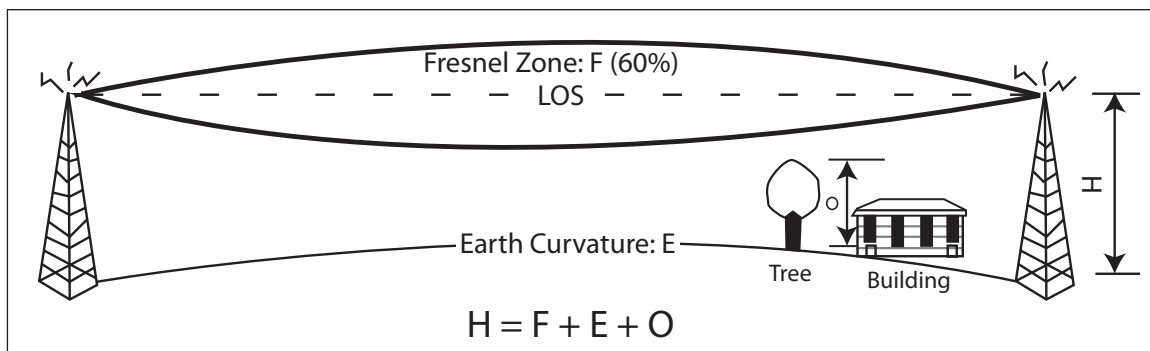


## Outdoor Antenna Installation Considerations

When installing a wireless LAN antenna several factors must be considered before installation in order to obtain optimal wireless signal connectivity. The correct installation height of an antenna depends on the factors outlined below.

- 1) Distance between the sites: The longer the link, the higher the antenna needs to be due to the earth's curvature. (This relation is not proportional) See table 1.
- 2) The Fresnel Zone: This is an electromagnetic phenomenon, where light or radio signals get diffracted or bent from solid objects near their path. See table 1 showing the 60% of Fresnel Zone values (accepted clearing on path). Add this to the earth curvature height.
- 3) Objects in the path: At a frequency of 2.4 GHz, you need a clear line of sight (LOS). Tree tops will reflect or ground the signal. The theory is that the height of the tallest object in the path of the signal should be added to the Fresnel Zone and earth curvature clearance heights. In your case, you should have to check the height of the trees, hills, buildings or any object on the link path and add this to the measurement for the total of the tower height. The above three conditions make up the Radio Line of Sight.

TABLE 1



## Antenna Application Examples

### Directional

The HG913Y-NF is being used in a waste water lift station application. Data is being sent wirelessly to a central control location where water levels and pressure can be monitored.



### Omni – Directional

L-com's HG2408U-PRO is being installed to provide 360° wireless connectivity at a public WiFi Hotspot.



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