W. Clem Small, KR6A, CET

A Multiband Antenna for Shortwave Listening

The ability to engage in "Bandhopping," or switching from one shortwave band to another as your listening interest leads you, is one of the pleasures of shortwave listening. With just the turn of a bandswitch or the keying of a keypad, you can be on a new band, listening to new signals and new action.

But is the antenna you are using appropriate for these frequency excursions? Probably it is, to some degree — most antennas will pull in the strong signals on several different bands. But usually an antenna favors one band and gives its best performance on that band. This month's featured antenna is one that helps overcome this limitation and gives good monitoring results on a number of shortwave bands.

This type of design is therefore referred to as a "multiband" antenna. So, if you find that your antenna is not bringing in signals on all the bands you want to monitor, consider giving a try to this month's antenna, the "Multiband Shortwave Sloper."

Let's Build the MSS Antenna

The MSS described here is designed for coverage of the popular 49, 31, 25, 16, and 13 meter bands. These correspond to frequency bands centering around 6.1, 9.7, 11.9, 17.7, and 21.7 MHz. But you can build the MSS to cover any bands that you wish: Use the formula:

$$\text{Length}_{(\text{in feet})} = 468/\text{Frequency}_{(\text{in MHz})}$$

For instance, an element for the 60 meter band, centered on 5 MHz would require the addition of an element 468/5 or 93.6 ft. (93 ft. 7 in.). You may entirely redesign the antenna, omitting elements that I suggest in the model I describe here, and adding any that you wish.

Hard drawn or braided copper antenna wire of something like 12 to 16 gauge is good, but you can use about any wire that you have on hand for this antenna. Wire that is too small or too soft may break. Follow the layout of Fig. 1 as you build.

1. First cut the elements to length, add 8 to 12 in. extra for the amount needed to wrap the ends around the insulators.

2. Remove the insulation (if any) from a few inches of one end of each element. Scrape these ends bright and clean, if necessary, and solder or clamp them together. Soldering is more resistant to weather in the long-run.

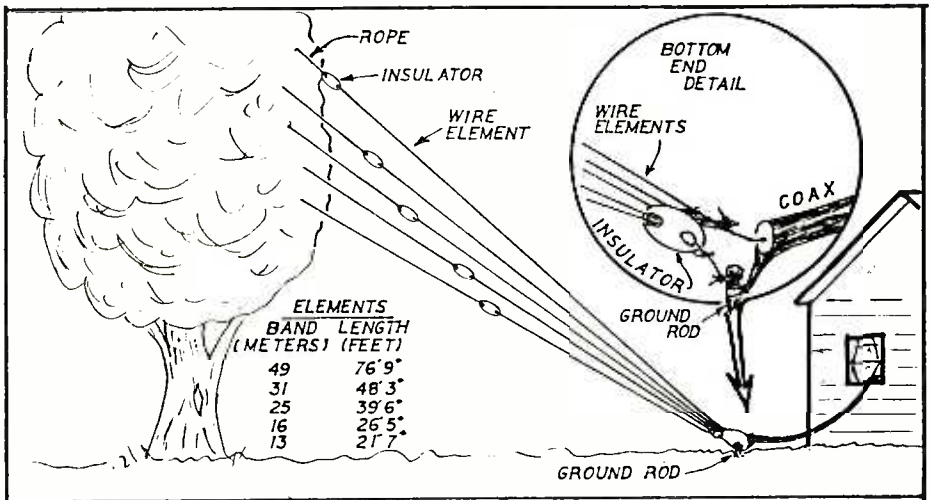

FIG. 1. A MULTIBAND SLOPER ANTENNA.

Remember to run one or two of them through the bottom insulator before you connect them together, so that you can anchor the bottom end of the antenna to the ground via that insulator as shown in Fig. 1. This group of ends, connected together, will be connected to the center conductor of the coaxial feedline later.

3. Put an insulator on the top-end of each element, making sure that each element is the correct length.

4. Drive down a ground rod to make your ground connection. In dry soil you may need more than one rod to get a decent connection.

5. Anchor the bottom-end insulator to the ground rod by a short nylon rope and make a short connection from the coax shield to the ground connection. Low impedance coax, such as 52 ohm, is best if you use this antenna for transmitting, but any coax in good condition should be fine for monitoring applications.

6. Attach the top-ends of the elements to appropriate high attachment points, such as a tower, tree, building, etc. Be very careful that you do not get close to or touch any powerlines with the antenna. Be careful to mount the antenna so that it can't fall on a powerline if it breaks.

You may run the various elements of the antenna in different directions, to favor reception from different directions for different bands. Pointing the element at 90 degrees to the desired direction of reception is likely to give the desired result.

7. Make a short connection between the coax center connection and the collection of wire-ends that attach to the bottom insulator. Seal off the end of the coax from the weather with coax-type sealer. Water will quickly ruin the coax otherwise.

8. Run the coax lead-in to your receiver and start monitoring!

Don't forget that the minimum lightning protection, especially in lightning country, is to never use the antenna during a storm, and disconnect and ground the antenna when it is not in use.