905B Circuit Description

1. Introduction

The model 905B is a 40 channel (902.125 - 927.100Mhz) cordless telephone. The whole unit is divided into two main parts as follow :

a. A remote Handset.
b. A Base unit.

2. Functional Blocks of the Remote Handset

2.1 Keyboard matrix and function LED
2.2 MCU and MCU interface
2.3 Antenna and RF module
2.4 Compander
2.5 Data shaper
2.6 Charge detector
2.7 Low battery detector
2.8 Buzzer amplifier

3. Circuit Block Description

3.1 Keyboard matrix and function LED

Pin 4 to pin7, pin 10 to pin 11 and pin 25 of the U5 ACT13H MCU form a keyboard, and the talk LED is controlled by the pin 12 of the MCU.

3.2 MCU and MCU interface

The handset and the base is link up by the pins(9,24 in HS and 21,24 in Base). Besides, the PLL of the RF Module is controlled by the pins 15,17 and 18 of the MCU.

3.3 Antenna and RF module

ANT is the common point for transmitting and receiving through antenna. MD1 is a RF module which consists of Duplexer, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio Output circuits.

3.4 Compander

A compander U2 is used for improving the S/N of the transmit and receive audio signal.

3.5 Data shaper

The information which sending from base unit, is recovered by the amplifier U3C.

3.6 Charge detector

ZD1, D7, D6, C43, R70, R68 and R69,D4, C42, R71, D5 form a charge detector to direct the charging signal to the MCU pin 26.

3.7 Low battery detector

A battery low detector is built-in by the U3B which detects the battery dropping and sends a signal to pin 19 of MCU.

3.8 Buzzer amplifier

Q2 is a buzzer amplifier driven directly by the MCU pin 23.

4. Functional Blocks of the Base unit

4.1 Power supply
4.2 MCU and MCU interface
4.3 Antenna and RF module
4.4 Compander
4.5 Data shaper
4.6 Charge detector
4.7 Line audio interface
4.8 Ring detector
4.9 Led function board
4.10 Noise detector and carrier detector

5. Circuit Block Description

5.1 Power supply

BU1 7805 regulate the input DC 9V to 5V which provides power to every part of the circuit.

5.2 MCU and MCU interface

The heart of the base is BU5 ACT8H MCU that communicates with the PLL of BMD1 through pins 5,6 and 7. Transmitter is controlled by the signal TX_DC which output from MCU via pin 20. MCU pins 6 to 11 consist of a resistor ladder for generating DTMF signal. The communication between Handset and Base is via the pin 24 and pin 26 through the RF link.

5.3 Antenna and RF modulator

ANT is antenna transmit and receive signal. BMD1 is a RF modulator which consist of Duplexer, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio Output circuits.

5.4 Compander

A compander BU4 is used for improving the S/N of the transmit and receive audio signal.

5.5 Data shaper

The information which sending from handset unit, is recovered by the amplifier BU2A.

5.6 Charge detector

BQ5 is a charge detector to direct the charging signal to the MCU pin 25.

5.7 Line audio interface

BR72, BK1, BR73, BC17, BL3, BL4 and BTR1 line transformer are the audio interface to the telephone line. The transformer is also used for telephone isolation.

5.8 Ring detector

BC44, BR71, BZD3, BZD2, BD7, BU7(K817) and BR67 form a ring detector which feed the signal through pin 26 of MCU.

5.9 LED function board

BLED1 is used for indicating "IN USE" OR "CHARGING" when handset is on cradle.

5.10 Carrier detector

The RF Module BMD1 pin 12 is an output pin of the carrier detector signal , it is sent to BU5 pin 23.When there is carrier, it is Low; when there is noise, it is High. BU5 finds the clear channel by this pin 23.

Operation Manual of (902.125 - 927.100MHz) Cordless Phone ©

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Pause
Power Saving (Extended Battery Life)
Handset Low Battery Indication
Page
Ringer On/Off switch © Base
In use/Charge LED © Base

I. Telephone Operation

1. Answer a Call

When the phone rings, if the Handset is out of the cradle, press the TALK button to be connected the line. The TALK led as well as the Base IN USE led will turn on respectively.

If the Handset is in the cradle, lift the Handset, Do not press the TALK button, the telephone line will be automatically connected.

If the call is first answered with an extension phone and you wait more than 5 seconds after the last ring before lifting the cordless handset, it will be necessary to press the TALK button to be connected the line.

When the "Ringer on/off" switch is set to the "off" position, the telephone set will not ring. Only the "In Use" and "Talk" leds will flash when there is an incoming call. When a call is connected (in Autoanswer Mode), the TALK button is disabled for 3.5 seconds to prevent the user from accidentally disconnecting the call.

2. Place a call

The TALK LED will be off when you lift the handset and walk away from the Base if no ring is detected.

Each new call must begin by pressing the TALK button. The TALK button will turn on after get connecting the line, and you can initiate your call.

3. To end a call,

Press the TALK button to disconnect the line. The TALK LED will turn off.

Put the handset back to the cradle, the line will be automatically disconnected.

4. Channel Selection

To select the clearest channel, during Talk mode, press the CHANNEL button on the handset. Each press will change from the current channel to the next clear channel. If you hear an error signal while you are changing channel. The error signal indicates that the changing channel process is not successful. Move closer to the base and try again.

In rare cases, due to interference, the telephone set may not operate correctly after a channel change. To normalize the reception, place the handset back to the cradle for a few seconds.

5. Redial

You can redial the last number that you dialed (up to 32 digits long). A long distance number dialed in "Tone" will be redialed in the same way.

Lift the handset. Press the TALK button.
When you hear a dial tone, press the REDIAL button.

6. Pause

A 4-second PAUSE may be inserted into the speed dailing of long distance numbers.

Press PAUSE (REDAIL) button at required point during storage of a number in memory.

7. Flash/Call Waiting

When you wish to terminate the call you are on and immediately obtain a dial tone again, press the FLASH button.

If you have Call Waiting service from your phone company, press the FLASH button to use this feature.

8. Mute

When you are talking at the phone , you are able to press "MUTE" button the clear all the sound temporarily and press it again to unmute.

9. Speed Dialing

STORE UP TO 10 TELEPHONE NUMBERS IN MEMORY WHICH CAN BE SPEED DIALED BY PRESSING TWO BUTTONS.

i. Store in Memory

If the TALK button lights, press the TALK button to turn it off.
Press the MEMORY button.
Press the telephone number (up to 16 digits long) on the keypad.
Press the MEMORY button.

Enter the memory location number (0 through 9) on the keypad.
Notes:

If no key is pressed for about 30 seconds during programming, an error signal will sound and the number will not be stored.
If a mistake entry occurs while entering the number, press the FLASH button and start entering the number again.
If you need to insert a pause in between the numbers, press the PAUSE button. Each pause is a digit.

You will hear a long confirmation beep tone after a number is successfully stored in memory.
To store numbers in other locations, follow the steps stated before again.

ii. Speed Dial

Press the TALK button to connect the line,
Press the MEMORY button.
Press the desired memory location number.

Notes:
If a memory location does not have a number stored in it, no number will be dialed.
You can speed dial one telephone number and then speed or manually dial a second telephone number in any sequence.

9. Out of Range

If you take the handset too far away from the base while in "talk" mode the handset will generate intermittent "beep" tone warning. The warning signal will be generated every 4 seconds. You can move back closer to the base within 16 seconds or the line will be disconnected automatically.

If you try to make a call while the handset is too far away from the base, the handset will generate an error tone to indicate that you are out of range.

10. Battery Low Detection

The handset will generate "beep tone" in 30 seconds interval and the TALK LED will flash when there is a Battery low condition. The handset will changed to "Halt" mode after 5 minute.

11. Paging

When the "Page" button of the base unit is pressed, the handset will generate ten consecutive tones. If you press the "Page" button more than 10s, then handset will generate consecutive tones for 1 minute.

12. LED Indications

i. Base Unit

a. Flash- Ringer in

b. On- Line is seized
Charging Handset
Storing memory
Paging Handset

ii. Handset

a. Flash- Being paged by base
Ringer in
Storing memory
Battery low
Scanning a clear channel

b. On-Line is seized

FREQUENCE TABLE

- CHANNEL SPACE : 25KHz
- 1'ST I.F : 10.7MHz
- 2'ND I.F : 450KHz
- TCXO(X-TAL) : 11.15MHz

CH	BASE(MHZ)		PORTABLE(MHZ)	
	TX	LOCAL(10.7)	TX	LOCAL(10.7)
1	902.125	936.825	926.125	891.425
2	902.150	936.850	926.150	891.450
3	902.175	936.875	926.175	891.475
4	902.200	936.900	926.200	891.500
5	902.225	936.925	926.225	891.525
6	902.250	936.950	926.250	891.550
7	902.275	936.975	926.275	891.575
8	902.300	937.000	926.300	891.600
9	902.325	937.025	926.325	891.625
10	902.350	937.050	926.350	891.650
11	902.375	937.075	926.375	891.675
12	902.400	937.100	926.400	891.700
13	902.425	937.125	926.425	891.725
14	902.450	937.150	926.450	891.750
15	902.475	937.175	926.475	891.775
16	902.500	937.200	926.500	891.800
17	902.525	937.225	926.525	891.825
18	902.550	937.250	926.550	891.850
19	902.575	937.275	926.575	891.875
20	902.600	937.300	926.600	891.900
21	902.625	937.325	926.625	891.925
22	902.650	937.350	926.650	891.950
23	902.675	937.375	926.675	891.975
24	902.700	937.400	926.700	892.000
25	902.725	937.425	926.725	892.025
26	902.750	937.450	926.750	892.050
27	902.775	937.475	926.775	892.075
28	902.800	937.500	926.800	892.100
29	902.825	937.525	926.825	892.125
30	902.850	937.550	926.850	892.150
31	902.875	937.575	926.875	892.175
32	902.900	937.600	926.900	892.200
33	902.925	937.625	926.925	892.225
34	902.950	937.650	926.950	892.250
35	902.975	937.675	926.975	892.275
36	903.000	937.700	927.000	892.300
37	903.025	937.725	927.025	892.325
38	903.050	937.750	927.050	892.350
39	903.075	937.775	927.075	892.375
40	903.100	937.800	927.100	892.400