

4 FCC§15.247 (i), §2.1091 - RF Exposure

4.1 Applicable Standard

According to §15.247(i) and §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 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

4.2 MPE Prediction

Prediction of MPE limit at a given distance

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

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

Where: S = power density

P = power input to 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

802.11b Mode:

Maximum peak output power at antenna input terminal (dBm): 16.74

Maximum peak output power at antenna input terminal (mW): 47.21

Prediction distance (cm): 20

Prediction frequency (MHz): 2437

Maximum Antenna Gain, typical (dBi): 2

Maximum Antenna Gain (numeric): 1.58

Power density of prediction frequency at 20.0 cm (mW/cm²): 0.0148

MPE limit for uncontrolled exposure at prediction frequency (mW/cm²): 1.0

802.11g Mode:

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>13.68</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>23.33</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>2412</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>2</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>1.58</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.0073</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>

4.3 Results:**FCC§15.247(i) and §2.1091:**

For 802.11b mode, the power density level at 20 cm is 0.0148mW/cm², which is below the uncontrolled exposure limit of 1.0mW/cm² at 2437 MHz.

For 802.11g mode, the power density level at 20 cm is 0.0073mW/cm², which is below the uncontrolled exposure limit of 1.0mW/cm² at 2412 MHz.