Product Review: MFJ-1775 6-Band Rotatable Mini-Dipole
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Introduction

When I received the 2006 MFJ catalog, their new MFJ-1775 compact dipole caught my attention. This antenna was appealing to me because I live on a small city lot, where my entire backyard is completely taken up with a swimming pool. So I only have room for a Butternut vertical in the corner of my yard, up against a cedar fence and surrounded by large shrubs. Obviously not the best antenna situation, though it has been g ood enough to provide me plenty of fun over the years. However, I have wanted something that could possibly give me improved performance, especially on the higher HF bands. Enter the MFJ-1775

MFJ-1775 Description

The MFJ-1775 is a mini 14-foot 40/20/15/10/6/2-meter rotatable dipole designed to fit on the smallest roof, making it perfect for town houses, apartments and condos. It can even be mounted inside an attic. It is light, inconspicuous and low profile, and is not much bigger than a TV antenna, making it easily turned by a lightweight TV rotator. Efficient end-loading coils and capacitance hats permit full 1500 watt legal limit power on the HF bands. Full-length half-wave dipoles for 6- and 2-meters are incorporated into the antenna, but power handling is reduced on these bands due to the design of the balun.

RF Specifications

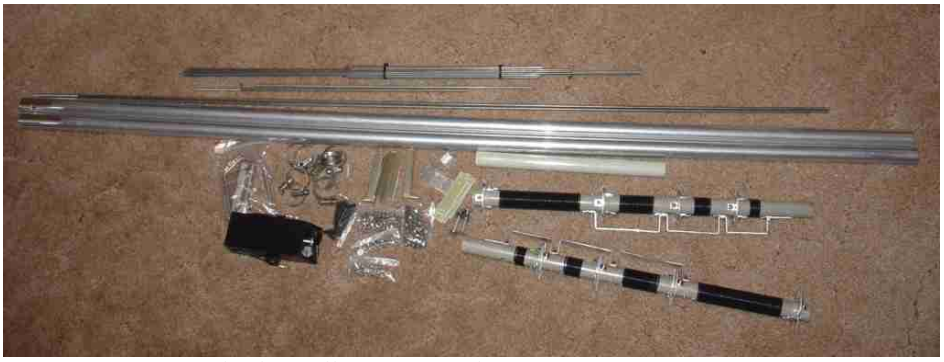
	Power		
Band	CW	SSB	2:1 SWR BW
40m	1500	1500	40 KHZ
20m	1500	1500	60 KHZ
15m	1500	1500	400 KHZ
10m	1500	1500	1.2 MHZ
6m	300	750	600 KHZ
2m	200	300	4.0 MHZ

Mechanical Specifications

Mast Size:	1- to 1-1/2" diameter
Overall Length:	14 feet
Turning Radius:	7 feet
Weight:	15 pounds
Wind Load:	2 square feet

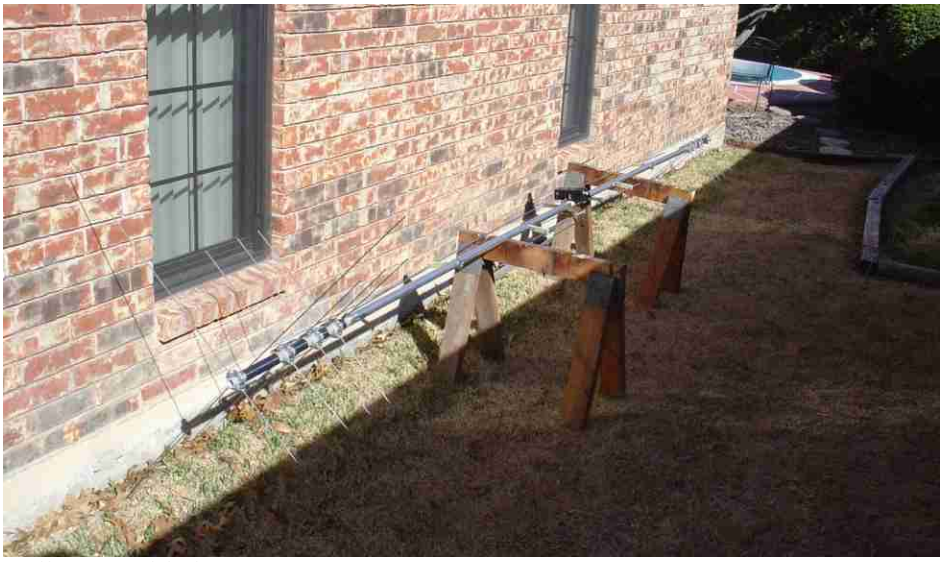
The MFJ-1775 Experience

After making the decision to acquire this antenna, within a short time a 6" x 6" by 5-1/2 foot box arrived. I guess I was expecting a larger package – after all, this is an HF antenna! However, the longest piece supplied is just 5-feet in length, so everything fits easily into the small box. Photo "AllParts" shows all the components of the disassembled antenna spread out on the floor of my "shack".



MFJ-1775 Unpacked – All parts are shown

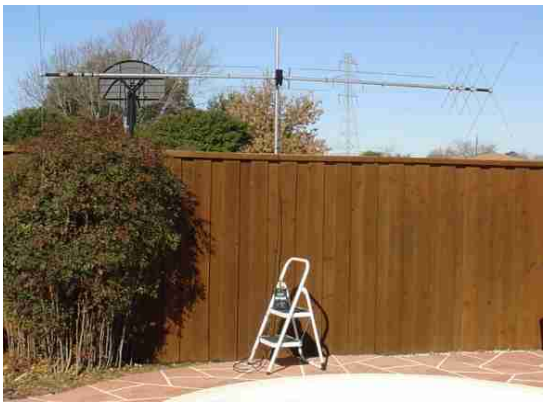
I assembled the entire antenna inside my home, except for the final job of attaching the end loading coils. I moved the antenna outside for the final assembly, which is made easy by using saw-horses for support. It took me just under two hours for the complete assembly. Photo "Assembled" shows the completed antenna. Note how difficult it is to see the capacitance hat spokes! MFJ warns you to use eye protection when working around this antenna, as the spokes could cause injury.

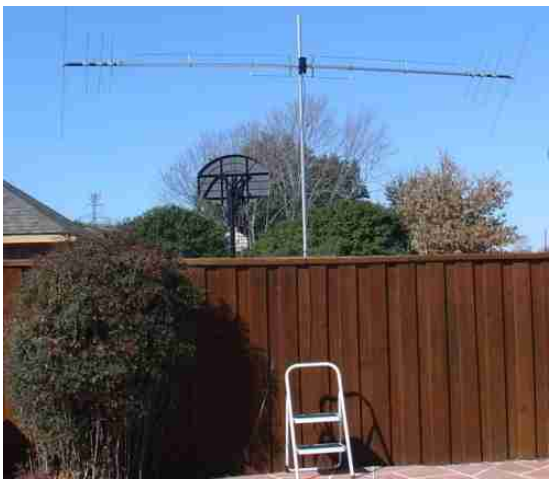


Fully assembled MFJ -1775

Next comes antenna tuning. This entails trimming the capacitance spokes with a pair of heavy wire cutters while monitoring SWR with an antenna analyzer. First, you must mount the antenna temporarily at a height of about 6-8 feet so that you have access to the spokes for trimming. I had a 1.5-inch diameter tube, and a 1.375-inch diameter tube that I telescoped together so that I could lower the antenna to about 5-feet for trimming, and then extend it to about 10-feet for checking the tuning. The tubes were attached to fence posts with hose clamps. Photos "TrimHeight" and "MeasuringHeight" show my trim/test set-up. The MFJ-1775 Assembly/Test manual gives approximate spoke trimming lengths versus frequency change, and recommend s that you "sneak up" on the desired resonance points, as it is hard to add spoke length if you trim too far!. I was careful to do this, and

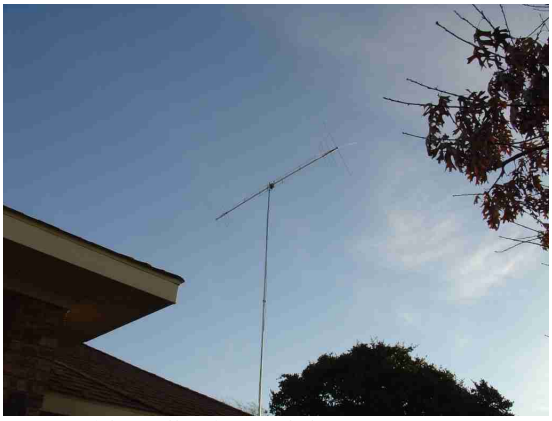
wound up trimming about ¼" at a time from the spokes. This tuning effort took me approximately three hours. Six- and 2-meter tuning takes just a few minutes, as adjusting those dipoles is very easy. There are some spurious 2-meter resonances that could be confusing, but the MFJ manual does a good job of explaining how to tune around these resonances.

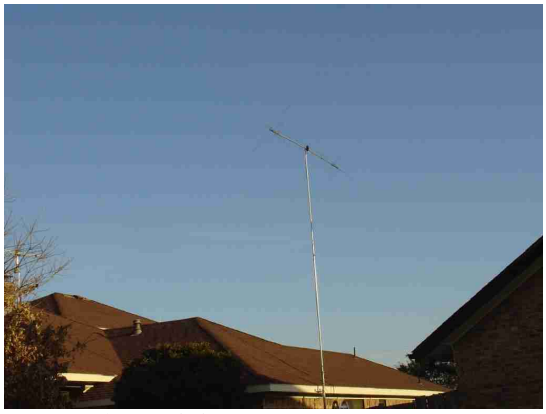

Trimming Height


Measuring Height

Once the antenna was tuned, it was time for me to put it up. I'd originally planned on mounting the antenna on a mast on my chimney . However, this position is currently occupied by my Cushcraft ASL670 50-450 MHz log periodic, and I didn't want to remove this antenna as I also use that antenna for HDTV reception! Plus, this could possibly give me the ability to make some comparisons between the ASL670 and the MFJ-1775, depending on conditions and activity on 6 - and 2-meters.

Since I live within a few miles o f Texas Towers, I drove there and purchased a Rohn H50 50-foot push-up mast, which is supported by attaching it to the eave of my house at about the 9-foot level. As the MFJ-1775 is so light, it was very easy for me to install it on the Rohn H50 using a 7-foot step ladder. This was literally a one-man job. Since I was only supporting the H50 at 9-feet, I only pushed up the mast to a height of 30-feet. The photos below show the MFJ-1775 in its final position. Note how unobtrusive the antenna is!


Front sidewalk view of the MFJ-1775


Street view of the MFJ-1775

Performance

As everyone knows, HF band conditions are pretty awful now, and will continue to be so for the next several years. However, there is good activity on 40- and 20-meters. And since I'm retired, I can also monitor 15- and 10-meters during the day and I have been lucky enough to find a little activity on these bands as well. So, how does the antenna perform? I was pleasantly surprised.

My antenna conditions are as follows: The MFJ-1775 is located at a height of 30-feet as shown in the photos. This antenna was compared against my ground-mounted Butternut vertical. The Butternut is mounted in the corner of my yard, surrounded by a cedar fence on two sides and a 15-foot shrub immediately in front of it. The Butternut has ten short random length radials fanning out towards one side of the swimming pool, one radial tied into the swimming pool electrical ground, one radial tied into the steel landscape edging near one end of the pool, one radial extending along my neighbor's fence that "T's" off my fence, two radials extending along my fence and grounded every 6-feet to the steel fence posts, and one radial that sneaks through my fence and ties into the CATV amplifier ground in the alley! Definitely not the best antenna location and ground plane overall, but the best that I can do at my particular location.

I used my FT-1000MP MKV S-meter for the antenna comparison. I have two back-to-back 4-position MFJ-1704 coax switches so I can rapidly switch any of four different rigs into any of four different antennas. The results shown below are in S-units, though I'm not claiming that these S-units will translate exactly between different radios. The results shown below are based on two weeks of active operating.

Band	MFJ-1775 compared to Butternut
40M	+1 to -2 S-units better/worse than Butternut
20M	+1 to -1 S-unit better/worse than Butternut
15M	+1 to +2 S-units better than Butternut
10M	+1 to +3 S-units better than Butternut

So, generally the MFJ-1775 is a little worse than the Butternut on 40-meters, and about the same as the Butternut on 20-meters, though occasionally it does outperform the Butternut on these two bands. The MFJ-1775 virtually always outperforms the Butternut on 15- and 10-meters. Additionally, the MFJ-1775 has a 2-3 S-unit LOWER noise floor on 40-meters compared to the Butternut. This has permitted me to work weaker stations that I could not have worked when using my Butternut. Not bad for a shortened, loaded dipole at 30-feet!

And how about 6- and 2-meters? Well, there has been no 2-meter activity since I've put up the antenna. However, I have had one good 6-meter opening between the Dallas area and the east coast. Because of high winds, I had the MFJ-1775 at only 20-feet, the same height as my chimney-mounted Cushcraft ASL670 log periodic. The results? The MFJ-1775 typically outperformed the log periodic by about one S-unit as measured on my IC-706MKIIG and also reported by stations I worked. I suspect this had to do with a

difference in take-off angles between the two antennas and the distances involved. However, I was still surprised, and further investigation is warranted! Over time, I should be able to accumulate some more data to help explain this.

Conclusion

If you are unable to put in an effective antenna system due to property restrictions, you may want to consider the MFJ-1775. Of course there is a bandwidth trade-off due to the reduced size of this antenna on the 40- and 20-meter bands. However, the MFJ-1775 is a surprising performer. And besides getting coverage of the popular 40-, 20-, 15-, and 10-meter bands, you get 6- and 2-meters thrown in to boot!