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 Occupational/Controlled Exposures				
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

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

For 850 MHz Band:

Maximum peak output power at antenna input terminal: 46.66(dBm)
Maximum peak output power at antenna input terminal: 46.344(Watt)
Prediction distance: 400 (cm)
Predication frequency: 881.6 (MHz)
Antenna Gain (typical): 17 (dBi)
Power density at predication frequency at 400 cm: 1.16 (mW/cm^2)
MPE limit for uncontrolled exposure at prediction frequency: 881.6/300=2.94 (mW/cm^2)

1.16 (mW/cm^2) < 2.94 (mW/cm^2)

For 1900 MHz Band:

Maximum peak output power at antenna input terminal: 45.77 (dBm)
Maximum peak output power at antenna input terminal: 37.757 (W)
Prediction distance: 300 (cm)
Predication frequency: 1960 (MHz)
Antenna Gain (typical): 17 (dBi)
Power density at predication frequency at 300 cm: 1.67 (mW/cm^2)
MPE limit for uncontrolled exposure at prediction frequency: 5 (mW/cm^2)

1.67 (mW/cm^2) < 5 (mW/cm^2)

Result: Compliant