CONFIDENTIAL

SERVICE MANUAL

MODEL: SL4Y (SL4Y, SPH4B-W)

Wireless Sound Bar
SERVICE MANUAL

MODEL: SL4Y
(SL4Y, SPH4B-W)

CAUTION
BEFORE SERVICING THE UNIT, READ THE “SAFETY PRECAUTIONS” IN THIS MANUAL.

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MAY, 2019

LG

CONTENTS

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SECTION 1
GENERAL

CONTENTS

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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.

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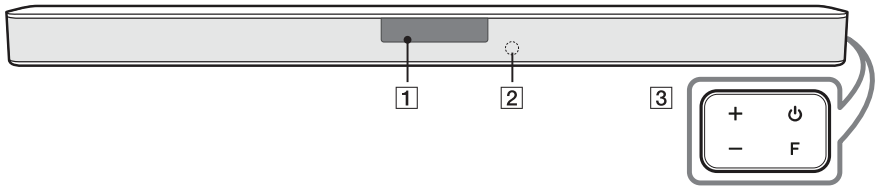
LOCATION OF CUSTOMER CONTROLS

● Front panel



1 Display Window
- Display window will be darkened automatically if there is no key input for 15 seconds. When you press any button, the display window will brighten.

2 Remote sensor

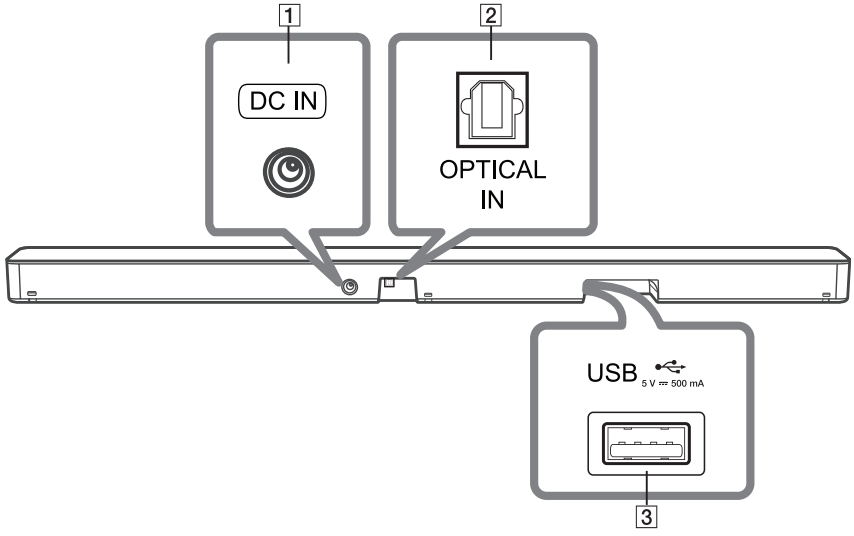
3 ⏻ (Standby)
- Switches the unit ON or OFF.

F (Function)
- Select the function and input source by pressing **F** repeatedly.

Input source / Function	Display
Optical LG Sound Sync (Wired)	OPT
Bluetooth	BT
LG Sound Sync (Wireless)	LG TV
USB	USB

+/– (Volume)
- Adjusts volume level.

● Rear panel



1 **DC IN**
- Connect to the AC adapter.

2 **OPTICAL IN**
- Connect the OPTICAL IN jack on the back of the unit to OPTICAL OUT jack on the TV.

3 USB Port
- Connect USB memory device to the USB port on the back of the unit.

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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.

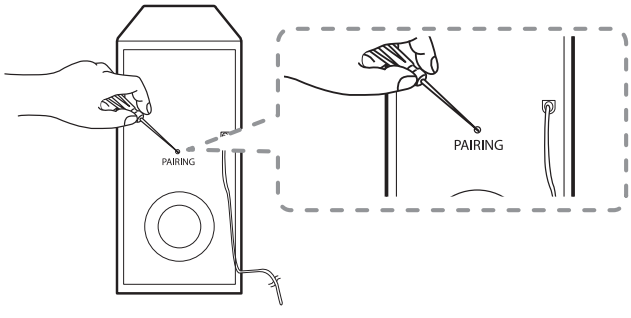
Setting up the wireless subwoofer for the first time

1. Connect the power cord 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.
   - Yellow - green 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.

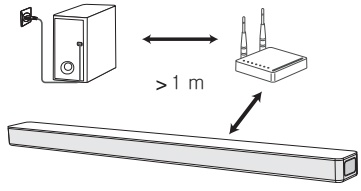


   - The yellow - green LED on the rear of the wireless subwoofer blinks quickly. (If the green LED does not blink, press and hold the **PAIRING**.)

2. Turn on the sound bar.
   - Pairing is completed. The yellow - green LED on the front 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 1m to prevent wireless interference.



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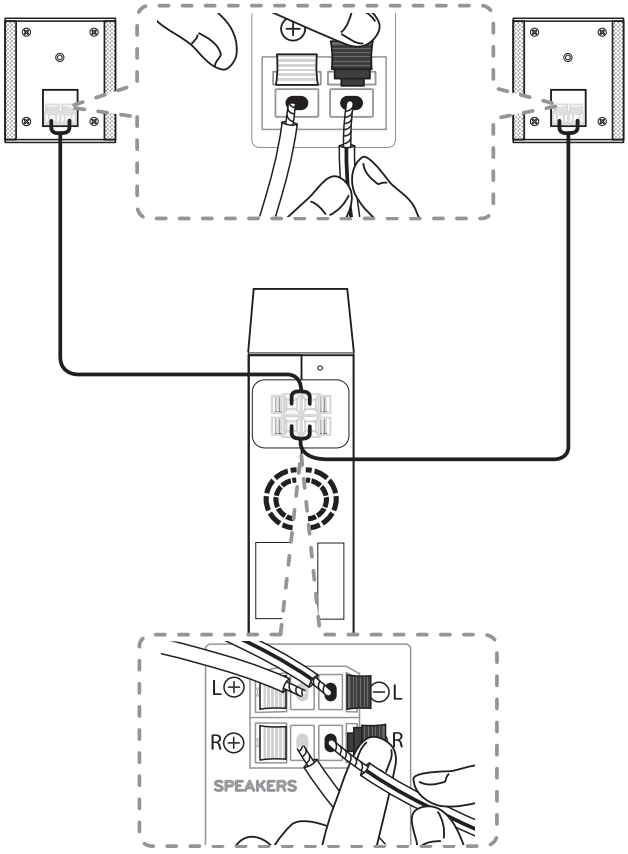
REAR SPEAKERS CONNECTION (SOLD SEPARATELY)

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

Note :
You need to purchase the wireless rear speakers kit (SPK8-S) to enjoy surround sound.

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 (Blink)	The connection is trying.
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

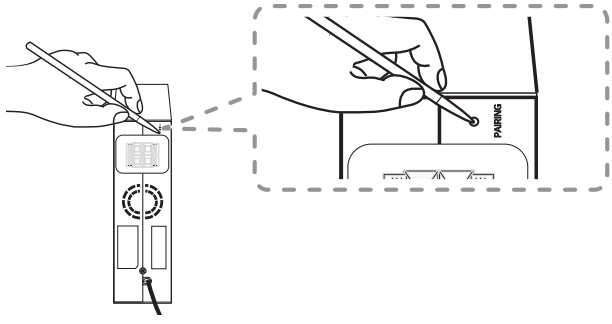
Setting up the wireless receiver for the first time

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
   - Paring is completed. The yellow - green LED on the wireless receiver turns on.

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HIDDEN KEY MODE

HIDDEN MODE	KEYS
EEPROM EDIT	Main unit ' ▬ (Volume)' + Remote control '**NIGHT ON**'
EEPROM CLEAR (Initialize)	Main unit ' ▬ (Volume)' + Remote control ''**ASC** (↳)'
VERSION CHECK	Main unit ' ▬ (Volume)' + Remote control ' ⏯ (Play/Pause)'

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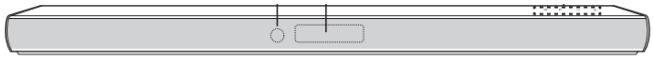
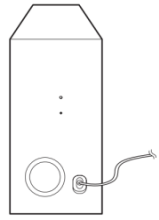
FIRMWARE UPDATE GUIDE

1. Preparation

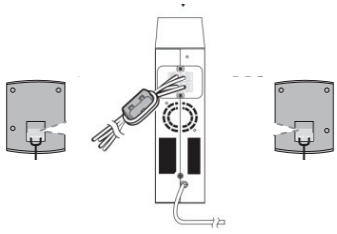
1) SL4Y Series Units : Main Unit, Wireless Subwoofer Unit, Rear Speaker Unit(optional).
2) SL4Y RCU.
3) USB Memory.
4) Android Device with “Music Flow Bluetooth” App for FOTA update, “Version Check APP” for Version Check.



<Main Unit>
Necessary



<Wireless Subwoofer Unit>
If wireless subwoofer rx module
of primary unit is updated.



<Rear Speaker Unit>
Optional as model suff x
If wireless rear rx module is updated

<RCU>
Necessary

<USB Memory>
for USB update

※ Take care not to power off during update.
※ Do format USB memory before update (FAT32 f le system).

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2. USB Update

Step 1. Prepare SL4 update binaries.

Update module	Prefix & Extension	Filename Sample
DSP	DSP_SL4Y*.ROM	DSP_SL4_1812100_PRO1_rev1619.rom
Wireless Subwoofer Tx	WOOFERTX_SL4Y*.BIN	WOOFERTX_SL4_190007_181206_checksum_C7CA.bin
Wireless Subwoofer Rx	WOOFERRX_SL4Y*.BIN	WOOFERRX_SL4_191008_181206_checksum_90BE.bin
Wireless Rear Tx	REARTX_SL4Y*.BIN	REARTX_SL4_BAR_19.40.06_CHECKSUM_BEA0.bin
Wireless Rear Rx	REARRX_SL4Y*.BIN	REARRX_SL4_Ver185001_171128_checksum_DFDF.bin
PEQ	PEQ_SL4Y*.BIN	PEQ_SL4_1812070_PRO1_0EAD.bin
Option	OPT*.BIN	OPTION_SL4Y_EUS.bin

* SLx : “SL4”, depends on model option.

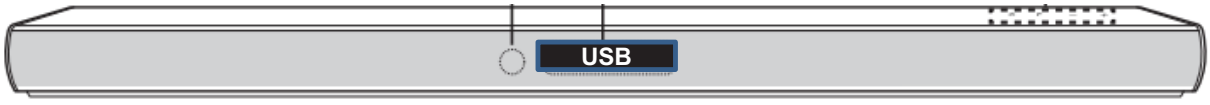
Step 2. Copy all updated SL5/ SL6 binaries to USB memory.

Step 3. Power on SL5/ SL6 main unit.

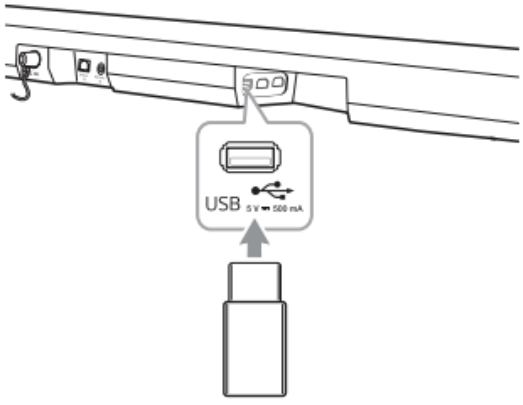
Step 4. If there is an updated wireless subwoofer rx binary in update list,
you need to pair between main unit and subwoofer unit before start update.

Step 5. If there is an updated wireless rear rx binary in update list,
you need to pair between main unit and rear speaker unit before start update.

Step 6. Press Function key to change function to USB.
Verify whether USB function is or not by VFD.



Step 7.Attach USB which has update binaries to the USB slot back of SL4Y main unit.



Update module	VFD display
DSP	D-UP
Option	OP-UP
PEQ	EQ-UP
Wireless Subwoofer Rx	WR 00
Wireless Subwoofer Tx	WT 00
Wireless Rear Tx	RT 00
Wireless Rear Rx	RR 00

<SL4Y Series VFD Display in Update>
※ The numbers in VFD display of wireless modules will increase in progress as progress percent from 00 to 100.

Step 8. Update will start automatically.
VFD Model : Check VFD what module is in progress one by one.

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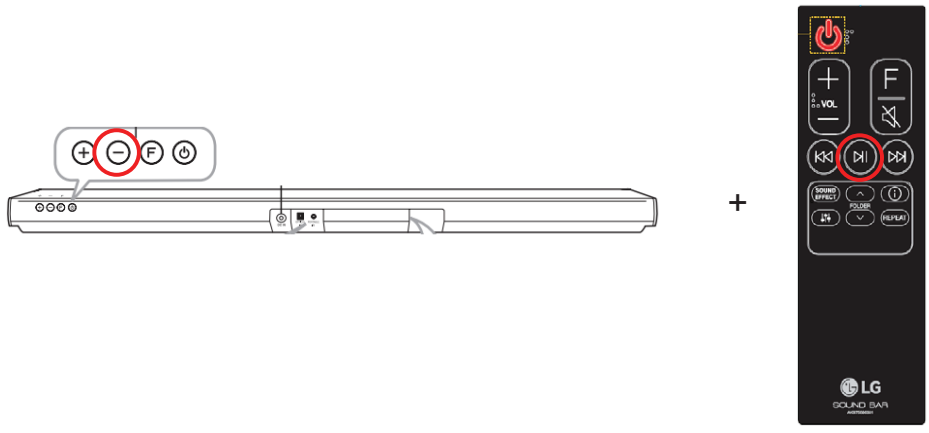
USB Update

Step 9. SL4Y main unit will be off automatically after update f nish.

Step 10. Power on SL4Y main unit again.

Step 11. Check the current versions to verify whether the update was successfully completed or not.

1) Press “Version Check” hidden key
   • Version Check Hidden Key : Press Set “Vol-” + RCU “Play/Pause” for 3secs.



2) SL4Y shows the version of all modules in the order shown below.
   • The order that SL4Y shows version in version check hidden mode.
   DSP → Wireless Subwoofer Tx → Wireless Subwoofer Rx → Wireless Rear Tx → Wireless Rear Rx → PEQ → Option

Module	VFD display sample
DSP	E1812100
Wireless Subwoofer Tx	WT190007
Wireless Subwoofer Rx	WR191008
Wireless Rear Tx	RT194006
Wireless Rear Rx	RR185001
PEQ	Q1812070
Option * Press Play/pause button to see next option value.	OP00-00

<SL4 VFD Display in Version Display>

3) Compare the version VFD shows and you updated.

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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 · Output : 25 V ⎓ 1.52 A
Dimensions (W x H x D)	Approx. 890.0 mm x 57.0 mm x 85.0 mm With foot
Operating temperature	5 °C to 35 °C
Operating humidity	5 % to 90 %
Bus Power Supply (USB)	5 V ⎓ 500 mA
Available Digital Input Audio	
Sampling Frequency	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
Available Digital Input Audio format	Dolby Audio, DTS Digital Surround, PCM

• INPUT/OUTPUT

OPTICAL IN	3 V (p-p), Optical jack x 1

• AMPLIFIER (RMS Output)

Total	300 W RMS
Front	50 W RMS x 2 (4 Ω at 1 kHz, THD 10 %)
Subwoofer	200 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	200 W
Max. Input Power	400 W
Dimensions (W x H x D)	Approx. 171.0 mm x 390.0 mm x 261.0 mm

SPK8-S (SPK8-S, S78S1-S), SOLD SEPARATELY

• 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	70 W RMS x 2 (3 Ω at 1 kHz, THD 10 %)
Dimensions (W x H x D)	Approx. 60.0 mm x 220.0 mm x 175.0 mm

• REAR SPEAKERS (EACH)

Type	1 Way 1 Speaker
Impedance	3 Ω
Rated Input Power	70 W RMS
Max. Input Power	140 W RMS
Dimensions (W x H x D)	Approx. 100.0 mm x 140.0 mm x 100.0 mm

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

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MEMO

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SECTION 2

CABINET & MAIN CHASSIS

CONTENTS

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DISASSEMBLY INSTRUCTIONS

1. HOW TO DISASSEMBLE THE MAIN SET

1) Remove the 19 screws.

Figure 1-1

2) Remove the Case Bottom Assembly.

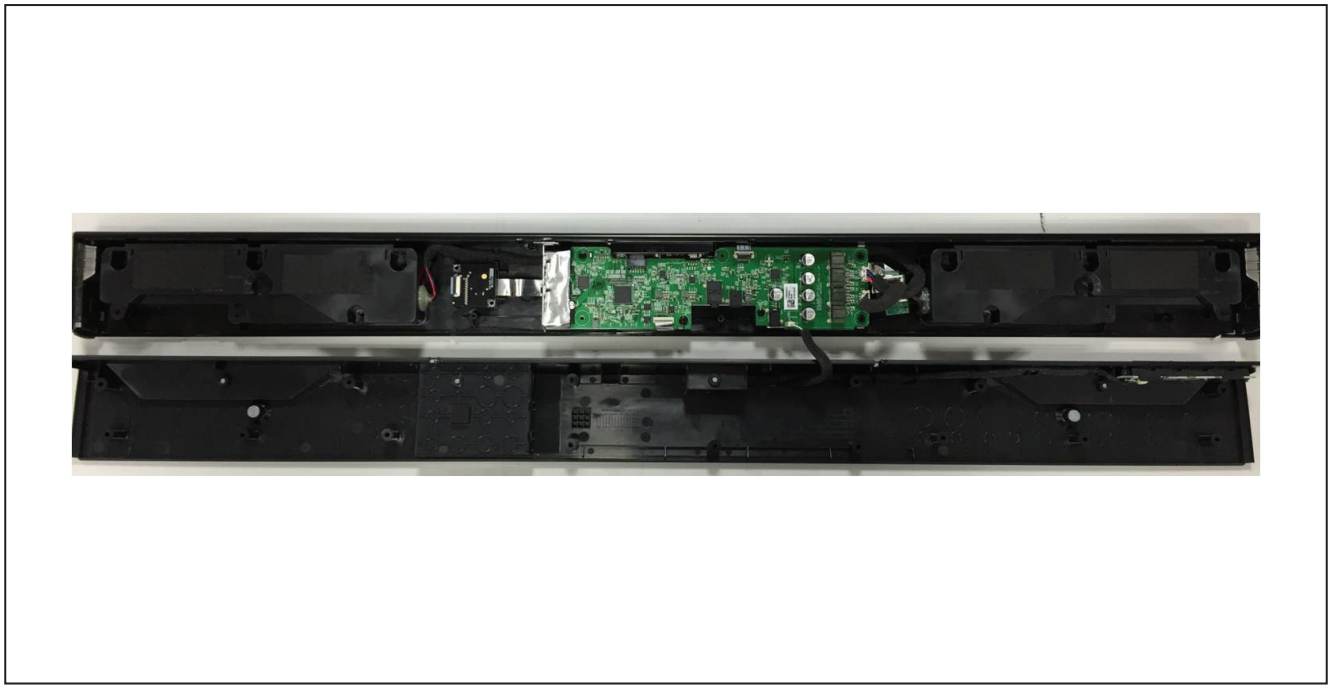

Figure 1-2

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HOW TO DISASSEMBLE THE MAIN SET

3) Remove the 2 screws, Disconnect the Harmess/FFC cables (KEY, SPK) and Remove the Main PCB Assembly.

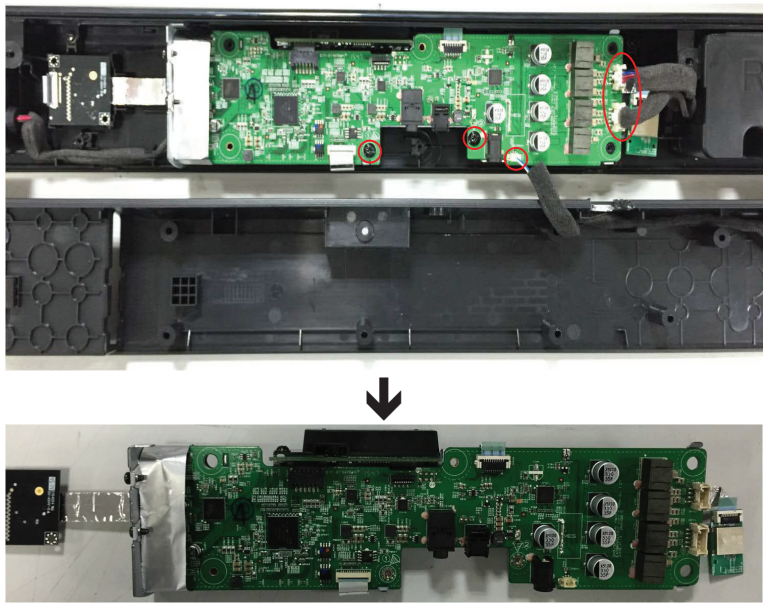

Figure 1-3

4) Remove the SPK Chamber L/R Assembly.

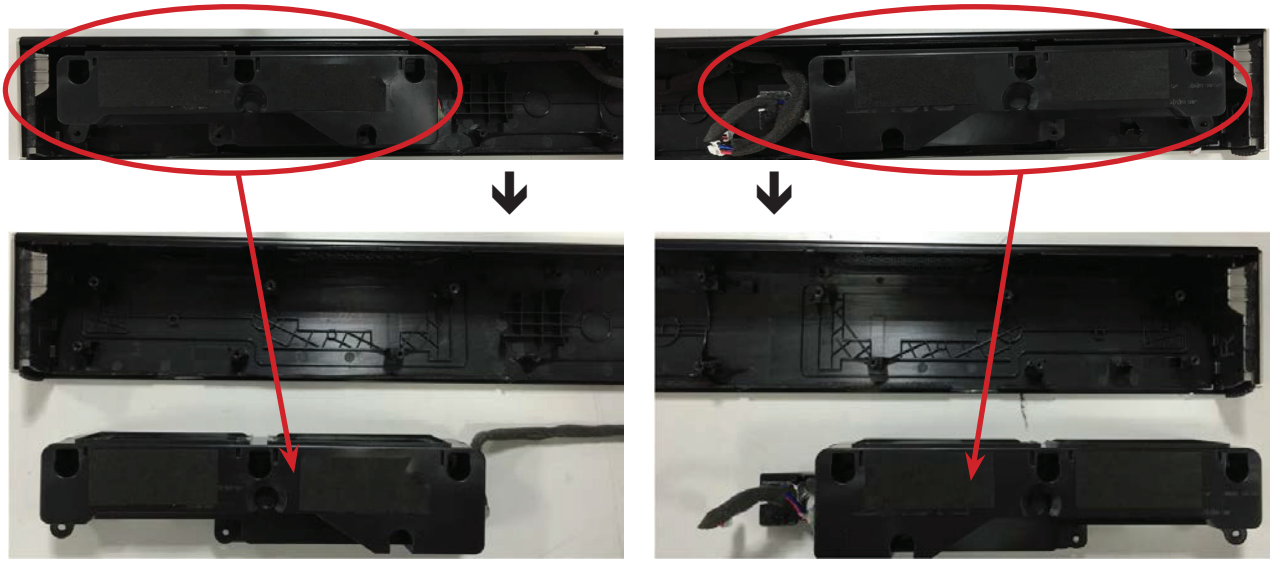

Figure 1-4

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HOW TO DISASSEMBLE THE MAIN SET

5) Remove the L/R Deco Assembly.

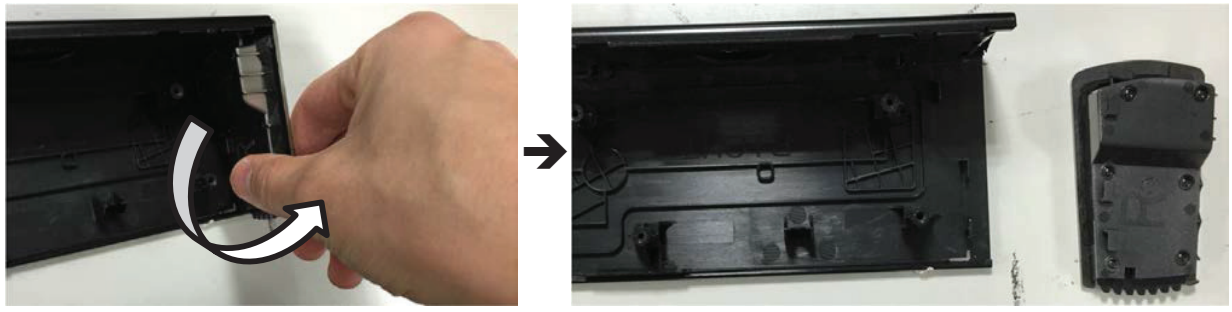

Figure 1-5

6) Remove the 4 screws and Disconnect FFC cables (BT, Wireless).

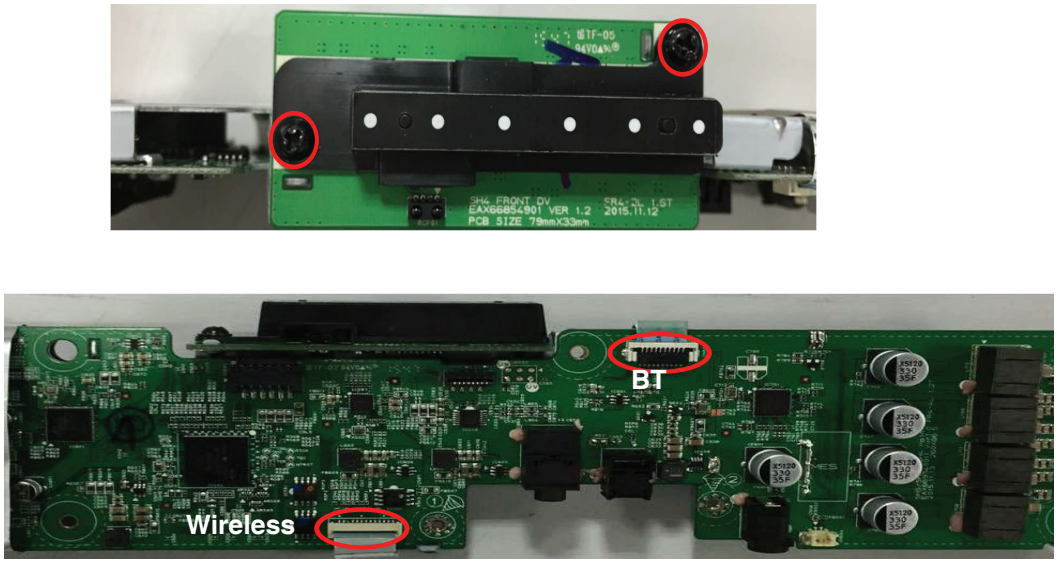

Figure 1-6

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HOW TO DISASSEMBLE THE MAIN SET

7) Remove the EMI Shield Tape.

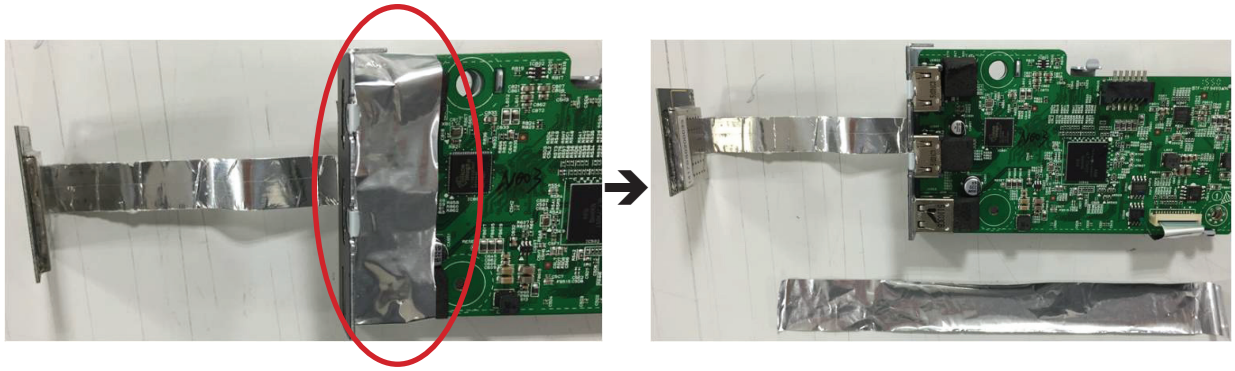

Figure 1-7

8) Remove the EMI Shield Tape of Bottom side.

Figure 1-8

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HOW TO DISASSEMBLE THE MAIN SET

9) Disassembly f nish.

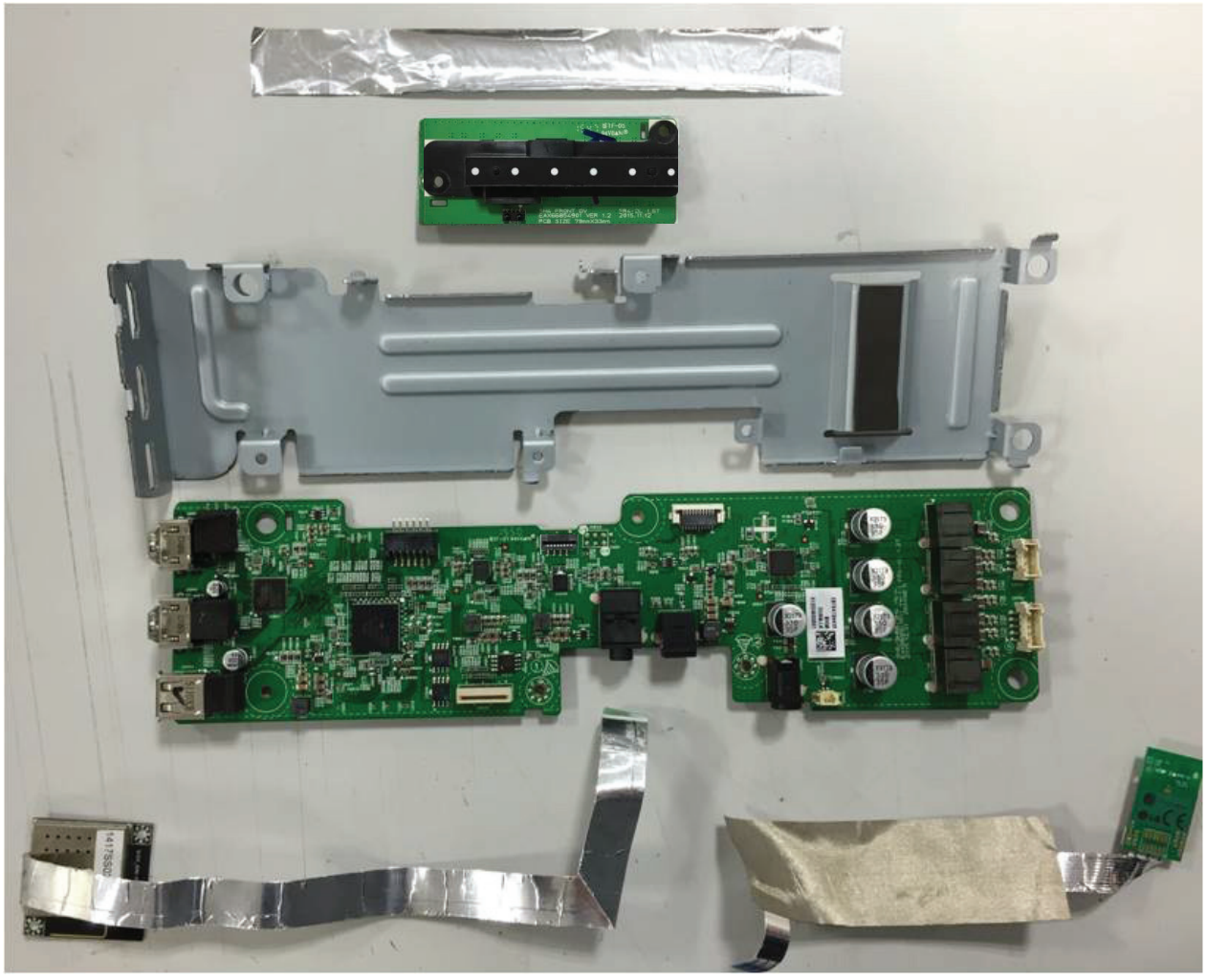

Figure 1-9

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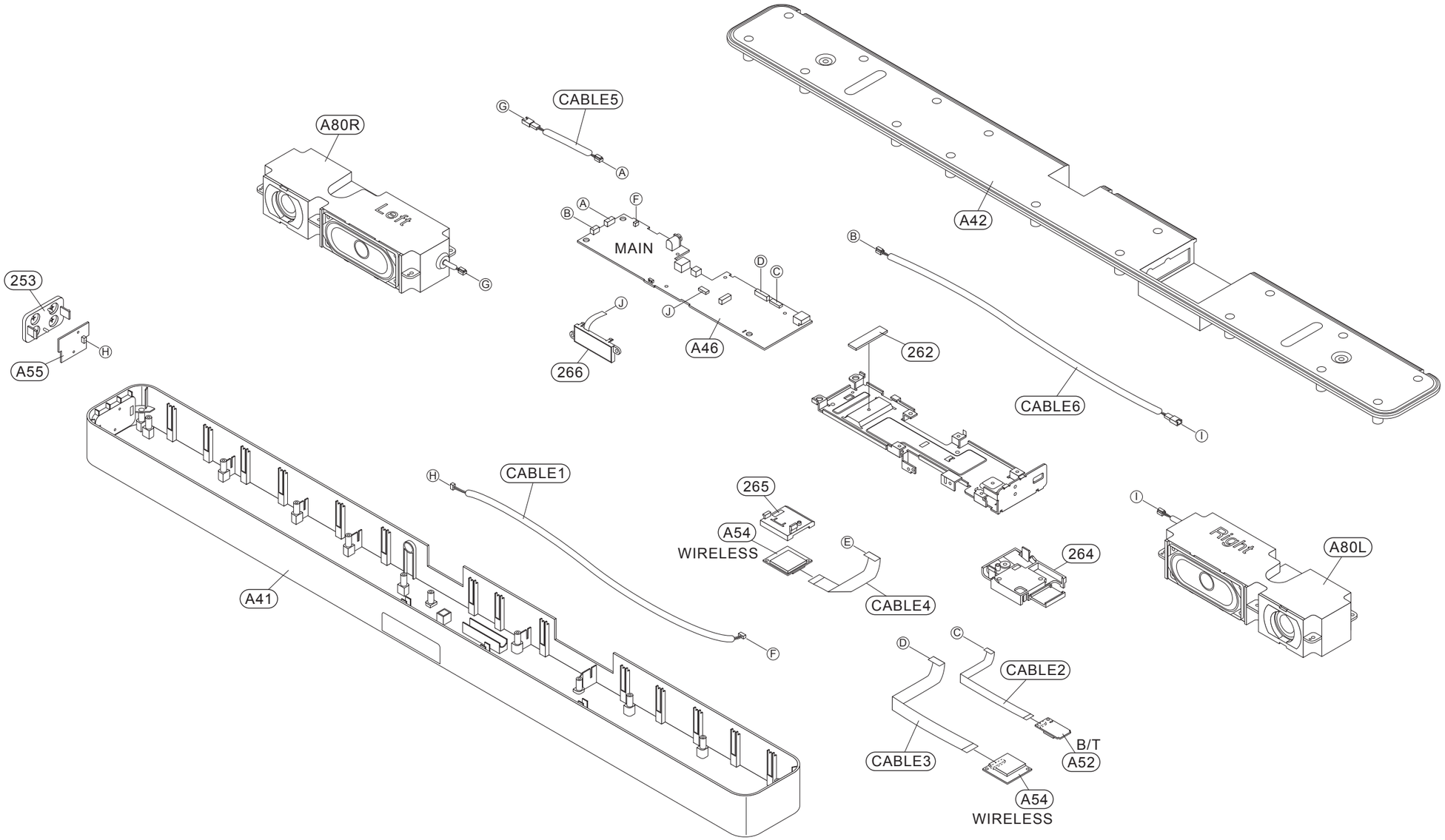
EXPLODED VIEWS
1. MAIN UNIT SECTION



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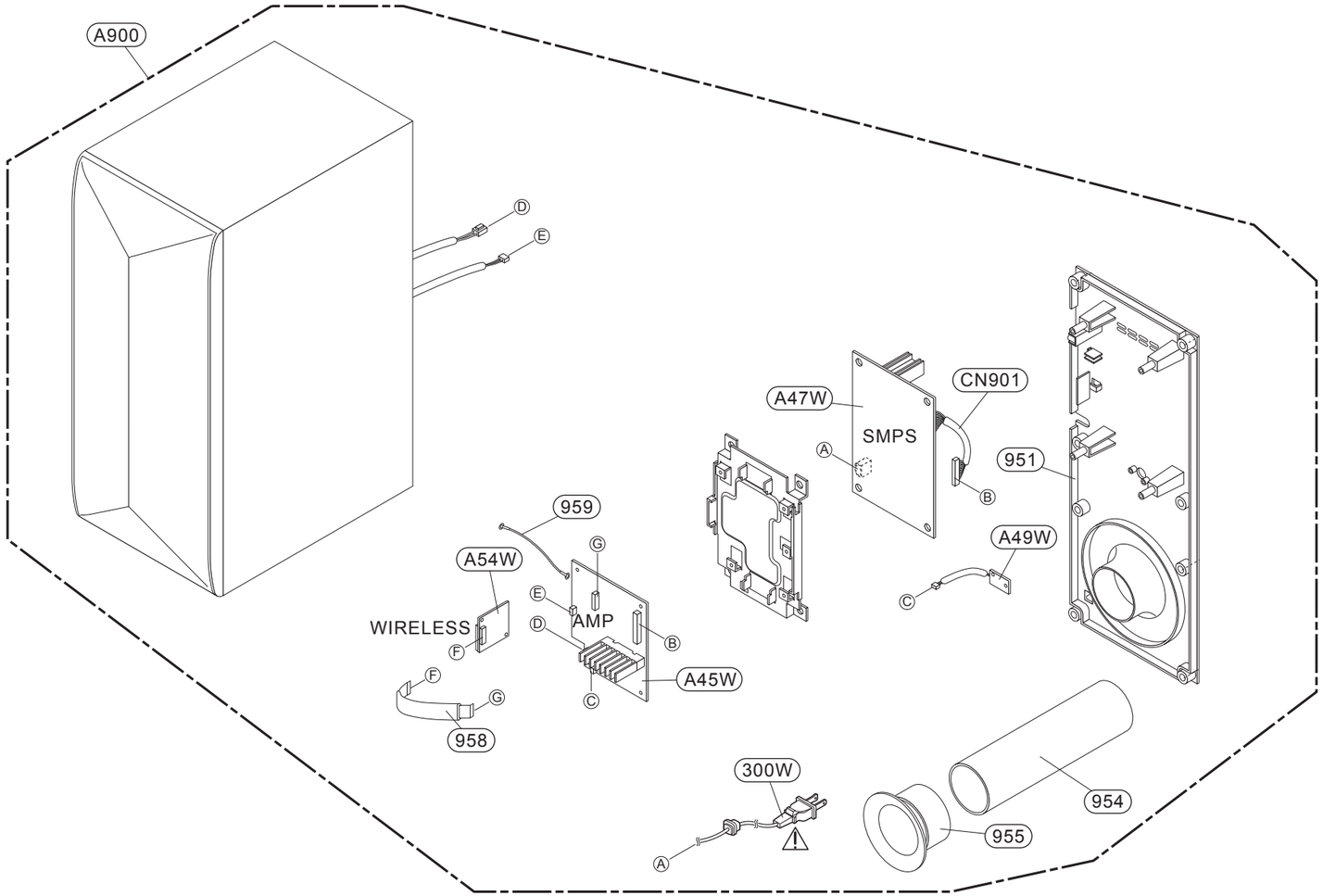
2. WIRELESS SUBWOOFER SECTION

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.



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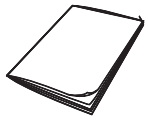
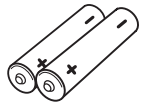
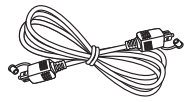
3. PACKING ACCESSORY SECTION

★Optional Part

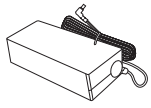






★ (806) Optical cable

(833) AC adapter



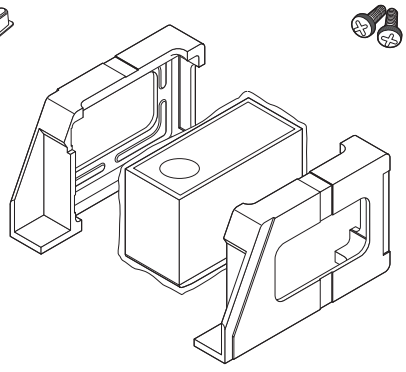
(900) Remote control

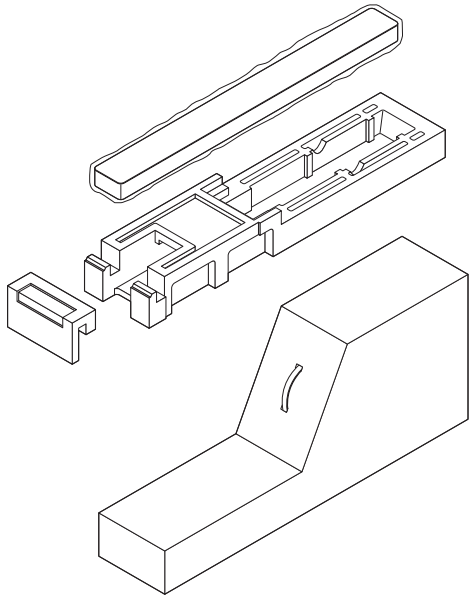
(835) Wall bracket

(300) Power cord

(837) Holder, foot

(836) Screws (2)





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SECTION 3
ELECTRICAL

CONTENTS

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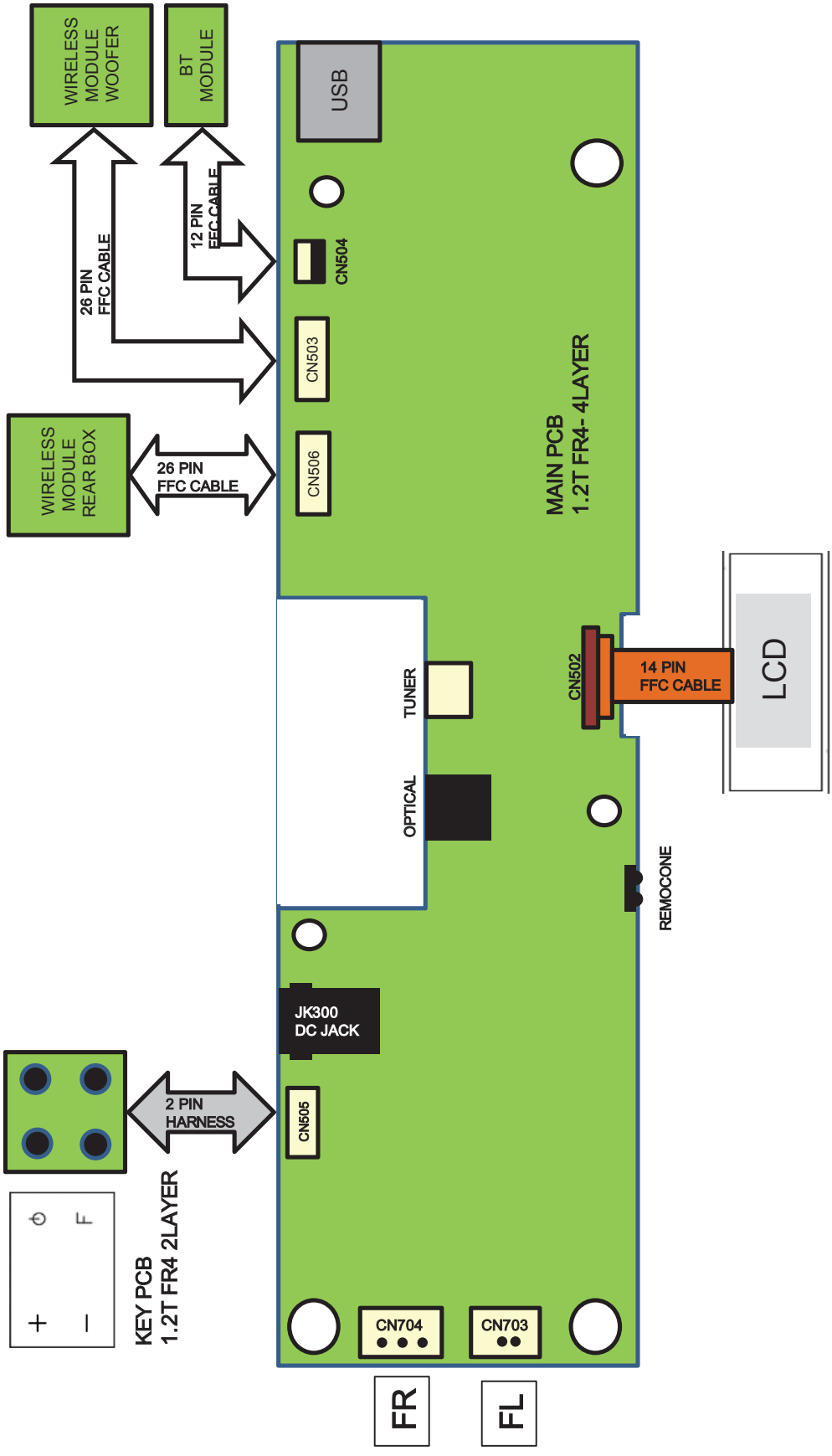
WIRING DIAGRAM



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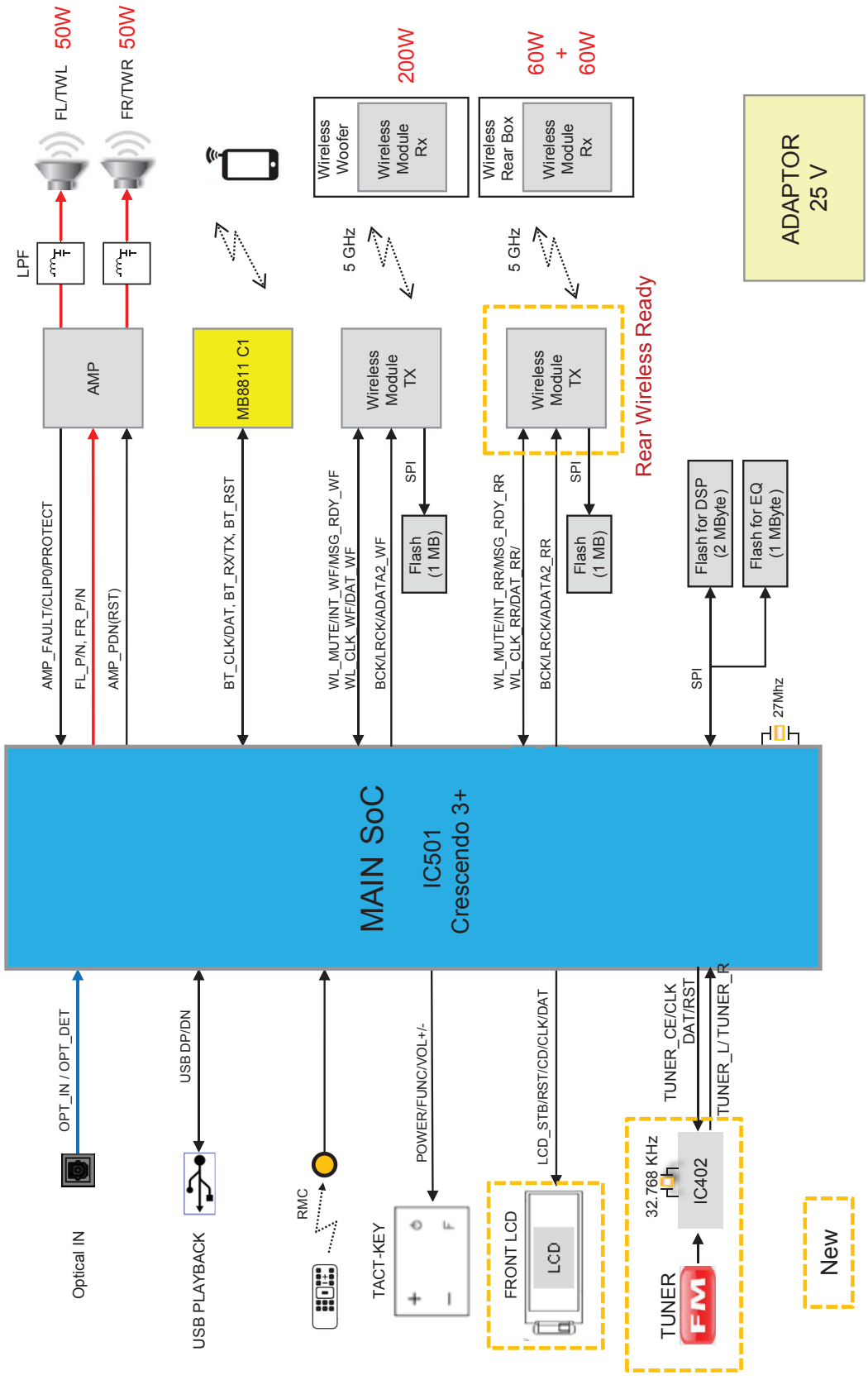
BLOCK DIAGRAMS

1. SYSTEM BLOCK DIAGRAM



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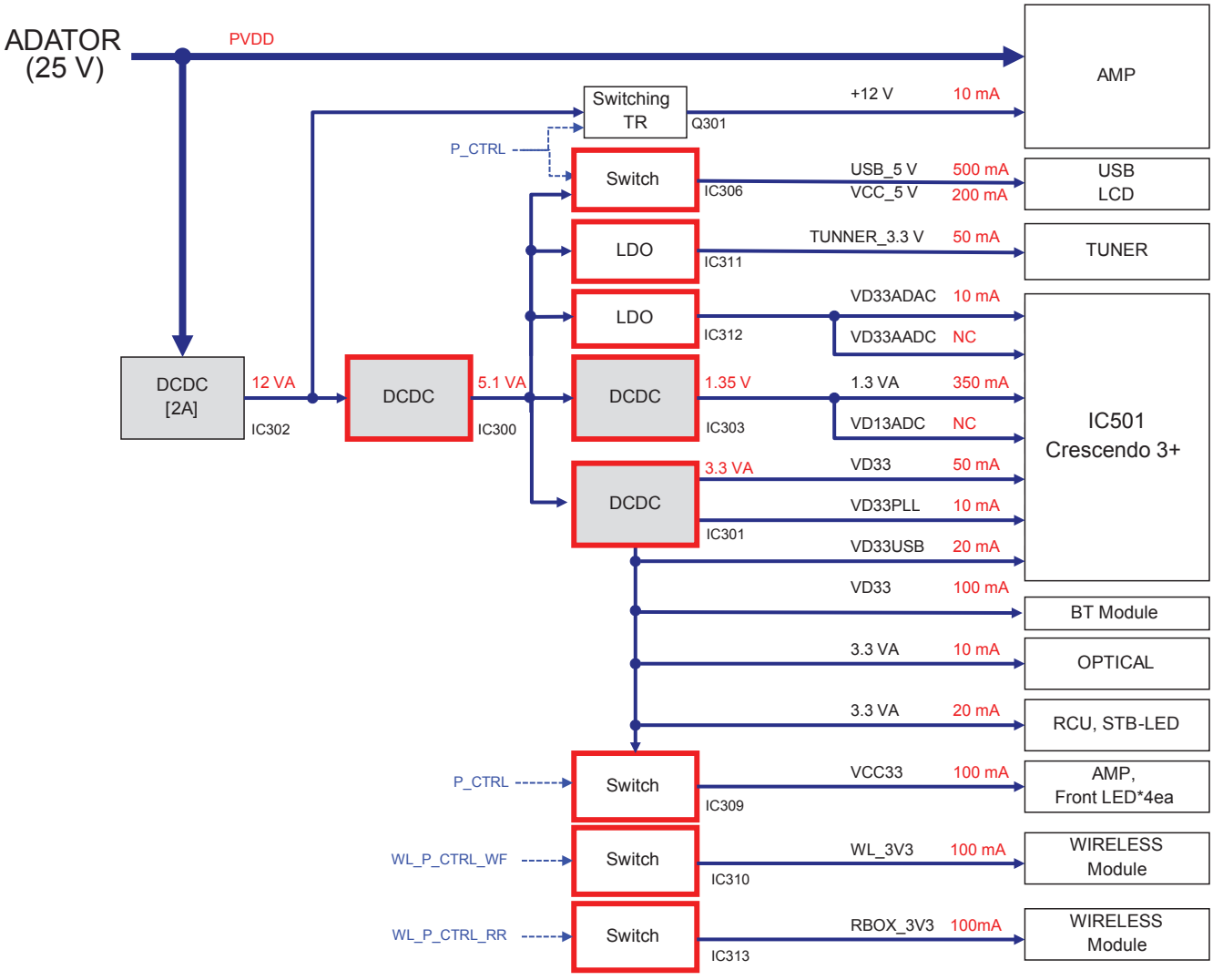
2. POWER BLOCK DIAGRAM



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ONE POINT REPAIR GUIDE

1. NO BOOTING WHEN YOU TURN THE UNIT ON, NO MESSAGE OR “HELLO” ON FRONT PANEL

When you turn on your set, no message on the front panel, and stand-by LED doesn’t work.

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

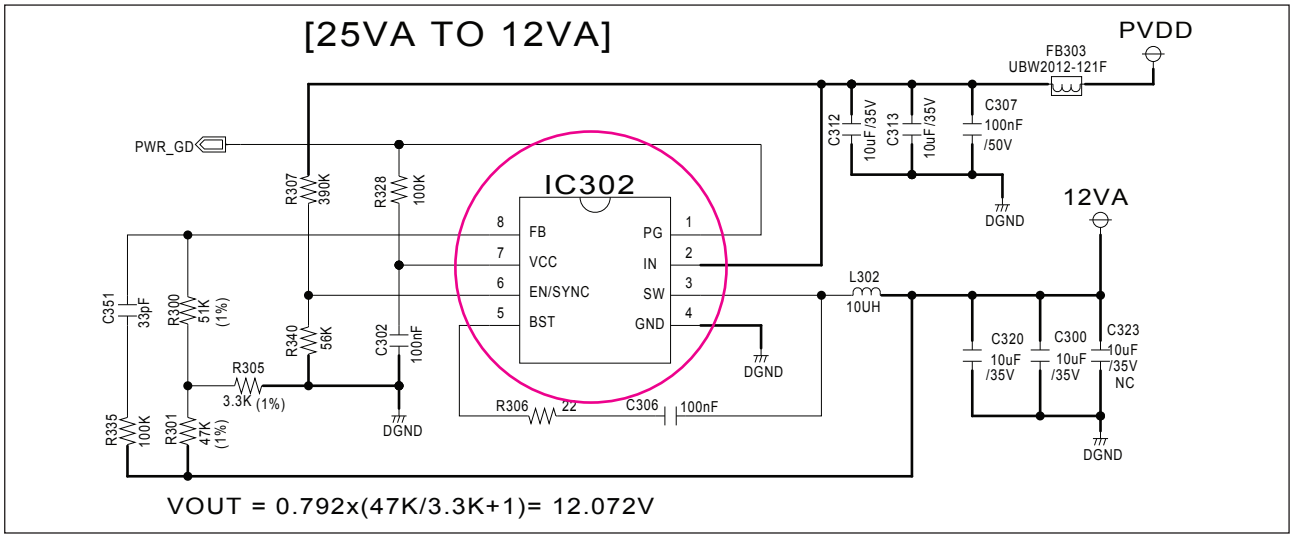
1-1-1. Solution

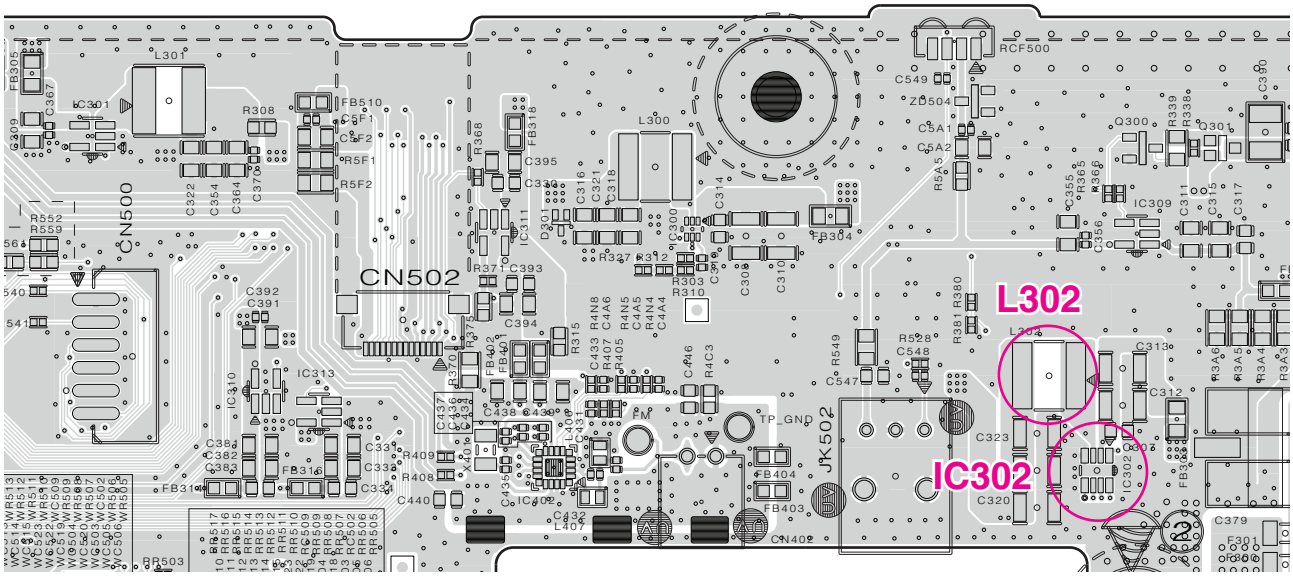
Replace MAIN board.

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)





< MAIN board top view >

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ONE POINT REPAIR GUIDE

NO BOOTING WHEN YOU TURN THE UNIT ON, NO MESSAGE OR “HELLO” ON FRONT PANEL

When you turn on your set, it will blank / no message on front panel / doesn’t work.

1-2. IC300 System 5.1 V (No 5.1 VA)

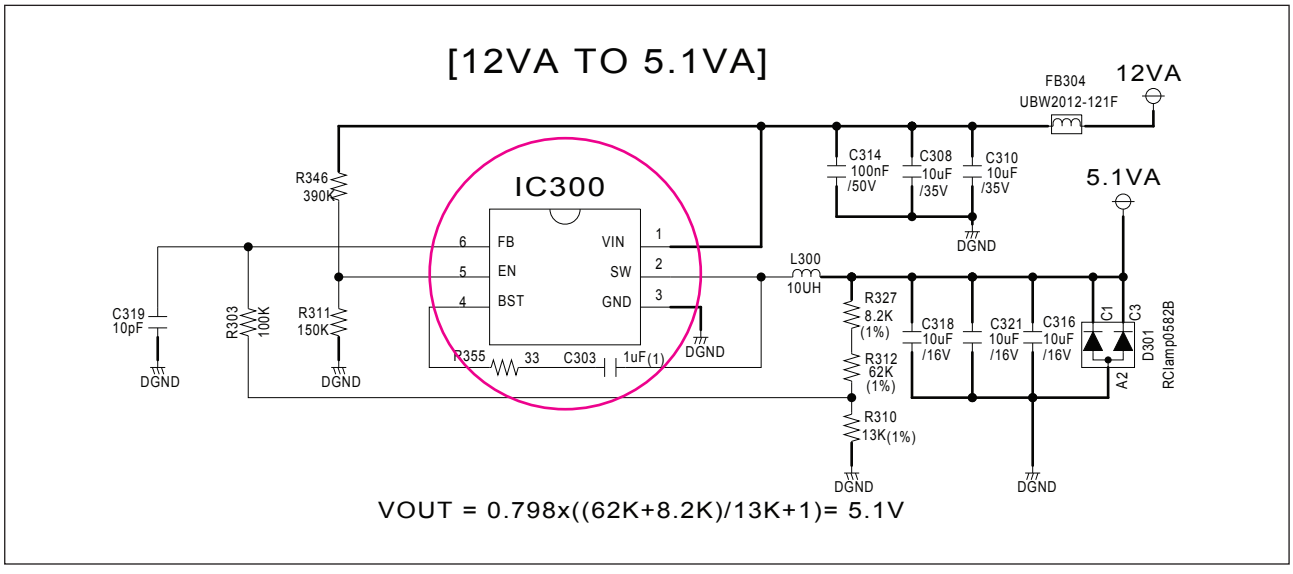
1-2-1. Solution

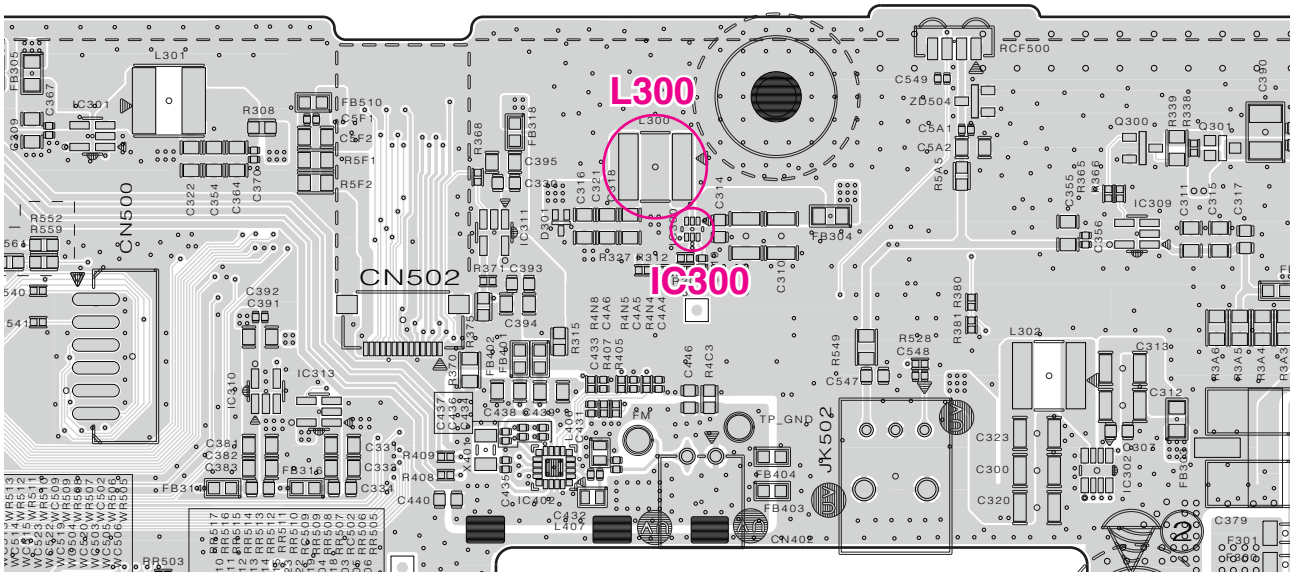
Check MAIN board.

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

1) Please check 5.1 VA of IC300 pin2
2) If 5.1 VA is abnormal, replace MAIN board.

1-2-3. Service hint (Any picture / Remark)





< MAIN board top view >

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ONE POINT REPAIR GUIDE

NO BOOTING WHEN YOU TURN THE UNIT ON, NO MESSAGE OR “HELLO” ON FRONT PANEL

When you turn on your set, it will blank / no message on front panel / doesn’t work.

1-3. IC301 System 3.3 V (No 3.3 VA)

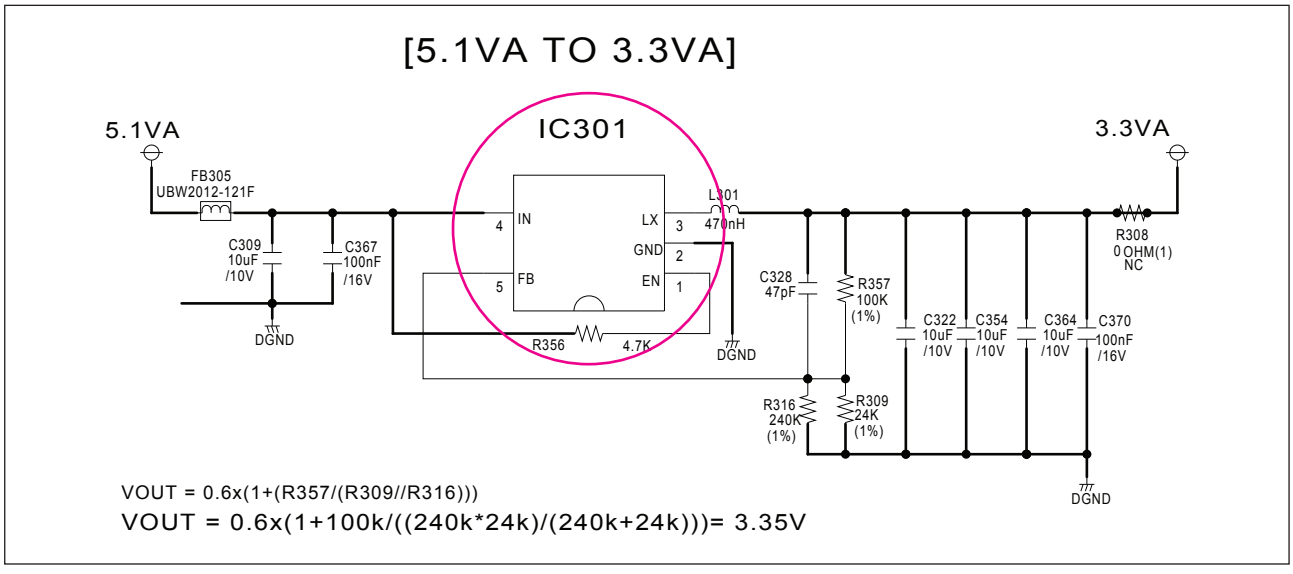
1-3-1. Solution

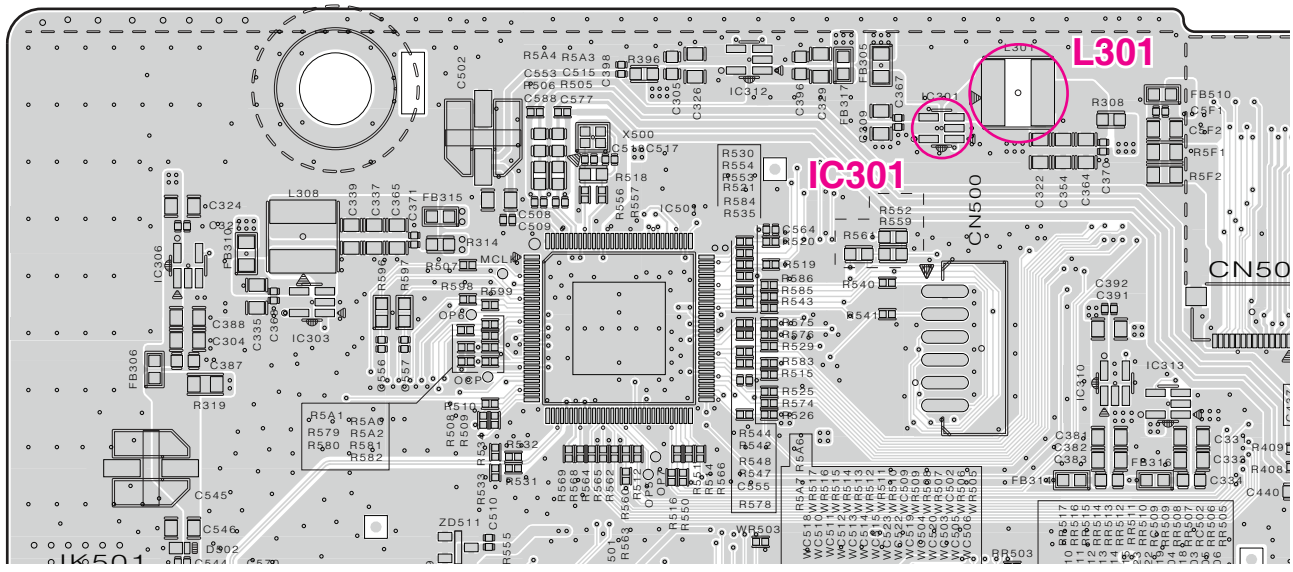
Replace MAIN board.

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

1) Please check 3.3 VA of IC301 pin3.
2) If 3.3 VA is abnormal, replace MAIN board.

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





< MAIN board top view >

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NO BOOTING WHEN YOU TURN THE UNIT ON, NO MESSAGE OR “HELLO” ON FRONT PANEL

When you turn on your set, it will blank / no message on front panel, LCD doesn’t work.

1-4. LCD System power VCC_5V

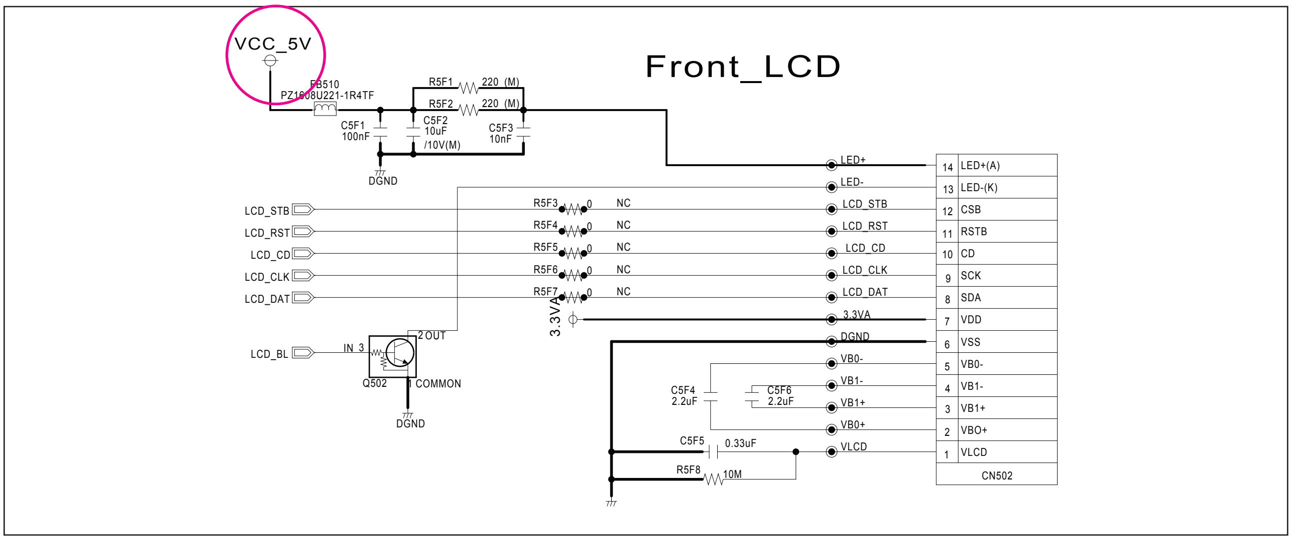
1-4-1. Solution

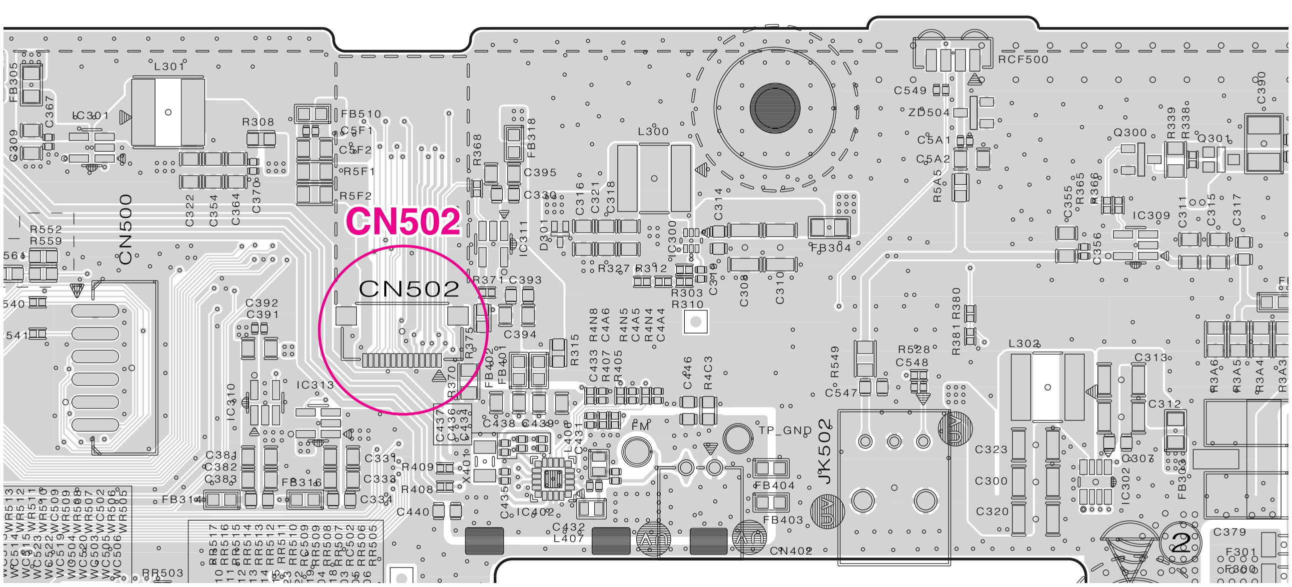
Replace MAIN/ LCD Module.

1-4-2. How to troubleshoot (Countermeasure)

1) Please check CN502 VCC_5V of CN502 pin1.
2) If VCC_5 V is abnormal, replace MAIN board.
3) If VCC_5 V OK, replace LCD module.

1-4-3. Service hint (Any picture / Remark)





< MAIN board top view >

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ONE POINT REPAIR GUIDE

2. NO SOUND

2-1. BLUETOOTH

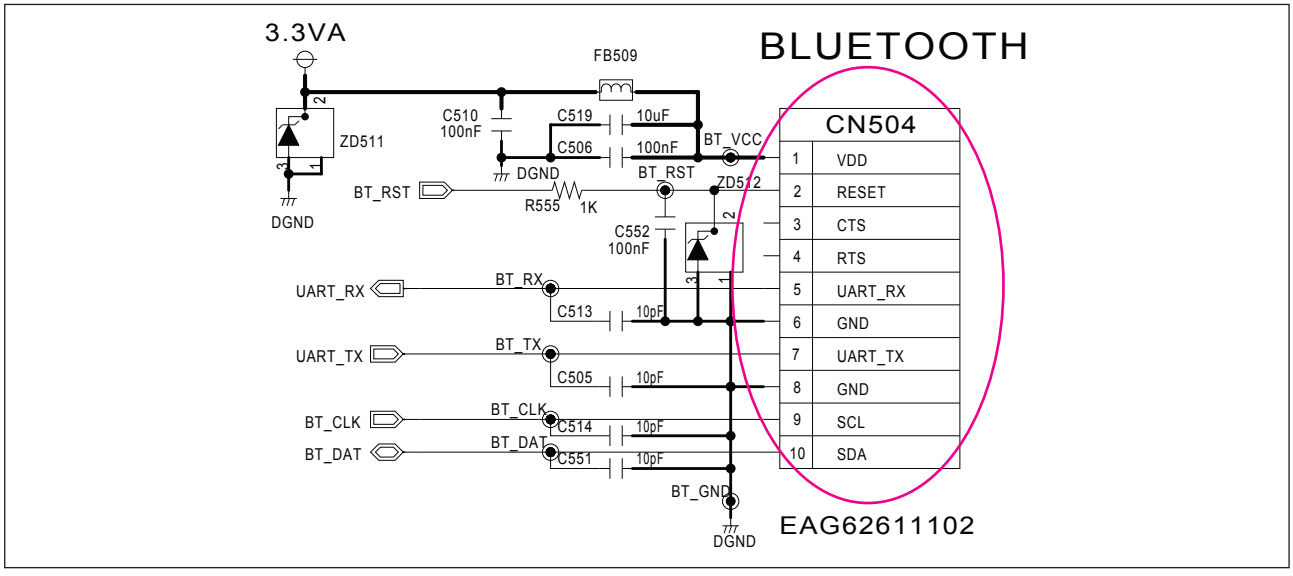
2-1-1. Solution

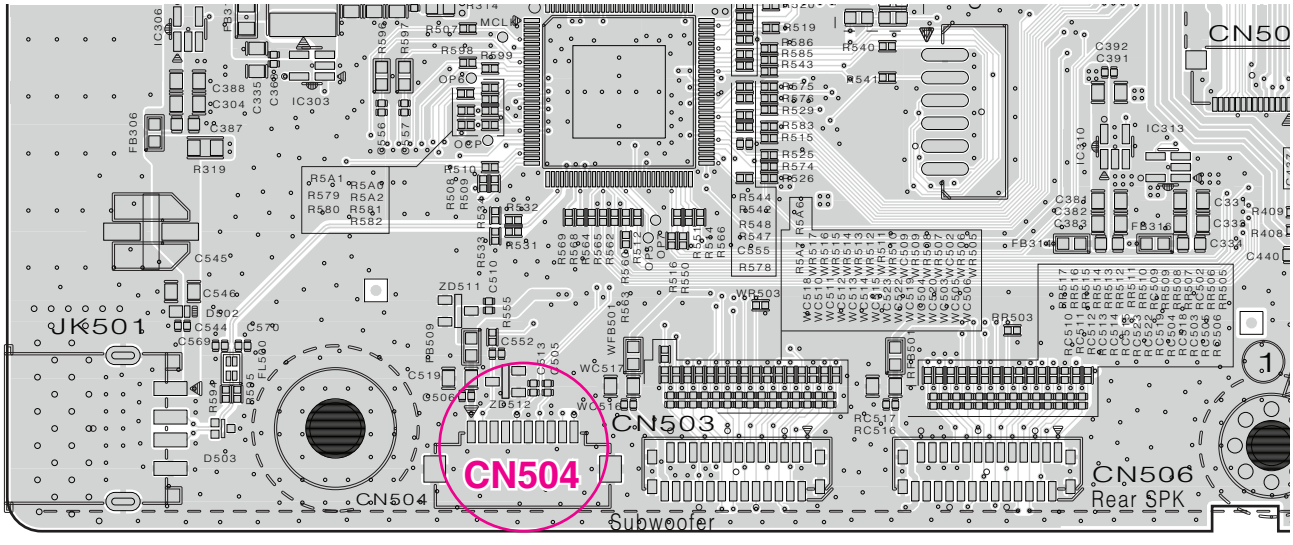
Replace MAIN board.

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

1) Please check status of Bluetooth cable connection. (at CN504 and BT module)
2) Please check 3.3 VA (at pin1 of CN504).
   If 3.3 VA is OK, please check UART_RX, UART_TX, RESET, SCL, SDA, RTS, CST
   If no signal, please replace MAIN board.

2-1-3. Service hint (Any picture / Remark)





< MAIN board top view >

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ONE POINT REPAIR GUIDE

NO SOUND

2-2. OPTICAL

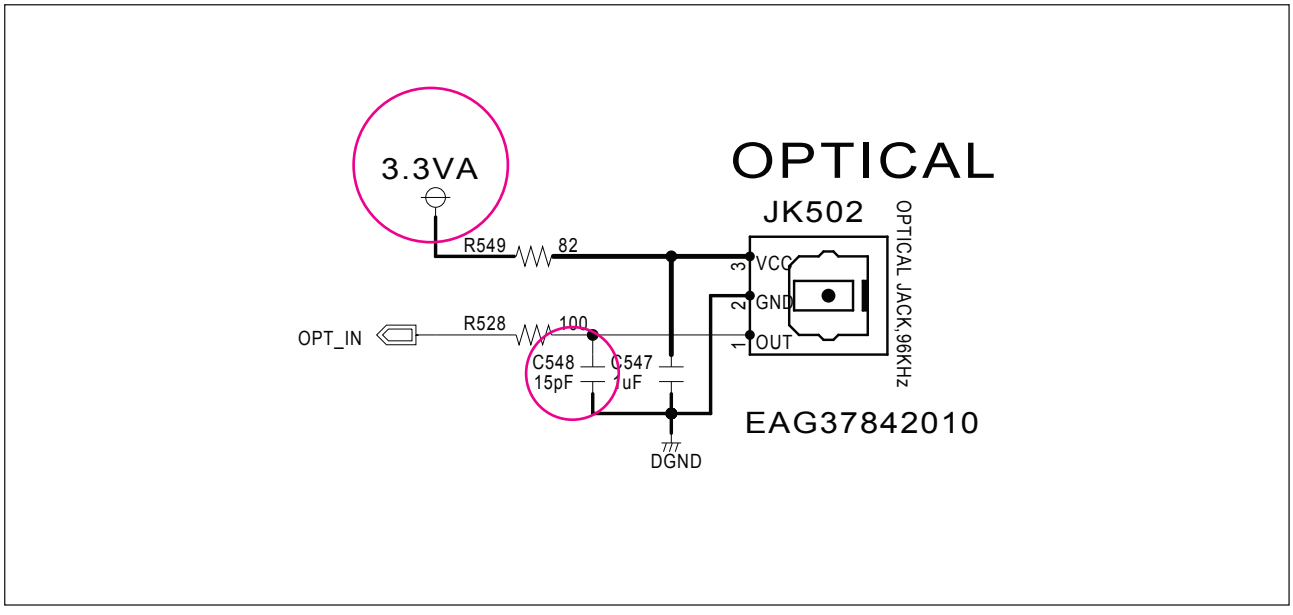
2-2-1. Solution

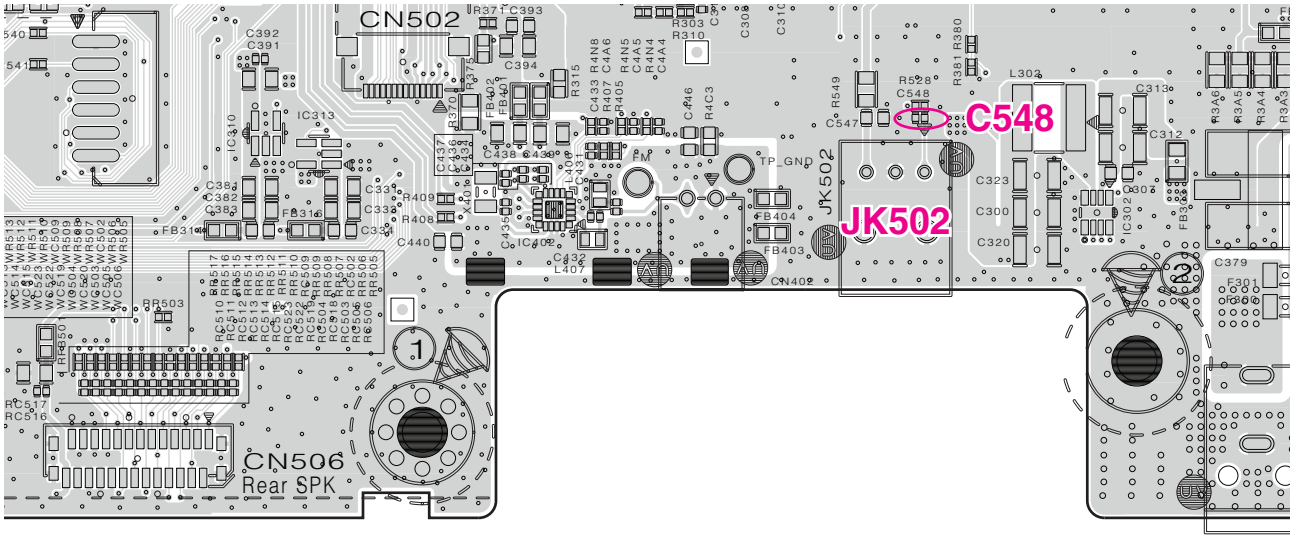
Replace MAIN board.

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

1) Please check 3.3 VA.
2) If 3.3 VA is ok, please check OPT_IN signal (C548) when OPTICAL mode.
3) If signal is abnormal, replace MAIN board.

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





< MAIN board top view >

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ONE POINT REPAIR GUIDE

NO SOUND

2-3. USB

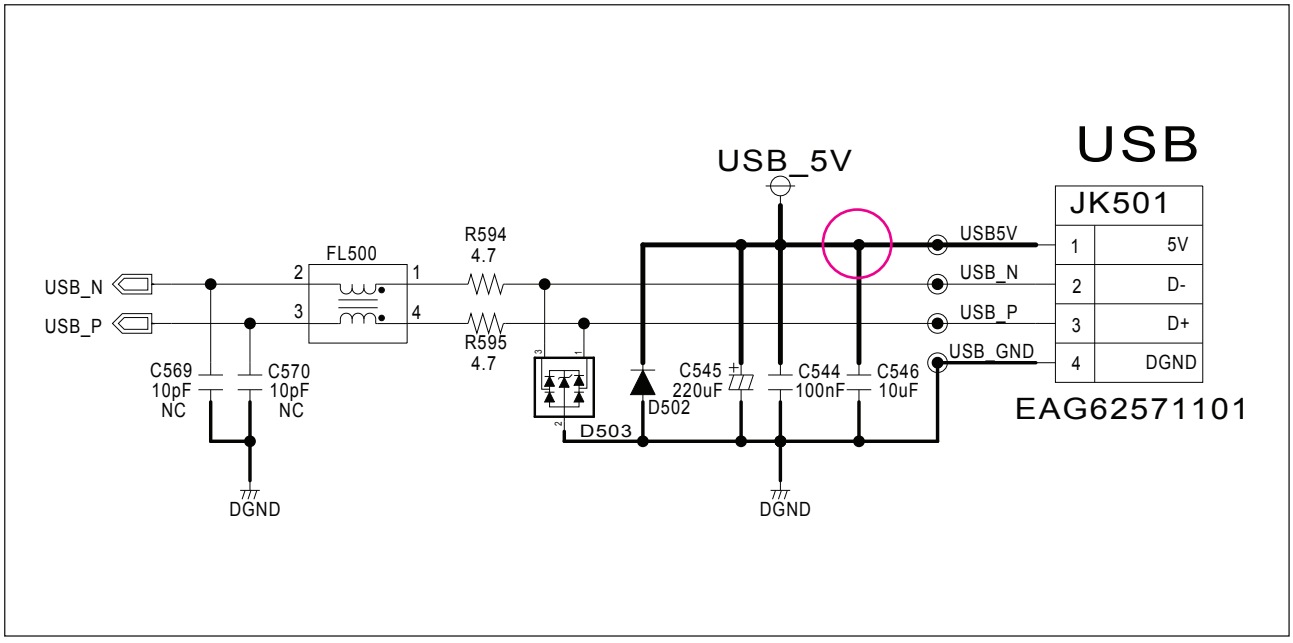
2-3-1. Solution

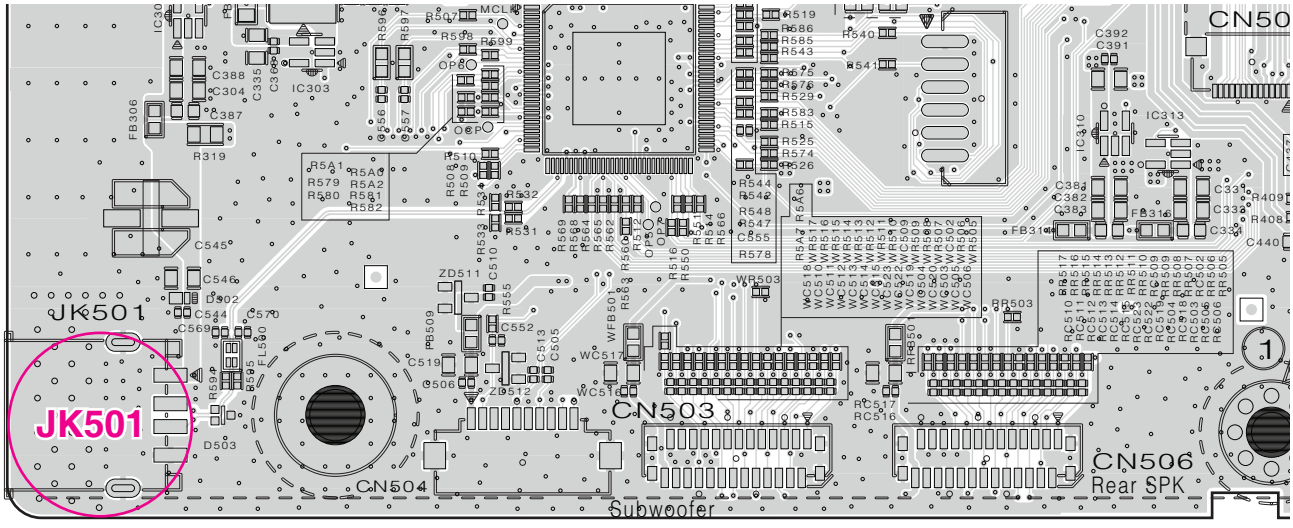
Replace MAIN board.

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

1) Please check USB_5V at JK501 pin1.
2) If soldering status and voltage has abnormal status, replace MAIN board.

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





< MAIN board top view >

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ONE POINT REPAIR GUIDE

3. PROTECTION ERROR

No display or No Sound.

3-1. D(DC) PROTECTION

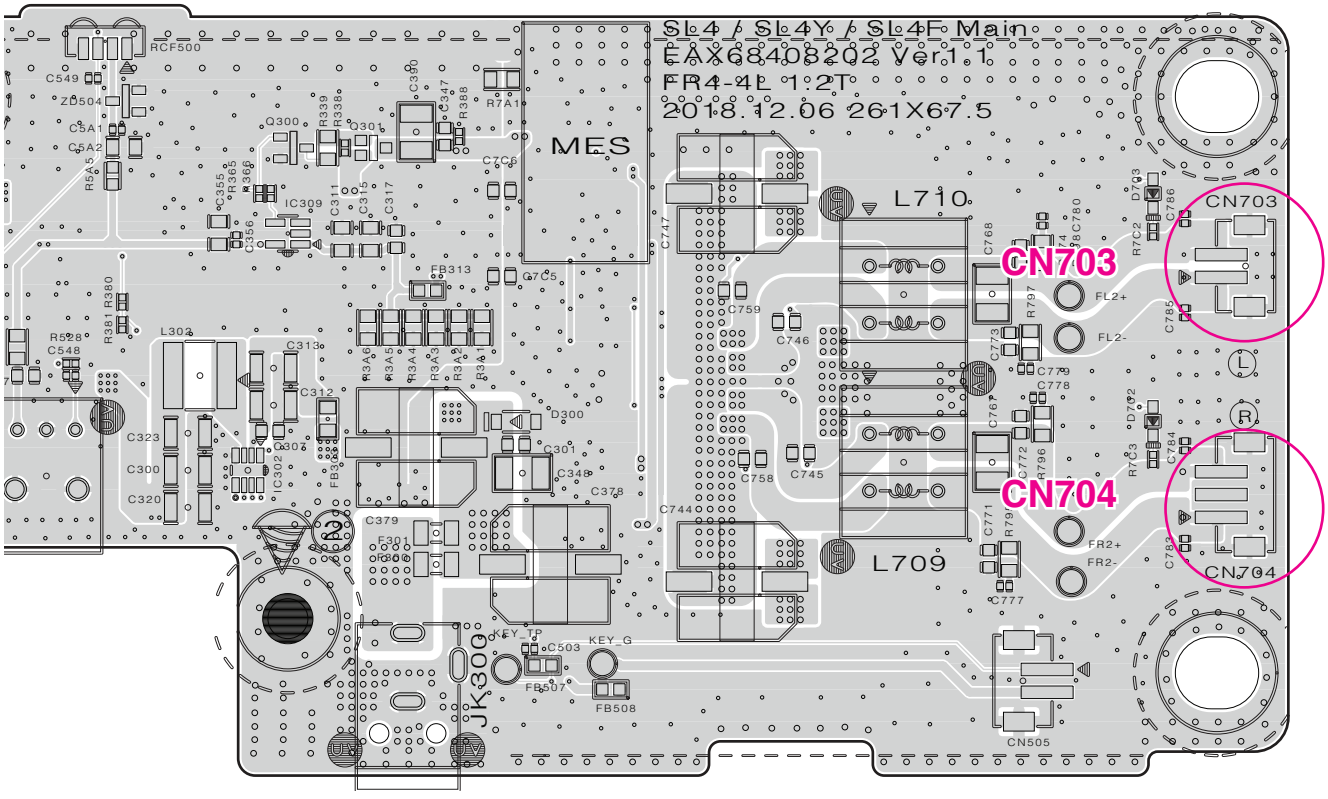
3-1-1. Solution

Replace MAIN board.

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

1) Check DC Voltage of speaker out FL+/- (CN703 pin1, 2), FR +/- (CN704 pin1, 2, 3)
2) Check resistor crack, cold solder of ESS IC out [FL+(R570), FL-(R571), FR+(R572), FR-(R573)].
3) If ESS (IC501) out is ok and speaker out (FL+/-, FR+/-) has DC voltage replace MAIN board.

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



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ONE POINT REPAIR GUIDE

PROTECTION ERROR

No display or No Sound.

3-2. B(BURNT) PROTECTION

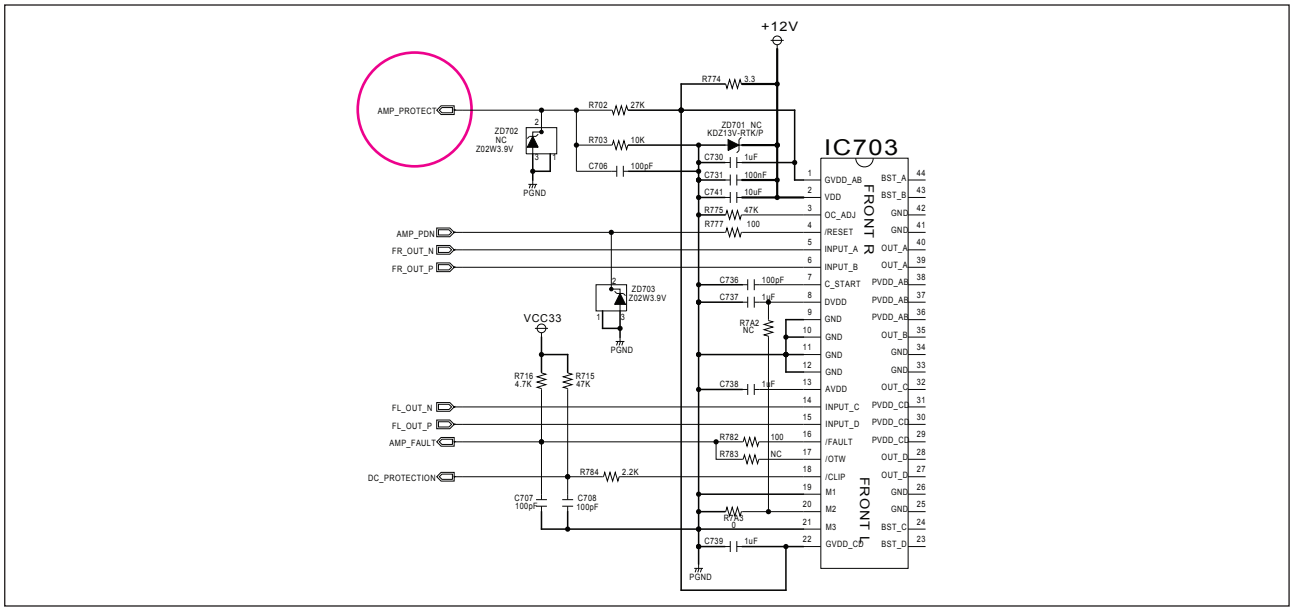
3-2-1. Solution

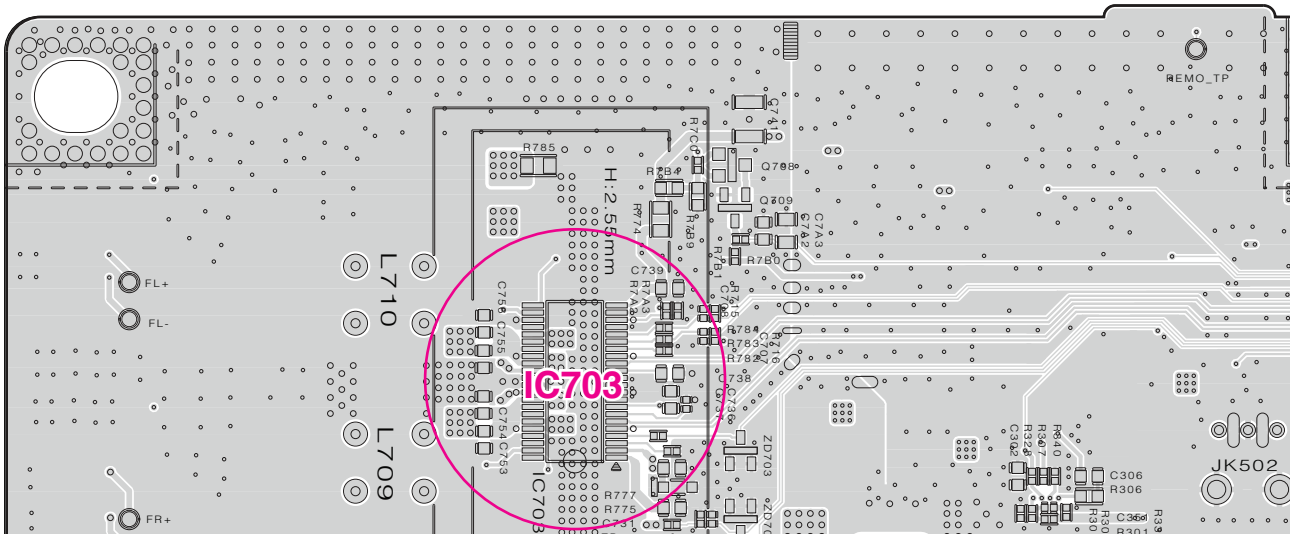
Replace MAIN board.

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

1) Check voltage 12 V of IC703 at pin1 ~ 2, if 12V has problem refer to STEP 1-1.
2) If 12 V is OK, replace MAIN board.

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





< MAIN board bottom view >

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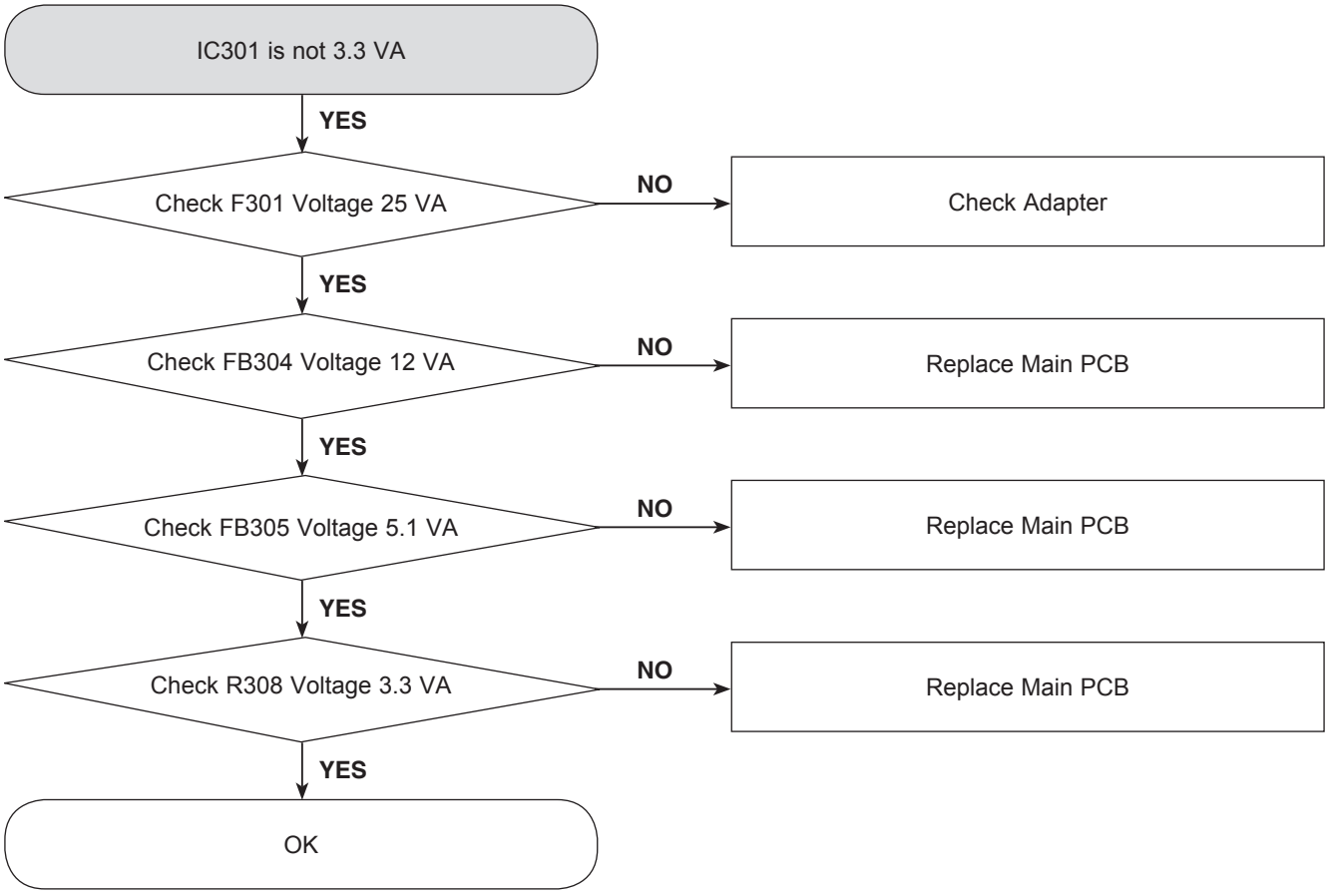
ELECTRICAL TROUBLESHOOTING GUIDE

1. ADAPTER POWER CIRCUIT



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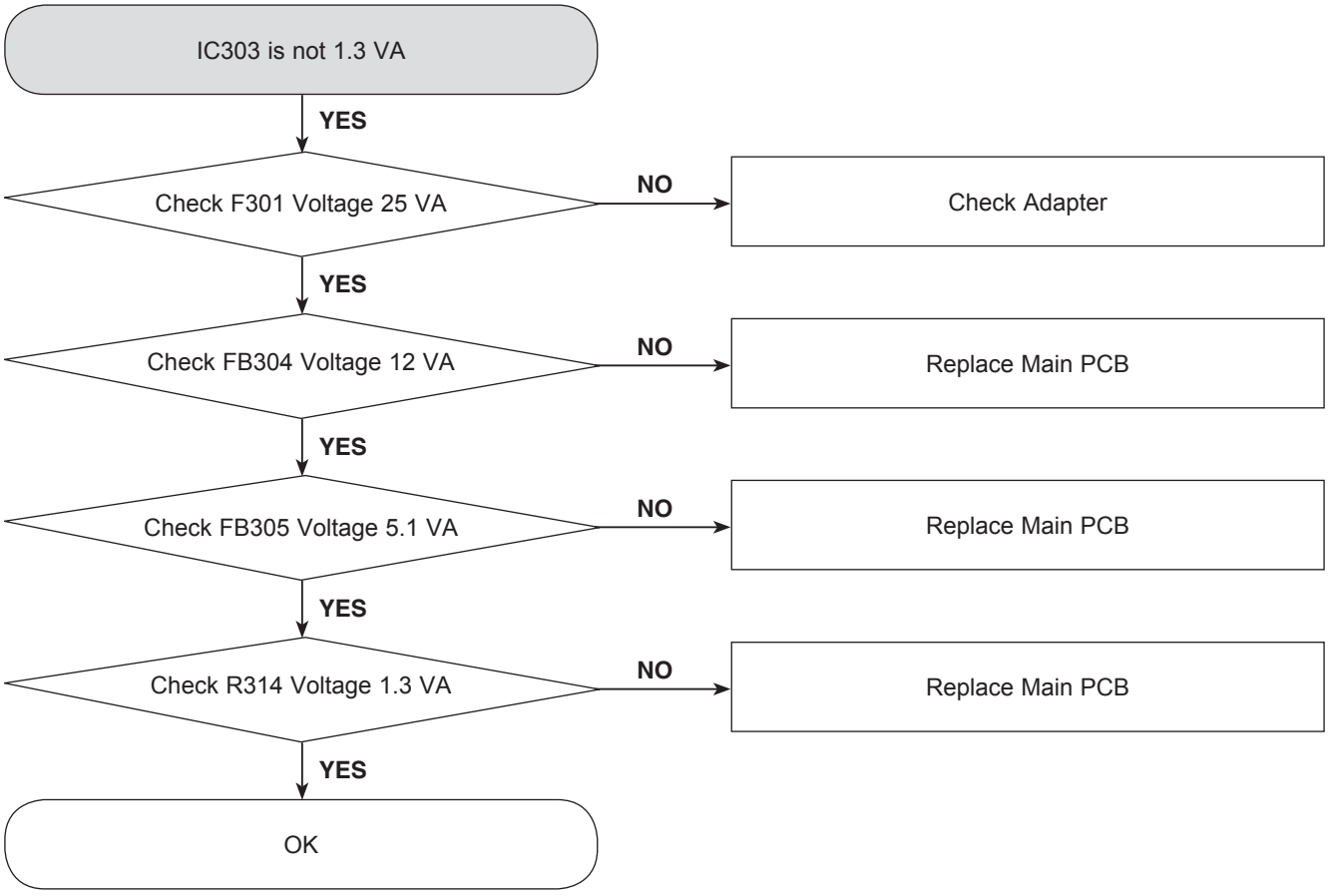
ELECTRICAL TROUBLESHOOTING GUIDE

ADAPTER POWER CIRCUIT



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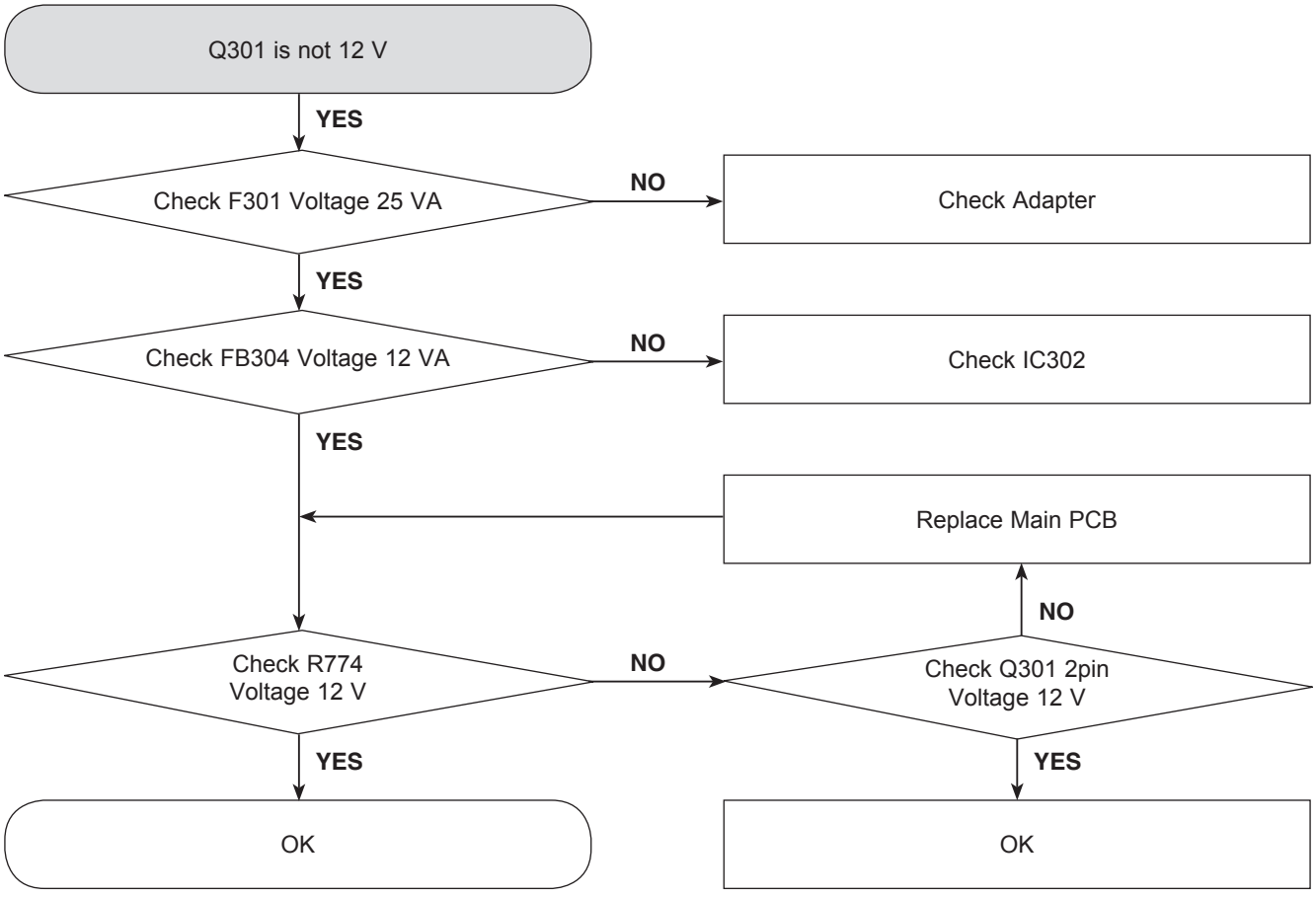
ELECTRICAL TROUBLESHOOTING GUIDE

ADAPTER POWER CIRCUIT



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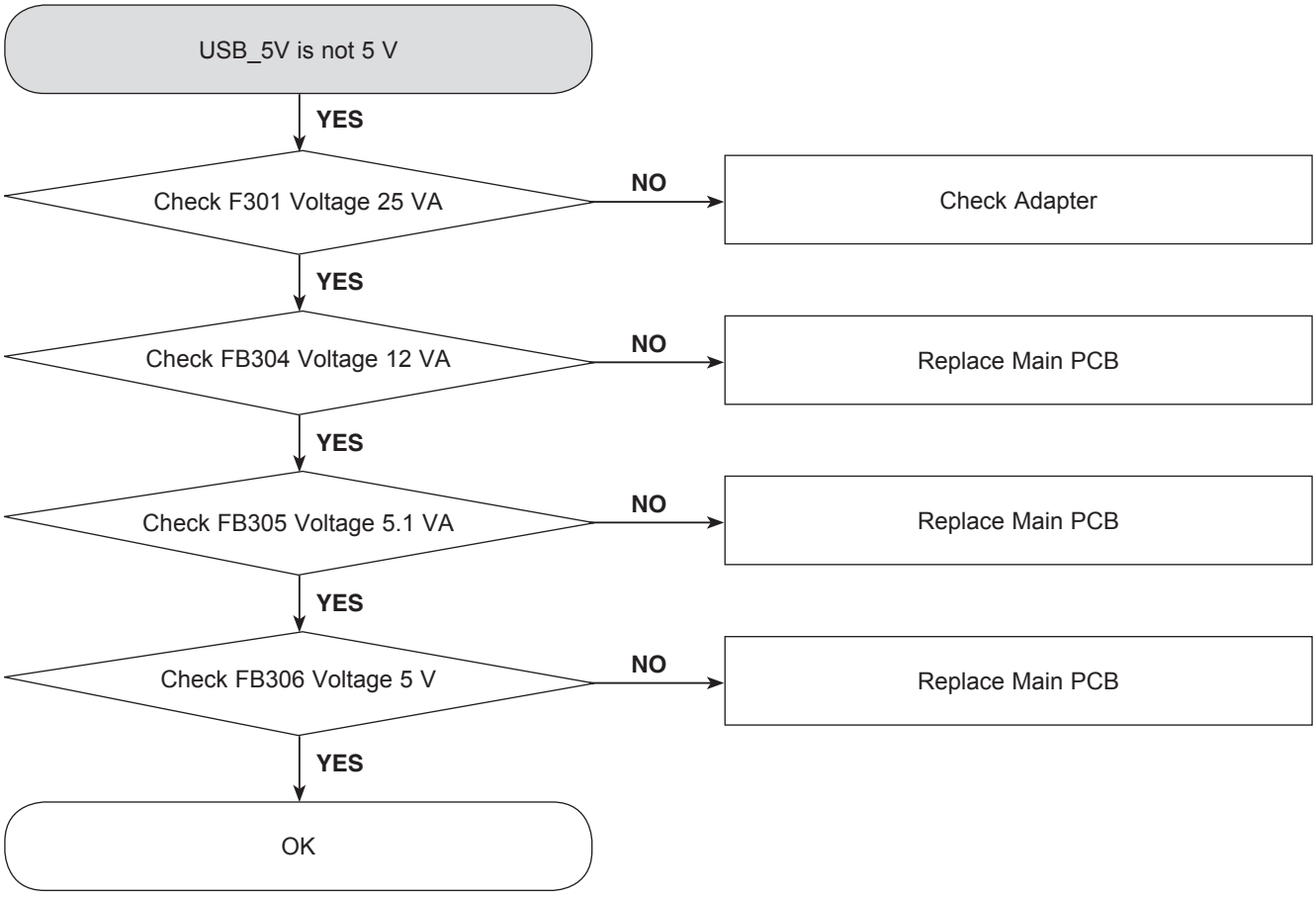
ELECTRICAL TROUBLESHOOTING GUIDE

ADAPTER POWER CIRCUIT



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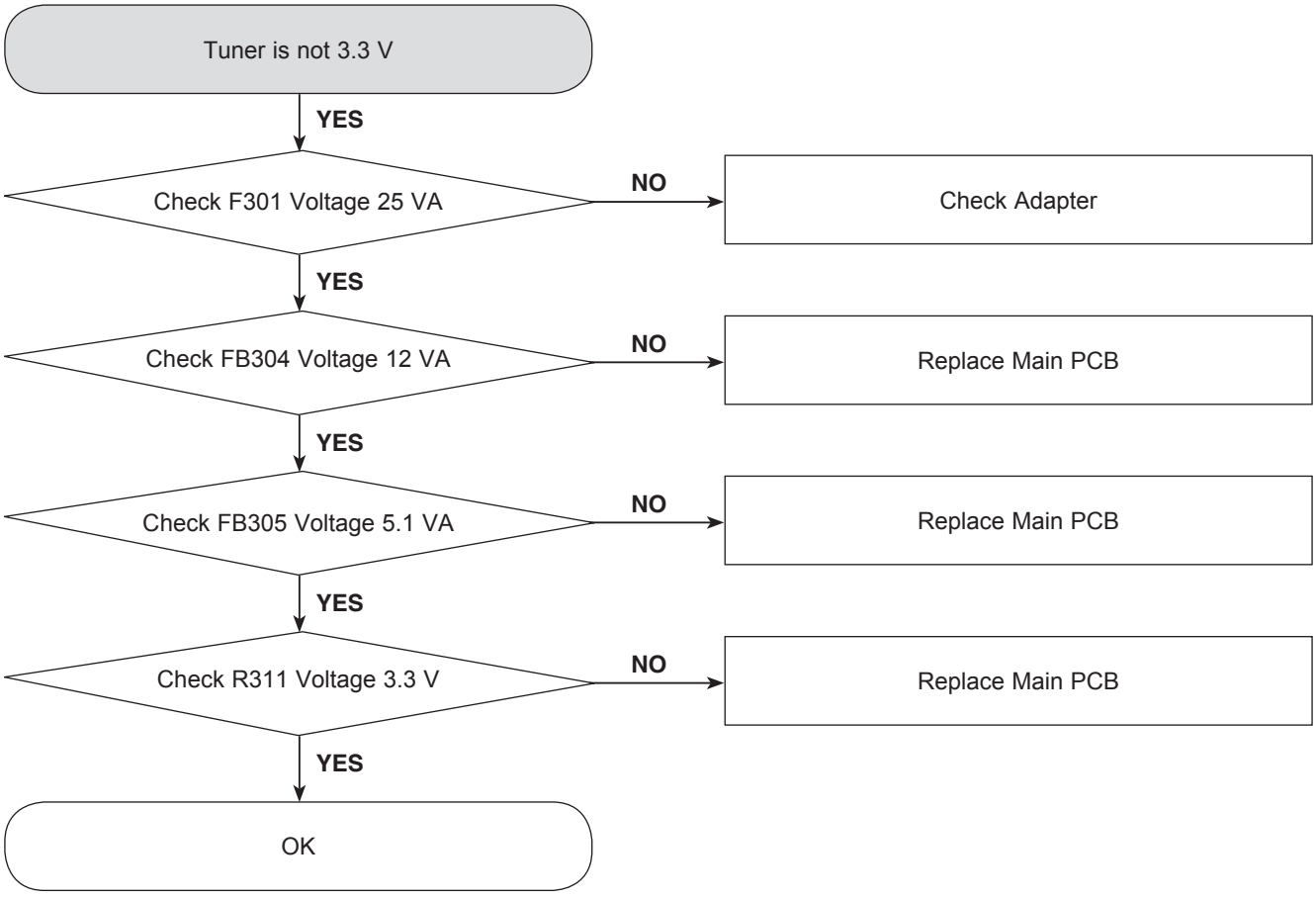
ADAPTER POWER CIRCUIT



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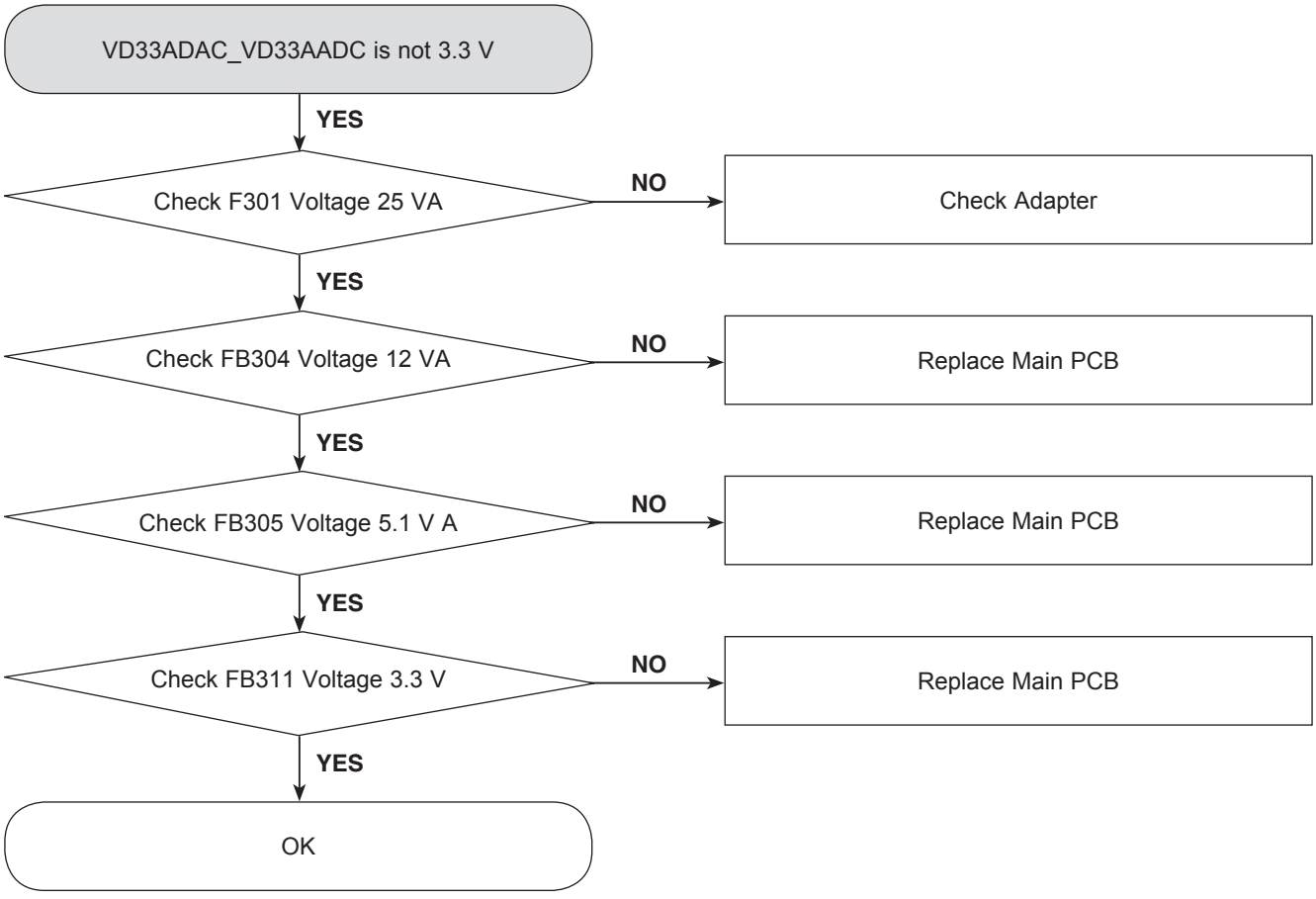
ELECTRICAL TROUBLESHOOTING GUIDE

ADAPTER POWER CIRCUIT



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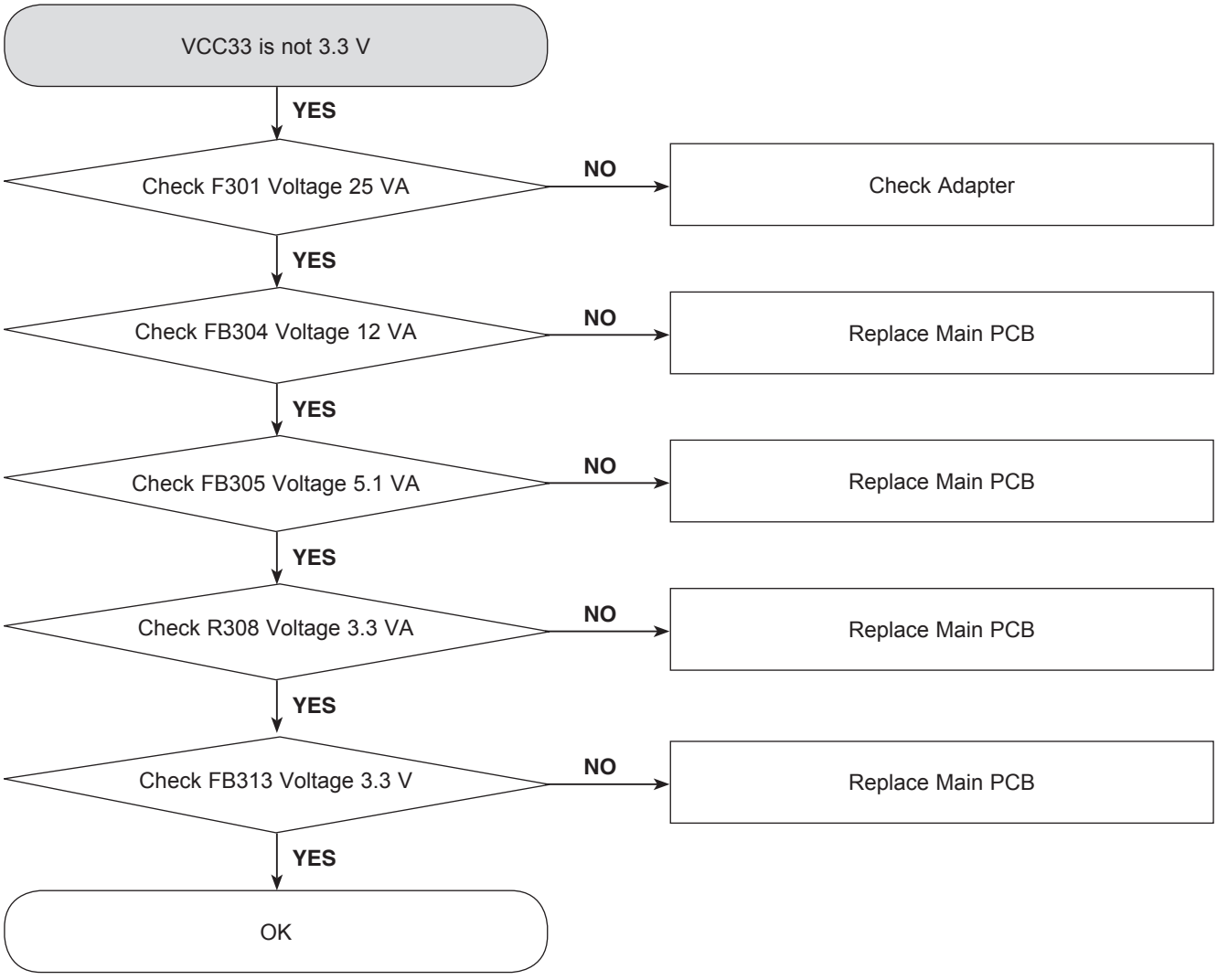
ELECTRICAL TROUBLESHOOTING GUIDE

ADAPTER POWER CIRCUIT



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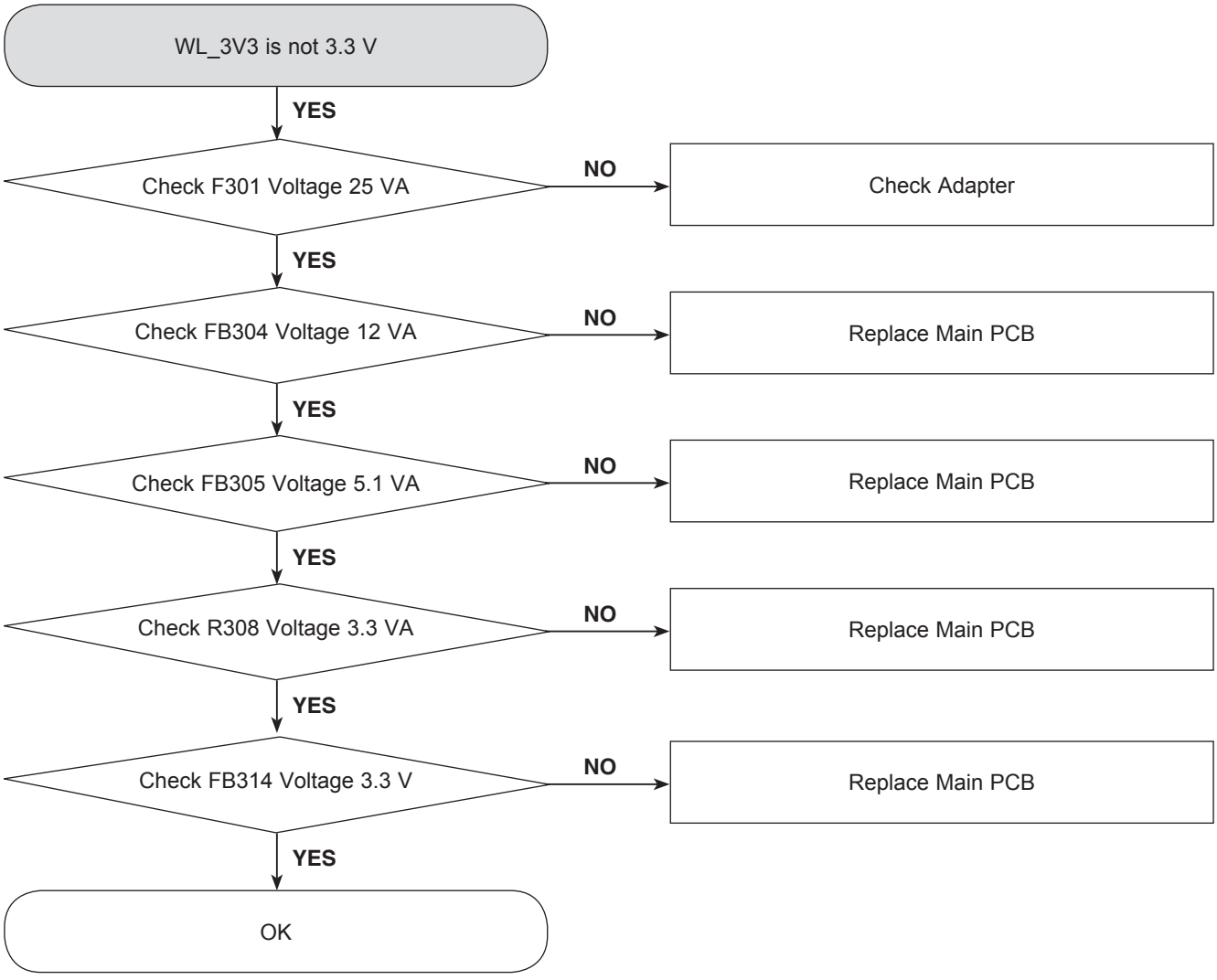
ADAPTER POWER CIRCUIT



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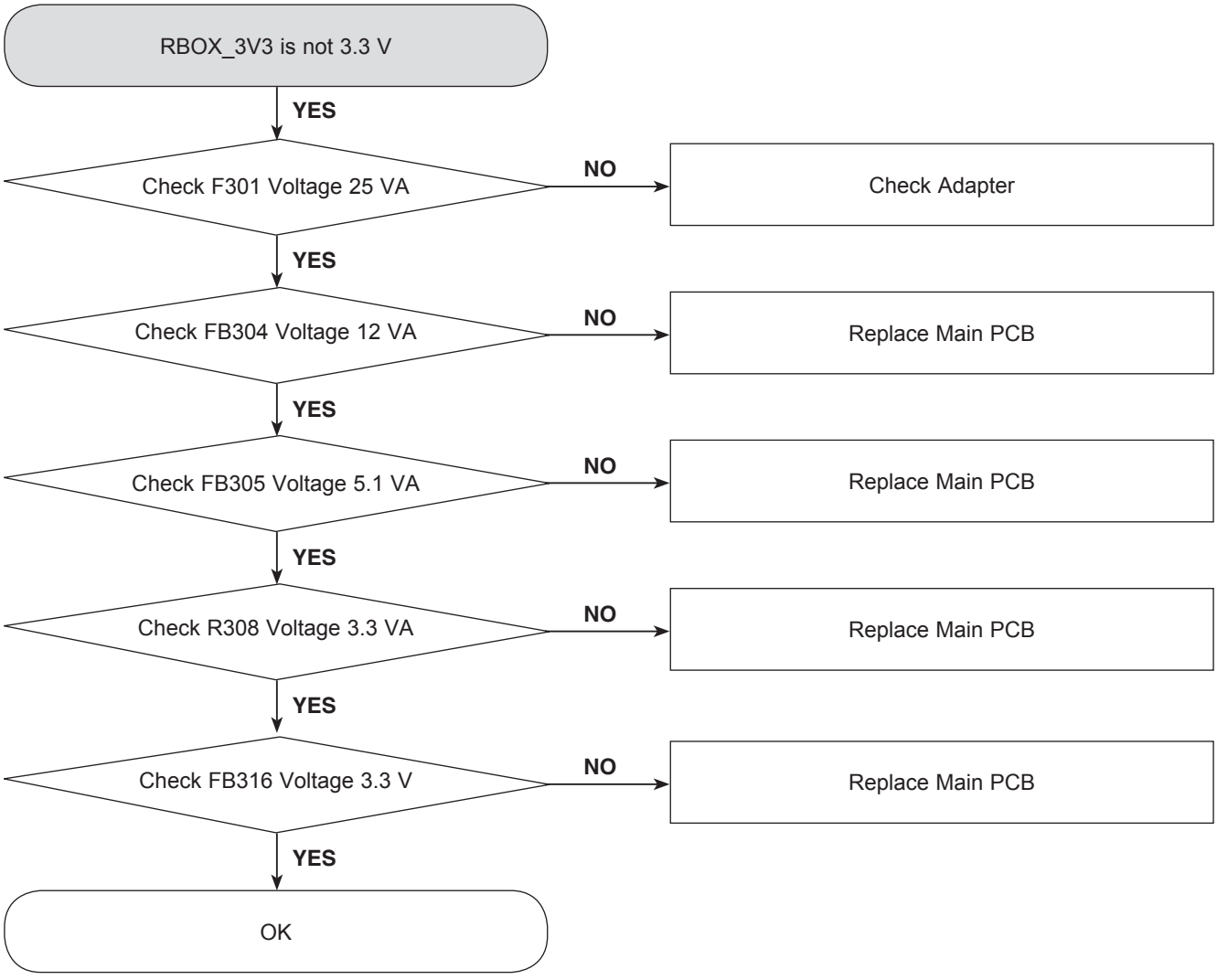
ADAPTER POWER CIRCUIT



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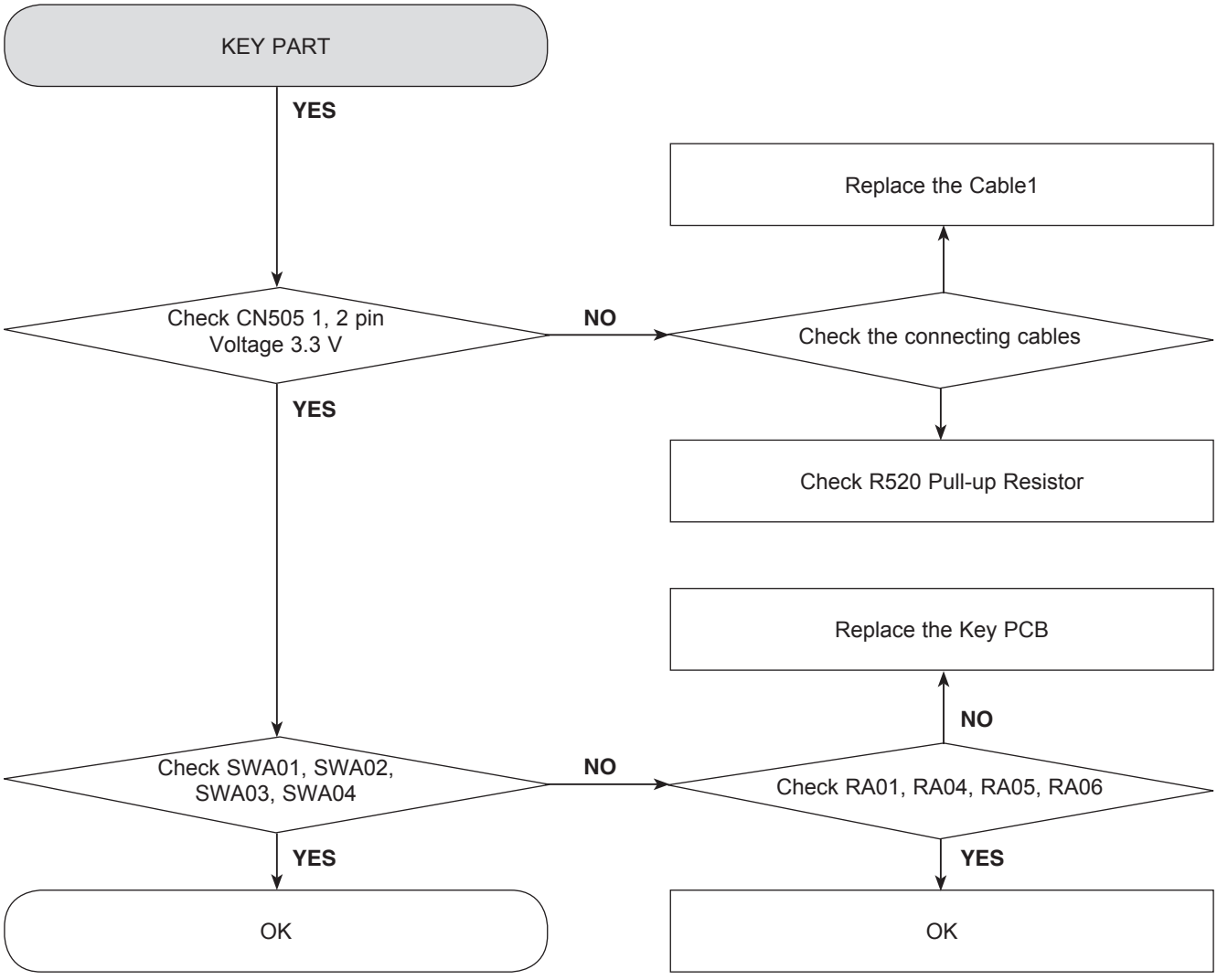
ELECTRICAL TROUBLESHOOTING GUIDE

2. KEY PART



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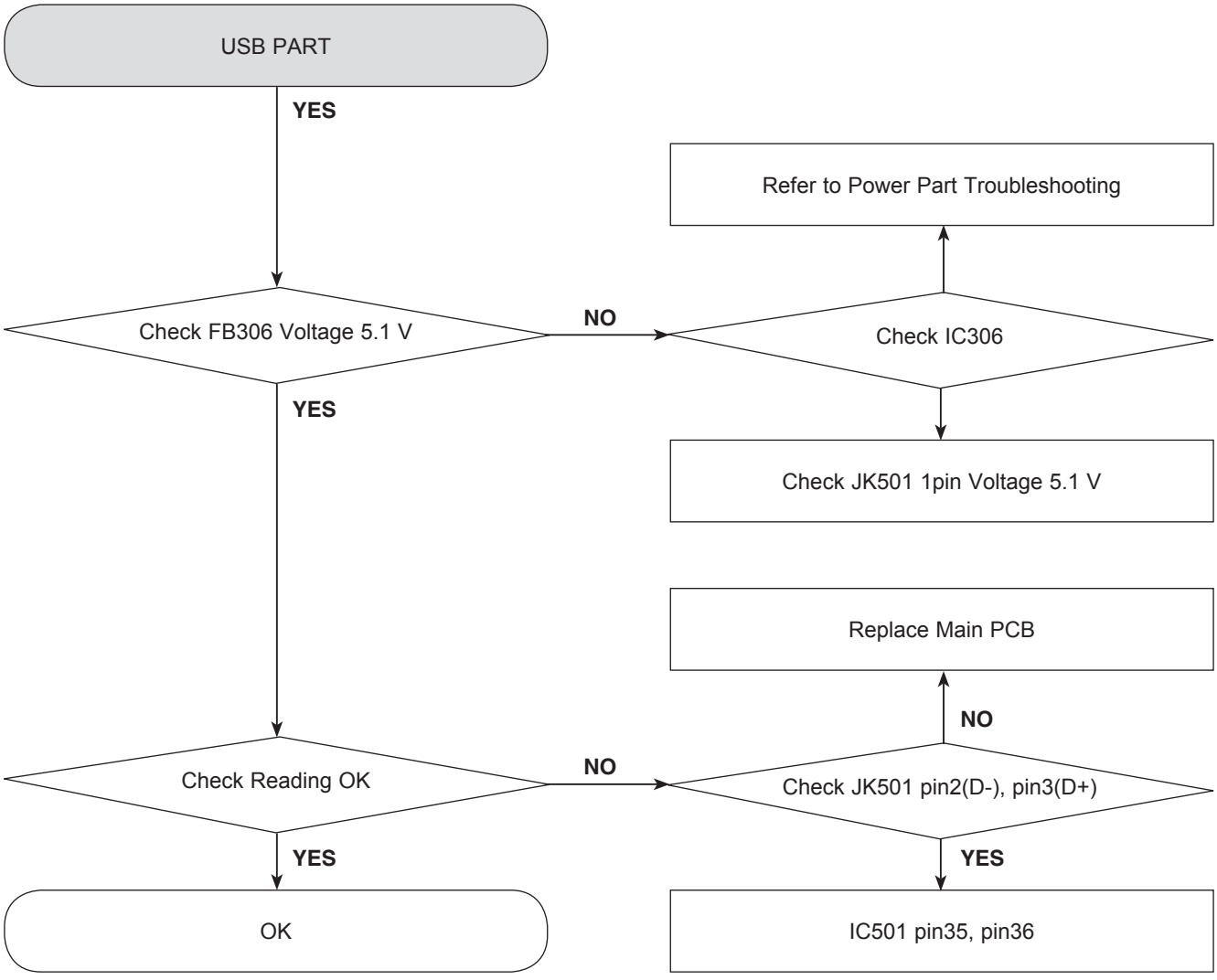
ELECTRICAL TROUBLESHOOTING GUIDE

3. USB FUNCTION



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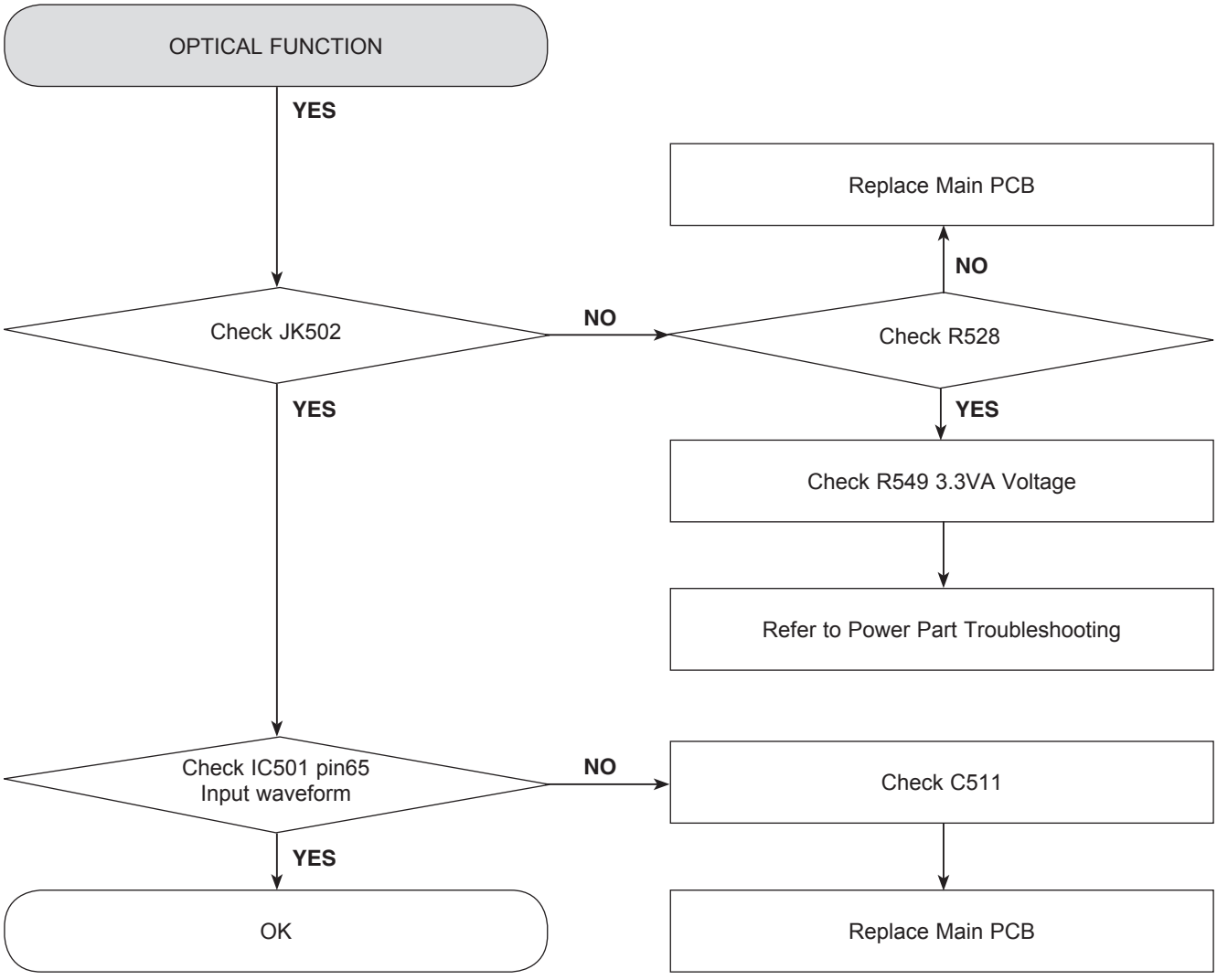
ELECTRICAL TROUBLESHOOTING GUIDE

4. OPTICAL FUNCTION



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WAVEFORMS OF MAJOR CHECK POINT

1. CRYSTAL

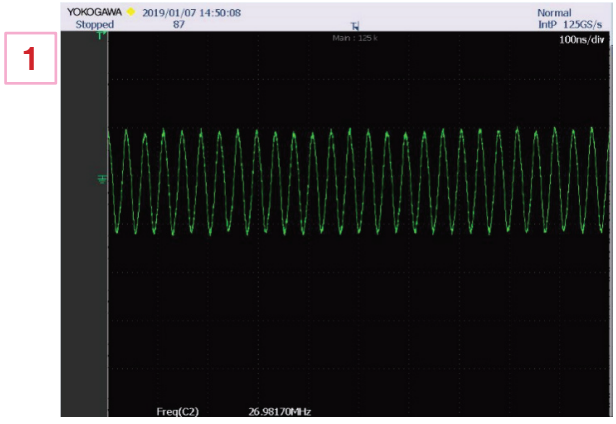


FIG 1. X500 (27 MHz)

2. FLASH MEMORY

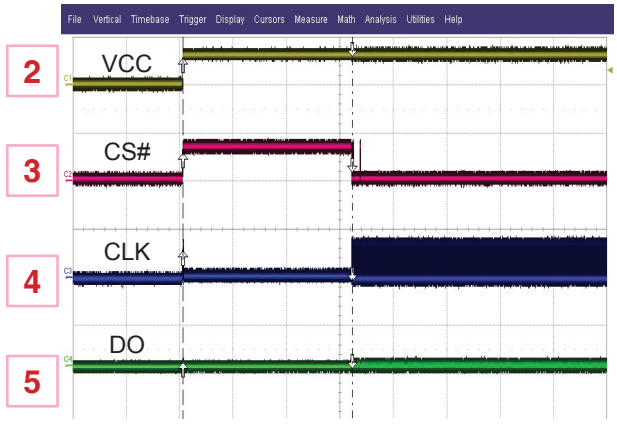
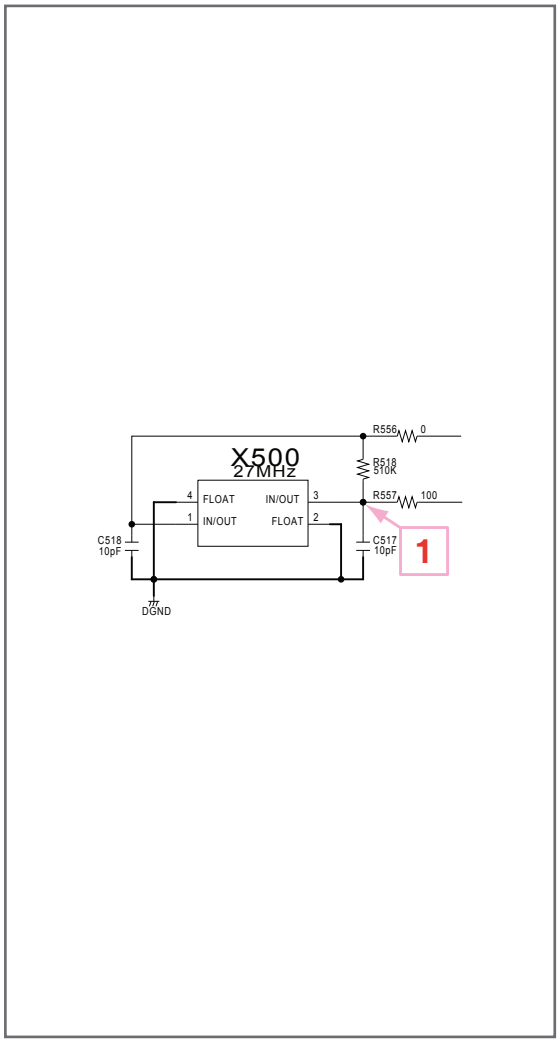
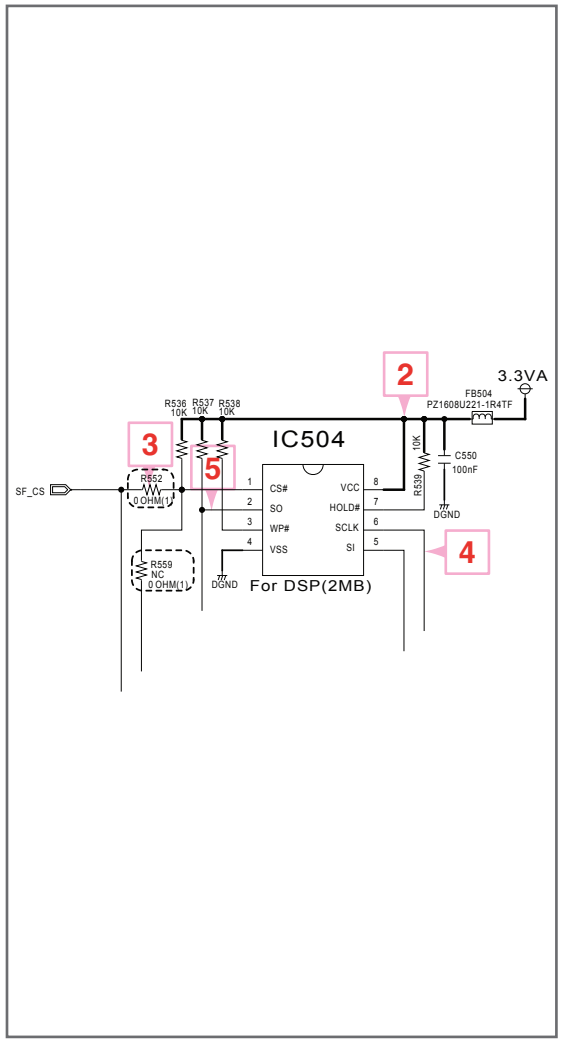


FIG 2. VCC, CS#, CLK, DO





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3. TACT KEY

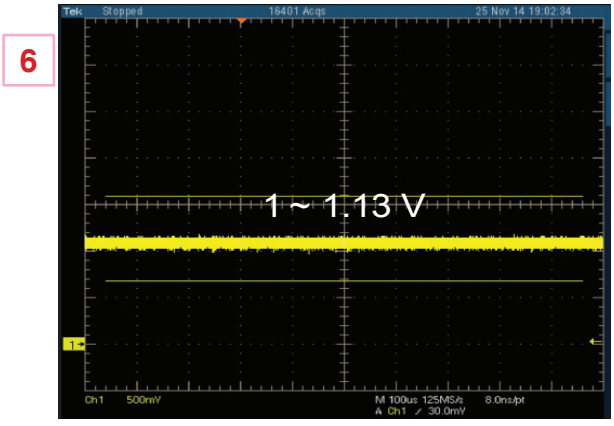


FIG 3-1. Press Power Key

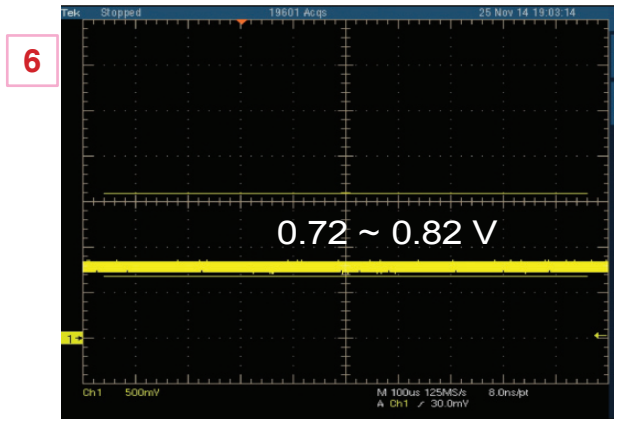


FIG 3-2. Press Function Key

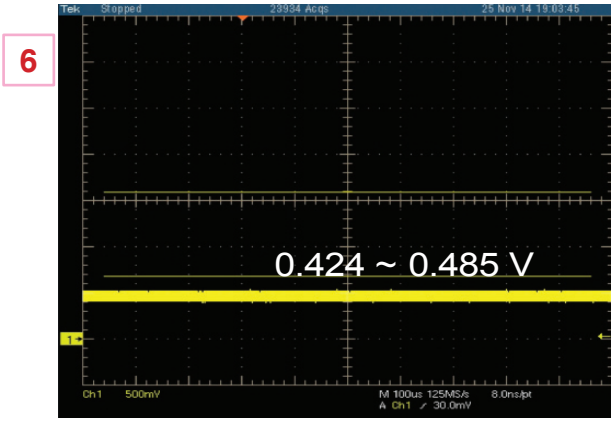


FIG 3-3. Press VOL- Key

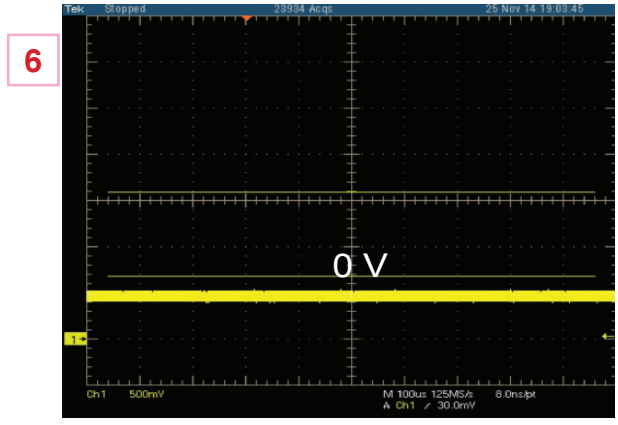
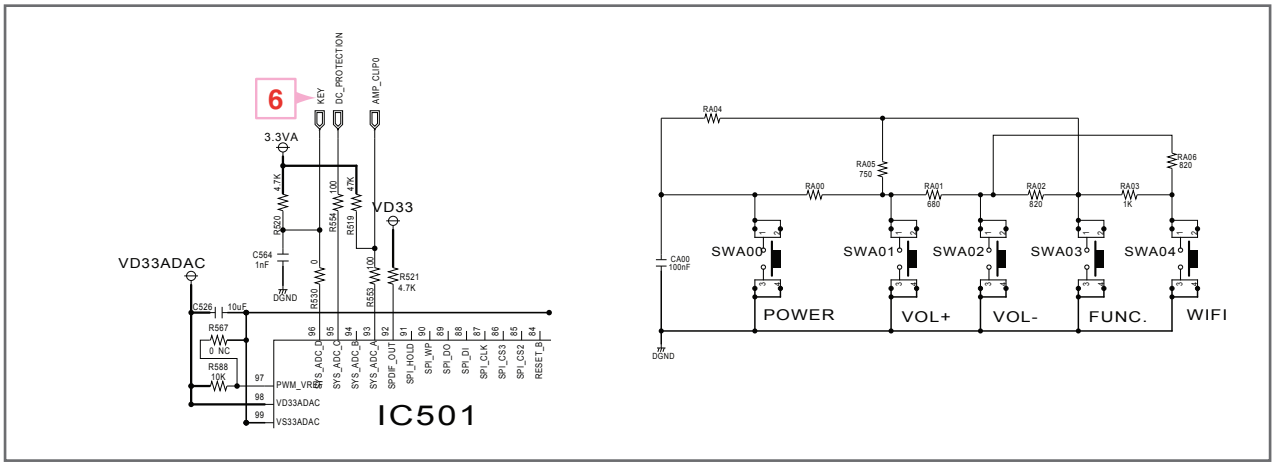


FIG 3-4. Press VOL+ Key



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4. USB

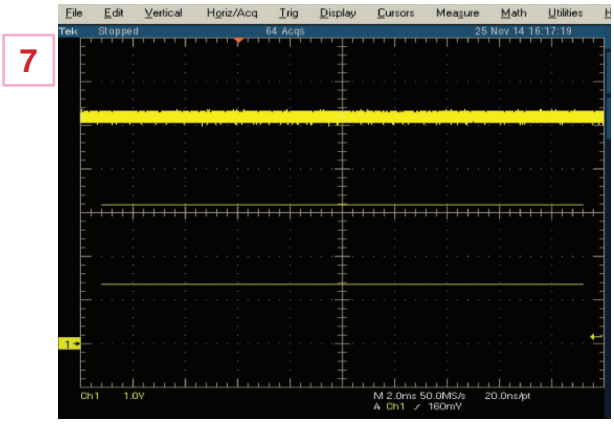


FIG 4-1. USB 5 V

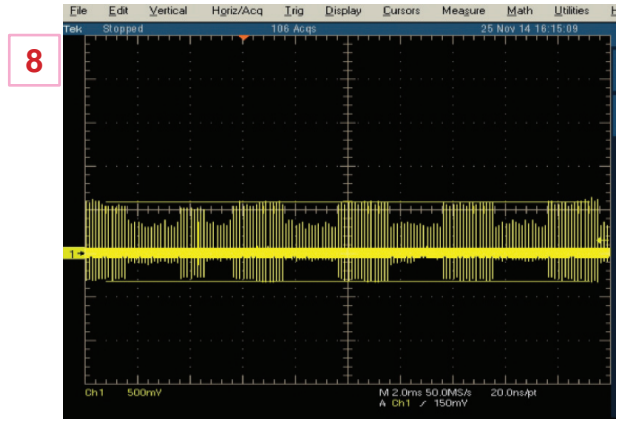


FIG 4-2. USB D+

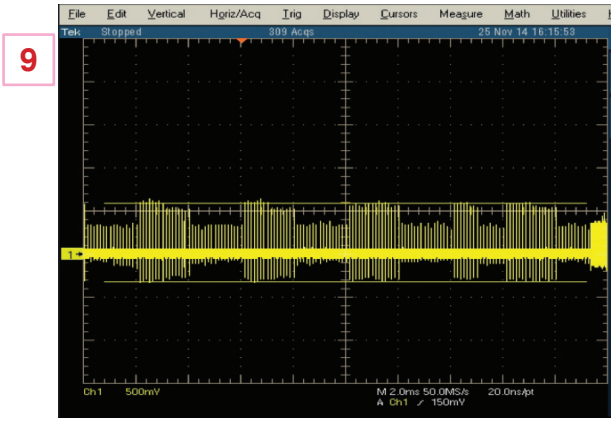
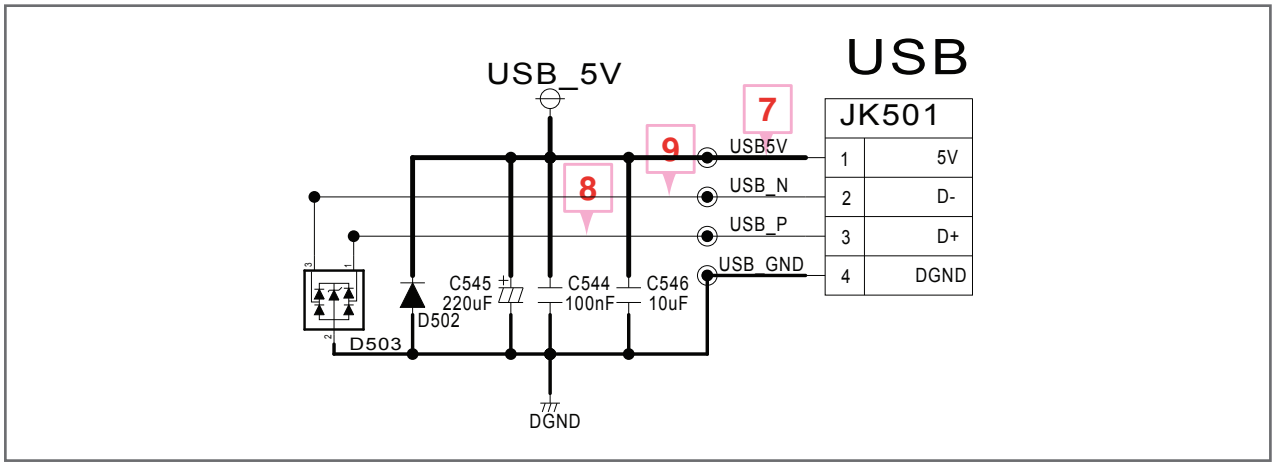


FIG 4-3. USB D-



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5. REMOTE CONTROL

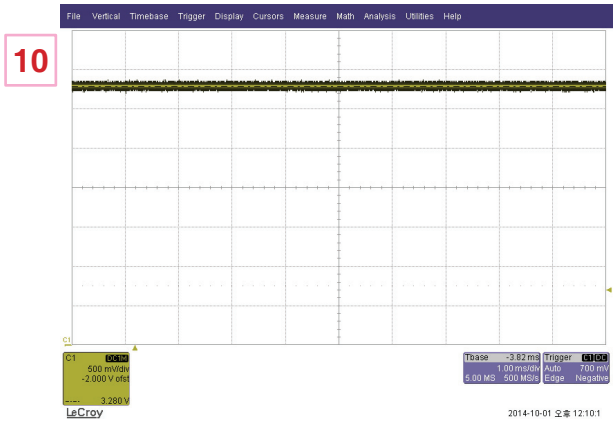


FIG 5-1. Input Voltage

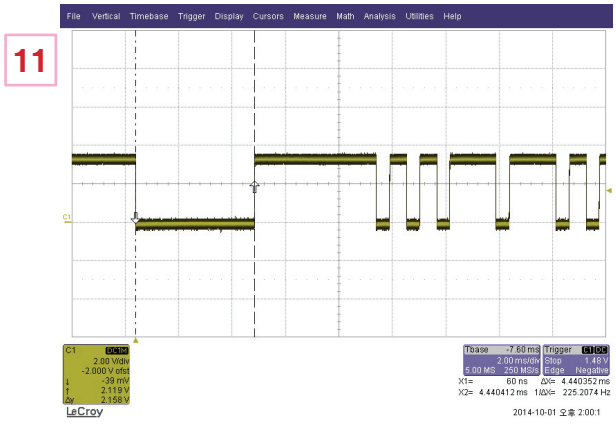


FIG 5-2. Low Timing

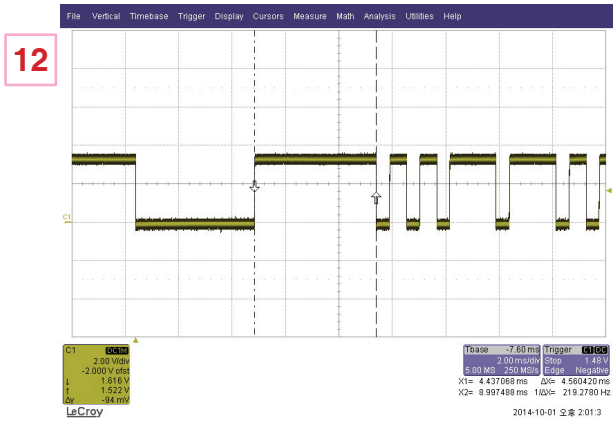
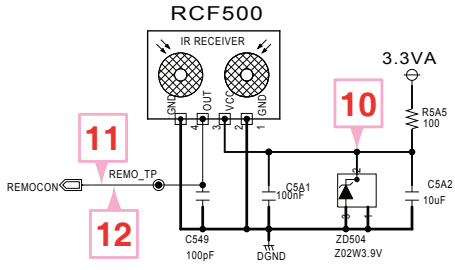


FIG 5-3. High Timing



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

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6. OPTICAL

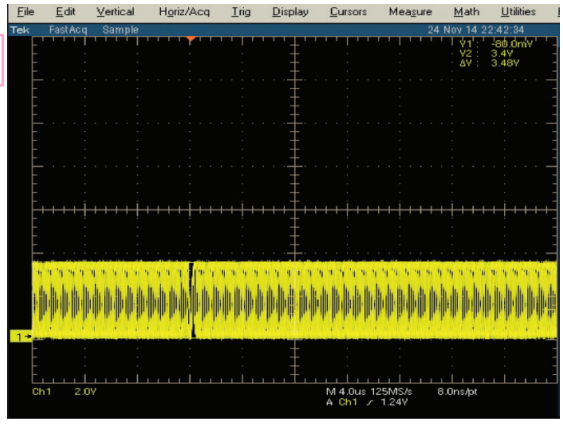


FIG 6-1. OPT IN

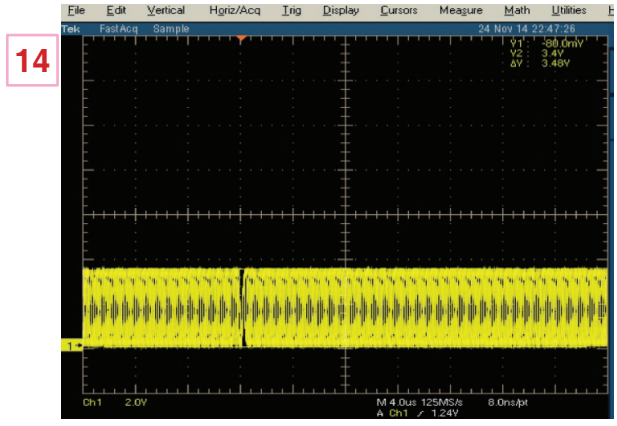
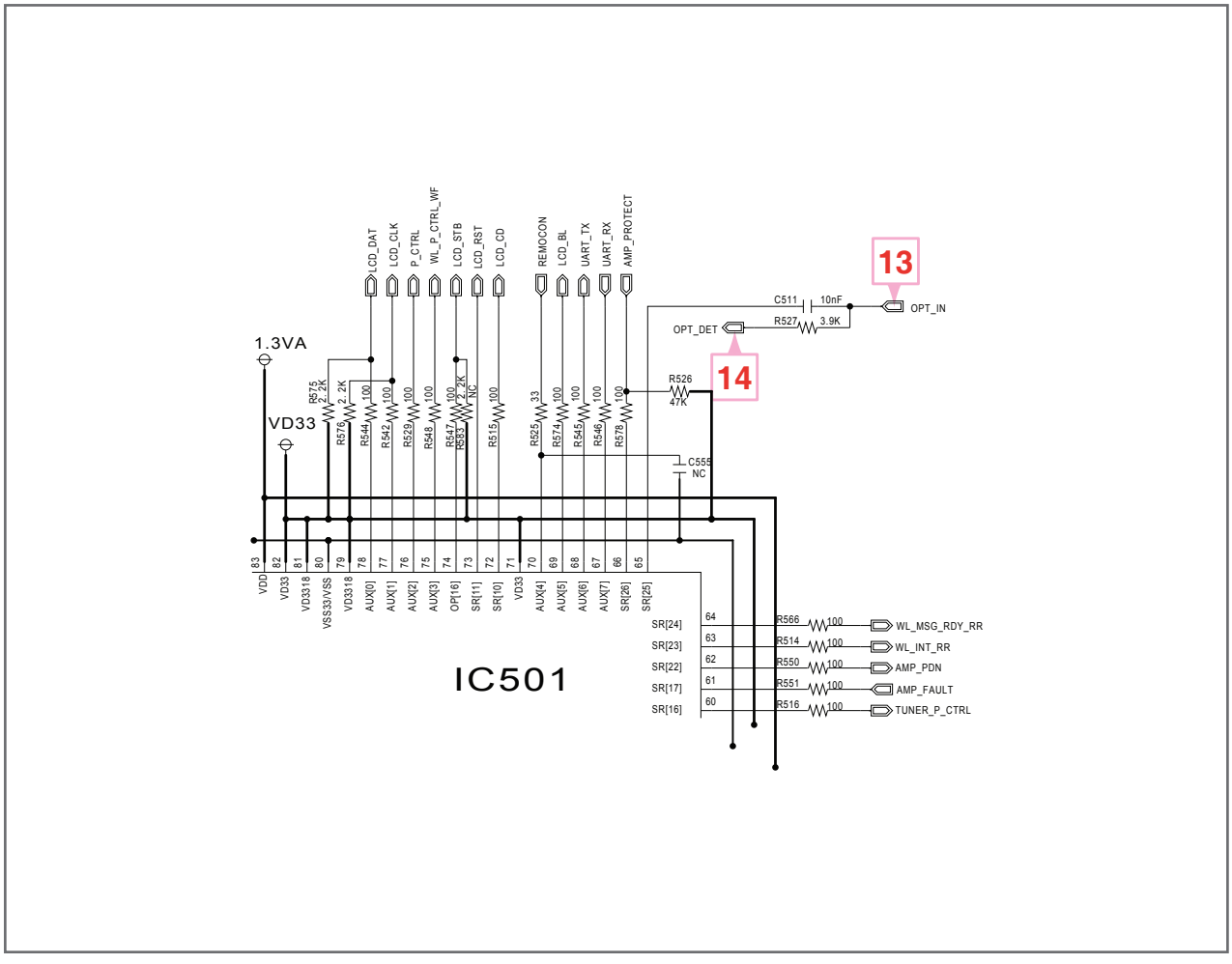


FIG 6-2. OPT DET



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7. FM

15

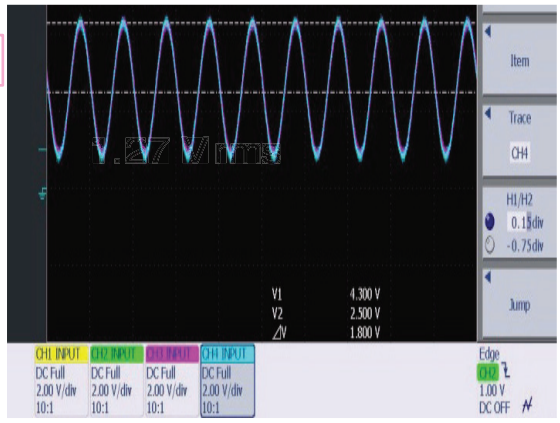
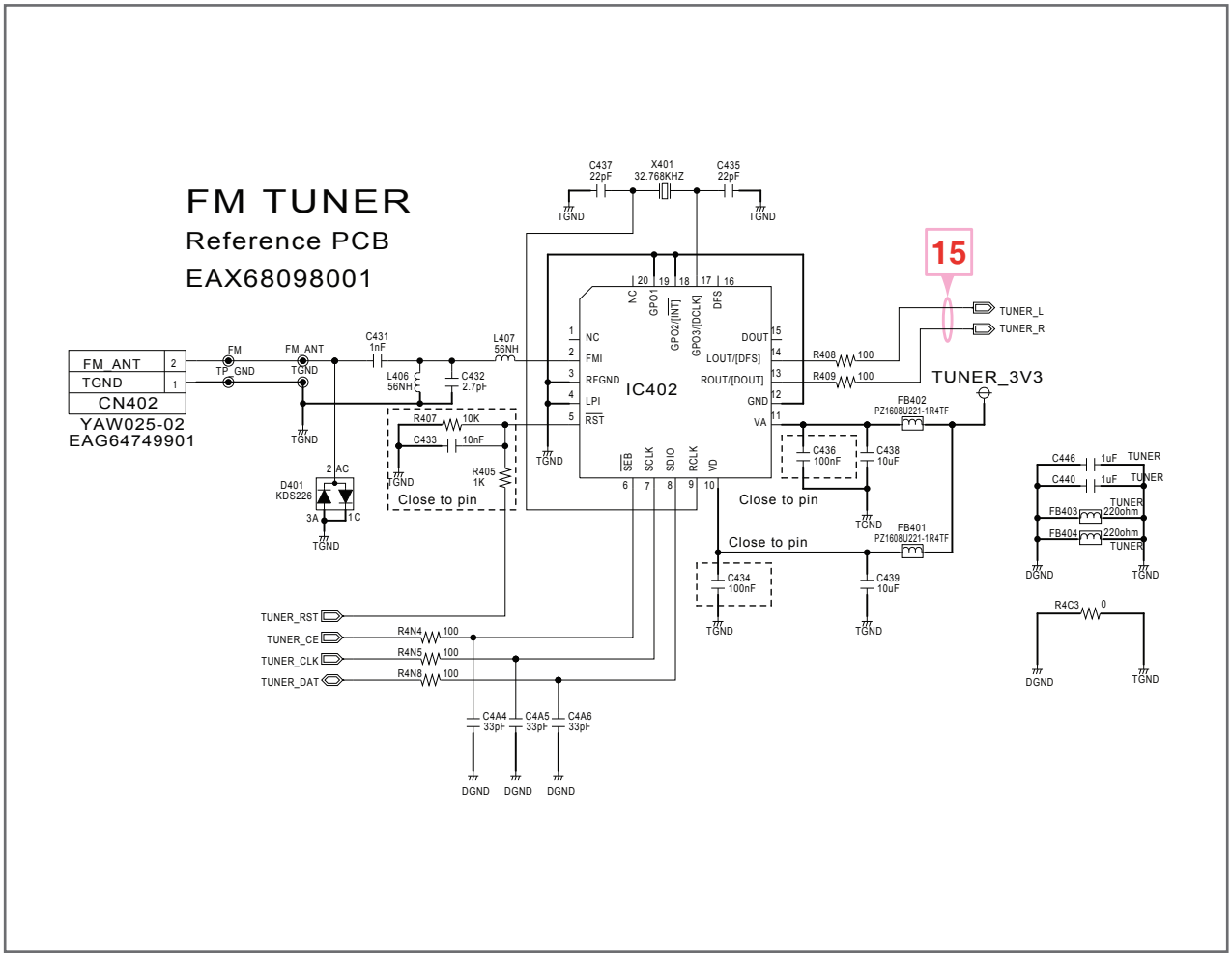


FIG 7. TUNER AUDIO



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CIRCUIT VOLTAGE CHART

IC Sym	Pin	Spec	Measured Voltage
IC300 DC,DC	Vin: 1 SW: 2	Vin: 4.2 V ~ 17 V VOUT: 0.8 V ~ 10 V	Vin: 12.02 V VOUT: 5.20 V
IC301 DC,DC	Vin: 4 SW: 3	Vin: 2.7 V ~ 5.5 V VOUT: 0.6 V ~ 5.225 V	Vin: 5.21 V VOUT: 3.44 V
IC302 DC-DC	VIN: 2 VOUT: 3	Vin: +4.0 V ~ +36 V Vout: 0.8 V ~ 33 V	Vcc: 25.42 V Vout: 12.02 V
IC303 DC,DC	Vin: 4 SW: 3	Vin: 2.7 V ~ 5.5 V VOUT: 0.6 V ~ 5.225 V	Vin: 5.22 V VOUT: 1.41 V
IC306 Switch IC	Vin: 5 Vout: 1	Vin: 2.5 V ~ 5.5 V out: 0 V ~ 5.5 V	Vin: 3.38 V out: 3.36 V
IC309 Switch IC	Vin: 5 Vout: 1	Vin: 2.5 V ~ 5.5 V out: 0 V ~ 5.5 V	Vin: 3.38 V out: 3.36 V
IC310 Switch IC	Vin: 5 Vout: 1	Vin: 2.5 V ~ 5.5 V out: 0 V ~ 5.5 V	Vin: 3.34 V out: 3.33 V
IC311 LDO IC	Vin: 1 Vout: 5	Vin: 2.3 V ~ 6 V	Vin: 5.24 V Out: 3.43 V
IC312 LDO IC	Vin: 1 Vout: 5	Vin: 2.3 V ~ 6 V	Vin: 5.22 V Out: 3.4 V
IC313 Switch IC	Vin: 5 Vout: 1	Vin: 2.5 V ~ 5.5 V out: 0 V ~ 5.5 V	Vin: 3.34 V out: 3.33 V
IC500 RESET	VCC: 3	VCC: 1.0 V ~ 7 V	VCC: 3.35 V
IC501 MAIN DSP	VDD : 20, 52, 83 VDDAADC : 121 VD33 : 7,18,25,54,71,79,81,82 VD33PLL : 41 VD33USB : 37 VD33ADAC : 98, 116 VD33AADC : 126	VDD : 1.3 V ± 5 % VDDAADC : 1.3 V ± 5 % VD33 : 3.3 V ± 5 % VD33PLL : 3.3 V ± 5 % VD33USB : 3.3 V ± 5 % VD33ADAC : 3.3 V ± 5 % VD33AADC : 3.3 V ± 5 %	VDD : 1.34 V VDDAADC : 1.35 V VD33 : 3.33 V VD33PLL : 3.33 V VD33USB : 3.33 V VD33ADAC : 3.31 V VD33AADC : 3.26 V
IC503 SERIAL FLASH MEMORY	VCC: 8	VCC: 2.7 V ~ 3.6 V	VCC: 3.30 V
IC504 SERIAL FLASH MEMORY	VCC: 8	VCC: 2.7 V ~ 3.6 V	VCC: 3.34 V
IC505 SERIAL FLASH MEMORY	VCC: 8	VCC: 2.7 V ~ 3.6 V	VCC: 3.37 V
IC703 AMP	GVDD_AB: 1 GVDD_CD: 22 PVDD_AB: 36,37,38 PVDD_CD: 29,30,31 VDD: 2 DVDD: 8 AVDD: 13	GVDD_AB: -0.3 V ~ 13.2 V GVDD_CD: -0,3 V ~ 13.2 V PVDD_AB: -0.3 V ~ 50 V PVDD_CD: -0.3 V ~ 50 V VDD: -0.3 V ~ 13.2 V DVDD: -0.3 V ~ 4.2 V AVDD: -0.3 V ~ 8.5 V	GVDD_AB: 11.9 V GVDD_CD: 11.9 V PVDD_AB: 25.5 V PVDD_CD: 25.5 V VDD: 11.9 V DVDD: 3.32 V AVDD: 7.76 V

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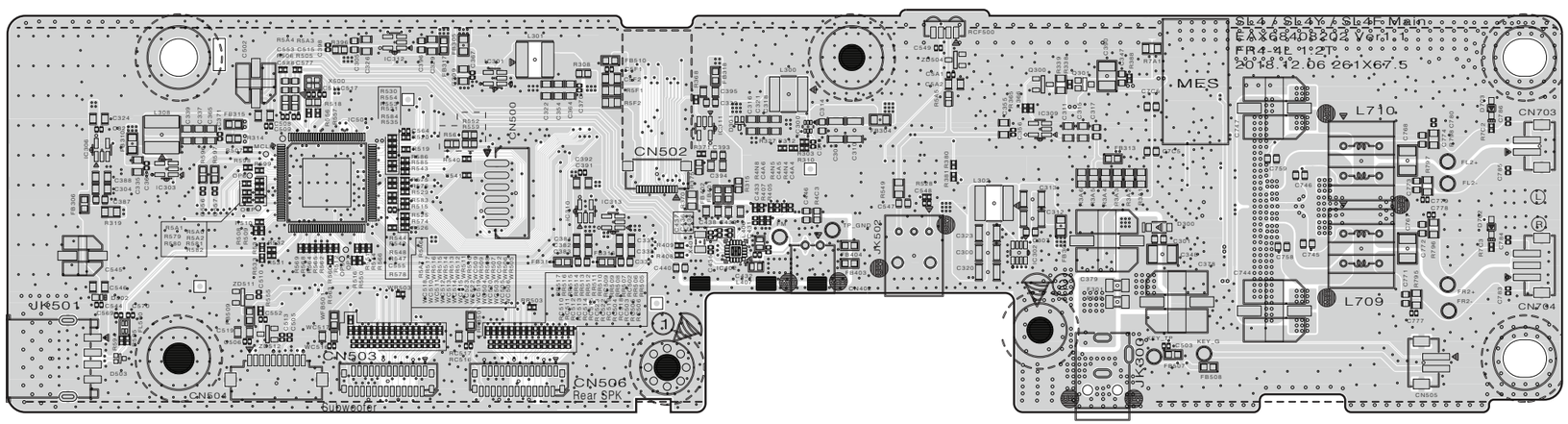
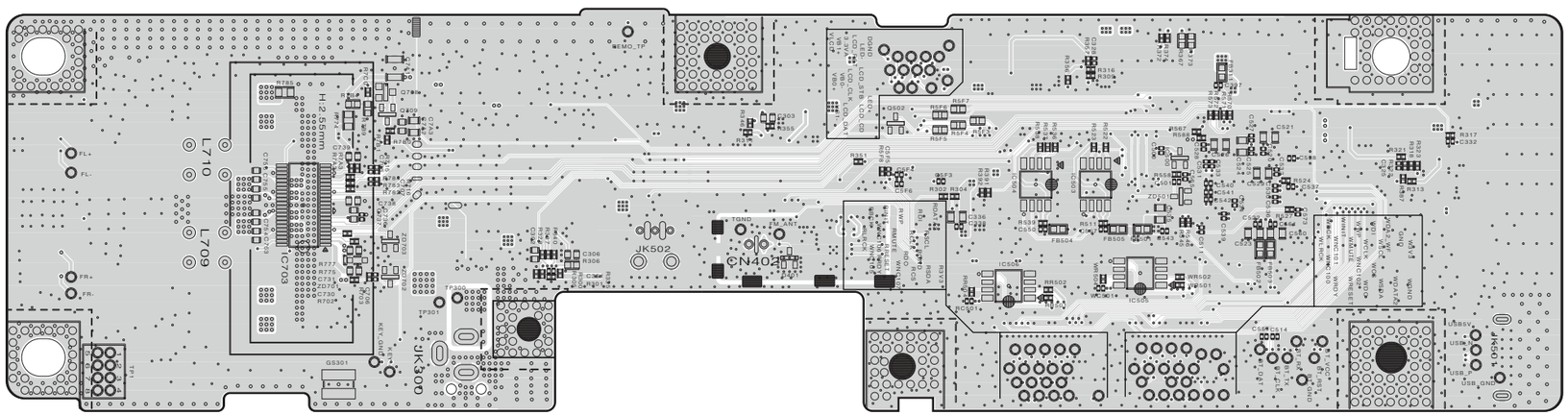
PRINTED CIRCUIT BOARD DIAGRAMS

1. MAIN P. C. BOARD DIAGRAM

(TOP VIEW)



(BOTTOM VIEW)



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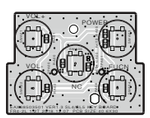
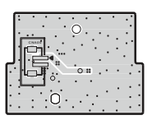
2. KEY P. C. BOARD DIAGRAM

(TOP VIEW)



(BOTTOM VIEW)



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SECTION 4

WIRELESS SUBWOOFER PART

CONTENTS

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ONE POINT REPAIR GUIDE

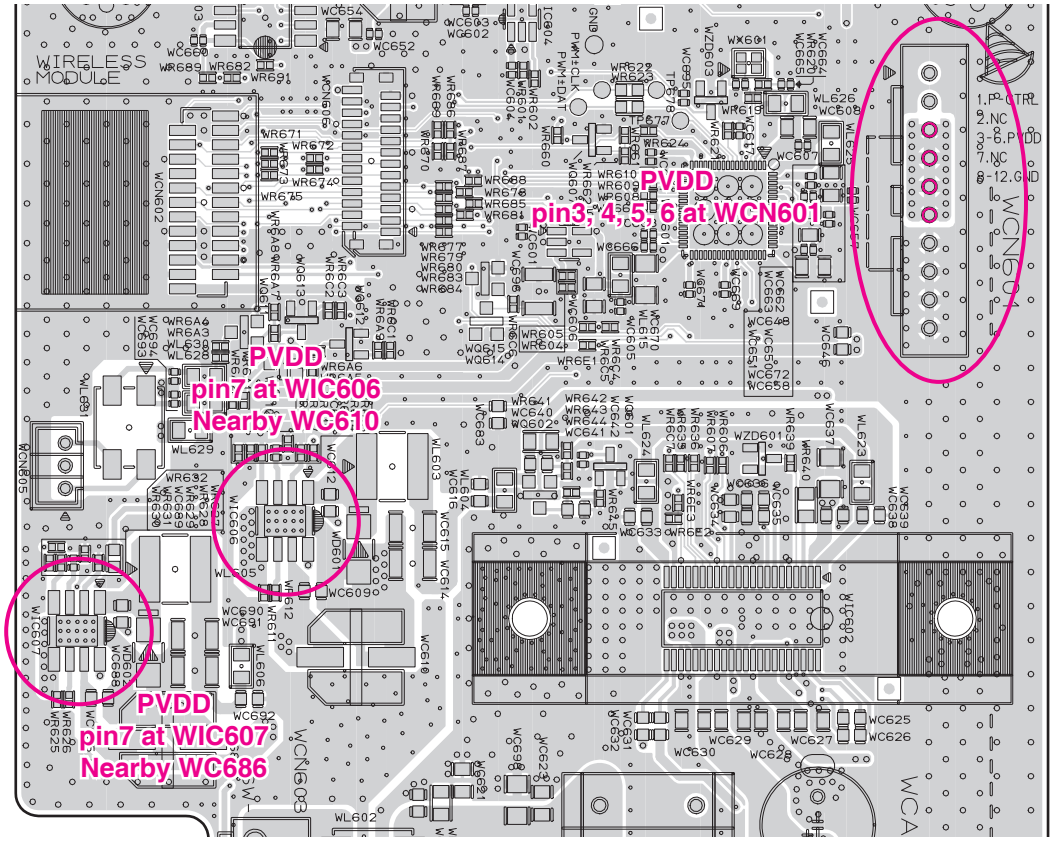
1. NO POWER PROBLEM (PVDD)

No power problem occurs when you power on the unit

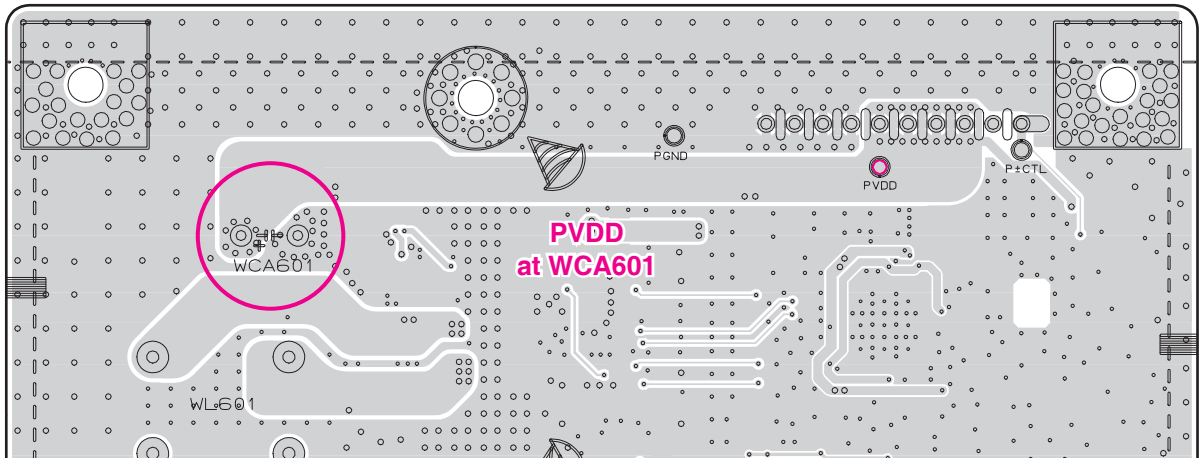
1-1. Solution

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 >

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ONE POINT REPAIR GUIDE

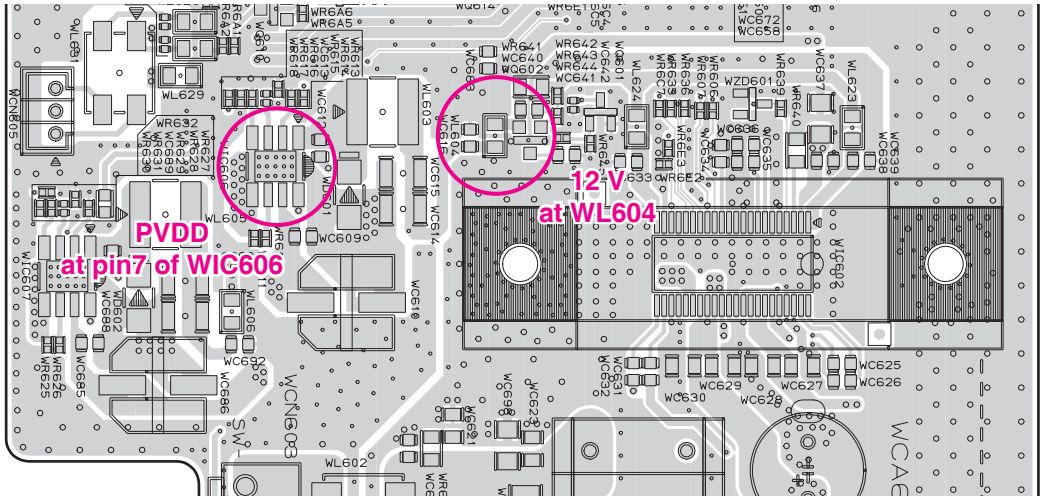
2. POWER ON ERROR

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.

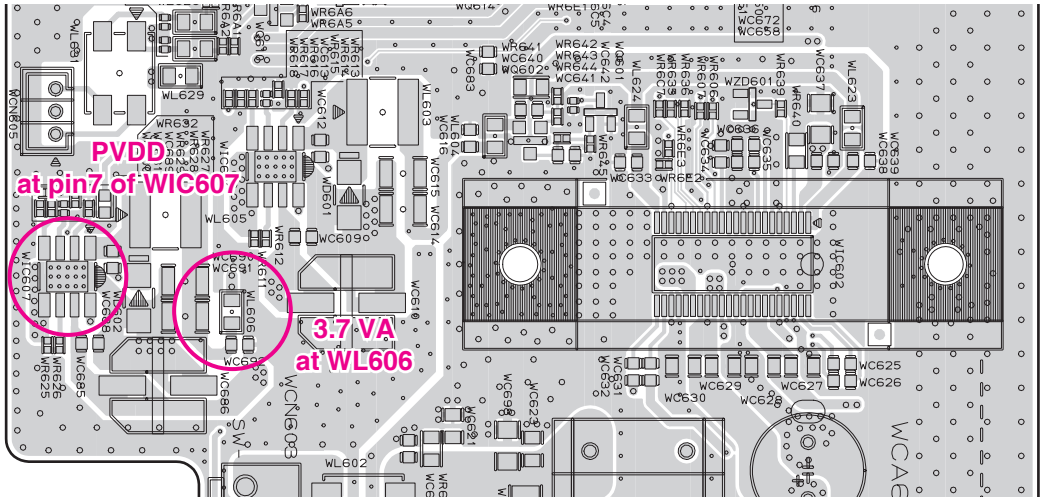


< Woofer AMP board top view >

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 >

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ONE POINT REPAIR GUIDE

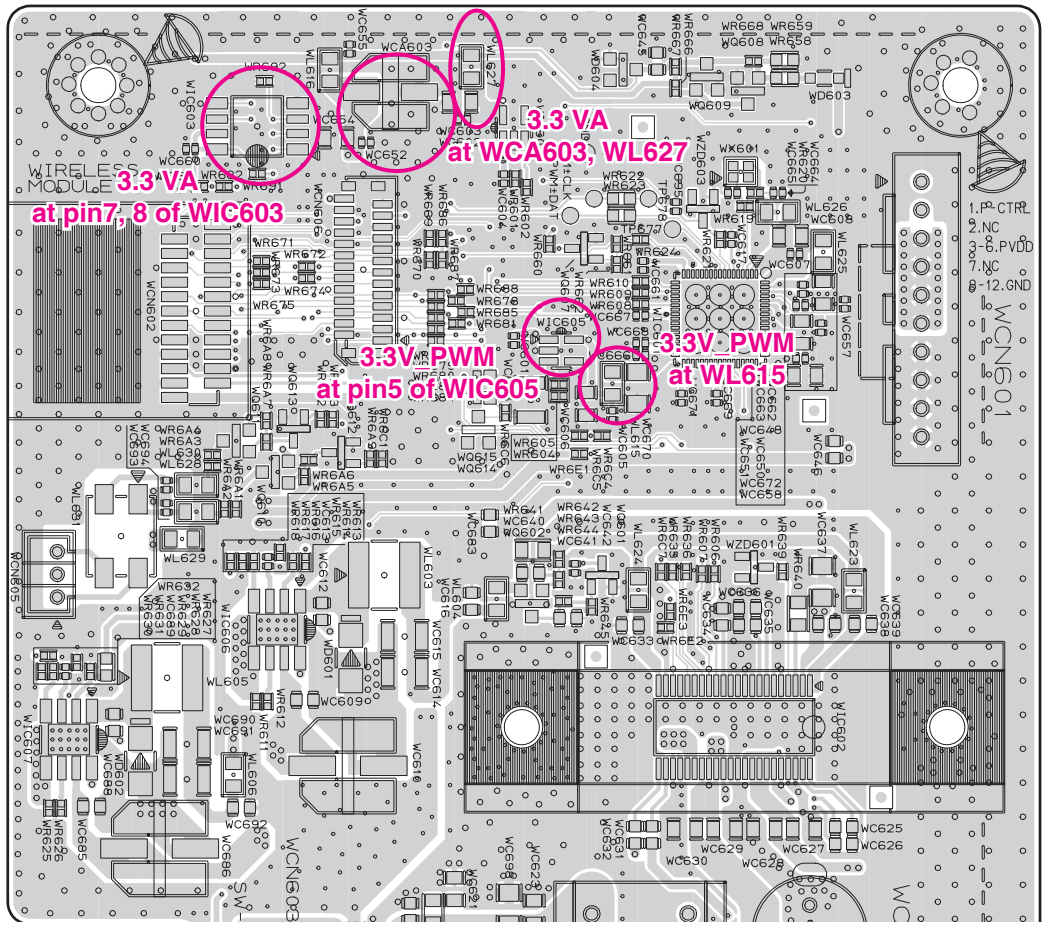
3. POWER ON ERROR

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 >

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ONE POINT REPAIR GUIDE

4. WIRELESS CONNECTION

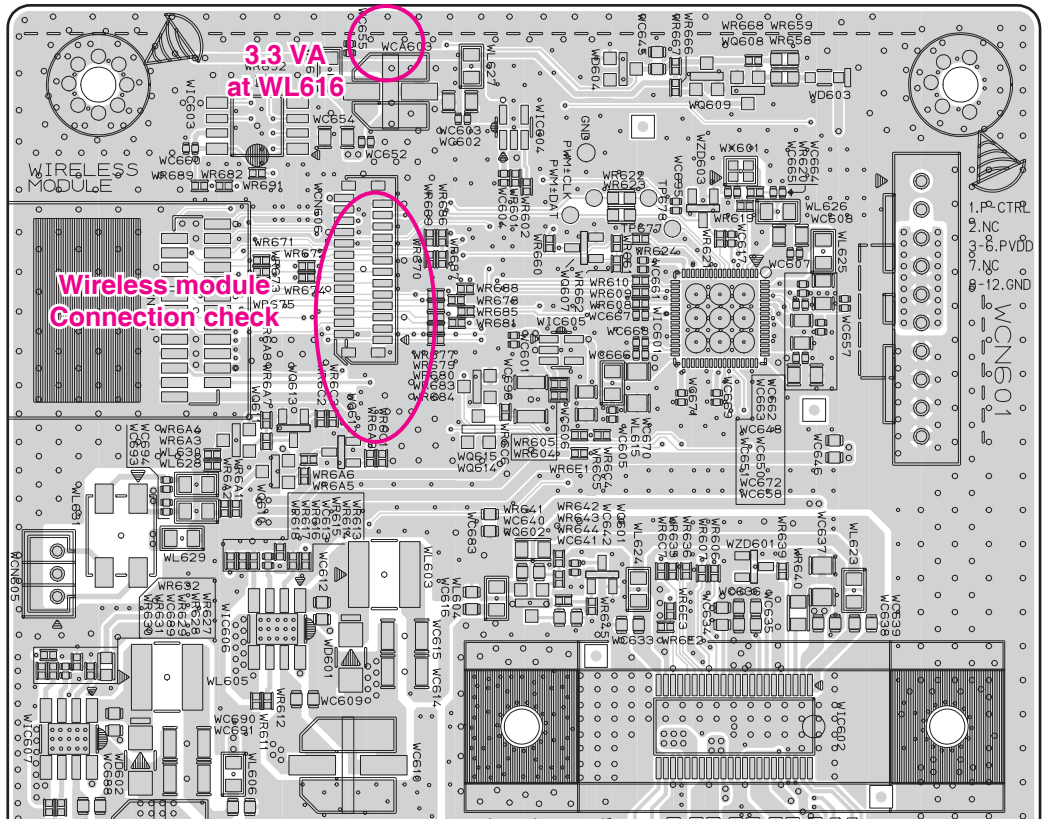
Wireless connection malfunction

4-1. 3.3 VA

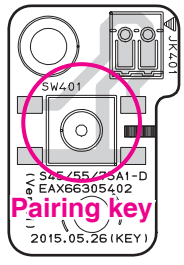
1) Check 3.3 VA at WL616.

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 >

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WAVEFORMS OF MAJOR CHECK POINT

1. VOLTAGE

1

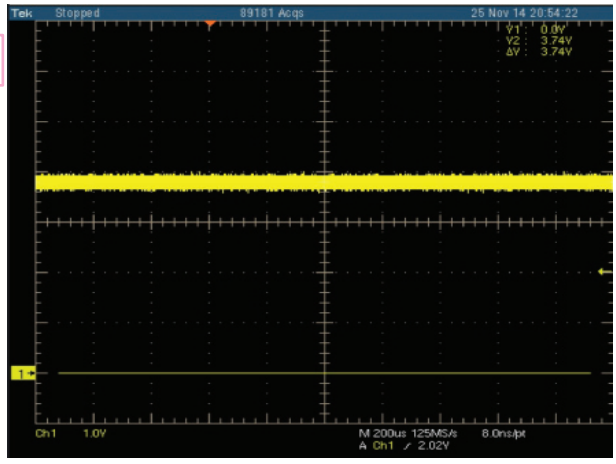


FIG 1-1. WIC607 3.7 VA

2

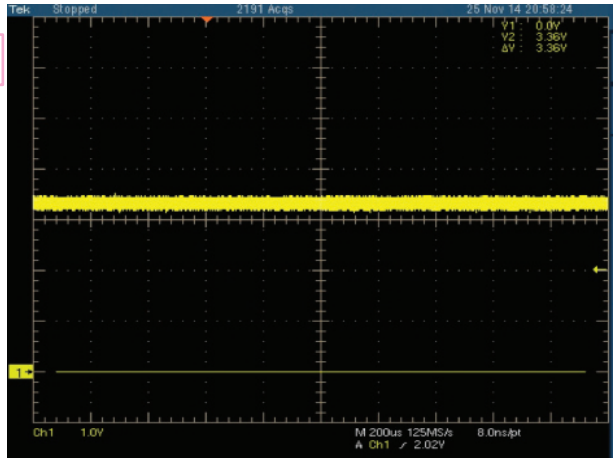


FIG 1-2. PWM 3.3 V

3

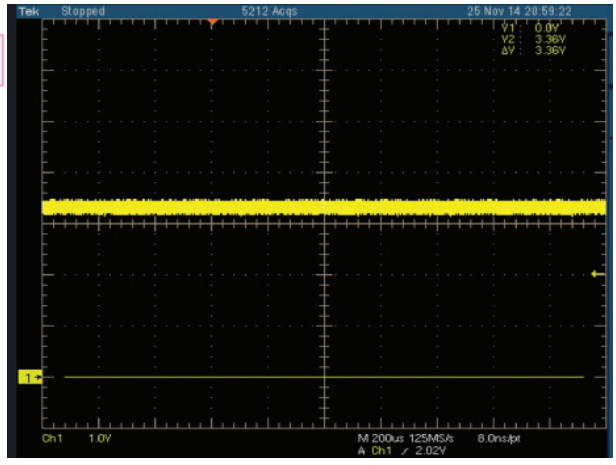
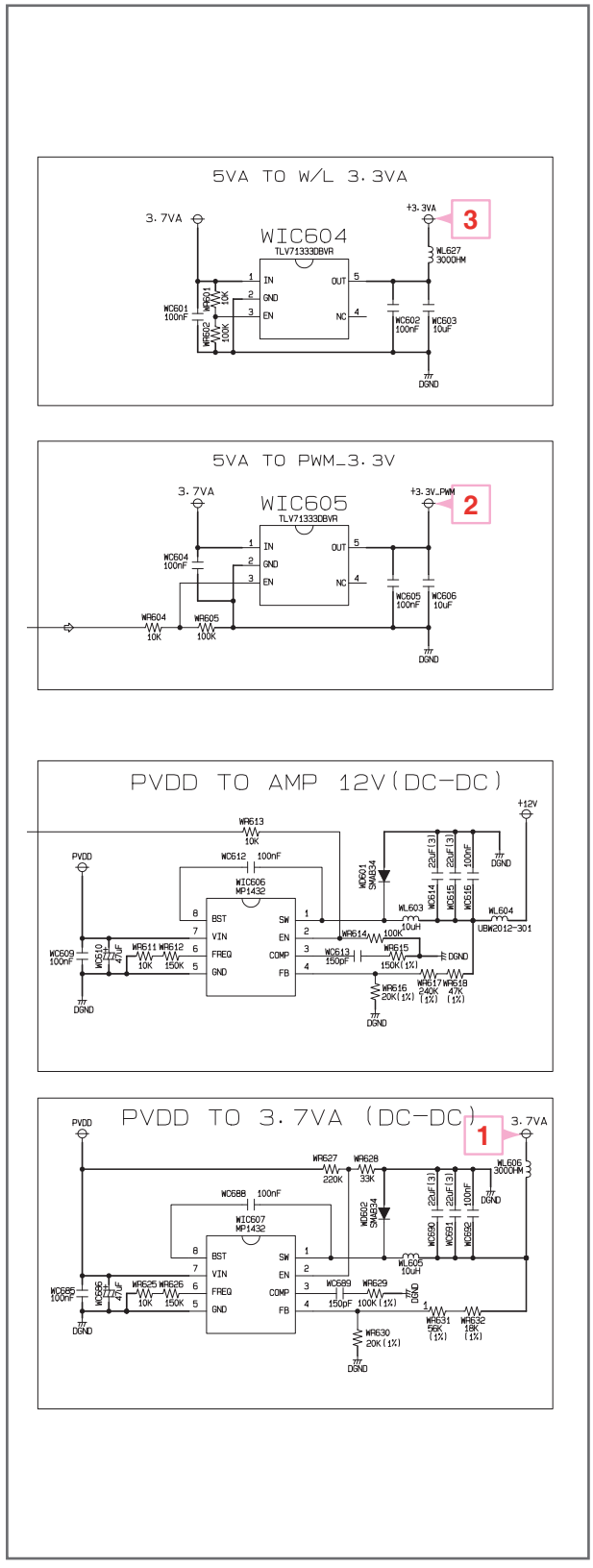


FIG 1-3. Wireless 3.3 VA



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2. AMP VOLTAGE

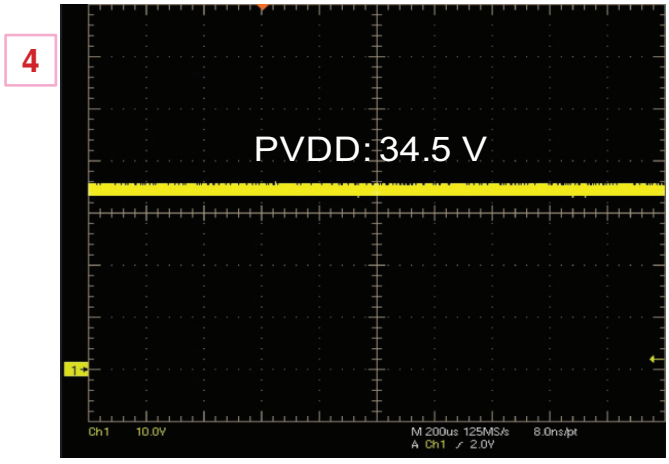


FIG 2-1. Woofer PVDD

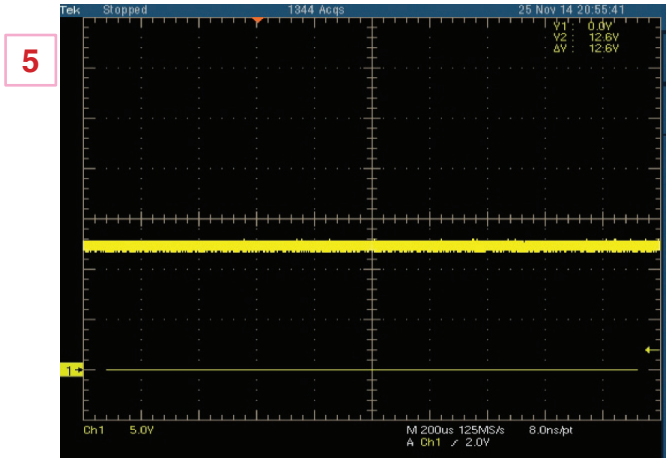
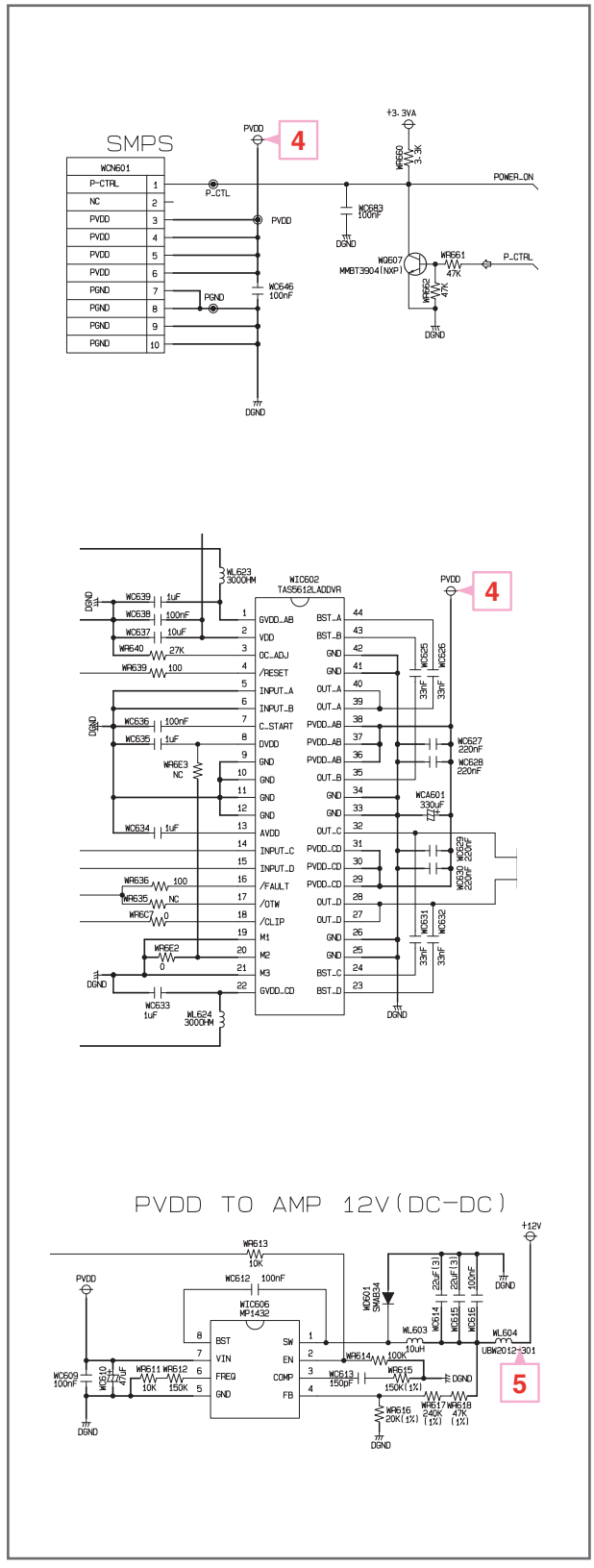


FIG 2-2. Woofer 12 V



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3. PWM

6

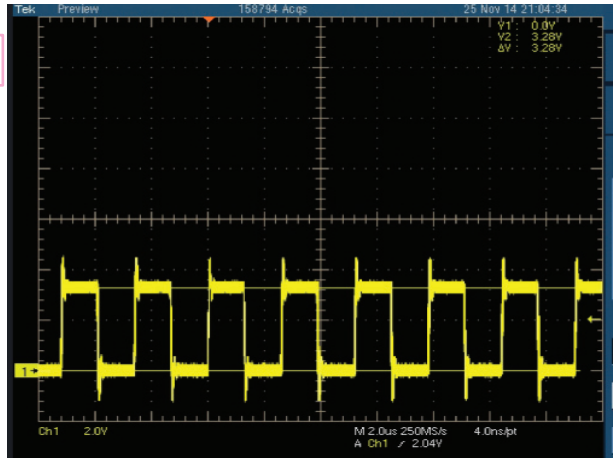


FIG 3-1. Woofer PWM SW+ SIgnal

7

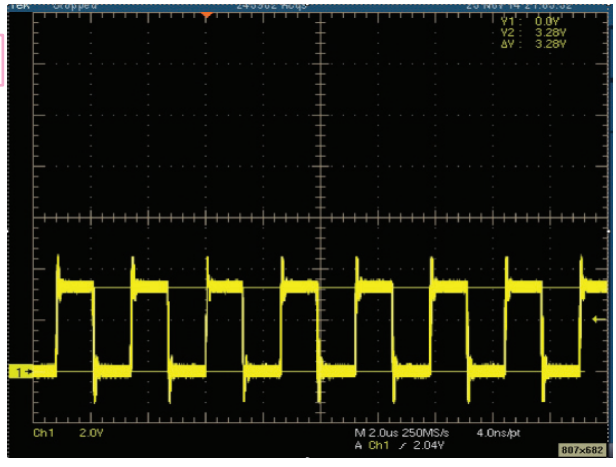
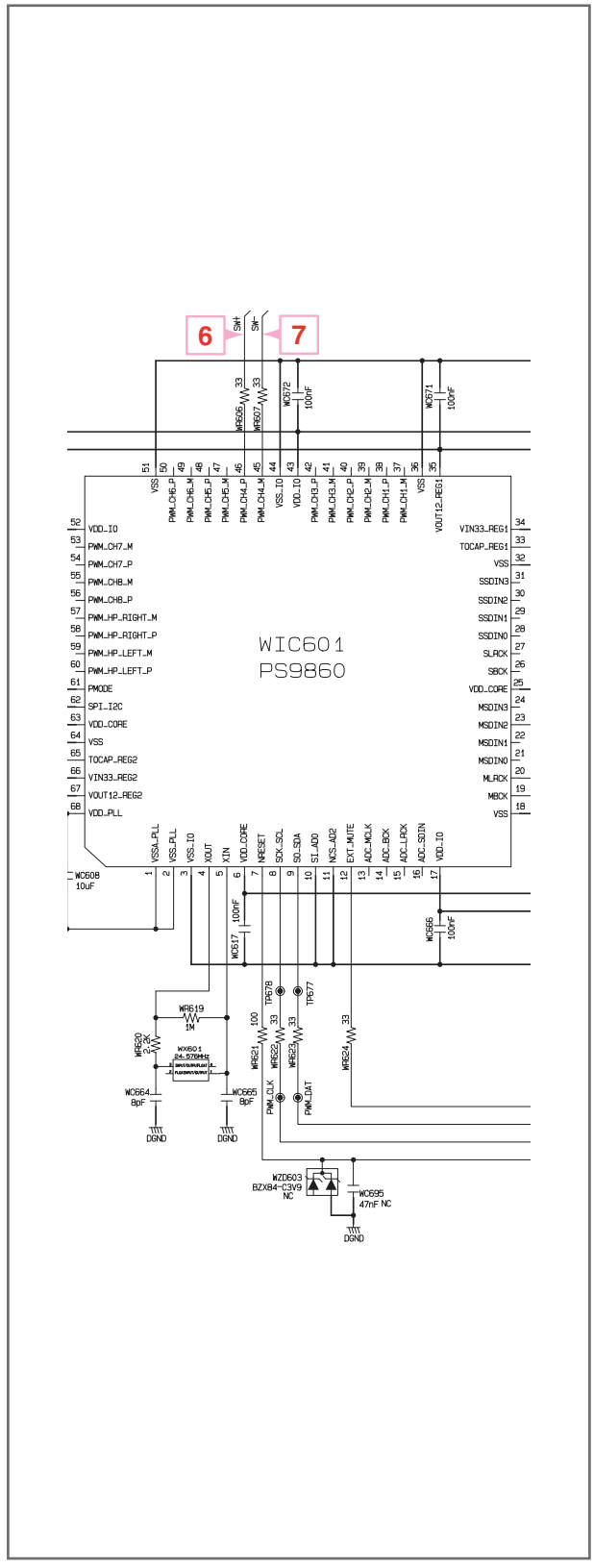


FIG 3-2. Woofer PWM SW- SIgnal



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4. LED

8

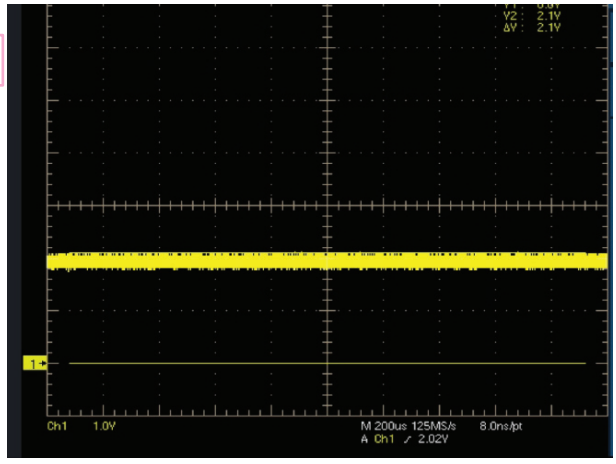


FIG 4-1.
Pairing Off Status ⇨ Red LED

9

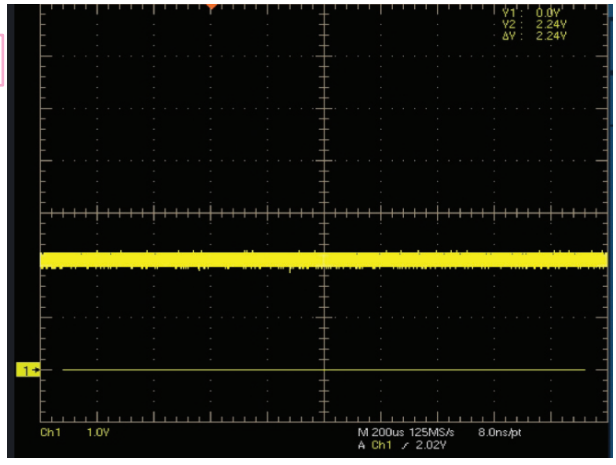
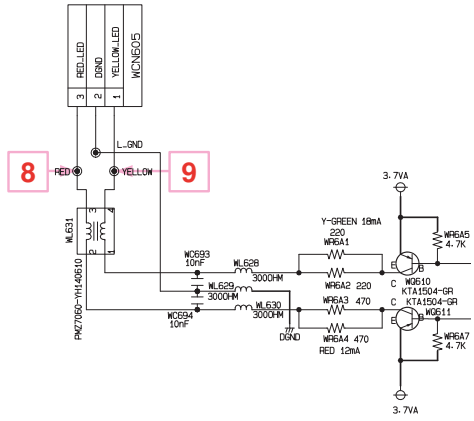


FIG 4-2.
Pairing On Status ⇨ Yellow LED



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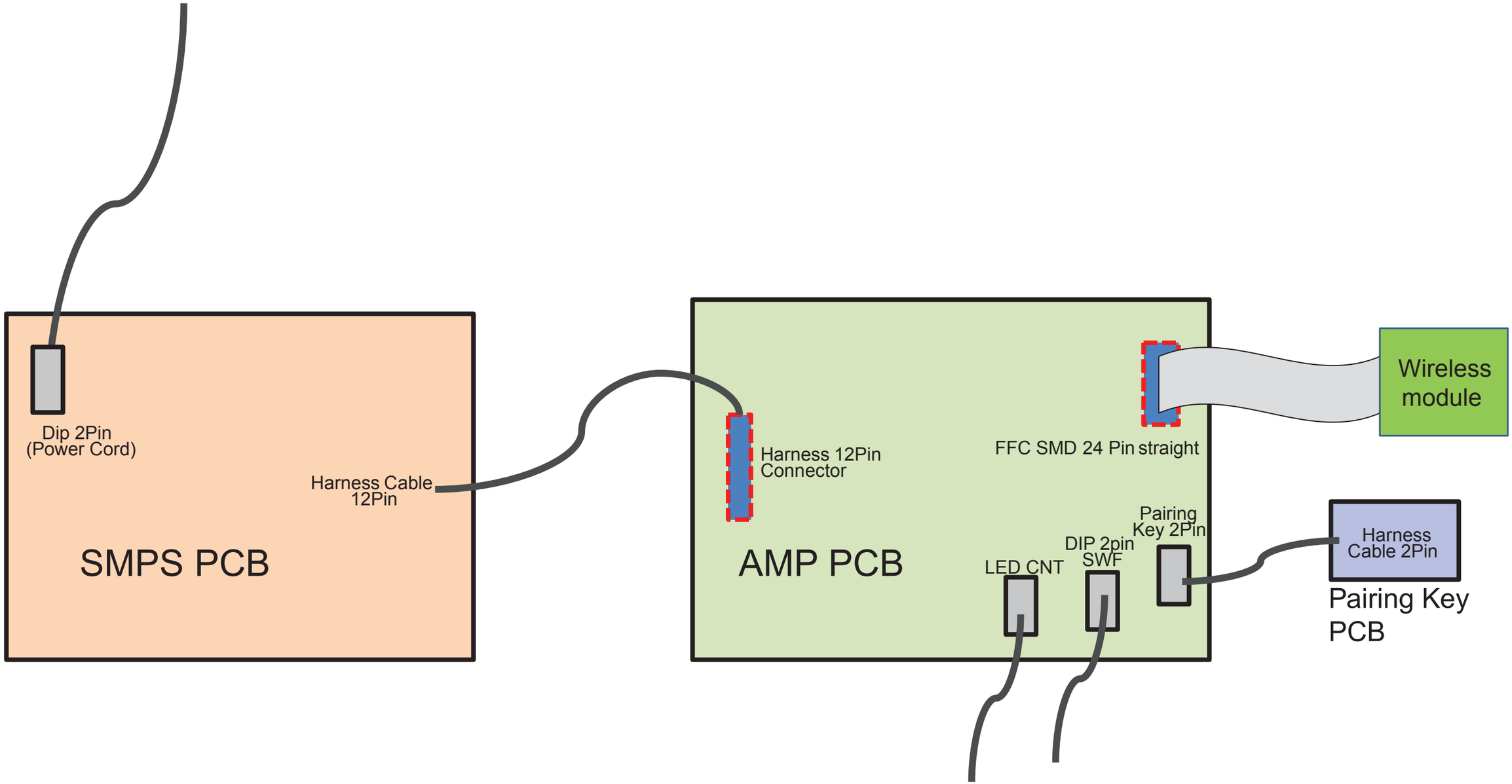
WIRING DIAGRAM



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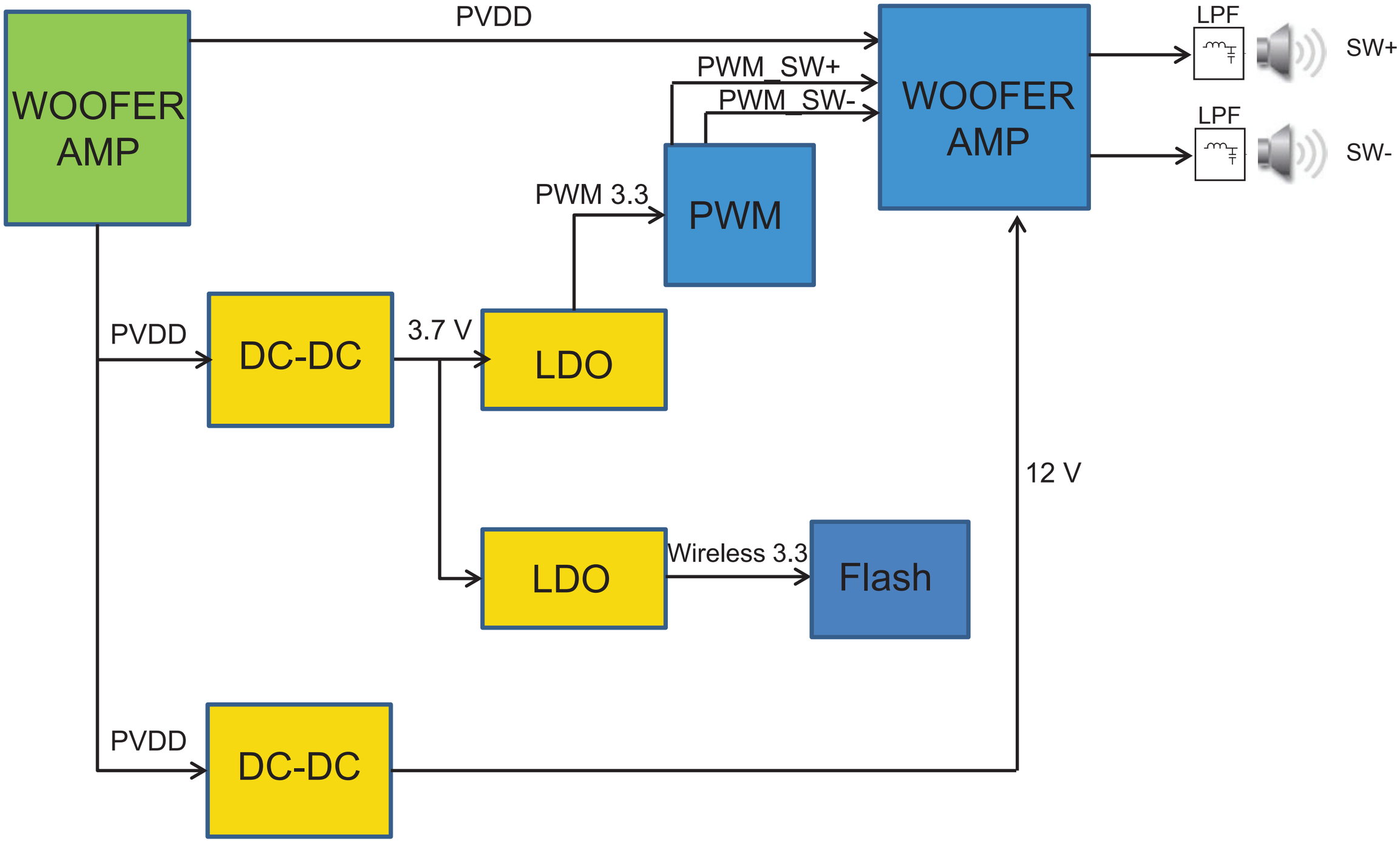
BLOCK DIAGRAM



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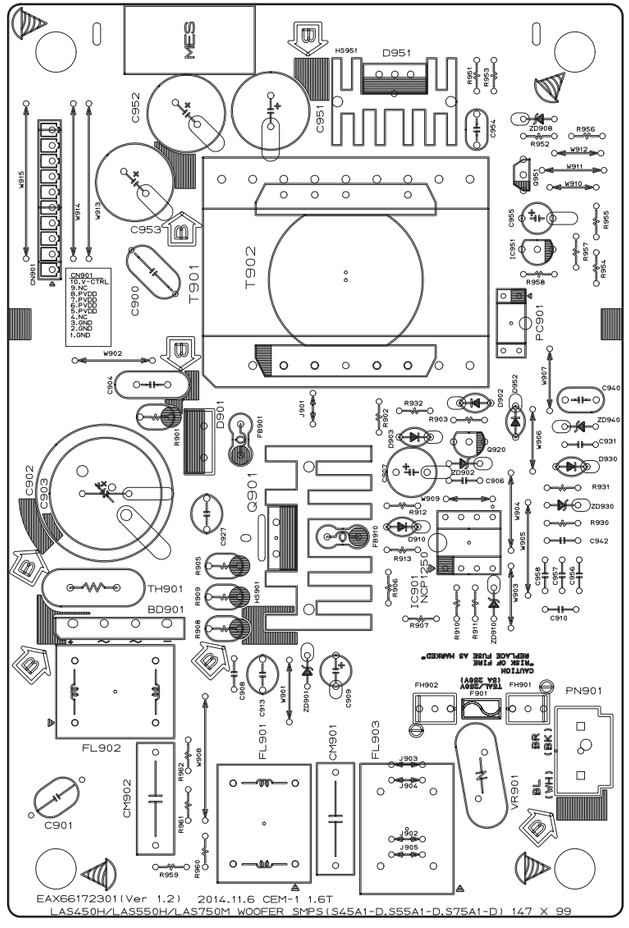
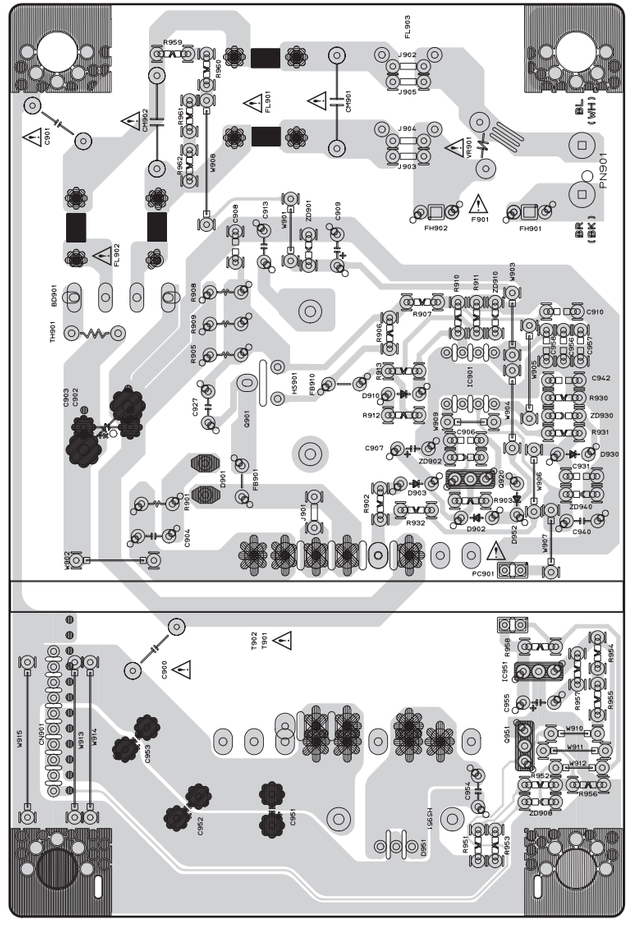
PRINTED CIRCUIT BOARD DIAGRAMS

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.

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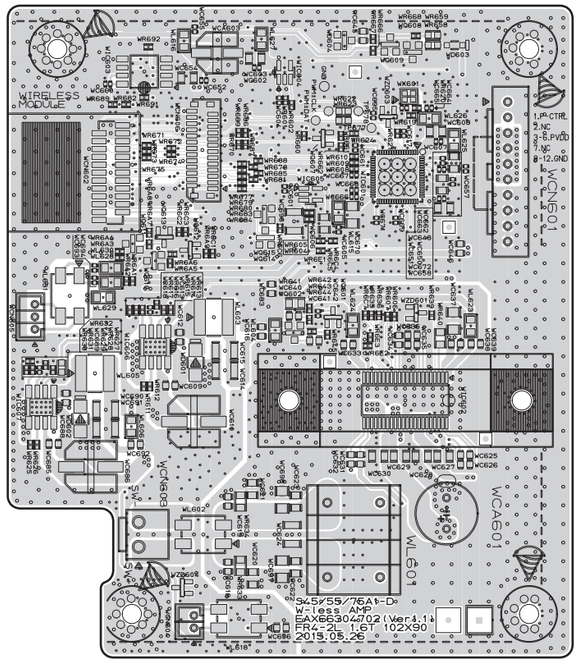
2. WOOFER AMP P. C. BOARD

(TOP VIEW)



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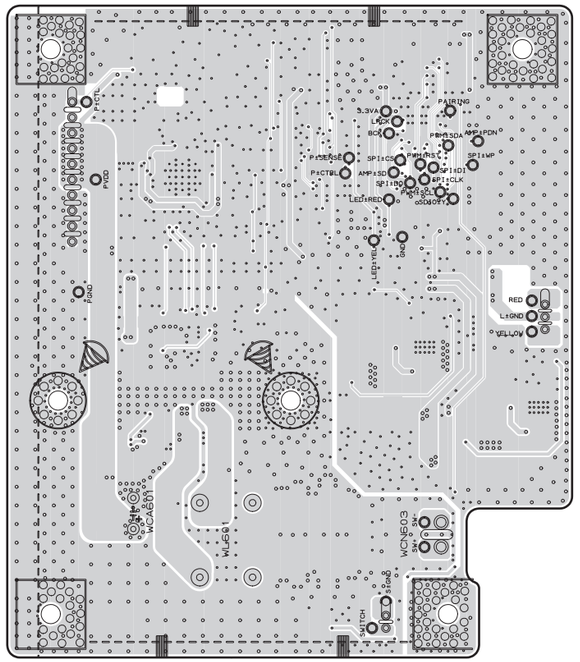
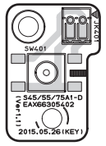
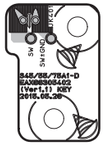


3. WOOFER KEY P. C. BOARD

(TOP VIEW)



(BOTTOM VIEW)



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