CIRCUIT DESCRIPTION AND
DIGITAL SECURITY CODE INFORMATION

Equipment Description

UC358Z

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, 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:	925.942154 MHz	-	927.831359 MHz
RX 1st Local Freq.:	1611.988496 MHz	-	1615.766905 MHz
RX 2nd Local Freq.:	805.994248 MHz	-	807.883452 MHz
RX VCO Frequency:	805.994248 MHz	-	807.883452 MHz
1st Intermediate Frequency:	816.533923 MHz	-	818.423127 MHz
2nd Intermediate Frequency:	10.539675 MHz		

2) Communication Link to Base unit

RX Circuit:

An incoming RF signal from the base unit is received through the antenna. COMBO IC (IC601) and RX VCO (Q357) produce RX VCO frequency. Then, this frequency is the 2nd RX Local frequency. And 1st RX Local frequency is produced by DOUBLER (Q355) from RX VCO frequency

This 1st local signal is applied to Mixer (Q352) which produces 1st IF of 816.533923 MHz - 818.423127 MHz. This 2nd local signal is applied to Mixer (Q354) that produces 2nd IF of 10.539675 MHz. The demodulated AF signal is amplified by IC601 an internal audio amplifier for driving a speaker.

TX Circuit:

TX VCO signal is generated at the PLL circuit and the TX VCO (Q355). Meanwhile, voice signal from the microphone (MC670) modulates the TX VCO signal at Q355. This modulated signal is the TX RF frequencies as listed in frequency chart.

Then, the TX RF signal is amplified by RF AMP (Q358/Q359) 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 (IC700) generates corresponding dial pulse codes.

2. Base Unit

1) Local Frequencies and Intermediate Frequencies

TX VCO Frequency: 809.507473 MHz - 811.396677 MHz
RX 1st Local Freq.: 936.481889 MHz - 938.371093 MHz
RX VCO Frequency: 936.481889 MHz - 938.371093 MHz
Intermediate Frequency: 10.539734 MHz

2) Communication Link to Handset

RX Circuit:

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

COMBO IC (IC2) and RX VCO (Q804) produce RX VCO frequency shown above. Then, this frequency is the RX Local frequency. This local signal is applied to Mixer (Q802), which produces IF of 10.539734MHz.

The demodulated signal by IC2 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 (Q810). Meanwhile, voice signal from Telephone Network through the Hybrid Transformer (T1) modulates the TX VCO signal at Q810. Then Q807 is produced three times frequency from TX VCO signal. This modulated signal is the TX RF frequencies as listed in frequency chart. Then, the TX RF signal is amplified by RF AMP (Q805/Q806) and fed into the antenna.

3) Dialing Signal

Dial pulse code sent from the handset is demodulated by IC2 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 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 (D1) 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 (IC1), which has sufficiently high impedance.

6) Power Supply Circuit

The power supply circuits are composed of Q5, Q7 and a zener diode type D6 and D7. 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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262114 Digital Security Code

This cordless telephone system automatically selects a different security code from 262114 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 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 PAGE 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	2428.522419 MHz	925.942154 MHz
2	2428.820714 MHz	926.041586 MHz
3	2429.119010 MHz	926.141018 MHz
4	2429.417305 MHz	926.240450 MHz
5	2429.715601 MHz	926.339881 MHz
6	2430.013896 MHz	926.439313 MHz
7	2430.312191 MHz	926.538745 MHz
8	2430.610487 MHz	926.638117 MHz
9	2430.908782 MHz	926.737609 MHz
10	2431.207078 MHz	926.837041 MHz
11	2431.505373 MHz	926.936472 MHz
12	2431.803668 MHz	927.035904 MHz
13	2432.101964 MHz	927.135336 MHz
14	2432.400259 MHz	927.234768 MHz
15	2432.698555 MHz	927.334200 MHz
16	2432.996850 MHz	927.433631 MHz
17	2433.295146 MHz	927.533063 MHz
18	2433.593441 MHz	927.632495 MHz
19	2433.891736 MHz	927.731927 MHz
20	2434.190032 MHz	927.831359 MHz