

MPE Calculation for AP30-4.9

RF Exposure Requirements: §90.1217, §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 @ 4945 - 4985 MHz; conducted power = 23.74 dBm (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm² or 10 W/m²**

EUT maximum antenna gain = 11 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

P = Power Input to antenna (0.2366 Watts)

G = Antenna Gain (12.589 in numeric)

R = distance to the center of radiation of the antenna (20 cm or 0.2 m)

$$S = 0.2366W * 12.589dB / 4 * 3.14 * (0.2m)^2 = 2.9785W / 0.5027m^2 = 5.925 W/m^2$$

EUT complies with 20cm distance exposure.