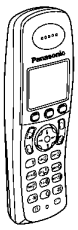
ORDER NO. KM40505700CE

Service Manual

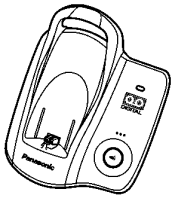
Telephone Equipment

Caller ID Compatible

KX-TCA132CXS
KX-TCA132CXT
(HANDSET)



KX-TCA130CXS
KX-TCA130CXT
(HANDSET)



KX-TG1860BXS
KX-TG1860BXT
(BASE UNIT)

- **The difference between KX-TCA132 and KX-TCA130**
  KX-TCA132 has the icons for answering system printed below the dial keys.

(CHARGER UNIT)

Configuration for each model

Model No	Base Unit	Handset	Charger Unit
KX-TG1860	1	1 (TCA132)	
KX-TCA130		1 (TCA130)	1

KX-TCA130 is an optional accessory, which contains a handset and a charger.

KX-TG1860BXS
KX-TG1860BXT
KX-TCA132CXS
KX-TCA132CXT
KX-TCA130CXS
KX-TCA130CXT

Digital Cordless Answering System

Silver Version

Titanium Black Version

(for Asia, Middle Near East and Other Areas)

SPECIFICATION

Standard:	DECT (Digital Enhanced Cordless Telecommunications) GAP (Generic Access Profile)
Number of channels:	120 Duplex Channels
Frequency range:	1.88 GHz to 1.9 GHz
Duplex procedure:	TDMA (Time Division Multiple Access)
Channel spacing:	1728 kHz
Bit rate:	1152 kbit/s
Modulation:	GFSK (Gaussian Frequency Shift Keying)
RF Transmission power:	Approx. 250 mW
Voice coding:	ADPCM 32 kbit/s
Operation range:	Up to 300 m outdoors, Up to 50 m indoors
Analog telephone connection:	Telephone Line

Power source:	AC Adaptor (220 V - 240 V AC, 50/60 Hz)
Power consumption,	
Base Unit:	Standby: Approx. 3.5 W/Maximum: Approx. 9.2 W
Charger Unit:	Standby: Approx. 2.3 W/Maximum: Approx. 6.8 W
Battery life, Handset (if batteries are fully charged):	Stand-by: Up to 170 hours (Ni-MH) Talk: Up to 16 hours (Ni-MH)
Operating conditions:	5 ˚C - 40 ˚C, 20 % - 80 % relative air humidity (dry)
Dimensions, Base Unit (D x W x L):	Approx. 111 mm x 121 mm x 123 mm
Dimensions, Handset (D x W x L):	Approx. 148 mm x 48 mm x 32 mm
Dimensions, Charger Unit (D x W x L):	Approx. 85 mm x 94 mm x 65 mm
Mass (weight), Base Unit:	Approx. 210 g
Mass (weight), Handset:	Approx. 130 g
Mass (weight), Charger Unit:	Approx. 90 g

Specifications are subject to change.
The illustrations used in this manual may differ slightly from the actual product.

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING
If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.
Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.
When this mark does appear, please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

Panasonic

⚠ 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 note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

Note:

Because CONTENTS 4 to 10 are the extracts from the Operating Instructions of this model, they are subject to change without notice. Please refer to the original Operating Instructions for further information.

CONTENTS

1 ABOUT LEAD FREE SOLDER (PbF: Pb free)

Note:

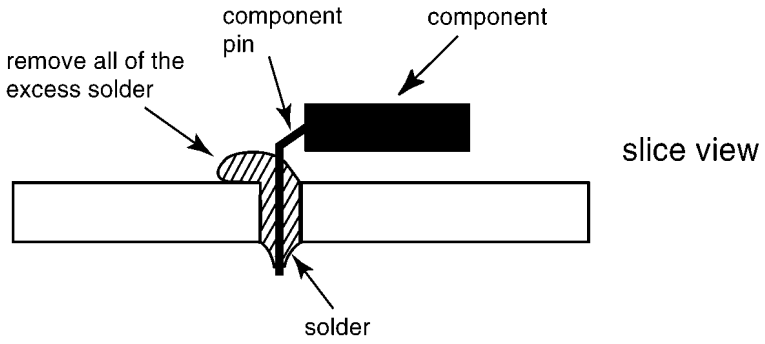
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin (Sn), Silver (Ag), and Copper (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB. For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

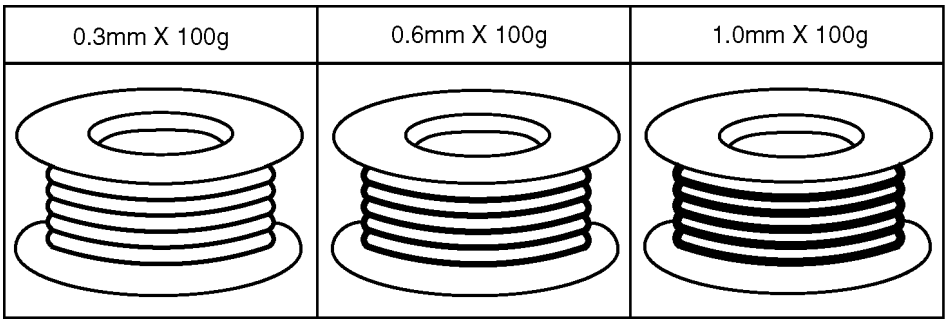
- PbF solder has a melting point that is 50°F ~ 70°F (30°C ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700°F ± 20°F (370°C ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F (600°C).
- If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.
- When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See the figure below).



1.1. Suggested PbF Solder

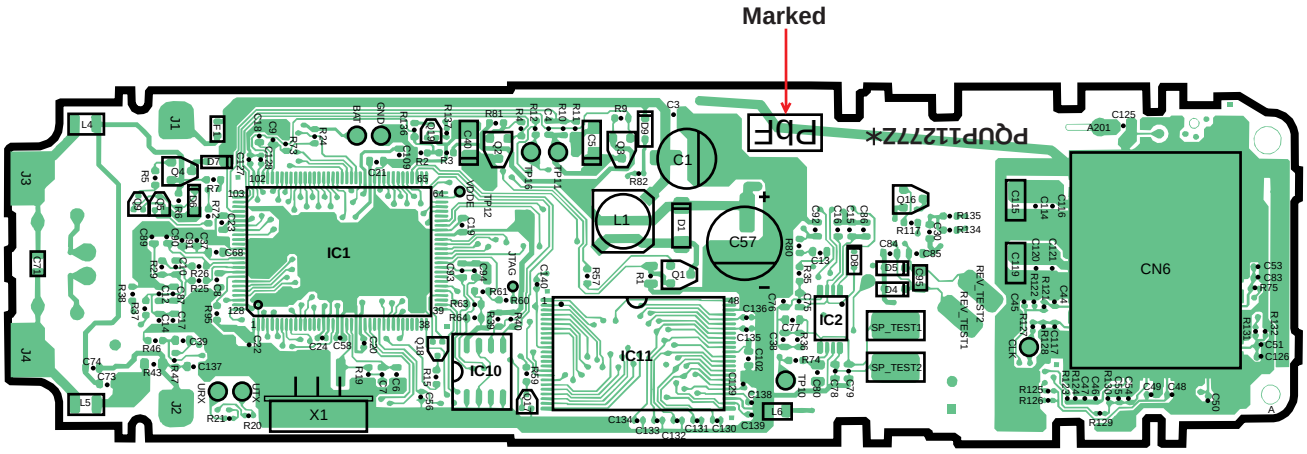
There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper (Sn+Ag+Cu), you can also use Tin and Copper (Sn+Cu) or Tin, Zinc, and Bismuth (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials.

The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.



1.2. How to recognize that Pb Free solder is used

(Example : Handset P.C.B.)



(Component View)

Note:

The location of the “PbF” mark is subject to change without notice.

2 FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

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

1. Cover the plastic parts boxes with aluminum foil and ground them.
2. Ground the soldering irons.
3. Use a conductive mat on the worktable.
4. Do not touch IC or LSI pins with bare fingers.

3 CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacture’s Instructions.

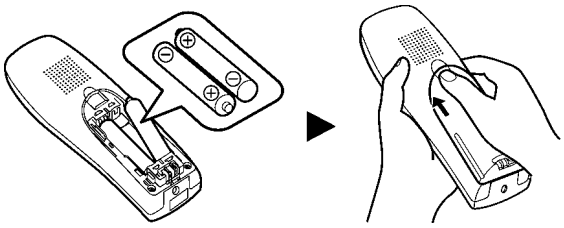
4 BATTERY

4.1. Battery Installation

1. Insert the batteries negative (⊖) terminal first.
2. Close the handset cover.

Note:

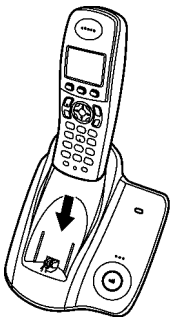
- Use only rechargeable AAA-size Ni-MH batteries (HHR-4EPT).



4.2. Battery Charge

Place the handset on the base unit for about 7 hours before initial use.

When charging, and battery strength icon are alternately shown on the display. When the batteries are fully charged, flashes.



Battery icon	Battery strength
	High
	Medium
	Low When flashing: Needs to be charged.

Note:

- It is normal for the handset to feel warm during charging.
- It takes 7 hours to fully charge the batteries, however, you can use the handset before the batteries are fully charged.
- Clean the charge contacts of the handset and base unit with a soft, dry cloth, otherwise the batteries may not charge properly. Clean if the unit is exposed to grease, dust or high humidity.
- When flashes, recharge the handset batteries. will continue to flash until the batteries have been charged for at least 15 minutes.
- If the handset is turned off, it will be turned on automatically when it is placed on the base unit.

4.3. Battery Life

After your Panasonic batteries are fully charged, you can expect the following performance:

Ni-MH batteries (700 mAh)

Operation	Operating Time
While in use (talking)	16 hours max.
While not in use (standby)	170 hours max.

Note:

- Actual battery performance depends on a combination of how often the handset is in use (talking) and how often it is not in use (standby).
- Battery operating time may be shortened over time depending on usage conditions and ambient temperature.

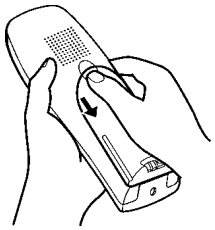
4.4. Battery Replacement

If  flashes even after the handset batteries have been charged for 7 hours, the batteries must be replaced.

Important:

- We recommend the use of Panasonic rechargeable AAA-size Ni-MH batteries (HHR-4EPT). If you install non-rechargeable batteries and start charging, the batteries may leak electrolyte.
- Do not mix old and new batteries.

1. Press the notch on the handset cover firmly and slide it in the direction of the arrow.
2. Remove the old batteries positive (⊕) terminal first and install the new ones.

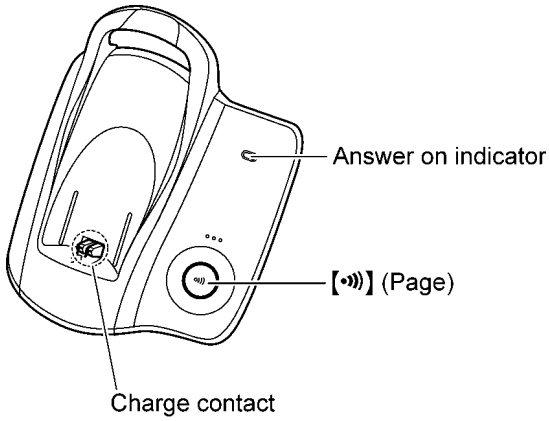


Note for Service:

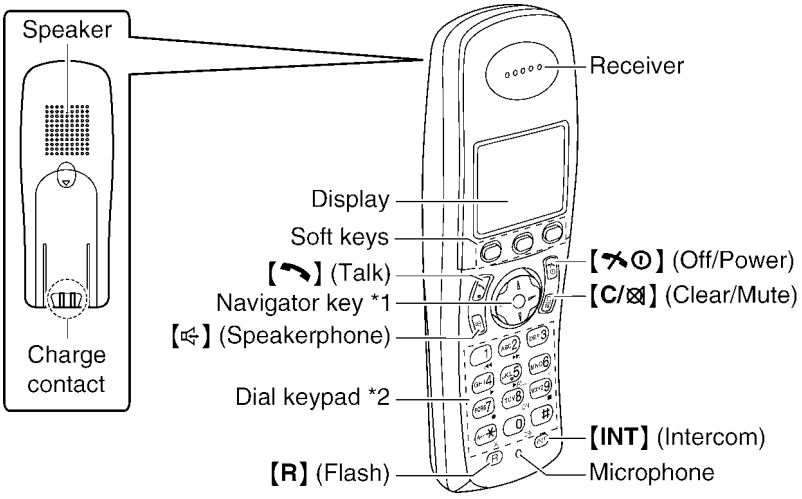
- You could use other rechargeable batteries on sale, but the unit is not guaranteed to work properly.

5 LOCATION OF CONTROLS

5.1. Base Unit



5.2. Handset



Model shown is KX-TCA132.

- *1: 【▲】【▼】: To search for the desired item in menus.
  【▶】: To select the desired item or move the cursor to the right.
  【◀】: To return to the previous screen or move the cursor to the left.

*2: The icons printed below the dial keys shown in the illustration (▶, , ■ etc.) indicate answering system operations.

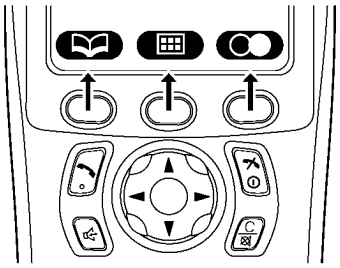
Note:

- Up to 3 menu items can be displayed at a time. To select a menu item not shown on the current page, scroll up or down by pressing the navigator key, 【▲】 or 【▼】, respectively.

Soft Keys

The handset features 3 soft keys. By pressing a soft key, you can select the feature or operation indicated by the soft key icon shown directly above it.

- Pressing the left, middle, or right soft key selects the leftmost, centre, or rightmost soft key icon respectively.
- The icons shown will vary depending on how you are using the unit.



Soft Key Icons

Soft Key icon	Action
	Returns to the previous screen.
	Displays the main menu.
OK	Accepts the current selection.
	Displays a previously dialled phone number.
	Opens the phonebook and switches between handset phonebook and shared phonebook.
	Displays the phonebook search menu.
	Turns the key lock feature off.
1/A/?	Displayed when adding or editing a phonebook entry.
	Stops recording or playback.
P	Inserts a dialling pause.
	Erases the selected item.
	Displayed when the soft key has no function.

6 SETTINGS

Important Information

General

- Use only the AC adaptor included with this product.
- Do not connect the AC adaptor to any AC outlet other than a standard 220 - 240 V AC outlet.
- This product is unable to make calls when:
  - The portable handset battery(ies) need recharging or have failed.
  - There is a power failure.
  - The key lock feature is turned on.
  - The call bar feature is turned on (only phone numbers stored in the unit as emergency numbers can be called).
- Do not open the base unit or handset other than to replace the battery(ies).
- This product should not be used near emergency/intensive care medical equipment and should not be used by people with pacemakers.
- Care should be taken that objects do not fall onto, and liquids are not spilled into, the unit. Do not subject this product to excessive smoke, dust, mechanical vibration or shock.

Environment

- Do not use this product near water.
- This product should be kept away from heat sources such as radiators, cookers, etc. It should also not be placed in rooms where the temperature is less than 5 °C or greater than 40 °C.
- The AC adaptor is used as the main disconnect device. Ensure that the AC outlet is installed near the unit and is easily accessible.

Warning:

- To prevent the risk of electrical shock, do not expose this product to rain or any other type of moisture.

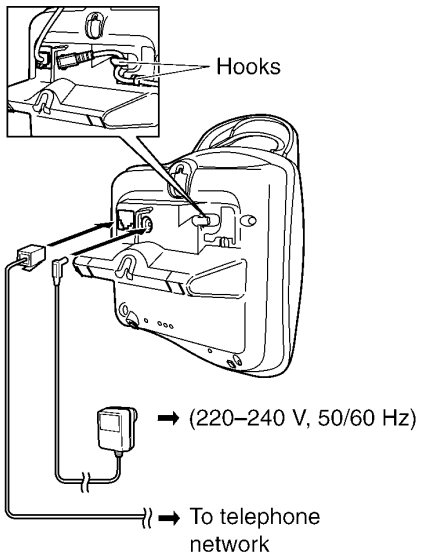
Location

- For maximum distance and noise-free operation, place your base unit:
  - Away from electrical appliances such as TVs, radios, personal computers or other phones.
  - In a convenient, high, and central location.

6.1. Connections

6.1.1. Base Unit

When the AC adaptor is connected, a short beep will be heard. If it is not heard, check the connections.



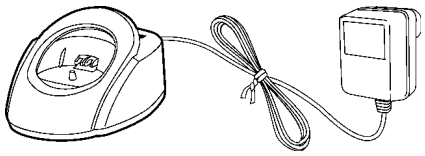
Important:

- Use only the AC adaptor PQLV19BXY and telephone line cord supplied with this unit.

Note:

- After connection, you must charge the batteries to make or answer calls.
- Never install telephone wiring during a lightning storm.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- The AC adaptor should be connected to a vertically oriented or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.

6.1.2. Charger Unit



Important:

- Use only the AC adaptor PQLV200BXY.

Note:

- The AC adaptor must remain connected at all times (It is normal for the adaptor to feel warm during use).

6.2. Guide to Settings

For your reference, a chart of all items which can be customised for the base unit and the handset is printed below.

- When customising the base unit and the handset, the current item or setting is highlighted.

6.2.1. Base Unit Settings

Settings menu	Sub-menu	Sub-menu 2	Default setting	Remarks (selectable options)
Ringer Setup	Ringer Volume		*Medium***	Off/Low/Medium/High**
	Night Mode	Start/End	*23:00/06:00*	—
		On/Off	Off	On/Off
		Ring Delay	60 sec.	30/60/90/120 sec and No Ringing
Call Options	Dial Mode		Tone	Tone/Pulse
	Recall		600 msec.	80/90/100/110/160/200/250/300/400/600/700/900 msec
	Pause Length		3 sec.	3 sec/5 sec
	Emergency No.		—	Up to 5 numbers
	ARS Settings	Area Code	—	Up to 4 area numbers
	Call Restrict		—	Up to 6 numbers
Other Options	Base Unit PIN		0000	—
	Repeater Mode		Off	On/Off
	Reset Base		—	—

Note:

- Up to 3 menu items can be displayed at a time. To select a menu item not shown on the current page, scroll up or down by pressing the navigator key, 【▲】 or 【▼】, respectively.
- The items with a mark "**" are not shown on the display.

6.2.2. Answering System Settings

Answering system setting	Default setting	Remarks (selectable options)
Answering system on/off	Answer On	Answer On/Answer Off
Remote access code	—	000~999/Off (☒1)
Number of rings	4 Rings	Auto/2-7 rings
Caller's recording time	3 Minutes	Greeting Only/1 minute/3 minutes
Call screening	On	On/Off
Message alert	Off	On/Off

6.2.3. Handset Settings

Settings menu	Sub-menu	Sub-menu 2	Default setting	Remarks (selectable options)
Time Settings	Set Date & Time		—	—
	Alarm		Off	Once/Daily/Off
Ringer Setup	Ringer Volume		*Maximum***	Off/1 to 6**
	Ext. Ringtone *(External ringtone)*		Ringtone 1	1 to 20
	Int. Ringtone *(Intercom ringtone)*		Ringtone 1	1 to 20
	Night Mode	Start/End	*23:00/06:00*	—
		On/Off	Off	On/Off
		Ring Delay	60 sec.	30/60/90/120 sec and No Ringing
		Select Category	—	—
Display Setup	Wallpaper		Wallpaper1	Off/1 to 4
	Display Colour		Colour1	1 to 5
	Standby Display		Off	Base Number/Handset Number/ Off
	Select Language		English	14 languages selectable
	Contrast		Contrast 3**	Level 1 to level 6**
Call Options	Call Bar		Off	On/Off
	Auto Talk		Off	On/Off
Registration	Register H.set *(Register handset)*		—	—
Select Base	—		Auto	Auto/Base 1/Base 2/Base 3/ Base 4 *1
Other Options	Handset PIN		0000	—
	Keytones		On	On/Off
	Reset Handset		—	—

*1 Here, only the case that a handset is registered to a maximum of 4 Base Units is mentioned.

Note:

- Up to 3 menu items can be displayed at a time. To select a menu item not shown on the current page, scroll up or down by pressing the navigator key, 【▲】 or 【▼】, respectively.
- The items with a mark "**" are not shown on the display.

6.3. Ringer Volume

6.3.1. Base Unit

1 Press (middle soft key).
2 Select , then press OK.
3 Enter "0000" (default base unit PIN).
  - If you changed the PIN, enter it.
4 Select "Ringer Setup", then press OK.
5 Select "Ringer Volume", then press OK.
6 Press 【▲】 or 【▼】 repeatedly to select the desired volume.
7 Press OK.
8 Press 【⏻】.

6.3.2. Handset

1 Press (middle soft key).
2 Select , then press OK.
3 Select "Ringer Setup", then press OK.
4 Select "Ringer Volume", then press OK.
5 Press [▲] or [▼] repeatedly to select the desired volume.
6 Press OK.
7 Press [].

Note:

- When the ringer volume is turned off, is displayed.
- Alarms will sound and the handset will ring for intercom calls and when paged even if the ringer is turned off.

6.4. Night Mode

Night mode allows you to select a block of time during which the base unit and the handset will not ring for outside calls. This feature is useful for times when you do not want to be disturbed, for example, while sleeping. Night mode can be set independently for the handset and the base unit.

Using the phonebook's category feature, you can also select categories of callers whose calls will override night mode and ring the handset (Caller ID subscribers only).

Set the date and time beforehand.

Note:

- When the message alert feature is on and new messages are recorded, the base unit will beep even if the night mode setting is on.
- When the call screening feature is on and the base unit answers a call, the greeting message and caller's messages will be heard from the handset speaker even if the night mode setting is on.

6.4.1. Turning Night Mode On/Off

6.4.1.1. Base Unit

1 Press (middle soft key).
2 Select , then press OK.
3 Enter "0000" (default base unit PIN).
  - If you changed the PIN, enter it.
4 Select "Ringer Setup", then press OK.
5 Select "Night Mode", then press OK.
6 Select "On/Off", then press OK.
7 Select "On" or "Off", then press OK.
8 Press [].

6.4.1.2. Handset

1 Press (middle soft key).
2 Select , then press OK.
3 Select "Ringer Setup", then press OK.
4 Select "Night Mode", then press OK.
5 Select "On/Off", then press OK.
6 Select "On" or "Off", then press OK.
7 Press [].

Note:

- When the night mode is turned on, is displayed.

6.5. PIN Code

6.5.1. Base Unit

For security, the base unit PIN must be entered when changing certain settings. The default PIN is "0000".

1. Press (middle soft key).
2. Select , then press OK.
3. Enter "0000" (default base unit PIN).
   - If you changed the PIN, enter it.*
4. Select "Other Options", then press OK.
5. Select "Base Unit PIN", then press OK.
6. Enter the new 4-digit base unit PIN, then press OK.
7. Press [].

For Service Hint:

*: If the current 4-digit Base Unit PIN is forgotten, follow the procedures below.

1. If Base Unit and Handset are not linked with, first, follow the steps in **Registering a Handset to a Base Unit** (P.27).
2. Follow the steps above in **Base Unit** (P.15) of PIN Code. At step 3, enter *7000 , and you will able to enter new Base Unit PIN.

6.5.2. Handset

For security, the handset PIN must be entered when changing certain settings. The default PIN is "0000".

1. Press (middle soft key).
2. Select , then press OK.
3. Select "Other Options", then press OK.
4. Select "Handset PIN", then press OK.
5. Enter the current 4-digit handset PIN.*
6. Enter the new 4-digit handset PIN, then press OK.
7. Press [].

For Service Hint:

*: If the current 4-digit PIN is forgotten, press *7000 and you will be able to enter new Handset PIN.

This password is useful whether Base Unit and Handset are linked with or not.

6.6. Reset

6.6.1. Base Unit

1 Press (middle soft key).
2 Select , then press OK.
3 Enter "0000" (default base unit PIN).
  • If you changed the PIN, enter it.
4 Select "Other Options", then press OK.
5 Select "Reset Base", then press OK.
6 Select "Yes", then press OK.
7 Press [ ].

Note:

- The following items will be deleted or reset to their default settings:
  - **Base Unit Settings** (P.12) and **Answering System Settings** (P.12)
  - Caller list
- The following items will be retained:
  - Date and time
  - Shared phonebook entries
  - Repeater mode
  - Recordings, including your greeting message, caller messages, voice memos, audible call announcements, and recorded conversations

6.6.2. Handset

1 Press (middle soft key).
2 Select , then press OK.
3 Select "Other Options", then press OK.
4 Select "Reset Handset", then press OK.
5 Enter "0000" (default handset PIN).
  • If you changed the PIN, enter it.
6 Select "Yes", then press OK.
7 Press [ ].

Note:

- The following items will be deleted or reset to their default settings:
  - **Handset Settings** (P.13)
  - Redial list
  - Voice enhancer
  - Category names
  - Category ringtones
  - Category display colours
- The following items will be retained:
  - Handset phonebook entries (category names, ringtones, and display colours will be reset to their default settings.)
  - Date and time

6.7. Key Lock

The handset can be locked so that no calls or settings can be made. Incoming calls can be answered, but all other functions are disabled while key lock is on.

To turn key lock on, press (middle soft key) for about 2 seconds.

- is displayed.
- To turn key lock off, press (middle soft key) for about 2 seconds.

Note:

- Calls to emergency numbers cannot be made until key lock is turned off.
- Key lock is turned off when the handset is turned off.

6.8. R Button to Use the Flash Feature

[R] is used to access optional telephone services. Contact your service provider for details.

Note:

- If your unit is connected to a PBX (private branch exchange), pressing **[R]** can allow you to access certain features of your host PBX such as transferring an extension call. Consult your PBX dealer for details.
- You can change the flash time.

6.9. Pause Button for PBX/Long Distance Service Users

A pause is sometimes required when making calls using a PBX or long distance service.

Example:

- If you have to dial **[0]** before dialling outside numbers manually, you will probably pause after dialling **[0]** until you hear a dial tone.

1. Press **[0]**.
2. Press **P** (right soft key).
3. Dial the phone number, then press **[ ]** or **[ ]**.

Note:

- Pressing **P** 1 time creates 1 pause. Press **P** repeatedly to create longer pauses.

6.10. Setting Call Restriction

You can restrict selected handsets from dialling certain numbers. You can assign up to 6 phone numbers to be restricted, and select which handsets will be restricted.

Storing area codes here will prevent the restricted handsets from dialling any phone number in that area code. If a restricted number is dialled, the call will not be connected and the restricted number will flash on the display.

1. Press (middle soft key).
2. Select , then press **OK**.
3. Enter "0000" (default base unit PIN).
   - If you changed the PIN, enter it.
4. Select "Call Options", then press **OK**.
5. Select "Call Restrict", then press **OK**.
6. Set which handsets will be restricted by pressing the desired handset number.
   - All the registered handset numbers will be displayed.
   - Flashing numbers indicate call restriction is turned on for the corresponding handset.
   - To turn call restriction off for a handset, press the number again. The number will stop flashing.
7. Press **OK**.
8. Select a memory location, then press **OK**.
   - If the memory location already contains a restricted number, the number is displayed.
9. Enter the phone number or area code to be restricted (8 digits max.), then press **OK**.
   - To erase a restricted number, press **[C/]**.
10. Press **[ ]**.

6.11. Turning Call BAR On/Off (Call Prohibition)

This feature prohibits making outside calls. When call bar is turned on, only intercom calls and calls to emergency numbers can be made.

1. Press (middle soft key).
2. Select , then press OK.
3. Select "Call Options", then press OK.
4. Select "Call Bar", then press OK.
5. Enter "0000" (default handset PIN).
   - If you changed the PIN, enter it.
6. Select "On" or "Off", then press OK.
7. Press [ ].

Note:

- When call bar is turned on, is displayed.

6.12. Changing the Display Language

1. Press (middle soft key).
2. Select , then press OK.
3. Select "Display Setup", then press OK.
4. Select "Select Language", then press OK.
5. Select the desired language, then press OK.
6. Press [ ].

Note:

- If you select a language you cannot read, follow the procedure bellow.

  Press [ ] ➧ Press ➧ Press [▼] ➧ Press OK ➧ Press [▼] 2 times ➧ Press OK ➧ Press [▼] 3 times ➧ Press OK ➧ Select the desired language ➧ Press OK ➧ Press [ ]

6.13. Changing the Flash Time

Change the flash time, if necessary, depending on the requirements of your service provider or PBX.

1. Press (middle soft key).
2. Select , then press OK.
3. Enter "0000" (default base unit PIN).
   - If you changed the PIN, enter it.
4. Select "Call Options", then press OK.
5. Select "Recall", then press OK.
6. Select the desired setting, then press OK.
7. Press [ ].

6.14. Setting Dialling Mode (Tone/Pulse)

"Tone": Select when you have a touch tone service.
"Pulse": Select when you have rotary or pulse service.

1 Press (middle soft key).
2 Select , then press OK.
3 Enter "0000" (default base unit PIN).
   • If you changed the PIN, enter it.
4 Select "Call Options", then press OK.
5 Select "Dial Mode", then press OK.
6 Select the desired setting, then press OK.
7 Press [].

6.15. Selecting Area Codes to be Deleted Auto matically

In some situations, phone numbers stored automatically in the Caller ID list will include area codes. If you do not want to dial the area codes when making calls from the Caller ID list, you can store the area codes which you want the unit to delete automatically.
Example: You have stored the area code "123". If you make a call from the Caller ID list to the phone number "123-456-7890", the unit dials "456-7890".

1 Press (middle soft key).
2 Select , then press OK.
3 Enter "0000" (default base unit PIN).
   • If you changed the PIN, enter it.
4 Select "Call Options", then press OK.
5 Select "ARS Settings", then press OK.
6 Select "Area Code", then press OK.
7 Select an area code location (1 to 4), then press OK.
   • If the location already contains an area code, the code is displayed.
8 Enter an area code (5 digits max.), then press OK.
9 Press [].

7 DISPLAY

7.1. Display Icons

Various icons appear on the handset display to indicate the current status of the unit.

Display icon	Meaning	Display icon	Meaning
	Within range of a base unit ● When flashing: Handset is searching for base unit. (out of range of base unit, handset is not registered to base unit, no power on base unit)		Batteries are charging.
			Battery strength
	Handset is accessing base unit. (intercom, paging, changing base unit settings, etc.)		Alarm is on.
			Voice enhancer is set to high or low tone.
	Handset is on an outside call.		Ringer volume is off.
	Call bar is on.		Night mode is on.
	Missed call (Caller ID subscribers only)	[2]	Handset number: The left icon shows handset 2 example.
	Answering system is on and/or new messages have been recorded.	-2-	Base unit number: The left icon shows base unit 2 example.
	Answering system is full.	IN USE	Line is being used by another handset.
	Answering system will answer calls with a greeting message and caller message will not be recorded.		

7.2. Menu Icons

When in standby mode, pressing the middle soft key reveals the handset's main menu. From here you can access various features and settings.

Menu icon	Menu/feature	Menu icon	Menu/feature
	Caller List		Handset Setup
	Ringer Setup		Base Unit Setup
	Answer System		Display Setup

7.3. Caller ID Display

Important:

- This unit is Caller ID compatible. To use Caller ID features (such as displaying caller phone numbers), you must subscribe to Caller ID service. Consult your service provider for details.

Caller ID features

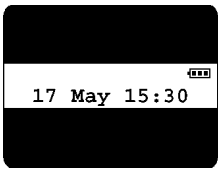
When an outside call is received, the caller's phone number can be displayed.

- Phone numbers of the last 50 different callers will be logged in the caller list.
- While listening to a message recorded by the answering system, you can call back the caller without having to dial the phone number.
- When caller information is received and it matches a phone number stored in the unit's phonebook:
  - The stored name will be displayed and logged in the caller list.
  - The handset will use the display colour and ringtone assigned to the caller's category.
  - The handset will announce the audible call recording you made.
- If the unit is connected to a PBX system, you may not receive the caller information.
- When the caller dialled from an area which does not provide Caller ID service, "**Out of Area**" will be displayed.
- When the caller requested not to send caller information, either no information or "**Private Caller**" will be displayed.

7.4. Screen Saver Mode

The backlight will turn off completely after 1 minute of inactivity if the handset is not on the base unit. Only essential icons and the date and time will be displayed, and they will occasionally change position in order to preserve the life of the display.

Example:



To use the handset when it is in screen saver mode, first press 【】 to turn the display on again.

8 OPERATIONS

8.1. Turning the Power On/Off

Power on

Press 【⏻】 for about 1 second.

- The display will change to the standby mode.

Power off

Press 【⏻】 for about 2 seconds.

- The display will go blank.

8.2. Setting the Date and Time

Important:

- Confirm that the AC adaptor is connected.
- Ensure that 📶 is not flashing. If the handset is in screen saver mode, 📶 is not displayed. Press 【⏻】 to turn the display on.

1 Press ▭ (middle soft key).
2 Select 🔧, then press OK.
3 Select "`Time Settings`", then press OK.
4 Select "`Set Date & Time`", then press OK.
5 Enter the current day, month and year by selecting 2 digits for each.
Example:17 May, 2005
Press 【1】【7】【0】【5】【0】【5】.
6 Enter the current hour and minute by selecting 2 digits for each.
- You can select "`AM`", "`PM`" or 24-hour time entry by pressing 【✳】 repeatedly.

Example: 3:30 PM
Press 【0】【3】【3】【0】, then press 【✳】 repeatedly until "`03:30 PM`" is displayed.

7 Press OK.
8 Press 【⏻】.

Note:

- To correct a digit, press 【◀】 or 【▶】 to move the cursor, then make the correction.
- The date and time may be incorrect after a power failure. In this case, set the date and time again.

8.3. Redialling

Previously dialled phone numbers (each 24 digits max.) can be redialled.

8.3.1. Making a Call Using the Redial List

The last 10 phone numbers dialled are stored in the redial list.

1 Press ▭ (right soft key).
- The last number dialled will be displayed.

2 Press 【▲】 or 【▼】 repeatedly to select the desired number.
- To exit the list, press 【⏻】.

3 Press 【📞】 or 【🔊】.
- If 【🔊】 is pressed, the unit will redial automatically if the other party's line is engaged.

8.3.2. Redialling the Last Number Dialled

Press ▭ (right soft key), then press 【📞】 or 【🔊】.
- If 【🔊】 is pressed, the unit will redial automatically if the other party's line is engaged.

Note:

- You can also press 【📞】 or 【🔊】 before pressing ▭.

8.4. Phonebook

The phonebook allows you to make calls without having to dial manually. You can add 200 names and phone numbers to the phonebook, assign each phonebook entry to the desired category, and search for phonebook entries by name or category.

8.4.1. Adding Entries to the Phonebook

1 Press (left soft key), then press .
2 Select "**New Entry**", then press OK.
3 Enter the party's name (16 characters max.), then press OK.
4 Enter the party's phone number (24 digits max.), then press OK.
5 Select the desired category for the entry, then press OK.
6 Select "**Save**", then press OK.
7 Press 【⏻】.

Note:

- If there is no space to store new entries, "**Memory Full**" will be displayed. Erase unnecessary entries.

8.4.2. Available Character Entries

The dial keys are used to enter characters and numbers. Each dial key has multiple characters assigned to it.
The available character entry modes are, Alphabet, Numeric, Greek, Extended 1, Extended 2, and Cyrillic.
When in Alphabet (ABC), Greek (АВΓ), Extended 1 (AÄÅ), Extended 2 (SŚŠ), or Cyrillic (АБВ) character entry modes, you can select which character is entered by pressing a dial key repeatedly.

- When the unit displays the character entry screen:
  - Press 【◀】 or 【▶】 to move the cursor.
  - Press dial keys to enter characters and numbers.
  - Press 【C/⌫】 to erase the character or number highlighted by the cursor. Press and hold 【C/⌫】 to erase all characters or numbers.
  - Press 【✳】 to switch between uppercase and lowercase.
  - To enter another character located on the same dial key, press 【▶】 to move the cursor to the next space, then press the appropriate dial key.

Character Entry Modes

Several character entry modes are available. When the unit displays the character entry screen, press 1/A/? (right soft key), then select a character entry mode, and press OK. The default mode is Alphabet.

Alphabet Character Table (ABC)

0	1	ABC 2	DEF 3	GHI 4	JKL 5	MNO 6	PQRS 7	TUV 8	WXYZ 9
Space 0	Space # & ' ( ) ✳ , - . / 1	A B C 2 a b c 2	D E F 3 d e f 3	G H I 4 g h i 4	J K L 5 j k l 5	M N O 6 m n o 6	P Q R S 7 p q r s 7	T U V 8 t u v 8	W X Y Z 9 w x y z 9

Numeric Entry Table (0-9)

0	1	ABC 2	DEF 3	GHI 4	JKL 5	MNO 6	PQRS 7	TUV 8	WXYZ 9
0	1	2	3	4	5	6	7	8	9

Greek Character Table (АВГ)

0	1	ABC 2	DEF 3	GHI 4	JKL 5	MNO 6	PQRS 7	TUV 8	WXYZ 9
Space 0	Space # & ' ( ) ∗ , - . / 1	Α Β Γ 2	Δ Ε Ζ 3	Η Θ Ι 4	Κ Λ Μ 5	Ν Ξ Ο 6	Π Ρ Σ 7	Τ Υ Φ 8	Χ Ψ Ω Ϋ 9

Extended 1 Character Table (AÄÅ)

0	1	ABC 2	DEF 3	GHI 4	JKL 5	MNO 6	PQRS 7	TUV 8	WXYZ 9
Space 0	Space # & ' ( ) ∗ , - . / 1	A À Á Â Ã Ä Å Æ B C Ç 2	D E È É Ê Ë Ẽ F 3	G Ğ H I Ì Í Î Ï Ĩ İ Ǐ 4	J K L 5	M N Ñ O Ò Ó Ô Õ Ö ø 6	P Q R S Ș ß 7	T U Ù Ú Û Ü Ũ V 8	W Ŵ X Y ŷ Z 9
		a à á â ã ä å æ b c ç 2	d e è é ê ë ẽ f 3	g ğ h i ì í î ï ĩ ı ǐ 4	j k l 5	m n ñ o ò ó ô õ ö ø 6	p q r s ș ß 7	t u ù ú û ü ũ v 8	w Ŵ x y ŷ z 9

- The following are used for both uppercase and lowercase:

  ø Ș Ŵ ŷ

Extended 2 Character Table (SŚŠ)

0	1	ABC 2	DEF 3	GHI 4	JKL 5	MNO 6	PQRS 7	TUV 8	WXYZ 9
Space 0	Space # & ' ( ) ∗ , - . / 1	A Á Ä Ą B C Ć Č 2	D Ď E É Ę Ě F 3	G H I Í 4	J K L Ł Ĺ Ľ 5	M N Ń Ň O Ó Ö Ő 6	P Q R Ŕ Ř S Ś Š 7	T Ť U Ú Ü Ű ů V 8	W X Y ỳ Ý Z Ź Ż Ž 9
		a á ä ą b c ć č 2	d ď e é ę ě f 3	g h i í 4	j k l Ł ĺ ľ 5	m n ń ň o ó ö ő 6	p q r ŕ ř s ś š 7	t ť u ú ü ű ů v 8	w x y ỳ ý z ź ż ž 9

- The following are used for both uppercase and lowercase:

  Ą Ć Č Ę Ł Ĺ Ľ Ń Ŕ Ś Š ů ỳ Ź Ż Ž

Cyrillic Character Table (АБВ)

0	1	ABC 2	DEF 3	GHI 4	JKL 5	MNO 6	PQRS 7	TUV 8	WXYZ 9
Space 0 Ґ Є І Ї Ў	Space # & ' ( ) ∗ , - . / 1	А Б В Г 2	Д Е Ж З 3	И Й К Л 4	М Н О П 5	Р С Т У 6	Ф Х Ц Ч 7	Ш Щ Ъ Ы 8	Ь Э Ю Я 9

8.4.3. Editing Entries in the Phonebook

Phonebook entries can be edited after you have saved them. You can change the name, phone number, and category.

Changing a name, phone number, category

1. Find the desired entry, then press (middle soft key).
2. Select "**Edit**", then press OK.
3. Edit the name if necessary (16 characters max.), then press OK.
4. Edit the phone number if necessary (24 digits max.), then press OK.
5. Select the desired category, then press OK.
6. Select "**Save**", then press OK.
7. Press [⏻].

8.4.4. Erasing Entries from the Phonebook

Erasing an entry

1. Find the desired entry, then press (middle soft key).
2. Select "**Erase**", then press OK.
3. Select "**Yes**", then press OK.
4. Press [⏻].

Erasing all entries

1. Press (left soft key), then press .
2. Select "**Erase All**", then press OK.
3. Select "**Yes**", then press OK.
4. Select "**Yes**" again, then press OK.
5. Press [⏻].

8.4.5. Storing a Number from the Caller List into the Phonebook

1. Press (middle soft key).
2. Select , then press OK.
3. Press [▲] or [▼] repeatedly to display the desired entry, then press .
4. Select "**Add Phonebook**", then press OK.
5. Continue from step 3 of "**Adding Entries to the Phonebook**".

Cross Reference:

Adding Entries to the Phonebook (P.23)

8.4.6. Storing a Number from the Redial List into the Phonebook

1. Press (right soft key).
2. Press [▲] or [▼] repeatedly to select the desired number, then press .
3. Select "**Add Phonebook**", then press OK.
4. Enter a name (16 characters max.), then press OK.
5. Edit the phone number if necessary, then press OK.
6. Select the desired category, then press OK.
7. Select "**Save**", then press OK.
8. Press [⏻].

8.4.7. One Touch Dial

Assigning an Entry in the Phonebook to a One Touch Dial Key

Dial keys 【1】 to 【9】 can each be used as a one touch dial key, allowing you to dial a number from the phonebook by simply pressing a dial key.

1. Find the desired entry, then press (middle soft key).
2. Select "One Touch Dial", then press OK.
3. Press 【▲】 or 【▼】 to select the desired dial key number, then press OK.
   - When the dial key is already used as a one touch dial key, "∗" is displayed next to the dial key number. If you select this dial key, "Overwrite" is displayed. You can overwrite the previous assignment if necessary.
   - If you do not wish to overwrite, select "Go Back".
4. Select "Save", then press OK.
5. Press 【⏻】.

Making a Call Using a One Touch Dial Key

1. Press and hold the desired one touch dial key (【1】 to 【9】).
   - You can view other one touch dial assignments by pressing 【▲】 or 【▼】.
2. Press 【📞】 or 【🔊】.

Erasing a One Touch Dial Assignment

1. Press and hold the desired one touch dial key (【1】 to 【9】).
2. Press (middle soft key), then press OK.
3. Select "Yes", then press OK.

Note:

- Only the one touch dial assignment is erased. The corresponding phonebook entry is not erased.

8.4.8. Copying Phonebook Entries to Other Handset

Phonebook entries can be copied from the handset to the phonebook of a compatible Panasonic handset.

Copying One Entry

1. Find the desired phonebook entry, then press (middle soft key).
2. Select "Copy", then press OK.
3. Enter the handset number you wish to send the phonebook entry to.
4. To continue copying another entry, select "Yes", then press OK. Find the desired phonebook entry, then press OK.
   - To finish copying, select "No", then press OK.
5. Press 【⏻】.

Copying All Entries

1. Press (left soft key), then press .
2. Select "Copy All", then press OK.
3. Enter the handset number you wish to send the phonebook entries to.
   - When all entries have been copied, "Completed" is displayed.
4. Press 【⏻】.

Note:

- If the other handset (the receiver) is not in standby mode, "Failed" is displayed on your handset (the sender).
- If copying failed after copying at least 1 entry, "Incomplete" is displayed on your handset (the sender).

8.5. Voice Mail Service

Voice mail is an automatic answering service offered by your service provider. If you subscribe to this service, your service provider's voice mail system can answer calls for you when you are unavailable to answer the phone or when your line is busy. Messages are recorded by the service provider, not your telephone.

8.6. Registering a Handset to a Base Unit

To Register an Additional Handset to a Base Unit (Easy Registration)

The included handset and base unit are preregistered. After purchasing an additional handset, register it to the base unit. Ensure that the additional handset is switched on. If it is not on, press and hold 【⏻】 for few seconds to turn the handset on.

1. Lift the additional handset and press 【⏻】 to put the handset in standby mode.
2. Press and hold 【📶】 on the base unit for about 3 seconds, until the registration tone sounds.
3. Place the additional handset on the base unit. The registration tone continues to sound.
   With the handset still on the base unit, wait until a confirmation tone sounds and 📶 stops flashing.

Note:

- If an error tone sounds, or if 📶 is still flashing, register the handset manually (manual registration).
- If all registered handsets start ringing in step 2, press 【📶】 to stop. Start again from step 1.
- Charge the batteries of your additional handset for about 7 hours before initial use.
- This registration method cannot be used for handsets that have already been registered to a base unit. Register the handset manually (manual registration).

To Register a Handset to an Additional Base Unit (Manual Registration)

You can register a handset to a base unit manually using the following method.

1. Press ▭ (middle soft key).
2. Select 🔧, then press OK.
3. Select "`Registration`", then press OK 2 times.
4. Select a base unit number, then press OK.
   - This number is used by the handset as a reference only.
5. Press and hold 【📶】 on the base unit for about 3 seconds, until the registration tone sounds.
   - If all registered handsets start ringing, press 【📶】 to stop, then repeat this step.
   - After pressing 【📶】, the rest of this procedure must be completed within 1minute.
6. Wait until "`Enter Base PIN`" is displayed, then enter "`0000`" (default base unit PIN), then press OK.
   - If you changed the PIN, enter it.
   - When the handset has been registered successfully, 📶 will stop flashing. If keytones are turned on, a confirmation tone will be heard.

8.6.1. Cancelling a Handset

A maximum of 6 handsets can be registered to a base unit. A handset can cancel its own registration (or the registration of another handset) that is stored in the base unit. This will allow the base unit to “forget” the handset.

1 Press (middle soft key).
2 Select , then press OK.
3 Enter “0000” (default base unit PIN).
- If you changed the PIN, enter it.

4 Enter “335”.
5 Select “Cancel Handset”, then press OK.
- The numbers of all handsets registered to the base unit are displayed.

6 Select the handset(s) you want to cancel, by pressing the desired handset number.
- The selected handset number(s) will flash.
- To cancel a selected handset number, press the number again. The number will stop flashing.

7 Press OK.
8 Select “Yes”, then press OK.
9 Press [ ].

8.6.2. Cancelling a Base Unit

A handset can be registered to a maximum of 4 base units. A handset can cancel a base unit that it is registered to. This allows the handset to “forget” the base unit.

1 Press (middle soft key).
2 Select , then press OK.
3 Select “Registration”, then press OK.
4 Enter “335”.
5 Select “Cancel Base”, then press OK.
6 Enter “0000” (default handset PIN).
- If you changed the PIN, enter it.

7 Select the base unit(s) you want to cancel, by pressing the desired base unit number.
- The selected base unit number(s) will flash.
- To cancel a selected base unit number, press the number again. The number will stop flashing.

8 Press OK.
9 Select “Yes”, then press OK.
10 Press [ ].

Note:

- To register the handset to another base unit or to the same base unit again, see manual registration.

8.7. Selecting a Base Unit

When “Auto” is selected, the handset will automatically use any available base unit it is registered to. When a specific base unit is selected, the handset will make and receive calls using that base unit only. If the handset is out of range of that base unit, no calls can be made.

1 Press (middle soft key).
2 Select , then press OK.
3 Select “Select Base”, then press OK.
4 Select the desired base unit number, or “Auto”, then press OK.
- The handset starts searching for the base unit.

9 ANSWERING SYSTEM

This unit contains an answering system which can answer and record calls for you when you are unavailable to answer the phone. You can also record your own voice memos and phone conversations.

Important:

- Only 1 handset can access the answering system (listen to messages, record a greeting message, etc.) at a time.
- When callers leave messages, the unit records the day and time of each message. Make sure the date and time have been set.

9.1. Turning the Answering System On/Off

1. Press (middle soft key).
2. Select , then press OK.
3. Select "**Answer On**" or "**Answer Off**", then press OK.
4. Press [⏻].

Note:

- When the answering system is turned on:
  - – is displayed next to the battery icon
  - – the answer on indicator on the base unit lights

9.2. Greeting Message

When the unit answers a call, callers are greeted by a greeting message. You can record your own greeting message or use a prerecorded greeting message.

9.2.1. Using a prerecorded greeting message

If you erase or do not record your own greeting message, the unit can play a prerecorded greeting message for callers and ask them to leave messages. If the message recording time is set to "**Greeting Only**", caller messages will not be recorded and the unit will play a different prerecorded greeting message asking callers to call again.

9.2.2. Playing back the greeting message

1. Press (middle soft key).
2. Select , then press OK.
3. Select "**Play Greeting**", then press OK.
4. Press [⏻].

9.3. Listening to Messages

Messages are stored and played back chronologically, from oldest message to newest.

9.3.1. Listening to new/all messages

When you have new messages:

- the answer on indicator on the base unit flashes
- is displayed
- the total number of new messages is displayed next to if the screen saver is turned off
- the base unit beeps about once a minute if the message alert feature has been turned on

1 Press (middle soft key).
2 Select , then press OK.
3 Select "**Play New Msg.**" or "**Play All Msg.**", then press OK.

Note:

- To adjust the speaker volume during playback, press 【▲】 or 【▼】 repeatedly.
- After playing back all of the new messages, the answer on indicator will stop flashing but will remain lit up when the answering system is turned on.
- While listening to messages, you can switch between the receiver and speaker by pressing 【】 or 【】.

9.3.2. Repeating, skipping, stopping, erasing a message during playback

- To repeat a message during playback, press 【◀】. If pressed within the first 5 seconds of a message, the previous message will be played.
- To skip a message during playback, press 【▶】.
- To stop a message during playback, press (left soft key).
- To erase a message during playback, press , select "**Yes**", then press OK.

9.3.3. Erasing all messages

1 Press (middle soft key).
2 Select , then press OK.
3 Select "**Erase Message**", then press OK.
4 Select "**Erase All**", then press OK.
5 Select "**Yes**", then press OK.
6 Press 【】.

Note:

- The greeting message is not erased.

9.4. Using Direct Commands

You can operate the answering system by pressing dial keys, rather than navigating through the menus. To use the following commands, press (middle soft key), select , then press OK.

Key	Direct commands
【1】	Repeat message (during playback)*1
【2】	Skip message (during playback)
【3】	Enter the "Settings" menu
【4】	Play new messages
【5】	Play all messages
【6】	Play greeting message
【7】【4】	Record memo message
【7】【6】	Record greeting message
【8】	Turn answering system on
【9】	Stop (recording, playback)
【0】	Turn answering system off
【✳】【4】	Erase this message (during playback)
【✳】【5】	Erase all messages
【✳】【6】	Erase greeting message

*1 If pressed within the first 5 seconds of a message, the previous message will be played.

9.5. Remote Operation

Using a touch tone phone, you can call your phone number from outside and access the unit to listen to messages or change answering system settings. The unit's voice guidance will prompt you to press certain dial keys to perform different operations.

Important:

- In order to operate the answering system remotely, you must first turn on remote operation by setting a remote access code. This code must be entered each time you operate the answering system remotely.

9.5.1. Turning Remote Operation On/Off

A 3-digit remote access code must be entered when operating the answering system remotely. This code prevents unauthorised parties from listening to your messages remotely. After you store your remote access code, remote operation is possible.

1. Press (middle soft key).
2. Select , then press OK.
3. Select "Settings", then press OK.
4. Select "Remote Code", then press OK.
5. To turn on remote operation, enter a 3-digit remote access code.
   - To turn off remote operation, press 【✳】.
6. Press OK.
7. Press 【⏻】.

9.5.2. Turning on the Answering System Remotely

If the answering system is off, you can turn it on remotely.

1. Dial your phone number from a touch tone phone.
2. Let the phone ring 20 times.
   - A long beep will be heard.
3. Enter your remote access code within 10 seconds of the long beep.
   - The greeting message is played back.
   - You can hang up, or enter your remote access code again and begin remote operation.

10 TROUBLESHOOTING

If you still have difficulties after following the instructions in this section, disconnect the AC adaptor and turn off the handset, then reconnect the AC adaptor and turn on the handset.

Initial settings

Problem	Cause & solution
Ⓨ is flashing.	● The handset is not registered to the base unit. Register it (*1). ● The handset is too far from the base unit. Move closer. ● The AC adaptor is not connected. Check the connections.
The handset display is blank.	● The handset is not turned on. Turn the power on (*2).
The handset will not turn on.	● Make sure that the batteries are installed correctly (*3). ● Fully charge the batteries (*4). ● Clean the charge contact and charge again (*4).
The display is dark and displayed items are very faint.	● The handset is in screen saver mode (*5).

Cross Reference:

(*1) **Registering a Handset to a Base Unit** (P.27)

(*2) **Turning the Power On/Off** (P.22)

(*3) **Battery Installation** (P.6)

(*4) **Battery Charge** (P.6)

(*5) **Screen Saver Mode** (P.21)

Telephone

Problem	Cause & solution
I cannot make or receive calls.	● The AC adaptor or telephone line cord is not connected. Check the connections. ● If you are using a splitter to connect the unit, remove the splitter and connect the unit to the wall socket directly. If the unit operates properly, check the splitter. ● Disconnect the base unit from the telephone line and connect the line to a known working telephone. If the working telephone does not operate properly, contact your service provider. ● The dialling mode setting is incorrect. Set to "**Tone**" or "**Pulse**" as needed (*6). ● The call bar feature is turned on. Turn it off (*7). ● You dialled a call restricted number (*8). ● The key lock feature is turned on. Turn it off (*9).
The unit does not ring.	● The ringer volume is turned off. Adjust the handset ringer volume and the base unit ringer volume (*10). ● The night mode feature is turned on. Turn it off (*11).
The batteries should be charging but the battery icon does not change.	● Clean the charge contact and charge again. ● The AC adaptor is disconnected. Plug in the AC adaptor.
A busy tone is heard when 【↘】 is pressed.	● The handset is too far from the base unit. Move closer and try again. ● Another handset is on an outside call. Wait for the other user to complete the call.

Cross Reference:

(*6) **Setting Dialling Mode (Tone/Pulse)** (P.19)

(*7) **Turning Call BAR On/Off (Call Prohibition)** (P.18)

(*8) **Setting Call Restriction** (P.17)

(*9) **Key Lock** (P.17)

(*10) **Ringer Volume** (P.13)

(*11) **Night Mode** (P.14)

Problem	Cause & solution
Static is heard, sound cuts in and out. Interference from other electrical units.	● Locate the handset and the base unit away from other electrical appliances. ● Move closer to the base unit. ● Your unit is connected to a telephone line with DSL service. We recommend connecting a filter (contact your DSL service provider) to the telephone line between the base unit and the telephone line jack.
The handset stops working while being used.	● Disconnect the AC adaptor and turn off the handset. Connect the AC adaptor, turn on the handset and try again.
While storing an entry in the phonebook or assigning a one touch dial, the handset starts to ring.	● A call is being received. To answer the call, press [ ]. Programming will be cancelled. Try again after the call.
Pressing does not display/dial the last number dialled.	● The redialled number was more than 24 digits long. Redial the number manually.
The handset beeps intermittently and/or flashes.	● Fully charge the batteries (*12).
I fully charged the batteries, but still flashes.	● Clean the charge contact and charge again (*12). ● It is time to replace the batteries (*13).
Caller information is not displayed.	● You must subscribe to Caller ID service (*14). ● Your unit is connected to a telephone line with DSL service. We recommend connecting a filter (contact your DSL service provider) to the telephone line between the base unit and the telephone line jack.
While viewing caller information, the display returns to standby mode.	● Do not pause for over 1 minute while searching.
I cannot register a handset to a base unit.	● Easy Registration is available only when the handset isn't registered to any base units. ● The maximum number of base units (4) are already registered to the handset. Cancel unused base unit registrations from the handset (*15). ● The maximum number of handsets (6) are already registered to the base unit. Cancel unused handset registrations from the base unit (*16). ● You entered the wrong PIN number. If you forget your PIN, refer to "**For Service Hint**" in "**PIN Code**". (*17) ● Locate the handset and the base unit away from other electrical appliances.

Cross Reference:

(*12) **Battery Charge** (P.6)

(*13) **Battery Replacement** (P.7)

(*14) **Caller ID Display** (P.21)

(*15) **Cancelling a Base Unit** (P.28)

(*16) **Cancelling a Handset** (P.28)

(*17) **PIN Code** (P.15)

Answering system

Problem	Cause & solution
The other party complains that they cannot leave a message.	● The recording time is set to "**Greeting Only**". Select "**1 Minute**" or "**3 Minutes**". ● Message memory is full. Erase unnecessary messages (*18).
I cannot operate the answering system with the handset.	● Another handset user is using the answering system, accessing the caller list or changing base unit settings. Wait for the other user to finish. ● A caller is leaving a message. Wait for the caller to finish. ● The handset is too far from the base unit. Move closer.
I cannot operate the answering system remotely.	● You are entering the wrong remote access code. Confirm that the correct remote code is entered. If you forget the remote access code, store a new remote access code again (*19). ● You are pressing the dial keys too quickly. Press each key firmly. ● The answering system is turned off. Turn it on (*20). ● You are using a pulse telephone. Try again using a touch tone phone.
While recording a greeting message or listening to messages, the unit rings and recording stops.	● A call is being received. Answer the call and try again later.

Cross Reference:

(*18) **Erasing all messages** (P.30)

(*19) **Turning Remote Operation On/Off** (P.31)

(*20) **Turning on the Answering System Remotely** (P.31)

11 DISASSEMBLY INSTRUCTIONS

11.1. Base Unit

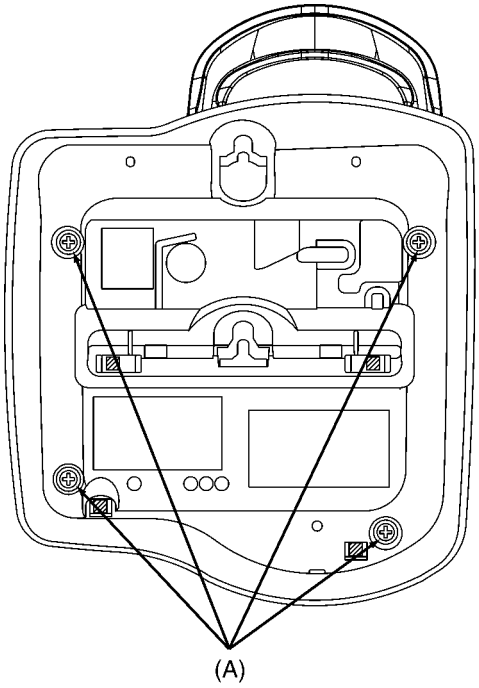


Fig. 1

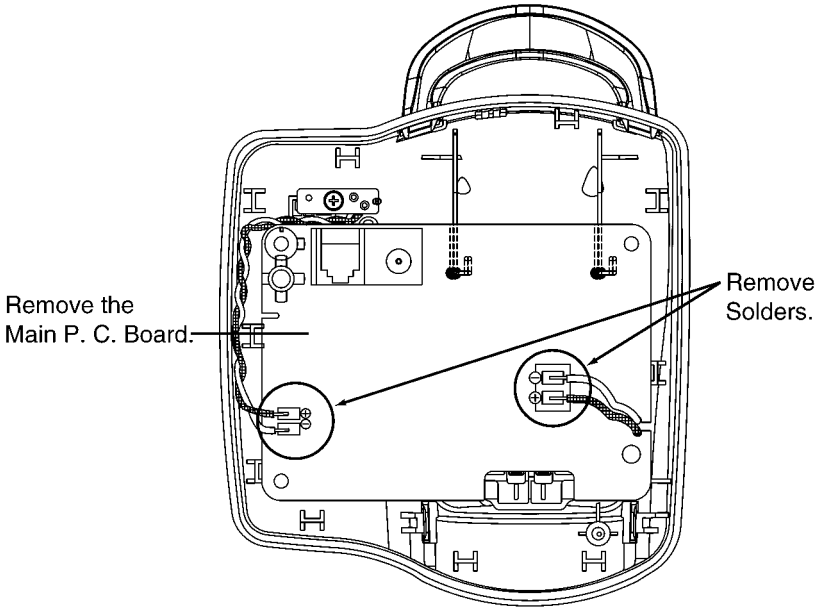


Fig. 2

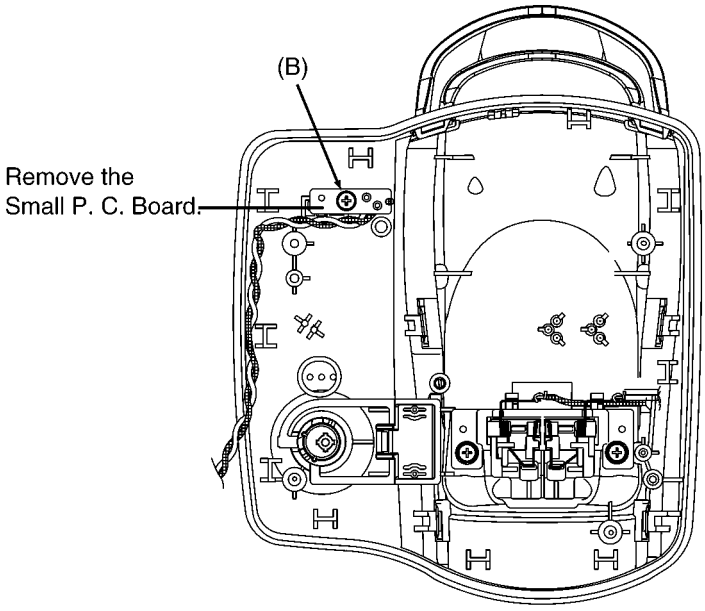


Fig. 3

Shown in Fig.-	To Remove	Remove
1	Cabinet Cover	Screws (2.6 × 10).....(A) × 4
2	Main P.C. Board	Solders
		Main P.C. Board
3	Small P.C. Board	Screw (2.6 × 10).....(B) × 1
		Small P.C. Board

11.2. Handset

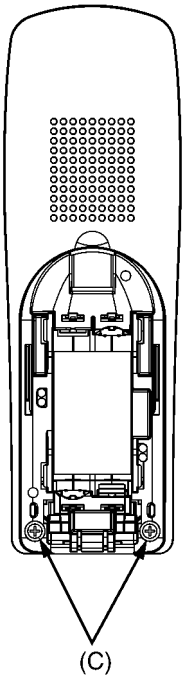


Fig.4

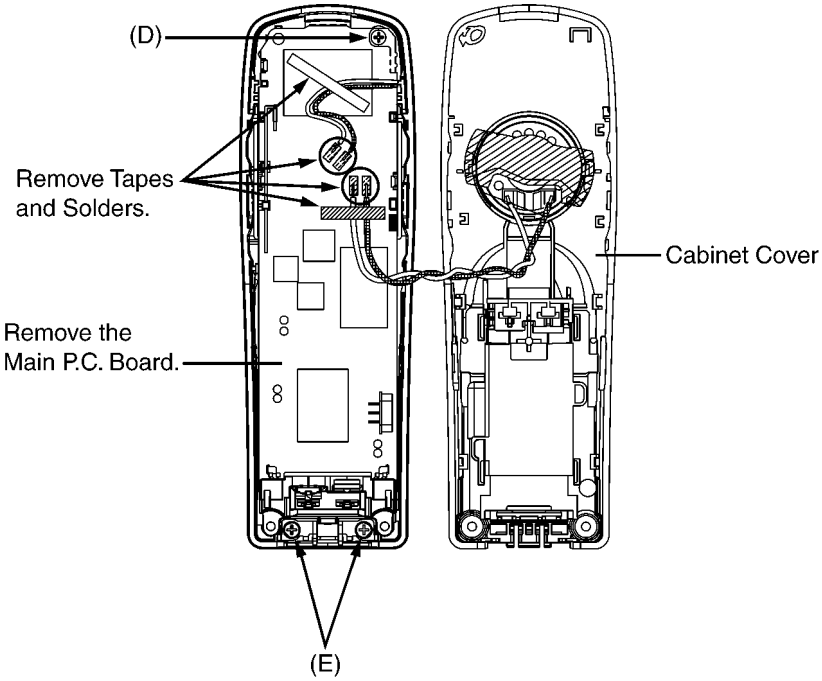
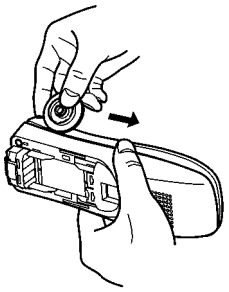
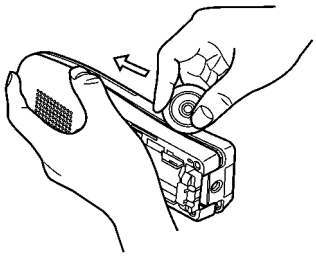


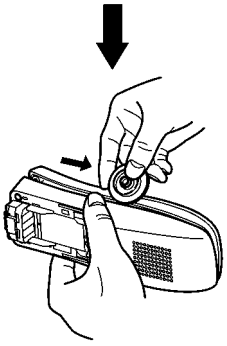
Fig.6

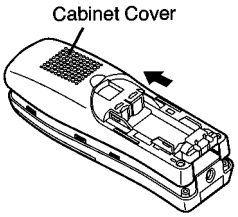


Insert a JIG (PQDJ10006Y) between the Cabinet Body and the Cabinet Cover, then pull it along the gap to open the Cabinet.



Likewise, open the other side of the Cabinet.





Remove the Cabinet Cover by pushing it upward.

Fig.5

Shown in Fig.-	To Remove	Remove
4	Cabinet Cover	Screws (2 × 10).....(C) × 2
5		Follow the procedure.
6	Main P.C. Board	Screw (2 × 10).....(D) × 1
		Screws (2 × 10).....(E) × 2
		Tapes and Solders
		Main P.C. Board

11.3. Charger Unit

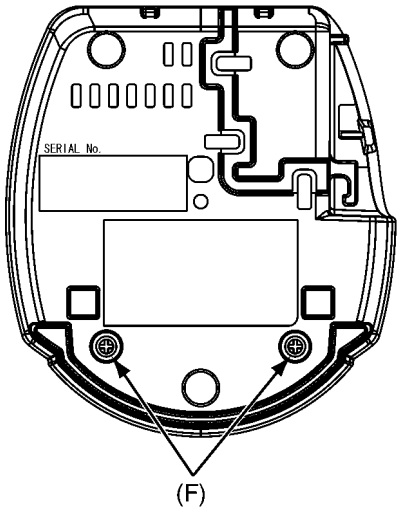


Fig. 7

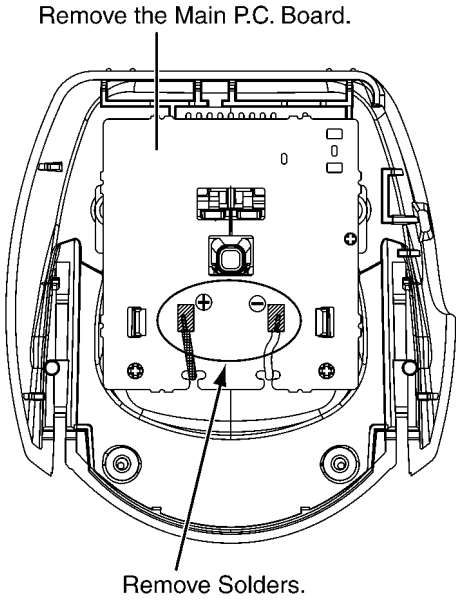
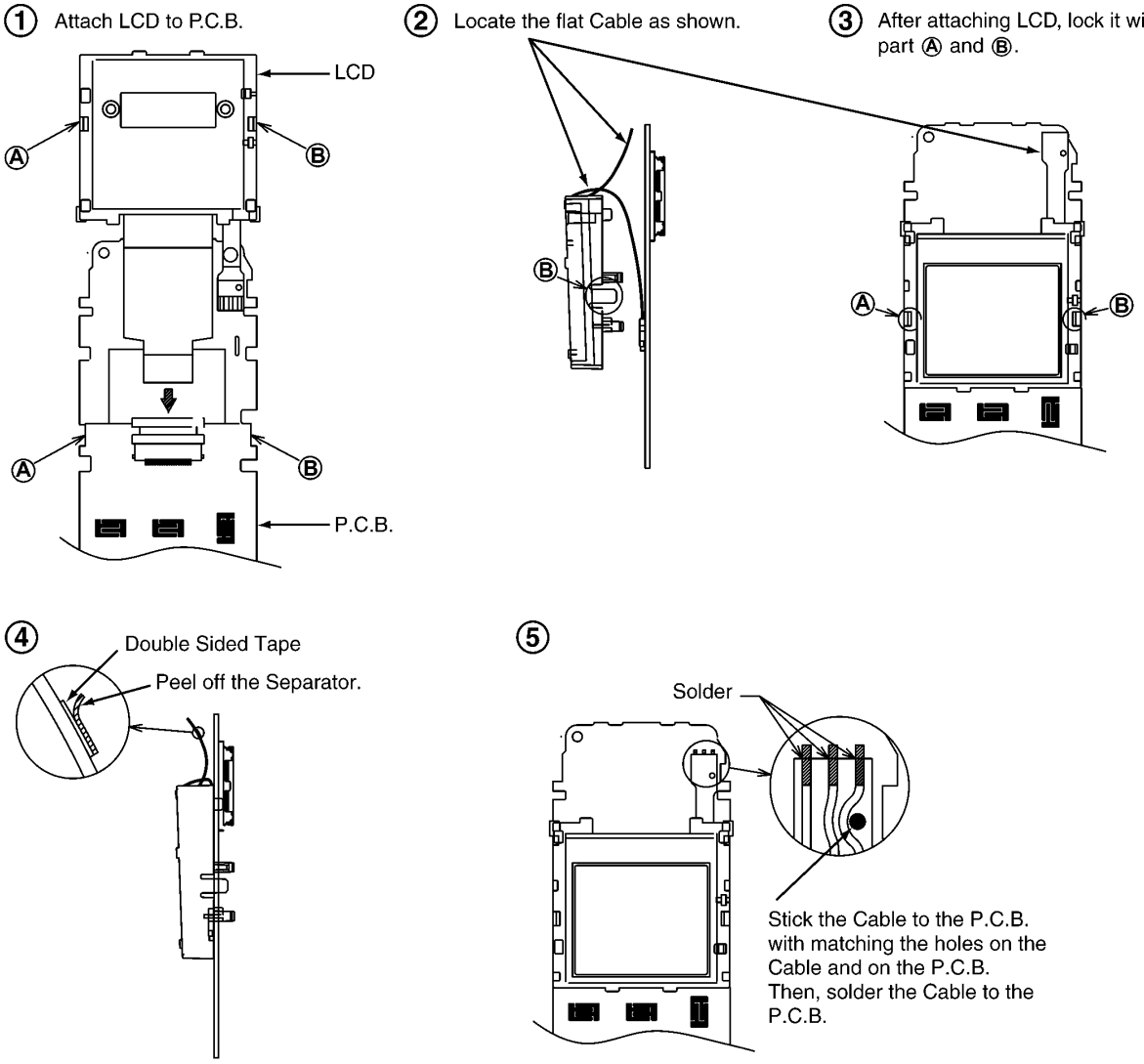


Fig. 8

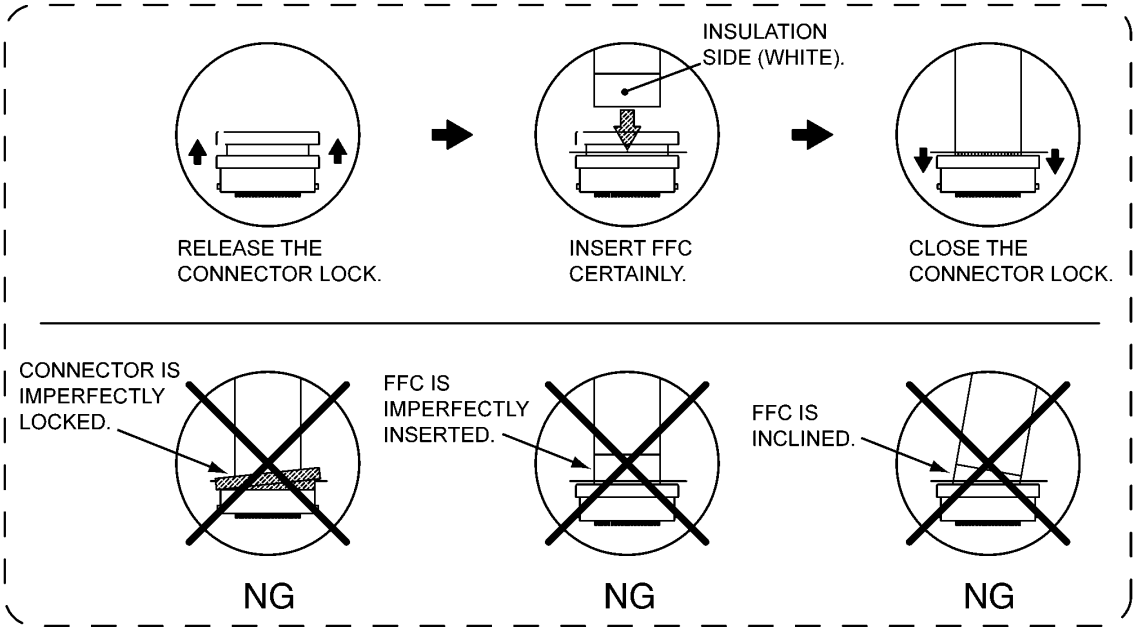
Shown in Fig.-	To Remove	Remove
7	Cabinet Cover	Screws (2.6 × 10).....(F) × 2
8	Main P.C. Board	Solders
		Main P.C. Board

12 ASSEMBLY INSTRUCTIONS

12.1. Fix the LCD to the Main P.C.Board (Handset)

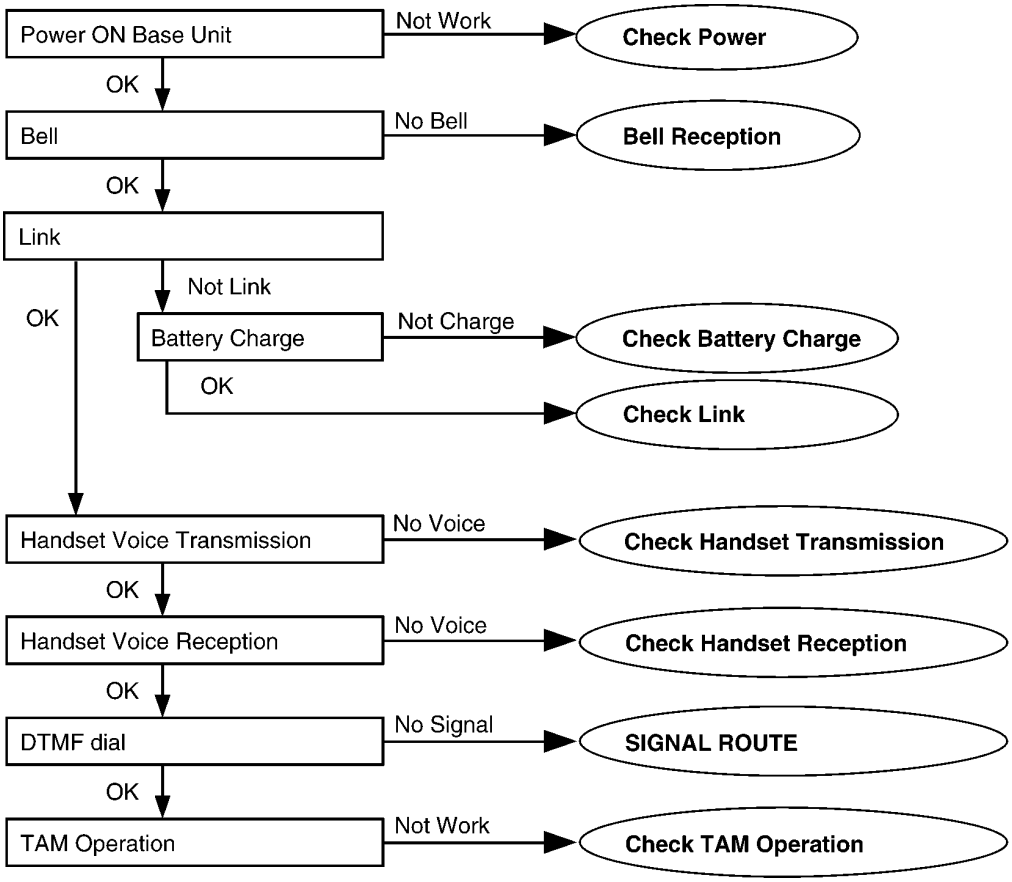


<Details of step ① above>



13 TROUBLESHOOTING FLOWCHART

Flow Chart



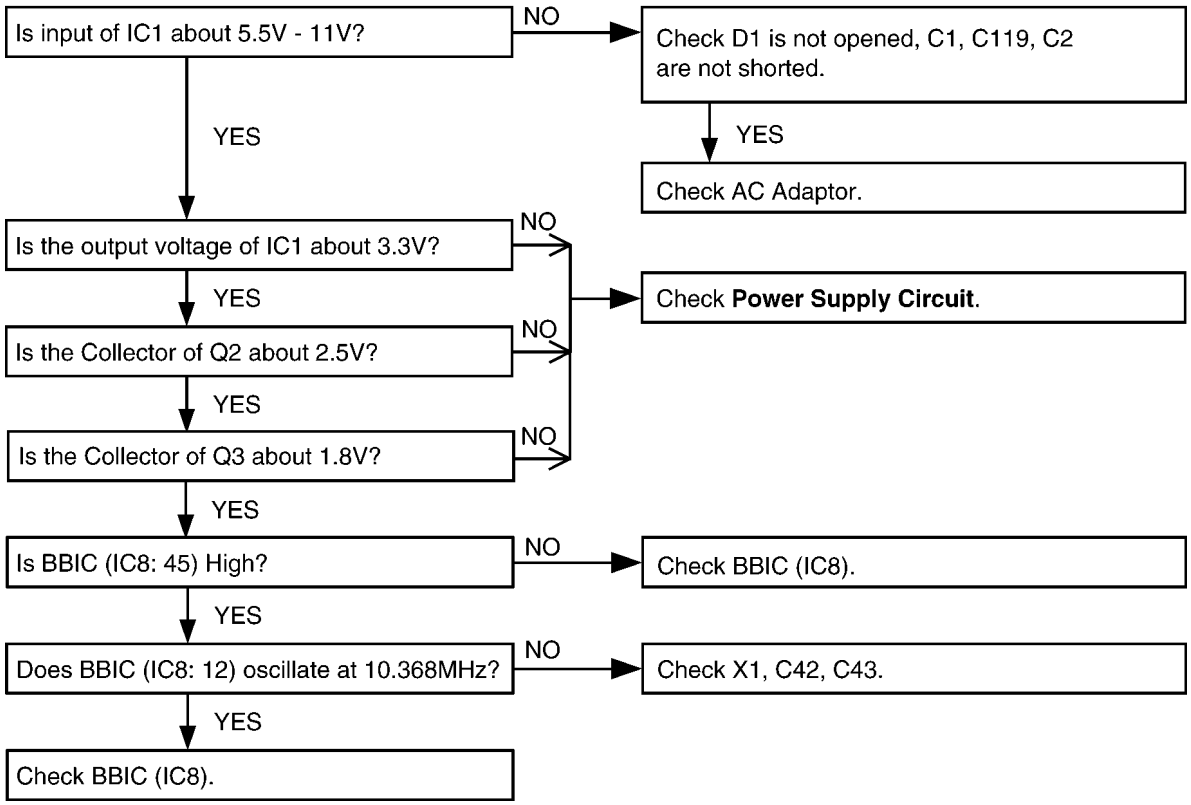
Cross Reference:

Check Power (P.40)
Bell Reception (P.47)
Check Battery Charge (P.41)
Check Link (P.42)
Check Handset Transmission (P.46)
Check Handset Reception (P.46)
SIGNAL ROUTE (P.71)
Check TAM Operation (P.47)

13.1. Check Power

13.1.1. Base Unit

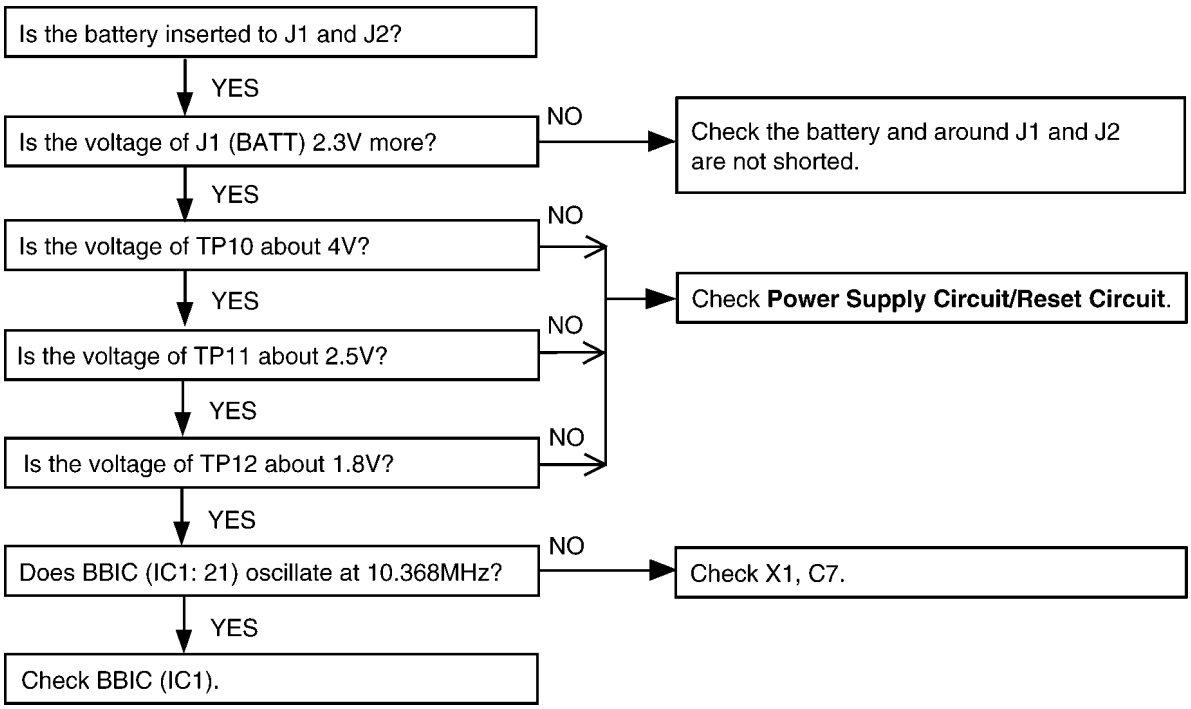
Is the AC Adaptor inserted into AC outlet? (Check AC Adaptor's specification.)



Cross Reference:

Power Supply Circuit (P.66)

13.1.2. Handset

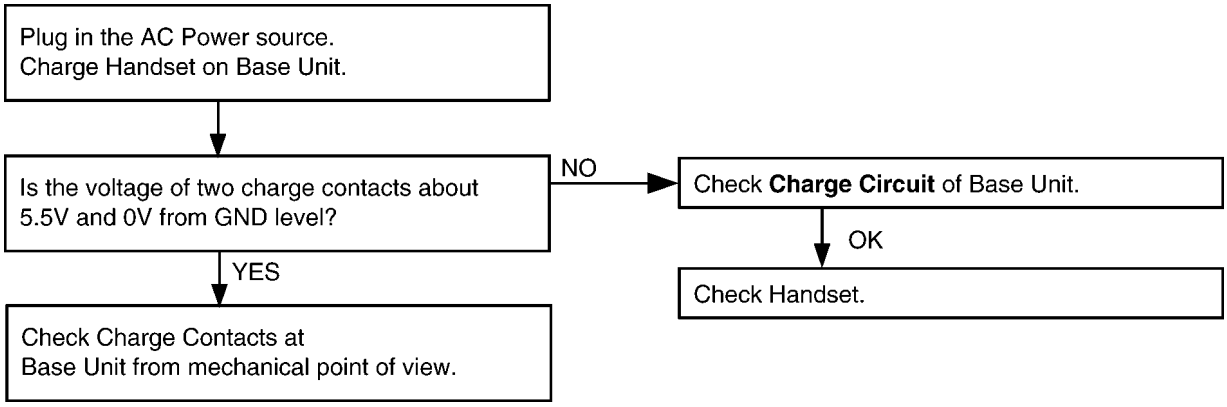


Cross Reference:

Power Supply Circuit/Reset Circuit (P.69)

13.2. Check Battery Charge

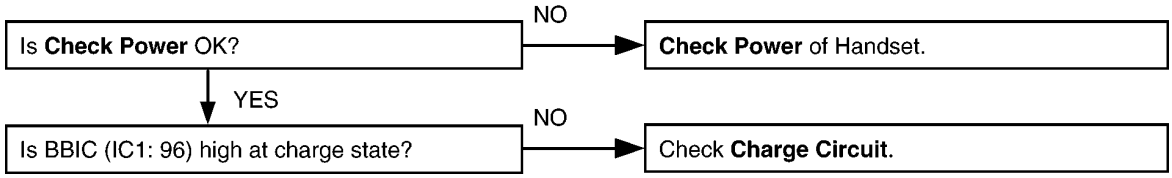
13.2.1. Base Unit



Cross Reference:

Charge Circuit (P.69)

13.2.2. Handset

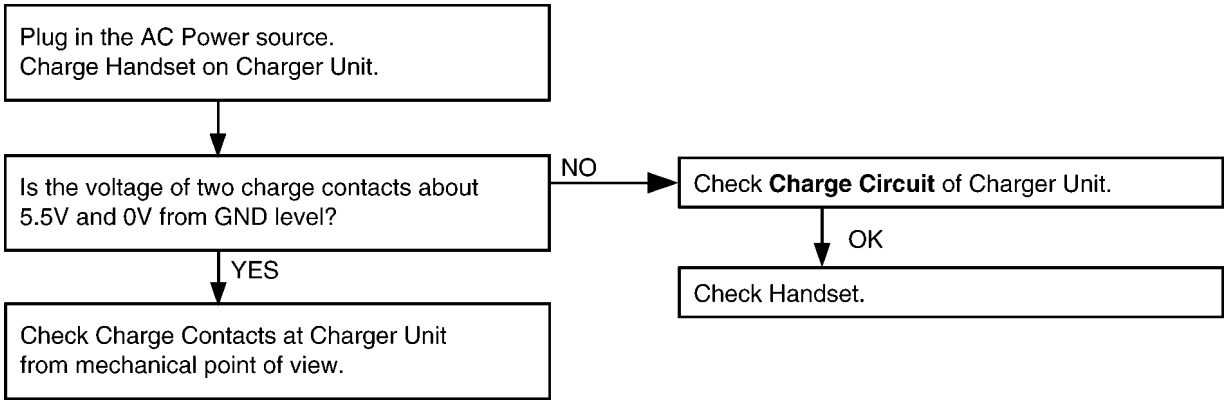


Cross Reference:

Check Power (P.40)

Charge Circuit (P.69)

13.2.3. Charger Unit

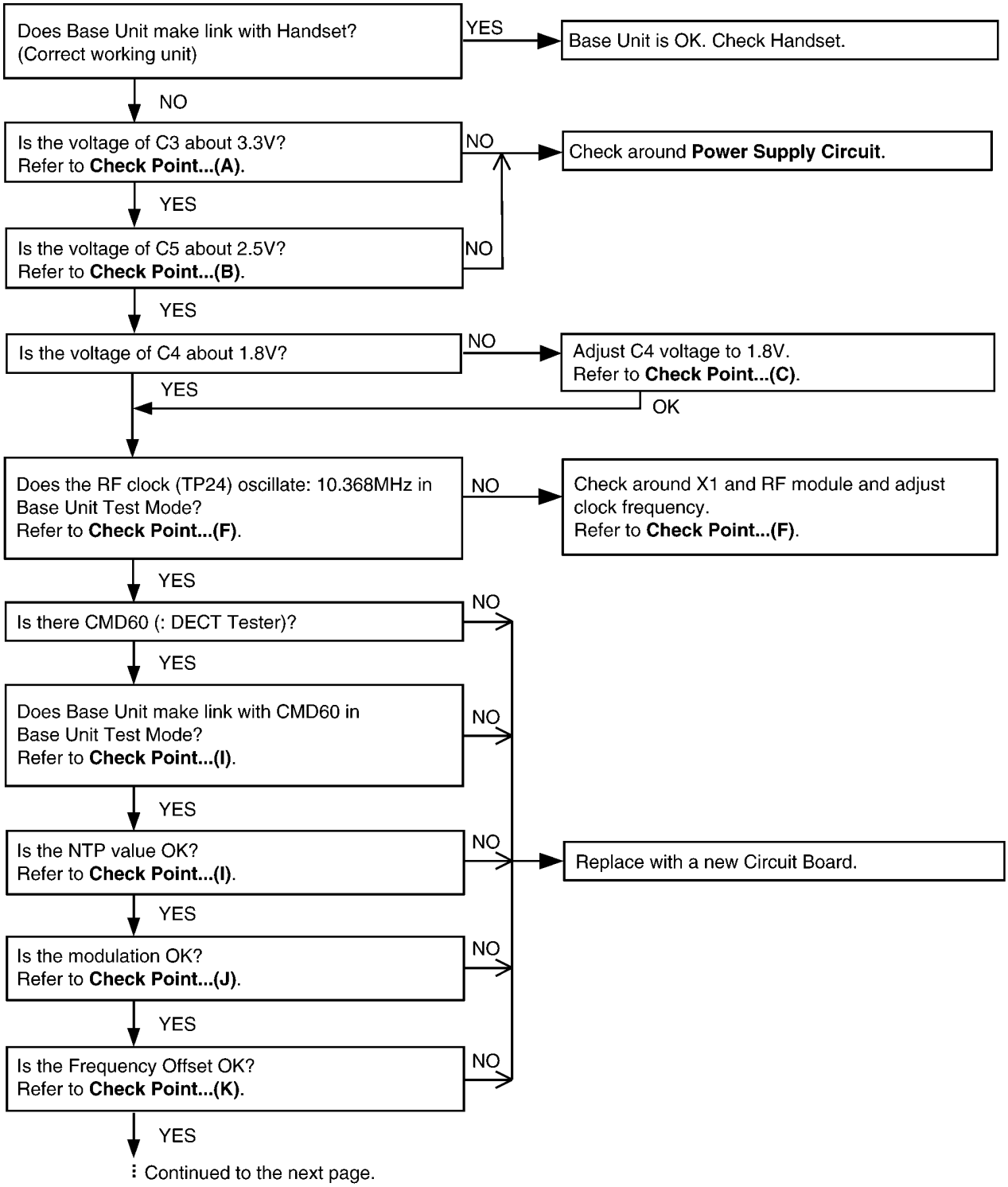


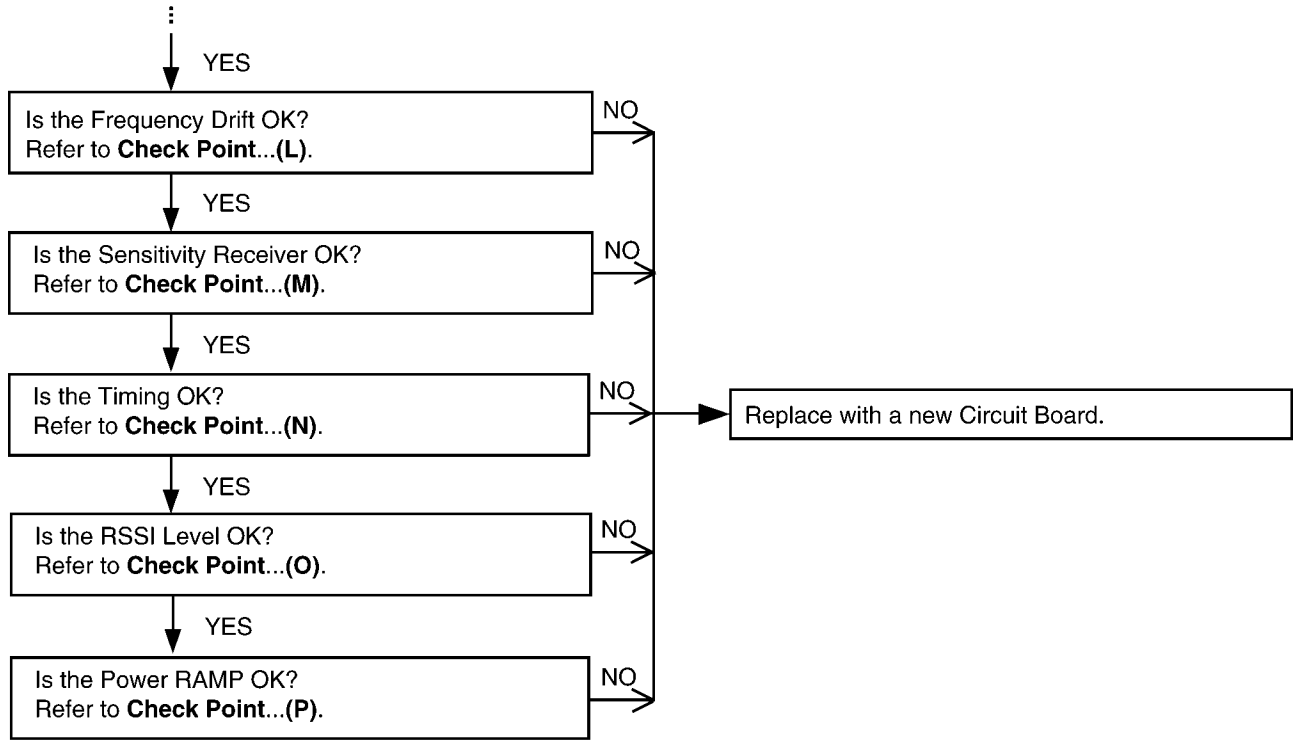
Cross Reference:

Charge Circuit (P.69)

13.3. Check Link

13.3.1. Base Unit



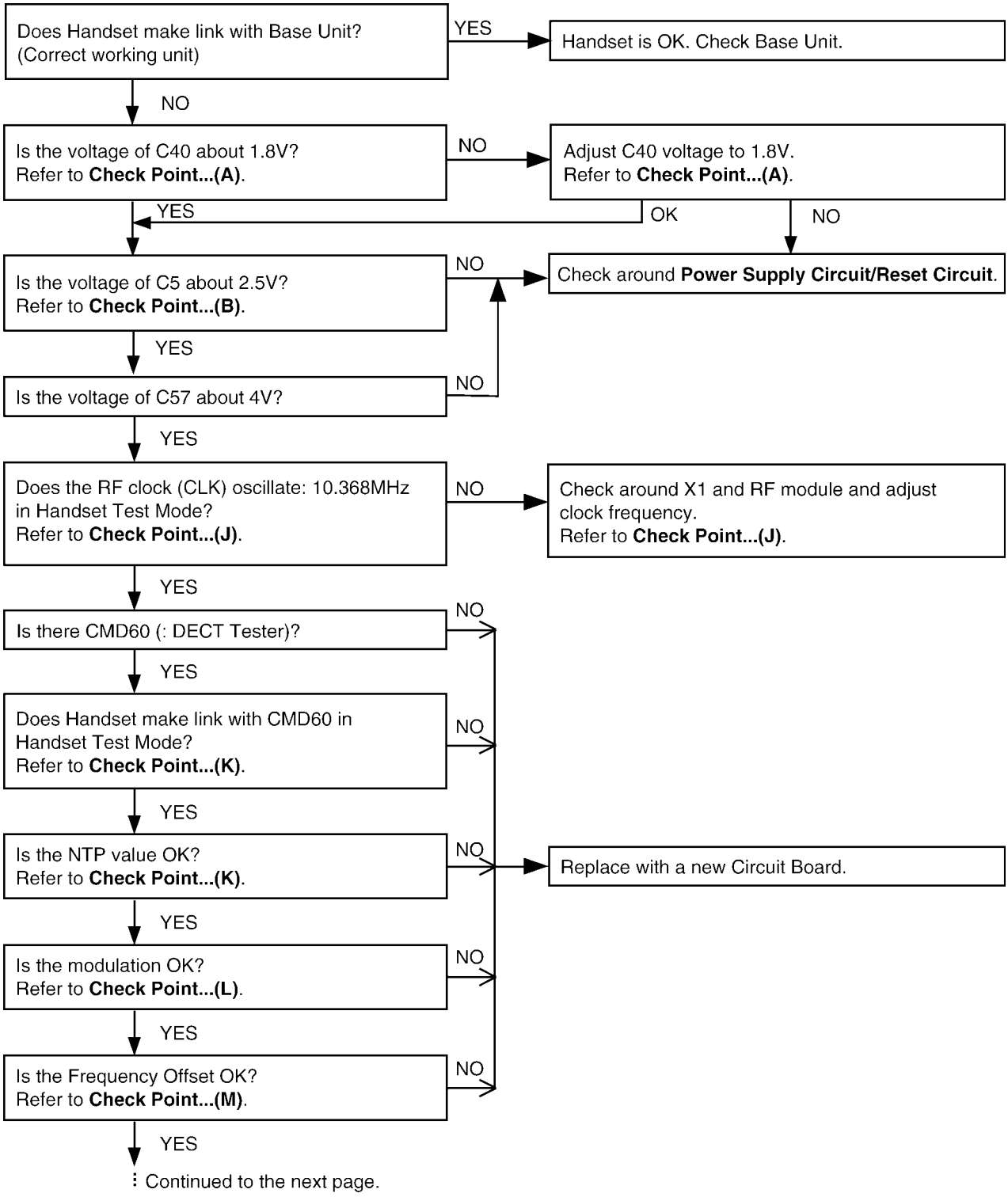


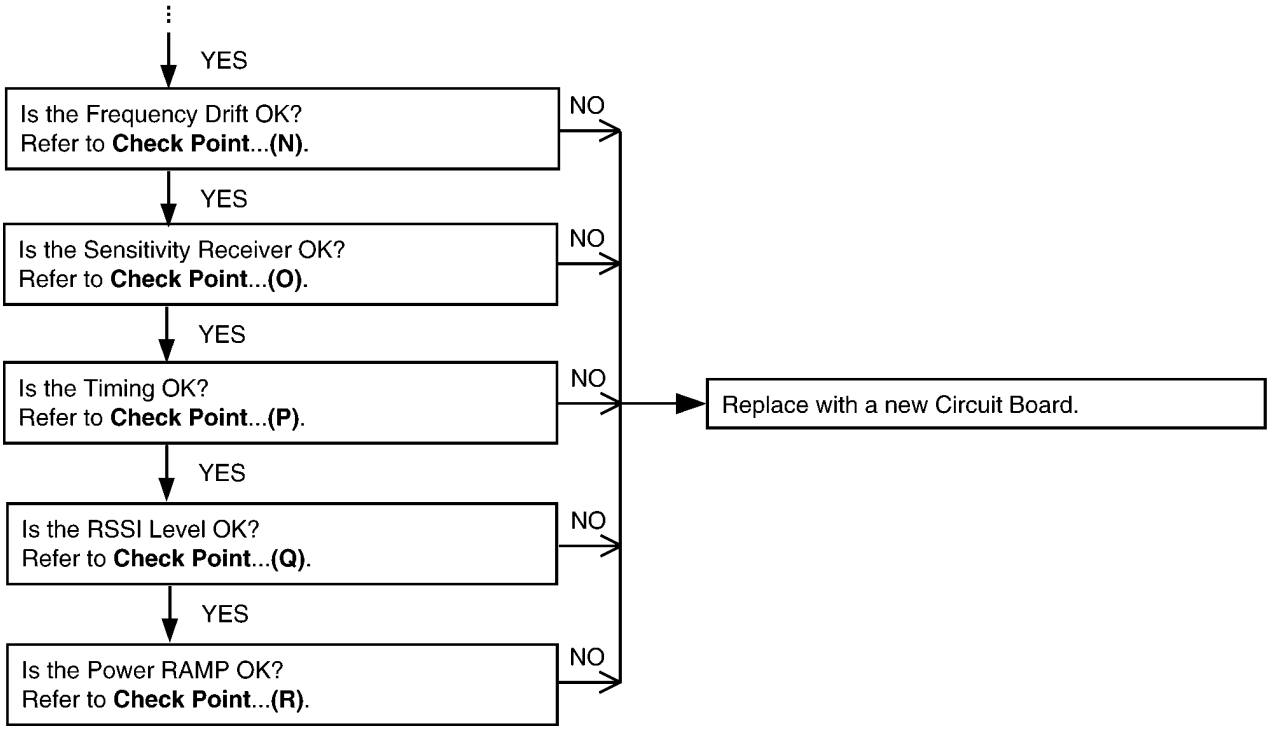
Cross Reference:

Power Supply Circuit (P.66)

Check Point (Base Unit) (P.48)

13.3.2. Handset



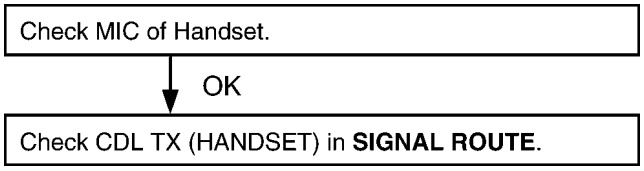


Cross Reference:

Power Supply Circuit/Reset Circuit (P.69)

Check Point (Handset) (P.55)

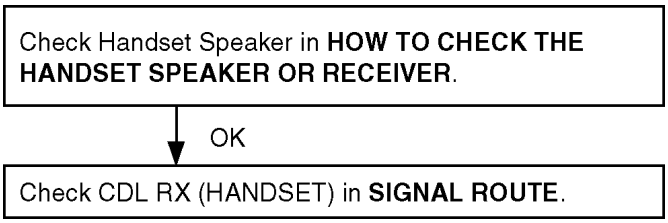
13.4. Check Handset Transmission



Cross Reference:

SIGNAL ROUTE (P.71)

13.5. Check Handset Reception



Cross Reference:

HOW TO CHECK THE HANDSET SPEAKER OR RECEIVER (P.63).

SIGNAL ROUTE (P.71)

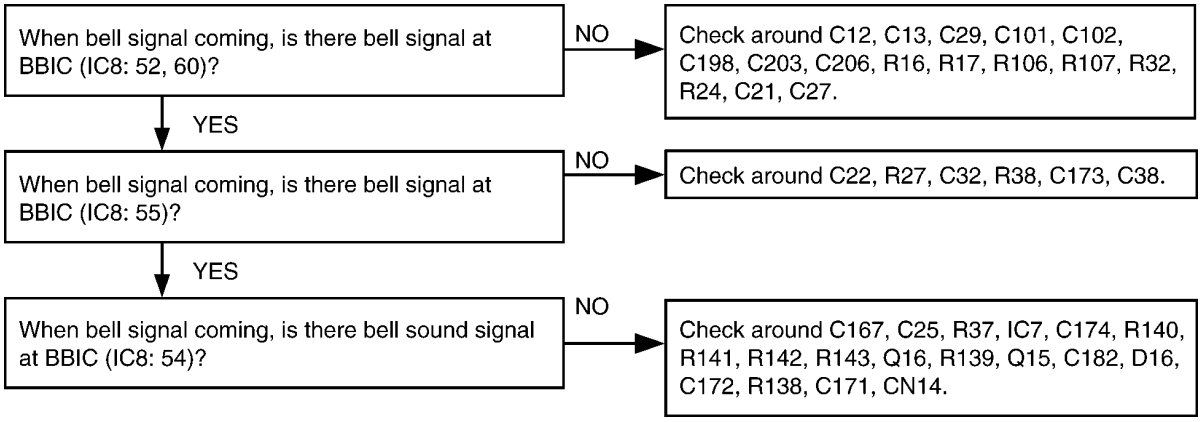
13.6. Check Caller ID

Cross Reference:

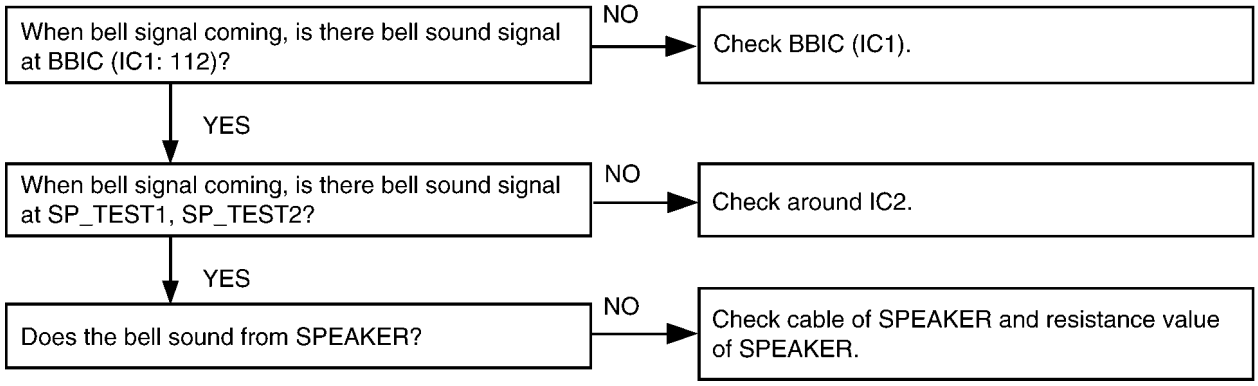
SIGNAL ROUTE (P.71)

13.7. Bell Reception

13.7.1. Base Unit



13.7.2. Handset



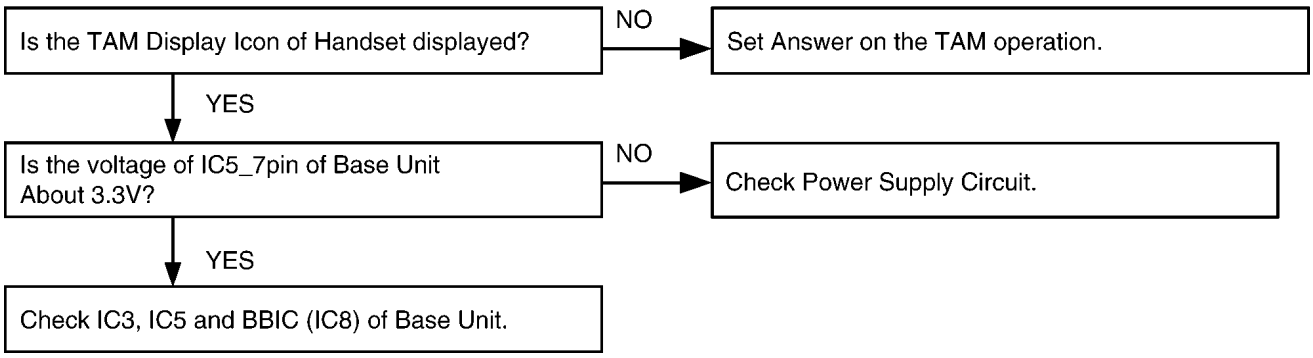
Cross Reference:

Telephone Line Interface (P.67)

Check Link (P.42)

HOW TO CHECK THE HANDSET SPEAKER OR RECEIVER (P.63)

13.8. Check TAM Operation



Cross Reference:

Power Supply Circuit (P.66)

14 TROUBLESHOOTING BY SYMPTOM (BASE UNIT AND CHARGER UNIT)

If your unit has below symptoms, follow the instructions in remedy column. Remedies depend on whether you have DECT tester (*1) or not.

Symptom	Remedy (*2)	
	You don't have DECT Tester.	You have DECT Tester. (Model Number : CMD60)
You cannot dial.	Check item (**A**)-(**G**).	Check item (**A**)-(**G**), (**I**)-(**O**).
You cannot hear the caller's voice.	Check item (**A**)-(**F**).	Check item (**A**)-(**F**), (**I**)-(**L**), (**N**).
You cannot use handset a little away from base unit even if the handset is within range of the base unit.	-	Check item (**I**), (**M**).
The acoustic transmit level is high or low.	Check item (**Q**).	Check item (**Q**).
The acoustic reception level is high or low.	Check item (**Q**).	Check item (**Q**).
The unit does not link.	Check item (**A**)-(**H**).	Check item (**A**)-(**P**).
The unit cannot charge.	Check item (**R**).	Check item (**R**).
TAM does not work.	Check item (**S**).	Check item (**S**).

Note:

(*1): A general repair is possible even if you don't have the DECT tester because it is for confirming the levels, such as Acoustic level in detail.

(*2): Refer to **Check Point (Base Unit)** (P.48)

14.1. Check Point (Base Unit)

Please follow the items below when BBIC or EEPROM or FLASH ROM is replaced.

Note:

After the measuring, sock up the solder of TP.

*: **PC Setting** (P.59) is required beforehand.

The connections of adjustment equipments are as shown in **Adjustment Standard (Base Unit)** (P.53).

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)	3.3V Supply Confirmation	TP14	1. Confirm that the voltage between test point VDD3 and GND is 3.3V ± 0.2V.	D1, IC1, C1, C119, C2, R8, R9, C114, C34, C8, R85
(**B**)	2.5V Supply Confirmation	TP22	1. Confirm that the voltage between test point VDD2 and GND is 2.5V ± 0.2V.	Q2, C5, C7, C168
(**C**)*	1.8V Supply Confirmation	TP15	1. Confirm that the voltage between test point VDD1 and GND is 1.8V ± 0.1V.	Q3, C6, C11, C48, C4, C37, C39, C44, C45
(**D**)*	BBIC Confirmation	-	1. BBIC Confirmation (Execute the command "getchk"). 2. Confirm the returned checksum value. Connection of checksum value and program number is shown below. ex.) checksum value: 64C0 / program number: D591ZC	IC8, X1, C42, C43, R40, C6, C11, C48, C4, C37, C39, C44, C45, R124, R125, C153
(**E**)*	EEP-ROM Confirmation	-	1. EEP-ROM Confirmation (Execute the command "ChkTCD220XXrevYY"). XX: country code YY: revision number 2. Confirm the returned checksum value. **Note:** "XX", "YY", and "checksum" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.52).	IC3, C53, R56, R57
(**F**)*	BBIC Clock Adjustment	CLK	1. Input Command "rdeeprom 00 01 01", then you can confirm the current value. 2. Adjust the frequency of CLK executing the command "setfreq xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 10Hz.	IC2, IC4, R124, R125, C153, X1, C42, C43

	Items	Check Point	Procedure	Check or Replace Parts
(**G**)*	Hookswitch Check with DC Characteristics	-	1. Connect CN1 (Telephone Socket) to Tel-simulator which is connected with 600 Ω. 2. Set line voltage to 48V and line current to 40mA at off-hook condition of nomal telephone. 3. Execute the command “hookoff” 4. Confirm that the line current is 40mA ± 5mA. 5. Execute the command “hookon”. 6. Confirm that the line current is less than + 0.8mA.	CN1, L6, L7, Q4, R23, R25, Q5, R26, R28, IC8, D3
(**H**)*	DTMF Generator Check	-	1. Connect CN1 (Telephone Socket) to DTMF tester. 2. Execute the command "hookoff" and "dtmf_hi". 3. Confirm that the high frequency (1477Hz) is -6 ± 2dBm. 4. Execute the command "dtmf_lo". 5. Confirm that the low frequency (852Hz) is -8 ± 2dBm.	IC8, R39, C41, R49, C46, C47, R42, R43, R44, R45, R46, R47, R48, C108, C109, C40, C36, Q8, D4
(**I**)*	Transmitted Power Confirmation	-	Remove the Antenna before starting step from 1 to 7. 1. Configure the DECT tester (CMD60) as follows; <Setting> • Short A_1 and GND. • Test mode: FP • Traffic Carrier: 5 • Traffic Slot: 4 • Mode: Loopback • PMID: 00000 • RF LEVEL = -70dBm. 2. Execute the command "testmode". 3. Execute the command “sendchar dmv 2 2“. 4. Check that “Signalling Status” has been set to “Locked“, then press “ACCEPT RFPI“. 5. Initiate connection from Dect tester (“set up connect“) 6. Execute the command “ANT1“. 7. Confirm that the NTP value at ANT is 20dBm ~ 25dBm.	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155
(**J**)	Modulation Check and Adjustment	-	Follow steps 1 to 6 of **(I)** above. 7.Confirm that the B-Field Modulation is -350 ~ -400/+320 ~ +370kHz/div using data type Fig31. 8.Adjust the B-Field Modulation if required. (Execute the command "readmod" and "wrtmod xx", where xx is the value.)	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155
(**K**)	Frequency Offset Check	-	Follow steps 1 to 6 of **(I)** above. 7.Confirm that the frequency offset is < ± 45kHz.	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155

	Items	Check Point	Procedure	Check or Replace Parts
(**L**)	Frequency Dirft Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Confirm that the frequency drift is < ± 30kHz/ms.	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155
(**M**)	Sensitivity Receiver Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Set DECT tester power to -88dBm. 8.Confirm that the BER is < 1000ppm.	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155
(**N**)	Timing Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Confirm that the Timing accuracy is < ± 2.0ppm.	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155
(**O**)*	RSSI Level Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Execute the command "readrssi". 8. Confirm that the returned value is 0×22 ± A (hex).	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155

	Items	Check Point	Procedure	Check or Replace Parts
(**P**)	Power RAMP Confirmation	-	Follow steps 1 to 6 of **(I)**. 7.Confirm that Power RAMP is matching.	IC2, IC8, R124, R125, C153, C140, C141, DA1, C142, C143, C144, L3, L4, R118, R119, C135, R115, R116, Q6, C145, C147, C149, C151, C157, R123, C158, C159, C160, C161, C162, C163, C164, C136, R117, R127, C156, C154, C155
(**Q**)*	Audio Check	-	1. Link with Handset. 2. Input -45dBm/1kHz to MIC of Handset. Measure the Level at Line I/F and distortion level. 3. Confirm that the level is -7.5dBm ± 2dBm and that the distortion level is < 5% at TEL Line (600Ω Load). 4. Input -20dBm/1kHz to Line I/F. Measure the level at Receiver of Handset and distortion level (*Receive volume set to second position from minimum). 5. Confirm that the level is -20.5dBm ± 2dBm and that the distortion level is < 5% at Receiver (Volume Middle, 150Ω Load).	IC8, CN1,SA1, L6, L7, D3, Q4, Q5, R23, R25, R26, R28
(**R**)	Charging Check	-	1. Connect Charge Contact 12Ω/2W resistor between charge+ and charge-. 2. Measure and confirm voltage across the resistor is 2.85V ± 0.2V.	R3, R4, R5, D6, C107, C180, C181
(**S**)	TAM Operation Confirmation	-	1. TAM Confirmation (Excute the command "sendchar_VPI") 2. Confirm the returned Value (Value is "D597EB").	IC5, R132, C195, C196, C197, R130, C169, C208, R133, R134, C209, C210

14.2. The Setting Method of JIG (Base Unit)

14.2.1. Preparation

14.2.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
  Hewlett Packard, 53131A is recommended.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

14.2.1.2. JIG and PC

- EEPROM serial JIG
  JIG Cable: PQZZ1CD300E*
- PC which runs in DOS mode
- **Batch file** for setting: PQZZTG1860BX

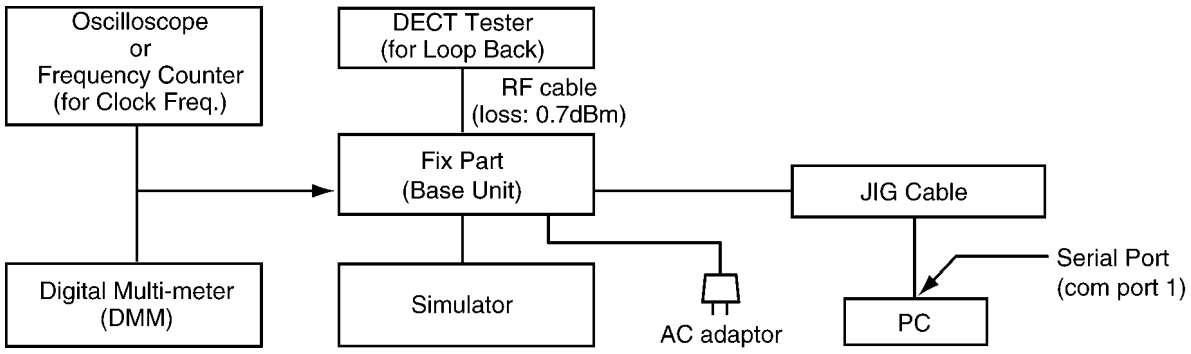
Note:

*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

Resistor	Old value (kΩ)	New value (kΩ)
R2	22	3.3
R3	22	3.3
R4	22	4.7
R7	4.7	10

14.2.2. PC Setting

14.2.2.1. Connections



14.2.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory.
3. Type “**SET_COM=1**” from the keyboard (when COM port 1 is used for the connection).
4. Type “doskey”.

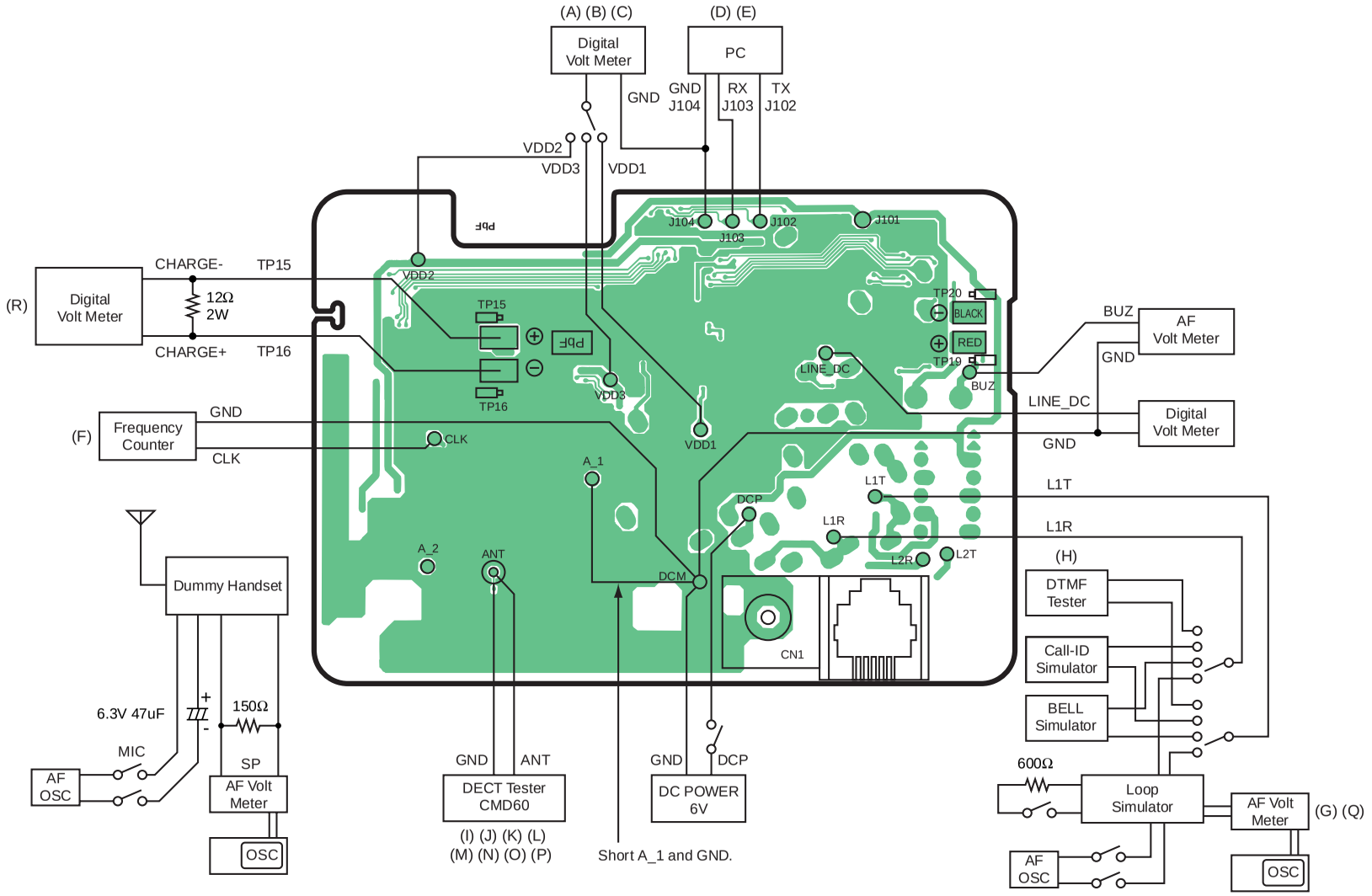
Note:

See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type “rdeeprom 00 00 FF”, and the data from address “00 00” to “FF” is read out.
readid	Read ID (RFPI)	Type “readid”, and the registered ID is read out.
writeid	Write ID (RFPI)	Type “writeid 00 18 E0 0E 98”, and the ID “0018 E0 0E 98” is written.
setfreq	Adjust Frequency of RFIC	Type “setfreq nn”.
hookoff	Off-hook mode on Base	Type “hookoff”.
hookon	On-hook mode on Base	Type “hookon”.
getchk	Read checksum	Type “getchk”.
wreeprom	Write the data of EEPROM	Type “wreeprom 01 23 45”. “01 23” is address and “45” is data to be written.

14.3. Adjustment Standard (Base Unit)

When connecting the Simulator Equipments for checking, please refer to below.



Note:

(**A**) - (**R**) is referred to **Check Point (Base Unit)** (P.48)

14.4. Check Point (Charger Unit)

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)	Charging Check	-	1. Connect Charge Contact 12Ω/2W resistor between charge+ and charge-. 2. Measure and confirm voltage across the resistor is 2.85V ± 0.2V.	D11, R11, R12

Note:

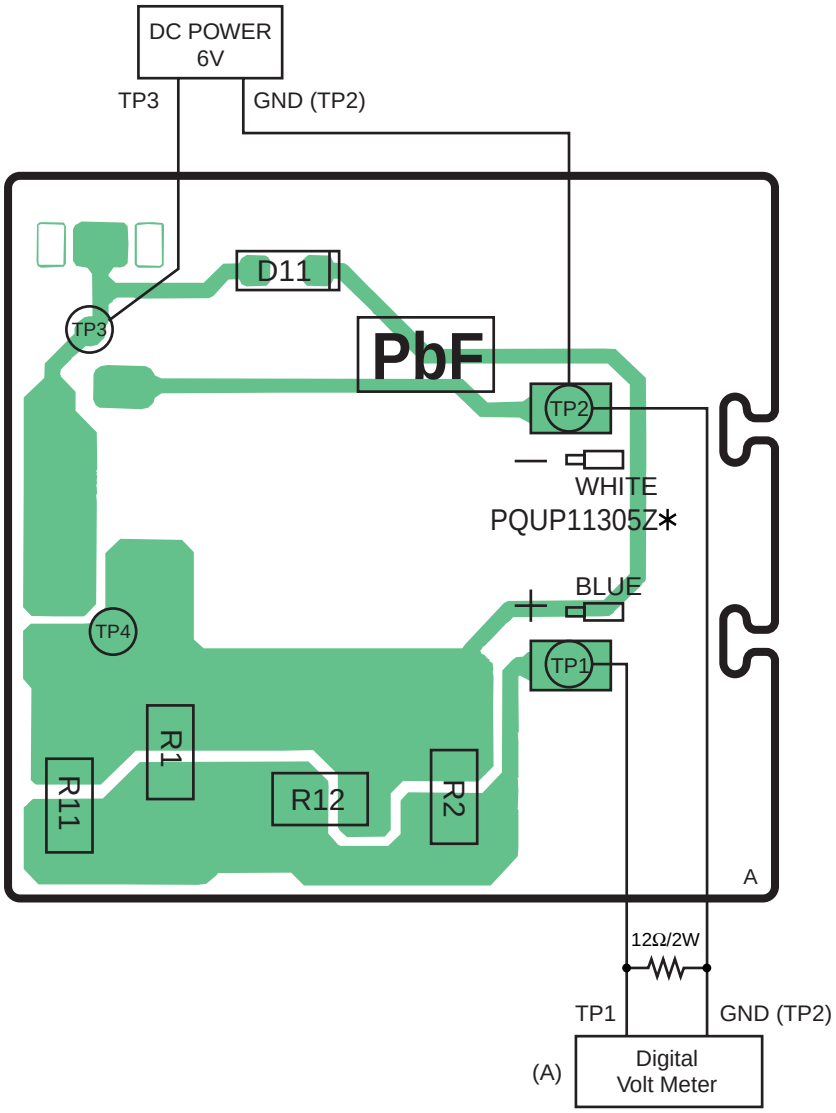
After the measuring, sock up the solder of TP.

The connection of adjustment equipment is as shown in **Adjustment Standard (Charger Unit)** (P.54).

14.5. Adjustment Standard (Charger Unit)

When connecting the Simulator Equipments for checking, please refer to below.

14.5.1. Flow Solder Side View



Note:

(**A**) is referred to **Check Point (Charger Unit)** (P.54)

15 TROUBLESHOOTING BY SYMPTOM (HANDSET)

If your unit has below symptoms, follow the instructions in remedy column. Remedies depend on whether you have DECT tester (*1) or not.

Symptom	Remedy (*2)	
	You don't have DECT Tester.	You have DECT Tester. (Model Number : CMD60)
Battery strength is not indicated correctly by Battery icon.	Check item (**A**)-(**D**), (**H**)-(**I**).	Check item (**A**)-(**D**), (**H**)-(**I**).
You cannot hear the caller's voice.	Check item (**A**)-(**D**), (**J**).	Check item (**A**)-(**D**), (**J**)-(**M**), (**N**), (**P**).
You cannot use handset a little away from base unit even if the handset is within range of the base unit.	-	Check item (**K**), (**O**).
Does not link between base unit and handset.	Check item (**A**)-(**D**), (**J**).	Check item (**A**)-(**D**), (**J**)-(**Q**).
The Audio level is high or low.	Check item (**S**).	Check item (**S**).
The SP-Phone level is high or low.	Check item (**T**).	Check item (**T**).

Note:

(*1): A general repair is possible even if you don't have the DECT tester because it is for confirming the levels, such as Acoustic level in detail.

(*2): Refer to **Check Point (Handset)** (P.55)

15.1. Check Point (Handset)

Please follow the items below when BBIC or EEPROM is replaced.

Note:

After the measuring, sock up the solder of TP.

*: **PC Setting** (P.59) is required beforehand.

The connections of adjustment equipments are as shown in **Adjustment Standard (Handset)** (P.60).

	Items	Check Point	Procedure	Check or Replace Parts
(**A**)*	1.8V Supply Adjustment	TP12	1. Confirm that the voltage between test point TP12 and GND is 1.8V ± 0.02V. 2. Execute the command "bandgap", then check the current value. 3. Adjust the 1.8V voltage of TP12 executing command "bandgap XX"(XX is the value).	IC1, Q2, C40, R4
(**B**)	DC/DC Supply Confirmation	TP10	1. Confirm that the voltage between test point TP10 and GND is 2.97V ± 0.3V (Backlight is OFF)/4.40V ± 0.3V (Backlight is ON).	IC1, F1, C1, C3, C57, C74, R1, R2, R3, Q1, D1, L1, R57
(**C**)	2.5V Supply Confirmation	TP11	1. Confirm that the voltage between test point TP11 and GND is 2.5V ± 0.1V.	IC1, Q3, C4, C5, R9, R10, R11
(**D**)*	BBIC Confirmation	-	1. BBIC Confirmation (Execute the command "getchk"). 2. Confirm the returned checksum value. Connection of checksum value and program number is shown below. ex.) checksum value: AE03 / program number: D552ZG	IC1, X1, C7
(**E**)*	EEP-ROM Confirmation	-	1. EEP-ROM Confirmation (Execute the command "ChkTCA130XXrevYY"). XX: country code YY: revision number 2. Confirm the returned checksum value. **Note:** "XX", "YY", and "checksum" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.59).	IC10, IC1, R39, R40

	Items	Check Point	Procedure	Check or Replace Parts
(**F**)	Charge Control Check & Charge Current Monitor Check	-	1. Apply 6V between J3(+) and J4(-) with DC power supply and set current limit to 250mA. 2. Confirm that the current limit LED of DC power supply is ON/OFF. 3. Decrease current limit of DC power supply to 100mA. 4. Confirm that the current limit LED of DC power supply is stable. (Current limiter is ON.) (If charge control cannot be confirmed by this procedure, please use battery to handset power supply and try again.)	IC1, Q4, Q5, Q9, D6, L4, L5, C73, C74, R5, R6, R7, R72, F1
(**G**)*	Charge Detection (OFF) Check	-	1. Stop supplying 6V to CHARGE(+) and CHARGE(-). 2. Execute the command “Backloff” then “charge”. 3. Confirm that the returned value is 0x00 (hex).	IC1, Q4, Q5, Q9 D6, D7, L4, L5, C73, C74, R5, R6, R7, R72, F1
(**H**)*	Battery Monitor Check	-	1. Apply 2.25V between BATT and GND. 2. Execute the command “readbatt”. It assumes that the return value is XX. a) 1E ≦ XX ≦ 2C: No need to adjust b) XX: 18 ~ 1D: Need to adjust XX: 2D ~ 32: Need to adjust Write AD value of 2.25V to EEPROM. ex) read data: XX = 1D, write data: YY = 1D read data: XX = 2D, write data: YY = 2D EEPROM = 0X0004(Low Voltage) write “YY”, then EEPROM = 0X0005(No Voltage) write “YY - 1D” EEPROM = 0X000A(Low Voltage BL) write “YY - 06” No Voltage writing data limit is ‘00’. c) XX: 00 ~ 17: Reject XX: 33 ~ FF: Reject	IC1, F1, C74, C1 C3, R81, R24, R73, C9
(**I**)	Battery Low Confirmation	-	1. Apply 2.40V between BATTERY(+) and BATTERY(-). 2. Confirm that there is no flashing of Battery Icon. 3. Apply 2.25V ± 0.08V between BATTERY(+) and BATTERY(-). 4. Confirm that there is flashing of Battery Icon.	IC1, F1, C74, C1 C3, R81, R24, R73, C9
(**J**)*	BBIC Clock Adjustment	CLK	1. Apply 2.6V between BATTERY(+) and BATTERY(-) with DC power. 2. Execute the command “conttx”. 3. Input Command “rdeeprom 00 01 01”, then you can confirm the current value. 4. Adjust the frequency of CLK executing the command “setfreq xx (where xx is the value)” so that the reading of the frequency counter is 10.368000MHz ± 10Hz. Note: CLK is displayed only for a few seconds when executing the command “conttx” after battery is inserted.	IC1, X1, CN6, C7, R127, C117
(**K**)*	Transmitted Power Confirmation	-	Remove the Antenna before starting step from 1 to 4. 1. Configure the DECT tester (CMD60) as follows; <Setting> • Test mode: PP • RFPI: 0102030405 • Traffic Carrier: 5 • Traffic Slot: 4 • Mode: Loopback • RF LEVEL = -70dBm 2. Execute the command "regcmd60 01 02 03 04 05". 3. Initiate connection from DECT tester. 4. Confirm that the NTP value at A201 is 20dBm ~ 25dBm.	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129

	Items	Check Point	Procedure	Check or Replace Parts
(**L**)*	Modulation Check and Adjustment	-	Follow steps 1 to 3 of **(K)**. 4.Confirm that the B-Field Modulation is -350 ~ -400/+320 ~ +370kHz/div using data type Fig 31. 5.Adjust the B-Field Modulation if required. (Execute the command "Readmod" and "wrtmod xx", where xx is the value.)	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129
(**M**)	Frequency Offset Confirmation	-	Follow steps 1 to 3 of **(K)**. 4.Confirm that the frequency Offset is < ± 45kHz.	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129
(**N**)	Frequency Drift Confirmation	-	Follow steps 1 to 3 of **(K)**. 4.Confirm that the frequency Drift is < ± 30kHz/ms.	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129
(**O**)	Sensitivity Receiver Confirmation	-	Follow steps 1 to 3 of **(K)**. 4.Set DECT tester power to -88dBm. 5.Confirm that the BER is < 1000ppm.	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129
(**P**)	Timing Confirmation	-	Follow steps 1 to 3 of **(K)**. 4.Confirm that the Timing accuracy is < ± 2.0ppm.	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129
(**Q**)*	RSSI Level Confirmation	-	Follow steps 1 to 3 of **(K)**. 4.Set DECT tester power to -81dBm. 5.Execute the command “readrssi“. 6.Confirm that the returned value is 0×1B ± 8 (hex). 7.Set DECT tester power to -63dBm. 8.Execute the command “readrssi“. 9.Confirm that the returned value is 0×23 ± 8 (hex).	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129
(**R**)	Power RAMP Confirmation	-	Follow steps 1 to 3 of **(K)**. 4.Confirm that Power RAMP is matching.	IC1, IC3, R127, C117, C115, C119, C45, R121, C44, R13, C47, C46, R125, C48, C49, C50, C53, C51, R131, C54, C55, R129

	Items	Check Point	Procedure	Check or Replace Parts
(**S**)	Audio Check and Confirmation	-	1. Link to BASE which is connected to Line Simulator. 2. Set line voltage to 48V and line current to 40mA. 3. Input -45dBm/1KHz to MIC and measure Line output level. 4. Confirm that the level is -7.5dBm ± 2dBm and that the distortion level is < 5% at TEL Line (600Ω Load). 5. Input -20dBm/1KHz to Line I/F and measure Receiving level at REV1 and REV2. 6. Confirm that the level is -20.5dBm ± 2dBm and that the distortion level is < 5% at Receiver. (vol = 2)	IC1, IC2, C37, C68, C91, R25, R26, C20, C12, C14, C90, C87, C89, R29, R37, R38, D4, D5
(**T**)	SP phone Audio Check and Confirmation	-	1. Link to Base which is connected to Line Simulator. 2. Set line voltage to 48V and line current to 40mA. 3. Set the handset off-hook using SP-Phone key. 4. Input -20dBm/1KHz to Line I/F and measure Receiving level at SP1 and SP2. 5. Confirm that the level is -7dBm ± 2dBm and that the distortion level is < 5%. (vol = 3)	IC1, IC2, C37, C68, C91, R25, R26, C20, C12, C14, C90, C87, C89, R29, R37, R38, C92, R80, C13, R35, C75, C86, C15, D8, C16, C77, C38, R36, R74, C80

15.2. Troubleshooting for Speakerphone

When the customer's telephone line corresponds to the following conditions and transmission signal of SP-Phone is interrupted, performing the next set up to a cordless handset will improve it to some extent.

Conditions

1. When customer's line has less line loss.

   ex.) The customer is using optical fiber, ISDN terminal adaptor, or PBX.

   In this case, receiving signal is strong and it may affect transmission signal.

2. When the other party is talking from noisy place.

   ex.) The other party is using cellular phone. The background noise is very loud.

   In this case, the noise from the other party (i.e. surrounding noise) may affect transmission signal.

Setting Method

- Change the address of EEPROM (0×0144) from 0×00 to 0×01.

15.3. The Setting Method of JIG (Handset)

15.3.1. Preparation

15.3.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
  Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 2.4V for Handset.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

15.3.1.2. JIG and PC

- EEPROM serial JIG
  JIG Cable: PQZZ1CD300E*
- PC which runs in DOS mode.
- **Batch file** for PC setting: PQZZTG1860BX

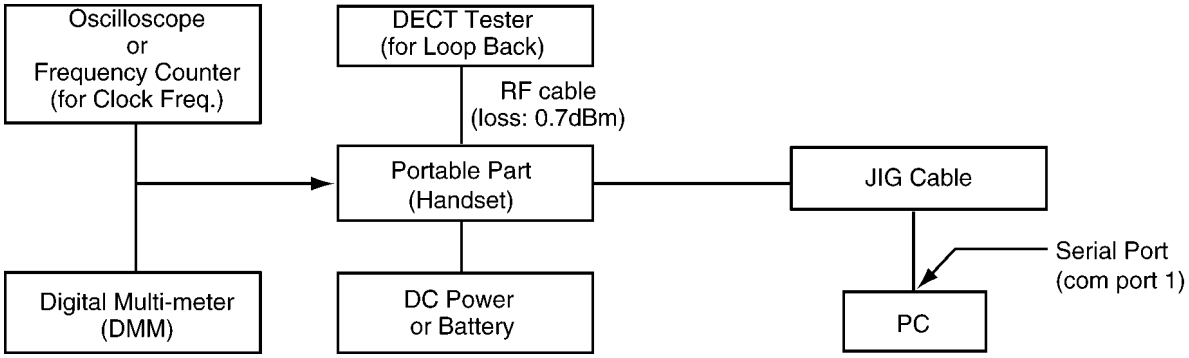
Note:

*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

Resistor	Old value (kΩ)	New value (kΩ)
R2	22	3.3
R3	22	3.3
R4	22	4.7
R7	4.7	10

15.3.2. PC Setting

15.3.2.1. Connections



15.3.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory.
3. Type “**SET_COM=1**” from the keyboard (when COM port 1 is used for the connection).
4. Type “doskey”.

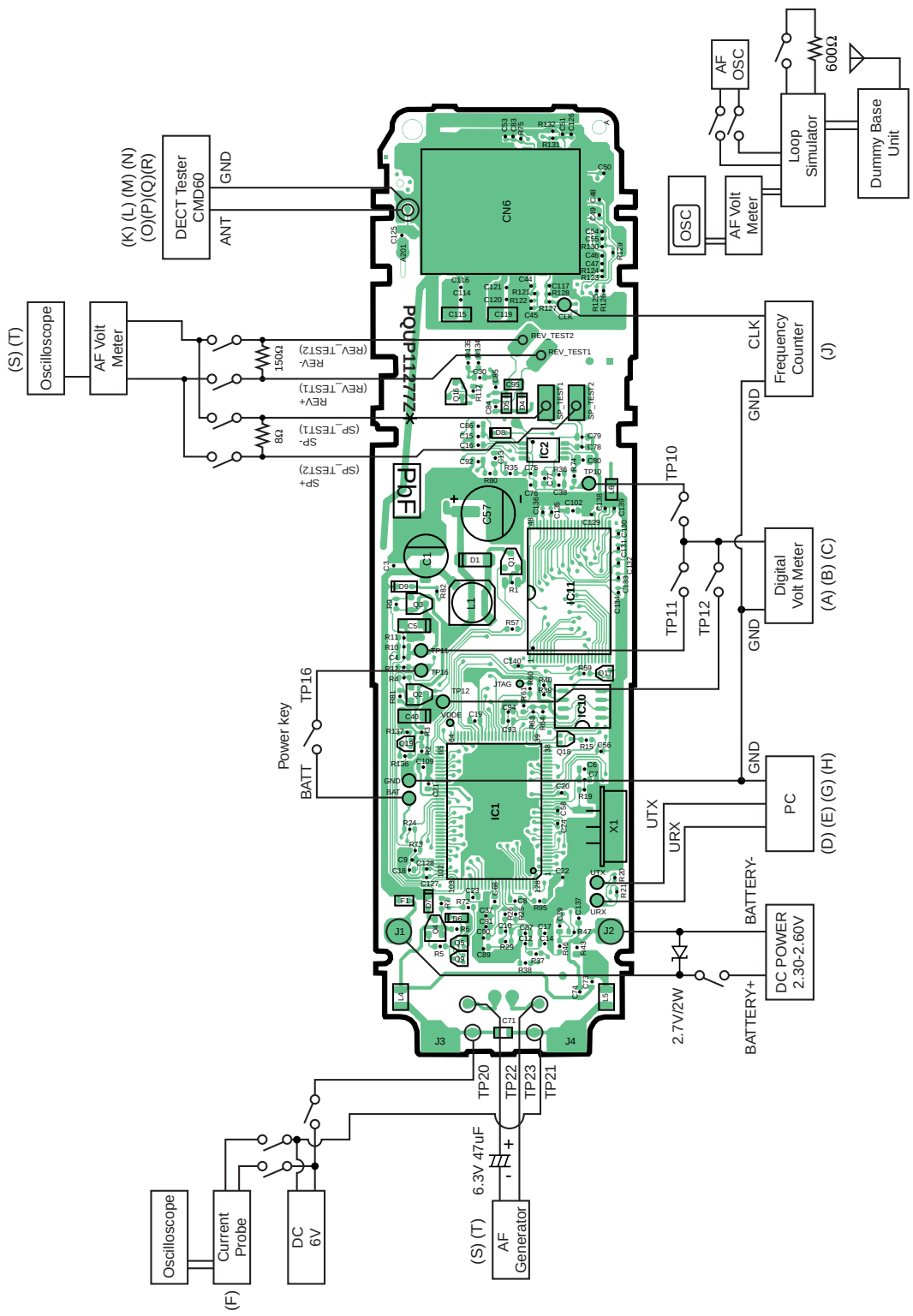
Note:

See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type “rdeeprom 00 00 FF”, and the data from address “00 00” to “FF” is read out.
readid	Read ID (RFPI)	Type “readid”, and the registered ID is read out.
writeid	Write ID (RFPI)	Type “writeid 00 18 E0 0E 98”, and the ID “0018 E0 0E 98” is written.
setfreq	Adjust Frequency of RFIC	Type “setfreq nn”.
getchk	Read checksum	Type “getchk”.
wreeprom	Write the data of EEPROM	Type “wreeprom 01 23 45”. “01 23” is address and “45” is data to be written.

15.4. Adjustment Standard (Handset)

When connecting the Simulator Equipments for checking, please refer to below.



Note:

(**A**) - (**T**) is referred to **Check Point (Handset)** (P.55)

16 THINGS TO DO AFTER REPLACING IC

Cautions:

Since this page is common to each country, it may not apply to some models in your country. The contents below are the minimum adjustments required for operation.

16.1. Base Unit

IC		Necessary Adjustment
BBIC	Programs for Voice processing, interface for RF and EEPROM	1. Default batch file: Execute the command “default”. 2. Country version batch file: Execute the command “TCD220XXrevYY”. (*1) 3. Clock adjustment: Refer to Check Point (F). (*2)
EEPROM	Adjustment parameter data (country version batch file, default batch file, etc.)	1. Change the address “0000” of EEPROM to “55”. 2. Default batch file: Execute the command “default”. 3. Country version batch file: Execute the command “TCD220XXrevYY”. (*1) 4. Clock adjustment: Refer to Check Point (F). (*2)
FLASH 1	Voice prompt data (vary depending on country version)	No need to adjust.

Note:

(*1) XX: country code, YY: revision number

“XX” and “YY” vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.52).

(*2) Refer to **Check Point (Base Unit)** (P.48)

16.2. Handset

IC		Necessary Adjustment
BBIC	Programs for Voice processing, interface for RF and EEPROM	1. Default batch file: Execute the command “default”. 2. Country version batch file: Execute the command “TCA130XXrevYY”. (*3) 3. Clock adjustment: Refer to Check Point (J). (*4) 4. 1.8 V setting and battery low detection: Refer to Check Point (A), (H) and (I). (*4)
EEPROM	Adjustment parameter data (country version batch file, default batch file, etc.)	1. Default batch file: Execute the command “default”. 2. Country version batch file: Execute the command “TCA130XXrevYY”. (*3) 3. Clock adjustment: Refer to Check Point (J). (*4) 4. 1.8 V setting and battery low detection: Refer to Check Point (A), (H) and (I). (*4)
FLASH 2	Program	No need to adjust.

Note:

(*3) XX: country code, YY: revision number

“XX” and “YY” vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.59).

(*4) Refer to **Check Point (Handset)** (P.55)

17 RF SPECIFICATION

17.1. Base Unit

Item	Value	Refer to -. *	Remarks
TX Power	20 dBm ~ 25 dBm	**Check Point (Base Unit) (I)**	
Modulation	-350 ~ -400/+320 ~ +370 kHz/div	**Check Point (Base Unit) (J)**	Data type: Fig31
Frequency Offset	-45 kHz ~ +45 kHz	**Check Point (Base Unit) (K)**	
Frequency Drift	< ± 30 kHz / ms	**Check Point (Base Unit) (L)**	
RX Sensitivity	< 1000 ppm	**Check Point (Base Unit) (M)**	
Timing Accuracy	< ± 2.0 ppm	**Check Point (Base Unit) (N)**	
RSSI Level	0x22 hex ± A hex	**Check Point (Base Unit) (O)**	
Power RAMP	Power RAMP is matching	**Check Point (Base Unit) (P)**	

*: Refer to **Check Point (Base Unit)** (P.48)

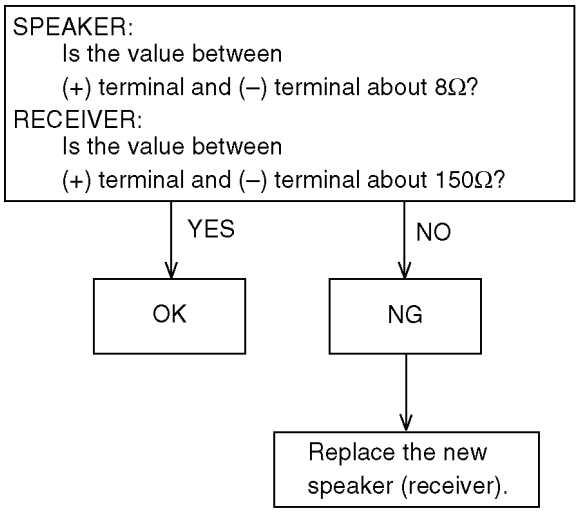
17.2. Handset

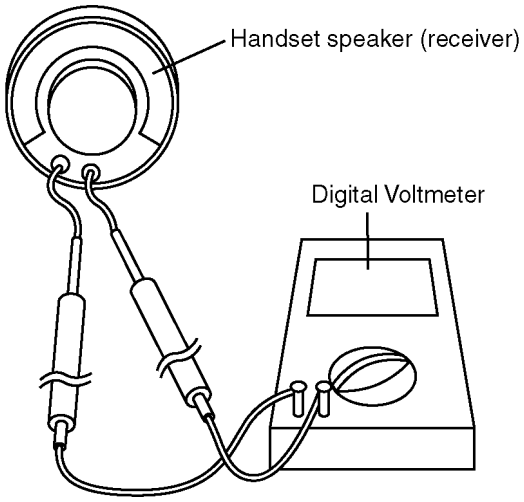
Item	Value	Refer to -. **	Remarks
TX Power	20 dBm ~ 25 dBm	**Check Point (Handset) (K)**	
Modulation	-350 ~ -400/+320 ~ +370 kHz/div	**Check Point (Handset) (L)**	Data type: Fig31
Frequency Offset	-45 kHz ~ +45 kHz	**Check Point (Handset) (M)**	
Frequency Drift	< ± 30 kHz / ms	**Check Point (Handset) (N)**	
RX Sensitivity	< 1000 ppm	**Check Point (Handset) (O)**	
Timing Accuracy	< ± 2.0 ppm	**Check Point (Handset) (P)**	
RSSI Level	0x1B hex ± 8 hex (at -81dBm) 0x23 hex ± 8 hex (at -63dBm)	**Check Point (Handset) (Q)**	
Power RAMP	Power RAMP is matching	**Check Point (Handset) (R)**	

: Refer to **Check Point (Handset) (P.55)

18 HOW TO CHECK THE HANDSET SPEAKER OR RECEIVER

1. Prepare the digital voltmeter, and set the selector knob to ohm meter.
2. Put the probes at the speaker terminals as shown below.





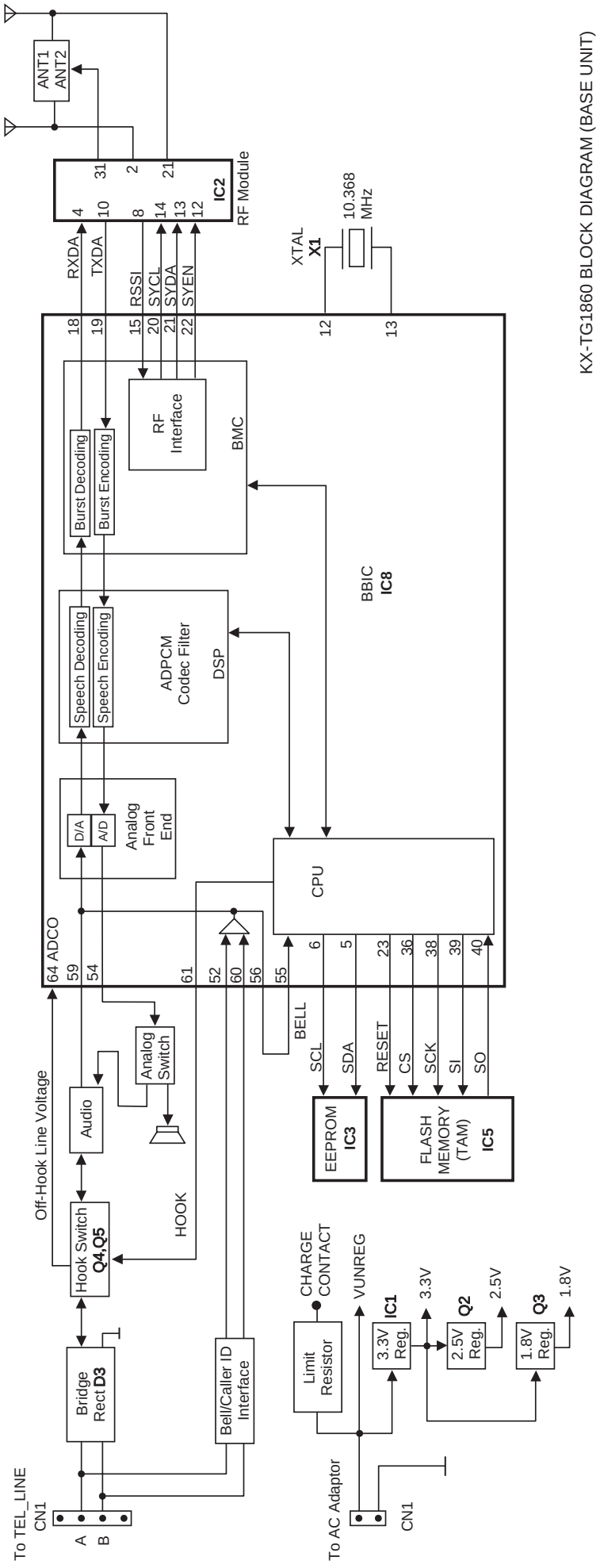
19 FREQUENCY TABLE (MHz)

	BASE UNIT		HANDSET	
Channel No	**Transmit Frequency**	Receive Frequency	**Transmit Frequency**	**Receive Frequency**
1	1897.344	1897.344	1897.344	1897.344
2	1895.616	1895.616	1895.616	1895.616
3	1893.888	1893.888	1893.888	1893.888
4	1892.160	1892.160	1892.160	1892.160
5	1890.432	1890.432	1890.432	1890.432
6	1888.704	1888.704	1888.704	1888.704
7	1886.976	1886.976	1886.976	1886.976
8	1885.248	1885.248	1885.248	1885.248
9	1883.520	1883.520	1883.520	1883.520
10	**1881.792**	**1881.792**	**1881.792**	**1881.792**

Note:

Channel No. 10: In the Test Mode on Base Unit and Handset.

20 BLOCK DIAGRAM (BASE UNIT)



KX-TG1860 BLOCK DIAGRAM (BASE UNIT)

21 CIRCUIT OPERATION (BASE UNIT)

21.1. Outline

Base Unit consists of the following ICs as shown in **BLOCK DIAGRAM (BASE UNIT)** (P.64).

- DECT BBIC (**B**ase **B**and IC): IC8
  - Handling all the audio, signal and data processing needed in a DECT base unit
  - Controlling the DECT specific physical layer and radio section (**B**urst **M**odule **C**ontroller section)
  - ADPCM codec filter for speech encoding and speech decoding (DSP section)
  - Echo-cancellation and Echo-suppression (DSP section)
  - Any tones (tone, sidetone, ringing tone, etc.) generation (DSP section)
  - DTMF receiver (DSP section)
  - Clock Generation for RF Module
  - ADC, DAC, timer, and power control circuitry
  - All interfaces (ex: RF module, EEPROM, LED, Analog Front End, etc.)
- RF Module: IC2
  - PLL Oscillator
  - Detector
  - Compress/Expander
  - First/Second Mixer
  - Amplifier for transmission and reception
- EEPROM: IC3
  - Temporary operating parameters (for RF, etc.)
- Additionally,
  - Power Supply Circuit (+3.3V, +2.5V, +1.8V output)
  - Crystal Circuit (10.368MHz)
  - Charge Circuit
  - Telephone Line Interface Circuit
- FLASH MEMORY: IC5
  - Voice Prompt (TAM) D/L Area
  - ICM/OGM/MEMO Recording Area

21.2. Power Supply Circuit

The power is supplied to the DECT BBIC, RF Module, EEPROM and Charge Contact from AC Adaptor (+6V) as shown in Fig.101. The power supply is as follows;

- DECT BBIC (IC8):

  CN1 (+6V) → D1 → IC1 → Q2 → IC8
- RF Module (IC2):

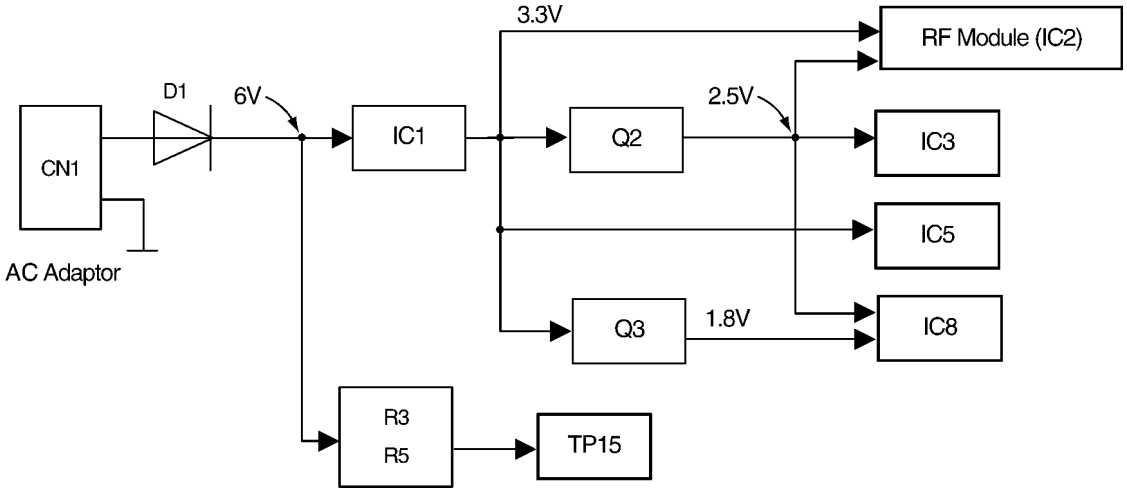
  CN1 (+6V) → D1 → IC1 → Q2 → IC2 (PLL)

  CN1 (+6V) → D1 → IC1 → IC2 (Power AMP)
- EEPROM (IC3):

  CN1 (+6V) → D1 → IC1 → Q2 → IC3
- FLASH MEMORY (IC5):

  CN1 (+6V) → D1 → IC1 → IC5
- Charge Contact (TP15):

  CN1 (+6V) → D1 → R3, R5 → TP15



<Fig.101>

21.3. Telephone Line Interface

<Function>

- Bell signal detection
- Clip signal detection
- ON/OFF hook circuit
- Audio circuits
- DTMF tone signal circuits

Bell & Clip (: Calling Line Identification Presentation: Caller ID) signal detection:

In the standby mode, Q4 is open to cut the DC loop current and decrease the ring load.

When ring voltage appears at the TP2 (A) and TP3 (B) leads (when the telephone rings), the AC ring voltage is transferred as follows;

- A → C13 → R17 → R24 → IC8 Pin 60 (CID INp)
- B → C12 → R16 → R32 → IC8 Pin 52 (CID INn)

ON/OFF hook circuit:

In the standby mode, Q4 is open, and connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an **off-hook condition**.

When IC2 detects a ring signal or press the TALK Key onto the handset, Q5 turns on and then Q4 turns on, thus providing an **off-hook condition** (active DC current flow through the circuit) and the following signal flow is for the loop current.

- A → D3 → Q4 → Q8 → R45 → R46 → D3 → B [**OFF HOOK**]

21.4. Transmitter/Receiver

Base Unit and Handset mainly consist of RF Module and DECT BBIC.

Base Unit and Handset transmit/receive voice signal and data signal through the antenna on carrier frequency.

Signal Path:

*Refer to **SIGNAL ROUTE** (P.71).

21.4.1. Transmitter Block

The voice signal input from the TEL LINE interface goes to RF Module (IC2) through DECT BBIC (IC8) as shown in **BLOCK DIAGRAM (BASE UNIT)** (P.64)

The voice signal passes through the analog part of IC8 where it is amplified and converted to a digital audio stream signal. The burst switch controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP (**G**eneric **A**ccess **P**rofile) standard DECT frame, assigning to a time slot and channel etc.

In IC2, the carrier frequency is changing, and frequency modulated RF signal is generated and amplified, and radiated from antenna. Handset detects the voice signal or data signal in the circuit same as the following explanation of Receiver Block.

21.4.2. Receiver Block

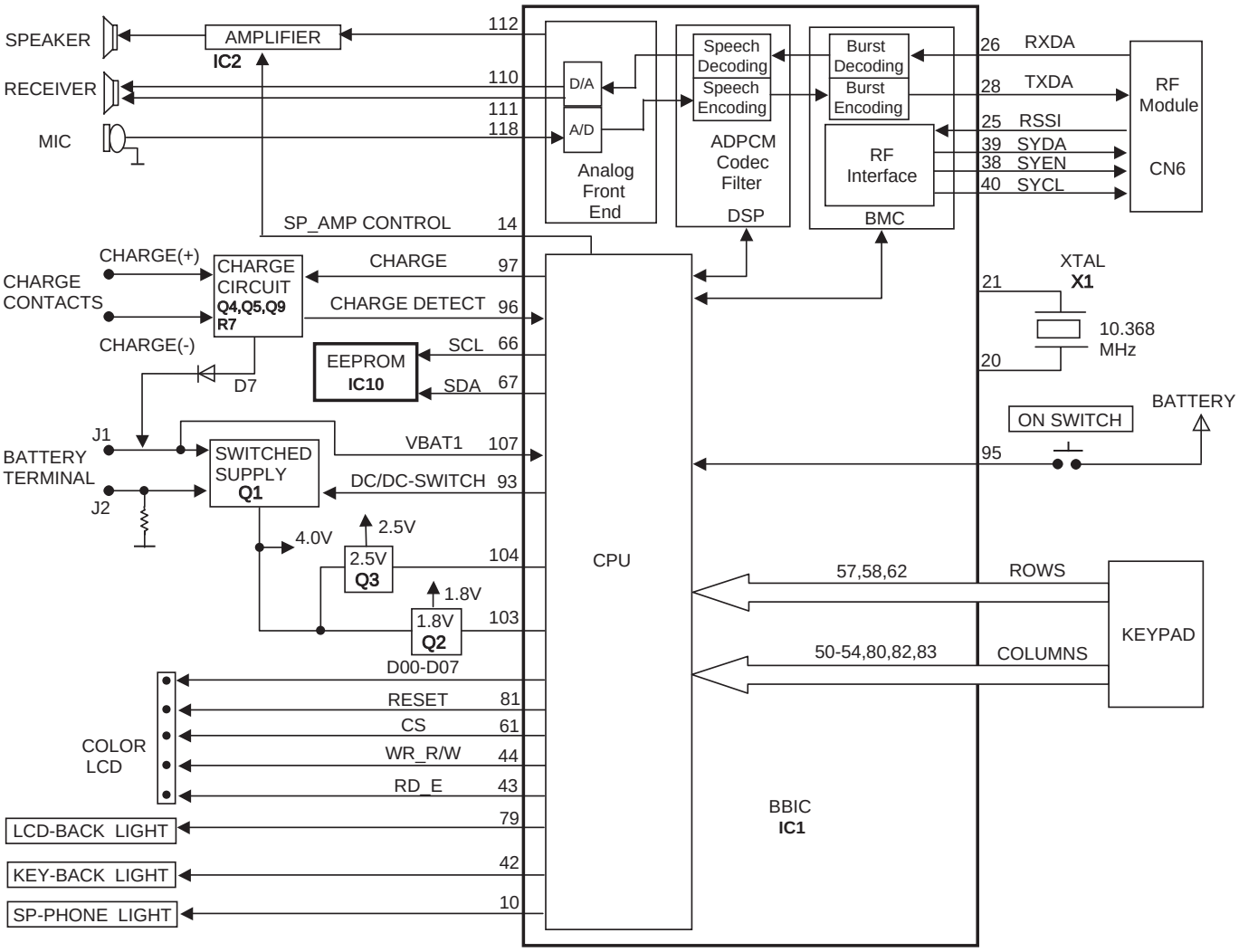
The signal of 19.2 MHz band (18.81792 MHz ~ 18.97344 MHz) which is input from antenna is input to IC2 as shown in **BLOCK DIAGRAM (BASE UNIT)** (P.64).

In IC2, the signal of 19.2 MHz band is downconverted to 864 kHz signal and demodulated, and goes to IC8 as GAP (**G**eneric **A**ccess **P**rofile) standard DECT frames. It passes through the decoding section burst switch controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP section where it is turned back into analog audio. This is amplified by the analog front end, and goes to the TEL LINE Interface.

21.5. Pulse Dialing

During pulse dialing the hookswitch (Q4,Q5) is used to generate the pulses using the HOOK control signal, which is set high during pulses. To force the line impedance low during the "pause" intervals between dial pulses, the PULSE_DIAL signal turns on Q12.

22 BLOCK DIAGRAM (HANDSET)



KX-TCA132/TCA130 BLOCK DIAGRAM (HANDSET)

23 CIRCUIT OPERATION (HANDSET)

23.1. Outline

Handset consists of the following ICs as shown in **BLOCK DIAGRAM (HANDSET)** (P.68).

- DECT BBIC (**B**ase **B**and IC): IC1
  - All data signals (forming/analyzing ACK or CMD signal)
  - All interfaces (ex: Key, Detector Circuit, Charge, DC/DC Converter, EEPROM, LCD)
- RF Module: CN6
  - PLL Oscillator
  - Detector
  - Compress/Expander
  - Amplifier for transmission and reception
- AMP: IC2
  - Single OP_AMP for SP
- EEPROM: IC10
  - Temporary operating parameters (for RF, etc.)
- FLASH: IC11
  - Temporary image data

23.2. Power Supply Circuit/Reset Circuit

Circuit Operation:

When power on the Handset, the voltage is as follows;

BATTERY(2.2 V ~ 2.6 V: J1) → F1, L1, D1 → Q2 (1.8 V), Q3 (2.5 V), Q1 (4.0 V)

The Reset signal generates IC1 (120 pin) and 1.8 V.

23.3. Charge Circuit

Circuit Operation:

When charging the handset on the Base Unit, the charge current is as follows;

DC+(5.5V ~ 6V) → D1 → R3, R5 → CHARGE+(Base) → CHARGE+(Handset) → L4 → Q4 → D7→ F1 → BATTERY+ ... Battery ... BATTERY- → R43 → GND → CHARGE-(Handset)→ CHARGE-(Base) → GND → DC-(GND)

In this way, the BBIC on Handset detects the fact that the battery is charged.

The charge current is controlled by switching Q5 of Handset.

Refer to Fig.101 in **Power Supply Circuit** (P.66).

23.4. Battery Low/Power Down Detector

Circuit Operation:

"Battery Low" and "Power Down" are detected by BBIC which check the voltage from battery.

The detected voltage is as follows;

- Battery Low

  Battery voltage: V(Batt) ≦ 2.25V ± 50mV

  The BBIC detects this level and "▭" starts flashing.
- Power Down

  Battery voltage: V(Batt) ≦ 2.00V ~ 2.05V

  The BBIC detects this level and power down.

  Refer to **Check Point (Handset)** (P.55).

23.5. Speakerphone

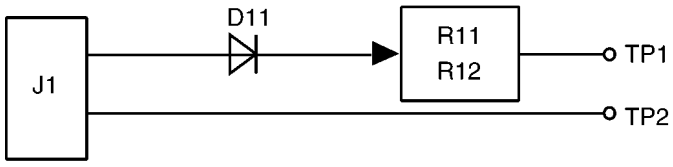
The hands-free loudspeaker at SP+ and SP- is used to generate the ring alarm. IC2 is used to switch off the telephone loudspeaker and is used to amplify the signal to drive the hands-free loudspeaker. They are selected using the SP_AMP line from pin 112 of the BBIC.

Refer to **Troubleshooting for Speakerphone** (P.58).

24 CIRCUIT OPERATION (CHARGER UNIT)

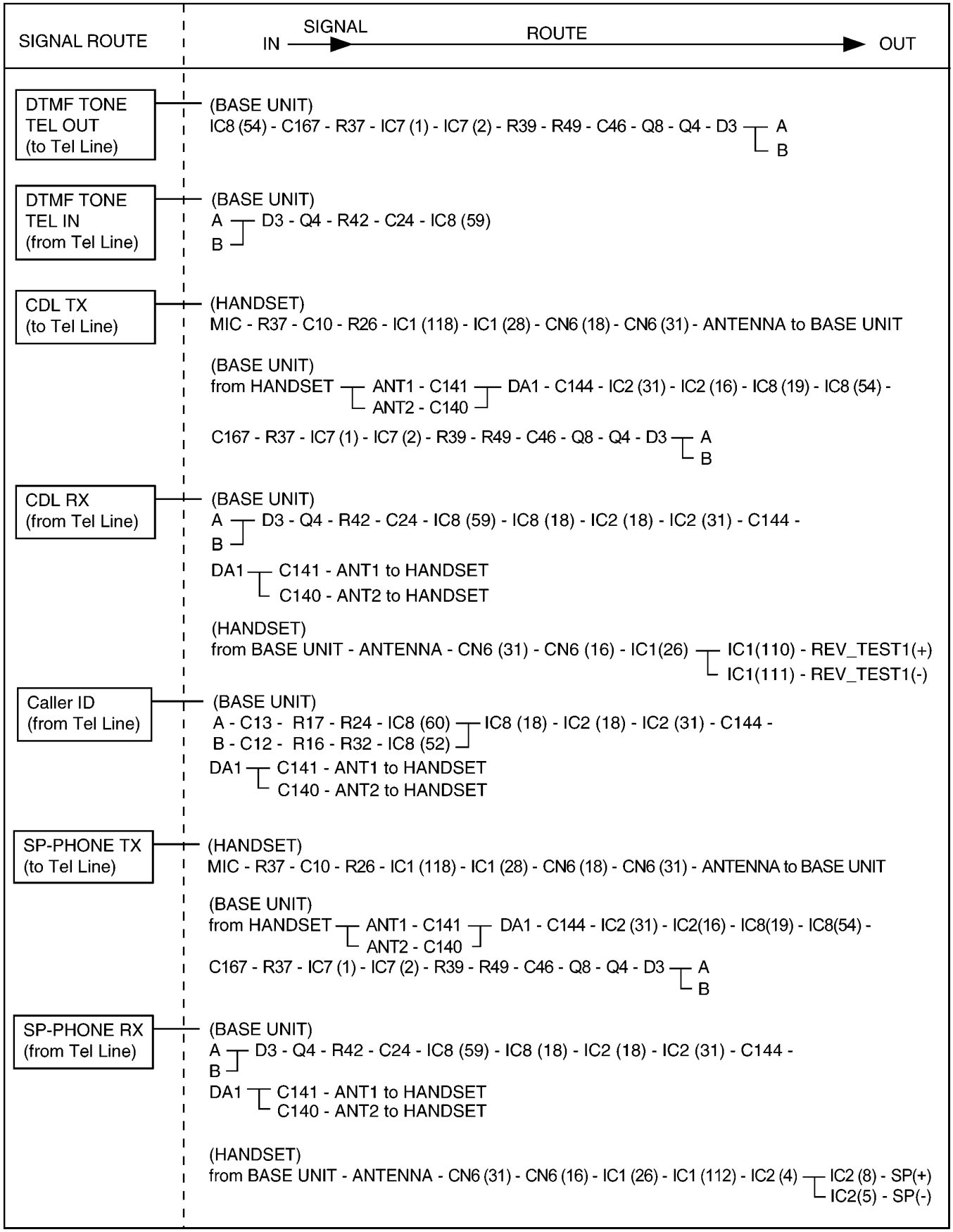
24.1. Power Supply Circuit

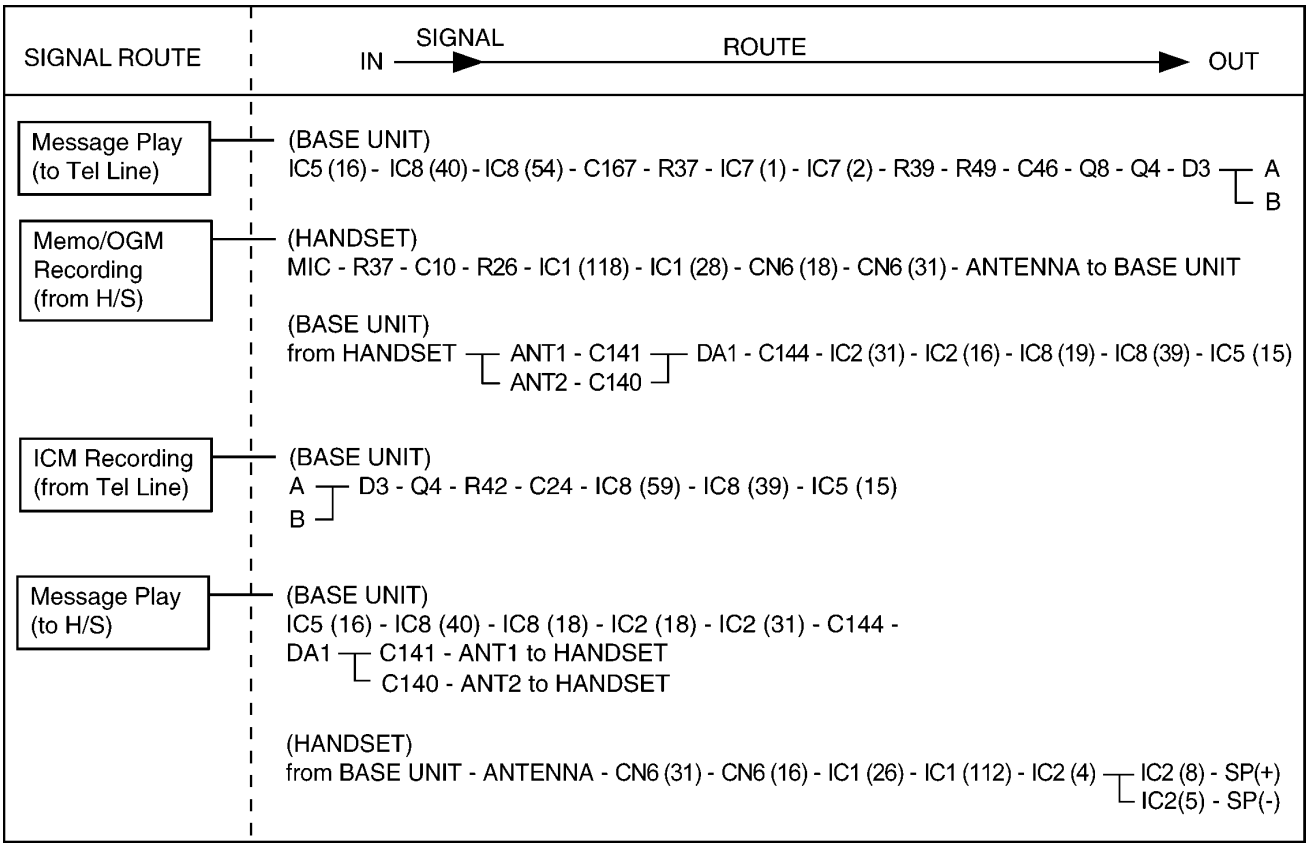
The power supply is as shown.



AC Adaptor

25 SIGNAL ROUTE




SIGNAL ROUTE
IN
SIGNAL
ROUTE
OUT
Message Play (to Tel Line)
(BASE UNIT)
IC5 (16) - IC8 (40) - IC8 (54) - C167 - R37 - IC7 (1) - IC7 (2) - R39 - R49 - C46 - Q8 - Q4 - D3 - A / B
Memo/OGM Recording (from H/S)
(HANDSET)
MIC - R37 - C10 - R26 - IC1 (118) - IC1 (28) - CN6 (18) - CN6 (31) - ANTENNA to BASE UNIT
(BASE UNIT)
from HANDSET - ANT1 - C141 / ANT2 - C140 - DA1 - C144 - IC2 (31) - IC2 (16) - IC8 (19) - IC8 (39) - IC5 (15)
ICM Recording (from Tel Line)
(BASE UNIT)
A / B - D3 - Q4 - R42 - C24 - IC8 (59) - IC8 (39) - IC5 (15)
Message Play (to H/S)
(BASE UNIT)
IC5 (16) - IC8 (40) - IC8 (18) - IC2 (18) - IC2 (31) - C144 -
DA1 - C141 - ANT1 to HANDSET
C140 - ANT2 to HANDSET
(HANDSET)
from BASE UNIT - ANTENNA - CN6 (31) - CN6 (16) - IC1 (26) - IC1 (112) - IC2 (4) - IC2 (8) - SP(+) / IC2(5) - SP(-)

26 CPU DATA (BASE UNIT)

26.1. IC8 (BBIC)

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
1	INT1n/P1_1	D,O	RLY	O	I-PU
2	VDDIO	-	-	-	-
3	VDD	-	-	-	-
4	VSS	-	-	-	-
5	SDA1/P2_5	D,I/O	SDA	I/O	I
6	SCL1/P2_4	D,O	SCL	O	I
7	INT5n/P1_5	D,O	NC	O-L	I-PU
8	INT2n/P1[2]	D,O	P1[2]		
9	AVD	-	-	-	-
10	AVS	-	-	-	-
11	CAP	A,I	CAP	I	I
12	Xtal1	A,I	Xtal1	I	-
13	VSSRF	-	-	-	-
14	RFCLKp	A,I	NC	O	Hi-Z
15	RSSI/RFCLKm	A,I	RSSI	I	Hi-Z
16	VDDRF	-	-	-	-
17	RFCLKd	D,O	RFCLKd	O	O-L
18	TDO	A,O	TDO	O	-
19	RDI	D,I	RDI	I	I
20	SK	D,I/O	SK	-	O-L
21	PD1/SIO	D,I/O	SIO	-	I-PD
22	LE	D,I/O	LE	O	O-H
23	P3[1]/PD1	D,I/O	P3[1]	O	I-PD
24	P3[2]/PD2	D,I/O	P3[2]	O	I-PD
25	P3[3]/PD3	D,I/O	P3[3]	O	I-PD
26	P3[4]/PD4	D,I/O	P3[4]	O	I-PD
27	TDOD/P3[5]/PD5	D,I/O	P3[5]	O	I-PD
28	P3[6]/PD6	D,O	NC	O	I-PD
29	VSS	-	-	-	-
30	VDDIO	-	-	-	-
31	VDD	-	-	-	-
32	PCM_FSC/INT0n/P1[0]	D,I/O	INT0n	O	I-PU
33	P0[0]/UTX	D,I/O	UTX	O	I-PU
34	P0[1]/URX	D,I/O	URX	O	I-PU
35	P0[2]/JTIO	D,I/O	JTIO	O	I-PU
36	P0[3]/SDA2	D,I/O	P0[3]	O	I-PU
37	P0[4]/SCL2	D,I/O	P0[4]	O	I-PU
38	P0[5]/SPICLK/PCM_CLK	D,I/O	SPICLK	O	I-PU
39	P0[6]/SPIDO/PCM_DOUT	D,I/O	SPIDO	O	I-PU
40	P0[7]/SPIDI/PCM_DIN	D,I/O	SPIDI	O	I-PU
41	VSS	-	-	-	-
42	VDD	-	-	-	-
43	P2[3]/ADC1	I	ADC1	I	I
44	P1[7]/CHARGE/INT7	I	CHARGE	I	I-PD
45	RSTn	I	RSTn	I	I-PU
46	VBAT1	A,I	VBAT1	I	I
47	LDO1_CTRL	D,O	LDO1_CTRL	O	O-H
48	LDO2_CTRL	D,O	LDO2_CTRL	O	O-H
49	LDO1_Sense	D,I	LDO1_Sense	I	O-L
50	AVS2	-	-		-
51	AVD2	-	-	-	-
52	CIDINn	A,I	CIDINn	I	I
53	LSRn/REF	A,O	REF	O	O
54	LSRp/REF	A,O	LSRp	O	O
55	RINGING	A,I	RINGING	I	I
56	MICn/CIDOUT	A,I	CIDOUT	O	O
57	VREFm	-	-	-	-
58	AGND	A,O	AGND	O	O
59	MICp	A,I	MICp	I	I
60	CIDINp	A,I	CIDINp	I	I
61	P1[4]/INT4n	D,I/O	P1[4]	I	I
62	PULSE_CTRL	D,I/O	Q12_ON	I	Q12_OFF

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
63	ADC2	A,I	ADC2	I	I
64	ADC0	A,I	ADC0	I	I

27 CPU DATA (HANDSET)

27.1. IC1 (BBIC)

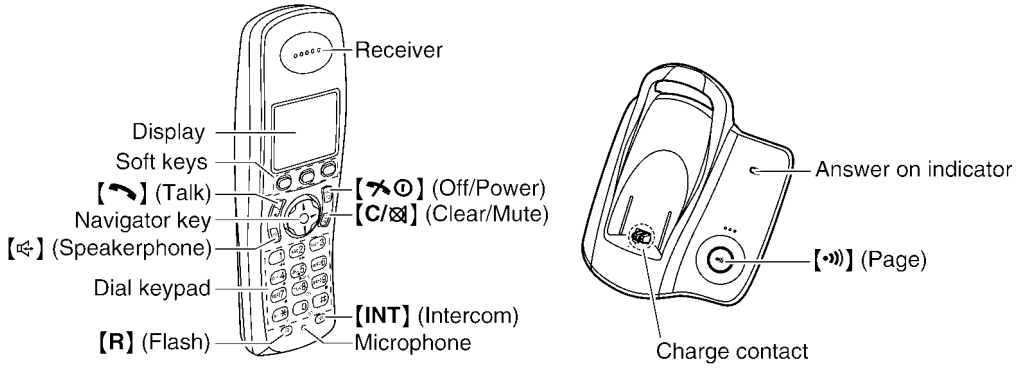
Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
1	VDDIO	-	-	-	-
2	VSS	-	-	-	-
3	AD8	D,O	AD8	O	O-H
4	AD9	D,O	AD9	O	O-H
5	AD10	D,O	AD10	O	O-H
6	AD11	D,O	AD11	O	O-H
7	AD12	D,O	AD12	O	O-H
8	AD13	D,O	AD13	O	O-H
9	AD14	D,O	AD14	O	O-H
10	P3_7/PD7	D,O	P3_7	O	O-Hi-Z
11	P3_1/PD1	D,O	P3_1	O	O-Hi-Z
12	P3_5/PD5	D,O	P3_5	O	O-Hi-Z
13	P3_4/PD4	D,O	NC	O	O-Hi-Z
14	P3_3/PD3	D,O	CD_AMP	O	O-Hi-Z
15	P3_2/PD2	D,O	NC	O	O-Hi-Z
16	VDD	-	-	-	-
17	VSS	-	-	-	-
18	RFCLK	D,O	RFCLK	O	O
19	VDDRF	-	VDDRF	-	-
20	VSSRF	-	VSSRF	-	-
21	Xtal1	A,I	Xtal1	I	-
22	CAP	A,I	CAP	I	-
23	AVS	-	AVS	-	-
24	AVD	-	AVD	-	-
25	RSSI	A,I	RSSI	I	I
26	RDI	D,I	RDI	I	I
27	CMPREF	A,I	NC	OPEN	I
28	TDO	A,O	TXDA	A,O	Hi-Z
29	AD15	D,O	AD15	O	O-H
30	AD16	D,O	AD16	O	O-H
31	AD17	D,O	AD17	O	O-H
32	AD18	D,O	AD18	O	O-H
33	AD19	D,O	AD19	O	O-H
34	AD20	D,O	NC	O	O-H
35	AD21	D,O	NC	O	O-H
36	AD22	D,O	NC	O	O-H
37	AD23	D,O	NC	O	O-H
38	LE	D,O	LE	D,O	O
39	SO	D,O	SIO	D,O	O-Hi-Z
40	SK	D,O	SK	D,O	O
41	DAC/ADC2	A,I	NC	I	I
42	P3_6/PD6	D,O	P3_6	D,O	O-Hi-Z
43	RDN	D,O	RE	O	O-H
44	WRN	D,O	WR	O	O-H
45	MI/READY	D,O	NC	OPEN	I-PU
46	SCLK	D,O	NC	OPEN	O-H
47	UTX/P0_0	D,O	UTX	O	I
48	URX/P0_1	D,I	URX	I	I
49	JTIO/P0_2	D,I	JTAG	I	I
50	PCM_FSC1/P0_3	D,I/O	COL4	OPEN	I-PU
51	PCM_FSC0/P0_4	D,I/O	COL3	OPEN	I-PU
52	PCM_CLK/P0_5	D,I/O	COL2	OPEN	I-PU
53	PCM_DOUT/P0_6	D,I/O	COL1	OPEN	I-PU
54	PCM_DINP/P0_7	D,I/O	COL0	OPEN	I-PU
55	VDDIO	-	VDDIO	-	-
56	VSS	-	VSS	-	-
57	INT0n/P1_0	D,I	ROW2	I	I-PU
58	INT1n/P1_1	D,O	ROW1	I	I-PU
59	INT2n/P1_2/ACS1	D,O	NC	OPEN	I-PU
60	ACS0	D,O	CE_FLASH	O	O-H
61	INT3n/P1_3/ACS2	D,O	CS_LCD	OPEN	I-PU
62	INT4n/P1_4	D,O	ROW0	I	I-PU

Pin No	Description	I/O	Connection	at Normal mode	at Reset mode
63	VDDE/INT5n/P1_5	D,O	NC	OPEN	O-H
64	BE1n	D,I/O	NC	OPEN	O-H
65	BE0n	D,I/O	NC	OPEN	O-H
66	SCL2/P3_0	D,O	SCL	O	O
67	SDA2	D,I/O	SDA	O	I
68	DAB0	D,I/O	DQ0	I/O	O-H
69	DAB8	D,I/O	DQ8	I/O	O-H
70	DAB1	D,I/O	DQ1	I/O	O-H
71	DAB9	D,I/O	DQ9	I/O	O-H
72	DAB2	D,I/O	DQ2	I/O	O-H
73	DAB10	D,I/O	DQ10	I/O	O-H
74	DAB3	D,I/O	DQ3	I/O	O-H
75	DAB11	D,I/O	DQ11	I/O	O-H
76	VSS	-	VSS	-	-
77	VDD	-	VDD	-	-
78	VDDIO	-	VDDIO	-	-
79	P2_0/PWM0/SPIDI	D,O	P2_0	O	I
80	P2_1/PWM1/SPICLK	D,O	COL5	OPEN	I
81	P2_2/ADC0/CLK100	D,O	RES_LCD	I	I
82	P2_3/ADC1	D,O	COL6	OPEN	I
83	P2_4/SCL1	D,O	COL7	OPEN	I
84	P2_5/SDA1	D,O	RESET	OPEN	I
85	DAB4	D,I/O	DQ4	I/O	O-H
86	DAB12	D,I/O	DQ12	I/O	O-H
87	DAB5	D,I/O	DQ5	I/O	O-H
88	DAB13	D,I/O	DQ13	I/O	O-H
89	DAB6	D,I/O	DQ6	I/O	O-H
90	DAB14	D,I/O	DQ14	I/O	O-H
91	DAB7	D,I/O	DQ7	I/O	O-H
92	DAB15	D,I/O	DQ15	I/O	O-H
93	P2_7/DC_CTRL	D,O	DC_CTL	D,O	O (fixed 100k pull down)
94	DC_I	A,I	DC_I	I	I
95	P1_6/PON/INT6n	A,I	PON	I	I
96	P1_7/CHARGE/INT7n	A,I	CHARGE	I	I (fixed 160k pull down)
97	P2_6/stop_charge	A,O	stop_charge	OPEN	O
98	VBAT3/RINGING	A,I	VBAT3	I	I
99	DC_stab	A,O	DC_stab	OPEN	O
100	DC_Sense	A,I	DC_Sense	-	I
101	AVS_sense	A,I	AVS_sense	-	I
102	ADC3	A,I	ADC3	I	I
103	LDO1_sense	A,I	LDO1_sense	I	I
104	LDO1_CTRL	A,O	LDO1_CTRL	O	O
105	LDO2_CTRL	A,O	LDO2_CTRL	O	O
106	VBAT2	A,I	VBAT2	I	I
107	VBAT1	A,I	VBAT1	I	I
108	AVS2	-	AVS2	-	-
109	AVD2	-	AVD2	-	-
110	LSR+/REF	A,O	LSR+	O	O
111	LSR-/REF	A,O	LSR-	O	O
112	LSR_HS/CIDIN-	A,I	CIDIN-	O	O
113	VREF_HS/CIDOUT	A,O	NC	O	O
114	MIC-	A,I	NC	I	I
115	-	A,O	-	-	O
116	VBUF	A,O	VBUF	OPEN	O
117	AGND	A,O	AGND	O	O
118	MIC+	A,I	MIC+	I	I
119	VREF+/CIDIN+	A,I	CIDIN-	I	I
120	RSTN	D,I	RSTN	I	I-PU
121	AD0	D,O	NC	I	O-H
122	AD1	D,O	AD0	O	O-H
123	AD2	D,O	AD1	O	O-H
124	AD3	D,O	AD2	O	O-H
125	AD4	D,O	AD3	O	O-H
126	AD5	D,O	AD4	O	O-H
127	AD6	D,O	AD5	O	O-H
128	AD7	D,O	AD6	O	O-H

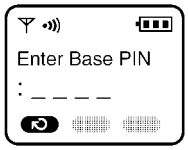
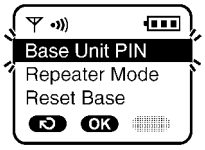
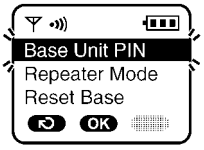
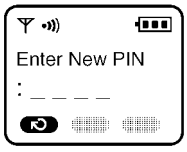
28 ENGINEERING MODE

28.1. Base Unit

Important:
Make sure the address on LCD is correct when entering. Otherwise, you may ruin the unit.



Model shown is KX-TCA132.

H/S key operation	H/S LCD
1). Register a Handset to a Base Unit.	
2). Press "" (menu) key, then select "Base Unit Setup" by navigator key.	
3). Press "OK" (menu).	
4). Enter "0", "0", "0", "0". **Note:** This 4 digits are default setting.	
5). Select "Other Options".	
6). Press "OK" (menu).	
7). Select "Base Unit PIN".	
8). Press "OK" (menu).	

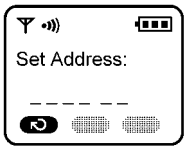
9). Enter "7", "2", "6", "2".

10). Enter "7", "6", "6", "4".
Note: 7262 7664 = PANA SONI
(see alphabets printed on dial keys)

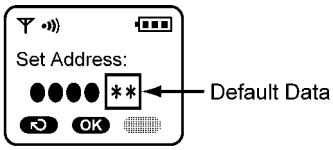
11). Press "OK" (menu).

12). Select "Write EEPROM".

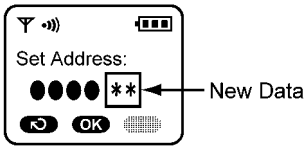
13). Press "OK" (menu).



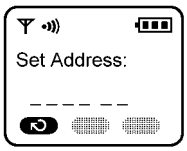
14). Enter "●", "●", "●", "●" (Address). *



15). Enter "∗", "∗" (New Data).



16). Press "OK" (menu).
A long confirmation beep will be heard.



17). Press "⏻" (off) to return to standby mode.
After that, turn the base unit power off and then power on.

Note:

*: When you enter the address, please refer to the table below.

Desired Number	Input Keys		Desired Number	Input Keys
0	0		A	[R] + 0
1	1		B	[R] + 1
.	.		C	[R] + 2
.	.		D	[R] + 3
.	.		E	[R] + 4
9	9		F	[R] + 5

ex.)

Items (*2)	**Address**	**Default Data**	**New Data**		**Remarks**
C-ID (FSK) sensitivity	04 3D	00	01 (6dB up)	02 (12dB up)	When hex changes from “00” to “01” or “02”, gain increases by 6dB or 12dB.
C-ID (DTMF) sensitivity	04 4B	50	60 (6dB up)	70 (12dB up)	When hex changes from “50” to “60” or “70”, gain increases by 6dB or 12dB.
Frequency	00 01	75	-	-	Use these items in a **READ-ONLY** mode to confirm the contents. Careless rewriting may cause serious damage to the computer system.
ID	00 10~00 14	Given value	-	-	
Bell length	01 F6	64 (10sec) (*1)	1E (3sec)	14 (2sec)	This is time until bell stops ringing. (Unit: 100ms)
PULSE Dial speed (10PPS -> 20PPS)	03 47	28 (40msec) (*1)	14 (20msec)	-	This is pulse make time. (Unit:1ms)
	03 48	3C (60msec) (*1)	1E (30msec)	-	This is pulse break time. (Unit:1ms)
	01 E4	57 (870msec) (*1)	2C (440msec)	-	This is inter-digit time in pulse mode. (Unit:10ms)

(*1)

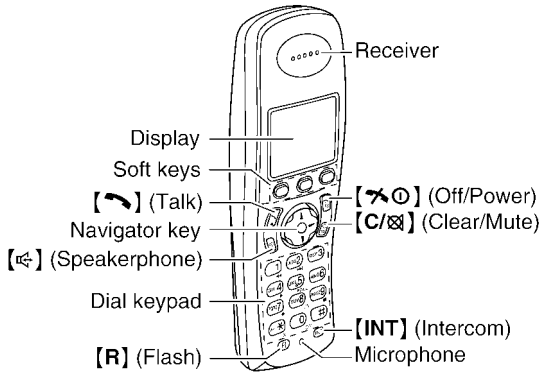
Bell length	100(hex) = 100(dec) → 100 × 100msec = 10000msec (10sec)
PULSE Dial speed (10PPS -> 20PPS)	28(hex) = 40(dec) → 40 × 1msec = 40msec
	3C(hex) = 60(dec) → 60 × 1msec = 60msec
	57(hex) = 87(dec) → 87 × 10msec = 870msec

(*2)

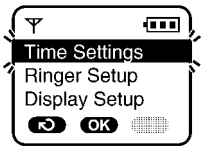
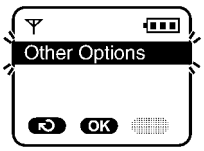
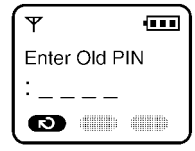
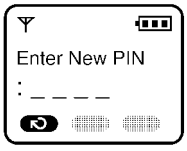
Items	**Description**
C-ID (FSK) sensitivity	FSKGain_shiftgain
C-ID (DTMF) sensitivity	Foutgains:HPFilter Foutgains
Frequency	Setting value of FREQ_TRIM_REG
ID	ID
Bell length	Time until it stops bell.
PULSE Dial speed (10PPS -> 20PPS)	Pulse MakeTime and BreakTime. bMakeTime:Pulse MakeTime Unit: 1ms bBreakTime:Pulse Break Time Unit: 1ms
	Inter-digit time in Pulse mode. Unit:10ms

28.2. Handset

Important:
Make sure the address on LCD is correct when entering. Otherwise, you may ruin the unit.



Model shown is KX-TCA132.

H/S key operation	H/S LCD
1). Press "" (menu) key, then select "Handset Setup" by navigator key.	
2). Press "OK" (menu).	
3). Select "Other Options".	
4). Press "OK" (menu).	
5). Select "Handset PIN".	
6). Press "OK" (menu).	
7). Enter "0", "0", "0", "0". **Note:** This 4 digits are default setting.	
8). Enter "7", "2", "6", "2".	

9). Enter "7", "6", "6", "4".
Note: 7262 7664 = PANA SONI
(see alphabets printed on dial keys)

10). Press "OK" (menu).

11). Select "Write EEPROM".

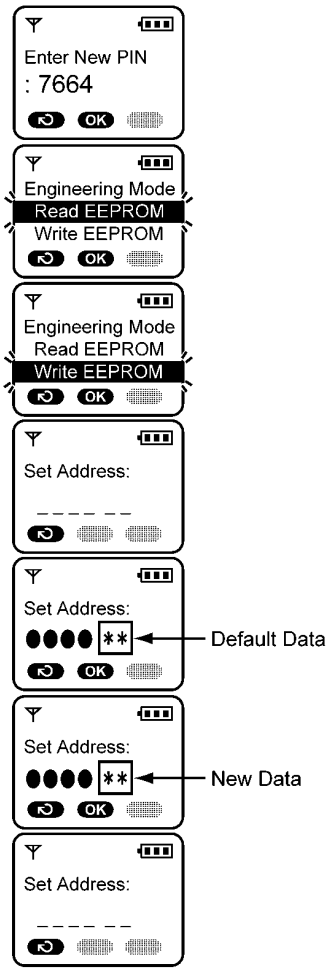
12). Press "OK" (menu).

13). Enter "●", "●", "●", "●" (Address). *

14). Enter "∗", "∗" (New Data).

15). Press "OK" (menu).
A long confirmation beep will be heard.

16). Press "⏻" (off) to return to standby mode.
After that, turn the handset power off and then power on.



Note:

*: When you enter the address, please refer to the table in **Note:** (P.78) of **ENGINEERING MODE**.

ex.)

Items (*4)	**Address**	**Default Data**	**New Data**	**Possible Adjusted Value MAX (hex)**	**Possible Adjusted Value MIN (hex)**	**Remarks**
Sending level	00 06	Adjusted value	Given value	6F	00	(*1)
Receiving level	00 07	Adjusted value	Given value	00	3F	(*2)
Battery Low	00 04	25	-	-	-	(*3)
Frequency	00 01	75	-	-	-	
ID	00 10~00 14	Given value	-	-	-	

(*1) When adding “01” (hex) to default value, sending level increases by 0.25dB.

ex.)

Item	**Default Data**	**New Data**	
	3A	3E	36
Sending level	-7.5dBm	-6.5dBm	-8.5dBm

(*2) When reducing “01” (hex) from default value, receiving level increases by 0.25dB.

ex.)

Item	**Default Data**	**New Data**	
	14	18	10
Receiving level	-20.5dBm	-21.5dBm	-19.5dBm

(*3) Use these items in a READ-ONLY mode to confirm the contents. Careless rewriting may cause serious damage to the computer system.

(*4)

Items	**Description**
Sending level	Analog Front End MIC Setting for Handset Mode
Receiving level	Analog Front End LSR Setting for Handset Mode
Battery Low	ADC value for battery low detection
Frequency	Setting value of FREQ_TRIM_REG
ID	International Portable Part Equipment Identities

29 HOW TO REPLACE THE FLAT PACKAGE IC

Even if you do not have the special tools (for example, a spot heater) to remove the Flat IC, with some solder (large amount), a soldering iron and a cutter knife, you can easily remove the ICs that have more than 100 pins.

29.1. PREPARATION

- PbF (: Pb free) Solder
- Soldering Iron

  Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

  Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.
- Flux

  Recommended Flux: Specific Gravity → 0.82.

  Type → RMA (lower residue, non-cleaning type)

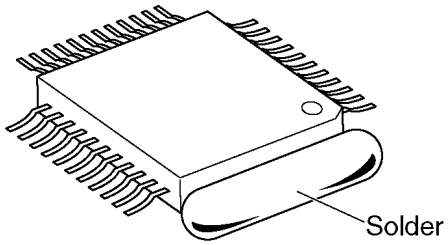
  Note: See **ABOUT LEAD FREE SOLDER (PbF: Pb free)** (P.4).

29.2. FLAT PACKAGE IC REMOVAL PROCEDURE

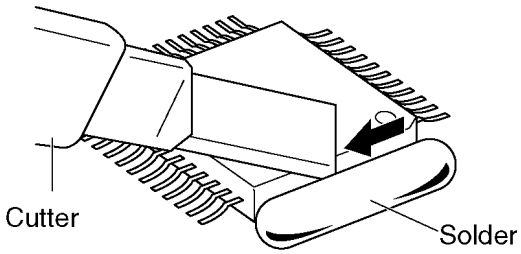
1. Put plenty of solder on the IC pins so that the pins can be completely covered.

   Note:

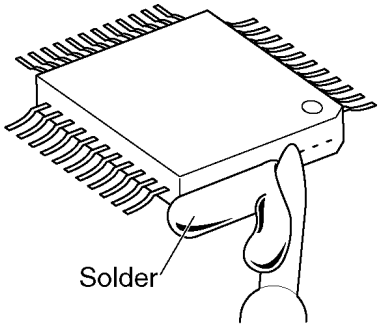
   If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



2. Make a few cuts into the joint (between the IC and its pins) first and then cut off the pins thoroughly.



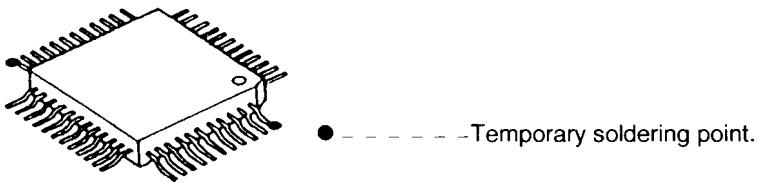
3. While the solder melts, remove it together with the IC pins.



When you attach a new IC to the board, remove all solder left on the land with some tools like a soldering wire. If some solder is left at the joint on the board, the new IC will not be attached properly.

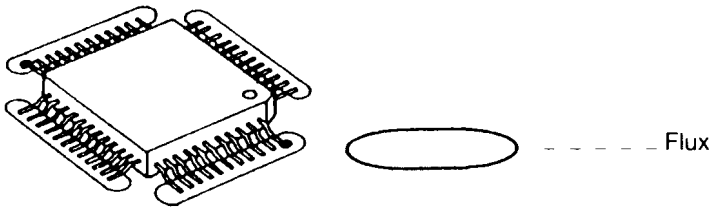
29.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

1. Temporarily fix the FLAT PACKAGE IC, soldering the two marked pins.

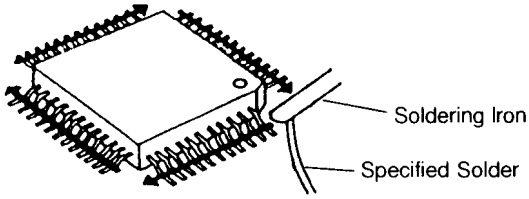


*Check the accuracy of the IC setting with the corresponding soldering foil.

2. Apply flux to all pins of the FLAT PACKAGE IC.

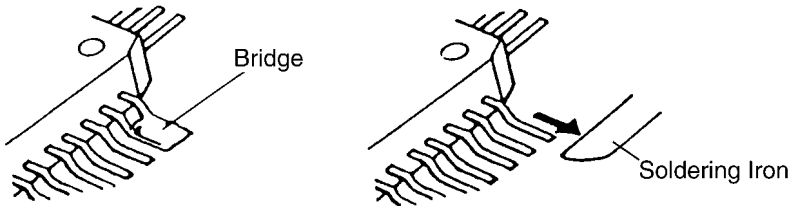


3. Solder the pins, sliding the soldering iron in the direction of the arrow.

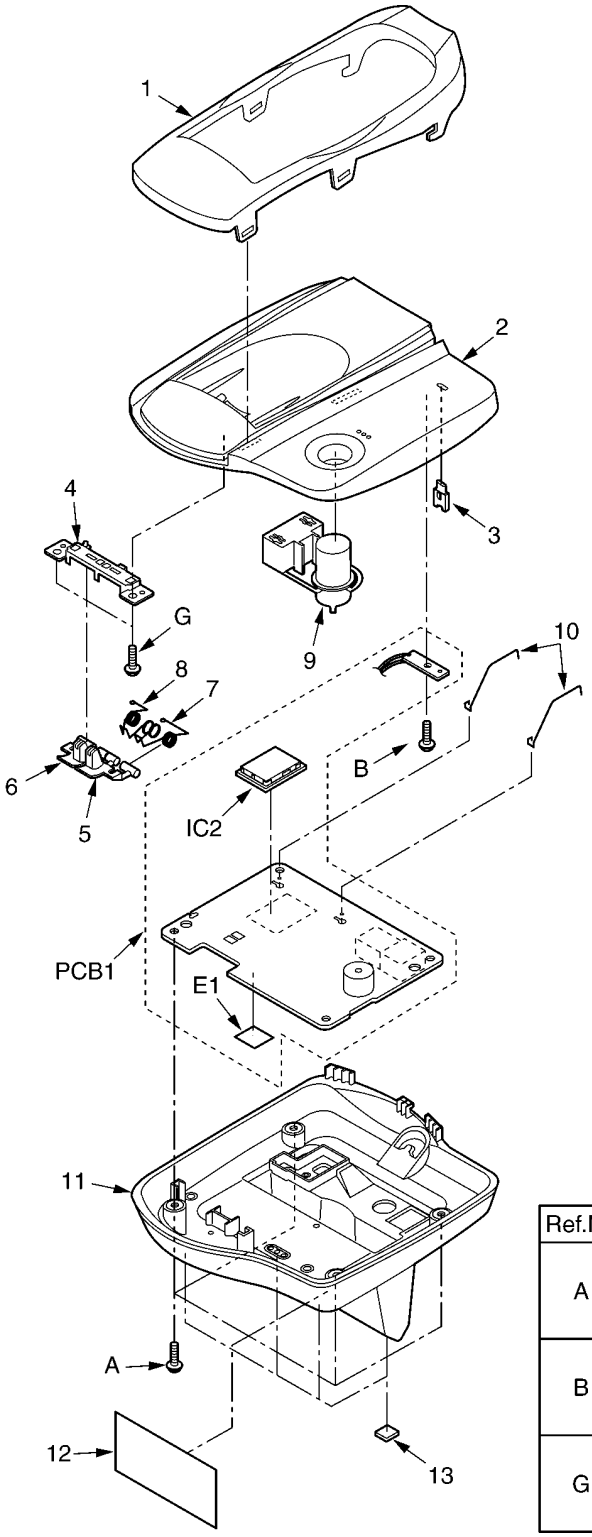


29.4. BRIDGE MODIFICATION PROCEDURE

1. Lightly resolder the bridged portion.
2. Remove the remaining solder along the pins using a soldering iron as shown in the figure below.

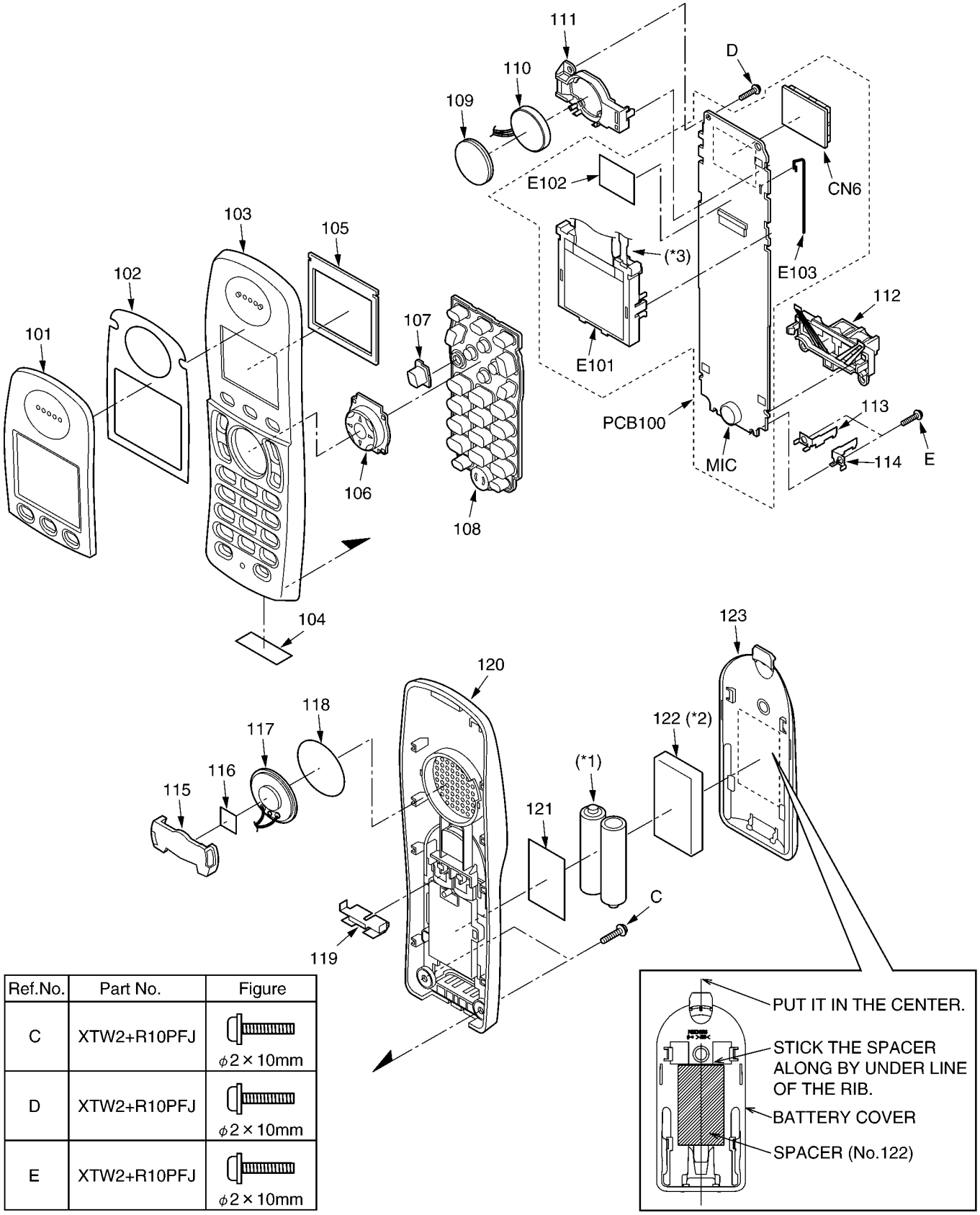


30 CABINET AND ELECTRICAL PARTS (BASE UNIT)



Ref.No.	Part No.	Figure
A	PQHV2610PJ65	 ϕ2.6 × 10mm
B	PQHV2610PJ65	 ϕ2.6 × 10mm
G	PQHV2610PJ65	 ϕ2.6 × 10mm

31 CABINET AND ELECTRICAL PARTS (HANDSET)



Ref.No.	Part No.	Figure
C	XTW2+R10PFJ	ϕ2 × 10mm
D	XTW2+R10PFJ	ϕ2 × 10mm
E	XTW2+R10PFJ	ϕ2 × 10mm

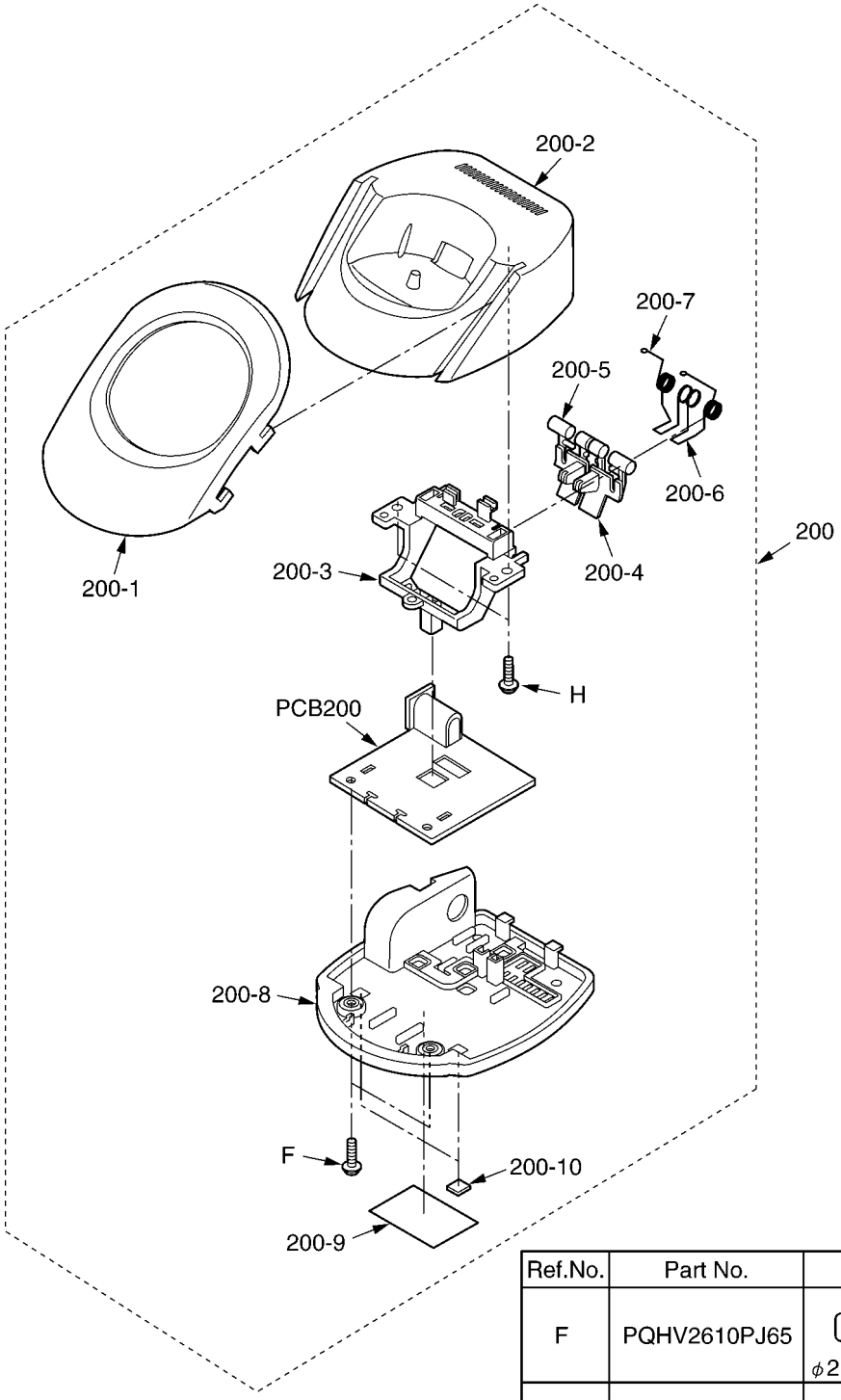
Note:

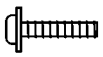
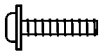
(*1) The rechargeable AAA-size Ni-MH battery (HHR-4EPT) is available through sales route of Panasonic.

(*2) Attach the spacer (No. 122) to the exact location described above.

(*3) This cable is fixed by soldering. Refer to step ⑤ of **Fix the LCD to the Main P.C.Board (Handset)** (P.38).

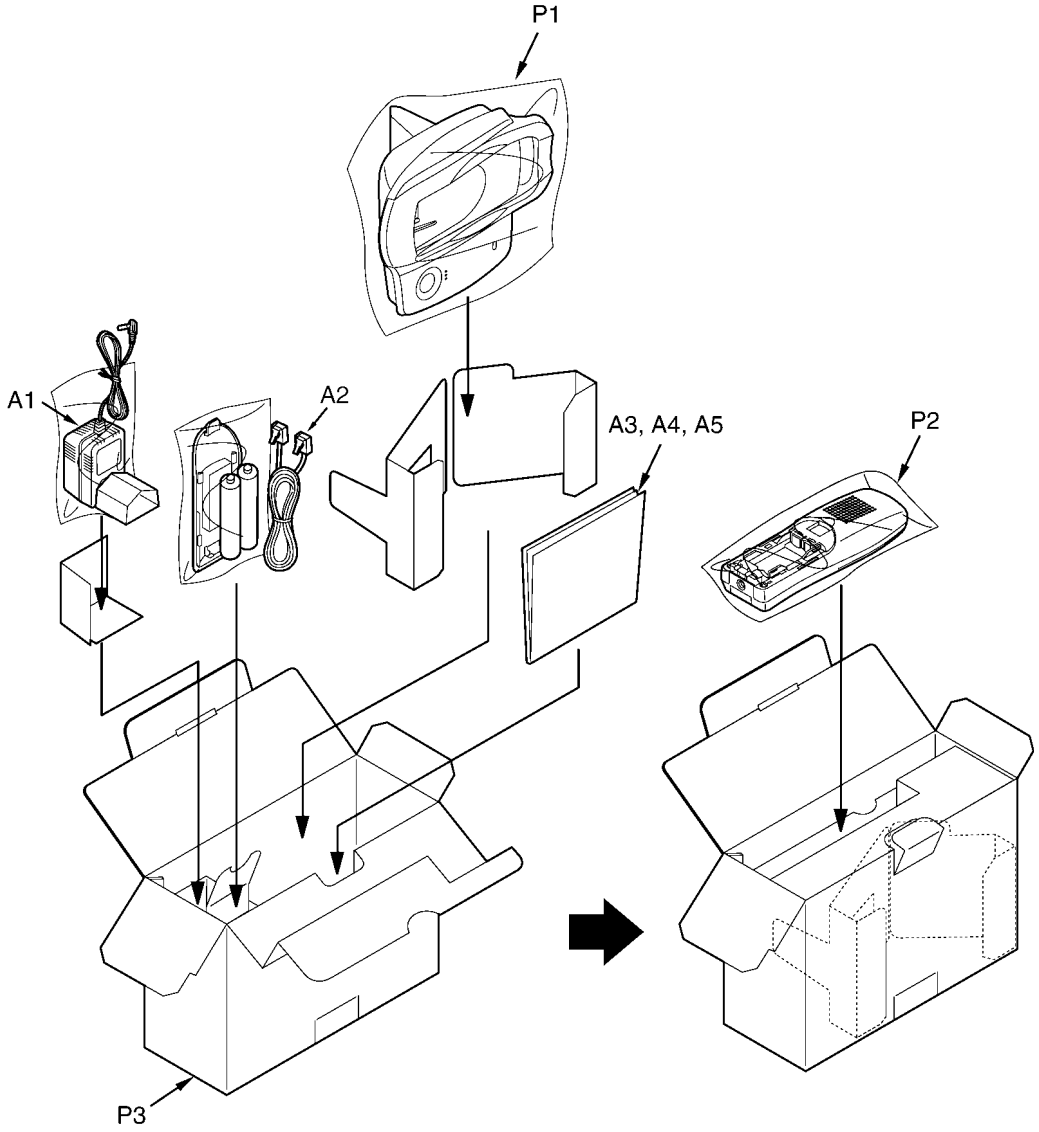
32 CABINET AND ELECTRICAL PARTS (CHARGER UNIT)



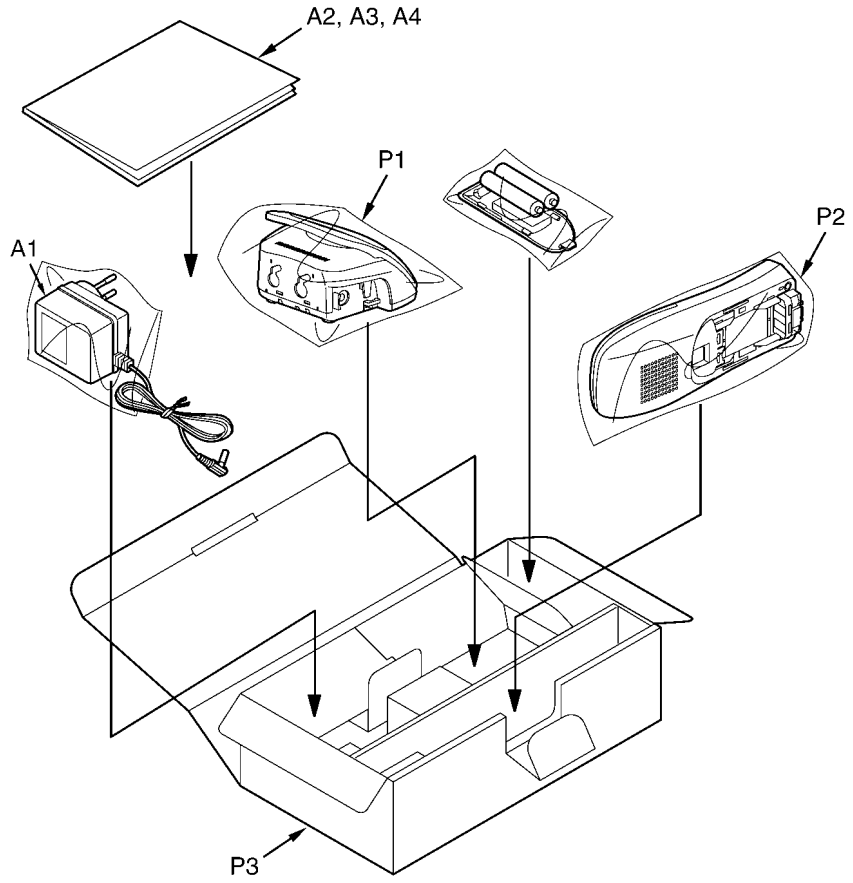
Ref.No.	Part No.	Figure
F	PQHV2610PJ65	 ϕ2.6 × 10mm
H	PQHV2610PJ65	 ϕ2.6 × 10mm

33 ACCESSORIES AND PACKING MATERIALS

33.1. KX-TG1860BXS/BXT

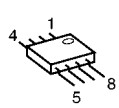


33.2. KX-TCA130CXS/CXT

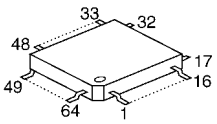


34 TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

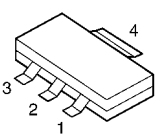
34.1. Base Unit



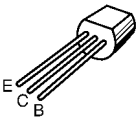
PQWICD300NEH
C0JBAS000248



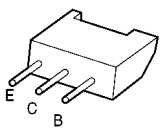
C1CB00002005



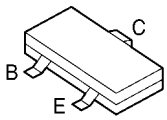
C0CBAYF00016



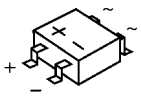
B1ACGP000007



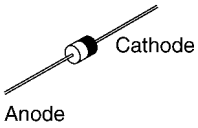
2SD1994A



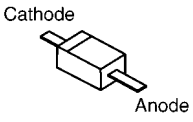
PQVTBF822T7, B1ADGE000004
B1ABGE000006, B1ABCF000103
PSVTDTC143X, B1ABCE000009



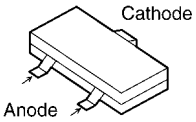
B0EDER000009



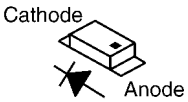
B0JAME000095



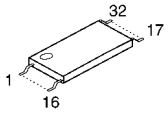
MA111
MA1Z300, MA8220



B0DDCM000001

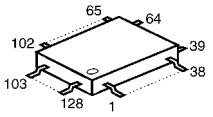


PQVDBR1111C

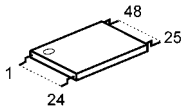


PQWIG1820BXH

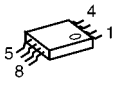
34.2. Handset



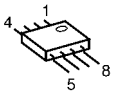
C1CB00001984



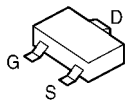
PQWI1A130EXR



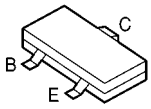
C1BB00000265



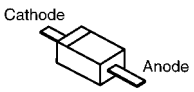
PQWI2A130EXR



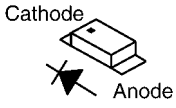
PQVTFDN335N



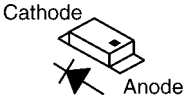
PSVTDTC143X, B1ABGE000006
UN9219J, B1ADGE000004
B1ABCF000103



B0BC2R1A0006, MA8047
B0JCDD000002, MA2Z72000
B0JCME000035, MA111

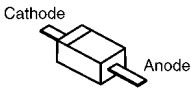


LNJ308G8JRA



PQVDBR1111C

34.3. Charger Unit



B0JCME000035

35 REPLACEMENT PARTS LIST

1. RTL (Retention Time Limited)

   Note:

   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 dependant 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 the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

   Unless otherwise specified;

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

   All capacitors are in MICRO FARADS (μF)P=μμF

   *Type & Wattage of Resistor

Type

ERC:Solid ERDS:Carbon ERJ:Chip	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Chip ERS:Fusible Resistor 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 ECQS:Styrol ECUV,PQCUV,ECUE:Chip ECQMS:Mica	ECCD,ECKD,ECBT,F1K,ECUV:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECST,EEE:Electlytic ECQP:Polypropylene

Voltage

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

35.1. Base Unit

35.1.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQGG10265Z1	GRILLE (for KX-TG1860BXS)	PC-HB
1	PQGG10265Z3	GRILLE (for KX-TG1860BXT)	PC-HB
2	PQKM10657Z1	CABINET BODY (for KX-TG1860BXS)	PS-HB
2	PQKM10657Z3	CABINET BODY (for KX-TG1860BXT)	PS-HB
3	PQHR11091Z	OPTIC CONDUCTIVE PARTS, LED LENS	ABS-HB
4	PQHR11057Z	CASE, CHARGE TERMINAL	PS-HB
5	PQKE10384Z1	HOLDER, CHARGE TERMINAL (R)	POM-HB
6	PQKE10385Z1	HOLDER, CHARGE TERMINAL (L)	POM-HB
7	PQJT10218Y	CHARGE TERMINAL (R)	
8	PQJT10219Y	CHARGE TERMINAL (L)	
9	PQBC10415Z1	PUSH BUTTON	ABS-HB
10	PQSA10154Z	ANTENNA	
11	PQKF10631Z1	CABINET COVER (for KX-TG1860BXS)	PS-HB
11	PQKF10631Z3	CABINET COVER (for KX-TG1860BXT)	PS-HB
12	PQGT17651Z	NAME PLATE (for KX-TG1860BXS)	
12	PQGT17651X	NAME PLATE (for KX-TG1860BXT)	
13	PQHA10023Z	RUBBER PARTS, FOOT CUSHION	

35.1.2. Main P.C.Board Parts

Note:

(*1) When replacing IC3 or IC8, data need to be written to it with PQZZTG1860BX.

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWPG1820BXH	MAIN P.C.BOARD ASS´Y (RTL)	
		(ICs)	
IC1	C0CBAYF00016	IC	
IC3	PQWICD300NEH	IC (EEPROM) (*1)	
IC5	PQWIG1820BXH	IC (FLASH MEMORY)	
IC7	C0JBAS000248	IC	
IC8	C1CB00002005	IC (BBIC) (*1)	
		(TRANSISTORS)	
Q2	B1ADGE000004	TRANSISTOR (SI)	
Q3	B1ADGE000004	TRANSISTOR (SI)	
Q4	B1ACGP000007	TRANSISTOR (SI)	
Q5	PQVTBF822T7	TRANSISTOR (SI)	
Q6	B1ADGE000004	TRANSISTOR (SI)	
Q8	2SD1994A	TRANSISTOR (SI)	
Q12	B1ABCE000009	TRANSISTOR (SI)	
Q14	PSVTDTC143X	TRANSISTOR (SI)	S
Q15	B1ABGE000006	TRANSISTOR (SI)	
Q16	B1ABCF000103	TRANSISTOR (SI)	
		(DIODES)	
D1	B0JAME000095	DIODE (SI)	
D3	B0EDER000009	DIODE (SI)	
D4	MA1Z300	DIODE (SI)	S
D6	MA8220	DIODE (SI)	S
D13	MA111	DIODE (SI)	S
D16	MA111	DIODE (SI)	S
D17	PQVDBR1111C	DIODE (SI)	S
DA1	B0DDCM000001	DIODE (SI)	
		(COILS)	
L3	PQLQR2M33NKT	COIL	S
L6	PQLQXF330K	COIL	S
L7	PQLQXF330K	COIL	S
L8	MQLRER10JFA	COIL	
L9	PQLQR2KA20T	COIL	S
L10	MQLRER10JFA	COIL	
C133	PQLQR2M8N2KT	COIL	S
C139	PQLQR2M5N6K	COIL	S
		(JACK)	
CN1	K2LD104A0001	JACK	S
		(RESISTORS)	
R3	ERJ1WYJ220	22	
R5	ERJ1WYJ220	22	
R8	ERJ2RKF1200	120	
R9	ERJ2RKF2000	200	
R16	ERJ3GEYJ105	1M	
R17	ERJ3GEYJ105	1M	
R22	D0GA104JA015	100K	
R23	ERJ3GEYJ104	100K	
R24	ERJ3GEYJ101	100	
R25	PQ4R10XJ272	2.7K	S

Ref. No.	Part No.	Part Name & Description	Remarks
R26	ERJ3GEYJ103	10K	
R27	D0GA104JA015	100K	
R28	ERJ3GEYJ222	2.2K	
R32	ERJ3GEYJ101	100	
R37	PQ4R10XJ180	18	S
R38	D0GA104JA015	100K	
R39	ERJ3GEYJ180	18	
R40	ERJ3GEYJ335	3.3M	
R42	ERJ3GEYJ273	27K	
R43	D0GA822JA015	8.2K	
R44	ERJ3GEYJ272	2.7K	
R45	ERJ12YJ120	12	
R46	ERJ12YJ270	27	
R47	ERJ3GEYJ104	100K	
R48	ERJ3GEYJ473	47K	
R49	ERJ3GEYJ560	56	
R52	D0GA820JA015	56	
R54	D0GA821JA015	820	
R55	D0GA102JA015	1K	
R56	D0GA222JA015	2.2K	
R57	ERJ3GEYJ222	2.2K	
R64	ERJ3GEYJ102	1K	
R69	ERJ3GEYJ104	100K	
R70	ERJ3GEYJ104	100K	
R71	ERJ3GEYJ104	100K	
R72	ERJ3GEYJ474	470K	
R78	ERJ3GEYJ103	10K	
R79	ERJ3GEYJ681	680	
R80	PQ4R18XJ100	10	S
R84	ERJ3GEYJ101	100	
R85	D0GA332JA015	3.3K	
R86	D0GA102JA015	1K	
R87	D0GA103JA015	10K	
R88	D0GA103JA015	10K	
R105	D0GA103JA015	10K	
R106	ERJ3GEYJ184	180K	
R107	ERJ3GEYJ184	180K	
R115	ERJ3GEYJ222	2.2K	
R116	PQ4R10XJ471	470	S
R117	D0GA102JA015	1K	
R118	ERJ3GEYJ271	270	
R119	ERJ3GEYJ271	270	
R123	D0GAR00Z0001	0	
R124	D0GAR00Z0001	0	
R125	D0GAR00Z0001	0	
R127	D0GA101JA015	100	
R129	ERJ3GEYJ681	680	
R130	ERJ3GEYJ103	10K	
R132	ERJ3GEYJ103	10K	
R133	ERJ3GEYJ331	330	
R134	ERJ3GEYJ102	1K	
R135	D0GA103JA015	10K	
R136	D0GA103JA015	10K	
R137	D0GA103JA015	10K	
R138	ERJ8GEYJ270	27	
R139	D0GA471JA015	470	
R140	D0GA102JA015	1K	
R141	D0GA153JA015	15K	
R142	D0GA122JA015	1.2K	
R143	ERJ3GEYJ181	180	
C167	PQ4R10XJ180	18	S
J10	ERJ3GEY0R00	0	
J13	ERJ12Y0R00	0	
J14	ERJ12Y0R00	0	
L4	ERJ3GEY0R00	0	
		(CAPACITORS)	
C1	ECUV1H100DCV	10P	
C2	ECEA1CK101	100	S
C3	ECEA0JU331	330	S
C4	ECEA1CKS100	10	
C5	ECEA1CKS100	10	
C6	ECUV1H100DCV	10P	
C7	ECUV1A105KBV	1	

Ref. No.	Part No.	Part Name & Description	Remarks
C8	ECUV1H100DCV	10P	
C11	ECUV1A105KBV	1	
C12	F1B2H152A048	0.0015	
C13	F1B2H152A048	0.0015	
C14	ECKD2H681KB	680P	S
C15	ECKD2H681KB	680P	S
C17	F1G1H221A571	220P	
C21	ECJ0EC1H100D	10P	
C22	F1G1H221A571	220P	
C24	ECUV1C104KBV	0.1	
C25	ECJ0EC1H100D	10P	
C26	ECJ0EC1H220J	22P	
C27	ECJ0EC1H100D	10P	
C28	ECUV1A224KBV	0.22	
C29	ECUV1H100DCV	10P	
C30	ECUV1C104KBV	0.1	
C32	ECUE1A223KBQ	0.022	
C34	F1G1A1040006	0.1	
C36	ECUV1H100DCV	10P	
C37	F1G1A1040006	0.1	
C38	F1G1A1040006	0.1	
C39	ECUV1A105KBV	1	
C40	PQCUV1A225KB	2.2	
C41	ECUV1C563KBV	0.056	
C42	ECUV1H060DCV	6P	
C43	ECJ0EC1H270J	27P	
C44	F1G1A1040006	0.1	
C45	F1G1A1040006	0.1	
C46	PQCUV1A105KB	1	
C47	ECUV1C563KBV	0.056	
C48	F1G1A1040006	0.1	
C49	ECEA1HKS100	10	S
C53	F1G1A1040006	150P	
C65	F1G1A1040006	0.1	
C75	ECUV1H100DCV	10P	
C76	ECUV1H103KBV	0.01	
C101	ECUV1H102KBV	0.001	
C102	ECUV1H102KBV	0.001	
C107	ECUV1H102KBV	0.001	
C114	ECJ0EC1H020C	2P	
C119	PQCUV1A225KB	2.2	
C122	ECUV1H101JCV	100P	
C123	ECJ0EC1H101J	100P	
C130	ECJ0EC1H100D	10P	
C135	PQCUV1C105KB	1	
C136	ECJ0EB1H102K	0.001	
C140	ECUV1H100DCV	10P	
C141	ECUV1H030CCV	3P	
C142	ECUV1H100DCV	10P	
C143	ECUV1H100DCV	10P	
C144	ECUV1H100DCV	10P	
C145	ECUV1H100DCV	10P	
C146	ECUV1C104KBV	0.1	
C149	ECUV1H100DCV	10P	
C151	ECUV1A475KB	4.7	
C153	ECJ0EC1H220J	22P	
C154	ECJ0EC1H100D	10P	
C155	ECJ0EC1H020C	2P	
C156	ECJ0EC1H100D	10P	
C157	ECJ0EC1H070D	7P	
C158	ECJ0EC1H100D	10P	
C159	ECJ0EC1H020C	2P	
C160	ECJ0EC1H100D	10P	
C161	ECJ0EC1H020C	2P	
C162	ECJ0EC1H100D	10P	
C163	ECJ0EC1H100D	10P	
C164	ECJ0EC1H151J	150P	
C169	ECUV1C104KBV	0.1	
C171	ECUV1H102KBV	0.001	
C172	ECJ0EC1H101J	100P	
C173	ECJ0EC1H100D	10P	
C174	F1G1A1040006	0.1	
C180	ECUV1H100DCV	10P	

Ref. No.	Part No.	Part Name & Description	Remarks
C181	ECUV1H100DCV	10P	
C182	ECUV1H100DCV	10P	
C183	ECUV1H070CCV	7P	
C184	ECUV1H100DCV	10P	
C191	ECUV1H100DCV	10P	
C192	ECUV1H100DCV	10P	
C193	ECJ0EC1H100D	10P	
C194	ECUV1H100DCV	10P	
C195	ECUV1H100DCV	10P	
C196	ECUV1H100DCV	10P	
C197	ECUV1H100DCV	10P	
C198	ECUV1H100DCV	10P	
C199	ECUV1H100DCV	10P	
C201	ECJ0EC1H100D	10P	
C203	ECJ0EC1H100D	10P	
C206	ECUV1H100DCV	10P	
C207	ECJ0EC1H100D	10P	
C208	ECUV1H100DCV	10P	
C213	ECUV1H100DCV	10P	
C214	ECJ0EC1H100D	10P	
C215	F1G1E472A086	0.0047	S
		(OTHERS)	
E1	PQMC10497Z	MAGNETIC SHIELD	
IC2	PQLP10263Z	RF UNIT	
CN14	L0DACA000024	BUZZER	
SA1	J0LF00000026	VARISTOR (SURGE ABSORBER)	
SW1	EVQQJJ05Q	SPECIAL SWITCH	
X1	H0D103500003	CRYSTAL OSCILLATOR	

35.2. Handset

35.2.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
101	PQGP10265Y1	PANEL, LCD (for KX-TCA132CXS) (for KX-TCA130CXS)	AS-HB
101	PQGP10265Y3	PANEL, LCD (for KX-TCA132CXT) (for KX-TCA130CXT)	AS-HB
102	PQHS10673W	TAPE, DOUBLE SIDED	
103	PQKM10647V8	CABINET BODY (for KX-TCA132CXS)	ABS-HB
103	PQKM10647V0	CABINET BODY (for KX-TCA132CXT)	ABS-HB
103	PQKM10647Z1	CABINET BODY (for KX-TCA130CXS)	ABS-HB
103	PQKM10647Z3	CABINET BODY (for KX-TCA130CXT)	ABS-HB
104	PQGT17648Z	NAME PLATE (for KX-TCA132CXS)	
104	PQGT17648X	NAME PLATE (for KX-TCA132CXT)	
104	PQGT17607Z	NAME PLATE (for KX-TCA130CXS)	
104	PQGT17607X	NAME PLATE (for KX-TCA130CXT)	
105	PQHE10155Z	SPACER, LCD CUSHION	
106	PQBC10413Z1	BUTTON, NAVI KEY	ABS-HB
107	PQBC10414Y1	BUTTON, SP PHONE	ABS-HB
108	PQSX10274Z	KEYBOARD SWITCH (for KX-TCA132CXS) (for KX-TCA130CXS)	
108	PQSX10274X	KEYBOARD SWITCH (for KX-TCA132CXT) (for KX-TCA130CXT)	
109	PQHS10467Z	COVER, SP NET	
110	L0AD02A00015	SPEAKER	
111	PQHR11104Z	GUIDE, SPEAKER	ABS-HB
112	PQWE10034Z	BATTERY TERMINAL	
113	PQJT10216Z	CHARGE TERMINAL (R)	
114	PQJT10217Z	CHARGE TERMINAL (L)	
115	PQHR11059Z	GUIDE, SPEAKER	ABS-HB
116	PQHG10702Z	RUBBER PARTS, SPEAKER	
117	L0AD02A00010	SPEAKER	
118	PQHS10622Z	COVER, SP NET	
119	PQJC10056Y	BATTERY TERMINAL	
120	PQKF10630X1	CABINET COVER (for KX-TCA132CXS) (for KX-TCA130CXS)	ABS-HB
120	PQKF10630X3	CABINET COVER (for KX-TCA132CXT) (for KX-TCA130CXT)	ABS-HB
121	PQHX11318Z	PLASTIC PARTS, BATTERY COVER SHEET (for KX-TCA132CXS/T)	
121	PQHX11299Z	PLASTIC PARTS, BATTERY COVER SHEET (for KX-TCA130CXS/T)	
122	PQHS10561Y	SPACER, BATTERY COVER	
123	PQKK10583Z1	LID, BATTERY COVER (for KX-TCA132CXS) (for KX-TCA130CXS)	ABS-HB
123	PQKK10583Z3	LID, BATTERY COVER (for KX-TCA132CXT) (for KX-TCA130CXT)	ABS-HB

35.2.2. Main P.C.Board Parts

Note:

(*1) When replacing IC1 or IC10, data need to be written to them with PQZZTG1860BX.

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWPCD300BXR	MAIN P.C.BOARD ASS´Y (RTL) (for KX-TG1860BXS/BXT)	
PCB100	PQWPCA130CXR	MAIN P.C.BOARD ASS´Y (RTL) (for KX-TCA130CXS/CXT)	
		(ICs)	
IC1	C1CB00001984	IC (BBIC) (*1)	
IC2	C1BB00000265	IC	
IC10	PQWI2A130EXR	IC (EEPROM) (*1)	
IC11	PQWI1A130CXR	IC (FLASH) (*1)	
		(TRANSISTORS)	
Q1	PQVTFDN335N	TRANSISTOR (SI)	S
Q2	B1ADGE000004	TRANSISTOR (SI)	
Q3	B1ADGE000004	TRANSISTOR (SI)	
Q4	B1ADGE000004	TRANSISTOR (SI)	
Q5	B1ABCF000103	TRANSISTOR (SI)	
Q9	UN9219J	TRANSISTOR (SI)	S
Q16	B1ABGE000006	TRANSISTOR (SI)	S
Q17	PSVTDTC143X	TRANSISTOR (SI)	S
Q18	PSVTDTC143X	TRANSISTOR (SI)	S
Q19	B1ABCF000103	TRANSISTOR (SI)	
		(DIODES)	
D1	B0JCME000035	DIODE (SI)	
D4	MA8047	DIODE (SI)	S
D5	MA8047	DIODE (SI)	S
D6	B0BC2R1A0006	DIODE (SI)	
D7	MA2Z72000	DIODE (SI)	
D8	B0JCDD000002	DIODE (SI)	
D9	MA111	DIODE (SI)	S
LED4	LNJ308G8JRA	LED	
LED5	LNJ308G8JRA	LED	
LED6	LNJ308G8JRA	LED	
LED7	LNJ308G8JRA	LED	
LED9	PQVDBR1111C	LED	S
		(COILS)	
L1	G1C470M00025	COIL	
L4	G1C100MA0072	COIL	
L5	G1C100MA0072	COIL	
L6	G1C101M00007	COIL	
F1	PQLQR2M5N6K	COIL	S
		(RESISTORS)	
R1	ERJL06KJ47MV	0.047	
R2	ERJ3GEYF823	82K	
R3	ERJ3EKF1503	150K	
R4	ERJ3GEYJ153	15K	
R5	ERJ3GEYJ471	470	
R6	ERJ3GEYJ103	10K	
R7	ERJ3GEYJ224	220K	
R9	ERJ3GEYJ562	5.6K	
R10	ERJ3GEYF183	18K	
R11	ERJ3GEYF103	10K	
R12	ERJ3GEYJ393	39K	
R15	ERJ3GEYJ100	10	
R20	ERJ2GEJ102	1K	
R21	ERJ2GEJ102	1K	
R24	ERJ3GEYJ474	470K	
R25	ERJ3GEYJ331	330	

Ref. No.	Part No.	Part Name & Description	Remarks
R26	ERJ3GEYJ101	100	
R29	ERJ3GEYJ222	2.2K	
R35	ERJ3GEYJ273	27K	
R36	ERJ3GEYJ473	47K	
R37	ERJ3GEYJ330	33	
R38	ERJ3GEYJ330	33	
R39	ERJ3GEYJ104	100K	
R40	ERJ3GEYJ103	10K	
R43	ERJ6RSJR10V	0.1	
R46	ERJ3GEYJ562	5.6K	
R47	ERJ3GEYJ562	5.6K	
R57	ERJ3GEYJ680	68	
R59	ERJ3GEYJ221	220	
R60	ERJ3GEYJ102	1K	
R61	ERJ3GEYJ103	10K	
R63	ERJ3GEYJ103	10K	
R64	ERJ3GEYJ103	10K	
R72	ERJ3GEYJ102	1K	
R73	ERJ3GEYJ474	470K	
R74	ERJ3GEYJ1R0	1	
R75	ERJ2GEJ102	1K	
R80	ERJ3GEYJ100	10	
R81	ERJ3GEYJ390	39	
R82	ERJ2GEJ100	10	
R95	ERJ3GEYJ103	10K	
R117	ERJ3GEYJ102	1K	
R121	ERJ2GE0R00	0	
R123	ERJ2GE0R00	0	
R125	ERJ2GE0R00	0	
R127	ERJ2GE0R00	0	
R129	ERJ2GE0R00	0	
R131	ERJ2GE0R00	0	
R134	ERJ3GEYJ470	47	
R135	ERJ3GEYJ470	47	
R136	ERJ3GEYF114V	110K	
R137	ERJ2GEJ103	10K	
L8	ERJ6GEY0R00	0	
		(CAPACITORS)	
C1	EEE0GA331WP	330	
C3	ECUV1C104KBV	0.1	
C4	ECUV1H100DCV	10P	
C5	ECST0JY106	10	
C7	ECUV1H100DCV	10P	
C8	ECUV1A224KBV	0.22	
C9	ECUV1C683KBV	0.068	
C10	ECUV1C104KBV	0.1	
C12	ECUV1A105KBV	1	
C13	ECUV1C104KBV	0.1	
C14	ECUV1H100DCV	10P	
C15	ECUV1A105KBV	1	
C16	ECUV1C104KBV	0.1	
C17	ECUV1H330JCV	33P	
C18	ECUV1H102KBV	0.001	
C19	ECUV1C104KBV	0.1	
C20	F1G1A1040006	0.1	
C21	ECUV1C104KBV	0.1	
C22	ECUV1C104KBV	0.1	
C23	ECUV1C104KBV	0.1	
C24	F1G1A1040006	0.1	
C26	ECUV1C104KBV	0.1	
C30	ECUV1A105KBV	1	
C37	ECUV1C683KBV	0.068	
C38	ECUV1H471JCV	470P	S
C39	ECUV1A105KBV	1	
C40	ECST0JY106	10	
C44	ECJ0EC1H100D	10P	
C45	ECJ0EB1H102K	0.001	
C46	ECJ0EC1H100D	10P	
C47	ECJ0EC1H020C	2P	
C48	ECJ0EC1H100D	10P	
C49	ECJ0EC1H020C	2P	
C50	ECJ0EC1H100D	10P	
C51	ECJ0EC1H100D	10P	

Ref. No.	Part No.	Part Name & Description	Remarks
C53	ECJ0EC1H151J	150P	
C54	ECJ0EC1H100D	10P	
C55	ECJ0EC1H020C	2P	
C56	ECJ0EC1H100D	10P	
C57	EEE0JA331P	330	
C58	F1G1A1040006	0.1	
C59	ECUV1A105KBV	1	
C68	ECUV1C683KBV	0.068	
C73	ECUV1C104KBV	0.1	
C74	ECUV1C104KBV	0.1	
C75	ECUV1H100DCV	10P	
C77	ECUV1H100DCV	10P	
C80	PQCUV1A225KB	2.2	
C83	ECJ0EB1H102K	0.001	
C86	ECUV1A105KBV	1	
C87	ECUV1H100DCV	10P	
C89	ECUV1H100DCV	10P	
C90	ECUV1H100DCV	10P	
C91	ECUV1H100DCV	10P	
C92	ECUV1H100DCV	10P	
C93	ECUV1H101JCV	100P	
C94	ECUV1H101JCV	100P	
C102	ECUV1A105KBV	1	
C109	ECUV1C104KBV	0.1	
C115	ECUV1A475KB	4.7	
C117	ECJ0EC1H220J	22P	
C119	ECUV1A475KB	4.7	
C125	ECUV1H020CCV	2P	
		(OTHERS)	
MIC	L0CBAB000052	MICROPHONE	
E101	L5DZDDD00004	LCD ASSEMBLY	
E102	PQHX11300Z	PLASTIC PARTS, SHEET	
E103	PQSA10159Z	ANTENNA	
CN6	PQLP10263Z	RF UNIT	
X1	H0D103500006	CRYSTAL OSCILLATOR	
CN5	K1MN20B00108	CONNECTOR	

35.3. Charger Unit

35.3.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
200	PQLV30032ZS	CHARGER UNIT (for KX-TCA130CXS)	
200	PQLV30032ZT	CHARGER UNIT (for KX-TCA130CXT)	
200-1	PQGG10276Z1	GRILLE (for KX-TCA130CXS)	PC-HB
200-1	PQGG10276Z3	GRILLE (for KX-TCA130CXT)	PC-HB
200-2	PQKM10656Z1	CABINET BODY (for KX-TCA130CXS)	ABS-HB
200-2	PQKM10656Z3	CABINET BODY (for KX-TCA130CXT)	ABS-HB
200-3	PQHR11085Z	CASE, CHARGE TERMINAL	
200-4	PQKE10384Z1	HOLDER, CHARGE TERMINAL (R)	POM-HB
200-5	PQKE10385Z1	HOLDER, CHARGE TERMINAL (L)	POM-HB
200-6	PQJT10218Y	CHARGE TERMINAL (R)	
200-7	PQJT10219Y	CHARGE TERMINAL (L)	
200-8	PQKF10653Z1	CABINET COVER (for KX-TCA130CXS)	PS-HB
200-8	PQKF10653Z3	CABINET COVER (for KX-TCA130CXT)	PS-HB
200-9	PQGT17399Z	NAME PLATE (for KX-TCA130CXS)	
200-9	PQGT17399X	NAME PLATE (for KX-TCA130CXT)	
200-10	PQHA10023Z	RUBBER PARTS, FOOT CUSHION	

35.3.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB200	PQWPA130ETCH	MAIN P.C.BOARD ASS´Y (RTL)	
		(DIODE)	
D11	B0JCME000035	DIODE(SI)	
		(JACK)	

Ref. No.	Part No.	Part Name & Description	Remarks
J1	PQJJ1B4Y	JACK	S
		(RESISTORS)	
R11	ERJ1WYJ220	22	
R12	ERJ1WYJ220	22	

35.4. Accessories and Packing Materials

35.4.1. KX-TG1860BXS/BXT

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV19BXY	AC ADAPTOR	⚠
A2	PQJA10075Z	CORD, TELEPHONE	
A3	PQQX14451Z	INSTRUCTION BOOK (for English)	
A4	PQQW13624Z	QUICK GUIDE (for Arabic)	
A5	PQQW14721Z	QUICK GUIDE (for Persian)	
P1	PQPP10116Z	PROTECTION COVER (for Base Unit)	
P2	PQPP10084Z	PROTECTION COVER (for Handset)	
P3	PQPK14571Z	GIFT BOX	

35.4.2. KX-TCA130CXS/CXT

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV200BXY	AC ADAPTOR	⚠
A2	PQQX14480Z	INSTRUCTION BOOK (for English)	
A3	PQQX14481Z	INSTRUCTION BOOK (for Arabic)	
A4	PQQX14655Z	INSTRUCTION BOOK (for Persian)	
P1	PQPP10086Z	PROTECTION COVER (for Charger Unit)	
P2	PQPP10084Z	PROTECTION COVER (for Handset)	
P3	PQPK14635Z	GIFT BOX	

35.5. Fixtures and Tools

Note:

(*1) See **The Setting Method of JIG (Base Unit)** (P.52), and **The Setting Method of JIG (Handset)** (P.59).

Part No.	Part Name & Description	Remarks
PQZZ1CD300E	JIG CABLE (*1)	
PQZZTG1860BX	BATCH FILE (*1)	

36 FOR SCHEMATIC DIAGRAM

36.1. Base Unit (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 may be modified at any time with the development of new technology.

36.2. Handset (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.

36.3. Charger Unit (SCHEMATIC DIAGRAM (CHARGER UNIT))

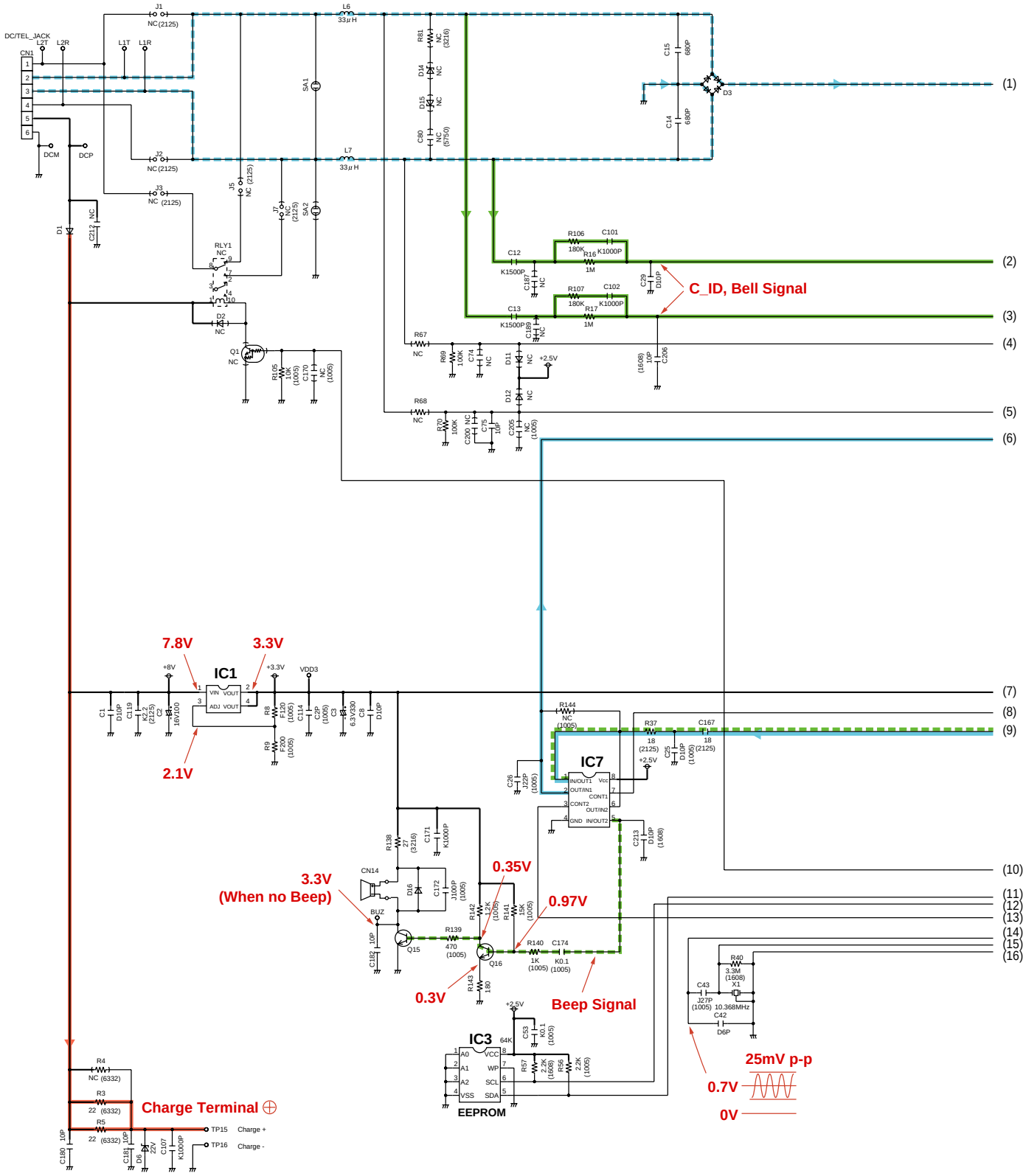
Notes:

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

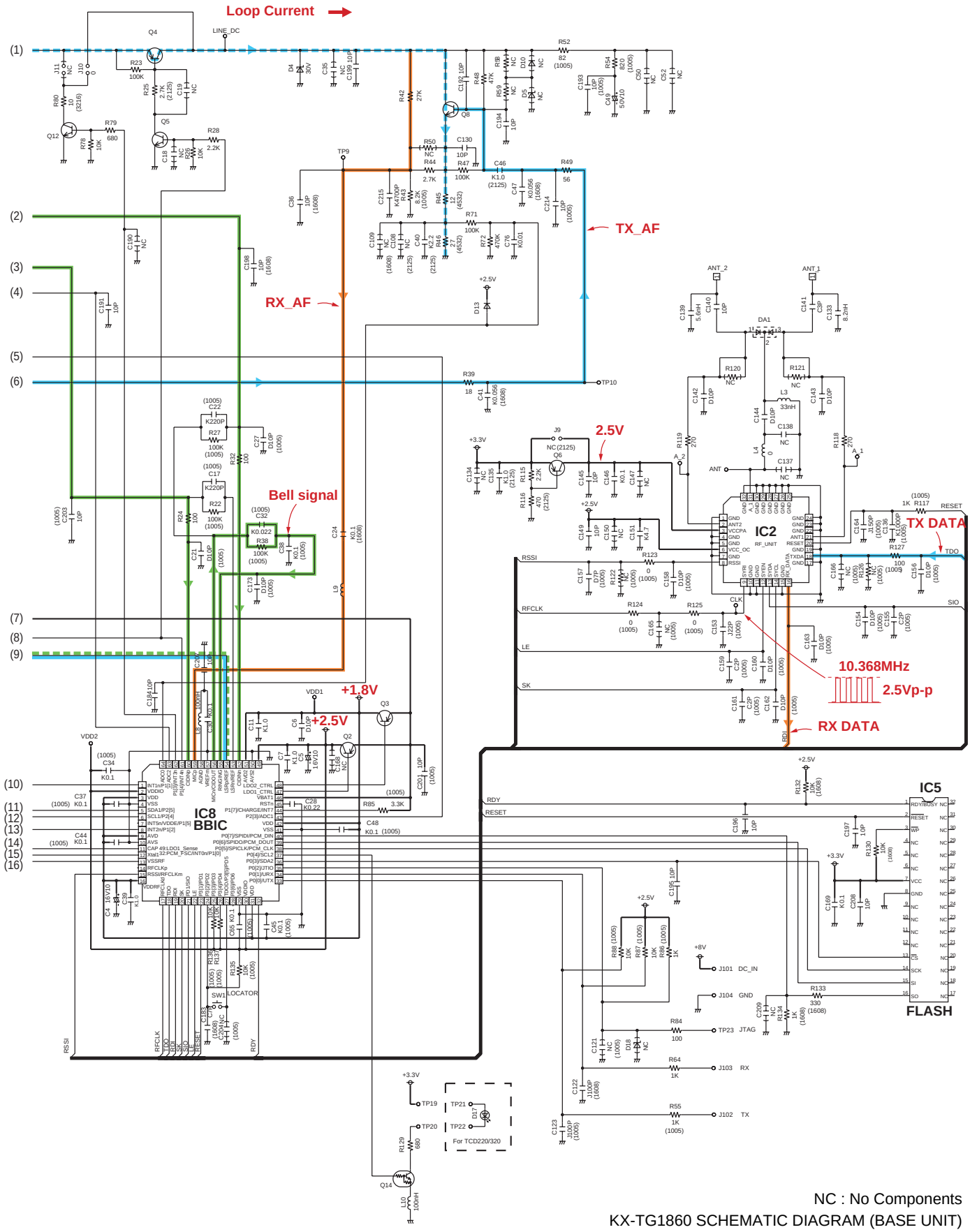
> Important Safety Notice:
> Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

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

37 SCHEMATIC DIAGRAM (BASE UNIT)



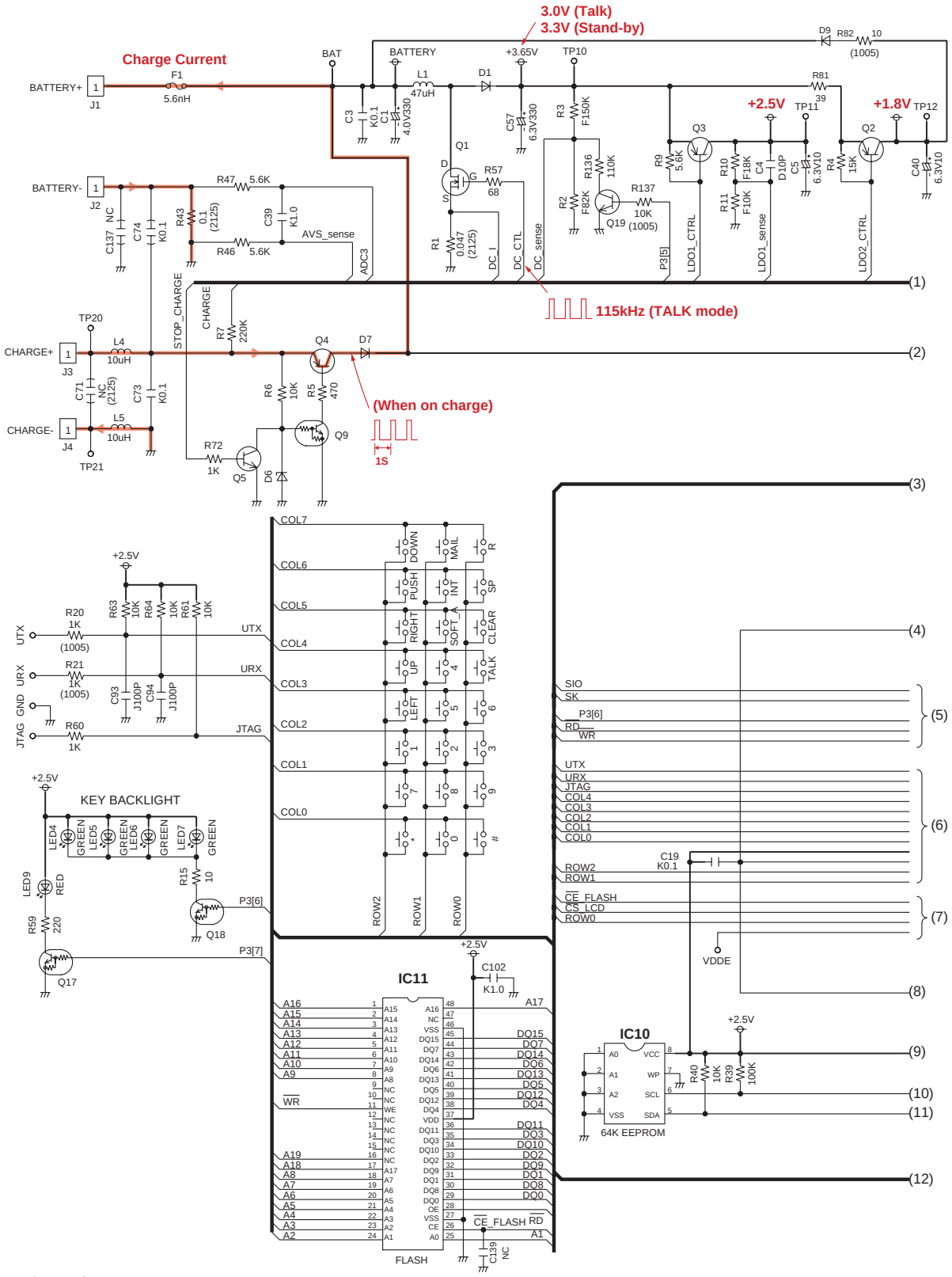
NC : No Components

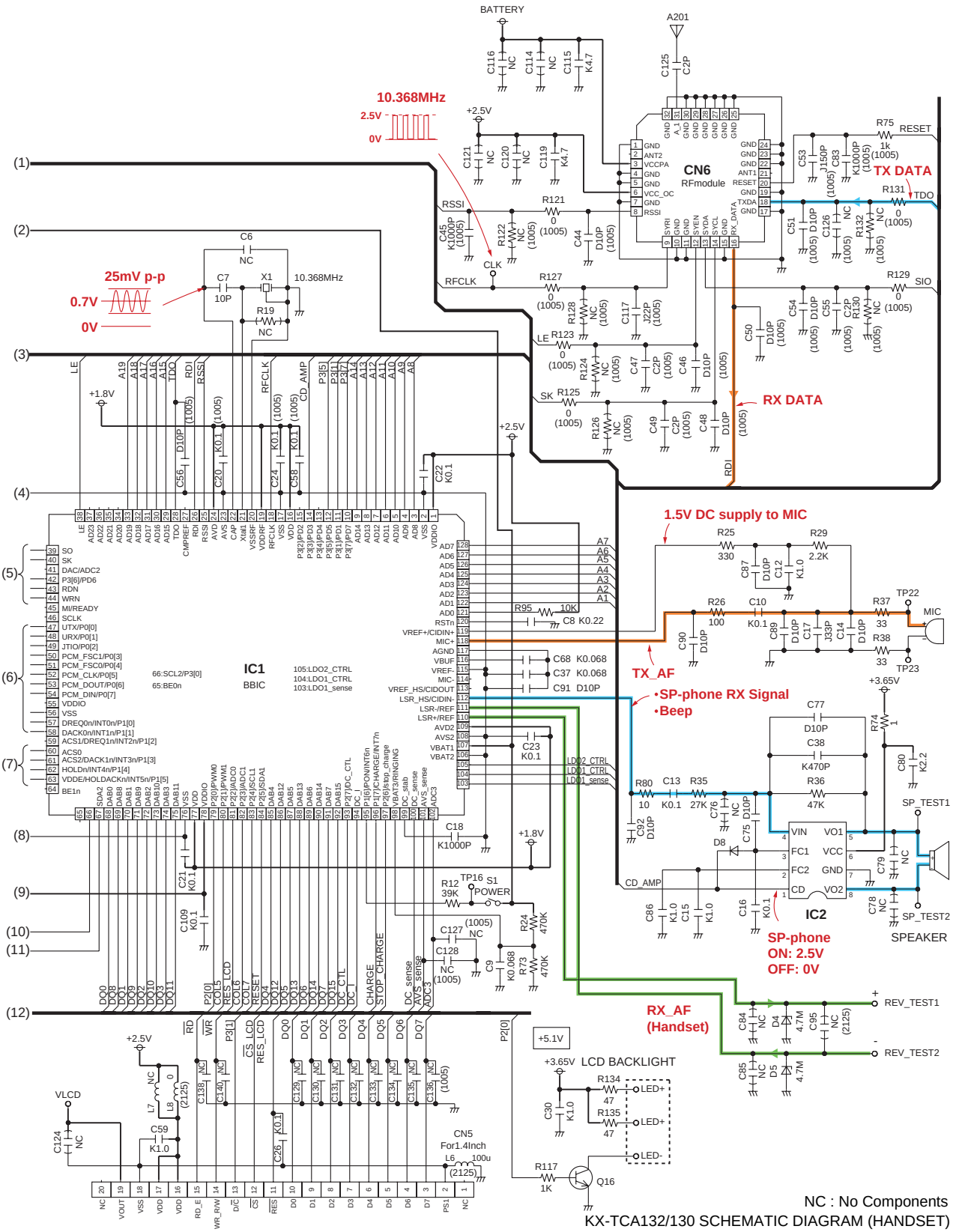


NC : No Components

KX-TG1860 SCHEMATIC DIAGRAM (BASE UNIT)

38 SCHEMATIC DIAGRAM (HANDSET)

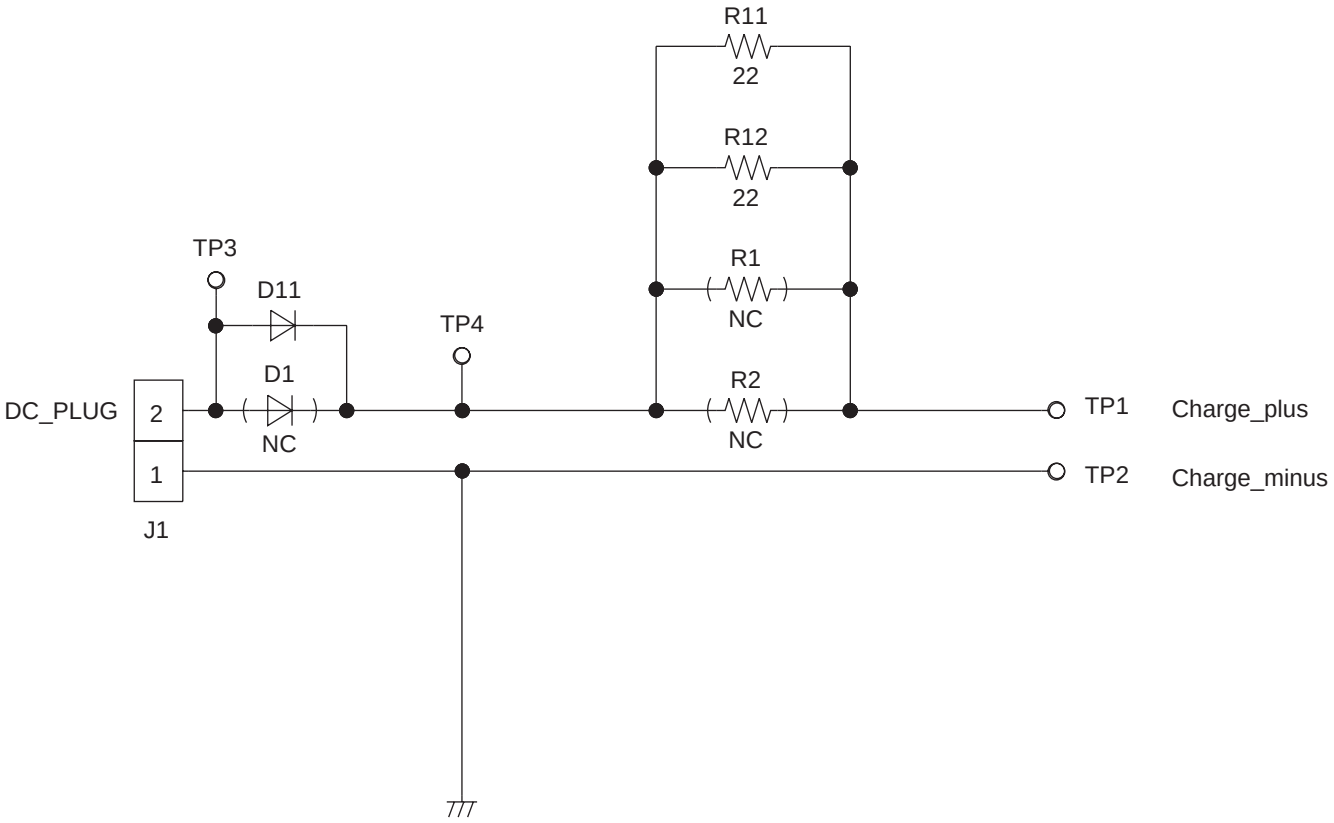




NC : No Components

KX-TCA132/130 SCHEMATIC DIAGRAM (HANDSET)

39 SCHEMATIC DIAGRAM (CHARGER UNIT)

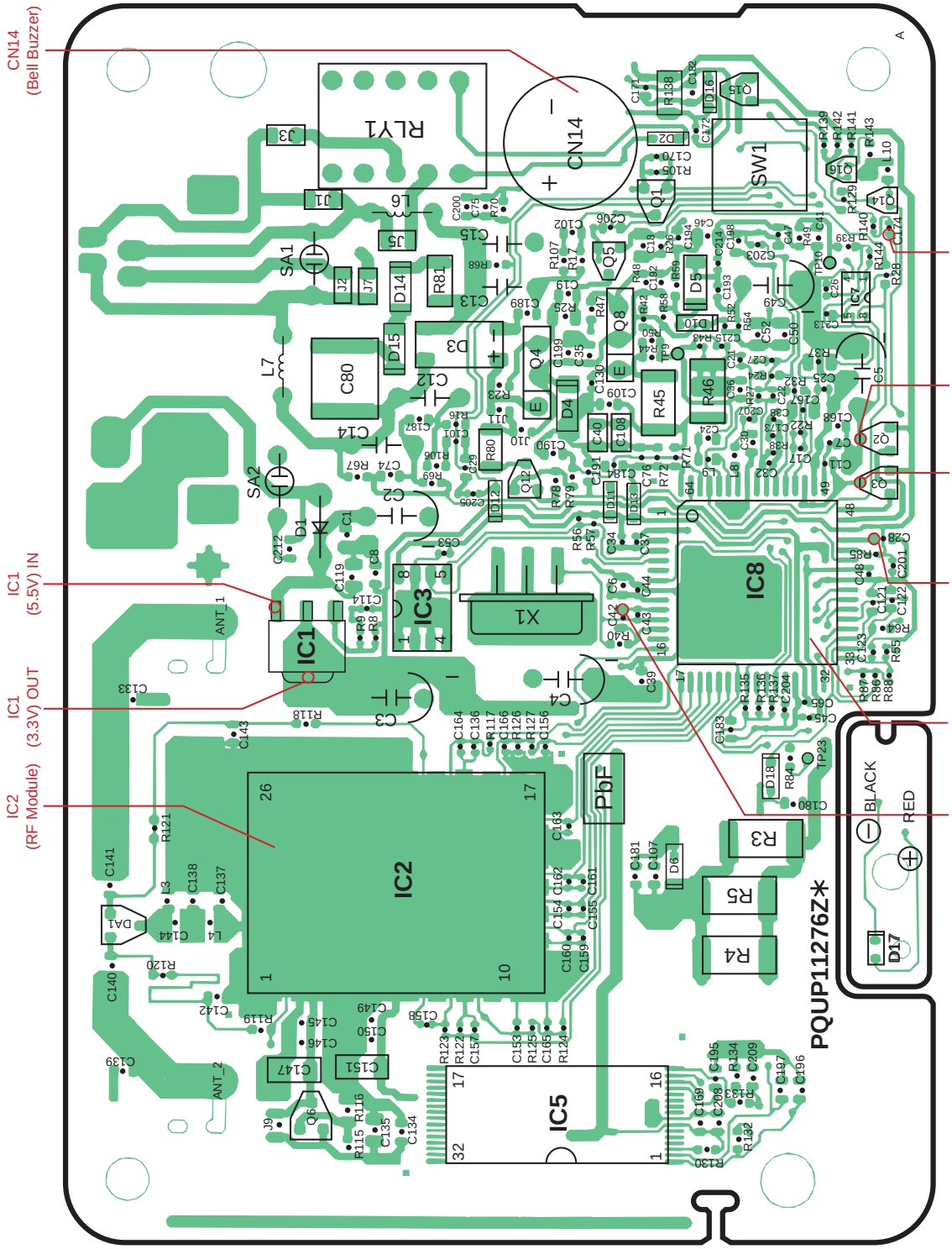


NC : No Components

SCHEMATIC DIAGRAM (CHARGER UNIT)

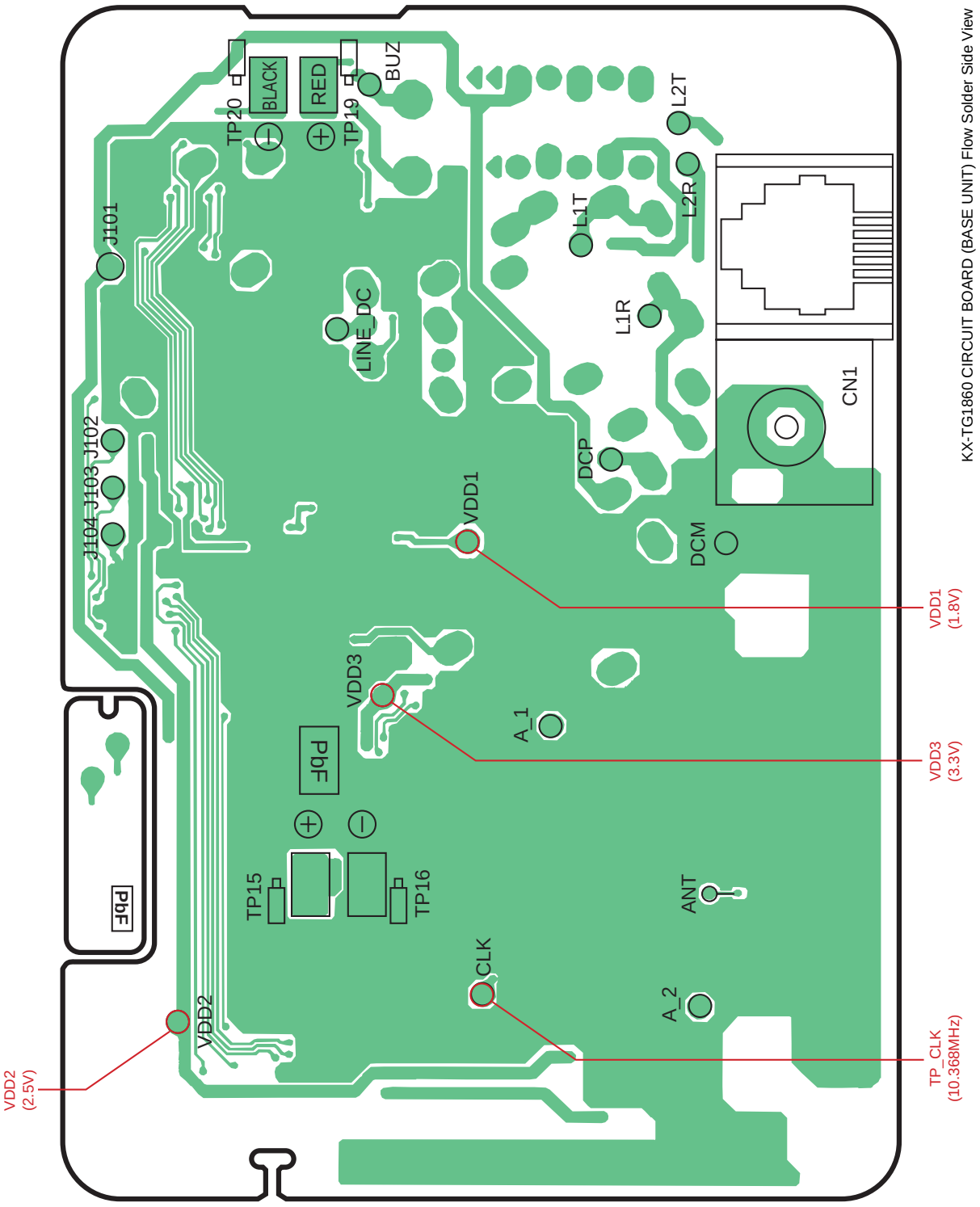
40 CIRCUIT BOARD (BASE UNIT)

40.1. Component View



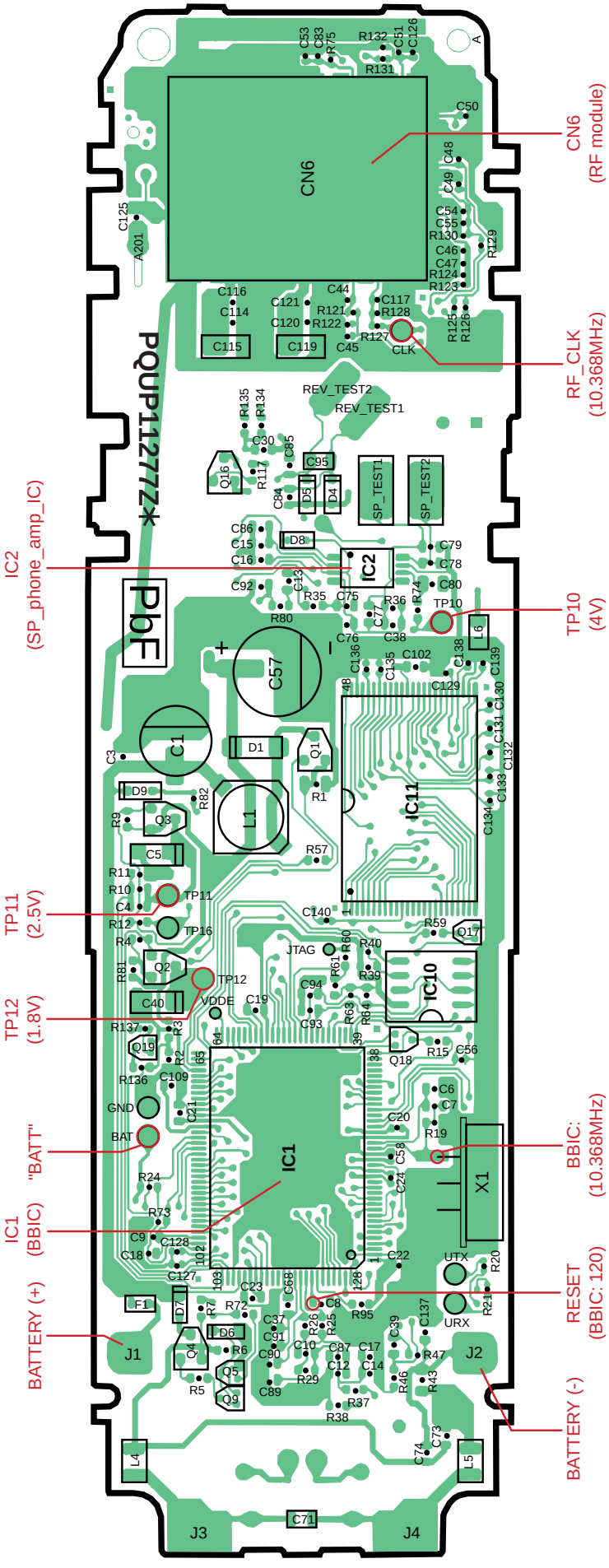
KX-TG1860 CIRCUIT BOARD (BASE UNIT) Component View

40.2. Flow Solder Side View



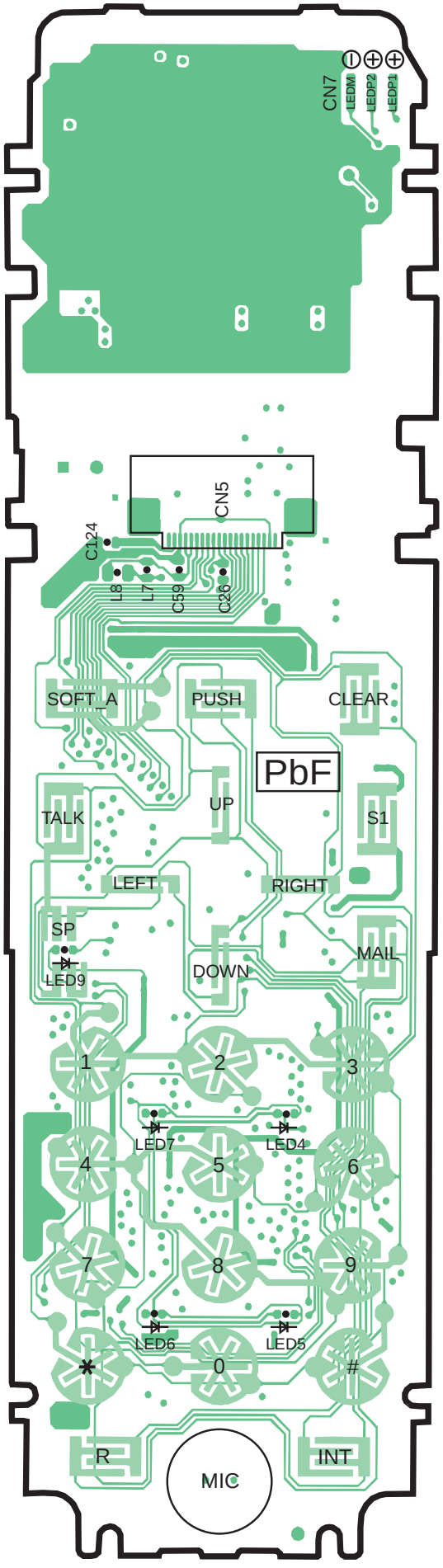
41 CIRCUIT BOARD (HANDSET)

41.1. Component View



KX-TCA132/130 CIRCUIT BOARD (HANDSET) Component View

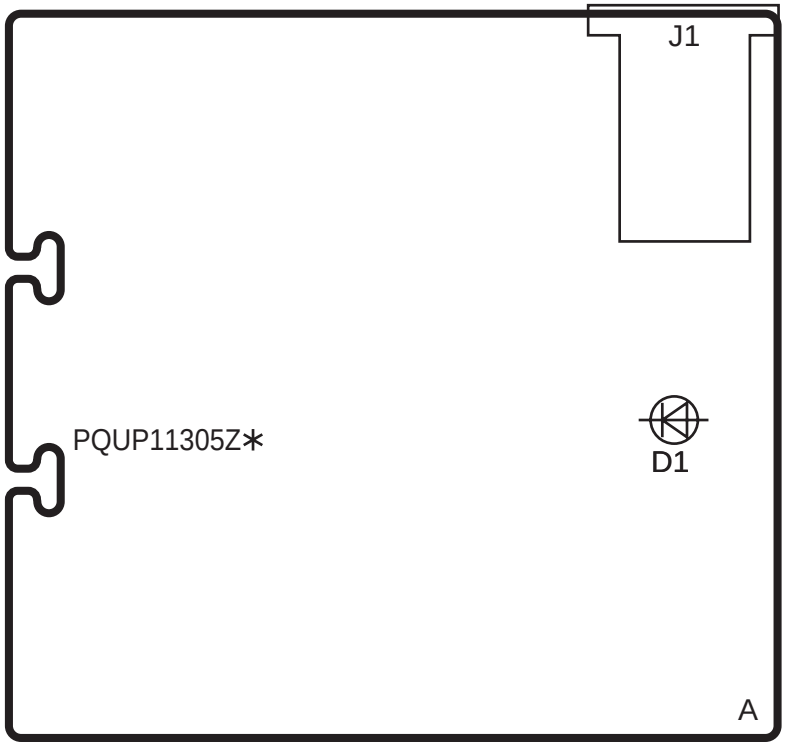
41.2. Flow Solder Side View



KX-TCA132/130 CIRCUIT BOARD (HANDSET) Flow Solder Side View

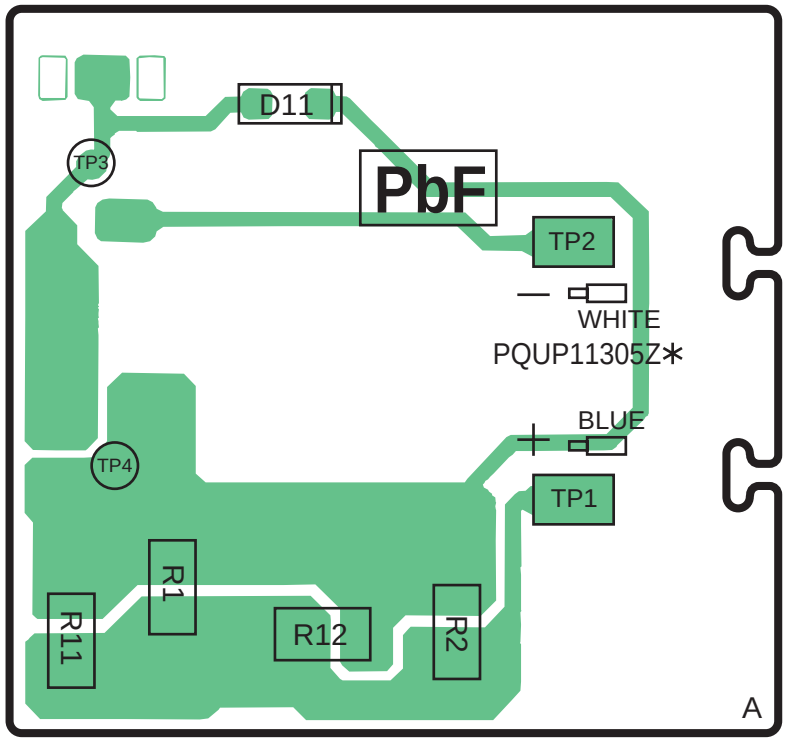
42 CIRCUIT BOARD (CHARGER UNIT)

42.1. Component View



CIRCUIT BOARD (CHARGER UNIT) Component View

42.2. Flow Solder Side View



CIRCUIT BOARD (CHARGER UNIT) Flow Solder Side View

I.N./S
KXTG1860BXS
KXTG1860BXT
KXTCA132CXS
KXTCA132CXT
KXTCA130CXS
KXTCA130CXT