

## **Theory of Operation Ensure Technologies Key XC-2**

Please refer to the block diagram for this discussion.

The key is a Gaussian shift keyed FSK transmitter. The transmitter consists of a directly modulated PLL synthesized VCO. The VCO drives a power amplifier. The output of the amplifier is filtered and applied to an internal antenna. A control microprocessor periodically wakes up and then initiates a transmission. The typical period between transmissions is 1 sec. The key has two buttons. One, the “ON” button initiates transmission and programs the key to transmit every 1 sec for 13 hours. The OFF button suspends transmission and puts the key into a sleep state.

Each transmission, the key consecutively transmits out of each antenna changing its antenna pattern by shifting the internal antenna polarization by 90 degrees. It uses the RF switch U4 to switch antenna elements.