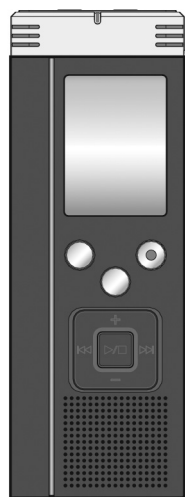


Service Manual

IC Recorder

Model No. **RR-US570PP**
RR-US570E
RR-US590P



RR-US570
RR-US590

Product Color: (K)...Black Type

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety Precautions

1.1. General Guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, carry out the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Protection Circuitry

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

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

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

If this occurs, follow the procedure outlines below:

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

Note:

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

1.3. Safety Part Information (RR-US570, RR-US590)

Safety Parts List:

There are special components used in this equipment which are important for safety.

These parts are marked by ⚠ in the Schematic Diagrams, Exploded View & Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

Table 1

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
⚠	13	RKS0454A-K	REAR CABINET	US570PP
⚠	13	RKS0454B-K	REAR CABINET	US570E
⚠	13	RKS0454H-K	REAR CABINET	US590P
⚠	ICP501	D4FB1R100015	RESETTABLE FUSE	
⚠	ICP502	D4FB1R100015	RESETTABLE FUSE	
⚠	A3	RQT9358-Y	O/I BOOK (En/Cf)	US570PP
⚠	A3	RQT9361-B	O/I BOOK (En)	US570E
⚠	A3	RQT9362-E	O/I BOOK (Ge/It/Fr/Du/Sp/Cn/Ar/Sw/Da/Cz/Po/Pr/Ru/Ur)	US570E
⚠	A3	RQT9359-P	O/I BOOK (En)	US590P

2 Warning

2.1. Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminium foil, to prevent electrostatic charge build up or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder remover device. Some solder removal devices not classified as “anti-static (ESD protected)” can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution:

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

2.2. Service caution based on Legal restrictions

2.2.1. General description about Lead Free Solder (PbF)

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

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

Definition of PCB Lead Free Solder being used

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

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

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

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
RFKZ03D01K----- (0.3mm 100g Reel)
RFKZ06D01K----- (0.6mm 100g Reel)
RFKZ10D01K----- (1.0mm 100g Reel)

Note

* Ingredient: Tin (Sn), 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

3 Service Navigation

3.1. Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model. If the circuit is changed or modified, this information will be followed by supplement service manual to be filled with original service manual.

3.2. Service Hint

3.2.1. Flash NAND ROM IC

Flash NAND ROM IC, IC701 is supplied as service part.

RR-US570 (1GB) - RFKWNUS570-S

RR-US590 (2GB) - RFKWNUS590-K

3.2.2. USB Serial Number

Serial Number is required to obtain the Firmware Updates.

3.2.3. Firmware Version

To obtain updated Firmware version and procedures for updating, please refer to item 6.2.

4 Specifications

Power
Batteries DC 3.0 V (2 AAA LR03 batteries)

Audio
Sampling Frequency XP: 44.1 kHz/44.1 kHz
(Stereo/Monaural) LP: 22.05 kHz/16 kHz
 SLP: 8 kHz/8 kHz

Recording Format MP3
Playable Bit Rate (MUSIC folder) 8 kbps to 320 kbps
Playable Sampling Frequency (MUSIC folder) 8 kHz to 48 kHz
Frequency Response XP: 180 Hz to 15,100 Hz
(-10 dB, Rec-Play, Monaural) LP: 180 Hz to 6,700 Hz
 SLP: 180 Hz to 2,900 Hz
Built-in Microphone S/N Ratio 40.5 dB (XP) Filter (JIS A)

USB USB2.0 (Hi-Speed)
Audio Output Earphone ø 3.5 mm (1.8"), 16 Ω, Max: 3 mW
Speaker output ø 20 mm (25/32"), 8 Ω, Max: 330 mW
Audio Input External Microphone ø 3.5 mm (1/8"),
 0.80 mV plug in power
Built-in Memory 1 GB*¹ (RR-US570)
 2 GB*¹ (RR-US590)
Operating Temperature 0°C to 40°C (32°F to 104°F)
Operating Humidity 20% to 80% (non-condensing)

*¹ GB means one billion bytes. Usable capacity will be less.

Monaural	XP	72 h, 00 min.	64 kbps
	LP	144 h, 00 min.	32 kbps
	SLP	576 h, 10 min.	8 kbps

Max. Dimensions (WxHxD) 40.4 mm x 110.6 mm x 16.8 mm
 (1-19/32" x 4-11/32" x 21/32")

Cabinet Dimensions (WxHxD) 39 mm x 110.6 mm x 15.1 mm
 (1-17/32" x 4-11/32" x 19/32")

Mass (Weight) Approx. 65 g (2.30 oz.) with battery
 Approx. 43 g (1.52 oz.) without battery

Specifications are subject to change without notice.

Battery life (may be less depending on the operating conditions.)

Battery (AAA LR03)	Recording mode		Rec* ³	Play* ⁴
Alkaline battery* ²	Stereo	XP	approx. 23 h.	approx. 35 h.
		LP	approx. 29 h.	approx. 35 h.
		SLP	approx. 32 h.	approx. 35 h.
	Monaural	XP	approx. 32 h.	approx. 35 h.
		LP	approx. 42 h.	approx. 35 h.
		SLP	approx. 45 h.	approx. 35 h.

*² Using Panasonic Alkaline battery.

*³ When zoom microphone is off.

*⁴ When audio is output from speaker (Volume: 13, EQ: off, playback speed control: x 1).

Standard recordable time (RR-US570)

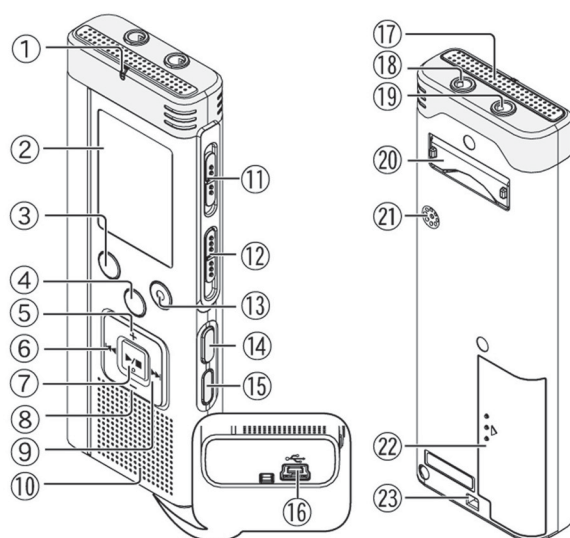
Recording mode		Time	Bit rate
Stereo	XP	17 h, 50 min.	128 kbps
	LP	35 h, 50 min.	64 kbps
	SLP	143 h, 40 min.	16 kbps
Monaural	XP	35 h, 50 min.	64 kbps
	LP	71 h, 50 min.	32 kbps
	SLP	287 h, 30 min.	8 kbps

Standard recordable time (RR-US590)

Recording mode		Time	Bit rate
Stereo	XP	36 h, 00 min.	128 kbps
	LP	72 h, 00 min.	64 kbps
	SLP	288 h, 00 min.	16 kbps

5 Location of Controls and Components

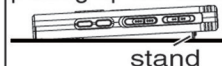
5.1. Components of IC Recorder



- ① Recording indicator (red)
- ② LCD display
- ③ FOLDER
- ④ STOP
- ⑤ + (Volume)
- ⑥ ◀◀ (Fast backward)
- ⑦ ▶/■ (Play/Stop/Enter)
- ⑧ - (Volume)
- ⑨ ▶▶ (Fast forward)
- ⑩ Built-in speaker
- ⑪ OPR/HOLD
- ⑫ Recording position switch (ZOOM/NORMAL/MANUAL)
- ⑬ REC/PAUSE
- ⑭ •MENU/-REPEAT
- ⑮ ERASE

- ⑯ USB jack
- ⑰ Built-in microphone
- ⑱ External microphone jack (MIC)
- ⑲ Headphone/earphone jack (🎧)
- ⑳ Stand

When you perform zoom recording with the unit placed on the desk, etc., stable zoom effect can be obtained by putting up the stand.

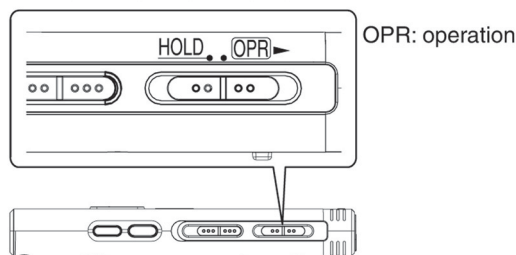


- ㉑ Zoom microphone
- ㉒ Battery cover
- ㉓ Hand strap hole

5.2. Basic Operation

Turning ON/OFF the Power

OPERATION/HOLD Switch



Turning the power ON

- Slide OPERATION/HOLD switch to **OPR** side, then the power turns on and the display lights on.

Turning the power OFF

- Slide and hold OPERATION/HOLD switch to **OPR** side for 2 seconds.

Also, when you do not operate the unit for more than approx. 15 minutes while the unit is stopped, "b4E" is displayed and the power automatically turns off.

6 Self-diagnostic/Doctor Mode

6.1. Service Functions

6.1.1. Test Mode

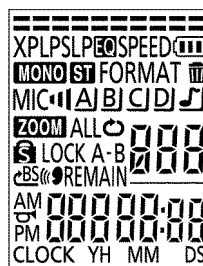
Purpose: To enter into Test Mode for checking and inspection of unit.

Procedures:

1. Set the recording position switch to "MANUAL" at the power off.
(Setting to "MANUAL" after turning on the power is OK.)
2. Slide [OPR/HOLD] switch to "OPR" side to turn on the power.
3. Set to "HOLD" mode by pushing [OPR/HOLD] button.
4. Input the below keys while displaying the "HOLD".
[MENU] --> [ERASE] --> [◀◀] --> [VOL-]

Note : Input of these keys are done within two seconds while displaying "HOLD".

5. All segments of LCD will Light up & the unit will enter into the Operation Check Mode. During the Operation Check Mode, the Recording LED will be blinking.
6. To cancel Test Mode, power off the unit by removing batteries.



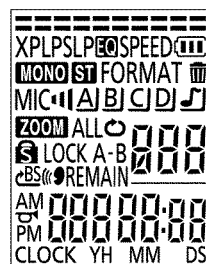
Initial display in the
Test Mode

6.1.2. USB Serial Number (ID) Confirmation Function

Purpose: To check USB Serial Number (ID) which is written in the NAND flash memory at the final process is confirmed in this mode.

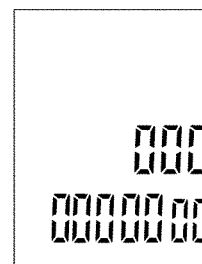
Procedures:

1. Enter into Test Mode, check all segments of LCD light up.
2. Press and hold [▶/■] for 10 seconds and the USB serial number which is written in NAND flash memory is displayed.



Initial display
(Test Mode)

Press and hold [▶/■]
for 10 seconds



USB serial number (ID)
confirmation display

6.1.3. Reset Function

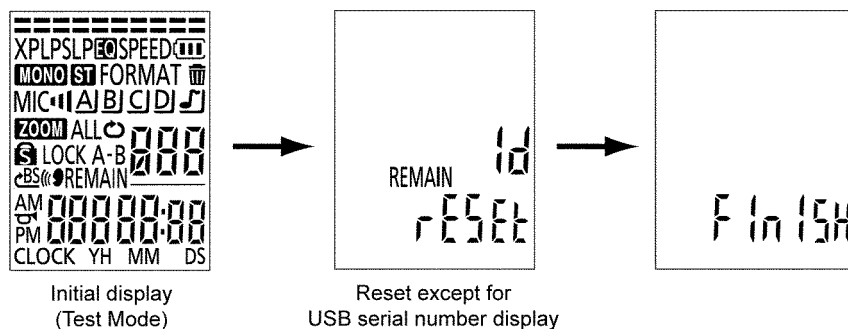
Purpose:

- To reset to factory default setting.
- Only USB Serial Number (ID) is not initialized, and NAND flash memory is not formatted logically in this mode.

Procedures:

1. Enter into Test Mode, check all segments of LCD light up.
2. Set the Recording position switch to "WIDE".

3. Press and hold [▶/■] for 10 seconds and enter this mode.



Caution:

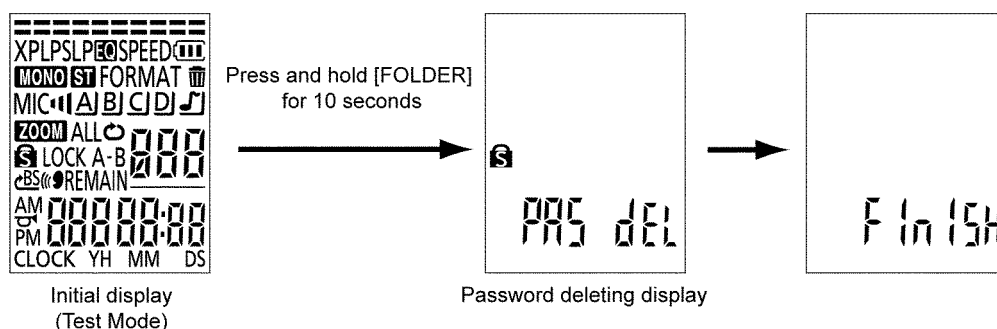
If the password is set, the password will be initialized.
Recording files and data files other than mp3 are erased.

6.1.4. Password Deletion Function

Purpose: To retain the data of all folders only deleting the password when forgotten the password.

Procedures:

1. Enter into Test Mode, check all segments of LCD light up.
2. Press and hold [FOLDER] for 10 seconds and the password is automatically deleted.



Caution:

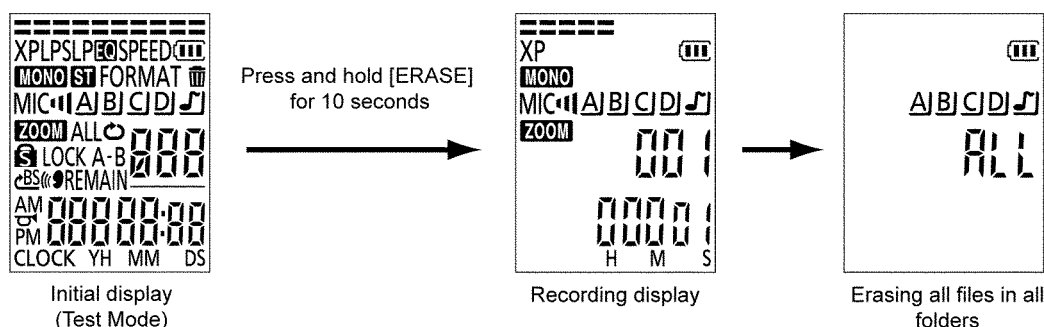
Pressing the [FOLDER] for 10 seconds is invalid when the password is unset (because of no need to delete the password).

6.1.5. Repeat Recording Function

Purpose: To measure recording battery life.

Procedures:

1. Enter into Test Mode, check all segments of LCD light up.
2. Press and hold [ERASE] for 10 seconds and enter the repeat recording mode.



Caution:

Recording mode, stereo/monaural and zoom setting are retained the final one before entering this mode. Therefore, cannot set them in the repeat recording function.

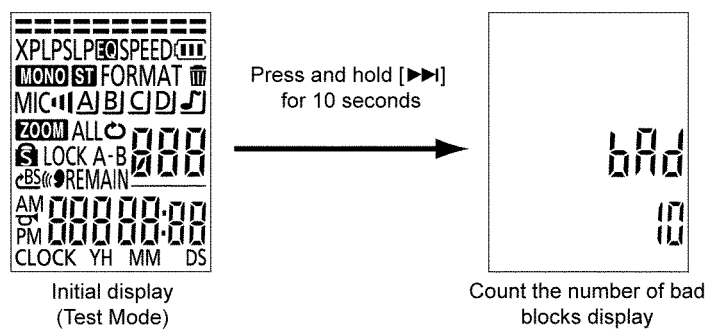
6.1.6. Bad Blocks in the NAND Flash Memory Function

Purpose: To count the number of bad blocks in the NAND flash memory in order to evaluate the flash memory.

Procedures:

1. Enter into Test Mode, check all segments of LCD light up.

2. Press and hold [▶▶I] for 10 seconds and enter the number of bad blocks counting mode.

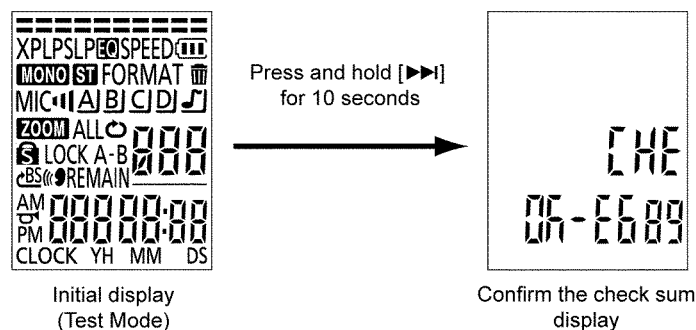


6.1.7. Check Sum in the Firmware Function

Purpose: To confirm the check sum in the Firmware stored area in the NAND flash memory in order to judge whether the data of the Firmware area is normal or not.

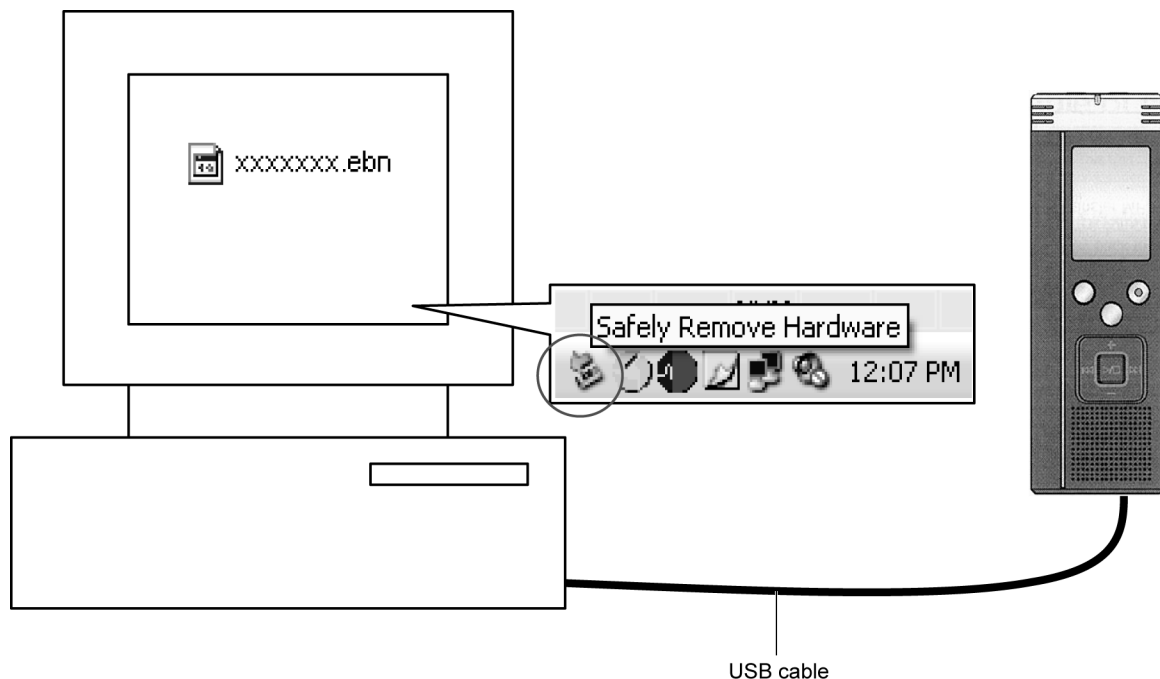
Procedures:

1. Enter into Test Mode, check all segments of LCD light up.
2. Set the Recording position switch to “WIDE”.
3. Press and hold [▶▶I] for 10 seconds and enter this mode.



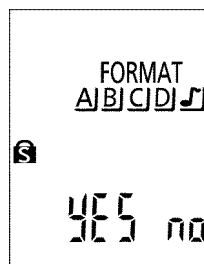
6.2. Firmware Update

6.2.1. Update Firmware and check its Version Number



• Updating the firmware

1. Insert battery with sufficient battery charge.
2. Connect IC-recorder to PC using USB cable.
3. Copy "XXXXXXXXX.ebn" file to IC-recorder root folder.
4. Terminate PC to IC-recorder connection safely
(refer to icon at bottom right side of the monitor – "Unplug, Eject or Safely Remove Hardware").
5. Let IC-recorder perform system update, "UP" and "[F] ACCESS" will display on LCD.
6. Upon completing update, perform "FORMAT" function to erase all files in the IC-recorder.
 - Press ERASE key
 - Select the display which [FORMAT] is flashing in file erasing mode
 - Select [YES] in the [YES no] display
 - Press [▶/■]



• Checking Firmware Version

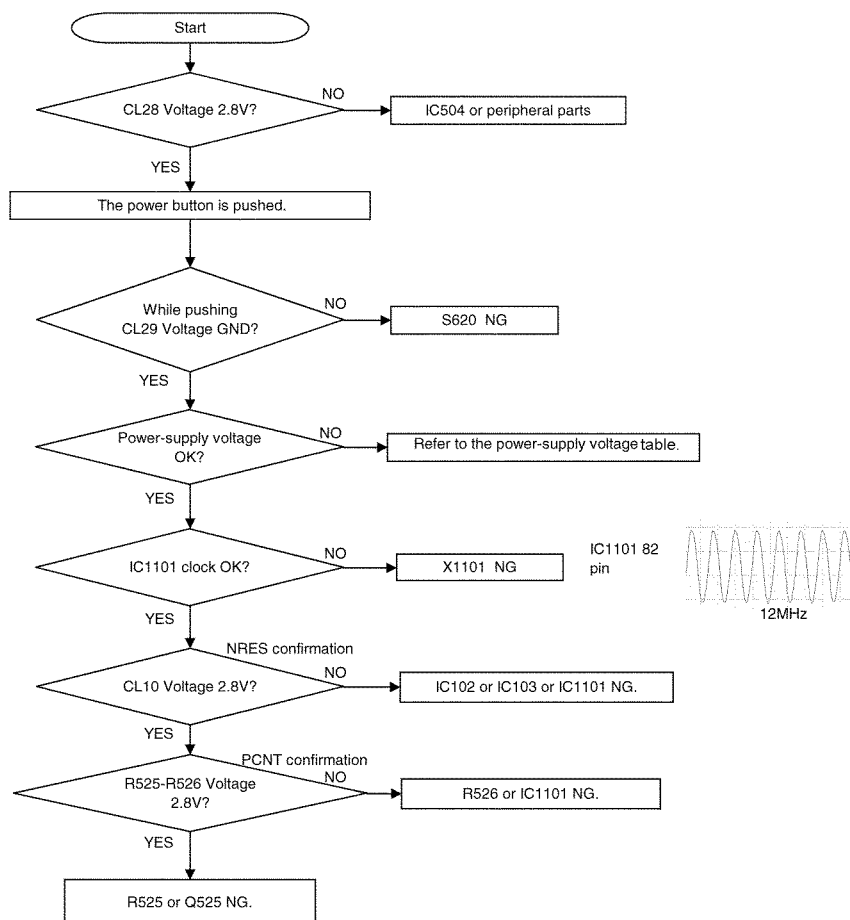
1. Press and hold [STOP] key for 10 seconds, LCD will display the firmware number.

Note: Firmware file and Firmware Version Number, please kindly obtain from TSN website.

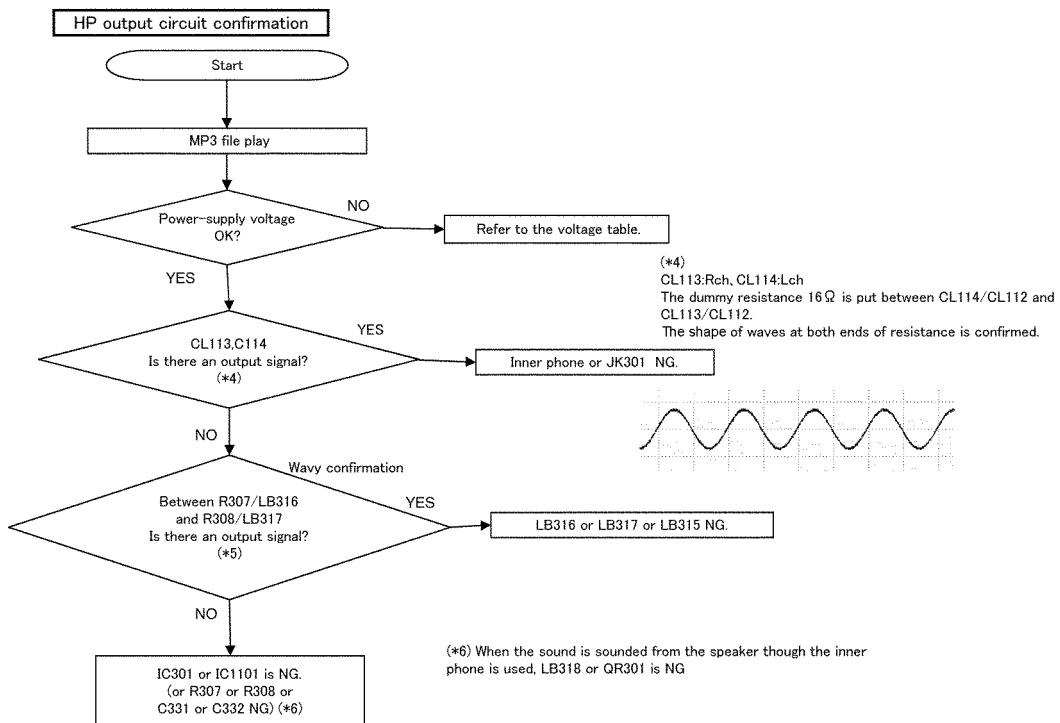
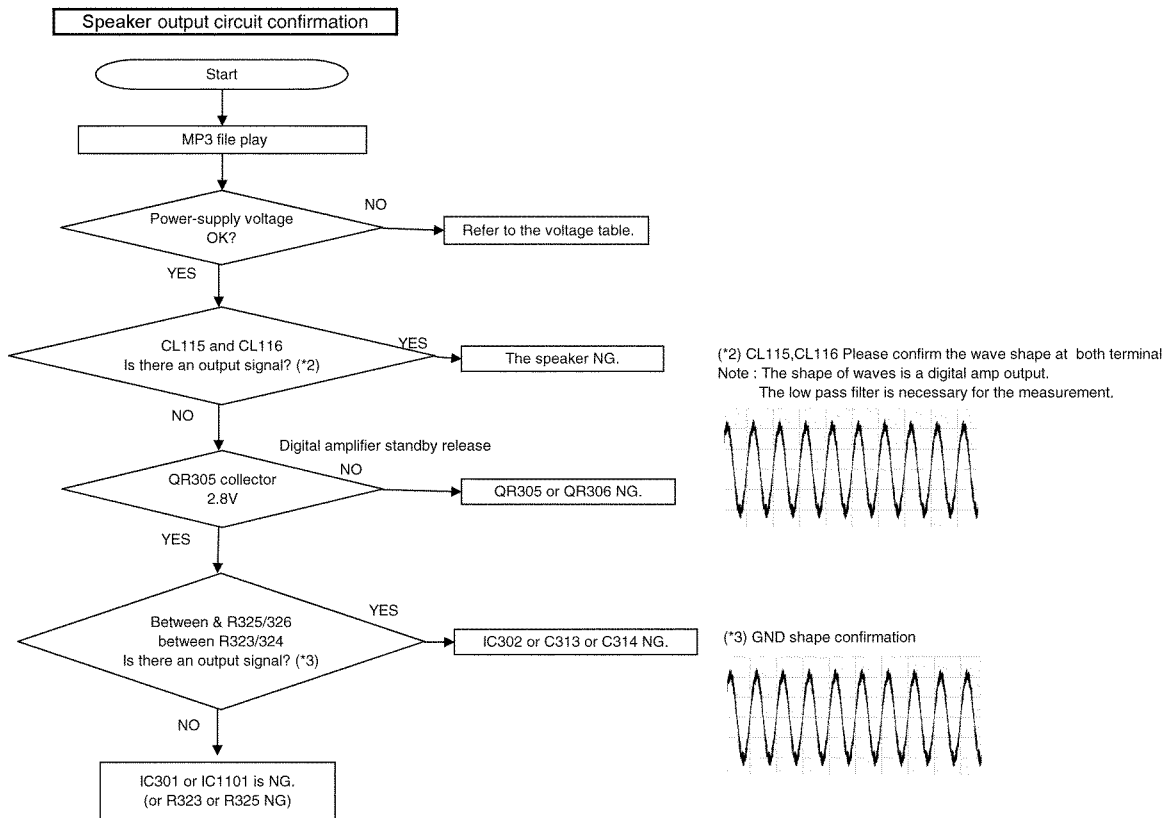
7 Troubleshooting Guide

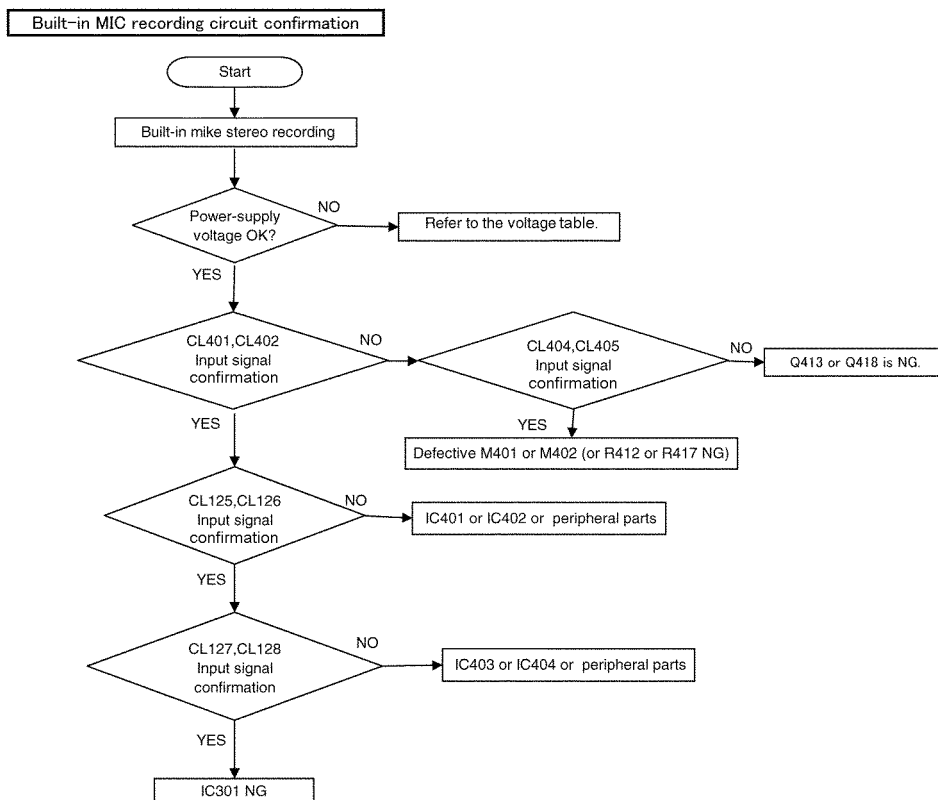
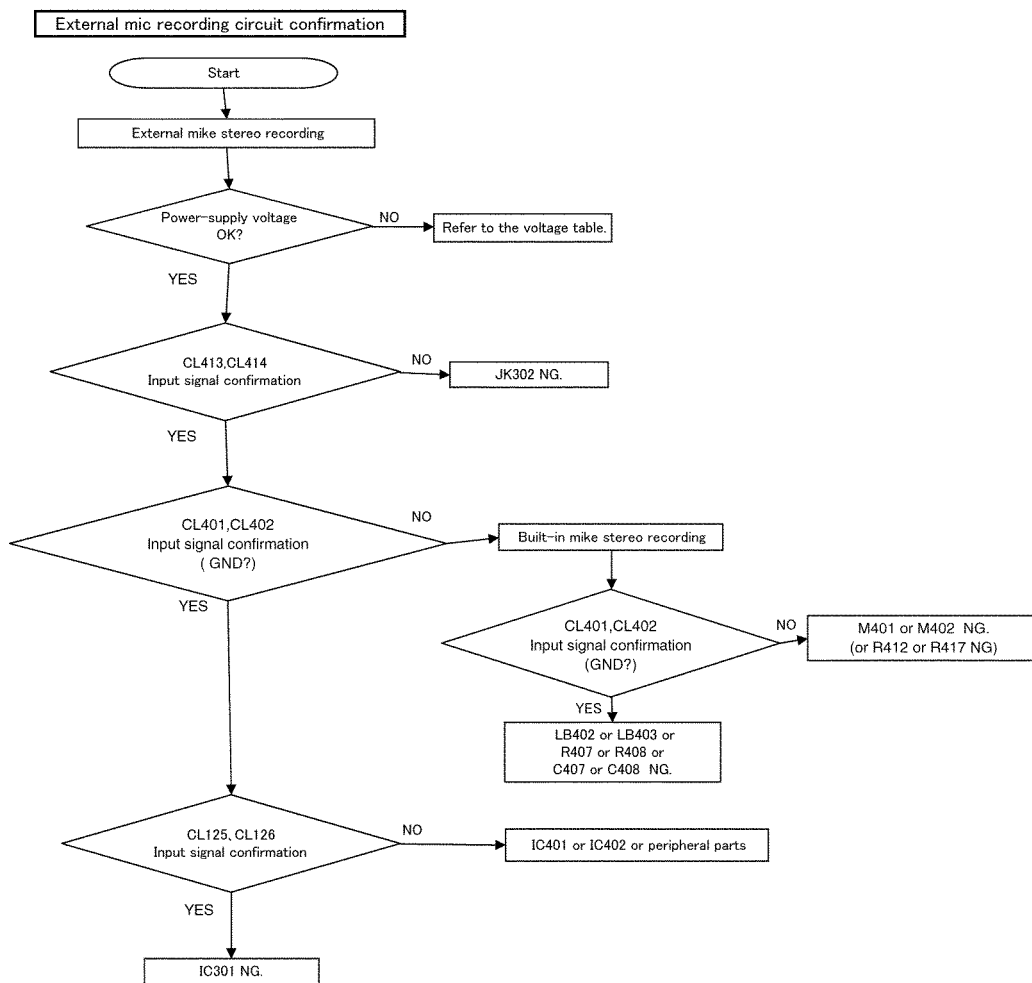
System start circuit confirmation

System doesn't start even if the power button pushes.



Power-supply voltage table	Measurement point	Power OFF	Record mode	Play mode	USB communicate mode	The main faulty point
Main source of electrical power	CL28	2.8V	2.8V	2.8V	3.2V	IC504
USB power supply	CL26	0V	0V	0V	3.2V	IC503 / IC502
Microcomputer power supply 1	C531	0V	1.2V	1.2V	1.5V	IC508 / IC509 / D503 / D503 / QR522 / QR526 / Q524
Microcomputer power supply 2	CL11	0V	2.8V	2.8V	3.2V	Q520 / QR522 / QR526
Power supply for recording	C473	0V	2.5V	0V	0V	IC405
Zoom stereo power supply	QR470 (collector)	0V	2.5V(At the zoom stereo)	0V	0V	QR470
Stereo power supply	QR471 (collector)	0V	2.5V(At the stereo)	0V	0V	QR471
Speaker amplifier power supply	C312	0V	2.8V - 2.4V	2.8V - 2.4V	3.2V - 2.8V	D301
Flash memory power supply	C701	0V	2.8V	2.8V	3.2V	LB701





8 Disassembly and Assembly Instructions

Caution

“ATTENTION SERVICER”

Be careful when disassembling and servicing.

Some chassis components may have sharp edges.

Special Note:

1. This section describes the disassembly procedures for all the major printed circuit boards and main components.
2. Before the disassembly process was carried out, do take special note that all Safety Precautions are carried out.
3. For assembly after operation checks or replacement, reverse the respective procedures.

Special reassembly procedures are described only when required.

4. Do take note of the locators on each printed circuit board during reassembling procedures.

Special reassembly procedures are described only when required.

5. Select items from the following index when checks or replacement are required.

- Disassembly of MIC Ornament and LED Tip
- Disassembly of Rear Cabinet Assembly
- Disassembly of Stand and Battery Cover
- Replacement of Side Ornament, Mode Knob and Hold Knob
- Replacement of Main P.C.B.
- Disassembly of LCD P.C.B.
- Disassembly of Rec Button
- Disassembly of Up Down Button Unit and Play Button
- Disassembly of Menu Button
- Disassembly of Speaker Unit
- Replacement of Front Ornament
- Replacement of LCD Holder Unit

CAUTION NOTE:

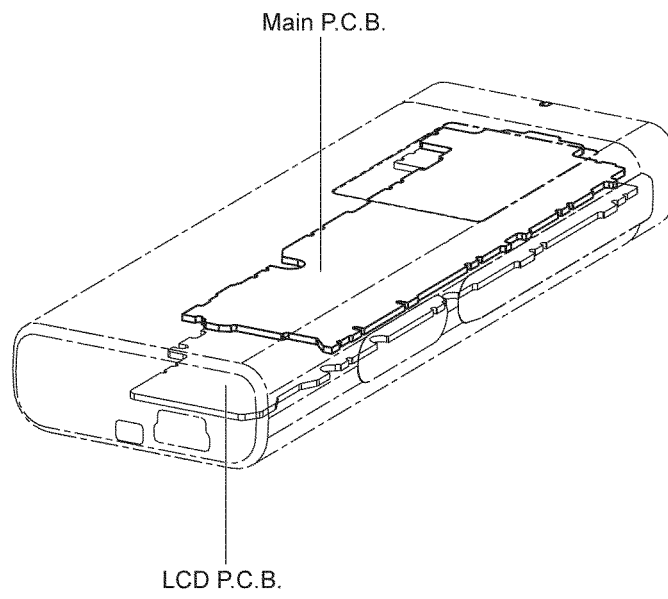
Please use original screw and at correct locations.

Below shown is part no. of different screw types used:

a : RHQ0051-K1

b : RHE5162ZB

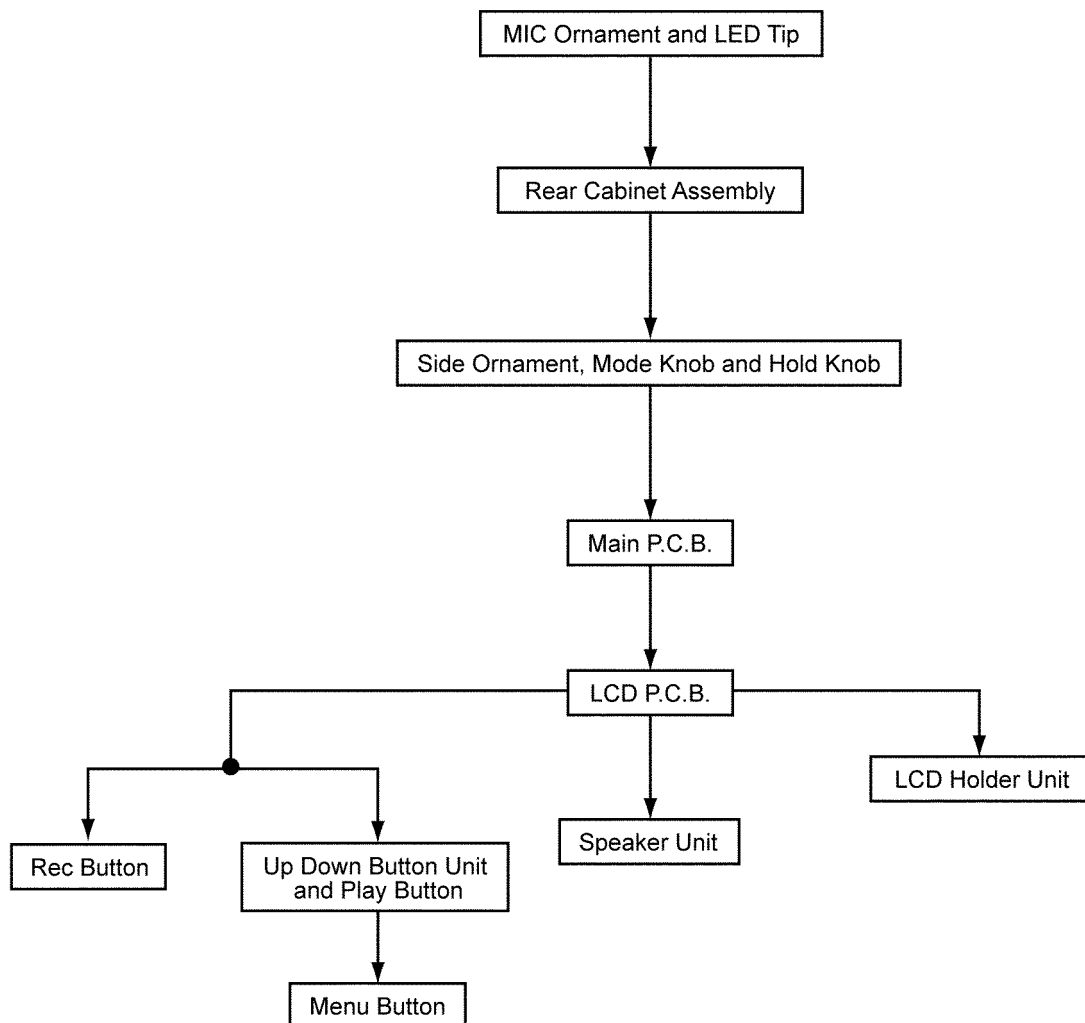
8.1. Main Parts Location Diagram



8.2. Disassembly flow chart

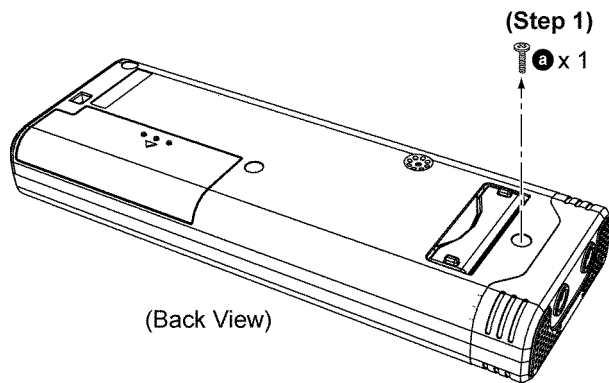
The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

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

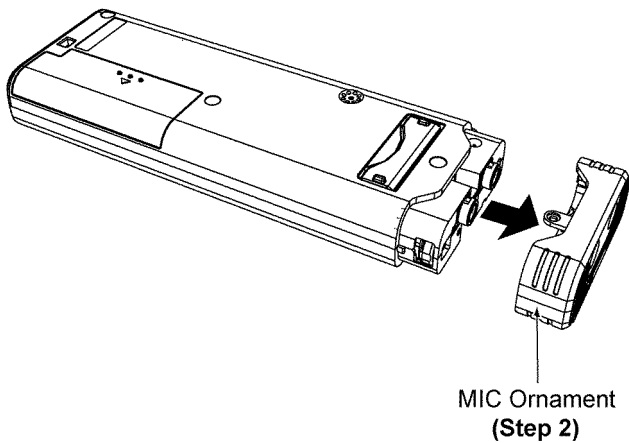


8.3. Disassembly of MIC Ornament and LED TIP

8.3.1. Disassembly of MIC Ornament

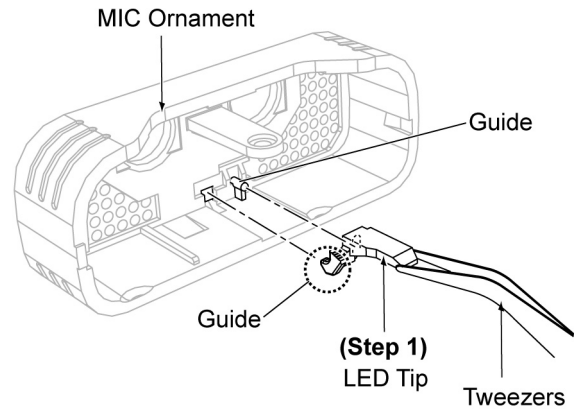


Step 1 : Remove 1 screw.



Step 2 : Remove MIC Ornament.

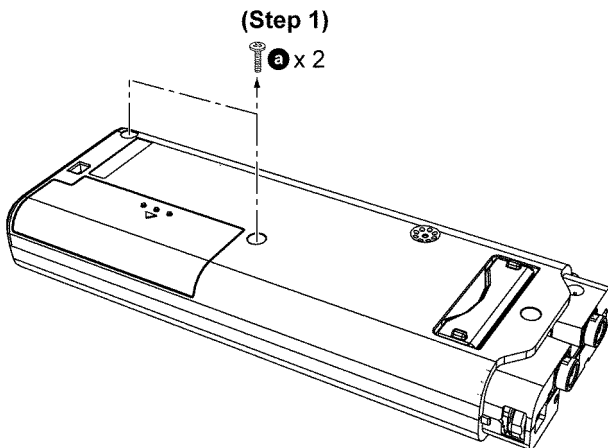
8.3.2. Disassembly of LED Tip



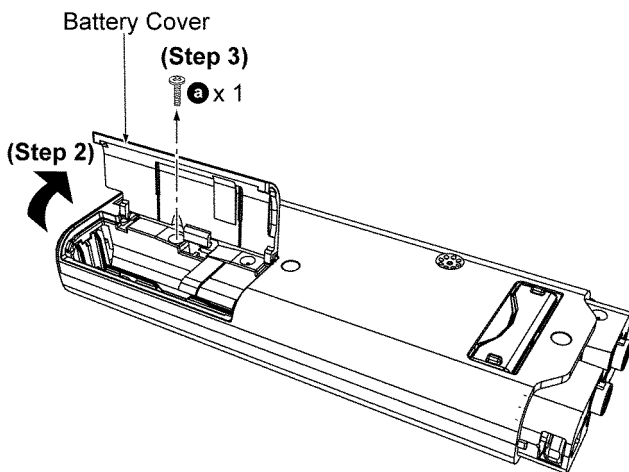
Step 1 : Use a Tweezers to remove the LED Tip.
Caution : Ensure the LED Tip is fixed exactly onto the guides during assembly.

8.4. Disassembly of Rear Cabinet Assembly

- Follow the (Step 1) - (Step 2) of item 8.3.1.

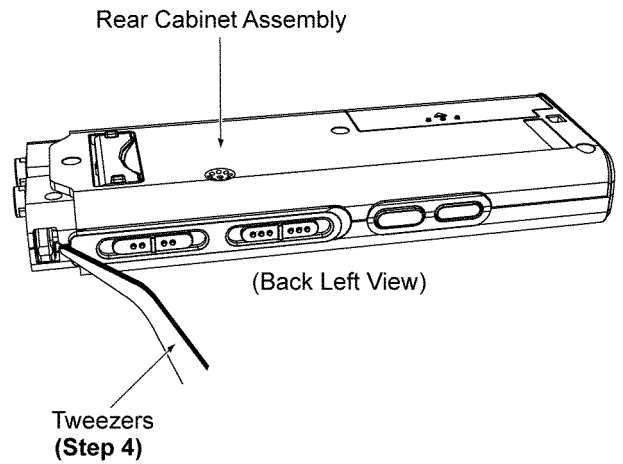


Step 1 : Remove 2 screws.

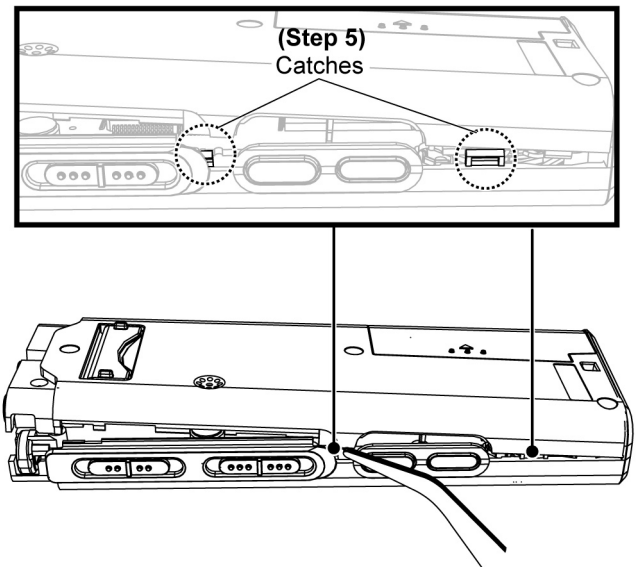


Step 2 : Flip open the Battery Cover.

Step 3 : Remove 1 screw.

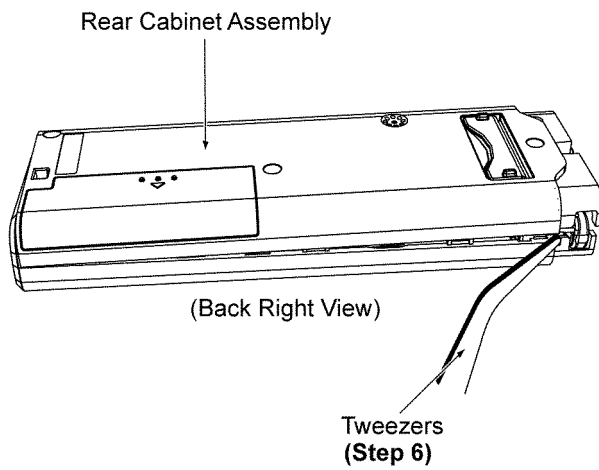


Step 4 : Insert a Tweezers at the upper portion of the Rear Cabinet Assembly to make a gap.

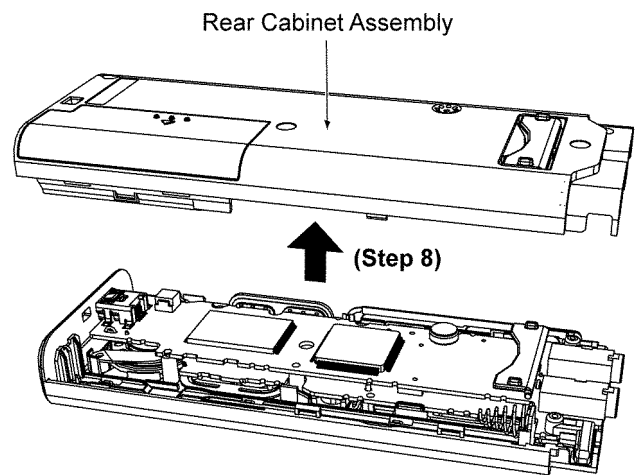


Step 5 : Gently push up the Rear Cabinet Assembly to release the 2 catches, one at a time.

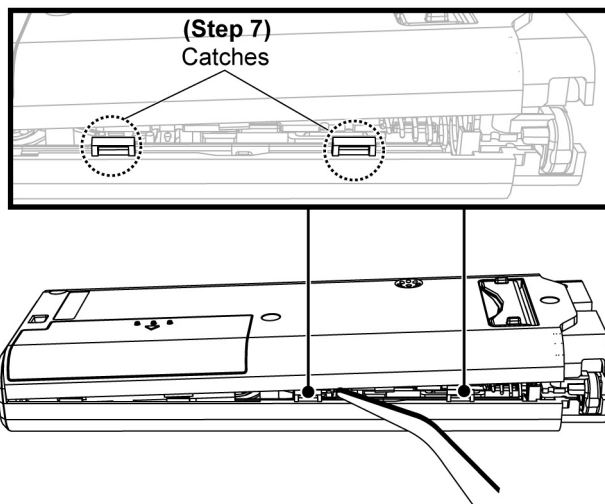
Caution : Do not apply strong force in releasing the catches to avoid damage of the catches.



Step 6 : Insert a Tweezers at the upper portion of the Rear Cabinet Assembly to make a gap.



Step 8 : Remove the Rear Cabinet Assembly.

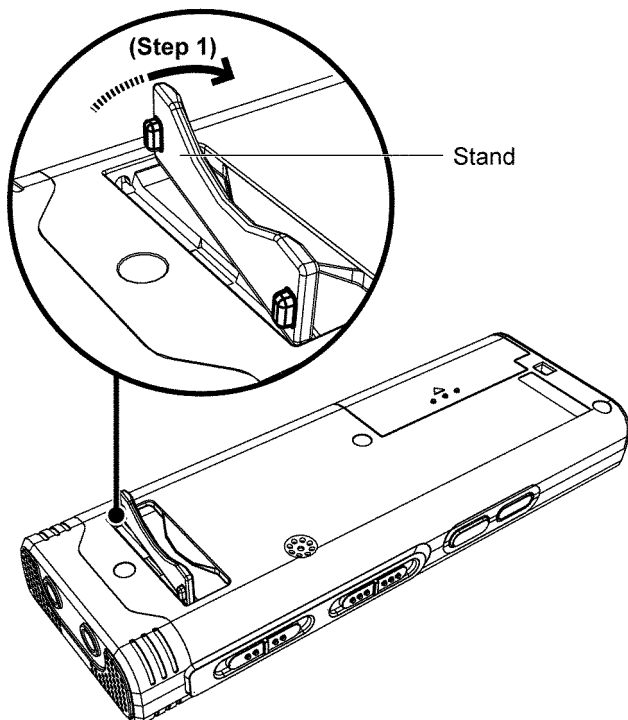


Step 7 : Gently push up the Rear Cabinet Assembly to release the 2 catches, one at a time.

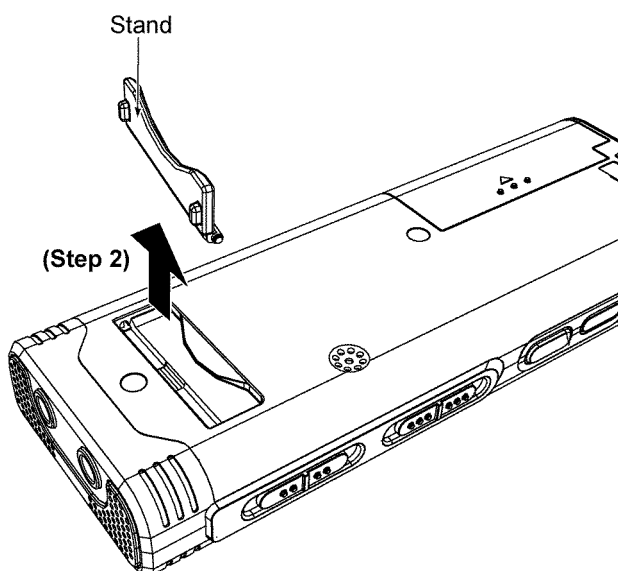
Caution : Do not apply strong force in releasing the catches to avoid damage of the catches.

8.5. Disassembly of Stand and Battery Cover

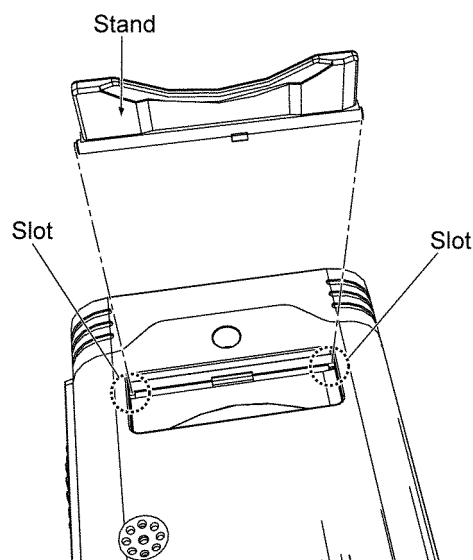
8.5.1. Disassembly of Stand



Step 1 : Push out the Stand.

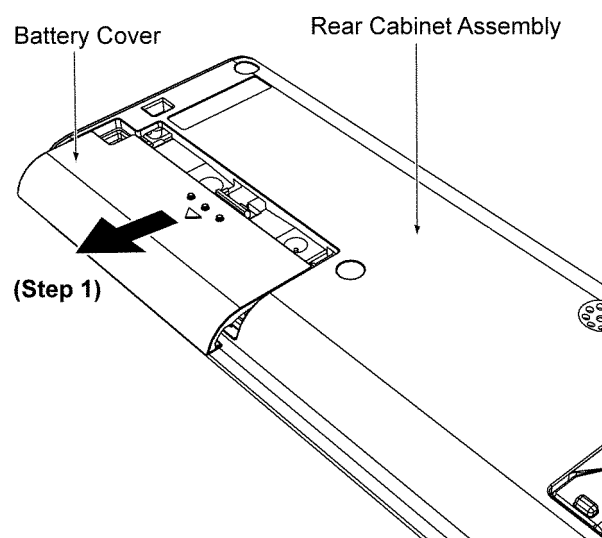


Step 2 : Remove the Stand.

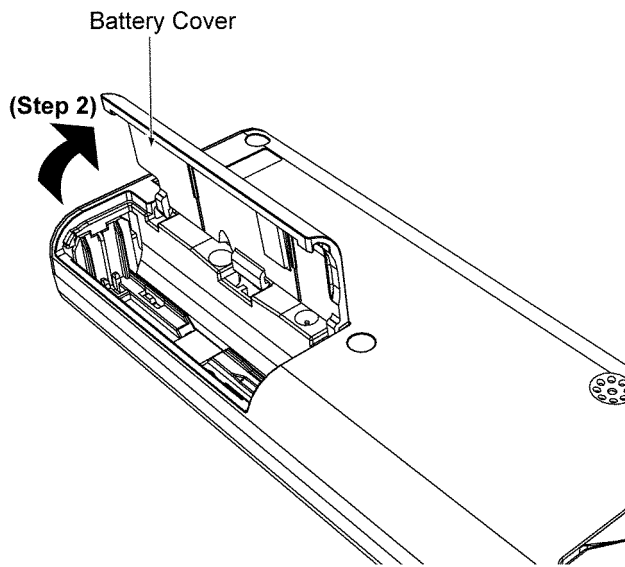


Caution : Ensure the Stand is fixed exactly into the slots during assembly.

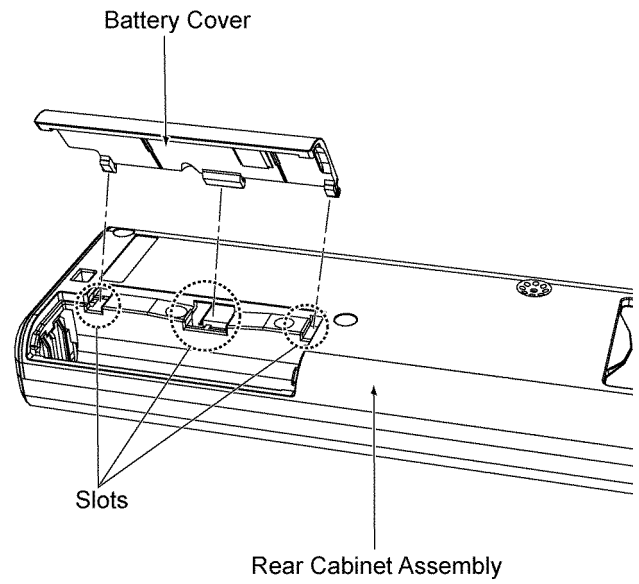
8.5.2. Disassembly of Battery Cover



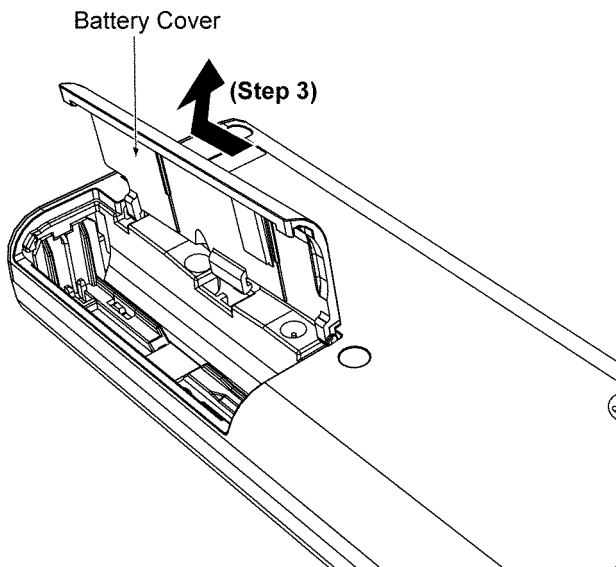
Step 1 : Push open the Battery Cover.



Step 2 : Flip open the Battery Cover.



Caution : Ensure the Battery Cover is fixed exactly into the slots during assembly.

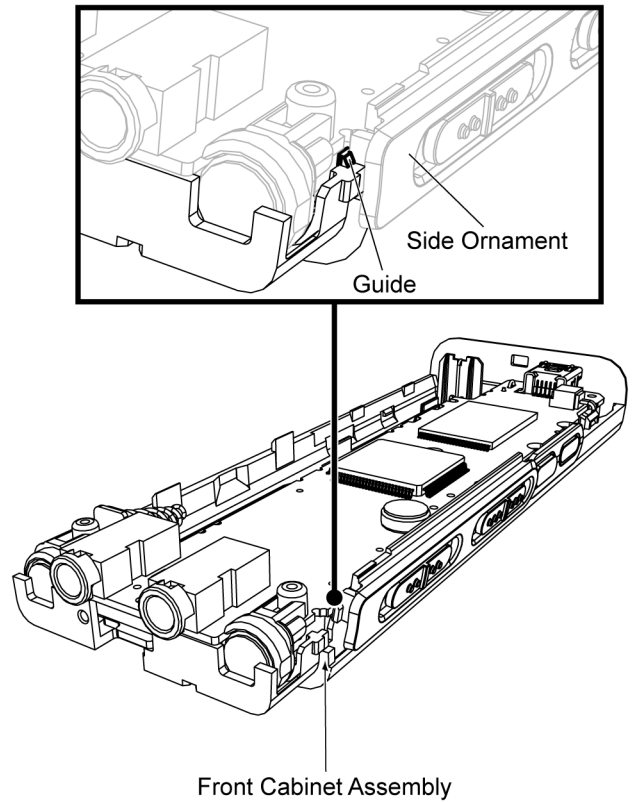
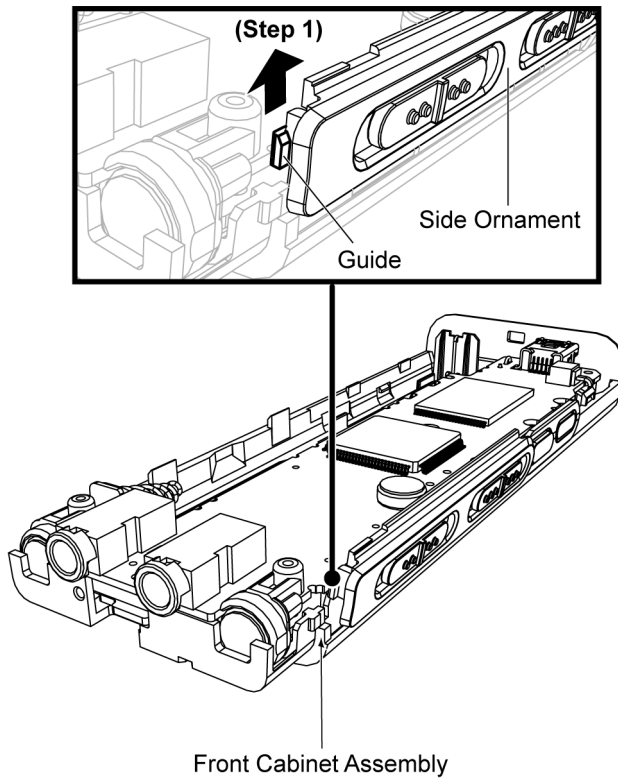


Step 3 : Slightly push out the Battery Cover and remove the Battery Cover.

8.6. Replacement of Side Ornament, Mode Knob and Hold Knob

- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.

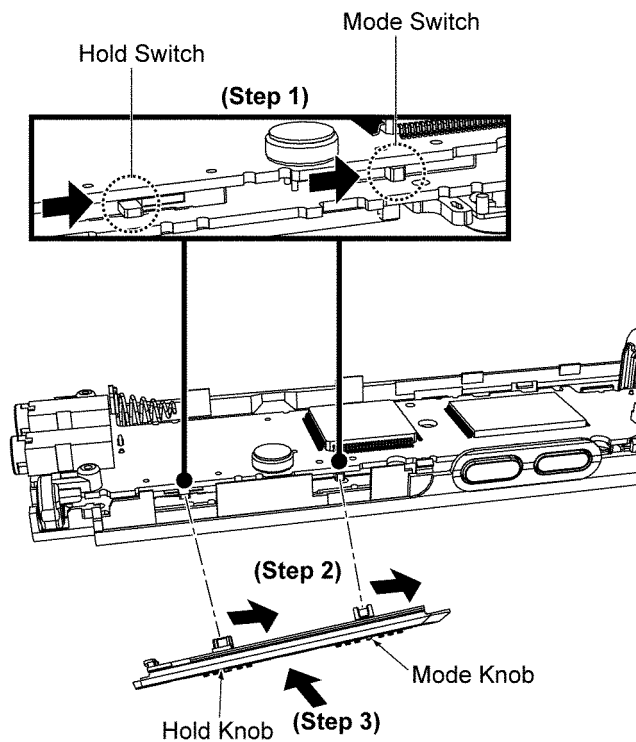
8.6.1. Disassembly of Side Ornament



Caution : Ensure the guide is fixed exactly onto the Front Cabinet Assembly during assembly.

Step 1 : Slide out the Side Ornament.

8.6.2. Assembly of Side Ornament



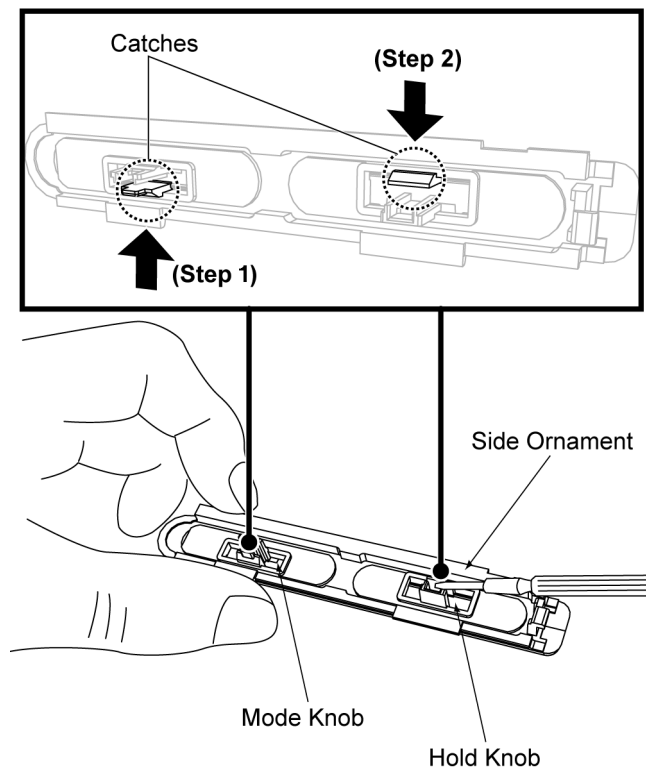
Step 1 : Push Hold switch and Mode switch to the extreme right.

Step 2 : Push Hold Knob and Mode Knob to the extreme right.

Step 3 : Slide in the Side Ornament.

Caution : Ensure Hold Switch and Mode Switch are properly seated in the Hold Knob and Mode Knob.

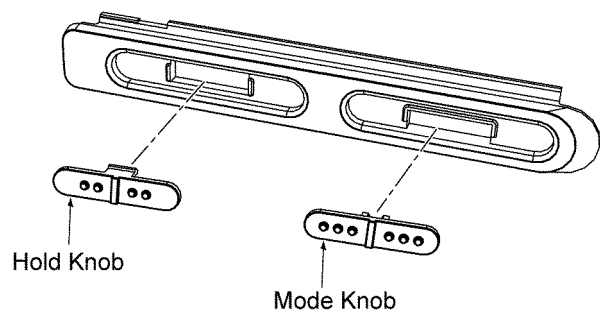
8.6.3. Disassembly of Mode Knob and Hold Knob



Step 1 : Release the catch to remove the Mode Knob.

Step 2 : Release the catch to remove the Hold Knob.

Caution 1 : Do not apply strong force in releasing the catch to avoid damage of the catch.

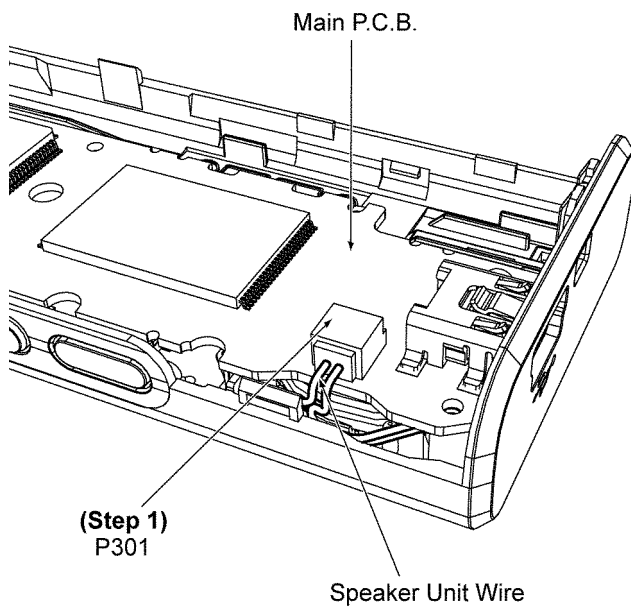


Caution 2 : Ensure that Mode Knob and Hold Knob are fixed at the correct location during assembly.

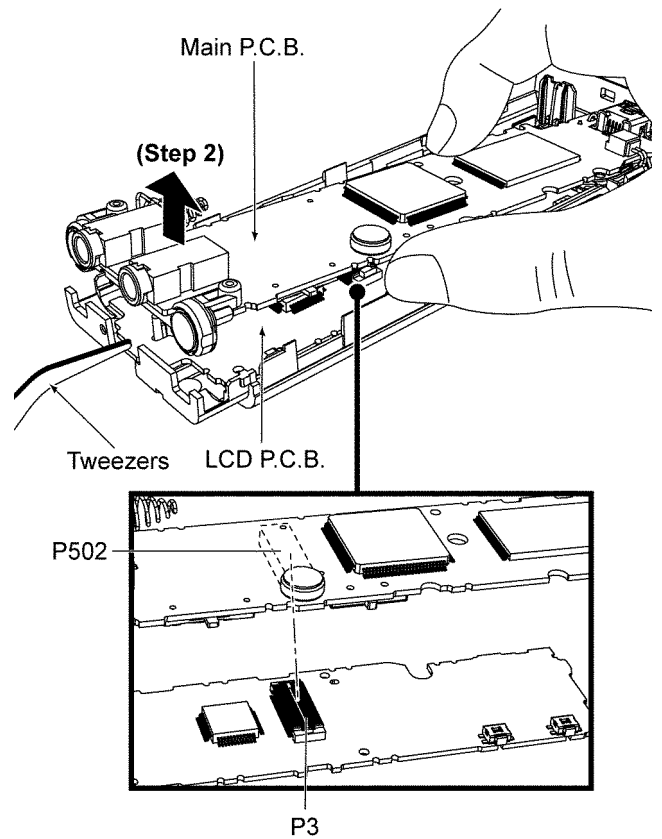
8.7. Replacement of Main P.C.B.

- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1.

8.7.1. Disassembly of Main P.C.B.

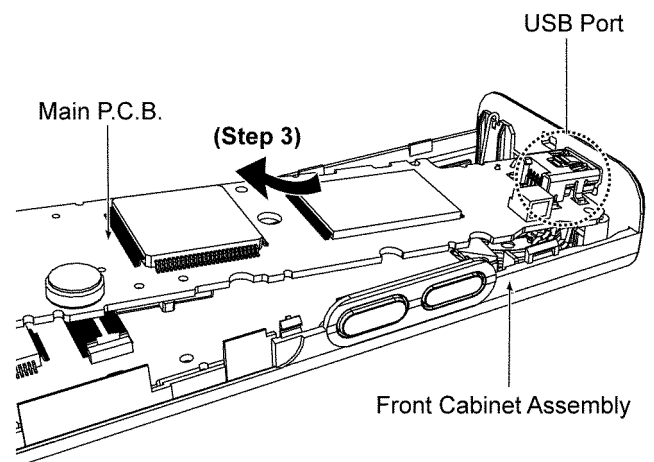


Step 1 : Detach Speaker Unit Wire at connector P301 on Main P.C.B.



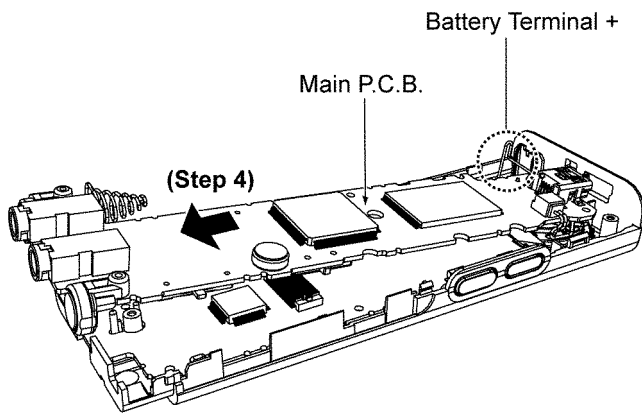
Step 2 : Use a Tweezers to hold down the LCD P.C.B. and lift up the Main P.C.B.

Caution : Main P.C.B. connector P502 and LCD P.C.B. connector P3 will be disconnected.



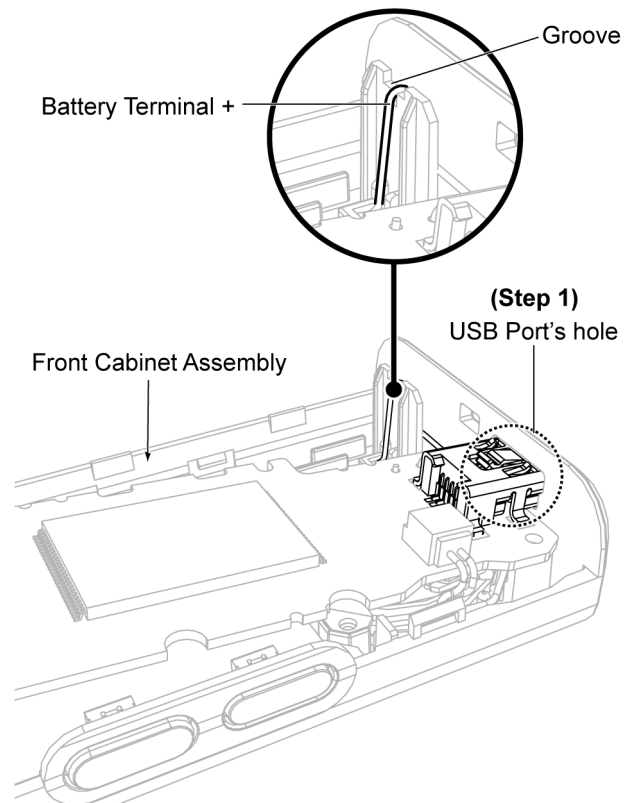
Step 3 : Slide out the Main P.C.B. slightly to release the USB Port from the Front Cabinet Assembly.

8.7.2. Assembly of Main P.C.B.



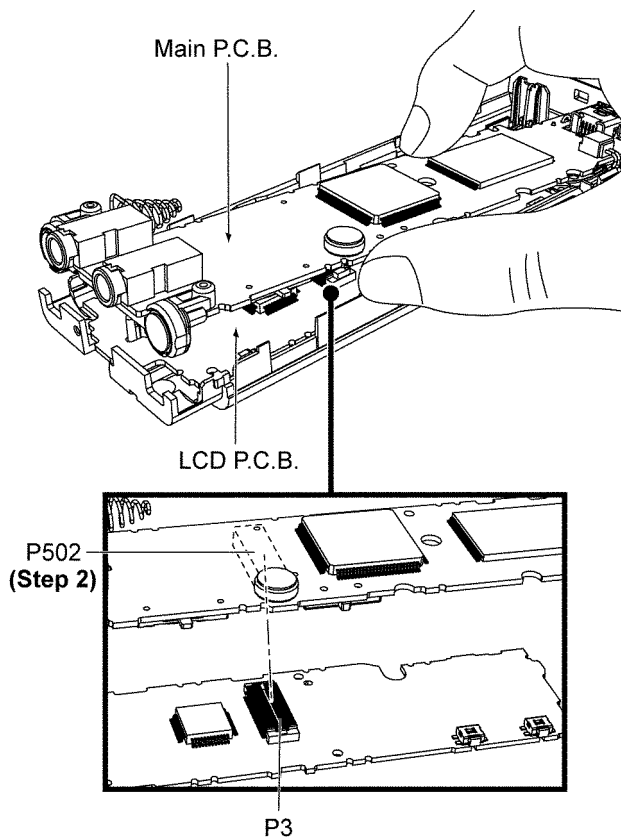
Step 4 : Remove the Main P.C.B.

Caution : Ensure the Battery Terminal + is release from the groove when removing the Main P.C.B.



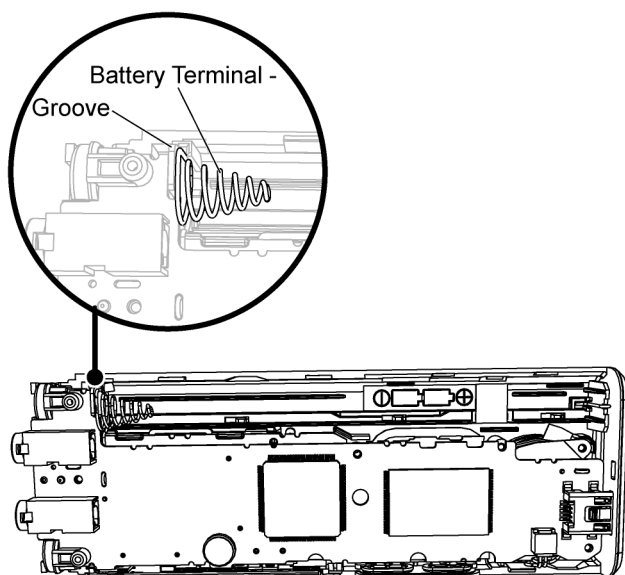
Step 1 : Insert the USB Port into the hole of Front Cabinet Assembly.

Caution : Ensure the Battery Terminal + is slot into the groove.

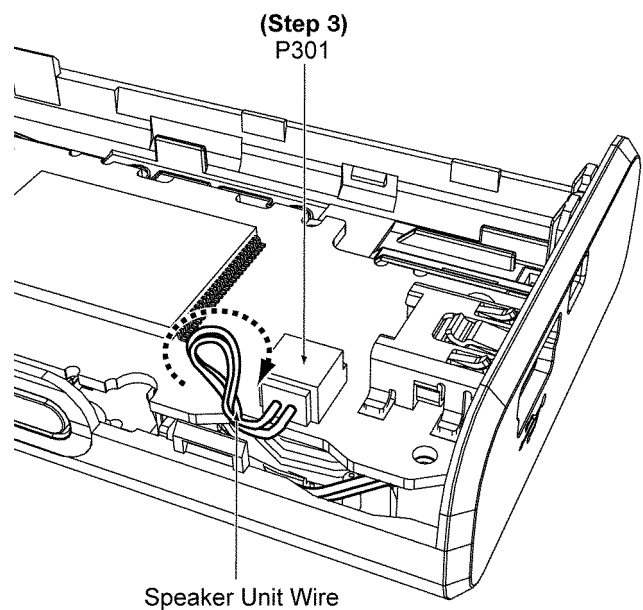


Step 2 : Connect Main P.C.B. connector P502 to LCD P.C.B. connector P3.

Caution 1 : Ensure the connectors are fully caught. A “Click” sound will be heard.



Caution 2 : Ensure the Battery Terminal - is properly seated into the groove.

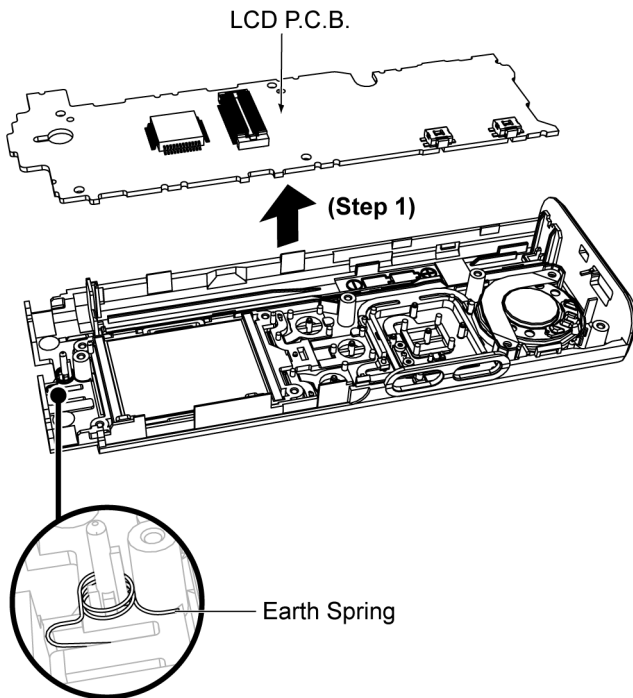


Step 3 : Connect the Speaker Unit Wire to connector P301 on Main P.C.B.

Caution : Twist the Speaker Unit Wire one round in clock-wise direction, press it down to the left side as shown.

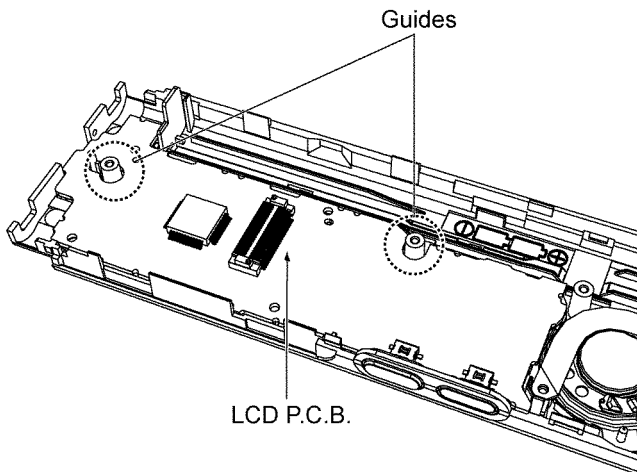
8.8. Disassembly of LCD P.C.B.

- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1.
- Follow the (Step 1) - (Step 4) of item 8.7.1.



Step 1 : Remove the LCD P.C.B.

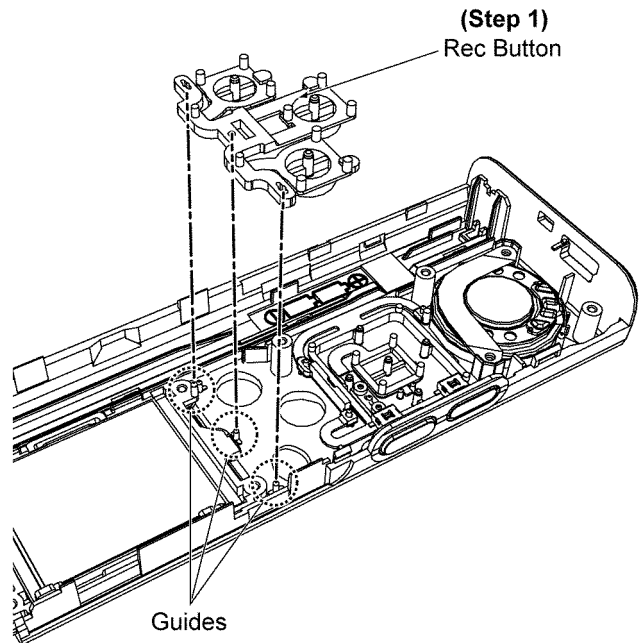
Caution : Keep the Earth Spring in safe place if it falls off. Avoid denting it. Place it back during assembly.



Caution : Ensure the LCD P.C.B. is seated properly

8.9. Disassembly of Rec Button

- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1.
- Follow the (Step 1) - (Step 4) of item 8.7.1.
- Follow the (Step 1) of item 8.8.



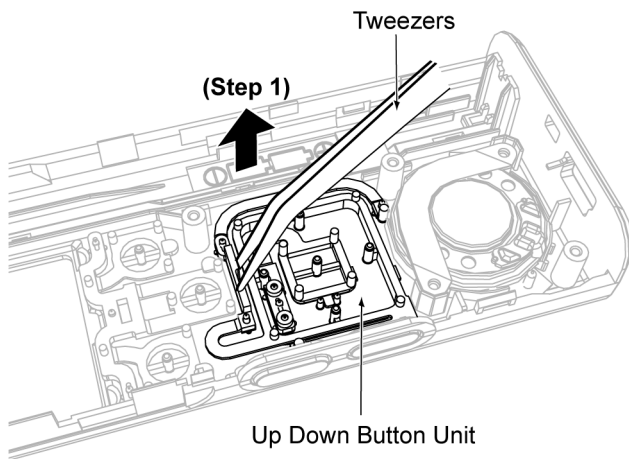
Step 1 : Remove the Rec Button.

Caution : Ensure the Rec Button is fixed exactly onto the guides during assembly.

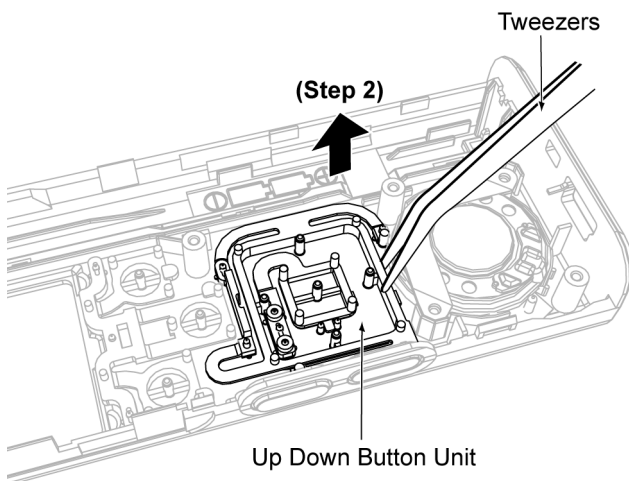
8.10. Disassembly of Up Down Button Unit and Play Button

- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1.
- Follow the (Step 1) - (Step 4) of item 8.7.1.
- Follow the (Step 1) of item 8.8.

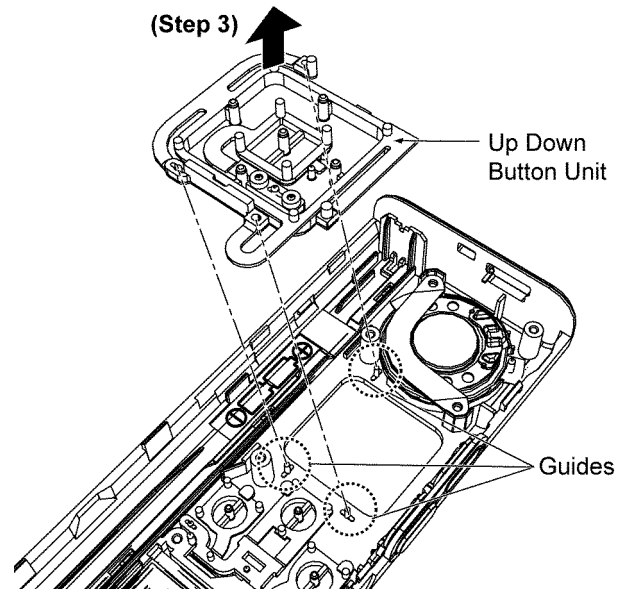
8.10.1. Disassembly of Up Down Button Unit



Step 1 : Use Tweezers gently pull one side of the Up Down Button Unit as shown.

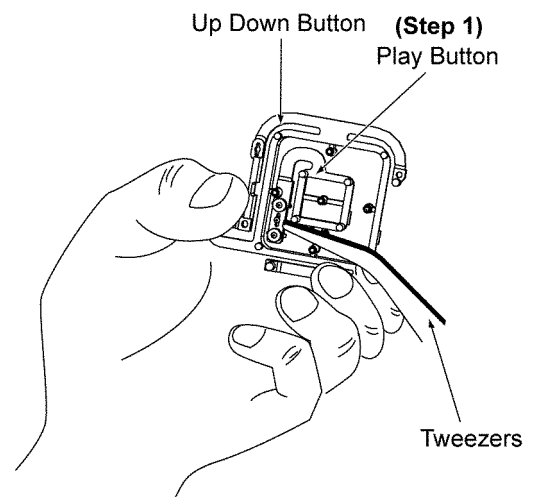


Step 2 : Use Tweezers gently pull the other side of the Up Down Button Unit as shown.

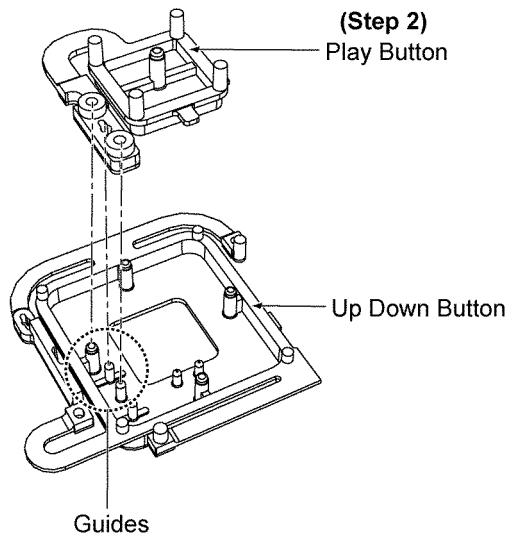


Step 3 : Remove the Up Down Button Unit.
Caution : Ensure the Up Down Button Unit is fixed exactly onto the guides during assembly.

8.10.2. Disassembly of Play Button



Step 1 : Use a Tweezers to lift up the Play Button.

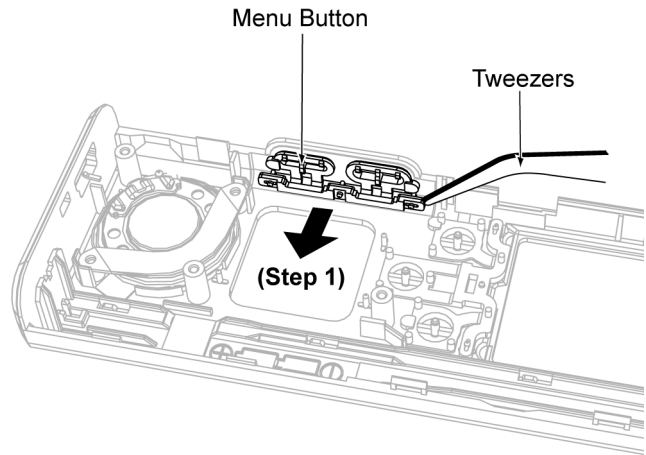


Step 2 : Remove the Play Button.

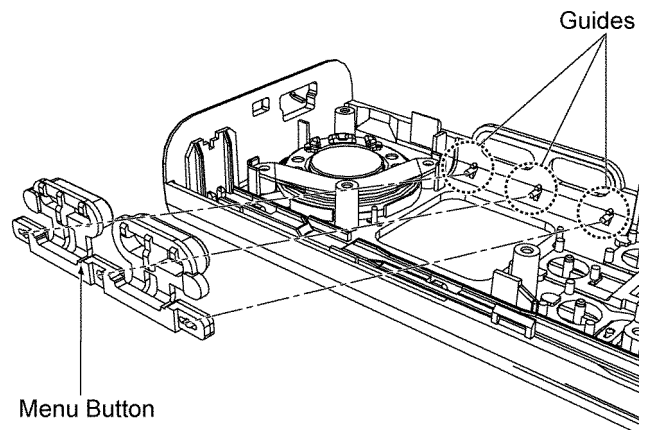
Caution : Ensure the Play Button is fixed exactly onto the guides during assembly.

8.11. Disassembly of Menu Button

- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1.
- Follow the (Step 1) - (Step 4) of item 8.7.1.
- Follow the (Step 1) of item 8.8.
- Follow the (Step 1) - (Step 3) of item 8.10.1.



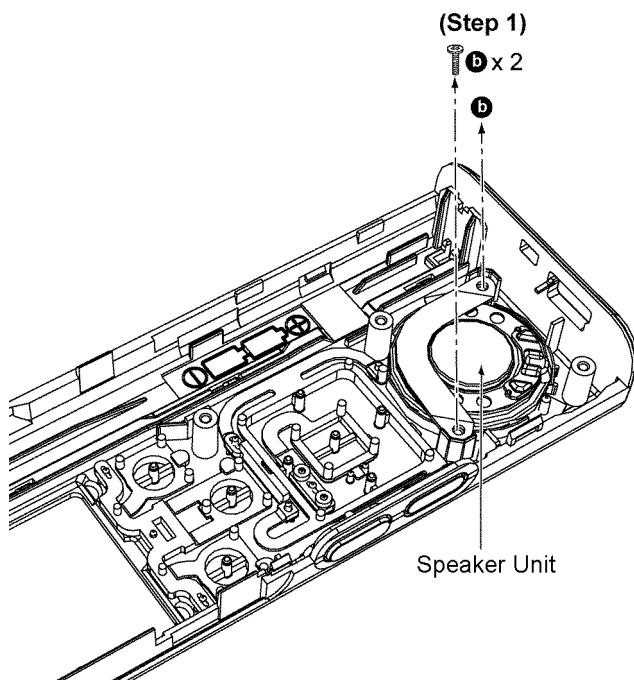
Step 1 : Use a Tweezers to remove the Menu Button.



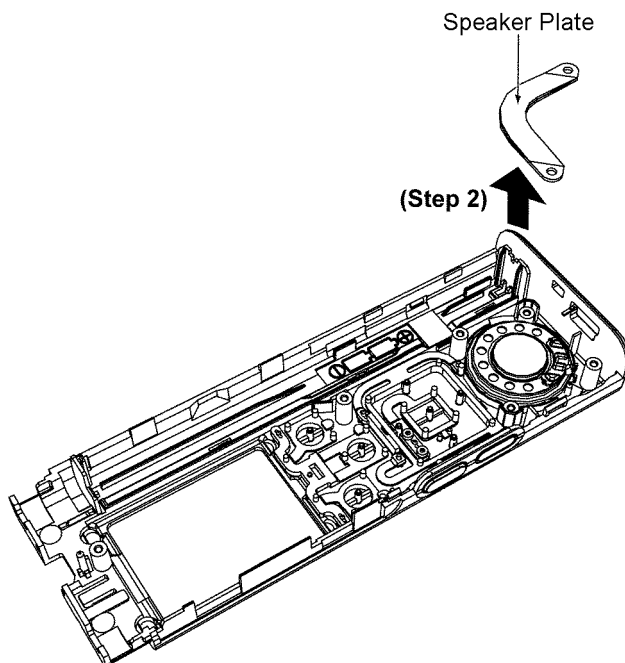
Caution : Ensure the Menu Button is fixed exactly onto the guides during assembly.

8.12. Disassembly of Speaker Unit

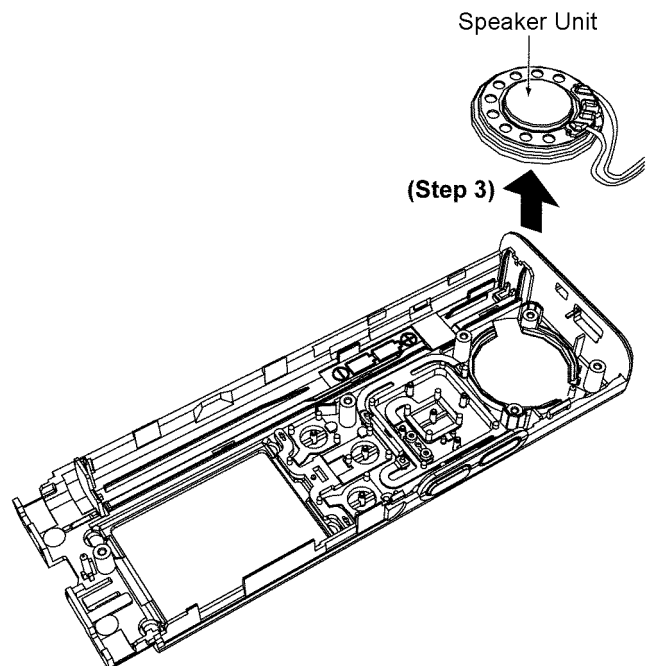
- Follow the (Step 1) - (Step 2) of item 8.4.
- Follow the (Step 1) - (Step 8) of item 8.5.1.
- Follow the (Step 1) - (Step 2) of item 8.6.1.
- Follow the (Step 1) - (Step 5) of item 8.7.1.
- Follow the (Step 1) of item 8.8.



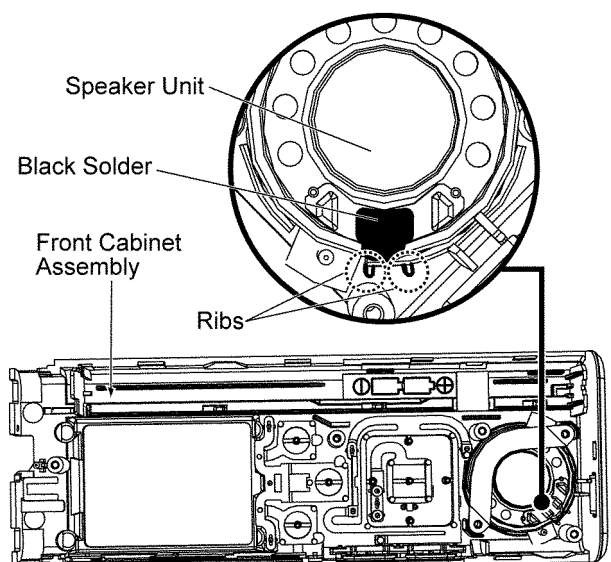
Step 1 : Remove 2 screws.



Step 2 : Remove the Speaker Plate.



Step 3 : Remove the Speaker Unit.

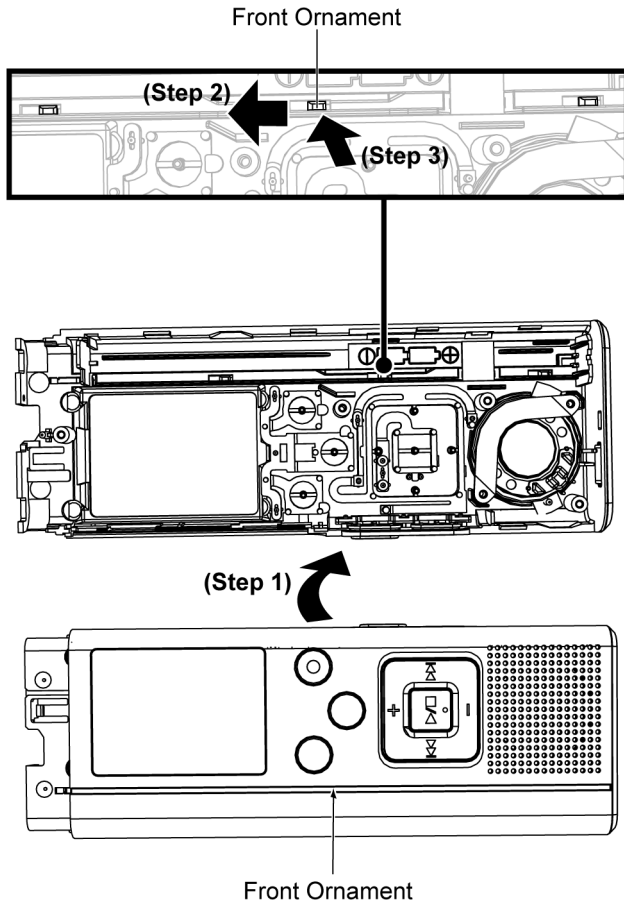


Caution : Ensure the Black Solder of the Speaker Unit is positioned in between the 2 Ribs.

8.13. Replacement of Front Ornament

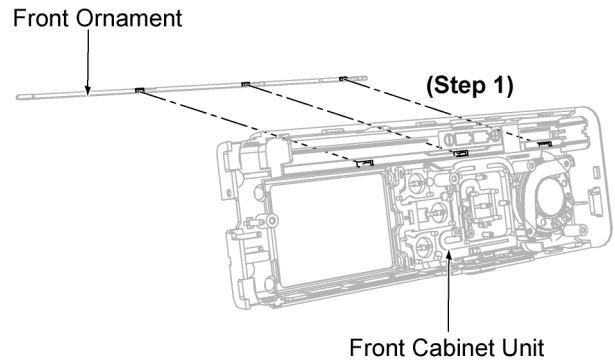
- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1.
- Follow the (Step 1) - (Step 4) of item 8.7.1.
- Follow the (Step 1) of item 8.8.

8.13.1. Disassembly of Front Ornament

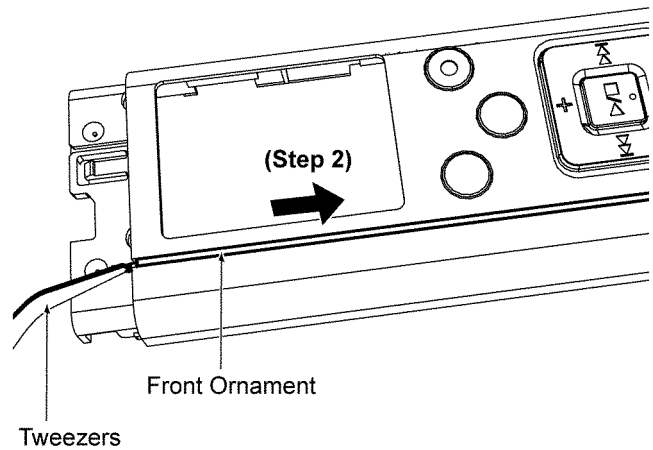


- Step 1 :** Flip over the Front Cabinet Assembly.
Step 2 : Push the Front Ornament upwards.
Step 3 : Push out the Front Ornament to remove it.

8.13.2. Assembly of Front Ornament



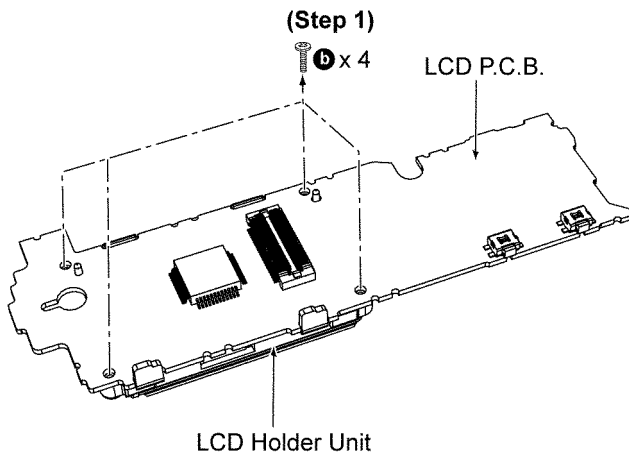
Step 1 : Fix the Front Ornament.



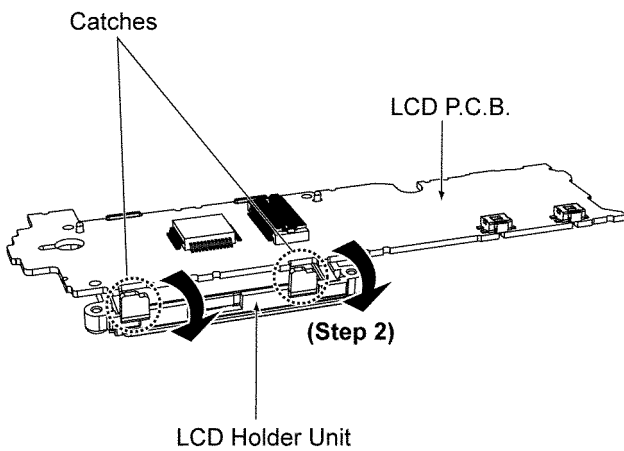
Step 2 : Use a Tweezers push downwards to fix the Front Ornament.

8.14. Disassembly of LCD Holder Unit

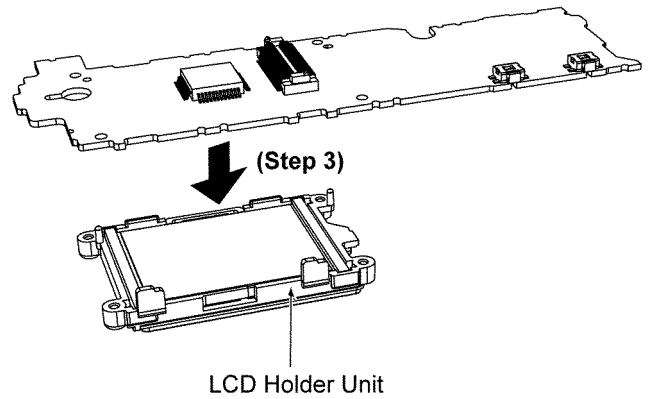
- Follow the (Step 1) - (Step 2) of item 8.3.1.
- Follow the (Step 1) - (Step 8) of item 8.4.
- Follow the (Step 1) of item 8.6.1
- Follow the (Step 1) - (Step 4) of item 8.7.1.
- Follow the (Step 1) of item 8.8.



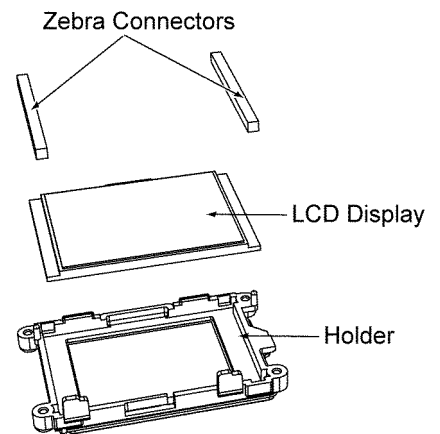
Step 1 : Remove 4 screws.



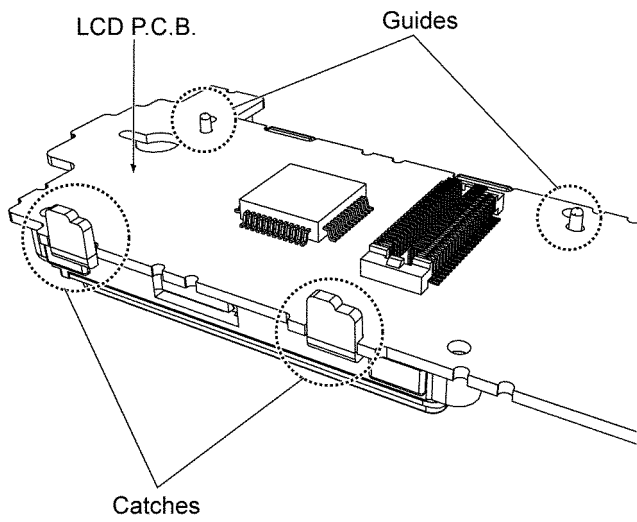
Step 2 : Release 2 catches.



Step 3 : Remove the LCD Holder Unit.



Caution 1 : LCD Display and Zebra Connectors can easily fall off.



Caution 2 : Ensure the LCD Holder Unit guides and catches are fixed exactly onto the LCD P.C.B. during assembly.

9 Service Position

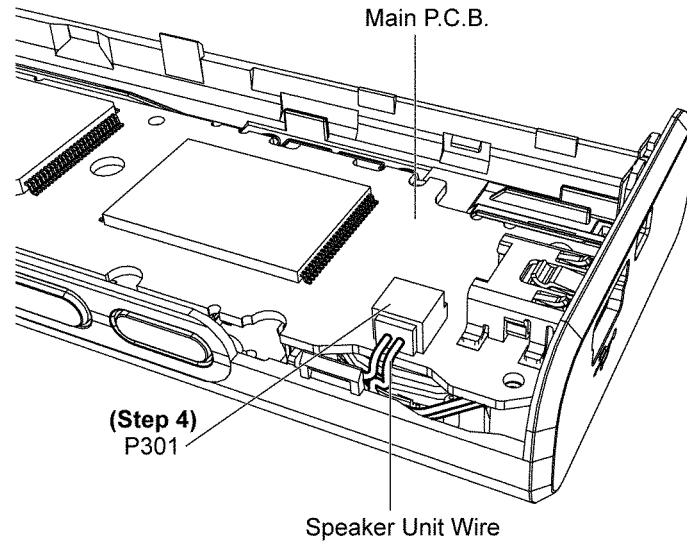
Note: For description of the disassembly procedures, see the Section 8.

9.1. Checking and Repairing of Main P.C.B. and LCD P.C.B.

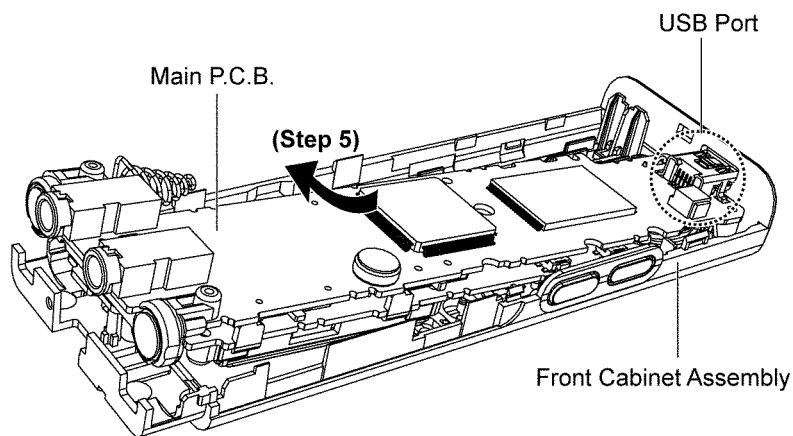
Step 1 : Remove the MIC Ornament

Step 2 : Remove the Rear Cabinet Assembly

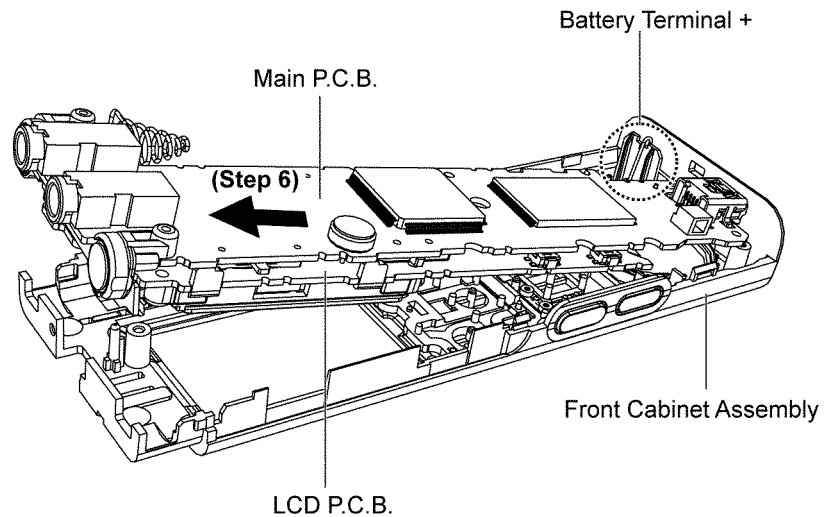
Step 3 : Remove the Side Ornament



Step 4 : Detach Speaker Unit Wire at connector P301 on Main P.C.B.

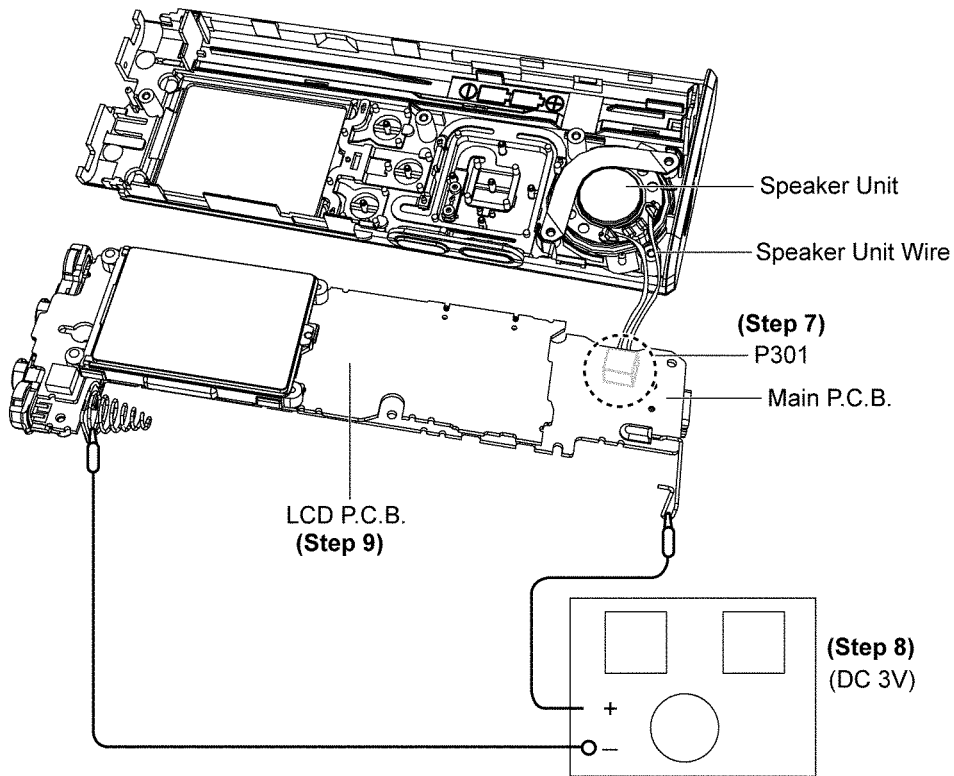


Step 5 : Slide out the Main P.C.B. and LCD P.C.B. slightly to release the USB Port from the Front Cabinet Assembly.



Step 6 : Remove the Main P.C.B. and LCD P.C.B.

Caution : Ensure the Battery Terminal + is release from the groove when removing the Main P.C.B.



Step 7 : Connect the Speaker Unit Wire to connector P301 on Main P.C.B.

Step 8 : Connect the DC Power supply device to the battery terminal for the power supply.

Step 9 : Checking and repairing LCD P.C.B. and Main P.C.B.

Note : Refer to Troubleshooting Guide of item 7 for composition check.

10 Voltage Measurement & Waveform Chart

Note:

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
- Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
- Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point because it may differ from actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

10.1. MAIN P.C.B. (1/3)

REF NO.	IC102															
MODE	1	2	3	4												
PLAY	0	0	2.8	1.2												
STANDBY	0	0	2.8	1.2												
REC	0	0	2.8	1.2												
REF NO.	IC103															
MODE	1	2	3	4												
PLAY	0	0	2.8	2.8												
STANDBY	0	0	2.8	2.8												
REC	0	0	2.8	2.8												
REF NO.	IC301															
MODE	18	20														
PLAY	2.8	1.4														
STANDBY	2.8	1.4														
REC	2.8	1.4														
REF NO.	IC302															
MODE	4	5														
PLAY	2.7	2.7														
STANDBY	2.7	2.7														
REC	2.8	2.8														
REF NO.	IC401															
MODE	1	2	3	4	5											
PLAY	0	0	0	0	0											
STANDBY	0	0	0	0	0											
REC	1.2	0	1.3	1.3	2.5											
REF NO.	IC402															
MODE	1	2	3	4	5											
PLAY	0	0	0	0	0											
STANDBY	0	0	0	0	0											
REC	1.3	0	1.3	1.3	2.4											
REF NO.	IC403															
MODE	1	2	3	4	5	6	7	8								
PLAY	0	0	0	0	0	0	0	0								
STANDBY	0	0	0	0	0	0	0	0								
REC	1.3	1.3	1.2	0	1.2	1.3	1.3	2.4								
REF NO.	IC404															
MODE	1	2	3	4	5	6	7	8								
PLAY	0	0	0	0	0	0	0	0								
STANDBY	0	0	0	0	0	0	0	0								
REC	1.3	1.3	1.2	0	1.2	1.2	1.2	2.5								
REF NO.	IC405															
MODE	1	2	3	4												
PLAY	0	0	0	2.8												
STANDBY	0	0	0	2.8												
REC	2.5	0	1.4	2.8												

RR-US570PP/E, RR-US590P MAIN P.C.B.

10.2. MAIN P.C.B. (2/3)

REF NO.	IC502																		
MODE	1	2	3	4															
PLAY	0	0	0	0															
STANDBY	0	0	0	0															
REC	0	0	0	0															
REF NO.	IC503																		
MODE	1	2	3	4															
PLAY	0	0	0	0															
STANDBY	0	0	0	0															
REC	0	0	0	0															
REF NO.	IC504																		
MODE	1	2	3	4	5	6													
PLAY	2.9	0	3	2.9	1.2	2.8													
STANDBY	2.9	0	2.9	2.9	1.2	2.8													
REC	3	0	3	2.9	1.3	3.2													
REF NO.	IC508																		
MODE	1	2	3	4															
PLAY	1.2	0	2.5	2.6															
STANDBY	1.2	0	2.5	2.6															
REC	1.2	0	2.5	2.6															
REF NO.	IC509																		
MODE	1	2	3	4															
PLAY	1.2	0	0	2.6															
STANDBY	1.2	0	0	2.6															
REC	1.2	0	0	2.6															
REF NO.	IC701																		
MODE	12	37																	
PLAY	2.8	2.8																	
STANDBY	2.8	2.8																	
REC	2.8	2.8																	
RR-US570PP/E, RR-US590P MAIN P.C.B.																			

10.3. MAIN P.C.B. (3/3)

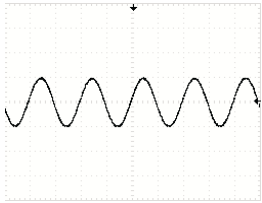
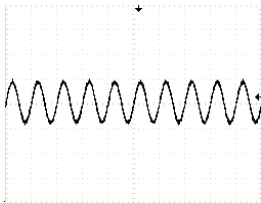
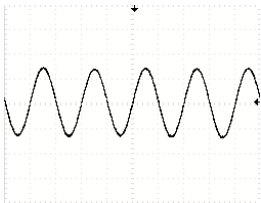
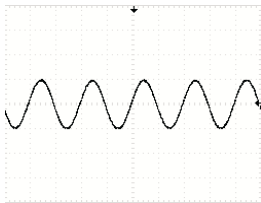
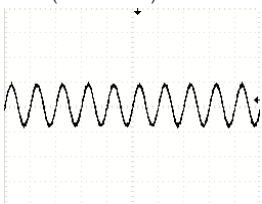
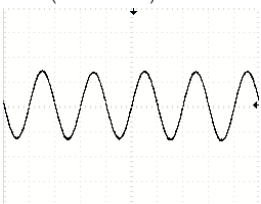
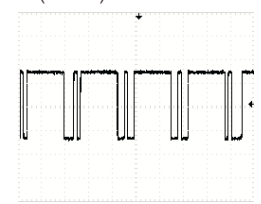
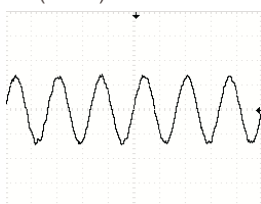
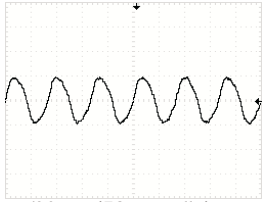
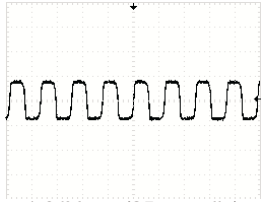
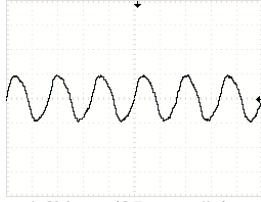
REF NO.	IC1101																		
MODE	24	25	39	52	53	66	73	77	80	91	96	97	101	105	106	115	116	119	
PLAY	1.2	2.8	2.8	1.2	2.8	1.2	2.8	1.2	1.2	1.2	2.8	2.8	2.8	2.8	2.8	1.2	2.8	2.8	
STANDBY	1.2	2.8	2.8	1.2	2.8	1.2	2.8	1.2	1.2	1.2	2.8	2.8	2.8	2.8	2.8	1.2	2.8	2.8	
REC	1.2	2.8	2.8	1.2	2.8	1.2	2.8	1.2	1.2	1.2	2.8	2.8	2.8	2.8	2.8	1.2	2.8	2.8	
REF NO.	Q101			Q413			Q416			Q418			Q421						
MODE	G	D	S	G	D	S	E	C	B	G	D	S	E	C	B				
PLAY	2.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
STANDBY	2.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
REC	2.8	0	0		2.2	0	0	0	0	0	0.4		2.5	0	0	0	0	0	0.4
REF NO.	Q423			Q439			Q462			Q466			Q505						
MODE	G	D	S	G	D	S	E	C	B	E	C	B	G	D	S				
PLAY	0	0	0		2.8	0	0	0	2.5	1.7		0	0	0		2.6	0	2.8	
STANDBY	0	0	0		0	0	0	0	0	0		0	0	0		2.6	0	2.8	
REC	0	1.8	0		2.8	0	0	0	0	0		1.1	2.5	1.7		2.6	0	2.8	
REF NO.	Q508			Q510			Q524			Q525			QR101						
MODE	G	D	S	E	C	B	E	C	B	E	C	B	E	C	B				
PLAY	2.8	0.9	0.9		3	2.9	2.4		2.8	2.8	2.3		0	0	0.5	1.5	1.5	0	
STANDBY	2.8	0.9	0.9		3	2.9	2.4		2.8	2.8	2.3		0	0	0.7	1.5	1.5	0	
REC	2.8	0.9	0.9		3	2.9	2.4		2.8	2.8	2.3		0	0	0	1.5	1.5	0	
REF NO.	QR301			QR304			QR305			QR406			QR409						
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
PLAY	0	2.8	0		2.8	2.8	0		2.8	2.8	0		0	0	0	2.5	0	2.5	
STANDBY	0	2.8	0		2.8	2.8	0		2.8	2.8	0		0	0	0	0	0	0	
REC	0	2.8	0		2.8	0	2.8		0	0	0		0	2.2	0	2.5	0	2.5	
REF NO.	QR470			QR471			QR506			QR521			QR522						
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
PLAY	0	0	0		0	0	0		0	2.7	0		0	2.8	0	0	0	0	
STANDBY	0	0	0		0	0	2.8		0	2.7	0		0	2.8	0	0	0	0	
REC	2.5	2.4	0		2.5	2.4	0		0	2.7	0		0	2.8	0	0	0	0	
REF NO.	QR526																		
MODE	E	C	B																
PLAY	0	0	0																
STANDBY	0	0	0																
REC	0	0	0																

RR-US570PP/E, RR-US590P MAIN P.C.B.

10.4. LCD P.C.B.

REF NO.	IC105																		
MODE	1	2	3	4															
PLAY	2.9	0	1.5	2.3															
STANDBY	2.3	0	1.5	2.3															
REC	2.3	0	1.5	2.3															
REF NO.	IC106																		
MODE	1	2	3	4															
PLAY	1.5	0	1.2	1.5															
STANDBY	1.5	0	1.2	1.5															
REC	1.5	0	1.2	1.5															
REF NO.	IC201																		
MODE	39	40																	
PLAY	2.8	2.8																	
STANDBY	2.8	2.8																	
REC	2.8	2.8																	
RR-US570PP/E, RR-US590P LCD P.C.B.																			

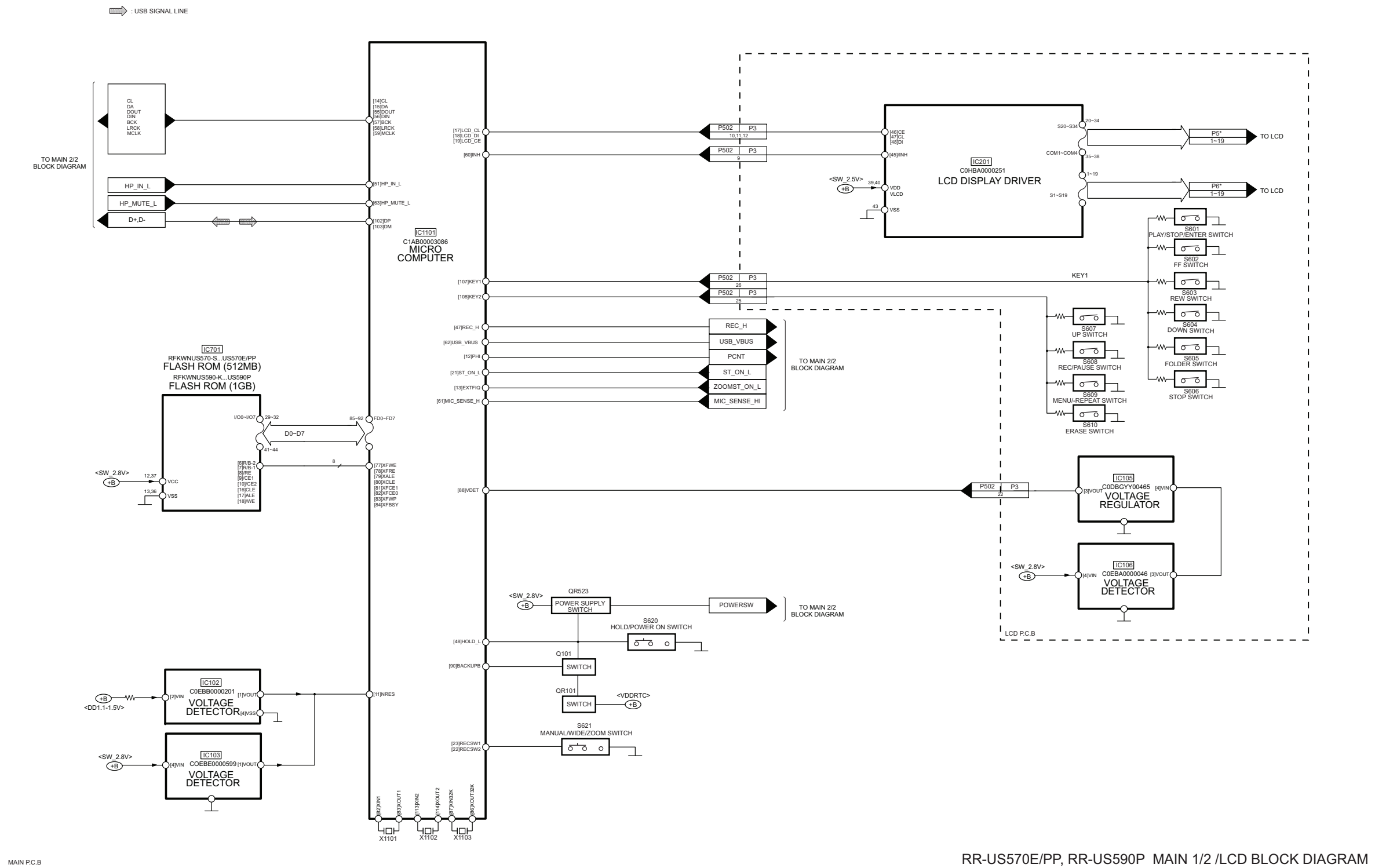
10.5. Waveform Chart

WF No. IC403 - 1 (RECORD)  1Vp-p (500usec.div)	WF No. IC403 - 3 (RECORD)  184mVp-p (1msec.div)	WF No. IC403 - 7 (RECORD)  1.42Vp-p (500usec.div)	WF No. IC404 - 1 (RECORD)  1.2Vp-p (500usec.div)
WF No. IC404 - 3 (RECORD)  176mVp-p (1msec.div)	WF No. IC404 - 7 (RECORD)  1.4Vp-p (500usec.div)	WF No. IC1101 - 55 (PLAY)  3.00Vp-p (5usec.div)	WF No. IC1101 - 82 (PLAY)  576mVp-p (50nsec.div)
WF No. IC1101 - 83 (PLAY)  1Vp-p (50nsec.div)	WF No. IC1101 - 86 (PLAY)  1.64Vp-p (25usec.div)	WF No. IC1101 - 87 (PLAY)  1.2Vp-p (25usec.div)	

11 Illustration of IC's, Transistors and Diodes

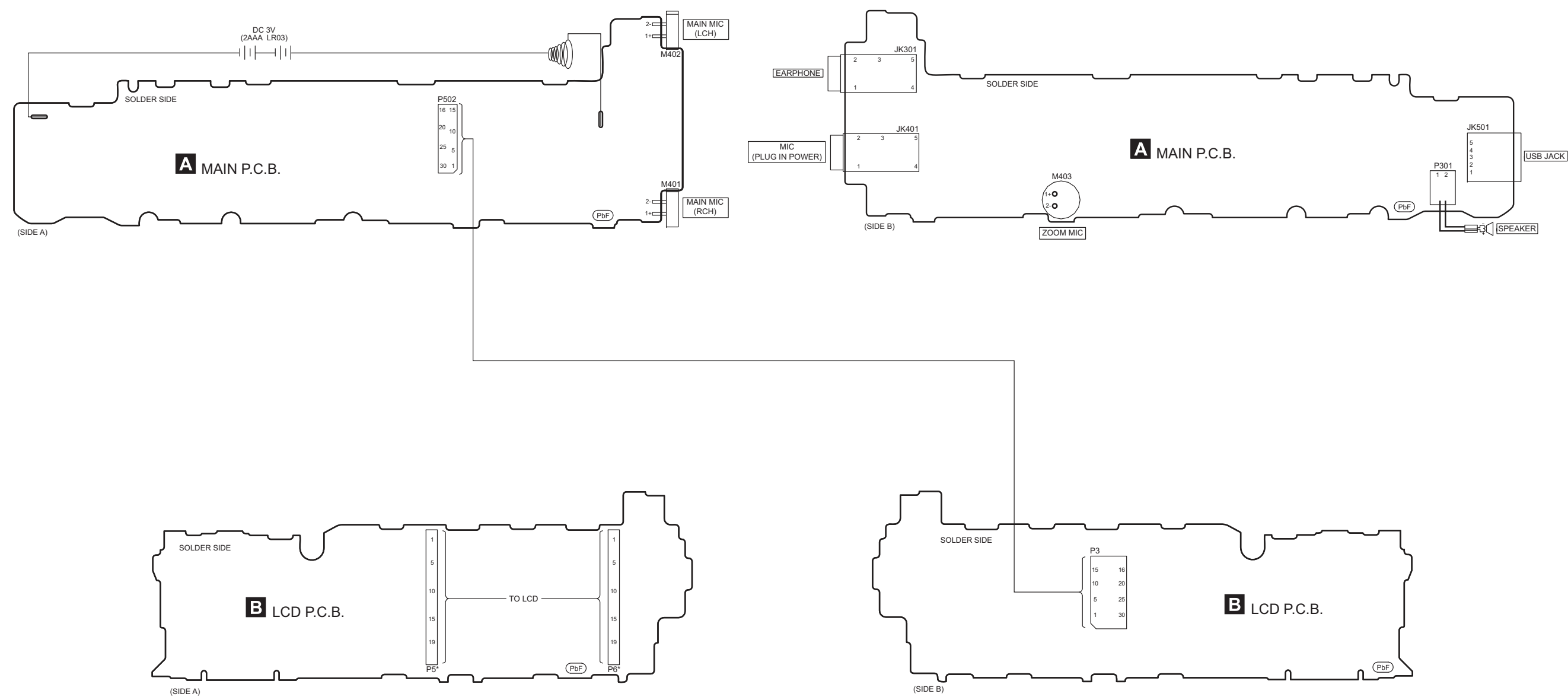
C0ABAB000112	C0ABHA000078	C0DBGYY00497 C0DBGYY00463 C0DBGYY00462 C0DBGYY00464	C0HBA0000251(48P) C1AB00002900(32P) C1AB00003086(120P)	C0DBGYY00465 C0EBF0000475 C0EBB0000201 C0EBE0000599 C0EBA0000046	RFKWNUS570-S RFKWNUS590-K
C1AB00003089	C0DBAGY00002	B1CFHC000003 B1CFFB000001 2SD19790SL	B1ABCF000226 B1ADCF000166 B1GBCFNN0042 B1GDCFJN0023 B1GDCFJA0025	2SK3546J0L	
B1DHCC000034	B1GBCFJN0037	B3AAB0000037	B0ACJ0000027 B0JCMD000023 MA2S7280GL MA2SD320GL		

12 Block Diagram





13 Wiring Connection Diagram



NOTE: " * " REF IS FOR INDICATION ONLY.

14 Schematic Diagram Notes

(All schematic diagrams may be modified at any time with the development of new technology)

Notes:

S601:	Play/Stop/Enter switch (▶/■)
S602:	FF switch. (▶▶)
S603:	REW switch. (◀◀)
S604:	DOWN switch. (-)
S605:	FOLDER switch
S606:	STOP switch
S607:	UP switch (+)
S608:	REC/PAUSE switch
S609:	MENU/-REPEAT switch (●)
S610:	ERASE switch
S620:	Hold/Power On (OPR/HOLD) switch
S621:	ZOOM/WIDE/MANUAL switch

- “ * ” REF IS FOR INDICATION ONLY.

- **Importance safety notice :**

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

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

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

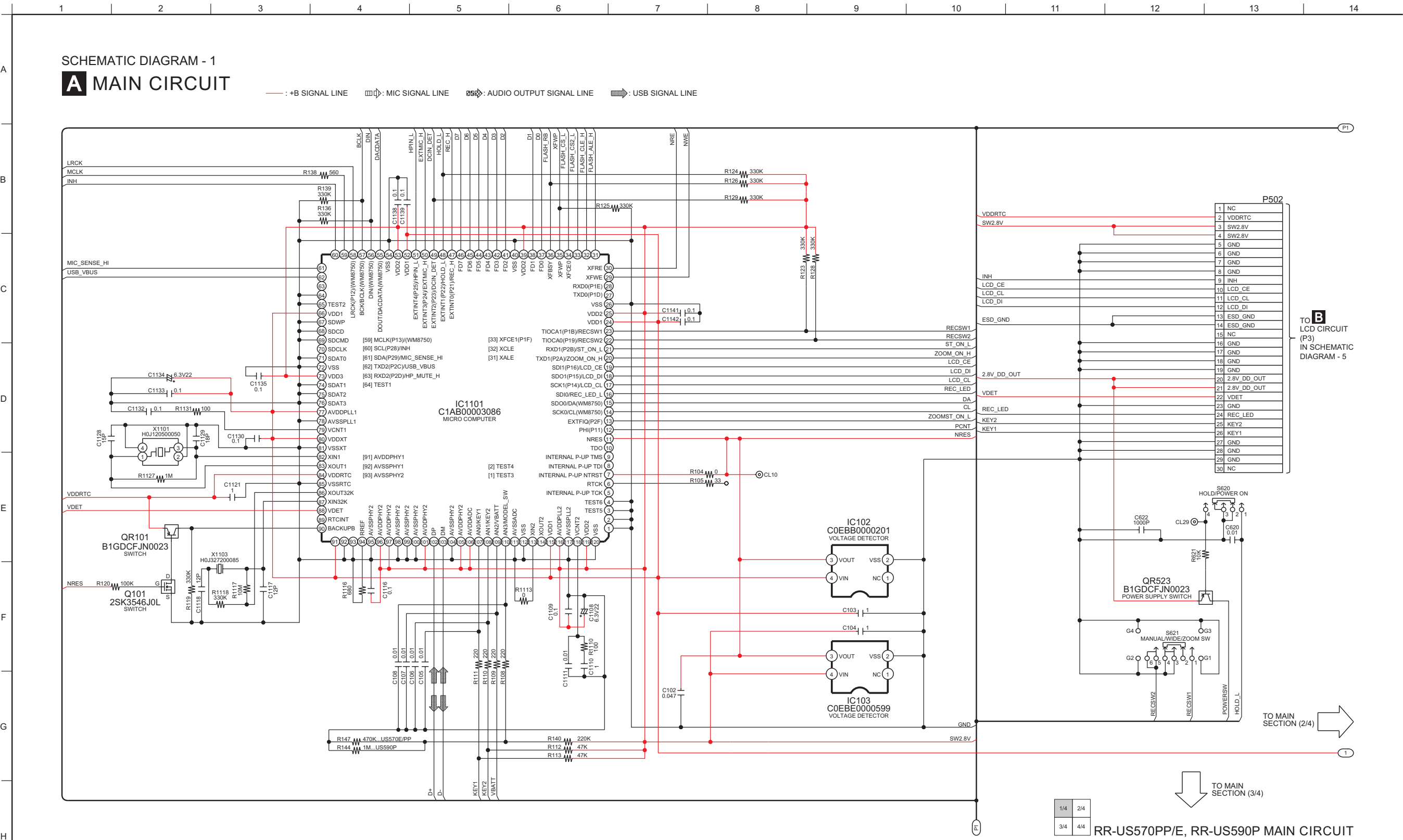
- Capacitor values are in microfarad(μF) unless specified otherwise, F=Farad, pF=Pico-Farad
Resistance values are in ohm(Ω), unless specified otherwise, 1K=1,000 Ω , 1M=1,000K Ω

- **Voltage and Signal lines:**

—	: +B signal line
	: MIC signal line
	: Audio Output signal line
	: USB signal line

15 Schematic Diagram

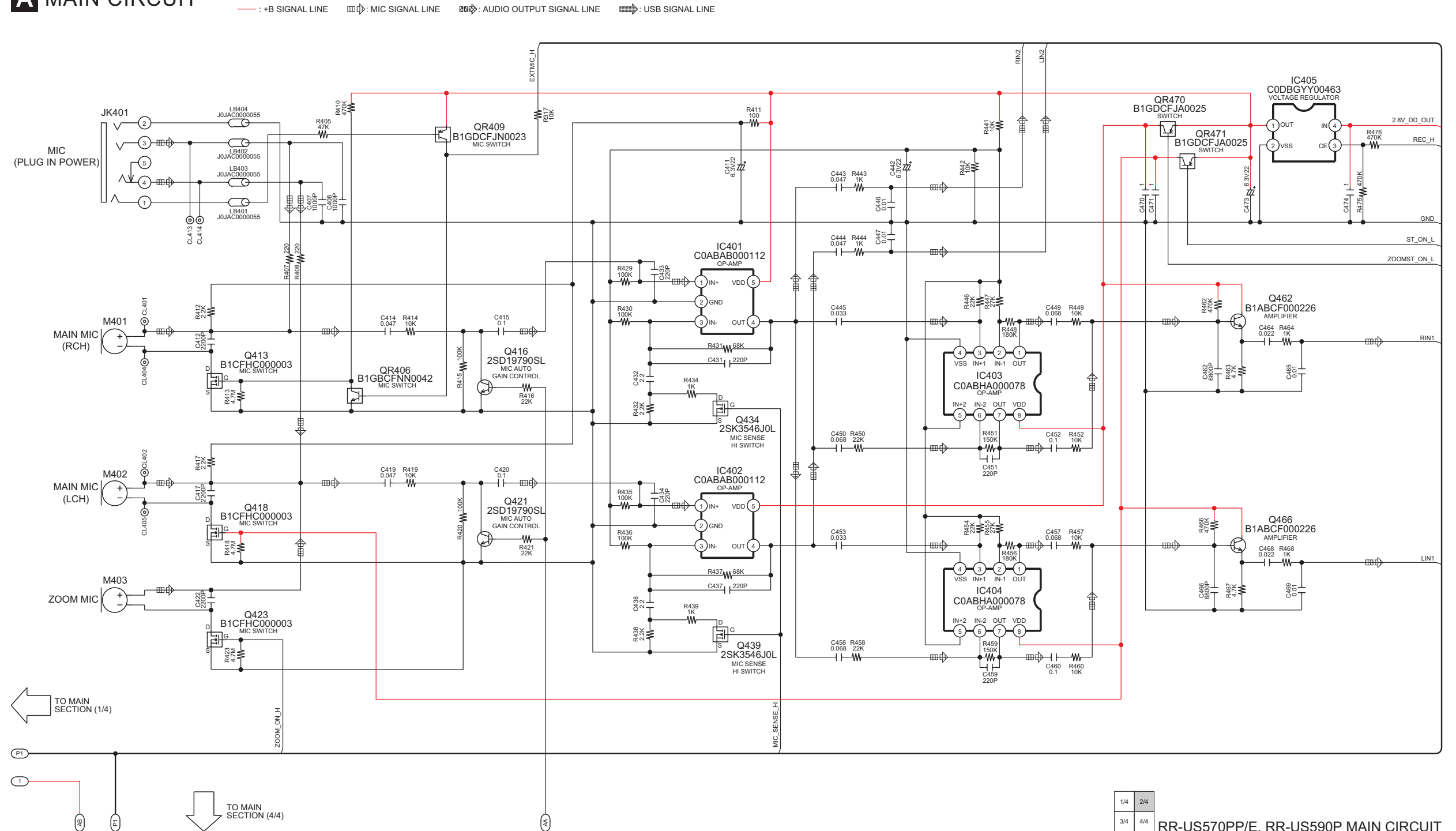
15.1. MAIN CIRCUIT (1/4)



15.2. MAIN CIRCUIT (2/4)

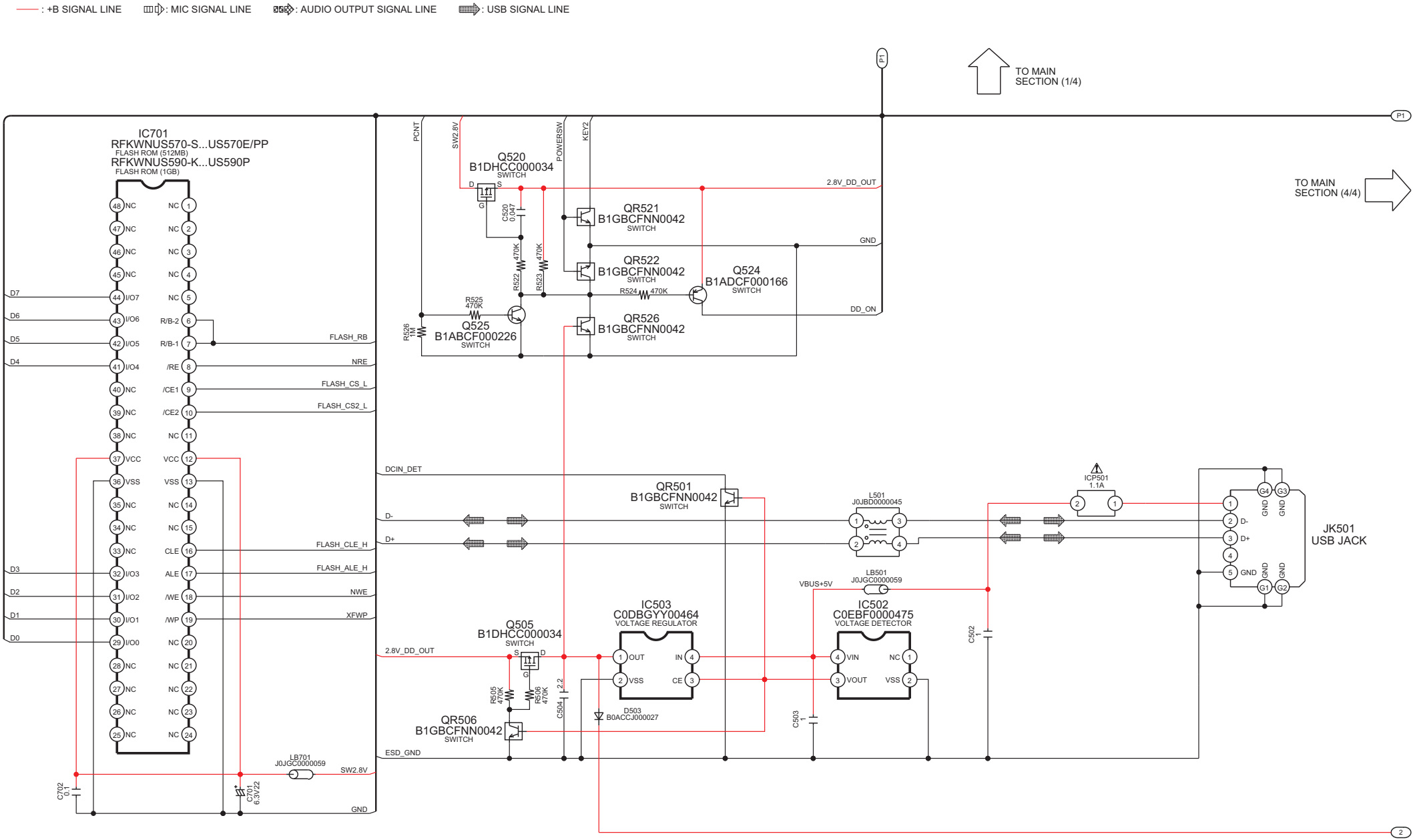
SCHEMATIC DIAGRAM - 2

A MAIN CIRCUIT



15.3. MAIN CIRCUIT (3/4)

SCHEMATIC DIAGRAM - 3
A MAIN CIRCUIT

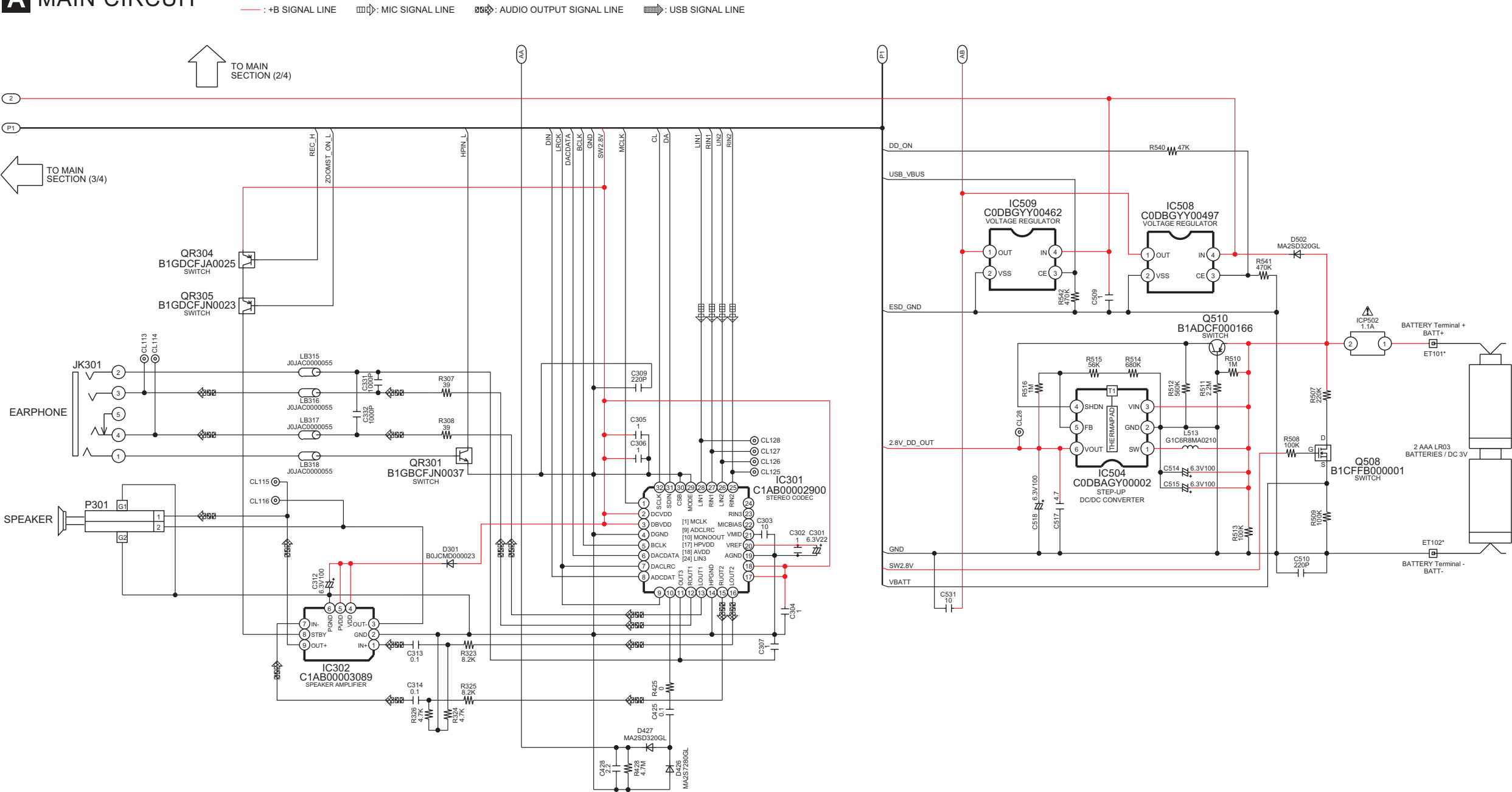


1/4	2/4
3/4	4/4

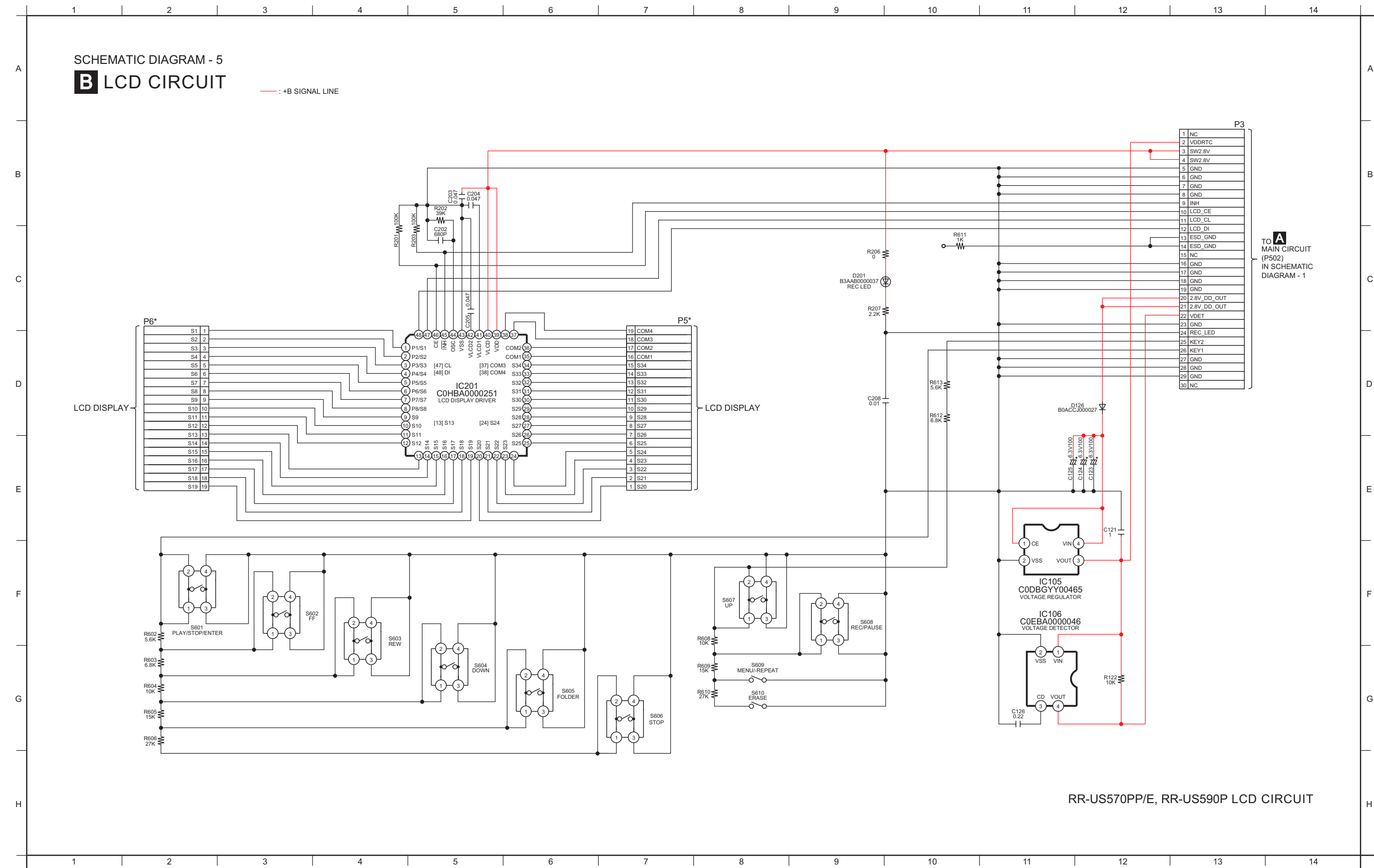
RR-US570PP/E, RR-US590P MAIN CIRCUIT

15.4. MAIN CIRCUIT (4/4)

SCHEMATIC DIAGRAM - 4
A MAIN CIRCUIT



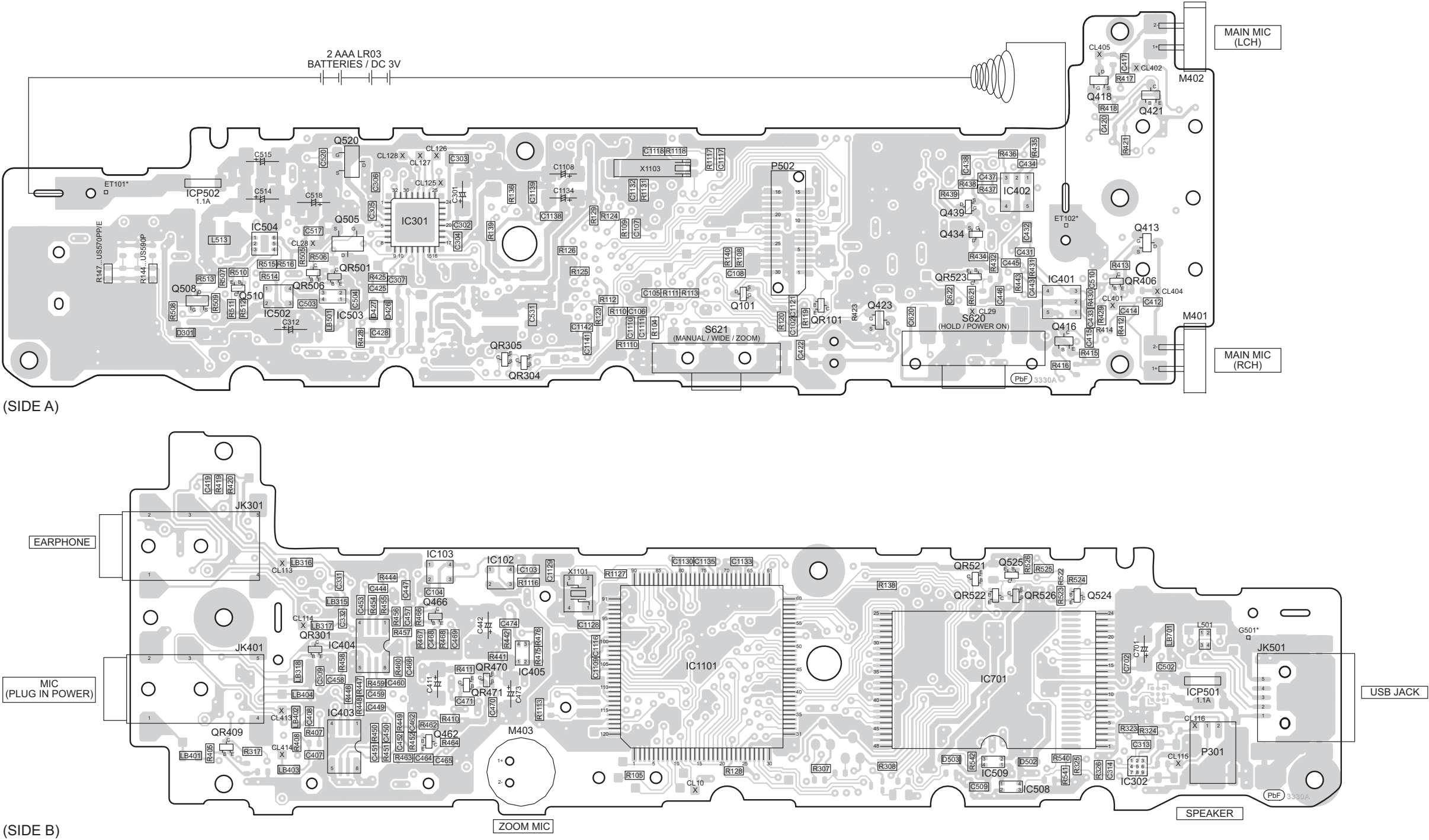
15.5. LCD CIRCUIT



16 Printed Circuit Board

16.1. MAIN P.C.B.

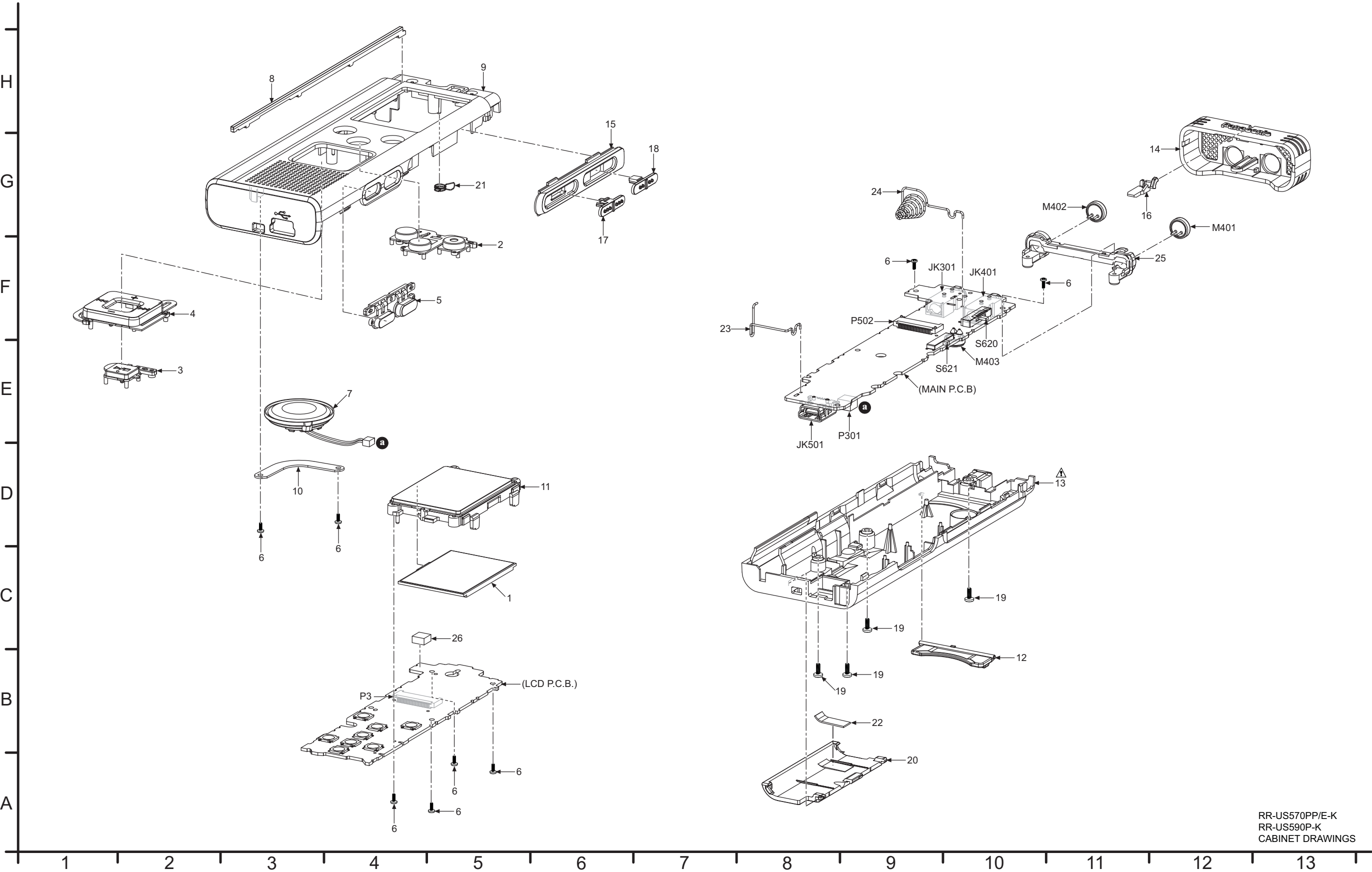
A MAIN P.C.B. (RFKB4477A...RR-US570PP/E)
(RFKB4477D...RR-US590P)



17 Exploded View and Replacement Parts List

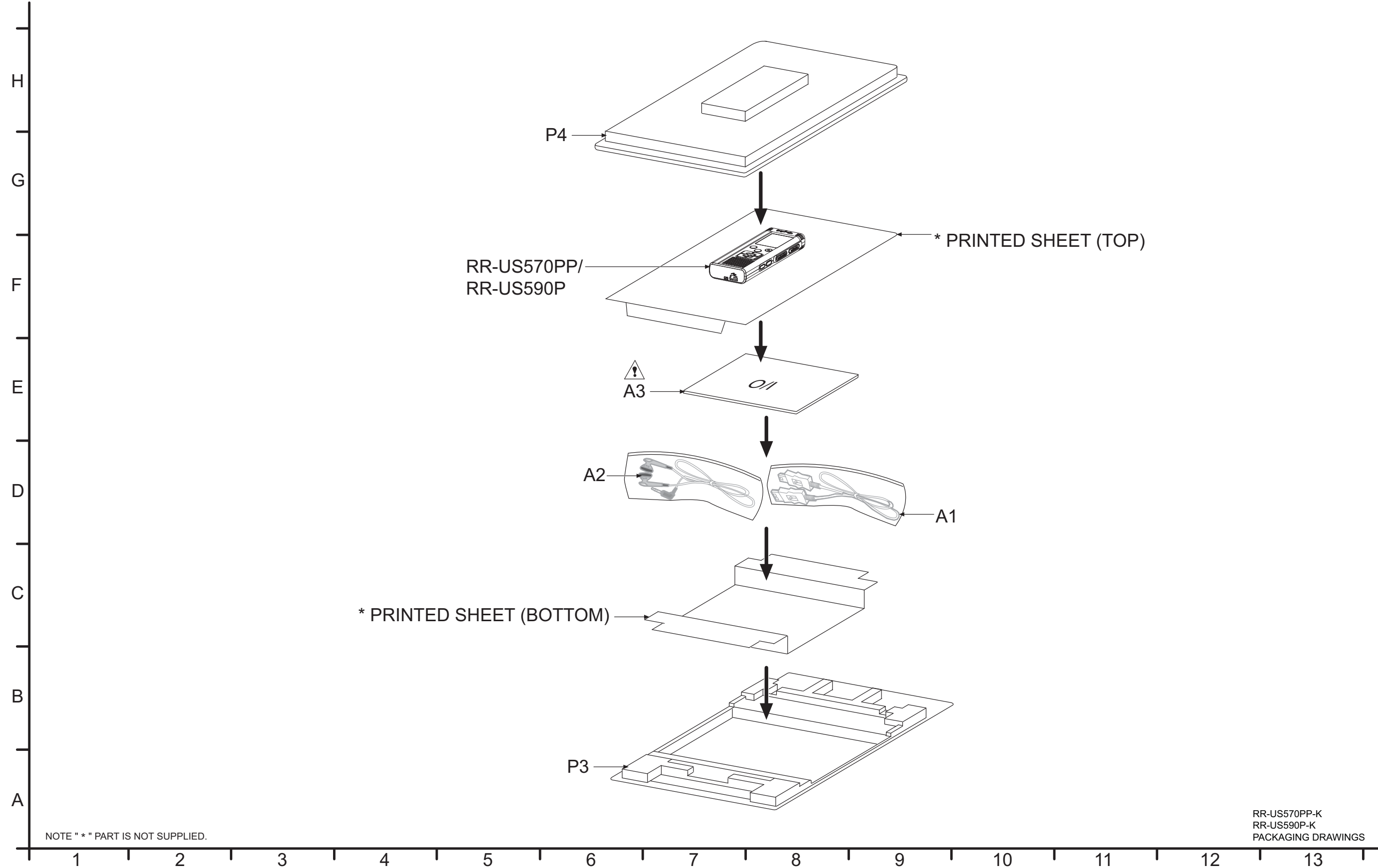
17.1. Exploded View and Mechanical Replacement Parts List

17.1.1. Cabinet Parts Location

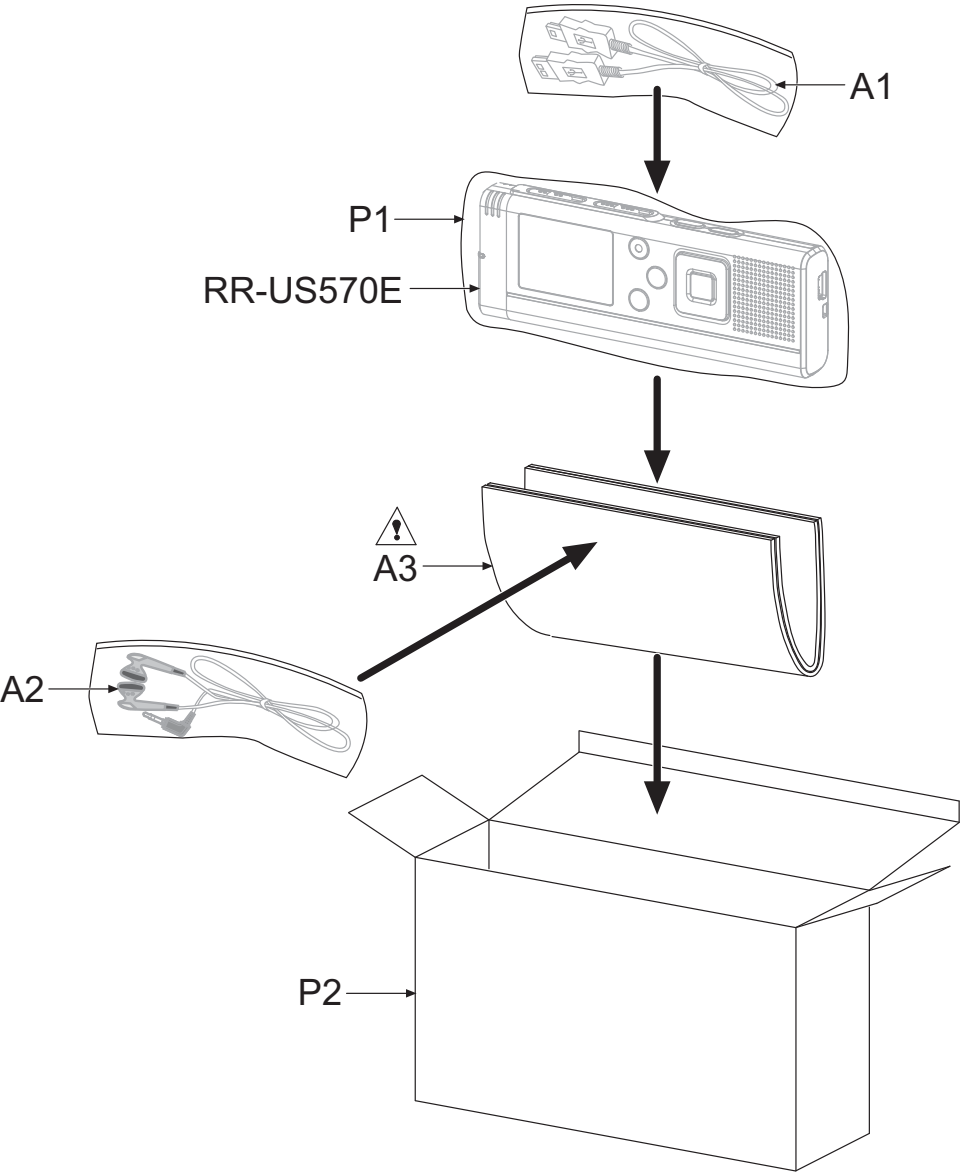


RR-US570PP/E-K
RR-US590P-K
CABINET DRAWINGS

17.1.2. Packaging (US570PP, US590P)



17.1.3. Packaging (US570E)



17.1.4. Mechanical Replacement Parts List

Important Safety Notice

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is Limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Note:

- When replacing any of these components, be sure to use only manufacturer's specified parts shown in the replacement part list.
- The parenthesized indications on the Remarks column specify the destination & product color (Refer to the cover page for the information).
- Parts without these indications shall be used for all areas.
- This product uses a laser diode. Refer to "Precaution of Laser Diode".
- All parts mentioned are supplied by PAVCSG unless indicated likewise.
- Parts mentioned [SPG] in the Remarks column are supplied by PAVC-CSG.
- Reference for O/I book languages are as follows:

Ar:	Arabic	Du:	Dutch	It:	Italian	Sp:	Spanish
Cf:	Canadian French	En:	English	Ko:	Korean	S:	Swedish
Cz:	Czech	Fr:	French	Po:	Polish	Co:	Traditional Chinese
Da:	Danish	Ge:	German	Ru:	Russian	Cn:	Simplified Chinese
Pe:	Persian	Ur:	Ukraine	Pr:	Portuguese		

Safety	Ref. No.	Part No.	Part Name & Description	QTY	REMARKS
			CABINET AND CHASSIS		
	1	L5AYBY00006	LCD DISPLAY	1	
	2	RGU2619-S	REC BUTTON	1	
	3	RGU2620-K	PLAY BUTTON	1	
	4	RGU2621-K	UP/DOWN BUTTON	1	
	5	RGU2622-H	MENU BUTTON	1	
	6	RHE5162ZB	SCREW	8	
	7	L0AA02A00075	SPEAKER UNIT	1	
	8	RGK2155-S	FRONT ORNAMENT	1	
	9	RFKNUS570PPK	FRONT CABINET ASS'Y	1	
	10	RMQ1592	SPEAKER PLATE	1	
	11	RYQ0696-Q	LCD ASS'Y	1	
	12	RGQ0514-K	STAND	1	
	13	RKS0454A-K	REAR CABINET	1	US570PP
	13	RKS0454B-K	REAR CABINET	1	US570E
	13	RKS0454H-K	REAR CABINET	1	US590P
	14	RGK2153-S	MIC ORNAMENT (A)	1	US570PP /E
	14	RGK2153A-S	MIC ORNAMENT (A)	1	US590P
	15	RGK2156-S	SIDE ORNAMENT	1	
	16	RGQ0513-Q	LED TIP	1	
	17	RGV0373-H	MODE KNOB	1	
	18	RGV0374-H	HOLD KNOB	1	
	19	RHQ0051-K1	SCREW	4	
	20	RKK0199-K	BATTERY COVER	1	
	21	RMB0900	EARTH SPRING	1	
	22	RMZ0893	BATTERY SPACER	1	
	23	RJC40032	BATTERY TERMINAL +	1	
	24	RJC80033	BATTERY TERMINAL -	1	
	25	RMN0919	MIC HOLDER	1	
	26	RMG0774-K	CONDUCTIVE RUBBER	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	REMARKS
			PACKING MATERIALS		
	P1	RPF0465-J	MIRAMAT BAG	1	US570E
	P2	RPK2778	INNER CARTON	1	US570E
	P3	RPN1962	CLAM SHELL (BOTTOM)	1	US570PP /590P
	P4	RPN2094	CLAM SHELL (COVER)	1	US570PP /590P
			ACCESSORIES		
	A1	K2KZ4CB00012	USB CABLE	1	
	A2	L0BAB0000172	EARPHONE	1	
	A3	RQT9358-1Y	O/I BOOK (En/Cf)	1	US570PP
	A3	RQT9361-1B	O/I BOOK (En)	1	US570E
	A3	RQT9362-E	O/I BOOK (Ge/It/Fr/Du/Sp/Cn/Ar/Sw/Da/Cz/Po/Pr/Ru/Ur)	1	US570E
	A3	RQT9359-P	O/I BOOK (En)	1	US590P

17.2. Electrical Replacement Parts List

Important Safety Notice

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is Limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Note:

- When replacing any of these components, be sure to use only manufacturer's specified parts shown in the replacement part list.
- The parenthesized indications on the Remarks column specify the destination & product color (Refer to the cover page for the information).
- Parts without these indications shall be used for all areas.
- This product uses a laser diode. Refer to "Precaution of Laser Diode".
- Capacitor value are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF), F=Farads.
- Resistance values are in ohms, unless specified otherwise, 1K=1000 (OHM).
- All parts mentioned are supplied by PAVCSG unless indicated likewise.
- Parts mentioned [SPG] in the Remarks column are supplied by PAVC-CSG.

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
			PRINTED CIRCUIT BOARDS		
	PCB1	RFKB4477A	MAIN PCB	1	(RTL) US570PP /E
	PCB1	RFKB4477D	MAIN PCB	1	(RTL) US590P
	PCB2	REP4478A	LCD PCB	1	(RTL)
			INTEGRATED CIRCUITS		
	IC102	C0EBB0000201	IC	1	
	IC103	C0EBE0000599	IC	1	
	IC105	C0DBGYY00465	IC	1	
	IC106	C0EBA0000046	IC	1	
	IC201	C0HBA0000251	IC	1	
	IC301	C1AB00002900	IC	1	
	IC302	C1AB00003089	IC	1	
	IC401	C0ABAB000112	IC	1	
	IC402	C0ABAB000112	IC	1	
	IC403	C0ABHA000078	IC	1	
	IC404	C0ABHA000078	IC	1	
	IC405	C0DBGYY00463	IC	1	
	IC502	C0EBF0000475	IC	1	
	IC503	C0DBGYY00464	IC	1	
	IC504	C0DBAGY00002	IC	1	
	IC508	C0DBGYY00497	IC	1	
	IC509	C0DBGYY00462	IC	1	
	IC701	RFKWNUS570-S	IC	1	US570PP /E
	IC701	RFKWNUS590-K	IC	1	US590P
	IC1101	C1AB00003086	IC	1	
			TRANSISTORS		

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
	Q101	2SK3546J0L	TRANSISTOR	1	
	Q413	B1CFHC000003	TRANSISTOR	1	
	Q416	2SD19790SL	TRANSISTOR	1	
	Q418	B1CFHC000003	TRANSISTOR	1	
	Q421	2SD19790SL	TRANSISTOR	1	
	Q423	B1CFHC000003	TRANSISTOR	1	
	Q434	2SK3546J0L	TRANSISTOR	1	
	Q439	2SK3546J0L	TRANSISTOR	1	
	Q462	B1ABCF000226	TRANSISTOR	1	
	Q466	B1ABCF000226	TRANSISTOR	1	
	Q505	B1DHCC000034	TRANSISTOR	1	
	Q508	B1CFFB000001	TRANSISTOR	1	
	Q510	B1ADCF000166	TRANSISTOR	1	
	Q520	B1DHCC000034	TRANSISTOR	1	
	Q524	B1ADCF000166	TRANSISTOR	1	
	Q525	B1ABCF000226	TRANSISTOR	1	
	QR101	B1GDCFJN0023	TRANSISTOR	1	
	QR301	B1GBCFJN0037	TRANSISTOR	1	
	QR304	B1GDCFJA0025	TRANSISTOR	1	
	QR305	B1GDCFJN0023	TRANSISTOR	1	
	QR406	B1GBCFNN0042	TRANSISTOR	1	
	QR409	B1GDCFJN0023	TRANSISTOR	1	
	QR470	B1GDCFJA0025	TRANSISTOR	1	
	QR471	B1GDCFJA0025	TRANSISTOR	1	
	QR501	B1GBCFNN0042	TRANSISTOR	1	
	QR506	B1GBCFNN0042	TRANSISTOR	1	
	QR521	B1GBCFNN0042	TRANSISTOR	1	
	QR522	B1GBCFNN0042	TRANSISTOR	1	
	QR523	B1GDCFJN0023	TRANSISTOR	1	
	QR526	B1GBCFNN0042	TRANSISTOR	1	
			DIODES		
	D126	B0ACCJ000027	DIODE	1	
	D201	B3AAB0000037	DIODE	1	
	D301	B0JCMD000023	DIODE	1	
	D426	MA2S7280GL	DIODE	1	
	D427	MA2SD320GL	DIODE	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
	D502	MA2SD320GL	DIODE	1	
	D503	B0ACCJ000027	DIODE	1	
			INDUCTORS		
	LB315	J0JAC0000055	INDUCTOR	1	
	LB316	J0JAC0000055	INDUCTOR	1	
	LB317	J0JAC0000055	INDUCTOR	1	
	LB318	J0JAC0000055	INDUCTOR	1	
	LB401	J0JAC0000055	INDUCTOR	1	
	LB402	J0JAC0000055	INDUCTOR	1	
	LB403	J0JAC0000055	INDUCTOR	1	
	LB404	J0JAC0000055	INDUCTOR	1	
	LB501	J0JGC0000059	INDUCTOR	1	
	LB701	J0JGC0000059	INDUCTOR	1	
			SWITCHES		
	S601	K0H1BA000436	SW PLAY	1	
	S602	K0H1BA000436	SW FF	1	
	S603	K0H1BA000436	SW REW	1	
	S604	K0H1BA000436	SW DOWN	1	
	S605	K0H1BA000436	SW FOLDER	1	
	S606	K0H1BA000436	SW STOP	1	
	S607	K0H1BA000436	SW UP	1	
	S608	K0H1BA000436	SW REC/PAUSE	1	
	S609	EVQP7L01K	SW MENU	1	
	S610	EVQP7L01K	SW ERASE	1	
	S620	K0D113B00087	SW HOLD	1	
	S621	K0D113B00029	SW MANUAL/WIDE/ZOOM	1	
			CONNECTORS		
	P3	K1KY30AA0651	30P CONNECTOR	1	
	P301	K1KA02BA0014	2P CONNECTOR	1	
	P502	K1KY30AA0652	30P CONNECTOR	1	
			COILS AND INDUCTORS		
	L501	J0JBD0000045	INDUCTOR	1	
	L513	G1C6R8MA0210	INDUCTOR	1	
			FUSES		
⚠	ICP501	D4FB1R100015	RESETTABLE FUSE	1	
⚠	ICP502	D4FB1R100015	RESETTABLE FUSE	1	
			MICROPHONES		
	M401	L0CBAB000124	MICROPHONE	1	
	M402	L0CBAB000124	MICROPHONE	1	
	M403	L0CBAB000124	MICROPHONE	1	
			OSCILLATOR		
	X1101	H0J120500050	CRYSTAL OSCILLATOR	1	
	X1103	H0J327200085	CRYSTAL OSCILLATOR	1	
			JACKS		
	JK301	K2HCL04E0014	JK EARPHONE	1	
	JK401	K2HCLYYE0006	JK MIC	1	
	JK501	K2HZ105E0009	JK USB	1	
			RESISTORS		
	R104	ERJ2GE0R00X	0 1/16W	1	
	R105	D0GA330JA023	33 1/16W	1	
	R108	D0GA221JA023	220 1/16W	1	
	R109	D0GA221JA023	220 1/16W	1	
	R110	D0GA221JA023	220 1/16W	1	
	R111	D0GA221JA023	220 1/16W	1	
	R112	ERJ2RHD473X	47K 1/16W	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
	R113	ERJ2RHD473X	47K 1/16W	1	
	R119	ERJ2GEJ334X	330K 1/16W	1	
	R120	D0GA104JA023	100K 1/16W	1	
	R122	D0GA103JA023	10K 1/16W	1	
	R123	ERJ2GEJ334X	330K 1/16W	1	
	R124	ERJ2GEJ334X	330K 1/16W	1	
	R125	ERJ2GEJ334X	330K 1/16W	1	
	R126	ERJ2GEJ334X	330K 1/16W	1	
	R128	ERJ2GEJ334X	330K 1/16W	1	
	R129	ERJ2GEJ334X	330K 1/16W	1	
	R136	ERJ2GEJ334X	330K 1/16W	1	
	R138	ERJ2GEJ561X	560 1/16W	1	
	R139	ERJ2GEJ334X	330K 1/16W	1	
	R140	ERJ2GEJ224X	220K 1/16W	1	
	R147	ERJ2GEJ474X	470K 1/16W	1	
	R201	D0GA104JA023	100K 1/16W	1	
	R202	D0GA393JA023	39K 1/16W	1	
	R203	D0GA104JA023	100K 1/16W	1	
	R206	ERJ2GE0R00X	0 1/16W	1	
	R207	D0GA222JA023	2.2K 1/16W	1	
	R307	ERJ2GEJ390X	39 1/16W	1	
	R308	ERJ2GEJ390X	39 1/16W	1	
	R317	D0GA103JA023	10K 1/16W	1	
	R323	D0GA822JA023	8.2K 1/16W	1	
	R324	D0GA472JA023	4.7K 1/16W	1	
	R325	D0GA822JA023	8.2K 1/16W	1	
	R326	D0GA472JA023	4.7K 1/16W	1	
	R405	D0GA473JA023	47K 1/16W	1	
	R407	D0GA221JA023	220 1/16W	1	
	R408	D0GA221JA023	220 1/16W	1	
	R410	ERJ2GEJ474X	470K 1/16W	1	
	R411	D0GA101JA023	100 1/16W	1	
	R412	D0GA222JA023	2.2K 1/16W	1	
	R413	ERJ2GEJ475X	4.7M 1/16W	1	
	R414	D0GA103JA023	10K 1/16W	1	
	R415	D0GA104JA023	100K 1/16W	1	
	R416	D0GA223JA023	22K 1/16W	1	
	R417	D0GA222JA023	2.2K 1/16W	1	
	R418	ERJ2GEJ475X	4.7M 1/16W	1	
	R419	D0GA103JA023	10K 1/16W	1	
	R420	D0GA104JA023	100K 1/16W	1	
	R421	D0GA223JA023	22K 1/16W	1	
	R423	ERJ2GEJ475X	4.7M 1/16W	1	
	R425	ERJ2GE0R00X	0 1/16W	1	
	R428	ERJ2GEJ475X	4.7M 1/16W	1	
	R429	D0GA104JA023	100K 1/16W	1	
	R430	D0GA104JA023	100K 1/16W	1	
	R431	ERJ2GEJ683X	68K 1/16W	1	
	R432	D0GA222JA023	2.2K 1/16W	1	
	R434	D0GA102JA023	1K 1/16W	1	
	R435	D0GA104JA023	100K 1/16W	1	
	R436	D0GA104JA023	100K 1/16W	1	
	R437	ERJ2GEJ683X	68K 1/16W	1	
	R438	D0GA222JA023	2.2K 1/16W	1	
	R439	D0GA102JA023	1K 1/16W	1	
	R441	D0GA103JA023	10K 1/16W	1	
	R442	D0GA103JA023	10K 1/16W	1	
	R443	D0GA102JA023	1K 1/16W	1	
	R444	D0GA102JA023	1K 1/16W	1	
	R446	D0GA223JA023	22K 1/16W	1	
	R447	D0GA273JA023	27K 1/16W	1	
	R448	ERJ2GEJ184X	180K 1/16W	1	
	R449	D0GA103JA023	10K 1/16W	1	
	R450	D0GA223JA023	22K 1/16W	1	
	R451	ERJ2GEJ154X	150K 1/16W	1	
	R452	D0GA103JA023	10K 1/16W	1	
	R454	D0GA223JA023	22K 1/16W	1	
	R455	D0GA273JA023	27K 1/16W	1	
	R456	ERJ2GEJ184X	180K 1/16W	1	
	R457	D0GA103JA023	10K 1/16W	1	
	R458	D0GA223JA023	22K 1/16W	1	
	R459	ERJ2GEJ154X	150K 1/16W	1	
	R460	D0GA103JA023	10K 1/16W	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
	R462	ERJ2GEJ474X	470K 1/16W	1	
	R463	D0GA472JA023	4.7K 1/16W	1	
	R464	D0GA102JA023	1K 1/16W	1	
	R466	ERJ2GEJ474X	470K 1/16W	1	
	R467	D0GA472JA023	4.7K 1/16W	1	
	R468	D0GA102JA023	1K 1/16W	1	
	R475	ERJ2GEJ474X	470K 1/16W	1	
	R476	ERJ2GEJ474X	470K 1/16W	1	
	R505	ERJ2GEJ474X	470K 1/16W	1	
	R506	ERJ2GEJ474X	470K 1/16W	1	
	R507	ERJ2RKD224X	220K 1/16W	1	
	R508	D0GA104JA023	100K 1/16W	1	
	R509	ERJ2RHD104X	100K 1/16W	1	
	R510	D0GA105JA023	1M 1/16W	1	
	R511	ERJ2GEJ225X	2.2M 1/16W	1	
	R512	ERJ2GEJ564X	560K 1/16W	1	
	R513	D0GA104JA023	100K 1/16W	1	
	R514	ERJ2RKD684X	680K 1/16W	1	
	R515	ERJ2RHD563X	56K 1/16W	1	
	R516	ERJ2RKD105X	1M 1/16W	1	
	R522	ERJ2GEJ474X	470K 1/16W	1	
	R523	ERJ2GEJ474X	470K 1/16W	1	
	R524	ERJ2GEJ474X	470K 1/16W	1	
	R525	ERJ2GEJ474X	470K 1/16W	1	
	R526	D0GA105JA023	1M 1/16W	1	
	R540	D0GA473JA023	47K 1/16W	1	
	R541	ERJ2GEJ474X	470K 1/16W	1	
	R542	ERJ2GEJ474X	470K 1/16W	1	
	R602	ERJ2RHD562X	5.6K 1/16W	1	
	R603	ERJ2RHD682X	6.8K 1/16W	1	
	R604	ERJ2RHD103X	10K 1/16W	1	
	R605	ERJ2RHD153X	15K 1/16W	1	
	R606	ERJ2RHD273X	27K 1/16W	1	
	R608	ERJ2RHD103X	10K 1/16W	1	
	R609	ERJ2RHD153X	15K 1/16W	1	
	R610	ERJ2RHD273X	27K 1/16W	1	
	R611	D0GB102JA008	1K 1/16W	1	
	R612	ERJ2RHD682X	6.8K 1/16W	1	
	R613	ERJ2RHD562X	5.6K 1/16W	1	
	R621	D0GA103JA023	10K 1/16W	1	
	R1110	D0GA101JA023	100 1/16W	1	
	R1113	ERJ2GEOR00X	0 1/16W	1	
	R1116	ERJ2RHD681X	680 1/32W	1	
	R1117	ERJ2GEJ106X	10M 1/16W	1	
	R1118	ERJ2GEJ334X	330K 1/16W	1	
	R1127	D0GA105JA023	1M 1/16W	1	
	R1131	D0GA101JA023	100 1/16W	1	
			CAPACITORS		
	C102	F1G1A473A013	0.047uF 10V	1	
	C103	F1G0J105A022	1uF 6.3V	1	
	C104	F1G0J105A022	1uF 6.3V	1	
	C105	F1G1C103A048	0.01uF 16V	1	
	C106	F1G1C103A048	0.01uF 16V	1	
	C107	F1G1C103A048	0.01uF 16V	1	
	C108	F1G1C103A048	0.01uF 16V	1	
	C121	F1G0J105A022	1uF 6.3V	1	
	C123	F3G0J1070004	100uF 6.3V	1	
	C124	F3G0J1070004	100uF 6.3V	1	
	C125	F3G0J1070004	100uF 6.3V	1	
	C126	F1G0J224A001	0.22uF 6.3V	1	
	C202	ECJ0EB1H681K	680pF 50V	1	
	C203	F1G1A473A013	0.047uF 10V	1	
	C204	F1G1A473A013	0.047uF 10V	1	
	C205	F1G1A473A013	0.047uF 10V	1	
	C208	F1G1C103A048	0.01uF 16V	1	
	C301	F3F0J226A057	22uF 6.3V	1	
	C302	F1G0J105A022	1uF 6.3V	1	
	C303	F1J0J106A004	10uF 6.3V	1	
	C304	F1G0J105A022	1uF 6.3V	1	
	C305	F1G0J105A022	1uF 6.3V	1	
	C306	F1G0J105A022	1uF 6.3V	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
	C307	F1G0J105A022	1uF 6.3V	1	
	C309	ECJ0EC1H221J	220pF 50V	1	
	C312	F3G0J1070004	100uF 6.3V	1	
	C313	F1G1A104A012	0.1uF 10V	1	
	C314	F1G1A104A012	0.1uF 10V	1	
	C331	F1G1E1020001	1000pF 25V	1	
	C332	F1G1E1020001	1000pF 25V	1	
	C407	F1G1E1020001	1000pF 25V	1	
	C408	F1G1E1020001	1000pF 25V	1	
	C411	F3F0J226A057	22uF 6.3V	1	
	C412	F1G1H222A416	2200pF 50V	1	
	C414	F1G1A473A013	0.047uF 10V	1	
	C415	F1G1A104A012	0.1uF 10V	1	
	C417	F1G1H222A416	2200pF 50V	1	
	C419	F1G1A473A013	0.047uF 10V	1	
	C420	F1G1A104A012	0.1uF 10V	1	
	C422	F1G1H222A416	2200pF 50V	1	
	C425	F1G1A104A012	0.1uF 10V	1	
	C428	F1H0J225A005	2.2uF 6.3V	1	
	C431	ECJ0EC1H221J	220pF 50V	1	
	C432	F1H0J225A005	2.2uF 6.3V	1	
	C433	ECJ0EC1H221J	220pF 50V	1	
	C434	ECJ0EC1H221J	220pF 50V	1	
	C437	ECJ0EC1H221J	220pF 50V	1	
	C438	F1H0J225A005	2.2uF 6.3V	1	
	C442	F3F0J226A057	22uF 6.3V	1	
	C443	F1G1A473A013	0.047uF 10V	1	
	C444	F1G1A473A013	0.047uF 10V	1	
	C445	F1G1A333A013	0.033uF 10V	1	
	C446	F1G1C103A048	0.01uF 16V	1	
	C447	F1G1C103A048	0.01uF 16V	1	
	C449	F1G0J683A001	0.068uF 6.3V	1	
	C450	F1G0J683A001	0.068uF 6.3V	1	
	C451	ECJ0EC1H221J	220pF 50V	1	
	C452	F1G1A104A012	0.1uF 10V	1	
	C453	F1G1A333A013	0.033uF 10V	1	
	C457	F1G0J683A001	0.068uF 6.3V	1	
	C458	F1G0J683A001	0.068uF 6.3V	1	
	C459	ECJ0EC1H221J	220pF 50V	1	
	C460	F1G1A104A012	0.1uF 10V	1	
	C462	ECJ0EB1C682K	6800pF 16V	1	
	C464	F1G1C223A039	0.022uF 16V	1	
	C465	F1G1C103A048	0.01uF 16V	1	
	C466	ECJ0EB1C682K	6800pF 16V	1	
	C468	F1G1C223A039	0.022uF 16V	1	
	C469	F1G1C103A048	0.01uF 16V	1	
	C470	F1G0J105A022	1uF 6.3V	1	
	C471	F1G0J105A022	1uF 6.3V	1	
	C473	F3F0J226A057	22uF 6.3V	1	
	C474	F1G0J105A022	1uF 6.3V	1	
	C502	F1G0J105A022	1uF 6.3V	1	
	C503	F1G0J105A022	1uF 6.3V	1	
	C504	F1H0J225A005	2.2uF 6.3V	1	
	C509	F1H1A1050002	1uF 10V	1	
	C510	ECJ0EC1H221J	220pF 50V	1	
	C514	F3G0J1070004	100uF 6.3V	1	
	C515	F3G0J1070004	100uF 6.3V	1	
	C517	F1H0J4750004	4.7uF 6.3V	1	
	C518	F3G0J1070004	100uF 6.3V	1	
	C520	F1G1A473A013	0.047uF 10V	1	
	C531	F1J0J106A004	10uF 6.3V	1	
	C620	F1G1C1030007	0.01uF 16V	1	
	C622	F1G1E1020001	1000pF 25V	1	
	C701	F3F0J226A057	22uF 6.3V	1	
	C702	F1G1A104A012	0.1uF 10V	1	
	C1108	F3F0J226A057	22uF 6.3V	1	
	C1109	F1G1A104A012	0.1uF 10V	1	
	C1110	F1G0J105A022	1uF 6.3V	1	
	C1111	F1G1C103A048	0.01uF 16V	1	
	C1116	F1G1A104A012	0.1uF 10V	1	
	C1117	F1G1H120A565	12pF 50V	1	
	C1118	F1G1H120A565	12pF 50V	1	
	C1121	F1G0J105A022	1uF 6.3V	1	

Safety	Ref. No.	Part No.	Part Name & Description	QTY	EMARKS
	C1128	F1G1H150A565	15pF 50V	1	
	C1129	F1G1H180A565	18pF 50V	1	
	C1130	F1G1A104A012	0.1uF 10V	1	
	C1132	F1G1A104A012	0.1uF 10V	1	
	C1133	F1G1A104A012	0.1uF 10V	1	
	C1134	F3F0J226A057	22uF 6.3V	1	
	C1135	F1G1A104A012	0.1uF 10V	1	
	C1138	F1G1A104A012	0.1uF 10V	1	
	C1139	F1G1A104A012	0.1uF 10V	1	
	C1141	F1G1A104A012	0.1uF 10V	1	
	C1142	F1G1A104A012	0.1uF 10V	1	