920 SGC Circuit Description

1. Introduction

The model 920 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 pins9,24.
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
-MCU and MCU interface
-Receiver amplifier
-Demodulator
-Audio amplifier
-Compander
-Antenna and RF Module
-Data shaper
-Charge detector
-Line audio interface
-Ring detector
-LED indications
-Power fail detector
-Switches
-DTMF generator
-Voice switched speakerphone
-Keyboard matrix

5. Circuit Block Description

5.1 Power supply
BU4 LM7805 regulate the input DC 9V whichprovides dc power to every part of thecircuit.

5.2 MCU and MCU interface

The heart of the base is the MCU communicates with the PLL in RF module BMD1 via pin 1,43,44. RF transmitter on/off is selected by pin 35. The communication between Handset and Base is via the pin 33(TX DATA)and pin31(RX DATA) through the RF link.

5.3 Antenna and RF module
BANT1 is the transmit and receive signal antenna.
BMD1 is RF module which consists of Duplexer, Power amplifier,Mixer & IF, RXVCO,TXVCO, TXVCC control and demodulated audio output circuits.

5.4 Charge detector

BQ12 is a charge detector to direct the charging signal to the MCU pin 30.

5.5 Audio amplifier and compander

BU4 MM1100XF is a compander IC which performs compress at transmitted signal via pin12, pin8 and expand at received signal via pin1, pin4. The RF mute is controlled by the MCU pin 7 and pin 8.

5.6 Line audio interface
BQ9,BL3,BL4,BR83,BR84,BR62,BC69 and BT1 line transformer are the audio interface to the telephone line. The transformer is also for telephone line isolation.

5.7 Datashaper and carrier/noise detector
BC2,BR2,BR3,BR7,BR9,BR10,BR8 and BU3D form a datashaperwhich send the information from BASE to theMCU pin31(RXDATA).
BMD1 pin10 provides an output to MCU pin26 through BQ15 to gives result on monitoring the receiving carrier state for thecondition of changed channel in charging state.

5.8 Ring detector

BR85,BC70,BZD1&2,BD6,BU7(K817) form a ring detector.

5.9 Power fail detector

BZD4,BR136&7,BQ134,BR132 form a powerfail detector.

5.10 LED indicationsfunction board
KLED2 is for SPEAKERPHONE
KLED3 is for INTERCOM
KLED4 is for CHARGING

5.11 Keyboard matrix
Pin 2 to pin 6 , pin 29 and pin 42 of the MCU form a keyboard.

5.12 Switches
MCU pin 28 (line mute) control BQ8 on and off for the line audio selection.
MCU pin 27 (intercom mute) control BQ6,BQ7on and off for the speakerphone audio selection.
MCU pin 7 and 8 (Txmute and Rxmute) control BQ3,BQ4 on and off for the cordless audio selection.

5.13 DTMF generator
MCU pin 19 to 24 generates DTMF signal through a resistor network and is via BU5 amplification to line.

5.14 Voice switched speakerphone
BU6 is a voice switched speakerphone IC.
Audio come from receiver or line is input via BU6 pin 27, and through on and off of BQ1,2 &23 can control the speakerphone output loudness. MIC signal is input via BU6 pin 9, output signal is via BU6 pin 4.

TO : 23260521 (CONAIR HK)
FM : C.M. YUEN (ARTCOM LTD)
SUBJ : SGC FREQ TABLE (S/72)

FREQUENCE TABLE

DATE : 8JULY.98

- 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

Rec. 19-7-99.