

11 FCC §15.247(i) & § 2.1091 - RF Exposure

11.1 Applicable Standard

According to §15.247(i) 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 (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 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

11.2 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

Maximum peak output power at antenna input terminal (dBm): 19.24

Maximum peak output power at antenna input terminal (mW): 83.94

Prediction distance (cm): 20

Prediction frequency (MHz): 2412

Maximum Antenna Gain, typical (dBi): 5.0

Maximum Antenna Gain (numeric): 3.16

Power density of prediction frequency at 20.0 cm (mW/cm²): 0.05279

Power density of prediction frequency at 20.0 cm (W/m²): 0.5279

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

11.3 Test Result

FCC: The power density level at 20 cm distance is 0.05279mW/cm², which is below the uncontrolled exposure limit of 1.0 mW/cm².