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Mobile Power Density Calculation for FCC ID: RVW2231

The Nortel Networks access point, Model 2231 and 2231 INT are IEE802.11 B /G radios. The access points operate on the 2.4 GHz ISM band.

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 at a distance of 20 cm is:

1 mW/cm^2

Power density is calculated from the following equation

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

Where:
Radius = 20 cm
Duty Cycle = assumed to be 100% to yield a worst case result.
NOTE: Maximum allowable certified external antenna gain: 6.8 dBi

2.4GHz ISM Band MPE distance Calculation
Using the highest power measured on the 2.4 GHz ISM band.
MAX Pout: 20.4 dBm (109.65 mW) MAX Ant Gain 6.8 dBi (4.78x)
EIRP: 27.2 dBm (524.80 mW EIRP)

Calculating power density at a distance of 20 cm yields:

$$\text{Power Density} = \frac{524.127 * 1}{4 * \text{Pi} * 20^2} \Rightarrow \frac{524.127}{5026.54} \Rightarrow .1043 \text{ mw/cm}^2$$

$$\text{Delta} = \text{specification} - \text{result}$$
$$1 \text{ mW/cm}^2 - .1043 \text{ mw/cm}^2 = .8956 \text{ mw/cm}^2$$
$$= -9.817 \text{ dB below limit}$$