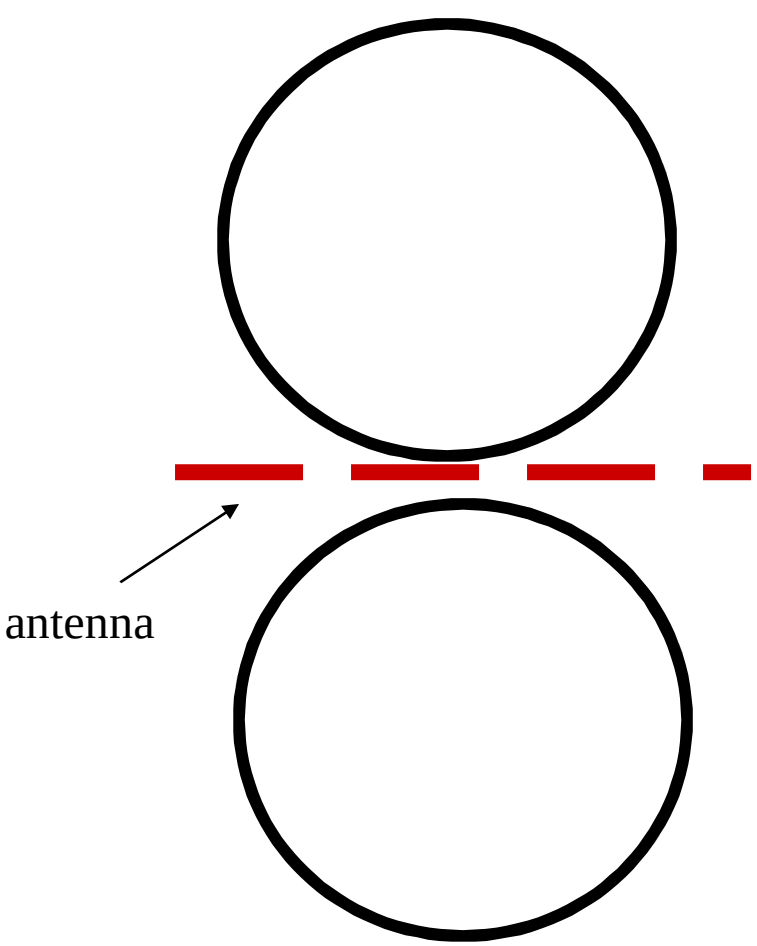
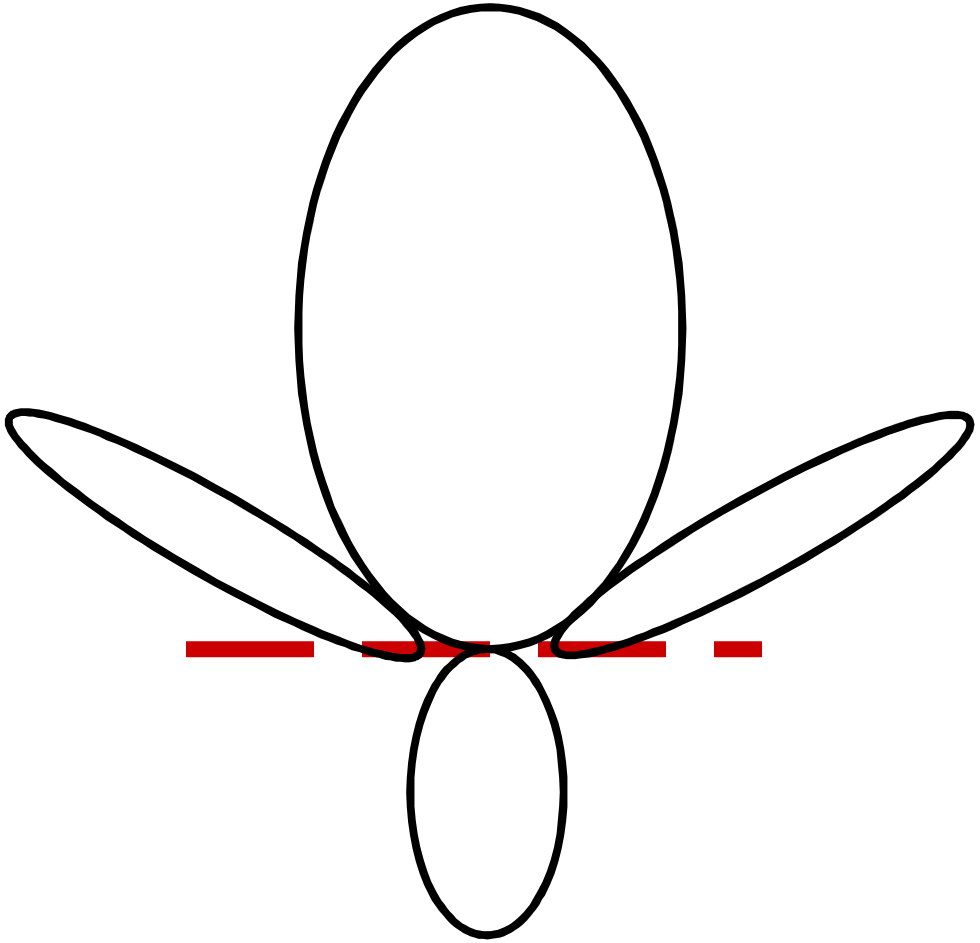
# Radiated Directed Signal




λ/2 dipole radiated signal without reflector



λ/2 dipole radiated signal with reflector

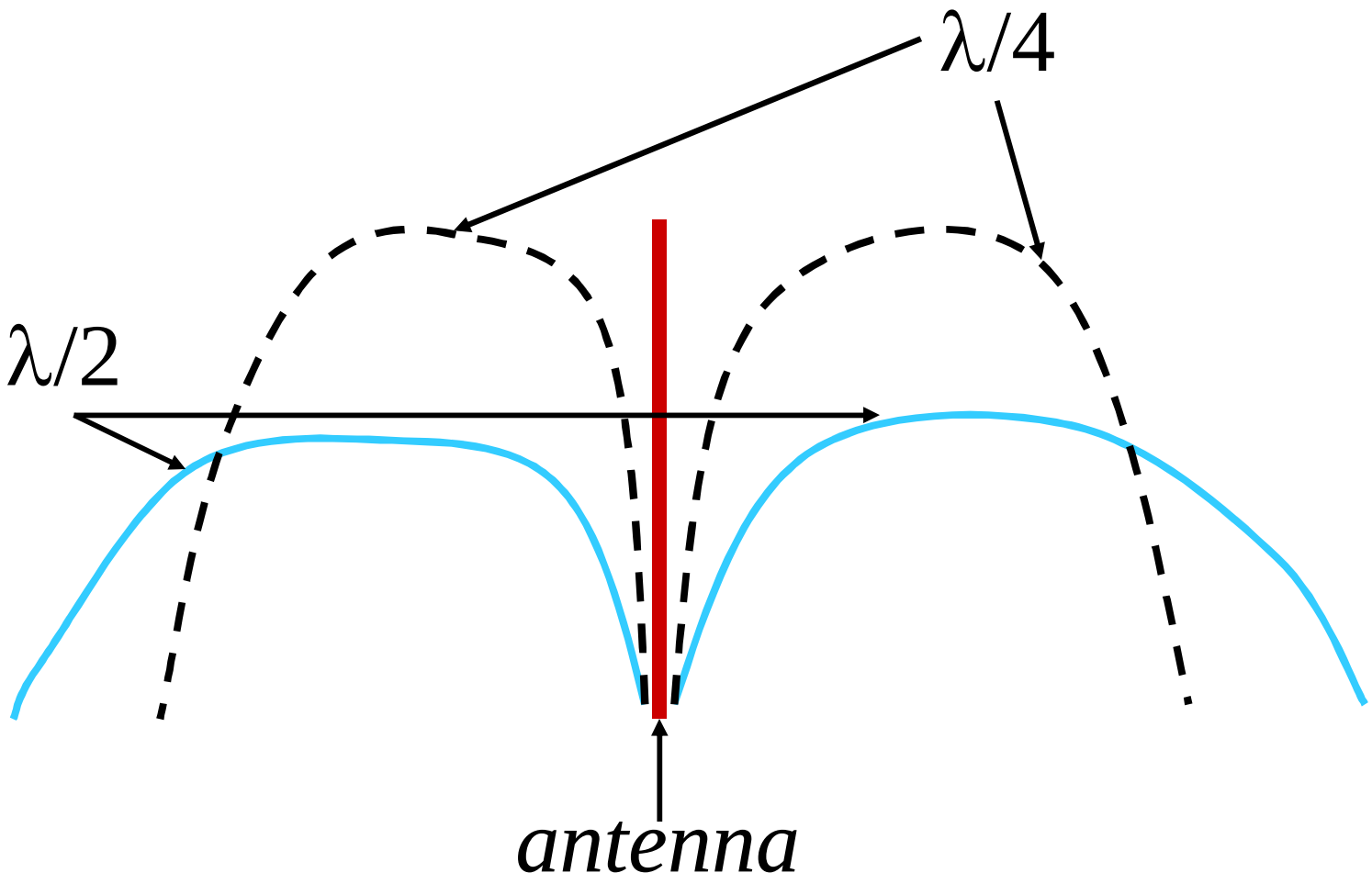
# Polarization

- Polarization is the direction of the electric field and is the same as the physical attitude of the antenna
  - **A vertical antenna will transmit a vertically polarized wave**
- The receive and transmit antennas need to possess the same polarization

# Vertical (Marconi) Antenna

- *Vertical Antennas* are used for frequencies under 2 MHz.
- It uses a conducting path to ground that acts as ¼ wavelength portion the antenna above the ground.
- The above ground structure represents a $\lambda/4$ wavelength

# Radiation Pattern for Vertical Antennas



# Vertical (Marconi) Antenna – cont'd

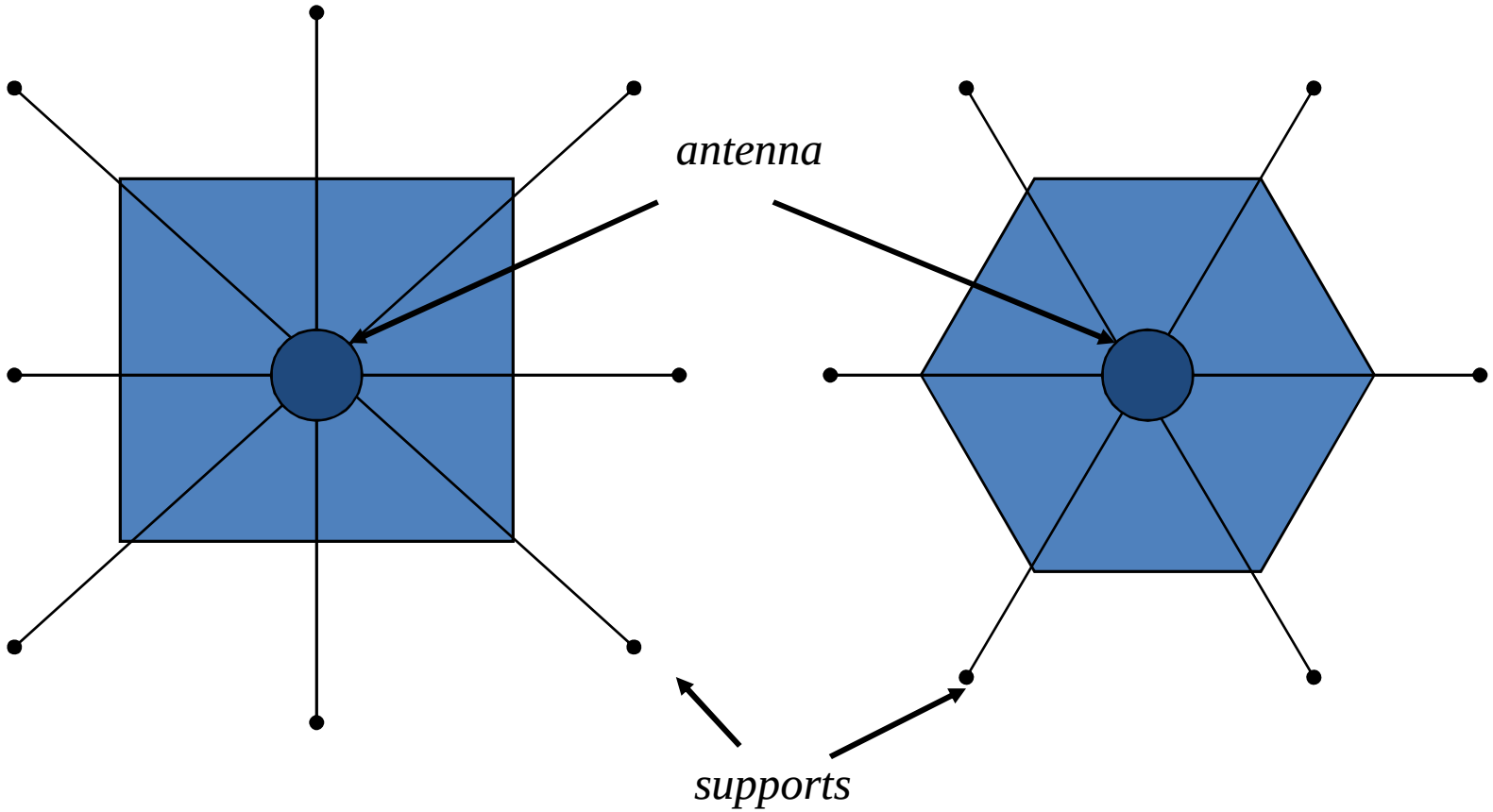
- Poor grounding conditions of the earth/soil surrounding the antenna can result in serious signal attenuation. This problem is alleviated by installing a *counterpoise*

# Counterpoise

- *Counterpoise* is a grounding grid established where the earth grounding cannot satisfy electrical requirements for circuit completion. It is designed to be non-resonant at the operating frequency

# Counterpoise-cont'd

*radius = ¼ λ*



# Directional Antenna