

**FCC§1.1307 (b) (1) & §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)

Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E ,  H  or S (minutes)
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);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

**MPE Results****Tune-Up Power Including Tolerance:**

For Tetra, the highest Power is 10+/-1W, for bluetooth, the highest Power is 6.8 dBm.

Frequency Bands	Antenna Gain		Tune-Up Power		Output Power* 50% duty cycle (PTT)	Evaluation Distance	Power Density	S <sub>limit</sub>	S <sub>i</sub> /S <sub>limit</sub>
	(dBi)	(numeric)	dBm	(mW)	(mW)	cm	(mW/cm <sup>2</sup> )	(mW/cm <sup>2</sup> )	
450-470MHz	5.5	3.55	\	11000	5500	35	1.26770	1.5	0.84513
2402-2480MHz	1	1.26	6.8	4.79	\	35	0.00039	5	0.00008

The Tetra module can transmit simultaneously with BT, the Ratio for Tetra, and:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$=S_{Tetra}/S_{limit\_Tetra} + S_{BT}/S_{limit\_BT}$$

$$=0.84513+0.00008$$

$$=0.84521$$

$$< 1.0$$

**Result: Compliance,** The device meets MPE requirement for Occupational/Controlled use at 35 cm distance