

9. RF Exposure Information:

Calculation for compliance with MPE requirements (47CFR2.1091) is done using a worst-case transmitter power of 250 mW, assumption of a unity gain antenna, and an exposure limit of 0.6 mW/cm² (f/1500 mW/cm² at 20 cm per 47CFR1.1310) for general applications. This device is not carried or worn by the end user. It has an extremely low duty cycle and a low rate of transmission that dramatically reduces the average power level that could pose an exposure hazard.

The transmitter is typically activated by the opening or closing of a door or window. In addition to these change-of-state transmissions, the transmitter is configured to transmit a supervisory message once every 3 minutes. The averaging interval specified in Table 1(B) of 47CFR1.1310 is 30 minutes. For the purposes of this calculation, it is assumed that ten supervisory and five change-of-state messages will be sent in the 30-minute interval. Each supervisory message consists of 3 redundant packets, and each change of state message contains 21 packets, for a total of 135 packets in the 30-minute interval. A packet is typically 20 ms in length.

The worst-case power density at a distance of 20 cm is then,

$$250mW \times \frac{135 \text{ packets}}{30 \text{ min}} \times \frac{20ms}{\text{packet}} \times \frac{1 \text{ min}}{60 \times 10^3 ms} \times \frac{1}{4\pi(20cm)^2} = 74.6 \frac{nW}{cm^2}$$

This is well below the 0.6 mW/cm² limit.