

§2.1091 & §1.1310 - RF EXPOSURE (MPE)

Applicable Standard

According to §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.

Radio frequency radiation exposure was calculated based on § 1.1310 limits.

Limits for Maximum Permissible Exposure (MPE)

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 Exposures				
0.3 - 1.34	614	1.63	*(100)	30
1.34 - 30	842/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

Test Data

Predication of MPE limit at a given distance

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

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)

The maximum antenna gain is 3dBi for Cellular Band: 824-894 MHz and PCS Band: 1850-1990 MHz.

For Cellular Band:

Maximum peak output power at antenna input terminal: 33.1 (dBm)

Maximum peak output power at antenna input terminal: 2042 (mW)

Prediction distance: 32(cm)

Predication frequency: 848.8 (MHz)

Antenna Gain (typical): 3 (dBi)

Antenna Gain (typical): 2(numeric)

The worst case is power density at predication frequency at 32 cm: 0.318 (mW/cm²)

MPE limit for general population/uncontrolled exposure at prediction frequency: 0.57 (mW/cm²)

For PCS Band:

Maximum peak output power at antenna input terminal: 29.78 (dBm)

Maximum peak output power at antenna input terminal: 950.6 (mW)

Prediction distance: 32 (cm)

Predication frequency: 1909.8 (MHz)

Antenna Gain (typical): 3 (dBi)

Antenna Gain (typical): 2 (numeric)

The worst case is power density at predication frequency at 32 cm: 0.148(mW/cm²)

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

Result: This MPE level is below the MPE limits at 32 cm distance for General Population / Uncontrolled Exposure as stated in OET-65-C. The precautions are outlined in the User's Manual to prevent exposure to high levels of RF energy.