GENERAL INFORMATION

General Information in accordance with the Federal Communications Commission Rules and Regulations, Volume II, Part 2.

(1) Applicant: Uniden America Corporation
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Lake City, South Carolina 29560
Mr. James R. Haynes, Vice President

(2) FCC Identifier: FCC ID: AMWUP002 for base unit
FCC ID: AMWUP002R for handset

MODEL: EXI3246(XX)

(3) Instruction Manual: Refer to User Manual

(4) Circuit Description: Refer to Operational Description

(5) Circuit & Block Diagrams: Refer to Block Diagram / Schematics

(6) Measurement Data: Refer to Test Report

The following conditions and procedures were followed during testing of the equipment.

Room Temperature: 23 - 27 Degrees Celsius
Room Humidity: 40 - 60 %
Power Supply: 120V AC for Base unit
Ni-cd Battery for Handset

(7) Photographs : Refer to External Photos

(8) Peripheral or Accessory Device: Not used

(9) Transition provisions in section 15.37 Rules:

This equipment complies with the new Part 15 of FCC Rules and is not affected by Section 15.37.

(10) Decoding the Emergency Broadcast System Attention Signal:

Not Applicable

(11) Direct Sequence Spread Spectrum Transmitter: Not Applicable

(12) Digital Security Code Information:

Refer to Operational Description

CIRCUIT DESCRIPTION AND DIGITAL SECURITY CODE INFORMATION

Equipment Description UP002

This 2.4GHz/900MHz cordless telephone 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 restrain 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.

This device operates by means of a full duplex radio frequency TX/RX system in 2400 - 2483.5 MHz and 902 - 928 MHz band. These radio frequency systems operate in accordance with Part 15 of the FCC Rules.

This device 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

Overview

This device is a Cordless Telephone System that operates within the 2.4GHz and 900MHz ISM band. This device consists of a base unit and a handset. The base unit is connected to a telephone network, and has transmitter and receiver circuits that 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 that 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:	462.357913 MHz	-	463.352231 MHz
RX 1st Local Freq.:	1612.054718 MHz	-	1616.031990 MHz
RX 2nd Local Freq.:	806.027359 MHz	-	808.015995 MHz
RX VCO Frequency:	403.013679 MHz	-	404.007997 MHz
1st Intermediate Frequency:	795.487587 MHz	-	797.476224 MHz
2nd Intermediate Frequency:	10.5397714 MHz		
Reference/Clock Frequency:	4.176136 MHz		

2) Communication Link to Base unit

RX Circuit:

An incoming RF signal from the base unit is received through the antenna. RX VCO frequency is produced by COMBO IC (IC801) and doubled in COMBO IC (IC801). Then, this doubled frequency (806.027359 - 808.015995) is the 2nd RX Local frequency. And DOUBLER (Q804) produces 1st RX Local frequency from this doubled frequency.

This 1st local signal is applied to Mixer (Q803) that produces 1st IF of 795.487587 MHz - 797.476224 MHz. This 2nd local signal is applied to Mixer (included in IC801) that produces 2nd IF of 10.539771 MHz. The demodulated AF signal is amplified by IC801 an internal audio amplifier for driving a speaker.

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC801). Meanwhile, voice signal from the microphone (MC601) modulates the TX VCO signal at IC801. Then, this moderated signal is doubled by DOUBLER (included in IC801).This doubled signal is the TX RF frequencies as listed in frequency chart.

Then, the TX RF signal is amplified by RF AMP (included in IC801) and fed into the antenna.

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 (IC601) generates corresponding dial pulse codes.

2. Base Unit

1) Local Frequencies and Intermediate Frequencies

TX VCO Frequency: 401.257051 MHz - 402.251369 MHz
RX 1st Local Freq.: 935.255560 MHz - 937.244196 MHz
RX VCO Frequency : 467.627780 MHz - 468.622098 MHz
Intermediate Frequency: 10.5397714 MHz
Reference/Clock Frequency: 7.15909 MHz

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 COMBO IC (IC401) and doubled in COMBO IC(IC401). Then, this frequency is the RX Local frequency. This local signal is applied to Mixer (included in IC401) that produces IF of 10.539771MHz.

The demodulated signal by IC401 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 (IC401). Meanwhile, voice signal from Telephone Network through the Hybrid Transformer (T1) modulates the TX VCO signal at IC401, and frequency doubler in IC401 doubles this modulated signal. Then Q403 is producing three times frequency from this doubled signal. This modulated signal is the TX RF frequencies as listed in frequency chart. Then, the TX RF signal is amplified by RF AMP (Q404/Q405) and fed into the antenna.

3) Dialing Signal

Dial pulse code sent from the handset is demodulated by IC401 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 IC401. 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 IC401 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 zener (D2) 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 (IC3) that has sufficiently high impedance.

6) Power Supply Circuit

The power supply circuits are composed of Q8, Q11 and a zener diode type D18 and D20. 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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262144 Digital Security Code

This cordless telephone system automatically selects a different security code from 262144 possible discrete digital codes each time the cordless telephone is used.

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

[APPENDIX]　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 'find handset' button. When test mode is set up, and the 'charge/in use' LED lights. The unit is set for CH 10 Transmitting mode.

To change the transmitting frequency, press the 'find handset' button about one second during the unit is set the TX Test mode, so that the channel is changed from CH 10 to CH 13. Every pressing the 'find handset' button about one second, channel is changed as below.

10　13　17　20　3　1　2　3 - - - 19　20　1　2　3　4 ---

To cancel the test mode, 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. The unit is set for CH 13 Transmitting mode. Every pressing the CHANNEL key, channel is changed as below.

13　10　17　20　3　1　2　3 - - - 19　20　1　2　3　4 ---

To cancel the test mode, press the TALK key.

FREQUENCY TABLE

CHANNEL	BASE (TX FREQUENCY)	PORTABLE (TX FREQUENCY)
1	2407.542305 MHz	924.715789 MHz
2	2407.840600 MHz	924.815221 MHz
3	2408.138896 MHz	924.914652 MHz
4	2408.437191 MHz	925.014084 MHz
5	2408.735487 MHz	925.113516 MHz
6	2409.033782 MHz	925.212948 MHz
7	2409.332078 MHz	925.312380 MHz
8	2409.630373 MHz	925.411811 MHz
9	2409.928668 MHz	925.511243 MHz
10	2410.226964 MHz	925.610675 MHz
11	2410.525259 MHz	925.710107 MHz
12	2410.823555 MHz	925.809539 MHz
13	2411.420145 MHz	926.008402 MHz
14	2411.718441 MHz	926.107834 MHz
15	2412.016736 MHz	926.207266 MHz
16	2412.315032 MHz	926.306698 MHz
17	2412.613327 MHz	926.406130 MHz
18	2412.911623 MHz	926.505561 MHz
19	2413.209918 MHz	926.604993 MHz
20	2413.508213 MHz	926.704425 MHz