

4 FCC §2.1091 - RF Exposure Information

4.1 Applicable Standards

FCC §2.1091, (a) Requirements of this section are a consequence of Commission responsibilities under the National Environmental Policy Act to evaluate the environmental significance of its actions. See subpart I of part 1 of this chapter, in particular §1.1307(b).

Limits for Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	1	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	842/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1	30

f = frequency in MHz

* = Plane-wave equivalent power density

MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

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

Where: *S* = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

403-430 MHz

Maximum peak output power at antenna input terminal (dBm): 33.06

Maximum peak output power at antenna input terminal (mW): 2023

Prediction distance (cm): 45

Prediction frequency (MHz): 429.95

Maximum Antenna Gain, typical (dBi): 5

Maximum Antenna Gain (numeric): 3.16

Power density of prediction frequency at 45 cm (mW/cm²): 0.2514

MPE limit for uncontrolled exposure at prediction frequency (mW/cm²): 0.2866

430-473 MHz

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>32.94</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>1967.886</u>
<u>Prediction distance (cm):</u>	<u>45</u>
<u>Prediction frequency (MHz):</u>	<u>459.075</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>5</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>3.16</u>
<u>Power density of prediction frequency at 45 cm (mW/cm²):</u>	<u>0.2445</u>
<u>MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>0.30605</u>

Conclusion

The device complies with the MPE requirements by providing a safe separation distance of at least 45 cm between the antenna with maximum 5.0 dBi gain, including any radiating structure, and any persons when normally operated.