CIRCUIT DESCRIPTION AND DIGITAL SECURITY CODE INFORMATION

CIRCUIT DESCRIPTION

1. OVER VIEW

The device is a digital spread spectrum cordless telephone which meets with FCC Part 15 requirements. It provides the following features:

Direct Sequence Spread Spectrum Modulation
20 Radio frequency Channels in 902 - 928MHz ISM band
10mW maximum output power
Time Division Duplex operation
32kbps ADPCM voice CODEC
65536 security codes
Auto Channel codes
Auto Interference Avoidance

2. Configurations

2.1 Transmission

The voice signal is converted into 32kbps digital data by ADPCM CODEC. The digital data is fed to scrambler, differential encoder, spreader which is responsible for the Spread Spectrum modulation. The SS Chip sends out digital data which is made by the spread spectrum sequence. This digital data having a 1.366Mbps data rate is filtered and upper converted to RF by FSK (Frequency Shift Keying) modulator. Then, filtered by LPF (Low Pass Filter) to suppress the out-of-band spurious of the antenna transmission signal.

2.2 Reception

The receiver is direct conversion type. The incoming signal is passes through the RF BPF (Band Pass Filter). Down-conversion to quadrature base band signal is

done using a matched pair of mixers and a 90° phase splatter for the LO (Local). The SS Chip calculates the correlation from the spreading code and the outputs the detected voice data to ADPCM CODEC. Finally, the ADPCM CODEC outputs received analog signal.

2.3 Duplexing

This DEVICE can communicate by using Time Division Duplexing. It uses same frequency in both transmission and reception. It has 1 msec time frame of one transmission and reception cycle. This frame signal is generated by SS Chip and is provided to all other circuits.

2.4 Control

The CPU controls the RF frequency channel. And the ASIC controls ADPCM CODEC and audio signal switching also set up the spreading code. Before established the communication link, THIS DEVICE searches vacant RF channel and then transmits RF signal at the vacant channel. The CPU generates a random security code out of 65536 codes, which can protects customers privacy.

3. Specification

Item	Specification
Frequency	902 - 928MHz
Channel	20
Channel Separation	0.96MHz
Spread Spectrum method	Direct Sequence (FSK modulation)
Chip rate	1.366Mbps
RF Output Power	10mW (Max.)
Duplexing	Time Division Duplex & Frequency Division Duplex
Burst Frame	1 msec
Voice Coding	ADPCM
Power Supply	3.6VDC Battery (Handset) / 120VAC Adapter (Base unit)

Operating temperature: 0 to 50 deg C Humidity: Up to 90%

Digital Security Code Information

65536 Digital Security Code:
This cordless telephone system provides the random digital security code.

Equipment Description:
This device 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 intended to connect to standard telephone modular jacks 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 with Spread Spectrum Technology. Theses 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 Part15 requirements. The specifications are below:

General:

Modulation	: Direct Sequence Spread Spectrum Modulation
Operating Temperature	: 0 deg. C to +50 deg. C
Security Codes	: 65536 Codes

Base Unit:

Frequency Band	: 902 MHz - 928 MHz
Power Requirements	: 9V DC 350mA (Use with AC Adapter)

Handset:

Frequency Band	: 902 MHz to 928 MHz
Power Requirements	: 3.6V DC (Rechargeable Nickel-Cadmium Battery)

SUPPLEMENTAL INFORMATION

1. Antenna Gain for both Units:

	Gain respect to dipole	Gain respect to isotropic
Base unit:	+ 1.2 dB	+ 3.34 dB (= +1.2 + 2.14)
Handset :	- 0.4 dB	+ 1.74 dB (= -0.4 + 2.14)

Note that antenna gain measurement was conducted based on substitution method using with an half wave dipole antenna.

2. Channel List (Center frequency for both units):

CH	Frequency	CH	Frequency
1	905.280MHz	11	914.880MHz
2	906.240MHz	12	915.840MHz
3	907.200MHz	13	916.800MHz
4	908.160MHz	14	917.760MHz
5	909.120MHz	15	918.720MHz
6	910.080MHz	16	919.680MHz
7	911.040MHz	17	920.640MHz
8	912.000MHz	18	921.600MHz
9	912.960MHz	19	922.560MHz
10	913.920MHz	20	923.5200MHz

As you can see in the table above, the lowest frequency is 905.280MHz and the highest frequency is 923.520MHz.

3. Maximum allowable output power:

Please be advised that we designed the rated output power for both unit as +8 dBm (= 0.0063 W: 2dB below 0.01 watts).