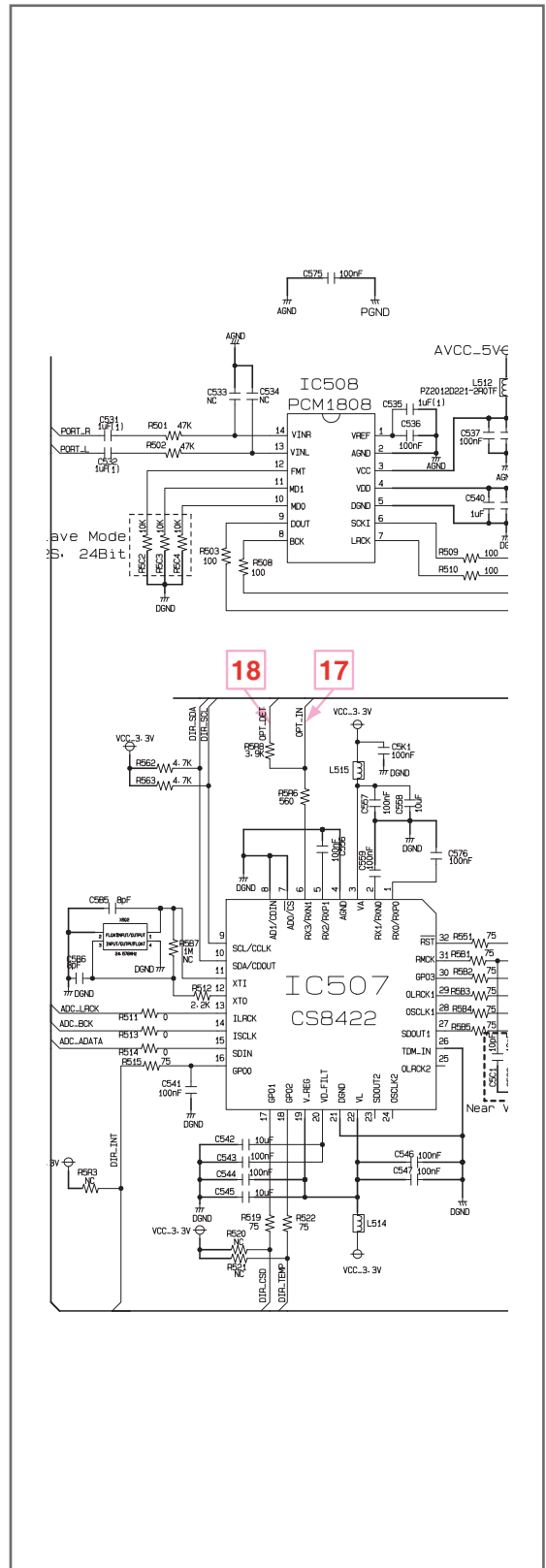


FIG 6-2. OPT\_DET





# 8. AUDIO PWM (1/2)

22

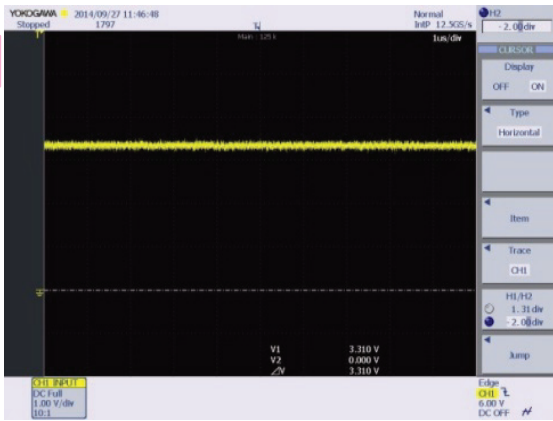


FIG 8-1. PWM IC 3.3 V

23

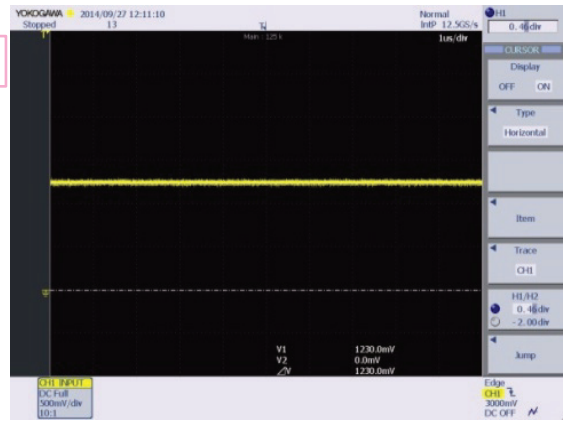


FIG 8-2. PWM IC 1.2 V

24

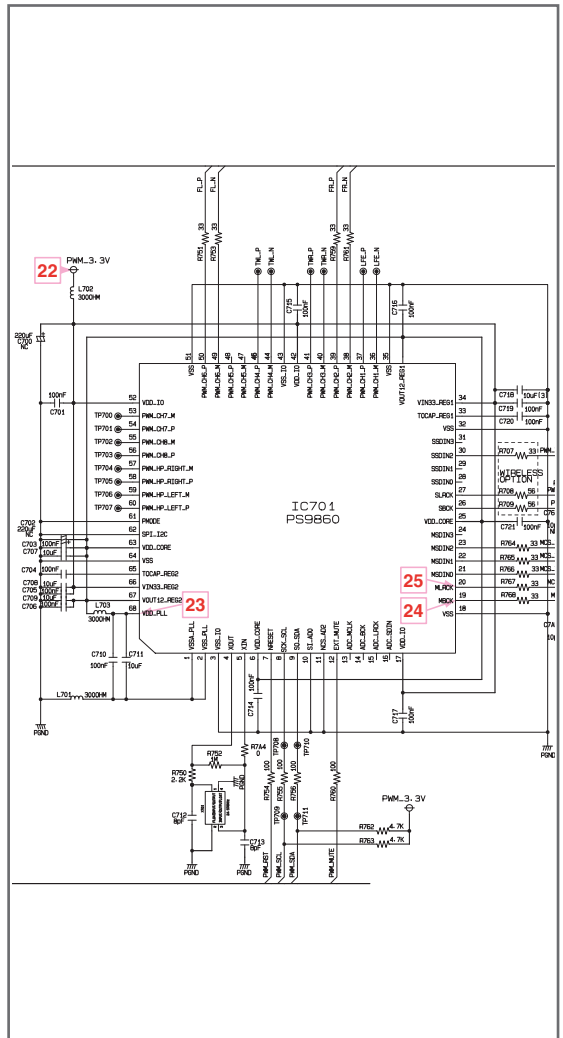


FIG 8-3. BCK

25



FIG 8-4. LRCK





# AUDIO PWM (2/2)

26

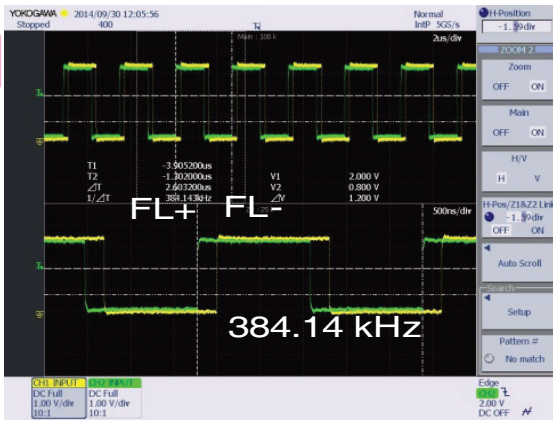


FIG 8-5. Front L

27

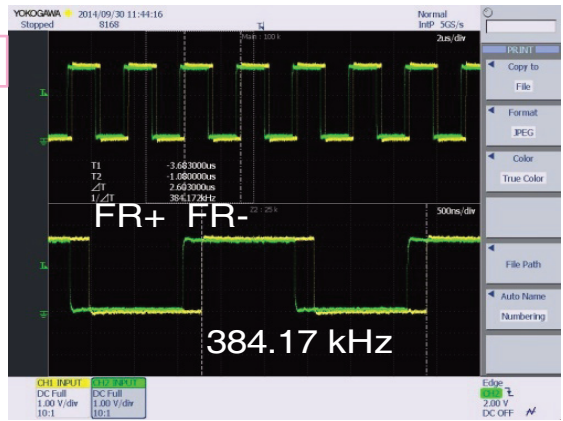
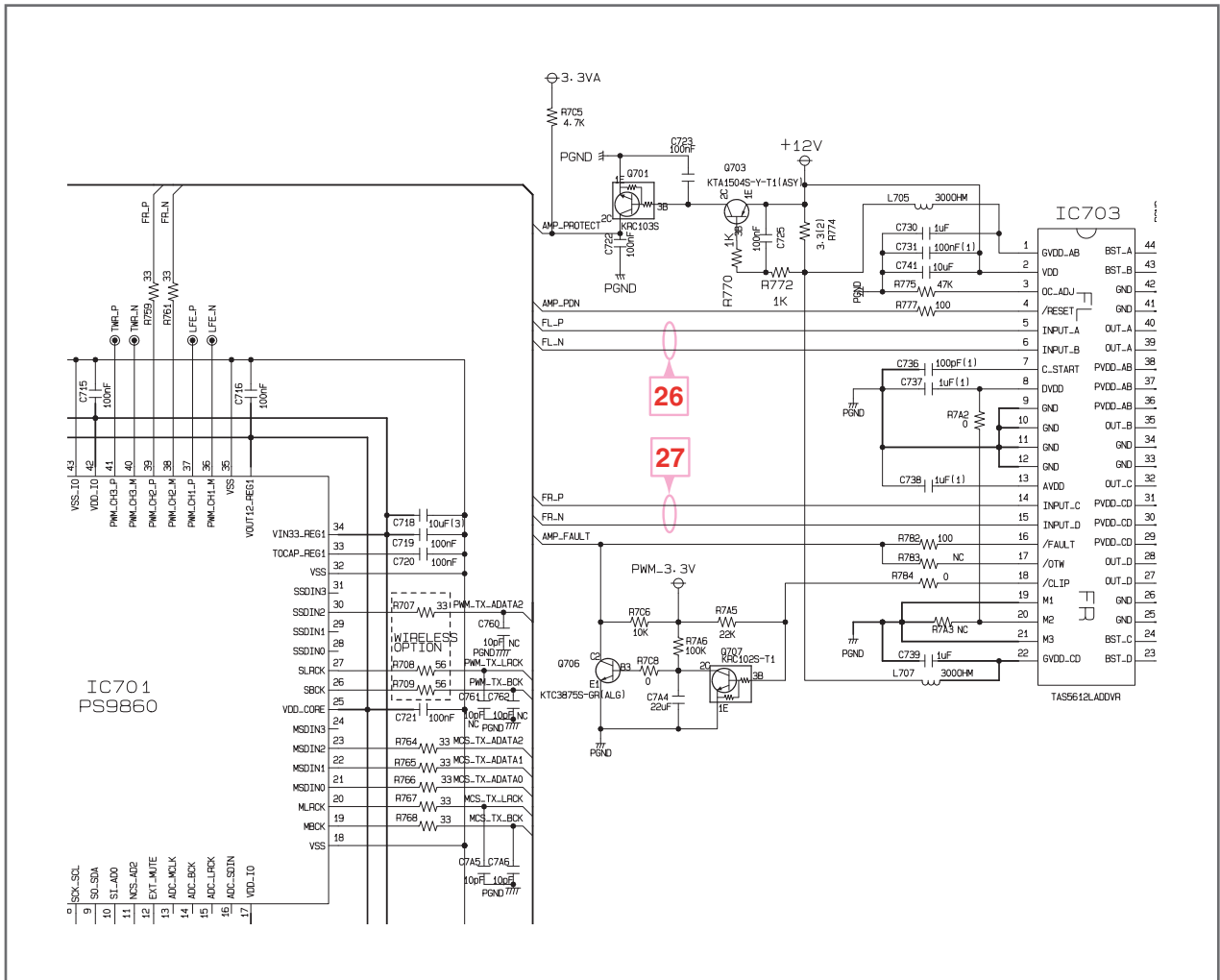


FIG 8-6. Front R



# 9. AUDIO AMP

28

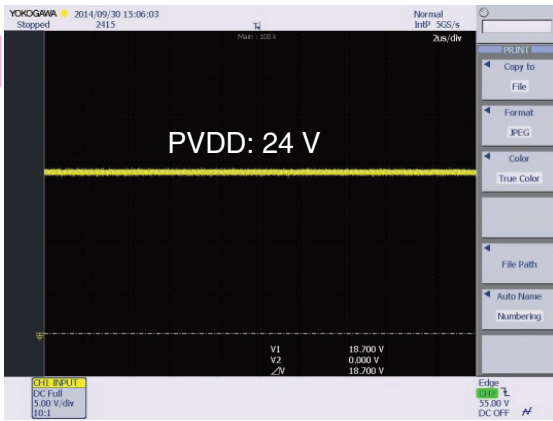


FIG 9-1. AMP IC PVDD

28

29

30

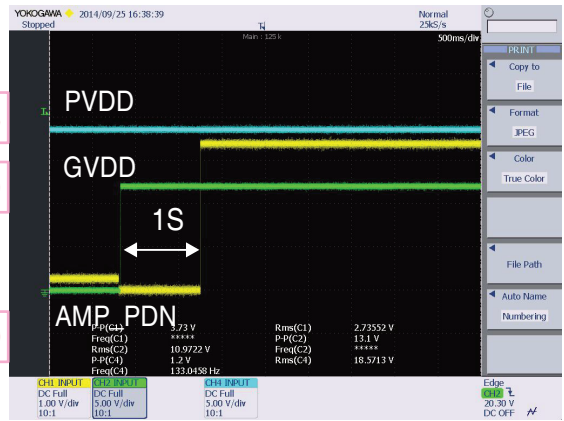
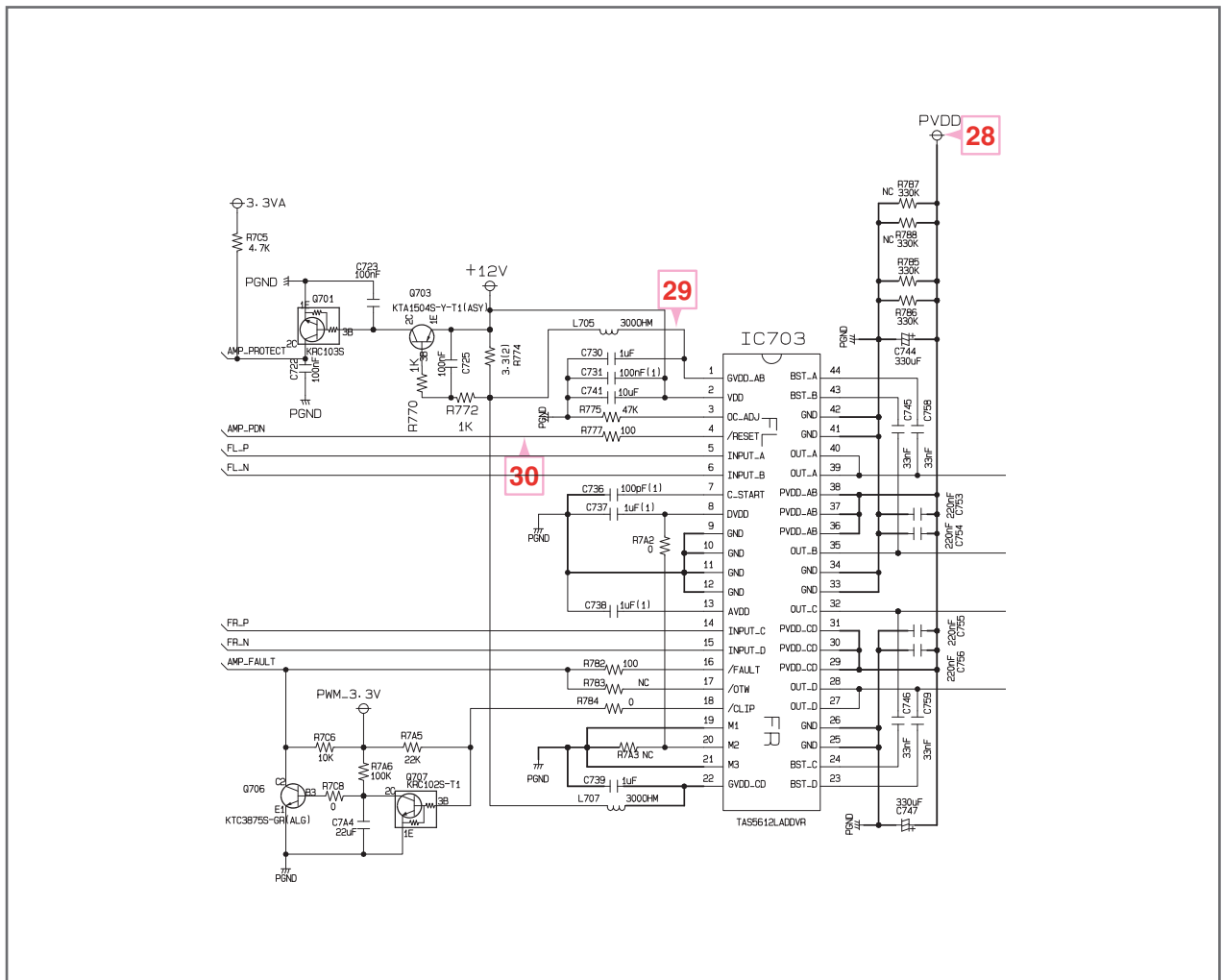
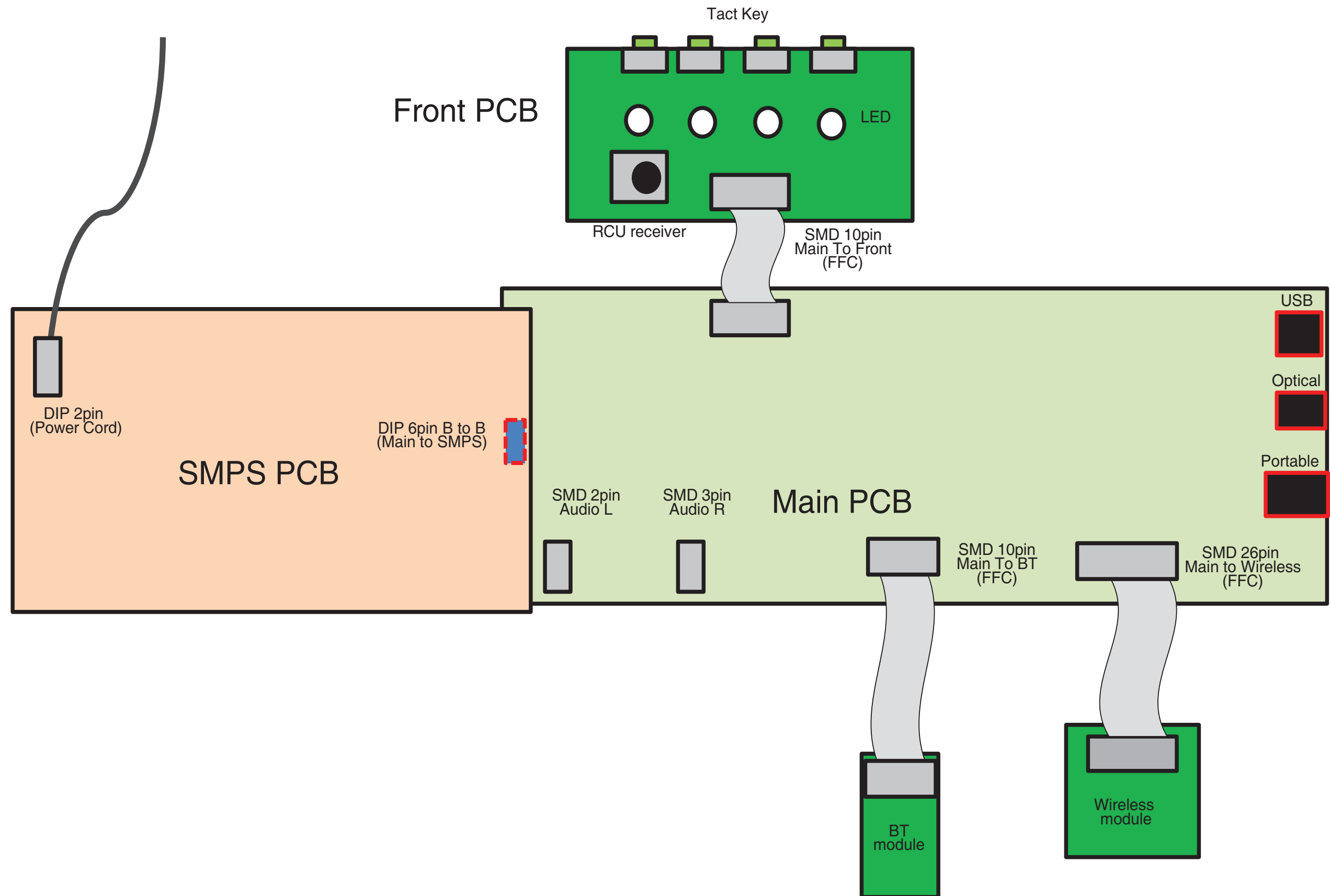


FIG 9-2.



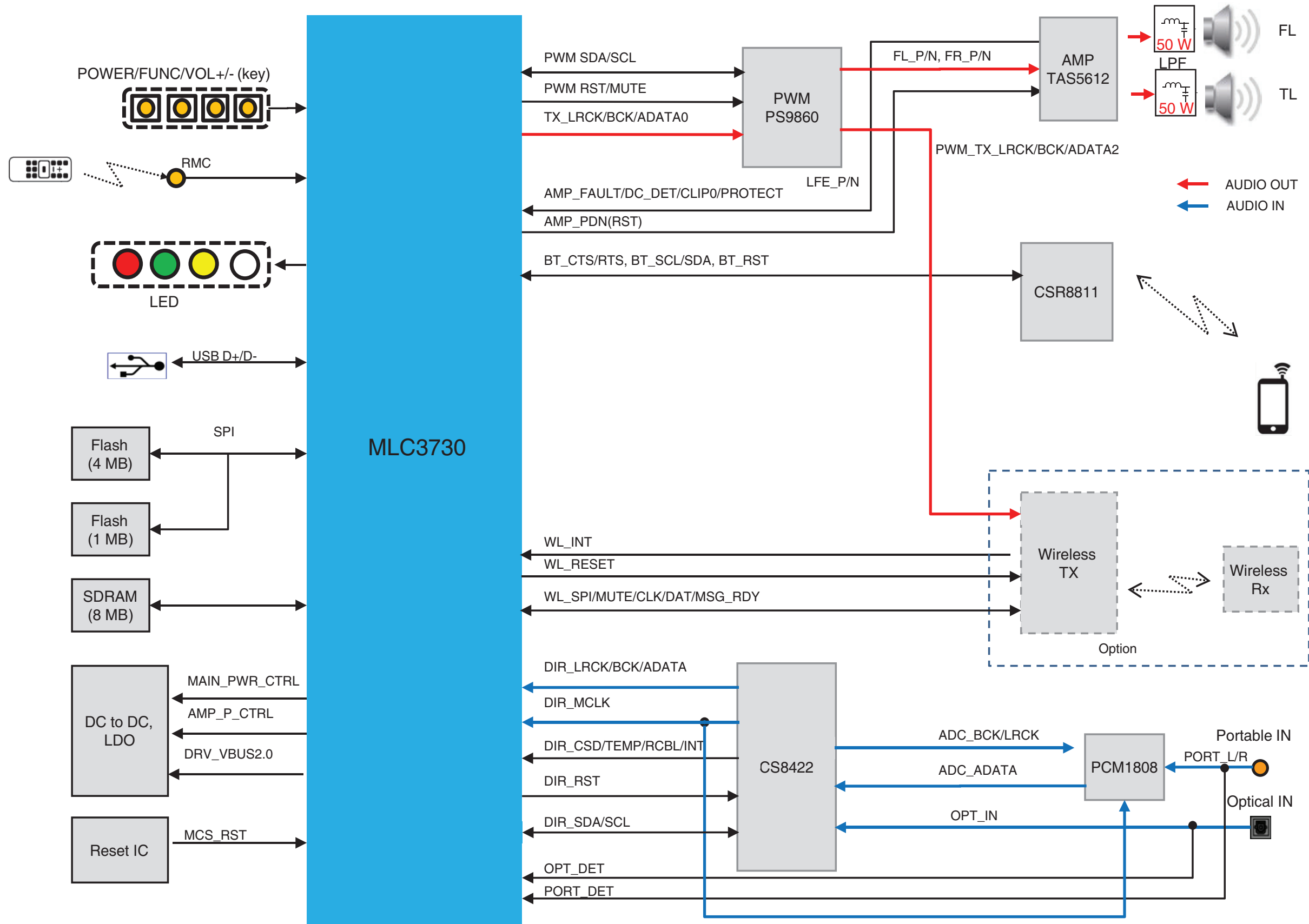
# WIRING DIAGRAM



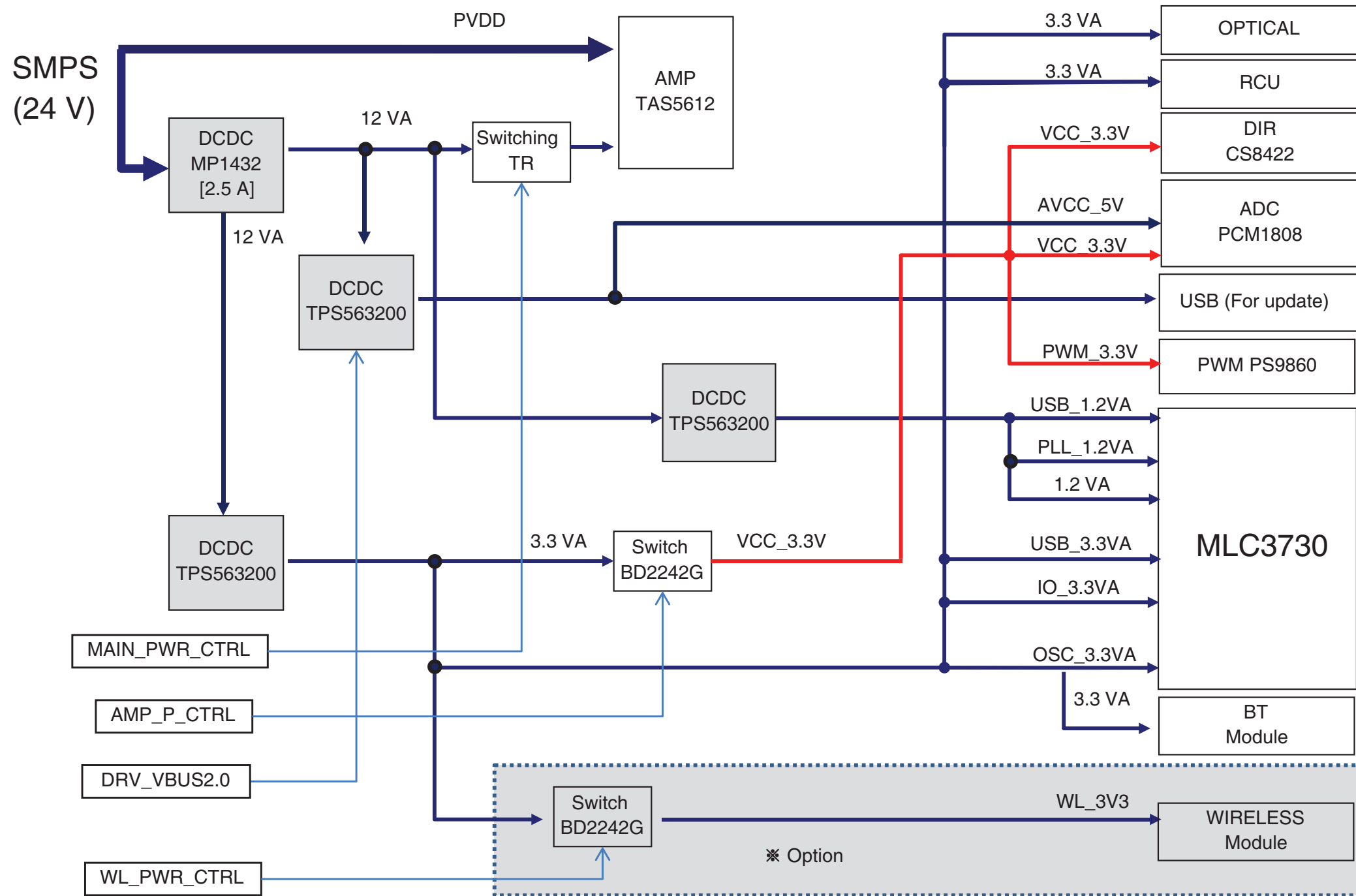


# BLOCK DIAGRAMS

## 1. SYSTEM BLOCK DIAGRAM



## 2. POWER BLOCK DIAGRAM



# CIRCUIT DIAGRAMS

## 1. SMPS CIRCUIT DIAGRAM

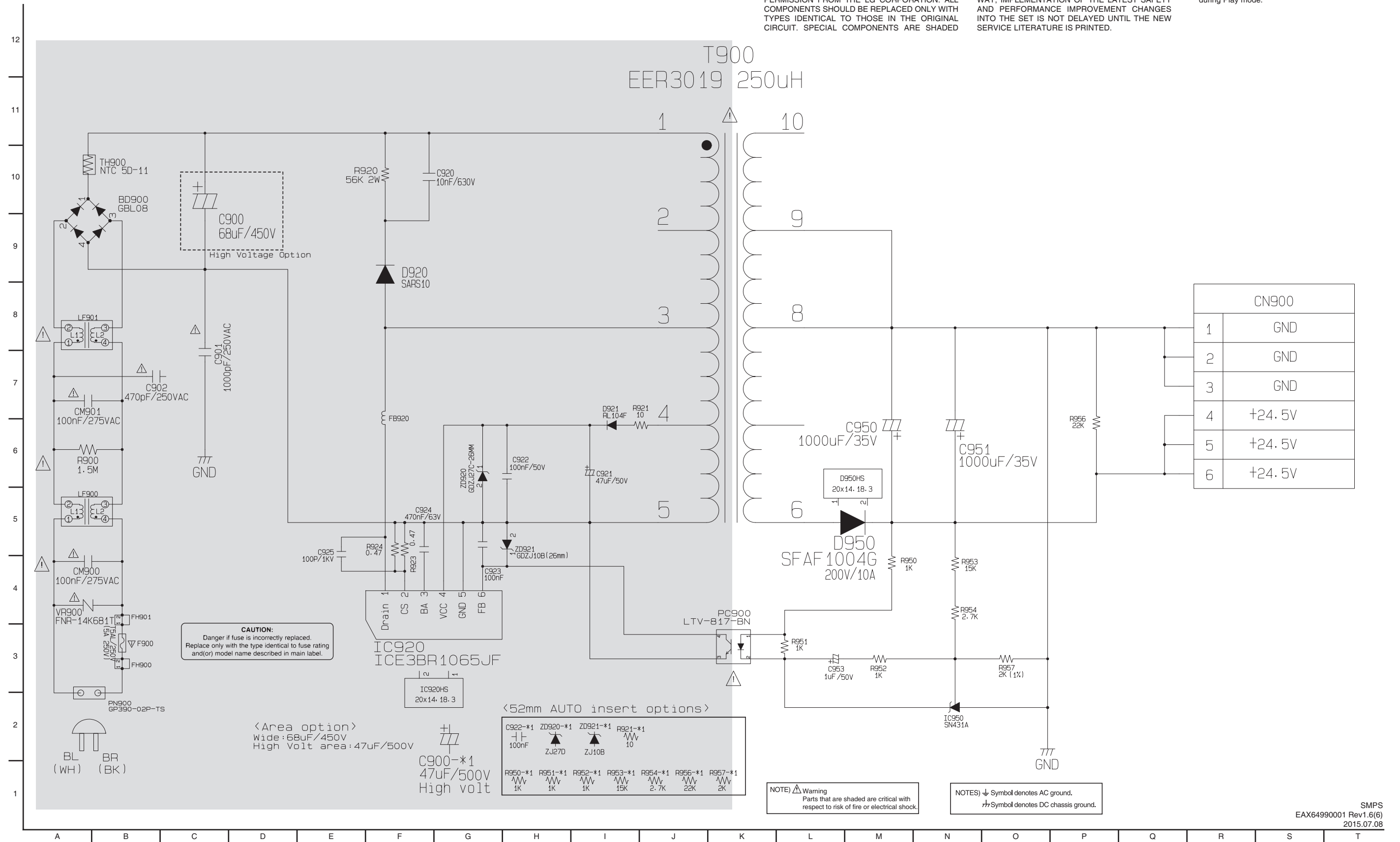
### IMPORTANT SAFETY

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE LG CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT. SPECIAL COMPONENTS ARE SHADED

ON THE SCHEMATIC FOR EASY IDENTIFICATION. THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

### NOTE :

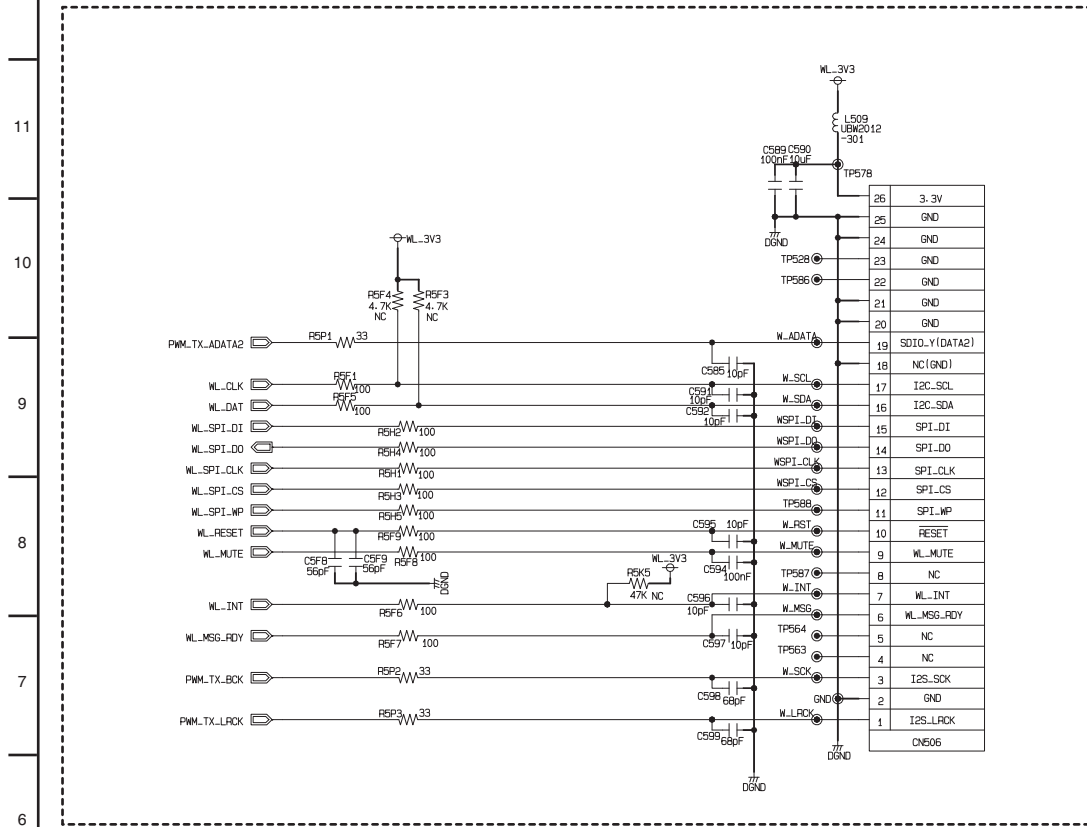
1. Shaded(■) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.



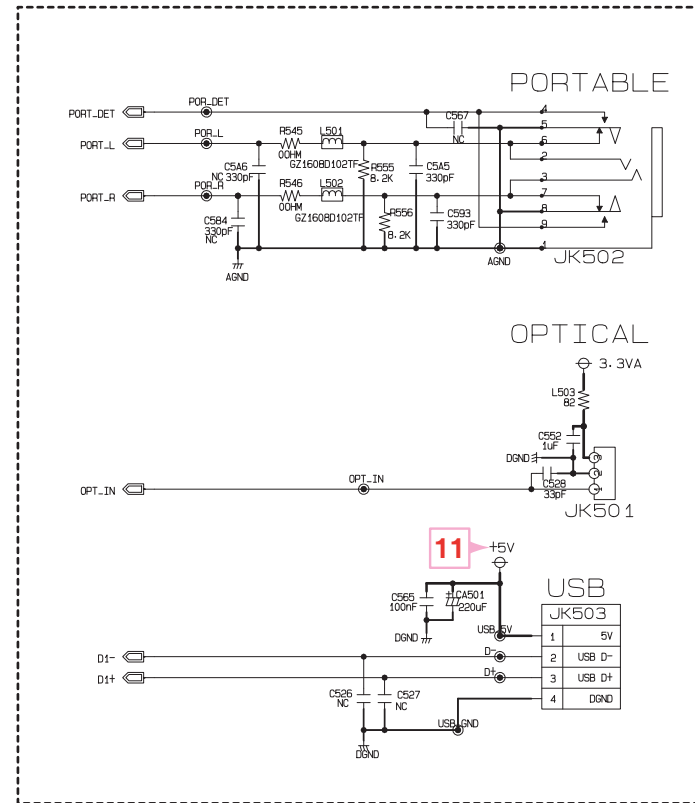


### 3. MAIN - INTERFACE CIRCUIT DIAGRAM

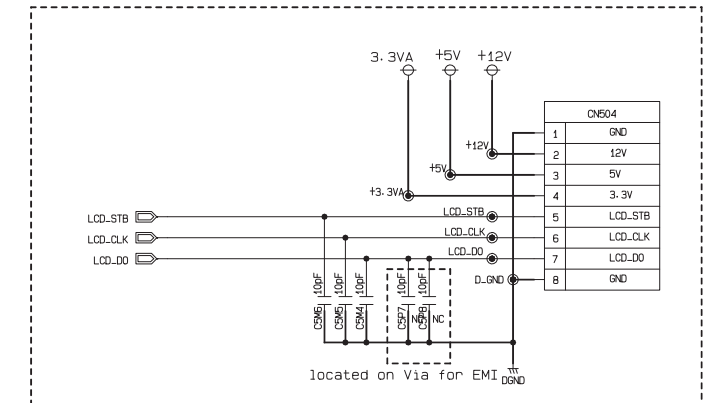
12 LAS454B OPTION(WIRELESS Interface)



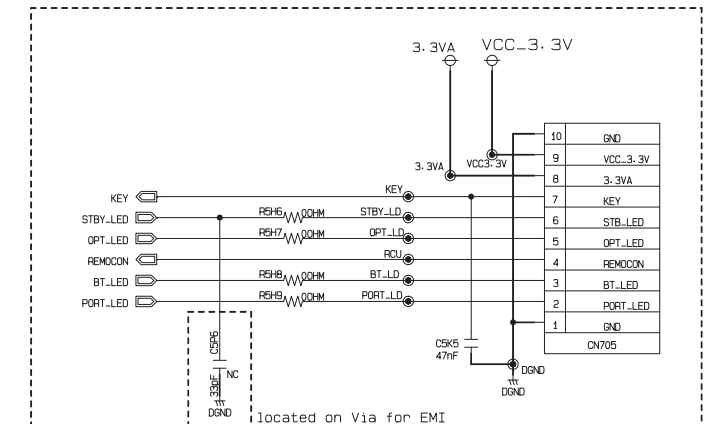
JACK Interface



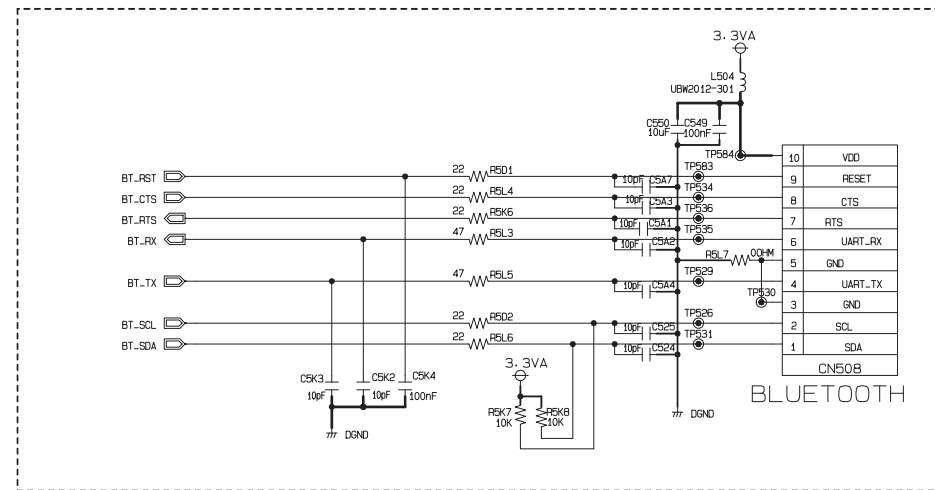
DISPLAY JIG



FRONT Interface

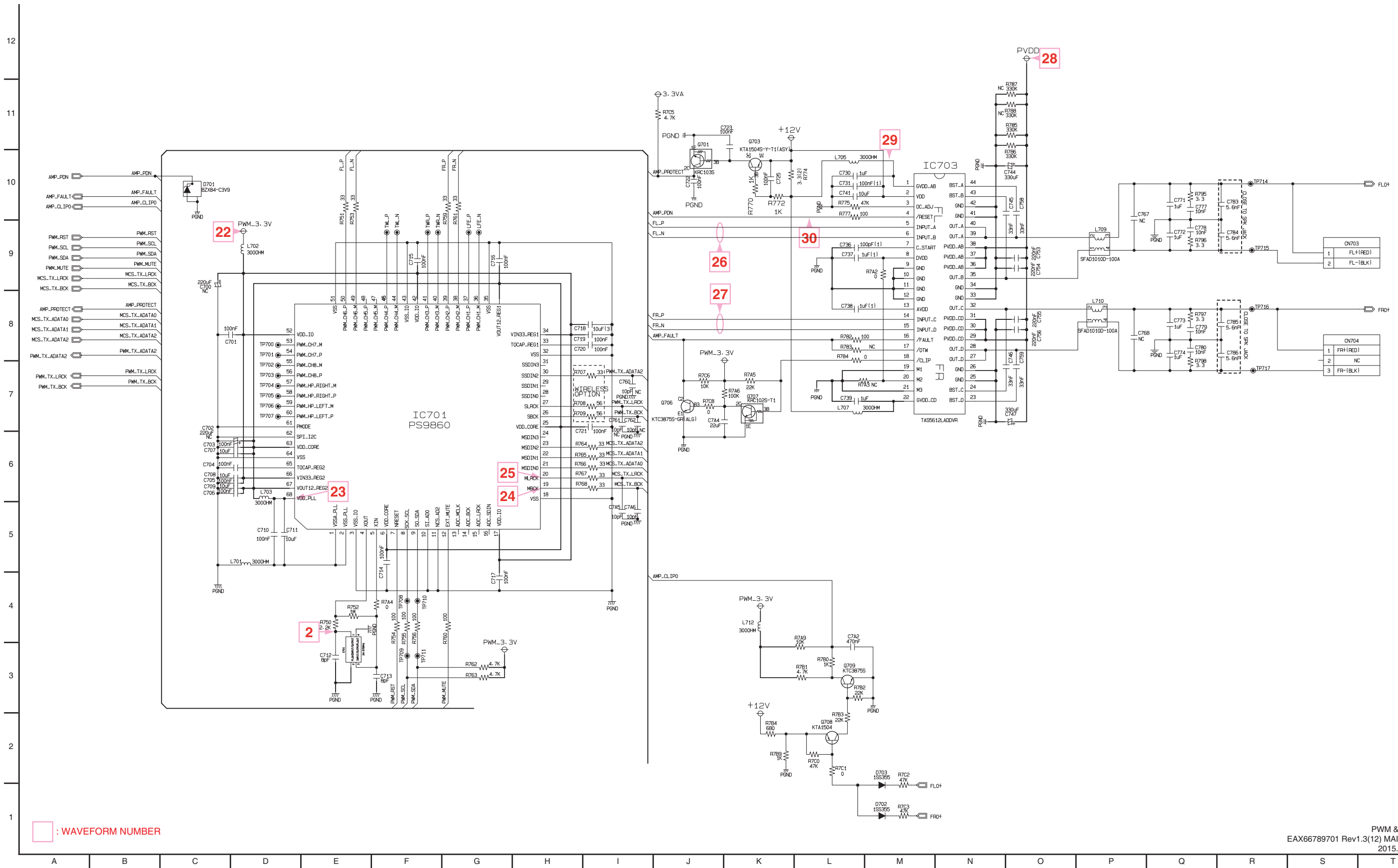


BlueTooth



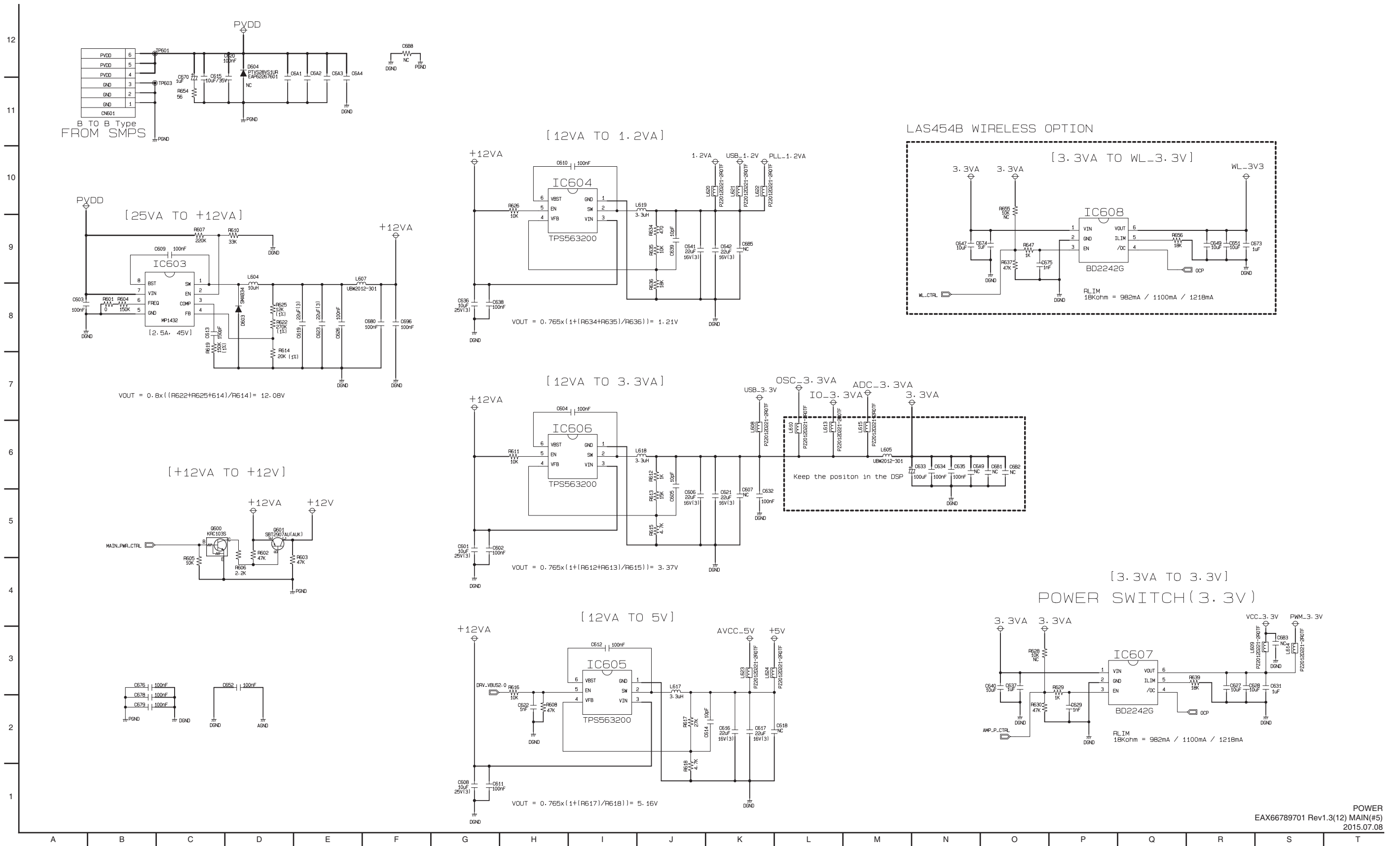
□ : WAVEFORM NUMBER

# 4. MAIN - PWM & AMP CIRCUIT DIAGRAM



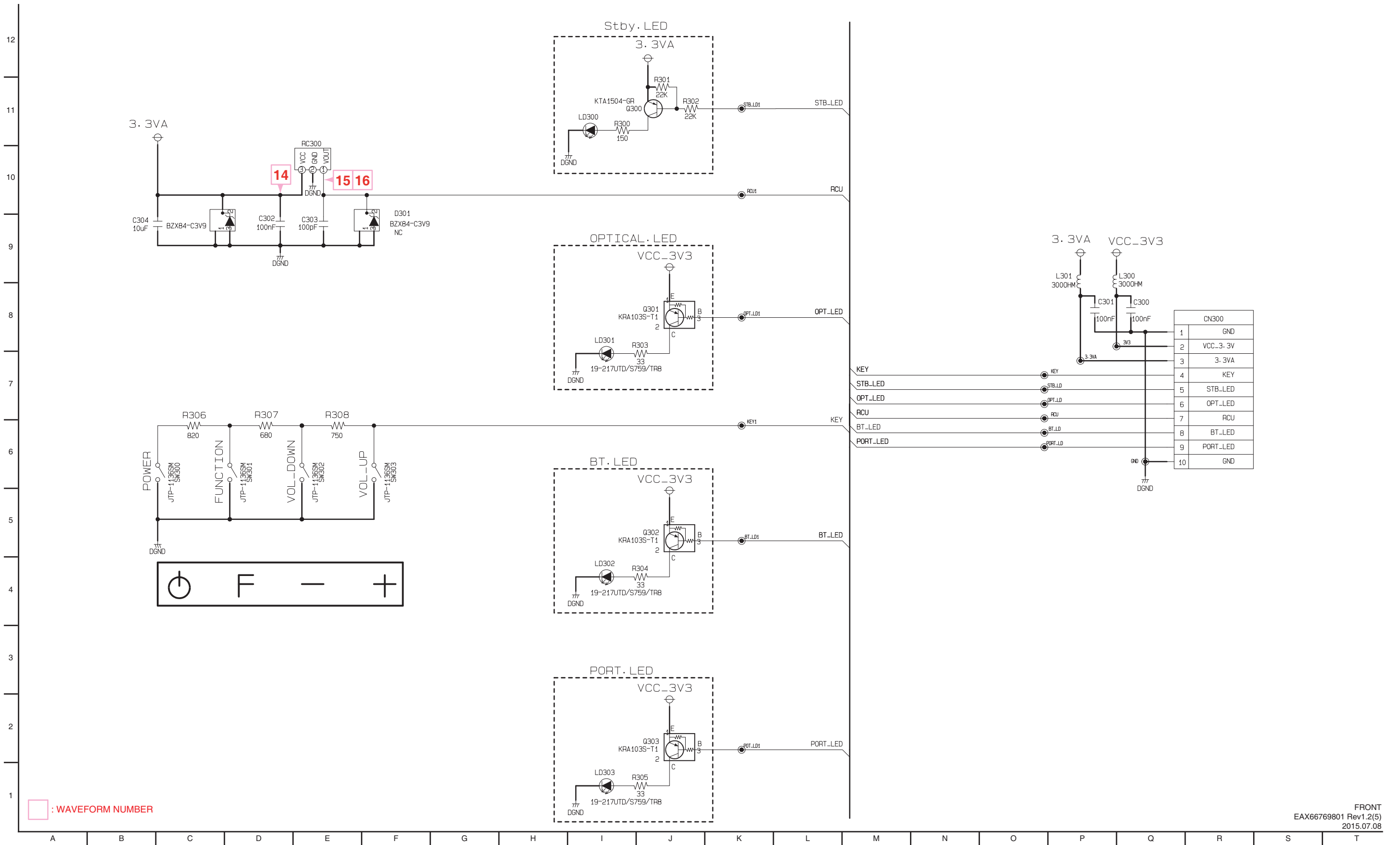


# 5. MAIN - POWER CIRCUIT DIAGRAM





# 6. FRONT CIRCUIT DIAGRAM



# CIRCUIT VOLTAGE CHART

## 1. ICs

Designator	Description	Specification	Pin Number	Voltage Spec	Real Value
<b>Main Board</b>					
IC501, IC505	IC,Serial Flash Memory	W25Q80DVSSIG 8MBIT	VCC: #8	VCC: 2.7 V ~ 3.6 V	VCC: 3.2 V
IC502	IC,Digital Signal Processors	MLC3730ST	<b>CORE SUPPLY VOLTAGE:</b> VDD12INT: #23 VDD12CORE: #55, #107, #142, #160 VDD12PLL: #87 VDD12USB20: #66  <b>IO SUPPLY VOLTAGE:</b> VDD33IO: #1, #43, #90, #132, #158 VDD33OSC: #68 VDD33ADC: #171 VDD33USB11: #164 VDD33USB20: #57, #60	<b>CORE SUPPLY VOLTAGE:</b> 1.08 V ~ 1.32 V  <b>IO SUPPLY VOLTAGE:</b> 3.0V ~ 3.6 V	<b>CORE SUPPLY VOLTAGE:</b> 1.24 V  <b>IO SUPPLY VOLTAGE:</b> 3.3 V
IC503	IC,SDRAM	M12L64164A-5TG2Y 64MBIT	VDDQ: #3, #9, #43, #49	VDDQ: 3.0 V ~ 3.6 V	VDDQ: 3.34 V
IC504	IC,Voltage Detector	APX809-29SR	VCC: #3	VCC: 1.1 V ~ 5.5 V	VCC: 3.34 V
IC506	IC,Serial Flash Memory	W25Q32FVSSIG 32MBIT	VCC: #8	VCC: 2.7 V ~ 3.6 V	VCC: 3.34 V
IC507	IC,I/O Support Chip	CS8422-CNZR	VL: #22 VA: #3 V_REG: #19	VL: 1.71 V ~ 5.25 V VA: 3.135 V ~ 3.465 V V_REG: 3.135 V ~ 3.456 V	VL: 3.32 V VA: 3.32 V V_REG: 3.32 V
IC508	IC,A/D Converter	PCM1808	VCC: #3 VDD: #4	VCC: 4.5 V ~ 5.5 V VDD: 2.7 V ~ 3.6 V	VCC: 5.08 V VDD: 3.32 V
IC603	IC,DC,DC Converter	MP1432	VIN: #7	VIN: 4.5 V ~ 45 V	VIN: 25.2 V
IC604, IC605, IC606	IC,DC,DC Converter	TPS563200	VIN: #3 SW: #2	VIN: 4.5 V ~ 17 V SW: 0.76 V ~ 7 V	VIN: 12.01 V SW: 1.22 V, 5.15 V, 3.35 V
IC607, IC608	IC,Analog Switch	BD2242G	VIN: #1 VOUT: #6	VIN: 2.8 V ~ 5.5 V VOUT: 2.8 V ~ 5.5 V	VIN: 3.3 V VOUT: 3.3 V
IC701	IC,Sound/Audio Processor	PS9860	VDD_IO: #17, #52 VDD_CORE: #6, #25 VIN33_REG1: #34 VIN33_REG2: #66 VDD_PLL: #68	VDD_IO: 2.97 V ~ 3.63 V VDD_CORE: 1.08 V ~ 1.32 V VIN33_REG1: 2.97 V ~ 3.63 V VIN33_REG2: 2.97 V ~ 3.63 V VDD_PLL: 1.08 V ~ 1.32 V	VDD_IO: 3.4 V VDD_CORE: 1.23 V VIN33_REG1: 3.2 V VIN33_REG2: 3.2 V VDD_PLL: 1.19 V
IC703	IC,Audio Amplifier	TAS5612LADDVR	PVDD: #29, #30, #31, #36, #37, #38 GVDD: #1, #22 VDD: #2	PVDD: 12 V ~ 34 V GVDD: 10.8 V ~ 13.2 V VDD: 10.8 V ~ 13.2 V	PVDD: 24.2 V GVDD: 11.7 V VDD: 11.8 V
<b>Front Board</b>					
RC300	Receiver Module	R84FH1H	VCC: #3	VCC: 2.7 V ~ 5.5 V	VCC: 3.33 V

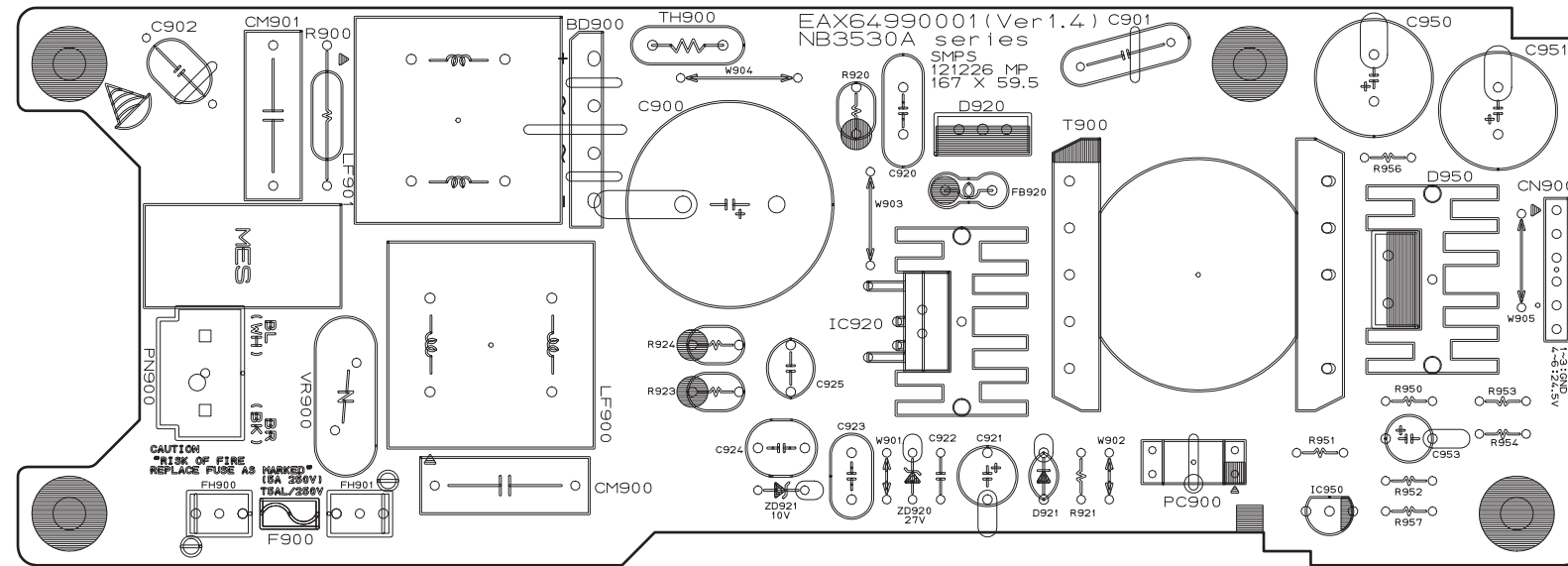
## 2. CONNECTORS

Part	Designator	Description	Specification	Pin Number	Voltage Spec	Mearsured Voltage (Main)	Remark
Main Board	CN504	Connector,FFC/FPC/PIC	04-6232-008-010-000 8P 1.00MM FFC/FPC STRAIGHT TOP SMD TP NON_LOCKING - KY-OCERA CORPORATION	2	12 V	11.87 V	DISPLAY JIG
				3	5 V	5.13 V	
				4	3.3 V	3.32 V	
	CN506	Connector,FFC/FPC/PIC	04-6495-626-000-846+ 26P 0.50MM FFC ANGLE BOTTOM SMD T/REEL LOCKING HLT55W KY-OCERA ELCO	26	3.3 V	3.31 V	WIRELESS Interface
	CN508	Connector,Wafer, FFC	10031HR-H10 10P 1.00MM 1R ANGLE SMD T/REEL NATURAL Main to Front for CM2820 YEON HO ELECTRONICS CO., LTD	10	3.3 V	3.31 V	BLUETOOTH Interface
CN601	Connector,BtoB	25032HS-H06F1(TR) 6P 2.50MM STRAIGHT SOCKET DIP TRAY 7.9mM LAS550H YEON HO ELECTRONICS CO., LTD	4, 5, 6	PVDD	24 V	from SMPS	
Main Board	CN705	Connector, FFC	10031HR-H10 10P 1.00MM 1R ANGLE SMD T/REEL NATURAL Main to Front for CM2820 YEON HO ELECTRONICS CO., LTD	9	VCC_3.3V	3.29 V	FRONT Interface
				8	3.3 VA	3.3 V	
Front Board	CN300	Connector, FFC	10031HR-H10 10P 1.00MM 1R ANGLE SMD T/REEL NATURAL Main to Front for CM2820 YEON HO ELECTRONICS CO., LTD	2	VCC_3.3V	3.29 V	from MAIN

# PRINTED CIRCUIT BOARD DIAGRAMS

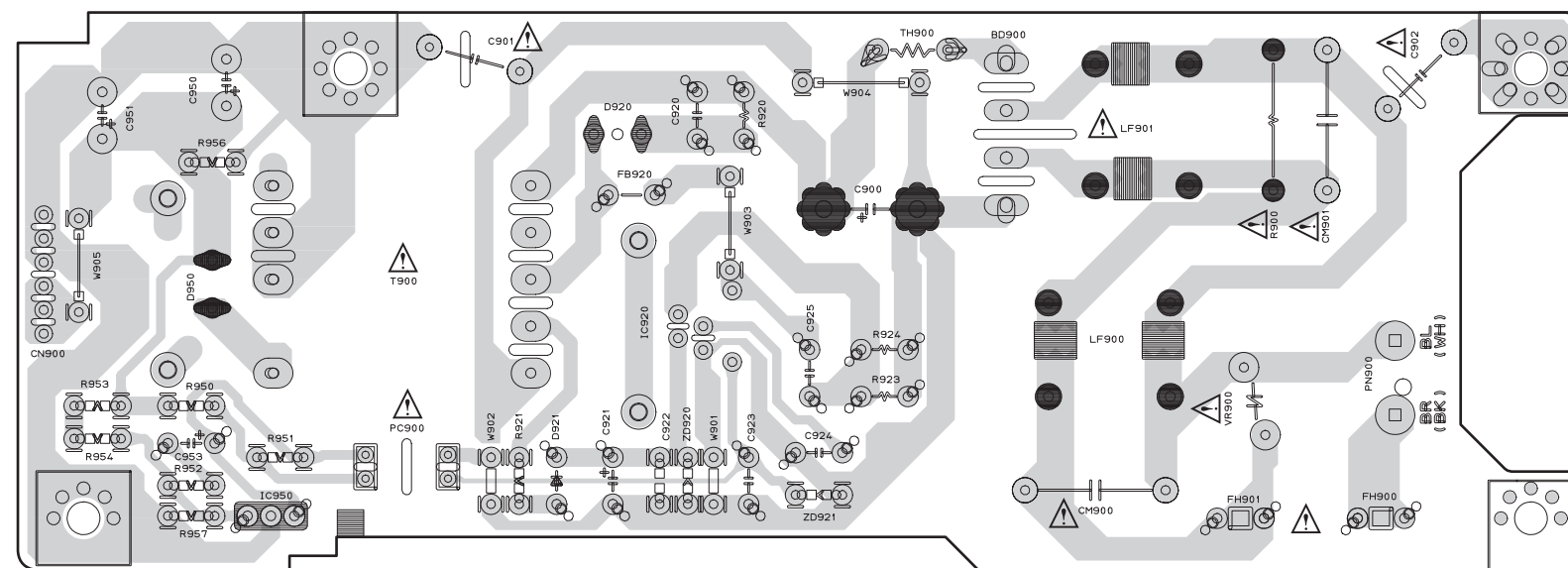
## 1. SMPS P. C. BOARD DIAGRAM

(TOP VIEW)



**(NOTE) Warning**  
 ⚠ Parts that are critical with respect to risk of fire or electrical shock.

(BOTTOM VIEW)









# SECTION 4

## WIRELESS SUBWOOFER PART

### CONTENTS

<b>ONE POINT REPAIR GUIDE .....</b>	<b>4-2</b>
1. NO POWER PROBLEM (PVDD) .....	4-2
2. POWER ON ERROR .....	4-3
3. POWER ON ERROR .....	4-4
4. WIRELESS CONNECTION .....	4-5
<b>WAVEFORMS OF MAJOR CHECK POINT.....</b>	<b>4-6</b>
1. VOLTAGE .....	4-6
2. AMP VOLTAGE .....	4-7
3. PWM .....	4-8
4. LED .....	4-9
<b>WIRING DIAGRAM.....</b>	<b>4-11</b>
<b>BLOCK DIAGRAM .....</b>	<b>4-13</b>
<b>CIRCUIT DIAGRAMS .....</b>	<b>4-15</b>
1. WOOFER SMPS CIRCUIT DIAGRAM .....	4-15
2. WOOFER AMP CIRCUIT DIAGRAM.....	4-17
3. WOOFER KEY CIRCUIT DIAGRAM .....	4-19
<b>PRINTED CIRCUIT BOARD DIAGRAMS .....</b>	<b>4-21</b>
1. WOOFER SMPS P. C. BOARD.....	4-21
2. WOOFER AMP P. C. BOARD .....	4-23
3. WOOFER KEY P. C. BOARD.....	4-23



# ONE POINT REPAIR GUIDE

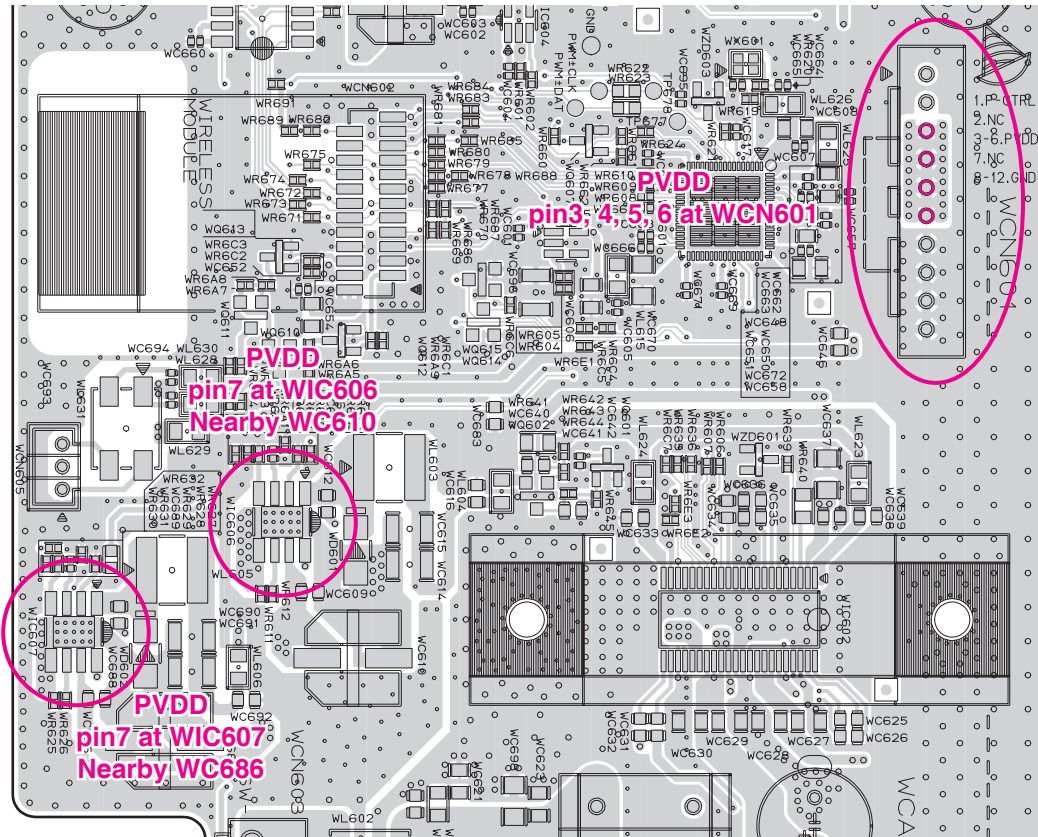
## 1. NO POWER PROBLEM (PVDD)

No power problem occurs when you power on the unit

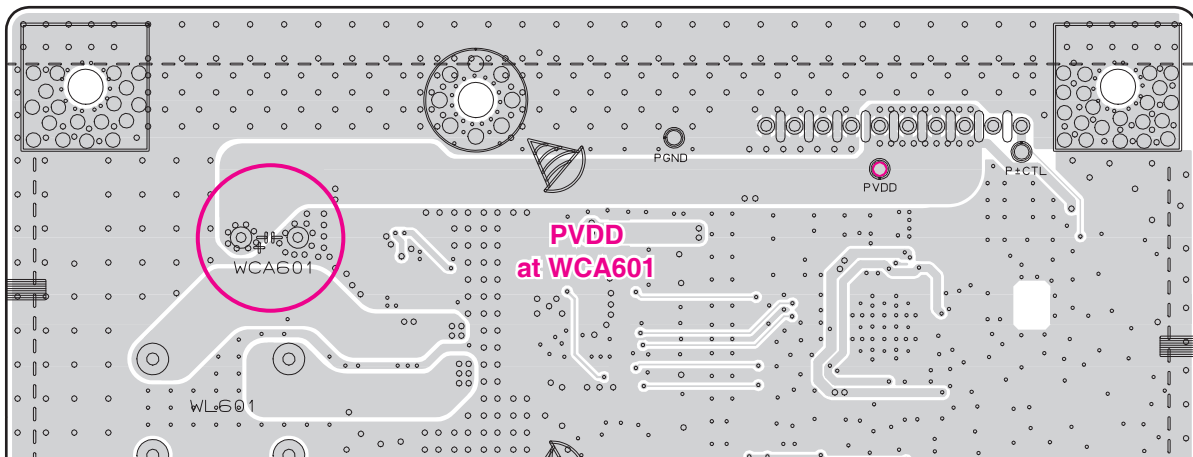
### 1-1. Solution

If you check these points and find PVDD voltage is not checked, replace woofer SMPS board.

### 1-2. Service hint (Any picture / Remark)



< Woofer AMP board top view >



< Woofer AMP board bottom view >

# ONE POINT REPAIR GUIDE

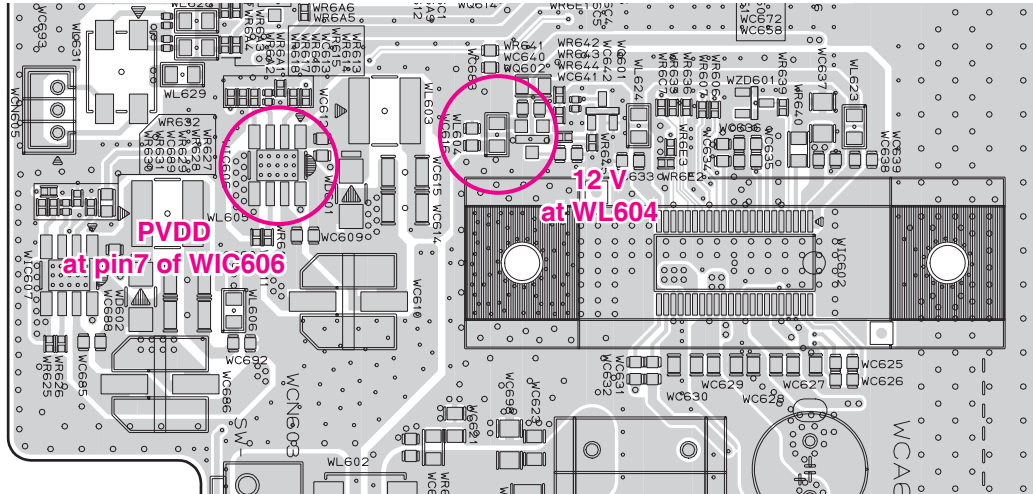
## 2. POWER ON ERROR

### Fundamental power check points

#### 2-1. 12 V

- 1) Check 12 V at WL604 nearby WL603 coil.
- 2) If 12 V is not checked at the point, then find PVDD at pin7 of WIC606.
- 3) 1), 2) is NG → Replace WIC606.

If you can't check PVDD voltage, then you replace woofer SMPS board.

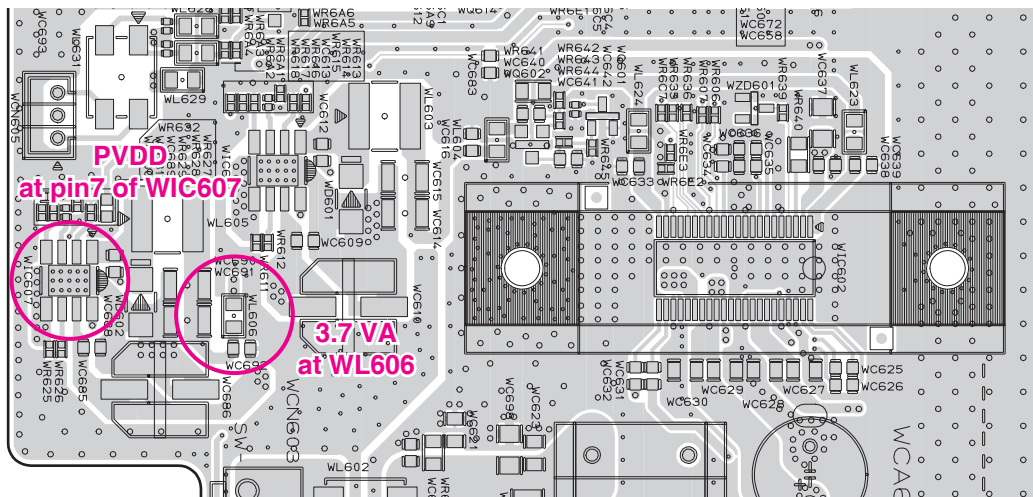


< Woofer AMP board top view >

#### 2-2. 3.7 VA

- 1) Check 3.7 VA at WL606 coil.
- 2) If 3.7 VA is not checked at the point, then find PVDD at pin7 of WIC607.
- 3) 1), 2) is NG → Replace WIC607.

If you can't check PVDD voltage, then you replace woofer SMPS board.



< Woofer AMP board top view >

# ONE POINT REPAIR GUIDE

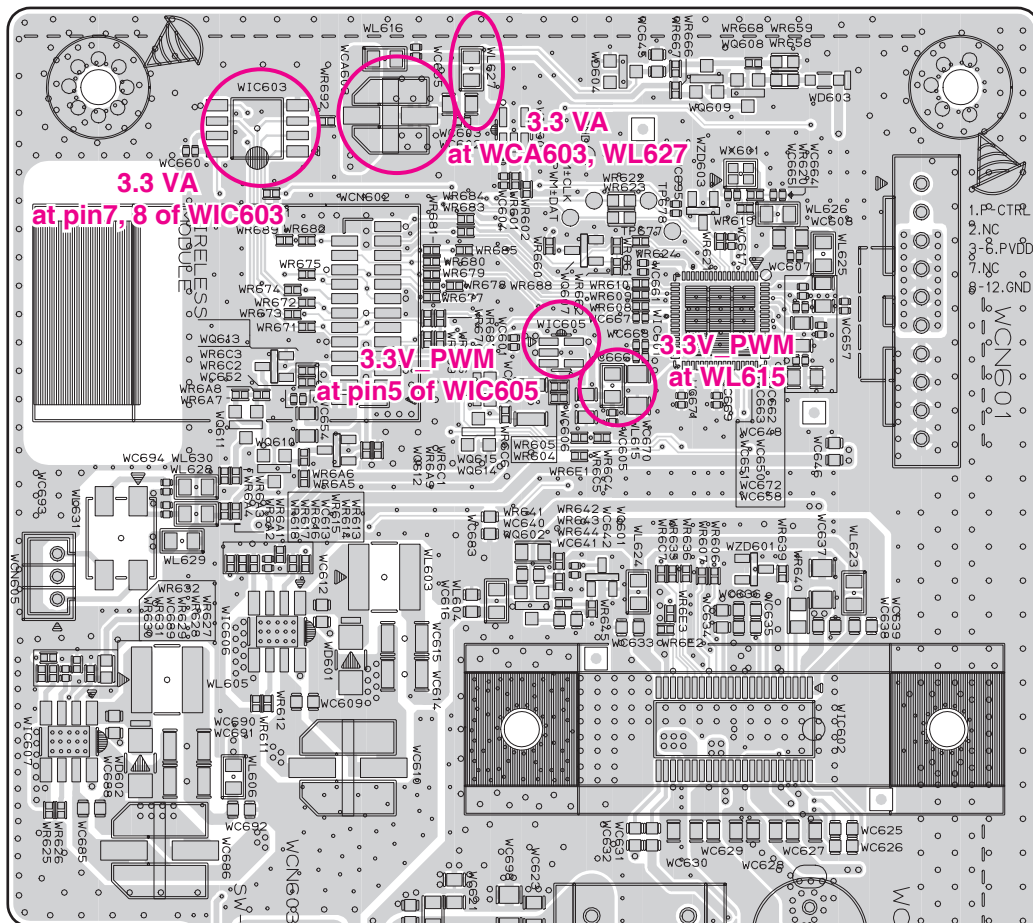
## 3. POWER ON ERROR

MAIN SoC IC supply voltage check points

### 3-1. 3.3 VA

- 1) Check 3.3 VA at WCA603 and WL627.
- 2) Check 3.3V\_PWM at pin5 of WIC605.
- 3) Check 3.3 VA at pin7, 8 of WIC603.
- 4) Check 3.3V\_PWM at WL615 nearby WIC601.

If all voltages are OK, then check the PVDD voltage of woofer SMPS board.



< Woofer AMP board top view >

# ONE POINT REPAIR GUIDE

## 4. WIRELESS CONNECTION

Wireless connection malfunction

### 4-1. 3.3 VA

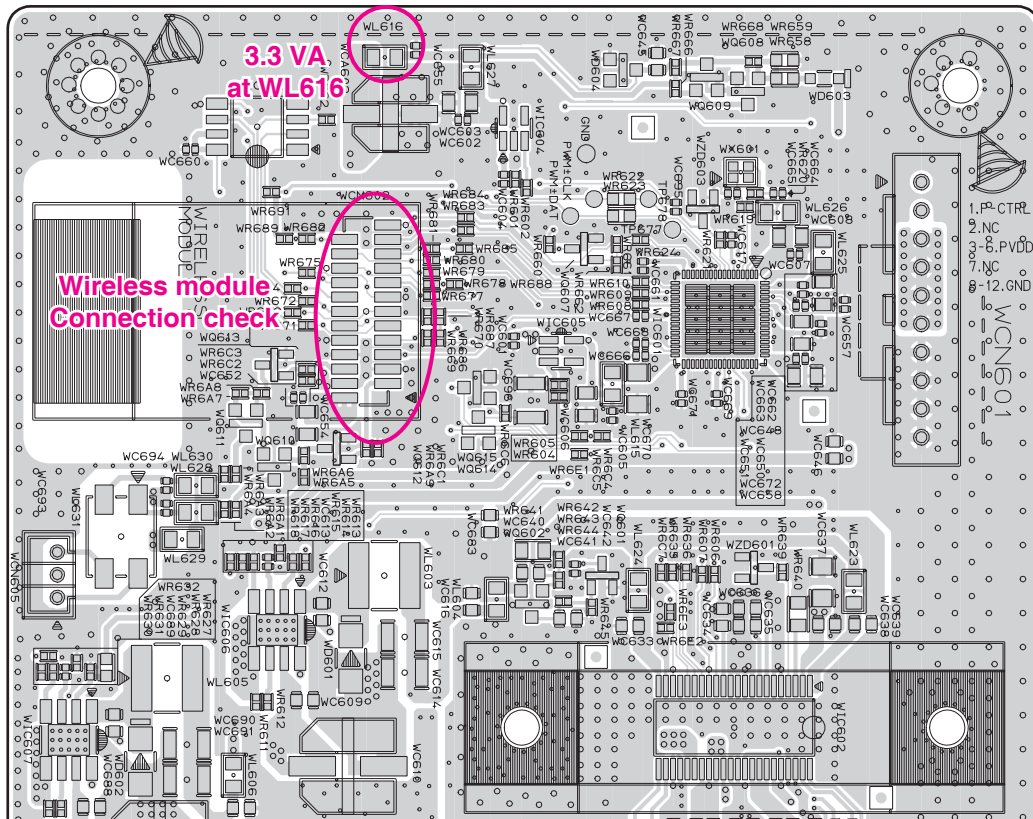
1) Check 3.3 VA at WL616.

### 4-2. Connection

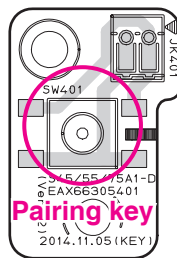
1) Wireless module connection closely.

2) Implement Wireless Factory Reset.

- ➔ MAIN SET : Soundbar vol MIN and push Mute key (sustain 3 ~ 5 sec).
- ➔ Subwofer :
  - ❶ Push Pairing key on the back case 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 AMP board top view >



< Woofer KEY board top view >



# WAVEFORMS OF MAJOR CHECK POINT

## 1. VOLTAGE

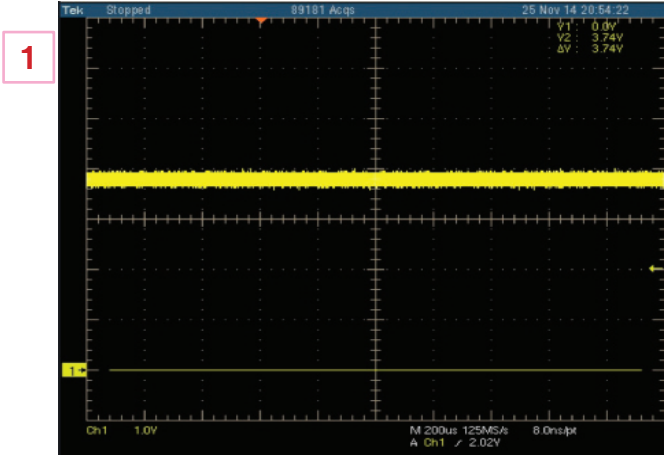


FIG 1-1. WIC607 3.7 VA

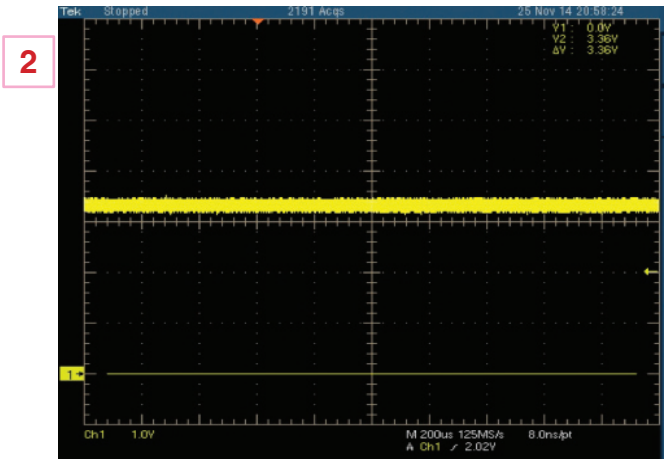


FIG 1-2. PWM 3.3 V

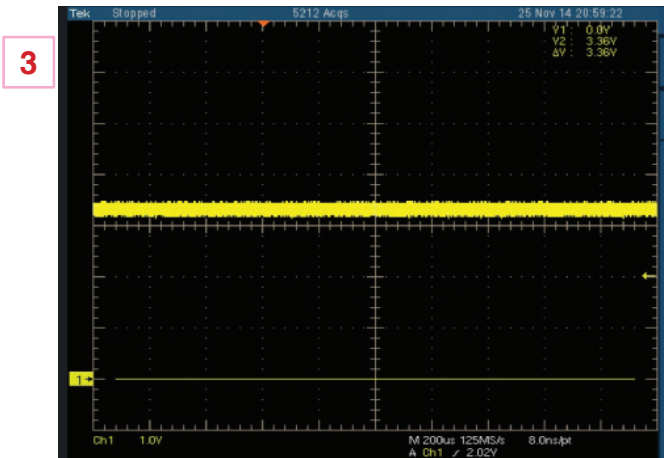
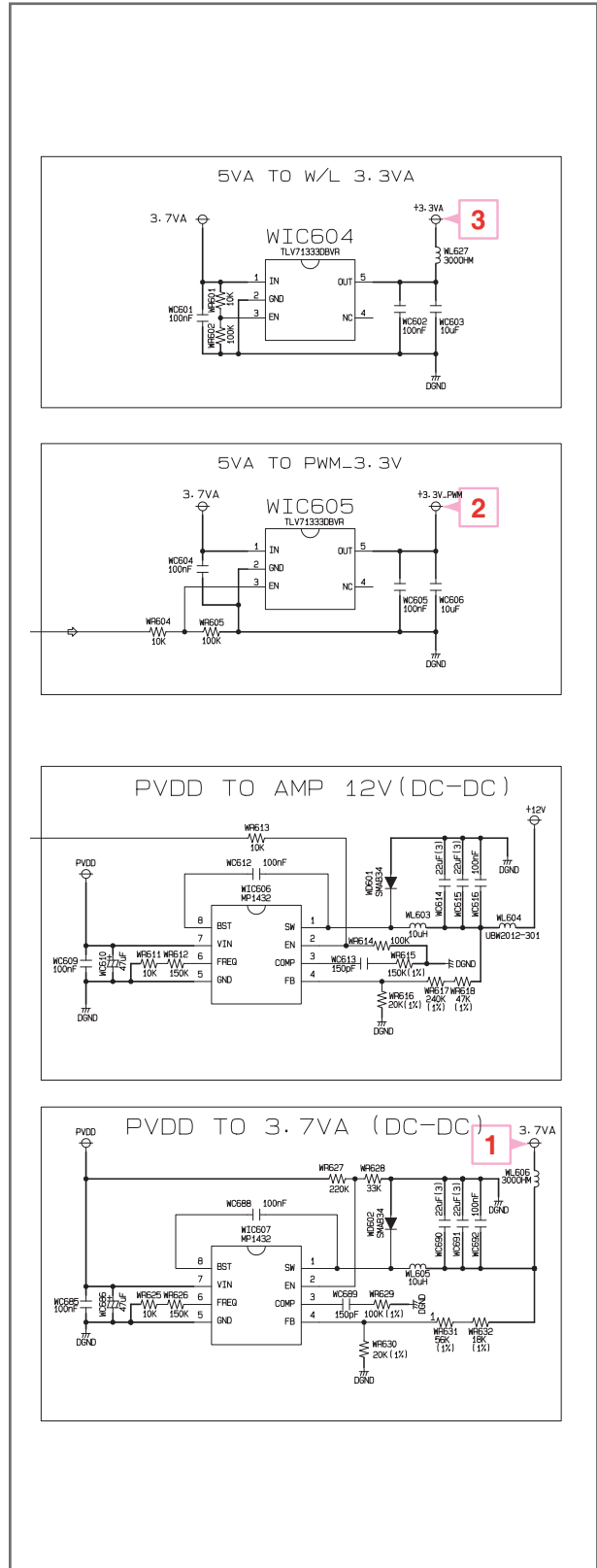


FIG 1-3. Wireless 3.3 VA



## 2. AMP VOLTAGE

4

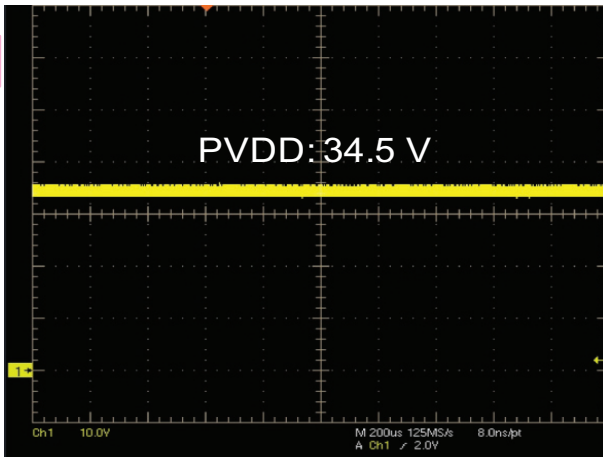
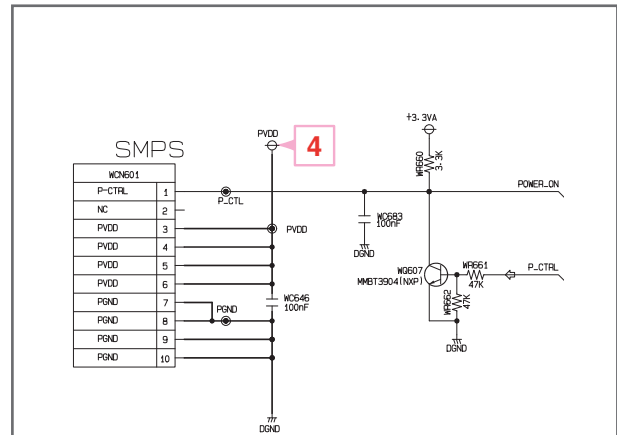


FIG 2-1. Woofer PVDD



5

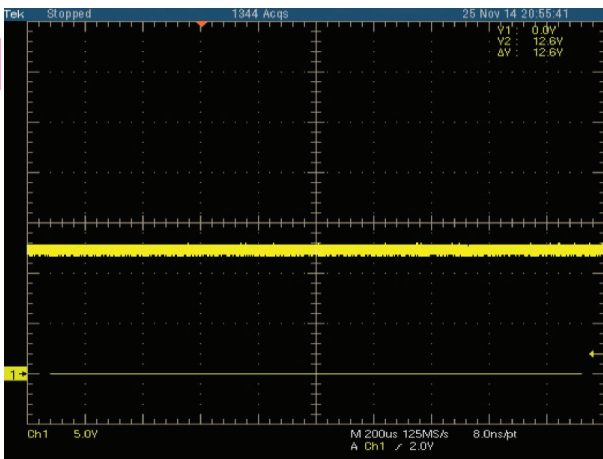
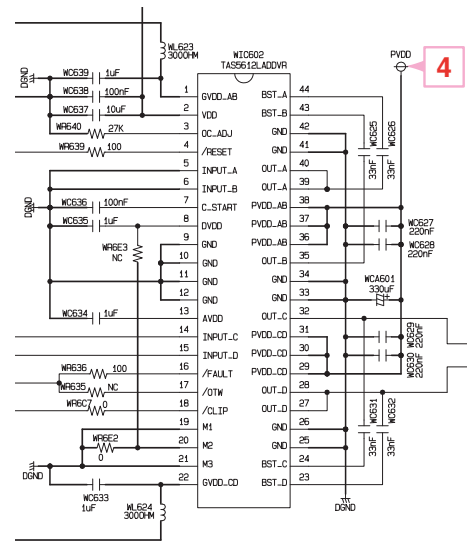
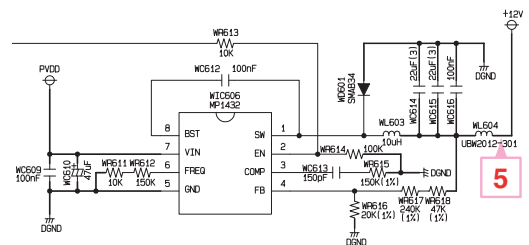


FIG 2-2. Woofer 12 V



### PVDD TO AMP 12V(DC-DC)



### 3. PWM

6

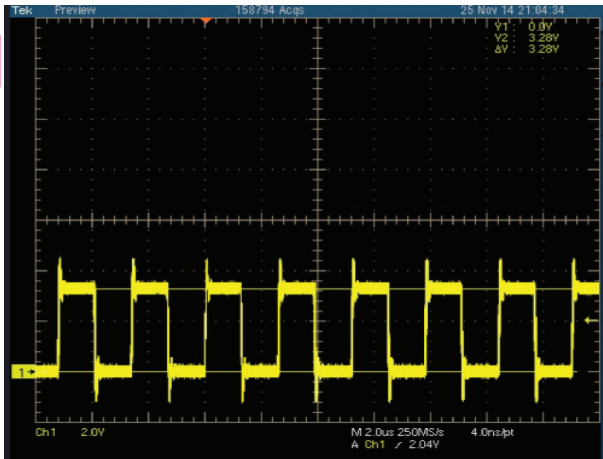


FIG 3-1. Woofer PWM SW+ Signal

7

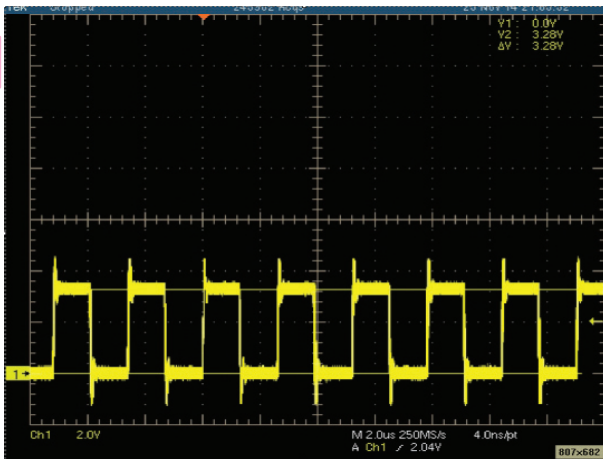
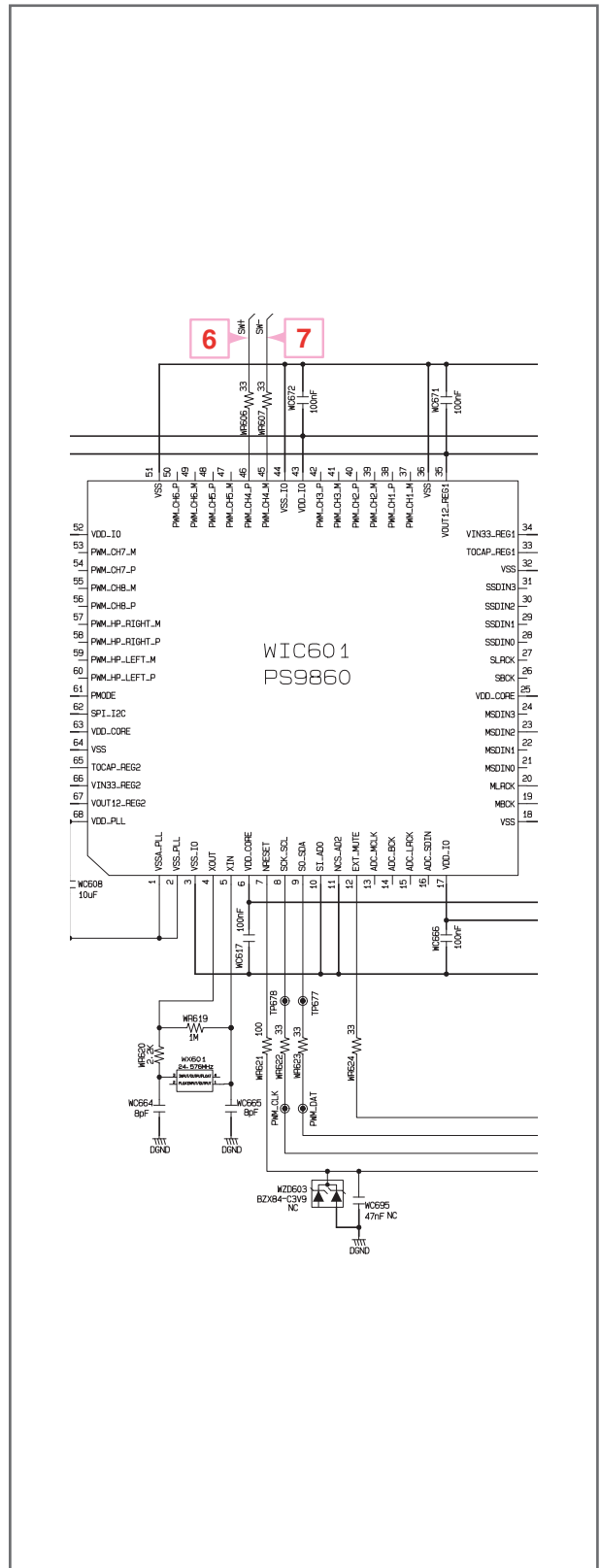


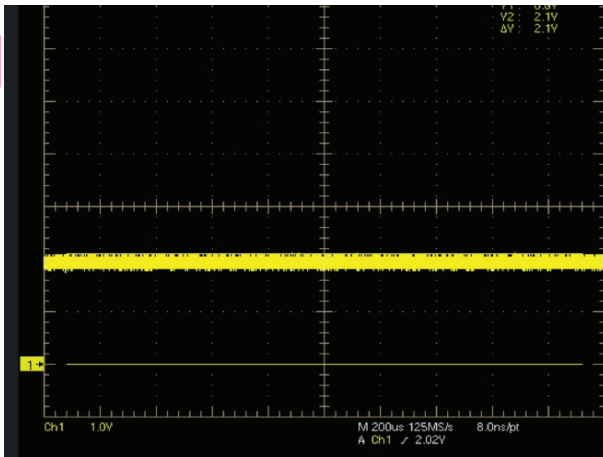
FIG 3-2. Woofer PWM SW- Signal





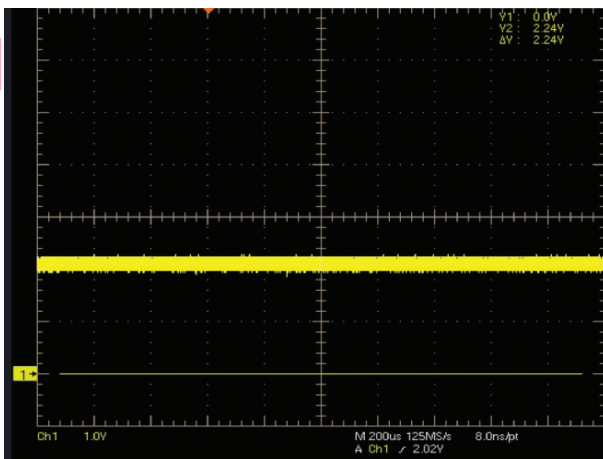
# 4. LED

8

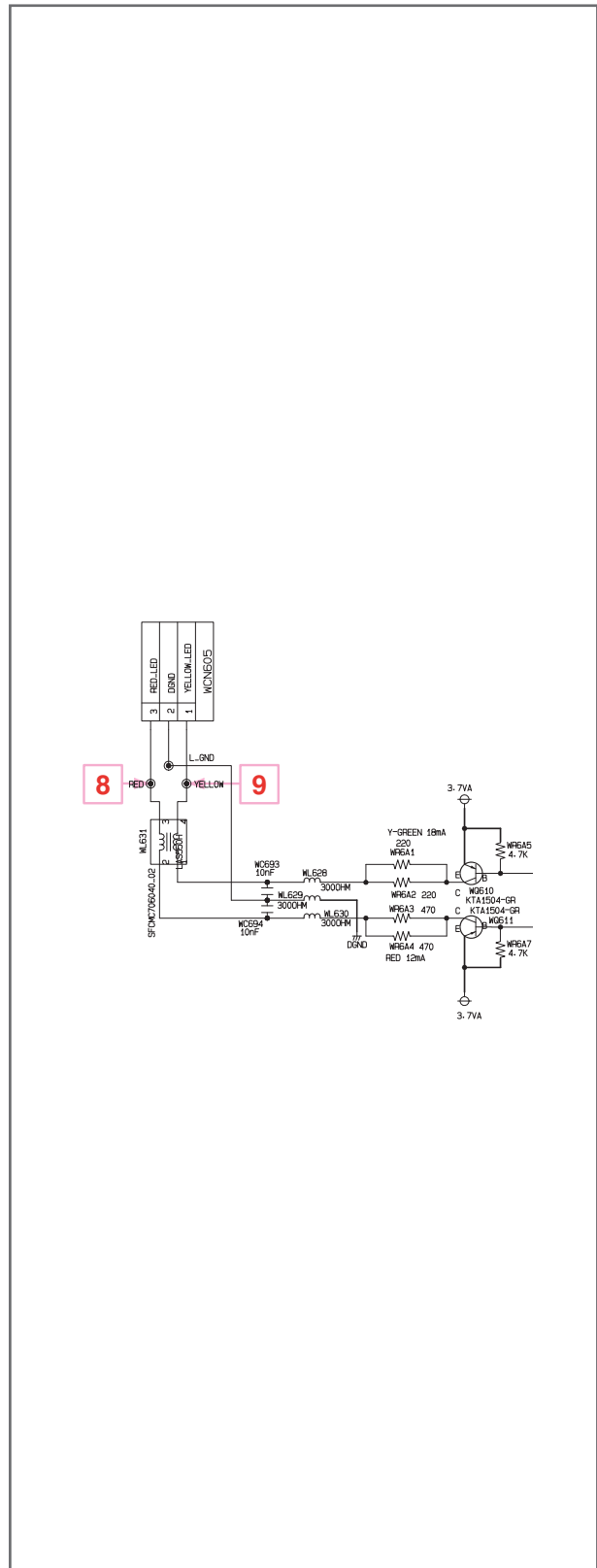


**FIG 4-1.**  
Pairing Off Status ⇒ Red LED

9

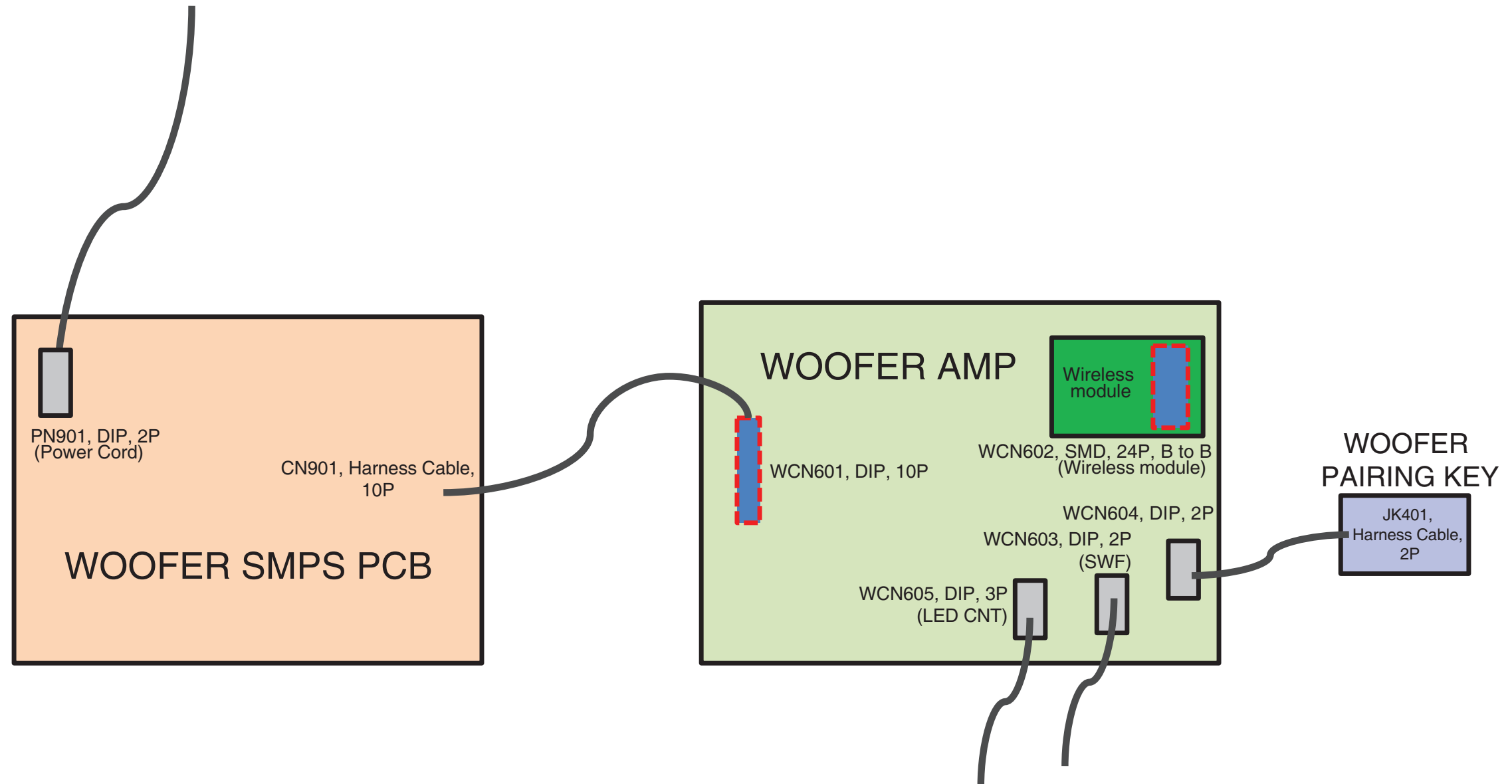


**FIG 4-2.**  
Pairing On Status ⇒ Yellow LED

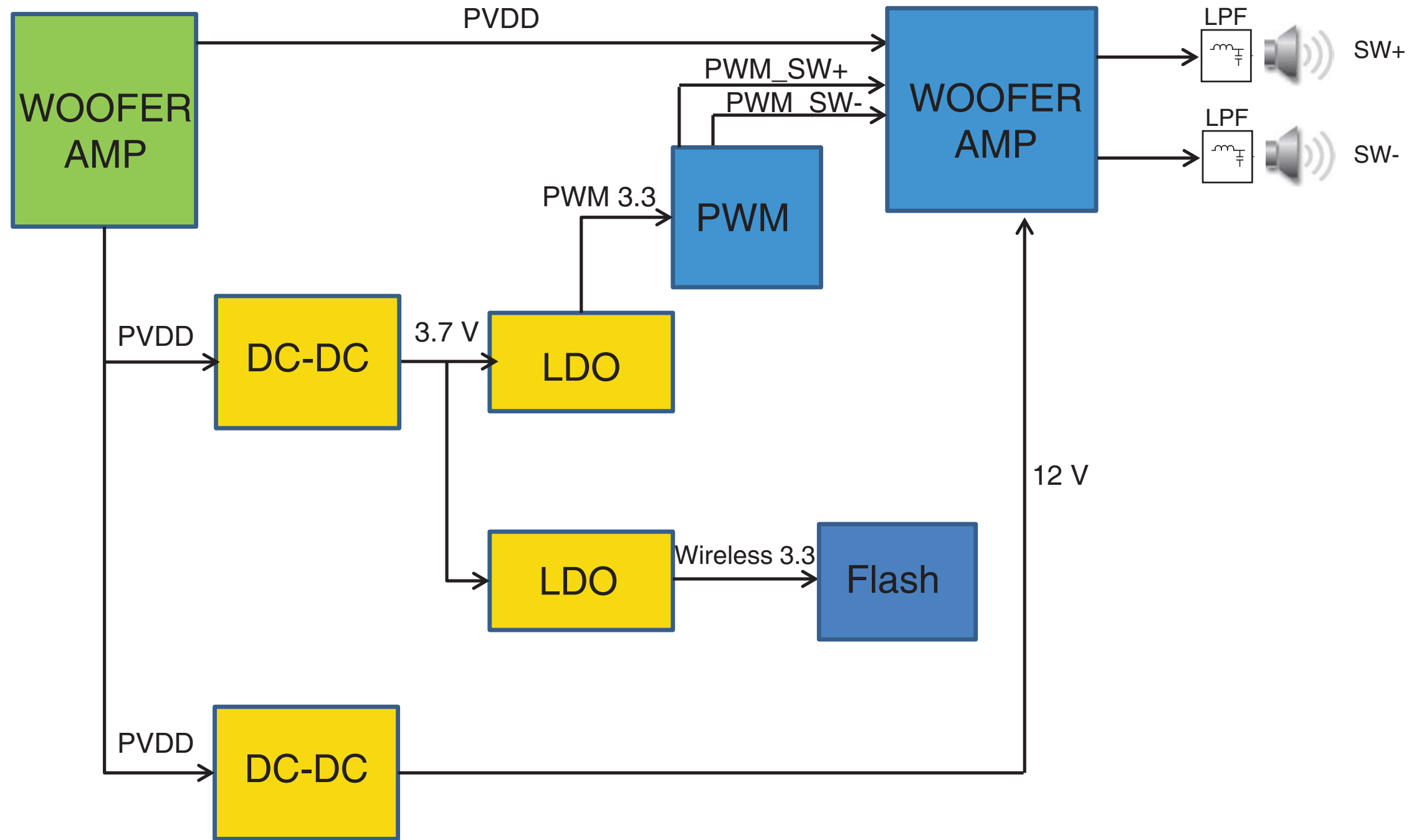




# WIRING DIAGRAM



# BLOCK DIAGRAM



# CIRCUIT DIAGRAMS

## 1. WOOFER SMPS CIRCUIT DIAGRAM

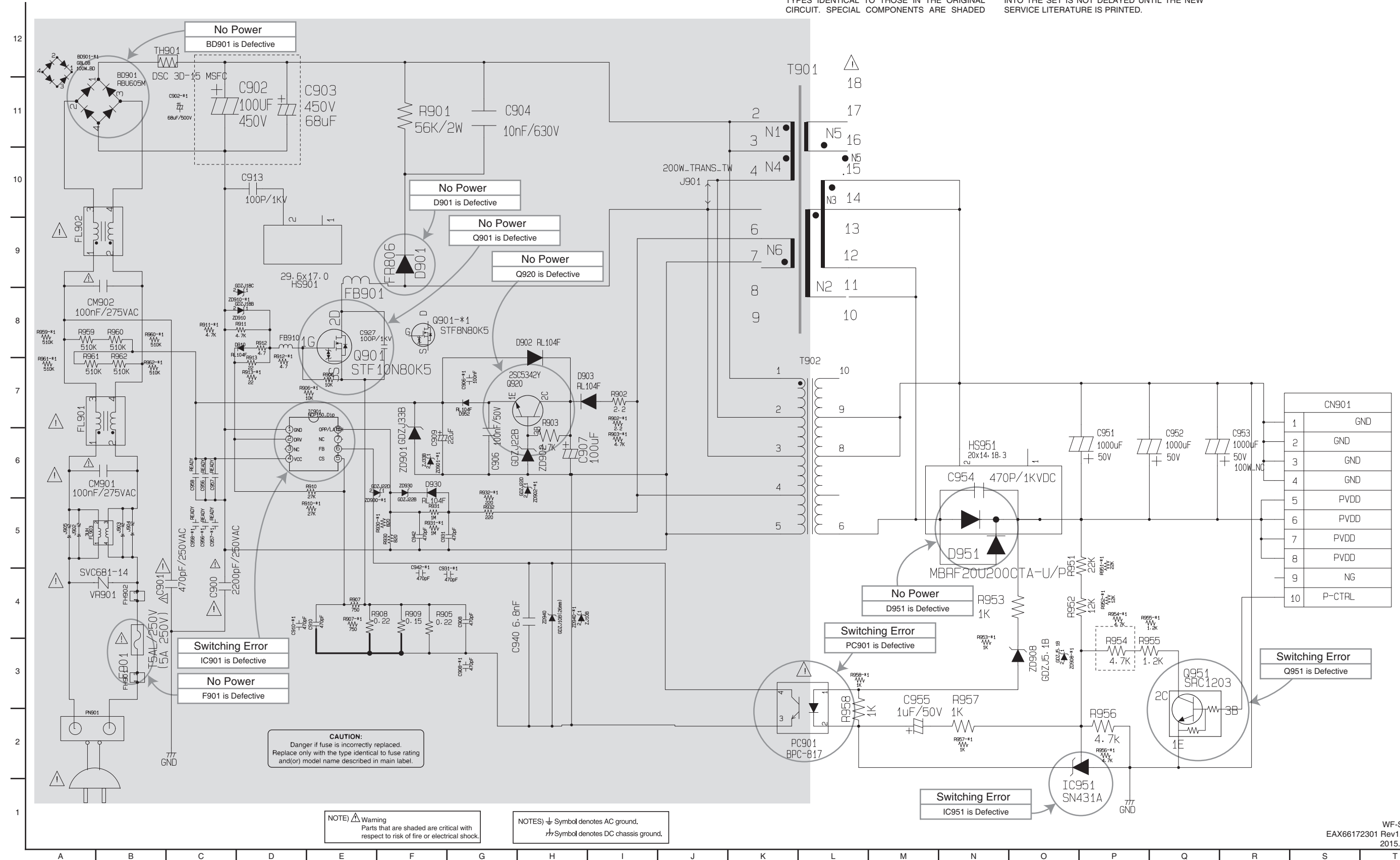
### IMPORTANT SAFETY

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE LG CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT. SPECIAL COMPONENTS ARE SHADED

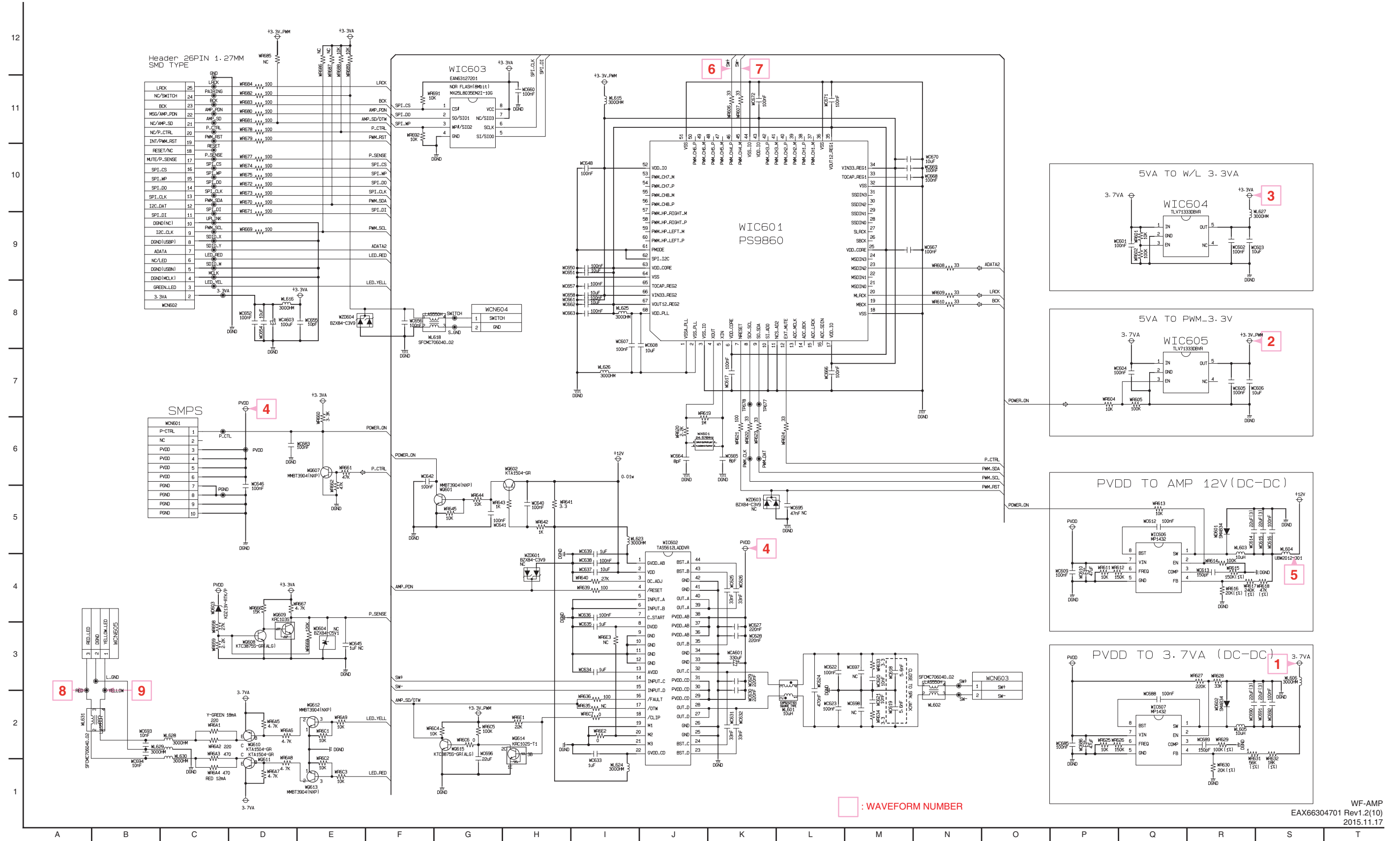
ON THE SCHEMATIC FOR EASY IDENTIFICATION. THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

### NOTE :

1. Shaded (■) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.



## 2. WOOFER AMP CIRCUIT DIAGRAM



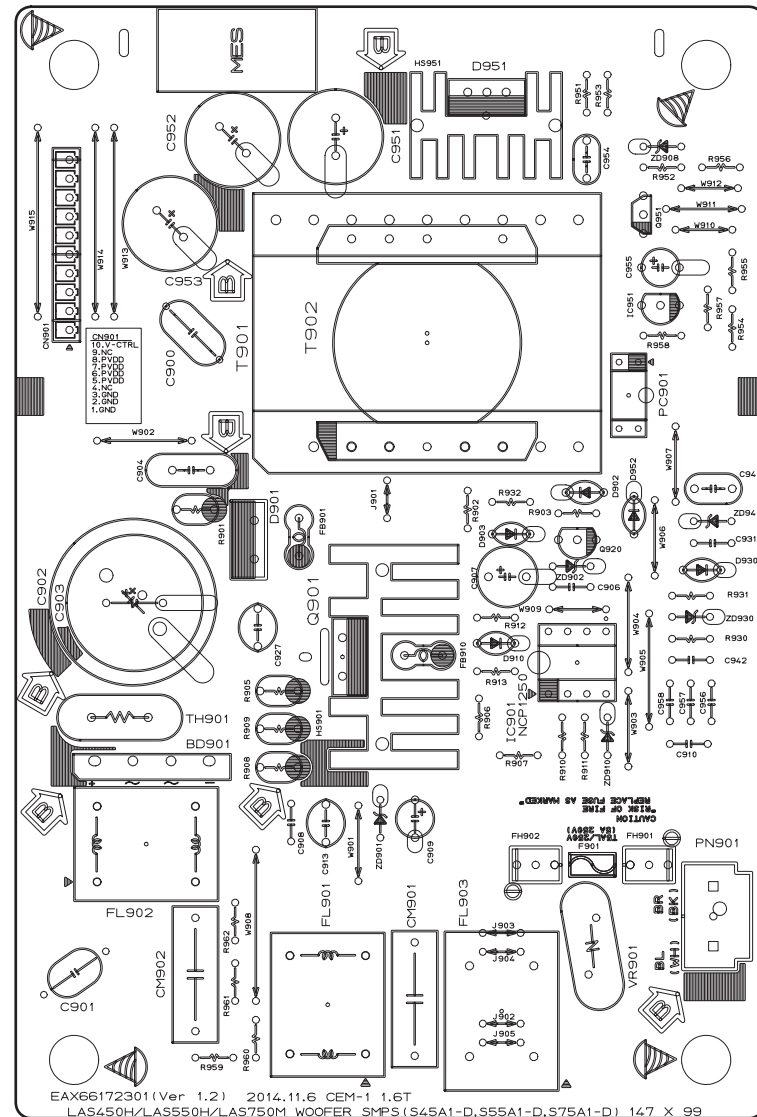




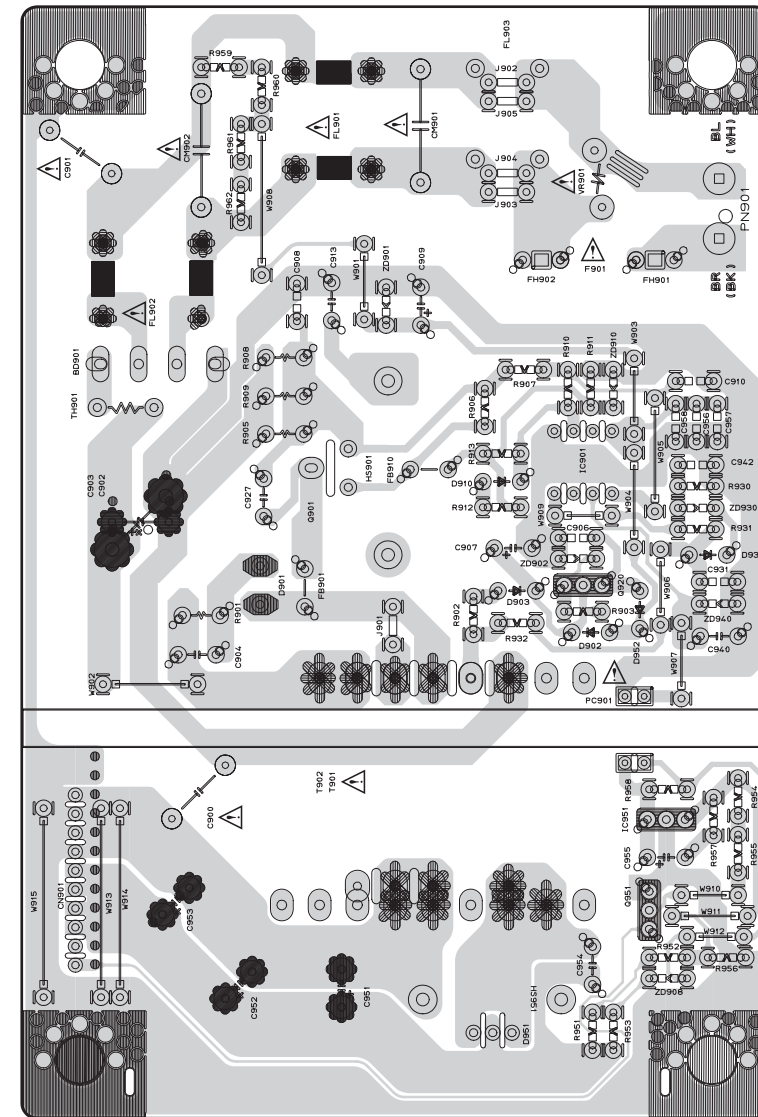
# PRINTED CIRCUIT BOARD DIAGRAMS

## 1. WOOFER SMPS P. C. BOARD

(TOP VIEW)

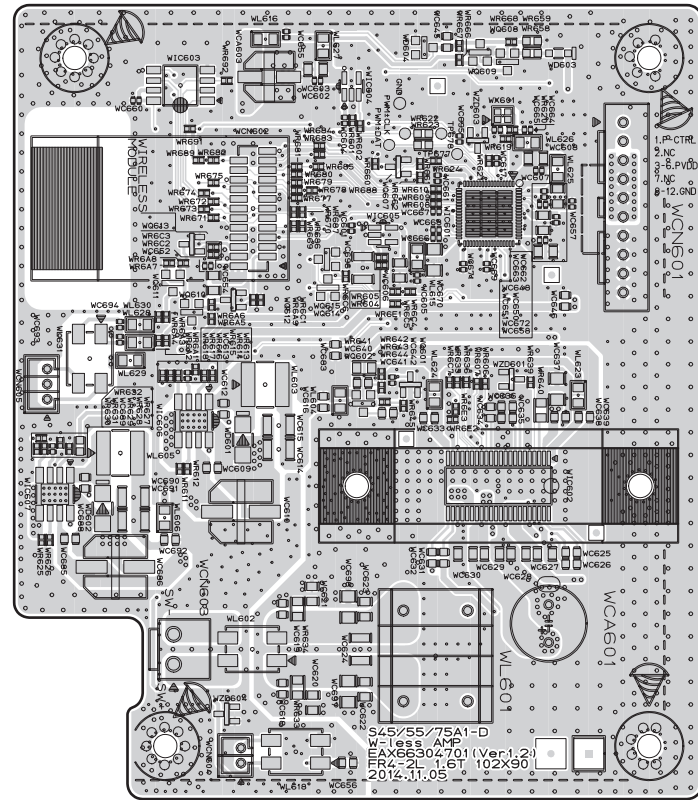


(BOTTOM VIEW)

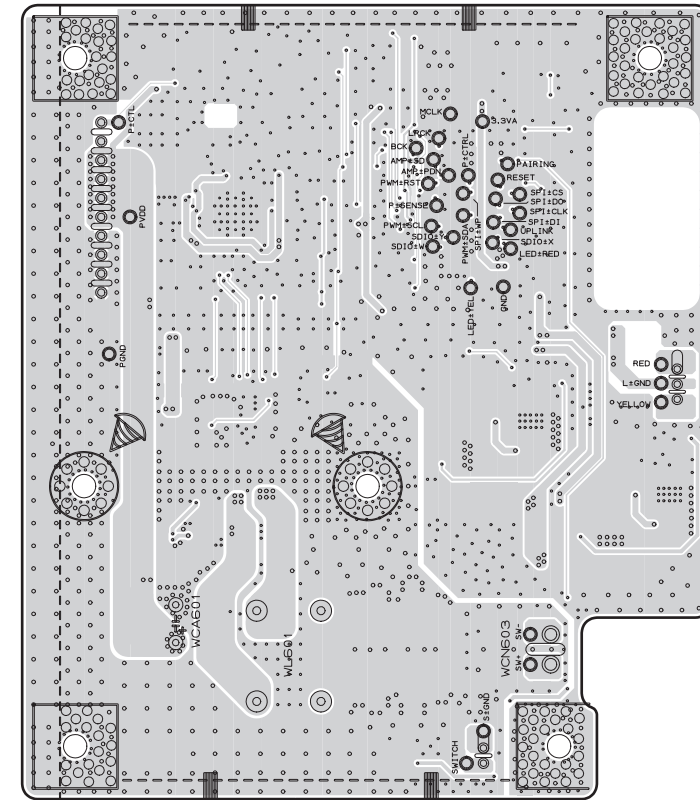


**NOTE) Warning**  
 ⚠ Parts that are critical with respect to risk of fire or electrical shock.

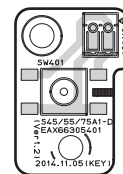
**2. WOOFER AMP P. C. BOARD  
(TOP VIEW)**



**(BOTTOM VIEW)**



**3. WOOFER KEY P. C. BOARD  
(TOP VIEW)**



**(BOTTOM VIEW)**

