

§ 15.247(i) Maximum Permissible Exposure

RF Exposure Requirements: **§1.1307(b)(1) and §1.1307(b)(2):** 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 Limit: **§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. 2.1093 of this chapter.

MPE Limit Calculation: EUT's operating frequencies @ 2400-2483.5 MHz; highest conducted power = 22.38 dBm (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²**

EUT maximum antenna gain = 5 dBi.

MPE Limit Calculation: EUT's operating frequencies @ 1850-1910 MHz; maximum sourced based time-averaged transmit power is 0.125 Watts, **Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²**

EUT maximum antenna gain = 6 dBi.

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, R = Distance (20cm)

P = Power Input to antenna (mW)

G = Antenna Gain (numeric)

2.4 GHz Band

1900 MHz

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

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$$\frac{(173\text{mW})(3.16)}{4\pi(20)^2}$$

$$\frac{(125\text{mW})(3.98)}{4\pi(20)^2}$$

$$S1 = 0.1088 \text{ mW/cm}^2$$

$$S2 = 0.099 \text{ mW/cm}^2$$

S	Power density (mW/cm ²)	General Population Limit (mW/cm ²)	S as a fraction of the limit (%)
S1	0.1088	1	10.9
S2	0.099	1	9.9

The total density is $0.1088 + 0.099 = 0.2078 \text{ mW/cm}^2$.

The total density does not exceed 1 per OET 65 requirements when the spectral power density is calculated at least 20cm away from the unit.

MPE Limit Calculation: EUT's operating frequencies @ 2400-2483.5 MHz; highest conducted power = 22.38 dBm (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²**

EUT maximum antenna gain = 5 dBi.

MPE Limit Calculation: EUT's operating frequencies @ 824-849 MHz; maximum sourced based time-averaged transmit power is 0.25 Watts, **Limit for Uncontrolled exposure: 0.549 mW/cm² or 10 W/m²**

EUT maximum antenna gain = 6 dBi.

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, R = Distance (20cm)

P = Power Input to antenna (mW)

G = Antenna Gain (numeric)

2.4 GHz Band

824 MHz

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

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

$$\frac{(173\text{mW})(3.16)}{4\pi(20)^2}$$

$$\frac{(250\text{mW})(3.98)}{4\pi(20)^2}$$

$$S1 = 0.1088 \text{ mW/cm}^2$$

$$S2 = 0.198 \text{ mW/cm}^2$$

S	Power density (mW/cm ²)	General Population Limit (mW/cm ²)	S as a fraction of the limit (%)
S1	0.1088	1	10.9
S1	0.198	0.549	36.1

The total density is $0.1088 + 0.198 = 0.3068 \text{ mW/cm}^2$.

The total density does not exceed 0.549 per OET 65 requirements when the spectral power density is calculated at least 20cm away from the unit.