K7MEM

Javascript Electronic Notebook
W5VMs Shorty 40 Antenna
by Martin E. Meserve

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Introduction

Making a simple antenna for 40 Meters is not very difficult. That is, if you have the space. A standard center fed dipole dipole for 40 Meters needs around 67 Feet of space. But, what if you only have space for a 20 Meter dipole, 33 Feet? If this is case, than you have several options.

1. You could just forget about 40 Meters and work the higher frequency bands, 20 Meters on up.

   What? And miss out on all the fun dodging the the short wave broadcasters in the evening.

2. You could create a Inverted-V type of antenna and raise the feedpoint on a mast.

   This is a possible alternative, but for this particular case, you would need a 28 Foot center mast and the apex angle would be less than optimum. This may cause some signal cancelation and give you a radiation pattern that you don't want.

3. You could shorten the dipole arms to fit the space and use a loading/matching coil in the center.

Item number 3 is what this page is about. Jact Sobel, W5VM (which is now assigned to Vernon Dyer), had at one time described a shortened dipole center fed with a loading/matching coil at the feed point. A drawing of which is below.

Initially, this seems to be a different approach than the shortened dipole designs, detailed on my **Short Dipole** page. But it's really not. If you tilt your head, and cross your eyes a little bit, you might start seeing it as two coils, very close together. In fact, the coils are so close to the center, that they touch..

Assuming that the two coils are an equal number of turns, and that the wires attached to each side are equal in length, the center of an antenna should be a zero current point. this makes a handy place to tie your coax shield. You could wrap several turns of wire around the coil in the center and feed it that way. But I couldn't begin to tell you how many turns to use or what the feed impedance would be. Each turn of the coil, as you move away from center, provides you with a different impedance and a possible match. By attaching the center of your coax to one of the coils turns, you should be able to find a good 50 Ohm feed point. This then gets around the balanced to unbalanced conversion effort (balun), that would be required and you were center feeding or link feeding..

Each element arm is **18 Feet 6 Inches (5.029 M)** long. The loading/matching coils consists of **30** turns of **12 SWG** enamelled copper wire wound on **2.5 inch (63.5 mm)** diameter PVC tube **6 inches (152.4 mm)** long. The winding pitch should be about **6 turns-per-inch (25.4 mm)**. Although the picture doesn't show it very well, the shield of the 50 coaxial cable is connected to the center of the coil. The coax center conductor is connected to a point 2 or 3 turns away from the center, to a point which gives the lowest SWR. This point may take some experimenting, depending on which section of the band you wish to operate in.