Smoky Signals

Smoky Mountain Amateur Radio Club

SUMMER 2024

Editor - Jeff Buffington, N4POD

info@w4olb.org

OFFICERS

Andrew Lawson, N2AL - President
Michael Foley, K4MJF - Vice Pres.
Bob Loving, K9JU - Secretary
David Andrews, N1ESK - Treasurer

Nets

SMARC Weekly Net.
Thursday 1900 hrs
146.655 & 443.075

KK4XA Morning Net
M-F 0900 hrs
146.655 & 443.075
KK4XA DMR 444.075-TG-314742

Club Meetings

4th Monday Monthly*
1900 hrs
USW Union Hall
339 Hall Road
Alcoa, TN 37701
*Excludes June and Dec

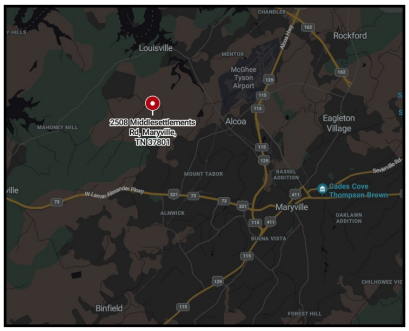
Typical Gatherings

Tech Lunch
Thurdays @ 1130hrs.
Windy City Grill
2641 Hwy 411
Maryville, TN

Eyeball Net (Breakfast)
Friday's @ 0830hrs
TC's Grill
2514 Old Niles Ferry Road
Maryville, TN

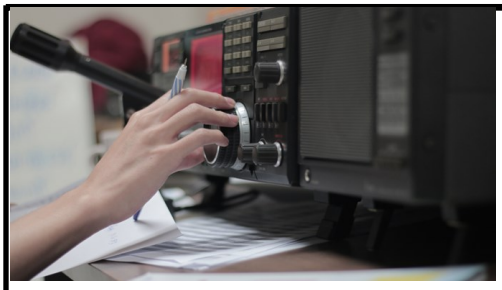
Field Day 2024

It's that time of the year! ARRL Field Day 2024 is coming up fast! This year, SMARC will be set up at the Field of Dreams, 2508 Middlesettlements Rd, in Maryville, from Saturday, June 22 through Sunday, June 23.
We will be running as class **5A**, with **five** stations. We will be operating CW, Digital, as well as both 10/15/20 meter and 40/80 meter SSB.



Hams from across North America ordinarily participate in Field Day by establishing temporary ham radio stations in public locations to demonstrate their skill and service. Their use of radio signals, which reach beyond borders, bring people together while providing essential communication in the service of communities. Field Day highlights ham radio's ability to work reliably under any conditions from almost any location and create an independent, wireless communications network.

For more information, and to sign up for Field Day 2024, please visit the club website at https://www.w4olb.org and click on the "Sign Up for Field Day" button on the Quick Links at the top of the page!



Contesting Roundup

JUNE

- June VHF Contest: Jun 8, 1800Z, to Jun 10, 0259Z
- Kids Day: June 15, 1800Z through 2359Z
- **Field Day**: Jun 22, 1800Z, to Jun 23, 2059Z

JULY

- RAC Canada Day Contest: Jul 1, 0000Z-2359Z
- IARU HF World Championship: Jul 13, 1200Z, to Jul 14 1159Z
- LABRE DX Contest: Jul 20, 0000Z-2359Z
- CQ WW VHF Contest: Jul 20, 1800Z to Jul 21, 2100Z

AUGUST

- 10-10 Int. Summer Contest (SSB): Aug 3, 00001Z to Aug 4, 2359Z
- North American QSO Party (SSB): Aug 17, 1800Z, to Aug 18, 0600Z
- Rookie Roundup (RTTY): Aug 18, 1800-2359Z

Note: All dates and times listed are UTC, unless otherwise specified

Upcoming Hamfests

DATE	NAME	CITY, STATE
6/15	Knoxville Hamfest and Electronics Convention, ARRL Delta Division Conference	Knoxville, TN
7/20	McMinn County Amateur Radio Club Hamfest	Athens, TN
7/20	Greater Nashville & Middle Tennessee Hamquest	Lebanon, TN
8/17-/18	Huntsville Hamfest, ARRL Southeastern Division	Huntsville, AL
8/24	Cedars of Lebanon Hamfest	Lebanon, TN
9/7	Greater Louisville Hamfest	Shepherdsville, KY

Hamvention News

Hamvention 2024 Sets Attendance Record

Hamvention 2024 set a new record. According to General chairman Jim Storms, AB8YK, the official attendance for 2024 was 35,877, beating out last years record of 33,861.

Hamvention 2025 will be held May 16-18.

Icom Prototype Teaser

Icom teased visitors to Hamvention with a prototype, or rather pieces of it, simply labeled as "X60." They invited visitors to submit their speculation into a fishbowl. According to Ray Novak, N9JA, Icom America's Senior Sales Manager, the official announcement of the new product is slated for the Tokyo Ham Fair in August. https://www.icomamerica.com/

Ten-Tec News!

Mike Dishop, N8WFF, owner of Ten-Tec, announced that Ten-Tec has relocated into a 12,000 square foot facility in Dayton, OH. He also announced that the Omni VIII, featuring a 7" display, will be coming out this fall. On display at the booth at Hamcation was a newer product called the TUNE-A-TENNA, a motorized inverted inverted-V that covers 160-6m; a prototype of a new vector network analyzer that operates at full legal limit; and the new Alpha 4040 4kW automatic antenna tuner, featuring vna technology, that will be available later this fall. https://www.tentec.com/

Comet Antennas Distributor Ownership Change

NCG Company, US distributor of Comet Antennas and Daiwa SWM meters has been acquired by 12 Volt Power. In addition to the Comet and Daiwa line, 12 Volt Power carries various electrical connectors, crimping tools, wire and cable, as well as AnyTone Radios. 12 Volt Power has moved into the existing NCG facility. https://www.12voltpower.com

VHF, UHF and Microwave Musings, by N0EDV

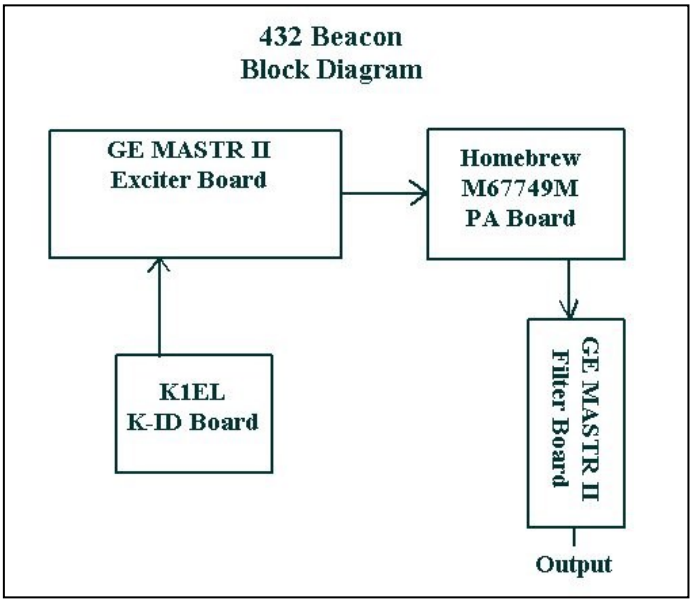
Scott N0EDV

Beacons. Love them or hate them, they provide a valuable service to the amateur operator. A beacon is simply an automated transmitter that continuously transmits a signal to be received by a receiver in your station. Why would one want to listen to a beacon? The simplest reason is it is an indicator of a band opening between it and your station.

Automatically controlled beacons can be used on any amateur band from 10 Meters up to Light frequencies. The FCC rules dictate, in any given band, where automatically controlled beacons are allowed to transmit. Much like a voice repeater system, there must be some form of controller that ensures the beacon operates in accordance with the law and must employ methods allowing it to be shut down in case of malfunction.

A beacon, in its simplest form, consists of a transmitter, a controller that monitors the functions of the beacon to ensure compliance with FCC rules, a keyer circuit that keys the transmitter to send out a Morse code message and an antenna. For example, I have a beacon on (or as near as possible) 432.324 MHz which repeatedly sends a 15 second carrier to allow peaking your Yagi antenna toward the beacon, followed by the simple CW message, "DE N0EDV/B EM85". The "/B" designates it is a beacon and the "EM85" is the Maidenhead Grid where the transmitter is located to help people know where to initially aim their antenna for best reception.

My beacon uses some repurposed circuitry from a commercial UHF mobile radio that was commonly used by businesses back in the 1980s. It was manufactured by General Electric in the Mastr II series of radios. It was crystal controlled and I ordered an appropriate crystal frequency from one of the now gone crystal manufacturers to move the transmitter down into the amateur band from its original 450-470 MHz range as manufactured. The block diagram for my beacon is shown below.



Of course, there is a homebrew controller board that isn't shown here. Its job is basically to reset the system in case the transmitter hangs up an transmit for more than 3 minutes without sending the CW ID message. If it can't clear the fault by resetting, it shuts down the transmitter, requiring intervention by me to investigate and repair as necessary.

Various propagation modes that are of an intermittent nature, such as Sporadic E, TEP (Trans-Equatorial Propagation), Aurora, Tropospheric Ducting or Scattering, Rainscatter and even aircraft reflection will be used by beacons without any operator input. These conditions are dependent on natural conditions such as weather, solar activity or man-made conditions (aircraft flying at high altitude somewhere between the beacon transmitter and the receiver). I have had reports of a distant station in SC, over 100 miles away, receiving my beacon via aircraft reflection. That is pretty amazing for a 4 Watt transmitter connected up to a simple horizontal loop antenna only about 25 feet above the ground and several mountains blocking the traditional line of sight between transmitter and receiver.

Another advanced use for beacon is to study propagation. By periodically listening to a beacon, you can make note of its signal strength at your location and start to formulate theories as to conditions that affect propagation. K9JU would be able to educate you on how solar activity affects propagation on the 10M

(Continued on page 4)

(Continued from page 3)

band. But even barring input from K9JU, a novice ham operator might notice that he can generally hear a 10M beacon during daylight hours and then nothing during the hours of darkness. This is exactly the same as for SSB QSOs on 10M when solar activity is low.

On the VHF and UHF bands, weather is a major factor in propagation. During the winter months, there are occasions where an approaching warm front overrides cooler air on the surface causing the air at higher altitude to be warmer above than it is at the surface. Normally, as you go up in altitude, the temperature decreases. When the opposite is true, we have what is called an inversion layer. An interesting phenomenon occurs as radio waves pass through the air. As the air temperature changes, the radio waves can be diffracted and if the inversion is dramatic enough, it can bend the radio waves back down toward Earth where they can refract back up when they hit the cooler air and the cycle repeats over and over until finally, there is no longer an inversion present and the signal drops out of the elevated duct. So, in theory, the radio wave gets trapped in the duct and will not be received by ground stations until it pops back out of the duct. This manifests itself such that two stations may be 1000 miles apart and hear each other with strong signals yet stations in between them hear nothing! Fascinating!

Check the FCC rules to find the designated beacon subbands and spin the big knob and give a listen. You might be pleasantly surprised to hear a distant beacon you've never heard before! You might spin that big knob for days, weeks or months and hear nothing. Then, all of a sudden, one day you'll hear a beacon at S1 or maybe even S9 for a few minutes, a few hours or even a few days and then it's gone again for an extended period of time. Take some time to be a beacon hunter!

End of an Era–MFJ Ceases Production

On April 25, 2024, an email from MFJ shocked and saddened amateurs around the world. It was a heartfelt letter, written by Martin F. Jue, K5FLU, Mr. MFJ himself. Coinciding with the start of Hamvention, MFJ was winding down.

"As many of you have heard by now, MFJ is ceasing its on-site production in Starkville, Mississippi on May 17, 2024. This is also the same for our sister companies' Ameritron, Hy-Gain, Cushcraft, Mirage and Vectronics."

He went on to note how times had changed and COVID-19 had affected their business. They lost a key member of their staff as a result of the global pandemic. Production was shut down. Staff moved onto positions with other companies.

MFJ was founded in 1972, and for 52 years provided affordable gear to hams worldwide. Throughout the 90's and beyond, MFJ acquired numerous other amateur manufacturers, including Ameritron Amplifiers in 1990 and Cushcraft Antennas in 2009. As of this writing, there is no word of any companies currently seeking to acquire MFJ or any of it's product lines.

The World of DX

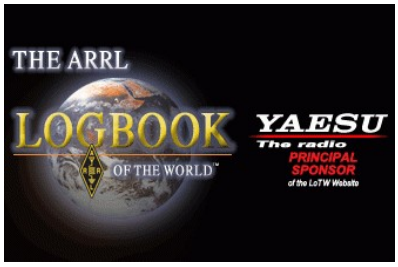
Hello again fellow SMARC members. Welcome back to the fascinating world of DX.

Ed. Note—Bob, K9JU is taking off this issue, so instead we'll pass along something courtesy of Kelley, KR4FK! Don't worry, Bob promises he'll be back for the Fall issue!

DX Code of Conduct

- **I will listen, and listen, and then listen again before calling.**
- **I will only call if I can copy the DX station properly.**
- **I will not trust the DX cluster and will be sure of the DX station's call sign before calling.**
- **I will not interfere with the DX station nor anyone calling and will never tune up on the DX frequency or in the QSX slot.**
- **I will wait for the DX station to end a contact before I call.**
- **I will always send my full call sign.**
- **I will call and then listen for a reasonable interval. I will not call continuously.**
- **I will not transmit when the DX operator calls another call sign, not mine.**
- **I will not transmit when the DX operator queries a call sign not like mine.**
- **I will not transmit when the DX station requests geographic areas other than mine.**
- **When the DX operator calls me, I will not repeat my call sign unless I think he has copied it incorrectly.**
- **I will be thankful if and when I do make a contact.**
- **I will respect my fellow hams and conduct myself so as to earn their respect.**

ARRL and LotW Attacked!



The **ARRL** and **Logbook of the World** were cyberattacked. On June 4th, the ARRL confirmed that the attack occurred on or around May 12th, by a "malicious international cyber group."

An incident response team was established, and the FBI, along with third party experts were brought in to investigate.

The ARRL first reported the issues on Thursday, May 16th, and has provided numerous updates since, as they were able to release more information.

The attack affected servers, including cloud-based, as well as network devices and computers. Their phone system was restored on May 31st, and other systems are slowly being methodically tested and restored to operation in this process.

At the time of this writing, Logbook of the World is still unavailable.

For the latest information, visit the ARRL's page regarding this disruption at https://www.arrl.org/news/arrl-systems-service-disruption

A Look at Wire Antennas

Dave N9KMY

Wire antennas have been around for as long as wireless. The dipole consists of two equal lengths of conductors supported with three insulators, one on each end and one in the middle. The dipole is usually supported as high as possible suspended in the air. The lengths of the conductors are related to the desired frequency of operation and the antenna feed point is in the center using a balanced feed. This method efficiently feeds as much current as possible into antenna. The dipole antenna has a slight gain characteristic, 2.15 db, in two directions, 90 degrees to the wire. Thus it is not omni-directional.

There are many versions of a simple dipole such as height above the ground, not parallel to the ground (a sloper), center higher than the ends (inverted "V") and the ends not supported at the full height (a Bobtail Curtain). Then comes the potential of moving the feed off center and even to the end. Next to think about are forms of wire where the ends come around to almost meet, called loops and folded dipoles.

Feeding a balanced antenna, it has been found to be best with balanced transmission line where low loss can be achieved as compared to coaxial cable. There is available multiple ladder line impedances such as 150, 300, 450 and 600 ohm with the last offering the lowest loss. The difficulty of using ladder line is maintaining the balance as it cannot have tight bends, located near conductive material or the earth. Two possible solutions: Transform impedance to coax via a balun and/or utilize a automatic tuning unit (ATU) before conversion to coax. Remember, a balun only provides balanced to unbalanced capability and isolating the antenna from the transmission line. The balun does not effect SWR except when used as part of a matching network.

Combining the various options, I elected to utilize what has been defined as a "Carolina" windom. This antenna offers multi-band support, a near omni-directional pattern, low take-off angle and a coaxial feed. My antenna has been at three residences and today is supported at one end about 25' high to the other end, a 40' mast pipe. In the middle I have 25' PVC pipe. The LMR-400 runs underground about 100' to my SPDs and shack entry. At the shack is another coax balun using ferrites. No external tuner is required with my FT-991A.

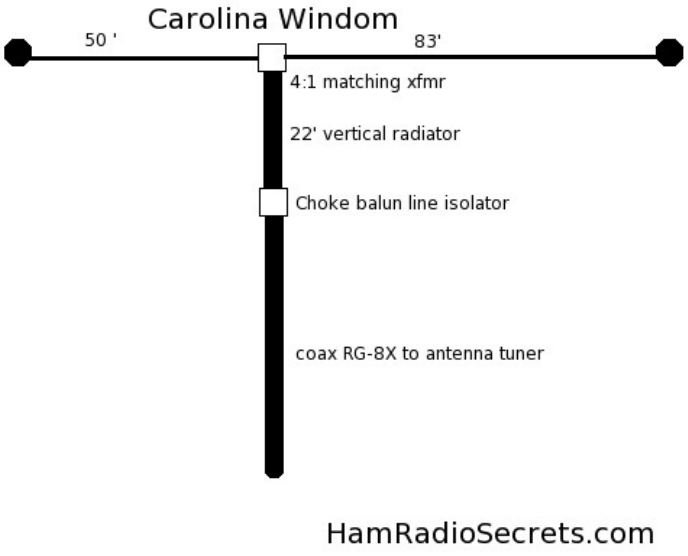
I have previously utilized ladder line fed dipoles, coax fed dipoles, a G5RV, end fed, Inverted "L" and verticals for HF. My personal choice is the "Carolina" windom for 80, 40 and 20, while the Inverted "L" for the remaining higher frequencies. Using relay switching I am able to change the Inverted "L" match 1:1, 1:4 or 1:9.

In 1999 Radio Works sold the Carolina Windom antenna I use today and published "Frequently Asked Questions" by Jim Thompson, W4THU. The book was supplied with the antenna. Radio Works no longer exists but interestingly, Don Backys, K9UQN, plus others were acknowledged for their help with the book.

Notice and thank you: The following information (in blue italics) is from a great web site: HamRadioSecrets.com web site that I encourage you to checkout for even more detail of the OCF antennas.

Windom Antenna: The Carolina Version

Think of the "Carolina" windom antenna (the modern version of the windom) as an "upside down vertical antenna", hanging down from its counterpoise strung (more or less horizontally) ~10 meters (or higher) above the ground.
In other words, the 22 feet vertical component of the "Carolina" - between the 4:1 matching voltage transformer and the 1:1 current choke balun - is a vertical antenna, fed at the tip.
This vertical does not require a ground or a system of radials!



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How the Carolina Windom Works

Because the antenna is not fed at its center, the RF currents in each horizontal radiating section are very much unequal. This makes the vertical coaxial section radiate RF energy (above the choke balun line isolator).
Normally, in the case of normal (balanced) dipoles, we try to avoid this radiation from happening.
But, in this case we ***want*** *this portion of the feedline to radiate!*

Extra Radiation

By letting it do so, the outer shield of the 22 feet long vertical coax (RG-8X) radiates to fill in the gaps in the signal pattern radiated by the top portion of the antenna.
The 22 feet portion of the feedline effectively becomes an upside down vertical, located high above ground and free of ground losses normally associated with verticals based on the ground!
The "Carolina" windom thus becomes a near-omnidirectional antenna. This is a very desirable characteristic on the lower bands 40 meters, 80 meters and 160 meters.

Choking Off The Excess

The 1:1 choke balun at the bottom of the 22 feet radiating vertical effectively isolates it from the coaxial feedline going down to the transceiver. This prevents RF from being fed back into the radio operation position. Another very desirable feature.

Outstanding Performance

The users of this special version of a windom antenna have reported that the near-omnidirectional characteristic is most pronounced near and over salt water.
The "Carolina" windom is...

- *Very efficient because no RF energy is lost in a "lossy" ground system.*
- *Very effective because a large portion of the RF energy is radiated, much of it at low angles, omnidirectionally.*

These same characteristics also make the "Carolina" windom an excellent receiving antenna.

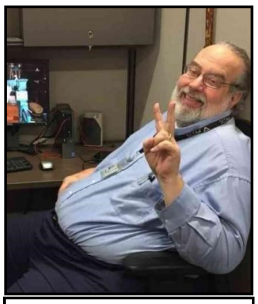
Source: https://www.hamradiosecrets.com/windom-antenna.html

A Few Personal Observations and Summary

Any type of antenna requiring an earth ground to properly work, creating the needed counterpoise ground can be problematic. This fact then effects vertical and end fed antennas related to efficiently getting RF power from the transmitter and into the air. Remember the other half a vertical or end fed is the quality of the earth.
Another huge efficiency factor is the quality of the transmission line. Get the best affordable ladder line or coax. Overall, LMR400 is likely the most cost effective for most hams if using coax. Remember transmission line does age and will over time, thus reducing its quality. Connectors also age, so keep it in mind the one improvement ten years after you put it up, consider a refresh.

EMCOMM NEWS FROM AROUND TNARES DISTRICT 8

Roane County and D8 Loses a Leader and Mentor



Bill KI4FZT

We regret to report the untimely passing of Bill Farnham, KI4FZT. Bill was involved both in local and state level ARES as the Emergency Coordinator for Roane County, and Assistant Section Emergency Coordinator, as well as Public Safety Liaison for East Tennessee. He was an inspiration and motivator for all of the ARES groups in East Tennessee, and will be sorely missed.

Bill served in many capacities throughout his years. He was a locksmith, an EMT, a Sheriff's Deputy and an AM radio broadcaster. He retired as a Critical Care Respiratory Therapist after 38 years at the University of Tennessee Medical Center.

Bill passed away on April 18, 2024, at the age of 75. His contributions to amateur radio and support for amateur radio emergency services were immeasurable. His legacy will live on.

Cliff Segar, KD4GT Named New Emergency Coordinator for Roane County

Cliff Segar, KD4GT has been named as the successor to the position of Roane County Emergency Coordinator. He is assisted by Bart Mayo, K0GYO and Don Bowers, KF4BDF, as Assistant Emergency Coordinators.

ARES Assists Tennessee National Guard

Several ARES members from around East Tennessee District 8 volunteered to assist the Tennessee National Guard Armory in Lenoir City with an Interoperability Training Exercise on Sunday, May 19th.

Among the volunteers were Cliff Segar, KD4GT, Jim Norman, N4CFB, Michael Neyenhaus, KQ4HOM, Jeff Buffington, N4POD, and Mike Wagner, KK6OKU.

An overview presentation on Winlink was shown to the guardsmen, as well as a real-world example of rapidly deploying antennas and transceivers and communicating with them. An assessment was made of the equipment the guard was provided. Utilizing amateur gear, successful communications were established on the SHARES frequencies with a unit in Nashville. Further training and exercises are planned later this year.

ICS-300 Training Held in Roane County

On June 8th and 9th, Roane County hosted ICS-300 training. ICS-300 is a multi-day course for Expanding Incidents. It serves as training for complex local or regional incidents for responders. Attendees from across the East Tennessee area were present.

If your ARES, EmComm group or other organization has news of interest, please send it to: info@w4olb.org

We encourage everyone to check into their local ARES Nets!

Knox County ARES/METERS - 146.940—Mon at 19:00 ET

Roane County—147.015—Tue at 20:00 ET

Monroe County—147.315—Wed at 20:00 ET

Sevier County— 146.850—Wed at 20:00 ET

Anderson County—147.150—Thu at 19:00 ET

Loudon County—146.685— Thu at 20:00 ET

Blount County - 146.625—Thu at 21:00 ET