# FCC§1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Report No.: RSZ160525009-00C

### **Applicable Standard**

According to subpart 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) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure								
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Averaging Time (minutes)				
0.3-1.34	614	1.63	*(100)	30				
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30				
30-300	27.5	0.073	0.2	30				
300-1500	1	/	f/1500	30				
1500-100,000	/	/	1.0	30				

f = frequency in MHz

\* = Plane-wave equivalent power density

#### **MPE Calculated:**

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm2)

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, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

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

$$\sum_{i} \frac{S_{i}}{S_{Limit,i}} \le 1$$

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### **MPE Results**

Tune-Up Power Including Tolerance:

Frequency (MHz)	Antenna Gain		Max Tune-up Power		Evaluation	Power	MPE Limit
	(dBi)	(numeric)	(dBm)	(mW)	Distance (cm)	Density (mW/cm <sup>2</sup> )	(mW/cm <sup>2</sup> )
3650-3700	5	3.16	17.5	56.23	20	0.035	1.0
2412-2462	2	1.58	16.0	39.81	20	0.008	1.0

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$$\sum_{i} \frac{S_{i}}{S_{Limit,i}} = 0.035 + 0.008 = 0.043 < 1.0$$

## **Radiation Exposure Statement:**

To comply with FCC RF exposure requirements, a minimum separation distance of  $20 \mathrm{cm}$  is required between the antenna and all public persons.

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