

## FCC §15.247 (i) &§2.1091- RF EXPOSURE

### 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 <sup>2</sup> .                 |
| 1.34-30                   | 3,450 R <sup>2</sup> /f <sup>2</sup> . |
| 30-300                    | 3.83 R <sup>2</sup> .                  |
| 300-1,500                 | 0.0128 R <sup>2</sup> f.               |
| 1,500-100,000             | 19.2R <sup>2</sup> .                   |

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) | Antenna Gain |       | Tune up conducted power |       | ERP   |       | Evaluation Distance (m) | ERP Limit (W) |
|-----------|-----------------|--------------|-------|-------------------------|-------|-------|-------|-------------------------|---------------|
|           |                 | (dBi)        | (dBd) | (dBm)                   | (W)   | (dBm) | (W)   |                         |               |
| Bluetooth | 2402-2480       | 4.88         | 2.73  | 12.0                    | 0.016 | 14.73 | 0.030 | 0.2                     | 0.768         |
| BLE       | 2402-2480       | 4.88         | 2.73  | 10.5                    | 0.011 | 13.23 | 0.021 | 0.2                     | 0.768         |
| Wi-Fi     | 2412-2462       | 4.88         | 2.73  | 18.0                    | 0.063 | 20.73 | 0.118 | 0.2                     | 0.768         |
|           | 5180-5240       | 4.98         | 2.83  | 16.0                    | 0.040 | 18.83 | 0.076 | 0.2                     | 0.768         |
|           | 5260-5320       | 4.98         | 2.83  | 17.5                    | 0.056 | 20.33 | 0.108 | 0.2                     | 0.768         |
|           | 5500-5700       | 4.98         | 2.83  | 16.5                    | 0.045 | 19.33 | 0.086 | 0.2                     | 0.768         |
|           | 5745-5825       | 4.98         | 2.83  | 16.0                    | 0.040 | 18.83 | 0.076 | 0.2                     | 0.768         |

Note:

1. The tune up conducted power and antenna gain was declared by the applicant.

2: 0dBd=2.15dBi.

3: The Bluetooth/BLE can transmit at same time with 2.4G Wi-Fi or 5G Wi-Fi

Simultaneous transmitting consideration (worst case):

The ratio=ERP<sub>BT</sub>/ERP+ ERP<sub>Wi-Fi</sub>/ ERP =0.030/0.768+0.118/0.768=0.193<1.0, so simultaneous exposure is compliant.

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

## Result: Compliance