

N.E.W.S. LETTER

The Official Publication of the North East Weak Signal Group – <http://www.newsvhf.com/>

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Issue 5

Next Meeting: September 28, 2019

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BOARD MEETING - 11:00 AM at Lulu's, 151 Hazard Ave. Enfield, CT

Phone: (860) 763-2377 I-91 Exit 47 Rt. 190E 1 Mile on Left

<http://luluspizzeria.com>

GENERAL MEETING - STORRS LIBRARY - from 1 PM to approximately 3:45 PM.

693 Longmeadow St, Longmeadow, MA 01106

<http://longmeadowlibrary.wordpress.com>

DON'T FORGET

The North East Weak Signal Group 2 Meter Net

Every Thursday at 8:30 PM local 144.250 MHz

W1COT, WZ1V or K1PXE Net Control

MEMBERSHIP in the N.E.W.S Group is \$15 per year.

Apply to John Crawford, N2OY. E-mail: n2oy.vhf@gmail.com.

You may download an application from our web page: <http://www.newsvhf.com>

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Send articles by e-mail to George Collins, KC1V at news.kc1v@gmail.com.

N.E.W.S. Picnic MDS/ERP Test Results 2019

Don W1FKF and the crew
donw1fkf-news@yahoo.com

MDS (Minimum Discernable Signal) and ERP testing on 10 GHz, 24 GHz and 47 GHz. To test for MDS, we set up a distant signal source. (320 ft.) After everyone has a chance to peak up on the signal, the signal level is reduced one dB at a time. At the point when you can no longer hear it, you have found the MDS for your system. You decide how well it works, and whether you can hear as well as Dale.

We also check relative ERP, transmitting one at a time and recording the relative power received at the distant point using a spectrum analyzer.



The Lineup – All the usual suspects were present.

| MDS/ERP Testing 2019 | | | | | | | | | |
|----------------------|-----------|-----------|--------|-----|------------|-----------|-----------|--------|-------|
| 10 GHz MDS | | | | | 10 GHz ERP | | | | |
| Call | Dish Type | Dish Size | Po Wer | MDS | Call | Dish Type | Dish Size | Po Wer | TX |
| AF1T | Prime | 24 inch | 10 W | -64 | AF1T | Prime | 24 inch | 10 W | -70 |
| WZ1V | Offset | 18 inch | 2 W | -64 | KA10J | Offset | 24 inch | 6 W | -73 |
| KA10J | Offset | 24 inch | 6 W | -63 | W1JHR | Offset | 18 inch | 3 W | -75 |
| K2AEP | Offset | 22 inch | 0.2 W | -62 | WZ1V | Offset | 18 inch | 2 W | -76 |
| W1FKF | Offset | 18 inch | 7 W | -62 | WW1Z | Horn | 22 dB | 0.3 W | -76 |
| W1JR | Offset | 18 inch | 2 W | -60 | K2AEP | Offset | 22 inch | 0.2 W | -92 |
| W1JHR | Offset | 18 inch | 3 W | -60 | W1JR | Offset | 18 inch | 2 W | -94.5 |
| WW1Z | Horn | 22 dB | 0.3 W | -52 | W1FKF | Offset | 18 inch | 7 W | |

| MDS/ERP Testing 2019 | | | | | | | | | |
|----------------------|-----------|-----------|----------|-----|------------|-----------|-----------|----------|-------|
| 24 GHz MDS | | | | | 24 GHz ERP | | | | |
| Call | Dish Type | Dish Size | Po Wer | MDS | Call | Dish Type | Dish Size | Po Wer | TX |
| KA10J | Offset | 18 inch | 4 W | -43 | N1JEZ | Prime | 0.5 meter | 1.75 W | -65.5 |
| AF1T | Prime | 12 inch | 2 W | -37 | W1FKF | Prime | 24 inch | 2 W | -67 |
| W1FKF | Prime | 24 inch | 2 W | -37 | AF1T | Prime | 12 inch | 2 W | -68 |
| W1JHR | Prime | 12 inch | 1 W | -37 | W1JHR | Prime | 12 inch | 1 W | -72.5 |
| N1JEZ | Prime | 0.5 meter | 1.75 W | -37 | VE2UG | Prime | 30 inch | 3 W | -79 |
| VE2UG | Prime | 30 inch | 3 W | -37 | KA10J | Offset | 18 inch | 4 W | |
| 47 GHz MDS | | | | | 47 GHz ERP | | | | |
| Call | Dish Type | Dish Size | Po Wer | MDS | Call | Dish Type | Dish Size | Po Wer | TX |
| AF1T | Prime | 12 inch | 30 m W | -90 | W1FKF | Prime | 12 inch | 40 m W | -46 |
| W1FKF | Prime | 12 inch | 40 m W | -89 | N1JEZ | Prime | 10 inch | 40 m W | -46.5 |
| N1JEZ | Prime | 10 inch | 40 m W | -88 | AF1T | Prime | 12 inch | 30 m W | -48.5 |
| KA1LEX | Prime | 10 inch | 0.03 m W | -80 | KA1LEX | Prime | 10 inch | 0.03 m W | -76.5 |

NEWS Meeting 13 July 2019 Minutes:

Picnic Knights of Columbus, Enfield, CT

President WA2AAU called meeting to order at 1349

Treasurers Report:

- Currently 112 paid members
- Balance \$2711

Old business:

- VHF Super Conference Report K1MAP: Joint conference with Packrats and SEVHFS, ~220 attendees, ~ \$12K in conference account - for weak signal activity, - CDs and T-shirts still available

New business:

- MOTION W1LE: Grants for microwave rovers.
- MOTION K1MAP: to TABLE Grant motion until next meeting – PASSED

Announcements:

- K2AEP - K2DLL beacons to move soon.
- N1JEZ - MT Mansfield 10GHz beacon is back on the air.
- K1MAP - Cape Hatteras beacon 144.282 at FM14ux is on the air.
- WA2AAU - 3456 Amps still available, willing to make group order.

Business meeting adjourned 1407

Buy, Sell, Swap

Don W1FKF

Formable .085 and .141 coax
 RG402 -- .141 - 15 ft, \$10.00
 RG405 -- .085 - 15 ft, \$10.00

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3D Printed Feedhorns for 10 GHz

Paul Wade, W1GHZ ©2019

www.w1ghz.org

3D printed horns have been shown to work quite well¹, and are not hard to make. The plastic horn is printed on a 3D printer, and then coated with metallic paint. There is a bit of technique involved in getting good conductivity, but Glenn Robb, KS4VA, described it well².

One problem is getting a coax connector attached to a plastic horn or waveguide. I have made circular waveguide transitions³ using 3/4-inch copper water pipe, and made feedhorns by fitting a metal corrugated horn onto the copper pipe. Why not 3D print the complicated part, the corrugated horn, and fit it onto a copper pipe transition?

I reviewed my previous feedhorn simulations and selected corrugated horns which provided good feed performance: one for offset dishes and one for prime-focus dishes. I modified the dimensions slightly, increasing the wall thicknesses for better 3D printing. A quick simulation suggests that the performance is not changed significantly. STL files for both horns are available.

The metallized corrugated horn should slip over the copper pipe. The offset horn should be adjusted so that the rim of the pipe forms a corrugation which lines up at the same angle as the others. The prime horn position is adjusted for different f/D – the corrugations should be nearly flush with the rim of the pipe for shallower dishes, and further back for deep dishes.

Getting the corrugated horn to slip over the pipe may take a bit of fiddling, as many 3D printers do not print to exact dimensions. For instance, my cheap printer prints about 2% undersize, so I adjust the scaling in the slicer program (I use CURA).

Many hams and most makerspaces have 3D printers. If you don't, there are also services that will print a file for a reasonable cost, and files for thousands of printable objects may be found at thingiverse.com.

Notes:

1. Paul Wade, W1GHZ, "3D Printed Horns," (Microwavelengths), **QST**, January 2019.
2. Glenn Robb, KS4VA, "3D Printing Microwave Antennas," *VHF Super Conference 2019 Proceedings*.
3. Paul Wade, W1GHZ, "Understanding Circular Waveguide—Experimentally," **QEX**, January/February 2001, pp 38-48.

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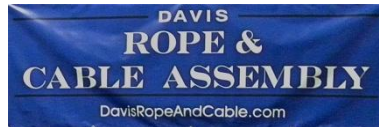
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47 GHz, 78 GHz

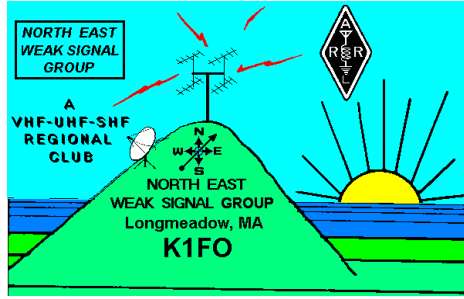
Upcoming Events

| | |
|-------------|--|
| Sept 14-16 | ARRL Sept. VHF Contest |
| Sept 21-22 | ARRL 10 GHz & Up Contest Weekend #2 |
| Sept 28 | NEWS Lunch and Board Meeting, Lulu's, Enfield, CT, 11:15am |
| Sept 28 | NEWS General Meeting, Storrs Library, Longmeadow, MA, 1pm |
| Sept 29-30 | ARRL EME Weekend #1, 2.3 GHz & Up |
| Oct 12-13 | NEAR-Fest - Deerfield, NH |
| Oct 27-28 | ARRL EME Weekend #2, 50-1296 MHz |
| Nov 23 | NEWS Lunch and Board Meeting, Lulu's, Enfield, CT, 11:15am |
| Nov 23 | NEWS General Meeting, Storrs Library, Longmeadow, MA, 1pm |
| Nov 24-25 | ARRL EME Weekend #3, 50-1296 MHz |
| Nov 30-Dec2 | ARRL 160-Meter Contest |

N.E.W.S. Group Supporters



QRPme PO Box 160 Limerick, Maine 04048 <http://www.qrpme.com/?p=contact>



MEMBERSHIP APPLICATION

Name: _____

Call sign: _____ Grid: _____

Street: _____

City: _____ State: _____ Zip: _____

Phone (home) _____ Optional (work) _____

Email _____

ARRL member: Y N

Electronic Newsletter Delivery: Y N

Operational Bands (circle) 50 MHz 144 MHz 222 MHz 432 MHz 903 MHz
1.2 GHz 2.3 GHz 3.4 GHz 5.6 GHz 10 GHz
24 GHz 47 GHz 76 GHz Light Other (list)

The North East Weak Signal [N.E.W.S.] Group is being established to form a camaraderie among fellow VHF-UHF-SHF enthusiasts and support a convenient means to exchange technical information. We currently have six meetings per year, held at a centrally located facility and provide a "NEWSLETTER" that is distributed two weeks prior to each meeting. Any contributions to this publication are appreciated and can be sent to: George Collins, KC1V by e-mail to kc1v@arrl.net. Dues are \$15/year. Remember, this group is formed by VHF'ers for VHF'ers.

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Check your membership
Expiration date on your mailing label!