



Operational Description (RF part)

The EUT has a RF module RFW102 ISM Transceiver Chipset that is a short –range, half duplex wireless radio transceiver. The communication link between the transceivers is a DSSS pulse pipe. The modulation scheme is 100 % Amplitude Shift Keying (ASK). The spreading modulation scheme is Bi-Phase modulation where each bit has a 13 bit Barker series. See the attached block diagram and schematic

The RFW102 is based on a SAW correlator that functions as a spreading/de-spreading element in the system. Along with the SAW correlator, two other devices are embedded in the system: A 488 MHz 1-port SAW resonator - provides the source of frequency for system, and a Silicon RFIC - functions as the active part of the system. The silicon RFIC is an ON OFF Keying transceiver, which operates with an IF of 488 MHz and a LO of 1952 MHz. The SAW resonator generates both frequencies.

The RF Front End is the final stage of amplification and up-conversion prior to feeding the antenna. Its input is the 13-bit BPSK series that is the output signal of the correlator in an intermediate frequency of 488MHz, and its output is the same signal amplified by 40dB and up-converted to 2440MHz. The first stage of amplification is in the IF, and the second is in the RF. The mixer is an image rejection mixer, with at least 35dB rejections.

The RFW-D100 is complimentary chip to the RFW-102 chipset as a RF controller. It provides an MCU (PIC16F874) with a parallel interface to the RFW-102.

ANTENNA

The antenna is specially designed to work with the RFW102 chipset. The antenna is printed on a PCB. No external ground is required or used with this transmitter.

Central frequency: 2.44 GHz

Bandwidth: 100 MHz

Maximum gain: 0dBi

Input impedance: 200 ohm differential