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^2)**	**Averaging Time |E|, |H| or S (minutes)**
0.3- 3.0	614	1.63	(100)*	6
3.0 - 30	1842/f	4.89/f	($900/f^2$)*	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^2);
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_{limit}	S_i/S_{limit}
	(dBi)	(numeric)	dBm	(mW)	(mW)	cm	(mW/cm^2)	(mW/cm^2)	
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