

# Broadband Transmitting Wire Antennas for 160 through 10 Meters

A traveling-wave antenna offers some attractive qualities for your station: a 50-Ω feedpoint at ground level, no tuner required, horizontal and vertical radiation components, no radials, nothing in the air but wire, and flexible size and height requirements.

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Does it sound too good to be true? Well, if you need a high-gain, directive antenna, this is *not* it. If you are looking for a general-purpose, simple, all-band radiator, however, a terminated wire may be your answer. There are many designs for resistively loaded dipoles and verticals, but I decided to design a wire antenna that covers 1.8 to 29.7 MHz with a low SWR and provides maximum radiation in all directions on all bands. There were to be no drooping feed lines or other heavy components in the wire, so it would be easy to support with ropes.

In this article, I am going to describe two designs that have resistive terminations at the end (on the ground). They require one or two support points, no more than

120 feet apart (as little as 30 feet apart if you omit 160 and 80 meters). Because the ends are on the ground, safety is a concern. If there is a possibility that someone might touch the wire while you are transmitting, slip a 10-foot piece of small-diameter PVC tubing over the wire ends at ground level and cover the connection terminals.

This antenna has been analyzed for support heights from 30 to 70 feet, although other heights are possible. Since this is not a resonant antenna, you can adjust its size

to fit your property. It is not necessary to have both ends at the same height. As you might suspect, lower and shorter wires reduce efficiency and raise takeoff angle.

Terminated wires are part of a class of antennas called *traveling wave* antennas, in which the current is approximately constant along the wire (any length). Such antennas have been with us since the dawn of Amateur Radio but may not have reached their full appreciation until personal computers came of age. For a dipole, one of a

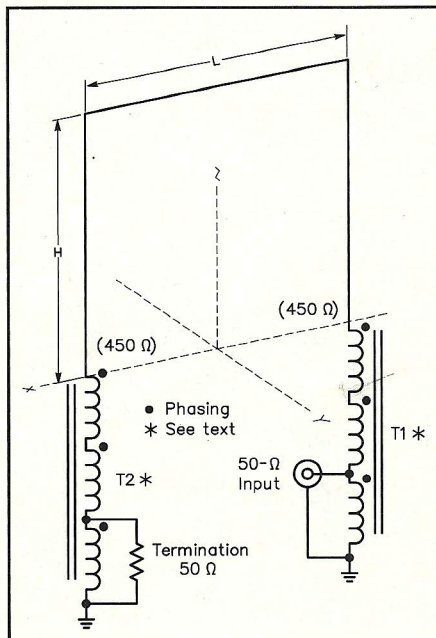


Figure 1—An end-fed, end-terminated TW antenna.

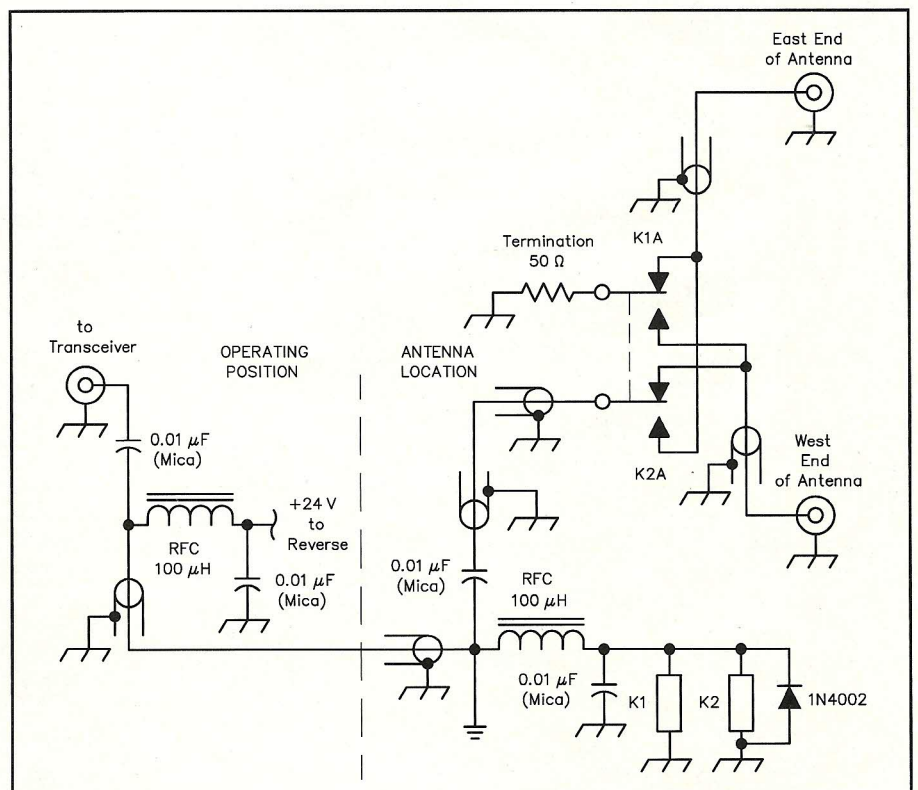


Figure 2—Relay-switching a TW antenna's pattern. RF chokes and blocking capacitors let the feed line carry the relay power.

