

4 §15.247 (i) and § 2.1091 - RF EXPOSURE

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

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
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

4.1 MPE Prediction

Predication 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): 22.87

Maximum peak output power at antenna input terminal (mW): 193.64

Prediction distance(cm): 20

Prediction frequency(MHz): 2437

Antenna Gain (Maximum)(dBi): 4

Maximum Antenna Gain(numeric): 2.512

Power density at prediction frequency at 20 cm (mW/cm²): 0.0968

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

802.11g Mode:

Maximum peak output power at antenna input terminal (dBm): 20.52
Maximum peak output power at antenna input terminal (mW): 112.72
Prediction distance(cm): 20
Prediction frequency(MHz): 2437
Antenna Gain (maximum)(dBi): 4
Maximum Antenna Gain(numeric): 2.512
Power density at prediction frequency at 20 cm (mW/cm²): 0.0563
MPE limit for uncontrolled exposure at predication frequency(mW/cm²): 1.0

4.2 Test Result

The predicted power density level at 20 cm is 0.0968 mW/cm² for 802.11b mode, and 0.0563 mW/cm² for 802.11g mode. Both are below the uncontrolled exposure limit of 1.0 mW/cm² at 2437 MHz. The EUT is used at least 20 cm away from user's body. It is determined as mobile equipment and complies with the MPE limit.