

RF Exposure Calculation For RF-11000E Repeater

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 Exposure

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-	614	1.6	* (100	6
3.0-	184	4.8	* (900	6
30-	61.	0.1	1.0	6
300-1500	/	/	f/300	6
1500-	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.6	* (100	30
1.34-30	842/f	2.1	* (180	30
30-300	27.5	0.0	0.2	30
300-1500	/	/	f/150	30
1500-	/	/	1	30

f = frequency in MHz

* = Plane-wave equivalent power density

Note 1 to Table 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where

occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

Note 2 to Table 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

Antenna

The manufacturer does not specify an antenna. This device has provisions for operation in a fixed location.

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 = Antenna gain .

R = Distance to the center of the antenna.

MPE Calculation For Occupational Condition :

Maximum peak output power at antenna input terminal (dBm):	32
Maximum peak output power at antenna input terminal (mW):	1592
Prediction distance (cm):	1700
Prediction frequency (MHz)	11000
Maximum Antenna Gain, typical (dBi):	50
Maximum Antenna Gain (numeric):	112201
MPE limit for controlled exposure at 11000 MHz (mW/cm ²):	5.0

MPE Result For Occupational Condition :

Power density of prediction distance at 17 m = 4.9 mW/cm²

The device complies with the MPE requirements by providing a safe separation distance of at least 1700 cm between the antenna (maximum 50 dBi gain, including any radiating structure) and persons when normally operated.

MPE Calculation For General Condition :

Maximum peak output power at antenna input terminal (dBm):	32
Maximum peak output power at antenna input terminal (mW):	1592
Prediction distance (cm):	1700
Prediction frequency (MHz)	11000
Maximum Antenna Gain, typical (dBi):	50
Maximum Antenna Gain (numeric):	112201
MPE limit for uncontrolled exposure at 11000 MHz (mW/cm^2):	1.0

MPE Result For General Condition :

Power density of prediction distance at 38 m = $0.98 \text{ mW}/\text{cm}^2$

The device complies with the MPE requirements by providing a safe separation distance of at least 3800 cm between the antenna (maximum 50 dBi gain, including any radiating structure) and persons for passer-by in general RF exposure condition.