

### Prediction of MPE limit at 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 the antenna

G = Antenna gain

R = Distance to the center of radiation of the antenna

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled "Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure"

| Frequency Range (MHz) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minutes) |
|-----------------------|-------------------------------------|--------------------------|
| 1500 - 100000         | 1.0                                 | 30                       |

where f = Frequency (MHz)

Frequency range: 5725 to 5825 MHz

Radiated power: 5745 MHz / 18.5 dBm peak => Antenna gain = -1.0 dBi

Frequency range: 5250 to 5350 MHz

Radiated power: 5280 MHz / 15.9 dBm peak => Antenna gain = -1.9 dBi

Frequency range: 5150 to 5250 MHz

Radiated power: 5180 MHz / 15.7 dBm peak => Antenna gain = -0.6 dBi

#### Prediction:

P x G    Max power at antenna:                      18.5 dBm / 71 mW

R        Distance:                                              20 cm

**S        calculated power density:                      0.014 mW / cm<sup>2</sup>**

#### **This prediction demonstrates the following:**

The power density levels at a distance of 20 cm are below the maximum levels allowed by FCC regulations