

MKRS416 RECEIVER COMPLIANCE TO PART 15.247(a)(1)

General Description

The MKRS416 receiver is a homodyne configuration, which uses a local oscillator signal, at the same frequency as the transmitted signal, to downconvert the received signal to baseband. The baseband signal is filtered with a 5-pole Bessel low pass filter, which has a cutoff frequency of 400 KHz. Using a local oscillator signal derived from the transmitter for direct downconversion to baseband insures synchronization of the receiver and transmitter. Using a low pass filter insures the receiver bandwidth matches the hopping channel bandwidth. The combination of these 2 design features provides compliance with Part 15.247(a)(1) in the MKRS416 receiver design.

Detailed Description

The receiver signal enters through the antenna and is routed through the SP6T switch. The signal then passes through the microwave circulator to a power divider. The two signals from the power divider are quadrature downconverted (to baseband) in 2 mixers, each using a local oscillator signal derived from the transmitter. The 2 baseband signals are amplified and then filtered with a 5-pole Bessel low pass filter. After 2 additional amplification stages, the absolute value of the quadrature channel signals is taken, then these signals are summed together. This final summed signal is compared to a pre-set voltage level to create a logic level signal for the microprocessor.