4 FCC §2.1091 - RF Exposure Information

4.1 Applicable Standards

FCC §2.1091, (a) Requirements of this section are a consequence of Commission responsibilities under the National Environmental Policy Act to evaluate the environmental significance of its actions. See subpart I of part 1 of this chapter, in particular §1.1307(b).

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 (minutes)
(A) 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*

4.2 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

25 kHz Channel Spacing, 22 kHz Bandwidth

Maximum peak output power at antenna input terminal (dBm):	48.75
Maximum peak output power at antenna input terminal (mW):	74990
Prediction distance (cm):	200
Prediction frequency (MHz):	868.975
Maximum Antenna Gain, typical (dBi):	20
Coax cable loss taken (dB):	2.0
Duty Cycle:	25%
Maximum Antenna Net Gain (numeric):	63.1
Power density of prediction frequency at 200 cm (mW/cm^2):	2.35
MPE limit for Controlled exposure at prediction frequency (mW/cm^2):	2.897

4.3 Conclusion

The device complies with the MPE requirements by providing a safe separation distance of at least 2 m between the antenna with maximum 20 dBi gain, including any radiating structure, and any persons when normally operated.