

## 4 FCC §2.1091, §15.407(f) - RF Exposure

### 4.1 Applicable Standards

According to FCC §15.247(f) and §1.1307(b)(1), 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 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) |
|-----------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
| 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

### 4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

### 4.3 MPE Results

#### 5GHz Wifi

|                                                                                        |        |
|----------------------------------------------------------------------------------------|--------|
| Maximum output power at antenna input terminal (dBm):                                  | 16.11  |
| Maximum output power at antenna input terminal (tune-up) (mW):                         | 17.11  |
| Maximum output power at antenna input terminal (tune-up) (mW):                         | 51.40  |
| Prediction distance (cm):                                                              | 20     |
| Prediction frequency (MHz):                                                            | 5180   |
| Maximum Antenna Gain, typical (dBi):                                                   | 4      |
| Maximum Antenna Gain (numeric):                                                        | 2.51   |
| Power density of prediction frequency at 20.0 cm (mW/cm <sup>2</sup> ):                | 0.0257 |
| FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.0    |

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.03mW/cm<sup>2</sup>. Limit is 1.0 mW/cm<sup>2</sup>.