ICB-U655

SERVICE MANUAL

US Model

Ver 1.1 1999. 05

Photo: Yellow model

SPECIFICATIONS

Operating frequency
462.5625 - 462.7125 MHz
467.5625 - 467.7125 MHz
14 channels
Antenna
Whip antenna
Communicating system
Press-to-talk system (single transmission)
Modulation
F3E
Transmitting output
500 mW
Reception
Double superheterodyne system
Speaker
Approx. 3.6 cm ($1\,^{7}/_{16}$ inches) dia., 4 ohms
Power output
100 mW (at 10% harmonic distortion)
Power requirements
4.5V DC, three size AA (R6) batteries
External power source
DC IN 4.5V jack accepts:
12V/24 V car battery with the recommended Sony car battery cord (not supplied)
Auto Power Off
Approx. 6 hours
Dimensions
Approx. $60 \times 101 \times 29.5$ mm (w/h/d) ($2\,^{3}/_{8} \times 4 \times 1\,^{3}/_{16}$ in.) not incl. projecting parts and controls
Mass
Approx. 165 g (5.9 oz.) incl. batteries and a belt clip
Supplied accessory
Belt holder (1)

Design and specifications are subject to change without notice.

FRS TWO-WAY RADIO

MICROFILM

SONY®

TABLE OF CONTENTS

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
SERVICING NOTES

About special screws

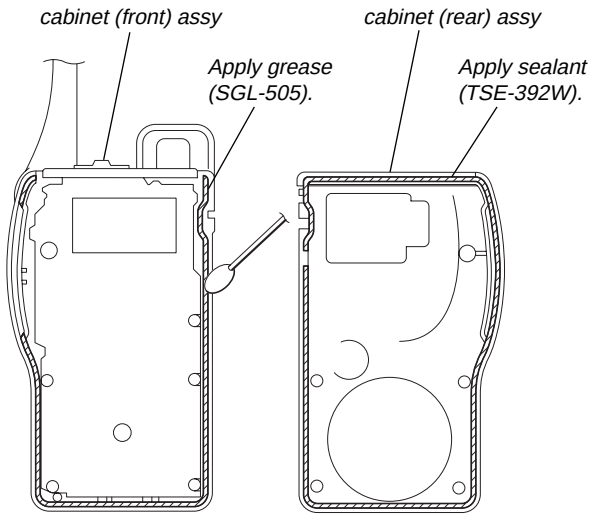
Special screws are used for this machine not to be remodeled the inside by any users. Therefore, repair should be done with the driver described below.

7-721-052-08 special driver

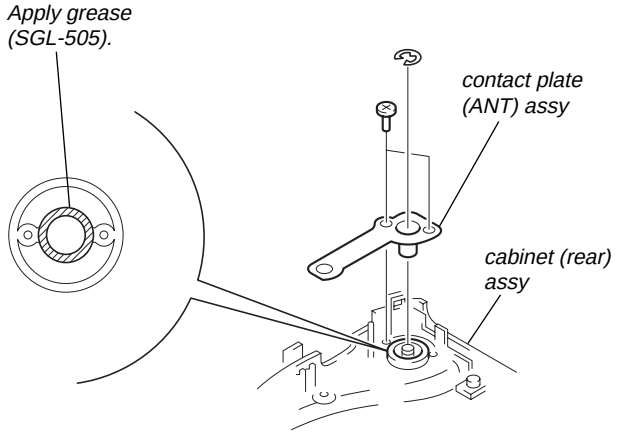
Drip-proof treatment

Always perform the following treatment when the Cabinet was removed, or the Contact Board (ANT) Assembly was removed during repair.

1. Apply SONY Grease SGL-505 (7-662-010-04) to entire surface of Cabinet Rear Assembly marked with ▨ using a swab. (See Fig. A)
2. Apply Sealant TSE-392W (7-432-950-03) to entire surface of Cabinet Rear Assembly marked with ▨ using a swab. (See Fig. A)
3. Apply SONY Grease SGL-505 (7-662-010-04) to entire surface of Cabinet Rear Assembly marked with ▨ using a swab. (See Fig. B)



(Flg. A)

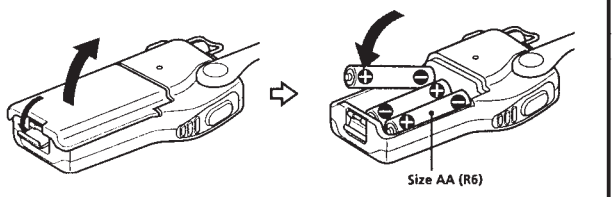


(Flg. B)

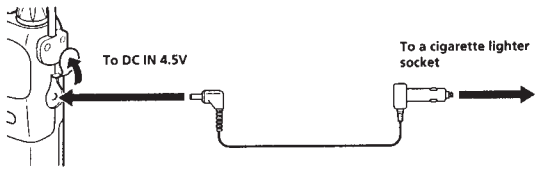
SECTION 2
GENERAL

This section is extracted from instruction manual.

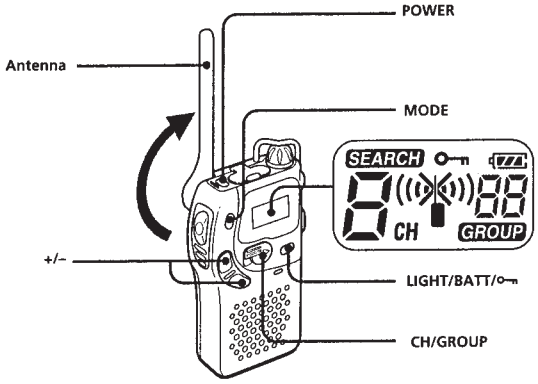
A



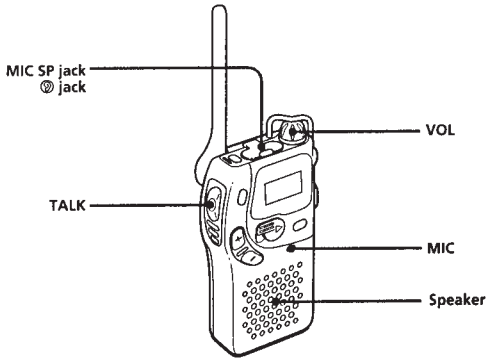
B



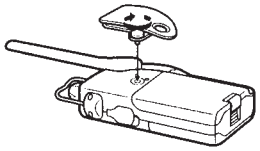
C



D



E



Before You Begin

Thank you for choosing the Sony FRS Two-way radio! The unit will give you many hours of reliable service.
Before operating the unit, please read these instructions thoroughly and retain them for future reference.

Features

The ICB-U655 is an FRS (Family Radio Service) two-way radio and can be used without any licences or qualifications within the United States.

- A transmitting output of 500 mW, with 14 channels. Can communicate with other FRS two-way radios with the same frequency channels.
- Handy size, easy to operate.
- Group Talk feature — Allows you to communicate only with units on the same channel with the same group number, including other models with the same feature.
- Search feature — Automatically searches for unused channels and calls up members of your group.
- 180° rotating antenna for convenience and compactness.
- Liquid Crystal Display to show operation status.

Precautions

Placement

- Do not leave the unit near heat sources, such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, humidity, rain, mechanical vibration or shock.
  Do not leave the unit in a car parked in the sun, especially in the summer.
- In vehicles or in buildings, transmission and reception may be difficult or noisy. Try using the unit near a window.

Safety

- Operate the unit on 4.5 V DC.
  For battery operation, use three size AA (R6) batteries.
  For car battery operation, use only the car battery cord recommended for this unit (not supplied). Do not use any other car battery cord.
- When the unit is not to be used for a long time, remove the batteries to avoid possible damage caused by undue battery discharge, leakage or corrosion.
- The nameplate indicating operating voltage, etc. is located at the rear exterior.
- Should any solid object or liquid fall into the unit, remove the batteries and have the unit checked by qualified personnel before operating it any further.
- Since a strong magnet is used for the speaker, metallic objects such as pins, etc. may cling to the unit. Keep personal credit cards using magnetic coding or spring-wound watches away from the unit to prevent possible damage from the magnet.
- When the casing becomes soiled, clean it with a soft cloth dampened with mild detergent solution. Never use abrasive cleansers or chemical solvents, as they may mar the casing.
- Keep the unit away from metallic objects.
- Handle the antenna with care, so as not to bend or break it.

Notes on using the two-way radio

- Use this unit only within the United States of America in accordance with the regulations governing two-way radios in the United States of America.
- Do not use this unit near a TV set, radio, or any type of broadcast station, as it may cause interference.
- You are warned that your transmission could be heard by some other party.
- Do not disclose or use the transmission of other parties in any form.
- Two-way radios are not protected from interference by broadcast stations or other high frequency facilities.

If you have any questions or problem concerning your unit, please consult your nearest Sony dealer.

Power Sources

The unit can be powered by batteries or a car battery.

Installing Batteries (See Fig. A)

Flip up the antenna and detach the belt clip if attached before inserting the batteries.

1 Open the lid of the battery compartment.
2 Insert three size AA (R6) batteries (not supplied) with correct polarity as shown in the illustration.
3 Close the lid.

Battery life

Using size AA (LR6) Sony alkaline batteries: Approximately 40 hours*

* Battery life when the unit is used continuously, repeating sets of 30-second transmission, 30-second reception, and a 9-minute Power-Save standby. Battery life varies with temperature conditions, and may be shorter especially in colder areas.

When to replace the batteries

When ▭ flashes in the display, replace all three batteries with new ones.

When the batteries have been replaced

Your current channel and group number setting will be erased. Set them again.

To check battery power

Press LIGHT/BATT/🔑 lightly (shorter than 2 seconds) when the power is turned on.
The battery power indication will light up for about 15 seconds, and then disappear. Press again to turn off the display manually.

Battery power is sufficient.
↓
Battery power is decreasing.
↓
There is little battery power. The battery warning beep will start to sound.
↓
Replace the batteries.

When the radio turns off unexpectedly

If there is no reception for 6 hours, or if you did not press any key (except LIGHT/BATT/🔑) for 6 hours, the unit will beep several times and then shut itself off to prevent unnecessary wear of the batteries (Auto Power Off function).
To turn the unit on again, press POWER.
If the power does not turn on by pressing POWER, or if the radio turns off unrelated to the Auto Power Off function, the batteries are exhausted. Replace them with new ones.

Car battery (See Fig. B)

Connect the recommended Sony car battery cord (not supplied).

- For details, see the Operating Instructions of the car battery cord.
- The display will light up when the unit is powered by the car battery.
- When the DC IN 4.5V jack is not being used, close the rubber cap securely to ensure water-resistance.

Notes

- The unit will not run on batteries as long as the DC IN 4.5V jack is plugged in.
- Use only the recommended car battery cord. Using any other car battery cord may cause damage to the unit.

Polarity of the plug

Operation

The unit has three transmission modes: the Basic mode, Group Talk mode and the Search mode. The explanation here is for the Basic mode. For the other transmission modes, see "Switching transmission modes".

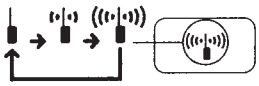
For the Basic mode, you first need to decide on a channel number with the member(s) of your group.

Preparation (See Fig. C)

1 Flip up the antenna.
The antenna rotates 180 degrees. Adjust the antenna so that it is vertical to the ground.
2 Press POWER to turn on the power.
If "🔑" is displayed, key protection is active. Press LIGHT/BATT/🔑 for 2 seconds or longer to disable key protection.
3 Press MODE repeatedly so that neither SEARCH nor GROUP is displayed.
The unit goes into the Basic mode.
4 Switch CH/GROUP to CH, and press +/– to select the channel.
Set the unit to the same channel as your group member(s).
Each press of + or – will increase or decrease, respectively, the channel number by one. Hold down either button to change the channel continuously.

Transmission (See Fig. D)

1 To transmit, hold down TALK and speak into the MIC (microphone).
Keep the MIC at about 2 inches from your mouth and speak in your normal voice.
During transmission, the transmission status indicator will repeat the following indication.



2 To receive, release TALK.
Adjust the reception volume with VOL.

To continue transmission

Repeat the steps for transmission above.
Notify the person at the other end that you are switching to reception with the word "over". Then, release TALK. When the person on the other end finishes with "over", hold down TALK again to respond.

On the Power-Save mode

When there is no reception for about 8 seconds during the reception mode, the unit automatically goes into the Power-Save mode, and will consume less battery power. The unit will automatically exit the Power-Save mode when there is reception.

To end transmission

Notify the person on the other end that you are ending the transmission with the word "out". Press POWER to turn off the power.
If "🔑" is displayed, press LIGHT/BATT/🔑 for 2 seconds or longer to disable key protection, and then turn off the power.

To use a speaker microphone or an earphone

Connect an optional speaker microphone to the MIC SP jack. Connect an optional earphone to the 🎧 jack (see the respective Operating Instructions for details).

Notes

- Do not plug in any other equipment than the recommended Sony U-ceiver accessories (not supplied) to the MIC SP or the 🎧 jack even if the plug seems to be similar, as it may cause damage to the unit.
- When the jacks are not in use, close the rubber cap securely to ensure water-resistance.

Switching transmission modes

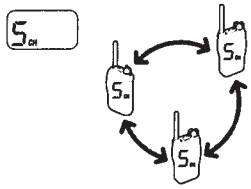
This unit has three transmission modes. Select according to situation.

Basic mode	When there is no intereference.
Group Talk mode	When there is interference by other groups using the same channel.
Search mode	When you have trouble finding an unused channel.

Each press of MODE will change the transmission mode as follows:

Basic mode

1 Decide on a channel number (1 to 14) with the member(s) of your group.
2 Press MODE repeatedly so that neither SEARCH nor GROUP is displayed.
The unit goes into the Basic mode.
3 Switch CH/GROUP to CH and press +/– to select the channel.
4 Transmit.
Example: When using channel number 5



You can talk with anyone with a Sony or other FRS two-way radio that is within the effective range and is set to the same channel .

In the Basic mode, you can hear transmission by any other two-way radio on the same channel that is within the effective range.

Group Talk mode

In the Group Talk mode, the unit communicates only with other units that are on the same channel and the same group number.

1 Decide on a channel number (1 to 14) and a group number (1 to 38) with the member(s) of your group.
2 Press MODE repeatedly so that GROUP is displayed and SEARCH is not displayed.
The unit goes into the Group Talk mode.
3 Switch CH/GROUP to CH and press +/– to select the channel.
4 Switch CH/GROUP to GROUP and press +/– to select the group number.
5 Transmit.
Example: When using channel number 3, group number 38.

When there are a number of groups on the same channel, you can block out transmission of other groups by switching to the Group Talk mode. (Transmission of other groups may still interfere, however, if the other groups use the same channel and group number).

Search mode

In the Search mode, the unit will search for an unused channel and call up the members of your group (i.e., other users with their ICB-U655s set to the Search mode and to the same group number). After first setting the group number, you need to initiate Search by sending the call signal.

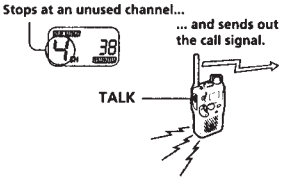
Setting the group number

1 Decide on a group number (1 to 38) with the members of your group.
2 Press MODE repeatedly so that both SEARCH and GROUP are displayed.
The unit goes into the Search mode.
3 Switch CH/GROUP to GROUP and press +/– to select the group number.
Example: When using group number 38.

The channel number will go into the Search standby status, and the segments of the channel number display will light up in a rotating motion.

Initiating Search

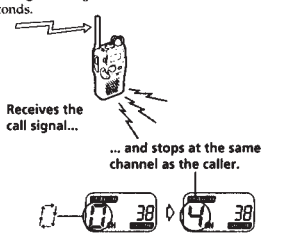
1 Hold down TALK.
The unit searches for an unused channel. When the unit finds an unused channel, it rings and sends off a call signal to other members of your group.



2 Release TALK when your unit rings.
The ring will continue for about 10 seconds. To stop the call signal manually, press TALK again. The ringing will stop.

When you receive the call signal

Your unit switches automatically to the same channel with the unit that sent the call signal, and will ring. The ring will continue for about 10 seconds.



Let the ring sound for about 5 seconds, then hold down TALK to respond.

- If you do not answer the call while the unit is ringing, the unit goes back to Search standby status.

When the transmission is terminated, the unit goes back to Search standby status in about 10 seconds.

Note

The Search system does not work with models other than the ICB-U655.

On channels

Two-way radios can only locate other units that are on the same channel. Please note that the frequency range may differ with the model of the two-way radio.

On effective range

The effective range of the unit depends upon operating conditions, but should cover about 2 miles in suburban areas, with full battery power. Clarity of transmission may worsen at locations with heavy car or railroad traffic.

On transmission modes, channel and group number settings

When the unit is turned on by pressing POWER, the transmission mode, channel and group number settings for the previous transmission will be displayed.
If, however, the batteries have been replaced or the car battery cord have been plugged or unplugged from the DC IN 4.5V jack since the last transmission, the channel and group number may change to 1.

Notes

- You cannot transmit and receive at the same time on this unit, as with telephones.
- Do not touch the antenna during operation, as this may reduce sensitivity.

Other features

Key protection

Press LIGHT/BATT/🔑 for 2 seconds or longer while the power is on.

"🔑" will light up in the display, and the unit will not accept any key operation than the TALK button and this key.

- If LIGHT/BATT/🔑 is pressed for 2 seconds or longer while the power is off, the unit will be protected from turning on accidentally.
- Press LIGHT/BATT/🔑 again for 2 seconds or longer to disable key protection. "🔑 " will go off in the display, and the unit will accept all key operation once again.

Attaching the belt holder (See Fig. E)

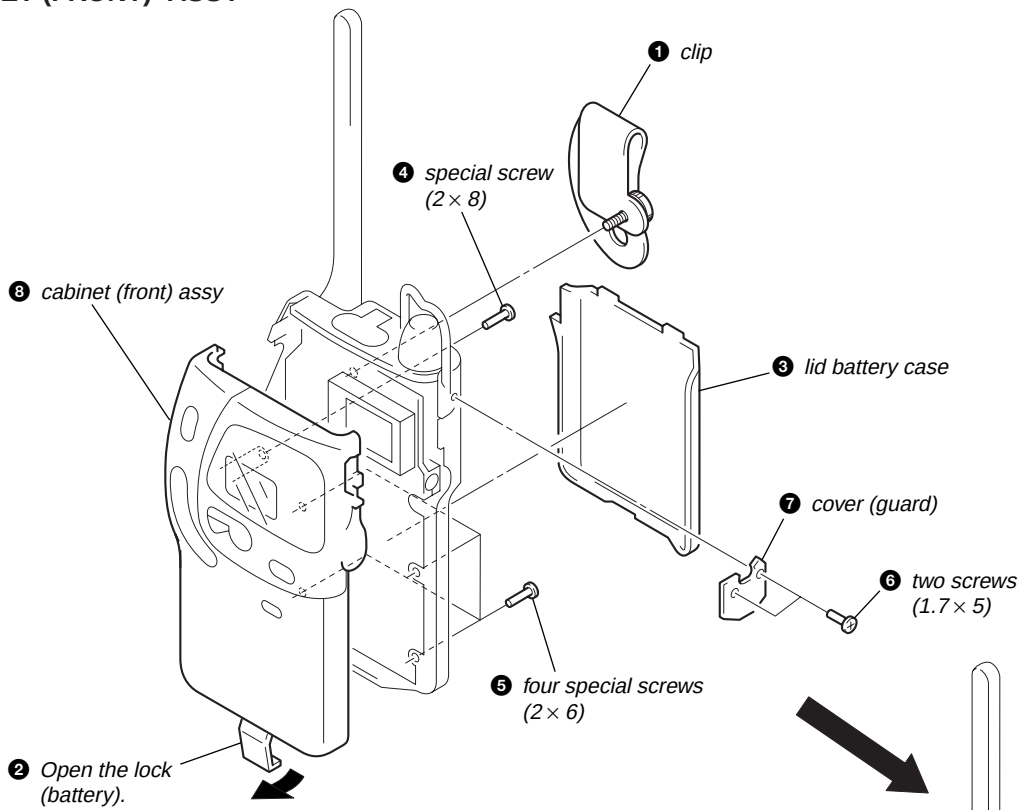
Screw the belt holder onto the main unit as shown in the illustration.

Select either vertical or horizontal position.

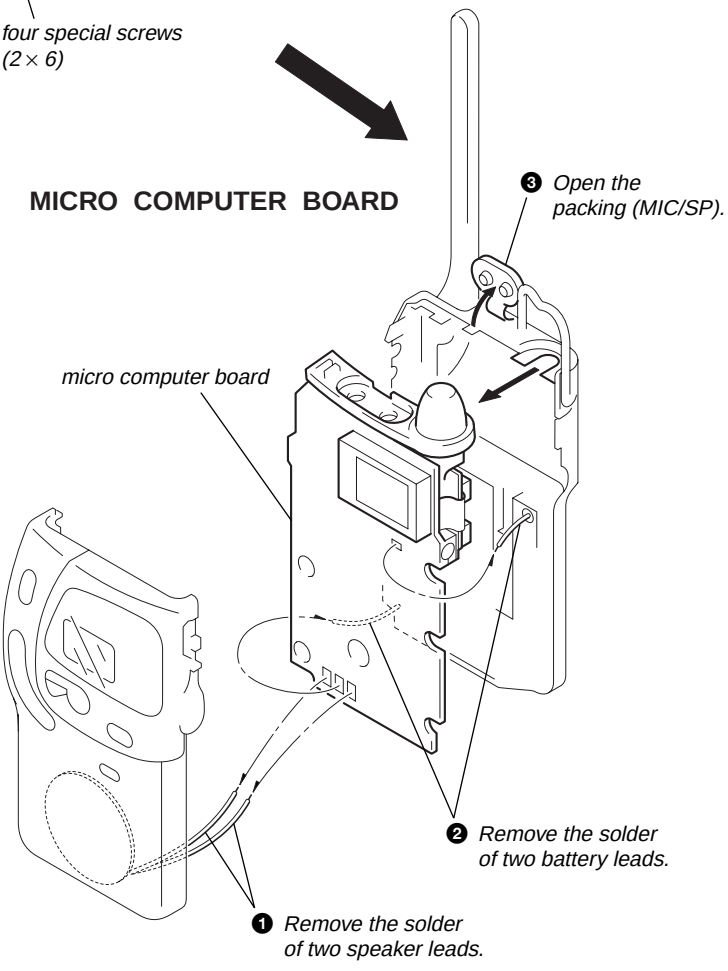
SECTION 3
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

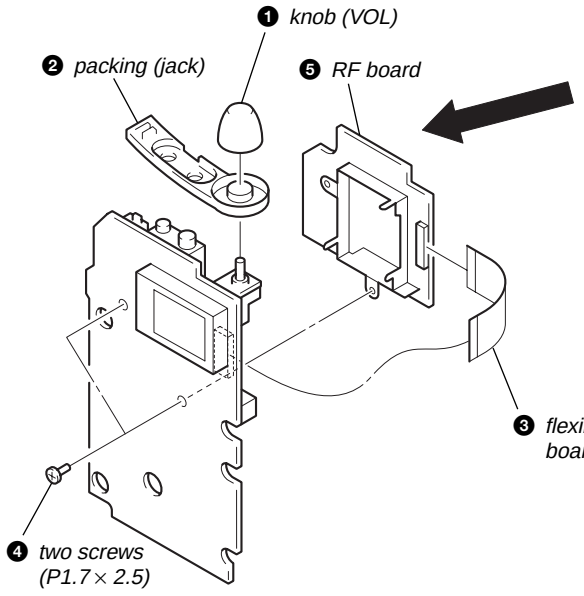
CABINET (FRONT) ASSY



MICRO COMPUTER BOARD



RF BOARD



SECTION 4
ELECTRICAL ADJUSTMENTS

0 dBm=0.775 V

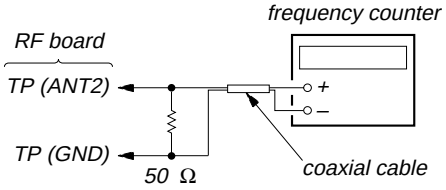
Carrier Frequency of each channel

(Frequency intervals are 25 kHz at each channel, but the interval between 7ch and 8ch is 4.85 MHz)

1ch : 462.5625 MHz	8ch : 467.5625 MHz
2ch : 462.5875 MHz	9ch : 467.5875 MHz
3ch : 462.6125 MHz	10ch : 467.6125 MHz
4ch : 462.6375 MHz	11ch : 467.6375 MHz
5ch : 462.6625 MHz	12ch : 467.6625 MHz
6ch : 462.6875 MHz	13ch : 467.6875 MHz
7ch : 462.7125 MHz	14ch : 467.7125 MHz

PLL Reference Frequency Adjustment

Setting:



Procedure:

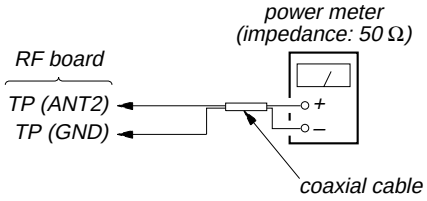
1. Turn the power ON, and set to 8ch.
2. Set to receive state.
3. Adjust C53 on the RF board so that the frequency counter reading become 467.5625 MHz

Specification Values: 467.56235 to 467.56265 MHz

Adjustment Location: RF board (See page 8)

TX Power Adjustment

Setting:



Procedure:

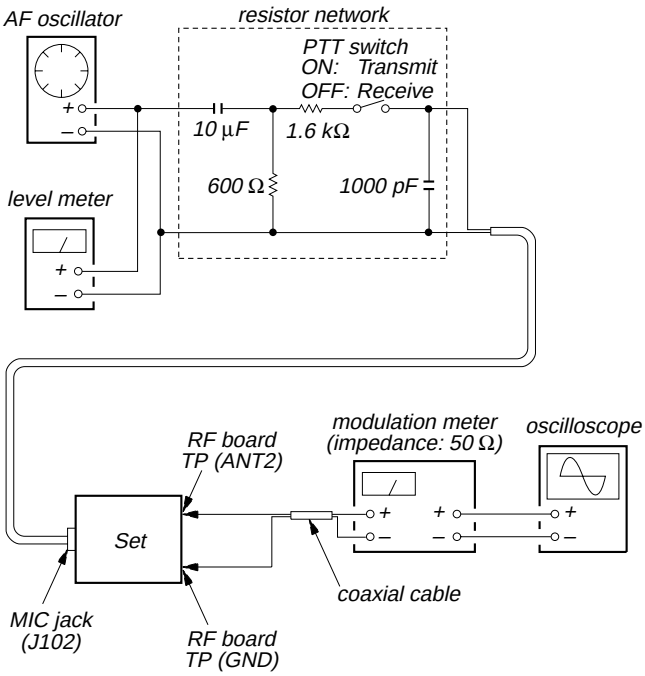
1. Turn the power ON, and set to 8ch.
2. Press the [TALK] button (S107) on the MICRO COMPUTER board continuously and set to transmit state.
3. Adjust RV107 on the MICRO COMPUTER board so that the power meter reading become 475 mW.

Specification Values: 450 to 500 mW

Adjustment Location: MICRO COMPUTER board (See page 8)

Tone Modulation and Modulation Sensitivity Adjustments

Setting:



Procedure:

– Tone Modulation Adjustment –

1. Turn the power ON.
2. Press the [MODE] button (S105) to set the GROUP talk mode.
3. Press the [+/–] button to set GROUP1.
4. Turn the PTT switch ON to set transmit state in no modulate condition. (AF oscillator: OFF)
5. Adjust RV104 on the MICRO COMPUTER board so that the modulation meter reading become 0.3 kHz deviation.

Specification Values: 0.27 to 0.33 kHz deviation

– Modulation Sensitivity Adjustment –

6. Turn the AF oscillator and PTT switch ON to apply 1 kHz/0 dBm signal.
7. Adjust RV103 on the MICRO COMPUTER board so that the modulation meter reading become 2.4 kHz deviation.

Specification Values: 2.3 to 2.5 kHz deviation

8. Turn the AF oscillator OFF.
9. Repeat step 5 to 8 several times.
10. Set the AF oscillator level to –33 dBm, and confirm that the modulation meter reading is 1.75 kHz deviation.

Specification Values: 1.6 to 1.9 kHz deviation

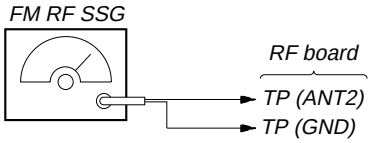
Note: • Any channel is available.
• Set the L. P. F, H. P. F and etc. on the modulation meter OFF.

Adjustment Location: MICRO COMPUTER board (See page 8)

Squelch Adjustment

Setting:

Carrier frequency: 467.5625 MHz (8ch)



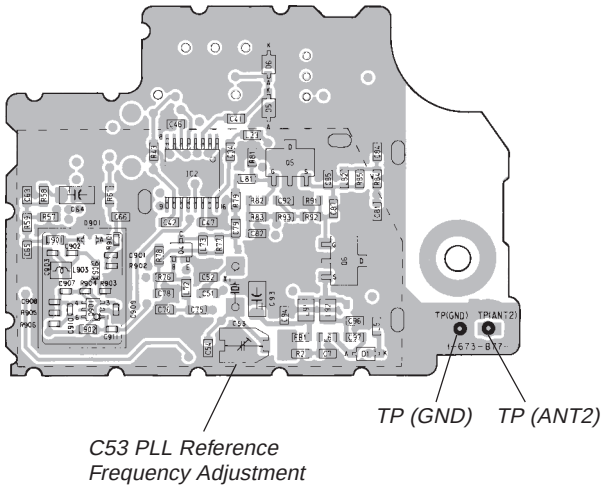
Procedure:

1. Turn the power ON, and set to 8ch.
2. Press the [MODE] button (S105) on the MICRO COMPUTER board to set the basic mode. (Goes off "GROUP" and "SEARCH" indication)
3. Set to the modulation is 1.5 kHz and set to the modulation frequency is 1 kHz of the FM RF SSG.
4. Set to the output level is –15 dBµV of the FM RF SSG, and turn the RV102 on the MICRO COMPUTER board in the clockwise to open the squelch. (Recognized by sound)
5. Turn the RV102 on the MICRO COMPUTER board in the counterclockwise until the squelch closes. (Recognized by sound stopped)
6. Set to the output level is –12 dBµV of the FM RF SSG, and confirm that the squelch opens.
7. Set to the output level is –15 dBµV of the FM RF SSG, and confirm that the squelch closes.

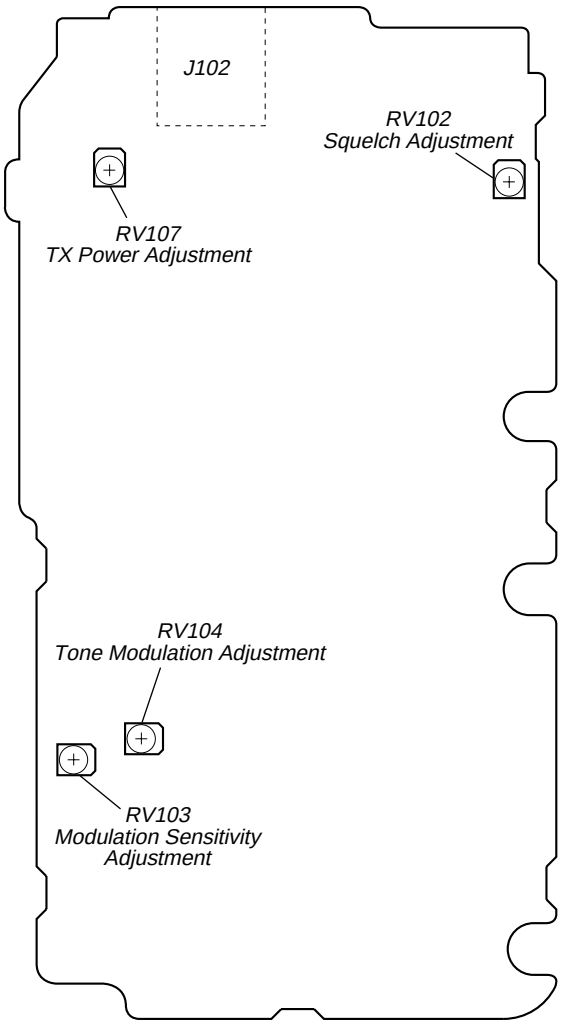
Adjustment Location: MICRO COMPUTER board

Adjustment Location:

– RF BOARD (Side A) **–**

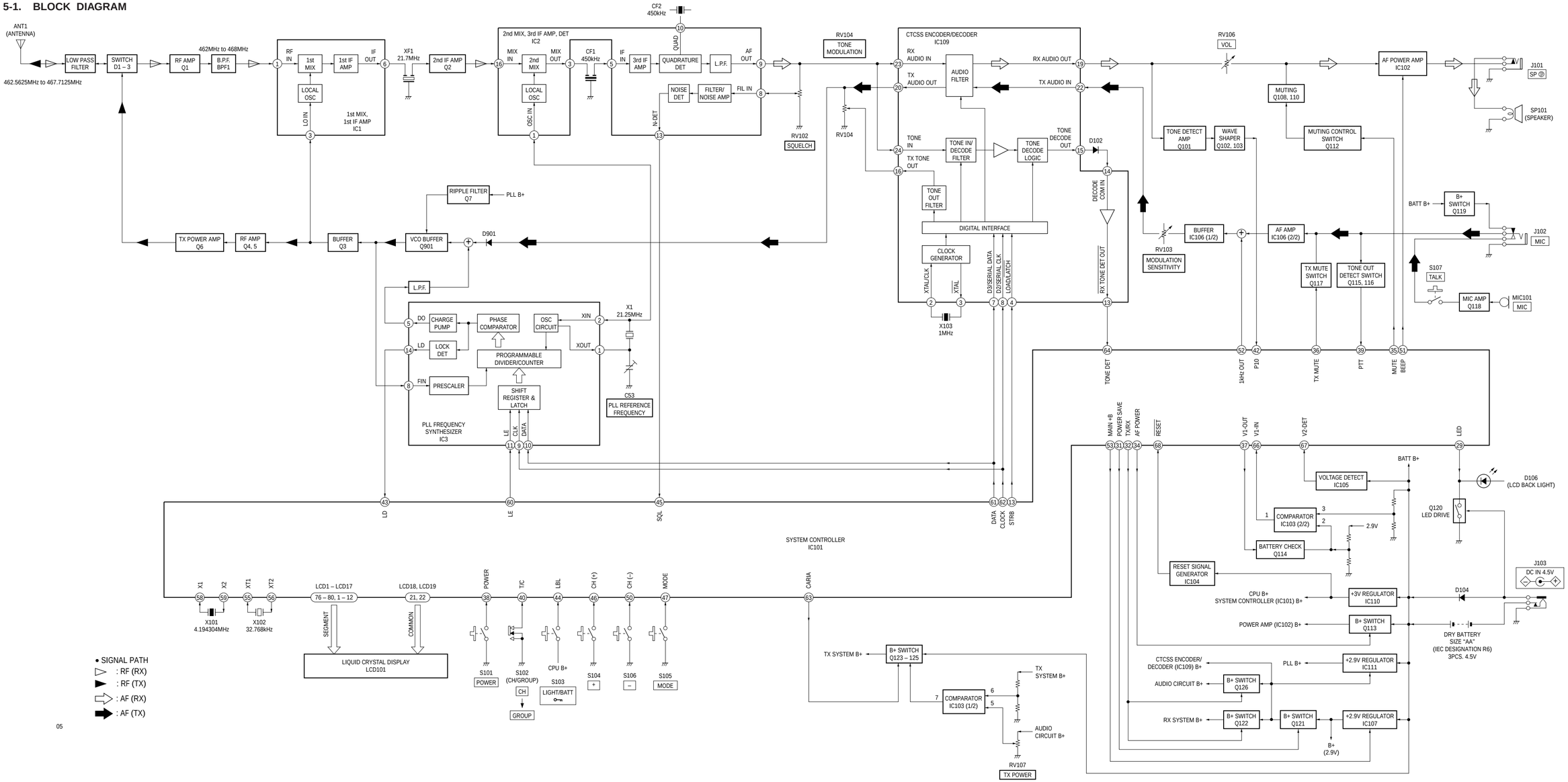


– MICRO COMPUTER BOARD (Side A) **–**



SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM



5-2. PRINTED WIRING BOARDS

- **Semiconductor Location**

Ref. No.	Location
D1	D-13
D2	E-13
D3	E-13
D4	E-12
D5	B-12
D6	B-12
D7	E-13
D102	F-1
D104	D-4
D105	B-2
D106	B-2
D901	C-11
IC1	F-13
IC2	B-12
IC3	E-12
IC101	C-8
IC102	F-4
IC103	B-9
IC104	D-2
IC105	E-3
IC106	G-1
IC107	H-4
IC109	F-2
IC110	F-7
IC111	G-4
Q1	E-12
Q2	G-12
Q3	F-12
Q4	C-12
Q5	B-12
Q6	C-13
Q7	E-11
Q120	B-3
Q121	H-4
Q122	G-4
Q123	H-7
Q124	H-7
Q125	D-4
Q126	H-2
Q901	C-11

Note on Printed Wiring Boards:

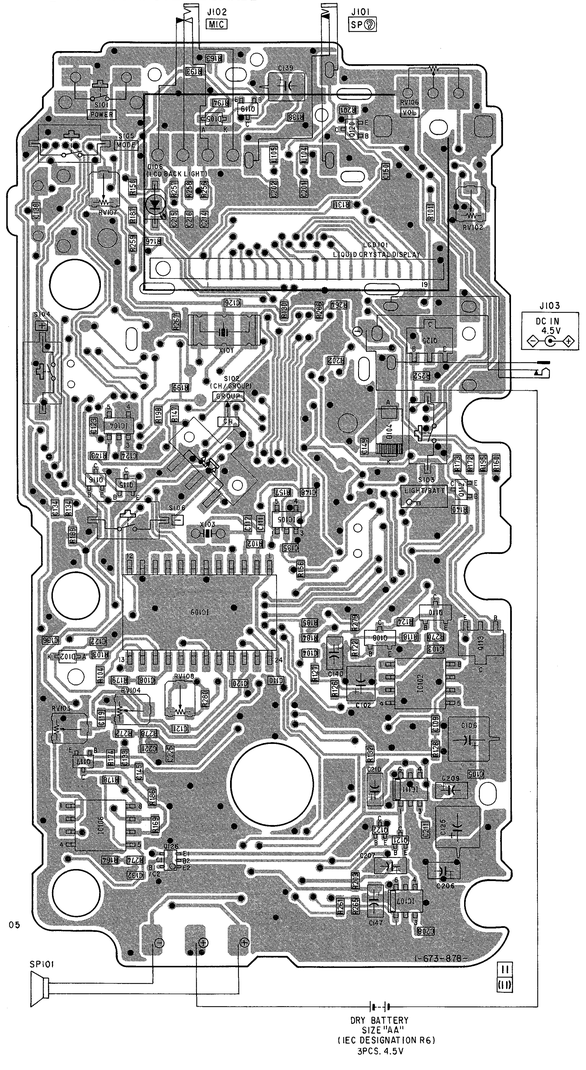
- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ● : Through hole.
- ▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

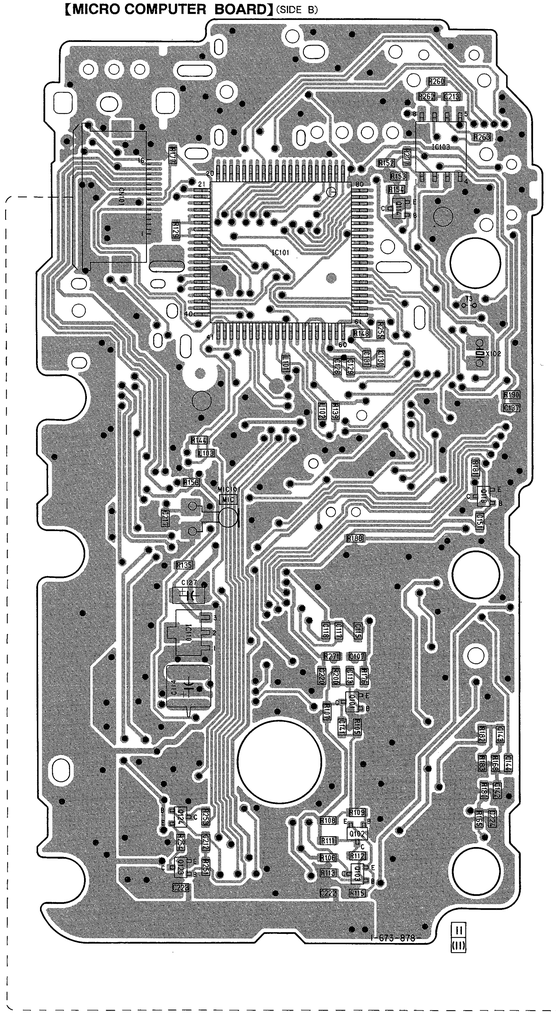
Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

- RF board is four-layer printed board. However, the patterns of layers 2 and 3 have not been included in the diagram.

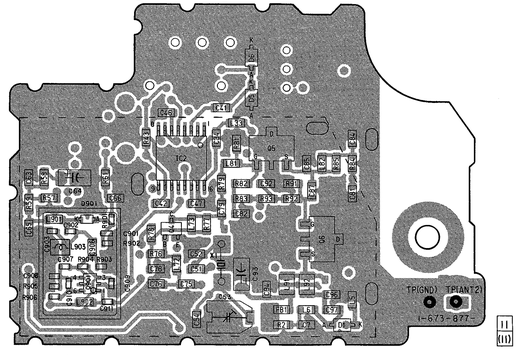
【MICRO COMPUTER BOARD】(SIDE A)



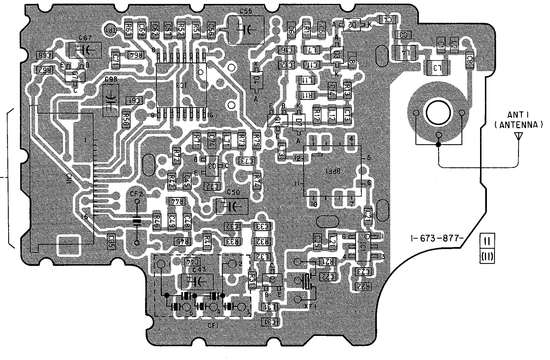
【MICRO COMPUTER BOARD】(SIDE B)



【RF BOARD】(SIDE A)



【RF BOARD】(SIDE B)



【FLEXIBLE BOARD】
1-650-569-11

Note on Schematic Diagram:

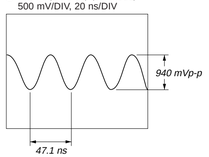
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from battery terminal.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : RX
  ( ) : TX
  * : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ▷ : RF (RX)
  ▶ : RF (TX)
  ⇨ : AF (RX)
  ➡ : AF (TX)

5-3. SCHEMATIC DIAGRAM • See page 19 for Waveforms. • See page 20 for IC Block Diagrams.

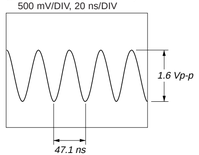
• **Waveforms**

– RF Board –

❶ IC2 ① (OSC IN) (TX mode)
500 mV/DIV, 20 ns/DIV

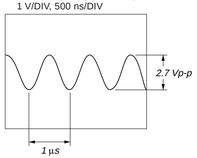


❷ IC3 ① (OSC IN) (TX mode)
500 mV/DIV, 20 ns/DIV

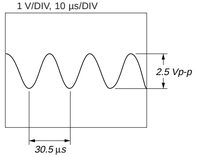


– MICRO COMPUTER Board –

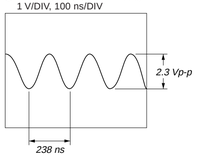
❸ IC109 ② (XTAL) (TX mode)
1 V/DIV, 500 ns/DIV



❹ IC101 ⑭ (XT1) (RX/TX mode)
1 V/DIV, 10 µs/DIV



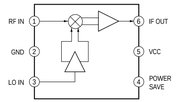
❺ IC101 ⑭ (X1) (RX/TX mode)
1 V/DIV, 100 ns/DIV



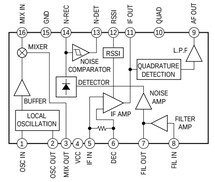
• **IC Block Diagrams**

– RF Board –

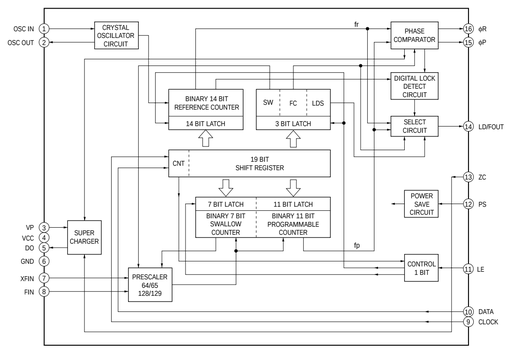
IC1 µPC2757T-E3



IC2 TA31136FN

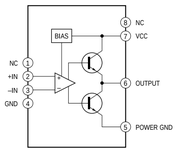


IC3 MB15E03LPFV1-G-BND-ER

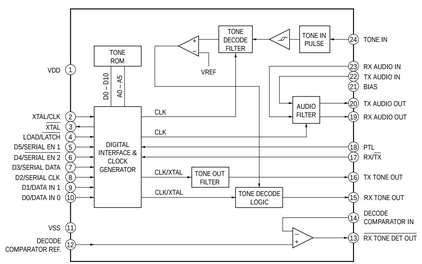


– MICRO COMPUTER Board –

IC102 NJM2070M



IC109 MX165CDW-TR



5-4. IC PIN FUNCTION DESCRIPTION

• MICRO COMPUTER BOARD IC101 µPD753012AGC-F00-3B9 (SYSTEM CONTROLLER)

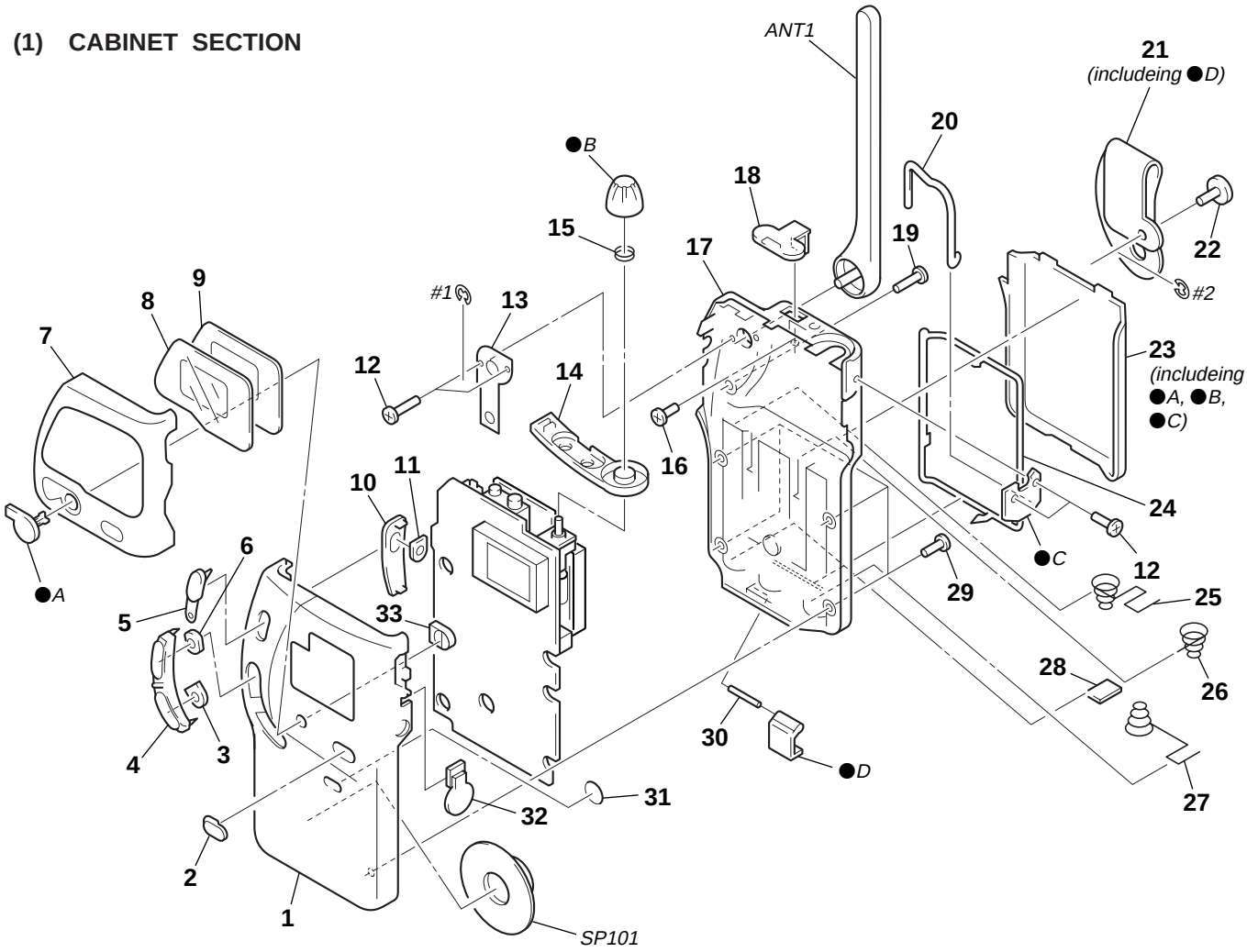
Pin No.	Pin Name	I/O	Description
1 to 12	LCD6 to LCD17	O	Segment drive signal output to the liquid crystal display (LCD101)
13	STRB	O	Serial data latch pulse output to the CTCSS encoder/decoder (IC109)
14 to 20	—	—	Not used (open)
21, 22	LCD18, LCD19	O	Common drive signal output to the liquid crystal display (LCD101)
23, 24	—	—	Not used (open)
25	BIAS	O	Liquid crystal display drive bias control output terminal
26 to 28	VLC0 to VLC2	—	Terminal for doubler circuit capacitor connection to develop liquid crystal display drive voltage
29	LED	O	LED drive signal output for the LCD back light on/off control “L”: LED on
30	—	—	Not used (open)
31	POWER SAVE	O	Power save control signal output terminal “L”: power on, “H”: power off (when receive, squelch on mode)
32	TX/RX	O	Power supply control signal output for the transmit/receive selection “L”: receive, “H”: transmit
33	VSS	—	Ground terminal
34	AF POWER	O	Power supply on/off control signal output of the power amplifier (IC102) “L”: power on
35	MUTE	O	Muting on/off control signal output for the receiver system “L”: muting on
36	TX MUTE	O	Muting on/off control signal output for the transmit system “H”: muting on
37	V1-OUT	O	Control signal output for the battery detection circuit
38	POWER	I	POWER switch (S101) input terminal “L” is input when key pushing
39	PTT	I	Transmit detection signal input terminal
40	T/C	I	CH/GROUP switch (S102) input terminal “L”: CH, “H”: GROUP
41	—	—	Not used (open)
42	P10	I	Tone detection signal input terminal
43	LD	I	Synthesizer unlock detection signal input from the PLL frequency synthesizer (IC3)
44	LBL	I	LIGHT/BATT 🔑 switch (S103) input terminal “H” is input when key pushing
45	SQL	I	Squelch detection signal input from the TA31136FN (IC2) AF signal mute when “L” input
46	CH (+)	I	CH (+) switch (S104) input terminal “L” is input when key pushing
47	MODE	I	MODE switch (S105) input terminal “L” is input when key pushing
48	MONITOR	I	Not used (open)
49	—	—	Not used (open)
50	CH (–)	I	CH (–) switch (S106) input terminal “L” is input when key pushing
51	BEEP	O	Beep sound signal output to the power amplifier (IC102)
52	1kHz OUT	O	1 kHz signal output for the search mode
53	MAIN +B	O	Main system power supply (+2.9V) on/off control signal output terminal “L”: power off, “H”: power on
54	VDD	—	Power supply terminal (+3V)
55	XT1	I	Sub system clock input terminal (32.768 kHz)
56	XT2	O	Sub system clock output terminal (32.768 kHz)
57	IC	—	Internal connection terminal (connected to power supply (+3V))
58	X1	I	Main system clock input terminal (4.194304 MHz)
59	X2	O	Main system clock output terminal (4.194304 MHz)
60	LE	O	Serial data latch pulse output to the PLL frequency synthesizer (IC3)
61	DATA	O	Serial data output to the CTCSS encoder/decoder (IC109) and PLL frequency synthesizer (IC3)
62	CLOCK	O	Serial data transfer clock signal output to the CTCSS encoder/decoder (IC109) and PLL frequency synthesizer (IC3)
63	CARIA	O	Transmit system power supply on/off control signal output terminal “H” active

Pin No.	Pin Name	I/O	Description
64	TONE DET	I	Tone detection signal input from the CTCSS encoder/decoder (IC109)
65	TEST	I	Not used (open)
66	V1-IN	I	Battery detection signal input terminal
67	V2-DET	I	Voltage detection signal input terminal
68	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC104) "L": reset "L" is input for several 100 msec after power on, then it changes to "H"
69 to 75	—	—	Not used (open)
76 to 80	LCD1 to LCD5	O	Segment drive signal output to the liquid crystal display (LCD101)

SECTION 6
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

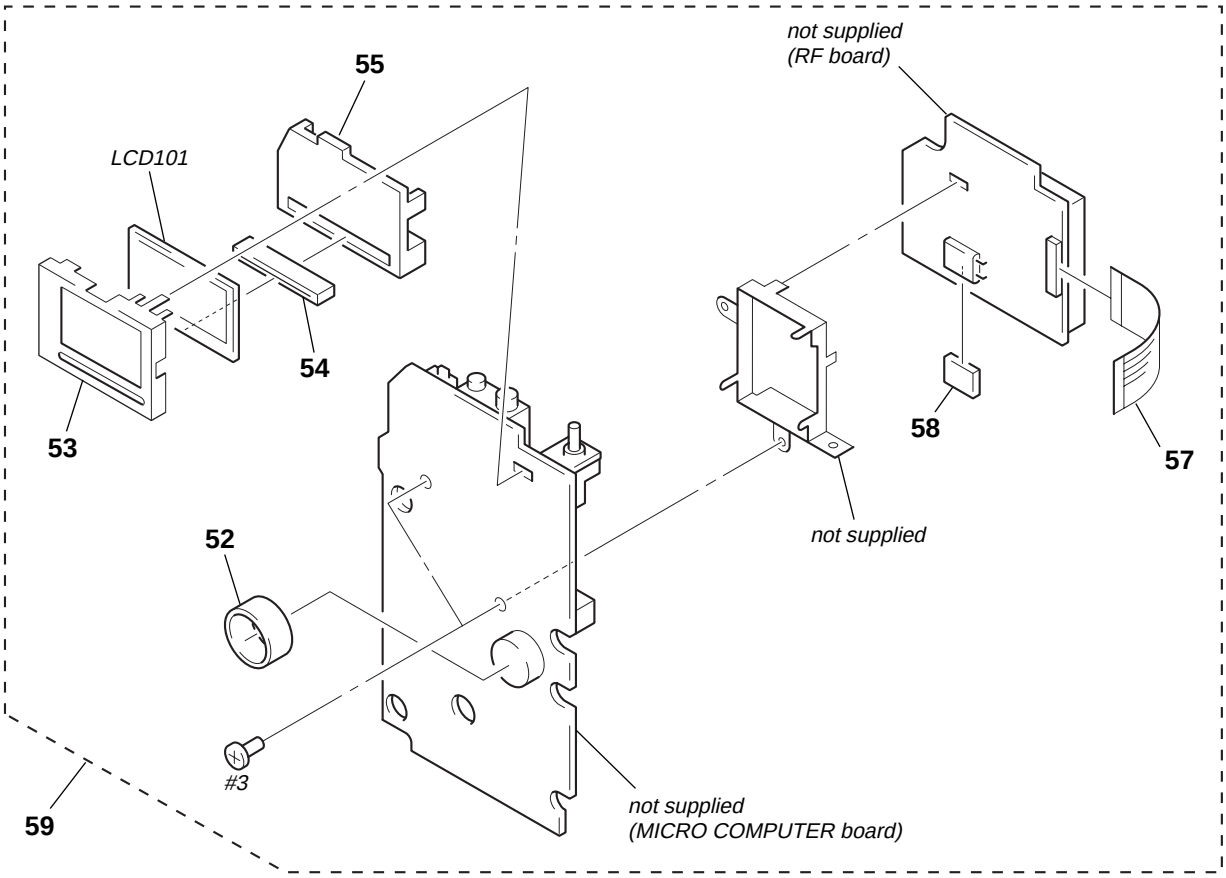
(1) CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	X-3372-841-1	CABINET (FRONT) ASSY	
2	3-939-933-01	BUTTON (LIGHT)	
3	3-014-647-01	RING (+. – B)	
4	3-939-934-01	BUTTON (+. –)	
5	3-007-309-01	BUTTON (MODE)	
6	3-010-670-01	RING (+. –)	
7	3-939-925-01	PANEL (YELLOW)	
7	3-939-925-11	PANEL (GRAY)	
8	3-939-926-11	PLATE, TRANSPARENT	
9	3-939-927-01	SHEET (TRANSPARENT), ADHESIVE	
10	3-939-932-01	BUTTON (PTT)	
11	3-010-671-01	RING (PTT)	
12	3-374-079-01	SCREW (1.7X5), TAPPING	
13	X-3367-452-2	PLATE (ANT) ASSY, CONTACT	
14	3-939-935-01	PACKING (JACK)	
15	3-907-103-01	SPRING, RING	
16	3-385-706-01	RIVET	
17	X-3372-835-1	CABINET (REAR) ASSY	
18	3-929-675-01	PACKING (MIC/SP)	

Ref. No.	Part No.	Description	Remark
19	3-910-807-01	SCREW (2X8), SPECIAL	
20	3-939-942-01	GUARD	
21	3-007-314-01	CLIP (COMBIND) (including ●D: LOCK (BATTERY))	
22	3-372-849-01	SCREW (M3), ORNAMENTAL	
23	3-007-313-01	LID (COMBINED), BATTERY CASE (including ●A: KNOB (CH), ●B: KNOB (VOL), ●C: COVER (GUARD))	
24	3-939-936-01	PACKING (BATTERY)	
25	3-907-746-01	SPRING (+/–. A), BATTERY	
26	3-907-745-01	SPRING (–), BATTERY	
27	3-907-747-01	SPRING (+/–. B), BATTERY	
28	3-919-944-01	TERMINAL (+), BATTERY	
29	3-383-954-01	SCREW	
30	3-669-481-05	PIN (DIA. 1X15), PARALLEL	
31	3-918-962-01	SHEET (WATERPROOF)	
32	3-907-737-01	PACKING (DC)	
33	3-378-310-01	ADAPTOR (SELECTION)	
ANT1	X-3377-309-1	ANTENNA ASSY (ALL)	
SP101	1-504-946-11	SPEAKER (3.6cm)	

(2) CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
52	3-907-107-01	PACKING (MIC)	
53	3-939-940-01	CASE	
54	1-694-160-11	CONDUCTIVE BOARD, CONNECTION	
55	3-939-939-01	PLATE, LIGHT GUIDE	
57	1-650-569-11	FLEXIBLE BOARD	
58	3-037-796-01	CUSHION (CR T1)	
* 59	A-3638-725-A	CHASSIS ASSY (Including MICRO COMPUTER BOARD and RF BOARD)	
LCD101	1-803-573-11	PANEL, LIQUID CRYSTAL DISPLAY	

MICRO COMPUTER

SECTION 7
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-3638-725-A	CHASSIS ASSY (Including MICRO COMPUTER BOARD and RF BOARD)			
	1-694-160-11	CONDUCTIVE BOARD, CONNECTION			
	3-907-107-01	PACKING (MIC/SP)			
	3-939-939-01	PLATE, LIGHT GUIDE			
	3-939-940-01	CASE			
		< CAPACITOR >			
C102	1-104-908-11	TANTALUM CHIP	47uF	20%	4V
C103	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C104	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C105	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C106	1-135-334-11	TANTALUM CHIP	100uF	20%	6.3V
C107	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C108	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C109	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C110	1-115-156-11	CERAMIC CHIP	1uF		10V
C111	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C112	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C113	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C114	1-135-334-11	TANTALUM CHIP	100uF	20%	6.3V
C115	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C117	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C118	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C120	1-113-619-11	CERAMIC CHIP	0.47uF		10V
C121	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C122	1-113-619-11	CERAMIC CHIP	0.47uF		10V
C123	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C124	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C125	1-135-334-11	TANTALUM CHIP	100uF	20%	6.3V
C126	1-115-156-11	CERAMIC CHIP	1uF		10V
C127	1-104-847-11	TANTALUM CHIP	22uF	20%	4V
C128	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C129	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C130	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C131	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C132	1-115-156-11	CERAMIC CHIP	1uF		10V
C133	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C134	1-115-156-11	CERAMIC CHIP	1uF		10V
C135	1-115-156-11	CERAMIC CHIP	1uF		10V
C136	1-115-156-11	CERAMIC CHIP	1uF		10V
C137	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C138	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C139	1-110-967-11	TANTALUM CHIP	100uF	20%	4V
C140	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C141	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C142	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C143	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C145	1-165-176-11	CERAMIC CHIP	0.047	10%	16V
C147	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C148	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C149	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C150	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C151	1-115-156-11	CERAMIC CHIP	1uF		10V
C201	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C202	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C206	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C207	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C210	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C211	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C212	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C213	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C214	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C215	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C216	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C217	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C220	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C221	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C222	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C223	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C224	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN101	1-764-370-11	HOUSING, FPC CONNECTOR (ZIF) 16P			
		< DIODE >			
D102	8-719-988-61	DIODE 1SS355TE-17			
D104	8-719-048-98	DIODE RB160L-40TE25			
D105	8-719-988-61	DIODE 1SS355TE-17			
D106	8-719-027-34	LED LN1361C (LCD BACK LIGHT)			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC101	8-759-589-60	IC uPD753012AGC-F00-3B9			
IC102	8-759-046-84	IC NJM2070M			
IC103	8-759-701-01	IC NJM2904M			
IC104	8-759-586-14	IC RN5VT19AA-TL			
IC105	8-759-586-16	IC RN5VL30AA-TL			
IC106	8-759-701-01	IC NJM2904M			
* IC107	8-759-525-40	IC TK11229BMCL			
IC109	8-759-442-82	IC MX165CDW-TR			
IC110	8-759-448-39	IC RH5RL30AA-T1			
* IC111	8-759-525-40	IC TK11229BMCL			
		< JACK >			
J101	1-569-215-11	JACK (SP ⓟ)			
J102	1-573-996-21	JACK, SMALL (WATERPROOF) (MIC)			
J103	1-691-099-11	JACK, DC (POLARITY UNIFIED TYPE)			(DC IN 4.5V)
		< COIL/RESISTOR >			
L101	1-412-967-31	INDUCTOR	0.1uH		
L102	1-412-967-31	INDUCTOR	0.1uH		
L103	1-412-967-31	INDUCTOR	0.1uH		
L104	1-216-864-11	METAL CHIP	0	5%	1/16W
L105	1-216-864-11	METAL CHIP	0	5%	1/16W
		< LIQUID CRYSTAL DISPLAY >			
LCD101	1-803-573-11	PANEL, LIQUID CRYSTAL DISPLAY			
		< MIC >			
MIC101	1-542-168-11	MICROPHONE, ELECTRET CONDENSER (MIC)			
		< TRANSISTOR >			
Q101	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q102	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q103	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q108	8-729-141-75	TRANSISTOR 2SD596DV345			
Q110	8-729-141-75	TRANSISTOR 2SD596DV345			
Q112	8-729-230-60	TRANSISTOR 2SA1586-YG			
Q113	8-729-820-86	TRANSISTOR 2SB1121-ST			
Q114	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q115	8-729-402-45	TRANSISTOR UN5212			
Q116	8-729-924-25	TRANSISTOR DTA113ZU			
Q117	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q118	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q119	8-729-230-60	TRANSISTOR 2SA1586-YG			
Q120	8-729-402-45	TRANSISTOR UN5212			
Q121	8-729-928-64	TRANSISTOR DTA123YE-TL			
Q122	8-729-928-64	TRANSISTOR DTA123YE-TL			
Q123	8-729-402-45	TRANSISTOR UN5212			
Q124	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q125	8-729-820-86	TRANSISTOR 2SB1121-ST			
* Q126	8-729-044-67	TRANSISTOR UMC5N-TR			
		< RESISTOR >			
R101	1-216-833-11	METAL CHIP	10K	5%	1/16W
R102	1-220-397-11	RES, CHIP	4.7M	5%	1/16W
R103	1-216-841-11	METAL CHIP	47K	5%	1/16W
R104	1-216-856-11	METAL CHIP	820K	5%	1/16W
R105	1-216-841-11	METAL CHIP	47K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W
R108	1-216-845-11	METAL CHIP	100K	5%	1/16W
R109	1-216-841-11	METAL CHIP	47K	5%	1/16W
R111	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R112	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R115	1-216-817-11	METAL CHIP	470	5%	1/16W
R118	1-216-821-11	METAL CHIP	1K	5%	1/16W
R122	1-216-821-11	METAL CHIP	1K	5%	1/16W
R124	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R126	1-216-797-11	METAL CHIP	10	5%	1/16W
R127	1-216-841-11	METAL CHIP	47K	5%	1/16W
R128	1-216-789-11	RES, CHIP	2.2	5%	1/16W
R129	1-216-845-11	METAL CHIP	100K	5%	1/16W
R130	1-216-845-11	METAL CHIP	100K	5%	1/16W
R131	1-216-809-11	METAL CHIP	100	5%	1/16W
R132	1-216-797-11	METAL CHIP	10	5%	1/16W
R134	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R135	1-216-857-11	METAL CHIP	1M	5%	1/16W
R138	1-216-864-11	METAL CHIP	0	5%	1/16W
R139	1-216-857-11	METAL CHIP	1M	5%	1/16W
R140	1-216-845-11	METAL CHIP	100K	5%	1/16W
R143	1-216-857-11	METAL CHIP	1M	5%	1/16W
R144	1-216-845-11	METAL CHIP	100K	5%	1/16W
R146	1-216-857-11	METAL CHIP	1M	5%	1/16W
R147	1-216-845-11	METAL CHIP	100K	5%	1/16W
R148	1-216-817-11	METAL CHIP	470	5%	1/16W
R150	1-216-809-11	METAL CHIP	100	5%	1/16W
R152	1-216-849-11	METAL CHIP	220K	5%	1/16W
R153	1-216-845-11	METAL CHIP	100K	5%	1/16W
R154	1-216-853-11	METAL CHIP	470K	5%	1/16W
R156	1-216-833-11	METAL CHIP	10K	5%	1/16W
R157	1-216-857-11	METAL CHIP	1M	5%	1/16W
R158	1-216-845-11	METAL CHIP	100K	5%	1/16W
R160	1-216-845-11	METAL CHIP	100K	5%	1/16W
R163	1-216-841-11	METAL CHIP	47K	5%	1/16W
R164	1-216-835-11	METAL CHIP	15K	5%	1/16W
R165	1-216-857-11	METAL CHIP	1M	5%	1/16W
R168	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R169	1-216-859-11	RES, CHIP	1.5M	5%	1/16W
R172	1-216-833-91	METAL CHIP	10K	5%	1/16W
R173	1-216-845-11	METAL CHIP	100K	5%	1/16W
R174	1-216-833-11	METAL CHIP	10K	5%	1/16W
R176	1-216-833-11	METAL CHIP	10K	5%	1/16W
R177	1-216-809-11	METAL CHIP	100	5%	1/16W
R178	1-216-841-11	METAL CHIP	47K	5%	1/16W
R179	1-216-841-11	METAL CHIP	47K	5%	1/16W
R180	1-216-841-11	METAL CHIP	47K	5%	1/16W
R181	1-216-841-11	METAL CHIP	47K	5%	1/16W
R182	1-216-817-11	METAL CHIP	470	5%	1/16W
R183	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R184	1-216-851-11	METAL CHIP	330K	5%	1/16W
R185	1-216-845-11	METAL CHIP	100K	5%	1/16W
R186	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R187	1-216-845-11	METAL CHIP	100K	5%	1/16W

MICRO COMPUTER | RF

Ref. No.	Part No.	Description			Remark
R188	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R189	1-216-817-11	METAL CHIP	470	5%	1/16W
R190	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R193	1-216-805-11	METAL CHIP	47	5%	1/16W
R194	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R195	1-216-817-11	METAL CHIP	470	5%	1/16W
R198	1-216-833-11	METAL CHIP	10K	5%	1/16W
R199	1-216-833-11	METAL CHIP	10K	5%	1/16W
R200	1-216-853-11	METAL CHIP	470K	5%	1/16W
R201	1-216-837-11	METAL CHIP	22K	5%	1/16W
R202	1-216-857-11	METAL CHIP	1M	5%	1/16W
R203	1-216-817-11	METAL CHIP	470	5%	1/16W
R251	1-216-819-11	METAL CHIP	680	5%	1/16W
R252	1-216-833-11	METAL CHIP	10K	5%	1/16W
R253	1-216-817-11	METAL CHIP	470	5%	1/16W
R254	1-216-864-11	METAL CHIP	0	5%	1/16W
R255	1-216-809-11	METAL CHIP	100	5%	1/16W
R256	1-216-797-11	METAL CHIP	10	5%	1/16W
R257	1-216-797-11	METAL CHIP	10	5%	1/16W
R258	1-216-797-11	METAL CHIP	10	5%	1/16W
R259	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R260	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R261	1-216-821-11	METAL CHIP	1K	5%	1/16W
R262	1-216-839-11	METAL CHIP	33K	5%	1/16W
R263	1-216-833-11	METAL CHIP	10K	5%	1/16W
R264	1-216-833-11	METAL CHIP	10K	5%	1/16W
R265	1-216-845-11	METAL CHIP	100K	5%	1/16W
R266	1-216-833-11	METAL CHIP	10K	5%	1/16W
R267	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R270	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R271	1-216-835-11	METAL CHIP	15K	5%	1/16W
R272	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R274	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R277	1-216-833-11	RES, CHIP	10K	5%	1/16W
R278	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R279	1-216-833-11	RES, CHIP	10K	5%	1/16W
R280	1-216-864-11	METAL CHIP	0	5%	1/16W
		< VARIABLE RESISTOR >			
RV102	1-225-206-11	RES, ADJ, CERMET 22K			
RV103	1-225-205-11	RES, ADJ, CERMET 10K			
RV104	1-225-206-11	RES, ADJ, CERMET 22K			
RV106	1-223-505-11	RES, VAR, CARBON 20K (VOL)			
RV107	1-223-584-11	RES, ADJ, CERMET 2.2K			
RV108	1-225-207-11	RES, ADJ, CERMET 47K			
		< SWITCH >			
S101	1-572-499-11	SWITCH, TACTIL (POWER)			
S102	1-572-272-11	SWITCH, SLIDE (CH, GROUP)			
S103	1-572-473-11	SWITCH, TACTIL (LIGHT/BATT, ⊶)			
S104	1-572-473-11	SWITCH, TACTIL (+)			
S105	1-572-473-11	SWITCH, TACTIL (MODE)			
S106	1-572-473-11	SWITCH, TACTIL (–)			
S107	1-572-499-11	SWITCH, TACTIL (TALK)			
		< VIBRATOR >			
X101	1-767-192-11	VIBRATOR, CERAMIC (4.194304MHz)			
X102	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)			
X103	1-760-158-11	VIBRATOR, CERAMIC (1MHz)			

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*	A-3638-725-A	CHASSIS ASSY (Including MICRO COMPUTER BOARD and RF BOARD)				
		< BAND PASS FILTER >				
BPF1	1-234-333-11	BAND PASS FILTER				
		< CAPACITOR >				
C1	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V	
C3	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V	
C4	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C5	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C6	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C7	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C8	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C11	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C12	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C13	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V	
C14	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C16	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C21	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C22	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C23	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C25	1-162-920-11	CERAMIC CHIP	27PF	5%	50V	
C31	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C32	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C33	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C34	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C35	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C41	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C42	1-164-382-11	CERAMIC CHIP	91PF	5%	50V	
C43	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C44	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C45	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C46	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C47	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C48	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C49	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C50	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C51	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	
C52	1-164-401-91	CERAMIC CHIP	12PF	5%	50V	
C53	1-141-325-11	CAP, CHIP TYPE TRIMMER	5PF			
C54	1-164-401-91	CERAMIC CHIP	12PF	5%	50V	
C55	1-110-967-11	TANTALUM CHIP	100uF	20%	4V	
C56	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C57	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C61	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C62	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C63	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C64	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C65	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C66	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C67	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	
C68	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C69	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	

Ref. No.	Part No.	Description			Remark
C71	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C72	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V
C73	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C74	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C75	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C78	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C79	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C81	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C82	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C84	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C85	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C87	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C92	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C93	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C94	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C96	1-164-237-11	CERAMIC CHIP	16PF	5%	50V
C97	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C98	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C901	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C902	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C903	1-162-905-11	CERAMIC CHIP	1PF	0.25PF	50V
C906	1-162-939-11	CERAMIC CHIP	8PF	0.5PF	50V
C907	1-164-185-11	CERAMIC CHIP	13PF	5%	50V
C908	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C909	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C910	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C911	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
		< CERAMIC FILTER >			
CF1	1-767-311-11	FILTER, CERAMIC (450kHz)			
CF2	1-760-894-11	FILTER, CERAMIC (DISCRIMINATOR) (450kHz)			
		< CONNECTOR >			
CN1	1-764-370-11	HOUSING, FPC CONNECTOR (ZIF)16P			
		< DIODE >			
D1	8-719-421-40	DIODE MA77			
D2	8-719-055-23	DIODE HVU132TRF			
D3	8-719-055-23	DIODE HVU132TRF			
D4	8-719-421-40	DIODE MA77			
D5	8-719-421-40	DIODE MA77			
D6	8-719-421-40	DIODE MA77			
D7	8-719-421-40	DIODE MA77			
D901	8-719-064-32	DIODE HVC358BTRF			
		< FERRITE BEAD >			
FB1	1-414-864-11	FERRITE	0uH		
		< IC >			
IC1	8-759-586-15	IC uPC2757T-E3			
IC2	8-759-249-18	IC TA31136FN			
IC3	8-759-571-36	IC MB15E03LPFV1-G-BND-ER			
		< COIL/RESISTOR >			
L2	1-414-733-21	INDUCTOR	100nH		
L3	1-414-681-21	INDUCTOR	15nH		
L4	1-414-681-21	INDUCTOR	15nH		

Ref. No.	Part No.	Description			Remark
L5	1-414-733-21	INDUCTOR	100nH		
L6	1-414-733-21	INDUCTOR	100nH		
L7	1-414-733-21	INDUCTOR	100nH		
L8	1-414-733-21	INDUCTOR	100nH		
L11	1-414-722-11	INDUCTOR	12nH		
L12	1-414-725-11	INDUCTOR	22nH		
L13	1-414-721-11	INDUCTOR	10nH		
L21	1-412-983-31	INDUCTOR	2.2uH		
L31	1-412-983-31	INDUCTOR	2.2uH		
L32	1-412-983-31	INDUCTOR	2.2uH		
L33	1-412-985-31	INDUCTOR	3.3uH		
L71	1-414-725-11	INDUCTOR	22nH		
L72	1-216-864-11	METAL CHIP	0	5%	1/16W
L73	1-414-725-11	INDUCTOR	22nH		
L81	1-414-717-21	INDUCTOR	2.2nH		
L82	1-414-722-11	INDUCTOR	12nH		
L91	1-414-679-21	INDUCTOR	10nH		
L92	1-414-676-21	INDUCTOR	3.3nH		
L901	1-414-733-21	INDUCTOR	100nH		
L902	1-414-727-11	INDUCTOR	33nH		
L903	1-419-146-11	INDUCTOR			
		< TRANSISTOR >			
Q1	8-729-016-85	TRANSISTOR 2SC4226 (R24)			
Q2	8-729-423-52	TRANSISTOR 2SC3931-C			
Q3	8-729-016-85	TRANSISTOR 2SC4226 (R24)			
Q4	8-729-016-85	TRANSISTOR 2SC4226 (R24)			
Q5	8-729-048-54	FET 2SK2795DXTL			
Q6	8-729-048-83	FET 2SK3078 (TE12L)			
Q7	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q901	8-729-041-82	TRANSISTOR UPA801T-T1/FB			
		< RESISTOR >			
R1	1-216-817-11	METAL CHIP	470	5%	1/16W
R2	1-216-819-11	METAL CHIP	680	5%	1/16W
R11	1-216-841-11	METAL CHIP	47K	5%	1/16W
R12	1-216-819-11	METAL CHIP	680	5%	1/16W
R13	1-216-801-11	METAL CHIP	22	5%	1/16W
R21	1-216-801-11	METAL CHIP	22	5%	1/16W
R22	1-216-805-11	METAL CHIP	47	5%	1/16W
R31	1-216-843-11	METAL CHIP	68K	5%	1/16W
R32	1-216-819-11	METAL CHIP	680	5%	1/16W
R33	1-216-801-11	METAL CHIP	22	5%	1/16W
R41	1-216-801-11	METAL CHIP	22	5%	1/16W
R42	1-216-807-11	METAL CHIP	68	5%	1/16W
R43	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R44	1-216-847-11	METAL CHIP	150K	5%	1/16W
R45	1-216-833-11	RES, CHIP	10K	5%	1/16W
R46	1-216-845-11	METAL CHIP	100K	5%	1/16W
R51	1-216-801-11	METAL CHIP	22	5%	1/16W
R52	1-216-801-11	METAL CHIP	22	5%	1/16W
R56	1-216-833-11	METAL CHIP	10K	5%	1/16W
R57	1-216-821-11	METAL CHIP	1K	5%	1/16W
R58	1-216-813-11	METAL CHIP	220	5%	1/16W
R59	1-216-821-11	METAL CHIP	1K	5%	1/16W
R61	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R62	1-216-825-11	METAL CHIP	2.2K	5%	1/16W

RF

Ref. No.	Part No.	Description			Remark
R63	1-216-799-11	METAL CHIP	15	5%	1/16W
R64	1-216-813-11	METAL CHIP	220	5%	1/16W
R71	1-216-843-11	METAL CHIP	68K	5%	1/16W
R72	1-216-801-11	METAL CHIP	22	5%	1/16W
R73	1-216-805-11	METAL CHIP	47	5%	1/16W
R74	1-216-805-11	METAL CHIP	47	5%	1/16W
R75	1-216-801-11	METAL CHIP	22	5%	1/16W
R76	1-216-839-11	METAL CHIP	33K	5%	1/16W
R77	1-216-815-11	METAL CHIP	330	5%	1/16W
R78	1-216-801-11	METAL CHIP	22	5%	1/16W
R79	1-216-864-11	METAL CHIP	0	5%	1/16W
R81	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R82	1-216-813-11	METAL CHIP	220	5%	1/16W
R83	1-216-833-11	METAL CHIP	10K	5%	1/16W
R84	1-216-797-11	METAL CHIP	10	5%	1/16W
R85	1-216-813-11	METAL CHIP	220	5%	1/16W
R91	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R92	1-216-813-11	METAL CHIP	220	5%	1/16W
R93	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R901	1-218-971-11	RES,CHIP	33K	5%	1/16W
R902	1-218-933-11	RES,CHIP	22	5%	1/16W
R903	1-218-961-11	RES,CHIP	4.7K	5%	1/16W
R904	1-218-961-11	RES,CHIP	4.7K	5%	1/16W
R905	1-218-943-11	RES,CHIP	150	5%	1/16W
R906	1-218-975-11	RES,CHIP	68K	5%	1/16W
		< VIBRATOR >			
X1	1-760-893-11	VIBRATOR, CRYSTAL (21.25MHz)			
		< CRYSTAL FILTER >			
XF1	1-579-819-11	FILTER, CRYSTAL (21.7MHz)			

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MISCELLANEOUS
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57	1-650-569-11	FLEXIBLE BOARD			
ANT1	X-3377-309-1	ANTENNA ASSY (ALL)			
SP101	1-504-946-11	SPEAKER (3.6cm)			

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HARDWARE LIST
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#1	7-624-118-01	RING, RETAINING E-2.5			
#2	7-624-104-04	STOP RING 2.0, TYPE-E			
#3	7-627-552-07	SCREW,PRECISION +P 1.7X2.5			

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ACCESSORIES & PACKING MATERIALS
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3-866-276-11 MANUAL, INSTRUCTION (ENGLISH)

99C057020-1
Printed in Singapore
Published by Quality Engineering Dept.
(Shinagawa)