



## **Function Description of Model 8069 Handheld Garage Door Type Transmitter**

The transmitter consists of encoder chip, SAW stabilized RF oscillator, and a 12 volt battery to power the device.

### **Encoder**

The encoder chip is manufactured by Microchip Inc. The part number is HCS301. The encoder is preprogrammed at Doorking with a manufacturer's code, and serial number, which are used to later modulate the RF oscillator when the encoder is activated. The manufacturer's code is used to encrypt the data for transmission. The serial number is unique to each transmitter and is used to identify the transmitter.

The output (PWM pin 6) of the encoder stays low, (RF oscillator off), until switch SW1 is closed. When the encoder detects the closure of SW1, the serial number and button data are output in a pulse width data modulation scheme. A 400us pulse is a data 1. An 800us pulse is a data 0.

The output of the encoder turns on and off the RF oscillator at this rate.

### **RF Oscillator/Antenna.**

The RF oscillator consists of a single transistor colpitts oscillator. L1,C3,C4 form the basic LC tank circuit. The oscillator is stabilized to 318MHz by SAW resonator S1. No tuning of the oscillator is needed in production. When the output of the encoder is high, the transistor is biased on and the circuit oscillates. When the encoder output is low the transistor is biased off and the oscillator does not oscillate.

The oscillator is coupled to a stub antenna using L2. The stub antenna consists of a 2 inch length of printed circuit board etch.

### **Battery/LED**

The transmitter is powered by a 12 volt battery, Duracell type MN21 or equivalent. The LED provides reverse battery circuit protection and transmitter operation indicator.