§ 15.319 (i) - RF RADIATION EXPOSURE

Standards Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	842/f	2.19/f	*(180/f\2\)	30
30-300	27.5	0.073	0.2	30
300-1500.	/	/	f/1500	30
1500-100,000.	/	/	1.0	30

    f = frequency in MHz
  * = Plane-wave equivalent power density

MPE Predication

MPE Calculation

$$S = \frac{PG}{4\pi R^2}$$

Where:
    S = power density (in appropriate units, e.g. mW/cm^2)
    P = power input to the antenna (in appropriate units, e.g., mW).
    G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally *numeric* gain.
    R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Result

Frequency Band	MPE Distance (cm)	Output Power (dBm)	Antenna Gain (dBi)	Power Density (mw/cm^2)	FCC Power Density Limit (mw/cm^2)	Result
1.9 GHz	20	19.50	3	0.0355	1.0	Compliance