# Appendix B. Maximum Permissible Exposure

# 1. Maximum Permissible Exposure

## 1.1. Limit of Maximum Permissible Exposure

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 levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

| **Limits for Occupational / Controlled Exposure** | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Electric Field Strength (E) (V/m)** | **Magnetic Field Strength (H) (A/m)** | **Power Density (S) (mW/ cm²)** | **Averaging Time \|E\|²,\|H\|² or S (minutes)** |
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842 / f | 4.89 / f | (900 / f)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | F/300 | 6 |
| 1500-100,000 | | | 5 | 6 |
| **Limits for General Population / Uncontrolled Exposure** | | | | |
| **Frequency Range (MHz)** | **Electric Field Strength (E) (V/m)** | **Magnetic Field Strength (H) (A/m)** | **Power Density (S) (mW/ cm²)** | **Averaging Time \|E\|²,\|H\|² or S (minutes)** |
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | F/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |
| Note 1: f = frequency in MHz ; *Plane-wave equivalent power density<br>Note 2: For the applicable limit, see FCC 1.1310 | | | | |

## 1.2. MPE Calculation Method

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$

Power Density: Pd (W/m$^2$) = $\frac{E^2}{377}$

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

**Pd** = $\frac{30 \times P \times G}{377 \times d^2}$

## 1.3. Result of Maximum Permissible Exposure

| Exposure Environment | | | General Population / Uncontrolled Exposure | | | | |
|---|---|---|---|---|---|---|---|
| Temp | | | 23℃ | Humidity | 61% | | |
| Test Engineer | | | Serway Li | Test Date | Oct. 10, 2014 ~ Oct. 18, 2014 | | |
| Test results | | | | | | | |
| Maximum EIPR Power of Test Frequency (GHz) | | | Average EIRP Power (dBm) | Average EIRP Power (mW) | Power Density (S) (mW/cm²) | Separation Distance (cm) | Limit of Power Density (S) (mW/cm²) |
| LRP | 60.16 | GHz | 18.32 | 67.89 | 0.014 | 20 | 1.00 |
| MRP | 60.48 | GHz | 24.30 | 269.41 | 0.054 | 20 | 1.00 |
| HRP | 60.48 | GHz | 26.94 | 494.77 | 0.098 | 20 | 1.00 |