CIRCUIT DESCRIPTION AND
DIGITAL SECURITY CODE INFORMATION

Equipment Description

UC354Z

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: 451.122102 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 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 10.539771MHz. 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 :462.805339 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.

RX VCO frequency shown above is produced by COMBO IC (IC1) ,RX VCO (IC1),resonance inductor(L9,L10) and doubler circuit(IC1). Then, this frequency is the RX Local frequency. This local signal is applied to Mixer (IC1) which produces IF of 10.539771MHz.

The demodulated signal by IC1 contains a security code, and the code is fed to the CPU(IC6).

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(IC6) to control RL1.

4) Telephone Interface Circuit

Outgoing voice signal to telephone network is amplified by IC1. 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 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 (IC3) which has a 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

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 PAGE button. When test mode is set up, and the STATUS LED lights. The unit is set for CH 10 (926.505564MHz) Transmitting mode.

To change the transmitting frequency, press the PAGE button during the unit is set the TX Test mode, so that the channel is changed from CH 10 to CH 13. Every pressing the PAGE button(more than 500ms), 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 and the TALK LED lights. 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	902.244203MHz	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	903.835112MHz	927.201586MHz
17	904.033976MHz	927.400450MHz
18	904.133407MHz	927.499882MHz
19	904.232839MHz	927.599313MHz
20	904.332271MHz	927.698745MHz