

CIRCUIT DESCRIPTION AND
DIGITAL SECURITY CODE INFORMATION

Equipment Description

FCC ID# AMWUC354EWCI

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This 900MHz cordless telephone is a telephone terminal device that is designed for voice operation in a similar fashion as an ordinary residential or business telephone without the inconvenience or restraint of a handset cord.

This cordless telephone system consists of a base unit and a handset. The base unit is connected to a standard telephone modular jack (USOC Type RJ-11C) and is supplied power from a standard electrical outlet by the use of an AC Adapter. The base unit also has the capability of displaying temperature and humidity information when operating with the associated weather sensor transmitter (FCC ID# AMWUC435). The handset is powered from an internal battery pack that is recharged from the base unit when it is placed into the charging cradle.

This device operates by means of a full duplex radio frequency system in 902 - 928 MHz band. The radio frequency system operates in accordance with Part 15 of the FCC Rules. Additionally, this device has been specifically designed to comply with the requirements set forth in Part 68 of the FCC Rules.

Circuit Description and Operating Frequency

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Overview

This device is a Cordless Telephone System that operates within the 900MHz ISM band. This device consists of a base unit and a handset. The base unit connects to the telephone network, and has transmitter(TX) and receiver(RX) circuits that communicate with the handset. The handset also has a transmitter and receiver in addition to a dialing circuit, earphone, and microphone.

Both the handset and the base units incorporate Phased-Locked-Loop (PLL) technology with a Voltage Controlled Oscillator (VCO). Internal circuitry enables communications on an empty channel. Pressing the CH key on the handset

will move communications to another open channel while maintaining the telephone line. This feature is used to avoid interference caused by ambient radio noise.

1. Handset

1) Local Oscillator Frequencies and Intermediate Frequencies

TX VCO Frequency: 451.122102 MHz - 452.166135 MHz
RX 1st Local Freq.: 936.150449 MHz - 938.238517 MHz
RX VCO Frequency: 468.075224 MHz - 469.119258 MHz
Intermediate Frequency: 10.539771 MHz

2) Communication Link to Base unit

RX Circuit:

An incoming radio frequency (RF) signal from the base unit is received through the antenna. COMBO IC (IC603) contains among other things, the RX VCO and a doubler circuit. The resultant frequency is known as the RX local oscillator frequency.

The local oscillator signal is applied to Mixer (IC603) that produces the intermediate frequency (IF) of 10.539771 MHz. The demodulated audio frequency (AF) signal is amplified by IC603, which contains an internal audio amplifier that drives the speaker.

TX Circuit:

TX reference signal is generated within the PLL circuit, the TX VCO (IC603), and doubler circuit (IC603). Meanwhile, voice signal from the microphone (MC601) modulates the TX reference signal at IC603. This modulated RF signal is the TX RF frequency that is listed in frequency chart.

The TX RF signal is then amplified by RF AMP (IC603) and fed into the antenna through a band pass filter (FL601).

3) Dialing Signal

When cordless telephone is in Talk Mode, the transmitting circuit and dialing circuit are activated to make outgoing telephone calls. In this condition, when the number keys are depressed, the CPU (IC601) generates corresponding dial pulse codes.

4) Receiving Weather Data from Base

When the WX key is depressed, handset is connected to base unit for getting weather data from base unit. The handset then indicates weather data on the handset's Liquid Crystal Display (LCD)(DP601).

2. Base Unit

1) Local Oscillator Frequencies and Intermediate Frequencies

TX VCO Frequency: 462.805339 MHz - 463.849373 MHz
RX 1st Local Freq.: 891.704432 MHz - 893.792500 MHz
RX VCO Frequency: 445.852216 MHz - 446.896250 MHz
Intermediate Frequency: 10.539771 MHz

2) Communication Link to Handset

RX Circuit:

An incoming RF signal from the handset is received through the antenna. COMBO IC (MY511), which contain the RX VCO and the doubler circuit, along with the resonance inductors (L1, L2) produce the RX local oscillator frequency. The local oscillator frequency is applied to Mixer (MY511) that produces the RX IF of 10.539771MHz.

The demodulated signal of MY511 contains a security code, and the code is fed to the CPU (IC3).

TX Circuit:

TX reference frequency is generated by the PLL circuit and the TX VCO (MY511), resonance inductor (L12, L13) and doubler circuit (MY511). Meanwhile, the voice signal from the telephone network modulates the TX reference frequency at MY511. This modulated signal is the TX RF frequencies as listed in frequency

chart. The TX RF signal is then amplified by RF AMP (MY511) and fed into the antenna through a band pass filter (FL1).

3) Dialing Signal

Dial pulse code sent from the handset is demodulated by MY511 as mentioned before, and is fed into the CPU (IC3) to control the Hook Relay, RL1.

4) Power Supply Circuit

The power supply circuits are composed of IC6, IC7, IC10, and IC11. These are voltage regulator integrated circuits (IC) to stabilize the input voltage from the AC Adapter to attain a stable operation.

5) Receiving weather data from the associated sensor (FCC ID# AMWUC435)

During the absence of a telephone communication link between the base unit and handset, the base unit has the ability of showing temperature, humidity and pressure change information.

For receiving outdoor temperature and humidity information that is generated by the associated sensor (FCC ID# AMWUC435), the base unit will be able to receive either one of CH1, CH10 and CH20 on the 900MHz ISM band frequency table.

When WX key on the base unit is pressed, the base unit will transmit weather data to handset.

Digital Security Code Information

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a) For Base and Handset connection / 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 the find handset key on the Base unit when the handset is placed in the base unit.

b) For Base and Outdoors weather sensor (AMWUC435) connection / 9999 Digital Security Code:

This security code is used for sending outdoor temperature and humidity data to base unit. This code is set at the factory providing a fixed code that is continuously varied as each outdoor sensor is manufactured.

[APPENDIX] TEST MODE AND OPERATION FREQUENCY

TEST MODE: This cordless telephone has a test mode function, which is enabled to perform TX/RX testing.

a) Test Mode for Base Unit: To enter the test mode, shift the Alarm sw to the off position, and then 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 (926.505564MHz) Transmitting mode.

To change the transmitting frequency, press the find handset button during the unit is set the TX Test mode, so that the channel is changed from CH 10 to CH 13. Every time the find handset button is depressed (more than 500ms), the channel is changed in the sequence below.

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

To cancel the test mode, place the Handset in the Base Unit so that the charge/in use 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.

b) Test Mode for Handset: First, remover the battery pack from handset. Then, install the battery pack again while pressing # and * keys simultaneously. When the test mode is set up, a long beep tone is heard. The unit is set for CH 13 Transmitting mode. Every time the channel key is depressed, the channel is changed in the sequence 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

CH	Handset(TX Frequency)	Base(TX Frequency)
1	902.244203MHz	925.610677MHz
2	902.343635MHz	925.710109MHz
3	902.443067MHz	925.809541MHz
4	902.542498MHz	925.908973MHz
5	902.641930MHz	926.008405MHz
6	902.741362MHz	926.107836MHz
7	902.840794MHz	926.207268MHz
8	902.940226MHz	926.306700MHz
9	903.039657MHz	926.406132MHz
10	903.139089MHz	926.505564MHz
11	903.238521MHz	926.604995MHz
12	903.337953MHz	926.704427MHz
13	903.437385MHz	926.803859MHz
14	903.536816MHz	926.903291MHz
15	903.636248MHz	927.002723MHz
16	903.735680MHz	927.102154MHz
17	904.934544MHz	927.301018MHz
18	904.133407MHz	927.499882MHz
19	904.232839MHz	927.599313MHz
20	904.332271MHz	927.698745MHz