

4 FCC §2.1091 - RF Exposure

4.1 Applicable Standards

According to §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* (100)	30
1.34-30	824/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	/	/	1.0	30
Limits for Occupational/Controlled Exposure				
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			5	6

Note: f = frequency in MHz

* = Plane-wave equivalent power density

4.2 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

4.3 Test Results

<u>Rated Maximum average output power (dBm):</u>	<u>26.02*</u>
<u>Rated Maximum average output power at antenna input terminal (mW):</u>	<u>399.945</u>
<u>Prediction frequency (MHz):</u>	<u>9375</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>33.6</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>2290.87</u>
<u>FCC MPE limit for controlled exposure at prediction frequency (mW/cm²):</u>	<u>5.0</u>
<u>Prediction distance (cm):</u>	<u>120.76</u>

The device is compliant with the requirement MPE limit for controlled exposure. The maximum power density at the distance of 120.76 cm is 5mW/cm². Thus the minimum compliant distance is 1.21 m.

*the rated maximum average power was derived from the peak power (50 dBm) and duty cycle (0.4%). The average power is calculated by using the equation below,

$$\text{Average Power (dBm)} = \text{Peak Power (dBm)} - 10 * \log(1/\text{Duty Cycle})$$