

15.247 (2,b,5) RF Exposure Requirements

Reference CFR 47 Part 1.1307(b)(1)

RF Exposure – MPE Calculations (902 - 928 MHz Band)

Transmitter Power: 160 mW

Antenna Gain: 0 dB (For calculations 0dB gain assumed actual antenna has a loss)

Cable loss: 0 dB

Frequency range: 902 - 928 MHz

Assumptions

1. A single $\frac{1}{4}$ wavelength radiating antenna is assumed.
2. Closest exposure distance is assumed to be 20 cm

Calculations

The following results shall be assumed to be accurate for the far-field only. These predictions will over-estimate power density in the near-field. Based on the use of a $\frac{1}{4}$ wavelength radiator, a distance of 20 cm is considered to be in the far-field for all cases.

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

P is 100 mW

G is 0 dB (Antenna gain – loss)

R is 20 cm

$$S = 0.032 \text{ mW/cm}^2$$

For Occupational/Controlled Exposure

From 300 to 1500 MHz, power density limit is $f/1500 \text{ mW/cm}^2$
@ 902 MHz, power density limit is 3.01 mW/cm^2

For General Population/Uncontrolled Exposure

From 300 to 1500 MHz, power density limit is $f/1500 \text{ mW/cm}^2$
@ 902 MHz, Power density limit is 0.60 mW/cm^2

Conclusion: ***Meets MPE limits***