

FCC §15.247 (i) & §1.1307 (b) (3) & §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.

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 | $19.2 R^2$. |

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

For worst case:

| Mode | Frequency (MHz) | Tune up conducted power | Antenna Gain | | ERP | | Evaluation Distance (m) | ERP Limit (W) |
|------------|-----------------|-------------------------|--------------|-------|-------|-------|-------------------------|---------------|
| | | (dBm) | (dBi) | (dBd) | (dBm) | (W) | | |
| BT | 2402-2480 | 8.5 | 3.32 | 1.17 | 9.67 | 0.009 | 0.2 | 0.768 |
| BLE | 2402-2480 | 8.0 | 3.32 | 1.17 | 9.17 | 0.008 | 0.2 | 0.768 |
| 2.4G Wi-Fi | 2412-2462 | 18.5 | 3.32 | 1.17 | 19.67 | 0.093 | 0.2 | 0.768 |
| 5G Wi-Fi | 5180-5240 | 12.0 | 4.18 | 2.03 | 14.03 | 0.025 | 0.2 | 0.768 |
| | 5260-5280 | 13.0 | 4.18 | 2.03 | 15.03 | 0.032 | 0.2 | 0.768 |
| | 5500-5700 | 12.0 | 4.18 | 2.03 | 14.03 | 0.025 | 0.2 | 0.768 |
| | 5745-5825 | 14.5 | 4.18 | 2.03 | 16.53 | 0.045 | 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 the same time with the Wi-Fi, the 2.4G Wi-Fi and 5G Wi-Fi cannot Simultaneous transmitting

Simultaneous transmitting consideration (worst case):

The ratio= $ERP_{BT}/limit + ERP_{Wi-Fi}/limit = 0.009/0.768 + 0.093/0.768 = 0.133 < 1.0$, 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.