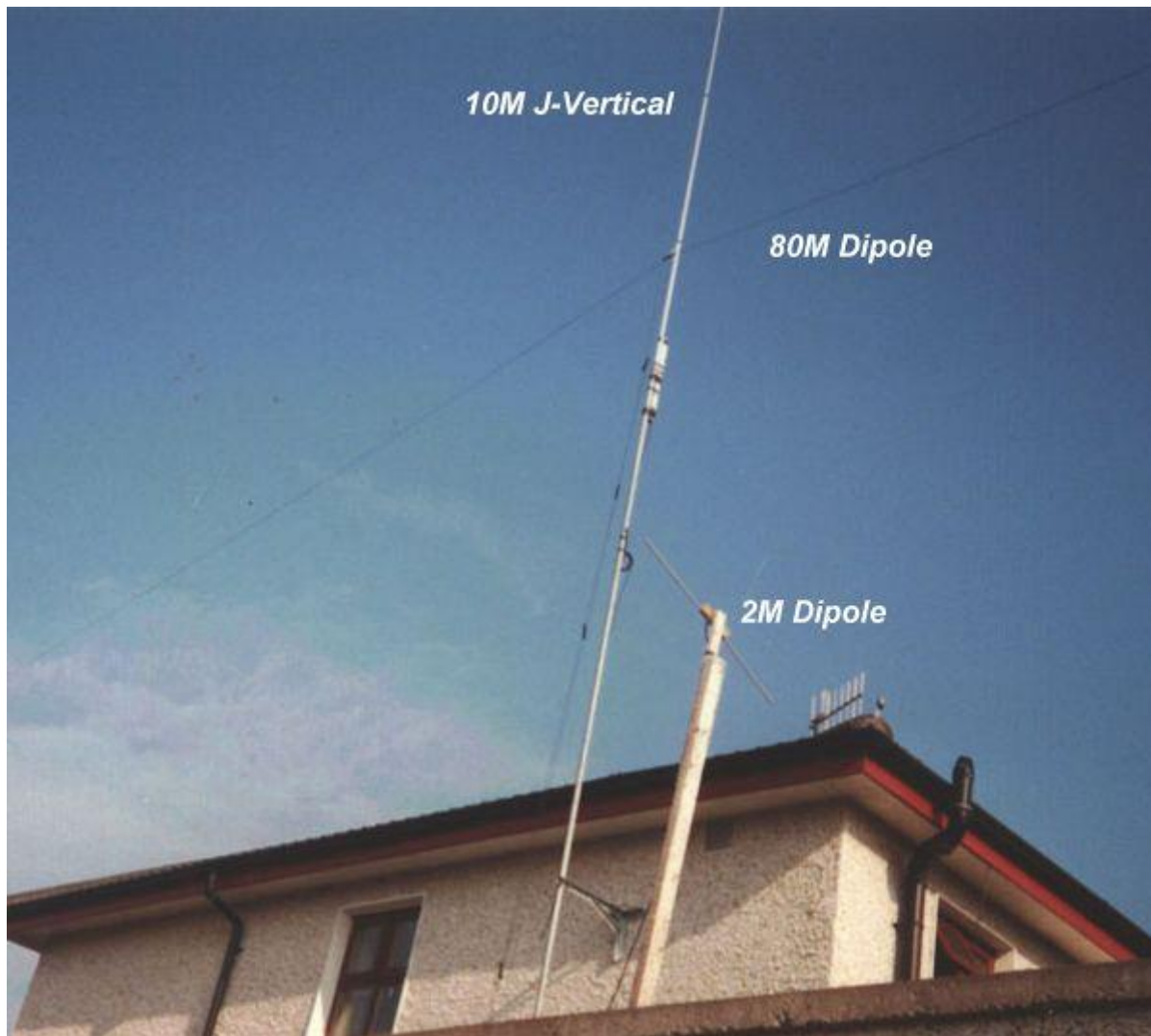
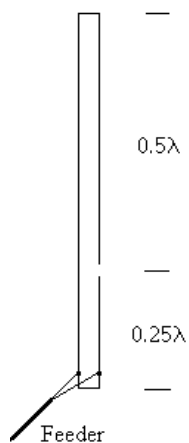


J-VERTICAL FOR 10 METRES

By EI9GQ

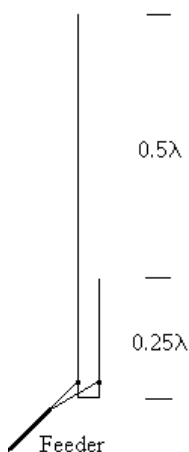


My first J vertical was a Slim Jim for two metres. This simple aerial performed better than a centre fed dipole at the same height. I compared it with an end fed half wave and an end fed 5/8 wave vertical. The Slim Jim always gave better results.



SLIM JIM

When I built my first 10 metre transceiver, I decided to make a Slim Jim for 10M. The 2M Slim Jim was made from Aluminium tubing. I soon realised that it would be quite difficult to make a 10M version.

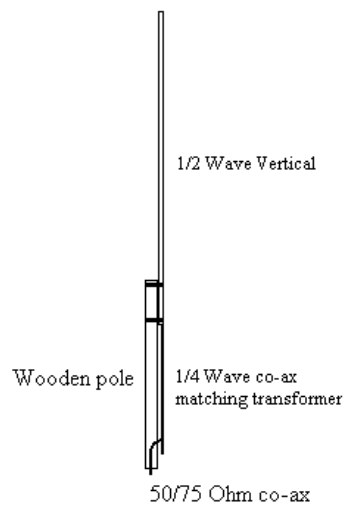


J VERTICAL

I abandoned the idea of using a folded half wave vertical, like the Slim Jim. I used a half wave vertical section made from three different sizes of Aluminium tubing. The quarter wave matching section was made from co-axial cable. I used 75 Ohm TV co-ax, for both the feeder and the matching transformer. To calculate the correct length of the 1/4 wave matching section, the velocity factor of the co-ax cable must be known. The well known formula for converting frequency to wavelength is $300/F$ in MHz = Wavelength in metres. The free space wavelength at 28.500MHz is $300/28.500 = 10.526$ Mtrs. One quarter wave = 2.631 Mtrs. This must be multiplied by the velocity factor of the co-ax, 0.8 for the low-loss 75 Ohm TV co-ax that I used, giving a length of 2.105 Mtrs (6ft 11.5in.) I used a 7ft length of co-ax with the feeder tapped in at 1ft from the bottom (see drawing.) If you use standard 50 Ohm co-ax like RG8, RG58, RG213, the velocity factor will probably be much lower (about 0.66.)



J VERTICAL WITH CO-AXIAL MATCHING SECTION



J VERTICAL USED AT EI9GQ

The original Aluminium J-vertical was dismantled when I moved QTH in 1996. I recently built a new one from fibreglass, (Thanks to John EI7BA for the very nice tapered fibreglass pole.) I ran a length of insulated wire through the fibreglass tube, for the 1/2 wave vertical. Design information below.

Frequency 28.8 MHz

Wire length = 16Ft 3In

Matching section = 5Ft 8In of RG213 co-ax. VF 0.66, short circuit at botton, feeder tap at 9 In from bottom.

The fibreglass pole is fixed to the wooden support with vinyl tape. Don't be mean with the tape. If you tape it up well, it will be strong enough to withstand the winter storms. My original J Vertical survived the 110 MPH winds in Feb. 1987. I cut the cable and soldered the feeder in at 9In from the bottom. A much neater method would be to use three PL259 plugs and a T connector. Take care to waterproof the connections. At the top of the quarter wave transformer, where the half wave wire is connected to the co-ax, I put some PVC tubing over the end of the co-ax, the PVC tubing was filled with Silicon grease.

Despite the fact that I used 75 Ohm low-loss satellite TV co-ax as the feeder, the SWR is 1.1 : 1 at 28.6 MHz and less than 1.5 : 1 from 28.3 to 29 MHz