

# MPE Prediction

FCC Rule: 15.247(b)(5)

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 levels in excess of the Commission’s guidelines. See §1.1307(b)(1) of this Chapter.

## LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average time (minutes)
<b>(A)Limits For Occupational / Control Exposures</b>				
30-300	61.4	0.613	1.0	6
300-1500	...	...	F/300	6
1500-100,000	...	...	5	6
<b>(B)Limits For General Population / Uncontrolled Exposure</b>				
30-300	27.5	0.073	0.2	30
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

## Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 802.11b/g/n(20MHz): 26.08 (dBm)  
802.11n(40MHz): 23.20 (dBm)

Maximum peak output power at antenna input terminal: 802.11b/g/n(20MHz): 405.5085(mW)  
802.11n(40MHz): 208.9296(mW)

Antenna gain(maximal): 2 (dBi)

Prediction distance: 20 (cm)

Prediction frequency: 802.11b/g/n(20MHz) 2462 (MHz)  
802.11n(40MHz) 2452 (MHz)

MPE limit for uncontrolled exposure at prediction frequency: 1.0 (mW/cm<sup>2</sup>)

Power density at prediction frequency: 802.11b/g/n(20MHz): 0.1279(mW/cm<sup>2</sup>)  
802.11n(40MHz): 0.0659(mW/cm<sup>2</sup>)

The manual instruct the user to install and operate the device in a minimum distance of 20 cm between antenna and the user's body.