

**MAXIMUM PERMISSIBLE EXPOSURE FOR SUBPART C 2.4 GHz BAND
DATA RADIO****Calculations**

Power density at the specific separation:

$$\begin{aligned} S &= PG/(4R^2\pi) \\ S &= (0.5585 * 15.85) / (4 * 20^2 * \pi) \\ S &= 0.001761 \text{ mW/cm}^2 \end{aligned}$$

where

S = Maximum power density (mW/cm²)
P = Power input to the antenna (mW) = -2.53 dBm
G = Numeric power gain of the antenna
R = distance to the center of the radiation of the antenna (20 cm = limit for MPE)

The maximum permissible exposure (MPE) for the general population is 1 mW/cm².

The power density at both 20 cm does not exceed the 1 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:

$$\begin{aligned} G &= \text{Log}^{-1} (\text{dBi antenna gain}/10) \\ G &= \text{Log}^{-1} (12 \text{ dBi}/10) \\ G &= 15.85 \end{aligned}$$