

FCC §15.247 (I) & §1.1307 (B) (3) & §2.1091- MPE-BASED EXEMPTION

Applicable Standard

According to subpart 1.1307 (b) (3) 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.

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)(1)(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 (W) |
|------------|-----------------|-------------------------|--------------|-------|-------|-------|-------------------------|---------------|
| | | (dBm) | (dBi) | (dBd) | (dBm) | (W) | | |
| BT | 2402-2480 | 2.0 | -0.68 | -2.83 | -0.83 | 0.001 | 0.2 | 0.768 |
| 2.4G Wi-Fi | 2412-2462 | 16.0 | 2.30 | 0.15 | 16.15 | 0.041 | 0.2 | 0.768 |
| 5G Wi-Fi | 5150-5250 | 14.0 | 2.97 | 0.82 | 14.82 | 0.030 | 0.2 | 0.768 |
| | 5725-5850 | 13.0 | 2.97 | 0.82 | 13.82 | 0.024 | 0.2 | 0.768 |

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
 2. The BT can transmit at same time with 2.4G Wi-Fi or 5G Wi-Fi
 3. 0dBd=2.15dBi

Simultaneous transmitting consideration (worst case):

The ratio= $ERP_{BT}/limit+ERP_{Wi-Fi}/limit=0.001/0.768+0.041/0.768=0.055 < 1.0$, 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.