

# SPP-SS964

## SERVICE MANUAL

*E Model*



### SPECIFICATIONS

#### General

Spread method  
Direct-Sequence Spread-Spectrum

Access method  
FDMA-TDD

Frequency band  
902 - 928 MHz

Operating channel  
20 channels

Dial signal  
Tone, 10 PPS (pulse) selectable

Supplied accessories  
AC power adaptor (AC-T46)  
Telephone line cord  
Wall bracket/stand for base phone  
Rechargeable battery pack (BP-T24)  
Directories

#### Handset

Power source  
Rechargeable battery pack BP-T24

Battery life  
Standby: Approx. 10 days (RING ON mode)  
Approx. A month (RING OFF mode)

Talk: Approx. 6 hours

Dimensions  
Approx. 58 x 177 x 46 mm (w/h/d), antenna excluded  
(approx. 2 <sup>3</sup>/<sub>8</sub> x 7 x 1 <sup>13</sup>/<sub>16</sub> inches)

Antenna: Approx. 72 mm  
(approx. 2 <sup>7</sup>/<sub>8</sub> inches)

Mass  
Approx. 250 g  
(approx. 8.8 oz), battery included

#### Base phone

Power source  
DC 9V from AC power adaptor AC-T46

Battery charging time  
Approx. 12 hours

Dimensions  
Approx. 170 x 60 x 214 mm (w/h/d), antenna excluded  
(approx. 6 <sup>3</sup>/<sub>4</sub> x 2 <sup>3</sup>/<sub>8</sub> x 8 <sup>1</sup>/<sub>2</sub> inches)

Antenna: Approx. 165 mm  
(approx. 6 <sup>1</sup>/<sub>2</sub> inches)

Mass  
Approx. 530 g  
(approx. 1 lb 3 oz), wall bracket excluded

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!!

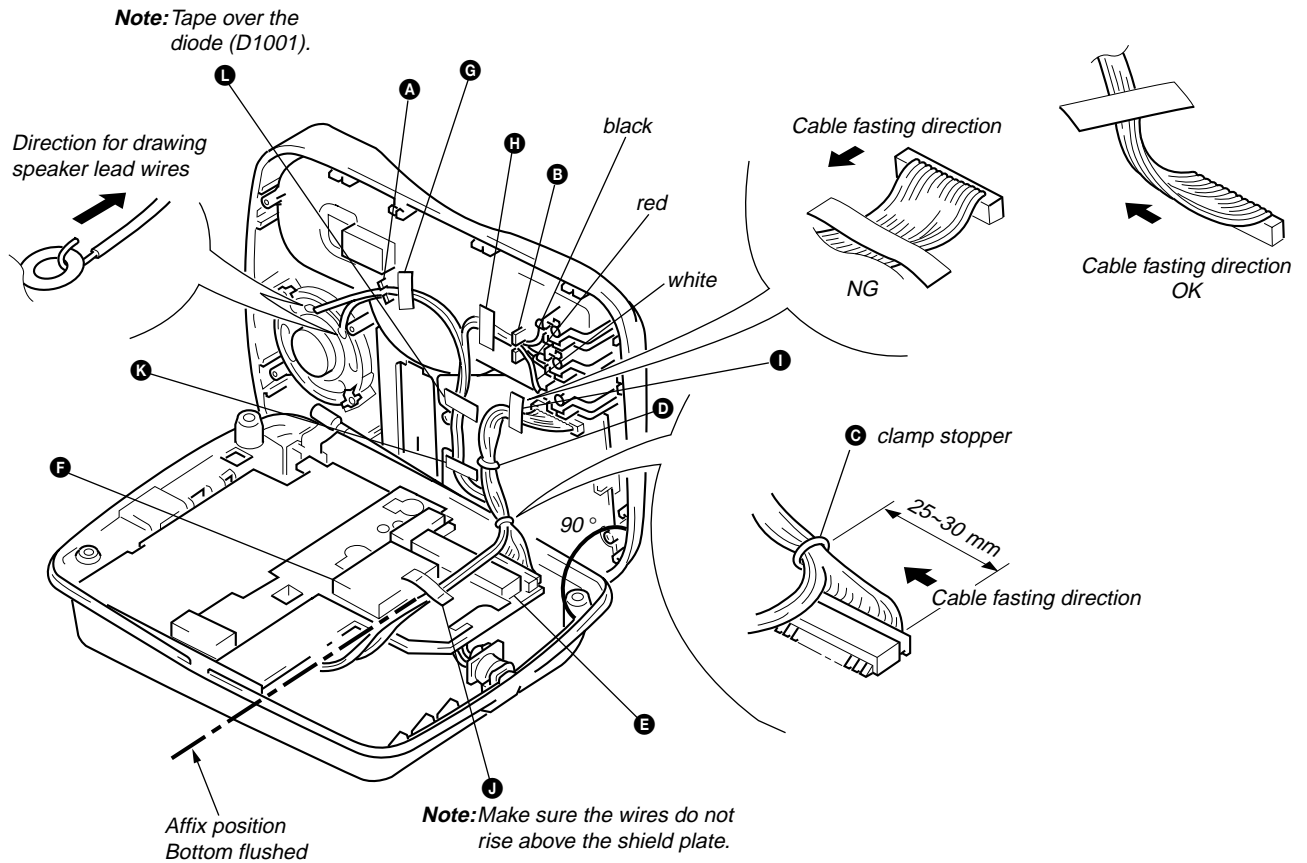
COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

# SECTION 1 SERVICING NOTES

## CABLE FASTENING METHOD

- TDD noise may be generated in the intercom or handset speech depending on how the cables are fastened, and therefore fasten the cables as shown below.

- ① Erect the cabinet (upper) 90 degrees.
- ② Insert the wires in the ribs at **A** and **B**.
- ③ Clamp them at **C** and **D**.
- ④ Affix the sponges at **E** and **F** positions.
- ⑤ Fix the cables with tapes at **G** to **L** positions.



## Step 2

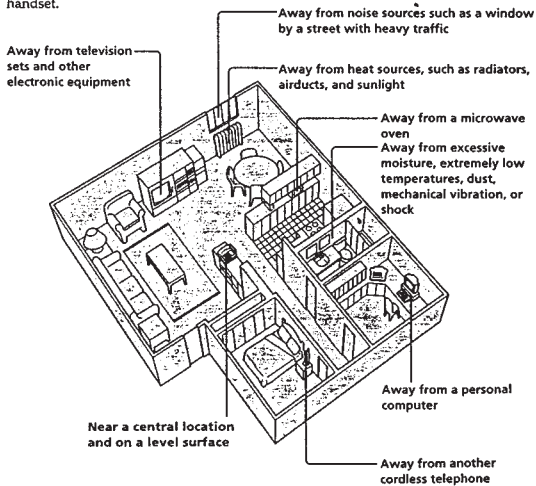
### Setting up the base phone

Do the following steps:

- Choose the best location
- Connect the base phone
- Choose the dialing mode

#### Choose the best location

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

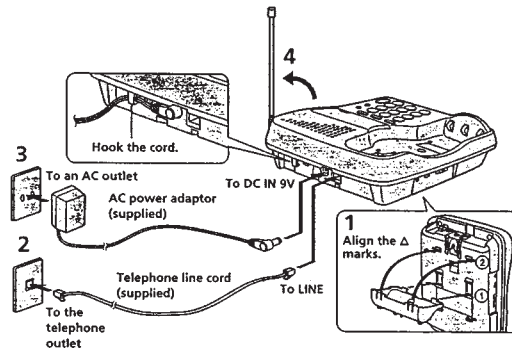


**CAUTION:** • Should you experience intermittent loss of audio during a conversation, try moving closer to the base or move base phone away from other noise sources.  
• The cordless telephone operates at a frequency that may cause interference to nearby TVs and VCRs; the base phone should not be placed 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.

6<sup>th</sup> Getting Started

### Connect the base phone

If you want to hang the base phone on the wall, see page 29.



- 1 Attach the wall bracket to the bottom of the base phone as illustrated to use it as a stand.
- 2 Connect the telephone line cord to the LINE jack and to a telephone outlet.
- 3 Connect the AC power adaptor to the DC IN 9V jack and to an AC outlet.
- 4 Raise the antenna. Make sure it points towards the ceiling.

continued

Getting Started

### Step 2: Setting up the base phone (continued)

#### Notes

- Use only the supplied AC-T46 AC power adaptor. Do not use any other AC power adaptor.
- Connect the AC power adaptor to a continuous power supply.
- Place the base phone close to the AC outlet so that you can unplug the AC power adaptor easily.

Polarity of the plug



#### Tips

- If your telephone outlet isn't modular, contact your telephone service company for assistance.
- To remove the wall bracket, press in the upper tab.

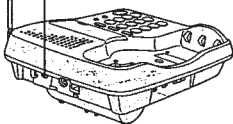
Modular



#### Choose the dialing mode

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

DIAL MODE switch



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

If your dialing system is	Set the switch to
Tone	T
Pulse	P

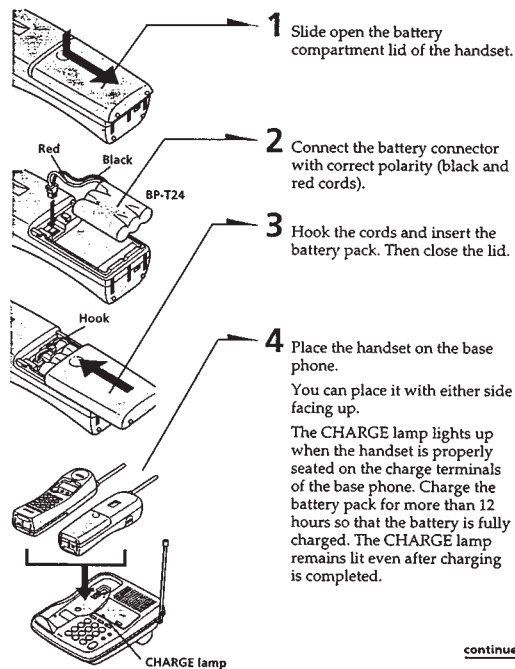
#### If you aren't sure of your dialing system

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

## Step 3

### Preparing the battery pack

Charge the battery pack for more than 12 hours before you start using your phone.



continued

8<sup>th</sup> Getting Started

Getting Started

### Step 3: Preparing the battery pack (continued)

#### Battery duration

A fully charged battery pack lasts for about:

- 6 hours when you use the handset continuously
- 10 days (RING ON mode) or a month (RING OFF mode) when the handset is in standby mode.

#### Notes

- The battery pack will gradually discharge over a long period of time, even when not in use.
- To obtain the best handset performance, place the handset on the base phone for charging after several calls.
- 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 to its full capacity.
- While charging, the battery pack warms up. This is not a malfunction.

#### When to purchase a new battery pack

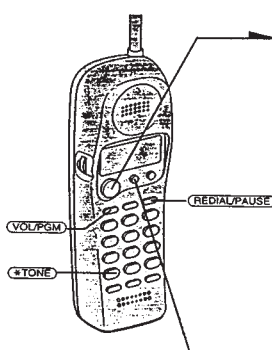
If the battery lasts only a few minutes even after 12 hours of charging, the usable life of the battery has expired and needs replacement. Contact your local Sony authorized dealer or service center, and ask for a Sony BP-T24 rechargeable battery pack.

#### Note

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

## Basics

### Making calls

- 
- 1 Pick up the handset from the base phone.
  - 2 Press **(TALK/FLASH)** and wait until "TALK" appears on the display and the display also shows the operation duration in hours, minutes and seconds. You'll then hear a dial tone. The LINE lamp on the base phone lights up. If you hear five short error beeps and "OUT OF RANGE" appears on the display, move closer to the base phone.
  - 3 Dial the phone number. During a conversation, you can adjust the handset volume. Follow the procedure described in the following table.
  - 4 When you're done talking, press **(OFF)** or place the handset on the base phone. The display and the LINE lamp on the base phone go off.

#### Additional tasks

To	Do this
Adjust the handset volume	During phone conversations, press <b>(VOL/PGM)</b> . Each press of <b>(VOL/PGM)</b> switches the speaker volume by one of four levels.
Put a call on hold	Press <b>(HOLD)</b> . "HOLD" appears on the display. Press <b>(HOLD)</b> again to resume the conversation.
Switch to tone dialing temporarily	Press <b>(TONE)</b> after you're connected. The line will remain in tone dialing until disconnected.

continued

### Making calls (continued)

#### Notes

- When you increase the sound volume, in some cases the back ground noise may be increased as well. You should adjust the volume accordingly.
- If the handset beeps every second during conversation and "OUT OF RANGE" appears on the display, move closer to the base phone; otherwise, the call will be disconnected after one minute.
- While conversing with an outside caller via the base phone, you can't make a call with the handset and "BASEPHONE IN USE" appears on the display. If you press **(TALK/FLASH)**, you will hear a busy tone.
- When the operation duration exceeds 9:59:59, the display counts from 0:00:00 again.

#### If the battery becomes weak during a call

The handset will beep every three seconds five times and **(BATTERY LOW)** appears on the display. Finish your call and charge the battery pack.

For optimum performance, charge the battery for a full 12 hours.

Note that during the first 10 - 15 minutes of charging, the phone will be inactive, i.e., unable to make or receive a call.

After this initial 10 - 15 minutes, you may be able to use the phone, but the battery duration will be very short; thus it is recommended that you fully charge the battery before the next usage.

#### Making calls through the speakerphone

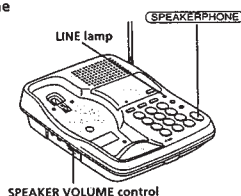
Press **(SPEAKERPHONE)** on the base phone.

The LINE lamp lights up.

Dial the phone number.

To adjust the speaker volume, slide the **SPEAKER VOLUME** control.

When you're done talking, press **(SPEAKERPHONE)** again.



#### Note

While conversing with an outside caller via the handset, you can't make a call through the speakerphone. If you press **(SPEAKERPHONE)**, you will hear a busy tone.

#### To obtain the best speakerphone performance

- You may not be able to hear the other party's voice in a noisy place. Therefore, use the speakerphone in a quiet room.
- Do not bring your hand or other object too close to the microphone or you will hear a shrill noise ("feedback").
- When the speaker volume is loud, or the base phone has been placed close to a wall, you may find that the volume drops suddenly. This is due to a circuit in the telephone designed to protect against feedback. In such cases, lower the speaker volume slightly.

#### Redialing

- 1 Press **(TALK/FLASH)** and wait until "TALK" appears on the display.

The LINE lamp on the base phone lights up.

If you're at the base phone, press **(SPEAKERPHONE)**. The LINE lamp lights up.

- 2 Press **(REDIAL/PAUSE)** to redial the last number dialed.

#### Note

If the number exceeds 32 digits or if it is erased, five short error beeps will alert you that the number can't be redialed.

#### Tip

The number to be redialed is the last number dialed either on the handset or on the base phone.

#### To check the phone number before redialing (handset only)

When not making a call with either the handset or base phone, press **(REDIAL/PAUSE)**.

The last number dialed is displayed for five seconds.

To dial the number, press **(TALK/FLASH)** while the number is displayed.

#### Notes

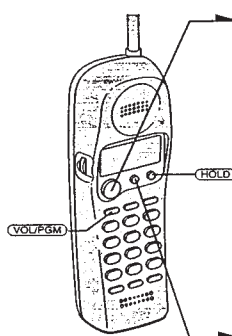
- The number will not be displayed if the last number dialed exceeds 32 digits or if it is erased.
- You can't check the last number dialed on the base phone.

#### To erase the last phone number dialed

When not conversing with an outside caller with either the handset or base phone, press **(REDIAL/PAUSE)** twice within five seconds.

The number will be erased from the memory, and you'll hear a long confirmation beep.

## Receiving calls

- 
- When you hear the phone ring:
    - Press **(TALK/FLASH)**.
    - or
    - Pick up the handset from the base phone when the handset is placed on the base phone.

"TALK" appears on the display and the display also shows the operation duration in hours, minutes and seconds.

The LINE lamp on the base phone lights up.

During a conversation, you can adjust the handset volume. Follow the procedure described in the following table.
  - When you're done talking, press **(OFF)** or place the handset on the base phone.
- The display and the LINE lamp on the base phone go off.

### Additional tasks

To	Do this
Adjust the handset volume	During phone conversations, press <b>(VOL/PGM)</b> . Each press of <b>(VOL/PGM)</b> switches the speaker volume by one of four levels.
Put a call on hold	Press <b>(HOLD)</b> . "HOLD" appears on the display. Press <b>(HOLD)</b> again to resume the conversation.
Switch to another call ("call waiting" service*)	Press <b>(TALK/FLASH)</b> . Press <b>(TALK/FLASH)</b> again to return to the first caller.

\* You need to subscribe to this service from your telephone company.

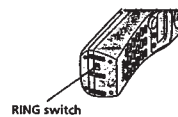
#### Tip

To inform you of an incoming call, the display shows "\*\* RINGING \*\*" when ringing.

### To turn the ringer off

Set the RINGER switch on the bottom to OFF. You can save battery power.

The handset won't ring. You can still make calls, and also receive calls if another telephone connected to the same line rings to inform you on incoming calls, but you cannot receive an intercom call.



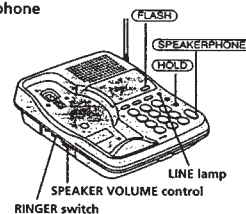
### Receiving calls through the speakerphone

When you hear the phone ring, press **(SPEAKERPHONE)** on the base phone.

The LINE lamp lights up.

When you're done talking, press **(SPEAKERPHONE)** again.

To obtain the best speakerphone performance, see page 13.



### Additional tasks

To	Do this
Put a call on hold	Press <b>(HOLD)</b> . The LINE lamp on the base phone flashes. Press <b>(HOLD)</b> again to resume the conversation.
Switch to another call ("call waiting" service*)	Press <b>(FLASH)</b> . Press <b>(FLASH)</b> again to return to the first caller.
Adjust the speakerphone volume	Slide the SPEAKER VOLUME control.
Turn on/off the ringer of the base phone	Set the RINGER switch on the base phone to ON to turn the ringer on, or OFF to turn it off.

\* You need to subscribe to this service from your telephone company.

#### Note

Even when you set the RINGER switch on the base phone to OFF, the handset will ring when the RING switch on the handset is set to ON.

#### Tips

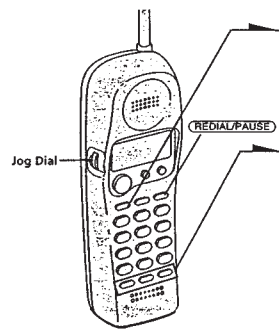

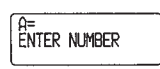
- To inform you of an incoming call, the LINE lamp lights on and off according to the ring signal even when you set the RINGER switch on the base phone to OFF.
- If there is an incoming call while on the intercom, the base phone will ring even when the RINGER switch on the base phone is set to OFF.

## Telephone Features

### One-touch dialing

You can dial with one touch of a key by storing a phone number on a one-touch dial button.

#### Storing phone numbers

- 
- Press **(VOL/PGM)**.
- 
- Press one of the three ONE-TOUCH DIAL buttons (A) to (C). You'll hear a confirmation beep.
- 
- If a number is stored, it appears on the display. To store a new number, turn Jog Dial to erase it.
- 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.
  - Press **(VOL/PGM)**. You'll hear a long confirmation beep, and the number is stored. The display goes off.

#### Note

Do not allow more than 20 seconds to elapse between each step of the procedure.

#### Tips

- If you have entered a wrong number in step 3 and have not pressed **(VOL/PGM)** (step 4) yet, just turn Jog Dial down to erase it. Then, enter the correct number.
- You may press Jog Dial instead of **(VOL/PGM)** in step 4.

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

Before entering a phone number in step 3 on page 16, do as follows:

- Enter the outside line access digit (e.g., 9).
- Press **(REDIAL/PAUSE)**.

#### To change a stored number

- Press **(VOL/PGM)**.
- Press one of the ONE-TOUCH DIAL buttons (A) to (C). The current number appears on the display.
- Turn Jog Dial down to erase the current number.
- Enter a new number.
- Press **(VOL/PGM)**.

#### Note

You can replace the stored number with a new number, but you can't just erase it.

### Making calls with one-touch dialing

- Press **(TALK/FLASH)** and wait until "TALK" appears on the display.
- Press one of the ONE-TOUCH DIAL buttons (A) to (C). The phone number stored on the one-touch dialing button will appear on the display and will be dialed.

#### To check the phone number before one-touch dialing

When not conversing with an outside caller with the handset, press one of the ONE-TOUCH DIAL buttons (A) to (C).

The number stored for that button appears on the display for five seconds. To dial the number, press **(TALK/FLASH)** while the number is displayed.

## Speed dialing

You can dial with a touch of a few keys by storing a phone number on a dialing key.

### Storing phone numbers



- 1 Press **(PGM)**.
- 2 Press **(SPEED DIAL)**.
- 3 Press one of the dialing keys (**(0)** to **(9)**) to store a phone number on.  
You'll hear a confirmation beep.
- 4 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.
- 5 Press **(PGM)**.  
You'll hear a long confirmation beep, and the number is stored.

#### Note

Do not allow more than 20 seconds to elapse between each step of the procedure.

#### Tips

- If you enter a wrong number in step 4, press **(PGM)**, then start from the beginning.
- Use the supplied directory to write down what you stored on the speed dialing numbers.

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

Before entering a phone number in step 4 on page 18, do as follows:

- 1 Enter the outside line access digit (e.g., 9).
- 2 Press **(REDIAL/PAUSE)**.

### To change a stored number

Store a new number, as described previously.

### Making calls with speed dialing

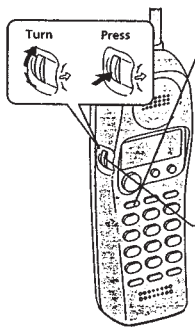
- 1 Press **(SPEAKERPHONE)**.
- 2 Press **(SPEED DIAL)**.
- 3 Enter the desired speed dialing number (**(0)** to **(9)**).  
The phone number stored as the speed dialing number will be dialed.

## Phone Directory

You can dial a number by scrolling through the Phone Directory, in which up to 50 phone numbers can be stored.

### Storing phone numbers and names

Example: to store "SONY" "123-4567".



- 1 Press **(VOL/PGM)**.  
(Be sure not to press **(TALK/FLASH)**.)



If "DIRECTORY" is not flashing, turn Jog Dial down to make it flash.

- 2 Press Jog Dial.  
"ENTER NAME" appears.
- 3 Enter the name using the dialing keys.  
You can enter up to 15 characters.

Press a dialing key until the desired character appears. (See the character table for details.)

Enter successive characters in the same way.

To enter two characters assigned to the same key, or to enter a "space", turn Jog Dial up to move the cursor to the right.

Example: to enter "SONY", press **(7)** four times (S), press **(6)** three times (O), turn Jog Dial up to move the cursor, press **(6)** twice (N), and press **(9)** three times (Y).

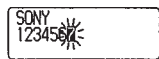


#### Character table

Key	Character
<b>(1)</b>	1
<b>(2)</b>	A → B → C → 2
<b>(3)</b>	D → E → F → 3
<b>(4)</b>	G → H → I → 4
<b>(5)</b>	J → K → L → 5
<b>(6)</b>	M → N → O → 6
<b>(7)</b>	P → Q → R → S → 7
<b>(8)</b>	T → U → V → 8
<b>(9)</b>	W → X → Y → Z → 9
<b>(0)</b>	0
<b>(*)</b>	*
<b>(#)</b>	#

- 4 Press **(VOL/PGM)**.  
"ENTER NUMBER" appears.

- 5 Enter the phone number.  
You can enter up to 16 digits, including a tone and a pause, each of which is counted as one digit.



- 6 Press **(VOL/PGM)**.  
You'll hear a long confirmation beep, and the name and the number are stored. The display goes off.

#### Notes

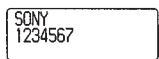
- If you intend to save a 51st phone number, you will hear five short error beeps and "MEMORY FULL" will be displayed. You cannot store the phone number. To store another phone number, erase one of the stored phone numbers (see page 22).
- Do not allow more than 20 seconds to elapse between each step of the procedure.

#### Tips

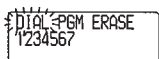
- If you have entered a wrong name or number in step 3 or 5, turn Jog Dial down to erase it. Then enter the correct name or number.
- You may press Jog Dial instead of **(VOL/PGM)** in steps 4 and 6.
- To store a number to be dialed via PBX, follow the steps on page 17 when entering a phone number.

### Changing a stored name and/or phone number

- 1 Display the name and phone number you want to change by doing steps 1 and 2 on page 23.



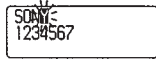
- 2 Press Jog Dial.



continued

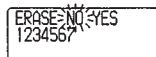
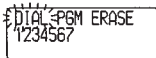
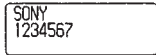
### Phone Directory (continued)

- Turn Jog Dial up to make "PGM" flash and press Jog Dial.  
The cursor flashes at the last character of the name.
- Turn Jog Dial down to erase the characters and enter the new name.  
If you want to change only the number, skip this step.
- Press Jog dial.  
The cursor flashes at the last digit of the phone number.
- Turn Jog Dial down to erase the number and enter the new number.  
If you don't want to change the number, skip this step.
- Press Jog Dial.  
You'll hear a long confirmation beep and the name and/or the number is changed.

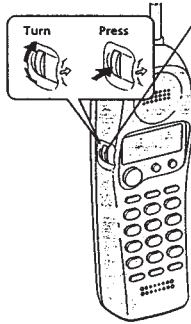


### Erasing a memory location

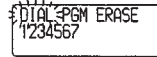
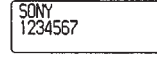
- Display the name and phone number you want to erase by doing steps 1 and 2 on page 23.
- Press Jog Dial.
- Turn Jog Dial up to make "ERASE" flash and press Jog Dial.
- Turn Jog Dial up to make "YES" flash, then press Jog Dial.  
You hear a long confirmation beep and the memory location is erased.



### Making calls from the Phone Directory



- Press Jog Dial twice.  
"DIRECTORY" appears on the display.
- Display the name and phone number you want to call.  
To search in alphabetical order: Turn Jog Dial up or down.  
To search by entering the initial character: Press the dialing key of the desired character, then turn Jog Dial.
- Press Jog Dial.
- Press Jog Dial again.  
The phone number will be dialed.



Tip  
You may press **TALK/FLASH** to make a call instead of doing steps 3 and 4.

### About the search order

The names appear in the following order when you turn Jog Dial up or down.

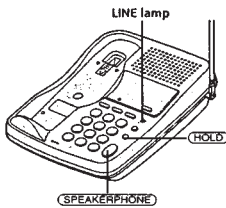
- Alphabetical order: ABC...XYZ ↔ \* ↔ # ↔ 0 - 9
- Initial character: To search for "SONY" for example, press **0** and then turn Jog Dial to search through the names starting with P, Q, R, S or 7.

Telephone Features

### Switching the phones during a call

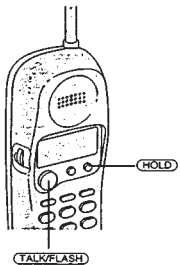
You can easily switch between the handset and speakerphone on the base phone without disconnecting the call.

#### To switch from the base phone to the handset



- Press **HOLD** on the base phone.  
The call is on hold and the LINE lamp on the base phone flashes and "HOLD" appears on the display of the handset.
- Press **TALK/FLASH** or **HOLD** on the handset.  
You can continue talking to the caller through the handset.

#### To switch from the handset to the base phone



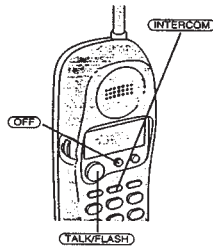
- Press **HOLD** on the handset.  
The call is on hold and "HOLD" appears on the display of the handset and the LINE lamp on the base phone flashes.
- Press **SPEAKERPHONE** or **HOLD** on the base phone.  
You can continue talking to the caller through the speakerphone.

- Tips
- While talking through the speakerphone on the base phone, if you pick up the handset, the call will be switched to the handset.
  - When the call is put on hold on the base phone, if you pick up the handset, the call will be switched to the handset.

### Talking between the phones (Intercom)

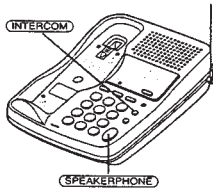
You can converse using the base phone and the handset. You can start the intercom from either phone.

#### To talk from the handset to the base phone



- Press **INTERCOM**.  
The base phone and handset ring and "\*\* PAGING \*\*" appears on the display of the handset.  
When a person at the base phone presses **SPEAKERPHONE** or **INTERCOM**, you can talk with each other.  
"INTERCOM" appears on the display of the handset.  
When you are done talking  
Press **OFF** on the handset.  
If no one answers the phone  
Press **INTERCOM** again.

#### To talk from the base phone to the handset



- Press **INTERCOM**.  
The base phone and handset ring and "\*\* PAGING \*\*" appears on the display of the handset.  
When a person at the handset presses **TALK/FLASH** or **INTERCOM**, you can talk with each other.  
"INTERCOM" appears on the display of the handset.  
When you are done talking  
Press **SPEAKERPHONE** on the base phone.  
If no one answers the phone  
Press **INTERCOM** again.

- Notes
- You can't receive an intercom call on the handset when its RING switch is set to OFF.
  - If there's an incoming call while on the intercom, only the base phone rings.  
To answer the call, press **INTERCOM** on the base phone or handset. The intercom is canceled and you can talk to the outside caller.
  - While conversing with an outside caller via the base phone or handset, you cannot make an intercom call. If you press **INTERCOM**, you will hear a busy tone.

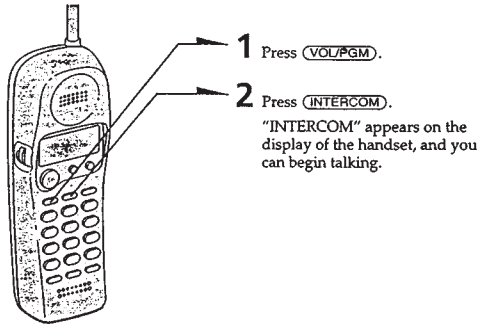
Tip  
You can receive an intercom call on the base phone even when the RINGER switch on the base phone is set to OFF. The base phone will ring at a low level.

Telephone Features

## Voice paging

The handset user can page someone near the base phone without any operation on the base phone. Neither phones will ring.  
Note that you can't page if the base phone is in use.

### To page with voice



- 1 Press **(VOL/PGM)**.
- 2 Press **(INTERCOM)**.  
"INTERCOM" appears on the display of the handset, and you can begin talking.

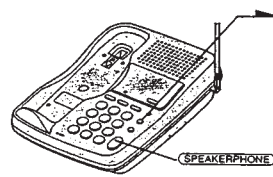
#### Notes

- If there's an incoming call during voice paging, only the base phone rings. To answer the call, press **(INTERCOM)** on the base phone or handset. The paging is canceled and you can talk to the outside caller.
- While conversing with an outside caller via the base phone or handset, you cannot make an intercom call. If you press **(INTERCOM)**, you will hear a busy tone.

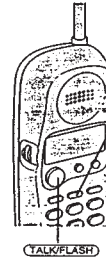
## Transferring a call

You can transfer a call between the handset and base phone without disconnecting the call.

### To transfer from the base phone to the handset



- 1 Press **(INTERCOM)** to page the handset.  
The call is put on hold on the base phone and the handset rings.  
The LINE lamp on the base phone flashes and "\*\* PAGING \*\*" appears on the display of the handset.



- 2 Press **(TALK/FLASH)** or **(INTERCOM)** on the handset.  
"INTERCOM" appears on the display of the handset.  
You can talk between the base phone and the handset.
- 3 To talk to the caller with the handset:
  - Press **(INTERCOM)** on the handset.
  - or
  - Press **(SPEAKERPHONE)** on the base phone.
 "TALK" appears on the display of the handset.

If no one answers the phone  
Press **(INTERCOM)** again.

#### Note

You can't receive an intercom call on the handset when its RING switch is set to OFF.

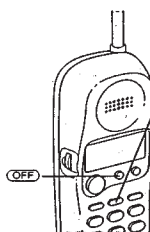
#### Tips

- If you have accidentally pressed **(HOLD)** in step 2, just press **(INTERCOM)** and you will get the same result as by pressing **(INTERCOM)** only.
- The LINE lamp on the base phone flashes during intercom.

continued

## Transferring a call (continued)

### To transfer from the handset to the base phone



- 1 Press **(INTERCOM)** to page the base phone.  
The call is put on hold on the handset and the base phone rings.  
"\*\* PAGING \*\*" appears on the display of the handset and the LINE lamp on the base phone flashes.



- 2 Press **(SPEAKERPHONE)** or **(INTERCOM)** on the base phone.  
"INTERCOM" appears on the display of the handset.  
You can talk between the handset and the base phone.

- 3 To talk to the caller with the base phone:
  - Press **(INTERCOM)** on the base phone.
  - or
  - Press **(OFF)** on the handset.

If no one answers the phone  
Press **(INTERCOM)** again.

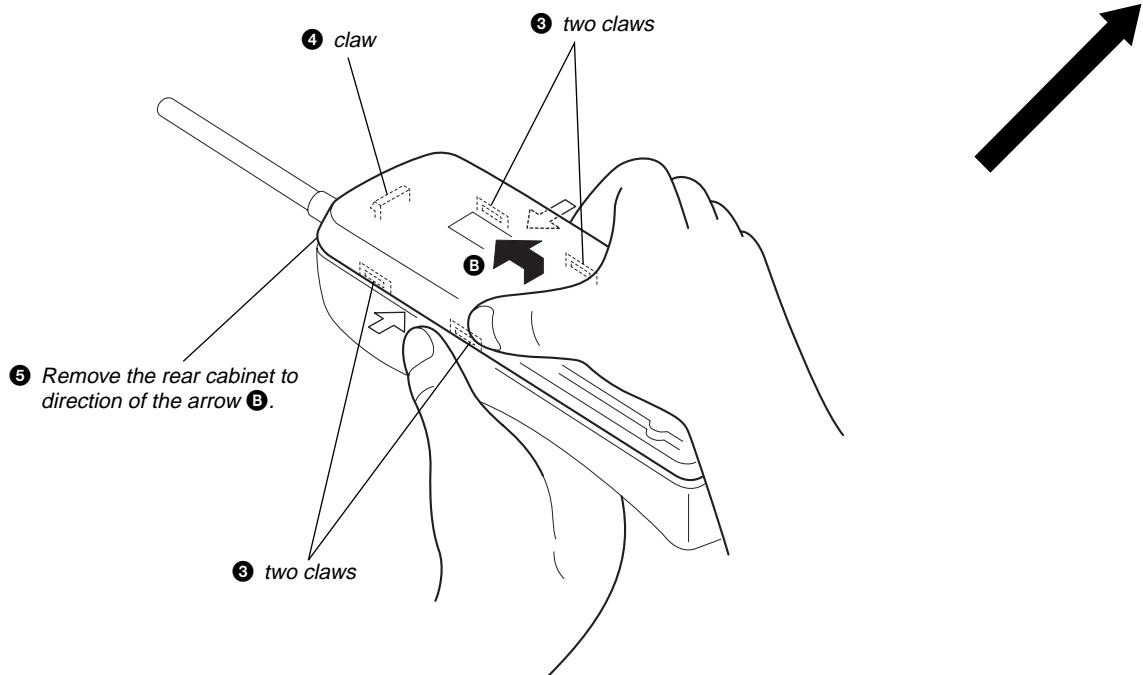
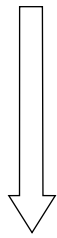
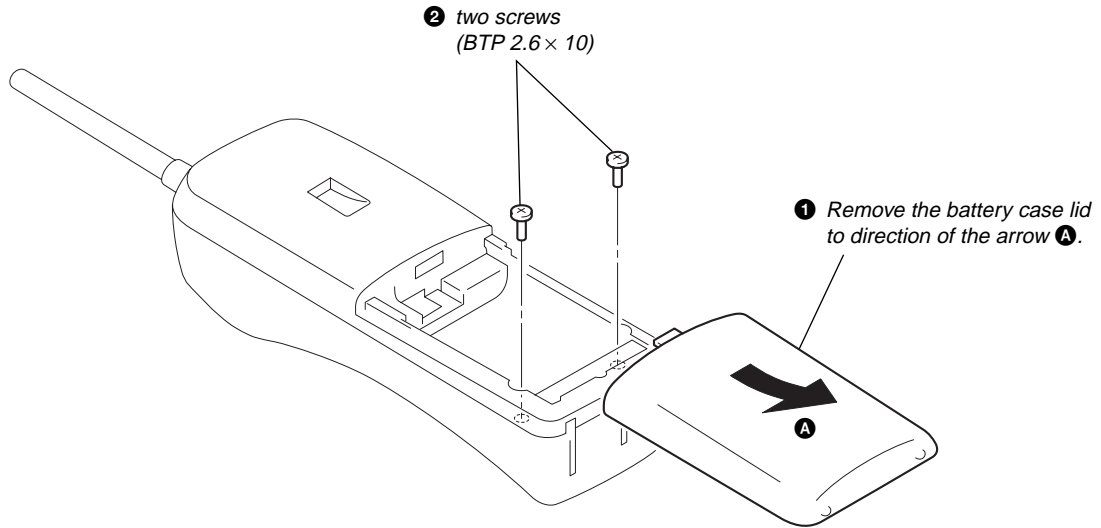
#### Tip

You can receive an intercom call on the base phone even when the RINGER switch on the base phone is set to OFF. The base phone will ring at a low level.

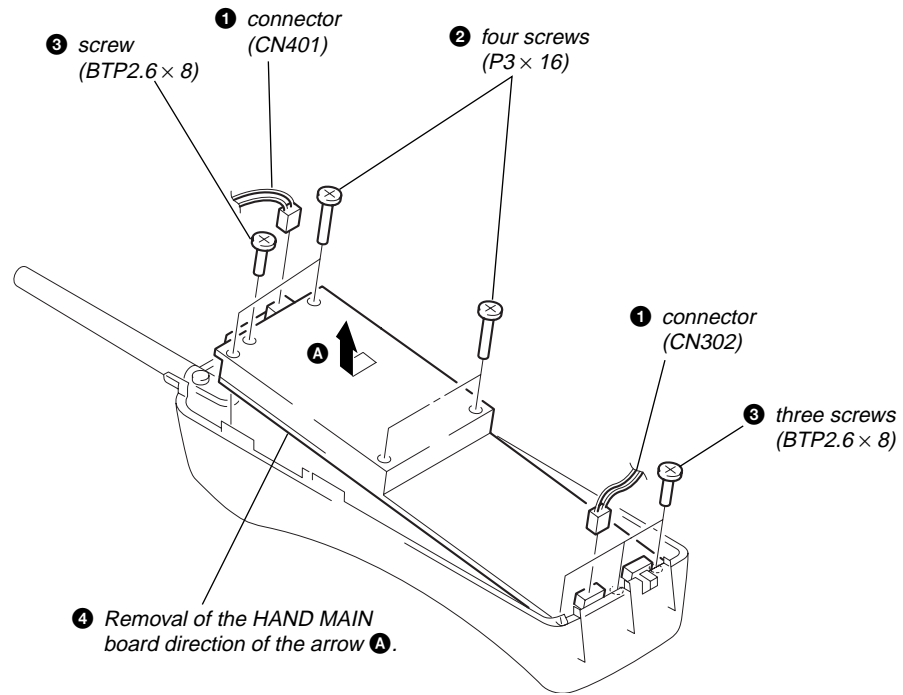
## SECTION 3 DISASSEMBLY

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

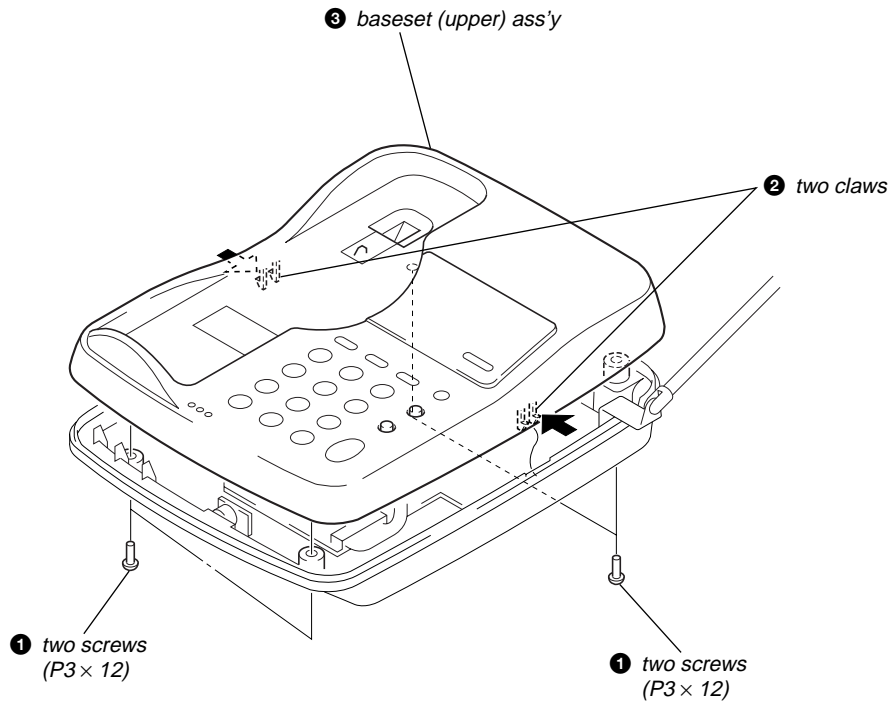
### • HANDSET REAR CABINET



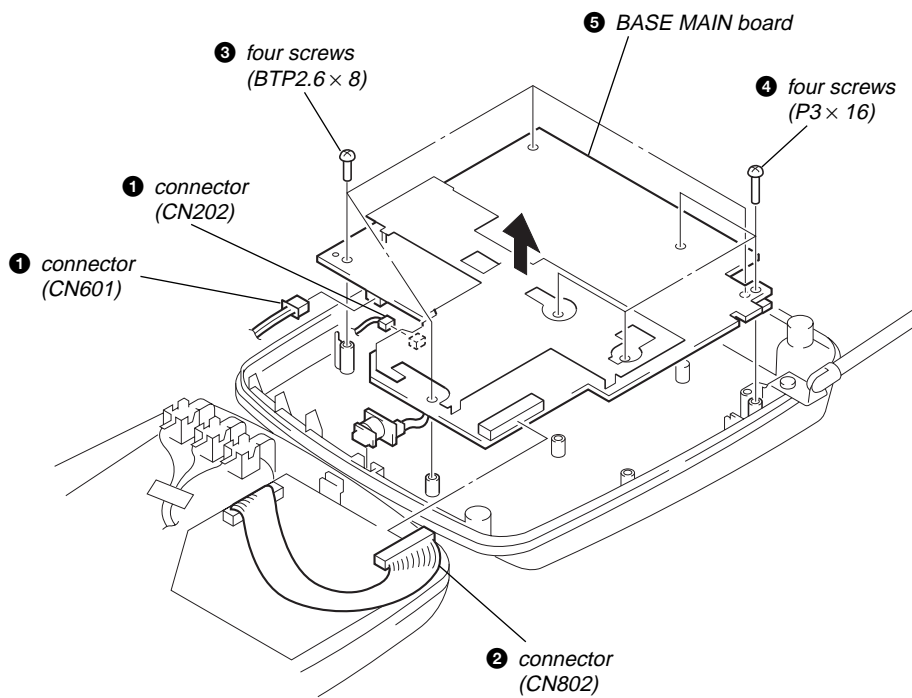
## HAND MAIN BOARD



• BASESET  
BASESET (UPPER) ASS'Y



BASE MAIN BOARD



# SECTION 4 900 MHz SYSTEM OPERATION

## 4-1. ACCESS METHOD

### 1. Transfer format & rate

The transfer format & rate of our system is as follows;

**Table 4-1. Transfer method**

Access method	FDMA-TDD
Channel number	20 channel
Channel spacing	1.2 MHz
Modulation method	DBPSK
Baseband transfer rate	960 Kbps
Spread method	Direct Sequence Spread Spectrum
Chip rate	12 chips/bit
Data transfer rate	80 Kbps

### 2. Channel Number & Frequencies

RF channels occupy the frequency band 902 – 928 MHz are numbered 1 to 20.

RF channel numbers & center frequencies are specified as follows.

**Table 4-2. Channel number & Channel frequency**

Channel Number	Channel Center Frequency (MHz)	Channel Number	Channel Center Frequency (MHz)
1	903.6	11	915.6
2	904.8	12	916.8
3	906.0	13	918.0
4	907.2	14	919.2
5	908.4	15	920.4
6	909.6	16	921.6
7	910.8	17	922.8
8	912.0	18	924.0
9	913.2	19	925.2
10	914.4	20	926.4

## 4-2. PROTOCOL

### 1. General

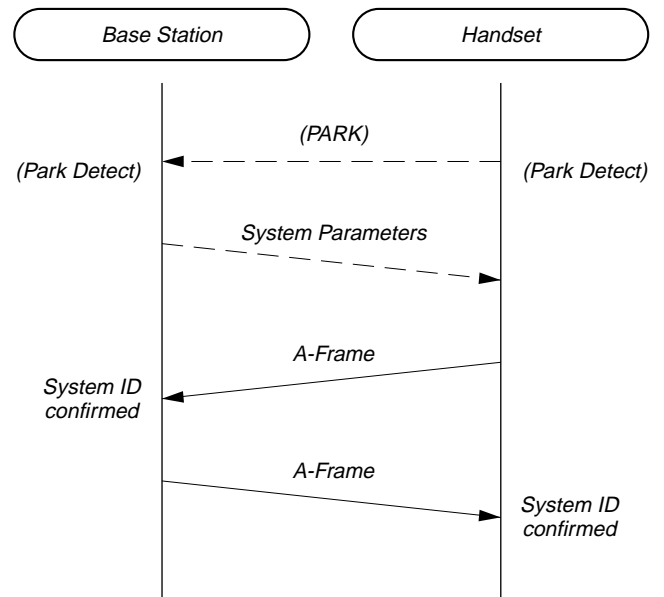
This system realizes the TX/RX superframe by TDD system. The relation of master/slave does not decide identification regarding the protocol between BS and HS, but the initiated side is the master and the requested side is the slave when the RF link has been established.

### 2. Initial acquisition

In order to establish the RF link between BS and HS, both of BS and HS need to have the same system ID. When “power” is applied to this system, the system have to do Initial Acquisition in order to have the same system ID. It is to exchange a parameter when the HS is parked on the BS, as soon as the system do System Parameters Re-initialization.

### 3. System parameter re-initialization

This System Parameters Re-initialization can realize that the HS is parked on the BS. So after the BS recognized to be parked the HS, the BS calculates a system parameter, and then it outputs this data from the ARTO port, and then the system establishes the RF link. In order to establish this link, the HS send the A-Frame to the BS after the HS received the system parameter, and then the BS send the A-Frame to the HS. The process of System Parameters Re-initialization is as follows.



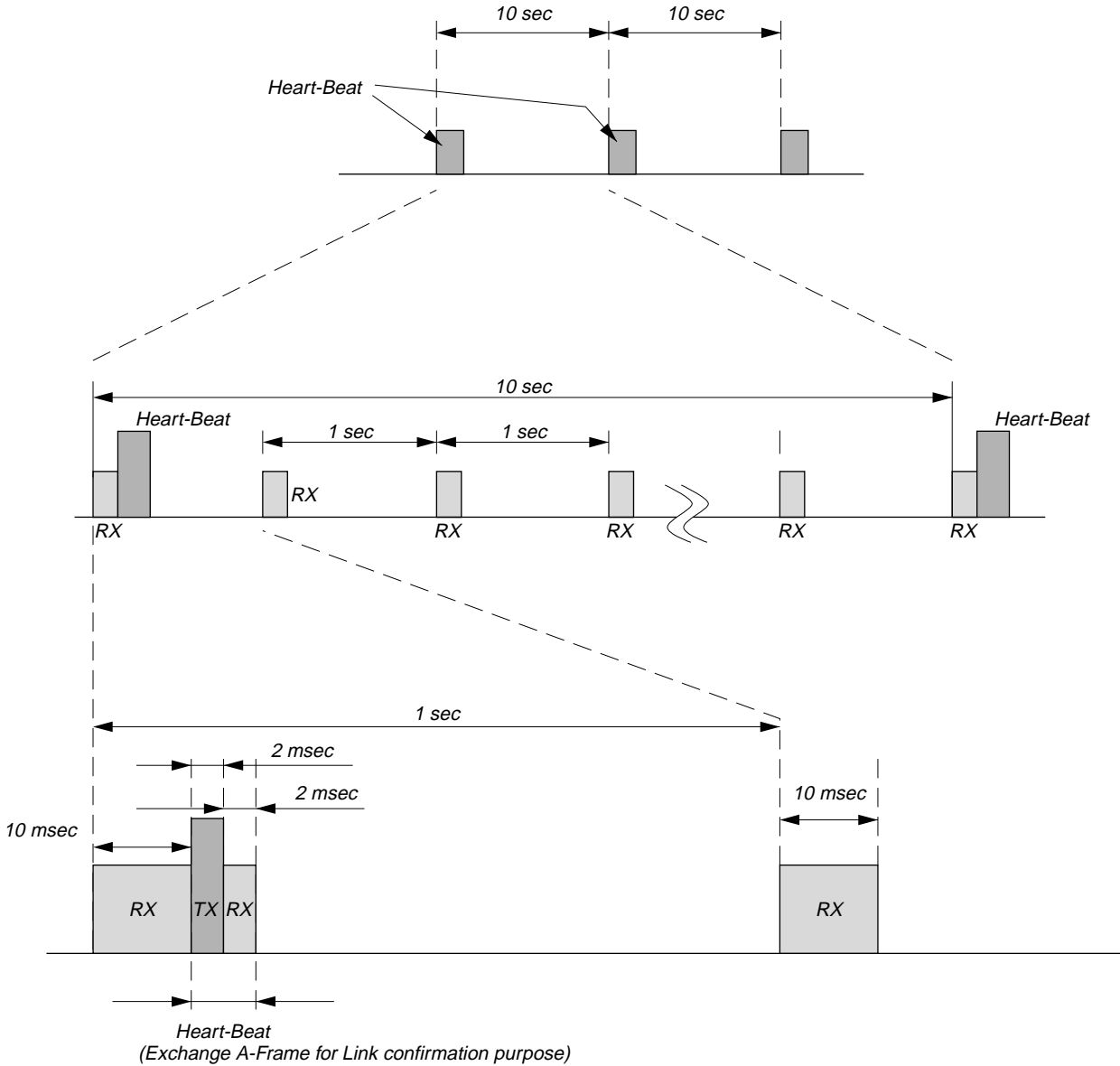
**Fig. 4-1. System Parameters Re-initialization**

#### 4. Stand-by Mode Operation

##### (1) HS

When the HS is the stand-by mode (sleep mode), the HS do the intermittent operation for power save, because the HS is the battery operation.

This process of stand-by mode operation is as follows.



**Fig. 4-2. Stand-by mode operation (HS)**

##### (2) BS

The BS is supplied the power by AC line. While the BS is the stand-by, the BS is always a wake state. While the BS monitors the current channel, the BS monitors also the other channel at the same time

Because if the current channel can not use by some interference, the system needs the clear channel information as a part of system parameter for a channel hop.

If the BS can not receive the A-Frame of Heart-beat from the HS, it become "link error", and the system become error recovery mode.

## 5. Link Establishment

According to the following Fig. 4-1, the requested side for link establishment is the master.

The system have to exchange the A-Frame for link establishment, and each system ID should be the same ID, and then the system link is established.

The protocol and timing chart of link establishment are as follows.

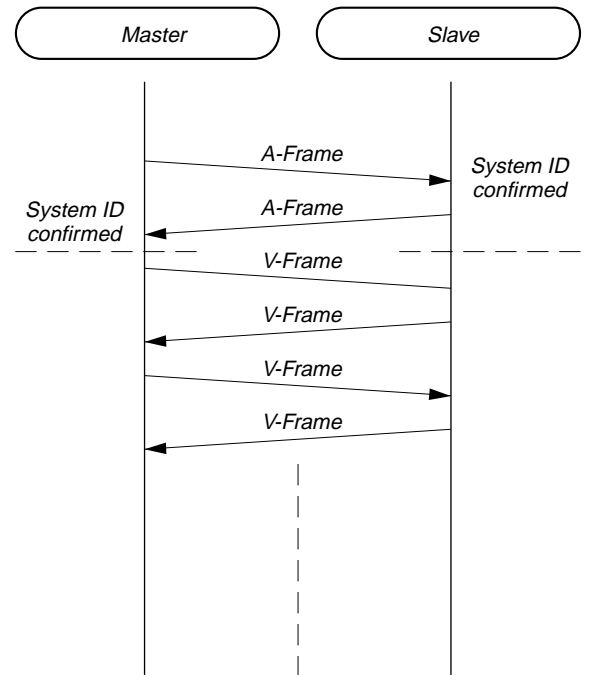


Fig. 4-3. Link Establishment protocol

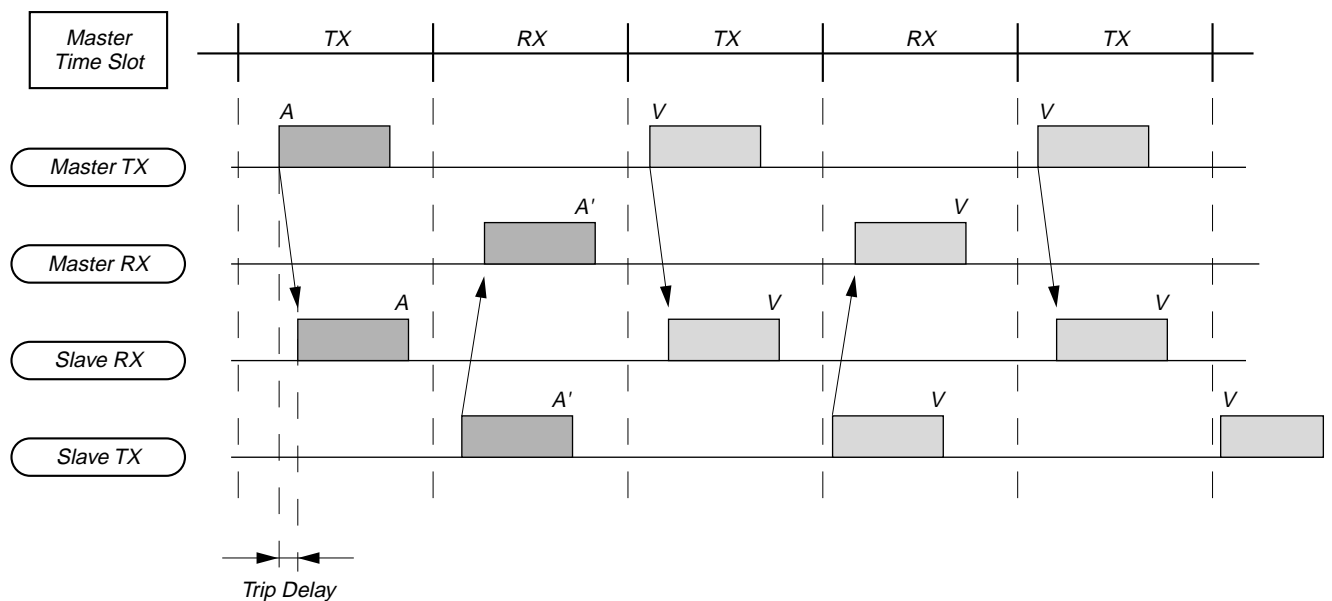


Fig. 4-4. Link Establishment Timing Chart

## 6. State Change/Termination

After the RF link between HS and BS was established, a movement of each state (State: ON-Hook, OFF-Hook, PAGE, InterCom, etc) is sent through supervisory bits.

## 7. Error Recovery

In case of the following situation, The system becomes “Error Recovery Mode”.

- (1) The system failed to move to “Heart-Beat” during “Stand-by mode, or failed “link establishment”.
- (2) The system failed to keep the link.

# SECTION 5 TEST MODE

## 5-1. BASE UNIT SECTION

### [Start-up]

1. Set the **[DIAL MODE]** switch to the P (PULSE) side.
2. Keeping the **[INTERCOM]** button pressed, turn the power on.
3. After a start-up acknowledge tone sounds, set the **[DIAL MODE]** switch from P (PULSE) to T (TONE) side, then return to the P (PULSE) side.
4. Release the **[INTERCOM]** button, and the Test Mode will start.
5. Allow for normal ringer to sound at high level for duration of 500 msec after start-up, then close the line and dial Pause → 0 (DP) → \* (mode change) → 1 (tone) → 4 (tone) → 8 (tone) → # (tone).
6. After dialing, the base unit will go in Test Mode Idle status.

### [Ring Detection Test]

1. The LINE LED blinks in synchronization with the RING signal and at the same time, Normal Ringer sounds, if the RING signal is detected in the Test Mode Idle status.

### [Charge Detection • ARTO Output Test]

1. Square-wave signal (2.4 kHz) is output to the IC751 pin ③④ (ARTO terminal) when the CHARGE signal is detected (IC751 pin ②② (PARKP terminal) H → L) in the Test Mode Idle status.
2. At this time, the EEPROM (IC951) is reset.

### [Charge Control Test]

1. IC751 pin ②⑦ (CHG-HIGH RATE terminal) outputs H → L → H once, if IC751 pin ②③ (VCHG-MON terminal) changes to H → L → H when the CHARGE signal is detected in the Test Mode Idle status.

### [Test Mode by Manual Input]

- The key input in the Test Mode Idle status can change the set status to the following modes. However, the transition to another mode within respective test mode groups (A-J) is possible directly, but in case of transition to other test mode group, the set must be returned to the Test Mode Idle status once by entering the command “0-1-#”.

#### A) Test mode termination

Command	Mode/Operation
0-0-#	Terminate the Test mode.

#### B) Return test mode idle

Command	Mode/Operation
0-1-#	Return to Test Mode Idle status.

#### C) Continuous receiving test group (Note 1)

Command	Mode/Operation
1-1-#	CH1 continuous receiving status (LNA, AGC ON)

#### D) Continuous transmission test group (Note 1)

Command	Mode/Operation
2-1-#	CH1 continuous transmission status (TX Power High)
2-2-#	CH1 continuous transmission status (TX Power Mid)
2-3-#	CH1 continuous transmission status (TX Power Low)

**Note 1:** Each time the **[\*]** key is pressed, the channels change over as follows:

CH1 → CH2 → CH3 → ... → CH20

#### E) Loopback test group 1

Command	Mode/Operation
3-1-#	CODEC Forward Loopback (L1) (Speech path: Talk status) (LINE IN → LINE OUT: CODEC LINE IN → SPKR OUT)
3-2-#	ADPCM Forward Loopback (L2) (Speech path: Talk status) (LINE IN → CODEC → ADPCM → CODEC → LINE OUT)
3-3-#	ADPCM → RF Loopback (Speech path: Talk status) (LINE IN → CODEC → ADPCM → RF → ADPCM → CODEC → LINE OUT)

#### F) TDD test group 1

Command	Mode/Operation
4-1-#	CH1 TDD mode (Master timing, Power High) status
4-2-#	CH1 TDD mode (Master timing, Power Mid) status
4-3-#	CH1 TDD mode (Master timing, Power Low) status
4-4-# (Note 2)	TDD mode (Slave timing, Standby) status. Power control

**Note 2:** To make a speech with the handset, first operate the set in Slave mode by “4-4-#” command, and operate the counterpart in the Master mode by “6-1-#” command. However, the ID must be same. To set the same ID, perform ON-Charge in advance, or clear the EEPROM by “7-1-#” command. In this case, however, the speech path should be the intercom status.

#### G) MMI test group

Command	Mode/Operation
5-1-#	Key test. <ul style="list-style-type: none"> <li>• Press the keys successively in the following order:  <b>[PGM]</b> → <b>[SPEED DIAL]</b> → <b>[REDIAL/PAUSE]</b>            → <b>[FLASH]</b> → <b>[1]</b> → <b>[2]</b> → <b>[3]</b> → <b>[4]</b> → <b>[5]</b>            → <b>[6]</b> → <b>[7]</b> → <b>[8]</b> → <b>[9]</b> → <b>[*]</b> → <b>[0]</b> → <b>[#]</b> → <b>[INTERCOM]</b> → <b>[HOLD]</b> → <b>[SPEAKERPHONE]</b></li> <li>• If key input sequence is correct: An acknowledge tone sounds, and the set returns to the Test Mode Idle status.</li> <li>• If key input sequence is wrong: An error tone sounds, and the set returns to the Test Mode Idle status.</li> </ul>
5-4-#	LED test. <b>[LINE]</b> LED lights up when the LED test mode is selected.

#### H) TDD test group 2

Command	Mode/Operation
6-1-#	TDD mode (Master timing) status. Power control. Refer to the description of “4-4-#” command.

#### I) Memory clear test group

Command	Mode/Operation
7-1-#	The contents of EEPROM are cleared. In case of successful clear, an acknowledge tone sounds.

J) Loopback test group 2

Command	Mode/Operation
8-1-#	ADPCM Forward Loopback (Speech path: Intercom status) (MIC IN → SPEAKER OUT: CODEC MIC IN → ADPCM → CODEC LINE OUT (Speech path: Intercom status)

5-2. HANDSET SECTION

[Start-up]

1. With the power supplied, press [TALK], [0], and [1] keys simultaneously, and the Test Mode will start.
2. Allow for normal ringer to sound at high level for duration of 500 msec after start-up, then the handset will go in Test Mode Idle status.
3. The RF in Talk/Intercom status is as follows.

[Test Mode by Manual Input]

- The key input in the Test Mode Idle status can change the set status to the following modes. However, the transition to another mode within respective test mode groups (A-J) is possible directly, but in case of transition to other test mode group, the set must be returned to the Test Mode Idle status once by entering the command “0-1-#”.

A) Test mode termination

Command	Mode/Operation
0-0-#	The Test mode terminates. The contents of EEPROM are cleared. In case of successful clear, an acknowledge tone sounds.

B) Return test mode idle

Command	Mode/Operation
0-1-#	Return to Test Mode Idle status.


C) Continuous receiving test group (Note 1)

Command	Mode/Operation
1-1-#	CH1 continuous receiving status (LNA, AGC ON)

D) Continuous transmission test group (Note 1)

Command	Description
2-1-#	CH1 continuous transmission status (TX Power High)
2-2-#	CH1 continuous transmission status (TX Power Mid)
2-3-#	CH1 continuous transmission status (TX Power Low)

**Note 1:** Each time the [\*] key is pressed, the channels change over as follows:

CH1 → CH2 → CH3 → ... → CH20  


E) Loopback test group 1

Command	Mode/Operation
3-1-#	CODEC Forward Loopback (L1) (MIC → SP) (within CODEC)
3-2-#	ADPCM Forward Loopback (L2) (MIC → CODEC → ADPCM → CODEC → SP)
3-3-#	ADPCM → RF Loopback (MIC → CODEC → ADPCM → RF → ADPCM → CODEC → SP)

F) TDD test group 1

Command	Mode/Operation
4-1-#	CH1 TDD mode (Master timing, Power High) status
4-2-#	CH1 TDD mode (Master timing, Power Mid) status
4-3-#	CH1 TDD mode (Master timing, Power Low) status
4-4-#	TDD mode (Slave timing, Standby) status. Power control

G) MMI test group

Command	Mode/Operation
5-1-#	Key test. • Press the keys successively in the following order: [TALK, FLASH] → [OFF] → [HOLD] → [VOL/PGM] → [INTERCOM] → [REDIAL/PAUSE] → [1] → [2] → [3] → [4] → [5] → [6] → [7] → [8] → [9] → [*] → [0] → [#] → [A] → [B] → [C]
	• If key input sequence is correct: An acknowledge tone sounds, and the set returns to the Test Mode Idle status. • If key input sequence is wrong: An error tone sounds, and the set returns to the Test Mode Idle status.
5-2-#	JOG shuttle test. (Note 2)
5-3-#	LCD test. All dots on LCD lights up immediately when the LCD test mode is selected.

**Note 2:** JOG shuttle test

The JOG shuttle test mode makes a check with the LCD display when JOG shuttle is rotated clockwise or counterclockwise, or the button is pressed.

JOG shuttle	LCD display
Rotate clockwise	“R” is displayed at 1st digit on 1st line
Rotate counterclockwise	“L” is displayed at 1st digit on 1st line
Press button	“P” is displayed at 1st digit on 1st line

H) TDD test group 2

Command	Mode/Operation
6-1-#	TDD mode (Master timing) status.

I) Memory clear test group

Command	Mode/Operation
7-1-#	The contents of EEPROM are cleared. In case of successful clear, an acknowledge tone sounds.

J) Battery save mode

Command	Mode/Operation
9-0-#	Battery Save mode.

### 5-3. RF TESTING

This test is for checking the RF system without disassembling the set in servicing. Perform measurement using the spectrum analyzer and jig antenna.

#### 5-3-1. RF Testing method

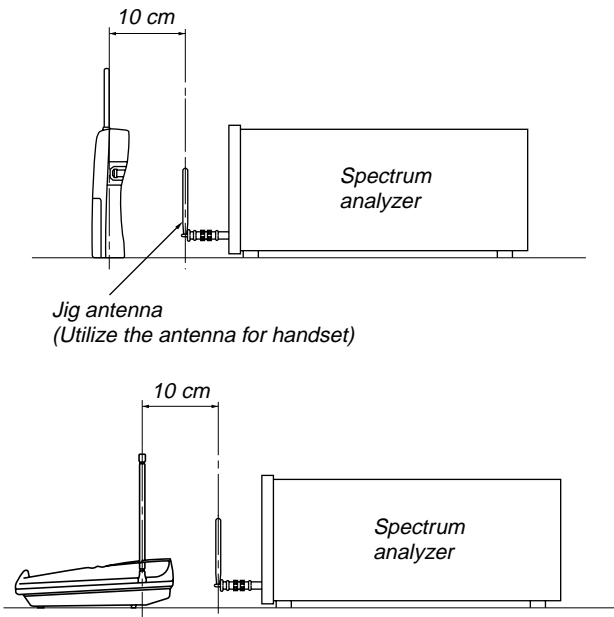
Please follow the below instruction to perform RF test.

##### [Setting Condition]

Connect a receiving antenna to RF INPUT of Spectrum analyzer and set the unit 10 cm (4 inches) away from the receiving antenna.

Measuring tool: Spectrum analyzer (equivalent to HP8595E)

Jig: Receiving antenna (for Spectrum analyzer)



#### • Transmission Wave:

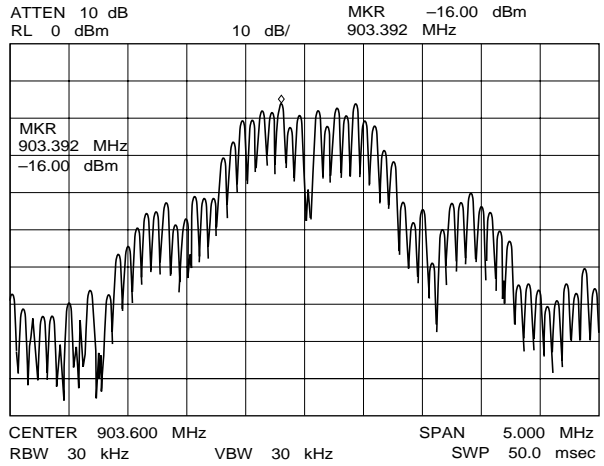


Fig. 1

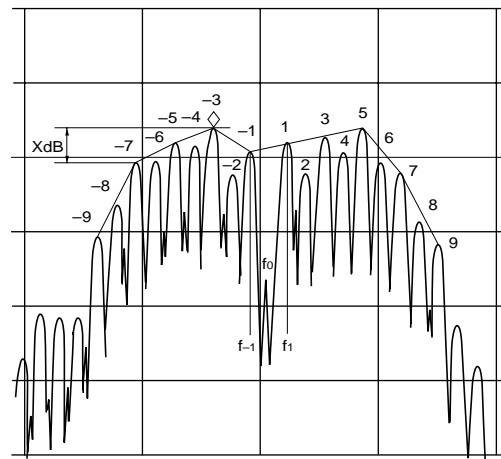


Fig. 2

#### [Check the Transmission Wave]

##### Purpose

It is necessary to check spectrum wave of transmission wave which is an important factor in order to confirm operational performance of Spread Spectrum models. If this wave deviates from correct wave form, normal data transmission cannot be made and, as a result of that, possibility that occurrence of mute increases and communication distance becomes shorter will increase.

##### Measuring process

- Setting Spectrum analyzer:
  - Center frequency : 903.6 MHz (CH1)
  - RBW : 30 kHz
  - VBW : 30 kHz
  - Span : 3 MHz (or 5MHz)
- Setting Test mode:
  - Continuous Transmit mode (CH1 High Power)
  - (Refer to "Test Mode" on page 16)
- Measurement:
  - Measure transmitting wave.
- Specifications:
  - Acceptable level [XdB] difference between the highest peak and the lowest peak of odd side band (the first to seventh side band from Center Frequency ; Transmission Frequency f<sub>0</sub>: CH1) is under 10 dB. (Refer Fig. 1 and Fig. 2)
  - If output wave form deteriorates, side band appears like Fig. 3 and Fig. 4.

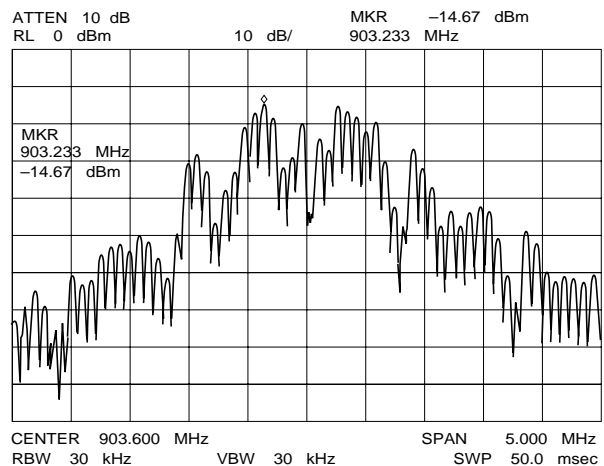


Fig. 3

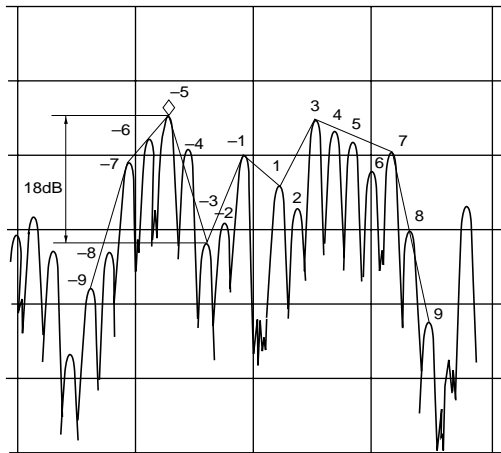
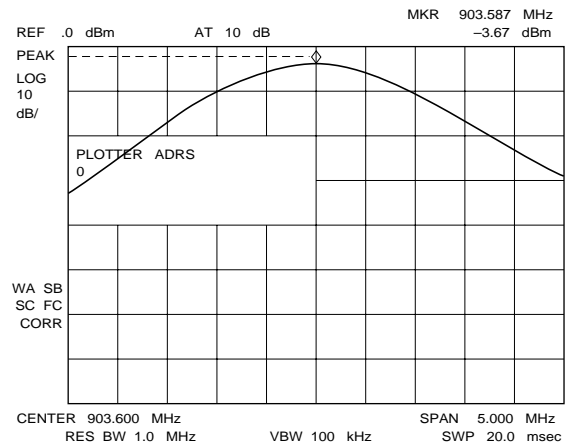


Fig. 4

- Measurement:  
Measure peak level by Spectrum analyzer.



**[Check Center Frequency]**

**Measuring process**

- Setting Spectrum analyzer:  
Center frequency : 903.6 MHz (CH1)  
RBW : 10 kHz  
VBW : 10 kHz  
Span : 1 MHz
- Setting Test mode:  
Continuous Transmit mode (CH1 High Power)  
(Refer to “Test Mode” on page 16)
- Measurement:  
Measure transmitting wave  $f_0$  (Formula of center frequency)  
(Refer Fig.5)
- Specification:  
903.6 MHz  $\pm$  27 kHz

**Center Frequency:**

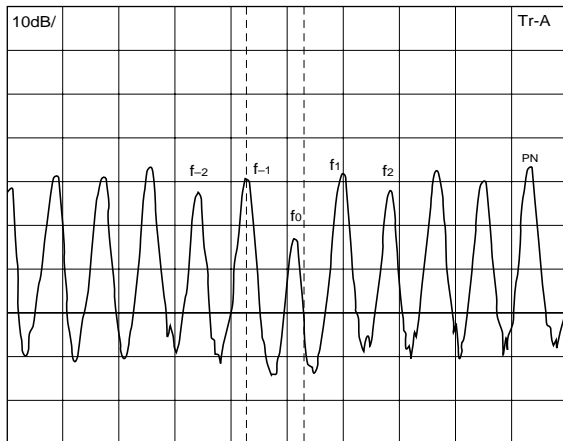


Fig. 5

**DATA**

(UNIT; dbm)

NO	HANDSET			BASESET		
	HIGH	MID	LOW	HIGH	MID	LOW
1	-3.93	-20.95	-34.53	-2.36	-19.17	-32.81
2	-3.70	-20.36	-33.75	-1.52	-18.33	-30.79
3	-4.47	-21.48	-34.78	-4.36	-18.65	-33.3
4	-4.64	-21.85	-35.12	-4.25	-19.37	-33.05
5	-4.52	-21.18	-35.54	-2.35	-19.05	-32.95
6	-4.02	-21.57	-35.12	-2.96	-19.14	-33.45
7	-5.03	-22.14	-35.45	-4.12	-19.12	-33.01
8	-5.58	-22.35	-35.61	-2.89	-18.56	-32.12
9	-4.03	-21.32	-35.82	-5.01	-18.33	-32.41
10	-4.43	-19.69	-33.92	-2.74	-17.28	-31.33
$\times$	-4.435	-21.29	-34.96	-3.256	-18.7	-32.52
$\sigma$	0.5336	0.7634	0.6747	1.0562	0.5895	0.8273
$\times + 4\sigma$	-2.301	-18.24	-32.27	0.9687	-16.34	-29.21
$\times - 4\sigma$	-6.569	-24.34	-37.66	-7.481	-21.06	-35.83

- Specification:  
HANDSET MIN -17 dBm  
(at High power: Include location loss)  
BASE SET MIN -18 dBm  
(at High power: Include location loss)

**[Confirm Transmitting output]**

**Measuring process**

- Setting Spectrum analyzer:  
Center frequency : 903.6 MHz (CH1)  
RBW : 1 MHz  
VBW : 100 kHz  
Span : 5 MHz
- Setting Test mode:  
Continuous Transmit mode (CH1 High Power)  
(Refer to “Test Mode” on page 16)

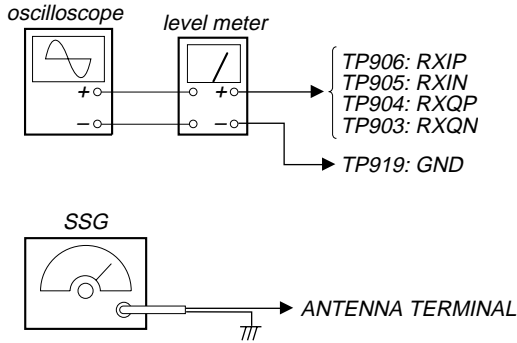
# SECTION 6 ELECTRICAL ADJUSTMENTS

## 6-1. BASE UNIT SECTION

- Make the set in Test mode (see page 16)

### 1. Checking RX I & Q Output Level

Setting:



**Procedure:**

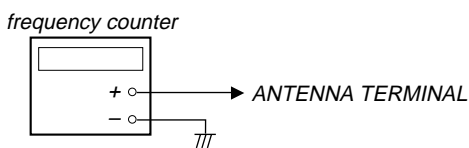
1. Place the base unit in the Continuous Receive mode (CH1, LNA ON, AGC ON).
2. Set the SSG frequency to the frequency on CH1 + 300 kHz, and the RF output level to -95 dBm.
3. Measure the output level of RXIN, RXIP, RXQN and RXQP with a level meter. At this time, confirm with an oscilloscope that a sine wave of 300 kHz is output.
4. Confirm that the measured output level is -31.0 to -24.0 (TYPICAL -27.0) dBV. If IC951 was replaced (there is no ID data), the output level is -31.0 to -24.0 dBV.
5. Also, execute steps 1 through 4 for the channels 10 and 20.

\* For the frequency on each channel, see page 13.

### 2. Checking TX Center Frequency

Setting :

- short: TP918 ↔ TP919

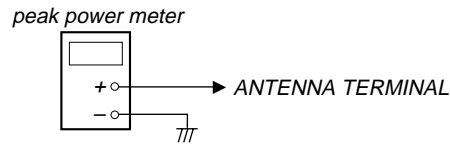


**Procedure:**

1. Short TP918 and TP919 (GND) on the BASE MAIN board in the base unit.
2. Place the base unit in the Continuous Transmit mode (CH1, High power).
3. Measure the ANT OUT frequency of the RF module in the base unit using a frequency counter.
4. Confirm that the measured frequency is 903.600 MHz ± 27 kHz.
5. Also, execute steps 1 through 4 for the channels 10 and 20.

### 3. Checking TX Output

Setting:



**Procedure:**

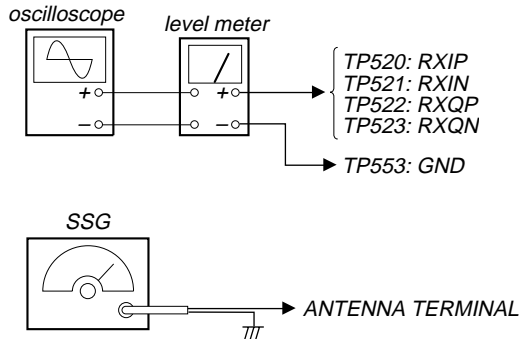
1. Place the base unit in the Continuous Transmit mode (CH1, High power).
2. Measure the ANT OUT output of the RF module in the base unit using a peak power meter.
3. Confirm that the measured output is 80 mW (MIN 30 mW).
4. Also, execute steps 1 through 4 for the channels 10 and 20.  
CH10: 80 mW (MIN 30 mW)  
CH20: 75 mW (MIN 25 mW)

## 6-2. HANDSET SECTION

- Make the set in Test mode (see page 17)

### 1. Checking RX I & Q Output Level

#### Setting:



#### Procedure:

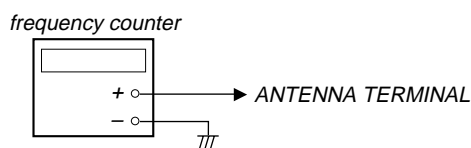
1. Place the handset in the Continuous Receive mode (CH1, LNA, AGC ON).
2. Set the SSG frequency to the frequency on CH1 + 300 kHz, and the RF output level to -95 dBm.
3. Measure the output level of RXIN, RXIP, RXQN, and RXQP with a level meter. At this time, confirm with an oscilloscope that a sine wave of 300 kHz is output.
4. Confirm that the measured output level is -31.0 to -24.0 (TYPICAL -27.0) dBV. If IC502 was replaced (there is no ID data), the output level is -31.0 to -24.0 dBV.
5. Also, execute steps 1 through 4 for the channels 10 and 20.

\* For the frequency on each channel, see page 13.

### 2. Checking TX Center Frequency

#### Setting:

- short: TP555 ↔ TP553

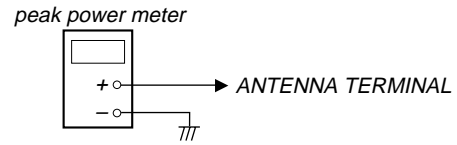


#### Procedure:

1. Short TP555 and TP553 (GND) on the HAND MAIN board in the handset.
2. Place the handset in the Continuous Transmit mode (CH1, High power).
3. Measure the ANT OUT frequency of the RF module in the handset using a frequency counter.
4. Confirm that the measured frequency is 903.600 MHz ± 27 kHz.
5. Also, execute steps 1 through 4 for the channels 10 and 20.

### 3. Checking TX output

#### Setting:

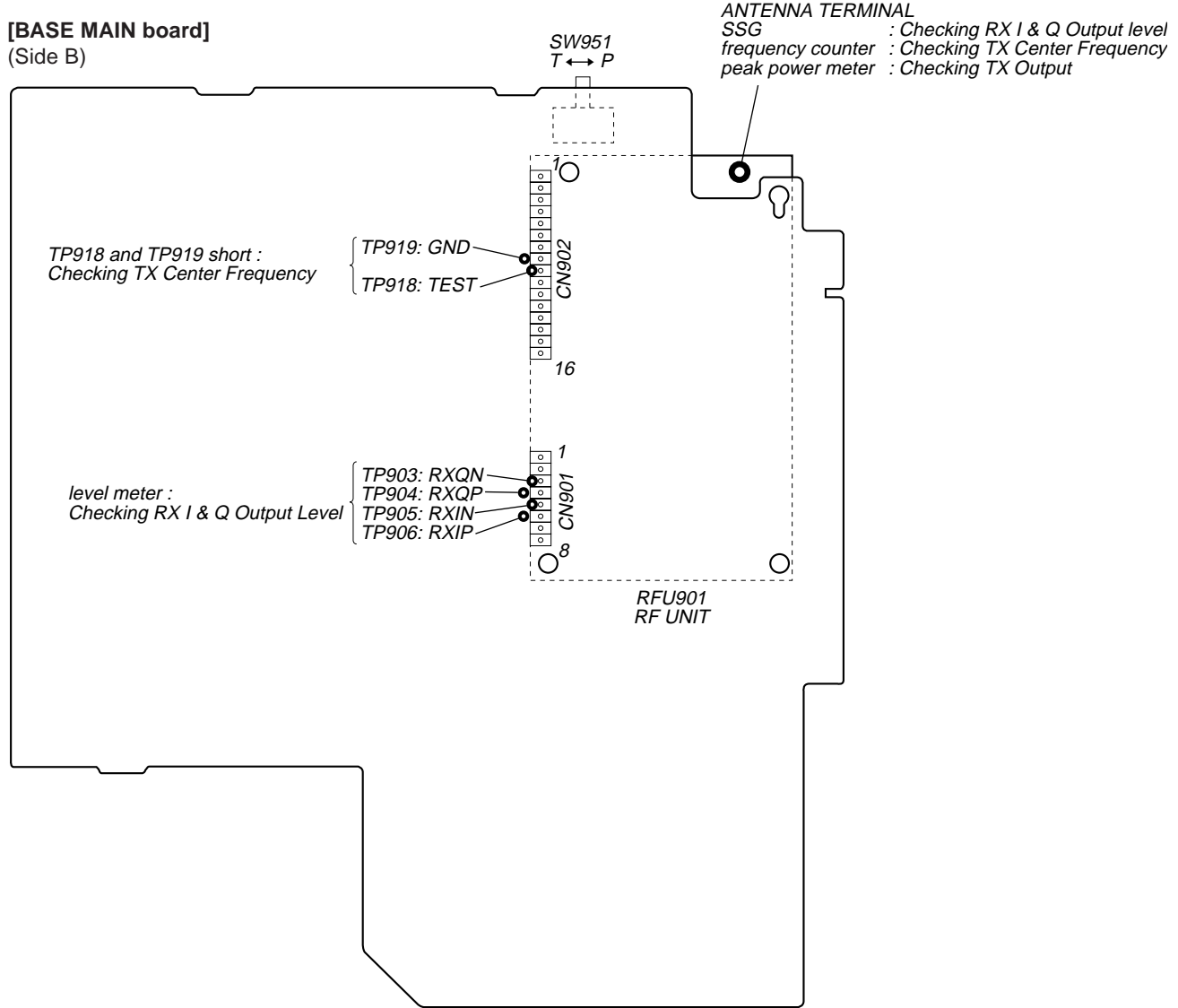


#### Procedure:

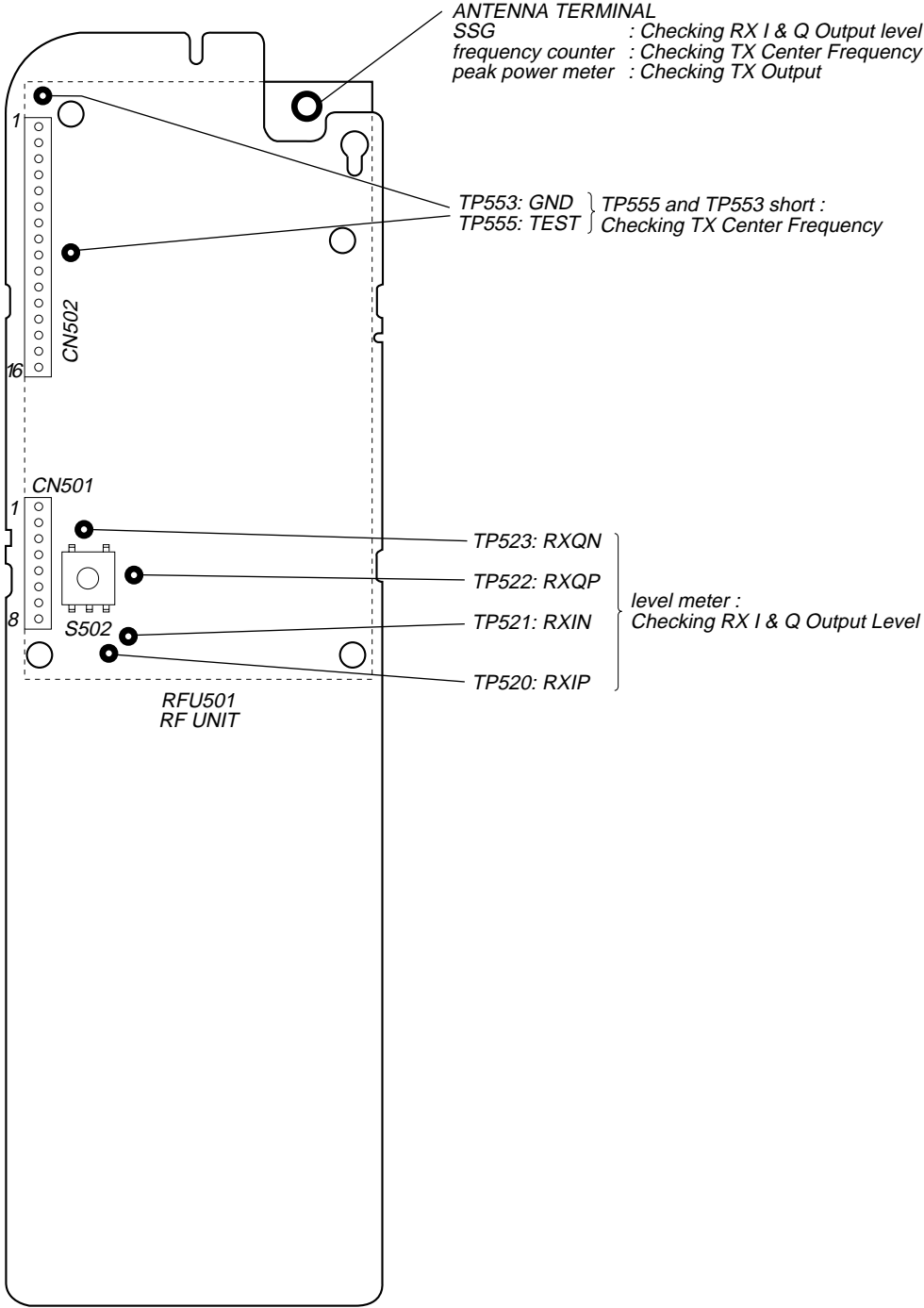
1. Place the handset in the Continuous Transmit mode (CH1, High power).
2. Measure the ANT OUT output of the RF module in the handset using a peak power meter.
3. Confirm that the measured output is 80 mW (MIN 20 mW).
4. Also, execute steps 1 through 3 for the channels 10 and 20.  
CH10: 80 mW (MIN 20 mW)  
CH20: 50 mW (MIN 10 mW)

**Adjustment Location:**

**[BASE MAIN board]**  
(Side B)

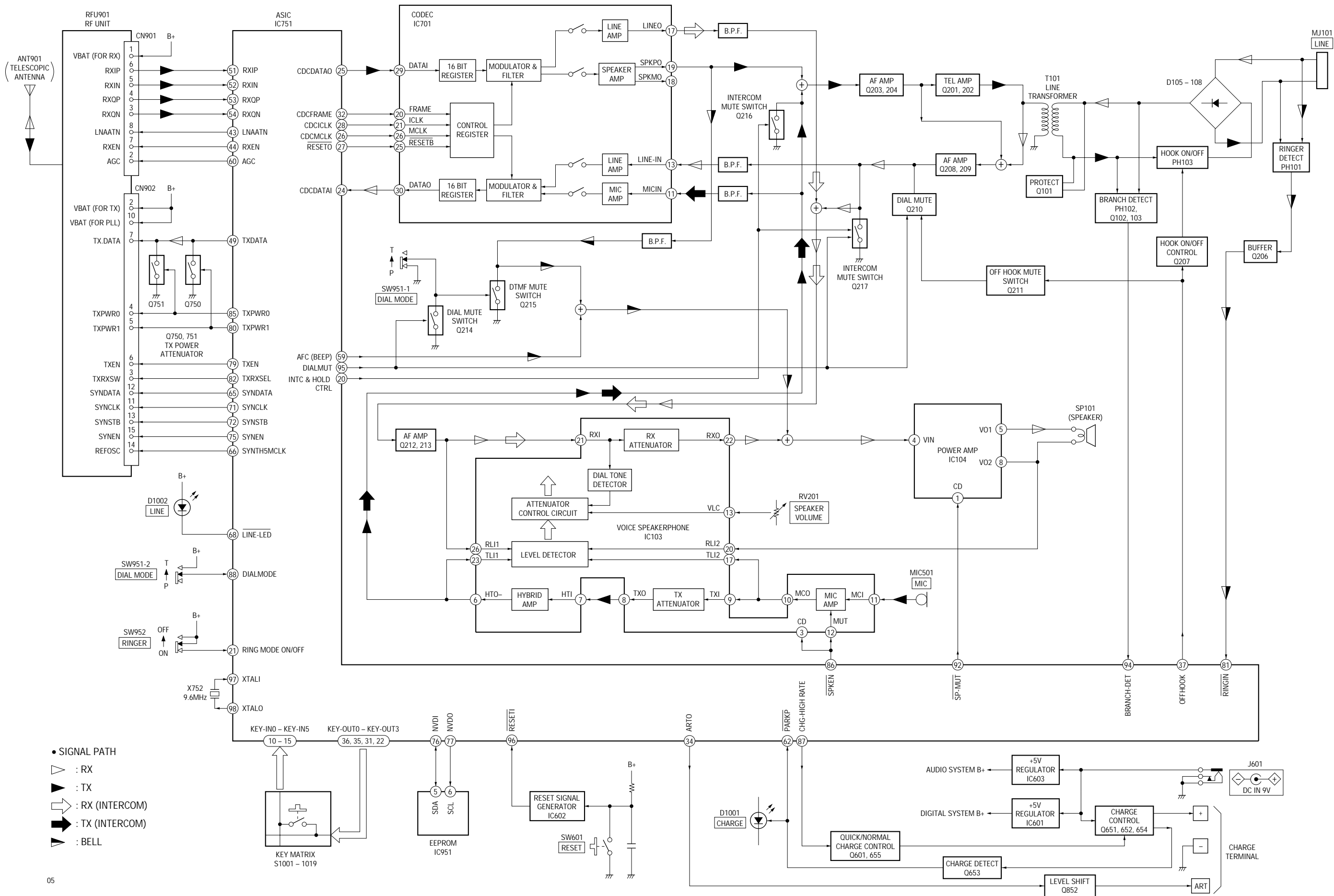


**[HAND MAIN board]**  
(Side A)



## SECTION 7 DIAGRAMS

7-1. BLOCK DIAGRAM – BASE UNIT Section –





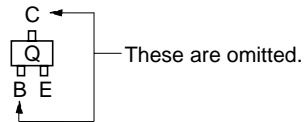
### 7-3. NOTES FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

#### Note on Printed Wiring Board:

- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.

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

- Indication of transistor.



#### Note on Schematic Diagram:

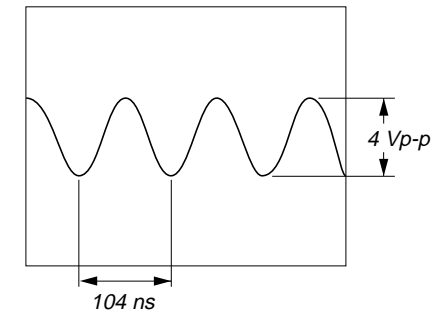
- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4\text{ W}$  or less unless otherwise specified.
- □ : panel designation.

**Note:** The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

- [B+] : B+ Line.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack (J601 on the BASE MAIN board).
- Power voltage is dc 12 V and fed with regulated dc power supply from modular jack (MJ101 on the BASE MAIN board) with  $100\ \Omega$  in series.
- Power voltage is dc 3.6 V and fed with regulated dc power supply from battery terminal (CN301 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
  - ⇨ : RX(INTERCOM)
  - ▶ : TX
  - ⇨ : TX(INTERCOM)
  - ▽ : bell

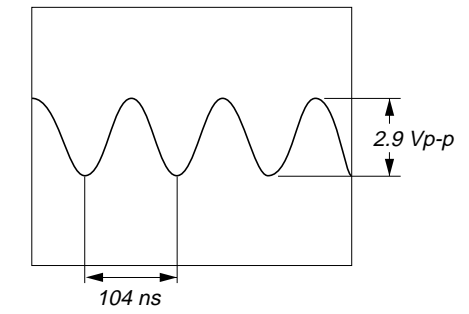
#### • Waveforms – BASE MAIN Board –

① IC751 ⑦ (XTALI)



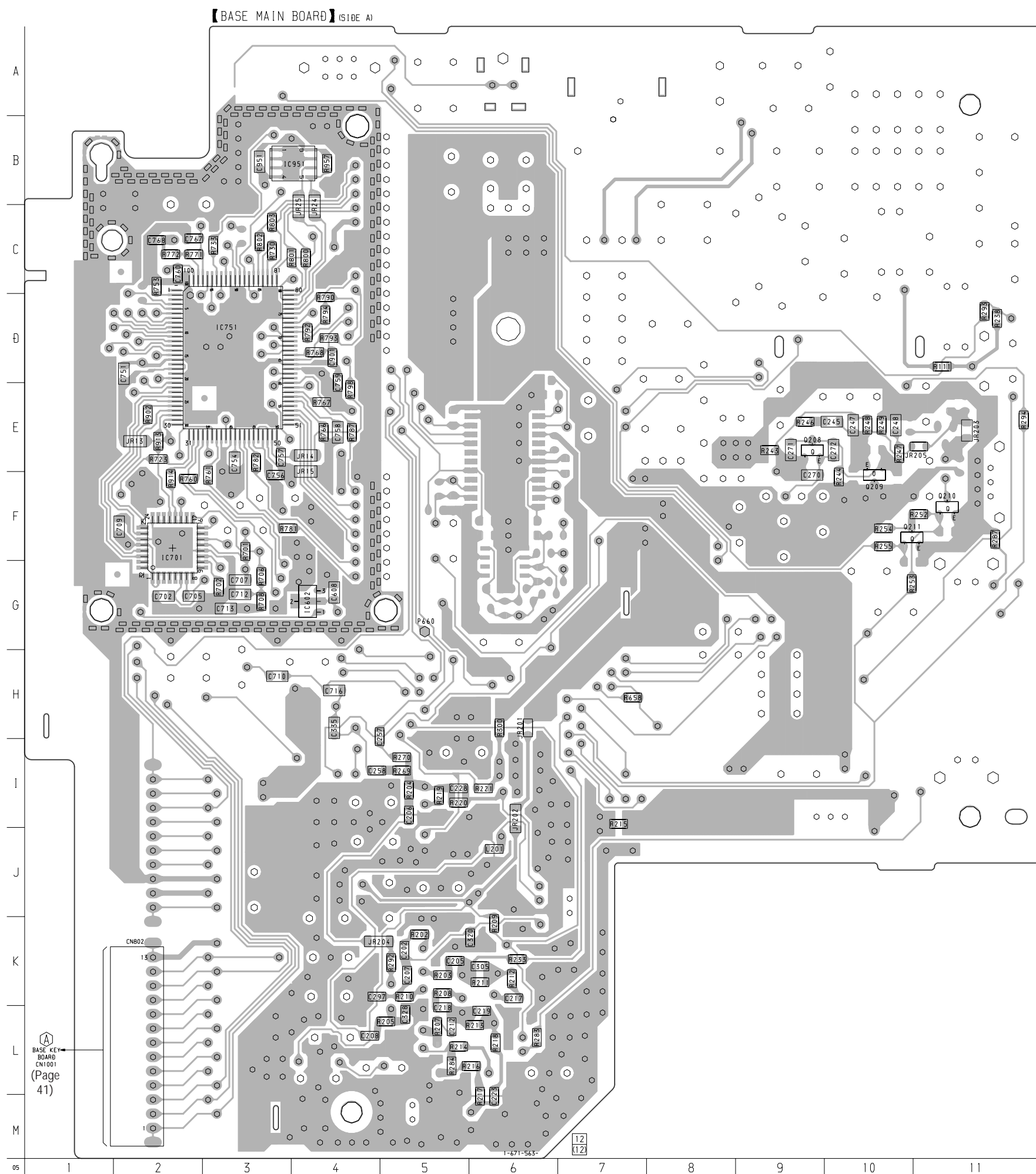
#### – HAND MAIN Board –

① IC501 ⑦ (XTALI)

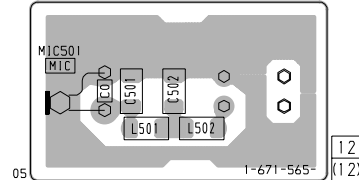


• Semiconductor Location (SIDE A)

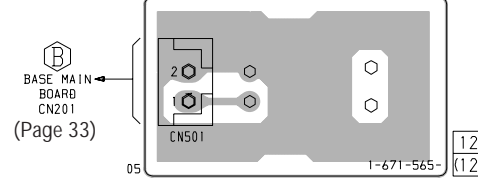
Ref. No.	Location
IC602	G-4
IC701	F-2
IC751	D-3
IC951	B-4
Q208	E-9
Q209	F-10
Q210	F-11
Q211	F-10



【BASE MICROPHONE BOARD】 (SIDE A)

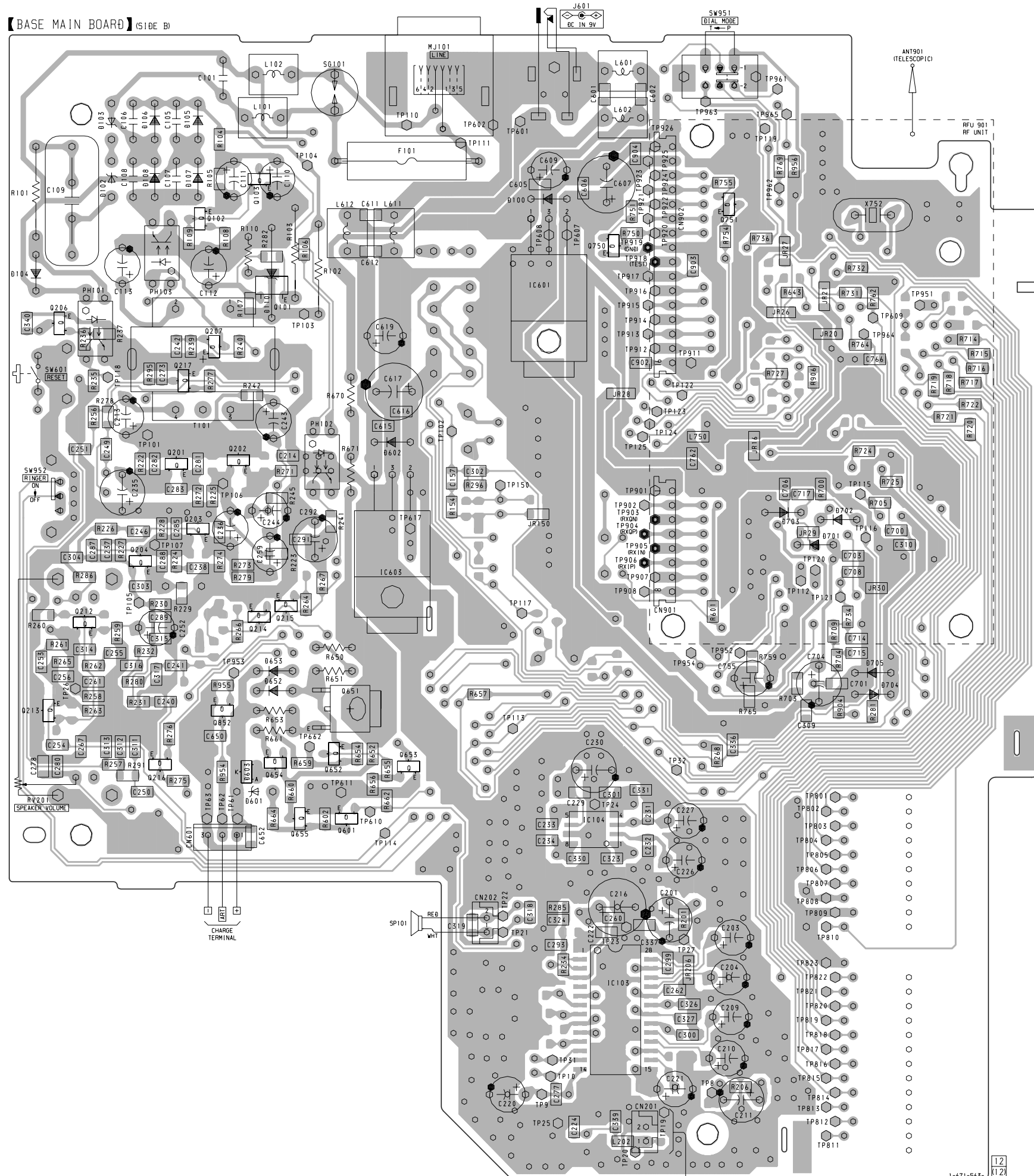


【BASE MICROPHONE BOARD】 (SIDE B)



BASE KEY BOARD CN1001 (Page 41)

【BASE MAIN BOARD】(SIDE B)



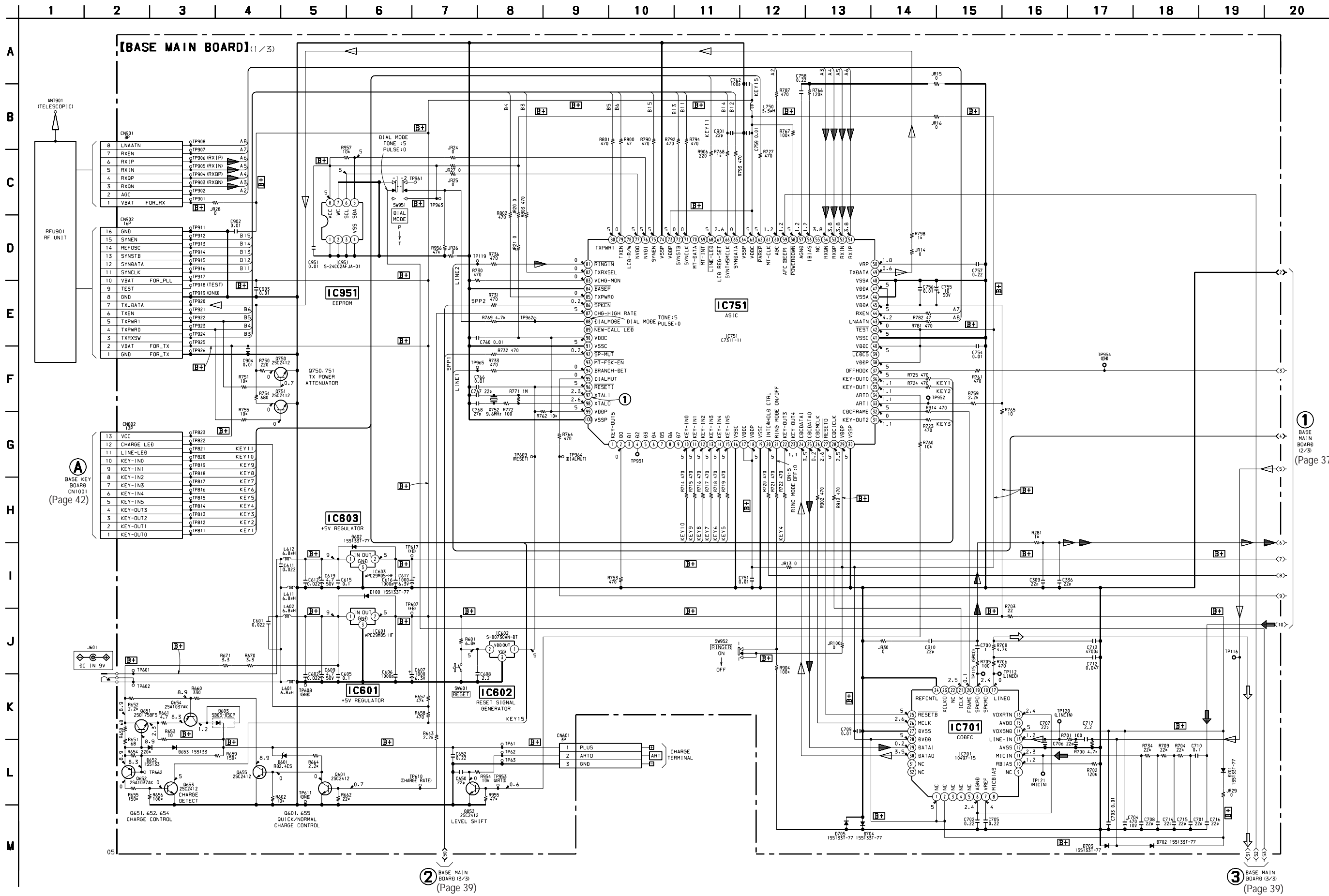
• Semiconductor Location (SIDE B)

Ref. No.	Location
D100	B-6
D102	B-11
D103	A-11
D104	C-11
D105	A-10
D106	A-10
D107	B-10
D108	B-10
D110	C-9
D601	I-9
D602	E-8
D603	I-9
D652	H-9
D653	H-9
D701	F-3
D702	F-3
D703	F-3
D704	H-2
D705	H-2
IC103	K-5
IC104	I-5
IC601	C-6
IC603	F-8
PH101	D-11
PH102	E-8
PH103	C-10
Q101	C-9
Q102	C-10
Q103	B-9
Q201	E-10
Q202	E-9
Q203	F-10
Q204	F-10
Q206	D-11
Q207	D-10
Q212	G-11
Q213	H-11
Q214	G-9
Q215	G-9
Q216	I-10
Q217	D-10
Q601	I-8
Q651	H-8
Q652	H-8
Q653	I-7
Q654	I-9
Q655	I-9
Q750	C-5
Q751	B-4
Q852	H-10

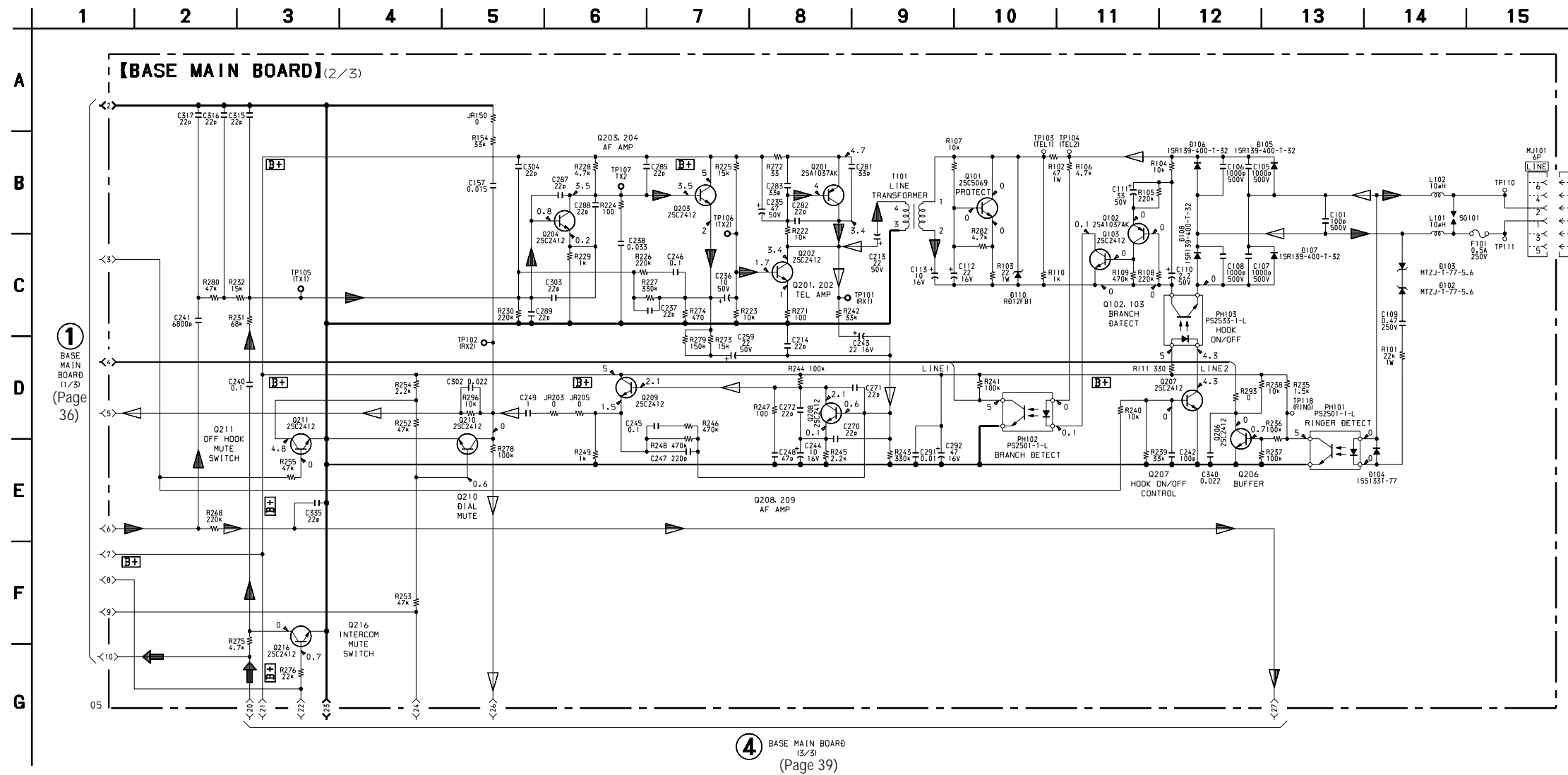
05 11 10 9 8 7 6 5 4 3 2 1

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

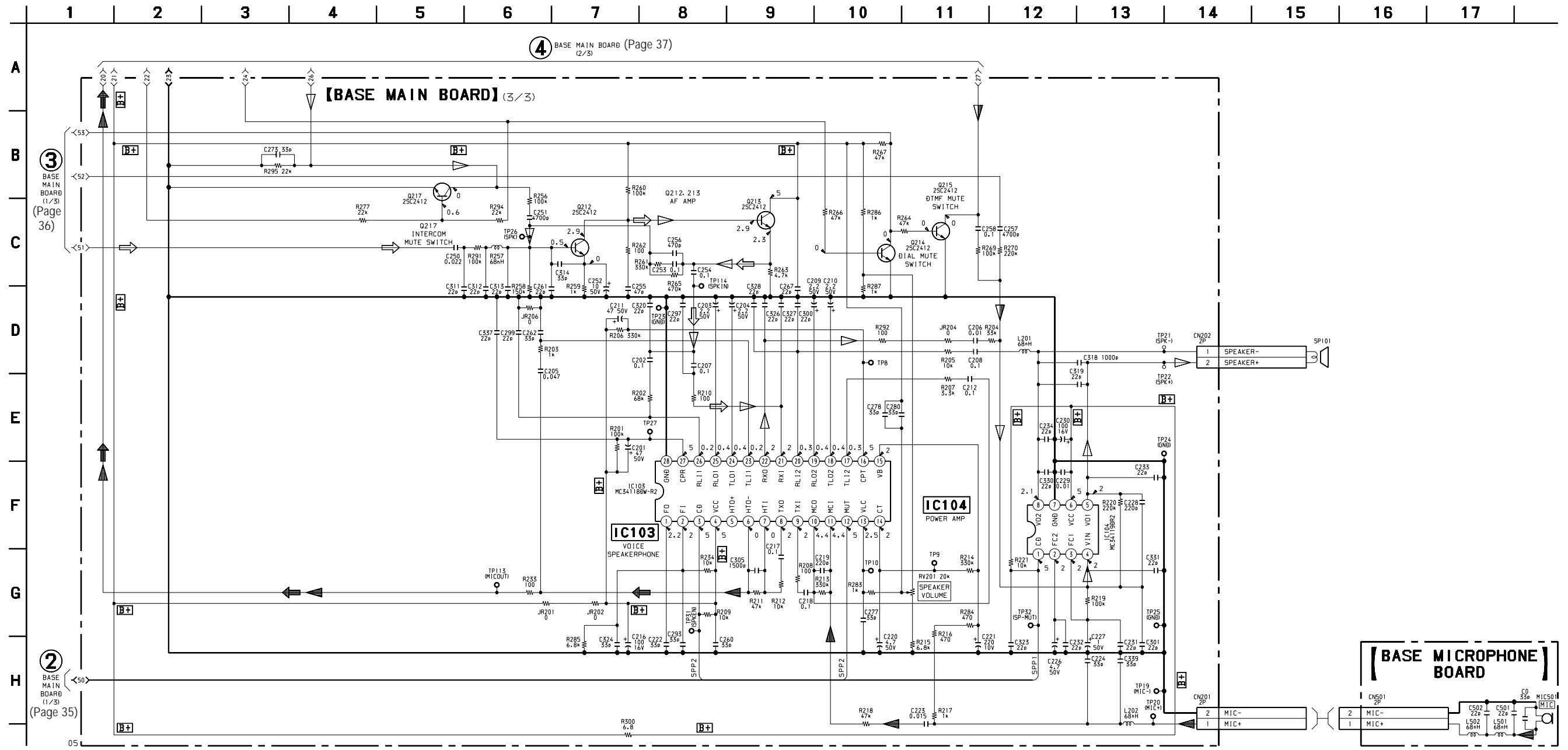
7-6. SCHEMATIC DIAGRAM – BASE MAIN Section (1/3) – • See page 30 for Waveform. • See page 47 for IC Block Diagrams.



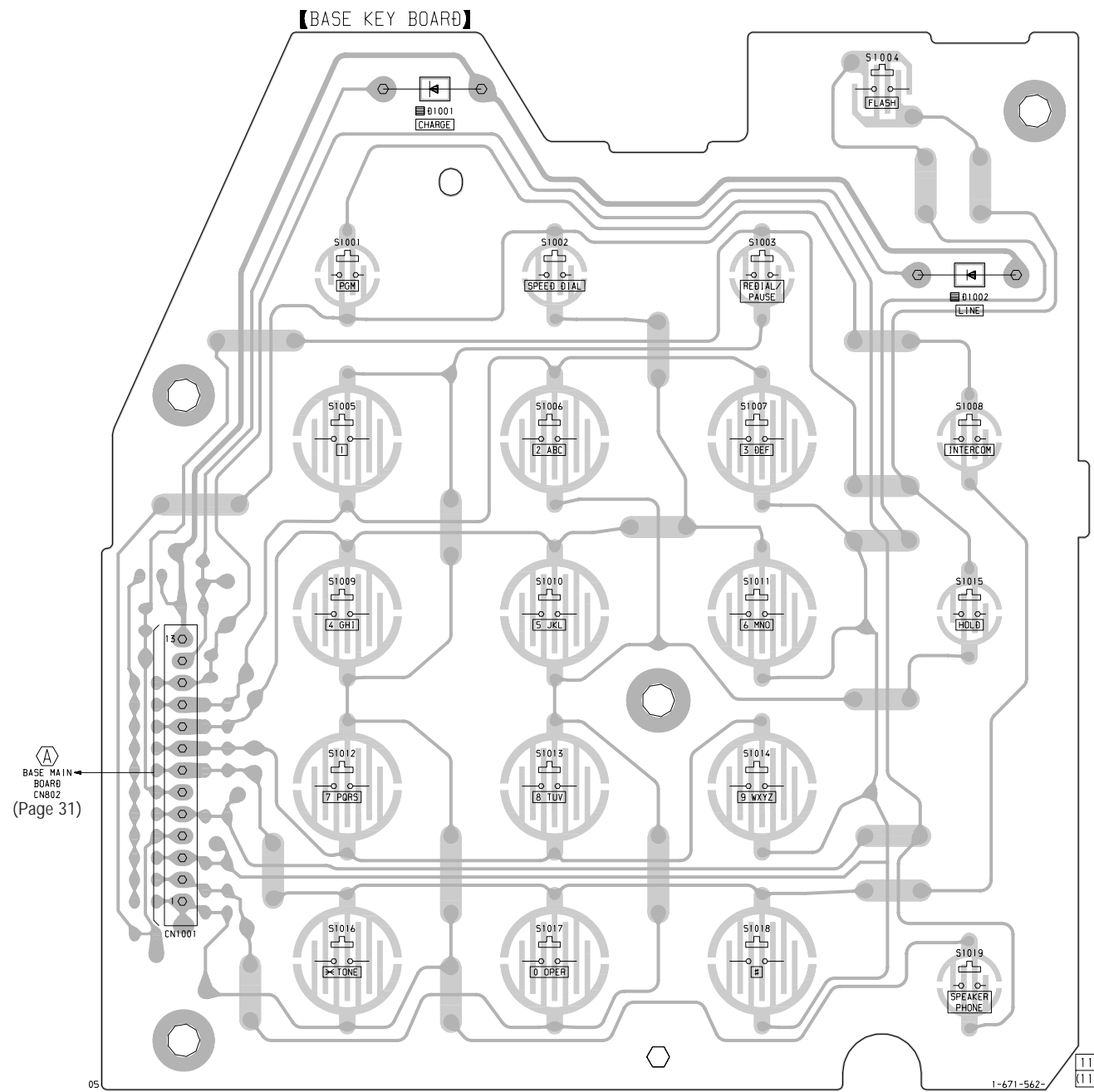
7-7. SCHEMATIC DIAGRAM – BASE MAIN Section (2/3) – • See page 47 for IC Block Diagrams.



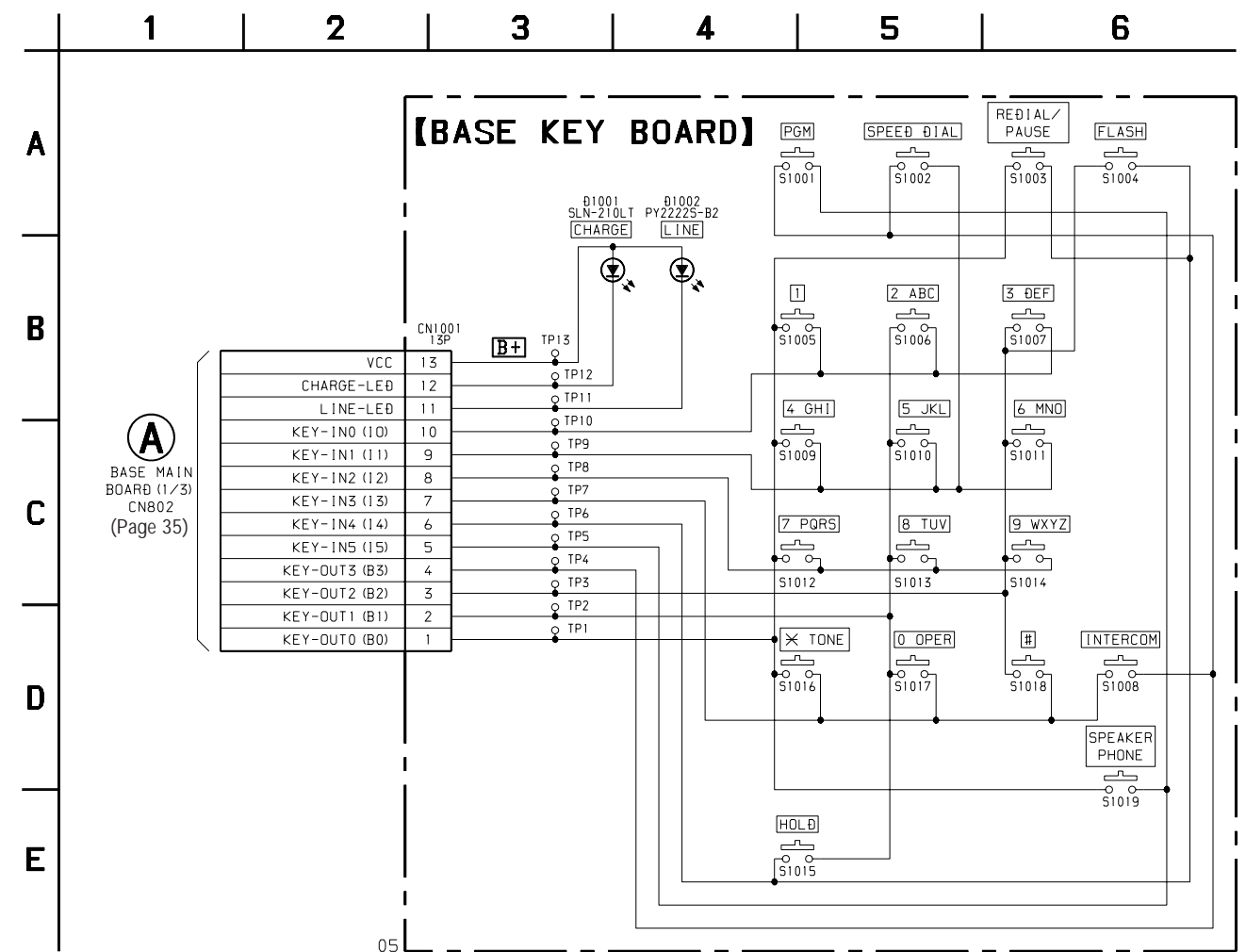
7-8. SCHEMATIC DIAGRAM – BASE MAIN Section (3/3) – • See page 47 for IC Block Diagrams.



7-9. PRINTED WIRING BOARD - BASE KEY Section -



7-10. SCHEMATIC DIAGRAM - BASE KEY Section -



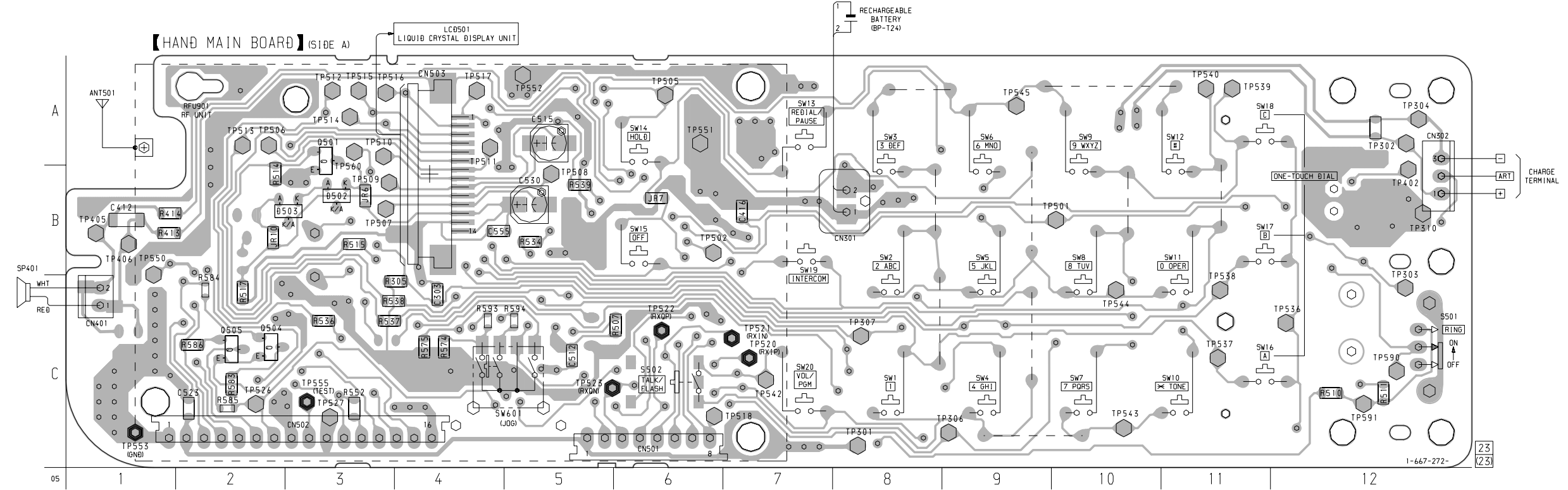
**Note**

- [Carbon pattern symbol] : Pattern of the side which is seen. (Carbon pattern)
- [Shaded area symbol] : Pattern from the side which enables seeing.

7-11. PRINTED WIRING BOARD – HAND MAIN Section –

• Semiconductor Location (SIDE A)

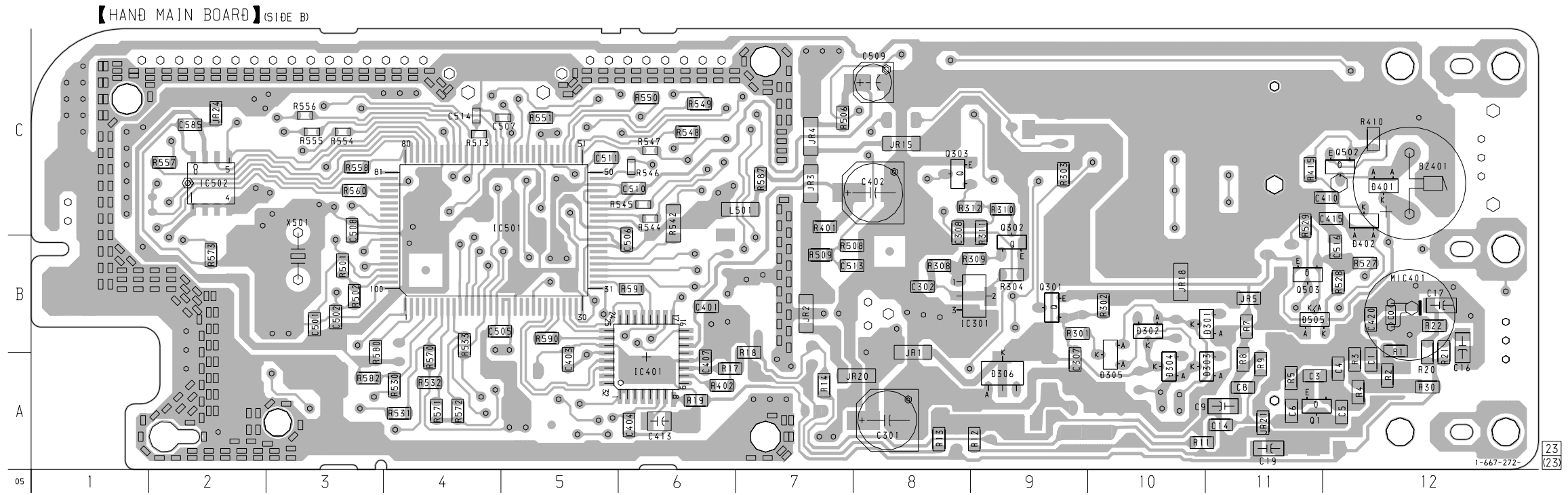
Ref. No.	Location
D502	B-3
D503	B-3
Q501	A-3
Q504	C-2
Q505	C-2



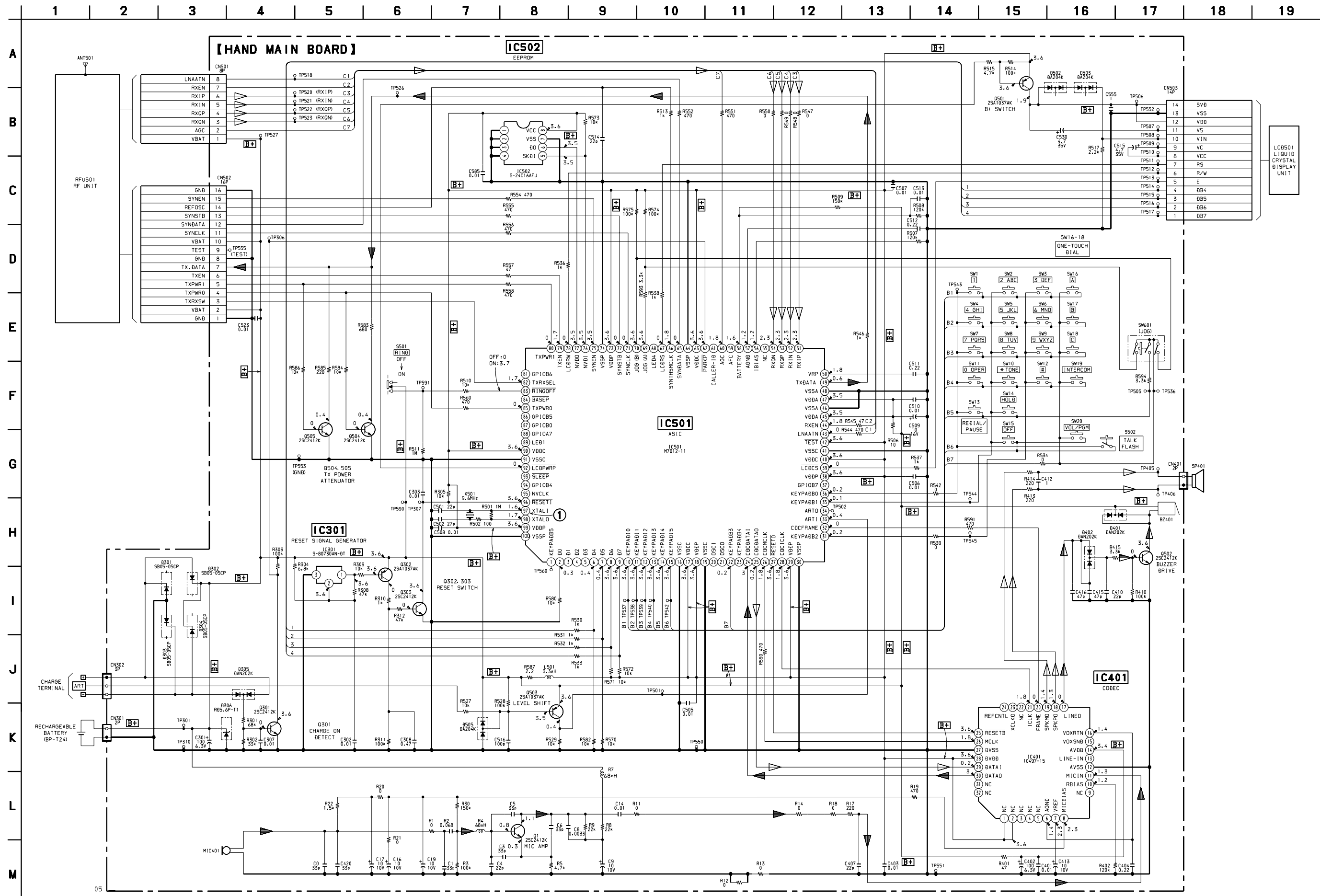
Note:  
 - - - - : carbon pattern

• Semiconductor Location (SIDE B)

Ref. No.	Location
D301	B-11
D302	B-10
D303	A-11
D304	A-10
D305	B-10
D306	A-9
D401	C-12
D402	C-12
D505	B-11
IC301	B-9
IC401	A-6
IC501	C-4
IC502	C-2
Q1	A-11
Q301	B-9
Q302	B-9
Q303	C-8
Q502	C-12
Q503	B-11

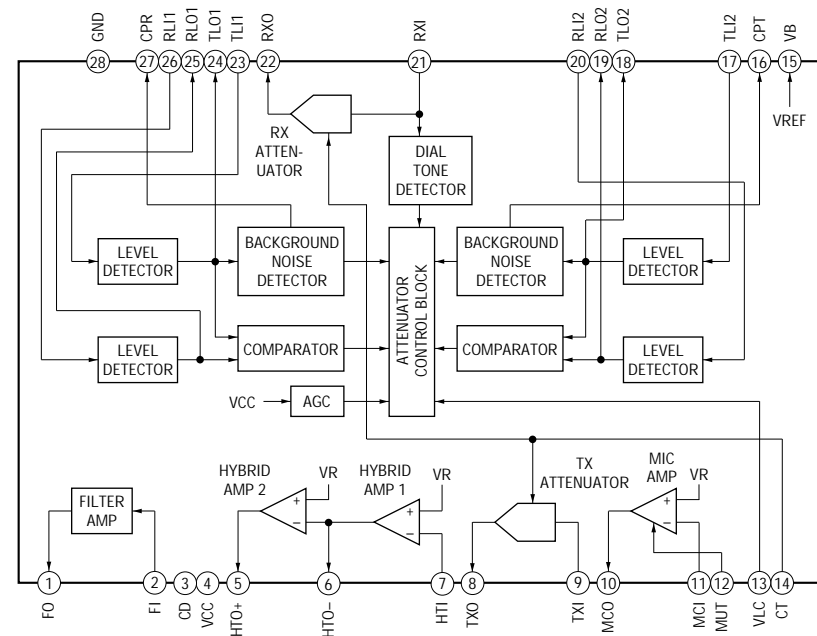


7-12. SCHEMATIC DIAGRAM – HAND MAIN Section – • See page 30 for Waveform. • See page 47 for IC Block Diagrams.

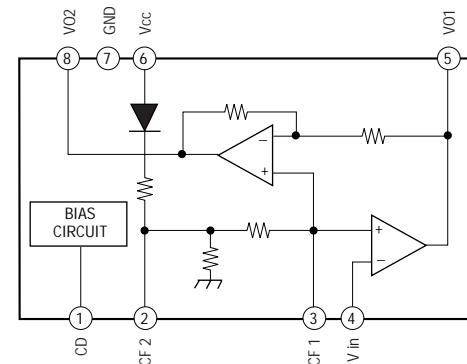


• IC Block Diagrams

IC103 MC34118DW (BASE MAIN BOARD)

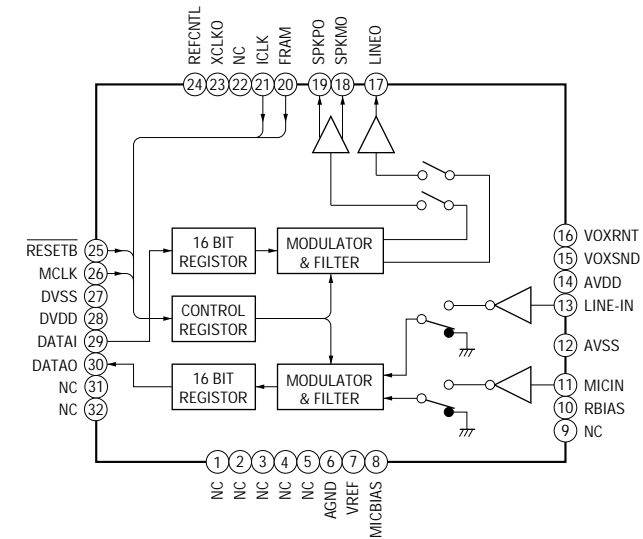


IC104 MC34119DR2 (BASE MAIN BOARD)



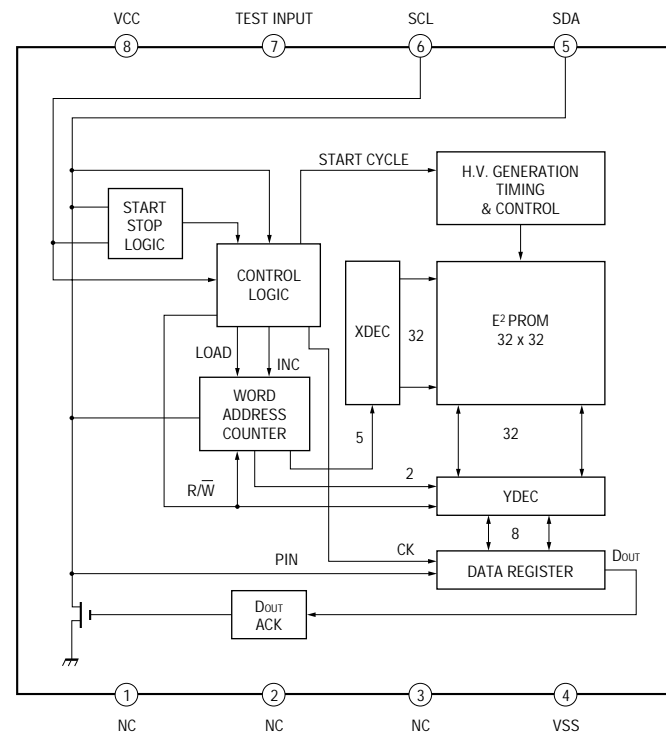
IC401 10497-15 (HAND MAIN BOARD)

IC701 10497-15 (BASE MAIN BOARD)



IC502 S-24C16AFJ-TB (HAND MAIN BOARD)

IC951 S-24C02AFJ-TB (BASE MAIN BOARD)



7-13. IC PIN FUNCTION DESCRIPTION

• HAND MAIN BOARD IC501 M7012-11 (ASIC)

Pin No.	Pin Name	I/O	Function
1	KEYPADB5	O	Key output terminal Not used (open)
2	D0	I	Selection input of the model Fixed at "L" in this set
3, 4	D1, D2	I/O	Not used (open)
5	D3	I	Selection input of the test mode Not used (open)
6 to 9	D4 to D7	O	Serial data output to the liquid crystal display unit (LCD501)
10 to 15	KEYPADI0 to KEYPADI5	I	Key return signal input from the key matrix "L" input when key pressing
16	VSSC	—	Ground terminal (for core)
17	VDDC	—	Power supply terminal (+5V) (for core)
18	VDDP	—	Power supply terminal (+5V) (for pad)
19	VSSC	—	Ground terminal (for core)
20	OSCI	I	Sub system clock input terminal (32.768 kHz) Not used (open)
21	OSCO	O	Sub system clock output terminal (32.768 kHz) Not used (open)
22	KEYPADB3	O	Key send signal output to the key matrix
23	KEYPADB4	O	Key output terminal Not used (open)
24	CDCDATAI	I	Transmit data input from the CODEC (IC401)
25	CDCDATAO	O	Receive data output to the CODEC (IC401)
26	CDCMCLK	O	Master clock signal output to the CODEC (IC401)
27	RESETO	O	Reset signal output to the CODEC (IC401) "L": reset
28	CDICLK	O	Interface clock signal output to the CODEC (IC401)
29	VDDP	—	Power supply terminal (+5V) (for pad)
30	VSSP	—	Ground terminal (for pad)
31	KEYPADB2	O	Key send signal output to the key matrix
32	CDCFRAME	O	Frame output to the CODEC (IC401)
33	ARTI	I	ART input from the base unit
34	ARTO	O	ART output terminal Not used (open)
35, 36	KEYPADB1, KEYPADB0	O	Key send signal output to the key matrix
37	GPIOB7	O	Not used (open)
38	VDDP	—	Power supply terminal (+5V) (for pad)
39	LCDCS	O	Chip select signal output to the liquid crystal display unit (LCD501) "L" active
40	VDDC	—	Power supply terminal (+5V) (for core)
41	VSSC	—	Ground terminal (for core)
42	TEST	I	Setting terminal for the test mode "L": test mode Normally: fixed at "H"
43	LNAATN	O	LNA gain selection signal output to the RF unit "H": low gain
44	RXEN	O	RX system enable signal output to the RF unit "H": enable
45	VDDA	—	Power supply terminal (+5V) (for analog)
46	VSSA	—	Ground terminal (for analog)
47	VDDA	—	Power supply terminal (+5V) (for analog)
48	VSSA	—	Ground terminal (for analog)
49	TXDATA	O	Transmit data output to the RF unit
50	VRP	O	Analog reference voltage output terminal
51	RXIP	I	Receive data (I positive) input from the RF unit
52	RXIN	I	Receive data (I negative) input from the RF unit
53	RXQP	I	Receive data (Q positive) input from the RF unit
54	RXQN	I	Receive data (Q negative) input from the RF unit
55	NC	—	Not used (open)

Pin No.	Pin Name	I/O	Function
56	IBIAS	I	Analog bias input terminal
57	AGND	—	Analog ground terminal
58	BATTERY	I	Battery voltage detection input terminal
59	AFC	O	Not used (open)
60	AGC	O	Auto gain control signal output to the RF unit
61	CALLER-ID	O	Not used (open)
62	$\overline{\text{PARKP}}$	I	Charge detection input terminal “L”: charge on
63	VDDC	—	Power supply terminal (+5V) (for core)
64	VSSP	—	Ground terminal (for pad)
65	SYNDATA	O	Synthesizer data output to the RF unit
66	SYNTH5MCLK	O	Synthesizer reference oscillator output to the RF unit (9.62 MHz)
67	LCDRS	O	Register selection signal output to the liquid crystal display unit (LCD501) “L”: instruction register, “H”: data register
68	LED4	O	LED drive signal output terminal “L”: LED on Not used (open)
69	JOG (A)	I	Jog dial pulse input of the rotary encoder (SW601) (A phase input)
70	JOG (B)	I	Jog dial pulse input of the rotary encoder (SW601) (B phase input)
71	SYNCLK	O	Synthesizer clock signal output to the RF unit
72	SYNSTB	O	Synthesizer strobe signal output to the RF unit
73	VDDP	—	Power supply terminal (+5V) (for pad)
74	VSSP	—	Ground terminal (for pad)
75	SYNEN	O	Synthesizer power control signal output to the RF unit “H”: enable
76	NVDI	I/O	Two-way data bus with the EEPROM (IC502)
77	NVDO	O	Clock signal output to the EEPROM (IC502)
78	LCDRW	O	Data read/write selection signal output to the liquid crystal display unit (LCD501) “L”: data write, “H”: data read
79	TXEN	O	TX system enable signal output to the RF unit “H”: enable
80	TXPWR1	O	PA power selection signal output to the RF unit
81	GPIOB6	O	Not used (open)
82	$\overline{\text{TXRXSEL}}$	O	TX/RX selection signal output to the RF unit “L”: RX, “H”: TX
83	$\overline{\text{RINGOFF}}$	I	RING on/off switch (S501) input terminal “L”: ringer off, “H”: ringer on
84	$\overline{\text{BASEP}}$	I	Setting terminal for the base/handset selection “L”: base unit, “H”: handset unit (CMOS receiver with pull-up)
85	TXPWR0	O	PA power selection signal output to the RF unit
86, 87	GPIOB5, GPIOB0	O	Not used (open)
88	GPIOA7	O	Muting control signal output for the speaker amplifier “H” active Not used (open)
89	LED1	O	LED drive signal output terminal “L”: LED on Not used (open)
90	VDDC	—	Power supply terminal (+5V) (for core)
91	VSSC	—	Ground terminal (for core)
92	$\overline{\text{LCDPWRP}}$	O	Power on/off control signal output for the liquid crystal display unit (LCD501) “L”: power on, “H”: power off
93	$\overline{\text{SLEEP}}$	O	Not used (open)
94	GPIOB4	O	Not used (open)
95	NVCLK	O	Not used (open)
96	$\overline{\text{RESETI}}$	I	System reset signal input from the reset signal generator (IC301) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
97	XTALI	I	Main system clock input terminal (9.6 MHz)
98	XTALO	O	Main system clock output terminal (9.6 MHz)
99	VDDP	—	Power supply terminal (+5V) (for pad)
100	VSSP	—	Ground terminal (for pad)

• BASE MAIN BOARD IC751 C7311-11 (ASIC)

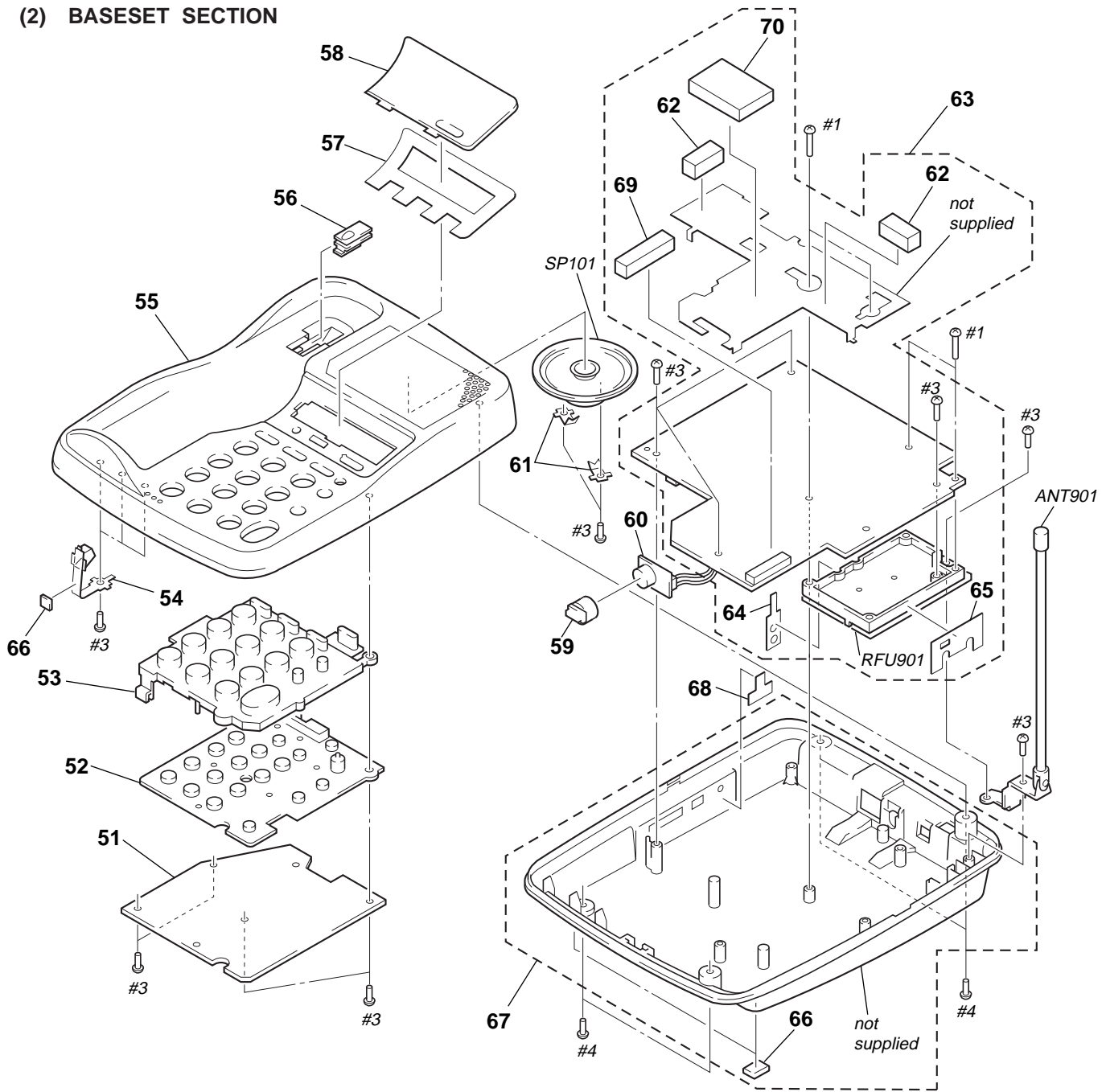
Pin No.	Pin Name	I/O	Function
1	KEY-OUT5	O	Key output terminal Not used (open)
2	D0	I	Selection input of the model (fixed at “L” in this set)
3, 4	D1, D2	O	Not used (open)
5	D3	I	Not used (open)
6 to 9	D4 to D7	O	Not used (open)
10 to 15	KEY-IN0 to KEY-IN5	I	Key return signal input from the key matrix “L” input when key pressing
16	VSSC	—	Ground terminal (for core)
17	VDDC	—	Power supply terminal (+5V) (for core)
18	VDDP	—	Power supply terminal (+5V) (for pad)
19	VSSC	—	Ground terminal (for core)
20	INTC & HOLD CTRL	O	Intercom and hold control signal output terminal “H”: intercom and hold status, Others: “L”
21	RING MODE ON/OFF	I	RINGER switch (SW952) input terminal “L”: ringer off, “H”: ringer on
22	KEY-OUT3	O	Key send signal output to the key matrix
23	KEY-OUT4	O	Key output terminal Not used (open)
24	CDCDATAI	I	Transmit data input from the CODEC (IC701)
25	CDCDATAO	O	Receive data output to the CODEC (IC701)
26	CDCMCLK	O	Master clock signal output to the CODEC (IC701)
27	RESETO	O	Reset signal output to the CODEC (IC701) “L”: reset
28	CDCICLK	O	Interface clock signal output to the CODEC (IC701)
29	VDDP	—	Power supply terminal (+5V) (for pad)
30	VSSP	—	Ground terminal (for pad)
31	KEY-OUT2	O	Key send signal output to the key matrix
32	CDCFRAME	O	Frame output to the CODEC (IC701)
33	ARTI	I	ART input terminal Not used (fixed at “H”)
34	ARTO	O	ART output to the handset unit
35, 36	KEY-OUT1, KEY-OUT0	O	Key send signal output to the key matrix
37	OFFHOOK	O	Hook on/off control signal output terminal “L”: on hook, “H”: off hook
38	VDDP	—	Power supply terminal (+5V) (for pad)
39	LCDCS	O	Chip select signal output for the liquid crystal display Not used (open)
40	VDDC	—	Power supply terminal (+5V) (for core)
41	VSSC	—	Ground terminal (for core)
42	TEST	I	Setting terminal for the test mode “L”: test mode Normally: fixed at “H”
43	LNAATN	O	LNA gain selection signal output to the RF unit “H”: low gain
44	RXEN	O	RX system enable signal output to the RF unit “H”: enable
45	VDDA	—	Power supply terminal (+5V) (for analog)
46	VSSA	—	Ground terminal (for analog)
47	VDDA	—	Power supply terminal (+5V) (for analog)
48	VSSA	—	Ground terminal (for analog)
49	TXDATA	O	Transmit data output to the RF unit
50	VRP	O	Analog reference voltage output terminal
51	RXIP	I	Receive data (I positive) input from the RF unit
52	RXIN	I	Receive data (I negative) input from the RF unit
53	RXQP	I	Receive data (Q positive) input from the RF unit

Pin No.	Pin Name	I/O	Function
54	RXQN	I	Receive data (Q negative) input from the RF unit
55	NC	—	Not used (open)
56	IBIAS	I	Analog bias input terminal
57	AGND	—	Analog ground terminal
58	POWERDOWN	I	Battery voltage detection input terminal “L”: power down
59	AFC (BEEP)	O	Beep tone signal output terminal
60	AGC	O	Auto gain control signal output to the RF unit
61	MT-CLK	O	Not used (open)
62	PARKP	I	Charge detection input terminal “L”: charge on
63	VDDC	—	Power supply terminal (+5V) (for core)
64	VSSP	—	Ground terminal (for pad)
65	SYNDATA	O	Synthesizer data output to the RF unit
66	SYNTH5MCLK	O	Synthesizer reference oscillator output to the RF unit (9.62 MHz)
67	LCD REG-SET	O	Register selection signal output for the liquid crystal display “L”: instruction register, “H”: data register Not used (open)
68	LINE-LED	O	LED drive signal output of the LINE LED (D1002) “L”: LED on
69	MT-INT	I	Caller-ID interrupt input terminal “L” active Not used (open)
70	MT-DATA	I	Caller-ID data input terminal Not used (open)
71	SYNCLK	O	Synthesizer clock signal output to the RF unit
72	SYNSTB	O	Synthesizer strobe signal output to the RF unit
73	VDDP	—	Power supply terminal (+5V) (for pad)
74	VSSP	—	Ground terminal (for pad)
75	SYNEN	O	Synthesizer power control signal output to the RF unit “H”: enable
76	NVDI	I/O	Two-way data bus with the EEPROM (IC951)
77	NVDO	O	Clock signal output to the EEPROM (IC951)
78	LCD-R/W	O	Data read/write selection signal output for the liquid crystal display “L”: data write, “H”: data read Not used (open)
79	TXEN	O	TX system enable signal output to the RF unit “H”: enable
80	TXPWR1	O	PA power selection signal output to the RF unit
81	RINGIN	I	Detection signal input of the ringer coming “L”: ringer coming
82	TXRSEL	O	TX/RX selection signal output to the RF unit “L”: RX, “H”: TX
83	VCHG-MON	I	Battery charge monitor input terminal
84	BASEP	I	Setting terminal for the base/handset selection “L”: base unit, “H”: handset unit (fixed at “L” in this set)
85	TXPWR0	O	PA power selection signal output to the RF unit
86	SPKEN	O	Enable control signal output to the voice speakerphone (IC103) “L”: enable, “H”: CD
87	CHG-HIGH RATE	O	Quick/normal charge selection signal output terminal “L”: normal charge, “H”: quick charge
88	DIALMODE	I	Dial mode switch (SW951) input terminal “L”: pulse, “H”: tone
89	NEW-CALL LED	O	New arrival call ID LED drive signal output terminal “L”: LED on Not used (open)
90	VDDC	—	Power supply terminal (+5V) (for core)
91	VSSC	—	Ground terminal (for core)
92	SP-MUT	O	Speaker muting on/off control signal output to the power amplifier (IC104) “H”: muting
93	MT-FSK-EN	O	Caller-ID frequency shift keying enable signal output terminal Not used (open)
94	BRANCH-DET	I	Reserve cancellation detect signal input terminal “H”: cancel status
95	DIALMUT	O	Reception muting during dial transmission “H”: during dial transmission
96	RESETI	I	System reset signal input from the reset signal generator (IC602) “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”

Pin No.	Pin Name	I/O	Function
97	XTALI	I	Main system clock input terminal (9.6 MHz)
98	XTALO	O	Main system clock output terminal (9.6 MHz)
99	VDDP	—	Power supply terminal (+5V) (for pad)
100	VSSP	—	Ground terminal (for pad)



## (2) BASESET SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	1-671-562-11	BASE KEY BOARD		* 63	A-3622-274-A	BASE MAIN BOARD, COMPLETE	
52	1-771-364-11	SWITCH, RUBBER KEY (BASE)		64	3-029-168-01	SHEET (COPPER LEAF. RF) (B)	
53	3-024-958-01	BUTTON (12 KEY)		65	3-030-066-01	SHEET (COPPER LEAF. RF) (C)	
54	3-023-909-01	TERMINAL (CHARGE B/S)		66	3-936-696-21	FOOT, RUBBER	
55	3-024-956-02	CABINET (UPPER)		67	X-3375-888-2	CABINET (LOWER) ASSY	
56	3-024-955-01	HOLDER (HAND SET)		68	3-026-909-01	SHEET (RESET BUTTON)	
57	3-024-963-01	SHEET (LCD), ADHESIVE		* 69	3-031-600-01	CUSHION (for PWB)	
58	3-024-959-21	PANEL (LCD)		* 70	3-031-601-02	CUSHION (for SHIELD PLATE)	
59	3-910-956-01	HOLDER (MIC)		ANT901	1-501-998-11	ANTENNA, ROD	
* 60	1-671-565-11	BASE MICROPHONE BOARD		RFU901	1-475-890-11	RF UNIT	
61	3-015-461-01	BRACKET (SP STOPPER)		SP101	1-505-802-11	SPEAKER (5.7cm)	
62	3-018-253-01	CUSHION (BATTERY)					

# SECTION 9 ELECTRICAL PARTS LIST

BASE KEY

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:  $\mu$ , for example:  
uA. . . :  $\mu$ A. . .      uPA. . . :  $\mu$ PA. . .  
uPB. . . :  $\mu$ PB. . .    uPC. . . :  $\mu$ PC. . .  
uPD. . . :  $\mu$ PD. . .
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  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
*	1-671-562-11	BASE KEY BOARD *****		C214	1-163-165-00	CERAMIC CHIP 22PF	5% 50V
		< LED >		C216	1-126-933-11	ELECT 100uF	20% 16V
				C217	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C218	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
				C219	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
D1001	8-719-946-48	LED SLN210LT (CHARGE)		C220	1-126-963-11	ELECT 4.7uF	20% 50V
D1002	8-719-055-05	LED PY2222S-B2 (LINE)		C221	1-126-934-11	ELECT 220uF	20% 10V
*****				C222	1-163-169-00	CERAMIC CHIP 33PF	5% 50V
*	A-3622-274-A	BASE MAIN BOARD, COMPLETE *****		C223	1-163-023-00	CERAMIC CHIP 0.015uF	5% 50V
				C224	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
	3-018-253-01	CUSHION (BATTERY)		C226	1-126-963-11	ELECT 4.7uF	20% 50V
	3-029-168-01	SHEET (COPPER LEAF. RF) (B)		C227	1-126-960-11	ELECT 1uF	20% 50V
	3-030-066-01	SHEET (COPPER LEAF. RF) (C)		C228	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
*	3-031-600-01	CUSHION (for PWB)		C229	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V
*	3-031-601-02	CUSHION (for SHIELD PLATE)		C230	1-126-933-11	ELECT 100uF	20% 16V
	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S  < CAPACITOR >		C231	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
				C232	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
				C233	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
				C234	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
				C235	1-126-967-11	ELECT 47uF	20% 50V
C101	1-162-117-00	CERAMIC 100PF	10% 500V	C236	1-126-964-11	ELECT 10uF	20% 50V
C105	1-162-318-11	CERAMIC 0.001uF	10% 500V	C237	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C106	1-162-318-11	CERAMIC 0.001uF	10% 500V	C238	1-163-989-11	CERAMIC CHIP 0.033uF	10% 25V
C107	1-162-318-11	CERAMIC 0.001uF	10% 500V	C240	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C108	1-162-318-11	CERAMIC 0.001uF	10% 500V	C241	1-163-019-00	CERAMIC CHIP 0.0068uF	10% 50V
C109	1-136-193-11	FILM 0.47uF	10% 250V	C242	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C110	1-126-961-11	ELECT 2.2uF	20% 50V	C243	1-124-234-00	ELECT 22uF	20% 16V
C111	1-126-966-11	ELECT 33uF	20% 50V	C244	1-126-157-11	ELECT 10uF	20% 16V
C112	1-124-234-00	ELECT 22uF	20% 16V	C245	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C113	1-126-157-11	ELECT 10uF	20% 16V	C246	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C157	1-163-023-00	CERAMIC CHIP 0.015uF	5% 50V	C247	1-163-001-11	CERAMIC CHIP 220PF	10% 50V
C201	1-126-967-11	ELECT 47uF	20% 50V	C248	1-163-243-11	CERAMIC CHIP 47PF	5% 50V
C202	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C249	1-164-346-11	CERAMIC CHIP 1uF	16V
C203	1-126-961-11	ELECT 2.2uF	20% 50V	C250	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C204	1-126-961-11	ELECT 2.2uF	20% 50V	C251	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C205	1-163-035-00	CERAMIC CHIP 0.047uF	50V	C252	1-126-964-11	ELECT 10uF	20% 50V
C206	1-163-021-11	CERAMIC CHIP 0.01uF	10% 50V	C253	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C207	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	C254	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C208	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	C255	1-163-243-11	CERAMIC CHIP 47PF	5% 50V
C209	1-126-961-11	ELECT 2.2uF	20% 50V	C256	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
C210	1-126-961-11	ELECT 2.2uF	20% 50V	C257	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C211	1-126-967-11	ELECT 47uF	20% 50V	C258	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C212	1-163-038-00	CERAMIC CHIP 0.1uF	25V	C259	1-126-965-11	ELECT 22uF	20% 50V
C213	1-126-965-11	ELECT 22uF	20% 50V	C260	1-163-239-11	CERAMIC CHIP 33PF	5% 50V
C214	1-163-235-11	CERAMIC CHIP 22PF	5% 50V				

# BASE MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C261	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C608	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C262	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C609	1-126-963-11	ELECT 4.7uF	20% 50V
C267	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C611	1-163-033-00	CERAMIC CHIP 0.022uF	50V
C270	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C612	1-163-033-00	CERAMIC CHIP 0.022uF	50V
C271	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C615	1-163-038-00	CERAMIC CHIP 0.1uF	25V
C272	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C616	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C273	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C617	1-126-916-11	ELECT 1000uF	20% 6.3V
C277	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C619	1-126-963-11	ELECT 4.7uF	20% 50V
C278	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C650	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C280	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C652	1-164-222-11	CERAMIC CHIP 0.22uF	25V
C281	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C700	1-164-346-11	CERAMIC CHIP 1uF	16V
C282	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C701	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C283	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C702	1-164-222-11	CERAMIC CHIP 0.22uF	25V
C285	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C703	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C287	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C704	1-126-925-11	ELECT 470uF	20% 10V
C288	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C705	1-164-222-11	CERAMIC CHIP 0.22uF	25V
C289	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C706	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C291	1-163-031-11	CERAMIC CHIP 0.01uF	50V	C707	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C292	1-124-589-11	ELECT 47uF	20% 16V	C708	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C293	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C709	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C297	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C710	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C299	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C712	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
C300	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C713	1-163-017-00	CERAMIC CHIP 0.0047uF	5% 50V
C301	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C714	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C302	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V	C715	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C303	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C716	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C304	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C717	1-164-505-11	CERAMIC CHIP 2.2uF	16V
C305	1-163-011-11	CERAMIC CHIP 0.0015uF	10% 50V	C751	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C309	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C754	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C310	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C755	1-126-964-11	ELECT 10uF	20% 50V
C311	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C756	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C312	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C757	1-164-222-11	CERAMIC CHIP 0.22uF	25V
C313	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C758	1-164-222-11	CERAMIC CHIP 0.22uF	25V
C314	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C759	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C315	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C760	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C316	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C762	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
C317	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C766	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C318	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V	C767	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C319	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C768	1-163-237-11	CERAMIC CHIP 27PF	5% 50V
C320	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C901	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C323	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C902	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C324	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	C903	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C326	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C904	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C327	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	C951	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C328	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	< CONNECTOR >			
C330	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	* CN202	1-506-998-11	PIN, CONNECTOR (PC BOARD) 2P	
C331	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	* CN601	1-506-999-11	PIN, CONNECTOR (PC BOARD) 3P	
C335	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	CN802	1-566-010-11	PIN, CONNECTOR (PC BOARD) 13P	
C336	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	* CN901	1-779-773-11	PIN, CONNECTOR (PC BOARD) 8P	
C337	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	* CN902	1-779-774-11	PIN, CONNECTOR (PC BOARD) 16P	
C339	1-163-239-11	CERAMIC CHIP 33PF	5% 50V	< DIODE >			
C340	1-163-033-00	CERAMIC CHIP 0.022uF	50V	D100	8-719-991-33	DIODE 1SS133T-77	
C601	1-163-033-00	CERAMIC CHIP 0.022uF	50V	D102	8-719-109-89	DIODE RD5.6ESB2	
C602	1-163-033-00	CERAMIC CHIP 0.022uF	50V	D103	8-719-109-89	DIODE RD5.6ESB2	
C605	1-163-038-00	CERAMIC CHIP 0.1uF	25V	D104	8-719-991-33	DIODE 1SS133T-77	
C606	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V	D105	8-719-970-02	DIODE 1SR139-400	
C607	1-126-916-11	ELECT 1000uF	20% 6.3V				

**BASE MAIN**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D106	8-719-970-02	DIODE 1SR139-400		L202	1-414-481-11	INDUCTOR 68nH	
D107	8-719-970-02	DIODE 1SR139-400		L601	1-410-468-11	INDUCTOR 6.8uH	
D108	8-719-970-02	DIODE 1SR139-400					
D110	8-719-160-55	DIODE RD12F-B1		L602	1-410-468-11	INDUCTOR 6.8uH	
D601	8-719-109-57	DIODE RD2.4ES-B2		L611	1-410-468-11	INDUCTOR 6.8uH	
				L612	1-410-468-11	INDUCTOR 6.8uH	
D602	8-719-991-33	DIODE 1SS133T-77		L750	1-412-945-11	INDUCTOR 3.3uH	
D603	8-719-938-75	DIODE SB05-05CP					
D652	8-719-991-33	DIODE 1SS133T-77				< MODULAR JACK >	
D653	8-719-991-33	DIODE 1SS133T-77					
D701	8-719-991-33	DIODE 1SS133T-77		MJ101	1-766-250-11	JACK, MODULAR (2C) 6P (LINE)	
D702	8-719-991-33	DIODE 1SS133T-77				< PHOTO COUPLER >	
D703	8-719-991-33	DIODE 1SS133T-77					
D704	8-719-991-33	DIODE 1SS133T-77		PH101	8-719-156-73	PHOTO COUPLER PS2501-1LA	
D705	8-719-991-33	DIODE 1SS133T-77		PH102	8-719-156-73	PHOTO COUPLER PS2501-1LA	
		< FUSE >		PH103	8-749-011-58	PHOTO COUPLER PS2533-1	
F101	1-533-542-11	FUSE (0.5A/250V)				< TRANSISTOR >	
		< IC >					
				Q101	8-729-032-66	TRANSISTOR 2SC5069-TD	
IC103	8-759-030-78	IC MC34118DW		Q102	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
IC104	8-759-463-98	IC MC34119DR2		Q103	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC601	8-759-482-72	IC uPC29M05HF		Q201	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
IC602	8-759-519-46	IC S-80730AN-DT-S		Q202	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC603	8-759-482-72	IC uPC29M05HF					
				Q203	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC701	8-759-530-12	IC 10497-15		Q204	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC751	8-759-534-65	IC C7311-11		Q206	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC951	8-759-487-04	IC S-24C02AFJ-TB		Q207	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
		< JACK >		Q208	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
J601	1-778-380-11	JACK,DC (POLARITY UNIFIED TYPE)	(DC IN 9V)	Q209	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
		< SHORT >		Q210	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
				Q211	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR13	1-216-296-00	SHORT 0		Q212	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR14	1-216-296-00	SHORT 0		Q213	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR15	1-216-296-00	SHORT 0					
JR16	1-216-296-00	SHORT 0		Q214	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR20	1-216-296-00	SHORT 0		Q215	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
				Q216	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR21	1-216-296-00	SHORT 0		Q217	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR24	1-216-296-00	SHORT 0		Q601	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR25	1-216-296-00	SHORT 0					
JR26	1-216-296-00	SHORT 0		Q651	8-729-922-34	TRANSISTOR 2SD1758F5-QR	
JR27	1-216-296-00	SHORT 0		Q652	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
				Q653	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR28	1-216-296-00	SHORT 0		Q654	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
JR29	1-216-295-00	SHORT 0		Q655	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR30	1-216-295-00	SHORT 0					
JR150	1-216-295-00	SHORT 0		Q750	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR201	1-216-295-00	SHORT 0		Q751	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
				Q852	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
JR202	1-216-296-00	SHORT 0					
JR203	1-216-295-00	SHORT 0				< RESISTOR/COIL >	
JR204	1-216-296-00	SHORT 0					
JR205	1-216-295-00	SHORT 0		R101	1-215-877-11	METAL OXIDE 22K 5% 1W	
JR206	1-216-295-00	SHORT 0		R102	1-215-861-00	METAL OXIDE 47 5% 1W	
		< COIL >		R103	1-215-859-00	METAL OXIDE 22 5% 1W	
				R104	1-216-073-00	METAL CHIP 10K 5% 1/10W	
L101	1-410-470-11	INDUCTOR 10uH		R105	1-216-105-00	RES,CHIP 220K 5% 1/10W	
L102	1-410-470-11	INDUCTOR 10uH					
L201	1-414-481-11	INDUCTOR 68nH		R106	1-216-065-00	RES,CHIP 4.7K 5% 1/10W	
				R107	1-216-073-00	METAL CHIP 10K 5% 1/10W	
				R108	1-216-105-00	RES,CHIP 220K 5% 1/10W	
				R109	1-216-113-00	METAL CHIP 470K 5% 1/10W	
				R110	1-249-417-11	CARBON 1K 5% 1/4W	
				R111	1-216-037-00	METAL CHIP 330 5% 1/10W	

# BASE MAIN

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R154	1-216-085-00	METAL CHIP	33K	5%	1/10W	R260	1-216-097-00	RES,CHIP	100K	5%	1/10W
R201	1-216-097-00	RES,CHIP	100K	5%	1/10W	R261	1-216-109-00	METAL CHIP	330K	5%	1/10W
R202	1-216-093-00	RES,CHIP	68K	5%	1/10W	R262	1-216-025-00	RES,CHIP	100	5%	1/10W
R203	1-216-049-11	RES,CHIP	1K	5%	1/10W	R263	1-216-065-00	RES,CHIP	4.7K	5%	1/10W
R204	1-216-085-00	METAL CHIP	33K	5%	1/10W	R264	1-216-089-00	RES,CHIP	47K	5%	1/10W
R205	1-216-073-00	METAL CHIP	10K	5%	1/10W	R265	1-216-113-00	METAL CHIP	470K	5%	1/10W
R206	1-216-109-00	METAL CHIP	330K	5%	1/10W	R266	1-216-089-00	RES,CHIP	47K	5%	1/10W
R207	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	R267	1-216-089-00	RES,CHIP	47K	5%	1/10W
R208	1-216-025-00	RES,CHIP	100	5%	1/10W	R268	1-216-105-00	RES,CHIP	220K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W	R269	1-216-097-00	RES,CHIP	100K	5%	1/10W
R210	1-216-025-00	RES,CHIP	100	5%	1/10W	R270	1-216-105-00	RES,CHIP	220K	5%	1/10W
R211	1-216-089-00	RES,CHIP	47K	5%	1/10W	R271	1-216-025-00	RES,CHIP	100	5%	1/10W
R212	1-216-073-00	METAL CHIP	10K	5%	1/10W	R272	1-216-013-00	METAL CHIP	33	5%	1/10W
R213	1-216-109-00	METAL CHIP	330K	5%	1/10W	R273	1-216-077-00	METAL CHIP	15K	5%	1/10W
R214	1-216-109-00	METAL CHIP	330K	5%	1/10W	R274	1-216-041-00	METAL CHIP	470	5%	1/10W
R215	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	R275	1-216-065-00	RES,CHIP	4.7K	5%	1/10W
R216	1-216-041-00	METAL CHIP	470	5%	1/10W	R276	1-216-081-00	METAL CHIP	22K	5%	1/10W
R217	1-216-049-11	RES,CHIP	1K	5%	1/10W	R277	1-216-081-00	METAL CHIP	22K	5%	1/10W
R218	1-216-089-00	RES,CHIP	47K	5%	1/10W	R278	1-216-097-00	RES,CHIP	100K	5%	1/10W
R219	1-216-097-00	RES,CHIP	100K	5%	1/10W	R279	1-216-101-00	METAL CHIP	150K	5%	1/10W
R220	1-216-105-00	RES,CHIP	220K	5%	1/10W	R280	1-216-089-00	RES,CHIP	47K	5%	1/10W
R221	1-216-073-00	METAL CHIP	10K	5%	1/10W	R281	1-216-049-11	RES,CHIP	1K	5%	1/10W
R222	1-216-073-00	METAL CHIP	10K	5%	1/10W	R282	1-216-065-00	RES,CHIP	4.7K	5%	1/10W
R223	1-216-073-00	METAL CHIP	10K	5%	1/10W	R283	1-216-049-11	RES,CHIP	1K	5%	1/10W
R224	1-216-025-00	RES,CHIP	100	5%	1/10W	R284	1-216-041-00	METAL CHIP	470	5%	1/10W
R225	1-216-077-00	METAL CHIP	15K	5%	1/10W	R285	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R226	1-216-105-00	RES,CHIP	220K	5%	1/10W	R286	1-216-049-11	RES,CHIP	1K	5%	1/10W
R227	1-216-109-00	METAL CHIP	330K	5%	1/10W	R287	1-216-049-11	RES,CHIP	1K	5%	1/10W
R228	1-216-065-00	RES,CHIP	4.7K	5%	1/10W	R291	1-216-097-00	RES,CHIP	100K	5%	1/10W
R229	1-216-049-11	RES,CHIP	1K	5%	1/10W	R292	1-216-025-00	RES,CHIP	100	5%	1/10W
R230	1-216-105-00	RES,CHIP	220K	5%	1/10W	R293	1-216-295-00	SHORT	0		
R231	1-216-093-00	RES,CHIP	68K	5%	1/10W	R294	1-216-081-00	METAL CHIP	22K	5%	1/10W
R232	1-216-077-00	METAL CHIP	15K	5%	1/10W	R295	1-216-081-00	METAL CHIP	22K	5%	1/10W
R233	1-216-025-00	RES,CHIP	100	5%	1/10W	R296	1-216-073-00	METAL CHIP	10K	5%	1/10W
R234	1-216-073-00	METAL CHIP	10K	5%	1/10W	R300	1-216-311-00	METAL CHIP	6.8	5%	1/10W
R235	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	R601	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R236	1-216-097-00	RES,CHIP	100K	5%	1/10W	R602	1-216-073-00	METAL CHIP	10K	5%	1/10W
R237	1-216-097-00	RES,CHIP	100K	5%	1/10W	R643	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R238	1-216-073-00	METAL CHIP	10K	5%	1/10W	R650	1-249-403-11	CARBON	68	5%	1/4W
R239	1-216-085-00	METAL CHIP	33K	5%	1/10W	R651	1-249-403-11	CARBON	68	5%	1/4W
R240	1-216-073-00	METAL CHIP	10K	5%	1/10W	R652	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R241	1-216-097-00	RES,CHIP	100K	5%	1/10W	R653	1-249-393-11	CARBON	10	5%	1/4W
R242	1-216-085-00	METAL CHIP	33K	5%	1/10W	R654	1-216-105-00	RES,CHIP	220K	5%	1/10W
R243	1-216-109-00	METAL CHIP	330K	5%	1/10W	R655	1-216-101-00	METAL CHIP	150K	5%	1/10W
R244	1-216-097-00	RES,CHIP	100K	5%	1/10W	R656	1-216-097-00	RES,CHIP	100K	5%	1/10W
R245	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R657	1-216-089-00	RES,CHIP	47K	5%	1/10W
R246	1-216-113-00	METAL CHIP	470K	5%	1/10W	R658	1-216-041-00	METAL CHIP	470	5%	1/10W
R247	1-216-025-00	RES,CHIP	100	5%	1/10W	R659	1-216-101-00	METAL CHIP	150K	5%	1/10W
R248	1-216-113-00	METAL CHIP	470K	5%	1/10W	R660	1-216-037-00	METAL CHIP	330	5%	1/10W
R249	1-216-049-11	RES,CHIP	1K	5%	1/10W	R661	1-249-389-11	CARBON	4.7	5%	1/4W
R252	1-216-089-00	RES,CHIP	47K	5%	1/10W	R662	1-216-081-00	METAL CHIP	22K	5%	1/10W
R253	1-216-089-00	RES,CHIP	47K	5%	1/10W	R664	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R670	1-249-387-11	CARBON	3.3	5%	1/4W
R255	1-216-089-00	RES,CHIP	47K	5%	1/10W	R671	1-249-387-11	CARBON	3.3	5%	1/4W
R256	1-216-097-00	RES,CHIP	100K	5%	1/10W	R700	1-216-065-00	RES,CHIP	4.7K	5%	1/10W
R257	1-414-481-11	INDUCTOR	68nH			R701	1-216-025-00	RES,CHIP	100	5%	1/10W
R258	1-216-101-00	METAL CHIP	150K	5%	1/10W	R702	1-218-754-11	METAL CHIP	120K	0.5%	1/10W
R259	1-216-049-11	RES,CHIP	1K	5%	1/10W						

**BASE MAIN**

**BASE MICROPHONE**

**HAND MAIN**

Ref. No.	Part No.	Description	Quantity	Percentage	Remark	Ref. No.	Part No.	Description	Quantity	Percentage	Remark
R703	1-216-009-00	RES,CHIP	22	5%	1/10W	R914	1-216-041-00	METAL CHIP	470	5%	1/10W
R704	1-216-081-00	METAL CHIP	22K	5%	1/10W	R954	1-216-073-00	METAL CHIP	10K	5%	1/10W
R705	1-216-025-00	RES,CHIP	100	5%	1/10W	R955	1-216-089-00	RES,CHIP	47K	5%	1/10W
R706	1-216-041-00	METAL CHIP	470	5%	1/10W	R956	1-216-089-00	RES,CHIP	47K	5%	1/10W
R708	1-216-065-00	RES,CHIP	4.7K	5%	1/10W	R957	1-216-073-00	METAL CHIP	10K	5%	1/10W
R709	1-216-081-00	METAL CHIP	22K	5%	1/10W			< RF UNIT >			
R714	1-216-041-00	METAL CHIP	470	5%	1/10W	RFU901	1-475-890-11	RF UNIT			
R715	1-216-041-00	METAL CHIP	470	5%	1/10W			< VARIABLE RESISTOR >			
R716	1-216-041-00	METAL CHIP	470	5%	1/10W	RV201	1-223-862-11	RES, VAR, SLIDE 20K/20K (SPEAKER VOLUME)			
R717	1-216-041-00	METAL CHIP	470	5%	1/10W			< SPARK GAP >			
R718	1-216-041-00	METAL CHIP	470	5%	1/10W	SG101	1-533-751-11	ABSORBER, SURGE			
R719	1-216-041-00	METAL CHIP	470	5%	1/10W			< SWITCH >			
R720	1-216-041-00	METAL CHIP	470	5%	1/10W	SW601	1-571-532-32	SWITCH, TACTIL (RESET)			
R721	1-216-041-00	METAL CHIP	470	5%	1/10W	SW951	1-692-990-21	SWITCH, SLIDE (DIAL MODE)			
R722	1-216-041-00	METAL CHIP	470	5%	1/10W	SW952	1-692-991-11	SWITCH, SLIDE (RINGER)			
R723	1-216-041-00	METAL CHIP	470	5%	1/10W			< TRANSFORMER >			
R724	1-216-041-00	METAL CHIP	470	5%	1/10W	T101	1-431-832-11	TRANSFORMER, LINE			
R725	1-216-041-00	METAL CHIP	470	5%	1/10W			< VIBRATOR >			
R727	1-216-041-00	METAL CHIP	470	5%	1/10W	X752	1-767-566-21	VIBRATOR, CRYSTAL (9.6MHz)			
R730	1-216-041-00	METAL CHIP	470	5%	1/10W	*****					
R731	1-216-041-00	METAL CHIP	470	5%	1/10W	*	1-671-565-11	BASE MICROPHONE BOARD			
R732	1-216-041-00	METAL CHIP	470	5%	1/10W			*****			
R733	1-216-041-00	METAL CHIP	470	5%	1/10W			3-910-956-01	HOLDER (MIC)		
R734	1-216-081-00	METAL CHIP	22K	5%	1/10W			< CAPACITOR >			
R736	1-216-041-00	METAL CHIP	470	5%	1/10W	C0	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
R750	1-216-033-00	METAL CHIP	220	5%	1/10W	C501	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
R751	1-216-073-00	METAL CHIP	10K	5%	1/10W	C502	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
R753	1-216-041-00	METAL CHIP	470	5%	1/10W			< COIL >			
R754	1-216-045-00	METAL CHIP	680	5%	1/10W	L501	1-414-481-11	INDUCTOR	68nH		
R755	1-216-073-00	METAL CHIP	10K	5%	1/10W	L502	1-414-481-11	INDUCTOR	68nH		
R759	1-216-057-00	METAL CHIP	2.2K	5%	1/10W			< MICROPHONE >			
R760	1-216-073-00	METAL CHIP	10K	5%	1/10W	MIC501	1-542-118-11	MICROPHONE, ELECTRET CONDENSER (MIC)			
R761	1-216-041-00	METAL CHIP	470	5%	1/10W	*****					
R762	1-216-073-00	METAL CHIP	10K	5%	1/10W	*	A-3622-273-A	HAND MAIN BOARD, COMPLETE			
R764	1-216-041-00	METAL CHIP	470	5%	1/10W			*****			
R765	1-216-001-00	METAL CHIP	10	5%	1/10W			3-012-368-01	HOLDER (LCD)		
R766	1-218-754-11	METAL CHIP	120K	0.5%	1/10W			3-028-552-01	SHEET (COPPER LEAF.RF)		
R767	1-216-097-00	RES,CHIP	100K	5%	1/10W			3-029-168-01	SHEET (COPPER LEAF.RF) (B)		
R768	1-216-049-11	RES,CHIP	1K	5%	1/10W			3-935-518-01	CUSHION (MICROPHONE)		
R769	1-216-065-00	RES,CHIP	4.7K	5%	1/10W			7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S		
R771	1-216-121-00	RES,CHIP	1M	5%	1/10W			< BUZZER >			
R772	1-216-025-00	RES,CHIP	100	5%	1/10W	BZ401	1-544-603-11	BUZZER			
R772	1-216-025-00	RES,CHIP	100	5%	1/10W						
R781	1-216-041-00	METAL CHIP	470	5%	1/10W						
R782	1-216-017-00	RES,CHIP	47	5%	1/10W						
R787	1-216-041-00	METAL CHIP	470	5%	1/10W						
R790	1-216-041-00	METAL CHIP	470	5%	1/10W						
R792	1-216-041-00	METAL CHIP	470	5%	1/10W						
R793	1-216-041-00	METAL CHIP	470	5%	1/10W						
R794	1-216-041-00	METAL CHIP	470	5%	1/10W						
R798	1-216-049-11	RES,CHIP	1K	5%	1/10W						
R800	1-216-017-00	RES,CHIP	47	5%	1/10W						
R801	1-216-041-00	METAL CHIP	470	5%	1/10W						
R802	1-216-041-00	METAL CHIP	470	5%	1/10W						
R803	1-216-041-00	METAL CHIP	470	5%	1/10W						
R902	1-216-041-00	METAL CHIP	470	5%	1/10W						
R904	1-216-097-00	RES,CHIP	100K	5%	1/10W						
R906	1-216-033-00	METAL CHIP	220	5%	1/10W						
R913	1-216-041-00	METAL CHIP	470	5%	1/10W						

# HAND MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< CAPACITOR >				< DIODE >			
C0	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	D301	8-719-938-75	DIODE SB05-05CP	
C1	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	D302	8-719-938-75	DIODE SB05-05CP	
C3	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	D303	8-719-938-75	DIODE SB05-05CP	
C4	1-163-235-11	CERAMIC CHIP 22PF 5%	50V	D304	8-719-938-75	DIODE SB05-05CP	
C5	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	D305	8-719-914-43	DIODE DAN202K	
C6	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	D306	8-719-066-61	DIODE RD5.6P-T1	
C8	1-164-182-11	CERAMIC CHIP 0.0033uF 10%	50V	D401	8-719-914-43	DIODE DAN202K	
C9	1-125-822-11	TANTALUM 10uF 20%	10V	D402	8-719-914-43	DIODE DAN202K	
C14	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V	D502	8-719-914-42	DIODE DA204K	
C16	1-125-822-11	TANTALUM 10uF 20%	10V	D503	8-719-914-42	DIODE DA204K	
C17	1-125-822-11	TANTALUM 10uF 20%	10V	D505	8-719-914-42	DIODE DA204K	
C19	1-125-822-11	TANTALUM 10uF 20%	10V	< IC >			
C301	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	IC301	8-759-519-46	IC S-80730AN-DT-S	
C302	1-163-031-11	CERAMIC CHIP 0.01uF	50V	IC401	8-759-530-12	IC 10497-15	
C303	1-163-031-11	CERAMIC CHIP 0.01uF	50V	IC501	8-759-534-64	IC M7012-11	
C307	1-163-031-11	CERAMIC CHIP 0.01uF	50V	IC502	8-759-487-05	IC S-24C16AFJ-TB	
C308	1-164-005-11	CERAMIC CHIP 0.47uF	25V	< SHORT >			
C401	1-163-031-11	CERAMIC CHIP 0.01uF	50V	JR1	1-216-296-00	SHORT 0	
C402	1-126-206-11	ELECT CHIP 100uF 20%	6.3V	JR2	1-216-296-00	SHORT 0	
C403	1-163-031-11	CERAMIC CHIP 0.01uF	50V	JR3	1-216-296-00	SHORT 0	
C404	1-164-222-11	CERAMIC CHIP 0.22uF	25V	JR4	1-216-296-00	SHORT 0	
C407	1-163-235-11	CERAMIC CHIP 22PF 5%	50V	JR5	1-216-295-00	SHORT 0	
C410	1-163-235-11	CERAMIC CHIP 22PF 5%	50V	JR6	1-216-295-00	SHORT 0	
C412	1-107-682-11	CERAMIC CHIP 1uF 10%	16V	JR7	1-216-295-00	SHORT 0	
C413	1-125-822-11	TANTALUM 10uF 20%	10V	JR10	1-216-295-00	SHORT 0	
C415	1-163-243-11	CERAMIC CHIP 47PF 5%	50V	JR15	1-216-296-00	SHORT 0	
C416	1-163-243-11	CERAMIC CHIP 47PF 5%	50V	JR18	1-216-296-00	SHORT 0	
C420	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	JR20	1-216-296-00	SHORT 0	
C501	1-163-235-11	CERAMIC CHIP 22PF 5%	50V	JR21	1-216-295-00	SHORT 0	
C502	1-163-237-11	CERAMIC CHIP 27PF 5%	50V	JR24	1-216-295-00	SHORT 0	
C505	1-163-031-11	CERAMIC CHIP 0.01uF	50V	< COIL >			
C506	1-163-031-11	CERAMIC CHIP 0.01uF	50V	L501	1-410-198-51	INDUCTOR CHIP 3.3uH	
C507	1-162-974-11	CERAMIC CHIP 0.01uF	50V	< LIQUID CRYSTAL DISPLAY >			
C508	1-163-031-11	CERAMIC CHIP 0.01uF	50V	LCD501	1-475-241-11	LCD UNIT	
C509	1-124-779-00	ELECT CHIP 10uF 20%	16V	< MICROPHONE >			
C510	1-163-031-11	CERAMIC CHIP 0.01uF	50V	MIC401	1-542-118-11	MICROPHONE, ELECTRET CONDENSER	
C511	1-164-222-11	CERAMIC CHIP 0.22uF	25V	< TRANSISTOR >			
C512	1-164-222-11	CERAMIC CHIP 0.22uF	25V	Q1	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
C513	1-163-031-11	CERAMIC CHIP 0.01uF	50V	Q301	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
C514	1-162-919-11	CERAMIC CHIP 22PF 5%	50V	Q302	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
C515	1-126-603-11	ELECT CHIP 4.7uF 20%	35V	Q303	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
C516	1-163-251-11	CERAMIC CHIP 100PF 5%	50V	Q501	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
C523	1-163-031-11	CERAMIC CHIP 0.01uF	50V	Q502	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
C530	1-126-603-11	ELECT CHIP 4.7uF 20%	35V	Q503	8-729-026-49	TRANSISTOR 2SA1037AK-T146-R	
C555	1-164-346-11	CERAMIC CHIP 1uF	16V	Q504	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
C585	1-163-031-11	CERAMIC CHIP 0.01uF	50V	Q505	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
< CONNECTOR >				< RESISTOR/CAPACITOR/COIL >			
CN301	1-766-180-11	PIN, CONNECTOR (PC BOARD) 2P		R1	1-216-295-00	SHORT 0	
* CN302	1-506-985-11	PIN, CONNECTOR (PC BOARD) 3P					
* CN401	1-506-984-11	PIN, CONNECTOR (PC BOARD) 2P					
* CN501	1-779-773-11	PIN, CONNECTOR (PC BOARD) 8P					
* CN502	1-779-774-11	PIN, CONNECTOR (PC BOARD) 16P					
CN503	1-568-237-11	CONNECTOR, FPC (1.0MM)(ZIF)14P					

**HAND MAIN**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R2	1-164-344-11	CERAMIC CHIP	0.068uF 10% 25V	R542	1-216-296-00	SHORT	0
R3	1-216-097-00	RES,CHIP	100K 5% 1/10W	R544	1-216-817-11	METAL CHIP	470 5% 1/16W
R4	1-414-481-11	INDUCTOR	68nH	R545	1-216-805-11	METAL CHIP	47 5% 1/16W
R5	1-216-065-00	RES,CHIP	4.7K 5% 1/10W	R546	1-216-821-11	METAL CHIP	1K 5% 1/16W
R7	1-414-481-11	INDUCTOR	68nH	R547	1-216-864-11	METAL CHIP	0 5% 1/16W
R8	1-216-081-00	METAL CHIP	22K 5% 1/10W	R548	1-216-295-00	SHORT	0
R9	1-216-081-00	METAL CHIP	22K 5% 1/10W	R549	1-216-295-00	SHORT	0
R11	1-216-295-00	SHORT	0	R550	1-216-295-00	SHORT	0
R12	1-216-295-00	SHORT	0	R551	1-216-041-00	METAL CHIP	470 5% 1/10W
R13	1-216-295-00	SHORT	0	R552	1-216-041-00	METAL CHIP	470 5% 1/10W
R14	1-216-295-00	SHORT	0	R554	1-216-817-11	METAL CHIP	470 5% 1/16W
R17	1-216-033-00	METAL CHIP	220 5% 1/10W	R555	1-216-817-11	METAL CHIP	470 5% 1/16W
R18	1-216-295-00	SHORT	0	R556	1-216-817-11	METAL CHIP	470 5% 1/16W
R19	1-216-041-00	METAL CHIP	470 5% 1/10W	R557	1-216-017-00	RES,CHIP	47 5% 1/10W
R20	1-216-295-00	SHORT	0	R558	1-216-041-00	METAL CHIP	470 5% 1/10W
R21	1-216-295-00	SHORT	0	R560	1-216-041-00	METAL CHIP	470 5% 1/10W
R22	1-216-053-00	METAL CHIP	1.5K 5% 1/10W	R570	1-216-073-00	METAL CHIP	10K 5% 1/10W
R30	1-216-101-00	METAL CHIP	150K 5% 1/10W	R571	1-216-073-00	METAL CHIP	10K 5% 1/10W
R301	1-216-093-00	RES,CHIP	68K 5% 1/10W	R572	1-216-073-00	METAL CHIP	10K 5% 1/10W
R302	1-216-085-00	METAL CHIP	33K 5% 1/10W	R573	1-216-073-00	METAL CHIP	10K 5% 1/10W
R303	1-216-097-00	RES,CHIP	100K 5% 1/10W	R574	1-216-097-00	RES,CHIP	100K 5% 1/10W
R304	1-216-069-00	METAL CHIP	6.8K 5% 1/10W	R575	1-216-097-00	RES,CHIP	100K 5% 1/10W
R305	1-216-073-00	METAL CHIP	10K 5% 1/10W	R580	1-216-073-00	METAL CHIP	10K 5% 1/10W
R308	1-216-089-00	RES,CHIP	47K 5% 1/10W	R582	1-216-073-00	METAL CHIP	10K 5% 1/10W
R309	1-216-073-00	METAL CHIP	10K 5% 1/10W	R583	1-216-045-00	METAL CHIP	680 5% 1/10W
R310	1-216-049-11	RES,CHIP	1K 5% 1/10W	R584	1-216-833-11	METAL CHIP	10K 5% 1/16W
R311	1-216-097-00	RES,CHIP	100K 5% 1/10W	R585	1-216-813-11	METAL CHIP	220 5% 1/16W
R312	1-216-089-00	RES,CHIP	47K 5% 1/10W	R586	1-216-073-00	METAL CHIP	10K 5% 1/10W
R401	1-216-017-00	RES,CHIP	47 5% 1/10W	R587	1-216-298-00	METAL CHIP	2.2 5% 1/10W
R402	1-218-754-11	METAL CHIP	120K 0.5% 1/10W	R590	1-216-041-00	METAL CHIP	470 5% 1/10W
R410	1-216-097-00	RES,CHIP	100K 5% 1/10W	R591	1-216-041-00	METAL CHIP	470 5% 1/10W
R413	1-216-033-00	METAL CHIP	220 5% 1/10W	R593	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R414	1-216-033-00	METAL CHIP	220 5% 1/10W	R594	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R415	1-216-061-00	METAL CHIP	3.3K 5% 1/10W			< RF UNIT >	
R501	1-216-121-00	RES,CHIP	1M 5% 1/10W				
R502	1-216-025-00	RES,CHIP	100 5% 1/10W	RFU501	1-475-890-11	RF UNIT	
R506	1-216-001-00	METAL CHIP	10 5% 1/10W			< SWITCH/ROTARY ENCODER >	
R507	1-218-754-11	METAL CHIP	120K 0.5% 1/10W	S501	1-692-991-11	SWITCH, SLIDE (RING)	
R508	1-218-754-11	METAL CHIP	120K 0.5% 1/10W	S502	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)	(TALK/FLASH)
R509	1-218-756-11	METAL CHIP	150K 0.5% 1/10W	SW601	1-475-338-11	ENCODER, ROTARY (JOG)	
R510	1-216-073-00	METAL CHIP	10K 5% 1/10W			< VIBRATOR >	
R511	1-216-121-00	RES,CHIP	1M 5% 1/10W	X501	1-767-566-21	VIBRATOR, CRYSTAL (9.6MHz)	
R513	1-216-821-11	METAL CHIP	1K 5% 1/16W	*****			
R514	1-216-097-00	RES,CHIP	100K 5% 1/10W			MISCELLANEOUS	
R515	1-216-065-00	RES,CHIP	4.7K 5% 1/10W			*****	
R517	1-216-057-00	METAL CHIP	2.2K 5% 1/10W	8	1-771-066-21	SWITCH, RUBBER KEY (HAND)	
R527	1-216-073-00	METAL CHIP	10K 5% 1/10W	52	1-771-364-11	SWITCH, RUBBER KEY (BASE)	
R528	1-216-097-00	RES,CHIP	100K 5% 1/10W	ANT501	1-501-933-21	ANTENNA	
R529	1-216-073-00	METAL CHIP	10K 5% 1/10W	ANT901	1-501-998-11	ANTENNA, ROD	
R530	1-216-049-11	RES,CHIP	1K 5% 1/10W	SP101	1-505-802-11	SPEAKER (5.7cm)	
R531	1-216-049-11	RES,CHIP	1K 5% 1/10W				
R532	1-216-049-11	RES,CHIP	1K 5% 1/10W	SP401	1-504-829-11	SPEAKER (28mm)	
R533	1-216-049-11	RES,CHIP	1K 5% 1/10W	*****			
R534	1-216-295-00	SHORT	0				
R536	1-216-049-11	RES,CHIP	1K 5% 1/10W				
R537	1-216-049-11	RES,CHIP	1K 5% 1/10W				
R538	1-216-049-11	RES,CHIP	1K 5% 1/10W				
R539	1-216-295-00	SHORT	0				

# SPP-SS964

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
		***** HARDWARE LIST *****	
#1	7-685-650-79	SCREW +P 3X16 TYPE2 NON-SLIT	
#2	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S	
#3	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#4	7-685-648-79	SCREW +P 3X12 TYPE2 NON-SLIT	
*****			
		ACCESSORIES & PACKING MATERIALS *****	
△	1-473-475-61	ADAPTOR, AC (AC-T46)	
	1-528-884-21	BATTERY, NICKEL CADMIUM(BP-T24)	
	1-696-454-11	CORD (WITH MODULAR PLUG)(LINE)	(2m15cm)
	3-012-379-21	CASE (WALL HOOK)	
	3-026-932-01	LABEL (ADDRESS. B)	
	3-862-955-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH, PORTUGUESE)	
	X-3368-367-1	SCREW ASSY	
*****			

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