# Service Manual

Caller ID Compatible





(Handset)

KX-TGA131HMH/HMV/HMW KX-TG1381HKH/HKV/HKW (Base Unit)



(Charger Unit)

Configuration for each model

Model No	Base Unit	Handset	Charger
KX-TG1381	1	1 (TGA131)	
KX-TG1382	1	2 (TGA131)	1

**Telephone Equipment** Model No. KX-TG1381HKH KX-TG1381HKV KX-TG1381HKW KX-TG1382HKH **KX-TGA131HMH KX-TGA131HMV KX-TGA131HMW** 

Digital Cordless Phone

H: Grey Version V: Violet Version W: White Version (for Hong Kong)

# **MARNING**

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.

# **IMPORTANT SAFETY NOTICE -**

There are special components used in this equipment which are important for safety. These parts are marked by  $\triangle$  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these cirtical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

# $\cdot$ 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.

- When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.
- The illustrations in this Service Manual may vary slightly from the actual product.

# Note for TABLE OF CONTENTS:

Because sections 5, 6 and 7 of this manual are extracts from the operating instructions for this model, they are subject to change without notice. You can download and refer to the original operating instructions on TSN Server for further information.

# **TABLE OF CONTENTS**

		PAGE
1	Safety Precautions	4
	1.1. For Service Technicians	4
2	Warning	
	2.1. Battery Caution	
	2.2. About Lead Free Solder (PbF: Pb free)	
_	2.3. Discarding of P.C. Board	
3	Specifications	6
4	Technical Descriptions 4.1. Block Diagram (Base Unit)	/
	4.2. Circuit Operation (Base Unit)	
	4.3. Block Diagram (Handset)	10
	4.4. Circuit Operation (Handset)	11
	4.5. Circuit Operation (Charger Unit)	
	4.6. Signal Route	12
5	Location of Controls and Components	
_	5.1. Location of Controls	
6	Installation Instructions	
	6.1. Connections	13
	6.2. Battery	
7	Operating Instructions	15
	7.1. Guide to Base Unit Settings	
	7.2. Guide to Handset Settings	
	7.3. Dialling mode	
	7.4. For Service Hint	
8	Service Mode	
	8.1. Engineering Mode	18
9	Troubleshooting Guide	22
	9.1. Troubleshooting Flowchart	
	9.2. Troubleshooting by Symptom (Base Unit and	t co
	Charger Unit)	
40	9.3. Troubleshooting by Symptom (Handset)	
10	Disassembly and Assembly Instructions 10.1. Disassembly Instructions	22
	10.2. How to Replace the Handset LCD	
11	Measurements and Adjustments	30 37
• •	11.1. The Setting Method of JIG (Base Unit)	
	11.2. Adjustment Standard (Base Unit)	
	11.3. Adjustment Standard (Charger Unit)	
	11.4. The Setting Method of JIG (Handset)	
	11.5. Adjustment Standard (Handset)	
	11.6. Things to Do after Replacing IC	
	11.7. RF Specification	45
	11.8. How to Check the Handset Speaker o	r
	Receiver	
	11.9. Frequency Table (MHz)	
12	Miscellaneous	
	12.1. CPU Data (Base Unit)	
	12.2. CPU Data (Handset)	
	12.3. Terminal Guide of the ICs, Transistors and	
40	Diodes	
13	Schematic Diagram	
	13.1. For Schematic Diagram (Page Unit)	
	13.2. Schematic Diagram (Handsot)	
	13.3. Schematic Diagram (Handset)13.4. Schematic Diagram (Charger Unit)	
11	Printed Circuit Board	
14	14.1. Circuit Board (Base Unit)	
	14.1. Circuit Board (Base Unit)	5/

	PAG
14.3. Circuit Board (Handset)	6
14.4. Circuit Board (Handset_Career)	6
14.5. Circuit Board (Charger Unit)	6
15 Exploded View and Replacement Parts List	6
15.1. Cabinet, Electrical Parts and Accessorie	es
(Base Unit/Handset)	6
15.2. Replacement Part List	6

# 1 Safety Precautions

# 1.1. For Service Technicians

- Repair service shall be provided in accordance with repair technology information such as service manual so as to prevent fires, injury or electric shock, which can be caused by improper repair work.
  - 1. When repair services are provided, neither the products nor their parts or members shall be remodeled.
  - 2. If a lead wire assembly is supplied as a repair part, the lead wire assembly shall be replaced.
  - 3. FASTON terminals shall be plugged straight in and unplugged straight out.
- 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.

# 2 Warning

# 2.1. Battery 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 manufacture's Instructions.

# 2.2. About Lead Free Solder (PbF: Pb free)

### Note:

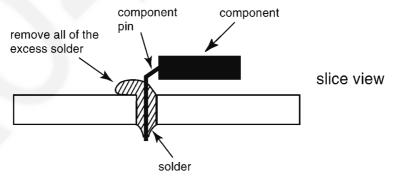
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

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.

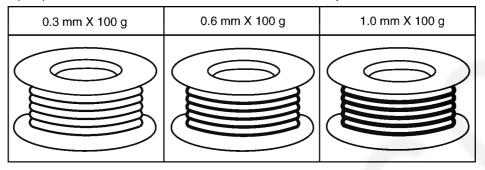
### Caution

- 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).
- Exercise care while using higher temperature soldering irons.: Do not heat the PCB for too long time in order to prevent solder splash or damage to the PCB.
- PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F (600°C).
- 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).



# 2.2.1. 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: 0.3 mm, 0.6 mm and 1.0 mm.



# 2.3. Discarding of P.C. Board

When discarding P. C. Board, delete all personal information such as telephone directory and caller list or scrap P. C. Board.

# 3 Specifications

# ■ Standard:

DECT (Digital Enhanced Cordless Telecommunications)

# ■ Number of channels:

120 Duplex Channels

# **■** Frequency range:

1.88 GHz to 1.90 GHz

# ■ Duplex procedure:

TDMA (Time Division Multiple Access)

# **■** Channel spacing:

1,728 kHz

# ■ Bit rate:

1,152 kbit/s

# ■ Modulation:

GFSK (Gaussian Frequency Shift Keying)

### ■ RF transmission power:

Approx. 10 mW (average power per channel)

# ■ Voice coding:

ADPCM 32 kbit/s

# ■ Power source (AC Adaptor):

220-240V AC, 50 Hz

Base unit: PQLV207EU

Charger

1: PQLV209EU

■ Power consumption

### Base unit:

Standby: Approx. 2.1 W Maximum: Approx. 5.8 W

# Charger<sup>1</sup>:

Standby: Approx. 0.8 W Maximum: Approx. 5.0 W ■ Operating conditions:

# 5°C-40°C, 20%-80% relative air humidity (dry)

### **■** Dimensions:

Base unit: Approx. 103 mm x 104 mm x 58 mm Handset: Approx. 148 mm x 50 mm x 33 mm Charger<sup>1</sup>: Approx. 87 mm x 75 mm x 53 mm

# ■ Mass (weight):

Base unit: Approx. 120 g Handset: Approx. 120 g Charger<sup>1</sup>: Approx. 60 g

\*1 KX-TG1382

# Note:

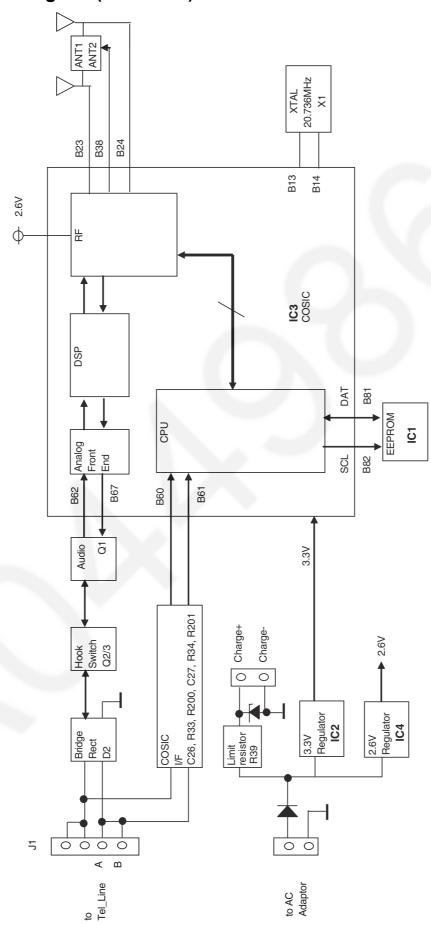
· Design and specifications are subject to change without notice.

### Note for Service:

- Operation range: Up to 300 m outdoors, Up to 50 m indoors, depending on condition
- · Analog telephone connection: Telephone Line

# 4 Technical Descriptions

# 4.1. Block Diagram (Base Unit)



KX-TG1381/1382 BLOCK DIAGRAM (BASE UNIT)

# 4.2. Circuit Operation (Base Unit)

# 4.2.1. **Outline**

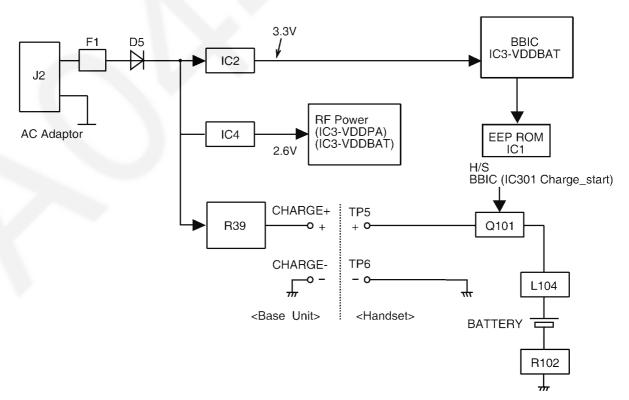
Base Unit consists of the following ICs as shown in Block Diagram (Base Unit) (P.7).

- DECT BBIC (Base Band IC): IC3 (career module)
  - Handling all the audio, signal and data processing needed in a DECT base unit
  - Controlling the DECT specific physical layer and radio section (Burst Module Controller section)
  - ADPCM codec filter for speech encoding and speech decoding (DSP section)
  - Echo-cancellation and Echo-suppression (DSP section)
  - Any tones (tone, sidetone, ringing tone, etc.) generation (DSP section)
  - DTMF receiver (DSP section)
  - Clock Generation for RF Module
  - ADC, DAC, timer, and power control circuitry
  - All interfaces (ex: RF module, EEPROM, LED, Analog Front End, etc.)
  - PLL Oscillator
  - Detector
  - Compress/Expander
  - First/Second Mixer
  - Amplifier for transmission and reception
- EEPROM: IC1
  - Temporary operating parameters (for RF, etc.)
- · Additionally,
  - Power Supply Circuit (+3.3V, +2.6V output)
  - Crystal Circuit (20.736MHz)
  - Charge Circuit
  - Telephone Line Interface Circuit

# 4.2.2. Power Supply Circuit

The power is supplied to the DECT BBIC, RF Module, EEPROM, Relay Coil, LED and Charge Contact from AC Adaptor as shown in Fig.101. The power supply is as follows:

- DECT BBIC (IC3):  $J2 \rightarrow F1 \rightarrow D5 \rightarrow IC2 \rightarrow IC3-VDDBAT$
- RF Power:  $J2 \rightarrow F1 \rightarrow D5 \rightarrow IC4 \rightarrow IC3-VDDPA$ , IC3-VDDBAT
- EEPROM (IC1): J2  $\rightarrow$  F1  $\rightarrow$  D5  $\rightarrow$  IC2  $\rightarrow$  IC3  $\rightarrow$  IC1
- Charge Contact (CHARGE+): J2  $\rightarrow$  F1  $\rightarrow$  D5  $\rightarrow$  R39  $\rightarrow$  CHARGE+



<Fig.101>

# 4.2.3. Telephone Line Interface

### <Function>

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

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

In the standby mode, Q3 is open to cut the DC loop current and decrease the ring load.

When ring voltage appears at the BATTERY (+) and BATTERY (-) leads (when the telephone rings), the signal is transferred as follows:

- A  $\rightarrow$  C26  $\rightarrow$  R33  $\rightarrow$  R19, R31  $\rightarrow$  R201  $\rightarrow$  IC3  $\rightarrow$  LINEA (DLP) [**BELL & CLIP**]
- B  $\rightarrow$  C27  $\rightarrow$  R34  $\rightarrow$  R16, R30  $\rightarrow$  R200  $\rightarrow$  IC3  $\rightarrow$  LINEN (DLP) [**BELL & CLIP**]

### ON/OFF hook circuit:

In the standby mode, Q3 is open, and connected as to cut the DC loop current and to cut the voice signal. The unit is consequently in an **off-hook condition**.

When IC3 detects a ring signal or press the TALK Key onto the handset, Q2 turns on and then Q3 turns on, thus providing an **off-hook condition** (active DC current flow through the circuit) and the following signal flow is for the loop current.

• A  $\rightarrow$  D2  $\rightarrow$  Q3  $\rightarrow$  Q1  $\rightarrow$  R9  $\rightarrow$  R10  $\rightarrow$  D2 $\rightarrow$  B [**OFF HOOK**]

### **Audio circuits:**

Refer to Signal Route (P.12).

# 4.2.4. Transmitter/Receiver

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

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

# Signal Path:

\*Refer to Signal Route (P.12).

### 4.2.4.1. Transmitter Block

The voice signal input from the TEL LINE interface goes to DECT BBIC (IC3) as shown in Block Diagram (Base Unit) (P.7)

The voice signal passes through the analog part of IC3 where it is amplified and converted to a digital audio stream signal. The burst switch controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP (**G**eneric **A**ccess **P**rofile) standard DECT frame, assigning to a time slot and channel etc.

In IC3, the carrier frequency is changing, and frequency modulated RF signal is generated and amplified, and radiated from antenna. Handset detects the voice signal or data signal in the circuit same as the following explanation of Receiver Block.

# 4.2.4.2. Receiver Block

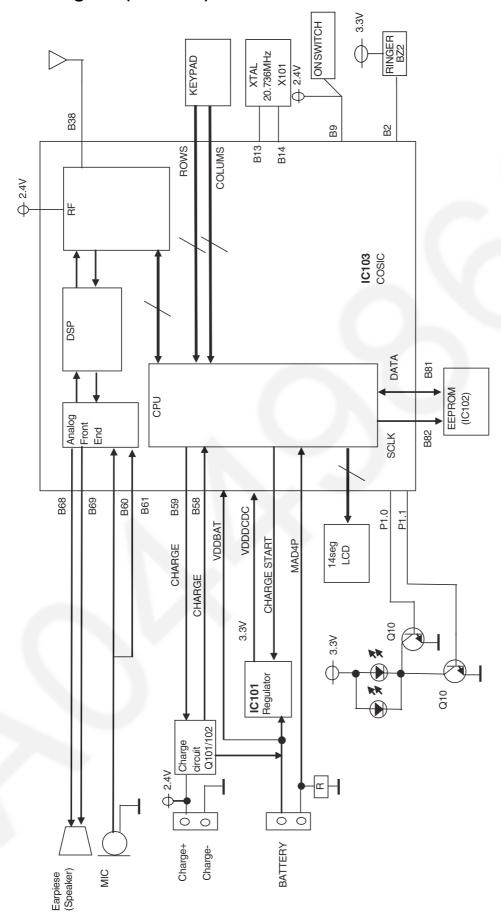
The signal of 1.9 GHz band (1.881792 GHz ~ 1.897344 GHz) which is input from antenna is input to IC3 as shown in **Block Diagram (Base Unit)** (P.7).

In IC3, the signal of 1.9 GHz band is demodulated, and goes to IC2 as GAP (Generic Access Profile) standard DECT frames. It passes through the decoding section burst switch controller where it separates out the frame information and performs deencryption and de-scrambling as required. It then goes to the DSP section where it is turned back into analog audio. This is amplified by the analog front end, and goes to the TEL LINE Interface.

# 4.2.5. Pulse Dialling

During pulse dialing the hookswitch (Q2, Q3) is used to generate the pulses using the HOOK control signal, which is set high during pulses. To force the line impedance low during the "pause" intervals between dial pulses, the PULSE\_DIAL signal turns on Q4.

# 4.3. Block Diagram (Handset)



KX-TGA131 BLOCK DIAGRAM (HANDSET)

# 4.4. Circuit Operation (Handset)

# 4.4.1. Outline

Handset consists of the following ICs as shown in Block Diagram (Handset) (P.10).

- DECT BBIC (Base Band IC): IC103
  - All data signals (forming/analyzing ACK or CMD signal)
  - All interfaces (ex: Key, Detector Circuit, Charge, DC/DC Converter, EEPROM, LCD)
  - PLL Oscillator
  - Detector
  - Compress/Expander
  - Amplifier for transmission and reception
- EEPROM: IC102
  - Temporary operating parameters

# 4.4.2. Power Supply Circuit/Reset Circuit

# **Circuit Operation:**

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

BATTERY (2.2 V 
$$\sim$$
 2.6V)  $\rightarrow$  D107  $\rightarrow$  IC103 -VDDBAT  $\rightarrow$  IC103-SDRV  $\rightarrow$  R107  $\rightarrow$  L103  $\rightarrow$  IC101  $\rightarrow$  3.3V

The Reset signal generates R121, C186 and ≒2.6V.

# 4.4.3. Charge Circuit

# **Circuit Operation:**

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

 $DC+ \rightarrow F1 \rightarrow D5 \rightarrow R39 \rightarrow CHARGE+ (Base) \rightarrow CHARGE+ (Handset) \rightarrow Q101 \rightarrow L104 \rightarrow BATTERY+...$  Battery...

BATTERY- → R102 → GND → CHARGE- (Handset) → CHARGE- (Base) → GND → DC- (GND)

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

The charge current is controlled by switching Q101 of Handset.

Refer to Fig.101 in Power Supply Circuit (P.8).

# 4.4.4. Battery Low/Power Down Detector

# **Circuit Operation:**

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

The detected voltage is as follows;

· Battery Low

Battery voltage: V (Batt) < 2.3V

The BBIC detects this level and " starts flashing and "battery alarm" starts ringing.

Power Down

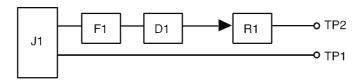
Battery voltage: V (Batt) < 2.2V

The BBIC detects this level and power down.

# 4.5. Circuit Operation (Charger Unit)

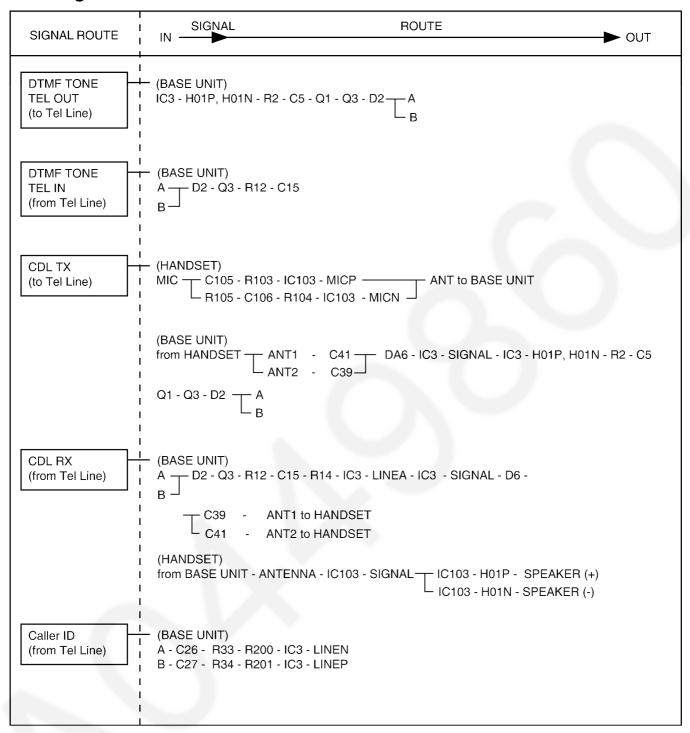
# 4.5.1. Power Supply Circuit

The power supply is as shown.



AC Adaptor

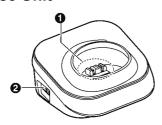
# 4.6. Signal Route



# 5 Location of Controls and Components

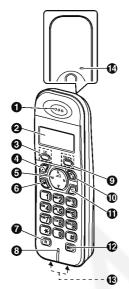
# 5.1. Location of Controls

# 5.1.1. Base Unit



- Charge contacts
- 2 [•))] (Locator)

# 5.1.2. Handset



- Receiver
- Display
- **③** [□□] (Phonebook)
- 4 [ ] (Talk)
- Navigator
   ((▲)/(▼)/(▶)/(↓))
   △ (Volume: (▲)/(▼))
- ⑥ 【◎】(Redial/Pause)
- R (Recall/Flash)
- Microphone
- **⑤** [■/OK] (Menu/OK)
- **①** [ → ] (Off/Power)
- [C] (Clear)
- (INT)

KX-TG1381:

To stop paging

KX-TG1382:

To stop paging/Intercom

- Charge contacts
- Ringer

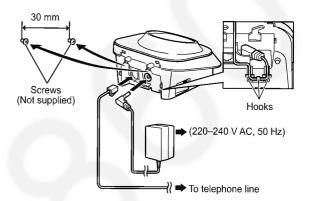
# 6 Installation Instructions

# 6.1. Connections

### Base unit

The base unit can be mounted on the wall, if required.

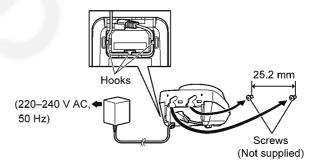
- Use only the supplied Panasonic AC adaptor PQLV207EU.
- Use only the supplied telephone line cord. Using another telephone line cord may not allow the unit to work properly.



# Charger

The charger can be mounted on the wall, if required.

 Use only the supplied Panasonic AC adaptor PQLV209EU.



### Note:

- Never install telephone wiring during a lightning storm
- Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.
- If the unit is connected to a PBX system, please contact your PBX supplier.

# During a power failure

The unit will not work during a power failure. We recommend connecting a corded-type telephone (without AC adaptor) to the same telephone line or to the same telephone line jack using a T-adaptor.

### Location of base unit

- For maximum coverage and noise-free communications, place your base unit:
  - at a convenient, high, and central location with no obstructions between the handset and base unit in an indoor environment.
  - away from electronic appliances such as TVs, radios, personal computers, wireless devices or other phones.
  - avoid facing radio frequency transmitters, such as external antennas of mobile phone cell stations (Avoid putting the base unit on the bay window or near the window).
- Coverage and voice quality depends on the local environmental conditions.
- If the reception for a base unit location is not satisfactory, move the base unit to another location for better reception.

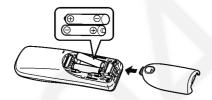
# 6.2. Battery

# 6.2.1. Battery Installation

# Important:

- Use the supplied rechargeable batteries (Part No. HHR-55AAAB).
- When installing the batteries:
  - Wipe the battery ends  $(\bigoplus, \bigcirc)$  with a dry cloth.
  - Avoid touching the battery ends (⊕, ⊝) or the unit contacts.
  - Confirm correct polarities (⊕, ⊝).
- If the handset does not automatically turn on after installing batteries, press [>O] for about 1 second, or place the handset on the base unit or charger.

Insert the batteries negative  $(\bigcirc)$  end first. Close the handset cover.



### See For Service Hint (P.17)

# 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.

# 6.2.2. Battery Charge

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

# 6.2.3. Battery Level

Battery icon	Battery level
(III	High  When flashing: Fully charged.
	Medium
	Low ■ When flashing: Needs charging.

# 6.2.4. Panasonic Ni-MH Battery Performance (supplied batteries)

Operation	Operating time
In continuous use	17 hours max.
Not in use (standby)	150 hours max.

### Note:

- It is normal for batteries not to reach full capacity at the initial charge.
   Maximum battery performance is reached after a few complete cycles of charge/discharge (use).
- To maximise battery life, it is recommended that the handset batteries be fully discharged (used) until flashes once every few months.
- Actual battery performance depends on a combination of how often the handset is in use and how often it is not in use (standby).
- The battery level may not be displayed correctly after you replace the batteries.
   In this case, place the handset on the base unit or charger and let it charge for at least 7 hours.

# 7 Operating Instructions

# 7.1. Guide to Base Unit Settings

To customise the base unit (general approach):

- 1 [国/OK]
- 2 Press [▼] or [▲] to select "SETTING BS". → [▶]
  - "INPUT CODE" is displayed.
- 3 Enter the desired code number. Follow the instructions in the "Feature" column of the chart.
  - To exit the operation, press [★①].

Code No.	Feature (default setting)	Remarks (selectable options)
[0]	Reset base unit to its default settings.*1  - Enter base unit PIN (default: "0000").*2 → [▶]	-
[3]	Dialling mode (Tone)	-
	Recall/flash time (400 ms)*3  Enter base unit PIN (default: "0000").*2 → [2] → [1]  Select the desired setting by pressing [1] for 700 ms,  [2] for 400 ms or [3] for 80 ms. → [▶]	
[5]	Change base unit PIN ("0000").*4  – Enter the current 4-digit base unit PIN.*2  – Enter the new 4-digit base unit PIN.  – Enter the new 4-digit base unit PIN again.	-
[6]	<ul> <li>Call restriction *5</li> <li>■ Setting call restriction <ul> <li>Enter base unit PIN (default: "0000").*2 → Enter the desired handset number by pressing the appropriate dial key.</li> <li>• The selected handset number flashes on the display.</li> <li>[ ▶ ]</li> <li>Enter the phone number to be restricted (8 digits max.).</li> <li>• To select a different memory location, press [ ▶ ] and enter a number.</li> <li>[ ▶ ]</li> </ul> </li> <li>■ Turning on/off call restriction <ul> <li>Enter base unit PIN (default: "0000").*2</li> <li>• Handset number is displayed. A flashing number indicates call restriction is on; a non-flashing number indicates call restriction is off.</li> <li>Enter the desired handset number by pressing the appropriate dial key to turn on/off. → [ ▶ ] 2 times</li> </ul> </li> </ul>	Up to 10 numbers
	<ul> <li>Emergency number ("999")*6</li> <li>Enter base unit PIN (default: "0000").*2 → [★]</li> <li>Storing: <ul> <li>Enter the emergency number (8 digits max.).</li> <li>To select a different memory location, press [▶] and enter a number.</li> <li>[▶]</li> <li>Editing:</li> <li>Press [▶] to display the desired number. → [C] → Enter the new emergency number. → [▶]</li> </ul> </li> </ul>	Up to 4 numbers
[ <del>*</del> ]	Date and time	-

<sup>\*1</sup> Only the emergency number setting is not reset.

# **Cross Reference:**

For Service Hint (P.17)

<sup>\*2</sup> If you forget your PIN, see "For Service Hint".

<sup>\*3</sup> The recall/flash time depends on your telephone exchange or host PBX. Contact your PBX supplier if necessary.

<sup>\*4</sup> If you change the PIN, please write down your new PIN as the unit will not reveal it to you again.

<sup>\*5</sup> Call restriction feature restricts the handset from dialling certain phone numbers. You can assign up to 10 phone numbers (memory locations 0–9) to be restricted.

<sup>\*6</sup> Emergency number feature determines which phone numbers may be dialled while the call bar feature is turned on. A total of 4 emergency numbers (memory locations 1–4) can be stored.

# 7.2. Guide to Handset Settings

To customise the handset (general approach):

- 1 [国/OK]
- 2 Press [▼] or [▲] to select "SETTING HS". → [▶]
- 3 Press  $[ \ \ ]$  or  $[ \ \ ]$  to select the desired item in the handset settings menu.  $\rightarrow [ \ \ )$
- 4 Press [▼] or [▲] to select the desired item in the sub-menu. → [▶]
- 5 Press (▼) or (▲) to select the desired setting. → (▶)
  - This step may vary depending on the feature being programmed.
  - To exit the operation, press [%0].

### Note:

• In the following table, < > indicates the default settings.

Menu	Sub-menu	Remarks (selectable options)	
TIME ALARM	SET TIME	_	
	SET ALARM <off></off>	ON/ONCE/REPEAT DAILY	
RINGER OPT	RINGER VOL	RINGER OFF/1 to 6	
	EXT RINGER*1 <ring 1="" type=""></ring>	1 to 20 (6 Bells and 14 Melodies)	
	INT RINGER <ring 1="" type=""></ring>	1 to 20 (6 Bells and 14 Melodies)	
	PAGING <ring 1="" type=""></ring>	1 to 20 (6 Bells and 14 Melodies)	
	ALARM <ring 1="" type=""></ring>	1 to 20 (6 Bells and 14 Melodies)	
TONE OPT	KEY TONE <on></on>	ON/OFF	
	CALL WAITING <on></on>	ON/OFF	
	RANGE ALARM <off></off>	ON/OFF	
	BATTERY LOW <on></on>	ON/OFF	
DISPLAY OPT	STANDBY MODE < CLOCK >	CLOCK/OFF/BS NO/HS NO	
	TALK MODE <talk time=""></talk>	TALK TIME/PHONE NO	
	LANGUAGE <english></english>	_	
CALL OPT	CALL BAR <off></off>	ON/OFF	
	DIRECT NO	-	
	SET DIRECT <off></off>	ON/OFF	
OTHER OPT	HSPIN CHANGE <0000>	_	
	AUTO TALK*2 <off></off>	ON/OFF	
RESET HS	_	_	

<sup>\*1</sup> If you select a melody for the external ringer tone, the ringer continues to sound until the melody finishes even when another person answers the call using another phone connected to the same line. If you want the handsets to stop ringing at the same time, select ringer tone number 1.

# 7.3. Dialling mode

If you cannot make calls, change this setting according to your telephone line service. The default setting is Tone.

- "1" (Tone): For tone dial service.
- "2" (Pulse): For rotary/pulse dial service.
- 1 [国/OK]
- 2  $[ \checkmark ]/[ \blacktriangle ]$ : "SETTING BS"  $\rightarrow [ \gt ] \rightarrow [ 3 ]$
- 3 Enter base unit PIN (default: "0000"). → [1]
  - If you forget your PIN, see For Service Hint.
- 4 Select the desired setting by pressing [1] for tone dialling mode or [2] for pulse dialling mode.
- 5 (**)** ] → [**%**①]

# **Cross Reference:**

For Service Hint (P.17)

<sup>\*2</sup> Auto talk feature allows you to answer calls simply by lifting the handset off the base unit or charger. You do not need to Press [ ]. If you subscribe to a Caller ID service and want to view the caller's information after lifting up the handset to answer a call, turn off this feature.

# 7.4. For Service Hint

Items	Contents			
Battery	You could use other rechargeable batteries sold in a market, but the unit is not guaranteed to work properly.			
	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 in <b>Battery Charge</b> , you will get a correct indication of the battery strength.			
PIN Code	<ul> <li>Change the PIN using the following method.</li> <li>1 [■/OK]</li> <li>2 [▼]/[▲]: "SETTING HS" → [▶]</li> <li>3 [▼]/[▲]: "OTHER OPT" → [▶]</li> <li>4 [▼]/[▲]: "HSPIN CHANGE" → [▶]</li> <li>5 [★][7][0][0][0]</li> <li>6 Enter the new 4-digit handset PIN.</li> <li>7 Enter the new 4-digit handset PIN again.</li> <li>8 [★①]</li> <li>Base unit PIN</li> <li>1 [■/OK]</li> <li>2 [▼]/[▲]: "SETTING BS" → [▶]</li> <li>3 [5]</li> <li>4 [★][7][0][0][0]</li> <li>5 Enter the new 4-digit base unit PIN.</li> <li>6 Enter the new 4-digit base unit PIN again.</li> <li>7 [★①]</li> </ul>			

Cross Reference: Battery Charge (P.14)

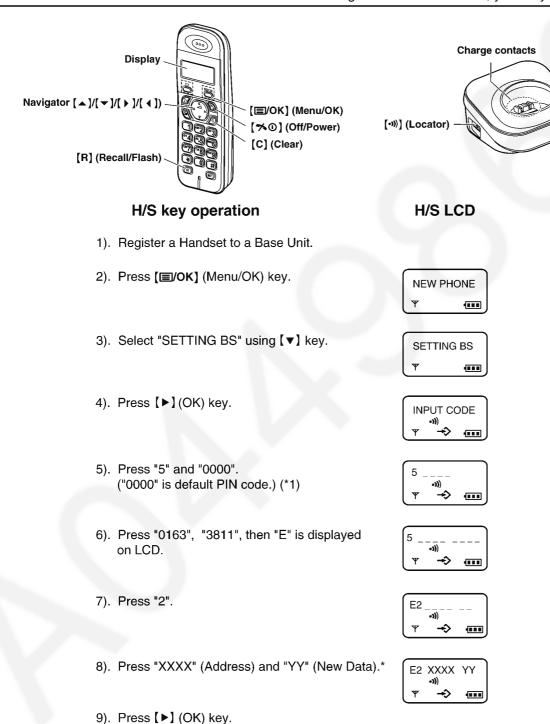
# 8 Service Mode

# 8.1. Engineering Mode

# 8.1.1. Base Unit

# Important:

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



9). Fless [F] (OR) key

10). Press [◀] key and repeat from Step 8.

If press [\*/0] (Off/Power) twice anytime, return to standby mode.

### Note:

(\*1) Refer to For Service Hint (P.17).

# Frequency Used Items (Base Unit) ex.)

Items (*2)	Address	Default Data	New	Data	Remarks
C-ID (FSK) sensi-	0A1D~0A1E	00 28	(3dB up)	(6dB up)	When hex changes from "006D" to "00A4" or "00E7",
tivity			00 A4	00 E7	gain increases by 3dB or 6dB.
C-ID (DTMF) sen-	0A 2D	34	(3dB up)	(6dB up)	When hex changes from "34" to "38" or "3C", gain
sitivity			38	3C	increases by 3dB or 6dB.
Frequency	00 00~00 01	Given value	-	-	Use these items in a READ-ONLY mode to confirm
ID	00 20~00 24	Given value	-		the contents. Careless rewriting may cause serious
					damage to the computer system.
Bell length	0F 12	3C (6 sec) (*1)	1E (3sec)	14 (2sec)	This is time until bell stops ringing. (Unit: 100ms)
PULSE Dial speed		21 (33 msec) (*1)	14 (20 msec)	-	This is pulse make time. (Unit:1 ms)
(10PPS -> 20PPS)	0F 07	43 (67 msec) (*1)	1E (30 msec)	-	This is pulse break time. (Unit:1 ms)
	0F 0A	4A (740 msec)	2C (440 msec)	-	This is inter-digit time in pulse mode.
		(*1)			(Unit:10 ms)

Note:

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

Desired Number (hex)	Input Keys	Desired Number (hex)	Input Keys
0	0	A	[R] + 0
1	1	В	[R] + 1
		С	[R] + 2
		D	[R] + 3
		E	[R] + 4
9	9	F	[R] + 5

(\*1)

Bell length	3C(hex) = 60(dec) → 60 × 100msec = 6000msec (6sec)
PULSE Dial speed	21 (hex) = 33 (dec) → 33 × 1 msec = 33 msec
(10PPS -> 20PPS)	43 (hex) = 67 (dec) → 67 × 1 msec = 67 msec
	4A (hex) = 74 (dec) → 74 × 10 msec = 740 msec

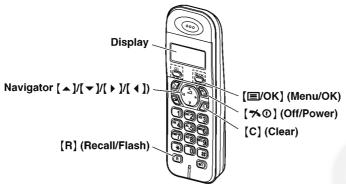
(\*2)

Items	Description
C-ID (FSK) sensitivity	FSKGain_shiftgain
C-ID (DTMF) sensitivity	Foutgains:HPFilter Foutgains
Frequency	Setting value of FREQ_TRIM_REG
ID	ID
Bell length	Time until it stops bell.

# 8.1.2. Handset

# **Important:**

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



# H/S LCD H/S key operation 1). Press [**II**/**OK**] (Menu/OK) key. **NEW PHONE** -000 2). Select "SETTING HS" using [▼] key, then SETTING HS Press [▶] (OK) key. -3). Select "OTHER OPT" using [▼] key, then OTHER OPT Press [▶] (OK) key. →> •••• 4). When "HSPIN CHANGE" is displayed, **HSPIN CHANGE** Press [▶] (OK) key. →> •••• 5). Press "0000" as an old PIN code. OLD PIN\_ (This is default PIN code.) (\*1) • 6). Press "0163" as a new PIN code. NEW PIN \_ -7). Press "3811", then "E" is displayed on LCD. VERIFY\_ →> 100 8). Press "2". E2 →> 111 9). Press "XXXX" (Address) and "YY" (New Data).\* E2 XXXX YY

- 10). Press [▶] (OK) key.
- 11). Press 【◀】 key and repeat from Step 9.

If press [\*\*/①] (Off/Power) twice anytime, return to standby mode.

# Note:

(\*1) Refer to For Service Hint (P.17).

# Frequency Used Items (Handset)

ex.

Items (*4)	Address	Default Data	New Data	Possible Adjusted	Possible Adjusted	Remarks
				Value MAX (hex)	Value MIN (hex)	
Sending level	0F 35	Adjusted value	Given value	30	00	(*1)
Receiving level	0F 37	Adjusted value	Given value	70	40	(*2)
Battery Low	0F 04	9A	-	-	-	
Frequency	00 00~00 01	00 60	-	-	-	(*3)
ID	00 30~00 34	Given value	-	-	-	

# Note:

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

Desired Number (hex)	Input Keys	Desired Number (hex)	Input Keys
0	0	A	[R] + 0
1	1	В	[R] + 1
		С	[R] + 2
		D	[R] + 3
		E	[R] + 4
9	9	F	[R] + 5

(\*1) When adding "01" (hex) to default value, sending level increases by 1.0dB. ex.)

Item	Default Data	New Data	
	1C	1D	1B
Sending level	-9.0dBm	-8.0dBm	-10.0dBm

(\*2) When reducing "01" (hex) from default value, receiving level increases by 1.0dB. ex.)

Item	Default Data	New Data		
	5B	5A	5C	
Receiving level	-22.5dBm	-23.5dBm	-21.5dBm	

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

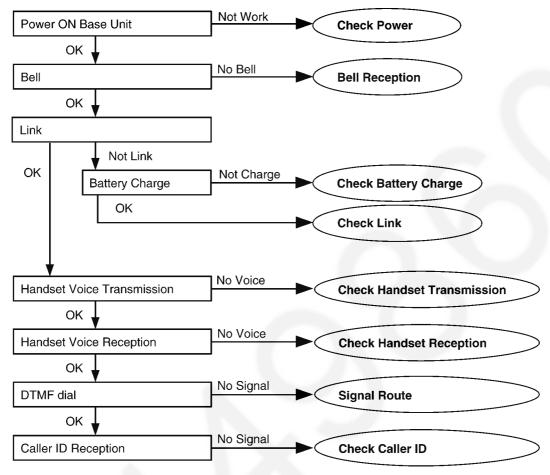
(\*4)

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

# 9 Troubleshooting Guide

# 9.1. Troubleshooting Flowchart

# Flow Chart



# **Cross Reference:**

Check Power (P.23)

**Bell Reception** (P.27)

**Check Battery Charge (P.24)** 

Check Link (P.25)

**Check Handset Transmission** (P.27)

**Check Handset Reception** (P.27)

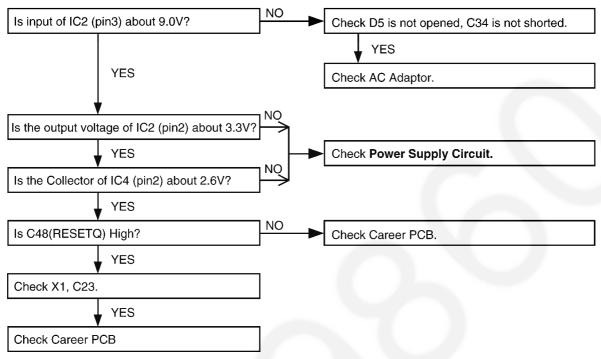
Signal Route (P.12)

Check Caller ID (P.27)

# 9.1.1. Check Power

# 9.1.1.1. Base Unit

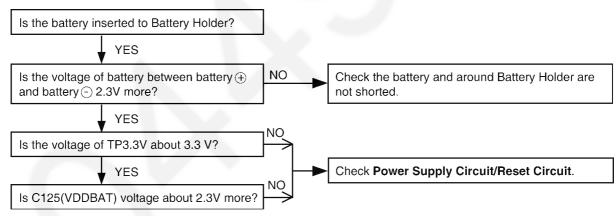
Is the AC Adaptor inserted into AC outlet? (Check AC Adaptor's specification.)



# **Cross Reference**

**Power Supply Circuit (P.8)** 

# 9.1.1.2. Handset

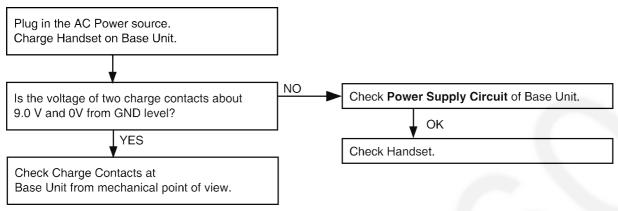


### **Cross Reference**

Power Supply Circuit/Reset Circuit (P.11)

# 9.1.2. Check Battery Charge

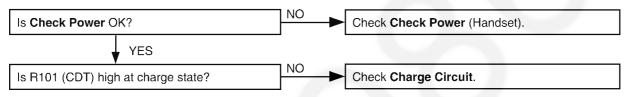
# 9.1.2.1. Base Unit



# **Cross Reference:**

**Power Supply Circuit (P.8)** 

# 9.1.2.2. Handset

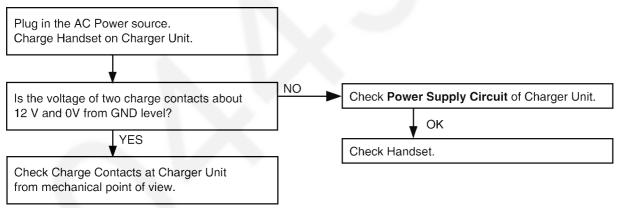


### **Cross Reference:**

Check Power (P.23)

Charge Circuit (P.11)

# 9.1.2.3. Charger Unit

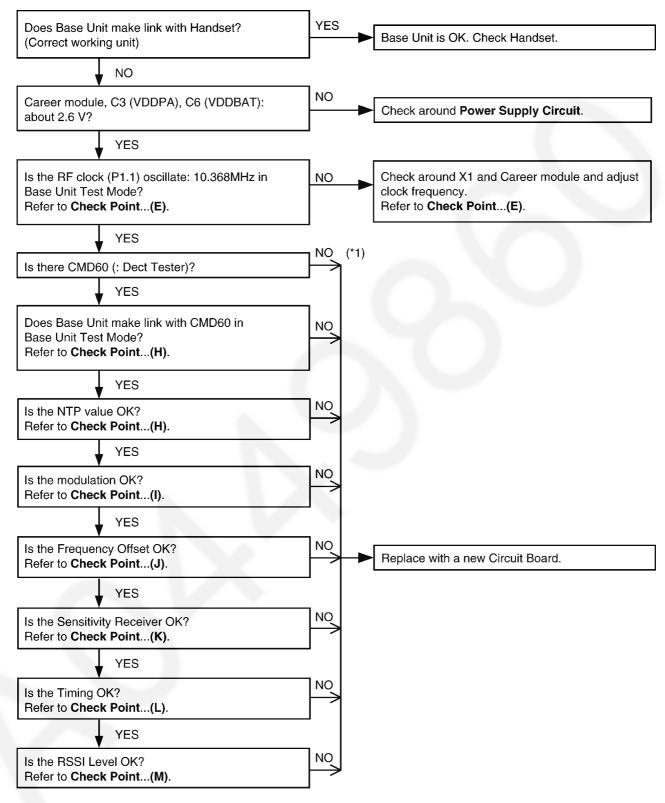


# **Cross Reference:**

**Power Supply Circuit (P.11)** 

# 9.1.3. Check Link

# 9.1.3.1. Base Unit



### **Cross Reference:**

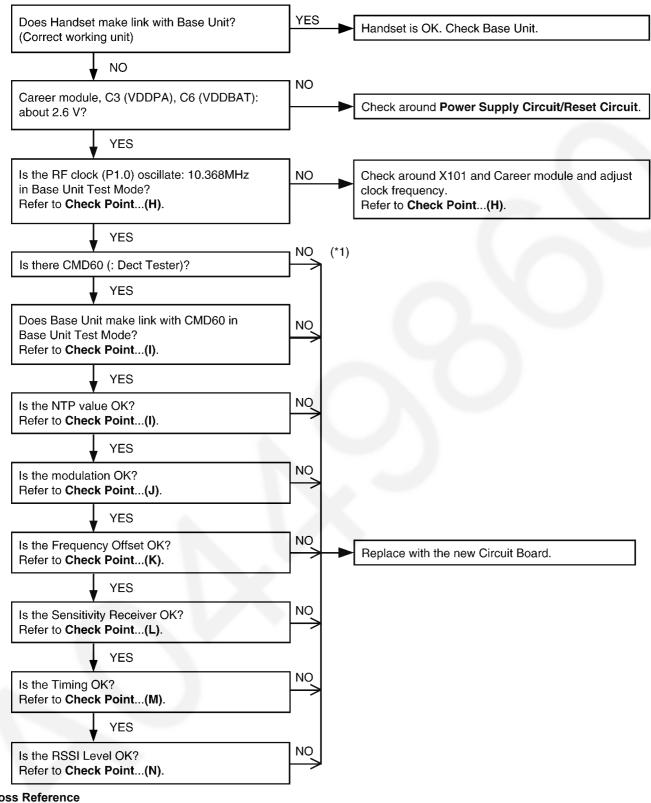
**Power Supply Circuit (P.8)** 

Check Point (Base Unit) (P.28)

# Note:

(\*1) Refer to Troubleshooting by Symptom (Base Unit and Charger Unit) (P.28).

### 9.1.3.2. Handset



**Cross Reference** 

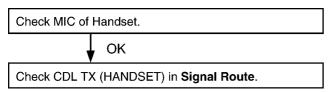
Power Supply Circuit/Reset Circuit (P.11)

Check Point (Handset) (P.31)

Note:

(\*1) Refer to Troubleshooting by Symptom (Handset) (P.31).

# 9.1.4. Check Handset Transmission



# **Cross Reference:**

Signal Route (P.12)

# 9.1.5. Check Handset Reception



### **Cross Reference:**

How to Check the Handset Speaker or Receiver (P.46). Signal Route (P.12)

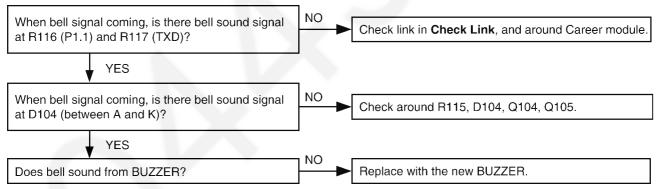
# 9.1.6. Check Caller ID

Check Caller ID in Signal Route.

Cross Reference: Signal Route (P.12)

# 9.1.7. Bell Reception

# 9.1.7.1. Handset



### **Cross Reference:**

**Telephone Line Interface (P.9)** 

Check Link (P.25)

How to Check the Handset Speaker or Receiver (P.46)

# 9.2. Troubleshooting by Symptom (Base Unit and Charger Unit)

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

	Remedy (*2)		
Symptom	You don't have DECT Tester.	You have DECT Tester. (Model Number : CMD60)	
You cannot dial.	Check item (A)-(F).	Check item (A)-(F), (H)-(M).	
You cannot hear the caller's voice.	Check item (A)-(E).	Check item (A)-(E), (H)-(J), (L).	
You cannot use handset a little away from base unit even if the handset is within range of the base unit.	-	Check item ( <b>H</b> ), ( <b>K</b> ).	
The acoustic transmission level is high or low.	Check item (O).	Check item (O).	
The acoustic reception level is high or low.	Check item (O).	Check item (O).	
The unit does not link.	Check item (A)-(G).	Check item (A)-(M).	
The unit cannot charge.	Check item (N).	Check item (N).	

# Note:

- (\*1) A general repair is possible even if you don't have the DECT tester because it is for confirming the levels, such as Acoustic level in detail.
- (\*2) Refer to Check Point (Base Unit) (P.28)

# 9.2.1. Check Point (Base Unit)

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

### Note:

After the measuring, suck up the solder of TP.

\*: **PC Setting** (P.37) is required beforehand.

The connections of simulator equipments are as shown in Adjustment Standard (Base Unit) (P.39).

	Items	Adjustment Point	Procedure	Check or
( <b>A</b> )	2.6V Supply Confirmation		1. Confirm that the voltage between VDDPA/RF and GND is 2.65V ± 0.2V.	Replace Parts  C58, F1, D5, C35, C34, C59, IC4, R46, R45, C47, C46, C29, C44, C33
( <b>B</b> )	3.3V Supply Confirmation		1. Confirm that the voltage between VDD and GND is 4.0V $\pm$ 0.2V.	C58, F1, D5, C35, C34, C59, IC2, R35, R36, C60, C28, C25, C11
( <b>C</b> )	VDDIO Confirmation	-	1. Confirm that the voltage between C24 and GND is 2.85 ± 0.3.	Career mod- ule(IC3), X1, C3
( <b>D</b> )*	BBIC Confirmation	-	BBIC Confirmation (Execute the command "getchk").     Confirm the returned checksum value. Connection of checksum value and program number is shown below.      ex.)	Career mod- ule, X1, C23
( <b>E</b> )*	BBIC Clock Adjustment (Important)	P1.1 CLK	<ol> <li>Execute the command "Enable Clock Output".</li> <li>Input Command "rdeeprom 00 00 02", then you can confirm the current value.</li> <li>Check X'ftal Frequency. (10.368 MHz ± 100 Hz).</li> <li>If the frequency is not 10.368MHz ± 100Hz, adjust the frequency of CLK executing the command "setfreq sfr xx xx (where xx is the value)" so that the reading of the frequency counter is 10.368000 MHz ± 5 Hz.</li> </ol>	

	Items	Adjustment	Procedure	Check or
/=\±	11 1 11 01 1 11	Point	4.0	Replace Parts
(F)*	Hookswitch Check with DC Characteristics	-	<ol> <li>Connect J1 (Telephone Socket) to Tel-simulator which is connected with 600 Ω.</li> <li>Set line voltage to 48V at on-hook condition and line current to 40mA at off-hook condition of parallel phase.</li> </ol>	ule. C30, C31, D2, Q3, Q2,
			hook condition of normal telephone.  3. Execute the command "hookoff".  4. Confirm that the line current is 40mA ± 5mA.	R26, R22, R18, R15
			<ul><li>5. Execute the command "hookon".</li><li>6. Confirm that the line current is 0mA + 2mA.</li></ul>	
( <b>G</b> )*	DTMF Generator Check	-	Connect J1 (Telephone Socket) to DTMF tester.	Career mod-
			<ol> <li>Execute the command "hookoff" and "dtmf_up".</li> <li>Confirm that the high frequency (1477.06Hz) group is -7.5 ± 2 dBm.</li> </ol>	ule, R2, C4, C5, R7, R9,
			<ul><li>4. Execute the command "dtmf_lo".</li><li>5. Confirm that the low frequency (852.05Hz) group is-9.5 ± 2 dBm.</li></ul>	R10, C9, R11, R13, R12, R6, Q1, D10, D1,
				Q3, R26, R22, Q2, R18, D2, C30, C31
( <b>H</b> )*	Transmitted Power Con-	-	Remove the Antenna before starting steps from 1 to 5.	Career mod-
	firmation		Configure the DECT tester (CMD60) as follows;	ule, C4, C6,
			<setting> • Test mode: FP</setting>	C2, C3, C25,
			Traffic Channel: 5	C8, C1, C12, C13, C7, L1,
			• Traffic Slot: 4	L2, C18, C19,
			Mode: Loopback	D1, C17, R2,
			• PMID: 00000	C23, BASE
			<ol> <li>Execute the command "testmode".</li> <li>Initiate connection from DECT tester. ("set up connect")</li> </ol>	module. R43, R44, L2, C38,
			4. Execute the command "ANT".	C42, D6, C39,
			5. Confirm that the NTP value at ANT is 14dBm ~ 20dBm.	C41
( <b>I</b> )*	Modulation Check and	ANT	Follow steps 1 to 3 of (H).	Career mod-
	Adjustment		<ol> <li>Confirm that the B-Field Modulation is 340kHz/div ~ 402kHz/div using data type Fig31.</li> </ol>	ule, C4, C6, C2, C3, C25,
			<ul><li>5. Adjust the B-Field Modulation if required. (Execute the command "readmod"</li></ul>	
			and "wrtmod xx", where xx is the value.)	C13, C7, L1,
				L2, C18, C19,
				D1, C17, R2,
				C23, BASE module. R43,
				R44, L2, C38,
				C42, D6, C39,
				C41
(J)*	Frequency Offset Check	-	Follow steps 1 to 3 of (H).	Career mod-
			4. Confirm that the frequency offset is -50kHz ~ +50kHz.	ule, C4, C6, C2, C3, C25,
				C8, C1, C12,
				C13, C7, L1,
				L2, C18, C19,
				D1, C17, R2, C23, BASE
				module. R43,
				R44, L2, C38,
				C42, D6, C39,
				C41
( <b>K</b> )*	Sensitivity Receiver Confirmation	-	Follow steps 1 to 3 of <b>(H)</b> .	Career mod-
	Commination		4. Set DECT tester power to -84dBm. 5. Confirm that the BER is < 1000ppm.	ule, C4, C6, C2, C3, C25,
			o. Sommit and and Bert to 1 1000ppm.	L3, L4, C15,
				C20, R1, C21,
				D1, C17, C20,
				R1, C21, D1,
1				C17, BASE
				module, R43, R44, L2, C38,
				C42, D6, C39,
				C41
	I	ı		ı

# KX-TG1381HKH/KX-TG1381HKV/KX-TG1381HKW/KX-TG1382HKH/KX-TGA131HMH/KX-TGA131HMV/KX-TGA131HMW

4. Confirm that the Timing accuracy is < ± 2.0ppm.  (M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	Replace Parts  Career module, C4, C6, C2, C3, C25, C8, C1, C12, C13, C7, L1, L2, C18, C19, D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
4. Confirm that the Timing accuracy is < ± 2.0ppm.  [M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	ule, C4, C6, C2, C3, C25, C8, C1, C12, C13, C7, L1, L2, C18, C19, D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm. 5. Execute the command "readrssi". 6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	C2, C3, C25, C8, C1, C12, C13, C7, L1, L2, C18, C19, D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	C8, C1, C12, C13, C7, L1, L2, C18, C19, D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	C13, C7, L1, L2, C18, C19, D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
(M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	L2, C18, C19, D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
(M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	D1, C17, R2, C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	C23, BASE module. R43, R44, L2, C38, C42, D6, C39, C41
(M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	module. R43, R44, L2, C38, C42, D6, C39, C41
(M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	R44, L2, C38, C42, D6, C39, C41
(M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	C42, D6, C39, C41
(M)* RSSI Level Confirmation - Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	C41
Follow steps 1 to 3 of (H).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	
4. Set DECT tester power to -70dBm. 5. Execute the command "readrssi". 6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	
5. Execute the command "readrssi". 6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	Career mod-
6. Confirm: 25 < returned value < 43 (hex) (0E ± A (hex))	ule, C4, C6,
	C2, C3, C25,
	L3, L4, C15,
	C20, R1, C21,
	D1, C17, C20,
	R1, C21, D1,
	C17, BASE
	module, R43,
	R44, L2, C38, C42, D6, C39,
	C42, D6, C39,
(11) Similar S	F1, D5, R39,
2. Measure and confirm voltage across the resistor is 2.3V ± 0.2V.	D8, D9, C40
(O)* Audio Check - 1. Link with Handset.	
2. Set line voltage to 48V and line current to 40mA.	
3. Input -45dBm/1kHz to MIC of Handset.	
Measure the Level at Line I/F and distortion level.	
4. Confirm that the level is -9.0 ± 3dBm and that the distortion level is < 5% at TEL	
Line (600 $\Omega$ Load).	
5. Input -20dBm/1kHz to Line I/F.	
Measure the level at Receiver of Handset and distortion level	
(*Receive volume set to second position from minimum).	
6. Confirm that the level is -22.5 ± 3dBm and that the distortion level is < 5% at	1
Receiver (Volume Middle, 150 $\Omega$ Load).	

# 9.2.2. Check Point (Charger Unit)

	Items	Adjustment	Procedure	Check or
		Point		Replace Parts
( <b>A</b> )	Charging Check	-	<ol> <li>Connect Charge Contact 10Ω/2W resistor between charge+ and charge</li> </ol>	R1, D1, F1
			<ol><li>Measure and confirm voltage across the resistor is 2.75V ± 0.3V.</li></ol>	

# Note:

After the measuring, suck up the solder of TP.

The connection of adjustment equipment are as shown in Adjustment Standard (Charger Unit) (P.40).

# 9.3. Troubleshooting by Symptom (Handset)

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

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

# Note:

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

(\*2) Refer to Check Point (Handset) (P.31)

# 9.3.1. Check Point (Handset)

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

# Note:

After the measuring, suck up the solder of TP.

\*: PC Setting (P.41) is required beforehand.

The connections of simulator equipments are as shown in Adjustment Standard (Handset) (P.43).

	Items	Adjustment Point	Procedure		ck or e Parts
(A)	Battery Supply Confirmation		Confirm that the consumption current is < 200mA, that is, there is no short circuit.		R102, C145, C131, C146, IC101, C102, C120, C120,
( <b>B</b> )	3.3V Supply Confirmation	V	1. Confirm that the voltage between 3.3V and GND is 3.3V $\pm$ 0.3V.	L103, C141, C103, Career	IC101, C102, R107, module
(C)*	BBIC Confirmation		BBIC Confirmation (Execute the command "getchk").     Confirm the returned checksum value.  Connection of checksum value and program number is shown below.      ex.)	Career ule, C122, (	X101,
( <b>D</b> )	Charge Control Check & Charge Current Monitor Check	-	<ol> <li>Apply 6V between TP5(+) and TP6(-) with current limit of PSU to 250mA.</li> <li>Confirm that the charge current is ON/OFF.</li> <li>SW to decrease current limit of PSU to 75mA.</li> <li>Confirm that the charge current is stable.</li> </ol>	C100, Q102, C142, Career	Q101, R101, R108, module
	Charge Detection (OFF) Check		<ol> <li>Stop supplying 6V to TP5(+) and TP6(-).</li> <li>Execute the command "charge".</li> <li>Confirm that the returned value is 00 (hex).</li> </ol>		Q101, R101, R108, module
( <b>F</b> )*	Battery Monitor Check & Adjustment (Important)	-	<ol> <li>Apply 2.3V ± 0.005V between BATTERY (+) and BATTERY (-) with DC power.</li> <li>Execute the command "deactmac" to stabilize the value.</li> <li>Then, execute the command "readbatt". The returned value is XX.</li> <li>Confirm that XX is between 90 and A0.</li> <li>90 &lt; XX &lt; A0 (Hex)</li> <li>(If XX is out of range, change BBIC)</li> </ol>	Career ule, C109, 0	D107,

# KX-TG1381HKH/KX-TG1381HKV/KX-TG1381HKW/KX-TG1382HKH/KX-TGA131HMH/KX-TGA131HMW/KX-TGA131HMW

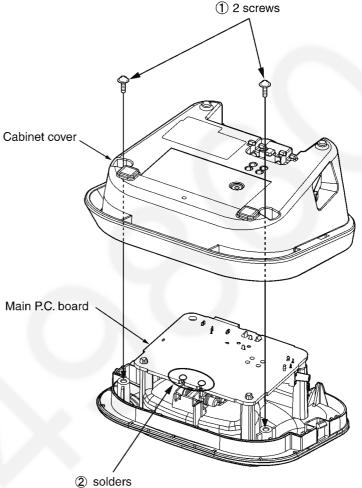
	Items	Adjustment	Procedure	Check or
	items	Point	Flocedule	Replace Parts
( <b>G</b> )	Battery Low Confirma- tion (Important)	-	Apply 2.40V between BATTERY (+) and BATTERY (-).     Confirm that there is no Speaker sound (Battery low alarm).     Apply 2.1V between BATTERY(+) and BATTERY(-).     Confirm that there is Speaker sound (Battery low alarm).	Career mod- ule,D107, C109, C125, R117, R116, C125, R117,
				R116, Q104, Q105, D104, R115, BUZZER
(H)*	BBIC Clock Adjustment (Important)	P1.0 CLK	<ol> <li>Apply 2.6V between BATTERY (+) and BATTERY (-) with DC power.</li> <li>Execute the command "EnableClockOutput".</li> <li>Input Command "rdeeprom 00 00 02", then you can confirm the current value.</li> <li>Check X'tal Frequency. (10.368 MHz ± 100 Hz).</li> <li>If the frequency is not 10.368 MHz ± 100 Hz, adjust the frequency of CLK executing the command "setfreq sfr xx xx (where xx is the value)" so that the reading of the frequency counter is 10.368000 MHz ± 5 Hz.</li> <li>Note:         Clear the registered information for Base Unit before measurement, because the Frequency will not possibly get stable due to the registered information. Pressing the button of "3" "7" "9" "#" clears the registration. Register to it on Base Unit after measurement.     </li> </ol>	
( <b>l</b> )*	Transmitted Power Confirmation	ANT	Remove the Antenna before starting steps from 1 to 5.  1. Configure the DECT tester (CMD60) as follows; <setting>  • Test mode: PP</setting>	Career mod- ule, R1, R2, C21, C23, L3, L4, C15, C20,
			<ul> <li>RFPI: 0102030405</li> <li>Traffic Channel: 5</li> <li>Traffic Slot: 4</li> <li>Mode: Loopback</li> <li>Execute the command "regcmd60".</li> <li>Initiate connection from DECT tester.</li> <li>Confirm that the NTP value at ANT is -19dBm ~ 25dBm.</li> </ul>	D2, C17
(J)*	Modulation Check	ANT	Follow steps 1 to 4 of (I). 4. Confirm that the B-Field Modulation is 340kHz/div ~ 402kHz/div using data type Fig31.	Career mod- ule, R1, R2, C21, C23, L3, L4, C15, C20, D2, C17
( <b>K</b> )*	Frequency Offset Confir- mation	-	Follow steps 1 to 4 of (I).  4. Confirm that the frequency offset is -50kHz ~ +50kHz.	Career mod- ule, R1, R2, C21, C23, L3, L4, C15, C20, D2, C17
(L)*	Sensitivity Receiver Confirmation	-	Follow steps 1 to 4 of (I).  4. Set DECT tester power to -85dBm.  5. Confirm that the BER is < 1000ppm.	R1, R2, C21, C23, C1, C8, C7, C12, C13, L1, L2, C18, C19, D1, C17
	Timing Confirmation		Follow steps 1 to 4 of <b>(I)</b> . 4. Confirm that the Timing accuracy is < ± 2.0ppm.	R1, R2, C21, C23, C1, C8, C7, C12, C13, L1, L2, C18, C19, D1, C17
(N)*	RSSI Level Confirmation	-	Follow steps 1 to 4 of (I).  4. Set DECT tester power to -70dBm.  5. Execute the command "readrssi".  6. Confirm: 9 < returned value < 13 (hex) (0E ± 5 (hex))	R1, R2, C21, C23, C1, C8, C7, C12, C13, L1, L2, C18, C19, D1, C17
(O)	Audio Check and Confirmation	-	<ol> <li>Link to BASE which is connected to Line Simulator.</li> <li>Set line voltage to 48V and line current to 40mA.</li> <li>Input -45dBm/1KHz to MIC and measure Line output level.</li> <li>Confirm that the level is -9.0 ± 3dBm and that the distortion level is &lt; 5% at TEL Line (600Ω Load).</li> <li>Input -20dBm/1KHz to Line I/F and measure Receiving level at SP+ and SP</li> <li>Confirm that the level is -22.5 ± 3dBm and that the distortion level is &lt; 5% at Receiver. (vol = middle, 150Ω Load)</li> </ol>	

# 10 Disassembly and Assembly Instructions

# 10.1. Disassembly Instructions

# 10.1.1. Base Unit

- (1) Remove the 2 screws to remove the cabinet cover.
- 2 Remove the solders to remove the main P.C. board.

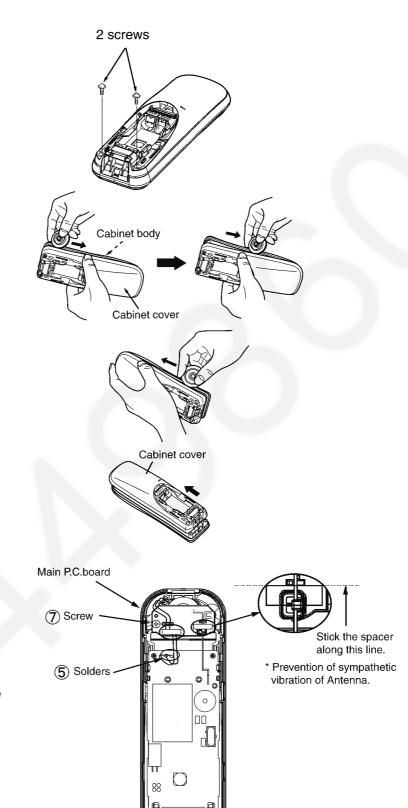


# 10.1.2. Handset

1 Remove the 2 screws.

- ② Insert a JIG (PQDJ10006Y) between the cabinet body and the cabinet cover, then pull it along the gap to open the cabinet.
- ③ Likewise, open the other side of the cabinet.
- 4 Remove the cabinet cover by pushing it upward.

- (5) Remove the solders and tapes.
- 6 Remove the 2 screws to remove the 2 charge terminals.
- Remove the screw to remove the main P. C. board.



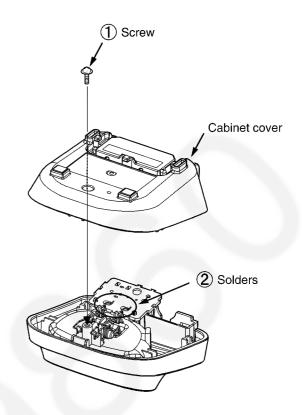
6 2 screws

6 2 charge terminals

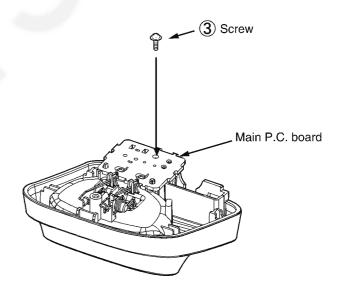
# 10.1.3. Charger Unit

1 Remove the screw to remove the cabinet cover.

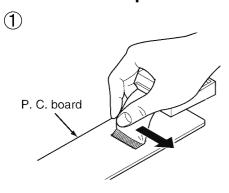
2 Remove the solders.



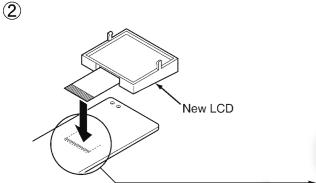
(3) Remove the screw to remove the main P.C. board.



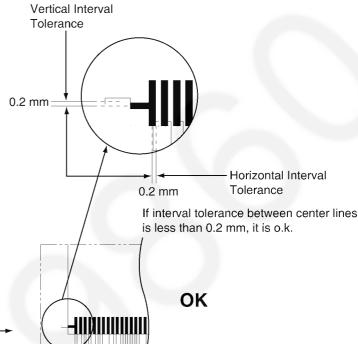
# 10.2. How to Replace the Handset LCD

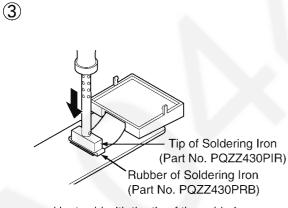


Peel off the FFC (Flexible Flat Cable) from the LCD, in the direction of the arrow. Take care to ensure that the foil on the P.C. board is not damaged.

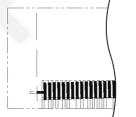


Fit the heatseal of a new LCD.





Heatweld with the tip of the soldering iron about 5 to 8 seconds (in case of 60W soldering iron).



NG (Inclined)



NG

(Vertical interval tolerance is more than 0.2 mm.)



NG

(Horizontal interval tolerance is more than 0.2 mm.)

# 11 Measurements and Adjustments

# 11.1. The Setting Method of JIG (Base Unit)

# 11.1.1. Preparation

## 11.1.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
   Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 9V.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

## 11.1.1.2. JIG and PC

- Serial JIG PQZZ1CD300E\*
- PC which runs in DOS mode
- Batch file CD-ROM for setting: PNZZTG1381HK

#### Note:

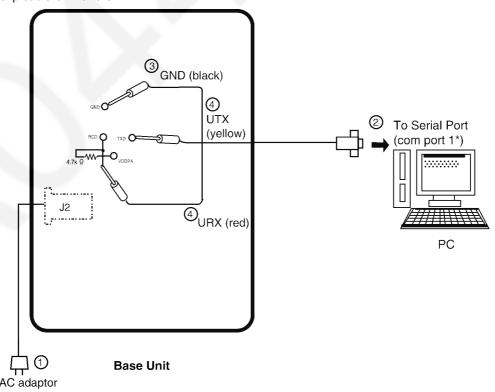
\*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

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

# 11.1.2. PC Setting

## 11.1.2.1. Connections

- ①Connect the AC adaptor to J2 (base unit).
- ② Serial JIG to the Serial Port of PC.
- 3 Connect the Clip cable GND.
- (4) Connect the Clip cable UTX and URX.



#### Note:

<sup>\*:</sup> Com port names may vary depending on what your PC calls it.

## 11.1.2.2. Batch file Setting

- **1.** Insert the Batch file CD-ROM into CD-ROM drive and copy PQZZTG\*\*\*\*\* folder to your PC (example: D drive).
- 2. Open a window of MS-DOS mode.

#### <Example for Windows>

On your computer, click [Start], select Programs

(All Programs for Windows XP/Windows Server 2003),

MS-DOS Prompt. (for Windows 95/Windows 98)

Accessories-MS-DOS Prompt. (for Windows Me)

Command Prompt. (for Windows NT 4.0)

Accessories-Command Prompt.

(for Windows 2000/Windows XP/Windows Server 2003)

- 3. At the DOS prompt, type "D:" (for example) to select the drive, then press the Enter key.
- **4.** Type "CD ¥PQZZTG\*\*\*\*\*", then press the Enter key.
- 5. Type "SET RTX COM=X", then press the Enter key (X: COM port number used for the serial connection on your PC).
- **6.** Type "READID", then press the Enter key.
  - •If any error messages appear, change the port number or check the cable connection.
  - •If any value appear, go to next step.
- 7. Type "DOSKEY", then press the Enter key.

- <Example: correct setting>
- C: ¥Documents and Settings>D: D: ¥>CD ¥PQZZTG\*\*\*\*\*
- D: ¥PQZZTG\*\*\*\*\* >SET RTX\_COM=X
- D: ¥PQZZTG\*\*\*\*\*>READID
- 00 52 4F A8 A8
- D: ¥PQZZTG\*\*\*\*\*>DOSKEY
- D: ¥PQZZTG\*\*\*\*\*> \_
  - <Example: incorrect setting>
- C: ¥Documents and Settings>D:
- D: ¥>CD ¥PQZZTG\*\*\*\*\*
- D: ¥PQZZTG\*\*\*\*\* >SET RTX COM=X
- D: ¥PQZZTG\*\*\*\*\*>READID CreateFile error

ERROR 10: Can't open serial port

D: ¥PQZZTG\*\*\*\*\*> \_

#### Note:

• "\*\*\*\*" varies depending on the country.

## 11.1.2.3. Commands

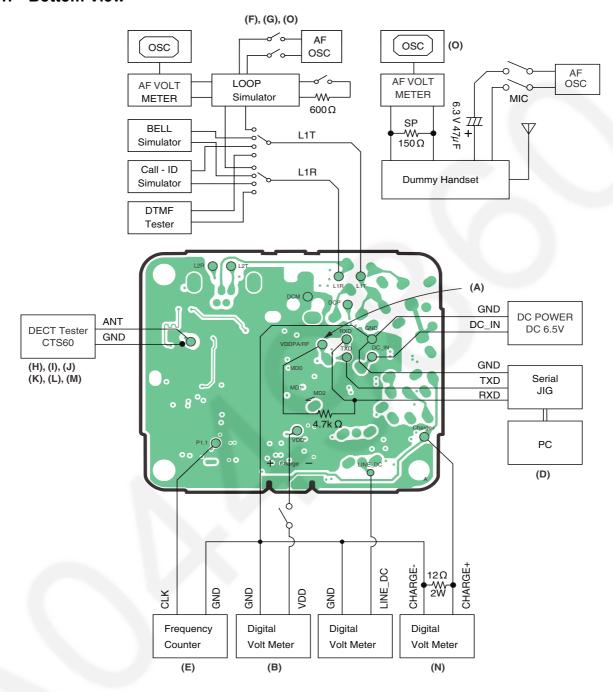
See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type "rdeeprom 00 00 FF", and the data from address "00 00" to "FF" is read out.
readid	Read ID (RFPI)	Type "readid", and the registered ID is read out.
writeid	Write ID (RFPI)	Type "writeid 00 18 E0 0E 98", and the ID "0018 E0 0E 98" is written.
setfreq	adjust Frequency of RFIC	Type "setfreq nn nn".
hookoff	off-hook mode on Base	Type "hookoff".
hookon	on-hook mode on Base	Type "hookon".
Getchk	Read checksum	Type "getchk".
Wreeprom	write eeprom	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.
InitBsPIN.bat	Initial Base PIN to "0000"	Type "initBsPIN"

# 11.2. Adjustment Standard (Base Unit)

When connecting the simulator equipments for checking, please refer to below.

## 11.2.1. Bottom View



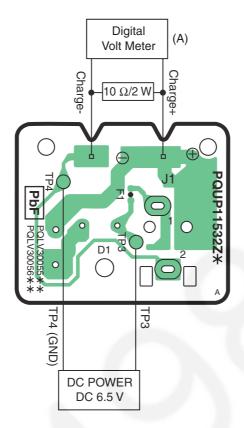
Note:

(A) - (O) is referred to Check Point (Base Unit) (P.28)

# 11.3. Adjustment Standard (Charger Unit)

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

# 11.3.1. Bottom View



#### Note:

(A) is referred to Check Point (Charger Unit) (P.30)

# 11.4. The Setting Method of JIG (Handset)

## 11.4.1. Preparation

## 11.4.1.1. Equipment Required

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

## 11.4.1.2. JIG and PC

- Serial JIG PQZZT1CD300E\*
- PC which runs in DOS mode.
- Batch file CD-ROM for setting: PNZZTG1381HK

#### Note:

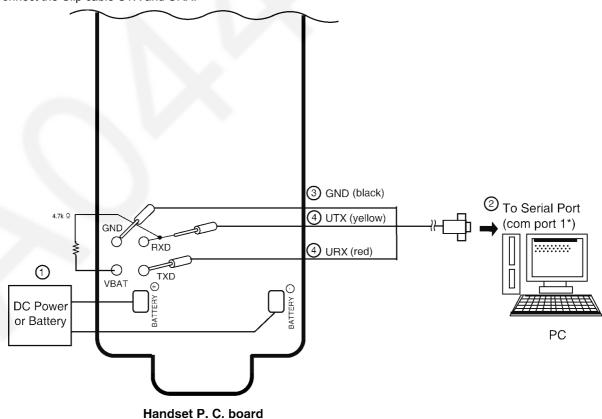
\*: If you have the JIG Cable for TCD500 series (PQZZ1CD505E), change the following values of resistance. Then you can use it as a JIG Cable for both TCD300 and TCD500 series. (It is an upper compatible JIG Cable.)

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

## 11.4.2. PC Setting

## 11.4.2.1. Connections

- ①Connect the DC Power or Battery to BATTERY(+) and BATTERY(-) (Handset).
- 2 Serial JIG to the Serial Port of PC.
- ③Connect the Clip cable GND.
- (4) Connect the Clip cable UTX and URX.



Note:

<sup>\*:</sup> Com port names may vary depending on what your PC calls it.

## 11.4.2.2. Batch file Setting

- **1.** Insert the Batch file CD-ROM into CD-ROM drive and copy PQZZTG\*\*\*\*\* folder to your PC (example: D drive).
- 2. Open a window of MS-DOS mode.

#### <Example for Windows>

On your computer, click [Start], select Programs (All Programs for Windows XP/Windows Server 2003),

then click

MS-DOS Prompt. (for Windows 95/Windows 98)

Or

Accessories-MS-DOS Prompt. (for Windows Me)

Or

Command Prompt. (for Windows NT 4.0)

Or

Accessories-Command Prompt.

(for Windows 2000/Windows XP/Windows Server 2003)

- **3.** At the DOS prompt, type "D:" (for example) to select the drive, then press the **Enter** key.
- **4.** Type "CD ¥PQZZTG\*\*\*\*\*", then press the Enter key.
- **5.** Type "SET RTX\_COM=X", then press the Enter key (X: COM port number used for the serial connection on your PC).
- 6. Type "READID", then press the Enter key.
  - •If any error messages appear, change the port number or check the cable connection.
  - •If any value appear, go to next step.
- 7. Type "DOSKEY", then press the Enter key.

- <Example: correct setting>
- C: ¥Documents and Settings>D:
- D: ¥>CD ¥PQZZTG\*\*\*\*\*
- D: ¥PQZZTG\*\*\*\*\* >SET RTX\_COM=X
- D: ¥PQZZTG\*\*\*\*\*>READID
- 00 52 4F A8 A8
- D: ¥PQZZTG\*\*\*\*\*>DOSKEY
- D: ¥PQZZTG\*\*\*\*\*> \_
  - <Example: incorrect setting>
- C: ¥Documents and Settings>D:
- D: ¥>CD ¥PQZZTG\*\*\*\*\*
- D: ¥PQZZTG\*\*\*\*\* >SET RTX COM=X
- D: ¥PQZZTG\*\*\*\*\*>READID CreateFile error

ERROR 10: Can't open serial port

D: ¥PQZZTG\*\*\*\*\*> \_

#### Note:

• "\*\*\*\*" varies depending on the country.

## 11.4.2.3. Commands

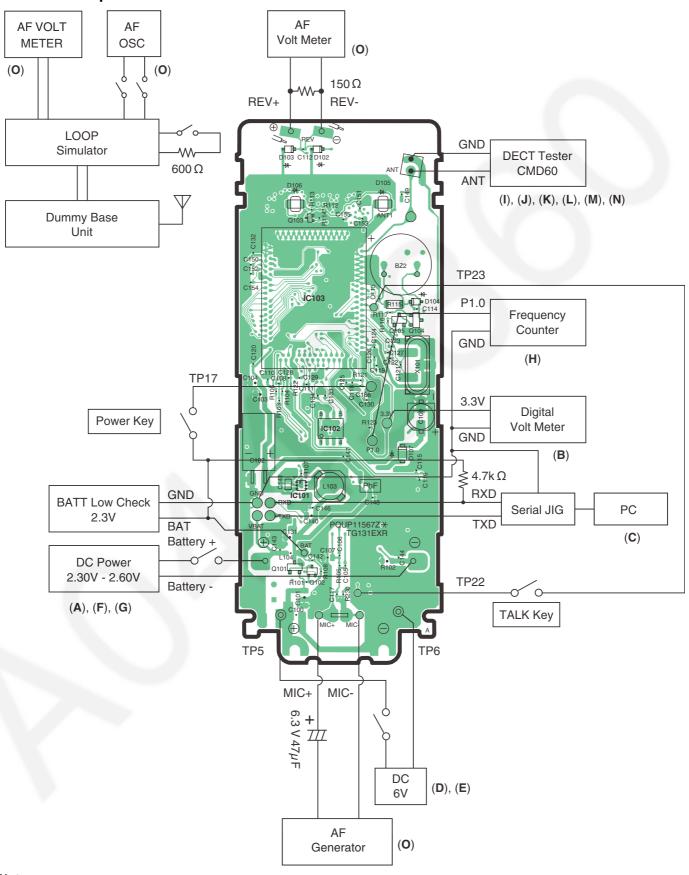
See the table below for frequently used commands.

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

# 11.5. Adjustment Standard (Handset)

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

## 11.5.1. Component View



Note:

(A) - (O) is referred to Check Point (Handset) (P.31)

# 11.6. Things to Do after Replacing IC

#### Cautions:

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

#### 11.6.1. Base Unit

Before doing the following adjustment, be sure to do PC Setting (P.37) in The Setting Method of JIG (Base Unit).

IC		Necessary Adjustment
BBIC	Programs for Voice processing, interface for RF and EEPROM	Clock adjustment: Refer to Check Point (E). (*1)
EEPROM	Adjustment parameter data (country version batch file, default batch file, etc.)	Default batch file: Execute the command "Default4KB".     Country version batch file: Execute the command "1311XXvYY". (*2)     Clock adjustment: Refer to Check Point (E). (*1)

#### Note:

- (\*1) Refer to Check Point (Base Unit) (P.28)
- (\*2) XX: country code, YY: revision number
- "XX" and "YY" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.37).

## 11.6.2. Handset

Before doing the following adjustment, be sure to do PC Setting (P.41) in The Setting Method of JIG (Handset).

	IC	Necessary Adjustment		
BBIC	Programs for Voice processing, interface for RF and EEPROM	Clock adjustment: Refer to Check Point (H). (*3)     4.0 V setting and battery low detection: Refer to Check Point (A), (F) and (G). (*3)		
EEPROM	Adjustment parameter data (country version batch file, default batch file, etc.)	<ol> <li>Default batch file: Execute the command "Default".</li> <li>Melody Initialize batch file; Execute the Command "DB3MZA".</li> <li>Country version batch file: Execute the command "131XXvYY". (*4)</li> <li>Clock adjustment: Refer to Check Point (H). (*3)</li> <li>4.0 V setting and battery low detection: Refer to Check Point (A), (F) and (G). (*3)</li> </ol>		

#### Note:

- (\*3) Refer to Check Point (Handset) (P.31)
- (\*4) XX: country code, YY: revision number
- "XX" and "YY" vary depending on the country version. You can find them in the batch file, PQZZ- mentioned in **JIG and PC** (P.41).

# 11.7. RF Specification

# 11.7.1. Base Unit

Item	Value	Refer to *
TX Power	More than 14 dBm ~ 26 dBm	Check Point (Base Unit) (H)
Modulation	340 kHz/div ~ 402 kHz/div	Check Point (Base Unit) (I)
Frequency Offset	-50 kHz ~ +50 kHz	Check Point (Base Unit) (J)
RX Sensitivity	< 1000 ppm	Check Point (Base Unit) (K)
Timing Accuracy	< ± 2.0 ppm	Check Point (Base Unit) (L)
RSSI Level	0E hex ± A hex	Check Point (Base Unit) (M)

<sup>\*:</sup> Refer to Check Point (Base Unit) (P.28)

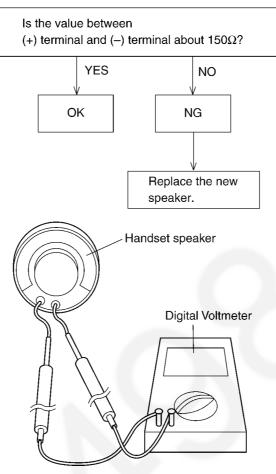
# 11.7.2. Handset

Item	Value	Refer to **
TX Power	More than 19 dBm ~ 25 dBm	Check Point (Handset) (I)
Modulation	340 kHz/div ~ 402 kHz/div	Check Point (Handset) (J)
Frequency Offset	-50 kHz ~ +50 kHz	Check Point (Handset) (K)
RX Sensitivity	< 1000 ppm	Check Point (Handset) (L)
Timing Accuracy	< ± 2.0 ppm	Check Point (Handset) (M)
RSSI Level	0E hex ± 5 hex	Check Point (Handset) (N)

<sup>\*\*:</sup> Refer to Check Point (Handset) (P.31)

# 11.8. How to Check the Handset Speaker or Receiver

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



# 11.9. Frequency Table (MHz)

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

Note:

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

# 12 Miscellaneous

# 12.1. CPU Data (Base Unit)

# 12.1.1. IC3 (COB)

PIN	Description	I/O	at Normal	at Reset
			mode	mode
1	P1.0	A.O	A.O	A.O
2	P1.1	D.O	D.O	D.O
3	TXD	D.O	D.O	PullD
4	RXD	D.I	D.I	D.I
5	VDD	SUPPLY	SUPPLY	SUPPLY
6	VSS	GND	GND	GND
7		D.I		
•	RESETQ		D.I	D.I
8	NC	-	-	-
9	NC	-	-	-
10	NC	-	-	-
11	VSS	GND	GND	GND
12	VCORE	SUPPLY	SUPPLY	SUPPLY
13	VSS	GND	GND	GND
14	VOSC	SUPPLY	SUPPLY	SUPPLY
15	VSSOS	GND	GND	GND
16	XTAL	A.I	A.I	A.I
17	LOAD	A.O	A.O	A.O
18	RXON	D.O	D.O	D.O
19	TXON	D.O	D.O	D.O
20	RTS	-	-	-
	PX0	D.I	D.I	D.I
21	CTS	۱.۵	-	D.I
۷ ا	PX1			
20		D.I	D.I	D.I
22	PX2	D.I	D.I	D.I
23	PX3	D.I	D.I	D.I
24	VIO	SUPPLY	SUPPLY	SUPPLY
25	VSS	GND	GND	GND
26	PX4	D.I	D.I	D.I
27	PY0	D.I	D.I	D.I
28	PY1	D.I	D.I	D.I
29	PY2	D.I	D.I	D.I
30	PY3	-	-	-
	ANT1	D.O	D.O	D.O
31	PY4	-	-	-
•	ANT2	D.O	D.O	D.O
32	RXIX	A.I	A.I	A.I
33	RXI	A.I	A.I	A.I
	VSSRF		GND	
34		GND	GND	GND
35	CAPVCO	-	-	-
36	VVCO	SUPPLY	SUPPLY	SUPPLY
37	VSSRF	GND	GND	GND
38	VDDBRF	SUPPLY	SUPPLY	SUPPLY
39	VSSRF	GND	GND	GND
40	RFOUT	-	-	-
41	VDDRF	-	-	-
42	VSSRF	GND	GND	GND
43	VDDPLL	SUPPLY	SUPPLY	SUPPLY
	VSSRF	GND	GND	GND
45	VDDPA1	SUPPLY	SUPPLY	SUPPLY
46	VSSPA1	GND	GND	GND
47	VSSPA2	GND	GND	GND
		GND		_
48	VSSPA2	-	-	-
49	POX	A.O	A.O	A.O
50	POX	-		-
51	VSSPA2	GND	GND	GND
	VSSPA2	-	-	-
52				
53	PO	A.O	A.O	A.O

PIN					
55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -           57         AO         GND         GND         GND           58         A1         GND         GND         GND           60         A3         -         -         -           60         A3         -         -         -           61         VDDE         SUPPLY         SUPPLY         SUPPLY           62         VSS         GND         GND         GND           63         A4         -         -         -           MD1         GND         GND         GND         GND           63         A4         -         -         -           MD2         GND         GND         GND         GND           64         A5         -         -         -           MD2         GND         GND         GND         GND           68         A6         GND         GND         GND           67         A8         GND         GND         GND           68         A9         GND         GND <td< td=""><td>PIN</td><td>Description</td><td>I/O</td><td>at Normal</td><td>at Reset</td></td<>	PIN	Description	I/O	at Normal	at Reset
56				mode	mode
57         A0         GND         GND         GND         GND           58         A1         GND         GND         GND         GND           59         A2         GND         GND         GND         GND         GND           60         A3         -         -         -         -         -         -           61         VDDE         SUPPLY         SUPPLY	55	VSSPA2	GND	GND	GND
57         A0         GND         GND         GND         GND           58         A1         GND         GND         GND         GND           59         A2         GND         GND         GND         GND         GND           60         A3         -         -         -         -         -         -           61         VDDE         SUPPLY         SUPPLY	56	VSSPA2	-	-	_
58         A1         GND         GND         GND           59         A2         GND         GND         GND           60         A3         -         -         -           MOD0         GND         GND         GND         GND           61         VDDE         SUPPLY         SUPPLY         SUPPLY           62         VSS         GND         GND         GND           63         A4         -         -         -           MD1         GND         GND         GND         PUIID           64         A5         -         -         -           MD2         GND         GND         GND         GND           66         A6         GND         GND         GND         GND           68         A9         GND         GND         GND         GND           68         A9         GND         GND         GND         GND           PORT1_7         -         -         -         -         -           68         A9         GND         GND         GND         GND           PORT1_7         -         -         -         -	57	AO	GND		GND
59   A2		-			
MODO					
MODO			GND	GND	_
61         VDDE         SUPPLY         SUPPLY         SUPPLY           62         VSS         GND         GND         GND           63         A4         -         -         -           MD1         GND         GND         GND         PullD           64         A5         -         -         -           MD2         GND         GND         GND         GND           65         A6         GND         GND         GND           66         A7         GND         GND         GND           68         A9         GND         GND         GND           PORT1_7         -         -         -         -           69         A10         GND         GND         GND           PORT1_2         -         -         -         -           70         A11         GND         GND         GND           PORT1_3         -         -         -         -           70         A11         GND         GND         GND           PORT1_4         -         -         -         -           70         A12         GND         GND	60		-	-	
62         VSS         GND         GND         GND           63         A4         -         -         -           MD1         GND         GND         PullD           64         A5         -         -         -           MD2         GND         GND         GND         GND           65         A6         GND         GND         GND         GND           66         A7         GND         GND         GND         GND           67         A8         GND         GND         GND         GND           68         A9         GND         GND         GND         GND           PORT1_7         -         -         -         -         -           69         A10         GND         GND         GND         GND           PORT1_2         -					
MD1	61	VDDE			
MD1	62		GND	GND	GND
MD2	63	A4	-	-	-
MD2		MD1	GND	GND	PullD
MD2	64	A5	-	-	_
65         A6         GND         GND         GND           66         A7         GND         GND         GND           67         A8         GND         GND         GND           68         A9         GND         GND         GND           PORT1_7         -         -         -         -           69         A10         GND         GND         GND           PORT1_2         -         -         -         -           70         A11         GND         GND         GND           PORT1_3         -         -         -         -           71         VDDE         SUPPLY         SUPPLY         SUPPLY           YSUPPLY         SUPPLY         SUPPLY         SUPPLY           A13         GND         GND         GND           GND         GND         GND         GND           GND	<u> </u>				
66         A7         GND         GND         GND           67         A8         GND         GND         GND           68         A9         GND         GND         GND           69         A10         GND         GND         GND           PORT1_2         -         -         -         -           70         A11         GND         GND         GND           PORT1_3         -         -         -         -           71         VDDE         SUPPLY         SUPPLY         SUPPLY           72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT0_5         -         -         -         -           74         A14         GND         GND         GND           PORT0_3         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -           7         A17         GND         GND </td <td>65</td> <td></td> <td></td> <td></td> <td></td>	65				
67         A8         GND         GND         GND           68         A9         GND         GND         GND           PORT1_7         -         -         -         -           69         A10         GND         GND         GND           PORT1_2         -         -         -         -           70         A11         GND         GND         GND           PORT1_3         -         -         -         -           71         VDDE         SUPPLY         SUPPLY         SUPPLY           72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT0_4         -         -         -         -           74         A14         GND         GND         GND           PORT0_3         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -           76         A16         GND         GND <td></td> <td></td> <td></td> <td></td> <td></td>					
68         A9         GND         GND         GND           PORT1_7         -         -         -         -           69         A10         GND         GND         GND           PORT1_2         -         -         -         -           70         A11         GND         GND         GND           PORT1_3         -         -         -         -           71         VDDE         SUPPLY         SUPPLY         SUPPLY           72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT1_5         -         -         -         -         -           74         A14         GND         GND         GND         GND           PORT0_3         -					
PORT1_7					_
69         A10         GND         GND         GND           PORT1_2         -         -         -         -           70         A11         GND         GND         GND           PORT1_3         -         -         -         -           71         VDDE         SUPPLY         SUPPLY         SUPPLY           72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT0_4         -         -         -         -           74         A14         GND         GND         GND           PORT0_3         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -           76         A16         GND         GND         GND           PORT0_1         -         -         -         -           78         A18         GND         GND         GND           PORT0_2         -         -         - </td <td>68</td> <td></td> <td>GND</td> <td>GND</td> <td>GND</td>	68		GND	GND	GND
PORT1_2		<del>-</del>			-
70         A11         GND         GND         GND           PORT1_3         -         -         -           71         VDDE         SUPPLY         SUPPLY         SUPPLY           72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT1_5         -         -         -         -           74         A14         GND         GND         GND           PORT0_3         -         -         -         -           PORT1_6         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -           76         A16         GND         GND         GND           PORT0_1         -         -         -         -           77         A17         GND         GND         GND           PORT0_2         -         -         -         -           78         A18         GND         GND         GND </td <td>69</td> <td></td> <td>GND</td> <td>GND</td> <td>GND</td>	69		GND	GND	GND
PORT1_3		PORT1 2	-	-	-
PORT1_3	70	_	GND	GND	GND
71         VDDE         SUPPLY         SUPPLY         SUPPLY         SUPPLY           72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT1_5         -         -         -         -           74         A14         GND         GND         GND           PORT0_3         -         -         -         -           PORT1_6         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -           76         A16         GND         GND         GND           PORT0_1         -         -         -         -           77         A17         GND         GND         GND           PORT0_2         -         -         -         -           79         A19         GND         GND         GND           PORT0_3         -         -         -         -           80         A20         GND<			-	-	-
72         A12         GND         GND         GND           PORT1_4         -         -         -         -           73         A13         GND         GND         GND           PORT1_5         -         -         -         -           74         A14         GND         GND         GND           PORT0_3         -         -         -         -           PORT1_6         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -         -           76         A16         GND         GND         GND         GND           PORT0_1         -<	71	_	SI IDDI V	SI IDDI V	CLIDDI V
PORT1_4					
73	12		GND	GND	GND
PORT1_5		<del>-</del>	-	-	-
74         A14         GND         GND         GND           PORT0_3         -         -         -         -           PORT1_6         -         -         -         -           75         A15         GND         GND         GND           PORT0_4         -         -         -         -           76         A16         GND         GND         GND           PORT0_1         -         -         -         -           77         A17         GND         GND         GND           PORT0_2         -         -         -         -           78         A18         GND         GND         GND           PORT0_3         -         -         -         -           79         A19         GND         GND         GND           PORT0_3         -         -         -         -           80         A20         GND         GND         GND           PORT0_4         -         -         -         -           80         A20         GND         GND         GND           PORT0_5         -         -         -         <	73		GND		GND
PORTO_3					
PORT1_6	74		GND	GND	GND
T5		PORT0_3	-	-	-
PORTO_4		PORT1 6	-	-	-
PORTO_4	75	A15	GND	GND	GND
76         A16         GND         GND         GND           PORT0_1         -         -         -         -           77         A17         GND         GND         GND           PORT0_2         -         -         -         -           78         A18         GND         GND         GND           PORT0_3         -         -         -         -           79         A19         GND         GND         GND           PORT0_4         -         -         -         -           80         A20         GND         GND         GND           PORT0_5         -         -         -         -           POWM         -         -         -         -           81         VDDE         SUPPLY         SUPPLY         SUPPLY           82         VSS         GND         GND         GND           83         A21         GND         GND         GND           84         A22         -         -         -           PORT0_6         -         -         -         -           R2         -         -         - <t< td=""><td>-</td><td></td><td>-</td><td>-</td><td>-</td></t<>	-		-	-	-
PORTO_1	76	_	GND	GND	GND
77         A17         GND         GND         GND           PORT0_2         -         -         -         -           78         A18         GND         GND         GND           PORT0_3         -         -         -         -           79         A19         GND         GND         GND           PORT0_4         -         -         -         -           80         A20         GND         GND         GND           PORT0_5         -         -         -         -         -           TONE         -         -         -         -         -           PWM         -         -         -         -         -           81         VDDE         SUPPLY         SUPPLY         SUPPLY         SUPPLY           82         VSS         GND         GND         GND         GND           83         A21         GND         GND         GND         GND           84         A22         -         -         -         -           R2         -         -         -         -         -           85         WRRAQ         GND	70		OND	OND	OND
PORTO_2	77		CND	CND	CND
78         A18         GND         GND         GND           PORT0_3         -         -         -         -           79         A19         GND         GND         GND           PORT0_4         -         -         -         -           80         A20         GND         GND         GND           PORT0_5         -         -         -         -           TONE         -         -         -         -           PWM         -         -         -         -           81         VDDE         SUPPLY         SUPPLY         SUPPLY           80         A21         GND         GND         GND           80         A21         GND         GND         GND           80         PORT0_6         -         -         -         -           R1         -         -         -         -         -           R1         -         -         -         -         -           R4         A22         -         -         -         -           R5         WRRAQ         GND         GND         GND         GND	11		GND	GND	GND
PORTO_3			-	-	-
79         A19         GND         GND         GND           PORT0_4         -         -         -         -           80         A20         GND         GND         GND           PORT0_5         -         -         -         -           TONE         -         -         -         -           PWM         -         -         -         -           81         VDDE         SUPPLY         SUPPLY         SUPPLY           82         VSS         GND         GND         GND           83         A21         GND         GND         GND           PORT0_6         -         -         -         -           R1         -         -         -         -           DRON         -         -         -         -           R1         -         -         -         -           BA         A22         -         -         -           PORT0_7         GND         GND         GND         GND           R2         -         -         -         -           85         WRRAQ         GND         GND         GND	78		GND	GND	GND
PORTO_4			-	-	-
80         A20         GND         GND         GND           PORT0_5         -         -         -         -           TONE         -         -         -         -           PWM         -         -         -         -           81         VDDE         SUPPLY         SUPPLY         SUPPLY           82         VSS         GND         GND         GND           83         A21         GND         GND         GND           PORT0_6         -         -         -         -           R1         -         -         -         -           DRON         -         -         -         -           BA A22         -         -         -         -           PORT0_7         GND         GND         GND         GND           R2         -         -         -         -           85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           89         VSS         GND         GND	79		GND	GND	GND
PORTO_5		PORT0_4	-	-	-
TONE	80	_	GND	GND	GND
TONE	<b>—</b>			-	
PWM		_		-	
81         VDDE         SUPPLY         SUPPLY         SUPPLY           82         VSS         GND         GND         GND           83         A21         GND         GND         GND           PORT0_6         -         -         -         -           R1         -         -         -         -           DRON         -         -         -         -           84         A22         -         -         -           PORT0_7         GND         GND         GND         GND           R2         -         -         -         -           85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -	-		-	_	_
82         VSS         GND         GND         GND           83         A21         GND         GND         GND           PORT0_6         -         -         -         -           R1         -         -         -         -           DRON         -         -         -         -           84         A22         -         -         -           PORT0_7         GND         GND         GND         GND           R2         -         -         -         -           85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -	21		SLIDDLA	SLIDDLA	SLIDDLY
83         A21         GND         GND         GND           PORT0_6         -         -         -         -           R1         -         -         -         -           DRON         -         -         -         -           84         A22         -         -         -           PORT0_7         GND         GND         GND           R2         -         -         -           85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -					
PORTO_6					
R1	83				
DRON			-	-	-
84         A22         -         -         -           PORT0_7         GND         GND         GND           R2         -         -         -           85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -			-	-	-
PORT0_7			-	-	-
R2	84	A22	-	-	-
85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -		PORT0_7	GND	GND	GND
85         WRRAQ         GND         GND         GND           86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -		R2	-	-	-
86         OERAQ         GND         GND         GND           87         CSROQ         GND         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -	85	WRRAQ			
87         CSROQ         GND         GND           88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -					
88         VDD         SUPPLY         SUPPLY         SUPPLY           89         VSS         GND         GND         GND           90         VSS         -         -         -         -					
89         VSS         GND         GND         GND           90         VSS         -         -         -		· ·			
90 VSS					
91 NC GND GND GND	1 00	IVSS	-	-	-

#### KX-TG1381HKH/KX-TG1381HKV/KX-TG1381HKW/KX-TG1382HKH/KX-TGA131HMH/KX-TGA131HMV/KX-TGA131HMW

	1301111(1/100-101301111(4/100-10			
PIN	Description	I/O	at Normal	at Reset
			mode	mode
92	NC	GND	GND	GND
93	LINEP	A.I	A.I	A.I
94	LINEN	A.I	A.I	A.I
95	LINEA		A.I	A.I
		A.I		
96	MAD2P	A.I	A.I	A.I
97	MAD4P	A.I	A.I	A.I
98	MAD4N	A.I	A.I	A.I
99	VSSAS	GND	GND	GND
100	VSSA	GND	GND	GND
101	VANA	SUPPLY	SUPPLY	SUPPLY
102	AOP	A.O	A.O	A.O
103	AOP	A.O	A.O	A.O
	NC	-	_	-
	NC	-	_	_
	D0	D.I	D.I	D.I
_	D1	D.I	D.I	D.I
	D2	D.I	D.I	D.I
	D3	D.I	D.I	D.I
110	D4	D.I	D.I	D.I
111	VDDE	SUPPLY	SUPPLY	SUPPLY
112	VSS	GND	GND	GND
	D5	D.I	D.I	D.I
114	D6	D.I	D.I	D.I
115	D7	D.I	D.I	D.I
_	CSRAQ	D.I	D.I	D.I
110	PORTO 6	D.I	D.I	D.I
44-7				
	PORT0_4	D.I	D.I	D.I
118	P0.0	D.O	D.O	D.O
	PWM	-	-	-
119	I2DAT	D.I.O	D.I.O	PullU
120	I2CLK	D.O	D.O	PullU
121	SUPEEP	SUPPLY	SUPPLY	SUPPLY
122	VIO	SUPPLY	SUPPLY	SUPPLY
	VSS	GND	GND	GND
	MRST	-	-	-
127	PORT1 4			
125	MTSR			_
125		-	-	-
L	PORT1_5	-	-	-
126	SCLK	-	-	-
	PORT1_6	-	-	-
127	PORT0_4	-	- //	-
	PORT1_2	-	-	-
	TDO	-	-	-
128	PORT0_5	-	-	-
	PORT1 3	-	-	-
<b>—</b>	TDI	-	-	_
120	PORTO_6	-	-	-
123	PORT1_4			
	_	-	-	-
466	TMS	-	-	-
130	PORT0_3	-	-	-
	PORT1_5	-	-	-
	TCK	-	-	-
131	PORT1_6	-	-	-
	nTRST	-	-	-
132	TMS	-	-	_
	VIO	SUPPLY	SUPPLY	SUPPLY
.00	···	30.11	001111	COLLE
Note:				

## Note:

I\_PU; Internal Pull-Up, I\_PD; Internal Pull-Down

# 12.2. CPU Data (Handset)

# 12.2.1. IC103 (COB)

P1.0	PIN	Description	I/O	at Normal	at Reset
2		Boompaon	0		
STAD	1	P1.0	A.O		
STAD	2			_	-
R1				_	
A RXD	<u> </u>	· · · · =		_	
R2	1				_
S	<u> </u>		D.1	_	_
6	5		SI IDDI V		
7 RESETQ D.I D.I D.I D.I 8 SDRV D.O D.O D.O D.O 9 SENSE A.I A.I A.I A.I 110 ONSW A.I A.I A.I 111 VSS GND GND GND GND 12 VCORE SUPPLY SUPPLY SUPPLY 13 VSS GND GND GND GND 14 VOSC SUPPLY SUPPLY SUPPLY 15 VSSOS A.O A.O A.O A.O 16 XTAL A.I A.I A.I 17 LOAD A.O A.O A.O A.O 18 RXON D.O D.O D.O 20 RTS PXO D.I D.I D.I D.I 21 CTS PXO D.I D.I D.I D.I 22 PX2 D.I D.I D.I D.I 23 PX3 D.I D.I D.I D.I 24 VIO SUPPLY SUPPLY SUPPLY 25 VSS GND GND GND GND 26 PX4 D.I D.I D.I D.I 27 PYO D.I D.I D.I D.I 28 PY1 D.I D.I D.I D.I 29 PY2 D.I D.I D.I D.I 31 PY4 D.I D.I D.I D.I 32 RXIX					
8         SDRV         D.O         D.O         D.O           9         SENSE         A.I         A.I         A.I         A.I           10         ONSW         A.I         A.I         A.I         A.I           11         VSS         GND         GND         GND         GND           12         VCORE         SUPPLY         SUPPLY         SUPPLY         SUPPLY           13         VSS         GND         GND         GND           14         VOSC         SUPPLY         SUPPLY         SUPPLY           15         VSSOS         A.O         A.O         A.O         A.O           16         XTAL         A.I         D.I					_
9   SENSE					
10   ONSW					
11					
12					
13					
14					
15				_	_
16         XTAL         A.I         A.I         A.I           17         LOAD         A.O         A.O         A.O           18         RXON         D.O         D.O         D.O           19         TXON         D.O         D.O         D.O           20         RTS         -         -         -           PXO         D.I         D.I         D.I         D.I           21         CTS         -         -         -         -           PX1         D.I					
17				_	
18					
19   TXON					
Description					_
PX0			D.O		D.O
21 CTS         -         -         -         -           PX1         D.I         D.I         D.I         D.I           22 PX2         D.I         D.I         D.I         D.I           23 PX3         D.I         D.I         D.I         D.I           24 VIO         SUPPLY         SUPPLY         SUPPLY           25 VSS         GND         GND         GND           26 PX4         D.I         D.I         D.I         D.I           27 PY0         D.I         D.I         D.I         D.I           28 PY1         D.I         D.I         D.I         D.I           29 PY2         D.I         D.I         D.I         D.I           30 PY3         D.I         D.I         D.I         D.I           31 PY4         D.I         D.I         D.I         D.I           32 RXIX         -         -         -         -           33 RXI         -         -         -         -           34 VSSRF         GND         GND         GND           35 CAPVCO         -         -         -         -           36 VVCO         -         -         -	20	_			
PX1			D.I	D.I	D.I
22         PX2         D.I         D.I         D.I           23         PX3         D.I         D.I         D.I           24         VIO         SUPPLY         SUPPLY         SUPPLY           25         VSS         GND         GND         GND           26         PX4         D.I         D.I         D.I         D.I           27         PY0         D.I         D.I         D.I         D.I           28         PY1         D.I         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I         D.I           32         RXIX         -         -         -         -           33         RXI         -         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -      <	21	CTS	-		
D.   D.   D.   D.		PX1	D.I	D.I	D.I
24         VIO         SUPPLY         SUPPLY         SUPPLY           25         VSS         GND         GND         GND           26         PX4         D.I         D.I         D.I         D.I           27         PY0         D.I         D.I         D.I         D.I           28         PY1         D.I         D.I         D.I         D.I           29         PY2         D.I         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I         D.I           32         RXIX         -         -         -         -           33         RXI         -         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY	22		D.I	D.I	D.I
25         VSS         GND         GND         GND           26         PX4         D.I         D.I         D.I         D.I           27         PY0         D.I         D.I         D.I         D.I           28         PY1         D.I         D.I         D.I         D.I           29         PY2         D.I         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I         D.I           32         RXIX         -         -         -         -           33         RXI         -         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND <td>23</td> <td>PX3</td> <td>D.I</td> <td>D.I</td> <td>D.I</td>	23	PX3	D.I	D.I	D.I
26         PX4         D.I         D.I         D.I           27         PY0         D.I         D.I         D.I           28         PY1         D.I         D.I         D.I           29         PY2         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I           32         RXIX         -         -         -           33         RXI         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -           41	24	VIO	SUPPLY	SUPPLY	SUPPLY
27         PY0         D.I         D.I         D.I           28         PY1         D.I         D.I         D.I           29         PY2         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I           32         RXIX         -         -         -           33         RXI         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           36         VVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         - </td <td>25</td> <td>VSS</td> <td>GND</td> <td>GND</td> <td>GND</td>	25	VSS	GND	GND	GND
28         PY1         D.I         D.I         D.I           29         PY2         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I           32         RXIX         -         -         -           33         RXI         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           36         VVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND         GND           40         RFOUT         -         -         -         -         -         -         -	26	PX4	D.I	D.I	D.I
29         PY2         D.I         D.I         D.I           30         PY3         D.I         D.I         D.I           31         PY4         D.I         D.I         D.I           32         RXIX         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -           36         VVCO         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -           41         VDDRF         -         -         -           42         VSSRF         GND         GND         GND           43         VDDPLL         -         -         -           44         VSSRF         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA2         G	27	PY0	D.I	D.I	D.I
30   PY3   D.I   D.I	28	PY1	D.I	D.I	D.I
31         PY4         D.I         D.I         D.I           32         RXIX         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           40         RFOUT         - <t< td=""><td>29</td><td>PY2</td><td>D.I</td><td>D.I</td><td>D.I</td></t<>	29	PY2	D.I	D.I	D.I
32         RXIX         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           40         RFOUT         -	30	PY3	D.I	D.I	D.I
33         RXI         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -           36         VVCO         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           40         RFOUT         -         -         -         -         -           41         VDDRF         - </td <td>31</td> <td>PY4</td> <td>D.I</td> <td>D.I</td> <td>D.I</td>	31	PY4	D.I	D.I	D.I
33         RXI         -         -         -           34         VSSRF         GND         GND         GND           35         CAPVCO         -         -         -         -           36         VVCO         -         -         -         -           37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           40         RFOUT         -	32	RXIX	_	-	-
35         CAPVCO         - </td <td>33</td> <td>RXI</td> <td>-</td> <td></td> <td></td>	33	RXI	-		
35         CAPVCO         - </td <td>34</td> <td>VSSRF</td> <td>GND</td> <td>GND</td> <td>GND</td>	34	VSSRF	GND	GND	GND
36         VVCO         - <td>35</td> <td></td> <td>-</td> <td>-</td> <td>-</td>	35		-	-	-
37         VSSRF         GND         GND         GND           38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           41         VDDRF         -         -         -         -         -           42         VSSRF         GND         GND         GND         GND           43         VDDPLL         -         -         -         -           43         VDDPLL         -         -         -         -           44         VSSRF         GND         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY         SUPPLY         SUPPLY           46         VSSPA2         GND         GND         GND         GND         GND           47         VSSPA2         GND         GND         GND         GND         GND           49         POX         -         -         -         -         -         -           50         POX         -         -         -			-	-	-
38         VDDBRF         SUPPLY         SUPPLY         SUPPLY           39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           41         VDDRF         - <td></td> <td></td> <td></td> <td></td> <td></td>					
39         VSSRF         GND         GND         GND           40         RFOUT         -         -         -         -           41         VDDRF         -         -         -         -         -           42         VSSRF         GND         GND         GND         GND           43         VDDPLL         -         -         -         -         -           44         VSSRF         GND					
40         RFOUT         -         -         -           41         VDDRF         -         -         -           42         VSSRF         GND         GND         GND           43         VDDPLL         -         -         -           44         VSSRF         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -           54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -					
41         VDDRF         -         -         -           42         VSSRF         GND         GND         GND           43         VDDPLL         -         -         -         -           44         VSSRF         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -           54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -				-	-
42         VSSRF         GND         GND         GND           43         VDDPLL         -         -         -         -           44         VSSRF         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -           54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -				_	_
43         VDDPLL         -         -         -           44         VSSRF         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -           54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -					
44         VSSRF         GND         GND         GND           45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -           54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -					
45         VDDPA1         SUPPLY         SUPPLY         SUPPLY           46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -           54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -					
46         VSSPA1         GND         GND         GND           47         VSSPA2         GND         GND         GND           48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -         -           54         PO         -         -         -         -           55         VSSPA2         GND         GND         GND         GND           56         VSSPA2         -         -         -         -         -				_	
47         VSSPA2         GND         GND           48         VSSPA2         -         -           49         POX         -         -           50         POX         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -         -           53         PO         -         -         -         -         -         -           54         PO         - </td <td></td> <td></td> <td></td> <td></td> <td></td>					
48         VSSPA2         -         -         -           49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -         -           54         PO         -         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -					
49         POX         -         -         -           50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -           53         PO         -         -         -         -           54         PO         -         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -				בוווט	
50         POX         -         -         -           51         VSSPA2         GND         GND         GND           52         VSSPA2         -         -         -         -           53         PO         -         -         -         -         -           54         PO         - </td <td></td> <td></td> <td></td> <td></td> <td></td>					
51         VSSPA2         GND         GND           52         VSSPA2         -         -           53         PO         -         -         -           54         PO         -         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -         -				-	_
52     VSSPA2     -     -     -       53     PO     -     -     -       54     PO     -     -     -       55     VSSPA2     GND     GND     GND       56     VSSPA2     -     -     -				- CND	- CND
53         PO         -					
54         PO         -         -         -           55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -         -				-	
55         VSSPA2         GND         GND         GND           56         VSSPA2         -         -         -		-		-	
56 VSSPA2		-			
					_
5/ AU					
	5/	AU	-	-	-

PIN	Description	I/O	at Normal	at Reset
			mode	mode
	PL0	A.O	A.O	A.O
58	A1	-	-	-
	PL1	A.O	A.O	A.O
59	A2	-	-	-
	PL2	A.O	A.O	A.O
60	A3	- //	-	-
	PL3	A.O	A.O	A.O
	MD0	-	-	-
61	VDDE	SUPPLY	SUPPLY	SUPPLY
62	VSS	GND	GND	GND
63	A4	-	-	_
	PL4	A.O	A.O	A.O
	MD1	-	-	-
64	A5	_	-	-
-	PL5	A.O	A.O	A.O
	MD2	-	-	-
65	A6	_	_	
00	PL6	_		-
66	A7	-		
00	PL7		-	-
67		-	-	-
67	A8	-	-	-
	PL8	A.O	A.O	A.O
68	A9	-	-	-
	PL9	A.O	A.O	A.O
	PORT1_7	-	-	-
69	A10	-	-	1
	PL10	A.O	A.O	A.O
	PORT1_2	-	-	-
70	A11	-	-	-
	PL11	A.O	A.O	A.O
	PORT1_3	-	-	-
71	VDDE	SUPPLY	-	-
72	A12	-	-	-
	PL12	A.O	A.O	A.O
	PORT1_4	-	-	-
73	A13	-	-	-
	PL13	A.O	A.O	A.O
	PORT1_5	-	-	-
74	A14	-	-	-
<u> </u>	PL14	A.O	A.O	A.O
	PORTO_3	-	-	-
-	PORT1 6	_		-
75	A15		-	-
'3	PL15	A.O	A.O	A.O
	PORTO 4			
70	A16	-	-	-
76	PL16			
		A.O	A.O	A.O
	PORT0_1	-	-	-
77	A17	-	-	-
	PL17	A.O	A.O	A.O
	PORT0_2	-	-	-
78	A18	-	-	1
	PL18	A.O	A.O	A.O
	PORT0_3	-	-	1
79	A19	-	-	-
	PL19	A.O	A.O	A.O
	PORT0_4	-	-	-
80	A20	-	-	-
	PL20	A.O	A.O	A.O
	PORT0_5	-	-	-
	TONE	-	-	-
-	PWM	_	-	-
	l			

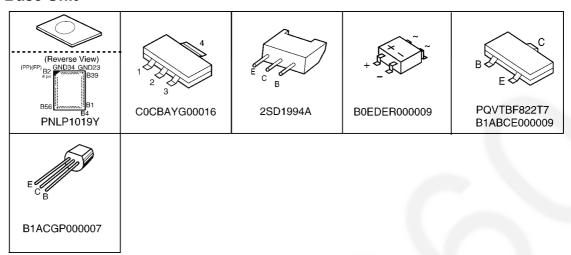
## KX-TG1381HKH/KX-TG1381HKV/KX-TG1381HKW/KX-TG1382HKH/KX-TGA131HMH/KX-TGA131HMV/KX-TGA131HMW

PIN	Description	I/O	at Normal mode	at Reset mode
81	VDDE	SUPPLY	SUPPLY	SUPPLY
82	VSS	GND	GND	GND
83	A21	-	-	-
	PL21	A.O	A.O	A.O
	PORTO_6	-	-	-
	R1	-	-	-
	DRON	-	-	-
84	A22	<u> </u>	_	_
<u> </u>	PL22	A.O	A.O	A.O
	PORTO 7	-	-	-
	R2		_	
0.5	WRRAQ		-	-
85		-	-	-
	PL24	A.O	A.O	A.O
86	OERAQ	-	-	-
	PL26	A.O	A.O	A.O
87	CSROQ	-	-	-
	PL27	A.O	A.O	A.O
88	VDDDCDC	-	-	-
89	VSS	GND	GND	GND
90	VSS	-	-	-
91	CHARGESTART	D.O	D.O	D.O
92	CDT	SUPPLY	SUPPLY	SUPPLY
93	MICP	A.I	A.I	A.I
94	MICN	A.I	A.I	A.I
95	MICS	A.O	A.O	A.O
96	NC	7.0	7.0	7.0
97	IMAD4P	A.I	A.I	A.I
98	MAD4N	A.I	A.I	A.I
	VSSAS		GND	GND
99		GND		_
	VSSA	GND	GND	GND
101	VANA	SUPPLY	SUPPLY	SUPPLY
102	HO1P	A.O	A.O	A.O
	HO1P	-	-	-
-	HO1N	A.O	A.O	A.O
	HO1N	-	-	-
106	D0	- (/	1	-
	PL35	A.O	A.O	A.O
107	D1	-	-	-
	PL34	A.O	A.O	A.O
108	D2	-	-	-
	PL33	A.O	A.O	A.O
109	D3	-	-	-
	PL32	A.O	A.O	A.O
110	D4	-	-	-
F-	PL31	A.O	A.O	A.O
111		SUPPLY	SUPPLY	SUPPLY
112		GND	GND	GND
113		-	-	-
	PL30	A.O	A.O	A.O
114	D6	- A.O	-	-
117	PL29	A.O	A.O	A.O
115	D7			
115	PL28	-	-	-
440		A.O	A.O	A.O
116	CSRAQ	-	-	-
	PL25	A.O	A.O	A.O
	PORTO_6	-	-	-
117	PL23	A.O	A.O	A.O
L	PORTO_4	-	Ī	-
118	P0.0	A.O	A.O	A.O
	PWM	-	-	-
			D.I.O	PullU
119	I2DAT	D.I.O	D.I.O	
		D.I.O D.O	D.1.O	PullU
	I2DAT I2CLK			
120	I2DAT I2CLK SUPEEP	D.O	D.O	PullU
120 121 122	I2DAT I2CLK SUPEEP	D.O SUPPLY	D.O SUPPLY	PullU SUPPLY
120 121 122 123	I2DAT I2CLK SUPEEP VIO	D.O SUPPLY SUPPLY	D.O SUPPLY SUPPLY	PullU SUPPLY SUPPLY

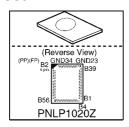
	5 : ::	1 1/0		
PIN	Description	I/O	at Normal	at Reset
			mode	mode
	PORT1_4	-	-	-
125	MTSR	-	-	-
	PORT1_5	-	-	-
126	SCLK	-	-	-
	PORT1_6	-	-	-
127	PORT0_4	-	-	-
	PORT1_2	-	-	-
	TDO	-	-	-
128	PORT0_5	-	-	-
	PORT1_3	-	-	-
	TDI	-	-	-
129	PORT0_6	-	-	-
	PORT1_4	-	-	-
	TMS	-	-	-
130	PORT0_3	-	-	-
	PORT1_5	-	-	-
	TCK	-	-	-
131	PORT1_6	-	-	-
	nTRST	-	-	-
-	TMS	-	-	-
133	VIO	-	-	-

# 12.3. Terminal Guide of the ICs, Transistors and Diodes

# 12.3.1. Base Unit



# 12.3.2. Handset



KX-TG1381HKH/KX-TG1381HKV/KX-TG1381HKW/KX-TG1382HKH/KX-TGA131HMH/KX-TGA131HMW/KX-TGA131HMW

Memo

# 13 Schematic Diagram

# 13.1. For Schematic Diagram

## 13.1.1. Base Unit (Schematic Diagram (Base Unit))

#### Notes:

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

Important Safety Notice:

Components identified by  $\triangle$  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.

## 13.1.2. Handset (Schematic Diagram (Handset))

#### Notes:

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

# 13.1.3. Charger Unit (Schematic Diagram (Charger Unit))

#### Notes:

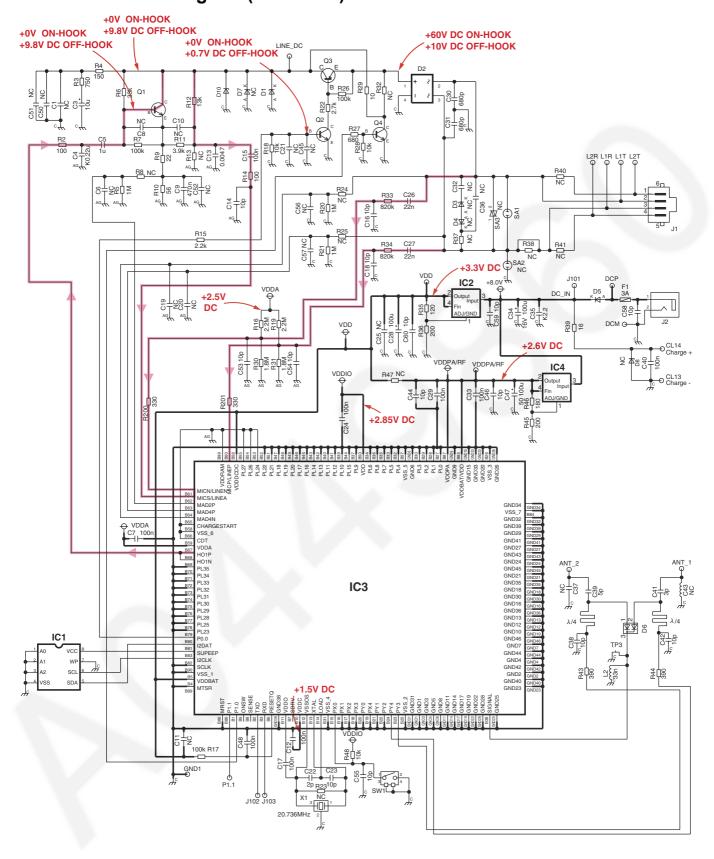
1. DC voltage measurements are taken with voltmeter from the negative voltage line.

Important Safety Notice:

Components identified by  $\triangle$  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.

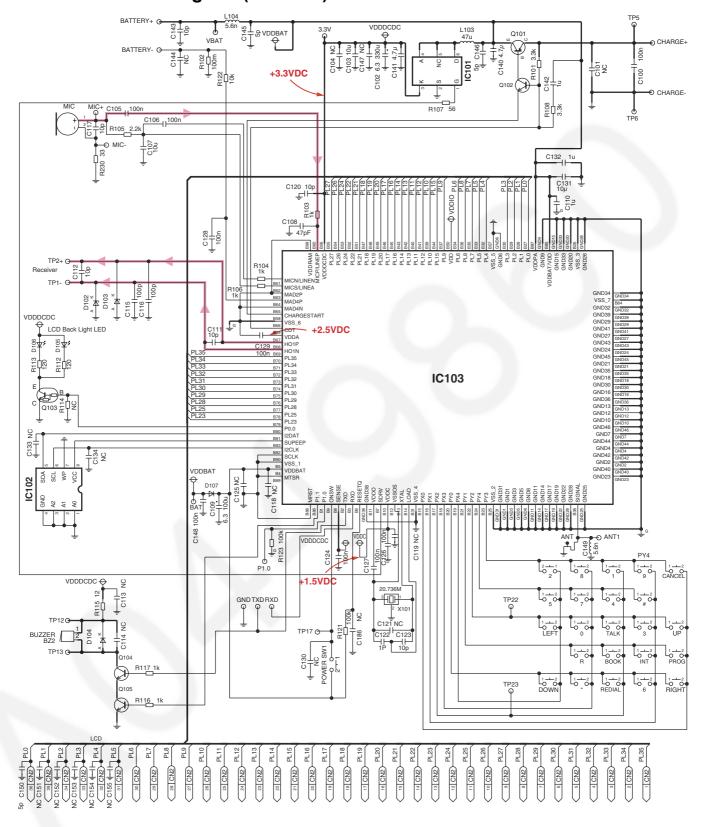
# 13.2. Schematic Diagram (Base Unit)



NC: No Components

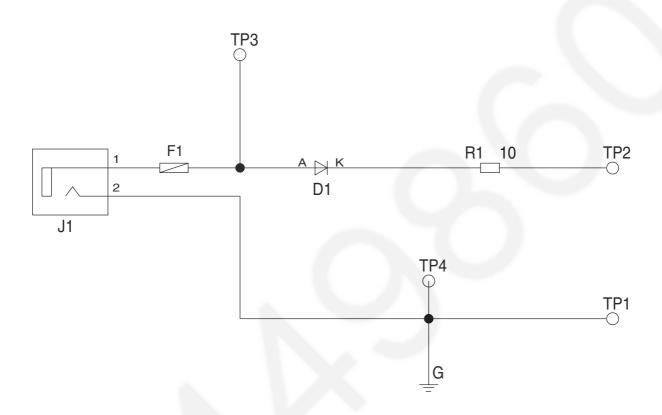
KX-TG1381/1382HK SCHEMATIC DIAGRAM (Base unit main)

# 13.3. Schematic Diagram (Handset)



NC: No Components KX-TGA131 SCHEMATIC DIAGRAM (Handset main)

# 13.4. Schematic Diagram (Charger Unit)

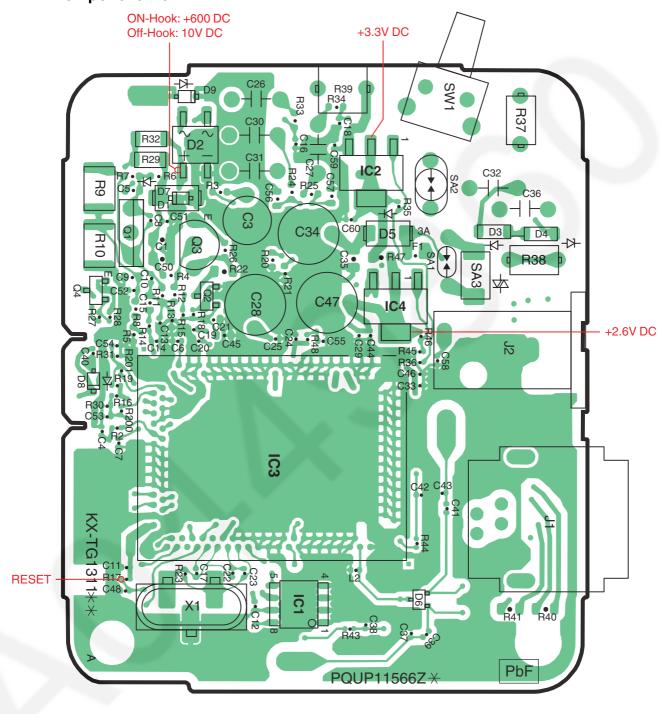


SCHEMATIC DIAGRAM (Charger Unit)

# **14 Printed Circuit Board**

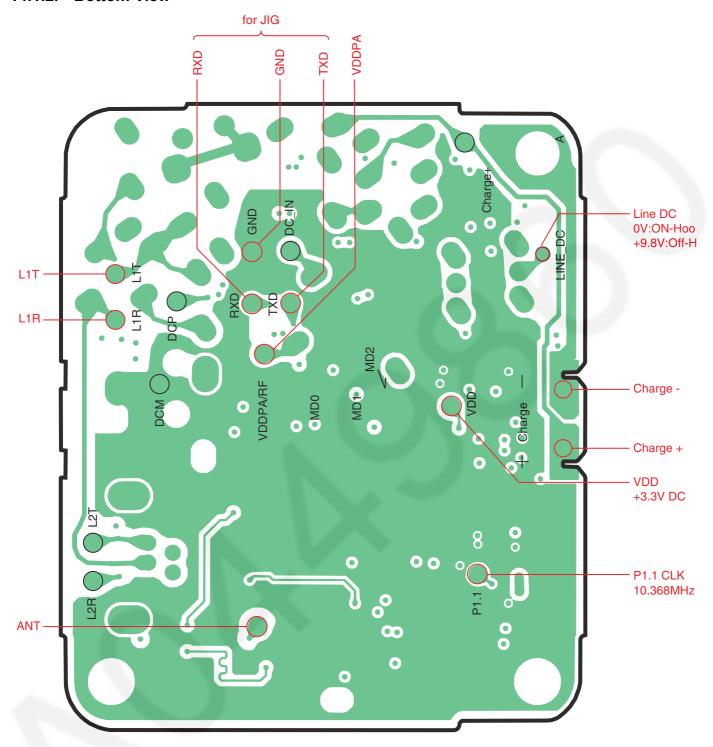
# 14.1. Circuit Board (Base Unit)

# 14.1.1. Component View



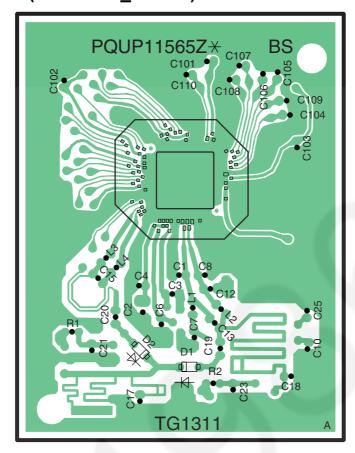
KX-TG1381/1382 CIRCUIT BOARD (Base Unit\_Main (Component View))

## 14.1.2. Bottom View



KX-TG1381/1382 CIRCUIT BOARD (Base Unit\_Main (Bottom View))

# 14.2. Circuit Board (Base Unit\_Career)



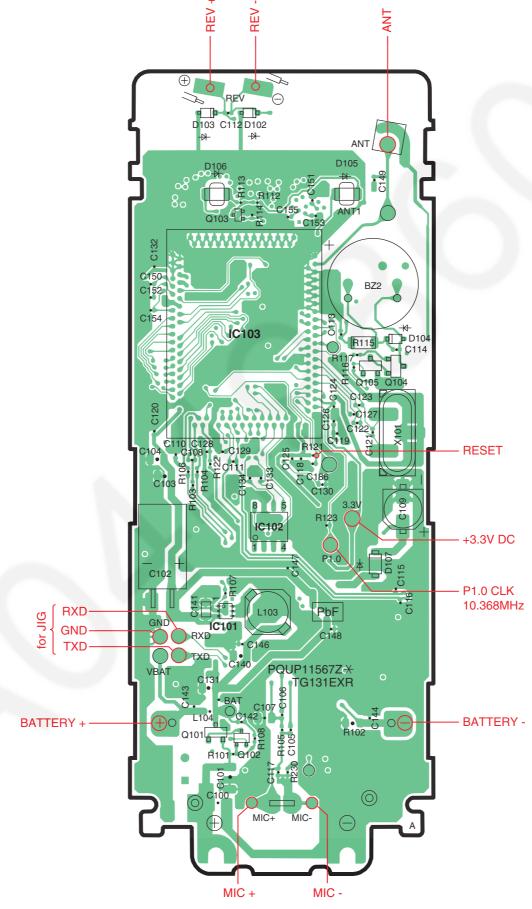
KX-TG1381/1382 CIRCUIT BOARD (Base Unit\_Carrier (Component View))

KX-TG1381HKH/KX-TG1381HKV/KX-TG1381HKW/KX-TG1382HKH/KX-TGA131HMH/KX-TGA131HMW/KX-TGA131HMW

Memo

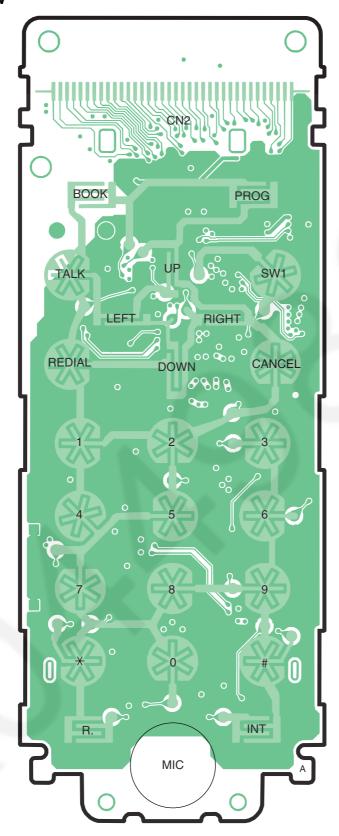
# 14.3. Circuit Board (Handset)

# 14.3.1. Component View



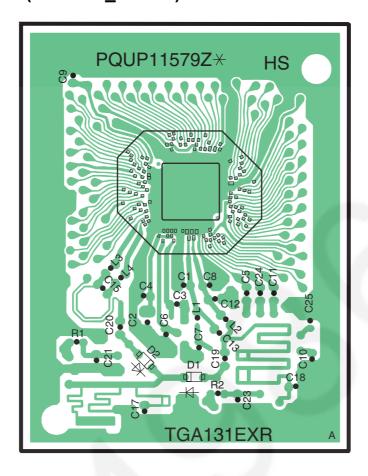
KX-TGA131 CIRCUIT BOARD (Handset\_Main (Component View))

# 14.3.2. Bottom View



KX-TGA131 CIRCUIT BOARD (Handset\_Main (Bottom View))

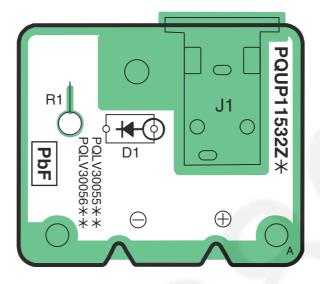
# 14.4. Circuit Board (Handset\_Career)



KX-TGA131 CIRCUIT BOARD (Handset\_Carrier (Component View))

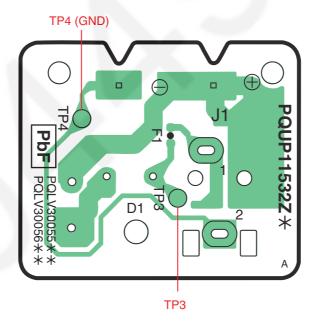
# 14.5. Circuit Board (Charger Unit)

# 14.5.1. Component View



CIRCUIT BOARD (Charger unit (Component View))

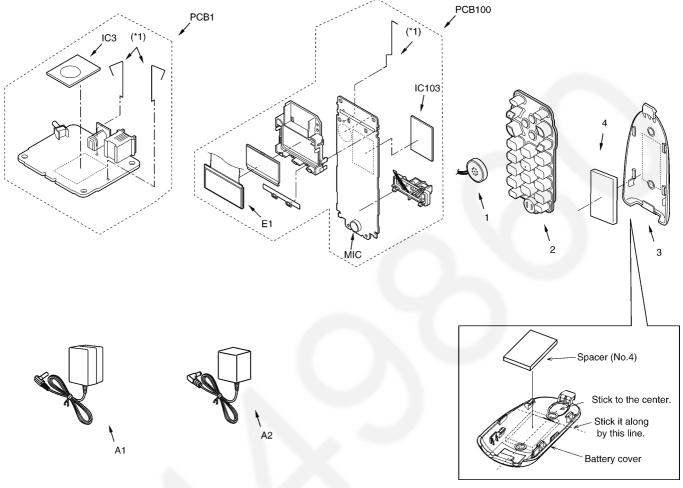
# 14.5.2. Bottom View



CIRCUIT BOARD (Charger unit (Bottom View))

# 15 Exploded View and Replacement Parts List

# 15.1. Cabinet, Electrical Parts and Accessories (Base Unit/Handset)



## Note:

(\*1) When replacing Antenna, refer to Handset (P.34) of Disassembly and Assembly Instructions.

# 15.2. Replacement Part List

1. RTL (Retention Time Limited)

#### Note:

The "RTL" marking indicates that its Retention Time is Limited.

When production is discontinued, this item will continue to be available only for a specific period of time. This period of time depends on the type of item, and the local laws governing parts and product retention. At the end of this period, the item will no longer be available.

#### 2. Important safety notice

Components identified by the  $\triangle$  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.

#### Type

ERC:Solid ERX:Met. ERDS:Carbon ERG:Met ERJ:Chip ER0:Meta		tal Oxide	Е	Q4R:C RS:Fu: RF:Ce	sible Re	
Wattage	Wattage					
10,16:1/8W	14,2	12:1/2W		1:1W	2:2W	3:3W
*Type & Voltage Of Capacitor						

\*Type & Voltage Of Capacitor Type

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

#### Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type		Oth	ers	W
1H:50V		0F:3.15V	0J	:6.3V	1V	:35V
2A:100V		1A:10V	1A	:10V	50,1	H:50V
2E:250V		1V:35V	1C	:16V	1J	:16V
2H:500V		0J:6.3V	1E,2	:5:25V	2A	:100V

# 15.2.1. Base Unit

## 15.2.1.1. Main P.C.Board Parts

#### Note:

(\*1) IC package of BGA (Ball Grid Array) type

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB1	PNWPG1381HKH	MAIN P.C.BOARD ASS'Y (RTL)	
			(ICS)	
	IC2	COCBAYG00016	IC	S
	IC3	PNLP1019Y	IC (COB) (*1)	
	IC4	COCBAYG00016	IC	S
			(TRANSISTORS)	
	Q1	2SD1994A	TRANSISTOR(SI)	
	Q2	PQVTBF822T7	TRANSISTOR(SI)	
	Q3	B1ACGP000007	TRANSISTOR(SI)	
	Q4	B1ABCE000009	TRANSISTOR(SI)	
			(DIODE)	
	D2	B0EDER000009	DIODE(SI)	
			(VARISTOR)	
	SA1	J0LF00000026	VARISTOR	
			(OTHER)	
	F1	K5H302Y00003	FUSE	

#### 15.2.2. Handset

#### 15.2.2.1. Cabinet and Electrical Parts

Safety	Ref.	Part No.	Part Name & Description	Remarks
	No.			
	1	L0AD02A00028	RECEIVER	
	2	PNJK1014Z	KEYBOARD SWITCH	
	3	PNKK1003Z3	LID, BATTERY (KX-TGA131HMH)	ABS-HB
	3	PNKK1003Z1	LID, BATTERY (KX- TGA131HMV)	ABS-HB
	3	PNKK1003Z2	LID, BATTERY (KX- TGA131HMW)	ABS-HB
	4	PQHS10561Y	SPACER, BATTERY COVER	

#### 15.2.2.2. Main P.C.Board Parts

#### Note:

- (\*1) When replacing the Handset LCD, see **How to** Replace the Handset LCD (P.36).
- (\*2) IC package of BGA (Ball Grid Array) type

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
	PCB100	PNWPGA131HMR	MAIN P.C.BOARD ASS'Y (RTL)	
			(IC)	
	IC103	PNLP1020Z	IC (COB) (*2)	
			(OTHERS)	
	E1	L5DCBYY00022	LIQUID CRYSTAL DISPLAY (*1)	
	MIC	L0CBAY000016	MICROPHONE	

#### 15.2.3. Accessories

## 15.2.3.1. KX-TG1381HKH/HKV/HKW

Safety	Ref. No.	Part No.	Part Name & Description	Remarks
$\triangle$	A1	PQLV207EU	AC ADAPTOR	•

## 15.2.3.2. KX-TG1382HKH

Safety	Ref. No.	Part No.	Part Name & Description Remark
⚠	A1	PQLV207EU	AC ADAPTOR (for Base Unit)
⚠	A2	PQLV209EU	AC ADAPTOR (for Charger Unit)

## 15.2.4. Fixtures and Tools

#### Note:

- (\*1) See The Setting Method of JIG (Base Unit) (P.37), and The Setting Method of JIG (Handset) (P.41).
- (\*2) When replacing the Handset LCD, see **How to** Replace the Handset LCD (P.36).

Safety	Ref. No.	Part No.	Part Name & Description Remarks
		PNZZTG1381HK	BATCH FILE CD-ROM (*1)
		PQZZ430PIR	TIP OF SOLDERING IRON (*2)
		PQZZ430PRB	RUBBER OF SOLDERING IRON (*2)
		PQZZ1CD300E	JIG CABLE (*1)

T.I KXTG1381HKH KXTG1381HKV KXTG1382HKH KXTGA131HMH KXTGA131HMV KXTGA131HMW