

MERCURY AMATEUR RADIO ASSOCIATION MARA - NORTH AMERICA - NORTH EAST

NEWSLETTER - JANUARY 2007

BUT IT'S GOTTA BE THERE!

You say you looked really hard at where you last remember seeing your antenna, but you can't find a thing! Here are a few ideas for some simple antennas to get you on the air in a hurry.

SIMPLE ANTENNAS

The simplest antenna has to be the **end fed** wire. It is cut to length to fit the space available and fed with a simple LC tuner (or a commercial tuner you already have).

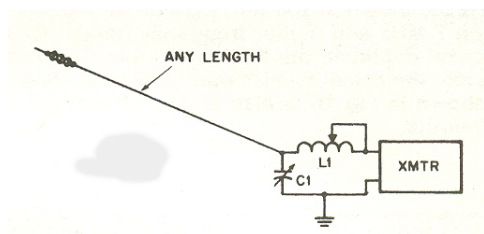


FIG. 1 Random length, end fed antenna. An L-network is used to match the unknown antenna impedance to the 50-ohm transceiver impedance. C1 can be a variable capacitor from an old broadcast band radio with a value of 100 pF or more. Typically a single 365 pF section could be used. L1 is 20 to 25 uH. A suitable coil would consist of 30 turns of #12 or #14 wire, 2.5 in. diameter (plastic pipe), 6 turns per in. Bare wire should be used so the tap can be placed as required for proper matching to the transmitter.

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Connect a $\frac{1}{4}$ wave length (at the operating frequency) of wire from the

tuner ground and lay it on the floor, or outdoors, as a counterpoise (virtual ground) if tuning, or RF in the shack, becomes a problem.

$$\text{length in feet} = \frac{234}{\text{Frequency (in MHz)}}$$

Formula for a quarter wave length

Take the far end of the wire to a convenient tree or other support.

The **inverted L** antenna is a close relative to the end fed. Bring the wire out from a window, up to a

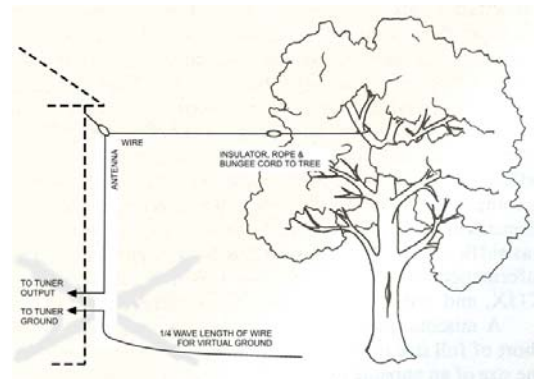


FIG. 2 Inverted L antenna, Make the L section between $\frac{1}{4}$ and $\frac{5}{16}$ wave length. Use the tuner and counterpoise wire from Fig. 1 for the same reasons.

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support for the vertical section, then horizontal to the convenient tree. Rule of thumb says the vertical and

horizontal sections should be approximately equal but reality says you work with what you've got.

The ARRL ANTENNA BOOK (15TH EDITION) indicates that using a 5/16 wave length makes it easier to match without a tuner.

Another simple design that has been around for many years is the **dipole**. Cut to ½ wave length with a center insulator (¼ wave length either side of center) made from a 2" long piece of ABS or PVC plastic pipe. Use the same lengths of the same material for the end insulators.

$$\text{length in feet} = \frac{468}{\text{Frequency (in MHz)}}$$

Formula for a half wave length

Use rope for end support line. Twine will saw its way into or through limbs from the wind action.

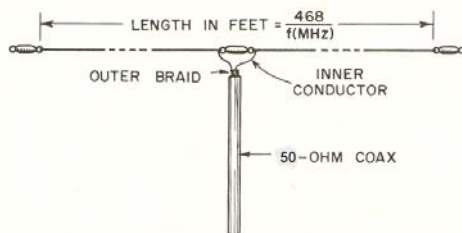


FIG. 3 Half wave dipole. While tuning the antenna to resonance, bend the wire ends back through the end insulators toward the center. Once you've gotten the length to what you want, trim the ends shorter and wrap them around the conductor.

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Using un-insulated or insulated wire makes no difference to receiving or transmitting. The insulated variety provides more protection against

weather damage.

Insulated #14 stranded copper electrical wire from Home Depot, Lowes, or similar suppliers is easily obtained.

The feed line is commonly a length of RG58 coaxial cable from the center insulator, down to the ground, and then to the house. This cable will safely handle the typical rig's one hundred watt output.

Solder the coax to the antenna wire joints. Don't depend on a mechanical connection for any length of time.

Use a couple of coatings of LIQUID TAPE to seal the end of the coaxial cable. Un-sealed coax ends might last in Death Valley, but in our climate they will quickly wick water into the cable braid causing rapid deterioration and increased signal loss.

TO TREE OR NOT TO TREE!

Some antenna handbooks and articles advocate tying the ends of the support lines to trees. I prefer the lines over limbs and tied off at ground level to a concrete building block instead. The block will slide before the rope breaks.

Even with this method, you still need some way to lessen the effect of the tree movement and prevent the wire from breaking. Insert a 3 ft. length of bungee cord between the end insulator and the support line. Keep it clear of tree branches.

Use a slingshot, a 1-2 oz. weight, and a cheap, closed face spin fishing reel with 10 -12 lb. test line. Fasten the reel to a 3 ft. pointed stick to keep it out of the grass and undergrowth. Shoot the weight over the selected limb. Untie the weight and pull back some twine. With the twine, pull the support rope into place. Use safety glasses.

If you are lucky, you can pick up the fishing reel (with line), the weight, the twine, the rope, and the slingshot at your local WalMart. You are on your own for the pointed stick!

Some jurisdictions do not allow the possession or use of slingshots. It's just part of the conspiracy against ham radio. ☺

In that case, you will have to rely on the Armstrong method – using your arm to throw a rubber ball or plastic soft drink bottle (partly filled with water) tied to the fishing line (instead of the weight).

Most of us have to make do with whatever tree of building is available for supports. If you have the freedom to do so, you may want to experiment with moving the orientation of your antenna to see if any improvement can be made in signal strength to and from the desired direction.

A much easier way is to download the demo version of EZNEC 4.0 antenna software from <http://www.eznec.com/demoinfo.htm>

Like all technical software, it has a learning curve but there is tutorial help and examples to get you going.

IN CASE OF EMERGENCY

Make up an emergency antenna and have it ready to go in case your primary antenna comes down in a storm. Since this is for emergencies, use a medium heavy twine for the support lines rather than rope to keep the bulk and weight down.

NEW YEAR'S RESOLUTIONS

Most resolutions get forgotten before January is a week old. If you made yourself a promise to get back on the air, don't let it become like all the others.

Post some sticky notes around the house to keep reminding you about the net time. Here's a virtual one to help you out!

MARA NE SSB NET – 3.8725 MHz @ 0730 Eastern time – every Saturday morning

See you next month,

Dave, VE1VQ

Care to host the 2007 MARA NE ANNUAL MEETING in the New England area this year?

Contact VE1VQ@eastlink.ca