



3.7 RF Exposure

RF Exposure Requirements - §15.247(i): 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 levels in excess of the Commission's guidelines.

RF Radiation Exposure Limits: §1.1310: As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307 (b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1903 of this chapter.

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Average Time (minutes) |
|---|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| (A) Limits for Occupational / Control Exposures | | | | |
| 30 - 300 | 61.4 | 0.163 | 1.0 | 6 |
| 300 – 1500 | -- | -- | F/300 | 6 |
| 1500 – 100,000 | -- | -- | 5 | 6 |
| (B) Limits for General Population / Uncontrolled Exposure | | | | |
| 30 - 300 | 27.5 | 0.073 | 0.2 | 30 |
| 300 – 1500 | -- | -- | F/1500 | 30 |
| 1500 – 100,000 | -- | -- | 1.0 | 30 |

Table 9. Limits for Maximum Permissible Exposure (MPE)

Note: F = Frequency in MHz

Test Results: MPE Limit Calculation: the EUT's operating frequencies @ 2402 – 2479 MHz; conducted power = 11.60 dBm (peak) with maximum antenna gain of 2 dBi. Therefore, Limit for Uncontrolled exposure: 1 mW/ cm² or 10 W/m²

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

$$S = PG / 4\pi R^2 \quad \text{or} \quad R = \sqrt{PG / 4\pi S}$$

Where, S = Power Density (10 W/m²)

P = Power Input to antenna (0.0145 Watts)

G = Antenna Gain (1.6 numeric)

R = distance to the center of radiation of antenna (in meter)

$$R = \sqrt{(0.0145 \times 1.6) / 4 \pi 10} = 0.0136 \text{ m}$$

The distance between the human and the RF antenna should not be less than 0.0136 m.

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