CIRCUIT DESCRIPTION
Model: ATC2488 – Digital Spread Spectrum Cordless Phone

Equipment Description:

The device is a digital spread spectrum cordless telephone, which meets with FCC Part 15 and 68 requirements. This device is a telephone terminal 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.

1. **Transmission:**
   ADPCM CODEC converts the voice signal into 32kbps digital data. The digital data is fed to differential encoder, spreader that is responsible for the Spread Spectrum Modulation. The CD/SS Chip sends out digital data, which is made by the spread spectrum sequence. This data having 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 spurious of the antenna transmission signal.

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 RF IC ML2725 for the LO (Local Oscillator). The CD/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.

3. **Duplexing:**
   This device can communicate by using Time Division Duplex. It uses same frequency in both transmission and reception. It has 2.35 msec time frame of one transmission and reception cycle. This frame signal is generated by CD/SS Chip and is provided to all circuits.

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 clearest available RF channel and then transmits RF signal at the clearest available channel. The CPU generates a random security code out of more than 4 million codes, which can protects customer's privacy.

Specification:

- Frequency: 2402.304 ~ 2480.128 MHz
- Channel: 77
- Channel Separation: 1.024MHz
- Spread Spectrum Modulation Method: FSK (Frequency Shift Keying)
- RF Output Power: 0.065 Watts
- Duplexing: TDD (Time Division Duplex)
- Burst Frame (RX/TX): 2.35msec / 2.35msec
- Spread Rate: 32 – Chip per Symbol
- Data Rate per Symbol: 3 Bit / Symbol
- Average Chip per Data Bit: 32 (Chip / Symbol) / 3 (Bit / Symbol) = 10.667 Chip per Bit
- Symbol Rate at 19.2MHz Master Clock: 23.4us (micro second) per Symbol
- Chip Rate: 1.366Mbps
- Voice Coding: ADPCM (Adaptive Differential Pulse Code Modulation)
- Power Supply: 3.6VDC, 800mAh (Handset) / 120VAC 500mA (Base Unit)