Next Monthly Meeting: Friday April 26 6:30 PM at the MCL Cafeteria in Kettering .
Meeting is always the 4th Friday of the month except for when impacted by holidays
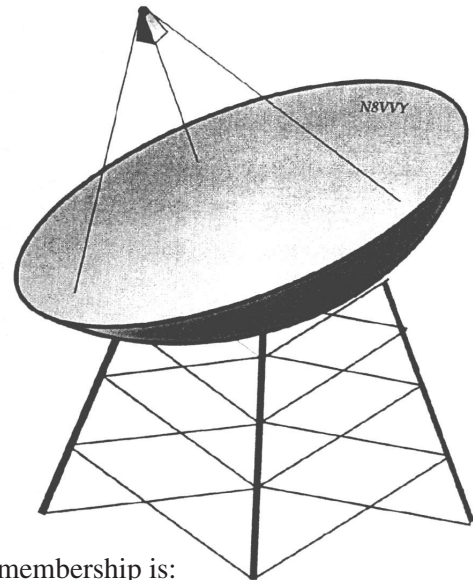
ANOMALOUS PROPAGATION

March 2024

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) or click on this link to get the Word format Template. Thank you!

Annual membership is:

$12.00 for newsletter by Email
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1214 Cottingwood Ct.
Bellbrook OH 45305

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Midwest VHF & UHF Society
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De N8ZM

It was a bit exciting around these parts last Thursday evening. As you probably saw on the news, central Ohio was hit with several tornadoes, which took 3 lives and did quite a bit of damage. I haven't heard of any MVUS members who were affected, but if you were, I am sorry for your loss and certainly offering any assistance with radio related help you might need. Part of ham radio has always been helping each other out when needed. I think that is something which is at the heart of MVUS's culture (We have culture? Who knew? And which explains our continued existence. That might actually be a requisite core value for any organization needs to survive. Anything else we do as a club depends on us working together towards a goal, whether for the club, or just helping out our friends. I often hear someone ask a question about a technical problem, or needing a part, or some help with a project, and almost every request is met with a response offering info, parts, or assistance. It doesn't get much better than that!

In the continuing Hoke Road Water Tank saga, Mike, W8RKO, and I visited there a few days back, and met with the guy responsible for the tower, and several people from the local Fire Department. The purposes were to scope out what might have changed since the repainting, and to become familiar with the new fall arresting apparatus. The biggest change was that the cage around the long vertical ladder has been removed and replaced with a fall arresting cable, an OSHA standards thing. As the cables going up through the central shaft of the tank had been strapped to the cage, we were concerned when we learned it had been removed. The good news is that the ladder itself is mounted on 6" stand-offs from the wall, which gives us anchor points for any cables we want to hang. Other good news is that we will be almost the only ones on the tank, except for the local police/fire repeater, which strangely is still on VHF and UHF frequencies. The tank folks are quite happy to let us put up whatever we want. WOW!

The training session was mainly for a couple of the FD guys to get familiar with the fall arresting harness and apparatus, so they made a trip to the top and were kind enough to take pictures for us; very helpful. The FD keeps a couple of body harnesses on site and gave us permission to use them whenever. Really nice of them. Mike has his own approved body harness, so we could send three guys up if needed. Now to get the beacons ready to go!

Hamvention will be here before we know it, so I hope you are all getting ready to indulge in whatever aspect of the hobby fascinates you. MVUS will have our meeting place in the flea market again this year, same location, so swing by and say hi! We plan to have a few items for sale donated by members which might be useful in your shack. We don't need the money; we just want to find loving new homes for these items rather than filling up a dump somewhere.

The meeting this month is on the 22nd, the 4th Friday as always. Don't be confused by this being a 5 Friday month!.

de N8ZM

Frequency Measurement Test

Author: Mike Suhar, W8RKO

The Frequency Measuring Test will be conducted on Wednesday, April 24, 2024, starting at 03:00 UTC (Tuesday, April 23, 23:00 EDT).   Transmissions will be conducted on 40 and 80 meters by Connie, K5CM, and Mike, W8RKO.   Transmissions will consist of a 4-minute CW call up, followed by 1-minute key down.   See the following table.   For details see the April 2024 issue of QST on page 61. Report results to http://fmt.arrl.org no later than 0200 UTC, April 27.

K5CM   (near 7064 KHz)

03:00 UTC   Call up

03:04 UTC   Key down

03:05 UTC   End 40-meter run

W8RKO (near 7065 KHz)

03:15 UTC   Call up

03:19 UTC   Key down

03:20 UTC   End 40-meter run

K5CM (near 3598)

03:30 UTC Call up

03:34 UTC Key down

03:35 UTC End 80-meter run

W8RKO (near 3599)

03:45 UTC Call up

03:49 UTC Key down

03:50 UTC End 80-meter run

ka9q-radio and RX888: A new kind of SDR

Author: John Ackermann, N8UR

I've been learning to use a new software defined radio hardware/software solution that's quite different than anything we've seen before. Phil Karn, KA9Q, has written a client/server based system that splits the receiver into two pieces: the server connects to a receiver via USB and sucks in a wide chunk of RF, while many virtual receivers ("clients") can tap into the parts of that stream they want. The server and client can be run on the same computer, or can be on different hardware running on the same LAN.

At present there's no GUI console with waterfall display, but for specific applications like monitoring multiple WSPR or FT8 frequencies, or monitoring multiple FM repeater frequencies, it's remarkably capable. (It's also far from plug-and-play at this point and runs only on Linux.)

The software is called ka9q-radio it's open source (of course). It works with all kinds of receivers such as: Airspy, RTL-SDR, Funcube Dongle (obsolete), and RX888.

The RX888 Mk2 receiver is also different than other SDRs. Most software defined radios have a large FPGA that does digital signal processing to filter and send maybe a

couple of MHz at most of spectrum to the host computer. That used to be necessary because general purpose computers weren't fast enough, and USB connections weren't fast enough, to process the entire HF spectrum in one gulp. But with much faster processors and USB3 handling up to 5 gbit bandwidth, that's all changed. The RX888 is nothing but a fast 16-bit analog-to-digital converter connected to a USB3 interface. It sends the entire 30 MHz HF spectrum to the host computer and all the processing is done there; the 16 bit ADC means that the dynamic range is very good. The RX888 Mk2 is available on Amazon and eBay for about $250. A big advantage of this approach is that big, fast FPGAs are still expensive, and not many folks can program them. By putting all the processing in the PC, that cost and complexity goes away.

Combining ka9q-radio with the RX888 provides a radio system that can receive literally hundreds of channels simultaneously and feed them to multiple outputs which can independently process them into audio, digital forms. The server and client talk to each other using the Real Time Streaming Protocol (RTSP) which is widely used for audio and video streaming within networks.

We're using an RX888 and ka9q-radio at the Flatfoot Road N8GA site to monitor all the LF/MF/HF WSPR, FST4W, WWV, and CHU frequencies simultaneously and send spots to the WSPR reporting network. I think there are currently over 25 virtual receivers, each feeding its own client program that processes the data. It all runs on a "BeeLink" Ryzen 5 PC running Linux. It's a tiny little box that handles the load easily and costs about $250.


We need that fast system because of the many channels we're monitoring. But you can run ka9q-radio for simpler tasks on a smaller or single-board computer. A Raspberry Pi

4 will just barely run the full 30 MHz bandwidth of the RX888. An Rpi 5 should handle it easily. The bottleneck is more likely to be the USB throughput than the CPU.

At home I'm running an RX888 and Airspy R2 both connected to an older Lenovo i5 tiny-form-factor computer. The screenshot below shows the server running in the right-hand window, and the two left windows are on my desktop PC. One of them is listening to four local AM stations, and the other to all the WWV and CHU frequencies. If I want, I can have audio from all of them coming out the speaker at the same time (that's usually not a good idea…).
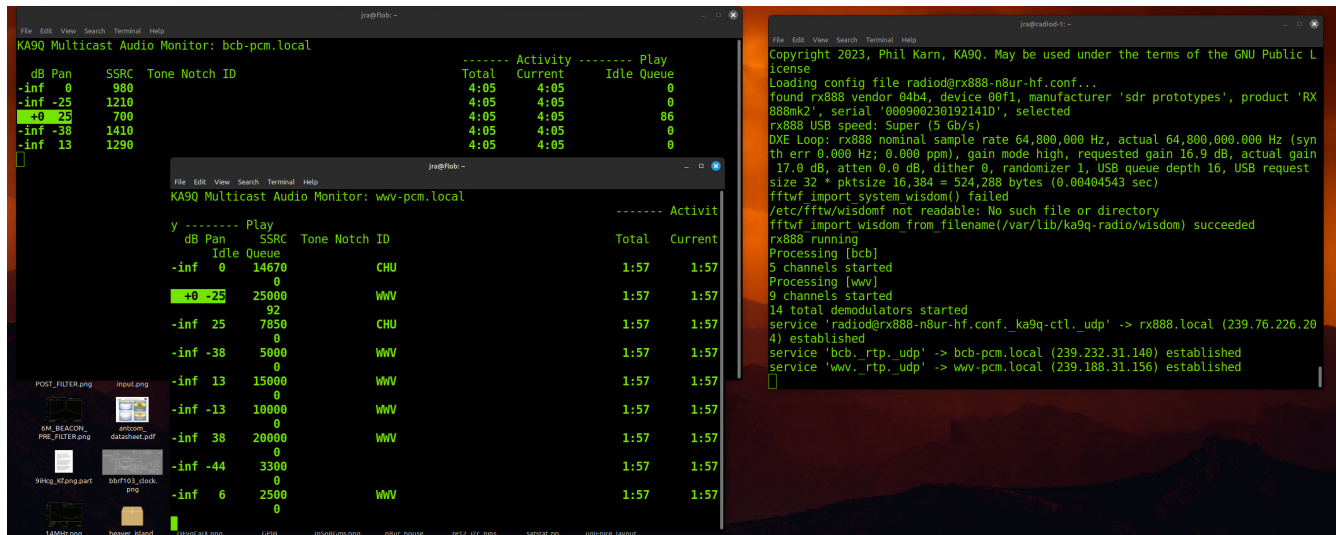
I think I could have both the RX888 and Airspy receivers operating at once, but I haven't gotten quite that far yet.

ka9q-radio is definitely not yet a general-purpose SDR, but it's already being used in a number of applications like WSPR decoding, 2M repeater monitoring, and propagation measurements. I hope that it won't be too long before there's a GUI client program, similar to HDSDR, that will allow more general use. There is currently a very rudimentary webSDR server but it needs a lot more work to be really useful. I think that HDSDR currently supports the RX888 hardware, but directly and not through ka9q-radio.

The software is changing so rapidly that there's not much current and complete documentation, but Tom McDermott, N5EG, has posted a series of YouTube videos about it that provide a good overview and example of what can be done. You can find them here: https://www.youtube.com/channel/UC6doPJliBMPjnpZCbqt9yIg

John Ackermann N8UR

jra@febo.com

MVUS Renewal

Don't forget to renew your MVUS membership.

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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

> Jim's PayPal account is: wb8vsu@arrl.net