

Mobile Power Density Calculation
for
FCC ID: RVW2330
IC: 332R-2330

The Access Point (AP) is an IEEE802.11 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 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:

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

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: 17.9dBm (Common setting H,M,L 802.11G) MAX Ant Gain 15 dBi (31.62x)

EIRP: 32.9 dBm (1649.85 mW EIRP)

5GHz Band MPE distance Calculation

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

MAX Pout: 19.39 dBm MAX Ant Gain 14 dBi (25.11x)

EIRP: 33.39 dBm (2182.72 mW EIRP)

Total EIRP (mw)

$$1649.85 + 2182.72 = 3832.57 \text{ mW EIRP total}$$

Calculating power density at a distance of 20 cm yields:

$$\text{Power Density} = \frac{3832.57 * 1}{4 * \text{Pi} * 20^2} \Rightarrow \frac{3832.57}{5026.54} \Rightarrow .7624 \text{ mw/cm}^2$$

$$\begin{aligned} \text{Delta} &= \text{specification} - \text{result} \\ 1 \text{ mW/cm}^2 &- .7624 \text{ mw/cm}^2 = .2375 \text{mw/cm}^2 \\ &= -1.178 \text{ dB below limit} \end{aligned}$$