

Quick HF antennas

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The most important thing to have for anyone able to operate on HF, is some form of antenna.

First, read all the antenna books and spend a year or two getting across the correct methods. Well, we do not have that much time. We wish to get on the air in a few hours. What antennas have you seen in use? What was your first antenna on VHF? A quarter-wave, maybe. Try one on 80 metres. Got a spare 20 metre pole handy? Well, you may be able to find a tree, and don't worry about a few bends.

Hold it!

Let us sit back for a moment and think about what we really want. HF around Australia at night? HF around our state in the daytime? Or are you interested in overseas DX work? For the moment, forget 160 metres. A great band, but not for now.

If you wish to chat around the Australian east coast at night, as well as with some local VK5 stations, and VK6 a little later when the sun has moved further west, choose 80 metres.

The simplest antenna is possibly the dipole. A little long for some back yards at 40 plus metres, but just use a single pole in the middle, and droop the ends towards the ground. A couple of bends won't be noticed. A loaded vertical antenna is smaller but can be a little noisy on receive. Still, if that is all we have room for, then let's try it. If you do find it noisy then transmit on the vertical and receive on a random piece of wire for now. But try the vertical, you may get away with it, and they do work.

For daytime activities, 40 metres is great. Most SSB signals will be found between 7.050 and 7.100 MHz. If we want to form a net, it is time we moved to between 7.100 and 7.200 MHz. A dipole for 40 metres is easier to fit in the backyard, as it is only 20 metres long. That's right, the old half wavelength. Once again, the loaded vertical is available and it may be better for short distances.

Want to work some DX? Twenty metres is great, or even 15, especially into Japan, or around Australia in the daytime. You may find America in our mornings on 15 or 10 metres.

Remember the propagation theory. You know: F layers and the sun, all

that ionisation in the upper atmosphere. Now, does it occur in the daytime or at night-time? Where is the sun when we are operating?

Don't forget the old CB antennas, like the Station Master. It is great for 15 and 10 metres. An end-fed half-wave on 15 or 10 can work the world. Experiment by moving the tap to the top of the coil, or disconnect the coil. With a ground-plane or some radials at the base, it makes a fine quarter-wave vertical for 20 metres.

If you have enough trees or other skyhooks you can simply connect all of the dipoles for 80, 40 and 20 at the one coax feed point. Give it a go! Yes, you will get some interaction but this is where the fun really starts. Once you have the dipoles resonant by building them one at a time, connect all the feed points together. If you have some interaction with them, change the angles between the dipoles.

Down the track you will find that 'traps' can work quite well to reduce the number of wires in the sky. Traps made from coaxial cable scraps can be the next experiment. An SWR of less than 1.2 to 1 is nice, but try for that across the whole band! If you're under 1.5 to 1 your radio will work quite well, and at 2 to 1 your in-built, or in-circuit, antenna tuner will hide the problem.

For now, let's just get on the air. Where do I find the wire? Any old 240 volt wire, solid or 7 strand, will do. Just remove the tough sheath near the ends and join the wire with some twist joints and solder. It won't break, well not for many years, and we are experimenting. You will need an insulator in the centre where the coax connects. A piece of plastic works fine. Hold up the antenna ends with plastic cord, preferably black.

Remember the dipole ends will be high voltage points, so no little fingers anywhere near the ends when you transmit. Try to keep them 2 metres or more above ground. When you are tuning the length of the antenna, you will find that as you raise the antenna the resonant frequency will go lower. The greater the antenna height, the lower will be the resonant frequency. That ultimate all-

band, high gain antenna is somewhere down the track!

Coax is the most popular feed method. Ordinary RG58 is quite suitable for HF operations. If you have RG59 or 70 ohm coax, you can try it. It often works very well. Remember the half-wave dipole is about 70 ohms, depending on height above ground. Don't forget the open-wire feed. It is not only the cheapest, it also causes the least loss, and will allow you to use a separate antenna tuner to give you multi-band operation.

If you decide to use open wire and an ATU, you may find it better to use a dipole length that is not resonant on an amateur band. For example an 80 metre dipole will be two half wavelengths when used on 40 metres, and exhibit a very high impedance. This may be far too high for the ATU to match. If we are using a quarter-wave radiator, we will need an earth, a ground plane, or we can use a quarter-wave radial or two. But the dipole is balanced, so the earth at the radio end is for safety.

To get started, choose a band or maybe two, just get on the air and have fun. When cutting the wire for your dipole do your measurements by using 300 divided by the frequency in MHz. That gives you the wavelength in metres with some tolerance in length. To be a little closer with wire, you can multiply by about 0.97; ie. shorten by about 3%. Then divide by 2 or 4 for the half or quarter wavelengths. I never use the imperial measurements now. We talk in metres for the band names, why use feet and inches and convert back and forth? That practise is so confusing! Try doing the sums and you will be intrigued by the half wavelength figures when the correction factor is applied. Especially for 2 metres, if you use 300 divided by 2 and multiplied by 0.96.

At least you are on the air. That is the whole aim of this exercise. Have fun and work everyone with a proud feeling of mateship and respect.

Welcome to HF.

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