

§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

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

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/cm²

P: Power input to the antenna, in mW

G: numeric gain of the antenna

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

802.11b Mode

Maximum peak output power at antenna input terminal (dBm):	<u>13.79</u>
Maximum peak output power at antenna input terminal (mW):	<u>23.93</u>
Prediction distance (cm):	<u>34</u>
Prediction frequency (MHz):	<u>2437</u>
Antenna Gain, typical (dBi):	<u>12.0</u>
Maximum Antenna Gain (numeric):	<u>15.85</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.026</u>
MPE limit for Occupational exposure at predication frequency (mW/cm ²):	<u>1.0</u>

802.11g Mode

Maximum peak output power at antenna input terminal (dBm):	<u>13.87</u>
Maximum peak output power at antenna input terminal (mW):	<u>24.38</u>
Prediction distance (cm):	<u>34</u>
Prediction frequency (MHz):	<u>2437</u>
Antenna Gain, typical (dBi):	<u>12.0</u>
Maximum Antenna Gain (numeric):	<u>15.85</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.027</u>
MPE limit for Occupational exposure at predication frequency (mW/cm ²):	<u>1.0</u>

802.11a Mode

Maximum peak output power at antenna input terminal (dBm):	<u>11.44</u>
Maximum peak output power at antenna input terminal (mW):	<u>13.93</u>
Prediction distance (cm):	<u>34</u>
Prediction frequency (MHz):	<u>5825</u>
Antenna Gain, typical (dBi):	<u>14.0</u>
Maximum Antenna Gain (numeric):	<u>25.12</u>
Power density at predication frequency and distance (mW/cm ²):	<u>0.024</u>
MPE limit for Occupational exposure at predication frequency (mW/cm ²):	<u>1.0</u>

Result

The device is compliant with the MPE limit of General Population/Uncontrolled Exposure at predication frequency 1.0 mW/cm². And the precaution is outlined in the user's manual to prevent to high level of RF energy.