

5. RF EXPOSURE EVALUATION

5.1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

5.1.1 Applicable Standard

According to subpart 1.1307 (b)(1), 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.

Limits for General Population/Uncontrolled Exposure

| Limits for General Population/Uncontrolled Exposure | | | | |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (Minutes) |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f ²) | 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

5.1.2 Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

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)

| Mode | Frequency (MHz) | Tune Up Conducted Power (dBm) | Antenna Gain (dBi) | Evaluation Distance (cm) | Power Density (mW/cm ²) | MPE Limit (mW/cm ²) |
|------------|-----------------|-------------------------------|--------------------|--------------------------|-------------------------------------|---------------------------------|
| 2.4G Wi-Fi | 2412-2462 | 27.0 | 3.51 | 20 | 0.22 | 1.0 |
| 5G Wi-Fi | 5180-5240 | 17.5 | 2.85 | 20 | 0.02 | 1.0 |
| | 5260-5320 | 17.5 | 2.85 | 20 | 0.02 | 1.0 |
| | 5500-5720 | 17.0 | 2.85 | 20 | 0.02 | 1.0 |
| | 5745-5825 | 17.0 | 2.85 | 20 | 0.02 | 1.0 |

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

2) The 2.4G Wi-Fi can't transmit at the same time with 5G Wi-Fi.

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

Result: Compliance