

Newcomers And Elmers Net 7-28-13 Robert AK3Q  
Experimenting with Different Antennas

There's an old amateur radio adage which says for every dollar spent on a radio, spend two on your antenna

- While you may find this surprising, the idea behind it is sound
- No matter how great your radio, it is useless without an antenna
- That wiz-bang do-everything-but-pour-you-a-cup-coffee radio is useless without an antenna
- Notice I didn't say a "good" antenna
- Any antenna designed for the band you want to use is better than nothing, but a well-designed antenna is a pleasure to use

Experimenting with different antennas allows you to learn about how they work, and it is part of your continuing education in amateur radio

- Nothing wrong with buying commercial gear
- Many folks go through stages: first they get commercial gear, then they build their own, then they get specialized commercial gear
- The initial commercial gear gets you on the air reliably; you start to experiment and build your own stuff (and many folks stop right here)
- Some folks move on to specialized commercial products they can not build for themselves easily, such as a 10-element multi-band HF Yagi

Take notes of your systematic experiments and be as thorough as you can

- If you are experimenting with different HT antennas, for example, write down the coverage of each antenna and where you are testing it from
- Try to hit a set range of repeaters in different directions; note audio quality, possible interference, time of day, time of year
- Test coverage using a mobile antenna if you can (a mobile magnetic mount antenna can be used on almost any convenient metal surface)
- If testing a ground plane or J-pole antenna (you are going to build one, right?!), record SWR readings, results with changes in height or direction, as well as its ability to receive other signals such as police/fire, etc. if you have an interest
- If working with HF antennas keep track of SWR settings, especially resonance along each band to be used
- Track what happens when you change overall length or if working with verticals, changes with the number or position of radials
- Track things over time as well – don't just depend on a one-time test; conditions change daily and even hourly; plan on testing an antenna for several weeks or months (assuming initial results are reasonable!)
- Eventually you will take a year or more to test an antenna to allow time enough for various conditions to affect your tests, but that's later

Experimenting with antennas also means exploring feedlines, supports, placement, elevation, etc.

- Coax vs. open-line/ladder line
- Coax allows feedlines to be close to other metal objects; run along the ground; take bends/corners as long as they are not too severe
- Open-line/ladder line inexpensive, low-loss; good for long feedlines; weak, bends/breaks easily; cannot be near conductive surfaces or go along the ground; no sharp bends or will be seen as a termination
- Elevation experimentation – height is your friend, for the most part; for VHF antennas getting something above the roof lines of the houses around you is usually sufficient
- Since these antennas are line-of-sight, sometimes slight adjustments of even a few feet left or right, up or down, can make a difference
- When talking about supports, get creative: non-conductive material is best, but if need be, you can run a rope from a metallic support to separate the antenna from the support
- Trees, chimneys; flag poles; bird houses; surplus fiberglass masts for tents from the army; a lot of things can be a support
- If making a wire antenna, consider using a pulley system (or a clothes line roller system) to raise and lower the feedpoint to make life easier

Experimenting also means using other people's equipment or stations

- See what other people are doing and ask about their results
- Understand that most people give anecdotal evidence (like "I was booming into Europe the other day") which may or may not be a real reflection on the quality of an antenna
- Look for consistency when testing antennas—meaning there is a difference between what *can* I get vs. what will I *usually* get
- Learn about how antennas work/why they work/when they work; this is a long-term process
- Trial and error will teach you more than any book by itself—take what you read and study and try it in the real world
- I would recommend even building some "bad" antennas to see why they are bad
- Look for books on wire antennas, VHF/UHF Antennas, etc., and build a few antennas, testing each one
- Don't be afraid to try something even if you don't think it will work – you may just end up surprised!