



Official Publication of the
West Allis Radio Amateur Club

Hamtrix

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Volume 71, Issue 2 February, 2022

FEBUARY CLUB HAPPENINGS



NUT NET

3.985mhz

Monday-Saturday

8:15am CT

NUT NET

Breakfast

8:30am fourth

Tuesday

of the month

Milwaukee-Florida Net

Every Day on 14.290 Mhz

7:00AM - 9:15AM ET

6:00AM - 8:00AM CT

Sunshine Committee

If you know of a member who could use a bit of cheer or support,

Barb Garnier (KD9HPS) is now the Sunshine Committee Chair. Contact her: 414-529-3536 or barbsewsblue@gmail.com.

ELECTION OF OFFICERS

Meeting

February 9, 2022 7pm

New Berlin Community Center

14750 W. Cleveland Ave.

New Berlin, WI

Between Moorland and Sunnyslope

Measuring SWR with a NanoVNA

Frank Humpal KA9FZR

Premeeting dinner

New Berlin Ale House 5:15pm

16000 W. Cleveland Ave

West of Moorland Rd.

2022 Challenge for our membership. Have someone you meet Ham or Ham wantabe come to a meeting this year

The Club election of Officers will be held at this meeting.

We have no candidates for President

The Club needs YOU!

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Editor's Corner

February is here with its normal weather (who knows what it will be)! Last week when the temperature went above freezing, I finished the screwdriver antenna we will be using for the Wisconsin QSO party next month.

The need was for an antenna that would give us 20, 40 and 80 meter bands in the CW portion. The antenna we had for the IL QSO party did not cover the 80 meter band. I had a 108 inch antenna that would do 80 meters but stuck up over 17 ft in the air. A little high if you didn't want to hit bridges!

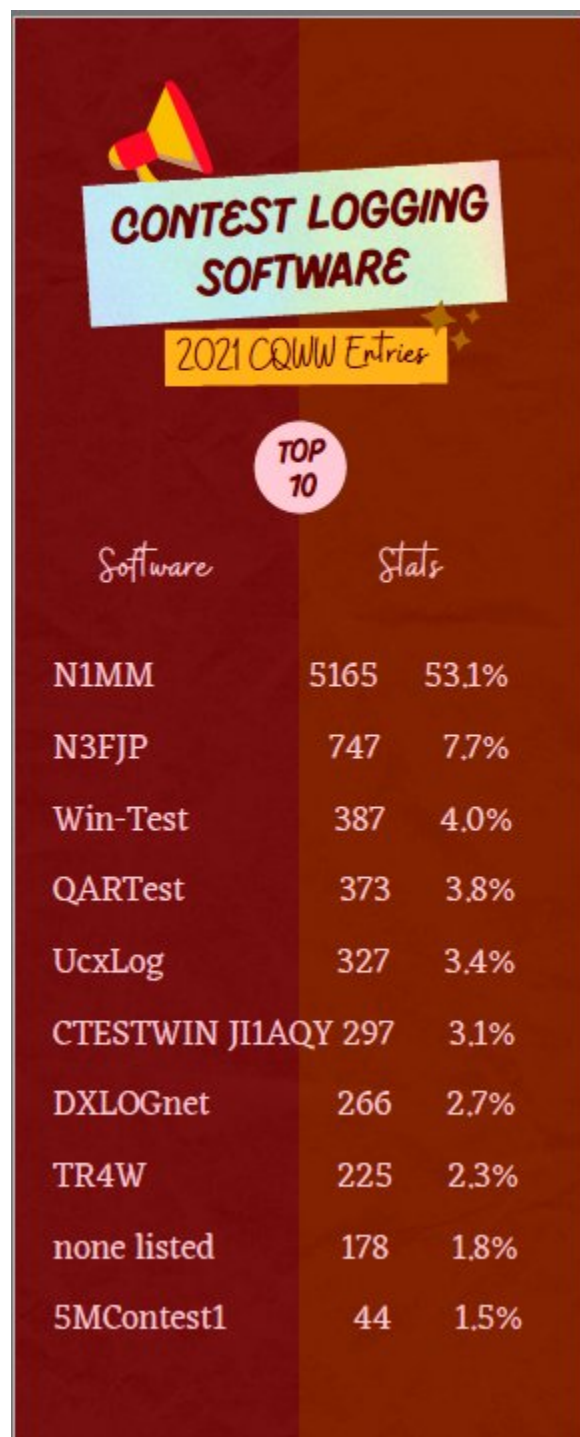
So out with NanoVNA tester and the antenna cutting equipment and to work. After a little work I was able to take some length off the antenna and still be able to operate in the bands we needed and not hit bridges as it were..

Still need to test drive it one of these days. Nice to have a whole month rather than the one day to the QSO party.

At our board meeting Feroz mentioned what I thought was a good idea. A challenge for each club member. Try to invite a person to a meeting. I think we have a great club with great people so it should be easy HI HI

73

Frank KA9FZR



WARAC Club Meeting Minutes – January 11, 2022

Virtual club meeting by Zitsi was called to order at by David Garnier, WB9OWN at 7:05 PM

Attendance was 15 club members and no visitors noted.

Club Program: – Sewing, cutting out sewing patterns with LCD projector by Barb KD9HPS.

The inexpensive LCD projector used was ViViMAGE Explore 2.

https://cdn.shopifycdn.net/s/files/1/0251/4350/9101/files/Explore_2_detailed_user_manual_EN_V1.02.pdf

Minutes of from December 12, 2021 club meeting were approved.

Time to renew club dues! Payment can done online through PayPal as: **WARACPP@WARAC.ORG** – Note, select payment type as “Friends or Family.”

Remote Radio (RR) proposal was discussed by the RR sub-committee. A capital working budget is still an unknown somewhere between \$4-6K. But an additional cost has surfaced, a new internet connection require 3 year commitment. This became a possible show stopper for RR committee. Given that the club is out of Hamfest business and Sendik’s fundraising nets very little income, a proposal was made to the club membership “To table further Remote Radio project activity at Joe’s N9JOS until a later date.” A nearly 100% show of hands voted in favor of stopping project activities.

Field Day Status by Dave WB9OWN. No Milwaukee, Waukesha or Racine County picnic shelters were available. Richard Bong State Recreation Area in Kenosha County was deemed undesirable by membership. Mike & Frank had done a park activation at DJ Mackie Picnic area and liked the area. It turns out looking closer at DJ Mackie Picnic Area it has a Shelter with AC power and restrooms and was secluded; this met our needs. I made the reservation and paid for it.. (DJ Mackie Picnic Area is located in Southern Kettle Moraine unit nearby HW 67 & County Rd ZZ).

Slow speed CW net is meeting Mondays at 8pm. WB0AFB repeater 147.045 is being used for net coordination frequency. All are welcomed.

Election of club President was discussed Nobody has stepped forward to assume this position.

Meeting ended @ 8:17pm

Respectfully Submitted

David Garnier WB9OWN

Secretary WARAC, January 24, 2022

WARAC Quarterly Board Meeting - January 25, 2022

A quarterly board meeting was called by Bill Reed, this meeting was a virtual meeting via Jitsi
<https://meet.jit.si/waracBoardJuly2021>

The board meeting was called to order 7:18 pm by Bill Reed N9KPH.

Officers Board Members Present

Frank Humpal KA9FZR, Feroz Ghouse WU9N, Dave Garnier WB9OWN, Tom Macon K9BTQ, Phil Tollefson WA9AQL.

Visitors present were Howard Smith WA9AXQ

Meeting began @ 7:18pm

Meeting Agenda -

Treasure's Report

- One CD was liquidated (1/3/2022) and transferred into the clubs scholarship fund to increase ARRL Endowment (scholarship) Fund.
- Sale of club's TS2000 is imminent per Mike Johnson WO9B.
- Mike Johnson WO9B has volunteered to do the yearly financial records review. TU Mike!!!
- Treasure's report was approved and seconded.

Remote Radio Status MSOE

- Dave WB9OWN has been in contact with Richard Phillips AA9L, he has FLEX networking issues between buildings, I'm waiting for callback. Note, some of the board desire to do "reach outs" to other organizations to nurture future relationships. This needs further definition and manpower.

Other business updates

- QSO Party status, no activity at this point.

Sendik fund raising 2022 is proceeding, Frank KA9FZR is going to reach out to them and attempt reservation of 2 stores. Looking for the same volunteer slots, weekend before Memorial Day and weekend after Labor Day.

Field Day update

- DJ Mackie Picnic Shelter area reservation price was \$87.95. Saturday operation only.

Direction of the club

- Board to resume monthly club presentations. Ideas anyone???
- New club goal. Can each each of us bring in one new member a year?
- February program – NANO VNA

Meeting Ended @ 8:30pm

Respectfully submitted,

David Garnier WB9OWN

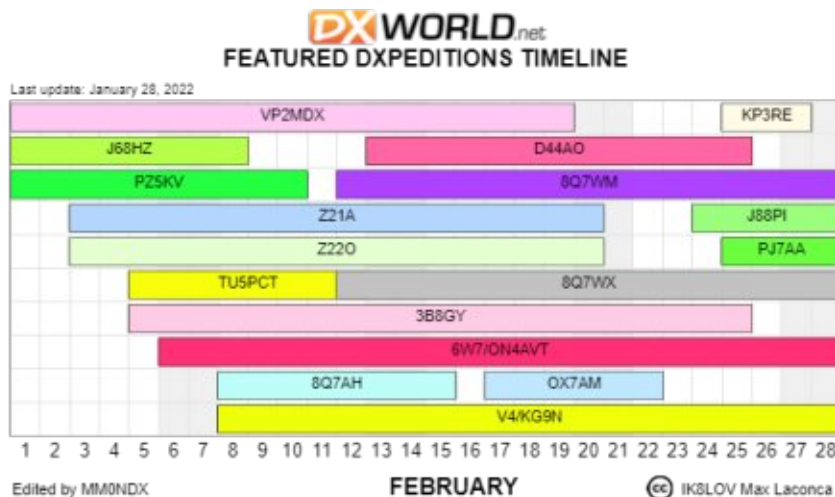
Secretary WARAC, December 5, 2021

Big Al's DXing and Contesting – February 2022

DX UPDATE:

A BIG THANK YOU goes out to WO9B (Mike Johnson) for producing this column in Hamtrix for the past few years. After a little arm twisting I agreed to give it a try. His shoes will be hard to fill.

DX WORLD has a great chart that I will continue to use (on your right). Most current DX activity is listed there. As DXpeditions appear I will highlight them.



Solar Cycle 25:

The predicted length of Solar Cycle 25 is now 14 years long. The average is 11 years. If it stays as predicted this would be the longest in recorded history. (Check out the sunspot activity on the right – high)



Contesting:

- VT QSO Party - 0000Z, Feb 5 to 2400Z, Feb 6
- MN QSO Party - 1400Z to 2400Z, Feb 5
- BC QSO Party - 1600Z, Feb 5 to 0350Z, Feb 6 and 1600Z – 2359Z, Feb 6
- EU Union DX Contest - 1800Z, Feb 5 to 1800Z, Feb 6
- ARRL School Club Roundup - 1300Z, Feb 14 to 2359Z, Feb 18

For ALL contests in February check the link below.

<https://www.contestcalendar.com/contestcal.html>

Special Event Stations that might interest you:

- 8N1MORSE - celebrating 230th birthday of Samuel Morse and other landmarks in CW until Feb 28
- 64 Belgian (ON) stations celebrating the 75th anniversary of UBA (Belgium's national IARU Society)
- LX5MF - Commemorating the birth of Michael Faraday until March 26
- OH0100AX - 100th anniversary of Aland Islands
- VR90ABC - 90th anniversary of the Australian Broadcasting Corporation (all year long)
- GB100 BBC - celebration 100th anniversary of the British Broadcasting Corporation (all year long)

For more special event station listings (there are many) check out:

<https://www.425dxn.org/index.php?op=wcal>

If you have further ideas or suggestions for this page please let WA9BZW (Al) know.

hoveyal@gmail.com or wa9bzw@arrl.net



Feb 2022 * Hamtrix * By Michael Johnson, WO9B

BM Hoseline

BrandMeister is arguably the most popular DMR network. Last count they had 1606 Talk Groups to choose from. That's a lot of DMR Talk Groups. Previous articles allude to finding those groups that are of interest to you. Aside from geographical and language basis, another really good criteria is to go where the action is. The BM folks have indeed provided some assistance in that regard.

If your goal is to jump in and start talking to someone, it is hard to beat TG 91 World Wide or TG 93 North America. Both are English language groups and someone is there to talk to virtually 24 hours a day. It can be a little much, but they are most definitely busy. Also, they are invariably available on local DMR repeaters. You might want to exercise some discretion in activating them on the repeater, but you absolutely can. Another good choice is TG 3100 USA Bridge. Not quite as busy, but very active for sure. This TG seems to attract a range of hams and can generate some pretty good discussions. It is not just HI and BYE as found in the World Wide TG's.

As we are in WI, don't forget to make your presence known on TG 3155 Wisconsin. There are also some decent WI subgroups to keep tabs on as well: TG 31551 WI Fusion and TG 31555 WI-DMR are also modestly active. Both are cross-mode TG's so they have appeal and hence users in other digital modes that you can find there. The 31551 has some regulars from the Ozaukee RAC that show up all the time.

As I indicated in the opening, BM does have a recently refined facility to assist you in your search for active TG's and possibly those groups that might be of interest to you. It is called the BM Hoseline and it is accessible from virtually any internet browser. The URL is <https://hose.brandmeister.network/#/> and it looks like the following:

It is highly configurable to your specifications, but it basically shows active TG's and even plays the audio from those groups. Rather than run through the list of features in this article, BM has put together a short how-to / what's new page that does a great job of getting you up to speed on this very very helpful tool.

<https://news.brandmeister.network/new-hoseline-with-stunning-new-features/>

I've spent some time on the new Hoseline. It is very impressive. Good job BM.



Next Month: Anyone APRS

Radio is Magic

- If you aren't impressed by the fact that you can wobble a few electrons in a wire and thereby wobble a few electrons in a wire half way around the world, you have no soul.

Recent FCC Proceedings News FCC REAFFIRMS \$2.8 MILLION FINE OF DRONE DEVICE MARKETER

<https://docs.fcc.gov/public/attachments/DOC-373369A1.pdf>

The story gets way better: Don't plead ignorance and give FCC the middle-finger!

MEMORANDUM OPINION AND ORDER

<https://docs.fcc.gov/public/attachments/FCC-21-76A1.pdf>



Nut Net Breakfast to start, AGAIN

Several years ago there was talk among Nut Net members that we should get to meet each other. A breakfast get together idea was started. It was open to all hams, XYL/partners and anyone who wanted to learn about amateur radio. Even visiting OM/XYL couples joined us.

So, on the fourth Tuesday each month at 8:30 am we will once again meet at Gensis Restaurant, corner of HWY 100 and Beloit Road, Greenfield, WI. Looking forward to seeing you, mark your calendar.

Phil, W9NAW

The Ozaukee Radio Club presents its 42nd Annual Spring Indoor
Amateur Radio, Electronics & Computer



SWAPFEST



Saturday, April 30, 2022 – 8 AM to 12 PM (Setup begins at 6 AM)

featuring TOWER ELECTRONICS!

Columbia St. Mary's Center – W67N890 Washington Ave., Cedarburg, WI

Talk-in: 146.97 – PL 127.3



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Use Order Form below, email, or call Tom Trethewey, KC9ONY at 262-421-6351

Email: swapfest@ozaukeeradioclub.org

For Advance Tickets, send check with self-addressed stamped **Business-Size Envelope** to:

Tom Trethewey, KC9ONY – W69N905 Evergreen Ct N, #202, Cedarburg WI 53012

Admission Tickets just \$5 (Please make checks payable to ORC)

Company Name: _____ Phone# _____
Contact Person: _____ Call Sign: _____
Address: _____ e-mail: _____
City: _____ State: _____ Zip: _____
No. of Tickets: _____ X \$5 = _____ Electricity: Yes (Add \$5) _____ No _____
No. of Tables: _____ X \$10 = _____ Total Amount Enclosed: _____

(For Official Use Only)

Ticket(s) # _____ Table(s) # _____ Init: _____

Date: _____ Time: _____ Vendor Entrance Used (Circle one): 1 2 3

QDX Digital Transceiver Kit

Michael Johnson, WO9B

Every once in a while something pops out of the noise that grabs your attention. The QDX Digital Transceiver had that effect on me. This one fell right into my “Must Have It” category. I am fortunate that my news feed picks up this sort of item as without the advance notice, I’d still have my nose pressed to the glass standing in the waiting line.

What is the QDX? It is a very small digital transceiver kit, about the size of a deck of cards, from QRP Labs. These are the same folks that sell the QCX CW radio which was the must have kit a year or so ago. Their latest creation builds on the same cutting edge technology to create a very versatile radio aimed at the WSJT-X modes (FT8, FT4...) as well as other digital sound card modes.



The QDX operates on the 20/30/40/80 meter bands at approximately 5W output and can be powered by a 9V or 12V battery, your choice. It has a built in sound card, USB serial COM port, internal VFO and is completely controlled via CAT commands from your attached computer. Literally, by plugging a laptop into the USB port and an antenna into the BNC, you’ve got a complete, ready to go digital station.

It is sold as a kit, so there is a bit of assembly. I managed to nibble away at mine over the course of three or four days. It was not terribly difficult, but I stumbled a bit on the toroids and I also wanted to be ultra careful not to mix up any part placement or fat-finger the soldering. The extra time paid off and the kit was fully operational upon completion. That has never happened to me before. Maybe my luck is changing.

As you can see from the picture, while the parts are pretty small, they are all thru-hole type components. All the SMD’s are pre mounted on



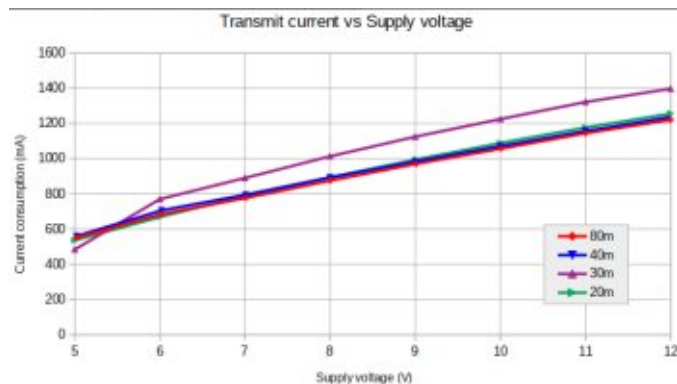
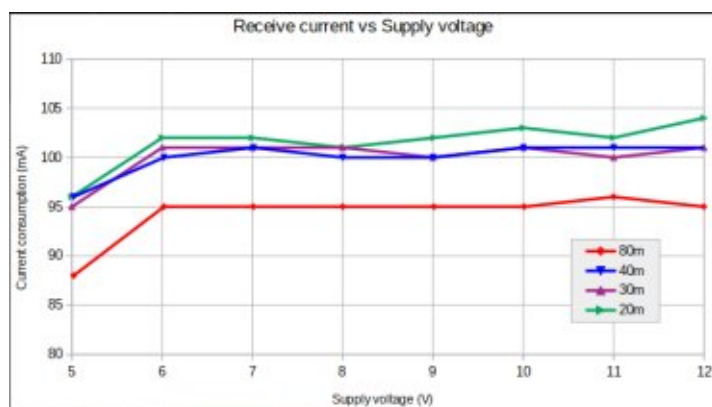
the board so the skill level needed is actually modest and if you have a decent soldering iron and digital multimeter, you will be all set. The only issue I had was the 22 ga magnet wire for 3 of the toroids I found to be not to my liking. I substituted wire I had on hand which I thought was better quality. Unlike some kits, magnifying goggles were not needed as there was ample space for the parts and the tip of the soldering iron. I did mess up a couple of connections, but some copper braid corrected that quickly. The instruction manual was well written and easily followed. The pictures of the finished unit show the optional aluminum

DX Digital Transceiver Kit (Continued)

enclosure. It is very nice and for the \$20 price, well worth the money. It fit the PC board and connectors perfectly.

So what attracted me to this device was a combination of size, performance and capabilities. My typical go-kit consists of a Mountain Topper QRP radio, a couple of 1.1 Ah LiFePO4 batteries and an end fed antenna. The radio and antennas are designed to operate on 20 and 40 primarily. With a little work, 30 meters can be added to the end fed. The QDX is made to order with my equipment list. Adding a laptop is all that is needed to bring an FT8 capability to the park on Wednesdays. Geez, it sure has gotten easier.

The whole operation banks on the power draw of the QDX since I am using very small batteries. I have found the 1.1Ah batteries provide literally months of power for the Mountain Topper radio, which draws about 700 ma on transmit. The QDX stated power requirements fit in that same range. The receive current is 100 ma and the transmit current is about 1200 ma. That gives me 2 to 3 hours of relatively heavy use FT8 time on a single battery.



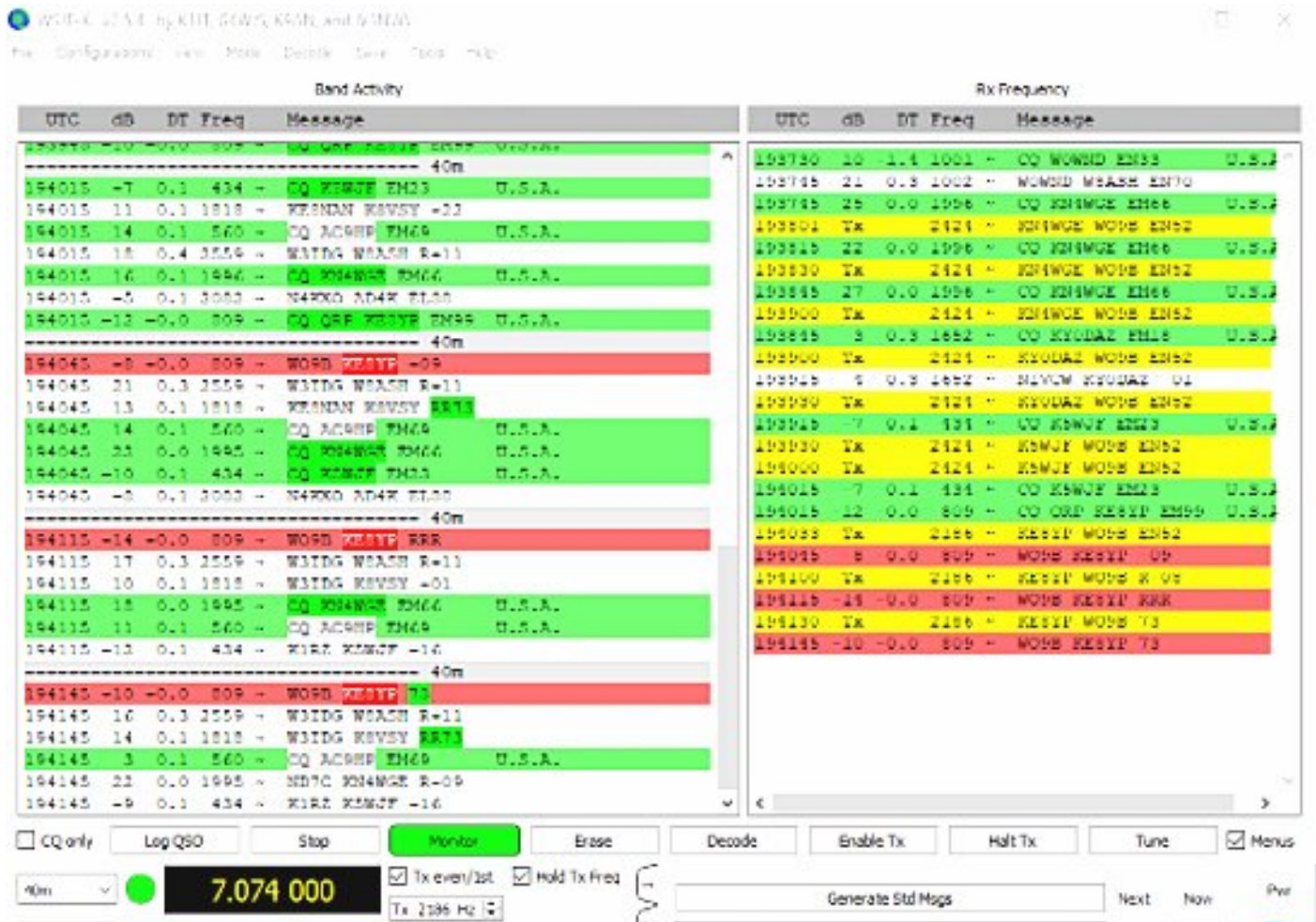
This is a remarkably efficient transmitter which is obtained by using a single carrier, frequency modulation rather than generating a SSB signal. There is no carrier or sidebands being generated, just a modulated tone received from the computer, synthesized into the correct RF frequency. This is then amplified via a Class C non-linear amplifier. This method results in a very efficient transceiver design and significant power savings. QRP Labs has been at work on this technique for several years. The QDX is the latest amateur radio product to take advantage of this type of architecture. Their QCX CW monoband radio, as mentioned previously, has been highly successful. Similar expectations are in play for the QDX.

So, having gone through the construction and sweating over solder joints and circuit board bridges it was time to put the QDX to the test. I opted to go full throttle and just connected the battery with my fingers crossed. To my complete amazement, all went well. I was met with the obligatory fast flashing LED which changed to solid in the expected 5 seconds. Viola!!!

Getting it on the air was stupidly simple. Battery, antenna, USB. Setting up WSJT-X was simply a matter of selecting the correct radio (TS-440) and the right sound inputs (conveniently labeled QDX). You do need to determine what COM port is assigned, but even that was straightforward. The good news is the QDX does

not care whether you are using a linux, mac or windows computer, so setup and operation are similar for any operating system.

Well the proof is in the screenshot. I have had it running for just a day or two. I've easily made FT8 contacts, keeping in mind my 5 W is competing against some really big signals. But I am getting through and having a great time doing it.



I have not spent much time figuring out the limits of the QDX. It should be able to operate multiple digital modes, but I have yet to journey down those paths. I noted on the website that someone had success with FLDigi and RTTY. That sounds very promising.

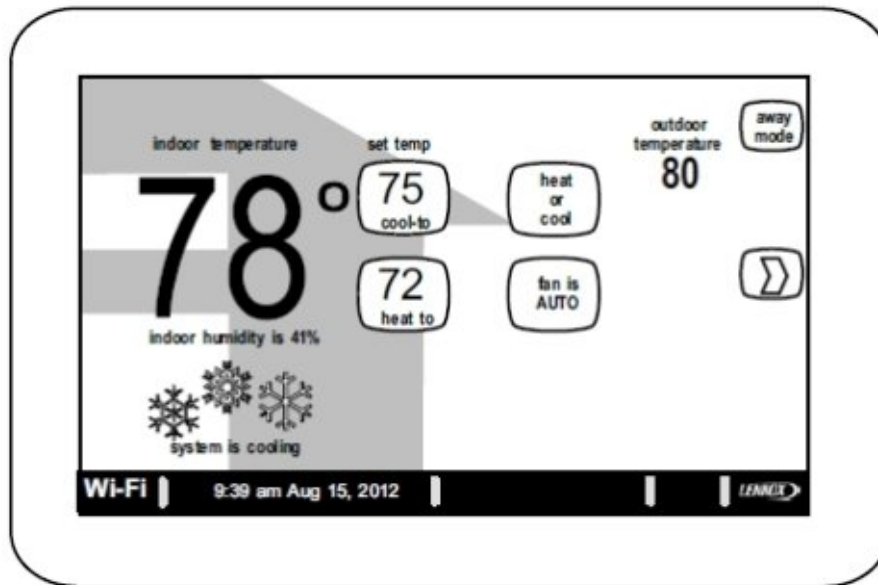
To wrap up, if the above has tweaked your interest, go check out more information on the QRP Labs website: www.qrp-labs.com The kit costs \$65 so it is not a budget breaker by any means. Adding in the enclosure and shipping gets you pretty close to \$100. The kits are out of stock at the moment, but QRP Labs does a good job of keeping you informed via their help forum on their Groups IO QRP Labs group.

• — • — •

Secretarial Musings – Deceased iComfort Thermostat – Dave WB9OWN

Sometimes life has to hit me upside the head to remind me, Ham-Radio isn't my life driving force, other electronic problems take priority too.

Couple months ago the furnace thermostat wallbox, **Lennox iComfort WiFi**, began loosing time and date. After this happened a couple of times I began to suspect if the iComfort thermostat battery was dying, this does happen to PCs.



Last week the thermostat finally went belly up. The back light LCD panel was slightly lit and repeated power cycling of the furnace didn't restore functionality. Without air conditioning everyone going to be uncomfortable when hot weather returns.

Removing the thermostats rear cover caused an odyssey of discovery, things were a lot more complicated that I imagined. (Gone are the days of bi-metal spring thermostat.)

The Lennox furnace system communicates on something called the "iComfort bus" for communication between the thermostat, furnace and air conditioner peripherals.

https://resources.lennox.com/pdfs/owners/wifi/Lennox_icomfortWiFi_Homeowner_Manual.pdf

The homeowner & installation manuals describe wiring connection but nothing on iComfort bus itself. I got lucky when I did a patent search. <https://www.pat2pdf.org/>

US Patent 20100115364 defines the iComfort communication protocol and states it's implemented on the Bosch 2.0 CAN bus (patent also refers to as "residential serial bus" RSBUS.)

(Hum, the level of complexity here, "What did I get myself into?")

I removed the rear cover and this is what I found.



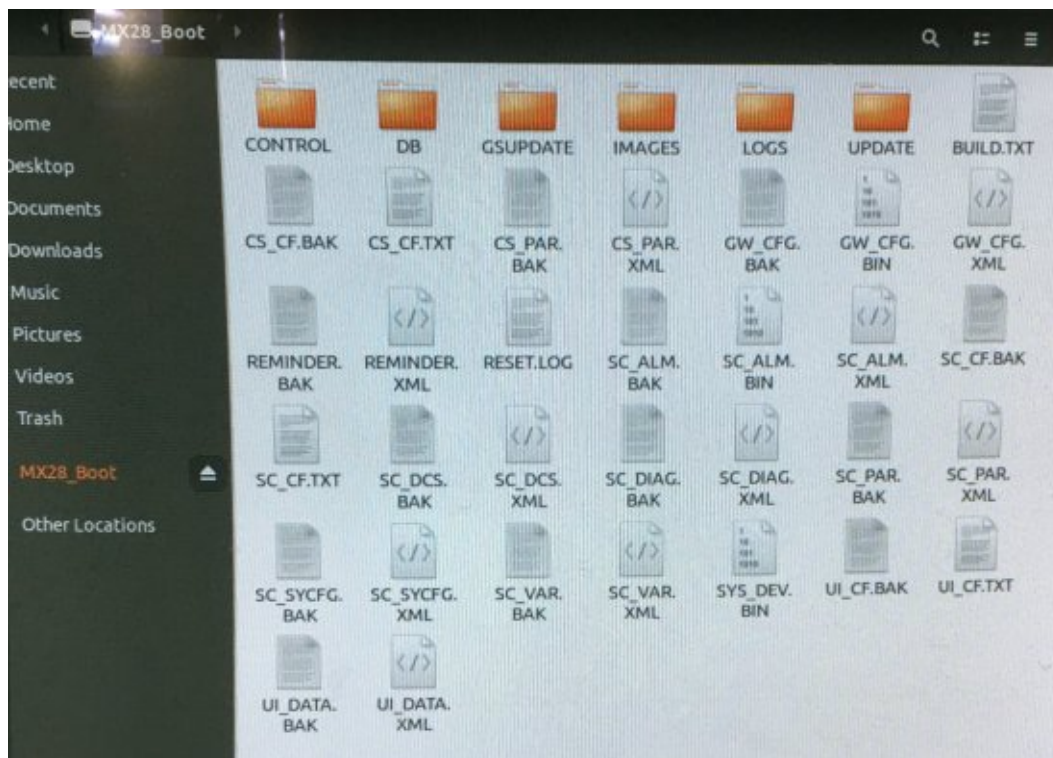
- I found a lot of interesting things here but I'm trying to keep this Hamtrix article short. ;-)
- I removed what I thought was a dead battery, "It's not a battery but it's 1.5 Farad super cap." I try substituting in a 4.5 Vdc battery. This didn't revive the thermostat.

Look: Freescale iMX28 ARM multimedia processor with an SD card

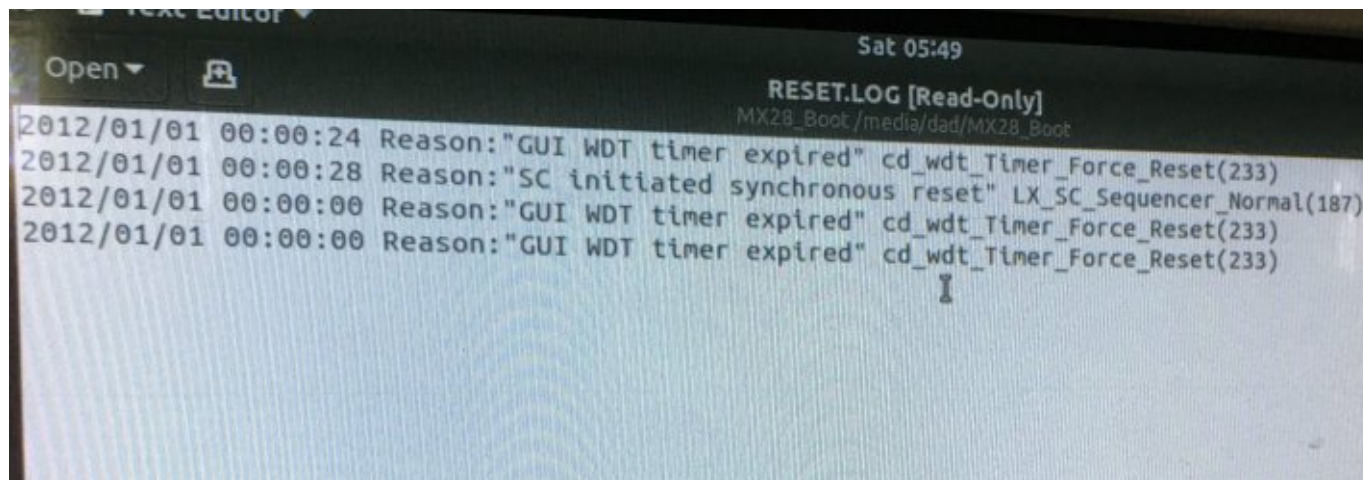
"I wonder if Windows read the card?" No. Ubuntu can read it, "MX28_BOOT."

This is a Linux Box!!!

- Found many sub-directories *.XML, *.TXT and RESET.LOG.



- Found furnace system configuration file.
- Found various sub-directories of boot failure messages, time and date match the approximate time of when the thermostat was last found unresponsive
- Found log file describing communications failure with LCD panel, see below.



- I wonder if I can find a used iComfort thermostat on eBay? No, the Ebay sellers are only selling broken IComfort WiFi thermostats, "LCD display or video chip has failed." This is bad.

- I can't buy a general replacement thermostat from big box store. It turns out every furnace manufacturer features their own propriety smart controller. I have to buy Lennox iComfort thermostat which of course is newer and more expensive. The original thermostat only lasted 5 years, this reliability is totally unacceptable.

- Below is industry article on the smart home thermostat problem. You have been warned!

<https://www.achrnews.com/articles/140063-battle-for-the-wall-benefits-of-proprietary-controls-versus-smart-thermostats>

Lennox iComfort replacement thermostat

https://www.support.lennoxicomfort.com/help/S30/pdp_s30.html

Other Web Link Documents

https://www.nxp.com/docs/en/user-guide/EVK_imx28_QuickStart.pdf

https://www.reddit.com/r/homeautomation/comments/89jnoc/lennox_icomfort_s30_e30_or_m30_thermosta_t_api/

<https://github.com/home-assistant/core/issues/20885>

<https://www.pickhvac.com/faq/communicating-vs-non-communicating/>

<https://forums.redflagdeals.com/why-you-dont-want-buy-variable-speed-furnace-2342003/>



SLOW SPEED CW QSO NET
Monday's - 8:00 PM - WB0AFB 147.045 Repeater

CW Practice

One of the best and maybe the only way to get better at CW is practice. Having someone else who also wants to practice also helps. Just makes it more fun.

The West Allis Radio Club is going to try to help. We are running a CW practice net on Monday at 8pm The repeater is 147.135+ 141.35 the CW portion is on HF

Mike WO9B has been joining me and setting up some practice but we are open for suggestions on where to go with this. Come join us.

Officers and Board
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Secretary
 Dave Garnier WB9OWN

Treasurer
 Bill Reed N9KPH

Directors
 Tom Macon K9BTQ

Phil Tollefson, WA9AQL

Newsletter Editor
 Frank Humpal, KA9FZR
fhump@milwpc.com

past president
 Frank Humpal KA9FZR

West Allis Radio Amateur Club
P. O. box 511381
New Berlin, WI 53151-1381

**West Allis Radio Club
PO Box 511381
New Berlin, WI 53151-1381**