

Section 15.247(i) – Radio Frequency Hazard Information

As per Section 15.247 (b) (4) spread spectrum transmitters operating in the 2400 – 2483.5 MHz band are required to be operated in a manner that ensures that the public is not exposed to RF energy levels in accordance with CFR 47, Section 1.1307(b)(1).

The device when in operation is fixed and a safe distance could be maintained when events are undertaken.

In accordance with Section 1.1310 the Maximum Permissible Exposure (MPE) limits for the General Population / Uncontrolled Exposure of 1 mW/cm² has been applied.

The maximum distance from the antenna at which the MPE is met or exceeded is calculated from the equation relating field strength in V/m, transmit power in watts, transmit antenna gain and separation distance in metres:

$$\begin{aligned} E, \text{ V/m} &= (\sqrt{30 * P * G}) / d \\ \text{Power density, mW/cm}^2 &= E^2/3770 \\ E \text{ for MPE: } 1 &= E^2/3770 \\ E &= \sqrt{1 * 3770} \\ E &= 61.4 \text{ V/m} \end{aligned}$$

The highest radiated power has been measured to be 0.2 dBm or 0.00173 watts ERP when operating on 2440 MHz.

Therefore:

$$\begin{aligned} E &= \sqrt{30 * P * G} / d \\ d &= \sqrt{30 * P * G} / E \\ d &= \sqrt{30 * 0.00173} / 61.4 \\ d &= 0.0037 \text{ m or } 0.37 \text{ cm} \end{aligned}$$

Result: Complies.

The Bluetooth transmitter will comply if a minimum safe distance of 20 cm is specified in the set up instructions for this system.