

LWD-4080 HF antenna from MOCVO

The LWD-4080 antenna from Nigel, MOCVO, is the latest in his range of simple HF wire antennas.

Introduction

This is a variation on MOCVO's LW-10 and it offers the lower 60m (5MHz) and 80m (3.5MHz) bands without all the extra length, making it suitable for the smaller urban gardens. Use of a heavy-duty inductive loading coil along the radiating wire and then a short (two metre) capacitive wire at the end allows tuning across the whole of the 80m band. The coil acts as a trap at higher frequencies allowing the antenna (Figure 1) to operate as a standard long wire from 40m to 6m.

This antenna is 12.3m long and consists of a 10.14m radiating wire, followed by a coil and then a further 2m of wire. The antenna is designed to tune on the 40m to 6m bands without the coil which, when added, enables operation on 80m with an antenna tuning unit. At the base of the antenna is a MOCVO 9:1 UNUN. This converts the impedance of the antenna down from 450Ω to something nearer to 50Ω.

Nigel says that it will handle up to 400W CW or 500W PEP for SSB for intermittent amateur use. If you are using AM or a constant carrier mode, I suggest you reduce your power or buy a higher-power UNUN.

The plastic matching box with the UNUN also has a separate connection for an earth. Nigel says this is not strictly necessary but will help to reduce static build-up and provide a direct path to earth in case of a lightning strike or a build-up of static in the air. You could always experiment with radials at this point, which may help, especially on 40m and 80m. Nigel recommends that you mount the matching box as high as possible in order to keep the wire as horizontal as possible. I mounted it as an inverted L using a 10m fishing pole with a 8m vertical section and the remaining 4.3m as a horizontal wire (Figure 2). This gave the VSWR figures shown Table 1. The interesting thing is that they are nearly all under 3.0:1. That means that it should be possible to tune the antenna to 1:1 with an internal ATU. This is a big bonus and gives you an HF antenna that will operate on ten or 11 bands without further expense.

FIGURE 1: The LWD-4080 HF antenna from MOCVO.



On the air

So how did it perform? Not bad considering its size. That is, the antenna has a length of a quarter wave on 40m and is much shorter than a quarter wave on 80m. The low VSWR on 160m may be misleading – I don't think the antenna is a performer on 160m because of its small size. Nigel, MOCVO, said: "Using this antenna myself, I went from zero to seven countries worked during January on 80m. This was mainly using CW (my preferred mode of operation), but I have also tried it on both LSB and FT8 in the 80m band."

I heard no activity on 5MHz but a test at 5262MHz showed that my Yaesu FTDX-3000's internal ATU would tune on that band.

On 40m during an afternoon in late February, I copied FT8 signals from all around Europe, including Germany, France, Netherlands, European Russia, Wales and Kyrgyzstan. Compared with my usual 132ft (40.2m) end-fed half-wave (EFHW) antenna, fed with a 49:1 UNUN, signals were down a little but usually no more than 3dB to 6dB. It even picked up some FT8 signals that could not be copied using my EFHW antenna, including Malta. On LSB, the signals were down a little compared with my EFHW antenna but usually no more than one or two S-points. In the inverted L configuration, the LWD-4080 antenna obviously favoured DX signals over around-the-UK near vertical incidence sky-wave signals, which was to be expected. On medium distances, such as the

UK to Germany, the antennas were virtually equal. It was a similar story on 30m where signals were reasonable and in line with those received on my longer 132ft EFHW antenna.

On 15m and 10m, the antenna performed reasonably well, with SSB and CW signals either equal to or no more than one or two S-points below those received on my EFHW antenna. As a vertical/inverted L, it performed well over long distances where I heard or worked many signals from the Pacific on the higher HF bands, especially using FT8/FT4. There were a few surprises. KHO/KCOW in the Mariana Islands on 24.957MHz SSB was slightly stronger on the LWD-4080. Another quick check of 10m beacons found that the 4W IZ8FFZ/B on 28.270MHz was a good three S-points stronger on the LWD-4080. OH9TEN on 28.267MHz in Finland and SV6DBG in Greece on 28.268MHz were roughly equal. The International Beacon Network spot on 28.200MHz, 4U1UN in New York, was louder using the LWD-4080 than with my EFHW by about two S-points.

During the test, I heard the Seychelles on 10m SSB, and TZ4AM in Mali was loud on 28.032MHz CW, as was ZD7AQH in St Helena Island on 28.002MHz CW. The J51A DXpedition in Guinea-Bissau gave an excellent 599 signal on 28.024MHz CW using the LWD-4080 at around 1430UTC in early March.

FT8 brought in EY8MM Tajikistan and TY5AD Benin on 10m at around 1315UTC. I also worked HP1RY in Panama on 10m FT4,

which was a first for me on that mode.

Listeners to short wave will be pleased to know that the antenna worked quite well on the medium wave for Shannon VOLMET transmissions on 5.505MHz, 8.957MHz USB and 13.264MHz and for various commercial stations on 15MHz (19m band).

I know that giving you a list of stations heard/worked is not really an accurate test of an antenna's performance but I wanted to show what it could do for you in a typical urban installation. OK, it's not a four-element Yagi antenna but it doesn't pretend to be.

Conclusion

Overall, my conclusion is that the antenna may suit people with small gardens who want to make the most of HF. That is, the antenna provides a reasonable match on all of the popular HF bands.

In truth, the way you orient the antenna will influence how it behaves. If you want to work around the UK on 80m, 60m and 40m, fixing the antenna as a horizontal wire may work better for you. But if you are more interested in DX, the vertical/sloper configuration I used would probably be more efficient. I had a lot of fun with this antenna which is available from Nigel at MOCVO Antennas (mOcvOantennas.co.uk) for £72.50 plus postage. My thanks to Nigel for the loan of the antenna.

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Table 1: Raw VSWR measurements (before an ATU was used).

Frequency (MHz)	VSWR
1.810	2.6:1
2.000	2.6:1
3.5	2.5:1
3.7	2.3:1
3.8	2.4:1
5.258	3.2:1
5.406	2.9:1
7.0	1.7:1
7.2	1.8:1
10.1	2.3:1
10.15	2.3:1
14.0	1.7:1
14.35	1.7:1
18.068	1.9:1
21.0	1.4:1
21.45	1.4:1
24.89	1.2:1
24.99	1.2:1
28.0	1.4:1
29.0	1.3:1
29.7	1.2:1
50.0	1.5:1
52.0	1.6:1
70.0	2.1:1
70.5	2.0:1



FIGURE 2: The antenna deployed in my garden.