

## 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 <sup>2</sup> )	Averaging Time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
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>(B) Limits for General Population/Uncontrolled Exposure</b>				
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 <sup>2</sup> ):	5.0

### **MPE Result For Occupational Condition :**

Power density of prediction distance at 17 m = 4.9 mW/cm<sup>2</sup>

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 ( $\text{mW}/\text{cm}^2$ ):	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.