



SERVICE MANUAL

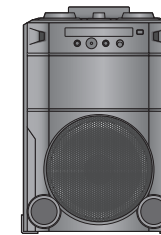
MODEL: OM7550

Mini Hi-Fi AUDIO SERVICE MANUAL

MODEL: OM7550

CAUTION

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



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SECTION 1

SUMMARY

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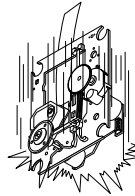
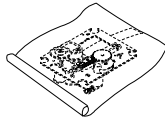
SERVICING PRECAUTIONS

NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

- 1) The pick-up should always be left in its conductive bag until immediately prior to use.
- 2) The pick-up should never be subjected to external pressure or impact.

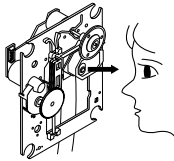
Storage in conductive bag



Drop impact

2. Repair notes

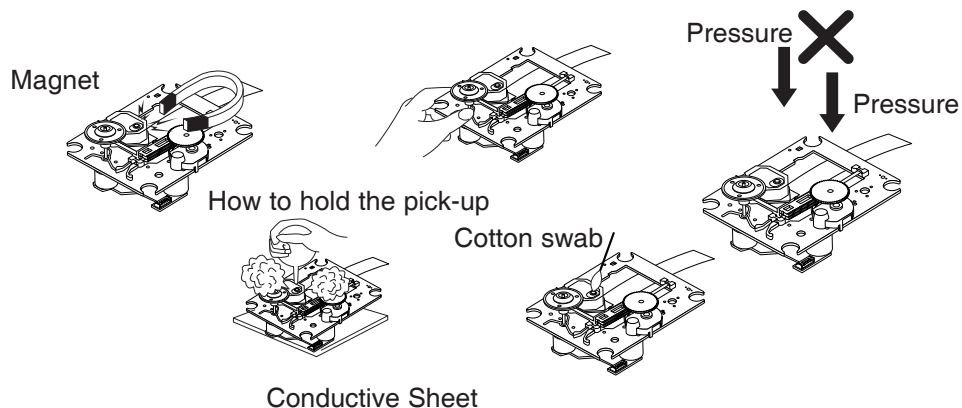
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
- 3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
- 4) Laser beams may damage the eyes!
Absolutely never permit laser beams to enter the eyes!
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.



NEVER look directly at the laser beam, and don't allow contact with fingers or other exposed skin.

5) Cleaning the lens surface

If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort lens.



6) Never attempt to disassemble the pick-up.

Spring has excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

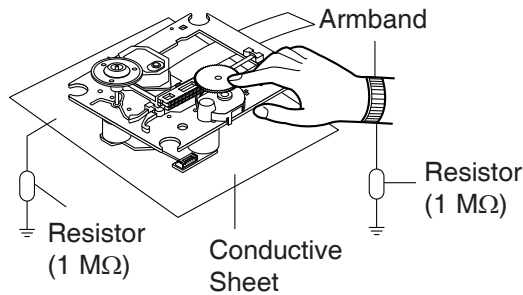
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

- 1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
- 2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature or humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

- 1) Before replacing a component part, first disconnect the power supply lead wire from the unit
- 2) All equipment, measuring instruments and tools must be grounded.
- 3) The workbench should be covered with a conductive sheet and grounded.
When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
- 4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
- 5) Workers should be grounded by an armband (1 M Ω)
- 6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
- 7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



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.

HIDDEN KEY MODE

Push both Front key and RCU key to activate it for 5 seconds.

1. Disc Lock On/Off (CD Function Only Active)

- Front Key : STOP
- RCU Key : STOP

2. Check Version and Option code

- Front Key : STOP
- RCU Key : PLAY/PAUSE
- You can change [Audio MCU Version <-> CD Controller Version <-> EEPROM Option] by SKIP+/-.

3. Clear EEPROM

- Front Key : STOP
- RCU Key : SKIP-

4. Edit EEPROM

- Front Key : STOP
- RCU Key : SKIP+
- You can change the digit of option by SKIP+/-.
- You can edit 0~f by REPEAT or PLAY/PAUSE key.

5. Bluetooth DUT

- Front Key : STOP
- RCU Key : PROGRAM
- Bluetooth model only

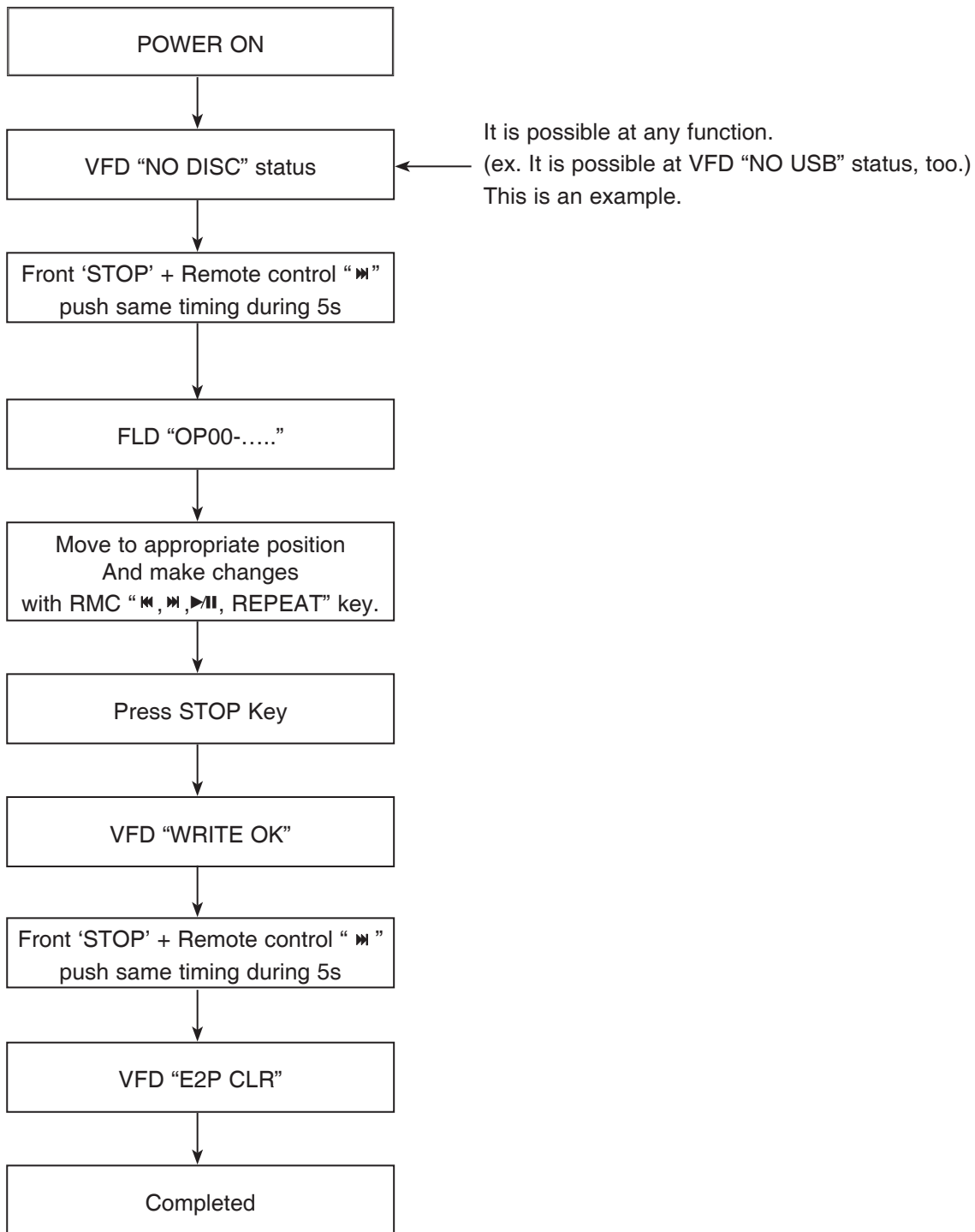
6. Power Disc Lock On/Off (CD Function Only Active)

- Front Key : STOP
- RCU Key : EQ

7. Amp Clip On/Off

- Front Key : STOP
 - RCU Key : Mute
- Amp Clip Mode Change (Amp Clip On --> Amp Clip Off --> Level Down display).

SERVICE INFORMATION FOR EEPROM



PROGRAM DOWNLOAD & UPDATE GUIDE

1. AUDIO PROGRAM

Download program file name must be MICOM_OM9550_YYMMDDX.HEX

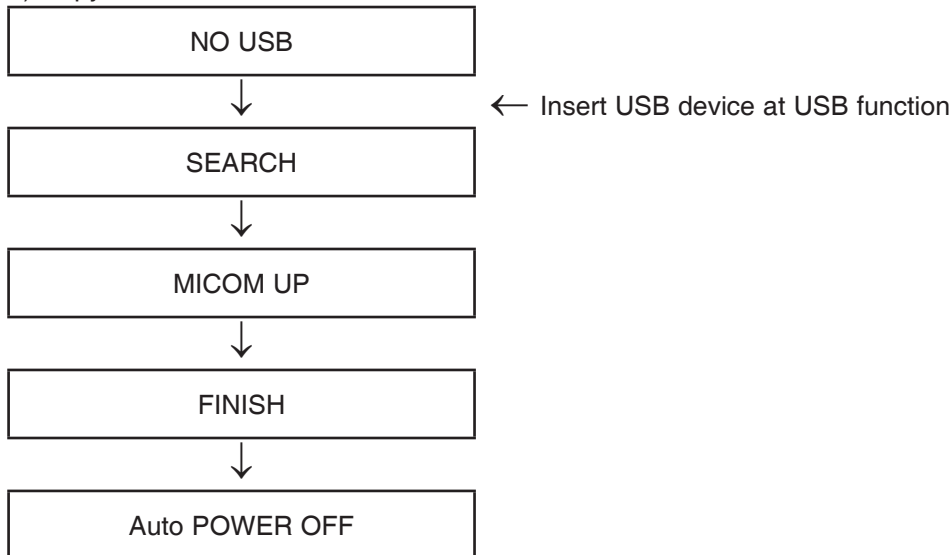
If security program(Water Wall) is activated on PC, you must save the file to the USB storage device and disable the security software, then download the file to your set.

Downloading file proceeds in the same way at USB1 function and USB2 function.

Caution: When downloading the file, you should neither unplug the USB device, change to the other function, nor power off the device. USB device must be unplugged when the downloading process is completed.

ON VFD DISPLAY SCREEN

- 1) (Fast) Format USB device
- 2) Copy Firmware file to USB device.



2. CD PROGRAM

Download program file name must be HG590_OM9550_YYMMDDX.bin

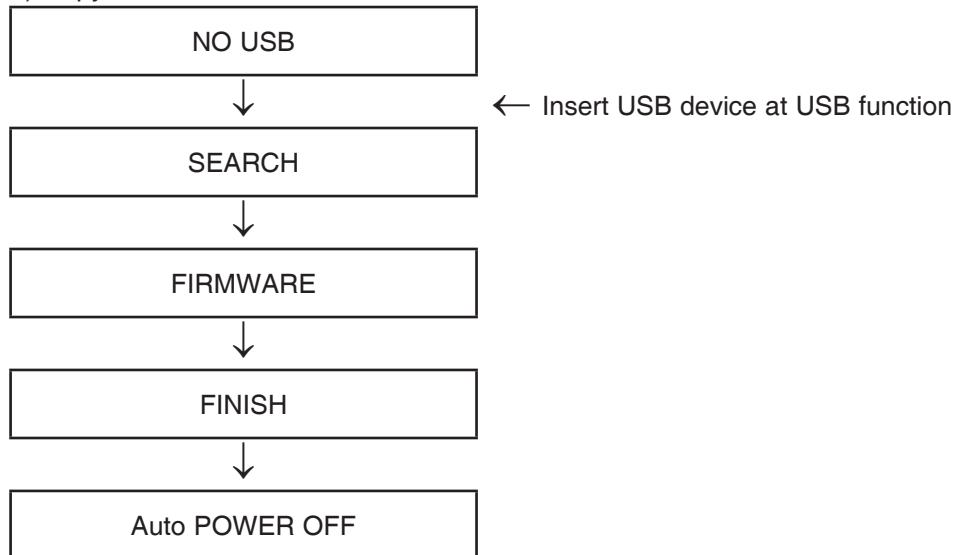
If security program(Water Wall) is activated on PC, you must save the file to the USB storage device and disable the security software, then download the file to your set.

Downloading file proceeds in the same way at USB1 function and USB2 function.

Caution: When downloading the file, you should neither unplug the USB device, change to the other function, nor power off the device. USB device must be unplugged when the downloading process is completed.

ON VFD DISPLAY SCREEN

- 1) (Fast) Format USB device
- 2) Copy Firmware file to USB device.



3. EQ PROGRAM

Download program file name must be EQ_PRG_OMXX50_YMMDDX_XXXX.BIN

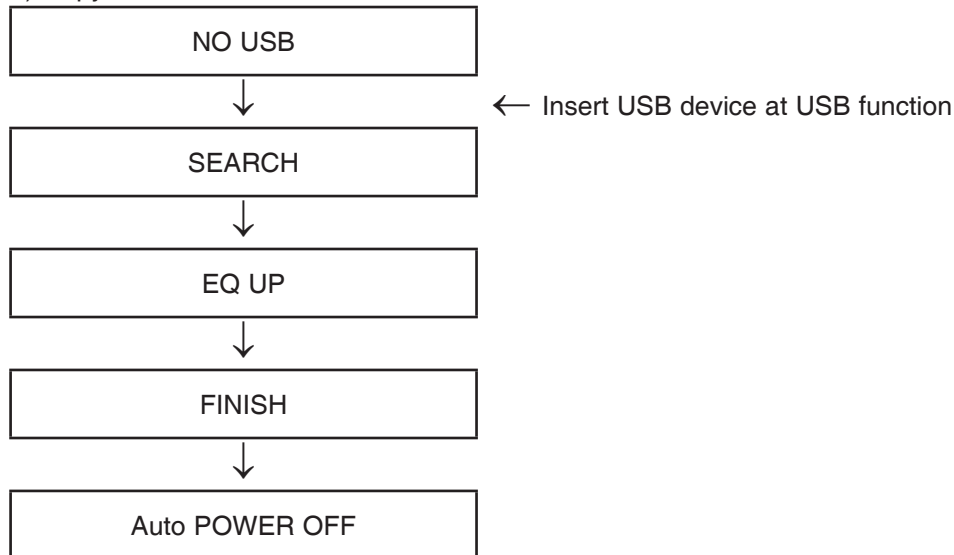
If security program(Water Wall) is activated on PC, you must save the file to the USB storage device and disable the security software, then download the file to your set.

Downloading file proceeds in the same way at USB1 function and USB2 function.

Caution: When downloading the file, you should neither unplug the USB device, change to the other function, nor power off the device. USB device must be unplugged when the downloading process is completed.

ON VFD DISPLAY SCREEN

- 1) (Fast) Format USB device
- 2) Copy Firmware file to USB device.



SPECIFICATIONS

- **GENERAL**

Power requirements	Refer to the main label.
Power consumption	Refer to the main label.
	Networked standby : 0,4 W (If all network ports are activated.)
Dimensions (W x H x D)	430 mm x 765 mm x 468 mm
Net Weight (Approx.)	22.7 kg
Operating temperature	5 °C to 35 °C (41 °F to 95 °F)
Operating humidity	60 %
Bus Power Supply	5 V $\overline{\text{---}}$ 500 mA

- **INPUTS / OUTPUTS**

AUX IN / OUT	2,0 Vrms (1 kHz, 0 dB), 600 Ω , RCA jack (L, R)
PORT. IN	1,2 Vrms (3.5 \emptyset jack)
MIC	20 mV

- **TUNER**

FM Tuning Range	87,5 to 108,0 MHz or 87,50 to 108,00 MHz
-----------------	--

- **CD**

Frequency Response	40 to 20 000 Hz
Signal-to-noise ratio	75 dB
Dynamic range	80 dB

- **AMPLIFIER**

Total output	1000 W
FRONT	500 W x 1 (6 Ω at 150 Hz)
Subwoofer	500 W x 1 (6 Ω at 1 kHz)
THD	20 %

- Design and specifications are subject to change without notice.

MEMO

A series of horizontal dotted lines for writing.

SECTION 2

CABINET & MAIN CHASSIS

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DISASSEMBLY INSTRUCTIONS

1. HOW TO DISASSEMBLE THE SIDE COVER (LEFT & RIGHT)

Step 1) Insert JIG into groove and then raise Cover_Side with a lever(JIG) to outside direction.



Figure 1

Step 2) Tap(Push-silde) Cover_Side to back direction.

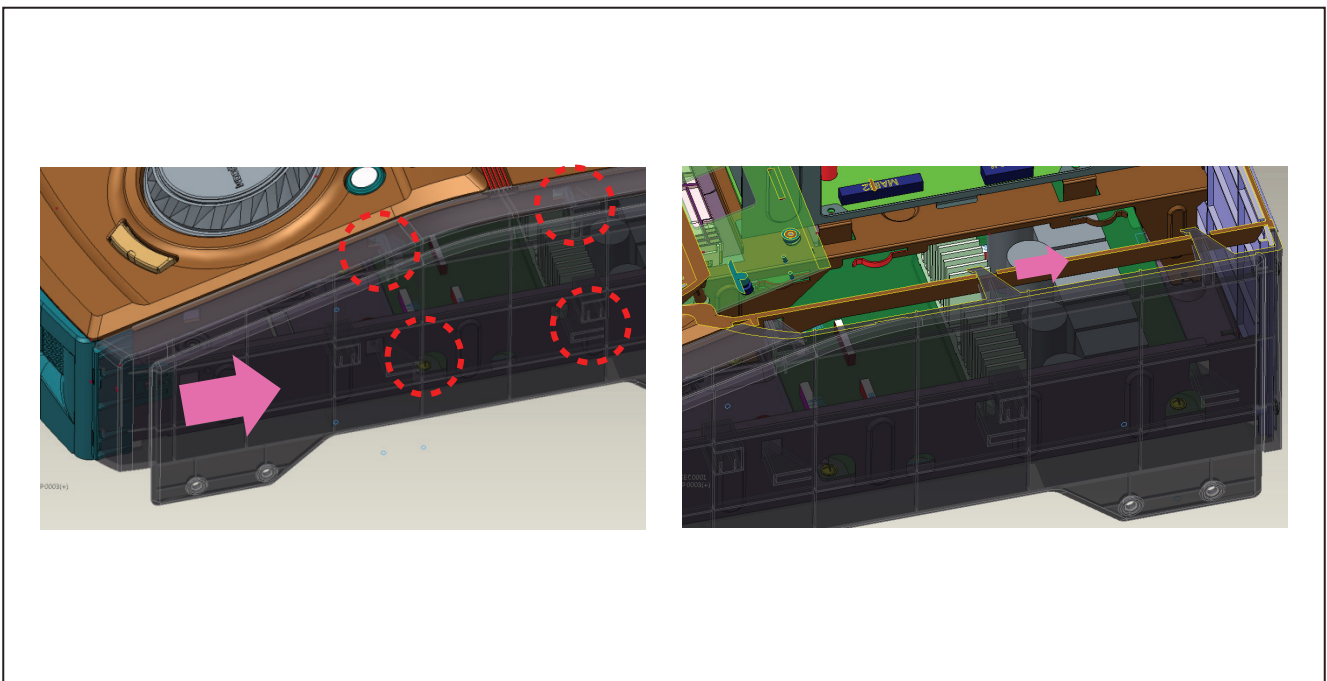


Figure 2

Step 3) Seperate Cover_Side to out direction.

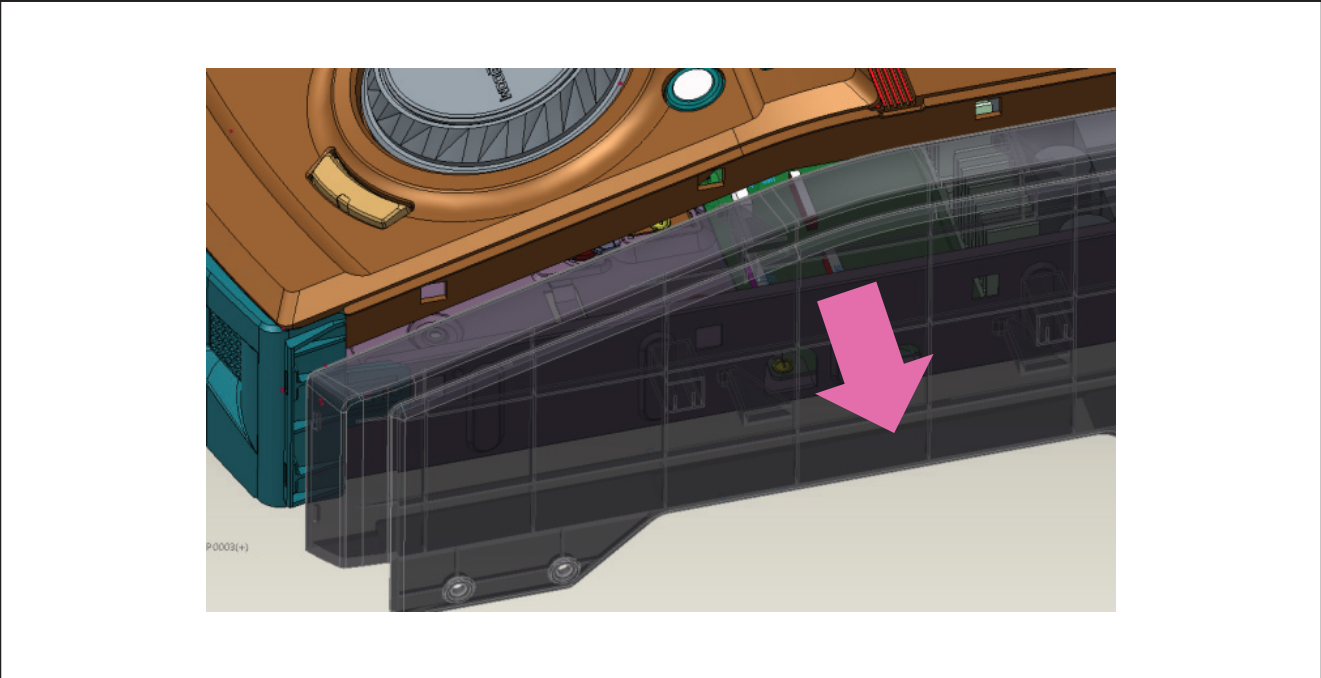


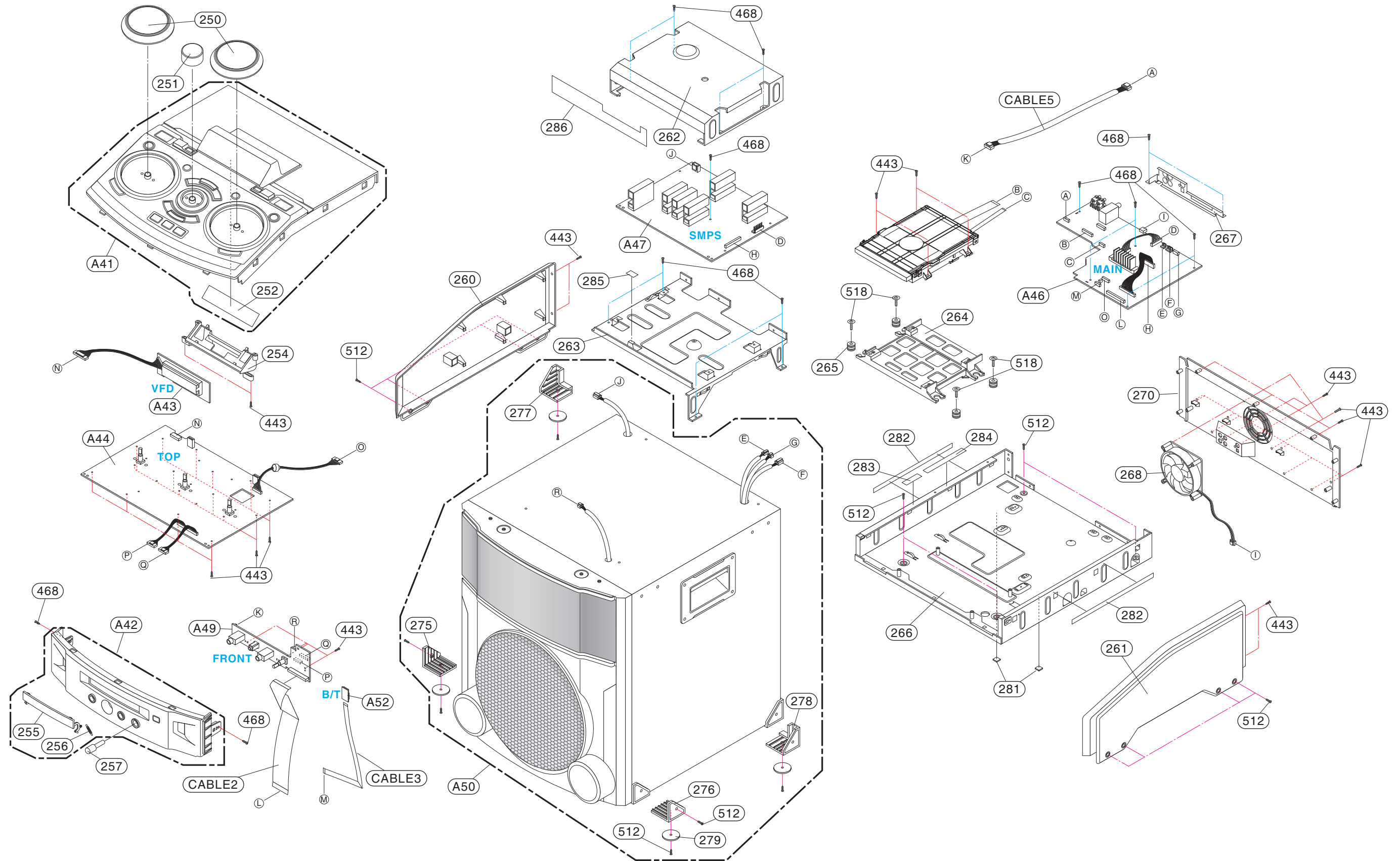
Figure 3

MEMO

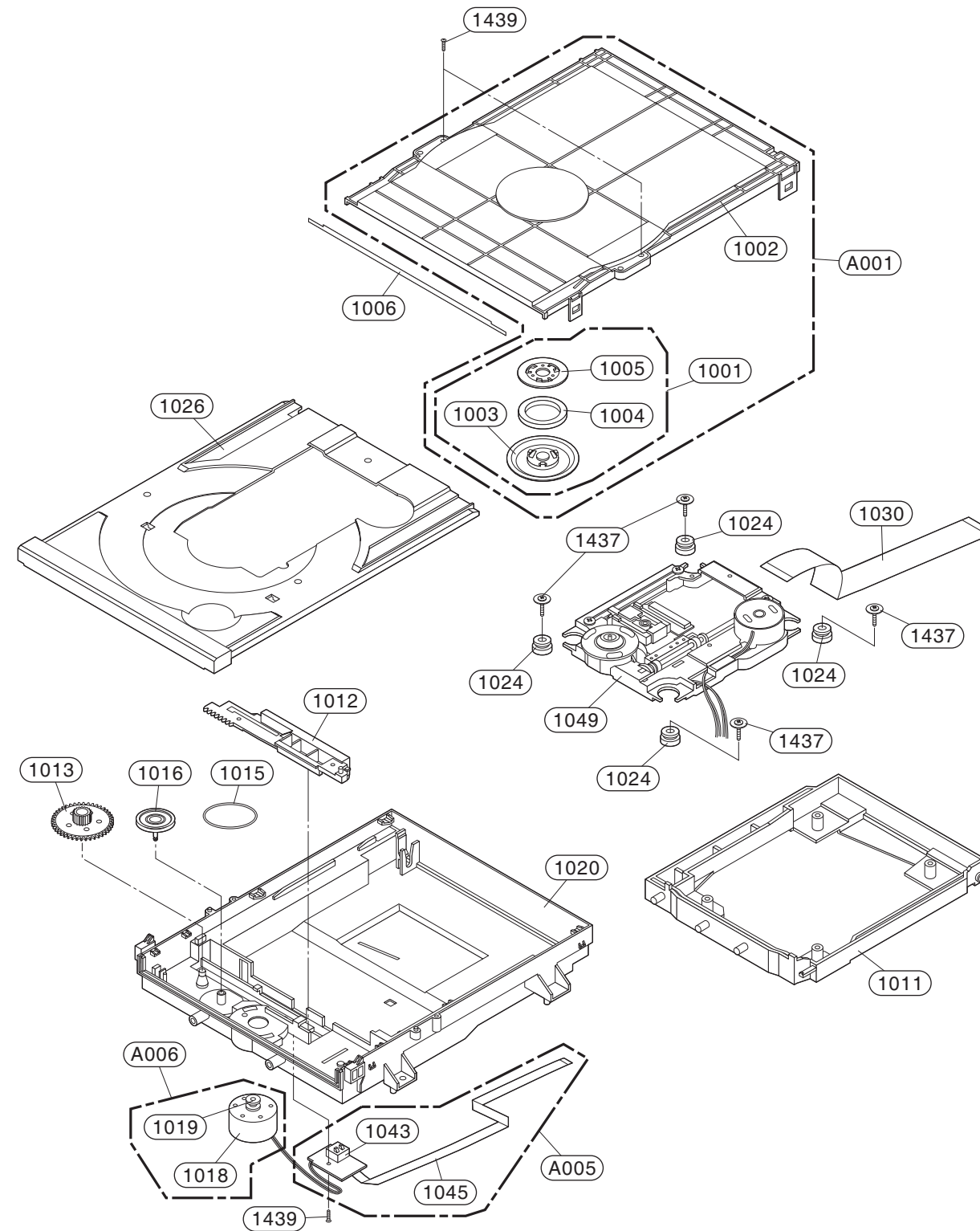
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EXPLODED VIEWS

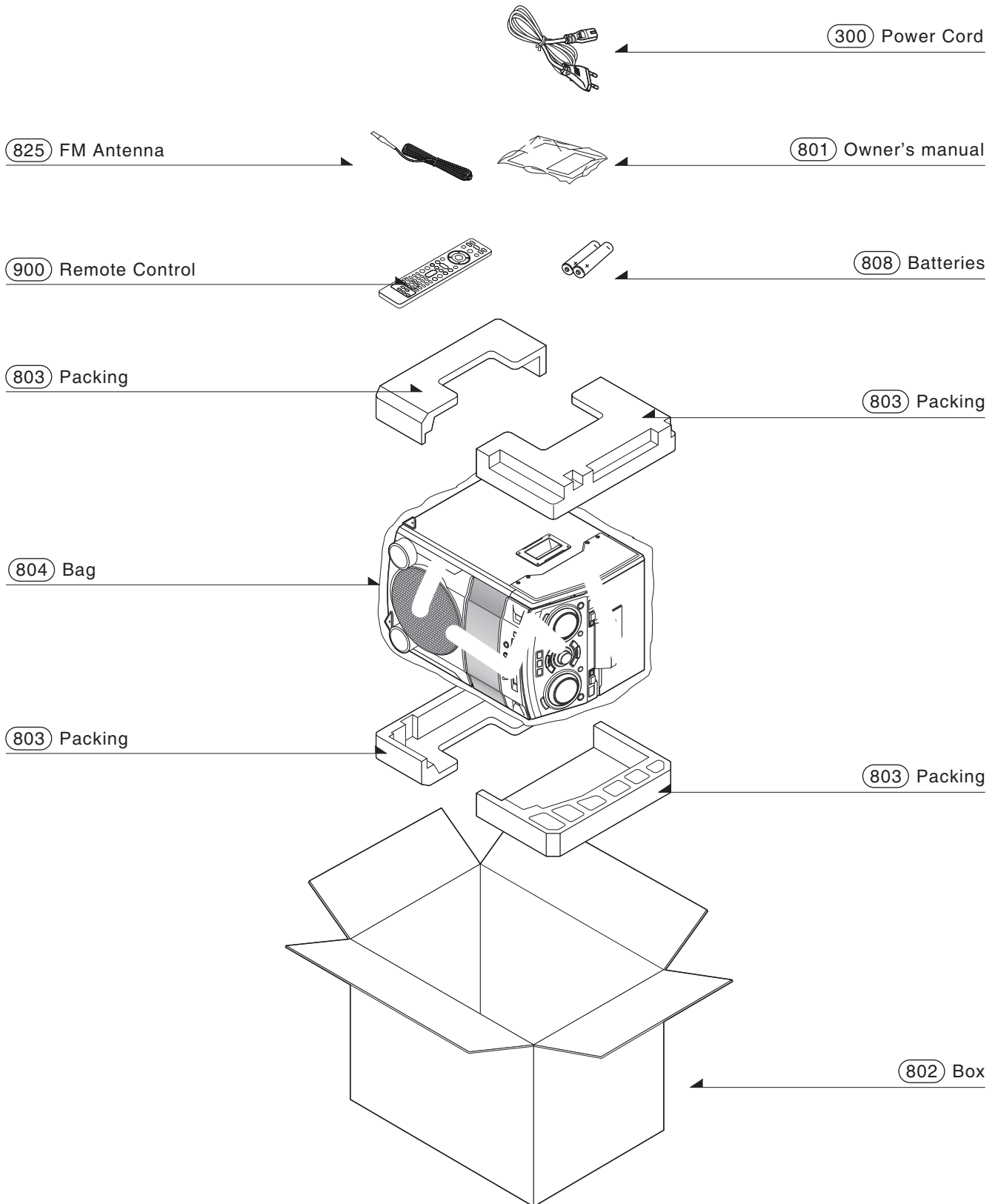
1. CABINET AND MAIN FRAME SECTION



2. DECK MECHANISM SECTION (DM19AA)



3. PACKING ACCESSORY SECTION



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ONE POINT REPAIR GUIDE

1. NO POWER

If the unit doesn't work by no power problem, repair the set according to the following guide.

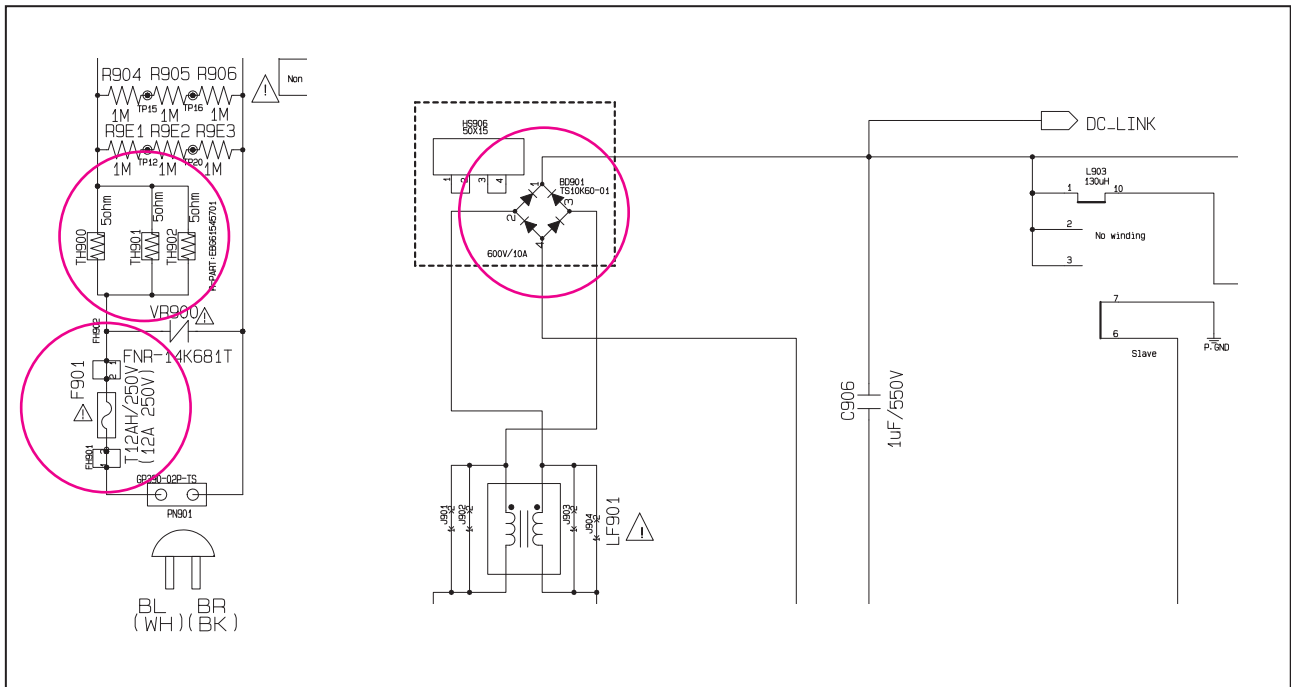
1-1. FUSE/ BRIDGE DIODE/ THERMISTOR

1-1-1. Solution

Please check and replace F901, BD901, TH900, TH901 on SMPS board.

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

- 1) Check if the fuse F901 is open or short-circuit.
- 2) Check if the bridge diode BD901 is short-circuit by over current with a digital multimeter.
- 3) Check if the NTC thermistor TH900~TH902 is normal or open.



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



< F901 >
If F901 is not short-circuit, replace it with a same specifications one.



< BD901 >
If BD901 is short-circuit, replace it with a new one.



< TH900, TH901 >
If TH900~TH901 is open, replace it with a new one.

ONE POINT REPAIR GUIDE

2. NO AMP POWER

If the unit doesn't work by no \pm PVDD problem, repair the set according to the following guide.

2-1. FUSE/ FET

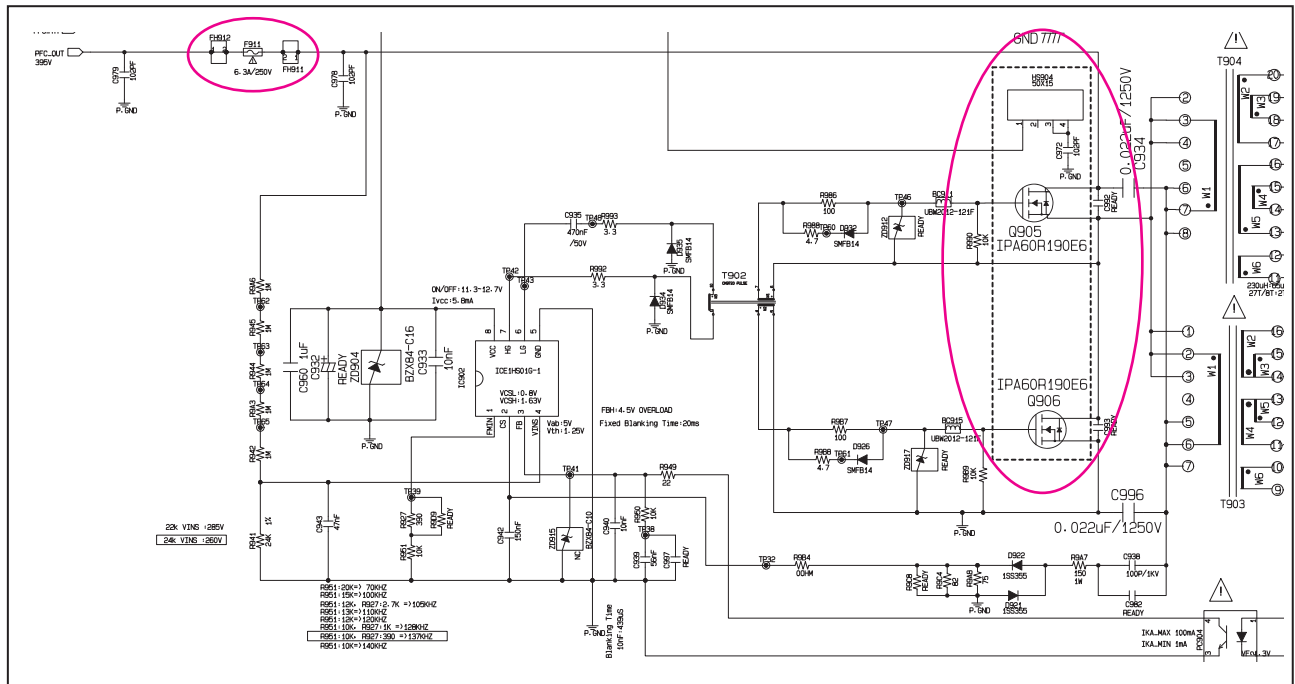
2-1-1. Solution

Please check and replace F911, Q905~Q906 on SMPS board.

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

- 1) Check if the fuse F911 is open or short-circuit.
- 2) Check the Drain-Source or Drain-Gate, Gate-Source Resistance of Q905~Q906 with a digital multimeter.
 - ⇒ If it is short condition, it's destroyed. Replace it with a new one.
 - (Please replace 2 FET at the same time although several FET is OK).

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



< F911 >

If F911 is not short-circuit, replace it with a same specifications one.



< Q905~Q906 >

If Q905~Q906 is short-circuit, replace it with a new one.

ONE POINT REPAIR GUIDE

3. NO BOOTING WHEN POWER ON THE SET

The set doesn't work when press the power button on the FRONT board or the remote control.

3-1. IC501

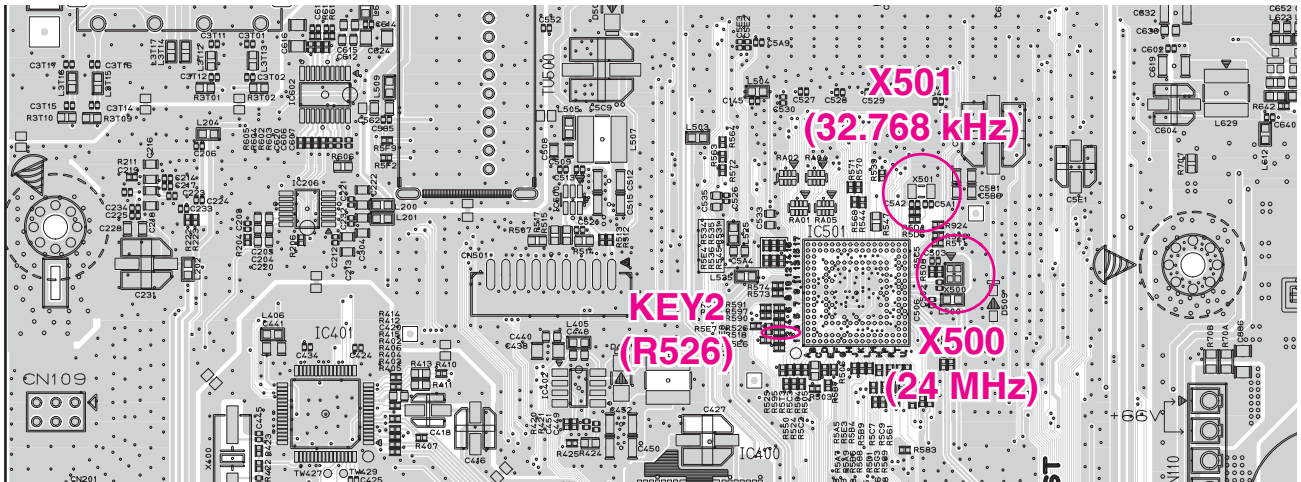
3-1-1. Solution

Replace IC501 on MAIN board.

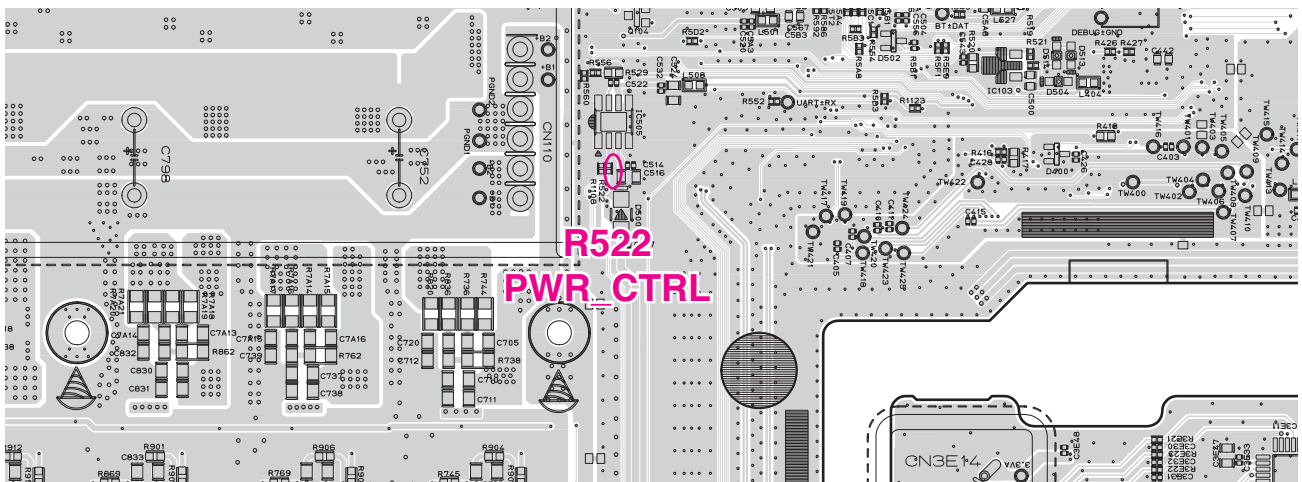
3-1-2. How to troubleshoot (Countermeasure)

- 1) Check the 5.6 VA (CN106) and DVCC_3.3 V (IC505) in standby mode.
 - ⇒ If there is no 5.6 VA, check the SMPS and if doesn't appear 3.3 V, check IC505.
- 2) Check 5.6 VA, +12 V, FL+, FL-, an +39 V when power on the set.
 - ⇒ If the set doesn't work regardless of what the KEY2 changes high to low while pressing the power button. X500 and X501 work normally but, if you can not power on the set, replace the IC501 with a new one on the MAIN board.

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



< MAIN board top view >



< MAIN board bottom view >

ONE POINT REPAIR GUIDE

4. VFD IS NOT DISPLAYED WHEN POWER ON THE SET

When power on the set, any icons or characters on VFD are not displayed.

4-1. VFD (DIG300)

4-1-1. Solution

Please check and replace DIG300 on FRONT board.

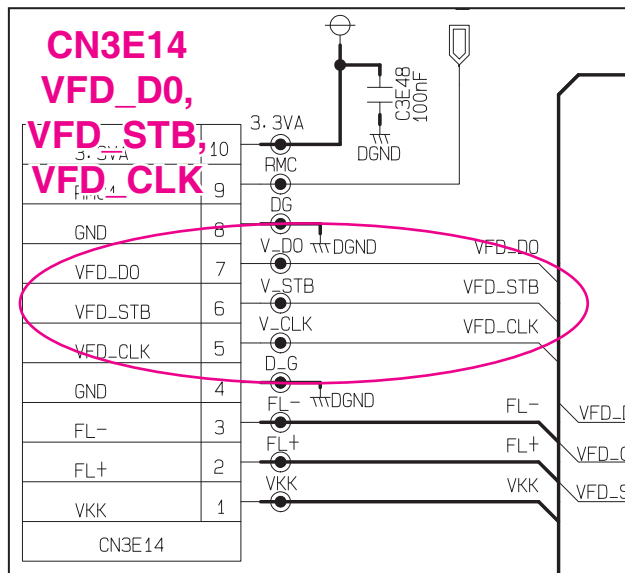
4-1-2. How to troubleshoot (Countermeasure)

- 1) Check if 39 V, FL+ and FL- are output from SMPS to VFD via the MAIN board.
- 2) Check if the IC501 outputs VFD_CLK, VFD_DO and VFD_STB to the FRONT board.
- 3) Check if the VFD grid current amplifier circuit on the FRONT board.

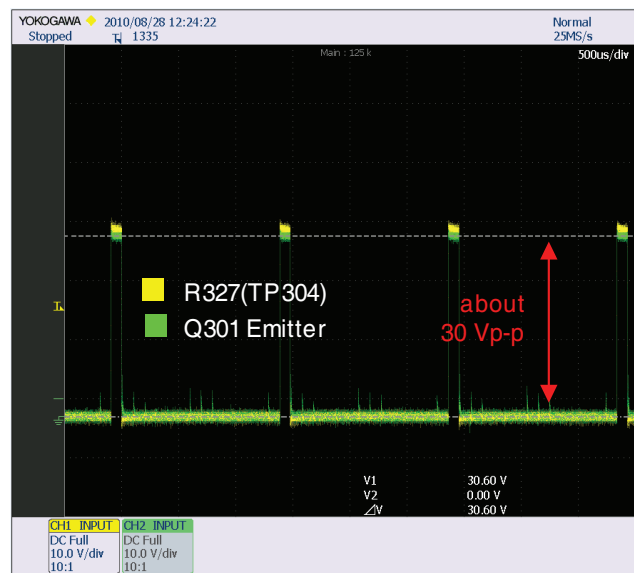
Check the drive signal to the transistor's base.

⇒ If the control signals from VFD (DGND, VDD) isn't output, replace VFD with a new one.

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



< VFD schematic >



< Waveform of the grid current driver >

ONE POINT REPAIR GUIDE

5. AUDIO OUTPUT IS SMALL OR NO AUDIO OUTPUT

Audio signal output is small or not. when you power on the Middle Power Mini System.

5-1. AMP IC (IC700, IC701, IC705)

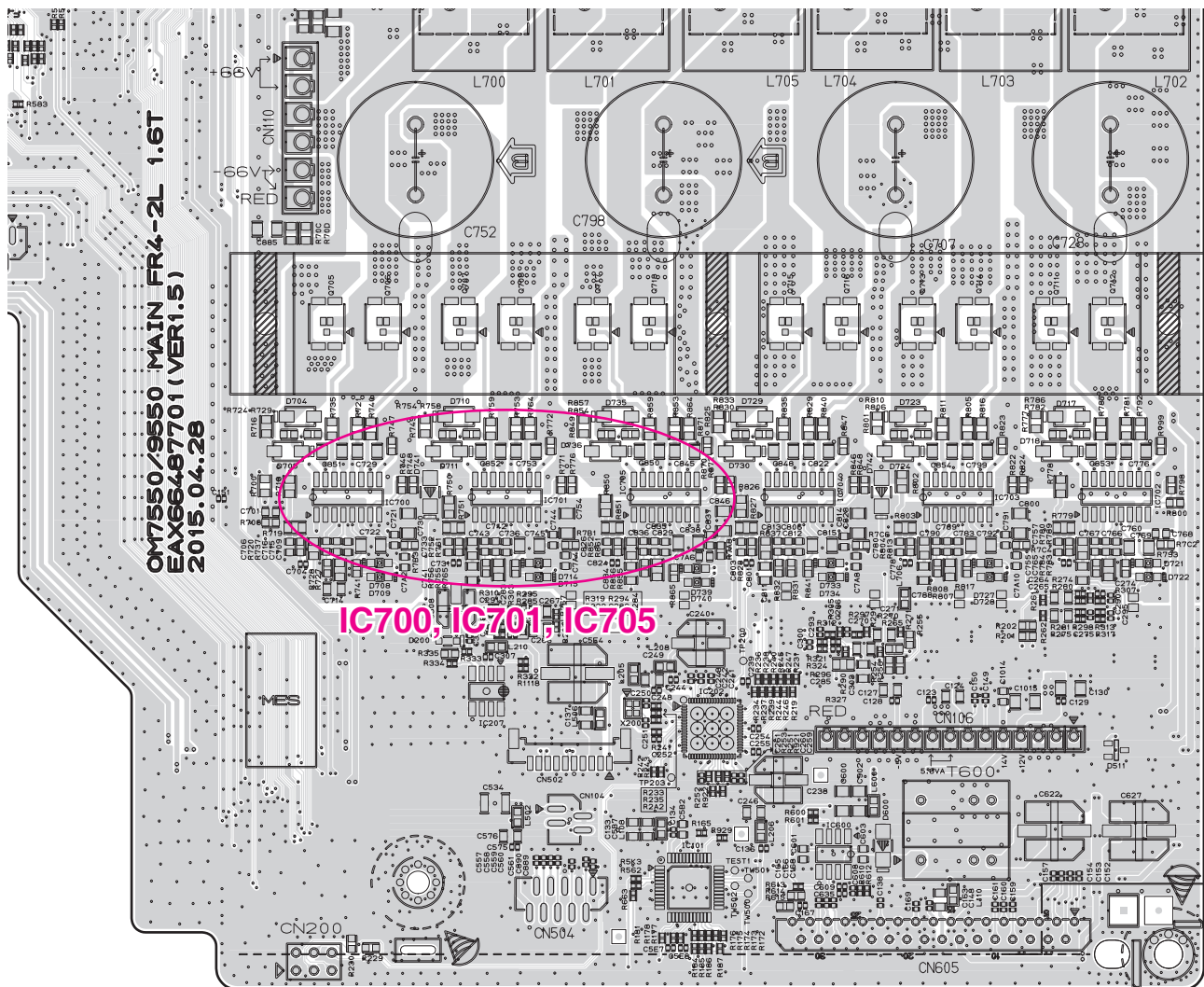
5-1-1. Solution

Replace IC700, IC701, IC705 on MAIN board.

5-1-2. How to troubleshoot (Countermeasure)

- 1) Please check if this system is on bass blast mode.
⇒ C, RL and RR make sound only on bass blast mode.
- 2) Check the IC700, IC701, IC705 on your eyes.
- 3) Check the audio signal output check (pin13 of IC700, IC701, IC705).
First, Check the PWM Data input (pin3 of IC700, IC701, IC705)
- 4) If the audio signal output has no output, try to change IC which has no output.
- 5) Lastly, check Speaker Terminal (CN701, CN702).

5-1-3. Service hint (Any picture / Remark)



< MAIN board top view >

ONE POINT REPAIR GUIDE

6. NO POWER ON (STANDBY LED IS BLINKING)

It doesn't turn on, and blinks standby LED(Red).

6-1. AMP FETs

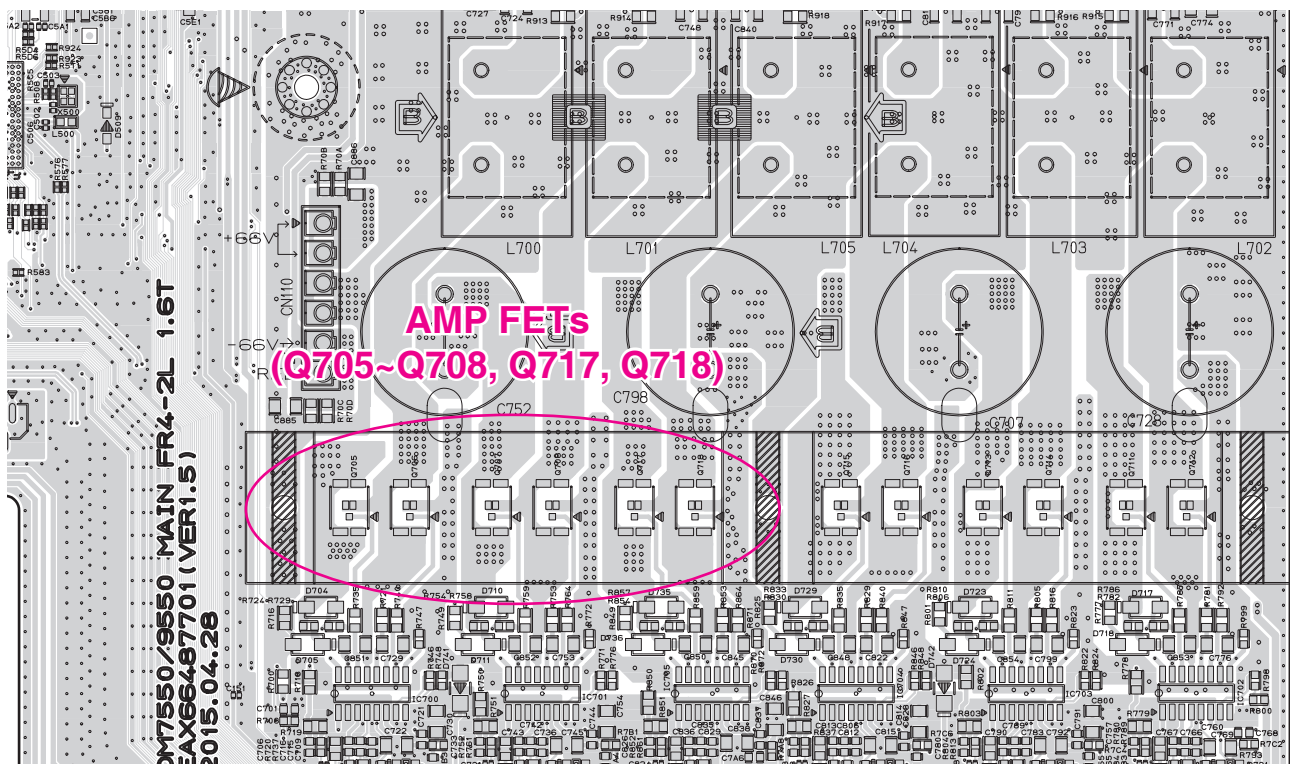
6-1-1. Solution

Replace AMP FET on MAIN board.

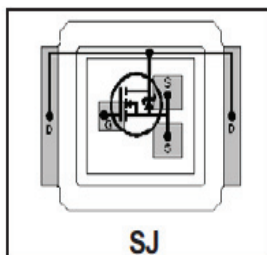
6-1-2. How to troubleshoot (Countermeasure)

- 1) This symptom occurs, when DC protection is detected. Main reasons are like below.
 - When some of AMP FETs dead.

6-1-3. Service hint (Any picture / Remark)



AMP FET : IRF6775
< MAIN board top view >



Notice for FET service

- In case of RF6775, Metal case, FET Drain, has electric potential. So be careful when you deal with it.

* You can see FET after removing heatsink.

* Notice for Service

Before repair Main Assy, you need to discharge SMPS. After then, open the connector.

You should try to change both of +/- FET and Driver IC as a pair.

ONE POINT REPAIR GUIDE

7. SPEAKER NO AUDIO

Speaker No Audio

7-1. AMP IC (IC700, IC701, IC705)

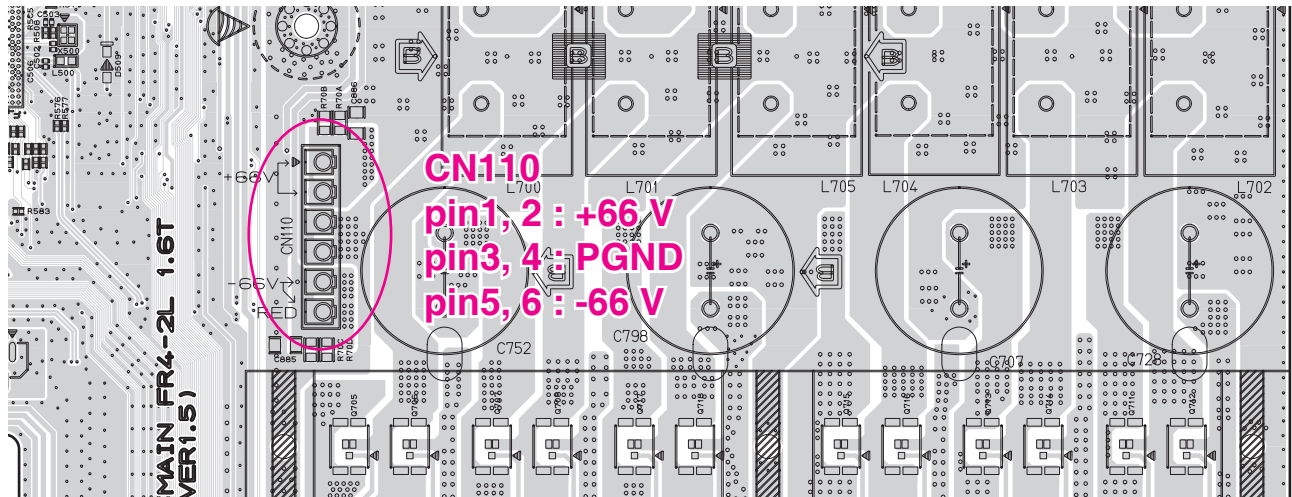
7-1-1. Solution

Replace IC700, IC701, IC705 on MAIN board.

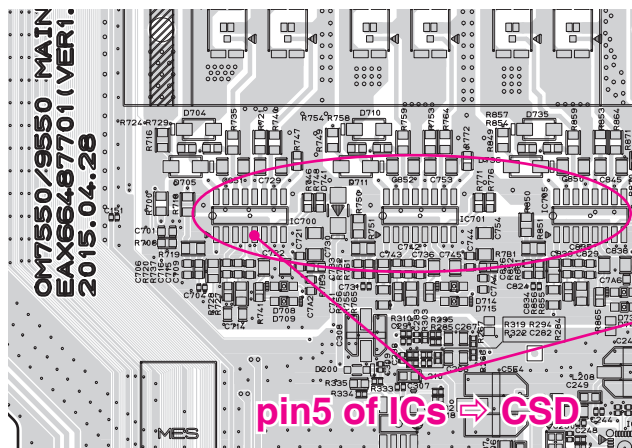
7-1-2. How to troubleshoot (Countermeasure)

- 1) Check supply voltage of AMP(CN110) & PWM signal
 Normal supply voltage and signal → Check AMP IC.
 Poor supply voltage → Check SMPS Assy.
 Poor signal → Check PWM IC.
- 2) Check CSD of FET driver IC (IRS2092).
 CSD has about 5 V on normal state.
 When AMP has problem, CSD is LOW state or keep change LOW to HIGH.

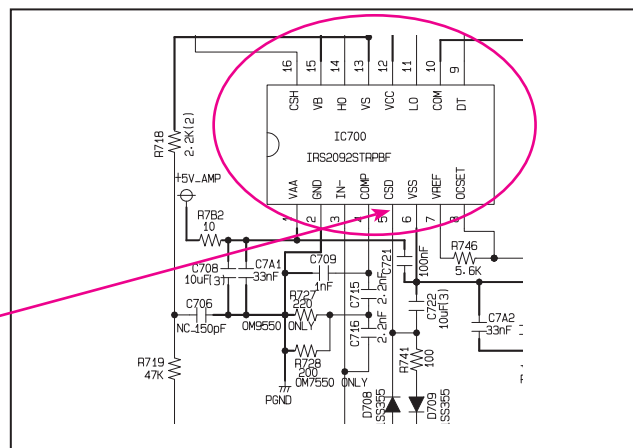
7-1-3. Service hint (Any picture / Remark)



< MAIN board top view >



< MAIN board top view >



< MAIN - AMP circuit >

ONE POINT REPAIR GUIDE

8. NO BOOTING IN CD/USB FUNCTION

After you turn on power key and displayed message in the following order (HELLO ⇨ VOL XX ⇨ CD or USB) on VFD, it will not display other message on VFD, and it will not boot-up normally.

8-1. NO VCC33, VCC12

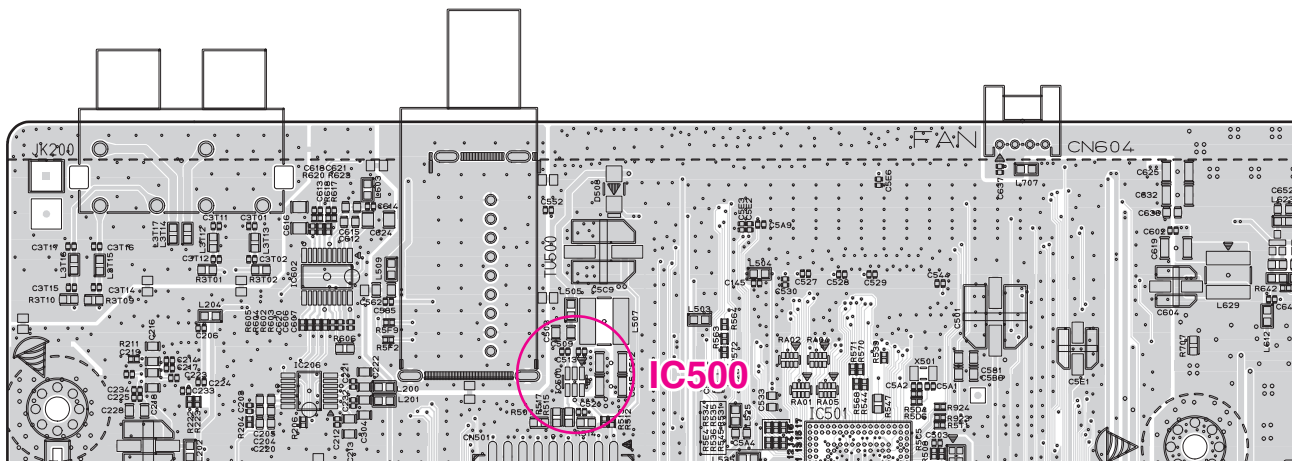
8-1-1. Solution

Please check and replace IC505, IC500 on MAIN board.

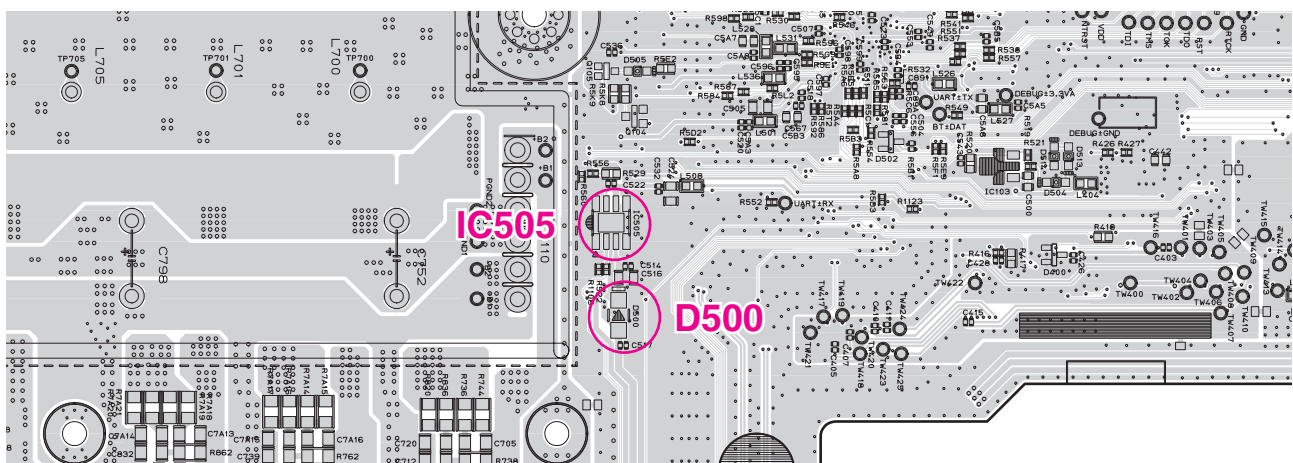
8-1-2. How to troubleshoot (Countermeasure)

- 1) Check Voltage of IC505 pin3 on MAIN board.
 - ⇨ If IC505 pin3(about 4.9 V) & D500 Input 5.6 VA doesn't come out, check 5.6 VA from SMPS board.
- 2) If IC505 pin3(about 4.9 V) is normal, check the PWR_CTRL(IC505 pin2) is high (about 3.3 V).
 - ⇨ If PWR_CTRL isn't high, check pin B2 of IC501 & R524, R522.
- 3) If PWR_CTRL is high, check R524 and if there's no defective component then replace IC505.
- 4) If 3.3 V(VCC33) is normal, check 1.2 V output(pin2) voltage of IC500.
 - ⇨ If 1.2 V of IC500 pin2 doesn't come out, then replace IC500.

8-1-3. Service hint (Any picture / Remark)



< MAIN board top view >



< MAIN board bottom view >

ONE POINT REPAIR GUIDE

NO BOOTING IN CD/USB FUNCTION

After you turn on power key and displayed message in the following order (HELLO ⇨ VOL XX ⇨ CD or USB) on VFD, it will not display other message on VFD, and it will not boot-up normally.

8-2. CRYSTAL (X500)

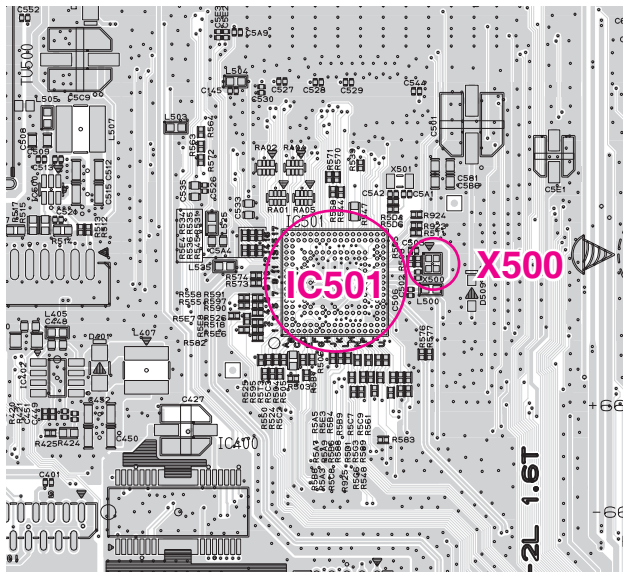
8-2-1. Solution

Replace X500 on MAIN board.

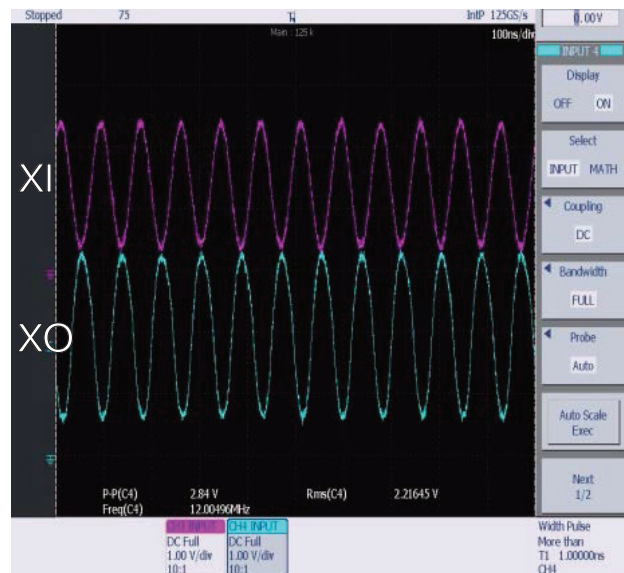
8-2-2. How to troubleshoot (Countermeasure)

- 1) If 3.3 V & 1.2 V is normal, check Reset "High" of IC501 pinT12 on MAIN board.
⇨ If MAIN_RESET isn't high, check MICOM(IC101) pin40.
- 2) If MAIN_RESET is high, check the soldering status of 24 MHz crystal (X500).
- 3) If the crystal (X500) doesn't oscillate, check R508, R5C5, C502, C503 around crystal (X500).
⇨ If there's no defective component, then replace X500.

8-2-3. Service hint (Any picture / Remark)



< MAIN board top view >



X500
< Signal waveform >

ONE POINT REPAIR GUIDE

NO BOOTING IN CD/USB FUNCTION

After you turn on power key and displayed message in the following order (HELLO ⇒ VOL XX ⇒ CD or USB) on VFD, it will not display other message on VFD, and it will not boot-up normally.

8-3. SERIAL FLASH (IC503)

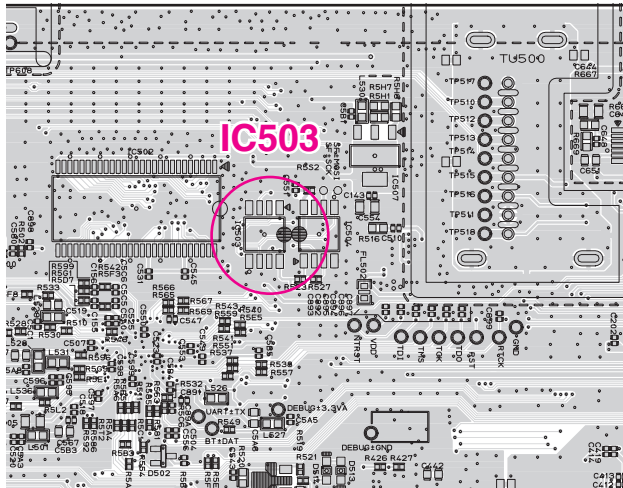
8-3-1. Solution

Please check and replace IC503 on MAIN board.

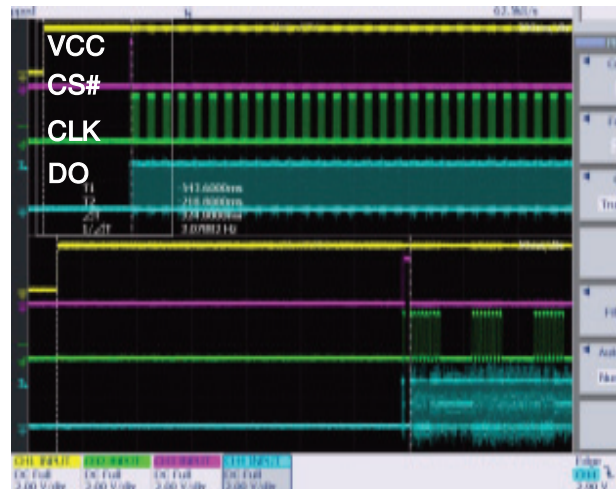
8-3-2. How to troubleshoot (Countermeasure)

- 1) If the crystal(X500) does oscillate, check Serial Flash(IC503) on MAIN board.
⇒ Check pin8(VCC), pin6(CLK), pin1(CS), pin2(DO), pin5(DI) of below waveform.
- 2) If pin8, 6, 1, 2, 5 doesn't come out, check damping resistor (R535,R536,R534) and pull up resistor (R564,R563) of IC503.
⇒ If damping resistor of IC503 is OK, then replace IC503. (it need to download program)
- 3) After change IC503, if It is still not below waveform, Check IC501(DSP IC).

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



< MAIN board bottom view >



< Signal waveform >

ONE POINT REPAIR GUIDE

NO BOOTING IN CD/USB FUNCTION

After you turn on power key and displayed message in the following order (HELLO ⇨ VOL XX ⇨ CD or USB) on VFD, it will not display other message on VFD, and it will not boot-up normally.

8-4. SDRAM (IC502)

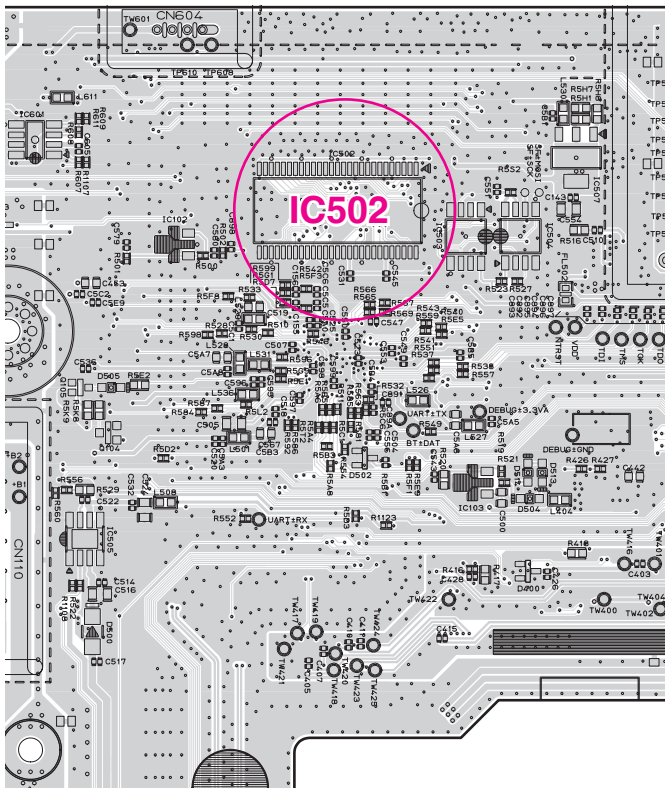
8-4-1. Solution

Please check and replace IC502 on MAIN board.

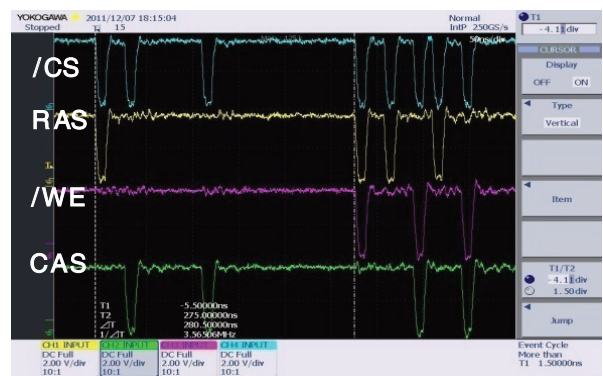
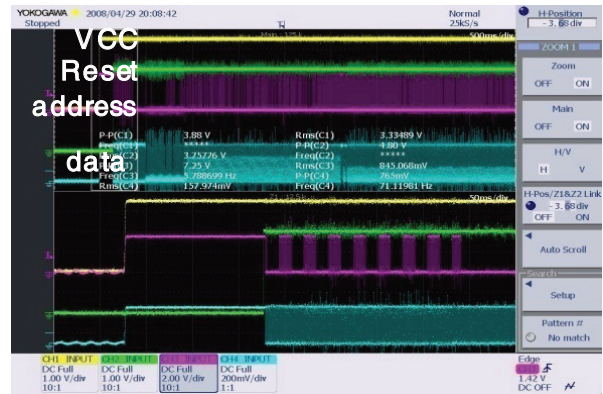
8-4-2. How to troubleshoot (Countermeasure)

- 1) Check below waveform & soldering status of SDRAM (IC502) on MAIN board.
 - ⇨ If pin17(#CAS), pin18(#RAS), pin19(#CS), pin38(CLK), pin29(address), pin2(DQ) doesn't come out, check damping resistor (R568, R570, R544, R547).
- 2) If resistor is OK, then replace IC502(SDRAM).
- 3) After change IC502, if It is still not below waveform, Check IC501 (DSP IC).

8-4-3. Service hint (Any picture / Remark)



< MAIN board bottom view >



< Signal waveform >

ONE POINT REPAIR GUIDE

NO BOOTING IN CD/USB FUNCTION

After you turn on power key and displayed message in the following order (HELLO ⇨ VOL XX ⇨ CD or USB) on VFD, it will not display other message on VFD, and it will not boot-up normally.

8-5. DSP (IC501)

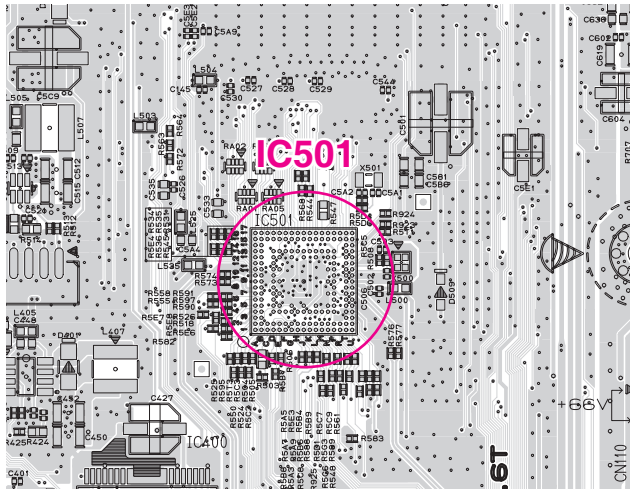
8-5-1. Solution

Please check and replace IC501 on MAIN board.

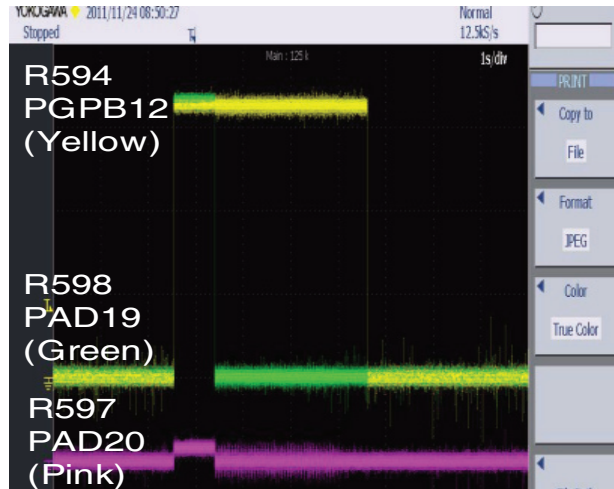
8-5-2. How to troubleshoot (Countermeasure)

- 1) After check them by Previous pages about NO Booting, if the set is still no booting, ⇨ Check soldering status of IC501.
- 2) If below bootstrap waveform doesn't come out, then replace IC501(DSP IC).

8-5-3. Service hint (Any picture / Remark)



< MAIN board top view >



< Bootstrap waveform >

ONE POINT REPAIR GUIDE

9. NO OPERATION OF MD

When no sound output in the CD function, you can not listen to music reading data from a CD disc if the servo motors in MD don't work. This step is for checking the spindle motor among them.

9-1. SPINDLE MOTOR

9-1-1. Solution

Replace IC401 or IC400 on MAIN board.

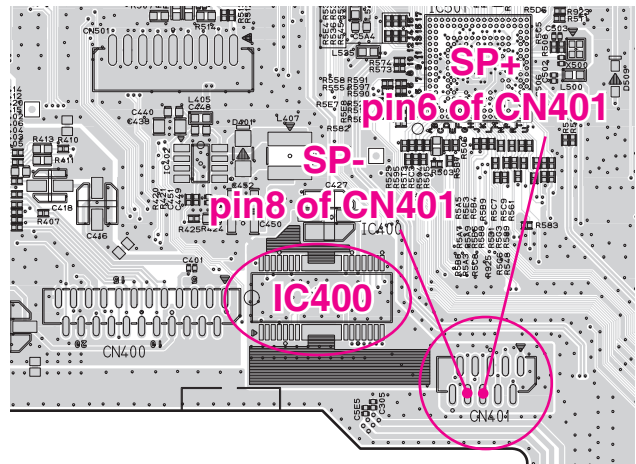
9-1-2. How to troubleshoot (Countermeasure)

- 1) Check the SPDO signal from pin16 of IC401.
⇒ If no signal, check 3.3 V (RF) and X400.
- 2) Check the SP- & SP+ from IC400 to CN401 for driving SPINDLE motor. It is about 3.6 Vp-p.
⇒ If no signal, check +1.8 V and DVCC +5 V for IC400.
- 3) Check if the FFC cable is solidly connected between CN401 and MD.
- 4) Check the MD.
⇒ If the spindle motor is short-circuit or has any trouble, it can not rotate CD discs.
Please check the function after changing another MD.

9-1-3. Service hint (Any picture / Remark)



< Waveform of SP- & SP+ for driving SPINDLE motor >



< MAIN board top view >

ONE POINT REPAIR GUIDE

NO OPERATION OF MD

When no sound output in the CD function, you can not listen to music reading data from a CD disc if the servo motors in MD don't work. This step is for checking the sled motor among them.

9-2. SLED MOTOR

9-2-1. Solution

Replace IC401 or IC400 on MAIN board.

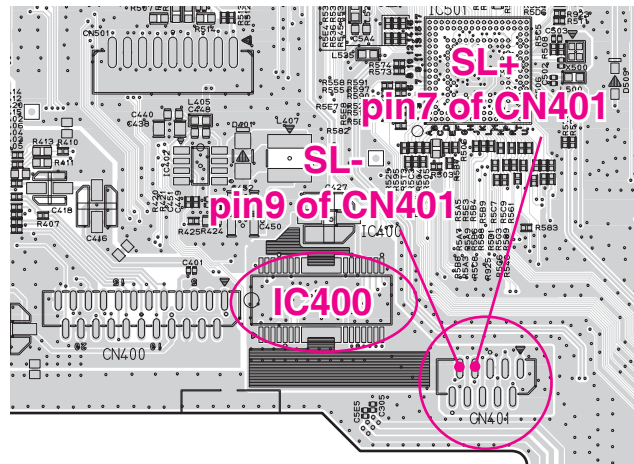
9-2-2. How to troubleshoot (Countermeasure)

- 1) Check the SLDO signal from pin23 of IC401.
⇒ If no signal, check 3.3 V (RF) and X400.
- 2) Check the SLED+ & SLED- from IC400 to CN401 for driving SPINDLE motor. It is about 2.9 Vp-p.
⇒ If no signal, check +1.8 V and +5 V for IC401.
- 3) Check if the FFC cable is solidly connected between CN401 and MD.
- 4) Check the MD.
⇒ If the sled motor is short-circuit or has any trouble, it can not move the pickup module.
Please check the function after changing another MD.

9-2-3. Service hint (Any picture / Remark)



< Waveform of SLED- & SLED+ for driving SLED motor >



< MAIN board top view >

ONE POINT REPAIR GUIDE

NO OPERATION OF MD

When no sound output in the CD function, you can not listen to music reading data from a CD disc if the servo motors in MD don't work. This step is for checking the tray open/close motor among them.

9-3. TRAY OPEN/ CLOSE MOTOR

9-3-1. Solution

Replace IC401 or IC400 on MAIN board.

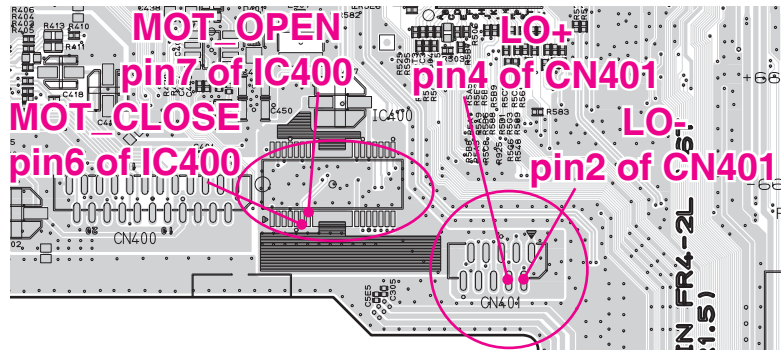
9-3-2. How to troubleshoot (Countermeasure)

- 1) Check MOT_OPEN & MOT_CLOSE signals from pinK4 & L4 of IC501 to IC400.
 - ⇒ If no signal, check +1.8 V & +5 V to IC400.
- 2) Check LOAD ± from IC400 to CN401 for driving the tray open/ close motor. It is about 3.85 Vp-p.
 - ⇒ If no signal, check +5 V to IC401. If it has any trouble, replace it with a new one.
- 3) Check if the FFC cable is solidly connected between CN401 and MD.
- 4) Check the MD.
 - ⇒ If the tray motor is short-circuit or has any trouble, it can not open or close the tray.
 - Please check the function after changing another MD.

9-3-3. Service hint (Any picture / Remark)



< Waveform
for driving TRAY open/ close motor >



< MAIN board top view >

ONE POINT REPAIR GUIDE

NO OPERATION OF MD

When no sound output in the CD function, you can not listen to music reading data from a CD disc if the pickup module in MD doesn't work. This step is for checking the laser tracking actuator.

9-4. LASER TRACKING ACTUATOR

9-4-1. Solution

Replace IC401 or IC400 on MAIN board.

9-4-2. How to troubleshoot (Countermeasure)

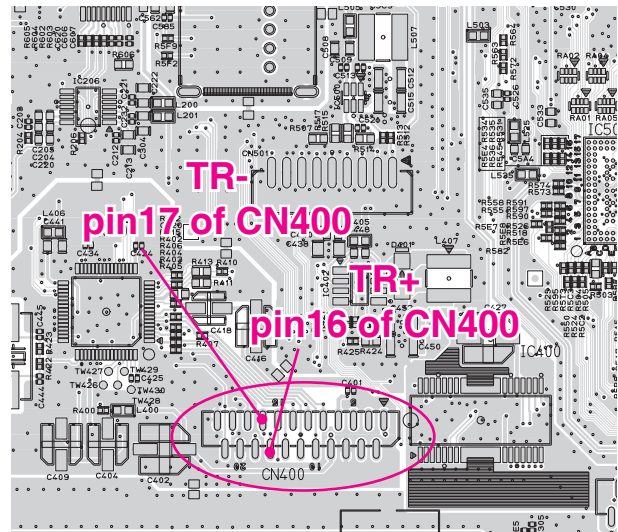
The tracking actuator makes the laser beam be positioned in the center of a track on CD disc.

- 1) Check the TRD signal from pin14 of IC401.
⇒ If no signal, check 3.3 V (RF) and X400.
- 2) Check TR- & TR+ from IC400 to CN400 for driving the tracking actuator.
⇒ If no signal, check +1.8 V and +5 V for IC400.
- 3) Check if the FFC cable is solidly connected between CN400 and MD.
- 4) Check the MD.
⇒ If the pickup module has any trouble, it can not move the laser beam on the left or right side.
Please check the function after changing another MD.

9-4-3. Service hint (Any picture / Remark)



< Waveform of T±
for driving TRACKING actuator >



< MAIN board top view >

ONE POINT REPAIR GUIDE

NO OPERATION OF MD

When no sound output in the CD function, you can not listen to music reading data from a CD disc if the pickup module in MD doesn't work. This step is for checking the laser focusing actuator.

9-5. LASER FOCUSING ACTUATOR

9-5-1. Solution

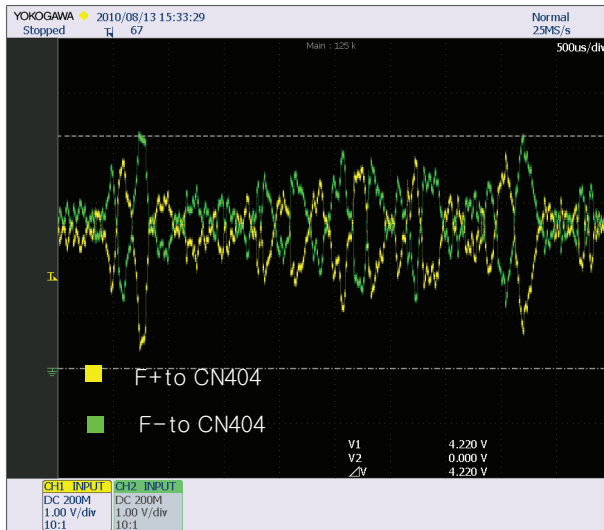
Replace IC401 or IC400 on MAIN board.

9-5-2. How to troubleshoot (Countermeasure)

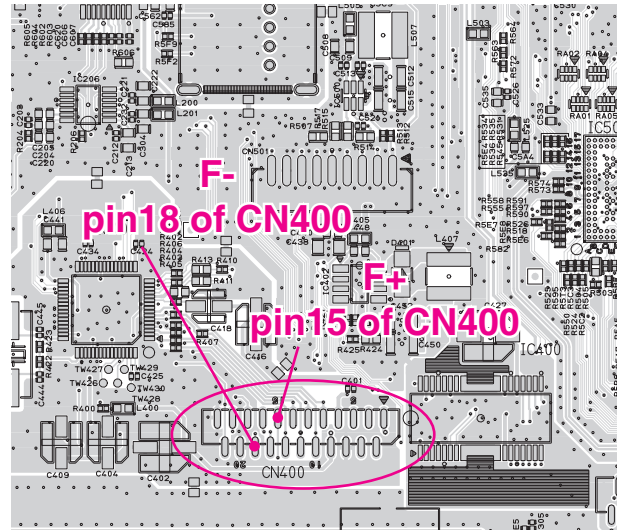
The focusing actuator makes the laser beam keep a regular interval with the surface of a CD disc.

- 1) Check the FDO signal from pin13 of IC401.
⇒ If no signal, check 3.3 V (RF) and X400.
- 2) Check F- & F+ from IC400 to CN400 for driving the focusing actuator.
⇒ If no signal, check +1.8 V and +5 V for IC400.
- 3) Check if the FFC cable is solidly connected between CN400 and MD.
- 4) Check the MD.
⇒ If the pickup module has any trouble, it can not move the laser beam on the top or bottom side.
Please check the function after changing another MD.

9-5-3. Service hint (Any picture / Remark)



< Waveform of F_{\pm}
for driving FOCUSING actuator >



< MAIN board top view >

ONE POINT REPAIR GUIDE

10. NO SOUND

There is no sound output in the USB function, repair the set according to the following guide.

10-1. USB FUNCTION

10-1-1. Solution

Replace IC501 on MAIN board, ICA201 on TOP board.

10-1-2. How to troubleshoot (Countermeasure)

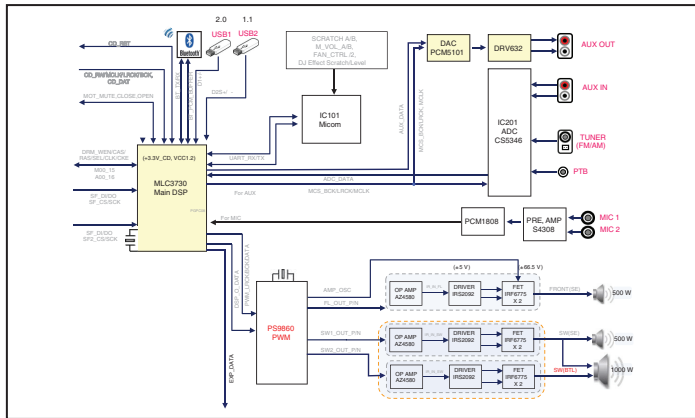
1) Check +5 VU to USB board.

⇒ if +5.6 VA to pin1 of ICA201(LDO) doesn't come out, check pin8 & 9 of CN106.

⇒ if +5.6 VA is normal & +5 VU of ICA201 pin2 doesn't come out, then replace ICA201.

2) Check "Digital audio AMP block".

10-1-3. Service hint (Any picture / Remark)



< USB function signal flow >



USB D+/D- (CN502 pin5, 6 & 8, 9)
< Waveform of USB D± signal >

ONE POINT REPAIR GUIDE

NO SOUND

There is no sound output in the AUX function, repair the set according to the following guide.

10-2. AUX FUNCTION

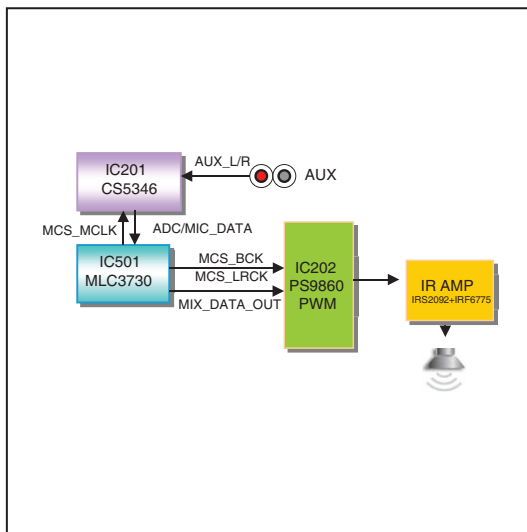
10-2-1. Solution

Replace IC201 on MAIN board.

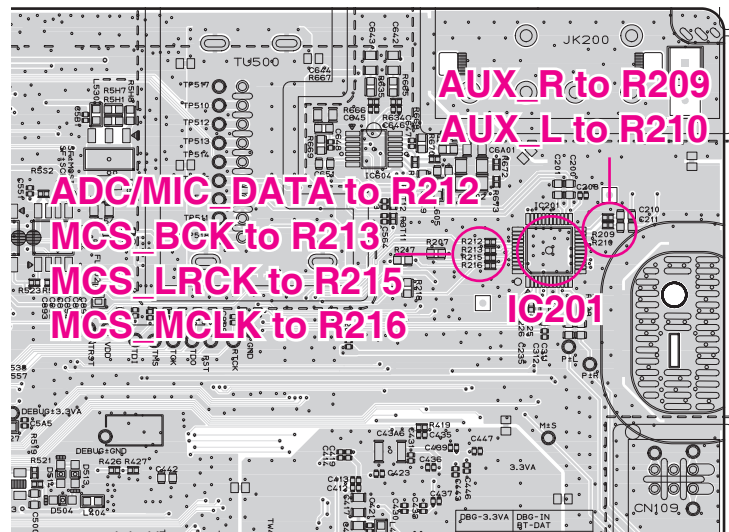
10-2-2. How to troubleshoot (Countermeasure)

- 1) Check AUX_L/R signals to IC201 (pin23, 24).
- 2) Check if MCS_BCK, MCS_LRCK & MCS_MCLK are entered from IC501 to IC201.
- 3) Check if ADC/MIC_DATA is entered from IC201 to IC501.
 - ⇒ If no signal, check +5 V & +3.3 V(ADC) for IC201. If is NG, replace it a new one.
- 4) Check the following I2S signal flow from IC501 to IC202.
 - ⇒ If there is any trouble, check the power for each IC. The power is normal but, if the signal waveform to the IC is distorted or no signal, replace it with a new one.
- 5) Check if the digital audio AMP block is okay.
 - ⇒ If AMP is damaged, replace it with a new one.

10-2-3. Service hint (Any picture / Remark)



< AUX function signal flow >



< MAIN board bottom view >

ONE POINT REPAIR GUIDE

NO SOUND

There is no sound output in the PORT. IN function, repair the set according to the following guide.

10-3. PORT. IN FUNCTION

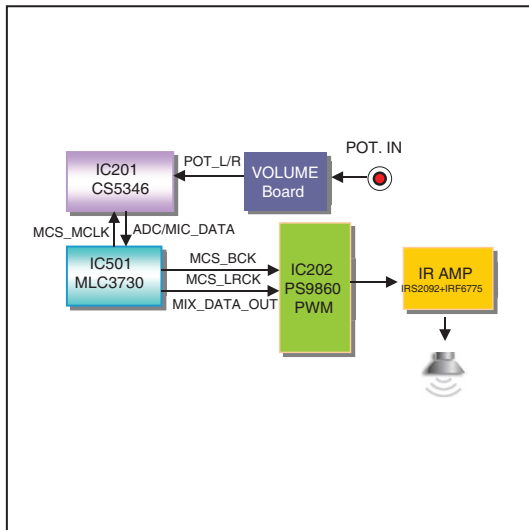
10-3-1. Solution

Replace IC201 on MAIN board.

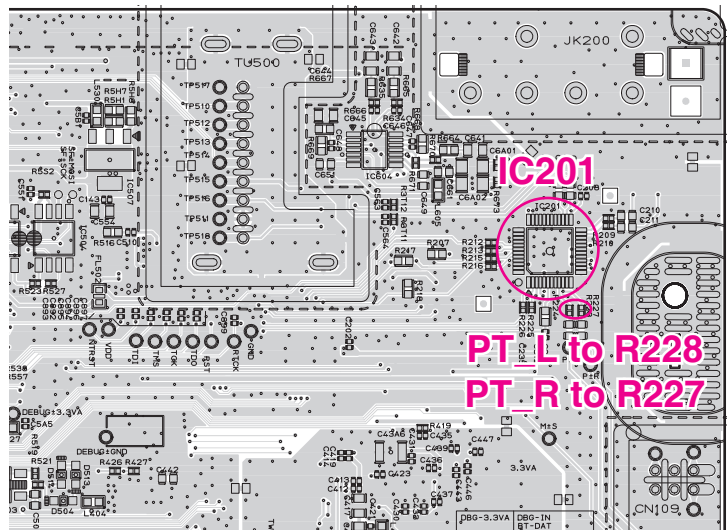
10-3-2. How to troubleshoot (Countermeasure)

- 1) Check PT_L/R signal from FRONT board to MAIN board.
- 2) Check if PT_LR is entered pin1 & 3 of CN201 ⇒ pin1 & 3 of CNA304.
- 3) Check PT_L/R signals to IC201(pin9, 10).
- 4) Check if ADC_BCK, ADC_LRCK & DAC_MCLK are entered from IC501 to IC201.
- 5) Check if ADC_DATA is entered from IC201 to IC501.
⇒ If no signal, check +5 V & +3.3 V(ADC) for IC201. If is NG, replace it a new one.
- 6) Check the following I2S signal flow from IC501 to IC202.
⇒ If there is any trouble, check the power for each IC. The power is normal but, if the signal waveform to the IC is distorted or no signal, replace it with a new one.
- 7) Check if the digital audio AMP block is okay. Refer to “Digital Audio AMP” guide.
⇒ If AMP is damaged, replace it with a new one.

10-3-3. Service hint (Any picture / Remark)



< PORT. IN function signal flow >



< MAIN board bottom view >

ONE POINT REPAIR GUIDE

NO SOUND

There is no sound output in the TUNER function, repair the set according to the following guide.

10-4. TUNER FUNCTION

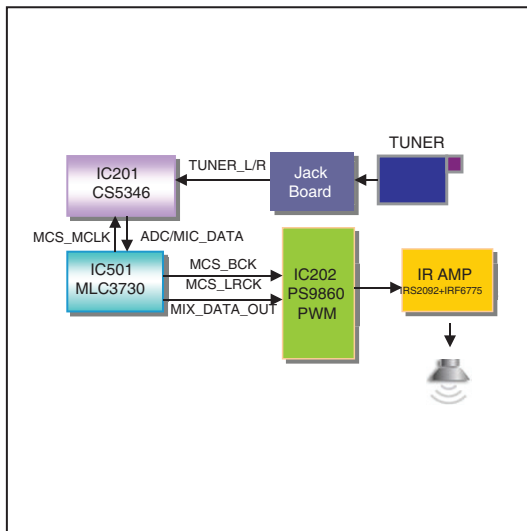
10-4-1. Solution

Replace IC201, TU500 on MAIN board.

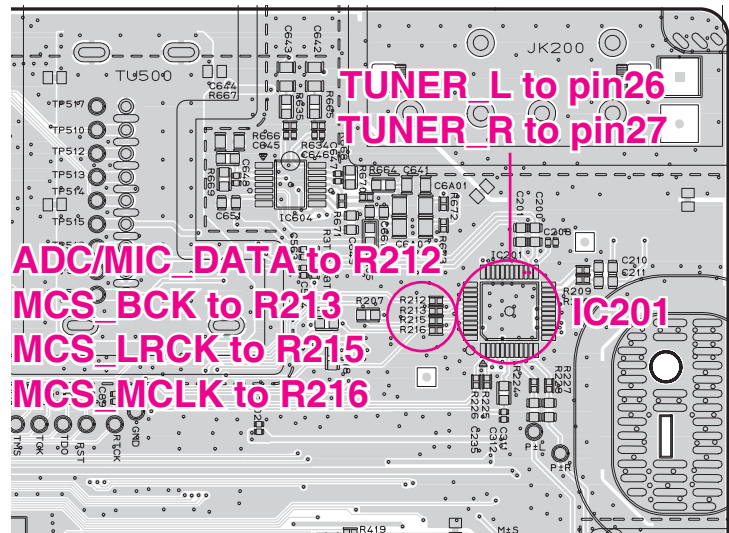
10-4-2. How to troubleshoot (Countermeasure)

- 1) Check if TUNER_L/R is entered from pin1 & 3 of TU500 to IC201(pin26, 27).
 - ⇒ If no signals, Check +3.3 V for Tuner power.
 - ⇒ Check if the Tuner control signals (CLK, DAT, CE, RST, GPO2) are entered from IC501 to TU500.
 - If it doesn't work, replace TUNER with a new one.
- 2) Check if ADC_BCK, ADC_LRCK & DAC_MCLK are entered from IC501 to IC201.
- 3) Check if ADC_DATA is entered from IC201 to IC501.
 - ⇒ If no signal, check +5 V & +3.3 V (ADC) for IC201. If is NG, replace it a new one.
- 4) Check the following I2S audio signal flow from IC501 to IC202.
 - ⇒ If there is any trouble, check the power for each IC. The power is normal but, if the signal waveform to the IC is distorted or no signal, replace it with a new one.
- 5) Check if the digital audio AMP block is okay. Refer to "Digital Audio AMP" guide.
 - ⇒ If AMP is damaged, replace it with a new one.

10-4-3. Service hint (Any picture / Remark)



< TUNER function signal flow >



< MAIN board bottom view >

ONE POINT REPAIR GUIDE

NO SOUND

There is no sound output in the MIC IN function, repair the set according to the following guide.

10-5. MIC IN FUNCTION

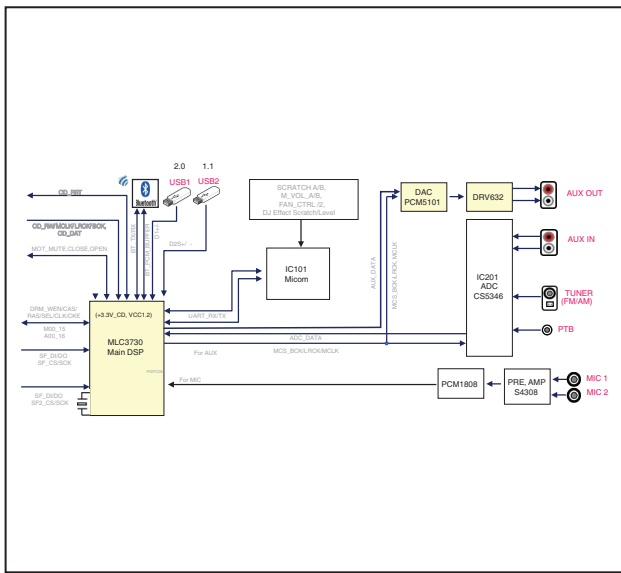
10-5-1. Solution

Replace ICA301 on FRONT board, IC206 on MAIN board.

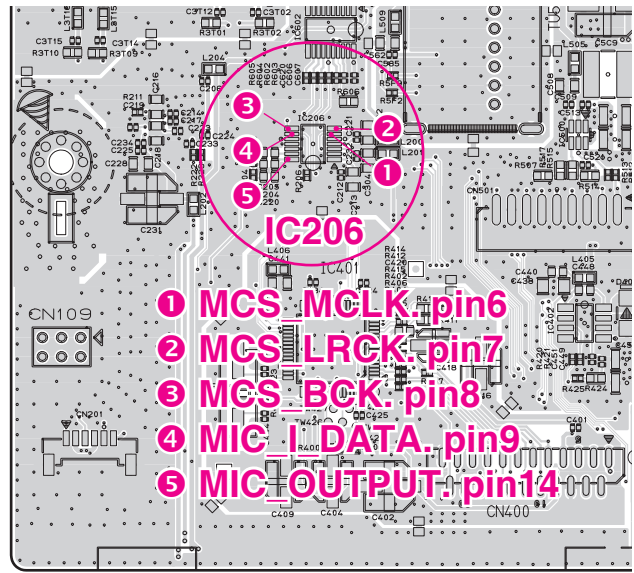
10-5-2. How to troubleshoot (Countermeasure)

- 1) Check MIC_SIG signal to pin5 of CN201.
 - ⇒ If no signal, check the signal to pin5 of CN304 on the FRONT board.
 - Check if the signal is entered from pin5 of CN201 to MAIN board.
- 2) Check if MIC_SIG is entered from pin5 of CN201 to pin3, 12 to ICA301 (MIC AMP).
 - ⇒ If no signal output, check +3.3V for ICA301, replace ICA301 with a new one if it has a problem.
- 3) Check if MCS_BCK, MCS_MLCK & MCS_LRCK is entered from IC501 to IC206.
 - Check if MIC_DATA_IN is entered from pin9 of IC206 to pinT1 of IC501.
 - ⇒ If no signal, check +5 V & +3.3 V for IC206. If it is abnormal, change replace it a new one.
- 4) Check the following I2S signal flow from IC206 to IC501.
 - ⇒ If there is any trouble, check the power for each IC. If the signals are abnormal, replace it a new one.
- 5) Check if the digital audio AMP block is okay. Refer to “Digital Audio AMP” guide.
 - ⇒ If AMP is damaged, replace it with a new one.

10-5-3. Service hint (Any picture / Remark)



< MIC IN function signal flow >



< MAIN board top view >

ONE POINT REPAIR GUIDE

NO SOUND

There is no sound output in the Bluetooth function, repair the set according to the following guide.

10-6. BLUETOOTH FUNCTION

10-6-1. Solution

Replace IC501 on the MAIN board or B/T module on the Front Panel.

10-6-2. How to troubleshoot (Countermeasure)

1) Check BT_RX, BT_TX signal to pin4, 6 of CN504.

⇒ If no signal, check the signal to pin4, 6 and pin10(+3.3 V) of on the Bluetooth module and cable connection state.

⇒ If there are no signal out from module, replace new module.

2) Check if BT_RX/TX is entered from pin4, 6 of CN504 to pin169, 170 to IC501 (DSP).

3) Check if MIC_BCK, MIC_MLCK & MIC_O_DATA is entered from IC501 to IC600.

⇒ If no signal, check VCC12(+1.2 V) for IC501. If it is abnormal, change replace it a new one.

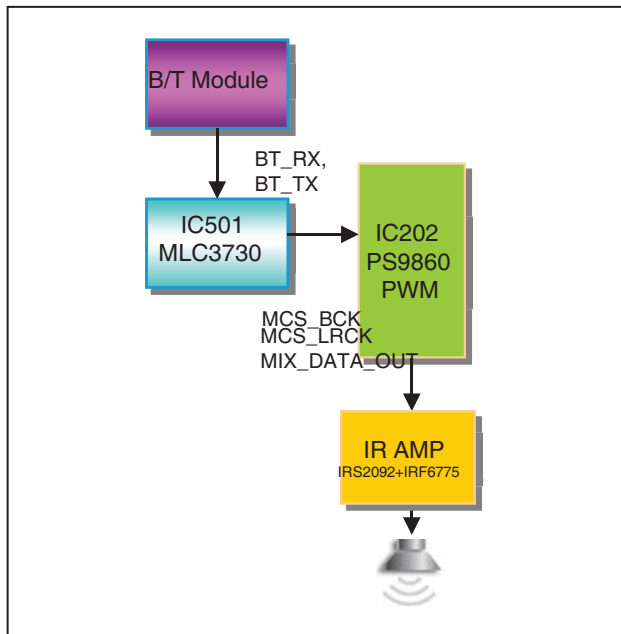
4) Check the following I2S signal flow from IC501 to IC600.

⇒ If there is any trouble, check the power for each IC. If the signals are abnormal, replace it a new one.

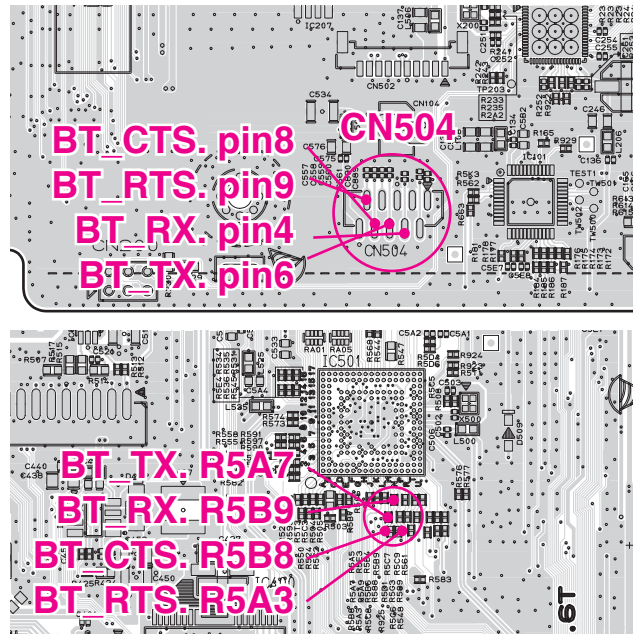
5) Check if the digital audio AMP block is okay. Refer to "Digital Audio AMP" guide.

⇒ If AMP is damaged, replace it with a new one.

10-6-3. Service hint (Any picture / Remark)



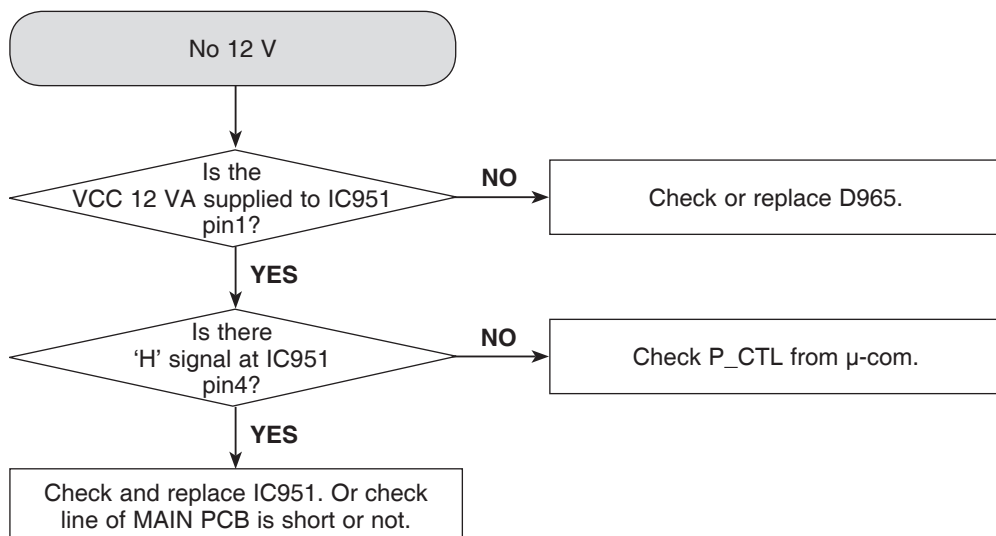
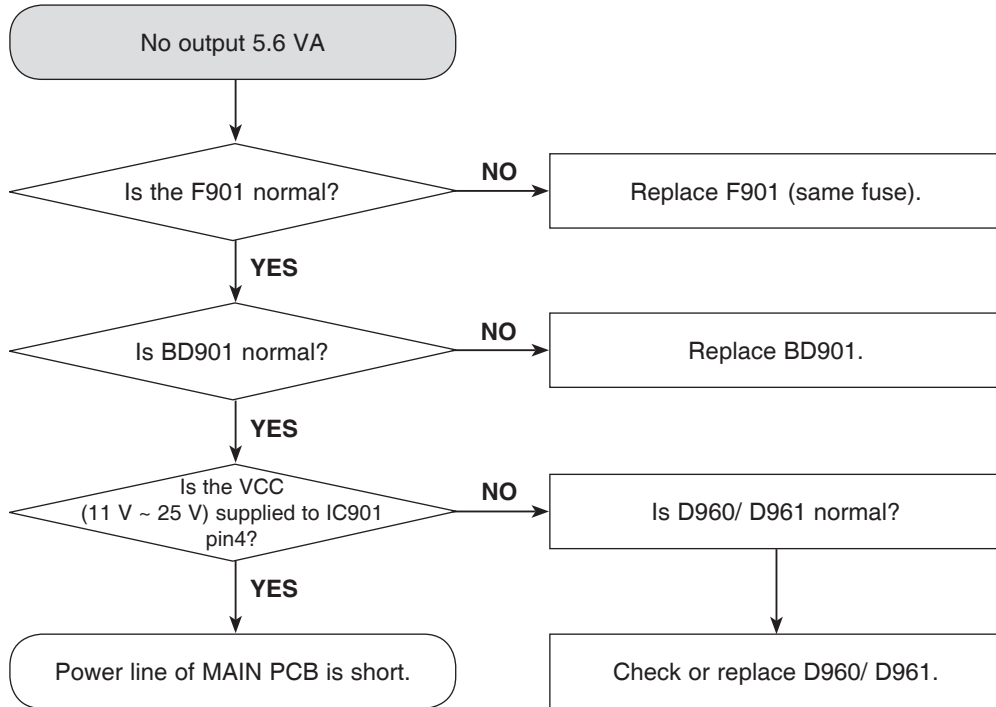
< Bluetooth function signal flow >



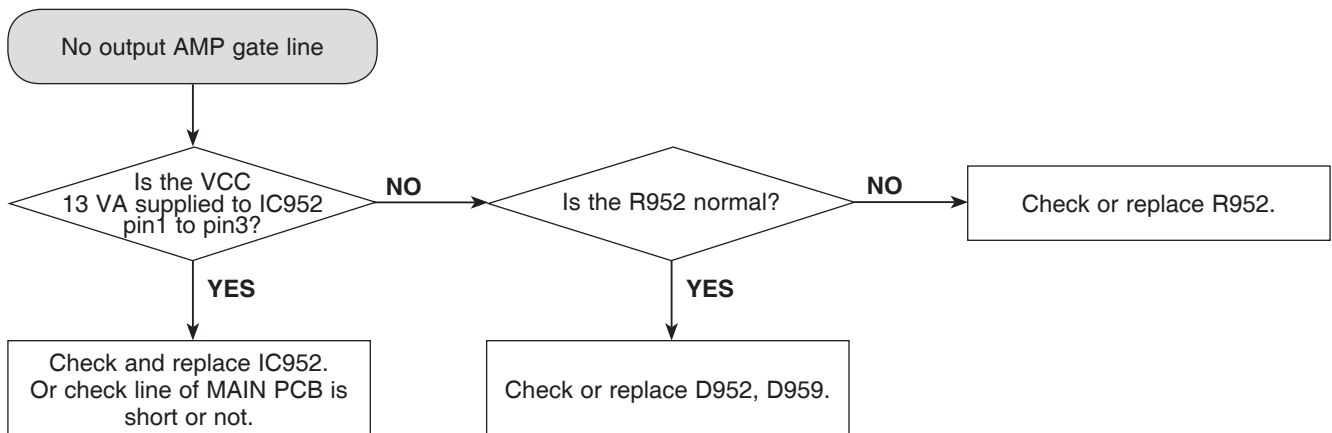
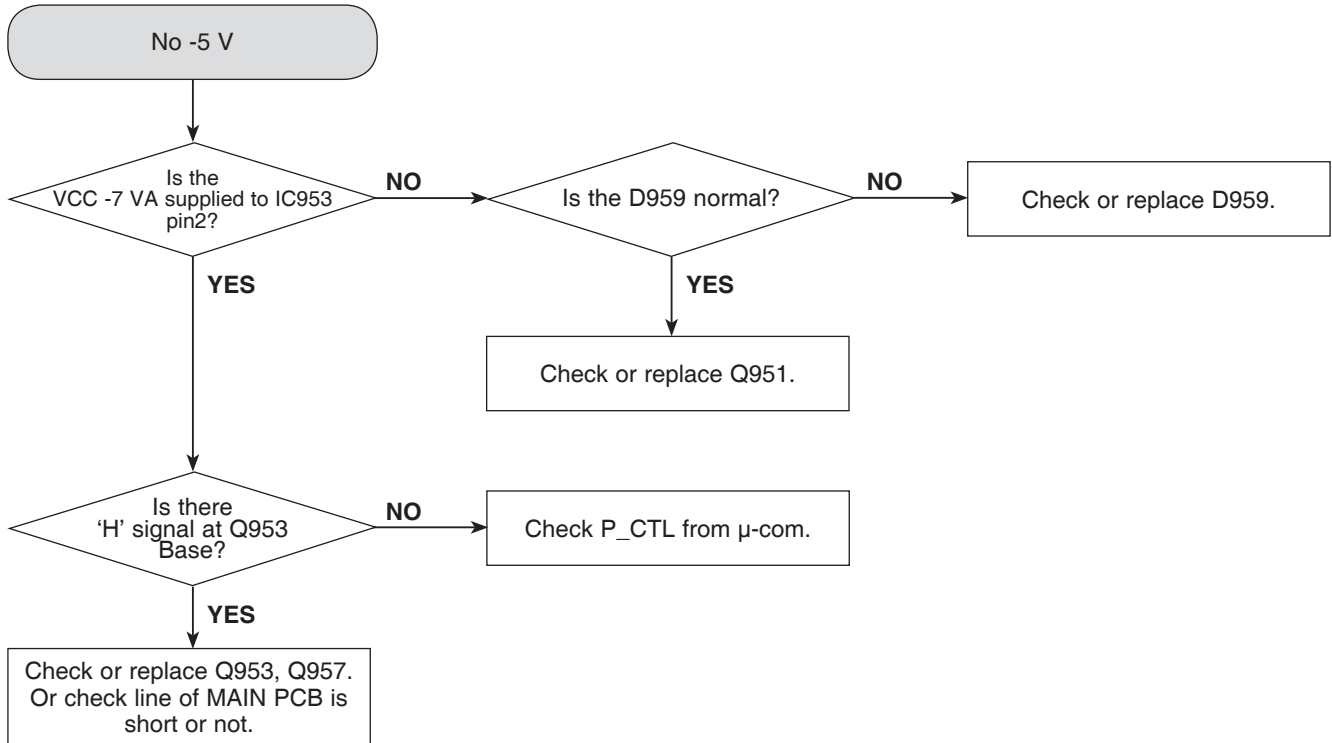
< MAIN board top view >

ELECTRICAL TROUBLESHOOTING GUIDE

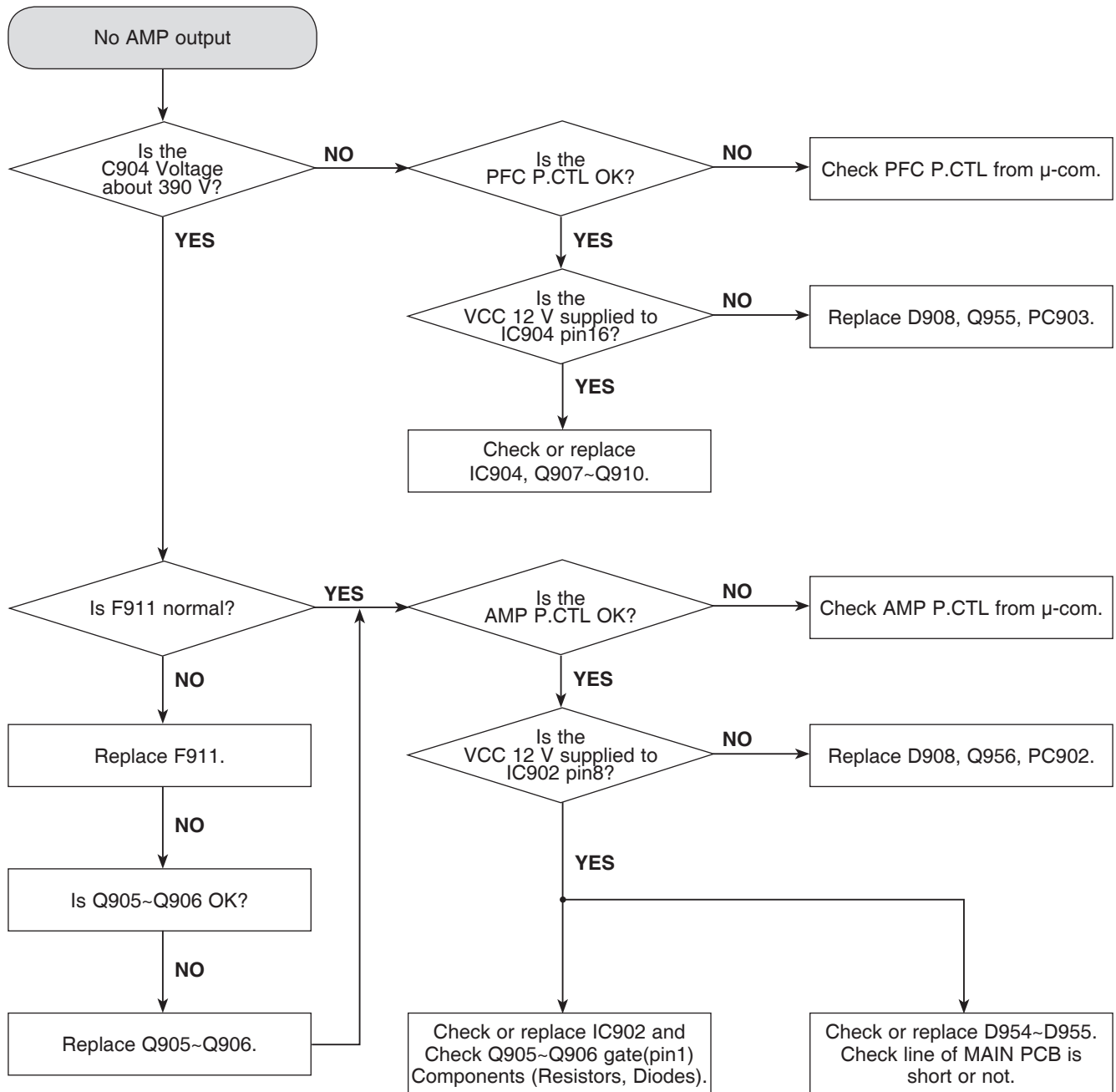
1. POWER SUPPLY ON SMPS BOARD



ELECTRICAL TROUBLESHOOTING GUIDE

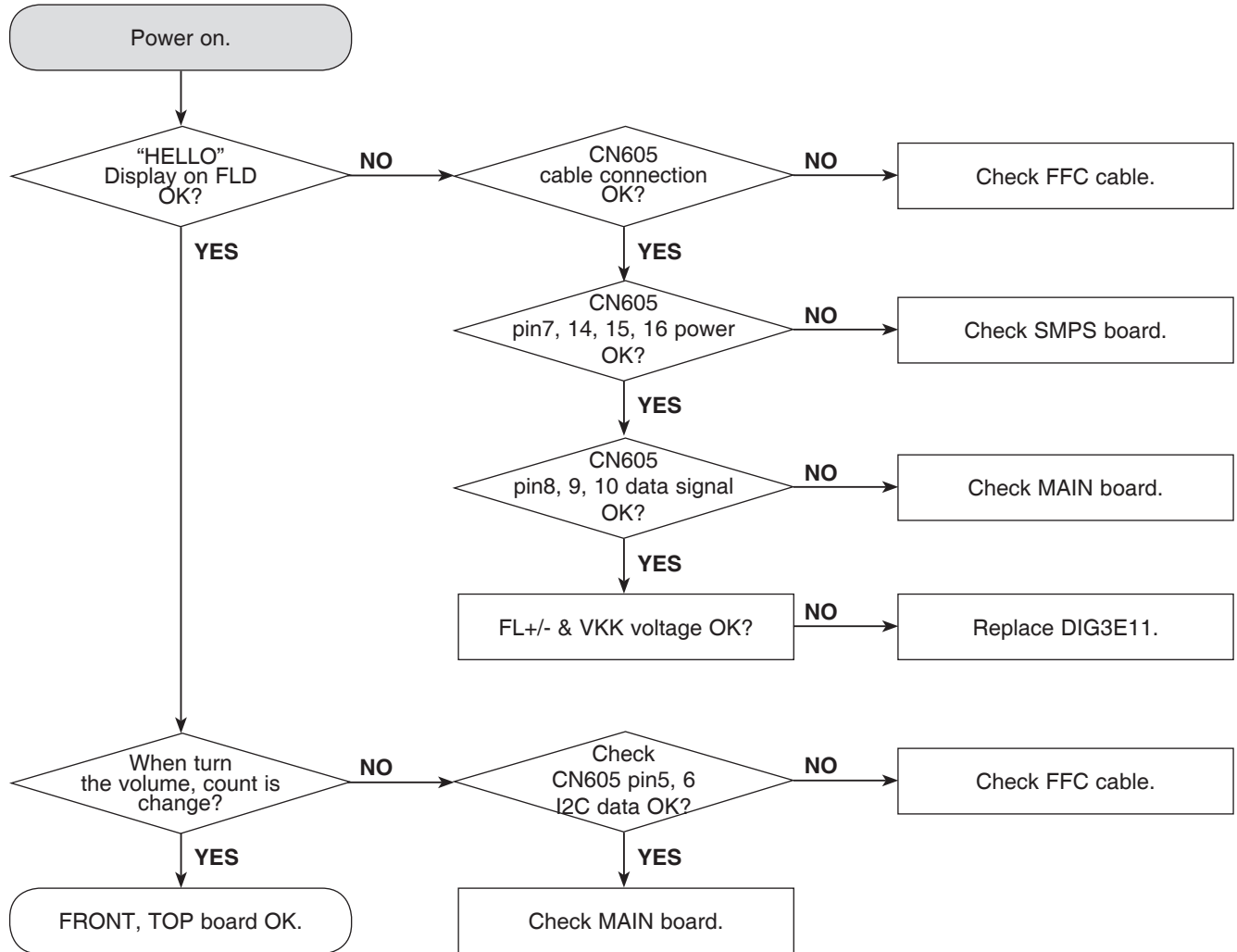


ELECTRICAL TROUBLESHOOTING GUIDE



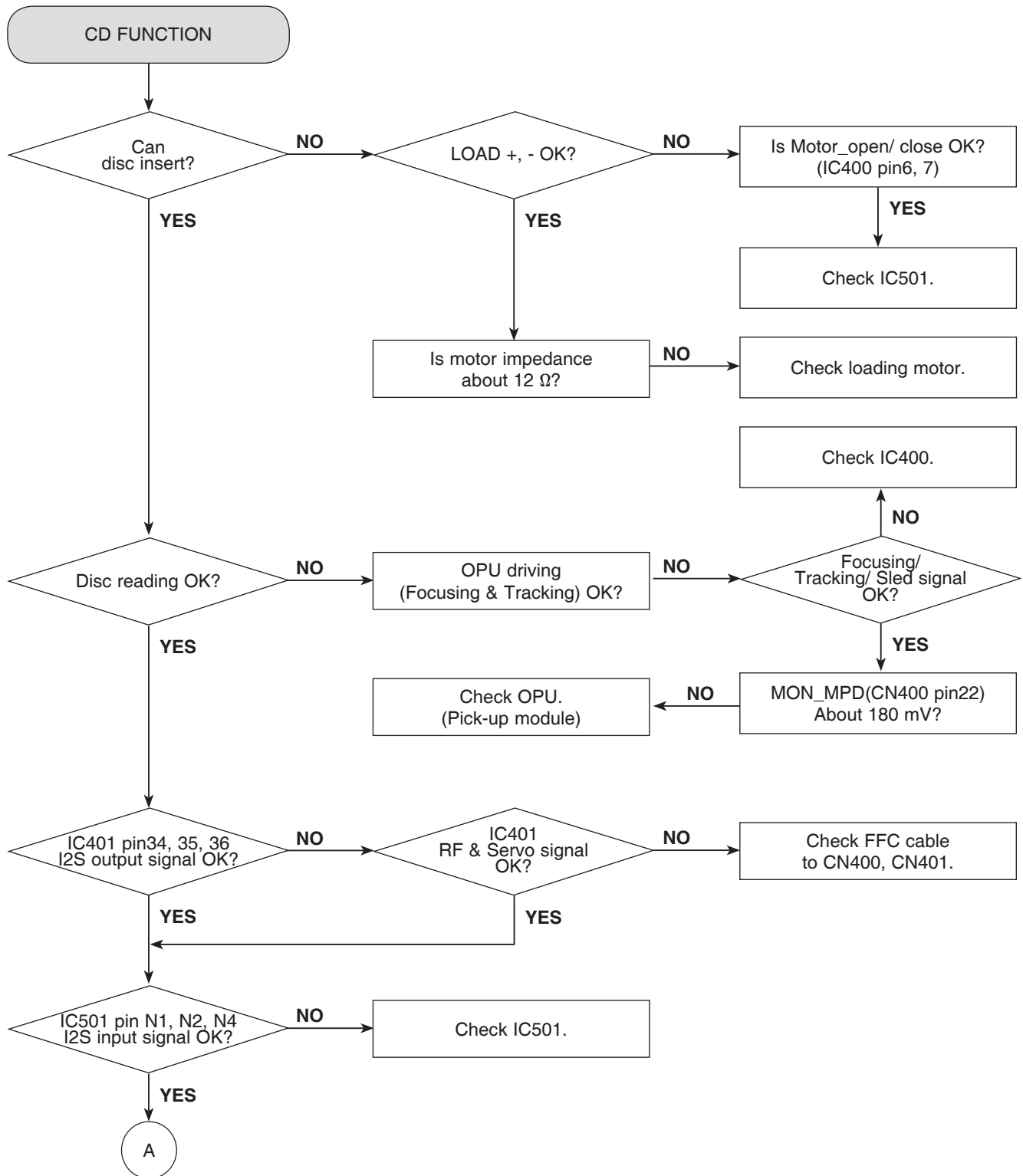
ELECTRICAL TROUBLESHOOTING GUIDE

2. SYSTEM PART

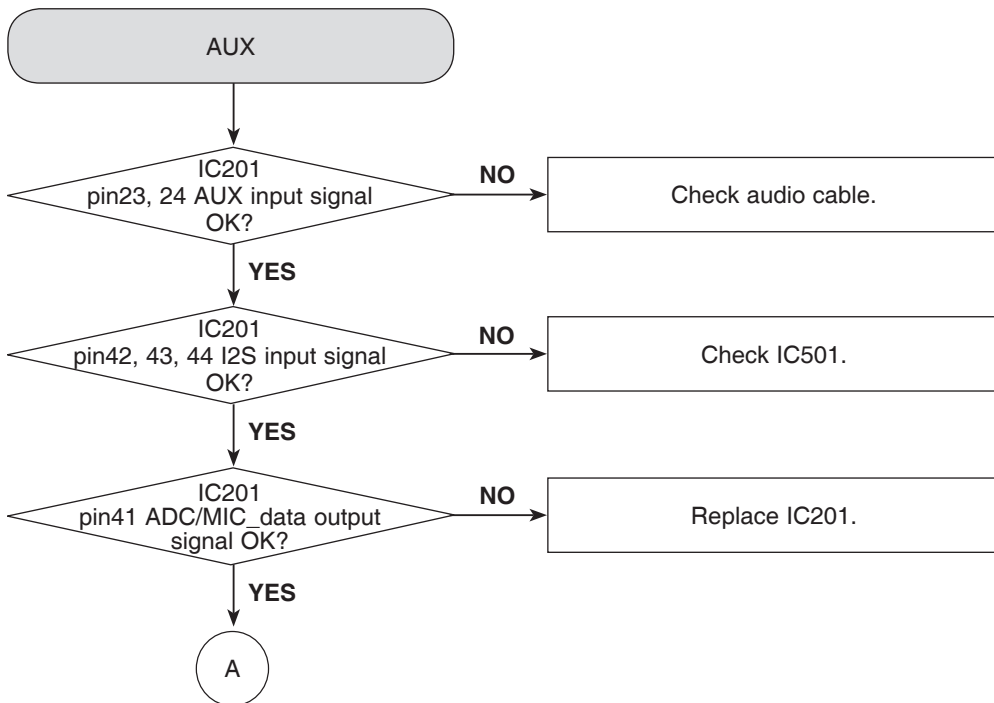
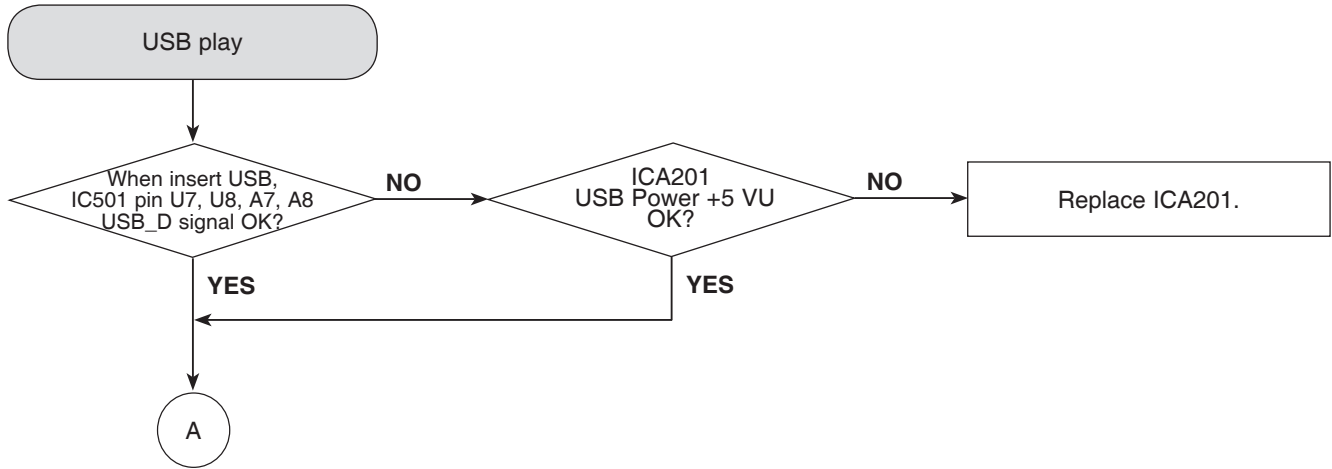


ELECTRICAL TROUBLESHOOTING GUIDE

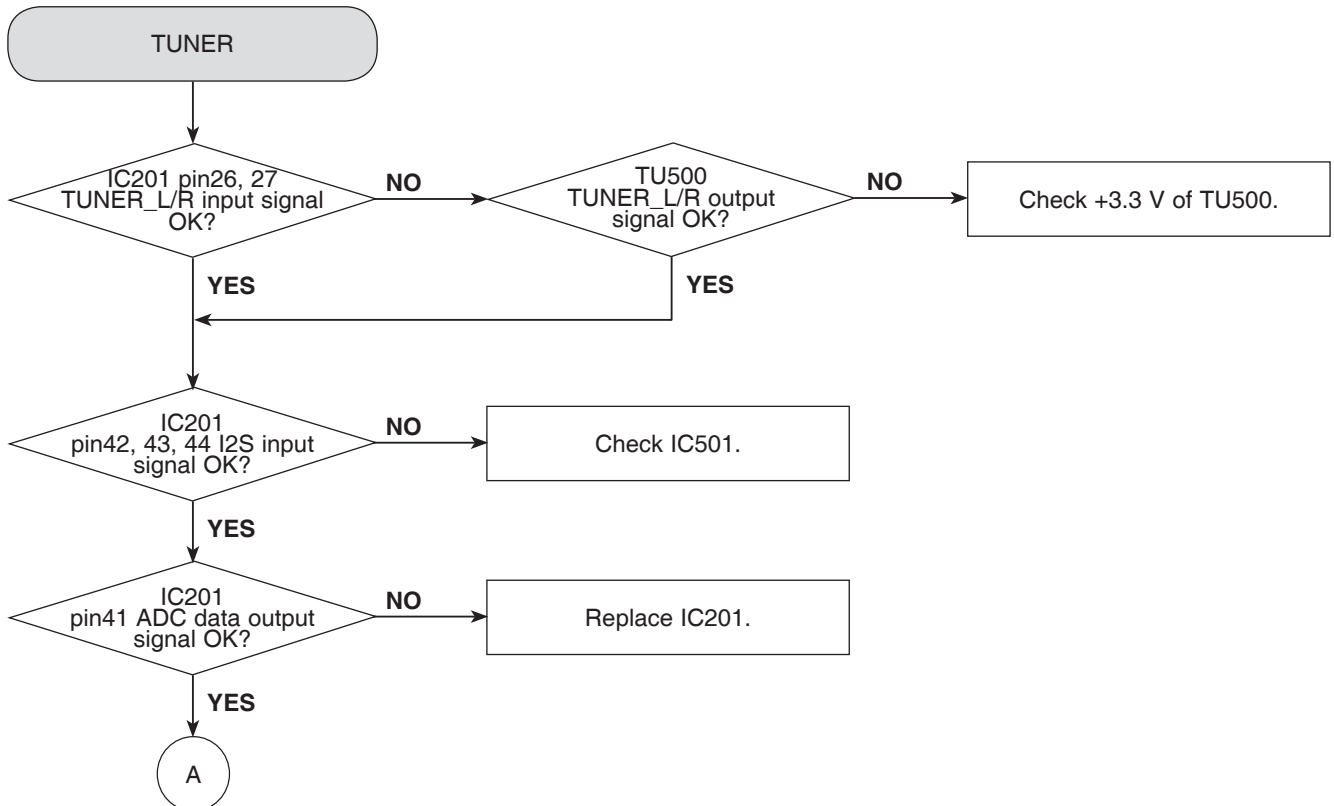
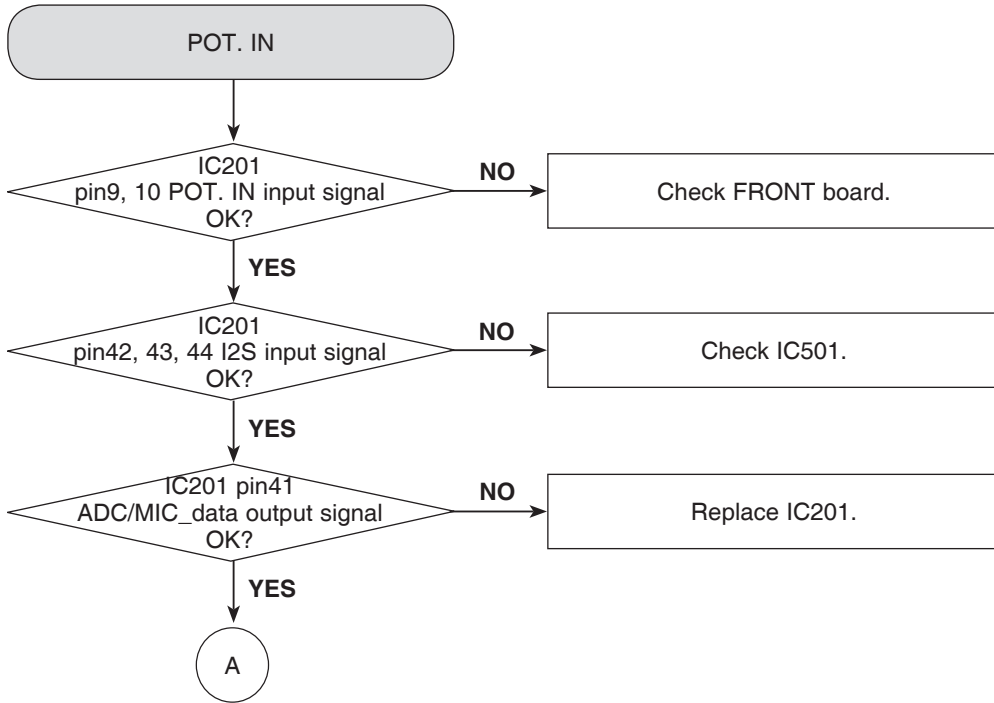
3. NO AUDIO CHECK



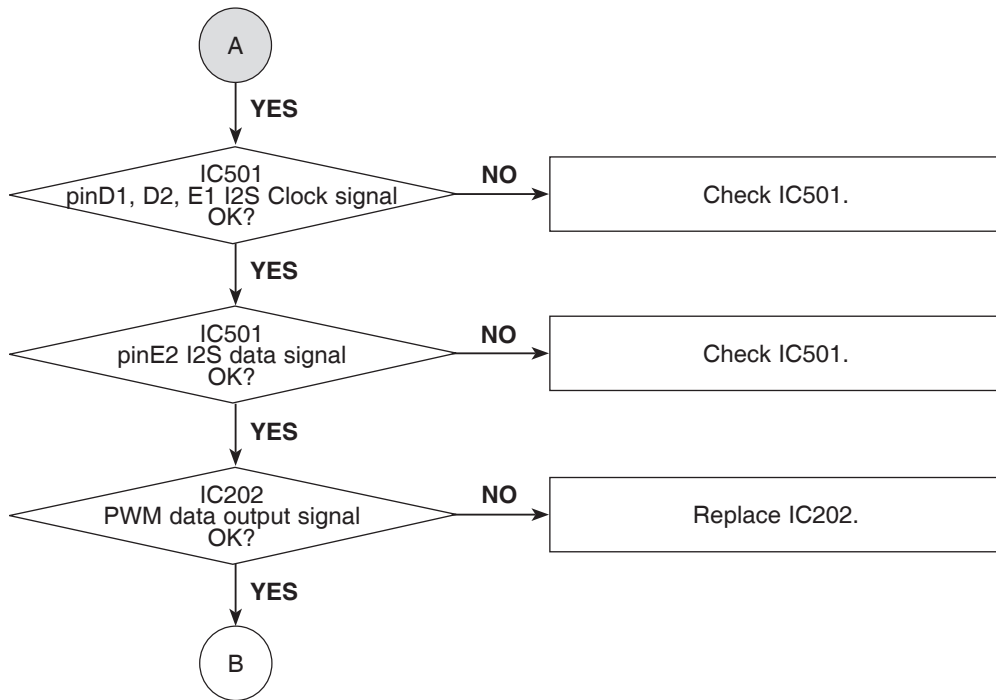
ELECTRICAL TROUBLESHOOTING GUIDE



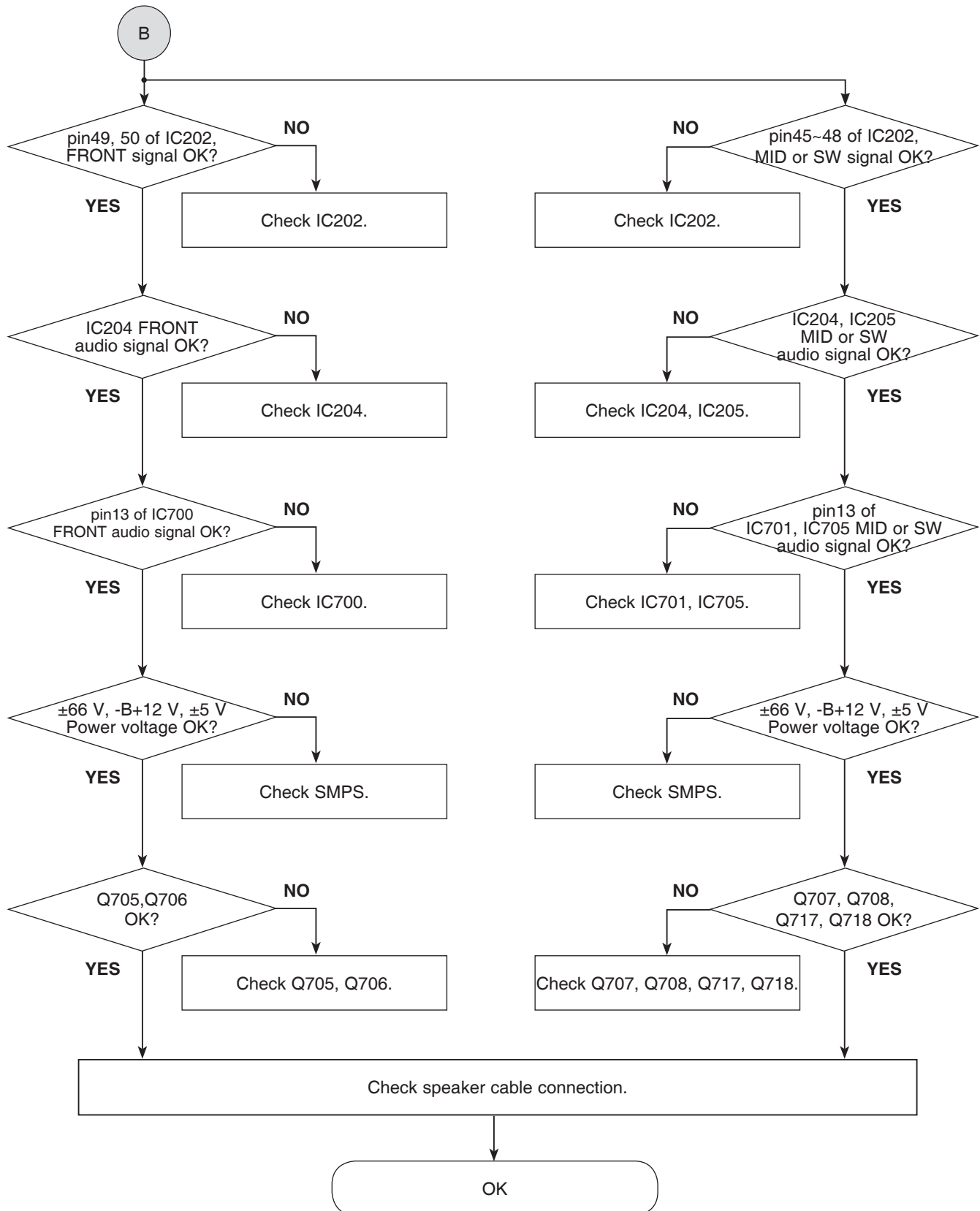
ELECTRICAL TROUBLESHOOTING GUIDE



ELECTRICAL TROUBLESHOOTING GUIDE

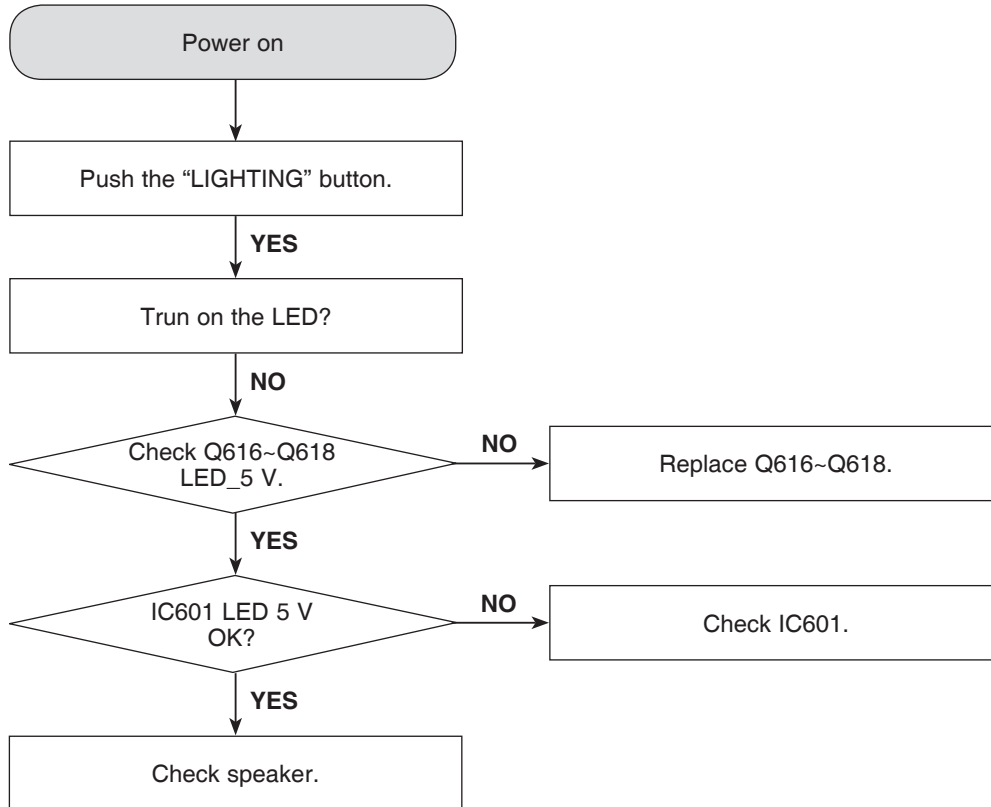


ELECTRICAL TROUBLESHOOTING GUIDE



ELECTRICAL TROUBLESHOOTING GUIDE

4. NO LIGHTING (SPEAKER LED)



WAVEFORMS OF MAJOR CHECK POINT

1. DSP (IC501)

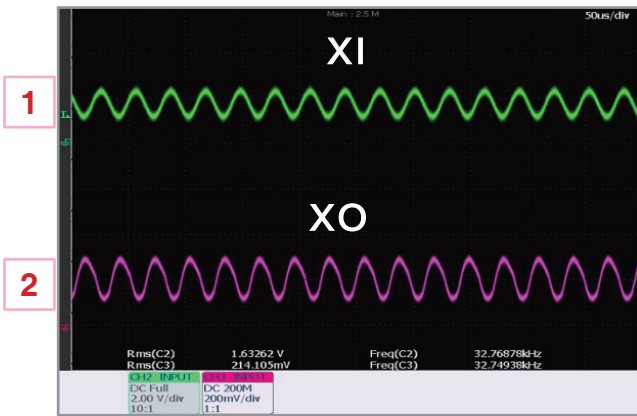


Fig 1-1. Crystal of RTC 32.768 kHz
(Both ends of R5D6) X501

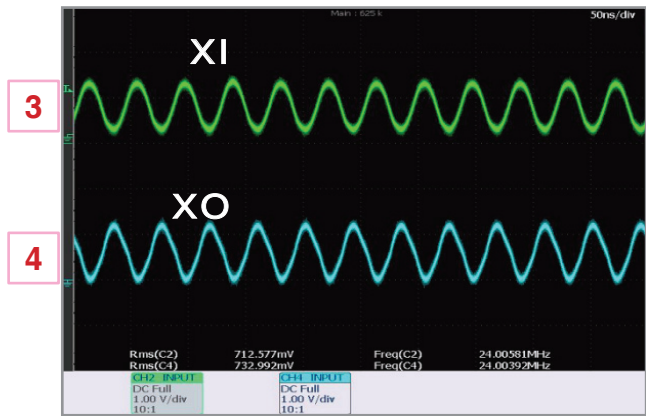
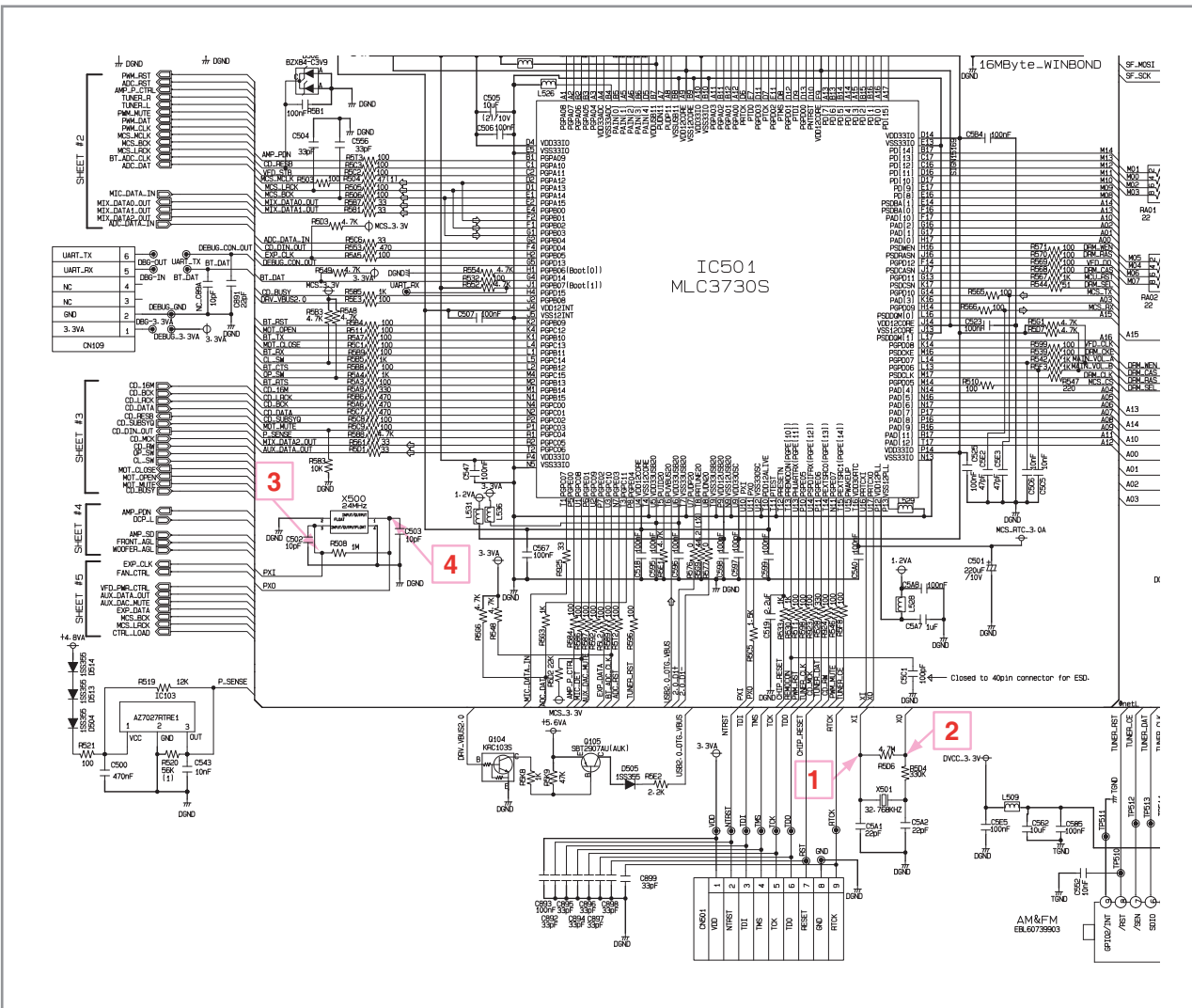


Fig 1-2. Crystal of system 24 MHz
(Main DSP : R508, C503) X500



2. PWM (IC202)

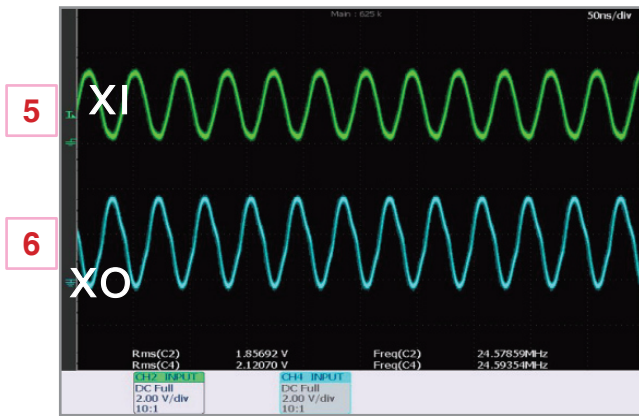


Fig 2-1. Crystal 24.576 MHz
(IC202 pin4, 5) X200

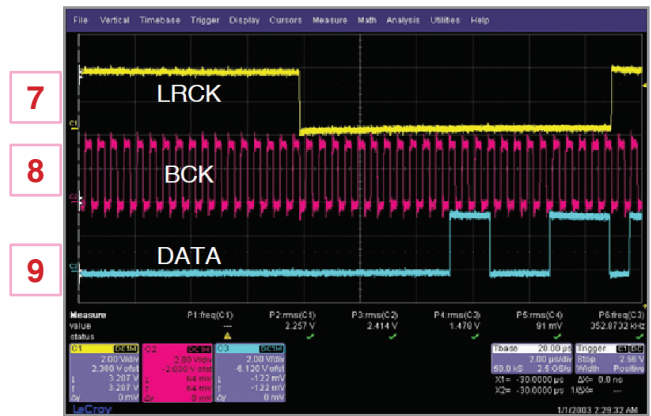
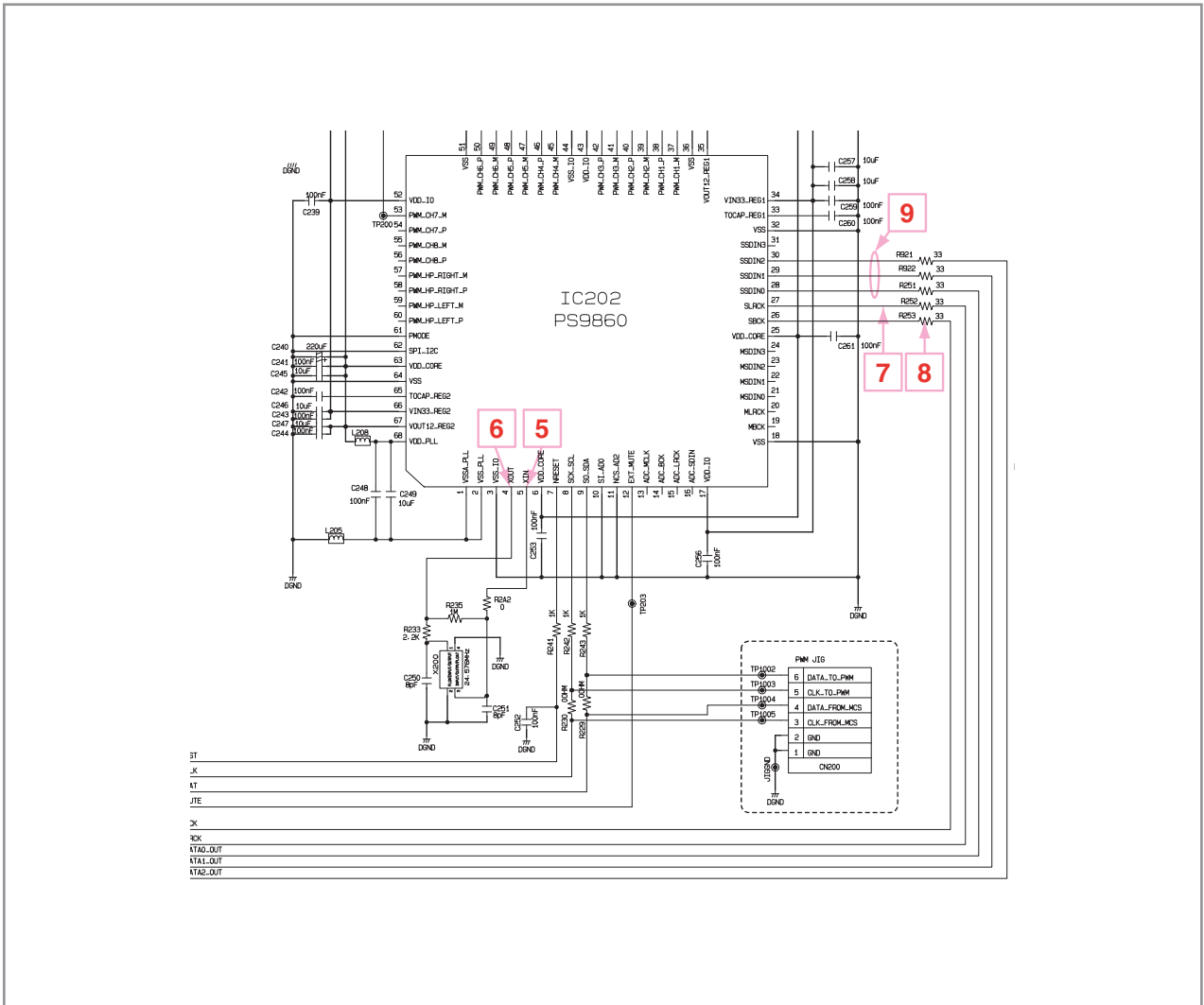


Fig 2-2. DSP to PWM I2S
IC202 pin26~30



3. SERVO (IC401)



Fig 3-1. Crystal 16.9344 MHz (X400)

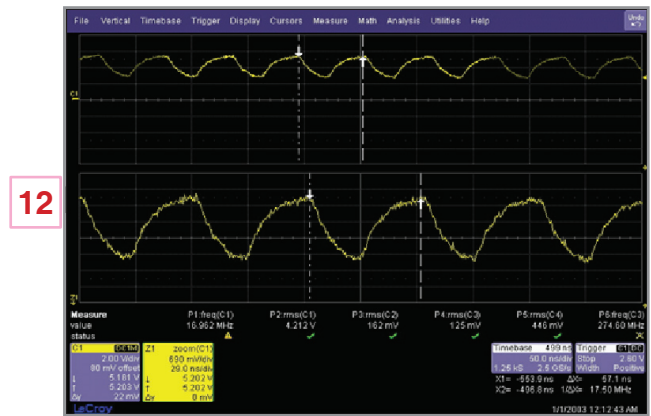
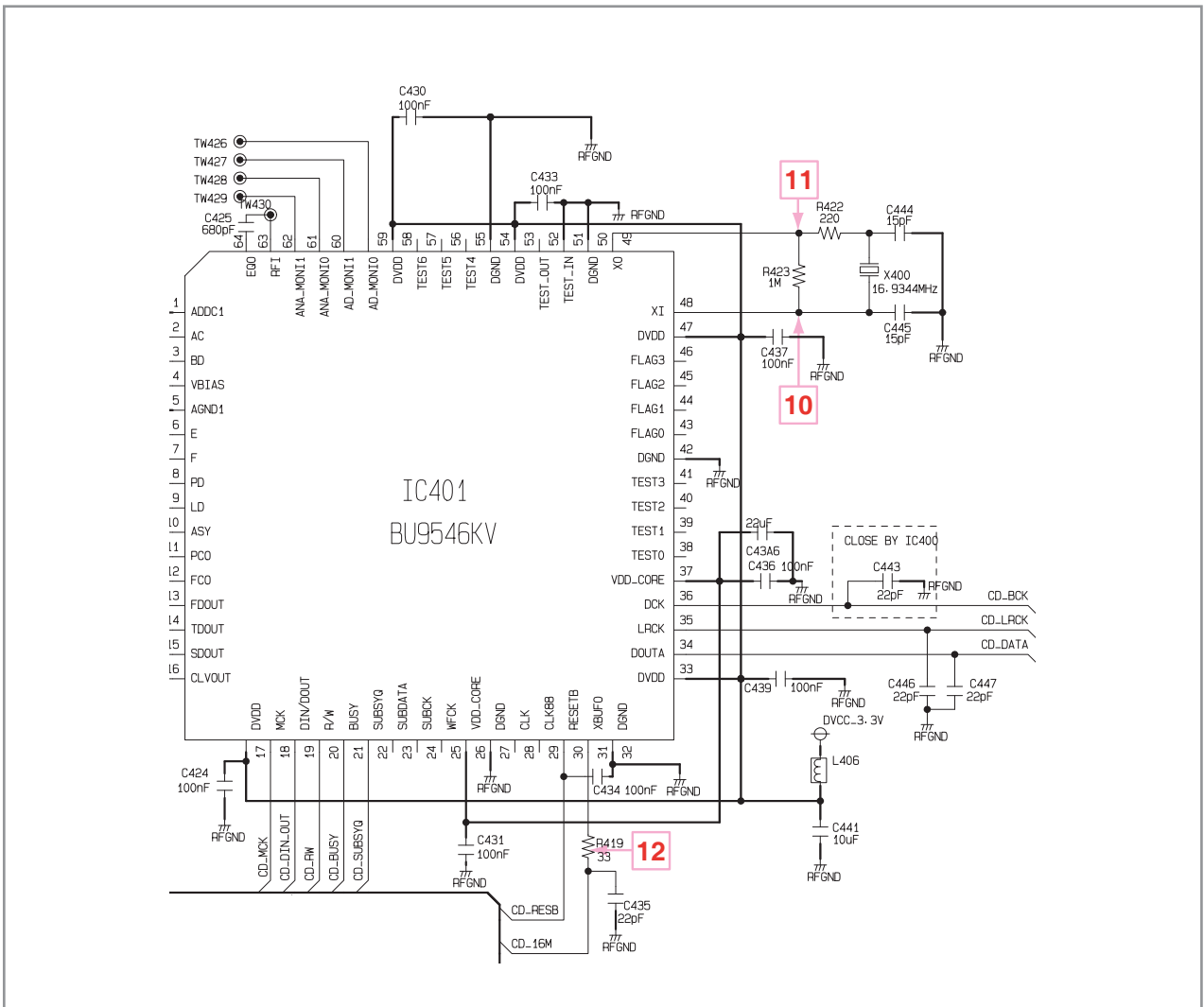


Fig 3-2. CD-16M (IC401 pin31)



4. MOTOR DRIVER (IC400)



Fig 4-1. LO- & LO+ / MOT_OPEN & MOT_CLOSE for Driving TRAY Motor (IC400 pin6, 7, 9, 10)



Fig 4-2. SL- & SL+ for Driving SPINDLE Motor (IC400 pin11, 12)

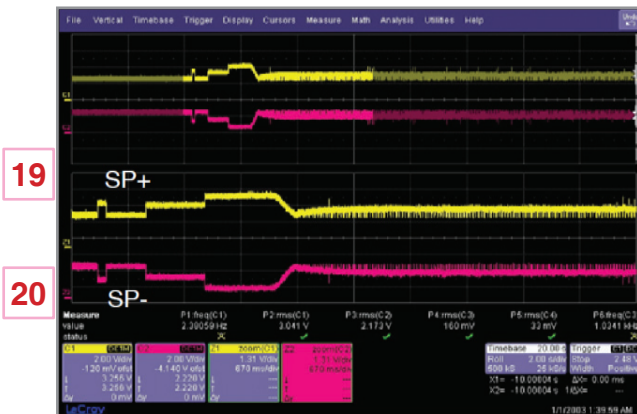
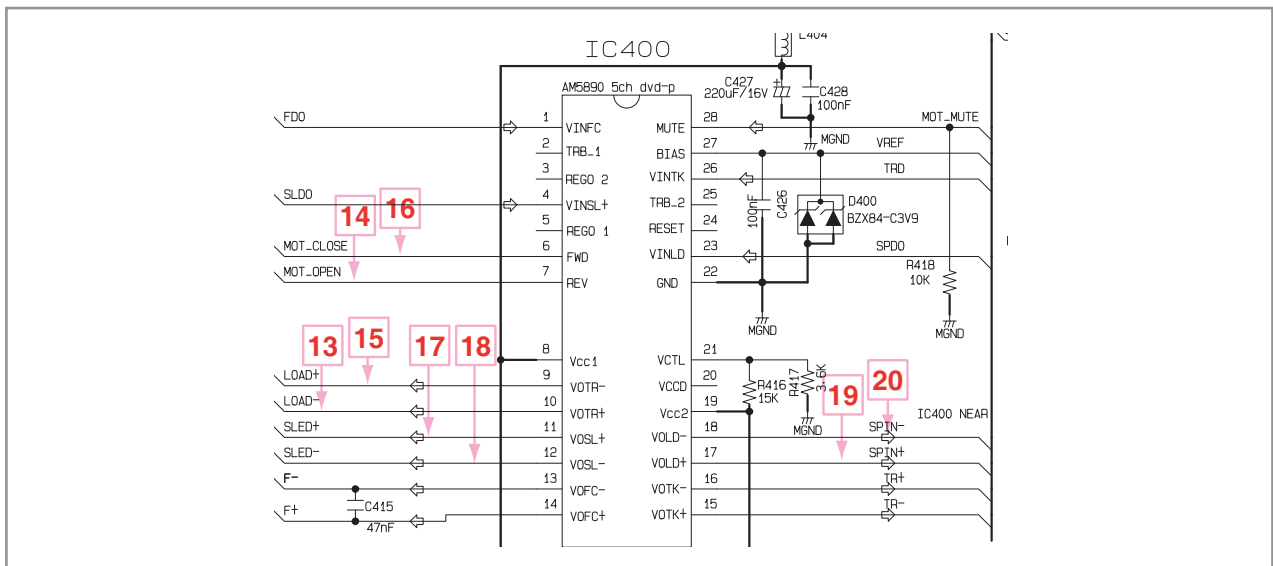


Fig 4-3. SP- & SP+ for Driving SPINDLE Motor (IC400 pin17, 18)



5. ADC (IC201)

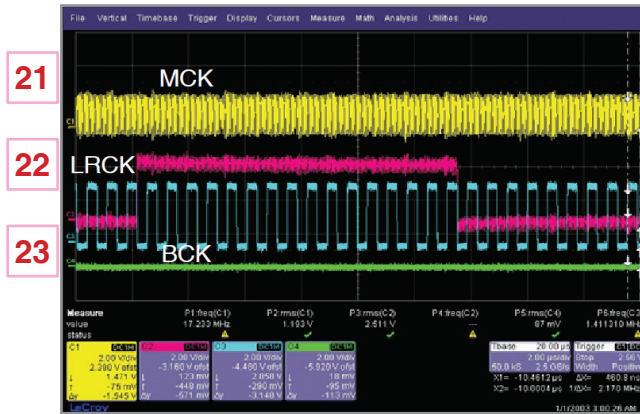


Fig 5. ADC I2S
(IC201 pin42, 43, 44)

6. USB (CN502)

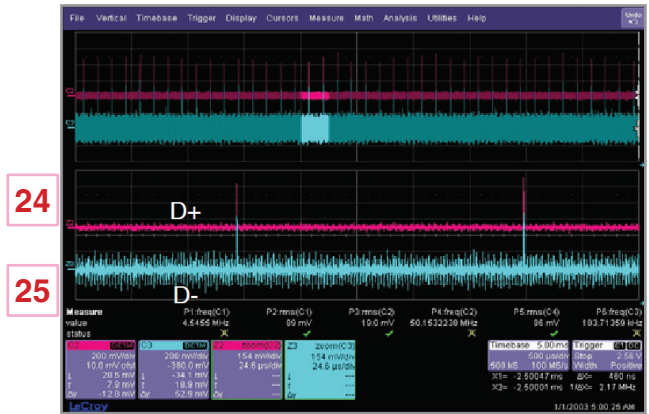
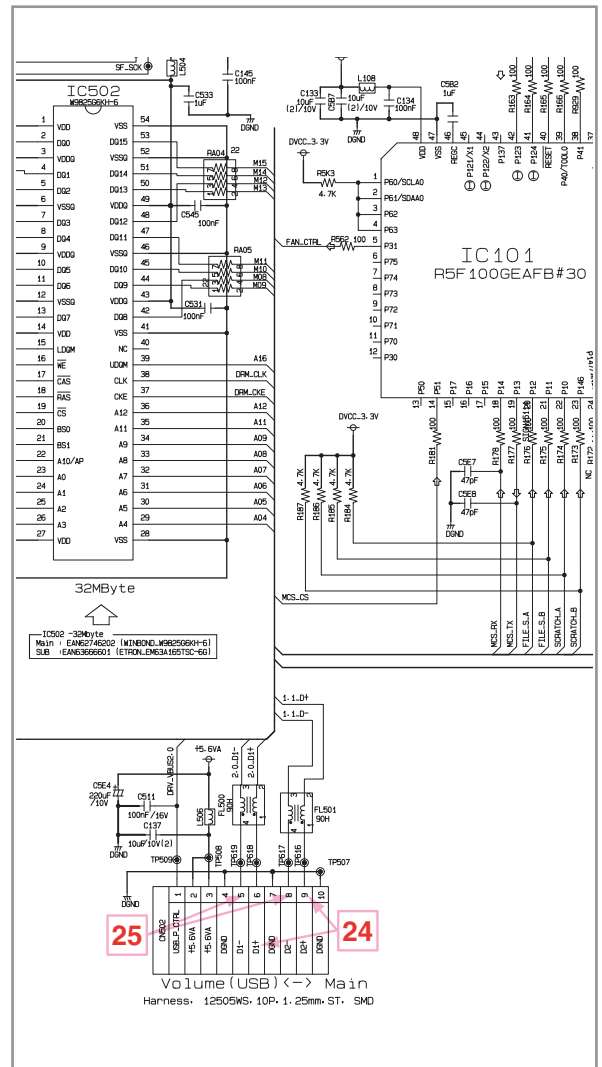
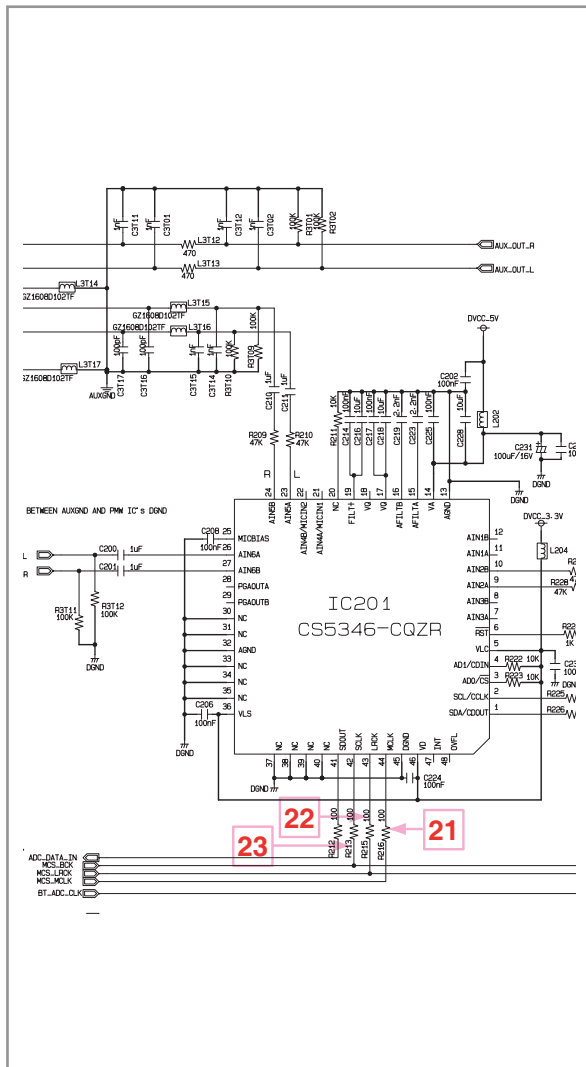


Fig 6. USB D+ / D-
(CN502 pin5, 6, 8, 9)



7. BLUETOOTH (CN504)

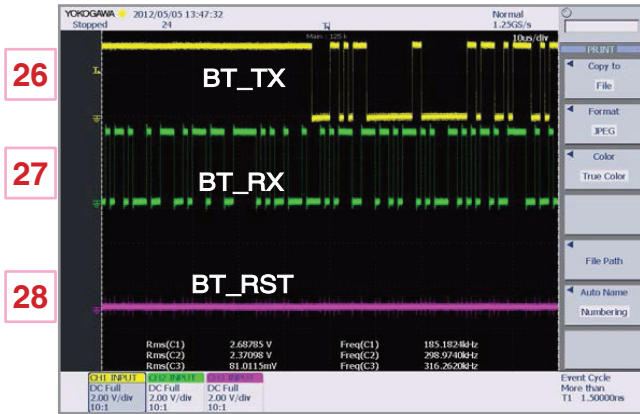
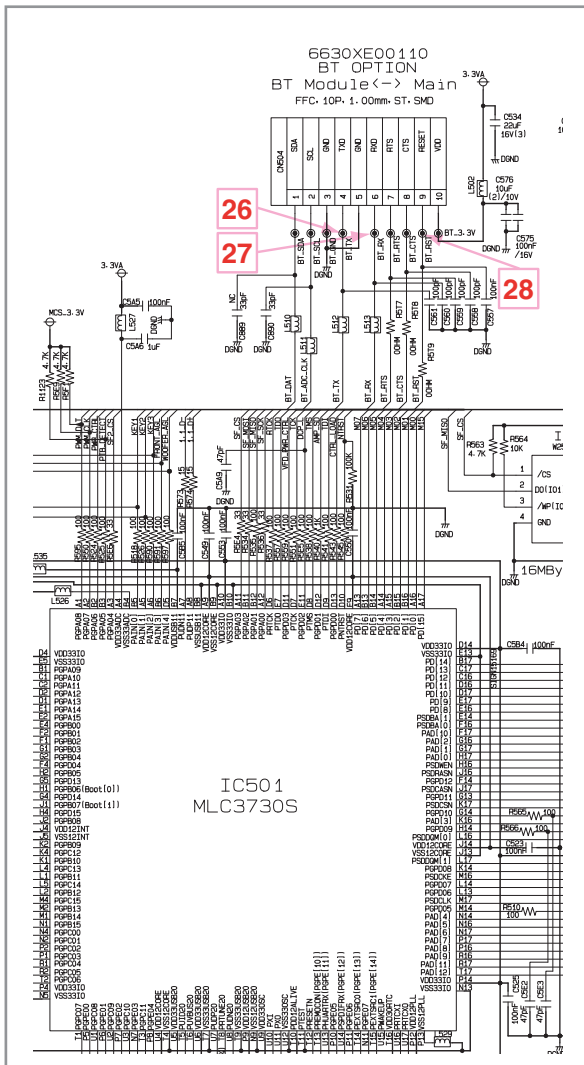
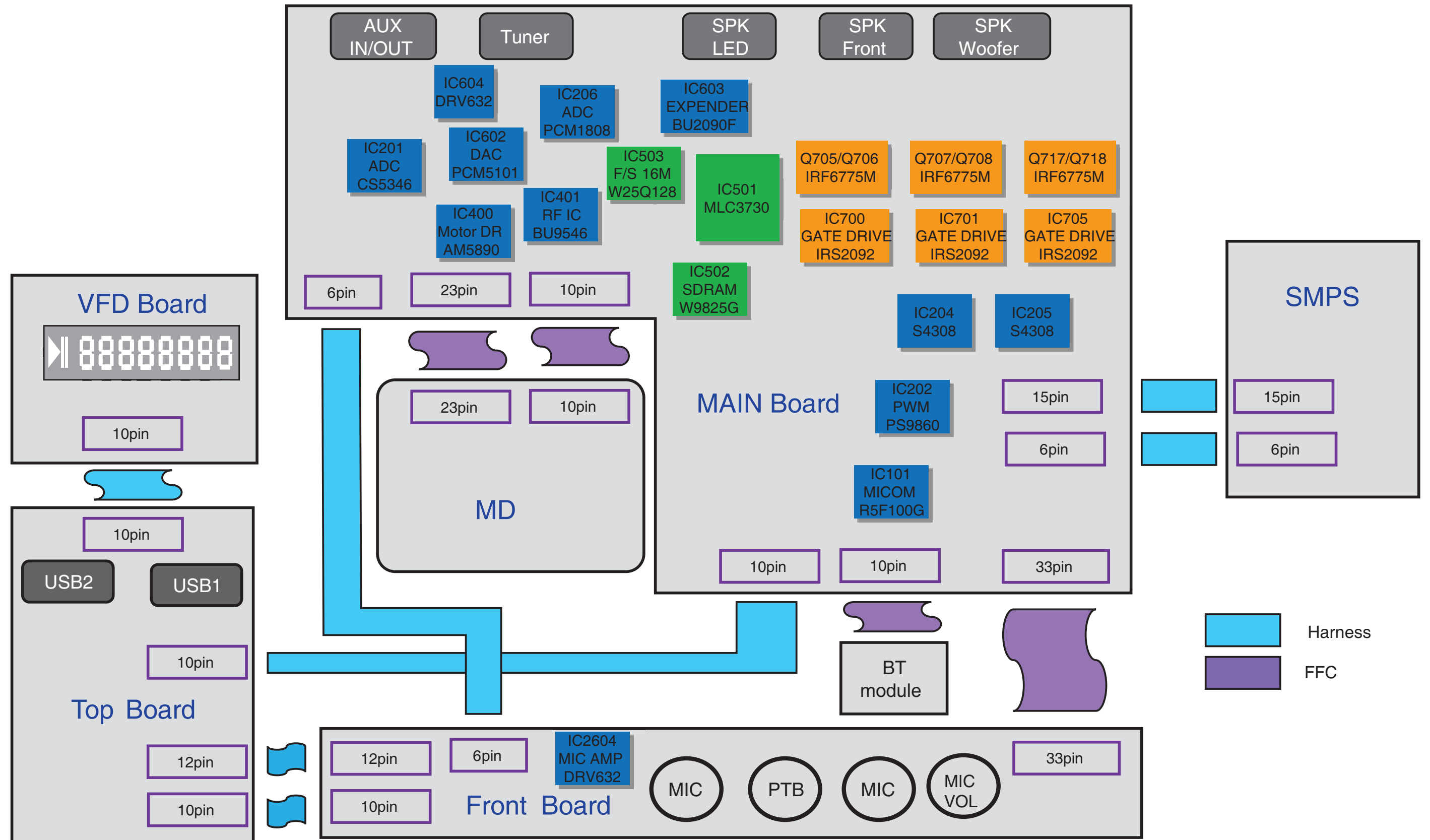


Fig 7. BT_TX / BT_RX / BT_RST (CN504 pin4, 6, 9)

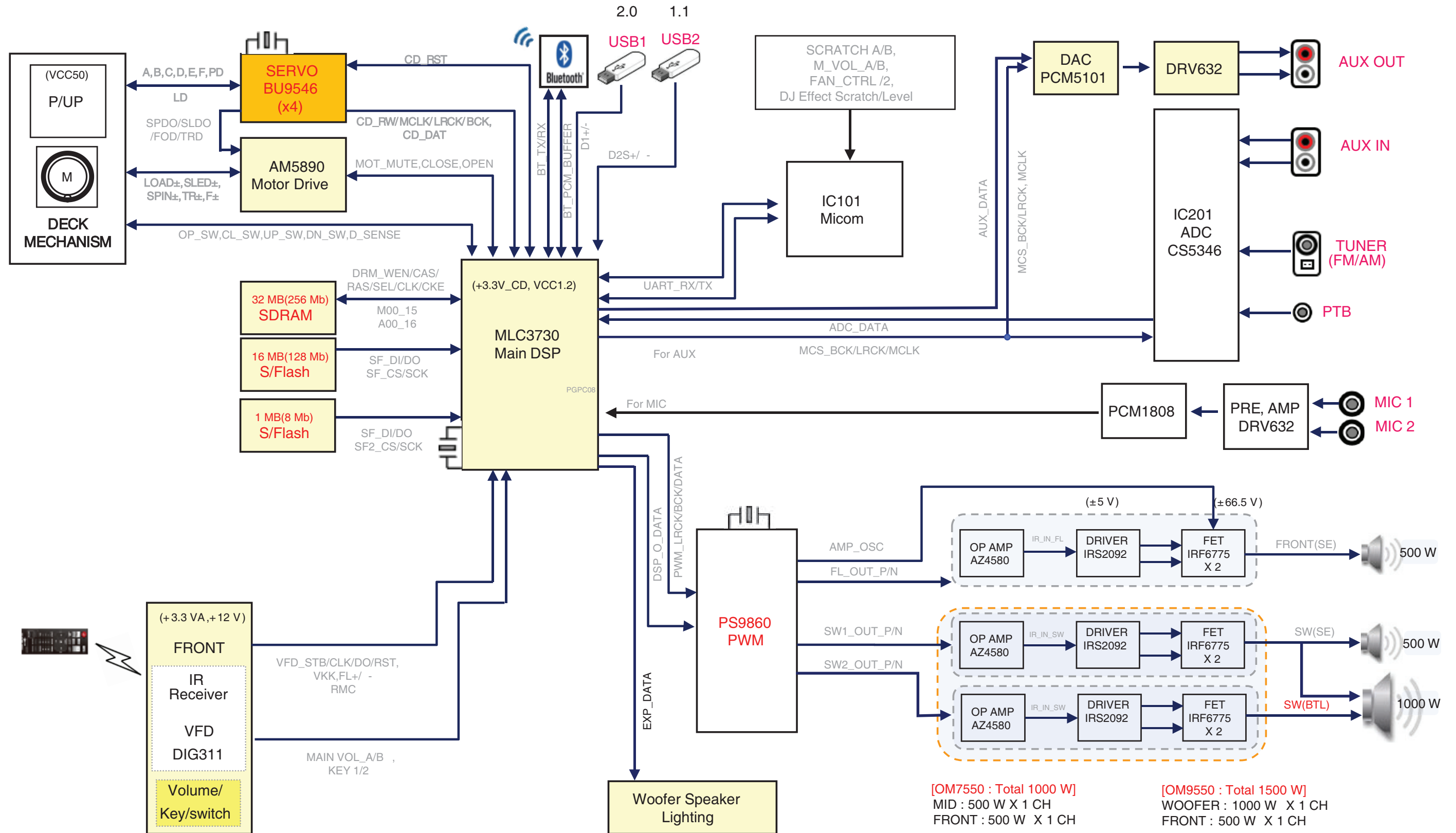


WIRING DIAGRAM

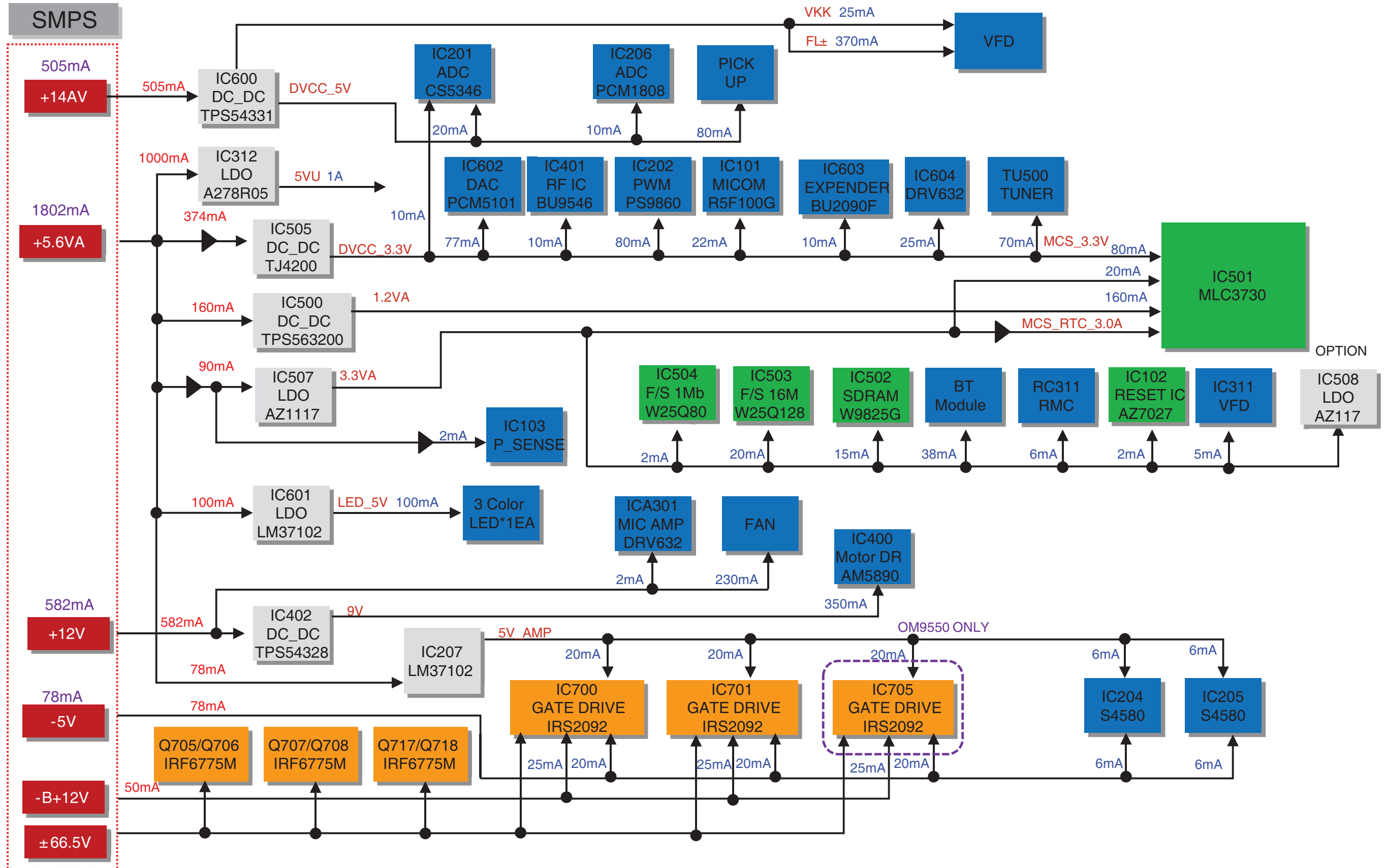


BLOCK DIAGRAMS

1. SYSTEM BLOCK DIAGRAM



2. POWER BLOCK DIAGRAM



CIRCUIT DIAGRAMS

1. SMPS_POWER #1 CIRCUIT DIAGRAM

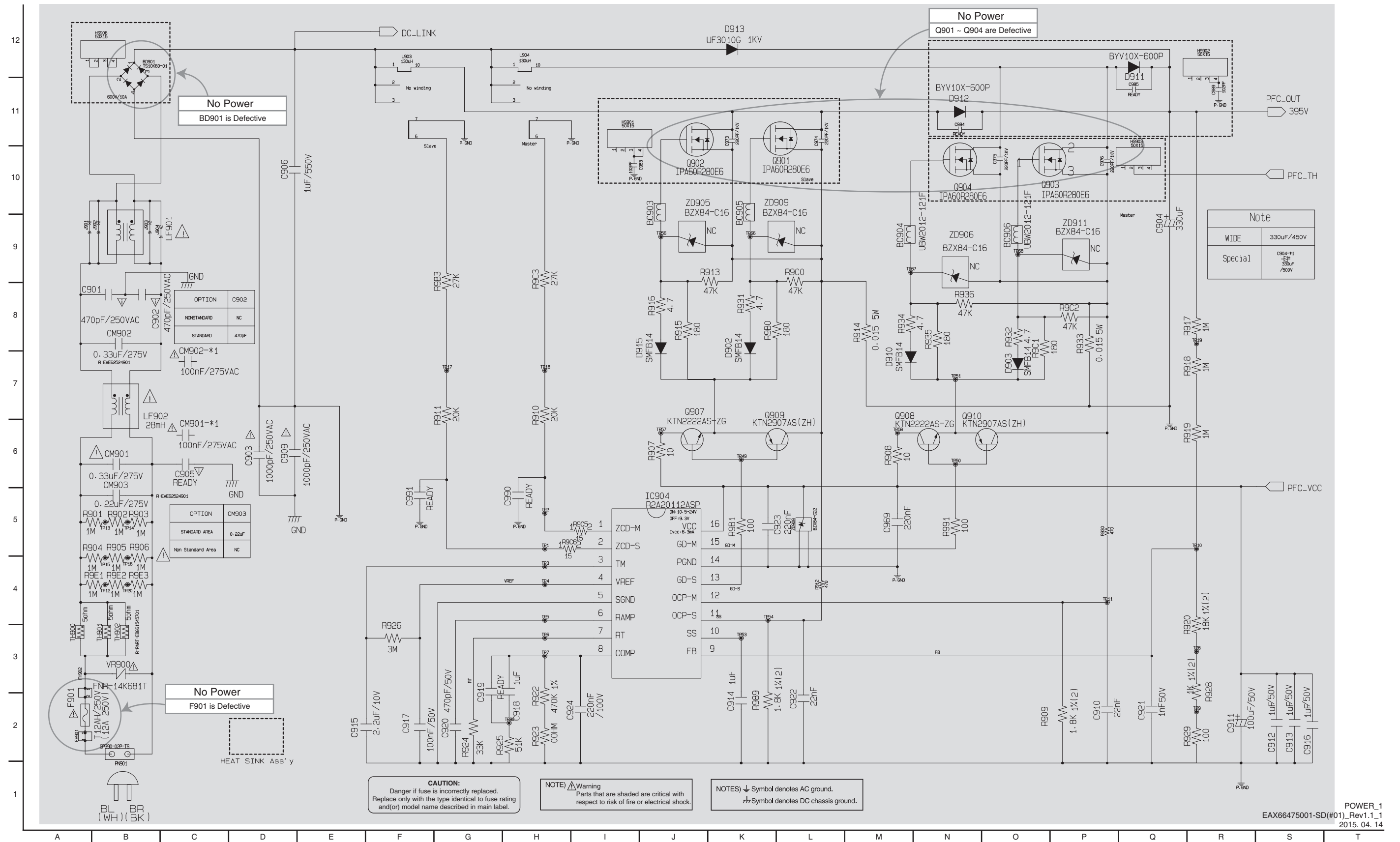
IMPORTANT SAFETY

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. SMPS_POWER #2 CIRCUIT DIAGRAM

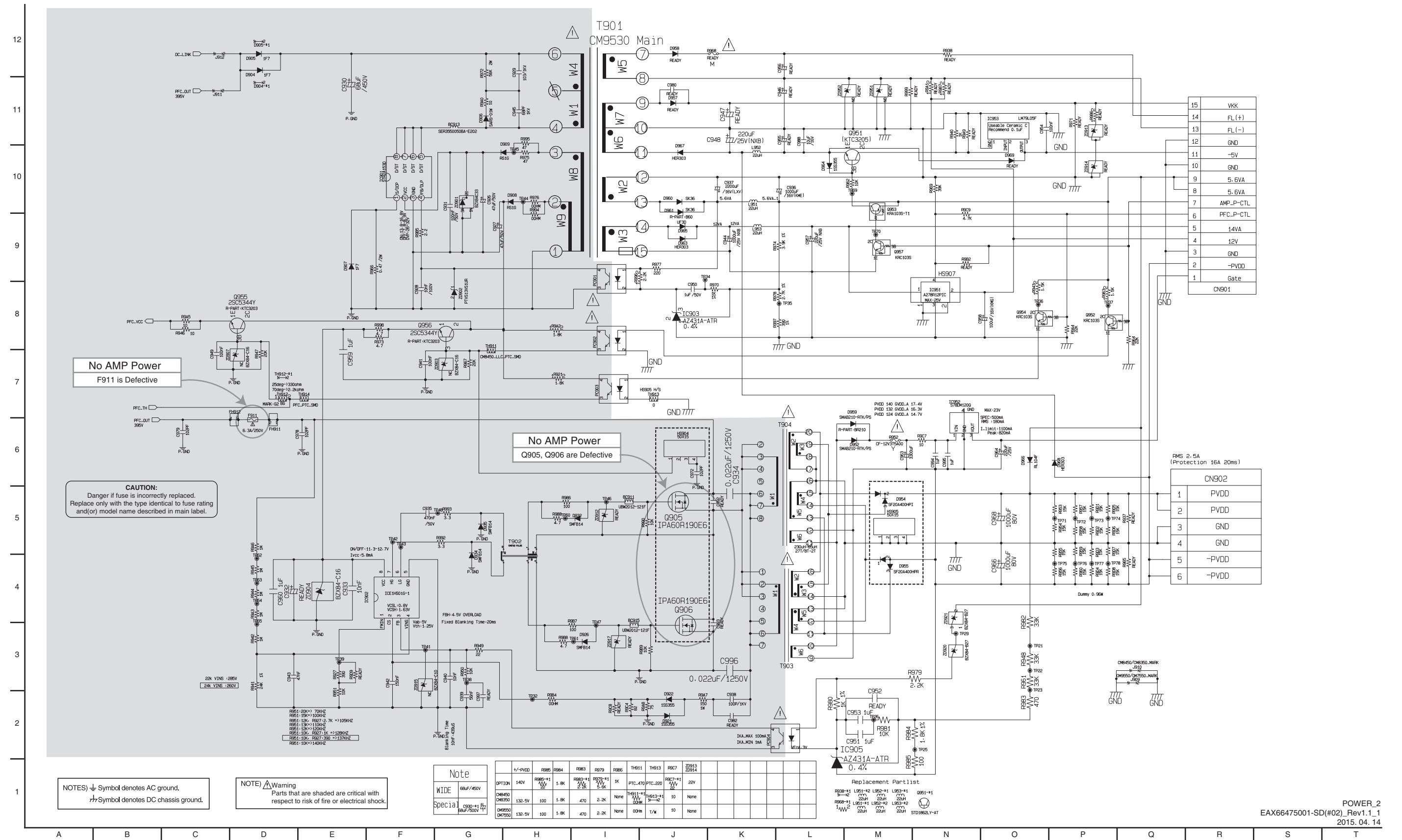
IMPORTANT SAFETY

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

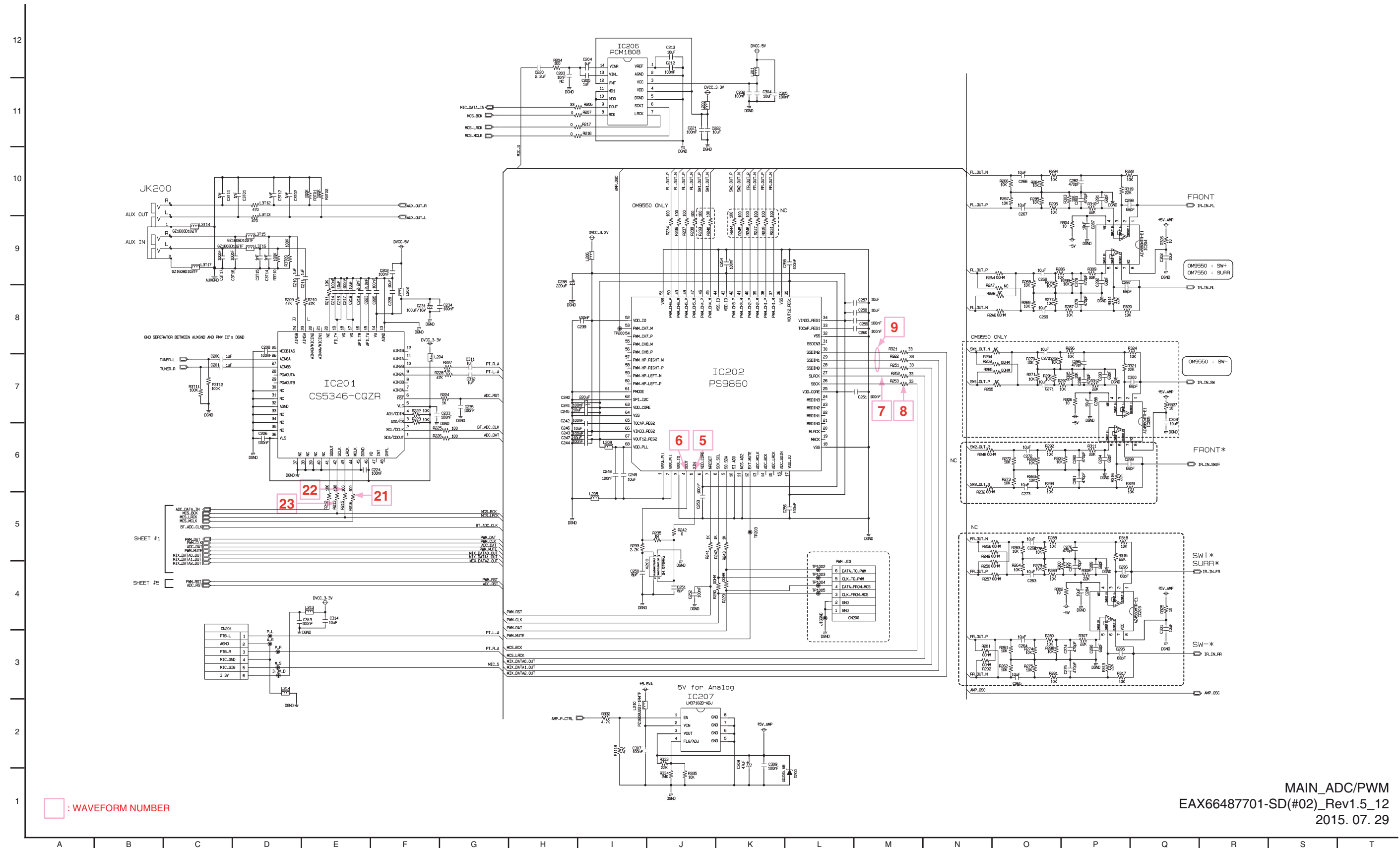
SCHEMATIC FOR EASY IDENTIFICATION. THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

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.

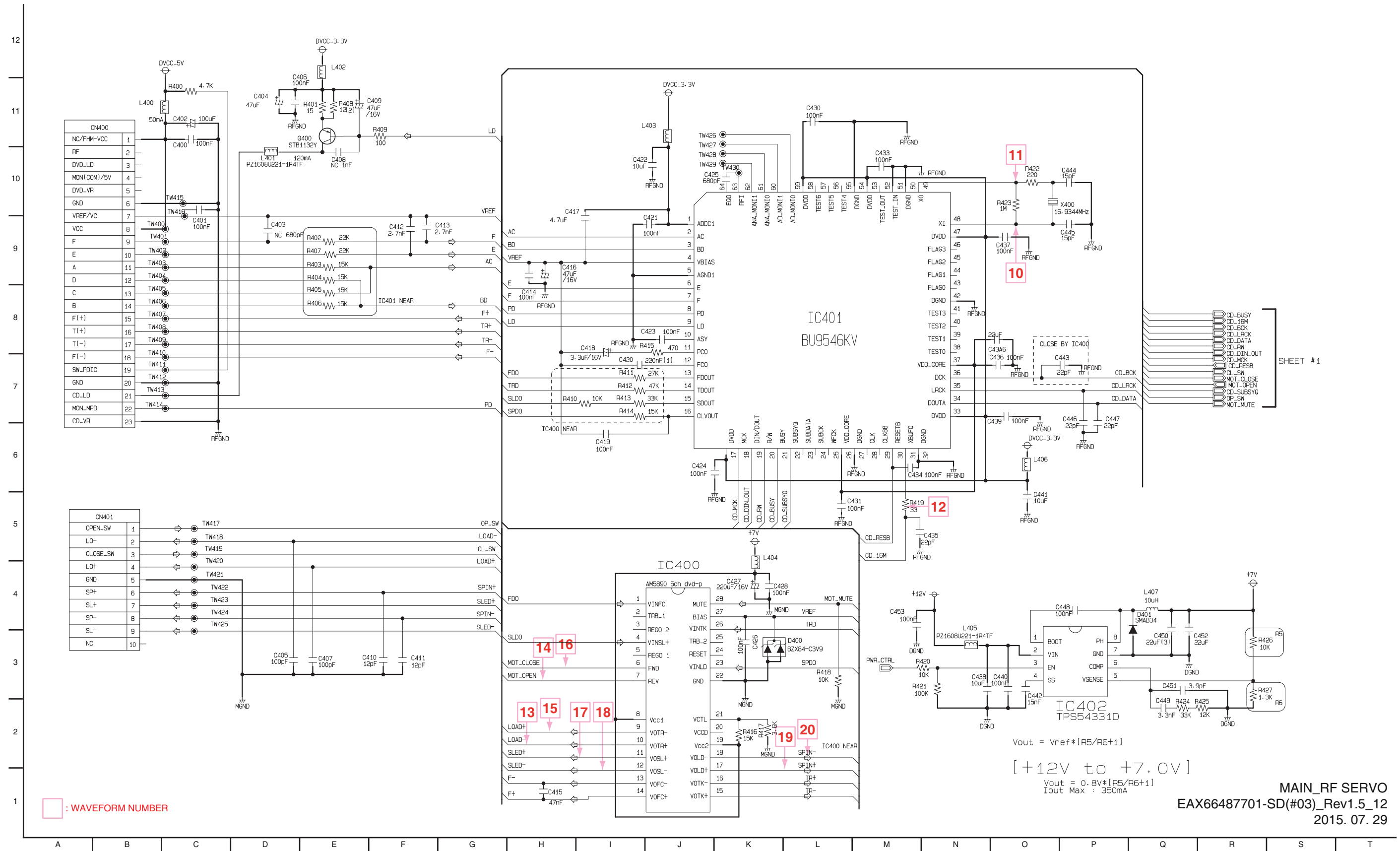


4. MAIN_ADC/PWM CIRCUIT DIAGRAM



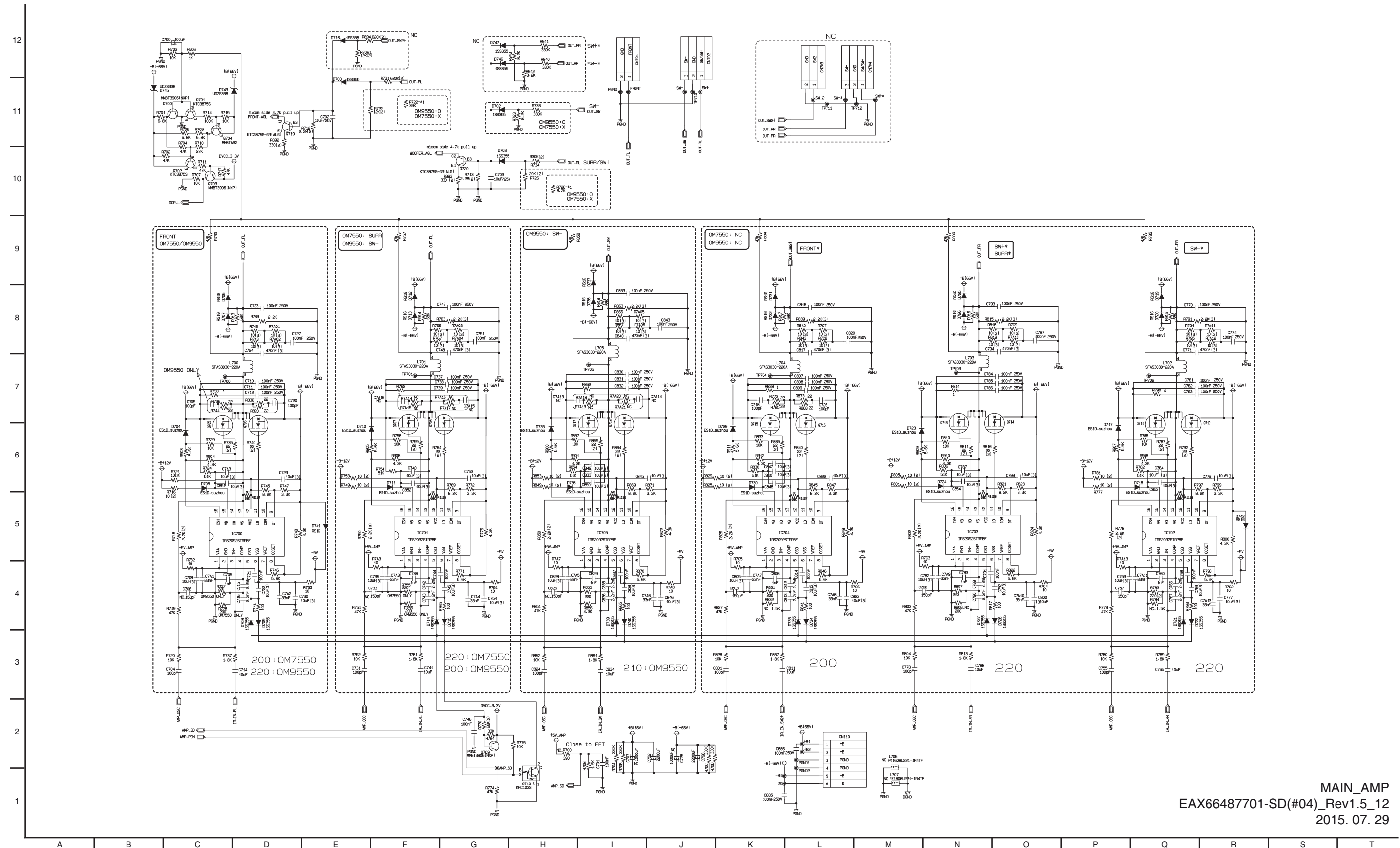
MAIN_ADC/PWM
EAX66487701-SD(#02)_Rev1.5_12
2015. 07. 29

5. MAIN_RF SERVO CIRCUIT DIAGRAM



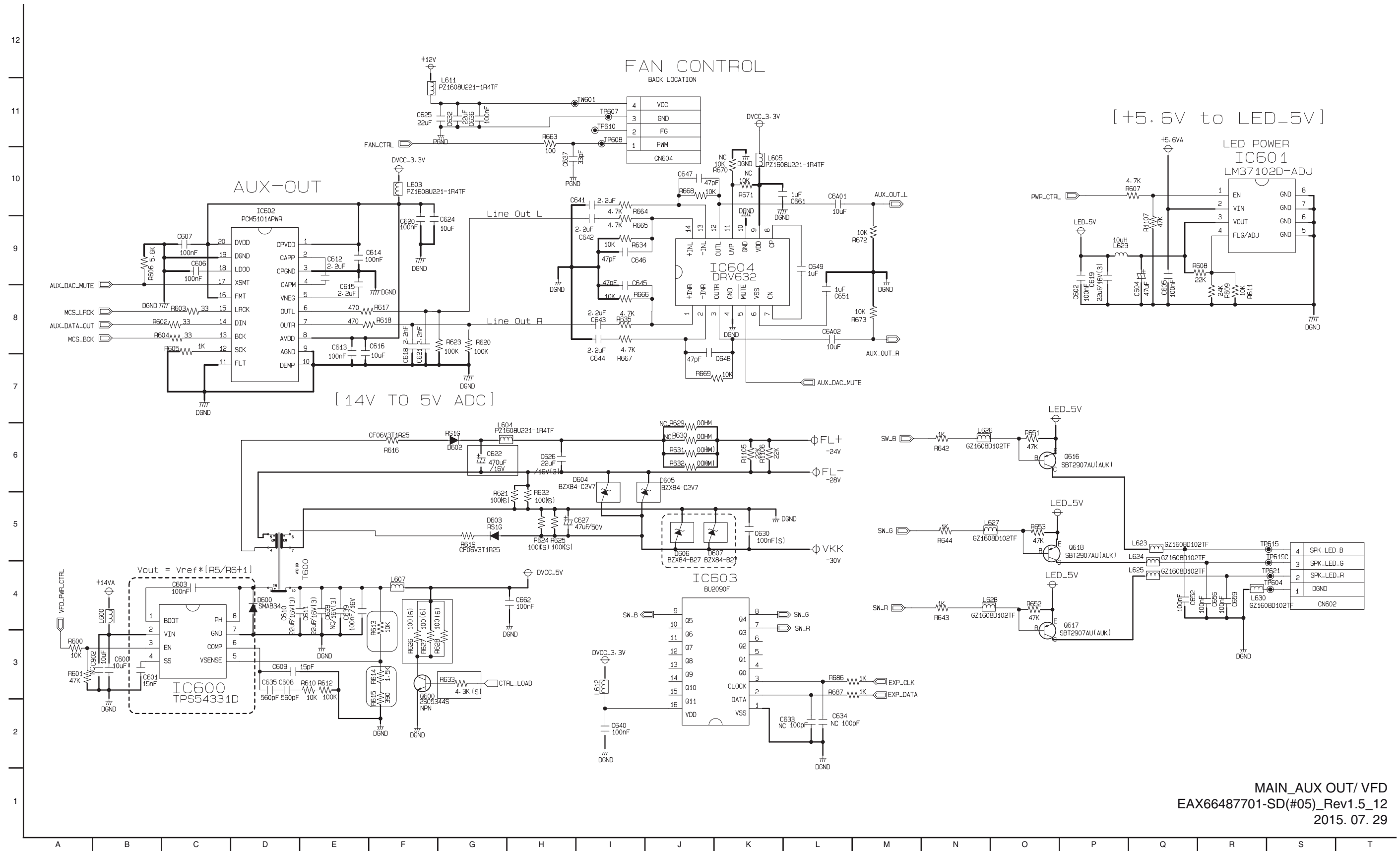
SHEET #1

6. MAIN_AMP CIRCUIT DIAGRAM



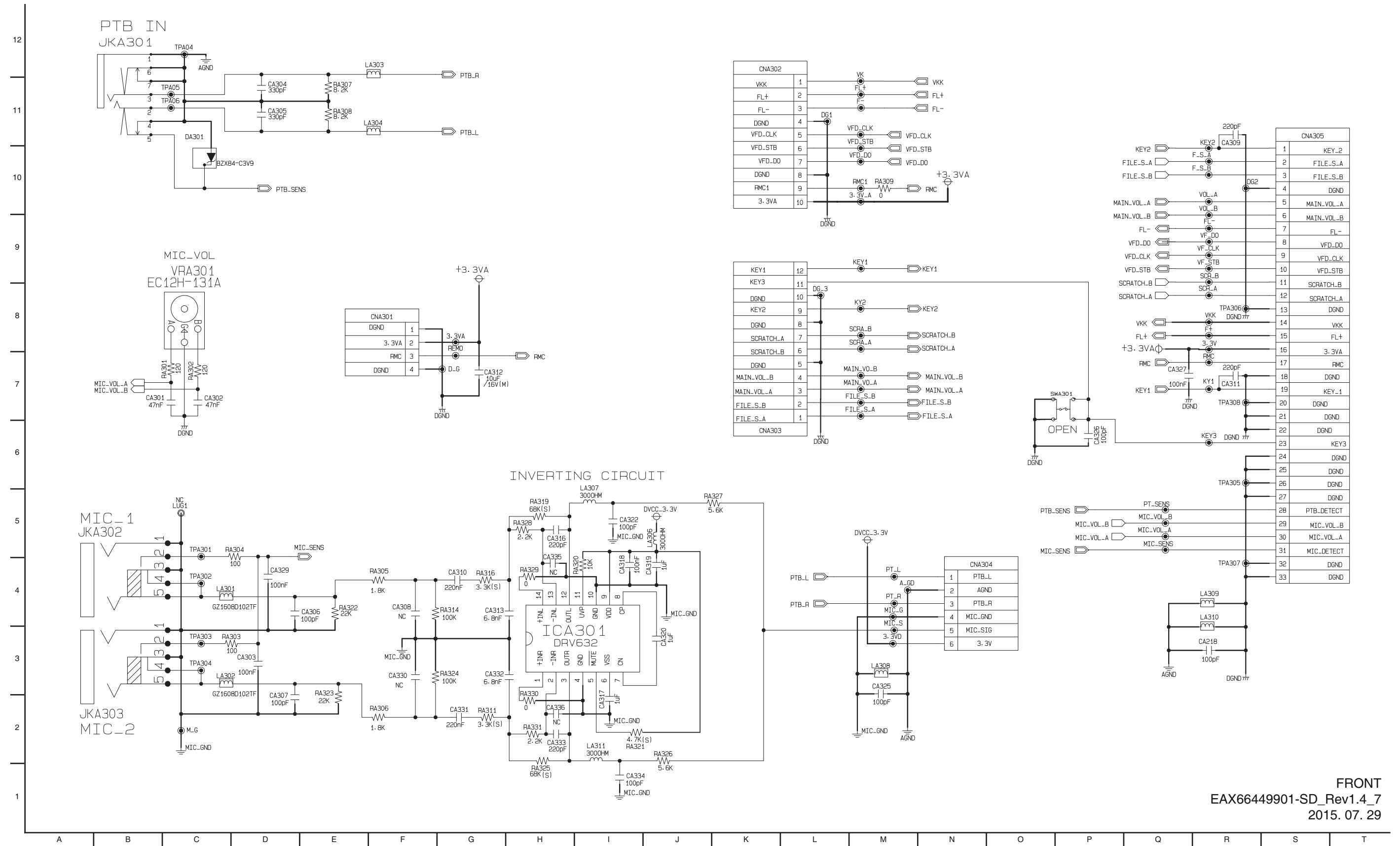
MAIN_AMP
EAX66487701-SD(#04)_Rev1.5_12
2015. 07. 29

7. MAIN_AUX OUT/ VFD PWR CIRCUIT DIAGRAM



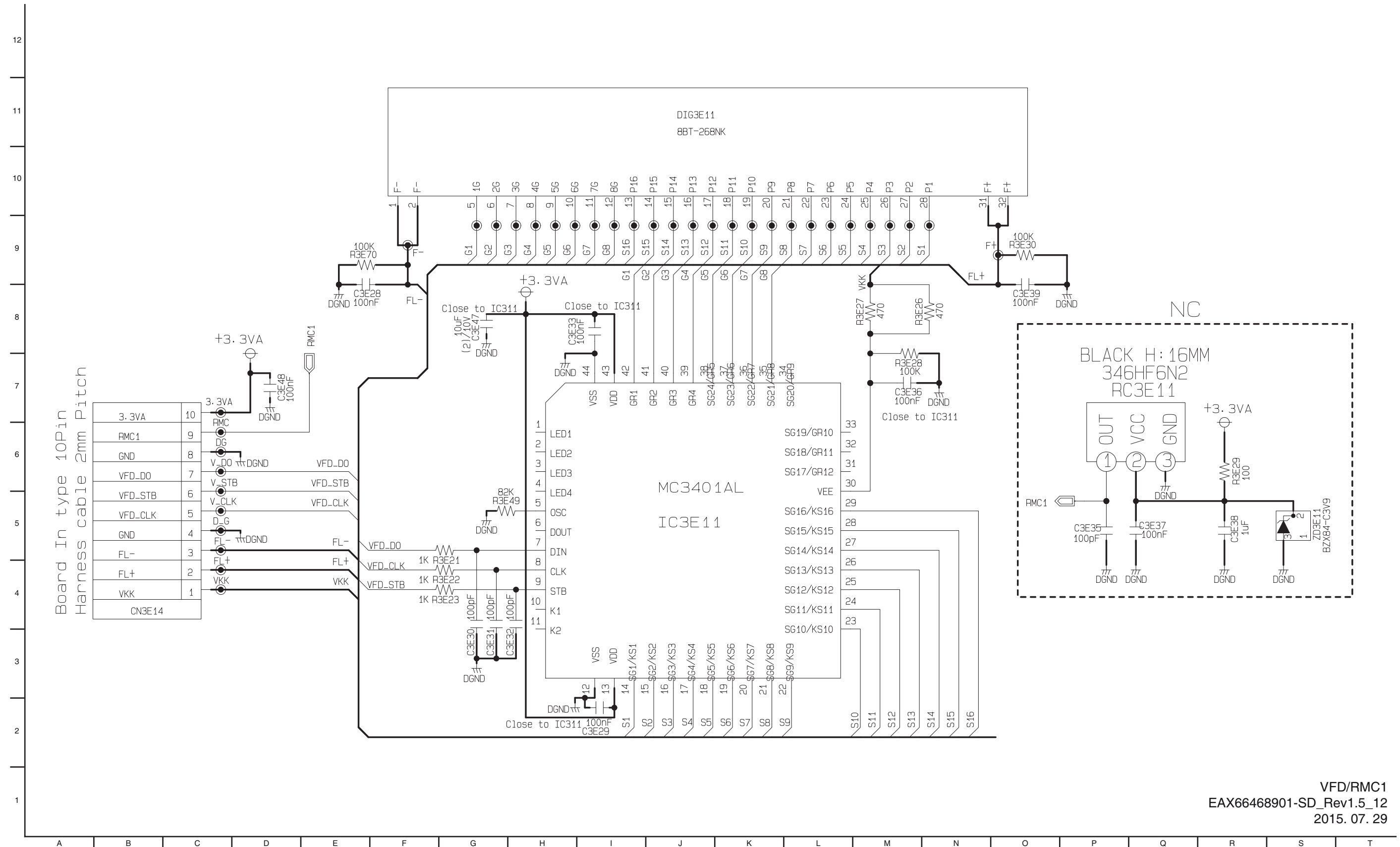
MAIN_AUX OUT/ VFD
EAX66487701-SD(#05)_Rev1.5_12
2015. 07. 29

8. FRONT CIRCUIT DIAGRAM



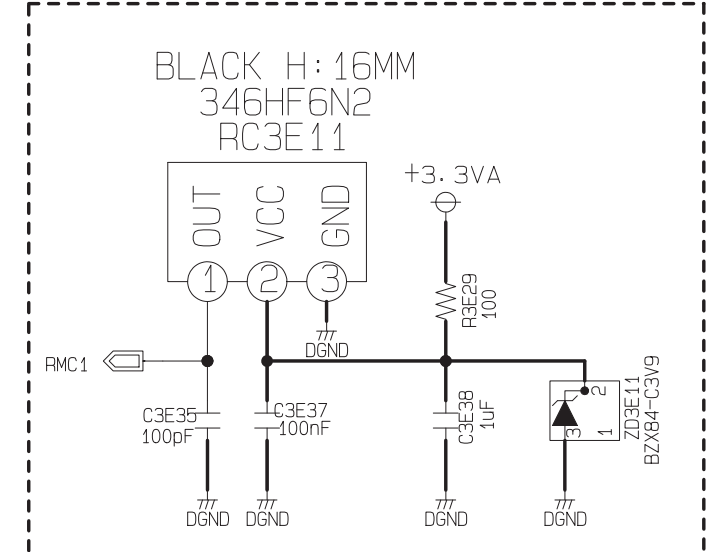
FRONT
EAX6644901-SD_Rev1.4_7
2015. 07. 29

9. VFD/RMC1 CIRCUIT DIAGRAM



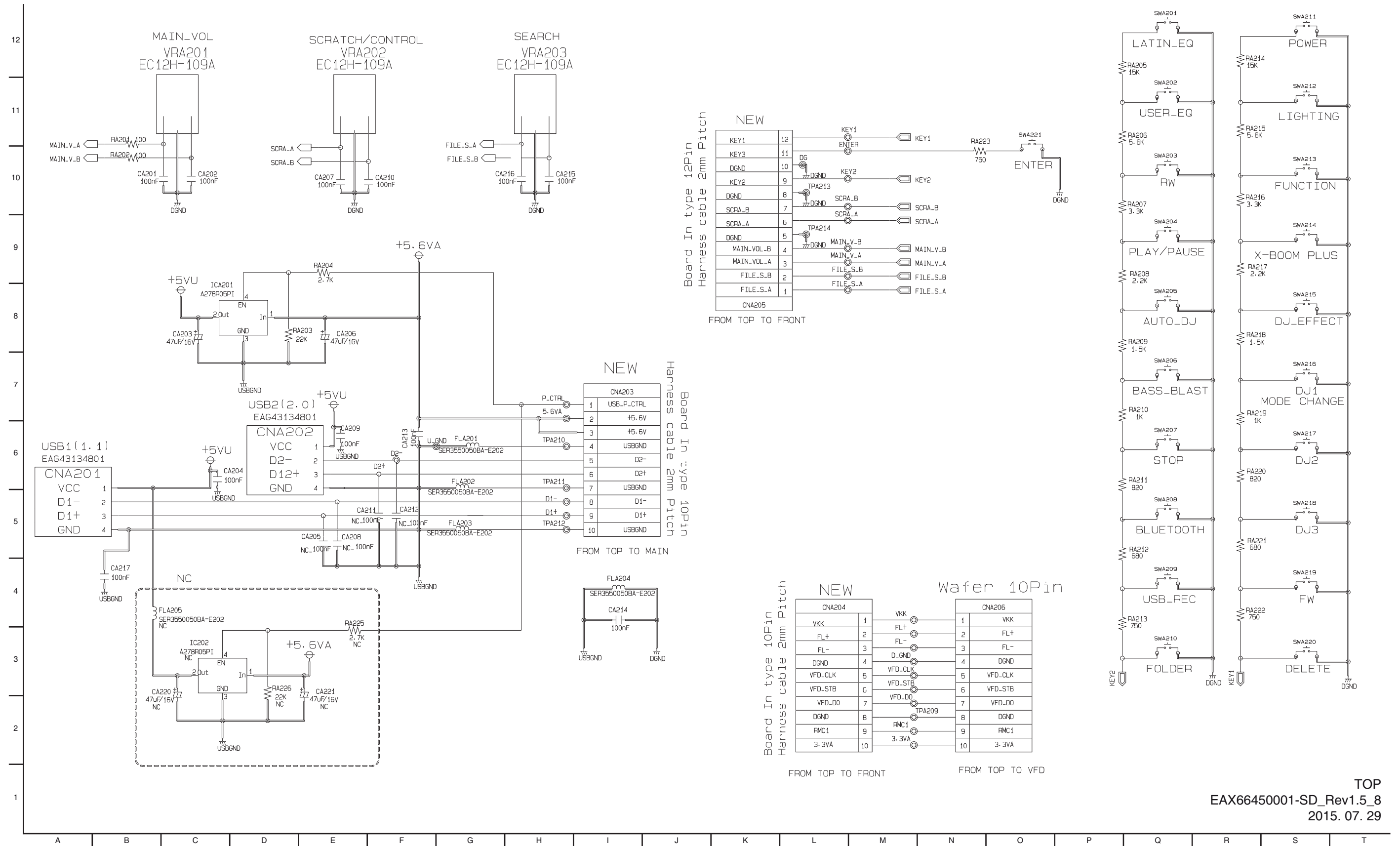
Board In type 10Pin
Harness cable 2mm Pitch

3.3VA	10
RMC1	9
GND	8
VFD_DO	7
VFD_STB	6
VFD_CLK	5
D_G	4
FL-	3
FL+	2
VKK	1
CN3E14	



VFD/RMC1
EAX66468901-SD_Rev1.5_12
2015. 07. 29

10. TOP CIRCUIT DIAGRAM



TOP
EAX66450001-SD_Rev1.5_8
2015. 07. 29

CIRCUIT VOLTAGE CHART

1. ICs

Parts	Name	Specification	Rated -20%	Rated +20%
		Voltage (V)	Voltage (V)	Voltage (V)
IC101 MICOM	R5F100GEAFB	VDD:-0.5~6.5V	VDD : 3.31V	VDD : 3.31V
IC102 Voltage Detector	AZ7027RTRE1	VCC: Max 18V	Vcc : 3.37V Vout : 3.36V	Vcc : 3.37V Vout : 3.36V
IC103 Voltage Detector	AZ7027RTRE1	VCC: Max 18V	Vcc : 3.37V Vout : 3.36V	Vcc : 3.37V Vout : 3.36V
IC201 A/D Converter	CS5346	VA : 4.75~5.25V VD : 3.13~3.47V VLS : 3.13~5.25V VLC : 3.13~5.25V	VA : 5.01V VD : 3.32V VLS : 3.32V VLC : 3.32V	VA : 5.01V VD : 3.32V VLS : 3.32V VLC : 3.32V
IC202 PWM	PS9860	AVDD, AVDD_PWM, DVDD_CORE : 0~3.6V	AVDD, AVDD_PWM, DVDD_CORE : 3.23V	AVDD, AVDD_PWM, DVDD_CORE : 3.23V
IC203~5,IC802 OP Amplifier	AZ4580MTR-E1	VCC: ~20V	VCC: 5.02V	VCC: 5.02V
IC206 A/D Converter	PCM1808	VCC : -0.3~6.5V VDD : -0.3~4V	VCC : 5.00V VDD : 3.32V	VCC : 5.00V VDD : 3.32V
IC207,IC601 LDO Voltage Regulator	LM37102D-ADJ	Vin : 2.25~16V Vout : 1.25~15V	Vin : 5.63V Vout : 5.20V	Vin : 5.63V Vout : 5.20V
IC400 Motor Driver	AM5890	VCC : 4.3~13.2V	VCC : 8.74V	VCC : 8.74V
IC401 RF, Servo	BU9546KV	DVDD,AVDD : 2.7~3.6V VDD_CORE : 1.75~1.95V	DVDD,AVDD : 3.26V VDD_CORE : 1.85V	DVDD,AVDD : 3.25V VDD_CORE : 1.85V
IC402 DC/DC Converter	TPS54331D	VIN : -0.3~20V VRGE : -0.5~6.5V	VIN: 11.83V VOUT: 5.50V	VIN: 11.83V VOUT: 5.50V
IC501 DSP	MLC3730S	VDD12 : 1.08~1.32V VDD33 : 3.0~3.6V	VDD12 : 1.2V VDD33 : 3.36V	VDD12 : 1.2V VDD33 : 3.36V
IC502 SDRAM	W9825G6KH-6 256MBIT	VDD,VDDQ : 3.0~3.6V	VDD,VDDQ : 3.36V	VDD,VDDQ : 3.36V
IC503 Serial Flash Memory	W25Q128FVSIQ 128MBIT	Vcc : 2.7~3.6V	Vcc : 3.37V	Vcc : 3.37V
IC504 Serial Flash Memory	W25Q80DVSSIQ 8MBIT	Vcc : 2.7~3.6V	Vcc : 3.37V	Vcc : 3.37V
IC505 LDO Voltage Regulator	TJ4220GDP-ADJ	Vin : 2.5~6.5V Vout : 2.5~5V	Vin : 4.90V Vout : 3.33 V	Vin : 4.91V Vout : 3.33 V
IC507,IC508 Voltage Regulator	AZ1117BH-ADJTRE1	Vin : Max 12V Vout : Max 10V	Vin : 5.12V Vout : 3.36V	Vin : 5.12V Vout : 3.36V
IC600 DC/DC Converter	TPS54331D	VIN : 3.5~28V	VIN: 12.67V	VIN: 12.67V
IC602 D/A Converter	PCM5101APWR	CPVDD/AVDD/DVDD : 3.0~3.6V	CPVDD/AVDD/DVDD : 3.32V	CPVDD/AVDD/DVDD : 3.32V
IC603 Clock Driver	BU2090	Vin : 2.7~5.5V	Vin : 3.37V	Vin : 3.37V
IC700~IC705 Power Driver	IRS2092	VB : 0~220V VAA : MAX 210V	VB : 11.32V VAA : 5.12V	VB : 11.33V VAA : 5.12V
ICA301 PRE Amplifier	DRV632	VCC: -0.3~4.0V	VCC:3.32V	VCC:3.32V

2. CAPACITORS

Location No.	Capacity	Specification	Rated-20%(88V, 60Hz)	Rated+20%(288V, 60Hz)
			Voltage (V)	Voltage (V)
C209	4.7u	50V	2.02	2.02
C226	100u	16V	11.31	11.32
C231	100u	16V	5.00	5.00
C238	220u	16V	3.30	3.30
C240	220u	6.3V	1.26	1.26
C308	47u	16V	5.21	5.21
C344	47u	16V	5.01	5.01
C345	47u	16V	5.64	5.64
C347	470u	10V	3.37	3.38
C402	100u	16V	5.00	5.00
C404	47u	16V	3.32	3.32
C409	47u	16V	3.32	3.32
C416	47u	16V	1.66	1.66
C418	3.3u	50V	0.52	0.51
C427	220u	16V	8.73	8.73
C501	220u	10V	3.23	3.23
C5C9	1000u	6.3V	3.35	3.36
C5E1	47u	16V	3.36	3.35
C604	47u	16V	5.12	5.12
C622	470u	16V	2.77	2.77
C627	47u	50V	27.04	27.09
C707	1000u	80V	65.84	65.84
C728	1000u	80V	65.56	65.58
C752	2200u	80V	65.98	65.98
C798	2200u	16V	66.08	66.08
C904	330u	450V	394.50	394.50
C926	47u	50V	15.72	15.74
C927	47u	50V	17.10	17.20
C936	1000u	16V	5.65	5.65
C937	2200u	16V	5.66	5.66
C944	470u	25V	12.64	12.70
C948	220u	25V	7.00	6.92
C958	100u	16V	11.83	11.84
C963	1000u	25V	16.17	16.18
C964	220u	25V	11.81	12.02
C966	1000u	80V	66.10	66.07
C968	1000u	80V	65.58	65.84

3. CONNECTORS

Pin No.	Pin Name	Spec [%]	Range [%]	Input Voltage	Margin [%]	Output Voltage	Margin [%]
SMPS <-> MAIN				CN901 (SMPS)		CN106 (MAIN)	
5	-5V	-5	±10%	-4.98	-0.4%	-4.96	-0.8%
7,8	+5.6V	5.6	±10%	5.63	0.5%	5.64	0.7%
11	14VA	14	±10%	12.86	-8.1%	12.68	-9.4%
12	12V	12	±10%	11.91	-0.7%	11.84	-1.3%
14	-B (-PVDD)	-66	±10%	-66	0.0%	-66.1	0.2%
15	GATE	-54	±10%	-54.11	0.2%	-54.13	0.2%
SMPS <-> MAIN				CN902 (SMPS)		CN110 (MAIN)	
1,2	+B (+PVDD)	66	±10%	65.81	-0.3%	65.81	-0.3%
5,6	-B (-PVDD)	-66	±10%	-66.08	0.1%	-66.08	0.1%
FRONT <-> MAIN				CNA305 (FRONT)		CN605(MAIN)	
7	FL-	-25	±10%	-24.46	-2.2%	-24.46	-2.2%
14	VKK	-27	±10%	-26.99	-0.0%	-26.99	-0.0%
15	FL+	-22	±10%	-22.22	1.0%	-22.22	1.0%
16	3.3V	3.3	±10%	3.37	2.1%	3.35	1.5%
MAIN <-> TOP(USB)				CN502 (MAIN)		CNA203(TOP)	
2,3	5.6VA	5.6	±10%	5.64	0.7%	5.64	0.7%
MAIN <-> BT Module				CN504 (MAIN)		BT Module	
10	3.3VA	3.3	±10%	3.329	0.9%	3.329	0.9%
MAIN <-> Pick-up(MD)				CN400(MAIN)		MD	
8	DVCC_5V	5	±10%	5.01	0.2%	5.01	0.2%
MAIN <-> FAN Module				CN604 (MAIN)		FAN Module	
4	12V	12	±10%	11.98	-0.2%	11.98	-0.2%
FRONT <-> MAIN				CNA304 (FRONT)		CN201(MAIN)	
6	3.3V	3.3	±10%	3.244	-1.7%	3.244	-1.7%
TOP <-> VFD				CNA206 (TOP)		CN3E14(VFD)	
1	VKK	-27	±10%	-26.98	-0.1%	-26.98	-0.1%
2	FL+	-22	±10%	-22.21	1.0%	-22.21	1.0%
3	FL-	-25	±10%	-24.45	-2.2%	-24.45	-2.2%
10	3.3VA	3.3	±10%	3.245	-1.7%	3.245	-1.7%
FRONT <-> TOP				CNA302 (FRONT)		CNA204(TOP)	
1	VKK	-27	±10%	-26.98	-0.1%	-26.98	-0.1%
2	FL+	-22	±10%	-22.21	1.0%	-22.21	1.0%
3	FL-	-25	±10%	-24.45	-2.2%	-24.45	-2.2%
10	3.3VA	3.3	±10%	3.245	-1.7%	3.245	-1.7%
FRONT <-> TOP				CNA303 (FRONT)		CNA205(TOP)	
9	KEY2	3.3	±10%	3.253	-1.4%	3.253	-1.4%
11	KEY3	3.3	±10%	3.253	-1.4%	3.253	-1.4%
12	KEY1	3.3	±10%	3.253	-1.4%	3.253	-1.4%

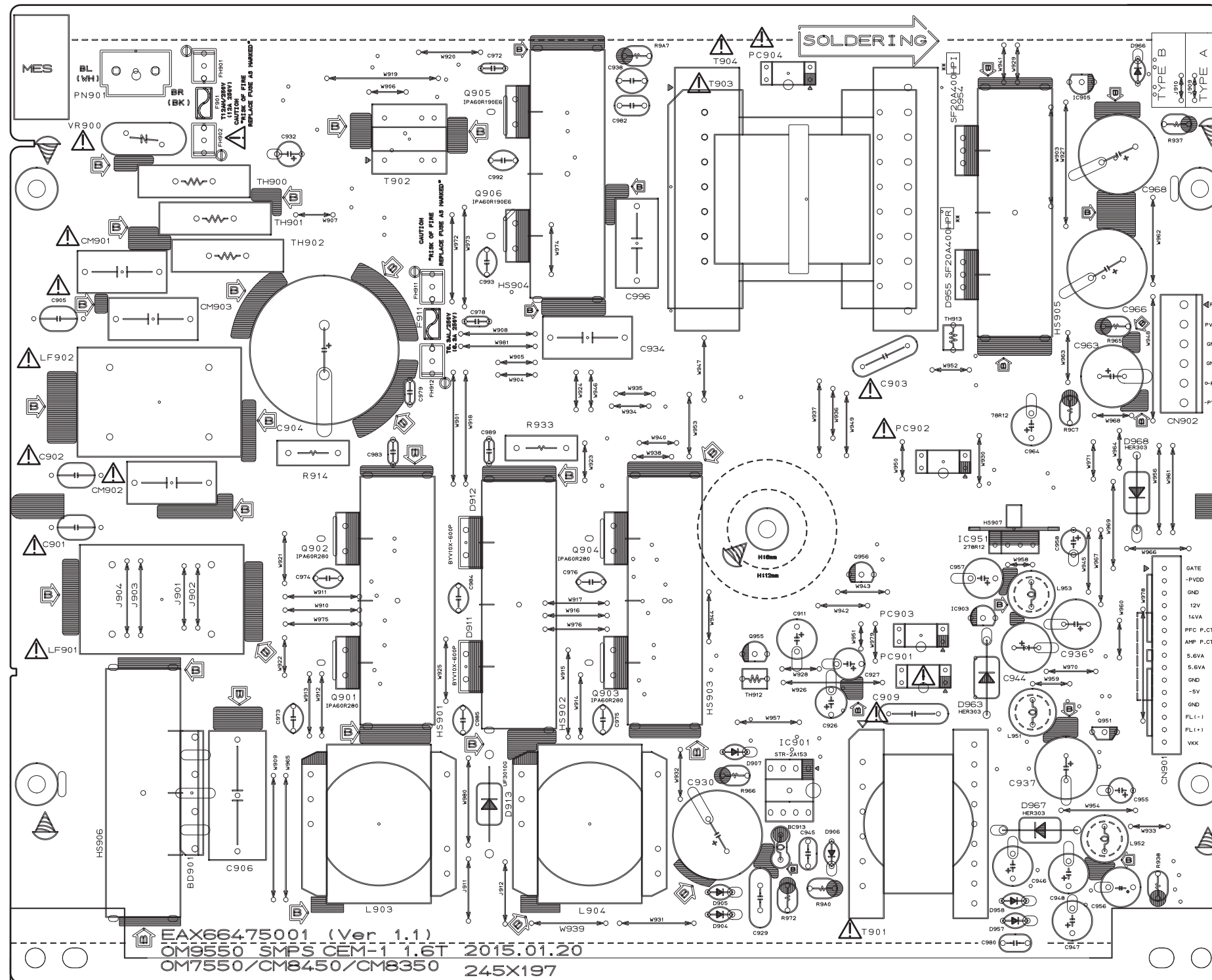
4. ZENER DIODES

Location No.	Voltage
ZD901	33V
ZD902 (TVS)	13V
ZD904, ZD905, ZD906, ZD907, ZD909, ZD911	16V
ZD908	22V
ZD915	10V
ZD920,ZD921	27V

PRINTED CIRCUIT BOARD DIAGRAMS

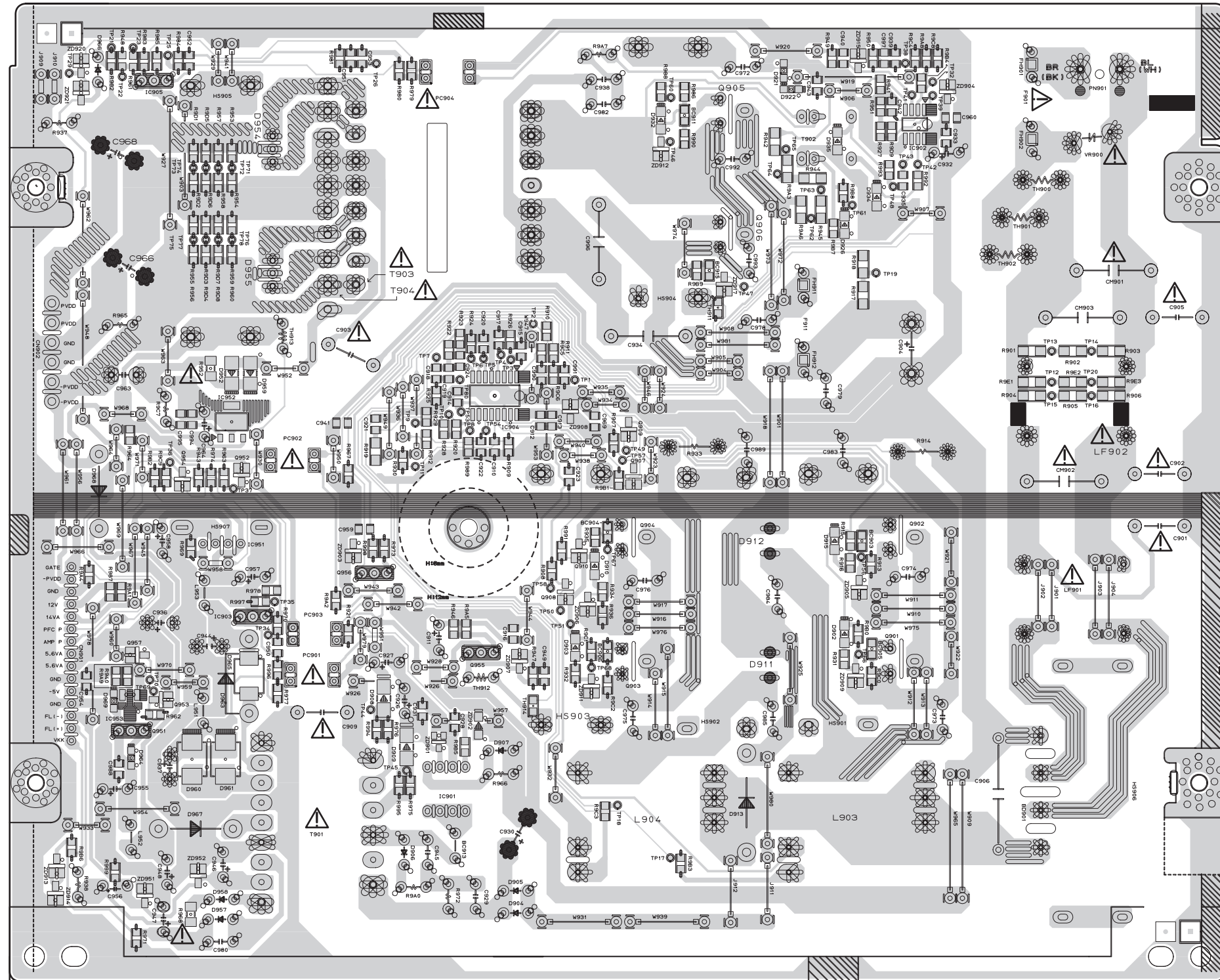
1. SMPS P. C. BOARD (TOP VIEW)

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

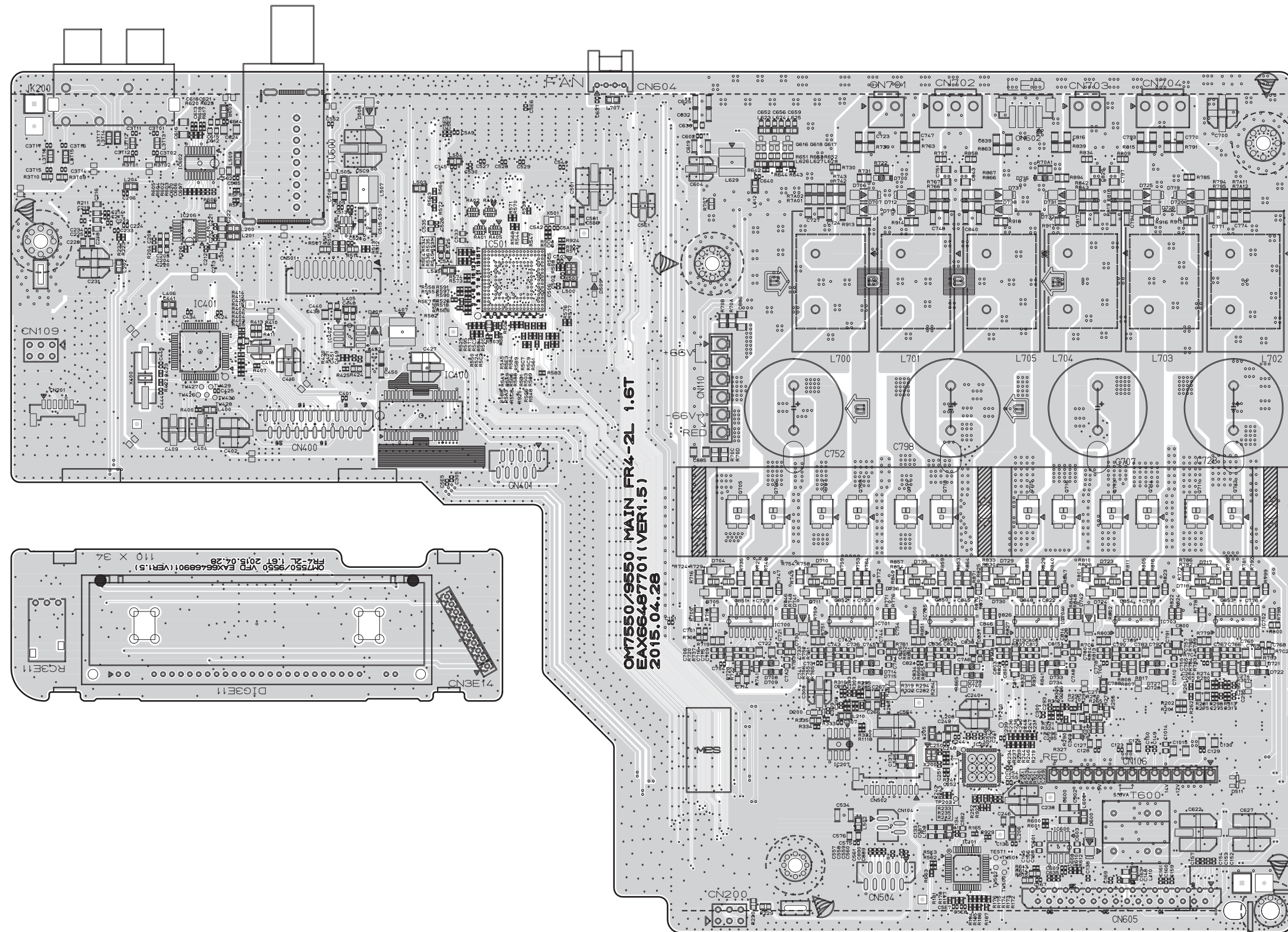


2. SMPS P. C. BOARD (BOTTOM VIEW)

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

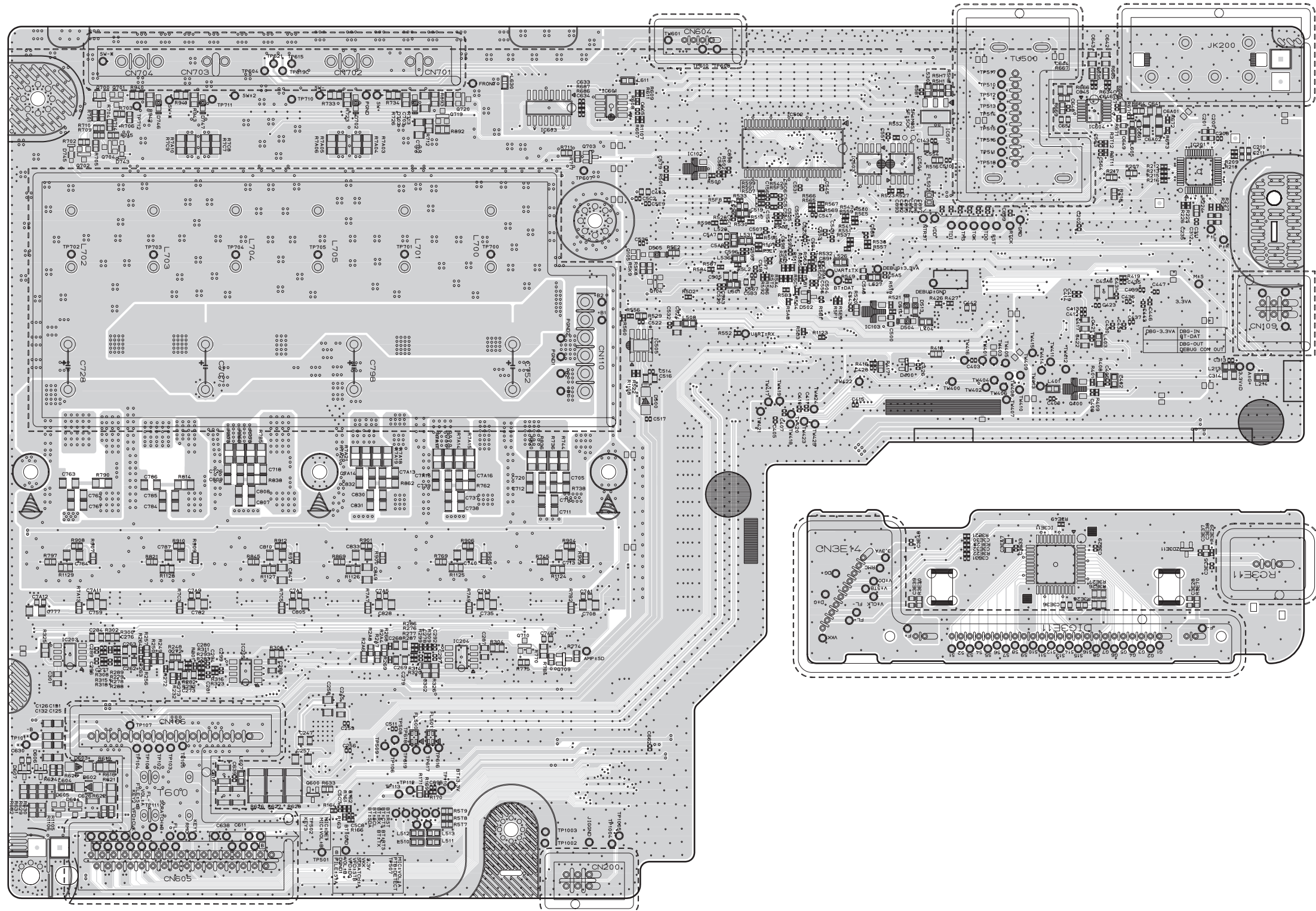


3. MAIN, VFD/RMC1 P.C.BOARD (TOP VIEW)

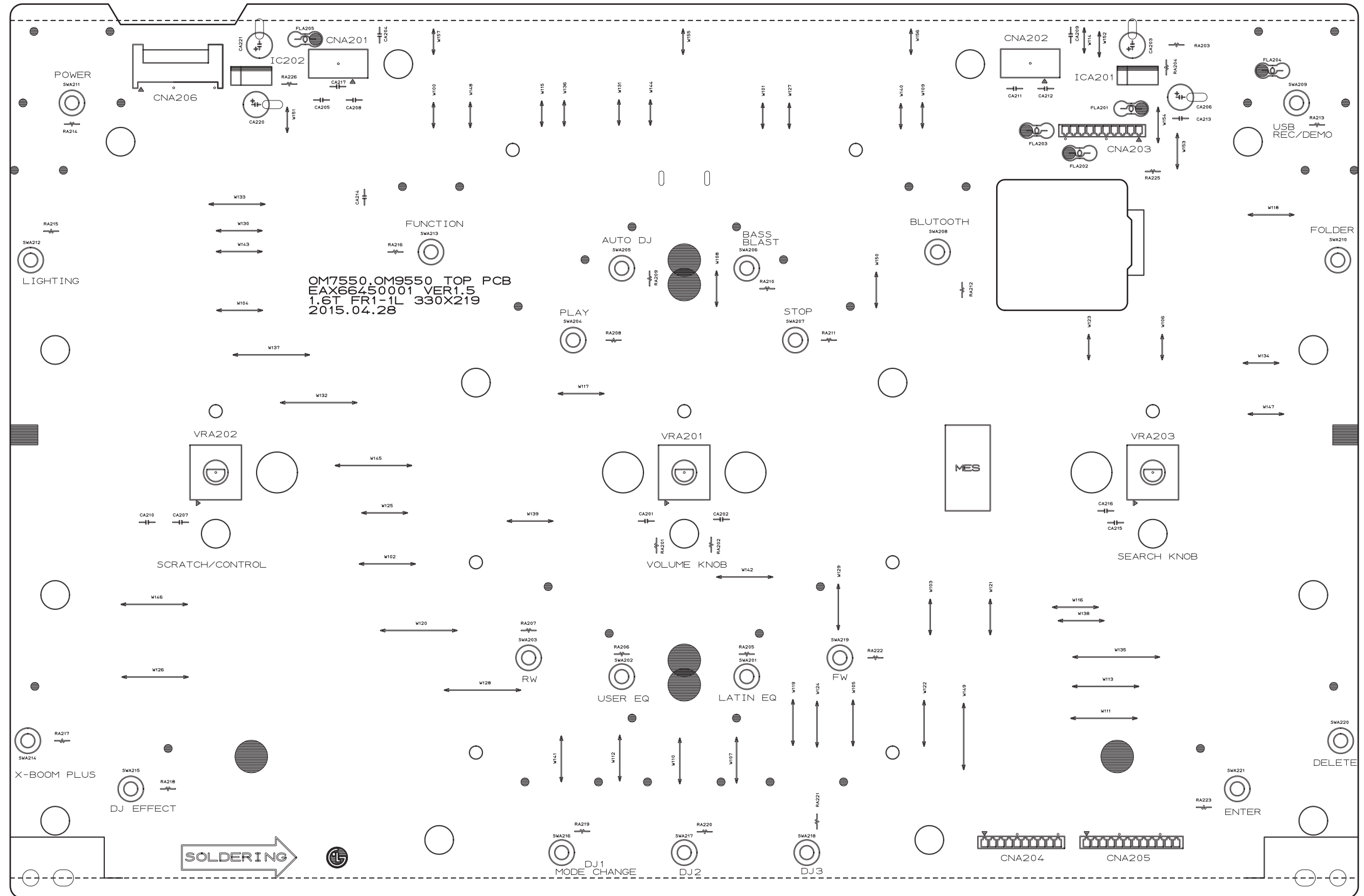


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 EAX66487701 (VER1.5)
 2015.04.28

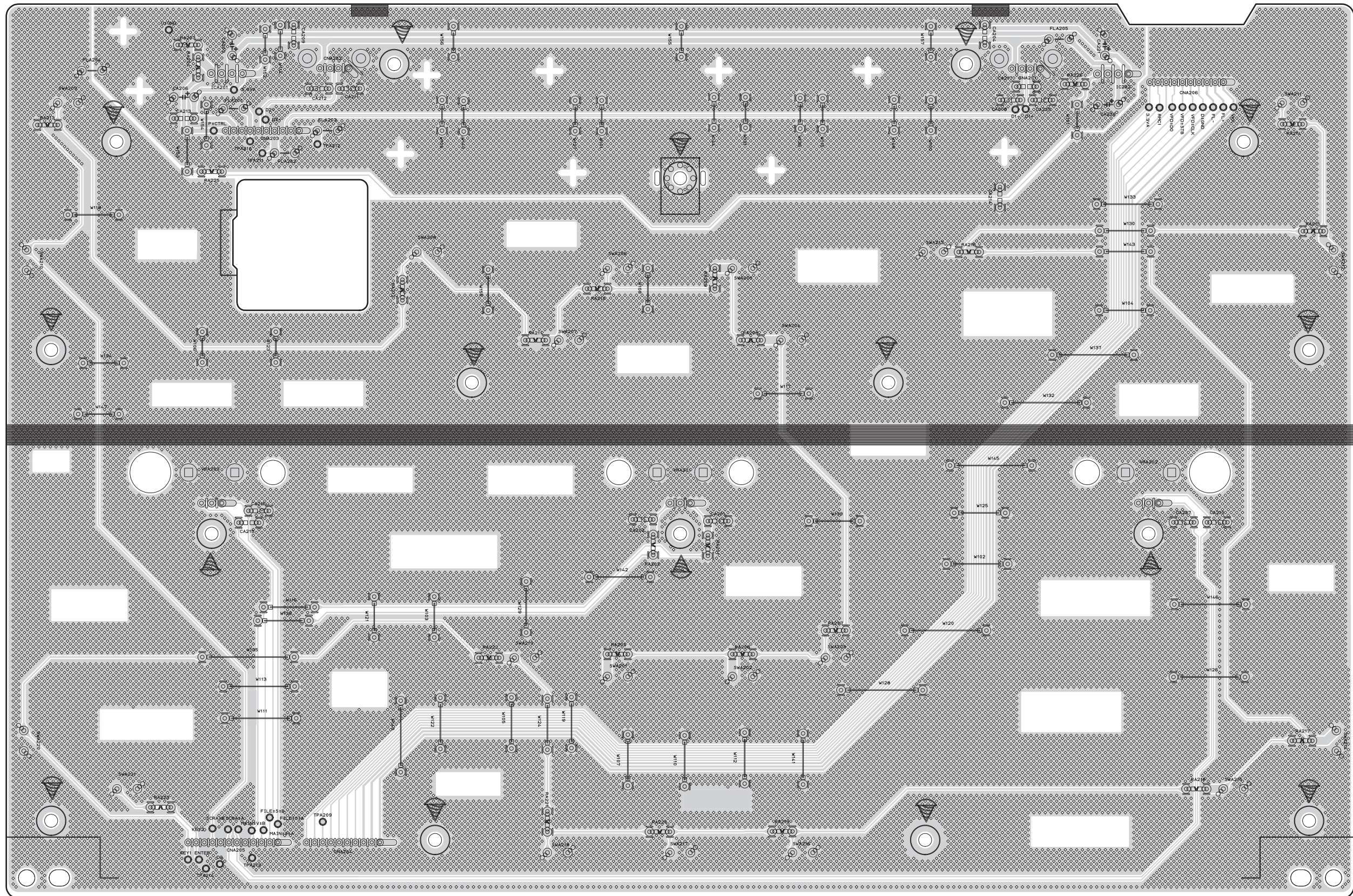
4. MAIN, VFD/RMC1 P.C.BOARD (BOTTOM VIEW)



7. TOP(VOLUME_FR1) P.C.BOARD (TOP VIEW)



8. TOP(VOLUME_FR1) P.C.BOARD (BOTTOM VIEW)



APPENDIX

MECHANISM (DM19AA)

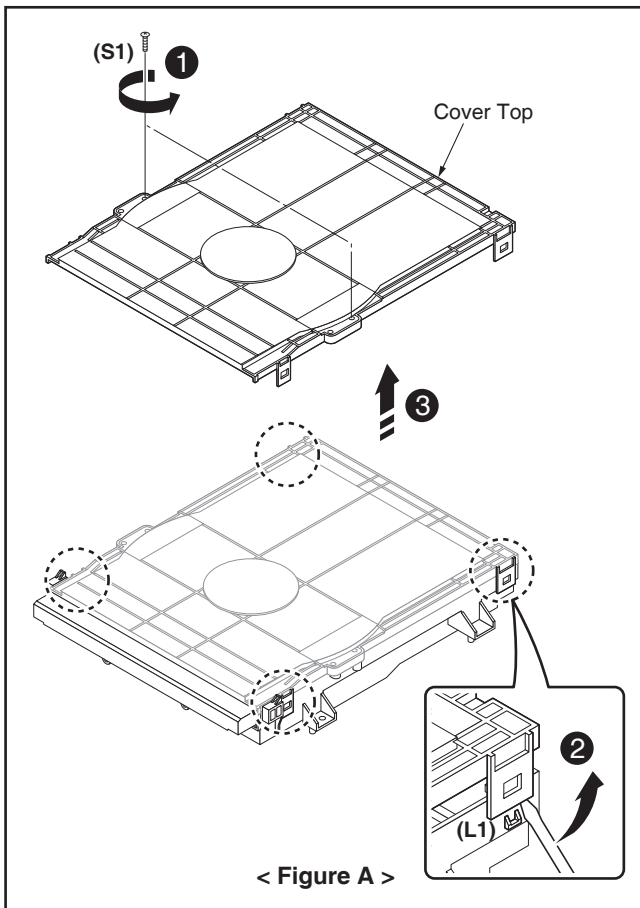
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7. Gear Pulley	5
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12. FFC Cable	5

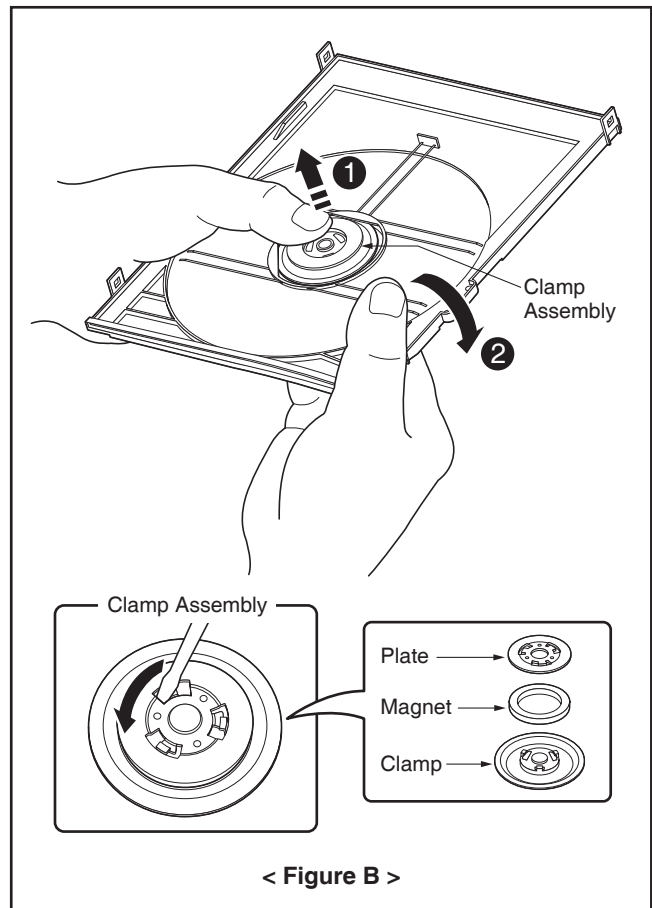
DECK MECHANISM EXPLODED VIEW (DM19AA).....	6
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DECK MECHANISM DISASSEMBLY



1. Cover Top

- 1) Remove the 2 screws (S1).
- 2) Unhook the 4 Locking Tabs (L1) by using a flat-head screwdriver.
- 3) Remove the Cover Top.



2. Clamp Assembly

- 1) Place the Clamp Assembly as **Figure B**.
- 2) Bending the Cover Top in direction of arrow (2) as **Figure B**.
- 3) Separate the Clamp Assembly from the Cover Top.

2-1. Plate

- 1) Turn the Plate to a counterclockwise direction and then lift up the Plate.
- 2) Remove the Plate.

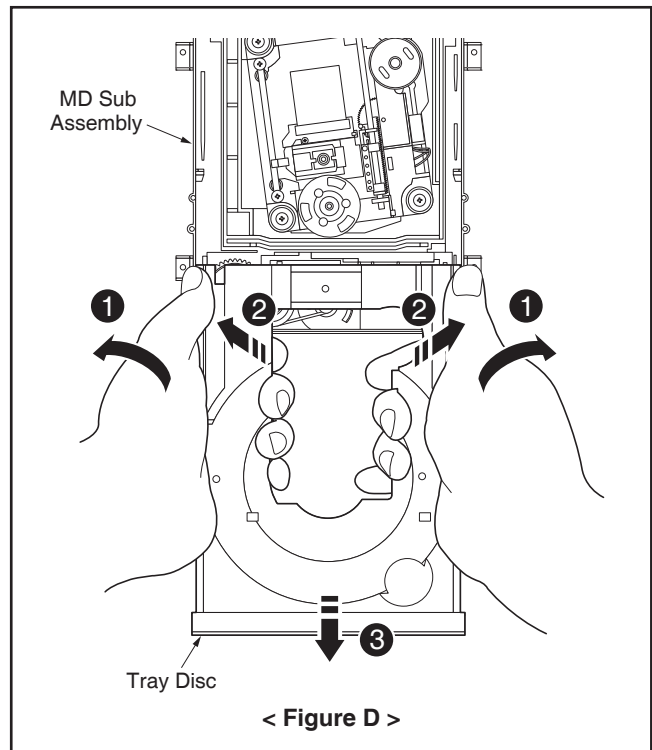
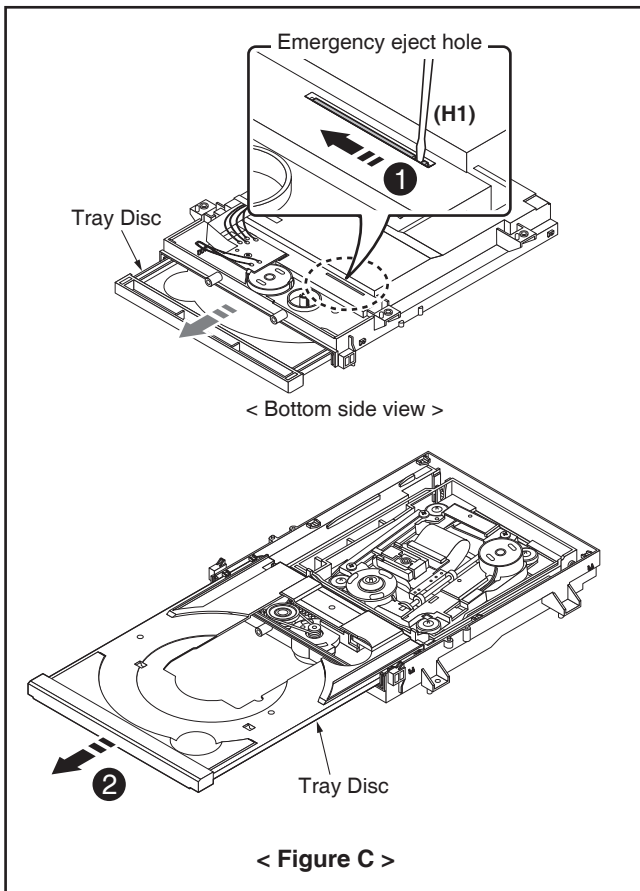
2-2. Magnet

Remove the Magnet.

2-3. Clamp

Remove the Clamp.

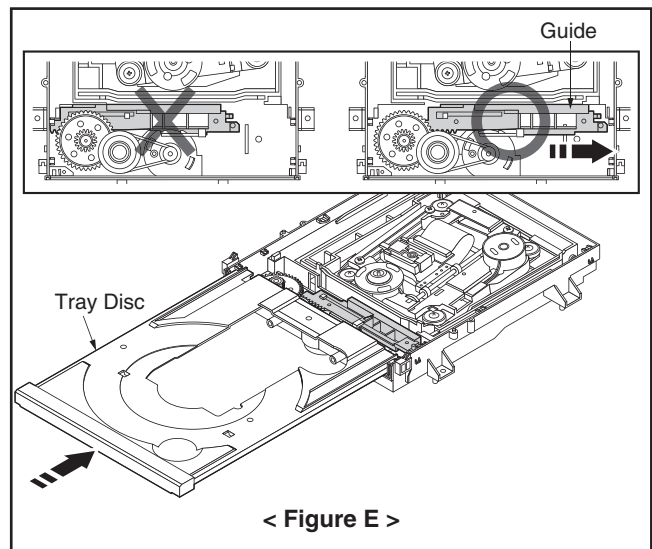
DECK MECHANISM DISASSEMBLY



3) Grasp the both sides of the Tray Disc and lift it up as **Figure D**, and then pull the Tray Disc until it is separated from the MD Sub Assembly completely.

3. Tray Disc

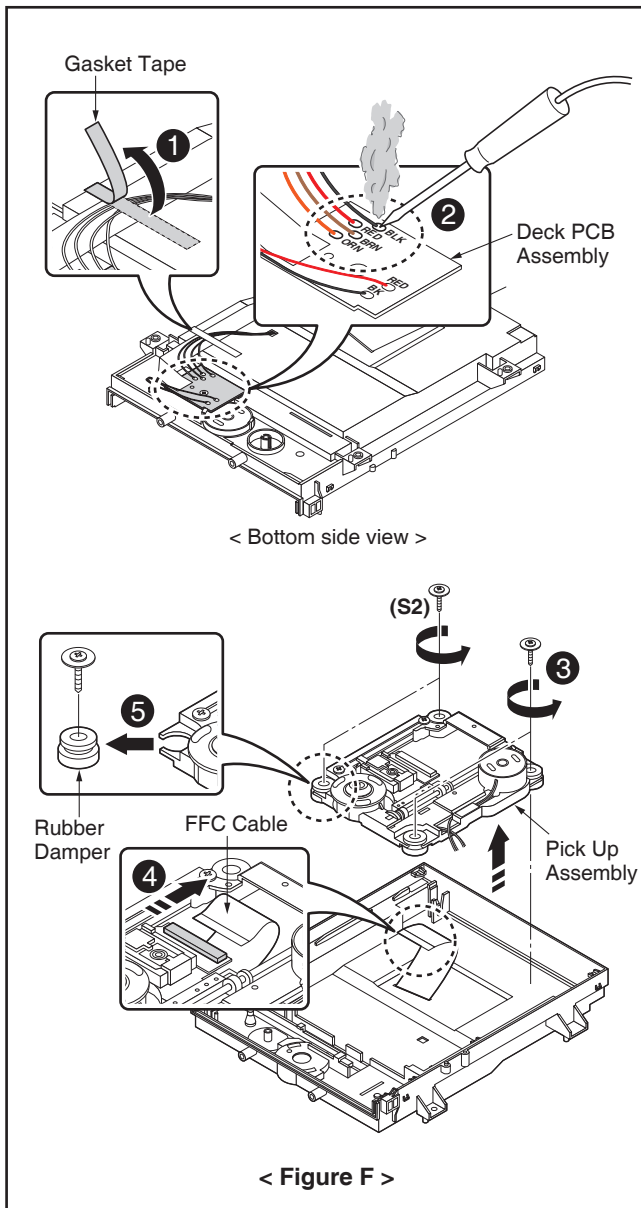
- 1) Insert and push a flat-head screwdriver in the Emergency eject hole (H1) at the right side, so that the Tray Disc is ejected about 15 ~ 20 mm.
- 2) Pull the Tray Disc until it is locked.



Note

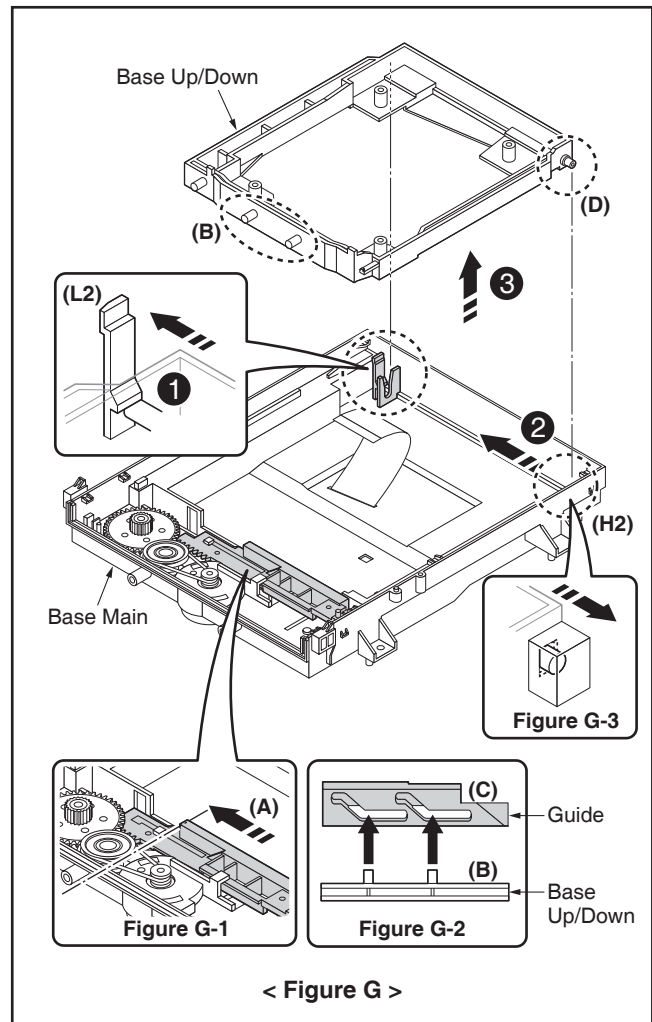
- When reassembling place the Guide as **Figure E**.

DECK MECHANISM DISASSEMBLY



4. Pick Up Assembly

- 1) Detach the Gasket Tape.
- 2) Disconnect the wires (BLK, RED, BRN, ORN) from the Deck PCB Assembly by desoldering.
- 3) Remove the 4 screws (S2).
- 4) Disconnect the FFC Cable from the Pick Up Assembly.
- 5) Remove the 4 Rubber Dampers.



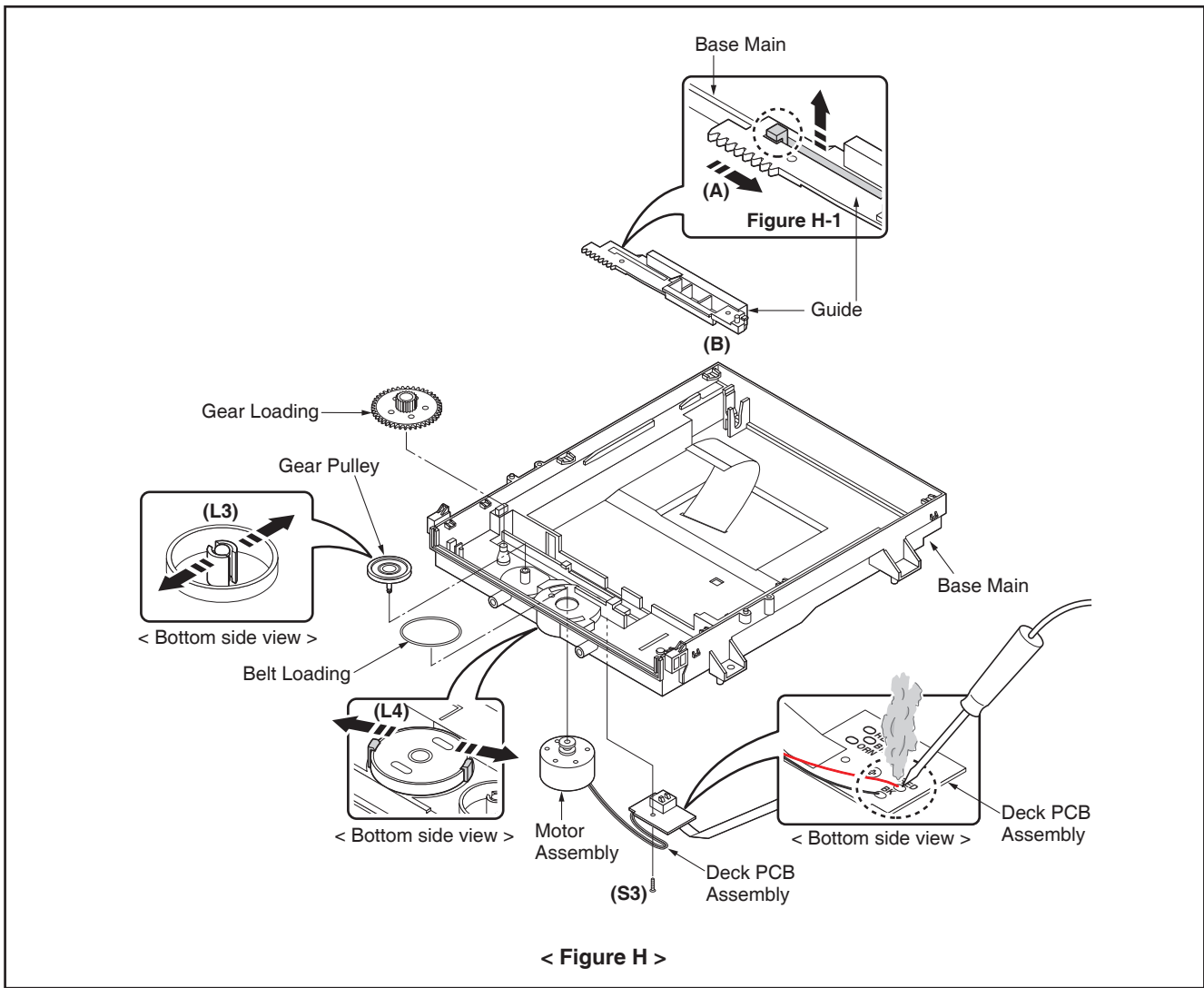
5. Base Up/Down

Unlock the Locking Tab (L2) in direction of arrow and then lift up the Base Up/Down to separate it from the Base Main.

Note

- When reassembling move the Guide in direction of arrow (A) until it is positioned as **Figure G-1**.
- When reassembling insert the (B) portion of the Base Up/Down in the (C) portion of the Guide as **Figure G-2**.
- When reassembling insert the (D) portion of the Base Up/Down in the Hole (H2) of the Base Main as **Figure G-3**.

DECK MECHANISM DISASSEMBLY



6. Belt Loading

Remove the Belt Loading.

7. Gear Pulley

Unlock the Locking Tab (L3) in direction of arrow and then separate the Gear Pulley from the Base Main.

8. Gear Loading

Remove the Gear Loading.

9. Guide

- 1) Move the Guide in direction of arrow (A) as **Figure H-1**.
- 2) Separate the Guide from the Base Main.

10. Deck PCB Assembly

- 1) Disconnect the wires (RED, BK) from the Deck PCB Assembly by desoldering.
- 2) Remove the 1 screw (S3).
- 3) Separate the Deck PCB Assembly from the Base Main.

11. Motor Assembly

Unlock the Locking Tab (L4) in direction of arrow and then separate the Motor Assembly from the Base Main.

12. FFC Cable

Remove the FFC Cable.

DECK MECHANISM EXPLODED VIEW (DM19AA)

