

Newcomers and Elmers Net: VHF/UHF Antennas 7-14-13
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VHF/UHF antennas are a good place to begin experimenting

- useful for regular repeater work
- useful for satellites, fox hunts, portable work
- base stations either at home or at another location where you will be stationary

Antennas are small and manageable

- material costs are less
- easier to build by yourself in terms of size and handling
- takes up minimal space and can be taken down easily if needed
- you can use better materials in construction and not break the bank

Many Commercial and Homebrew Options

- search the Internet, magazines, and books for construction plans
- try several different types of antennas
- if possible, set up more than one kind for variety and options

Classic Antennas

- J-pole
- Ground Plane
- Log periodic
- Yagi
- each design has strengths and weaknesses; every antenna is a compromise of some sort

J-pole is simple to build, and a good performer for general work

- does not have a lot of gain/directivity, but has other strengths
 - can be made from basic ladder line or better
 - numerous options/plans on the Internet
 - can be extremely portable if you build a roll-up version

1/4 Wave Ground Plane is a vertical antenna like the J-pole

- has a vertical wire or tube 1/4 wavelength in height
- uses 1/4 wavelength radials to complete the other half of the antenna
- easy to build, again many plans available online
- also no real gain, but good omni-directional antenna
- possible the cheapest antenna to build
- portable like the J-pole and can be hung by a rope from a tree/support

Log Periodic is more complex, but a substantially better directional antenna

- looks a lot like a TV antenna

- has gain in the form of directivity
- lots of design options; will help you learn about antenna theory
- directivity means it will hear/transmit well in one direction, less in others
- heavier and therefore requires more support strength

Yagi typically has highest gain and performance, most directive

- Yagis use multiple elements (1 reflector and one or more directive elements in addition to the driven element) to narrow the RF signal
- often called beam antennas
- many, many options and easy to build
- the longer the boom (that's the part that holds the elements) the more gain (at least up to a point)
- really good for portable work when trying to work in a particular direction
- also good for satellites, fox hunting, etc.

Feedlines

The quality of the coax is extremely important for VHF/UHF antennas

- low quality coax cause a lot of your signal to be converted to heat, especially at 440 MHz
- keep coax runs as short as possible (under 50' is good, 25' even better)
- use RG213 or LMR 400 if possible, even on short runs
- the thicker coax provides a greater surface area for the signal, and less resistance
- make sure you know how the coax is to be handled near the antenna e.g.:
 - J-poles they usually need 5-6' of coax going horizontally from the feedpoint before come down
 - ground plane antennas usually have the coax hanging straight down from the feedpoint

Height

Since VHF/UHF signals are basically line of sight, the higher you can get your antenna the better your coverage will be

- base antennas should be mounted 25 feet or more if possible
- if using a Yagi or Log Periodic antenna, consider adding an inexpensive TV antenna Rotor/controller to change directions when needed

Polarization

Keep in mind the polarization issue

- For most FM simplex and repeater work, antennas are vertical
- For most SSB work antennas are horizontal