CIRCUIT DESCRIPTION AND DIGITAL SECURITY CODE INFORMATION

Equipment Description

UC356

This 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 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, which operates within the 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, 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: 451.138248 MHz - 452.192544 MHz
RX 1st Local Freq.: 936.214784 MHz - 938.323376 MHz
RX VCO Frequency: 468.107392 MHz - 469.161688 MHz
Intermediate Frequency: 10.5429593 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 (IC603), RX VCO (IC603), resonance inductor(L601,L602) and doubler circuit(IC603). Then, this frequency is the RX Local frequency.

This local signal is applied to Mixer (IC603), which produces IF of 10.5429593MHz. The demodulated AF signal is amplified by IC603 an internal audio amplifier for driving a speaker.

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC603), resonance inductor (L609,L610) and doubler circuit(IC603). Meanwhile, voice signal from the microphone (MC601) modulates the TX VCO signal at IC603. This modulated signal is the TX RF frequencies as listed in frequency chart.

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

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: 462.835912 MHz - 463.890208 MHz
RX 1st Local Freq.: 891.733537 MHz - 893.842129 MHz
RX VCO Frequency: 445.866768 MHz - 446.921064 MHz
Intermediate Frequency: 10.5429593 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 (IC1), RX VCO (IC1), resonance inductor (L1,L2) and doubler circuit(IC1). Then, this frequency is the RX Local frequency. This local signal is applied to Mixer (IC1), which produces IF of 10.5429593MHz. The demodulated signal by IC1 contains a security code, and the code is fed to the CPU (IC152).

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (IC1), resonance inductor (L9, L10) and doubler circuit (IC1). Meanwhile, voice signal from Telephone Network through the Hybrid Transformer (T1) modulates the TX VCO signal at IC1. This modulated signal is the TX RF frequencies as listed in frequency chart. Then, the TX RF signal is amplified by RF AMP (IC1) and fed into the antenna through a band pass filter (FL1).

3) Dialing Signal

Dial pulse code sent from the handset is demodulated by IC1 as mentioned above, and is fed into the CPU (IC152) to control RL1.

4) Telephone Interface Circuit

Outgoing voice signal to telephone network is amplified by IC1 and IC152. 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 Q153 and IC1 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 (IC150) which has a

sufficiently high impedance.

6) Power Supply Circuit

The power supply circuits are composed of Q157, Q119, Q160, Q161, Q163, IC154 and a zener diode type D167, D168, D171 and D169. These are voltage regulator circuits to stabilize input voltage from the AC Adapter to attain a stable operation.

Digital Security Code Information

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 PAGE 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 "answer on/off" KEY. When test mode is set up, and the 7 segment LED displayed "8". The unit is set for CH 10 (926.575507MHz) Transmitting mode.

To change the transmitting frequency, press the "repeat/rew" KEY during the unit is set the TX Test mode, so that the channel is changed from CH 10 to CH 13. Every pressing the "repeat/rew" KEY , channel is changed as 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 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.
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

CH	Handset(TX Frequency)	Base(TX Frequency)
1	902.276496MHz	925.671825MHz
2	902.376905MHz	925.772234MHz
3	902.477314MHz	925.872643MHz
4	902.577723MHz	925.973052MHz
5	902.678133MHz	926.073461MHz
6	902.778542MHz	926.173870MHz
7	902.878951MHz	926.274280MHz
8	902.979360MHz	926.374689MHz
9	903.079769MHz	926.475098MHz
10	903.180178MHz	926.575507MHz
11	903.280587MHz	926.675916MHz
12	903.380996MHz	926.776325MHz
13	903.481406MHz	926.876734MHz
14	903.782633MHz	927.177962MHz
15	903.883042MHz	927.278371MHz
16	903.983451MHz	927.378780MHz
17	904.083860MHz	927.479189MHz
18	904.184270MHz	927.579598MHz
19	904.284679MHz	927.680007MHz
20	904.385088MHz	927.780417MHz