CIRCUIT DESCRIPTION AND
DIGITAL SECURITY CODE INFORMATION

CIRCUIT DESCRIPTION   (UC650B)

1.   OVER VIEW

This 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
● Radio frequency Channels in 2400 - 2483.5MHz ISM band
● 10mW maximum output power
● Time Division Duplex operation
● 32kbps or 40kbps ADPCM voice CODEC
● security codes
● Auto Channel codes
● Auto Interference Avoidance
● Auto least power control

2. Configurations

2.1 Transmission

The voice signal is converted into 32kbps or 40kbps 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 1.2Mbps data rate is filtered and upper converted to RF by DBPSK (Differential Binary Phase Shift Keying) modulator. This BPSK signal is upper converted to 2.4GHz RF by a mixer and is amplified by a power amplifier. Then, filtered by BPF (Band Pass Filter) to suppress the out-of-band spurious of the antenna transmission signal.

2.2 Reception

The receiver is single conversion and quadrature demodulation type. The incoming signal is passes through the RF BPF (Band Pass Filter). Converting IF and 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 enables communicate by using Time Division Duplexing. It uses same frequency in both transmission and reception. It has 2 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 channels, RF power, ADPCM CODEC and audio signal switching. It also set up the spreading code other data of the SS Chip. Before established the communication link, this device searches vacant RF channel and then transmits RF signal at the vacant channel. Initially, it output the minimum RF power to maintain communication in order to minimize the interference to other cordless telephones. The CPU generates a random security code out of 65536 codes, which can protects customers privacy.

3.   Specification

Item	Specification
Frequency	2400 – 2483.5MHz
Channel	20
Channel Separation	ch.1-2,ch-19, 20; 0.6MHz ch.2-19; 1.2MHz
Spread Spectrum method	Direct Sequence (DBPSK modulation)

Chip rate	1.2Mbps
RF Output Power	10mW (Max.)
Output Power Control	3 steps, 10mW to 1mW, and 0.1mW (10dB step)
Duplexing	Time Division Duplex
Burst Frame	2 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 2400 - 2483.5 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 Part 15 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	: 2400 MHz - 2483.5 MHz
Power Requirements	: 9V DC 500mA (Use with AC Adapter)

Handset:

Frequency Band	: 2400 MHz - 2483.5 MHz
Power Requirements	: 3.6V DC (Rechargeable Nickel-Cadmium Battery)

SUPPLEMENTAL INFORMATION

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

CH	Frequency	CH	Frequency
1	2454.200MHz	11	2465.600MHz
2	2454.800MHz	12	2466.800MHz
3	2456.000MHz	13	2468.000MHz
4	2457.200MHz	14	2469.200MHz
5	2458.400MHz	15	2470.400MHz
6	2459.600MHz	16	2471.600MHz
7	2460.800MHz	17	2472.800MHz
8	2462.000MHz	18	2474.000MHz
9	2463.200MHz	19	2475.200MHz
10	2464.400MHz	20	2475.800MHz

As you can see in the table above, the lowest frequency is 2454.200MHz and the highest frequency is 2475.800MHz.

2. Power Control:

During the measurement, the automatic power control circuit was disabled by controlling with personal computer (PC) connected the unit under test. The RF output required for testing would be set by personal computer.

3. Serial port:

The serial port is a terminal that is mainly used as command port for setting the unit for specified test mode and/or read out the data from the unit under test to verify the operational condition. Note that Bit Error Ratio (B.E.R) of the unit may be available through this port as well.

Nature of impedance for serial port would be classified as CMOSs input/output port level, therefore, connection of serial port would not affect the power to

the antenna.

4. Maximum allowable output power:

Please be advised that we designed the rated output power for both unit as +8 dBm. Just for your reference, the units (both base and handset) could be automatically changed the RF output power levels as follows;

Hi - Power :   +8dBm
MID -Power :   -2dBm
LO - Power :   -12dBm