



# CARS CONNECTION

CHEROKEE AMATEUR RADIO SOCIETY MAGAZINE

MARCH 2026 | ISSUE 31





# MESSAGE FROM THE PRESIDENT



**Marty Buehring - KB4MG**

The presentation from Rob Sherwood was great this past month! I am sure many of you had trouble following the technical details, but don't worry about it. The bottom line is still the same, *"don't pick a radio on the specs alone. Pick a radio that works best for your operating style, budget, and ease of use"*. Great advice.

I was also pleased that our enhanced sound system proved to be working. For a small investment we have better capability for both live and remote presentations.

This month we will be hearing from Karin Thompson from RT Systems. It's a great company with an interesting story. Think how difficult it must be to create programming software for the wide variety of radios out there. Karin will share with us what it takes to do this as well as some tips and tricks you can use when programming your radio. Don't miss this!

This month we will also host the New Ham's Luncheon. We know people have questions and are not always willing to just approach others and ask. This creates a forum for this to happen. We want new hams to feel comfortable asking *"the hard questions"* about our hobby. We will

have some mentors at the luncheon that can help with answers or take an action-item to find out. I strongly recommend this event to any ham licensed less than 2 years.

This year is about **"Learning Together"**. As I have stated before, no one knows it all when it comes to a topic as broad as amateur radio. This year we sought some outside speakers so that we can increase our knowledge together as a club and be more effective operators. The more you know, the more you can appreciate your hobby. Imagine a fly fisherman that only purchases his own equipment, lures, and flies. Yes, you can still enjoy the hobby, but if you tie your own flies and catch a fish with it, that creates a joy that cannot be duplicated. So, it is with amateur radio. Doing some hands-on projects promotes understanding and deeper knowledge.

## INCREASE OUR KNOWLEDGE THROUGH HANDS-ON ACTIVITIES

You can read books, watch YouTube videos, and even watch live demonstrations, but doing something hands-on is the best way to truly learn. We will have some opportunities in 2026 to do that. The first one coming up is the club picnic and POTA event on April 18th. We chose this date to align with the Georgia Parks on the Air event. This is your chance to get on the HF bands in a low stress and fun activity. Besides, you will be getting points for the club in this event. Last year CARS was the number one points leader club in Georgia, by a lot! We would like a repeat of that this year. You will learn a lot about operating and maybe get the urge to try other contests.

There will be some workshops at Field Day in June, which are still being planned. This will be another opportunity for learning.

## A NEW CHALLENGE

In October 2025 **Stephen (KK4YDY)** did a great presentation on small computers for amateur radio. We want to expand on that in the coming months and years so that those who desire a deeper dive into this can have a learning path. There are projects almost every month on the ham radio magazines and websites that make use of these small computers. There are fundamentally two classes of these devices and would be used for different reasons.

Raspberry Pi is the most commonly used platform for projects that require a more capable computer that can run some version of LINUX. These projects often use software written by someone else and may not even need external hardware other than a display and keyboard/mouse. Some examples are:

- DMR/DStar Hotspot, which does require an added RF board
- HamClock - code runs on the LINUX-OS and displays the clock plus more
- WINLINK Gateway - requires packet software and radio, requires approval
- APRS Digipeater
- Dedicated SDR Receiver - requires an external SDR dongle

The second most common method is some derivative of Arduino. These boards and platforms are designed to have a dedicated task. These are also called microcontrollers and do not run an operating system. Projects that need more "control" of things





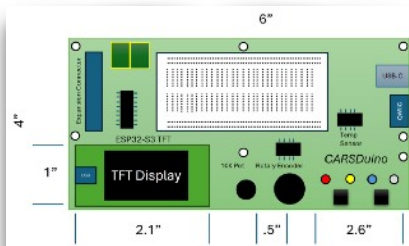
# MESSAGE CONT'D

are best suited for this platform.  
Examples are:

- Power monitor for your station
- Morse code keyer and practice system
- WSPR (Whisper) transmitter
- Multiport antenna switch
- SWR and Power Meter
- Rotor controller
- Many more...

I am sure there are some curious members in our club that would like to learn more about this. These controllers have a close relationship with the hardware, which is why they work so well for this purpose.

My proposal is to create a platform for club projects that will be both for basic learning and building more projects. The ideas are still being worked out and there may be a prototype board by the April meeting. The opportunity will be to learn some basic programming in Circuit Python to bring these projects to life.



The picture shown here is a concept drawing, but is well on its way to being a real circuit board.

I look forward to seeing you all at the March and April meetings! Come expecting to learn!

73,

Marty - KB4MG

## UPCOMING EVENTS

### CARS Calendar

- Mar. 7-8** International DX Contest - SSB
- March 11** SKYWARN Basic Spotter Training (Register)
- March 14** CARS monthly meeting and New Hams lunch
- March 14** Georgia State ARES Meeting, Forsyth, Ga.
- March 25** SKYWARN Basic Spotter Training (Register)
- March 28** Georgia Death Race
- April 18** CARS spring picnic and POTA Day (Red Top Mountain SP)
- April 18** World Amateur Radio Day
- May 15-17** Dayton HamVention, Xenia, Ohio
- Jun 27-28** Field Day (Location TBA)
- Aug 22-23** Huntsville HamFest, Huntsville, Ala.
- Sept 18-19** Georgia Jewel

### Recurring events:

**Mondays @ 8pm.** Cherokee ARES net on WA4EOC repeater (145.19, non-standard plus offset of 2.26. PL tone 173.8). Backup repeater is K4SJR (146.70, minus offset. PL tone 123.0) Check in via voice, D-STAR, DMR, Winlink, D-RATS.

**Thursdays @ 8pm.** CARS Net on KG4VUB repeater (145.27, minus offset, PL tone 100.0)

# THE 2026 K3Y EXPERIENCE: A MONTH-LONG MARATHON IN THE HEART OF WINTER

by Jason Turnage, KO4NDP

For our club, the calendar is a revolving door of adrenaline. We've got the June heat of Field Day, the summer sprint of the 13 Colonies, and year-round POTA outings. But January is different. While the snow is piled high (or the frigid Georgia ice) and it's too cold to tinker with antennas, we have Straight Key Month (SKM).

Think of it as the ultimate "warm-up" for Winter Field Day. While others are checking their tent heaters, we're stretching out our wrists. It's a month-long marathon celebrating the K3Y event and the 2006 founding of the Straight Key Century Club (SKCC). As

a returning veteran for my second year, I jumped back into the fire as a volunteer operator for K3Y/4.

## THE "OPERATOR'S HIGH": CHASING THE RUSH

Volunteering for K3Y is a unique brand of madness. You sign up for one-hour "shifts" on the regional schedule, thinking you'll just do your hour shift then go back to being a hunter. But there is a specific "operator's high" that comes from being the one holding the keys to the pileup.

A new operator's first hour usually starts with a bit of "key fright," but once the rhythm takes over, the adrenaline kicks in. They'll repeatedly head back to

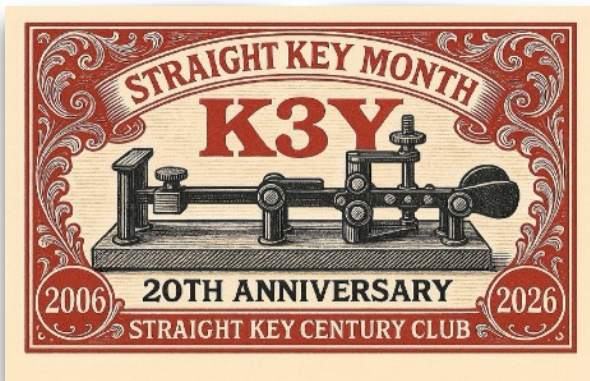




# THE 2026 K3Y EXPERIENCE... CONTD

the sign-up sheet to chase that rush. This time, once all pens were down, I had logged 24 hours in the hot seat over the course of 22 shifts. By the end of the month, I'd handled 297 QSOs for Region 4, with a 5-6 p.m. peak that saw 84 contacts over the month—a true workout for a straight key operator!

"Hardware Store Special" and mid-month meltdown. My primary instrument for this marathon wasn't a boutique chrome key. It was my "Georgia Original"—a



homemade straight key I built four years ago from plywood, skateboard bearings, and hardware store nuts and bolts.

However, mid-way through the month, the homebrew pine pounder suffered a catastrophic structural failure and literally fell apart in my hand mid-QSO. In true ham fashion, I didn't reach for a backup. I performed an emergency field rebuild, reinforced the pivot, tightened some nuts, reset some screws, and soldiered on. The Mark II version of the key finished the month stronger than ever, proving you don't need a \$500 key to work the world—just some scrap wood and a bit of stubbornness.

## HUNTING THE SWEEP

When I wasn't serving as the lighthouse for Region 4, I was out in the weeds hunting. The bands were incredibly diverse, stretching from the 160M basement all the way up to 10m.

The real magic happened on the SKCC "Sked Page." This community hub is where the live chat happens, K3Y operators announce their QRVs and band switching, and DX station chatter engages to keep everyone attempting QSOs with them all day and night. And on occasion during the month, a 6M pipeline opened up, and that chat window lit up like a

Christmas tree. I snagged a Puerto Rico 6M QSO when I saw the chatter and tuned into his frequency.

I also managed to bag a US + Territory Sweep (AK, HI, and PR), as well as pull Oceania out of the noise. However, Africa, Asia, and South America remained elusive ghosts for me this year.

## FAMILIAR FISTS

The best part of this event is recognizing the "swing" and personality of the operators. My "fan club" was led by **KK0I**, who tracked me down six times across the bands. I also logged local club mates **K8MC** and **N4CDH** five times each. And I have to mention **KK4YDY**—it's always a treat to hear a familiar local fist come through the pileup, reminding you that this global hobby is really just one big neighborhood.

By the time the logs closed, I had 367 total records and a rebuilt key that deserves a trophy. Whether it was the heavy lifting on 40M(134 QSOs) or the 6M surprises, it was a January to remember.

If you're looking for a way to keep your skills sharp between POTA runs and Field Days, join the K3Y ranks next year. Dust off your favorite key—even if you have to build it out of plywood first. I'll be back for my third year in 2027, still chasing those last three continents!

### Resources:

SKCC: <https://skccgroup.com/>

Straight Key Month: <https://skccgroup.com/k3y/>

Sked Page: <https://sked.skccgroup.com/>



Click [HERE](#) to purchase from Ham Radio Deluxe





# THINGS I WISH I KNEW ABOUT ANTENNAS BUT WAS AFRAID TO ASK -- PART 5

## DIPOLE VARIATIONS: THE WINDOM AND G5RV

By Tony Drake (KC4OBY)

In the first couple of articles in this series, I introduced some basic terms and concepts about antennas. If you run across something that you are not familiar with, you can refer to those articles in the May and June (2024) issues of this newsletter.

In other articles, I introduced antenna modeling and the EZNEC software. EZNEC models will be used to demonstrate the antennas in this and future articles.

Today I will dive into two more variations of the dipole: the Windom (or off-center-fed dipole, abbreviated OCF), and the G5RV. These two antennas are variations of the dipole antenna that are commonly used to enable the use of a single antenna on multiple amateur bands.

### THE WINDOM ANTENNA

The full history of the Windom antenna is detailed in "Ham Radio" magazine from January 1974. The first example in amateur literature was in "QST" in September of 1929 by **Loren Windom, W8GZ/W8ZG**. These versions used a single wire feedline and never really gained widespread acceptance or usage.

The article on Windom antennas<sup>1</sup> gives an excellent overview of the history of the original version and some ideas about installation and testing.

A second derivative of the Windom replaced the single wire with parallel feedline and placed an insulator in the wire to break it into two segments, with one segment fed by each side of the parallel feedline.

The most common derivative currently in use was detailed in "Ham Radio" magazine in May 1988, when the legendary **Bill Orr** placed a diagram in his column of a design by **WA4LVB** called the "Carolina Windom," which replaced the parallel feedline with a 4:1 balun and 72-ohm coax cable. The basic design is a single wire 131-feet, 10-inches long and fed through a 4:1 balun with coax 81 feet 8 inches from the left end of the wire. All these designs require a tuner to operate.

There are now several different variations on this antenna:

1. **Original:** Single horizontal wire fed with single wire feedline to the antenna tuner. I won't go into depth on this one as it is superseded by other versions. It can also be a dangerous antenna due to high currents and voltages on the single wire feed.

2. **Parallel 1:** Single horizontal wire with insulator fed off-center, with parallel feedline to the antenna tuner. I won't go into detail on this version either, since most of us need or at least want to feed our antennas with coax cable into the shack.

3. **Off-center Fed:** No balun, a standard length 80M dipole fed approximately 30 percent off center with coax.

4. **Parallel 2:** Single horizontal wire fed with parallel feedline to a balun, with coax to the antenna tuner. Here the balun is not connected to the wire, but is connected between the parallel feedline and coax.

5. **Carolina Windom:** Single horizontal wire fed with a balun, and coax to the antenna tuner. No parallel feedline is used.

The important thing to realize about this antenna is that in all of its forms, any feedline that is between the antenna and the balun will be part of the radiating element of the antenna. Because of this feedline radiation, the Windom has both vertical and horizontal radiating elements. It also means that there are common mode currents on the wire and feedline. A very detailed treatment of Windoms, baluns, chokes and common mode currents was written by **DJOIP**<sup>10</sup>.

If you are interested in using one of these antennas, be sure to employ the proper baluns and chokes to prevent currents from entering the shack, and ensure that the wires cannot be accidentally contacted by either human or metal objects as this will result in one of many unfortunate outcomes.

### ANALYSIS AND MODELS

The first thing we need to understand about the Windom is that it is not a dipole. The only real similarity to a dipole is that the antenna wire is a half-wavelength long.

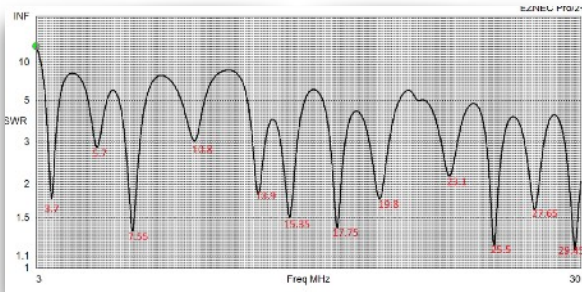




# THINGS I WISH I KNEW ABOUT ANTENNAS BUT WAS AFRAID TO ASK -- PART 5 CONTD

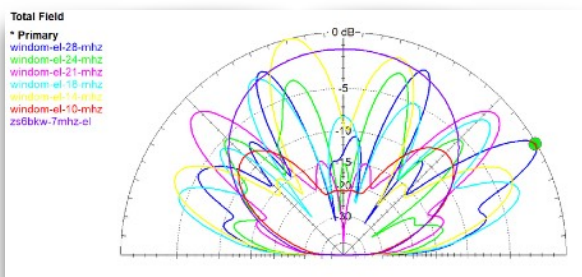
The second thing to understand is that the antenna requires a tuner. When you are using an antenna off the fundamental frequency, whether center-fed or off-center fed, you encounter a phenomenon known as the "end effect," which makes the antenna electrically shorter than the physical length because the currents at the end of the antenna are not zero, unlike with a center fed half wavelength dipole at the design frequency.

The impact of the end effect is that antennas do not resonate exactly on their harmonics. You see below the low SWR frequencies for Windom. Note that the SWR low frequencies are close to the amateur bands, but not within them.



Note also the radiation patterns shown in the graph below. You will see that these are not the figure-eight plots from the half-wave dipole presented in previous installments of this series. There are nulls and peaks in multiple directions in the pattern, both perpendicular to the plane of the antenna, and off the ends. This makes the concepts of gain and directionality ambiguous for any Windom.

The pattern of the Windom antenna is therefore multi-directional, rather than bi-directional as seen with a center-fed dipole. The exact pattern and resonance are also very sensitive to the height above ground.



## WRAPPING UP THE WINDOM

The Windom is a multi-band antenna based on an off-center fed dipole. Because it is not a resonant antenna, the dimensions are not critical. There are multiple designs that can be used, with some variations in results based on the exact design and materials used. All of the Windom designs require a tuner as their SWR low frequencies mostly sit outside the amateur bands. With a proper tuner, the antenna can be used on multiple amateur bands. The pattern is multi-directional with multiple peaks and nulls which vary with frequency and height above ground in wavelengths on the band of operation.

## THE G5RV ANTENNA

The G5RV was designed by British ham **Louis Varney** in 1946 and was first published in the July 1958 "RSGB Bulletin"<sup>5</sup>.

The basic idea behind this antenna is a 102-foot (51 feet on a side) wire with a 34-foot (half-wave on 14MHz) section of 300-ohm open wire feedline (this is not the TV ribbon cable with which many of us are familiar, but rather open wire feedline), connected to a length of 72-ohm feedline (RG-59 or RG-11), and then to an antenna tuner. The antenna operates as a shortened dipole on 80 meters, an extended dipole on 40 meters, nearly three half-wavelengths on 20 meters, and as a center-fed long wire on 15 and 10 meters<sup>6</sup>.

There are many variations and opinions on whether a balun should be used, and whether the coax must be 72-ohm (Footnotes 4 and 5). One thing that is important to note is that you should use at least RG-213 coax to feed these antennas if you are using 50-ohm coax instead of 72-ohm RG-59/RG-11. The design of a G5RV makes it a voltage fed antenna on 30, 15, and 10 meters. The feedline impedance will be on the order of 500 to 1000 ohms. With high SWR and power levels, the peak voltage rating of RG-8x coax can be exceeded<sup>3</sup>.

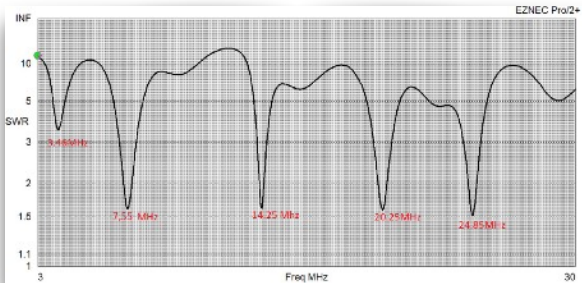
You may also take the open wire feedline directly into the tuner in the shack. This design is still used in many antennas that are available commercially today.



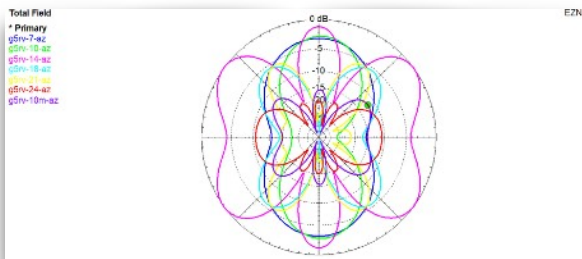


# THINGS I WISH I KNEW ABOUT ANTENNAS BUT WAS AFRAID TO ASK -- PART 5 CONTD

As you can see from the SWR plot below for the original G5RV design, with some careful pruning and a little luck, you can use portions of 40M, 20M, and 12M without an external tuner.



In the graph below, notice that the azimuth plots for the G5RV are neither regular nor symmetrical. Also notice that the radiation patterns are not perpendicular to the plane of the antenna at all frequencies. Starting around 18MHz, the radiation pattern moves along the wire, instead of perpendicular to it.



## ZS6BKW'S DESIGN FOR AN IMPROVED G5RV

The design from ZS6BKW is an evolution of the G5RV that took advantage of advances in computers and pre-calculated Smith charts to improve the original design. This allowed the elimination of the requirement for a tuner in most cases and allowed the antenna to be fed with the 50-ohm coax.

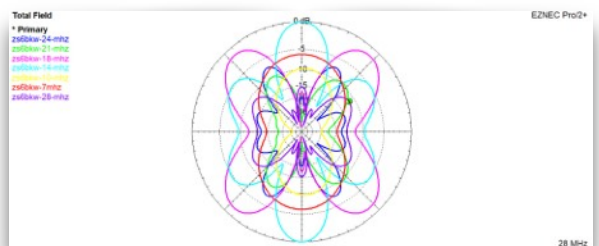
The design was originally created by **Brian Austin (ZS6BKW)**, for whom the design is named. It was first published in June 1985, in "RadioZS," the journal of the South African Radio League. Austin started with the design of the G5RV, which requires a tuner, and used computer optimization, first with a program he created, and then with EZNEC, to refine the antenna to make it work without a tuner on 40M, 20M, 17M, 12M,

10M and 6M, and with a tuner on 80M, 30M and 15M. The basic design is a 90-foot-long wire (as opposed to 102 feet for a G5RV), fed in the center with a 40-foot length of 300- or 400-ohm feedline, connected either directly or by using a 1:1 balun, to 50-ohm coax.

While there are many different versions of the antenna, depending on the length of the wire, and the characteristics of the parallel feedline stub, the following dimensions are the ones I have modeled below based off some tweaking of the data in the article<sup>8</sup>.

### Here are the parameters I put into the model:

- Height: 45.9318 Feet
- Length: 93.5039 Feet
- Ladder Line: 400 ohms, .98 velocity factor, 43.6352 feet, 0.31dB loss/100 feet at 21Mhz.
- Coax: 52.4934 feet length, 50 ohms, .66 VF, 1.1 dB loss per 100 feet at 10MHz.
- This antenna will give coverage of 5 bands with no traps and no tuner. The 2:1 SWR coverage is:
  - 7.0-7.3 MHz (40M)
  - 14-14.25MHz (20M)
  - 18-18.15MHz (30M)
  - 24.65-25.0 MHz (12M)
  - 28.5-29.05 MHz (10M)
  - 50-50.075 MHz (6M)



Notice that just like with the G5RV, the elevation patterns do not exhibit good low angle radiation. So, what are the differences among these antennas?

### There are a few key points to remember:

- The G5RV is a center-fed antenna which requires a tuner to work on multiple bands.
- The Windom is an off-center fed antenna and requires a tuner on all bands.





# THINGS I WISH I KNEW ABOUT ANTENNAS BUT WAS AFRAID TO ASK -- PART 5 CONTD

- The ZS6BKW as modeled is a center-fed antenna that covers multiple amateur bands without a tuner, and additional bands with a tuner.
- The elevation patterns of all of these antennas do not exhibit the low angle radiation patterns that we generally are trying to obtain. Instead, they all have different multi-lobe patterns at varying angles.

You will also notice that the azimuth patterns change with frequency from being perpendicular to the plane of the wire (as we see with a dipole), to being along the plane of the wire (off the ends) depending on the frequency.

## SUMMING IT ALL UP


All these examples are good general-purpose antennas when one wants to be able to talk to a wide variety of people in a wide variety of areas with a single antenna on multiple bands, and doesn't particularly care about specific directions, countries, or areas. They make an excellent alternative to a standard dipole, especially when one has to choose only one antenna for all needs.

As always, if you have questions about any of the material, feel free to ask in the CARS groups.io group, via the club email, or find me in a meeting or event.

### Endnotes:

1. "Ham Radio," May 1978, retrieved from <https://www.worldradiohistory.com/Archive-DX/Ham%20Radio/70s/Ham-Radio-197805.pdf> 3/3/2024
2. "Ham Radio," May 1988, retrieved from <https://www.worldradiohistory.com/Archive-X/Ham%20Radio/80s/Ham-Radio-198805.pdf>, figure 4 page 38 retrieved 3/3/2024
3. "QST" May 1989, retrieved from ARRL 3/4/2024, Technical Correspondence, The G5RV. Which Coax to Use, Richard Broomfield, K1TAV
4. "QST" February 1990, retrieved from ARRL 3/4/2024, Technical Correspondence, The G5RV: Which Coax to Use, Joseph Noecker, N7HMV
5. "QST" March 1994, retrieved from ARRL 3/4/2024 Off Center Fed Multiband Dipoles. Belrose, John, VE2CV, Paul Boulaine, VE3KLO
6. "Ham Radio" September 1983, pg 45, Ham Radio Techniques, The G5RV Antenna, Bill Orr, W6SAI retrieved from <https://www.worldradiohistory.com/Archive-DX/Ham%20Radio/80s/Ham-Radio-198309.pdf> 3/4/2024

7. "Ham Radio", March 1986, pg 64, More on the G5RV Antenna, The ZS6BKW multiband antenna design retrieved from <https://www.worldradiohistory.com/Archive-DX/Ham%20Radio/80s/Ham-Radio-198603.pdf> 3/4/2024
8. <https://www.nonstopsystems.com/radio/pdf-ant/ZS6BKW.pdf> retrieved 3/4/2024
9. <https://www.worldradiohistory.com/Archive-DX/73-magazine/73-magazine-1980/73-magazine-09-september-1980.pdf> September, 1980, pg 68
10. <https://www.dj0ip.de/off-center-fed-dipole/carolina-windom/> retrieved 3/6/2024



**HELP THE CLUB**  
**WE'RE LOOKING FOR ORIGINAL ARTICLES FOR THE NEWSLETTER**

Write about an experience you enjoyed or a memorable QSO. Tell us about a new piece of equipment you discovered. Share your expertise with your fellow club members, or help educate readers on some aspect of amateur radio that interests you.

And be sure to include pictures! Articles need not be "perfect." We'll help with the editing. We just need your input.

Send contributions and pictures to  
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# A PRACTICAL DUAL-BAND YAGI FOR EMERGENCY AND LONG-RANGE VHF/UHF USE

By Al Sims (KK4JPO)



This article looks at the HYS dual-band outdoor Yagi antenna, designed for amateur radio operation on the 2-meter and 70-centimeter bands (144/430 MHz). The antenna delivers approximately 9.5 dBi of gain on 2 meters and 11.5 dBi on 70 centimeters, making it a compact yet capable directional choice for fixed outdoor installations. From its mounting location in Woodstock, the antenna is aimed north along the I-75 corridor. Under ideal conditions, the manufacturer claims a potential operating range of 30 to 600 miles.

To reduce visual impact, the antenna was finished in a camouflage paint scheme. This choice serves both aesthetic and practical purposes, helping it blend into the surrounding tree line and remain less noticeable from the ground. The accompanying photos document the mounting and final aiming of the antenna.

The installation was completed as a permanent outdoor setup and proved to be straightforward. Aside from the usual considerations, such as proper mounting height, secure attachment, and careful alignment, no significant issues were encountered. The antenna is fed with high-quality, VHF/UHF-rated 50-ohm coaxial cable. The feedline is routed along the exterior wall using stand-off clips, which reduce mechanical strain, maintain separation from the structure, and allow for proper drainage while minimizing wind-induced movement.



The primary objective of this installation was to improve access to more distant stations and repeaters, particularly for northbound traffic and information during potential disaster evacuation scenarios. Compared to an omnidirectional antenna, the Yagi's directional pattern provides increased forward gain, resulting in better reception and more reliable access to repeaters located along the I-75 North corridor.

The total cost of the project came in at approximately \$125.

Initial SWR measurements fell well within acceptable limits for both VHF and UHF operation, with no additional tuning required beyond standard post-installation checks. As expected, SWR performance can vary depending on factors such as mounting height, nearby structures, and feedline choice.





# FINDING LOCALS IN A LONG-DISTANCE HOBBY

By Christian Payne --G5DOC



After relocating to Scotland, a ham radio operator rediscovers on-air magic but misses local community.

I recently turned on my new radio for the first time and heard Canada and America on a piece of wire thrown into a tree. That's a first for my new location and I figured the radio was performing some kind of magic. Both of those contacts had immense pileups so I realized that conditions were in fact up and I was in for an interesting night.

It took me a while to realize how to turn on the tuner on my still new FTX-1 Optima. Which should give you an indication of just how little time I have made for radio.

With managing the still antenna-free garden, cutting, chipping and stacking firewood for winter... harvesting and picking apples plums and other fruit... plus the making of cider to see us through the holidays... there's been more than enough excuses I can use for not getting the station up and running. I'm getting there though. Just slowly.

I did have a couple of friends (**M9TOG & M1NER**) come visit me. Gordon made the 90-minute drive over and for Andy it was about six hours. We certainly got to pay a little radio, but we mostly did a tour of the local pubs and looked for tall buildings that would look good with antennas on.



We are hoping to have a little field day spring/summer, as well as some more 'club walks' between local ale houses.

## MISSING NEARBY RADIO FRIENDS

I'm constantly reminded of how physically isolated I am from other radio operators and how lucky I was where I used to live in Cambridgeshire.

Back there, the amateur community was never far away. My local club met just a short walk from my house, and I could almost see the local repeater from my shack. I regularly met with other operators for informal gatherings in pubs or each other's homes. There was a rhythm to our interactions and rarely a lull between contacts.

If anything happened with the weather, power, or otherwise, there was always someone on the other end of the repeater and a bunch of people nearby happy to head over to help fix things.

That density of radio fanatics created a kind of ambient community and with it some reassurance that all was well in the world of radio.

Here in the Scottish Borders, the picture is somewhat different. I'm about a twenty-minute drive from the nearest amateur radio operator (that I know of), and I genuinely have no idea if there are any others within an hour of my QTH.

That may sound unremarkable to operators in large rural parts of the US or Australia but having moved from a place where there may have been over a hundred hams within a 20-minute drive, it's been a bit of a shock. There was a local club, but it dissolved as those running it got older or went silent key.

Of course, amateur radio thrives on distance. We celebrate the long path, fleeting openings and pulling weak signals out of the noise. So in theory, none of this should matter as we mostly connect over the air, not necessarily across kitchen tables or village halls.

## PROXIMITY MATTERS

There is something about face-to-face contact that cements a community in a way no net or messaging group quite can. Seeing the same people regularly. Passing around bits of kit. Sharing stories about weird





# FINDING LOCALS IN A LONG-DISTANCE HOBBY CONTD

antennas, half-finished projects, seemingly magical contacts, or simply sitting with a cup of tea while talking about life in general.

These small, ordinary, off-air interactions are where we share a little more personally and where trust and a sense of belonging can form.

Without that, the hobby can feel strangely two-dimensional. Where we're technically active at the same time as being socially disconnected. Although a QSO can easily lead to a friendship, adding a call sign to a logbook is just collecting. You can make hundreds of global contacts and still feel like you're operating alone.

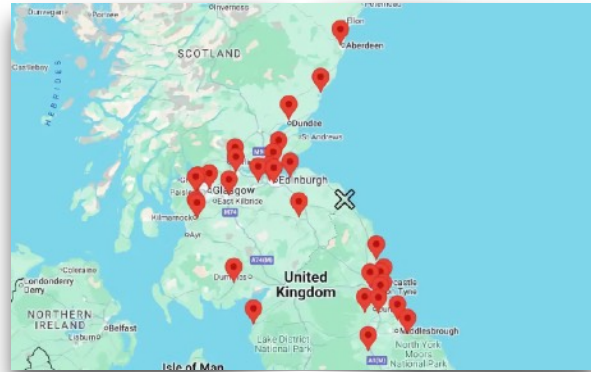
That craving for a deeper connection is what has nudged me toward the idea of starting something local to me. Nothing formal. No constitution, or committee. So, no pressure. Just a once-a-month meet and greet. A chance to flush out the quiet hams who must be out there somewhere, operating from sheds, spare rooms and caravans. Maybe even attract the radio curious, unsure where to begin.

I suspect there are more operators in my part of the Borders than it appears. Some will have drifted away after the local Berwick Amateur Society folded. Some may be licensed but inactive. Others might simply not see themselves as the club going type. So, a casual, low-stakes gathering feels like the right place to start.

Amateur radio has always been about more than radios. It is about helping one another, sharing a nerdy curiosity in an infinite playground and the slow building of friendships over time.

In an age where so much community has been abstracted by algorithms and crammed into feeds and servers, it feels a little radical to suggest meeting in the same room, at the same time, with no agenda beyond connecting.

I have no idea if this will work. But I feel it's worth a go. In a hobby built on reaching out far and wide, sometimes it's fun to see what we're missing right under our noses.



This map shows the 'dead zone' around my QTH, marked by the cross. The two closest clubs are a one-hour drive away.

There is an amazing repeater not far away from me, **GB3BT**. Being coastal, it has huge coverage and I've heard people over 100 miles away getting in. It's rare though. Normally the only ones to be heard on it are me and **Keith (MM6KFE)**. So, should I find local-ish amateurs out there, there's a potential of a radio net to keep everyone in the loop.

In the interim, I'm going to be listening out on there as much as possible and if you think you might be able to get into GB3BT, please do try. You never know I might even be there to come back to you.

**Christian Payne writes his G5DOC newsletter from his home in Berwick-upon-Tweed, Scotland. Reach him at [G5DOC.net](http://G5DOC.net)**



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# GET TO KNOW...

## JASON TURNAGE - KO4NDP

**CARS IS A VIBRANT AND EXPANDING COMMUNITY, WELCOMING NEW MEMBERS REGULARLY. TO FOSTER CONNECTIONS, WE'LL PERIODICALLY SPOTLIGHT A MEMBER THROUGH A BRIEF Q&A. IF YOU'D LIKE TO BE FEATURED OR HAVE SOMEONE IN MIND, [PLEASE LET US KNOW.](#)**

**What is your name, callsign and license classification?** Jason Turnage, KO4NDP, Extra

**How long have you been licensed?** I went straight from unlicensed to General in Feb 2021. I upgraded to Extra in Nov 2023. I wish there was another upgrade because I'd do that too.

**What interests you most about amateur radio?** The plethora of sub-hobbies within it. A lot like saying you enjoy woodworking or welding, someone who says they enjoy amateur radio simply doesn't have the rest of the week explaining what all they use their radio hobby for. For me, it's building antennas, perfecting portable kits for certain needs, finding new-to-me POTA spots when I travel, building CW keys, generally "doing CW" and helping others with it, and most of all - the camaraderie and the good food. As a wise man once said, "you can't do radio on an empty stomach."

**What modes do you operate?** Almost entirely CW, with a touch of digital modes (FT8 and JS8Call) for those moments that need them. I probably have a mic around here somewhere. Wherever it is I'm sure it's fine.

**What are some of your most memorable experiences with amateur radio?** Activating my first POTA park using only CW. I'd done it many times on SSB, but CW was new to me. It was rough, I still didn't have a great grasp with CW yet, but I pushed on and did it anyway. All my hunters knew I was new and struggling, and the patience they gave was outstanding. I succeeded and couldn't have been happier, and kept seeking more and have continued since.

One thing was missing though - a group to share the excitement with and talk about it after. That's why I started helping others with practice sessions for Field Day (and general POTA), so they can rise to the top faster and have a small group they can trust to know what they're going through and build excitement with. Now my most memorable experiences with radio are when someone on our team makes their first CW QSO, or calls CQ for the first time, or

activates their first park, and gets the same rush I did to get to go do it again. That I get to be part of their experience thrills me.

**What is your most memorable QSO?** In January 2023 during an SKCC (Straight Key Century Club) annual event that brings a worldwide audience, a guy from the Netherlands wrote to me that he wanted to have a QSO. We found a good propagation path after a few failed attempts and had a nice long QSO. He sent me a nice QSL card.

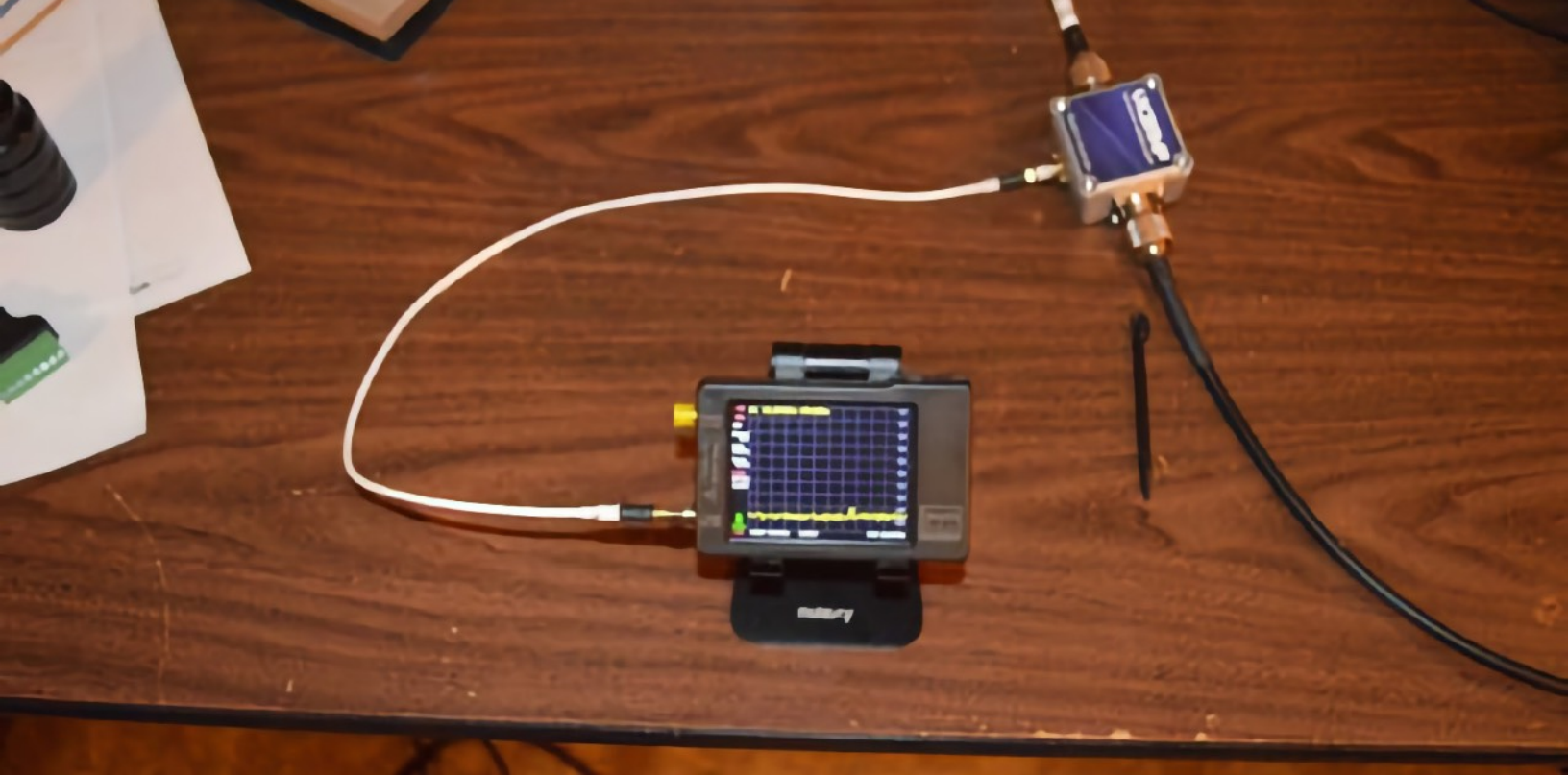
**How long have you been a member of CARS?** I joined CARS the minute I passed my first test in 2021. I knew from attending the meeting before the test that I wanted to come back regularly.

**What is one piece of advice you would offer a new ham?** Try everything and ask questions to everyone along the way. Take all advice with a grain of salt. Their advice is coming from their perspective, not yours. And once you figure it all out and you get to offer advice to a new ham who asks a question, stay away from "it depends"... figure out what they're looking for and make it depend on something.

**What do you like to do outside of ham radio?**

Building stuff, though exactly what stuff changes regularly. Currently it's building out a camper van for my wife and I to have adventures traveling around the country in. With a radio twist, of course :D





CHEROKEE AMATEUR RADIO SOCIETY

# SPECTRAL SLEUTHING WITH THE TINYSA

By Bob Cheek - N4RFC

In the previous installment on the Tiny SA we employed the device in its most-used application, examining the spectral purity of a QRP transmitter. The result was that the Elad FDM-DUO had a very clean output. I had planned to add a linear amplifier to the DUT (Device Under Test) but my plans were changed by a failure of the MOSFETS in the linear amplifier.

## WHEN UPDATES GO WRONG

BEWARE of third-party firmware for these sorts of devices. I downloaded a new version of firmware that promised several bug fixes and improved functionality. Instead, I discovered a new bug in the firmware. In cleaning up the source code the author deleted a line of code that set the low pass filter to the appropriate band. Everything was working well until I switched from 80 meters to 20 meters and transmitted. The low pass filter was still on 80 meters and that blew the finals. So, \$400 later, I have the new MOSFETS but haven't installed them yet.

I was working on another project that made me get out the Tiny SA and thought that it would make a good example of checking transmitters spectral purity. In this case it was my vintage Heathkit DX-100B, a 100-watt plate modulated AM and CW transmitter. It was sold by Heathkit in the '50s for \$189.95. Quite the bargain for that much power on AM.





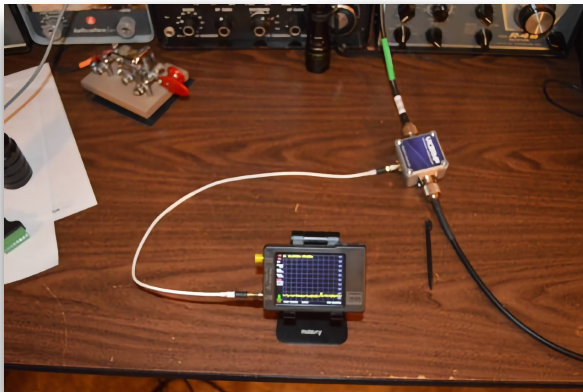
# SPECTRAL SLEUTHING WITH THE TINYSA CONTD

To make 100 watts output on AM takes a lot of power, and this transmitter draws about 500 watts from the AC mains to make a 100-watt AM signal! And, with all that iron in the transformers it tips the scale at 105 lbs. The ole gal had been working fine but one day I noticed something unusual tuning the transmitter. It also had low output power, and I could hear strange noises in the receiver when it was not muted.

After some trouble shooting, I discovered the bandswitch on the VFO was not on the correct band. The mechanical links between the two sections of the bandswitch were not in sync. The root cause was that the VFO band switch had become very stiff and bent the metal lever that moved it. I removed the metal linkage parts, straightened them out, and lubricated the VFO bandswitch shaft so it moved freely and put the transmitter back together.

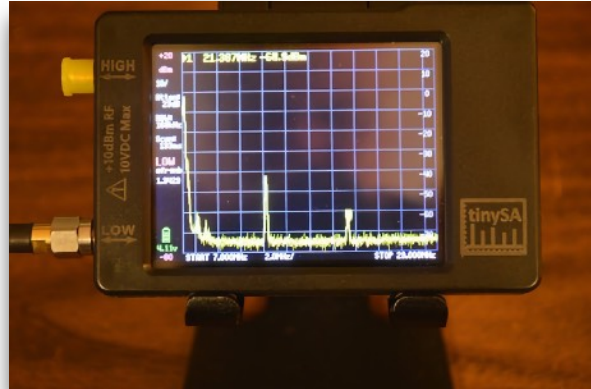
## TIME TO MEASURE

After the repairs I wanted to be sure the transmitter output was clean and had no unwanted emissions. I got the Tiny SA out and set it up the same way as with the FDM-DUO. In the photo below the cable with the green marker comes from the output of the transmitter to the coupler. The other side of the coupler is connected to a 50-ohm dummy load. The small white cable is connected to the "Low" input of the Tiny SA.



The setup on the Tiny SA was the same as in the previous article, except that I set the display scale to "Auto" to allow the Tiny SA to automatically adjust its display range to the output. In Auto mode, the TinySA will set the vertical scale such that the highest peak on

the signal will be at 0 dBm. That makes measuring the relative levels from peak very simple. This is what I saw:



The rig was tuned up into the dummy load on 7.05 MHz to a power output of 100 watts on the CW setting. You can see the frequency range on the Tiny SA was set to cover from 7.00 MHz, to 29.0 MHz. In the scan you can see the fundamental signal at the 0 dBm level, and the second harmonic at about -42 dBm, and the third harmonic at 21.307 at a level of -62 dBm. Those measurements are about typical for a linear amplifier or transmitter.

While adjusting the tuning on the transmitter, I watched the Tiny SA display and saw no issues of instability or spurious signals on the display. I called it a successful repair.

## THE OLD-SCHOOL APPROACH

These older transmitters work by using harmonics of the VFO to generate signals on the upper bands. For instance, the VFO would operate on 7 MHz when the transmitter is set to operate on 40, 20, 15, and 10 meters. It is using the fundamental frequency on 40, the second harmonic on 20, the third harmonic on 15 and the fourth harmonic on 10 meters. This ole gal was built before the 27 MHz CB band existed when the 11-meter band was a ham band. When I was troubleshooting the transmitter, I was seeing output around 6.75 MHz which was the fundamental VFO frequency for the 11-meter band. 27 MHz divided by four (fourth harmonic) equals 6.75 MHz. The band switch was set to 40 meters (7 MHz) but the VFO was on 6.75 MHz. Not good!





# SPECTRAL SLEUTHING WITH THE TINYSA CONTD

I suspect that the strange noises and unusual tuning were caused by the stages subsequent to the VFO operating without a proper drive signal and may have become unstable when being tuned. I have seen that before. Without a good drive signal a tuned amplifier can easily become an oscillator. That will produce unwanted output from the transmitter.


Modern transmitters and transceivers don't operate on harmonics. They use mixers to heterodyne signals from the intermediate frequency (IF) to the operating frequency. Mixers work by combining two different frequencies. The output of the mixer contains both the sum and the difference of the two frequencies. Tuned circuits or filters are used to separate the desired frequency for further amplification. However, the unwanted products from the mixer can appear in the output of the transmitter because of mis-tuning or component failures. It is helpful to understand the methods and frequencies involved in order to be able to diagnose problems.

In this case, using the TinySA I was able to see the output of the transmitter was on the wrong frequency, leading me to look at the band switching on the VFO where I discovered the problem with the band switches being out of sync. After the repair I used the TinySA to check my work and see that the transmitter was operating on the correct frequency and was not putting out unusual or unwanted emissions.



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Write about an experience you enjoyed or a memorable QSO.  
 Tell us about a new piece of equipment you discovered.  
 Share your expertise with your fellow club members, or help educate readers on some aspect of amateur radio that interests you.

And be sure to include pictures! Articles need not be "perfect." We'll help with the editing.  
 We just need your input.

Send contributions and pictures to  
**k4qo.mail@gmail.com**





Welcome to the KY4KP YouTube channel where I share my time in amateur radio and the experiences that come with it. Most of my videos focus on getting on the air from the field, especially Parks On The Air activations, contesting, and portable operating. I like showing how I set up, what works, what does not, and how each activation unfolds in real conditions. You will also see the community side of ham radio, family moments, and the enjoyment that comes from combining radio, learning, and being outdoors. My goal is to document real operating, encourage others to get on the air, and keep the hobby practical, approachable, and fun.



In this video, I share a quick look at the fun side of Parks On The Air, especially when people get on the air for the first time. It captures the excitement, the laughs, and the simple enjoyment of making contacts outdoors. Moments like this remind me why I enjoy ham radio so much. It is about getting on the air, sharing the experience with others, and keeping the hobby welcoming and enjoyable.



In this video, I give a quick behind the scenes look at my contest station and the setup I am running. It is a relaxed moment that shows the gear, the space, and the atmosphere while operating. Clips like this give a real sense of how I work contests and enjoy the time on the air without overthinking it.



In this video, I talk through a mistake I made during an activation and why it mattered once I was on the air. It is an honest look at how small setup decisions can turn into real problems in the field. I explain what went wrong, what I learned from it, and what you should check ahead of time so you do not run into the same issue. My goal is to help you avoid lost time, frustration, and missed contacts when you head out to operate.



In this video, I spend the day at the Cherokee Amateur Radio Society fall picnic and enjoy time with fellow hams outside the shack. It is a relaxed gathering with good food, easy conversation, and plenty of shared stories about radio. Events like this matter because they remind you that amateur radio is not only about operating and equipment, it is about people, friendships, and staying connected as a community.





# CONTESTING

## CONTEST CORNER MARCH 2026

**ARRL International DX Contest**  
0000Z, March 7 to 2400Z, March 8

**South American 10m Contest**  
1200Z, March 14 to 1200Z, March 15

**CQ WW WPX Contest, SSB**  
0000Z, March 28 to 2359Z, March 29

**Africa All Mode Intern. DX Contest**  
1200Z, March 28 to 1200Z, March 29

**Monthly QSO Parties**  
SC, NC, OK, ID, VA

## DXPEDITION NEWS

**3YOK, Bouvet Island**  
March 2026, HF SSB,CW and digital



C5SP, Gambia - Thru March 2026 - HF bands SSB, FT8



H44MS, Solomon Islands - March 2026, 40-6m SSB and ft8





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# RESOURCE LINKS

**Website** - <https://www.wx4car.org>

**Contact Us** - <https://www.wx4car.org/contact-us.html>

**Membership** - <https://www.wx4car.org/membership-form.html>

**CARS Club Technical Programs** - <https://www.wx4car.org/technical-monthly-programs.html>

**Club Activities** - <https://www.wx4car.org/club-activities.html>

**POTA Corner** - <https://www.wx4car.org/pota-corner.html>

**ARRL FIELD DAY** - <https://www.wx4car.org/field-day.html>

**Ham Fests** - <https://www.wx4car.org/amateur-radio-events.html>

**CARS Groups.io** - <https://groups.io/groups>

**ARRL Testing Info** - <https://www.wx4car.org/testing2023.html>

**New Ham Kit** - [https://www.wx4car.org/uploads/8/3/7/7/83773582/wx4cars\\_intro\\_to\\_new\\_hams-7apr2021.pdf](https://www.wx4car.org/uploads/8/3/7/7/83773582/wx4cars_intro_to_new_hams-7apr2021.pdf)

**Ham License Upgrading** - <https://www.wx4car.org/obtaining-a-license.html>

**Technician Ham Cram Study Guide** - [https://www.wx4car.org/uploads/8/3/7/7/83773582/2022-2026\\_technician\\_pool\\_study\\_guide.pdf](https://www.wx4car.org/uploads/8/3/7/7/83773582/2022-2026_technician_pool_study_guide.pdf)

**Club Apparel** - <https://www.hamthreads.com>

**CARS Club Badges** - <https://www.thesignman.com/clubs/carsga.html>

**POTA Supplies** - <https://www.clubgearonline.com>

## CONTESTING LINKS

**ARRL Contest Calendar** - <http://www.arrl.org/contest-calendar>

**Contesting Calendar** - <http://www.contesting.com/>

**CQ Contest Calendar** - [http://cq-amateur-radio.com/cq\\_contests/cq\\_annual\\_contest\\_calendar/](http://cq-amateur-radio.com/cq_contests/cq_annual_contest_calendar/)

**SolarHam Site** - <http://www.solarham.net/index.htm>

**Space Weather** - <http://www.spaceweatherwoman.com/>

**Contest Calendar** - <https://www.contestcalendar.com>

## OTHER LINKS

**ARRL** - <http://www.arrl.org>

**Sky Warn** - <http://skywarn.org>

**QSO Today** - <http://qsotoday.com>

**Cherokee EMA** - <http://cherokeega-ema.org>

**Georgia ARES** - <https://www.gaares.org>

**Ham Radio Work Bench** - <http://hamradioworkbench.com>

**On All Bands** - <https://www.onallbands.com>





# MISSION STATEMENT

The mission of the Cherokee Amateur Radio Society is to promote the hobby of amateur radio to the Cherokee County residents and surrounding communities. It primarily serves to provide education, FCC testing, public service, and fellowship to people with the common interest of amateur radio.

Cherokee Amateur Radio Society is an organization of FCC licensed amateur radio operators (also called Hams) that meet and share the hobby, educate people about amateur radio, as well as support our local community in times of disaster. We are located in Cherokee County, Georgia and have club call sign WX4CAR. We are an ARRL Affiliated Club.

The club also participates with ARES, and the Cherokee County EOC when severe weather gets close to the area, and we help with local public service projects. The members of the club also dedicate some of their time to promote and help new hams to develop their skills and knowledge on Amateur communications modes and to be better operators. We are a very active club and participate in ARRL Field Day every year. If you are located in Cherokee County or the surrounding area, we would like to invite you to participate.

## CARS OFFICERS FOR 2024:

**President:** Martin Buehring - KB4MG

**Vice President:** Chad Cone - KY4KP

**Secretary:** Stephen Kuhn - KK4YDY

**Treasurer:** James James - KE4HMS

**Cherokee County Emergency Coordinator:**

Rob Bruderer - W1JKU

**Email:** [wx4car.club@gmail.com](mailto:wx4car.club@gmail.com)

### Time & Location of Meetings:

Meetings are the second Saturday of each month at 10:00 am Eastern Time.

**William G. Long Senior Center**

**223 Arnold Mill Road**

**Woodstock, Georgia 30188**

Our meetings are open to all visitors. You do not need to be a member or have a license to attend. Come for the fellowship and technical programs. We also have a combined ARES meeting at the same time. ARRL FCC Testing is at 1:00PM following the meeting.

### Newsletter Team:

**Editor:** Lee Hall - K4QO

[k4qo.mail@gmail.com](mailto:k4qo.mail@gmail.com)

**Design:** Carmon Madison - KQ4JIO

[carmon@icloud.com](mailto:carmon@icloud.com)