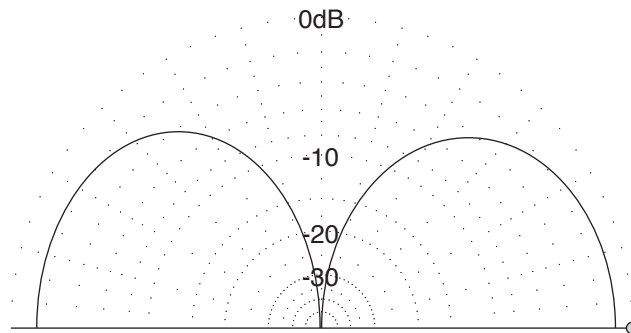


ANTENNA INFORMATION

ANTENNA TYPES EXPLAINED

The Quarter Wave Antenna

- The simplest and often the most effective antenna
- Requires a ground plane
- The antenna consists of an electrical quarter wavelength at the desired frequency
- Best results can be obtained when it is centre mounted on a vehicle roof
- Mounting on the boot or bonnet is possible, although with reduced efficiency
- If a change in frequency is required, a new quarter wave cut to the new frequency can be installed on the existing mount
- Quarter waves are effective in hilly environments due to the 'doughnut' shape of the radiation pattern



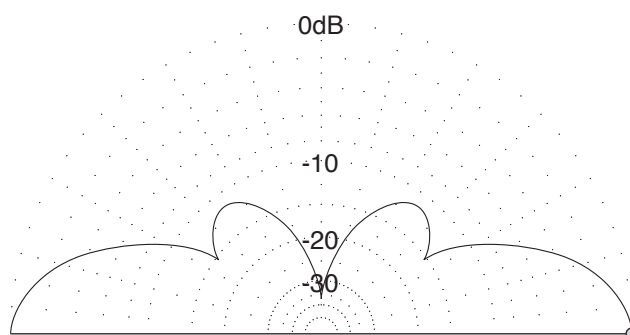
Radiation Pattern for quarter wave and halfwave antennas

The Half Wave Antenna

- Ground plane independent
- The antenna consists of an electrical half wavelength at the desired frequency, fed by a matching arrangement at one end
- Works best mounted high on the vehicle, clear of obstructions
- Can also be bonnet or boot mounted
- Half waves are effective in hilly environments, due to the 'doughnut' shape of the radiation pattern

The Five Eighth Wave Antenna

- Use where a ground plane is available and the quarter wave antenna does not give enough gain
- Has a gain of 4.2dBi
- The antenna consists of an electrical three quarter wavelength at the desired frequency, with a small phasing coil at its base to give correct matching to the coax feed
- Best results can be obtained when it is centre mounted on a vehicle roof
- Mounting on the boot or bonnet is possible, although with reduced efficiency
- Like the quarter wave, it can be replaced when a frequency band change is required

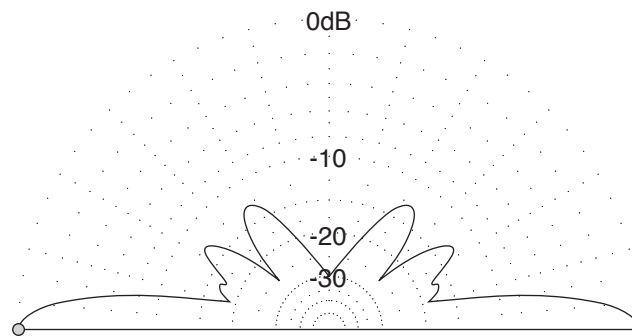


Radiation Pattern for five eighth wave antennas

The Colinear Antenna

The highest gain whip antenna

- The antenna consists of two or more elements stacked above one another, and arranged to be electrically in phase at the desired frequency
- The term colinear refers to the elements being “in line”
- If its first element is a half wave, the colinear antenna does not need a ground plane
- If its first element is a quarter or five eighth wave, the colinear antenna needs a ground plane
- The level of gain is dependent on the number of elements in the antenna, but is typically between 5 and 7.5dBi
- Works best mounted high on the vehicle, clear of obstructions
- Can also be bonnet or boot mounted



Radiation pattern for colinear antennas

Elevated Feed Antennas

- The antenna is mounted on a stainless steel tube which lifts the antenna above obstructions and negates the need for a ground plane for the antenna
- The stainless steel tube is a quarter wavelength of the desired frequency
- The elevated feed and the antenna can be replaced on the installed mount if a frequency change is required

Low Profile Antennas

- Electrically a quarter wave antenna
- The ground plane is built into the base of the antenna
- The best installation point is as high as possible, with a clear all round view
- Mount horizontally for all-round coverage

Top Loaded and Helical Antennas

- Both types of antenna have been physically shortened but are electrically resonant at the desired frequency
- Not as efficient as a full size antenna as the capture area is not as big
- Performance is below that of a quarter wave antenna