

## FCC §1.1307(b) – RF EXPOSURE

### Applicable Standard

According to KDB 447498 D04 Interim General RF Exposure Guidance v01, clause 2.1.4–MPE-Based Exemption:

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

Table 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                 | $0.0128 R^2 f$ .      |
| 1,500-100,000             | $19.2 R^2$ .          |

f = frequency in MHz;

R = minimum separation distance from the body of a nearby person (appropriate units, e.g., m);

### Test Result

For worst case:

| Mode       | Frequency Range (MHz) | Tune-up Output Power |       | Antenna Gain |       | ERP   |       | Evaluation Distance (cm) | MPE-Based Exemption Limit (mW) |
|------------|-----------------------|----------------------|-------|--------------|-------|-------|-------|--------------------------|--------------------------------|
|            |                       | (dBm)                | (mW)  | (dBi)        | (dBd) | (dBm) | (mW)  |                          |                                |
| BLE        | 2402-2480             | 4                    | 2.51  | 1.2          | -0.95 | 3.05  | 2.02  | 20                       | 768                            |
| 2.4G Wi-Fi | 2412-2462             | 17                   | 50.12 | 1.2          | -0.95 | 16.05 | 40.27 | 20                       | 768                            |

Note 1: The tune-up power was declared by the applicant.

Note 2: 0dBd=2.15dBi.

Note 3: The BLE can not transmit at the same time with the 2.4G Wi-Fi.

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

**Result:** Compliant.