## FCC §15.247 (i) \& §1.1307 (b) (3) \& §2.1091- RF EXPOSURE EVALUATETION

## 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 § $1.1307(\mathrm{~b})(1)(\mathrm{i})(\mathrm{C})$ ] to support an exemptionfrom 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 <br> frequency <br> $(\mathrm{MHz})$ | Threshold ERP <br> (watts) |
| :--- | :--- |
| $0.3-1.34$ |  |
| $1.34-30$ | $3,920 \mathrm{R}^{2}$. |
| $30-300$ | $3.83 \mathrm{R}^{2} / \mathrm{f}^{2}$. |
| $300-1,500$ | $0.0128 \mathrm{R}^{2} \mathrm{f}$. |
| $1,500-100,000$ | $19.2 \mathrm{R}^{2}$. |

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:

$$
\sum_{i=1}^{a} \frac{P_{i}}{P_{t h, i}}+\sum_{j=1}^{b} \frac{E R P_{j}}{E R P_{t h, j}}+\sum_{k=1}^{c} \frac{\text { Evaluated }_{k}}{\text { Exposure Limit }_{k}} \leq 1
$$

## Result

For worst case:

| Mode | Frequency (MHz) | Tune up conducted power | Antenna Gain |  | ERP |  | Evaluation Distance (m) | ERP Limit <br> (W) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | (dBm) | (dBi) | (dBd) | (dBm) | (W) |  |  |
| BLE | 2402-2480 | 2.5 | 3.98 | 1.83 | 4.33 | 0.003 | 0.2 | 0.768 |
| 2.4G Wi-Fi | 2412-2462 | 16.5 | 3.77 | 1.62 | 18.12 | 0.065 | 0.2 | 0.768 |

Note: 1 . The tune up conducted power and antenna gain was declared by the applicant.
2. The BLE can transmit at the same time with the Wi-Fi.
3. $0 \mathrm{dBd}=2.15 \mathrm{dBi}$

Simultaneous transmitting consideration (worst case):
The ratio $=\mathrm{ERP}_{\mathrm{BLE}} /$ limit $+\mathrm{ERP}_{\mathrm{Wi}-\mathrm{Fi}} /$ limit $=0.003 / 0.768+0.065 / 0.768=0.089<1.0$, so simultaneous exposure is compliant.

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

## Result: Compliant.

