

MAXIMUM PERMISSIBLE EXPOSURE FOR SUBPART C 2.4 GHz BAND

Calculations

Power density at the specific separation:

$$\begin{aligned}
 S &= PG/(4R^2\pi) \\
 S &= (17.10 * 1.754) / (4 * 2.5^2 * \pi) \\
 S &= 0.3819 \text{ mW/cm}^2 \text{ (at 2.5 cm)} \\
 \text{Limit} &= 0.60175 \text{ mW/cm}^2
 \end{aligned}$$

where

$$\begin{aligned}
 S &= \text{Maximum power density (mW/cm}^2\text{)} \\
 P &= \text{Power input to the antenna (mW) - 12.33 dBm} \\
 G &= \text{Numeric power gain of the antenna} \\
 R &= \text{distance to the center of the radiation of the antenna (2.5 cm = limit for MPE)}
 \end{aligned}$$

The maximum permissible exposure (MPE) for the general population is 0.60175 mW/cm².

The power density at 2.5 cm does not exceed the 0.60175 mW/cm². Therefore, the exposure condition is compliant with FCC rules.

The numeric gain (G) of the antenna with a gain specified in dB is determined by:

$$\begin{aligned}
 G &= \text{Log}^{-1} (\text{dB antenna gain}/10) \\
 G &= \text{Log}^{-1} (2.44 \text{ dBi}/10) \\
 G &= 1.754
 \end{aligned}$$