EXHIBIT 1
GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Cobra CP-9105 is a 30 Channel Analog Modulation Cordless Phone. The unit is capable of either tone or pulse dialing. The internal power supply's isolation is accomplished through a power transformer having an adequate dielectric rating. The circuit wiring is consistent under the requirement of part 68.

The handset unit consists of a keypad with twelve standard keys (0,...9,*,#), four function keys (flash, memo, redial/pulse and mute), and one channel switch key. A talk key is provided to control pick/release telephone line in a toggle base.

The base unit has a page key, which is used to page the handset unit.

The circuit description is listed in the following page.

Connection between the device and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

CP9105 900MHz CORDLESS TELEPHONE
CIRCUIT DESCRIPTION

1. HANDSET UNIT

1.1. RF Receiver

The received signal from base unit is filtered and amplified by two stage filter(F2), amplifier(Q5), filter(F5) and amplifier(Q3). This amplified signal is mixed with RX LO (Q6, D3) signal.

The RX LO is controlled by PLL IC (U5) pin14. The PLL is programmed by microprocessor through serial data pins 11,13 and 18.

The mixer(Q8) output 10.7MHz intermediate frequency is amplified by (Q11) and filtered by (F3). This IF frequency enter the FM demodulator IC(U4) pin 3. The input signal is amplified by internal amplifier and filtered by external 10.7MHz ceramic filter.

1.2. Audio Signal

The IF signal is demodulated by external tank circuit (IFT1 and C2). The demodulated audio signal is fed into Scrambler IC(U4) and the Scrambler convert the scrambled signal to normal audio signal. The audio output from scrambler IC pin 14 is connected to pin 16 of compandor IC (U3) for expansion. The expanded audio output from (U3) pin 19 is finally amplified by transistor (Q4) and ac coupled to the receiver.

1.3. Ringer and Digital Signal

After the base unit detected the ring, it transmit the data code signal including security code to handset. The recovered data is amplified and filtered by IC(U2). The amplified data signal is passed to comparator and the output signal is connected to pin25 of Microprocessor IC (U1). If the code is correct, the ring signal output from pin no.24 of the Microprocessor IC (U1) is applied to buzzer driver Q6 to activate the buzzer.

1.4. Battery Low and Dead Detector

When the battery voltage drops below 3.45V, pin 1 of the IC (U2) goes high, LED1 flash with warning sound. If battery voltage further drops below 3.25V, pin7 of the IC(U2) goes high and the handset will stop working.

1.5. Battery Charging

When the handset is placed on the base unit, the battery will be charged by constant current source (Z1, DAP1) and it is detected by Microprocessor IC(U1).

1.6. Voice transmission

Voice signal from condenser Mic is coupled to compandor IC(U3) pin 8 for compression. The compressed output signal is fed into IC (U4) through pin 10 for scrambling. The scrambled signal is passed to IC (U3) pin 3 for filtering.

1.7. Modulator and Oscillator

The audio signal from (U3) pin 1 output is frequency modulated by (D2). The oscillator is formed by Q1, L10, D2. The oscillator frequency is controlled by PLL IC(U5). This carrier frequency is amplified by Q2 and filtered by F1. Then the RF signal is transmitted through antenna.

2. BASE UNIT

2.1. RF Receiver

The received signal from handset unit is filtered and amplified by two stage filter(F2), amplifier(Q5), filter(F5) and amplifier(Q3). This amplified signal is mixed with RX LO (Q6, D3) signal.

The RX LO is controlled by PLL IC (U5) pin14. The PLL is programmed by microprocessor through serial data pins 11,13 and 18.

The mixer(Q8) output 10.7MHz intermediate frequency is amplified by (Q11) and filtered by (F3). This IF frequency enter the FM demodulator IC(U4) pin 3. The input signal is amplified by internal amplifier and filtered by external 10.7MHz ceramic filter.

2.2. Audio Signal

The IF signal is demodulated by external tank circuit (IFT1 and C2). The demodulated audio signal is fed into Scrambler IC(U105) and convert the scrambled signal to normal audio signal. The audio output from scrambler IC pin 14 is connected to pin no.16 of compandor IC (U103) for expansion. The expanded audio output from (U103) pin no.19 is amplified by the amplifier formed by the LM324 IC (U104A) and output to the telephone line interface.

2.3. Digital Signal

The demodulated digital data signal from the pin demod_out of the RF module is fed into the amplifier inside the Scrambler IC (pin 6 and 7 in U105). The amplified digital data signal is then fed into the comparator formed by the IC LM324 (U104B) and the transistor Q104. The data signal is finally fed into the pin 25 of Microprocessor IC (U101).

2.4. Battery Charging

The charging circuit is formed mainly by the components R101, 175, 104, 193 and Q101. It uses the power from the DC jack to charge the battery in the handset while the handset on the base unit cradle. When the handset is placed on the base unit cradle, the voltage at the collector pin of the transistor Q101 is pulled low and trigger the IRQ at pin 2 of the microprocessor U101. At this moment, the charging LED (D104) is turned on .

2.5. Telephone Line Interface

The main components of the telephone line interface is the LM324 (U104D), hybrid transformer (T1), relay (RL101), inductors (L101, 102), fuse (F101) and the modular jack (J104).

The hook switch is formed by the relay RL101 and the diode D102. The hook switch is turned to open or close by the circuit formed by the transistor Q102 and the resistor R115. The control signal of the hook switch comes from the pin 20 of the microprocessor (U101).

2.6. Ringer Detect

The ringer detect circuit is formed mainly by the LM324 (U104C) and Q110. The circuit convert the ringer signal into the digital signal that is checked at the pin 17 of the microprocessor U101.

2.7. 5 Bit DTMF Generator

The DTMF generator is formed mainly from the resistor R165, 166, 167, 168, 169 and 170. It is acted as a D to A converter. The output from the DTMF generator is then fed into the amplifier U104A through the transistor Q113.

2.8. Voice transmission

The audio signal from the telephone line interface is fed into the compandor (U103) pin 8 for compression. The compressed signal is output from the pin 3 of the compandor (U103) and it is then fed into the scrambler IC (U105) pin 10. The scrambled signal from the pin 8 of U105 is then fed into the filter inside the compandor IC U103 pin 2 and the audio signal is output from the pin 1 of the U103.

2.9. Modulator and Oscillator

The audio signal from (U3) pin 1 output is frequency modulated by (D2). The oscillator is formed by Q1, L10, D2. The oscillator frequency is controlled by PLL IC(U5). This carrier frequency is amplified by Q2 and filtered by F1. Then the RF signal is transmitted antenna.

2.10. Reset

The reset circuit is formed by the components, R107, R108, R109, R110, C106 and the transistor Q103. It is used to reset the microprocessor (U101) at pin 1. The microprocessor is reset only when the base unit is powered up.

US 900M Frequencies Table

1	902.15	926.85
2	902.25	927.05
3	902.45	927.25
4	902.65	927.45
5	902.85	927.65
6	903.05	927.85
7	903.25	926.05
8	903.45	926.25
9	903.65	926.45
10	903.85	926.65
11	902.10	926.90
12	902.30	927.10
13	902.50	927.30
14	902.70	927.50
15	902.90	927.70
16	903.10	927.90
17	903.30	926.10
18	903.50	926.30
19	903.70	926.50
20	903.90	926.70
21	902.20	927.00
22	902.40	927.20
23	902.60	927.40
24	902.80	927.60
25	903.00	927.80
26	903.20	925.90
27	903.40	926.20
28	903.60	926.40
29	903.80	926.60
30	904.00	926.80