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

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 General Population/Uncontrolled Exposure

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Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**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/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, 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:

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

Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
	(dBi)	(numeric)	(dBm)	(mW)			
2412-2472	0	1	13.0	19.95	20	0.004	1.0
5150-5250	0	1	12.0	15.85	20	0.003	1.0
5725-5850	0	1	10.5	11.22	20	0.002	1.0

Note:

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

2) 2.4GHz or 5GHz Wi-Fi can transmit simultaneously for this device, but the BT/BLE can't transmit with the 2.4G Wi-Fi /5G Wi-Fi at the same time.

3) Simultaneous transmitting consideration:

The ratio=$MPE_{DTS(2.4G\ Wi\text{-}Fi)}$/limit+$MPE_{NII}$/limit=0.004+0.003=0.007＜1.0, so simultaneous exposure is not required.

Result: Compliance