§15.247 (i), § 1.1310 - MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to §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.

Radio frequency radiation exposure was calculated based on § 1.1310 limits.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for General Polulation/Uncontrolled Exposures				
0.3 - 1.34	614	1.63	*(100)	30
1.34 - 30	842/f	2.19/f	*(180/ f²)	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

$S = PG/4\pi R^2$
S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally *numeric* gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

The max gain of 2.4 GHz antenna is 15 dBi, the max gain of 5.8 GHz antenn is 17 dBi.

802.11a Mode

Maximum peak output power at antenna input terminal: 18.32 (dBm)
Maximum peak output power at antenna input terminal: 67.92 (mW)
Prediction distance: 20 (cm)
Predication frequency: 5745 (MHz)
Antenna Gain (typical): 17 (dBi)
Antenna Gain (typical): 50.12 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.68 (mW/cm^2)
MPE limit for general polulation/uncontrolled exposure at prediction frequency: 1.0 (mW/cm^2)

802.11b Mode

Maximum peak output power at antenna input terminal: 14.94 (dBm)
Maximum peak output power at antenna input terminal: 31.19 (mW)
Prediction distance: 20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical): 15 (dBi)
Antenna Gain (typical): 31.62 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.196 (mW/cm^2)
MPE limit for general polulation/uncontrolled exposure at prediction frequency: 1.0 $(mW/cm^2$

802.11g Mode

Maximum peak output power at antenna input terminal: 17.30 (dBm)
Maximum peak output power at antenna input terminal: 53.7 (mW)
Prediction distance: 20 (cm)
Predication frequency: 2462 (MHz)
Antenna Gain (typical): 15 (dBi)
Antenna Gain (typical): 31.62 (numeric)
The worst case is power density at predication frequency at 20 cm: 0.338 (mW/cm^2)
MPE limit for general polulation/uncontrolled exposure at prediction frequency: 1.0 $(mW/cm^2$

Result: This MPE level is below the 1 mW/cm² MPE at 20 cm distance for General Population / Uncontrolled Exposure as stated in OET BULLETIN 65 Edition 97-01. The precautions are outlined in the User's Manual to prevent exposure to high levels of RF energy.