



The Fresnel zone shows the ellipsoid spread of the radio waves around the visual line-of-sight after they leave the antenna (see figure above). This area must be clear of obstructions or the signal strength will be reduced due to signal blockage. Typically, 20% Fresnel Zone blockage introduces little signal loss to the link. Beyond 40% blockage, signal loss will become significant. This calculation is based on a **flat earth**. It does not take into account the curvature of the earth. It is recommended for RF path links greater than 7 miles to have a microwave path analysis done that takes the curvature of the earth and the topography of the terrain into account.

$$\text{Fresnel Zone Radius} = 72.1 \text{ SQRT } [(d1d2) / (F(d1 + d2))]$$

Units

Fresnel Zone Radius in ft.
d1 and d2 in statute miles
F in GHz