

FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to FCC 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 that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure | | | | |
|--|--------------------------------------|--------------------------------------|--|---------------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm²) | 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;

MPE Calculation

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

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)

Calculated Data, worst case as below:

| Mode | Frequency (MHz) | Antenna Gain | | Conducted Power | | Evaluation Distance (cm) | Power Density (mW/cm ²) | MPE Limit (mW/cm ²) |
|---|--------------------|--------------|-----------|-----------------|--------|-----------------------------|--|------------------------------------|
| | | (dBi) | (numeric) | (dBm) | (mW) | | | |
| Limits for General Population/Uncontrolled Exposure | | | | | | | | |
| 802.11b | 2412 | 9 | 7.94 | 24.20 | 263.03 | 20 | 0.4157 | 1.0 |
| 802.11g | 2462 | 9 | 7.94 | 24.09 | 256.45 | 20 | 0.4053 | 1.0 |
| 802.11n-HT20 | 2437 | 9 | 7.94 | 24.02 | 252.35 | 20 | 0.3988 | 1.0 |
| 802.11n-HT40 | 2422 | 9 | 7.94 | 24.10 | 257.04 | 20 | 0.4062 | 1.0 |

FCC Radiation Exposure Statement:

To comply with FCC RF exposure requirements, a minimum separation distance of 20 cm is required between the antenna and all public persons.

Result: Compliance