SPP-A968

SERVICE MANUAL

US Model
Canadian 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 cords (2)
  Wall bracket/stand for base unit
  Rechargeable battery pack (BT-T24)

Handset

Power source
  Rechargeable battery pack BP-T24
Battery life
  Standby: Approx. 10 days (RING ON mode)
  Approx. 1 month (RING OFF mode)
  Talk: Approx. 6 hours
Dimensions
  Approx. 2 3/8 x 7 x 1 13/16 inches (w/h/d), antenna excluded
  (approx. 58 x 177 x 46 mm)
  Antenna: 2 7/8 inches (72 mm)
Mass
  Approx. 9 oz (approx. 260 g), battery included

Base unit

Power source
  DC 9V from AC power adaptor AC-T46
Battery charging time
  Approx. 12 hours
Dimensions
  Approx. 6 3/4 x 2 3/8 x 8 1/2 inches (w/h/d), antenna excluded
  (approx. 170 x 60 x 214 mm)
  Antenna: 6 1/2 inches (165 mm)
Mass
  Approx. 18 oz (approx. 520 g), wall bracket excluded

Answering machine

Maximum recording time
  About 20 minutes, using incorporated IC
Greeting message
  Up to 4 minutes
Incoming message
  Up to 4 minutes/message
Memo
  Up to 4 minutes/message

Design and specifications are subject to change without notice.

CORDLESS TELEPHONE WITH ANSWERING SYSTEM

MICROFILM

SONY®

TABLE OF CONTENTS

Notes on chip component replacement

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

SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

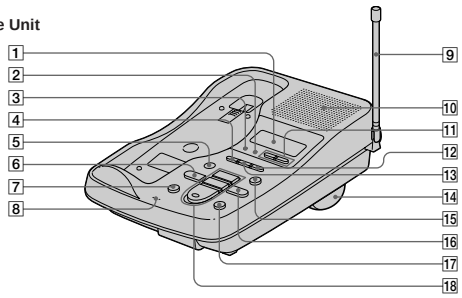
LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

This section is extracted from instruction manual.

Identifying the parts

Refer to the pages indicated in parentheses for details.

Base Unit



1 **Display window** (p.9, 34)

2 **IN USE lamp**
Lights when the cordless handset is in use.

3 **CHARGE lamp** (p. 11)
Lights while the battery is being charged.

4 **GREETING button** (p. 29)
Plays back the greeting message. Also used when recording a greeting.

5 **ERASE button** (p. 30, 34)
Erases the recorded greeting or messages.

6 **REPEAT/SLOW button** (p. 28, 34)
Press to repeat the current message or go back to the previous message. Keep the button pressed for slow playback of messages.

7 **MEMO button** (p. 36)
Records a memo message.

8 **MIC (microphone)** (p. 29, 36)

9 **Antenna** (p. 9, 47)

10 **Speaker**

11 **VOLUME +/– buttons** (p. 34)
Adjusts the speaker volume.

12 **TIME button** (p. 28)
Press when setting the day andtime, or to check the current time.

13 **SET/REC button** (p. 28, 29, 37)
Press to set the time or to record a greeting. Also used when setting the remote ID code (security code).

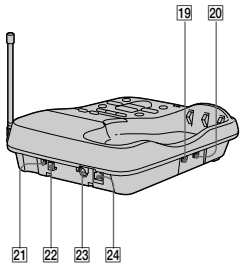
14 **Wall bracket/stand for base unit** (p. 9, 47)

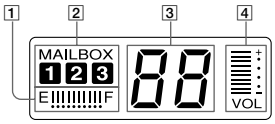
15 **ANSWER ON/OFF button** (p. 33)
Turns the answering function on or off. Lights when the answering function is on, and flashes when a new message is recorded. Also used when setting the remote ID code (security code).

16 **SKIP/QUICK button** (p. 28, 34)
Press to skip to the next message. Keep the button pressed for quick playback of messages.

Display

The display on the base unit shows the answering machine operation.





17 **HANDSET LOCATOR button** (p. 27)
Allows you to page the cordless handset.

18 **PLAY/STOP (MAILBOX 1, 2, 3) buttons** (p. 34)
Plays back the messages in each mail box.

19 **AUDIBLE INDICATE switch** (p. 32)
Selects the answering mode.

20 **RINGER SELECT switch** (p. 31)
Selects the ring time.

21 **DIAL MODE switch** (p. 10)
Selects pulse or tone dialing.

22 **Hook for AC power adaptor cord** (p. 9)

23 **DC IN 9V jack** (p. 9)

24 **LINE (telephone line) jack** (p. 9)

1 **Memory capacity indicator** (p. 32)
Indicates the available memory capacity, from E (Empty) to F (Full), for recording. The bars increase as the available memory capacity decreases.

2 **MAILBOX indicator** (p. 34)
Displayed when there are messages recorded and when the messages are being played back.
Flashes when there are new messages recorded.

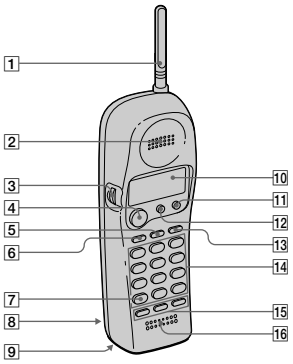
3 **Message number indicator** (p. 34)
Indicates the number of new messages recorded. "A" appears in the announcement only mode. "F" appears when there is no space to record messages. "P" appears when the power is turned on.

4 **VOL (volume) indicator**
Indicates the speaker volume. The bars increase as the volume is turned up.

continued

Identifying the parts (continued)

Handset



1 **Antenna**

2 **Speaker**

3 **Jog dial** (p. 13, 23, 40)

4 **TALK button** (p. 17, 35)
Lets you make or receive a call.

5 **REDIAL button** (p. 18)
Redials the last number called.

6 **VOL (volume) /PGM (program) button** (p. 13, 17, 21, 23)
Used to adjust the speaker volume. Also used to store numbers in Phone Directory or for one-touch dialing.

7 **✳ TONE button** (p. 17, 38)
Allows you to switch temporarily to tone dialing.

8 **Battery compartment** (p. 11)

9 **RING switch** (p. 12, 20)
Switches the ringing mode.

10 **Display window** (p. 39)

11 **CALL WAITING/FLASH button** (p. 19, 46)
Switches to a second call if you have "call waiting" service, or lets you make a new call.

12 **OFF button** (p. 17)
Allows you to disconnect the call.

13 **PAUSE button** (p. 22)
Inserts a pause in the dialing sequence.

14 **Dialing keys** (p. 17)

15 **ONE-TOUCH DIAL (A, B, C) buttons** (p. 21)

16 **Microphone**

Step 2

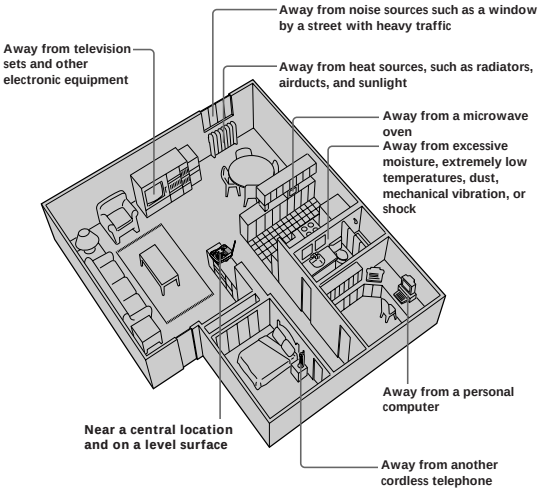
Setting up the base unit

Do the following steps:

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

Choose the best location

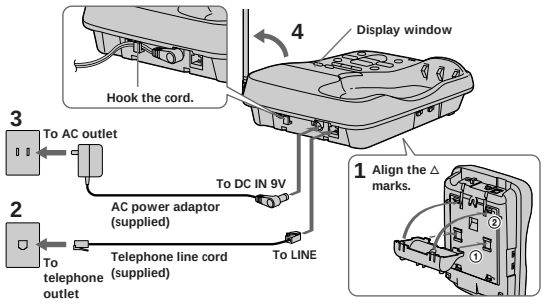
Where you place the base unit affects the reception quality of the handset.



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

Connect the base unit

If you want to hang the base unit on the wall, see page 47.



1 Attach the wall bracket on the bottom of the base unit 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.

"P" flashes in the display window.

4 Raise the antenna. Make sure it points toward the ceiling.

continued

Step 2: Setting up the base unit (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 unit close to the AC outlet so that you can unplug the AC power adaptor easily.

Polarity of the plug

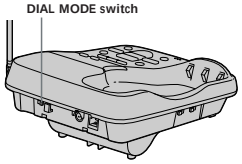
Tips

- If your telephone outlet is not modular, contact your telephone service company for assistance.
- To remove the wall bracket, press the upper tab.

Modular

Choose the dialing mode

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



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

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

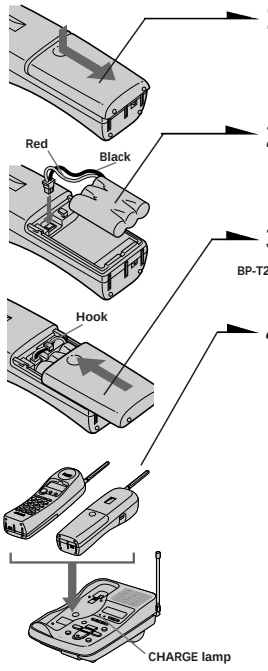
If you aren't sure of your dialing system

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.



1 Slide open the battery compartment lid of the handset.

2 Connect the battery connector with correct polarity (black wire goes on right side and red wire goes on left).

3 Hook the cords and insert the battery pack. Then close the lid.

4 Place the handset on the base unit.

You can place either side facing up.

The CHARGE lamp lights up when the handset is properly seated on the charge terminals of the base unit. Charge the battery pack for more than **12 hours** so that the battery is fully charged. The CHARGE lamp remains lit even after charging is completed.

continued

Battery duration

A fully charged battery pack lasts for about:

- Approx. 6 hours when you use the handset continuously
- Approx. 10 days (RING ON mode) or 1 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 if not in use.
- If you leave the battery pack in the handset without charging it, the battery pack will be completely discharged.
  It may require several times of charging to recover to its full capacity.
- While charging, the battery pack warms up. This is not a malfunction.

To obtain the best performance from the battery

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

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 Sony **BP-T24** rechargeable battery pack.

Note

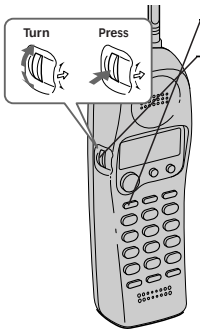
Battery life may vary depending on usage condition and ambient temperature.

Step 4

Entering your area code

When you use this phone for the first time, or move to an area that has a different area code, you must enter your area code.

This is necessary because the phone must distinguish local or long distance calls to properly dial calls from the Caller ID list.



1 Press (VOL/PGM).

2 Turn Jog Dial up to make "AREA" flash.

3 Press Jog Dial.

"ENTER AREA CODE" appears on the display.

4 Enter three digits of your area code using the dialing keys.

5 Press (VOL/PGM).

You hear a long confirmation beep.

Notes

- If an area code is already entered, it appears on the display in step 3. To enter a different area code, see "To change the area code" below.
- Do not allow more than 20 seconds to elapse between each step of the procedure.

Tips

- You may press Jog Dial instead of (VOL/PGM) in step 5.
- To check the current area code, perform steps 1 to 3 above. The area code appears on the display for 20 seconds.

To change the area code

1 Perform steps 1 to 3 above.

The current area code appears on the display.

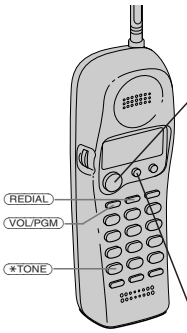
2 Turn Jog Dial down to erase the current area code.

3 Enter a new area code using the dialing keys.

4 Press (VOL/PGM).

You hear a long confirmation beep.

Making calls



1 Pick up the handset from the base unit.

2 Press (TALK) and wait until "TALK" appears on the display. The IN USE lamp on the base unit lights up.

You then hear a dial tone. If you hear five short error beeps and "OUT OF RANGE" appears on the display, move closer to the base unit.

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 replace the handset on the base unit.

The display goes off.

Additional tasks

To	Do this
Adjust the handset volume	During phone conversations, press (VOL/PGM). Each press of (VOL/PGM) switches the speaker volume by four levels.
Switch to tone dialing temporarily	Press (*TONE) after you are connected. The line will remain in tone dialing until disconnected.

Notes

- If the handset beeps every second during conversation and "OUT OF RANGE" appears on the display, move closer to the base unit; otherwise, the call will be disconnected after one minute.
- When you increase the sound volume, in some cases the background noise may be increased as well. You should adjust the volume accordingly.

continued

If the battery becomes weak during a call

The handset will beep every three seconds and and "BATTERY LOW" appear 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 next use.

Redialing

1 Press (TALK) and wait until "TALK" appears on the display. The IN USE lamp on the base unit lights up.

2 Press (REDIAL) to redial the number last dialed.

Note

If the number exceeds 32 digits or if it is erased, five short error beeps will alert you that the number cannot be dialed.

To check the phone number before redialing

Without pressing (TALK), press (REDIAL).

The number last dialed is displayed for five seconds.

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

Note

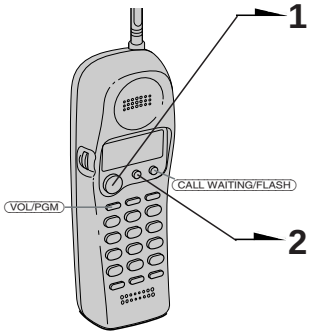
The number will not be displayed if the last dialed number exceeds 32 digits or if it is erased.

To erase the last phone number dialed

While the handset is not in use, press (REDIAL) twice.

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

Receiving calls



1 When you hear the phone ring, pick up the handset from the base unit, and press TALK.

"TALK" appears on the display and the IN USE lamp on the base unit lights up.

During a conversation, you can adjust the handset volume. Follow the procedure described in the table below.

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

The display and the IN USE lamp on the base unit go off.

If you have subscribed to the Caller ID service

- the caller's number and/or name appears on the display when you receive a call (see page 39).
- the ringer sound changes to a higher tone if the call matches the number stored on ONE-TOUCH DIAL buttons or in the Phone Directory (memory match function; see page 39).

Additional tasks

To	Do this
Adjust the handset volume	During phone conversations, press VOL/PGM. Each press of VOL/PGM switches the speaker volume by four levels.
Switch to another call ("call waiting" service*)	Press CALL WAITING/FLASH. Press CALL WAITING/FLASH again to return to the first caller.

* You need to subscribe to the service from your telephone company.

Tip

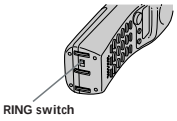
To inform you of an incoming call, the display shows "✻✻RINGING✻✻" when ringing.

continued

Receiving calls (continued)

To turn the ringer off

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



The handset will not 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 page the handset from the base unit.

Note

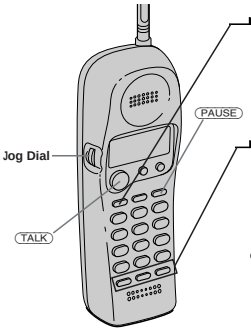
You **cannot receive Caller ID data** when the handset is off and the base unit in RING OFF mode. See page 39 for details.

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.

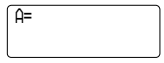
Storing phone numbers



1 Press VOL/PGM.

2 Press one of the three ONE-TOUCH DIAL buttons (A to C).

You 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.

3 Enter the phone number you want to store.

You can enter up to 16 digits, including a tone and a pause, each of which is counted as one digit.

4 Press VOL/PGM.

You hear a long confirmation beep, and the number is stored. The display goes off.

continued

One-touch dialing (continued)

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 21, do as follows:

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

To change a stored number

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

Note

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

Making calls with one-touch dialing

1 Press TALK and wait until "TALK" appears on the display.
2 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

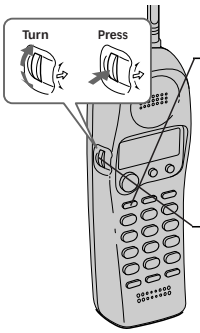
While the handset is not in use, press one of the ONE-TOUCH DIAL buttons (A to C).

The number stored on the button appears on the display for five seconds. To dial the number, press TALK while the number is displayed.

Phone Directory

You can dial a number by scrolling through the Phone Directory.
You can store up to 50 numbers.

Storing phone numbers and names



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

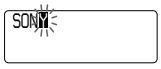
1 Press (VOL/PGM).
(Be sure not to press (TALK).)

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

continued

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 hear a long confirmation beep, and the name and the number are stored. The display goes off.

Notes

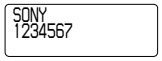
- If you try to save a 51st phone number, you will hear five short error beeps and "MEMORY FULL" will be displayed. You cannot store the phone number. To store another phone number, erase one of the stored phone numbers (see page 25).
- Do not allow more than 20 seconds to elapse between each step of the procedure.

Tips

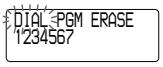
- If you have entered a wrong name or number in step 3 or 5, turn Jog Dial down to erase it. Then enter the correct name or number.
- You may press Jog Dial instead of (VOL/PGM) in steps 4 and 6.
- To store a number to be dialed via PBX, follow the steps on page 22 when entering a phone number.

Changing a stored name and/or phone number

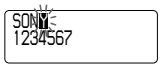
1 Display the name and phone number you want to change by following steps 1 and 2 on page 26.



2 Press Jog Dial.

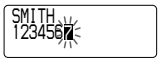


3 Turn Jog Dial up to make "PGM" flash and press Jog Dial.
The cursor flashes at the last character of the name.



4 Turn Jog Dial down to erase the characters and enter the new name.
If you want to change only the number, skip this step.

5 Press Jog dial.
The cursor flashes at the last digit of the phone number.

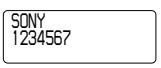


6 Turn Jog Dial down to erase the number and enter the new number.
If you don't want to change the number, skip this step.

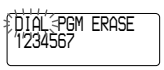
7 Press Jog Dial.
You hear a long confirmation beep and the name and/or the number is changed.

Erasing a memory location

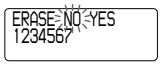
1 Display the name and phone number you want to erase by following steps 1 and 2 on page 26.



2 Press Jog Dial.



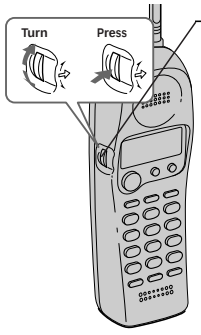
3 Turn Jog Dial up to make "ERASE" flash and press Jog Dial.



4 Turn Jog Dial up to make "YES" flash, then press Jog Dial.
You hear a long confirmation beep and the memory location is erased.

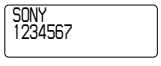
continued

Making calls from the Phone Directory

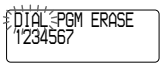


1 Press Jog Dial twice.
"DIRECTORY" appears on the display.

2 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.



3 Press Jog Dial.



4 Press Jog Dial again.
The phone number will be dialed.

Tip
You may press (TALK) to make a call instead of following 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 ⟷ symbols* ⟷ * ⟷ # ⟷ 0 - 9

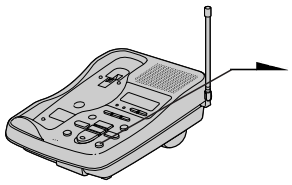
* Symbols appear only when you stored the number having the symbol from the Caller ID list.

- Initial character: To search for "SONY" for example, press (7) and then turn Jog Dial to search through the names starting with P, Q, R, S or 7.

Paging

You can page the handset from the base unit.

Note that you cannot page if the handset is in use.



To page

Press HANDSET LOCATOR.

The handset rings.

When you keep pressing HANDSET LOCATOR, the handset rings continuously.

Note

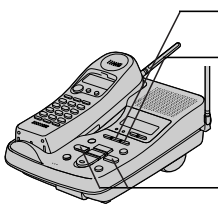
You cannot page the handset when its RING switch is set to OFF.

Preparing the answering machine

Note that you cannot operate the base unit while the handset is in use.

Setting the day and time

Set the day and time so that you can stamp day and time for the incoming messages. You'll hear the recorded day and time when you play back messages.



1 Press SET/REC.

2 Press TIME.

You hear a voice guide: "Please set the day. To select, press the SKIP or REPEAT button. To enter, press the SET button".

3 Press SKIP/QUICK or REPEAT/SLOW repeatedly until the correct day of the week is announced.

Press SKIP/QUICK to advance, or REPEAT/SLOW to go back.

4 Press SET/REC.

You hear a voice guide: "Please set the hour. To select, press the SKIP or REPEAT button. To enter, press the SET button".

5 Press SKIP/QUICK or REPEAT/SLOW repeatedly until the correct hour is announced.

6 Press SET/REC.

You hear a voice guide: "Please set the minute. To select, press the SKIP or REPEAT button. To enter, press the SET button".

7 Press SKIP/QUICK or REPEAT/SLOW repeatedly until the correct minute is announced.

8 Press SET/REC.

You hear a long confirmation beep, followed by the day and time. Then the phone starts counting time.

Notes

- Do not allow more than 20 seconds (or 60 seconds when setting the minute) to elapse between each step of the procedure.
- If a power interruption occurs, the day and time will be erased.
- If the current day and time are not set, you will not hear a time stamp when you play back recorded messages. If you try to check the current time, you will hear five short error beeps.

To check the current time

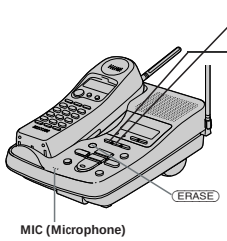
Press TIME. You hear the current day and time.

Recording the greeting

This answering machine has prerecorded greetings (see page 30). However, you can record your own greeting.

The greeting must be between two seconds and four minutes long.

You can record only one greeting, and it is used regardless of the answering mode ("normal" and "announcement only" modes. See page 32). Therefore, if you decide to change the mode, make sure that you record a new greeting to match the answering mode.



1 Press SET/REC.

2 Press GREETING.

You hear a voice guide and a long confirmation beep.

3 After the tone, start recording. Speak about 12 inches (30 cm) away from the microphone.

4 Press SET/REC to stop recording.

The phone automatically replays the recorded greeting.

continued

Notes

- If recording did not succeed, you hear five short error beeps. Start over the procedure.
- If a call comes in or TALK is pressed while recording a greeting, recording is cancelled. Start over the procedure.
- If you hear five short error beeps while recording, the recording area may be full. In this case, erase unnecessary messages (see page 34).

Tips

- If four minutes have passed in step 3, recording stops automatically.
- To record the greeting from a touch-tone phone, see page 38.

Prerecorded greeting

Normal mode:	"Hello, I'm unable to answer your call right now. Please leave your name, number and message after the tone."
Announcement only mode:	"Hello, I'm unable to answer your call right now. Please call again. Thank you."

Tips

- If you wish to record your own "announcement only" greeting, follow the above sequence after setting the AUDIBLE INDICATE switch to ANN ONLY (page 32). Otherwise, the "normal" greeting will be recorded.
- You have to change the message each time you change the mode.

To check the greeting

Press GREETING to play back the greeting.

To change the greeting

Record a new greeting. The new greeting replaces the old one.

To erase the greeting

Press ERASE while playing back the greeting.

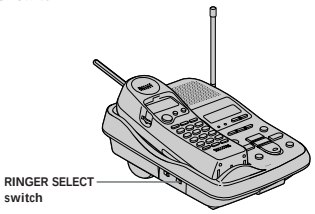
The answering machine will answer a call with the prerecorded greeting.

To go back to the factory preset greeting

Press ERASE while playing back the greeting. This will bring back the original greeting.

Selecting the ring time

There are three options of ring time. Select the ring time by setting the RINGER SELECT switch.



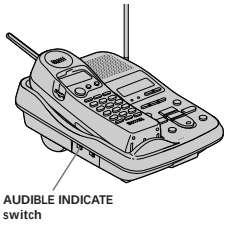
Set RINGER SELECT to	Mode
TS (Toll Saver)	If new messages have been recorded, the phone answers at the second ring and records incoming messages; if no new messages are recorded, it answers at the fifth ring. When you call from an outside phone and hear more than two rings, you know that there are no new messages. If you hang up at this point before the phone answers, you can save the toll for the call.
5	The phone always answers at the fifth ring and records incoming messages.
2	The phone always answers at the second ring and records incoming messages.

continued

Selecting the answering mode

You can set the answering machine to record incoming messages (normal mode), or just make an announcement without recording messages (announcement only mode).
You can record your own greeting, or use the factory pre-recorded greetings.

In the normal mode, you also have the option of having a beep to tell you if you have received any new incoming messages.



Set the AUDIBLE INDICATE to	When you wish to	Pre-recorded greeting
ON (normal mode)	play a greeting to ask the caller to leave a message and have the phone beep to alert you of recorded incoming messages.	"Hello, I'm unable to answer your call right now. Please leave your name, number and message after the tone."
OFF (normal mode)	play a greeting to ask the caller to leave a message but you do not wish to sound a beep.	
ANN ONLY (announcement only mode)	make an announcement to the caller without accepting incoming messages when, for example, you are away on a long vacation.	"Hello, I'm unable to answer your call right now. Please call again. Thank you."

Note

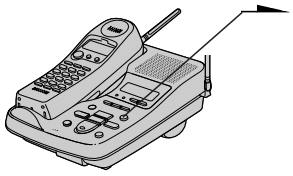
The same greeting is used regardless of the answering mode. Therefore, if you decide to change the mode, make sure that you record a new greeting to match the answering mode.

When the memory is full

The recording area of this phone's memory is about 20 minutes (including the greeting, messages, and memo). If the remaining recording area becomes less than one minute, "F" flashes on the display, and the phone automatically switches to announcement only mode, which does not record messages, and the greeting will be switched to the pre-recorded greeting.

If you wish to record more messages, erase the existing messages (see page 34). You can also erase the messages from an outside phone (see page 38).

Turning on the answering function



Note

When the memory is full, you hear five short error beeps and you cannot turn on the answering function. Erase unnecessary messages (see page 34).

Tips

- The answering machine will automatically answer a call after 10 rings even if the answering function is off. The answering function will remain on for all subsequent calls.
- You can also turn on or off the answering function from an outside phone recorded. (see page 38).

When a caller calls

The caller can choose one of the two ways to leave a message:

- Select a mailbox by pressing (*) (1) (MAILBOX 1), (*) (2) (MAILBOX 2) or (*) (3) (MAILBOX 3) while the caller hears the greeting. The greeting stops and a beep will sound, then the caller can start recording a message.
- Wait until the greeting finishes, then start recording a message. When the caller does not select a mailbox, the messages goes into MAILBOX 1.

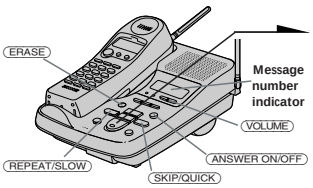
Notes

- If four minutes have passed while recording the incoming message, the line is automatically disconnected.
- If the message is shorter than two seconds, it will not be

To turn off the answering function

Press (ANSWER ON/OFF) so that the red light goes off.

Playing back messages



When you come home

If (ANSWER ON/OFF) flashes in red, or the display shows the number of new messages and the MAILBOX indicator flashes, press the mailbox button ((MAILBOX 1), (MAILBOX 2) or (MAILBOX 3)). The machine plays back from the first new message.

Additional tasks when playing back messages

To	Do this
Adjust the speaker volume	Press (VOLUME) (+) or (–).
Stop playback	Press the mailbox button again.
Replay the messages	Press the mailbox button again.
Skip to the next message	Press (SKIP/QUICK) while the current message is playing.
Repeat the current message	Press (REPEAT/SLOW) while the current message is playing.
Go back to previous messages	Press (REPEAT/SLOW) within the first three seconds of the current message.
Play back slowly	Keep (REPEAT/SLOW) pressed during playback.
Play back quickly	Keep (SKIP/QUICK) pressed during playback.

To erase messages

You can erase only the messages you have played back.

- To erase one message, press (ERASE) while the message is being played back.
- To erase all messages in a mailbox, press (ERASE), and a mailbox button ((MAILBOX 1), (MAILBOX 2) or (MAILBOX 3)). A long confirmation beep sounds and all messages in the selected mailbox are erased.

Notes

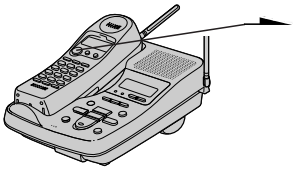
- The display shows the total number of "new" messages. Therefore, it is reset to "0" when you play back all new messages, even they are not erased yet. Be sure to erase unnecessary messages before the memory becomes full.
- When the number of new messages exceeds 99, "99" flashes on the counter.
- If a call comes in during playback, the playback stops.
- If a power interruption occurs or the AC power adaptor is disconnected while erasing a message, all recorded message may be erased.

Tip

You can also listen to the messages or erase the messages from a touch-tone phone (page 38).

Screening incoming calls

You can screen calls by leaving the answering function on (see page 33) while you are at home. When a call is answered, you can hear the message being recorded through the base unit (you cannot hear the message through the handset) but the caller cannot hear you. Then, you can decide whether to answer the call or not. This function is available only on the base unit.



To answer the call

Press (TALK).

Recording is cancelled and you can speak to the caller.

Note

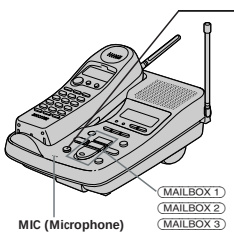
If the volume is set to minimum, you cannot screen the calls.

Tip

You can also answer the call by picking up another phone if it is connected to the same line.

Recording a memo

You can record a "memo" (up to four minutes) as a personal reminder or as a message for other people. You can play back the recorded memo like any incoming messages (see page 34).



1 Press (MEMO).

You hear a voice guide.

2 Select a mailbox by pressing (MAILBOX 1), (MAILBOX 2) or (MAILBOX 3). You will hear a voice guide, then a long confirmation beep.

3 After the tone, start recording. Speak about 12 inches (30 cm) away from the microphone.

4 Press (MEMO) to stop recording.

The message number in the display increases by one.

Notes

- If you press (MEMO) when the memory is full ("F" flashing on the display), you hear five short error beeps and you cannot record a memo.
- If a call comes in or (TALK) is pressed while recording a memo, recording is canceled. Start over the procedure.
- If the remaining memory becomes full while recording, recording stops automatically and "F" flashes on the display.

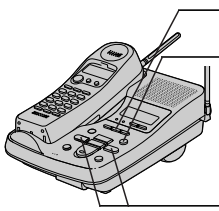
Tip

If four minutes have passed in step 3, recording stops automatically, and the recorded memo is counted as a new message.

Operating from an outside phone

You can call from a touch-tone phone and pick up new messages recorded on the phone. First, you just set the remote ID code (security code) and turn on the answering function before going out.

Setting the remote ID code (security code)



1 Press (SET/REC).

2 Press (ANSWER ON/OFF).

You hear a voice guide: "Please set the security code. To select, press the SKIP or REPEAT button. To enter, press the SET button".

3 Set a two-digit number between 00 and 99 by pressing (SKIP/QUICK) or (REPEAT/SLOW).

Press (SKIP/QUICK) to increase a number, or (REPEAT/SLOW) to decrease.

Each time you press (SKIP/QUICK) or (REPEAT/SLOW), the phone announces a number.

4 Press (SET/REC).

The remote ID code (security code) is set, and you hear a long confirmation beep.

To change the remote ID code (security code)

Enter a new remote ID code (security code). The new code will replace the old one.

continued

Picking up new messages

1 Call your phone from a touch-tone phone.

2 While you hear your greeting play, press (#), and your remote ID code (security code).

You hear a long confirmation beep and the greeting stops. Following the voice guide informing you of the number of messages recorded, the phone stands by for you to enter a control code.

3 To do other operations, enter the control code within 20 seconds (see the table below). To quit, hang up the phone.

Control codes for remote operations

To	Press
Play back messages in MAILBOX 1	(#) (1)
Play back messages in MAILBOX 2	(#) (2)
Play back messages in MAILBOX 3	(#) (3)
Repeat the current message	(#) (4) while the message is being played back
Skip the current message	(#) (6) while the message is being played back
Erase the current message	(#) (9) while the message is being played back
Erase all messages in MAILBOX 1	(#) (9) (#) (1)
Erase all messages in MAILBOX 2	(#) (9) (#) (2)
Erase all messages in MAILBOX 3	(#) (9) (#) (3)
Record a new greeting (up to one minute)	(*) (7). When you hear a long beep, start recording your greeting. Press (*) (*) to stop recording.
Turn on the answering function	(*) (0)
Turn off the answering function	(#) (0)
Stop the current operation	(*) (*)

If you forgot to turn the answering function on

Call your phone and let it ring 10 times until it answers. Then the answering function automatically turns on.

Note

If you enter a wrong remote security code three times, the line will be disconnected.

To use the toll-saver feature

Set RINGER SELECT to TS. See page 31 for details.

Understanding the Caller ID service

Caller ID allows the caller's phone number to be shown on the display before you answer the call. In order to use this feature, you must first subscribe to Caller ID service. The name of this service may vary depending on your telephone company.

To use this feature, be sure to enter your area code (see page 13).

When you receive a call

The phone number appears on the display with the date and time as shown in the following example.

If your Caller ID service includes the caller name service, the caller's name also appears on the display (up to 15 letters).

When you answer the call, the Caller ID display changes to the "TALK" display.

* The date and time in the display are transmitted from the telephone company which offers the Caller ID service, therefore may differ from the date and time you set on the base unit.

Caller's phone number

Notes

- If the RING switch is set to OFF:
  - when the handset is off the base unit, the Caller ID is not displayed, and it is not kept in the Caller ID list (see page 40). If you set it back to RING ON while the phone is ringing, the Caller ID appears from that moment.
  - when the handset is on the base unit, the Caller ID is displayed, and it is kept in the Caller ID list.
- The caller's phone number and/or name will not appear in the following cases:
  - "OUT OF AREA": when the call is made through a telephone company which does not offer Caller ID service (including international calls).
  - "PRIVATE": when the call is "blocked". For privacy reasons, many states allow callers the option to prevent his or her telephone data from being displayed on the other party's Caller ID display.
- If the call is from an office which uses multiple lines, the displayed phone number may not match the number you use to call the extension.

About the memory match function

If you receive a call from a phone number which is stored on one of the ONE-TOUCH DIAL buttons (see page 21) or in the Phone Directory (see page 23), the ringer sound will change to a higher tone from the second ring.

Note

The memory match function does not work with "OUT OF AREA" or "PRIVATE" calls; and it may not work with calls made from an office which uses multiple lines because the number does not always match the one you stored in this phone.

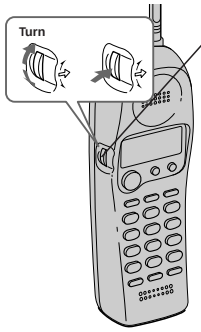
Looking at the Caller ID list

The phone stores the data of the last 20 calls received including "OUT OF AREA" and "PRIVATE" calls. It keeps track of all calls received; even if they were not answered.

However, if the RING switch is set to OFF when the handset is off the base unit, the phone cannot receive the Caller ID data.

Viewing the Caller ID list

You can look through the Caller ID list to check the phone number and/or name of the calls received.



1 Press Jog Dial.

The display shows the number of "NEW" (calls which you have not viewed) and "OLD" (calls which you have viewed) calls.

NEW 08 OLD 12

2 Turn Jog Dial.

The data of the newest call appears for 20 seconds.

SMITH JOHN
1-201-123-4567
NEW 08 7.04PM 4:53

3 Turn Jog Dial down to display older data or up to display newer data.

Notes

- If a 21st call is received, the oldest data is automatically erased.
- If there is a "NEW" data, you will hear a new call voice guide at the beginning of message playback on the base unit, i.e. "You have one new message and new call".

About the "*" mark

SMITH JOHN *
1-201-123-4567
NEW 08 7.04PM 4:53

"*" appears if there are more than two calls from the same phone number. The older data will be replaced by the new data, so the calls are counted as only one call.

Erasing data from the Caller ID list

Old data will be erased automatically when a 21st call comes in, but you can also manually erase unnecessary data one by one or erase the entire list.

To erase the phone number one by one

1 Display the phone number you want to erase from the Caller ID list (see page 40).

SMITH JOHN
1-201-123-4567
OLD 01 7.04PM 4:53

2 Press Jog Dial.

DIAL>PGM ERASE
1-201-123-4567
OLD 01 7.04PM 4:53

3 Turn Jog Dial up to make "ERASE" flash and press Jog Dial.

ERASE>NO YES
1-201-123-4567
OLD 01 7.04PM 4:53

4 Turn Jog Dial up to make "YES" flash, then press Jog Dial.

You hear a long confirmation beep and the data is erased.

continued

To erase the entire list at once

1 Display any Caller ID data.

SMITH JOHN
1-201-123-4567
OLD 01 7.04PM 4:53

2 Press Jog Dial.

DIAL>PGM ERASE
1-201-123-4567
OLD 01 7.04PM 4:53

3 Turn Jog Dial up to make "ERASE" flash and press Jog Dial.

ERASE>NO YES ALL
1-201-123-4567
OLD 01 7.04PM 4:53

4 Turn Jog Dial up to make "ALL" flash, then press Jog Dial.

ALL ERASE>NO YES
1-201-123-4567
OLD 01 7.04PM 4:53

5 Turn Jog Dial up to make "YES" flash, then press Jog Dial.

You hear a long confirmation beep and the entire list is erased.

NEW 00 OLD 00

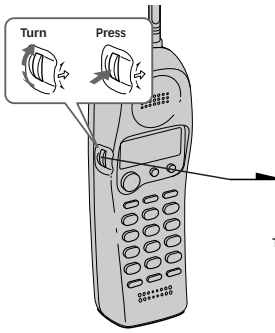
Note

"ALL" appears only when all the data had become "OLD" data. If there is any "NEW" data, you cannot erase the entire list.

Using the Caller ID list

By using the Caller ID list, you can call back a phone number from the Caller ID list easily, or store numbers from the Caller ID list into memory dialing keys.

Calling back a number from the Caller ID list



1 Display the phone number you want to call from the Caller ID list (see page 40).

SMITH JOHN
1-201-123-4567
NEW 08 7.04PM 4:53

2 Confirm the number and press Jog Dial.

Tip

DIAL PGM ERASE
1-201-123-4567
NEW 08 7.04PM 4:53

3 Press Jog Dial again.

The phone automatically dials the displayed number.

Notes

- If the number displayed in step 1 is not the one you should call back, you can change the number of digits of the phone number as described on page 45.
- If the phone is connected to a Private Branch Exchange (PBX), you may not be able to call back from the Caller ID list because an outside line access digit is necessary.

You may press (TALK) to make a call instead of following steps 2 and 3.

continued

Storing a number of the Caller ID list into the Phone Directory

1 Display the name and phone number you want to store from the Caller ID list (see page 40).

SMITH JOHN
1-201-123-4567
NEW 08 7.04PM 4:53

2 Confirm the number and press Jog Dial.

DIAL PGM ERASE
1-201-123-4567
NEW 08 7.04PM 4:53

3 Turn Jog Dial up to make "PGM" flash and press Jog Dial.

The cursor flashes at the end of the name.

Enter or change the name, if necessary (see page 24).

SMITH JOHN
12011234567

4 Press Jog Dial.

The cursor flashes at the end of the phone number.

Enter or change the phone number, if necessary (see page 24).

SMITH JOHN
12011234567

5 Press Jog Dial again.

You hear a long confirmation beep and the name and number are stored.

Notes

- Do not allow more than 20 seconds to elapse between each step of the procedure.
- If the number displayed in step 1 is not the one you should call back, you can change the number of digits of the phone number as described on page 45.
- If the phone is connected to a Private Branch Exchange (PBX), you may need to add an outside line access digit (see page 22).

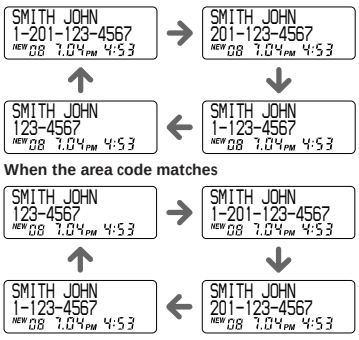
To change the number of digits of the phone number

If the number of digits of the phone number in the Caller ID list is different from the actual phone number, you need to adjust the number of digits of the phone number to call back or store into the phone directory.

1 While the phone number from the Caller ID list is displayed, press (#) repeatedly until the phone number with the correct number of digits appears on the display.

Each time you press (#), the number of digits changes as follows.

When the area code does not match



When the area code matches

2 Continue the operation to call or store the phone number with the correct number of digits (pages 43 and 44).

Notes

- You need to adjust the number of digits each time you call back from the Caller ID list as the changes to the Caller ID data is not stored in memory.
- You may not be able to change the number of digits depending on the Caller ID data.

Using "Caller ID with call waiting" service

This telephone is compatible with the "Caller ID with call waiting" service. Make sure that your telephone company offers this service.

Like the basic Caller ID service, you need to subscribe to "Caller ID with call waiting" in order to use this service.

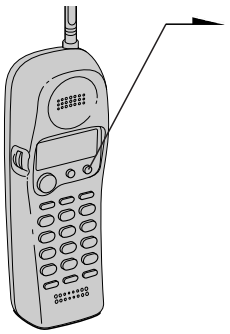
Even though you may have already subscribed to "Caller ID" and "call waiting" as two separate services, you need to request a subscription to "Caller ID with call waiting" as a single service.

This is a new service that combines the two services.

Even though you now have a "Caller ID with call waiting" compatible phone, unless you subscribe to the combined "Caller ID with call waiting" service, you will not be able to see the name and number of the second caller.

When a new call comes in while you are talking, the caller's name and/or phone number of the new call appears on the display for about 20 seconds.

To switch to another caller



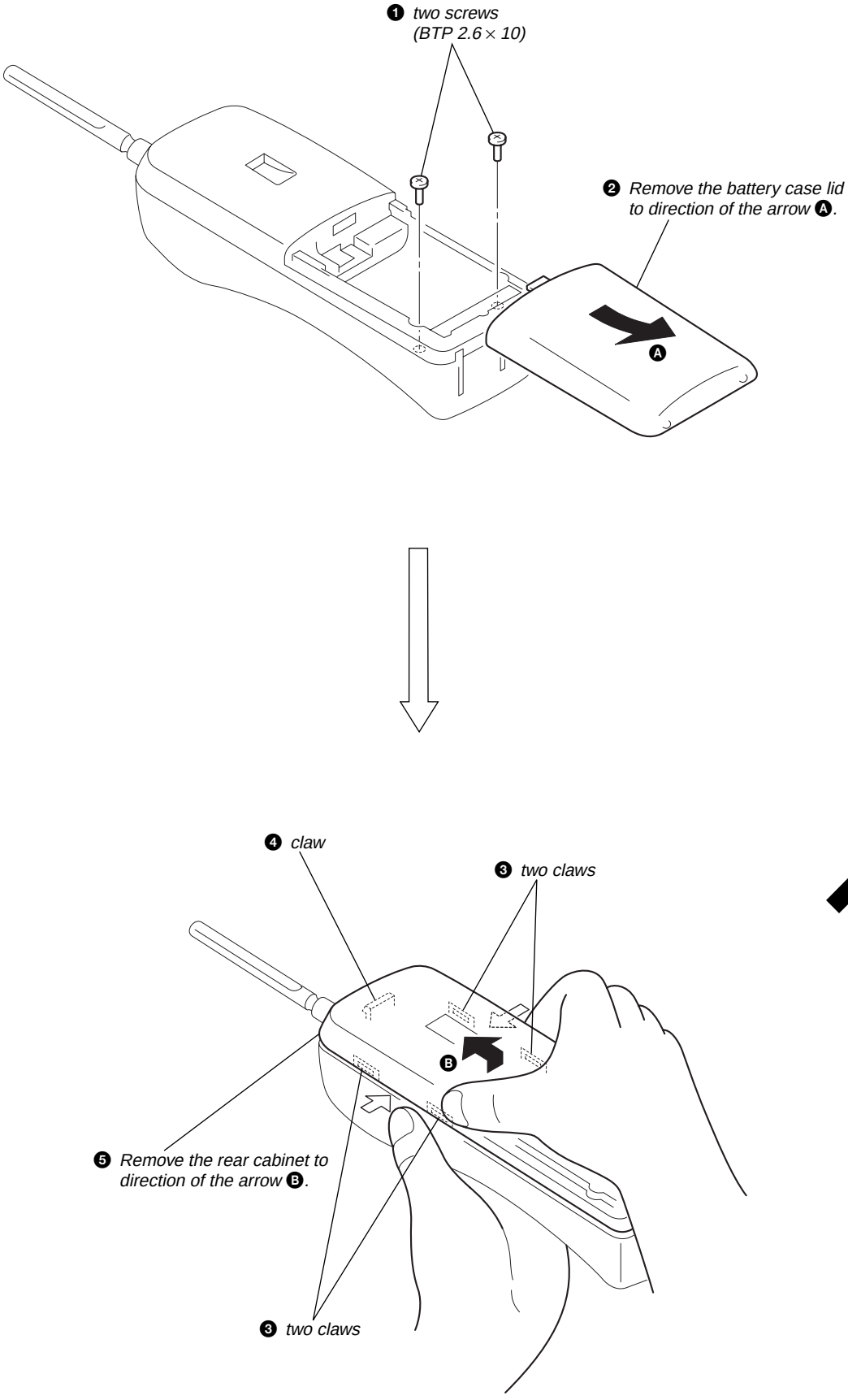
1 To switch to the new caller, press (CALL WAITING/FLASH).

2 To switch back to the first caller, press (CALL WAITING/FLASH) again.

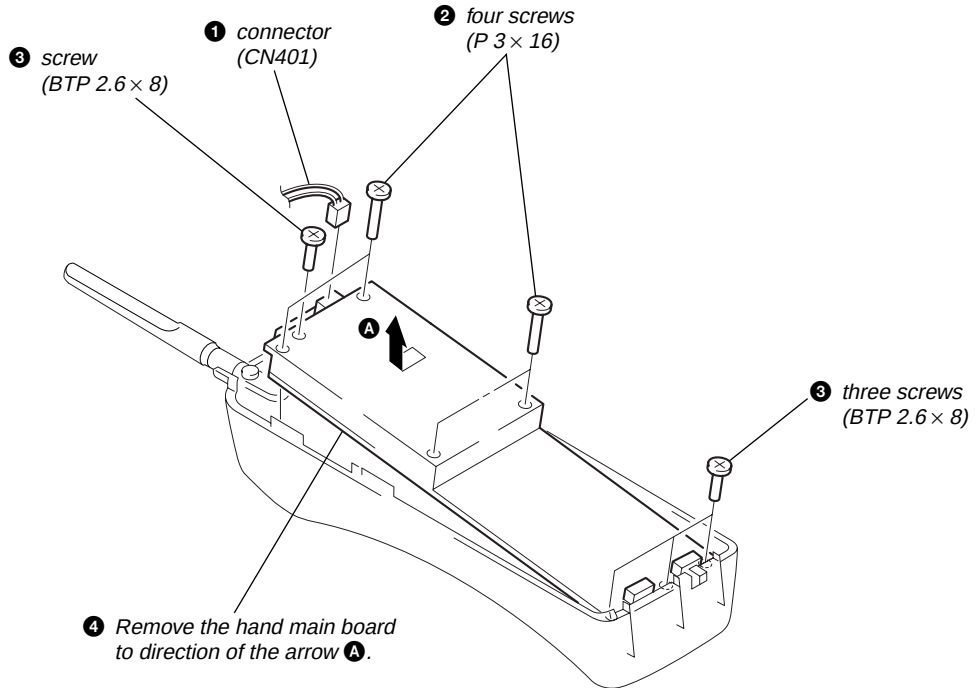
SECTION 2
DISASSEMBLY

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

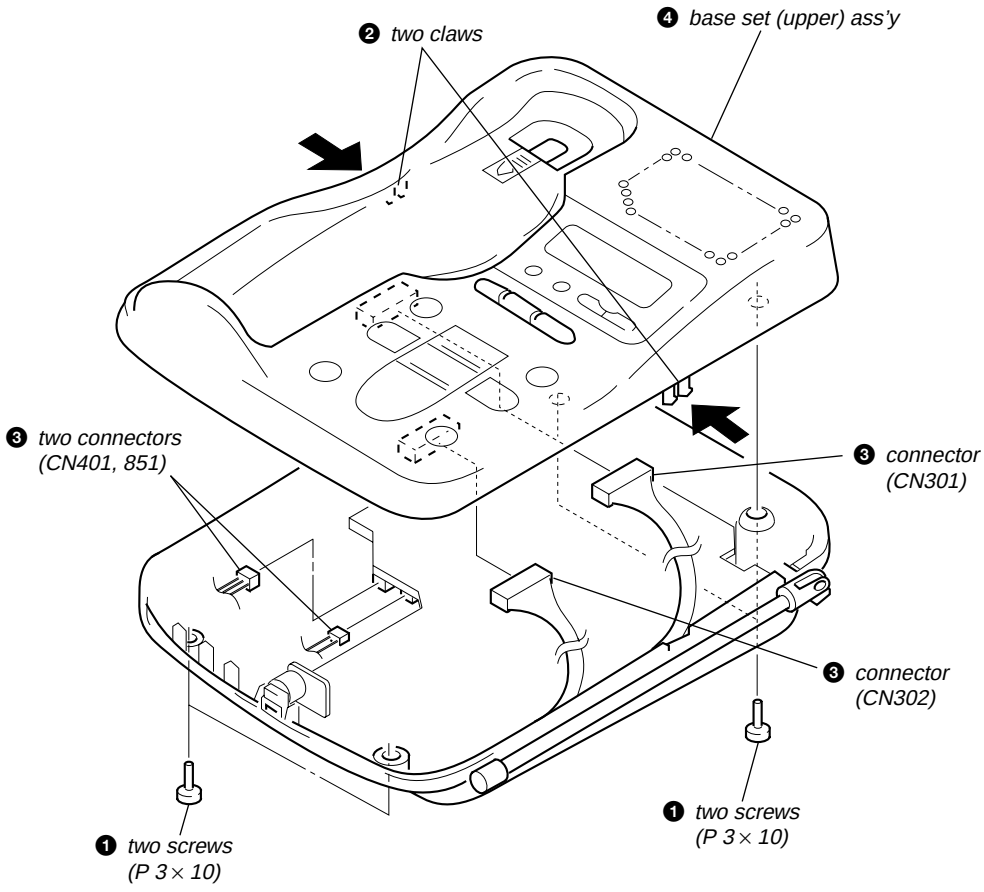
- **HANDSET**
  REAR CABINET



HAND MAIN BOARD



- **BASESET**
  BASESET (UPPER) ASS'Y



SECTION 3
900 MHz SYSTEM OPERATION

3-1. ACCESS METHOD

1. Transfer format & rate

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

Table 3-1. 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 3-2. 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	824.0
9	913.2	19	925.2
10	914.4	20	926.4

3-2. PROTOCOL

1. General

This system realizes the TX/RX superframe by TDD system. The relation of master/slave dose 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.

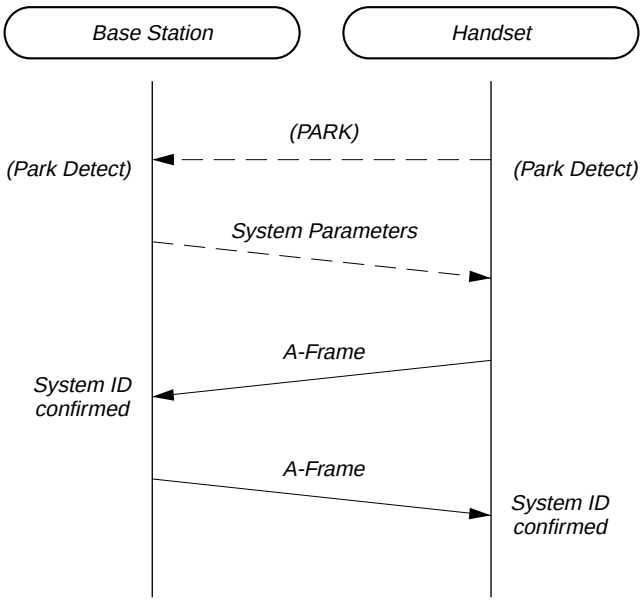


Fig. 3-1. System Parameters Re-initialization

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.

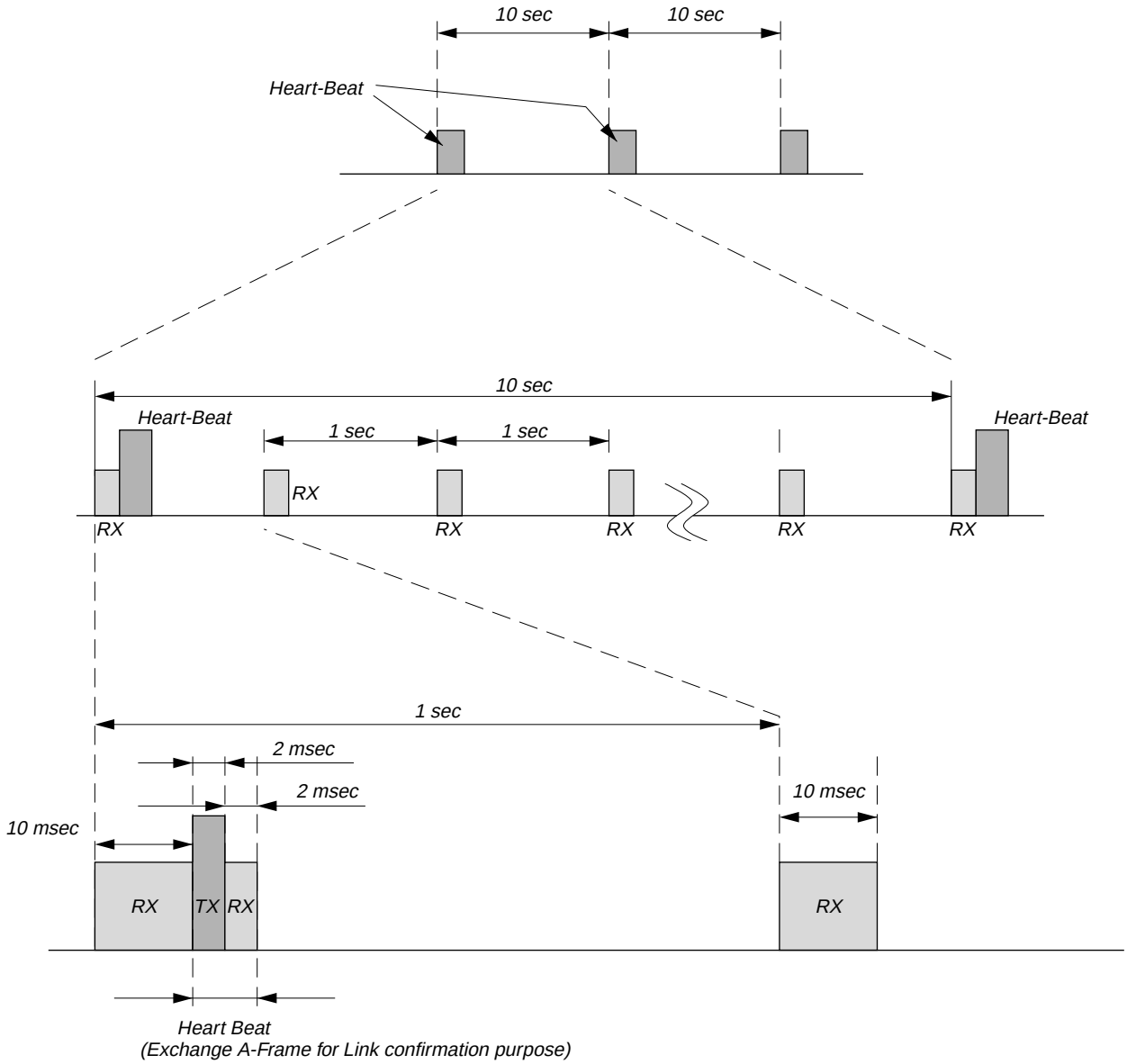


Fig. 3-2. Stand-by mode operation (HS)

(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. 3-1, 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.

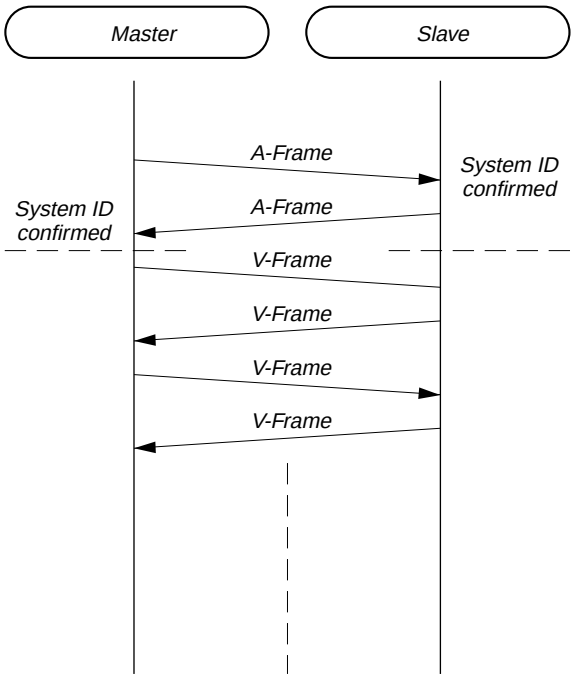


Fig. 3-3. Link Establishment protocol

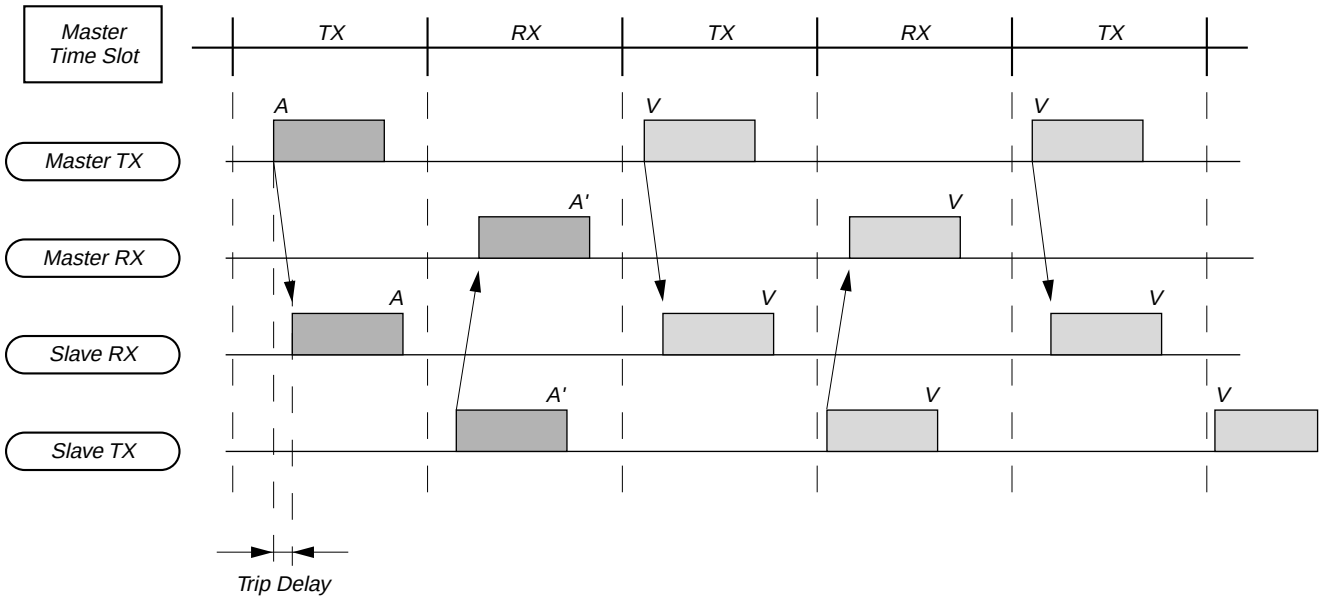


Fig. 3-4. Link Establishment Timing Chart

6. State Change/Tarmination

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 4
TEST MODE

General Description

- The base unit of this set has two microcomputers IC201 and IC751, and it provides two test modes for the communication system and for the automatic answering system.
- The communication system test mode is grouped into two kinds depending on the start-up method. Two kinds of test modes are named Test Mode A and Test Mode B respectively. Also, the Test Mode A and the Test Mode B have two major statuses depending on the DIAL MODE switch position, named Test Mode Idle A-1, Test Mode Idle A-2, and Test Mode Idle B-1, Test Mode Idle B-2 respectively.

Communication System Test Mode

4-1. BASE UNIT TEST MODE A

[Start-up]

1. Set DIAL MODE switch to the P (PULSE) side.
2. Keeping HANDSET LOCATOR, MEMO, and MAIL BOX2 buttons pressed simultaneously, turn the power on, and set the DIAL MODE switch from P (PULSE) side to T (TONE) side, then return to the P (PULSE) side.
3. Release the above three buttons, and the Test Mode A will start.
4. After the Test Mode A started, the dial test is executed.
5. The Radio block goes in the TDD mode (master timing) and the channel 1 is in the line speech status (Test Mode Idle A-1 status).
6. In this status, two kinds of idle statuses can be selected with the DIAL MODE switch.

DIAL MODE switch	Idle status
P (PULSE) side	Test Mode Idle A-1
T (TONE) side	Test Mode Idle A-2

[Dial Test]

1. After the Test Mode A started, close the line and dial “0” in the 10 pps mode, then after 2 seconds, “1” “4” “8” “#” are output in the DTMF mode.

[Loopback Test]

1. Each time the HANDSET LOCATOR button is pressed in the Test Mode Idle A-1 status, the mode varies as listed below.

HANDSET LOCATOR button pressing count	Test mode
1	CODEC Forward Loopback (L1) test
2	ADPCM Forward Loopback (L2) test
3	ADPCM → RADIO Forward Loopback test
4	FIFO Loopback (L4) test
5	Return to Test Mode Idle A-1 status

[Talk Test in TDD Mode on Each Channel]

1. Each time the HANDSET LOCATOR button is pressed in the Test Mode Idle A-2 status, the channel varies as shown below.

   CH1 → CH2 → CH3 → CH4 → … → CH20 (→ back to CH1)

2. From CH2 to CH20, each block is in the following status.
   Radio block: TDD mode (slave timing)
   Audio block: Line speech status

[Charge Detection, ARTO Terminal Output Test/ EEPROM Clear]

1. Upon detection of Charge signal in the Test Mode Idle A-1 status, 2.4 kHz square wave is output from the IC751 pin ㉞ (ARTO terminal).
2. At this time, the contents of EEPROM are all cleared.

4-2. BASE UNIT TEST MODE B

[Start-up]

1. Set DIAL MODE switch to the T (TONE) side.
2. Keeping HANDSET LOCATOR, MEMO, and MAIL BOX2 buttons pressed simultaneously, turn the power on, and set the DIAL MODE switch from T (TONE) side to P (PULSE) side, then return to the T (TONE) side.
3. Release the above three buttons, and the Test Mode B will start.
4. After the Test Mode B started, the dial test is executed.
5. The Radio block goes in the TDD mode (master timing) and the channel 1 is in the line speech status (Test Mode Idle B-1 status).
6. In this status, two kinds of idle statuses can be selected with the DIAL MODE switch.

DIAL MODE switch	Idle status
T (TONE) side	Test Mode Idle B-1 *1
P (PULSE) side	Test Mode Idle B-2 *2

*1 Radio block: TDD mode (master timing)
Audio block: Line speech status

*2 Radio block: Standby status
Audio block: Line open

[Call Waiting Detection Test]

1. Upon normal reception of Call Waiting signal from the IC150 (caller ID signal demodulator) in the Test Mode Idle B-1 status, the IC751 pin (89) (LED1 terminal) changes the signal level from H to L.
2. To return to L → H status, press HANDSET LOCATOR button.

[Ring Detection Test]

1. Upon detection of Ring signal in the Test Mode Idle B-2 status, the IC751 pin (89) (LED1 terminal) outputs H → L ... in synchronization with the Ring Detection signal of H → L ...

[Continuous Receiving and Transmission Test/Talk Test in TDD Mode with High, Mid, and Low Power]

1. Each time the [HANDSET LOCATOR] button is pressed in the Test Mode Idle B-1 status, the radio block goes in the following status.

[HANDSET LOCATOR] button pressing count	Radio Block
1	Continuous RX (CH1, LNA ON, AGC ON)
2	Continuous RX (CH10, LNA ON, AGC ON)
3	Continuous RX (CH20, LNA ON, AGC ON)
4	Continuous TX (CH1, High power)
5	Continuous TX (CH1, Mid power)
6	Continuous TX (CH1, Low power)
7	Continuous TX (CH10, High power)
8	Continuous TX (CH10, Mid power)
9	Continuous TX (CH10, Low power)
10	Continuous TX (CH20, High power)
11	Continuous TX (CH20, Mid power)
12	Continuous TX (CH20, Low power)
13	TDD mode (Master timing, CH1, High power)
14	TDD mode (Master timing, CH1, Mid power)
15	TDD mode (Master timing, CH1, Low power)
16	Return to Test Mode Idle B-2.

Note: When the button pressing count is 1-15, the Audio block is in the line speech status.

[Charge Detection, ARTO Terminal Output Test/ EEPROM Clear]

1. Upon detection of Charge signal in the Test Mode Idle B-1 status, 2.4 kHz square wave is output from the IC751 pin ㉞ (ARTO terminal).
2. At this time, the contents of EEPROM are all cleared.

Automatic Answering System Test Mode

4-3. BASE UNIT TEST MODE

[Start-up]

1. Keeping [MEMO], [MAIL BOX2] pressed simultaneously, or [HANDSET LOCATOR], [MEMO], [MAIL BOX2] pressed simultaneously, turn the power on and the Test mode will start.
2. Immediately after the Test mode started, a beep tone sounds for 500 msec and the LCD lights up fully, then the unit goes in the Test Mode Idle status.
3. When the Test mode started by pressing [HANDSET LOCATOR], [MEMO], [MAIL BOX2] simultaneously, "HIGH" is output from the IC201 pin ㊺ (PAGE ON terminal). (To start the Test mode on the IC751 side)
4. If the first status is not returned from the DSP when the Test mode started, the unit goes in the Test Mode Idle status without performing DSP initial setting and memory data check. (The Test mode can be started even if DSP board is not attached.)
5. During operation in the Test mode, the [HANDSET LOCATOR] key input is always monitored, and "HIGH" is output from the IC201 pin ㊺ (PAGE ON terminal) while [HANDSET LOCATOR] key is pressed. However, at the key input test, "HIGH" is not output from the IC201 pin ㊺ (PAGE ON terminal).

[Operation in Test Mode Idle]

1. In the Test Mode Idle status, LCD is all ON and the ANSWER ON/OFF LED and the IN USE LED are OFF.
2. In the Test Mode Idle status, MIC is OFF, SPEAKER is OFF, TX-MUTE and RX-MUTE are in MUTE, charging is in normal status, line is open, and volume is set to initial value.
3. In the Test Mode Idle status, the key input is always monitored, and in the even of key input, a key touch tone is sounds, then the unit goes in each status selected.

[Key Input and LED Test]

1. Press the [GREETING] key in the Test Mode Idle status, and the Key Input and LED Test mode will start.
2. Press the following keys successively in the given order.
   [VOLUME-] → [VOLUME+] → [GREETING] → [SET/REC] → [TIME] → [ERASE] → [MAIL BOX3] → [ANSWER ON/OFF] (ANSWER LED ON) → [SLOW REPEAT] → [MAIL BOX2] → [QUICK/SKIP] → [MEMO] → [MAIL BOX1] → [HANDSET LOCATOR] (IN USE LED ON)

   If key input sequence is correct:
   A completion tone sounds and the Test Mode Idle status resumes.
   If key input sequence is wrong:
   An error tone sounds and the Test Mode Idle status resumes.

Note: A key touch tone sounds when each key is pressed.

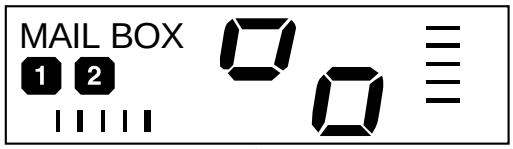
[Line Close and Ring Detection Test]

1. Press the [SET/REC] key in the Test Mode Idle status, and the Line Close and Ring Detection Test mode will start.
2. During the line close and ring detection test, IC201 pin ㉗ (RING DET terminal) is monitored, and if IC201 pin ㉗ is on "LOW" level, the ANSWER ON/OFF LED turns on, or if "HIGH" level, it turns off.
3. During the line close and ring detection test, the line close detection port is monitored, and if it is on "HIGH" level, the IN USE LED turns on, or if "LOW" level, it turns off.
4. Press the [ERASE] key to return to the Test Mode Idle status.

[LCD Test]

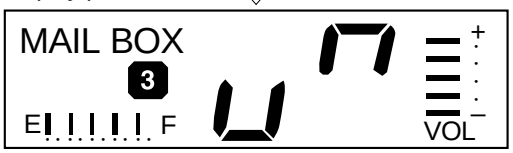
1. Press the [TIME] key in the Test Mode Idle status, and the LCD Test mode will start.
2. During the LCD test, the following patterns are displayed alternately at 0.5sec interval.

Display pattern 1



Alternate display

Display pattern 2



3. Press the [ERASE] key to return to the Test Mode Idle status.

[DSP Signal Detection Test]

1. Press the [ANSWER ON/OFF] key in the Test Mode Idle status, and the DSP Signal Detection Test mode will start.
2. On the LCD, the MAIL BOX 1, 2, 3 turn off and the MESSAGE COUNTER indicates "– –".
3. Close the line, reset the MUTE of TX-MUTE and RX-MUTE, and turn on the speaker to wait for a signal.
4. The data in flash memory are all cleared, and the recording for the first data (No.0 data of DSP) starts and the line is monitored.
5. The DTMF numbers are displayed on the MESSAGE COUNTER of LCD while DTMF signals are detected. "A" or "C" is displayed if "∗" or "#" is detected respectively. "– –" is displayed if no DTMF is detected.
6. MAIL BOX 1 of LCD turns on while voiced sounds are detected. It turns off when no voice sound is detected.
7. MAIL BOX 2 of LCD turns on while a busy tone is detected. It turns off when no busy tone is detected.
8. Pressing the [ERASE] key terminates the recording, erases all data in flash memory, and resumes the Test Mode Idle status.

[Automatic Hold Reset Test]

1. Press the [VOLUME-] key in the Test Mode Idle status, and the Automatic Hold Reset Detection Test mode will start.
2. Close the line, reset the MUTE of TX-MUTE and RX-MUTE, and turn on the speaker.
3. The IC201 pin ⑳ (EXT OFF HOOK terminal) is monitored and if "LOW" level, the ANSWER ON/OFF LED turns off, or if "HIGH" level, it turns on. Also, once the "HIGH" level is detected, the ANSWER ON/OFF LED is kept on.
4. Press the [ERASE] key to return to the Test Mode Idle status.

[Charge Test]

1. Press the [MAIL BOX3] key in the Test Mode Idle status, and the Charge Test mode will start.
2. The IC201 pin ㊼ (QUICK CHG terminal) outputs "LOW" signal to activate the normal charge mode.
3. The IC201 pin ㊶ (CHG DET terminal) is monitored, and if "LOW" level, the ANSWER ON/OFF LED turns on, or if "HIGH" level, it turns off.
4. When [SET/REC] key is pressed, the IC201 pin ㊼ (QUICK CHG terminal) outputs "HIGH" signal to activate the quick charge mode. This key is active even during quick charging so as to continue the quick charge mode.
5. When [TIME] key is pressed, the IC201 pin ㊼ (QUICK CHG terminal) outputs "LOW" signal to activate the normal charge mode. This key is active even during normal charging so as to continue the normal charge mode.
6. Press the [ERASE] key to return to the Test Mode Idle status.

[Audio System Test]

1. Press the [MAIL BOX2] key in the Test Mode Idle status, and the Audio System Test mode will start.
2. Turn on the MIC, turn off the speaker, set TX-MUTE and RX-MUTE to MUTE, and close the line. (MIC record path system test)
3. Reset the electronic volume display on LCD to initial value.
4. In the Audio System Test mode, when the key is pressed, a key touch tone sounds, then the set goes in each status, as described below.
5. Press the [ERASE] key to return to the Test Mode Idle status.

A) MIC record path system test

Key	Status/Operation
[GREETING]	MIC ON, Speaker OFF, TX-MUTE and RX-MUTE in MUTE status, Line open

B) ICM record path system test

Key	Status/Operation
[SET/REC]	MIC OFF, Speaker ON, TX-MUTE and RX-MUTE in normal status, Line closed

C) Speaker play path system test

Key	Status/Operation
[TIME]	MIC OFF, Speaker ON, TX-MUTE and RX-MUTE in MUTE status, Line open

D) Record test

Key	Status/Operation
[MEMO]	• Data in flash memory are all cleared, and after a record start tone sounded, the recording for the first data (No.0 data of DSP) starts. If [MEMO] key is pressed again, the record test finishes and the Audio System Test mode resumes. • No change in audio path system is made. • No key except [MEMO] key is active during recording.

E) Play test

Key	Status/Operation
[MAIL BOX1]	• First data (No.0 data of DSP) is played, and the play continues until [MAIL BOX1] is pressed again or the play finished. • No change in audio path system is made. • No key except [MAIL BOX1] key is active during playing. • At the end of play, the Audio System Test mode resumes.

F) Beep transmission test

Key	Status/Operation
ANSWER ON/OFF	• Beep tones are transmitted continuously. • MIC OFF, Speaker ON, TX-MUTE and RX-MUTE in MUTE status, Line open. • No key except ANSWER ON/OFF key is active during beep transmission. • If ANSWER ON/OFF key is pressed again, the beep transmission stops, and the Audio System Test mode resumes.

G) Electronic volume control

Key	Status/Operation
VOLUME+/-	• Volume is set. VOLUME+ key: Increases the volume by +1, as well as increase of VOL display by +1. VOLUME- key: Decreases the volume by -1, as well as decrease of VOL display by -1.

[Electronic Volume Test]

1. Press the VOLUME+ key in the Test Mode Idle status, and the Electronic Volume Test mode will start.
2. Turn off the MIC, turn on the Speaker, set the TX-MUTE and RX-MUTE to MUTE status, and open the line.
3. All the VOL0 to VOL4 terminals output "LOW" signals.
4. Press each key in the Electronic Volume Test mode, and the logic of VOL0 to VOL4 is set as shown below:

Key	IC201				
	pin ⑥⓪ VOL4	pin ㉕ VOL3	pin ㉔ VOL2	pin ㉓ VOL1	pin ㉒ VOL0
GREETING	L	L	L	L	L
SET/REC	L	H	L	L	L
TIME	L	L	H	L	L
ANSWER ON/OFF	L	L	L	H	L
MAIL BOX3	L	L	L	L	H
REPEAT	H	H	H	H	H

5. Press the ERASE key to return the volume setting to initial value and resume the Test Mode Idle status.

[New Call Detection Test]

1. Press the MAIL BOX1 key in the Test Mode Idle status, and the New Call Detection Test mode will start.
2. The IC201 pin ㊷ (NEW CALL DET terminal) is monitored, and if "LOW" level, the ANSWER ON/OFF LED turns on, or if "HIGH" level, it turns off.
3. Press the ERASE key to turn off all LEDs and resume the Test Mode Idle status.

[Answer Mode Switch Test]

1. Press the SLOW/REPEAT key in the Test Mode Idle status, and the Answer Mode Switch Test mode will start.
2. The input to IC201 pin ⑱ (ANS MODE terminal) is always monitored, and if "HIGH" level, the ANSWER ON/OFF LED turns on, or if "MIDDLE" level, the ANSWER ON/OFF LED and the IN USE LED turn on, or if "LOW" level, only the IN USE LED turns on.
3. Press the ERASE key to resume the Test Mode Idle status.

[Flash Memory Data Clear]
(Resetting Test Mode Idle status)

1. Press the ERASE key in the Test Mode Idle status, and the data in flash memory are all cleared and the normal initial status resumes.
   ("E" is displayed on the LCD if no status is returned from the the DSP, or the DSP board is not connected.)

4-4. HANDSET TEST MODE

[Start-up]

1. With the power supplied, press TALK, 0 , 1 keys simultaneously, and the Test mode will start.
2. Immediately after Test mode started, the ringer sounds for 500 msec, and the Handset goes in Test Mode Idle status.
3. In the Test Mode Idle status, the Radio block goes in TDD mode (master timing) and the channel 1 is in the line speech status.
4. The set status can be changed to each mode by entering the keys (command) in the Test Mode Idle status.
5. To exit from each mode, enter "0-1-#" command to return to the Test Mode Idle status.
6. In all modes, if "0-0-#" command is entered, the test mode is released and normal status resumes.

[Test Mode by Key Input]

The test mode by key input is grouped into seven modes. The following describes the modes and commands.

A) Continuous receiving mode (Note 1)

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

B) Continuous transmission mode (Note 1)

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

C) Loopback test mode

Command	Mode/Operation
3-1-#	CODEC Forward Loopback (L1)
3-2-#	ADPCM Forward Loopback (L2)
3-3-#	ADPCM → RADIO Loopback
3-4-#	ADPCM Reverse Loopback

D) TDD test mode with high, mid, low power

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

E) Operation button and display test mode (Note 2)

Command	Mode/Operation
5-1-#	Key matrix test mode
5-2-#	JOG shuttle test mode
5-3-#	LCD test mode
5-4-#	LED test mode

F) TDD test mode on each channel (Note 1)

Command	Mode/Operation
6-1-#	CH1, TDD mode (Master timing, Line speech status)

G) EEPROM memory clear

Command	Mode/Operation
7-1-#	Contents of EEPROM are all cleared

Note 1: Each time [*] key is pressed, the channels change over as follows:
CH1 → CH2 → CH3 → … → CH20

Note 2: See each item for the operation and function in the operation button and display test mode.

- **Key matrix test mode**
  Press the keys in the order given below.

  [TALK] → [OFF] → [CALL WAITING/FLASH] → [PGM/VOL] → [REDIAL] → [PAUSE] → [1] → [2] → [3] → [4] → [5] → [6] → [7] → [8] → [9] → [*] → [0] → [#] → [ONE-TOUCH DIAL A] → [ONE-TOUCH DIAL B] → [ONE-TOUCH DIAL C]

  If key input sequence is correct:
  An acknowledge tone sounds and the Test Mode Idle status resumes.
  If key input sequence is wrong:
  An error tone sounds and the Test Mode Idle status resumes.

- **JOG shuttle test mode**
  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

- **LCD test mode**
  All dots and characters on LCD light up immediately when the LCD test mode is selected.

4-5. 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.

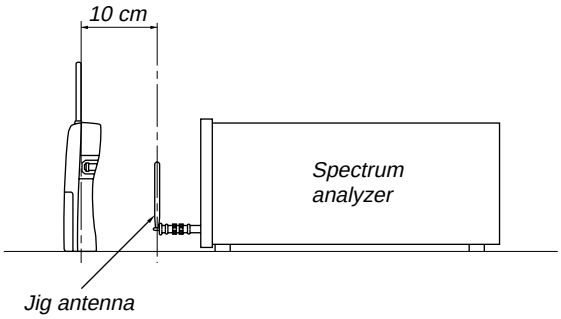
4-5-1. RF Testing method

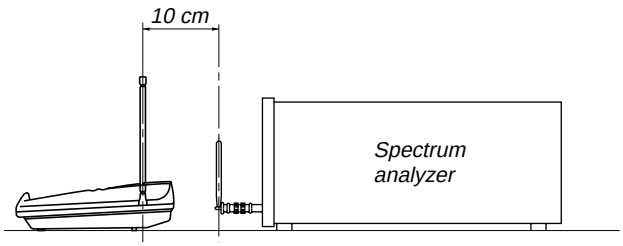
Please follow the below instruction to perform RF test.

[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)





[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 kHz (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 18)
- 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_0: 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.

- **Transmission Wave:**

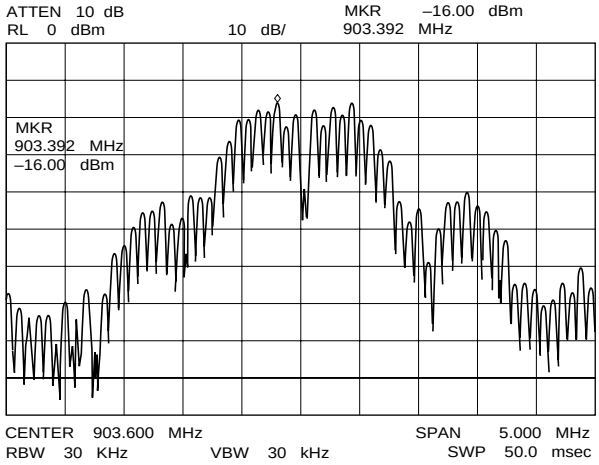


Fig. 1

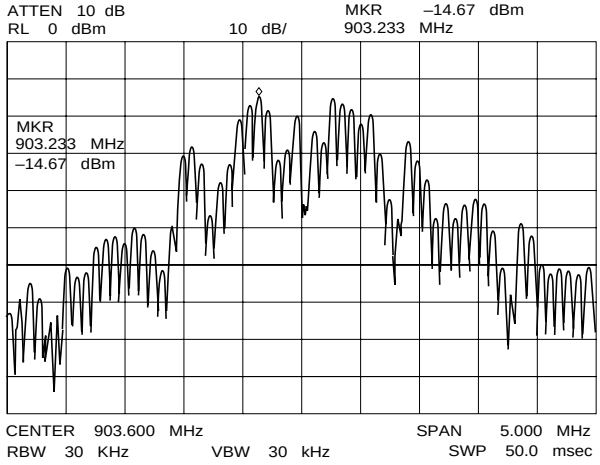


Fig. 2

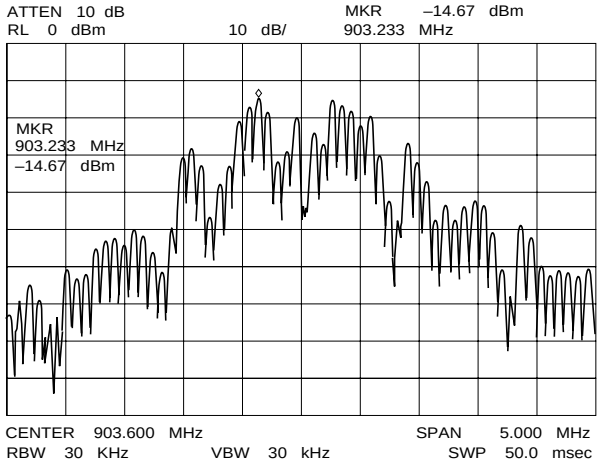


Fig. 3

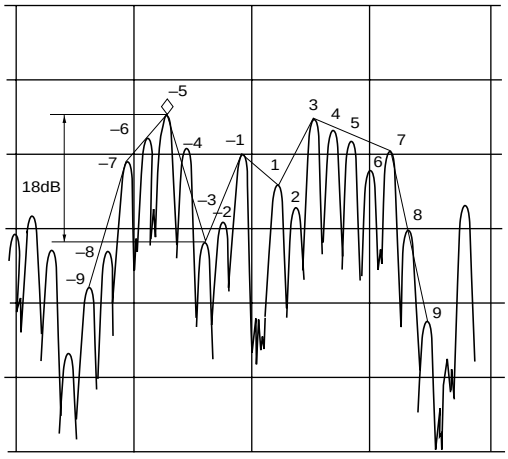


Fig. 4

[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 18)
- Measurement:
  Measure transmitting wave f_0 (Formula of center frequency)
  (Refer Fig. 5)
- Specification:
  903.6 MHz ± 27 kHz

- **Center Frequency:**

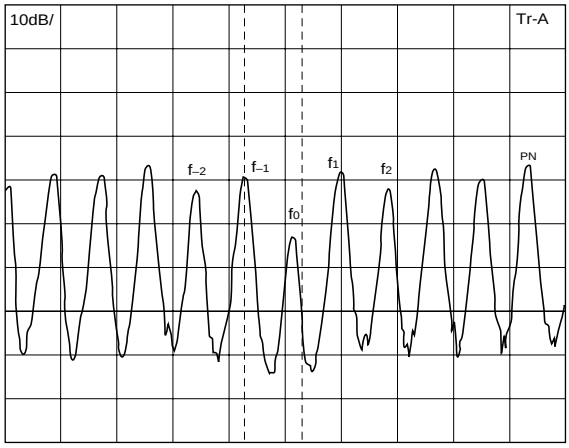


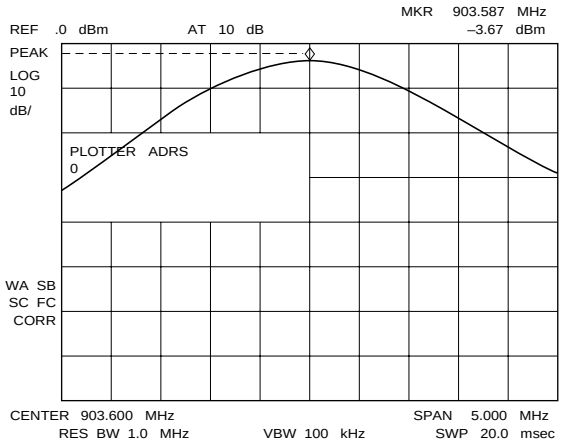
Fig. 5

[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 18)

• Measurement:
Measure peak level by Spectrum analyzer.



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
σ	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

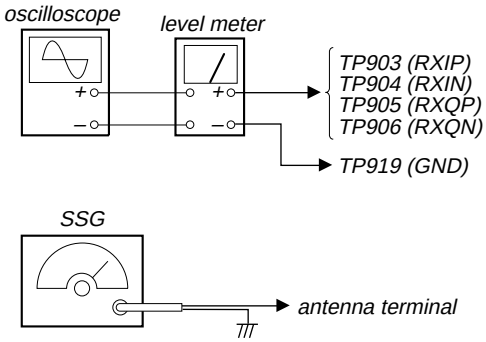
• Specification:
HANDSET MIN –17 dBm
(at High power: Include location loss)
BASE SET MIN –18 dBm
(at High power: Include location loss)

SECTION 5
ELECTRICAL ADJUSTMENTS

BASE UNIT | 0 dBm=0.775 V, 0 dBV=1 V

• Make the set in Test mode (see page 18)

1. Checking RX I&Q Output Level
Setting:

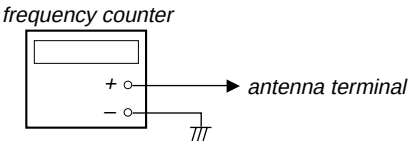


Procedure:
1. Place the base unit in the Contiunous Receive mode (CH1, LNA ON, AGC ON).
2. Set the SSG frequency to the frequency on CH1 + 300 kHz, and the RF output level to –95 dBm.
3. Measure the output level of TP903 (RXIP), TP904 (RXIN), TP905 (RXQP) and TP906 (RXQN) with a level meter. At this time, confirm with the oscilloscope that a sine wave of 300 kHz is output.
4. Confirm that the measured output level is –25.0 to –19.0 dBV. If IC951 was replaced (there is no ID data), the output level is –30.0 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 15.

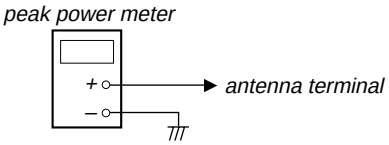
2. Checking TX Center Frequency
Setting :

• short: TP918 (TEST) ↔ TP919 (GND)



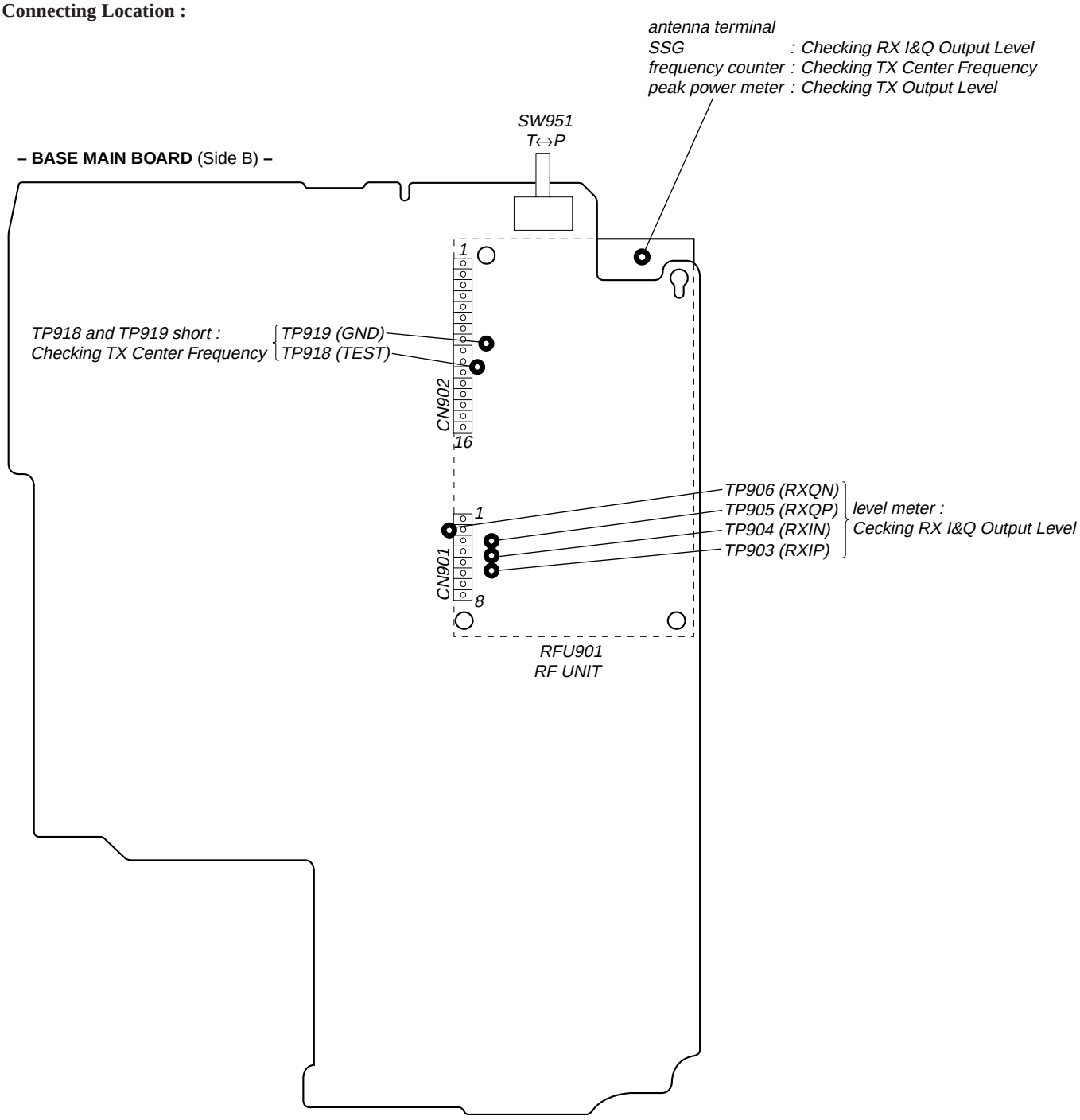
Procedure:
1. Short TP918 (TEST) and TP919 (GND) on the BASE MAIN board.
2. Place the base unit in the Continuous Transmit mode (CH1, High power).
3. Measure the frequency of the antenna terminal on the RF unit (RFU901) using a frequency counter.
4. Confirm that the measured frequency is 903.600 MHz ± 27 kHz.
5. Also, execute steps 1 through 4 for the channels 10 and 20.

3. Checking TX Output Level
Setting:



Procedure:
1. Place the base unit in the Continuous Transmit on the mode (CH1, High power).
2. Measure the output level of the antenna terminal on the RF unit (RFU901) using a peak power meter.
3. Confirm that the measured output is 85 mW (MIN 30 mW).
4. Also, execute steps 1 through 3 for the channels 10 and 20.
   CH10: 80 mW (MIN 25 mW)
   CH20: 80 mW (MIN 25 mW)

Connecting Location :

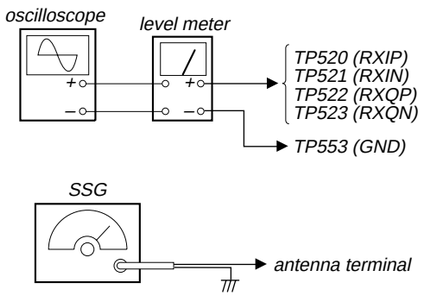


HANDSET

• Make the set in Test mode (see page 21)

1. Checking RX I&Q Output Level

Setting:



Procedure:

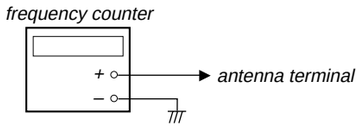
1. Place the handset in the Continuous Receive mode (CH1, LNA, AGC ON).
2. Set the SSG frequency to the frequency on CH1 + 300 kHz, and the RF output level to –95 dBm.
3. Measure the output level of TP520 (RXIP), TP521 (RXIN), TP522 (RXQP), and TP523 (RXQN) with a level meter. At this time, confirm with the oscilloscope that a sine wave of 300 kHz is output.
4. Confirm that the measured output level is –25.0 to –19.0 dBV. If IC502 was replaced (there is no ID data), the output level is –30.0 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 15.

2. Checking TX Center Frequency

Setting:

• short: TP555 (TEST) ↔ TP553 (GND)

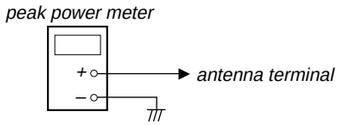


Procedure:

1. Short TP555 (TEST) and TP553 (GND) on the HAND MAIN board.
2. Place the handset in the Continuous Transmit mode (CH1, High power).
3. Measure the frequency of the antenna terminal on the RF unit (RFU501) 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 Level

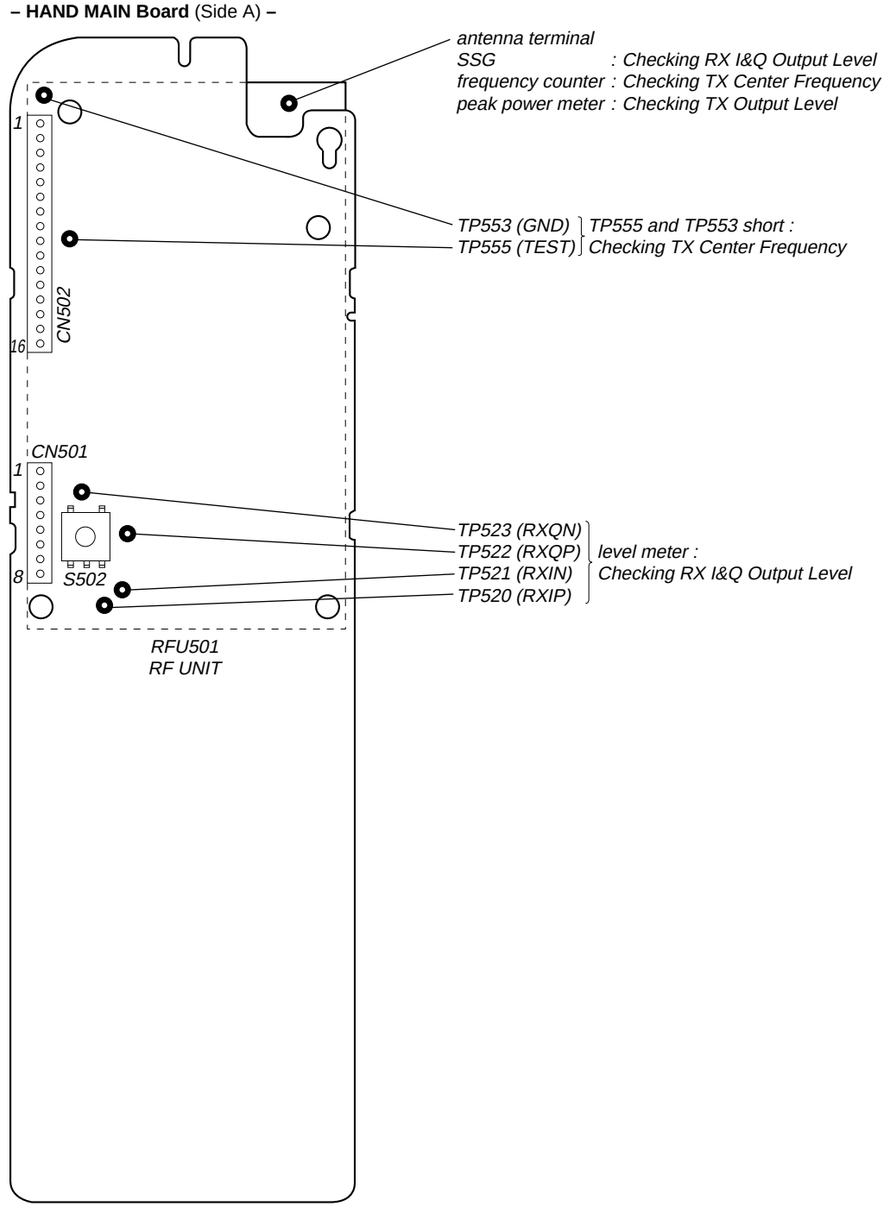
Setting:



Procedure:

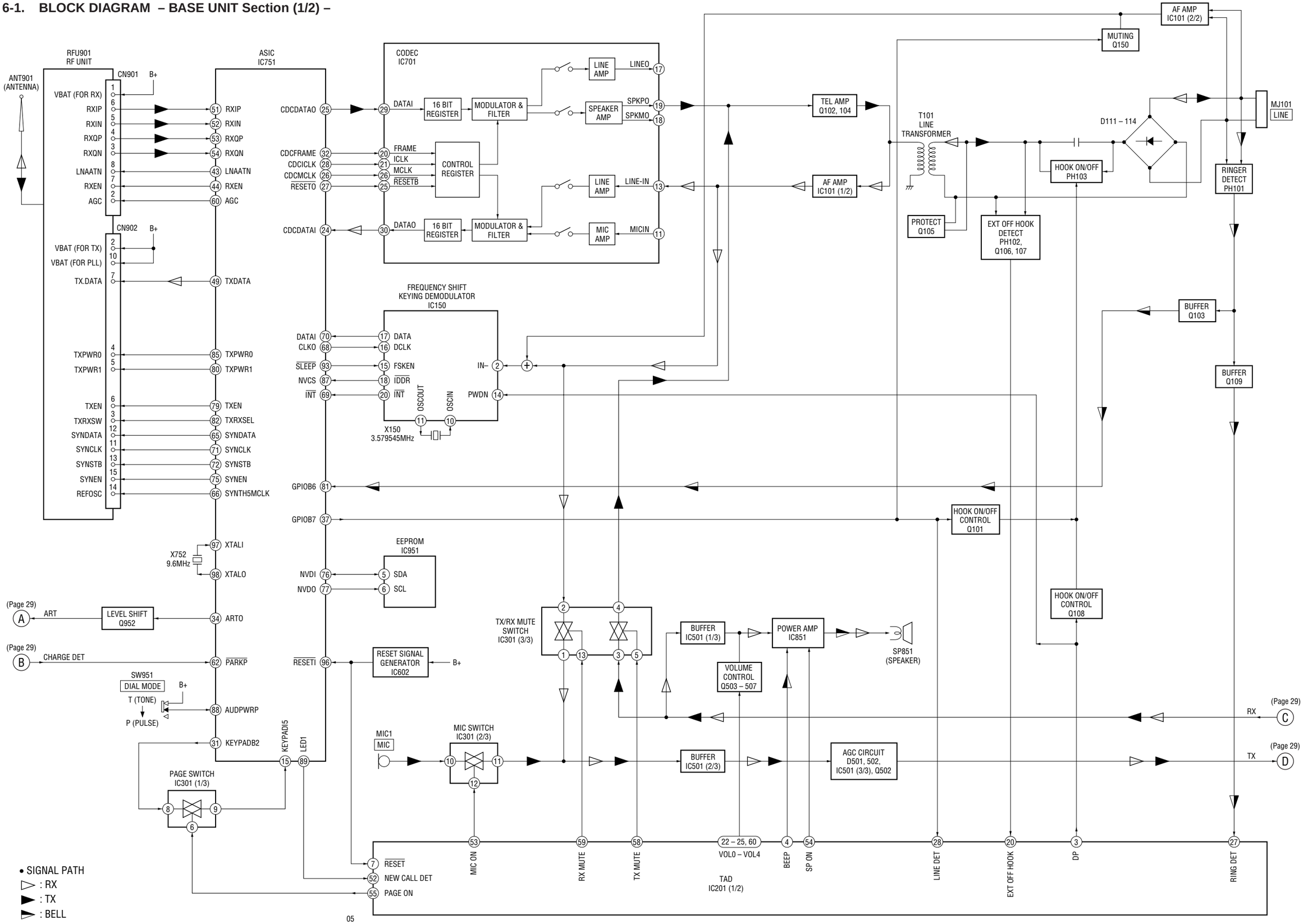
1. Place the handset in the Continuous Transmit mode (CH1, High power).
2. Measure the output level of the antenna terminal on the RF unit (RFU501) using a peak power meter.
3. Confirm that the measured output is 62 mW (MIN 25 mW).
4. Also, execute steps 1 through 3 for the channels 10 and 20.
   CH10: 64 mW (MIN 25 mW)
   CH20: 64 mW (MIN 25 mW)

– HAND MAIN Board (Side A) **–**

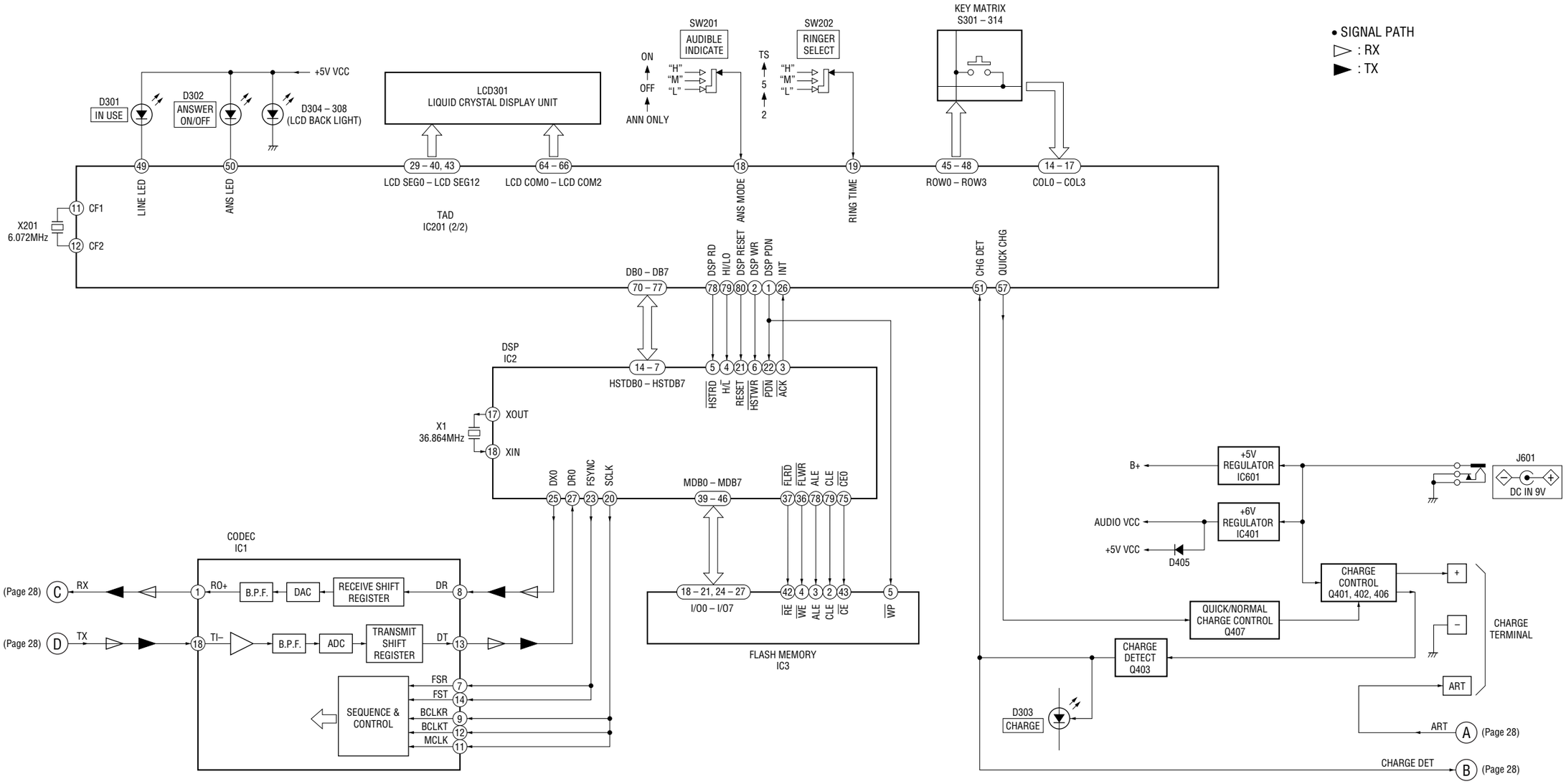


SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM – BASE UNIT Section (1/2) –

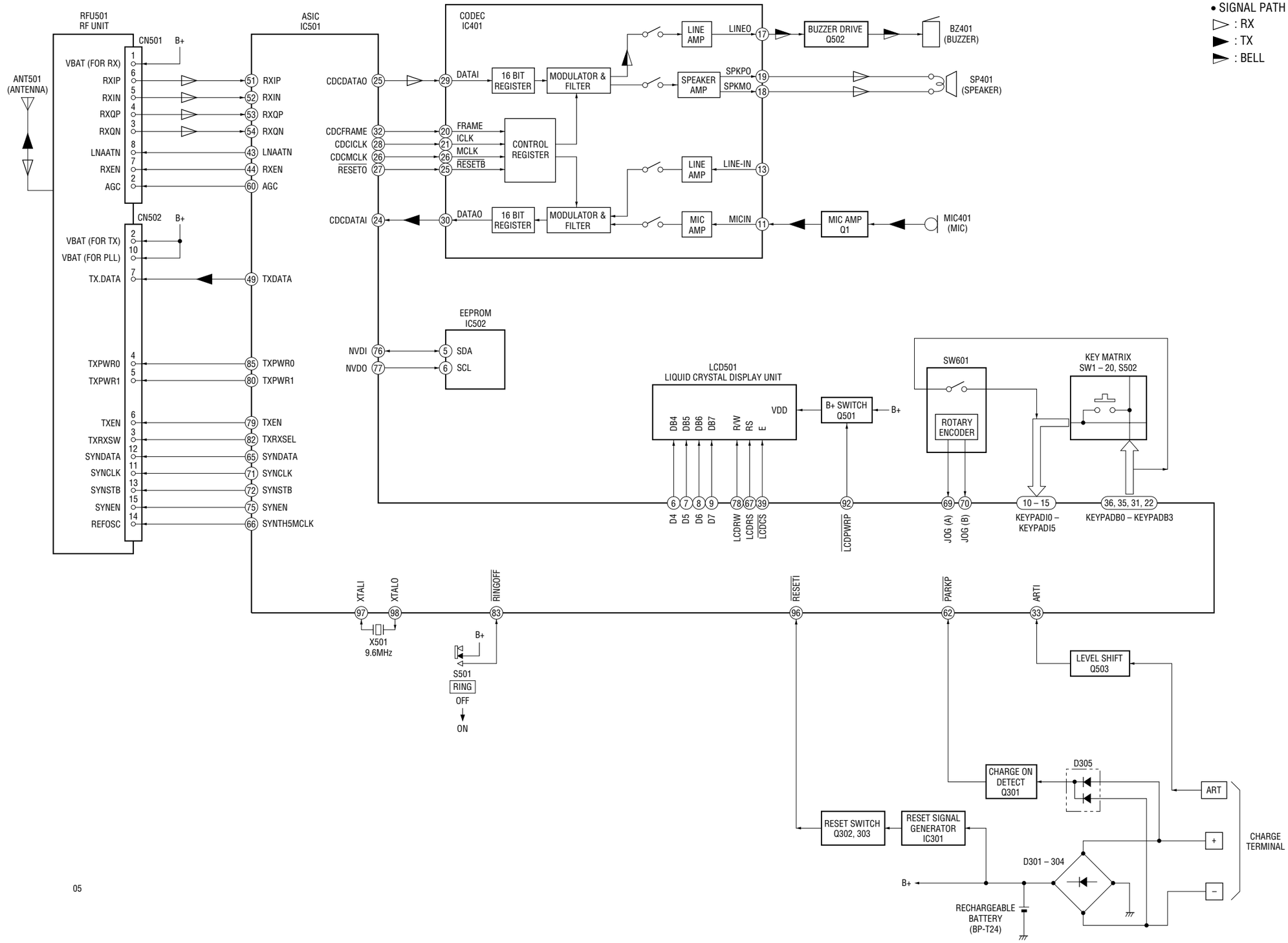


6-2. BLOCK DIAGRAM – BASE UNIT Section (2/2) –



05

6-3. BLOCK DIAGRAM – HANDSET Section –



6-4. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

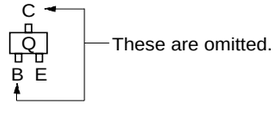
Note on Printed Wiring Boards:

- ○——— : 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.

(The other layers' patterns are not indicated.)

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

- Indication of transistor.



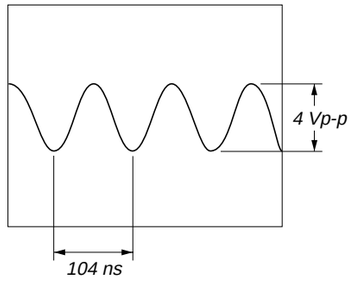
Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- : nonflammable resistor.
- : panel designation.
- 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 Ω in series.
- Power voltage is dc 3.6 V and fed with regulated dc power supply from battery connector (CN311 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 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - : RX
  - : TX
  - : BELL

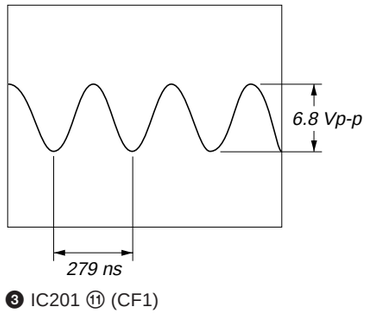
- **Waveforms**

– BASE MAIN Board –

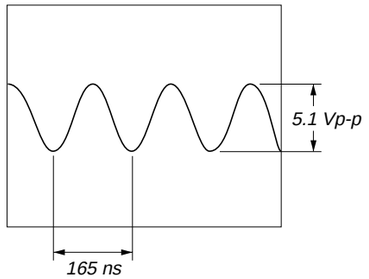
❶ IC751 ㊼ (XTALI)



❷ IC150 ⑩ (OSCIN)

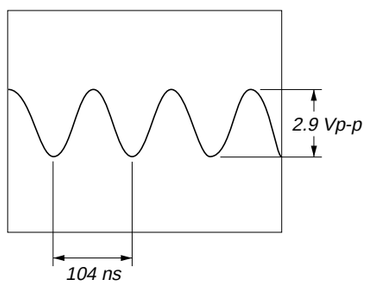


❸ IC201 ⑪ (CF1)



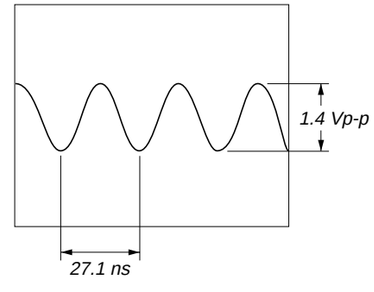
– HAND MAIN Board –

❶ IC501 ㊼ (XTALI)

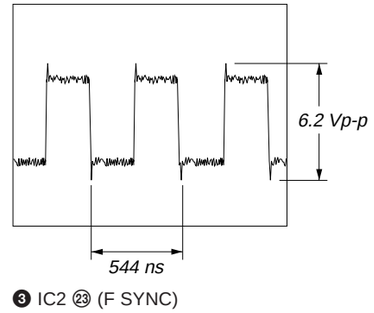


– DSP Board –

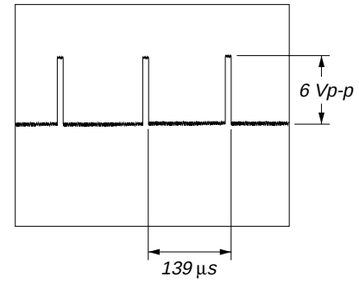
❶ IC2 ⑰ (X-OUT)



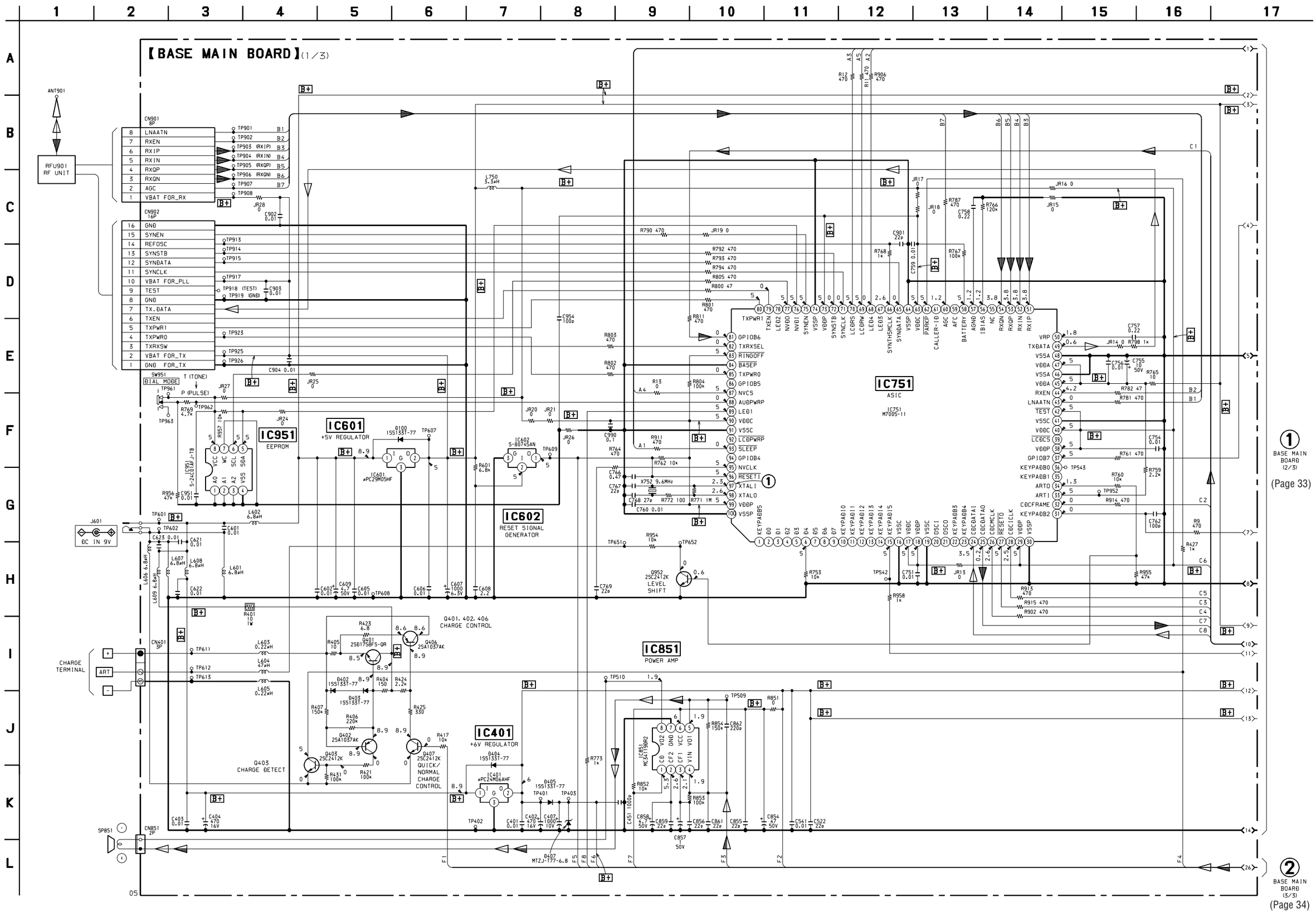
❷ IC2 ⑳ (SCLK)



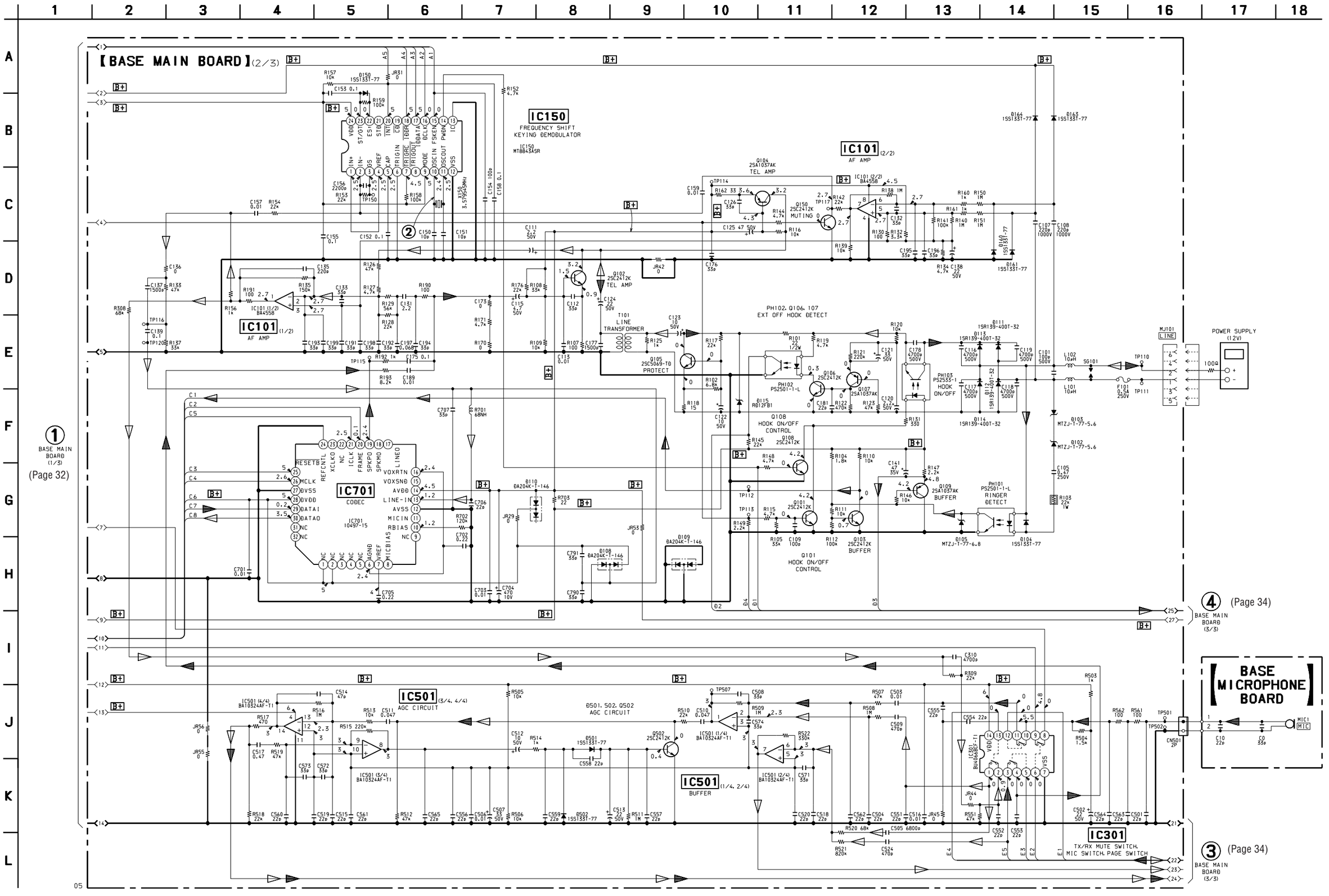
❸ IC2 ㉓ (F SYNC)



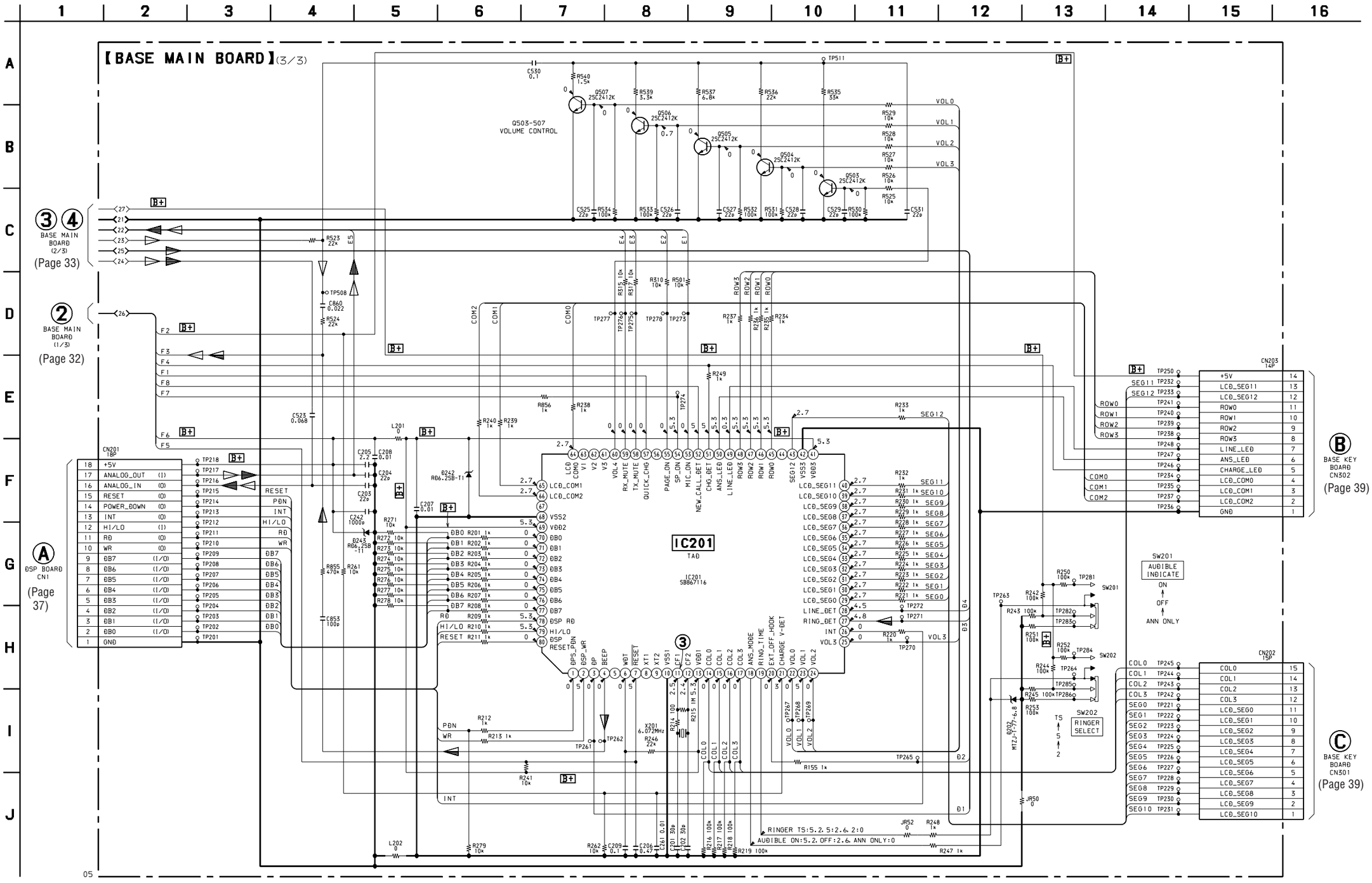
6-5. SCHEMATIC DIAGRAM – BASE MAIN Board (1/3) – **• See page 31 for Waveform.** **• See page 42 for IC Block Diagrams.**



6-6. SCHEMATIC DIAGRAM – BASE MAIN Board (2/3), BASE MICROPHONE Board – • See page 31 for Waveform. • See page 42 for IC Block Diagrams.



6-7. SCHEMATIC DIAGRAM – BASE MAIN Board (3/3) – • See page 31 for Waveform.



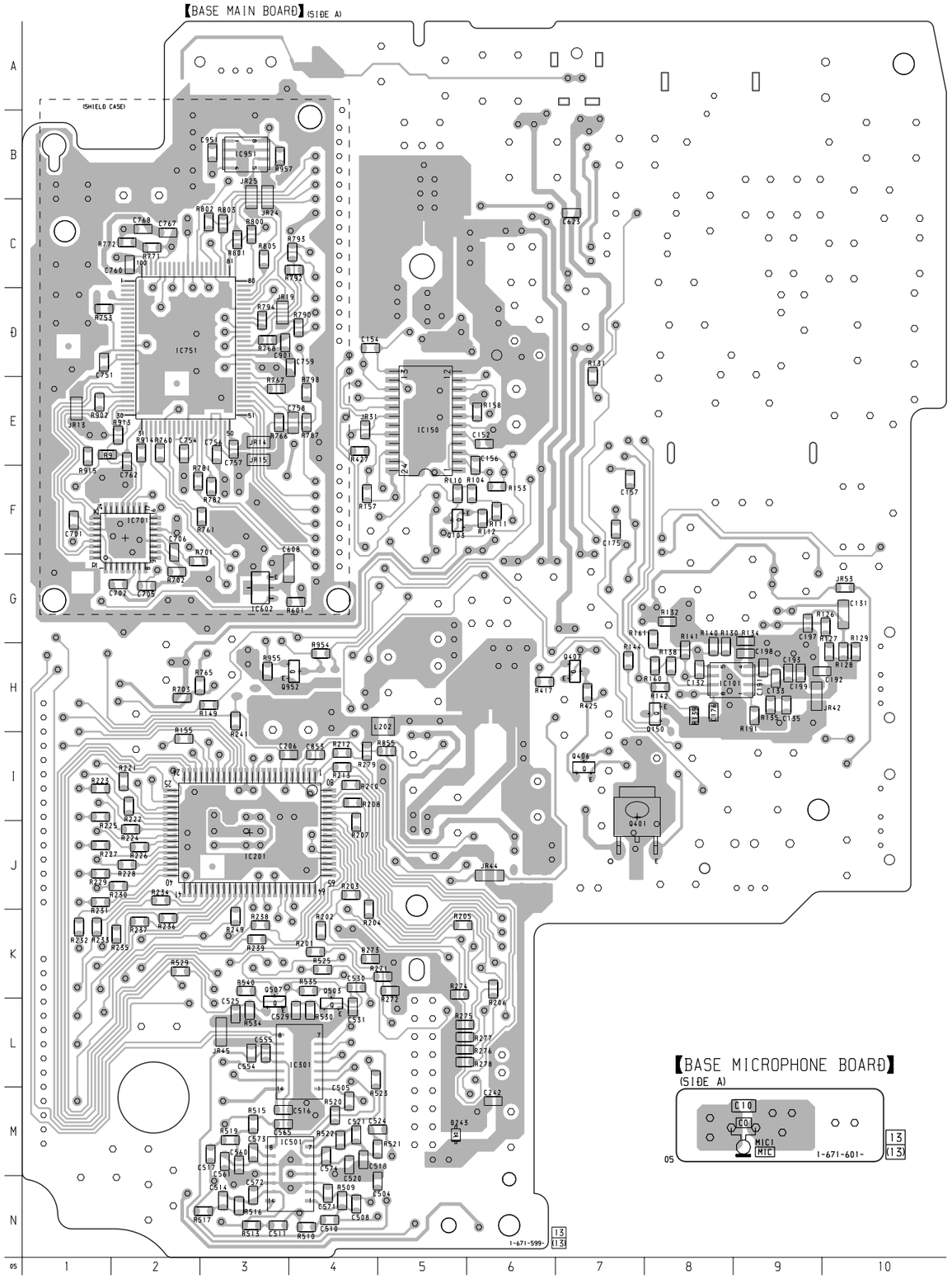
- **Semiconductor Location (Side A)**

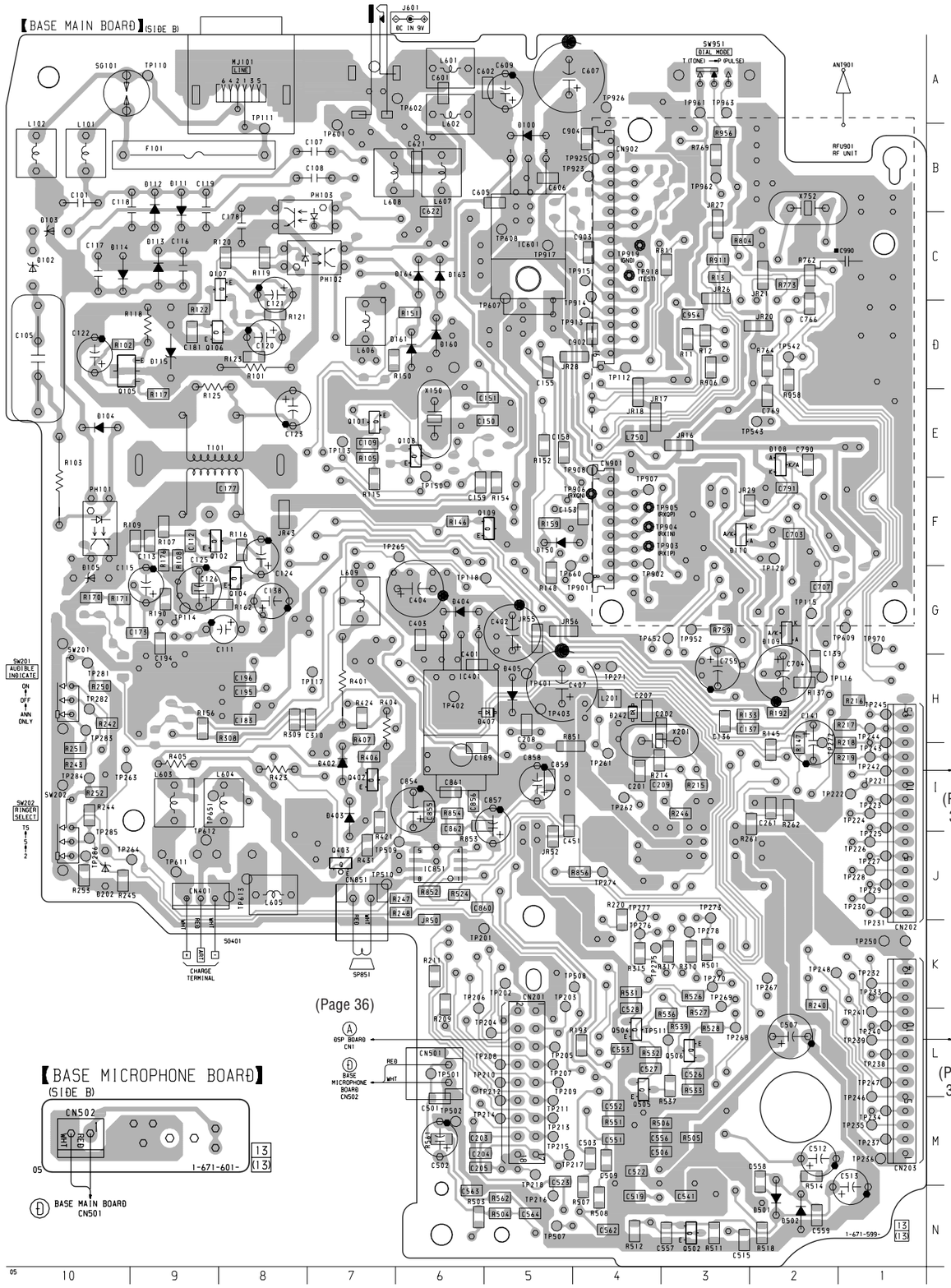
Ref. No.	Location
D241	H-3
D243	M-5
D406	J-6
IC101	H-8
IC150	E-5
IC201	J-3
IC301	L-4
IC501	M-4
IC602	G-3
IC701	F-2
IC751	D-2
IC951	B-3
Q103	F-5
Q150	H-8
Q401	J-7
Q406	I-7
Q407	H-7
Q503	K-4
Q507	K-3
Q952	H-4

- **Semiconductor Location (Side B)**

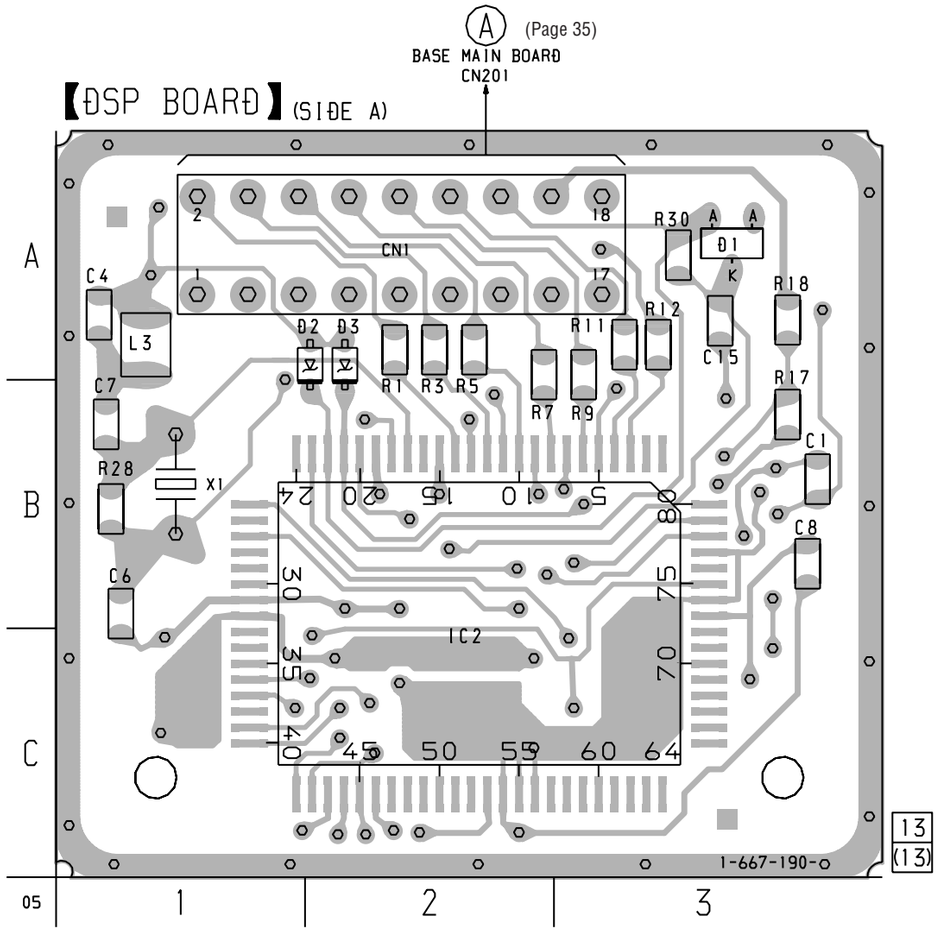
Ref. No.	Location
D100	B-5
D102	C-10
D103	C-10
D104	E-10
D105	G-10
D108	E-2
D109	G-2
D110	F-3
D111	B-9
D112	B-9
D113	C-9
D114	C-10
D115	D-9
D150	F-5
D160	D-6
D161	D-6
D162	E-6
D163	C-6
D164	C-6
D165	E-5
D201	J-9
D202	J-10
D242	H-4
D402	I-7
D403	I-7
D404	G-6
D405	H-5
D407	H-5
D501	N-2
D502	N-2
IC401	H-6
IC601	C-5
IC851	J-6
PH101	F-10
PH102	C-7
PH103	B-7
Q101	E-7
Q102	F-9
Q104	G-8
Q105	D-10
Q106	D-9
Q107	C-8
Q108	E-6
Q109	F-5
Q171	H-9
Q402	I-7
Q403	J-7
Q502	N-3
Q504	L-4
Q505	M-4
Q506	L-3

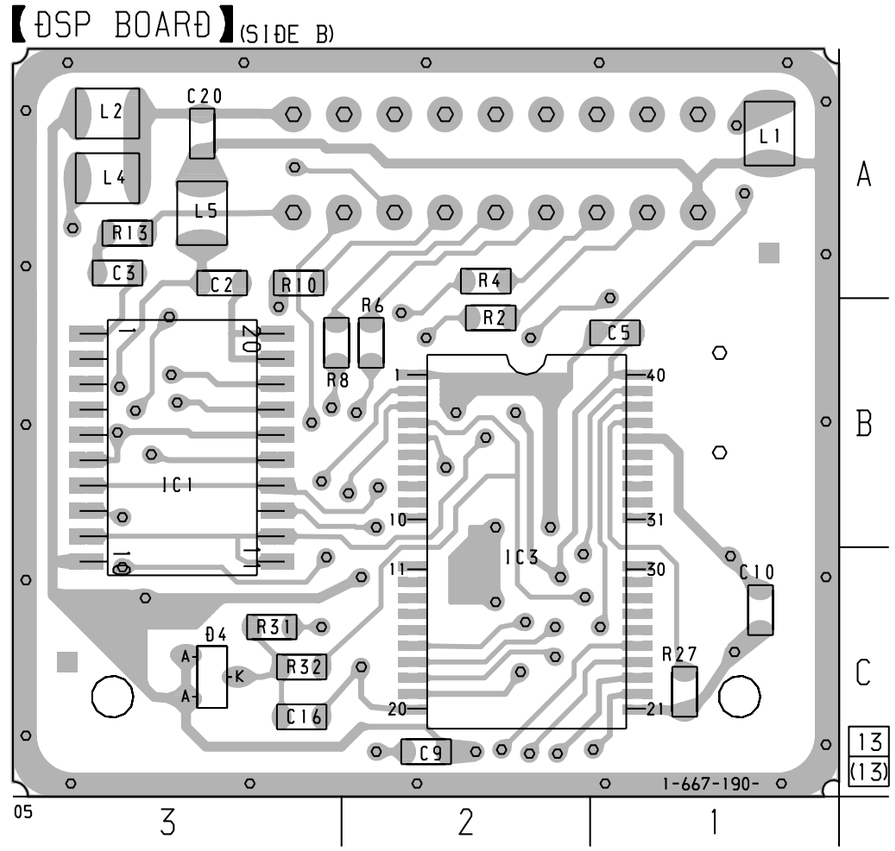
6-8. PRINTED WIRING BOARDS – BASE MAIN/BASE MICROPHONE Boards –





6-9. PRINTED WIRING BOARD – DSP Board –





- **Semiconductor Location (Side A)**

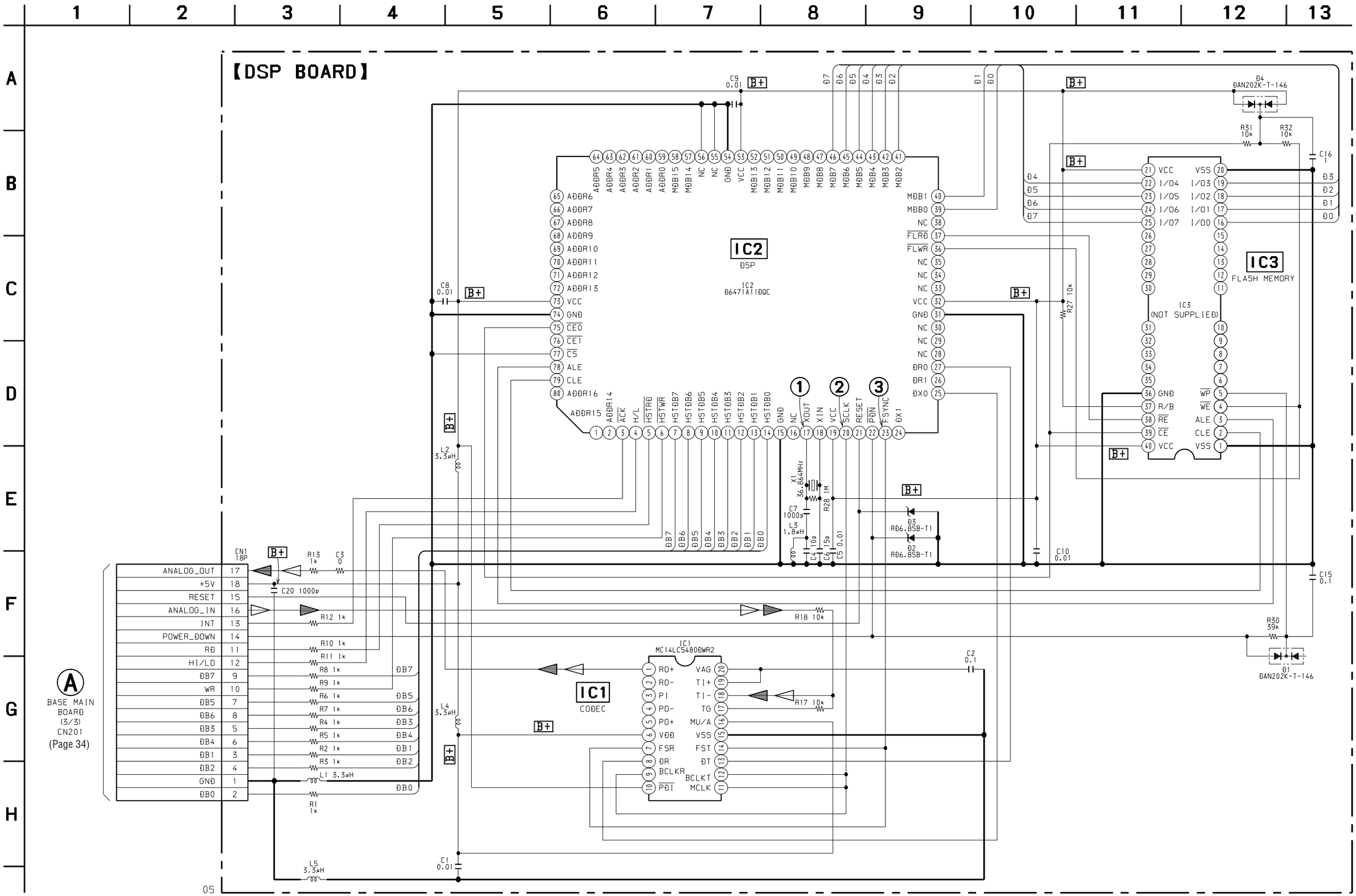
Ref. No.	Location
D1	A-3
D2	A-2
D3	A-2
IC2	C-2

- **Semiconductor Location (Side B)**

Ref. No.	Location
D4	C-3
IC1	B-3
IC3	C-2

6-10. SCHEMATIC DIAGRAM – DSP Board –

• See page 31 for Waveforms. • See page 42 for IC Block Diagrams.

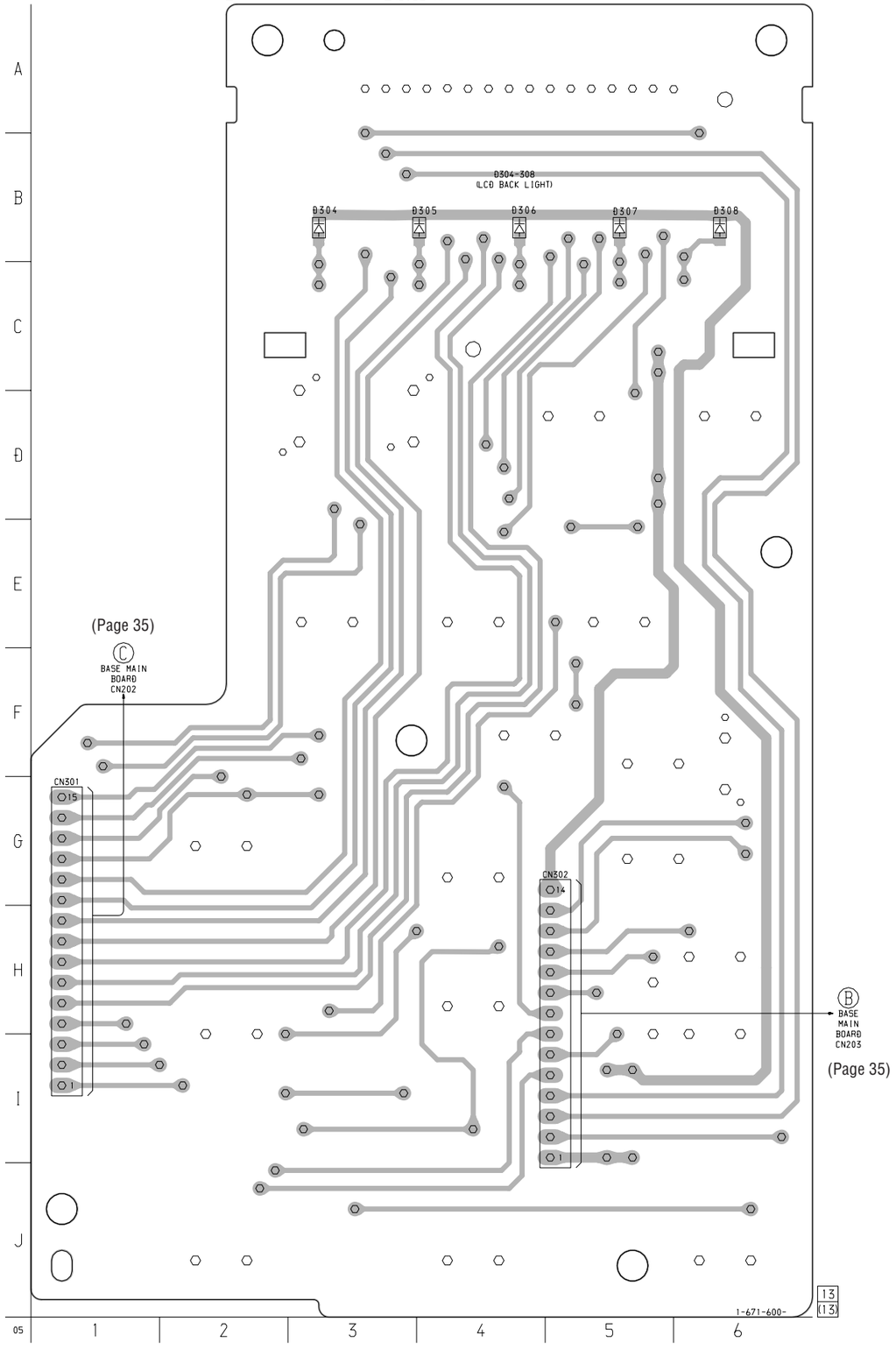


6-11. PRINTED WIRING BOARD – BASE KEY Board –

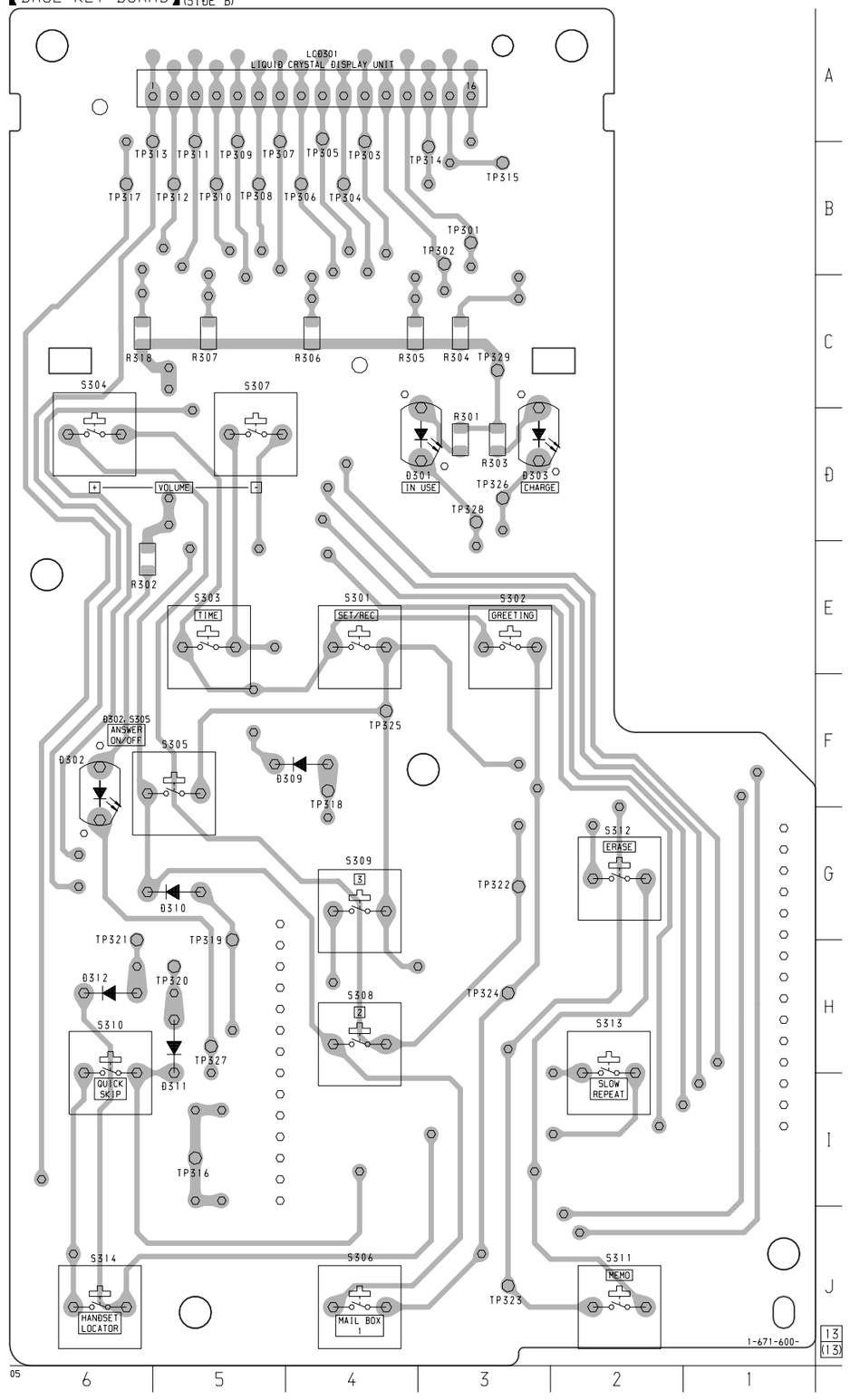
- **Semiconductor Location (Side A)**

Ref. No.	Location
D304	B-3
D305	B-3
D306	B-4
D307	B-5
D308	B-6

【BASE KEY BOARD】(SIDE A)



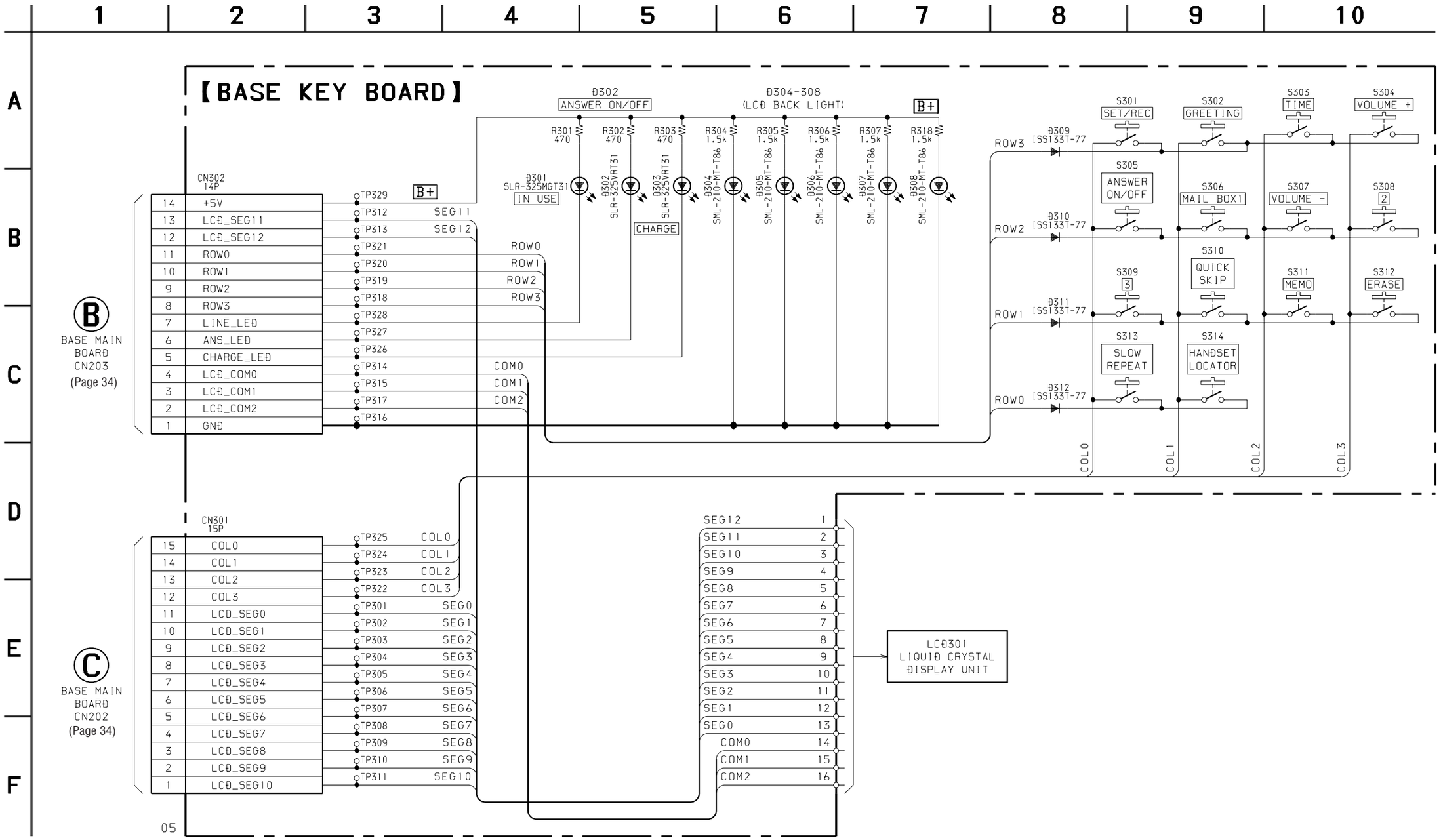
【BASE KEY BOARD】(SIDE B)



- **Semiconductor Location (Side B)**

Ref. No.	Location
D301	D-3
D302	F-6
D303	D-3
D309	F-4
D310	G-5
D311	H-5
D312	H-6

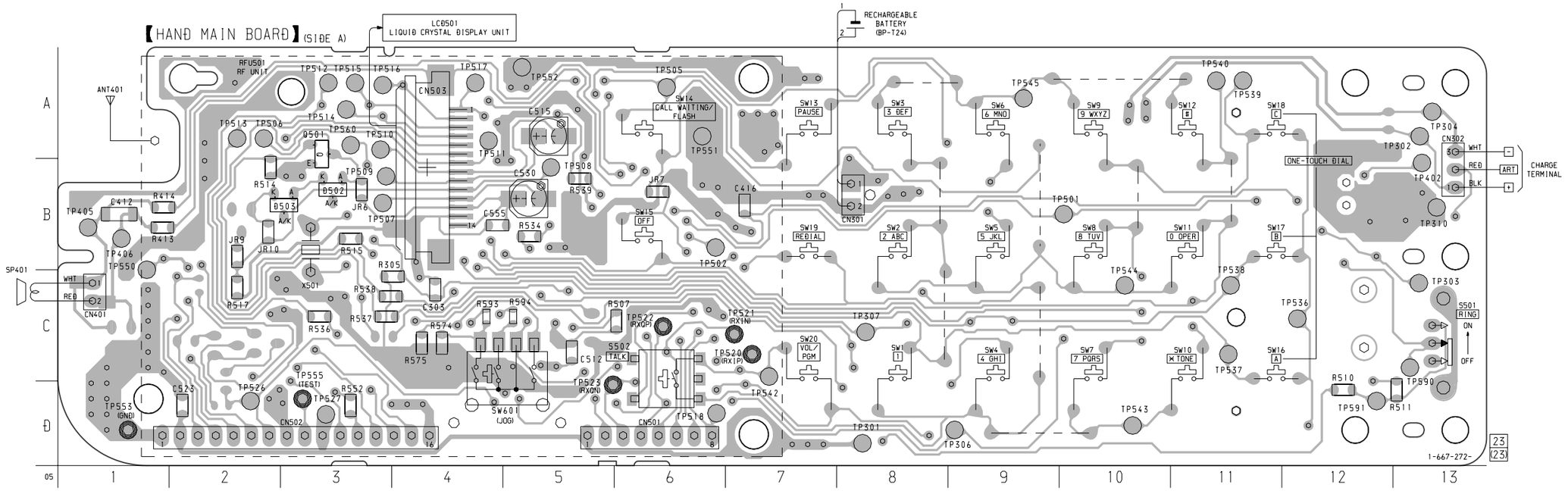
6-12. SCHEMATIC DIAGRAM – BASE KEY Board –



6-13. PRINTED WIRING BOARD – HAND MAIN Board –

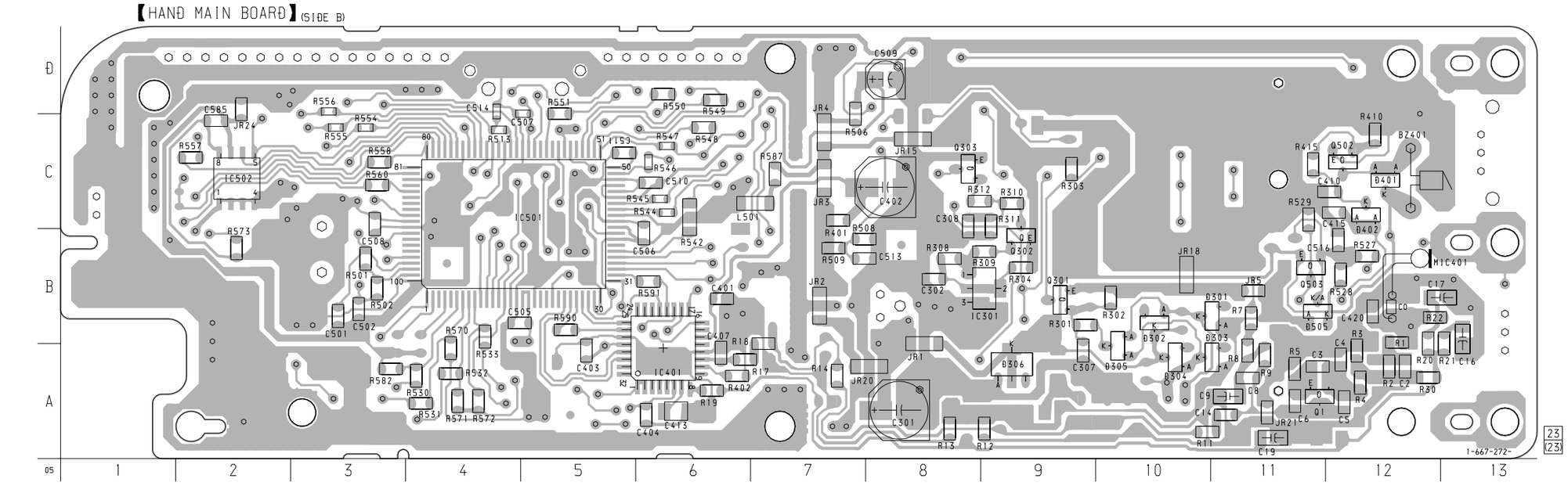
- **Semiconductor Location (Side A)**

Ref. No.	Location
D502	B-3
D503	B-3
Q501	A-3

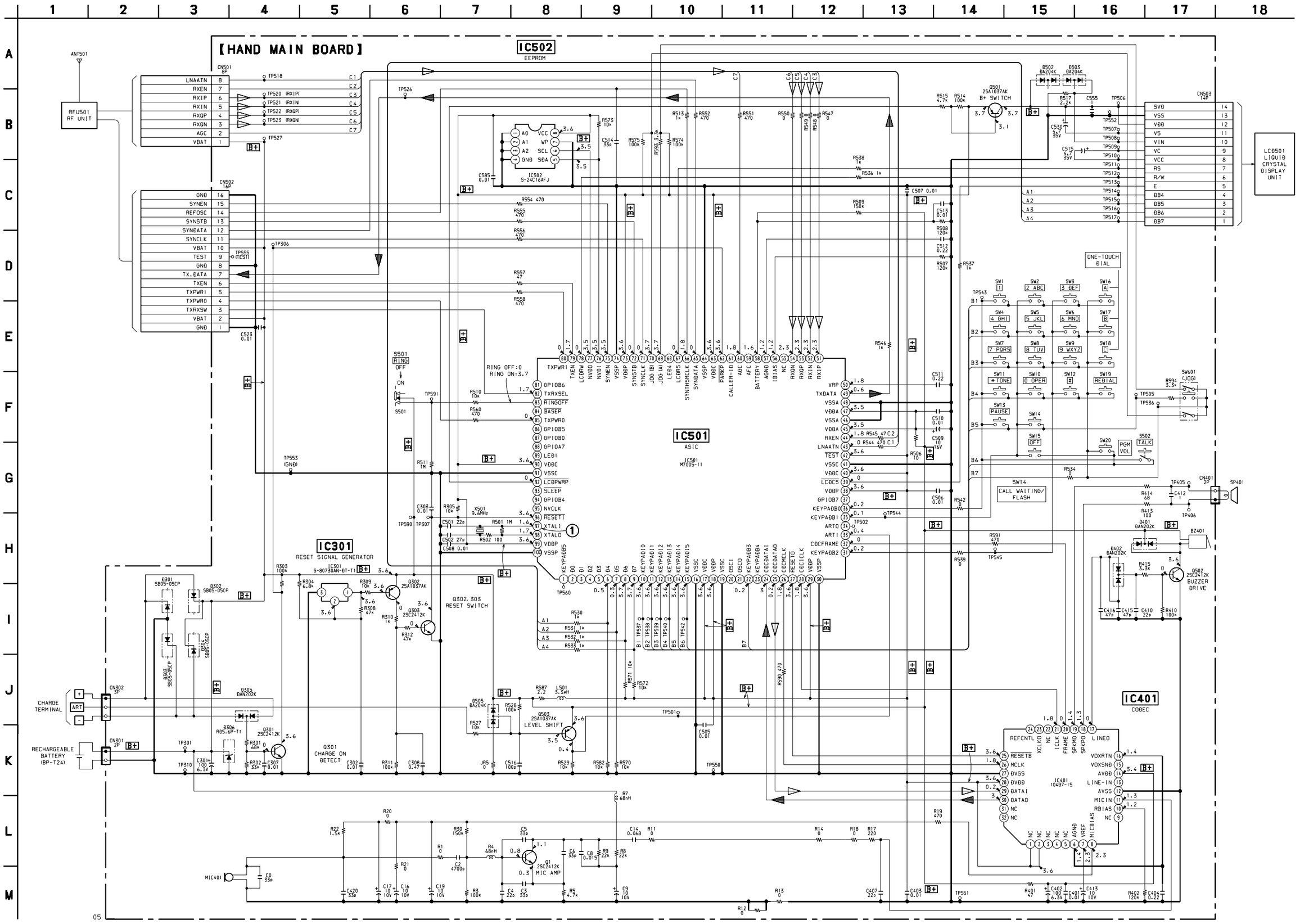


- **Semiconductor Location (Side B)**

Ref. No.	Location
D301	B-11
D302	B-10
D303	A-11
D304	A-10
D305	A-10
D306	A-9
D401	C-12
D402	C-12
D505	B-11
IC301	B-9
IC401	A-6
IC501	C-5
IC502	C-2
Q1	A-11
Q301	B-9
Q302	B-9
Q303	C-8
Q502	C-12
Q503	B-11

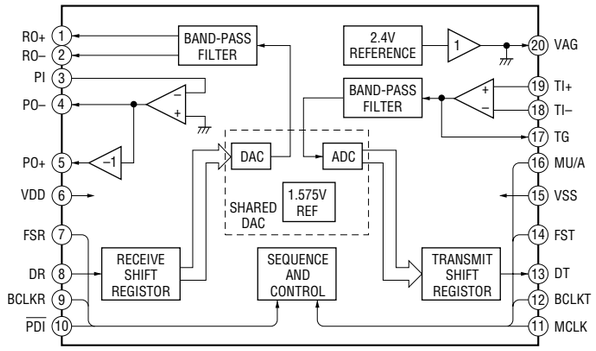


6-14. SCHEMATIC DIAGRAM – HAND MAIN Board – • See page 31 for Waveform. • See page 42 for IC Block Diagrams.

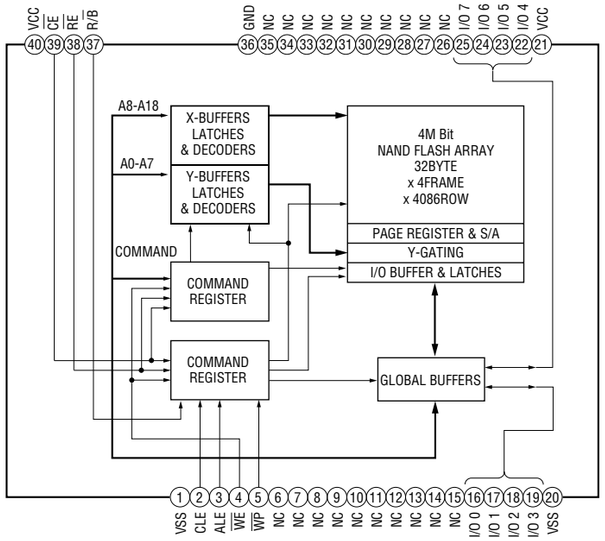


- **IC Block Diagrams**

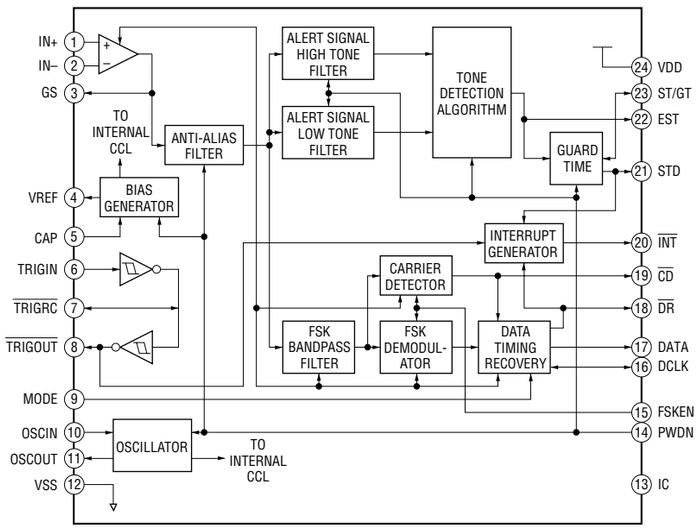
IC1 MC14LC5480DWR2 (DSP Board)



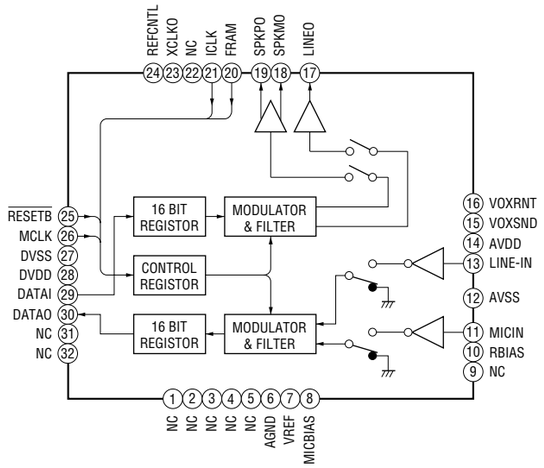
IC3 KM29N040T (DSP Board) (Not Supplied)



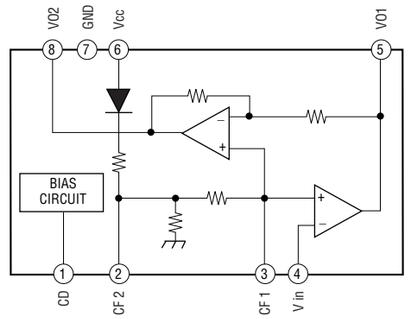
IC150 MT88E43 (BASE MAIN Board)



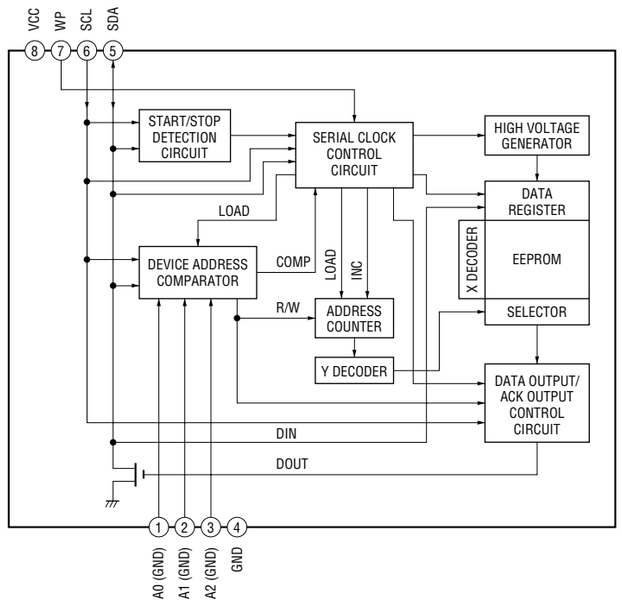
IC401 10497-15 (HAND MAIN Board)
IC701 10497-15 (BASE MAIN Board)



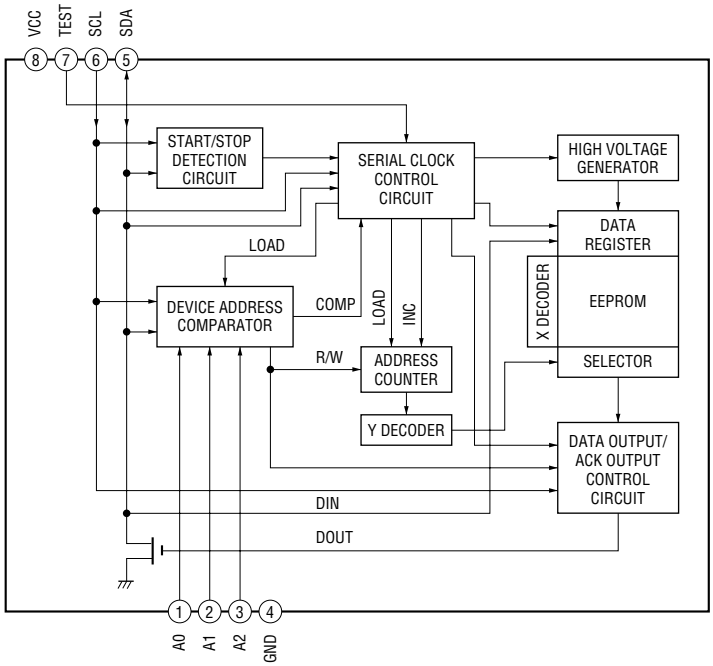
IC851 MC34119DR2 (BASE MAIN Board)



IC502 S-24C16AFJA-TB-01 (HAND MAIN Board)



IC951 S-24C01AFJA-TB-01 (BASE MAIN Board)



6-15. IC PIN FUNCTION DESCRIPTION

• DSP BOARD IC2 D6471A11DQC (DSP)

Pin No.	Pin Name	I/O	Description
1	ADDR15	O	Address signal output for the external memory Not used (open)
2	ADDR14	O	Address signal output for the external memory Not used (open)
3	$\overline{\text{ACK}}$	I	Acknowledge detection signal output to the TAD (IC201)
4	H/$\overline{\text{L}}$	I	High/low byte selection signal input from the TAD (IC201) When this signal is "L", the TAD (IC201) can read/write the low byte of the status/command When "H", the high byte is selected
5	$\overline{\text{HSTRD}}$	I	Data read strobe signal input from the TAD (IC201) "L" active
6	$\overline{\text{HSTWR}}$	I	Data write strobe signal input from the TAD (IC201) "L" active
7 to 14	HSTDB7 to HSTDB0	I/O	Two-way data bus with the TAD (IC201) HSTDB0 (pin ⑭): LSB, HSTDB7 (pin ⑦): MSB
15	GND	—	Ground terminal
16	NC	—	Not used (open)
17	XOUT	O	System clock output terminal (36.864 MHz)
18	XIN	I	System clock input terminal (36.864 MHz)
19	VCC	—	Power supply terminal (+5V)
20	SCLK	O	Clock signal output to the CODEC (IC1)
21	RESET	I	Reset signal input from the TAD (IC201) "H": reset
22	$\overline{\text{PDN}}$	I	Power fail detection signal input from the TAD (IC201) When a "L" is detected on this terminal, the DSP (IC2) enters power down mode
23	FSYNC	O	Frame synchronization signal output to the CODEC (IC1)
24	DX1	O	Serial data (CODEC-1 PCM data) output terminal Not used (open)
25	DX0	O	Serial data (CODEC-0 PCM data) output to the CODEC (IC1)
26	DR1	I	Serial data (CODEC-1 PCM data) input terminal Not used (open)
27	DR0	I	Serial data (CODEC-0 PCM data) input from the CODEC (IC1)
28 to 30	NC	—	Not used (open)
31	GND	—	Ground terminal
32	VCC	—	Power supply terminal (+5V)
33 to 35	NC	—	Not used (open)
36	$\overline{\text{FLWR}}$	O	Data write strobe signal output to the flash memory (IC3) "L" active
37	$\overline{\text{FLRD}}$	O	Data read strobe signal output to the flash memory (IC3) "L" active
38	NC	—	Not used (open)
39 to 46	MDB0 to MDB7	I/O	Two-way data bus with the flash memory (IC3) MDB0 (pin ㊴): LSB
47 to 52	MDB8 to MDB13	I/O	Two-way data bus with the external memory Not used (open)
53	VCC	—	Power supply terminal (+5V)
54	GND	—	Ground terminal
55, 56	NC	—	Not used (fixed at "L")
57, 58	MDB14, MDB15	I/O	Two-way data bus with the external memory MDB15 (pin ㊽): MSB Not used (open)
59 to 72	ADDR0 to ADDR13	O	Address signal output for the external memory ADDR0 (pin ㊾): LSB Not used (open)
73	VCC	—	Power supply terminal (+5V)
74	GND	—	Ground terminal
75	$\overline{\text{CE0}}$	O	Chip enable signal output to the flash memory (IC3)
76	$\overline{\text{CE1}}$	O	Chip enable signal output terminal Not used (open)
77	$\overline{\text{CS}}$	I	Chip select signal input terminal Not used (fixed at "L")
78	ALE	O	Address latch enable signal output to the flash memory (IC3)
79	CLE	O	Command latch enable signal output to the flash memory (IC3)
80	ADDR16	O	Address signal output for the external memory Not used (open)

• **BASE MAIN BOARD IC201 SB867116B-5J20 (TAD)**

Pin No.	Pin Name	I/O	Description
1	DSP PDN	O	Power down control signal output to the DSP (IC2) and flash memory (IC3)
2	DSP WR	O	Data write strobe signal output to the DSP (IC2)
3	DP	O	Hook on/off control signal output terminal "H": hook on
4	BEEP	O	Beep sound drive signal output terminal
5	—	—	Not used (open)
6	WDT	I	Watch dog timer input terminal
7	$\overline{\text{RESET}}$	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"
8	XT1	—	Not used (open)
9	XT2	—	Not used (open)
10	VSS1	—	Ground terminal
11	CF1	—	Master clock connection terminal (6.072 MHz)
12	CF2	—	Master clock connection terminal (6.072 MHz)
13	VDD1	—	Power supply terminal (+5.4V)
14 to 17	COL0 to COL3	I	Key return signal input from the key matrix
18	ANS MODE	I	AUDIBLE INDICATE switch (SW201) input terminal "L": ANN only, "M": audible off, "H": audible on
19	RING TIME	I	RINGER SELECT switch (SW202) input terminal "L": 2, "M": 5, "H": TS
20	EXT OFF HOOK	I	Reserve cancellation detect signal input terminal "H": cancel status
21	CHARGE V-DET	I	Voltage detect at the charge selected (A/D input)
22 to 25	VOL0 to VOL3	O	Electrical volume control signal output terminal
26	INT	I	Acknowledge detection signal input from the DSP (IC2)
27	RING DET	I	Detection signal input of the ringer coming "L": ringer coming
28	LINE DET	I	Hook on/off detection signal input from the ASIC (IC751) "H": hook on
29 to 40	LCD SEG0 to LCD SEG11	O	Segment drive signal output to the liquid crystal display unit (LCD301)
41	VDD3	—	Power supply terminal (+5.4V)
42	VSS3	—	Ground terminal
43	LCD SEG12	O	Segment drive signal output to the liquid crystal display unit (LCD301)
44	—	—	Not used (open)
45 to 48	ROW0 to ROW3	O	Key send signal output to the key matrix
49	LINE LED	O	LED drive signal output of the IN USE LED (D301) "L": LED on
50	ANS LED	O	LED drive signal output of the ANSWER ON/OFF LED (D302) "L": LED on
51	CHG DET	I	Charge on/off detection signal input terminal "L": charge on
52	NEW CALL DET	I	New arrival call ID detection signal input from the ASIC (IC751) "L": new call present
53	MIC ON	O	Microphone on/off control signal output terminal "L": microphone on
54	SP ON	O	Speaker on/off control signal output terminal "L": speaker on
55	PAGE ON	O	Page switch on/off control signal output terminal "H": page on
56	—	O	Not used (open)
57	QUICK CHG	O	Quick/normal charge selection signal output terminal "L": normal charge, "H": quick charge
58	TX MUTE	O	Transmission muting on/off control signal output terminal "L": muting on
59	RX MUTE	O	Receive muting on/off control signal output terminal "L": muting on
60	VOL4	O	Electrical volume control signal output terminal
61 to 63	V3 to V1	—	Not used (open)
64 to 66	LCD COM0 to LCD COM2	O	Common drive signal output to the liquid crystal display unit (LCD301)

Pin No.	Pin Name	I/O	Description
67	—	—	Not used (open)
68	VSS2	—	Ground terminal
69	VDD2	—	Power supply terminal (+5.4V)
70 to 77	DB0 to DB7	I/O	Two-way data bus with the DSP (IC2)
78	DSP RD	O	Data read strobe signal output to the DSP (IC2)
79	HI/LO	O	High/low byte selection signal output to the DSP (IC2) “L”: low byte
80	DSP RESET	O	Reset signal output to the DSP (IC2) “H”: reset

• HAND MAIN BOARD IC501 M7005-11 (ASIC)

Pin No.	Pin Name	I/O	Description
1	KEYPADB5	O	Key output terminal Not used (open)
2 to 5	D0 to D3	I/O	Not used (open)
6 to 9	D4 to D7	O	Display 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 (+3.6V) (for core)
18	VDDP	—	Power supply terminal (+3.6V) (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	$\overline{\text{RESETO}}$	O	Reset signal output to the CODEC (IC401) "L": reset
28	CDCICLK	O	Interface clock signal output to the CODEC (IC401)
29	VDDP	—	Power supply terminal (+3.6V) (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 (+3.6V) (for pad)
39	$\overline{\text{LCDCS}}$	O	Chip select signal output to the liquid crystal display unit (LCD501)
40	VDDC	—	Power supply terminal (+3.6V) (for core)
41	VSSC	—	Ground terminal (for core)
42	$\overline{\text{TEST}}$	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 (RFU501) "H": low gain
44	RXEN	O	RX system enable signal output to the RF unit (RFU501) "H": enable
45	VDDA	—	Power supply terminal (+3.6V) (for analog)
46	VSSA	—	Ground terminal (for analog)
47	VDDA	—	Power supply terminal (+3.6V) (for analog)
48	VSSA	—	Ground terminal (for analog)
49	TXDATA	O	Transmit data output to the RF unit (RFU501)
50	VRP	O	Analog reference voltage output terminal
51	RXIP	I	Receive data (I positive) input from the RF unit (RFU501)
52	RXIN	I	Receive data (I negative) input from the RF unit (RFU501)
53	RXQP	I	Receive data (Q positive) input from the RF unit (RFU501)
54	RXQN	I	Receive data (Q negative) input from the RF unit (RFU501)
55	NC	—	Not used (open)
56	IBIAS	I	Analog bias input terminal

Pin No.	Pin Name	I/O	Description
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 (RFU501)
61	CALLER-ID	O	Not used (open)
62	$\overline{\text{PARKP}}$	I	Charge detection input terminal "L": charge on
63	VDDC	—	Power supply terminal (+3.6V) (for core)
64	VSSP	—	Ground terminal (for pad)
65	SYNDATA	O	Synthesizer data output to the RF unit (RFU501)
66	SYNTH5MCLK	O	Synthesizer reference oscillator output to the RF unit (RFU501) (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 (RFU501)
72	SYNSTB	O	Synthesizer strobe signal output to the RF unit (RFU501)
73	VDDP	—	Power supply terminal (+3.6V) (for pad)
74	VSSP	—	Ground terminal (for pad)
75	SYNEN	O	Synthesizer power control signal output to the RF unit (RFU501) "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 (RFU501) "H": enable
80	TXPWR1	O	PA power selection signal output to the RF unit (RFU501)
81	GPIOB6	O	Not used (open)
82	TXRXSEL	O	TX/RX selection signal output to the RF unit (RFU501) "L": RX, "H": TX
83	$\overline{\text{RINGOFF}}$	I	RING on/off switch (S501) input terminal "L": RING OFF, "H": RING 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 (RFU501)
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 (+3.6V) (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 (+3.6V) (for pad)
100	VSSP	—	Ground terminal (for pad)

• **BASE MAIN BOARD IC751 M7005-11 (ASIC)**

Pin No.	Pin Name	I/O	Description
1	KEYPADB5	O	Key output terminal Not used (open)
2 to 4	D0 to D2	I/O	Not used (open)
5	D3	I	Selection input of the dial make rate "L": 33%, "H": 40% Not used (open)
6	D4	I	Selection input of the model Fixed at "L" in this set
7, 8	D5, D6	I	Microphone gain control input terminal Not used (open)
9	D7	I	D/A converter gain control input terminal Not used (open)
10 to 14	KEYPADI0 to KEYPADI4	I	Key input terminal Not used (open)
15	KEYPADI5	I	Key return input terminal (for page switch)
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, 23	KEYPADB3, KEYPADB4	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	$\overline{\text{RESETO}}$	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	KEYPADB2	O	Key send signal output terminal (for page switch)
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	KEYPADB1, KEYPADB0	O	Key output terminal Not used (open)
37	GPIOB7	O	Hook on/off control signal output terminal "H": hook on
38	VDDP	—	Power supply terminal (+5V) (for pad)
39	$\overline{\text{LCDCS}}$	O	Chip select signal output terminal Not used (open)
40	VDDC	—	Power supply terminal (+5V) (for core)
41	VSSC	—	Ground terminal (for core)
42	$\overline{\text{TEST}}$	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 (RFU901) "H": low gain
44	RXEN	O	RX system enable signal output to the RF unit (RFU901) "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 (RFU901)
50	VRP	O	Analog reference voltage output terminal
51	RXIP	I	Receive data (I positive) input from the RF unit (RFU901)
52	RXIN	I	Receive data (I negative) input from the RF unit (RFU901)

Pin No.	Pin Name	I/O	Description
53	RXQP	I	Receive data (Q positive) input from the RF unit (RFU901)
54	RXQN	I	Receive data (Q negative) input from the RF unit (RFU901)
55	NC	—	Not used (open)
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 (RFU901)
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 (RFU901)
66	SYNTH5MCLK	O	Synthesizer reference oscillator output to the RF unit (RFU901) (9.62 MHz)
67	LED3	O	LED drive signal output terminal Not used (open)
68	CLKO	O	Caller-ID clock signal (1.2 kHz) output to the MT88E43ASR (IC150)
69	$\overline{\text{INT}}$	I	Caller-ID interrupt input from the MT88E43ASR (IC150)
70	DATAI	I	Caller-ID data input from the MT88E43ASR (IC150)
71	SYNCLK	O	Synthesizer clock signal output to the RF unit (RFU901)
72	SYNSTB	O	Synthesizer strobe signal output to the RF unit (RFU901)
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 (RFU901) "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	LED2	O	LED drive signal output terminal Not used (open)
79	TXEN	O	TX system enable signal output to the RF unit (RFU901) "H": enable
80	TXPWR1	O	PA power selection signal output to the RF unit (RFU901)
81	GPIOB6	I	Detection signal input of the ringer coming "L": ringer coming
82	TXRXSEL	O	TX/RX selection signal output to the RF unit (RFU901) "L": RX, "H": TX
83	$\overline{\text{RINGOFF}}$	I	Not used (fixed at "H")
84	$\overline{\text{BASEP}}$	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 (RFU901)
86	GPIOB5	O	Not used (open)
87	NVCS	I	Frequency shift keying interface data input from the MT88E43ASR (IC150)
88	AUDPWRP	I	DIAL MODE switch (SW951) input terminal "L": P (pulse), "H": T (tone)
89	LED1	O	New arrival call ID LED drive signal output to the TAD (IC201) "L": LED on
90	VDDC	—	Power supply terminal (+5V) (for core)
91	VSSC	—	Ground terminal (for core)
92	$\overline{\text{LCDPWRP}}$	O	Not used (open)
93	$\overline{\text{SLEEP}}$	O	Caller-ID frequency shift keying enable signal output to the MT88E43ASR (IC150)
94	GPIOB4	O	Not used (open)
95	NVCLK	O	Reception muting during dial transmission "L": during dial transmission Not used
96	$\overline{\text{RESETI}}$	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"
97	XTALI	I	Main system clock input terminal (9.6 MHz)

Pin No.	Pin Name	I/O	Description
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)

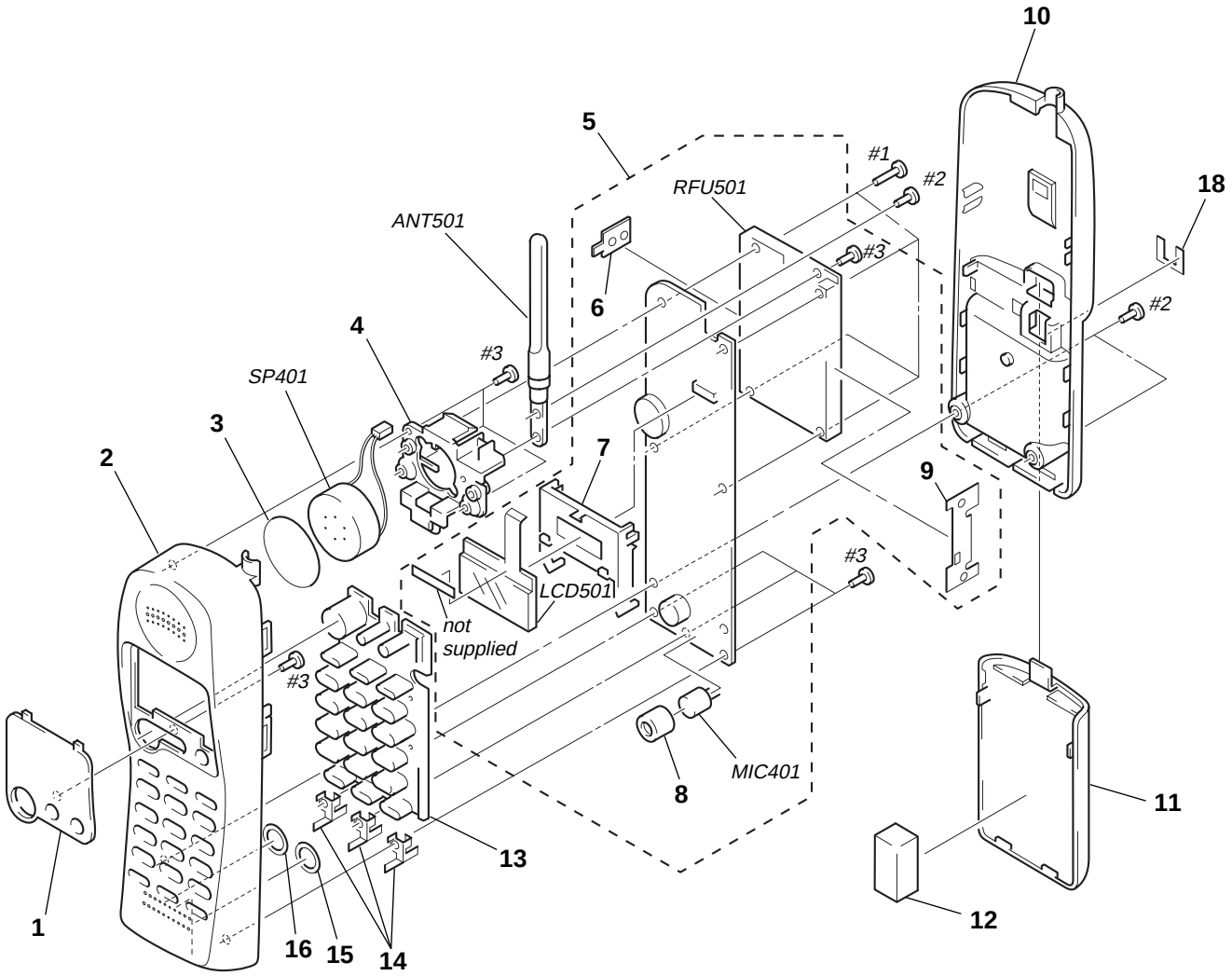
SECTION 7
EXPLODED VIEWS

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

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

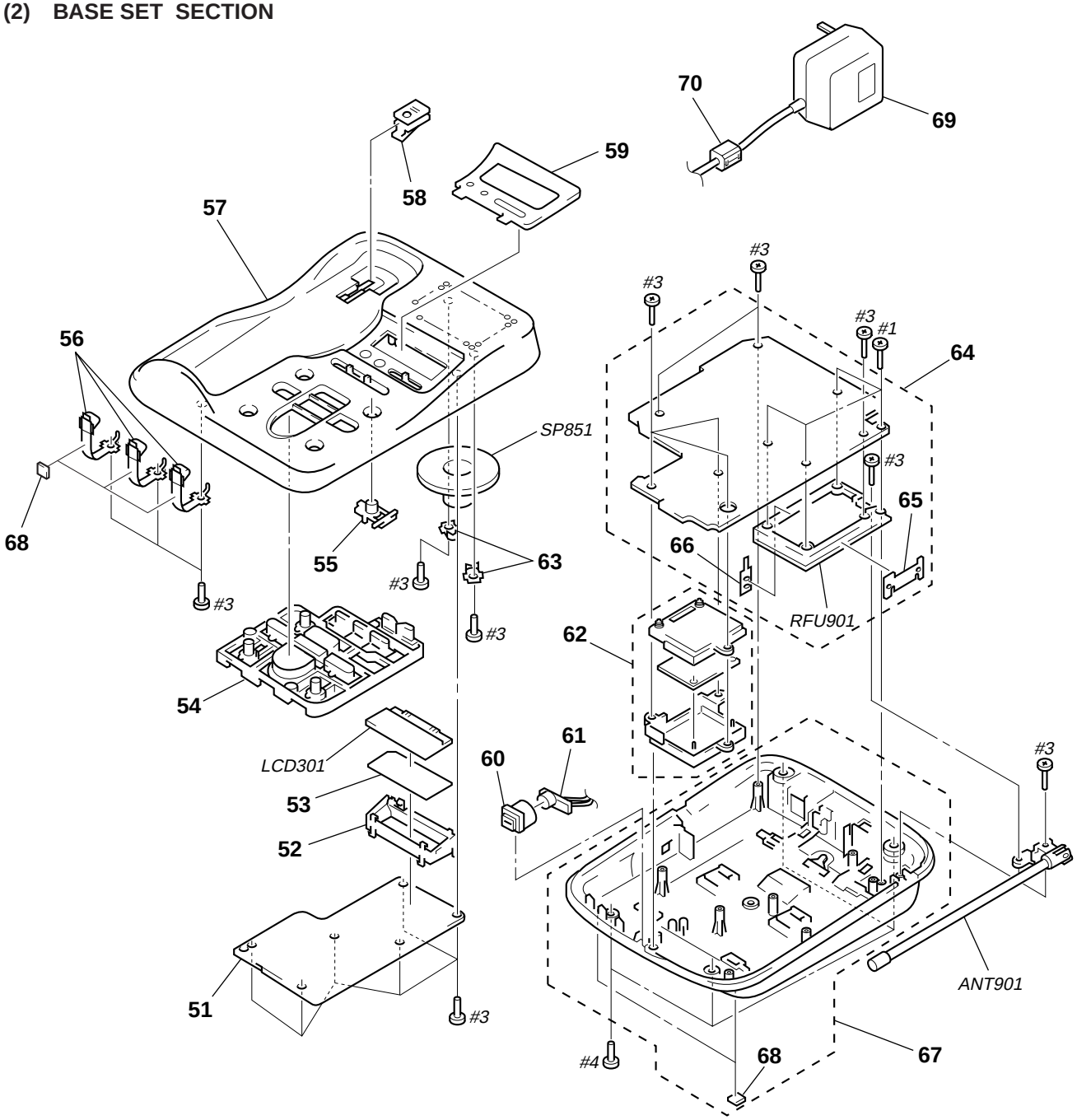
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

(1) HAND SET SECTION



Ref. No.	Part No.	Description	Remark
1	3-012-367-41	PANEL	
2	3-012-362-51	CABINET (FRONT)	
3	3-371-005-01	GASKET (RECEIVER) (TWN)	
4	3-012-365-01	HOLDER (SP)	
* 5	A-3622-344-A	HAND MAIN BOARD, COMPLETE	
6	3-029-168-01	SHEET (COPPER LEAF. RF) (B)	
7	3-012-368-01	HOLDER (LCD)	
8	3-935-518-01	CUSION (MICROPHONE)	
9	3-028-552-01	SHEET (COPPER LEAF. RF)	
10	3-012-363-21	CABINET (REAR)	
11	3-012-364-21	COVER (BATT)	
12	3-935-520-01	CUSHION (BATTERY)	
13	1-771-066-41	SWITCH, RUBBER KEY	
14	3-012-366-01	TERMINAL (HAND), CHARGE	
15	3-935-519-21	CUSHION (BUZZER)	
16	3-935-519-11	CUSHION (BUZZER)	
18	3-040-575-01	LABEL (CONNECTOR)	
ANT501	1-754-086-11	ANTENNA	
LCD501	1-475-241-11	LCD UNIT	
MIC401	1-542-118-11	MICROPHONE, ELECTRET CONDENSER	
RFU501	1-475-890-11	RF UNIT	
SP401	1-504-829-11	SPEAKER (28mm)	

(2) BASE SET SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 51	1-671-600-13	BASE KEY BOARD	
52	3-023-908-01	HOLDER (LCD)	
53	3-024-618-01	SHEET, DIFFUSION	
54	3-023-906-11	BUTTON (FC)	
55	3-023-907-01	BUTTON (ANS)	
56	3-023-909-01	TERMINAL (B/S)	
57	3-023-903-11	CABINET (UPPER)	
58	3-024-955-11	HOLDER (HAND SET)	
59	3-023-905-21	PANEL (LCD)	
60	3-910-956-01	HOLDER (MIC)	
* 61	1-671-601-13	BASE MICROPHONE BOARD	
* 62	A-3647-419-A	DSP BOARD, COMPLETE	
63	3-015-461-01	BRACKET (SP STOPPER)	
* 64	A-3622-343-A	BASE MAIN BOARD, COMPLETE	
65	3-028-552-01	SHEET (COPPER LEAF. RF)	
66	3-029-168-01	SHEET (COPPER LEAF. RF) (B)	
67	X-3377-882-1	CABINET (LOWER) ASSY	
68	3-936-696-21	FOOT, RUBBER	
⚠69	1-473-475-61	ADAPTOR, AC (AC-T46)	
70	1-543-584-31	CORE	
ANT901	1-501-998-11	ANTENNA, ROD	
LCD301	1-803-347-11	DISPLAY PANEL, LIQUID CRYSTAL	
RFU901	1-475-890-11	RF UNIT	
SP851	1-505-720-11	SPEAKER (5.7cm)	

BASE KEY

BASE MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

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

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

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

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

Ref. No.	Part No.	Description	Remark
*	1-671-600-13	BASE KEY BOARD	
		**********	
	3-023-908-01	HOLDER (LCD)	
	3-024-618-01	SHEET, DIFFUSION	
		< CONNECTOR >	
* CN301	1-566-012-11	PIN, CONNECTOR (PC BOARD) 15P	
* CN302	1-566-011-11	PIN, CONNECTOR (PC BOARD) 14P	
		< DIODE >	
D301	8-719-050-06	LED SLR-325MGT31 (IN USE)	
D302	8-719-050-05	LED SLR-325VRT31 (ANSWER ON/OFF)	
D303	8-719-050-05	LED SLR-325VRT31 (CHARGE)	
D304	8-719-060-99	LED SML-210MT-T86 (LCD BACK LIGHT)	
D305	8-719-060-99	LED SML-210MT-T86 (LCD BACK LIGHT)	
D306	8-719-060-99	LED SML-210MT-T86 (LCD BACK LIGHT)	
D307	8-719-060-99	LED SML-210MT-T86 (LCD BACK LIGHT)	
D308	8-719-060-99	LED SML-210MT-T86 (LCD BACK LIGHT)	
D309	8-719-991-33	DIODE 1SS133T-77	
D310	8-719-991-33	DIODE 1SS133T-77	
D311	8-719-991-33	DIODE 1SS133T-77	
D312	8-719-991-33	DIODE 1SS133T-77	
		< LIQUID CRYSTAL DISPLAY >	
LCD301	1-803-347-11	DISPLAY PANEL, LIQUID CRYSTAL	
		< RESISTOR >	
R301	1-216-041-00	METAL CHIP 470 5% 1/10W	
R302	1-216-041-00	METAL CHIP 470 5% 1/10W	
R303	1-216-041-00	METAL CHIP 470 5% 1/10W	
R304	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R305	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R306	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R307	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R318	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
		< SWITCH >	
S301	1-572-381-21	SWITCH, KEY BOARD (SET/REC)	
S302	1-572-381-21	SWITCH, KEY BOARD (GREETING)	
S303	1-572-381-21	SWITCH, KEY BOARD (TIME)	
S304	1-572-381-21	SWITCH, KEY BOARD (VOLUME +)	
S305	1-572-381-21	SWITCH, KEY BOARD (ANSWER ON/OFF)	
S306	1-572-381-21	SWITCH, KEY BOARD (MAIL BOX1)	
S307	1-572-381-21	SWITCH, KEY BOARD (VOLUME –)	
S308	1-572-381-21	SWITCH, KEY BOARD (2)	
S309	1-572-381-21	SWITCH, KEY BOARD (3)	
S310	1-572-381-21	SWITCH, KEY BOARD (QUICK, SKIP)	
S311	1-572-381-21	SWITCH, KEY BOARD (MEMO)	
S312	1-572-381-21	SWITCH, KEY BOARD (ERASE)	
S313	1-572-381-21	SWITCH, KEY BOARD (SLOW, REPEAT)	
S314	1-572-381-21	SWITCH, KEY BOARD (HANDSET LOCATOR)	
**********			
*	A-3622-343-A	BASE MAIN BOARD, COMPLETE	
		**********	
	3-028-552-01	SHEET (COPPER LEAF. RF)	
	3-029-168-01	SHEET (COPPER LEAF. RF) (B)	
	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	
		< CAPACITOR/SHORT >	
C101	1-162-117-00	CERAMIC 100PF 10% 500V	
C105	1-136-193-11	MYLAR 0.47uF 10% 250V	
C107	1-107-423-11	CERAMIC 220PF 10% 1KV	
C108	1-107-423-11	CERAMIC 220PF 10% 1KV	
C109	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C111	1-126-961-11	ELECT 2.2uF 20% 50V	
C112	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C113	1-163-021-11	CERAMIC CHIP 0.01uF 10% 50V	
C115	1-126-963-11	ELECT 4.7uF 20% 50V	
C116	1-161-830-00	CERAMIC 0.0047uF 500V	
C117	1-161-830-00	CERAMIC 0.0047uF 500V	
C118	1-161-830-00	CERAMIC 0.0047uF 500V	
C119	1-161-830-00	CERAMIC 0.0047uF 500V	
C120	1-115-872-11	ELECT 2.2uF 20% 50V	
C121	1-126-966-11	ELECT 33uF 20% 50V	
C122	1-126-964-11	ELECT 10uF 20% 50V	
C123	1-126-795-11	ELECT 10uF 20% 50V	
C124	1-126-965-11	ELECT 22uF 20% 50V	
C125	1-126-967-11	ELECT 47uF 20% 50V	
C126	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C131	1-109-994-11	CERAMIC CHIP 2.2uF 10% 10V	
C132	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C133	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C135	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C136	1-216-295-00	SHORT 0	
C137	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	

Ref. No.	Part No.	Description			Remark
C138	1-126-965-11	ELECT	22uF	20%	50V
C139	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C141	1-126-947-11	ELECT	47uF	20%	35V
C150	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C151	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C152	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C153	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C154	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C155	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C156	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C157	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V
C158	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C159	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V
C173	1-216-295-00	SHORT	0		
C175	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C176	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C177	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C178	1-161-830-00	CERAMIC	0.0047uF		500V
C181	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C189	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V
C191	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C192	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C193	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C194	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C195	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C196	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C197	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C198	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C199	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C201	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C202	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C203	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C204	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C205	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C206	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C207	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C208	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C209	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C242	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C261	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C310	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C401	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C402	1-126-935-11	ELECT	470uF	20%	16V
C403	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C404	1-126-935-11	ELECT	470uF	20%	16V
C407	1-126-926-11	ELECT	1000uF	20%	10V
C451	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C501	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C502	1-126-965-11	ELECT	22uF	20%	50V
C503	1-163-021-11	CERAMIC CHIP	0.01uF	10%	50V
C504	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C505	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C506	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C507	1-126-966-11	ELECT	33uF	20%	50V
C508	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C509	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C510	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C511	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C512	1-126-964-11	ELECT	10uF	20%	50V
C513	1-126-965-11	ELECT	22uF	20%	50V
C514	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C515	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C516	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C517	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C518	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C519	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C520	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C522	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C523	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C524	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C525	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C526	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C527	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C528	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C529	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C530	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C531	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C541	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C551	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C552	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C553	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C554	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C555	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C556	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C557	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C558	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C559	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C560	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C561	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C562	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C563	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C564	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C565	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C571	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C572	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C573	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C574	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C601	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C602	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C605	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C606	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C607	1-126-916-11	ELECT	1000uF	20%	6.3V
C608	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C609	1-126-963-11	ELECT	4.7uF	20%	50V
C621	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C622	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C623	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C701	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C702	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C703	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C704	1-126-925-11	ELECT	470uF	20%	10V
C705	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C706	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C707	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C751	1-163-031-11	CERAMIC CHIP	0.01uF		50V

BASE MAIN

Ref. No.	Part No.	Description			Remark
C754	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C755	1-126-964-11	ELECT	10uF	20%	50V
C756	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C757	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C758	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C759	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C760	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C762	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C766	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C767	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C768	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C769	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C790	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C791	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C853	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C854	1-126-967-11	ELECT	47uF	20%	50V
C855	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C856	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C857	1-126-960-11	ELECT	1uF	20%	50V
C858	1-126-963-11	ELECT	4.7uF	20%	50V
C859	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C860	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C861	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C862	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C901	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C902	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C903	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C904	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C951	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C954	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C990	1-101-004-00	CERAMIC	0.01uF		50V
		< CONNECTOR >			
* CN201	1-779-705-11	CONNECTOR, BOARD TO BOARD (PLUG)			
* CN401	1-506-999-11	PIN, CONNECTOR (PC BOARD) 3P			
* CN501	1-506-998-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN851	1-506-998-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN901	1-779-773-11	PIN, CONNECTOR (PC BOARD) 8P			
* CN902	1-779-774-11	PIN, CONNECTOR (PC BOARD) 16P			
		< DIODE >			
D100	8-719-991-33	DIODE	1SS133T-77		
D102	8-719-109-89	DIODE	MTZJ-T-77-5.6		
D103	8-719-109-89	DIODE	MTZJ-T-77-5.6		
D104	8-719-991-33	DIODE	1SS133T-77		
D105	8-719-109-97	DIODE	MTZJ-T-77-6.8		
D108	8-719-914-42	DIODE	DA204K-T-146		
D109	8-719-914-42	DIODE	DA204K-T-146		
D110	8-719-914-42	DIODE	DA204K-T-146		
D111	8-719-970-02	DIODE	1SR139-400T-32		
D112	8-719-970-02	DIODE	1SR139-400T-32		
D113	8-719-970-02	DIODE	1SR139-400T-32		
D114	8-719-970-02	DIODE	1SR139-400T-32		
D115	8-719-160-55	DIODE	RD12FB1		
D150	8-719-991-33	DIODE	1SS133T-77		
D160	8-719-991-33	DIODE	1SS133T-77		
D161	8-719-991-33	DIODE	1SS133T-77		
D163	8-719-991-33	DIODE	1SS133T-77		
D164	8-719-991-33	DIODE	1SS133T-77		
D202	8-719-109-97	DIODE	MTZJ-T-77-6.8		
D242	8-719-037-02	DIODE	RD6.8SB-T1		
D243	8-719-037-02	DIODE	RD6.8SB-T1		
D402	8-719-991-33	DIODE	1SS133T-77		
D403	8-719-991-33	DIODE	1SS133T-77		
D404	8-719-991-33	DIODE	1SS133T-77		
D405	8-719-991-33	DIODE	1SS133T-77		
D407	8-719-037-02	DIODE	RD6.8SB-T1		
D501	8-719-991-33	DIODE	1SS133T-77		
D502	8-719-991-33	DIODE	1SS133T-77		
		< FUSE >			
F101	1-533-542-11	FUSE (0.5A/250V)			
		< IC >			
IC101	8-759-909-71	IC	BA4558F-T2		
IC150	8-759-529-22	IC	MT88E43		
IC201	8-759-560-21	IC	SB867116B-5J20		
IC301	8-759-008-67	IC	BU4066BCF-T1		
IC401	8-759-390-43	IC	uPC24M06AHF		
IC501	8-759-058-50	IC	BA10324AF-E2		
IC601	8-759-482-72	IC	uPC29M05HF		
IC602	8-759-087-73	IC	S-80745AN-D9-T1		
IC701	8-759-530-12	IC	10497-15		
IC751	8-759-589-81	IC	M7005-11		
IC851	8-759-463-98	IC	MC34119DR2		
IC951	8-759-487-03	IC	S-24C01AFJA-TB-01		
		< JACK >			
J601	1-778-380-11	JACK, DC (POLARITY UNIFIED TYPE) (DC IN 9V)			
		< SHORT >			
JR13	1-216-296-00	SHORT			0
JR14	1-216-296-00	SHORT			0
JR15	1-216-296-00	SHORT			0
JR16	1-216-296-00	SHORT			0
JR17	1-216-296-00	SHORT			0
JR18	1-216-296-00	SHORT			0
JR19	1-216-296-00	SHORT			0
JR20	1-216-296-00	SHORT			0
JR21	1-216-296-00	SHORT			0
JR24	1-216-296-00	SHORT			0
JR25	1-216-296-00	SHORT			0
JR26	1-216-296-00	SHORT			0
JR27	1-216-296-00	SHORT			0
JR28	1-216-296-00	SHORT			0
JR29	1-216-295-00	SHORT			0
JR31	1-216-295-00	SHORT			0
JR42	1-216-296-00	SHORT			0
JR43	1-216-296-00	SHORT			0
JR44	1-216-296-00	SHORT			0
JR45	1-216-296-00	SHORT			0
JR50	1-216-295-00	SHORT			0
JR52	1-216-295-00	SHORT			0

Ref. No.	Part No.	Description			Remark
JR53	1-216-295-00	SHORT	0		
JR55	1-216-296-00	SHORT	0		
JR56	1-216-296-00	SHORT	0		
		< COIL/SHORT >			
L101	1-410-470-11	INDUCTOR	10uH		
L102	1-410-470-11	INDUCTOR	10uH		
L201	1-216-296-00	SHORT	0		
L202	1-216-296-00	SHORT	0		
L601	1-410-468-11	INDUCTOR	6.8uH		
L602	1-410-468-11	INDUCTOR	6.8uH		
L603	1-414-102-11	INDUCTOR	0.22uH		
L604	1-410-478-11	INDUCTOR	47uH		
L605	1-414-102-11	INDUCTOR	0.22uH		
L606	1-410-468-11	INDUCTOR	6.8uH		
L607	1-410-468-11	INDUCTOR	6.8uH		
L608	1-410-468-11	INDUCTOR	6.8uH		
L609	1-410-468-11	INDUCTOR	6.8uH		
L750	1-412-945-11	INDUCTOR	3.3uH		
		< MODULAR JACK >			
MJ101	1-766-250-11	JACK, MODULAR (2C) 6P (LINE)			
		< PHOTO COUPLER >			
PH101	8-719-156-73	PHOTO COUPLER PS2501-1-L			
PH102	8-719-156-73	PHOTO COUPLER PS2501-1-L			
PH103	8-749-011-58	PHOTO COUPLER PS2533-1			
		< TRANSISTOR >			
Q101	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q102	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q103	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q104	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q105	8-729-032-66	TRANSISTOR	2SC5069-TD		
Q106	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q107	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q108	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q109	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q150	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q401	8-729-922-34	TRANSISTOR	2SD1758F5-QR		
Q402	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q403	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q406	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q407	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q502	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q503	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q504	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q505	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q506	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q507	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q952	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
		< RESISTOR/COIL >			
R9	1-216-041-00	METAL CHIP	470	5%	1/10W
R11	1-216-041-00	METAL CHIP	470	5%	1/10W
R12	1-216-041-00	METAL CHIP	470	5%	1/10W
R13	1-216-295-00	SHORT	0		
R101	1-260-079-11	CARBON	22	5%	1/2W
R102	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R103	1-215-877-11	METAL OXIDE	22K	5%	1W
R104	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R105	1-216-085-00	METAL CHIP	33K	5%	1/10W
R107	1-216-025-00	RES, CHIP	100	5%	1/10W
R108	1-216-085-00	METAL CHIP	33K	5%	1/10W
R109	1-216-073-00	METAL CHIP	10K	5%	1/10W
R110	1-216-073-00	METAL CHIP	10K	5%	1/10W
R111	1-216-073-00	METAL CHIP	10K	5%	1/10W
R112	1-216-097-00	RES, CHIP	100K	5%	1/10W
R115	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R116	1-216-073-00	METAL CHIP	10K	5%	1/10W
R117	1-216-081-00	METAL CHIP	22K	5%	1/10W
R118	1-249-395-11	CARBON	15	5%	1/4W
R119	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R120	1-216-073-00	METAL CHIP	10K	5%	1/10W
R121	1-216-105-00	RES, CHIP	220K	5%	1/10W
R122	1-216-113-00	METAL CHIP	470K	5%	1/10W
R123	1-216-089-00	RES, CHIP	47K	5%	1/10W
R125	1-249-417-11	CARBON	1K	5%	1/4W
R126	1-216-089-00	RES, CHIP	47K	5%	1/10W
R127	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R128	1-216-081-00	METAL CHIP	22K	5%	1/10W
R129	1-216-091-00	METAL CHIP	56K	5%	1/10W
R130	1-216-097-00	RES, CHIP	100K	5%	1/10W
R131	1-216-037-00	METAL CHIP	330	5%	1/10W
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R133	1-216-089-00	RES, CHIP	47K	5%	1/10W
R134	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R135	1-216-101-00	METAL CHIP	150K	5%	1/10W
R137	1-216-085-00	METAL CHIP	33K	5%	1/10W
R138	1-216-121-00	RES, CHIP	1M	5%	1/10W
R139	1-216-073-00	METAL CHIP	10K	5%	1/10W
R140	1-216-121-00	RES, CHIP	1M	5%	1/10W
R141	1-216-097-00	RES, CHIP	100K	5%	1/10W
R142	1-216-081-00	METAL CHIP	22K	5%	1/10W
R144	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R145	1-216-081-00	METAL CHIP	22K	5%	1/10W
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W
R147	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R148	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R149	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R150	1-216-121-00	RES, CHIP	1M	5%	1/10W
R151	1-216-121-00	RES, CHIP	1M	5%	1/10W
R152	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R153	1-216-081-00	METAL CHIP	22K	5%	1/10W
R154	1-216-081-00	METAL CHIP	22K	5%	1/10W
R155	1-216-049-11	RES, CHIP	1K	5%	1/10W
R156	1-216-049-11	RES, CHIP	1K	5%	1/10W
R157	1-216-073-00	METAL CHIP	10K	5%	1/10W
R158	1-216-097-00	RES, CHIP	100K	5%	1/10W
R159	1-216-097-00	RES, CHIP	100K	5%	1/10W
R160	1-216-049-11	RES, CHIP	1K	5%	1/10W
R161	1-216-049-11	RES, CHIP	1K	5%	1/10W
R162	1-216-013-00	METAL CHIP	33	5%	1/10W
R170	1-216-295-00	SHORT	0		
R171	1-216-065-00	RES, CHIP	4.7K	5%	1/10W

BASE MAIN

Ref. No.	Part No.	Description			Remark
R176	1-216-081-00	METAL CHIP	22K	5%	1/10W
R190	1-216-025-00	RES, CHIP	100	5%	1/10W
R191	1-216-025-00	RES, CHIP	100	5%	1/10W
R192	1-216-049-11	RES, CHIP	1K	5%	1/10W
R193	1-216-071-00	RES, CHIP	8.2K	5%	1/10W
R201	1-216-049-11	RES, CHIP	1K	5%	1/10W
R202	1-216-049-11	RES, CHIP	1K	5%	1/10W
R203	1-216-049-11	RES, CHIP	1K	5%	1/10W
R204	1-216-049-11	RES, CHIP	1K	5%	1/10W
R205	1-216-049-11	RES, CHIP	1K	5%	1/10W
R206	1-216-049-11	RES, CHIP	1K	5%	1/10W
R207	1-216-049-11	RES, CHIP	1K	5%	1/10W
R208	1-216-049-11	RES, CHIP	1K	5%	1/10W
R209	1-216-049-11	RES, CHIP	1K	5%	1/10W
R210	1-216-049-11	RES, CHIP	1K	5%	1/10W
R211	1-216-049-11	RES, CHIP	1K	5%	1/10W
R212	1-216-049-11	RES, CHIP	1K	5%	1/10W
R213	1-216-049-11	RES, CHIP	1K	5%	1/10W
R214	1-216-025-00	RES, CHIP	100	5%	1/10W
R215	1-216-121-00	RES, CHIP	1M	5%	1/10W
R216	1-216-097-00	RES, CHIP	100K	5%	1/10W
R217	1-216-097-00	RES, CHIP	100K	5%	1/10W
R218	1-216-097-00	RES, CHIP	100K	5%	1/10W
R219	1-216-097-00	RES, CHIP	100K	5%	1/10W
R220	1-216-049-11	RES, CHIP	1K	5%	1/10W
R221	1-216-049-11	RES, CHIP	1K	5%	1/10W
R222	1-216-049-11	RES, CHIP	1K	5%	1/10W
R223	1-216-049-11	RES, CHIP	1K	5%	1/10W
R224	1-216-049-11	RES, CHIP	1K	5%	1/10W
R225	1-216-049-11	RES, CHIP	1K	5%	1/10W
R226	1-216-049-11	RES, CHIP	1K	5%	1/10W
R227	1-216-049-11	RES, CHIP	1K	5%	1/10W
R228	1-216-049-11	RES, CHIP	1K	5%	1/10W
R229	1-216-049-11	RES, CHIP	1K	5%	1/10W
R230	1-216-049-11	RES, CHIP	1K	5%	1/10W
R231	1-216-049-11	RES, CHIP	1K	5%	1/10W
R232	1-216-049-11	RES, CHIP	1K	5%	1/10W
R233	1-216-049-11	RES, CHIP	1K	5%	1/10W
R234	1-216-049-11	RES, CHIP	1K	5%	1/10W
R235	1-216-049-11	RES, CHIP	1K	5%	1/10W
R236	1-216-049-11	RES, CHIP	1K	5%	1/10W
R237	1-216-049-11	RES, CHIP	1K	5%	1/10W
R238	1-216-049-11	RES, CHIP	1K	5%	1/10W
R239	1-216-049-11	RES, CHIP	1K	5%	1/10W
R240	1-216-049-11	RES, CHIP	1K	5%	1/10W
R241	1-216-073-00	METAL CHIP	10K	5%	1/10W
R242	1-216-097-00	RES, CHIP	100K	5%	1/10W
R243	1-216-097-00	RES, CHIP	100K	5%	1/10W
R244	1-216-097-00	RES, CHIP	100K	5%	1/10W
R245	1-216-097-00	RES, CHIP	100K	5%	1/10W
R246	1-216-081-00	METAL CHIP	22K	5%	1/10W
R247	1-216-049-11	RES, CHIP	1K	5%	1/10W
R248	1-216-049-11	RES, CHIP	1K	5%	1/10W
R249	1-216-049-11	RES, CHIP	1K	5%	1/10W
R250	1-216-097-00	RES, CHIP	100K	5%	1/10W
R251	1-216-097-00	RES, CHIP	100K	5%	1/10W
R252	1-216-097-00	RES, CHIP	100K	5%	1/10W
R253	1-216-097-00	RES, CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R261	1-216-073-00	METAL CHIP	10K	5%	1/10W
R262	1-216-073-00	METAL CHIP	10K	5%	1/10W
R271	1-216-073-00	METAL CHIP	10K	5%	1/10W
R272	1-216-073-00	METAL CHIP	10K	5%	1/10W
R273	1-216-073-00	METAL CHIP	10K	5%	1/10W
R274	1-216-073-00	METAL CHIP	10K	5%	1/10W
R275	1-216-073-00	METAL CHIP	10K	5%	1/10W
R276	1-216-073-00	METAL CHIP	10K	5%	1/10W
R277	1-216-073-00	METAL CHIP	10K	5%	1/10W
R278	1-216-073-00	METAL CHIP	10K	5%	1/10W
R279	1-216-073-00	METAL CHIP	10K	5%	1/10W
R308	1-216-093-11	RES, CHIP	68K	5%	1/10W
R309	1-216-081-00	METAL CHIP	22K	5%	1/10W
R310	1-216-073-00	METAL CHIP	10K	5%	1/10W
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-215-857-11	METAL OXIDE	10	5%	1W F
R404	1-249-407-11	CARBON	150	5%	1/4W
R405	1-249-393-11	CARBON	10	5%	1/4W
R406	1-216-105-00	RES, CHIP	220K	5%	1/10W
R407	1-216-101-00	METAL CHIP	150K	5%	1/10W
R417	1-216-073-00	METAL CHIP	10K	5%	1/10W
R421	1-216-097-00	RES, CHIP	100K	5%	1/10W
R423	1-249-391-11	CARBON	6.8	5%	1/4W
R424	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R425	1-216-037-00	METAL CHIP	330	5%	1/10W
R427	1-216-049-11	RES, CHIP	1K	5%	1/10W
R431	1-216-097-00	RES, CHIP	100K	5%	1/10W
R501	1-216-073-00	METAL CHIP	10K	5%	1/10W
R503	1-216-049-11	RES, CHIP	1K	5%	1/10W
R504	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R505	1-216-073-00	METAL CHIP	10K	5%	1/10W
R506	1-216-073-00	METAL CHIP	10K	5%	1/10W
R507	1-216-089-00	RES, CHIP	47K	5%	1/10W
R508	1-216-121-00	RES, CHIP	1M	5%	1/10W
R509	1-216-121-00	RES, CHIP	1M	5%	1/10W
R510	1-216-081-00	METAL CHIP	22K	5%	1/10W
R511	1-216-121-00	RES, CHIP	1M	5%	1/10W
R512	1-216-089-00	RES, CHIP	47K	5%	1/10W
R513	1-216-073-00	METAL CHIP	10K	5%	1/10W
R514	1-216-049-11	RES, CHIP	1K	5%	1/10W
R515	1-216-105-00	RES, CHIP	220K	5%	1/10W
R516	1-216-121-00	RES, CHIP	1M	5%	1/10W
R517	1-216-041-00	METAL CHIP	470	5%	1/10W
R518	1-216-081-00	METAL CHIP	22K	5%	1/10W
R519	1-216-089-00	RES, CHIP	47K	5%	1/10W
R520	1-216-093-11	RES, CHIP	68K	5%	1/10W
R521	1-216-119-00	RES, CHIP	820K	5%	1/10W
R522	1-216-109-00	METAL CHIP	330K	5%	1/10W
R523	1-216-081-00	METAL CHIP	22K	5%	1/10W
R524	1-216-081-00	METAL CHIP	22K	5%	1/10W
R525	1-216-073-00	METAL CHIP	10K	5%	1/10W
R526	1-216-073-00	METAL CHIP	10K	5%	1/10W
R527	1-216-073-00	METAL CHIP	10K	5%	1/10W
R528	1-216-073-00	METAL CHIP	10K	5%	1/10W
R529	1-216-073-00	METAL CHIP	10K	5%	1/10W
R530	1-216-097-00	RES, CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R531	1-216-097-00	RES, CHIP	100K	5%	1/10W
R532	1-216-097-00	RES, CHIP	100K	5%	1/10W
R533	1-216-097-00	RES, CHIP	100K	5%	1/10W
R534	1-216-097-00	RES, CHIP	100K	5%	1/10W
R535	1-216-085-00	METAL CHIP	33K	5%	1/10W
R536	1-216-081-00	METAL CHIP	22K	5%	1/10W
R537	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R539	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R540	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R551	1-216-089-00	RES, CHIP	47K	5%	1/10W
R561	1-216-025-00	RES, CHIP	100	5%	1/10W
R562	1-216-025-00	RES, CHIP	100	5%	1/10W
R601	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R701	1-414-481-11	INDUCTOR	68nH		
R702	1-218-754-11	METAL CHIP	120K	0.5%	1/10W
R703	1-216-009-91	RES, CHIP	22	5%	1/10W
R753	1-216-073-00	METAL CHIP	10K	5%	1/10W
R759	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R760	1-216-073-00	METAL CHIP	10K	5%	1/10W
R761	1-216-041-00	METAL CHIP	470	5%	1/10W
R762	1-216-073-00	METAL CHIP	10K	5%	1/10W
R764	1-216-041-00	METAL CHIP	470	5%	1/10W
R765	1-216-001-00	METAL CHIP	10	5%	1/10W
R766	1-218-754-11	METAL CHIP	120K	0.5%	1/10W
R767	1-216-097-00	RES, CHIP	100K	5%	1/10W
R768	1-216-049-11	RES, CHIP	1K	5%	1/10W
R769	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R771	1-216-121-00	RES, CHIP	1M	5%	1/10W
R772	1-216-025-00	RES, CHIP	100	5%	1/10W
R773	1-216-049-11	RES, CHIP	1K	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
R804	1-216-097-00	RES, CHIP	100K	5%	1/10W
R805	1-216-041-00	METAL CHIP	470	5%	1/10W
R811	1-216-041-00	METAL CHIP	470	5%	1/10W
R851	1-216-296-00	SHORT	0		
R852	1-216-073-00	METAL CHIP	10K	5%	1/10W
R853	1-216-097-00	RES, CHIP	100K	5%	1/10W
R854	1-216-101-00	METAL CHIP	150K	5%	1/10W
R855	1-216-113-00	METAL CHIP	470K	5%	1/10W
R856	1-216-049-11	RES, CHIP	1K	5%	1/10W
R902	1-216-041-00	METAL CHIP	470	5%	1/10W
R906	1-216-041-00	METAL CHIP	470	5%	1/10W
R911	1-216-041-00	METAL CHIP	470	5%	1/10W
R913	1-216-041-00	METAL CHIP	470	5%	1/10W
R914	1-216-041-00	METAL CHIP	470	5%	1/10W
R915	1-216-041-00	METAL CHIP	470	5%	1/10W
R954	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R955	1-216-089-00	RES, CHIP	47K	5%	1/10W
R956	1-216-089-00	RES, CHIP	47K	5%	1/10W
R957	1-216-073-00	METAL CHIP	10K	5%	1/10W
R958	1-216-049-11	RES, CHIP	1K	5%	1/10W
		< RF UNIT >			
RFU901	1-475-890-11	RF UNIT			
		< SURGE ABSORBER >			
SG101	1-533-751-11	ABSORBER, SURGE			
		< SWITCH >			
SW201	1-692-989-11	SWITCH, SLIDE (AUDIBLE INDICATE)			
SW202	1-692-989-11	SWITCH, SLIDE (RINGER SELECT)			
SW951	1-692-991-11	SWITCH, SLIDE (DIAL MODE)			
		< TRANSFORMER >			
T101	1-431-832-21	TRANSFORMER, LINE			
		< VIBRATOR >			
X150	1-567-505-11	OSCILLATOR, CRYSTAL (3.579545MHz)			
X201	1-767-582-11	VIBRATOR, CRYSTAL (6.072MHz)			
X752	1-767-566-21	VIBRATOR, CRYSTAL (9.6MHz)			
**********					
*	1-671-601-13	BASE MICROPHONE BOARD			
		**********			
		< CAPACITOR >			
C0	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C10	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
		< MICROPHONE >			
MIC1	1-542-118-11	MICROPHONE, ELECTRET CONDENSER (MIC)			
**********					
*	A-3647-419-A	DSP BOARD, COMPLETE			
		**********			
C1	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C2	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C3	1-216-295-00	SHORT	0		
C4	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C5	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C6	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C7	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C8	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C9	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C10	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C15	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C16	1-164-346-11	CERAMIC CHIP	1uF		16V
C20	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
* CN1	1-779-704-11	CONNECTOR, BOARD TO BOARD			

DSP | HAND MAIN

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D1	8-719-914-43	DIODE DAN202K-T-146			
D2	8-719-037-02	DIODE RD6.8SB-T1			
D3	8-719-037-02	DIODE RD6.8SB-T1			
D4	8-719-914-43	DIODE DAN202K-T-146			
		< IC >			
IC1	8-759-473-23	IC MC14LC5480DWR2			
IC2	8-759-541-51	IC D6471A11DQC			
IC3	(Not supplied)				
		< COIL >			
L1	1-410-198-51	INDUCTOR CHIP	3.3uH		
L2	1-410-198-51	INDUCTOR CHIP	3.3uH		
L3	1-410-195-51	INDUCTOR CHIP	1.8uH		
L4	1-410-198-51	INDUCTOR CHIP	3.3uH		
L5	1-410-198-51	INDUCTOR CHIP	3.3uH		
		< RESISTOR >			
R1	1-216-049-11	RES, CHIP	1K	5%	1/10W
R2	1-216-049-11	RES, CHIP	1K	5%	1/10W
R3	1-216-049-11	RES, CHIP	1K	5%	1/10W
R4	1-216-049-11	RES, CHIP	1K	5%	1/10W
R5	1-216-049-11	RES, CHIP	1K	5%	1/10W
R6	1-216-049-11	RES, CHIP	1K	5%	1/10W
R7	1-216-049-11	RES, CHIP	1K	5%	1/10W
R8	1-216-049-11	RES, CHIP	1K	5%	1/10W
R9	1-216-049-11	RES, CHIP	1K	5%	1/10W
R10	1-216-049-11	RES, CHIP	1K	5%	1/10W
R11	1-216-049-11	RES, CHIP	1K	5%	1/10W
R12	1-216-049-11	RES, CHIP	1K	5%	1/10W
R13	1-216-049-11	RES, CHIP	1K	5%	1/10W
R17	1-216-073-00	METAL CHIP	10K	5%	1/10W
R18	1-216-073-00	METAL CHIP	10K	5%	1/10W
R27	1-216-073-00	METAL CHIP	10K	5%	1/10W
R28	1-216-121-00	RES, CHIP	1M	5%	1/10W
R30	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R31	1-216-073-00	METAL CHIP	10K	5%	1/10W
R32	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VIBRATOR >			
X1	1-767-583-21	VIBRATOR, CRYSTAL (36.864MHz)			
**********					
*	A-3622-344-A	HAND MAIN BOARD, COMPLETE			
		**********			
	3-012-368-01	HOLDER (LCD)			
	3-028-552-01	SHEET (COPPER LEAF. RF)			
	3-029-168-01	SHEET (COPPER LEAF. RF) (B)			
	3-935-518-01	CUSHION (MICROPHONE)			
	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S			
		< BUZZER >			
BZ401	1-544-603-11	BUZZER			
		< CAPACITOR >			
C0	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C2	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C3	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C4	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C5	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C6	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C8	1-163-023-00	CERAMIC CHIP	0.015uF	10%	50V
C9	1-125-822-11	TANTALUM	10uF	20%	10V
C14	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C16	1-125-822-11	TANTALUM	10uF	20%	10V
C17	1-125-822-11	TANTALUM	10uF	20%	10V
C19	1-125-822-11	TANTALUM	10uF	20%	10V
C301	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C302	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C303	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C307	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C308	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C401	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C402	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C403	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C404	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C407	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C410	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C412	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C413	1-125-822-11	TANTALUM	10uF	20%	10V
C415	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C416	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C420	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C501	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C502	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C507	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C508	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C509	1-124-779-00	ELECT CHIP	10uF	20%	16V
C510	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C511	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C512	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C513	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C514	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C515	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C516	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C523	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C530	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C555	1-164-346-11	CERAMIC CHIP	1uF		16V
C585	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN301	1-766-180-11	PIN, CONNECTOR (PC BOARD) 2P			
* 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			
		< DIODE >			
D301	8-719-938-75	DIODE SB05-05CP-TB			
D302	8-719-938-75	DIODE SB05-05CP-TB			
D303	8-719-938-75	DIODE SB05-05CP-TB			
D304	8-719-938-75	DIODE SB05-05CP-TB			

Ref. No.	Part No.	Description			Remark
D305	8-719-914-43	DIODE DAN202K-T-146			
D306	8-719-066-61	DIODE RD5.6P-T1			
D401	8-719-914-43	DIODE DAN202K-T-146			
D402	8-719-914-43	DIODE DAN202K-T-146			
D502	8-719-914-42	DIODE DA204K-T-146			
D503	8-719-914-42	DIODE DA204K-T-146			
D505	8-719-914-42	DIODE DA204K-T-146			
		< IC >			
IC301	8-759-443-71	IC RH5VL30AA-T1			
IC401	8-759-530-12	IC 10497-15			
IC501	8-759-589-81	IC M7005-11			
IC502	8-759-487-05	IC S-24C16AFJA-TB-01			
		< SHORT >			
JR1	1-216-296-00	SHORT	0		
JR2	1-216-296-00	SHORT	0		
JR3	1-216-296-00	SHORT	0		
JR4	1-216-296-00	SHORT	0		
JR5	1-216-295-00	SHORT	0		
JR6	1-216-295-00	SHORT	0		
JR7	1-216-295-00	SHORT	0		
JR10	1-216-295-00	SHORT	0		
JR15	1-216-296-00	SHORT	0		
JR18	1-216-296-00	SHORT	0		
JR20	1-216-296-00	SHORT	0		
JR21	1-216-295-00	SHORT	0		
JR24	1-216-295-00	SHORT	0		
		< COIL >			
L501	1-410-198-51	INDUCTOR CHIP	3.3uH		
		< LIQUID CRYSTAL DISPLAY >			
LCD501	1-475-241-11	LCD UNIT			
		< MICROPHONE >			
MIC401	1-542-118-11	MICROPHONE, ELECTRET CONDENSER			
		< TRANSISTOR >			
Q1	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q301	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q302	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q303	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q501	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
Q502	8-729-120-28	TRANSISTOR	2SC2412K-T-146-QR		
Q503	8-729-026-49	TRANSISTOR	2SA1037AK-T146-QR		
		< RESISTOR/COIL >			
R1	1-216-295-00	SHORT	0		
R3	1-216-097-00	RES, CHIP	100K	5%	1/10W
R4	1-414-481-11	INDUCTOR	68nH		
R5	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R7	1-414-481-11	INDUCTOR	68nH		
R8	1-216-081-00	METAL CHIP	22K	5%	1/10W
R9	1-216-081-00	METAL CHIP	22K	5%	1/10W
R11	1-216-295-00	SHORT	0		

Ref. No.	Part No.	Description			Remark
R12	1-216-295-00	SHORT	0		
R13	1-216-295-00	SHORT	0		
R14	1-216-295-00	SHORT	0		
R17	1-216-033-00	METAL CHIP	220	5%	1/10W
R18	1-216-295-00	SHORT	0		
R19	1-216-041-00	METAL CHIP	470	5%	1/10W
R20	1-216-295-00	SHORT	0		
R21	1-216-295-00	SHORT	0		
R22	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R30	1-216-101-00	METAL CHIP	150K	5%	1/10W
R301	1-216-093-11	RES, CHIP	68K	5%	1/10W
R302	1-216-085-00	METAL CHIP	33K	5%	1/10W
R303	1-216-097-00	RES, CHIP	100K	5%	1/10W
R304	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W
R308	1-216-089-00	RES, CHIP	47K	5%	1/10W
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-216-049-11	RES, CHIP	1K	5%	1/10W
R311	1-216-097-00	RES, CHIP	100K	5%	1/10W
R312	1-216-089-00	RES, CHIP	47K	5%	1/10W
R401	1-216-017-00	RES, CHIP	47	5%	1/10W
R402	1-218-754-11	METAL CHIP	120K	0.5%	1/10W
R410	1-216-097-00	RES, CHIP	100K	5%	1/10W
R413	1-216-025-00	METAL CHIP	100	5%	1/10W
R414	1-216-021-00	METAL CHIP	68	5%	1/10W
R415	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R501	1-216-121-00	RES, CHIP	1M	5%	1/10W
R502	1-216-025-00	RES, CHIP	100	5%	1/10W
R506	1-216-001-00	METAL CHIP	10	5%	1/10W
R507	1-218-754-11	METAL CHIP	120K	0.5%	1/10W
R508	1-218-754-11	METAL CHIP	120K	0.5%	1/10W
R509	1-218-756-11	METAL CHIP	150K	0.5%	1/10W
R510	1-216-073-00	METAL CHIP	10K	5%	1/10W
R511	1-216-121-00	RES, CHIP	1M	5%	1/10W
R513	1-216-821-11	METAL CHIP	1K	5%	1/16W
R514	1-216-097-00	RES, CHIP	100K	5%	1/10W
R515	1-216-065-00	RES, CHIP	4.7K	5%	1/10W
R517	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R527	1-216-073-00	METAL CHIP	10K	5%	1/10W
R528	1-216-097-00	RES, CHIP	100K	5%	1/10W
R529	1-216-073-00	METAL CHIP	10K	5%	1/10W
R530	1-216-049-11	RES, CHIP	1K	5%	1/10W
R531	1-216-049-11	RES, CHIP	1K	5%	1/10W
R532	1-216-049-11	RES, CHIP	1K	5%	1/10W
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		
R542	1-216-296-00	SHORT	0		
R544	1-216-817-11	METAL CHIP	470	5%	1/16W
R545	1-216-805-11	METAL CHIP	47	5%	1/16W
R546	1-216-821-11	METAL CHIP	1K	5%	1/16W
R547	1-216-864-11	METAL CHIP	0	5%	1/16W
R548	1-216-295-00	SHORT	0		
R549	1-216-295-00	SHORT	0		

HAND MAIN

Ref. No.	Part No.	Description			Remark
R550	1-216-295-00	SHORT	0		
R551	1-216-041-00	METAL CHIP	470	5%	1/10W
R552	1-216-041-00	METAL CHIP	470	5%	1/10W
R554	1-216-817-11	METAL CHIP	470	5%	1/16W
R555	1-216-817-11	METAL CHIP	470	5%	1/16W
R556	1-216-817-11	METAL CHIP	470	5%	1/16W
R557	1-216-017-00	RES, CHIP	47	5%	1/10W
R558	1-216-041-00	METAL CHIP	470	5%	1/10W
R560	1-216-041-00	METAL CHIP	470	5%	1/10W
R570	1-216-073-00	METAL CHIP	10K	5%	1/10W
R571	1-216-073-00	METAL CHIP	10K	5%	1/10W
R572	1-216-073-00	METAL CHIP	10K	5%	1/10W
R573	1-216-073-00	METAL CHIP	10K	5%	1/10W
R574	1-216-097-00	RES, CHIP	100K	5%	1/10W
R575	1-216-097-00	RES, CHIP	100K	5%	1/10W
R582	1-216-073-00	METAL CHIP	10K	5%	1/10W
R587	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R590	1-216-041-00	METAL CHIP	470	5%	1/10W
R591	1-216-041-00	METAL CHIP	470	5%	1/10W
R593	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R594	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
		< RF UNIT >			
RFU501	1-475-890-11	RF UNIT			
		< SWITCH >			
S501	1-692-991-11	SWITCH, SLIDE (RING)			
S502	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE) (TALK)			
SW601	1-475-338-11	ENCODER, ROTARY (JOG)			
		< VIBRATOR >			
X501	1-767-566-21	VIBRATOR, CRYSTAL (9.6MHz)			
**********					
		MISCELLANEOUS			
		**********			
13	1-771-066-41	SWITCH, RUBBER KEY			
⚠69	1-473-475-61	ADAPTOR, AC (AC-T46)			
70	1-543-584-31	CORE			
ANT501	1-754-086-11	ANTENNA			
ANT901	1-501-998-11	ANTENNA, ROD			
SP401	1-504-829-11	SPEAKER (28mm)			
SP851	1-505-720-11	SPEAKER (5.7cm)			
**********					
		**********			
		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	7-685-647-79	SCREW +P 3X10 TYPE2 NON-SLIT			
**********					
		ACCESSORIES & PACKINGMATERIALS			
		**********			
⚠	1-473-475-61	ADAPTOR, AC (AC-T46)			
	1-528-884-41	BATTERY, NICKEL CADMIUM (BP-T24)			

Ref. No.	Part No.	Description	Remark
	1-543-584-31	CORE	
	1-696-453-21	CORD (WITH MODULAR PLUG) (LINE) (22cm)	
	1-696-454-11	CORD (WITH MODULAR PLUG) (LINE) (2m15cm)	
	3-012-379-31	WALL BRACKET	
	3-867-416-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (US)	
	3-867-416-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH) (Canadian)	
	3-867-417-11	GUIDE,QUICK START (US)	
	3-867-417-21	GUIDE,QUICK START (Canadian)	
	3-867-418-11	CARD,REMOTE CONTROL (US)	
	3-867-418-21	CARD,REMOTE CONTROL (Canadian)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Digital Telecommunication Company

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