5. RF EXPOSURE EVALUATION

5.1 Maximum Permissible Exposure (MPE)

According to subpart 15.247(i)and subpart §1.1310, 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.

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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/f²)	30					
30–300	27.5	0.073	0.2	30					
300–1500	/	/	f/1500	30					
1500-100,000	/	/	1.0	30					

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

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

5.1.2 Measurement Result

For worst case:

Mode	Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance	Power Density	MPE Limit
		(dBi)	(numeric)	(dBm)	(mW)	(cm)	(mW/cm^2)	(mW/cm ²)
BLE	2402-2480	1.7	1.48	6.0	3.98	20	0.0012	1

Note: The tune-up power and antenna gain was declared by the applicant.

Result: The device meet FCC MPE at 20 cm distance