

Mobile Power Density Calculation for FCC ID: RVW2332 IC: 332R-2332

The Access Point (AP) is an IEE802.11 A / B /G radio. The access point operates on the 2.4 GHz and 5 GHz ISM and 5GHz UNII bands.

Operating Environment:

The operating environment for the for the radio in all cases is a fixed, uncontrolled environment, however, the devices are classified as being "Mobile", Therefore the exposure at 20 cm is calculated.

Fixed, Uncontrolled Environment:

The FCC limit for the power density for uncontrolled exposure to RF devices operation at 2.4GHz and 5GHz at a distance of 20 cm is:

$$\mathbf{1 \text{ mW/cm}^2}$$

Power density is calculated from the following equation

$$\text{Exposure (mW/cm}^2\text{)} = \frac{\text{EIRP(mW)} * \text{Duty Cycle}}{4 * \text{PI} * \text{Radius}^2\text{(cm)}}$$

Where:

Radius = 20 cm

Duty Cycle = assumed to be 100% to yield a worst case result.

The maximum allowed external antenna gain on 2.4 GHz is 13dBi

The maximum allowed external antenna gain on 5 GHz is 14dBi (with some power reduction in the UNII bands)

2.4GHz ISM Band MPE distance Calculation

Using the highest EIRP (all settings / all antenna) measured on the 2.4 GHz ISM band.

MAX Pout: 20.00dBm, 100 mW MAX Ant Gain 14.3 dBi (26.91x)

EIRP: 34.3 dBm (2691.534 mW EIRP MAX)

5GHz Band MPE distance Calculation

Using the highest EIRP (all settings / all antenna) on the 5 GHz (ISM) band.

MAX Pout: 12.77 dBm , 18.92 mW MAX Ant Gain 16.1 dBi (40.73x)

EIRP: 28.87 dBm (770.903 mW EIRP MAX)

Total EIRP (mw)

$$2691.534 + 770.903 = 3462.437 \text{ mW EIRP total}$$

Calculating power density at a distance of 20 cm yields:

$$\text{Power Density} = \frac{3462.437 * 1}{4 * \text{pi} * 20^2} \Rightarrow \frac{3462.437}{5026.548} \Rightarrow \mathbf{.6888 \text{ mw/cm}^2}$$

$$\begin{aligned} \text{Delta} &= \text{specification} - \text{result} \\ &= 1 \text{ mW/cm}^2 - .6888 \text{ mw/cm}^2 = \mathbf{.3111 \text{ mw/cm}^2} \\ &= \mathbf{-1.619 \text{ dB below limit}} \end{aligned}$$