

SPP-904

SERVICE MANUAL

E Model



SPECIFICATIONS

General

Operating frequency	900 MHz ISM bands
Dial signal	Tone, 10 PPS (pulse) selectable
Supplied accessories	AC power adaptor AC-T127 Telephone line cord Rechargeable battery pack BP-T23 Wall bracket

Handset

Power source	Rechargeable battery pack BP-T23
Battery life	Talk time : Approx. 7 hours Standby: Approx. 6 days
Dimensions	Approx. 56 x 183 x 43 mm (w/h/d), antenna excluded (approx. 2 1/4 x 7 1/4 x 1 3/4 inches) Antenna: Approx. 32 mm (approx. 1 1/4 inches)
Mass	Approx. 230 g (approx. 8 oz), battery included

Base unit

Power source	DC 9 V from AC power adaptor
Battery charging time	Approx. 10 hours
Dimensions	Approx. 123 x 57 x 219 mm (w/h/d), antenna excluded (approx. 4 7/8 x 2 1/2 x 8 1/2 inches) Antenna : Approx. 120 mm (approx. 4 3/4 inches)
Mass	Approx. 350 g (approx. 12 1/3 oz)

Design and specifications are subject to change without notice.

CORDLESS TELEPHONE

SONY®



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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.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1 GENERAL

This section is extracted from instruction manual.

Setting up the phone

Choose the best location

Where you place the base unit affects the reception quality of the handset.

Place the base unit:

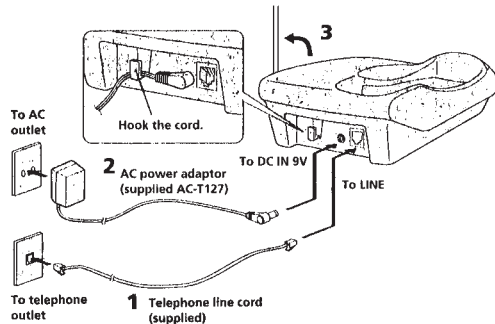
- near a central location and on a level surface
- away from television sets and other electronic equipment, a personal computer, or a microwave oven
- away from noise sources, such as a window by a street with heavy traffic
- away from another cordless telephone
- away from heat sources, such as radiators, airducts, and sunlight
- away from excessive moisture, extremely low temperatures, dust, mechanical vibration, or shock

CAUTION

- Should you experience intermittent loss of audio during a conversation, try moving closer to the base or move base unit away from other noise sources.
- The cordless telephone operates at a frequency that may cause interference to nearby TVs and VCRs; the base unit should not be placed near or on the top of a TV or VCR; and if interference is experienced, moving the cordless telephone farther away from the TV or VCR will often reduce or eliminate the interference.

Connect the base unit

If you want to hang the base unit on the wall, see "Mounting the base unit on a wall".



- 1 Connect the telephone line cord to the LINE jack, and to a telephone outlet.
- 2 Connect the AC power adaptor to the DC IN 9V jack, and to an AC outlet.
- 3 Raise the antenna vertically.

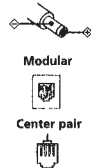
Notes

- Use only the supplied AC-T127 AC power adaptor. Do not use any other AC power adaptor.
- Connect the AC power adaptor to a continuous power supply.
- Place the base unit close to the AC outlet so that you can unplug the AC power adaptor easily.

Tips

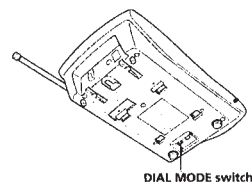
- If your telephone outlet is not modular, contact your telephone service company for assistance.
- If you have two phone lines on a single jack with the first phone line connected to a center pair of wires, and you need to connect the second phone line (outer pair of wires), contact your telephone company for rewiring.

Polarity of the plug



Choose the dialing mode

For the telephone to work properly, select an appropriate dialing mode (tone or pulse).



Depending on your dialing system, set the DIAL MODE switch as follows:

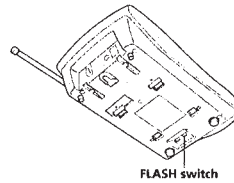
If your dialing system is	Set the switch to
Tone	TONE
Pulse	PULSE

If you aren't sure of your dialing system

Make a trial call with the DIAL MODE switch set to TONE. If the call connects, leave the switch as is; otherwise, set to PULSE.

Setting the flash time

If you use a call waiting service, you should set the flash time to conform to it.



According to the call waiting service in your country, set the FLASH switch as follows:

Flash time	Set the switch to
Mexico, Venezuela (100 ms)	1 2 3
Panama (300 ms)	1 2 3
Colombia (600 ms)	1 2 3

Note

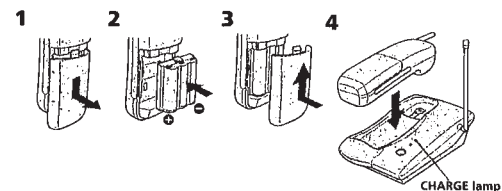
Call waiting service may not be available in countries not listed above.

Charge the battery pack

Charge the battery pack for more than 10 hours before you start using your phone.

- 1 Slide open the battery compartment lid of the handset.
- 2 Insert the battery pack (with contacts facing down) into the battery compartment.
- 3 Replace the battery compartment lid.
- 4 Place the handset on the base unit.

The CHARGE lamp lights up when the handset is properly seated on the charge terminals of the base unit. Charge the battery pack for more than 10 hours so that the battery is fully charged. The CHARGE lamp remains lit even after charging is completed.



Battery duration

A fully charged battery pack lasts for about:

- Approx. 7 hours when you use the handset continuously.
- Approx. 6 days when the handset is in standby mode.

Notes

- The battery pack will gradually discharge over a long period of time, even if not in use.
- If you leave the battery pack in the handset without charging it, the battery pack will be completely discharged. It may require several times of charging to recover its full capacity.
- When the battery pack is completely discharged and place the handset on the base unit, you cannot use the handset during the first three minutes of charging. After this initial three minutes, you may be able to use the handset, but the battery duration will be very short.

To obtain the best performance from battery

Do not place the handset on the base unit after each call. The battery works best if the handset is returned to the base unit after two or three calls. However, do not leave the handset off the base unit for a long period of time as this will completely discharge the battery pack.

If the handset battery becomes weak

When not conversing with an outside caller, the TALK/BATT LOW lamp on the handset flashes if the handset is not placed on the base unit. Replace the handset to the base unit to recharge the battery for more than 10 hours.

When to purchase a new battery pack

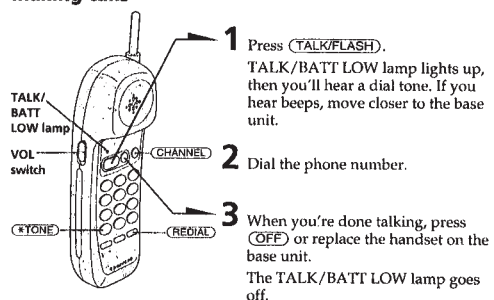
If the battery lasts only a few minutes even after 10 hours of charging, the usable life of the battery has expired and needs replacement. Contact your local Sony authorized dealer or service center, and ask for a Sony BP-T23 rechargeable battery pack.

Note

Battery life may vary depending on usage condition and ambient temperature.

Making and receiving calls

Making calls



Receiving calls

- 1 When you hear the phone ring:
 - Press **(TALK/FLASH)** (or any key except **(OFF)**).

or

- Pick up the handset from the base unit when the handset is placed on the base unit.

The TALK/BATT LOW lamp lights up at the same time the LINE lamp on the base unit lights up.

- 2 When you're done talking, press **(OFF)** or replace the handset on the base unit.

The TALK/BATT LOW and LINE lamps go off.

Additional tasks

To	Do this
Select a better channel	Press (CHANNEL) .
Adjust the handset volume	Set the VOL switch to H (high), M (middle) or L (low).
Switch to tone dialing temporarily	Press (RTONE) while using the telephone after you're connected. The line remains in tone dialing until disconnected.
Switch to another call ("call waiting" service*)	Press (TALK/FLASH) to access the flash function. Press (TALK/FLASH) again to return to the first caller.

* Contact your telephone company to subscribe to this service.

Notes

- Before dialing, make sure you can hear the dial tone, otherwise you cannot dial correctly.
- When the TALK/BATT LOW lamp lights up by pressing **(TALK/FLASH)**, the LINE lamp on the base unit lights up simultaneously.

If the handset battery becomes weak during a call

You hear a beep every three seconds and the TALK/BATT LOW lamp on the handset flashes.

The call will disconnect soon. Replace the handset on the base unit to charge.

Redialing

- 1 Press **(TALK/FLASH)**.
The TALK/BATT LOW lamp lights up.
- 2 Press **(REDIAL)** to redial the number last dialed.

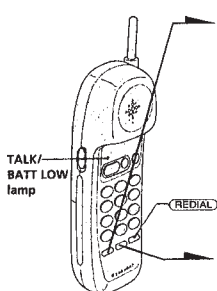
Note

If the number last dialed exceeds 16 digits, only the first 16 digits are dialed.

Speed dialing

You can dial with a touch of a few buttons by storing a phone number on a dialing button. You can store up to 10 different phone numbers.

Storing phone numbers

- 
- 1 Press **(PGM)**.
The TALK/BATT LOW lamp flashes.
 - 2 Press one of the dialing buttons (**(0)** to **(9)**) for the phone number to be stored.
 - 3 Enter the phone number you want to store.
You can enter up to 16 digits, including a tone and a pause, each of which is counted as one digit.
 - 4 Press **(SPEED DIAL)**.
You'll hear a long confirmation beep, and the number is stored. The TALK/BATT LOW lamp goes off.

Notes

- In step 3, if you don't enter the phone number, the previously stored number will be erased.
- Do not allow more than 30 seconds to elapse between each step of the procedure.
- Before storing phone numbers, make sure the handset is not in use.

Tip

If you enter a wrong number, start from the beginning.

To store the previous number dialed

Press **(REDIAL)** directly after step 2, then go to step 4.

To store a number to be dialed via Private Branch Exchange (PBX)

Before entering a phone number in step 3, do as follows:

- 1 Enter the outside line access digit (e.g. 9).
- 2 Press and hold the number button down before the position where the pause is to be inserted.

For example, 9, pause, 555-1234 would be programmed by pressing and holding the 9 button until it beeps twice, then entering 5, 5, 5, 1, 2, 3, 4. The pause is two seconds in length. To enter a longer pause, press and hold the button down until the handset beeps three or four times. Each additional beep indicates an additional two second pause.

Note

Each pause is counted as a digit.

To change a stored number

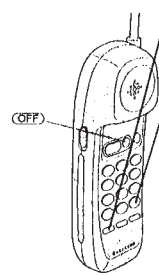
To store a new number, follow the instructions described previously.

Making calls with speed dialing

- 1 Press **(TALK/FLASH)**.
The TALK/BATT LOW lamp lights up.
- 2 Press **(SPEED DIAL)**.
- 3 Enter the desired speed dialing number (**(0)** to **(9)**).
The phone number stored in the speed dialing number will be dialed.

Setting the ringer type

You can select a ringer type from four types.

- 
- 1 Press **(PGM)**.
 - 2 Press **(H)**.
 - 3 Press a number button, **(1)** to **(4)**, to select a ringer type.
 - 4 Press **(OFF)**.

Turning off the ringer

- 1 Press **(PGM)**.
- 2 Press **(H)**.
- 3 Press **(5)**.
- 4 Press **(OFF)**.

The ringer on the handset is turned off.

To turn the ringer on again

Follow the instructions described in "Setting the ringer type."

Checking the ringer type

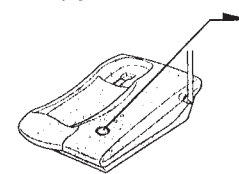
- 1 Press **(PGM)**.
- 2 Press **(H)**.
- 3 Press **(0)**.
The currently selected ringer sounds.
- 4 Press **(OFF)**.

Note

If you hear no sound (only key beep), the ringer on the handset has been turned off.

Paging

You can page from the base unit to the handset.

- 
- 1 Press **(HANDSET LOCATOR)**.
The handset rings for one minute.
To end the page at the base unit, press **(HANDSET LOCATOR)**.

Note

If a call comes in during paging, paging is cancelled.

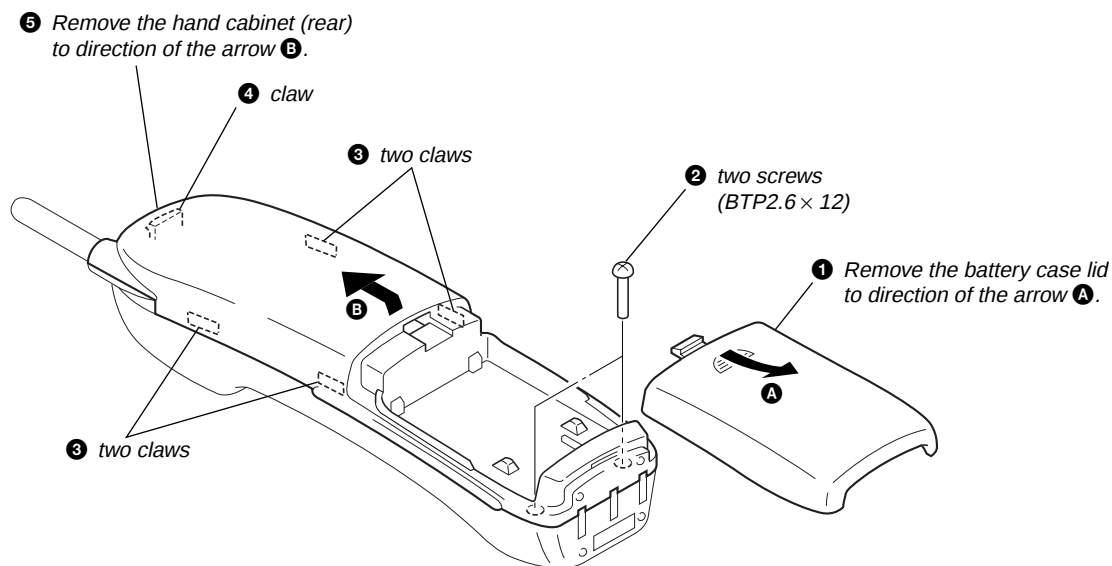
Tip

To end a page at the handset, press **(OFF)**.

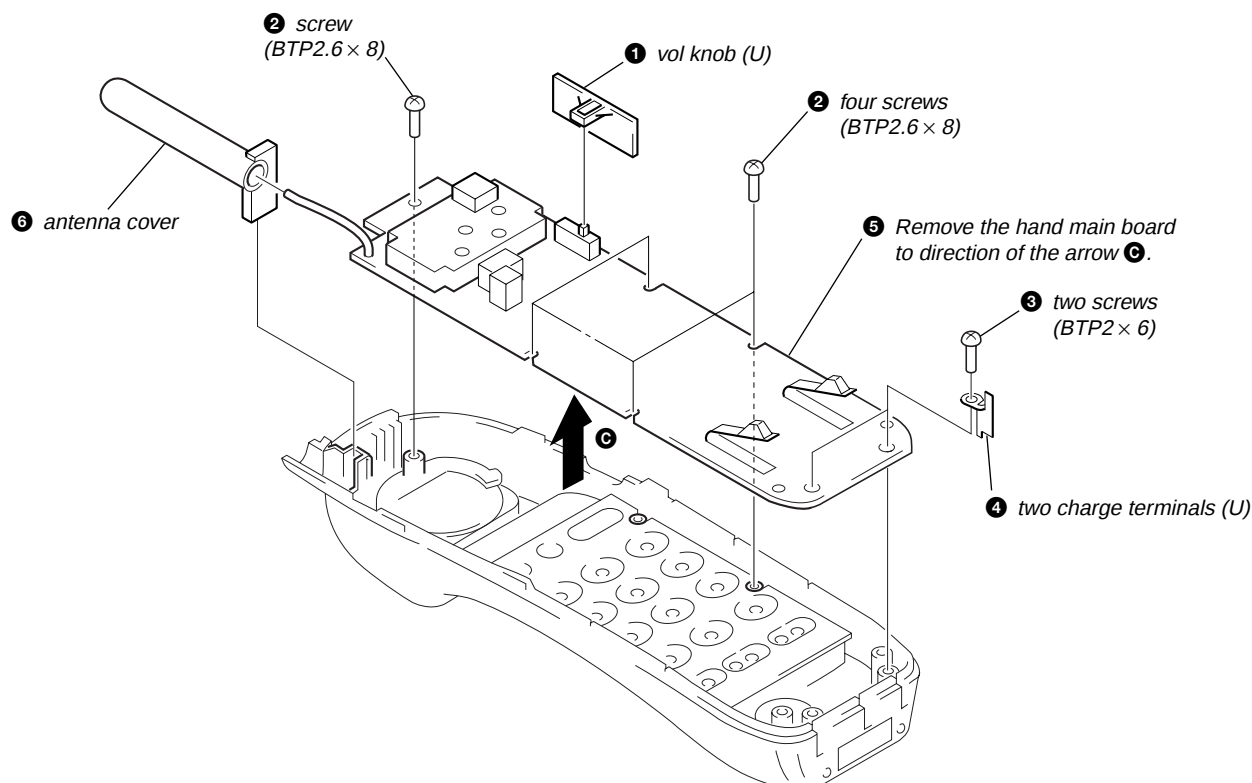
SECTION 2 DISASSEMBLY

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

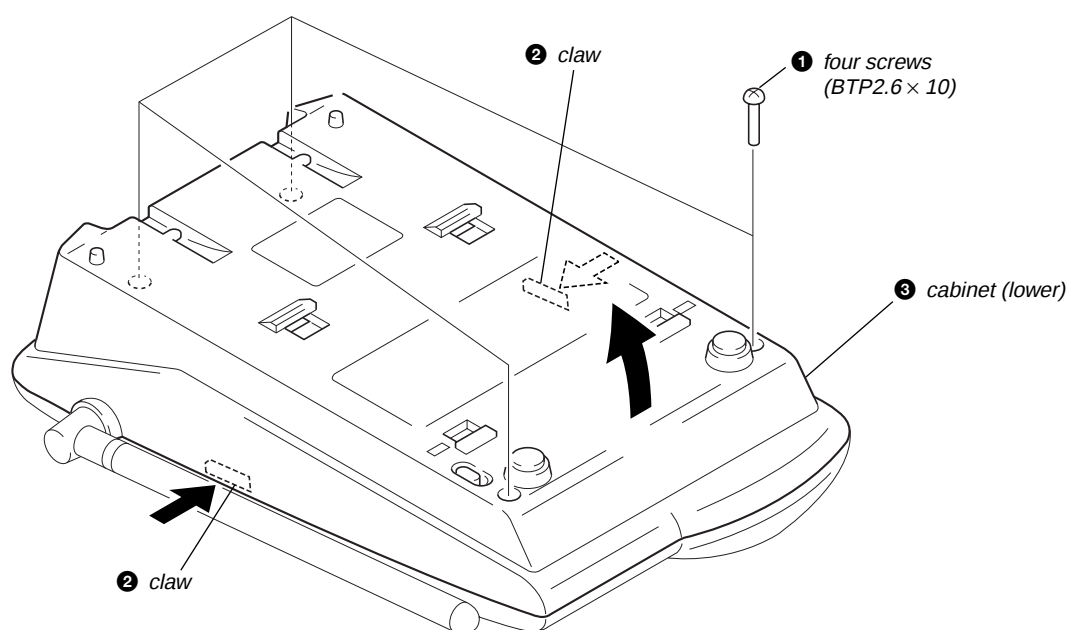
HAND CABINET (REAR)



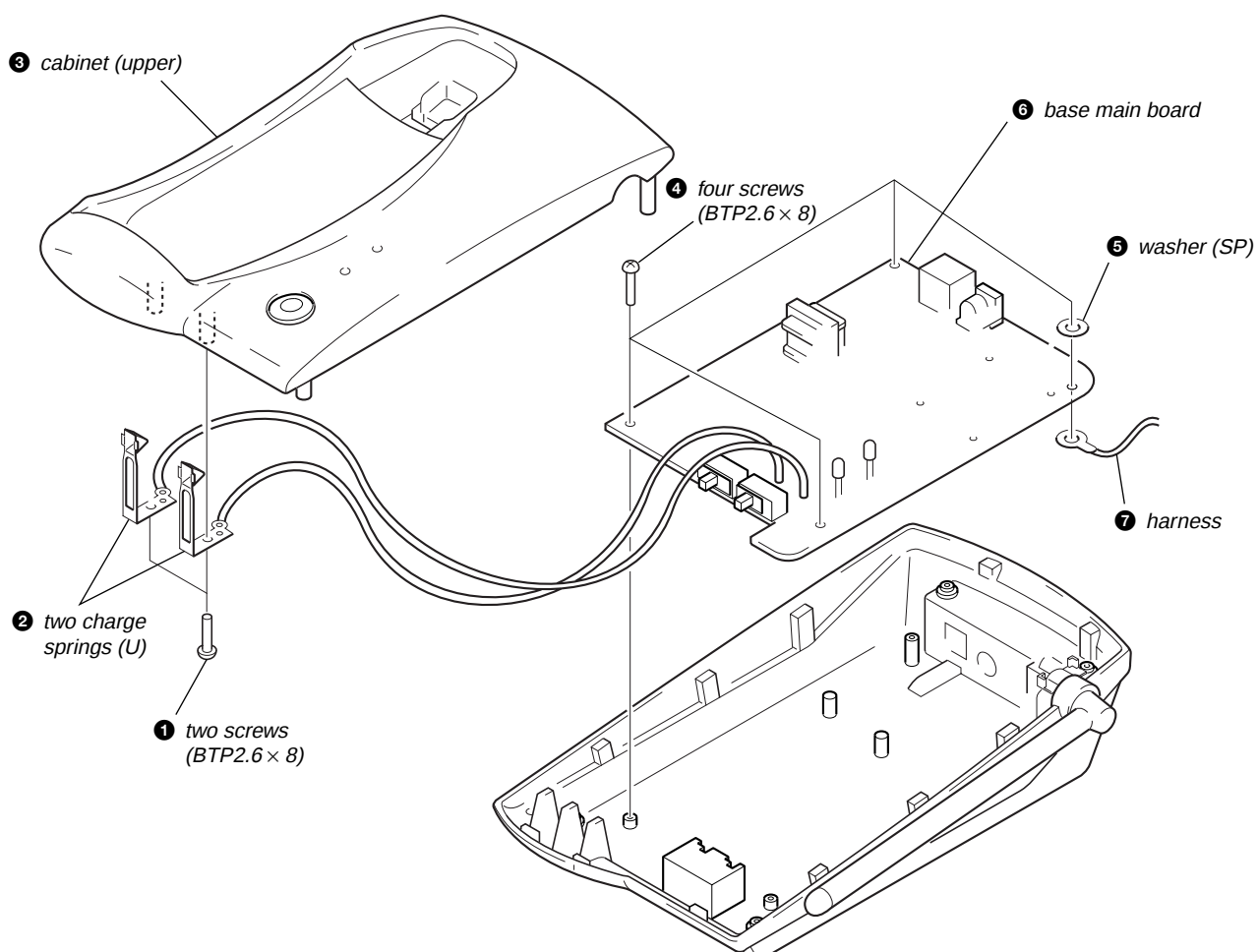
HAND MAIN BOARD



BASE CABINET



BASE MAIN BOARD



SECTION 3

TEST MODE

BASE UNIT

[Setting the Test Mode]

1. Power on with pressing the **HANDSET LOCATOR** key for two seconds.
 2. CHARGE and LINE LEDs turn on for 50 msec, and the test mode is set.
- * If setting the test mode with the status that **TONE** position is selected at **DIAL MODE** switch, the unit cold stars next time when the power is turned on.

[Releasing the Test Mode]

To release the test mode, perform as follows:

- Turn the power off (disconnect the AC adapter plug).
- Set the handset to charge on the base unit (except Test Mode 9).
- Bell in.

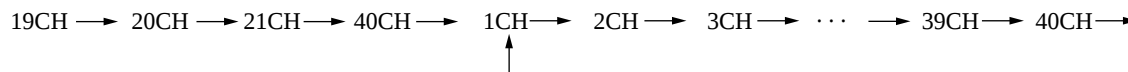
[Changing the Test Mode Step]

1. Set the **DIAL MODE** switch to the **PULSE** position.
2. Press the **HANDSET LOCATOR** key.
3. A step is changed each time the key is pressed, and CHARGE and LINE LEDs turn on for 50 msec.

[Changing the Channel]

1. Set the **DIAL MODE** switch to the **TONE** position.
 2. Press the **HANDSET LOCATOR** key.
 3. A channel is changed each time the key is pressed, and CHARGE and LINE LEDs turn on for 50 msec.
- * Channel will be back to initial channel (19CH), when the test mode step is changed.

- Channel Rotation



[Test Mode Execution]

Press the **HANDSET LOCATOR** key to execute any of the following tests:

Step	Test Mode Name	TX (IC5 pin ④⑥)	TX MUTE (IC5 pin ③⑦)	RX MUTE (IC5 pin ③⑧)	TALK (IC5 pin ③③)	Remarks
1	VCO/TX FREQ. ADJ	L	L	L	L	
2	TX MOD CHECK	L	H	L	H	
3	TX DATA	L	L	L	L	*1
4	RX SENS	H	L	H	H	
5	SQ SENS	L	L	*A	H	
6	DTMF SINGLE TONE	H	L	L	H	*2
7	DTMF DUAL TONE	H	L	L	H	*3
8	DATA IN CHECK	L	L	L	L	*4
9	CHARGE CHECK	H	L	L	L	*5
10	DUPLEX	L	H	H	H	

* Initial Channel of each step: 19CH

*A. SQ on: H (CHARGE LED turns on)

SQ off: L (CHARGE LED turns off)

*1. Test Mode 3: Continue output TX data as “0000……”.

*2. Test Mode 6: Set the **DIAL MODE** switch to the **TONE** position, and press the **HANDSET LOCATOR** key. DTMF will be changed.

ROW 1 → ROW 2 → ROW 3 → ROW 4 → COL1 → COL2 → COL3 → ROW1 → …… .

* DTMF frequency

ROW 1: 696.95 Hz COL1: 1209.31 Hz

ROW 2: 770.13 Hz COL2: 1335.65 Hz

ROW 3: 852.27 Hz COL3: 1476.71 Hz

ROW 4: 940.99 Hz

*3. Test Mode 7: Set the **DIAL MODE** switch to the **TONE** position, and press the **HANDSET LOCATOR** key. DTMF will be changed.

1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 9 → 0 → * → # → 1 → …… .

*4. Test Mode 8: When locked receiving data is “0000……”, CHARGE LED turns on.

*5. Test Mode 9: When CHGIN (IC5 pin ③⑨) is “L” (charge on), CHARGE LED turns on.

HANDSET

[Setting the Test Mode]

- Power on with press the **[*]** key and the **[#]** key simultaneously for one second.
 - It beeps confirm tone, and the test mode is set.
- * If the **[PGM]** key is pressed, the unit cold starts next time when the power is turned on.

[Releasing the Test Mode]

To release the test mode, perform as follows:

- Press the **[FLASH, TALK]** key.
- Turn the power off (remove the battery pack).
- Set the handset to charge on the base unit (except Test Mode 9).

[Changing the Test Mode Step]

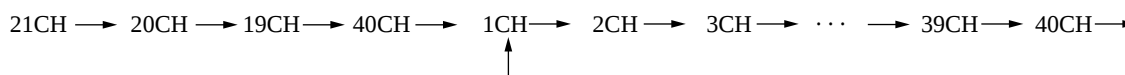
Press the each key of the test mode step number.

[Changing the Channel]

Press the **[CHANNEL]** key.

- The channel is back to initial channel (6CH), when test mode step is changed.

- Channel Rotation



[Test Mode Execution]

Press the each key for the desired test mode step to execute any of the following tests:

No.	Test Mode Name	KEY	TX B (IC404 pin ②)	RX PWR (IC404 pin ⑬)	TX MUTE (IC404 pin ⑪)	RX MUTE (IC404 pin ⑫)	CONV (IC404 pin ⑥)	Remarks
1	VCO/TX FREQ. ADJ	1	L	H	L	L	L	
2	TX MOD CHECK	2	L	H	H	L	H	
3	TX DATA	3	L	H	L	L	H	*1
4	RX SENS	4	H	H	L	H	H	*2
5	SQ SENS	5	L	H	L	*A	H	
6	RECEIVE DATA CHECK	6	L	H	L	L	H	*3
7	BELL CHECK	7	H	L	L	L	H	
8	BAT. LOW CHECK	8	H	L	L	L	H	*4
9	CHARGE CHECK	9	H	L	L	L	H	*5
10	DUPLEX	0	L	H	H	H	L	*2

* Initial Channel of each step: 21CH

*A. SQ on: H
SQ off: L

*1. Test Mode 3: Continue output TX data as “0000……”.

*2. Test Mode 4, 10: It is possible to change the speaker output level by **[VOL]** switch.

*3. Test Mode 6: When locked receiving data is “0000……”, it beeps confirm tone. (1 kHz)

*4. Test Mode 8: When BATT LOW (IC404 pin ③⑤) is “L” (battery low), it beeps confirm tone.

*5. Test Mode 9: When CHG IN (IC404 pin ③⑥) is “L” (charge on), it beeps confirm tone.

SECTION 4 ELECTRICAL ADJUSTMENTS

0 dBm = 0.775 V

BASE UNIT

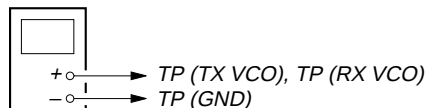
- Make the set in test mode. (See page 7.)

– TX Adjustments and Checks –

1. TX VCO Check

Setting:

digital voltmeter



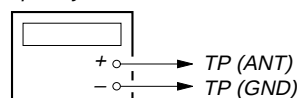
Procedure:

1. Connect a digital voltmeter to TP (TX VCO), TP (RX VCO) and TP (GND) on the BASE RF board.
2. Check that both TP (TX VCO) and TP (RX VCO) voltage of digital voltmeter are 0.8 V to 2.2 V.
3. Set the **[DIAL MODE]** switch (S2) to the **[TONE]** position.
4. Press the **[HANDSET LOCATOR]** key (S1) three times to change the channel to 40CH.
5. Check that both TP (TX VCO) and TP (RX VCO) voltage of digital voltmeter are 0.8 V to 2.2 V.
6. Press the **[HANDSET LOCATOR]** key (S1) once to change the channel to 1CH.
7. Check that both TP (TX VCO) and TP (RX VCO) voltage of digital voltmeter are 0.8 V to 2.2 V.

2. TX Frequency Adjustment

Setting:

frequency counter



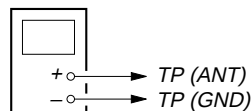
Procedure:

1. Connect a frequency counter to TP (ANT) and TP (GND) on the BASE MAIN board.
2. Restart the test mode to change the channel to 19CH.
3. Adjust CT1 on the BASE MAIN board so that the value of frequency counter becomes 926.897468 MHz $\pm$ 600 Hz.

3. TX Power Adjustment

Setting:

power meter



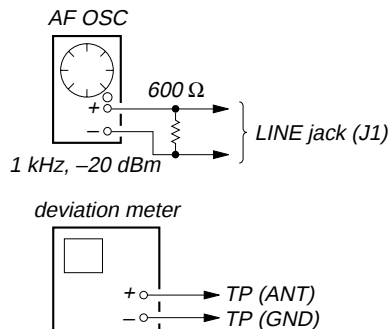
Procedure:

1. Connect a power meter to TP (ANT) and TP (GND) on the BASE MAIN board.
2. Adjust RT301 on the BASE RF board so that the value of power meter becomes $-5.5 \text{ dBm} \pm 1 \text{ dBm}$.
3. Set the **[DIAL MODE]** switch (S2) to the **[TONE]** position.
4. Press the **[HANDSET LOCATOR]** key (S1) three times to change the channel to 40CH.
5. Check that the value of power meter is $-5.5 \text{ dBm} \pm 1.5 \text{ dBm}$.
6. Press the **[HANDSET LOCATOR]** key (S1) once to change the channel to 1CH.

7. Check that the value of power meter is $-5.5 \text{ dBm} \pm 1.5 \text{ dBm}$.

4. Modulation Sensitivity Adjustment

Setting:

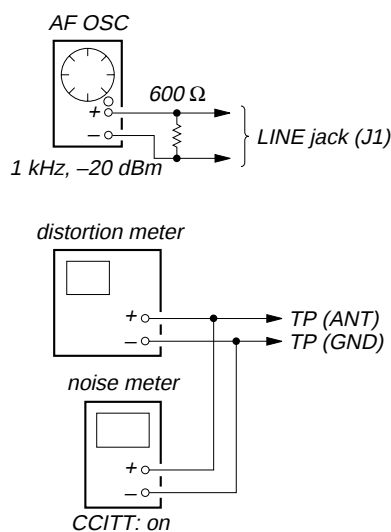


Procedure:

1. Connect an AF OSC to the LINE jack (J1) on the BASE MAIN board.
2. Connect a deviation meter to TP (ANT) and TP (GND) on the BASE MAIN board.
3. Set the **[DIAL MODE]** switch (S2) to the **[PULSE]** position.
4. Press the **[HANDSET LOCATOR]** key (S1) once to change the test mode step to TX MOD CHECK.
5. Adjust RT3 on the BASE MAIN board so that the value of deviation meter becomes 8 kHz $\pm$ 0.5 kHz.

5. Distortion and S/N Ratio Check

Setting:

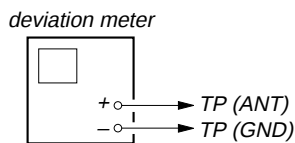


Procedure:

1. Connect a distortion meter and noise meter to TP (ANT) and TP (GND) on the BASE MAIN board.
2. Check that the value of distortion meter is less than 4%.
3. Check that the value of noise meter, and record it.
4. Stop outputting the signal of AF OSC.
5. Check that the value of noise meter again. And check that difference of level between in step3 and in step5 is less than 30 dB.

6. Code Deviation Check

Setting:



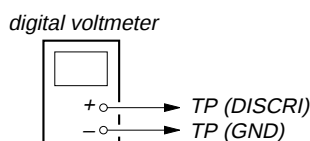
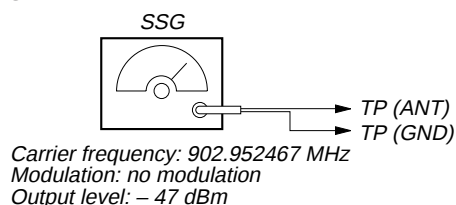
Procedure:

1. Connect a deviation meter to TP (ANT) and TP (GND) on the BASE MAIN board.
2. Press the **HANDSET LOCATOR** key (S1) once to change the test mode step to TX DATA.
3. Check that the value of deviation meter is 6 kHz to 10 kHz.

- RX Adjustments and Checks -

1. DISCRI Voltage Adjustment

Setting:

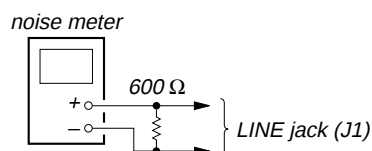
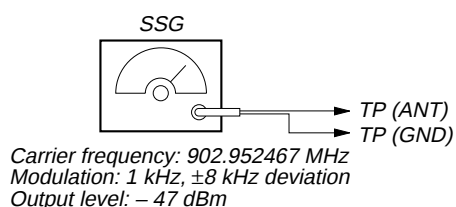


Procedure:

1. Connect a SSG to TP (ANT) and TP (GND) on the BASE MAIN board.
2. Connect a digital voltmeter to TP (DISCRI) and TP (GND) on the BASE MAIN board.
3. Set the **DIAL MODE** switch (S2) to the **PULSE** position.
4. Press the **HANDSET LOCATOR** key (S1) three times to change the test mode step to RX SENS.
5. Adjust L3 on the BASE MAIN board so that the value of digital voltmeter becomes $1\text{ V} \pm 0.05\text{ V}$.

2. TEL Out Level Adjustment

Setting:

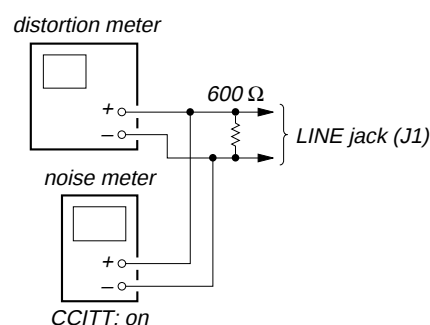
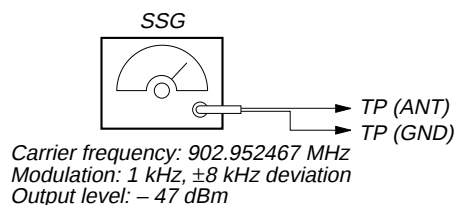


Procedure:

1. Change the modulation of SSG to 1 kHz, $\pm 8\text{ kHz}$ deviation.
2. Connect a noise meter to the LINE jack (J1) on the BASE MAIN board.
3. Adjust RT2 on the BASE MAIN board so that the value of noise meter becomes $265\text{ mV} \pm 10\text{ mV}$.

3. Distortion and S/N Ratio Check

Setting:

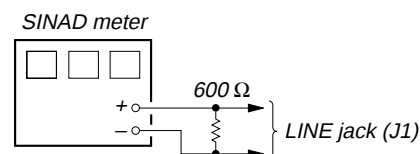
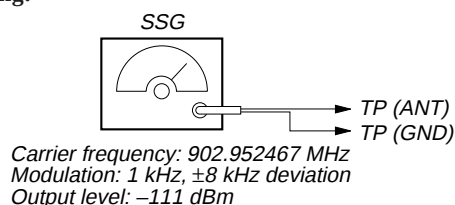


Procedure:

1. Connect a distortion meter to the LINE jack (J1) on the BASE MAIN board.
2. Set the CCITT of noise meter on.
3. Check that the value of distortion meter is less than 4%.
4. Check that the value of noise meter, and record it.
5. Change the modulation of SSG to no modulation.
6. Check that the value of noise meter again. And check that difference of level between in step3 and in step5 is more than 60 dB.

4. RX Sensitivity Check

Setting:

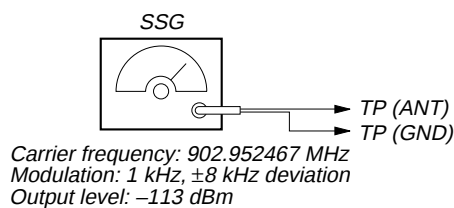


Procedure:

1. Connect a SINAD meter to the LINE jack (J1) on the BASE MAIN board.
2. Change the output level of SSG to -111 dBm, and change the modulation to 1 kHz $\pm 8\text{ kHz}$ deviation.
3. Check that the value of SINAD meter is more than 12 dB.

5. SQ Sensitivity Adjustment

Setting:

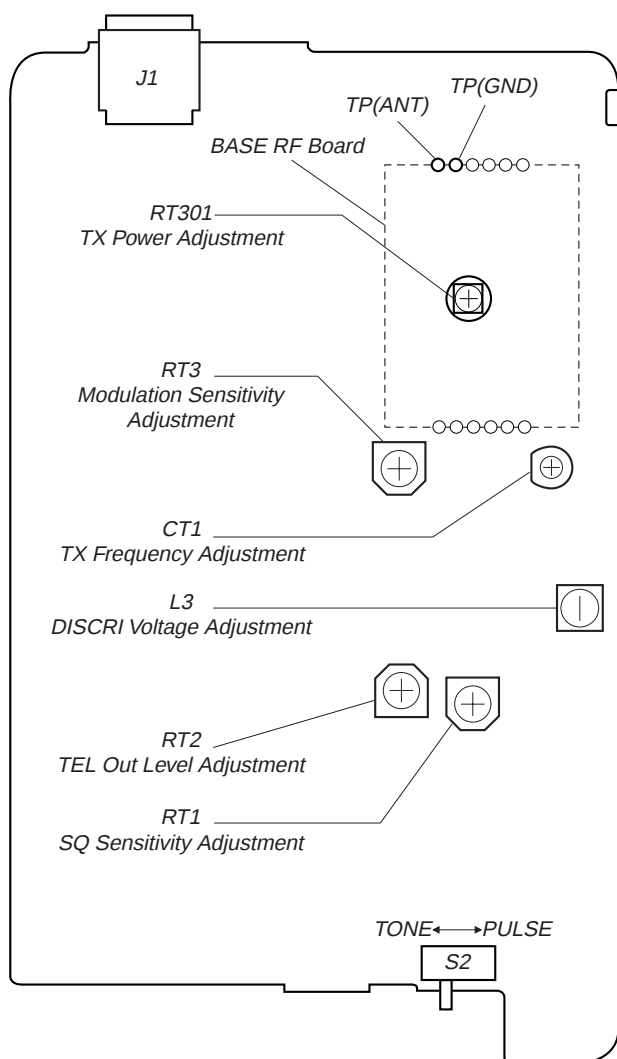


Procedure:

1. Change the output level of SSG to -113 dBm.
2. Press the **HANDSET LOCATOR** key (S1) once to change the test mode step to SQ SENS.
3. Adjust RT1 so that the CHARGE LED (D6) becomes blinking.

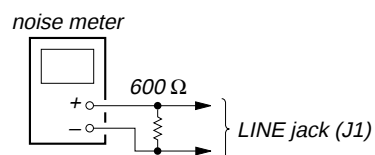
Adjustment Location:

– BASE MAIN BOARD (Component Side) –



6. DTMF Level Check

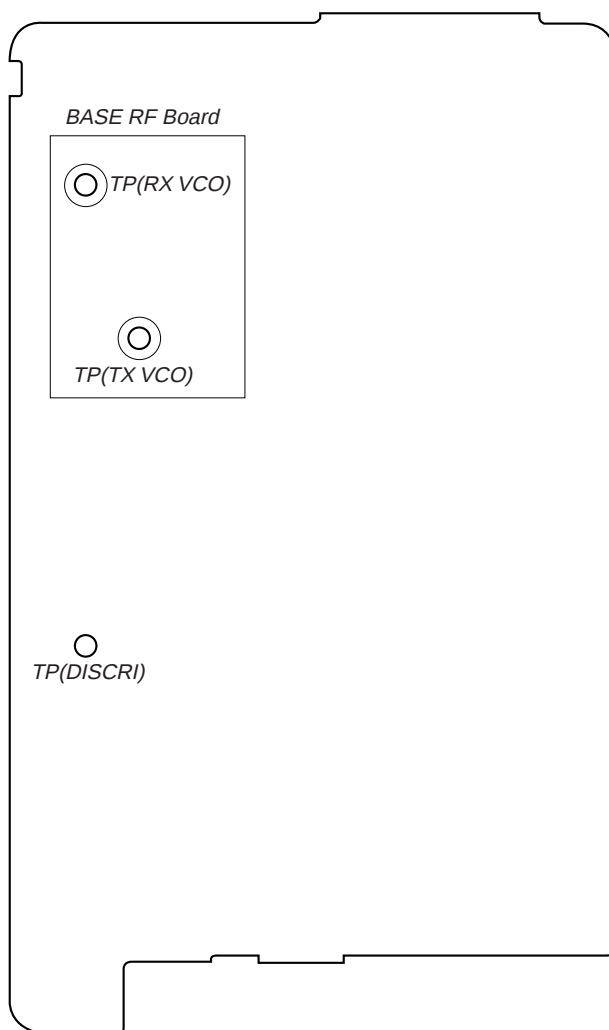
Setting:



Procedure:

1. Connect a noise meter to the LINE jack (J1) on the BASE MAIN board.
2. Press the **HANDSET LOCATOR** key (S1) twice to change the test mode step to DTMF DUAL TONE.
3. Check that the value of noise meter is -5 dBm to 0 dBm.

– BASE MAIN BOARD (Conductor Side) –



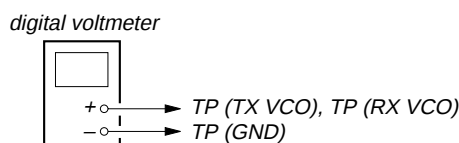
HANDSET

- Make the set in test mode. (See page 9.)

– TX Adjustments and Checks –

1. TX VCO Check

Setting:

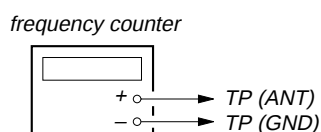


Procedure:

1. Connect a digital voltmeter to TP (TX VCO), TP (RX VCO) and TP (GND) on the HAND RF board.
2. Check that both TP (TX VCO) and TP (RX VCO) voltage of digital voltmeter are 0.8 V to 2.2 V.
3. Press the **[CHANNEL]** key three times to change the channel to 40CH.
4. Check that both TP (TX VCO) and TP (RX VCO) voltage of digital voltmeter are 0.8 V to 2.2 V.
5. Press the **[CHANNEL]** key once to change the channel to 1CH.
6. Check that both TP (TX VCO) and TP (RX VCO) voltage of digital voltmeter are 0.8 V to 2.2 V.

2. TX Frequency Adjustment

Setting:

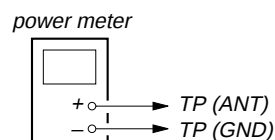


Procedure:

1. Connect a frequency counter to TP (ANT) and TP (GND) on the HAND MAIN board.
2. Restart the test mode to change the channel to 21CH.
3. Adjust CT401 on the HAND MAIN board so that the value of frequency counter becomes $903.052467 \text{ MHz} \pm 600 \text{ Hz}$.

3. TX Power Adjustment

Setting:

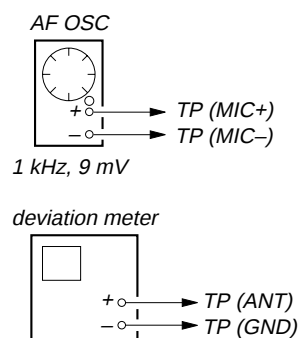


Procedure:

1. Connect a power meter to TP (ANT) and TP (GND) on the HAND MAIN board.
2. Adjust RT501 on the HAND RF board so that the value of power meter becomes $-7.5 \text{ dBm} \pm 1 \text{ dBm}$.
3. Press the **[CHANNEL]** key three times to change the channel to 40CH.
4. Check that the value of power meter is $-7.5 \text{ dBm} \pm 1.5 \text{ dBm}$.
5. Press the **[CHANNEL]** key once to change the channel to 1CH.
6. Check that the value of power meter is $-7.5 \text{ dBm} \pm 1.5 \text{ dBm}$.

4. Modulation Sensitivity Adjustment

Setting:

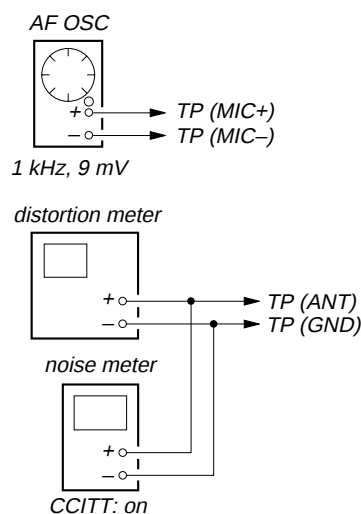


Procedure:

1. Disconnect the microphone (MC401).
2. Connect an AF OSC to TP (MIC+) and TP (MIC-) on the HAND MAIN board.
3. Connect a deviation meter to TP (ANT) and TP (GND) on the HAND MAIN board.
4. Press the **[2]** key to change the test mode step to TX MOD CHECK.
5. Adjust RT403 on the HAND MAIN board so that the value of deviation meter becomes $8 \text{ kHz} \pm 0.5 \text{ kHz}$.

5. Distortion and S/N Ratio Check

Setting:

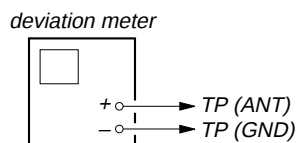


Procedure:

1. Connect a distortion meter and noise meter to TP (ANT) and TP (GND) on the HAND MAIN board.
2. Check that the value of distortion meter is less than 4%.
3. Check that the value of noise meter, and record it.
4. Stop outputting the signal of AF OSC.
5. Check that the value of noise meter again. And check that difference of level between in step3 and in step5 is less than 30 dB.

6. Code Deviation Check

Setting:



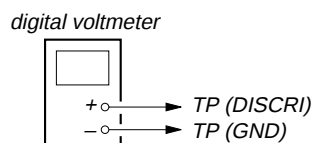
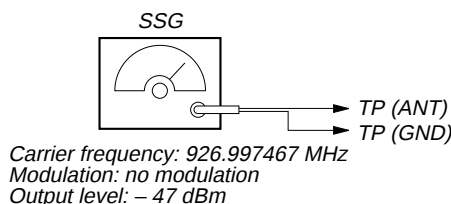
Procedure:

1. Connect a deviation meter to TP (ANT) and TP (GND) on the HAND MAIN board.
2. Press the [3] key to change the test mode step to TX DATA.
3. Check that the value of deviation meter is 6 kHz to 10 kHz.

– RX Adjustments and Checks –

1. DISCRI Voltage Adjustment

Setting:

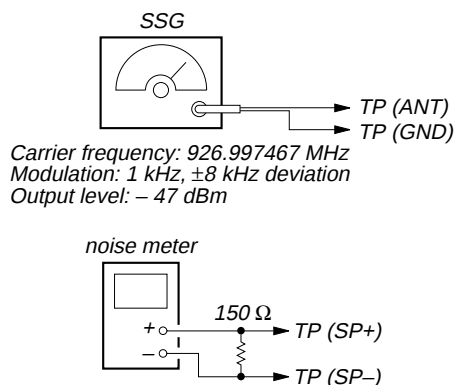


Procedure:

1. Connect a SSG to TP (ANT) and TP (GND) on the HAND MAIN board.
2. Connect a digital voltmeter to TP (DISCRI) and TP (GND) on the HAND MAIN board.
3. Press the [4] key to change the test mode step to RX SENS.
4. Adjust L402 on the HAND MAIN board so that the value of digital voltmeter becomes $1\text{ V} \pm 0.05\text{ V}$.

2. Speaker Out Level Adjustment

Setting:



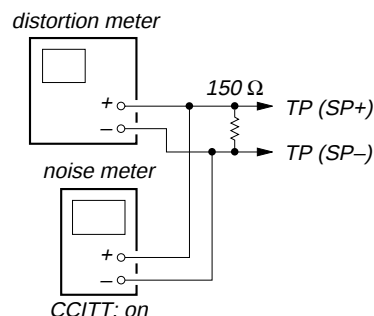
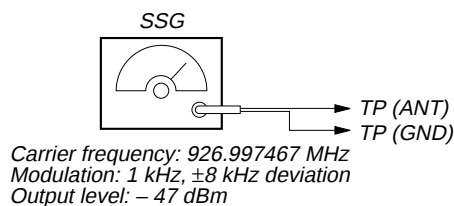
Procedure:

1. Change the modulation of SSG to 1 kHz, $\pm 8\text{ kHz}$ deviation.
2. Disconnect the speaker (SP801).
3. Connect a noise meter to TP (SP+) and TP (SP-) on the HAND MAIN board.

4. Set the [VOL] switch (S401) to [M] position.
5. Adjust RT402 on the HAND MAIN board so that the value of noise meter becomes $115\text{ mV} \pm 10\text{ mV}$.

3. Distortion and S/N Ratio Check

Setting:

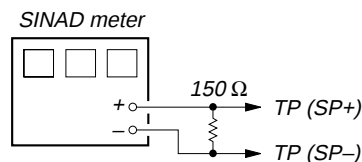
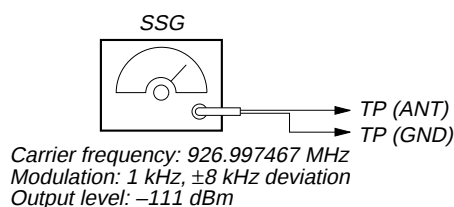


Procedure:

1. Connect a distortion meter to TP (SP+) and TP (SP-) on the HAND MAIN board.
2. Check that the value of distortion meter is less than 4%.
3. Check that the value of noise meter, and record it.
4. Change the modulation of SSG to no modulation.
5. Check that the value of noise meter again. And check that difference of level between in step3 and in step5 is more than 60 dB.

4. RX Sensitivity Check

Setting:

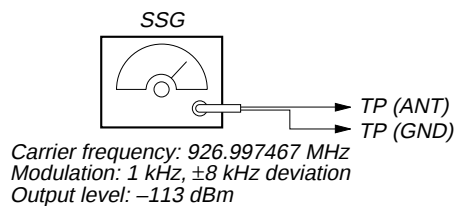


Procedure:

1. Change the output level of SSG to -111 dBm.
2. Connect a SINAD meter to TP (SP+) and TP (SP-) on the HAND MAIN board.
3. Check that the value of SINAD meter is more than 12 dB.

5. SQ Sensitivity Adjustment

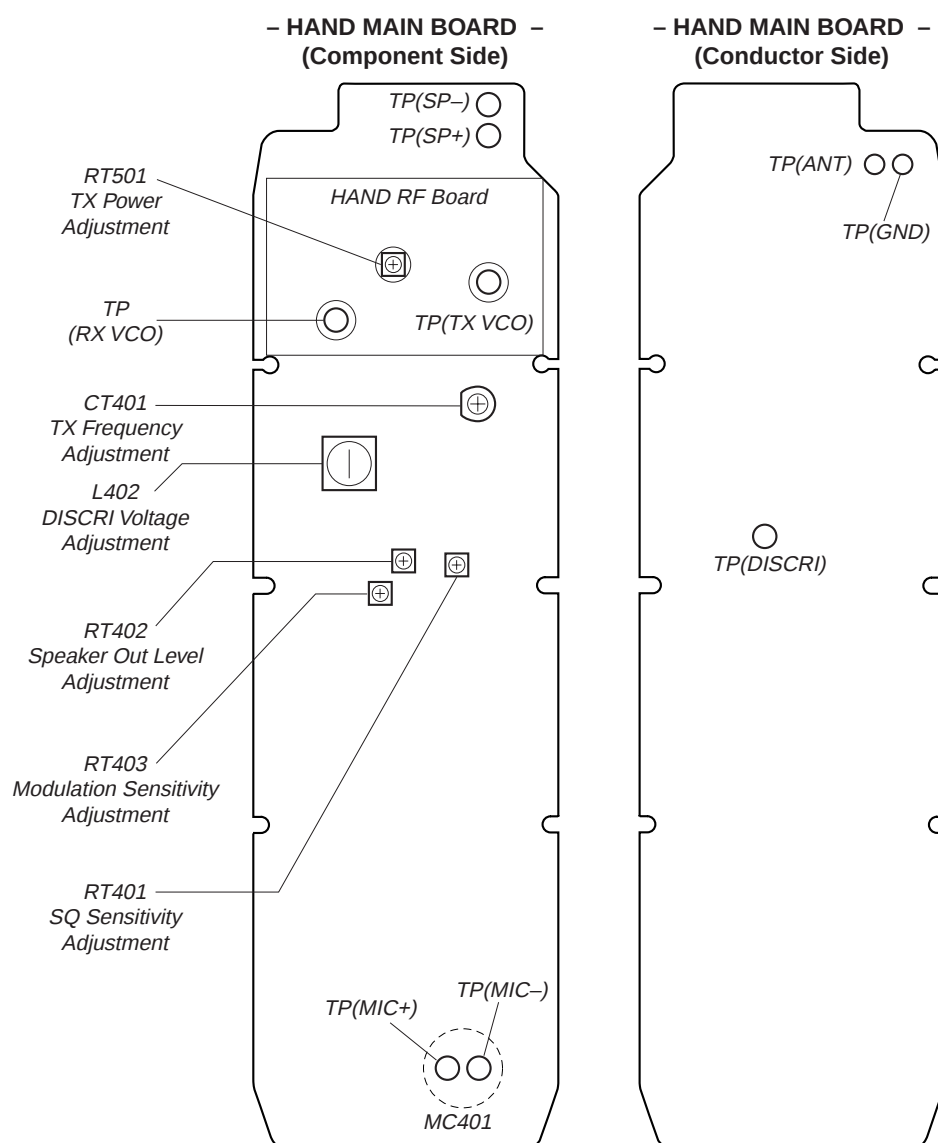
Setting:



Procedure:

1. Change the output level of SSG to -113 dBm.
2. Press the [5] key to change the test mode step to SQ SENS.
3. Adjust RT401 so that the TALK/BATT LOW LED (D408) becomes blinking.

Adjustment Location:



5-1. BLOCK DIAGRAM – BASE UNIT Section –

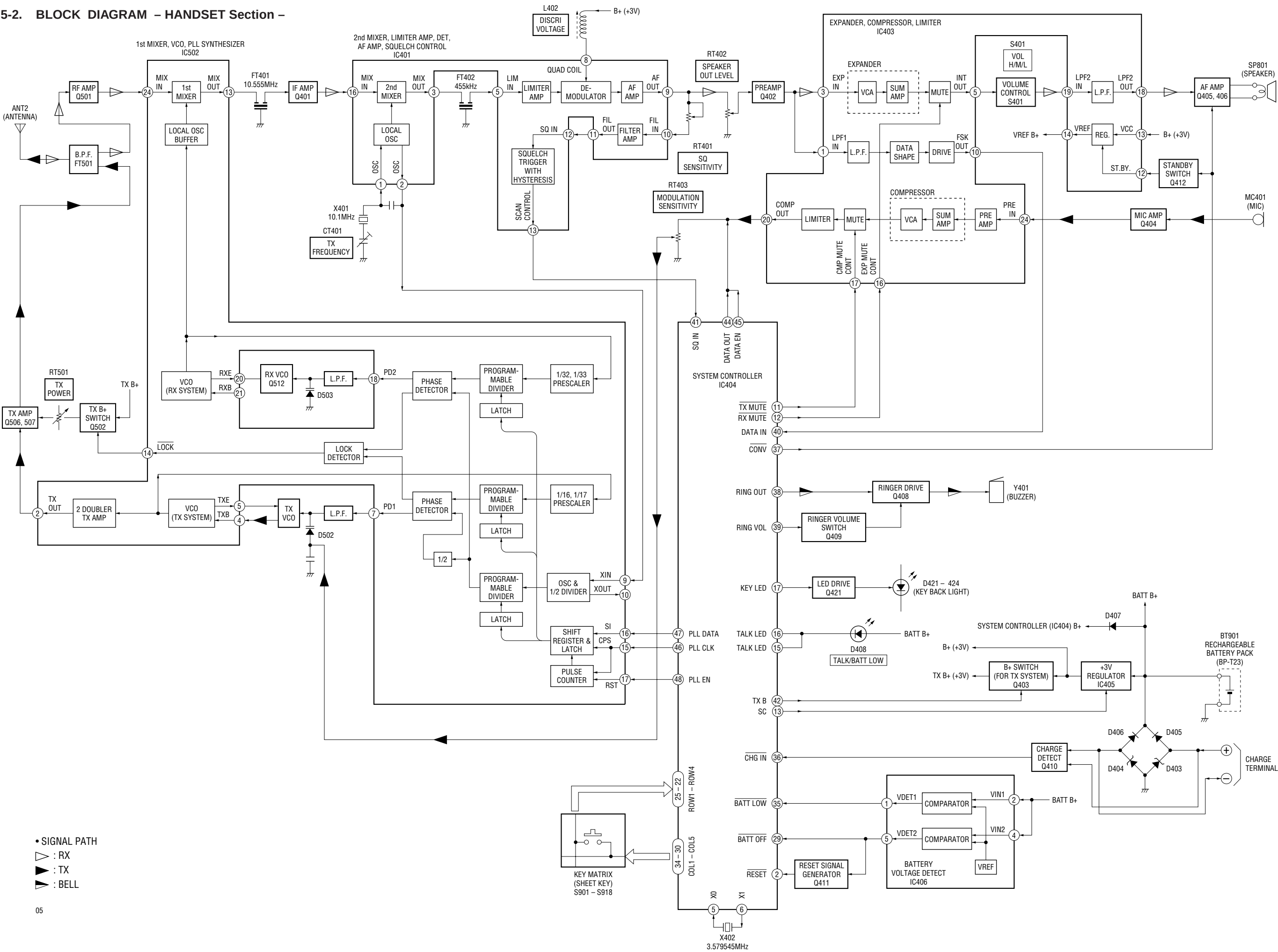
Legend:

- SIGNAL PATH
- ▷ : RX
- ◼ : TX
- ◁ : BELL

Key Components and Sections:

- 1st MIXER, VCO, PLL SYNTHESIZER (IC302):** Receives signals from ANT1 (ANTENNA) and B.P.F. (FT301). Includes a LOCAL OSC BUFFER and a VCO (RX SYSTEM).
- 2nd MIXER, LIMITER AMP, DET., AF AMP, SQUELCH CONTROL (IC3):** Processes the mixed signal through a 2nd MIXER, LIMITER AMP, DE-MODULATOR, and AF AMP. Includes a SQUELCH TRIGGER WITH HYSTERESIS and a SCAN CONTROL.
- EXPANDER, COMPRESSOR, LIMITER (IC1):** Contains an EXPANDER and a COMPRESSOR section, both with VCA and SUM AMP blocks.
- SYSTEM CONTROLLER (IC5):** Manages system functions including TX MUTE, RX MUTE, DATA IN, DTMF, TALK, BELL IN, LED CHG1, LED CHG2, LED INUSE1, LED INUSE2, BATT OFF, RESET, TX B, CHG OUT, CHG IN, and FLASH signals.
- Power Supply:** Includes a BATTERY VOLTAGE DETECT (IC6), RESET SIGNAL GENERATOR (Q9), B+ SWITCH (FOR TX SYSTEM) (Q12), +3V REGULATOR (Q11), +6V REGULATOR (Q7), CHARGE CONTROL (Q8), and CHARGE DETECT (Q6).
- Other Components:** RF AMP (Q301), IF AMP (Q1), TX AMP (Q306, 307), TX B+ SWITCH (Q302), TX POWER, TX B+, TX VCO, TX VCO, TXB, TXE, TX OUT, 2 DOUBLER TX AMP, LOCK, LOCK DETECTOR, RX VCO (Q312), RXB, RXE, L.P.F., PD1, PD2, PHASE DETECTOR, PROGRAM-MABLE DIVIDER, LATCH, 1/32, 1/33 PRESCALER, 1/16, 1/17 PRESCALER, OSC & 1/2 DIVIDER, SHIFT REGISTER & LATCH, PULSE COUNTER, DISCRI VOLTAGE, QUAD COIL, FIL IN, FIL OUT, FILTER AMP, TEL OUT LEVEL, PREAMP Q2, MUTE, TEL OUT, LPF2 IN, LPF2 OUT, HYBRID AMP Q3, T1 LINE TRANSFORMER, J1 LINE, J2 DC IN 9V, X1 3.579545MHz, X0, X1, X2 10.1MHz, CT1 TX FREQUENCY, RT1 SQ SENSITIVITY, RT2 TEL OUT LEVEL, RT3 MODULATION SENSITIVITY, RL1, D6 CHARGE, D7 LINE, D302, D303, FT1 10.555MHz, FT2 455kHz.

5-2. BLOCK DIAGRAM – HANDSET Section –



5-3. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Printed Wiring Board:

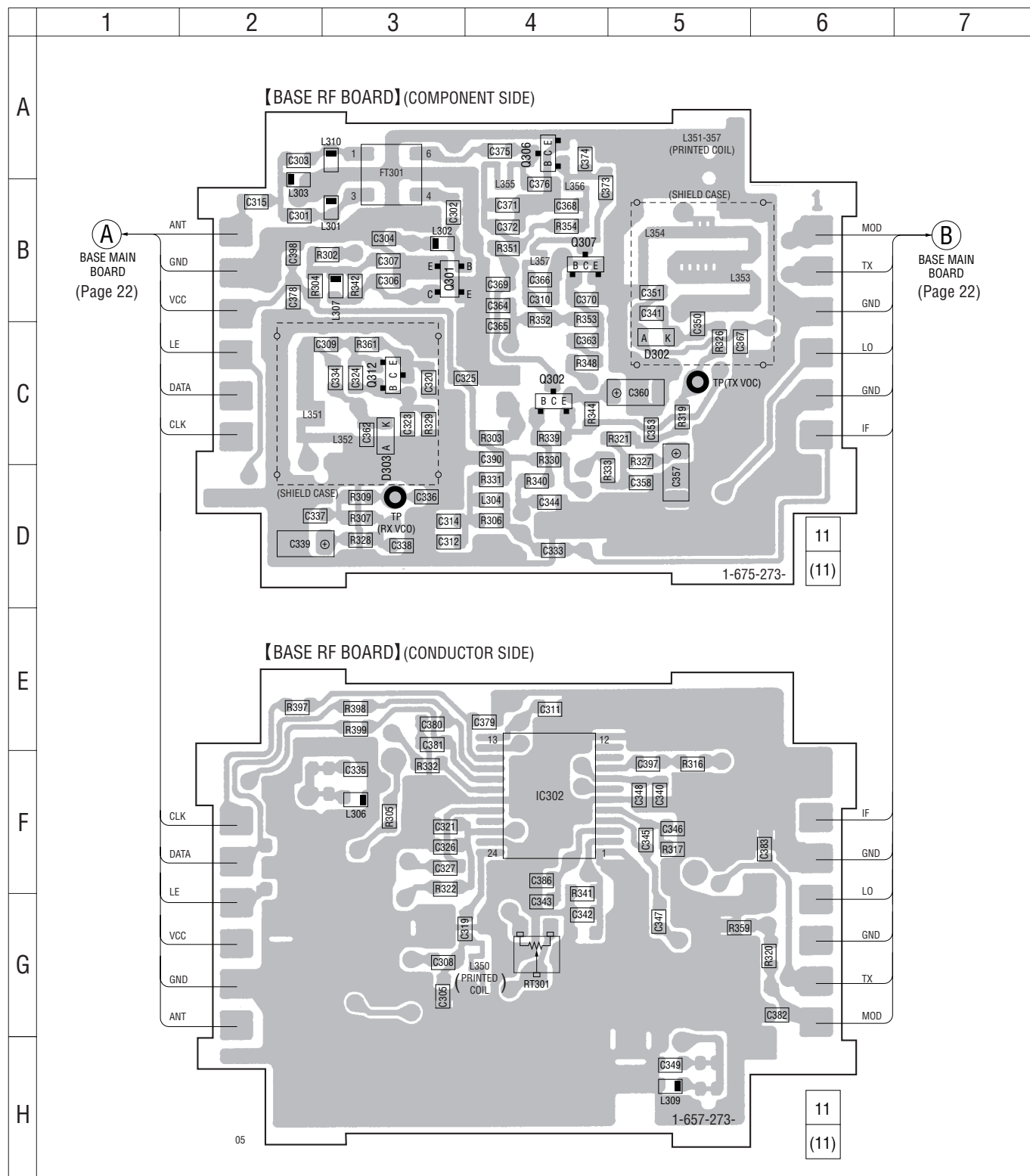
-  : parts extracted from the component side.
 -  : parts extracted from the conductor side.
 -  : indicates side identified with part number.
 -  : internal component.
 -  : Pattern from the side which enables seeing.
- (The other layers' patterns are not indicated.)
-  : carbon pattern

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

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : μF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
-  : internal component.
-  : nonflammable resistor.
-  : printed coil.
-  : panel designation.
-  : B+ Line.
-  : adjustment for repair.
- Power voltages are dc 9 V and fed with regulated dc power supply from external power voltage jack (J2) on the BASE MAIN board, dc 12 V and fed with regulated dc power supply from modular jack (J1) on the BASE MAIN board with $100\ \Omega$ in series, and dc 3.6 V and fed with regulated dc power supply from battery terminal on the HAND MAIN board.
- Voltages and waveforms are dc with respect to ground in test mode.
- Voltages are taken with a VOM (Input impedance $10\ \text{M}\Omega$). 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.
 -  : RX
 -  : TX
 -  : BELL

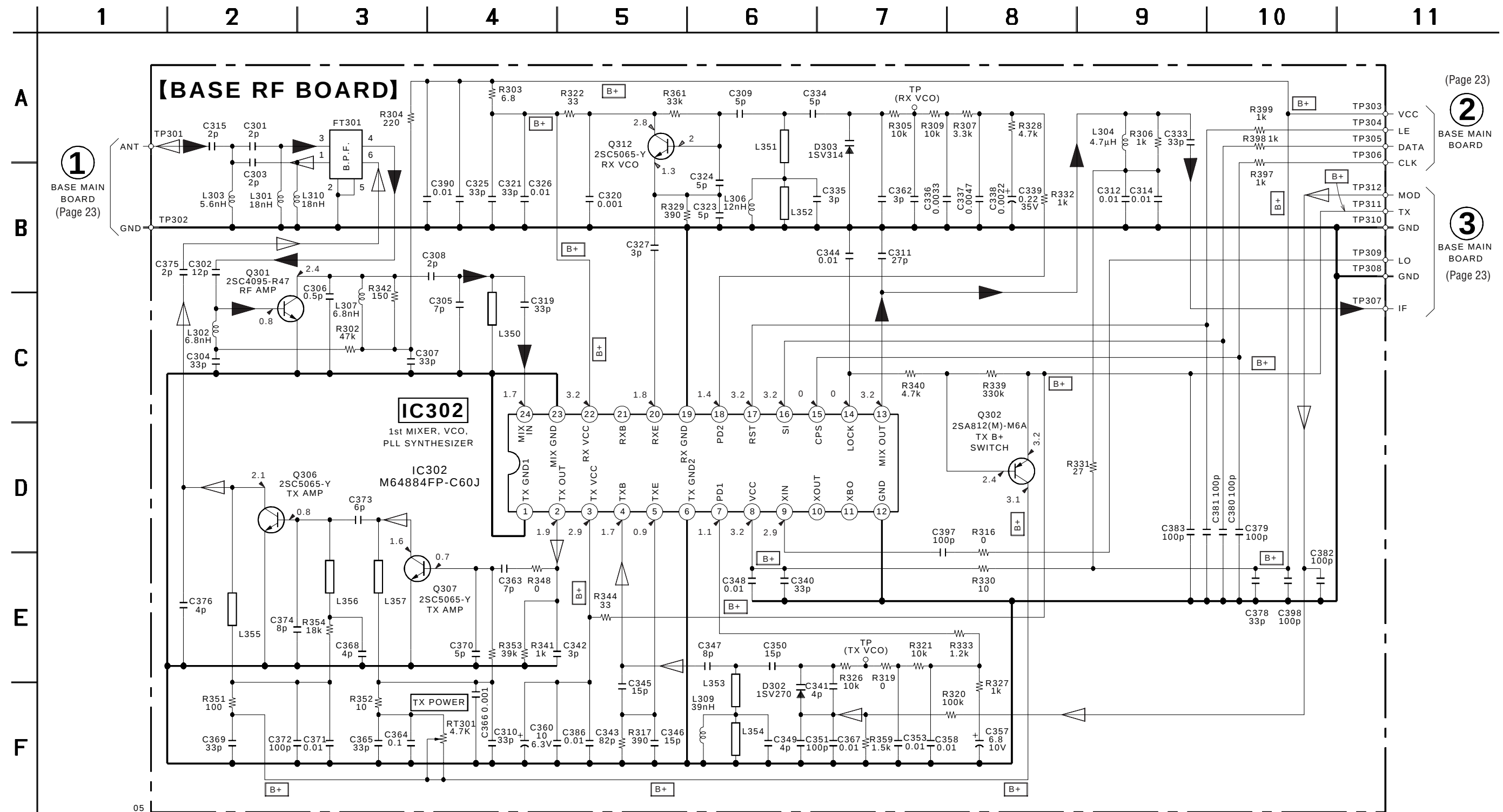
5-4. PRINTED WIRING BOARD – BASE RF Section –



• Semiconductor Location

Ref. No.	Location
D302	C-5
D303	C-3
IC302	F-4
Q301	B-3
Q302	C-4
Q306	A-4
Q307	B-4
Q312	C-3

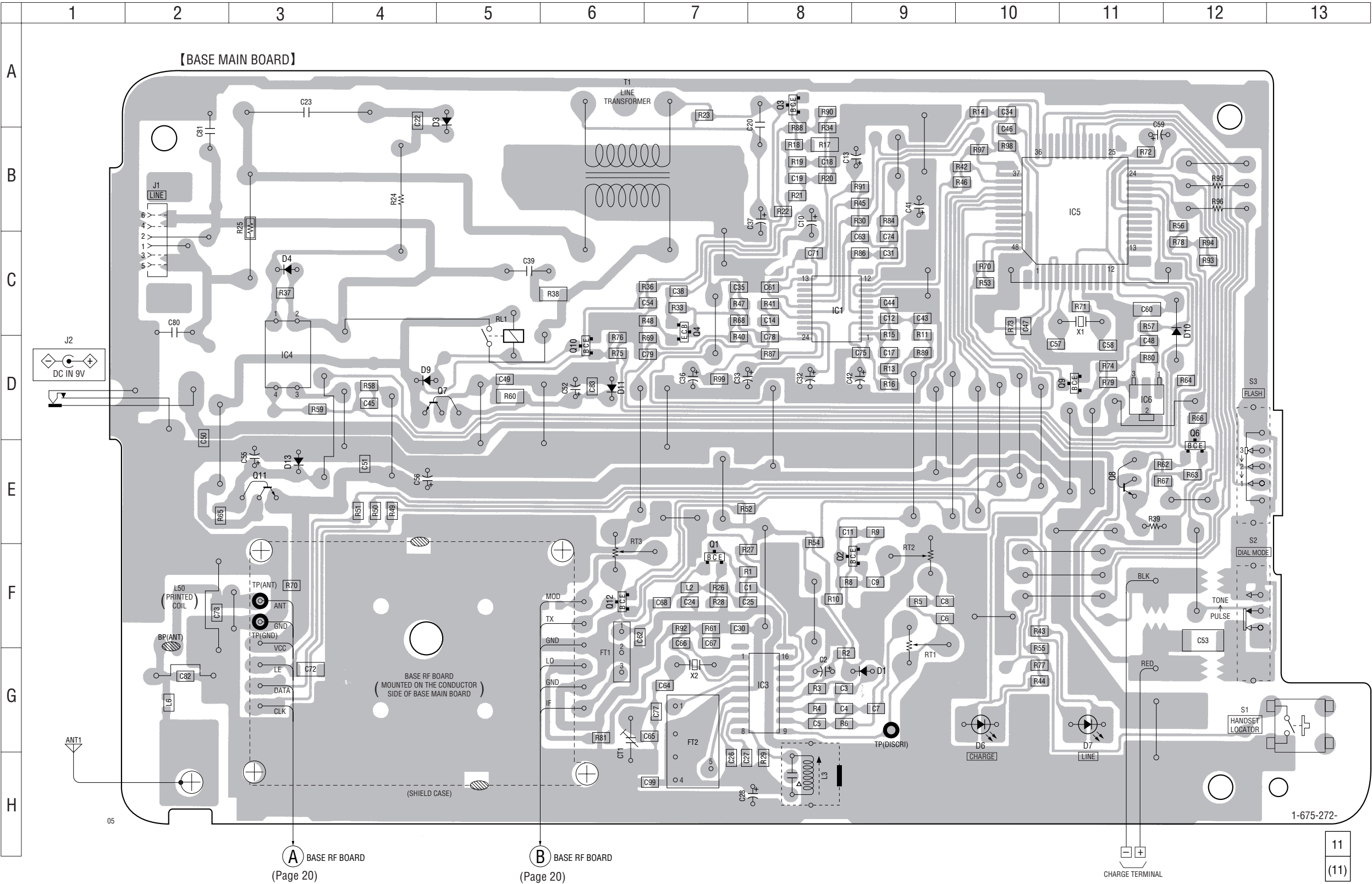
21 21



5-6. PRINTED WIRING BOARD – BASE MAIN Section –

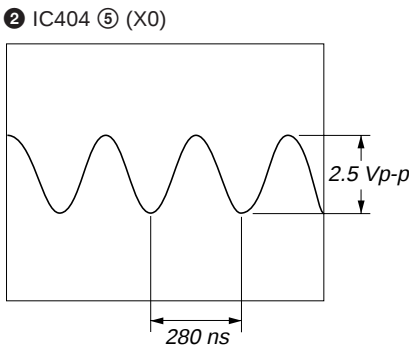
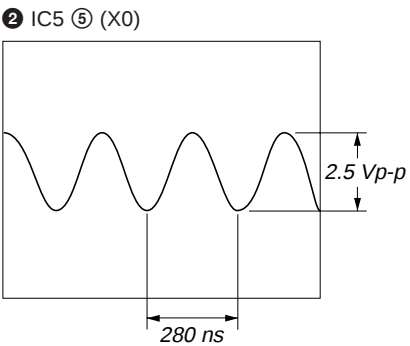
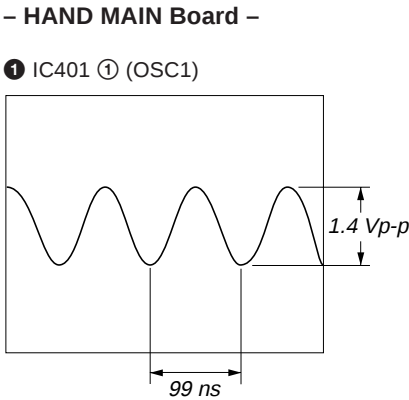
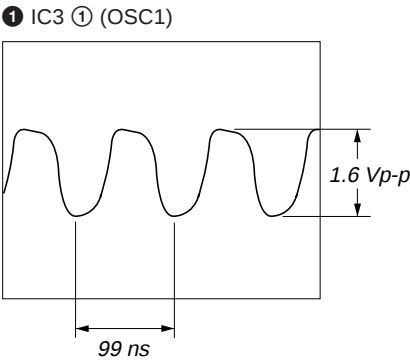
• Semiconductor Location

Ref. No.	Location
D1	G-9
D3	A-5
D4	C-3
D6	G-10
D7	G-11
D9	D-4
D10	C-12
D11	D-6
D13	E-3
IC1	C-8
IC3	G-8
IC4	D-3
IC5	B-11
IC6	D-11
Q1	F-7
Q2	F-9
Q3	A-8
Q4	C-7
Q6	E-12
Q7	D-5
Q8	E-11
Q9	D-11
Q10	D-6
Q11	E-3
Q12	F-6





• Waveforms
– BASE MAIN Board –



– HAND MAIN Board –

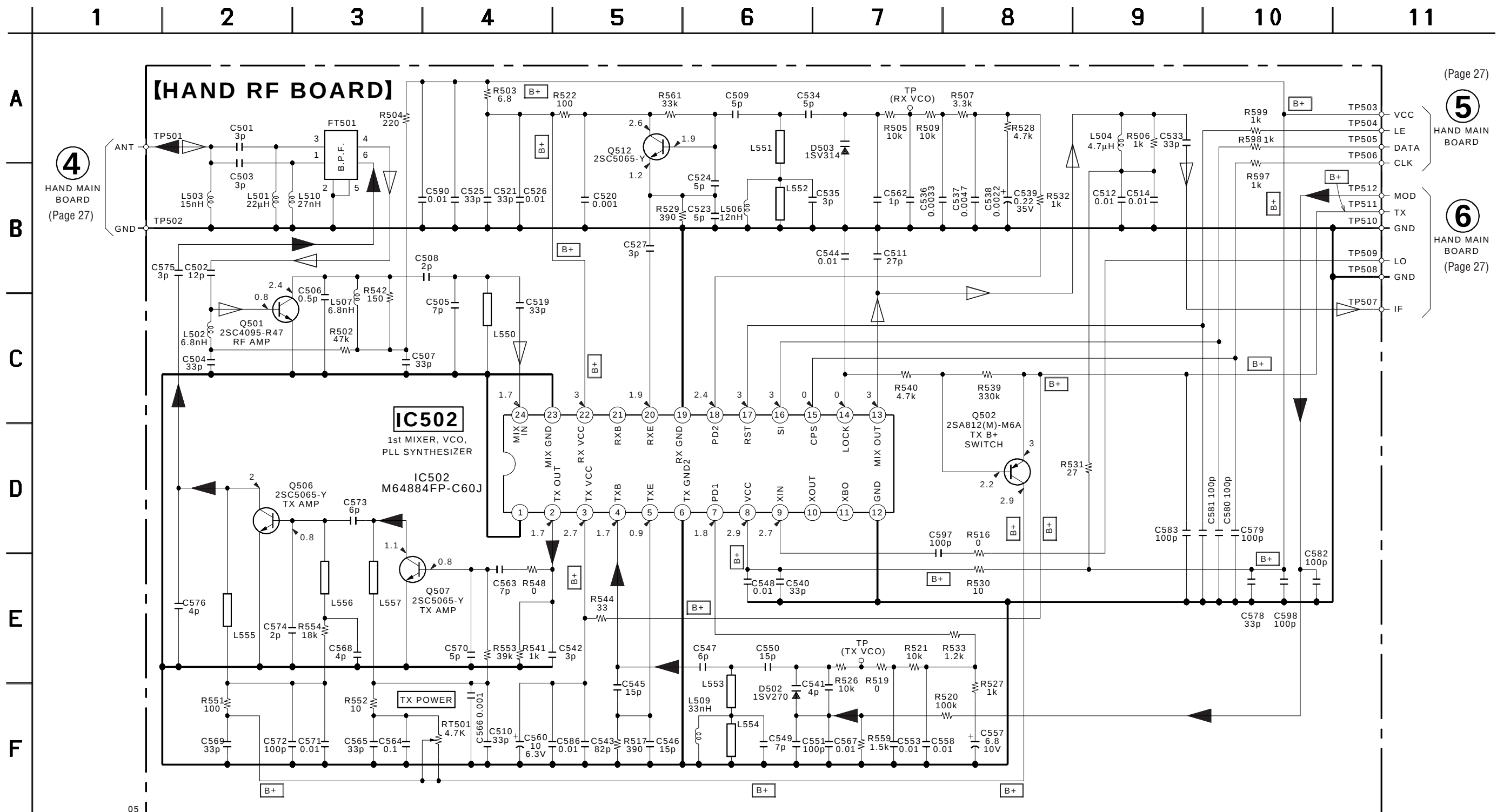
5-8. PRINTED WIRING BOARD – HAND RF Section –



• Semiconductor Location

Ref. No.	Location
D502	B-5
D503	C-3
IC502	F-4
Q501	B-3
Q502	C-4
Q506	A-4
Q507	B-4
Q512	C-3

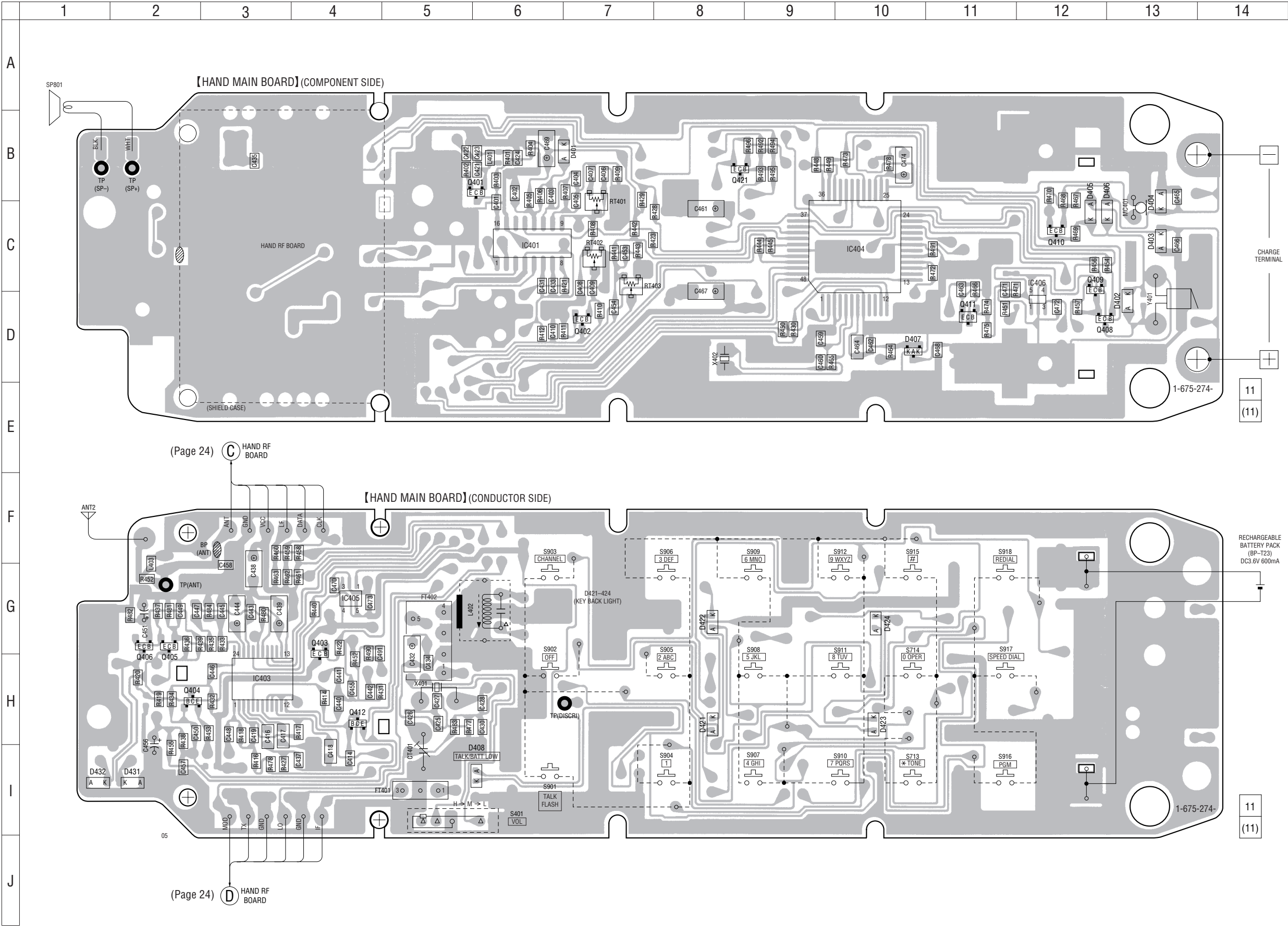
5-9. SCHEMATIC DIAGRAM – HAND RF Section – • See page 28 for IC Block Diagram.



5-10. PRINTED WIRING BOARD – HAND MAIN Section –

• Semiconductor Location

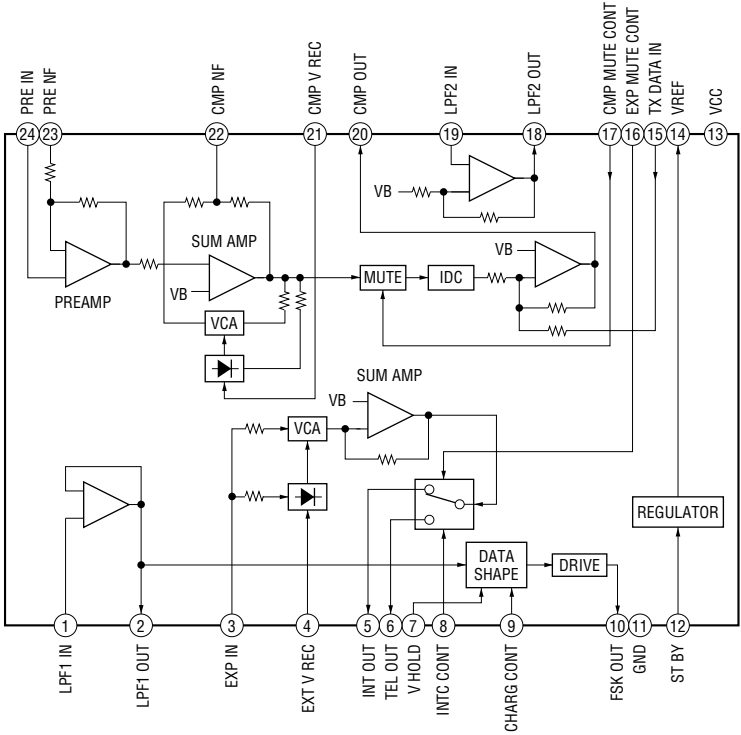
Ref. No.	Location
D401	B-7
D402	D-13
D403	C-13
D404	C-13
D405	C-12
D406	C-12
D407	D-10
D408	I-6
D421	H-8
D422	G-8
D423	H-10
D424	G-10
D431	I-2
D432	I-1
IC401	C-6
IC403	H-3
IC404	C-10
IC405	G-4
IC406	D-12
Q401	B-6
Q402	D-7
Q403	G-4
Q404	H-2
Q405	G-2
Q406	G-2
Q408	D-12
Q409	C-12
Q410	C-12
Q411	D-11
Q412	H-4
Q421	B-8



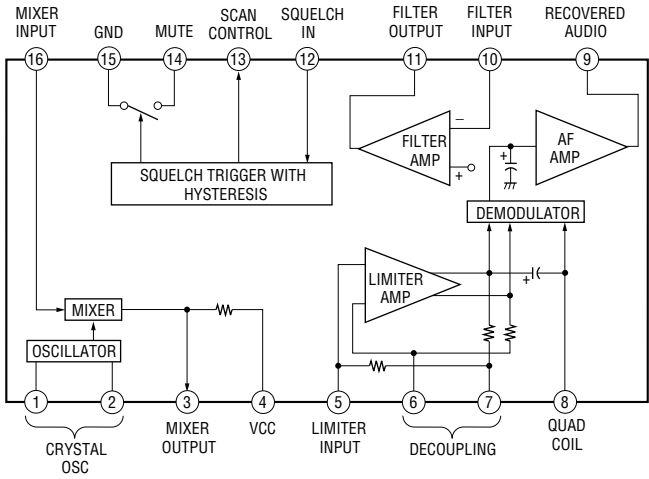


• IC Block Diagrams

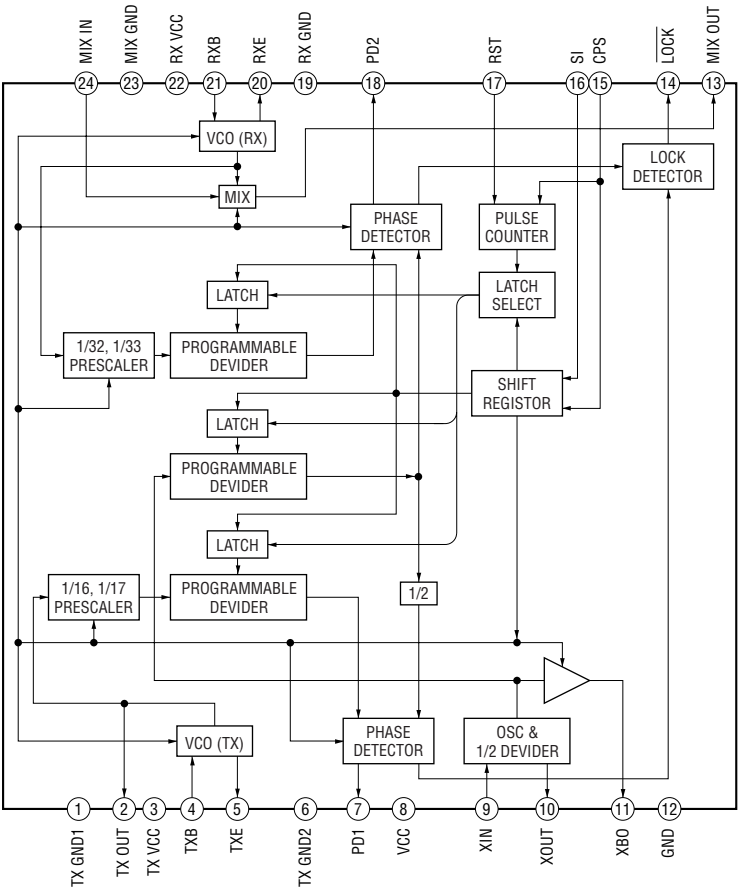
IC1 LA8633VU-TLM (BASE MAIN Board)
IC403 LA8633VU-TLM (HAND MAIN Board)



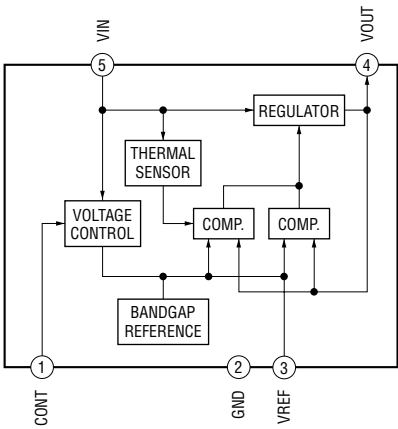
IC3 MC3361CDR2 (BASE MAIN Board)
IC401 MC3361CDR2 (HAND MAIN Board)



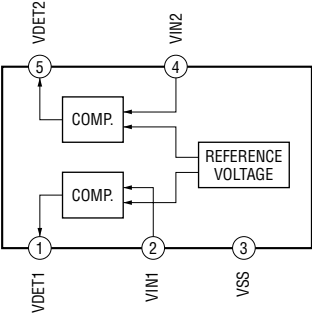
IC302 M64884FP-C60J (BASE RF Board)
IC502 M64884FP-C60J (HAND RF Board)



IC405 TK11130SCL (HAND MAIN Board)



IC406 XC612N3328MR (HAND MAIN Board)



5-12. IC PIN FUNCTION DESCRIPTION

• BASE MAIN BOARD IC5 MB89173PF-G-256-BND (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	DTMF	O	DTMF tone signal output terminal
2	RESET	I	System reset signal input from the reset signal generator (Q9) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
3, 4	MOD0, MOD1	I	Setting terminal for the CPU operational mode Fixed at “L” in this set
5	X0	I	Main system clock input terminal (3.579545 MHz)
6	X1	O	Main system clock output terminal (3.579545 MHz)
7	VCC	—	Power supply terminal (+3V)
8	X0A	I	Sub system clock input terminal (32.768 kHz) Not used (fixed at “L”)
9	X1A	O	Sub system clock output terminal (32.768 kHz) Not used (open)
10 to 12	NC	O	Not used (open)
13	TALK	O	Hook on/off control signal output terminal “H”: hook on
14 to 17	NC	O	Not used (open)
18	BATT OFF	I	Battery level detect signal input from the RH5VL28CA (IC6) “L”: battery off
19	GND	—	Ground terminal
20	PAGE	I	HANDSET LOCATOR switch (S1) input terminal “L” is input when key pressing
21	BELL IN	I	Detect signal input of the ringer coming “L”: ringer coming
22	TONE/PULSE	I	DIAL MODE switch (S2) input terminal “L”: tone mode, “H”: pulse mode
23	FLASH 270	I	FLASH speed switch (S3) input terminal “L”: speed 270 (switch position is 2), “H”: speed 100 or speed 650 (switch position is 1 or 3)
24	FLASH 100	I	FLASH speed switch (S3) input terminal “L”: speed 100 (switch position is 1), “H”: speed 270 or speed 650 (switch position is 2 or 3)
25	CHG OUT	O	Charge on/off control signal output terminal “H”: charge on
26 to 28	NC	O	Not used (open)
29, 30	LED INUSE2, LED INUSE1	O	LED drive signal output of the LINE indicator (D7) “L”: LED on
31, 32	LED CHG2, LED CHG1	O	LED drive signal output of the CHARGE indicator (D6) “L”: LED on
33	NC	O	Not used (open)
34	DTMF	O	DTMF tone signal output terminal
35	CHG IN	I	Charge detection signal input terminal “L”: charge on
36	RX MUTE	O	Muting control signal output to the LA8633VU (IC1) “L”: muting on At RX mode: After receiving preamble bits from handset muting it until data sent finished
37	TX MUTE	O	Muting control signal output to the LA8633VU (IC1) “L”: muting on At TX mode: During sending data to handset, muting it
38	DATA IN	I	Receive data input from the LA8633VU (IC1)
39	SQ IN	I	Squelch signal (carrier detection signal) input from the MC3361CDR2 (IC3) “L”: carrier present, “H”: no carrier
40	PLL CLK	O	PLL serial data transfer clock signal output to the M64884FP (IC302)
41	PLL DATA	O	PLL serial data output to the M64884FP (IC302)
42	PLL EN	O	Chip enable signal output to the M64884FP (IC302) When PLL EN goes from “L” to “H”, it load data from PLL DATA
43	GND	—	Ground terminal
44, 45	NC	O	Not used (open)
46	TX B	O	TX system power supply on/off control signal output “L”: TX system power on
47	DATA OUT	O	Transmit data output terminal
48	DATA EN	O	Transmit data enable signal output terminal

• HAND MAIN BOARD IC404 MB89174PF-G-257-BND (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	DTMF	O	DTMF tone signal output terminal Not used (open)
2	<u>RESET</u>	I	System reset signal input from the reset signal generator (Q411) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
3, 4	MOD0, MOD1	I	Setting terminal for the CPU operational mode Fixed at “L” in this set
5	X0	I	Main system clock input terminal (3.579545 MHz)
6	X1	O	Main system clock output terminal (3.579545 MHz)
7	VCC	—	Power supply terminal (+3V)
8	X0A	I	Sub system clock input terminal (32.768 kHz) Not used (fixed at “L”)
9	X1A	O	Sub system clock output terminal (32.768 kHz) Not used (open)
10	NC	O	Not used (open)
11	<u>TX MUTE</u>	O	Muting control signal output to the LA8633VU (IC403) “L”: muting on At TX mode: During sending data to base unit, muting it
12	<u>RX MUTE</u>	O	Muting control signal output to the LA8633VU (IC403) “L”: muting on At RX mode: After receiving preamble bits from base unit muting it until data sent finished
13	SC	O	Main system power supply (+3V) on/off control signal output “H”: main system power on
14	NC	O	Not used (open)
15, 16	TALK LED	O	LED drive signal output of the TALK/BATT LOW indicator (D408) “L”: LED on
17	KEY LED	O	LED drive signal output of the key back light (D421 to D424) “L”: LED on
18	NC	O	Not used (open)
19	GND	—	Ground terminal
20, 21	NC	O	Not used (open)
22 to 25	ROW4 to ROW1	I	Key scan signal input from the key matrix
26	<u>STPCNT</u>	O	Wakeup control signal output terminal
27	<u>WAKEUP</u>	I	Wakeup input terminal
28	NC	O	Not used (open)
29	<u>BATT OFF</u>	I	Battery level detect signal input from the XC612N3328MR (IC406) “L”: battery off
30 to 34	COL5 to COL1	O	Key scan signal output to the key matrix
35	<u>BATT LOW</u>	I	Battery level detect signal input from the XC612N3328MR (IC406) “L”: battery low level
36	<u>CHG IN</u>	I	Charge detection signal input terminal “L”: charge on
37	<u>CONV</u>	O	Standby control signal output to the LA8633VU (IC403) “L”: standby mode
38	RING OUT	O	Buzzer sound drive signal output terminal
39	RING VOL	O	Buzzer sound level control signal output terminal
40	DATA IN	I	Receive data input from the LA8633VU (IC403)
41	SQ IN	I	Squelch signal (carrier detection signal) input from the MC3361CDR2 (IC401) “L”: carrier present, “H”: no carrier
42	TX B	O	TX system power supply on/off control signal output “L”: TX system power on
43	GND	—	Ground terminal
44	DATA OUT	O	Transmit data output terminal
45	DATA EN	O	Transmit data enable signal output terminal
46	PLL CLK	O	PLL serial data transfer clock signal output to the M64884FP (IC502)
47	PLL DATA	O	PLL serial data output to the M64884FP (IC502)
48	PLL EN	O	Chip enable signal output to the M64884FP (IC502) When PLL EN goes from “L” to “H”, it load data from PLL DATA

SECTION 6

EXPLODED VIEWS

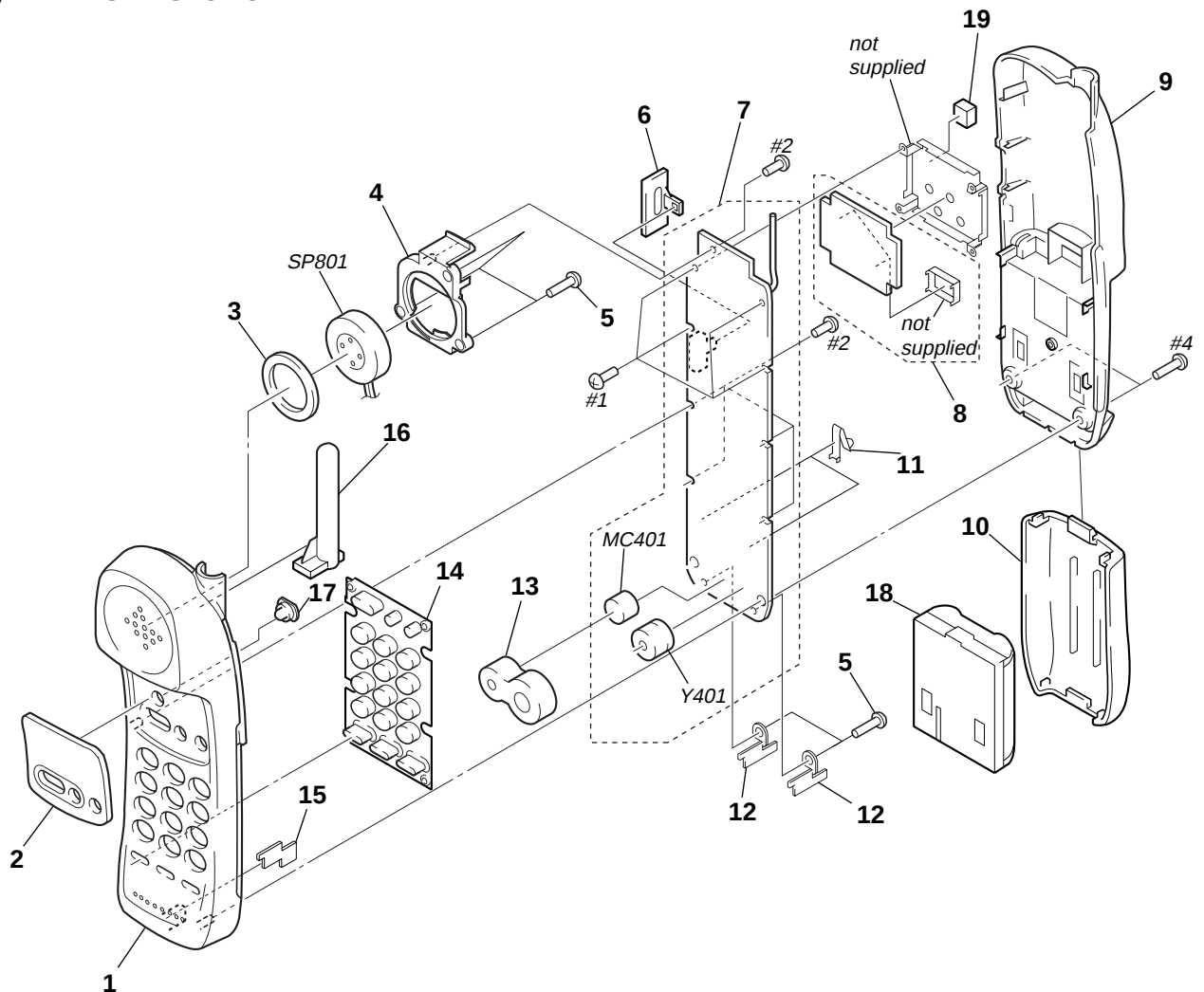
NOTE:

- 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

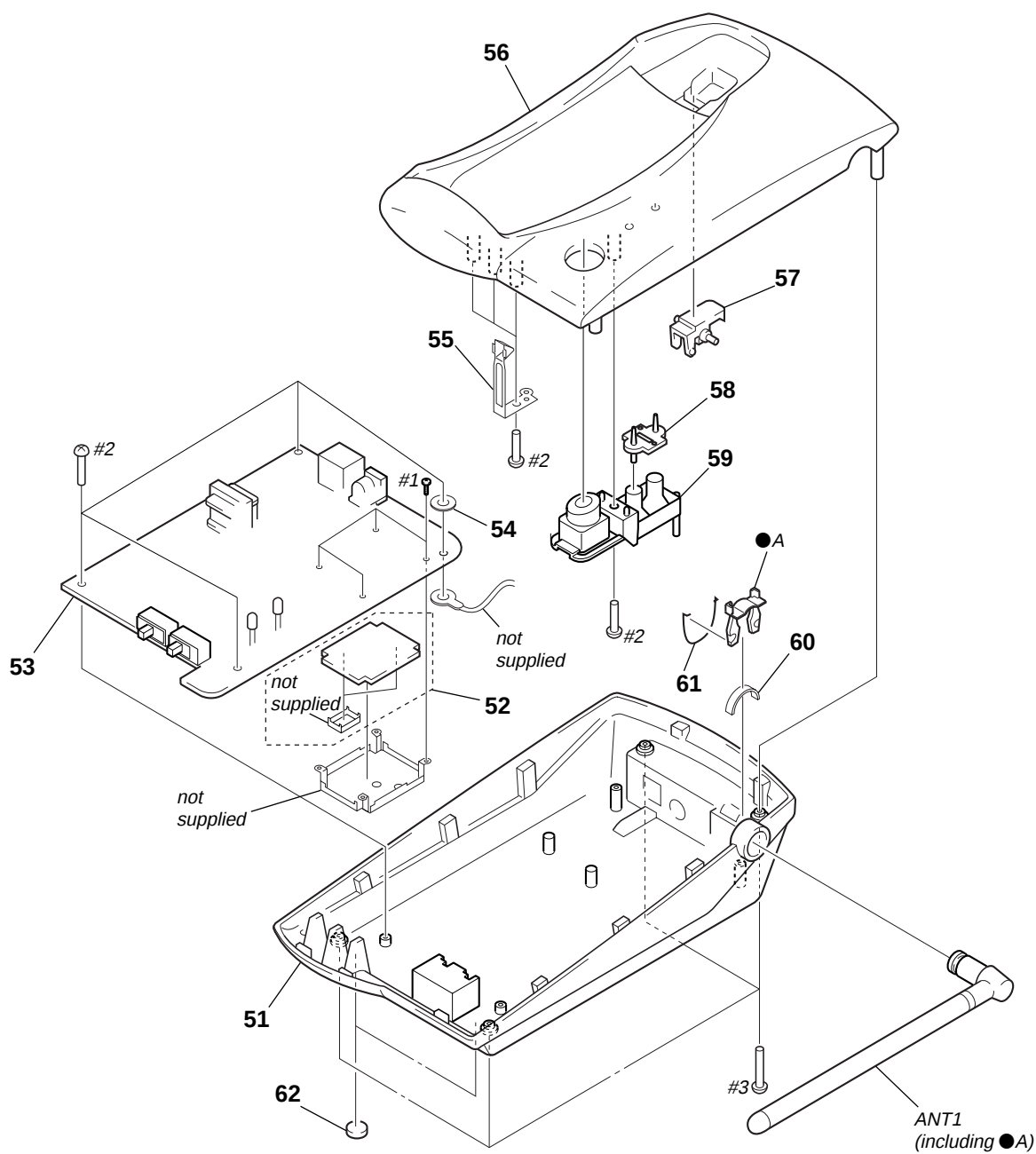
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

(1) HANDSET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	3-036-331-01	CABINET (F) (HS-U)		12	3-036-335-01	TERMINAL (U), CHARGE	
2	3-036-339-01	PANEL (U)		13	3-039-408-01	HOLDER, MIC	
3	3-041-507-01	CUSHION (SP)		14	3-036-328-01	KEY (U), RUBBER (Mexican)	
4	3-039-415-01	HOLDER (SP)		14	3-036-328-21	KEY (U), RUBBER (E)	
5	3-039-417-01	SCREW (2X6) (BTP), TAPPING		15	3-039-407-01	TERMINAL (HS), CHARGE	
6	3-036-329-01	KNOB (U), VOL		16	3-039-405-01	COVER, ANTENNA	
* 7	A-3672-852-A	HAND MAIN BOARD, COMPLETE		17	3-039-414-01	LED (HS), GUIDE, LIGHT	
* 8	A-3672-781-A	HAND RF BOARD, COMPLETE		18	1-756-033-21	BATTERY PACK, NI-CD (BP-T23)	
9	3-036-332-01	CABINET (R) (HS-U)		* 19	3-041-506-01	SHIELD, CUSHION	
10	3-036-121-01	LID (U), BATTERY CASE		MC401	1-542-118-41	MICROPHONE, ELECTRET CONDENSER	
11	3-040-872-01	TERMINAL (HAND), BATTERY		SP801	1-529-541-11	SPEAKER	
				Y401	1-544-603-11	BUZZER	

(2) BASE UNIT SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-036-334-21	CABINET (LOWER) (BASE-U)		57	3-036-336-01	HOOK (U)	
* 52	A-3672-783-A	BASE RF BOARD, COMPLETE		58	3-036-338-01	GUIDE (U), LIGHT	
* 53	A-3672-853-A	BASE MAIN BOARD, COMPLETE		59	3-036-337-01	KEY (U), PAGE	
54	3-039-413-01	WASHER (SP)		60	3-039-401-01	CUSHION	
55	3-036-340-01	SPRING (U), CHARGE		61	3-039-399-01	SPRING, TORSION	
56	3-036-333-21	CABINET (UPPER) (BASE-U)		62	3-039-398-01	BASE, RUBBER FOOT	
				ANT1	1-754-093-11	ANTENNA	

SECTION 7 ELECTRICAL PARTS LIST

BASE MAIN

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. . . : μ A. . . uPA. . . : μ PA. . .
uPB. . . : μ PB. . . uPC. . . : μ PC. . .
uPD. . . : μ PD. . .
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

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

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
*	A-3672-853-A	BASE MAIN BOARD, COMPLETE *****				C44	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V	
						C45	1-164-677-11	CERAMIC CHIP 0.033uF	10%	16V	
	7-621-772-20	SCREW +B 2X5				C46	1-162-966-11	CERAMIC CHIP 0.0022uF	10%	50V	
		< CAPACITOR/VARISTOR >				C47	1-131-712-11	CERAMIC CHIP 0.01uF		50V	
C1	1-162-921-11	CERAMIC CHIP 33PF	5%	50V		C48	1-131-712-11	CERAMIC CHIP 0.01uF		50V	
C2	1-126-961-11	ELECT 2.2uF	20%	50V		C49	1-807-366-11	VARISTOR, CERAMIC			
C3	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C50	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V	
C4	1-164-230-11	CERAMIC CHIP 220PF	5%	50V		C51	1-807-366-11	VARISTOR, CERAMIC			
C5	1-164-230-11	CERAMIC CHIP 220PF	5%	50V		C52	1-126-023-11	ELECT 100uF	20%	16V	
C6	1-162-921-11	CERAMIC CHIP 33PF	5%	50V		C53	1-163-033-00	CERAMIC CHIP 0.022uF		50V	
C7	1-162-959-11	CERAMIC CHIP 330PF	5%	50V		C54	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V	
C8	1-164-173-11	CERAMIC CHIP 0.0039uF	10%	50V		C55	1-126-023-11	ELECT 100uF	20%	16V	
C9	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C56	1-126-924-11	ELECT 330uF	20%	6.3V	
C10	1-126-022-11	ELECT 47uF	20%	10V		C57	1-162-920-11	CERAMIC CHIP 27PF	5%	50V	
C11	1-131-712-11	CERAMIC CHIP 0.01uF		50V		C58	1-162-920-11	CERAMIC CHIP 27PF	5%	50V	
C12	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V		C59	1-126-023-11	ELECT 100uF	20%	16V	
C13	1-126-059-11	ELECT 10uF	20%	50V		C60	1-109-982-11	CERAMIC CHIP 1uF	10%	10V	
C14	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C61	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V	
C17	1-131-711-11	CERAMIC CHIP 0.0056uF		50V		C62	1-162-922-11	CERAMIC CHIP 39PF	5%	50V	
C18	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C63	1-131-712-11	CERAMIC CHIP 0.01uF		50V	
C19	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C64	1-131-712-11	CERAMIC CHIP 0.01uF		50V	
C20	1-807-366-11	VARISTOR, CERAMIC				C65	1-162-917-11	CERAMIC CHIP 15PF	5%	50V	
C22	1-131-712-11	CERAMIC CHIP 0.01uF		50V		C66	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	
C23	1-107-762-11	FILM 0.56uF	5%	250V		C67	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	
C24	1-131-712-11	CERAMIC CHIP 0.01uF		50V		C68	1-162-923-11	CERAMIC CHIP 47PF	5%	50V	
C25	1-131-712-11	CERAMIC CHIP 0.01uF		50V		C70	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	
C26	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V		C71	1-109-982-11	CERAMIC CHIP 1uF	10%	10V	
C27	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V		C72	1-162-964-11	CERAMIC CHIP 0.001uF	10%	50V	
C28	1-126-058-11	ELECT 4.7uF	20%	50V		C73	1-162-912-11	CERAMIC CHIP 7PF	0.5PF	50V	
C30	1-131-712-11	CERAMIC CHIP 0.01uF		50V		C74	1-162-977-11	CERAMIC CHIP 0.0018uF	10%	50V	
C31	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V		C75	1-164-173-11	CERAMIC CHIP 0.0039uF	10%	50V	
C32	1-124-742-11	ELECT 0.47uF	20%	50V		C77	1-162-907-11	CERAMIC CHIP 2PF	0.25PF	50V	
C33	1-126-058-11	ELECT 4.7uF	20%	50V		C78	1-131-712-11	CERAMIC CHIP 0.01uF		50V	
C34	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C79	1-162-966-11	CERAMIC CHIP 0.0022uF	10%	50V	
C35	1-162-966-11	CERAMIC CHIP 0.0022uF	10%	50V		C80	1-107-425-11	CERAMIC 470PF	10%	1KV	
C36	1-126-706-11	ELECT 2.2uF	20%	50V		C81	1-107-425-11	CERAMIC 470PF	10%	1KV	
C37	1-124-673-11	ELECT 100uF	20%	10V		C82	1-162-909-11	CERAMIC CHIP 4PF	0.25PF	50V	
C38	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V		C83	1-107-826-11	CERAMIC CHIP 0.1uF	10%	16V	
C39	1-161-754-00	CERAMIC CHIP 0.001uF	10%	2KV		C99	1-162-921-11	CERAMIC CHIP 33PF	5%	50V	
C41	1-126-044-11	ELECT 1uF	20%	50V				< TRIMMER >			
C42	1-124-742-11	ELECT 0.47uF	20%	50V		CT1	1-131-713-11	CAP, TRIMMER 10PF			
C43	1-131-711-11	CERAMIC CHIP 0.0056uF		50V							

BASE MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< DIODE >				R15	1-216-845-11	METAL CHIP 100K	5% 1/16W
D1	8-719-070-90	DIODE 1N4148		R16	1-216-837-11	METAL CHIP 22K	5% 1/16W
D3	8-719-110-83	DIODE HZ33-2		R17	1-216-021-00	METAL CHIP 68	5% 1/10W
D4	8-719-070-90	DIODE 1N4148		R18	1-216-818-11	METAL CHIP 560	5% 1/16W
D6	8-719-980-67	LED MVR3338S (CHARGE)		R19	1-216-821-11	METAL CHIP 1K	5% 1/16W
D7	8-719-970-07	LED MPG3371X-1-TP-J11K (LINE)		R20	1-216-832-11	METAL CHIP 8.2K	5% 1/16W
D9	8-719-070-90	DIODE 1N4148		R21	1-216-832-11	METAL CHIP 8.2K	5% 1/16W
D10	8-719-070-90	DIODE 1N4148		R22	1-216-843-11	METAL CHIP 68K	5% 1/16W
D11	8-719-991-73	DIODE HZ7A3		R23	1-216-819-11	METAL CHIP 680	5% 1/16W
D13	8-719-109-71	DIODE HZ4B1		R24	1-214-888-00	METAL 10K	1% 1/2W
< CERAMIC FILTER >				R25	1-215-864-00	METAL OXIDE 150	5% 1W F
FT1	1-760-143-42	FILTER, CERAMIC		R26	1-216-849-11	METAL CHIP 220K	5% 1/16W
FT2	1-781-595-11	FILTER, CERAMIC		R27	1-216-817-11	METAL CHIP 470	5% 1/16W
< IC/PHOTO COUPLER >				R28	1-216-864-11	METAL CHIP 0	5% 1/16W
IC1	8-759-641-08	IC LA8633VU-TLM		R29	1-216-833-11	RES, CHIP 10K	5% 1/16W
IC3	8-759-375-39	IC MC3361CDR2		R30	1-216-821-11	METAL CHIP 1K	5% 1/16W
IC4	8-719-156-72	PHOTO COUPLER PS2501-1-K		R33	1-216-849-11	METAL CHIP 220K	5% 1/16W
IC5	8-759-641-09	IC MB89173PF-G-256-BND		R34	1-216-843-11	METAL CHIP 68K	5% 1/16W
IC6	8-759-443-74	IC RH5VL28CA-T1		R36	1-216-809-11	METAL CHIP 100	5% 1/16W
< JACK >				R37	1-216-821-11	METAL CHIP 1K	5% 1/16W
J1	1-766-250-21	JACK, MODULAR (2C) 6P (LINE)		R38	1-208-770-11	METAL CHIP 330	2% 1/10W
J2	1-580-727-11	JACK (DC IN 9V)		R39	1-216-603-11	METAL CHIP 10	0.5% 1/10W
< COIL >				R40	1-216-837-11	METAL CHIP 22K	5% 1/16W
L2	1-412-986-41	INDUCTOR 3.9uH		R41	1-216-836-11	METAL CHIP 18K	5% 1/16W
L3	1-419-289-11	COIL, OSC		R42	1-216-821-11	METAL CHIP 1K	5% 1/16W
L6	1-403-654-11	INDUCTOR 3.9nH		R43	1-216-813-11	METAL CHIP 220	5% 1/16W
< TRANSISTOR >				R44	1-216-813-11	METAL CHIP 220	5% 1/16W
Q1	8-729-200-87	TRANSISTOR 2SC2714-Y		R45	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q2	8-729-120-28	TRANSISTOR 2SC1623-L6		R46	1-216-845-11	METAL CHIP 100K	5% 1/16W
Q3	8-729-120-28	TRANSISTOR 2SC1623-L6		R47	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
Q4	8-729-120-28	TRANSISTOR 2SC1623-L6		R48	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q6	8-729-120-28	TRANSISTOR 2SC1623-L6		R49	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q7	8-729-050-08	TRANSISTOR 2SD471-T		R50	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q8	8-729-050-08	TRANSISTOR 2SD471-T		R51	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
Q9	8-729-120-28	TRANSISTOR 2SC1623-L6		R52	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q10	8-729-120-28	TRANSISTOR 2SC1623-L6		R53	1-216-838-11	METAL CHIP 27K	5% 1/16W
Q11	8-729-050-08	TRANSISTOR 2SD471-T		R54	1-216-821-11	METAL CHIP 1K	5% 1/16W
Q12	8-729-216-22	TRANSISTOR 2SA812-M6		R55	1-216-821-11	METAL CHIP 1K	5% 1/16W
< RESISTOR >				R56	1-216-833-11	RES, CHIP 10K	5% 1/16W
R1	1-216-819-11	METAL CHIP 680	5% 1/16W	R57	1-216-841-11	METAL CHIP 47K	5% 1/16W
R2	1-216-836-11	METAL CHIP 18K	5% 1/16W	R58	1-216-845-11	METAL CHIP 100K	5% 1/16W
R3	1-216-825-11	METAL CHIP 2.2K	5% 1/16W	R59	1-216-833-11	RES, CHIP 10K	5% 1/16W
R4	1-216-853-11	METAL CHIP 470K	5% 1/16W	R60	1-216-178-00	RES, CHIP 150	5% 1/8W
R5	1-216-827-11	METAL CHIP 3.3K	5% 1/16W	R61	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
R6	1-216-833-11	RES, CHIP 10K	5% 1/16W	R62	1-216-841-11	METAL CHIP 47K	5% 1/16W
R8	1-216-853-11	METAL CHIP 470K	5% 1/16W	R63	1-216-823-11	METAL CHIP 1.5K	5% 1/16W
R9	1-216-814-11	METAL CHIP 270	5% 1/16W	R64	1-216-821-11	METAL CHIP 1K	5% 1/16W
R10	1-216-825-11	METAL CHIP 2.2K	5% 1/16W	R65	1-216-813-11	METAL CHIP 220	5% 1/16W
R11	1-216-833-11	RES, CHIP 10K	5% 1/16W	R66	1-216-841-11	METAL CHIP 47K	5% 1/16W
R13	1-216-837-11	METAL CHIP 22K	5% 1/16W	R67	1-216-821-11	METAL CHIP 1K	5% 1/16W
R14	1-216-840-11	METAL CHIP 39K	5% 1/16W	R68	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R69	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R70	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R71	1-216-821-11	METAL CHIP 1K	5% 1/16W
				R72	1-216-801-11	METAL CHIP 22	5% 1/16W
				R73	1-216-821-11	METAL CHIP 1K	5% 1/16W
				R74	1-216-845-11	METAL CHIP 100K	5% 1/16W
				R75	1-216-821-11	METAL CHIP 1K	5% 1/16W

BASE RF

35

BASE RF

HAND MAIN

Ref. No.	Part No.	Description	Remark
C390	1-131-712-11	CERAMIC CHIP 0.01uF	50V
C397	1-162-927-11	CERAMIC CHIP 100PF 5%	50V
C398	1-162-927-11	CERAMIC CHIP 100PF 5%	50V
< DIODE >			
D302	8-719-076-89	DIODE 1SV270 (TRH3)	
D303	8-719-076-90	DIODE 1SV314	
< FILTER >			
FT301	1-781-631-11	FILTER, SAW	
< IC >			
IC302	8-759-641-06	IC M64884FP-C60J	
< COIL >			
L301	1-403-662-11	INDUCTOR 18nH	
L302	1-403-657-11	INDUCTOR 6.8nH	
L303	1-403-656-11	INDUCTOR 5.6nH	
L304	1-412-987-31	INDUCTOR 4.7uH	
L306	1-403-660-11	INDUCTOR 12nH	
L307	1-403-657-11	INDUCTOR 6.8nH	
L309	1-403-666-11	INDUCTOR 39nH	
L310	1-403-662-11	INDUCTOR 18nH	
< TRANSISTOR >			
Q301	8-729-050-34	TRANSISTOR 2SC4095-R47T1	
Q302	8-729-216-22	TRANSISTOR 2SA812-T1M6	
Q306	8-729-050-35	TRANSISTOR 2SC5065-Y (TE85R)	
Q307	8-729-050-35	TRANSISTOR 2SC5065-Y (TE85R)	
Q312	8-729-050-35	TRANSISTOR 2SC5065-Y (TE85R)	
< RESISTOR >			
R302	1-216-841-11	METAL CHIP 47K 5%	1/16W
R303	1-216-795-11	RES, CHIP 6.8 5%	1/16W
R304	1-216-813-11	METAL CHIP 220 5%	1/16W
R305	1-216-833-11	RES, CHIP 10K 5%	1/16W
R306	1-216-821-11	METAL CHIP 1K 5%	1/16W
R307	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R309	1-216-833-11	RES, CHIP 10K 5%	1/16W
R316	1-216-864-11	METAL CHIP 0 5%	1/16W
R317	1-216-816-11	METAL CHIP 390 5%	1/16W
R319	1-216-864-11	METAL CHIP 0 5%	1/16W
R320	1-216-845-11	METAL CHIP 100K 5%	1/16W
R321	1-216-833-11	RES, CHIP 10K 5%	1/16W
R322	1-216-803-11	METAL CHIP 33 5%	1/16W
R326	1-216-833-11	RES, CHIP 10K 5%	1/16W
R327	1-216-821-11	METAL CHIP 1K 5%	1/16W
R328	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R329	1-216-816-11	METAL CHIP 390 5%	1/16W
R330	1-216-797-11	METAL CHIP 10 5%	1/16W
R331	1-216-802-11	RES, CHIP 27 5%	1/16W
R332	1-216-821-11	METAL CHIP 1K 5%	1/16W
R333	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R339	1-216-851-11	METAL CHIP 330K 5%	1/16W
R340	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R341	1-216-821-11	METAL CHIP 1K 5%	1/16W
R342	1-216-811-11	METAL CHIP 150 5%	1/16W

Ref. No.	Part No.	Description	Remark
R344	1-216-803-11	METAL CHIP 33 5%	1/16W
R348	1-216-864-11	METAL CHIP 0 5%	1/16W
R351	1-216-809-11	METAL CHIP 100 5%	1/16W
R352	1-216-797-11	METAL CHIP 10 5%	1/16W
R353	1-216-840-11	METAL CHIP 39K 5%	1/16W
R354	1-216-836-11	METAL CHIP 18K 5%	1/16W
R359	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R361	1-216-839-11	METAL CHIP 33K 5%	1/16W
R397	1-216-821-11	METAL CHIP 1K 5%	1/16W
R398	1-216-821-11	METAL CHIP 1K 5%	1/16W
R399	1-216-821-11	METAL CHIP 1K 5%	1/16W
< VARIABLE RESISTOR >			
RT301	1-238-663-11	RES, ADJ, CARBON 4.7K	

*	A-3672-852-A	HAND MAIN BOARD, COMPLETE	

	7-621-772-20	SCREW +B 2X5	
< CAPACITOR >			
C401	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C402	1-109-982-11	CERAMIC CHIP 1uF 10%	10V
C403	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C404	1-164-230-11	CERAMIC CHIP 220PF 5%	50V
C405	1-164-230-11	CERAMIC CHIP 220PF 5%	50V
C406	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C407	1-162-959-11	CERAMIC CHIP 330PF 5%	50V
C408	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C409	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C410	1-131-712-11	CERAMIC CHIP 0.01uF 50V	
C414	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C416	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C417	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C418	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C419	1-131-711-11	CERAMIC CHIP 0.0056uF 50V	
C421	1-162-923-11	CERAMIC CHIP 47PF 5%	50V
C422	1-162-922-11	CERAMIC CHIP 39PF 5%	50V
C423	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C424	1-131-712-11	CERAMIC CHIP 0.01uF 50V	
C425	1-162-908-11	CERAMIC CHIP 3PF 0.25PF 50V	
C426	1-131-712-11	CERAMIC CHIP 0.01uF 50V	
C427	1-162-916-11	CERAMIC CHIP 12PF 5%	50V
C428	1-162-927-11	CERAMIC CHIP 100PF 5%	50V
C430	1-162-927-11	CERAMIC CHIP 100PF 5%	50V
C431	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V
C432	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C433	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V
C434	1-131-712-11	CERAMIC CHIP 0.01uF 50V	
C435	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C437	1-131-712-11	CERAMIC CHIP 0.01uF 50V	
C438	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C439	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C440	1-164-492-11	CERAMIC CHIP 0.15uF 10%	16V
C441	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V
C442	1-131-712-11	CERAMIC CHIP 0.01uF 50V	
C443	1-164-005-11	CERAMIC CHIP 0.47uF 25V	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C444	1-135-181-21	TANTALUM CHIP	4.7uF 20% 6.3V			< IC >	
C445	1-164-005-11	CERAMIC CHIP	0.47uF 25V				
C446	1-131-712-11	CERAMIC CHIP	0.01uF 50V	IC401	8-759-375-39	IC MC3361CDR2	
C447	1-164-489-11	CERAMIC CHIP	0.22uF 10% 16V	IC403	8-759-641-08	IC LA8633VU-TLM	
				IC404	8-759-641-12	IC MB89174PF-G-257-BND	
C448	1-164-173-11	CERAMIC CHIP	0.0039uF 10% 50V	IC405	8-759-641-10	IC TK11130SCL	
C449	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	IC406	8-759-641-07	IC XC612N3328MR	
C450	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V			< COIL >	
C451	1-126-163-11	ELECT	4.7uF 20% 50V				
C452	1-162-908-11	CERAMIC CHIP	3PF 0.25PF 50V	L401	1-412-986-41	INDUCTOR	3.9uH
				L402	1-419-289-11	COIL, OSC	
C453	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	L403	1-403-656-11	INDUCTOR	5.6nH
C454	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V			< MIC >	
C455	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V				
C456	1-104-396-11	ELECT	10uF 20% 16V	MC401	1-542-118-41	MICROPHONE, ELECTRET CONDENSER	
C457	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V			< TRANSISTOR >	
C458	1-162-906-11	CERAMIC CHIP	1.5PF 0.25PF 50V	Q401	8-729-200-87	TRANSISTOR	2SC2714-Y
C459	1-162-921-11	CERAMIC CHIP	33PF 5% 50V	Q402	8-729-120-28	TRANSISTOR	2SC1623-L6
C460	1-162-921-11	CERAMIC CHIP	33PF 5% 50V	Q403	8-729-216-22	TRANSISTOR	2SA812-M6
C461	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	Q404	8-729-120-28	TRANSISTOR	2SC1623-L6
C462	1-131-712-11	CERAMIC CHIP	0.01uF 50V	Q405	8-729-120-28	TRANSISTOR	2SC1623-L6
C463	1-131-712-11	CERAMIC CHIP	0.01uF 50V	Q406	8-729-120-28	TRANSISTOR	2SC1623-L6
C464	1-164-346-11	CERAMIC CHIP	1uF 16V	Q408	8-729-800-37	TRANSISTOR	2SD1048-X7
C465	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	Q409	8-729-800-37	TRANSISTOR	2SD1048-X7
C466	1-162-967-11	CERAMIC CHIP	0.0033uF 10% 50V	Q410	8-729-120-28	TRANSISTOR	2SC1623-L6
C467	1-126-206-11	ELECT CHIP	100uF 20% 6.3V	Q411	8-729-120-28	TRANSISTOR	2SC1623-L6
C468	1-131-712-11	CERAMIC CHIP	0.01uF 50V	Q412	8-729-120-28	TRANSISTOR	2SC1623-L6
C469	1-135-259-11	TANTALUM CHIP	10uF 20% 6.3V	Q421	8-729-216-22	TRANSISTOR	2SA812-M6
C470	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V			< RESISTOR >	
C471	1-131-712-11	CERAMIC CHIP	0.01uF 50V				
C472	1-131-712-11	CERAMIC CHIP	0.01uF 50V	R401	1-216-849-11	METAL CHIP	220K 5% 1/16W
				R402	1-216-864-11	METAL CHIP	0 5% 1/16W
C473	1-107-826-11	CERAMIC CHIP	0.1uF 10% 16V	R403	1-216-819-11	METAL CHIP	680 5% 1/16W
C474	1-135-259-11	TANTALUM CHIP	10uF 20% 6.3V	R404	1-216-817-11	METAL CHIP	470 5% 1/16W
C491	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	R405	1-216-836-11	METAL CHIP	18K 5% 1/16W
		< TRIMMER >		R406	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
CT401	1-131-713-11	CAP, TRIMMER	10PF	R407	1-216-853-11	METAL CHIP	470K 5% 1/16W
				R408	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
		< DIODE >		R409	1-216-833-11	RES, CHIP	10K 5% 1/16W
D401	8-719-976-19	DIODE RLS-4148		R410	1-216-853-11	METAL CHIP	470K 5% 1/16W
D402	8-719-976-19	DIODE RLS-4148					
D403	8-719-943-60	DIODE HZ6CT2		R411	1-216-814-11	METAL CHIP	270 5% 1/16W
D404	8-719-943-60	DIODE HZ6CT2		R412	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
D405	8-719-976-19	DIODE RLS-4148		R414	1-216-835-11	METAL CHIP	15K 5% 1/16W
				R416	1-216-837-11	METAL CHIP	22K 5% 1/16W
D406	8-719-976-19	DIODE RLS-4148		R417	1-216-845-11	METAL CHIP	100K 5% 1/16W
D407	8-719-017-42	DIODE HSM88WA-TL					
D408	8-719-053-09	LED SML-310VTT86 (TALK/BATT LOW)		R418	1-216-837-11	METAL CHIP	22K 5% 1/16W
D421	8-719-063-83	LED SML-310MTT86 (KEY BACK LIGHT)		R419	1-216-813-11	METAL CHIP	220 5% 1/16W
D422	8-719-063-83	LED SML-310MTT86 (KEY BACK LIGHT)		R420	1-216-813-11	METAL CHIP	220 5% 1/16W
				R421	1-216-833-11	RES, CHIP	10K 5% 1/16W
D423	8-719-063-83	LED SML-310MTT86 (KEY BACK LIGHT)		R422	1-216-821-11	METAL CHIP	1K 5% 1/16W
D424	8-719-063-83	LED SML-310MTT86 (KEY BACK LIGHT)					
D431	8-719-943-60	DIODE HZ6CT2		R423	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
D432	8-719-943-60	DIODE HZ6CT2		R427	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
				R428	1-216-821-11	METAL CHIP	1K 5% 1/16W
		< CERAMIC FILTER >		R429	1-216-845-11	METAL CHIP	100K 5% 1/16W
FT401	1-760-143-42	FILTER, CERAMIC		R430	1-216-821-11	METAL CHIP	1K 5% 1/16W
FT402	1-781-595-11	FILTER, CERAMIC					
				R431	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
				R432	1-216-825-11	METAL CHIP	2.2K 5% 1/16W

HAND MAIN

HAND RF

Ref. No.	Part No.	Description	Remark
R433	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R434	1-216-853-11	METAL CHIP 470K 5%	1/16W
R435	1-216-836-11	METAL CHIP 18K 5%	1/16W
R436	1-216-835-11	METAL CHIP 15K 5%	1/16W
R437	1-216-805-11	METAL CHIP 47 5%	1/16W
R438	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R439	1-216-835-11	METAL CHIP 15K 5%	1/16W
R440	1-216-836-11	METAL CHIP 18K 5%	1/16W
R441	1-216-842-11	METAL CHIP 56K 5%	1/16W
R442	1-216-844-11	METAL CHIP 82K 5%	1/16W
R443	1-216-845-11	METAL CHIP 100K 5%	1/16W
R444	1-216-845-11	METAL CHIP 100K 5%	1/16W
R445	1-216-838-11	METAL CHIP 27K 5%	1/16W
R448	1-216-821-11	METAL CHIP 1K 5%	1/16W
R449	1-216-821-11	METAL CHIP 1K 5%	1/16W
R450	1-216-821-11	METAL CHIP 1K 5%	1/16W
R451	1-216-845-11	METAL CHIP 100K 5%	1/16W
R452	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R453	1-216-820-11	METAL CHIP 820 5%	1/16W
R454	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R455	1-216-821-11	METAL CHIP 1K 5%	1/16W
R456	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R457	1-216-808-11	METAL CHIP 82 5%	1/16W
R458	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R459	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R460	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R461	1-216-833-11	RES, CHIP 10K 5%	1/16W
R462	1-216-833-11	RES, CHIP 10K 5%	1/16W
R463	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R464	1-216-801-11	METAL CHIP 22 5%	1/16W
R465	1-216-821-11	METAL CHIP 1K 5%	1/16W
R466	1-216-821-11	METAL CHIP 1K 5%	1/16W
R467	1-216-839-11	METAL CHIP 33K 5%	1/16W
R468	1-216-839-11	METAL CHIP 33K 5%	1/16W
R469	1-216-841-11	METAL CHIP 47K 5%	1/16W
R470	1-216-835-11	METAL CHIP 15K 5%	1/16W
R471	1-216-845-11	METAL CHIP 100K 5%	1/16W
R472	1-216-817-11	METAL CHIP 470 5%	1/16W
R473	1-216-821-11	METAL CHIP 1K 5%	1/16W
R474	1-216-854-11	METAL CHIP 560K 5%	1/16W
R475	1-216-845-11	METAL CHIP 100K 5%	1/16W
R476	1-216-847-11	METAL CHIP 150K 5%	1/16W
R477	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R478	1-216-864-11	METAL CHIP 0 5%	1/16W
R480	1-216-845-11	METAL CHIP 100K 5%	1/16W
R481	1-216-835-11	METAL CHIP 15K 5%	1/16W
R482	1-216-835-11	METAL CHIP 15K 5%	1/16W
R483	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R484	1-216-129-00	METAL CHIP 2.2M 5%	1/10W
R490	1-216-820-11	METAL CHIP 820 5%	1/16W
R491	1-216-821-11	METAL CHIP 1K 5%	1/16W
R492	1-216-815-11	METAL CHIP 330 5%	1/16W
R493	1-216-815-11	METAL CHIP 330 5%	1/16W
R494	1-216-815-11	METAL CHIP 330 5%	1/16W
R495	1-216-815-11	METAL CHIP 330 5%	1/16W

Ref. No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RT401	1-223-590-21	RES, ADJ, CARBON 220K	
RT402	1-223-589-11	RES, ADJ, CARBON 100K	
RT403	1-223-587-11	RES, ADJ, CARBON 22K	
		< SWITCH >	
S401	1-771-811-11	SWITCH, SLIDE (VOL)	
		< VIBRATOR >	
X401	1-781-596-11	VIBRATOR, CRYSTAL (10.1MHz)	
X402	1-760-311-11	VIBRATOR, CRYSTAL (3.579545MHz)	
		< BUZZER >	
Y401	1-544-603-11	BUZZER	

*	A-3672-781-A	HAND RF BOARD, COMPLETE	

		< CAPACITOR >	
C501	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V
C502	1-162-916-11	CERAMIC CHIP 12PF 5%	50V
C503	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V
C504	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C505	1-162-912-11	CERAMIC CHIP 7PF 0.5PF	50V
C506	1-162-904-11	CERAMIC CHIP 0.5PF 0.25PF	50V
C507	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C508	1-162-907-11	CERAMIC CHIP 2PF 0.25PF	50V
C509	1-131-707-11	CERAMIC CHIP 5PF	50V
C510	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C511	1-162-920-11	CERAMIC CHIP 27PF 5%	50V
C512	1-131-712-11	CERAMIC CHIP 0.01uF	50V
C514	1-131-712-11	CERAMIC CHIP 0.01uF	50V
C519	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C520	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C521	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C523	1-131-707-11	CERAMIC CHIP 5PF	50V
C524	1-131-707-11	CERAMIC CHIP 5PF	50V
C525	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C526	1-131-712-11	CERAMIC CHIP 0.01uF	50V
C527	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V
C533	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C534	1-131-707-11	CERAMIC CHIP 5PF	50V
C535	1-131-705-11	CERAMIC CHIP 3PF	50V
C536	1-162-967-11	CERAMIC CHIP 0.0033uF 10%	50V
C537	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V
C538	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C539	1-135-194-21	TANTALUM CHIP 0.22uF 10%	35V
C540	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C541	1-131-706-11	CERAMIC CHIP 4PF	50V
C542	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V
C543	1-162-926-11	CERAMIC CHIP 82PF 5%	50V
C544	1-131-712-11	CERAMIC CHIP 0.01uF	50V
C545	1-164-813-11	CERAMIC CHIP 15PF 2%	50V
C546	1-164-813-11	CERAMIC CHIP 15PF 2%	50V
C547	1-131-708-11	CERAMIC CHIP 6PF	50V
C548	1-131-712-11	CERAMIC CHIP 0.01uF	50V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C549	1-131-709-11	CERAMIC CHIP 7PF	50V	Q507	8-729-050-35	TRANSISTOR 2SC5065-Y (TE85R)	
C550	1-164-813-11	CERAMIC CHIP 15PF 2%	50V	Q512	8-729-050-35	TRANSISTOR 2SC5065-Y (TE85R)	
C551	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	< RESISTOR >			
C553	1-131-712-11	CERAMIC CHIP 0.01uF	50V	R502	1-216-841-11	METAL CHIP 47K 5%	1/16W
C557	1-135-238-21	TANTALUM CHIP 6.8uF 20%	10V	R503	1-216-795-11	RES, CHIP 6.8 5%	1/16W
C558	1-131-712-11	CERAMIC CHIP 0.01uF	50V	R504	1-216-813-11	METAL CHIP 220 5%	1/16W
C560	1-135-243-11	TANTALUM CHIP 10uF 20%	6.3V	R505	1-216-833-11	RES, CHIP 10K 5%	1/16W
C562	1-131-705-11	CERAMIC CHIP 3PF	50V	R506	1-216-821-11	METAL CHIP 1K 5%	1/16W
C563	1-162-912-11	CERAMIC CHIP 7PF 0.5PF	50V	R507	1-216-827-11	RES, CHIP 3.3K 5%	1/16W
C564	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	R509	1-216-833-11	RES, CHIP 10K 5%	1/16W
C565	1-162-921-11	CERAMIC CHIP 33PF 5%	50V	R516	1-216-864-11	METAL CHIP 0 5%	1/16W
C566	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	R517	1-216-816-11	METAL CHIP 390 5%	1/16W
C567	1-131-712-11	CERAMIC CHIP 0.01uF	50V	R519	1-216-864-11	METAL CHIP 0 5%	1/16W
C568	1-162-909-11	CERAMIC CHIP 4PF 0.25PF	50V	R520	1-216-845-11	METAL CHIP 100K 5%	1/16W
C569	1-162-921-11	CERAMIC CHIP 33PF 5%	50V	R521	1-216-833-11	RES, CHIP 10K 5%	1/16W
C570	1-162-910-11	CERAMIC CHIP 5PF 0.25PF	50V	R522	1-216-809-11	METAL CHIP 100 5%	1/16W
C571	1-131-712-11	CERAMIC CHIP 0.01uF	50V	R526	1-216-833-11	RES, CHIP 10K 5%	1/16W
C572	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R527	1-216-821-11	METAL CHIP 1K 5%	1/16W
C573	1-162-911-11	CERAMIC CHIP 6PF 0.5PF	50V	R528	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
C574	1-162-907-11	CERAMIC CHIP 2PF 0.25PF	50V	R529	1-216-816-11	METAL CHIP 390 5%	1/16W
C575	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V	R530	1-216-797-11	METAL CHIP 10 5%	1/16W
C576	1-162-909-11	CERAMIC CHIP 4PF 0.25PF	50V	R531	1-216-802-11	RES, CHIP 27 5%	1/16W
C578	1-162-921-11	CERAMIC CHIP 33PF 5%	50V	R532	1-216-821-11	METAL CHIP 1K 5%	1/16W
C579	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R533	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
C580	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R539	1-216-851-11	METAL CHIP 330K 5%	1/16W
C581	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R540	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
C582	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R541	1-216-821-11	METAL CHIP 1K 5%	1/16W
C583	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R542	1-216-811-11	METAL CHIP 150 5%	1/16W
C586	1-131-712-11	CERAMIC CHIP 0.01uF	50V	R544	1-216-803-11	METAL CHIP 33 5%	1/16W
C590	1-131-712-11	CERAMIC CHIP 0.01uF	50V	R548	1-216-864-11	METAL CHIP 0 5%	1/16W
C597	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R551	1-216-809-11	METAL CHIP 100 5%	1/16W
C598	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	R552	1-216-797-11	METAL CHIP 10 5%	1/16W
< DIODE >				R553	1-216-840-11	METAL CHIP 39K 5%	1/16W
D502	8-719-076-89	DIODE 1SV270 (TPH3)		R554	1-216-836-11	METAL CHIP 18K 5%	1/16W
D503	8-719-076-90	DIODE 1SV314		R559	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
< FILTER >				R561	1-216-839-11	METAL CHIP 33K 5%	1/16W
FT501	1-781-631-11	FILTER, SAW		R597	1-216-821-11	METAL CHIP 1K 5%	1/16W
< IC >				R598	1-216-821-11	METAL CHIP 1K 5%	1/16W
IC502	8-759-641-06	IC M64884FP-C60J		R599	1-216-821-11	METAL CHIP 1K 5%	1/16W
< COIL >				< VARIABLE RESISTOR >			
L501	1-403-663-41	INDUCTOR 22nH		RT501	1-238-663-11	RES, ADJ, CARBON 4.7K	
L502	1-403-657-11	INDUCTOR 6.8nH		*****			
L503	1-403-661-11	INDUCTOR 15nH		MISCELLANEOUS			
L504	1-412-987-31	INDUCTOR 4.7uH		*****			
L506	1-403-660-11	INDUCTOR 12nH		18	1-756-033-21	BATTERY PACK, NI-CD (BP-T23)	
L507	1-403-657-11	INDUCTOR 6.8nH		ANT1	1-754-093-11	ANTNNA	
L509	1-403-665-11	INDUCTOR 33nH		SP801	1-529-541-11	SPEAKER	
L510	1-403-664-11	INDUCTOR 27nH		*****			
< TRANSISTOR >				*****			
Q501	8-729-050-34	TRANSISTOR 2SC4095-R47T1		HARDWARE LIST			
Q502	8-729-216-22	TRANSISTOR 2SA812-T1M6		*****			
Q506	8-729-050-35	TRANSISTOR 2SC5065-Y (TE85R)		#1	7-621-772-20	SCREW +B 2X5	
				#2	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
				#3	7-685-535-19	SCREW +BTP 2.6X10 TYPE2 N-S	

Ref. No.	Part No.	Description	Remark
#4	7-685-536-19	SCREW +BTP 2.6X12 TYPE2 N-S	

ACCESSORIES & PACKING MATERIALS

△	1-418-615-11	ADAPTOR, AC (AC-T127)	
	1-696-453-21	CORD (WITH MODULAR PLUG) (LINE) (22cm)	
	1-696-454-11	CORD (WITH MODULAR PLUG) (LINE)	
		(2m15cm)	
	1-756-033-21	BATTERY PACK, NI-CD (BP-T23)	
	3-010-356-11	LABEL (MEMORY)	
	3-012-379-21	ADAPTOR, WALL HOOK	
	3-867-099-31	MANUAL, INSTRUCTION (ENGLISH, SPANISH)	
		(E)	
	3-867-099-41	MANUAL, INSTRUCTION (ENGLISH, SPANISH)	
		(Mexican)	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.