FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 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 General Population/Uncontrolled Exposure

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	$*(180/f^2)$	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

Result

Calculated Formulary:

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 comply with:

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

Report No.: SZNS210715-61178E-RF

Mode	Frequency (MHz)	Antenna Gain		Max Tune-up Conducted Power		Evaluation Distance	Power Density	MPE Limit
		(dBi)	(numeric)	(dBm)	(mW)	(cm)	(mW/cm^2)	(mW/cm ²)
2.4G Wi-Fi	2412-2462	1.5	1.41	12.0	15.85	20	0.0044	1
BLE	2402-2480	1.5	1.41	1.5	1.41	20	0.0004	1

Report No.: SZNS210715-61178E-RF

Note: 1. the tune up conducted power was declared by the applicant 2. the 2.4G Wi-Fi, BLE can transmit at the same time.

Simultaneous transmitting consideration:

The ratio=MPE $_{2.4 GWi\text{-}Fi}$ /limit+ MPE $_{BLE}$ /limit=0.0044/1+0.0004/1=0.0048 < 1.0

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance