FCC 1.1307 (B) & §2.1091- MPE-BASED EXEMPTION

Applicable Standard

According to 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.

According to KDB 447498 D04 Interim General RF Exposure Guidance

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(3)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

R is the minimum separation distance in meters
f = frequency in MHz

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Result

Mode	Frequency (MHz)	Tune up conducted power#	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (mW)
		(dBm)	(dBi)	(dBd)	(dBm)	(mW)		
BT	2402-2480	12.0	2.11	-0.04	11.96	15.70	0.2	768
BLE	2402-2480	8.0	2.11	-0.04	7.96	6.25	0.2	768
2.4G Wi-Fi	2412-2462	24.5	2.34	0.19	24.69	294.44	0.2	768
5.2G Wi-Fi	5180-5240	16.0	3.19	1.04	17.04	50.58	0.2	768
5.3G Wi-Fi	5260-5320	16.5	3.19	1.04	17.54	56.75	0.2	768
5.6G Wi-Fi	5500-5720	17.0	3.19	1.04	18.04	63.68	0.2	768
5.8G Wi-Fi	5745-5825	17.0	3.19	1.04	18.04	63.68	0.2	768

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
2. The BT and Wi-Fi can transmit at same time. The 2.4G and 5G Wi-Fi cannot transmit at same time.
3. 0dBd=2.15dBi

Simultaneous transmitting consideration (worst case):

The ratio=ERP_{BT}/limit+$ERP_{2.4G\ Wi\text{-}Fi}$/limit = 15.70/768+294.44/768 =0.404＜1.0,
so simultaneous exposure is compliant.

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

Result: Compliant.