



This is a popular antenna design as the performance is very good across several HF bands and requires little or no tuning. It's a dipole fed off center with a 4:1 current balun at the offset feedpoint. The antenna shown covers 80, 40, 20 and 10 meters with 15 meters and WARC bands only available with an antenna tuner and should be limited to less than 500 watts due to elevated SWR. This design is based on calculations from a program created by Walter Lau (KK1CW) and is available with his permission on our website in the "Support / Downloads" tab under Antenna Design Links.

### Design Parameters

For an 80-10 meter OCF dipole antenna, start with a total length of 135.85 feet of insulated wire and place the offset at 39.26 feet from one end. Again, this is based on a feed point height of around 40 feet, inverted V configuration, normal soil conditions and no large nearby structures. You can adjust most of these parameters if needed using Walt's Excel program, but the design shown is quite tolerant of adjustments to height and configuration. **For a lower base frequency like 160m, use the Excel program we provided to calculate the overall length and offset percentages.**

Using a quality 4:1 current balun at the feedpoint (**Balun Designs** Model 4115ocf, 4114ocf or 4116ocf) is crucial to the overall performance of the antenna. The feedpoint impedance at the offset is at or about 200 Ohms and the balun will provide good transformation to the coax feedline impedance of 50 Ohms. Feedpoint height greater than 60 feet will require a 6:1 balun.

After installing the OCF, check the resonant frequency on 40m for lowest SWR. It should be in the middle portion of the 40 meter band (e.g., 7.1 - 7.2 MHz). If too low, you can begin tweaking small lengths of wire off each end of the OCF to obtain the lowest SWR at or around 7.15 MHz. Begin with no more than 3 inches in total with 2 inches from the long leg and 1 inch off the short leg. **Be sure to trim each wire proportionately!** There is no need to physically cut your antenna wire if you fold the ends back on themselves and then tape tight to the main wire.

Depending on your surroundings (large structures, metal roofs etc), ground conductivity and antenna height, 80m may only reach an SWR of 1.8 – 2.2:1. This is normal and the higher bands will be lower.

For a different design frequency (i.e. 160m or 40m) the Excel program allows you to enter the desired frequency in the "design frequency" block of the Excel program and press enter. The calculations will be done for you and required wire lengths displayed in the model.