

Prediction of MPE limit at given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = Power density
P = Power input to the antenna
G = Antenna gain
R = Distance to the center of radiation of the antenna

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

Frequency Range (MHz)	Power Density (mW/cm ²)	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

Prediction:

	WLAN	Bluetooth
P Max power input to the antenna:	212.32 mW *1	2.10 mW *1
R Distance:	20 cm	20 cm
S MPE limit for uncontrolled exposure:	1 mW/cm ²	1 mW/cm ²
G Antenna gain:	0.94	1.45
Calculated Power density:	0.0397 mW/cm ²	0.0006 mW/cm ²
Result in % of MPE limit:	0.397 %	0.006 %
Result for co-location in % for both technologies	0.403 %	

*1 declared power shown in operational description

This prediction demonstrates the following:

The power density levels at a distance of 20 cm are below the maximum levels allowed by regulations.



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