If you don't have room for a standard-length antenna, you might consider the wire-shortening technique described here by KB1EHE that can cut your antenna size in half without compromising performance.

The Sabertooth Wire: An Innovation in Antenna-Length Shortening

BY ERIC KNIGHT,* KB1EHE

In the century and a half since the discovery of radio-wave propagation for communications, countless antenna methods and designs have been developed. More recently, computer modeling has enabled significant advances in antenna designs and performance. But the tried-and-true wire-only antenna has had only modest advances in the past decades; for instance, dipoles are essentially the same as they were 50 years ago. And the 486/f formula has remained the bedrock of antenna-radiator length calculations and design. That is, until today.

It is pleasure to disclose to all of our fellow amateur radio colleagues the research that my colleague Rod Lane, N1FNE, and I have made over the last 10 years — resulting in a radiator-shortening method that does not require any external components, such as coils. With this method, antenna-radiator lengths can be easily shortened by up to 50% — or more — while maintaining high levels of transmitting and receiving efficiency.

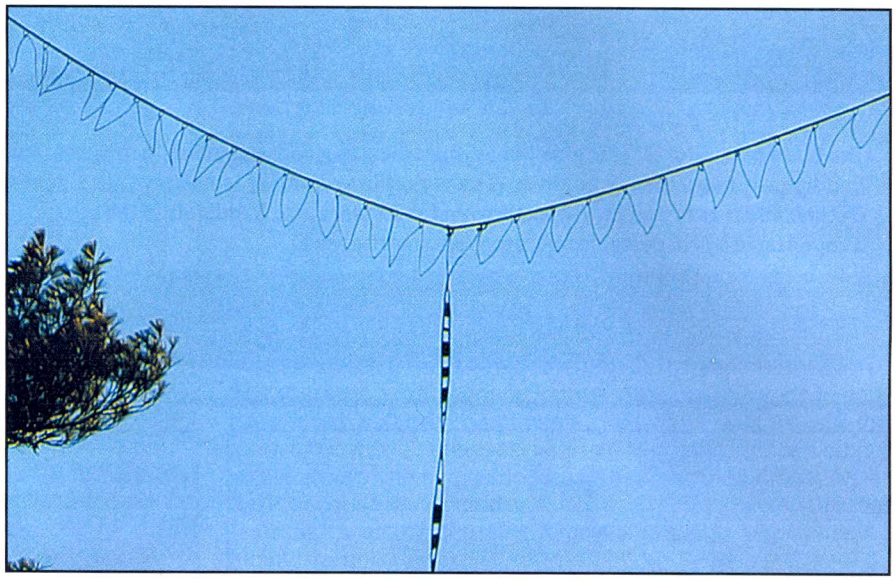

Photo A. One of the original designs constructed in 2010. It has survived multiple New England winters and is still in use at the author's QTH in Connecticut. The apexes of the wire are connected to the support rope with zip ties.

The resulting new wire technology is both patented (U.S. Patent 7,864,131) and patent-pending under an additional patent application recently submitted to the U.S. Patent and Trademark Office.

This article is not meant to be the be-all and end-all on this new radiator-shortening method. Our research and development work continues.

Discovery

In 2003, while on a flight to Europe, I was fidgeting with a twist tie. I looked down at the tray table at what my fingers had subconsciously made, and I spotted a couple of inches of zigzagged wire. I wondered, "How would a dipole antenna work if made this way?"

When I returned from travel, I spooled out 130 feet of 16 AWG antenna wire on my lawn. I then walked down the wire, crudely hand-zigzagging it into about 6-inch-tall equilateral-triangle waves. The resulting total end-to-end length was 50% less: 65 feet. I cut the zigzagged wire at the center and fed it with 50 feet of 450-ohm ladder line. I then used a length of polypropylene rope to "hang" it by the wire apexes, suspending it between two trees about 40 feet off the ground. Finally, I fired up the antenna from my shack with my Yaesu FT-857D, tuned with an MFJ-969 tuner.

I was surprised at how easily the antenna tuned up. But most importantly, I was stunned at the volume of contacts I was making with my CQs. I quickly set up an A/B switch between this new antenna any my trusty 130-foot, multi-band dipole, similarly fed with ladder line and supported 70 feet in the air in another part of my lot. The new antenna was as loud as my standard 130-footer. And when switching during QSOs, neither the hams on the other side of the QSOs nor I noticed any difference.

R&D and U.S. Patent

I contacted my long-time friend and ham radio buddy, Rod Lane, N1FNE, with my "discovery." He was as surprised and intrigued as I was with this new approach. Over the next few years, we dabbled with various constructions, including different ways to "hang" the wire from the support rope. We experimented with loops made of zip ties, directly threading the wire

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