COMPATIBLE ELECTRONICS

MAXIMUM PERMISSIBLE EXPOSURE FOR SUBPART C 2.4 GHz BAND

Calculations

Power density at the specific separation:

$$S = PG/(4R^2\pi)$$
$$S = (0.3838 * 0.1995) / (4 * 20^2 * \pi)$$
$$S = 0.0000152327 \text{ mW/cm}^2$$

$$S = PG/(4R^2\pi)$$
$$S = (0.3838 * 0.1995) / (4 * 1^2 * \pi)$$
$$S = 0.0060930958 \text{ mW/cm}^2$$

where

S = Maximum power density (mW/cm^2)
P = Power input to the antenna (mW) = -4.159 dBm
G = Numeric power gain of the antenna
R = distance to the center of the radiation of the antenna (20 cm or 1 cm = limit for MPE)

The maximum permissible exposure (MPE) for the general population is 1 mW/cm^2.

The power density at both 1 cm and 20 cm does not exceed the 1 mW/cm^2. 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:

$$G = \text{Log}^{-1} (\text{dBi antenna gain}/10)$$
$$G = \text{Log}^{-1} (-7 \text{ dBi}/10)$$
$$G = 0.1995$$