

Operational Description of the BowBug Transmitter

Abstract

The BowBug transmitter consists of a modulated 315 MHz Colpitts oscillator, coupled to an electrically short whip antenna. It emits a short, periodically pulses of 315 MHz carrier to allow a sensitive narrowband receiver and high gain antenna to determine the location of the unit. The end application is short range tracking on wounded game animals in rural areas.

Circuit operation

Q1 and surrounding components comprise a 315 MHz SAW stabilized Colpitts oscillator. This oscillator is pulse modulated by U2 and surrounding components, which comprise the pulse generator. The pulse generator is a relaxation oscillator with a low duty cycle and relatively long period. This maximizes battery life in the application. The resulting RF pulses are coupled to the antenna via the matching/filter network L1, C1, and L3. The unit itself is power by a 1.5 volt silver oxide cell BT1 that is switched on and off by the reed relay K1 and external magnet.