

## §15.247 (i) and §1.1307 (b) (1) - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### Standard Applicable

According to subpart 15.247 (i) and subpart 1.1307 (b)(1), 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

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
<b>Limits for General Population/Uncontrolled Exposure</b>				
0.3–3.0	614	1.63	*(100)	30
3.0–30	824/f	2.19/f	*(180/f <sup>2</sup> )	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

### Test Data

Prediction of MPE limit at a given distance

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

$$S = PG/4\pi R^2$$

S: Power density, in mW/cm<sup>2</sup>

P: Power input to the antenna, in mW

G: numeric gain of the antenna

R: distance to the center of the antenna, in cm

**External Antenna****802.11b Mode:**

Maximum peak output power at antenna input terminal (dBm): 17.31  
Maximum peak output power at antenna input terminal (mW): 53.83  
Prediction distance (cm): 20  
Prediction frequency (MHz): 2437  
Antenna Gain, typical (dBi): 4.6  
Maximum Antenna Gain (numeric): 2.884  
The worst case is power density at predication frequency at 20 cm (mW/cm<sup>2</sup>): 0.03088  
MPE limit for general population exposure at prediction frequency (mW/cm<sup>2</sup>): 1.0

**802.11g Mode:**

Maximum peak output power at antenna input terminal (dBm): 16.29  
Maximum peak output power at antenna input terminal (mW): 42.56  
Prediction distance (cm): 20  
Prediction frequency (MHz): 2437  
Antenna Gain, typical (dBi): 4.6  
Maximum Antenna Gain (numeric): 2.884  
The worst case is power density at predication frequency at 20 cm (mW/cm<sup>2</sup>): 0.02442  
MPE limit for general population exposure at prediction frequency (mW/cm<sup>2</sup>): 1.0

**Internal Antenna****802.11b Mode:**

Maximum peak output power at antenna input terminal (dBm): 17.31  
Maximum peak output power at antenna input terminal (mW): 53.83  
Prediction distance (cm): 20  
Prediction frequency (MHz): 2437  
Antenna Gain, typical (dBi): 2.6  
Maximum Antenna Gain (numeric): 1.820  
The worst case is power density at predication frequency at 20 cm (mW/cm<sup>2</sup>): 0.01949  
MPE limit for general population exposure at prediction frequency (mW/cm<sup>2</sup>): 1.0

**802.11g Mode:**

Maximum peak output power at antenna input terminal (dBm): 16.29  
Maximum peak output power at antenna input terminal (mW): 42.56  
Prediction distance (cm): 20  
Prediction frequency (MHz): 2437  
Antenna Gain, typical (dBi): 2.6  
Maximum Antenna Gain (numeric): 1.820  
The worst case is power density at predication frequency at 20 cm (mW/cm<sup>2</sup>): 0.01541  
MPE limit for general population exposure at prediction frequency (mW/cm<sup>2</sup>): 1.0

**Test Result**

The EUT complies with 20 cm distance.