

§ 15.319(i)

RF 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: EUT's operating frequencies @ 1921.536-1928.448 MHz; **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 (mW/cm²)
P = Power Input to antenna (mW)
G = Antenna Gain (numeric value)
R = Distance (cm)

Test Results:

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
2437	28.75	749.894	3	1.995	0.29767	1	0.70233	20	Pass

Table 1. MPE, 2.4 GHz, Wi-Fi

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
5200	17.7	58.884	4.8	3.02	0.03538	1	0.96462	20	Pass

Table 2. MPE, 5 GHz UNII-1, Wi-Fi

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
5260	19.84	96.383	4.8	3.02	0.05791	1	0.94209	20	Pass

Table 3. MPE, 5 GHz UNII-2A, Wi-Fi

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
5580	19.08	80.91	4.8	3.02	0.04861	1	0.95139	20	Pass

Table 4. MPE, 5 GHz UNII-2B, Wi-Fi

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
5785	18.3	67.608	4.8	3.02	0.04062	1	0.95938	20	Pass

Table 5. MPE, 5 GHz UNII-3, Wi-Fi

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
2402	12.15	16.406	3	1.995	0.00651	1	0.99349	20	Pass

Table 6. MPE, BLE

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
1928	20.3	107.152	3.5	2.239	0.04772	1	0.95228	20	Pass

Table 7. MPE, DECT

Pwr Density(mW/cm²):

$$2.4\text{G Wi-Fi} + \text{DECT} = 0.29767 + 0.04772 = 0.34539 < 1$$

$$5\text{G UNII-1 Wi-Fi} + \text{DECT} = 0.03538 + 0.04772 = 0.0831 < 1$$

$$5\text{G UNII-2A Wi-Fi} + \text{DECT} = 0.05791 + 0.04772 = 0.10563 < 1$$

$$5\text{G UNII-2B Wi-Fi} + \text{DECT} = 0.04861 + 0.04772 = 0.09633 < 1$$

$$5\text{G UNII-3 Wi-Fi} + \text{DECT} = 0.04062 + 0.04772 = 0.08834 < 1$$

$$\text{BT} + \text{DECT} = 0.00651 + 0.04772 = 0.05423 < 1$$