The BEACON

Quarter 4 - 2022

Holiday Rebates

Shortwave Radiogram
By Mike Agner, KA3JJZ

Hello to all the digital folks out there.

A new program for the Shortwave Radiogram broadcasts has now been posted on the SW Radiogram website.

If you're new to decoding digital, this is a pretty nice way to get your feet wet. You can use your desktop or laptop, or you can use an Android device such as a smartphone or tablet. You can find links to the SW Radiogram website, software for decoding, and wiki articles with extensive details and help at: http://www.udxf.nl/events.html.

If you'd like to see a list of web receivers (which are often reported as being used), receiver, transceiver and SDR applications and more, take a look at the SW Radiogram gateway at https://wiki.radioreference.com/index.php/Shortwave_Radiogram_Gateway

Help is also available on Facebook and Twitter. The SW Radiogram website has the links.

Radio Northern Europe International also uses digital modes during its broadcasts. See https://rnei.org/ for more information.

KBC Radio in the Netherlands also uses digital modes in their broadcasts. They usually announce the frequency, time and modes they are going to use on their Facebook page https://www.facebook.com/TheMightyKbc

Here's hoping for good propagation
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A Portable Winlink E-Mail Station using the RIGblaster Nomic
By Sholto Fisher, K7TMJ

The RIGblaster Nomic has been one of our core products for many years. It's proved very popular for a wide-range of applications from EchoLink to FT-8. I'm often asked if it can be used with a modern HT radio and laptop running WL2K (Winlink) software and my answer is "Yes, but it's not as easy as you might think."

To illustrate the issues involved I decided to use my Yaesu FT-250R as part of a portable WL2K station along with my Windows 11 Acer notebook.

The HT Issue
In the past, HT radios usually had two separate jacks: A mic jack (2.5mm), and a headphone jack (3.5mm) on the side opposite the PTT button. This made it relatively simple to interface a Nomic to the radio with a suitable cable and a resistor jumper (SKU #58119-983).
My Yaesu FT-250R has a single 4-pole 3.5mm jack which provides RX audio, TX audio, Ground, & PTT contacts.

As the Nomic is only connected on the transmit side, this means RX audio bypasses the RIGblaster and should go straight to the computer's mic jack.

Like many HT radios the Yaesu also requires a DC blocking capacitor for mic audio and a resistor jumper for PTT. The RIGblaster already contains the DC blocking capacitor.
To create a 4-pole cable which satisfied all these requirements would be complex and tricky to solder. Fortunately Yaesu make the CT-44 adapter which interfaces to a number of their HT radios and provide the usual 3.5mm and 2.5mm breakout jacks.

The following diagram from Yaesu shows the CT-44 and typical connections to a "TNC".

The PC Issue
A similar issue arises with modern laptops in that they invariably also use a combined 4-pole audio jack, long-gone are the separate mic & headphone jacks. We can either use a headphone/mic splitter to break out the signals onto separate jacks or we could use a USB sound card dongle. A USB sound card is included with the RIGblaster Nomic for you to use if you wish.
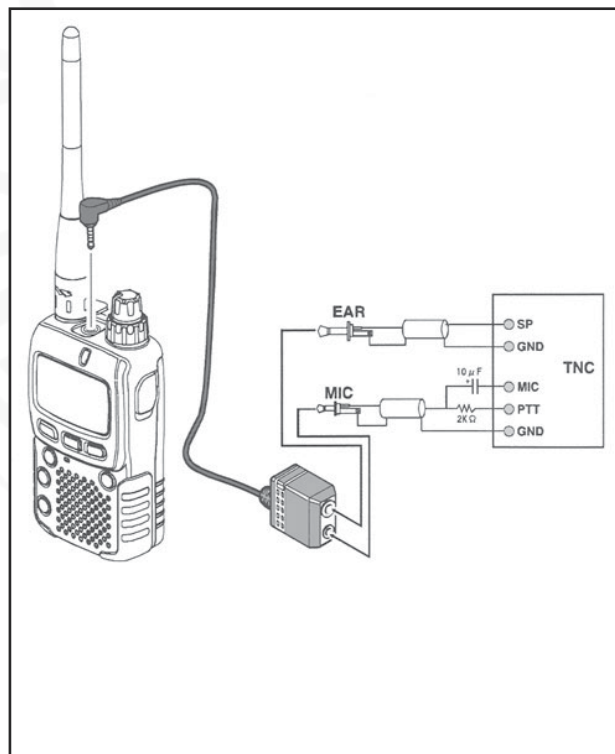

Figure 1: CT-44 and typical TNC connections (Yaesu)

On my particular laptop there was only a single USB slot available as the others are taken up with a wireless mouse interface and a GPS receiver so I opted to use the headphone/mic splitter because I needed to use the USB for the Nomic Serial/USB adapter .
Looking on Amazon I found a MiLLSO splitter that looked like it would work and had the bonus of colored jacks which makes it easy to determine which would be TX audio (Green) and RX audio (Pink). Once I ordered it, a CT-44 , and our 2.5mm HT mic cable, I had everything I needed to make my portable WL2K station.

Our HT 2.5mm mic cable comes with the resistor jumper. The jumper pattern to use in the Nomic should look like this:
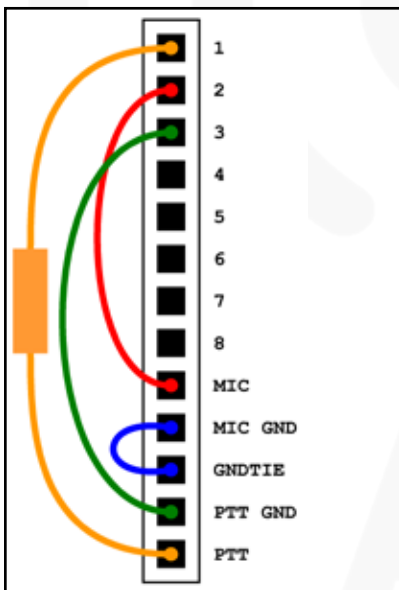

Figure 2: 2.5mm HT Cable jumper wiring

Figure 3: The completed WL2K station

Once everything is cabled the next task is to configure the Winlink software so it can use 1200 baud packet radio to connect to an RMS (Remote Message Server).

The E-Mail client "Winlink Express" can be downloaded directly from: https://downloads.winlink.org/User%20Programs/

The Winlink Express software itself cannot decode or produce the tones necessary for 1200 baud packet radio so we need to use another program the client can hook into.
One of the best and free (donations appreciated) packet radio programs for Windows computers is UZ7HO's Sound Modem software.

Figure 4: The cables and adapters required to interface to the Yaesu FT-250R

This can be downloaded from http://uz7.ho.ua/packetradio.htm and the file required is currently called "soundmodem114.zip".

Once you have both programs install Winlink Express first, then unzip the Sound Modem archive to a folder of your choice (I chose C:\UZ7HO).

Configuring UZ7HO Sound Modem

Start the Sound Modem software and then open Device Settings. In this screen we need to specify which audio device to use for input (RX) and output (TX). We also need to enable the KISS server port on 8100 and select the PTT com port number for the RIGblaster.

If you are using the USB Sound Card dongle then your audio devices will be different and most likely will be identified as "PNP USB Audio Device".

Once you have done this, quit Sound Modem. We will configure Winlink Express so that Sound Modem is automatically loaded when you start a WL2K session.

Configuring Winlink Express

Run the Winlink Express software, for first time users you'll need to register with Winlink for an account and you can read about how to do this here https://winlink.org/user

Open "Packet Winlink" from the sessions drop-down list and then go into the settings window.

The important parameters to use are:
1. Packet TNC Type should be set to KISS.
2. Serial Port should be TCP/IP.
3. Ensure the TCP Host/Port is set to 127.0.0.1 and 8100.
4. Fill in the path to the packet sound modem (in my case C:\UZ7HO\soundmodem.exe)

This must be entered so that Sound Modem will automatically load each time you need it.

Click on "1200 Baud" in the TNC parameters. This will initialize Sound Modem with the correct parameters for 1200 baud packet radio operation.
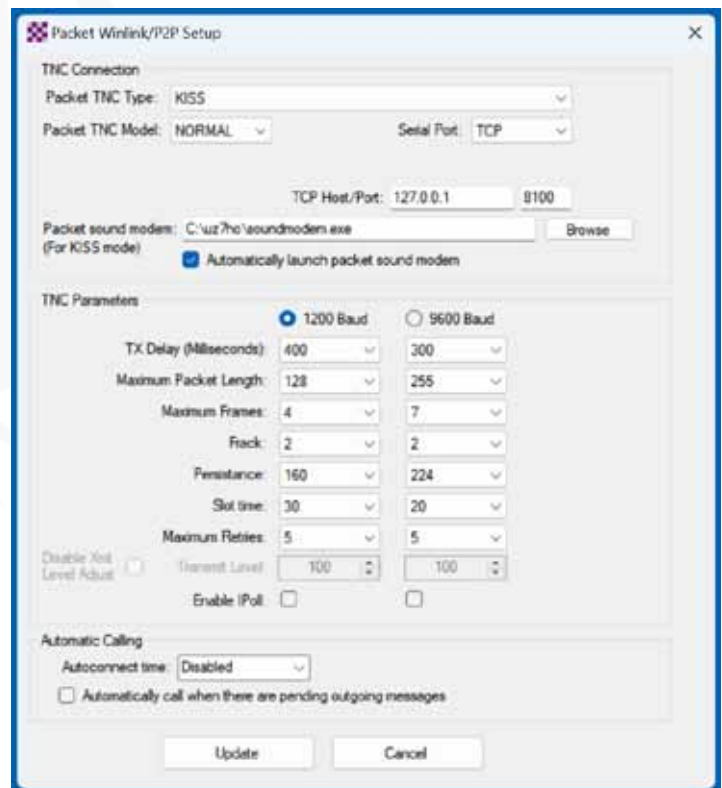

Figure 5: UZ7HO Sound Modem device settings

Once you've done that hit update and you will have successfully configured Winlink Express.

There's really only one step after this and that is to set your sound card levels. 1200 baud packet radio is quite forgiving so I'd suggest starting with 50% on the Playback channel (TX) and 50% on the Recording channel (RX). To adjust these you can use Windows Settings>Sound or bring up the Windows Sound Control panel (Hint: Create a shortcut on the Desktop pointing to mmsys.cpl and you'll have a quick way to get into Sound Control Panel).

Once you've set your audio levels it's time to try a connection. Hopefully you'll have more luck than I did when trying a very remote RMS from home!
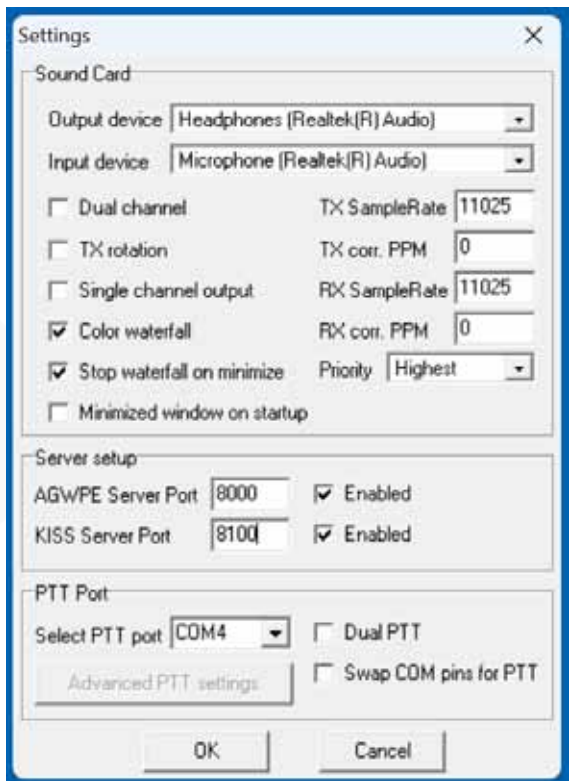

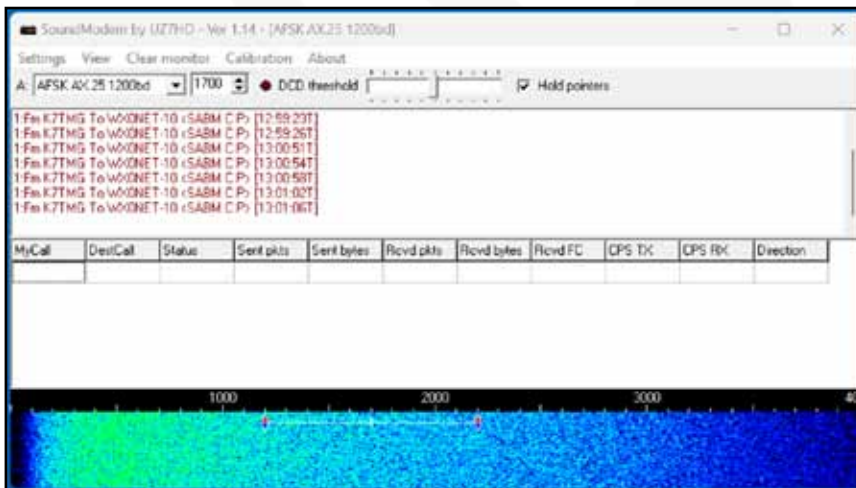Figure 6: Packet setup screen in Winlink Express

Figure 7: Sound Modem window when trying a connection.

WX0NET-10 is far beyond my radio horizon at this QTH hence no connect.
So now you've seen an overview of the steps necessary to get a Winlink Email connection running using an HT radio and a laptop.

Gotchas
On Windows 10 and 11, when you first insert a headphone/mic splitter into the laptop's audio jack you'll get a pop-up window asking what you just plugged in. Make sure you select headset. Be careful that you don't select headphones otherwise you'll lose your microphone channel!

If you find that your software stops responding when you're transmitting remember there's a good chance that RF from the HT could be disrupting the computer. The use of RF chokes is a good idea! Use them on any cable attached to the laptop.

So - Are Conditions REALLY Improving?
By Fred Schwierske, W9KEY

By now, you have likely heard someone talking about how the amateur radio high frequency (HF) bands are improving. Band conditions are an ongoing discussion topic during weekly 2 Meter Nets, Club Meetings (or their Zoom equivalents), and even face-to-face chats at local hamfests.

So --- are the HF Band Conditions really improving? Or is it just fun to talk about something that dramatically affects our hobby, but over which we have no control?

I'm still pretty new to amateur radio – making my first HF contact in July, 2018. At that time, experienced operators were complaining loudly about "terrible" band conditions, and how those poor conditions decreased their interest in the hobby, resulting in fewer operating hours every month.

While I certainly didn't doubt them – ignorance (as they say) is bliss. Given my rookie status, I had no previous experience to act as a gauge. But regardless of conditions, I could always find someone interesting to talk to! And even my simple tree mounted multi-band fan dipole seemed to work fine.

New States, Grid Squares, and Countries / Entities I'd never heard of started to slowly roll in. It was great fun! But still - it was obvious higher frequency 10, 12, and 15 meter bands were often quiet, only occasionally coming to life for a short time, then reverting back to long silences. Regardless – 20, 40, and 80 meters provided ample excitement – and my list of confirmed States and Countries continued to slowly grow.

Along the way, I attempted to absorb articles explaining signal propagation and how the sun's activity played a major role. I learned Solar Cycle 24 was nearing completion, with Cycle 25 beginning "soon" – perhaps bringing with it HF band conditions a new ham could only dream about. But it was slow going.

As background, scientific observance of solar sunspot activity didn't begin until 1755 (Cycle 1) and took observers some time to realize activity occurred over an 11 year average cycle. Even now, it requires data analysis and a certain amount of looking in the rear-view mirror to know for certain when one Cycle ends and the next begins. Happily, the worst conditions are now behind us. Solar Cycle 25 began around December 2019 and amateur HF propagation has steadily improved since then, often exceeding expectations. Experts confidently predict ever improving conditions over the next several years, with the peak expected around July 2025. It's a great time to be a ham!

So the big question - if you enjoy chasing distant DX stations and working rare "new" ones, or want to confirm all 50 States on a particular band – how can you best take advantage of these improving propagation conditions? Well, there are several ways ….

DXpeditions, which basically ceased during Covid, are now back and thriving. A DXpedition is a group of skilled hams who raise considerable funds, acquire equipment, secure permits & licenses, and trek to remote locations (Countries / Entities) to establish temporary radio stations. They do that out of love for the hobby and to allow the rest of us to put a new remote location in our Log Books. Some locations are uninhabited and only become radio-active every few decades. Others are in restricted areas such as nature preserves, normally off-limits to humans.

ARRL recognizes 340 different Countries (Entities) and DXpeditions are the only way most of us will ever be able to add rare DX locations into our station logs.

How rare – Well North Korea is Number 1 on Club Log's 2022 DXCC Most Wanted List - but with no ham radio allowed is unlikely to be activated anytime soon. Number 2 on the most wanted list is the sub-Antarctic Bouvet Island, one of the most isolated islands in the world. With a budget of $760,000 USD, a Bouvet Island DXpedition is planned for late

January / February, 2023. They are expected to operate for at least 22 days, using Call Sign 3Y0J. Take advantage of improving HF band conditions to work that rare, perhaps once in a lifetime, DX entity.

Large DXpeditions operate multiple stations continuously on several bands using CW, SSB Phone, and Digital modes such as FT8 & FT4. Their highly skilled CW & Phone operators are fast – usually working huge pile-ups. Their Digital operators often run multiple transmitters simultaneously, including multiple digital QSO's in the same time slice. They may be using FT8 Fox & Hound mode, which can be easily enabled in WSJT-X Settings > Advanced > Special Operating Activity. If so, insure you transmit above 1000 Hz. Or if operating on Phone, listen closely before transmitting to determining if they are running "Split" (listening for your call on a slightly different frequency). Listen for a few minutes to insure you understand their operating mode.

As Cycle 25 continues, watch this DX List for activations from remote locations. Don't miss the opportunity, it may be many years before they show up again: https://dxnews.com/calendar/

Contests are another great way to add new locations to your log in a short period of time. Contests occur every weekend of the year. Several of the largest are sponsored by CQ Magazine – including the CQ World Wide DX and CQ WPX (work all prefix) events. Each attracts huge numbers of world-wide participants. With improving bands full of desirable DX stations, you can quickly and easily work many new countries / entities during a major contest weekend.

ARRL also sponsors several large popular events. Improving band conditions, along with huge numbers of North American stations should allow you to work many of the 50 US States, across several bands, on a good contest weekend.

To illustrate the effectiveness of working a major contest – I recently operated 28 hours (of the total 48) during the October, 2022 CQ World Wide DX SSB Contest – one of the largest ham radio events of the year, logging:
- 783 Phone Contacts in 91 Countries (entities).
- 340 Contacts in 77 Countries, just on 10 meters.
- 15 & 20 meters were also excellent, with 56 & 65 Countries worked on each.

Clearly, ever improving conditions during a major contest weekend can put you well on the way to DXCC (100 Countries / Entities) awards on several bands with just a few hours of operation!

Contesting Suggestions:

Contesting should be fun – don't start out trying to "win" - you won't. Instead, consider the contest weekend, with thousands of eager stations on-air, as a golden opportunity to work new States, Countries, and Zones. Here are a few suggestions to get started:

1. A most valuable bit of advice was given to me by world class Contester Gary Sutcliffe, W9XT, early in my contesting career. Simply stated, he told me to, "Always Read The Rules"! It may seem obvious, but each contest has its own unique set of operating times, rest requirements, on-air exchanges, and log submittal deadlines. So download and read the rules before every contest.

2. Most new Contesters start out doing "Search & Pounce" – tuning the band to find stations calling CQ. It allows you to work calmly and carefully at your own pace. But after gaining a bit of experience, don't be afraid to find an open spot and call CQ. Doing so will usually result in a faster "rate" - more stations worked during a given period of time.

3. Don't be intimidated by big gun stations and their rapid fire QSO rate. They understand new hams work at a slower pace and will accommodate you. Just don't expect to have any conversation other than the exact "exchange" required to validate the contact (as clearly stated in the Rules – you did read the Rules, right??).

4. When operating a multiband contest, start on the highest frequency band and work your way down as the day and activity level goes on. Propagation on those higher frequencies may only occur for part of the day, so try not to miss those band openings. Cycle 25 may progress to the point of 10 Meters being open all night – but we are not there yet.

5. Propagation is always changing. People in other countries may have narrow time windows with you, so try different bands at different times of day. When your contact rate slows down, don't be afraid to try another band. The more experience you gain operating at different times, the easier it will be to predict best band opportunities.

6. Research the date and try to work your State QSO Party. Remember, stations from other States will be trying to contact you – in other words, YOU become the desirable "DX" target! During our 2022 Wisconsin QSO party, with just a wire antenna hanging in backyard trees, I made 493 phone contacts across 41 States (and 46 Wisconsin Counties) in 7 hours. So as band conditions improve, even a few hours of operating during a busy contest can put you well on the way to a "Worked All States" award!

But --- Antennas Are Not Allowed!

A final thought. HOA's and small city lots make it difficult to erect large effective HF antennas. DX'ing with an attic or small loop antenna is certainly possible – just more difficult. Steve Ford, WB8IMY, has a helpful book, "Small Antennas for Small Spaces" - available from ARRL and Amazon.

But also consider taking your station on the road and becoming involved in the hugely popular "Parks On The Air Program". POTA activations are taking place every weekend, allowing those with difficult home situations to enjoy the ever improving HF conditions of Solar Cycle 25. https://pota.app/#/activations

Several compact QRP radios are available for lightweight portable operation - perfect for hiking into remote locations. With band conditions improving, 5 or 10 watts can go a long way. But even your regular 100 watt HF rig, with a proper battery and portable wire antenna, can get you away from city electrical noise pollution and restrictive HOA's. Several friends now regularly convert park picnic tables and nearby trees into effective weekend ham shacks. It's probably more fun in the summer, but POTA activations occur all year long.

My portable battery box, ready for POTA or beach operation as the bands improve. To me, QRP is 100 watts, so my battery box contains a 50Ah LiFePO4 battery, Rig Runner 4008, Epic PWRgate, Meters / Outlets and a 30A switching supply if 120 volt mains are nearby. "Portable" means different things to different people!

My portable battery box, ready for POTA or beach operation as the bands improve. To me, QRP is 100 watts, so my battery box contains a 50Ah LiFePO4 battery, Rig Runner 4008, Epic PWRgate, Meters / Outlets and a 30A switching supply if 120 volt mains are nearby. "Portable" means different things to different people!

In summary, conditions are most certainly improving!!

- If you are a new Technician Class license holder, consider upgrading to General. HF Band privileges as we head toward the peak of Solar Cycle 25 will greatly enhance your amateur radio enjoyment for years to come.

- If you are an "Aged Ham" who may have lost interest during the trailing end of Solar Cycle 24 – now is the time to dust off the radios, clean up the antenna farm, and get back on the air!

It's a great time to be a ham!!

Resources to Help Enjoy Our Improving Band Conditions

Amateur Radio Contesting
- **CQ Magazine Annual Contest Calendar:** https://cq-amateur-radio.com/cq_contests/index_cq_contests.html
- **ARRL Contest Calendar:** https://www.arrl.org/contest-calendar
- **WA7BNM Contest Calendar:** https://www.contestcalendar.com/

Chasing DX
- **Upcoming DXpeditions and DX Activations:** https://dxnews.com/calendar/
- **List of all 340 Current ARRL DXCC Entities:** https://www.arrl.org/country-lists-prefixes
- **Club Log's 2022 DXCC Most Wanted List of Rare Countries:** https://dxnews.com/dxcc-2017/
- **DX Spotting Link – Search for Active DX stations, by Call Sign:** http://www.dxsummit.fi/#/
- **PSK Reporter Link – See where your CW or Digital transmissions are being received:** https://pskreporter.info/pskmap.html

Park Activations:
- **Parks On the Air:** https://pota.app/#/activations

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