

§2.1091 - RF EXPOSURE

Limit

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.

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

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 Exposure				
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

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

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)

Cellular Band:

Maximum peak output power at antenna input terminal: 33.10 (dBm)

Maximum peak output power at antenna input terminal: 2041 (mW)

Prediction distance: 50 (cm)

Prediction frequency: 848.8 (MHz)

Antenna Gain, typical: 2.5 (dBi)

Maximum Antenna Gain 1.778 (numeric)

The worst case is power density at predication frequency at 50cm: 0.116 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 0.566 (mW/cm²)

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: 50 (cm)

Prediction frequency: 1909.8 (MHz)

Antenna Gain, typical: 2.5 (dBi)

Maximum Antenna Gain 1.778 (numeric)

The worst case is power density at predication frequency at 50 cm 0.0538 (mW/cm²)

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

Result: This MPE level is below the MPE limits at 50 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.