

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 @ 5745-5805 MHz; highest conducted power = 15.574 dBm (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²**

Gain of Omni Antenna @ 5.8GHz = 10 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, S = Power Density (mW/cm²)

P = Power Input to antenna (36.088 mW)

G = Antenna Gain (10)

R = Radius (20 cm)

$$S = (36.088 * 10) / (4 * 3.14 * 20^2) = 0.072 \text{ mW/cm}^2$$

Since S < 1 mW/cm², the EUT is compliant with the RF exposure limits at 20cm.

Gain of Sector Antenna @ 5.8GHz = 15.5 + 10log(2) = 18.51 dBi

Highest Conducted Power with Sector Antenna = 15.495 dBm

S = Power Density (mW/cm²)

P = Power Input to Antenna (35.442 dBm)

G = Numeric Antenna Gain (70.962)

R = Radius (20 cm)

$$S = (35.442 * 70.962) / (4 * 3.14 * 20^2) = 0.501 \text{ mW/cm}^2$$

Since S < 1 mW/cm², the EUT is compliant with the RF exposure limits at 20cm.