

## 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                 | $0.0128 R^2 f$ .      |
| 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**

| Mode  | Frequency (MHz) | Tune up conducted power | Antenna Gain |       | ERP   |        | Evaluation Distance (m) | ERP Limit (W) |
|-------|-----------------|-------------------------|--------------|-------|-------|--------|-------------------------|---------------|
|       |                 | (dBm)                   | (dBi)        | (dBd) | (dBm) | (W)    |                         |               |
| UHF   | 917-922.2       | 9.0                     | -1.03        | -3.18 | 5.82  | 0.004  | 0.2                     | 0.470         |
| BT    | 2402-2480       | 8.5                     | -5.96        | -8.11 | 0.39  | 0.001  | 0.2                     | 0.768         |
| BLE   | 2402-2480       | 5.5                     | -5.96        | -8.11 | -2.61 | 0.0005 | 0.2                     | 0.768         |
| Wi-Fi | 2412-2462       | 24.0                    | -5.96        | -8.11 | 15.89 | 0.039  | 0.2                     | 0.768         |

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.  
 2. The UHF can transmit at the same time with the BT or Wi-Fi, the BT and Wi-Fi cannot Simultaneous transmitting

Simultaneous transmitting consideration (worst case):

The ratio= $ERP_{UHF}/limit + ERP_{Wi-Fi}/limit = 0.004/0.470 + 0.039/0.768 = 0.059 < 1.0$ , 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.**