MAXIMUM PERMISSIBLE EXPOSURE FOR SUBPART C 2.4 GHz BAND

Calculations

Power density at the specific separation of 20 centimeters:

$S = PG/(4R^2\pi)$
$S = (53.58 * 1.413) / (4 * 20^2 * \pi)$
$S = \mathbf{0.01506\ mW/cm^2}$

where

S = Maximum power density (mW/cm^2)
P = Power input to the antenna (mW)
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/cm^2.

The power density at 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:

$G = Log^{-1}$ (dB antenna gain/10)
$G = Log^{-1}$ (1.5 dBi/10)
G = 1.413