

Service Manual

Telephone Equipment

KX-TC1709LBB

900MHz Digital Cordless Phone

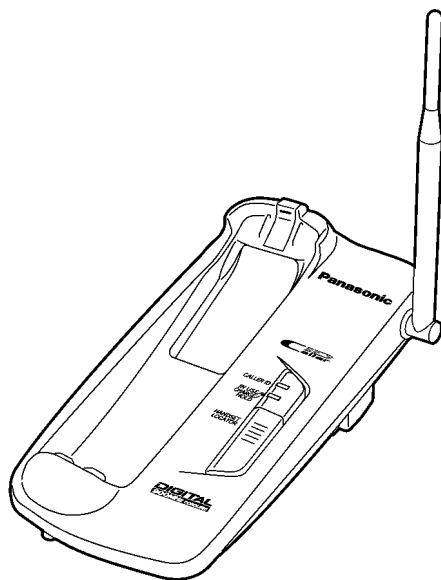
Black Version

(for Brazil)

Caller ID Compatible



(Handset)



(Base Unit)

SPECIFICATIONS

| | Base Unit | Handset |
|-----------------------------|--|---|
| Power Source: | AC Adaptor (PQLV2LBZ) | Rechargeable Ni-Cd battery |
| Receiving Frequency: | 22 channels within 902.00~928.00 MHz | 22 channels within 902.00~928.00 MHz |
| Receiving Method: | Double super heterodyne | Double super heterodyne |
| Transmitting Frequency: | 22 channels within 902.00~928.00 MHz | 22 channels within 902.00~928.00 MHz |
| Oscillation Method: | PLL synthesizer | PLL synthesizer |
| Tolerance of OSC Frequency: | 4.096 MHz | 4.096 MHz |
| Modulation Method: | TDD-FSK | TDD-FSK |
| Spread spectrum Method: | | |
| Chip rate | | |
| ID Code: | 28-bit | 28-bit |
| Dial Mode: | | Tone (DTMF)/Pulse |
| Redial: | | Up to 32 digits |
| Speed Dialer: | | |
| Power Consumption: | | 14 days at Standby, 6 hours at Talk |
| Dimension (H × W × D): | 3 11/32" × 4 7/32" × 8 1/4" (85 × 107 × 210mm) | 1 5/8" × 2 5/32" × 9 7/16" (41 × 55 × 240 mm) |
| Weight | 0.56 lbs. (256 g) | 0.49 lbs. (222g) with battery |

Design and specifications are subject to change without notice.

Panasonic

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WARNING

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

When you mention the serial number, write down all 11 digits. The serial number may be found on the label affixed to the bottom of the unit.

FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

When replacing, the following precautions will help prevent recurring malfunctions.

1. Cover the plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on the work table.
4. Do not grasp IC or LSI pins with bare fingers.

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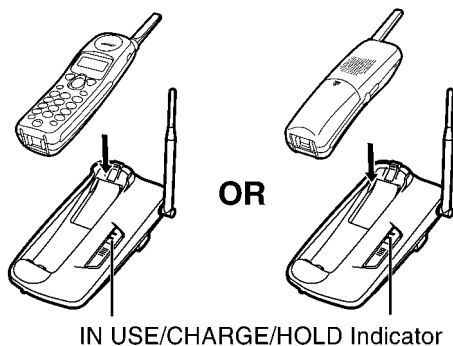
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1 STANDARD BATTERY LIFE

Battery Charge

Place the handset on the base unit and charge for about **15 hours** before initial use.

- The IN USE/CHARGE/HOLD indicator lights.



Battery strength

You can check the battery strength on the display while the handset is on the base unit, while it is in use (making/answering a call etc.), or after viewing the Caller List, or directory items, programming, etc. The battery strength will remain on the display for a few seconds after using the handset, then the display will return to the standby mode.

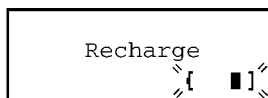
The battery strength is as shown in the chart below.

| Display prompt | Battery strength |
|-------------------|------------------------|
| {■■■■} | Fully charged |
| {■■■} | Medium |
| {■■} | Low |
| ⚡{■■}⚡ (flashing) | Needs to be recharged. |

Recharge

Recharge the battery when:

- "Recharge" is displayed,
- "{■■}" flashes on the handset display, or
- The handset beeps intermittently while it is in use.



- If you DO NOT recharge the handset battery for more than 15 minutes, the display will keep indicating "Recharge" and/or "{■■}" will continue to flash.

Battery information

After your Panasonic battery is fully charged;

| Operation | Approx, battery life |
|----------------------------|----------------------|
| While in use (TALK) | Up to about 6 hours |
| While not in use (Standby) | Up to about 14 days |

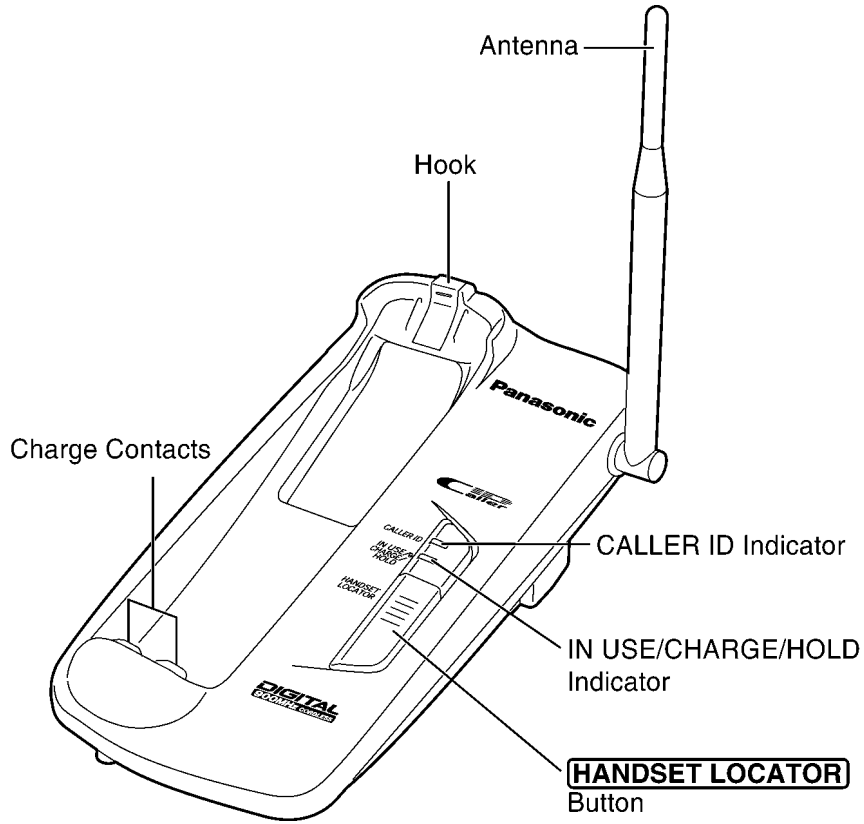
- The battery operating time may be shortened depending on usage conditions, such as viewing the Caller ID Caller List or directory list and ambient temperature.
- **Clean the handset and the base unit charge contacts with a soft, dry cloth. Clean if the unit is subject to grease, dust or high humidity.** Otherwise the battery may not charge properly.
- If the battery is fully charged, you do not have to place the handset on the base unit until "Recharge battery" is displayed and/or " [■]" flashes. This will maximize the battery life.
- The battery cannot be overcharged.

Standby mode (While the handset is off the base unit)

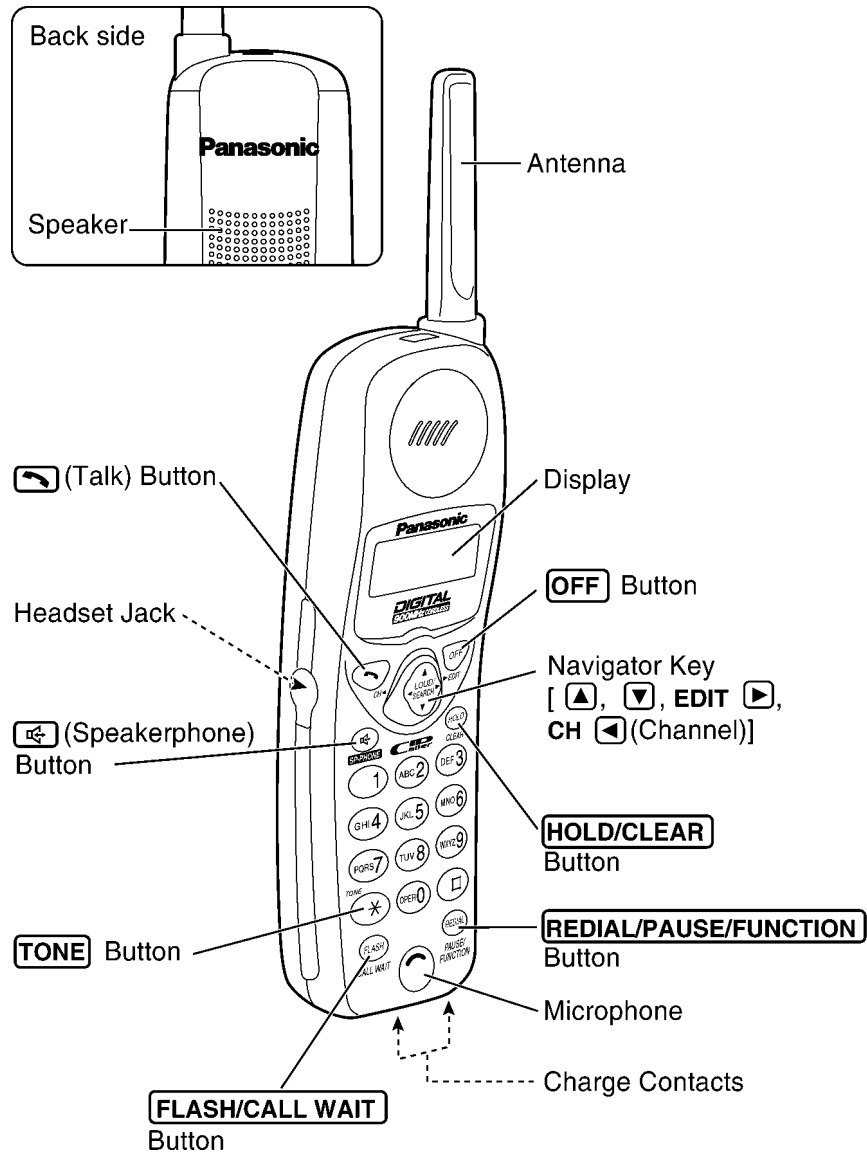
The handset goes into the standby mode after you finish using the handset (making/answering a call, viewing the Caller List or directory list etc.). The display is blank, but the handset can receive calls. The battery life is conserved in this mode.

2 LOCATION OF CONTROLS

2.1. Base unit

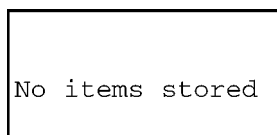


2.2. Handset

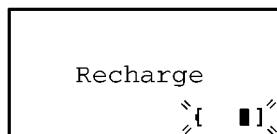


3 DISPLAY

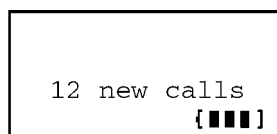
The handset shows you instructions and information on the display. These display prompts are shown below.



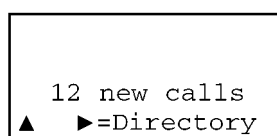
The Caller List is empty or there are no stored items in the directory.






The battery needs to be charged. Place the handset on the base unit to charge the battery.





The display shows the number of new calls and the battery strength while the handset is on the base unit.

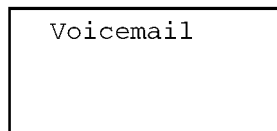


The display shows the number of new calls when  or  is pressed while the handset is off the base unit.

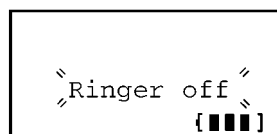
To search from the most recent call, press .

To search from the oldest call, press .

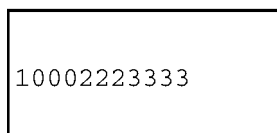
To go to the directory list, press **EDIT**  (Directory key).



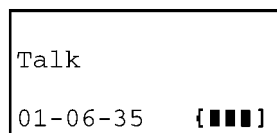
The display shows the voice mail message(s) is/are recorded.



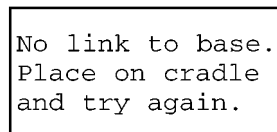
When the ringer volume is set to OFF, "Ringer off" will flash for about 45 seconds before the unit returns to the standby mode.



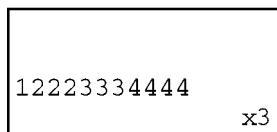
When a call is received, the display shows the caller's name and number after the first ring.



During a conversation, the display shows the length of the call (ex. 1 hour, 6 minutes and 35 seconds). The battery strength is also displayed.



The handset has lost communication with the base unit. Place the handset on the base unit and try again.



This is a an information the Caller List.

The display shows:

—the caller's number and

—the number of times called (ex. 3 times).

Ann
1234567890

This is a name from the directory. The stored name and phone number are displayed.



Directory full

When trying to store an item or Caller List information in the directory, the directory memory is full.





Save error

During a programming procedure, the handset has lost communication with the base unit. Move closer to the base unit.

Hold
00-00-08 [■■■■]

An outside call has been put on hold by the handset. To release the hold, press  or .

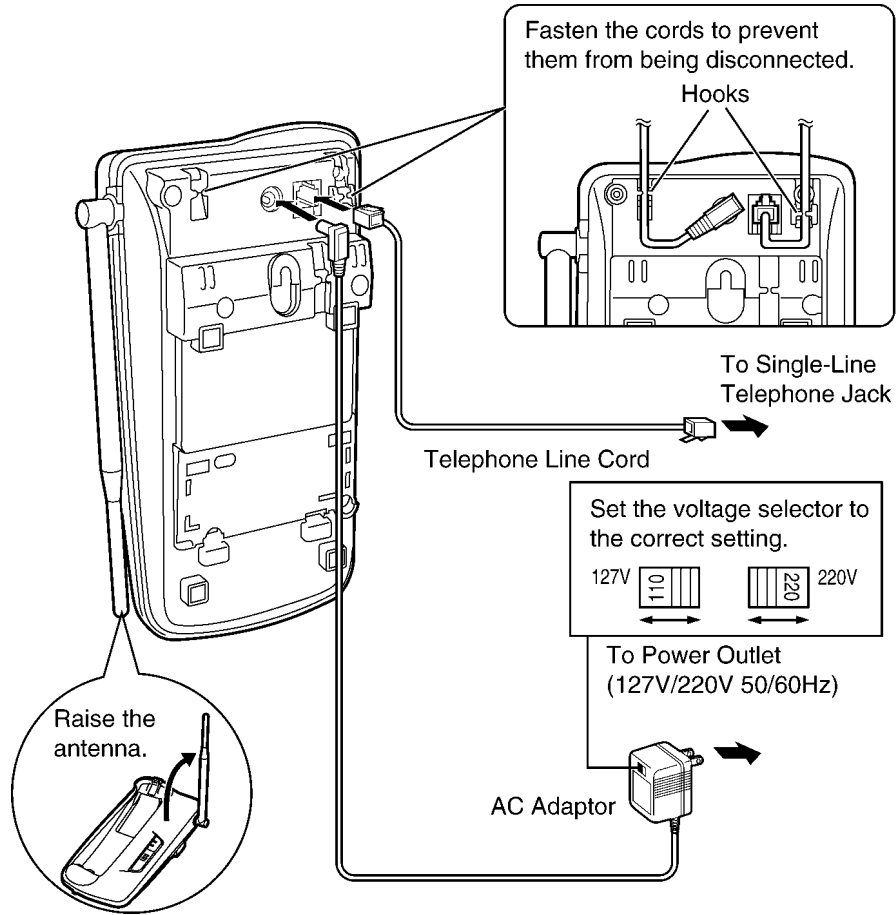
Please lift up
and try again.

, , **CH**  or **EDIT**  was pressed while the handset was on the base unit. Lift the handset and press the button again.

Not available

, , **CH**  or **EDIT**  was pressed while the base unit was not in the standby mode.

4 CONNECTIONS

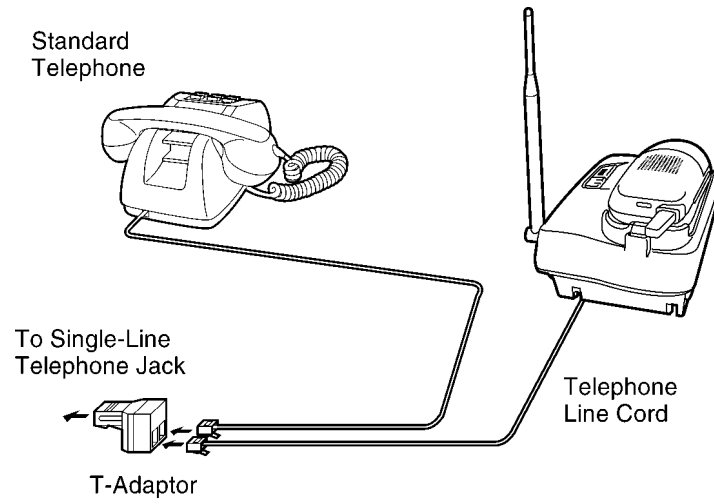


Note:

- USE ONLY WITH Panasonic AC ADAPTOR PQLV2LBZ.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- If your unit is connected to a PBX which does not support Caller ID, you cannot access the service.

4.1. Adding Another Phone

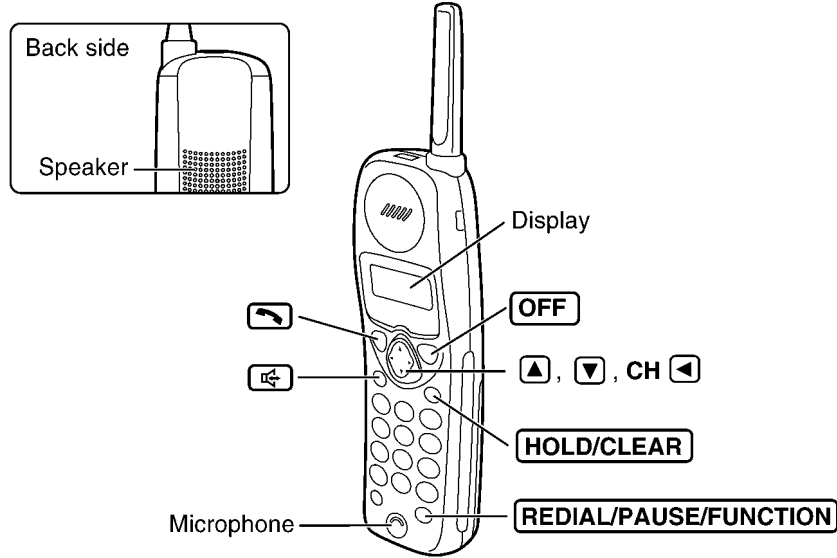
This unit will not function during a power failure. To connect a standard telephone on the same line, use the Panasonic T-adaptor.




5 OPERATION

5.1. Making Calls

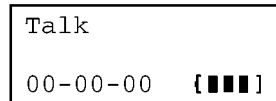
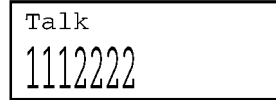
To have a hands-free conversation, connect an optional headset to the handset.



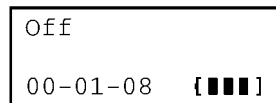
1 Press .



2 Dial a phone number.
 • The dialed number is displayed.
 • After a few seconds, the display will show the length of the call and the battery strength.




3 To hang up, press **OFF** or place the handset on the base unit.



• If "No link to base Place on cradle and try again." is displayed and an alarm tone sounds in step 1, move closer to the base unit or place the handset on the base unit, and try again.

To have a hands-free phone conversation (Using Digital Duplex Speakerphone)

- 1 Press .

| |
|----------|
| SP-phone |
|----------|
- 2 Dial a phone number.
 - The dialed number is displayed.
 - After a few seconds, the display will show the length of the call and the battery strength.

| |
|----------|
| SP-phone |
| 1112222 |

| |
|-----------------|
| SP-phone |
| 00-00-00 [■■■■] |
- 3 When the other party answers, talk into the microphone.






| |
|-----------------|
| Off |
| 00-01-08 [■■■■] |
- 4 To hang up, press **OFF** or place the handset on the base unit.

| |
|-----------------|
| Off |
| 00-01-08 [■■■■] |


- If "No link to base Place on cradle and try again." is displayed and an alarm tone sounds in step 1, move closer to the base unit or place the handset on the base unit, and try again.

Hands-free Digital Duplex Speakerphone

For best performance, please note the following:

- Talk alternately with the caller in a quiet room.
- If the other party has difficulty hearing you, press  to decrease the speaker volume.
- If the other party's voice from the speaker cuts in/out during a conversation, press  to decrease the speaker volume.
- While talking using , you can switch to the hands-free phone conversation by pressing . To switch back to the receiver, press .

If noise interferes with the conversation

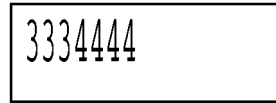
Press **CH**  to select a clearer channel in the talk, speakerphone, intercom or remote operation mode, or move closer to the base unit.

To redial the last number dialed on the handset

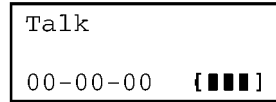
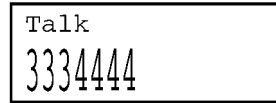
Press  or  ➔ **REDIAL/PAUSE/FUNCTION**.

To dial after confirming the entered number

- 1 Dial a phone number.
 - If you misdial, press **HOLD/CLEAR**. One digit is erased from the right. Dial the correct phone number.



- 2 Press .
OR
To have a hands-free phone conversation, press , and when the other party answers, talk into the microphone.
 - After a few seconds, the display will show the length of the call and the battery strength.



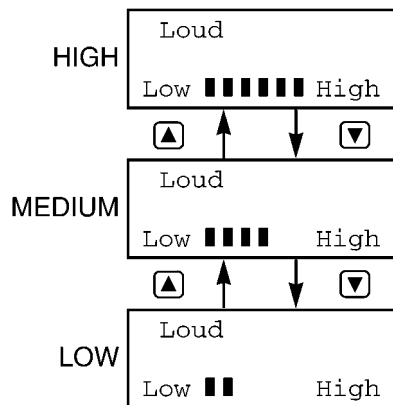
- 3 To hang up, press **OFF** or place the handset on the base unit.

To adjust the receiver volume (HIGH, MEDIUM or LOW) or speaker volume (6 levels) while talking

Press or while talking.

While using

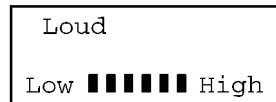
- Each time you press or , the volume level will change from MEDIUM (preset) to HIGH or LOW.
- The display will return to the length of the call.
- When you replace the battery, the selected receiver volume setting will return to the factory set (MEDIUM). Reprogram if necessary.



While using

- Each time you press or , the volume level will change from level 1 to 6. Your phone comes from the factory set to level 3.

Ex. Speaker volume:
level 6





To put a call on hold

Press **HOLD/CLEAR**.

- "Hold" is displayed.
- The IN USE/CHARGE/HOLD indicator on the base unit flashes.
- If you do not press any key more than 6 minutes, an alarm tone will sound.
- If you do not press any key more than 10 minutes after holding a call, a line will be disconnected.



To release the hold

From the handset, press  or .

- If another phone is connected on the same line, you can also release the hold by lifting its handset.


Backlit LCD display





The lighted handset display will stay on for a few seconds after pressing a handset button, lifting the handset off the base unit, hanging up a call, leaving the programming mode.

5.2. Answering Calls


When a call is received, the unit rings and the CALLER ID indicator on the base unit flashes quickly. If you subscribe to a Caller Display service, the calling party information will be displayed after the first ring. In order to view the Caller ID information, please wait until the second ring to answer a call.

5.2.1. With the Handset



If the handset off the base unit;
Press .

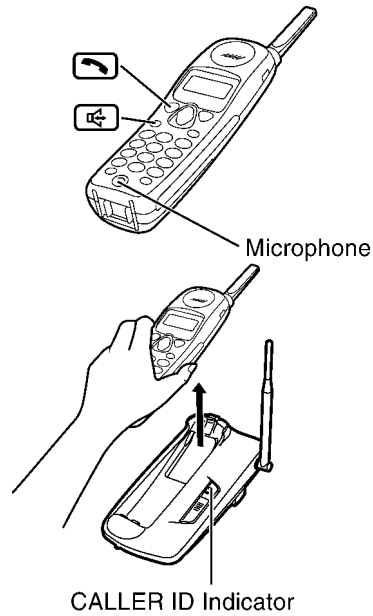
- You can also answer a call by pressing any dialing button  to ,  or  (**Any Key Talk**).

OR

Press , and when the other party answers, talk into the microphone.

Auto Talk

If you set the Auto Talk feature to ON, you can answer a call by lifting the handset off the base unit without pressing  or .



When an optional headset is connected, make sure to use the headset to talk with the caller. If you want to have a normal cordless phone conversation, disconnect the headset.

5.3. FLASH Button

Pressing **FLASH/CALL WAIT** allows you to use special features of your host PBX such as transferring an extension call or accessing special telephone services (optional) such as call waiting.

Selecting the flash time

The flash time depends on your telephone exchange or host PBX. You can select the following flash times: "700, 600, 400, 300, 250, 110, 100 or 90 ms (milliseconds)". Your phone comes from the factory set to "700 ms".

Make sure the unit is in the standby mode.

1 Press **REDIAL/PAUSE/FUNCTION**.

2 Press **▼** or **▲** repeatedly until the arrow points to "Program".

```
Ringer volume
▶Program
Save directory
```

3 Press **EDIT** **▶**.

4 Press **▼** or **▲** repeatedly until the arrow points to "Set flash time".

```
LCD contrast
▶Set flash time
Set line mode
```

5 Press **EDIT** **▶**.

```
Flash time
:700ms
▼▲ ▶=Save
```

6 Press **▼** or **▲** repeatedly until the desired time is displayed.

7 Press **EDIT** **▶** (Save key).

- A beep sounds.
- To return to the standby mode, press **OFF**.

```
Flash time
:110ms
```

- You can exit the programming mode any time by pressing **OFF**.
- If you are connected via a PBX, a longer flash time may be necessary to use PBX functions (transferring a call etc.). Consult your PBX supplier for the correct setting.

6 DISASSEMBLY INSTRUCTIONS

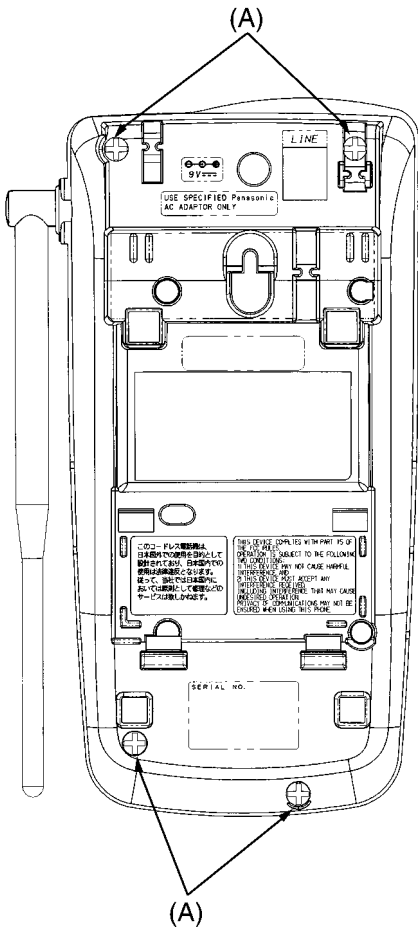


Fig. 1

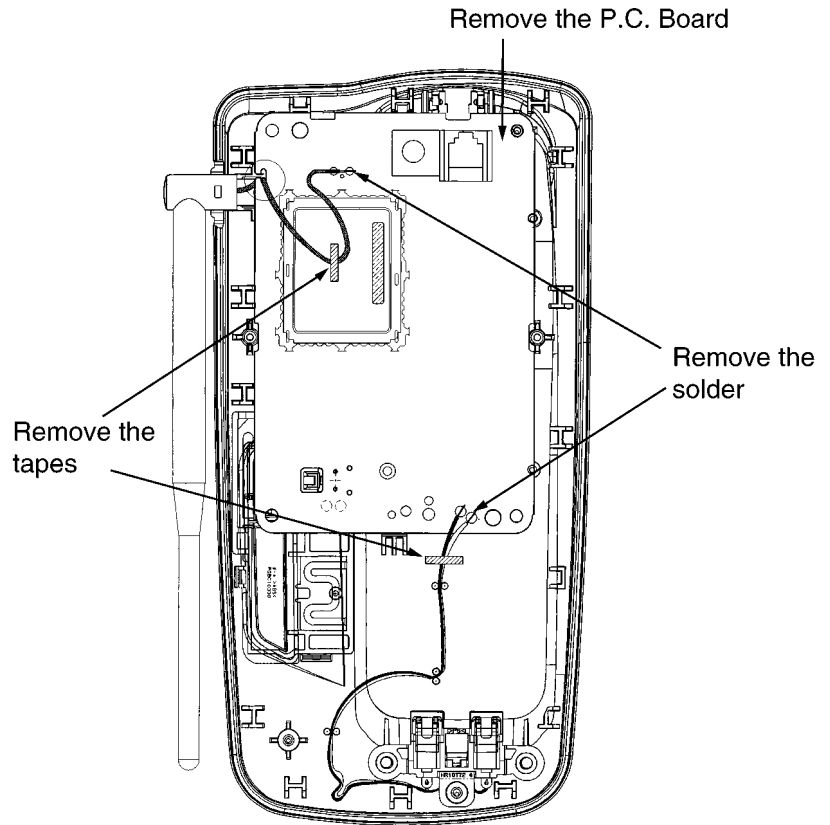


Fig. 2

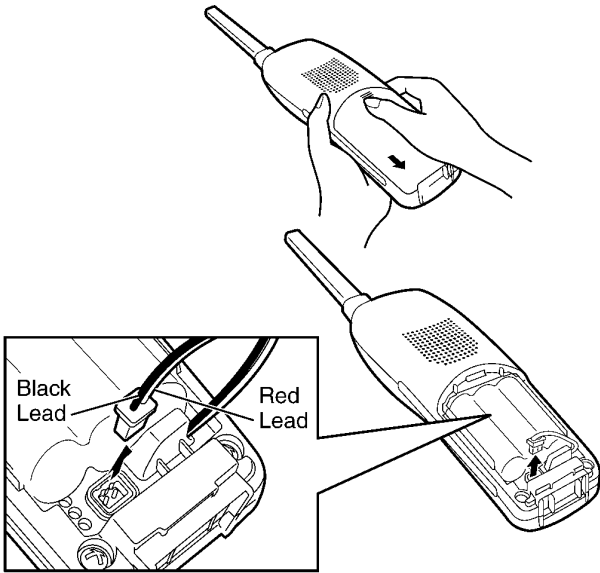


Fig. 3

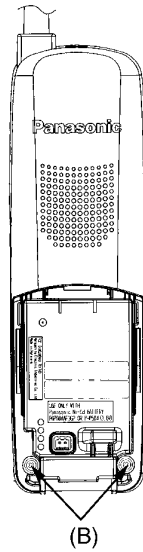


Fig. 4

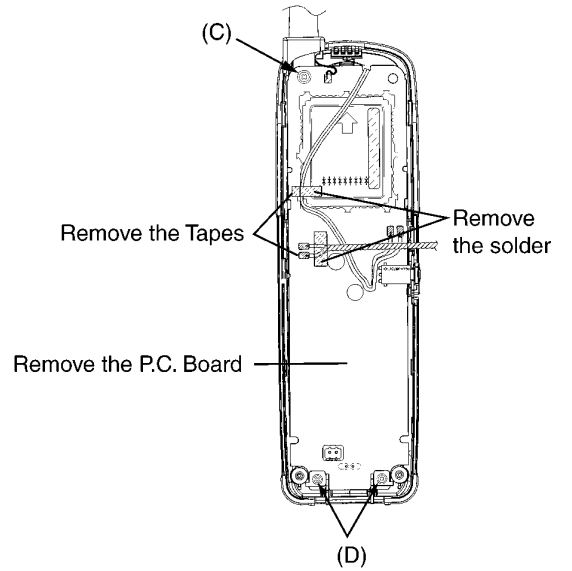


Fig. 6

Note: When opening the upper cabinet, be careful of the speaker lead wire.

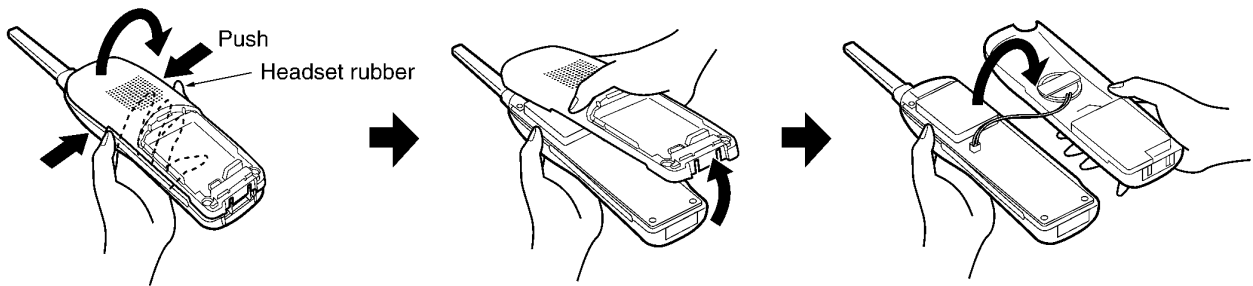
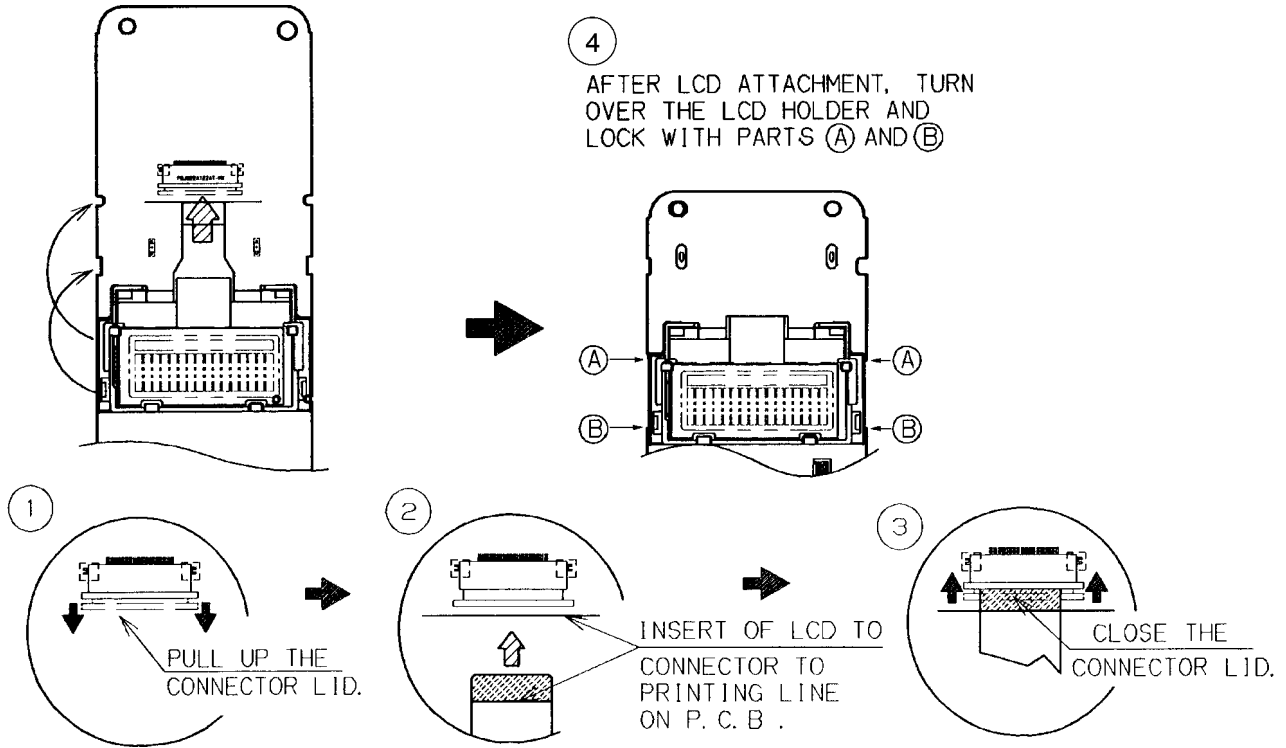


Fig. 5

| Shown in Fig. | To Remove | Remove |
|---------------|-----------------|-------------------------------|
| 1 | Lower Cabinet | Screws (2.6 X 12).....(A) x 4 |
| 2 | Main P.C. Board | Tapes and solder |
| | | Main P.C. Board |
| 3 | Battery Cover | Battery Cover |
| 4 | Rear Cabinet | Screws (2.6 X 12).....(B) x 2 |
| 5 | Rear Cabinet | Rear Cabinet |
| 6 | Main P.C. Board | Screw (2.6 x 12).....(C) x 1 |
| | | Screws (2.6 x 10).....(D) x 2 |
| | | Lead wire |
| | | Main P.C. Board |

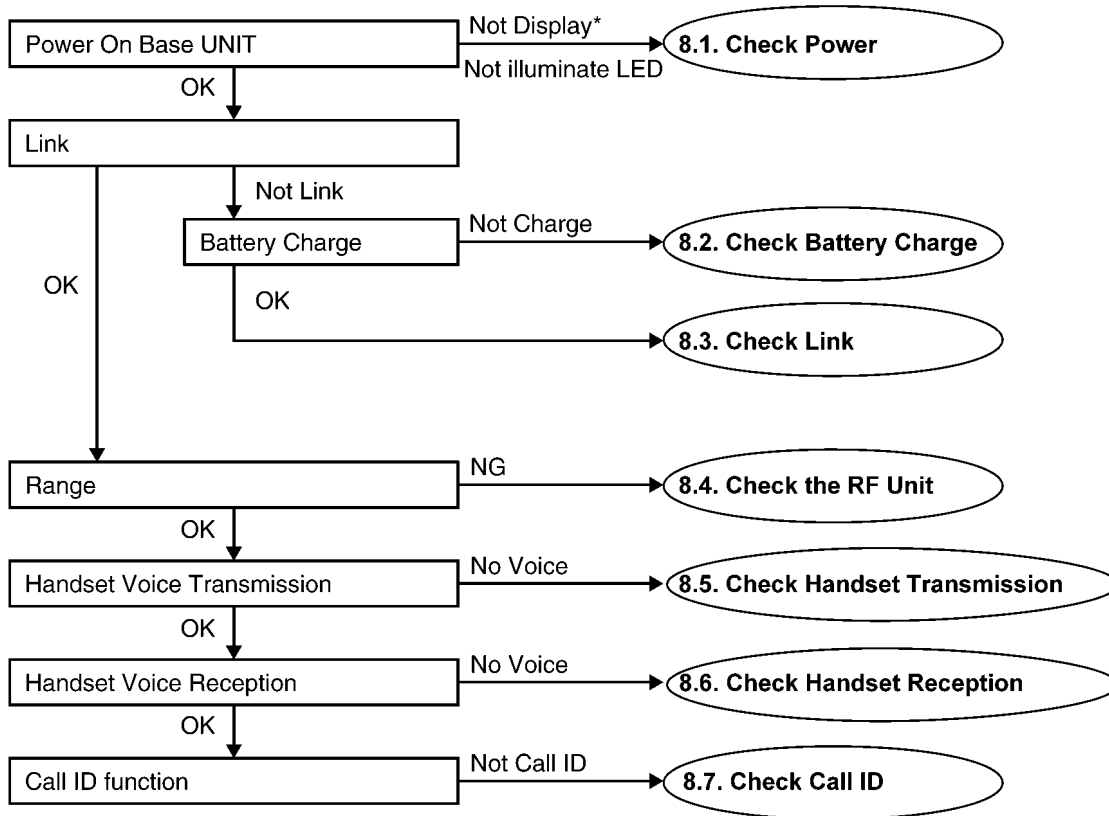
7 ASSEMBLY INSTRUCTIONS

7.1. Assembly the LCD to P.C. Board (Handset)



8 TROUBLESHOOTING GUIDE

MAIN



*Depending on the Model.

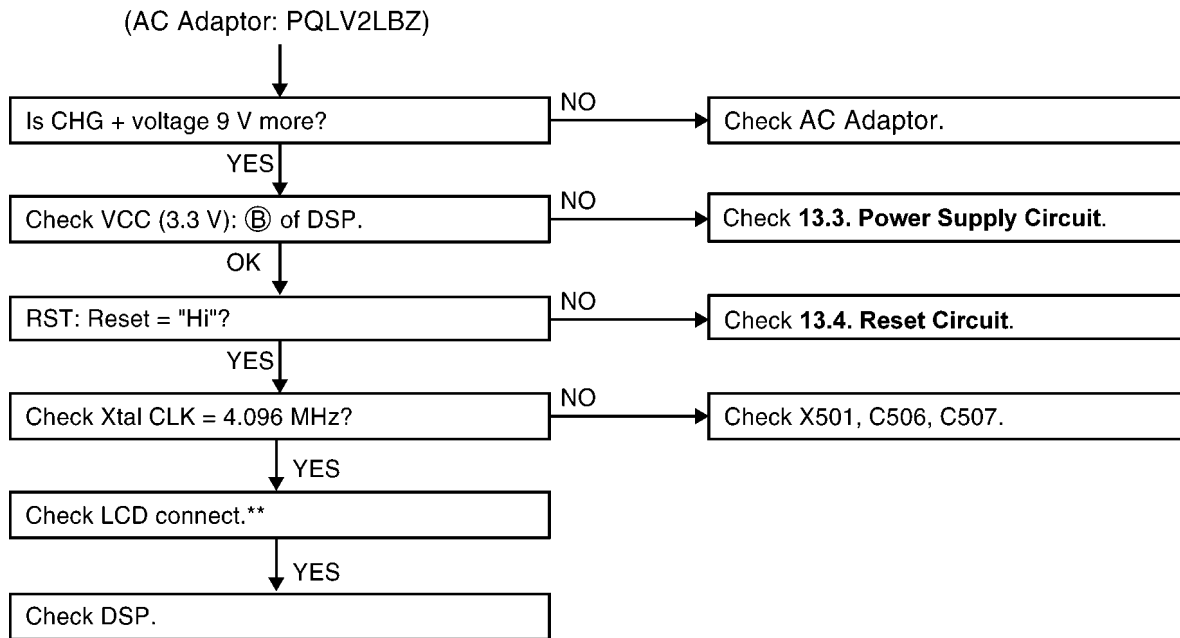
Cross Reference:

- 8.1. Check Power (P.22)
- 8.2. Check Battery Charge (P.23)
- 8.3. Check Link (P.23)
- 8.4. Check the RF Unit (P.24)
- 8.5. Check Handset Transmission (P.29)
- 8.6. Check Handset Reception (P.29)
- 8.7. Check Call ID (P.29)

8.1. Check Power

BASE UNIT

Is the AC Adaptor inserted into AC outlet?* (*Check the AC Adaptor's specification.)



Cross Reference:

13.3. Power Supply Circuit (P.40)

13.4. Reset Circuit (P.41)

NOTE:

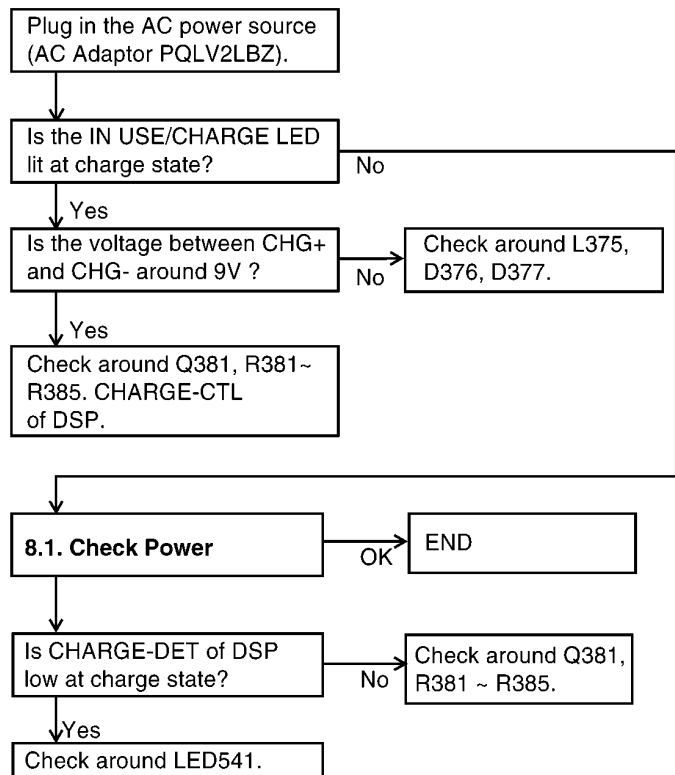
EEPROM is IC551.

DSP is IC501.

** Models with no LCD can skip.

8.2. Check Battery Charge

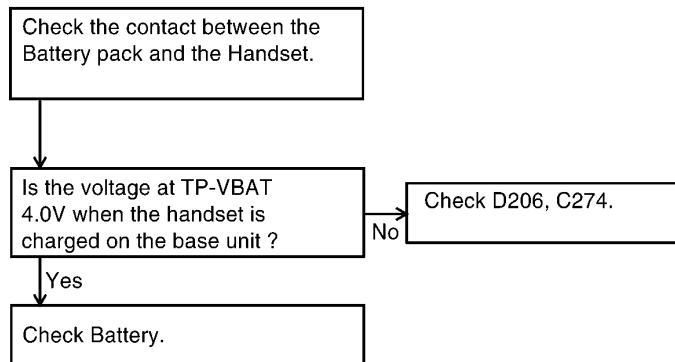
A. BASE UNIT



NOTE:

EEPROM is IC551.
 DSP is IC501.

B. HANDSET

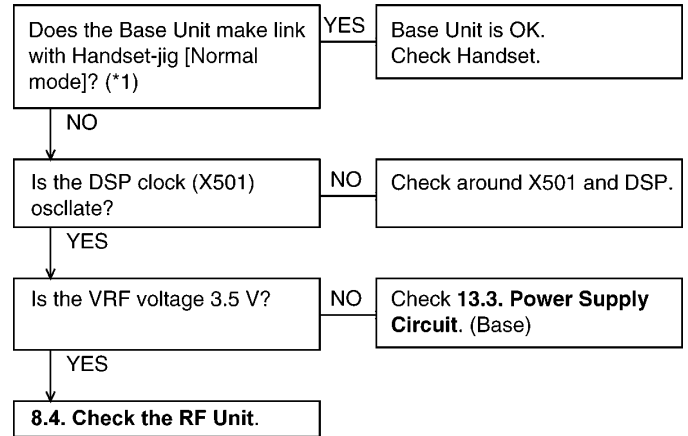


Cross Reference:

8.1. Check Power (P.22)

8.3. Check Link

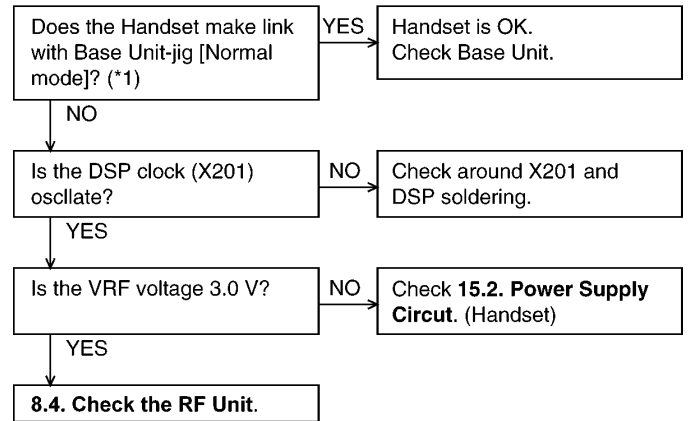
A. BASE UNIT



NOTE:

EEPROM is IC551.
 DSP is IC501.

B. HANDSET



(*1) Refer to **8.4.1. Finding out the Defective Unit** (P.24).

Cross Reference:

- 8.4. Check the RF Unit** (P.24)
- 13.3. Power Supply Circuit** (P.40)
- 15.2. Power Supply Circuit** (P.48)

8.4. Check the RF Unit

8.4.1. Finding out the Defective Unit

Prepare HS JIG (Handset-jig) and BS JIG (Base Unit-jig) 2). Place the HS JIG on the cradle of the base unit for checking, then confirm that they are linked. Place the handset for checking on the cradle of the BS JIG, then confirm that they are linked. How to confirm the link is as follows; press the TALK button and confirm that the LEDs of the base unit is turned ON.

8.4.2. Check Items

8.4.2.1. Handset-jig (HS JIG) for Base Unit

The handset unit jig also uses two modes: TEST LOW mode and NORMAL POWER mode.

(1) NORMAL POWER mode (Stand-By). In this mode the LCD will remain blank.

(2) TEST LOW mode. Place the portable unit on the base unit while pushing **FLASH** and **☒** key at the same time within 5 seconds after Power supply the portable unit. Refer to fixation CH table, figure 1 for the **☒** key. This test simulates the handset is at very large distance from the base unit and the TX signal from handset to base is very small.

Procedure: First place handset jig on base under test to charge (exchange security code); press CLEAR and then TALK to operate. The LCD will show TALK. This means that the base unit sensitivity is OK.

* HS JIG becomes [NORMAL POWER] mode immediately after the power supply turning on.

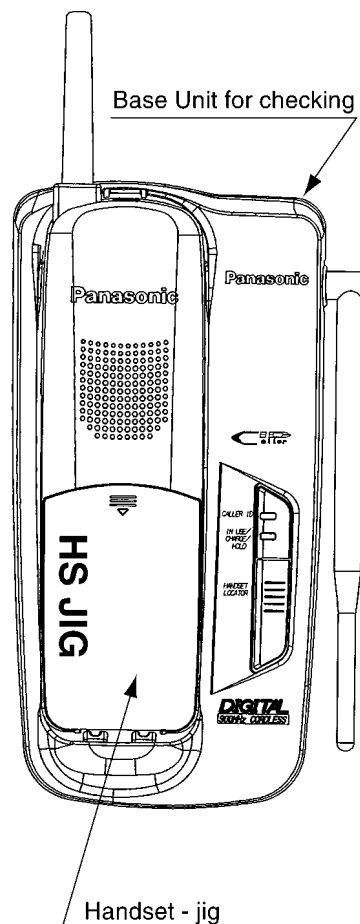


Fig. Using TC1703 Handset-jig.

* KX-TC1703 is used as the jig.

NOTES:

1) If when setting the handset to TEST LOW mode, if handset beeps 3 times and the LCD shows "No link to base. Place on cradle and try again", press 2, 5, 8, 0 simultaneously and then disconnect battery. Re-install battery, place unit on cradle to get security codes and tries again.

2) Only KX-TC1703 with marks HS JIG/BS JIG can be used for troubleshooting. However, regular production set also can be used as a JIG.

| Fixation CH | Figure 1 | |
|-------------|----------|---------------|
| CH | POWER | making key |
| 1CH | "Lo" | "FLASH" + "1" |
| 3CH | "Lo" | "FLASH" + "2" |
| 5CH | "Lo" | "FLASH" + "3" |
| 7CH | "Lo" | "FLASH" + "4" |
| 9CH | "Lo" | "FLASH" + "5" |
| 11CH | "Lo" | "FLASH" + "6" |
| 13CH | "Lo" | "FLASH" + "7" |
| 15CH | "Lo" | "FLASH" + "8" |
| 17CH | "Lo" | "FLASH" + "9" |
| 19CH | "Lo" | "FLASH" + "☒" |
| 21CH | "Lo" | "FLASH" + "0" |

8.4.2.2. Base Unit - jig (BS JIG) for Handset

The base unit jig uses two modes: NORMAL POWER mode and TEST POWER mode.

(1) NORMAL POWER mode. This test simulates the handset is at normal/close distance. The base unit is in NORMAL POWER mode right after the AC adapter has been inserted.

(2) TEST LOW (POWER) mode. Place the portable unit on the base unit while pushing **FLASH** and **☒** key at the same time within 5 seconds after Power supply the portable unit. Refer to fixation CH table, figure 1 for the **☒** key. This test simulates the handset is at very large distance from the base unit and the TX signal from base to handset is very small.

Procedure: First, place handset under test to charge (exchange security code), then remove handset from base after you hear a beep. Press TALK button on handset and if it links with the base, then this handset sensitivity is OK.

* BS JIG becomes [NORMAL POWER] mode immediately after the power supply turning on.

NOTES:

1) If when setting the base to TEST LOW mode, if handset beeps 3 times, press 2, 5, 8, 0 simultaneously and then disconnect battery. Re-install battery, place unit on cradle to get security codes and tries again.

2) Only KX-TC1703 with marks BS JIG/HS JIG can be used for troubleshooting. However, regular production set also can be used as a JIG.

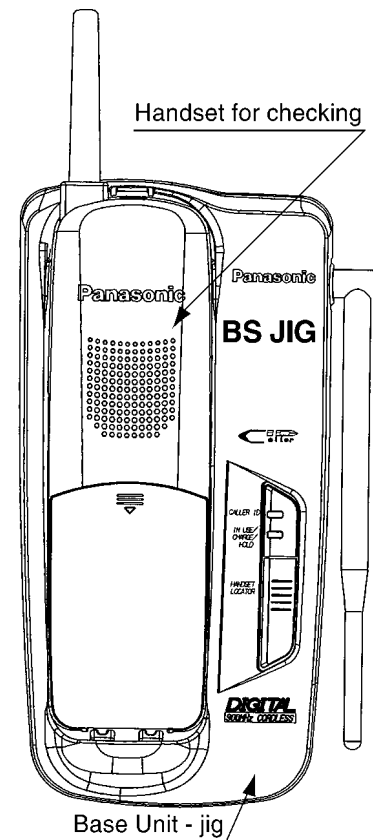
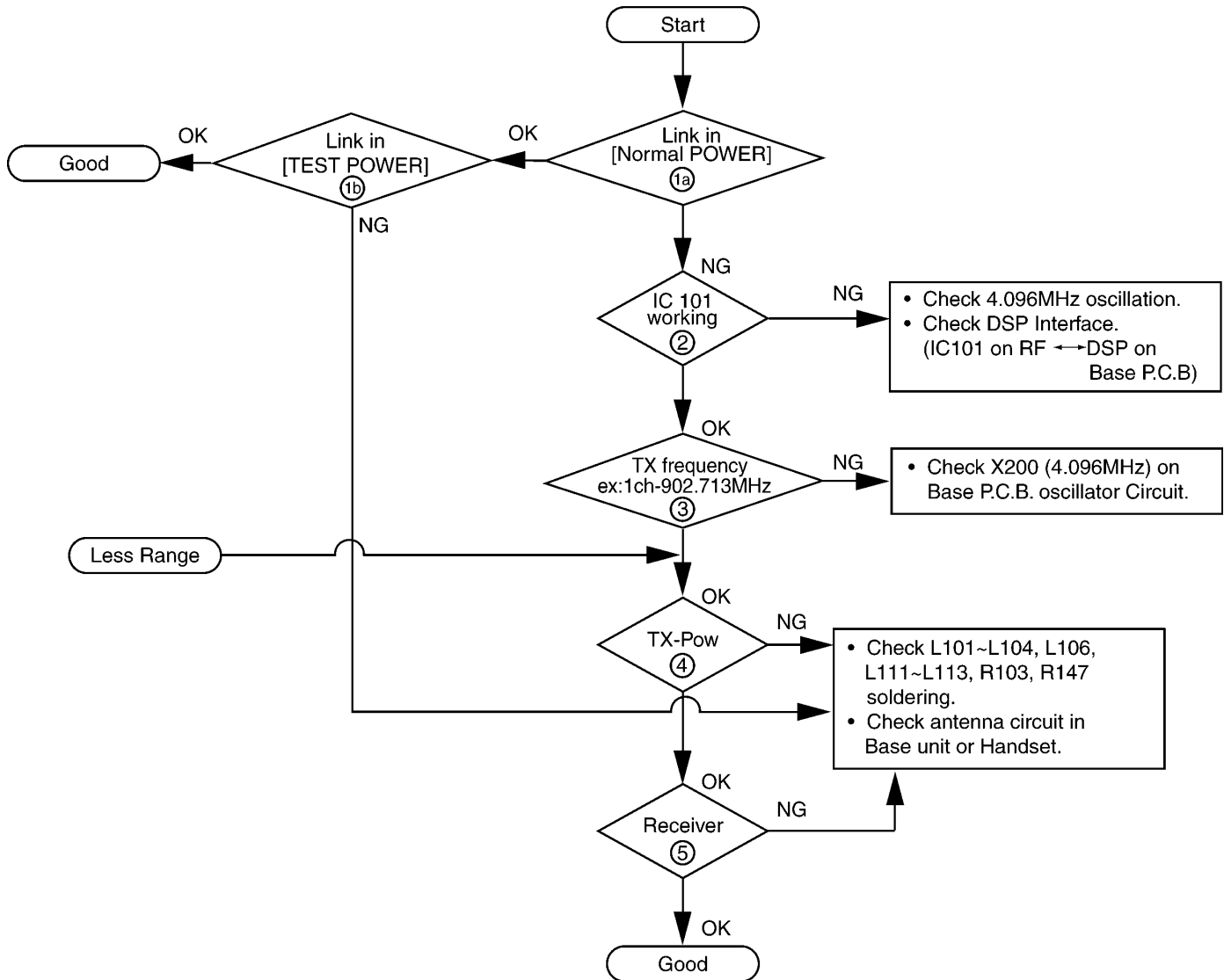


Fig. Using TC1703 BaseUnit-jig.

* KX-TC1703 is used as the jig.

8.4.3. RF Check Flowchart



①a ~ ⑤ : Details of confirmation items are following in "8.4.4. Check Table for RF Block (P.27)".

NOTE:

<Base Unit>

EEPROM is IC551.

DSP is IC501.

<Handset>

EEPROM is IC202.

DSP is IC201.

8.4.4. Check Table for RF Block

| No | Item | BS (Base unit) (*1) | HS (Handset) (*1) |
|-----|----------------------------------|--|---|
| 1a. | Link confirmation [NORMAL POWER] | Procedure 1. Put "HS JIG" on BS. 2. Set MODE to [NORMAL POWER] position of "HS JIG". 3. Press [TALK] key of "HS JIG" to establish link. | 1. Put HS on "BS JIG". 2. Set MODE to [NORMAL POWER] position of "BS JIG". 3. Press [TALK] key of "HS" to establish link. |
| 1b. | Link confirmation [TEST POWER] | Procedure 1. Change MODE to [TEST POWER] position of "HS JIG". 2. Press [TALK] key of "HS JIG" to establish link about 30cm away from "BS". | 1. Change MODE to [TEST POWER] position of "BS JIG". 2. Press [TALK] key of "HS" to establish link about 30cm away from "BS JIG". |
| 2 | IC101 working confirmation | Procedure 1. Set Test-mode [Continuous Send Low Power].(*3) 2. Confirm oscillate signal (4.096 MHz at Pin 33). (*4) | 1. Set Test-mode [Continuous Send Low Power].(*3) 2. Confirm oscillate signal (4.096 MHz at Pin 33). (*4). |
| | | Check point 1. Check Pin 33 oscillator. 2. Check DSP interface(IC101←→DSP/BS) (*5). | 1. Check Pin 33 oscillator. 2. Check DSP interface(IC101←→DSP/HS) (*5). |
| 3 | TX frequency confirmation | Procedure 1. Set Test-mode [Continuous Send].(*3) 2. Confirm TX-carrier frequency (1CH = 902.713MHz ± 20kHz). | 1. Set Test-mode [Continuous Send Low Power].(*3) 2. Confirm TX-carrier frequency (1CH = 902.713MHz ± 20kHz). |
| | | Check point 1. Check DSP or X200 oscillator Circuit. | 1. Check DSP or X201 oscillator Circuit. |
| 4 | TX Power confirmation | Procedure 1. Put RF wire to ANT and ANT_GND (See 9.4. Base Unit Reference Drawing). Connect this wire Marconi or Spectrum Analyzer. 2. Set Test-mode . 3. Confirm TX power level within -3±5dBm (*2) (0.158~1.58mW) | 1. Put RF wire to ANT and ANT_GND (See 9.5. Handset Reference Drawing). 2. Set Test-mode . 3. Confirm TX power level within -3±5dBm (*2) (0.158~1.58mW) |
| | | Check point 1. Check C102~C103, C161, L102, L111, R147 soldering. 2. Check Antenna in BS. | 1. Check C102~C103, C161, L102, L111, R147 soldering. 2. Check Antenna in HS. |
| 5 | Receiver confirmation | Procedure 1. Put "HS JIG" on BS. 2. Set MODE to [NORMAL POWER] position of "HS JIG". 3. Press [TALK] key of "HS JIG" to establish link. 4. Change MODE to [TEST POWER] position of "HS JIG". 5. Press [TALK] key of "HS JIG" to establish link about 30cm away from "BS". | 1. Put HS on "BS JIG". 2. Set MODE to [NORMAL POWER] position of "BS JIG". 3. Press [TALK] key of "HS" to establish link. 4. Change MODE to [TEST POWER] position of "BS JIG". 5. Press [TALK] key of "HS" to establish link about 30cm away from "BS JIG". |
| | | Check point 1. Check L103, L104, L106, L111~L113, X101, C103~C106, C110, C118, R103 soldering. 2. Check Antenna in BS. | 1. Check L103, L104, L106, L111~L113, X101, C103~C106, C110, C118, R103 soldering. 2. Check Antenna in HS. |

(*1) BS: Base unit, HS: Handset unit, HS JIG: Handset-jig,
BS JIG: Base unit-jig

(*2)<Marconi setting>

TX Freq.; 902.713MHz mode; WB

<Spectrum analyzer setting>

Freq. 902.713MHz Span 10MHz

RBW 1MHz or above VBW same as RBW

(*3)See **9 TEST MODE** (P.30).

(*4)See **8.4.5. RF-DSP interface signal wave form** (P.28).

(*5)See **9.4. Base Unit Reference Drawing** (P.32).

See **9.5. Handset Reference Drawing** (P.33).

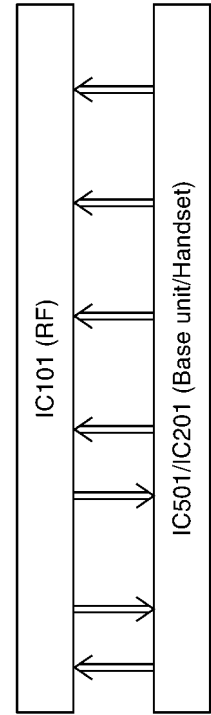
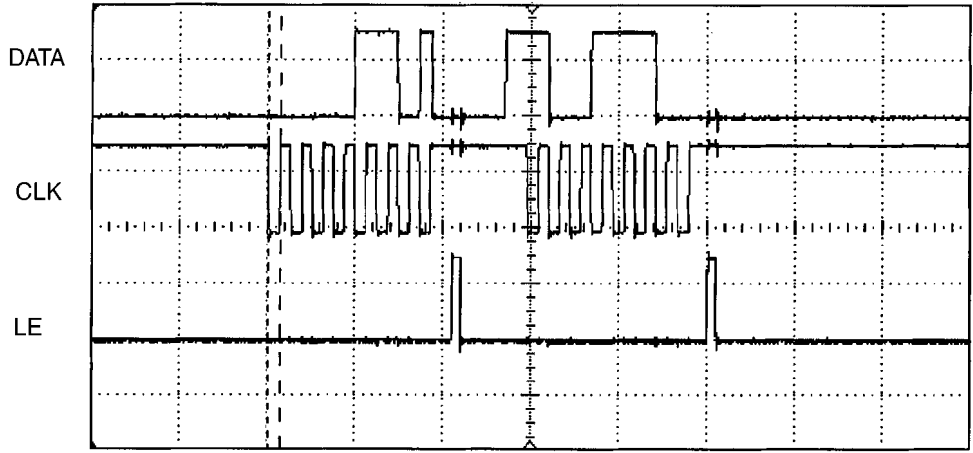
NOTE:

Flash Memory is IC300.

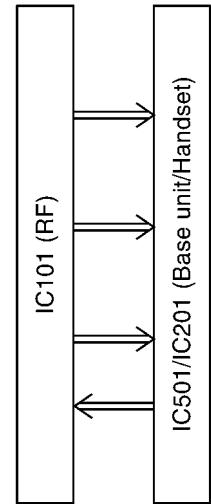
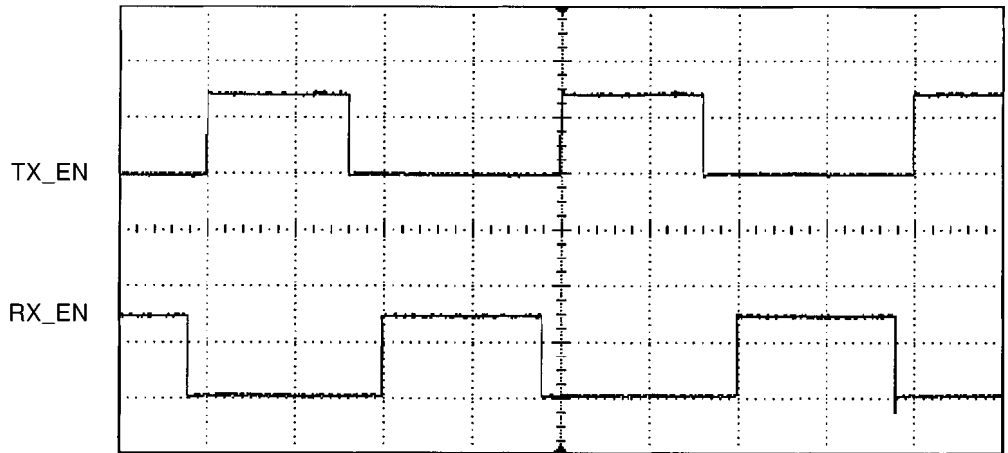
DSP is IC501 (Base Unit) / IC201 (Handset).

8.4.5. RF-DSP interface signal wave form

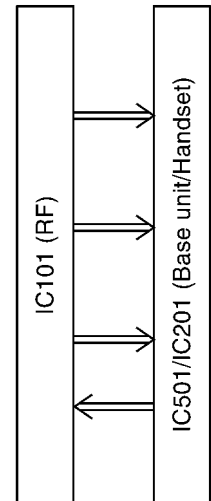
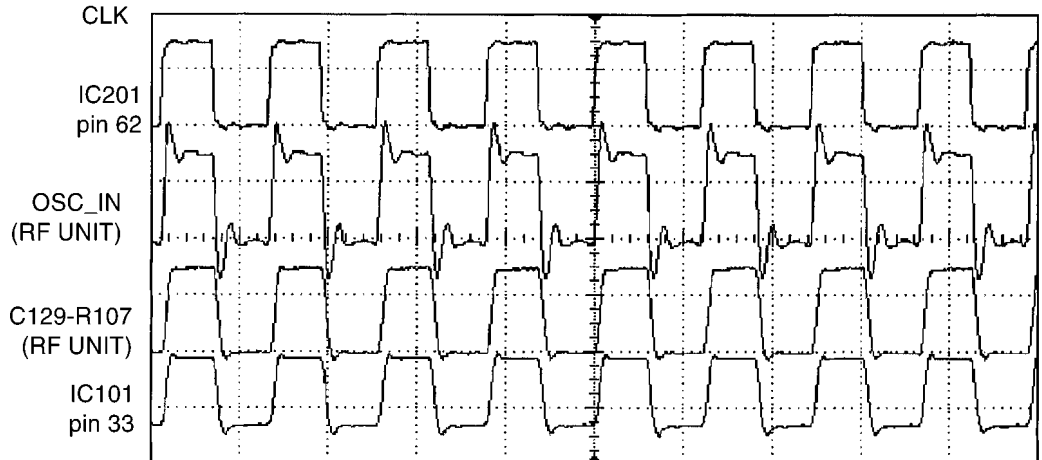
(1) Serial control line
<Standby mode>



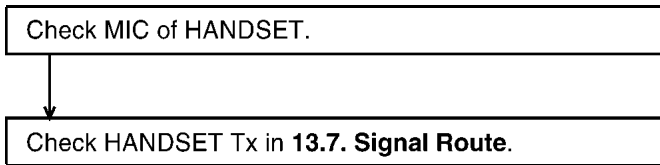
(2) Control line <Talk mode>
<Tx & Rx Power SW>



<Referenc clock 4.096MHz>



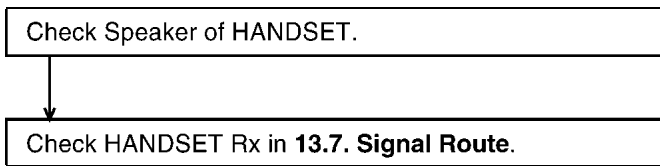
8.5. Check Handset Transmission



Cross Reference:

13.7. Signal Route (P.44).

8.6. Check Handset Reception



Cross Reference:

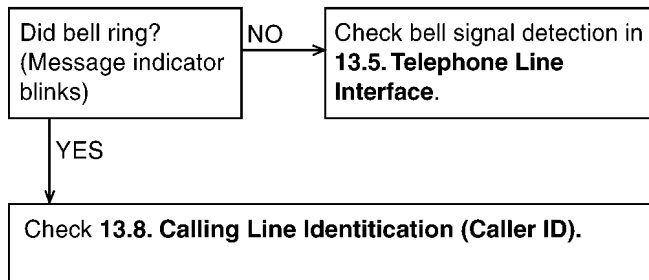
13.7. Signal Route (P.44).

NOTE:

When checking the RF UNIT, Refer to **8.4. Check the RF Unit** (P.24)

8.7. Check Call ID

BASE UNIT



Cross Reference:

13.5. Telephone Line Interface (P.42).

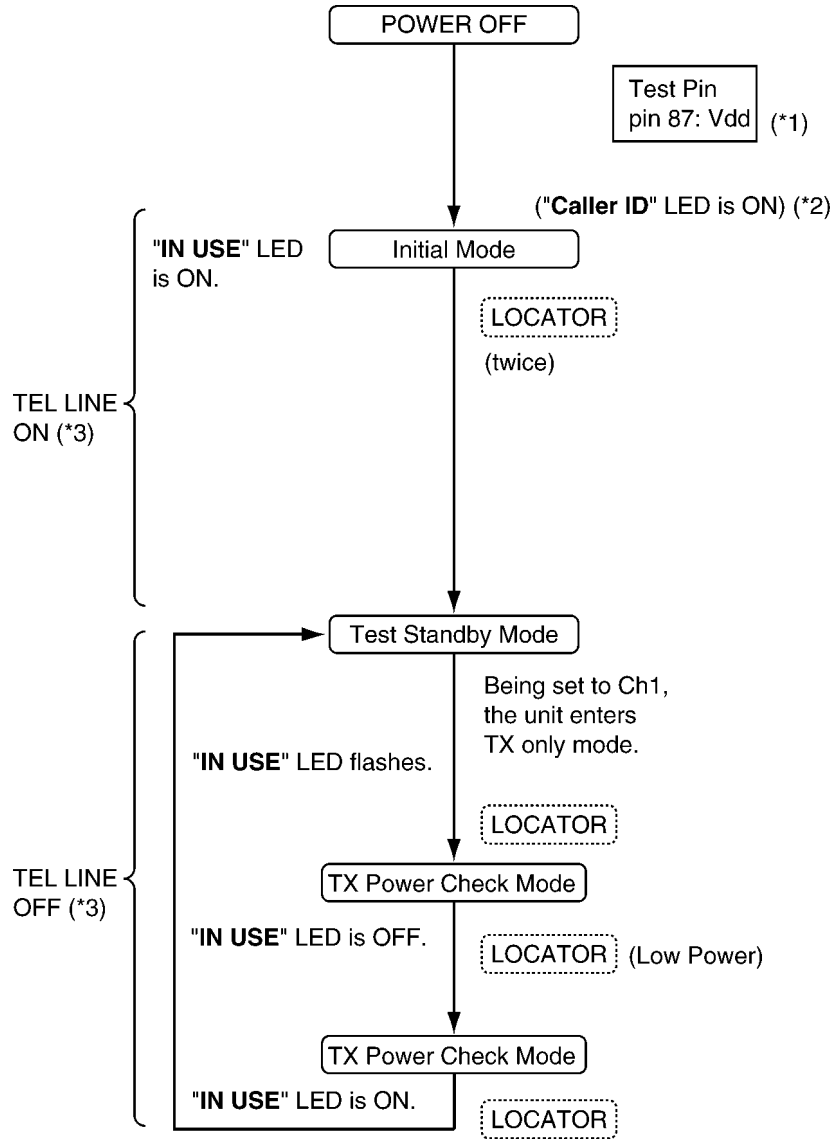
13.8. Calling Line Identification Circuit (Caller ID) (P.45).

Note:

- Make sure the format of the Caller ID or Call Waiting Caller ID service of the Telephone company that the customer subscribed to.
- Also we recommend to confirm that the customer is really a subscriber of the service.

9 TEST MODE

9.1. Test mode flow chart for Base Unit



<Legend>

: Push the key.

: The unit enters the indicated state. The state will be changed every time a key is pressed.

(*1) See 9.4. Base Unit Reference Drawing (P.32) - Insert AC adaptor for entering the test mode during pressing the test switch .

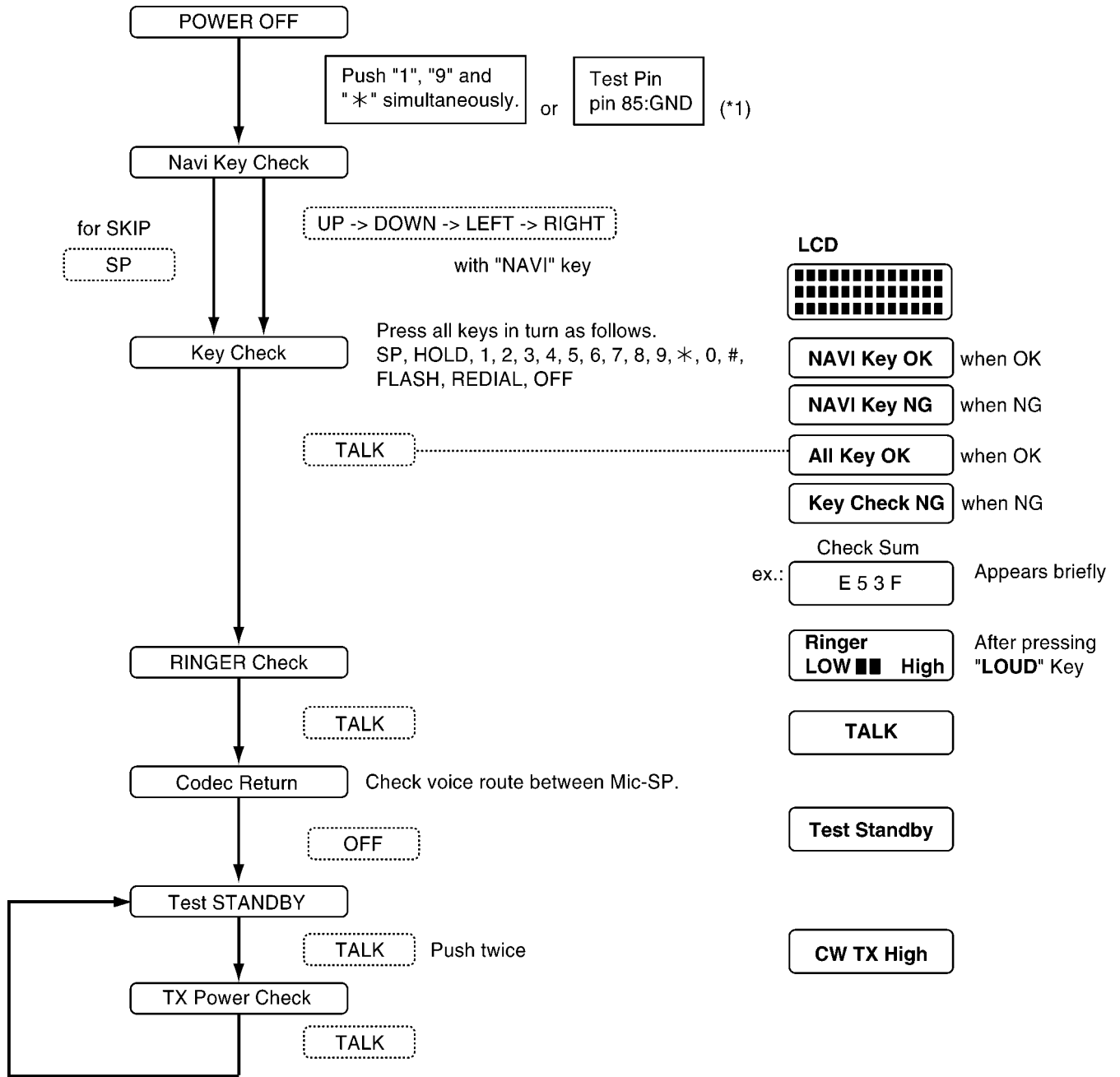
(*2) While the Tele line is connected, the "Caller ID" LED is ON/OFF as well.

(*3) It shows whether the telephone line is connected or not.

-ON: OFF HOOK.

-OFF: ON HOOK

9.2. Test mode flow chart for Handset



(*1) See 9.5. Handset Reference Drawing (P.33).---Insert Battery for entering the Test mode during pressing the test switch.

9.3. X101 Check

The confirmation is made under the Continuous Send mode of TEST MODE.

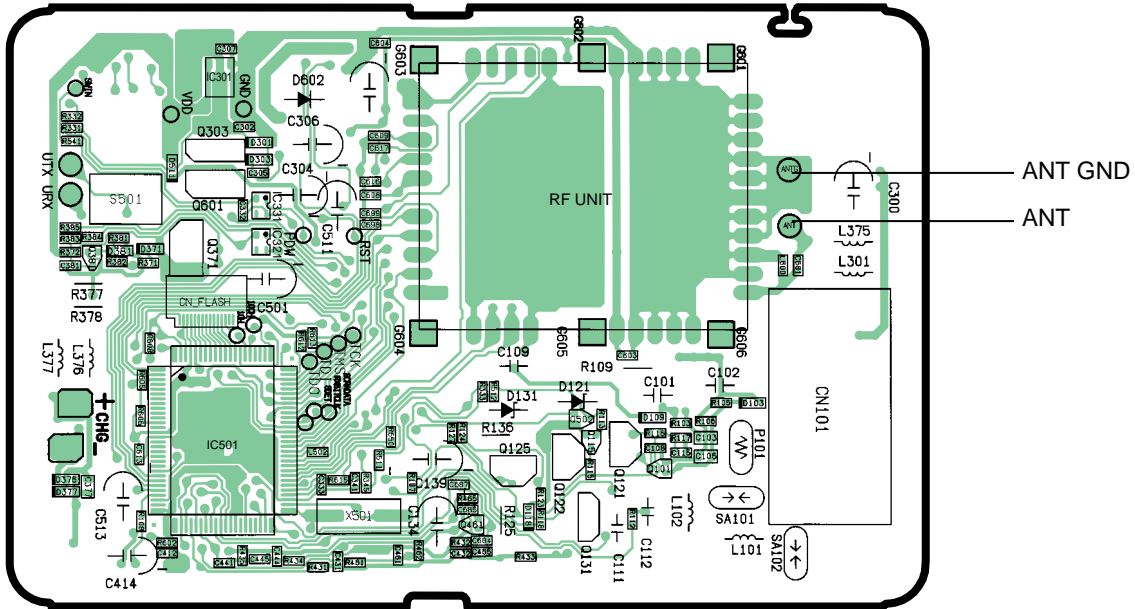
Equipment: Frequency counter

TP for adjustment: TP_ANT

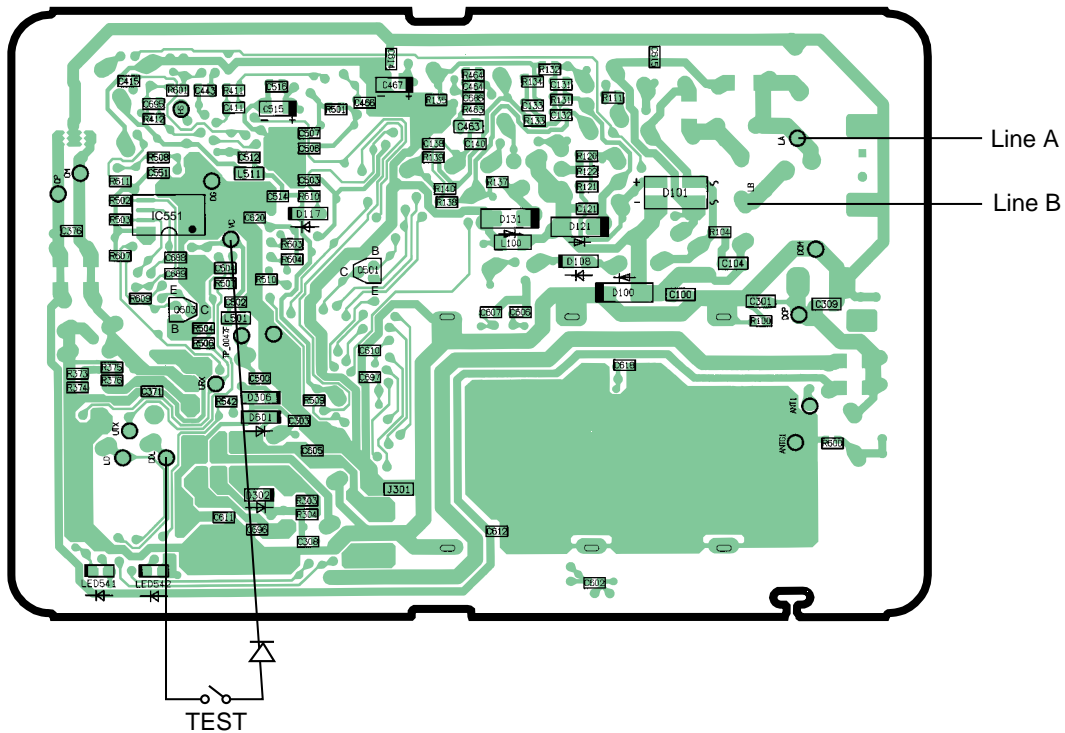
Measure range: 902.713 MHz ± 5 kHz (1ch) at Test Standby mode in **9 TEST MODE** (P.30).

9.4. Base Unit Reference Drawing

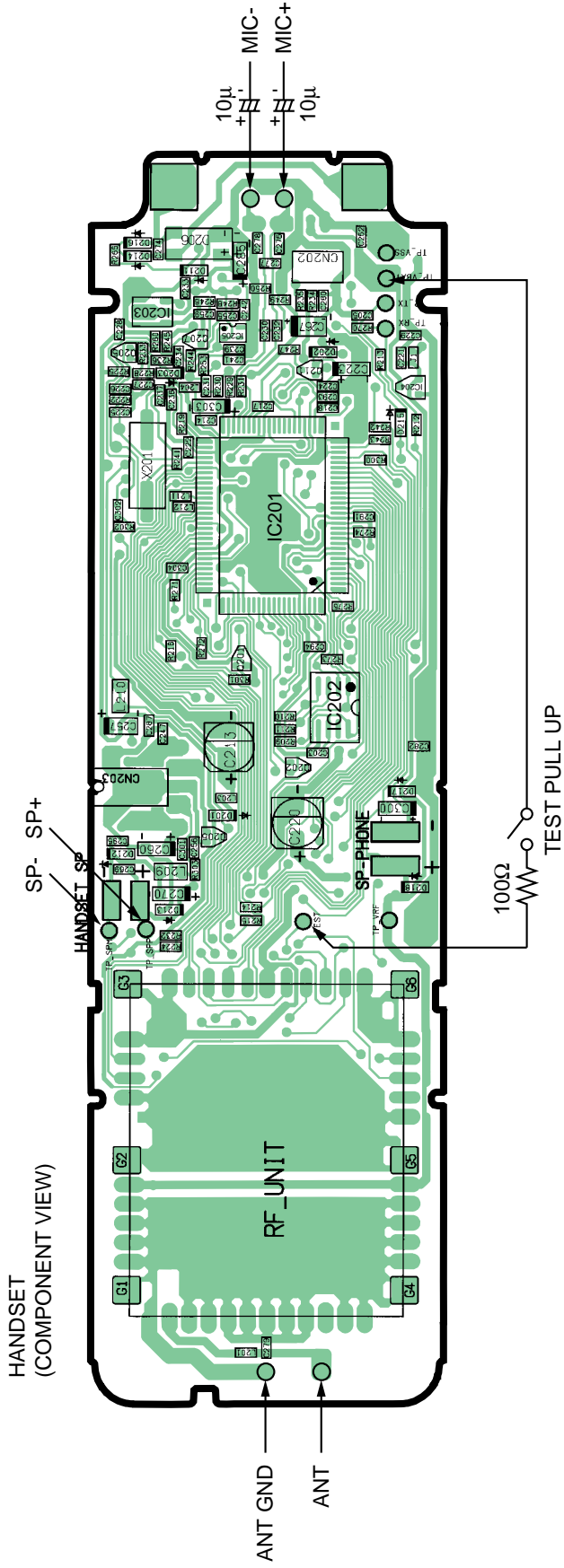
(COMPONENT VIEW)



(FLOW SOLDER SIDE VIEW)



9.5. Handset Reference Drawing



9.6. FREQUENCY TABLE

(TDD: time division duplex)

| Channel | TX/RX Frequency (MHz) | Channel | TX/RX Frequency (MHz) |
|---------|-----------------------|---------|-----------------------|
| 1 | 902.713 | 12 | 925.013 |
| 2 | 902.940 | 13 | 925.241 |
| 3 | 903.168 | 14 | 925.468 |
| 4 | 903.395 | 15 | 925.696 |
| 5 | 903.623 | 16 | 925.923 |
| 6 | 903.850 | 17 | 926.151 |
| 7 | 904.078 | 18 | 926.378 |
| 8 | 904.305 | 19 | 926.606 |
| 9 | 904.533 | 20 | 926.833 |
| 10 | 904.761 | 21 | 927.061 |
| 11 | 904.988 | 22 | 927.289 |

10 DESCRIPTION

10.1. Frequency

The frequency range of 902.713 MHz ~ 927.289 MHz is used. Transmitting and receiving channel between base unit and handset is same frequency. Refer to the Frequency Table.

10.2. Time Division Duplex (TDD) operation

Transmission/reception between the base unit and handset is performed by time-sharing as shown in Fig. 7. 1 slot time of transmission and reception is 1mS. Same frequency is used in transmitting and receiving. The figure shows an example; the frequency of 3ch is used in transmitting between the base unit and handset.

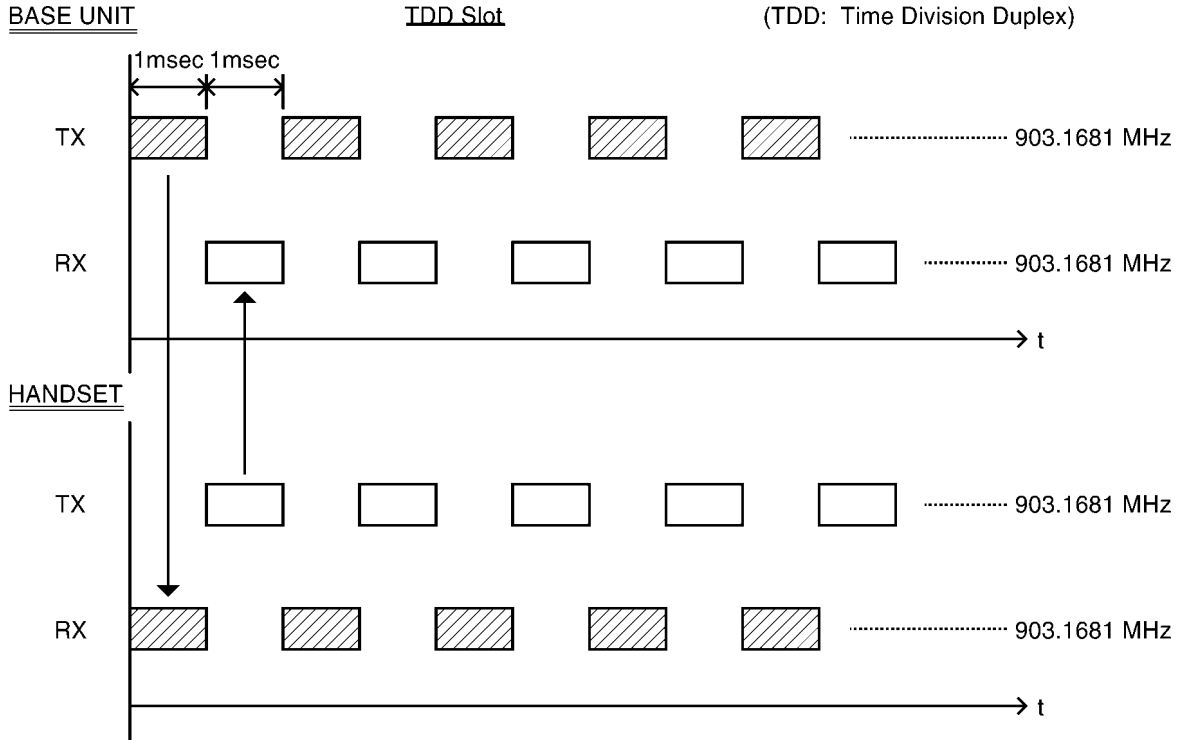


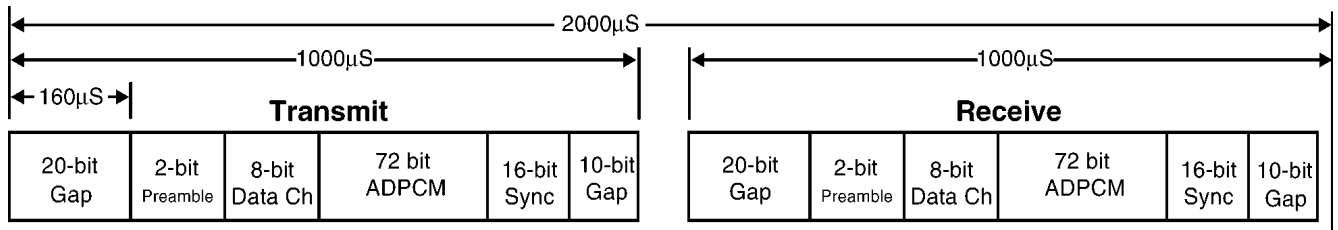
Fig. 7

10.2.1. TDD Frame Format

The TDD frame is 2mS in length. Each subframe contains 128 bits of 7.8μS duration.

Each subframe consists of the following four fields:

- A 2-bit Preamble field
- An 8-bit Data Channel field
- An 16-bit Sync Word
- A 72-bit ADPCM Payload (CRC 8-bit)



10.3. Signal Flowchart in the Whole System

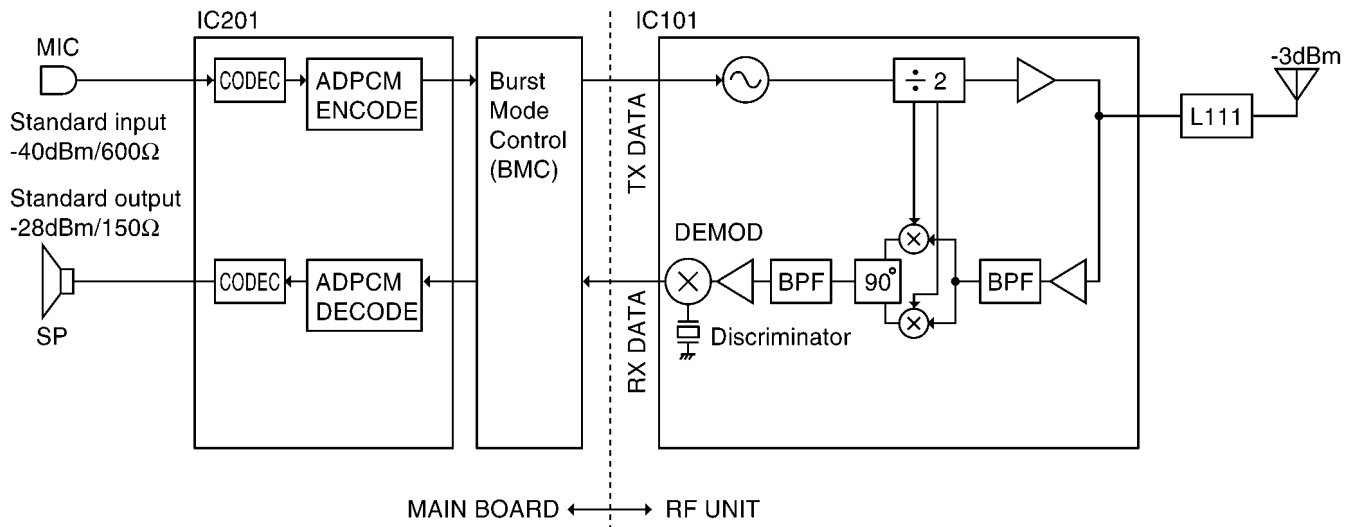
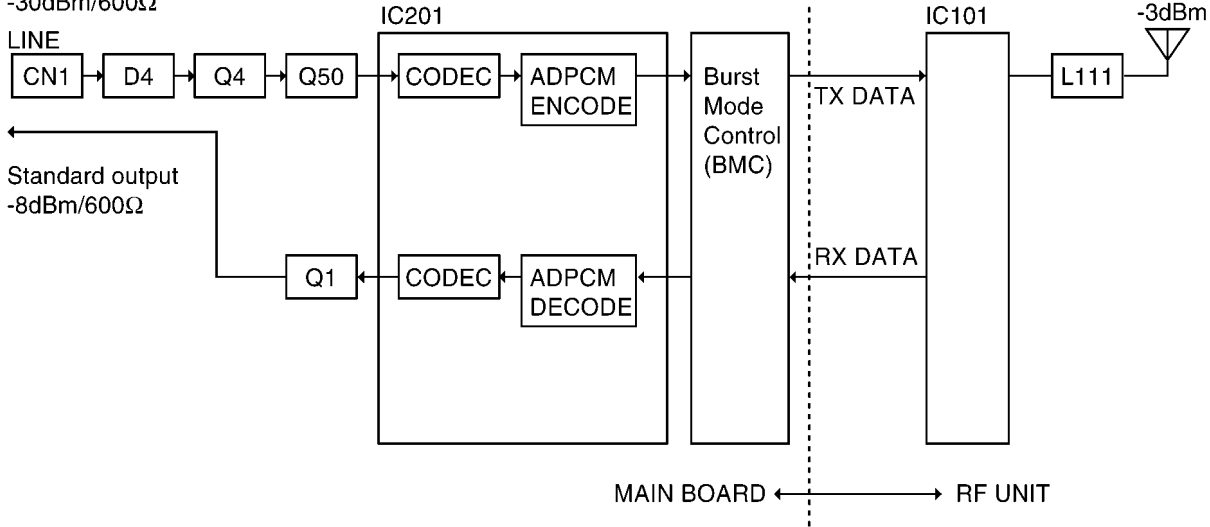
Reception

CN1 of the base unit is connected to the TEL line, and the signal is input through the bridge diode D101. While talking the relay (Q121) is turned ON and amplified at the amplifiers Q50, then led to DSP (IC201). DSP generates ADPCM signal. The ADPCM signal is input to RFIC (IC101) of RF UNIT. RFIC outputs FSK modulated RF signal. The RF signal is passed through filter (L111) to be transmitted from the antenna. As for the handset, RF signal from the antenna is input to RFIC passing through filter (L111) then input to DSP (IC201). DSP performs ADPCM decoding to convert the signal into the voice signal, then it is output to the speaker.

Transmission

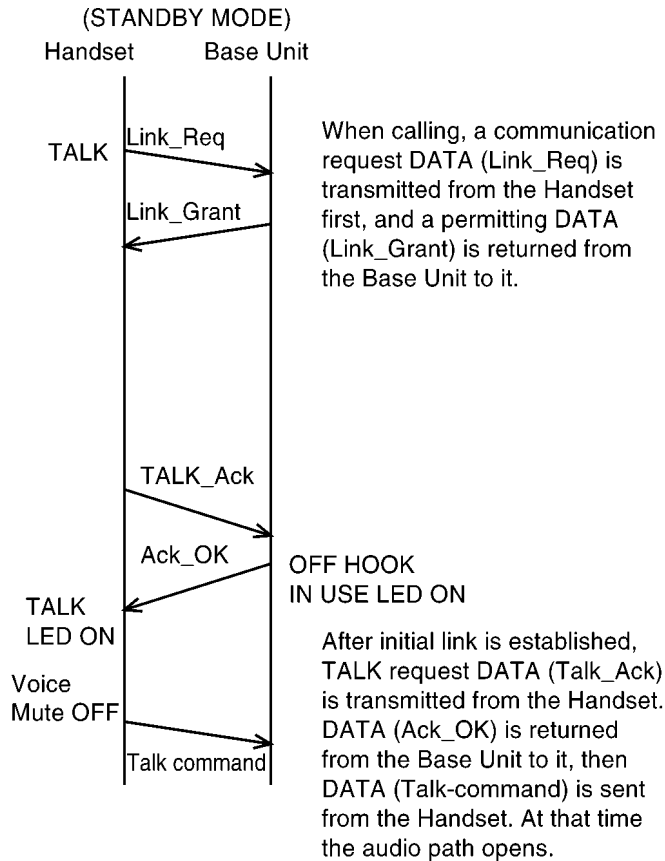
The voice signal input from the microphone is led to DSP (IC201). The DSP generates ADPCM signal. As well as the reception, it is converted into the RF signal by RFIC (IC101). Passing through filter (L111), it is transmitted from the antenna. As for the base unit, RF signal from the antenna is input to RFIC (IC101) passing through filter (L111) and the balun then input to DSP (IC201). DSP performs ADPCM decoding to convert the signal into the voice signal. The voice signal is amplified at the TX amplifier (Q1), then output to the TEL line (CN1) through the relay (Q4) and bridge (D4).

Standard Input
-30dBm/600Ω

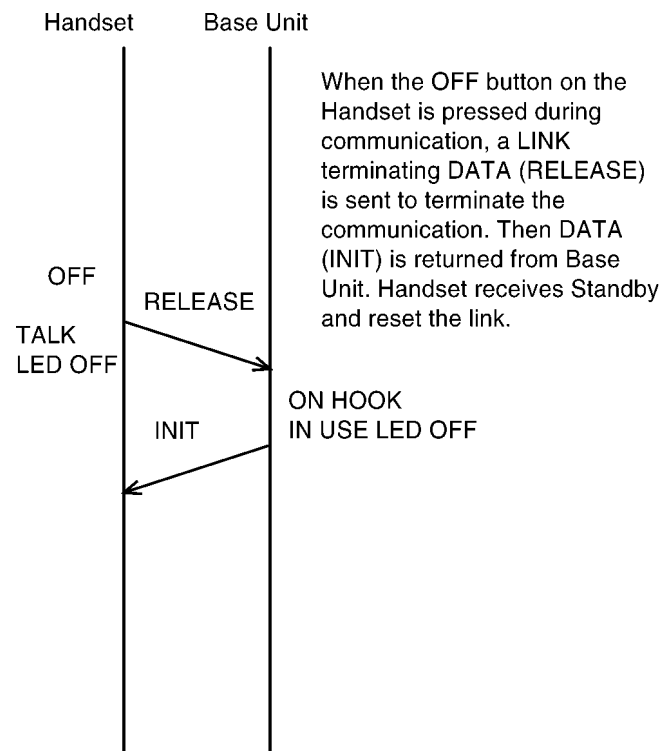


11 EXPLANATION OF BBIC (Base Band IC) DATA COMMUNICATION

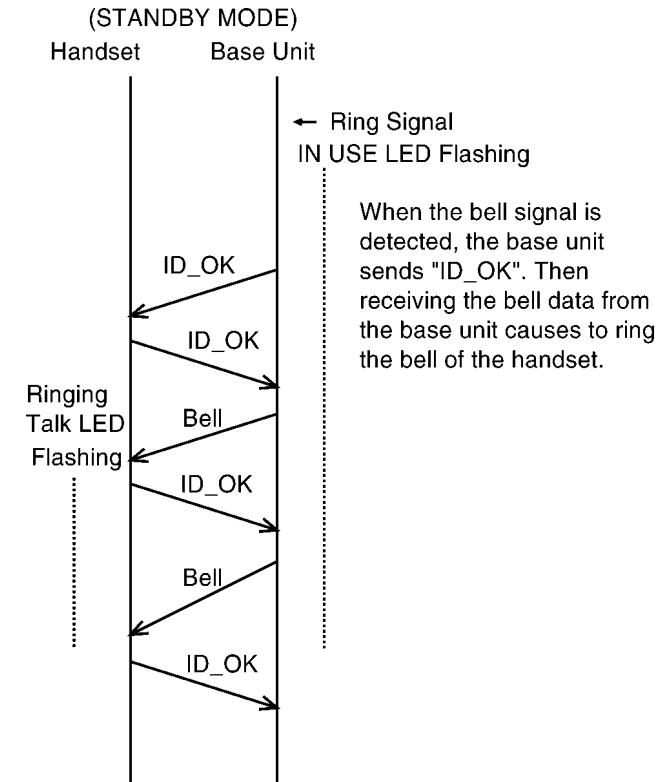
11.1. Calling



11.2. To Terminate Communication



11.3. Ringing

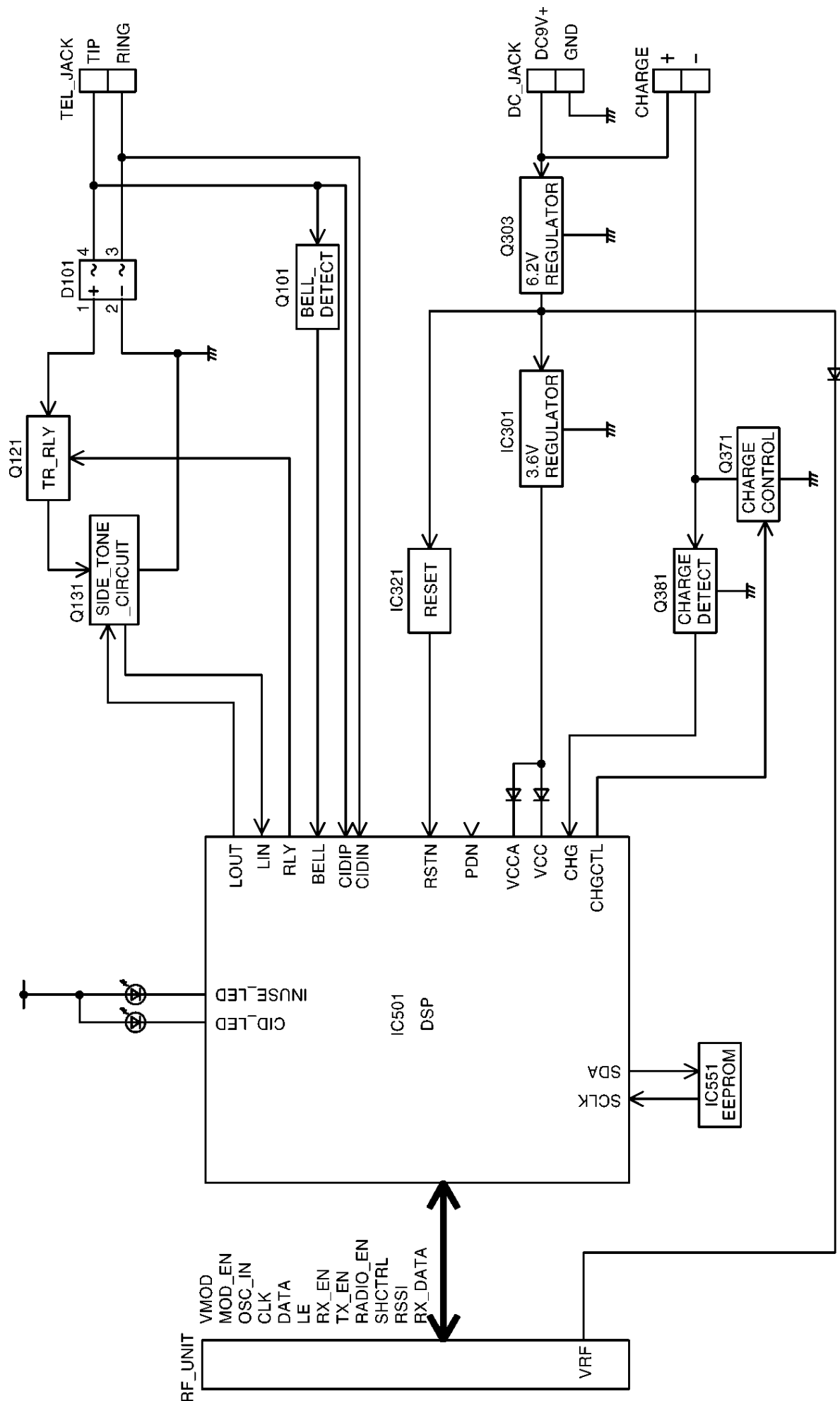


11.4. Ports for Transmitting and Receiving of Data

Handset: (IC201)
 Transmitting Pin 57 (TXO), Pin 64 (TXEN)
 Receiving Pin 66 (RXI), Pin 63 (RXEN)

Base Unit: (IC501)
 Transmitting Pin 57 (TXO), Pin 64 (TXEN)
 Receiving Pin 66 (RXI), Pin 63 (RXEN)

12 BLOCK DIAGRAM (Base Unit)



13 CIRCUIT OPERATION (Base Unit)

General Description:

(DSP, Flash Memory) is a digital speakerphone/speech/signal processing system that implements all the functions of speech compression, record and playback, and memory management required in a digital telephone answering machine.

The DSP system is fully controlled by a host processor DSP. The host processor provides activation and control of all that functions as follows.

13.1. DSP (Digital Speech/Signal Processing: IC501)

· DTMF Detection/Generator

The DTMF detection is implemented by the DSP system in software. The DTMF detection is performed during Record, Playback, and Line Monitoring modes of operation.

When the DTMF data from the Handset is received, the DTMF signal is output.

· Caller ID and Call Waiting CID demodulation

The DSP implements monitor and demodulate the FSK signals that provide CID information from the Central Office.

· Analog Switching

The voice signal from telephone line is transmitted to the speaker or the voice signal from speakerphone microphone is transmitted to the Telephone line, etc. They are determined by the signal path route operation of voice signal.

· Block Interface Circuit

RF unit, LED, Key scan, Speaker, Microphone, Telephone line, LCD

13.2. EEPROM (IC551)

Following information data is stored.

· Telephone number, etc.

ex: Telephone Directory number, Caller ID data, ID code

· Settings

ex: message numbers, caller ID numbers, pulse tone dial

13.3. Power Supply Circuit

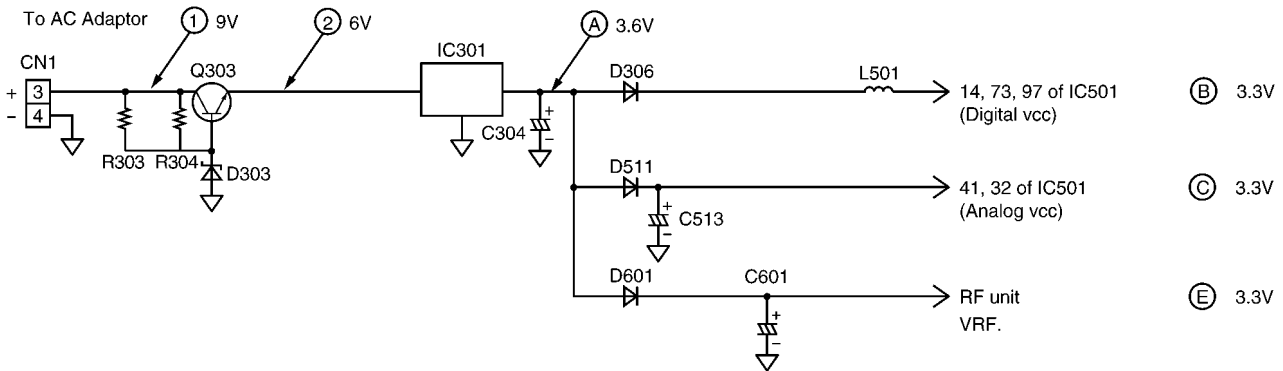
Function:

The power supply voltage from AC adaptor is converted to the desired voltage of each block.

Circuit Operation:

This unit supplies the voltage to each block as shown below.

Circuit Diagram



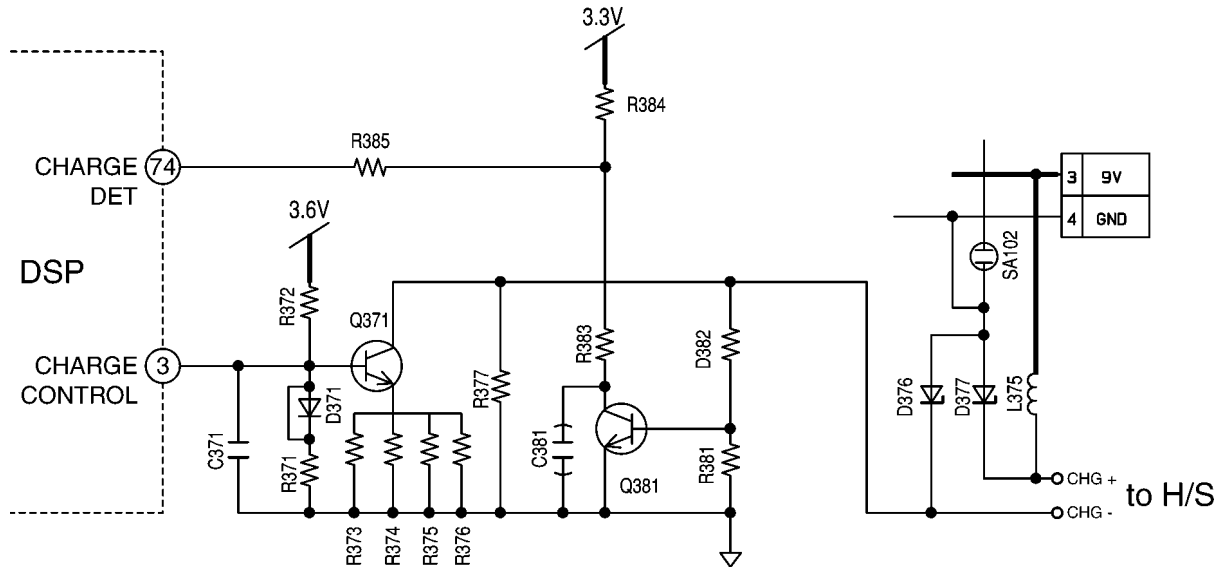
13.3.1. Charge Circuit

The voltage from the AC is supplied to the main charge circuits. Normal charge (70 mA) of maximum 20-hours is started soon after the Handset is placed on the base unit. Then it changes to trickle charge (15 mA on the average) to prevent from overcharging.

Normal charge : Q150 is ON

Trickle charge : Q150 is OFF

Circuit Diagram



13.4. Reset Circuit

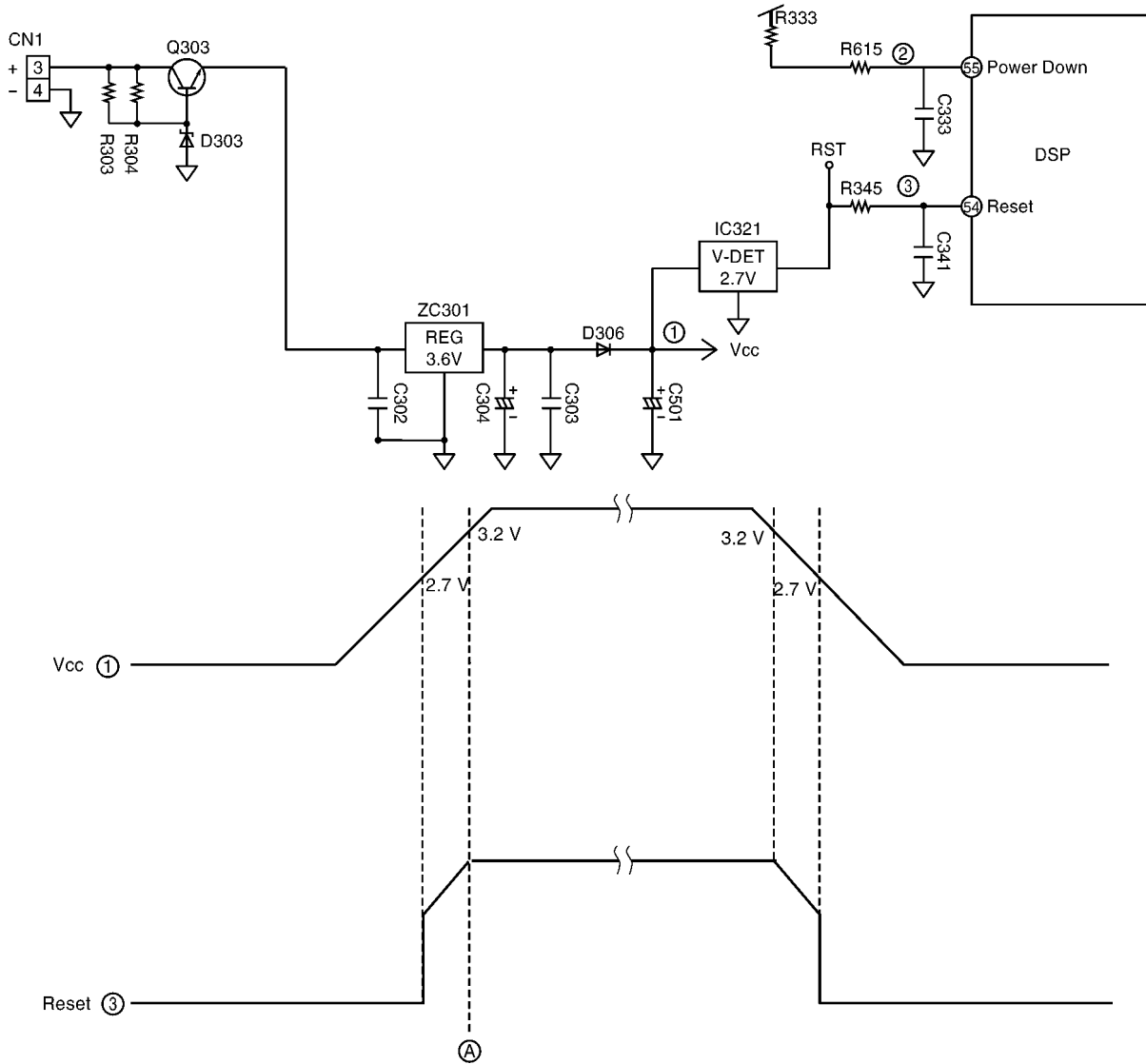
Function:

This circuit is used for to initialize the microcomputer when it incorporates an AC adaptor.

Circuit Operation:

When the AC Adaptor is inserted into the unit, then the voltage is shifted by IC301, D306 and power is supplied to the DSP. The set can operate beyond point (A) in the circuit voltage diagram.

Circuit Diagram



13.5. Telephone Line Interface

Telephone Line Interface Circuit:

Function

- Bell signal detection
- ON/OFF hook and pulse dial circuit
- Side tone circuit
- Auto-disconnect circuit/Parallel connection detection circuit

Bell signal detection and OFF HOOK circuit:

In the idle mode, Q121 is open to cut the DC loop current and decrease the ring load. When ring voltage appears at the Tip (T) and Ring (R) leads (When the telephone rings), the AC ring voltage is transferred as follows:

T → L101 → R103 → C103 → Q101 → DSP pin 27. [BELL]

When the CPU (DSP) detects a ring signal, Q121 turns on, thus providing an off-hook condition (active DC current flow through the circuit) and the following signal flow is for the voice signal.

T → D101 → Q121 → R140/R139 → C139 → R138 → R136 → D131 → D101 → L102 → P101 → R

ON HOOK Circuit:

Q121 is open, Q121 is connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an on-hook condition.

Pulse Dial Circuit:

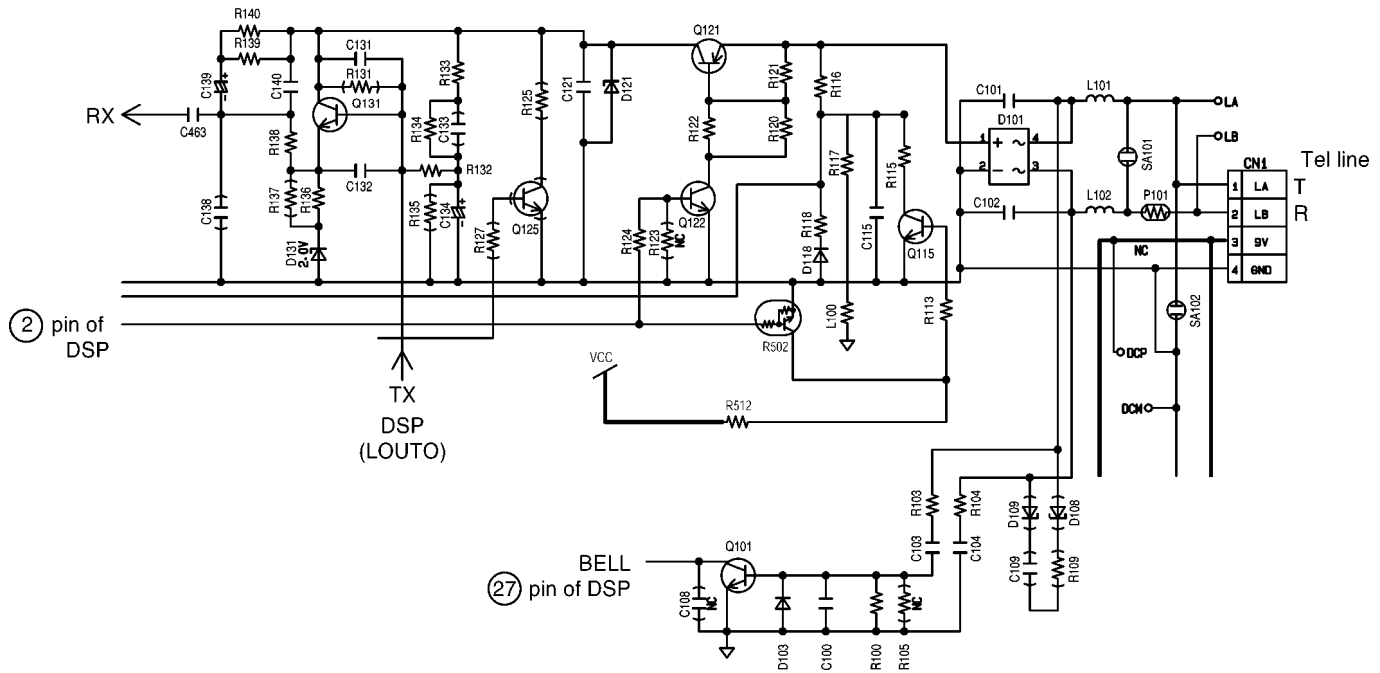
DSP (2) turns Q121 ON/OFF to make the pulse dialing.

Side Tone Circuit:

Basically this circuit prevents the TX signal from feeding back to RX signal.

As for this unit, TX signal feed back from Q131 is canceled by the chancellor circuit of DSP.

Circuit Diagram



13.6. Parallel Connection Detect Circuit

Function:

In order to disable call waiting and stutter tone functions when using telephones connected in parallel, it is necessary to have a circuit that judges whether a telephone connected in parallel is in use or not. This circuit determines whether the telephone connected in parallel is on hook or off hook by detecting changes in the T/R voltage.

Circuit Operation:

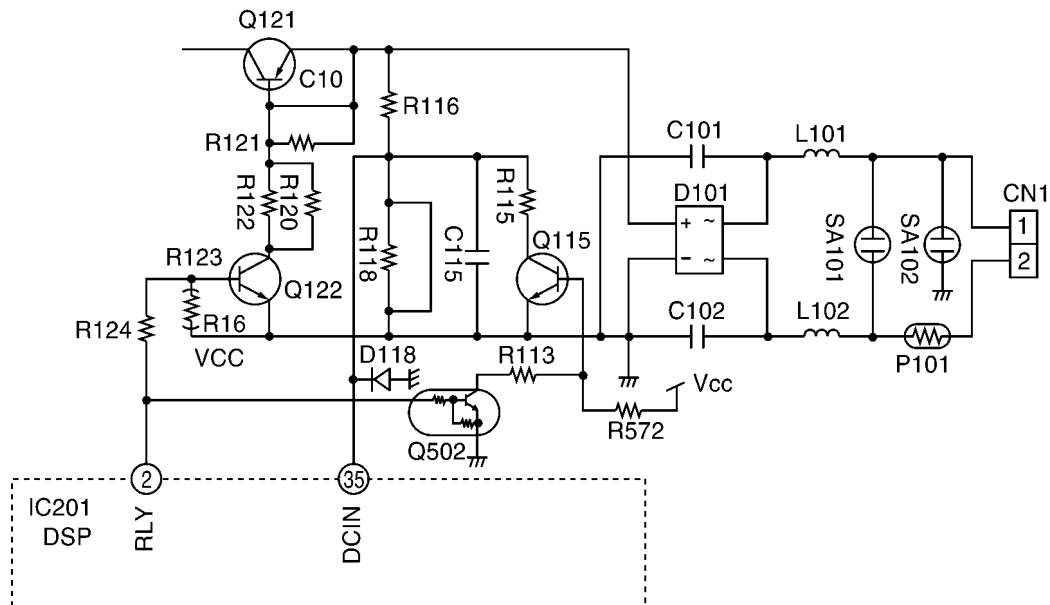
Parallel connection detection when on hook:

When on hook Q115 is ON, the voltage is monitored DCIN of DSP. There is no parallel connection if the voltage is 1.65 V or higher, while a parallel connection is deemed to exist if the voltage is lower.

Parallel connection detection when off hook:

When off hook Q115 is OFF, the voltage is monitored DCIN of DSP; the presence/absence of a parallel connection is determined when the voltage changes by 0.2 V or more.

Circuit Diagram



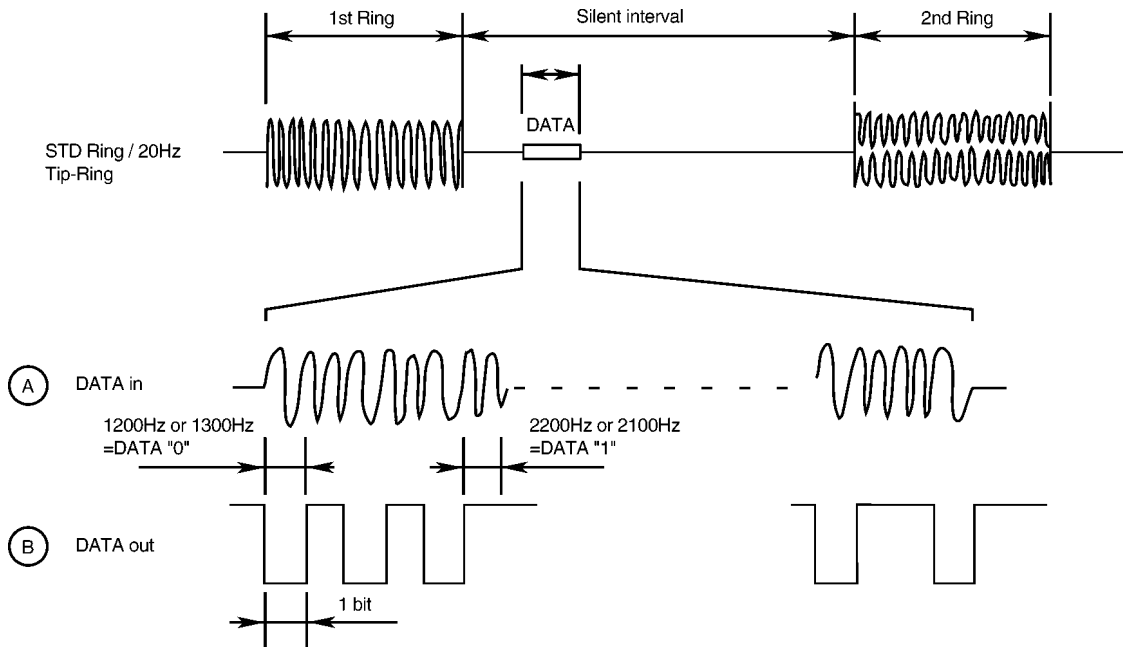
13.8. Calling Line Identification Circuit (Caller ID)

Function:

The caller ID is a chargeable ID which the user of a telephone circuit obtains by entering a contract with the telephone company to utilize a caller ID service. For this reason, the operation of this circuit assumes that a caller ID service contract has been entered for the circuit being used. This model can receive 2 types of caller ID (FSK type, DTMF type).

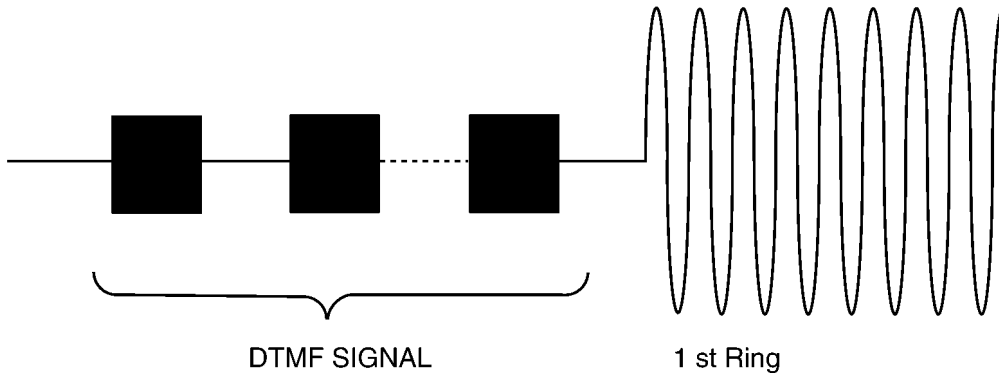
• FSK type

The data for the caller ID from the telephone exchange is sent during the interval between the first and second rings of the bell signal. The data from the telephone exchange is a modem signal which is modulated in an FSK (Frequency Shift Keying) format. Data "0" is a 1200 Hz or 1300 Hz sine wave, and data 1 a 2200 Hz or 2100 Hz sine wave.

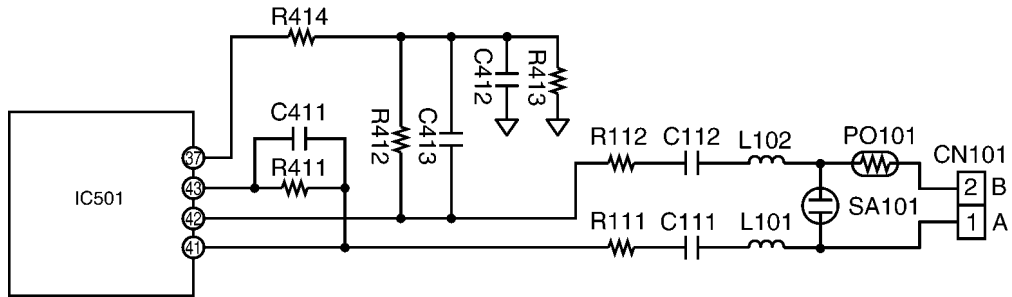


- DTMF type

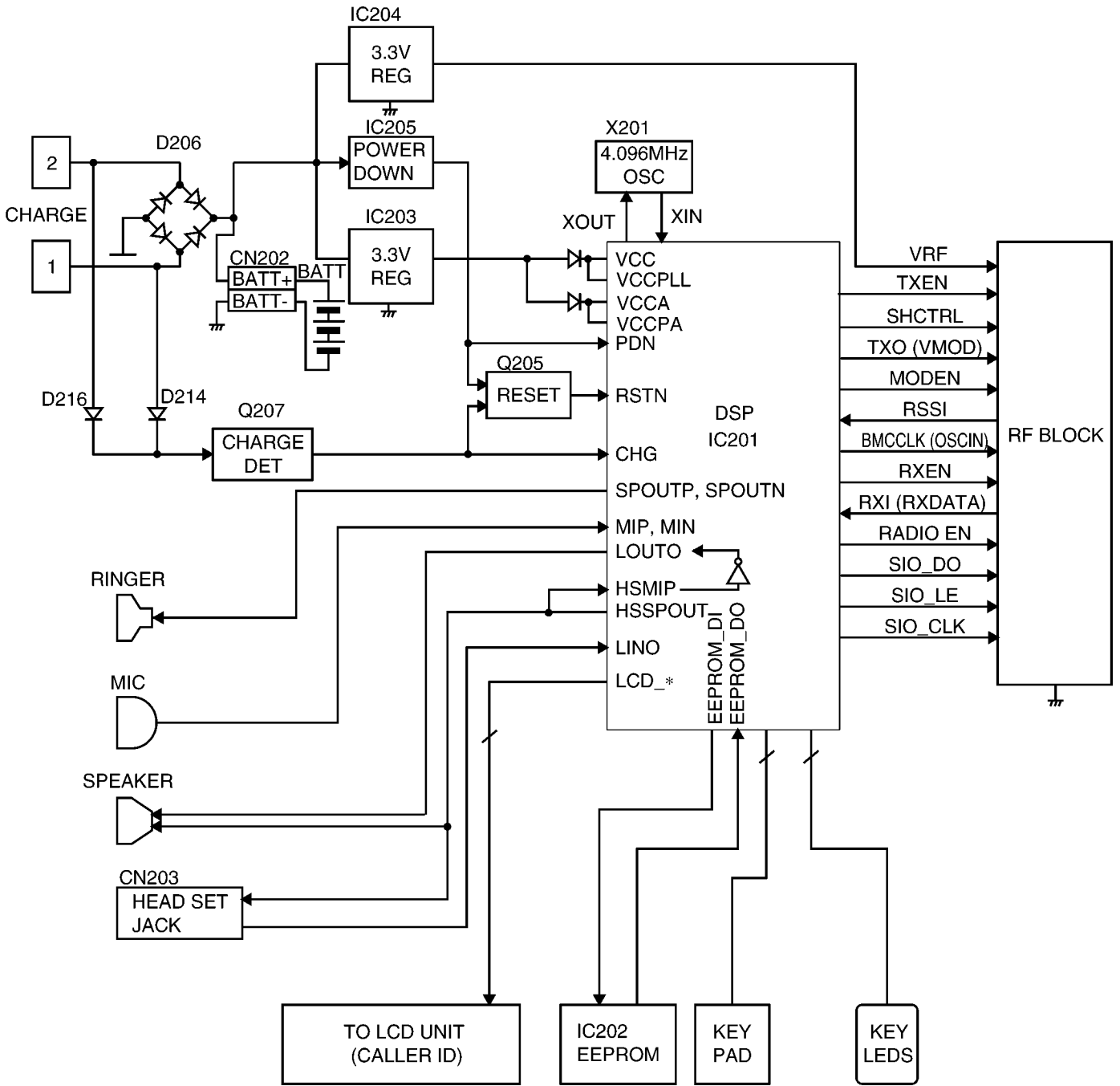
The data for the caller ID from the telephone exchange is DTMF signal. It is sent before the first ring of bell signal.



Circuit Diagram



14 BLOCK DIAGRAM (Handset)



15 CIRCUIT OPERATION (Handset)

15.1. Construction

The circuit mainly consists of DSP and RF unit as shown in the block diagram.

15.1.1. DSP:IC201

Function

- Battery Low, Power down defect circuit
 - Ringer Generation
 - Interface circuit
- RF unit, speaker, mic, LED, Key scan, LCD, Headset

15.1.2. RF unit

Mainly voice signal is modulated to RF, or it goes the other way.

15.1.3. EEPROM: IC202

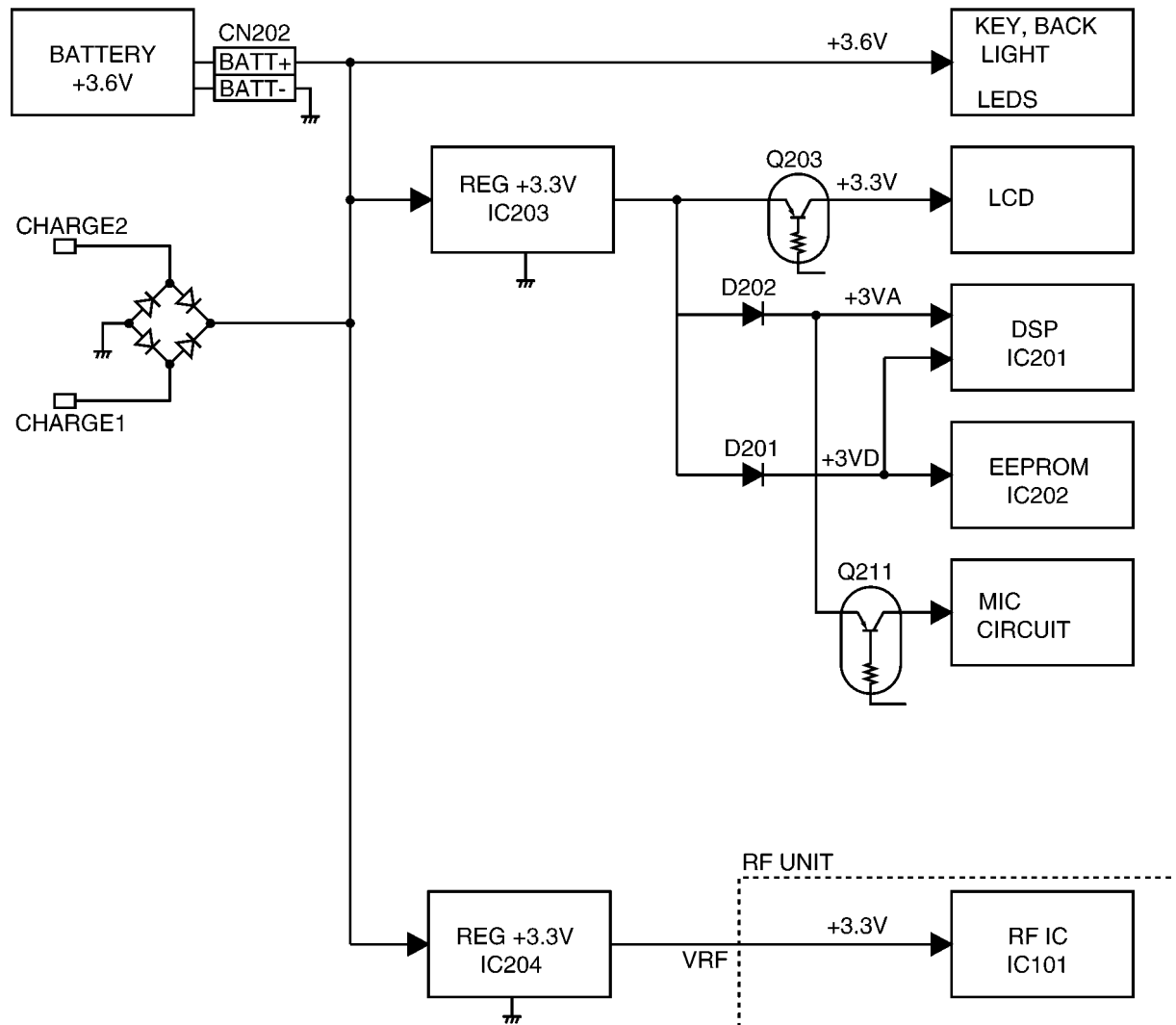
All setting data is stored.

ex: ID code, user setting (Flash Time, Tone/Pulse)

15.2. Power Supply Circuit

Voltage is supplied separately to each block as shown Block Diagram.

Block Diagram (Handset Power)



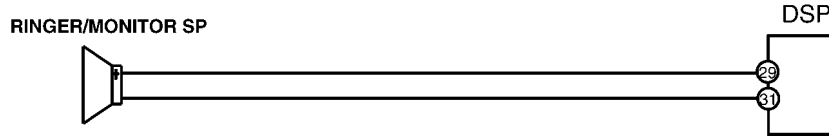
15.3. Charge Circuit

Ni-Cd battery is connected to CN202. When the handset is put on the cradle of the base unit, the power is supplied from CHARGE1 and CHARGE2 terminals to charge the battery. Q207 detects the voltage of CHARGE1 and CHARGE2 terminals, then the handset makes ID code setting with the base unit.

15.4. Ringer and Handset SP-Phone

DSP (29-31) → SP/RINGER

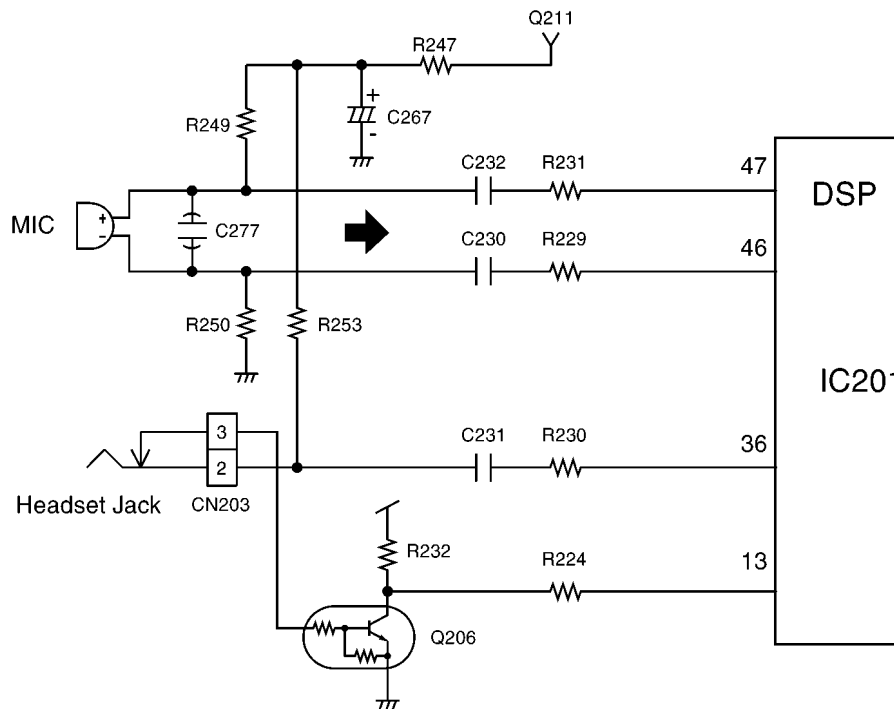
Circuit Diagram



15.5. Sending Signal

The voice signal from the microphone input to DSP (46-47). CN203 is the headset jack. When the headphone is connected, the Q206 detect it. The input from the microphone of the handset (MIN, MIP) is cut and the microphone signal from the headphone is input to DSP (36). Also the power for the microphone is supplied from Q211, and the power is turned OFF on standby.

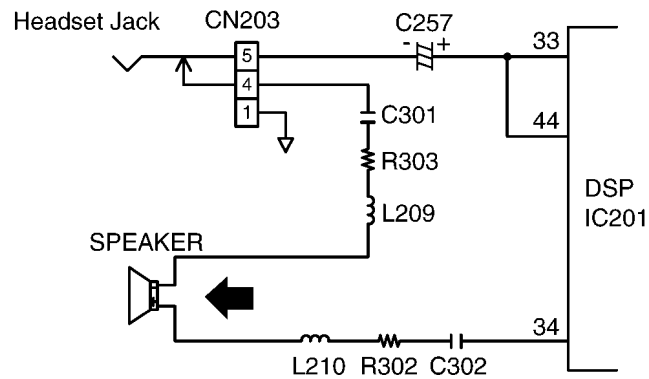
Circuit Diagram



15.6. Reception Signal

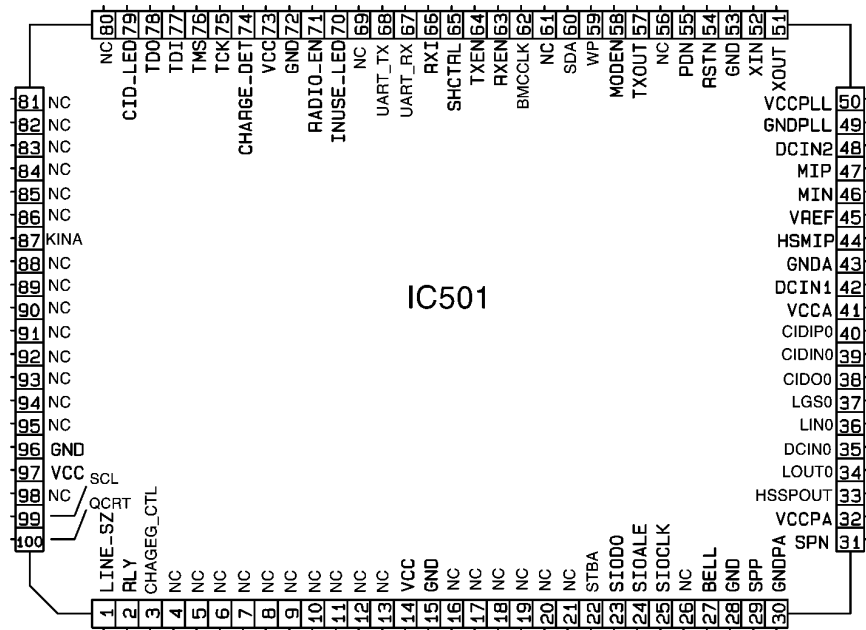
The voice signal from the base unit is output to DSP (33) (HSSOUT). This signal is led to the headset jack (CN203) and DSP (44) (HSMIP). The signal input to DSP (44) is inverted and output to DSP (34) (LOUTO). The signal through the headset jack is inverted, then output from DSP (34) to drive the speaker. When the headset is inserted to the jack, the voice signal is cut at the jack, so the sound does not come out from the speaker, but from the headset only.

Circuit Diagram



16 CPU DATA (Base Unit)

16.1. IC501

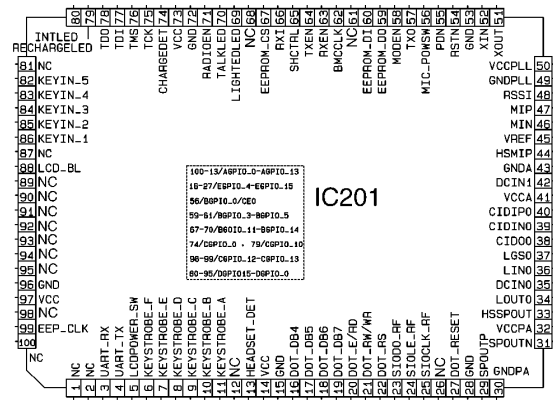


| Pin | Description | I/O | High | Hi-z | Low |
|-----|-------------|-----|--------|--------|------------|
| 1 | LINE_SZ | D.O | On | -- | Off |
| 2 | RLY | D.O | On | -- | Off |
| 3 | CHAGEG_CTL | D.O | -- | Charge | Non Charge |
| 4 | NC | D.O | -- | -- | Normal |
| 5 | NC | D.O | -- | -- | Normal |
| 6 | NC | D.O | -- | -- | Normal |
| 7 | NC | D.O | -- | -- | Normal |
| 8 | NC | D.O | -- | -- | Normal |
| 9 | NC | D.O | -- | -- | Normal |
| 10 | NC | D.O | -- | -- | Normal |
| 11 | NC | D.O | -- | -- | Normal |
| 12 | NC | D.O | -- | -- | Normal |
| 13 | NC | D.O | -- | -- | Normal |
| 14 | VCC | VCC | Vcc | -- | -- |
| 15 | GND | GND | -- | -- | GND |
| 16 | NC | D.O | -- | -- | Normal |
| 17 | NC | D.O | -- | -- | Normal |
| 18 | NC | D.O | -- | -- | Normal |
| 19 | NC | D.O | -- | -- | Normal |
| 20 | NC | D.O | -- | -- | Normal |
| 21 | NC | D.O | -- | -- | Normal |
| 22 | STBA | D.O | Active | Not | -- |
| 23 | SIOD0 | D.O | -- | -- | -- |
| 24 | SIOALE | D.O | -- | -- | -- |
| 25 | SIOCLK | D.O | -- | -- | -- |
| 26 | NC | D.O | -- | -- | Normal |
| 27 | BELL | D.I | Off | -- | On |
| 28 | GND | GND | -- | -- | GND |
| 29 | SPP | A.O | -- | -- | -- |
| 30 | GNDPA | GND | -- | -- | GND |
| 31 | SPN | A.O | -- | -- | -- |
| 32 | VCCPA | VCC | VCC | -- | -- |
| 33 | HSSPOUT | A.O | -- | -- | -- |
| 34 | LOUT0 | A.O | -- | -- | -- |
| 35 | DCIN0 | A.I | -- | -- | -- |
| 36 | LINO | A.I | -- | -- | -- |
| 37 | LGS0 | A.I | -- | -- | -- |
| 38 | CIDO0 | A.I | -- | -- | -- |
| 39 | CIDIN0 | A.I | -- | -- | -- |
| 40 | CIDIPO | A.I | -- | -- | -- |
| 41 | VCCA | VCC | VCC | -- | -- |
| 42 | DCIN1 | A.I | -- | -- | -- |
| 43 | GNDPA | GND | -- | -- | GND |
| 44 | HSMIP | A.I | -- | -- | -- |
| 45 | VREF | A.O | -- | -- | -- |
| 46 | MIN | A.I | -- | -- | -- |
| 47 | MIP | A.I | -- | -- | -- |
| 48 | DCIN2 | A.I | -- | -- | -- |
| 49 | GNDPLL | GND | -- | -- | GND |
| 50 | VCCPLL | VCC | VCC | -- | -- |

| Pin | Description | I/O | High | Hi-z | Low |
|-----|-------------|-----|------------|------|------------|
| 51 | XOUT | A.O | -- | -- | -- |
| 52 | XIN | A.I | -- | -- | -- |
| 53 | GND | GND | -- | -- | GND |
| 54 | RSTN | D.I | Normal | -- | Reset |
| 55 | PDN | D.I | Power On | -- | Power Down |
| 56 | NC | D.O | -- | -- | Normal |
| 57 | TXOUT | D.O | -- | -- | -- |
| 58 | MODEN | D.I | -- | -- | -- |
| 59 | WP | D.O | WP | -- | Write |
| 60 | SDA | D.O | High | -- | Low |
| 61 | NC | D.O | -- | -- | Normal |
| 62 | BMCCLK | D.O | -- | -- | -- |
| 63 | RXEN | D.O | -- | -- | -- |
| 64 | TXEN | D.O | -- | -- | -- |
| 65 | SHCTRL | D.O | -- | -- | -- |
| 66 | RXI | D.I | -- | -- | -- |
| 67 | UART_RX | D.I | High | -- | Low |
| 68 | UART_TX | D.O | High | -- | Low |
| 69 | NC | D.O | -- | -- | Normal |
| 70 | INUSE_LED | D.O | -- | off | On |
| 71 | RADIO_EN | D.O | -- | -- | -- |
| 72 | GND | GND | -- | -- | GND |
| 73 | VCC | VCC | VCC | -- | -- |
| 74 | CHARGE_DET | D.I | Off Charge | -- | On Charge |
| 75 | TCK | D.O | -- | -- | -- |
| 76 | TMS | D.O | -- | -- | -- |
| 77 | TDI | D.I | -- | -- | -- |
| 78 | TDO | D.O | -- | -- | -- |
| 79 | CID_LED | D.O | -- | off | On |
| 80 | NC | D.O | -- | -- | Normal |
| 81 | NC | D.O | -- | -- | Normal |
| 82 | NC | D.O | -- | -- | Normal |
| 83 | NC | D.O | -- | -- | Normal |
| 84 | NC | D.O | -- | -- | Normal |
| 85 | NC | D.O | -- | -- | Normal |
| 86 | NC | D.O | -- | -- | Normal |
| 87 | KINA | D.I | Key In | -- | Non |
| 88 | NC | D.O | -- | -- | Normal |
| 89 | NC | D.O | -- | -- | Normal |
| 90 | NC | D.O | -- | -- | Normal |
| 91 | NC | D.O | -- | -- | Normal |
| 92 | NC | D.O | -- | -- | Normal |
| 93 | NC | D.O | -- | -- | Normal |
| 94 | NC | D.O | -- | -- | Normal |
| 95 | NC | D.O | -- | -- | Normal |
| 96 | GND | GND | -- | -- | GND |
| 97 | VCC | VCC | VCC | -- | -- |
| 98 | NC | D.O | -- | -- | Normal |
| 99 | SCL | D.O | High | -- | Low |
| 100 | QCRT | D.O | STOP | -- | Normal |

17 CPU DATA (Handset)

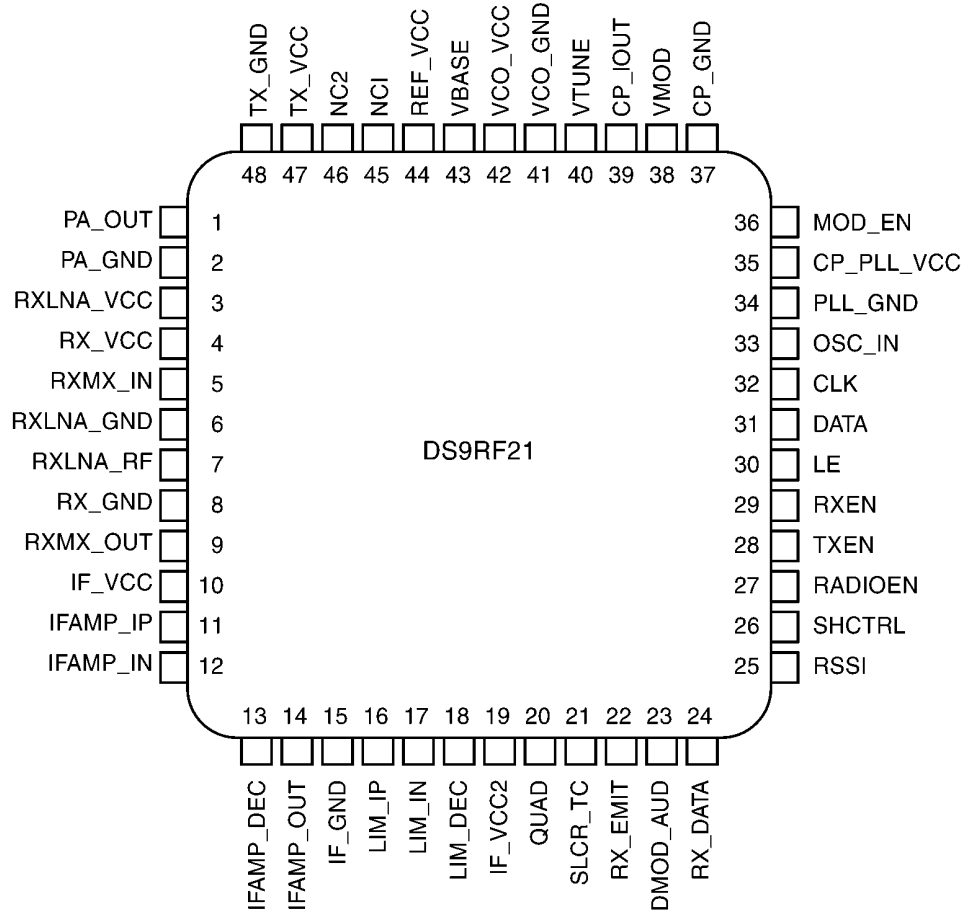
17.1. IC201



| Pin | Description | I/O | High | High_Z | Low | Pin | Description | I/O | High | High_Z | Low |
|-----|-------------|-----|------------|--------|----------|-----|-------------|-----|------------|--------|------------|
| 1 | NC | D.O | - | - | Normal | 51 | XOUT | A.O | - | - | - |
| 2 | NC | D.O | - | - | Normal | 52 | XIN | A.I | - | - | - |
| 3 | UART_RX | D.I | High | - | Low | 53 | GND | GND | - | - | GND |
| 4 | UART_TX | D.O | High | - | Low | 54 | RSTN | D.I | Normal | - | Reset |
| 5 | LCDPOWER_SW | D.O | Off | - | On | 55 | PDN | D.I | Power On | - | Power Down |
| 6 | KEYSTROBE_F | D.O | - | Not | Active | 56 | MIC_POWSW | D.O | Bias Off | - | Bias On |
| 7 | KEYSTROBE_E | D.O | - | Not | Active | 57 | TXO | D.O | - | - | - |
| 8 | KEYSTROBE_D | D.O | - | Not | Active | 58 | MODEN | D.O | - | - | - |
| 9 | KEYSTROBE_C | D.O | - | Not | Active | 59 | EEPROM_DO | D.I | High | - | Low |
| 10 | KEYSTROBE_B | D.O | - | Not | Active | 60 | EEPROM_DI | D.O | High | - | Low |
| 11 | KEYSTROBE_A | D.O | - | Not | Active | 61 | NC | D.O | - | - | Normal |
| 12 | NC | D.O | - | - | Normal | 62 | BMCCLK | D.O | - | - | - |
| 13 | HEADSET_DET | D.I | Headset In | - | Non | 63 | RXEN | D.O | - | - | - |
| 14 | VCC | VCC | Vcc | - | - | 64 | TXEN | D.O | - | - | - |
| 15 | GND | GND | - | - | GND | 65 | SHCTRL | D.O | - | - | - |
| 16 | DOT_DB4 | D.O | High | - | Low | 66 | RXI | D.I | - | - | - |
| 17 | DOT_DB5 | D.O | High | - | Low | 67 | EEPROM_CS | D.O | Active | - | Not |
| 18 | DOT_DB6 | D.O | High | - | Low | 68 | NC | D.O | - | - | Normal |
| 19 | DOT_DB7 | D.O | High | - | Low | 69 | LIGHTEDLED | D.O | On | - | Off |
| 20 | DOT_E/RD | D.O | Active | - | Not | 70 | TALK LED | D.O | Normal | - | On |
| 21 | DOT_RW/WR | D.O | Read | - | Write | 71 | RADIOEN | D.O | - | - | - |
| 22 | DOT_RS | D.O | Data | - | Instruct | 72 | GND | GND | - | - | GND |
| 23 | SIODO_RF | D.O | High | - | Low | 73 | VCC | VCC | VCC | - | - |
| 24 | SIOLE_RF | D.O | Latch | - | Not | 74 | CHAGEDET | D.I | Off Charge | - | On Charge |
| 25 | SIOCLK_RF | D.O | High | - | Low | 75 | TCK | D.O | - | - | - |
| 26 | NC | D.O | - | - | Normal | 76 | TMS | D.O | - | - | - |
| 27 | DOT_RESET | D.O | Normal | - | Reset | 77 | TDI | D.I | - | - | - |
| 28 | GND | GND | - | - | GND | 78 | TDO | D.O | - | - | - |
| 29 | SPOUTP | A.O | - | - | - | 79 | RECHARGELED | D.O | Normal | - | On |
| 30 | GNDPA | GND | - | - | GND | 80 | INTLED | D.O | Normal | - | On |
| 31 | SPOUTN | A.O | - | - | - | 81 | NC | D.O | Normal | - | - |
| 32 | VCCPA | VCC | VCC | - | - | 82 | KEYIN_5 | D.I | Non | - | Key In |
| 33 | HSSPOUT | A.O | - | - | - | 83 | KEYIN_4 | D.I | Non | - | Key In |
| 34 | LOUTO | A.O | - | - | - | 84 | KEYIN_3 | D.I | Non | - | Key In |
| 35 | DCINO | A.I | - | - | - | 85 | KEYIN_2 | D.I | Non | - | Key In |
| 36 | LINO | A.I | - | - | - | 86 | KEYIN_1 | D.I | Non | - | Key In |
| 37 | LGSO | A.I | - | - | - | 87 | NC | D.O | Normal | - | Normal |
| 38 | CIDOO | A.I | - | - | - | 88 | LCD_BL | D.O | On | - | Off |
| 39 | CIDINO | A.I | - | - | - | 89 | NC | D.O | - | - | Normal |
| 40 | CIDIPO | A.I | - | - | - | 90 | NC | D.O | - | - | Normal |
| 41 | VCCA | VCC | VCC | - | - | 91 | NC | D.O | - | - | Normal |
| 42 | DCIN1 | A.I | - | - | - | 92 | NC | D.O | - | - | Normal |
| 43 | GNDPA | GND | - | - | GND | 93 | NC | D.O | - | - | Normal |
| 44 | HSMIP | A.I | - | - | - | 94 | NC | D.O | - | - | Normal |
| 45 | VRFF | A.O | - | - | - | 95 | NC | D.O | - | - | Normal |
| 46 | MIN | A.I | - | - | - | 96 | GND | GND | - | - | GND |
| 47 | MIP | A.I | - | - | - | 97 | VCC | VCC | VCC | - | - |
| 48 | RSSI | A.I | - | - | - | 98 | NC | D.O | - | - | Normal |
| 49 | GNDPLL | GND | - | - | GND | 99 | EPP_CLK | D.O | High | - | Low |
| 50 | VCCPLL | VCC | VCC | - | - | 100 | NC | D.O | - | - | Normal |

18 EXPLANATION OF IC TERMINALS (RF Unit)

18.1. IC101



| Pin | Description | I/O |
|-----|-------------|-------|
| 1 | PA_OUT | O |
| 2 | PA_GND | O |
| 3 | RXLNA_VCC | O&VCC |
| 4 | RX_VCC | VCC |
| 5 | RXMX_IN | I |
| 6 | RXLNA_GND | GND |
| 7 | RXLNA_RF | I |
| 8 | RX_GND | GND |
| 9 | RXMX_OUT | O&VCC |
| 10 | IF_VCC | VCC |
| 11 | IFAMP_IP | I |
| 12 | IFAMP_IN | I |
| 13 | IFAMP_DEC | I |
| 14 | IFAMP_OUT | O |
| 15 | IF_GND | GND |
| 16 | LIM_IP | I |
| 17 | LIM_IN | I |
| 18 | LIM_DEC | I |
| 19 | IF_VCC2 | VCC |
| 20 | QUAD | I |
| 21 | SLCR_TC | I |
| 22 | RX_EMIT | GND |
| 23 | DMOD_AUD | O |
| 24 | RX_DATA | O |

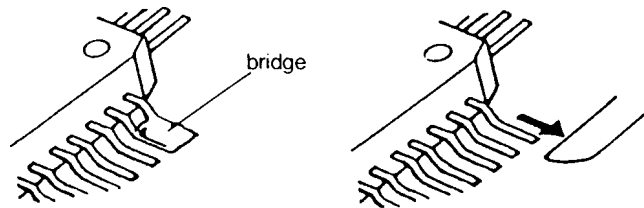
| Pin | Description | I/O |
|-----|-------------|-----|
| 25 | RSSI | O |
| 26 | SHCTRL | I |
| 27 | RADIOEN | I |
| 28 | TXEN | I |
| 29 | RXEN | I |
| 30 | LE | I |
| 31 | DATA | I |
| 32 | CLK | I |
| 33 | OSC_IN | I |
| 34 | PLL_GND | GND |
| 35 | CP_PLL_VCC | VCC |
| 36 | MOD_EN | I |
| 37 | CP_GND | GND |
| 38 | VMOD | I |
| 39 | CP_IOUT | O |
| 40 | VTUNE | I |
| 41 | VCO_GND | GND |
| 42 | VCO_VCC | VCC |
| 43 | VBASE | I |
| 44 | REF_VCC | VCC |
| 45 | NCI | N/C |
| 46 | NC2 | N/C |
| 47 | TX_VCC | VCC |
| 48 | TX_GND | GND |

19 HOW TO REPLACE FLAT PACKAGE IC

19.1. Preparation

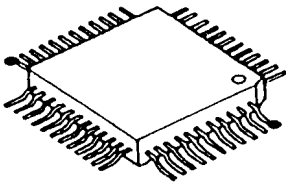
- SOLDER
Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA
- Soldering iron
Recommended power consumption will be between 30 W to 40 W.
Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)
(An expert may handle between 60 W to 80 W iron, but beginner might damage foil by overheating.)
- Flux
HI115 Specific gravity 0.863.
(Original flux will be replaced daily.)

iron as shown in below figure.



19.2. Procedure

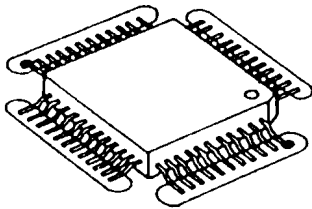
1. Temporary fix FLAT PACKAGE IC by soldering on two marked 2 pins.



● - - - - - Temporary soldering point.

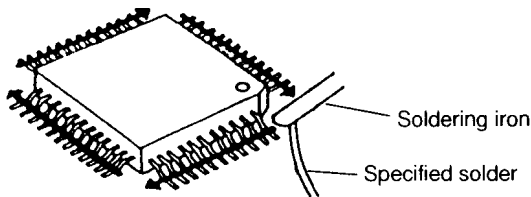
*Most important matter is accurate setting of IC to the corresponding soldering foil.

2. Apply flux for all pins of FLAT PACKAGE IC.



○ - - - - - Flux

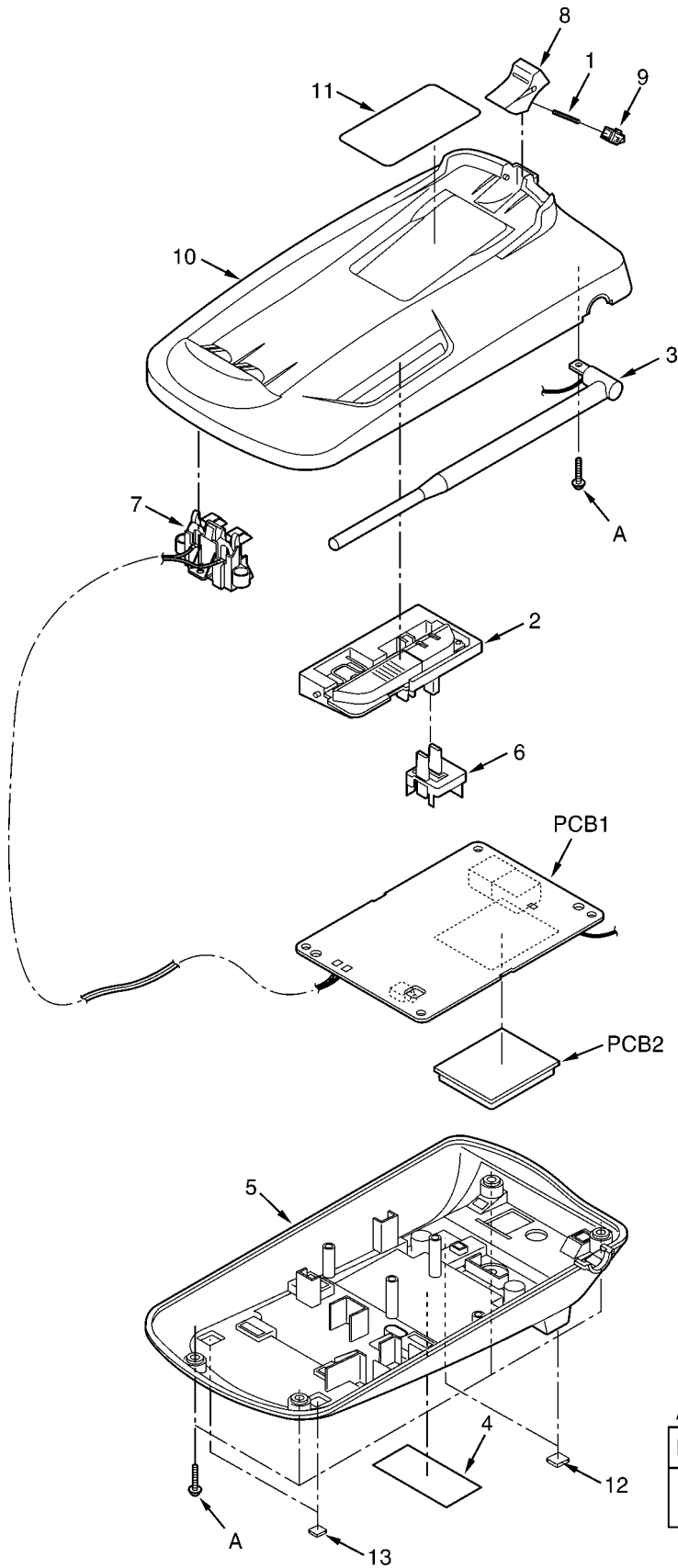
3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.



19.3. Modification Procedure of Bridge

1. Re-solder slightly on bridged portion.
2. Remove remained solder along pins employing soldering

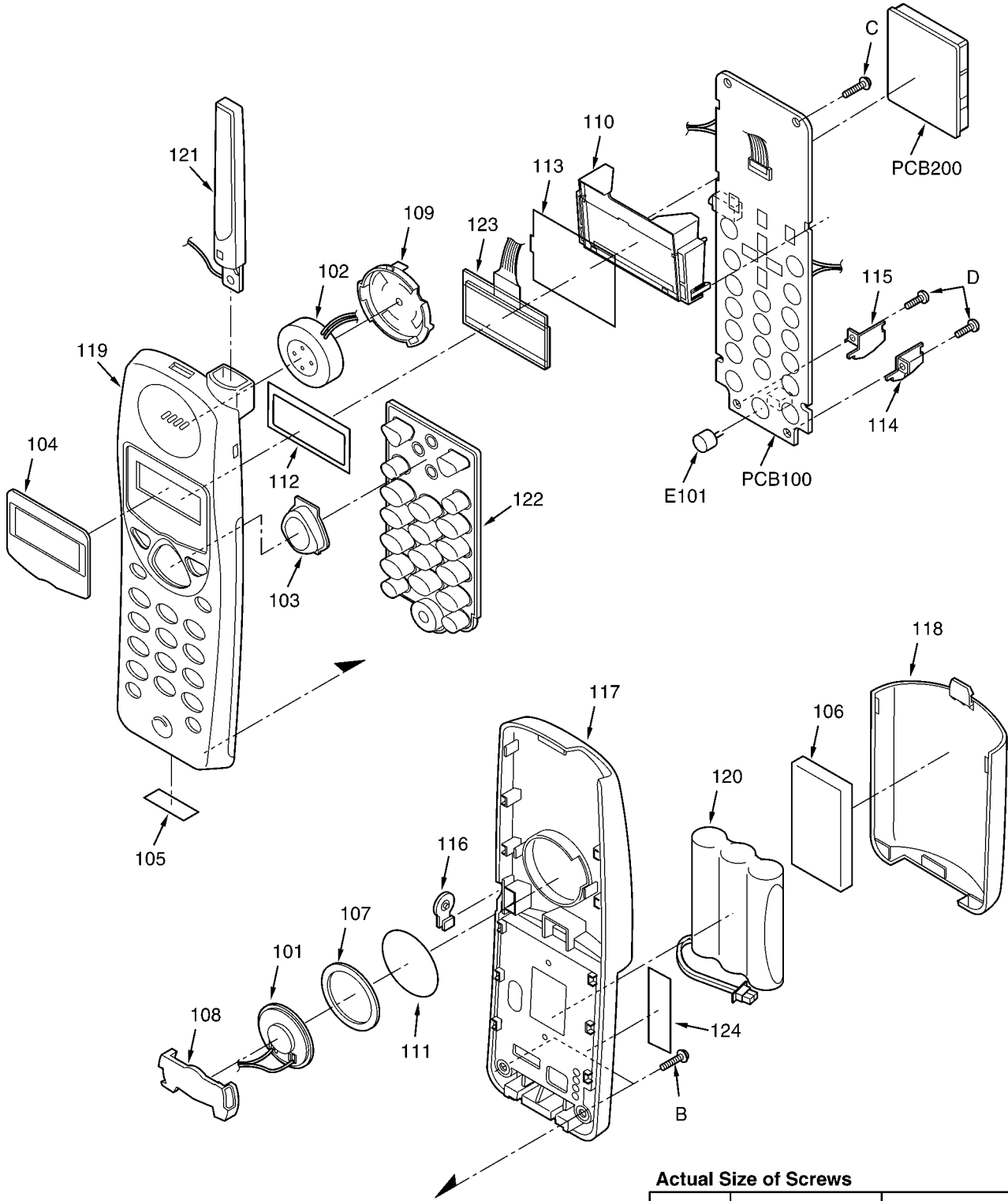
20 CABINET AND ELECTRICAL PARTS (Base Unit)



Actual Size of Screws

| Ref.No. | Part No. | Figure |
|---------|-----------|--------|
| A | XTW26+12P | |

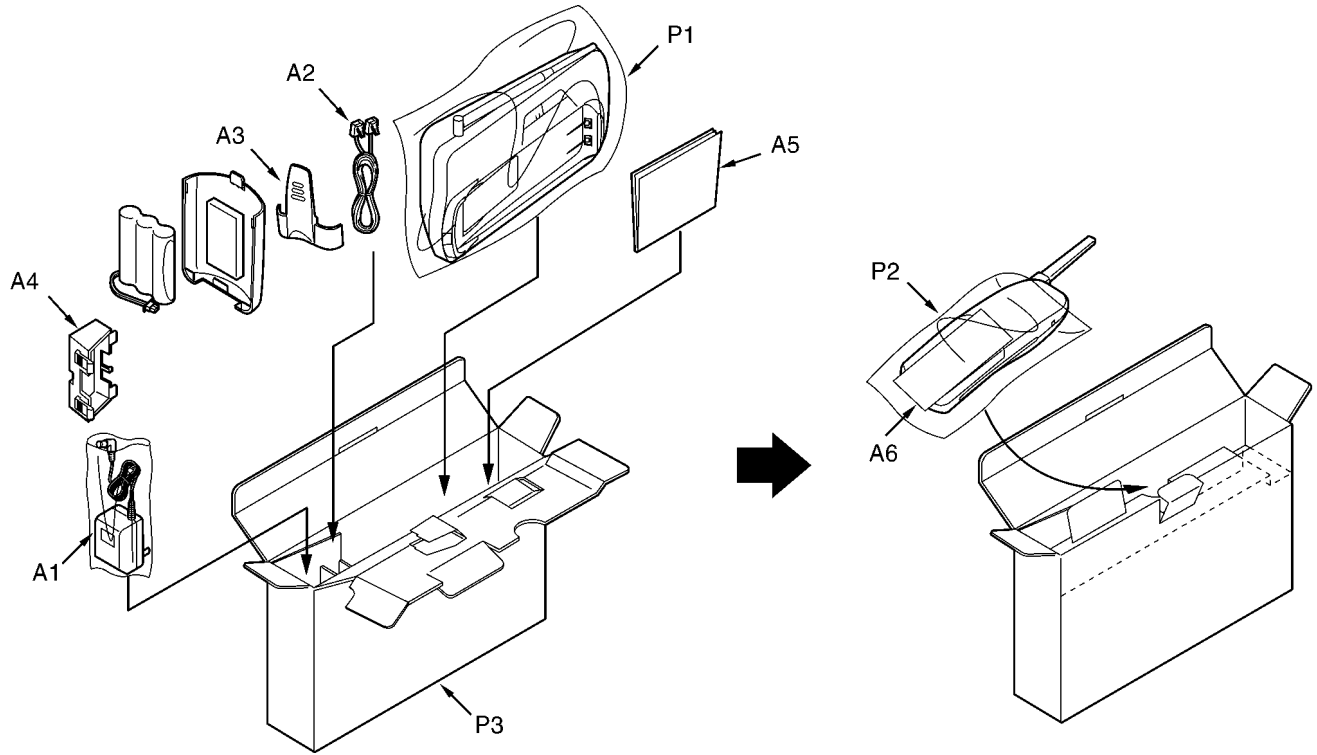
21 CABINET AND ELECTRICAL PARTS (Handset)



Actual Size of Screws


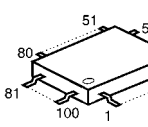
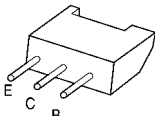
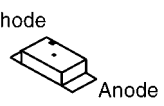
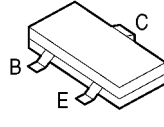
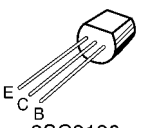
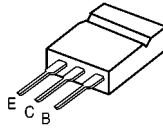
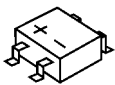
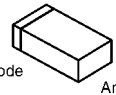
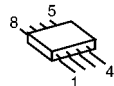
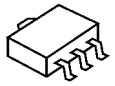
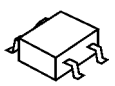
| Ref.No. | Part No. | Figure |
|---------|-----------|--------|
| B | XTW26+12P | |
| C | XTW26+12P | |
| D | XTB26+10J | |

22 ACCESSORIES AND PACKING MATERIALS

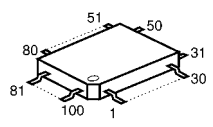
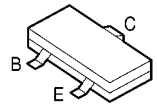
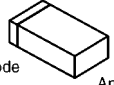

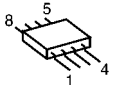

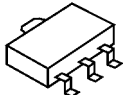
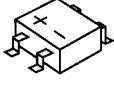
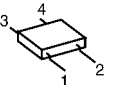


23 TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

23.1. Base Unit

| | | | | |
|---|---|---|--|--|
|  <p>PQVDRLZ2R0 PQVDRLZ20A</p> |  <p>C2HBBG000025</p> |  <p>2SD1994A</p> |  <p>PQVDBR1111C PQVDSML310MT</p> |  <p>UN5213 2SD1819A</p> |
|  <p>2SC2120 2SA1625 PQVT2N6517CA</p> |  <p>2SD2136</p> |  <p>PQVDS1ZB60F1</p> |  <p>MA111 MA8220 MA8068M PQVDHRU0302A</p> | |
|  <p>PQWIC1709LBH</p> |  <p>C0CBABD00013</p> |  <p>PQVIPS3327UT</p> | | |

23.2. Handset

| | | | | |
|---|--|---|--|---|
|  <p>C2HBBG000024</p> |  <p>2SD1819A PQVTDTC143E PQVDTA143TU</p> | |  <p>MA111 MA8100M MA2ZD1400</p> |  <p>LNJ308G8JRA</p> |
|  <p>PQWIC1703BXR</p> |  <p>PQVIC62FP33M</p> |  <p>C0CBABD00011</p> |  <p>PQVDS1ZB60F1</p> |  <p>PQVIC61CN32N</p> |

24 REPLACEMENT PARTS LIST

This replacement parts list are KX-TC1709LBB only.

Note:

1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention.

After the end of this period, the assembly will no longer be available.

2. Important safety notice

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

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω

All capacitors are in MICRO FARADS (μ F) P= μ μ F

*Type & Wattage of Resistor

Type

| | | |
|-------------|-----------------|----------------------|
| ERC:Solid | ERX:Metal Film | PQ4R:Carbon |
| ERD:Carbon | ERG:Metal Oxide | ERS:Fusible Resistor |
| PQRD:Carbon | ER0:Metal Film | ERF:Cement Resistor |

Wattage

| | | | | | |
|------------|------------|---------|------|------|------|
| 10,16:1/8W | 14,25:1/4W | 12:1/2W | 1:1W | 2:2W | 3:3W |
|------------|------------|---------|------|------|------|

*Type & Voltage of Capacitor

Type

| | |
|---------------------|-------------------------------|
| ECFD:Semi-Conductor | ECED,ECKD,ECBT,PQCBC: Ceramic |
| ECQS:Styrol | ECQE,ECQV,ECQG: Polyester |
| PQCUV:Chip | ECEA,ECSZ:Electlytic |
| ECQMS:Mica | ECQP:Polypropylene |

Voltage

| ECQ Type | ECQG ECQV Type | ECSZ Type | Others | | |
|----------|-------------------|-----------|-----------|-----------|--|
| 1H:50V | 05:50V | 0F:3.15V | 0J :.63V | 1V :.35V | |
| 2A:100V | 1:100V | 1A:10V | 1A :10V | 50,1H:50V | |
| 2E:250V | 2:200V | 1V:35V | 1C :16V | 1J :.63V | |
| 2H:500V | | 0J:6.3V | 1E,25:25V | 2A :100V | |

24.1. Base Unit

24.1.1. CABINET AND ELECTRICAL PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|-------------|-------------------------|---------|
| 1 | PQUS10285Z | HOOK SPRING | |
| 2 | PQBC10338Z1 | LOCATOR BUTTON | S |
| 3 | PQSA10095Z | ANTENNA | |
| 4 | PQGT14771Z | NAME PLATE | |
| 5 | PQKF10519Y1 | LOWER CABINET | S |
| 6 | PQHR10857Z | LED PLATE | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|-------------|-------------------------|---------|
| 7 | PQWE10022Z | CHARGE TERMINAL | |
| 8 | PQKE10131Z1 | HOOK LEVER | S |
| 9 | PQKE10134Z1 | HOOK KNOB | S |
| 10 | 1AKML0487Z3 | UPPER CABINET | S |
| 11 | PQQT22278Z | CHARGE LABEL | |
| 12 | PQHA10017Z | LEG CUSHION RUBBER | |
| 13 | PQHA10018Z | FOOT RUBBER | |

24.1.2. MAIN P.C. BOARD PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|----------------------------|---------|
| PCB1 | PQWPC1709LBH | MAIN P.C.BOARD ASS'Y (RTL) | |
| | | (ICS) | |
| IC301 | C0CBABD00013 | IC | |
| IC321 | PQVIPS3327UT | IC | |
| IC501 | C2HBBG000025 | IC | |
| IC551 | PQWIC1709LBH | IC | |
| | | (TRANSISTORS) | |
| Q101 | 2SD1819A | TRANSISTOR (SI) | |
| Q115 | 2SD1819A | TRANSISTOR (SI) | |
| Q121 | 2SA1625 | TRANSISTOR (SI) | S |
| Q122 | PQVT2N6517CA | TRANSISTOR (SI) | S |
| Q131 | 2SC2120 | TRANSISTOR (SI) | S |
| Q303 | 2SD2136 | TRANSISTOR (SI) | |
| Q371 | 2SD1994A | TRANSISTOR (SI) | |
| Q381 | 2SD1819A | TRANSISTOR (SI) | |
| Q461 | 2SD1819A | TRANSISTOR (SI) | |
| Q501 | 2SD1819A | TRANSISTOR (SI) | |
| Q502 | UN5213 | TRANSISTOR (SI) | S |
| | | (DIODES) | |
| D101 | PQVDS1ZB60F1 | DIODE (SI) | |
| D103 | MA111 | DIODE (SI) | |
| D117 | MA111 | DIODE (SI) | |
| D118 | MA111 | DIODE (SI) | |
| D121 | PQVDRLZ20A | DIODE (SI) | S |
| D131 | PQVDRLZ2R0 | DIODE (SI) | S |
| D303 | MA8068M | DIODE (SI) | |
| D306 | PQVDHRU0302A | DIODE (SI) | S |
| D376 | MA8220 | DIODE (SI) | |
| D377 | MA8220 | DIODE (SI) | |
| D511 | PQVDHRU0302A | DIODE (SI) | S |
| D601 | PQVDHRU0302A | DIODE (SI) | S |
| | | (LEDS) | |
| LED541 | PQVDSML310MT | LED | S |
| LED542 | PQVDBR1111C | LED | S |
| | | (COILS) | |
| L101 | PQLQXF330K | COIL | S |
| L102 | PQLQXF330K | COIL | S |
| L301 | PQLQXF100K | COIL | S |
| L375 | PQLQXF100K | COIL | S |
| L501 | PQLQR2KA213 | COIL | S |
| L502 | PQLQR4RB601D | COIL | |
| | | (SURGE ABSORBERS) | |
| SA101 | PQVDDSS301L | SURGE ABSORBER | S |
| SA102 | PQVDDSS301L | SURGE ABSORBER | S |
| | | (OTHERS) | |
| CN101 | PQJJ2H003Z | JACK SOCKET | S |
| G601 | PQJT10152Z | CHARGE TERMINAL | |
| G602 | PQJT10152Z | CHARGE TERMINAL | |
| G603 | PQJT10152Z | CHARGE TERMINAL | |
| G604 | PQJT10152Z | CHARGE TERMINAL | |
| G605 | PQJT10152Z | CHARGE TERMINAL | |
| G606 | PQJT10152Z | CHARGE TERMINAL | |
| P101 | PQRP390N | POSISTOR | S |
| S501 | EVQPCQ05K | PUSH SWITCH | |
| X501 | H0J409400006 | CRYSTAL OSCILLATOR | |
| | | (RESISTORS) | |
| R103 | ERJ3GEYJ104 | 100k | |
| R104 | ERJ3GEYJ104 | 100k | |
| R106 | ERJ3GEYJ472 | 4.7k | |
| R107 | ERJ3GEYJ473 | 47k | |
| R108 | ERJ3GEYJ102 | 1k | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| R111 | ERJ3GEYJ394 | 390k | |
| R112 | ERJ3GEYJ394 | 390k | |
| R113 | ERJ3GEYJ472 | 4.7k | |
| R115 | ERJ3GEYJ155 | 1.5M | |
| R116 | ERJ3GEYJ106 | 10M | |
| R117 | ERJ3GEYJ275 | 2.7M | |
| R118 | ERJ3GEYJ102 | 1k | |
| R120 | ERJ3GEYJ103 | 10k | |
| R121 | ERJ3GEYJ104 | 100k | |
| R122 | ERJ3GEYJ103 | 10k | |
| R124 | ERJ3GEYJ472 | 4.7k | |
| R132 | ERJ3GEYJ393 | 39k | |
| R133 | ERJ3GEYJ102 | 1k | |
| R134 | ERJ3GEYOR00 | 0 | |
| R136 | ERDS1TJ330 | 33 | S |
| R138 | ERJ3GEYJ470 | 47 | |
| R139 | ERJ3GEYJ681 | 680 | |
| R140 | ERJ3GEYJ122 | 1.2k | |
| R303 | ERJ3GEYJ122 | 1.2k | |
| R304 | ERJ3GEYJ122 | 1.2k | |
| R333 | ERJ3GEYJ103 | 10k | |
| R345 | ERJ3GEYJ102 | 1k | |
| R371 | ERJ3GEYJ331 | 330 | |
| R372 | ERJ3GEYJ561 | 560 | |
| R373 | ERJ3GEYJ390 | 39 | |
| R374 | ERJ3GEYJ560 | 56 | |
| R375 | ERJ3GEYJ470 | 47 | |
| R376 | ERJ3GEYJ470 | 47 | |
| R377 | ERDS1VJ271 | 270 | |
| R381 | ERJ3GEYJ563 | 56k | |
| R382 | ERJ3GEYJ563 | 56k | |
| R383 | ERJ3GEYJ103 | 10k | |
| R384 | ERJ3GEYJ104 | 100k | |
| R385 | ERJ3GEYJ102 | 1k | |
| R411 | ERJ3GEYJ394 | 390k | |
| R412 | ERJ3GEYJ564 | 560k | |
| R431 | ERJ3GEYJ222 | 2.2k | |
| R433 | ERJ3GEYJ333 | 33k | |
| R434 | ERJ3GEYJ102 | 1k | |
| R461 | ERJ3GEYJ102 | 1k | |
| R462 | ERJ3GEYJ392 | 3.9k | |
| R463 | ERJ3GEYJ102 | 1k | |
| R464 | ERJ3GEYJ394 | 390k | |
| R465 | ERJ3GEYJ820 | 82 | |
| R502 | ERJ3GEYJ103 | 10k | |
| R503 | ERJ3GEYJ103 | 10k | |
| R504 | ERJ3GEYJ103 | 10k | |
| R506 | ERJ3GEYJ102 | 1k | |
| R507 | ERJ3GEYJ102 | 1k | |
| R508 | ERJ3GEYJ103 | 10k | |
| R509 | ERJ3GEYJ103 | 10k | |
| R511 | ERJ3GEYJ274 | 270k | |
| R512 | ERJ3GEYJ473 | 47k | |
| R541 | ERJ3GEYJ181 | 180 | |
| R542 | ERJ3GEYJ561 | 560 | |
| R601 | ERJ3GEYJ123 | 12k | |
| R602 | ERJ3GEYJ103 | 10k | |
| R603 | ERJ3GEYJ472 | 4.7k | |
| R604 | ERJ3GEYJ472 | 4.7k | |
| R611 | ERJ3GEYJ104 | 100k | |
| R612 | ERJ3GEYJ472 | 4.7k | |
| R613 | ERJ3GEYJ472 | 4.7k | |
| R615 | ERJ3GEYJ102 | 1k | |
| R650 | ERJ3GEYJ332 | 3.3k | |
| L100 | PQ4R18XJ000 | 0 | S |
| L511 | ERJ3GEYOR00 | 0 | |
| | | (CAPACITORS) | |
| C100 | ECUV1C104ZFV | 0.1 | |
| C101 | ECKD2H681KB | 680P | S |
| C102 | ECKD2H681KB | 680P | S |
| C103 | PQCUV1H154KR | 0.15 | |
| C104 | PQCUV1H154KR | 0.15 | |
| C106 | PQCUV1A684KB | 0.68 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| C111 | ECKD2H681KB | 680P | S |
| C112 | ECKD2H681KB | 680P | S |
| C115 | ECUV1H103KBV | 0.01 | |
| C121 | ECUV1H103KBV | 0.01 | |
| C131 | ECUV1H101JCV | 100P | |
| C132 | ECUV1H103KBV | 0.01 | |
| C134 | ECEA1HKA010 | 1 | |
| C139 | ECEA1CKA100 | 10 | |
| C140 | ECUV1C473KBV | 0.047 | |
| C302 | ECUV1C104ZFV | 0.1 | |
| C303 | ECUV1C104ZFV | 0.1 | |
| C304 | ECEA1CKA100 | 10 | |
| C305 | ECUV1C104ZFV | 0.1 | |
| C306 | ECEA1AU471 | 470 | |
| C308 | ECUV1C104ZFV | 0.1 | |
| C333 | ECUV1C104ZFV | 0.1 | |
| C341 | ECUV1C104ZFV | 0.1 | |
| C371 | ECUV1C104ZFV | 0.1 | |
| C411 | ECUV1H121JCV | 120P | |
| C412 | ECUV1A105ZFV | 1 | |
| C414 | ECEA1CKA100 | 10 | |
| C415 | ECUV1C104ZFV | 0.1 | |
| C431 | ECUV1H272KBV | 0.0027 | |
| C432 | ECUV1C104KBV | 0.1 | |
| C441 | ECUV1C104KBV | 0.1 | |
| C445 | ECUV1C104KBV | 0.1 | |
| C463 | ECUV1C104KBV | 0.1 | |
| C464 | ECUV1H102KBV | 0.001 | |
| C467 | ECST0JY106 | 10 | |
| C501 | ECEA1AU221 | 220 | S |
| C502 | ECUV1C104ZFV | 0.1 | |
| C503 | ECUV1C104ZFV | 0.1 | |
| C504 | ECUV1H681JCV | 680P | S |
| C506 | ECUV1H180JCV | 18P | |
| C507 | ECUV1H150JCV | 15P | |
| C513 | ECEA0JKA101 | 100 | |
| C514 | ECUV1C104ZFV | 0.1 | |
| C515 | ECST0JY106 | 10 | |
| C516 | ECUV1C104ZFV | 0.1 | |
| C551 | ECUV1C104ZFV | 0.1 | |
| C601 | ECEA1AU101 | 100 | S |
| C602 | ECUV1H103KBV | 0.01 | |
| C611 | ECUV1H103KBV | 0.01 | |
| C613 | ECUV1C104ZFV | 0.1 | |
| C616 | ECUV1H330JCV | 33P | |
| C618 | ECUV1H030CCV | 3P | |
| C620 | ECUV1C104ZFV | 0.1 | |
| C681 | ECUV1H030CCV | 3P | |

24.1.3. RF P.C.BOARD PART

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|------------|-------------------------|---------|
| PCB2 | PQLP10246Z | RF BLOCK | |

24.2. Handset

24.2.1. CABINET AND ELECTRICAL PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|-------------|-------------------------|---------|
| 101 | PQAS3P07Y | SPEAKER | |
| 102 | PQAX3P27Z | RECEIVER | |
| 103 | PQBC10337ZL | NAVIKEY BUTTON | S |
| 104 | PQGP10183ZL | LCD LABEL | S |
| 105 | PQGT14793Z | NAME LABEL | |
| 106 | PQHE10121Z | CUSHION, URETHANE FORM | |
| 107 | PQHG10589Y | SP RUBBER SHEET | |
| 108 | PQHR10778Z | SP HOLDER | |
| 109 | PQHR10855Z | SP HOLDER | |
| 110 | PQHR10856Z | LCD HOLDER | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| 111 | PQHS10457Z | SP NET | |
| 112 | PQHS10470Z | CUSHION LCD | |
| 113 | PQHX11005Z | LCD SHEET | |
| 114 | PQJT10176Z | CHARGE TERMINAL (L) | |
| 115 | PQJT10177Z | CHARGE TERMINAL (R) | |
| 116 | PQKE10132Z1 | EARPHONE CAP | S |
| 117 | PQKF10518Z1 | REAR CABINET | S |
| 118 | PQKK10120Z1 | BATTERY COVER | S |
| 119 | 1DKM10486Z1 | FRONT CABINET | S |
| 120 | PQPP504SVC | BATTERY | S |
| 121 | PQSA10102X | ANTENNA | S |
| 122 | PQSX10174Y | KEY RUBBER SWITCH | |
| 123 | PQADGP332GN2 | LIQUID CRYSTAL DISPLAY | |
| 124 | QQQT20007Z | INSERT LABEL, BATTERY | |

24.2.2. MAIN P.C. BOARD PARTS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|----------------------------|---------|
| PCB100 | PQWPC1703BXR | MAIN P.C.BOARD ASS'Y (RTL) | |
| | | (ICS) | |
| IC201 | C2HBBG000024 | IC | |
| IC202 | PQWIC1703BXR | IC | |
| IC203 | C0CBABD00011 | IC | |
| IC204 | PQVIC62FP33M | IC | S |
| IC205 | PQVIC61CN32N | IC | S |
| | | (TRANSISTORS) | |
| Q202 | PQVTDTC143E | TRANSISTOR(SI) | S |
| Q203 | PQVTDTA143TU | TRANSISTOR(SI) | |
| Q205 | 2SD1819A | TRANSISTOR(SI) | |
| Q206 | PQVTDTC143E | TRANSISTOR(SI) | S |
| Q207 | 2SD1819A | TRANSISTOR(SI) | |
| Q211 | PQVTDTA143TU | TRANSISTOR(SI) | |
| | | (DIODES) | |
| D201 | MA2ZD1400 | DIODE(SI) | |
| D203 | MA111 | DIODE(SI) | |
| D206 | PQVDS1ZB60F1 | DIODE(SI) | |
| D211 | MA8100M | DIODE(SI) | |
| D214 | MA111 | DIODE(SI) | |
| D215 | MA2ZD1400 | DIODE(SI) | |
| D216 | MA111 | DIODE(SI) | |
| | | (LEDS) | |
| LED205 | LNJ308G8JRA | LED | |
| LED206 | LNJ308G8JRA | LED | |
| LED207 | LNJ308G8JRA | LED | |
| | | (COILS) | |
| L201 | MQLRE15NJF | COIL | |
| L203 | PQLQR3FL121 | COIL | S |
| L211 | PQLQR4RB601D | COIL | |
| L212 | PQLQR4RB601D | COIL | |
| | | (CONNECTORS) | |
| CN201 | PQJS22A12Z | FFC CONNECTOR | S |
| CN202 | PQJP2D13Z | CONNECTOR PIN | S |
| CN203 | PQJ1J007Z | EAR JACK | S |
| | | (OTHERS) | |
| E101 | PQJM147Y | MICROPHONE | |
| G1 | PQJT10152Z | CHARGE TERMINAL | |
| G2 | PQJT10152Z | CHARGE TERMINAL | |
| G3 | PQJT10152Z | CHARGE TERMINAL | |
| G4 | PQJT10152Z | CHARGE TERMINAL | |
| G5 | PQJT10152Z | CHARGE TERMINAL | |
| G6 | PQJT10152Z | CHARGE TERMINAL | |
| X201 | H0J409400006 | CRYSTAL OSCILLATOR | |
| | | (RESISTORS) | |
| R205 | ERJ3GEYJ271 | 270 | |
| R206 | ERJ3GEYJ271 | 270 | |
| R207 | ERJ3GEYJ271 | 270 | |
| R209 | ERJ3GEYJ102 | 1k | |
| R210 | ERJ3GEYJ103 | 10k | |
| R211 | ERJ3GEYJ103 | 10k | |
| R212 | ERJ3GEYJ101 | 100 | |
| R213 | ERJ3GEYJ101 | 100 | |
| R217 | ERJ3GEYF434 | 430k | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| R218 | ERJ3GEYF824 | 820k | S |
| R222 | ERJ3GEYJ101 | 100 | |
| R224 | ERJ3GEYJ103 | 10k | |
| R225 | ERJ3GEYJ472 | 4.7k | |
| R228 | ERJ3GEYJ224 | 220k | |
| R229 | ERJ3GEYJ102 | 1k | |
| R230 | ERJ3GEYJ102 | 1k | |
| R231 | ERJ3GEYJ102 | 1k | |
| R232 | ERJ3GEYJ103 | 10k | |
| R233 | ERJ3GEY0R00 | 0 | |
| R234 | ERJ3GEYJ225 | 2.2M | |
| R235 | ERJ3GEYJ225 | 2.2M | |
| R236 | ERJ3GEYJ473 | 47k | |
| R241 | ERJ3GEY0R00 | 0 | |
| R244 | ERJ3GEYJ473 | 47k | |
| R245 | ERJ3GEYJ103 | 10k | |
| R246 | ERJ3GEYJ153 | 15k | |
| R247 | ERJ3GEYJ391 | 390 | |
| R248 | ERJ3GEYJ393 | 39k | |
| R249 | ERJ3GEYJ222 | 2.2k | |
| R250 | ERJ3GEYJ222 | 2.2k | |
| R253 | ERJ3GEYJ222 | 2.2k | |
| R260 | ERJ3GEYJ103 | 10k | |
| R265 | ERJ3GEYJ103 | 10k | |
| R270 | ERJ3GEYJ104 | 100k | |
| R271 | ERJ3GEYJ104 | 100k | |
| R272 | ERJ3GEYJ104 | 100k | |
| R300 | ERJ3GEYJ104 | 100k | |
| R302 | ERJ3GEYJ180 | 18 | |
| R303 | ERJ3GEYJ180 | 18 | |
| C301 | ERJ3GEY0R00 | 0 | |
| L209 | PQ4R10XJ000 | 0 | S |
| | | (CAPACITORS) | |
| C203 | ECUV1C104ZJV | 0.1 | |
| C205 | ECUV1H101JCV | 100P | |
| C206 | ECUV1C104KBV | 0.1 | |
| C207 | ECUV1C104KBV | 0.1 | |
| C208 | ECUV1C104KBV | 0.1 | |
| C209 | ECUV1C104KBV | 0.1 | |
| C210 | ECUV1C104KBV | 0.1 | |
| C211 | ECUV1A474KBV | 0.47 | |
| C212 | ECUV1A474KBV | 0.47 | |
| C213 | ECEVOJA101 | 100 | |
| C214 | ECUV1C104ZJV | 0.1 | |
| C215 | ECUV1A474KBV | 0.47 | |
| C217 | ECUV1C104ZJV | 0.1 | |
| C218 | ECUV1C104ZJV | 0.1 | |
| C220 | ECEVOGA102P | 1000 | |
| C221 | ECUV1C104ZJV | 0.1 | |
| C222 | ECUV1C104ZJV | 0.1 | |
| C223 | ECSTOJY106 | 10 | |
| C224 | ECUV1C104ZJV | 0.1 | |
| C225 | ECUV1C104ZJV | 0.1 | |
| C226 | ECUV1C104ZJV | 0.1 | |
| C227 | ECUV1C104ZJV | 0.1 | |
| C228 | ECUV1C104ZJV | 0.1 | |
| C229 | ECUV1A105ZJV | 1 | |
| C230 | ECUV1E333KBV | 0.033 | |
| C231 | ECUV1A224KBV | 0.22 | |
| C232 | ECUV1E333KBV | 0.033 | |
| C233 | ECUV1A105ZJV | 1 | |
| C234 | ECUV1A224KBV | 0.22 | |
| C236 | ECUV1H150JCV | 15P | |
| C237 | ECUV1H150JCV | 15P | |
| C239 | ECUV1C104ZJV | 0.1 | |
| C242 | ECUV1C104ZJV | 0.1 | |
| C255 | ECUV1A224KBV | 0.22 | |
| C257 | ECSTOJY226 | 22 | |
| C262 | ECUV1A105ZJV | 1 | |
| C267 | ECSTOJY226 | 22 | |
| C270 | ECSTOJY475 | 4.7 | |
| C274 | ECUV1C104ZJV | 0.1 | |
| C277 | ECUV1C563KBV | 0.056 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| C279 | ECUV1H010CCV | 1P | |
| C280 | ECUV1C104ZJV | 0.1 | |
| C282 | ECUV1C104ZJV | 0.1 | |
| C285 | ECUV1C105ZF | 1 | |
| C291 | ECUV1C104ZJV | 0.1 | |
| C294 | ECUV1C104ZJV | 0.1 | |
| C303 | ECST0JY106 | 10 | |
| C304 | ECUV1C104ZJV | 0.1 | |
| C305 | ECUV1H030CCV | 3P | |

24.2.3. RF P.C.BOARD PART

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|------------|-------------------------|---------|
| PCB200 | PQLP10246Z | RF BLOCK | |

24.2.4. ACCESSORIES AND PACKING MATERIALS

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|-------------|-------------------------------------|---------|
| A1 | PQLV2LBZ | AC ADAPTOR | △ |
| A2 | PQJA10075Z | TEL CORD | |
| A3 | PQKE10130Z1 | BELT CLIP | S |
| A4 | PQKL10035Z1 | WALL MOUNT ADAPTOR | S |
| A5 | PQX13147Z | INSTRUCTION BOOK | |
| A6 | PQW12582Z | BATTERY LEAFLET | |
| P1 | XZB20X35A01 | PROTECTION COVER (for Base Unit) | |
| P2 | XZB10X35A02 | PROTECTION COVER (for Handset) | |
| P3 | PQPK13481Z | CARTON BOX | |

25 FOR SCHEMATIC DIAGRAM

25.1. Base Unit (27 SCHEMATIC DIAGRAM (Base Unit))

Notes:

1. DC voltage measurements are taken with voltmeter from the negative voltage line.

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

2. This schematic diagram and circuit board may be modified at any time with the development of new technology.

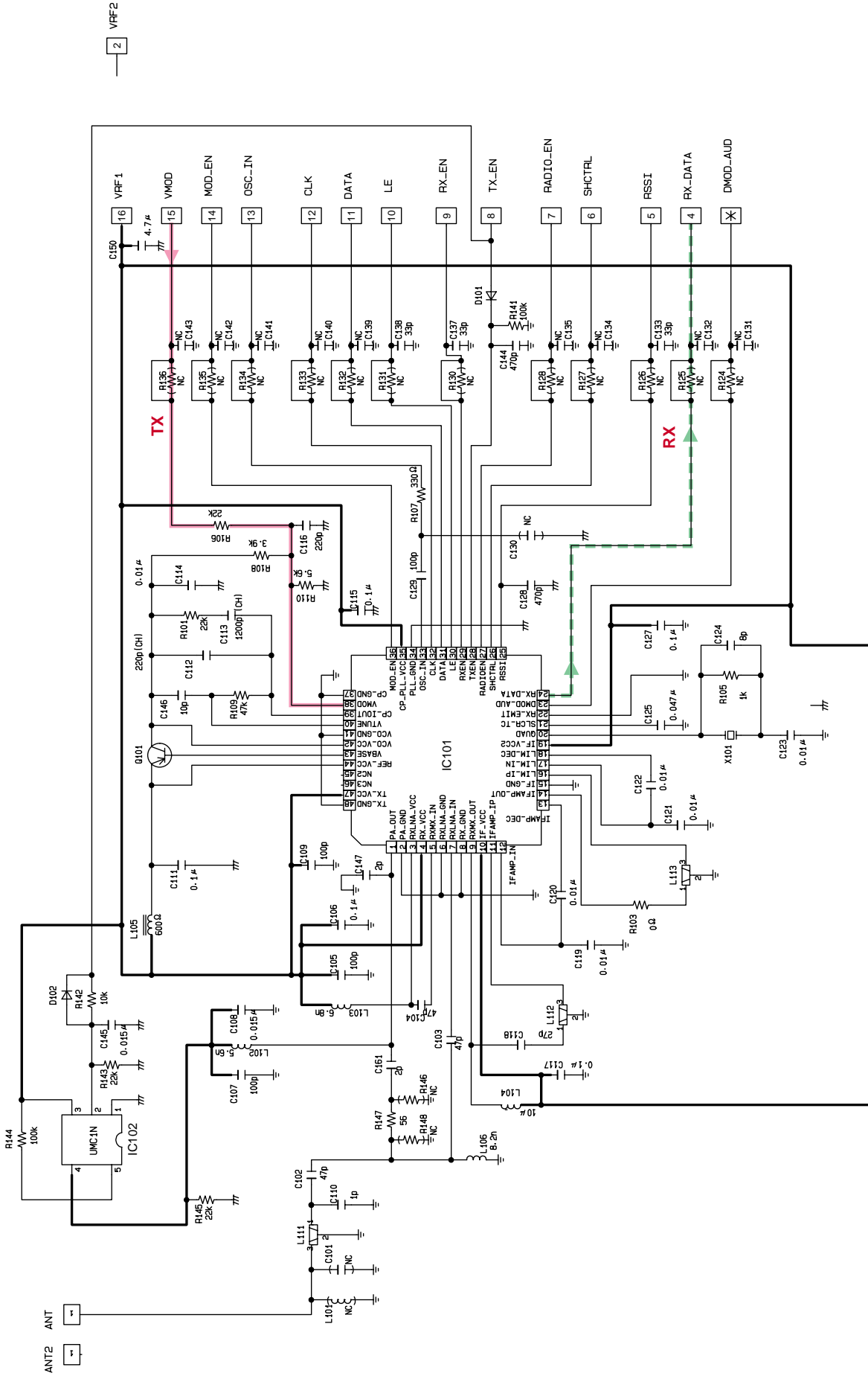
25.2. Handset (28 SCHEMATIC DIAGRAM (Handset))

Notes:

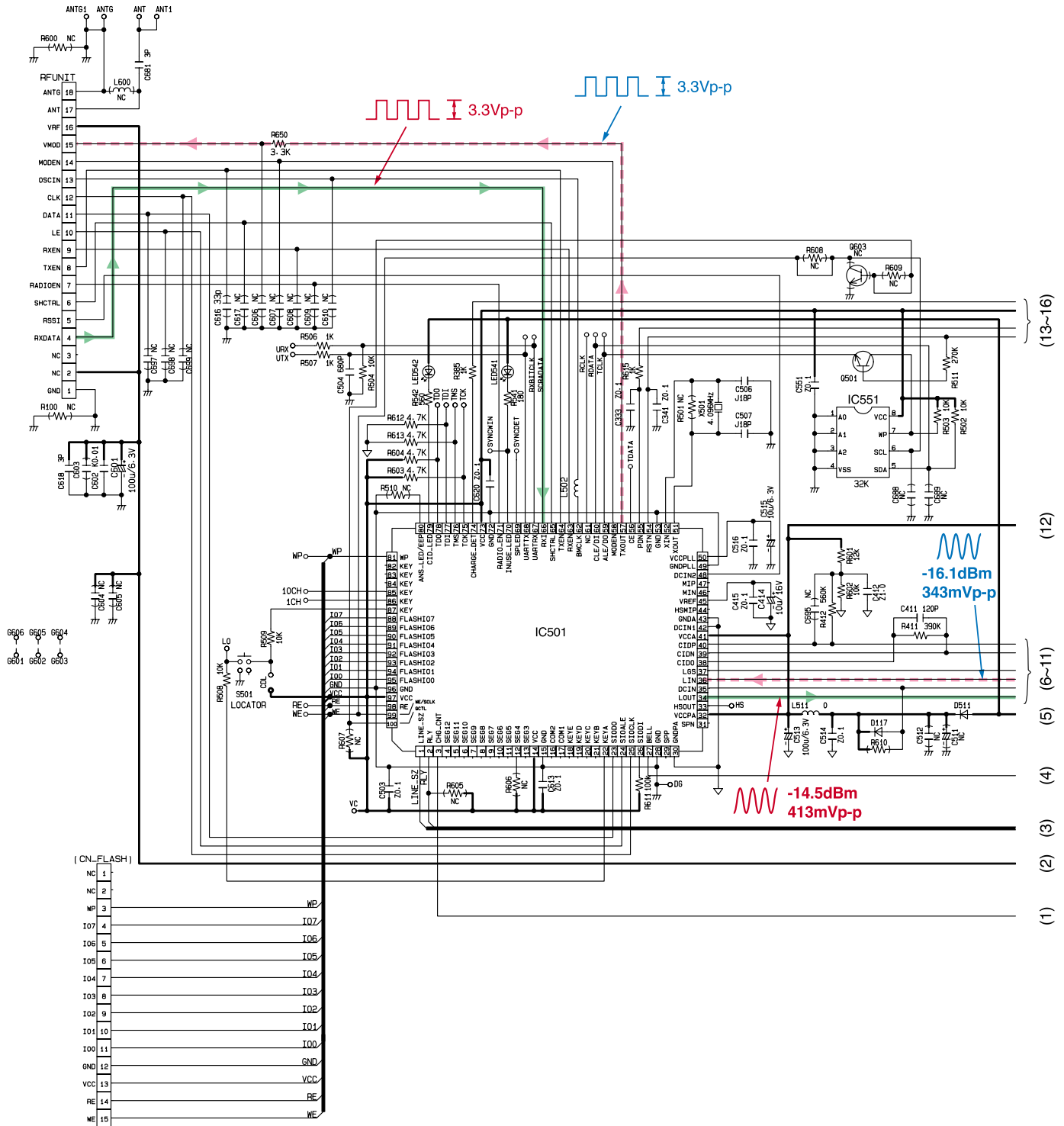
1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.

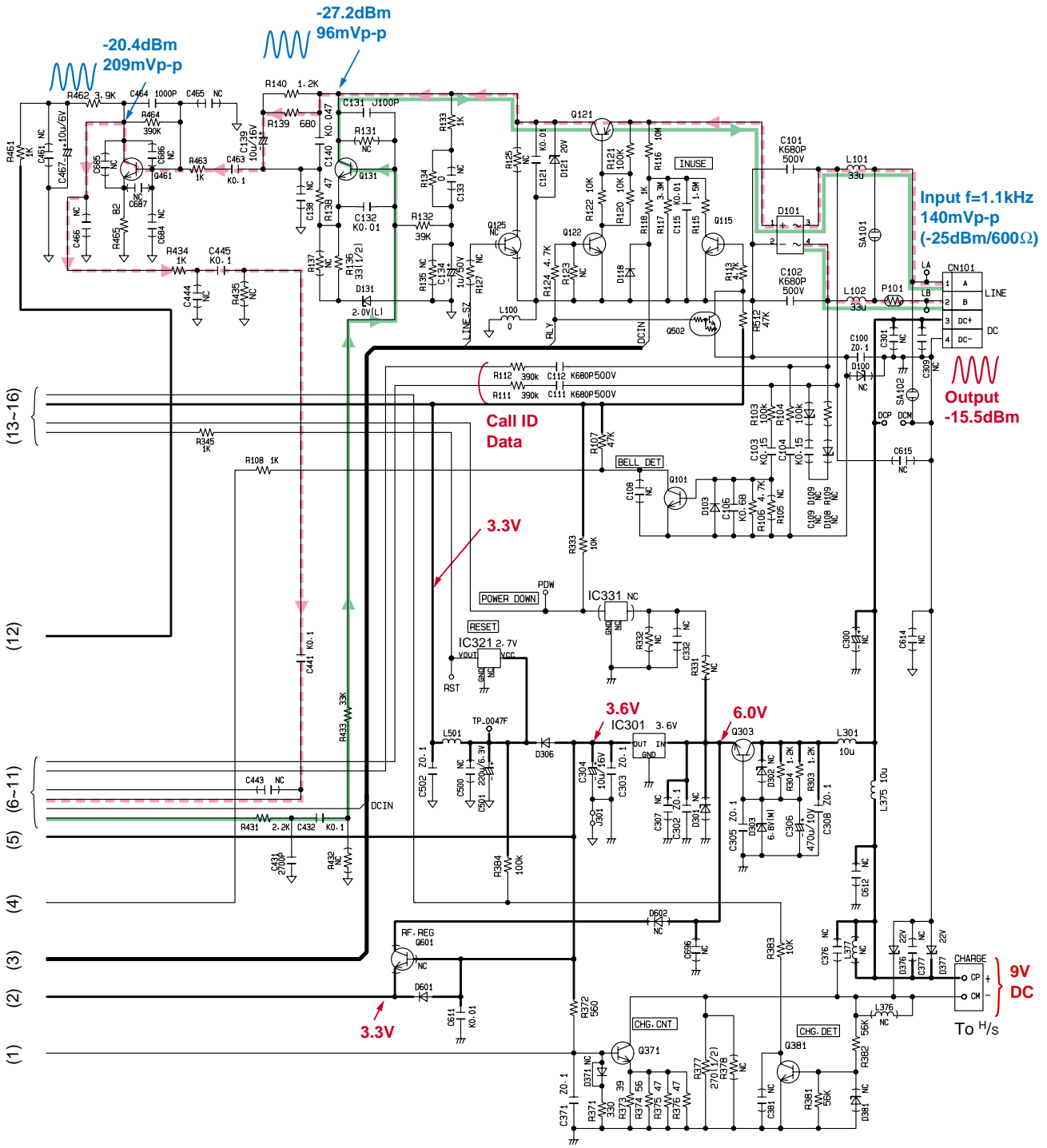
25.3. Memo

26 SCHEMATIC DIAGRAM (RF Unit)



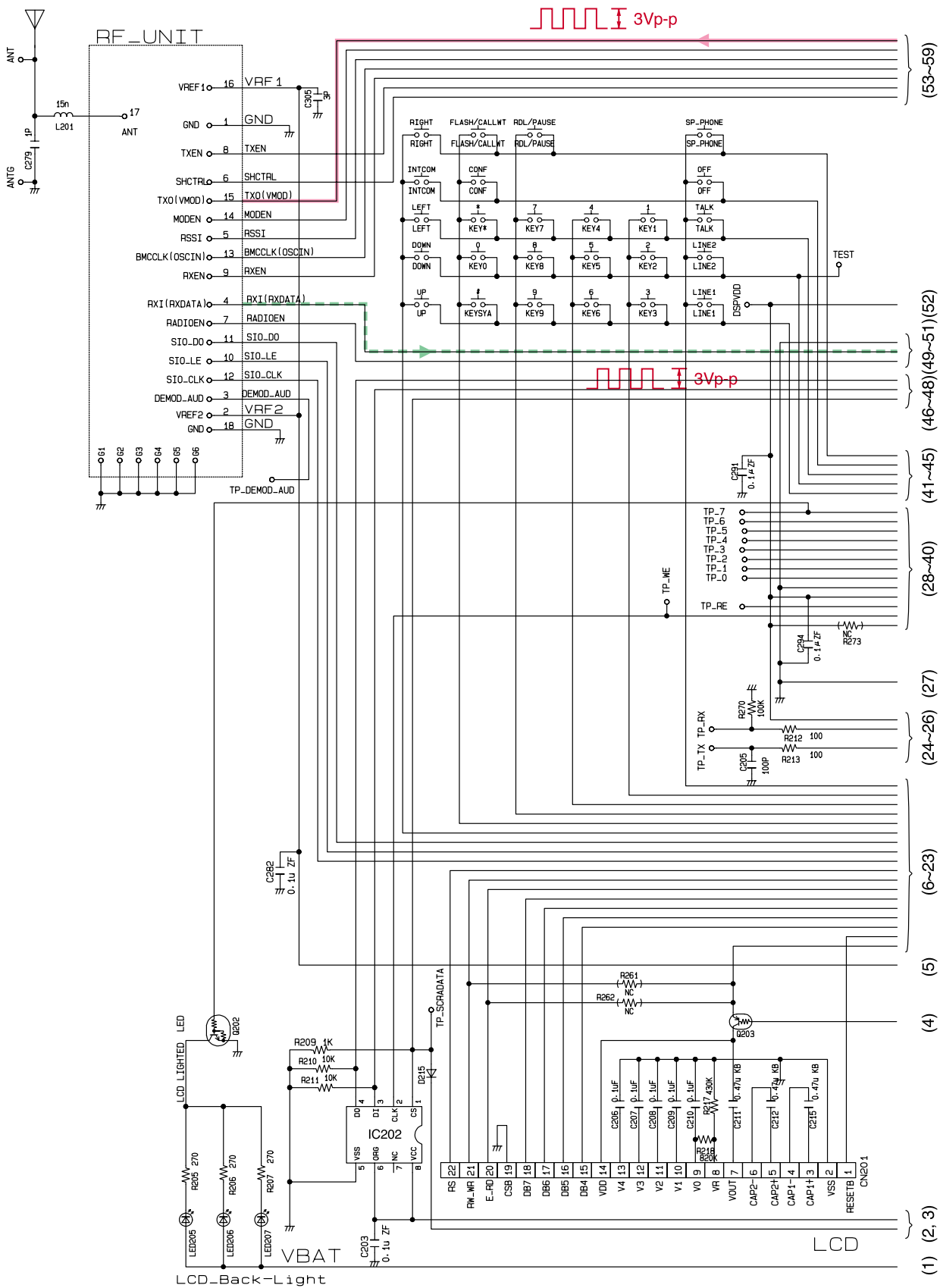
27 SCHEMATIC DIAGRAM (Base Unit)

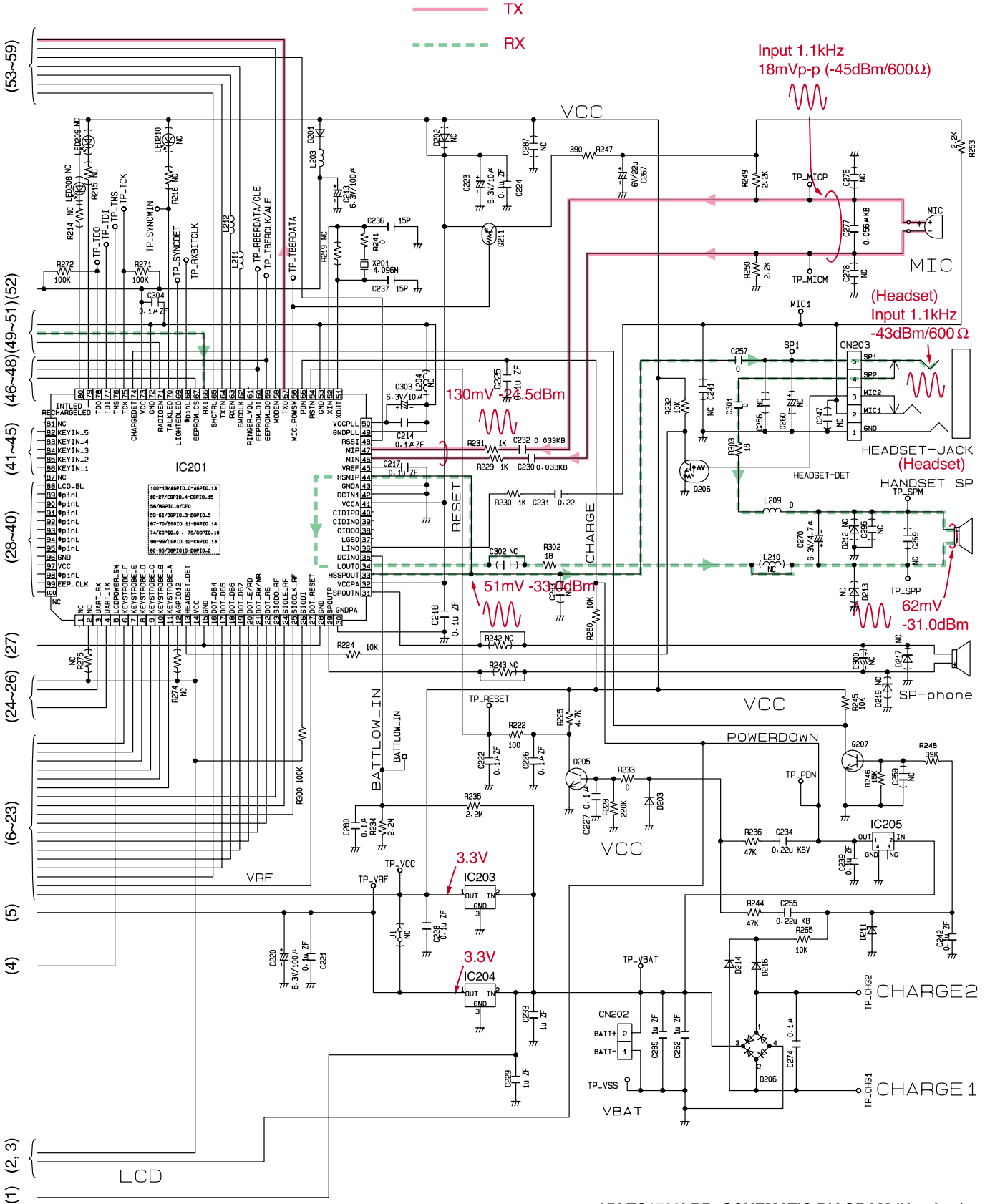




KX-TC1709LBB: SCHEMATIC DIAGRAM (Base Unit)

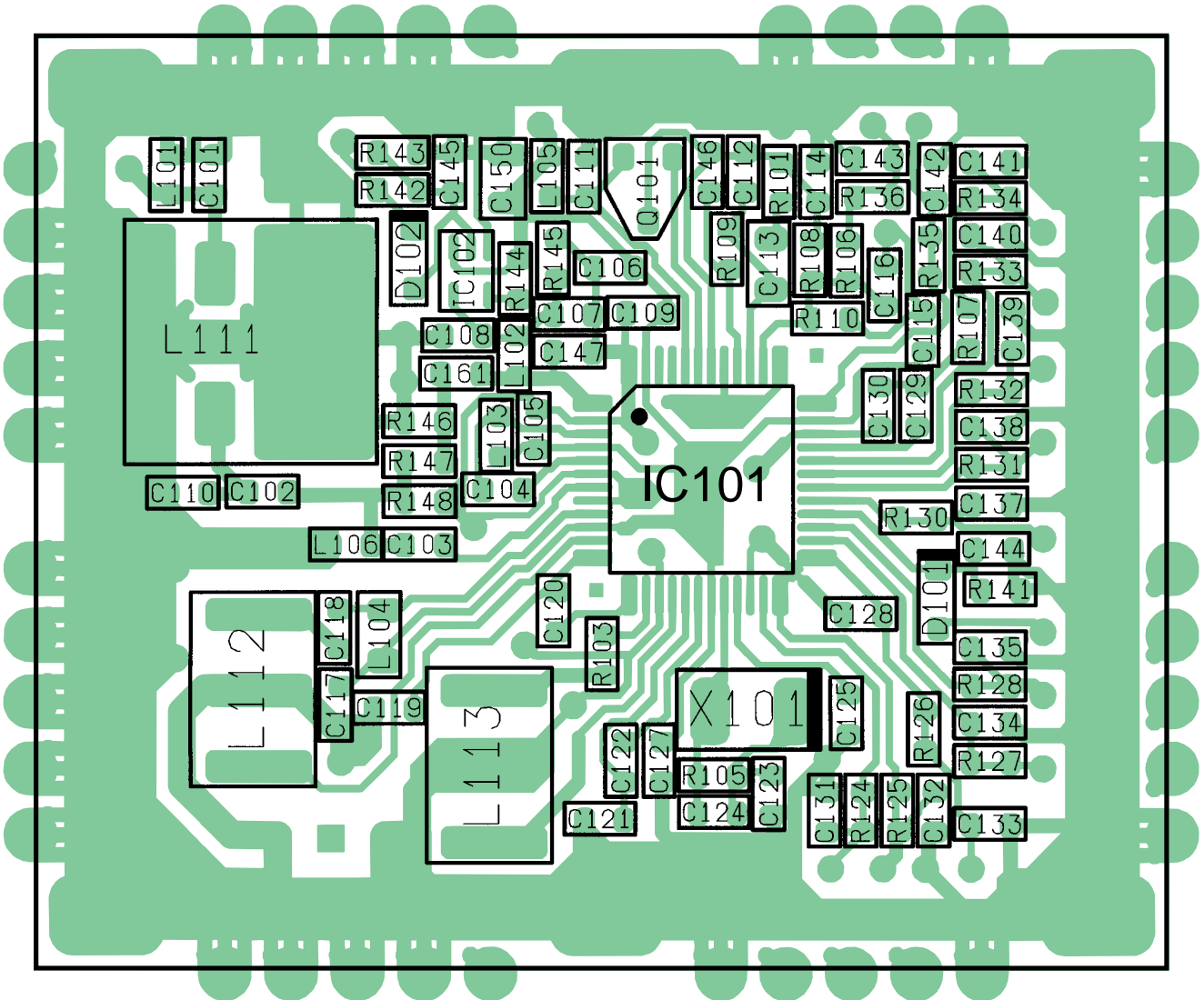
28 SCHEMATIC DIAGRAM (Handset)





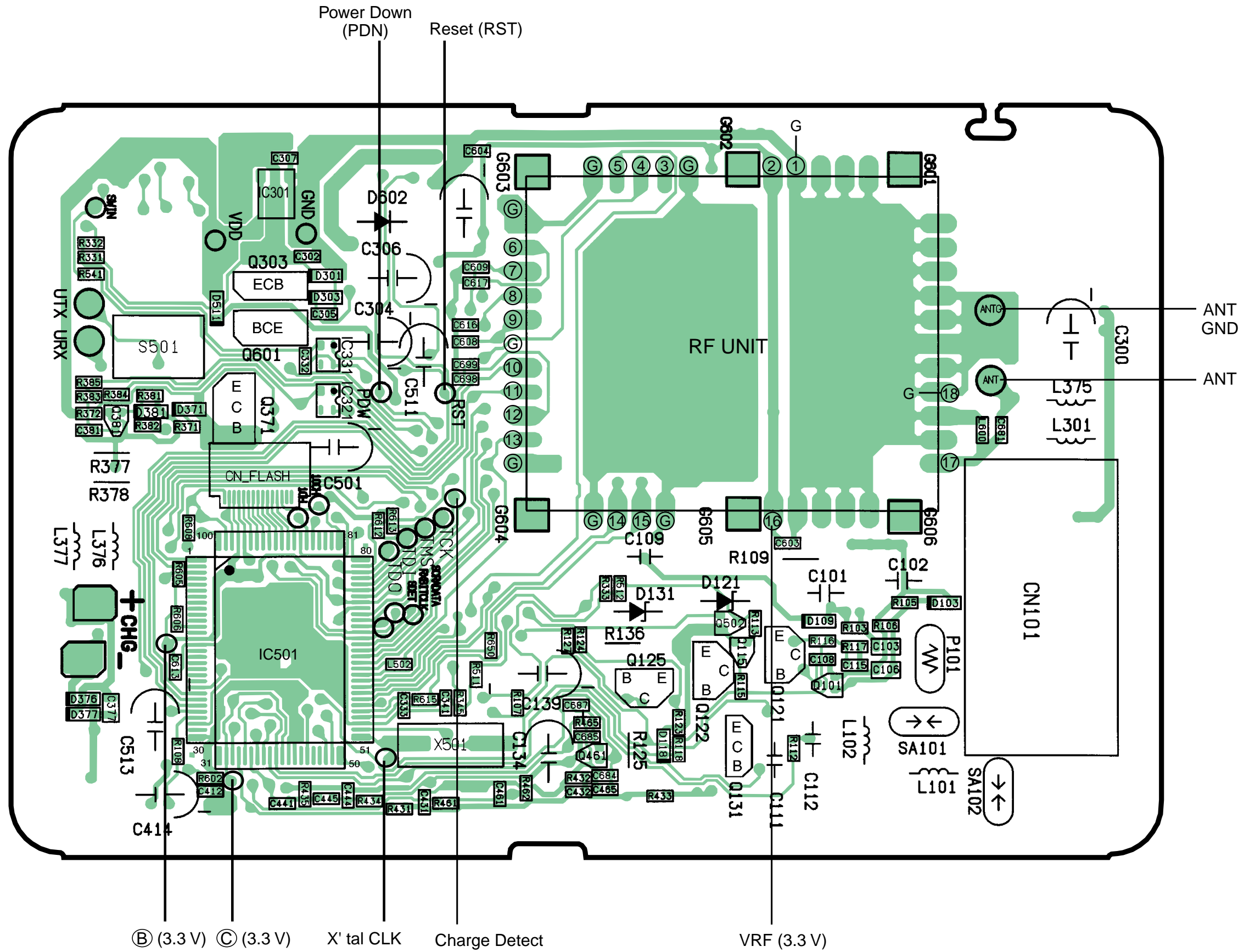
KX-TC1709LBB: SCHEMATIC DIAGRAM (Handset)

29 CIRCUIT BOARD (RF Unit)



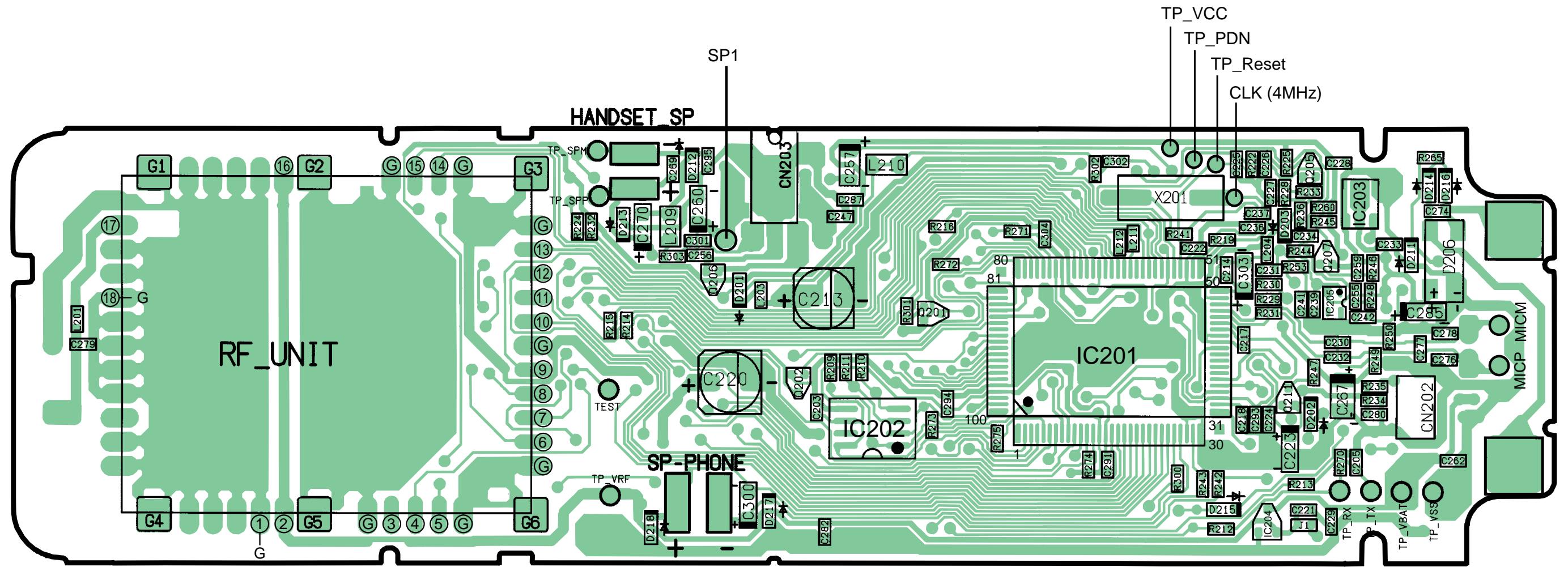
30 CIRCUIT BOARD (Base Unit)

30.1. Component View



31 CIRCUIT BOARD (Handset)

31.1. Component View



31.2. Flow Solder Side View

