

## FCC §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz)                                   | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minutes) |
| 0.3–1.34  | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34–30   | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30–300  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300–1500  | /                             | /                             | f/1500                              | 30                       |
| 1500–100,000  | /                             | /                             | 1.0                                 | 30                       |

f = frequency in MHz; \* = Plane-wave equivalent power density

According to §1.1310 and §2.1091 RF exposure is calculated.

### Result

#### Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

#### Calculated Data:

For worst case:

| Mode       | Frequency (MHz) | Antenna Gain <sup>#</sup> |           | Max Tune-up Power <sup>#</sup> |       | Evaluation Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | MPE Limit (mW/cm <sup>2</sup> ) |
|------------|-----------------|---------------------------|-----------|--------------------------------|-------|--------------------------|-------------------------------------|---------------------------------|
|            |                 | (dBi)                     | (numeric) | (dBm)                          | (mW)  |                          |                                     |                                 |
| BLE        | 2402-2480       | -8.0                      | 0.16      | 8.5                            | 7.08  | 20                       | 0.0002                              | 1.0                             |
| 5.8G Wi-Fi | 5745-5825       | 2.44                      | 1.75      | 15.5                           | 35.48 | 20                       | 0.0124                              | 1.0                             |

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

2) The BLE and 5G Wi-Fi cannot Simultaneous transmitting.

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

**Result: Compliant.**