MPE Prediction for Andrew INCELL800 Repeater

Maximum peak power output at antenna input terminal: +22 dBm (158.5 mW)
Maximum antenna gain: 7 dBi (5 numeric)
Prediction distance: 20 cm
MPE limit for uncontrolled exposure at tx frequency of 869 MHz: 869/1500 = .579 mW/cm^2

Using the equation from page 18 of OET Bulletin 65, Edition 97-01to predict the worst-case exposure at 20 cm:

$$S = \frac{PG}{4pR^2}$$

where: S = power density
P = power input to the 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

$$S = \frac{158.5 \times 5}{12.6 \times 400} = .157 mW / cm^2$$

The normal worst-case arrangement of the antenna would be mounted in a ceiling tile. This would guarantee that the antenna would never be closer than 20 cm to any person.

To actually exceed the limit of .579 mW/cm^2, the antenna unit would need to be closer than 10.4 cm. to any person.

The maximum allowable gain with a 20 cm. separation would be:

$$G = \frac{S \times (4pR^2)}{158.5} = \frac{.579 \times (12.6 \times 400)}{158.5} = 18.4(numeric)$$

10log(18.4) = 12.7 dBi

Given the above information, the manufacturer recommends a minimum separation distance of 20 cm. and maximum antenna gain of 12.7 dBi.