ORDER NO. KM40209968C3

Service Manual

Telephone Equipment

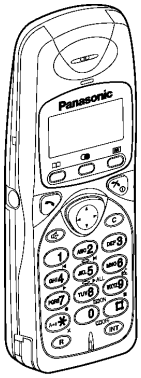
KX-TCD735AXM

Caller ID Compatible

Digital Cordless Answering System

Metallic Grey Version

(for Eastern Asia)



(HANDSET)

(BASE UNIT)

SPECIFICATION

Standard:	DECT=Digital Enhanced Cordless Telecommunications GAP=Generic Access Profile
Number of channels:	120 Duplex Channels
Frequency range:	1.88 GHz to 1.9 GHz
Duplex procedure:	Time Multiplex, 10 ms frame length
Channel Spacing:	1728 kHz
Bit rate spacing:	1152 kbit/s
Modulation:	GFSK
Voice coding:	32 kbit/s
Operation range:	Up to 300 m outdoors, up to 50 m indoors
Analog telephone connection:	Telephone Line / PBX
Power source:	AC Adaptor 230 V ~ /50 Hz
Power consumption, Base unit:	5 VA
Battery life, Handset (if batteries are fully charged):	Stand-by: Up to 200 hours (Ni-MH) Up to 100 hours (Ni-Cd) Talk: Up to 20 hours (Ni-MH) Up to 10 hours (Ni-Cd)
Operating conditions:	5˚ - 40˚C, 20 - 80% relative air humidity (not condensing)
Dialing modes:	Pulse/Tone
Recall button (set default):	Flash (80 ms)
for PBX:	Flash (700 ms)
Recall button (option):	Earth (400 ms)
Dimensions, Base unit:	about 208 mm x 115 mm x 60 mm (L x W x D)
Dimensions, Handset:	about 136 mm x 47 mm x 31.5 mm (L x W x D)
Weight, Base unit:	about 405 g
Weight, Handset:	about 152 g
Telephone line cord length:	about 2.2 m
AC adaptor cord length:	about 1.9 m
Connection jack:	RJ11 to RJ11
Telephoneline cord:	2-core. ABS/PS jacket.

Design and specification are subject to change without notice.

Panasonic

⚠ WARNING

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

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

FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.
When repairing, the following precautions will help prevent recurring malfunctions.
1. Cover plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on worktable.
4. Do not grasp IC or LSI pins with bare fingers.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's Instructions.

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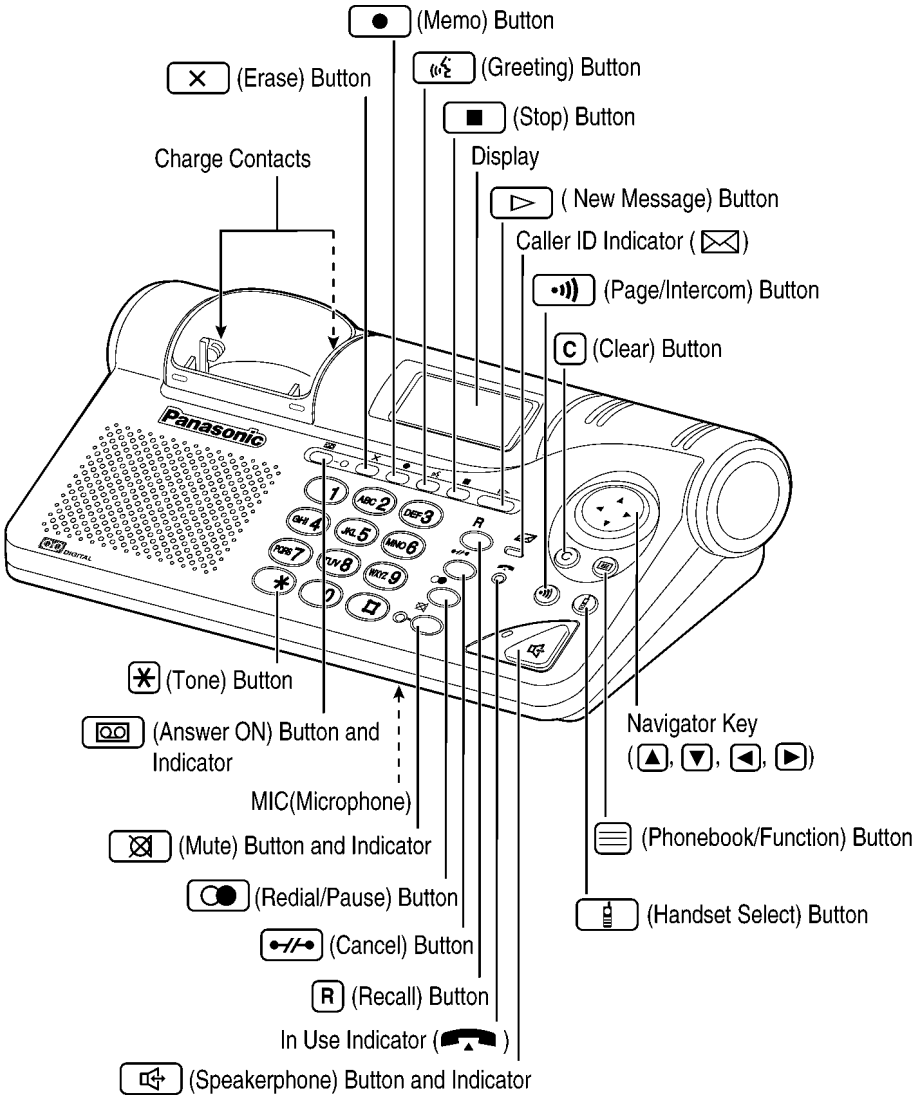
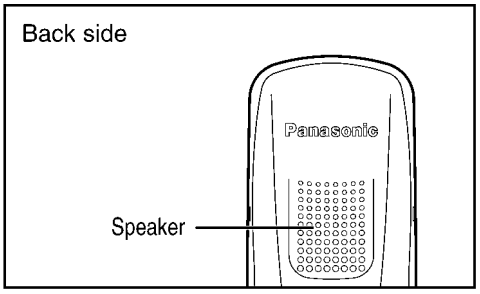
1 LOCATION OF CONTROLS

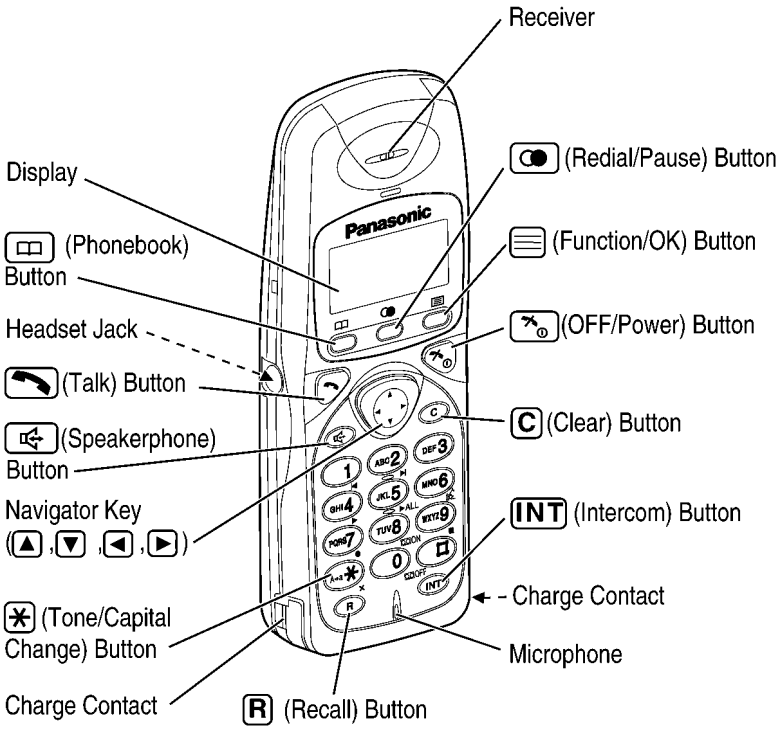
1.1. Base Unit



- Base unit operation is not available when the handset is in use.

1.2. Handset

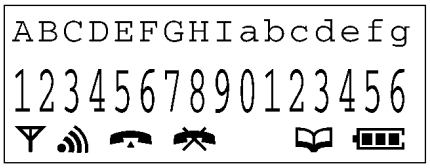




- Handset operation is not available when the base unit is in use.

2 DISPLAYS

Handset Display



Icons

The in-range icon indicates that the handset is in range of the base unit. It flashes when the handset is out of range.

The page/intercom icon is displayed when paging or using the intercom. It flashes when another unit pages the handset.

The talk icon is displayed when making or answering calls. It flashes when an outside call is being received.

The call prohibition icon is displayed when call prohibition mode is set to on.

The phonebook icon is displayed when storing or viewing item into the handset phonebook.

The battery icon indicates the battery strength.

Characters

P "Pause" is selected while dialling.

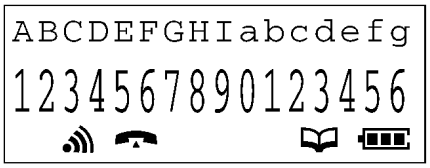
↦ Direct call mode is ON.

[A] Answering system is ON.

F (R) is pressed while dialling.

[x] Key lock is ON.

Base Unit Display



Icons

The page/intercom icon is displayed when paging or using the intercom. It flashes when another unit pages the base unit.

The talk icon is displayed when making or answering calls. It flashes when an outside call is being received.

The phonebook icon is displayed when storing or viewing item into the base unit phonebook.

The battery icon indicates the Handset is on charging.

Characters

P "Pause" is selected while dialling.

F (R) is pressed while dialling.

3 DISASSEMBLY INSTRUCUTIONS

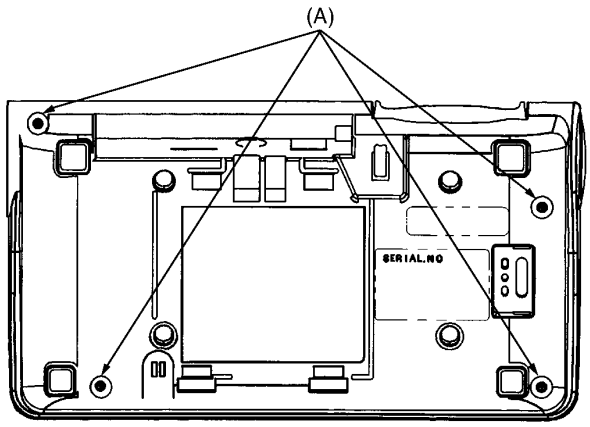


Fig. 1

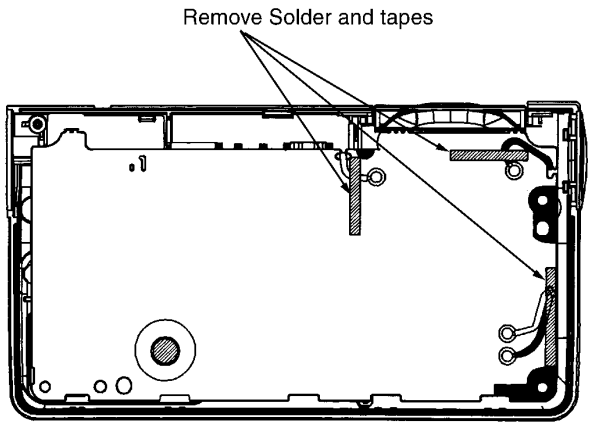


Fig. 2

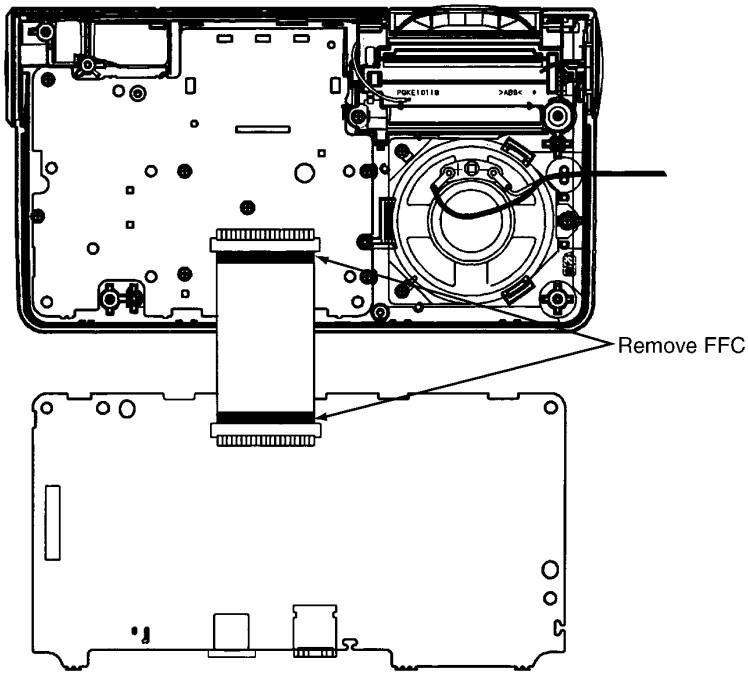


Fig. 3

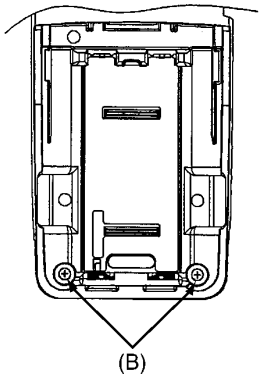


Fig. 4

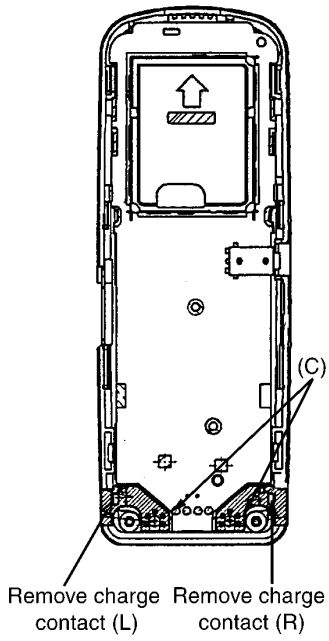
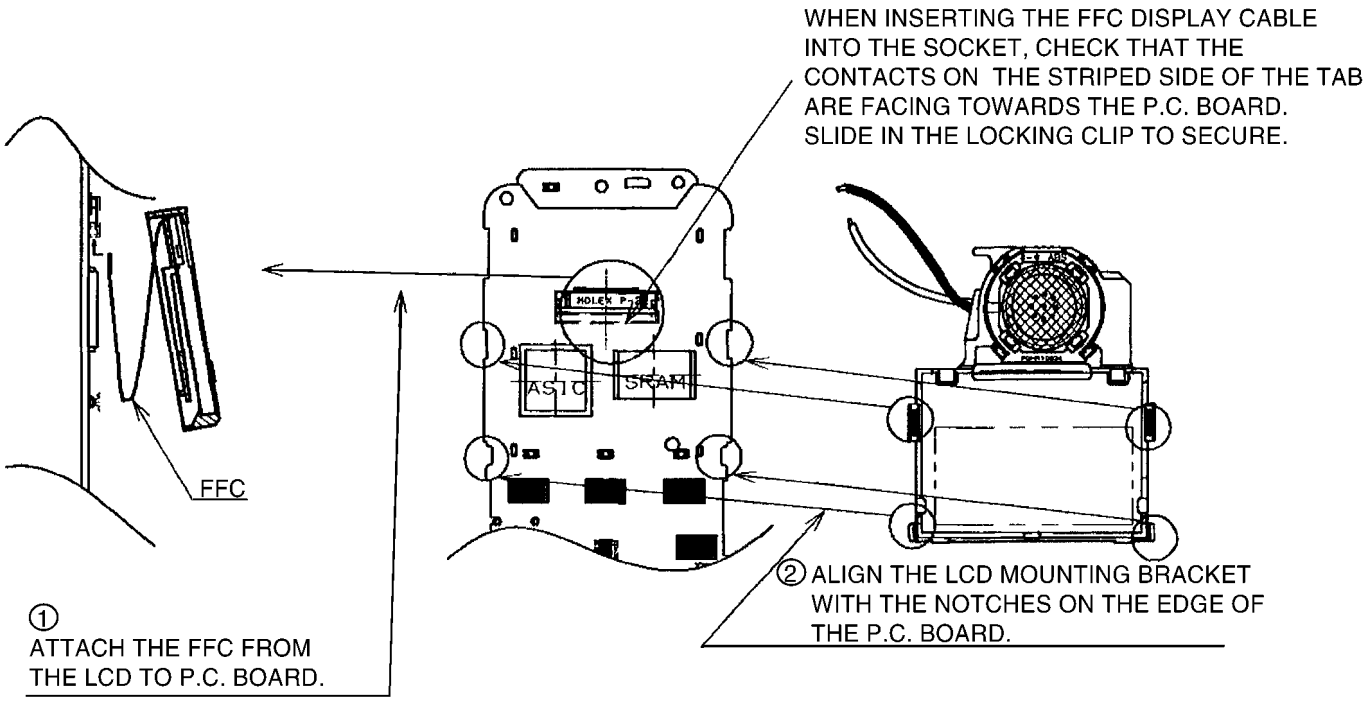
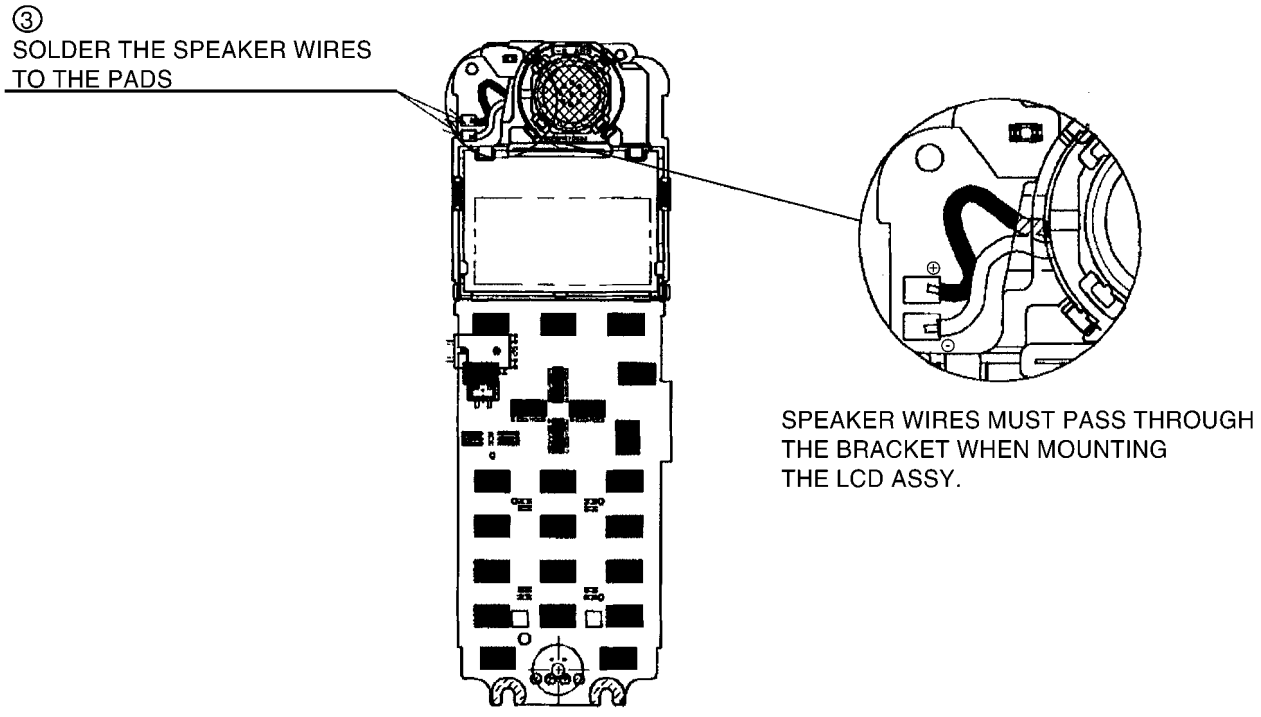


Fig. 5

Shown in Fig.	To Remove	Remove
1	Lower Cabinet	Screws (2.6 × 14).....(A) × 4
2	Main P.C.B of base	Remove solder and tapes
3	Main P.C.B of base	FFC
4	Rear Cabinet of handset	Screws (2 × 8).....(B) × 2
5	Main P.C.B of handset	Screws (2 × 6).....(C) × 2

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

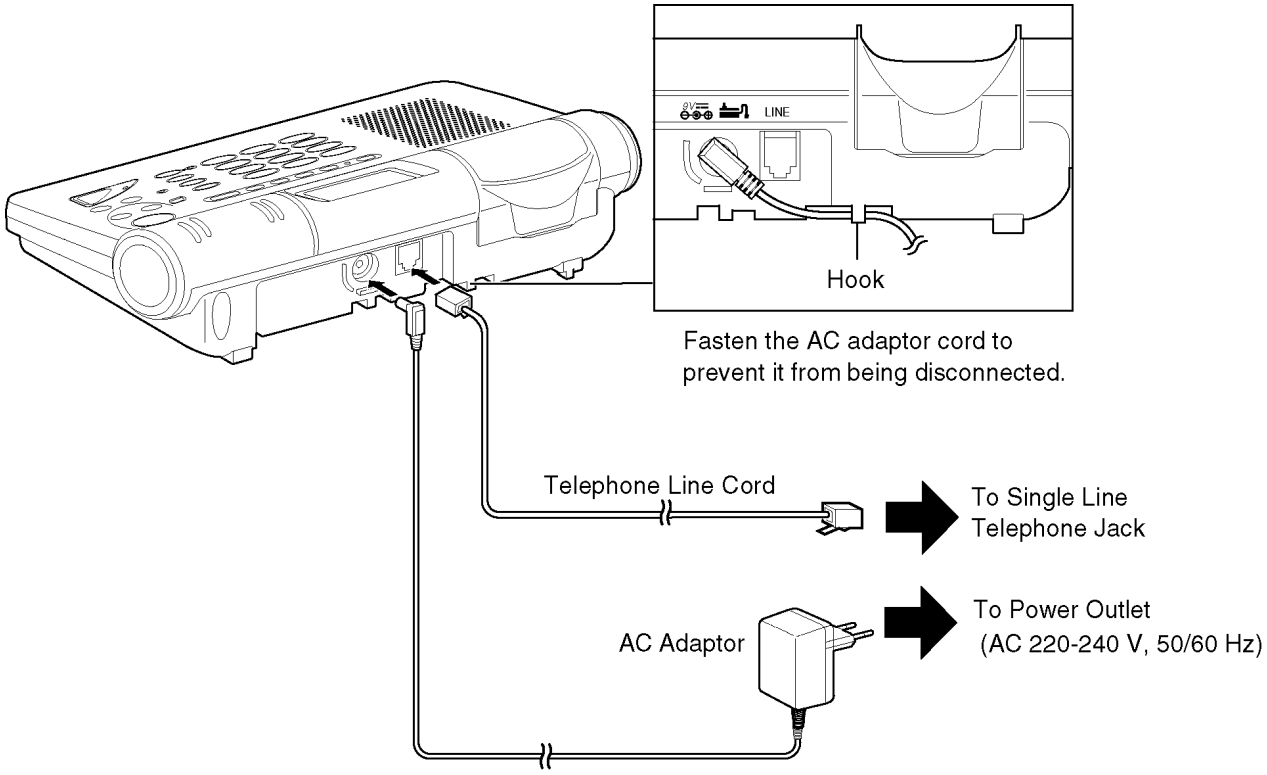




4 SETTINGS

4.1. Connections

Plug in the AC Adaptor and the telephone line cord to the bottom of the unit. Then connect the cords as shown.

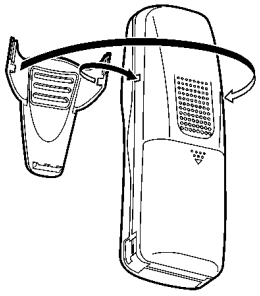


- USE ONLY WITH Panasonic AC ADAPTOR PQLV1CEZ.
- The AC Adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- This telephone has a single terminal which must be connected to an analog telephone line with a RJ11 connector.
- If your unit is connected to a PBX which does not support Caller ID services, you cannot access those services.
- The telephone will not work during a power failure. We therefore recommend you use a standard telephone and automatic change-over switch to connect this Digital Cordless Phone to the line. Your Panasonic sales shop can offer you more information about connection possibilities.

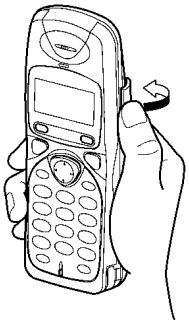
4.2. Using the Belt Clip

You can hang the handset on your belt or pocket using the belt clip.

To attach the belt clip



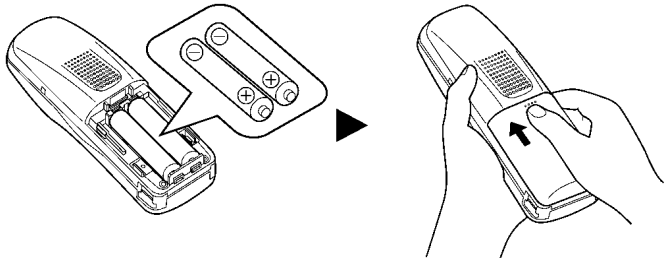
To remove the belt clip



4.3. Batteries

4.3.1. Installing the Batteries in the Handset

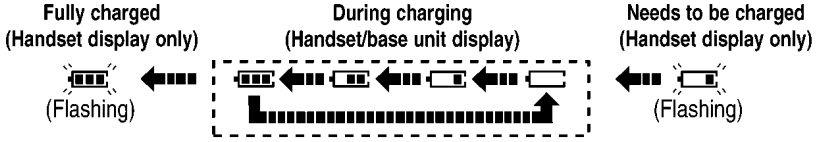
Install the batteries as shown, then install the handset cover.



- If the rechargeable batteries are not inserted correctly, the handset will not work.

4.3.2. Battery Charge

At the time of shipment, the batteries are not charged. To charge, place the handset on the base unit. Please charge the batteries for about **15 hours** before initial use. During charging the battery, battery icon is as shown below



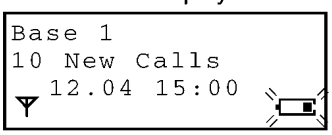
You can check the present battery strength on the display

Handset display only					
Battery strength	Fully charged	High	Medium	Low	Need to be charged
Battery icon	(Flashing)				(Flashing)

4.3.3. Recharge (Handset display only)

When "  " flashes or the unit beeps every 15 seconds, recharge the batteries.

Ex. Handset display



4.3.4. Battery Information

After your batteries are fully charged, battery life depends on its type and usage condition.

	Approx. Ni-MH battery life (Included)	Approx. Ni-Cd battery life (Optional) *
While in use (Talk)	Up to about 20 hours	Up to about 10 hours
While not in use (Standby)	Up to about 200 hours	Up to about 100 hours

- Battery life may be shortened depending on usage conditions, such as:
  — when viewing the Caller ID Caller List or phonebook
  — when talking in speakerphone mode
  — ambient temperature.
- **Clean the handset and the base unit charge contacts with a soft, dry cloth. Clean if the unit is subject to grease, dust or high humidity, otherwise the batteries may not be charged properly.**
- If the batteries are fully charged, you do not have to place the handset on the base unit until "▭" flashes. This will maximise the battery life.
- The batteries cannot be overcharged.

* Nickel Cadmium (Ni-Cd) rechargeable batteries (AA size) are available.
If you replace the batteries with Ni-Cd batteries, battery type selection on the handset programming must be changed to Ni-Cd.

5 OPERATIONS

This section is intended to provide a basic overview for KX-TCD735AXM.

For a full explanation, refer to the Operating Instructions.

5.1. Turning the Power ON/OFF

To turn the power ON

Press and hold .

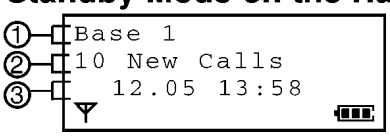
- After all possible configurations briefly appear, the display will change to the standby mode. A beep sounds.

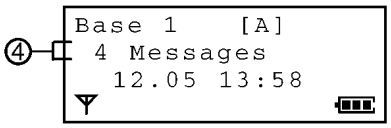
To turn the power OFF

Press and hold until a long beep sounds.

- The display will go blank.
- The handset will not ring.

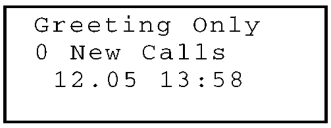
Standby Mode on the Handset





- If message(s) is/are recorded, the standby mode will be shown as above.

Standby Mode on the Base Unit



- If "greeting only" is selected, the display will be shown as above.

① The current connected base unit number: You can select whether to display the base unit number handset number or no display in the standby mode by programming.
② The number of new Caller ID calls received.
③ The current date and time.
④ The number of recorded message: If new message(s) is/are recorded, ④ will flash. When memory is full, ④ will flash faster

5.2. Making a Call

with the Handset

Make sure that the power is ON, and the unit is in the standby mode.

Press [TALK] then dial a phone number

- After a few seconds, the display will start showing the length of the call.
- If you misdialed, press [OFF] and start over again.
- The dialed number is automatically stored into the redial list.

with the Base Unit

1 Press [SP-PHONE] then enter a phone number.
OR
Enter a phone number then press [SP-PHONE].

- The speakerphone indicator ( ) lights.
- The dialed number is displayed.
- If you misdial, press [FLASH/PAUSE] then dial again.
- After a few seconds, the display will start showing the length of the call.

2 When the other party answers, talk into the microphone.

3 To hang up, press [SP-PHONE].

- The speakerphone indicator ( ) goes out.

- The base unit speakerphone cannot be used while a handset is in use. Wait until the in use indicator ( ) goes out.

For best performance on digital speakerphone

- Talk alternately with the caller in a quiet room.
- If the other party has difficulty hearing you, press [▼] to decrease the speaker volume.
- If the other party's voice from the speaker cuts in/out during a conversation, press [▼] to decrease the speaker volume.

5.3. Answering a Call

with the Handset

Make sure that the power is ON, otherwise the handset will not ring.

- Press [TALK] or any dialing button, [0] to [9], [INT], [SP-PHONE], [*] or [#] —Any Key Answer.
  After a few seconds, the display will start showing the length of the call.

with the Base Unit

If you subscribe to a Caller ID service, the caller information will be displayed after the first ring.

1 Press [SP-PHONE].

2 Talk into the MIC.

3 To hang up, press [SP-PHONE].

- The base unit will return to the standby mode.

5.4. Terminating a Call

Press [OFF] or place the handset on the base unit.

- The handset will return to the standby mode.

5.5. Summary of Programmable Functions

5.5.1. Base Unit

You can select and execute the following functions by pressing direct command as follows without programming.

These operations need to be done with the Handset near the base unit.

Make sure that the power is ON, and the unit is in the standby mode.

Press [MENU]. Press [▼] or [▲] until the arrow points to "Setting Base", then press [►].

"Input Command" is displayed.*1

<Direct command>

Press [1], 4-digit base unit PIN, then [1]	To select the all handsets ringer mode
Press [1], 4-digit base unit PIN, then [2]	To select the selected handset(s) ringer mode
Press [1], 4-digit base unit PIN, then [3]	To select the selected then all handsets ringer mode
Press [2] then [1]	To set the base unit key tone ON/OFF
Press [2] then [2]	To select the base unit ringer volume
Press [2] then [3]	To select the base unit ringer type
Press [3], 4-digit base unit PIN, then [1]	To select the tone/pulse dialing mode
Press [3], 4-digit base unit PIN, then [2]	To select the flash mode
Press [3], 4-digit base unit PIN, then [3]	To select the pause timing
Press [4], 4-digit base unit PIN, then [1]	To store the exchange code (AKZ)
Press [4], 4-digit base unit PIN, then [2]	To store the main exchange code (HAKZ)
Press [5] then 4-digit base unit PIN*2	To change the 4-digit base unit PIN*2
Press [6] then 4-digit base unit PIN	To set the call restriction
Press [7] then 4-digit base unit PIN	To cancel a handset registration in the base unit
Press [8] then [0]	To clear the total charge
Press [8] then [1]	To check the total charge
Press [8] then [2]	To store the charge rate
Press [9], 4-digit base unit PIN, then [1]	To store the carrier code
Press [9], 4-digit base unit PIN, then [2]	To store the area code
Press [9], 4-digit base unit PIN, then [4]	To set the relating area code(s) to a carrier code
Press [0] then 4-digit base unit PIN	To reset the base unit settings
Press [*]	To set the date/time
Press [#] then [1]	To set the remote code
Press [#] then [2]	To select the number of rings
Press [#] then [3]	To select the caller's recording time
Press [#] then [4]	To set the monitor function ON/OFF

*1 If any key is not pressed over 60 seconds, the display will return to "Setting Base".

*2 See **Setting a 4-digit Base Unit PIN** (P.15) for more details.

5.5.1.1. Setting a 4-digit Base Unit PIN

You can program a 4-digit base unit PIN (Personal Identification Number) **with the Handset**.
The factory preset is 0000.
Changing the PIN may prevent the unauthorised use of your unit by another person.
You need to enter the 4-digit base unit PIN when using the following functions.

—Ringer Mode Selection
—Selecting the Tone/Pulse Dialing Mode
—Setting the Flash/Earth Mode
—Selecting the Pause Timing
—Call Restriction
—Cancelling a Handset Registration in the Base Unit
—Reset the Base Unit Settings

Make sure that the power is ON, and the unit is in the standby mode.

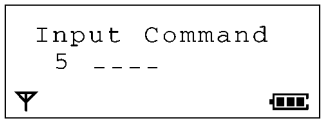
1 Press (MENU).

2 Press (▼) **or** (▲) **until the arrow points to "**`Setting Base`**", then press** (▶).

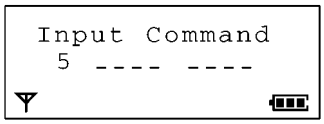
- "`Input Command`" is displayed.

3 Press (5)**, then enter the current 4-digit base unit PIN.**[*1]

- The factory preset is 0000.



4 Enter the new 4-digit base unit PIN TWICE.



- A beep sounds.
- The display will return to "`Setting Base`". To return to the standby mode, press (OFF).

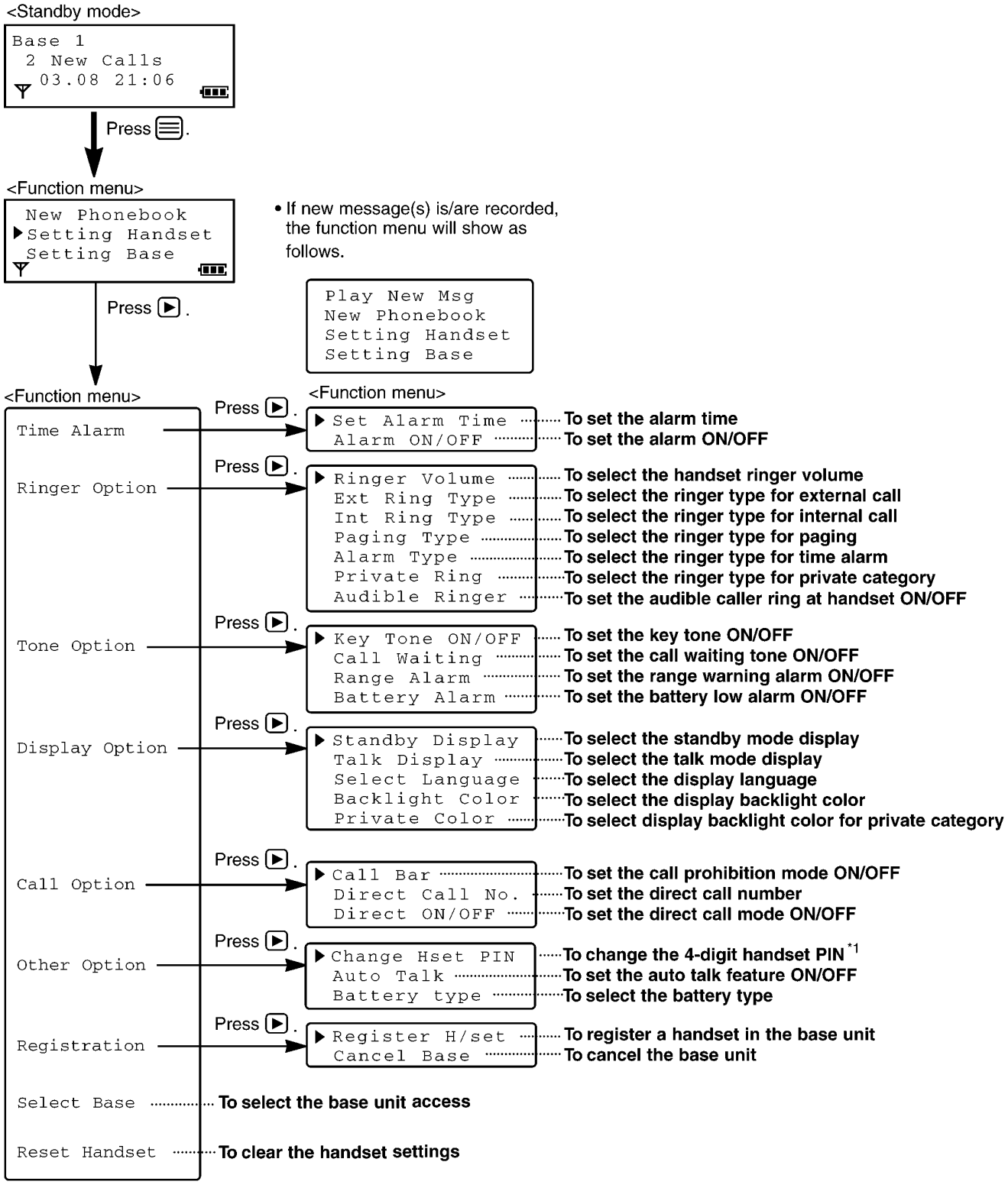
- If 5 beeps sound in step 3, the entered 4-digit base unit PIN is incorrect. Enter the correct 4-digit base unit PIN.
- You can exit the programming mode any time by pressing (OFF).

*1 If the current PIN is forgotten, press (✱)(7)(0)(0)(0) and you will be able to enter new PIN.

5.5.2. Handset

You can program the following function items **using the handset near the base unit.**

Make sure that the power is ON, and the unit is in the standby mode.



*1 See **Setting a 4-digit Handset PIN** (P.17) for more details.

5.5.2.1. Setting a 4-digit Handset PIN

You can program a 4-digit handset PIN (Personal Identification Number) with the Handset.
The factory preset is 0000.
Changing the PIN may prevent the unauthorised use of your unit by another person.
You need to enter the 4-digit handset PIN for the following functions.

— To set the call prohibition mode ON/OFF.
— Reset Handset Settings.
— To cancel a base unit.

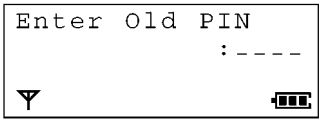
Make sure that the power is ON, and the unit is in the standby mode.

1 **Press** (MENU).

2 **Press** (▼) **or** (▲) **until the arrow points to "**`Setting Handset`**", then press** (▶).

3 **Press** (▼) **or** (▲) **until the arrow points to "**`Other Option`**", then press** (▶).

4 **Press** (▼) **or** (▲) **until the arrow points to "**`Change Hset PIN`**", then press** (▶).



5 **Enter the current 4-digit handset PIN.**[*1]

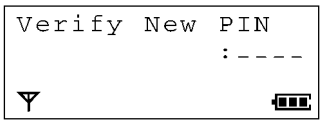
- The factory preset is 0000.

6 **Enter the new 4-digit handset PIN TWICE.**

- If you misdial, press (C). Digits are erased from the right. To erase all digits, press and hold (C).

1st

2nd



- A beep sounds.
- To return to the standby mode, press (⏻) or wait for 60 seconds.

- If 5 beeps sound in step 5, the entered 4-digit handset PIN is incorrect. Enter the correct PIN.

*1 If the current PIN is forgotten, press (✱)(7)(0)(0)(0) and you will be able to enter new PIN.

5.6. Registration

5.6.1. Registering a Handset in the Base Unit

You must register the handset in the base unit before use.

Charge the optional handset batteries for approximately 15 hours before initial use.
Make sure that the power is ON and the unit is in the standby mode.
Register the handset number within 1 minute. If not registered within 1 minute, press [⏻] on the handset to cancel the programming mode. Then start over again from step 1.

1 **Handset:**
Press [MENU].

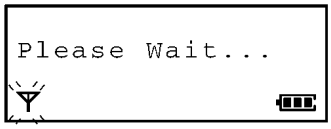
2 **Press [▼] or [▲] until the arrow points to "Setting Handset", then press [▶].**

3 **Base unit where handset is to be registered :**
Press and hold [•))] on the base unit for more than 10 seconds until a confirmation tone sounds.

4 **Handset:**
Press [▼] or [▲] until the arrow points to "Registration", then press [▶].

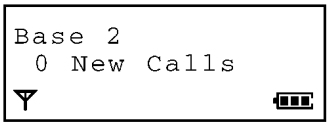
5 **While the arrow is at "Register H/set", press [▶].**
The available base unit numbers are displayed.

6 **Press [▼] or [▲] to select the desired base unit number, then press [▶].**
The number is assigned as the base unit number for the handset.



7 **Enter the 4-digit base unit PIN.**

8 **Press [MENU].**
"Please Wait..." is displayed, then a confirmation tone sounds.
The handset will return to the standby mode. The current connected base unit number will be displayed.



To register the handset in more than one base unit, repeat from step 1 with the other base unit(s).

You can exit the programming mode any time by pressing [⏻].
The base unit number which the handset is currently in contact with can be displayed in the standby mode. Calls (both incoming and outgoing) can be conducted only via the displayed base unit (even if the radio areas overlap with neighbouring base units).

5.6.2. Cancelling a Handset Registration in the Base Unit

Each handset can cancel itself or another handset.

Make sure that the power is ON, and the unit is in the standby mode.

1 **Press** (MENU).

2 **Press** (▼) **or** (▲) **until the arrow points to "**`Setting Base`**", then press** (►)

"`Input Command`" is displayed.

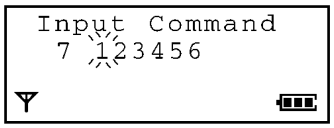
3 **Press** (7).

4 **Enter the 4-digit base unit PIN.**

The current registered handset number(s) is/are displayed.

5 **Enter the handset number(s) you desire to cancel.**

The selected handset number(s) flash(es).



If you misdial, press the number(s) again.

6 **Press** (MENU).

A beep sounds.
The display will return to "`Setting Base`". To return to the standby mode, press (POWER).

You can exit the programming mode any time by pressing (POWER).

5.6.3. Cancelling a Base Unit

If another handset is out of range and/or its power is OFF when cancelling a handset registration in the base unit, the previous base unit number will still remain in the cancelled handset. Therefore, you need to cancel the base unit registered **in the cancelled handset**.

Make sure that the power is ON, and the unit is in the standby mode.

1 **Press** (MENU).

2 **Press** (▼) **or** (▲) **until the arrow points to "**`Setting Handset`**", then press** (►).

3 **Press** (▼) **or** (▲) **until the arrow points to "**`Registration`**", then press** (►)

4 **Press** (▼) **or** (▲) **until the arrow points to "**`Cancel Base`**", then press** (►)

"`Enter H/set PIN`" is displayed.

5 **Enter the 4-digit handset PIN.**

Registered base unit(s) is(are) displayed.

6 **Press** (▼) **or** (▲) **until the arrow points to the base unit(s) you desire to cancel, then press** (►)

"✓" marks the selected base unit.

7 **Press** (►).

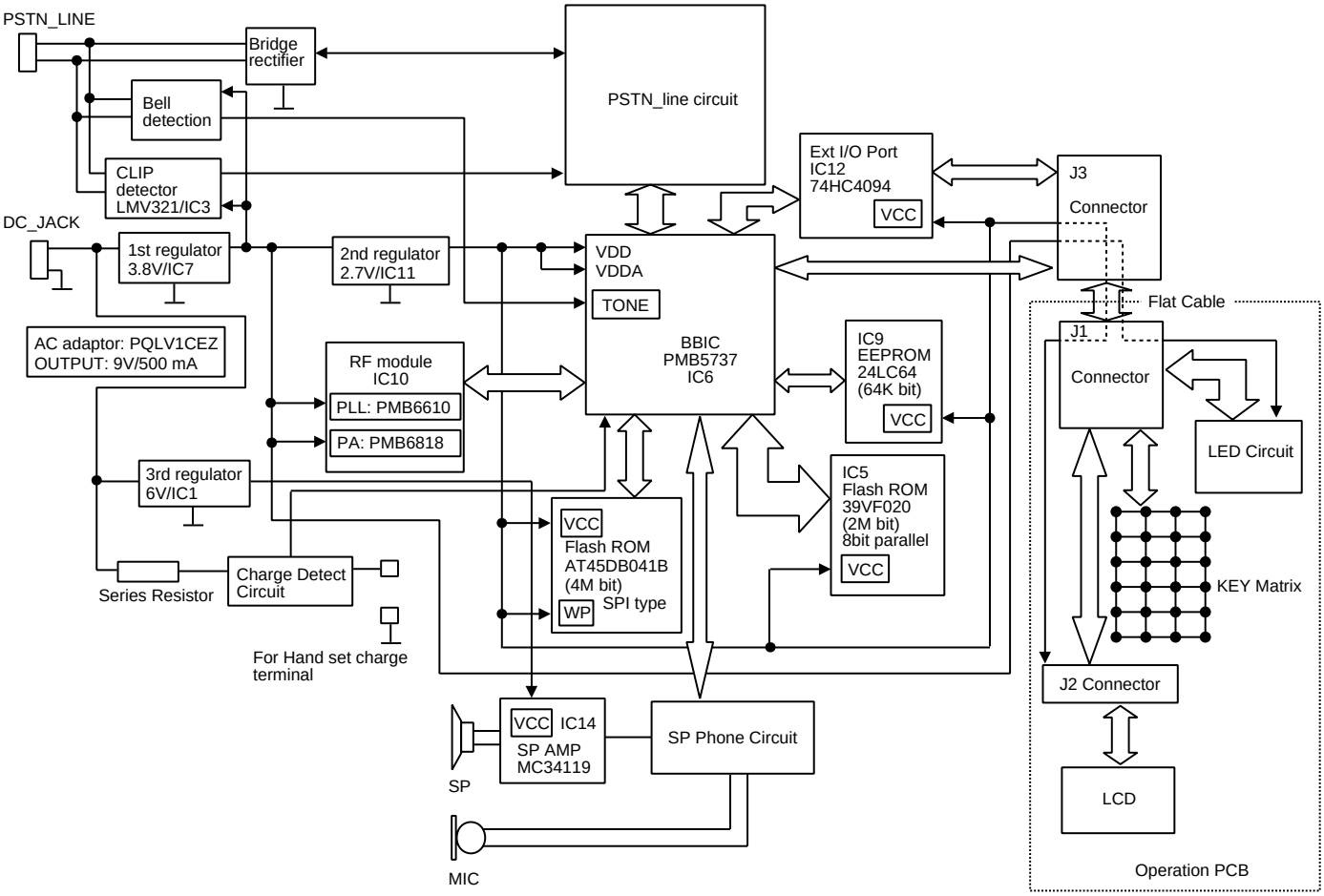
"`Clear ?`" is displayed.

8 **Press** (▼) **or** (▲) **to select "** `YES` **", then press** (MENU).

A beep sounds and "`CLEARED`" is displayed.
To return to the standby mode, press (POWER).

6 CIRCUIT OPERATION (BASE UNIT)

BLOCK DIAGRAM BASEBAND SECTION AND LINE INTERFACE (BASE UNIT)



KX-TCD735AXM: BLOCK DIAGRAM (BASE UNIT) Main

Fig. 17

6.1. THE BASE-BAND SECTION

6.1.1. INTRODUCTION (SEE Fig. 17)

The base-band section consists of a base-band integrated circuit (BBIC), a Flash PROM and an EEPROM.

6.1.2. THE BASE-BAND INTEGRATED CIRCUIT (BBIC)

The CICB00001367 (PMB5737 : IC6) is a CMOS device designed to handle all the audio, signal and data processing needed in a DECT base unit. It contains a "burst mode controller" which takes care of DECT specific physical layer and radio section control. It also contains an ADPCM codec filter used for speech encoding and decoding in the DSP section, a general purpose microcontroller, various other ADC´s, DAC´s, timers and power control circuitry.

The BBIC interfaces to its external PROM (IC5) via a data/address/control bus. It connects to the EEPROM (IC9) via a serial interface, and a second serial interface is used during manufacture and service to connect to an external computer.

6.1.3. FLASH PROM (SEE Fig. 18)

The 2 Mbit (IC5) Flash PROM contains the operational firmware for the microcontroller. It is interfaced to the data/address/control bus using address lines A0 to A17, data lines D0 to D7, and chip select (pin 30), output enable (pin 32), and write (pin 7).

6.1.4. EEPROM (SEE Fig. 18)

The electrically erasable PROM PQVIT2464WM6 (IC9) is used to store all the temporary operating parameters for the base (see **EEPROM LAYOUT (BASE UNIT)**). It uses a two-line serial data interface with the BBIC, with bi-directional data on pin 5 (TP104), and clock on pin 6 (TP3).

6.1.5. SERIAL FLASH ROM (SEE Fig. 18)

The 4Mbit (IC8) Serial Flash ROM contains the audio data for TAM operation.

It is interfaced to the clock/input/output using serial interface SCK, SI and SO.

6.1.6. CLOCK GENERATION (SEE Fig. 18)

single clock generator in the BBIC uses an external crystal X1 to derive all clock frequencies used in the base. The crystal is tuned to the exact frequency of 10.368 MHz during manufacture.

The BBIC provides a reference clock signal **SYRI** (pin 5, TP101) which is used to drive the PLL circuitry in the RF module. The basic data rate for **TXDA** (pin 12 and **RXDA** (pin 20) is 1.152 Mbits/s, which is 10.368MHz divided by 9.

6.1.7. FACTORY SERIAL PORT (SEE Fig. 18)

In order to communicate with the base band section during manufacture and servicing (using a PC) a serial data link has been provided.

Serial data input/output is provided through the SDA terminal (J102). The data is clocked through using the SCL terminal (J103). A ground terminal is provided by J104.

The serial port terminals J100 to J104 are connected to by means of test probe pads on the ground plane side of the pcb.

6.1.8. AUDIO PATH-RX AUDIO-LINE INPUT (SEE Fig. 18)

Audio from the line interface TXAF (TP97) enters the BBIC on pin 134. The audio signal passes through the analogue part of the BBIC where it is amplified and converted to a digital audio stream signal. The burst mode controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP standard DECT frame, assigning to a time slot and channel etc. to emerge on pin 12 as TXDA.

6.1.9. AUDIO PATH - TX AUDIO - LINE OUTPUT (SEE Fig. 18)

Audio from the receiver RXDA enters the BBIC on pin 20 as GAP standard DECT frames. It passes through the decoding section burst mode controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP where it is turned back into analogue audio. This is amplified by the analogue front end and emerges at pin 126 - i.e. the RXAF signal of the line interface.

6.1.10. TAM VOICE PROMPT AND DATA (SEE Fig. 18)

TAM voice prompt and data are stored at SERIAL FLASH ROM (IC8).

When recording, BBIC (IC6) write voice data to IC8 via V_SI signal.

When playing, BBIC (IC6) read voice data from IC8 via V_SO signal.

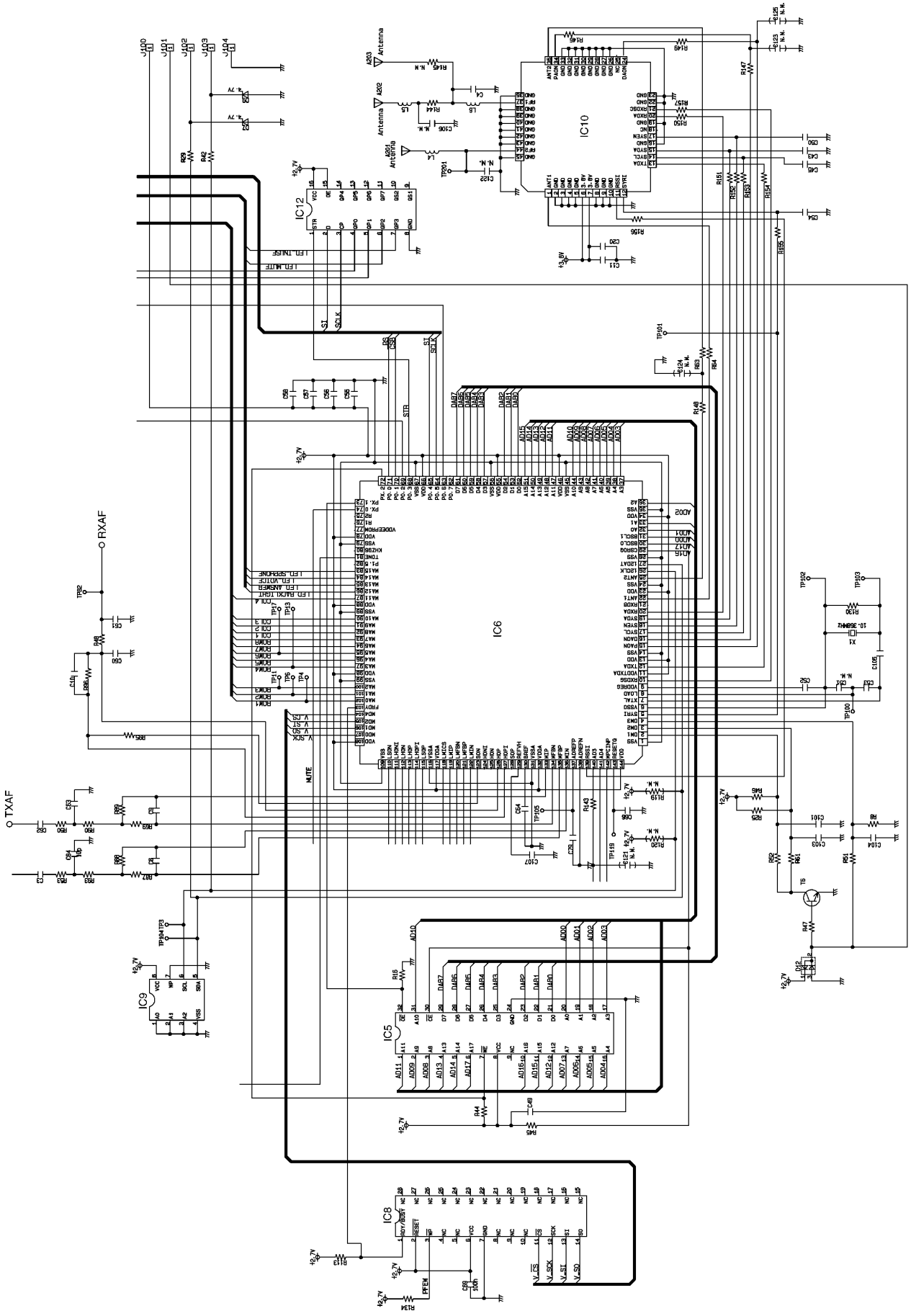

IC6
IC10
IC12
IC5
IC8
IC9
RXAF
TXAF
MUTE
LED_TMUSE
LED_MUTE
LED_SPEAKONE
LED_VOICE
LED_ANSWER
LED_BACKLIGHT
SI
SCLK
STR
+2.7V
+3.6V
X1
10.368MHz

Fig. 18

6.2. THE LINE INTERFACE SECTION (SEE BLOCK DIAGRAM Fig. 17)

6.2.1. INTRODUCTION

This section consists of the telephone line interface, bell detector, charge-pulse detector, hook switch, pulse dialing circuits, audio circuits, DC mask & line impedance circuits, power supplies, and battery charger circuits.

6.2.2. TELEPHONE LINE INTERFACE (SEE Fig. 19)

The telephone line is connected to a bridge rectifier D8. Surge suppressor SA3 protects against excessive line voltages. Test points are TP40 (A), TP26 (B). Bridge rectifier D8 provides for lines of either polarity. The output of D8 is “Line +” (TP50) and “Line -” which is ground.

6.2.3. BELL DETECTOR (SEE Fig. 19)

The AC ringing signal is detected by phoptocoupler IC2, using its internal diode in conjunction with D4. DC from the line is blocked by C2. The other components D2, D3, and R3 reduce current and increase the circuit impedance in line with national requirements. When ringing is detected IC2 will turn on, and the RING line will be dragged to a low voltage.

6.2.4. CLIP CIRCUITS (SEE Fig. 19)

The CLIP signal is detected by IC3 and sent to the BBIC through the **/TXAF** line as a square waveform. The CLIP_STATE signal from the BBIC is used to provide a CLIP impedance through a combination of components selected from R85, R86, C93, C37 and R1. The combination depends upon the CLIP requirements of the specific country - often there is no requirements for the CLIP_STATE impedance.

T10 disables the CLIP signal during the off-hook condition.

6.2.5. HOOKSWITCH (SEE Fig. 19)

T8 is the hookswitch, driven by T9. When the phone is “off-hook”, the **HOOK** control signal from the BBIC will be a high logic level (+2.7V), and both transistors will be on, thus T8 will “loop” the line. The zenner diode D10 protects transistors T11 to T13 against transient line voltages.

6.2.6. PULSE DIALING (SEE Fig. 19)

During pulse dialing the hookswitch (T8, T9) 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 T11.

6.2.7. AUDIO CIRCUITS (SEE Fig. 19)

The loop current (typically 40mA) passes through T13, R57 and R56. R54 and R55 provide dc biasing for the base of T13. The line output signal from the BBIC **RXAF** is DC decoupled by C47 and amplified by T13. The emitter load (R57, R58 and C46) is complex in order to achieve the right frequency response with the complex line impedance. e line input signal **TXAF** is taken from the junction of R41 and R49. Phase cancellation is provided at this point by R70 so that only the incoming line audio should be passed to the BBIC on TXAF.

6.2.8. DISCONNECT (SEE Fig. 19)

The disconnect (DSC) circuit detects whether a second telephone receiver has been picked up while the TAM is operating on the same loop. The second telephone will cause the current through the unit to drop. This is manifests as a reduced voltage across R56 which is detected at the AD3 input port (pin 140) of the BBIC.

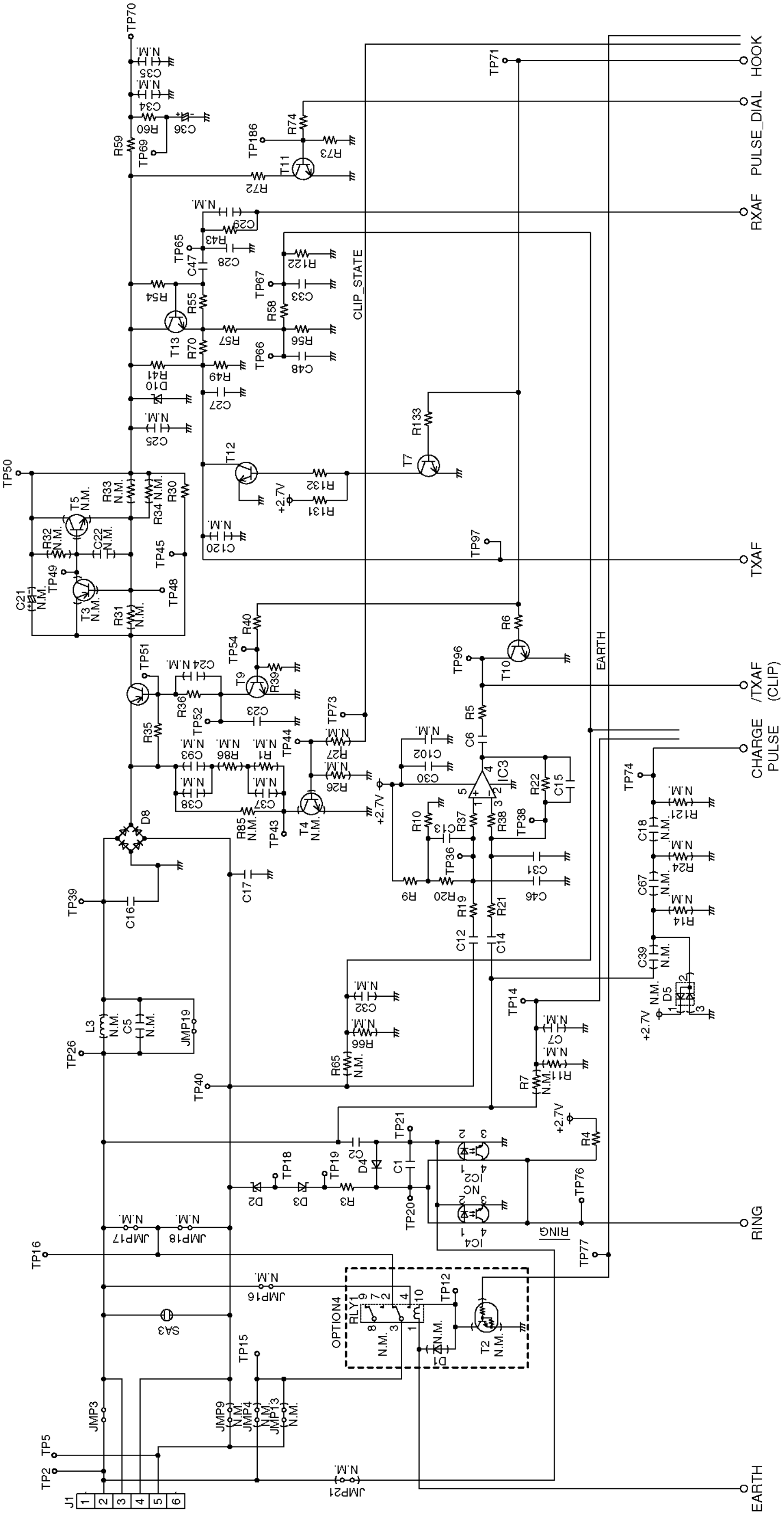


Fig. 19

6.2.9. POWER SUPPLIES (SEE Fig. 20)

The AC adaptor for the KX-TCD735 provides unregulated DC through J2 for the handset charge terminal, 6V regulator (IC1) the 3.8V regulator (IC7) and the Relay coil (RL1) where fitted.

The 3.8V supply from IC7 is used for the RF module, and is further reduced by IC11 to 2.7V for the BBIC supply.

The 6V supply from IC1 is used for SP-Phone AMP. (IC14).

R17, 18 and 28 provide short circuit/over current protection at the handset charge terminal.

R109, D6, T1, R110, R111, R112 and D11 are charge detection circuit, in order to detect whether put Handset on cradle or not.

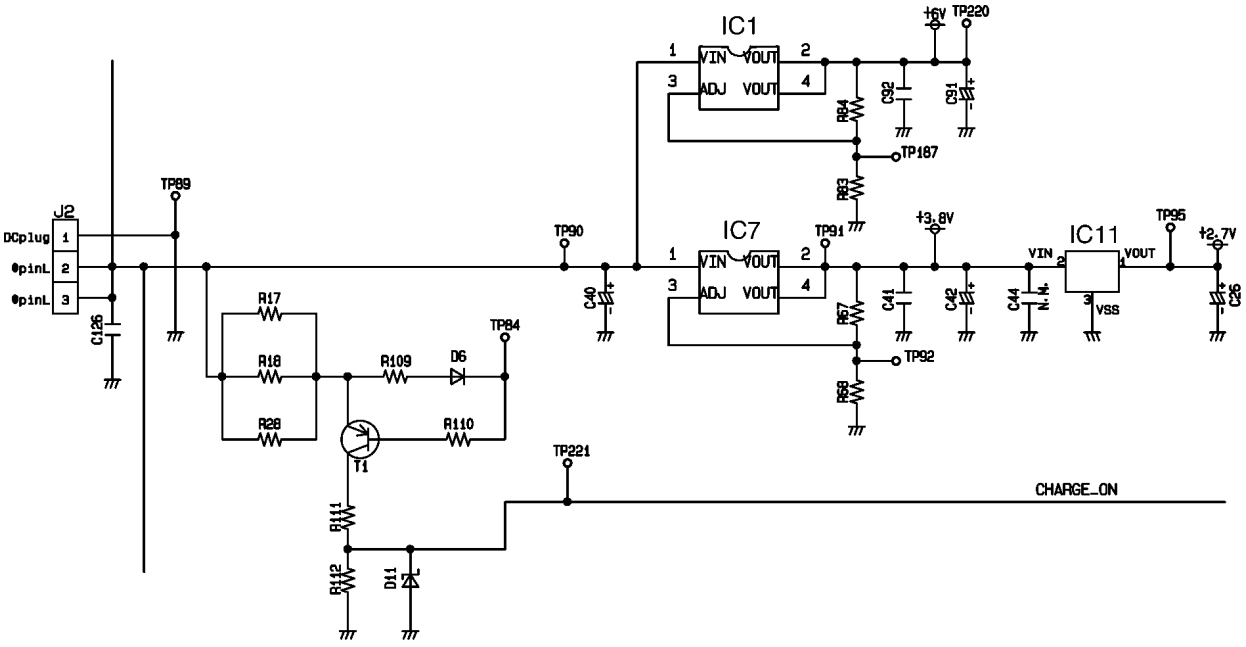


Fig. 20

6.3. Speakerphone (SEE Fig. 21)

The extra circuitry for the TCD735 speakerphone circuit comprises a microphone, a speaker, and a speaker amplifier IC14. However, note that the majority of the speakerphone functionality is contained within the existing BBIC IC6. This includes the switching between microphone and speaker path, echo suppression and cancelling, etc.

Around circuit of T14 is filter in order to reduce sampling noise.

The DC supply to the speakerphone amplifier IC14 pin 6, is a 6V supply, derived from the regulator IC1 (**TP220**).

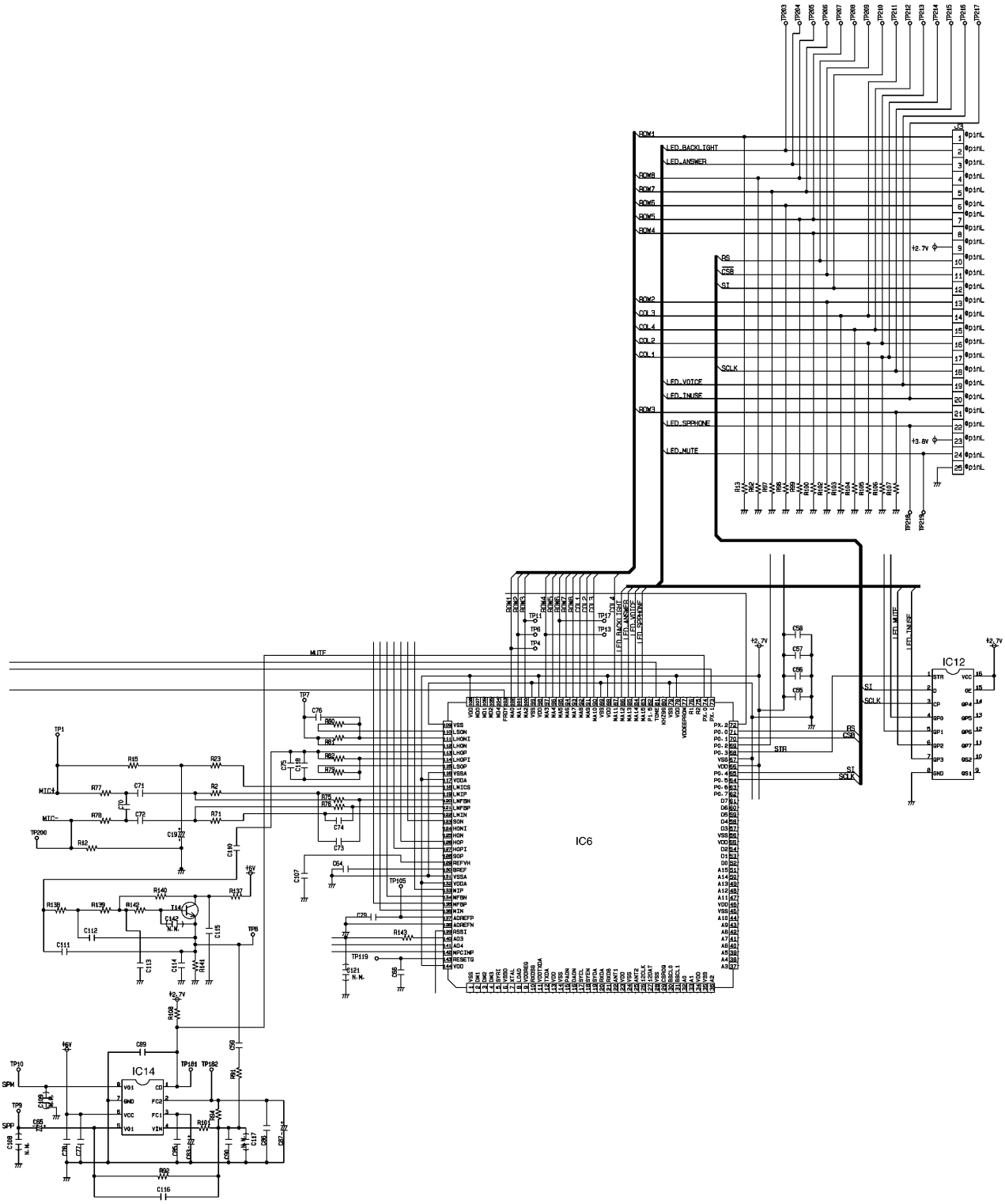


Fig. 21

6.3.1. Path from Telephone Line to Speaker

Audio from the telephone line passes via the normal signal path of J1 tel-line connector (**TP26** and **TP40**), D8 bridge rectifier, T8 hookswitch (**TP50**), and R41, to BBIC IC6 pin 133. In the BBIC it is converted from an analogue audio signal into digital data in the BBIC´s internal codec. Additionally, the speakerphone switching and echo suppression functions are contained within the BBIC. An eight level speaker volume control is provided, and the functionality for this is also contained within the BBIC. The analog data is sent from the BBIC IC6 pin 113 to the speaker amplifier IC14 pin 4, via filter circuit (**T14**). The audio signal is amplified in IC14, and the push-pull audio output is sent from IC14 pins 5 and 8 to the speaker (**TP9**) and (**TP10**).

6.3.2. Path from Microphone to Telephone Line

DC bias for the microphone is provided from the BBIC IC6 pin 118 (positive bias) and GND (negative bias). The bias is fed to the microphone via R15 and R23 (positive bias) and R12 (negative bias). The balanced audio signal from the microphone is fed to the BBIC (IC6), via R77, C71 and R2 (Positive), R78, C72 and R71 (negative).

The analogue signal is converted into a digital signal in the BBIC IC6 pin 119 and 122. The speakerphone switching and echo suppression functions are contained within the BBIC. The digital data is converted again into an analogue signal in the BBIC´s internal codec.

The analogue signal is fed from IC6 pin126, via T13 audio amplifier, T8 hookswitch (**TP50**), D8 bridge rectifier, to J1 tel. line connector (**TP26** and **TP40**), and out to the telephone line.

6.4. Keyboard

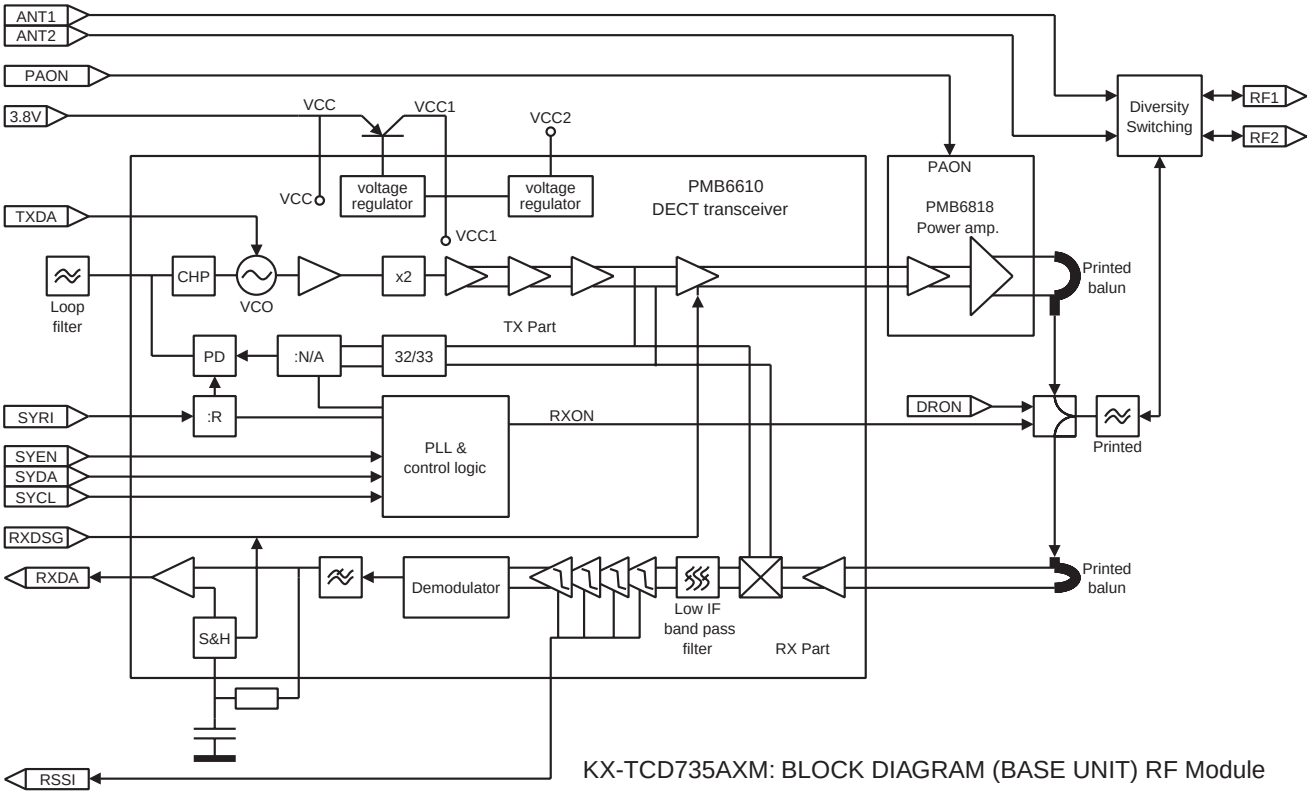
The TCD735 is fitted with a keyboard which provides the user with comprehensive speakerphone and TAM facilities, and includes a full numeric keypad for dialling out.The keyboard is mounted on a separate pcb, and is connected to the main pcb via J3 connector.

Keyboard scan pulses and LED drive signals are fed from the BBIC address/data bus to the keyboard via and connector J3.Key press information from the keyboard is fed via J3 to the BBIC address/data bus.

LCD is connected to keyboard via J2 (LCD connector), and it is controled by BBIC (IC6).

6.5. RF MODULE

BLOCK DIAGRAM RF MODULE



KX-TCD735AXM: BLOCK DIAGRAM (BASE UNIT) RF Module

Fig. 22

6.5.1. RF MODULE (SEE BLOCK DIAGRAM Fig. 22)

The RF Module consists of two main components: the PMB6610 transceiver and the PMB6818 power amp.

In the transceiver the 10.368MHz clock signal SYCL is multiplied to around 1.9GHz using PLL (Phase Locked Loop) control.

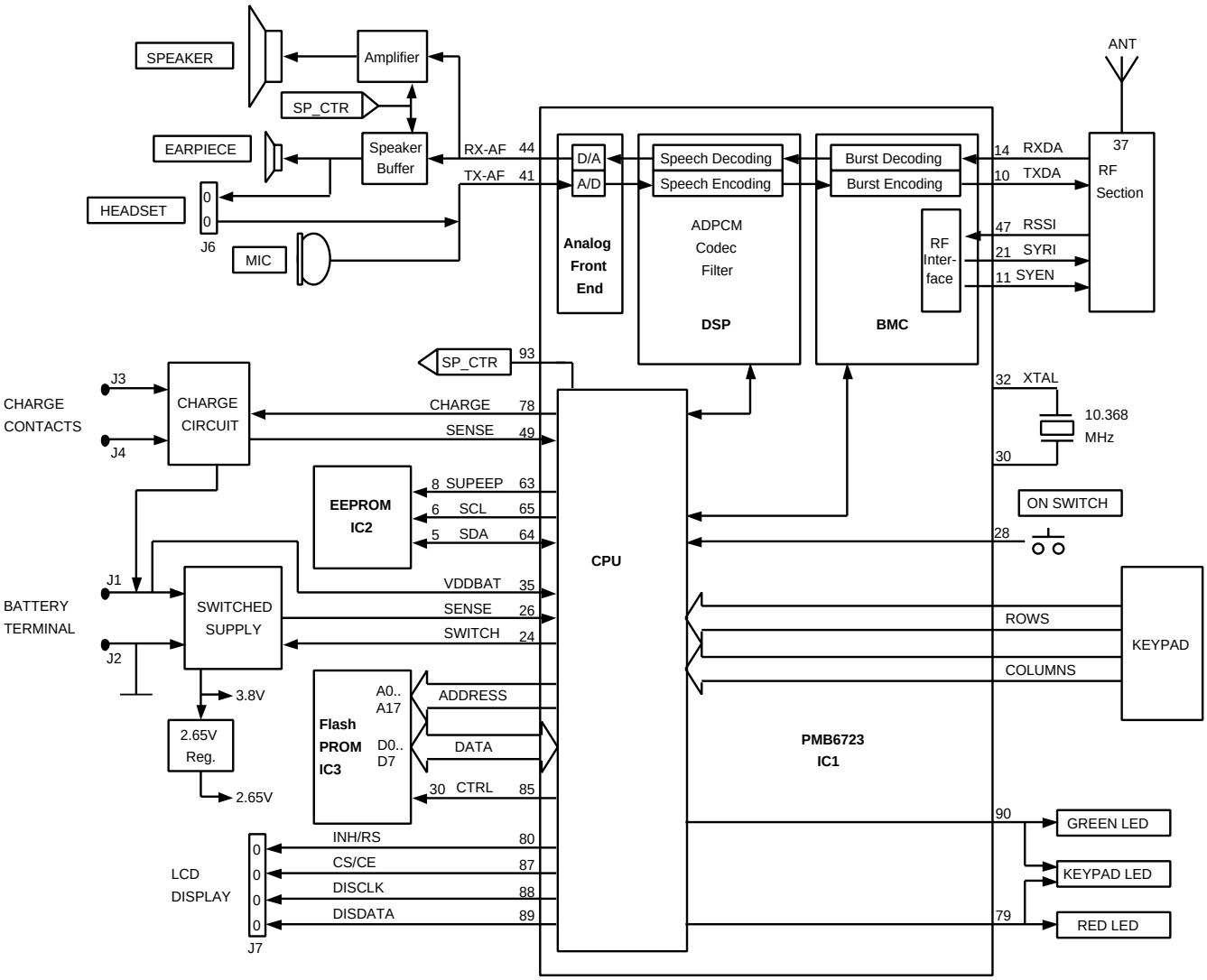
The TXDA signal is used to control the modulation of this frequency to 1.87GHz to 1.93GHz.

Received signals are demodulated, filtered and sent to the BBIC via the RXDA line.

The RSSI (Radio Signal Strength Indicator) signal enables the implementation of diversity switching whereby two antennae can be mounted in different orientations and their signals compared. The one with better reception can be selected by the BBIC using the ANT1 and ANT2 lines.

7 CIRCUIT OPERATION (HANDSET)

BLOCK DIAGRAM BASEBAND SECTION (HANDSET)



KX-TCD735AXM: BLOCK DIAGRAM (HANDSET) Main

Fig. 23

7.1. THE BASE BAND SECTION

7.1.1. INTRODUCTION

The base-band section consists of a base-band integrated circuit (BBIC), a Flash PROM, an EEPROM, an LCD Display, a Microphone, an Earpiece, and power supply/battery management circuits.

7.1.2. THE BASE-BAND INTEGRATED CIRCUIT (BBIC)

The PMB6723 (IC1) is a CMOS device designed to handle all the audio, signal and data processing needed in a DECT handset. It contains a "burst mode controller" which takes care of DECT specific physical layer and radio section control. It also contains an ADPCM codec filter used for speech encoding and decoding in the DSP section, a general purpose microcontroller, various other ADC´s, DAC´s, timers and power control circuitry.

The BBIC interfaces to its external PROM (IC3) via a data/address/control bus. It connects to the EEPROM (IC2) via a serial interface (SDA and SDC). This serial interface is also used during manufacture and service to connect to an external computer.

7.1.3. FLASH ROM (SEE Fig. 24)

The 1Mbit Flash PROM IC3 contains the operational firmware for the BBIC´s general purpose microprocessor. It is interfaced to the BBIC using address lines A0 to A17, data lines D0 to D7, and control lines CE (Chip Enable), WE (Write Enable) and OE (Output Enable).

7.1.4. EEPROM (SEE Fig. 24)

The electrically erasable PROM IC2 is used to store all the temporary operating parameters for the handset (see **EEPROM LAYOUT**). It uses a two-line serial data interface with the BBIC, with bi-directional data on IC2 pin5 (TP52), and a 45 kHz clock on pin6 (TP53).

7.1.5. FACTORY SERIAL PORT (SEE Fig. 24)

In order to communicate with the handset during manufacture and servicing (using a PC) a serial data link has been provided.

Serial data input/output is provided through the I2DAT input (pin 64). The data is clocked through using the I2CLK pin (65). Test probe pads SDA and SDC are provided for Flash PROM download with I2DAT and I2CLK respectively.

To invoke the flash PROM download mode the MODE_SEL test pad must be connected to the 2.65V pad.

A Ground reference Test pad is also provided.

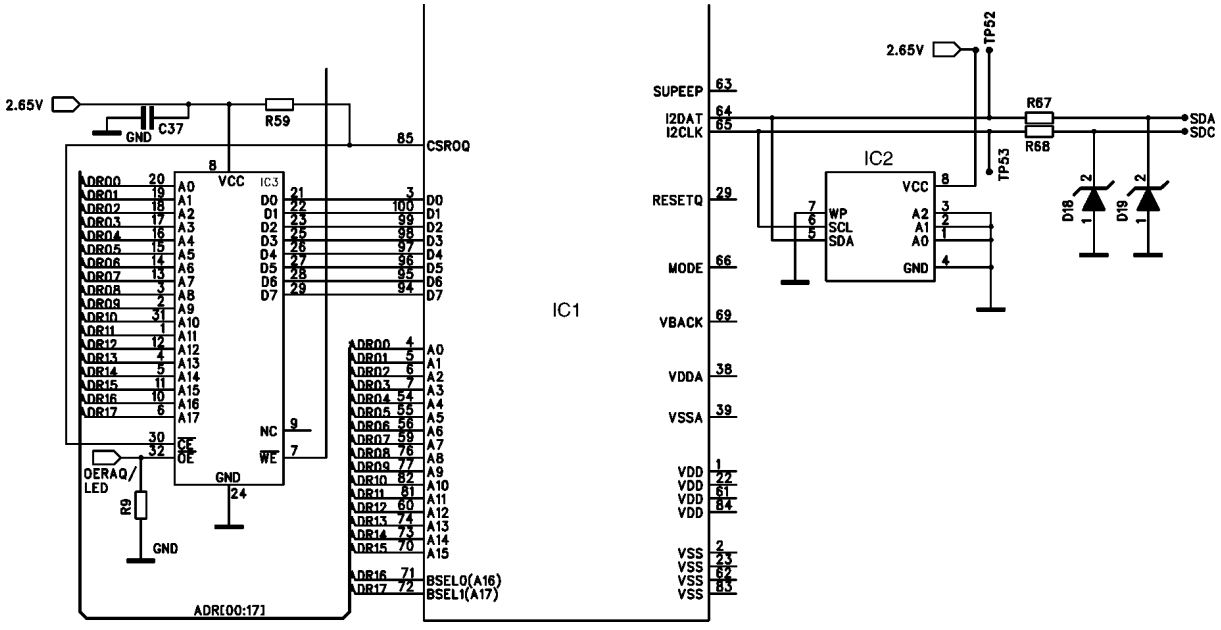


Fig. 24

7.1.6. AUDIO PATH - TX AUDIO (SEE Fig. 25)

The audio signal from the microphone (TP23) enters the BBIC at pin 44. RF decoupling and signal conditioning are provided by C17, R21, C14 and C25.

In the BBIC the signal passes through the analogue section where it is amplified and converted to a digital audio stream signal. The burst mode controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP standard DECT frame, assigning to a time slot and channel etc. to emerge on pin 14 as TXDA.

7.1.7. AUDIO PATH - RX AUDIO (SEE Fig. 25)

Audio from the receiver RXDA enters the BBIC on pin 10 as GAP standard DECT frames. It passes through the decoding section burst mode controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP where it is turned back into analogue audio. This is amplified by the analogue front end and emerges at pin 40 and 41. The telephone speaker is driven directly from the BBIC output ports.

The hands-free loudspeaker at SP+ and SP- is used to generate the ring alarm. When the handset is not in hands-free mode the HF_AM1 amplifier is deactivated by the SP_CTR control signal at pin 93 from the BBIC.

The earpiece speaker LS1 is driven directly from the HON and HOP output lines, pins 40 and 41, without any amplification.

A 2.5mm jack J6 is provided for connecting a headset.

7.1.8. CLOCK GENERATION (SEE Fig. 25)

A single clock generator in the BBIC uses an external crystal X1 to derive all clock frequencies used in the handset. The crystal is tuned to the exact frequency of 10.368 MHz during manufacture.

The BBIC provides a reference clock signal **SYRI** (pin 21, TP101) which is used to drive the PLL circuitry in the RF module. The basic data rate for **TXDA** (pin 14) and **RXDA** (pin 10) is 1.152 Mbits/s, which is 10.368MHz divided by 9.

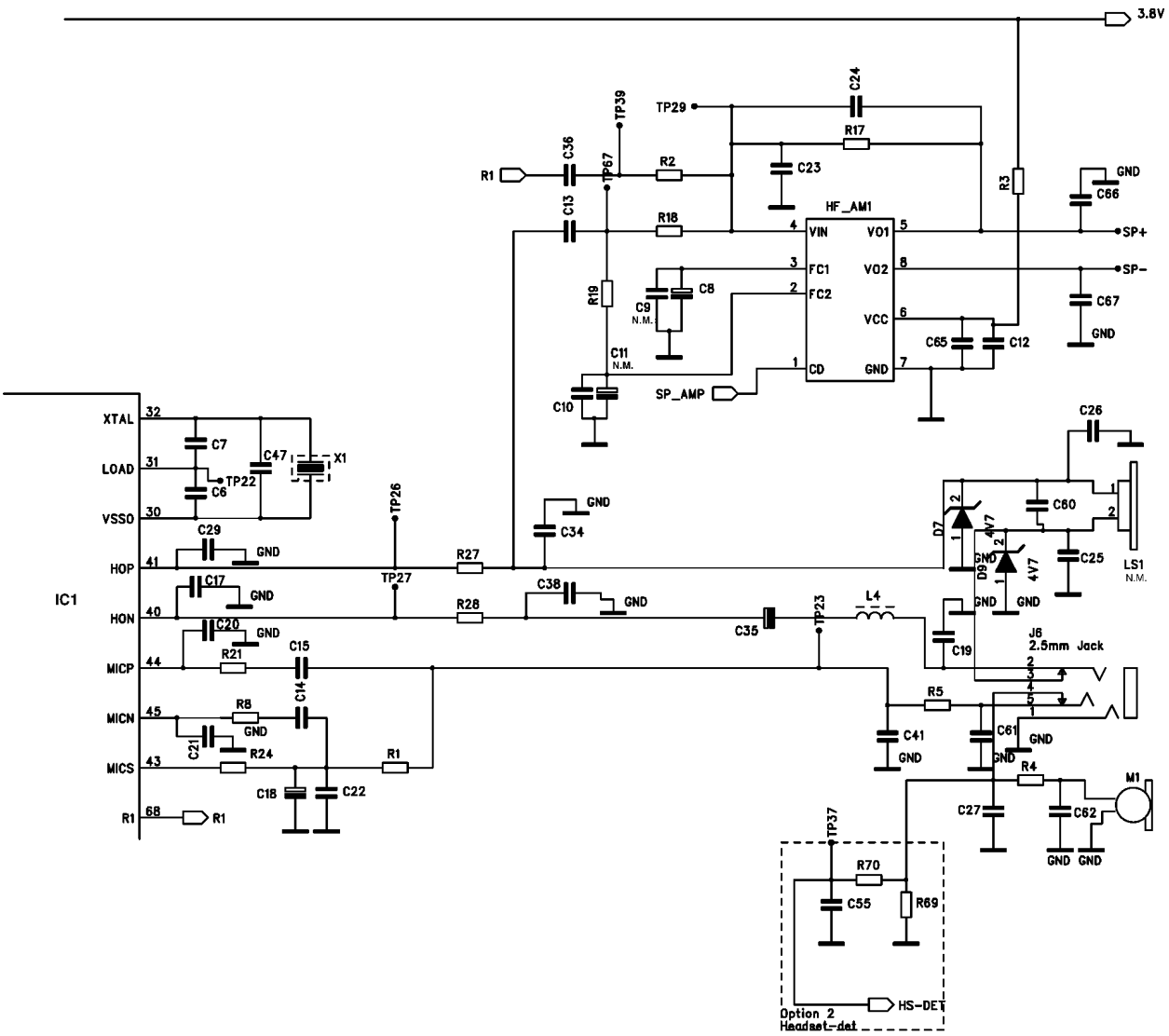

3.8V
TP29
TP39
TP67
C24
R17
C23
R1
C36
R2
C13
R18
R19
C9
N.M.
C8
C11
N.M.
C10
HF_AM1
VIN
VO1
FC1
VO2
FC2
VCC
CD
GND
SP_AMP
R3
GND
C66
SP+
SP-
C67
GND
C65
C12
IC1
XTAL
LOAD
VSSO
HOP
HON
MICP
MICN
MICS
R1
C7
C47
X1
C6
TP22
C29
GND
C17
GND
C20
GND
R21
C15
C14
R8
GND
C21
R24
R1
C18
C22
TP26
TP27
R27
R28
GND
C34
C38
GND
C35
TP23
L4
C19
D7
D9
4V7
GND
C60
C26
C25
LS1
N.M.
J6
2.5mm Jack
R5
C41
GND
C61
GND
R4
M1
C27
C62
GND GND
TP37
R70
C55
R69
HS-DET
Option 2
Headset-det

Fig. 25

7.1.9. KEYBOARD (SEE Fig. 26)

The keyboard “On” button is connected directly to pin 33 and 28 of the BBIC. When pressed it turns the handset on and off. All other keys are connected in a row/column matrix. They are scanned in five rows using scan pulses (only active when keys are pressed) from IC1 pins 15 to 19. The five key matrix columns are input to the BBIC on pins 51, 52, 53, 57 and 58.

7.1.10. LCD DISPLAY, AND DISPLAY DRIVER (SEE Fig. 26)

The LCD display receives data via a serial interface. Serial data is sent to the display on pin 6 of the J5 socket, with control lines at pin3 thru 6.

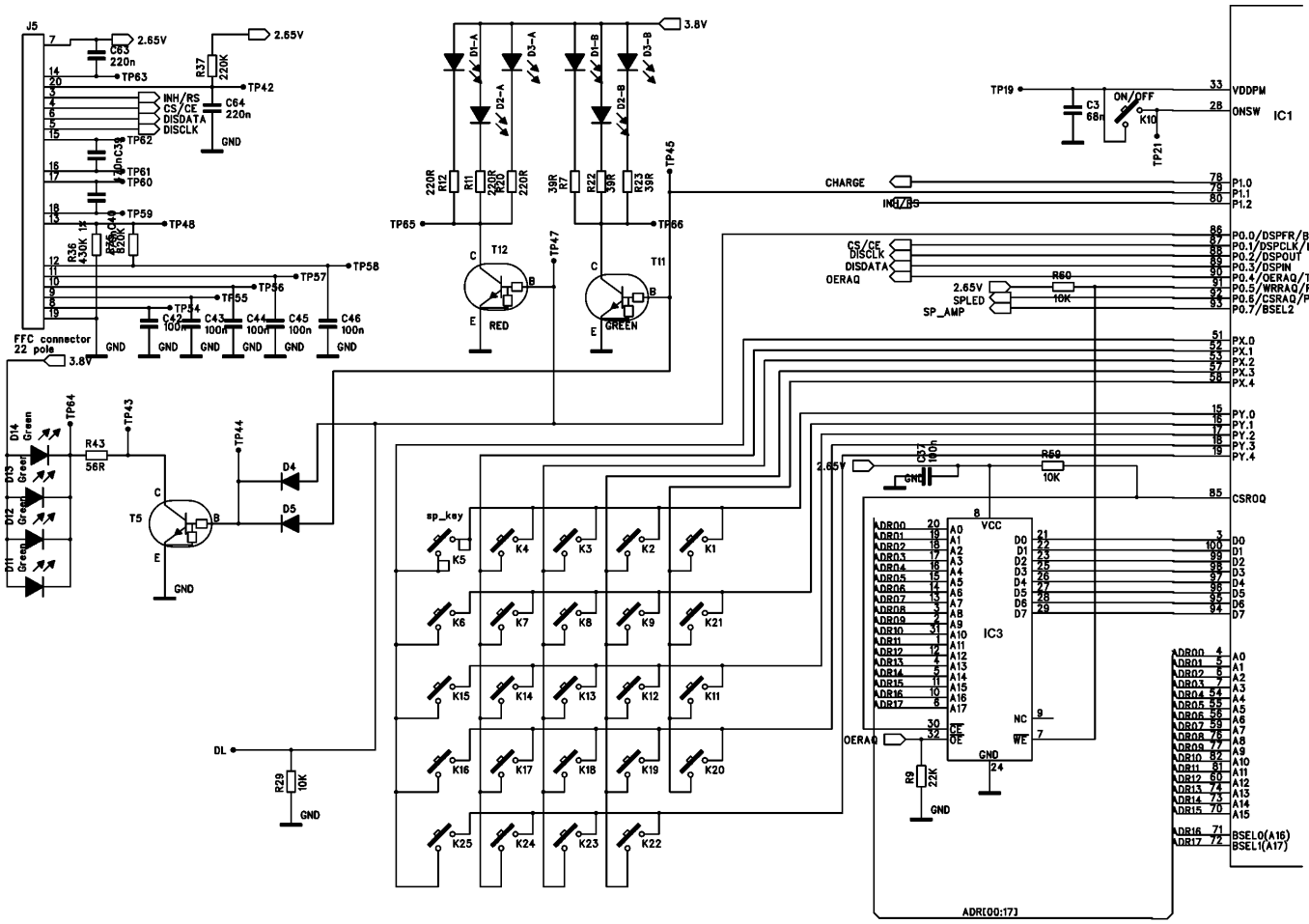


Fig. 26

7.1.11. BATTERY SUPPLY (SEE Fig. 27)

A switch mode boost converter is used to provide a 3.8V supply from the battery. This supply is sensed by the BBIC through pin 26 (TP14) so that the switching rate can be controlled by a FET (T3) driven from pin 24 (TP13). A resistor on the Source of the FET provides a current sense at pin 25 (TP12).

T3 switches the current through L1. When T3 switches off the back emf conducts through D16 and charges the reservoir cap C4.

7.1.12. 2.65V REGULATOR (SEE Fig. 27)

A 2.65V supply is provided for the BBIC and is regulated by the BBIC's on board control signal LRB (pin 37).

This reference is fed to the base of T6 to keep the "VREG+" line at 2.65V.

7.1.13. BATTERY CHARGING CIRCUIT (SEE Fig. 27)

The supply for the battery comes from the charge terminals at J3 and J4. Battery charge rate is controlled by switching the current through T7 such that the average charging current is 170mA. The current flow is monitored at pin 49 of the BBIC by measuring the voltage across R56.

D21 protects against the high voltage present on the charge contacts (J3 and J4) when there is no battery in the handset. R42 and C50 provide a signal to the BBIC (pin 27) to detect that the handset has been placed on the base charger.

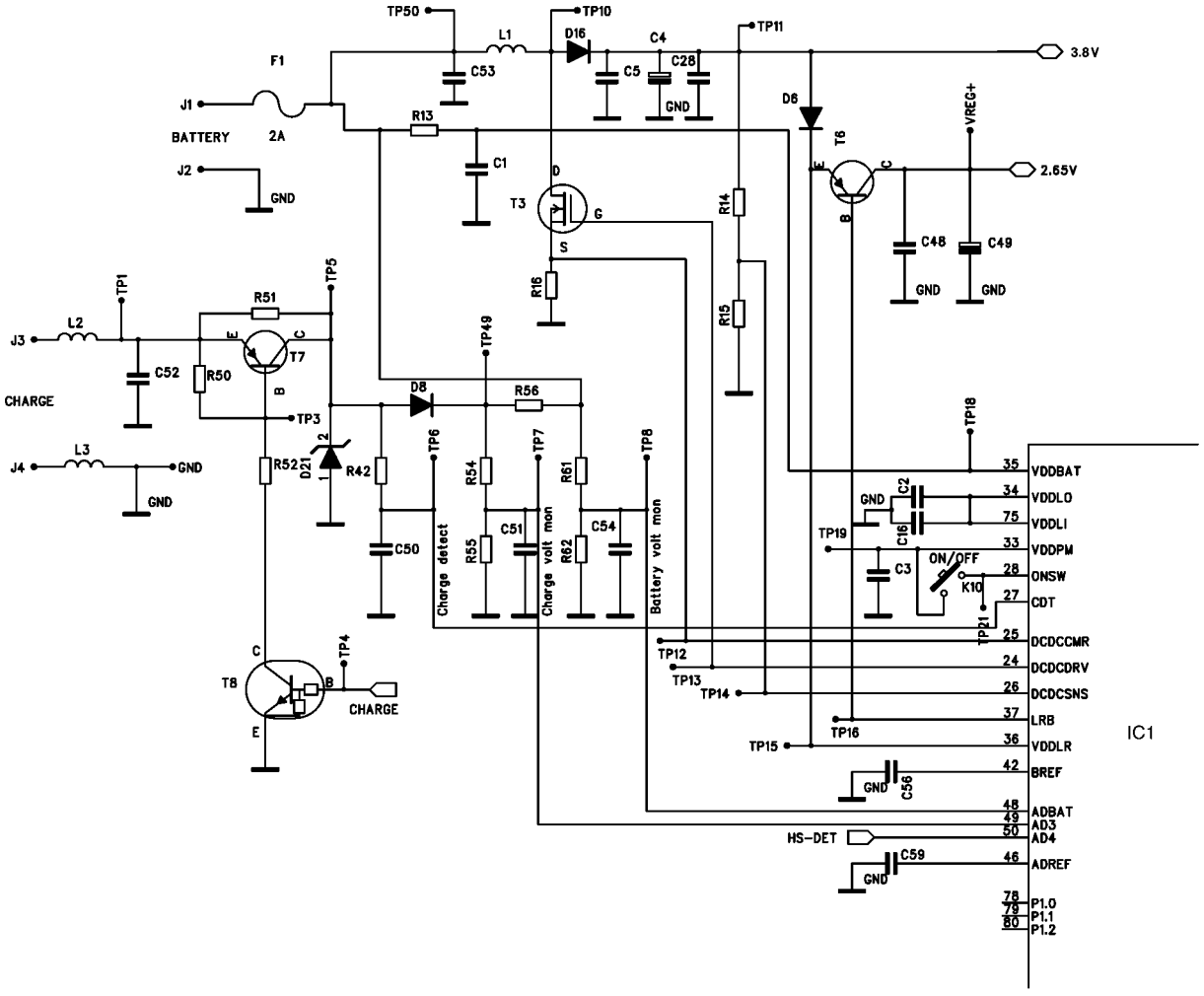


Fig. 27

7.2. RF SECTION

7.2.1. BLOCK DIAGRAM RF SECTION (HANDSET)

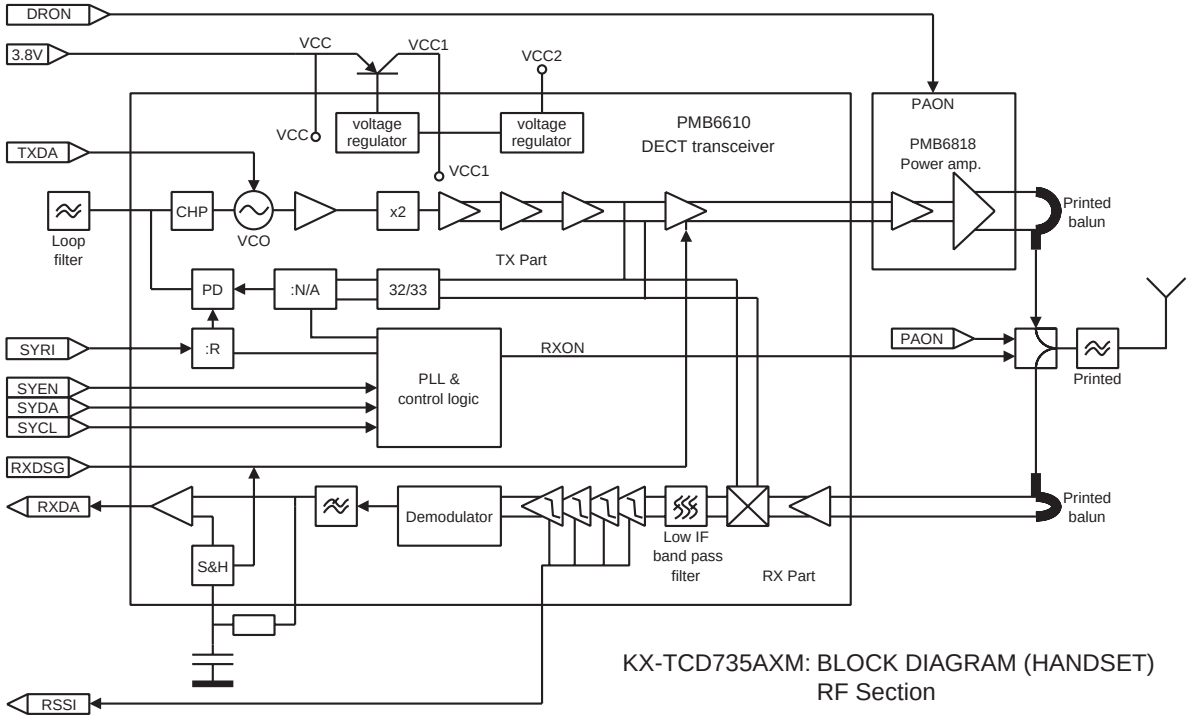


Fig. 28

The RF section consists of two main components: The PMB6610 transceiver and the PMB6618 power amp.

In the transceiver the 10.368MHz clock signal SYCL is multiplied to around 1.9GHz using PLL (Phase Locked Loop) control. The TXDA signal is used to control the modulation of this frequency to 1.87GHz to 1.93GHz.

Received signals are demodulated, filtered and sent to the BBIC via the RXDA line.

8 CHECK PROCEDURE (BASE UNIT)

8.1. PREPARATION

8.1.1. EQUIPMENT REQUIRED

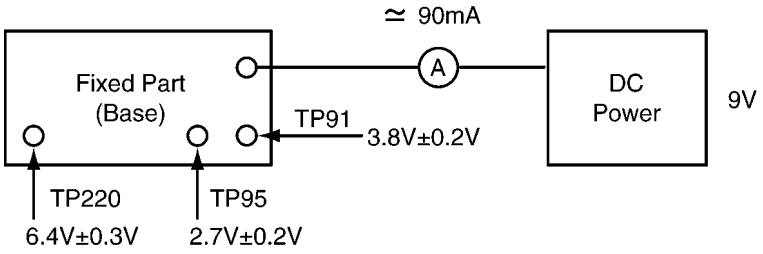
- DECT tester: Romde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision;±4ppm). Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 9V.
- Digital multi-meter (DMM): it must be able to measure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

8.1.2. JIGs AND PC

- EEPROM serial JIGs
  1. I2C PCB: PQZZTCD705BX
  2. RS232C cable: PQZZ1CD705BX
  3. Clip cable: PQZZ2CD705BX
  4. DC cable: PQZZ3CD705BX
- PC which runs in DOS mode.
- **Batch file** for PC setting

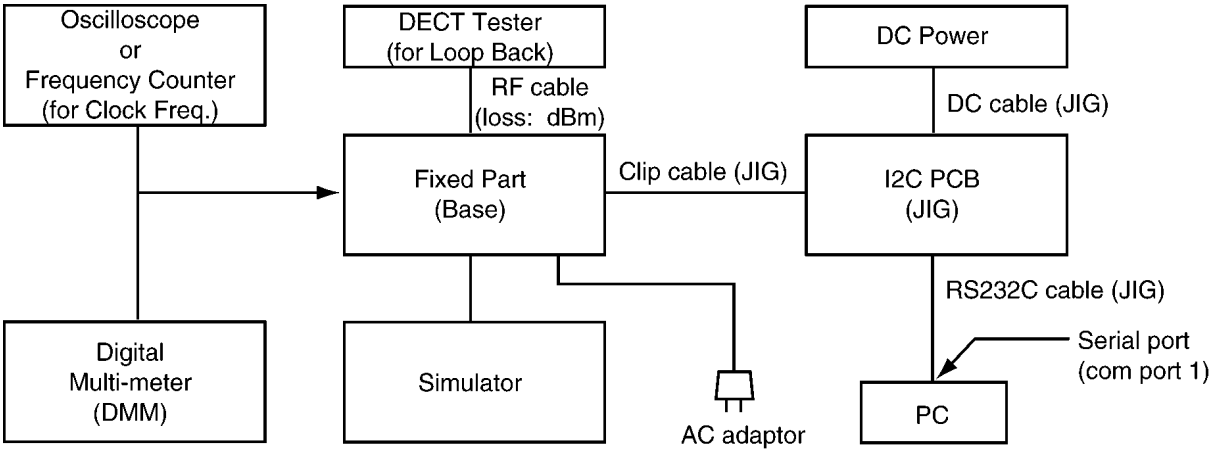
8.2. INITIAL POWER TESTS

1. Turn on the 9V supply.
2. Check for approx. 90mA current on the 9V supply line.
3. Check the 3.8V supply rail at TP91. It must be 3.8V ± 0.2V.
4. Check the 2.7V supply rail at TP95. It must be 2.7V ± 0.2V.
5. Check the 6.0V supply rail at TP220. It must be 6.4V ± 0.3V.



8.3. PC SETTING

8.3.1. CONNECTIONS



Note:

See **TELEPHONE LINE TESTS** (P.39) for more details.

8.3.2. PC SETTING

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

Note:

See the table below for frequently used commands.

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

8.4. SET THE CLOCK FREQUENCY

1. Turn on the 9V supply. (AC adaptor)
2. Enter "DEACTMAC" from the PC to switch off the RF unit.
3. Enter "CONTTX 0" to start continuous RF transmission.
4. Enter "EDEEPROM 00 00 02" to display the clock frequency adjustment value. *1
5. Connect the frequency counter probe to TP101 (or pin12 of the RF module) to measure the SYRI signal from the BBIC.
6. The clock frequency should be within 10,368,000Hz ± 10Hz. If not then enter "SETFREQ nn nn" where nn nn are the clock frequency adjustment values. An increase in the value will lower the clock frequency and vice versa. The maximum value is 03 FF.
7. Switch off the 9V supply.

Note:

*1 See **EEPROM LAYOUT (BASE UNIT)** (P.61) for more details.

8.5. POWER AND LOOPBACK TESTS

1. Connect the RF Cable from the CMD60 (DECT tester) to RF (IC10 pin44) and Ground plane of the base P.C.B. Use the minimum amount of stripped/exposed cable to solder to the contacts.
2. Switch on the 9V supply.
3. Set the CMD60 as shown below.

   TEST MODE: FP

   CONFIG MENU: SIGN, SCRAMBLE: OFF

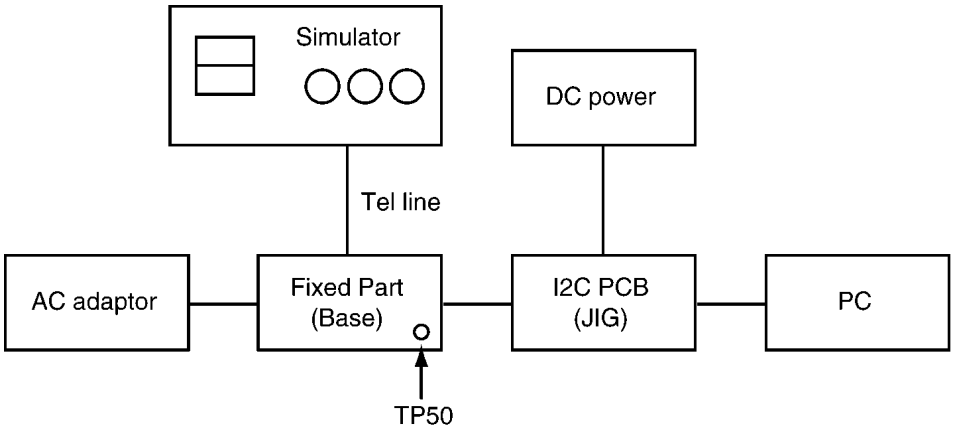
   MANUAL TEST: Loop Back mode (TRAFFIC SLOT: 4, TRAFFIC CARRIER: 5)

   CONNECT/EXT.ATT: _dBm (RF cable loss)
4. Invoke the "TESTMODE" batch file from the PC.
5. Press ACCEPT RFPI and SETUP CONNECT on the CMD60.
6. Enter “ANT2”.
7. Check the power (NTP): it must be between 20 and 25dBm.
8. Press MODULATION.
9. Set DATA TYPE to FIG 31.
10. Check frequency drift: must be 0 ± 35 kHz/ms.
11. Check frequency offset: must be 0 ± 40 kHz.
12. Check deviation or modulation (max ± B field) with data type "FIG 31": must be 340kHz to 380kHz.
13. Press POWER RAMP on the CMD60.
14. Check that the burst fits the mask.
15. Press Menu Up "↑" on the CMD60.
16. Press BER (Bit Error Rate).
17. Obtain the sensitivity by slowly reducing RF LEVEL until the BER falls below 1000ppm. The sensitivity is the RF LEVEL reading at this point. It must be < -88dBm.
18. Press Menu Up "↑" on the CMD60.
19. Press BEARER RELEASE and switch off the 9V supply.
20. Disconnect the RF cable from the PCB.

Note:

These tests can also be repeated on TRAFFIC CARRIERS 0 and 9.

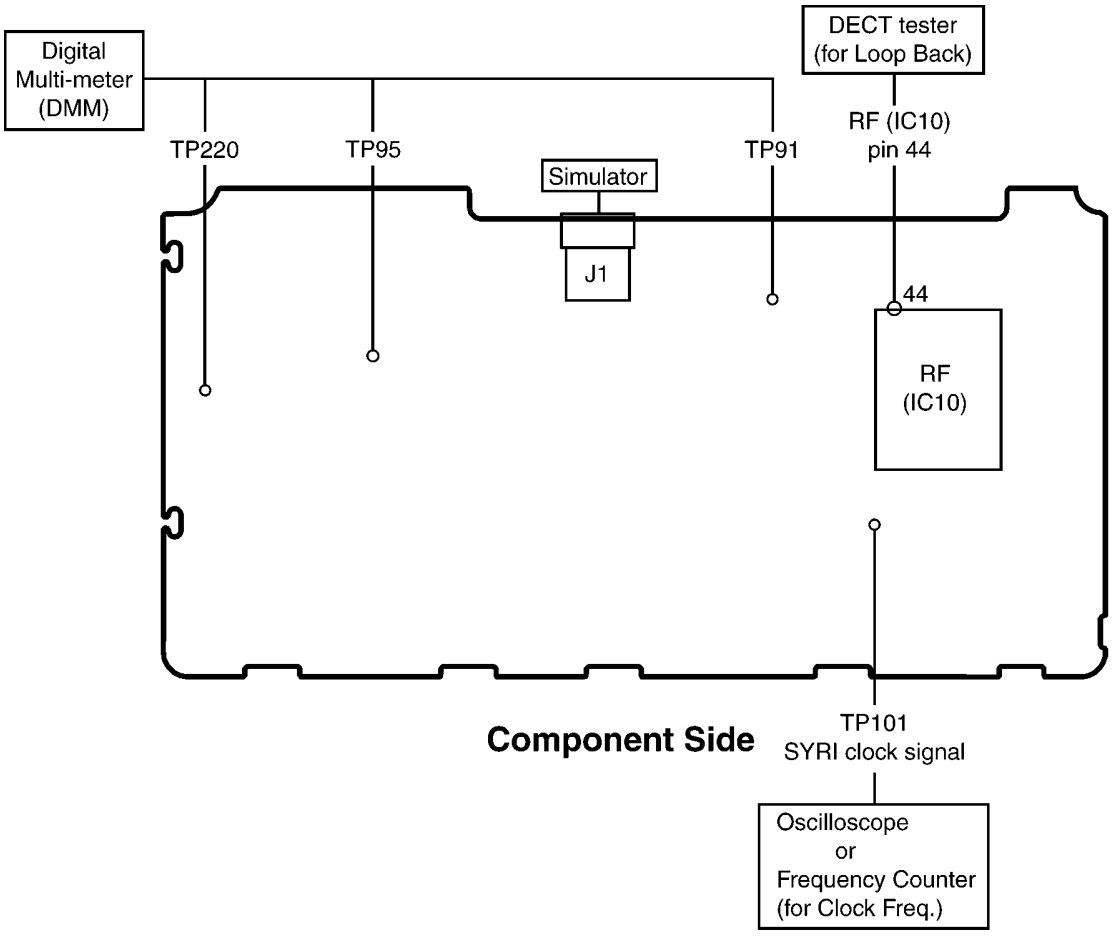
8.6. TELEPHONE LINE TESTS

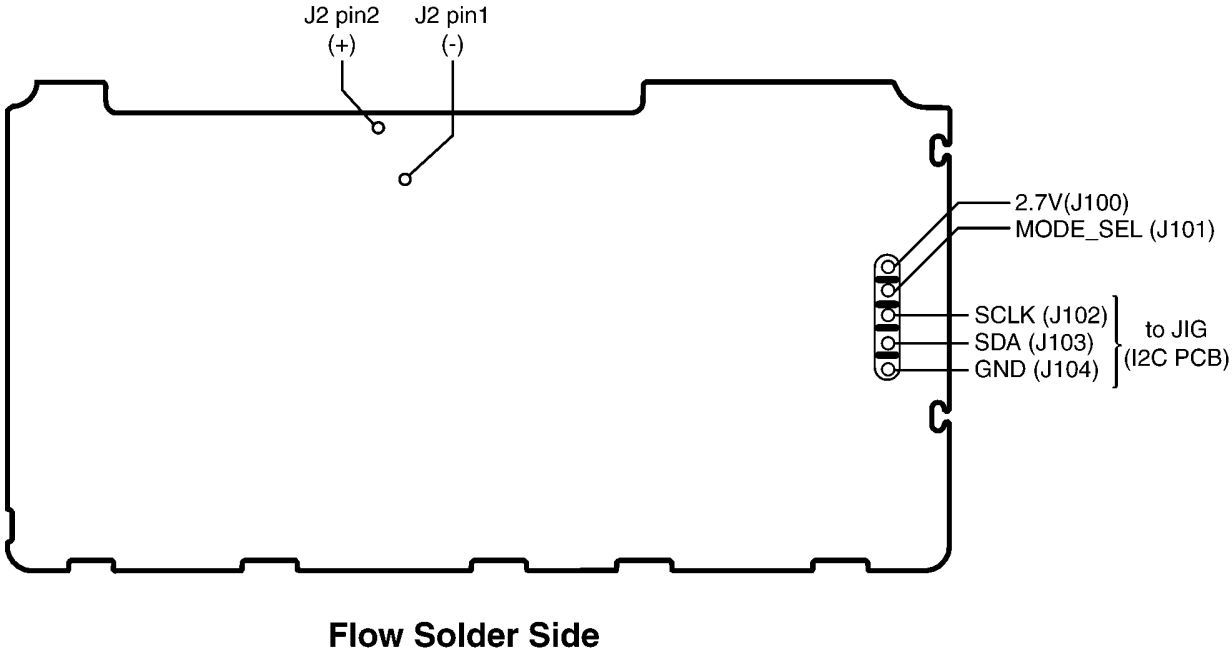


1. Switch on the 9V power supply.
2. Connect a telephone cord from the base unit to the line/DTMF test set.
3. Enter "HOOKOFF" from the PC to invoke an off-hook condition.
4. Set the current limit to 40mA on the line simulator.
5. Enter "HOOKON" from the PC to invoke the on-hook condition.
6. Check that the line current has dropped to 0 ± 0.5mA.
7. Enter "HOOKOFF".
8. Use a DMM to test the off-hook voltage at TP50. It must be 6.5V ± 1.0V.
9. Enter "LINEIMP 1" at the PC to switch on the pulse-dialing impedance.
10. Check the DC voltage at TP50. It must be < 3.5V.
11. Enter "LINEIMP 0" at the PC to switch off the pulse-dialing impedance.
12. Enter "DTMF_UP" to make the base generate the upper DTMF frequency.
13. Check that the upper frequency is detected by the line/DTMF test set. Must be 1477Hz ± 1.5%.
14. Enter "DTMF_LO" to make the base generate the lower DTMF frequency.
15. Check that the lower frequency is detected by the line/DTMF test set. Must be 852Hz ± 1.5%.
16. Switch off the 9V power supply.
17. Disconnect the telephone line and reconnect the base to the Bell oscillator.
18. Switch on the 9V supply.
19. Enter "RINGDET" to check the ring detection status. The command returns a number to the PC display. "0" = no ring.
20. Switch the bell oscillator on to 23Hz, 30V RMS (Sin Wave).
21. Send the batch file "RINGDET".
22. Check that the Number on the PC display has changed to "1".
23. Switch off the 9V power supply.

8.7. BASE UNIT REFERENCE DRAWING

When connecting the Simulator and the Equipments to the P.C.B. for checking, refer to the illustrations below.





9 CHECK PROCEDURE (HANDSET)

9.1. PREPARATION

9.1.1. EQUIPMENT REQUIRED

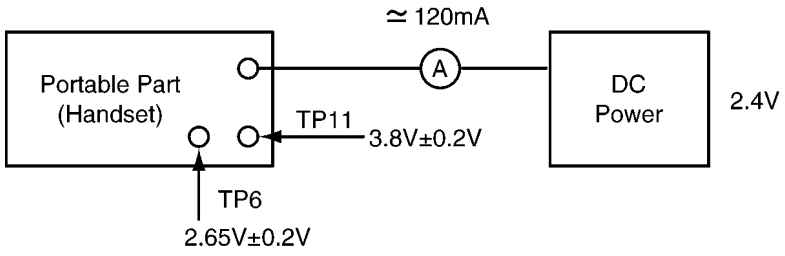
- DECT tester: Romde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision;±4ppm). Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 2.4V.
- Digital multi-meter (DMM): it must be able to measure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

9.1.2. JIGs AND PC

- EEPROM serial JIGs
  1. I2C PCB: PQZZTCD705BX
  2. RS232C cable: PQZZ1CD705BX
  3. Clip cable: PQZZ2CD705BX
  4. DC cable: PQZZ3CD705BX
- PC which runs in DOS mode.
- **Batch file** for PC setting

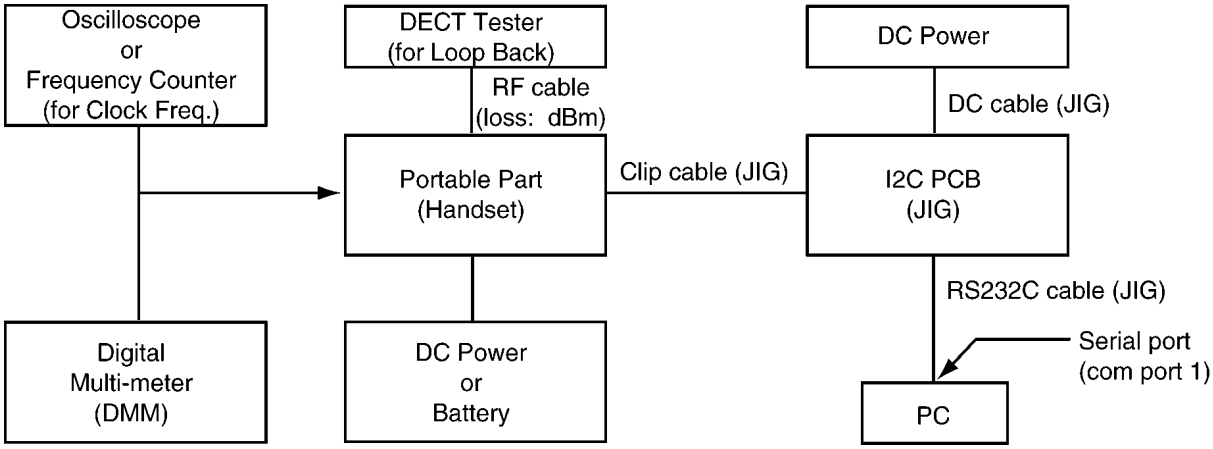
9.2. INITIAL POWER TESTS

1. Switch on the 2.4V supply.
2. Switch the handset on at the keypad.
3. Check for approx. 120mA current on the supply line for around 10s.
4. Check the 3.8V supply rail at TP11. It must be 3.8V ± 0.2V.
5. Check the 2.65V supply rail at the collector of transistor T6. It must be 2.65V ± 0.2V.
6. Switch off the 2.4V supply.



9.3. PC SETTING

9.3.1. CONNECTIONS



9.3.2. PC SETTING

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

Note:

See the table below for frequently used commands.

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

9.4. SET CLOCK FREQUENCY

1. Turn on the 2.4V supply.
2. Switch the handset on at the keypad.
3. Enter "DEACTMAC" from the PC to switch off the RF unit.
4. Enter "CONTTX 0" to start continuous RF transmission.
5. Check that the current consumption is approx. 220mA.
6. Enter "RDEEPROM 00 00 02" to display the two-byte frequency adjustment value, MSB first. *1
7. Connect the frequency counter probe to TP24 to measure the SYRI signal from the BBIC.
8. The clock frequency should be within 10,368,000Hz ± 10Hz. If not then enter "SETFREQ nn nn" where nn nn are the clock frequency adjustment values. An increase in the value will lower the clock frequency and vice versa. The maximum value is 01 FF.
9. Switch off the 2.4V supply.

Note:

*1 See **EEPROM LAYOUT (HANDSET)** (P.71) for more details.

9.5. POWER AND LOOPBACK TESTS

1. Connect the RF input cable from the CMD60 (DECT tester) to the "0V" and "ANT" antenna pads.
2. Switch on the 2.4V supply.
3. Switch the handset on at the keypad.
4. Enter "RDEEPROM 00 4A 01". This will return the value "25" if a base has been registered to the handset, or "FF" if there is no base registered.
5. If a base is not registered to the unit (i.e. "FF" returned in step 4) then enter "SETBASE" to induce registration.
6. Set the CMD60 as shown below.

   TEST MODE: PP

   CONFIG MENU: SIGN, SCRAMBLE: OFF

   MANUAL TEST: Loop Back mode (TRAFFIC SLOT: 4, TRAFFIC CARRIER: 5)

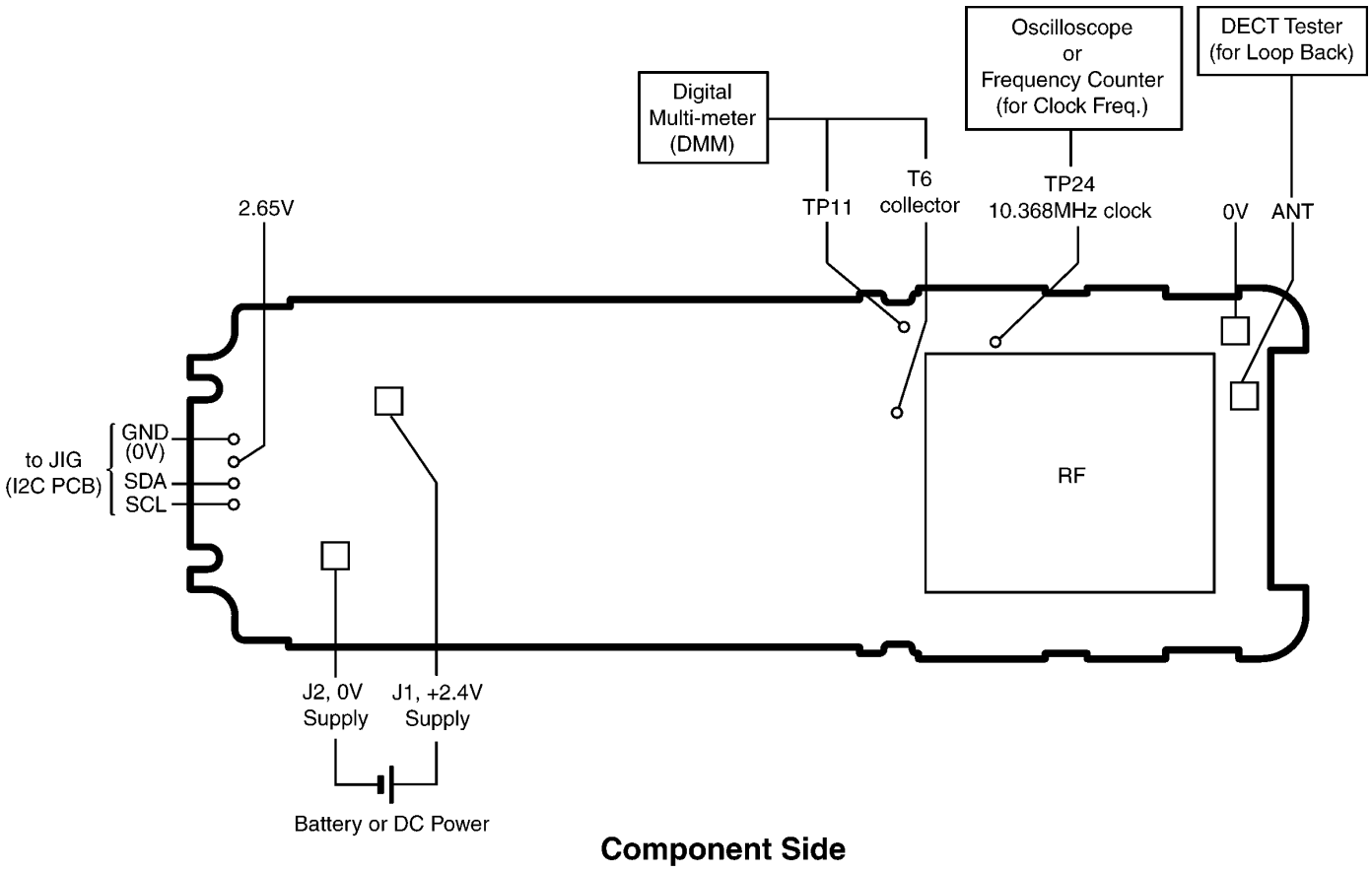
   CONNECT/EXT. ATT:_dBm (RF cable loss)
7. Enter "TESTMODE" on the PC.
8. Enter "RDEEPROM 00 36 05" to obtain the base RFPI identifier.
9. Set the RFPI in the CMD60 to the value obtained in the previous step.
10. Press SETUP CONNECT on the CMD60.
11. Check the power (NTP): it must be between 20 and 25dBm.
12. Press MODULATION.
13. Set DATA TYPE to FIG 31.
14. Check frequency drift: must be 0 ± 35 kHz/ms.
15. Check frequency offset: must be 0 ± 40 kHz.
16. Check deviation or modulation (max ± B field) with data type "FIG 31": must be 320kHz to 400kHz.
17. Press POWER RAMP on the CMD60.
18. Check that the burst fits the mask.
19. Press Menu Up "↑" on the CMD60.
20. Press BER (Bit Error Rate).
21. Obtain the sensitivity by slowly reducing RF LEVEL until the BER falls below 1000ppm. The sensitivity is the RF LEVEL reading at this point. It must be < -88dBm.
22. Press Menu Up "↑" on the CMD60.
23. Press BEARER RELEASE and switch off the 2.4V supply.
24. If the "SETBASE" operation above was carried out then enter "RESBASE" to de-register.
25. Disconnect the RF cable.

Note:

These tests can also be repeated on TRAFFIC CARRIERS 0 and 9.

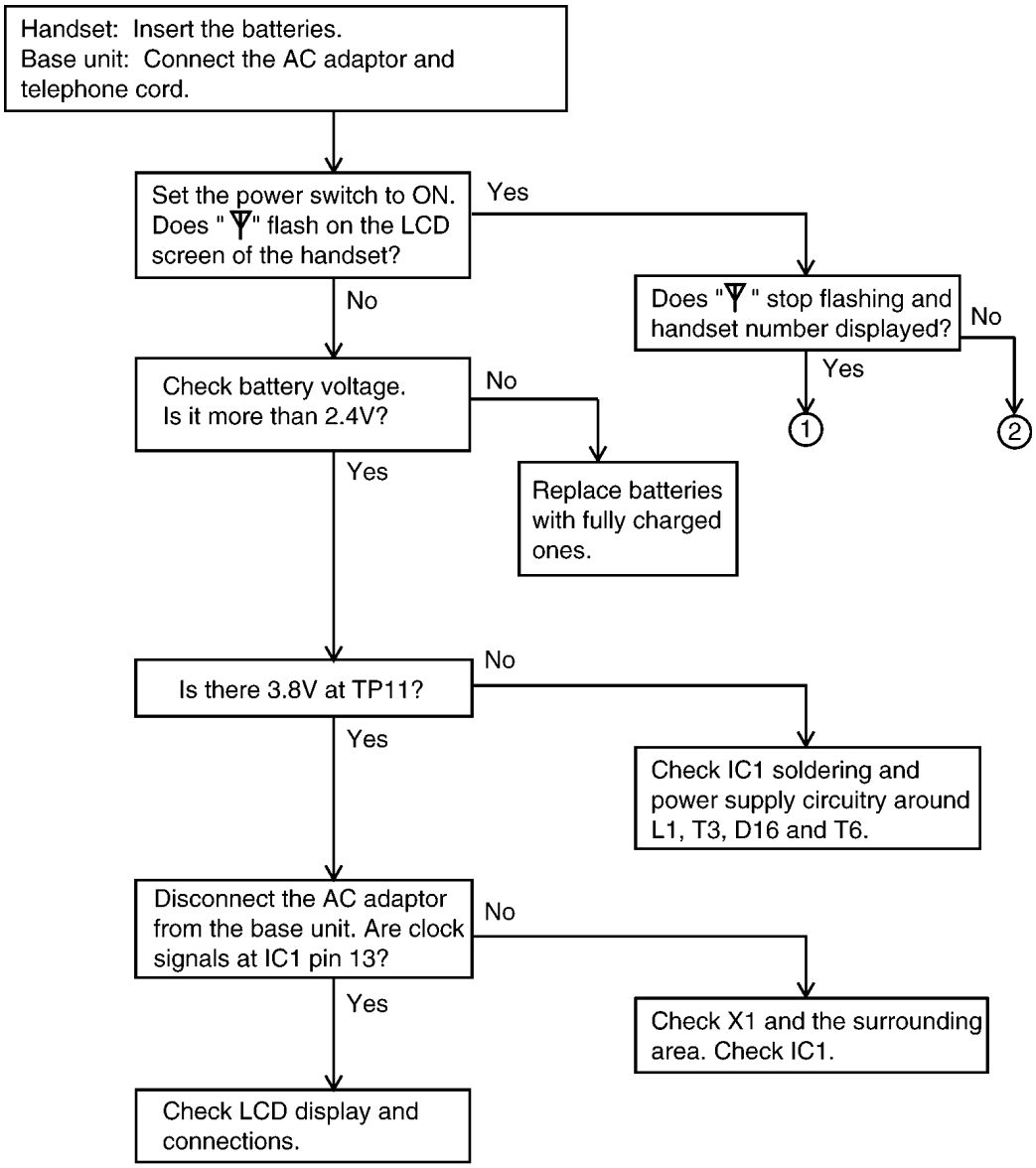
9.6. HANDSET REFERENCE DRAWING

When connecting the Simulator and the Equipments to the P.C.B. for checking, refer to the illustration below.

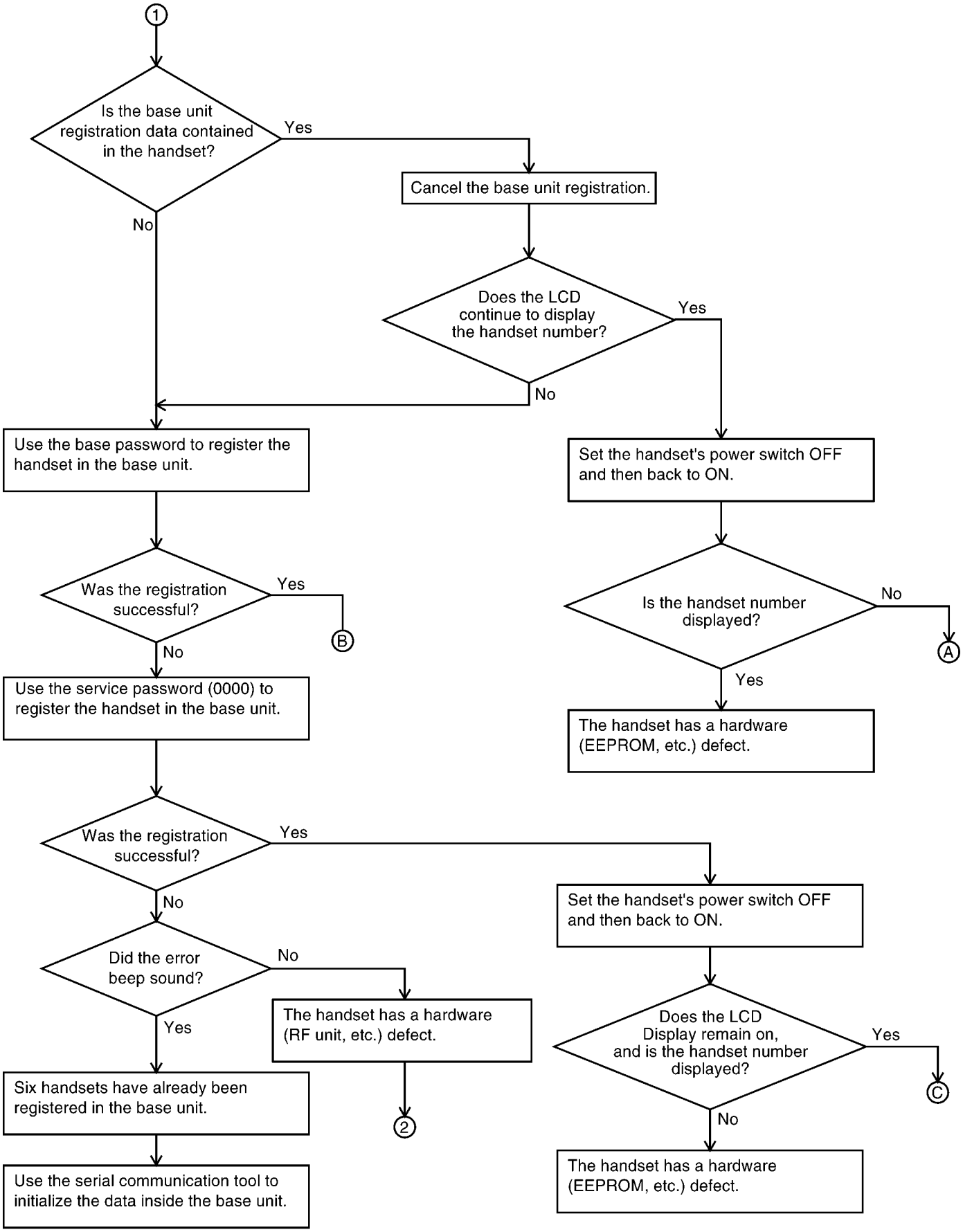


10 TROUBLESHOOTING GUIDE

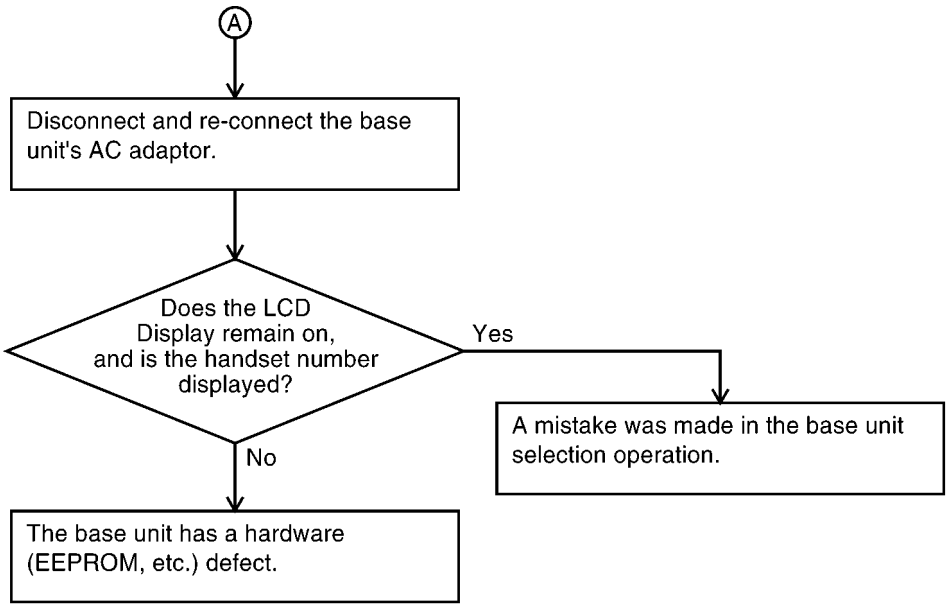
10.1. HANDSET: DOES NOT OPERATE

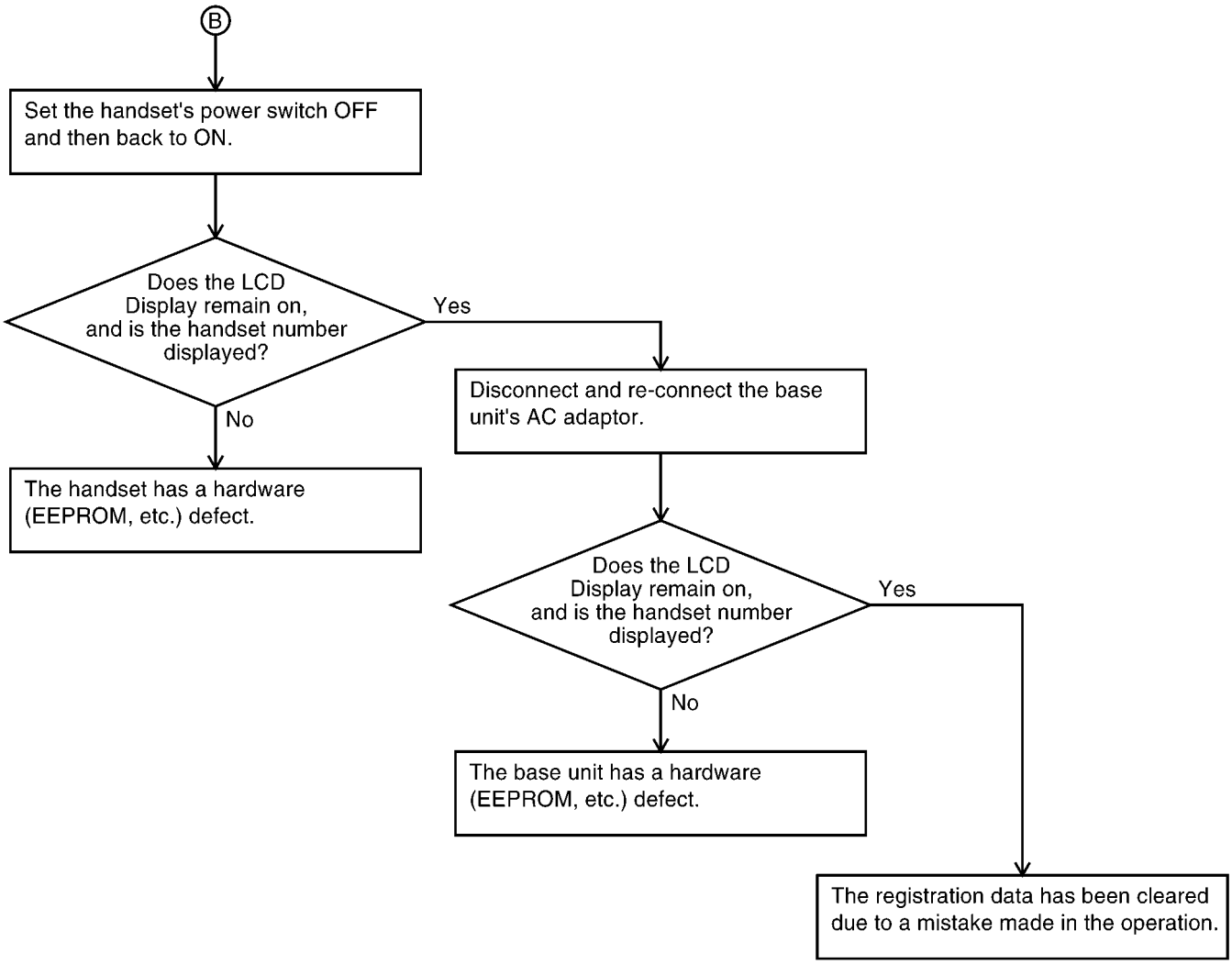


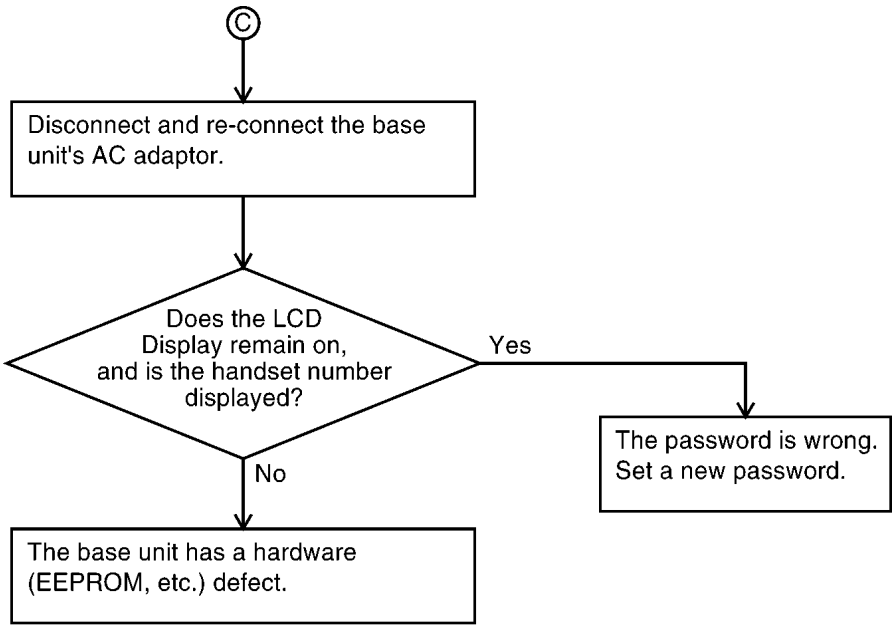
10.2. HANDSET: LINK



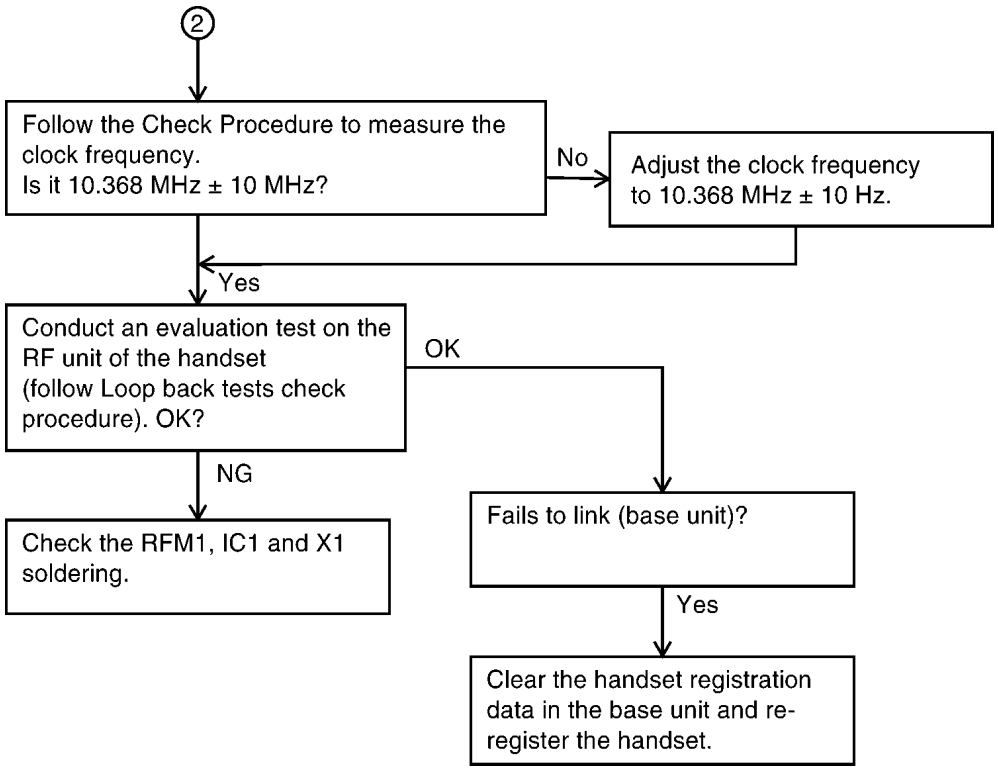
(Use the method for clearing the registered handset data in the base unit.)


A
Disconnect and re-connect the base unit's AC adaptor.
Does the LCD Display remain on, and is the handset number displayed?
Yes
A mistake was made in the base unit selection operation.
No
The base unit has a hardware (EEPROM, etc.) defect.

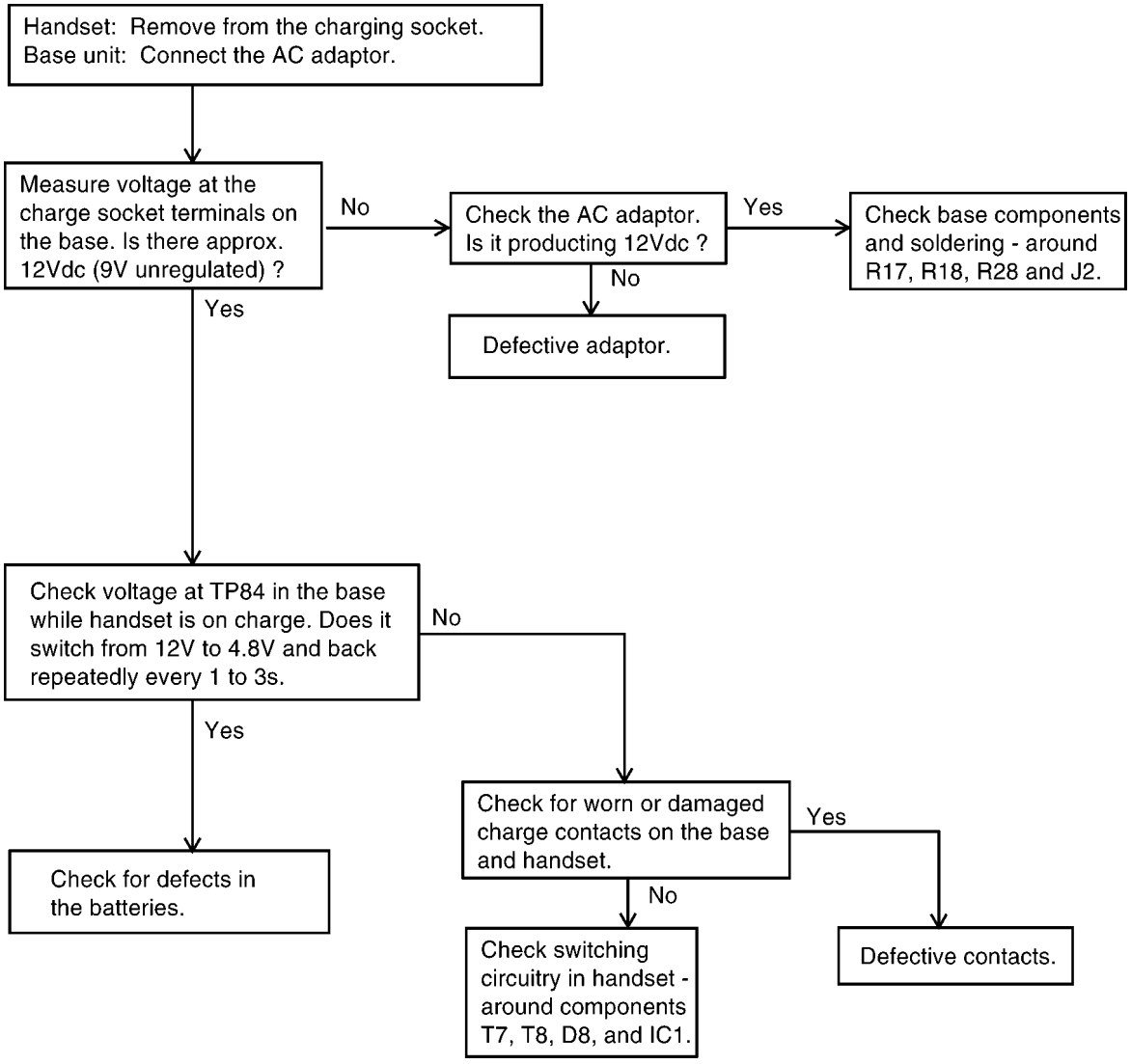

B
Set the handset's power switch OFF and then back to ON.
Does the LCD Display remain on, and is the handset number displayed?
Yes
Disconnect and re-connect the base unit's AC adaptor.
No
The handset has a hardware (EEPROM, etc.) defect.
Does the LCD Display remain on, and is the handset number displayed?
Yes
No
The base unit has a hardware (EEPROM, etc.) defect.
The registration data has been cleared due to a mistake made in the operation.



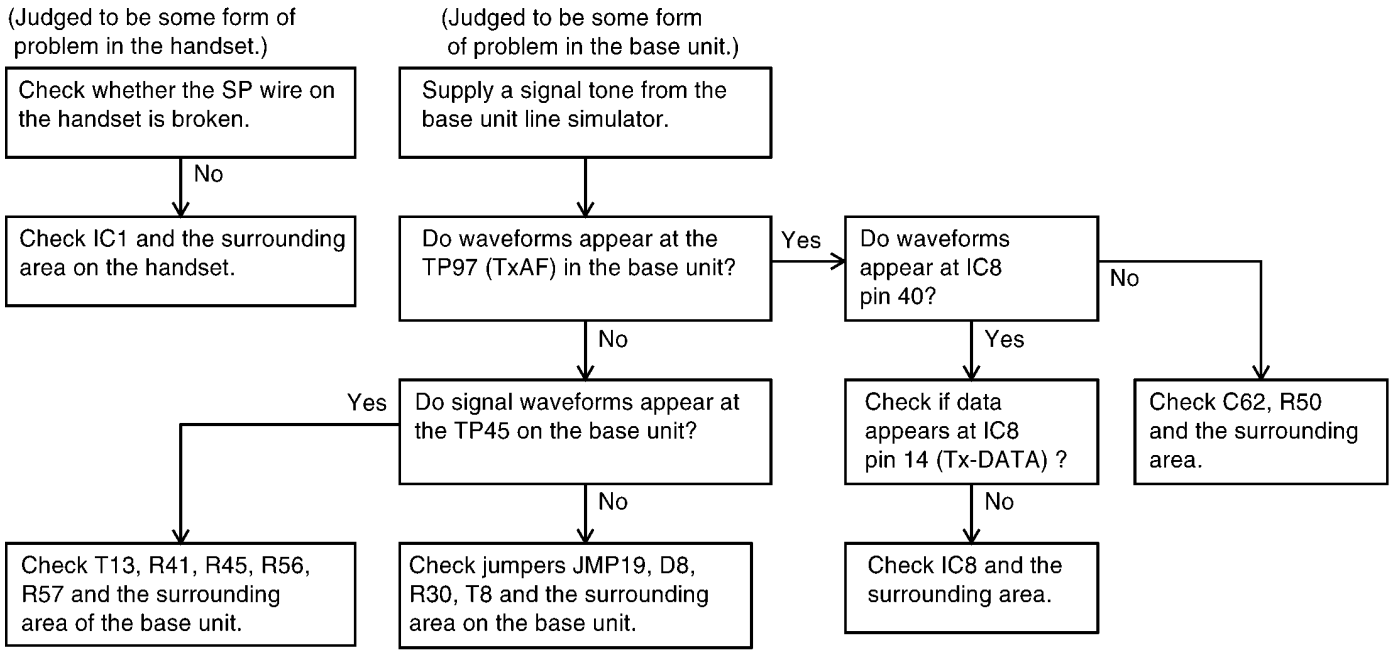
10.3. HANDSET: DOES NOT LINK



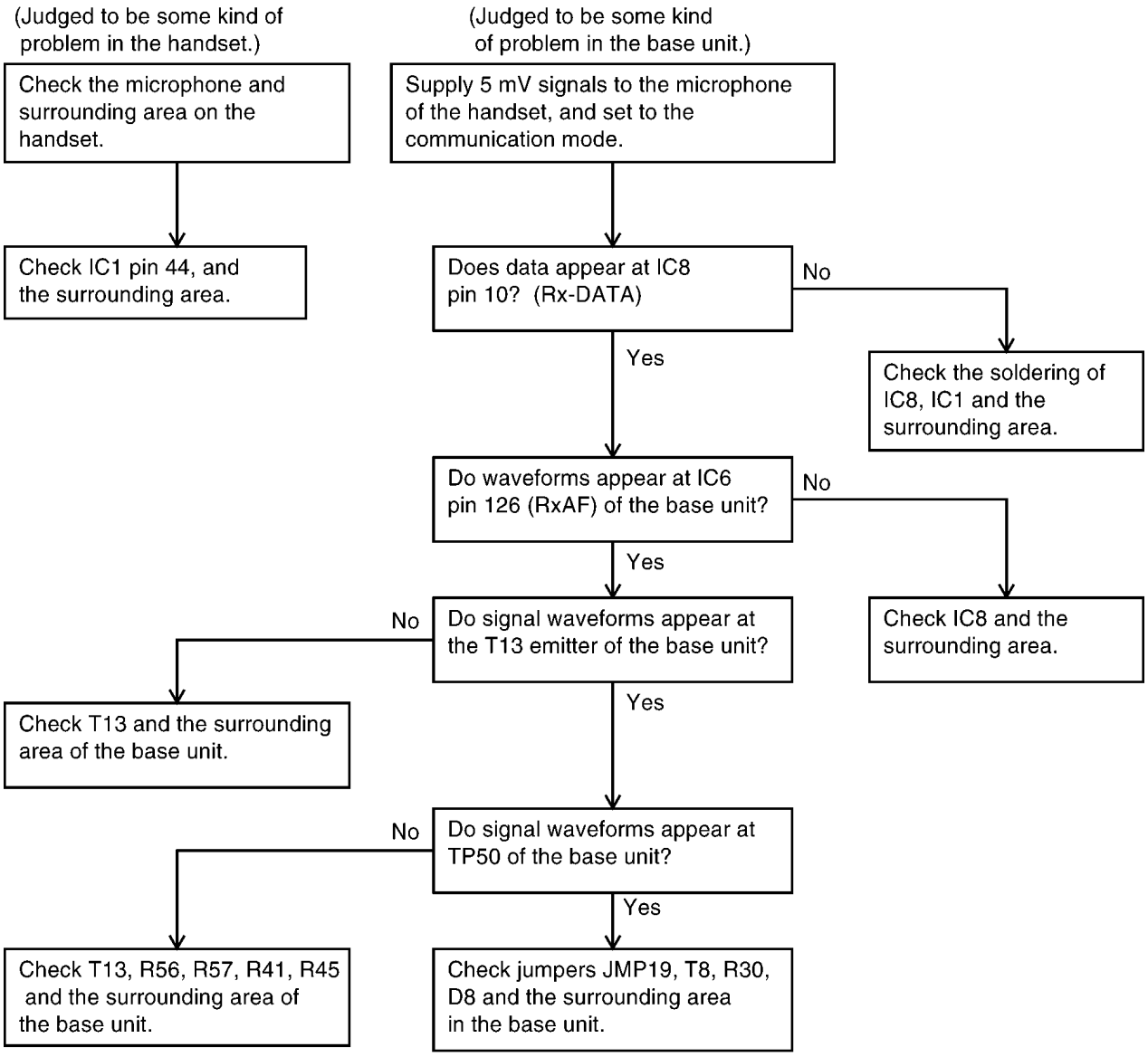
10.4. BATTERY DOES NOT CHARGE



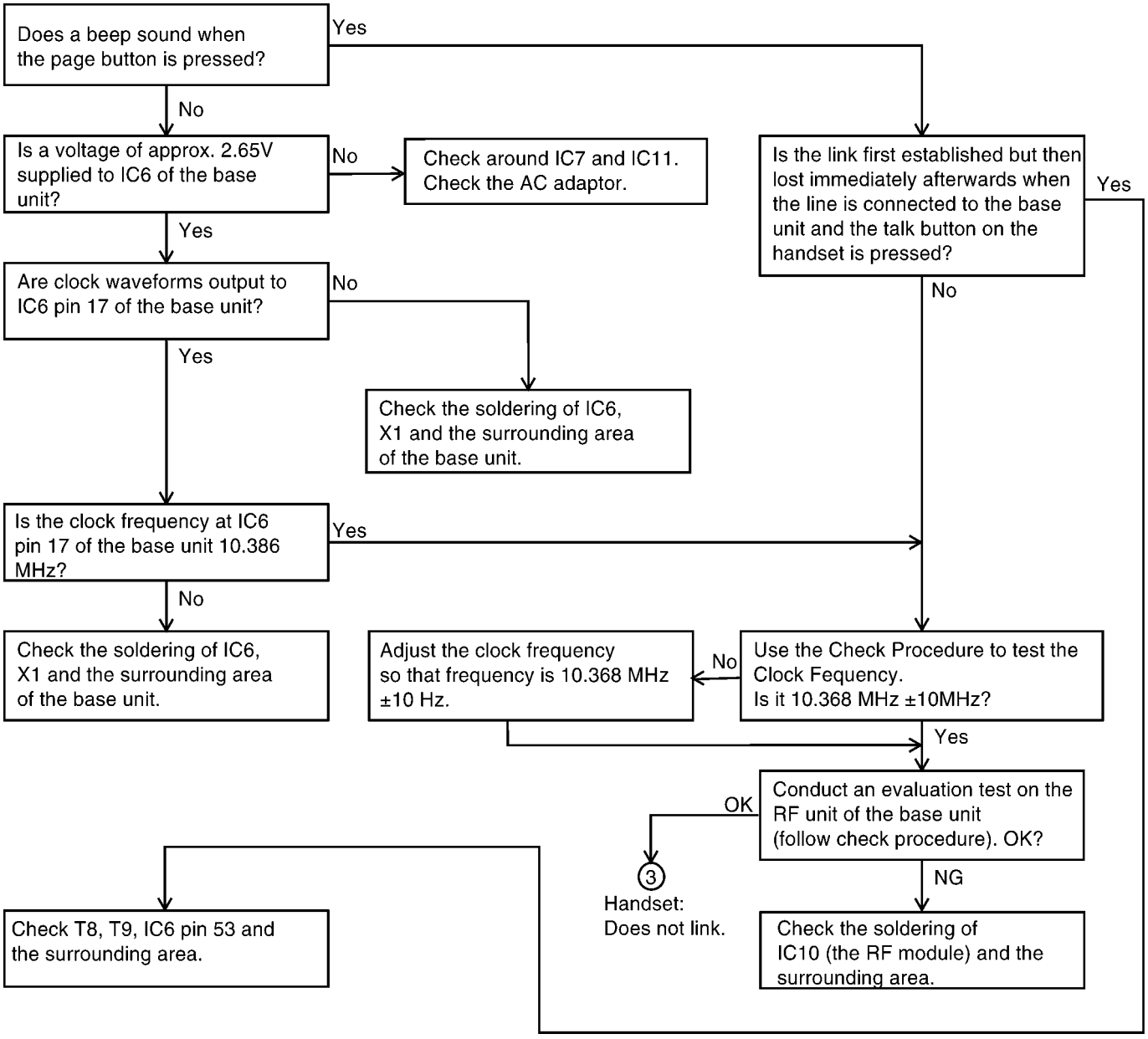
10.5. NO VOICE RECEPTION



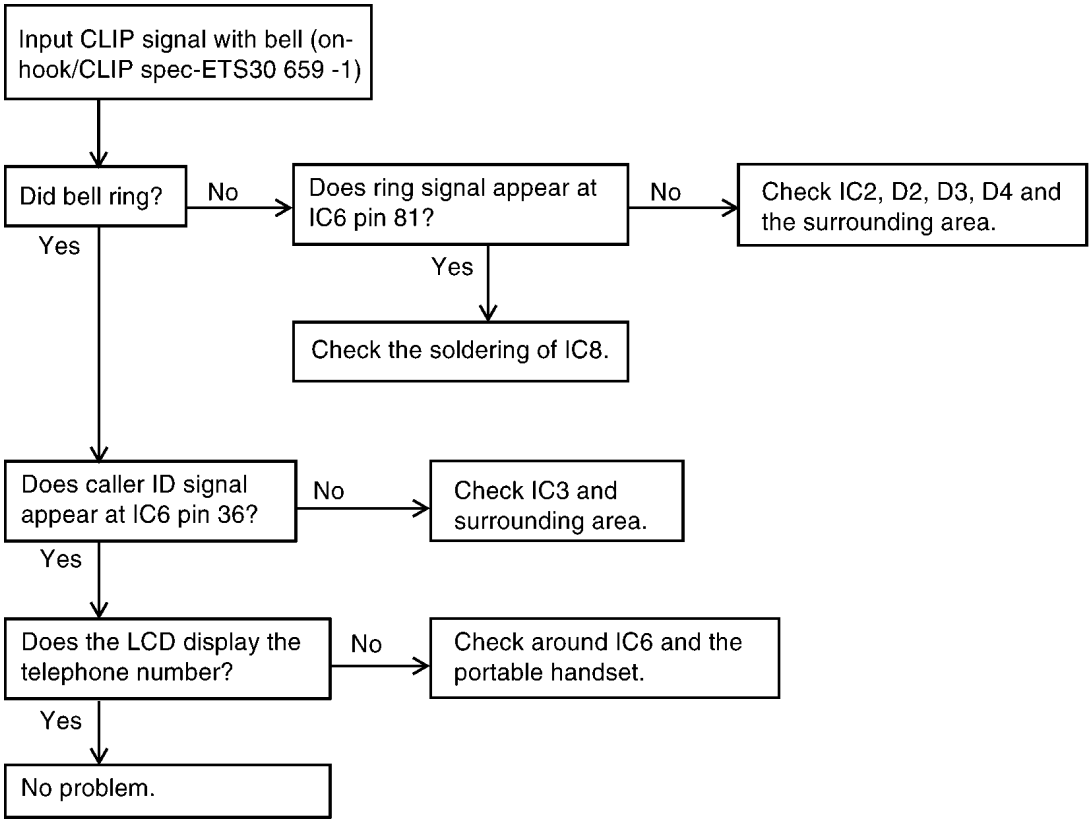
10.6. NO VOICE TRANSMISSION



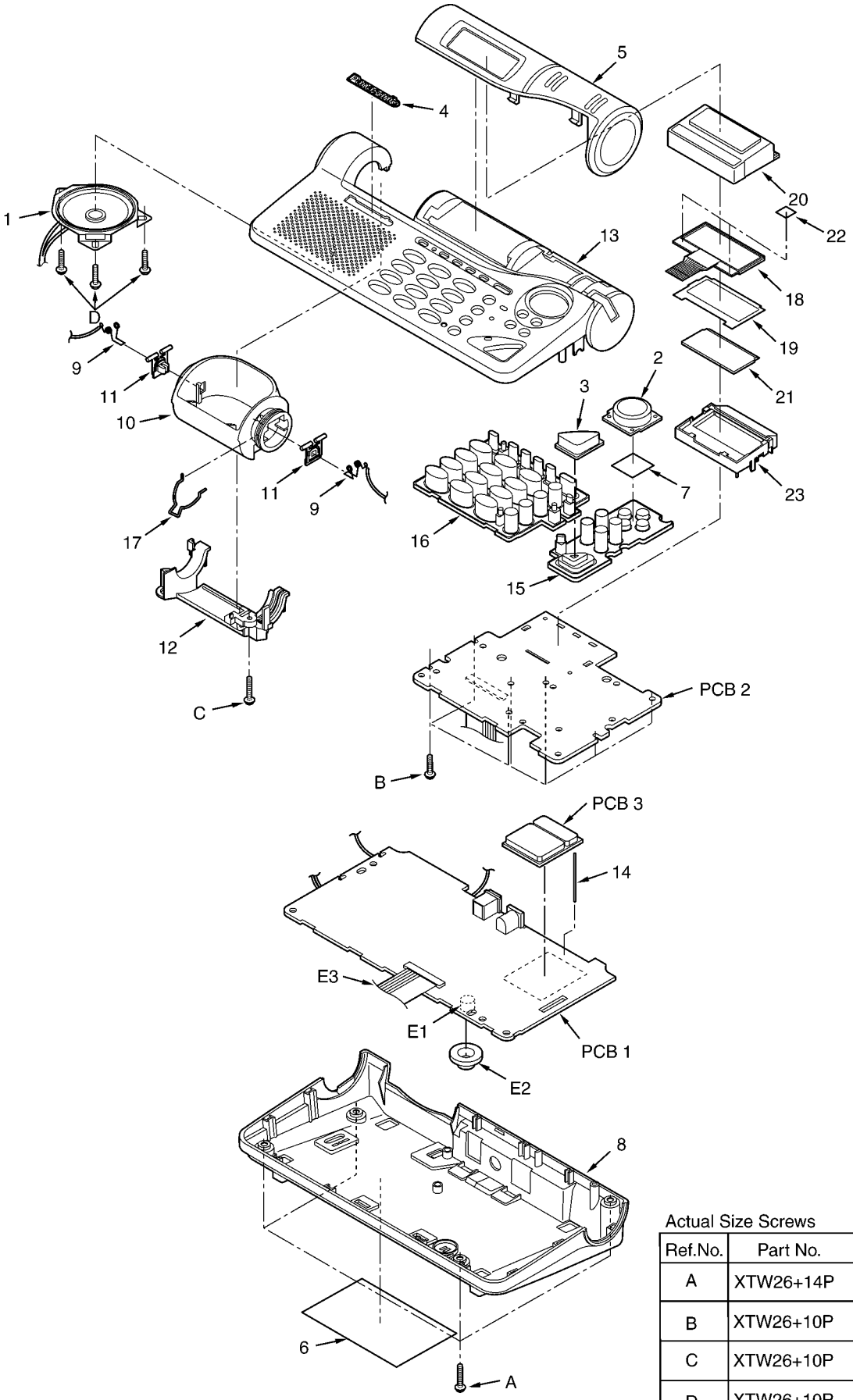
10.7. BASE UNIT: DOES NOT LINK



10.8. BASE UNIT : CALLER ID PROBLEMS



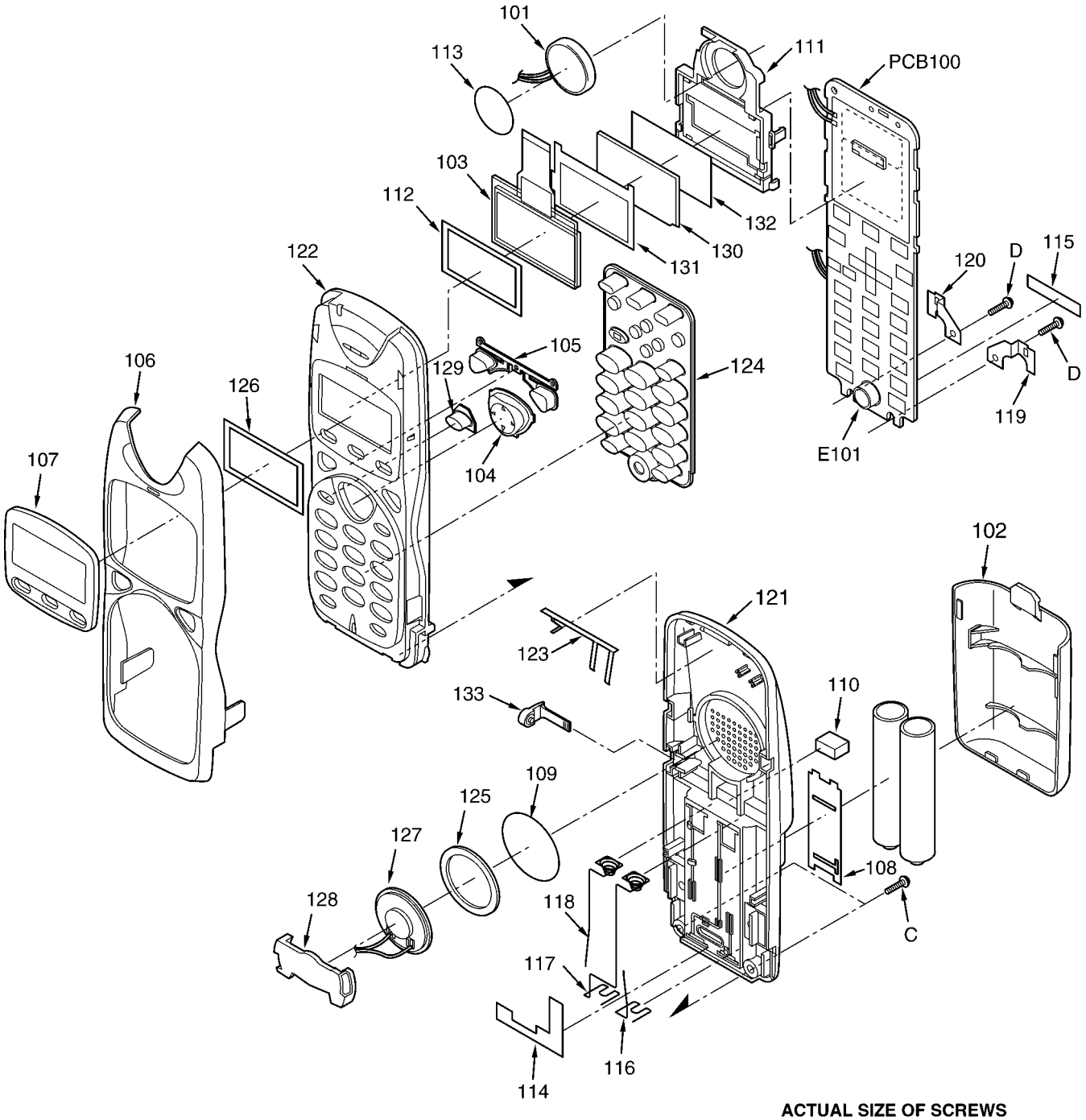
11 CABINET AND ELECTRICAL PARTS LOCATION (BASE UNIT)



Actual Size Screws

Ref.No.	Part No.	Figure
A	XTW26+14P	
B	XTW26+10P	
C	XTW26+10P	
D	XTW26+10P	

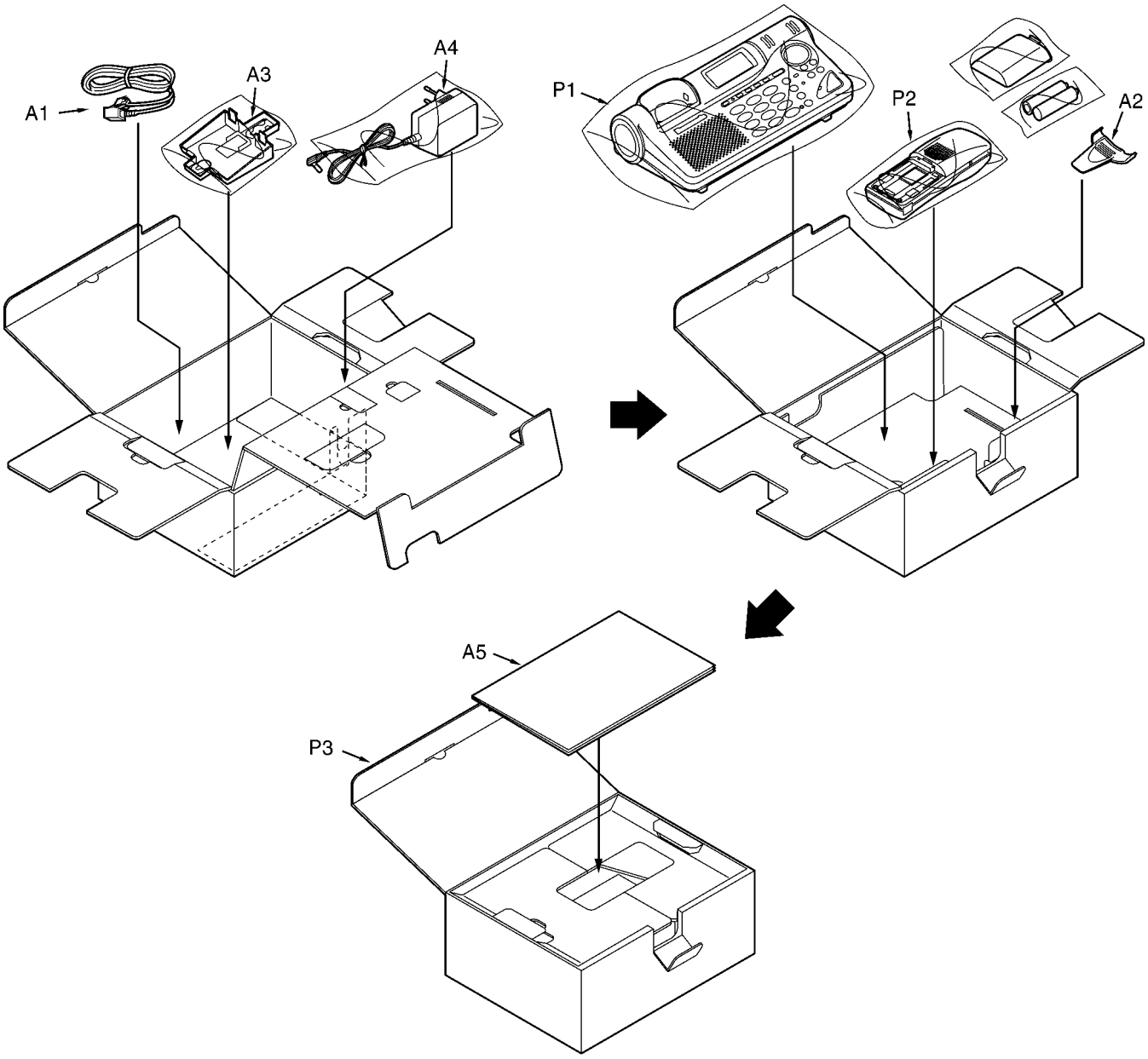
12 CABINET AND ELECTRICAL PARTS LOCATION (HANDSET)



ACTUAL SIZE OF SCREWS

Ref. No.	Part No.	Screw
C	XTW2+Q8P	
D	XTB2+6G	

13 ACCESSORIES AND PACKING MATERIALS



14 REPLACEMENT PARTS LIST

Notes:

1. RTL (Retention Time Limited)

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

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

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

2. Important safety notice

   Components identified by the ⚠ 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. RESISTORS & CAPACITORS

   Unless otherwise specified;

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

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

   *Type & Wattage of Resistor

Resistor Type:

ERC:Solid ERD: Carbon ERF:Wire Wound ERG:Metal Oxide	ERJ:Thick Film ERO:Metal Film ERX:Metal PQ4R:Chip	PQRD:Carbon PQRQ:Fuse

Wattage:

3: 1/16W 1: 1W	10,16,18: 1/8W 2: 2W	15,20,S1: 1/2W 5: 5W

Capacitor Type:

ECFD:Semi Conductor ECQS: Styrol PQCBX,ECUV:Chip ECMS:Mica	ECCD,ECKD,ECU,PQCBC,PQVP:Ceramic ECQM,ECQV,ECQE,ECQU,ECQB:Polyester ECEA,ECSZ,ECOS,PSCE:Electrolytic ECQP:Polypropolene

Voltage:

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

14.1. Base Unit

14.1.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQAS57P03Y	SPEAKER	
2	PQBC10325Y1	NAVIGATOR BUTTON	S
3	PQBC10332Z1	SP PHONE BUTTON	S
4	PQGB7X	BADGE	
5	PQGG10123Z1	GRILLE	S
6	QUGT00089Z	NAME LABEL	
7	PQHX11083Z	PET SHEET	
8	PQYF10183X2	LOWER CABINET	S
9	PQJT10170Y	CHARGE TERMINAL	
10	PQKE10107X3	CHARGE CASE, PLASTIC	S
11	PQKE10111Z1	CHARGE TERMINAL CASE	S
12	PQKE10119Y2	CHARGE CASE HOLDER	S
13	PQKM10474Y1	UPPER CABINET	S
14	PQSA10124Z	ANTENNA	
15	PQSX10166Z	RUBBER SWITCH, 9 KEY	
16	PQSX10167Z	RUBBER SWITCH, 22 KEY	
17	PQUS10263Z	CLICK SPRING	
18	L5DZBEC00001	LIQUID CRYSTAL DISPLAY	
19	PQHX11088Z	LCD COVER SHEET	
20	PQGP10179Z1	LCD PANEL	S
21	PQHR10787Z	LCD PLATE	
22	PQHS10525Z	CUSHION	
23	PQHR10823Z	LCD HOLDER	

14.1.2. MAIN P.C.BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP1D735BXH	MAIN P.C.BOARD ASS´Y (RTL)	
		(ICS)	
IC1	PQVILM1117MP	IC	S
IC2	PQVIPC357CN	IC	
IC3	PQVILMV321M5	IC	
IC5	PQWICD735-7H	IC	
IC6	C1CB00001367	IC	
IC7	PQVILM1117MP	IC	S
IC8	C3FBKZ000001	IC	
IC9	PQVIT2464WM6	IC	
IC11	PSVIXC62FP27	IC	
IC12	C0JBAQ000158	IC	
IC14	PQVIMC34119D	IC	S
		(TRANSISTORS)	
T1	2SB709A	TRANSISTOR(SI)	S
T6	B1ABGE000004	TRANSISTOR(SI)	
T7	B1ABCE000009	TRANSISTOR(SI)	
T8	2SA1807	TRANSISTOR(SI)	
T9	PQVTBF822T7	TRANSISTOR(SI)	
T10	B1ABCE000009	TRANSISTOR(SI)	
T11	B1ABCE000009	TRANSISTOR(SI)	
T12	B1ABCE000009	TRANSISTOR(SI)	
T13	2SD874A	TRANSISTOR(SI)	
T14	2SD601A	TRANSISTOR(SI)	
		(DIODES)	
D2	PQVDBZV55C02	DIODE(SI)	
D3	PQVDBZV55C02	DIODE(SI)	
D4	MA111	DIODE(SI)	
D6	MA112	DIODE(SI)	
D7	MA8047	DIODE(SI)	
D8	PQVDS1ZB60F1	DIODE(SI)	S
D9	MA8047	DIODE(SI)	
D10	MA1Z300	DIODE(SI)	
D11	PQVDBZ55B2V4	DIODE(SI)	S
D12	PQVDDAN217	DIODE(SI)	
		(CONNECTORS)	
J1	PQJJ1T023Y	JACK SOCKET	S
J2	PQJJ1T022Z	JACK SOCKET	S
J3	PQJS25B37Z	CONNECTOR	
		(OTHERS)	
E1	L0CBAB000040	MICROPHONE	
E2	PQMG10025Z	CUSHION RUBBER, MIC	
E3	PQJE10112Z	FFC	
SA3	PQVDDSS301L	SURGE ABSORBER	S
X1	PQVCF1036N4Z	CRYSTAL OSCILLATOR	
		(RESISTORS)	
R2	ERJ3GEYJ224	220k	
R3	PQ4R18XJ472	4.7k	S
R4	ERJ3GEYJ103	10k	
R5	ERJ3GEYJ224	220k	
R6	ERJ3GEYJ102	1k	
R8	ERJ3GEYJ102	1k	
R9	ERJ3GEYJ473	47k	
R10	ERJ3GEYJ473	47k	
R12	ERJ3GEYJ222	2.2k	

Ref. No.	Part No.	Part Name & Description	Remarks
R13	ERJ3GEYJ103	10k	
R15	ERJ3GEYJ222	2.2k	
R16	ERJ3GEYJ222	2.2k	
R17	ERJ1WYJ111	110	
R18	ERJ1WYJ680	68	
R19	ERJ3GEYJ474	470k	
R20	ERJ3GEYJ224	220k	
R21	ERJ3GEYJ474	470k	
R22	ERJ3GEYJ274	270k	
R23	ERJ3GEYJ101	100	
R25	ERJ3GEYJ103	10k	
R28	ERJ1WYJ111	110	
R29	ERJ3GEYJ101	100	
R30	PQ4R18XJ000	0	S
R35	ERJ3GEYJ104	100k	
R36	ERJ3GEYJ272	2.7k	
R37	ERJ3GEYJ101	100	
R38	ERJ3GEYJ101	100	
R39	ERJ3GEYJ103	10k	
R40	ERJ3GEYJ222	2.2k	
R41	ERJ3GEYJ333	33k	
R42	ERJ3GEYJ101	100	
R43	ERJ3GEYJ560	56	
R44	ERJ3GEYJ103	10k	
R45	ERJ3GEYJ103	10k	
R46	ERJ3GEYJ103	10k	
R47	ERJ3GEYJ102	1k	
R48	ERJ3GEYJ560	56	
R49	ERJ3GEYJ822	8.2k	
R50	ERJ3GEYJ101	100	
R51	ERJ3GEYJ101	100	
R52	ERJ3GEYJ102	1k	
R53	ERJ3GEYJ101	100	
R54	ERJ3GEYJ183	18k	
R55	ERJ3GEYJ104	100k	
R56	ERJ12YJ560	56	
R57	ERJ12YJ220	22	
R58	ERJ3GEYJ474	470k	
R59	ERJ3GEYJ391	390	
R60	ERJ3GEYJ391	1k	
R61	ERJ3GEYJ102	1k	
R62	ERJ3GEYJ103	10k	
R63	ERJ3GEYJ391	390	
R64	ERJ3GEYJ391	390	
R67	ERJ3GEYJ331	330	
R68	ERJ3GEYJ681	680	
R69	ERJ3GEYJ154	150k	
R70	ERJ3GEYJ562	5.6k	
R71	ERJ3GEYJ224	220k	
R72	PQ4R18XJ100	10	S
R73	ERJ3GEYJ103	10k	
R74	ERJ3GEYJ222	2.2k	
R75	ERJ3GEYJ104	100k	
R76	ERJ3GEYJ104	100k	
R77	ERJ3GEYJ183	18k	
R78	ERJ3GEYJ183	18k	
R79	ERJ3GEYJ183	18k	
R80	ERJ3GEYJ183	18k	
R81	ERJ3GEYJ563	56k	
R82	ERJ3GEYJ563	56k	
R83	ERJ3GEYJ472	4.7k	
R84	ERJ3GEYJ122	1.2k	
R87	ERJ3GEYJ154	150k	
R88	ERJ3GEYJ101	100	
R89	ERJ3GEYJ101	100	
R90	ERJ3GEYJ183	18k	
R91	ERJ3GEYJ563	56k	
R92	ERJ3GEYJ124	120k	
R93	ERJ3GEYJ183	18k	
R94	ERJ3GEYJ104	100k	
R95	ERJ3GEYJ683	68k	
R96	ERJ3GEYJ104	100k	
R97	ERJ3GEYJ103	10k	

Ref. No.	Part No.	Part Name & Description	Remarks
R98	ERJ3GEYJ103	10k	
R99	ERJ3GEYJ103	10k	
R100	ERJ3GEYJ103	10k	
R101	ERJ3GEYJ101	100	
R102	ERJ3GEYJ103	10k	
R103	ERJ3GEYJ103	10k	
R104	ERJ3GEYJ103	10k	
R105	ERJ3GEYJ103	10k	
R106	ERJ3GEYJ103	10k	
R107	ERJ3GEYJ103	10k	
R108	ERJ3GEYJ103	10k	
R109	ERJ3GEYJ1R5V	1.5	
R110	ERJ3GEYJ101	100	
R111	ERJ3GEYJ102	1k	
R112	ERJ3GEYJ472	4.7k	
R113	ERJ3GEYJ103	10k	
R122	PQ4R10XJ105	1M	
R130	ERJ3GEYJ104	100k	
R131	ERJ3GEYJ103	10k	
R132	ERJ3GEYJ102	1k	
R133	ERJ3GEYJ102	1k	
R134	ERJ3GEYJ103	10k	
R137	ERJ3GEYJ102	1k	
R138	ERJ3GEYJ152	1.5k	
R139	ERJ3GEYJ472	4.7k	
R140	ERJ3GEYJ333	33k	
R141	ERJ3GEYJ102	1k	
R142	ERJ3GEY0R00	0	
R143	ERJ3GEY0R00	0	
R144	PQ4R18XJ000	0	S
R146	ERJ3GEY0R00	0	
R147	ERJ3GEY0R00	0	
R148	ERJ3GEY0R00	0	
R149	ERJ3GEY0R00	0	
R150	ERJ3GEY0R00	0	
R151	ERJ3GEY0R00	0	
R152	ERJ3GEY0R00	0	
R153	ERJ3GEY0R00	0	
R154	ERJ3GEY0R00	0	
R155	ERJ3GEY0R00	0	
R156	ERJ3GEY0R00	0	
R157	ERJ3GEY0R00	0	
JMP19	PQ4R10XJ000	0	S
JMP51	PQ4R10XJ000	0	S
JMP52	PQ4R10XJ000	0	S
JMP53	PQ4R10XJ000	0	S
L4	ERJ3GEY0R00	0	
L5	ERJ3GEY0R00	0	
L6	ERJ3GEY0R00	0	
		(CAPACITORS)	
C1	ECUV1C104KBV	0.1	
C2	ECQE2E474KZ	0.47	S
C3	ECUV1C104KBV	0.1	
C4	ECUV1H0R5CCV	0.5	
C6	ECUV1C104KBV	0.1	
C8	ECUV1H151JCV	150P	
C9	ECUV1H151JCV	150P	
C10	ECUV1H121JCV	120P	
C11	ECUV1H100DCV	10P	
C12	ECUV2H102KB	0.001	
C13	ECUV1H151JCV	150P	
C14	ECUV2H102KB	0.001	
C15	ECUV1H151JCV	150P	
C16	ECUV2H681KB	680P	
C17	ECUV2H681KB	680P	
C19	ECST1AY106	10	
C20	ECUV1H100DCV	10P	
C23	ECUV2H332KB	0.0033	
C26	ECST0JY225	2.2	
C27	ECUV1H472KBV	0.0047	
C28	PQCUV1C224KB	0.22	
C30	ECUV1H100DCV	10P	
C31	ECUV1H100DCV	10P	

Ref. No.	Part No.	Part Name & Description	Remarks
C33	ECUV1H103KBV	0.01	
C36	ECEV1HA2R2S	2.2	
C40	PSCEV1CA101	100P	S
C41	ECUV1H100DCV	10P	
C42	PSCEV1CA101	100P	S
C43	ECUV1H100DCV	10P	
C45	ECUV1H100DCV	10P	
C46	ECUV1H100DCV	10P	
C47	ECUV1A225KB	2.2	
C48	PQCUV1C105KB	1	
C49	ECUV1C104KBV	0.1	
C50	ECUV1H100DCV	10P	
C52	ECUV1C823KBV	0.082	
C53	ECUV1H470JCV	47P	
C54	ECUV1H100DCV	10P	
C55	ECUV1C104KBV	0.1	
C56	ECUV1C104KBV	0.1	
C57	ECUV1C104KBV	0.1	
C58	ECUV1C104KBV	0.1	
C59	ECUV1C104KBV	0.1	
C60	ECUV1H100DCV	10P	
C61	PQCUV1C224KB	0.22	
C62	ECUV1C104KBV	0.1	
C63	ECUV1H100DCV	10P	
C64	ECUV1C823KBV	0.082	
C65	PSCEV1CA101	100P	S
C66	ECUV1E333KBV	0.033	
C69	ECUV1C104KBV	0.1	
C70	ECUV1H100DCV	10P	
C71	ECUV1E333KBV	0.033	
C72	ECUV1E333KBV	0.033	
C73	ECUV1H6R8CCV	6.8	
C74	ECUV1H6R8CCV	6.8	
C75	ECUV1H6R8CCV	6.8	
C76	ECUV1H221JCV	220P	
C77	ECUV1C104KBV	0.1	
C78	ECUV1H100DCV	10P	
C79	ECUV1C104KBV	0.1	
C83	ECST1CY105	1	
C84	ECUV1H100DCV	10P	
C85	ECUV1H220JCV	22P	
C86	ECUV1H220JCV	22P	
C87	ECST1AY475	4.7	
C89	ECUV1H100DCV	10P	
C90	ECUV1H100DCV	10P	
C91	PSCEV1CA101	100P	S
C92	ECUV1H100DCV	10P	
C101	ECUV1C105ZFV	1	
C103	ECUV1C105ZFV	1	
C104	ECUV1C105ZFV	1	
C105	ECUV1H270JCV	27P	
C107	ECUV1H153KBV	0.015	
C110	ECUV1C104KBV	0.1	
C111	ECUV1C393KBV	0.039	
C112	ECUV1C393KBV	0.039	
C113	ECUV1H272KBV	0.0027	
C114	ECUV1C104KBV	0.1	
C115	PQCUV1C225ZF	2.2	
C116	ECUV1H221JCV	220P	
C118	ECUV1H151JCV	150P	
C126	ECUV1C225KB	2.2	

14.1.3. KEYPAD P.C.BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PQWP2D735CEH	KEYPAD P.C.BOARD ASS´Y (RTL)	
		(DIODES)	
D1	LNJ311G8TRU	DIODE(SI)	
D2	LNJ211R8ARU	DIODE(SI)	
D3	PQVDHPY1105W	DIODE(SI)	
D4	PQVDHPY1105W	DIODE(SI)	
D5	PQVDHPY1105W	DIODE(SI)	
D14	LNJ311G8TRU	DIODE(SI)	
D15	LNJ211R8ARU	DIODE(SI)	
D16	LNJ211R8ARU	DIODE(SI)	
		(TRANSISTORS)	
T1	PQVTDTC143K	TRANSISTOR(SI)	
T2	PQVTDTC143K	TRANSISTOR(SI)	
T3	PQVTDTC143K	TRANSISTOR(SI)	
T4	PQVTDTC143K	TRANSISTOR(SI)	
T5	PQVTDTC143K	TRANSISTOR(SI)	
T6	PQVTDTC143K	TRANSISTOR(SI)	
		(CONNECTORS)	
J1	PQJS25B37Z	CONNECTOR	
J2	PQJS18B11Z	CONNECTOR	S
		(RESISTORS)	
R1	ERJ3GEYJ103	10k	
R2	ERJ3GEYJ101	100	
R3	ERJ3GEYJ271	270	
R4	ERJ3GEYJ271	270	
R5	ERJ3GEYJ101	100	
R6	ERJ3GEYJ271	270	
R8	PQ4R18XJ000	0	S
R9	PQ4R18XJ000	0	S
R10	PQ4R18XJ000	0	S
R11	PQ4R18XJ000	0	S
R13	PQ4R18XJ000	0	S
R39	ERJ3EKF8203	830k	
R40	ERJ3EKF4303	430k	
R7B	PQ4R18XJ150	15	S
		(CAPACITORS)	
C1	ECUV1E333KBV	0.033	
C57	PQCUV1C224KB	0.22	
C58	PQCUV1C224KB	0.22	
C59	PQCUV1C224KB	0.22	
C60	ECUV1C104KBV	0.1	
C61	ECUV1C104KBV	0.1	
C62	ECUV1C104KBV	0.1	
C63	ECUV1C104KBV	0.1	
C64	ECUV1C104KBV	0.1	

14.1.4. RF MODULE

Ref. No.	Part No.	Part Name & Description	Remarks
PCB3	PQLZ10015Z	RF MODULE (IC10)	

14.2. Handset

14.2.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
101	L0AD02A00006	RECEIVER	
102	PQKK10109Z5	BATTERY COVER	S
103	L5DCBDC00003	LCD DOT MATRIX	
104	PQBC10323Y1	NAVIGATOR KEY	S
105	PQBX10345Y1	FUNCTION BUTTON	S
106	PQGG10116Z5	FRONT CABIET GRILL	S
107	PQGP10176Y2	LCD PANEL	S
108	QUGT00100Z	NAME LABEL	
109	PQHS10457Z	SPEAKER NET	
110	PQHG10634X	RUBBER	
111	PQHR10779Y	LCD HOLDER	
112	PQHS10430Y	LCD SPONGE	
113	PQHS10467Z	RECEIVER NET	
114	PQHX10990Y	SHEET PET	
115	PQHX11030Z	INSULATION TAPE	
116	PQJC10046Y	BATTERY TERMINALS (A)	
117	PQJC10047X	BATTERY TERMINALS (B)	
118	PQJC10048Y	BATTERY TERMINALS (C)	
119	PQJT10168Z	CHARGE TERMINAL (L)	
120	PQJT10169Z	CHARGE TERMINAL (R)	

Ref. No.	Part No.	Part Name & Description	Remarks
121	PQKF10497Z5	REAR CABIET	S
122	PQKM10464W5	FRONT CABINET	S
123	PQSA10117Y	ANTENNA	
124	PQSX10155Y	RUBBER KEYPAD	
125	PQHG10589Y	SPEAKER SPONGE	
126	PQHS10429X	DOUBLE SIDED TAPE	
127	PQAS3P07Y	SPEAKER	
128	PQHR10778Z	SPEAKER HOLDER	
129	PQBC10314Z1	SP BUTTON	S
130	PQHR10781Z	LCD PLATE	
131	PQHX10962Z	LCD COVER SHEET	
132	PQHX10963Z	LCD REFLECTOR SHEET	
133	PQKE10108Z2	EAR PIECE CAP	S

14.2.2. MAIN P.C.BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWPCD735CER	MAIN P.C.BOARD ASS´Y (RTL)	
		(ICS)	
IC1	PQVI6723L22	IC	
IC2	PQVIT2464WMB	IC	S
IC3	PQWICD735CER	IC	
IC400	PMB6818	IC	
IC402	PMB6610V12	IC	S
HF_AM1	PQVINJM2135M	IC	
		(TRANSISTORS)	
T1	B1GBCFGC0001	TRANSISTOR(SI)	S
T3	PQVTSI2302DS	TRANSISTOR(SI)	
T5	B1GBCFGC0001	TRANSISTOR(SI)	S
T6	PQVTBC80725T	TRANSISTOR(SI)	S
T7	PQVTBC80740T	TRANSISTOR(SI)	S
T8	B1GBCFGC0001	TRANSISTOR(SI)	S
T11	DTC143XKA106	TRANSISTOR(SI)	
T12	DTC143XKA106	TRANSISTOR(SI)	
T400	BC858BW	TRANSISTOR(SI)	
		(DIODES)	
D1	LNJ115W89RA	DIODE(SI)	
D2	LNJ115W89RA	DIODE(SI)	
D3	LNJ115W89RA	DIODE(SI)	
D4	MA111	DIODE(SI)	
D5	MA111	DIODE(SI)	
D6	MA111	DIODE(SI)	
D7	MA8047	DIODE(SI)	
D8	MA112	DIODE(SI)	
D9	MA8047	DIODE(SI)	
D11	B3ABB0000001	DIODE(SI)	S
D12	B3ABB0000001	DIODE(SI)	S
D13	B3ABB0000001	DIODE(SI)	S
D14	B3ABB0000001	DIODE(SI)	S
D16	MA2H73600L	DIODE(SI)	
D17	PQVDBR1111C	DIODE(SI)	S
D18	PQVDBZV55C47	DIODE(SI)	S
D19	PQVDBZV55C47	DIODE(SI)	S
D21	PQVDBZV55C47	DIODE(SI)	S
D400	PQVDBAR6405	DIODE(SI)	
		(COILS)	
L1	G1A220F00005	COIL	
L2	ELJPA100KF	COIL	
L3	ELJPA100KF	COIL	
L4	PQLQR2K1A102	COIL	
L400	G1C4N7Z00005	COIL	
L401	G1C4N7Z00005	COIL	
L402	G1C22NKA0025	COIL	
L405	PSLQR2B2N7S	COIL	
L406	PSLQR2B2N7S	COIL	
F1	PQLQR2M6N8KT	COIL	
		(CONNECTORS)	
J5	PSJS22A62Z	LCD CONNECTOR	
J6	PQJJ1C002Z	HEADSET JACK	
		(OTHERS)	
A1a	PQJT10152Y	CHARGE PAD	
A1b	PQJT10152Y	CHARGE PAD	

Ref. No.	Part No.	Part Name & Description	Remarks
J1	PQJT10152Y	CHARGE PAD	
J2	PQJT10152Y	CHARGE PAD	
E101	PQJM146Z	MICROPHONE	
RFCAN 1	PQMC10417Z	RFCAN 1	
RFCAN 2	PQMC10418Z	RFCAN 2	
X1	PQVCF1036N3Z	CRYSTAL OSCILLATOR	
		(RESISTORS)	
R1	ERJ3GEYJ222	2.2k	
R2	ERJ3GEYJ184	180k	
R3	ERJ3GEYJ000	0	
R4	ERJ3GEYJ330	33	
R5	ERJ3GEYJ330	33	
R6	ERJ3GEYJ471	470	
R7	ERJ3GEYJ120	12	
R8	ERJ3GEYJ471	470	
R9	ERJ3GEYJ223	22k	
R10	ERJ3GEYJ393	39k	
R11	ERJ3GEYJ181	180	
R12	ERJ3GEYJ181	180	
R13	ERJ3GEYJ100	10	
R14	ERJ3GEYJ124	120k	
R15	ERJ3GEYJ473	47k	
R16	PQ4R18XJR10	0.1	
R17	ERJ3GEYJ683	68k	
R18	ERJ3GEYJ563	56k	
R20	ERJ3GEYJ181	180	
R21	ERJ3GEYJ471	470	
R22	ERJ3GEYJ120	12	
R23	ERJ3GEYJ120	12	
R24	ERJ3GEYJ471	470	
R27	ERJ3GEYJ220	22	
R28	ERJ3GEYJ220	22	
R29	ERJ3GEYJ103	10k	
R35	ERJ3GEYJ824	820k	
R36	ERJ3EKF4303	430k	
R37	ERJ3GEYJ224	220k	
R42	ERJ3GEYJ153	15k	
R43	ERJ3GEYJ560	56	
R50	ERJ3GEYJ103	10k	
R51	PQ4R18XJ471	470	
R52	PQ4R10XJ122	1.2k	
R54	ERJ3GEYJ224	220k	
R55	ERJ3GEYJ104	100k	
R56	PQ4R10XJ2R7	2.7	
R59	ERJ3GEYJ103	10k	
R60	ERJ3GEYJ103	10k	
R61	ERJ3GEYJ224	220k	
R62	ERJ3GEYJ104	100k	
R67	ERJ3GEYJ101	100	
R68	ERJ3GEYJ101	100	
R69	ERJ3GEYJ104	100k	
R70	ERJ3GEYJ104	100k	
R404	ERJ3GEYJ1R0	1	
R406	ERJ3GEYJ100	10	
R408	ERJ3GEYJ561	560	
R409	ERJ3GEYJ331	330	
R410	ERJ3GEYJ273	27k	
R411	ERJ3GEYJ472	4.7k	
R412	ERJ3GEYJ272	2.7k	
R413	ERJ3GEYJ332	3.3k	
R414	ERJ3GEYJ183	18k	
R415	ERJ3GEYJ152	1.5k	
R416	ERJ3GEYJ331	330	
R417	ERJ3GEYJ272	2.7k	
R418	ERJ3GEYJ1R0	1	
C47	ERJ3GEYJ473	47k	
		(CAPACITORS)	
C1	ECUV1C683KBV	0.068	
C2	ECUV1C683KBV	0.068	
C3	ECUV1C683KBV	0.068	
C4	ECST1AD227	220	
C5	ECUV1C683KBV	0.068	
C6	ECUV1H030CCV	3P	

Ref. No.	Part No.	Part Name & Description	Remarks
C7	ECUV1H220JCV	22P	
C8	PQCUV1H333JC	0.033	
C10	ECUV1H220JCV	22P	
C12	ECUV1C104KBV	0.1	
C13	ECUV1C104KBV	0.1	
C14	ECUV1C104KBV	0.1	
C15	ECUV1C104KBV	0.1	
C16	ECUV1C683KBV	0.068	
C17	ECUV1H100DCV	10P	
C18	ECST1AY475	4.7	
C19	ECUV1H100DCV	10P	
C20	ECUV1H100DCV	10P	
C21	ECUV1H100DCV	10P	
C22	ECUV1H100DCV	10P	
C23	ECUV1H100DCV	10P	
C24	ECUV1H182KBV	0.0018	
C25	ECUV1H100DCV	10P	
C26	ECUV1H100DCV	10P	
C27	ECUV1H100DCV	10P	
C28	ECUV1A225KB	2.2	
C29	ECUV1H100DCV	10P	
C30	ECUV1C104KBV	0.1	
C31	ECUV1C104KBV	0.1	
C32	ECUV1C104KBV	0.1	
C33	ECUV1C104KBV	0.1	
C34	ECUV1H100DCV	10P	
C35	ECST1AY106	10	
C36	ECUV1C104KBV	0.1	
C37	ECUV1C104KBV	0.1	
C38	ECUV1H100DCV	10P	
C39	PQCUV1C474KB	0.47	
C40	PQCUV1C474KB	0.47	
C41	ECUV1H100DCV	10P	
C42	ECUV1C104KBV	0.1	
C43	ECUV1C104KBV	0.1	
C44	ECUV1C104KBV	0.1	
C45	ECUV1C104KBV	0.1	
C46	ECUV1C104KBV	0.1	
C48	ECUV1C104KBV	0.1	
C49	ECST1AY106	10	
C50	ECUV1C104KBV	0.1	
C51	ECUV1C104KBV	0.1	
C52	PQCUV1E104MD	0.1	S
C53	ECUV1C104KBV	0.1	
C54	ECUV1C104KBV	0.1	
C55	ECUV1H103KBV	0.01	
C56	ECUV1C683KBV	0.068	
C57	ECUV1C104KBV	0.1	
C58	ECUV1C104KBV	0.1	
C59	ECUV1C104KBV	0.1	
C60	ECUV1H100DCV	10P	
C61	ECUV1H100DCV	10P	
C62	ECUV1H100DCV	10P	
C63	ECUV1C224KBV	0.22	
C64	ECUV1C224KBV	0.22	
C65	ECUV1H100DCV	10P	
C66	ECUV1H100DCV	10P	
C67	ECUV1H100DCV	10P	
C400	ECUV1H1R8CCV	1.8	
C402	ECUV1H100DCV	10P	
C404	ECUV1H100DCV	10P	
C405	ECUV1H100DCV	10P	
C406	ECUV1H331JCV	330P	
C407	ECUV1H100DCV	10P	
C408	ECUV1H330JCV	33P	
C409	PQCUV1H102J	0.001	
C410	0805N472J500	0.0047	
C411	ECUV1H102KBV	0.001	
C412	ECUV1H100DCV	10P	
C413	ECUV1H103KBV	0.01	
C414	PQCUV1H222JC	0.0022	
C415	ECUV1H100DCV	10P	
C416	0805N472J500	0.0047	
C417	ECUV1H103KBV	0.01	
C418	ECUV1H1R5CCV	1.5	
C419	ECUV1H100DCV	10P	
C420	ECUV1H100DCV	10P	
C421	ECUV1H100DCV	10P	
C422	ECUV1H100DCV	10P	
C423	ECUV1H330JCV	33P	
C424	0603N1R8B500	1.8	
C426	ECUV1C104KBV	0.1	
C427	ECUV1H100DCV	10P	
C428	ECUV1H100DCV	10P	
C429	ECUV1H103KBV	0.01	
C431	ECUV1H100DCV	10P	
C432	ECUV1H100DCV	10P	
C433	ECUV1H100DCV	10P	
C434	ECUV1H180JCV	18P	
C435	ECUV1H2R2CCV	2.2	
C436	ECUV1H100DCV	10P	
C437	ECUV1H221JCV	220P	
C438	ECUV1H1R5CCV	1.5	
C439	ECUV1H1R2CCV	1.2	
C440	ECUV1H100DCV	10P	
C441	ECUV1H100DCV	10P	
C442	ECUV1H1R2CCV	1.2	
C443	ECUV1H1R8CCV	1.8	
C444	0603N1R8B500	1.8	
C445	ECUV1H100DCV	10P	
C446	ECUV1C104KBV	0.1	
C447	ECUV1H100DCV	10P	
C448	ECUV1H100DCV	10P	
C449	ECUV1H180JCV	18P	
C450	ECUV1H1R5CCV	1.5	
C451	ECUV1H1R8CCV	1.8	
C452	ECUV1H1R2CCV	1.2	
C455	PQCUV1A105KB	1	
C456	ECUV1H1R8CCV	1.8	
C457	ECUV1H1R8CCV	1.8	
C458	ECUV1H1R8CCV	1.8	
R19	ECUV1H100DCV	10P	

14.3. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQJA10075Z	TEL CORD	
A2	PQKE10120Z2	BELT CLIP	S
A3	PQKL10038Y2	WALL MOUNT ADAPTOR	S
A4	PQLV1CEZ	AC ADAPTOR	⚠
A5	QUQX00076Z	INSTRUCTION BOOK	
P1	PQPP10085Z	POLY BAG (for Base Unit)	
P2	PQPP10084Z	POLY BAG (for Handset)	
P3	QUPK00034Z	CARTON BOX	

14.4. FIXTURES AND TOOLS

Part No.	Part Name & Description	Remarks
PQZZTCD705BX	I2C PCB	
PQZZ1CD705BX	RS232C CABLE	
PQZZ2CD705BX	CLIP CABLE	
PQZZ3CD705BX	DC CABLE	

Note:

See **CHECK PROCEDURE (BASE UNIT)** (P.36), and **CHECK PROCEDURE (HANDSET)** (P.41).

15 EEPROM LAYOUT (BASE UNIT)

15.1. Scope

The purpose of this section is to describe the layout of the EEPROM (IC9) for the TCD735 Base Unit.

The EEPROM contains hardware, software, and user specific parameters. Some parameters are set during production of the base e.g. crystal frequency adjustment at address 0000 and 0001, some are set by the user configuration e.g. ringer volume at address 0210, and some are set during normal use of the phone e.g. meter pulse billing at address 1040..015F.

15.2. Introduction

The base unit uses a 64k bit (8192 x 8) serial EEPROM (IC9) for storing volatile parameters. All parameters are set up before the base leaves the factory. Some of these are vital for the operation of the hardware so a set of default parameters is programmed before the actual hardware fine-tuning can be initiated. This document lists all default settings with a short description.

In the tables below values in a range that are similar are not repeated; i.e. Address 00 to 01 contains the value 00 simply means that the value 00 is repeated in all addresses in the range. All values in this document are in hexadecimal notation.

Type	Name	Description
D	default	The EEPROM location is preset to the Default value by the eeprom default loader.
A	adjust	The EEPROM location is set during the production test and should not be overwritten. The value is set by the eeprom default loader only if the location contains all 1's (byte: 0xFF, word FFFFh), i, e. it has never been set.
-		EEPROM location which is not set at all.
d	default	Same as D but best-guess value and/or not verified.

15.3. EEPROM Layout

15.3.1. General Setup

Address	Default	Name	Type	Description
0000-01	00 4B	EepromOscillator	A	Frequency adjustment
0002	STEP6: 20 STEP5: 2A	ModulationDeviation	A	Modulation adjustment
0003	00	InitialTestmode	D	Used when entering testmode
0020	00 .. 00	RFPI	A	RFPI
0025	00 00	AC	D	AC code
0027	00	DiversityMode	D	Diversity mode: 0: Diversity 1: Fixed on antenna 1 2: Fixed on antenna 2
0028-002F	??-??	Reserved	-	Protocol data
0030-0034	FF .. FF	IPUI_1	D	Ipui for handset 1. If set to FF .. FF the handset is not enrolled.
0035-0039	FF .. FF	IPUI_2	D	Ipui for handset 2. If set to FF .. FF the handset is not enrolled.
003A-003E	FF .. FF	IPUI_3	D	Ipui for handset 3. If set to FF .. FF the handset is not enrolled.
003F-0043	FF .. FF	IPUI_4	D	Ipui for handset 4. If set to FF .. FF the handset is not enrolled.
0044-0048	FF .. FF	IPUI_5	D	Ipui for handset 5. If set to FF .. FF the handset] is not enrolled.
0049-004D	FF .. FF	IPUI_6	D	Ipui for handset 6. If set to FF .. FF the handset is not enrolled.

15.3.2. MeterPulse Billing

Address	Default	Name	Type	Description
0140-0141	00 00 MSB LSB	MpBill.Unit	D	Meter-pulse billing unit
0142-0145	00..00	MpBill.PstnLineTotal	D	Meter-pulse billing total for PSTN line. MSB in 0160h.
0146-0149	00..00	MpBill.Hs1	D	Meter-pulse billing total for HS1
014A-014D	00..00	MpBill.Hs2	D	Meter-pulse billing total for HS2
014E-0152	00..00	MpBill.Hs3	D	Meter-pulse billing total for HS3
0153-0156	00..00	MpBill.Hs4	D	Meter-pulse billing total for HS4
0157-0159	00..00	MpBill.Hs5	D	Meter-pulse billing total for HS5
015A-015D	00..00	MpBill.Hs6	D	Meter-pulse billing total for HS6

Address	Default	Name	Type	Description
015E-015F	FF..FF	Freeblock0	-	Free block 0

15.3.3. Free Block 1

Address	Default	Name	Type	Description
161-162	00..00	RunTimeErrorLogAddress	-	Last RunTime error (unit16)

15.3.4. Audio Setup

Address	Default	Name	Type	Description
0200	0x15	SpeakerGain	D	Gain for speaker output (GX2), see Gain index values
0201	0x11	MicGain	D	Gain for microphone input (GR1), see Gain index values
0202-0203 MSB-LSB	0x3BCA	GX1Gain	D	Gain for GX1 gaincell, see appendix Gain for transmit and receive
0204-0205 MSB-LSB	0x00B2	GR2Gain	D	Gain for GR2 gaincell, see appendix Gain for transmit and receive.
0206	0x00	Unused	D	
0207	0x00	Unused	D	
0208	0x14	OnhookMicGain	D	Gain for microphone input (GR1) during onhook, see Gain index values
0209	0x00	Unused	D	
020A	0x42	ToneToLineGain	D	Gain for tones emitted to the line, see appendix Amplification by Shift&Add coeffecients
020B	0x31	ToneToHandsetGain	D	Gain for tones emitted to the handset see appendix Amplification by Shift&Add coeffecients
020C	0xBB	GD1Gain	D	Gain for GD1 gaincell (high DTMF tone), see appendix Gain for tone generator
020D	0x24	GD2Gain	D	Gain for GD2 gaincell (low DTMF tone), see appendix Gain for tone generator
020E	0x40	GDRGain	D	Gain for GDR gaincell (DTMF tone to handset), see appendix Amplification by Shift&Add coeffecients
020F	0x22	GDXGain	D	Gain for GDX gaincell (DTMF tone to line), see appendix Amplification by Shift&Add coeffecients
0210	2	RingerVolumeStep	D	Current ringer volume selected by the user
0211	00	RingerVolumeData 0	D	Volume data for ringer volume step 0. Range 0-50 (decimal). Buzzer models only. This location is overwritten by the RingerVolumeDataSpkr 0 during power up in non-buzzer models!
0212	07	RingerVolumeData 1	D	Volume data for ringer volume step 1. Range 0-50 (decimal). Buzzer models only. This location is overwritten by the RingerVolumeDataSpkr 1 during power up in non-buzzer models!
0213	0F	RingerVolumeData 2	D	Volume data for ringer volume step 2. Range 0-50 (decimal). Buzzer models only. This location is overwritten by the RingerVolumeDataSpkr 2 during power up in non-buzzer models!
0214	1E	RingerVolumeData 3	D	Volume data for ringer volume step 3. Range 0-50 (decimal). Buzzer models only. This location is overwritten by the RingerVolumeDataSpkr 3 during power up in non-buzzer models!
0215	0A	ToneVolumeData	D	Volume data for tone volume. Range 0-50 (decimal). Buzzer models only. This location is overwritten by the ToneVolumeDataSpkr during power up in non-buzzer models!
0229	0x69	GCR	D	GCR register
022A	0x00	ACR	D	ACR register
022B	0xE3	ToneFilter 1	D	A2 register
022C	0Xac	ToneFilter 1	D	A1 register
022D	0xF4	ToneFilter 2	D	K register
022E	0x09	ToneFilter 2	D	GE register
022F	0x21	SoftLimiter1	D	LIM_HIGH
0230	0x06	SoftLimiter1	D	LIM_LOW
0231	0x40	SoftLimiter2	D	LPOR + TIM_OVR
0232	0x21	SoftLimiter2	D	GOR

Address	Default	Name	Type	Description
0233	0x15	ToneVolInSpkr	D	This volume (which is only used in 715/735) is controlling all tones sent to the base speaker. It is cascade coupled with the main tone volumes (DtmfToneVolumeData, PagedToneVolumeData, ToneVolumeDataSpkr, or RingerVolumeDataSpkr). This value is written to the IFG1 register, see table 5.5.
0234	0x7F	TadLineRecordGain	D	This gain controls the TAD recording level during recording from the line. Value = 256 * 10(gain/20) . The Universal Attenuator is used, so only attenuation is possible.
0235	0x7F	TadAdpcm2RecordGain	D	This gain controls the TAD recording level during recording from the handset. Value = 256 * 10(gain/20) . The Universal Attenuator is used, so only attenuation is possible.
0236	0x7F	TadSpphRecordGain	D	This gain controls the TAD recording level during recording from the speakerphone. Value = 256 * 10(gain/20) . The Universal Attenuator is used, so only attenuation is possible.
0237	0x00	TadDtmfRecordGain	D	This gain controls the TAD recording level during detected DTMF, value = 256 * 10(gain/20) . The Universal Attenuator is used, so only attenuation is possible.

15.3.5. BsNalTask

Address	Default	Name	Type	Description
0240	0x01	ARSCountryCorrespondance	D	ARS Country Correspondance 0 = Negative matching: No area code match -> Carrier is inserted. 1 = Positive matching: Match on area code -> Carrier is inserted. 2 = French matching: First digit of matched area code is replaced by carrier code
0241	0x00	ARSInternationalPrefix	D	ARS international prefix code in BCD on the form: International prefix = 00 Adr 0241 = 0x00
0242	0x00	KPN Voicemail Software Enable	D	KPN Voicemail Software Enable 1 = KPN Voicemail Softeware Enabled 0 = KPN Voicemail Softeware Disabled
0243-0245	0xB6, 0x1B, 0xFF	KPNVoiceMailEnableCode	D	KPN Voicemail Enable Code on the form: Enable code = *61* Addr 0243 = 0xB6, Addr 0244 = 0x1B Addr 0245 = 0xFF
0246-0248	0xC6, 0x1C, 0xFF	KPNVoiceMailDisableCode	D	KPN Voicemail Disable Code on the form: Enable code = #61# Addr 0246 = 0xC6, Addr 0247 = 0x1C Addr 0248 = 0xFF
0249-024C	0x08, 0x42, 0x33, 0x3F	KPNVoiceMailReadCode	D	KPN Voicemail Read Code on the form: Enable code = 0842333 Addr 0249 = 0x08, Addr 024A = 0x42 Addr 024B = 0x33, Addr 024C = 0x3F
024D-0250 0251-0254 0255-0258 0259-025C	0x11,0x2F, 0xFF,0xFF 0x11,0x0F, 0xFF,0xFF 0xFF,0xFF, 0xFF,0xFF 0xFF,0xFF, 0xFF,0xFF	BsNalExemptedNumber 1 BsNalExemptedNumber 2 BsNalExemptedNumber 3 BsNalExemptedNumber 4	D	Exempted numbers in BCD on the form: ExemptedNumber1 = 112 Addr 024D = 0x11 , Addr 024E = 0x2F Addr 024F = 0xFF , Addr 0250 = 0xFF
025D	0x00	ARSCheckEnable	D	ARS check configuration 1 = enable, 0 = disable
025E	0x00	ARS DeleteInternational Number	D	ARS delete international number configuration 1 = enable, 0 = disable Also used for enabling/disabling French ARS matching.
025F	0x00	KPN Voicemail Service Activated	D	KPN Voicemail Service Activated 1 = enable, 0 = disable
0260	0x00	KPN Voicemail Message Received		KPN Voicemail Message Received 1 = True, 0 = False
0261	0x00	BarredHandsets	D	Barred handsets configuration **Bit** 0: SpeakerPhone (TCD715/TCD735) 1: Handset 1, 2: Handset 2, 3: Handset 3, 4: Handset 4, 5: Handset 5, 6: Handset 6

Address	Default	Name	Type	Description
0262-0265 0266-0269 026A-026D 026E-0271 0272-0275 0276-0279	FF .. FF FF .. FF FF .. FF FF .. FF FF .. FF FF .. FF	BsNalBarredNumber 1 BsNalBarredNumber 2 BsNalBarredNumber 3 BsNalBarredNumber 4 BsNalBarredNumber 5 BsNalBarredNumber 6	D	Barred numbers in BCD on the form: Barred number 1 = 1234 Addr 0262 = 0x12 , Addr 0263 = 0x34 Addr 0264 = 0xFF , Addr 0265 = 0xFF
027A-027B 027C-027D 027E-027F 0280-0281 0282-0283 0284-0285 0286-0287 0288-0289	0xFF, 0xFF 0xFF, 0xFF 0xFF, 0xFF 0xFF, 0xFF 0xFF, 0xFF 0xFF, 0xFF 0xFF, 0xFF 0xFF, 0xFF	AKZ AccessCode 1 AKZ AccessCode 2 AKZ AccessCode 3 AKZ AccessCode 4 HAKZ AccessCode 1 HAKZ AccessCode 2 HAKZ AccessCode 3 HAKZ AccessCode 4	D	AccessCodes in BCD on the form: AKZ Code 1 = 12 Addr 027A = 0x12 , Addr 027B = 0xFF
028A-028D 028E-0291 0292-0295 0296-0299 029A-029D	FF .. FF FF .. FF FF .. FF FF .. FF FF .. FF	ARSCarrierCode 1 ARSCarrierCode 2 ARSCarrierCode 3 ARSCarrierCode 4 ARSCarrierCode 5	D	ARS Carrier codes in BCD on the form ARS Carrier 1 = 1234 Addr 028A = 0x12 , Addr 028B = 0x34 Addr 028C = 0xFF , Addr 028D = 0xFF
029E-02A0 02A1-02A3 ..... 02E6-02E8	FF, FF, F1 FF, FF, F1 ..... FF, FF, F1	ARSAreaCode 1 ARSAreaCode 2 ..... ARSAreaCode 25	D	ARS Area codes in BCD on the form ARS Area 1 = 1234 associated with ARS Carrier 1 Addr 029E = 0x12 , Addr 029F = 0x34 Addr 02A0 = 0xF1
02E9-02ED	-	Reserved for BsNalTask	-	

15.3.6. BsSpphTask

Address	Default	Name	Type	Description
090E	0x01	BsSpphAutoTransferEnable	D	Base speakerphone autotransfer configuration
09E1	0x00	BsSpphAntDiversityDisable	D	Antenna diversity disabling configuration
09E2	0x01	BsSpphAutoRedial.Enabled	D	Auto redial configuration
09E3	0x28	BsSpphAutoRedial. RetryTimeout	D	Auto redial Retry timeout
09E4	0x0C	BsSpphAutoRedial. RetryCount	D	Auto redial number of retries
09E5	0x28	BsSpphAutoRedial. BusyDetectTimeout	D	Timeout for busy tone detection after end of dial out. Unit: 1 second. Defaults to 40 seconds.
09E6-09EF	-	Reserved for BsSpphTask	-	

15.3.7. PSTN Line

Address	Default	Name	Type	Description
0F00	03	UserCfg-1.Mode	D	User configuration (MMI) - mode settings 1. **Bit** 0 :"R" mode, 0=earth break, 1=**loop break** 2..1: Dial mode, 00:pulse, 01:**DTMF** 3..7: Reserved
0F01	0D	UserCfg-2.Mode	D	User configuration (MMI) - mode settings 2. **Bit** 0..1: short "R" key time selection 00= short, 01=**long**, 10=extra-long 2..3: long "R" key time selection 00= short, 01=long, 10=extra-long, 11=**undef** (uses same time as specified for short R key) 4..7: Reserved Defaults to 0000 1101
0F02	10	UserCfg.RPauseTime	D	User configuration (MMI) - "R"-pause. If disabled, normal dial pause (DialPauseTime) is used. Bit 7..0 : "R" pause time, zero value allowed Unit : 50 ms, defaults to **800 ms**.
0F03	03	UserCfg.DialPauseTime	D	User configuration (MMI) - dial pause. Bit 3-0 : dial pause in 1 sec units , zero not allowed. Bit 7-4 : unused Defaults to **3 seconds**

Address	Default	Name	Type	Description
0F04	0F	Cfg-1	D	PSTN line configuration 1 (factory settings) **Bit** 0: EarthBreakEnable , Earth break 1=**enable** 0=disable 1: LoopBreakEnable, Loop break 1=**enable** 0=disable 2: PulseDialEnable, Pulse dial 1=**enable** 0=disable 3: RPauseEnable, usage of "R" pause 1=**enable** 0=disable 4: PulseType, 0=**normal** puls-type 1= (´0´=1 puls,..´9´=10 puls´s). 5: InterDigitLowImp. controls interdigit impedance. 1: keep low-impedance during interdigit pause 0: **normal impedance** during interdigit pause 6: LowImpLineSeizure. Special low-imp line seizure (Australian) , 1=enable , **0=disable** 7: TwoLines. line config 0=**one line** 1=two lines Defaults to 0000 0111B.
0F05	15	Cfg-2		PSTN line configuration 2 (factory settings) **Bit** 0: Meter-pulse, **1=enable**, 0=disable 1: DialToneMode, dial tone detection 1=enable 0=**disable** 2: BusyToneMode. busy tone detection 1=**enable** 0=disable 3: CurrentLimiterMode, 1=enable, 0=**disable** 4: RingToneMode. Ring tone detection 1=**enable** 0=disable 5: HookRelayEnable, 1=enable, 0=**disable** (if same port is used for earth-control EarthBreakEnable and HookRelayEnable cannot both be set to 1). 6..7: not used Defaults to 0001 0101B.
0F06	28	MakeTime	D	Pulse make time. Unit : 1 ms. defaults to **40 ms**.
0F07	3C	BreakTime	D	Pulse break time Unit : 1 ms, defaults to **60 ms**.
0F08	64	DtmfTime	D	DTMF tone pulse time. Unit : 1 ms, defaults to **100 ms**.
0F09	0A	InterDigitDtmfTime	D	Inter-digit time in DTMF mode. Unit : 10 ms , defaults to **100ms**.
0F0A	4A	InterDigitPulseTime	D	Inter-digit time in Pulse mode. Unit : 10 ms, defaults to **740 ms**.
0F0B	08	CalibBreakTime[0]	D	Calibrated loop-break time for short break Unit : 10 ms, defaults to **80 ms**.
0F0C	14	CalibBreakTime[1]	D	Calibrated loop-break time for long break Unit : 10 ms, defaults to **200 ms**.
0F0D	46	CalibBreakTime[2]	D	Calibrated loop-break time for extra-long break Unit : 10 ms, defaults to **700 ms**.
0F0E	28	CalibBreakTime[3]	D	Calibrated earth-break time for short break Unit : 10 ms, defaults to **400 ms**.
0F0F	82	CalibBreakTime[4]	D	Calibrated earth-break time for long break Unit : 10 ms, defaults to **1300 ms**.
0F10	82	CalibBreakTime[5]	D	Calibrated earth-break time for extra-long break Unit : 10 ms, defaults to 1300 ms.
0F11	FF	LineSeizureEndTime	D	Line seizure end-time - time after hook-on. Meter-pulse detection continues during this period of time. 00h or FFh means 10 ms. Unit : 10 ms, defaults to **10 ms**.
0F12	64	RingTermToU100	D	Ring terminate time-out period. This is the max time that must elapse between two ring-voltage bursts before the new ring-voltage is registered as a new incoming call. Unit: 100 ms. defaults to approx **10 sec**.
0F13	08	RingPatternToU100	D	Ring pattern timeout. Max. silence period during distinctive ringing. As long as the silence period does not exceed this period of time the ring is still considered and counted as one single ring. Unit : 100 ms. Defaults to **800 ms**
0F14	FF	AgcUpdateTime		Line AGC update time. The period of time between each line AGC update. If FFh, line-AGC is disabled. If used recommended value is 64h (1 sec). Unit : 10ms, min/max: 10/FF, Defaults to **disabled**.
0F15	0A	LineSeizureTime		Line seizure time. The period of time that the PSTN line or the PSTN HW needs after the hook-switch is activated in order to be ready. During this period audio is muted. 700/705: Only used during outgoing calls or if the special-line seizure mode is enabled (Cfg:6). 715/25/35: Always used. Unit : 10 ms, min/max: 01/FF. Defaults to **100 ms**.

Address	Default	Name	Type	Description
0F16	66	InitDialPause	D	Init-dial-pause. Dial pause inserted after hook-off when making an outgoing call. Bit 0..3: init dial pause if PULSE dial-mode. If 0fH then normal dial-pause is used. Bit 4..7: init dial pause if DTMF dial-mode. if 0fH then normal dial-pause is used. Unit : 500 ms, min/max: 00/0F. Defaults to **3 sec and 3 sec**.
0F17..1BB	FF..FF	Reserved[5]	D	

15.3.8. Clip configuration

Address	Default	Name	Type	Description
0F37..38	3D 00	Parse.Configuration	D	Clip parse set configuration **Bit** 0: Etsi: 1=**enable** 0=disable 1: ForwardNumber: 1=enable 0=**disable** 2: Danish: 1=**enable** 0=disable 3: Dutch: 1=**enable** 0=disable 4: Canadian: 1=**enable** 0=disable 5: Swedish: 1=**enable** 0=disable 6: UserDefined: 1=enable 0=**disable** 7: KPN vmwi: 1=enable 0=**disable** 8: Reserved8 9: Reserved9 10: Reserved10 11: Reserved11 12: Reserved12 13: Reserved13 14: Reserved14 15: Reserved15

15.3.9. BsUiTask

Address	Default	Name	Type	Description
0FFB	(TCD715 / TCD735) 0xFF (TCD725) 0xF7	Config1	D	BsUiTask configuration (LSB) **Bits** 1=**enable** 0=disable 0: FlashTime1Enabled. 1: FlashTime2Enabled. 2: FlashTime3Enabled. 3: KeyClicksEnabled: TCD700 / TCD705 : Default disabled 4: ARSCarrierMenuEnabled. 5: ARSIntDeletionMenuEnabled. 6: ARSMultipleCarrierMenuEnabled. 7: ARSMultipleAreaCodeMenuEnabled.
0FFC	0x01	Config2	D	BsUiTask configuration (MSB) **Bits** 1=**enable** 0=disable 0: AmPmClockSettingEnabled. 1-7: Unused.
0FFD	0x00	KammaBaseFeatures	A	Kamma base features **Bits** 1=**enable** 0=disable 0: PhoneBookAvailable. 1: TadAvailable. 2-7: Unused.
0FFE	0x05	Kamma4BaseModelId	A	Kamma4 Base Model Identifier: 0x03 = TCD715 0x04 = TCD725 0x05 = TCD735 Warning: if this location contains 0xFF the EEPROM is considered un-initialized and the application will be disabled! In this case only bus access is available to allow the EEPROM to be defaulted.

15.4. Appendix

15.4.1. Gain for transmit and receive

	[dB]		[dB]		[dB]		[dB]		[dB]
00 00	16.06	31 15	5.92	BB 22	-2.72	39 20	-11.02	48 D7	-29.51
00 01	16.90	21 41	5.73	AB 92	-2.92	A9 24	-11.20	98 C6	-29.97
00 02	16.26	0B 93	5.53	3A 15	-3.11	99 C2	-11.39	CB D6	-30.40
00 03	15.92	12 C3	5.34	BA C0	-3.30	39 14	-11.58	CB DE	-30.80
00 0D	15.47	21 BB	5.14	AB B5	-3.50	A9 22	-11.77	B8 E0	-31.26
00 0B	15.19	0A 94	4.94	19 35	-3.70	9A 0D	-11.91	38 E1	-31.58
00 11	14.81	0B 41	4.74	AB 31	-3.89	99 52	-12.39	48 E1	-32.08
00 12	14.40	32 10	4.54	2A 10	-4.06	C9 15	-12.88	A8 D7	-32.53
00 1D	13.92	22 23	4.35	AA A5	-4.28	99 33	-13.36	A8 DD	-32.88
00 21	13.53	31 B5	4.16	AA B1	-4.47	99 31	-13.84	C8 E1	-33.16
00 2D	13.03	22 4B	3.97	AA BC	-4.66	A8 A5	-14.27	48 E2	-33.66
00 3C	12.54	22 CC	3.77	AA CA	-4.66	99 24	-14.72	28 E7	-34.12
01 10	12.04	32 21	3.59	B9 A3	-5.03	C8 B1	-15.10	48 E3	-34.57
00 BB	11.55	32 25	3.40	AA 42	-5.23	48 B2	-15.60	48 E4	-35.07
00 B3	11.41	23 30	3.20	AA 33	-5.41	28 B7	-16.06	48 E7	-35.53
00 B2	11.33	23 4A	3.01	39 44	-5.59	48 B3	-16.51	98 D6	-35.99
00 B1	11.19	23 B2	2.81	AA 25	-5.78	48 B4	-17.01	C8 E5	-38.42
01 13	11.04	32 B1	2.63	AA 22	-5.96	48 B7	-17.47	C8 EE	-36.82
00 A5	10.84	1B CB	2.43	B9 B5	-6.13	96 A6	-17.93	B8 D9	-37.28
00 A3	10.72	1B 41	2.24	39 33	-6.31	CB B5	-18.36	A8 E3	-37.60
01 21	10.57	1B 30	2.05	98 93	-6.51	C8 BE	-18.76	A8 E4	-38.10
01 22	10.40	33 B1	1.86	AA 14	-6.69	B8 C0	-19.22	A8 E7	-38.55
01 2D	10.22	33 A1	1.68	9B AD	-6.89	38 C1	-19.54	A8 ED	-38.90
01 31	10.07	33 93	1.49	9B C2	-7.06	48 C1	-20.03	C8 EA	-39.18
01 3C	9.88	1A C1	1.29	9B 42	-7.28	A8 B7	-20.49	B8 EA	-39.78
01 4A	9.68	2B A5	1.09	9B 2C	-7.48	A8 B0	-20.84	98 E2	-40.21
02 0D	9.50	2B C1	0.89	B9 4B	-7.67	C8 C1	-21.12	98 E3	-41.12
10 CB	9.30	2B 44	0.70	A9 C2	-7.87	48 C2	-21.62	98 E4	-41.62
10 C1	9.13	3B 94	0.50	A9 C8	-8.06	28 C7	-22.06	98 E7	-42.06
10 B4	8.95	2B 21	0.30	9A C1	-8.25	48 C3	-22.53	98 ED	-42.42
01 A5	8.76	2B 15	0.11	99 95	-8.43	48 C4	-23.03	C8 E9	-42.70
02 21	8.59	3B CA	-0.08	9A 49	-8.61	48 C7	-23.49	B8 E9	-43.30
02 25	8.40	09 49	-0.28	9A 41	-8.80	98 B6	-23.95	A8 E9	-44.64
02 33	8.20	3B 24	-0.47	B9 31	-8.98	C8 C5	-24.38	29 0F	-46.23
02 49	8.01	1A 14	-0.67	9A 2B	-9.18	C8 CE	-24.78	39 0F	-47.14
02 C2	7.82	3B 13	-0.86	A9 41	-9.37	B8 D0	-25.24	49 0F	-47.64
02 B1	7.63	3A B2	-1.03	A9 38	-9.53	38 D1	-25.56	98 E9	-48.16
20 BC	7.43	2A 2B	-1.22	A9 35	-9.72	48 D1	-26.05	C9 0F	-48.73
11 43	7.24	2A 23	-1.42	99 A3	-9.89	A8 C7	-26.51	B9 0F	-49.32
03 49	7.07	3A 4A	-1.61	B9 23	-10.05	AB CD	-26.86	A9 0F	-50.66
21 14	6.88	09 31	-1.80	9A 14	-10.21	C8 D1	-27.14	99 0F	-54.19
11 BD	6.69	BB A4	-2.00	29 15	-10.38	48 D2	-27.64	88 00	-1"10^10
30 BD	6.50	BB BB	-2.19	99 B1	-10.55	28 D7	-28.10		
12 15	6.31	BB 4A	-2.38	29 14	-10.66	48 D3	-28.55		
21 2C	6.11	BB 31	-2.56	A9 2C	-10.84	48 D4	-29.05		

Table 1-17: Gain for Transmit and Receive/dB

15.4.2. Gain for tonegenerator

	[dB]		[dB]		[dB]		[dB]		[dB]
00	6.02	1F	-6.09	35	-17.79	51	-26.58	6E	-36.26
01	3.52	1E	-6.16	36	-17.93	52	-28.16	6D	-36.40
02	1.94	1D	-6.30	37	-17.99	53	-29.08	6C	-36.68
03	1.02	1C	-6.58	40	-18.06	54	-29.58	6B	-37.28
04	0.53	1B	-7.18	3F	-18.13	55	-29.84	71	-38.62
05	0.27	21	-8.52	3E	-18.20	56	-29.97	72	-40.21
06	0.13	22	-10.10	3D	-18.34	57	-30.04	73	-41.12
07	0.07	23	-11.02	3C	-18.62	60	-30.10	74	-41.62
10	0.00	24	-11.51	3B	-19.22	5F	-30.17	75	-41.88
0F	-0.07	25	-11.77	41	-20.56	5E	-30.24	76	-42.01
0E	-0.14	26	-11.91	42	-22.14	5D	-30.38	77	-42.08
0D	-0.28	27	-11.97	43	-23.06	5C	-30.66	69	-42.14
0C	-0.56	30	-12.04	44	-23.56	5B	-31.26	7F	-42.21
0B	-1.16	2F	-12.11	45	-23.82	61	-32.60	7E	-42.28
11	-2.50	2E	-12.18	46	-23.95	62	-34.19	7D	-42.42
12	-4.08	2D	-12.32	47	-24.01	63	-35.10	7C	-42.70
13	-5.00	2C	-12.60	50	-24.08	64	-35.60	7B	-43.30
14	-5.49	2B	-13.20	4F	-24.15	65	-35.86	7A	-44.64
15	-5.75	31	-14.54	4E	-24.22	66	-35.99	79	-48.16
16	-5.89	32	-16.12	4D	-24.36	67	-36.06	08	-1*10^10
17	-5.95	33	-17.04	4C	-24.64	70	-36.12		
20	-6.02	34	-17.54	4B	-25.24	6F	-36.19		

15.4.3. Amplification by Shift & Add coeffecients

	[dB]		[dB]		[dB]		[dB]		[dB]
00	6.02	1F	-6.09	35	-17.79	51	-26.58	6E	-36.26
01	3.52	1E	-6.16	36	-17.93	52	-28.16	6D	-36.40
02	1.94	1D	-6.30	37	-17.99	53	-29.08	6C	-36.68
03	1.02	1C	-6.58	40	-18.06	54	-29.58	6B	-37.28
04	0.53	1B	-7.18	3F	-18.13	55	-29.84	71	-38.62
05	0.27	21	-8.52	3E	-18.20	56	-29.97	72	-40.21
06	0.13	22	-10.10	3D	-18.34	57	-30.04	73	-41.12
07	0.07	23	-11.02	3C	-18.62	60	-30.10	74	-41.62
10	0.00	24	-11.51	3B	-19.22	5F	-30.17	75	-41.88
0F	-0.07	25	-11.77	41	-20.56	5E	-30.24	76	-42.01
0E	-0.14	26	-11.91	42	-22.14	5D	-30.38	77	-42.08
0D	-0.28	27	-11.97	43	-23.06	5C	-30.66	69	-42.14
0C	-0.56	30	-12.04	44	-23.56	5B	-31.26	7F	-42.21
0B	-1.16	2F	-12.11	45	-23.82	61	-32.60	7E	-42.28
11	-2.50	2E	-12.18	46	-23.95	62	-34.19	7D	-42.42
12	-4.08	2D	-12.32	47	-24.01	63	-35.10	7C	-42.70
13	-5.00	2C	-12.60	50	-24.08	64	-35.60	7B	-43.30
14	-5.49	2B	-13.20	4F	-24.15	65	-35.86	7A	-44.64
15	-5.75	31	-14.54	4E	-24.22	66	-35.99	79	-48.16
16	-5.89	32	-16.12	4D	-24.36	67	-36.06	08	-1*10^10
17	-5.95	33	-17.04	4C	-24.64	70	-36.12		
20	-6.02	34	-17.54	4B	-25.24	6F	-36.19		

Table 1-14: amplification by Shift & Add coefficients / dB

15.4.4. Gain index values

Index (dec)	Index (hex)	Gain (dB)	DspRam
0	0x00	-21	0xC8C1
1	0x01	-20	0x48C1
2	0x02	-19	0xB8C0
3	0x03	-18	0x98A6
4	0x04	-17	0x48B4
5	0x05	-16	0x28B7
6	0x06	-15	0xC8B1
7	0x07	-14	0x9931
8	0x08	-13	0xC915
9	0x09	-12	0x9A0D
10	0x0a	-11	0x3920
11	0x0b	-10	0xB923
12	0x0c	-9	0xB931
13	0x0d	-8	0xA9CB
14	0x0e	-7	0x9BC2
15	0x0f	-6	0xAA22
16	0x10	-5	0xB9A3
17	0x11	-4	0x2A10
18	0x12	-3	0xAB92
19	0x13	-2	0xBBA4
20	0x14	-1	0x3AB2
21	0x15	0	0x3BCA
22	0x16	+1	0x2BA5
23	0x17	+2	0x1B30
24	0x18	+3	0x234A
25	0x19	+4	0x224B
26	0x1A	+5	0x0A94
27	0x1B	+6	0x3115
28	0x1C	+7	0x0349
29	0x1D	+8	0x0249
30	0x1E	+9	0x10B4
31	0x1F	+10	0x0131
32	0x20	+11	0x0113
33	0x21	+12	0x0110
34	0x22	+13	0x002D
35	0x23	+14	0x001D
36	0x24	+15	0x0011
37	0x25	+16	0x0003
38	0x26	+17	0x0001
39	0x27	+18	0x0000

15.4.5. Speakerphone gain

DspRam	Index	Attenuation
0x02DA	0/0x00	-21 dB
0x0333	1/0x01	-20 dB
0x0397	2/0x02	-19 dB
0x0407	3/0x03	-18 dB
0x0485	4/0x04	-17 dB
0x0512	5/0x05	-16 dB
0x05B0	6/0x06	-15 dB
0x0662	7/0x07	-14 dB
0x072A	8/0x08	-13 dB
0x080A	9/0x09	-12 dB
0x0905	10/0x0a	-11 dB
0x0A1E	11/0x0b	-10 dB
0x0B5B	12/0x0c	-9 dB
0x0CBD	13/0x0d	-8 dB
0x0E4B	14/0x0e	-7 dB
0x100A	15/0x0f	-6 dB
0x11FF	16/0x10	-5 dB
0x1431	17/0x11	-4 dB
0x16A8	18/0x12	-3 dB
0x196C	19/0x13	-2 dB
0x1C86	20/0x14	-1 dB
0x2001	21/0x15	0 dB
0x23E8	22/0x16	+1 dB
0x284A	23/0x17	+2 dB
0x2D35	24/0x18	+3 dB
0x32B9	25/0x19	+4 dB
0x38E9	26/0x1A	+5 dB
0x3FDB	27/0x1B	+6 dB
0x47A6	28/0x1C	+7 dB
0x5064	29/0x1D	+8 dB
0x5A33	30/0x1E	+9 dB
0x6534	31/0x1F	+10 dB
0x718E	32/0x20	+11 dB
0x7F69	33/0x21	+12 dB
Special values:		
0x0000	34/0x22	Off
0x028A	35/0x23	-22 dB
0x0244	36/0x24	-23 dB
0x0204	37/0x25	-24 dB
0x01CC	38/0x26	-25 dB
0x019A	39/0x27	-26 dB
0x016D	40/0x28	-27 dB
0x0146	41/0x29	-28 dB
0x0122	42/0x2A	-29 dB
0x0103	43/0x2B	-30 dB
0x00E6	44/0x2C	-31 dB
0x00CD	45/0x2D	-32 dB

16 EEPROM LAYOUT (HANDSET)

16.1. Scope

The purpose of this section is to describe the layout of the EEPROM (IC2) TCD118 handset.

The EEPROM contains hardware, software, and user specific parameters. Some parameters are set during production of the handset e.g. crystal oscillator adjustment at 0000..01, some are set by the user when configuring the handset e.g. ringer volume at 0F38, and some during normal use of the phone e.g. redial memory at 0311..0392.

16.2. Introduction

The handset uses a 32k bit (4096 x 8) serial EEPROM (IC9) for storing volatile parameters. All parameters are set up before the handset the factory. Some of these are vital for the operation of the hardware so a set of default parameters is programmed before the actual hardware fine-tuning can be initiated. This document lists all default settings with a short description.

This document lists all default parameters with a short description.

In the tables below values in a range that are similar are not repeated; i.e. Address 00 to 01 contains the value 00 simply means that the value 00 is repeated in all addressee in the range.

Type	Name	Description
D	default	The EEPROM location is preset to the Default value by the eeprom default loader.
A	adjust	The EEPROM location is set during the production test and should not be overwritten. The value is set by the eeprom default loader only if the location contains 0xFF, i, e. it has never been set.
-		EEPROM location which is not set at all.

16.3. EEPROM contents

16.3.1. General Setup

Address	Default	Name	Type	Description
00-01	?? ??	EepromOscillator	D	Frequency adjustment.....
0002	20	ModulationDeviation	A	Mudulation adjustment
0036-003A	?? .. ??	PARK_1	-	PARK for registration 1
003B-003F	?? .. ??	PARK_2	-	PARK for registration 2
0040-0044	?? .. ??	PARK_3	-	PARK for registration 3
0045-0049	?? .. ??	PARK_4	-	PARK for registration 4
004A	FF	PLI_1	D	Pli for registration 1. If set to FF the registration is deleted.
004B	FF	PLI_2	D	Pli for registration 2. If set to FF the registration is deleted.
004C	FF	PLI_3	D	Pli for registration 3. If set to FF the registration is deleted.
004D	FF	PLI_4	D	Pli for registration 4. If set to FF the registration is deleted.
0100-0104	?? .. ??	RFPI_1	-	RFPI for registration 1
0105	??	SerClass_1	-	Service class for registration 1
0106	??	LAL_1	-	Location area level for registration 1
0107	??	IPUI_LEN_1	-	IPUI length for registration 1
0108-0114	?? .. ??	IPUI_1	-	IPUI for registration 1
0115	??	ZAP_1	-	ZAP for registration 1
0116	??	STATUS_1	-	Status for registration 1
0117-0126	?? .. ??	UAK_1	-	UAK for registration 1
0127-012F	?? .. ??	Reserved	-	Protocol data
0130-0134	?? .. ??	RFPI_2	-	RFPI for registration 2
0135	??	SerClass_2	-	Service class for registration 2
0136	??	LAL_2	-	Location area level for registration 2
0137	??	IPUI_LEN_2	-	IPUI length for registration 2
0138-0144	?? .. ??	IPUI_2	-	IPUI for registration 2
0145	??	ZAP_2	-	ZAP for registration 2
0146	??	STATUS_2	-	Status for registration 2
0147-0156	?? .. ??	UAK_2	-	UAK for registration 2
0157-015F	?? .. ??	Reserved	-	Protocol data
0160-0164	?? .. ??	RFPI_3	-	RFPI for registration 3
0165	??	SerClass_3	-	Service class for registration 3
0166	??	LAL_3	-	Location area level for registration 3
0167	??	IPUI_LEN_3	-	IPUI length for registration 3
0168-0174	?? .. ??	IPUI_3	-	IPUI for registration 3
0175	??	ZAP_3	-	ZAP for registration 3

Address	Default	Name	Type	Description
0176	??	STATUS_3	-	Status for registration 3
0177-0186	?? .. ??	UAK_3	-	UAK for registration 3
0187-018F	?? .. ??	Reserved	-	Protocol data
0190-0194	?? .. ??	RFPI_4	-	RFPI for registration 4
0195	??	SerClass_4	-	Service class for registration 4
0196	??	LAL_4	-	Location area level for registration 4
0197	??	IPUI_LEN_4	-	IPUI length for registration 4
0198-01A4	?? .. ??	IPUI_4	-	IPUI for registration 4
01A5	??	ZAP_4	-	ZAP for registration 4
01A6	??	STATUS_4	-	Status for registration 4
01A7-01B6	?? .. ??	UAK_4	-	UAK for registration 4
01B7-01FF	?? .. ??	Reserved	-	Protocol data

16.3.2. Default audio-parameters

Address	Default	Name	Type	Description
2FB	--	COMAR	D	Not used. COMAR-setting moved to address 1F28 in order to have a different COMAR-value for each volumestep.
2FC	2B	LPAAR	D	AGC receive
2FD	00	SPAHR	D	AGC receive
2FE	79	SPALR	D	AGC receive
2FF	E0	MAX_AAR	D	AGC receive
300	00	MAX_GAR	D	AGC receive
301	06	IG_AR	D	AGC receive
302	7F	LIMNR	D	AGC receive
303	58	COMAX	D	AGC transmit
304	5E	LPAX	D	AGC transmit
305	40	SPAHX	D	AGC transmit
306	40	SPALX	D	AGC transmit
307	0F	MAX_AAX	D	AGC transmit
308	0F	MAX_GAX	D	AGC transmit
309	0F	IG_AX	D	AGC transmit
30A	00	LIMNX	D	AGC transmit
30B	00	SKR1+SA2R1	D	Frequency correction receive
30C	00	A2R1	D	Frequency correction receive
30D	00	SKR2+SA1R1	D	Frequency correction receive
30E	00	A1R1	D	Frequency correction receive
30F	00	KR2	D	Frequency correction receive
310	00	KR1	D	Frequency correction receive
311	00	SKR3+SA2R2	D	Frequency correction receive
312	00	A2R2	D	Frequency correction receive
313	00	SA1R3+SA1R2	D	Frequency correction receive
314	00	A1R2	D	Frequency correction receive
315	00	KR3	D	Frequency correction receive
316	00	A1R3	D	Frequency correction receive
317	00	SKX1+SA2X1	D	Frequency correction transmit
318	00	A2X1	D	Frequency correction transmit
319	00	SKX2+SA1X1	D	Frequency correction transmit
31A	00	A1X1	D	Frequency correction transmit
31B	00	KX2	D	Frequency correction transmit
31C	00	KX1	D	Frequency correction transmit
31D	00	SKX3+SA2X3	D	Frequency correction transmit
31E	00	A2X2	D	Frequency correction transmit
31F	00	SA1X3+SA1X2	D	Frequency correction transmit
320	00	A1X2	D	Frequency correction transmit
321	00	KX3	D	Frequency correction transmit
322	00	A1X3	D	Frequency correction transmit
323	1A	LIM_LP2R	D	Speech-detect receive
324	36	LIM_SDR	D	Speech-detect receive
325	1E	LP1R	D	Speech-detect receive
326	00	OFFSETR	D	Speech-detect receive
327	51	LP2NR	D	Speech-detect receive
328	1E	PKDNR	D	Speech-detect receive
329	24	LP2SR	D	Speech-detect receive
32A	51	PKDSR	D	Speech-detect receive

Address	Default	Name	Type	Description
32B	1A	LIM_LP2X	D	Speech-detect transmit
32C	10	LIM_SDX	D	Speech-detect transmit
32D	1E	LP1X	D	Speech-detect transmit
32E	15	OFFSETX	D	Speech-detect transmit
32F	51	LP2NX	D	Speech-detect transmit
330	1E	PKDNX	D	Speech-detect transmit
331	24	LP2SX	D	Speech-detect transmit
332	51	PKDSX	D	Speech-detect transmit
333	EF	GAE	D	Speech compare AE
334	10	ETAE	D	Speech compare AE
335	52	GDSAE	D	Speech compare AE
336	10	PDSAE	D	Speech compare AE
337	12	GDNAE	D	Speech compare AE
338	2A	PDNAE	D	Speech compare AE
339	F6	GLE	D	Speech compare LE
33A	10	ETLE	D	Speech compare LE
33B	48	GDSLE	D	Speech compare LE
33C	10	PDSLE	D	Speech compare LE
33D	20	GDNLE	D	Speech compare LE
33E	2A	PDNLE	D	Speech compare LE
33F	09	LGX	D	Gain LGAR
340	31	LGR	D	Gain LGAX
341	35	ATT	D	Hands free speaking
342	FF	SW	D	Hands free speaking
343	05	TW	D	Hands free speaking
344	40	DS	D	Hands free speaking

16.3.3. MMI parameters

Address	Default	Name	Type	Description
200-20C	204 = DD	DirectCallEntry	D	The first byte is the length of the speeddialnumber. The next 12 bytes is the 24 digits. every digit is 4 bytes and stored in BCD + some special characters.
20D-28E	--	Redial	D	
28F	00	LastRedialEntry	D	
290 - 299	FF	HotKey	D	index 0 - speeddialentry for key 0 index 1 - speeddialentry for key 1 - index 9 - speeddialentry for key 9
29A - 29B	00 00	HSPinCode	-	4 BCD Digits
29C	00	EESubscriptionNumber	D	Selected subscription
29D-2A4	00	EESubscriptionInfo	D	HandsetNumber And BaseType for all subscriptions.
2A5-2A6	FF FF	AlarmTime	D	4 BCD Digits Hours Tens,Units : Minutes Tens,Units
2A7	00	AlarmConfig	D	bit1 + bit2 - Configuration settings for alarm. 1 Byte 00 - OFF 01 - ONCE 10 - DAILY.
2A8-2AB	00	TotalHandsetCharge	D	Holds the chargecostcount since last handset-reset or callcost-reset(32bit).
2AC	0x10	FactoryLanguageSetting	D	Factory setting for language: 00 = Spanish 01 = Norwegian 02 = French 03 = Italian 04 = Danish 05 = Dutch 06 = Swedish 07 = Finnish 08 = Greek 09 = Turkish 0A = Hungarian 0B = Portugese 0C = Russian 0D = Polish 0E = Slovakian 0F = Czech 10 = German 11 = English
2AD	0x10	Language	D	Language code (see table above)

Address	Default	Name	Type	Description
2AE - 2B0	FF ED FF	AvailableLanguages	D	Bit 0: 0:Disable, **1:Enable Spanish** Bit 1: 0:Disable, **1:Enable Norwegian** Bit 2: 0:Disable, **1:Enable French** Bit 3: 0:Disable, **1:Enable Italian** Bit 4: 0:Disable, **1:Enable Danish** Bit 5: 0:Disable, **1:Enable Dutch** Bit 6: 0:Disable, **1:Enable Swedish** Bit 7: 0:Disable, **1:Enable Finnish** Bit 0: 0:Disable, **1:Enable Greek** Bit 1: 0:Disable, **1:Enable Turkish** Bit 2: 0:Disable, **1:Enable Hungarian** Bit 3: 0:Disable, **1:Enable Portuguese** Bit 4: 0:Disable, **1:Enable Russian** Bit 5: 0:Disable, **1:Enable Polish** Bit 6: 0:Disable, **1:Enable Slovakian** Bit 7: 0:Disable, **1:Enable Czech** Bit 0: 0:Disable, **1:Enable German** Bit 1: 0:Disable, **1:Enable English** Bit 2-7: Reserved
2B1-2BA	0x41	Category	D	
2BB	00	RunTimeErrorLogConfig	D	00 = Show RunTimeErrorLog disabled.
2BC-2BD	0000	RunTimeErrorLogAddress	D	0000 = No error.

16.3.4. Audiosettings

Address	Default	Name	Type	Description
345	01	ExtMelodyIndex	D	Melody played when incoming external call
346	01	IntMelodyIndex	D	Melody played when incoming internal call
347	01	PageMelodyIndex	D	Melody played when paging
348	01	AlarmMelodyIndex	D	Melody played when alarm is sounded
349	03	EERingerVolume	D	Volume of the ringer
34A	02	EEVoiceVolume	D	Volume of the earpice
34B	03	EESpVolume	D	Volume of the speakerphone
34C	02	EETAMVoiceVolume	D	Volume of the earpice when in TAM
34D	03	EETAMSpPhVolume	D	Volume of the speakerphone when in TAM

16.3.5. Melodies

Address	Default	Name	Type	Description
34E - 377	--	MelodyTable	-	Table telling start of each melody + end of last melody (21 * 2 byte)
378 - 777	--	Melodies	-	Ringermelodies

16.3.6. MMI

Address	Default	Name	Type	Description
778-1EE7	Number Length = 00	PhoneBook	-	200 Phonebook entries, with each location defined by 30 bytes: Name[MAX_NAME_LENGTH] = 16 bytes NumberLength = 1 byte Number[MAX_NUMBER_LENGTH/2] = 12 bytes Category = 1 bytes
1EE8-1EEA	FF	Unused1	D	Unused eeprom location
1EEB	00	AudibleRinger	D	
1EEC	04	DisplayContrast	D	Display contrast value[00..1F] with 00 as the highest contrast setting
1EED	02	BacklightColour	D	00 = Off 01 = Red 02 = Green 03 = Orange

16.3.7. MMI Bits

Address	Default	Name	Type	Description
1F00	0B	EEToneConfig	D	bit 0 - Keytone on/off - 1/0 bit 1 - Call waiting on/off - 1/0 bit 2 - Range alarm on/off - 1/0 bit 3 - Battery low alarm on/off - 1/0
1F01	C6	UIConfig00	D	bit 0 - Direct call 1 = on /0 = off bit 1 - StandbyDisplay00 00 = Off / 01 = Clock bit 2 - StandbyDisplay01 10 = PpNo / 11 = FpNo bit 3 - BatteryType 1 = Ni-Cd/0 = Ni-Mh bit 4 - Call barring bit 5 - Autio talk bit 6 - TalkmodeDisplay00 11 = Talk time bit 7 - TalkmodeDisplay01 01 = Talk cost 10 = Phone number

16.3.8. VolumeSettings

Address	Default	Name	Type	Description
1F12	10	BeepVolSetting	D	Soundlevel of buzzerbeeps, who is not affected by the ringervolume. Hightime = Cycle/VolumeLevel

nb. There is no restriction in range. That is if a value is put in, who is too high, the hightime will become zero and therefore onlly clickingsounds will be heard.

16.3.9. Audiogains

Address	Default	Name	Type	Description
1F1D	16	GX-index	D	Gain-transmit (values ranging from 0x00 to 0x24, each step representing 1 dB)
1F1E	1C	GR-index	D	Gain-receive (values ranging from 0x00 to 0x24, each step representing 1 dB)
1F1F	04	SideToneGain	D	SideToneGain (T67DSP-PPV2xD4-7600, table 1.10).
1F20	11	SpPhGX-index	D	Gain-transmit for speakerphone (values ranging from 0x00 to 0x24, each step representing 1 dB)
1F21	9B	SpPhGR-index	D	Bit7 - AOG when speakerphone (0 as default) Bit6 - AOG2 when speakerphone (1 as default) Bit5 - Extra 6dB attenuation using the method described on page 120 in ""T672X-XV01D7-7600". 0 = 0dB, 1 = -6dB, when speakerphone (1 as default) Gain-receive for speakerphone (values ranging from 0x00 to 0x1F, each step representing 1 dB)
1F22	08	SpPhSideToneGain	D	SideToneGaint for speakerphone (T67DSP-PPV2xD4-7600, table 1.10).
1F23	01	SpPhEnableState	D	Indicates in what state the chip-enable on HF-AM1 has to be to enable the speakerphone-amplifier 0x01 - P0.7(SP_AMP) set to high enables HF_AM1 0x00 - P0.7(SP_AMP) set to low enables HF_AM1
1F24	16	HeadsetGX-index	D	Gain-transmit when headset mounted (values ranging from 0x00 to 0x24, each step representing 1 dB)
1F25	1B	HeadsetGR-index	D	Gain-receive when headset mounted (values ranging from 0x00 to 0x24, each step representing 1 dB)
1F26	04	HeadsetSideToneGain	D	SideToneGaint when headset mounted (T67DSP-PPV2xD4-7600, table 1.10).
1F27	20	HeadsetDetectVoltage	D	Determines at which voltage below which the headset will be detected. HeadsetDetectVoltage[eeprom] = [ADC-steps] = LowVoltage[mV] / (3.2 * 9.53[mV/step])

16.3.10. Call cost-configuration

Address	Default	Name	Type	Description
1F30	03	MenusEnabled	D	Used to disable/enable functionality. bit 0: Callcost - 0 disabled/1 enableed. bit1: Batteryselection - 0 disabled/1 enabled.

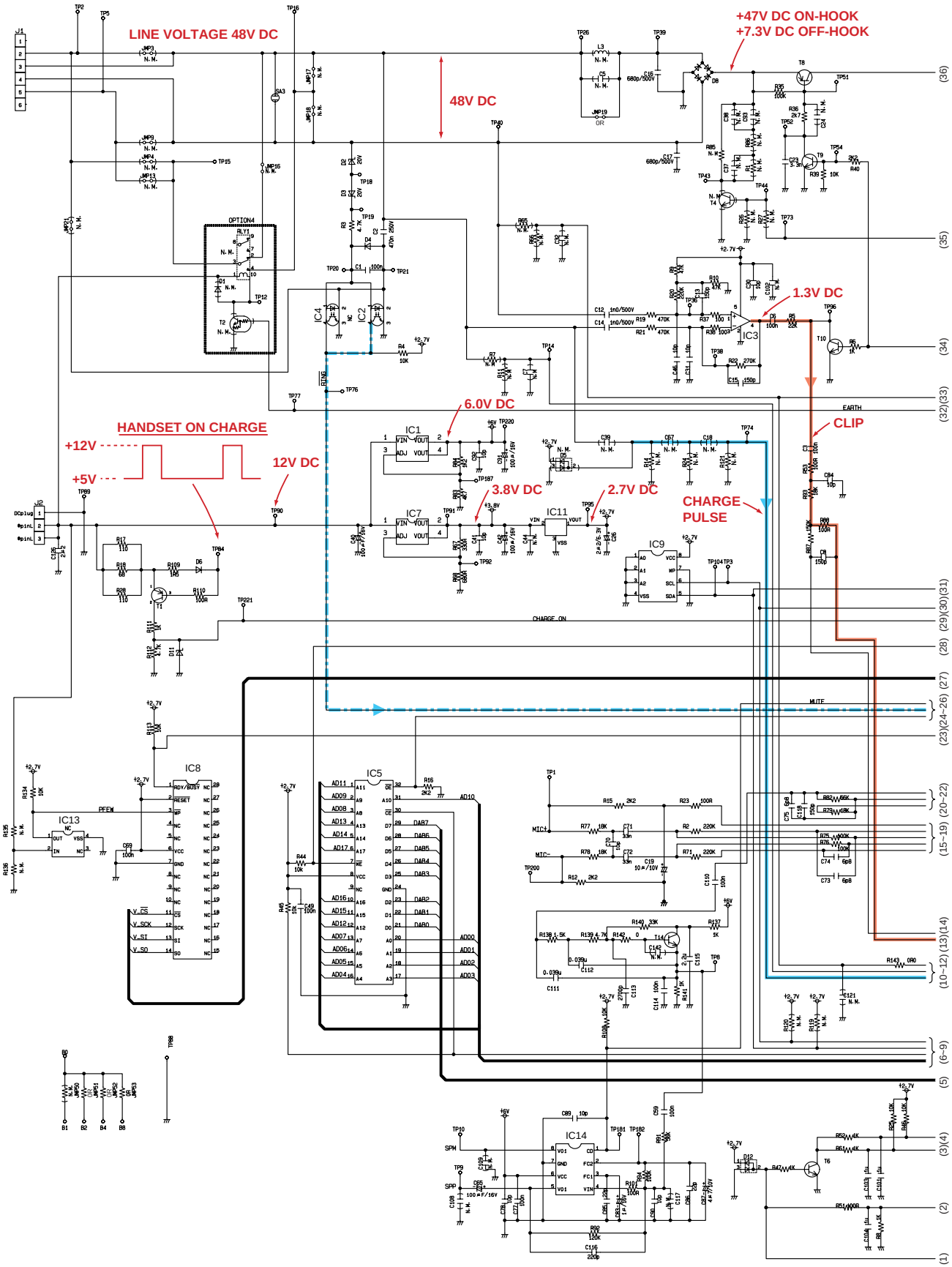
16.3.11. Phonebook-FAT

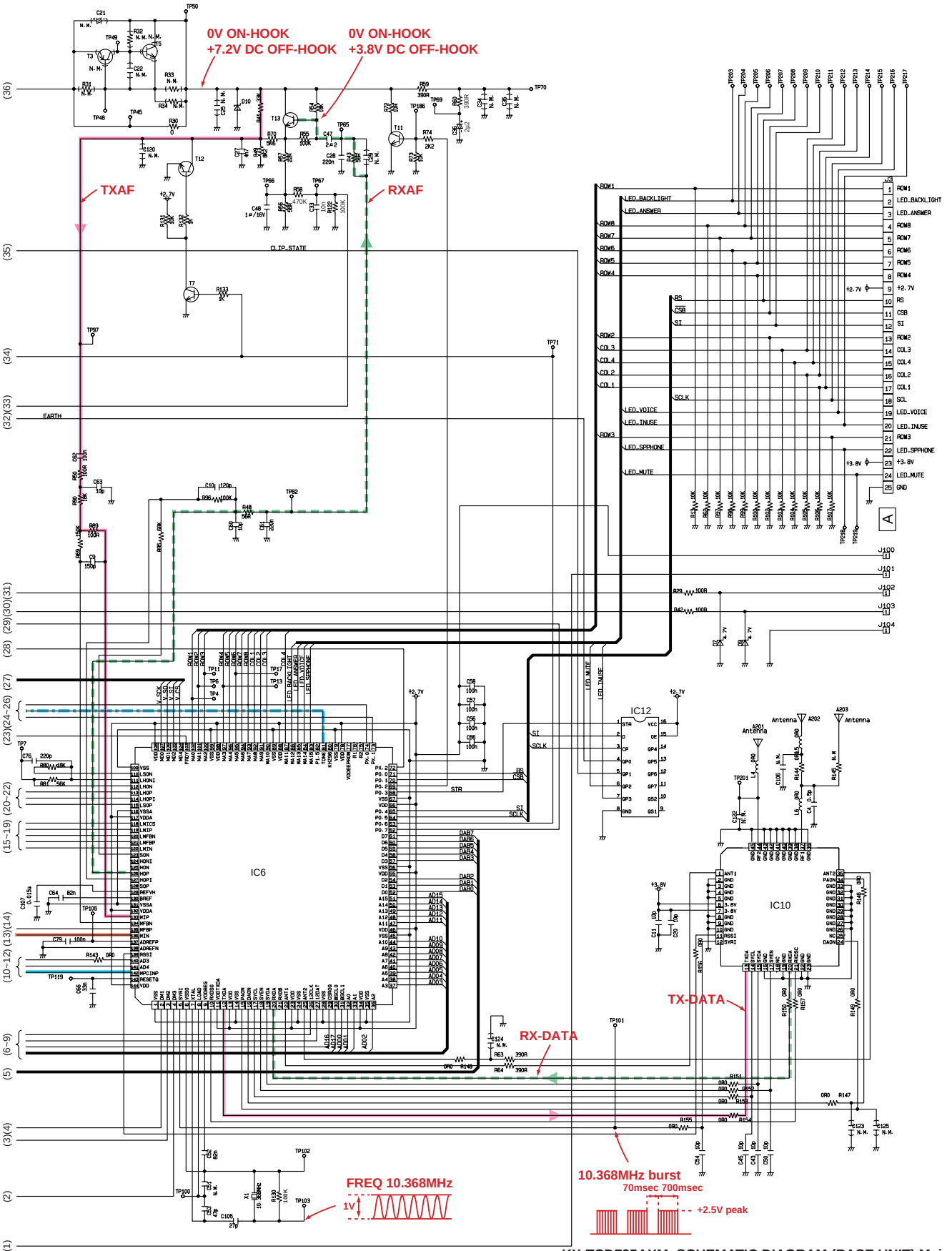
Address	Default	Name	Type	Description
1F31-1FF8	FF	SortedListEeprom	-	Sorted list used in phonebook

16.4. Memo

17 SCHEMATIC DIAGRAM (BASE UNIT)

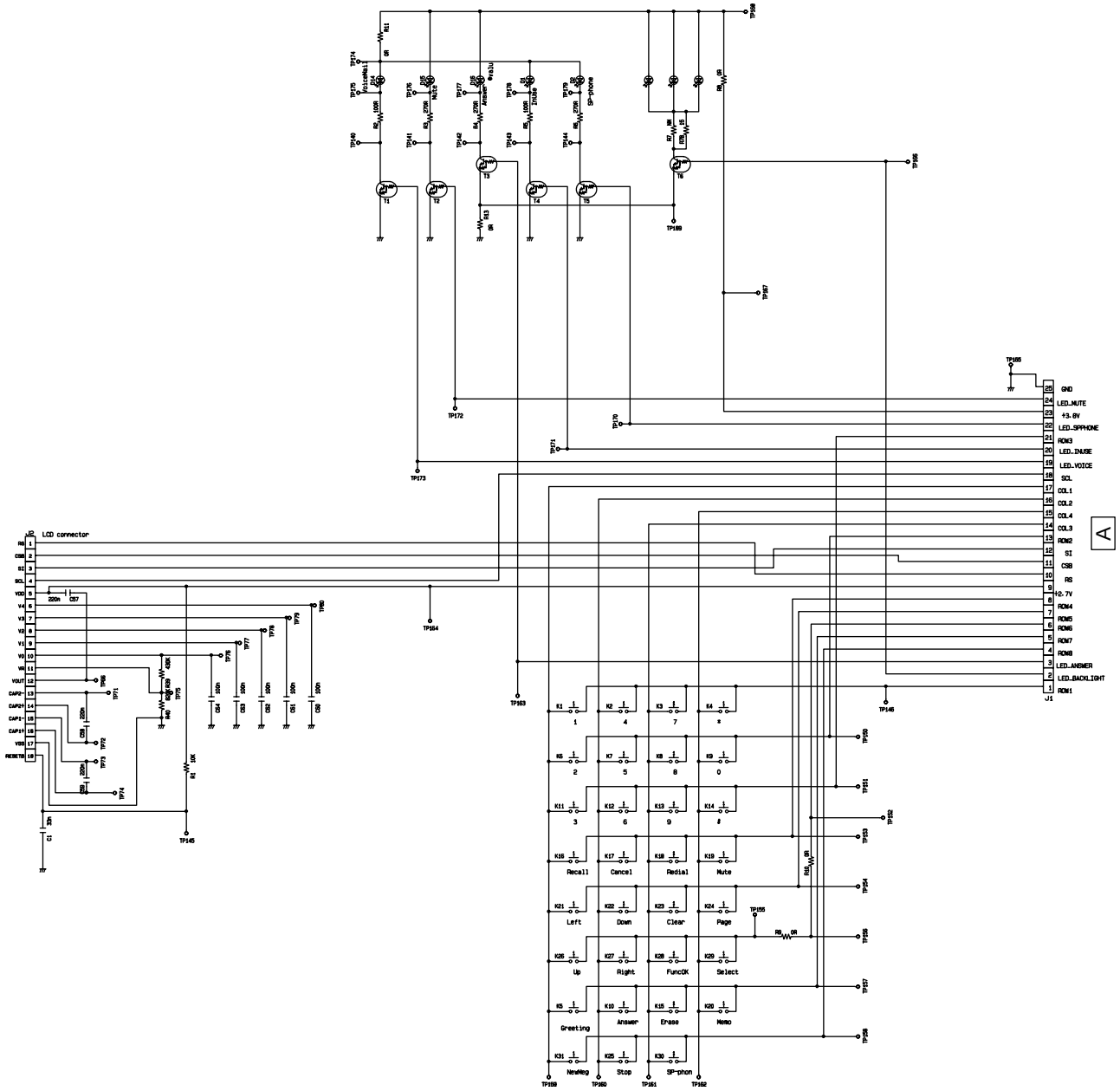
17.1. Main





KX-TCD735AXM: SCHEMATIC DIAGRAM (BASE UNIT) Main

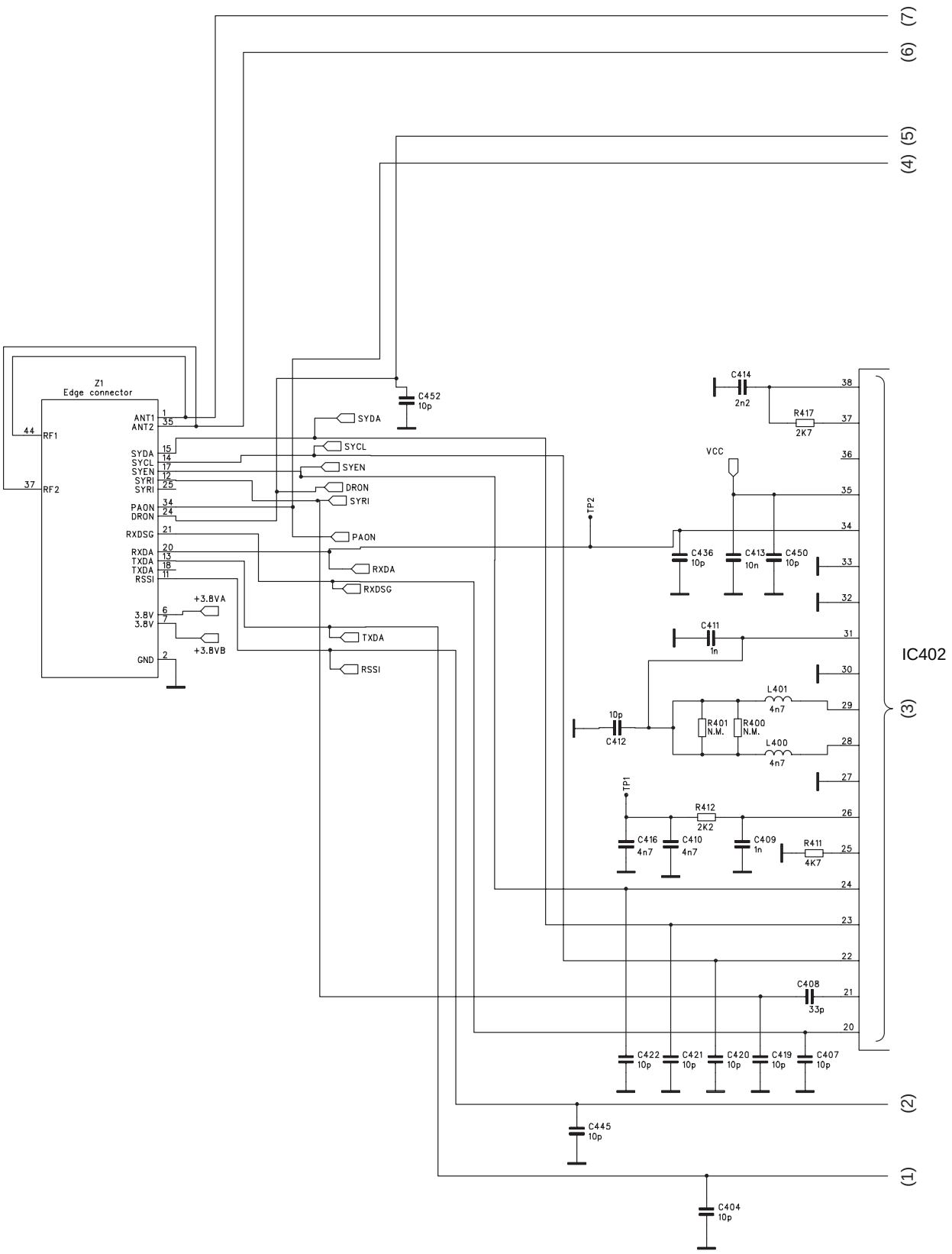
17.2. Keypad

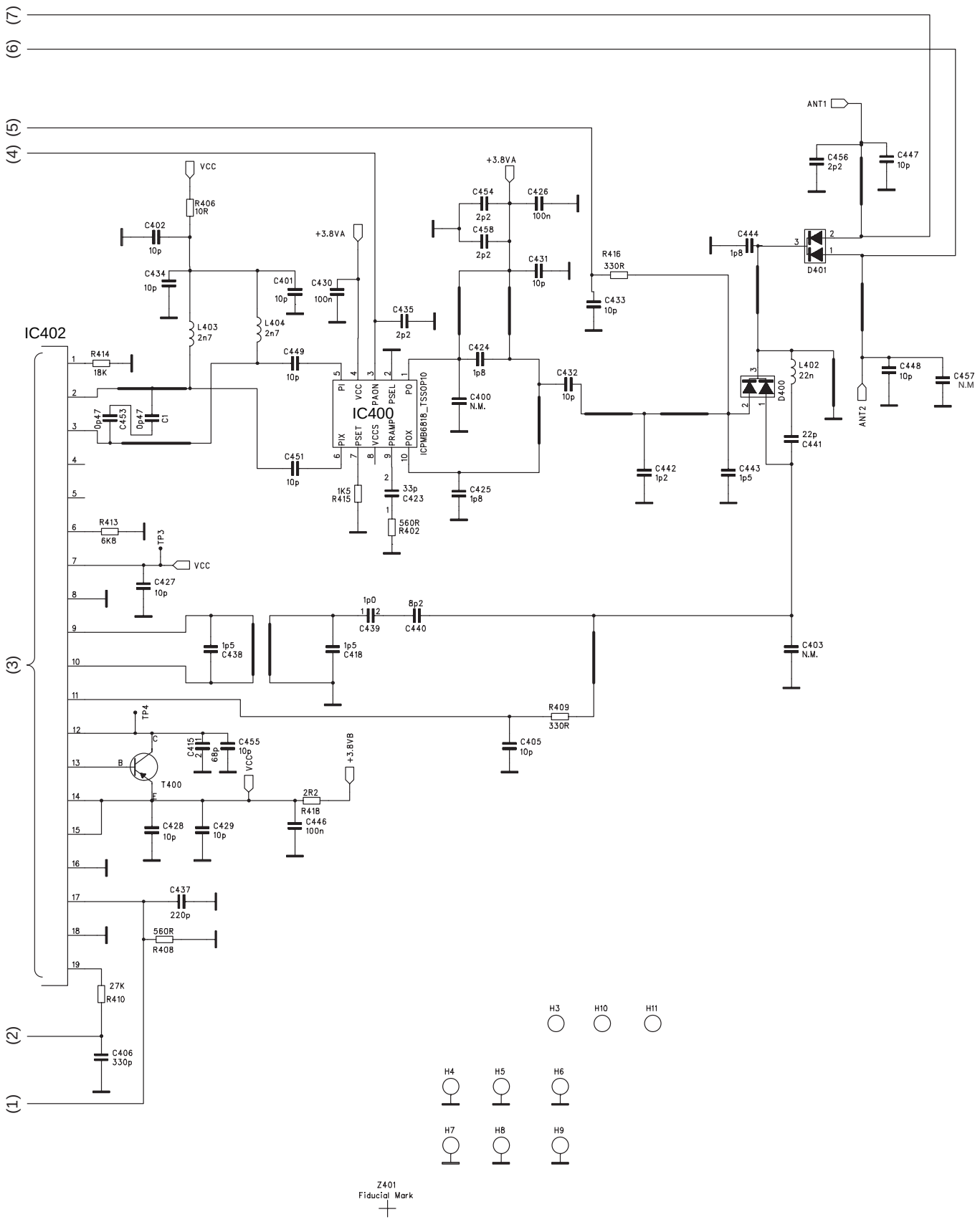


KX-TCD735AXM: SCHEMATIC DIAGRAM (BASE UNIT) Keypad

17.3. Memo

17.4. RF Module

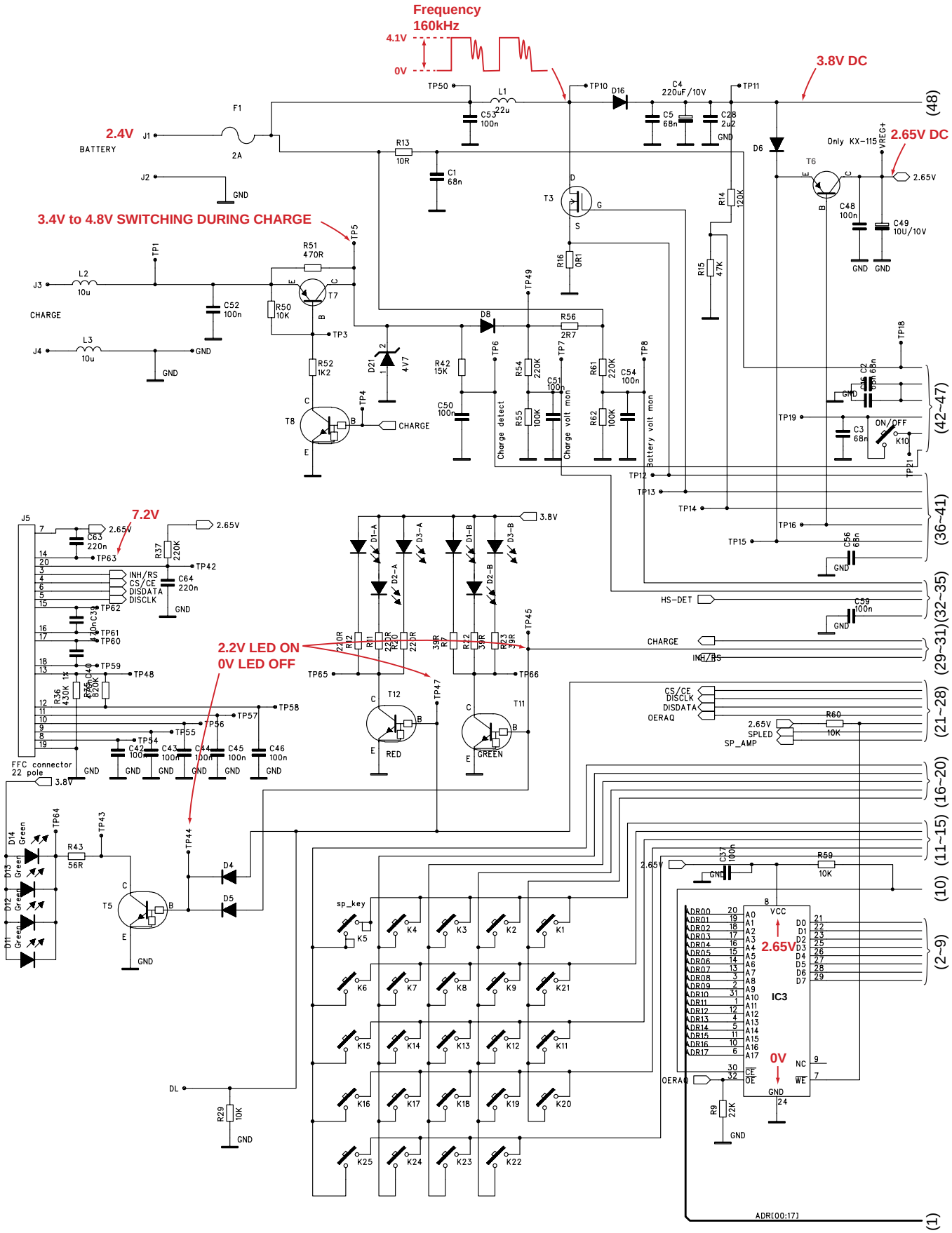


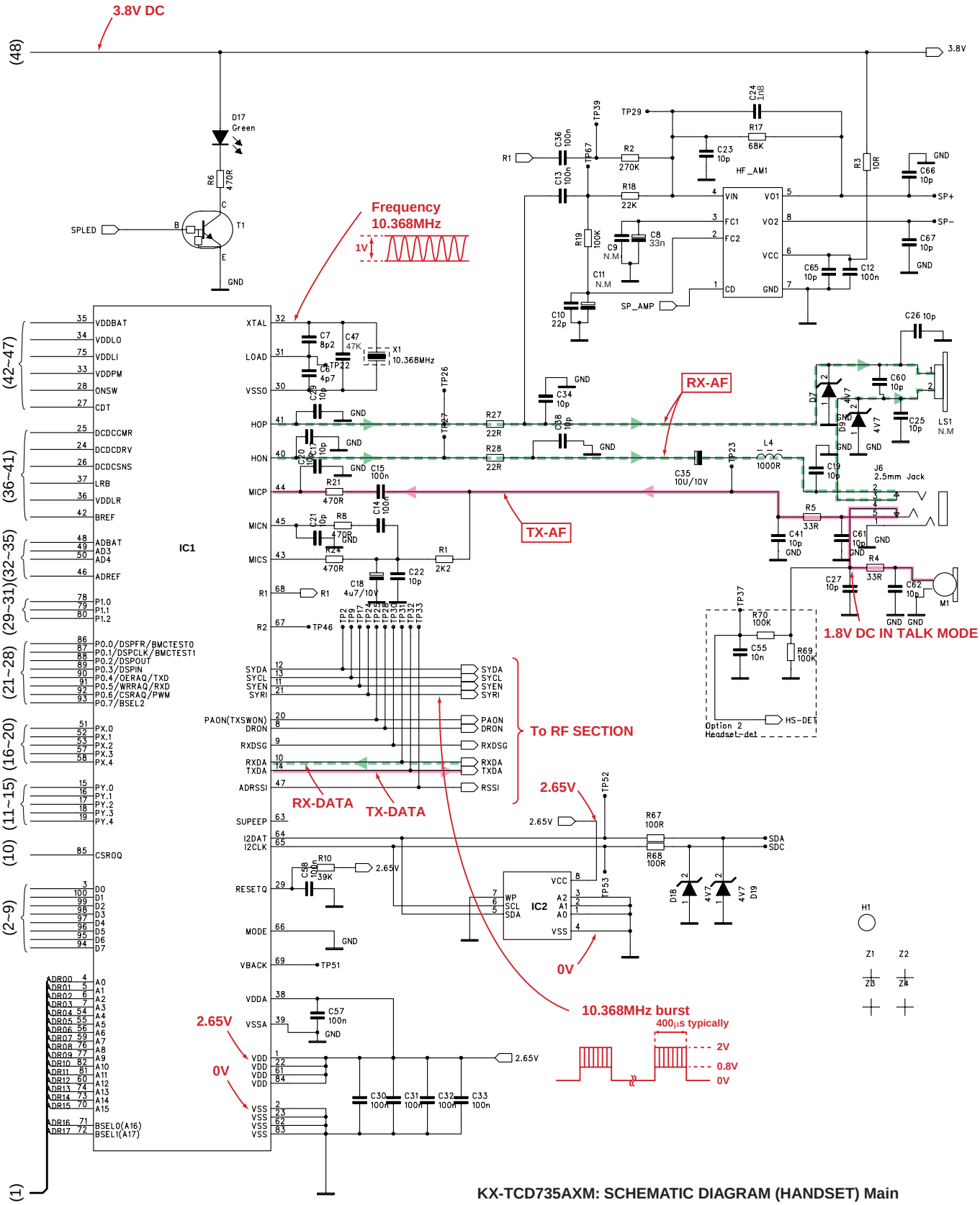


KX-TCD735AXM: SCHEMATIC DIAGRAM (BASE UNIT) RF Module

18 SCHEMATIC DIAGRAM (HANDSET)

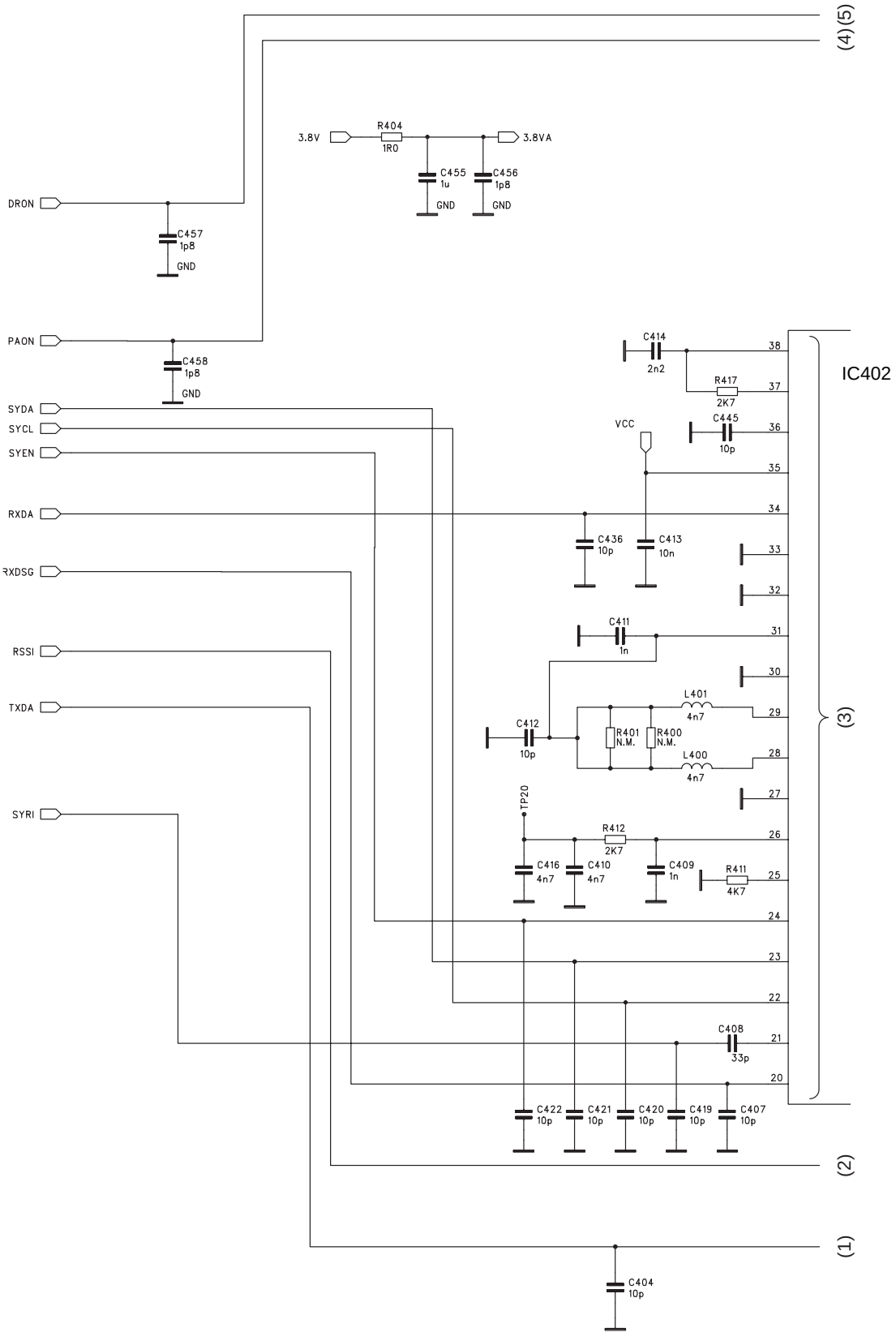
18.1. Main

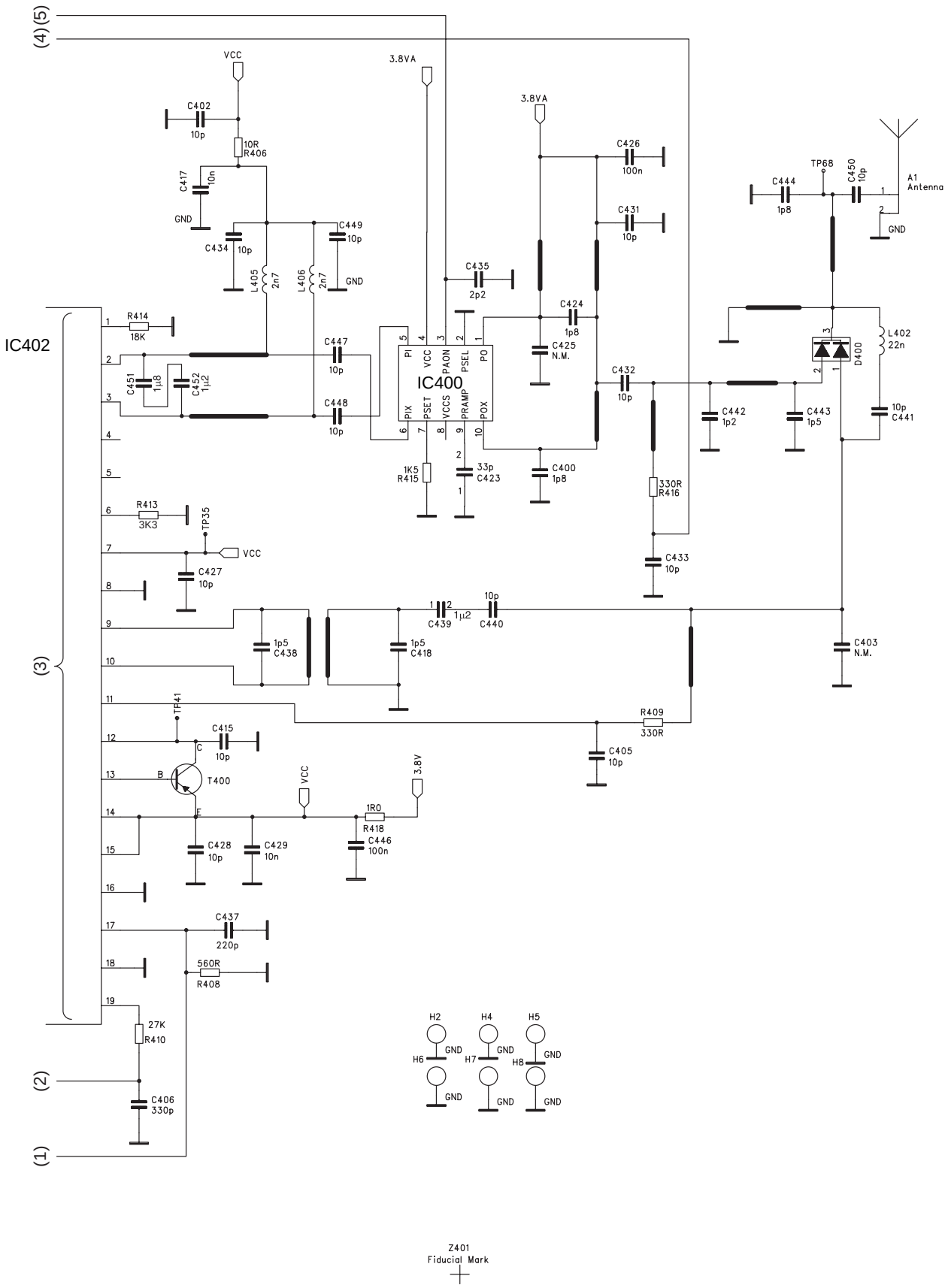




KX-TCD735AXM: SCHEMATIC DIAGRAM (HANDSET) Main

18.2. RF Section



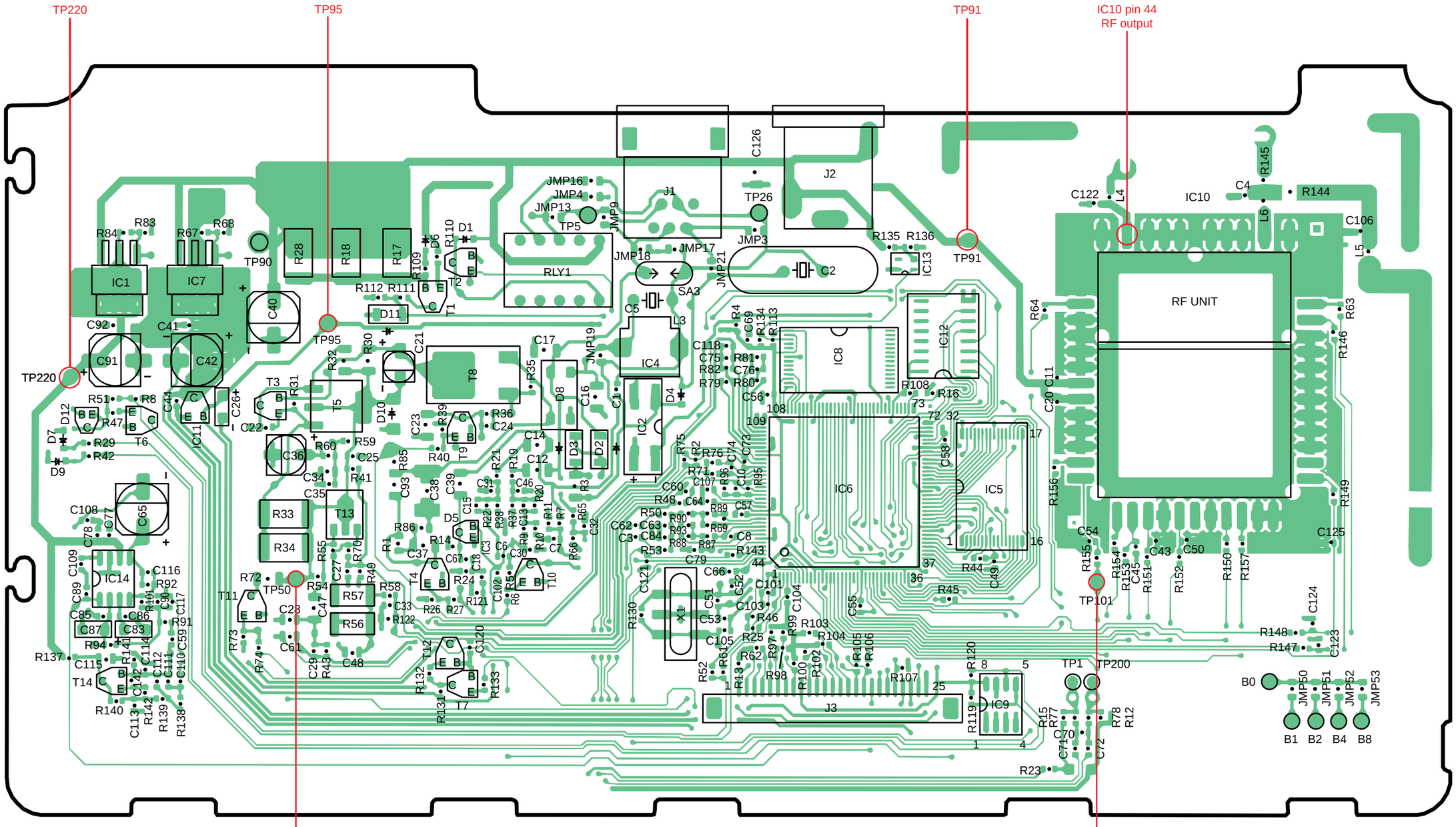


KX-TCD735AXM: SCHEMATIC DIAGRAM (HANDSET) RF Section

18.3. Memo

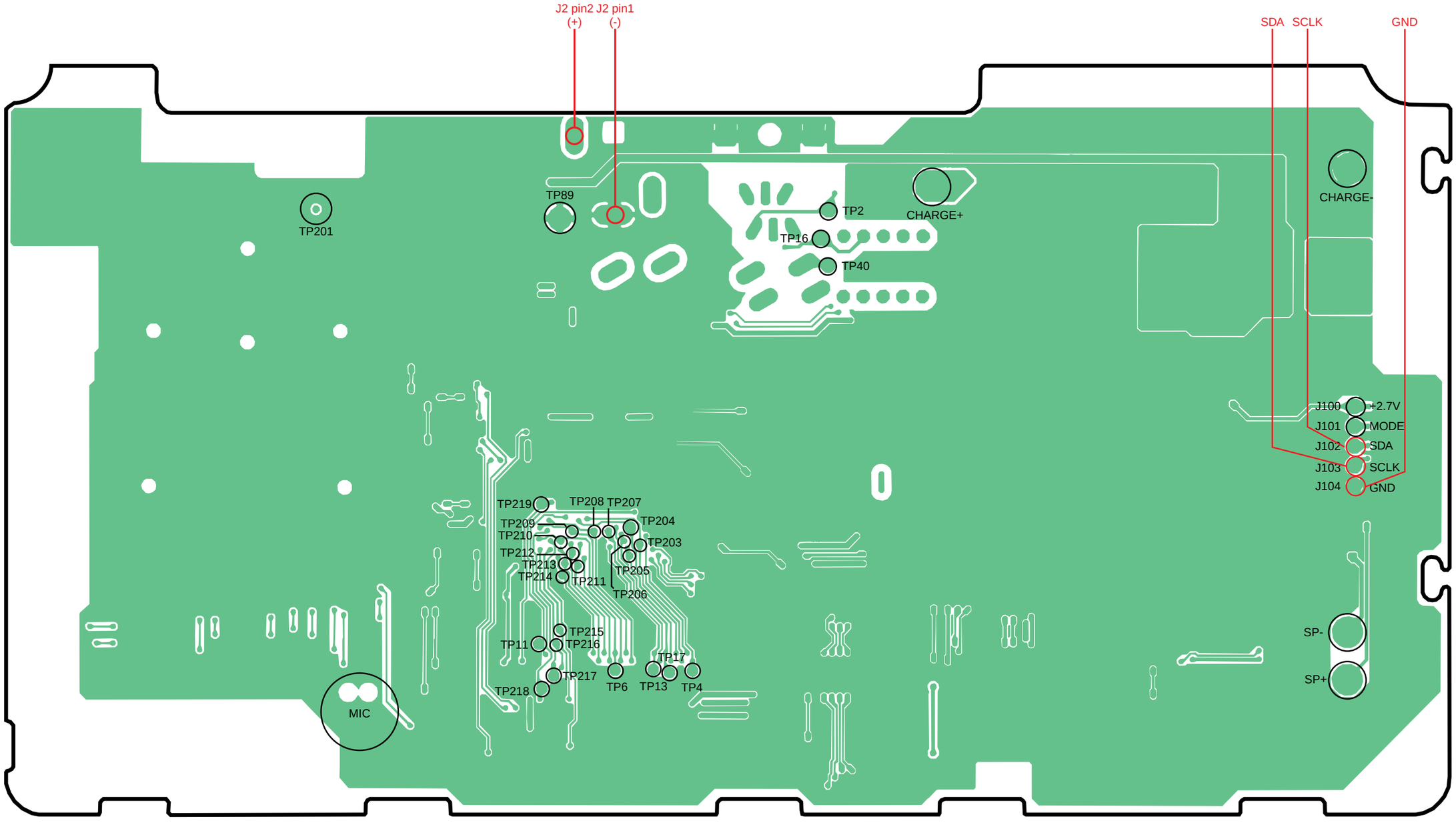
19 CIRCUIT BOARD (BASE UNIT)

19.1. Main (Component View)



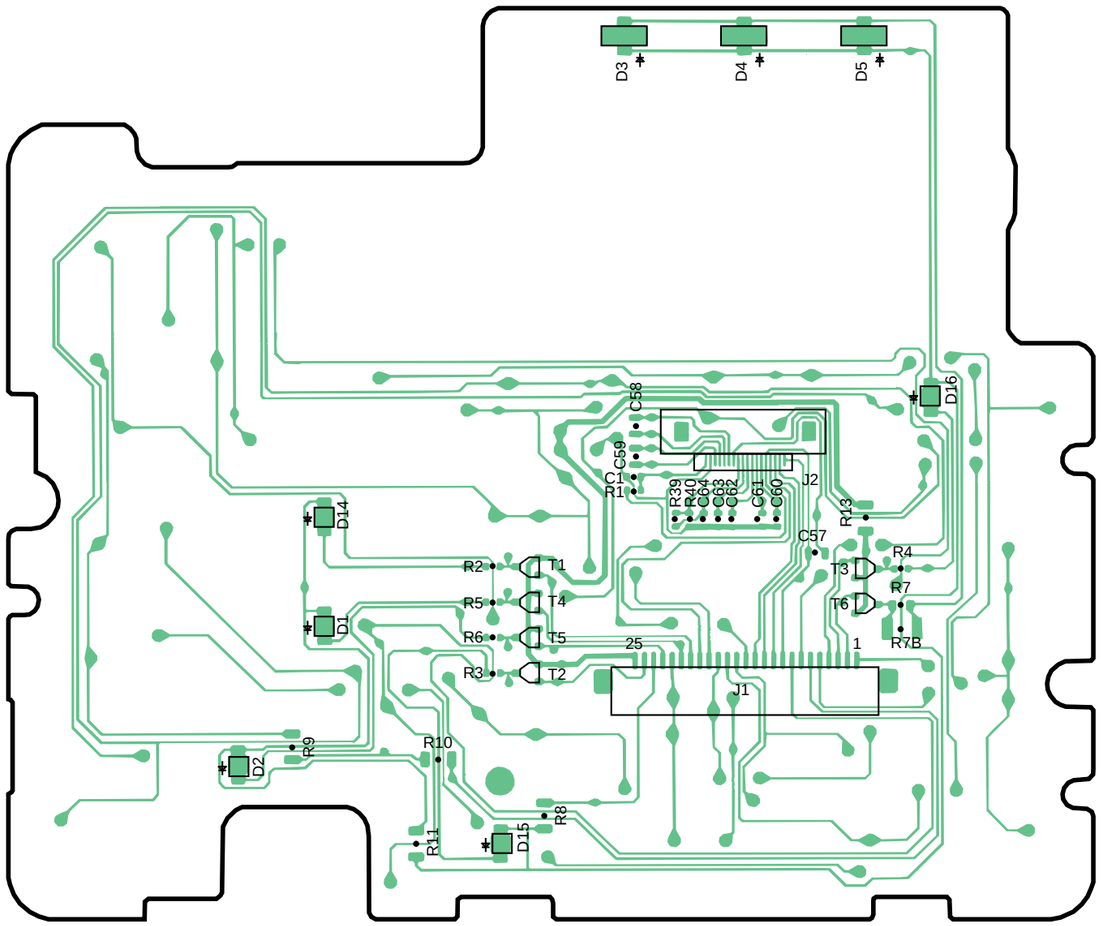
KX-TCD735AXM: BASE UNIT Main (Component View)

19.2. Main (Flow Solder Side View)



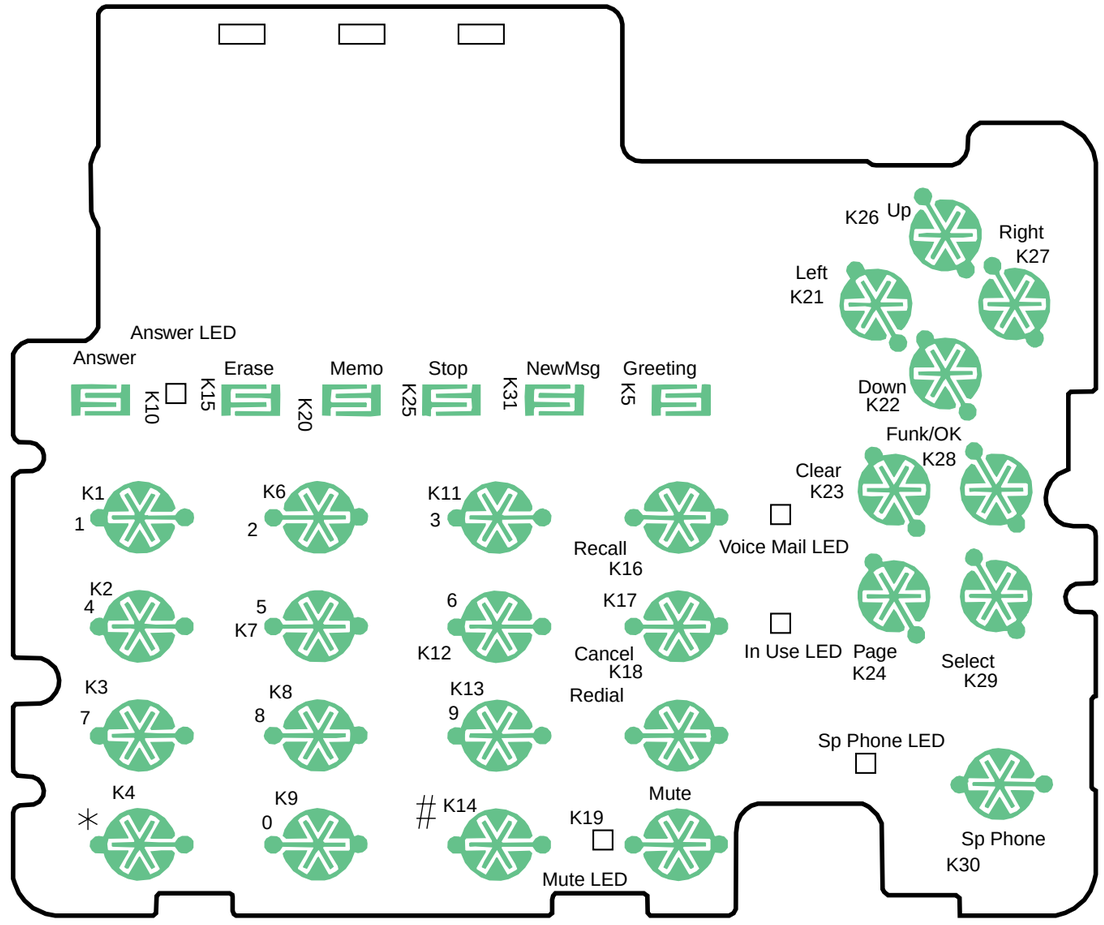
KX-TCD735AXM: BASE UNIT Main
(Flow solder Side View)

19.3. Keypad (Component View)



KX-TCD735AXM: Key pad (Component View)

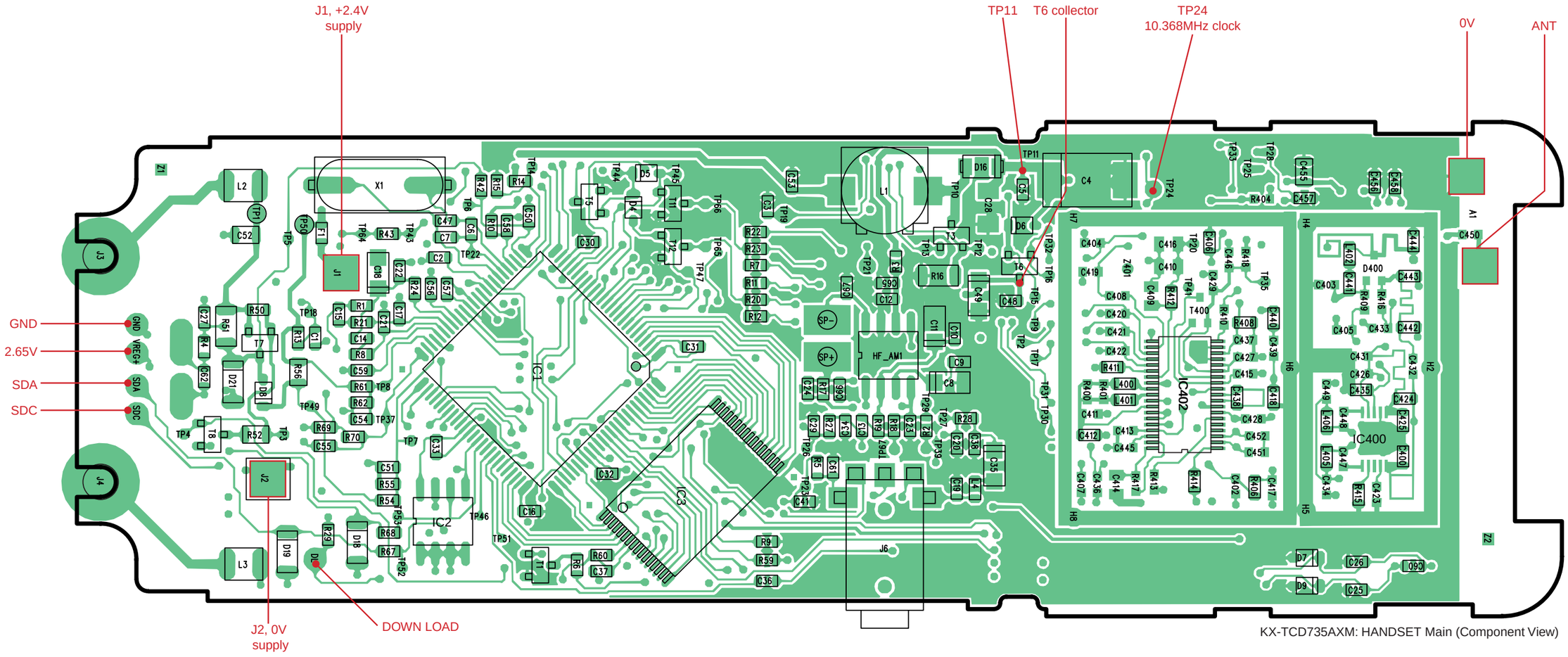
19.4. Keypad (Flow Solder Side View)



KX-TCD735AXM: Key pad (Flow Solder Side View)

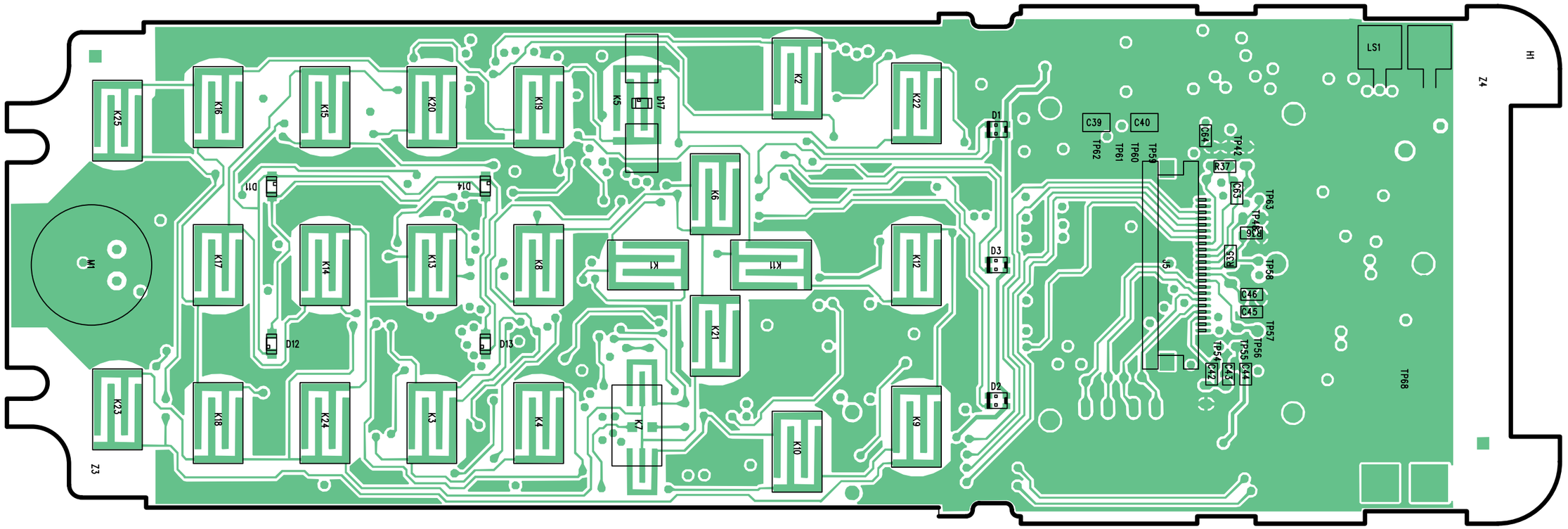
20 CIRCUIT BOARD (HANDSET)

20.1. Main (Component View)



KX-TCD735AXM: HANDSET Main (Component View)

20.2. Main (Flow Solder Side View)



KX-TCD735AXM: HANDSET Main (Flow Solder Side View)