

## 80m ALL-HF-BANDS (almost) OCFD ANTENNA

**I am often asked: what is the best feedpoint position for feeding the 80m Off-Center-Fed Dipole Antenna?**

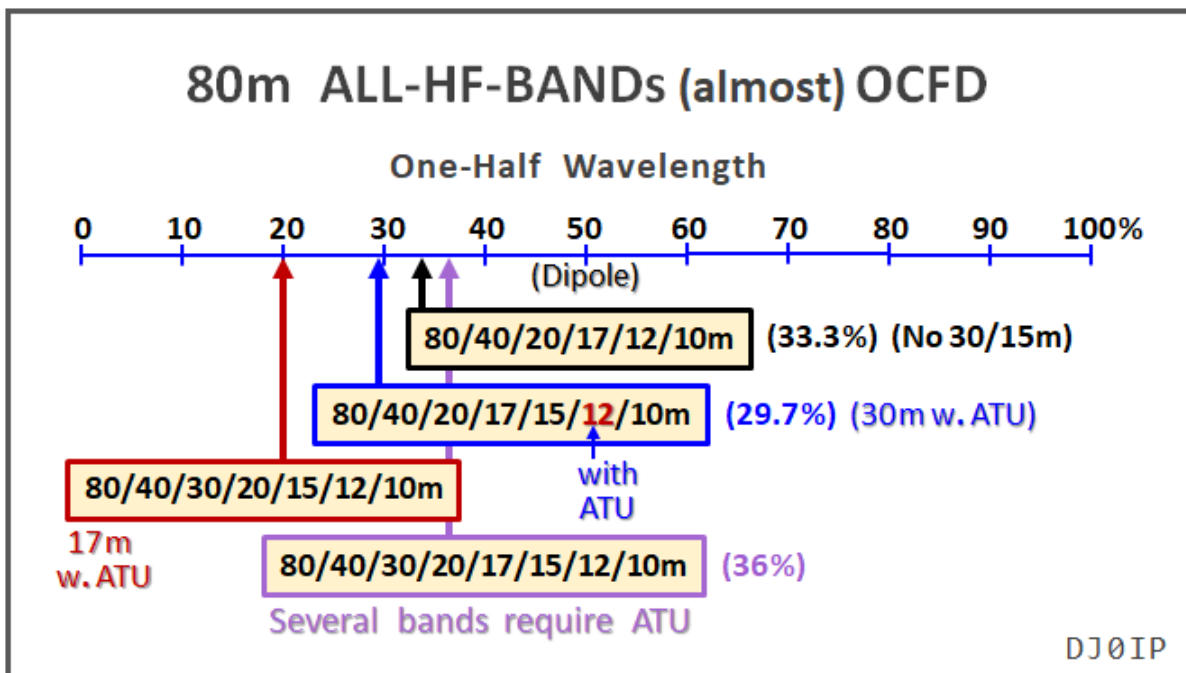
It seems everyone realizes by now that the classical “ $\frac{1}{3}$  -  $\frac{2}{3}$ ” feedpoint is not good because it has high SWR on 15m, but they have no idea where else to feed it.

**There is only one correct answer to this question:**

*It all depends.*

There are many interesting points for feeding the antenna, each with its own set of advantages and disadvantages.

Below is a list of several interesting feedpoint positions. I have personally built and worked with all of these except the 36% split.



As you see, there are many. I will comment on each feedpoint position below.

**20%:** Many hams learned of this feedpoint from Tom Rauch, W8JI. He published it on his web page almost 20 years ago. It was actually described by Bill Orr, W6SAI in his Wire Antenna Book about 40 years ago.

**Advantages:** Has the lowest SWR of all feedpoints on the classic HF bands, and has good SWR on 30m. Its radical offset ( $\frac{1}{5}$  -  $\frac{4}{5}$ ) is sometimes advantageous for some installations.

## 80m ALL-HF-BANDS (almost) OCFD ANTENNA

---

**Disadvantages:** It has high SWR on 17m. Never-the-less, when matched with an antenna matchbox, it delivers good results on 17m. Its radical offset results in high Common Mode Current at the feedpoint, which must be addressed with a very good BALUN/CHOKE combination. Its radical offset is disadvantageous for some installations.

**29%:** This is actually a range from about 28.9 to 30%. Where exactly we place it depends on which bands we favor. In general, it covers the bands shown above, but with a somewhat high SWR on 12m.

**12m:** at 28.9%, the SWR on this band is about 16:1. At 30% it drops to just under 4:1. This is easily matched with any ATU. However, as we move up from 28.9 to 30%, the SWR on 15m rises from 1.7:1 to 3:1, with 17m SWR falling faster than 15m SWR is rising. Where exactly we place it is user-preference. As a contester, 15m is more important to me than 12m. I chose to place mine at 29.7%, resulting in an SWR of 2.3:1 on 15m, and 6:1 on 12m. 6:1 is easily matched with an ATU and low enough to still radiate efficiently on 12m.

**Advantages:** Low SWR on 6 bands and relatively low SWR on 12m. Less radical feedpoint split than 20%, thus less trouble with Common Mode Current. This split is often advantageous, offering a more symmetrical fit than the 20% split.

**Disadvantage:** High SWR on 30m (about 10:1 with 28.9% and 14.5:1 with 30%).

**33.3%:** This is the classic feedpoint position which most commercial OCFD (a.k.a. "Windom") antennas use. Several commercial antenna companies manufacture and sell this version. The good ones clearly state that it is not to be used on 15m.

**Advantages:** All of the classic hf bands shown above have low SWR, and it has low SWR on the 12m and 17m WARC bands. It has slightly less trouble with Common Mode Current than the 29% split, and a lot less Common Mode Current than the 20% split.

**Disadvantages:** Extremely high SWR on 30m (20:1) as well as 15m (18:1). Although these bands "can" be matched with a good antenna matchbox, it is not advisable to do this unless you run reduced power. Indeed, many OM have ignored the Windom manufacturer's warning of this and destroyed their BALUN.

## 80m ALL-HF-BANDS (almost) OCFD ANTENNA

---

**36%:** This is an interesting split, but I have never built or used it.

### Average SWR Across Each Band

Percent	Bands (m)	80m	75m	40m	30m	20m	17m	15m	12m	10m L	10m U
36.0335	SWR(200)	3.03	5.10	1.98	13.53	1.92	5.00	2.85	1.76	6.07	11.24
		ATU	ATU		ATU		ATU			ATU	ATU

(Data source: K8BA)

Keep in mind that the SWR shown is the “**average**” across the band. It can be a bit higher and a bit lower within the band, especially on 80m.

Except for 30m and the high/upper end of 10m, most transceivers built-in ATU should be able to be match all bands – except for ICOM radios. For some reason ICOM chose to make their ATUs only match up to 3:1 SWR.

15m is borderline and may also require an ATU.

**Advantages:** ALL BANDS but 30m will have very good performance. This feedpoint split will have the least amount of Common Mode Current of all the splits shown in the chart at the beginning of this document. 30m is usable.

**Disadvantages:** Several bands require an antenna matchbox.

**Disclaimer:** I have never personally used this feedpoint split. The information above is based on data modeled by John Young, K8BA.

---

### Comments:

The SWR levels shown in this paper were modeled by K8BA with an 80m OCFD 40 ft. high (AGL), and 200 Ohms at the feedpoint.

The level of Common Mode Current referenced in all of the above feedpoint splits cannot be fully suppressed by a 4:1 Current (Guanella) BALUN alone. It will not have sufficient Common Mode Impedance. In all cases a 1:1 Guanella BALUN is required in addition to the 4:1 Guanella BALUN.

This is best achieved with a “**DJ0IP Hybrid Balun**”, which is **quite different** from the “[Hybrid Balun](#)” described by Andrew Roos (ZS1AN) and also described by Steve Hunt (G3TXQ) in his paper on “[Basic Baluns](#)”.

The Model 4116 “Hybrid Balun” sold by Balun Designs is totally insufficient (in CMI) for use in these antennas and requires the aid of an additional RF choke.