

February 2024



The Airscoop

K8PL

From the Editor

This year the club decided to collect dues from members. I want to highlight some of the projects that our dues help support so that the club remains active and is able to support the community. There are some annual expenses that the club pays each year in order to remain active. We pay a \$200 liability insurance premium each year to maintain our liability insurance. We also pay a \$20 annual licensing fee to Michigan Department of Licensing and Regulatory Affairs to maintain our non-profit status. We also pay \$125.00 to the UP Steam and Gas Association to cover electricity and propane for the ham shack. This totals about \$345.00 in annual expenses in order to keep the club active.

I wish to thank all the people who have already paid their FY 24 dues. We currently have an additional \$180 in our checking account from dues this year. If every member paid their dues we would have about \$800 additional to use for ongoing projects or improvements for the club.

A new Yaesu Dr2X repeater was purchased and installed at the 147.15 site. We are asking for donations to pay for the new repeater rather than depleting our club funds. Please send your repeater donations to Dave Palmgren 6132 County 420 – 21st Road, Gladstone, MI 49837.

The 442.625 repeater is temporarily installed at the clubhouse it is a + shift and 100 hz pl.



The Saxophone Antenna: A True Dual-Band UHF and VHF J-Pole

A unique J-pole that covers the 144 and 440 MHz bands with excellent performance.

Kosta Kropivny, PhD, VA7KL

Building a J-pole antenna that performs well on the VHF and UHF bands can be challenging. The monoband collinear J-pole, or super J-pole, is an improvement of a regular J-pole. It combines two $\lambda/2$ radiating sections with a collinear phasing stub between them. However, if tuned on UHF, this antenna won't resonate on VHF unless you make the J element $\frac{3}{4} \lambda$ instead of $\frac{1}{4} \lambda$. Also, you can't get a 50Ω impedance on both bands when feeding the antenna from the bottom end.

Igor Goncharenko, DL2KQ, proposed a wire antenna at <http://dl2kq.de/ant/3-85.htm> (check your browser for Russian translation) that uses a $\frac{3}{2} \lambda$ radiating element on UHF and consists of two $\frac{5}{6} \lambda$ elements separated by a $\lambda/4$ phasing stub and a $\frac{3}{4} \lambda$ J element. DL2KQ proved that an impedance of 50Ω on both bands can be achieved by bending the J-element wire along its length. On VHF, this antenna works as a slightly shortened J-pole with the inductance of the phasing stub in the middle. On UHF, it works as a super J-pole with a $\frac{3}{4} \lambda$ J element. On both bands, this wire antenna radiates at low angles. However, it's narrowbanded, so it must be tuned to the desired UHF and VHF band segments.

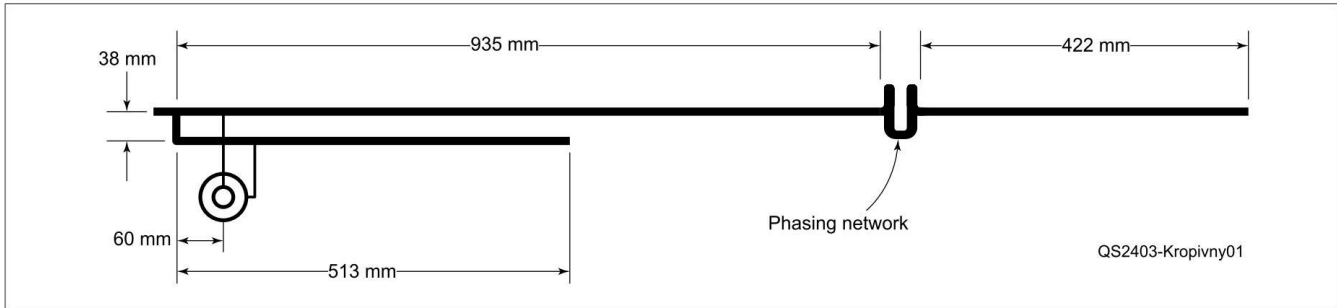


Figure 1 — Dimensions of the saxophone antenna. This drawing is not to scale.

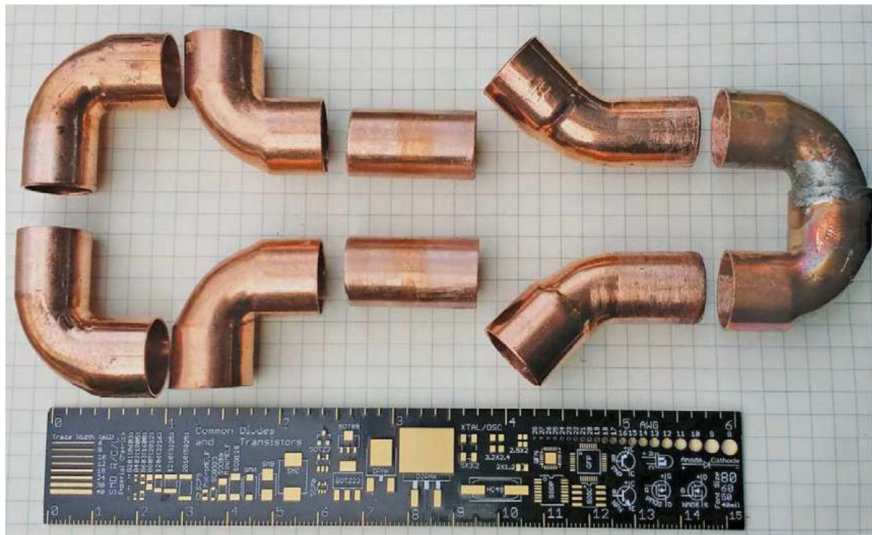


Figure 2 — Phasing stub components.



Figure 3 — The assembled phasing stub.

Parts and Construction

I've further developed this antenna with thick pipes using MMANA-GAL (<http://gal-ana.de/basicmm/en>) and building a dozen prototypes (see the lead photo). The optimal design of the dual-band UHF and VHF J-pole is shown in Figure 1. All of the measurements are from pipe center to pipe center.

The elements are made from a type-L copper pipe with an inner diameter of 1/2 inch and an outer diameter of 5/8 inch. You'll need a hot torch, flux, and solder, and you should solder the junctions outdoors or in a well-ventilated area. The RF N-type connector ground is soldered directly to the J element (as shown in the lead photo). Components for the phasing stub are given in Table 1 and are shown in Figure 2. The assembled phasing stub is shown in Figure 3. The dimensions are optimized for 146 and 446 MHz. The exact shape of the phasing stub is not very important, but its overall length must be 320 millimeters. This should work correctly when using the pipe fittings specified. The length of the phasing stub mainly af-

Table 1 — Copper Water Pipe with an Internal Diameter of 1/2 Inch and an External Diameter of 5/8 Inch

Quantity	Description	Lowe's Part Number
1	1/2-inch x 10-foot copper pipe	#LH04010
2	1/2-inch caps	#W 07007L
1	1/2-inch tee	#W 04006L
3	1/2-inch, 90-degree elbows	#W 01622L
6	1/2-inch, 90-degree female elbows	#W 01652L
2	1/2-inch, 45-degree elbows	#W 03326L
1	Female N-type connector	

fects the UHF resonant frequency. The VHF resonance is mainly controlled by the positioning of the feed point and minor bending of the J-element tip. I call this a saxophone antenna, as I think the phasing stub resembles part of a saxophone.

MMANA-GAL simulations show that this antenna has a low angle of radiation on VHF and UHF bands. Figure 4 shows one of these antennas installed on a

Secretary Report

The January meeting minutes were unavailable at the time the newsletter was published.

Treasurers Report

We have collected dues from 12 members. Thank you for sending in your dues for this year. Dues can be mailed to Jim Harsh N0OUR at 6604 N 3rd Street, Wells, MI 49894.

Website

I encourage you to check out our website www.k8pl.org for updated information. You can also check out our facebook page <https://www.facebook.com/groups/dcars.k8pl> for updates on current events. I will be working to develop a google chat account where people can post information and chat with other members.

Coming Events

Every Wednesday Noon Gathering at the Hong Kong Buffett

Feb 19 DCARS Meeting at 7pm

March 2 Breakfast Gathering at the Family Inn

April 13-14 AUXCOMM Training at the Quality Inn see flier below <https://mi-arpssc.org/wp-content/uploads/2024/01/Escaanaba-Announcement.pdf>

AUXCOMM Training Announcement



When: Saturday–Sunday, April 13–14
08:00am–06:00pm

Where: Quality Inn & Suites
2603 North Lincoln Road
Escanaba

Prerequisites:

- FEMA Independent Study IS-100, 200, 700, 800 (most recent versions strongly encouraged)
- Sponsorship from a public safety agency
- Willingness to work with a Communication Unit Leader (COML) in a NIMS/ICS environment



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