

§1.1310 §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 §2.1091RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Limits for Occupational/Controlled Exposures				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300.	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6

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)

Maximum peak output power at antenna input terminal (dBm): 34.07

Maximum peak output power at antenna input terminal (mW): 2553

Prediction distance (cm): 30 (>20)

Prediction frequency (MHz): 460

Antenna Gain, typical (dBi): 5.5

Maximum Antenna Gain (numeric): 3.548

Power density at predication frequency at 30 cm (mW/cm²): 0.8

MPE limit for uncontrolled exposure at predication frequency (mW/cm²): 460/300=1.53

$$0.8 \text{ (mW/cm}^2\text{)} < 1.53 \text{ (mW/cm}^2\text{)}$$

Result: The Power Density Level at 30 cm is 0.8 mW/cm² which is below the controlled exposure

limit of 1.53 mW/cm² at 460 MHz.

Please refer to the user's manual in details.