

## **FCC §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

### **Applicable Standard**

According to 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for Maximum Permissible Exposure (MPE)

<b>Limits for Occupational/Controlled Exposure</b>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (E) (V/m)</b>	<b>Magnetic Field Strength (H) (A/m)</b>	<b>Power Density (S) (mW/cm<sup>2</sup>)</b>	<b>Averaging Time  E ,  H  or S (minutes)</b>
0.3- 3.0	614	1.63	(100)*	6
3.0 - 30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6

f = frequency in MHz;

\* = Plane-wave equivalent power density;

### **MPE Calculation**

**Predication of MPE limit at a given distance**

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

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

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 (appropriate units, e.g., cm);

**Calculated Data:**

Frequency	Max Target Output Power	Duty Cycle	Antenna Cable Loss	Typical Antenna Gain		Distance	Power Density	Limit
MHz	mW		dB	dBi	numeric	cm	mW/cm <sup>2</sup>	mW/cm <sup>2</sup>
450.0125	44668	50%	0	0	1.0	120	0.123	1.50

Note1: The manufacturer does not specify an antenna to be used with this device, but a typical installation has a gain up to 0 dBi.

Note2: The maximum tune-up tolerance limit is 40W (46.0 dBm)  $\pm 0.5$ dB = 44668 mW (46.5dBm)

Radio Exposure Statement:

Using the parameters given in the above calculation, a minimum antenna to person distance of 120 cm is required to meet the limits for occupational/controlled exposure.

Result: Compliant.