

FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Standard Applicable

According to subpart 15.247 (i) and subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mw/cm ²)	Averaging Time (Minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/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 Calculation

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm²)

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)

Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
802.11b							
2412	3.0	2.0	18.97	78.89	20	0.031	1
2437	3.0	2.0	18.70	74.13	20	0.030	1
2462	3.0	2.0	17.41	55.08	20	0.022	1
802.11g							
2412	3.0	2.0	19.27	84.53	20	0.034	1
2437	3.0	2.0	19.26	84.33	20	0.034	1
2462	3.0	2.0	18.86	76.91	20	0.031	1
802.11n-20							
2412	3.0	2.0	19.77	94.84	20	0.038	1
2437	3.0	2.0	18.94	78.34	20	0.031	1
2462	3.0	2.0	18.55	71.61	20	0.029	1

Note: To maintain compliance with the FCC’s RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance