

## Calculation of Safe Distance for Radiofrequency Radiation Exposure Limits

The Limits for Maximum Permissible Exposure to Radiofrequency Radiation are set out in FCC Document 47 CFR Ch. I paragraph 1.1310. The limits for uncontrolled exposure are  $1 \text{ mW/cm}^2$

The distance from an antenna resulting in a power density of greater than  $1 \text{ mW/cm}^2$ , can be calculated from the equation:

$$S = \text{EIRP} / 4\pi R^2$$

$$\text{Or } R = \sqrt{\text{EIRP} / 4\pi S}$$

Where:        S is the power density in  $\text{mW/cm}^2$   
                  R is the distance from the center of the antenna in cm  
                  EIRP is the equivalent isotropically radiated power (  $P_{\text{tx}} \times G_{\text{antenna}}$  )

For a 24dBi gain parabolic antenna, and a transmit power of 24dBm, the EIRP is 48dBm, or  $6.3\text{E}4 \text{ mW}$

$$\begin{aligned} R &= \sqrt{\text{EIRP} / 4\pi S} \\ &= \sqrt{6.3\text{E}4 / 4\pi} \\ &= 71\text{cm} \end{aligned}$$

We therefore recommend that an installer stay 1meter (100cm or 3.5ft) from the antenna while it is transmitting. We also recommend that the antenna be installed such that it is at least 1m away from any easily accessible public location.