

§ 15.407(f)

RF Exposure

Test Requirement(s):

§15.407(f): U-NII devices are subject to the radio frequency radiation exposure requirements specified in §1.1307(b), §2.1091 and §2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a “general population/uncontrolled” environment.

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 @ 5740-5830MHz; **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

P = Power Input to antenna

G = Antenna Gain

R = Minimum Distance between User and Antenna (20 cm)

28dBi antenna:

P1= 16.19 dBm = 41.6 mW

G1=28 dBi = 631 linear

S1= 1 mW/cm²

R1=46 cm

23 dBi antenna:

P2=21.87 dBm = 153.8 mW

G2=23 dBi = 200 linear

S2=1 mW/cm²

R2=50 cm

Since $S < 1 \text{ mW/cm}^2$, the minimum distance (R) is 50 cm.