

EXHIBIT - 3

CIRCUIT DESCRIPTION AND DIGITAL SECURITY CODE INFORMATION

Equipment Description

file: uc-206

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The model EXP7902 is a telephone terminal device that is designed for voice operation in a similar fashion to an ordinary residential or business telephone without the inconvenience and restraint of a handset cord.

This device consists of a base unit and a handset. The base unit is connected to a standard telephone modular jack (USOC RJ 11C Type) and is supplied electric power from a standard AC power line by using with the AC Adapter. The handset is powered from an internal battery pack.

The EXP7902 Cordless Telephone operates by means of a full duplex radio frequency TX/RX system in 902 - 928 MHz band. These radio frequency systems operate in accordance with Part 15 of the FCC Rules.

The EXP7902 has been specifically designed to comply with the requirements set forth in Part 68 of the FCC Rules as well as the Part 15 requirements.

Circuit Description and Operating Frequency

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Overview

This equipment is a Cordless Telephone System which operates within the 900MHz ISM band. This equipment consists of a base unit and a handset. The base unit is connected to a telephone network, and has transmitter and receiver circuits which are served to communication with the handset. The handset also has a transmitter and receiver portions in addition to regular dialing circuit.

Both the handset and the base unit have PLL circuits which enable to communicate in an empty channel. Pressing the CH key on the handset can last the communications moving into other open channel without cutting the line even if interfered by interruption on talks.

1. Handset

1) Local Frequencies and Intermediate Frequencies

TX VCO Frequency: 902.052448 MHz to 904.002454 MHz
RX 1st Local Freq.: 940.442487MHz to 942.402481 MHz
RX VCO Frequency: 940.442487MHz to 942.402481 MHz
RX 2nd Local Freq.: 14.000 MHz

1st Intermediate Frequency: 14.455 MHz
2nd Intermediate Frequency: 455 kHz

2) Communication Link to Base unit

RX Circuit:

An incoming RF signal from the base unit is received through the antenna. RX VCO frequency shown above is produced by PLL IC (IC502) and RX VCO (IC502 1/2). Then, this frequency is the RX 1st Local frequency.

This 1st local signal is applied to the 1st Mixer (IC502) which produces 1st IF of 14.455MHz.

The 1st IF signal (14.455MHz) is mixed with 2nd local frequency of 14.0MHz to produce the 2nd IF of 455kHz at IC606. AF signal demodulated by IC606 is amplified by the audio amplifier (Q601/Q603/IC601) to drive a speaker.

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC502 2/2). Meanwhile, voice signal from the microphone (MC601) modulates the TX VCO signal at IC502. This modulated signal is the TX RF frequencies as listed above.

Then, the TX RF signal is amplified by RF AMP (Q506/Q507) and fed into the antenna through a band pass filter (FT501).

3) Dialing Signal

When this equipment is in Talk Mode, the transmitting circuit and dialing circuit are activated to make outgoing call. In this condition, when any number keys are pressed, the CPU (IC603) generates corresponding dial pulse codes.

2. Base Unit

1) Local Frequencies and Intermediate Frequencies

TX VCO Frequency : 925.997487MHz to 927.947481MHz
RX 1st Local Freq.: 887.597448MHz to 889.547454MHz
RX VCO Frequency : 887.597448MHz to 889.547454MHz
RX 2nd Local Freq.: 14.455MHz

1st Intermediate Frequency: 14.000 MHz
2nd Intermediate Frequency: 455 kHz

2) Communication Link to Handset

RX Circuit:

An incoming RF signal from the handset is received through the antenna.

RX VCO frequency shown above is produced by PLL IC (IC202) and RX VCO (IC202 1/2). Then, this frequency is the RX 1st Local frequency. This 1st local signal is applied to the 1st Mixer (IC202) which produces 1st IF of 14.455MHz.

Then, the 1st IF signal (14.455MHz) is mixed with 2nd local frequency of 14.000MHz to produce the 2nd IF of 455kHz at IC3, and also AF output is obtained by IC3. The demodulated signal by IC3 contains a security code, and the code is fed to the CPU.

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC202 2/2). Meanwhile, voice signal from Telephone Network through the Hybrid Transformer (T1) modulates the TX VCO signal at IC202. This modulated signal is the TX RF frequencies as listed above. Then, the TX RF signal is amplified by RF AMP (Q206/Q207) and fed into the antenna through a band pass filter (FT201).

3) Dialing Signal

Dial pulse code sent from the handset is demodulated by IC3 as mentioned above, and is fed into the CPU to control RL1.

4) Telephone Interface Circuit

Outgoing voice signal to telephone network is amplified by IC2. This signal is delivered to the telephone interface circuit through the Hybrid Transformer (T1).

Incoming voice signal also goes through T1, then it is amplified by IC2 2/2 to a proper level for frequency modulation, then it is fed to the TX circuit. To protect the TX/RX circuits from a metallic surge, the surge absorbing capacitor (C20) is provided at the secondary circuit of the Hybrid Transformer (T1).

5) Bell Signal

An alerting signal (Bell signal) is detected by means of a Photo Coupler (IC4) which has a sufficiently high impedance.

6) Power Supply Circuit

The power supply circuits are composed of Q7, Q9 and a zener diode type HZ7C3, HZ5C2. These are voltage regulator circuits to stabilize input voltage from the AC Adapter to attain a stable operation.

Digital Security Code Information

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65536 Digital Security Code

This cordless telephone system automatically selects a different security code from 65536 possible discrete digital codes each time the cordless telephone is used.

Furthermore, the security code can be changed randomly by pressing PAGE button on the base unit when the handset is placed in the base unit.

[APPENDIX] EXP7902 TEST MODE AND OPERATION FREQUENCY

TEST MODE

This cordless telephone has test mode function which enable to perform TX/RX testing.

Test Mode for Base Unit

To enter the test mode, connect the AC Adapter to the unit while pressing the PAGE button. When test mode is set up, and the LINE LED lights. The unit is set for CH 19 (926.897484 MHz) Transmitting mode.

To change the transmitting frequency, change the TONE/PULSE switch position to TONE side and then press the PAGE button during the unit is set the TX Test mode, so that the channel is changed from CH 19 to CH 20. Every pressing the CHANNEL key, channel is changed as below.

19 20 21 40 1 2 3 - - - 39 40 1 2 3 4 ---

To cancel the test mode, place the Handset in the Base Unit, so that the STATUS LED lights and the equipment is set for normal operation mode (Standby mode).

Or, disconnect the AC Adapter and connect it again, so that the test mode is easily canceled.

Test Mode for Handset

First, disconnect the battery pack. Then, connect the battery pack again while pressing # and * keys. When test mode is set up, long beep tone is heard and the TALK LED lights. The unit is set for CH 21 Transmitting mode. Every pressing the CHANNEL key, channel is changed as below.

21 20 19 40 1 2 3 - - - 39 40 1 2 3 4 ---

To cancel the test mode, press the TALK key.

FREQUENCY TABLE

CH	Portable(TX Frequency)	Base(TX Frequency)
1	902.052448MHz	925.997487MHz
2	902.102449MHz	926.047486MHz
3	902.152449MHz	926.097486MHz
4	902.202449MHz	926.147486MHz
5	902.252449MHz	926.197486MHz
6	902.302449MHz	926.247486MHz
7	902.352449MHz	926.297486MHz
8	902.402449MHz	926.347486MHz
9	902.452450MHz	926.397485MHz
10	902.502450MHz	926.447485MHz
11	902.552450MHz	926.497485MHz
12	902.602450MHz	926.547485MHz
13	902.652450MHz	926.597485MHz
14	902.702450MHz	926.647485MHz
15	902.752450MHz	926.697485MHz
16	902.802450MHz	926.747485MHz
17	902.852451MHz	926.797484MHz
18	902.902451MHz	926.847484MHz
19	902.952451MHz	926.897484MHz
20	903.002451MHz	926.947484MHz
21	903.052451MHz	927.997484MHz
22	903.102451MHz	927.047484MHz
23	903.152451MHz	927.097484MHz
24	903.202452MHz	927.147483MHz
25	903.252452MHz	927.197483MHz

26	903. 302452MHz	927. 247483MHz
27	903. 352452MHz	927. 297483MHz
28	903. 402452MHz	927. 347483MHz
29	903. 452452MHz	927. 397483MHz
30	903. 502452MHz	927. 447483MHz
31	903. 552452MHz	927. 497483MHz
32	903. 602453MHz	927. 547482MHz
33	903. 652453MHz	927. 597482MHz
34	903. 702453MHz	927. 647482MHz
35	903. 752453MHz	927. 697482MHz
36	903. 802453MHz	927. 747482MHz
37	903. 852453MHz	927. 797482MHz
38	903. 902453MHz	927. 847482MHz
39	903. 952454MHz	927. 897481MHz
40	904. 002454MHz	927. 947481MHz