

§1.1307(b)(1) & §2.1091 - RF EXPOSURE

According to §15.247(b)(4) 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.

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

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 (minute) |
|---|-------------------------------|-------------------------------|-------------------------------------|-------------------------|
| 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 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

MPE Prediction

Predication of MPE limit at a given distance

Equation from page 18 of 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

2412 – 2462 MHz:

Maximum peak output power at antenna input terminal: 23.84(dBm)

Maximum peak output power at antenna input terminal: 242.10 (mW)

Predication frequency: 2400 (MHz)

Antenna Gain (typical): 24 (dBi)

antenna gain: 251.2 (numeric)

Prediction distance: 70(cm)

Power density at predication frequency at 70 cm: 0.99 (mW/cm²)

MPE limit for uncontrolled exposure at prediction frequency: 1.0 (mW/cm²)

5.2 – 5.3 GHz

Maximum peak output power at antenna input terminal: 5.98(dBm)

Maximum peak output power at antenna input terminal: 3.96 (mW)

Predication frequency: 5000 (MHz)

Antenna Gain (typical): 32 (dBi)

antenna gain: 1584.9 (numeric)

Prediction distance: 25 (cm)

Power density at predication frequency at 25 cm: 0.80 (mW/cm²)

MPE limit for uncontrolled exposure at prediction frequency: 1.0 (mW/cm²)

Test Result

The EUT is of fixed outdoor installation, point -to-point or point-to-multipoint. 1mW/cm² limit applies. The prediction distance for the 2.4G Hz antenna is 70cm. The prediction distance for the 5G Hz antenna is 25cm.