

Next Monthly Meeting: Friday November 24 6:30 PM at the MCL Cafeteria in Kettering .  
Meeting is always the 4th Friday of the month except for when impacted by holidays

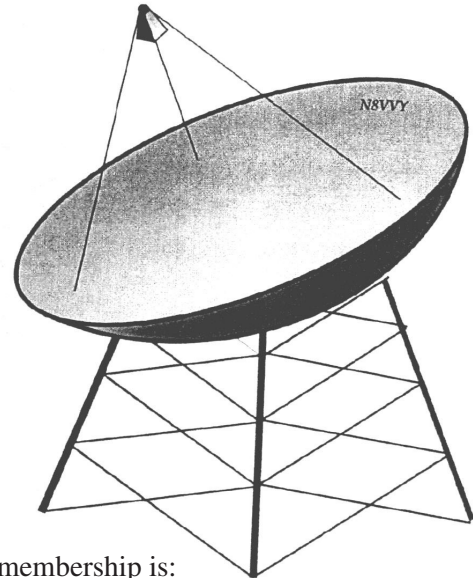
# ANOMALOUS PROPAGATION

October 2023

Newsletter of the **Midwest VHF/UHF Society**

Editor: Jim Bacher, WB8VSU

For a Word document template for articles, send a request to Jim ([j.bacher@ieee.org](mailto:j.bacher@ieee.org)) or click on this link to get the Word format Template. Thank you!



Annual membership is:

\$12.00 for newsletter by Email

\$16 if newsletter by USPS

\$240 Life Membership by email

Make checks payable to Midwest VHF / UHF Society and mail to:

Joe Muchnij, N8QOD,  
1214 Cottingwood Ct.  
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[www.mvus.org](http://www.mvus.org)

October 2023

Beacons: 1296.079 W8KSE EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.  
MVUS Skimmer -. <http://www.reversebeacon.net/dxsd1/dxsd1.php?f=0&c=w8kse&t=de>

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# De N8ZM

Well, another month has come and gone, and in reading over last month's column to see what lies I told, I noticed that I had said I would send out a list of equipment from the various estates and downsizings that I have taken on. Maybe I'll have some time this Friday to get it out 😊. I will say that there are radios, coax, antennas, and accessories available for HF, VHF, and uWave, so if you are looking for something specific, feel free to ask.

Some of you are aware that we (well, W8RKO and I) have been slowly working on putting 144, 432, and 10 GHz beacons together to install on the Hoke Road water tank in Englewood. Progress has been slow as we were advised last Spring that the city had plans to repaint the tank sometime this year. In August I got a message that we needed to get the antennas off the tower ASAP as they expected the painting to commence soon. So, W8RKO (Mike), KE8DOC (Dave), KB8STB (Steve) and I scrambled over to remove the antennas that belonged to a UHF repeater that KB8ZR and I have there, as well as removing antennas that DARA has for a remote receiver site for the 146.94 repeater. We had to leave the coax and other cables as they were intertwined with cables that were for other users, but were expecting to go back to help with that when the commercial guys showed up. I did not hear anything from the tower folks for a couple of weeks, and driving by a few weeks later noticed that the paint crew had already started. I checked in, and was told that the painters had called and said "we need to start now", so the cables were taken down by someone (just as happy we didn't have to get involved in that high-wire act anyway). Was told we could swing by to pick them up any time, so KE8DOC and I went over and found them all neatly coiled up on the ground, no worse for the wear except for the piece of elliptical WG that had been severed and kinked a little. It was not ours but we were told we could have it since any new commercial installations would use new cabling. COOL! Well, until I went looking for connectors. But eBay can sometimes be a friend, and I found a couple for not unreasonable bucks. They'll be here tomorrow 😊.

It turns out that the commercial stuff has been relocated to a different site for the duration of the painting, and it is working well-enough that they have decided to leave it there, no doubt a cost savings. We will only be sharing the tank with a public service radio system (think police/fire), and I have been told that we can put whatever we want back in once the paint job is finished. It will be some work to pull the cables back into place as it is 165' tall. We will have backup power as there is a generator there to support to public service gear, and our power circuit is wired to that. Definitely a Spring project for MVUS and DARA.

A quick reminder that our November meeting will take place on the Friday after Thanksgiving (24th), and the December meeting will take place on the Friday before Christmas (22nd). See you all soon! de N8ZM

# 1420 MHz BiQuad Antenn

Author: Mike Suhar, W8RKO

I built an antenna to use for a dish feed to be used at the radio astronomy frequency of 1420 MHz. Looking at various designs used by others I decided on the BiQuad antenna. I found a photograph of an antenna used at 1420 MHz but no reference to an article with details. I found online calculators, but they gave different results. I found this site ( <https://tinyurl.com/3tkknd46> ) that discussed the errors of other calculators. The author used professional design software to come up with his calculator. This calculator scales the original design to frequency and impedance entered in the data fields. His design was for WiFi.

You can see the difference in the calculations:

using author's calculator for 1420 MHz:

Impedance: 50 ohms

total length of loops: 165mm

distance loop to reflector: 30.7mm

reflector width: 217mm

reflector length: 217mm

wavelength: 211mm

total length of wire making loops: 439mm

gap at connection point: 1.6mm

Wire size: AWG #11 (calculator determined the wire size)

Using another calculator that author determined is wrong:

Impedance: not specified

total length of loops: 143.5mm

distance loop to reflector: 26.4mm

reflector width: 105mm

reflector length: 211mm

wavelength: 211mm

Continued on page 5

Continued from page 4

total length of wire making loops: 445mm

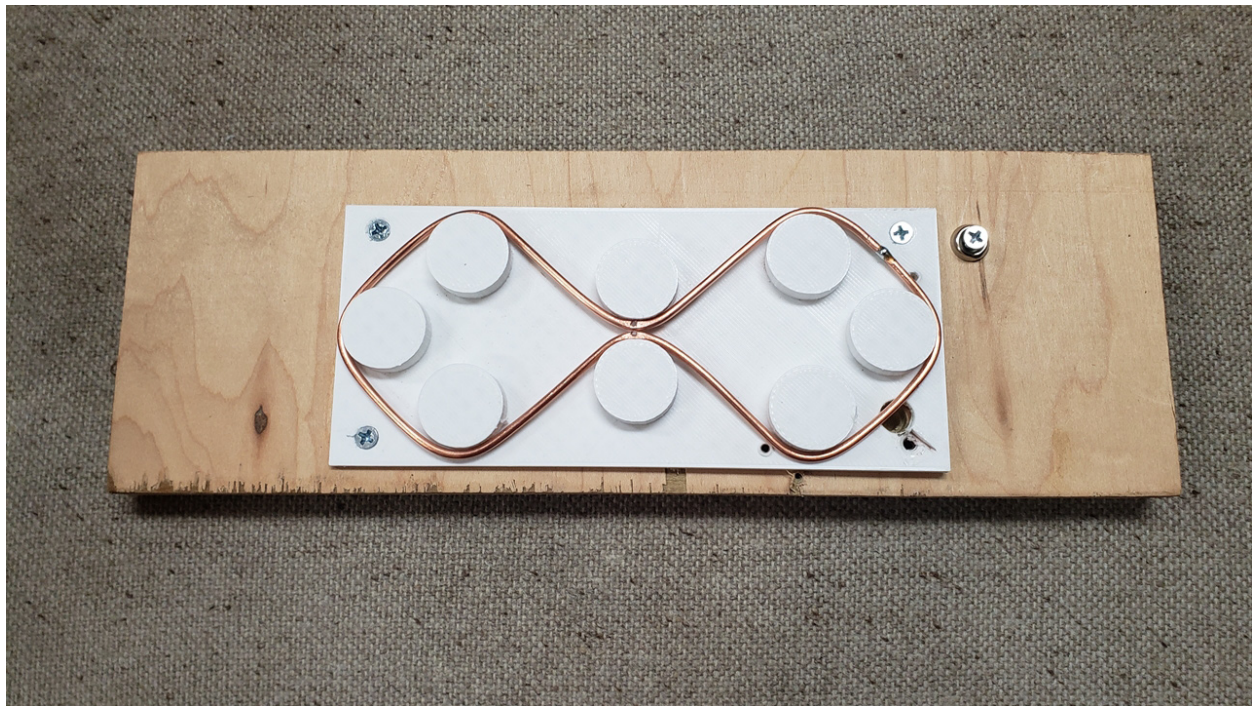
gap at connection point: not specified

Wire size: 1.8mm (AWG #13) (calculator determined the wire size)

The gap distance allowed for shifting the best return loss frequency a few MHz. That is the only adjustment that can be made once the wire is bent into shape.

Note that this design did not include the panels on the side of the ground plane. The side panels were shown on the photograph in the radio astronomy picture.

The calculator I used indicated radius dimensions that I was able to use to make a jig to wind the wire.

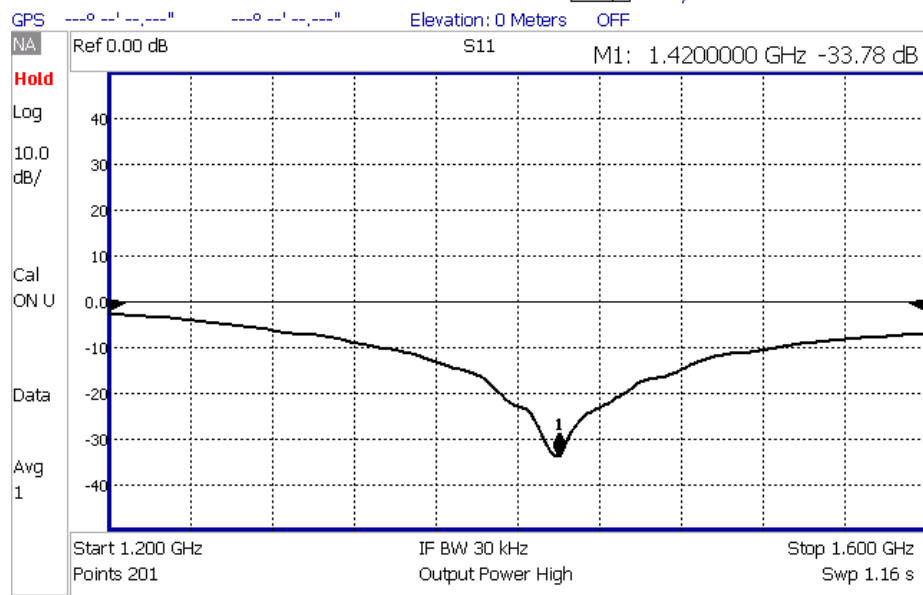


Wire Bending Jig

I built the antenna and tested it on the FieldFox. Best return loss was around 1390 MHz. Adjusting the gap, I could move this around but not enough to get to 1420 MHz. When I added the side panels the return loss frequency jumped to 1420 MHz! What luck.

Continued on page 6

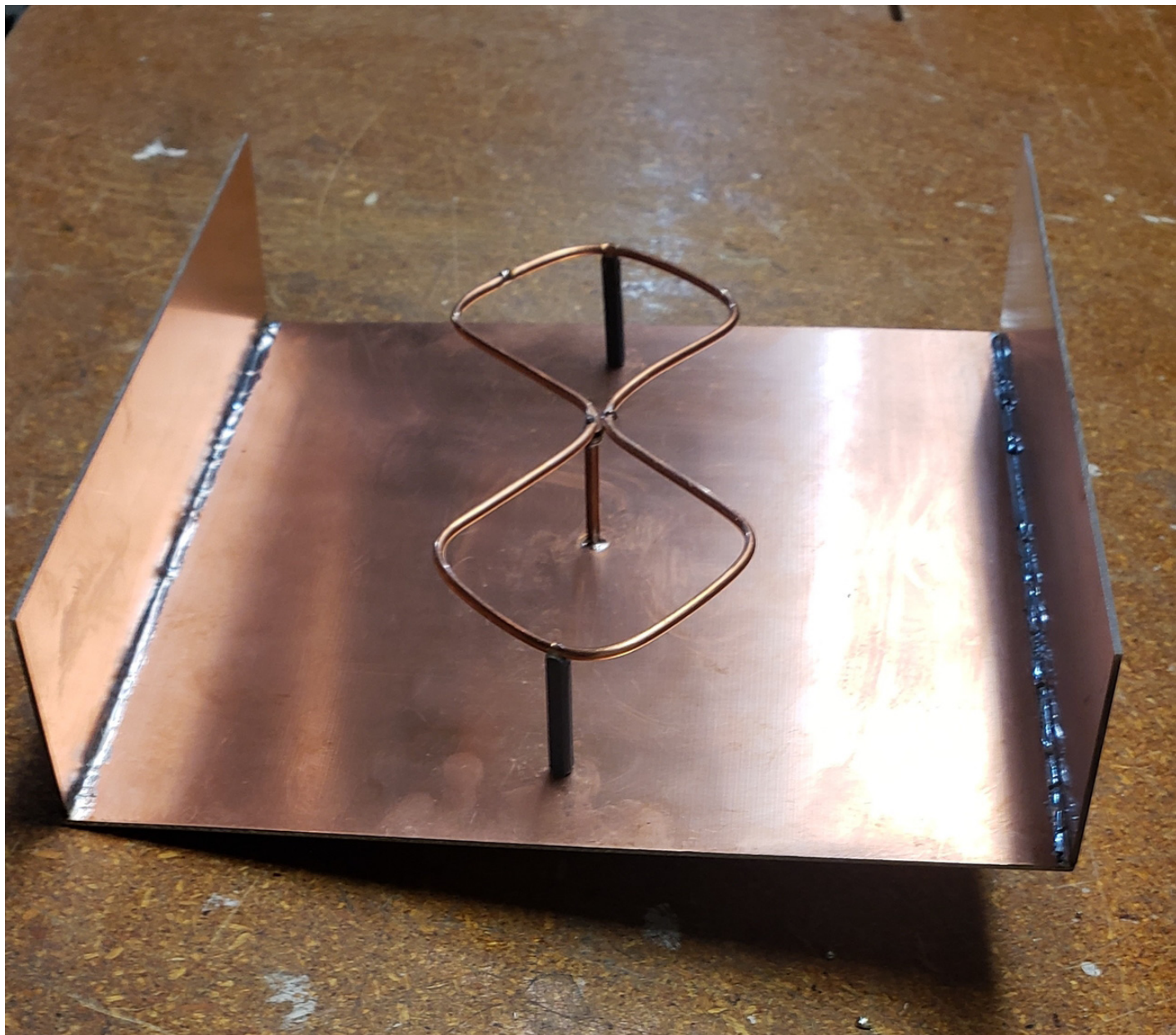




Return Loss With Side Panels



Dish used for this project is a 4-foot diameter offset feed



BiQuad Antenna With Side Panels



# EME Setup

EME Setup at N8GA Contest Site for the September ARRL VHF Contest





# MVUS Picnic

Additional Photo from the MVUS Meeting and Picnic



# MVUS Renewal

***Don't forget to renew your MVUS membership.***

Annual membership is:

\$12.00 for newsletter by Email

\$16 if newsletter by USPS

Or

\$240 for Life Membership with Newsletter by email

Make checks payable Midwest VHF / UHF Society and mail to:

Joe Muchnij, N8QOD

1214 Cottingwood Ct.

Bellbrook OH 45305

Memberships are prorated by month. So you can send any amount and Joe will adjust your membership accordingly

If you want to pay by PayPal you can send your renewal to Either Tom Holmes, N8ZM or Jim Bacher, WB8VSU and we will get your renewal to Joe.

Tom's PayPal account is: [tholmes@woh.rr.com](mailto:tholmes@woh.rr.com)

Jim's PayPal account is: [wb8vsu@arrl.net](mailto:wb8vsu@arrl.net)

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