

Service Manual

Telephone Equipment

Caller ID Compatible

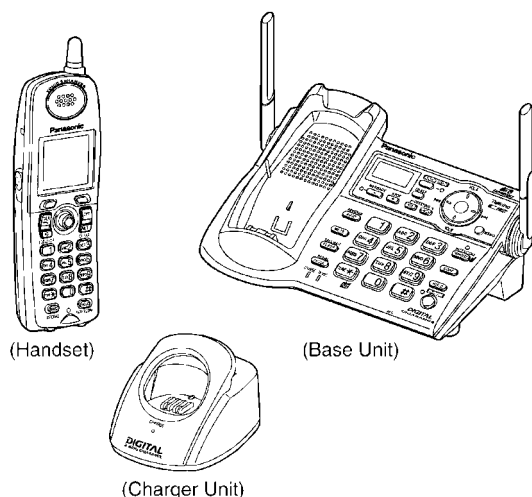
KX-TG5571BXM

KX-TGA550BXM

Expandable Digital Cordless Answering System

Metallic Gray Version

(for Asia, Middle Near East and Other Areas)



Configuration for each model

Model No	Base Unit	Handset	Charger Unit
KX-TG5571	1	1 (TGA550)	1
KX-TGA550*	1	1	1

* KX-TGA550 is also an optional accessory, which contains a handset and a charger.

SPECIFICATION

	Base Unit	Handset	Charger
Power Supply	AC Adaptor (PQLV1BXY, 220-240V AC, 50/60 Hz)	Rechargeable Ni-MH battery (3.6 V, 830 mAh) HHR-P104A	AC Adaptor (KX-TCA1BX-4, 220-240V AC, 50/60Hz)
Receiving/Transmitting Frequency	89 channels within 5.76GHz-5.84GHz	89 channels within 5.76GHz-5.84GHz	—
Receiving Method	Super Heterodyne	Super Heterodyne	—
Oscillation Method	PLL synthesizer	PLL synthesizer	—
Detecting Method	Quadrature Discriminator	Quadrature Discriminator	—
Tolerance of OSC Frequency	13.824MHz±270Hz	13.824MHz±100Hz	—
Modulation Method	Frequency Modulation	Frequency Modulation	—
Spread spectrum Method	Frequency Hopping Spread spectrum	Frequency Hopping Spread spectrum	—
ID Code	19bit	22bit	—
Security Codes	—	1,000,000	—
Ringer Equivalence No. (REN)	0.1	—	—
Dialing Mode	—	Tone (DTMF)/Pulse	—
Redial	—	Up to 48 digits	—
Speed Dialer	—	Up to 32 digits (Phone book)	—
Power Consumption	Standby: Approx. 2.6W, Maximum: Approx. 5.5W	11 days at Standby, 5 hours at Talk	Standby: Approx. 0.8W, Maximum: Approx. 3.2W
Operating Environment	5°C - 40°C (41°F - 104°F)	5°C - 40°C (41°F - 104°F)	5°C - 40°C (41°F - 104°F)
Dimensions (H x W x D)	Approx. 96mm × 210mm × 157mm (3 ²¹ / ₃₂ " × 8 ¹ / ₄ " × 6 ⁹ / ₁₆ "	Approx. 173mm × 48mm × 33mm (6 ¹³ / ₁₆ " × 1 ⁷ / ₈ " × 1 ⁵ / ₁₆ "	Approx. 71mm × 88mm × 100mm (2 ¹³ / ₁₆ " × 3 ¹⁵ / ₃₂ " × 3 ¹⁵ / ₁₆ "
Mass (Weight)	Approx. 405 g (0.89 lb.)	Approx. 168 g (0.37 lb.)	Approx. 110 g (0.24 lb.)

- Optional Headset: KX-TCA89BX
- Design and specifications are subject to change without notice.
- The illustrations in this Service Manual may vary 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

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⚠ WARNING

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

When you 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 is the extract from the Operating Instructions of this model, it is subject to change without notice. You can download and refer to the original Operating Instructions on TSN Server for further information.

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1 ABOUT LEAD FREE SOLDER (PbF: Pb free)

Note:

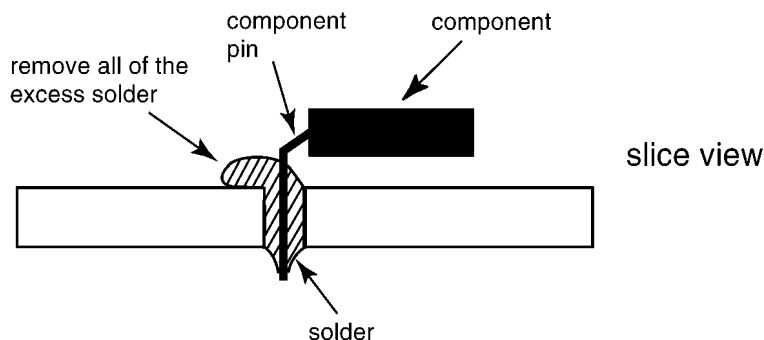
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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

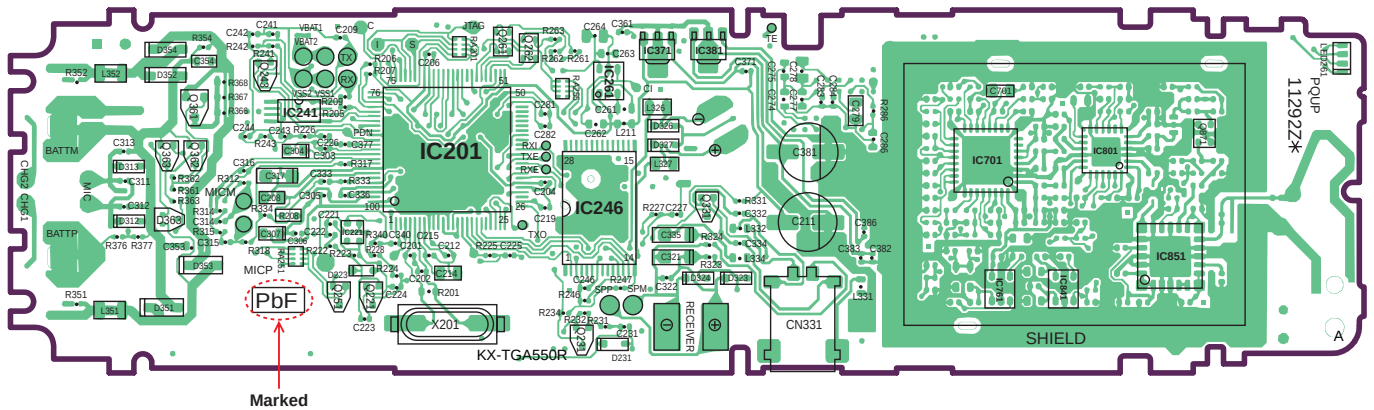
There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper (Sn+Ag+Cu), you can also use Tin and Copper (Sn+Cu), or Tin, Zinc, and Bismuth (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their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

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g

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

3 CAUTION

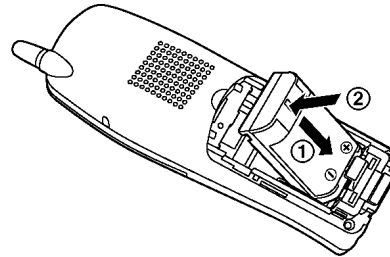
1. Danger of explosion if battery is incorrectly replaced.
2. Replace only with the same or equivalent type recommended by the manufacturer.
3. Dispose of used batteries according to the manufacturer’s Instructions.

4 OPERATING INSTRUCTIONS

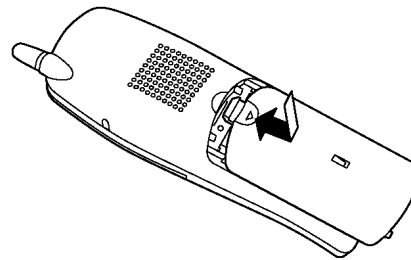
4.1. Battery

4.1.1. Battery Installation

- 1 Insert the battery (①), and press it down until it snaps into the compartment (②).



- 2 Close the handset cover.



4.1.2. Battery Charge

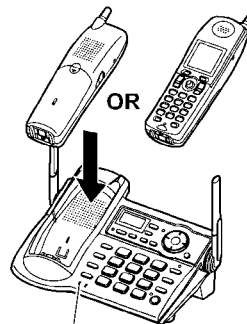
Place the handset on the base unit or charger for **6 hours** before initial use.

- The unit will beep once, the CHARGE indicator will light, and "Charging" will be displayed.
- "Charge completed" is displayed when the battery has been fully charged. The CHARGE indicator will remain lit.

Note:

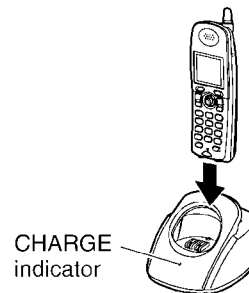
- To ensure the battery charges properly, clean the charge contacts of the handset, base unit, and charger with a soft, dry cloth. Clean if the unit is subject to grease, dust or high humidity.

Base unit



CHARGE indicator

Charger unit



4.1.3. Recharging the Battery

Recharge the battery when:

- "Recharge battery" is displayed or  flashes on the handset display.
- the handset beeps intermittently while it is in use.

Note:

- Recharge the handset battery for more than 15 minutes, or the display will continue showing the indication.
- If the battery has been discharged, the handset will display "Charge for 6 HRS" and  when you place the handset on the base unit or charger.

Note for service:

The battery strength may not be indicated correctly if the battery is disconnected and connected again, even after it is fully charged. In that case, by recharging the battery as mentioned above, you will get a correct indication of the battery strength.

4.1.4. Battery Strength

You can confirm the battery strength on the handset display.

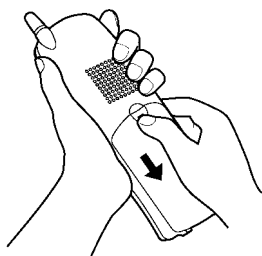
Battery icon	Battery strength
	Fully charged
	Medium
	Low When flashing: needs to be recharged.
	Discharged

4.1.5. Battery Replacement

If battery performance diminishes, make sure you have cleaned the charge contacts and fully charged the battery. The battery needs to be replaced if any of the following are displayed after a few phone calls even when you have fully charged the battery.

- “Recharge battery”
-  (flashing)
- “Charge for 6 HRS”
- 
- Use only the rechargeable Panasonic battery HHR-P104A.

- 1 Press the notch on the cover firmly and slide it as indicated by the arrow.



- 2 Replace the old battery with a new one, and close the cover.

4.1.6. Battery Performance

After your Panasonic battery is fully charged, you can expect the following performance:

Operation	Operating time
While in use (talking)	Up to 5 hours
While not in use (standby)*1	Up to 11 days
While using the clarity booster feature	Up to 3 hours

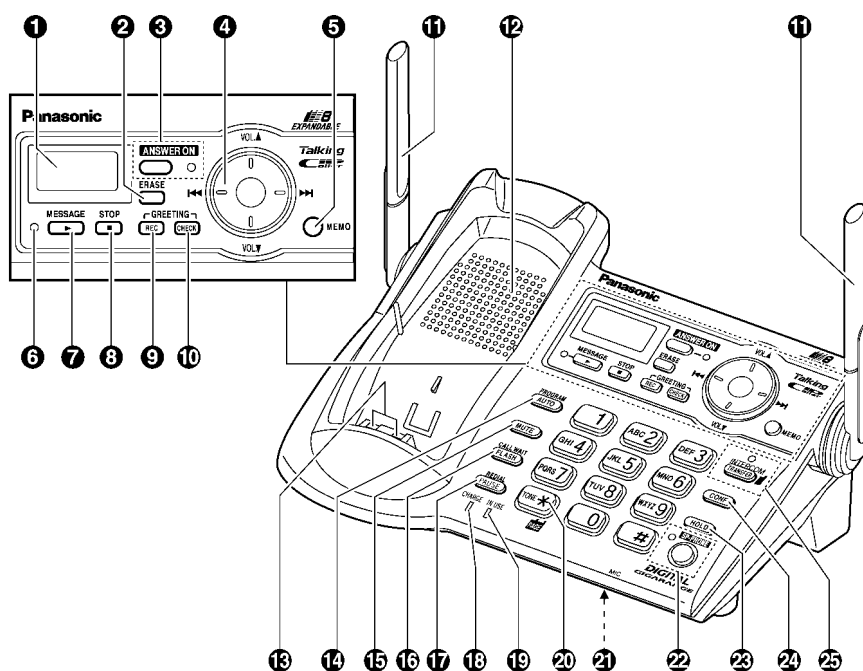
*1 Handset is off the base unit or charger but not in use.

Note:

- Battery power is consumed whenever the handset is off the base unit or charger, even when the handset is not in use. The longer you leave the handset off the base unit or charger, the shorter you can actually talk on the handset. Actual battery performance depends on a combination of how often the handset is in use and how often it is not in use.
- Once the battery is fully charged, you do not have to charge it again until “Recharge battery” is displayed or  flashes. This will maximize the battery life.

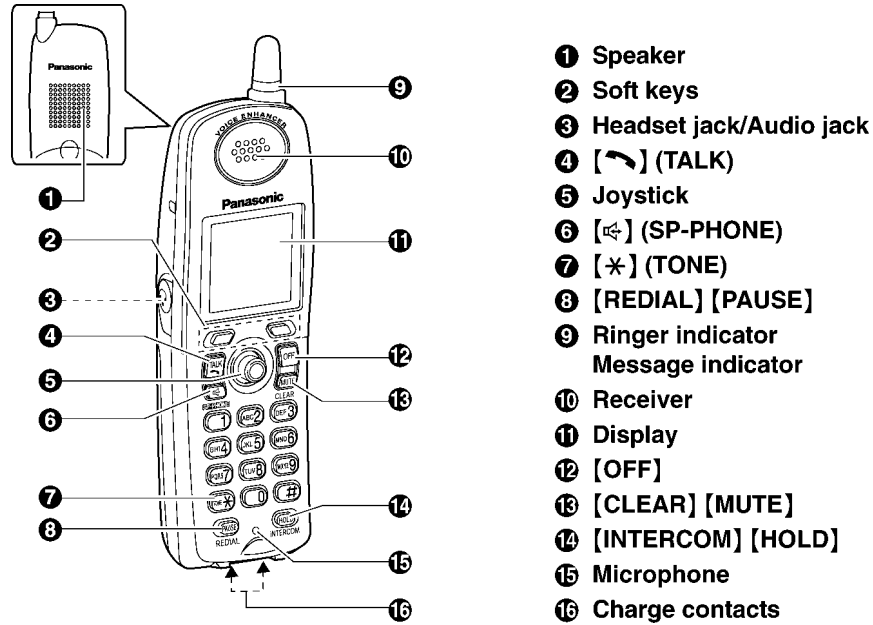
4.2. Location of Controls

4.2.1. Base Unit

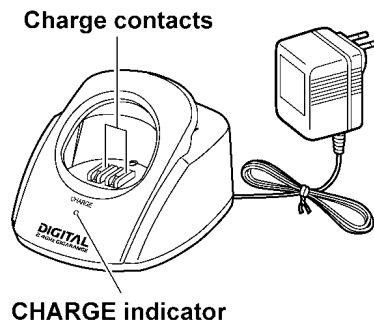


- | | |
|--------------------------------------|---|
| ① Display | ⑭ [PROGRAM] [AUTO] |
| ② [ERASE] | ⑮ [MUTE] |
| ③ [ANSWER ON]
ANSWER ON indicator | ⑯ [CALL WAIT] [FLASH] |
| ④ Navigator key | ⑰ [REDIAL] [PAUSE] |
| ⑤ [MEMO] | ⑱ CHARGE indicator |
| ⑥ MESSAGE indicator | ⑲ IN USE indicator |
| ⑦ [MESSAGE] | ⑳ [*] (TONE/ PLS) |
| ⑧ [STOP] | ㉑ MIC (Microphone) |
| ⑨ [GREETING REC] (Recording) | ㉒ [SP-PHONE] (Speakerphone)
SP-PHONE indicator |
| ⑩ [GREETING CHECK] | ㉓ [HOLD] |
| ⑪ Antenna | ㉔ [CONF] (Conference) |
| ⑫ Speaker | ㉕ [INTERCOM] [TRANSFER]
INTERCOM indicator |
| ⑬ Charge contacts | |

4.2.2. Handset



4.2.3. Charger Unit (for Optional Handset)



4.3. Displays

4.3.1. Display Items

Base unit display items

Displayed item	Meaning
	Flashes when the date and time need to be set.
FULL	Flashes when message memory is full.
RINGER OFF	Base unit ringer is off.
	Greeting or memo message recording error
	Answering system is in greeting only mode (caller messages will not be recorded).
	Handset number; displayed when paging or being paged (example shown here: handset 1).
	Paging all handsets.
	Base unit is in programming mode.

Handset display items

Displayed item	Meaning
VE	Voice enhancer is on.
	Battery strength
INUSE	Line is in use. When flashing: a call is on hold. When flashing rapidly: a call is being received.
SP	Speaker is on.
PRIVACY	Call Privacy mode is on.
	This handset's extension number (example shown here: handset 1)
	You can move the cursor right and left.
	You can scroll or move the cursor right and left or up and down.
	You can scroll up and down.
✓	When customizing the unit: indicates the current setting. When viewing the caller list: indicates that you have called back this caller or viewed this caller information.

4.3.2. Menu Icons

Handset menu icons

When in standby mode, pushing the center of joystick reveals the handset's main menu. From here you can access various features and settings.

Important:

- The menu icons shown in this Service Manual vary slightly from the actual icons shown on the display.

Menu icon	Menu/feature
	Answering device
	Ringer setting
	Phonebook
	Function
	Initial setting
	Set date & time

4.3.3. Troubleshooting (Handset LCD)

If the unit detects a problem, one of the following messages will be displayed on the handset.

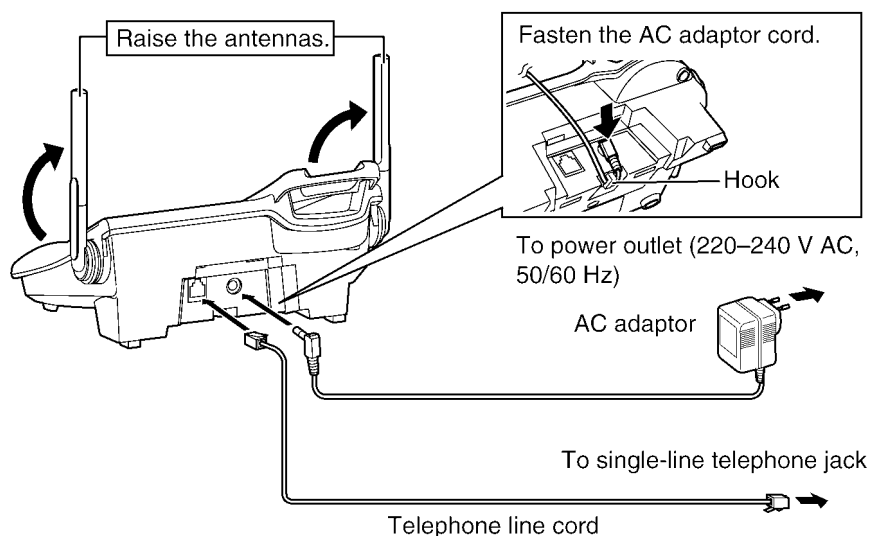
Display message	Cause & solution
Busy	• The called handset or base unit is in use. • Privacy mode is on for the call you tried to join. • The handset you tried to copy phonebook items to is in use. • The handset you are calling is too far from the base unit.
Denied	• The room monitor feature is turned off on the destination handset or base unit and the room cannot be monitored. • The called handset is on the base unit. The handset must be off the base unit to be monitored.
Dial locked	• Dial lock is turned on. To turn it off, see "Dial Lock".
Error!!	• When you tried to register or deregister the handset, the handset and the base unit could not link for some reason, such as interference from electrical appliances. Move the handset and the base unit away from the electrical appliances and try again. • If more than one handset is in use, you may not be able to register/deregister. Try again later. • Another handset tried to send phonebook items to you but there was an error. Have the other handset user re-send the items to you. • The entered password was wrong in programming dial lock. Enter the correct password.
Error!! All handsets registered. Maximum is 8.	• 8 handsets have already been registered to the base unit. To cancel a handset's registration, see "Canceling the Handset Registration". • You may have registered one of your handsets to another base unit without deleting its registration to this base unit. Erase the handset's registration from the base unit. Base unit: (1) Press and hold [INTERCOM] until the CHARGE indicator flashes, and (2) Press and hold the handset's extension number [1] to [8] that you do not want for 5 seconds. A long beep sounds, then the handset number is erased.
---Incomplete--- Tom Jones 5557654321 Phonebook full (The name/number is an example.)	• When phonebook items were sent to another handset, the handset's phonebook memory was full and copying stopped. Press [OFF] to exit. Erase items from another handset's phonebook. When phonebook memory is available, you can copy all phonebook items or individual items one by one.

Display message	Cause & solution
---Incomplete--- Tom Jones 5557654321 (The name/number is an example.)	• The destination handset is out of area. • The destination handset user may have pressed [↶] or [↷].
Invalid	• There is no handset registered to the base unit matching the extension number you entered. • You selected your own extension number. • You cannot rename the preset song.
Invalid. Please register to the base unit	• The handset you tried to call has not been registered to the base unit. Register the handset.
Memory full	• There is no space in memory to record new songs. Erase unnecessary songs.
No items stored	• Your phonebook or redial list is empty.
No link to base. Move closer to base, try again.	• The handset has lost communication with the base unit. Move closer to the base unit, and try again. • Confirm that the base unit's AC adaptor is plugged in. • Raise the base unit antennas. • The handset's registration may have been canceled. Re-register the handset.
Not erasable	• You cannot erase the preset song.
Phonebook full	• There is no space to store new items in the phonebook. Erase unnecessary items.
Please lift up and try again.	• A handset button was pressed while the handset was on the base unit or charger. Lift the handset and press the button again.
System is busy. Please try again later.	• The handset has lost communication with the base unit. Move closer to the base unit, and try again. • Other units are in use and the system is busy. Try again later. • Another user is listening to messages. Try again later.

4.4. Settings

4.4.1. Connections

Base Unit

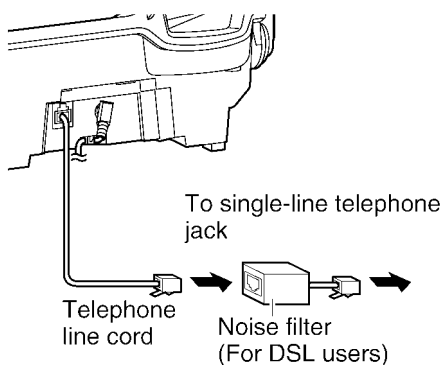


Note:

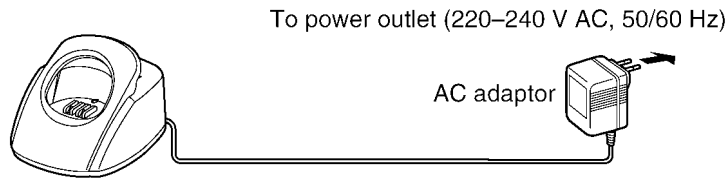
- Use only the included Panasonic AC adaptor PQLV1BXY.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- The AC adaptor should be connected to a vertically oriented or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.
- When more than one unit is used, the units may interfere with each other. To prevent or reduce interference, please keep ample space between the base units.
- The unit will not work during a power failure. We recommend connecting a standard telephone to the same telephone line or to the same telephone jack using a T-adaptor. Emergency power can be supplied to the unit by connecting a Panasonic battery back-up power supply.

If you subscribe to a DSL service

- Please attach a noise filter (contact your DSL provider) to the telephone line between the base unit and the telephone line jack in the event of the following:
 - Noise is heard during conversations.
 - Caller ID features do not function properly.



Charger Unit



Note:

- Use only the included Panasonic AC adaptor KX-TCA1BX-4.
- 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.

4.4.2. Guide to Handset Programming

For your reference, a chart of all programmable functions is printed below. To program, press **[MENU]** (center of joystick), push the joystick up, down, left, or right to scroll through the menu, and press **[SELECT]** when the desired menu item or setting is displayed.

Important:

- Before programming, make sure the handset and base unit are not being used. The handset must be operated near the base unit and while off the base unit or charger.
- You can also program features using “direct commands”—special codes that take you directly to the feature you wish to program and allow you to select the desired setting.

During programming:

- To exit programming, press **[OFF]** at any time.
- To go to next page, press **[NEXT]**.
- To go back to the top of the menu, press **[TOP]**.
- To go back to the previous menu, press **[BACK]**, or push the joystick left.

Main menu	Sub-menu 1	Sub-menu 2
Answering device 	Message playback	—
	Message alert	—
	Ring count^{*1}	—
	Recording time^{*1}	—
	Remote code^{*1}	—
	Call screening^{*1}	—
Ringer setting 	Ringer volume	—
	Ringer tone	—
	Customize ring	—
	Ring color	—
Phonebook 	—	—
Function 	Voice enhancer	—
	Dial lock^{*1}	—

Main menu	Sub-menu 1	Sub-menu 2
Initial setting 	Talking CallerID	—
	Room monitor	—
	LCD contrast	—
	Key tone	—
	Auto talk	—
	Interrupt tone	—
	Set base unit	Ringer volume ^{*1}
		Ringer tone ^{*1}
		Interrupt tone ^{*1}
		Room monitor ^{*1}
		Talking CallerID ^{*1}
	Set tel line	Set dial mode ^{*1}
		Set flash time ^{*1}
		Set line mode ^{*1}
	Registration	HS registration
		Deregistration
Set date & time 	Date and time ^{*1}	—
	Time adjustment ^{*1}	—

^{*1} If you program these settings using one of the handsets, you will not need to program the same item using another handset.

4.4.3. Dial Lock

This feature prohibits making outside calls.

Important:

- When dial lock is turned on, only phone numbers stored in the phonebook as emergency numbers (numbers stored with a # at the beginning of the name) can be dialed using the phonebook. We recommend storing emergency numbers in the phonebook before using this feature.
- When dial lock is turned on, you cannot store, edit, or erase items in the phonebook.

To turn dial lock on

- 1** Press **[MENU]** (center of joystick).
- 2** Scroll to , then press **[SELECT]**.
- 3** Scroll to "Dial lock", then press **[SELECT]**.
- 4** Enter a 4-digit password*.
 - This password is required when turning dial lock off. We recommend writing the password down.
- 5** Press **[SAVE]**.
- 6** Press **[YES]**.
 - "Dial lock on" will be displayed.
- 7** Press **[OFF]**.

Note:

- If dial lock is turned on, the handset displays "Dial lock". While there are missed calls or new messages, "Dial lock" is not displayed.

To turn dial lock off

- 1** Press **[MENU]** (center of joystick).
- 2** Scroll to , then press **[SELECT]**.
- 3** Scroll to "Dial lock", then press **[SELECT]**.
- 4** Enter the same password* that was entered when dial lock was turned on.
- 5** Press **[SAVE]**.
- 6** Press **[YES]**.
 - "Dial lock off" will be displayed.
- 7** Press **[OFF]**.

For Service Hint:

*: If the current password is forgotten, enter "726276642" and you will be able to go to next step.

4.4.4. Direct Commands

You can also program features using “direct commands”—special codes that take you directly to the feature you wish to program and allow you to select the desired setting. There is no need to scroll through the unit’s menus.

Important:

- Before programming, make sure the handset and base unit are not being used. The handset must be operated near the base unit and while off the base unit or charger.

1 Press **[MENU]** (center of joystick), then press **[#]**.

Enter direct No.
:

2 Enter the desired feature code (shown below).

3 Enter the desired setting code (shown below).

- This step may vary depending on the feature being programmed.

4 Press **[SAVE]**.

5 Press **[OFF]** to exit programming mode.

Note:

- If the handset beeps 3 times, you entered an invalid code. Enter the correct code.
- If you make a mistake or enter the wrong code, press **[OFF]** then start again by pressing **[MENU]**.

Direct commands chart

Important:

- The default settings are indicated by *.

Feature	Feature code	Setting code
Date and time	[1] [0] [1]	Enter date and time. (Default: 31.12.2005)
Set dial mode	[1] [2] [0]	[1] : Pulse [2] : Tone*
Set flash time	[1] [2] [1]	[1] : 700 ms* [2] : 600 ms [3] : 400 ms [4] : 300 ms [5] : 250 ms [6] : 110 ms [7] : 100 ms [8] : 90 ms
Set line mode	[1] [2] [2]	[1] : A [2] : B*
HS registration	[1] [3] [0]	Go to step 5 of "Registering the Handset".

Feature	Feature code	Setting code
Deregistration	[1] [3] [1]	[3] [3] [5]
LCD contrast (Handset)	[1] [4] [5]	[1] : Level 1 [2] : Level 2 [3] : Level 3* [4] : Level 4 [5] : Level 5 [6] : Level 6
Ringer volume (Handset)	[1] [6] [0]	[1] : Low [2] : Medium [3] : High* [0] : Off
Ringer tone Tone & Melody (Handset)	[1] [6] [1]	Scroll to " Tone & Melody ", then press [SELECT] . [1] : Tone 1* [2] : Tone 2 [3] : Tone 3 [4] : Melody 1 [5] : Melody 2 [6] : Melody 3 [7] : Melody 4
Ringer tone Customized ring (Handset)	[1] [6] [1]	Go to step 4 of " Handset Ringer Tone ".
Talking Caller ID (Handset)	[1] [6] [2]	[1] : On [0] : Off*
Key tone (Handset)	[1] [6] [5]	[1] : On* [0] : Off
Customize ring (Handset)	[1] [6] [6]	
Auto talk	[2] [0] [0]	[1] : On [0] : Off*
Interrupt tone (Handset)	[2] [0] [1]	[1] : On [2] : 2 times* [0] : Off
Room monitor (Handset)	[2] [0] [2]	[1] : On [0] : Off*
Ring count	[2] [1] [1]	[2] : 2 rings [3] : 3 rings [4] : 4 rings* [5] : 5 rings [6] : 6 rings [7] : 7 rings [0] : Toll saver
Time adjustment	[2] [2] [6]	[1] : Caller ID[auto]* [2] : Manual
Ring color	[2] [3] [5]	[1] : Colour 1* [2] : Colour 2 [3] : Colour 3 [4] : Multicolor
Dial lock	[2] [5] [1]	Go to step 4 of " Dial Lock ".
Voice enhancer	[2] [7] [0]	[1] : On [0] : Off*
Message playback	[3] [0] [0]	–
Recording time	[3] [0] [5]	[1] : 1 minute [2] : 2 minutes [3] : 3 minutes* [0] : Greeting only

Feature	Feature code	Setting code
Remote code	[3] [0] [6]	Enter remote code. (Default: 11)
Call screening	[3] [1] [0]	[1] : On* [0] : Off
Message alert	[3] [4] [0]	[1] : On [0] : Off*
Ringer volume (Base unit)	[*] [1] [6] [0]	[1] : Low [2] : Medium [3] : High* [0] : Off
Ringer tone (Base unit)	[*] [1] [6] [1]	[1] : Tone 1* [2] : Tone 2 [3] : Tone 3 [4] : Melody 1 [5] : Melody 2 [6] : Melody 3 [7] : Melody 4
Talking Caller ID (Base unit)	[*] [1] [6] [2]	[1] : On [0] : Off*
Interrupt tone (Base unit)	[*] [2] [0] [1]	[1] : On [2] : 2 times* [0] : Off
Room monitor (Base unit)	[*] [2] [0] [2]	[1] : On [0] : Off*

4.5. Troubleshooting

If the handset display shows error messages, see “Troubleshooting (Handset LCD) (P.11)” for the Cause & Solution.

General use

Problem	Cause & solution
The unit does not work.	• Make sure that the battery is installed correctly. • Check the connections. • Fully charge the battery. • Clean the charge contacts and charge again. • Unplug the base unit's AC adaptor to reset the unit. Reconnect the adaptor and try again. • The handset has not been registered to the base unit. Register the handset. • Re-install the battery and fully charge it.
The display shows “ No link to base. Move closer to base, try again. ” and an alarm tone sounds.	• The handset has lost communication with the base unit. Move closer to the base unit, and try again. • Confirm that the base unit's AC adaptor is plugged in. • Raise the base unit antennas. • The handset's registration may have been canceled. Re-register the handset.
I cannot hear a dial tone.	• Confirm that the telephone line cord is connected. • Disconnect the unit from the telephone line and connect a known working telephone. If the working telephone operates properly, contact our service personnel to have the unit repaired. If the working telephone does not operate properly, contact your telephone company.
The handset displays the incorrect time.	• The handset has lost communication with the base unit (because the base unit's AC adaptor is not connected or the handset is out of range). Confirm that the base unit's AC adaptor is connected and move the handset closer to the base unit.

Programmable settings

Problem	Cause & solution
I cannot program items.	• Programming is not possible while the handset and base unit are being used. • Do not pause for over 1 minute while programming. • Move closer to the base unit. • While another user is listening to messages or the answering system is answering a call, you cannot program. Try again later.
While programming, the handset starts to ring.	• A call is being received. Answer the call and start again from the beginning after hanging up.
I cannot record or erase songs, and “ Recharge battery ” is displayed.	• The battery power is low. Fully charge the battery and try again.

Making/answering calls, Intercom

Problem	Cause & solution
Static is heard, sound cuts in and out. Interference from other electrical units.	• Move the handset and the base unit away from other electrical appliances. • Move closer to the base unit. • Raise the base unit antennas. • Turn on the clarity booster feature. • If your unit is connected to a telephone line with DSL service, we recommend connecting a noise filter between the base unit and the telephone line jack. Contact your DSL provider for details.
The handset and base unit do not ring.	• The ringer volume is turned off. Adjust it.
I cannot make a call.	• The dialing mode may be set incorrectly. Set the dial mode to match the type of telephone service you have (tone or pulse). • If the base unit (including answering system) or another handset is in use, you may not be able to make a call. Try again later. • While listening to messages using the handset, you cannot make a call. Exit by pressing [OFF]. • Dial lock is turned on. To turn it off, see "Dial Lock".
I cannot redial by pressing [REDIAL] .	• If the last number dialed was more than 48 digits long, the number will not be redialed correctly. • If you press [REDIAL] after you have started dialing, this button functions as the [PAUSE] button. To redial, do not dial any numbers before pressing [REDIAL]. • Dial lock is turned on. To turn it off, see "Dial Lock".
I cannot have a conversation using the headset.	• Make sure that an optional headset is connected properly. • If "SP-phone" is displayed on the handset, press [↶] to switch to the headset.
I cannot page the handset or base unit.	• The called handset is too far from the base unit. • The called unit is in use. Try again later.
I cannot make a voice announcement.	• Other handsets are in use. Try again later.
I cannot turn the clarity booster feature on.	• Another handset is already using this feature. Only one handset can use this feature. • If 3 handsets are on a conference call with an outside party, this feature cannot be used by any of the handsets.

Phonebook

Problem	Cause & solution
I cannot store an item in the phonebook.	- You cannot store an item in the phonebook while the handset is in talk, speakerphone or intercom mode, or while listening to messages. - Do not pause for over 1 minute while storing. - Dial lock is turned on. To turn it off, see "Dial Lock".
While storing an item in the phonebook, the handset starts to ring.	A call is being received. Answer the call and start again from the beginning after hanging up.
Copying stopped with an item displayed.	The destination handset may have lost communication with the base unit, or the destination handset user may have pressed [↶] or [↷]. The displayed phonebook item was not copied to the handset. Press [OFF]. Confirm that the destination handset is in standby mode (i.e., not in use) and try again.
The display exits the phonebook while searching.	The handset automatically exits after 1 minute of inactivity.

Caller ID

Problem	Cause & solution
The handset does not display the caller's phone number.	- You have not subscribed to Caller ID service. Contact your telephone company to subscribe. - If your unit is connected to any additional telephone equipment such as a Caller ID box or wireless telephone jack, disconnect the unit from the equipment and plug the unit directly into the wall jack. - If your unit is connected to a telephone line with DSL service, we recommend connecting a noise filter between the base unit and the telephone line jack. Contact your DSL provider for details. - Other telephone equipment may be interfering with this unit. Disconnect the other equipment and try again. - The caller requested not to send caller information. - If a call is being transferred to you, the caller information will not be displayed.
The handset or base unit does not announce the displayed caller names.	- The handset or base unit's ringer volume is turned off. Adjust it. - The Talking Caller ID feature is turned off. Turn it on. - Caller names will usually be announced after the 2nd ring. - The ring count for the answering system is set to "2" or "Toll saver". Select a different setting.
The handset or base unit does not announce the displayed caller's name correctly.	- Name pronunciation may vary. This feature may not pronounce all names correctly. - The handset or base unit will announce each letter of abbreviations, such as "Co." and "Inc." - Caller ID supports a name of up to 15 letters. If the caller's name has more than 15 letters, the name will not be announced correctly.
The display exits the caller list while searching.	The handset automatically exits after 1 minute of inactivity.

Answering system

Problem	Cause & solution
I cannot listen to messages from a remote location.	• A touch tone phone is required for remote operation. • Press the remote code correctly and press each key firmly. • The answering system is off. Turn it on.
FULL flashes and the ANSWER ON indicator flashes rapidly. No new messages are recorded.	• Message memory is full. Erase unnecessary messages.
The unit does not record new messages.	• The answering system is turned off. Turn it on. • The recording time is set to "Greeting only". Select "1min", "2min", or "3min". • Message memory is full. Erase unnecessary messages.
I cannot operate the answering system.	• Someone is operating the answering system. • If someone is talking on a conference call, you cannot operate the answering system. Try again later.
During message playback, the unit rings and cancels playback.	• A call is being received. Answer the call and start again from the beginning after hanging up.
The message indicator on the handset flashes slowly.	• New messages have been recorded. Listen to the new messages or turn the message alert off .
When you play back messages or turn on the answering system, the base unit and handset announce the day and time incorrectly.	• Set the date and time again.

Battery recharge

Problem	Cause & solution
"Recharge battery" is displayed,  flashes or the handset beeps intermittently.	• Fully charge the battery.
"Charge for 6 HRS" and  are displayed and the handset does not work.	• The battery has been discharged. Fully charge the battery.
I charged the battery fully, but "Recharge battery" is still displayed and/or  continues to flash, or "Charge for 6 HRS" and  are displayed.	• Clean the charge contacts and charge again. • The battery may need to be replaced. If you install a new battery, fully charge it.
The CHARGE indicator does not go out after the battery has been charged.	• This is normal.
The handset display is blank.	• Confirm that the battery is properly installed. • Fully charge the battery.

Power failure

Problem	Cause & solution
The unit will not function.	● This product is not designed to make calls in the event of a power failure. We recommend connecting a standard telephone to the same telephone line in the event that emergency calls need to be made during a power failure.

5 DISASSEMBLY INSTRUCTIONS

5.1. Base Unit

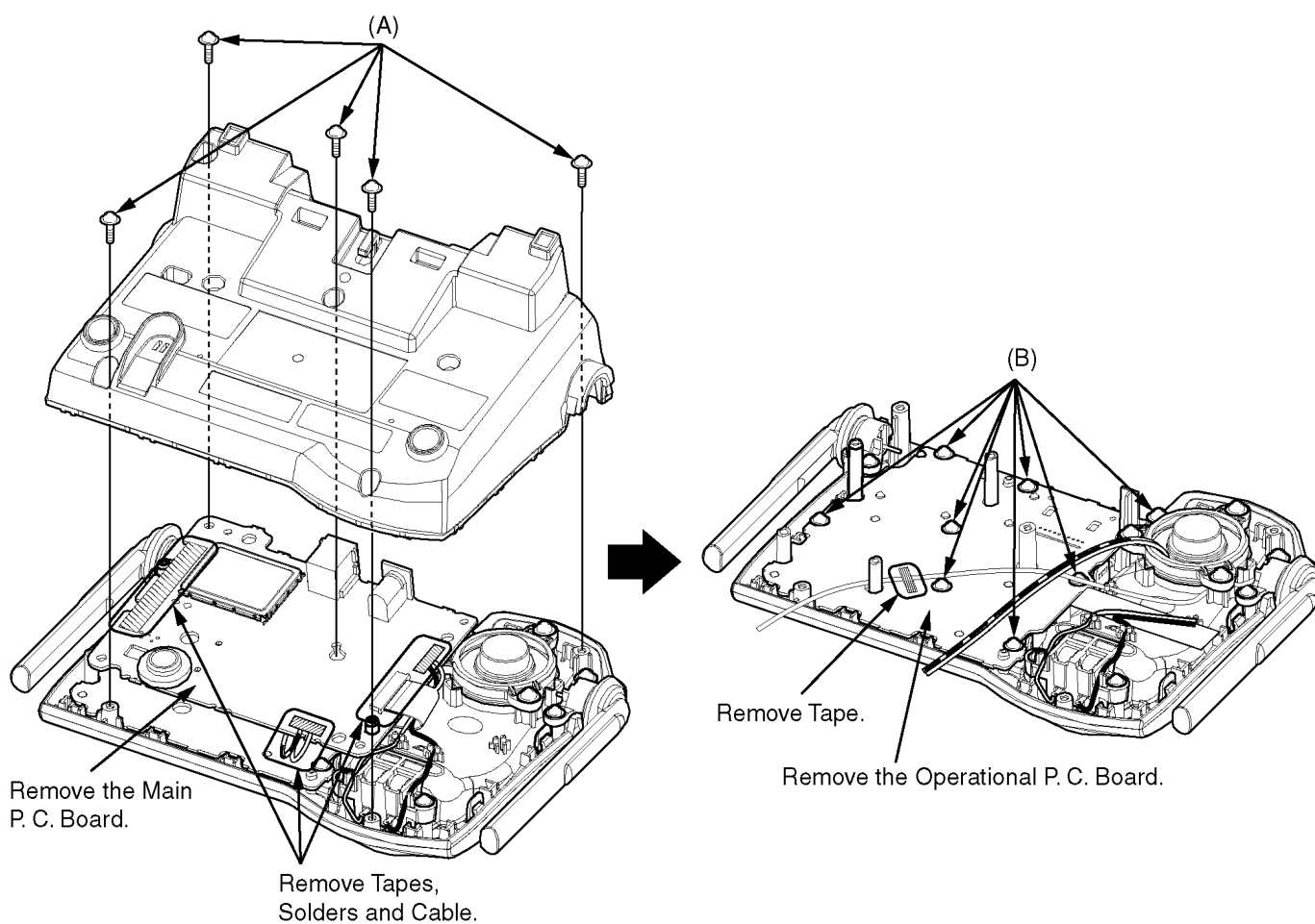


Fig. 1

Fig. 2

Shown in Fig.-	To Remove -	Remove -
1	Cabinet Cover	Screws (2.6 × 12).....(A) × 5
	Main P. C. Board	Tapes, Solders and Cable
		Main P. C. Board
2	Operational P. C. Board	Tape
		Screws (2.6 × 8).....(B) × 8
		Operational P. C. Board

5.2. Handset

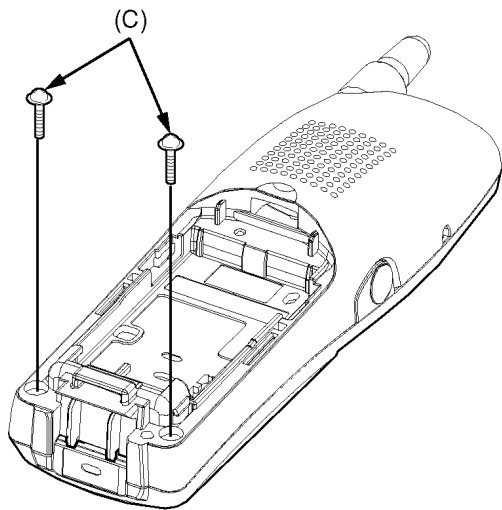


Fig. 3

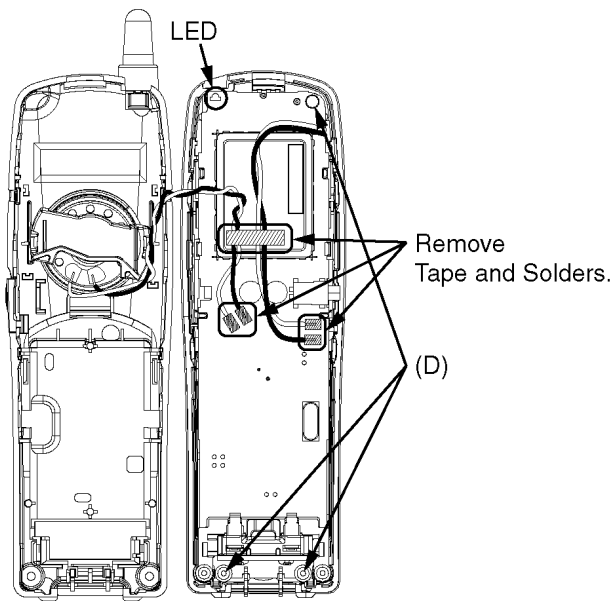
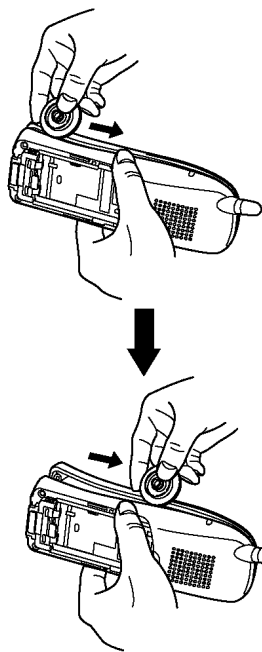
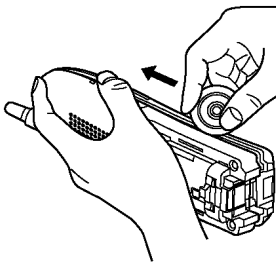


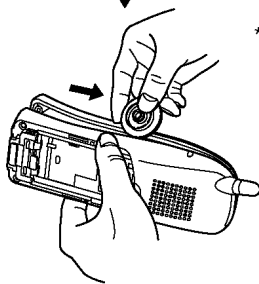
Fig. 5



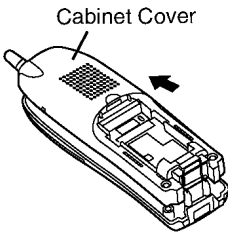
Insert a JIG (PQDJ10006Y) between the Cabinet Body and the Cabinet Cover, then pull it along the gap to open the Cabinet.



Likewise, open the other side of the Cabinet.



* Be careful not to damage LED. Refer to Fig. 5.



Remove the Cabinet Cover by pushing it upward.

Fig. 4

Shown in Fig.-	To Remove -	Remove -
3	Cabinet Cover	Screws (2 × 14).....(C) × 2
4		Follow the procedure.
5	Main P. C. Board	Tape and Solders
		Screws (2 × 9).....(D) × 3
		Main P. C. Board

5.3. Charger Unit

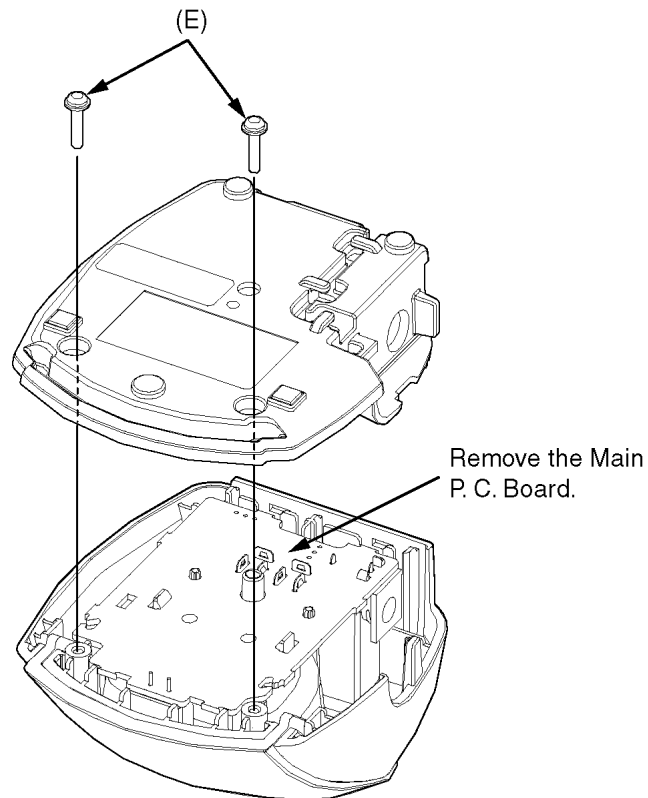
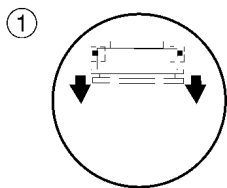
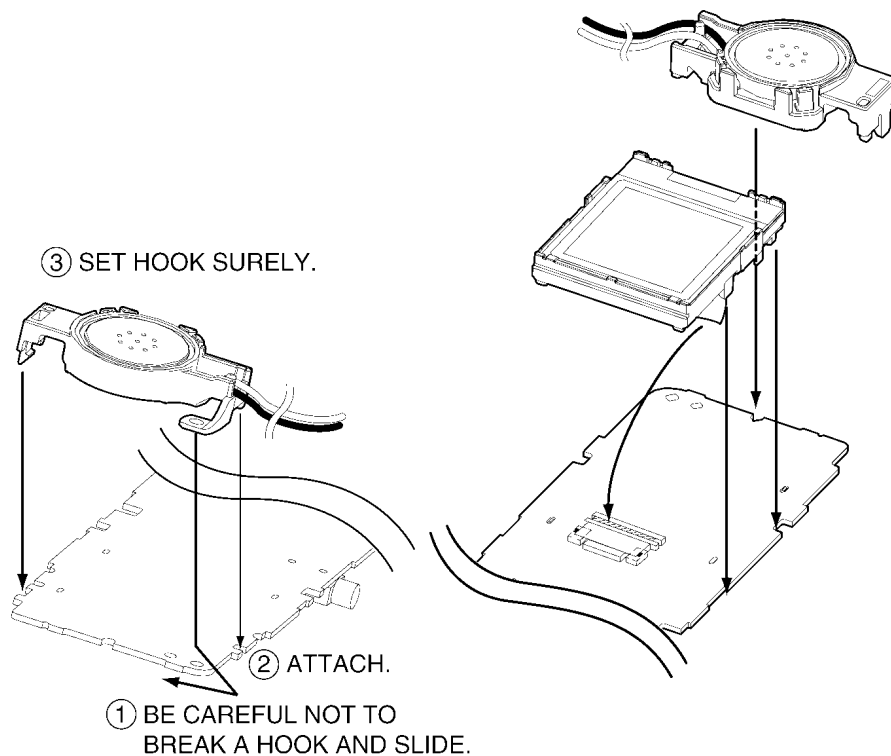


Fig. 6

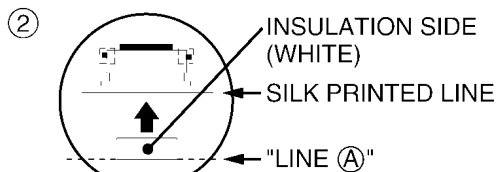
Shown in Fig.-	To Remove -	Remove -
6	Cabinet Cover	Screws (2.6 × 12).....(E) × 2
	Main P.C.Board	Main P.C.Board

6 ASSEMBLY INSTRUCTIONS

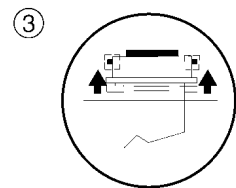
6.1. Fix the LCD and the Receiver Guide to the Main P.C. Board (Handset)



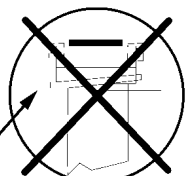
RELEASE THE
CONNECTOR LOCK.



INSERT FFC OF LCD INTO
CONNECTOR SURELY UNTIL
"LINE A" REACHES THE SILK
PRINTED LINE ON P. C. B.

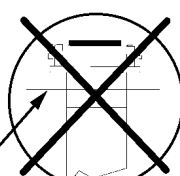


CLOSE THE
CONNECTOR LOCK.



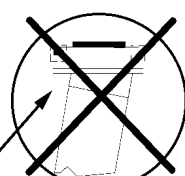
NG

CONNECTOR IS
IMPERFECTLY
LOCKED.



NG

FFC (Flexible Flat Cable) IS
IMPERFECTLY INSERTED.

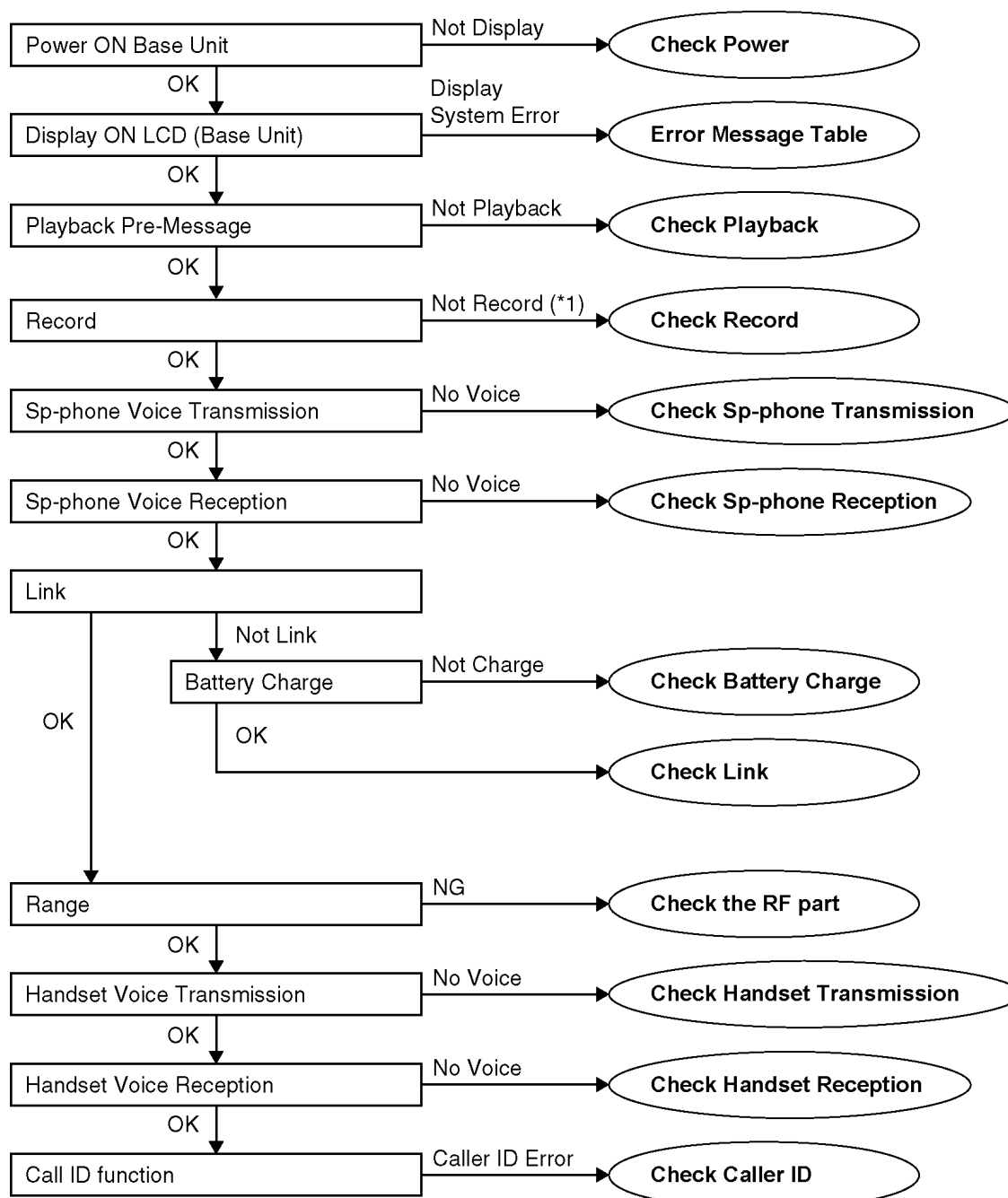


NG

FFC IS INCLINED.

7 TROUBLESHOOTING GUIDE

FLOW CHART



Cross Reference:

Check Power (P.30)
Error Message Table (P.30)
Check Playback (P.32)
Check Record (P.31)
Check Sp-phone Transmission (P.32)
Check Sp-phone Reception (P.33)
Check Battery Charge (P.33)
Check Link (P.34)
Check the RF part (P.35)
Check Handset Transmission (P.42)
Check Handset Reception (P.42)
Check Caller ID (P.42)

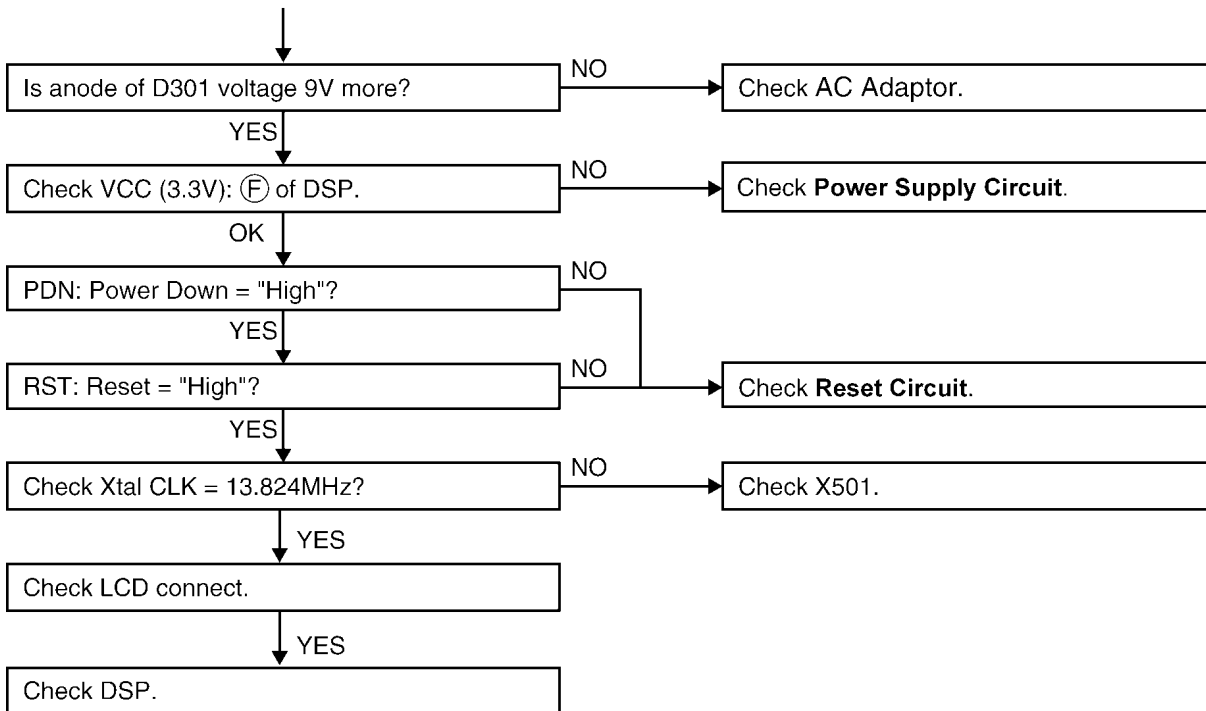
Note:

(*1) When a user claims that the unit disconnects a call right after the greeting message and no incoming messages can be recorded, this symptom can not be reappeared with TEL simulator in the service center. So in that case try **Check Record** (P.31) item (C).

7.1. Check Power

BASE UNIT

Is the AC Adaptor inserted into 220-240V outlet?
(AC Adaptor PQLV1BXY)



Cross Reference:

Power Supply Circuit (P.63)

Reset Circuit (P.65)

Note:

Flash Memory is IC601.

DSP is IC501.

7.2. Error Message Table

Display	Symptom	Remedy
E1	The initialization was tried, but it could not be done.	1. Check the peripheral circuit of Flash Memory visually.
E3 E9	When the adjustment data was checked, an error was detected. (The adjustment data may not be written.)	2. Confirm that the voltage is added to the power supply pin. If no voltage is detected, replace the Flash Memory because it might be defect. 3. Solder the Flash Memory again.

Note:

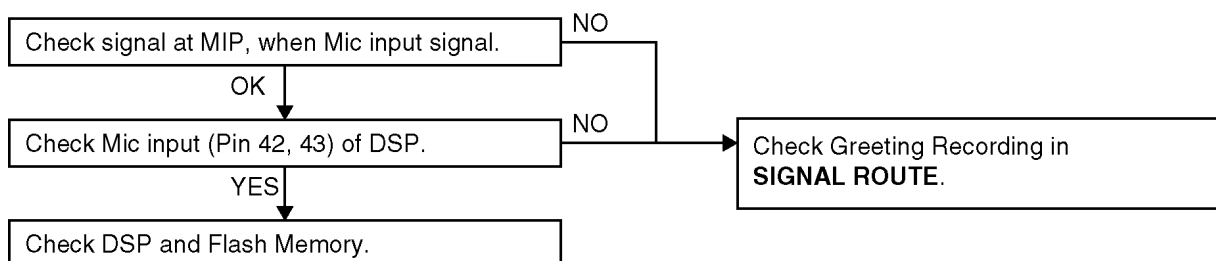
Flash Memory is IC601.

DSP is IC501.

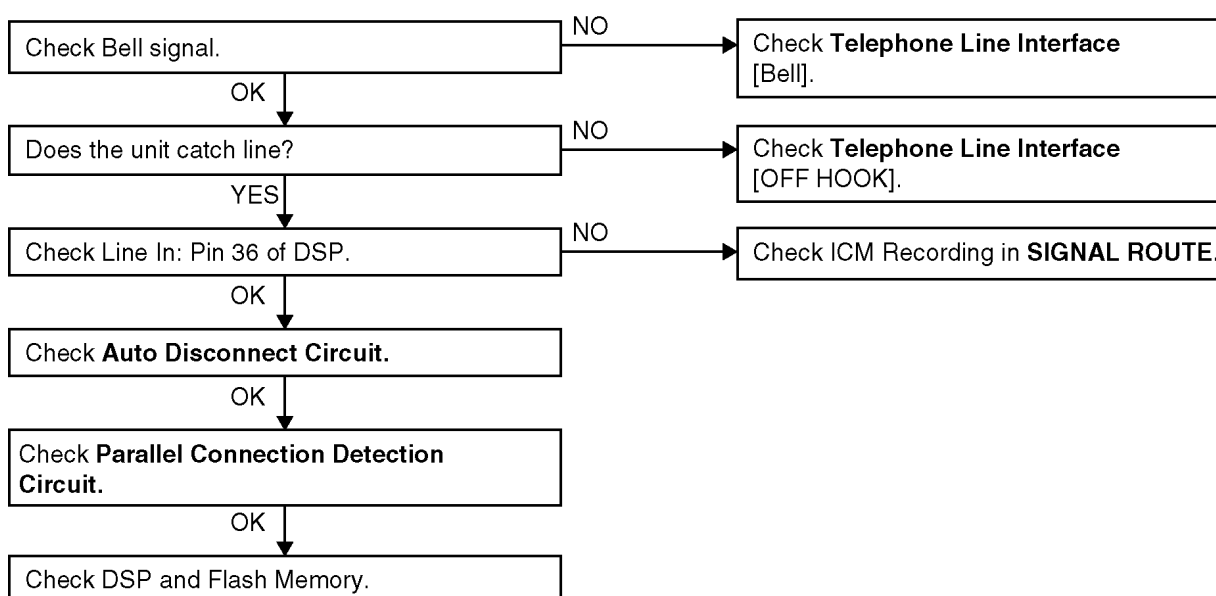
7.3. Check Record

BASE UNIT

a) Not record Greeting Message



b) Not record Incoming Message



c) How to change the Auto Disconnect activation (time)

Some Telephone Company lines (fiber or cable) ON Hook and OFF Hook voltages are lower than conventional lines, which may cause a malfunction of Auto Disconnect detection. To solve this problem, try changing the Auto Disconnect activation through the procedures below.

Auto Disconnect activation		PROCEDURE	Status
Enable	2 sec. & CPU detect [default]	"STOP"+"GREETING CHECK"+"▶▶" simultaneously	Stand-by
	2 sec. & No CPU detect	"STOP"+"GREETING CHECK"+"VOL. ▲" simultaneously	
Disable*		"STOP"+"GREETING CHECK"+"VOL. ▼" simultaneously	

*If the "Disable" is selected, even if the parallel-connected telephone is OFF HOOK, the line isn't disconnected.

d) How to change the VOX level

VOX Level	PROCEDURE
Normal	"STOP"+"INTERCOM" + "VOL. ▲" simultaneously
-10 dB Down	"STOP"+"INTERCOM" + "VOL. ▼" simultaneously

Cross Reference:

SIGNAL ROUTE (P.84)

Telephone Line Interface (P.66)

Auto Disconnect Circuit (P.67)

Parallel Connection Detect Circuit (P.68)

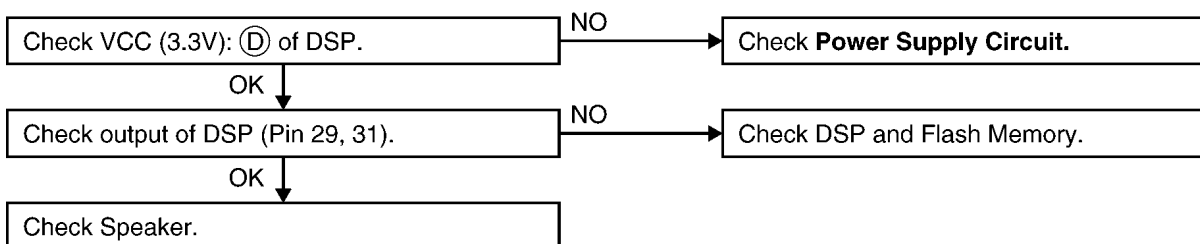
Note:

Flash Memory is IC601.

DSP is IC501.

7.4. Check Playback

BASE UNIT



Cross Reference:

Power Supply Circuit (P.63)

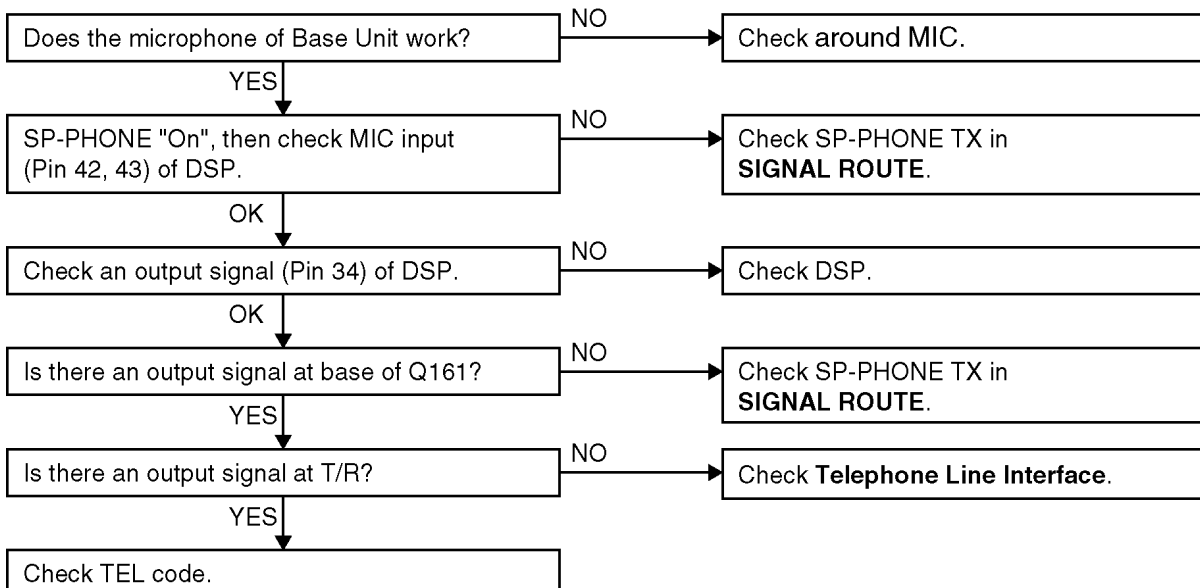
Note:

Flash Memory is IC601.

DSP is IC501.

7.5. Check Sp-phone Transmission

BASE UNIT



Cross Reference:

SIGNAL ROUTE (P.84)

Telephone Line Interface (P.66)

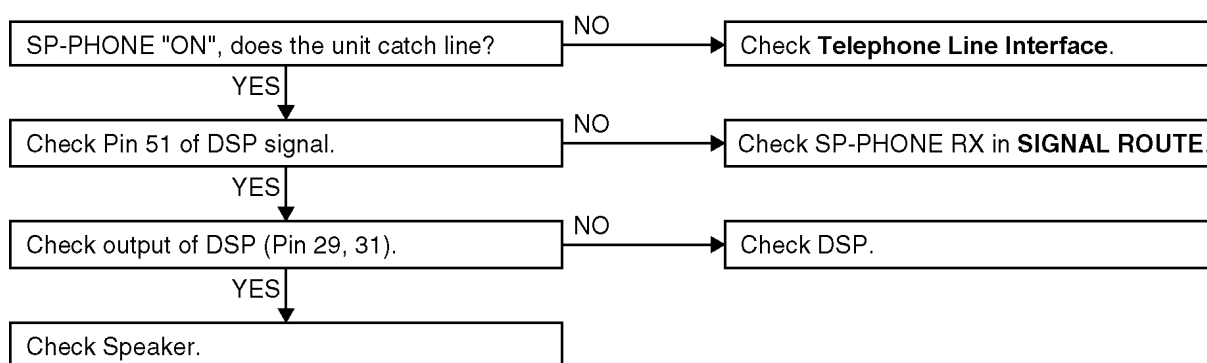
Note:

Flash Memory is IC601.

DSP is IC501.

7.6. Check Sp-phone Reception

BASE UNIT



Cross Reference:

Telephone Line Interface (P.66)

SIGNAL ROUTE (P.84)

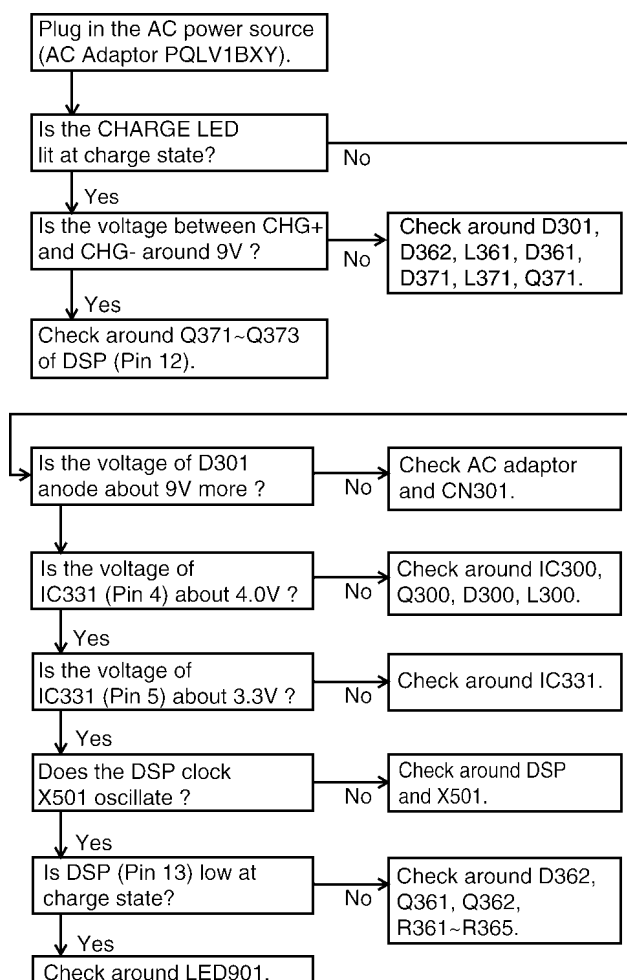
Note:

Flash Memory is IC601.

DSP is IC501.

7.7. Check Battery Charge

BASE UNIT

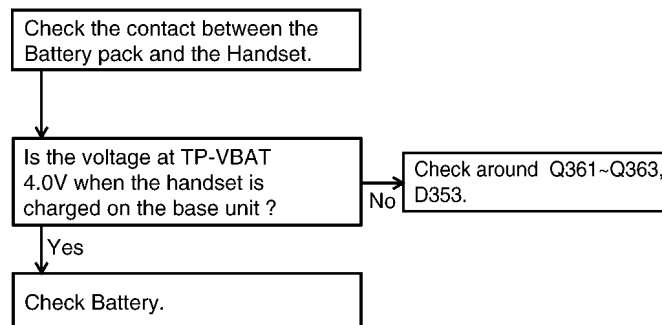


Note:

Flash Memory is IC601.

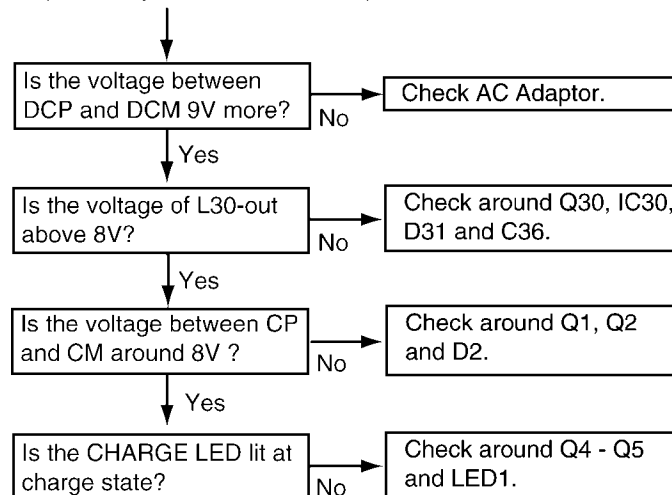
DSP is IC501.

HANDSET



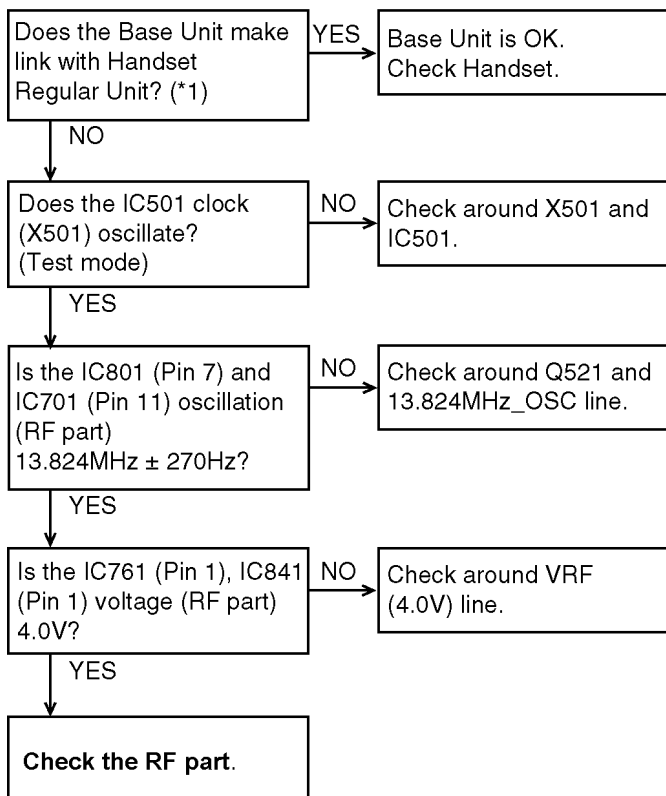
CHARGER UNIT

Is the AC Adaptor inserted into AC outlet?
(AC Adaptor KX-TCA1BX-4)



7.8. Check Link

BASE UNIT



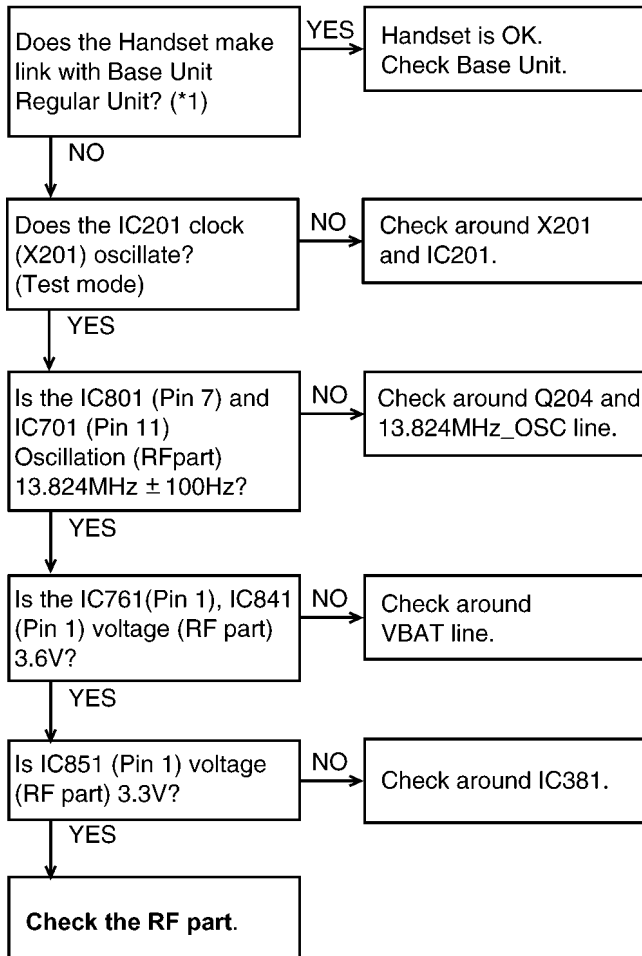
Note:

Flash Memory is IC601.

DSP is IC501.

(*1) Refer to **Finding out the Defective part** (P.35).

HANDSET



Cross Reference:

Check the RF part (P.35)

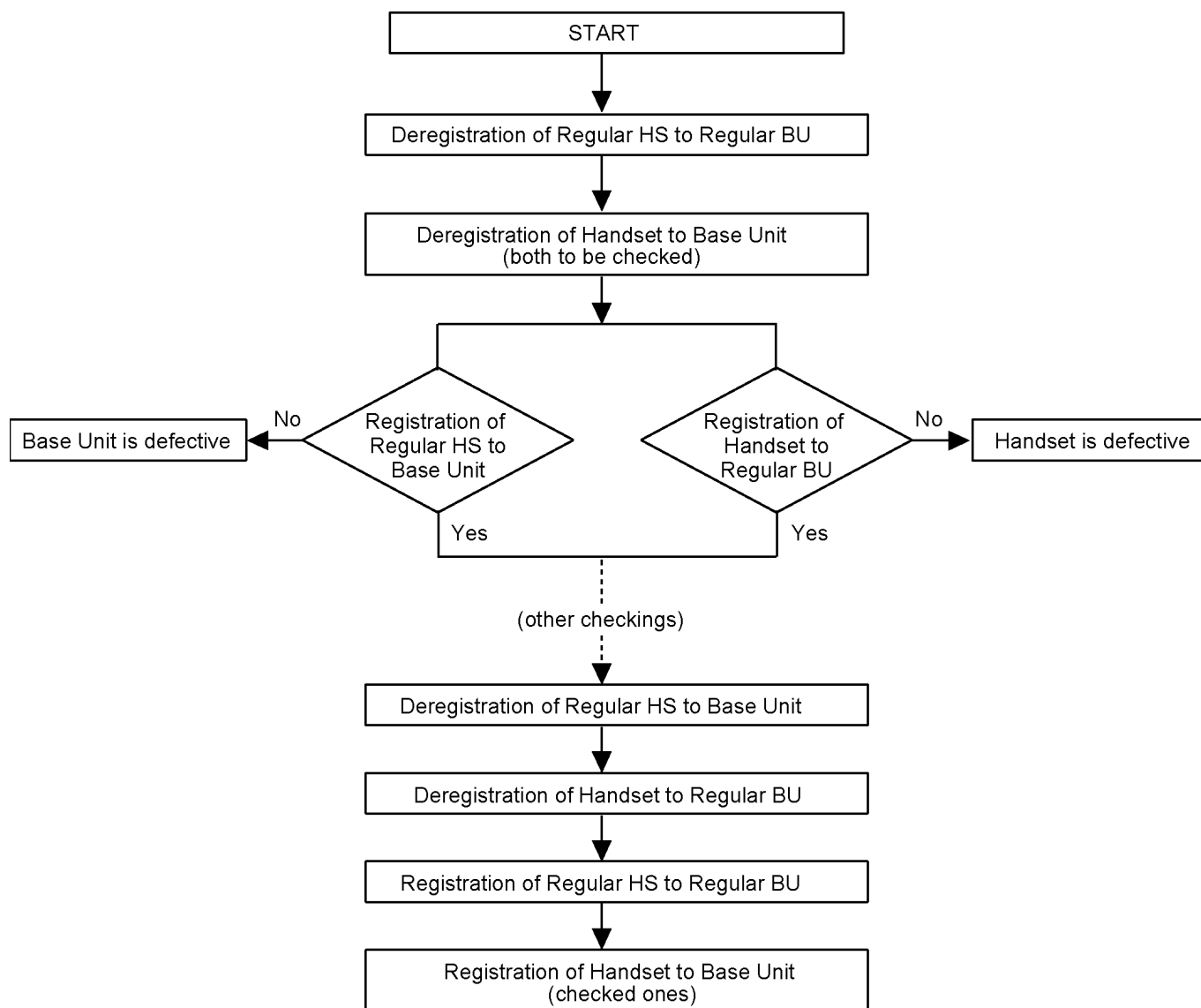
7.9. Check the RF part

7.9.1. Finding out the Defective part

1. Prepare Regular HS(*1) and Regular BU(*2).
2. Cancel the Registration of the regular HS to the regular BU to confirm that neither of them is defective.
3. Cancel the Registration of Handset (to be checked) to Base Unit (to be checked).
If this operation fails in some ways, either the Handset or the Base Unit is defective, then skip this procedure.
4. a. Re-register regular HS (Normal mode) to Base Unit (to be checked).
If this operation fails in some ways, the Base Unit is defective.
- b. Re-register Handset (to be checked) to regular BU (Normal mode).
If this operation fails in some ways, the Handset is defective.

After All the Checkings or Repairing

1. After all the checkings or repairing, cancel the Registration of Regular HS to checked Base Unit, and checked Handset to Regular BU.
2. Re-register the checked Handset to the checked Base Unit, and Regular HS to Regular BU.



Note:

- (*1) HS: Handset
(*2) BU: Base Unit

7.9.1.1. Canceling the Handset Registration

If you no longer need to use the handset or if you want to use the handset with a different base unit of the same model, it is necessary to cancel the handset's registration from the current base unit.

Important:

- Before canceling, make sure the base unit is not being used.
- Have the handset and base unit near each other when canceling the handset.

- 1 Press **[MENU]** (center of joystick).
- 2 Scroll to , then press **[SELECT]**.
- 3 Scroll to "Registration", then press **[SELECT]**.
- 4 Scroll to "Deregistration", then press **[SELECT]**.
- 5 Enter **[3] [3] [5]**.
- 6 Press **[OK]**.
 - The handset's extension number (**1** to **8**) will disappear from the display.
 - If the handset beeps 3 times, you entered a wrong code. Enter "335", then press **[OK]**.

7.9.1.2. Reregistering the Handset

If you want to use the handset with a different base unit of the same model, register it to that base unit. The handset will be given a new extension number of that base unit.

Important:

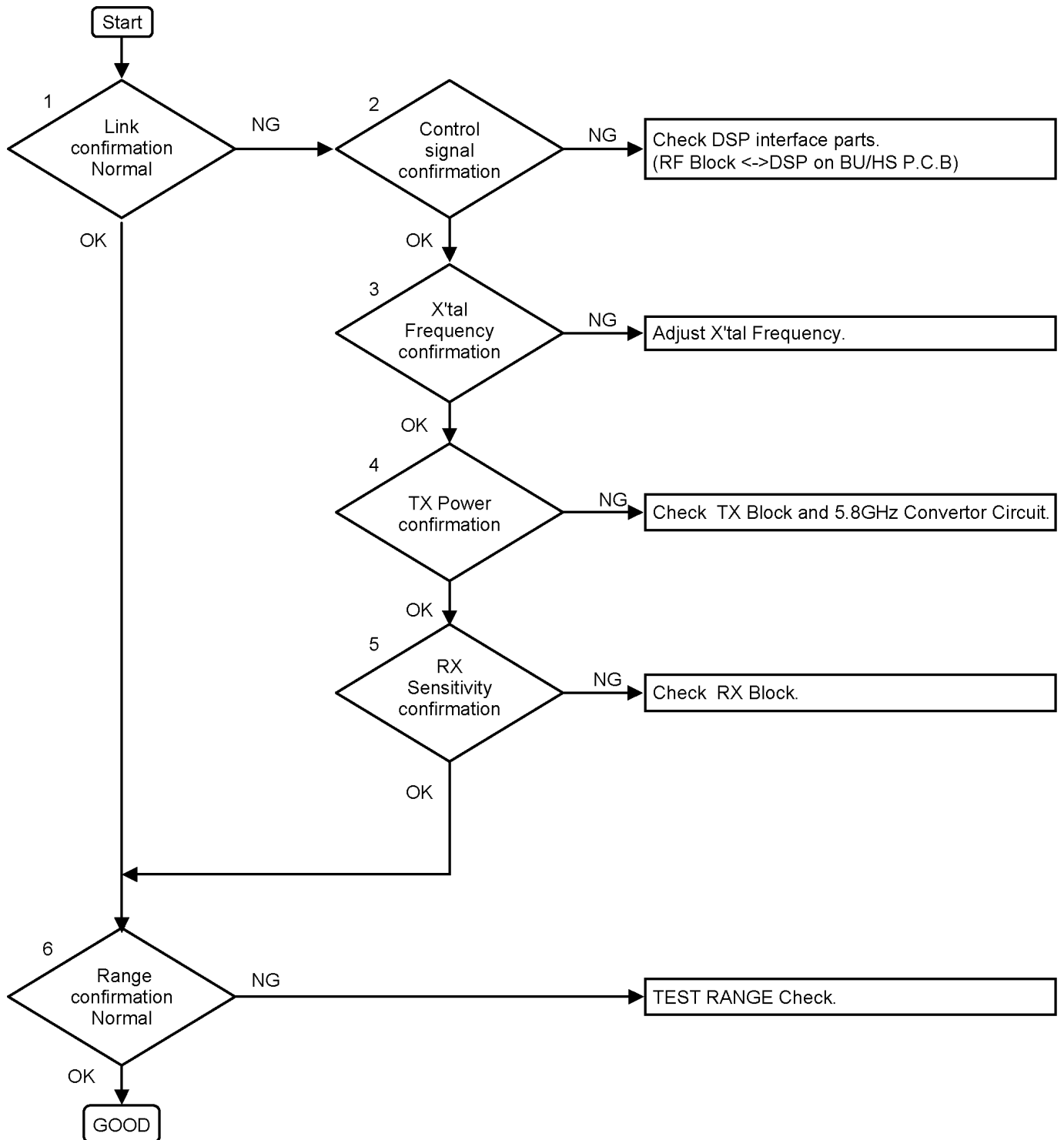
- Before registering, make sure the base unit and the other handsets are not being used.
- Have the handset and base unit near each other when registering the handset.
- If you have already canceled the handset registration at the previous base unit, start from step 5.

- 1 **Handset:**
Press **[MENU]** (center of joystick).
- 2 Scroll to , then press **[SELECT]**.
- 3 Scroll to "Registration", then press **[SELECT]**.
- 4 Scroll to "HS registration", then press **[SELECT]**.
- 5 **Base unit:**
Press and hold **[INTERCOM]** until the CHARGE indicator flashes.
 - After the CHARGE indicator starts flashing, the rest of the procedure must be completed within 1 minute.
- 6 **Handset:**
Press **[OK]** (right soft key), then wait until the handset beeps.
 - Registration is complete.
 - The handset's new extension number (**1** to **8**) will be displayed.

7.9.2. RF Check Flowchart

Each item (1 ~ 6) of RF Check Flowchart corresponds to **Check Table for RF part** (P.38).

Please refer to the each item.



7.9.3. Check Table for RF part

No.	Item	BU (Base Unit) Check	HS (HandSet) Check
1	Link Confirmation Normal HS, BU Mode [Normal Mode]	1. Register Regular HS to BU (to be checked). 2. Press [Talk] key of the Regular HS to establish link.	1. Register HS (to be checked) to Regular BU. 2. Press [Talk] key of the HS to establish link.
2	Control signal confirmation HS, BU Mode: [Test Burst Mode] (*1)	Check DSP interface. (*2)	Check DSP interface. (*2)
3	X'tal Frequency confirmation (*7) HS, BU Mode: [Adjustment] (*3)	Check X'tal Frequency. (13.824000MHz $\pm$ 270Hz)	Check X'tal Frequency. (13.824000MHz $\pm$ 100Hz)
4	TX Power confirmation Regular HS, BU Mode: [RX-CW Mode.] (*4) HS, BU (to be checked) Mode: [Test Burst Mode.] (*1)	1. Place the Regular HS about 15cm away from the BU. 2. Confirm that RSSI of the Regular HS is approximately 2V by Oscilloscope. (*5)	1. Place the HS about 15cm away from the Regular BU. 2. Confirm that RSSI of the Regular BU is approximately 2V by Oscilloscope. (*6)
5	RX Sensitivity confirmation Regular HS, BU Mode: [Test Burst Mode.] (*1) HS, BU (to be checked) Mode: [RX-CW Mode.] (*4)	1. Place the Regular HS about 15cm away from the BU. 2. Confirm that RSSI of the BU is approximately 2V by Oscilloscope. (*5)	1. Place the HS about 15cm away from the Regular BU. 2. Confirm that RSSI of the HS is approximately 2V by Oscilloscope. (*6)
6	Range Confirmation Normal HS, BU Mode: [Normal Mode]	1. Register Regular HS to BU (to be checked). 2. Press [Talk] key of the Regular HS to establish link. 3. Compare the range of the BU (being checked) with that of the Regular BU.	1. Register HS (to be checked) to Regular BU. 2. Press [Talk] key of the HS to establish link. 3. Compare the range of the HS (being checked) with that of the Regular HS.

Note:

- (*1)(*3)(*4) **ADJUSTMENT AND TEST MODE** (P.43)
- (*2) **RF-DSP Interface Signal Wave Form** (P.40)
- (*5) **Base Unit Reference Drawing** (P.52)
- (*6) **Handset Reference Drawing** (P.53)
- (*7) **X501 (Base Unit), X201 (Handset) Check** (P.51)

7.9.4. TEST RANGE Check

Circuit block which range is defective can be found by the following check.

Item	BU (Base Unit) Check	HS (HandSet) Check
Range Confirmation TX TEST (TX Power check) HS, BU Mode: [Test Link Mode] (*1)	1. Register Regular HS to BU (to be checked). 2. Set BU to "Test Link mode". 3. Set Regular HS to "Test Link mode". *Set TX Power and RX Sensitivity of the BU and the Regular HS by CHART1. * At distance of about 20m between HS and BU, Link OK = TX Power of the BU is OK. No Link = TX Power of the BU is NG.	1. Register HS (to be checked) to Regular BU. 2. Set Regular BU to "Test Link mode". 3. Set HS to "Test Link mode". *Set TX Power and RX Sensitivity of the HS and the Regular BU by CHART1. * At distance of about 20m between HS and BU, Link OK = TX Power of the HS is OK. No Link = TX Power of the HS is NG.
Range Confirmation RX TEST (RX sensitivity check) HS, BU Mode: [Test Link Mode] (*1)	1. Register Regular HS to BU (to be checked). 2. Set BU to "Test Link mode". 3. Set Regular HS to "Test Link mode". *Set TX Power and RX Sensitivity of the BU and Regular HS by CHART1. * At distance of about 20m between HS and BU, Link OK= RX Sensitivity of the BU is OK. No Link = RX Sensitivity of the BU is NG.	1. Register HS (to be checked) to Regular BU. 2. Set Regular BU to "Test Link mode". 3. Set HS to "Test Link mode". * Set TX Power and RX Sensitivity of Checking_HS and Regular_BU by CHART1. * At distance of about 20m between HS and BU, Link OK= RX Sensitivity of the HS is OK. No Link = RX Sensitivity of the HS is NG.

CHART1: Setting of TX Power and RX Sensitivity in Range Confirmation TX TEST, RX TEST

	BU (to be checked)		Regular_HS	
	TX Power	RX Sens.	TX Power	RX Sens.
BU (Base Unit) TX Power Check	High	High	High	Low
BU (Base Unit) RX Sensitivity Check	High	High	Low	High

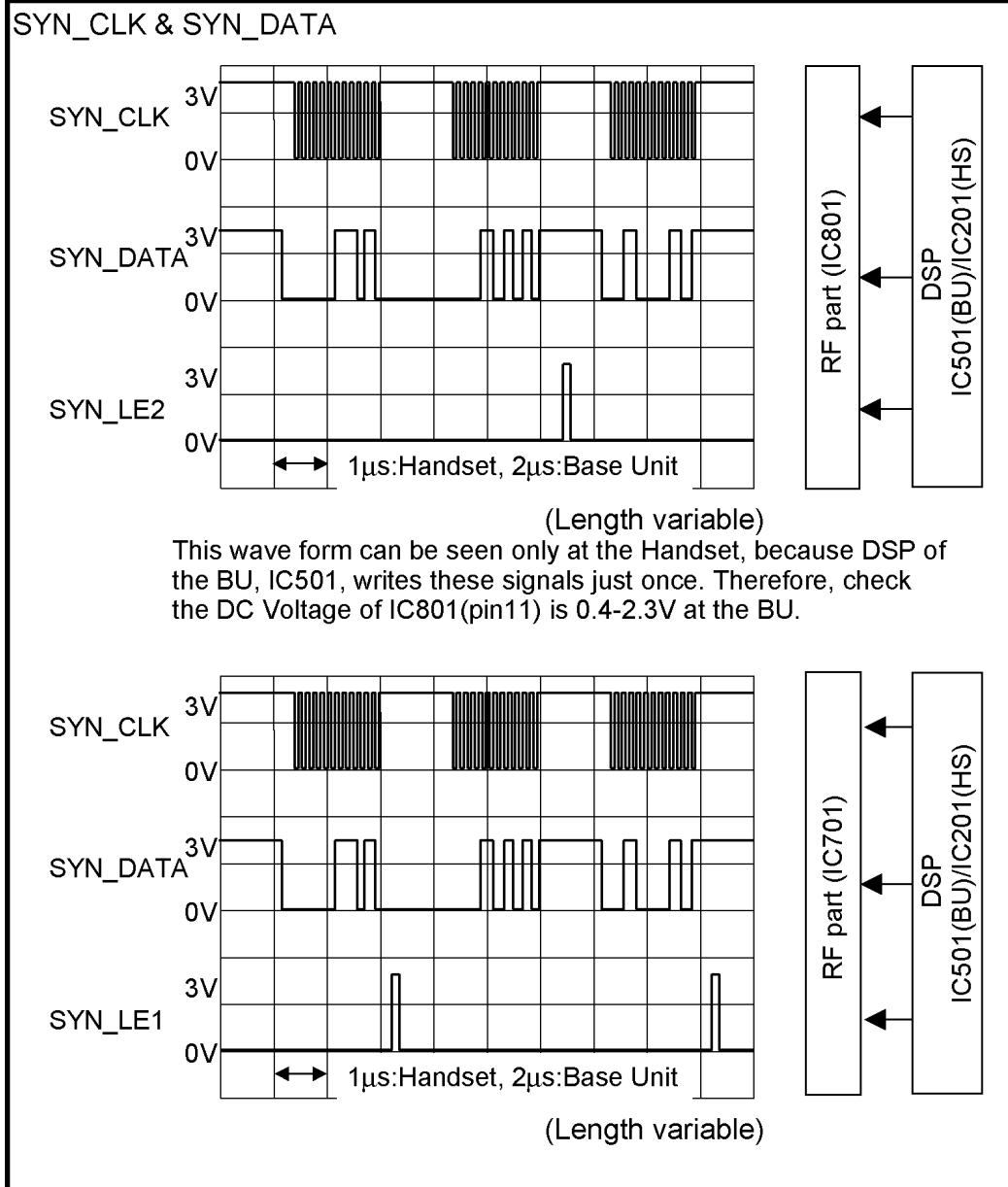
	HS (to be checked)		Regular_BU	
	TX Power	RX Sens.	TX Power	RX Sens.
HS (Handset) TX Power Check	High	High	High	Low
HS (Handset) RX Sensitivity Check	High	High	Low	High

Note:

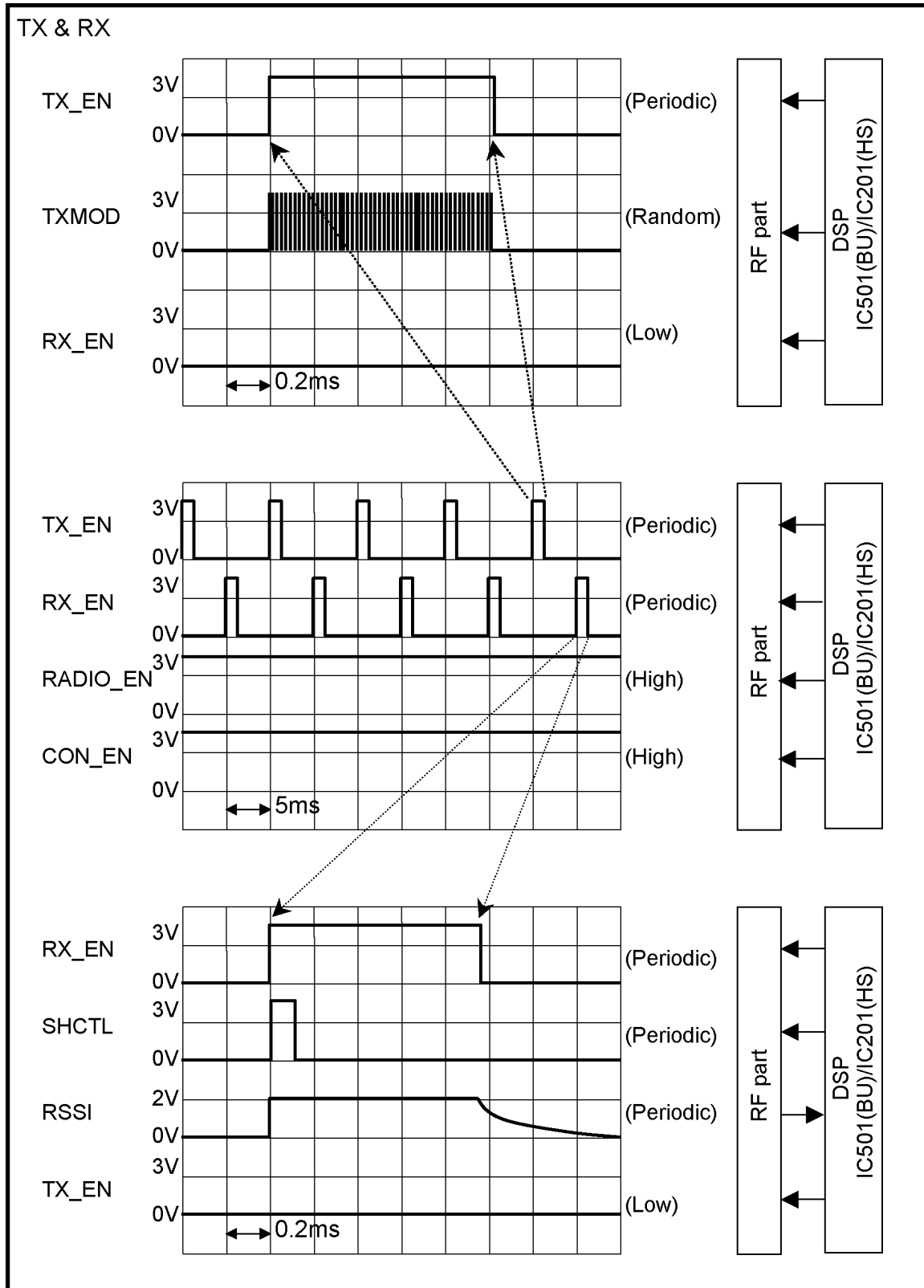
(*1) **ADJUSTMENT AND TEST MODE** (P.43)

7.9.5. RF-DSP Interface Signal Wave Form

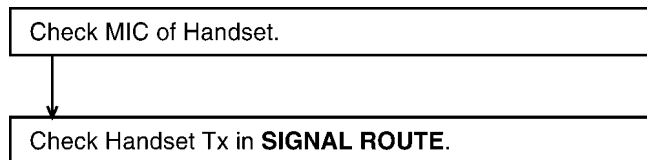
<Test Burst Mode>



<Test Burst Mode>



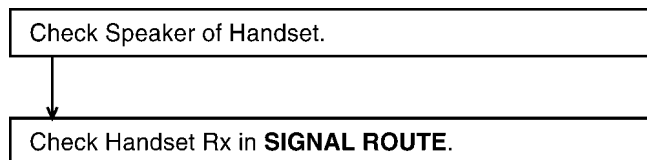
7.10. Check Handset Transmission



Cross Reference:

SIGNAL ROUTE (P.84).

7.11. Check Handset Reception



Cross Reference:

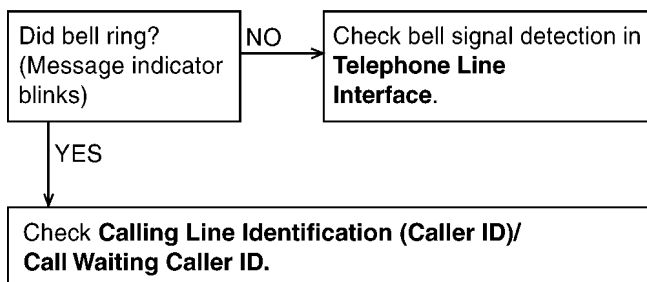
SIGNAL ROUTE (P.84).

Note:

When checking the RF part, Refer to **Check the RF part** (P.35)

7.12. Check Caller ID

BASE UNIT



Cross Reference:

Telephone Line Interface (P.66).

Calling Line Identification (Caller ID) (P.69).

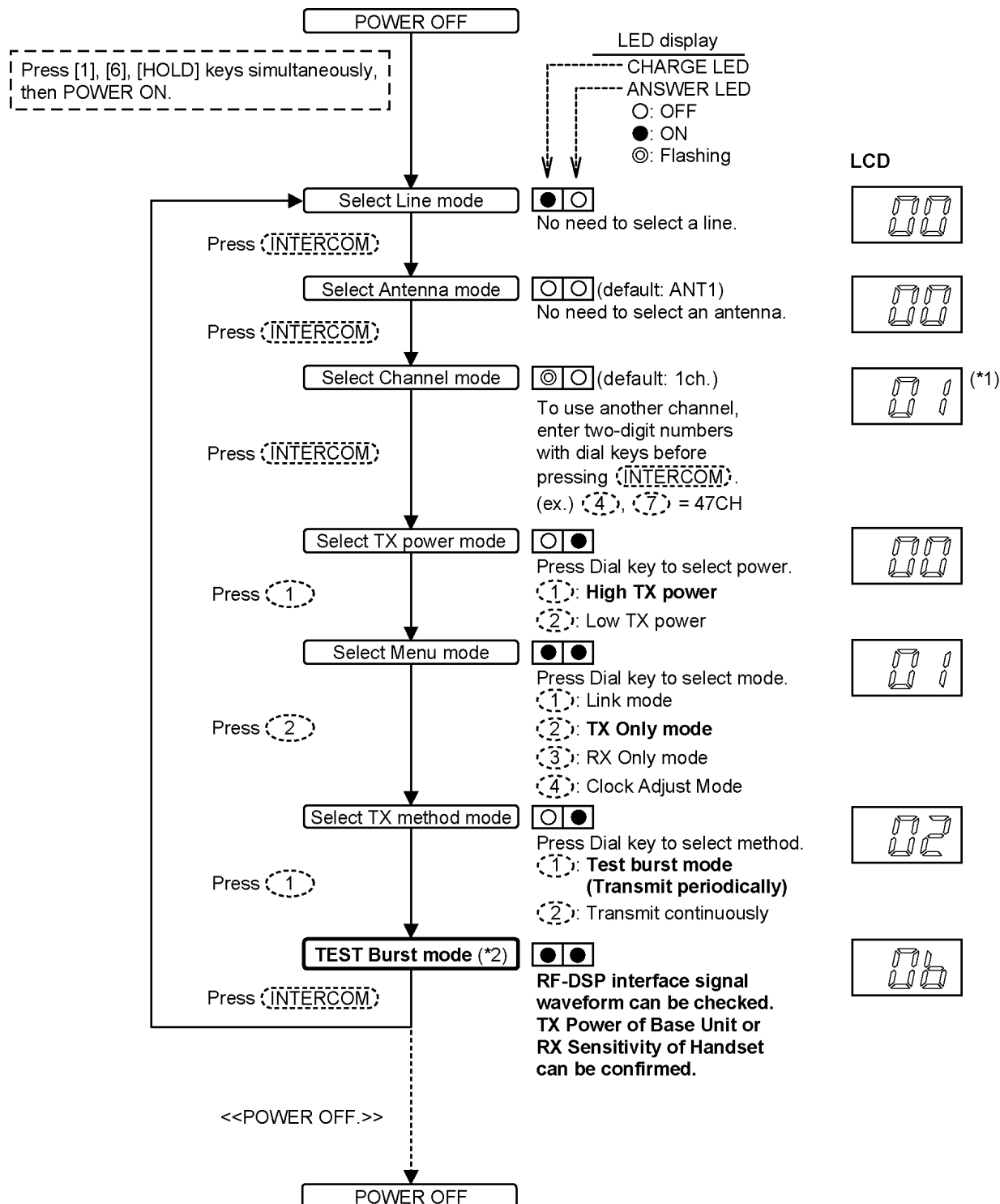
Note:

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

8 ADJUSTMENT AND TEST MODE

8.1. Test Mode Flow Chart for Base Unit

8.1.1. Test Burst Mode

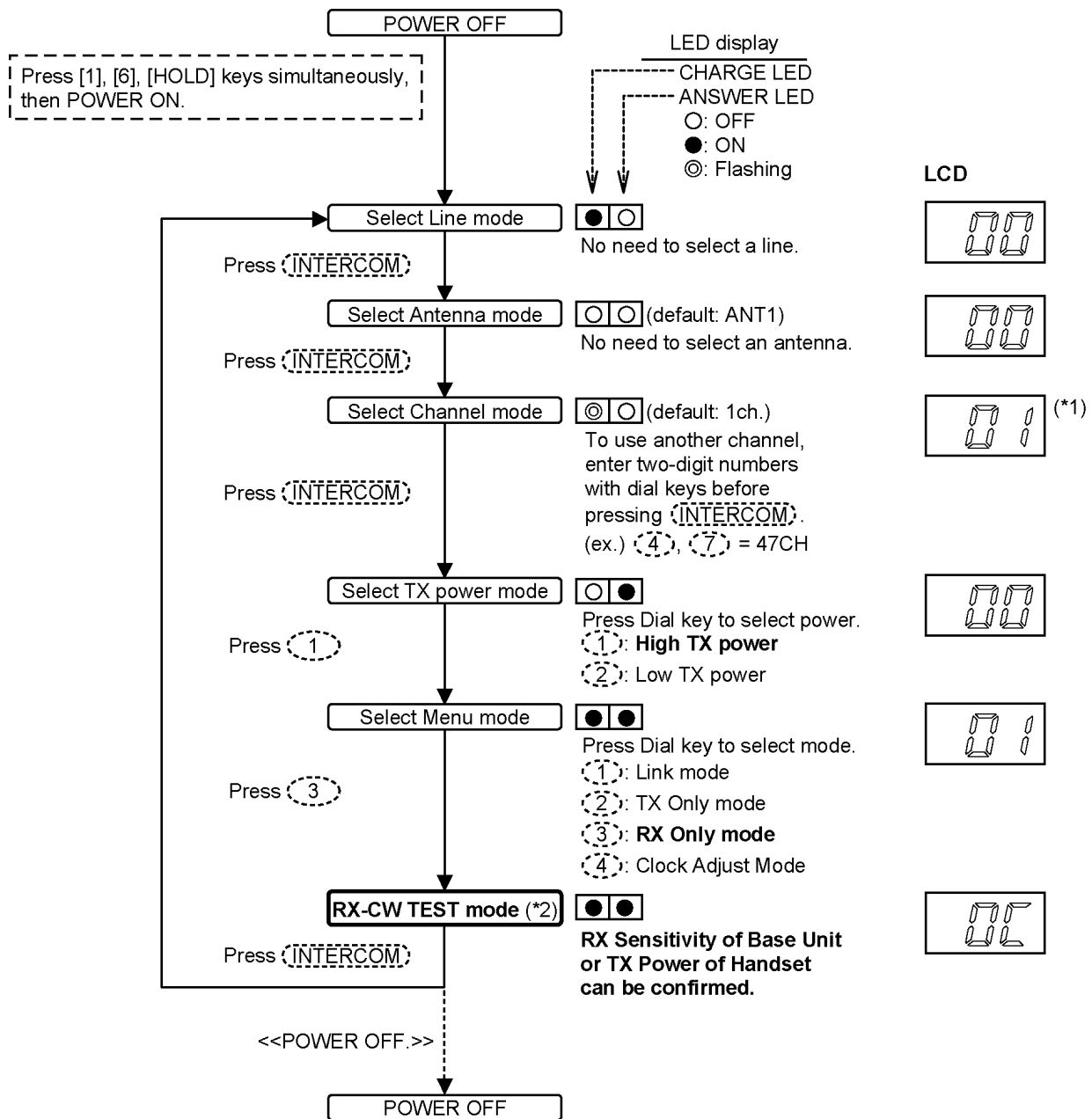


Note:

(*1) LCD displays the Channel number.

(*2) Refer to **Check Table for RF part** (P.38) and **RX-CW Test Mode** (P.48) for proper Handset settings.

8.1.2. RX-CW Test Mode

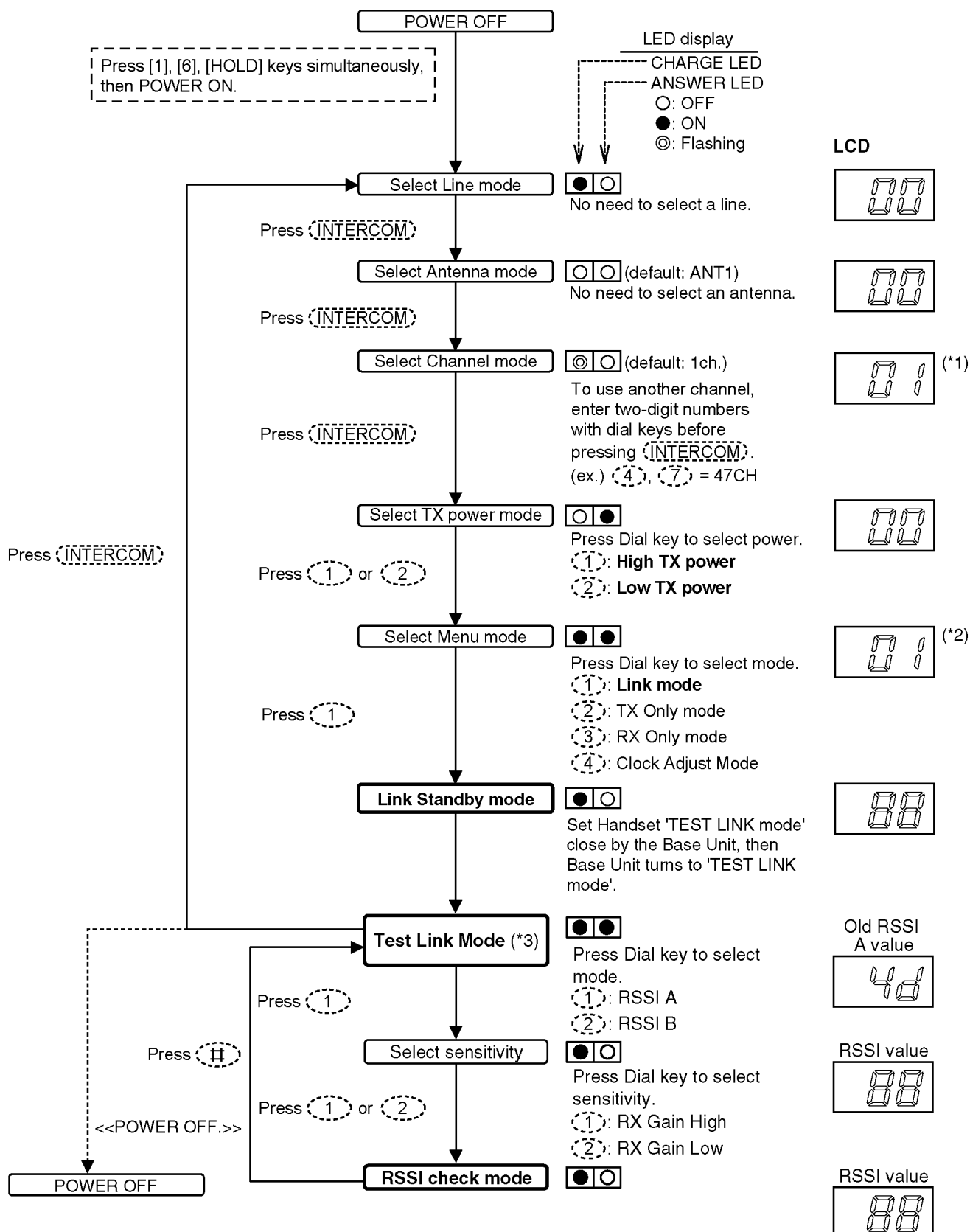


Note:

(*1) LCD displays the Channel number.

(*2) Refer to **Check Table for RF part** (P.38) and **Test Burst Mode** (P.47) for proper Handset settings.

8.1.3. Test Link Mode



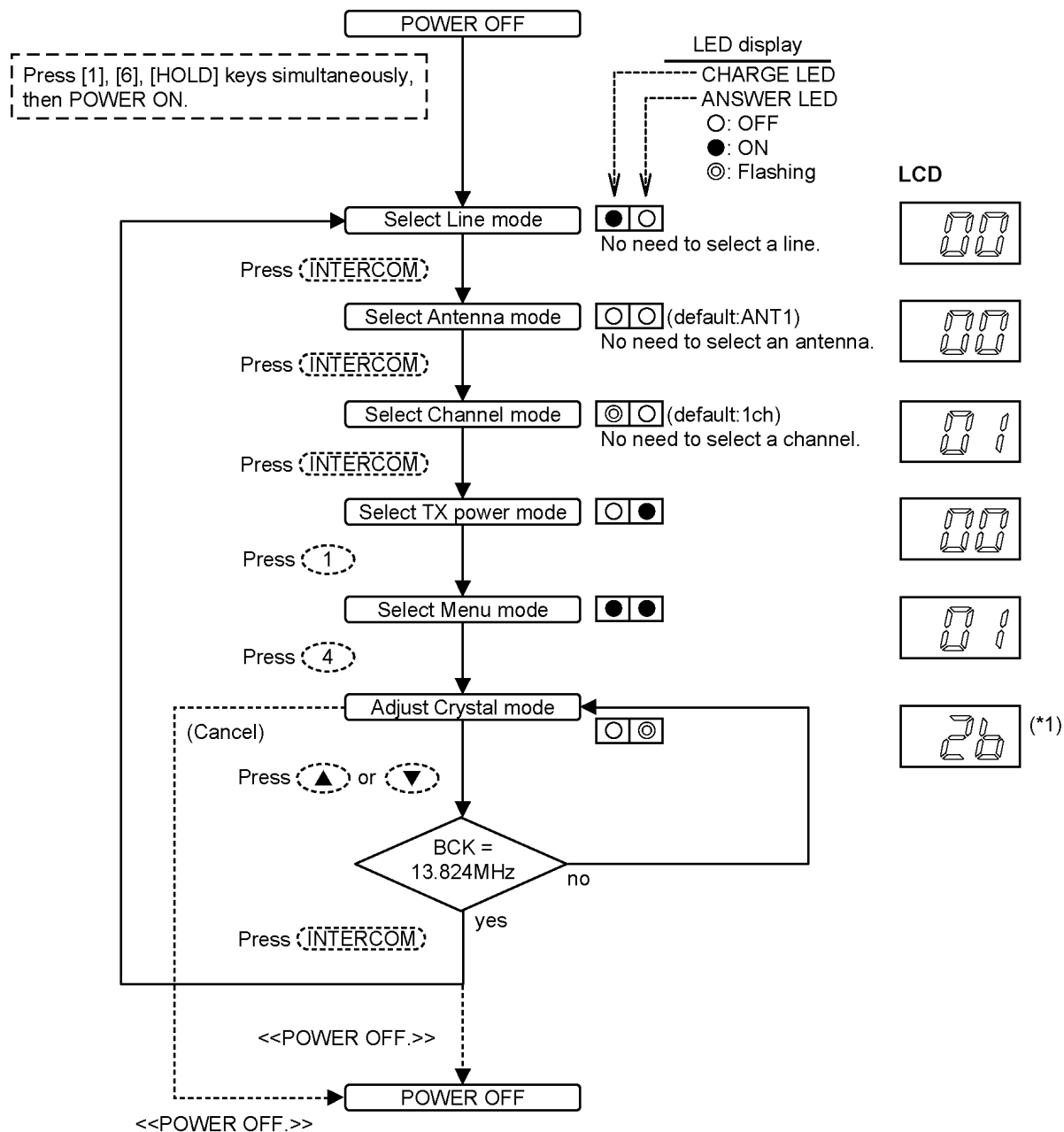
Note:

(*1) LCD displays the Channel number.

(*2) LCD displays the number of selected power.

(*3) Refer to **Check Table for RF part** (P.38) and **Test Link Mode** (P.49) for proper Handset settings.

8.1.4. Adjustment Mode



Cross Reference

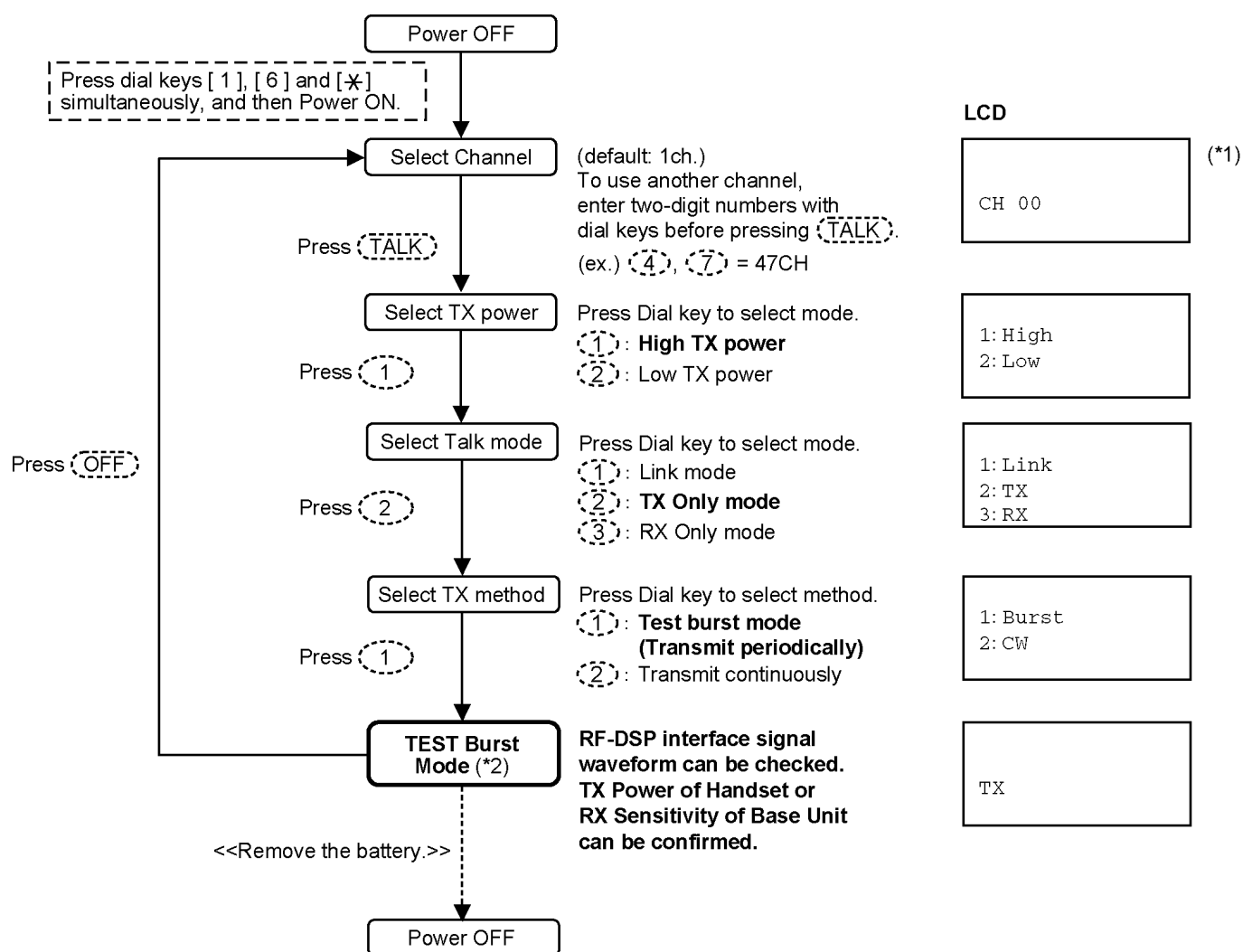
Check and Adjust X501 (Base Unit) Frequency (P.51)

Note:

(*) This is an adjustment value (hex.).

8.2. Test Mode Flow Chart for Handset

8.2.1. Test Burst Mode



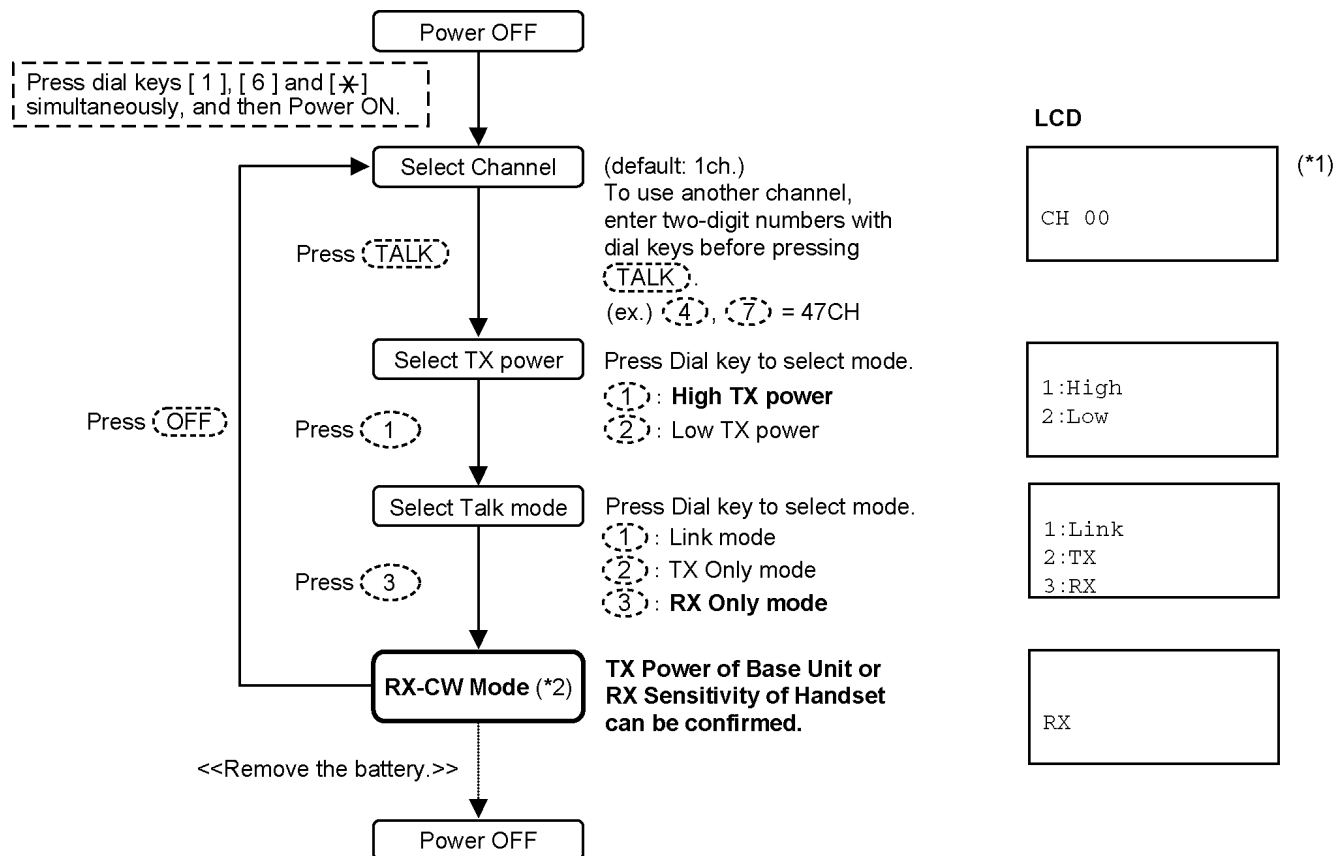
Note:

(*1) LCD displays the Channel number.

(exception: default/ CH00 = 1ch.)

(*2) Refer to **Check Table for RF part** (P.38) and **RX-CW Test Mode** (P.44) for proper Base Unit settings.

8.2.2. RX-CW Test Mode



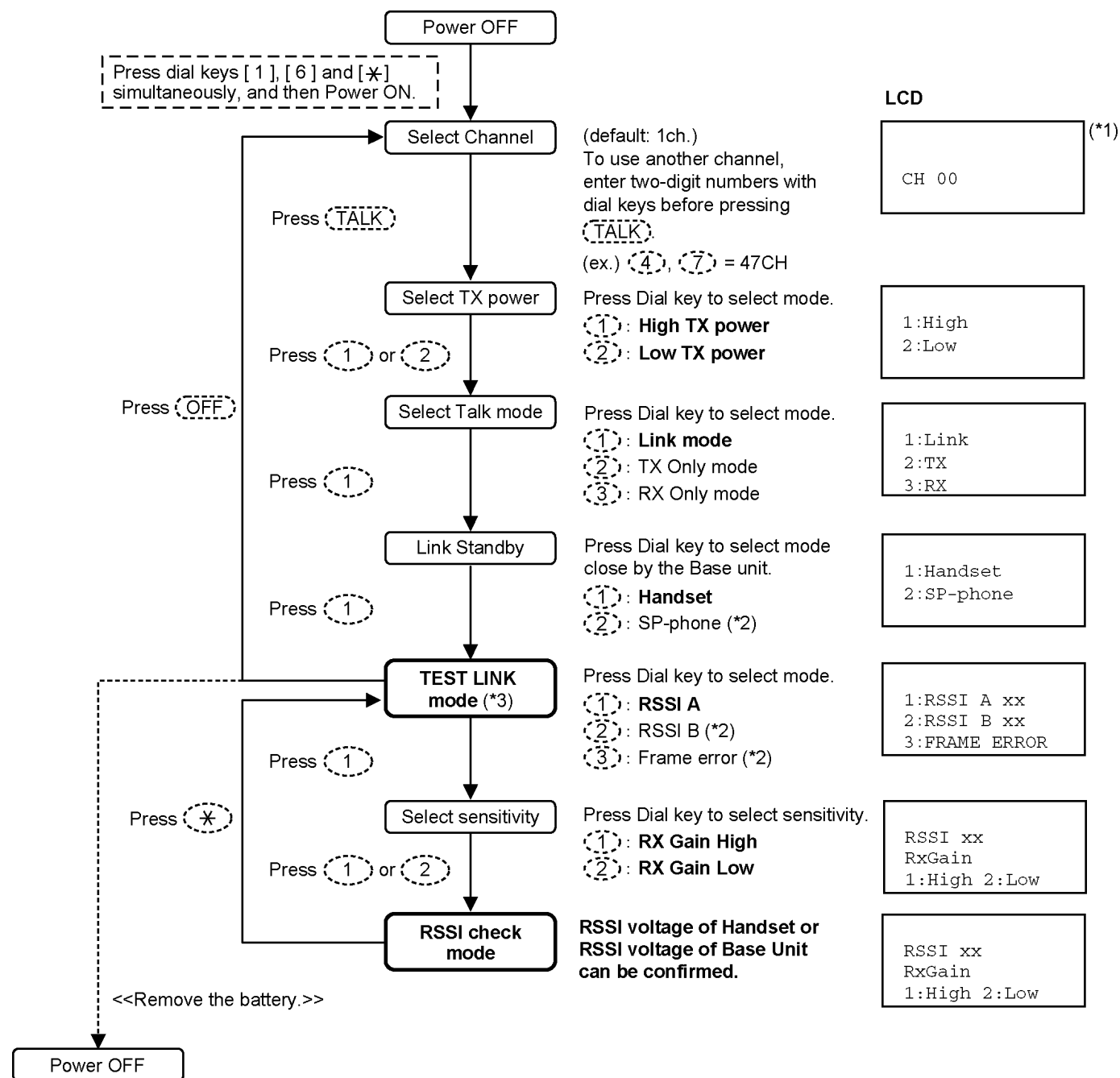
Note:

(*) LCD displays the Channel number.

(exception: default/ CH00 = 1ch.)

(*) Refer to **Check Table for RF part** (P.38) and **Test Burst Mode** (P.43) for proper Base Unit settings.

8.2.3. Test Link Mode



Note:

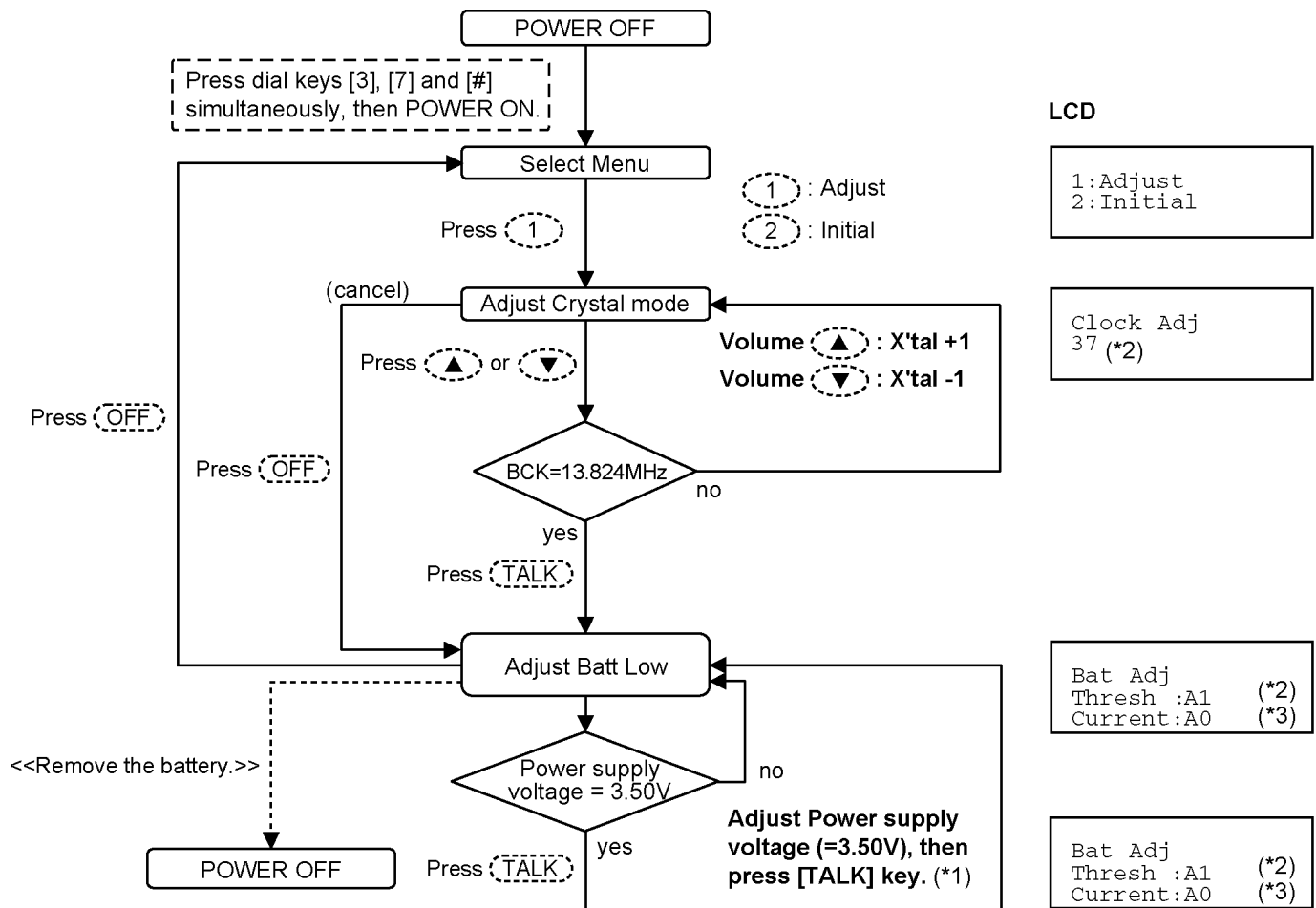
(*1) LCD displays the Channel number.

(exception: default/ CH00 = 1ch.)

(*2) for factory use only.

(*3) Refer to **Check Table for RF part** (P.38) and **Test Link Mode** (P.45) for proper Base Unit settings.

8.2.4. Adjustment Mode



Cross Reference

(*1) **Adjust Battery Low Detector Voltage (Handset)** (P.51)

Note:

(*2) These are the default values.

(*3) These values may not be fixed depending on the battery strength.

8.3. X501 (Base Unit), X201 (Handset) Check

Equipment: Frequency counter

Check Point for measurement: BCK

Checking tolerance: 13.824MHz $\pm$ 270Hz (Base Unit)/13.824MHz $\pm$ 100Hz (Handset)

8.3.1. Check and Adjust X501 (Base Unit) Frequency

1. Set up Base Unit in TEST mode.
2. Press following keys in order to Adjust Crystal mode. [INTERCOM], [INTERCOM], [INTERCOM], [1], [4]. Check BCK frequency.
3. If the BCK frequency is out of the checking tolerance ($\pm$ 270Hz), adjust to Adjustment tolerance ($\pm$ 30Hz) by pressing [▲] or [▼] key.
Adjustment Tolerance: 13.824MHz $\pm$ 30Hz
4. Press [INTERCOM] key to write the new frequency factor in Memory.
5. Turn the power off. Then this value is available.

When you have replaced IC501 and IC601, adjust X501 by the procedure above.

Cross Reference:

Adjustment Mode (P.46)

8.3.2. Check and Adjust X201 (Handset) Frequency

1. Set DC power supply to 3.9V.
2. Set up Handset in TEST mode (Adjustment flow).
3. Press [1] key to Adjust Crystal mode ("Clock Adj." is displayed on LCD). Check BCK frequency.
4. If the BCK frequency is out of the checking tolerance ($\pm$ 100Hz), adjust to Adjustment tolerance ($\pm$ 30Hz) by pressing [▲] or [▼] key.
Adjustment Tolerance: 13.824MHz $\pm$ 30Hz
5. Press [TALK] key to write the new frequency factor in EEPROM.
6. Turn the power off. Then this value is available.

When you have replaced IC201 and IC241, adjust X201 by the procedure above.

Cross Reference:

Adjustment Mode (P.50)

8.4. Adjust Battery Low Detector Voltage (Handset)

After Handset's DSP (IC201) or EEPROM (IC241) replacement, Re-writing Battery Low voltage to EEPROM is required.

With following Handset Adjustment Flow, adjust DC power supply and DC voltmeter by the procedure below.

1. Set DC power supply to 3.9V.
2. Set up Handset in TEST mode (Adjustment flow).
3. Press [1] key and [OFF] key to Adjust Batt Low mode. ("Bat Adj." is displayed on LCD)
4. Change the voltage of the DC power supply to 3.50V accurately. Check the voltage at P.C. board pads because some voltage drops occur due to the usage of long or thin cables.
5. Press [TALK] key to write voltage value in EEPROM.
6. Turn the power off. Then this value is available.

Note:

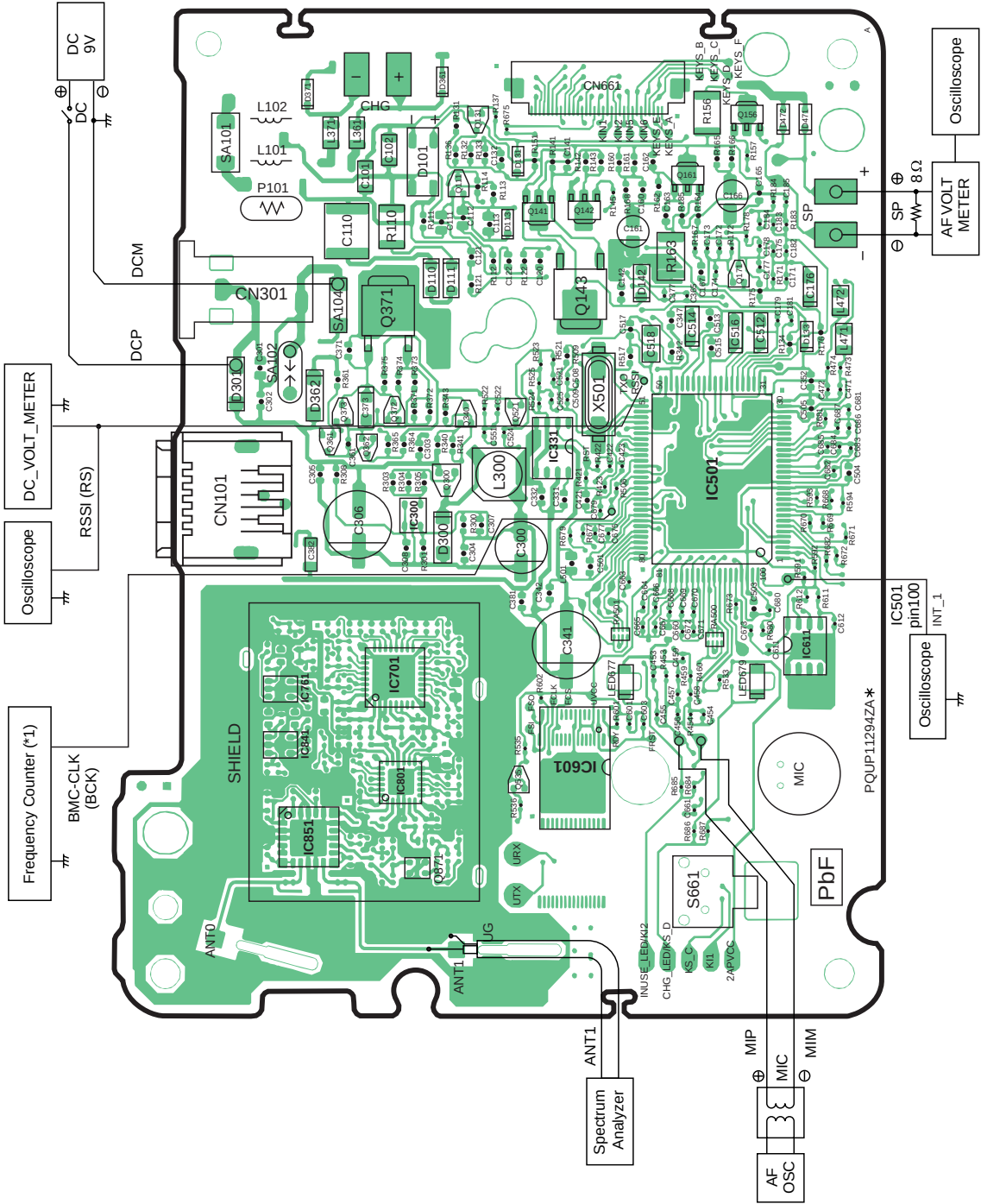
Refer to **Handset Reference Drawing** (P.53) for connection of DC power supply and voltmeter.

Cross Reference:

Adjustment Mode (P.50)

8.5. Base Unit Reference Drawing

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



Note:

(*1) is referred to No.3 of Check Table for RF part (P.38)

Note: (*1) is referred to No.3 of Check Table for RF part (P.38)

8.7. Frequency Table

8.7.1. Base Unit

Channel	TX/RX Frequency (MHz)	Channel	TX/RX Frequency (MHz)	Channel	TX/RX Frequency (MHz)
1	5759.702398	33	5788.242242	65	5816.782086
2	5760.592291	34	5789.132135	66	5817.671978
3	5761.486139	35	5790.025982	67	5818.565826
4	5762.376031	36	5790.915875	68	5819.455719
5	5763.269879	37	5791.809723	69	5820.349566
6	5764.159771	38	5792.699615	70	5821.239459
7	5765.053619	39	5793.593463	71	5822.133307
8	5765.943512	40	5794.483355	72	5823.023199
9	5766.837359	41	5795.377203	73	5823.917047
10	5767.727252	42	5796.267096	74	5824.806939
11	5768.621100	43	5797.160943	75	5825.700787
12	5769.510992	44	5798.050836	76	5826.590680
13	5770.404840	45	5798.944684	77	5827.484527
14	5771.294732	46	5799.834576	78	5828.374420
15	5772.188580	47	5800.728424	79	5829.268268
16	5773.078473	48	5801.618316	80	5830.158160
17	5773.972320	49	5802.512164	81	5831.052008
18	5774.862213	50	5803.402057	82	5831.941900
19	5775.756060	51	5804.295904	83	5832.835748
20	5776.645953	52	5805.185797	84	5833.725641
21	5777.539801	53	5806.079644	85	5834.619488
22	5778.429693	54	5806.969537	86	5835.509381
23	5779.323541	55	5807.863385	87	5836.403228
24	5780.213434	56	5808.753277	88	5837.293121
25	5781.107281	57	5809.647125	89	5838.186969
26	5781.997174	58	5810.537018		
27	5782.891021	59	5811.430865		
28	5783.780914	60	5812.320758		
29	5784.674762	61	5813.214605		
30	5785.564654	62	5814.104498		
31	5786.458502	63	5814.998346		
32	5787.348394	64	5815.888238		

8.7.2. Handset

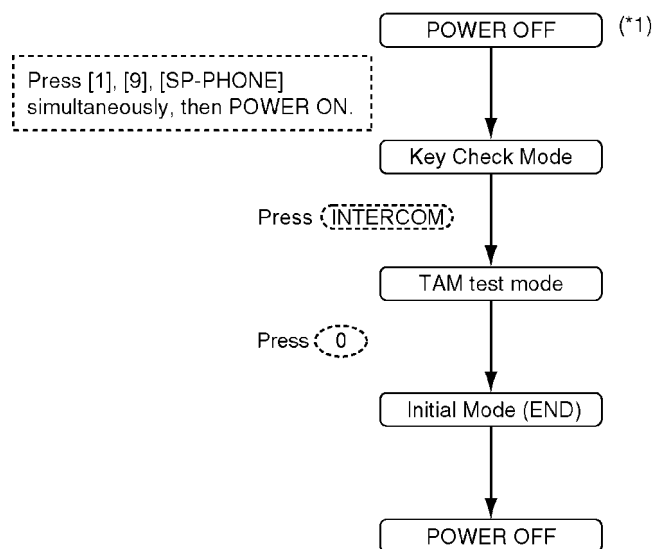
Channel	TX/RX Frequency (MHz)	Channel	TX/RX Frequency (MHz)	Channel	TX/RX Frequency (MHz)
1	5759.700425	33	5788.240269	65	5816.780113
2	5760.594273	34	5789.134117	66	5817.673960
3	5761.484165	35	5790.024009	67	5818.563853
4	5762.378013	36	5790.917857	68	5819.457701
5	5763.267906	37	5791.807749	69	5820.347593
6	5764.161753	38	5792.701597	70	5821.241441
7	5765.051646	39	5793.591490	71	5822.131333
8	5765.945494	40	5794.485337	72	5823.025181
9	5766.835386	41	5795.375230	73	5823.915074
10	5767.729234	42	5796.269078	74	5824.808921
11	5768.619126	43	5797.158970	75	5825.698814
12	5769.512974	44	5798.052818	76	5826.592662
13	5770.402867	45	5798.942710	77	5827.482554
14	5771.296714	46	5799.836558	78	5828.376402
15	5772.186607	47	5800.726451	79	5829.266294
16	5773.080455	48	5801.620298	80	5830.160142
17	5773.970347	49	5802.510191	81	5831.050035
18	5774.864195	50	5803.404039	82	5831.943882
19	5775.754087	51	5804.293931	83	5832.833775
20	5776.647935	52	5805.187779	84	5833.727623
21	5777.537828	53	5806.077671	85	5834.617515
22	5778.431675	54	5806.971519	86	5835.511363
23	5779.321568	55	5807.861412	87	5836.401255
24	5780.215415	56	5808.755259	88	5837.295103
25	5781.105308	57	5809.645152	89	5838.184996
26	5781.999156	58	5810.538999		
27	5782.889048	59	5811.428892		
28	5783.782896	60	5812.322740		
29	5784.672789	61	5813.212632		
30	5785.566636	62	5814.106480		
31	5786.456529	63	5814.996373		
32	5787.350376	64	5815.890220		

8.8. How to Clear User Setting

Units are reset to the Factory settings by this operation (Erase recorded Voice messages, stored Phone numbers, Caller list and etc.).

This operation should not be performed for a usual repair.

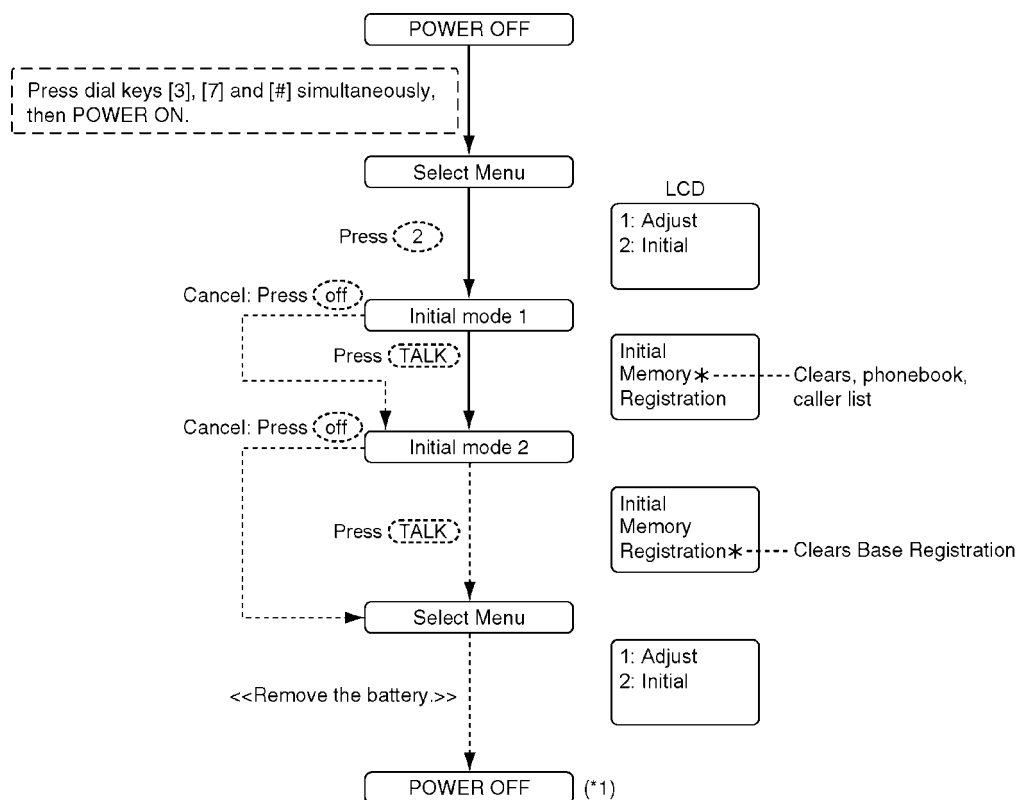
8.8.1. Base unit



Note:

(*1) Telephone line must be connected.

8.8.2. Handset



Note:

(*1) Be sure to short the battery terminals of the Handset with a lead wire, etc. for 2 seconds for discharge after removing the battery.

9 DESCRIPTION

9.1. Frequency

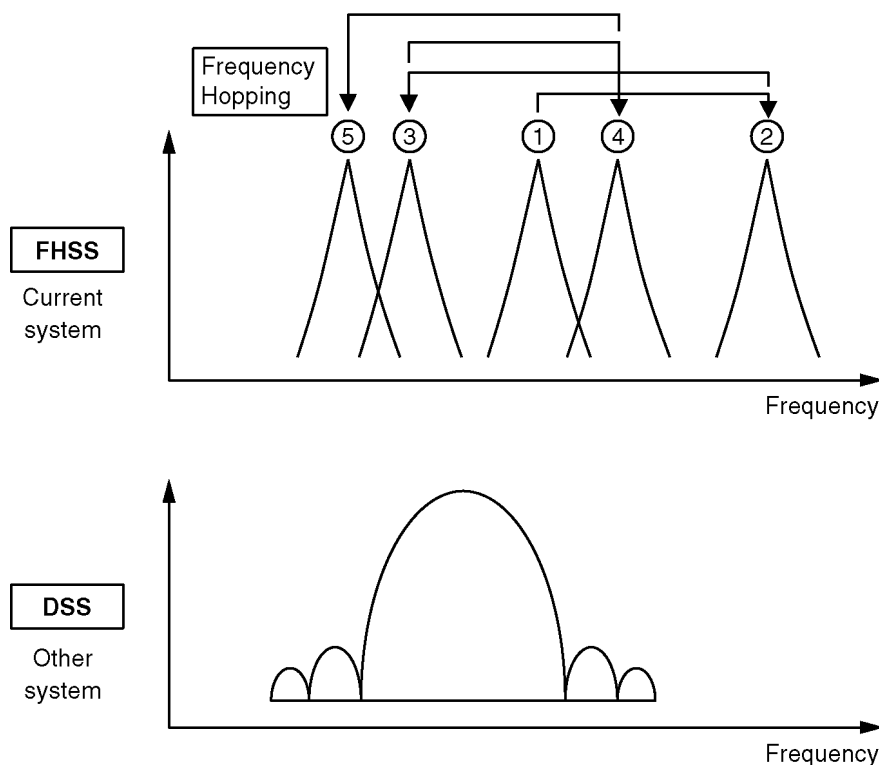
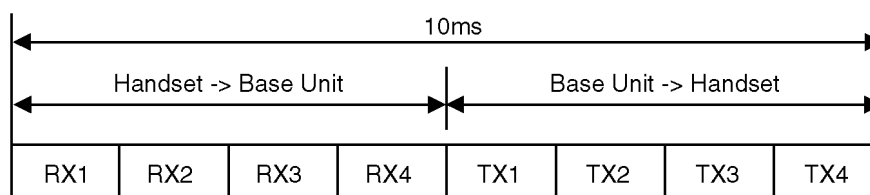
The frequency range of 5.76GHz-5.84GHz is used. Transmitting and receiving channel between Base Unit and Handset is same frequency. Refer to **Frequency Table** (P.54).

9.2. FHSS (Frequency Hopping Spread Spectrum)

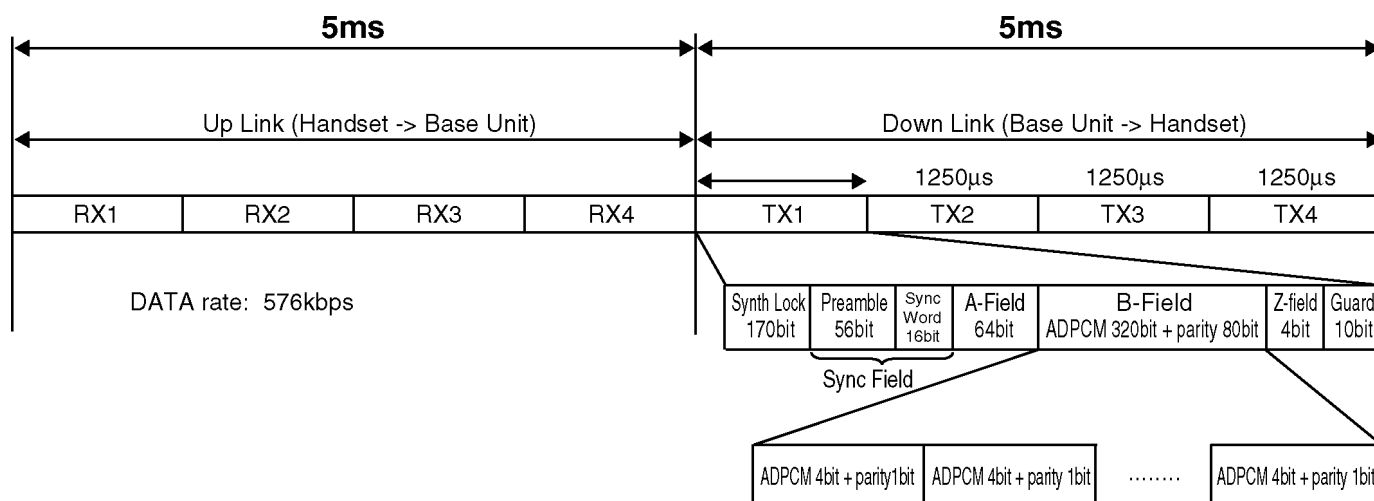
This telephone is using an IC chip which has similar specification to WDCT (World Digital Cordless Telephone) and is the telephone system that can use multiple portable unit simultaneously. The explanation of this system is mentioned below. This system uses a Time Division Multiple Access/Time Division Duplex (**TDMA/TDD**) scheme:

transmitting and receiving frequencies of the Base Unit and Handset are shared in the same frequency. The construction of RX/TX frequency data is shown below. It consists of 4 slots from the Base Unit to the Handset, and 4 slots from the Handset to the Base Unit, total 8 slots in 10ms. By this slot system, simultaneous air link and communication between 4 Handsets and the Base Unit can be realized. One communication between Handset and the Base Unit is done by one slot from the Base Unit to Handset, and another slot from Handset to the Base Unit.

DSS makes spectrum spread by multiplying carrier signal by PN code. The purpose to make spectrum spread is to reduce power density per time and per band. On the other hand, **FHSS** makes spectrum spread by changing channel every 10ms according to Hopping table. Also the purpose to make spectrum spread is to reduce power density per time and per band.



9.2.1. TDD Frame Format



Sync Field (72bit): Preamble 56bit + SyncWord 16bit

Base Unit (Handset) adjusts the timing of reception so that reception of Base Unit (Handset) can correspond to transmission of Handset (Base Unit).

It is necessary for sync-field that Handset gets synchronization.

A - field (64bit): Each kinds of DATA: ch data, line condition, etc.

B - field (320bit + 80bit): Sound data + parity

Z - field (4bit): Parity Check

9.2.2. TDMA system

This system is the cycles of 10ms, and has four duplex paths, so it is possible to perform four duplex communications simultaneously.

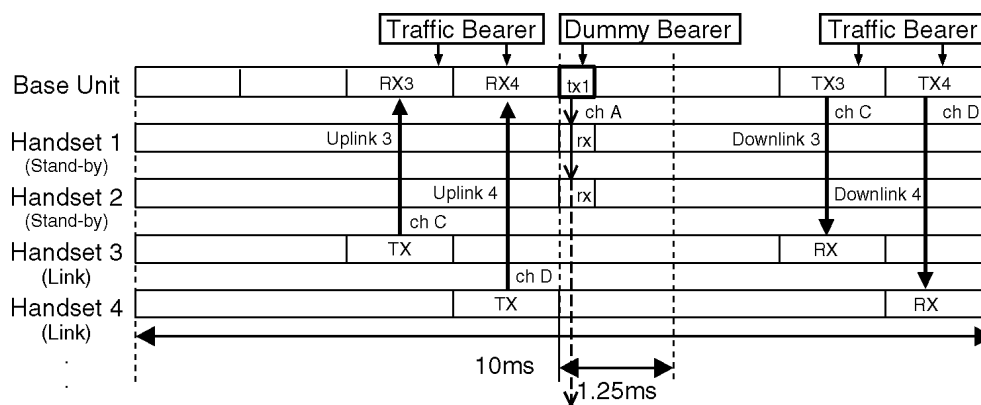
(Up to eight Handsets can be registered)

In 1 slot 1.25ms, the 10ms of voice data is transmitted.

Each slot makes every frame frequency hop. (100hops/sec.)

Although each slot (UpLink3 and UpLink4) uses different frequency, UpLink3 and DownLink3 use the same frequency.

• 2 - Handsets Link



Traffic Bearer

A link is established between Base Unit and Handset.

The state where duplex communication is performed.

The hopping pattern of a 3000hops (30 seconds) cycle.

Dummy Bearer

The Base Unit sends Dummy-data to the all stand-by state Handsets.

The Handsets receive that data for keeping synchronization and monitoring request from the Base Unit.

Dummy Bearer doesn't contain B-field (sound) data.

9.3. Signal Flowchart in the Whole System

Reception

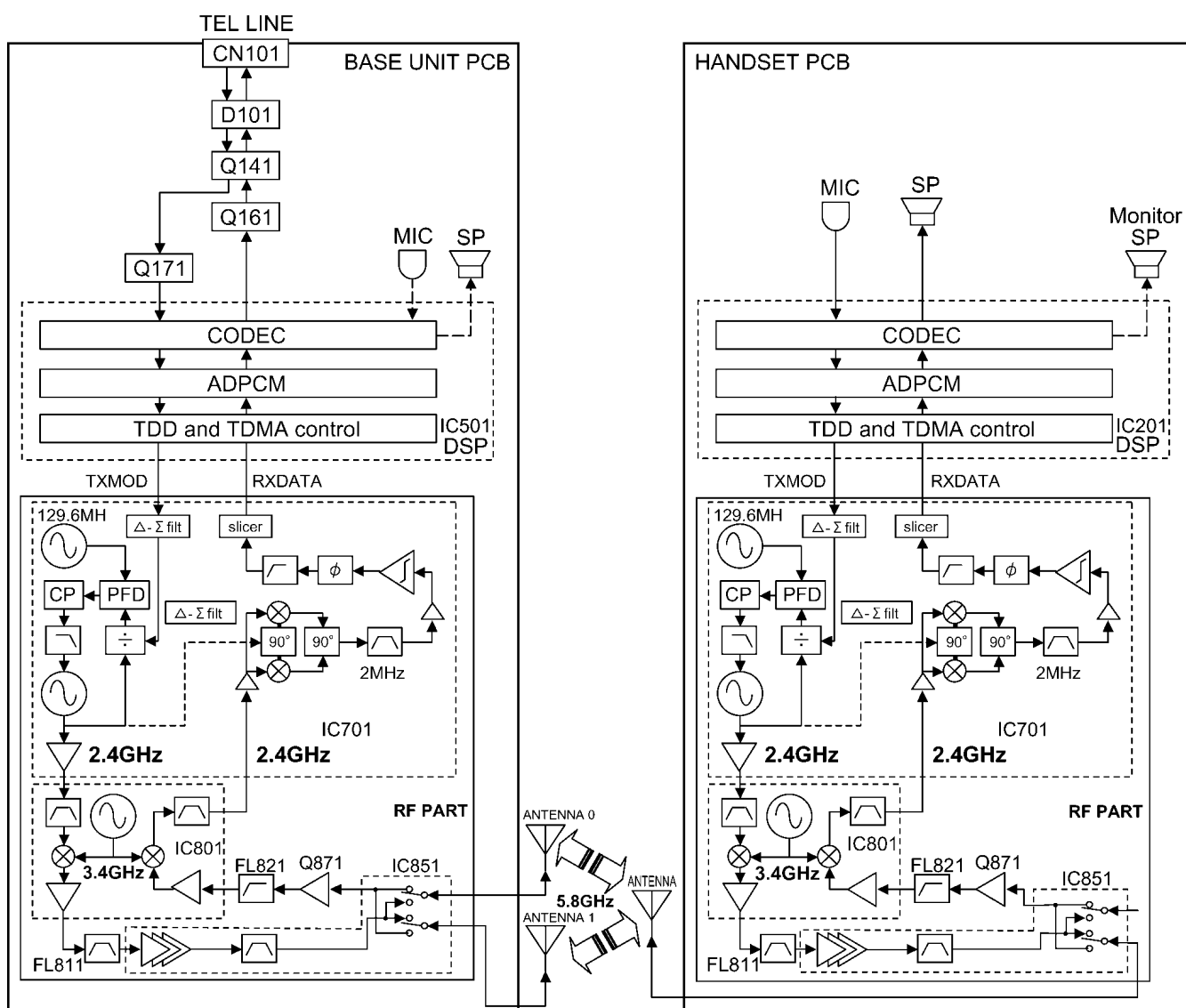
CN101 of the Base Unit is connected to the TEL line, and signal is enter through the bridge diode D101. While talking, the relay (Q141) is turned ON and amplified at the Q171, then led to DSP (IC501). The DSP encodes ADPCM and TDD/TDMA with FHSS to TXMOD. The TXMOD signal is enter to IC701 of RF PART, and modulated to 2.4GHz. The 2.4GHz signal is up-converted to 5.8GHz RF signal by IC801. The RF signal is amplified by the power amplifier (IC851) and fed to Antennas.

As for the Handset, RF signal from the antenna is amplified by LNA (Q871). The amplified signal is down-converted to 2.4GHz signal by IC801 and led to IC701. The 2.4GHz is down-converted to IF signal in IC701. The IF signal passing through internal filter is demodulated into RXDATA, then enter to DSP (IC201). The DSP performs TDD/TDMA and ADPCM decoding to convert the RXDATA into the voice signal, then it is output to the speaker.

Transmission

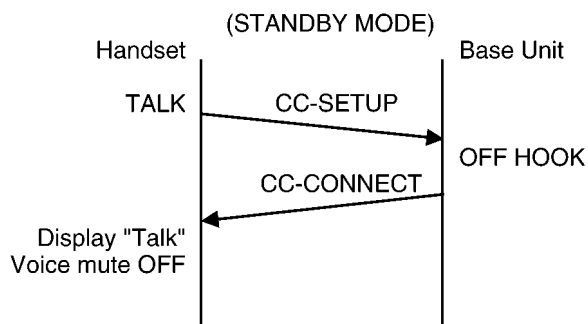
The voice signal entering from the Handset microphone is led to DSP (IC201). The DSP encodes ADPCM and TDD/TDMA with FHSS to TXMOD. The TXMOD signal is enter to IC701 of RF PART, and modulated to 2.4GHz. The 2.4GHz signal is up-converted to 5.8GHz RF signal by IC801. The RF signal is amplified by the power amplifier (IC851) and fed to Antenna.

As for the Base Unit, RF signal from the Antennas is amplified by LNA (Q871). The amplified signal is down-converted to 2.4GHz signal by IC801 and led to IC701. The 2.4GHz is down-converted to IF signal in IC701. The IF signal passing through internal filter is demodulated into RXDATA, then enter to DSP (IC501). The DSP performs TDD/TDMA and ADPCM decoding to convert the RXDATA into the voice signal. The voice signal is amplified at the TX amplifier (Q161), then output to the TEL line CN101 through the relay (Q141) and bridge (D101).



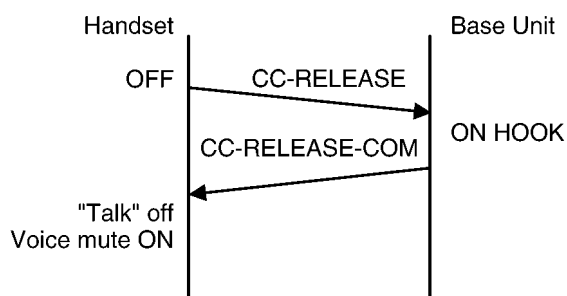
10 EXPLANATION OF LINK DATA COMMUNICATION

10.1. Calling



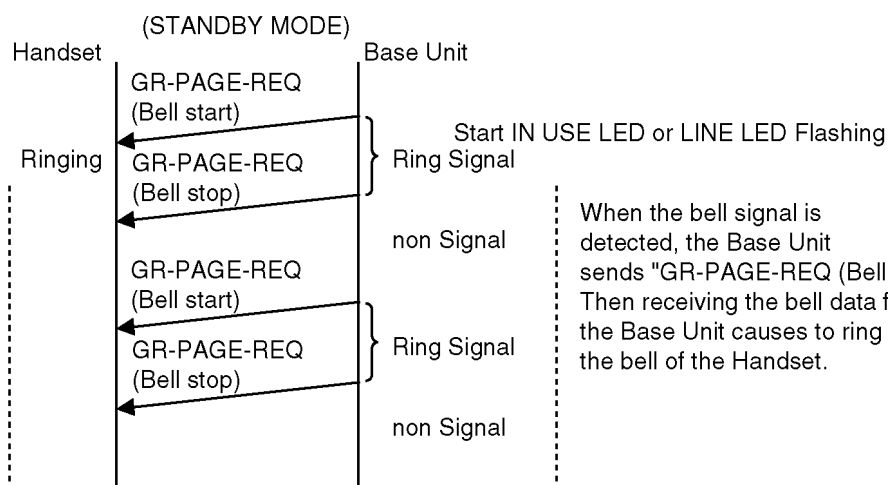
When calling, a communication request DATA (CC-SETUP) is transmitted from the Handset, and a permitting DATA (CC-CONNECT) is returned from the Base Unit to it. At that time the audio path opens.

10.2. To Terminate Communication



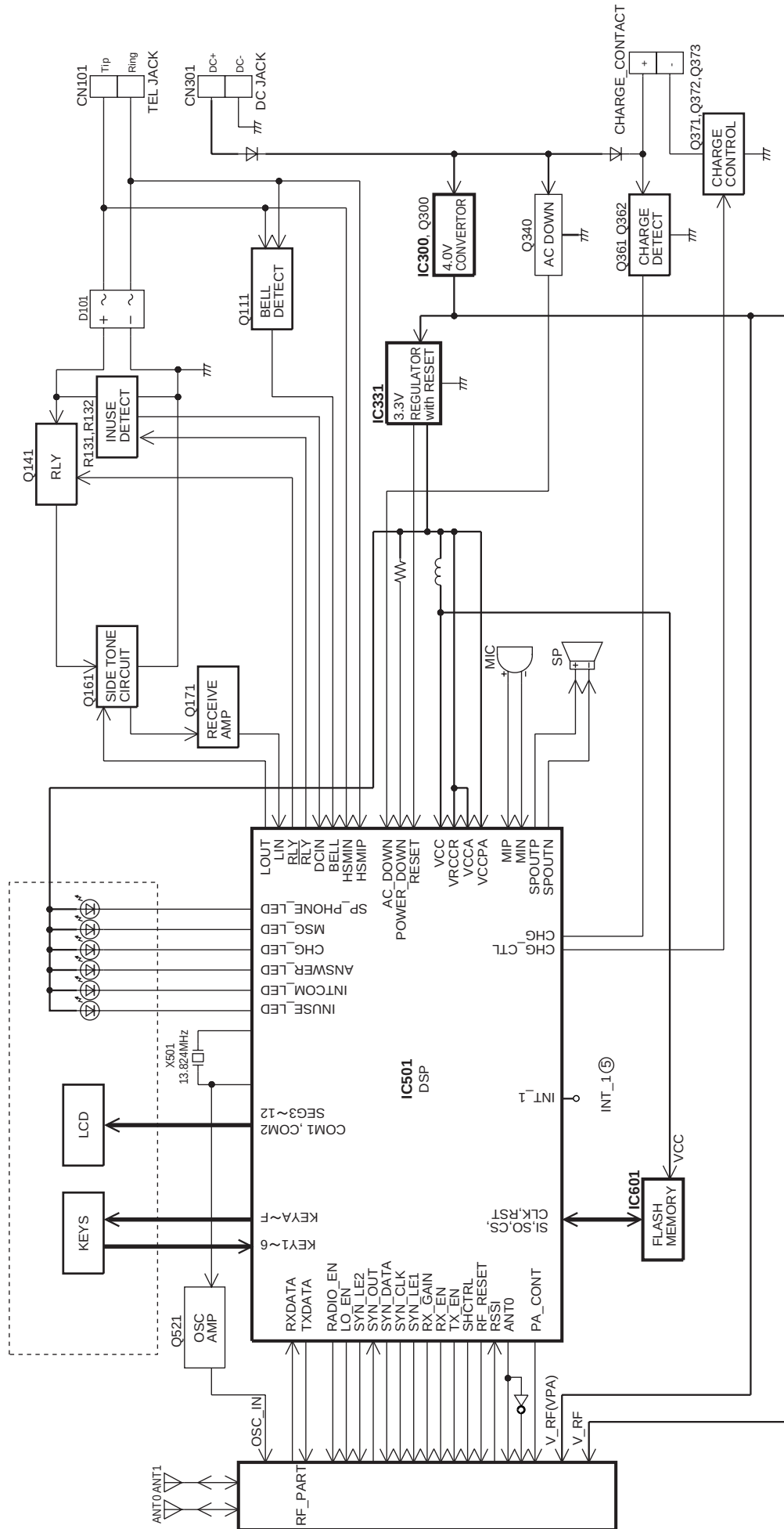
When the OFF button on the Handset is pressed during communication, a LINK terminating DATA (CC-RELEASE) is sent to terminate the communication. Then DATA (CC-RELEASE-COM) is returned from Base Unit. Handset receives it and reset the link.

10.3. Ringing



When the bell signal is detected, the Base Unit sends "GR-PAGE-REQ (Bell start)". Then receiving the bell data from the Base Unit causes to ring the bell of the Handset.

11 BLOCK DIAGRAM (BASE UNIT_MAIN)



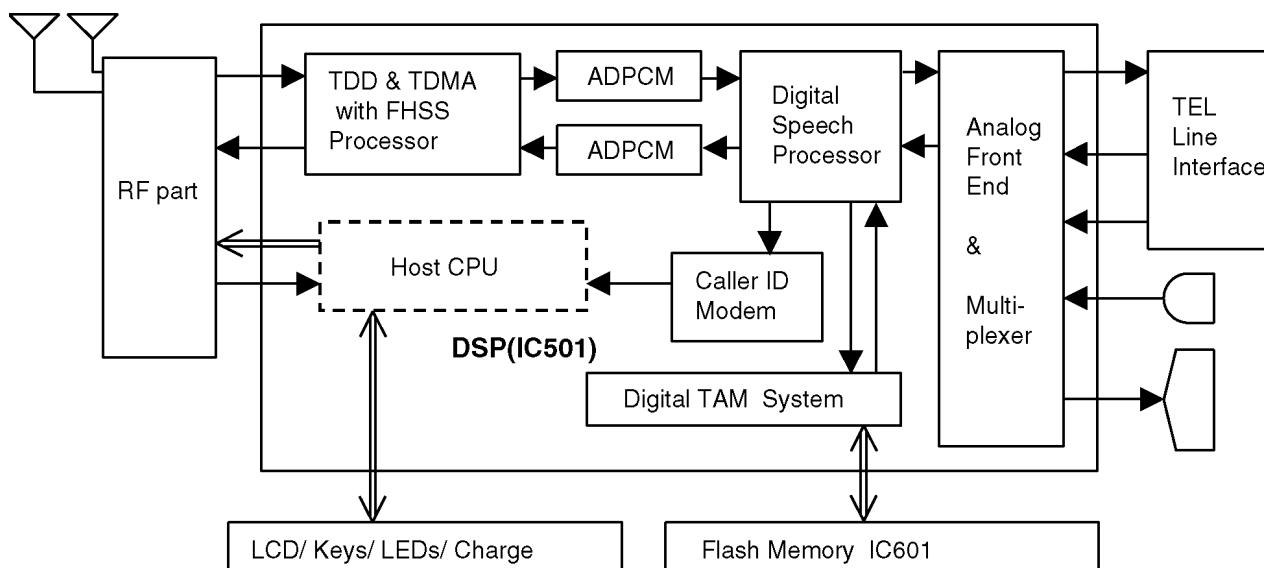
KX-TG5571 BLOCK DIAGRAM (Base Unit_Main)

12 CIRCUIT OPERATION (BASE UNIT_MAIN)

General Description:

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

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



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

- **Voice Message Recording/Play back**

The DSP system use a proprietary speech compression technique to record and store voice message in Flash Memory. An error correction algorithm is used to enable playback of these messages from the Flash Memory.

- **DTMF Detection/Generator**

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

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

- **Synthesized Voice (Pre-recorded message)**

The DSP implements synthesized Voice, utilizing the built in speech detector and a Flash Memory, which stored the vocabulary.

- **Caller ID demodulation**

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

- **Analog Switching**

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

- **Block Interface Circuit**

RF part, LED, Key scan, Speaker, Microphone, Telephone line, LCD.

12.2. Flash Memory (IC601)

Following information data is stored.

- **Voice signal**

ex: Pre-recorded Greeting message, Incoming message, Talking Caller ID announcement

- **Telephone number, etc.**

ex: Telephone Directory number, ID code

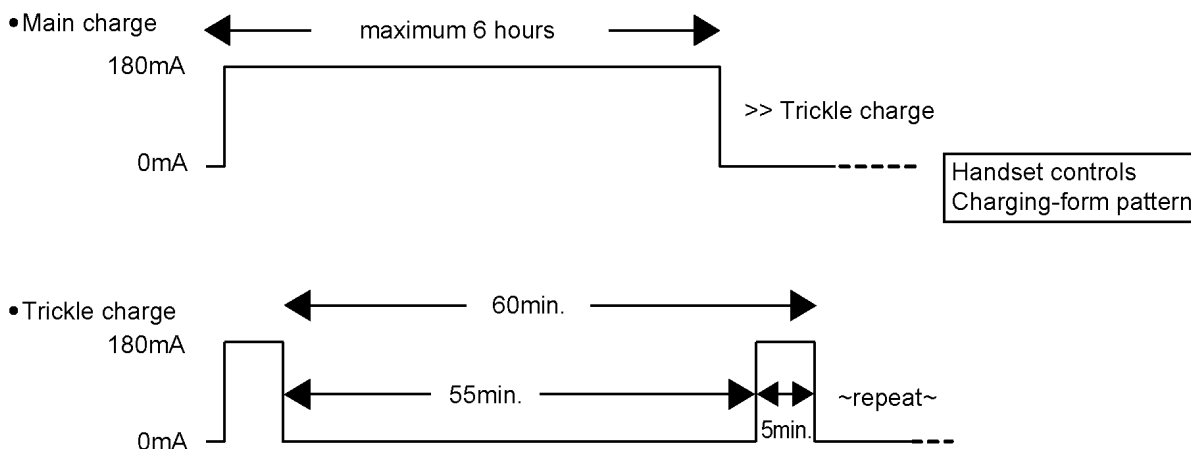
- **Settings**

ex: message numbers, Flash Time, Tone/Pulse

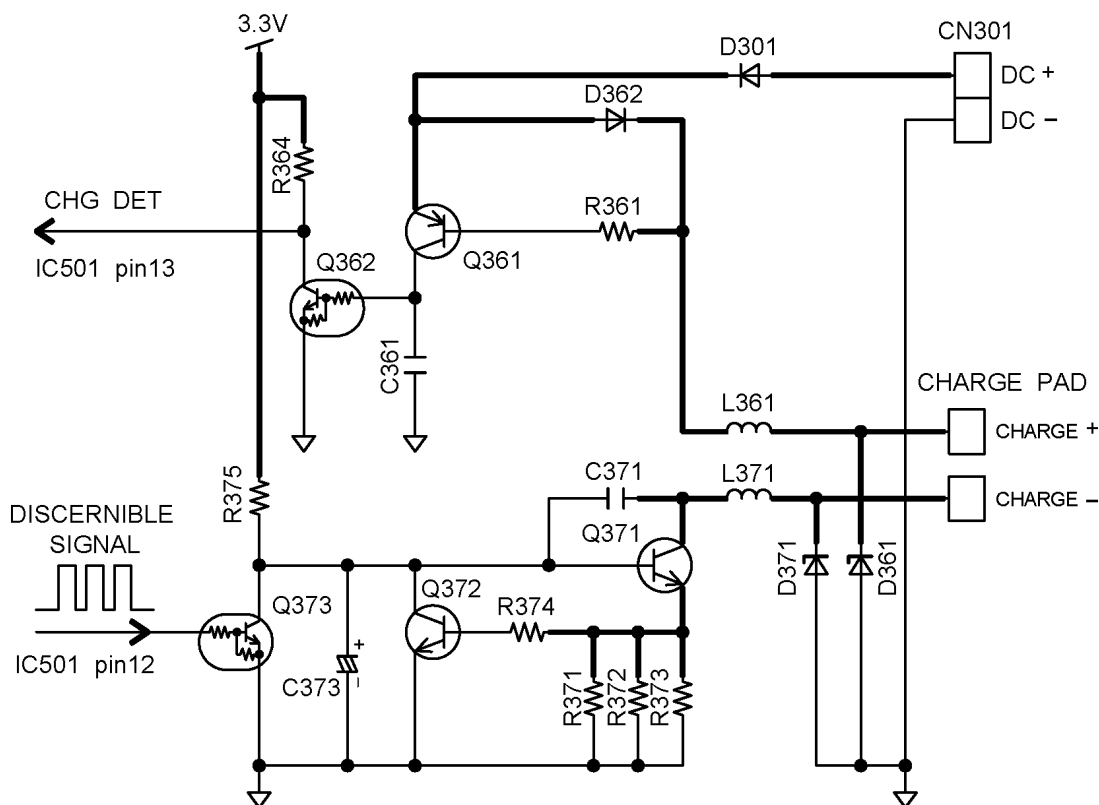
12.3.1. Charge Circuit

The voltage from the AC is supplied to the charge circuits. Main charge (180mA at the Battery) of maximum 6-hours is started soon after the Handset is placed on the Base Unit. Then it changes to Trickle charge to prevent from overcharging.

Charging-form



Q361 and Q362 detect the ON-HOOK state (Handset is placed on Base Unit).



Q371 and Q372 control the charge current.

Q373 sends a signal to the Handset for about 5 seconds soon after the Handset is placed on the Base Unit.

This signal tells that the Handset is being charged on the Base Unit or the charger.

When the signal is received: charged on the Base Unit

No signal: charged on the charger.

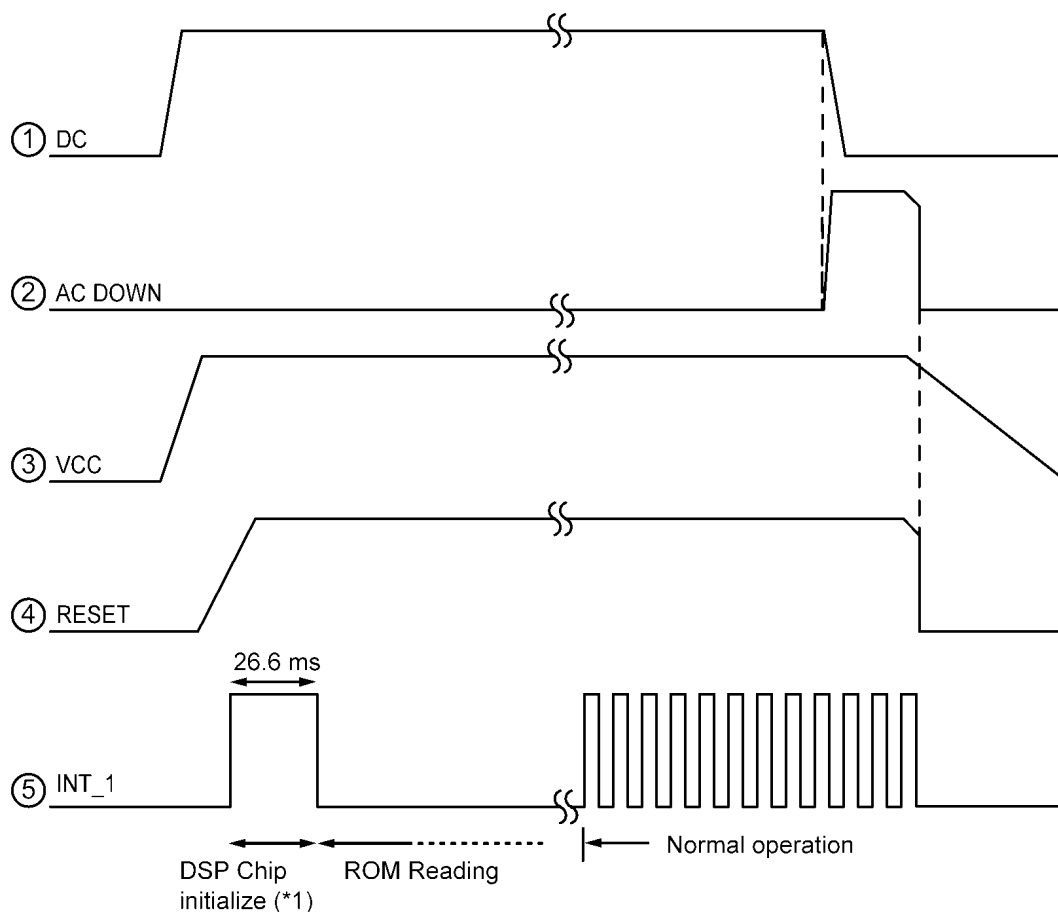
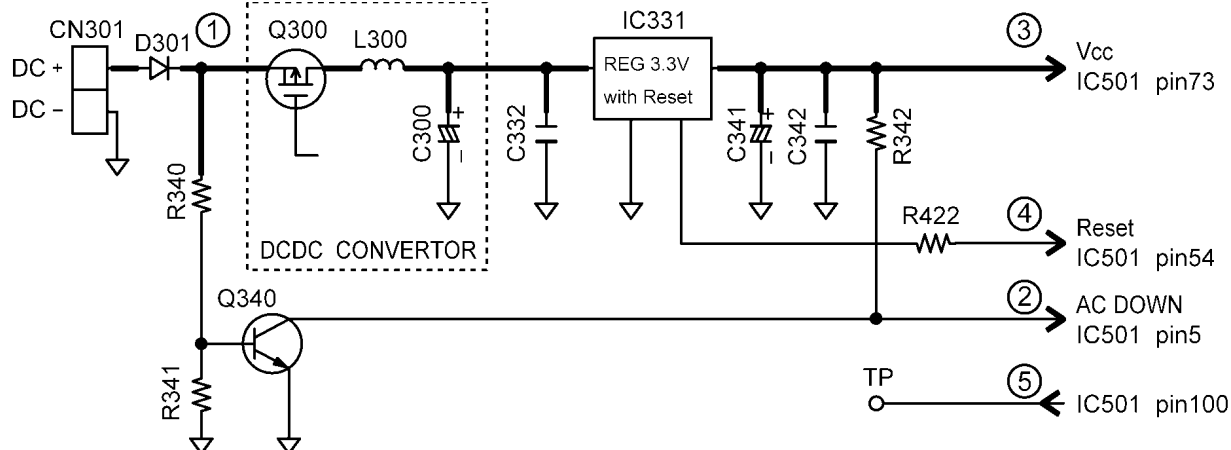
12.4. Reset Circuit

Function:

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

Circuit Operation:

When the AC Adaptor is inserted into the unit, then the voltage is shifted by IC331 and power is supplied to the DSP. The set starts to operate when VCC goes up to 3.0V or more in the circuit voltage diagram.



Note:

(*1) The initializing time of the DSP chip is 26.6ms under normal conditions.

12.5. Intercom Mode

1. Press the Base Unit INTERCOM button, and the handset number button ([1] to [8]), then a monitor tone is heard from the speaker.
2. At the same time, the Handset ring. This status is called "Intercom stand-by".
3. Then press TALK button of the Handset, the status is changed to "Intercom mode".

12.6. Telephone Line Interface

Telephone Line Interface Circuit:

Function

- Bell signal detection
- ON/OFF hook and pulse dial circuit
- Side tone circuit

Bell signal detection and OFF HOOK circuit:

In the idle mode, Q141 is open to cut the DC loop current and decrease the ring load. When ring voltage appears at the Tip (T) and Ring (R) leads (When the telephone rings), the AC ring voltage is transferred as follows:

T → L101 → R111 → C111 → Q111 → DSP pin 3 [BELL]

When the CPU (DSP) detects a ring signal, Q141 turns on, thus providing an off-hook condition (active DC current flow through the circuit). Following signal flow is the DC current flow.

T → L101 → D101 → Q141 → Q161 → R163 → D101 → L102 → P101 → R

ON HOOK Circuit:

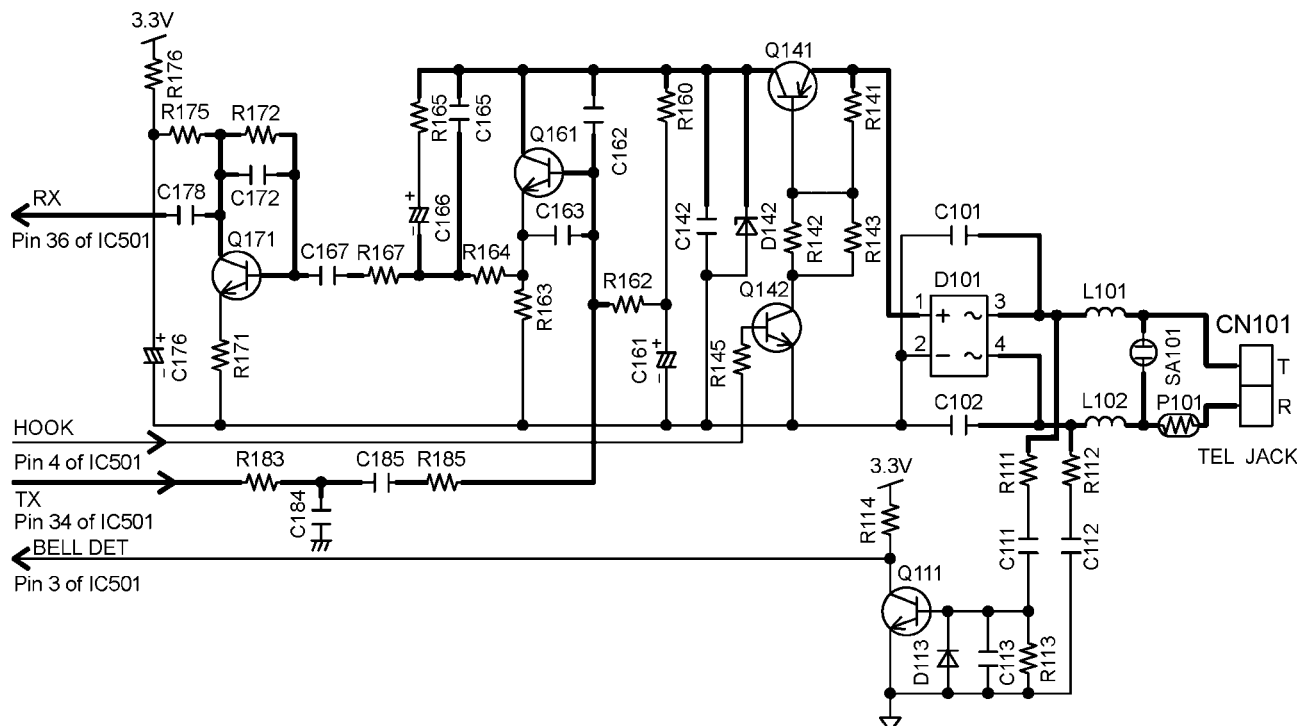
Q141 is open, Q141 is connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an on-hook condition.

Pulse Dial Circuit:

Pin 4 of DSP turns Q141 ON/OFF to make the pulse dialing.

Side Tone Circuit:

Basically this circuit prevents the TX signal from feeding back to RX signal. As for this unit, TX signal feed back from Q161 is canceled by the canceller circuit of DSP.



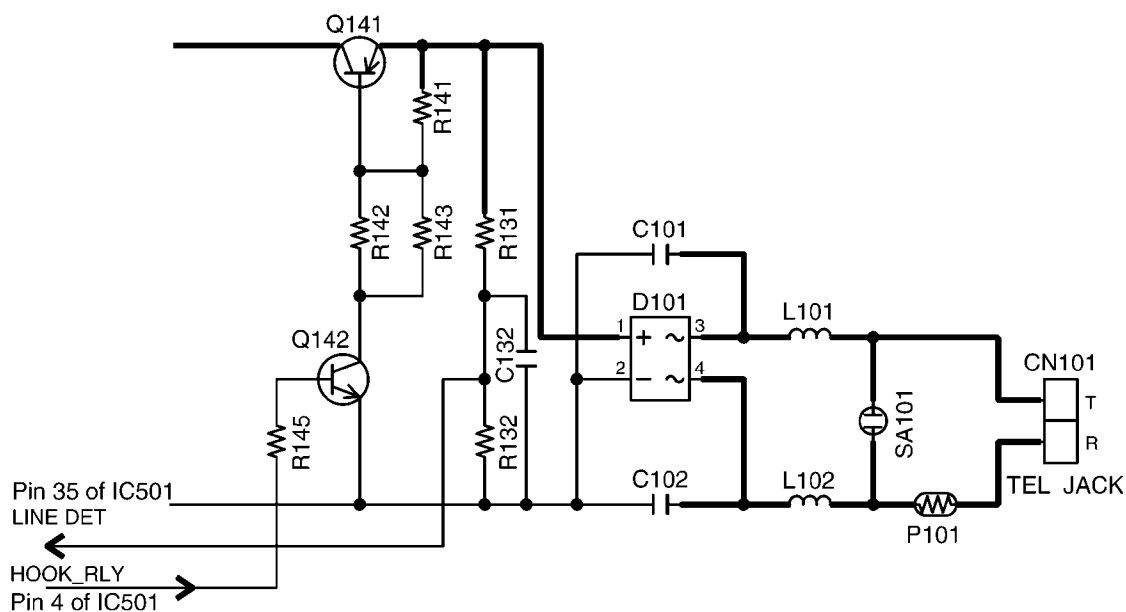
12.7. Auto Disconnect Circuit

Function:

This circuit is used to detect the fact that another telephone connected to the same line is OFF-HOOK while the unit is in a receiving status or OGM transmitting status.

Circuit Operation:

The voltage of pin 35 of IC501 is monitored. If a parallel-connected telephone is put into OFF HOOK status, the presence/absence of a parallel connection is determined when the voltage changes by 0.2V or more. When the set detects the parallel-connected telephone is OFF HOOK status, the line is disconnected.



You can enable or disable the Auto Disconnect function.

See **Check Record** (P.31)

12.8. Parallel Connection Detect Circuit

Function:

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

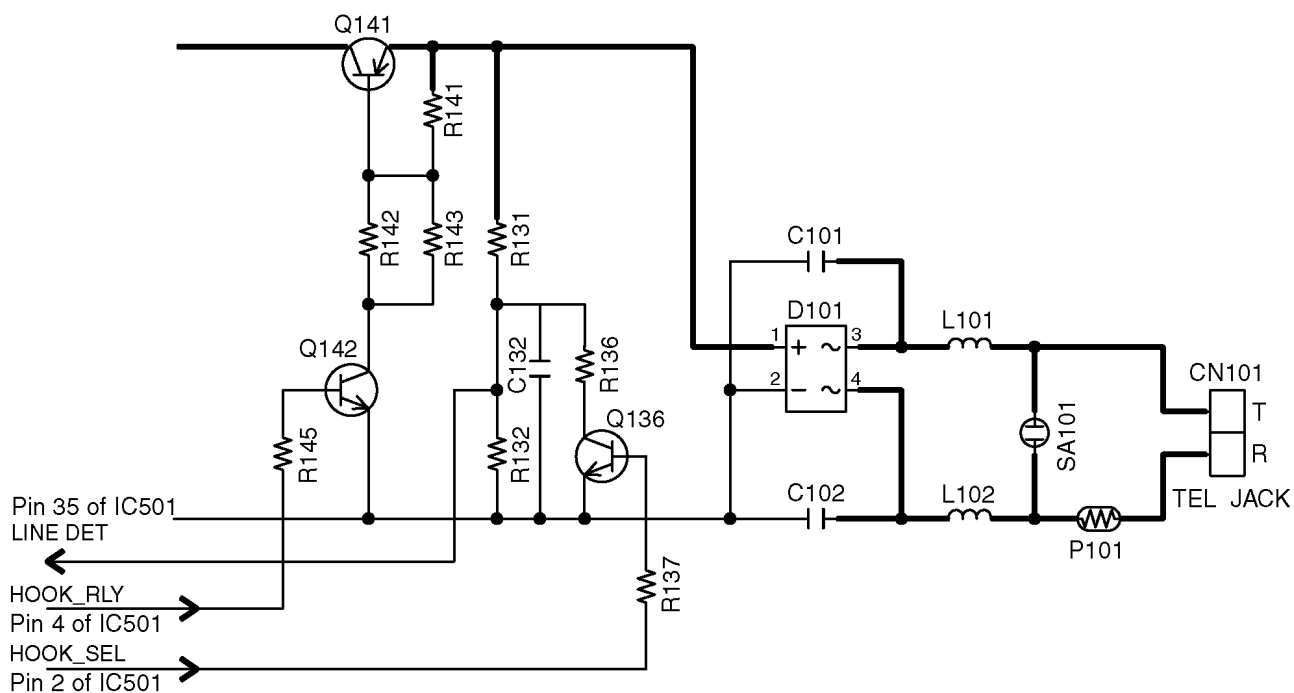
Circuit Operation:

Parallel connection detection when on hook:

When on hook Q136 is ON, the voltage is monitored at pin 35 of IC501. There is no parallel connection if the voltage is 1.65 V or higher, while a parallel connection is deemed to exist if the voltage is lower.

Parallel connection detection when off hook:

When off hook Q136 is OFF, the voltage is monitored at pin 35 of IC501; the presence/absence of a parallel connection is determined when the voltage changes by 0.2 V or more.



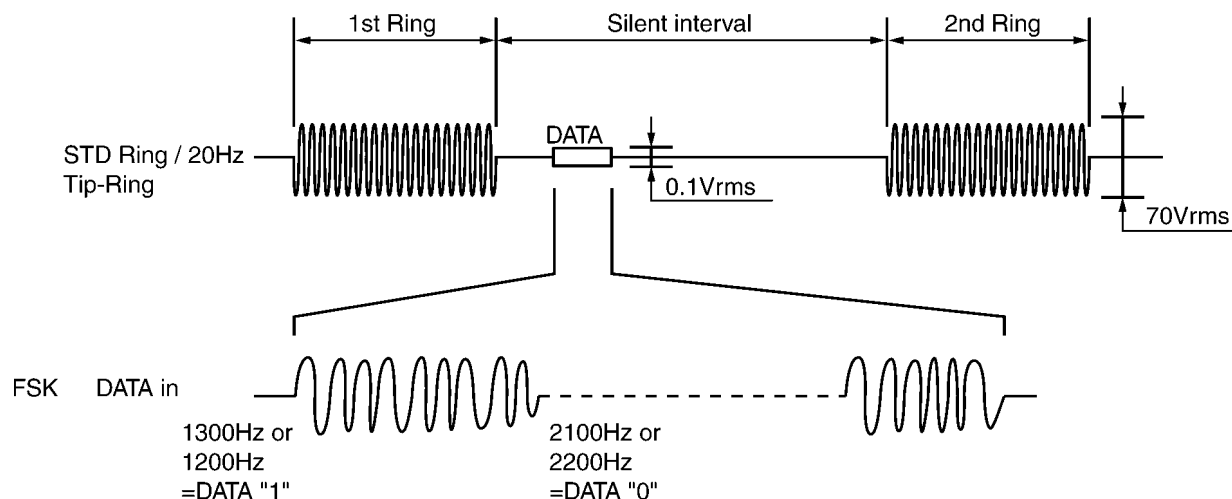
12.9. Calling Line Identification (Caller ID)

Function:

The caller ID is a chargeable ID which the user of a telephone circuit obtains by entering a contract with the telephone company to utilize a caller ID service. For this reason, the operation of this circuit assumes that a caller ID service contract has been entered for the circuit being used.

The Caller-ID data from exchange is supplied to the telephone using either method of FSK or DTMF. The method is chosen according to the exchange of telephone office. This unit is available to receive the data with both methods and displays the received data on LCD.

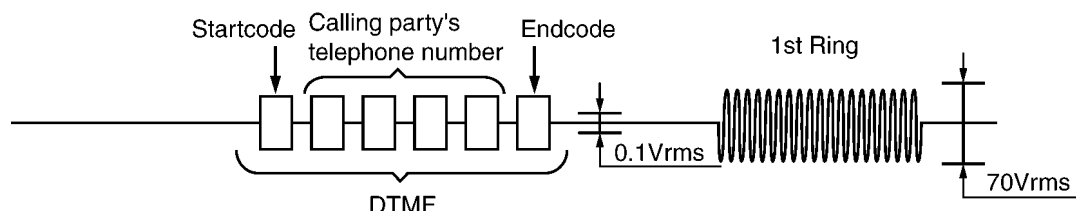
• FSK (Frequency Shift Keying) format



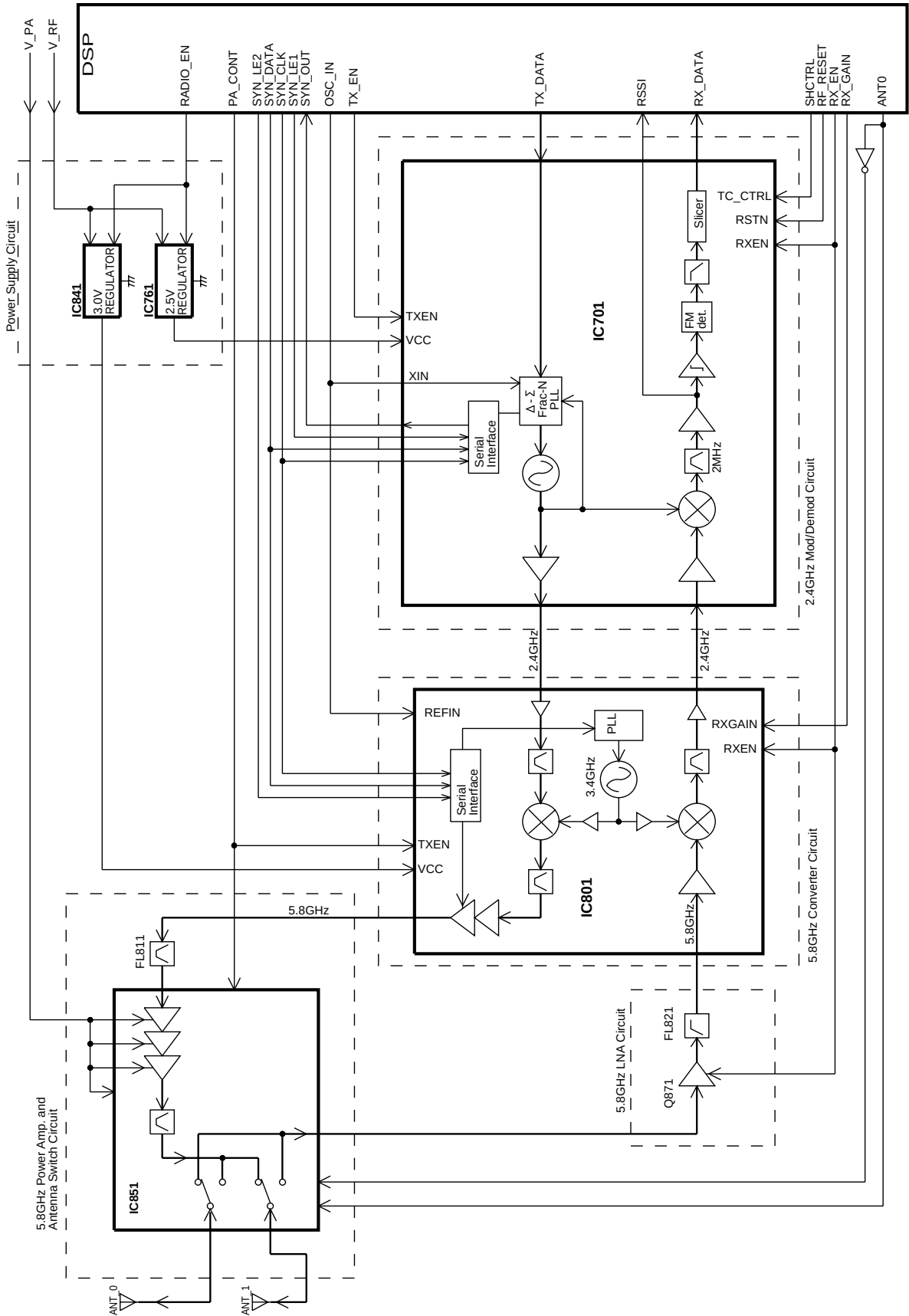
• DTMF format

It is the method to send the telephone number of calling party with DTMF to the telephone. DTMF is sent before the first bell signal. The data is sent in turn; first the start code, secondly the telephone number of calling party, lastly end code.

The DTMF is chosen from A (1633Hz and 697Hz), B (1633Hz and 770Hz), C (1633Hz and 852Hz) and D (1633Hz and 941Hz) as the start code and end code according to the exchange.

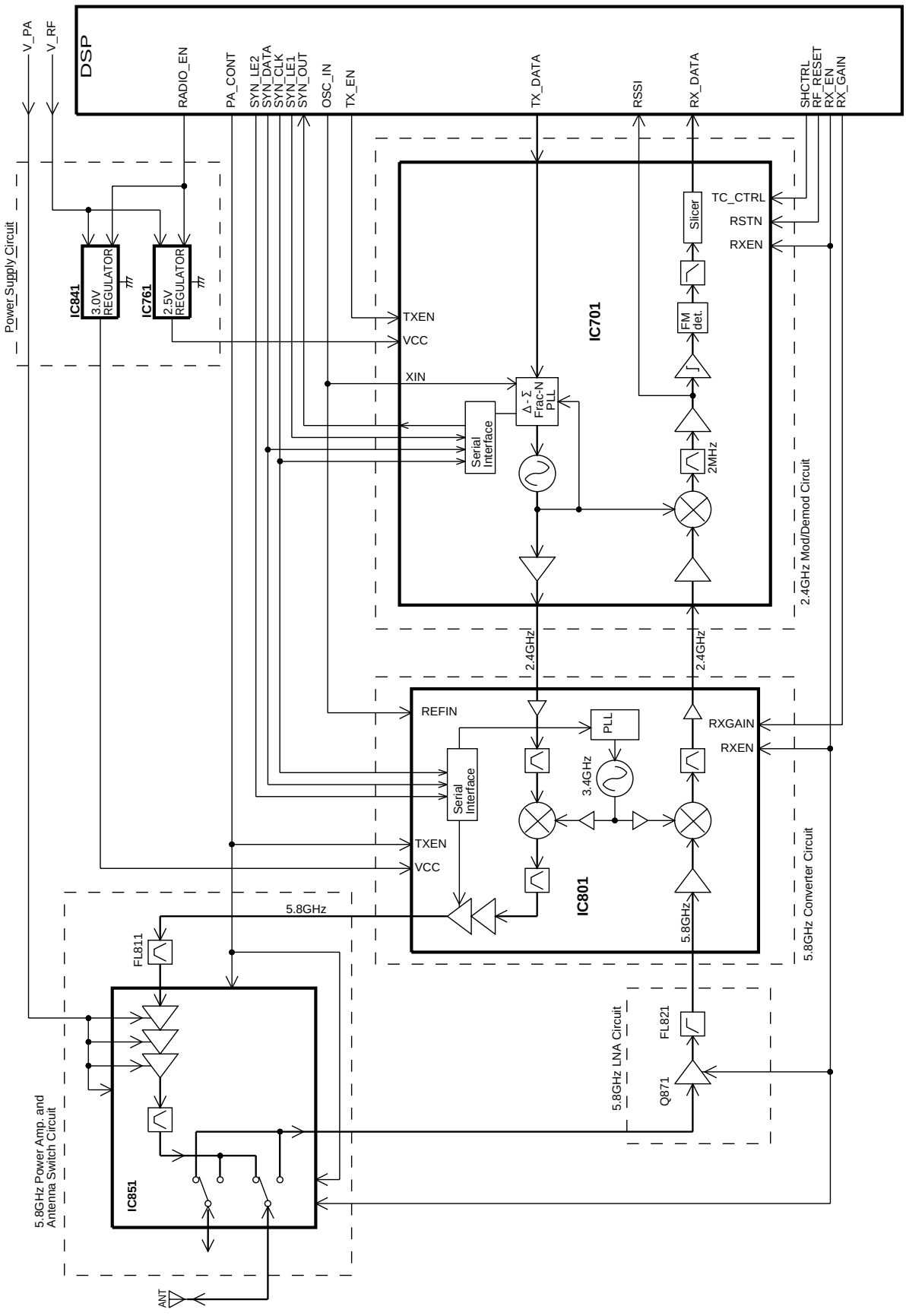


13 BLOCK DIAGRAM (BASE UNIT_RF PART)



KX-TG5571 BLOCK DIAGRAM (Base Unit_RF Part)

14 BLOCK DIAGRAM (HANDSET_RF PART)

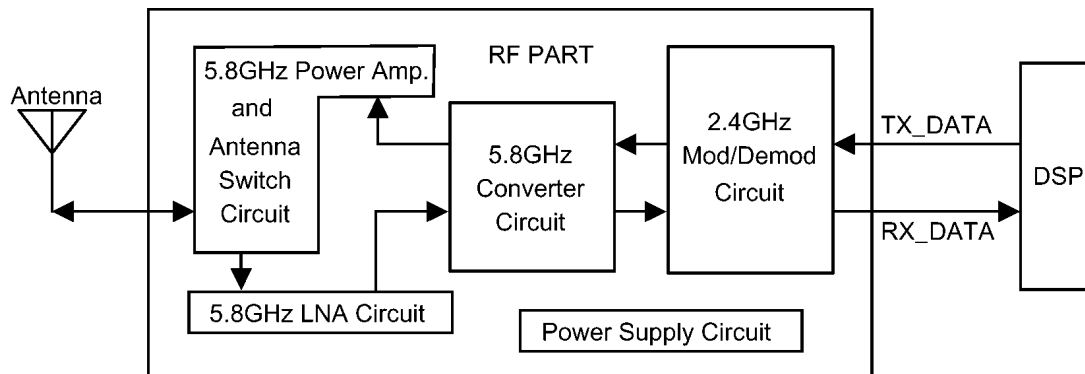


KX-TGA550 BLOCK DIAGRAM (Handset_RF Part)

15 CIRCUIT OPERATION (RF PART)

General Description:

RF part includes Transmitter and Receiver functions. Digital signals (Mainly voice data) that come from DSP, are modulated and are transmitted. On the other hand, received signals are demodulated and go out to DSP.



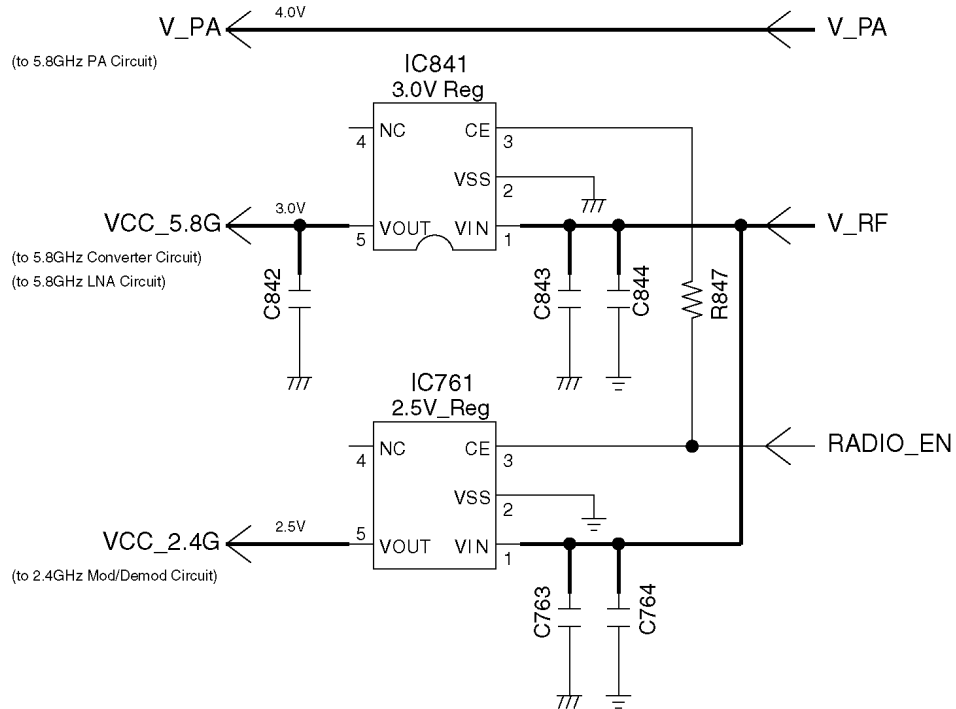
15.1. Power Supply Circuit

As indicated below, the various voltages are supplied to each block.

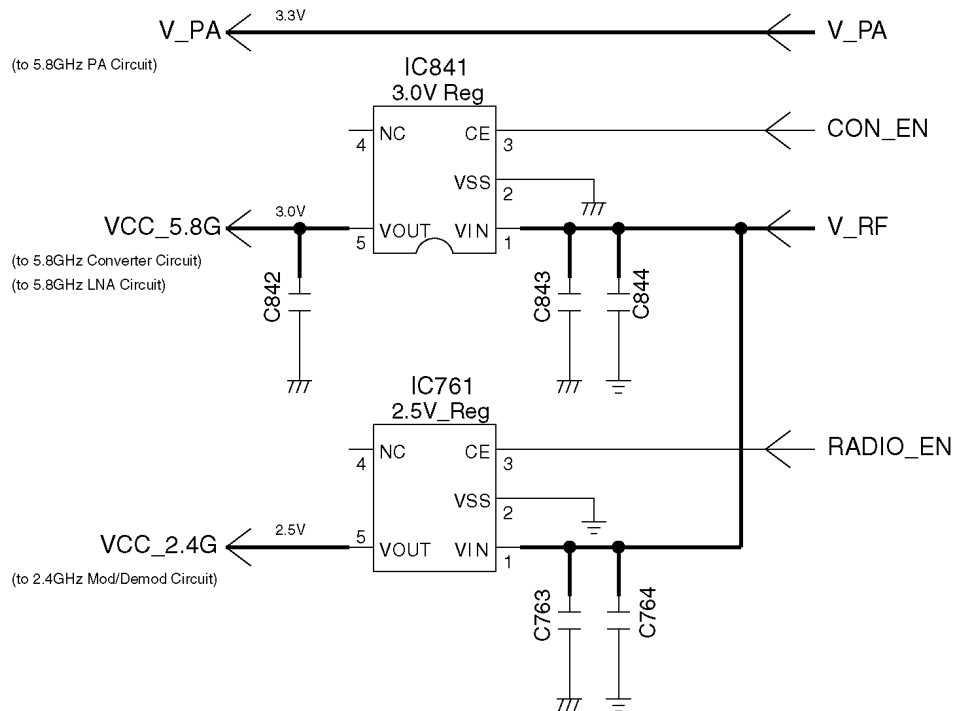
V_PA, about 4.0V at Base Unit or 3.3V at Handset, is supplied to the Power amplifier in 5.8GHz PA circuit.

IC841 is 3.0V Regulators, and IC761 is a 2.5V Regulator. They output Vcc_5.8GHz, and Vcc_2.4GHz respectively by order of RADIO_EN signal or CON_EN signal. V_RF is approximately 4.0V (Base Unit) or 3.6V (Handset).

<Base Unit>

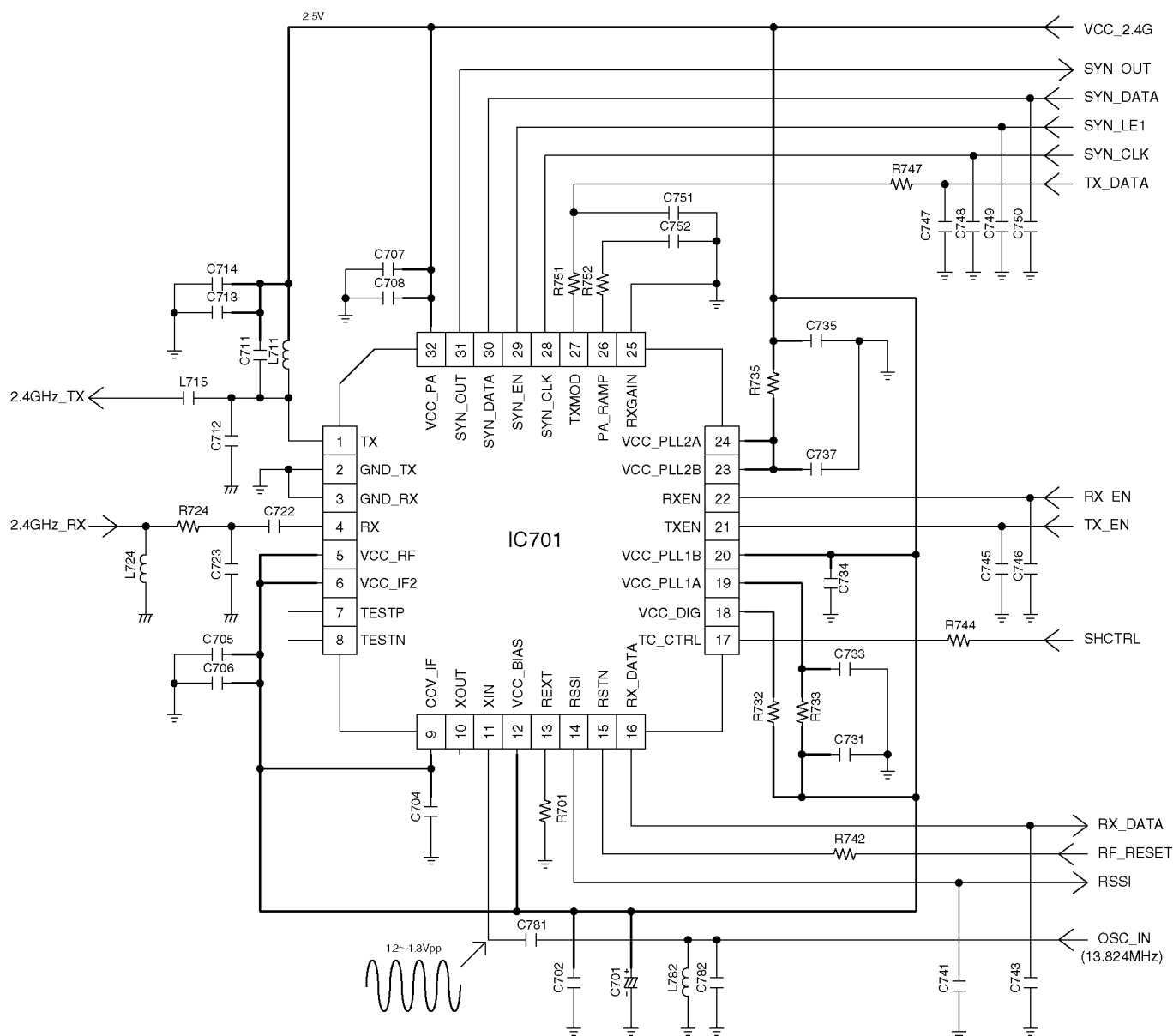


<Handset>



15.2. 2.4GHz Mod/Demod Circuit

IC701 incorporates all of the modulation and demodulation functions. TX Digital data (TX_DATA) from DSP is supplied to pin 27 of IC701, and then 2.4GHz TX modulated signal is output from pin1. This TX signal goes into the 5.8GHz Converter circuit. 2.4GHz RX signal from 5.8GHz Converter circuit is passed through matching circuit and supplied to pin4 of IC701, then demodulated signal (RX_DATA) comes out from pin 16. At the same time, RSSI (Received Signal Strength Indicator) outputs from the pin 14. Reference clock (13.824MHz) from DSP block is supplied to pin 11 of IC701. VCC_2.4G supplies 2.5V regulated voltage.



15.3. 5.8GHz Converter Circuit

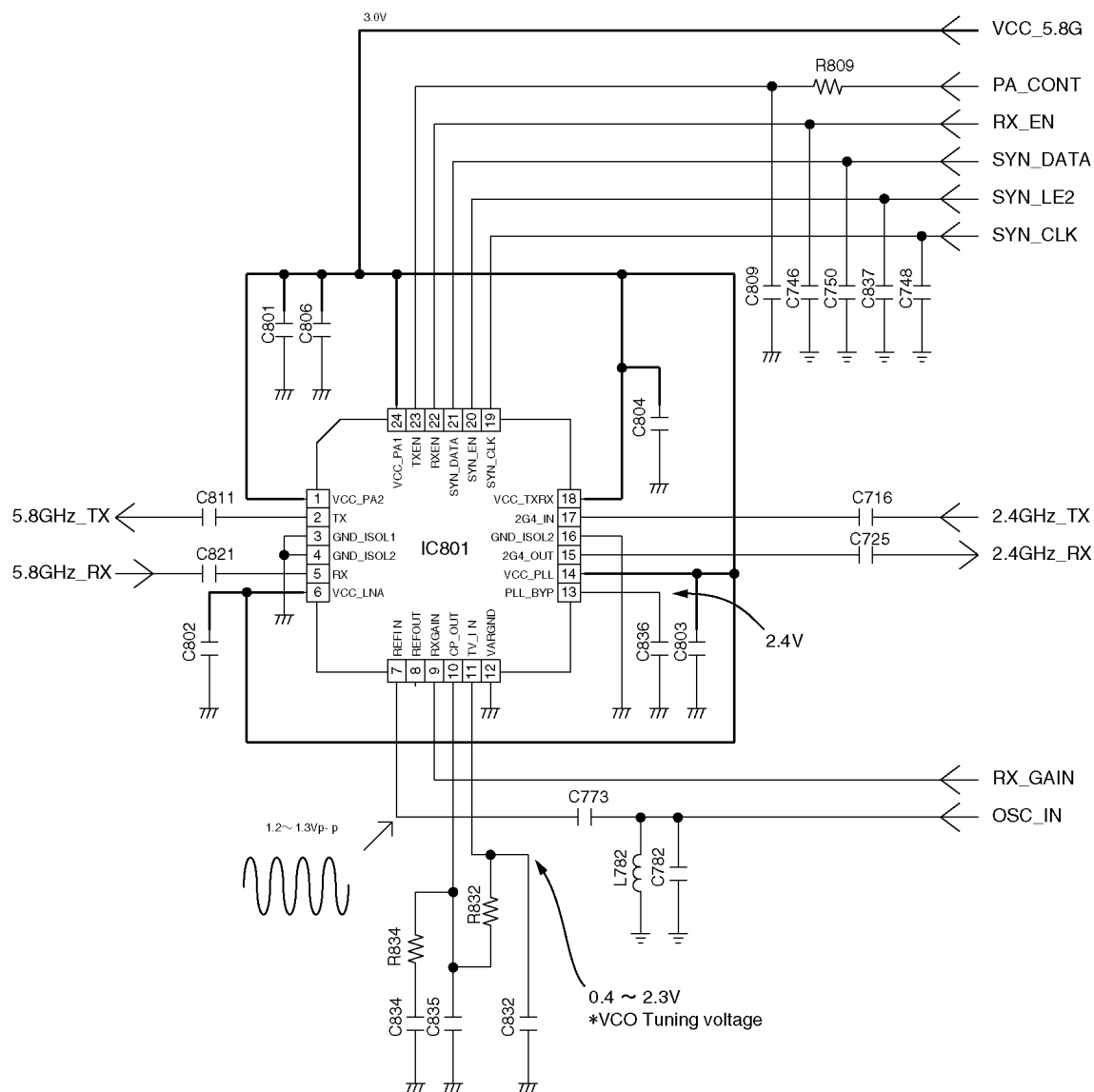
This block converts frequency of TX signal and RX signal.

IC801 includes TX-MIXER, RX-MIXER, PLL and VCO modules internally.

The VCO module is tuned by PLL synthesizer module, and generates 3.4GHz Local signal. Reference clock (13.824MHz) from DSP block is supplied to pin7 of IC701.

2.4GHz TX signal from 2.4GHz Mod/Demod circuit is supplied to pin 17 of IC801, and internal TX-MIXER multiplies it by 3.4GHz Local signal from internal VCO module, and up-converts into 5.8GHz TX signal. This 5.8GHz TX signal is output from pin 2, and goes into the 5.8GHz PA circuit.

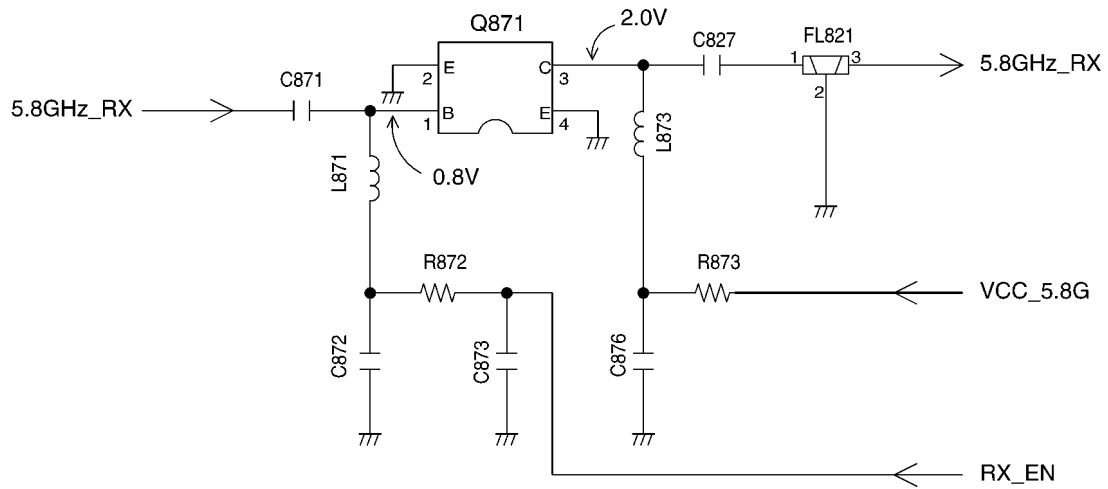
5.8GHz RX signal from 5.8GHz LNA circuit supplied to pin 5 of IC801, and internal RX-MIXER multiplies it by 3.4GHz Local signal from internal VCO module, and down-converts into 2.4GHz RX signal. This 2.4GHz RX signal is output from pin 15, and goes into the 2.4GHz Mod/Demod circuits.



15.4. 5.8GHz LNA (Low Noise Amplifier) Circuit

This block amplifies receiving 5.8GHz signal.

5.8GHz RX signal from Antenna Switch circuit amplified by LNA (Low Noise Amplifier) Q871 and filtered by HPF (FL821), and then supplied to 5.8GHz Converter circuit.



15.5. 5.8GHz Power Amplifier and Antenna Switch Circuit

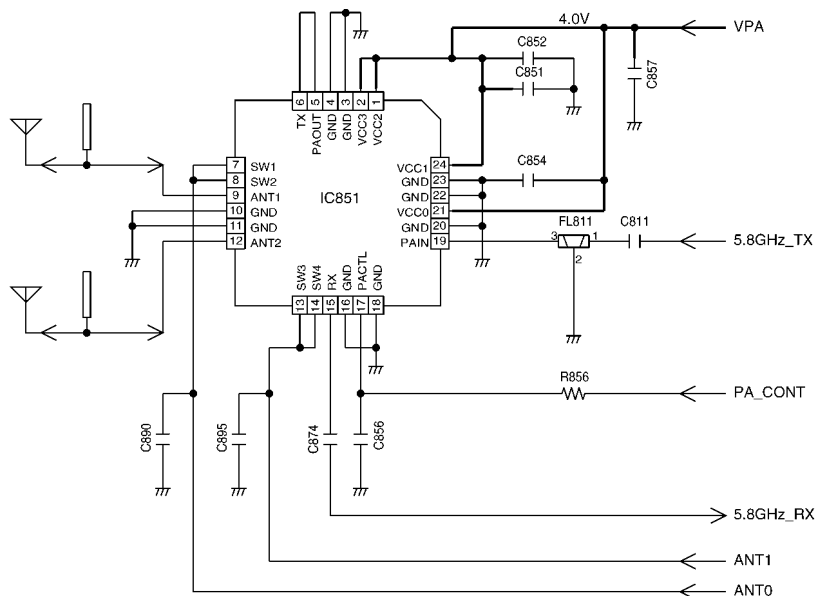
This block amplifies power of 5.8GHz TX signal.

5.8GHz TX signal from 5.8GHz Converter circuit is filtered by 5.8GHz-BPF FL811, and amplified by Power amplifier (PA) block of IC851, and then passes through internal 5.8GHz-BPF. After that, it is supplied to Antenna Switch block of IC851.

This block selects the TX 5.8GHz signal or RX 5.8G signal, and connect to Antenna terminal.

V_PA is approximately 4.0V at Base Unit, and 3.3V at Handset.

<Base Unit>

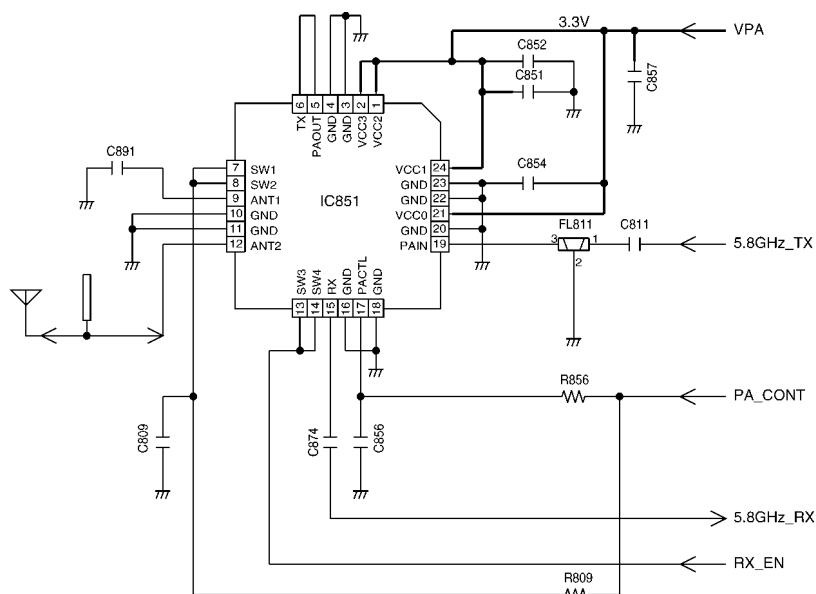


IC851 includes Switches for High frequency signals, and controlled by ANT0 signal and ANT 1 signal from DSP.

DSP is checking RSSI (Received Signal Strength Indicator) signal, and selects better condition Antenna from two antennas.

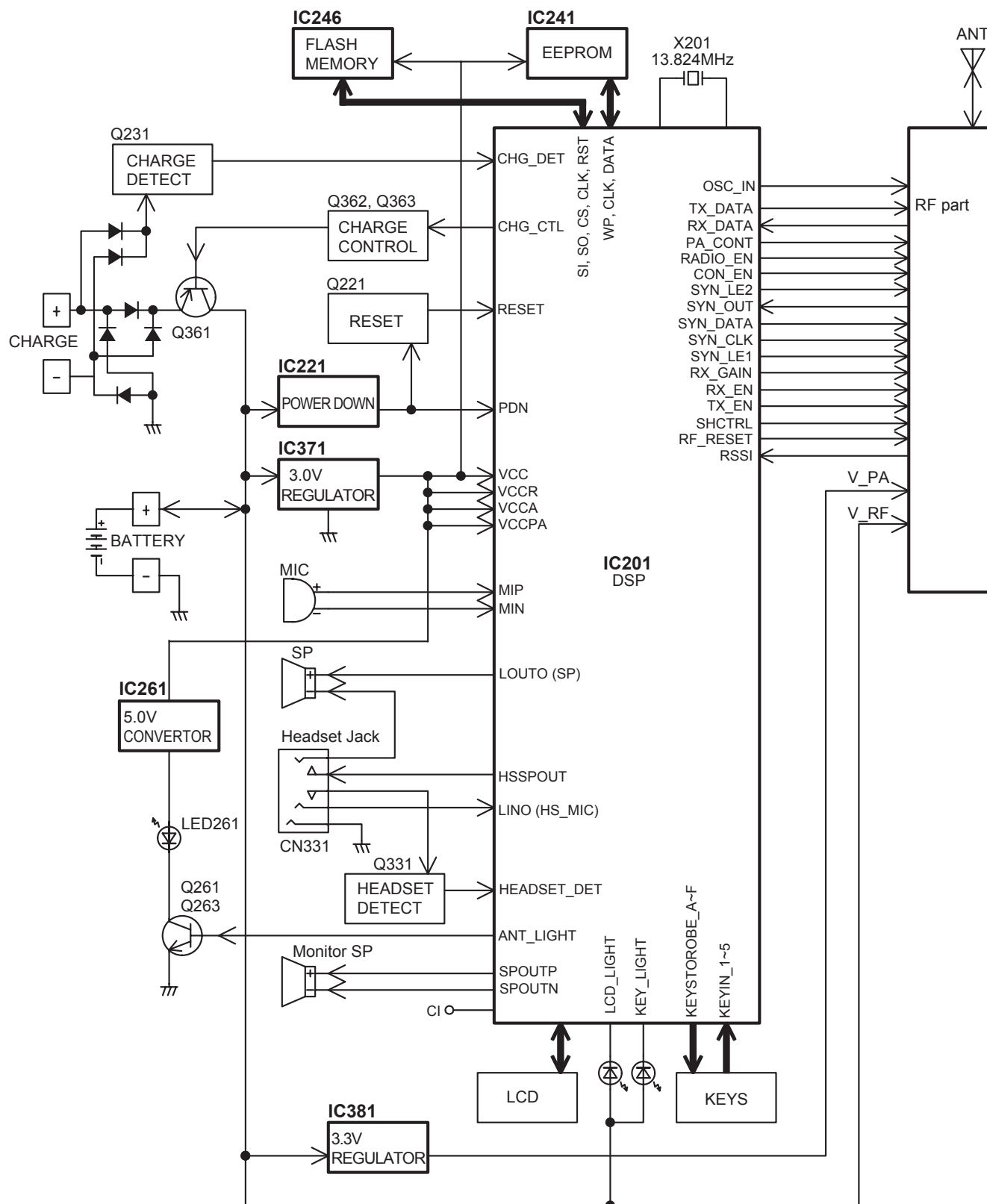
At the TX mode 5.8GHz TX signal from 5.8GHz PA block leads to selected Antenna terminal, at the RX mode 5.8GHz RX signal from selected Antenna terminal leads to 5.8GHz LNA circuit.

<Handset>



IC851 includes Switch for High frequency signals, and controlled by PA_CONT signal and RX_EN signal from DSP. At the TX mode 5.8GHz TX signal from 5.8GHz PA block leads to Antenna terminal, at the RX mode 5.8GHz RX signal from Antenna terminal leads to 5.8GHz LNA circuit.

16 BLOCK DIAGRAM (HANDSET)



KX-TGA550 BLOCK DIAGRAM (Handset)

17 CIRCUIT OPERATION (HANDSET)

17.1. Construction

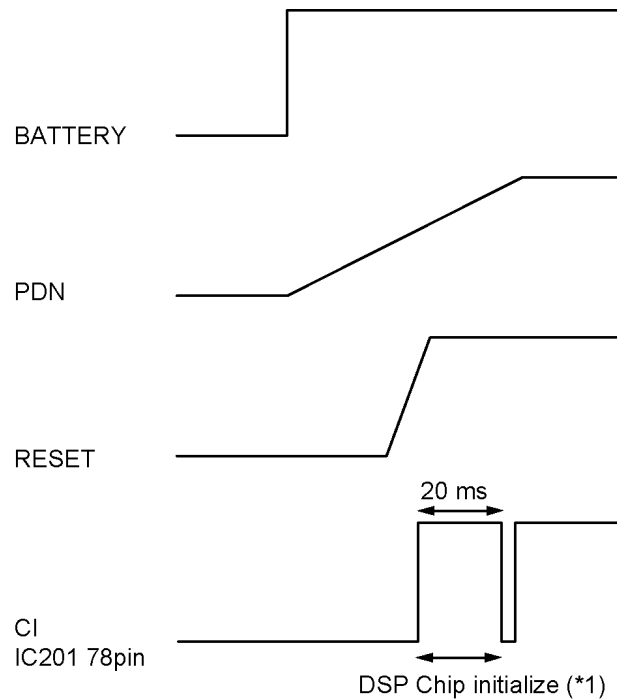
The circuit mainly consists of DSP and RF part as shown in the block diagram.

17.1.1. DSP: IC201

Function

- Battery Low, Power down detect circuit
 - Ringer Generation
 - Interface circuit
- RF part, Speaker, Mic, LED, Key scan, LCD, Headset

Initialize



Note:

(*1) The initializing time of the DSP chip is 20ms under normal conditions.

17.1.2. RF part

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

17.1.3. EEPROM: IC241

All setting data is stored.

ex: ID code, user setting (Phonebook, Caller ID data)

17.1.4. Flash Memory: IC246

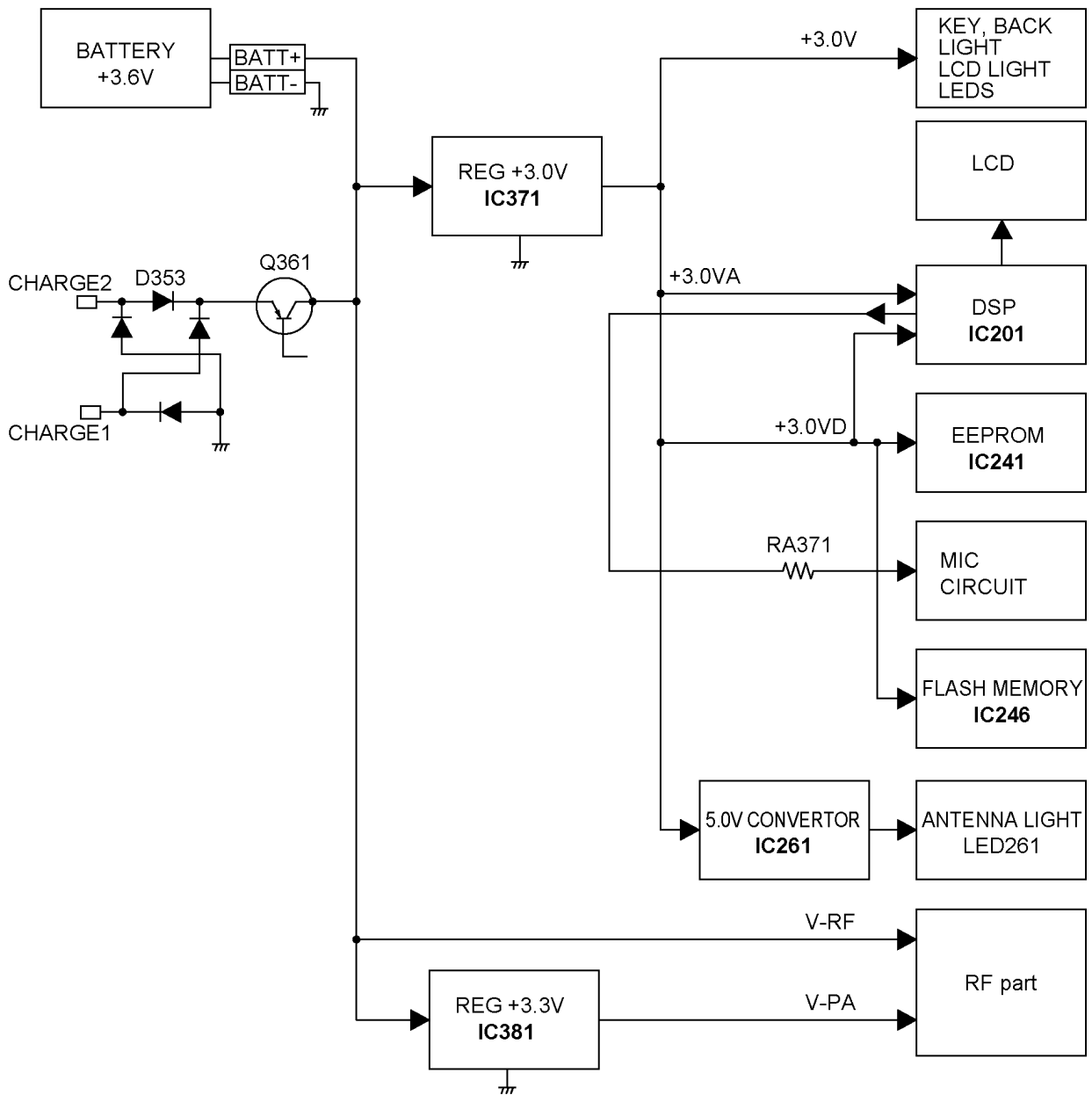
Following information data is stored.

- Ringer melody

17.2. Power Supply Circuit

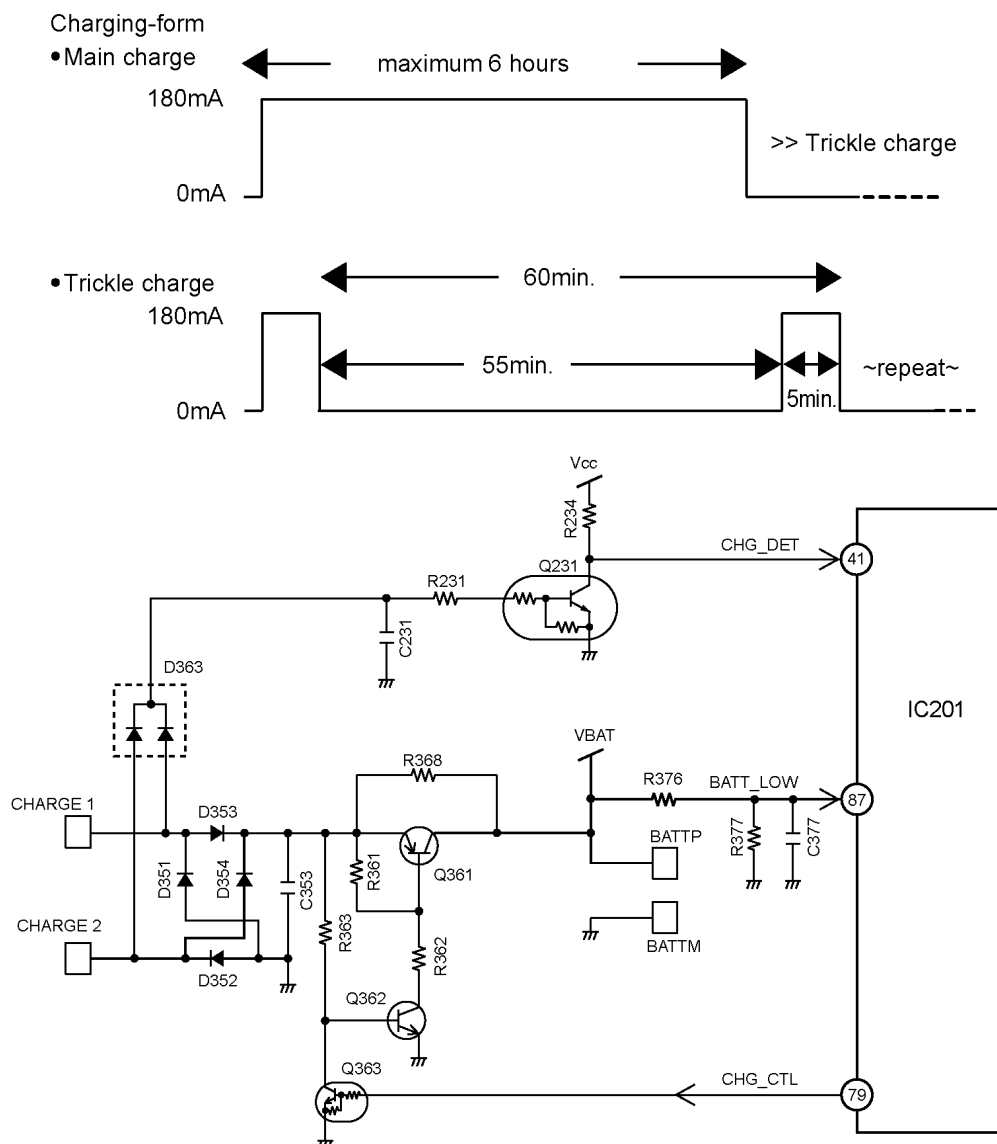
Voltage is supplied separately to each block.

Block Diagram (Handset Power)



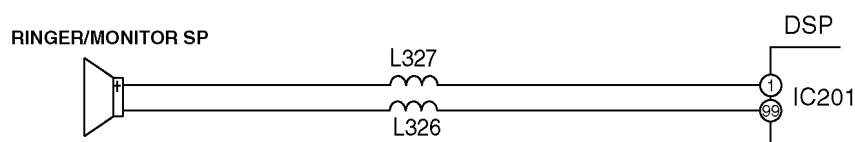
17.3. Charge Circuit

When the Handset is put on the cradle of the Base unit or the charger, the power is supplied from CHARGE+ and CHARGE- terminals to charge the battery via D353 and R368 or Q361. The voltage between CHARGE+ and CHARGE- flows R231 → Q231 → pin41 of IC201, where the charge is detected. Then IC201 calculates the battery consumption amount from the previous charge, and it controls Q361/Q362/Q363 by pin79 of IC201 until charging is complete. When charging is complete, the control pattern is switched to Trickle charging form from Operational charging form.



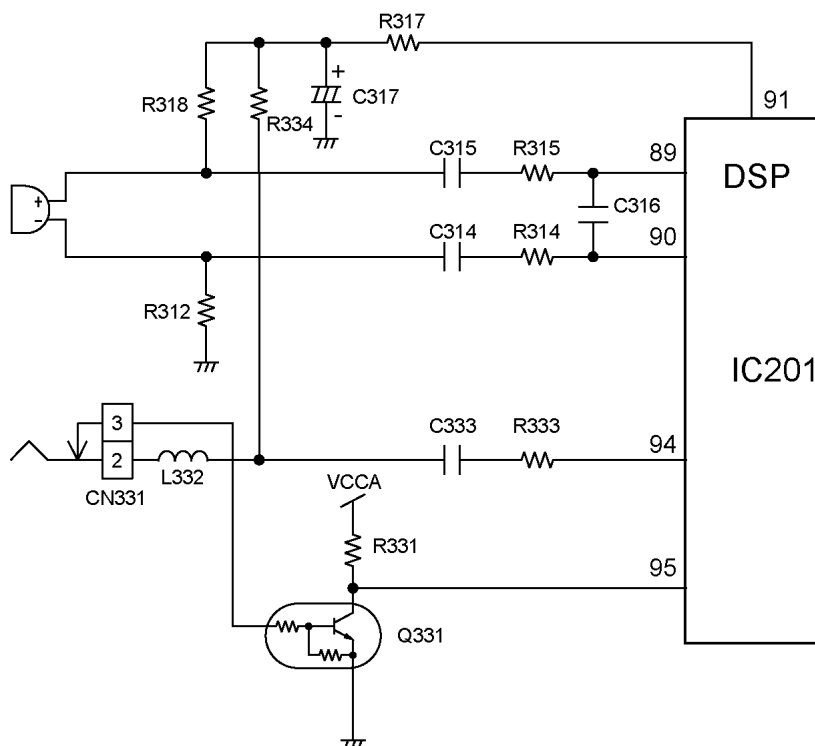
Pin 87 of IC201 monitors the battery voltage and detect BATT LOW at 3.50V.

17.4. Ringer and Handset SP-Phone



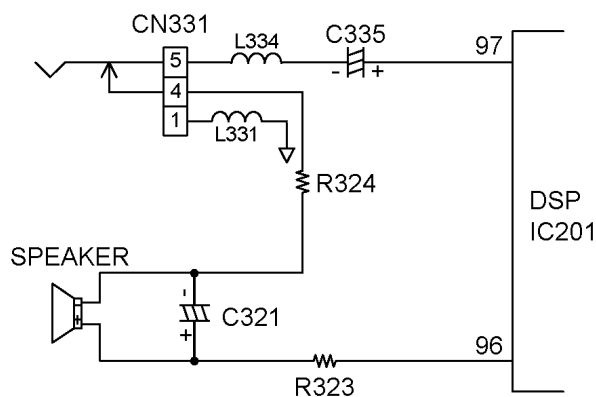
17.5. Sending Signal

The voice signal from the microphone is input to DSP (89, 90). CN331 is the headset jack. When the headphone is connected, the Q331 detect it. The input from the microphone of the Handset (MIN, MIP) is cut and the microphone signal from the headset is input to DSP (94). Also the power for the microphone is supplied from DSP (91) and the power is turned OFF on standby.



17.6. Reception Signal

The voice signal from the Base Unit is output to DSP (97) (HSSPOUT). This signal is led to the headset jack (CN331). The signal through the headset jack and the other signal output from DSP (96) drives the speaker. When the headset is inserted to the jack, the voice signal is cut at the jack, so the sound does not come out from the speaker, but from the headset only.



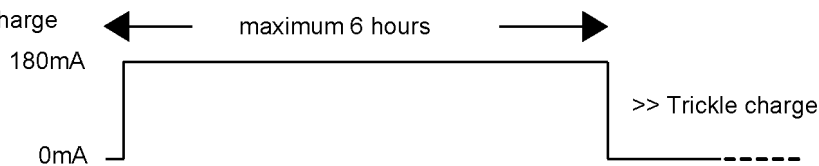
18 CIRCUIT OPERATION (CHARGER UNIT)

The voltage from the AC is supplied to the charge circuits. Main charge (180mA at the Battery) of maximum 6-hours is started soon after the Handset is placed on the Base Unit. Then it changes to Trickle charge to prevent from overcharging.

Charging form

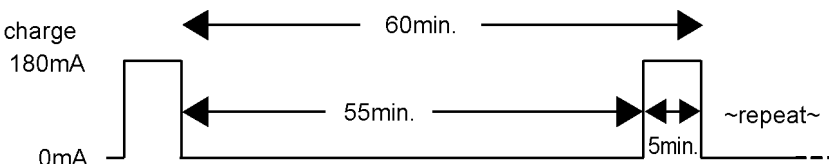
Charging-form

• Main charge

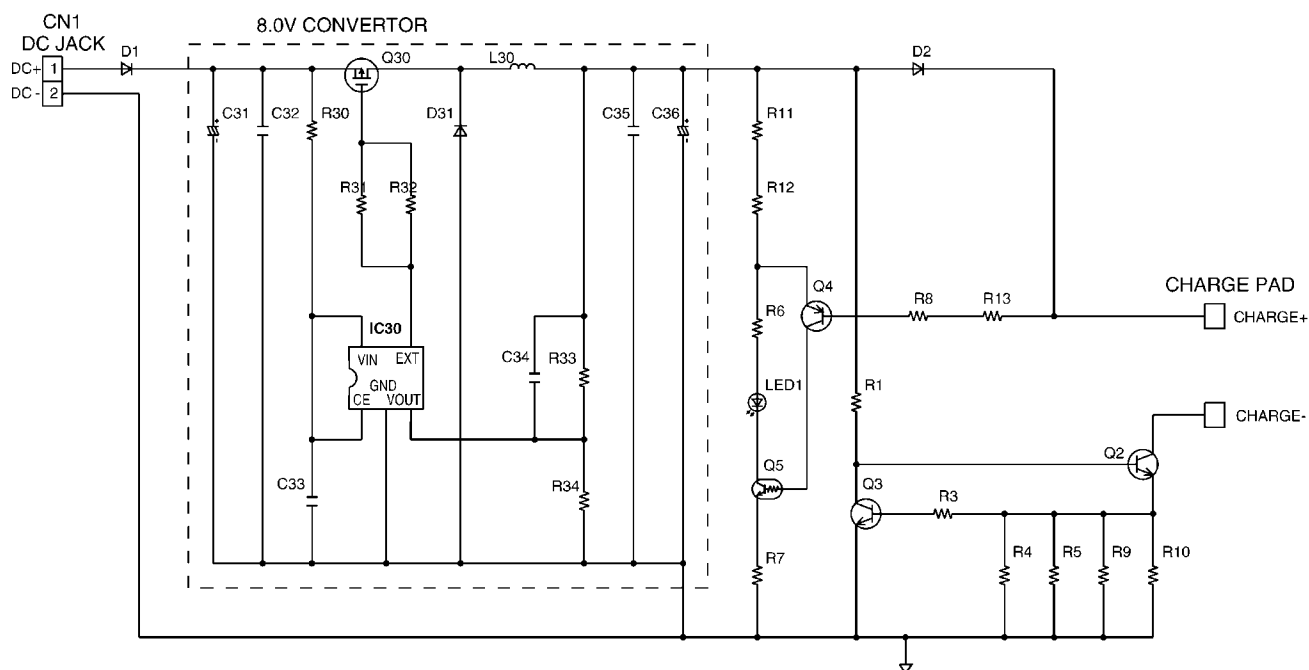


Handset controls
Charging-form pattern.

• Trickle charge



Q4 detects the ON-HOOK state (Handset is placed on Base Unit), then Q5 turns ON and LED1 lights up.



Q2 and Q3 regulate the charge current.

The route for this is as follows: DC+pin of CN1→D1→Q30→L30→D2→CHARGE+pad→Handset→CHARGE pad→Q2→R4, R5, R9 and R10→DC pin of CN1.

19 SIGNAL ROUTE

Each signal route is as follows.

SIGNAL ROUTE	IN	→	ROUTE	→	OUT
HANDSET TX	HANDSET MIC - C314/C315 - R314/R315 - IC201(90/89 - 23) - <HANDSET_RF_TX_ROUTE> - ANT. --- ---ANT. - <BASE_UNIT_RF_RX_ROUTE> - IC501(66 - 34) - R183 - C185 - R185 - Q161 - Q141 - D101 - L101/L102 - CN101(TEL LINE)				
HANDSET RX	CN101(TEL LINE) - L101/L102 - D101 - Q141 - C165 - R167 - C167 - Q171 - C178 - R178 - IC501(36 - 57) - <BASE_UNIT_RF_TX_ROUTE> - ANT. --- --- ANT. - <HANDSET_RF_RX_ROUTE> - IC201(38 - 97/96) - [C335 - L334 - HEADSET_JACK(5 - 4) - R324/R323 - HANDSET SPEAKER				
HEADSET TX	HEADSET_JACK(2) - L332 - C333 - R333 - IC201(94 - 23) - <HANDSET_RF_TX_ROUTE> - ANT. --- ---ANT. - <BASE_UNIT_RF_RX_ROUTE> - IC501(66 - 34) - R183 - C185 - R185 - Q161 - Q141 - D101 - L101/L102 - CN101(TEL LINE)				
HEADSET RX	CN101(TEL LINE) - L101/L102 - D101 - Q141 - C165 - R167 - C167 - Q171 - C178 - R178 - IC501(36 - 57) - <BASE_UNIT_RF_TX_ROUTE> - ANT. --- --- ANT. - <HANDSET_RF_RX_ROUTE> - IC201(38 - 97) - C335 - L334 - HEADSET_JACK(5)				
HANDSET SP-Phone TX	HANDSET MIC - C314/C315 - R314/R315 - IC201(90/89 - 23) - <HANDSET_RF_TX_ROUTE> - ANT. --- ---ANT. - <BASE_UNIT_RF_RX_ROUTE> - IC501(66 - 34) - R183 - C185 - R185 - Q161 - Q141 - D101 - L101/L102 - CN101(TEL LINE)				
HANDSET SP-Phone RX	CN101(TEL LINE) - L101/L102 - D101 - Q141 - C165 - R167 - C167 - Q171 - C178 - R178 - IC501(36 - 57) - <BASE_UNIT_RF_TX_ROUTE> - ANT. --- --- ANT. - <HANDSET_RF_RX_ROUTE> - IC201(38 - 1/99) - L327/L326 - MONITOR SP				
INTERCOM HANDSET TO BASE UNIT	HANDSET MIC - C314/C315 - R314/R315 - IC201(90/89 - 23) - <HANDSET_RF_TX_ROUTE> - ANT. --- --- ANT. - <BASE_UNIT_RF_RX_ROUTE> - IC501(66 - 29/31) - R473/R474 - SPEAKER				
INTERCOM BASE UNIT TO HANDSET	MIC - C457/C458 - R459/R460 - IC501(43/42 - 57) - <BASE_UNIT_RF_TX_ROUTE> - ANT. --- --- ANT. - <HANDSET_RF_RX_ROUTE> - IC201(38 - 97/96) - [C335 - L334 - HEADSET_JACK(5 - 4) - R324/R323 - HANDSET SPEAKER				
BASE UNIT SP-Phone TX	MIC - C457/C458 - R459/R460 - IC501(43/42 - 34) - R183 - C185 - R185 - Q161 - Q141 - D101 - L101/L102 - CN101(TEL LINE)				
BASE UNIT SP-Phone RX	CN101(TEL LINE) - L101/L102 - D101 - Q141 - C165 - R167 - C167 - Q171 - C178 - R178 - IC501(36 - 29/31) - R473/R474 - SPEAKER				
GREETING RECORDING	MIC - C457/C458 - R459/R460 - IC501(43/42 - 60/61) - IC601				
GREETING PLAY TO TEL LINE	IC601 - IC501(60/61 - 34) - R183 - C185 - R185 - Q161 - Q141 - D101 - L101/L102 - CN101(TEL LINE)				
ICM RECORDING	CN101(TEL LINE) - L101/L102 - D101 - Q141 - C165 - R167 - C167 - Q171 - C178 - R178 - IC501(36 - 60/61) - IC601				
ICM PLAY TO SPEAKER	IC601 - IC501(60/61 - 29/31) - R473/R474 - SPEAKER				

Note:

: inside of Handset

Each signal route is as follows.

SIGNAL ROUTE	IN	→	ROUTE	→	OUT
DTMF SIGNAL ——— TO TEL LINE	IC501(34)	- R183 - C185 - R185 - Q161 - Q141 - D101 - L101/L102 - CN101(TEL LINE)			
DTMF DETECTION	CN101(TEL LINE)	- L101/L102 - D101 - Q141 - C165 - R167 - C167 - Q171 - C178 - R178 - IC501(36)			
CALLER ID ———	CN101(TEL LINE)	- L101/L102 - C121/122 - R121/122 - IC501(40/39)			
BELL DETECTION	CN101(TEL LINE)	- L101/L102 - R111/R112 - C111/C112 - Q111 - IC501(3)			

RF part signal route

SIGNAL ROUTE	IN	→	ROUTE	→	OUT
HANDSET RF [TX_ROUTE]	< R747 - R751 - IC701(27 - 1) - L751 - C716 - IC801(17 - 2) - FL811 - IC851(19-12) >				
HANDSET RF [RX_ROUTE]	< IC851(12-15) - C874 - C871 - Q871(B - C) - C827 - FL821 - C821 - IC801(5 - 15) - C725 - R724 - C722 - IC701(4 - 16) >				
BASE UNIT RF [TX_ROUTE]	< R747 - R751 - IC701(27 - 1) - L751 - C716 - IC801(17 - 2) - FL811 - IC851(19 - 9/12) >				
HANDSET RF [RX_ROUTE]	< IC851(9/12 - 15) - C874 - C871 - Q871(B - C) - C827 - FL821 - C821 - IC801(5 - 15) - C725 - R724 - C722 - IC701(4 - 16) >				

Note:

 : inside of Handset

20 CPU DATA (BASE UNIT)

20.1. IC501

PIN	Description	I/O	High	High_Z	Low
1	LINE_SZ	D.O	On	--	Off
2	NOT_RLY	D.O	On Hook	--	Off Hook
3	BELL	D.I	OFF	--	On
4	RLY	D.O	Off Hook	--	On Hook
5	AC_DOWN_DET	D.I	High	--	Low
6	KEY_STB_F	D.O	Active	Not	--
7	KEY_STB_E	D.O	Active	Not	--
8	KEY_STB_D	D.O	Active	Not	--
9	KEY_STB_C	D.O	Active	Not	--
10	KEY_STB_B	D.O	Active	Not	--
11	KEY_STB_A	D.O	Active	Not	--
12	CHG_CTRL	D.O	No Charge	--	Charge
13	CHG_DET	D.I	Off Charge	--	On Charge
14	VCC	VCC	VCC	--	--
15	GND	GND	--	--	GND
16	KEY_IN_6	D.O	Non	--	Key In
17	KEY_IN_5	D.I	Non	--	Key In
18	KEY_IN_4	D.I	Non	--	Key In
19	KEY_IN_3	D.I	Non	--	Key In
20	KEY_IN_2	D.I	Non	--	Key In
21	KEY_IN_1	D.I	Non	--	Key In
22	INT_LED	D.I.O	--	Off	On
23	SYN_DATA	D.O	High	--	Low
24	SYN_LE1	D.O	Not	--	Active
25	SYN_CLK	D.O	High	--	Low
26	SYN_DI	D.I	High	--	Low
27	SYN_LE2	D.O	Not	--	Active
28	GND	GND			
29	SPOUTP	A.O			
30	GNDPA	GND			
31	SPOUTN	A.O			
32	VCCPA	VCC			
33	HSSPOUT	A.O			
34	LOUT0	A.O			
35	DCIN0	A.I			
36	LIN0	A.I			
37	VCCA	VCC			
38	GNDPA	GND			
39	HSMIP	A.I			
40	HSMIN	A.I			
41	VREF	A.O			
42	MIN	A.I			
43	MIP	A.I			
44	GNDP	GND			
45	TXMOD	A.O			
46	VREFR	A.O			
47	RSSI	A.I			
48	VCCR	VCC			
49	GNDPLL	GND			
50	VCCPLL	VCC			
51	XOUT	A.O			
52	XIN	A.I			
53	GND	GND			
54	Reset	D.I	Normal	--	Reset
55	Power Down	D.I	Normal	--	Power Down
56	FLASH_RST	*	High	Middle	Low
57	TX_OUT	D.O	High	--	Low
58	PA_CONT	D.O	Low Power	--	High Power
59	FLASH_SO	*	High	Middle	Low
60	FLASH_SI	*	High	Middle	Low
61	FLASH_CS	*	High	Middle	Low

PIN	Description	I/O	High	High_Z	Low
62	BMCCLK	D.O	High	--	Low
63	RXEN	D.O	Active	--	Off
64	TXEN	D.O	Active	--	Off
65	RXGAIN	D.O	High	--	Low
66	RXI	D.I	High	--	Low
67	CHG_LED	D.I.O	--	Off	On
68	INUSE_LED	D.I.O	--	Off	On
69	ANS_LED	D.I.O	--	Off	On
70	RF_RST	D.O	Normal	--	WakeUp
71	RADIO_EN	D.O	Active	--	Not
72	GND	GND	--	--	GND
73	VCC	VCC	VCC	--	--
74	SHCTRL	D.O	Active	--	Not
75	ANT0	D.O	On	--	Off
76	TCK	D.O	--	--	--
77	TMS	D.O	--	--	--
78	TDI	D.I	--	--	--
79	TD0	D.O	--	--	--
80	SEG12	D.O	High	--	Low
81	SEG11	D.O	High	--	Low
82	SEG10	D.O	High	--	Low
83	SEG9	D.O	High	--	Low
84	SEG8	D.O	High	--	Low
85	SEG7	D.O	High	--	Low
86	SEG6	D.O	High	--	Low
87	SEG5	D.O	High	--	Low
88	SEG4	D.O	High	--	Low
89	SEG3	D.O	High	--	Low
90	COM2	D.O	High	Middle	Low
91	COM1	D.O	High	Middle	Low
92	UART_TX	D.O	High	--	Low
93	UART_RX	D.I	High	--	Low
94	INT0	D.O	--	--	--
95	MSG_LED	D.I.O	--	Off	On
96	GND	GND	--	--	GND
97	VCC	VCC	VCC	--	--
98	SP_LED	D.I.O	--	Off	On
99	FLASH_CLK	*	High	Middle	Low
100	INT_1	D.O	High	--	Low

Note:

- The mark “*” in the I/O column means the port is controlled by the firmware.
- Data in the blank columns are omitted because of the Analog I/O.

21 CPU DATA (HANDSET)

21.1. IC201

PIN	Description	I/O	High	High_Z	Low
1	SPOUTP	A.O			
2	BCLK	A.O			
3	NC	A.O			
4	RSSI	A.I			
5	XIN	A.I			
6	XOUT	A.O			
7	VDD	VDD	--	--	VDD
8	VCC	VCC	VCC	--	--
9	GND	GND	--	--	GND
10	NC	I/O	--	--	--
11	NC	I/O	--	--	--
12	VCC	VCC	VCC	--	--
13	DCDCGND	A.O			
14	KEY_BL	A.O	--	Off	On
15	NC	A.O			
16	RSTN	D.I	Normal	--	Reset
17	FLASH_RESET	D.O	High	--	Low
18	FLASH_DO	D.O	High	--	Low
19	FLASH_DI	D.I	High	--	Low
20	FLASH_CS	D.O	High	--	Low
21	NC	D.O	--	--	Low
22	SERIAL_DI	D.I	High	--	Low
23	TXOUT	D.O	High	--	Low
24	PA_CTRL	D.O	High	--	Low
25	SYN_LE2	D.O	On	--	Off
26	CON_EN	D.O	High	--	Low
27	RF_RESET	D.O	Normal	--	Reset
28	NC	D.O	--	--	Low
29	SHCTRL	D.O	On	--	Off
30	GND	GND	--	--	GND
31	VCC	VCC	VCC	--	--
32	SERIAL_LE	D.O	High	--	Low
33	SERIAL_CLK	D.O	High	--	Low
34	SERIAL_DATA	D.I	High	--	Low
35	RXEN	D.O	Active	--	Off
36	TXEN	D.O	Active	--	Off
37	RXGAIN	D.O	High	--	Low
38	RXI	D.I	High	--	Low
39	NC	D.O	High	--	Low
40	NC	D.O	High	--	Low
41	CHG_DET	D.I	Off Charge	--	On Charge
42	NC	D.O	--	--	Low
43	NC	D.O	--	--	Low
44	NC	D.O	--	--	Low
45	NC	D.O	--	--	Low
46	NC	D.O	--	--	Low
47	NC	D.O	--	--	Low
48	LCD_DB6	D.O	High	--	Low
49	LCD_DB7	D.O	High	--	Low
50	GND	GND	--	--	GND
51	VCC	VCC	VCC	--	--
52	LCD_RESET	D.O	Normal	--	Reset
53	FLASH_CLK	D.O	--	--	--
54	ANT_LED1	D.O	On	--	Off
55	ANT_LED2	D.O	On	--	Off
56	ANT_LED3	D.O	On	--	Off
57	LCD_BL	D.O	On	--	Off
58	LCD_CS	D.O	High	--	Low
59	NC	D.O	--	--	Low
60	LCD_RD/AO	D.O	High	--	Low
61	LCD_PWR_CTRL	D.O	High	--	Low
62	STB_E	D.O	--	Not	Active

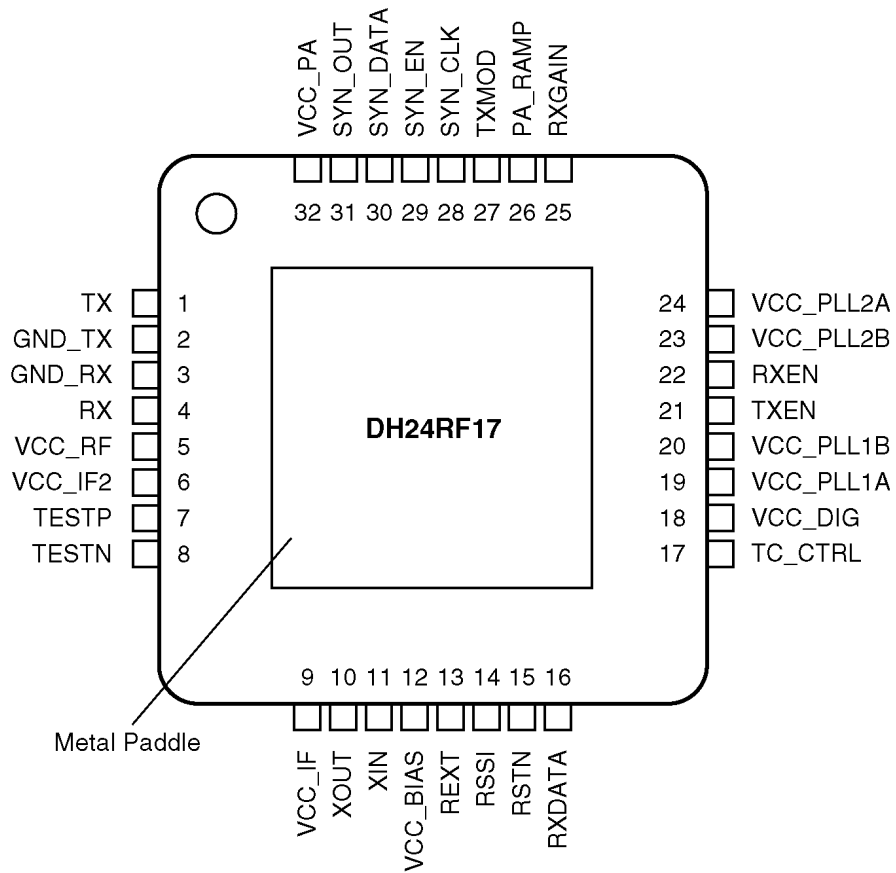
PIN	Description	I/O	High	High_Z	Low
63	STB_D	D.O	--	Not	Active
64	STB_C	D.O	--	Not	Active
65	STB_B	D.O	--	Not	Active
66	STB_A	D.O	--	Not	Active
67	GND	GND	--	--	GND
68	VCC	VCC	VCC	--	--
69	TCK	D.I	--	--	--
70	TMS	D.I	--	--	--
71	TDI	D.I	--	--	--
72	TDO	D.O	--	--	--
73	KIN_1	D.I	Non	--	Key In
74	KIN_2	D.I	Non	--	Key In
75	KIN_3	D.I	Non	--	Key In
76	KIN_4	D.I	Non	--	Key In
77	KIN_5	D.I	Non	--	Key In
78	LED_CTRL	D.O	On	--	Off
79	CHG_CTRL	D.O	Trickle	--	Normal
80	EEP_SCL	D.O	High	--	Low
81	EEP_SDA	D.I.O	High	--	Low
82	UART_TX	D.O	High	--	Low
83	UART_RX	D.I	High	--	Low
84	EEP_WP	D.O	WP	--	Write
85	GND	GND	--	--	GND
86	PDN	A.I			
87	IBAT	A.I			
88	VREF	A.O			
89	MIP	A.O			
90	MIN	A.O			
91	MPWR	A.I.O			
92	GNDA	GND A	--	--	GNDA
93	VCCA	VCC A	VCCA	--	--
94	HEADSET_MIN	A.I			
95	HEADSET_DET	A.I			
96	HSSPOUTN	A.O			
97	HSSPOUTP	A.O			
98	VCCPA	VCC PA	VCCPA	--	--
99	SPOUTN	A.O			
100	GNDDPA	GND PA	--	--	GNDDPA

Note:

- Data in the blank columns are omitted because of the Analog I/O.

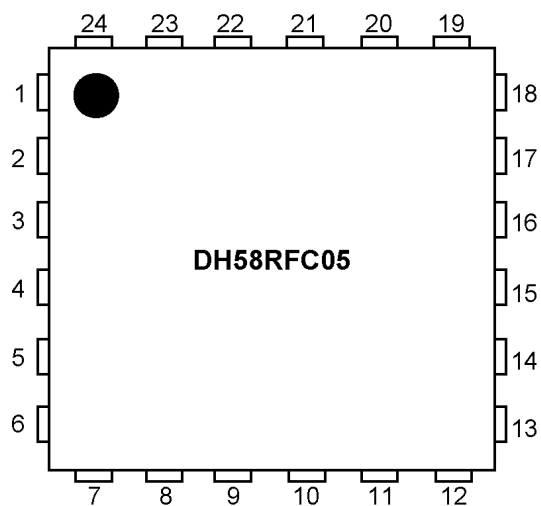
22 EXPLANATION OF IC TERMINALS (RF PART)

22.1. IC701



Pin	Description	I/O	Pin	Description	I/O
1	TX	O & VCC	18	VCC_DIG	VCC
2	GND_TX	GND	19	VCC_PLL1A	VCC
3	GND_RX	GND	20	VCC_PLL1B	VCC
4	RX	I	21	TXEN	I
5	VCC_RF	VCC	22	RXEN	I
6	VCC_IF2	VCC	23	VCC_PLL2B	VCC
7	TESTP	O	24	VCC_PLL2A	VCC
8	TESTN	O	25	RXGAIN	I
9	VCC_IF	VCC	26	PA_RAMP	I
10	XOUT	XI/XO	27	TXMOD	I
11	XIN	XI/XO	28	SYN_CLK	I
12	VCC_BIAS	VCC	29	SYN_EN	I
13	REXT	I	30	SYN_DATA	I
14	RSSI	O	31	SYN_OUT	O
15	RSTN	I	32	VCC_PA	VCC
16	RXDATA	O	PKG	PADDLE_GND	GND
17	TC_CTRL	I			

22.2. IC801

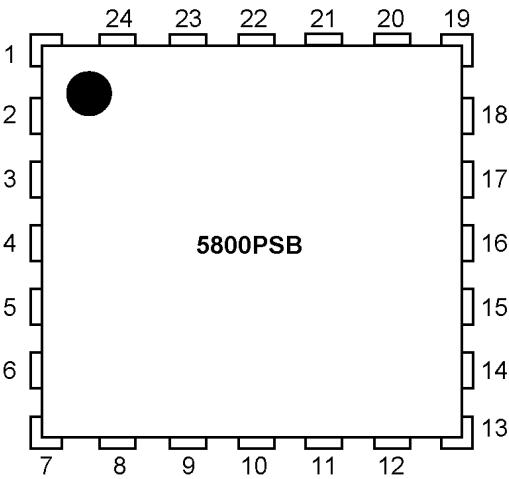


Pin	Description	I/O
1	VCC_PA2	VCC
2	TX	O
3	GND_ISOL1	GND
4	GND_ISOL2	GND
5	RX	I
6	VCC_LNA	VCC
7	REFIN	I
8	REFOUT	O
9	RXGAIN	I
10	CP_OUT	O
11	TV_IN	I
12	VARGND	GND

Pin	Description	I/O
13	PLL_BYP	O
14	VCC_PLL	VCC
15	2G4_OUT	O
16	GND_ISOL3	GND
17	2G4_IN	I
18	VCCTXR	VCC
19	SYN_CLK	I
20	SYN_EN	I
21	SYN_DATA	I
22	RXEN	I
23	TXEN	I
24	VCC_PA1	VCC

Backside Terminal: GND

22.3. IC851



Pin	Description	I/O
1	VCC2	VCC
2	VCC3	VCC
3	GND	GND
4	GND	GND
5	PA_OUT	O
6	TX_IN	I
7	SW1	I
8	SW2	I
9	ANT1_IN/OUT	I/O
10	GND	GND
11	GND	GND
12	ANT2_IN/OUT	I/O

Pin	Description	I/O
13	SW3	I
14	SW4	I
15	RX_OUT	O
16	GND	GND
17	PA_CTL	I
18	GND	GND
19	PA_IN	I
20	GND	GND
21	VCC0	VCC
22	GND	GND
23	GND	GND
24	VCC1	VCC

Backside Terminal: GND

23 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.

23.1. 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)

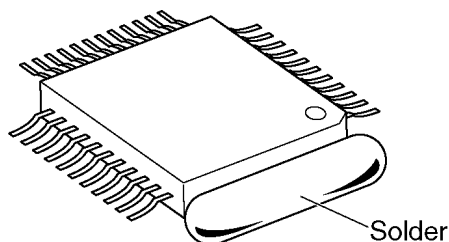
Note: See **ABOUT LEAD FREE SOLDER (PbF: Pb free)** (P.4)

23.2. FLAT PACKAGE IC REMOVAL PROCEDURE

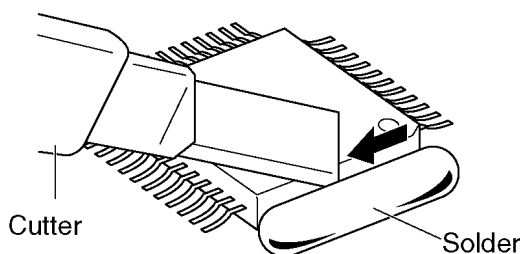
1. Put plenty of solder on the IC pins so that the pins can be completely covered.

Note:

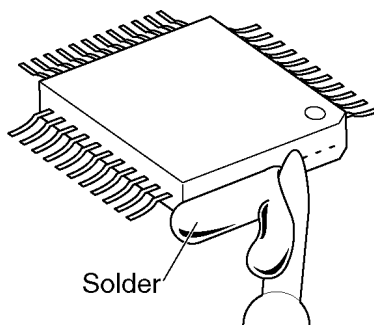
If the IC pins are not soldered enough, you may give pressure to the P.C. board when cutting the pins with a cutter.



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



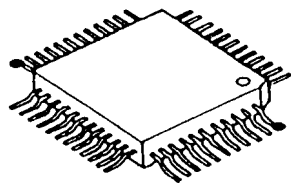
3. While the solder melts, remove it together with the IC pins.



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.

23.3. FLAT PACKAGE IC INSTALLATION PROCEDURE

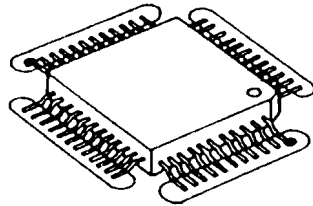
1. Temporarily fix the FLAT PACKAGE IC, soldering the two marked pins.



● - - - - - Temporary soldering point.

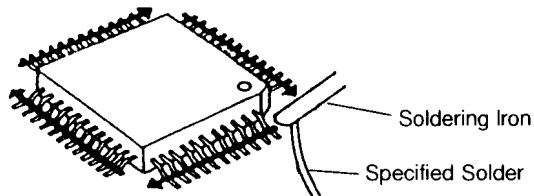
*Check the accuracy of the IC setting with the corresponding soldering foil.

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



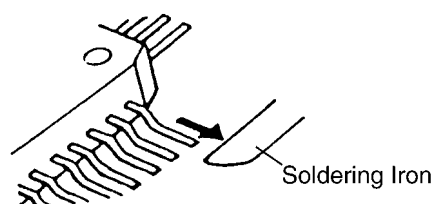
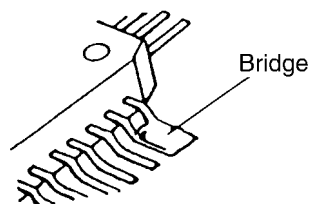
○ - - - - - Flux

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

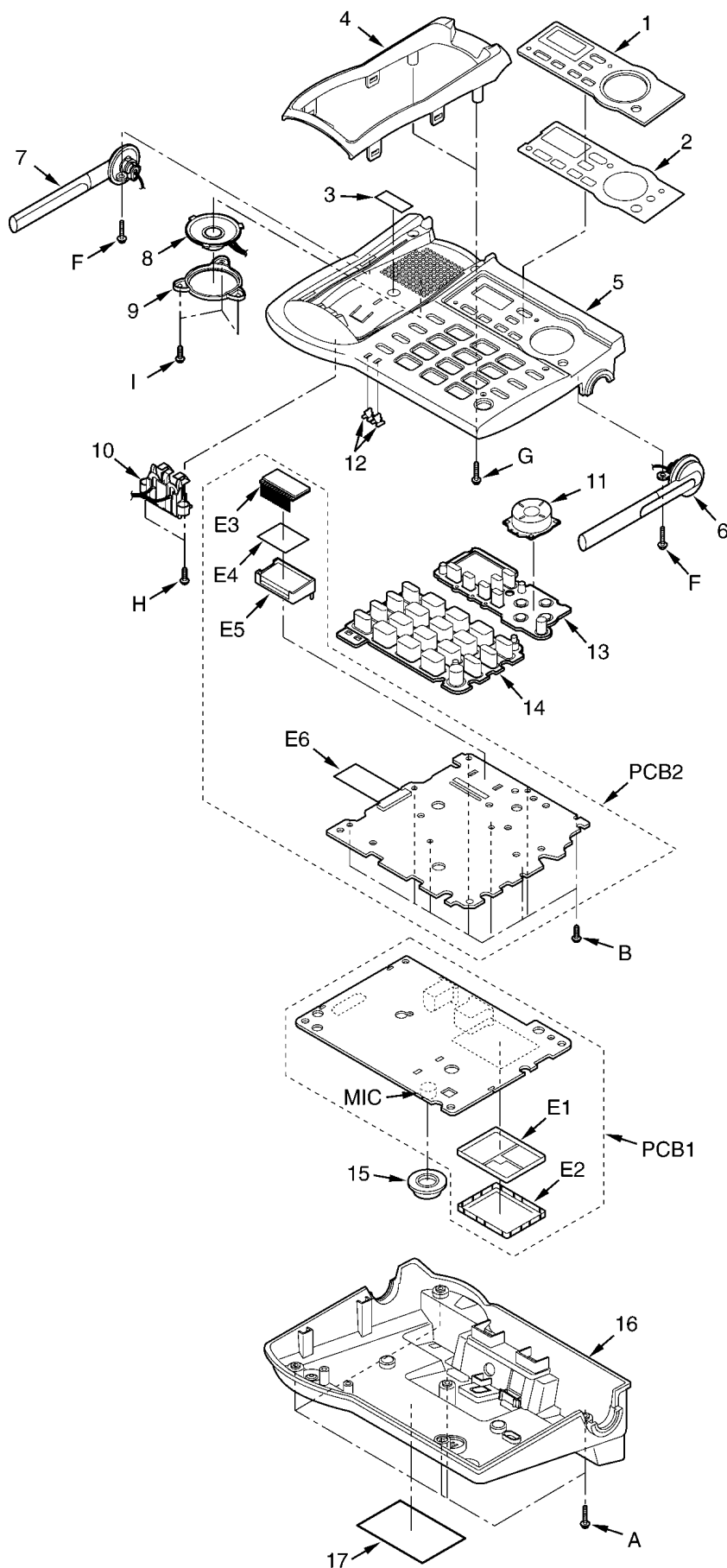


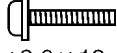
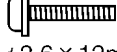
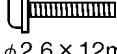
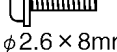
23.4. BRIDGE MODIFICATION PROCEDURE

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

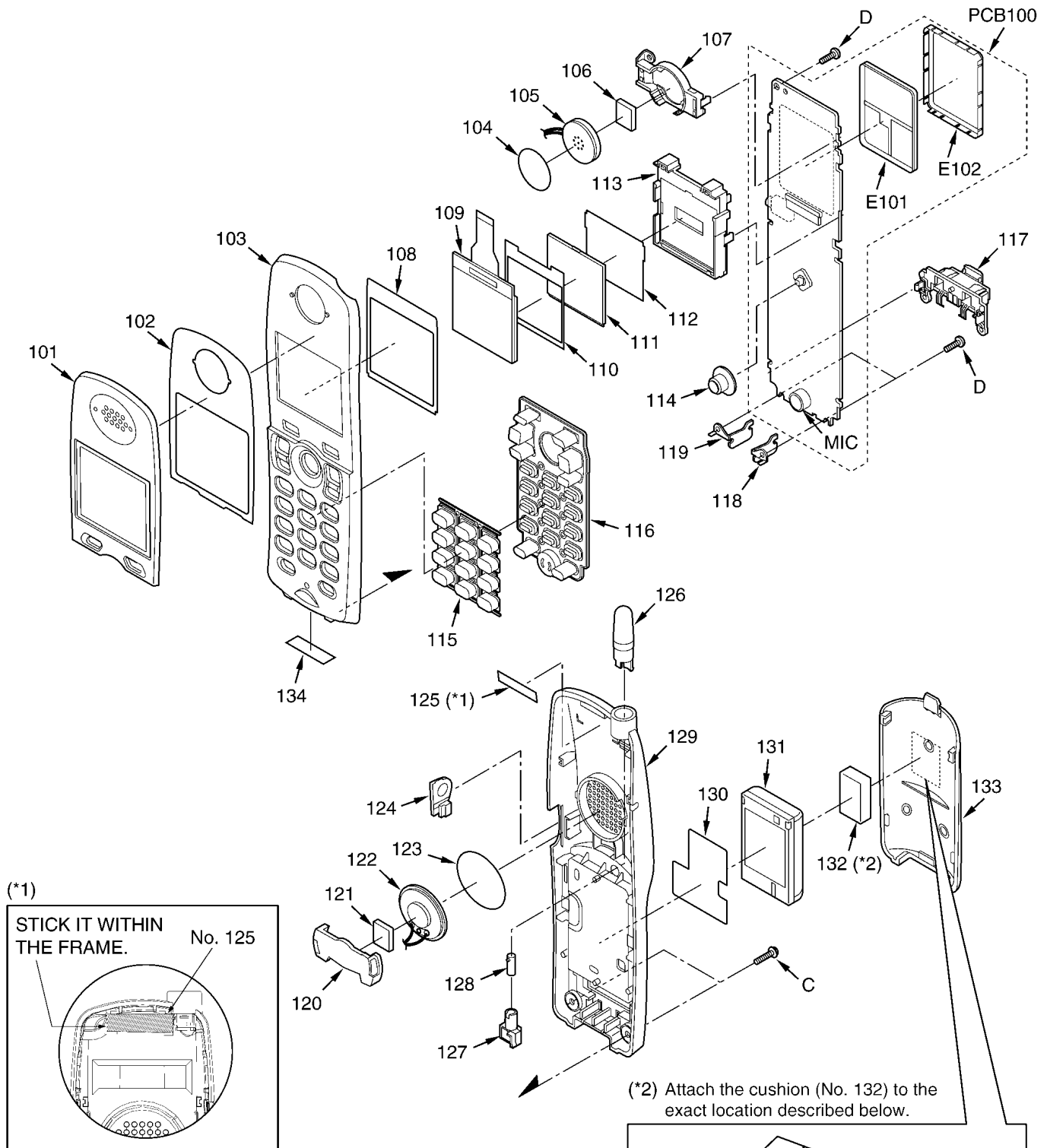


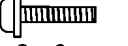
24 CABINET AND ELECTRICAL PARTS (BASE UNIT)

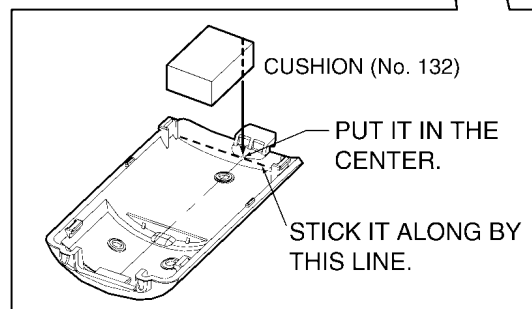


Ref.No.	Part No.	Figure
A	PQHV2612PJ65	 $\phi 2.6 \times 12\text{mm}$
B	XTW26+8PFJ7	 $\phi 2.6 \times 8\text{mm}$
F	PQHV2612PJ65	 $\phi 2.6 \times 12\text{mm}$
G	PQHV2612PJ65	 $\phi 2.6 \times 12\text{mm}$
H	PQHV2612PJ65	 $\phi 2.6 \times 12\text{mm}$
I	XTW26+8PFJ7	 $\phi 2.6 \times 8\text{mm}$

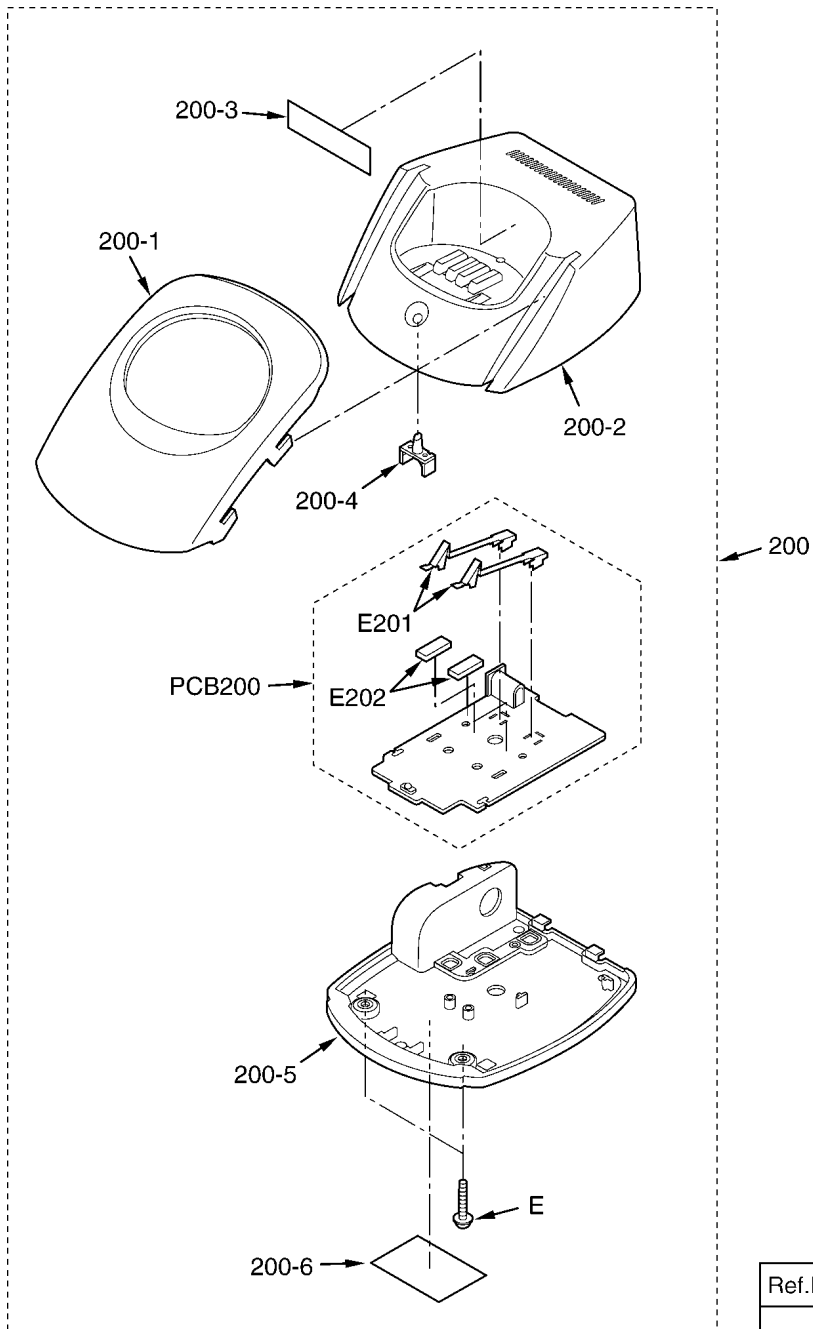
25 CABINET AND ELECTRICAL PARTS (HANDSET)

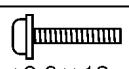


Ref.No.	Part No.	Figure
C	XTW2+R14PFJ	 $\phi 2 \times 14\text{mm}$
D	XTW2+R9PFJ	 $\phi 2 \times 9\text{mm}$



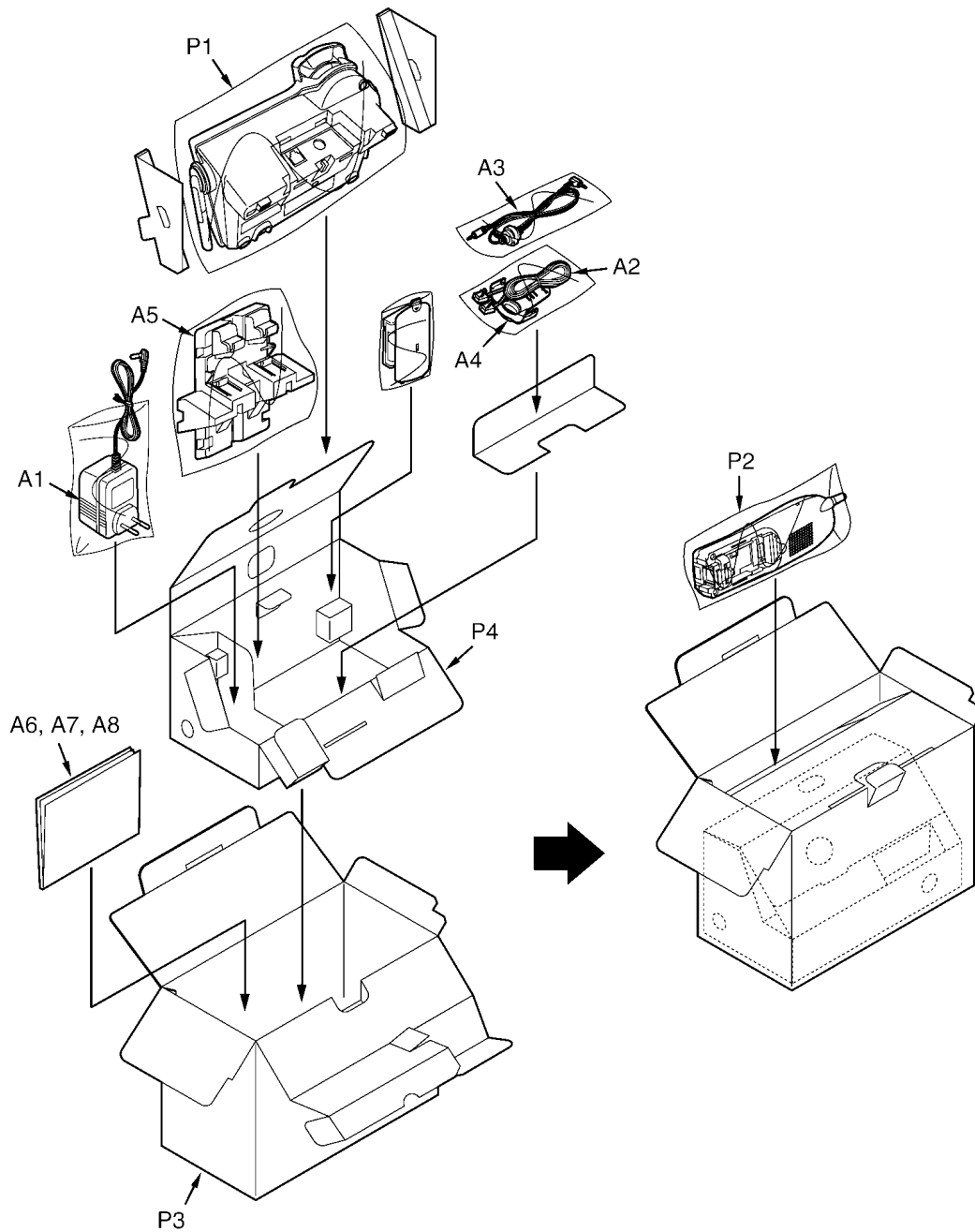
26 CABINET AND ELECTRICAL PARTS (CHARGER UNIT)



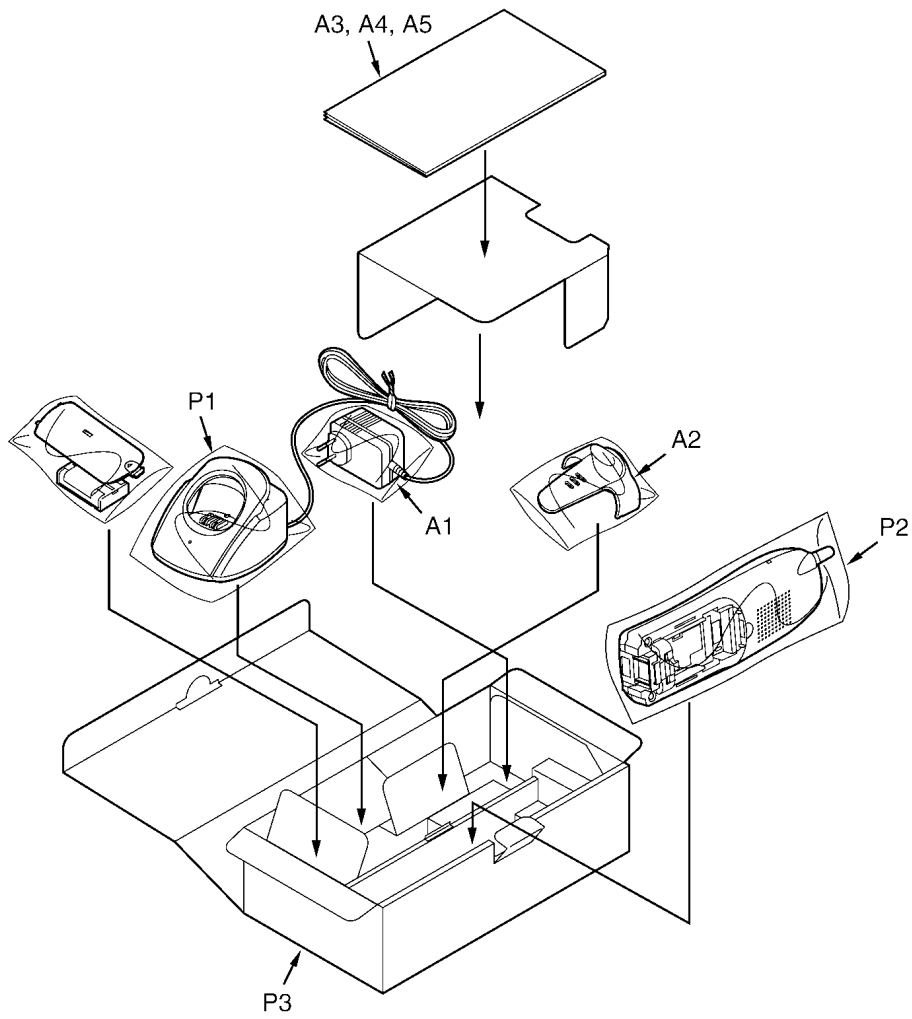
Ref.No.	Part No.	Figure
E	PQHV2612PJ65	 $\phi 2.6 \times 12\text{mm}$

27 ACCESSORIES AND PACKING MATERIALS

27.1. KX-TG5571BXM

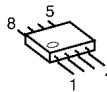
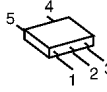
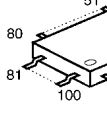
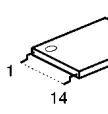
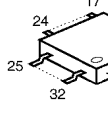
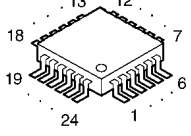
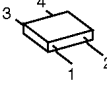
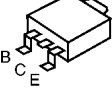
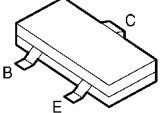
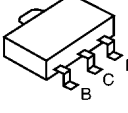
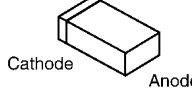
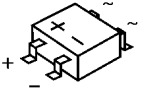


27.2. KX-TGA550BXM (Optional Set)

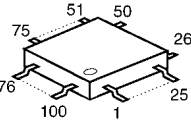
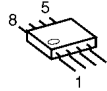
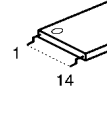
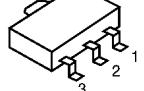
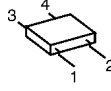
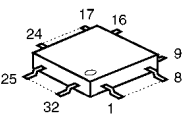
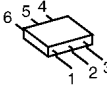
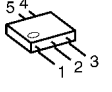
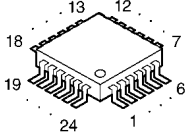
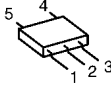
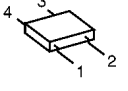
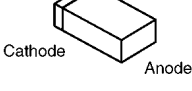
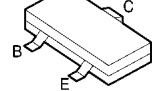
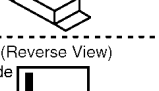
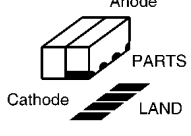
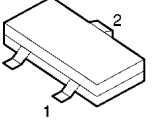


28 TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

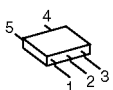
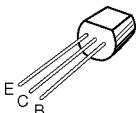
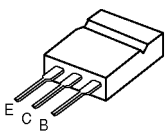
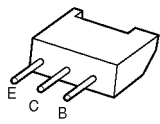
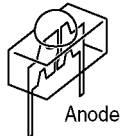
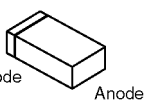
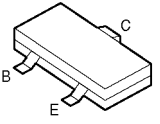
28.1. Base Unit

 C0DBFGD00017	 C0DBAGZ00023 C0CBAAC00083 C0CBABE00029	 C2HBBL000036	 PQWIG5571BXH	 C1CB00001657
 C1CB00001682 C1CB00001917	 B1ABAA000022	 2SD1758Q	 B1CHND000004, 2SD1819A PQVTDTC144TU, 2SC39300CL PQVTDTC114TU, 2SB1218A	
 B1ADGP000008 2SD0874AS B1BBAP000021	 MA111, MA8220 B0JCME000035 B0ECKM000008	 MAZ805100L PQVDS1ZB60F1	 PQVDRLZ20A	 PQVDPY1112H PQVDSML210L

28.2. Handset

 C2HBBL000032	 PQWI15571BXR	 PQWI2TG5571R	 C0CBABD00019 C0CBABD00011	 C0EBF0000179
 C1CB00001657	 C0DBZHA00012	 C0CBAAC00083 C0CBABE00029	 C1CB00001682 C1CB00001917	 PSVTUMG11NTR
 B1ABAA000022	 MA111 B0JCMD000010 MA8047	 UN521, PQVTDTC143E, 2SD1819A PQVTDTC123JU, 2SB1197KQ		 B3ACB0000115
 B3AZB0000033	 MA132WK			

28.3. Charger Unit

 C0DBAFZ00054	 2SA933 UN4210	 2SD21360R	 2SD1991A	 LNJ201LPQJA	 B0JCME000035 PQVD1SR154
 B1CHND000004					

29 REPLACEMENT PARTS LIST

Note:

1. RTL (Retention Time Limited)

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

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

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

2. Important safety notice

Components identified by the Δ 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=1000 Ω , M=1000k Ω

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

*Type & Wattage of Resistor

Type

ERC:Solid	ERX:Metal Film	PQ4R:Chip
ERDS:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
ERJ:Chip	ERO:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W
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*Type & Voltage Of Capacitor

Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,F1K,ECUV:Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG:Polyester
ECUV,PQCUV,ECUE:Chip	ECEA,ECST,EEE:Electlytic
ECQMS:Mica	ECQP:Polypropylene

Voltage

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

29.1. Base Unit

29.1.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQGP10276Z1	PANEL, LCD	AS-HB
2	PQHS10667Z	TAPE, DOUBLE SIDED (LCD PANEL)	
3	PQQT22880Z	LABEL, CHARGE	
4	PQGG10284Z1	GRILLE, CRADLE	PC-HB
5	PQKM10660S1	CABINET BODY	PS-HB
6	PQSA10157X	ANTENNA (R)	
7	PQSA10158X	ANTENNA (L)	

Ref. No.	Part No.	Part Name & Description	Remarks
8	L0AA04A00028	SPEAKER	
9	PQHR11082Z	GUIDE, SP HOLDER	POM-HB
10	PQWE10037Z	BATTERY TERMINAL	PS-HB
11	PQBC10426Z1	PUSH BUTTON, NAVI	ABS-HB
12	PQHR11103Z	OPTIC CONDUCTIVE PARTS, LED LENS (CHARGE)	PS-HB
13	PQSX10287Z	KEYBOARD SWITCH, TAM	
14	PQSX10286X	KEYBOARD SWITCH, DIAL	
15	PQMG10025Z	RUBBER PARTS, MIC	
16	PQYF10602Y1	CABINET COVER	PS-HB
17	PQGT18137Z	NAME PLATE	

29.1.2. Main P.C. Board Parts

Note:

(*1) When you have replaced IC501 or IC601, adjust X501.

Refer to **Check and Adjust X501 (Base Unit) Frequency (P.51).**

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP15571BXH	MAIN P.C.BOARD ASS'Y (RTL)	
		(ICs)	
IC300	C0DBAGZ00023	IC	S
IC331	C0DBFGD00017	IC	
IC501	C2HBBL000036	IC (*1)	
IC601	PQWIG5571BXH	IC (*1)	
IC701	C1CB00001657	IC	
IC761	C0CBAAC00083	IC	
IC801	C1CB00001682	IC	
IC841	C0CBABE00029	IC	
IC851	C1CB00001917	IC	
		(TRANSISTORS)	
Q111	2SD1819A	TRANSISTOR(SI)	
Q131	2SD1819A	TRANSISTOR(SI)	
Q141	B1ADGP000008	TRANSISTOR(SI)	
Q142	B1BBAP000021	TRANSISTOR(SI)	
Q161	2SD0874AS	TRANSISTOR(SI)	
Q171	2SD1819A	TRANSISTOR(SI)	
Q300	B1CHND000004	TRANSISTOR(SI)	
Q340	2SD1819A	TRANSISTOR(SI)	
Q361	2SB1218A	TRANSISTOR(SI)	
Q362	PQVDTTC144TU	TRANSISTOR(SI)	S
Q371	2SD1758Q	TRANSISTOR(SI)	S
Q372	2SD1819A	TRANSISTOR(SI)	
Q373	PQVDTTC114TU	TRANSISTOR(SI)	S
Q521	2SC3930CL	TRANSISTOR(SI)	
Q535	2SD1819A	TRANSISTOR(SI)	
Q871	B1ABAA000022	TRANSISTOR(SI)	
		(DIODES)	
D101	PQVDS1ZB60F1	DIODE(SI)	S
D113	MA111	DIODE(SI)	S
D133	MA111	DIODE(SI)	S
D142	PQVDRLZ20A	DIODE(SI)	S
D300	B0JCME000035	DIODE(SI)	
D301	B0JCME000035	DIODE(SI)	
D361	MA8220	DIODE(SI)	S
D362	B0ECKM000008	DIODE(SI)	
D371	MA8220	DIODE(SI)	S
D471	MAZ805100L	DIODE(SI)	
D472	MAZ805100L	DIODE(SI)	
		(COILS)	
L101	PQLQXF330K	COIL	S
L102	PQLQXF330K	COIL	S
L300	G1C220M00037	COIL	S
L361	G1C6R8MA0072	COIL	
L371	G1C6R8MA0072	COIL	
L471	G1C6R8MA0072	COIL	
L472	G1C6R8MA0072	COIL	
L501	PQLQR2KA213	COIL	S
L711	MQLRF18NJFB	COIL	
L782	G1C1R0KA0096	COIL	
L871	MQLRF6N8JFB	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
L873	MQLRF2N2DFB	COIL	
C723	MQLRF2N7DFB	COIL	
C874	MQLRF1N5DFB	COIL	
		(JACKS AND CONNECTOR)	
CN101	PQJJ1TA15Z	JACK	S
CN301	PQJJ1B4Y	JACK	S
CN661	K1MN32B00035	CONNECTOR	
		(LCR FILTERS)	
FL811	ELB1A001	LCR FILTER	
FL821	KNCFH165R8Z1	LCR FILTER	
		(COMPONENTS PARTS)	
RA500	D1H810440003	RESISTOR ARRAY	
RA501	D1H84724A013	RESISTOR ARRAY	
		(VARISTORS)	
SA101	J0LE00000047	VARISTOR (SURGE ABSORBER)	
SA104	J0LE00000047	VARISTOR (SURGE ABSORBER)	
		(RESISTORS)	
R111	ERJ3GEYJ104	100K	
R112	ERJ3GEYJ104	100K	
R113	ERJ3GEYJ103	10K	
R114	ERJ3GEYJ473	47K	
R121	ERJ3GEYJ394	390K	
R122	ERJ3GEYJ394	390K	
R131	ERJ3GEYJ106	10M	
R132	ERJ3GEYJ395	3.9M	
R134	ERJ3GEYJ102	1K	
R136	ERJ3GEYJ135	1.3M	
R137	ERJ2GEJ473	47K	
R141	ERJ3GEYJ104	100K	
R142	ERJ3GEYJ103	10K	
R143	ERJ3GEYJ103	10K	
R145	ERJ2GEJ103	10K	
R161	ERJ3GEYJ751	750	
R162	ERJ3GEYJ393	39K	
R163	ERJ12YJ330	33	
R164	ERJ3GEYJ470	47	
R165	ERJ3GEYJ431	430	
R167	ERJ2GEJ102	1K	
R168	ERJ3GEY0R00	0	
R171	ERJ2GEJ270	27	
R172	ERJ2GEJ104	100K	
R175	ERJ3GEYJ561	560	
R176	ERJ3GEYJ101	100	
R178	ERJ2GEJ102	1K	
R183	ERJ2GEJ222	2.2K	
R185	ERJ3GEYJ333	33K	
R303	ERJ3GEYJ221	220	
R304	ERJ3GEYJ221	220	
R308	ERJ3GEYJ121	120	
R340	ERJ3GEYJ123	12K	
R341	ERJ3GEYJ102	1K	
R342	ERJ3GEYJ473	47K	
R361	ERJ3GEYJ332	3.3K	
R364	ERJ3GEYJ103	10K	
R365	ERJ3GEYJ102	1K	
R371	ERJ3GEYJ100	10	
R372	ERJ3GEYJ100	10	
R373	ERJ3GEYJ100	10	
R374	ERJ3GEYJ101	100	
R375	ERJ3GEYJ561	560	
R421	ERJ2GEJ473	47K	
R422	ERJ2GEJ102	1K	
R423	ERJ2GEJ102	1K	
R453	ERJ2GEJ222	2.2K	
R454	ERJ2GEJ222	2.2K	
R459	ERJ2GEJ222	2.2K	
R460	ERJ2GEJ222	2.2K	
R473	ERJ2GEJ1R0	1	
R474	ERJ2GEJ1R0	1	
R506	ERJ2GEJ121	120	
R521	ERJ2GEJ182	1.8K	
R522	ERJ2GEJ151	150	
R523	ERJ2GEJ393X	39K	

Ref. No.	Part No.	Part Name & Description	Remarks
R524	ERJ2GEJ561	560	
R525	ERJ2GEJ681	680	
R533	ERJ2GEJ472X	4.7K	
R535	ERJ2GEJ102	1K	
R536	ERJ2GEJ222	2.2K	
R673	ERJ2GEJ681	680	
R675	ERJ2GEJ681	680	
R677	ERJ2GEJ221	220	
R679	ERJ2GEJ821	820	
R680	ERJ2GEJ681	680	
R681	ERJ2GEJ221	220	
R701	ERJ2RKF103X	10K	
R724	ERJ2GE0R00	0	
R732	ERJ2GEJ100	10	
R733	ERJ2GEJ100	10	
R735	ERJ2GEJ4R7	4.7	
R742	ERJ2GEJ331	330	
R744	ERJ2GEJ102	1K	
R747	ERJ2GEJ102	1K	
R751	ERJ2GEJ102	1K	
R752	ERJ2GEJ102	1K	
R809	ERJ2GEJ223	22K	
R832	ERJ2GEJ562X	5.6K	
R834	ERJ2GEJ332	3.3K	
R847	ERJ2GE0R00	0	
R856	ERJ2GEJ103	10K	
R872	ERJ2GEJ473	47K	
R873	ERJ2GEJ121	120	
		(CAPACITORS)	
C101	ECUV2H681KB	680P	S
C102	ECUV2H681KB	680P	S
C111	F1J2A473A024	0.047	
C112	F1J2A473A024	0.047	
C113	PQCUV1A684KB	0.68	
C120	ECUV1H562KBV	0.0056	
C121	ECUV1H681JCV	680P	S
C122	ECUV1H681JCV	680P	S
C132	ECUV1H103KBV	0.01	
C142	ECUV1H103KBV	0.01	
C161	EEE1EA100WR	10	
C162	ECUV1H101JCV	100P	
C163	ECJ1VB1H472K	0.0047	
C165	ECUV1C473KBV	0.047	
C166	EEE1CA100SR	10	
C167	ECUV1A224KBV	0.22	
C172	ECUE1H272KBQ	0.0027	
C176	ECST0JY226	22	
C178	F1G1A473A032	0.047	
C184	F1G1A473A032	0.047	
C185	F1G1C183A081	0.018	
C300	EEEFK1C470P	47	
C303	ECUV1H103KBV	0.01	
C304	ECUV1A105KBV	1	
C305	ECUV1H103KBV	0.01	
C306	F2G1E1010011	100	S
C308	ECUV1E104KBV	0.1	
C331	ECUV1C474KBV	0.47	
C332	ECUV1C104KBV	0.1	
C341	EEE0JA331P	330	
C342	ECUV1C104KBV	0.1	
C347	ECUV1C104KBV	0.1	
C352	ECUV1C104KBV	0.1	
C361	ECUE1H102KBQ	0.001	S
C365	ECJ0EB1C103K	0.01	
C371	ECUV1C104KBV	0.1	
C373	F3F0J106A057	10	
C381	ECUV1A105KBV	1	
C382	F1K0J1060020	10	
C421	ECUV1C104KBV	0.1	
C422	F1G1A1040003	0.1	
C457	ECJ0EB1C223K	0.022	
C458	ECJ0EB1C223K	0.022	
C459	ECUE1C153KBQ	0.015	S

Ref. No.	Part No.	Part Name & Description	Remarks
C501	ECUV1C104KBV	0.1	
C503	ECUV1C104KBV	0.1	
C504	ECUV1C104KBV	0.1	
C508	ECUE1H2R0CCQ	2P	
C509	ECUE1H2R0CCQ	2P	
C513	ECUV1C104KBV	0.1	
C515	ECUV1A105KBV	1	
C516	F3F0J106A057	10	
C517	ECUV1C104KBV	0.1	
C518	ECUV1A106ZF	10	S
C521	ECJ0EC1H030C	3P	
C522	F1G1A1040003	0.1	
C524	F1G1A1040003	0.1	
C525	F1G1A1040003	0.1	
C551	ECJ0EB1C103K	0.01	
C601	F1G1A1040003	0.1	
C660	ECUV1C104KBV	0.1	
C663	ECUE1H102KBQ	0.001	S
C664	ECUE1H102KBQ	0.001	S
C665	ECUE1H102KBQ	0.001	S
C666	ECUE1H102KBQ	0.001	S
C667	ECUE1H102KBQ	0.001	S
C668	ECUE1H102KBQ	0.001	S
C669	ECUE1H102KBQ	0.001	S
C670	ECUE1H102KBQ	0.001	S
C671	ECUE1H102KBQ	0.001	S
C672	ECUE1H102KBQ	0.001	S
C682	ECUE1H331KBQ	330P	
C683	ECUE1H331KBQ	330P	
C684	ECUE1H331KBQ	330P	
C685	ECUE1H331KBQ	330P	
C686	ECUE1H331KBQ	330P	
C687	ECUE1H331KBQ	330P	
C701	PQCUV0J475MB	4.7	S
C702	F1G1A1040003	0.1	
C704	ECUE1H102KBQ	0.001	S
C705	ECUE1H100DCQ	10P	S
C706	ECJ0EB1C103K	0.01	
C707	ECUE1H102KBQ	0.001	S
C708	ECUE1H1R5CCQ	1.5P	
C711	ECUE1H010CCQ	1P	S
C712	ECUE1H2R0CCQ	2P	
C713	ECUE1H100DCQ	10P	S
C714	ECUE1H102KBQ	0.001	S
C716	ECUE1H2R0CCQ	2P	
C722	ECUE1H2R0CCQ	2P	
C725	ECJ0EC1H050C	5P	
C731	ECJ0EB1C103K	0.01	
C732	ECUE1H102KBQ	0.001	S
C733	ECUE1H102KBQ	0.001	S
C734	ECUE1H102KBQ	0.001	S
C735	F1G1A1040003	0.1	
C737	ECUE1H102KBQ	0.001	S
C741	ECJ0EB1H222K	0.0022	
C743	F1G1H221A541	220P	
C745	ECUE1H101JCQ	100P	S
C746	ECUE1H101JCQ	100P	S
C747	ECUE1H100DCQ	10P	S
C748	ECUE1H101JCQ	100P	S
C749	ECUE1H101JCQ	100P	S
C750	ECUE1H101JCQ	100P	S
C751	ECUE1H100DCQ	10P	S
C752	ECJ0EB1H471K	470P	
C763	ECUV1A474KBV	0.47	
C764	ECUE1H2R0CCQ	2P	
C773	ECUE1H101JCQ	100P	S
C781	F1G1A1040003	0.1	
C782	F1G1H121A444	120P	
C801	ECJ0EC1H030C	3P	
C802	ECJ0EC1H220J	22P	
C803	ECJ0EB1C103K	0.01	
C804	ECJ0EC1H150J	15P	
C806	ECUE1H100DCQ	10P	S

Ref. No.	Part No.	Part Name & Description	Remarks
C809	ECUE1H102KBQ	0.001	S
C811	ECUE1H2R0CCQ	2P	
C821	ECUE1H100DCQ	10P	S
C827	ECJ0EC1H050C	5P	
C832	F1G1H221A541	220P	
C833	ECUE1H101JCQ	100P	S
C834	ECJ0EB1C103K	0.01	
C835	ECJ0EB1H471K	470P	
C836	ECUV1A105KBV	1	
C837	ECUE1H101JCQ	100P	S
C842	ECUV1A105KBV	1	
C843	ECUV1A474KBV	0.47	
C844	ECUE1H2R0CCQ	2P	
C851	ECUE1H101JCQ	100P	S
C852	ECJ0EB1C103K	0.01	
C854	ECUE1H102KBQ	0.001	S
C856	ECJ0EB1H471K	470P	
C857	ECUE1H0R5CCQ	0.5P	
C858	F1G1HR20A561	0.2P	
C859	F1G1HR20A561	0.2P	
C871	ECUE1H010CCQ	1P	S
C872	ECUE1H010CCQ	1P	S
C873	ECUE1H100DCQ	10P	S
C876	ECUE1H010CCQ	1P	S
C890	ECUE1H101JCQ	100P	S
C895	ECUE1H101JCQ	100P	S
L715	ECJ0EC1H050C	5P	
		(OTHERS)	
MIC	L0CBAB000052	MICROPHONE	
E1	PQMC10492Z	MAGNETIC SHIELD, FRAME	
E2	PQMC10491Z	MAGNETIC SHIELD, COVER	
P101	PFRT002	THERMISTOR (POSISTOR)	S
X501	H0J138500003	CRYSTAL OSCILLATOR	

29.1.3. Operational P.C. Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PQWP2TG5576H	OPERATIONAL P.C.BOARD ASS'Y (RTL)	
		(DIODES)	
LED901	PQVDSML210L	LED	S
LED902	PQVDPY1112H	LED	S
LED904	PQVDSML210L	LED	S
LED905	PQVDSML210L	LED	S
LED907	PQVDSML210L	LED	S
LED909	PQVDPY1112H	LED	S
		(CONNECTOR)	
CN901	K1MN32B00035	CONNECTOR	
		(OTHERS)	
E3	L5DCBCB00016	LIQUID CRYSTAL DISPLAY	
E4	PQHS10327Z	TAPE, LCD	
E5	PQHR11102Z	GUIDE, LCD	ABS-HB
E6	PQJE10142Z	LEAD WIRE, FFC	

29.2. Handset

29.2.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
101	PQGP10278Z1	PANEL, LCD	AS-HB
102	PQHS10662Z	TAPE, DOUBLE SIDED (PANEL)	
103	PQKM10665Z1	CABINET BODY	ABS-HB
104	PQHS10658Z	SPACER, RECEIVER	
105	L0AD02A00023	RECEIVER	
106	PQHG10703Z	RUBBER PARTS, RECEIVER	
107	PQHR11105Z	GUIDE, RECEIVER	ABS-HB
108	PQHS10663Z	SPACER, CUSHION LCD	
109	L5DZBED00002	LIQUID CRYSTAL DISPLAY	
110	PQHX11298Z	COVER, LCD COVER SHEET	
111	PQHR11108Z	TRANSPARENT PLATE, LCD PLATE	PMMA-HB
112	PQHX11307Z	PLASTIC PARTS, LCD SHEET	

Ref. No.	Part No.	Part Name & Description	Remarks
113	PQHR11107Z	GUIDE, LCD	ABS-HB
114	PQBC10427Z1	PUSH BUTTON, CURSOR	ABS-HB
115	PQBX10378X1	PUSH BUTTON, 12KEY	PMMA-HB
116	PQSX10289Z	KEYBOARD SWITCH	
117	PQWE10033Z	BATTERY TERMINAL	ABS-HB
118	PQJT10225Z	CHARGE TERMINAL (L)	
119	PQJT10226Z	CHARGE TERMINAL (R)	
120	PQHR10778Z	GUIDE, SP HOLDER	ABS-HB
121	PQHG10703Z	RUBBER PARTS, SPEAKER	
122	L0AD02A00026	SPEAKER	
123	PQHS10622Z	SPACER, SPEAKER	
124	PQKE10398Z1	COVER, EARPHONE	
125	PQMC10499Z	MAGNETIC SHIELD, ANTENNA	
126	PQKE10394Z3	COVER, LED CAP	PC+ABS-HB
127	PQHR11081Z	GUIDE, LED CAP	ABS-HB
128	PQHR11080Z	OPTIC CONDUCTIVE PARTS, LED LENS	PMMA-HB
129	PQKF10658Z2	CABINET COVER	ABS-HB
130	PQHX11297S	PLASTIC PARTS, BATTERY COVER SHEET	
131	HHR-P104A	BATTERY	
132	PQHE10160Z	SPACER, BATTERY	
133	PQKK10588Z2	LID, BATTERY COVER	ABS-HB
134	PQGT18138Z	NAME PLATE	

29.2.2. Main P.C.Board Parts

Note:

(*1) When you have replaced IC201 or IC241, adjust X201.

Refer to **Check and Adjust X201 (Handset) Frequency** (P.51) and **Adjust Battery Low Detector Voltage (Handset)** (P.51).

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWPG5571BXR	MAIN P.C.BOARD ASS'Y (RTL)	
		(ICs)	
IC201	C2HBB1000032	IC (*1)	
IC221	C0EBF0000179	IC	
IC241	PQWI15571BXR	IC (*1)	
IC246	PQWI2TG5571R	IC	
IC261	C0DBZHA00012	IC	
IC371	C0CBABD00019	IC	
IC381	C0CBABD00011	IC	
IC701	C1CB00001657	IC	
IC761	C0CBAAC00083	IC	
IC801	C1CB00001682	IC	
IC841	C0CBABE00029	IC	
IC851	C1CB00001917	IC	
		(TRANSISTORS)	
Q221	2SD1819A	TRANSISTOR(SI)	
Q231	UN521	TRANSISTOR(SI)	S
Q251	PQVTDTC123JU	TRANSISTOR(SI)	S
Q261	PSVTUMG11NTR	TRANSISTOR(SI)	S
Q262	PSVTUMG11NTR	TRANSISTOR(SI)	S
Q331	PQVTDTC143E	TRANSISTOR(SI)	S
Q361	2SB1197KQ	TRANSISTOR(SI)	S
Q362	2SD1819A	TRANSISTOR(SI)	
Q363	PQVTDTC143E	TRANSISTOR(SI)	S
Q871	B1ABAA000022	TRANSISTOR(SI)	
		(DIODES)	
D223	MA111	DIODE(SI)	S
D312	MA8047	DIODE(SI)	S
D313	MA8047	DIODE(SI)	S
D323	MA8047	DIODE(SI)	S
D324	MA8047	DIODE(SI)	S
D326	MA8047	DIODE(SI)	S
D327	MA8047	DIODE(SI)	S
D351	B0JCMD000010	DIODE(SI)	S
D352	B0JCMD000010	DIODE(SI)	S
D353	B0JCMD000010	DIODE(SI)	S
D354	B0JCMD000010	DIODE(SI)	S

Ref. No.	Part No.	Part Name & Description	Remarks
D363	MA132WK	DIODE(SI)	S
LED251	B3ACB00000115	LED	
LED252	B3ACB00000115	LED	
LED253	B3ACB00000115	LED	
LED254	B3ACB00000115	LED	
LED255	B3ACB00000115	LED	
LED256	B3ACB00000115	LED	
LED257	B3ACB00000115	LED	
LED261	B3AZB00000033	LED	
		(COILS)	
L326	G1CR47J00005	COIL	
L327	G1CR47J00005	COIL	
L331	PQLQR2KB113T	COIL	S
L332	PQLQR2KB113T	COIL	S
L334	PQLQR2KB113T	COIL	S
L711	MQLRF18NJFB	COIL	
L782	G1C1R0KA00096	COIL	
L871	MQLRF6N8JFB	COIL	
L873	MQLRF2N2DFB	COIL	
C723	MQLRF2N7DFB	COIL	
C874	MQLRF1N5DFB	COIL	
		(CONNECTOR AND JACK)	
CN271	K1MN22B00101	CONNECTOR	
CN331	K2HD103D0001	JACK	
		(LCR FILTERS)	
FL811	ELB1A001	LCR FILTER	
FL821	KNCFH165R8Z1	LCR FILTER	
		(COMPONENTS PARTS)	
RA201	D1H84724A013	RESISTOR ARRAY	
RA251	D1H84714A013	RESISTOR ARRAY	
RA255	EXB28V221JX	RESISTOR ARRAY	S
		(RESISTORS)	
R208	ERJ3GEYJ100	10	
R209	ERJ2GEJ104	100K	
R222	ERJ2GEJ223	22K	
R223	ERJ2GEJ224	220K	
R225	ERJ2GEJ102	1K	
R226	ERJ2GEJ223	22K	
R227	ERJ2GEJ104	100K	
R228	ERJ2GEJ104	100K	
R231	ERJ2GEJ223	22K	
R234	ERJ2GEJ103	10K	
R241	ERJ2GEJ103	10K	
R242	ERJ2GEJ102	1K	
R243	ERJ2GEJ274	270K	
R247	ERJ2GEJ332	3.3K	
R261	ERJ2GEJ221	220	
R262	ERJ2GEJ221	220	
R263	ERJ2GEJ221	220	
R286	ERJ2GEJ102	1K	
R312	ERJ2GEJ222	2.2K	
R314	ERJ2GEJ222	2.2K	
R315	ERJ2GEJ222	2.2K	
R317	ERJ2GEJ101	100	
R318	ERJ2GEJ222	2.2K	
R323	ERJ2GEJ180	18	
R324	ERJ2GEJ180	18	
R331	ERJ2GEJ103	10K	
R333	ERJ2GEJ102	1K	
R334	ERJ2GEJ222	2.2K	
R340	ERJ2GE0R00	0	
R361	ERJ2GEJ473	47K	
R362	ERJ2GEJ102	1K	
R363	ERJ2GEJ473	47K	
R366	ERJ3GEYJ332	3.3K	
R376	ERJ2GEJ225	2.2M	
R377	ERJ2GEJ225	2.2M	
R701	ERJ2RKF103X	10K	
R724	ERJ2GE0R00	0	
R732	ERJ2GEJ100	10	
R733	ERJ2GEJ100	10	
R735	ERJ2GEJ4R7	4.7	
R742	ERJ2GEJ331	330	

Ref. No.	Part No.	Part Name & Description	Remarks
R744	ERJ2GEJ102	1K	
R747	ERJ2GEJ102	1K	
R751	ERJ2GEJ102	1K	
R752	ERJ2GEJ102	1K	
R809	ERJ2GEJ223	22K	
R832	ERJ2GEJ562X	5.6K	
R834	ERJ2GEJ332	3.3K	
R856	ERJ2GEJ472X	4.7K	
R872	ERJ2GEJ473	47K	
R873	ERJ2GEJ121	120	
		(CAPACITORS)	
C201	ECJ0EC1H060D	6P	
C202	ECJ0EC1H060D	6P	
C204	F1G1A1040003	0.1	
C206	F1G1A1040003	0.1	
C208	F1J0J1060006	10	S
C211	EEE0GA331WP	330	
C212	ECJ0EB1C103K	0.01	
C214	F1J0J1060006	10	S
C215	F1G1A1040003	0.1	
C221	ECJ0EB1C103K	0.01	
C222	F1G1A1040003	0.1	
C224	F1G1A1040003	0.1	
C225	F1G1A1040003	0.1	
C226	F1G1A1040003	0.1	
C231	F1G1A1040003	0.1	
C241	F1G1A1040003	0.1	
C242	ECUE1H101JCQ	100P	S
C246	F1G1A1040003	0.1	
C261	ECUV1C104KBV	0.1	
C262	ECUV1A105KBV	1	
C263	ECUV1A105KBV	1	
C271	ECUV1C474KBV	0.47	
C272	ECUV1A474KBV	0.47	
C273	ECUV1A474KBV	0.47	
C274	ECUV1A474KBV	0.47	
C275	ECUV1A474KBV	0.47	
C276	ECUV1A105KBV	1	
C277	ECUV1A105KBV	1	
C278	F1J1C1050014	1	
C279	F1J1C1050014	1	
C281	F1G1H121A444	120P	
C282	F1G1H121A444	120P	
C283	F1G1H121A444	120P	
C284	F1G1H121A444	120P	
C286	ECUV1A224KBV	0.22	
C303	F1G0J1050007	1	S
C305	ECJ0EB1C103K	0.01	
C306	F1G1A1040003	0.1	
C314	F1G1C183A081	0.018	
C315	F1G1C183A081	0.018	
C316	ECUE1C153KBQ	0.015	S
C317	ECST0JY226	22	
C321	ECST0JY335	3.3	
C333	F1G1A1040003	0.1	
C335	ECST0JY226	22	
C340	F1G1A1040003	0.1	
C353	ECUV1H103KBV	0.01	
C371	F1G1A1040003	0.1	
C377	F1G1A1040003	0.1	
C381	EEE0JA101SP	100P	
C386	F1G1A1040003	0.1	
C701	PQCUV0J475MB	4.7	S
C702	F1G1A1040003	0.1	
C704	ECUE1H102KBQ	0.001	S
C705	ECUE1H100DCQ	10P	S
C706	ECJ0EB1C103K	0.01	
C707	ECUE1H102KBQ	0.001	S
C708	ECUE1H1R5CCQ	1.5P	
C711	ECUE1H010CCQ	1P	S
C712	ECUE1H2R0CCQ	2P	
C713	ECUE1H100DCQ	10P	S
C714	ECUE1H102KBQ	0.001	S

Ref. No.	Part No.	Part Name & Description	Remarks
C716	ECUE1H2R0CCQ	2P	
C722	ECUE1H2R0CCQ	2P	
C725	ECJ0EC1H050C	5P	
C731	ECJ0EB1C103K	0.01	
C732	ECUE1H102KBQ	0.001	S
C733	ECUE1H102KBQ	0.001	S
C734	ECUE1H102KBQ	0.001	S
C735	F1G1A1040003	0.1	
C737	ECUE1H102KBQ	0.001	S
C741	ECJ0EB1H222K	0.0022	
C742	ECJ0EB1C103K	0.01	
C743	F1G1H221A541	220P	
C745	ECUE1H101JCQ	100P	S
C746	ECUE1H101JCQ	100P	S
C747	ECUE1H100DCQ	10P	S
C748	ECUE1H101JCQ	100P	S
C749	ECUE1H101JCQ	100P	S
C750	ECUE1H101JCQ	100P	S
C751	ECUE1H100DCQ	10P	S
C752	ECJ0EB1H471K	470P	
C763	ECUV1A474KBV	0.47	
C764	ECUE1H2R0CCQ	2P	
C773	ECUE1H101JCQ	100P	S
C781	F1G1A1040003	0.1	
C782	F1G1H121A444	120P	
C801	ECJ0EC1H030C	3P	
C802	ECJ0EC1H220J	22P	
C803	ECJ0EB1C103K	0.01	
C804	ECJ0EC1H150J	15P	
C806	ECUE1H100DCQ	10P	S
C809	ECUE1H102KBQ	0.001	S
C811	ECUE1H2R0CCQ	2P	
C821	ECUE1H100DCQ	10P	S
C827	ECJ0EC1H050C	5P	
C832	F1G1H221A541	220P	
C833	ECUE1H101JCQ	100P	S
C834	ECJ0EB1C103K	0.01	
C835	ECJ0EB1H471K	470P	
C836	ECUV1A105KBV	1	
C837	ECUE1H101JCQ	100P	S
C842	ECUV1A105KBV	1	
C843	ECUV1A474KBV	0.47	
C844	ECUE1H2R0CCQ	2P	
C851	ECUE1H101JCQ	100P	S
C852	ECJ0EB1C103K	0.01	
C854	ECUE1H102KBQ	0.001	S
C856	ECUE1H102KBQ	0.001	S
C857	ECUE1H0R5CCQ	0.5P	
C858	F1G1HR20A561	0.2P	
C859	F1G1HR20A561	0.2P	
C871	ECUE1H010CCQ	1P	S
C872	ECUE1H010CCQ	1P	S
C873	ECUE1H100DCQ	10P	S
C876	ECUE1H010CCQ	1P	S
C891	F1G1HR20A561	0.2P	
L715	ECJ0EC1H050C	5P	
		(OTHERS)	
MIC	L0CBAB000052	MICROPHONE	
E101	PQMC10492Z	MAGNETIC SHIELD, FRAME	
E102	PQMC10491Z	MAGNETIC SHIELD, COVER	
X201	H0J138500003	CRYSTAL OSCILLATOR	
S251	K0C115A00005	SEESAW SWITCH	

29.3. Charger Unit

29.3.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
200	PQLV30030TM	CHARGER UNIT	
200-1	PQGG10285X3	GRILLE	PC-HB
200-2	PQKM10671Z1	CABINET BODY	ABS-HB
200-3	PQQT22880Z	LABEL, CHARGE	

Ref. No.	Part No.	Part Name & Description	Remarks
200-4	PQHR11098Z	OPTIC CONDUCTIVE PARTS, LED LENS	PS-HB
200-5	PQYF10612Z1	CABINET COVER	PS-HB
200-6	PQGT18148Z	NAME PLATE	

29.3.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB200	PQWPTGA549CH	MAIN P.C.BOARD ASS'Y (RTL)	
		(IC)	
IC30	C0DBAFZ00054	IC	
		(TRANSISTORS)	
Q2	2SD21360R	TRANSISTOR(SI)	
Q3	2SD1991A	TRANSISTOR(SI)	
Q4	2SA933	TRANSISTOR(SI)	S
Q5	UN4210	TRANSISTOR(SI)	S
Q30	B1CHND000004	TRANSISTOR(SI)	
		(DIODES)	
D1	B0JCME000035	DIODE(SI)	
D2	PQVD1SR154	DIODE(SI)	S
D31	B0JCME000035	DIODE(SI)	
LED1	LNJ201LPQJA	LED	
		(COIL)	
L30	G0C680KA0052	COIL	
		(JACK)	
CN1	PQJJ1B4Y	JACK	S
		(RESISTORS)	
R1	ERJ3GEYJ222	2.2K	
R3	ERJ3GEYJ101	100	
R4	ERJ3GEYJ120	12	
R5	ERJ3GEYJ150	15	
R6	ERJ3GEYJ821	820	
R7	ERJ3GEYJ000	0	
R8	ERJ3GEYJ102	1K	
R9	ERJ3GEYJ150	15	
R10	ERJ3GEYJ150	15	
R11	ERJ3GEYJ000	0	
R12	ERJ3GEYJ000	0	
R13	ERJ3GEYJ000	0	
R30	ERJ3GEYJ121	120	
R31	ERJ3GEYJ102	1K	
R32	ERJ3GEYJ102	1K	
R33	ERJ3GEYJ823	82K	
R34	ERJ3GEYJ123	12K	
		(CAPACITORS)	
C31	F2A1E3310046	330	
C32	ECUV1H103KBV	0.01	
C33	ECUV1E104KBV	0.1	
C34	ECUV1H102KBV	0.001	
C35	ECUV1A105KBV	1	
C36	F2A1E2210029	220	
		(OTHERS)	
E201	PQJT10200Z	CHARGE TERMINAL	
E202	PQH610584Z	SPACER	

29.4. Accessories and Packing Materials

Note:

(*1) You can download and refer to the Operating Instructions (Instruction book) on TSN Server.

29.4.1. KX-TG5571BXM

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV1BXY	AC ADAPTOR	△
A2	PQJA10075Z	CORD, TELEPHONE	
A3	PQJA10165Z	CORD, AUDIO CABLE	△
A4	PQKE10396Z2	HANGER, BELT CLIP	PC+ABS-HB

Ref. No.	Part No.	Part Name & Description	Remarks
A5	PQKL10068Y2	STAND, WALL MOUNT	ABS-HB
A6	PQX14550Z	INSTRUCTION BOOK (for English) (*1)	
A7	PQQW13709Z	QUICK GUIDE (for Arabic)	
A8	PQQW13710Z	QUICK GUIDE (for Persian)	
P1	XZB21X35A03	PROTECTION COVER (for Base Unit)	
P2	XZB10X35A02	PROTECTION COVER (for Handset)	
P3	PQPK14911Y	GIFT BOX	
P4	PQPN11726Y	ACCESSORY BOX	

29.4.2. KX-TGA550BXM (Optional Set)

Ref. No.	Part No.	Part Name & Description	Remarks
A1	KX-TCA1BX-4	AC ADAPTOR	△
A2	PQKE10396Z2	HANGER, BELT CLIP	PC+ABS-HB
A3	PQX14552Z	INSTRUCTION BOOK (for English) (*1)	
A4	PQX14836Z	INSTRUCTION BOOK (for Arabic) (*1)	
A5	PQX14837Z	INSTRUCTION BOOK (for Persian) (*1)	
P1	XZB15X25A04	PROTECTION COVER (for Charger Unit)	
P2	XZB10X35A02	PROTECTION COVER (for Handset)	
P3	PQPK14913Z	GIFT BOX	

Memo

30 FOR SCHEMATIC DIAGRAM

30.1. Base Unit (SCHEMATIC DIAGRAM (BASE UNIT_MAIN))

30.1.1. Acoustic Testing Mode

Press “1”, “6” and “FLASH” simultaneously, and insert the plug of AC adaptor.

- No beep sound.

It is easier to measure the transmit level with acoustic testing mode.

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.

30.2. Handset (SCHEMATIC DIAGRAM (HANDSET_MAIN))

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.

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

Notes:

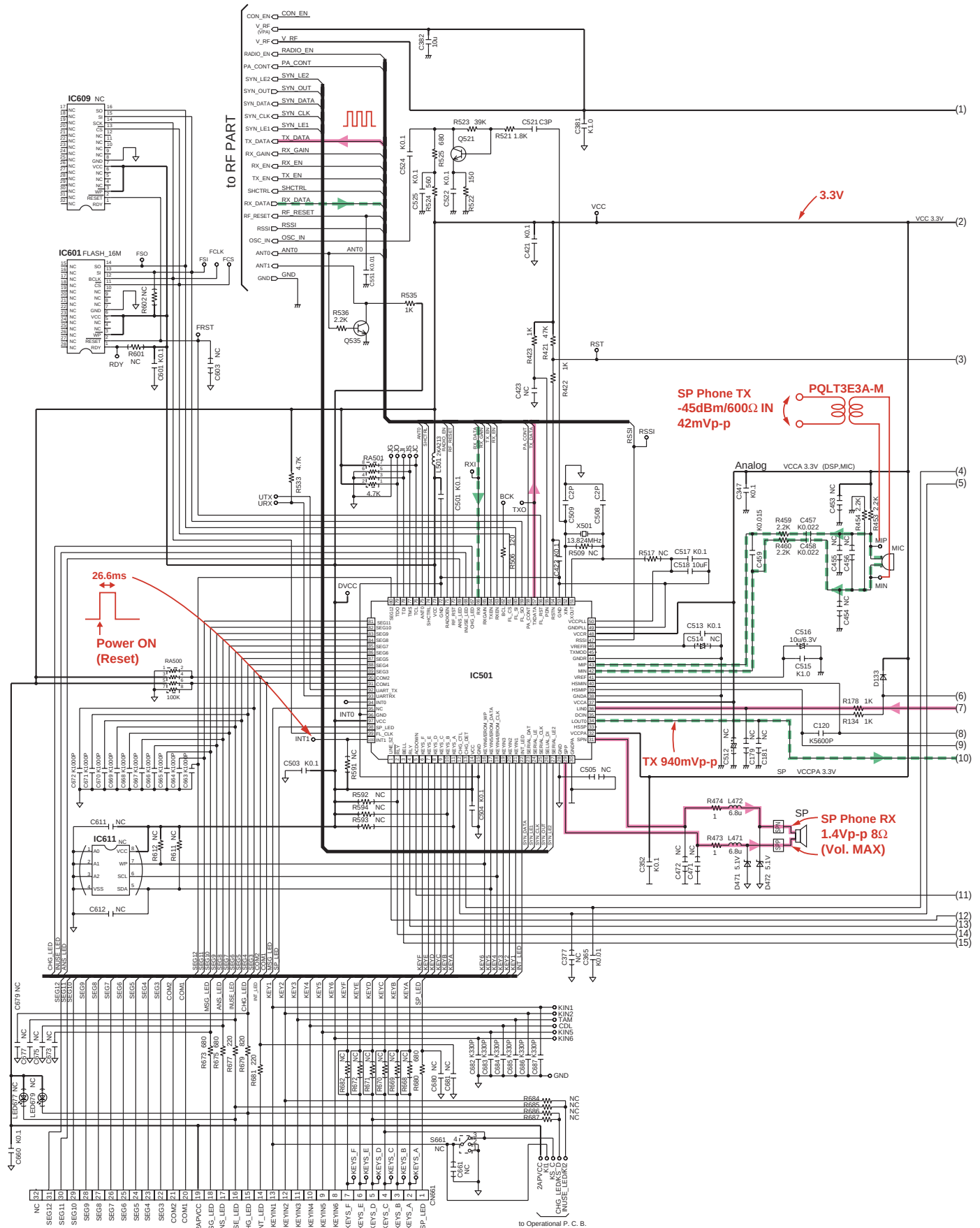
1. DC voltage measurements are taken with voltmeter from the negative voltage line.

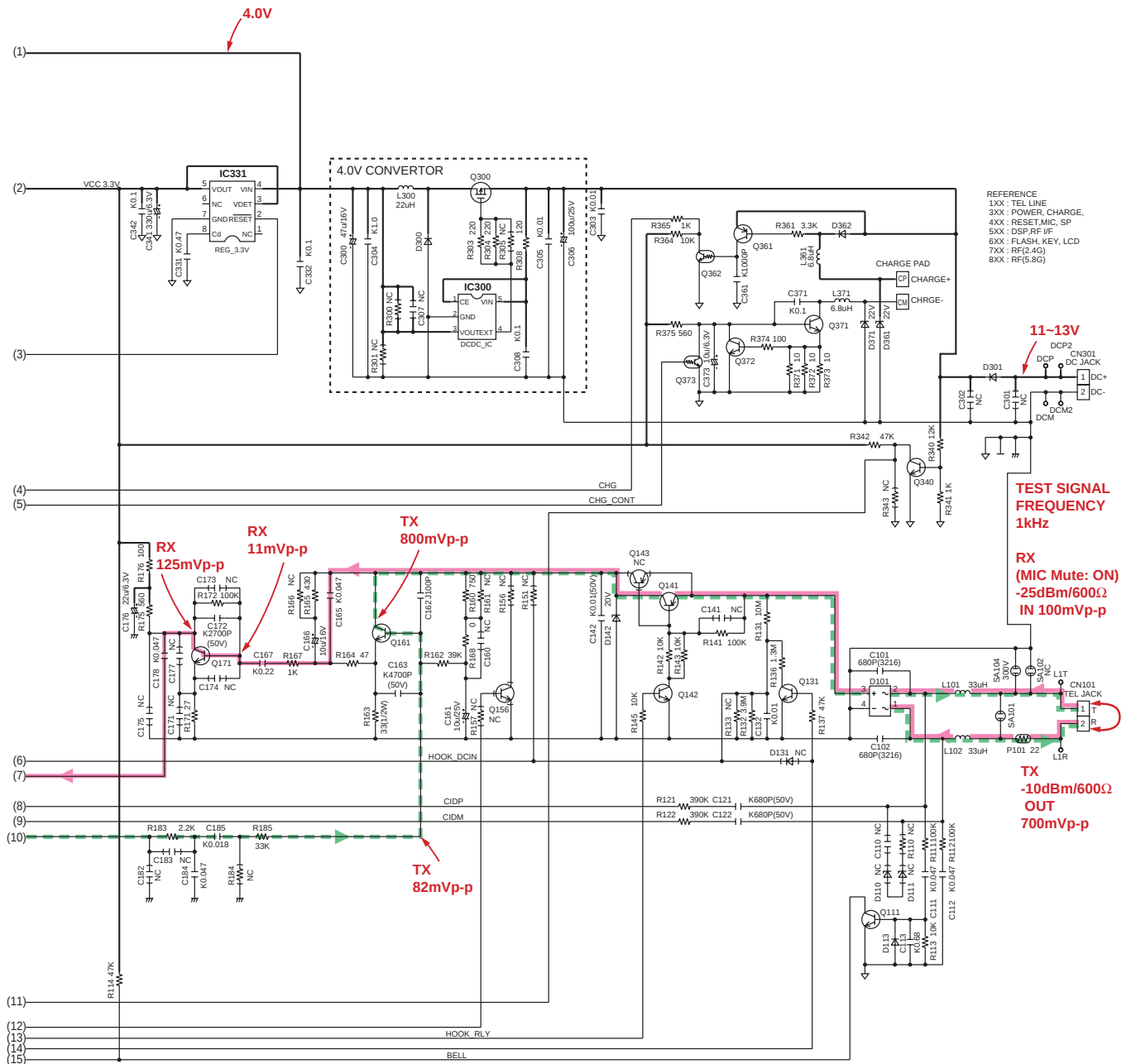
Important Safety Notice:

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.

31 SCHEMATIC DIAGRAM (BASE UNIT_MAIN)

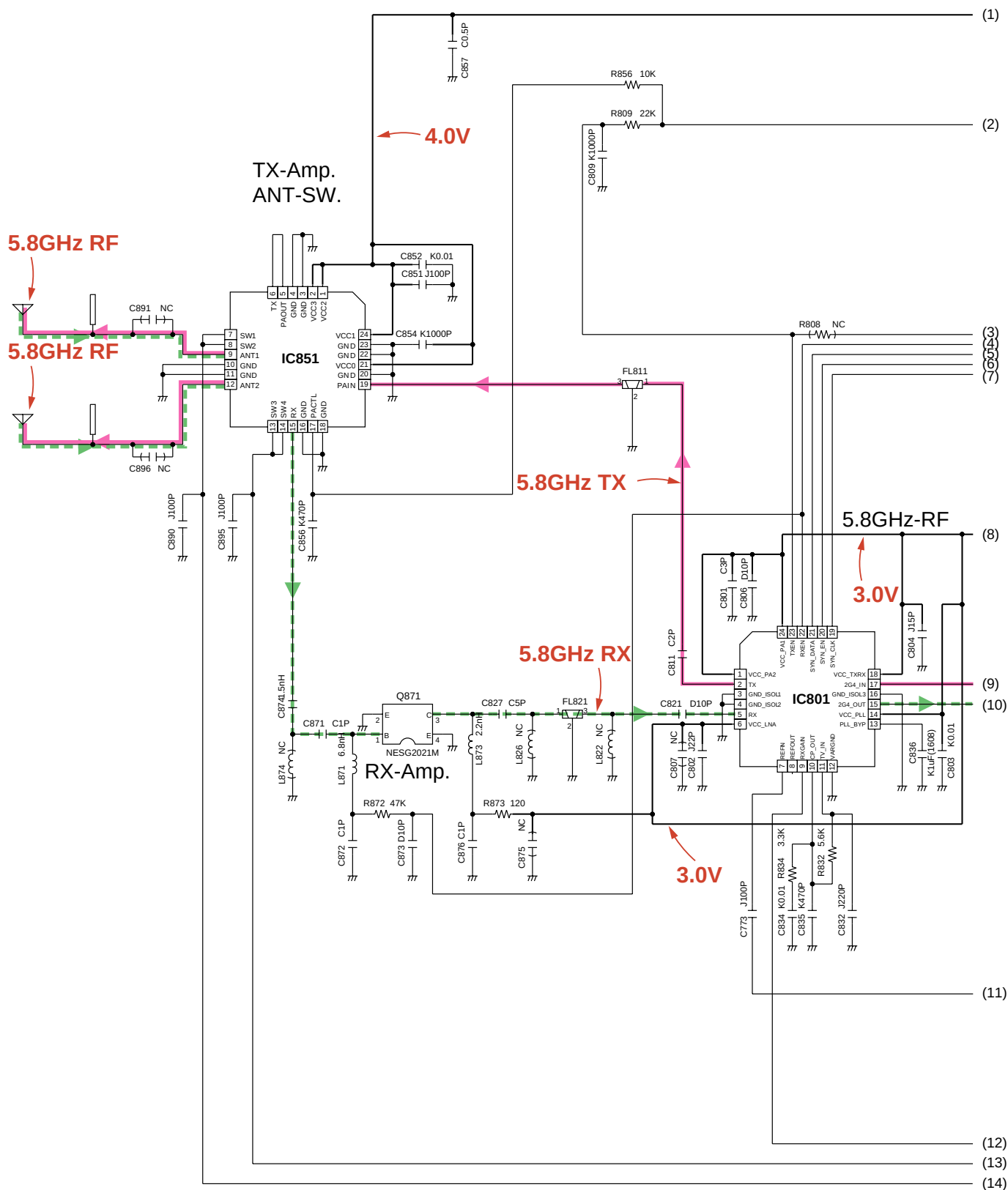




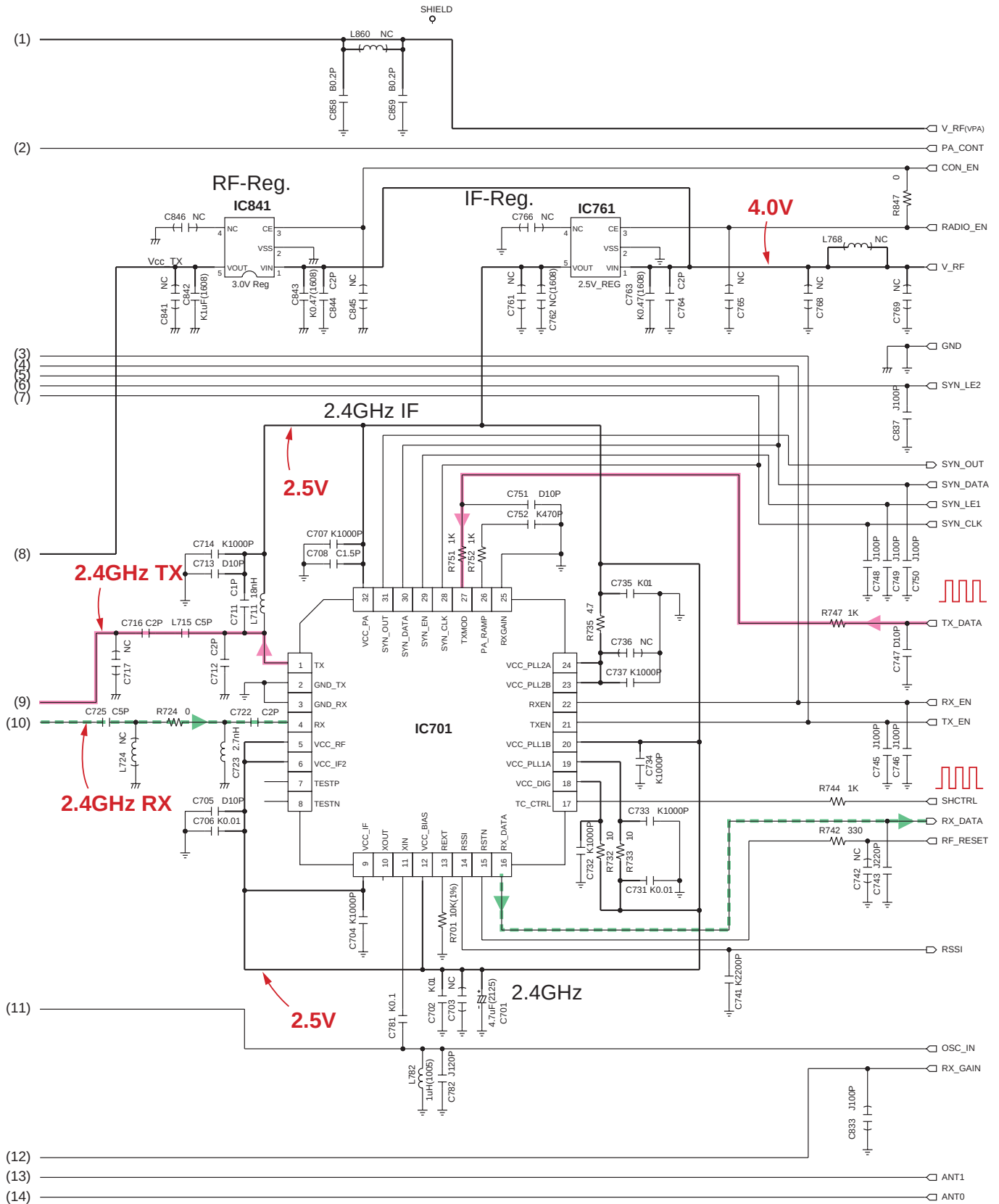
NC: No Components

KX-TG5571 SCHEMATIC DIAGRAM (Base Unit_Main)

32 SCHEMATIC DIAGRAM (BASE UNIT_RF PART)

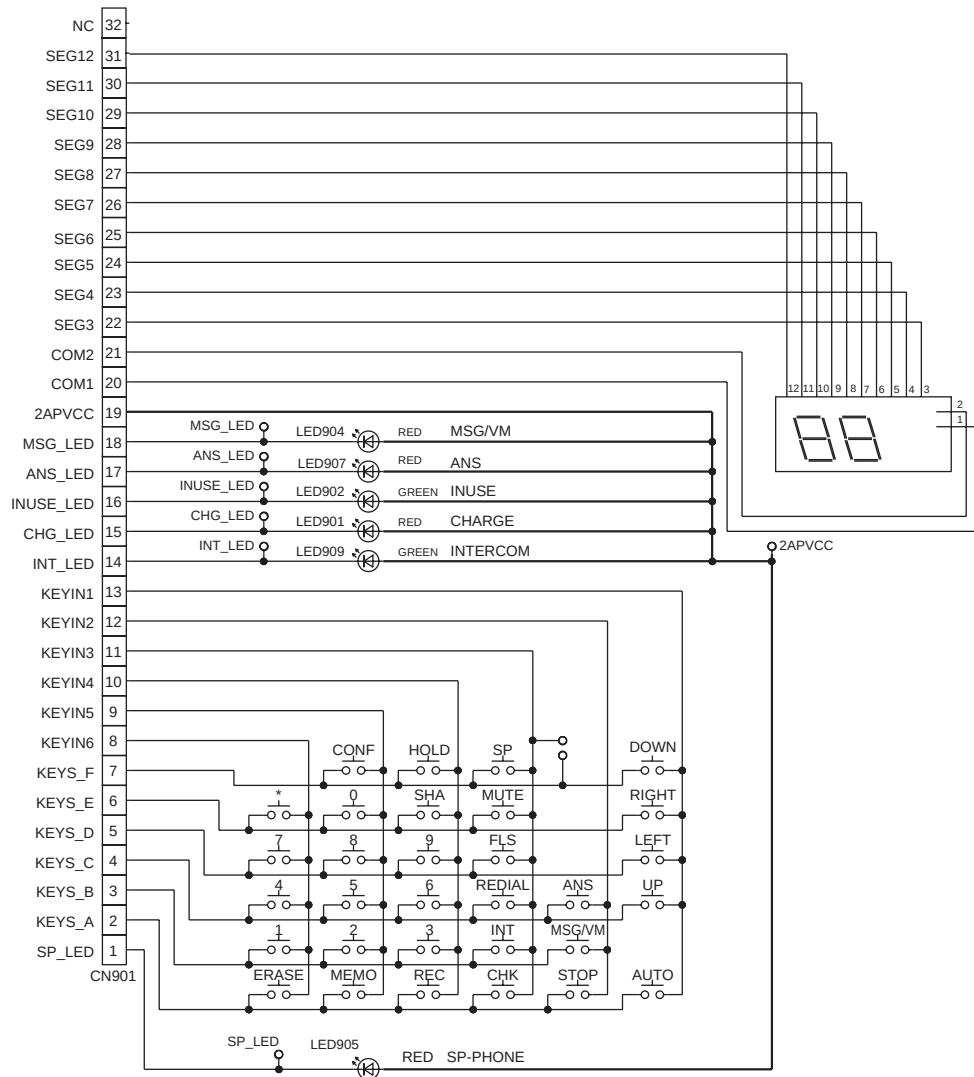


NC: No Components



KX-TG5571 SCHEMATIC DIAGRAM (Base Unit_RF Part)

33 SCHEMATIC DIAGRAM (BASE UNIT_OPERATION)

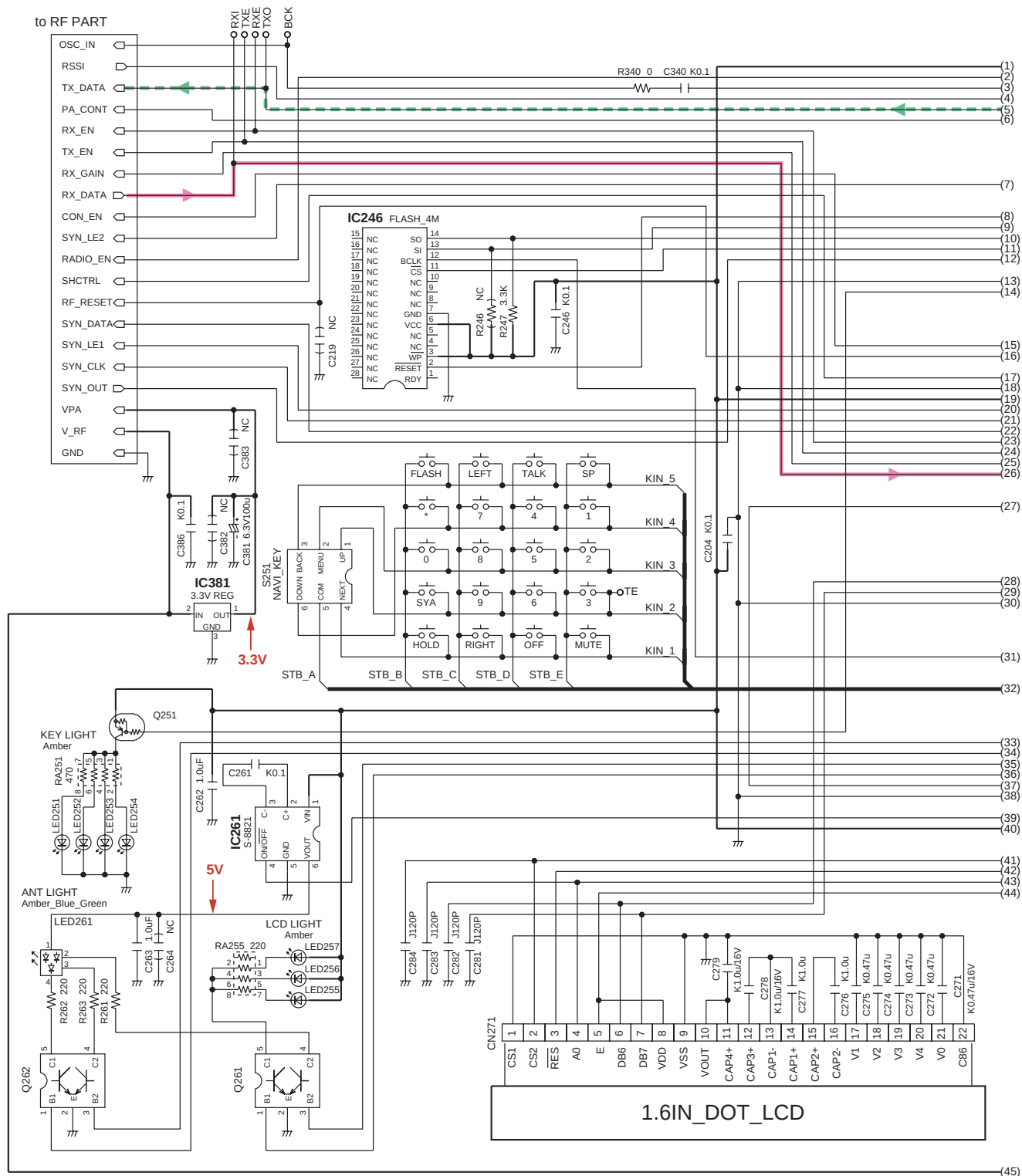


NC: No Components

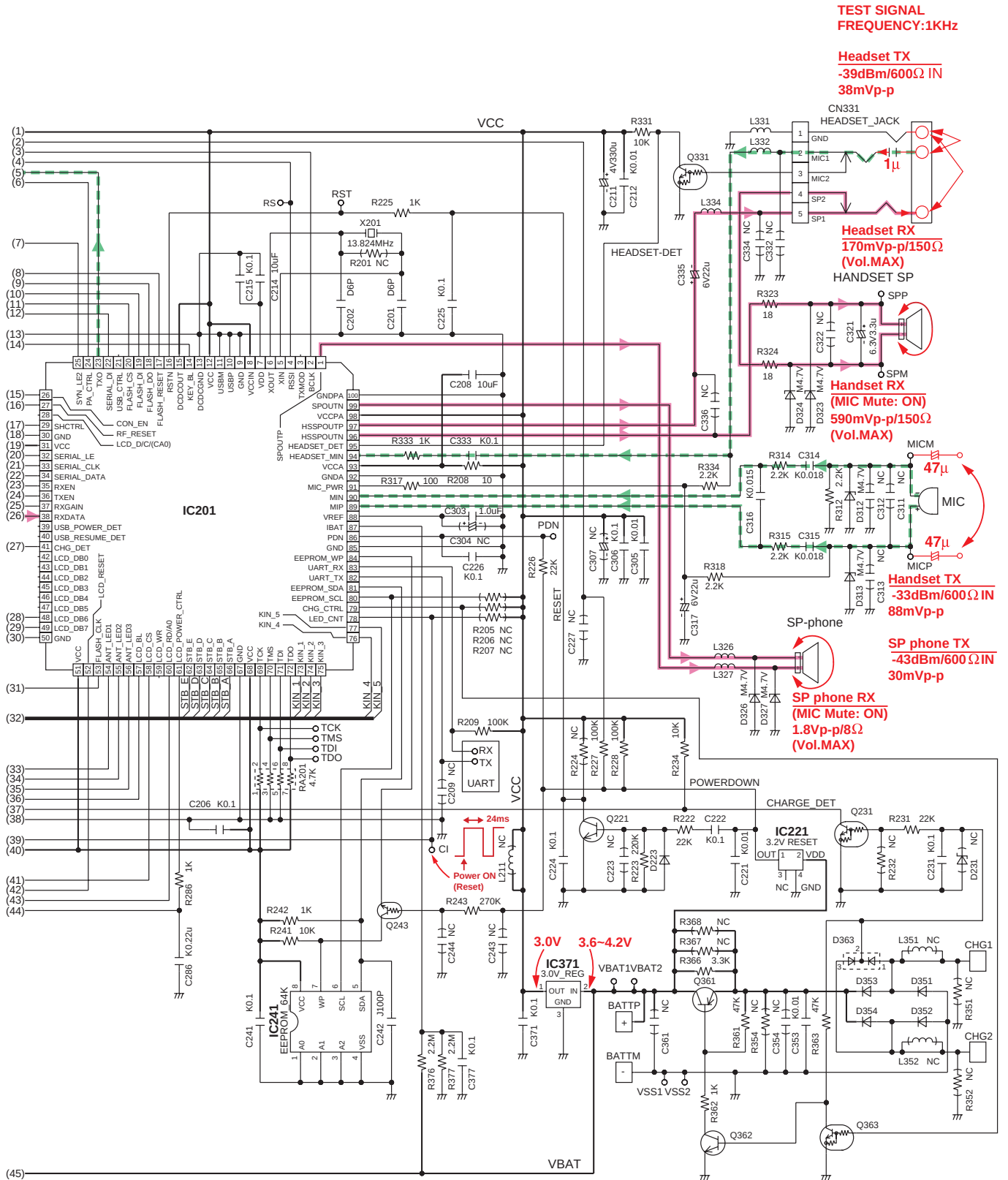
KX-TG5571 SCHEMATIC DIAGRAM (Base Unit_Operation)

Memo

34 SCHEMATIC DIAGRAM (HANDSET_MAIN)

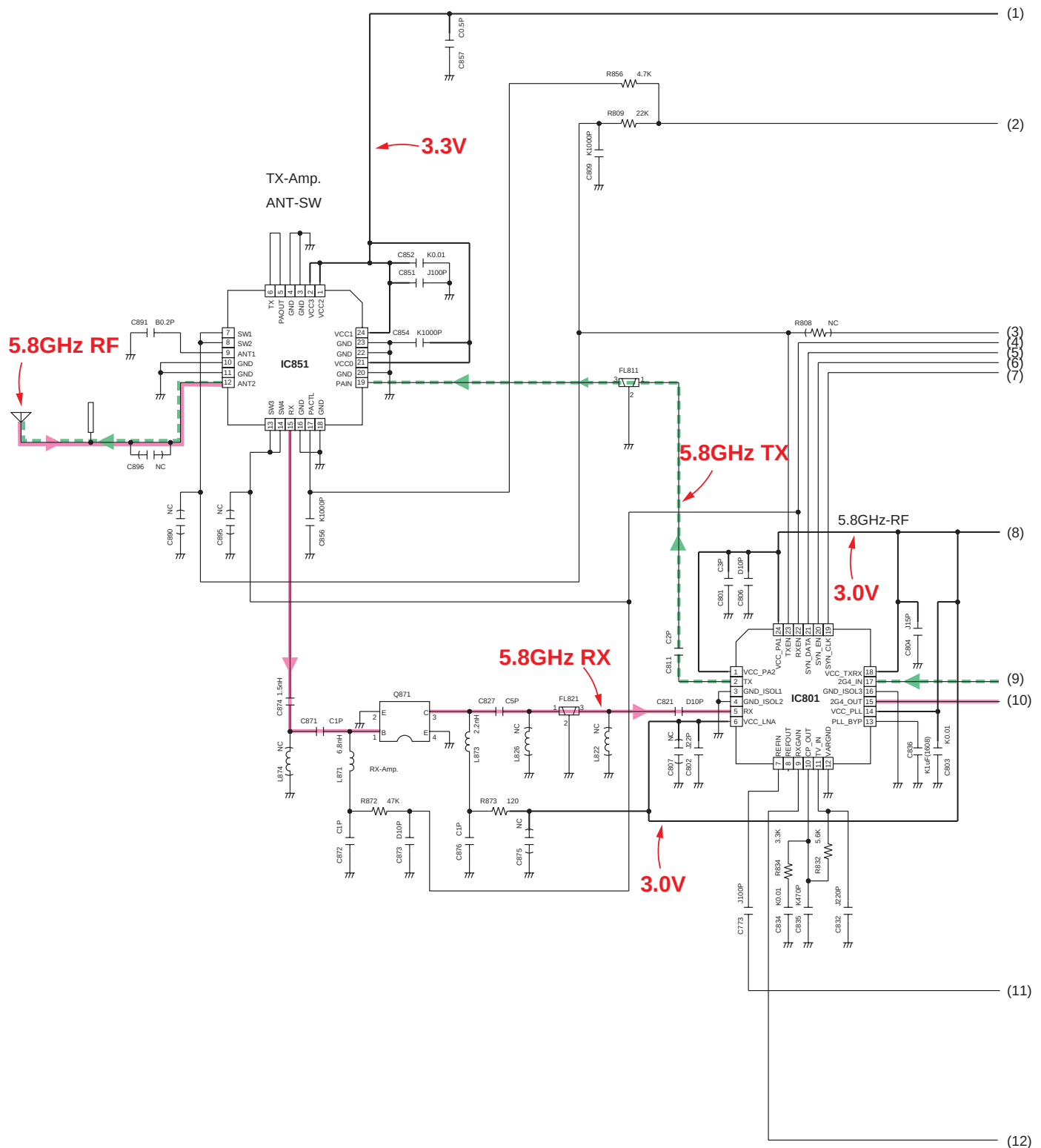


NC: No Components

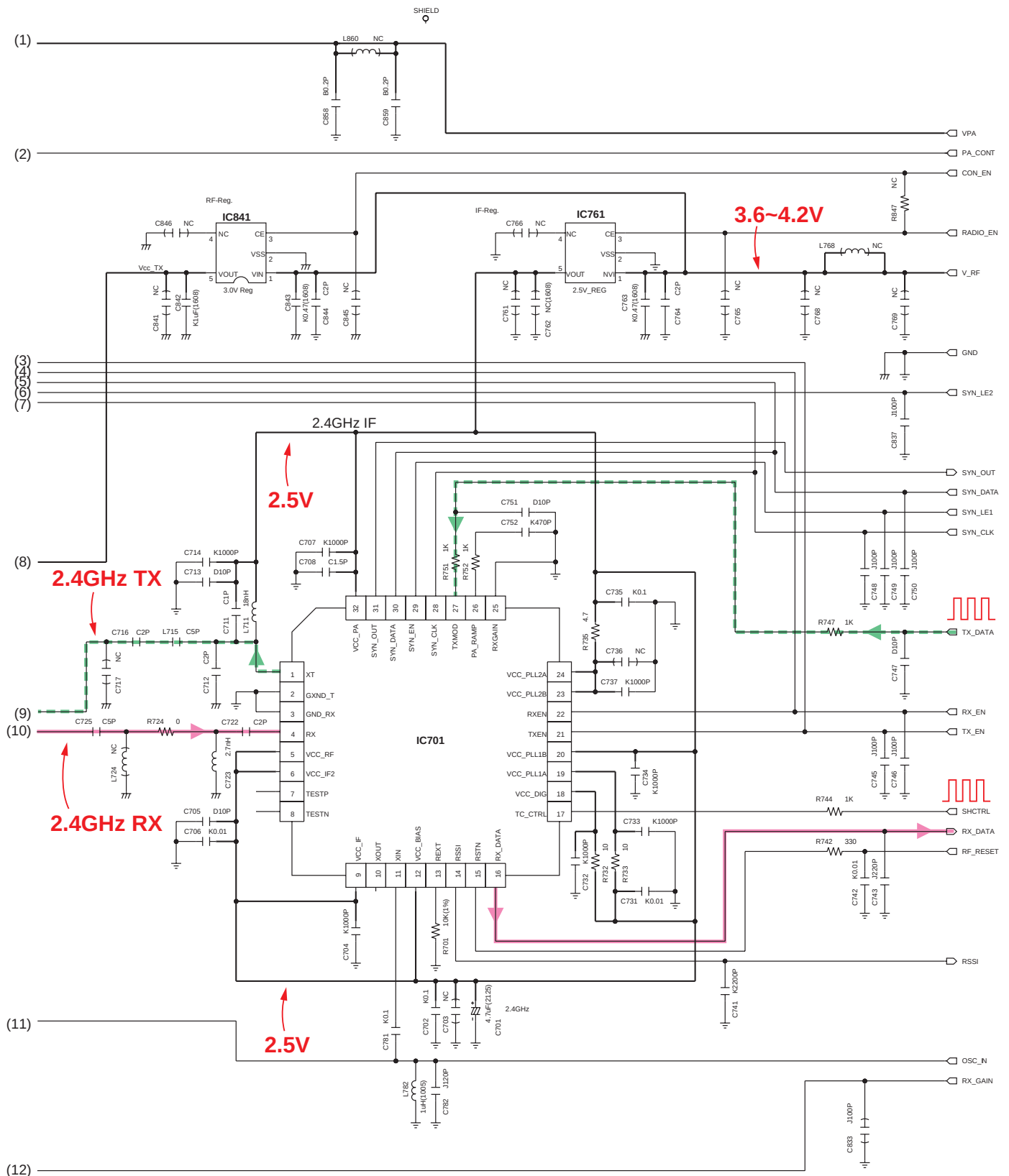


KX-TGA550 SCHEMATIC DIAGRAM (Handset_Main)

35 SCHEMATIC DIAGRAM (HANDSET_RF PART)

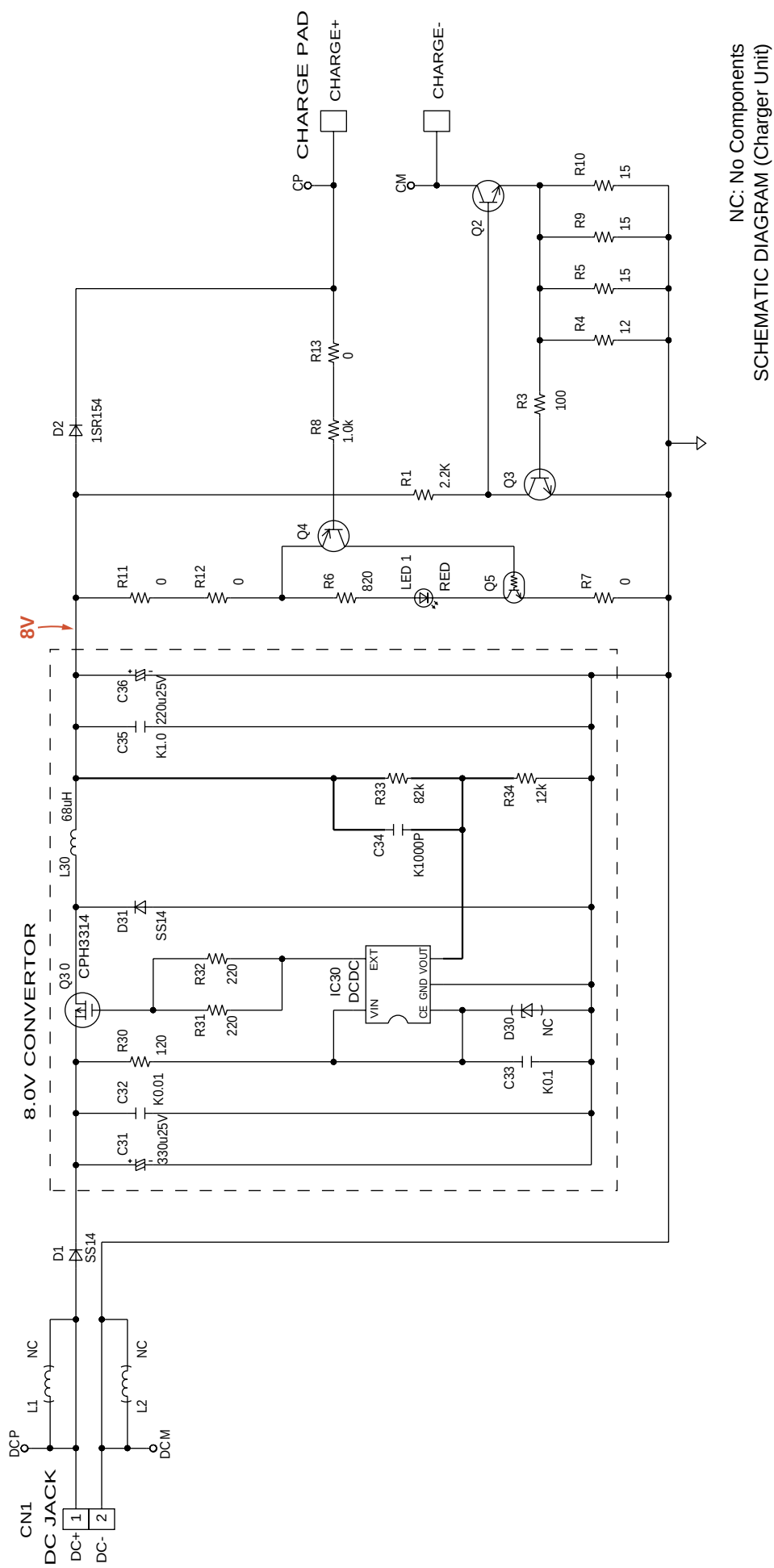


NC: No Components

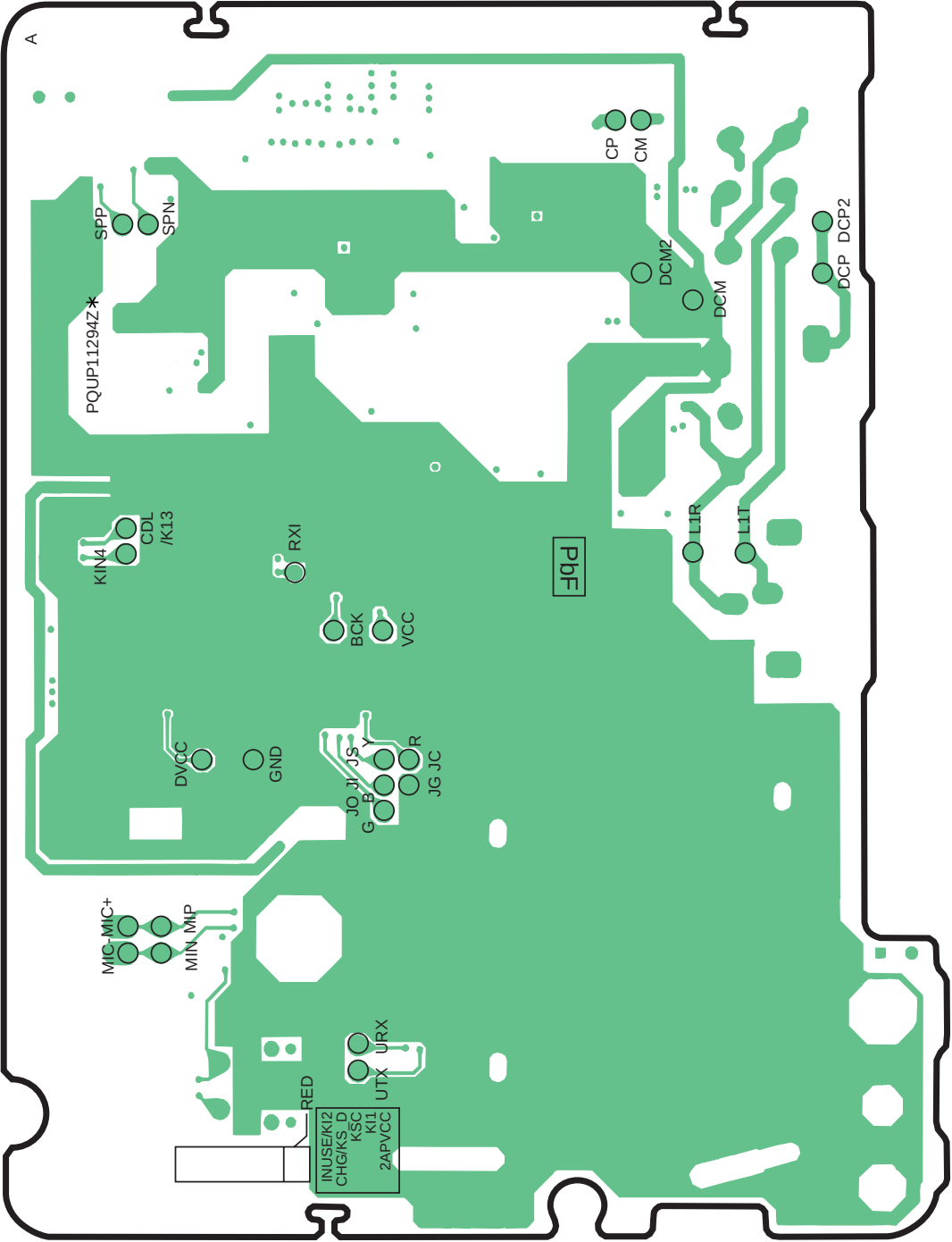


NC: No Components

KX-TGA550 SCHEMATIC DIAGRAM (Handset_RF Part)



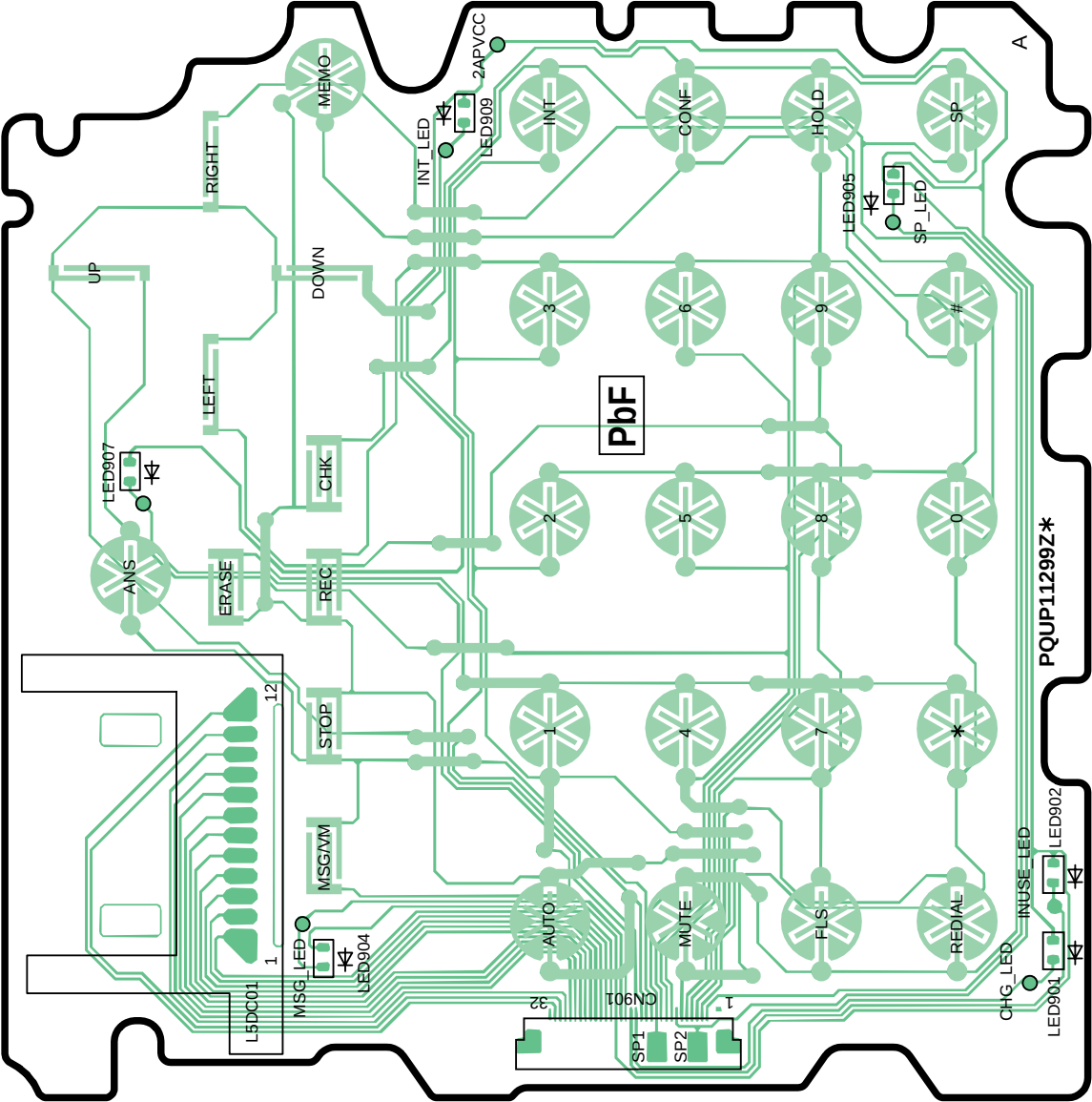
37.2. Flow Solder Side View



KX-TG5571 CIRCUIT BOARD (Base Unit_Main (Flow Solder Side View))

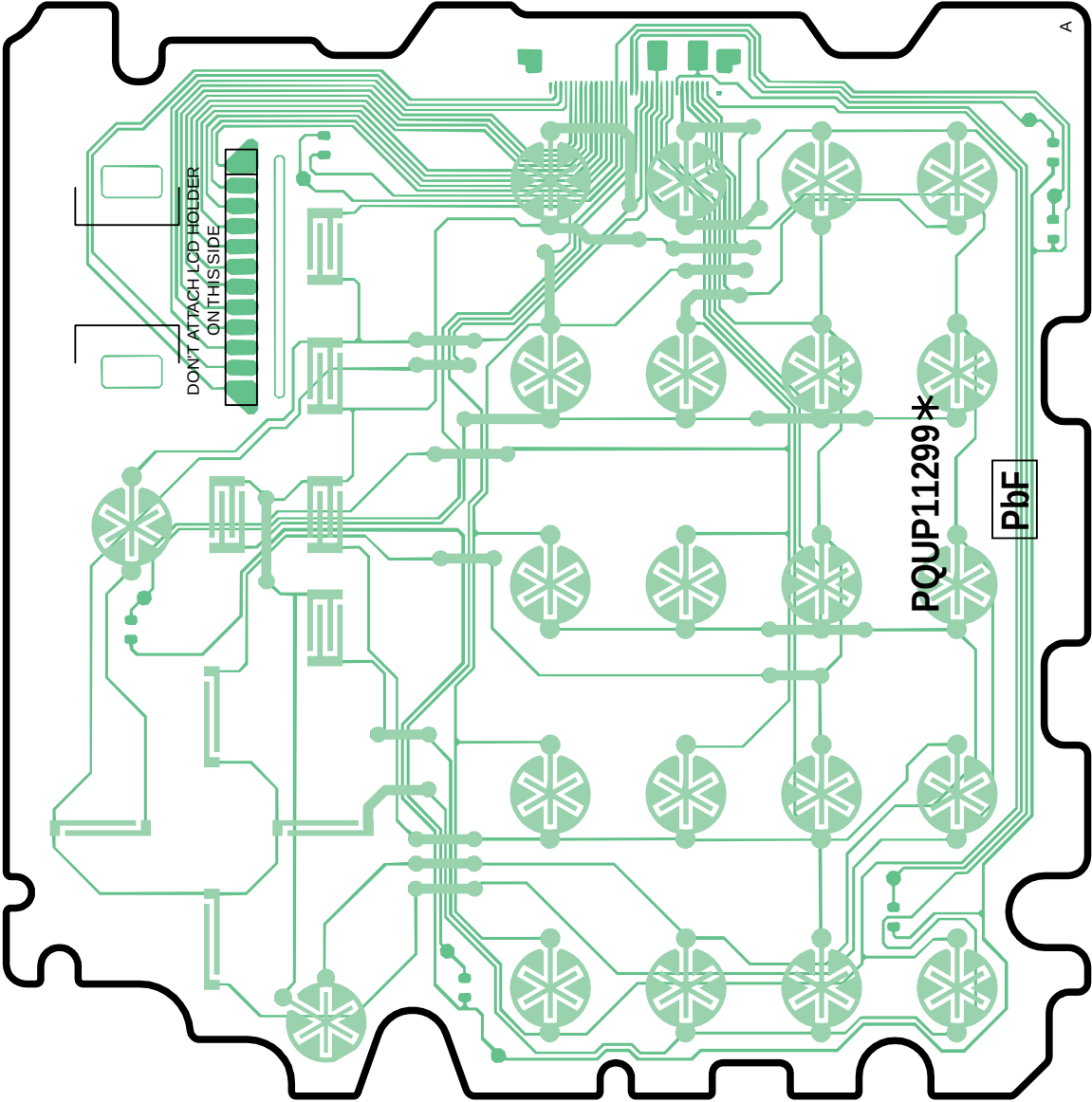
38 CIRCUIT BOARD (BASE UNIT_OPERATION)

38.1. Component View

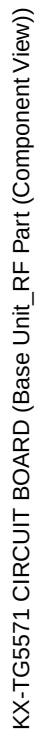


KX-TG5571 CIRCUIT BOARD (Base Unit_Operation (Component View))

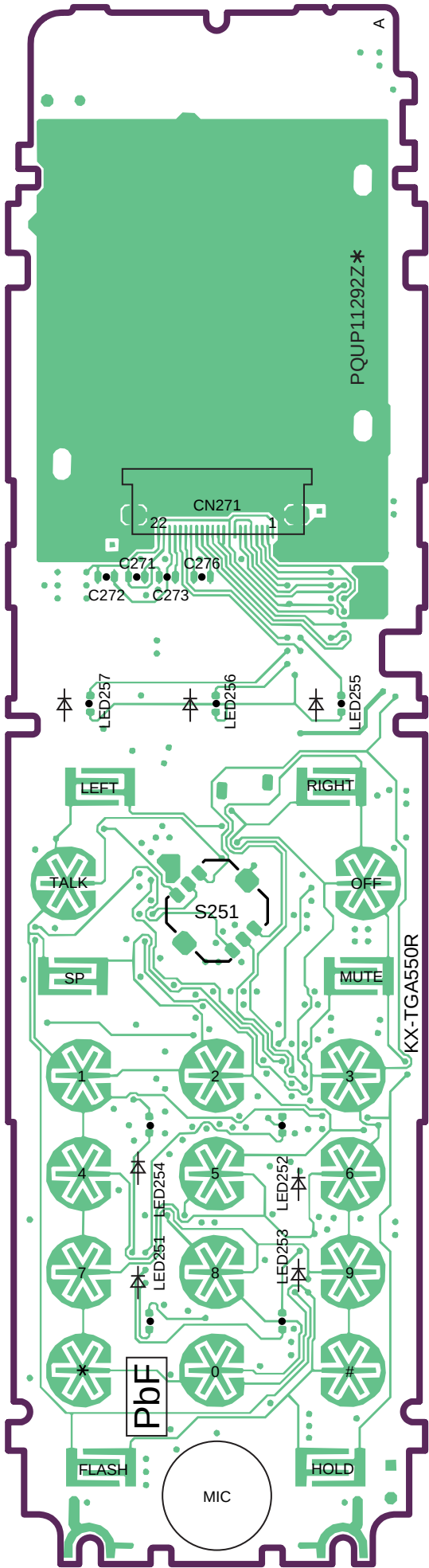
38.2. Flow Solder Side View



KX-TG5571 CIRCUIT BOARD (Base Unit_Operation (Flow Solder Side View))



40.2. Flow Solder Side View

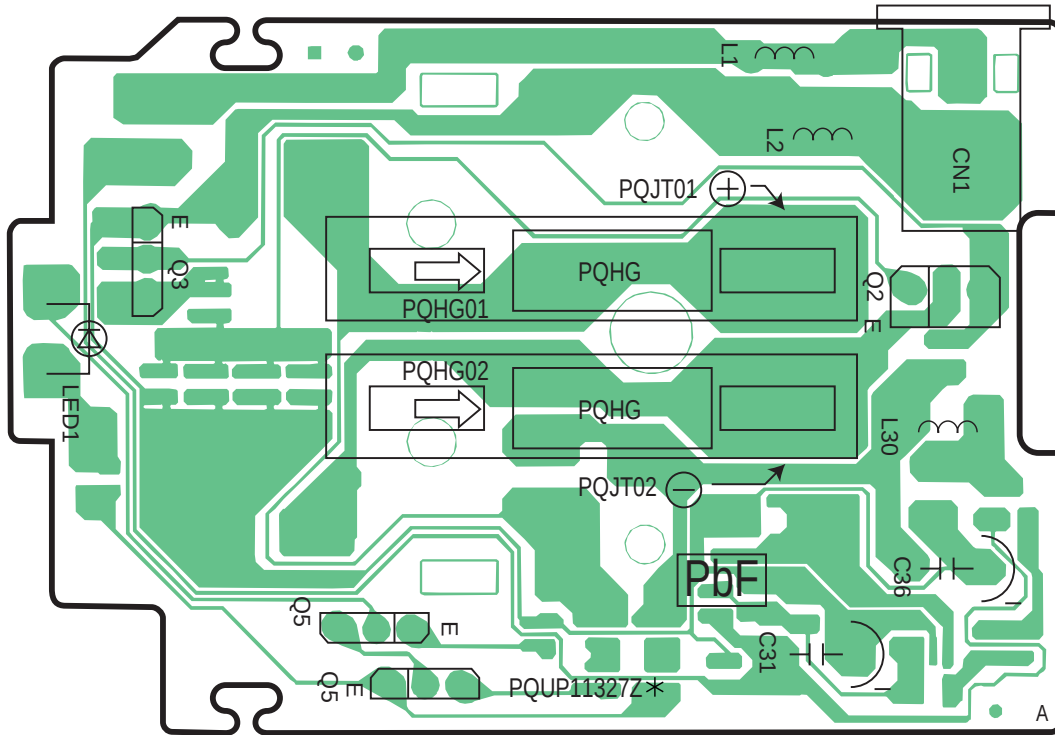


KX-TGA550 CIRCUIT BOARD (Handset_Main (Flow Solder Side View))



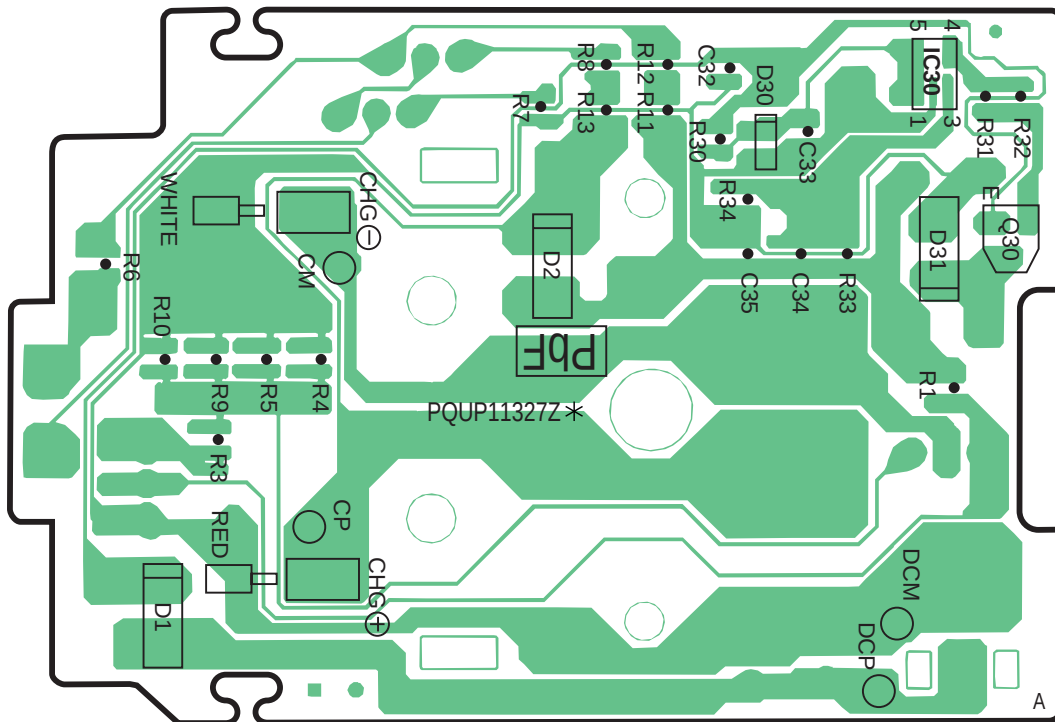
42 CIRCUIT BOARD (CHARGER UNIT)

42.1. Component View



CIRCUIT BOARD (Charger (Component View))

42.2. Flow Solder Side View



CIRCUIT BOARD (Charger (Flow Solder Side View))