September 2026

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SWR Magazine 1:1

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XIEGU G7250

A NEW CONCEPT
100-WATT SDR

VHF/UHF SSB

MUCH MORE THAN JUST TALKING
THROUGH A REPEATER

WHEN MAIL TRAVELS THROUGH THE AIR

GETTING TO KNOW WINLINK

EVERYTHING YOU NEED TO KNOW ABOUT THE NEW ICOM IC-7110

FUNDAMENTOS DE LOS CONCURSOS DE RADIOAFICIÓN

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Introduction

On the Cover

K3LR's contest station is one of the most impressive sights in competitive amateur radio, featuring massive towers and stacked Yagi antennas. This remarkable antenna system represents years of planning, engineering, and a passion for DXing and contesting.

As we approach a new contest season, this image reminds us that the bands will soon be filled again with signals, call signs, and stations looking to reach every corner of the world.



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Amateur radio reminds us that there are no distances when two people share the same passion. A signal may travel thousands of miles, but what truly matters is the human connection it makes possible.

DXE-3X10 SkyHawk

Efficient HF Directional Performance Without the Hassle



The DX Engineering DXE-3X10 SkyHawk is a Yagi-style directional antenna designed for the 20, 15, and 10-meter bands, specifically aimed at HF operators looking for solid performance for DXing and contesting. Its computer-optimized design provides more than 7 dBi of gain on all three bands, along with an excellent front-to-back ratio that significantly improves directivity and rejection of unwanted signals.

One of its biggest strengths is its construction. It is lightweight, wind-resistant, and produces virtually no torque on the mast, making it ideal for installations on moderate-height towers without requiring complicated support systems. It also uses corrosion-resistant materials and stainless-steel hardware, ensuring long-term durability.

In practical terms, it is a true “plug-and-play” antenna. No fine-tuning is required after assembly, making installation easier even for amateur radio operators with limited experience with directional antennas.

In short, the SkyHawk 3X10 is an excellent choice for anyone looking to step up to an efficient, reliable, and relatively easy-to-install triband beam, offering a very attractive balance between performance and complexity.

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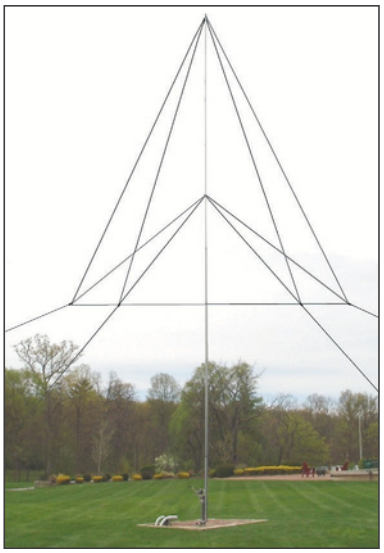


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EDITORIAL

WE'RE STILL ON FREQUENCY



Photo by: onallband

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A little over a year ago, we started this project with a simple idea: to create a space where we could talk about amateur radio, share knowledge, preserve stories, and keep the passion for this fascinating hobby alive.

Today, looking back, we can say with great satisfaction that that idea has taken root.

SWR Magazine now has a solid base of readers and followers who join us edition after edition, reading, sharing, and, in one way or another, becoming part of this adventure. That support is, without a doubt, one of our greatest motivations to keep moving forward.

But there is something else that fills us with pride. Summer is now behind us, and we are entering autumn. The days, temperatures, and landscape may change, but at SWR Magazine, there is one season that never ends: spring.

Because as long as there is someone putting up an antenna, firing up a radio, learning CW, chasing a new DX contact, or simply enjoying a conversation over the airwaves, there will always be something new to discover.

We look to the future with excitement, while keeping our feet firmly planted in what we have built. We want to continue growing, welcoming new contributors, embracing new ideas, and, above all, remaining a magazine made by amateur radio operators, for amateur radio operators.

Autumn may be arriving on the calendar, but for us, amateur radio will always be an eternal spring.



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WORLD NEWS

Artificial Intelligence Comes Directly to Amateur Radio

Artificial intelligence is beginning to gain a foothold in amateur radio through initiatives such as HamGPT, a project that seeks to use AI as an assistant for radio operators. This technology can help operators access technical information, analyze data, and simplify various tasks related to radio operations.

Its arrival represents a new stage for a hobby that has historically been closely connected to technological innovation. Artificial intelligence also opens up possibilities in areas such as propagation, digital communications, signal processing, and automation.

At the same time, it raises new questions about the role of the operator and how far automation should go. The integration of AI demonstrates that amateur radio continues to evolve and adapt to the technologies of the future.

ARRL Receives Historic $1 Million Donation to Advance the Future of Amateur Radio

Amateur radio received important news with a historic $1 million donation to the American Radio Relay League (ARRL), made by American radio amateur and businessman Dr. James M. Galm, W8WTS. The contribution will be used to strengthen STEM-related educational programs, support amateur radio spectrum advocacy, and contribute to the organization's financial future.

ARRL highlighted that Galm, a licensed radio amateur since 1975, represents the connection between amateur radio, engineering, and technological innovation. Part of the funds will help advance initiatives that introduce students to electronics, wireless communications, programming, and scientific experimentation.

The donation will also strengthen efforts to protect the bands allocated to amateur radio operators from increasing spectrum demands by commercial services. This historic contribution represents a significant investment in education, innovation, and the next generation of radio amateurs, engineers, and scientists.

Source: ARRL

WORLD NEWS

Continued Concern Over Commercial Satellites Using the 70 cm Band



In 2026, amateur radio continues to face new challenges related to the use of the radio spectrum by commercial satellite operators. One of the most prominent cases involves AST SpaceMobile and the 70-centimeter band, between 430 and 440 MHz, which is also used by amateur radio operators for terrestrial and satellite communications.

The FCC granted limited authorization for the use of several channels within this band for telemetry, tracking, and command operations during emergency situations outside the United States. The decision raised concerns among amateur radio organizations because of its potential impact on other services sharing these frequencies.

Overall, this case demonstrates the growing pressure on the radio spectrum and the importance of protecting amateur radio allocations, particularly as commercial satellite communications continue to expand rapidly.

Source: ARRL

Radio Amateurs Participate in Tracking Scientific Balloons

In 2026, radio amateurs continue to contribute to scientific projects by tracking high-altitude balloons equipped with radio transmitters. These initiatives allow operators in different locations to receive telemetry signals and provide information about the balloons' position and trajectory during their flights.

One of the recent activities was organized by the Kopernik Observatory, which invited radio amateurs to assist in tracking a scientific balloon flight conducted in August. Operators were able to use their equipment and radio expertise to contribute to data collection and mission tracking.

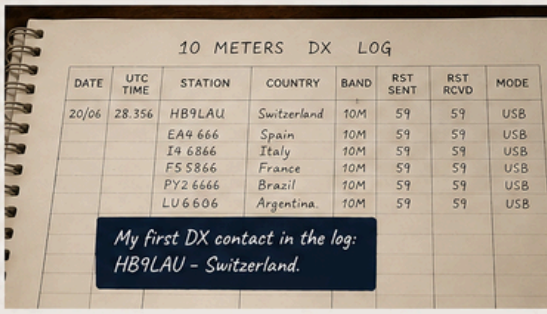
These types of projects once again demonstrate the value of amateur radio as a scientific and educational tool, combining communications, propagation, antennas, and technology to support real-world research while bringing radio amateurs closer to science.

Source: Kopernik Observatory

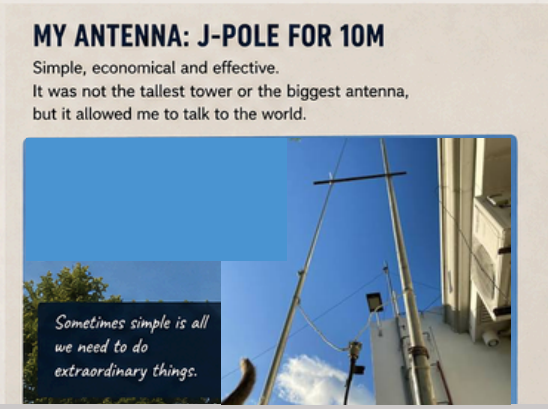












When I Heard Switzerland for the First Time

THE DAY I DISCOVERED THE MAGIC OF 10 METERS

By: Jose M. Candelaria NP4ET

There are moments in every ham's life that stay with us forever. No matter how many QSOs we make afterward, how many awards we earn, or how many countries we eventually work, there is always that first contact that holds a special meaning.

It is the moment when we stop being just someone listening to the radio and become part of that immense conversation that crosses borders.

For me, that moment came after many years of listening.

Before I became a ham radio operator, I had already discovered radio through Citizens Band, the famous CB. During my teenage years, I spent countless hours in front of the radio, listening to voices coming from places that, at the time, seemed incredibly far away.

CB Was My First Window to the World of Radio

I remember the fascination of turning the dial and finding different voices, different accents, and, every now and then, stations coming in from other countries. To me, it was almost magical. How could a signal leave an antenna and end up being heard hundreds or even thousands of miles away?

Without realizing it, I was beginning to discover propagation.
On 11 meters, especially during periods of strong solar activity, signals can travel tremendous distances through ionospheric propagation. The signal leaves our antenna, reaches the ionosphere, and under the right conditions, can return to Earth hundreds or even thousands of miles away. Back then, I didn't know all the technical terms, but I knew exactly how it felt to hear a distant station and wonder where it was coming from.

I even heard stations working DX on CB.
That planted a seed.
As the years went by, that curiosity grew into something much bigger: I wanted to enter the world of amateur radio.





The Day of My First QSO

When I finally got my first amateur radio license, I knew exactly what I wanted to do.
I wanted my first DX contact.

I wasn't thinking about collecting awards, working a certain number of countries, or chasing contests just yet. I simply wanted to hear a distant station, call them, and receive a signal that proved my transmission had made it across that enormous distance.

My first HF rig was a Yaesu FT-757GXII.
It was my gateway into a completely new world.

My antenna was a J-pole for 10 meters. I didn't have a big station or an impressive antenna system. I had what I needed to get started, and for me, that was enough.
But there was one important thing I did have: the desire to make it happen.

I knew there were other HF bands and that each one had its own propagation characteristics. However, at the time, my access was pretty much limited to 10 meters.
And perhaps that was one of the best things that could have happened to me.

10 Meters: A Band Many Hams Overlook

10 meters, around 28 MHz, is an extraordinary band.

It's a band that is often underestimated, especially by newly licensed hams who quickly focus most of their attention on 2 meters and 70 centimeters.

I have absolutely nothing against those bands. Quite the opposite. VHF and UHF offer tremendous opportunities for repeaters, local communications, satellite work, and experimentation.

But there is a completely different world waiting on 10 meters.

Ten meters can behave in an almost unpredictable way. During periods of low solar activity, you may find the band seemingly dead for long stretches of time. But when conditions are right, it can come alive in a completely different way.

Propagation on 10 meters is heavily influenced by solar activity and ionospheric conditions. During the years around solar maximum, increased F-layer ionization can make it possible to work long-distance stations with relatively strong signals.

And when the band opens up, it can be spectacular.

There is also a strong relationship with the time of day. Conditions can change quickly between morning, midday, afternoon, and evening. A band that seemed completely dead can suddenly come alive.

Under the right conditions, 10 meters can let you work stations thousands of miles away with relatively modest equipment.
That was exactly what I discovered.



My First DX

I was incredibly fortunate to get my license during a period of solar maximum.
10 meters was alive.
And when I say alive, I mean that the band seemed to have an energy I had never experienced before.
I remember sitting in front of my Yaesu FT-757GXII, listening to stations popping up from places I had previously only known from looking at maps.
Then it happened.
On 28.356 MHz, I heard a station from Switzerland.
HB9LAU.
Switzerland.
I still remember that feeling.
I can't describe exactly what I felt at that moment. There are experiences you can explain technically, but emotionally, they are impossible to put into words.
I had spent years listening to other people communicating over the air. I had started out on CB, listening to distant stations and dreaming that someday I could become part of it.
And suddenly, there I was.
I was no longer just a listener.
My signal had left my antenna, traveled through space, and made it all the way to Switzerland.
I had made my first DX.
To many people, it might seem like just another contact in the logbook.
To me, it was much more.
It was confirmation that the dream that had begun during my teenage years was real.

Two Months I'll Never Forget

After that first contact, 10 meters became a true obsession.
In just two months, which was approximately the amount of time it took me to earn my second license and gain privileges on the other HF bands, I managed to make 2,711 DX contacts on 10 meters.
Two thousand seven hundred eleven contacts.
When I look at that number today, it still amazes me.
But more than the number of contacts, I remember the experience.
I remember listening to the band.
I remember hunting for stations.
I remember discovering countries.
I remember learning, QSO after QSO, that propagation could change in a matter of minutes.
Ten meters was my HF classroom.
That's where I learned that an antenna doesn't have to be huge to make extraordinary communications possible.
I learned that power isn't everything.
I learned that a seemingly simple station can work incredible distances when the ionosphere decides to cooperate.
And, above all, I learned to listen.
Because before you transmit, a good ham learns to listen to the band.



A Band That Still Excites Me

Many years have passed since that first contact with HB9LAU.
I have discovered other bands, other modes, other antennas, and other ways of enjoying amateur radio.
But 10 meters still holds a special place in my heart.
Sometimes I go back to that band and just listen.
And when it is packed with stations, I feel that same excitement all over again.
But there are also times when I find the band seemingly empty.
And I confess, it makes me a little sad.
Especially when I know the propagation conditions are there.
The ionosphere is doing its job. The Sun is providing the conditions we need. The band could be wide open, and yet many stations remain silent.
Maybe that is why I'm writing these lines.
Because I believe 10 meters deserves our attention.



Don't Forget About 10 Meters

When a new ham gets licensed, it's completely normal to be drawn to 2 meters and 70 centimeters. These are accessible bands, packed with repeaters, and excellent for getting started and experimenting with radio.
But if our license gives us operating privileges on 10 meters, we shouldn't overlook that opportunity.
Ten meters can be a fantastic gateway into the world of HF.
We don't need to start with a huge tower or a massive antenna. A simple, properly tuned installation and a radio capable of operating on the band can be enough to begin discovering an extraordinary world.
And when a band opening comes along, we need to be there.
Because 10 meters can teach us something that no manual can ever fully explain: amateur radio has a dimension we cannot see.

We don't see the signal traveling.
We don't see the ionosphere reflecting it.
We don't see the solar conditions that are making the contact possible.
But we hear the result.
A voice comes through the speaker.
A call sign comes in from another continent.
And suddenly, we understand the magic.

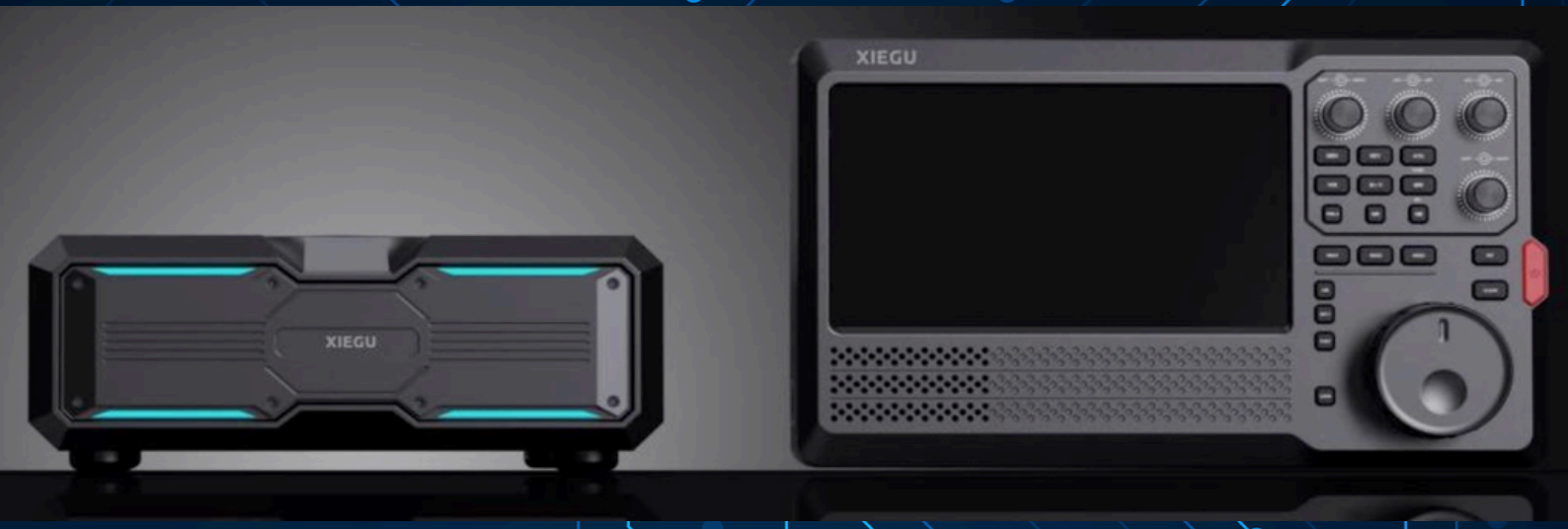
You Never Forget Your First Time

Today, when I think back to that young person who spent hours listening to CB, I realize that the passion never disappeared.
It simply changed frequency.

The curiosity that made me turn the dial on my CB radio searching for distant voices was the same curiosity that, years later, led me to search for my first DX on 10 meters.
And that contact with HB9LAU on 28.356 MHz was not just my first DX.
It was the confirmation of a dream.

That's why, every time I listen to 10 meters, I remember those early days.
I remember my Yaesu FT-757GXII.
I remember my simple J-pole.
I remember those 2,711 stations.
And I especially remember the excitement of hearing a voice from Switzerland and knowing that, somehow, my signal had managed to make it there too.
Perhaps that is one of the most beautiful things about amateur radio.
We can start with very little.
A radio.
An antenna.
A little knowledge.
And a whole lot of desire to experiment.
The rest is up to nature.
Sometimes the Sun.
Sometimes the ionosphere.
Sometimes propagation.
And many times, simply, the patience of the ham who stays there listening.
So, if you've just earned your license and you're spending most of your time on 2 meters or 70 centimeters, I invite you to do something.
Go up to 10 meters.
Listen.
Don't rush.
Wait for the band opening.
And when you hear a station coming in from far away, pick up the microphone.
Maybe that contact will become, just as it did for me, one of those moments you remember for the rest of your life.
Because some signals don't just travel thousands of miles.
Some signals also travel through time.
And even today, decades later, when I listen to 10 meters, I can hear that first voice from Switzerland all over again.
And for a moment, I become that young ham once again, sitting in front of his first HF rig, discovering that the whole world could be on the other side of the antenna.

The Concept That's Catching the Attention of Hams



XIEGU G7250

100 Watts, SDR, and a New Way of Thinking About the Ham Shack

Information and Images from Xiegu EU

Some radios simply come to market with more power, more buttons, or a larger display. Others try to change the way we think about a ham station. The new Xiegu G7250 appears, at least on paper, to belong to this second group.

Introduced in July 2026, the G7250 is a direct-sampling SDR transceiver for HF and 50 MHz, capable of delivering up to 100 watts on HF and 90 watts on 6 meters. But perhaps the most interesting thing isn't just its power, but its architecture: the radio is split into a main RF unit and a separate control head with a 7-inch touchscreen.

And this is where the concept gets particularly interesting for those of us who enjoy building our stations around our needs rather than around the traditional all-in-one radio.







Two Pieces, One Station

One of the features that caught my attention most about the G7250 is precisely its split design.

Instead of putting everything inside a single box, Xiegu places the radio unit in one location and the controller in another. The control head features a 7-inch capacitive touchscreen, physical controls, and everything needed to operate the transceiver.

This offers something many of us hams have learned to appreciate: flexibility.

The RF unit can be installed in one location while the control head can be placed wherever it is most convenient for the operator. In a fixed station, this can make shack organization easier, while in a mobile or remote setup, it can open up even more interesting possibilities.

It's not simply a matter of aesthetics. Separating the controls from the radio represents a design philosophy that is becoming increasingly common in modern amateur radio: the radio doesn't necessarily have to be sitting right in front of us for us to operate it.

Direct RF Sampling SDR



At the heart of the G7250 is its direct RF sampling SDR architecture.
For those of us who still remember transceivers where every function depended on a long chain of mixers, filters, and analog stages, the SDR concept represents a huge change. In a radio like this, a significant portion of the signal processing takes place in the digital domain.
The result is a platform where functions that once required additional circuitry can now be implemented through digital signal processing.
The G7250 features adjustable digital filters, Digital Noise Reduction, a Noise Blanker, and Noise Threshold controls. It also includes a spectrum display and waterfall, tools that have already become practically indispensable for many modern operators.
And for those of us who live surrounded by signals, interference, and electrical noise, these tools are not simply eye candy on a screen. They can become true working tools.



Full HF Coverage and 6 Meters

The G7250 covers 0.5 to 30 MHz and 50 to 54 MHz, with SSB, CW, NFM, AM, and digital modes. On HF, it can deliver up to 100 watts, while on 50 MHz it reaches 90 watts, according to the published specifications.
This puts the G7250 in a very attractive category.
We're not talking about another small QRP SDR designed exclusively for taking into the field with just a few watts. Here we have a radio that aims to deliver full HF power while retaining many of the features we associate with modern SDRs.
For the ham who wants to chase DX, get on the contest bands, work digital modes, or simply enjoy the bands with conventional power, that combination could be especially appealing.

A Display That Actually Makes Sense

The 7-inch touchscreen isn't there just to make the radio look modern.
The G7250 uses the display to show the spectrum and waterfall, allowing us to visually monitor activity around our operating frequency.
Anyone who has operated an SDR knows exactly how different it is to simply listen to a band versus actually seeing it.

We can find a weak signal, see where stations are clustered during a contest, identify clear spots, and even get an immediate sense of how a band is behaving.
But there's something I particularly like about Xiegu's design: the touchscreen doesn't eliminate the physical controls.
The operator can use the touchscreen, buttons, and traditional controls. That combination is important because, no matter how far we move toward touchscreen interfaces, there's still something wonderfully satisfying about turning a tuning knob by hand while listening to a signal.



The Automatic Antenna Tuner Is Built In, Too

Another interesting feature is the automatic antenna tuner. The built-in ATU operates with impedances from 20 to 150 ohms and stores tuning settings by band.
According to Xiegu, the initial tuning cycle can take up to 10 seconds, while returning to a band with a stored setting can recall the match in as little as 0.1 seconds.
For those of us who constantly switch bands, this is extremely convenient. That said, let's never forget one fundamental rule: an antenna tuner does not turn a bad antenna into a good antenna. Its job is to help the transmitter work into a mismatched load.

Designed With the CW Operator in Mind

The G7250 also includes some interesting features for CW operators. It allows you to store preset Morse messages and transmit them later, along with voice recording and playback for repetitive calls.
These features can be especially useful during contests, activations, or whenever we need to repeatedly send our call sign and certain messages.
It's a good example of how modern radios can automate routine tasks without taking control of the station away from the operator.

One Feature That Really Stands Out: Networking

One of the aspects of the G7250 that generates the most curiosity is its advertised ability to transmit baseband signals over a network.
This opens up some interesting possibilities for remote operation. Amateur radio has been moving toward stations where the operator doesn't necessarily have to be sitting in front of the transceiver, and SDRs and networking are changing the way we interact with our radios.
We'll still have to see how this feature works in practice, what software will be compatible with it, and what capabilities it will ultimately offer. But conceptually, it is one of the features that most clearly sets the G7250 apart from a conventional transceiver.



Is It Really a Revolution?

This is where it's worth dialing back the excitement a little.
The G7250 is certainly interesting, but we shouldn't confuse a product announcement with a laboratory test just yet. Xiegu warns that the preliminary specifications may change before the launch, which is scheduled for September 30, 2026, and pricing has not yet been announced. There are still some important questions: How will the receiver handle strong signals? How effective will the digital signal processing be against real-world noise? How will the network connection perform? What capabilities will the software offer? And, of course, how much will it cost?
We'll get those answers once the radio becomes available and starts making its way into the hands of hams.

A Proposal Worth Paying Attention To

Despite these questions, the Xiegu G7250 deserves our attention. The combination of 100 watts on HF, 90 watts on 6 meters, direct RF sampling SDR architecture, a 7-inch touchscreen, physical controls, spectrum display, waterfall, digital filters, noise reduction, voice recorder, CW messages, built-in ATU, and network-based operation makes for a very complete package.And there is something even more important: the split design between the control head and the RF unit shows that Xiegu is thinking about more than simply building another transceiver. They are trying to imagine what a modern amateur radio station could look like. Perhaps in a few years we'll look back at the G7250 and say it was simply another SDR. Or perhaps we'll remember it as one of those radios that helped move amateur radio toward a new generation of distributed, connected, and much more digital stations.
For now, let's keep the excitement in check, but also keep the antenna in the air and our ears tuned. Because in amateur radio, no matter how beautiful the display may be, the real test always begins when we turn the dial, hear a weak signal, and say:
"Can you copy me?"

Note: The Xiegu G7250 should not yet be considered a radio that has been fully tested and reviewed by the ham radio community. The published specifications are preliminary and may change before its official launch.





Photo by: Reg Natarajan

By: SWR Magazine Editorial Team

VHF/UHF SSB:

MUCH MORE THAN JUST TALKING THROUGH A REPEATER

VHF/UHF SSB: Weak Signals, Directional Antennas, and Propagation That Can Take Your QSOs Far Beyond the Horizon.

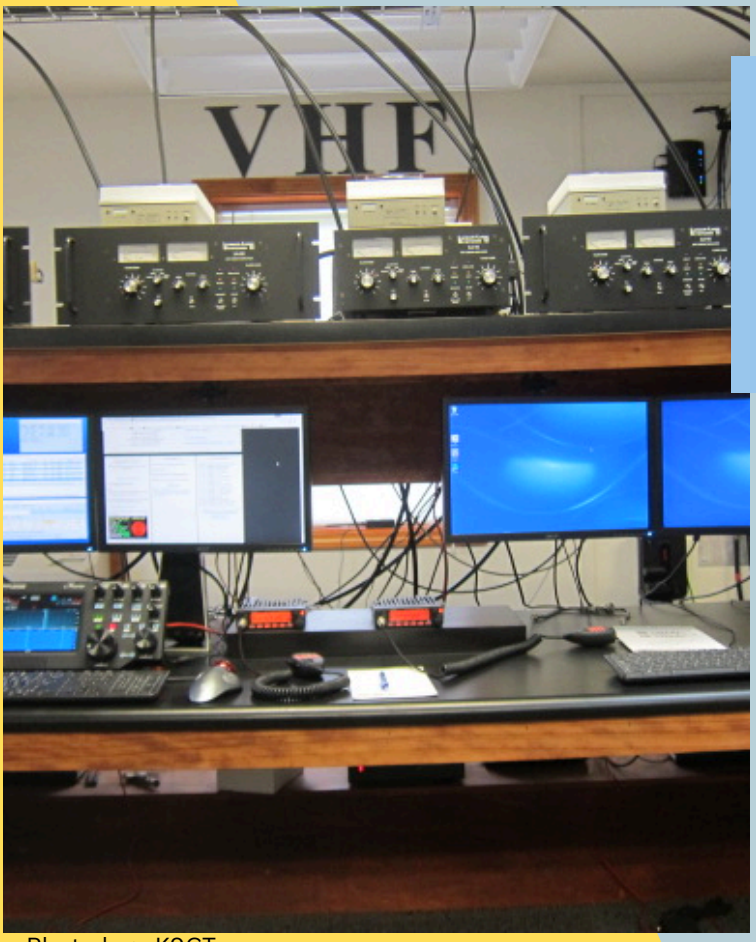


Photo by: K9CT

On the 2-meter band, 144.200 MHz is one of the best-known frequencies for SSB and weak-signal activity. That doesn't mean someone is always transmitting there. That's precisely why monitoring the frequency regularly can help you catch propagation openings or occasional activity.

When we talk about VHF and UHF, the first image that probably comes to mind is an FM radio, a vertical antenna, and a conversation through a repeater. For many hams, that's where the experience begins and ends. However, there's another side to these bands that can be much more interesting: the world of weak signals and SSB.

The 2-meter band, for example, has segments specifically designated for weak-signal and SSB operation. The ARRL band plan places an important area of 2-meter SSB activity around 144.200 MHz, while other nearby frequencies are used for CW and other weak-signal modes.

Why SSB on VHF?

SSB has a fundamental advantage when working weak signals: it uses spectrum more efficiently than FM and allows the transmitted energy to be concentrated into a much narrower bandwidth.

This does not mean that an SSB station will automatically reach hundreds of miles. Propagation, antenna performance, height above ground, power, and the conditions at the time are still critical factors. But when a signal is right at the edge of being readable, every decibel counts.

That's why SSB became an important mode for hams looking for something beyond local communications.

The Art of Listening for Weak Signals

One of the most interesting differences between operating FM and SSB on VHF is the way we listen. On FM, we normally expect a relatively strong and steady signal. On SSB, the operator may find a signal that barely rises above the noise. Sometimes, all you can pick out are fragments of a call sign, a word, or a sentence.

This is where one of the fascinating aspects of amateur radio begins: learning how to listen.

The operator has to carefully tune the dial, adjust the bandwidth, use filters when necessary, and be patient. A station that initially seems impossible to copy can slowly begin to emerge from the noise.





Single Sideband (SSB) is a transmission mode that uses only one sideband of the voice signal. By eliminating the carrier and the other sideband, the bandwidth used is significantly reduced, allowing the available transmitter power to be concentrated more efficiently. That's why SSB is especially useful for weak-signal work and long-distance contacts on VHF and UHF.



The Antenna Changes the Game

On VHF and UHF, a good antenna can make a huge difference. For SSB and weak-signal work, directional antennas such as Yagis are especially useful because they provide gain and allow you to focus your RF energy in a specific direction.

Height also plays an important role. A station located on a mountain or an elevated structure can have a significant advantage over one operating from low-lying terrain.

You don't always need a huge station. A relatively small antenna, properly installed and paired with a good feed line, can produce surprising results.

In fact, VHF contests have repeatedly shown that portable stations using directional antennas can make some very interesting contacts. In the January 2026 contest, for example, participants reported making 2-meter and 70-centimeter contacts using relatively compact antennas and portable stations.

When the Atmosphere Opens the Door

This is where VHF starts to get really interesting. Signals on these bands are normally very much constrained by line of sight, but the atmosphere can significantly alter their behavior. Tropospheric propagation can extend the normal range and make contacts over hundreds of kilometers possible.

Under certain conditions, phenomena such as Sporadic-E, meteor scatter, and even EME, better known as moonbounce, can also come into play. The ARRL specifically highlights these propagation modes as some of the most exciting experiences in VHF weak-signal work.

On UHF, tropospheric propagation can also produce surprising results. When conditions are favorable, signals that would normally be limited by the horizon can travel much greater distances.

SSB and Contesting

Contests are probably one of the best ways to discover the world of VHF and UHF SSB.
During a contest, bands that may normally seem quiet can suddenly fill up with operators hunting for stations, grids, and new contacts. SSB and CW activity is usually concentrated in the weak-signal portions of the bands, near the calling frequencies.
This turns a simple weekend into an opportunity to experiment with your station.

You don't need a huge tower or hundreds of watts. A modest station operating from an elevated location can become a very effective tool.

The Geographic Factor

On VHF and UHF, where we operate from can be just as important as the radio itself.

A station set up on a mountain can have a huge advantage over one located in a valley. That's why portable operations from mountains, towers, high-rise buildings, or open locations are so popular among hams who enjoy these bands.

Even an operator running a low-power transceiver can be surprised by what happens when a good location is combined with a directional antenna.

And that is precisely one of the great lessons of VHF: the station with the most power doesn't always win; many times, it's the station that listens best.





Beyond 2 Meters

Although 2 meters is probably the best-known band for VHF SSB, the adventure doesn't end there.
70 centimeters and the higher bands also offer opportunities to experiment with weak-signal work, directional antennas, propagation, and digital communications. As the frequency increases, antennas can become physically smaller, but losses in feed lines, connectors, and feed systems also become increasingly important.
It's a part of the hobby where building and technical experimentation take center stage.

A Different Way to Do Radio

SSB completely changes the personality of VHF and UHF.

We're no longer simply waiting for someone to key up a repeater. We're listening to the band noise, hunting for weak signals, turning the antenna, watching atmospheric conditions, and waiting for that moment when a signal appears where it normally shouldn't be.

That's exactly what makes it so appealing.

A 20-kilometer contact can be interesting. But when a station pops up from hundreds of kilometers away thanks to a tropospheric opening, a good antenna, and just a few extra dB of signal, the experience is completely different.



On VHF and UHF, getting your antenna higher can make a huge difference. A station located at a high elevation can have a much clearer path to other stations.
A simple antenna on a mountaintop can outperform a much more powerful station installed among buildings and other obstructions.



VHF/UHF Still Have a Lot to Offer

In an era where repeaters, digital networks, and automated modes are making communication easier than ever, SSB reminds us of one of the original reasons for amateur radio: experimentation.

Build an antenna. Raise it a few more feet. Tune across a frequency. Find a weak signal. Turn the Yagi. Fine-tune the dial. Finally copy the call sign.

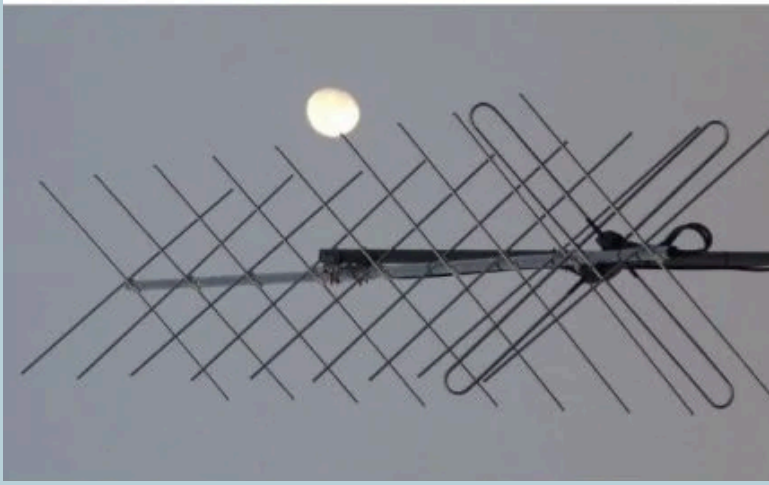
And then comes that moment every ham knows: realizing that we've just heard and worked a station that, only a few minutes earlier, seemed like it didn't even exist.

VHF and UHF are not simply the repeater bands.

They are also bands for exploration, propagation, technical experimentation, and discovery. And for anyone who wants to push a little farther, SSB can be the gateway to one of the most exciting sides of amateur radio.

The next time you fire up your 2-meter rig, don't just tune in the repeater. Tune down into the weak-signal portion of the band, listen, and explore. You might just discover where your next adventure begins.





By: SWR Editorial Team



HamGPT

What If Your Next Ham Radio Buddy Were an Artificial Intelligence?

Artificial Intelligence Comes to the Ham Shack

For decades, the ham operator has had a quiet companion sitting next to the transceiver.
Sometimes it has been a book. Other times, a service manual, a propagation chart, a frequency guide, a notebook filled with notes, or, more recently, a computer.
But now, a different possibility is emerging.
What if that companion could actually talk with us?
What if we could ask it what band is open, where the activity is, what frequency might be worth checking, how to calculate an antenna, or even analyze our QSO log?
This is no longer entirely in the realm of science fiction.
Artificial intelligence is beginning to make its way into the world of amateur radio.
And one interesting example is HamGPT, a chatbot developed specifically around the world of amateur radio.

It's Not Just Another Chatbot

The idea behind HamGPT is quite simple, but at the same time, it represents an important shift.

Large AI models can answer questions about practically any subject. However, that broad scope can also become a limitation.

A specialized chatbot can focus on a particular field and, in this case, work with information related to amateur radio.

According to the experience published by Hackaday, HamGPT can access amateur radio related sources, including FCC information and propagation data. It can also use information related to band activity.

For a ham, that is especially interesting.

Because asking an AI:
"What is the 20-meter band?"
is one thing.
Asking it:
"Which band has the best chance of reaching Japan from my station right now?"
is something completely different.
The second question requires context. It needs to know where we are. It needs to know the current propagation conditions.
It needs to interpret information that is constantly changing. And that's where things start to get really interesting.



One of the things that stands out most about these new tools is that you don't necessarily have to be a computer expert to use them.
The interaction can be as simple as typing a question.
In the test conducted by Hackaday, the AI was asked which band would offer the best conditions for making contact with Japan from the operator's location.
The response indicated that 30 meters offered good possibilities and that 20 meters was also active. It also pointed out that FT8 and CW could

be appropriate options for trying to make the contact.
For an experienced ham, none of this is probably revolutionary.
Many operators already know intuitively that certain bands can favor specific paths depending on the time of day and solar conditions.
But here's where something important comes into play.
Artificial intelligence isn't necessarily meant to replace that knowledge.
It can become a tool for accessing that knowledge more quickly.

The Real Potential Lies in the Difficult Questions

Asking which band is open is only the beginning.
Let's imagine we're getting ready for a contest operation.
We could ask an AI:
"Analyze my ADIF log and tell me which multipliers I'm missing."
Or:
"Find duplicate contacts in this log and prepare a sheet with the possible errors."
We could even imagine asking:
"Analyze my contacts from the last six months and tell me which bands and modes I'm using the least."
These possibilities were precisely some of the ideas raised at the end of the Hackaday article.
And here we find something much more powerful than a simple chatbot.
We're talking about an artificial intelligence that can understand our station.

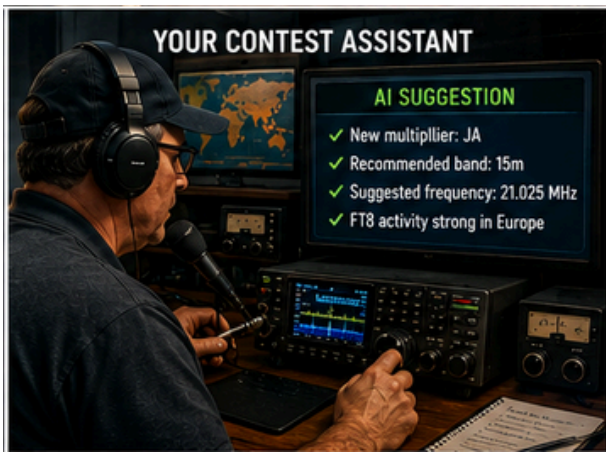


An AI That Knows Our Shack

Let's imagine the following scenario.
We have a Yaesu, Icom, Kenwood, or any other transceiver connected to a computer.
We have logging software.
We have an interface for digital modes.
We have propagation data.
We have a weather station.
We have maps.
We have contest information.
Now we put an artificial intelligence system at the center of it all.
We could ask it:
"What's going on in my station?"
And the answer wouldn't be some generic explanation.
It could say:
"On 20 meters, you have activity toward Europe. On 15 meters, there are strong signals coming from South America. Your antenna is showing a high SWR around a certain frequency. You also have three entities that haven't been logged yet."
That would be something completely different.
We would no longer be talking about just a chatbot.
We would be talking about a station assistant.

Could It Become Our Contest Operator?

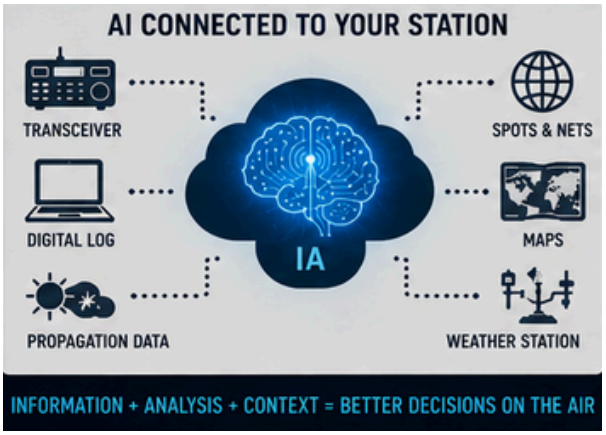
Now we're getting into even more interesting territory.
During a contest, the ham has to listen, identify call signs, determine multipliers, keep track of dupes, log contacts, and decide what the next target should be.
An artificial intelligence could help with many of these tasks.
It could listen to the audio.
Recognize call signs.
Identify stations.
Check the log.
Determine whether a contact has already been made.
And potentially suggest where we should focus our attention.
It could even say:
"This station is a new multiplier."
That could completely change the contesting experience.
But here's a fundamental question:
Are we actually operating radio, or are we simply supervising a computer?
That debate is only just beginning.





Amateur Radio Has Always Evolved

Some may think that using artificial intelligence goes against the traditional spirit of amateur radio.
But if we look at the history of the hobby, we find something different.
Hams have always embraced new technologies.
First came transmitters built with discrete components.
Then came vacuum tubes.
Then transistors.
Later, integrated circuits.
Then computers.
Digital modes arrived.
Packet Radio.
APRS.
FT8.
SDR.
The Internet became part of many activities related to amateur radio.
Today, a modern ham station can have more digital processing power than many complete computers from previous generations.
Artificial intelligence could simply be the next step.



But There's a Problem

Artificial intelligence can make mistakes.
And that's something we cannot ignore.
A well-written answer does not necessarily mean it's correct.
An AI can provide an explanation with absolute confidence and still get a calculation wrong, misinterpret a regulation, or rely on information that is no longer current.
That's why, especially when we're dealing with regulations, electrical safety, RF, power limits, or operating procedures, AI should be considered an assistance tool, not the final authority.
The ham operator is still responsible for verifying the information.

Knowledge Doesn't Disappear

There is another concern.
If an artificial intelligence can tell us which band to use, what antenna to build, and how to troubleshoot a problem, will we eventually stop learning?
Not necessarily.
A good ham could use AI in exactly the opposite way.
We could ask:
"Explain why 30 meters is better than 20 meters under these conditions."
Then:
"Explain how the ionosphere produces that difference."
And finally:
"How can I verify it myself?"
That way, artificial intelligence stops being a machine that simply hands us answers.
It becomes a teacher that is available 24/7.

The Human Ear Still Matters

There is something no artificial intelligence should ever make us forget: amateur radio began with listening.
Before the screens and algorithms, there was an operator sitting in front of a receiver, a little noise, a weak signal, and a call sign that could barely be understood.
And there was that incomparable satisfaction of copying a station that others might not even be able to hear.
Perhaps the future isn't about putting the ham against artificial intelligence, but about finding a way for both to work together.
AI may be able to analyze propagation, study the spectrum, check our log, and identify contact opportunities. But it will be the ham who listens, confirms the call sign, picks up the microphone, and decides to make the call.
Maybe the next great accessory in the shack will be an artificial intelligence that knows our station, our antennas, and our equipment.
But there is something no machine should ever do for us: listen for a weak signal buried in the noise and feel that excitement when we finally make out the call sign on the other end.
Because technology can help us find the contact, but the experience of making it will always be ours.

By: SWR Editorial Team

Why Can We Hear Stations We Can't Work?

The Mystery of Propagation Asymmetry



There's a scene every ham has experienced at some point. We turn the dial, find a DX station, and the S meter jumps. S9, S9+10, maybe S9+20. The signal is clean, strong, and perfectly readable. We hear the operator working other stations and think, "If I can hear him this strong, surely he can hear me just as well."

Then we transmit.
Nothing.
We call again.
Nothing.
We fire up the amplifier, switch antennas, move the VFO a few hertz, and try again. The station continues to come in with an impressive signal, but it seems like our transmission has simply disappeared into thin air.
What's going on?

The answer is much more interesting than it might seem. Hearing a station at tremendous signal strength does not mean that station is receiving us at the same strength. In fact, the two directions of a communication can be remarkably different.

Two Paths, Not One

One of the most important ideas for understanding this phenomenon is that a communication between two stations should not be thought of as a single connection.

There are two functional paths:

Station A → Station B

and

Station B → Station A

Although both signals may use the same ionosphere and, in general terms, the same path, each station has different characteristics.

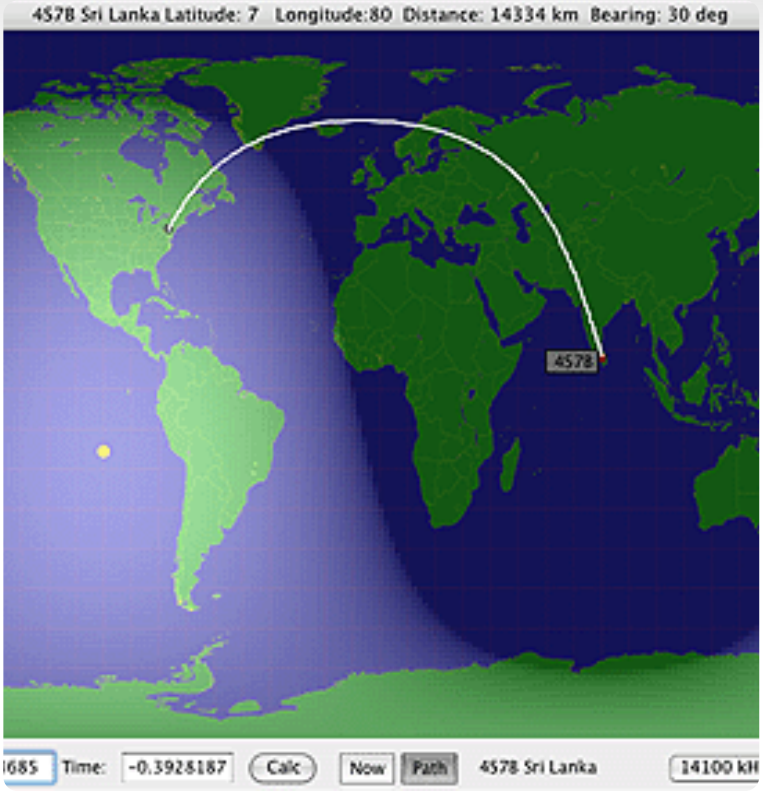


Our station may be running 100 watts into a dipole. The DX station may be running 1,000 watts into a five-element Yagi mounted high above the ground.

We may be operating in an urban environment with an S8 noise floor. The DX operator may be in a rural location with a noise floor of barely S1.

From our end, his signal may be huge. From his end, our signal may be barely above the noise.

The communication is not necessarily symmetrical.



The S Meter Can Fool Us

Here's where one of the biggest misconceptions in amateur radio comes into play.

We hear a station at S9+20 and assume that signal must be incredibly strong at both ends.

But the S meter on our radio only tells us how strong that signal is at our receiver.

It tells us absolutely nothing about how strong our signal is at the other station's receiver.
We could have:
DX received: S9+20
while our signal at the remote receiver might be:
S2
And if that station has a noise floor of S5, our signal may be difficult or even impossible to copy.



That's why a high reading on our S meter is no guarantee that the QSO will be possible.



Power Isn't Everything

Let's say we're transmitting with 100 watts.
That sounds like a considerable amount of power. And it is.
But imagine that the DX station is running 1,000 watts.
That's a 10 dB difference.
That means the 1,000-watt station is putting ten times more electrical power into its transmitting system than our 100-watt station.
But there's still another element.
The antenna.
If we're using a dipole and the DX station is using a directional antenna with gain, the difference can increase considerably.

And that brings us to one of the fundamental rules of radio:
Transmitter power is only one part of the equation.
Power, antenna performance, gain, direction, height, system losses, polarization, noise, and propagation conditions all matter.

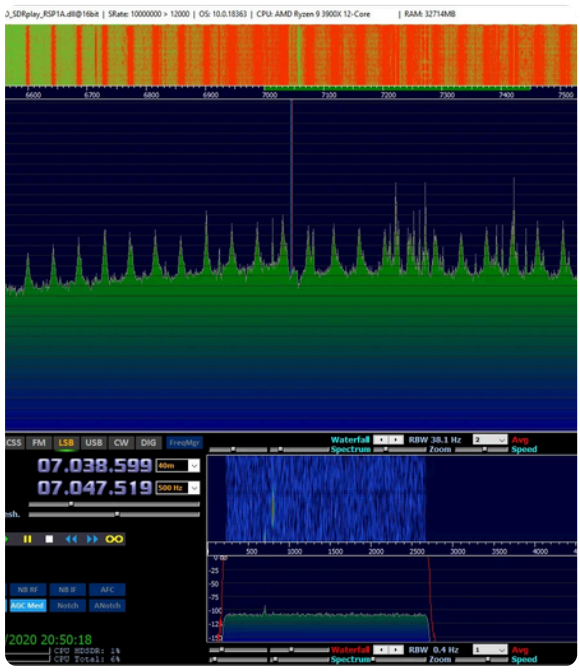
The Monster Called Noise

This is probably the factor that best explains those seemingly impossible contacts.

Let’s imagine two stations.
Station A
100 W
Dipole
S8 noise floor
Station B
1,000 W
Directional Yagi
S1 noise floor
Station A hears Station B at S9+20.
The signal sounds spectacular.
But when Station A transmits, its signal may reach Station B at only S3.
Is that a usable signal?
It depends.
If Station B has a noise floor of S1, then probably yes.
Now imagine that Station B is located in an urban area with an S6 noise floor.
That same S3 signal could be practically useless.
And this brings us to a concept that is much more important than the absolute signal strength:

Signal-to-Noise Ratio

In simple terms, it’s not just about how strong the signal is, but how strong it is compared to the noise surrounding it.
A weak signal in a quiet environment can be perfectly copyable.
A relatively strong signal buried in heavy noise can be practically unintelligible.
And this is precisely one of the reasons why improving reception doesn’t always mean installing a more expensive receiver.
Sometimes it simply means lowering the noise.



One Station Can Have “Better Ears”

Two receivers can be listening to the same signal and get completely different results.

copy a signal.
But there is something even more important:
the receiving antenna.
An antenna located in an electrically quiet environment can provide a huge advantage over another antenna surrounded by dozens of sources of interference.
This explains why a modest station operating in a quiet environment can



hear stations that a much more expensive station, but one surrounded by noise, simply cannot copy.



The Mystery of Antennas

Here's where another common misconception comes into play.
We tend to think of an antenna primarily as a device that "transmits" and "receives."
But an antenna's characteristics affect both functions.
A Yagi pointed in our direction can concentrate a considerable amount of RF energy toward us.
We may hear that signal at tremendous strength.
But our dipole doesn't necessarily have the same gain or directivity toward the DX station.
Therefore, even though electromagnetic reciprocity exists in a passive antenna, the two complete station systems are not necessarily equivalent.
The DX station may have a huge antenna advantage.
And we may have a huge disadvantage.

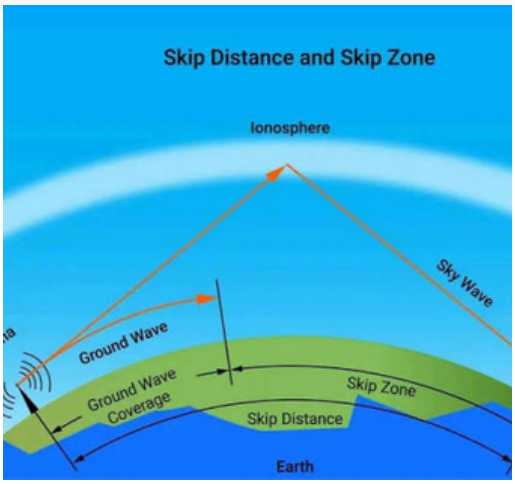
Location Matters Too

There's something we often forget:
the station itself is part of the antenna.

Not literally, of course, but the location determines many characteristics of the station's overall system.
An antenna installed 30 meters above favorable ground doesn't necessarily behave the same way as an antenna installed just a few meters above a completely different type of terrain.
In addition, a rural station may have an incredibly low noise floor, while an urban station can be surrounded by:



solar panels, inverters, battery chargers, switching power supplies, LED lighting, routers, TVs, computers, and all kinds of electronic devices.
The rural operator may be able to hear our S3.



We may have difficulty hearing them even when their signal is apparently strong at our end.

What About the Ionosphere?

This is where things become even more fascinating.
Ionospheric propagation isn't simply a matter of a signal leaving our antenna, bouncing off the ionosphere, and landing exactly where we want it to go.
There are different propagation modes, radiation angles, hops, virtual heights, absorption, and ionospheric conditions that can favor certain paths. In addition, a station may be using a radiation angle that is particularly well suited for reaching our location.
Our antenna, on the other hand, may be radiating much of its energy at angles that are not as favorable for that same path.
This is especially important on HF.
An antenna may perform exceptionally well for regional contacts yet not be ideal for a particular DX path. Another antenna may work extraordinarily well for long-haul DX but be less efficient for nearby stations.

Not Everything That Shines on the Waterfall Is an Easy Contact

Modern SDRs have changed the way we observe the bands. We can now see dozens of signals simultaneously on a panadapter, but there's a catch: seeing a signal clearly on the

screen doesn't mean we can necessarily hold a QSO with it.
On SSB, for example, a signal may appear perfectly visible on the display and still be difficult to understand if it barely rises above the noise.
The experienced operator learns to look beyond signal strength, listening to the noise, watching the stability of the signal, and recognizing changes in propagation.

So, Should We Use More Power?

Not necessarily.
When a station doesn't respond, our first reaction is often to think, "I need more power."
Before increasing the watts, it's worth asking ourselves whether our antenna is working properly, whether there are excessive losses in the coax, whether the radiation angle is appropriate, what our noise floor looks like, and whether propagation is favoring the contact. Perhaps the most important question is this:
Is my signal getting there, but hiding underneath the noise?

When the DX Station Doesn't Answer

If a station is coming in at S9+20 and doesn't answer, there are many possibilities. They may be working another area, listening in a different direction, using a much more favorable antenna, or simply not hearing us because of their noise floor.
That's why silence doesn't always mean our signal never made it there. Perhaps it arrived, but was buried among other signals or underneath the noise.

The True Measure of a Station

There may be an obsession with watts: 100 W, 500 W, 1,000 W.
But an efficient station isn't defined by power alone. It's defined by how effectively it turns that power into a useful signal and how well it can hear the response.
A 100-watt station with a good antenna, low system losses, a quiet noise floor, and an operator who understands propagation can be surprisingly effective.
A 1,500-watt station with a mediocre antenna and a high noise floor can be disappointing.
In DX, we need to think about the entire system, not just the watts.

The Next Time You Hear S9+20...

The next time a DX station comes booming in with an incredible signal and doesn't answer, don't immediately think you need an amplifier.
Remember that you're seeing only half of the conversation.
You know how well he's reaching you, but you don't know how well you're reaching him.
A signal can travel thousands of kilometers and arrive at our receiver with tremendous strength, while our own signal reaches the other end barely whispering through the noise.
Radio doesn't always reward the station that transmits the loudest.
Many times, it rewards the station that listens better, understands propagation, and knows when to transmit.


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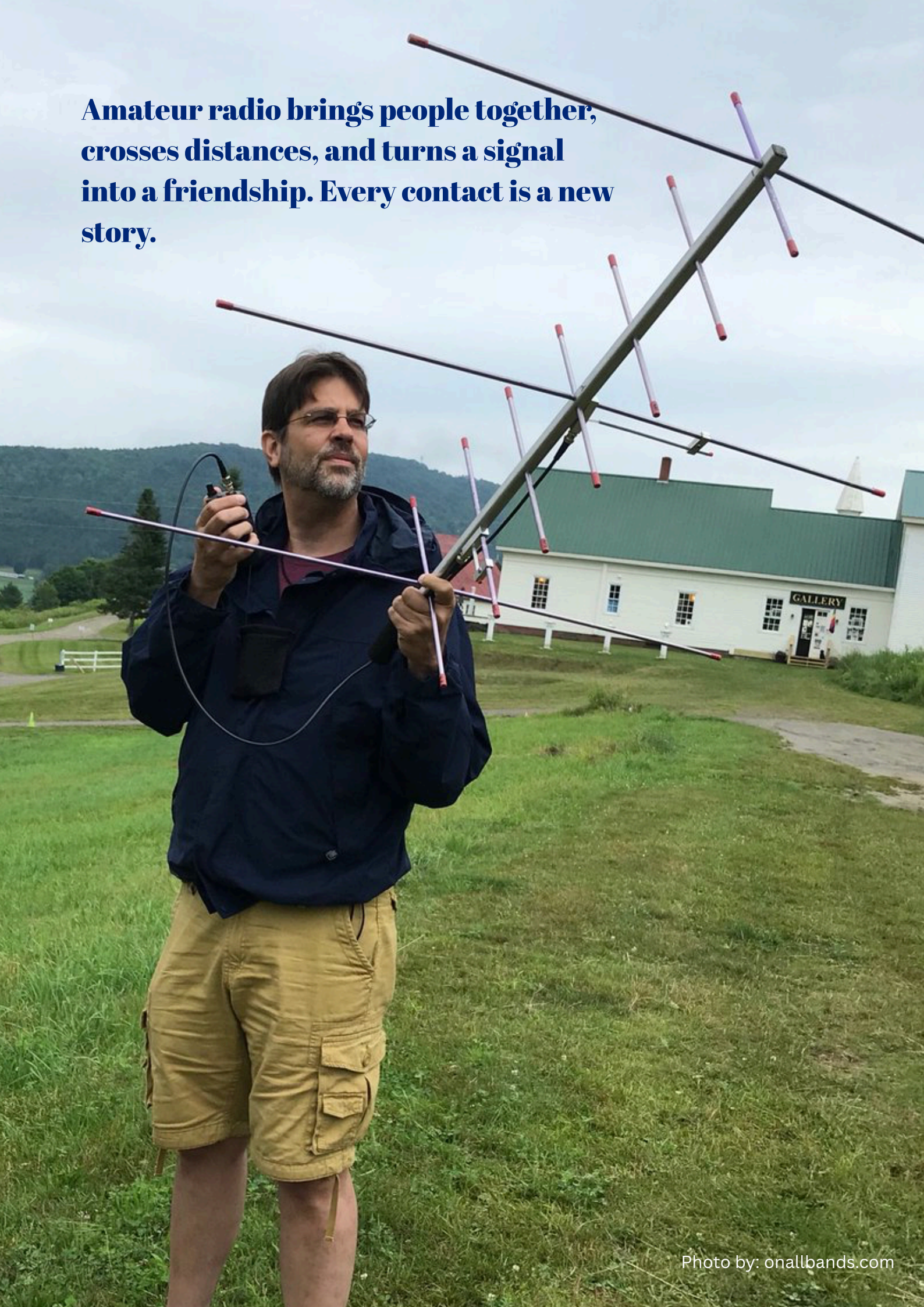


Photo by: onallbands.com

ON THE AIR

AMATEUR RADIO CONTESTS THIS MONTH

📻 ALL ASIAN DX CONTEST – PHONE

Dates: September 5, 2026, 00:00 UTC to September 6, 2026, 23:59 UTC
Mode: SSB
Participants: Worldwide, open to all amateur radio operators
Exchange: RS report and serial number
Note: One of the major international SSB contests. Stations around the world can work stations in Asia on the HF bands, providing excellent opportunities for working DX.

🌐 IARU REGION 1 VHF CONTEST

Dates: September 5, 2026, 14:00 UTC to September 6, 2026, 14:00 UTC
Modes: CW and SSB, as well as other modes permitted under the rules
Participants: Worldwide, with strong participation from stations in IARU Region 1
Exchange: Signal report and Maidenhead grid locator
Note: An important international 145 MHz contest that brings together many operators interested in VHF propagation and long distance communications.

📡 ARRL SEPTEMBER VHF CONTEST

Dates: September 12, 2026, 18:00 UTC to September 14, 2026, 02:59 UTC
Modes: CW, SSB, FM, and digital modes
Participants: United States, Canada, and U.S. possessions; DX stations may participate under the conditions specified in the contest rules
Exchange: Signal report and six character Maidenhead grid locator

🌐 WAE DX CONTEST – SSB

Dates: September 12, 2026, 00:00 UTC to September 13, 2026, 24:00 UTC
Mode: SSB
Participants: Worldwide, open to all amateur radio operators
Exchange: RS report and serial number, with the QTC system according to the contest rules
Note: One of Europe's most well known DX contests. The WAE is known for its QTC system, which adds a different strategic dimension to traditional HF contesting.

🏅 YO DX HF CONTEST

Dates: September 19, 2026, 12:00 UTC to September 20, 2026, 12:00 UTC
Mode: CW
Participants: Worldwide, open to all amateur radio operators
Exchange: RST report and serial number
Note: An important international CW contest focused on working stations in the Scandinavian countries. It is an excellent opportunity to work Europe from the Americas and test propagation conditions on the HF bands.

📻CQ WORLD WIDE RTTY DX CONTEST

Dates: September 19, 2026, 12:00 UTC to September 20, 2026, 12:00 UTC
Mode: CW
Participants: Worldwide, open to all amateur radio operators
Exchange: RST report and serial number
Note: An important international CW contest focused on working stations in the Scandinavian countries. It is an excellent opportunity to work Europe from the Americas and test propagation conditions on the HF bands.

A CONTEST ISN'T JUST ABOUT WINNING; IT'S ABOUT ENJOYING EVERY CONTACT AND DISCOVERING JUST HOW FAR OUR SIGNAL CAN REACH.

Kenwood TS-430

The Little Giant of the Bands

Some radios pass through a station, while others stay in your memory. The Kenwood TS-430 belongs to that second category. For many hams in the 1980s and 1990s, that transceiver was one of the gateways into the wonderful world of HF. It didn't need a huge display or an endless list of features. It had what was necessary, solid construction, and that distinctive look that even today instantly takes us back to another era of ham radio.



Photo by: RadioWorld

The TS-430S came along at a time when buying an HF transceiver represented a significant investment. When that Kenwood finally made it into the shack, a new chapter began. In front of the operator was a dial, a meter, a row of buttons, and a collection of controls that invited experimentation. There were no complicated menus or touchscreens. You had to turn the dial and listen. And boy, did it deliver.

One of the things many hams remember about the TS-430 is its receiver. Turning it on and tuning across 20 meters, 40 meters, or 15 meters was like opening a window to the world. Back then, hearing a Japanese, European, or South American station from Puerto Rico could become quite an event. The operator would carefully tune the dial, adjust the RIT control, and try to place that voice exactly where it could be understood best. When the callsign finally came through, that smile appeared that only a ham can truly understand. The station was on the air!

Nostalgia Corner



Photo by: Reddit

The TS-430S had a philosophy that today seems almost forgotten: offer a practical piece of equipment without turning it into a computer. Its compact design allowed it to fit into practically any station. With its 100 watts of output power, it could handle local contacts, DX, and contests without requiring a massive setup. And perhaps that was part of its charm. It was a radio that didn't intimidate you. It was a radio that invited you to get on the air.

Another reason many hams remember these radios so fondly is that they were much more accessible to those who enjoyed electronics. When something went wrong, the ham could open the cover, pull out the service manual, and start troubleshooting. A multimeter, a soldering iron, and a little patience could become tools just as important as the antenna. There were operators who knew their equipment practically by heart. They knew which component to check, what voltage to measure, and even what strange sound might indicate that something wasn't working properly. Today that may seem unusual, but for that generation, repairing the radio was also part of the ham radio experience.

The TS-430S was there for countless operators through nights of propagation, contests, and early mornings spent at the station. And that is precisely what makes an old radio special. We don't remember its specifications alone. We remember what we experienced with it. Maybe it was the first radio someone used to work Europe. Perhaps it was the rig that helped them earn their first DXCC. Or maybe it was simply the radio that sat on the desk for years while its owner learned, experimented, and made friends around the world.

Coming across a TS-430S today can bring about a curious feeling. We know there are much more modern radios, equipment with spectacular displays, SDR receivers, digital filters, and features that back then would have seemed like science fiction. But when we put our hands on that old Kenwood and slowly turn the dial, we understand something: radio hasn't changed that much.

Nostalgia Corner

We still search for a signal. We still tune. We still listen. We still wait for that callsign to emerge from the noise. And when we finally hear it, we feel exactly what that ham felt forty years ago sitting in front of his TS-430.



Perhaps that's why some radios never go out of style. Because they weren't built simply to transmit and receive. They were built to create memories.



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PRODUCTS • INNOVATION • SERVICES • COMMUNITY

A Legendary Puerto Rico Contest Site Seeks Its Next Chapter

An 11-acre property in Arecibo, Puerto Rico, approximately one mile from the former Arecibo Observatory, once home to the WA3FET / WP3R contest station, is now being offered for sale to someone who may envision a new amateur-radio chapter from the same hilltop.



The former WA3FET / WP3R contest installation in Arecibo, with the 60-foot Rohn 55 tower and multi-band OWA antenna system. The tower and antennas were destroyed by Hurricane Maria in 2017.

THE LEGACY

For nearly two decades, a hilltop property in Arecibo, Puerto Rico, served as the home of the WA3FET / WP3R contest station, a site associated with high-scoring operations in some of amateur radio's major competitions.

Owned by Prof. James K. Breakall, WA3FET, the 11-acre property lies approximately one mile from the former Arecibo Observatory. Beginning in 1998, Jim and a number of visiting operators used Angel Vazquez's call sign, WP3R, from a station built specifically with serious contesting in mind.

Hurricane Maria brought that chapter to an end in 2017, destroying the tower and antenna systems. Jim chose not to rebuild the station, but the property itself remains, and he is now offering it for sale with the hope that another amateur-radio operator might see potential in the same location.

A PROVEN CONTEST LOCATION

The results supplied by Jim offer a glimpse of what was accomplished from the site without telling the entire story. WP3R operations appearing in the supplied ARRL contest records include a 9,650,745-point Single Operator High Power entry in the 2003 ARRL DX Phone contest with K9PG operating, followed in 2004 by a 6,028,056-point Single Operator Low Power Phone entry. The records also document repeated Sweepstakes activity from the property over many years.

9,650,745 points in 2003 ARRL DX Phone SOHP from WP3R, with K9PG operating

WHAT ONCE STOOD HERE

The former station was centered around a 60-foot Rohn 55 tower with interlaced 20-meter and 15-meter OWA Yagis, a 10-meter OWA and a 40-meter wire Yagi. That historic antenna installation is no longer standing.

THE SITE TODAY



Looking north from the hilltop, with the ocean visible in the distance. The property includes two elevations with a broad area between them.

A PROPERTY WITH A RADIO PAST

The offering consists of approximately 11 acres in Arecibo, Puerto Rico, approximately one mile from the former Arecibo Observatory.

Jim describes a principal hilltop and a second, somewhat lower hill to the northwest, with a large flatter area between them. From the higher ground, the terrain slopes away and provides views toward the ocean from the northwest through north and northeast.

Access to the property is by a private paved road connected to a main road leading toward the former Observatory. The original antenna structures are gone, but Jim's current description states that the communications building, storage shed and electricity remain. The main radio shelter is an Andrews fiberglass communications shelter that previously served as the operating shack. Concrete anchors installed for the former guyed tower are also described as remaining at the site.

The original station had electrical distribution for 120-volt outlets and two 240-volt outlets, as well as incoming surge protection and a transfer switch that had been installed for generator use.



The Andrews fiberglass communications shelter that served as the WA3FET / WP3R operating shack. The shelter remains on the property.

SITE AT A GLANCE

11 ACRES
ARECIBO, PUERTO RICO
APPROX. 1 MILE FROM FORMER ARECIBO OBSERVATORY
TWO HILLTOP AREAS
PRIVATE PAVED ACCESS
COMMUNICATIONS SHELTER
ELECTRICITY

THE NEXT CHAPTER

A SITE WITH A DIFFERENT KIND OF HEAD START

For an amateur-radio buyer, the significance of the property is not that a completed contest station is waiting to be switched back on. It is not.

Its appeal is different. This is land where a substantial HF contest installation once operated, with hilltop terrain, an existing communications shelter, electrical service described by the owner as remaining, paved access and physical evidence of the station that came before it.

THE NEXT CHAPTER

Any future station would have to be designed and built by its next owner, with engineering, permitting and regulatory considerations determined independently. What the property offers is the possibility of beginning that process at a location already closely associated with amateur radio and contesting history.

For the right operator, the next WP3R-style story would not be about restoring the station that once stood there. It would be about deciding what comes next.

“I would love to see this site continue with some contester and see it winning contests again.”

— Prof. James K. Breakall, WA3FET

WA3FET / WP3R PUERTO RICO CONTEST SITE

Asking Price **$150,000 or best offer**

Property: 11 acres
Location: Arecibo, Puerto Rico, approximately one mile from the former Arecibo Observatory
Owner: Prof. James K. Breakall, WA3FET

Email: jimb@psu.edu
Phone: 814-883-6521
Coordinates: 18.358947977793267, -66.7527212013293

Interested parties should contact Jim Breakall directly for property details, current conditions and sale information.

This Marketplace Special Feature is presented by SWR Magazine at no charge as a service to the amateur radio community.



Photo by: Qrper

July 17 EVENTS AND ACTIVITIES SCHEDULED FOR SEPTEMBER 2026

SPECIAL EVENTS

📍 Conventions, Hamfests & In-Person Events

- **Shelby Hamfest –** September 4–5, 2026 – Shelby, North Carolina, USA – ARRL North Carolina State Convention. Celebration of the 70th edition of this traditional hamfest, featuring a large equipment flea market, vendor spaces, camping, youth activities, special event station W1AW/4, and the ARRL state convention.
- **London Amateur Radio Club Annual Hamfest –** September 5, 2026 – Dorchester, Ontario, Canada. An in person gathering hosted by the London Amateur Radio Club, featuring commercial vendors, swap tables, tailgating, food, equipment, and accessories for ham radio operators. The event will be held at the Dorchester Fairgrounds and is one of the featured hamfests in Canada during September.
- **W9DXCC Convention –** September 11–12, 2026 – Naperville, Illinois, USA – ARRL Convention. One of the most important conventions for DX and contesting enthusiasts, organized by the Northern Illinois DX Association. It brings together operators interested in DX, contesting, equipment, technology, and educational activities.
- **National Hamfest –** September 25–26, 2026 – Newark, Nottinghamshire, UK. Considered the UK's largest national amateur radio event, it brings together manufacturers, distributors, clubs, and hams from across the country. The event features a large equipment marketplace, an outdoor flea market, exhibition areas, and camping.

📍 On the Air / Special Operations

- **Route 66 On the Air –** September 12–20, 2026 – United States – W6H. A special event commemorating historic Route 66, with participating stations active for nine days and contacts available on various HF bands. An excellent opportunity to collect special event contacts and QSL cards.
- **Historic Soldiers Weekend –** September 26–27, 2026 – Fort Mott State Park, New Jersey, USA – W2M. A special activation from Fort Mott State Park, which is part of POTA, with several stations operating SSB, CW, and FT8, primarily on 40, 20, 15, and 10 meters. Contacts will be eligible for a special certificate.

📬 DO YOU HAVE A HAM RADIO EVENT YOU'D LIKE TO SEE FEATURED IN OUR MAGAZINE? SEND US THE DETAILS AT INFO@SWRMAGAZINE.ORG, AND WE'LL BE HAPPY TO PUBLISH IT.

By: Yanira Maldonado, WP4QOE

Frecuencia Femenina

The best DX you can make never appears in the logbook.

Amateur radio operators know what it means to chase a good DX contact.
We wait for propagation to be in our favor. We listen carefully. We repeat our callsign among many stations and, when the answer finally comes from the other side, we feel that satisfaction that only those who truly love radio can understand.
A new country.
A new entity.
An extraordinary distance.
One more contact in the logbook.
But as time has gone by, I have started to wonder about something:
What if some of the most important contacts of our lives as hams never appeared in the logbook?
They have no date.
They have no frequency.
They have no signal report.
And yet, they may be the ones that travel the farthest.

There Are Distances That Aren't Measured in Miles

We get excited knowing that our signal crossed an ocean or reached a place we may have never visited.
But there is another kind of distance.
The distance traveled by a word of encouragement.
The distance that reaches a beginner who is about to give up.
The distance between someone who knows and someone who wants to learn.
There is no meter for those distances.
They don't receive a QSL card either.
But some of them can last a lifetime.
If you have been on the air for a while, you probably remember someone in a very special way.
Maybe it was that person who patiently took the time to explain something to you when you were just getting started.

The person who answered one of your first calls.
Or the one who could have embarrassed you after a frequency mistake... but chose to teach you instead.
Over the years, we may forget many of the QSOs recorded in our logbooks.
But we rarely forget the person who made us feel that we belonged in this world.

Knowledge Must Travel Too

Ham radio came to us because someone decided to share what they knew.
One operator taught another.
Someone explained how to build an antenna.
Another talked about propagation.
Someone had the patience to teach CW.
That is how this hobby has survived, generation after generation.
Not only because of technology.
Because of the passing of knowledge.
And here there is an important difference.
Some people use what they know to impress others.
Others use it to teach.
True knowledge does not need to make someone who is still learning feel small. Quite the opposite: it sparks curiosity, builds confidence, and, over time, accomplishes something extraordinary:
the person who learned eventually teaches someone else.
Then knowledge begins to travel much farther than we ever could.

What Really Speaks for Our Station

We love our radios, antennas, and technology. They are a wonderful part of this hobby.
But no station, no matter how impressive, can buy what truly sets a good ham apart:
patience, ethics, courtesy, humility, and a willingness to help.
We can have an extraordinary station and leave no lasting mark.
Or we can have a modest station and transform the experience of many people.

Because the most important reach of our station does not always depend on the antenna.
It also depends on the person behind the microphone.
And over time, our callsign comes to represent exactly that.
With the years, it stops being just letters and numbers.
People begin to associate it with the way we operate, teach, and treat others.
Let's build a callsign that, when heard on the air, makes someone think:
"That person helped me when I was getting started."
That kind of recognition cannot be bought.
It is built contact after contact.

The Contacts We Never Write Down

Some QSOs end when we say 73.
And others are just beginning at that moment.
A conversation can become a friendship.
An explanation can spark a new passion.
An invitation to participate can reveal a future leader.
A gesture of encouragement can lead someone to decide to stay in ham radio.
None of that automatically appears in our logbook.
So perhaps we should ask ourselves another question:
How many people have we really contacted?
Not stations.
People.
Because behind every callsign there is someone who also had a first day, made mistakes, asked basic questions, and needed to learn.
Exactly like we did.

What Will Your True DX Be?

Someday we will make our last QSO.
Perhaps we won't know that it is the last one.
We will say 73, turn off the radio, and eventually our callsign will no longer be heard on those frequencies where it was familiar for so many years.
What will remain?
Logbooks, awards, and QSL cards will tell part of our story.

But there will be another, much more important part.
The people.
The operator who learned because we had the patience to explain it.
The YL who dared to get involved because someone believed in her.
The young person who discovered ham radio because we allowed them to come close to our station.
The friend who started out as nothing more than a callsign on the other end of the frequency.
That is why I would like to leave you with a question:
Who is on the air today because, at some point, your path crossed theirs?
If you can think of one person, perhaps you have already made one of the most important contacts of your life.
And if you still can't think of anyone, there is always time.
Teach.
Share.
Be patient.
And when someone makes a mistake, remember how you would have wanted to be treated when you were just getting started.
Because I have always believed that:
"The best hams are not those who make the most contacts; they are those whose influence continues to be heard even after their station has gone silent."
The day will come when we close our logbook.
Then the numbers will matter a little less.
What will really matter is knowing whether, while our signal was on the air, we managed to reach farther than our radio waves.
Because perhaps the best DX of our lives will never be confirmed in the logbook.
Maybe it won't have a QSL card.
Maybe we will never receive an award for making it.
Maybe it will simply be written into the story of someone we helped keep going.
And if that is the case...
that will have been our best signal.
73,

NEXT FREQUENCY: I WANT TO HEAR FROM YOU

Where Are the YLs in CW?

A question from some readers of Female Frequencies has sparked my curiosity and could become one of our upcoming articles: the presence of women in telegraphy (CW) within ham radio.
How many YLs are currently practicing CW? How many participate in contests? Are there women competing in high speed telegraphy?
I want to meet them.
If you are a YL who practices telegraphy, from someone learning their first characters to those who participate in contests or practice high speed CW, I invite you to be part of this survey.
You can tell me your name and callsign, the country you operate from, how long you have been practicing CW, your approximate speed, whether you participate in contests or competitions, and especially what telegraphy means to you.
I also invite our OM readers: if you know a YL who is active on CW, please pass this invitation along to her.
I want to discover not only how many of you there are, but also the stories behind those signals.
Because some women make their voices heard through a microphone…
while others make their presence heard, dot by dot, dash by dash.
Are you one of them? I want to hear from you.
Send your response to: femeninefreq@swrmagazine.org



Portable, Versatile, Powerful

IS THE YAESU FT-891 STILL RELEVANT TODAY?



By: SWR Editorial Team

Little Warrior

A Radio That Refuses to Disappear

In a world where modern transceivers come with touchscreens, wireless connectivity, digital interfaces, and an impressive number of features, the Yaesu FT 891 might seem like a radio from another era. Yet, years after its introduction, it remains a very interesting option for many hams.
The reason is simple: the FT 891 was designed to get you on the air, and that is exactly what it continues to do very well.

Small on the Outside, Big on Possibilities

One of its biggest attractions remains its size. The FT 891 delivers 100 watts of power and covers HF and 50 MHz in a compact package, making it an ideal companion for portable and mobile operations, travel, and activations.
For anyone who enjoys taking their radio into the field, setting up a temporary station, or simply wants to save space, its compact dimensions are a significant advantage. With a battery, an antenna, and the necessary accessories, it is possible to build a very capable station without having to carry a large radio.

Can It Compete with Modern Radios?

Here we need to be realistic. The FT 891 does not have the display or user experience of the latest transceivers. Some current radios offer better interfaces, connectivity, and much deeper integration with computers and digital systems.
But that does not mean the FT 891 has become obsolete.
A large part of ham radio still depends on the same elements it always has: receiver sensitivity, selectivity, power, the antenna, and, above all, the skill of the operator. In that arena, the FT 891 still has a lot to offer.



The Antenna Is Still the Star

The FT 891 also reminds us of something that never goes out of style: a good radio needs a good antenna. A 100 watt radio connected to an efficient antenna can deliver excellent results. For portable operation, it can be used with dipoles, End Fed antennas, verticals, and other wire antennas. At a fixed station, it can also be integrated with larger antenna systems.
This makes the FT 891 an excellent tool for experimentation. The operator can spend more time discovering which antenna works best, improving the installation, and taking advantage of propagation conditions.

Its Limitations Also Exist

We should not turn it into a perfect radio. Its display is small, and some controls take some getting used to because of the combination of buttons and menus. In addition, anyone looking for the latest digital features and a completely modern interface will probably find better alternatives. But those limitations do not eliminate its usefulness. On the contrary, for many hams, its simplicity may be part of the appeal. It is a radio that allows you to focus less on the technology and more on operating.

Is It Worth It in 2026?

The answer depends on what we are looking for. If we want the latest transceiver available, with all the modern features, we should probably look at newer equipment. But if we are looking for a compact 100 watt radio capable of operating on HF and 50 MHz and able to accompany us practically anywhere, the FT 891 remains a very solid choice. Especially on the used market, a unit in good condition can become an excellent entry point into the world of HF or a second radio for portable operations. The relevance of a transceiver does not depend solely on when it was manufactured. It depends on what it can still do. The Yaesu FT 891 still allows us to hear a weak signal, fine tune the receiver, call another station, and enjoy that special moment when a voice answers from hundreds or thousands of miles away.
It does not have the largest display or the newest technology. But it has something that has not gone out of style: the ability to put a ham on the air. And as long as we continue searching for signals across the bands, the FT 891 will still have a place in ham radio.



WHEN MAIL TRAVELS THROUGH THE AIR

When the networks go down, the airwaves can still talk.

By: Abimael Padro KP4RY

Winlink + VARA HF allow messages to be sent over radio without necessarily relying on the Internet. The computer prepares the message, VARA converts it into digital signals, and the radio transmits them.

There are moments in ham radio when you discover something that, although it has technically been around for years, produces that same sense of wonder we felt when we made our first long distance contact. That happened to me when I discovered that I could send an email using a radio. At first, I thought it had to be complicated. A computer, a radio, an antenna, software, digital modes, connections, servers, and a whole collection of terms that seemed to belong more to the world of computing than to ham radio.

But after I understood how it worked, I thought something that I still say whenever I talk about this subject: it looks complicated, but it's easy. And perhaps that is one of the most beautiful things about ham radio. Many times, what looks complicated from the outside turns out to be quite simple when someone takes the time to explain it.

DID YOU KNOW YOU CAN SEND AN EMAIL WITHOUT THE INTERNET?

One of the most interesting features of Winlink is that it allows communications to be established using radio when conventional connections are unavailable.
This is especially important during hurricanes, earthquakes, floods, and other situations in which electricity, cellular service, and the Internet can all go down at the same time.
Radio then becomes a communications bridge once again.

An Email by Radio?

Yes. And I'm not talking about connecting a computer to the Internet and using a conventional email program. I'm talking about using our radio as the means of transport to carry a message. We write the message on the computer, but instead of sending it over an Internet connection, the message can go out over the airwaves. We can be in a place where there is no Internet. There may be no phone service. The communications infrastructure may have gone down. And yet, if we have power, a radio, an antenna, and a properly equipped station on the other end of the link, we can send information.



That's where Winlink comes in. Winlink is an amateur radio email system that allows users to send and receive messages through different radio systems. The system can use the Internet when it is available, but it also has mechanisms for transferring messages entirely over radio. And this is where we begin to realize that what seemed so complicated really isn't that complicated after all.

How Does It Work?

Let's imagine a simple situation. I have my computer in front of me. I have my HF radio connected to the computer through an audio interface or digital interface. I have my antenna connected to the radio. I open Winlink Express and write a message.

I could write something as simple as: "Family is safe. We have water and food. We have no phone service. We need information about the road to the shelter." So far, there doesn't seem to be anything extraordinary. It's simply writing an email. The difference comes when I press the button to send it. The software takes that information and prepares it for transmission over the radio. That's when the digital mode comes into play.

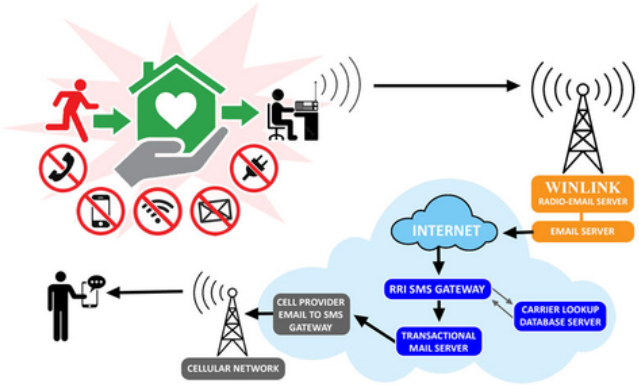
And This Is Where VARA Comes In

When we talk about Winlink over HF today, one of the most interesting digital modes is VARA HF. In simple terms, VARA is a digital modem that uses the computer's sound card to convert data into signals that the radio can transmit.

And here's something important. We don't need to think of VARA as something mysterious. We can think of it as a translator. The computer speaks in data. The radio speaks in radio signals. VARA acts as the interpreter between the two.
Winlink Express can use VARA HF to establish a connection with an RMS station, which acts as a gateway into the system. So, in simplified terms, the process would be: computer, Winlink Express, VARA HF, radio, antenna, RMS station, Winlink system, and finally the recipient.
It looks complicated. But it isn't.



And What Is an RMS Station?



An RMS station, or Radio Mail Server, is a station that functions as a gateway into the Winlink system. We reach it using radio. The station receives our message and can route it to the appropriate system.
When Internet access is available at the RMS station, the message can continue on its way to the recipient using the Internet infrastructure.
But here is one of the features that caught my attention the most. Winlink also has radio only forwarding capabilities. In other words, there are configurations in which traffic can be transported between stations by radio without directly depending on the Internet.
That completely changes the perspective.
We are no longer simply talking about sending emails.
We are talking about resilient communications.

What Do We Need?

There is no need to start with a huge station. For a basic HF station, we can think in terms of an HF radio, a computer, an interface between the computer and the radio, an antenna, Winlink Express, and VARA HF.
The radio can be a modern transceiver or an older one that can work properly with an audio interface.
The computer can be a laptop. The interface allows the audio and, depending on the setup, control of the radio to communicate with the computer.
And here our old friend makes another appearance: the antenna.
Because we can have the most modern computer in the world, but if the antenna doesn't work, we still have a problem.
Winlink Express is the software we will use to prepare and manage our messages, while VARA HF works as the digital modem that allows the data to be transported over HF.

What Happens When We Press "Send"?



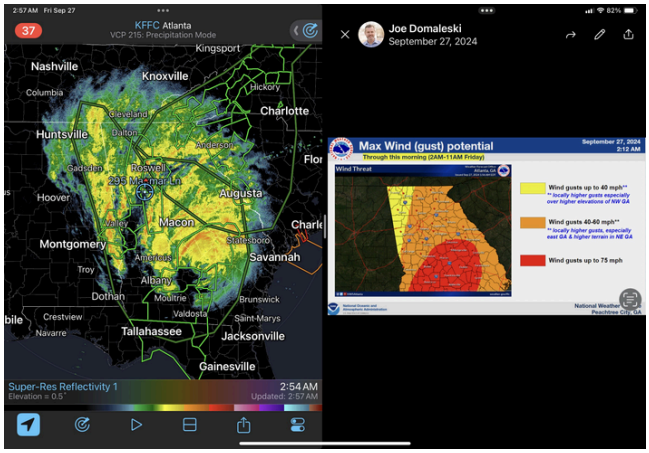
Here is the part that I find fascinating. The message we see as letters on the screen has to be converted into information that can travel through the air.
VARA takes the data and converts it into digital signals. The radio transmits them. The receiving station listens to those signals, decodes them, and receives the data. Then the message continues on its way.
To us, it may seem like we are simply sending an email. But underneath that seemingly simple action is an entire digital communications process.
And the best part is that we don't need to know every mathematical detail of the process to start using it.
That is also part of the beauty of ham radio.
First, we learn how to use it.
Then we start asking ourselves how it works.
And then we dive all the way in.

What If a Hurricane Hits?



This is where the system stops being simply interesting and begins to become a truly useful tool.
Let's think about Puerto Rico. A hurricane arrives. Winds knock down utility poles. The power goes out. Cell towers stop working. Telephone exchanges can be knocked offline. Internet connections disappear.
And after the storm, we find ourselves in a situation that is very common: we have radio, but we don't have conventional communications.
At that moment, a Winlink station can become an extraordinarily valuable tool.
We can send information about shelters. We can send damage reports. We can report on people who need assistance. We can send supply lists. We can relay messages between operations centers. We can send forms and, when conditions and the system allow, attachments.
Winlink was developed with emergency scenarios and communications in mind, particularly when normal networks are unavailable.

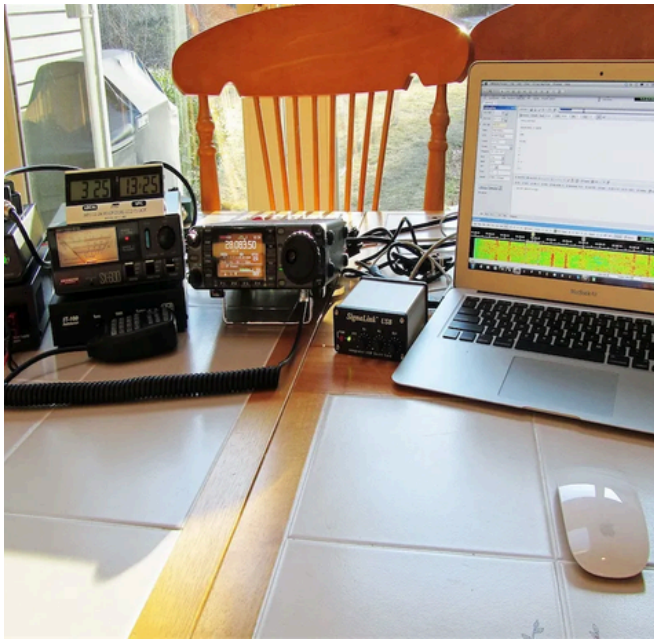
Now Let's Imagine Something Even More Important



Suppose that after a hurricane, someone needs to communicate with their doctor. They have no phone. They have no Internet. But there is an operational amateur radio station.
The patient has medical information that needs to reach a healthcare professional. In a properly managed emergency situation, radio can become the bridge that allows that information to get out of an isolated area. It could involve, for example, information needed by a doctor to provide guidance on continuing a treatment.
And here we need to pause.
Because ham radio is not a private messaging system. Messages transmitted over amateur radio can be received by other people. For that reason, medical communications should be handled very carefully.
We should not unnecessarily transmit identification numbers, detailed personal information, or any data that is not essential.

In an emergency, the principle should be simple: transmit the necessary information as clearly and responsibly as possible, while always following the rules that apply to amateur radio and the instructions of the authorities or emergency organization coordinating the communications.

We Can Also Operate Without the Internet



This is perhaps one of the parts that excites me the most.
Many people think, "But if Winlink uses the Internet, what happens when the Internet goes down?"
That is precisely where the difference lies.
The system has modes that allow messages to be transported by radio between stations. Winlink explicitly describes its radio only capabilities and its hybrid network.
That means we can imagine a chain of stations where a message starts at one station, travels over HF to another station, and from there can continue on to another.
The message can keep moving forward.
And in certain configurations, a station that eventually has Internet access can deliver the message to its final destination.
It's a kind of postal service.
Only instead of trucks and roads, we have radios, antennas, and electromagnetic waves.

It Doesn't All Have to Be HF



Winlink can also be used over VHF and UHF, depending on the available infrastructure. On VHF and UHF, we can find systems based on packet radio and VARA FM.
This can be very interesting for local or regional communications.
HF, on the other hand, offers us something that all hams know very well:
distance.
When terrestrial communications fail, HF can allow a message to leave the affected area and reach a station that still has communications capabilities.

And Then I Realized Something

When I discovered that I could send an email over radio, I initially thought about the technology. I thought about the software. I thought about the digital mode. I thought about the computer. I thought about the radio.
But then I realized that what really mattered was none of those things individually.
What mattered was what we could do with them.
Because ham radio has always been about more than talking.
Sometimes it's about listening.
Sometimes it's about experimenting.
Sometimes it's about learning.
And at certain moments...
it's about serving.
The day a person can sit down at a computer, connect through radio, and get a message through when all other means of communication have disappeared, we once again understand why our hobby still matters.
And perhaps that's why I like to repeat it.
When someone asks me, "Can I really send an email using my radio?"
I simply smile.
And I tell them:
It looks complicated... but it's easy.
You just need to learn.
Connect.
Experiment.
And, above all, have your station ready before the emergency arrives.
Because when the hurricane is already bearing down on us, it is not the best time to start figuring out how Winlink works.
Preparation begins long before.

AMATEUR RADIO ISNOTDYING

ByDaveDahlberg,AA4TE

A DATA-INFORMED LOOK AT AGE, PARTICIPATION AND THE LIFE CYCLE OF A TECHNICAL HOBBY



Editorial comp image: Pioneer Central Schools amateur radio mentorship. Permission/license verification required before publication.

Not long ago, our amateur radio club received an interesting email from a 12-year-old boy. He sounded genuinely excited about joining our group, taking the Technician exam, and using his grandfather's radio shack. He wanted to attend our next activity and asked how he could join in.

That activity happened to be our weekly net at 8 p.m. There was no meeting at the clubhouse that evening, so I explained that if his grandfather was serving as the control operator and supervising him at the station, he could certainly participate in the net. I also encouraged him to begin studying for his own license and, perhaps most importantly, to ask his grandfather questions about the hobby.

My response to that young man was not focused primarily on recruiting another amateur operator. It was focused on something I consider more important: one family member having the opportunity to pass along a lifelong passion to another generation.

Notice the word lifelong.

That may or may not describe this young man's future. Perhaps he will become deeply involved in amateur radio. Perhaps he will be interested for a season and then move on to other things. Perhaps radio will remain somewhere in the back of his mind while school, work, relationships, and adult responsibilities take priority. Perhaps years from now he will remember his grandfather's shack and decide to come back to it.

We simply do not know.

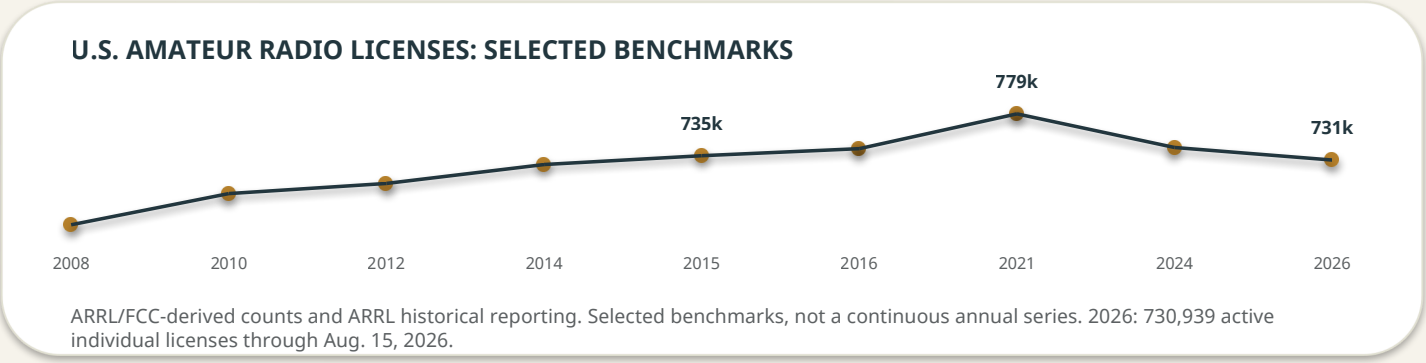
In fact, five months after that first email exchange, we had not heard from him again.

That does not mean amateur radio failed him. It does not mean he will never become licensed. It does not tell us much of anything about his future.

And that uncertainty matters, because there is an assumption circulating through amateur radio circles these days: the idea that the hobby is in danger of disappearing unless clubs aggressively reinvent themselves around youth recruitment.

That claim has been repeated often enough that many operators have started accepting it without asking what I believe is a very important question: Where is the data?

“Where is the data?”



SHOW ME THE DATA

Years ago, I taught at a high school in the Pacific Northwest where the administration and faculty successfully transformed a culture of failure into one where more than 90 percent of students graduated on time. That change did not happen because someone delivered an emotional speech or introduced the latest educational theory. It happened because administrators studied successful schools, researched best practices, and trained staff to collect and use data when making decisions.

I remember one debate in particular. Another high school in our district wanted schools to change the traditional math sequence by teaching Algebra II before Geometry. The proposal sounded innovative, but our department's response was simple:

Show us the data.

Did schools using that approach improve student performance? Did graduation rates rise? Were students better prepared afterward?

The point was not resistance to change. The point was that major decisions should be supported by evidence.

I think amateur radio deserves the same standard.

We hear that meetings must be redesigned for younger people. We hear that clubs sound outdated. We hear that young people reject the way amateur radio is presented. And sometimes we hear the strongest claim of all: unless we aggressively recruit youth, the hobby will eventually disappear.

Those are important concerns. Youth outreach can be valuable, and no thoughtful amateur operator should dismiss the importance of welcoming another generation.

But if we are going to diagnose the health of an entire hobby and prescribe major changes to the organizations within it, we should first understand what the numbers actually tell us.

And, just as importantly, what they do not.

WHAT THE LICENSE NUMBERS ACTUALLY SHOW

For many years, U.S. amateur radio licensing did grow.

When I earned my Technician and General licenses in 2015, there were approximately 735,000 licensed amateur operators in the United States. The documented year-end total was 735,405. Licensing continued upward after that, eventually reaching roughly 779,000 to 780,000 around 2021.

If the story ended there, it would be easy to point to a steadily increasing license population and declare the argument settled. But it does not end there.

Since that high point, the number of active individual U.S. amateur licenses has declined. As of August 15, 2026, the ARRL table based on FCC public data files reported 730,939 active individual licenses.

If I am going to ask other people, "Where is the data?", then I have to be willing to accept the data when it complicates my own argument.

The recent decline is real.

But what does it actually prove?

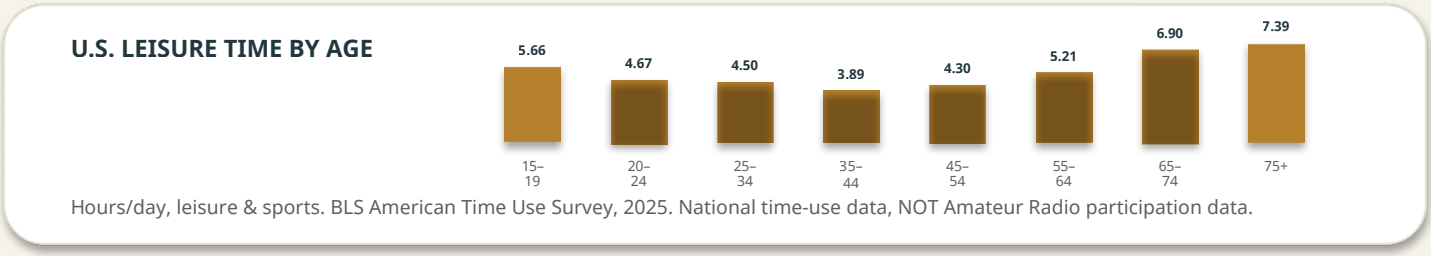
It certainly means we should not say that U.S. amateur radio licensing is still setting records or continuing an uninterrupted growth trend. It is not.

At the same time, a decline from roughly 779,000 licenses to approximately 731,000 does not, by itself, prove that amateur radio is approaching extinction. More than 730,000 active individual licenses still represent an enormous technical community.

There is another limitation that is easy to overlook: a license count is not an activity count.

An active FCC license does not tell us how often someone gets on the air. It does not tell us whether that person participates in a club, operates contests, maintains repeaters, activates parks, provides emergency communications, experiments with digital modes, builds antennas, works satellites, or simply keeps a license current while being relatively inactive.

The reverse is also important. A falling license total tells us that the licensed population is getting smaller, but it does not tell us, by itself, why people leave, who is entering, how intensely remaining operators participate, or what the hobby will look like ten years from now.



License numbers matter.

They just do not answer every question.

AMATEUR RADIO AS A LIFETIME HOBBY

This is where I think some discussions about the future of amateur radio become too simple.

We sometimes talk as though a healthy hobby must capture people when they are young and then keep them continuously active for the next sixty years.

Life rarely works that neatly.

Someone may discover radio as a teenager and become fascinated with it. Then comes college. A career. Marriage. Children. Housing restrictions. Mortgages. Financial pressures. Long workdays. Suddenly the time and money available for radios, coaxial cable, antennas, towers, test equipment, and experimentation compete with much more immediate responsibilities.

That does not necessarily mean the interest disappeared.

Research into amateur radio participation supports the idea that not every operator follows one continuous path through the hobby. Surveys and demographic research have found later-in-life licensees as well as operators whose years of active participation are fewer than their total years licensed.

That does not prove that everyone who leaves eventually returns. Nor does it prove that returning operators will somehow replace every person who disappears from the license rolls.

It does demonstrate something more modest, and important: amateur radio participation can occur at different stages of a person's life.

I have spoken with numerous hams who tell versions of the same story:

"I was licensed years ago."

"I used to operate with my dad or grandfather."

"Life got busy."

"I always meant to come back."

Those conversations are personal experience, not a national statistical survey. But they fit a broader pattern in which entry, inactivity, renewed interest, and later-in-life participation can all be part of an amateur radio career.

That certainly describes my own experience.

I did not become deeply involved in amateur radio as a teenager. I could never have afforded to participate at the level I wanted. It was later, after my children were grown and my finances became more manageable, that the hobby truly opened up for me.

Amateur radio can be entered relatively inexpensively. Nobody needs a giant station to become a ham. But the hobby also offers almost unlimited opportunities to explore more sophisticated radios, antennas, test equipment, station infrastructure, and technical experimentation over time.

How far someone chooses to go is entirely individual.

So perhaps we should stop assuming that the only meaningful entry point into amateur radio is adolescence.

A 14-year-old new licensee matters.

So does a 34-year-old.

So does a 64-year-old.

AN OLDER HOBBY, BUT WHAT DOES THAT MEAN?

There is no serious reason to pretend that amateur radio does not skew older. Available demographic research, including ARRL membership information and survey-based studies, clearly points in that direction.

But there is an important limitation.

The FCC does not publish a complete current age breakdown of all U.S. amateur radio licensees. That means precise claims about the age distribution of the entire American amateur population should be treated carefully. Membership surveys and demographic studies can give us useful indicators, but they are not the same thing as a complete national census.

Still, the older demographic is real enough to deserve discussion. The question is what we make of it.

One possible interpretation is that an aging population proves the hobby is failing to replace itself.

Another possibility is that at least part of the age pattern reflects the realities of adult life.

Time-use data from the U.S. Bureau of Labor Statistics show that available leisure time changes considerably across adulthood. People in major career and family-building years tend to have less leisure time than people later in life. That is not amateur radio participation data, but it provides useful context.

Think about what many younger adults are balancing.

Will the landlord permit an antenna?

Is there room for a station?

Can I justify spending money on radio equipment while raising a family?

Can I spend Saturday operating when there are children, household responsibilities, work commitments, and a long list of other demands competing for that time?



Those are not signs that amateur radio has lost its value.

They are ordinary realities of adult life.

Later, circumstances may change. Children grow up. Careers stabilize. Housing situations improve. Retirement approaches. Disposable income and leisure time may increase.

That does not explain every older amateur operator, and it should not be treated as the only explanation for the hobby's demographics.

But it is part of the picture.

And that is why I am reluctant to accept the age of the average ham as proof, by itself, that amateur radio is dying.

CLUBS ARE NOT SCHOOLS

I want to make something very clear.

I am not opposed to young people becoming amateur radio operators.

I have congratulated 12- and 13-year-olds after they passed their exams, and I genuinely enjoy seeing technically curious young people discover radio. A club that has members who are enthusiastic about youth outreach should absolutely encourage them.

But there is a major difference between welcoming interested young operators and requiring every amateur radio club to reorganize itself around youth recruitment.

That distinction matters.

Amateur radio clubs serve many purposes. Some are social organizations. Some maintain repeaters. Some emphasize emergency preparedness or public service. Others revolve around contesting, technical experimentation, operating activities, breakfast gatherings, or simply providing a place where people with a common interest can spend time together.

What they are not automatically is schools.

No one expects every woodworking guild, photography society, astronomy association, classic-car club, quilting circle, or model-railroad organization to transform itself into a youth-centered institution in order to justify its continued existence.

Those organizations may gladly welcome interested young members.

So should we.

But voluntary organizations are also allowed to serve the interests of the people who voluntarily belong to them.

There is nothing inherently wrong with that.

WELCOMING YOUNG PEOPLE REQUIRES THE RIGHT PEOPLE

Years ago, my middle school started an after-school organization focused on outdoor and scouting-style skills. Students learned knot tying, canoe handling, fire-building techniques, and other useful skills.

Looking back, it was a good program.

But when students were later asked what they thought about it, many gave essentially the same response:

"It feels like more school."

That observation stayed with me.

Most amateur radio club meetings involve things like business discussions, repeater issues, technical presentations, event planning, emergency-preparedness discussions, and conversations among longtime hobbyists.

There is nothing wrong with those activities.

There is also nothing wrong with creating a youth program that approaches amateur radio differently.

But those are not necessarily the same thing, and the people best suited for one are not automatically the people best suited for the other.

I spent many years teaching middle-school and high-school students. One thing I learned is that teaching young people well is specialized work.

Technical competence and teaching ability are not the same skill. Some amateur operators are wonderful mentors. They are patient, enthusiastic, encouraging, and naturally good at explaining complicated subjects to beginners.

Others are not.

That does not make them bad operators or bad people.

Many retirees join amateur radio clubs because they want fellowship, technical conversation, public-service opportunities, operating activities, or simply an enjoyable hobby during a stage of life when they finally have more time to pursue one. They did not necessarily join because they wanted to become classroom instructors.

When motivated young people genuinely want to learn, helping them can be tremendously rewarding.

Youth outreach is valuable.

But guilt-driven mentoring is something different.

Welcoming young people should be an opportunity, not a moral test imposed on every amateur radio club.

THE TECHNICAL CURIOSITY FACTOR

I also question the idea that young people reject amateur radio primarily because we have failed to package it correctly for their generation.

Young people today are surrounded by technology. They have instant worldwide communication, streaming platforms, gaming voice chat, robotics, drones, software-defined radio, Arduino projects, Raspberry Pi systems, satellites, digital communications, and countless other opportunities for technical experimentation.

In my experience as an educator, the students who became deeply interested in technical extracurricular activities were a particular group.

They existed in every school.

They could be remarkably motivated.

But not every student wanted to build robots, experiment with electronics, write software, or understand how communications systems worked.

That should not surprise us.

Amateur radio has never appealed to everyone. Neither has astronomy. Neither has model railroading.

Neither has photography, woodworking, programming, or countless other specialized interests. Some young people will encounter radio and immediately want to understand what is happening behind the microphone. They will want to know how an antenna works, why propagation changes, how a digital mode decodes signals below the noise, or how someone can communicate through a satellite passing overhead.

Those are the young people we should be ready to welcome.

But I am not convinced that the survival of amateur radio depends on transforming the hobby into something designed to appeal equally to everyone.

ONE OF AMATEUR RADIO'S GREATEST STRENGTHS

In fact, one of the reasons I remain optimistic about amateur radio has little to do with demographics.

It has to do with the people. Experienced amateur operators routinely help newcomers install antennas, program radios, troubleshoot equipment, prepare for license examinations, understand operating procedures, experiment with new modes, and solve technical problems.

They lend equipment. They answer questions. They share decades of accumulated knowledge.

I have belonged to hobby organizations where longtime members seemed reluctant to teach newer participants because expertise gave them status. That has not generally been my experience in amateur radio.

There is simply too much knowledge in this hobby for any one operator to master all of it. The person who understands antennas may need help with digital modes. The contest operator may learn something from the satellite enthusiast. The experienced Extra-class operator may ask a newcomer who works professionally in networking or software for help with a modern digital system.

That exchange of knowledge is one of amateur radio's greatest strengths.

And it works with newcomers of every age. If a club has the people, interest, and resources to develop a strong youth program, wonderful.

If another club primarily serves existing members while warmly welcoming interested newcomers, including people discovering amateur radio later in life, that is legitimate too.

There is room for both.

FINAL THOUGHTS

So, is amateur radio dying? The numbers deserve a more thoughtful answer than either side of that argument sometimes gives them.

U.S. amateur radio licensing grew substantially for many years, reached record or near-record levels around 2021, and has declined since then.

We should acknowledge that.

We should pay attention to it.

But we should also resist turning one statistic into an entire diagnosis.

License totals do not measure every form of participation. An older demographic does not tell us why every operator entered the hobby or when. And the presence of fewer young operators than older ones does not automatically establish that every club must reorganize itself around youth recruitment.

Amateur radio remains a very large technical community. New people continue to discover it. Some enter young. Some arrive much later. Some participate continuously. Others step away when life becomes demanding and may rediscover the hobby years later.

Youth outreach can be valuable, and the people who do it well deserve support.

But the future of amateur radio does not depend upon guilt.

It does not depend upon shaming older operators for finally having the time and resources to enjoy the hobby.

And it does not require every club to become something it was never intended to be.

Perhaps that 12-year-old boy who emailed our club will become licensed next m onth .

Perhaps we will never hear from him again.

Perhaps twenty years from now, after education, work, and family have carried him in directions none of us can predict, he will remember sitting near his grandfather's radio and wonder whether amateur radio is still there.

If he does, I hope it will be. And I hope there will still be an experienced operator somewhere willing to answer his first question. Amateur radio's future is more complicated, and I believe more resilient, than the simple phrase "the hobby is dying" suggests. Before we decide otherwise, we should continue asking the question that started this discussion:

Where is the data?

SOURCES & DATA • ARRL/FCC license data & ARRL historical reporting • U.S. Bureau of Labor Statistics ATUS • Frank Howell, K4FMH demographic research

ORLANDO HamCation

OFFICIAL COMMUNITY ANNOUNCEMENT
For SWR Magazine readers

HAMCATION 2027 AWARDS

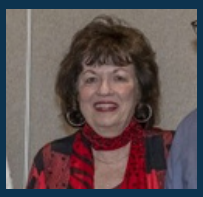
NOMINATIONS NOW OPEN

Recognizing Outstanding Service to Amateur Radio

Each year, HamCation recognizes amateurs whose service, mentoring and response have strengthened the radio community. Nominations for 2027 may be submitted for candidates in the United States and worldwide.

Open to nominations from the USA and worldwide

THREE AWARD CATEGORIES



Carole Perry Educator of the Year Award

Honors an individual who has made an outstanding contribution to educating and advancing youth in amateur radio.



Gordon West Ham Ambassador of the Year Award

Recognizes an amateur who represents and inspires others, embodies the amateur radio spirit and contributes meaningfully to the community.

Amateur Radio Hero Award

Recognizes selfless service by an amateur who provides skills, equipment and time for communications duty during a disaster or moment of need.

NOMINATION DEADLINE

NOVEMBER 1, 2026

Nominate at hamcation.com/award

Scan for criteria and nomination forms

A NEW GENERATION ON THE AIR

Ten-Year-Old Reynaldo Mangual, KM7HFU, Earns Technician License



Reynaldo Mangual, KM7HFU, receives his certificate from MARA president and 4-H group leader Michael Mills, NO7S.

At just ten years old, Reynaldo Mangual, KM7HFU, has taken an important first step into amateur radio after successfully passing the Technician Class examination.

The 35-question exam covers subjects including basic radio theory, operating rules and practices, electrical safety, and circuits. A minimum of 26 correct answers is required to pass.

Reynaldo is the youngest member of the Maricopa Amateur Radio Association (MARA) and is also a member of the Pinal County, Arizona, 4-H Amateur Radio Club. The youth program is supported by 4-H, MARA, a grant from the Amateur Radio Council of Arizona, and the Arizona 4-H Foundation.

During MARA's August 1, 2026 meeting, club president and 4-H group leader Michael Mills, NO7S, presented Reynaldo with a certificate recognizing his successful examination.

But the celebration held another surprise.



Steve Miller, W6SDM, presents Reynaldo with a restored World War II-era J-38 telegraph key.

Reynaldo was presented with an almost-new Yaesu FT-857D HF/VHF/UHF multimode transceiver that had been anonymously donated to MARA with the stipulation that it be given to a deserving young person after successfully earning an amateur radio license. The station package also included an LDG YT-100 automatic antenna tuner and a power supply, providing the young operator with the foundation for a capable amateur radio station of his own.

The occasion also connected Reynaldo's introduction to amateur radio with an earlier chapter in communications history.

Steve Miller, W6SDM, a collector and restorer of historic telegraph keys, presented him with a fully restored, authentic World War II-era J-38 telegraph key. Whether that piece of radio history will inspire an interest in Morse code remains to be seen, but it gives Reynaldo an opportunity to explore one of amateur radio's most enduring operating traditions as he begins developing his own interests in the hobby.

For a ten-year-old operator, earning a first license would already make the day memorable. Leaving the meeting with a complete station, a historic telegraph key, and the support of an amateur radio community invested in helping young people get started made it something more.

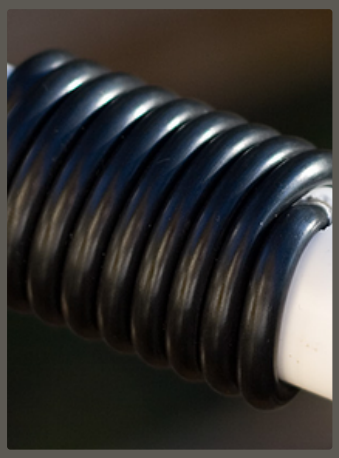
SWR Magazine congratulates Reynaldo Mangual, KM7HFU, on earning his Technician license and welcomes him to amateur radio. We look forward to hearing where his journey takes him next.

Based on material submitted by Steve Miller, W6SDM, Maricopa Amateur Radio Association.



WHEN RF BLOOMS: BUILDING A FLOWERPOT

My FlowerPot: When a Piece of Coax Becomes an Antenna







By: Julio Mercado WP4PUX

There are ham radio projects that begin with a box full of components, tools scattered everywhere, and a good dose of patience. And then there are others that begin with something as simple as a piece of plastic pipe and a roll of coax.
The FlowerPot belongs to the second category.
.

When I discovered this antenna, I thought, “Can you really build an antenna for 2 meters and 70 centimeters with this?” Well, yes. And that’s where the fun began.
The FlowerPot, or “flower pot” antenna, is one of those builds I really enjoy because it proves once again that in ham radio, you don’t always have to spend a fortune to experiment. The original design by VK2ZOI uses coaxial cable as part of the antenna elements, along with a coiled section that serves some very important functions within the system.
And the best part is that, when you finish building it, you end up with a fairly discreet, lightweight antenna that is easy to install.



What Exactly Is a FlowerPot?

At first glance, it looks almost too simple.
We have a plastic tube that serves as the support and protective housing, a piece of RG58 coax, and a series of turns of the same coax forming a coil.

But here’s where the magic happens.
The basic 2 meter FlowerPot uses a radiating section approximately half a wavelength long. Part of the coax is modified to become the radiating element, while another section is used as part of the feed and isolation system.

In the dual band version, an additional “sleeve” technique is used, employing a conductive sleeve, typically made of aluminum, that allows the antenna to also operate on 70 centimeters. The relationship between 145 MHz and 435 MHz is approximately three to one, which is precisely what makes it possible to take advantage of the third harmonic for the 70 centimeter band.
In plain English: the antenna pulls more than one trick with the same piece of coax!

What We Need

For my project, I would use a plastic tube approximately 25 millimeters in diameter, about two meters of RG58 coax with a braided shield, a cap for the top end, electrical tape or heat shrink tubing, a bit of aluminum tape for the 70 centimeter section, and, of course, basic tools.
I also recommend having a NanoVNA.
Not because the antenna is complicated, but because the NanoVNA lets us play scientist and discover what is really happening.
And for me, that is part of the fun.
One important detail: the original design recommends RG58 coax with a braided shield rather than cable with an additional aluminum foil shield. The reason is very simple: we will need to bend the coax to form the coils, and a braided shield handles that kind of work better.

We Start with the Radiator

For a version centered around 145 MHz, the radiating element is on the order of 45 centimeters long, although the exact measurement depends on the coax used and the physical conditions of the build.
Here’s a warning that has saved me more than once in my own experiments:
Don’t cut everything as if you were building IKEA furniture.
Leave yourself some extra length.
The published dimensions are an excellent starting point, but the antenna will need to be tuned afterward. Even different types of RG58 can have different velocity factors, and that changes the electrical dimensions.
In one of the documented 2 meter designs, a section close to 457 millimeters is used,

along with a nine turn coil serving as a choke.
I would start there and leave enough material to make adjustments.



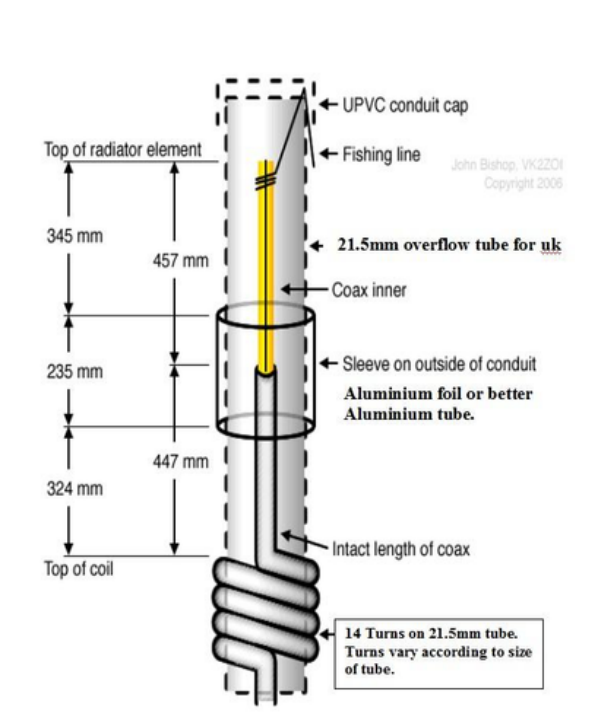
The Secret Is in the Coil

This is where the FlowerPot starts to get interesting.
Part of the coax comes out of the tube, is wound around the tube, and then goes back inside.
And no, we're not trying to make a spring for a door!
That coil is a fundamental part of the system.
In different versions, we'll find different numbers of turns. Some documented builds use seven turns for the phasing section and nine turns for the common mode current choke.
The choke serves a very important purpose. We want the RF current to travel where it is supposed to go and prevent the outside of the feedline coax from accidentally becoming another part of the antenna.
Because RF has quite a personality.
If it finds an available path, it will take it!



The Plastic Tube

Once we have the coax prepared, we use the plastic tube as the support.
The design published by BARC uses approximately one meter of 25 millimeter tubing and requires two holes to allow the coax to come out, form the turns around the tube, and then go back inside.
I would make the turns first without gluing or sealing anything.
This is important.
First, we lay everything out.
Then we measure.
Then we test.
And only when we are satisfied do we start sealing everything up.
I learned a long time ago that putting on tape, silicone, and heat shrink before testing an antenna is an excellent way to guarantee that we'll have to remove the tape, silicone, and heat shrink five minutes later.



What About 70 Centimeters?

Here comes the part I like the most.
The FlowerPot can be adapted to operate on 2 meters and 70 centimeters by using a conductive sleeve around a specific section of the tube.
The material can be aluminum or another suitable conductor. The idea is to electrically modify that section to allow operation on the higher frequency.

In other words, we first build our antenna for 2 meters and then add the system needed for 70 centimeters.
That said, the dimensions are more critical here.
A small difference in the position or length of the sleeve can shift the resonance considerably on UHF.
So, once again, my best friend in this project is the NanoVNA.



Now Comes My Favorite Part: Measuring

I connect the NanoVNA and start looking at the results.
First, I check 2 meters.
Then I check 70 centimeters.
If the resonance is where I want it, I smile.
If it isn't where I want it, I smile anyway.
Why?
Because that's when the truly fun part begins.
An experimental antenna isn't built with a tape measure alone. It's built with a tape measure, a VNA, patience, and a little bit of stubbornness.

The resonant frequency can shift due to the type of coax, the diameter of the tube, the proximity of metal objects, the way the antenna is mounted, and even how it ends up being installed.
That's why I never like to say, "Cut it to exactly this length and it will work perfectly."
I much prefer to say:
"Start with this measurement, and then let's see what the antenna tells us."
An Inexpensive Antenna That Teaches You a Lot
That's precisely what's so beautiful about the FlowerPot.

We're not just building an antenna.
We're learning.
We learn about wavelength.
We learn about velocity factors.
We learn about common mode current.
We learn about RF chokes.
We learn about resonance.
And we learn something that no manual can ever fully teach us: antennas have a personality of their own.

The entire build can be very inexpensive. In fact, one of the documented projects points out that you only need about one meter of tubing and two meters of coax to build a basic dual band FlowerPot.



And Does It Work?

That's the question we've all been waiting for.
Yes.
There are numerous ham-built versions that have achieved good results with this concept. There are even commercial versions and various experimental designs.
But here I want to make an important clarification.

We shouldn't judge an antenna solely by the number of dB shown in a diagram or on a website.
The installation matters.
Height matters.
The surroundings matter.
The coax matters.
And, above all, where we place the antenna matters.
A properly installed FlowerPot with a good feedline can become an excellent antenna for a simple VHF/UHF station, especially for someone who wants to experiment without starting out by buying a commercial antenna.

My FlowerPot Doesn't Stay in the Workshop

When I finish building an antenna like this, I immediately want to put it to the test.
I mount it.
Connect the coax.
Check the SWR.
Listen.
Call CQ.
And then that little bit of magic happens that all hams know.
Someone answers.
It could be a repeater.
It could be a simplex station.
It could be someone several miles away.
And at that moment, I look at the antenna and think:
"And I built this with a piece of tubing and some coax!"
That's the real satisfaction.

To Wrap Things Up

The FlowerPot reminds me why I love ham radio so much.
Because we can still build things with our own hands.
We can make mistakes.
We can cut too much.
We can measure again.
We can move a turn.
We can change a dimension.
We can connect the NanoVNA and discover that the antenna that looked perfect has its resonance somewhere we didn't want it.
And we can fix it.
That's ham radio.
It's not just about buying the most expensive equipment and pressing the transmit button.
It's about experimenting.
Learning.
Getting our hands a little dirty.
And smiling when we finally hear a station through an antenna we built ourselves.
So if you ever find a piece of plastic tubing and a roll of RG58 lying around, don't throw them away.
You never know.
Maybe your next antenna is waiting right there.
And if someone asks me what a FlowerPot is, I'll answer the way I always do:
"It looks like a flower pot... but when you feed it RF, even the flowers answer back!"





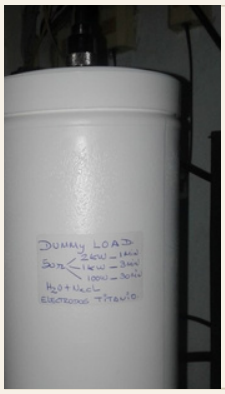
LA SALADITA

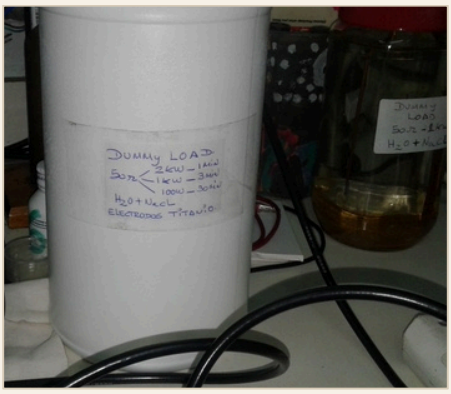
An Experimental Aqueous Dummy Load

From a conversation between fellow hams to years of real-world HF testing

By Ing. Jorge Daniel “Dany” Di Lella, LU2AHD
Autonomous City of Buenos Aires, Argentina







Two generations of “La Saladita”: a glass prototype with copper electrodes and the higher-volume version with titanium electrodes.

THE EXPERIMENT BEGAN WITH A NEED

A dummy load is one of those tools that sooner or later becomes essential in the shack of any radio amateur who enjoys experimenting. It allows equipment to be brought on line, adjusted and tested against a load close to 50 ohms without using the station antenna.

As a restless ham, and I certainly am one, over the years I have built many dummy loads using di□erent components: from arrays of non-inductive carbon resistors to power resistors in TO-220 and TO-267 packages, with natural or forced-air cooling. For power levels up to about 100 W I achieved more than acceptable results, often at a much lower cost than a commercial load.

The challenge begins when we want to go much further. As power increases, our friend, or perhaps our enemy, the Joule e□ect begins to play a leading role. The energy absorbed by the load ends up mainly as heat, and that heat must be dissipated.

Air-cooled designs then begin to get complicated. Large heat sinks, fans and special resistors appear. There are also excellent commercial loads cooled with dielectric liquids, but the cost can be considerable.

In my case there was a concrete reason to look for another solution. I was modernizing my veteran DenTron GLA-1000B linear ampli□er and needed a load that could handle power levels around 700 W with enough margin, preferably without keeping a □re extinguisher next to the equipment.

Almost by chance I had an interesting QSO with Carlos Alberto Guevara, LU8JB, an Argentine colleague and enthusiastic experimenter with hundreds of projects built. I told him I was looking for a higher-power dummy load. Carlos replied that he had been experimenting with something quite di□erent: salt water.

> **“A dummy load with water and salt?”**

At □rst I thought I might end up being another dreamer building a completely useless device. But curiosity won. That is how my own experimentation with an aqueous dummy load began, a load that would inevitably receive a name: “La Saladita”.

HOW DOES IT BEHAVE?

Measurements by LU2AHD and an SWR technical note

The construction principle is very simple: a non-metallic container holds a solution of water and sodium chloride, common table salt, in which two electrodes are connected to the RF input.

In my first units I used copper electrodes. Later I built a version of about 2 liters using titanium. The adjustment does not start from a fixed amount of salt: it starts with water, and the concentration is increased gradually while watching the SWR until the best point is found.

At DC, a multimeter may show values from kilohms to several megohms. However, when RF is applied and the concentration is adjusted, I obtained very low SWR values.

In one of my tests I observed about 600 W forward power with less than 3 W reflected, which corresponds to approximately 1.15:1 SWR under that particular condition.

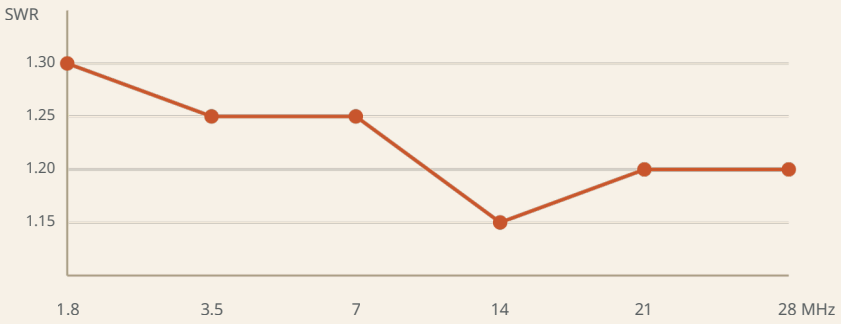
Over time I decided to document the 2-liter version in greater detail. I also swept this unit with an SAA2 VNA from approximately 1.8 to 30 MHz. In that small-signal measurement I obtained a fairly flat response, with an average SWR close to 1.5:1.

In my tests I have observed that measurements made with applied power show lower SWR values than those obtained with the VNA.

SWR NOTE
The measurements correspond to the load built and tested by LU2AHD. They are not universal specifications for every aqueous load.

MEASURED BY LU2AHD

Prototype ≈2 L · titanium electrodes · 400 W · Daiwa CN-501-H2



REFERENCE TABLE

1.8 MHz	1.30:1
3.5 MHz	1.25:1
7MHz	1.25:1
14 MHz	1.15:1
21 MHz	1.20:1
28 MHz	1.20:1

SWR TECH NOTE · LOW SWR DOES NOT NECESSARILY MEAN "PURE RESISTANCE"

Low SWR indicates a good match under one measurement condition. By itself, it does not prove that the impedance is exactly 50 + j0 Ω at all frequencies, temperatures and power levels. In an aqueous NaCl solution, concentration, frequency, temperature and electrode geometry all play a role. That is why SWR presents these figures as measurements from specific prototypes.

Aqueous-electrolyte loads have documented precedents in technical experimentation. The value of "La Saladita" is not in claiming to have invented the principle, but in sharing LU2AHD's practical experience: different builds, materials, adjustments, measurements and years of use in a real shack.

BUILDING “LA SALADITA”

Container, connector and practical geometry





Copper electrodes in one of the first units and detail of the upper port in the higher-volume version.

One of the things that attracts me most to this project is that it does not require absolutely rigid dimensions. It is an experimental build that is later adjusted for the selected container and electrodes.

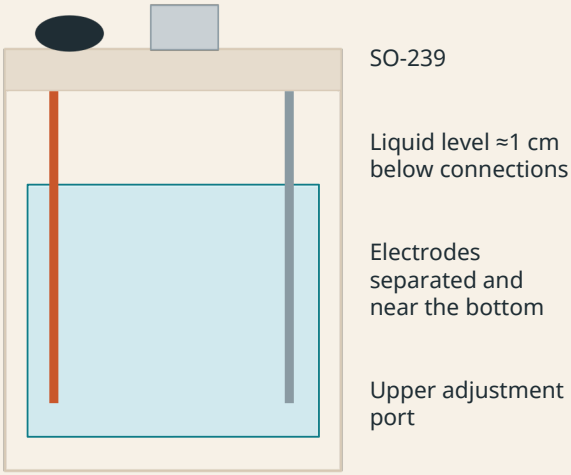
I have used glass and temperature-resistant plastic containers. I do not recommend metallic containers: the saline solution may promote corrosion, and the metal changes the electrical geometry of the tested constructions.

My reference prototypes were a glass jar of about 500 cm³ and a plastic container of around 2 liters.

An SO-239 is installed on the lid and connected to the two electrodes. The joints between the electrodes and the connector must remain above the solution. In my builds I leave the liquid level approximately 1 cm below those connections and recommend protecting them with suitable insulating coating.

The electrodes should be installed with the greatest practical separation, close to the walls and extending almost to the bottom, but without touching it. In the small copper load I used the braid of an RG8U cable as one electrode and its center conductor as the other. In the approximately 2-liter load I used two titanium strips about 2 cm wide and roughly 25 cm long.

SWR CONSTRUCTION DIAGRAM



COPPER VS. TITANIUM

Copper: inexpensive, easy to obtain and more gradual to adjust, although it degrades over time.

Titanium: more corrosion-resistant in these prototypes, but more expensive and more critical when adjusting the salt.

SWR note: this comparison describes LU2AHD’s experience with his prototypes. It is not a universal comparison of materials.

ADJUSTING IT: PATIENCE, MEASUREMENT AND VERY LITTLESALT

Theprocedureisempiricalandmustbeginatlowpower

Adjusting “La Saladita” is empirical. I do not recommend starting from a universal recipe of “so many grams of salt per liter,” because each container, geometry and electrode material may behave diferently. Here, patience is worth more than any formula.

STEP 1 · START WITH WATER

Fill the container until the level is about 1 cm below the upper connections. In my tests I have used tap water; if it contains many minerals, I prefer to start with demineralized water. Measure with 5 to 10 W.

STEP 2 · ADD SALT VERY SLOWLY

As a purely practical reference, in my tests I use a small coffee spoon to dose the salt, adding only small fractions at a time and measuring after each addition. It is not a unit of measure or a fixed proportion: each construction must be adjusted progressively.

> **“Better to be stingy with the salt than generous.”**

STEP 3 · IF YOU OVERSHOOT

If the SWR begins to worsen after adding salt, part of the solution can be removed with a syringe and replaced with an equivalent amount of water. Then measure again. It may take several attempts.

STEP 4 · INCREASE POWER GRADUALLY

Once satisfactory behavior is obtained at low power, I increase power in stages. I never consider the initial adjustment an automatic authorization to apply the maximum possible power.

After adjustment I have also observed changes during the first days and weeks. In some units the SWR eventually improved compared with the initial adjustment. If the container was shaken or moved abruptly, I observed temporary variations that usually decreased after letting it rest. I present this as a practical observation of my prototypes, not as a universal rule.

POWER + TIME + VOLUME

The absorbed RF energy ends up mainly as heat. In my units I have tried to keep the solution below approximately 50 to 60 °C. Under moderate conditions I have observed about 40 °C, depending on power, duration, volume and ambient temperature.

CONFIGURATIONS TESTED BY LU2AHD

Build	Electrodes	Reported condition
≈500 cm³	Copper	≈300 W for 1 min
≈2 liters	Titanium	≈1.2 kW for 1 min
≈2 liters	Titanium	≈2 kW in ≈30 s tests

SWR SAFETY NOTE · THIS IS NOT A HARMLESS EXPERIMENT

Adjust initially with low power. Do not touch electrodes, connector or wiring while RF is applied. Keep the container stable and away from equipment with dangerous voltages. Watch temperature, allow cooling, and use suitable connectors, coax, wattmeter and instruments.

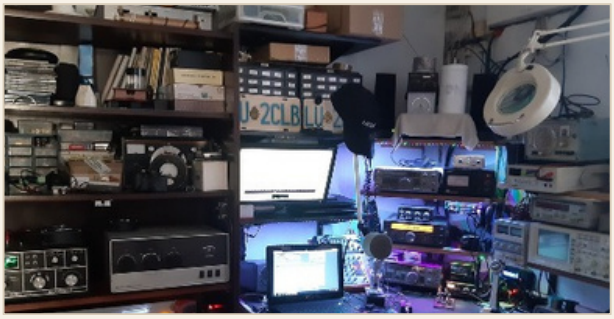
The upper plug must not be interpreted as a calibrated valve or guarantee against overpressure. This load is not RF-shielded. SWR does not present these power levels as certi□ed ratings or safe limits.

FOUR YEARS LATER

When the experiment leaves the bench







Copper electrodes after years of use, “La Saladita” beside the CUBIC 1500ZA and a view of the LU2AHD/LU2CLB shack.

Perhaps the photograph that best sums up this project is not that of a new load. It is that of an old load. After more than four years, the copper electrodes in one of my first units showed darkened areas, deposits and clear corrosion. However, the load continued to work.

I do not know how much longer those electrodes will survive, and I do not want to turn one particular experience into a prediction of service life. But four years after that first curiosity sparked by a conversation with LU8JB, the experiment was still there. And it was still useful.

“La Saladita” stopped being a bench curiosity for me and became a tool used during the commissioning and testing of real equipment. Among the photographs accompanying this article is my CUBIC 1500ZA during RF commissioning work, using a Daiwa CN-501H2 wattmeter and the aqueous load.

Amateur radio is not only about buying finished equipment. It is also about asking questions, building, making mistakes, measuring, modifying and trying again.

ABOUT THE AUTHOR



Ing. Jorge Daniel “Dany” Di Lella, LU2AHD, operates from the Autonomous City of Buenos Aires, Argentina. A radio amateur, engineer and experimenter, he develops projects involving construction, modi□cation and commissioning of equipment and practical shack solutions. “La Saladita” grew out of that combination of curiosity, exchange between fellow hams and hands-on experimentation.

THE EXPERIMENT CONTINUES

SWR invites readers who investigate this principle responsibly to document and share their experiences: electrode material, container used, solution volume, frequencies tested, SWR, power, duration, temperature, photographs, problems found, modi□cations and long-term behavior.

The goal is not to □nd a single “correct recipe.” It is to build shared knowledge. Daniel has expressed interest in evaluating a possible follow-up based on results contributed by other radio amateurs.

73 AND GOOD EXPERIMENTING

Ing. Jorge Daniel “Dany” Di Lella, LU2AHD

DID YOU KNOW?

Why Are Amateur Radio Operators Called HAMS?



One of amateur radio's most familiar names
appears to have started as an insult. In professional telegraphy, 'ham' was used dismissively for operators considered clumsy or poorly skilled.

THE SHORT ANSWER:

'Ham' began as a dismissive telegraph term for an inexperienced or poorly skilled operator.

The term later followed telegraph culture into early wireless and became associated with amateur experimenters.



FROM TELEGRAPH INSULT TO RADIO IDENTITY

As wireless communication emerged, telegraph vocabulary followed operators onto the air. 'Ham' was applied dismissively to early amateur experimenters.

Documented wireless usage dates to at least 1909. Over time, radio amateurs turned the label around and made it their own.

The insult faded, while 'ham' became an informal and eventually proud identity recognized throughout the Amateur Radio world.



FROM PUT-DOWN TO PROUD IDENTITY
What began as a dismissive label became one of radio's most enduring names.

QUICKFACTS:

- 'Ham' was used as a telegraph-era put-down.
- Wireless use is documented by at least 1909.
- Radio amateurs eventually adopted the label themselves.
- HAM is not an acronym. The familiar expansions are later myths.

Historical references compiled from publicly available telegraph, early wireless and amateur radio history sources.

SWR TECHNICAL FEATURE

Recording Sound fromYour Transceiver

By Daniel Romila, VE7LCG



Radio amateurs often ask one another a familiar question after a contact: "How does my signal sound?"

Sometimes they are asking about signal strength. More often, especially on voice, they want to know how their transmitted audio sounds at the other end. Is the microphone adjustment good? Is the compression too strong? Does a new microphone actually sound better than the original one? Did the latest change to the transmit audio make a noticeable difference?

I have been asked these questions many times. For years, I answered by simply describing what I heard. Eventually I realized there was a much better solution. Instead of trying to explain another operator's audio, I could record exactly what my transceiver was receiving and send them the audio file.

That gives the other operator something much more useful than my opinion. They can listen to their own transmitted audio, compare different settings, repeat the recording as many times as they want, and decide for themselves what sounds better.

My HF transceiver is an SDR radio with USB audio input and output, and it is permanently connected to my Windows 11 computer. I originally made that connection primarily for digital modes such as FT8, but the same USB audio connection also gives me a very convenient way to record received voice audio directly on the computer.

If your own transceiver provides USB audio to the computer, you may be able to do the same thing without adding another audio interface.

Why Record the Audio?

Discussions about transmitted audio can become surprisingly complicated.

An operator may be using the microphone supplied with the transceiver. Another may have invested in a more expensive desktop microphone. Someone else may have added external preamplifiers, equalizers, compressors, or an entire rack of audio equipment.

After spending a considerable amount of money and time on such a setup, naturally the operator expects an improvement. I learned that being too direct with my personal opinion about those improvements did not always make me more friends.

External audio equipment certainly has its place, and its usefulness depends on the radio, microphone, operating goals, and the way the station is configured. My point is not to argue that one type of audio system is better than another. The important thing is that a recording removes much of the subjectivity from the conversation.

Instead of saying, "I think the first microphone sounded better," I can send the operator a recording and let them decide for themselves. That became my preferred method.

There is, of course, a very simple way to make such a recording: place a cellphone near the transceiver speaker and press Record. I have done that, mainly as an experiment. It works, but it is not a very good method because the cellphone does not record only the receiver audio. It also records whatever else is happening in the room.

The final result is affected by the transceiver's loudspeaker, the acoustics of the room, the cellphone microphone, the distance between the phone and speaker, and background noise.

If the received audio is already available digitally through the transceiver's USB connection, recording that signal directly on the computer is much cleaner and more repeatable. That is the method I use.

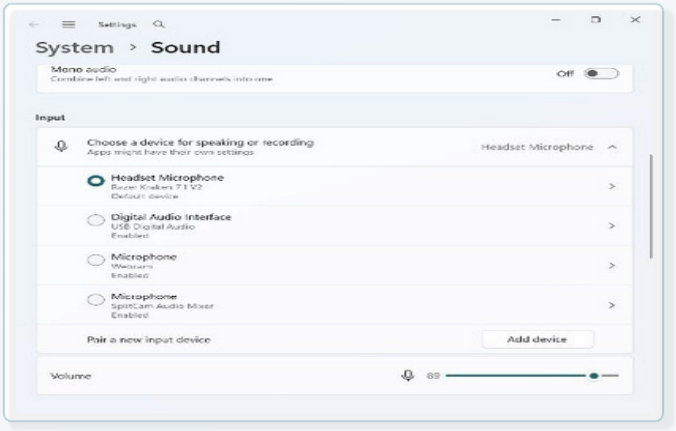
The first challenge is identifying which Windows audio device belongs to the transceiver.

This is also where one of the most common points of confusion appears: input versus output.

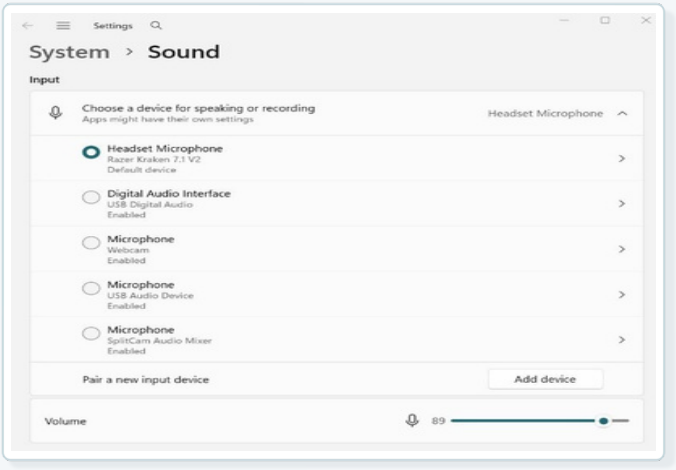
The terminology is from the computer's point of view.

Audio traveling from the transceiver into the computer is an input to Windows. Audio traveling from the computer toward the transceiver is an output from Windows.

Once I kept that point clearly in mind, the rest became much easier.



RADIO OFF: EXISTING WINDOWS INPUTS



RADIO ON: USB AUDIO INPUT APPEARS

Finding the Correct Audio Input

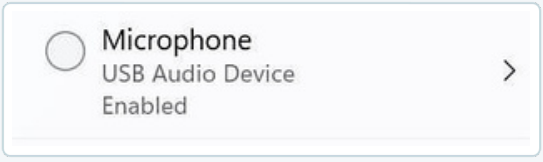
My preferred method for identifying the correct device is simple.

I first start the computer with the transceiver switched off. I allow Windows to finish loading normally and then open Settings > System > Sound. In the Input section, I look at the recording devices that are already available.

I do not change anything. I simply take note of what is there. Then I switch on the transceiver.

After several seconds, Windows detects the transceiver's USB audio device and makes it available as an audio input. I return to the same Input section and compare the list with what I saw before.

On my computer, an additional audio input appears. That newly appearing device is the one associated with my transceiver.



NEWLY DETECTED USB AUDIO DEVICE

FROM THE COMPUTER'S POINT OF VIEW

Transceiver -> Computer = INPUT
Computer -> Transceiver = OUTPUT

Finding the Correct Audio Input

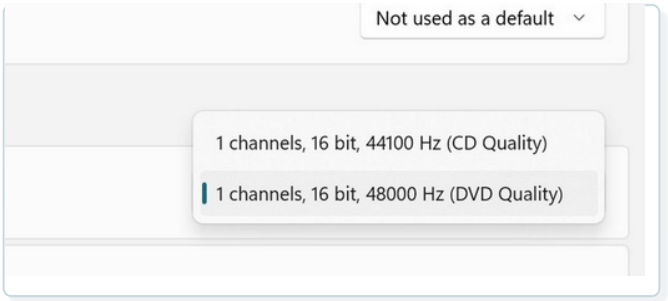
This comparison is especially useful on a computer that already has several audio devices. My own system may contain a headset microphone, a desktop microphone, an audio mixer, and other possible recording sources. The transceiver's USB audio device does not necessarily appear at the bottom of the list, so simply choosing the last device shown is not a reliable method.

Comparing the list with the radio off and then with the radio on removes much of the guesswork.

Once I identify the correct device, I normally leave my computer's general default input unchanged. I do not need the transceiver to become the default microphone for every Windows application. I only need to select it as the source when I want to make a radio recording.

The exact names displayed in Windows will vary according to the transceiver, its USB implementation, the installed software, and the computer configuration. On my system, Windows identifies the radio connection as a USB audio device.

The important part is not the exact name. It is identifying which input appears when the transceiver becomes available to Windows.



FORMAT CHOICES: 44.1 KHZ AND 48 KHZ

Your own radio may behave differently, so treat the settings on my station as an example rather than a mandatory configuration.

Audio Format

Opening the properties for the transceiver's USB audio device also shows the formats that Windows and the device make available.

On my computer I can select, among other possibilities, 16-bit audio at 44.1 kHz or 48 kHz. Windows labels these options using familiar quality descriptions.

I normally choose 48 kHz because it is available and my computer handles it easily. That is my preference, however, not a requirement for making a useful amateur-radio recording.

Received communications audio occupies a much narrower bandwidth than either of those sampling rates can represent. Selecting 48 kHz instead of 44.1 kHz does not create audio information that was never present in the received signal. Both settings are more than adequate for the purpose described here.

The goal is not to produce a studio master recording. The goal is to capture faithfully enough what came through the receiver so the other operator can hear and compare it.

I also avoid changing unrelated Windows audio settings unless there is a reason to do so. If the USB audio level already works correctly with my normal station configuration, I first try recording with that existing level.

Recording with Windows Sound Recorder

Once the correct USB audio input has been identified, the actual recording is easy.

Windows 11 includes Sound Recorder, which is sufficient for what I want to accomplish.

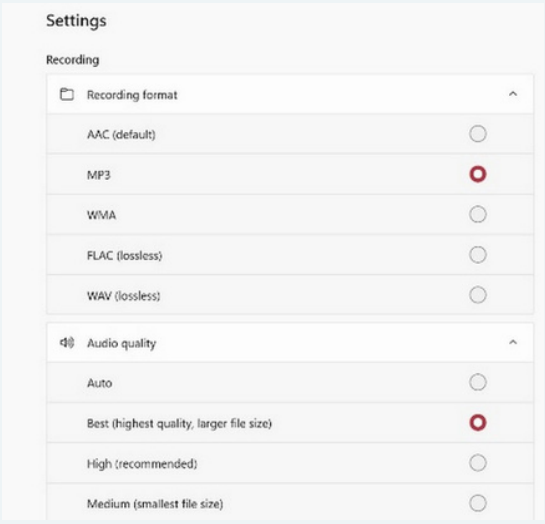
I open Sound Recorder and select the transceiver's USB audio device as the recording source. In my installation, the selected source is accessible directly from the recorder interface.

I also choose the recording format and quality I prefer. For these recordings I normally use MP3 because it produces a convenient file that is easy to send to another operator.

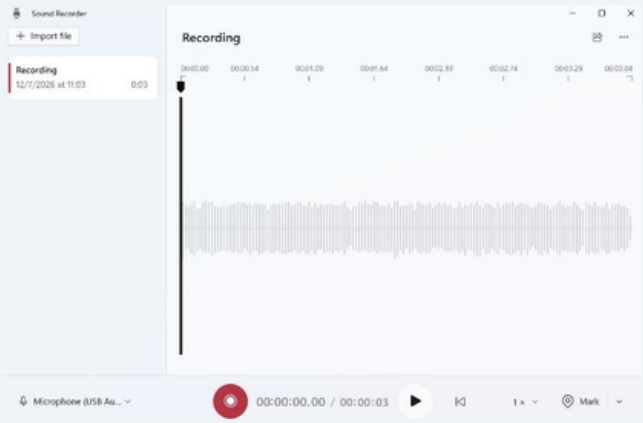
Other formats and other recording programs can certainly be used. I work with several audio applications, but for this particular job I prefer the built-in Windows recorder because it is simple, fast, and already available on the computer.

After using it several times, I even pinned Sound Recorder to the taskbar. My computer is normally running whenever I operate the transceiver anyway, partly because I use it for logging and digital modes, so having the recorder immediately available is convenient.

When somebody asks, "How do I sound?" I do not want to begin searching through menus and configuring software. I want to press Record.



SOUND RECORDER FORMAT AND QUALITY SETTINGS



WAVEFORM ACTIVITY CONFIRMS RECEIVED AUDIO

Make Sure You Are Recording the Radio

Before depending on this setup during an actual contact, I strongly recommend testing it.

It is very easy to select an audio input that works perfectly but is not the input you intended to record. I know because I have done it.

A computer may have a built-in microphone, a headset microphone, a desktop microphone, a webcam microphone, an external mixer, and the transceiver's USB audio device all available at the same time. Sound Recorder will happily record whichever one you select.

My test begins by tuning the transceiver to a strong signal. It can be a voice signal or another clearly audible signal. I start Sound Recorder and watch the graphical representation of the incoming audio.

If I am recording the correct source, the display should respond to the received audio. As the audio level or content changes, the recorded waveform should change accordingly. If I tune away from the signal and the receiver becomes quiet, the recording display should also show a corresponding reduction in audio activity.

Verify on Your Own Station

That gives me a first indication that I have selected the radio audio rather than some unrelated microphone.

I then perform another test on my station.

While recording the USB audio, I reduce the transceiver's speaker volume.

On my radio, changing the front-panel speaker level does not change the level of the USB audio being sent to the computer. I can reduce the loudspeaker volume until I hear nothing in the room while the USB recording continues normally.

That behavior is useful to me because it demonstrates that the computer is receiving the radio's internal USB audio stream rather than listening acoustically through a microphone sitting on the desk.

However, the relationship between the front-panel AF control and USB audio output is determined by the transceiver design. Another radio may route or control its USB audio differently. The test is therefore something to verify on your own equipment, not a rule that every transceiver must follow.

If reducing the speaker volume also makes your Windows recording disappear, do not immediately assume something is wrong with the radio. First make sure you selected the intended Windows input.

I once discovered that I had been recording through my desk microphone instead of the transceiver. On another occasion, the selected source was associated with my headset.

Both devices were working exactly as they should. I had simply chosen the wrong input.

Listening Instead of Guessing

Amateur radio voice occupies a relatively limited audio bandwidth, so some changes that seem dramatic in the shack may sound much less dramatic after passing through a communications transmitter and receiver.

Speech compression, microphone equalization, processing levels, and other adjustments can certainly change transmitted audio. They can also affect intelligibility. But more processing is not automatically the same thing as better audio, and a setting that works well for weak-signal communication may not be the one an operator prefers for relaxed local conversation.

This is where recording becomes especially useful.

If another operator wants to compare two microphones, we can make two recordings. If they want to compare different transmit equalizer settings, we can record those. If they change compression, we can record again.

Now they do not have to depend on my memory of what the previous setting sounded like. They have the files and can compare them directly.

That is far more useful than telling someone, "It sounds a little better now."

Two Mistakes to Avoid

After helping other operators with this, I found that most problems came back to two simple things.

The first was confusing input with output.

Remember that Windows describes the connection from the computer's perspective. The sound coming from the transceiver into the computer is a Windows input.

The second problem was selecting an input that was working correctly but was not the transceiver.

That is why I like the radio-off/radio-on comparison in Windows Sound Settings, followed by a practical recording test.

Once those two points are understood, there is very little mystery left.

A compatible transceiver, a USB connection, Windows, and a simple recording application can give you a very useful station tool.

The next time another operator asks, "How do I sound?" you do not necessarily have to find the perfect words to describe it.

Record the signal.
Send the file.
Let them hear it for themselves.

73, Daniel Romila, VE7LCG

The Eggbeater

The Antenna That Simplified Access to Satellites (Part 2)

The Eggbeater reminds us that, to reach the sky, sometimes we don’t need to point the antenna: we just need to be ready to listen.

By: The Extraterrestrial (Pen Name)



Two elements, a phase difference, and a rotating electric field. The Eggbeater requires the two radiating elements to operate in quadrature, meaning with a phase difference of approximately 90°. This condition allows the horizontal and vertical components of the electromagnetic field to combine and produce circular polarization.

Photo by: Karl Rinne

How an Eggbeater Really Works

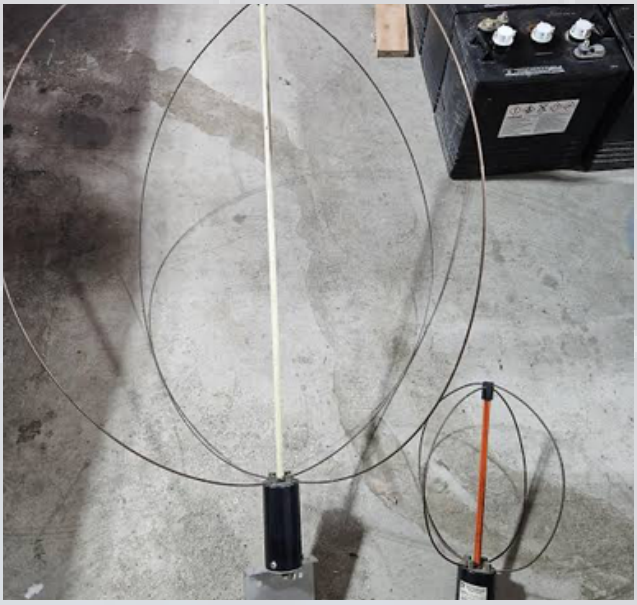
In the first part of this article, we explored the general concept of the Eggbeater and understood why this antenna became such an attractive alternative for operators who want to work low Earth orbit satellites without using an azimuth and elevation tracking system.
Now we're going to get into the most interesting part: what actually happens to the RF energy inside an Eggbeater?
At first glance, it looks like a structure made up of nothing more than two large metal loops. However, those two elements are carefully positioned and fed so that they work together as a single electromagnetic system.
The key is in three words:
Two elements. Two currents. Ninety degrees.

Two Loops Working as One

A conventional Eggbeater can be understood as an evolution of the Turnstile antenna. Instead of using two crossed dipoles, it uses two loops approximately one wavelength long, positioned in perpendicular planes.
Each loop produces its own electromagnetic field.

If we simply connected the two loops together and fed them simultaneously without controlling the phase, we would not get the characteristics we're looking for.

The secret is to make the currents flowing through both elements have approximately the same amplitude, but be shifted 90 degrees in phase.
That time shift is responsible for producing circular polarization in the appropriate direction.
The same fundamental concept appears in Turnstile antennas: two physically orthogonal radiators fed in quadrature produce an electric field whose vector rotates through space.



What Does "90 Degrees Out of Phase" Really Mean?

To understand this, we can imagine a sine wave.
An RF signal continuously moves through four states:
0° → 90° → 180° → 270° → 360°
Then it starts over again.
When two signals are exactly in phase, their peaks and troughs occur simultaneously.
But if we shift one signal by 90°, when the first signal is reaching its peak, the second signal is at another point in its cycle.
Now imagine that one antenna produces a vertical electric field and the other produces a horizontal electric field.
If both fields have equal amplitude and one is shifted 90° relative to the other, the result is not simply an electric field that moves up and down.
The electric vector rotates.
From the receiver's point of view, the tip of the vector traces approximately a circle.
That is circular polarization.

A Simple Way to Visualize It

Imagine two antennas:
Antenna A: vertical field.
Antenna B: horizontal field.
At a given instant:
A = maximum

B = zero
One quarter of a cycle later:
A = zero
B = maximum
Another quarter of a cycle:
A = minimum
B = zero
And then:
A = zero
B = minimum
The resulting field continuously changes direction.
If we were observing the field along the radiation axis, we would see the electric vector rotating.
This is precisely the characteristic we are looking for when designing a circularly polarized antenna.

RHCP and LHCP

Here we come to another fundamental concept for any satellite operator:
RHCP and LHCP.
These abbreviations mean:
RHCP: Right Hand Circular Polarization.
LHCP: Left Hand Circular Polarization.
The difference is not in signal strength.
It is in the direction in which the electric field vector rotates.
This is important because a circularly polarized antenna can be perfectly matched in frequency and have an excellent SWR, yet still suffer significant signal loss if its polarization sense does not match that of the received signal.
One of the interesting features of certain Eggbeater designs is that the phase relationship can be changed to reverse the polarization, switching from RHCP to LHCP.
For the experimental builder, this represents a considerable advantage.

The Mystery of the Phasing Line

We now come to one of the most important components of the Eggbeater:
The phasing line.
When we use two crossed elements, we need to feed one of them with a signal shifted 90° relative to the other.
One practical way to achieve this is by using a section of transmission line with a specific electrical length.
In simplified terms, a section approximately one quarter wavelength long can introduce the required phase shift, although in an actual build we must account for the velocity factor of the coaxial cable.
That's why we should not simply cut a quarter of the physical wavelength and assume it will work perfectly.
The propagation velocity inside coax is slower than the speed of light in a vacuum.
Therefore:
Physical Length ≠ Electrical Wavelength
The relationship depends on the cable's velocity factor.
This is one of the points where many homebrew projects start to run into problems.
A few centimeters can make a significant difference, especially on 70 centimeters.

The Reflector: More Than Just a Piece of Metal

Some Eggbeater designs incorporate a reflector or ground plane beneath the radiating elements.
This structure serves several purposes.
First, it modifies the radiation pattern.

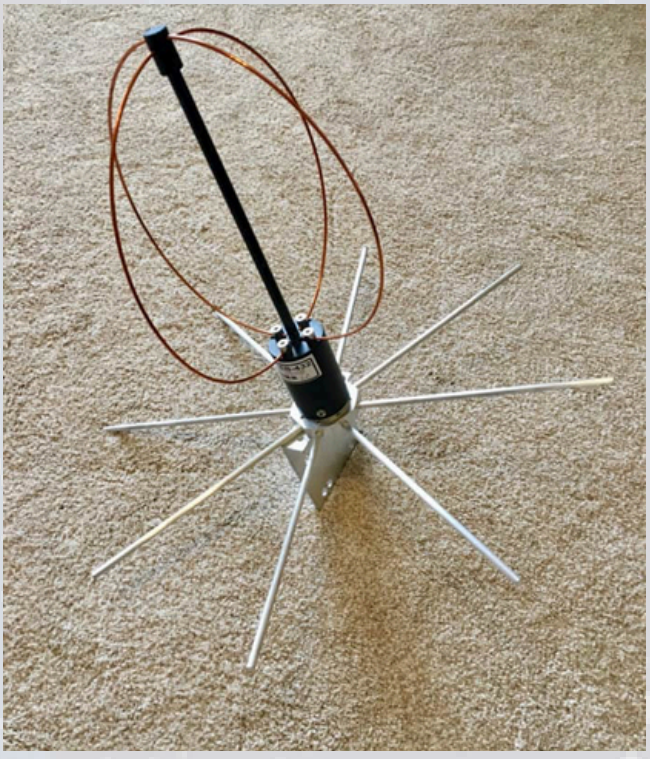
It can also help reduce energy radiated downward and favor radiation toward the sky, which is precisely where our target is when working satellites in LEO.

Certain commercial and homebrew designs use a radial structure beneath the active elements. AMSAT documentation shows precisely this configuration in Eggbeater designs used for 2 meters and 70 centimeters.

The reflector also modifies the antenna's impedance and resonant behavior.
For that reason, we shouldn't casually change the distance between the loops and the reflector.
A mechanical change can become an electrical change.

Why Not Simply Use a Vertical Antenna?

That's a completely valid question.
A quarter-wave vertical antenna is much simpler.
It can also receive satellites.
So why complicate things by building an Eggbeater?
The answer is polarization and coverage.
A vertical antenna maintains predominantly vertical polarization.
When the satellite changes its orientation or uses circular polarization, the received signal can experience significant variations.
The Eggbeater attempts to solve precisely that problem by combining two orthogonal components.
For a station dedicated to LEO satellite work, this can translate into much more consistent reception throughout the pass.



Eggbeater vs. a Yagi

The comparison with a Yagi is inevitable.
The Yagi has one major advantage:
Gain.
By concentrating energy in a specific direction, it can provide a much stronger signal than an omnidirectional antenna.
But there's a price.
We need to point it.
When the satellite moves from horizon to horizon, the antenna must track it in both azimuth and elevation.
With an Eggbeater, we can do without the rotor.
We don't need to constantly watch the azimuth.
We don't need to move the antenna manually.
We simply let the satellite pass through the antenna's coverage pattern.
That's why the Eggbeater is especially attractive for simple stations, remote stations, educational installations, and operators who want to get started with satellites without immediately investing in an Az/El system.
AMSAT has specifically noted its usefulness for working low Earth orbit satellites from mobile or simple stations, while also pointing out that its lack of directivity limits its usefulness compared with higher-gain antennas.

Eggbeater vs. QFH

Another antenna very well known among satellite enthusiasts is the Quadrifilar Helix, commonly known as the QFH.

The QFH uses multiple helical elements and can provide very interesting circular polarization.
One important difference is that the Eggbeater can offer the ability to switch between RHCP and LHCP by changing the feed arrangement, depending on the design.

The QFH, on the other hand, can maintain circular polarization over a broad range of elevation angles, but its construction can be more complicated.

There is no perfect antenna.
Every design represents a compromise between:
gain
coverage
polarization
complexity
size
cost

Eggbeater vs. Lindenblad

The Lindenblad is another omnidirectional antenna used in satellite applications.
Here we find a particularly interesting difference.
The Eggbeater tends to be predominantly horizontally polarized near the horizon and approaches circular polarization at higher elevations.
The Lindenblad behaves differently and can provide better circular polarization response near the horizon.
This can be important when working satellites that use linearly polarized antennas.
Published experiences from satellite operators have shown that an Eggbeater can experience fading when a linearly polarized signal arrives at an unfavorable orientation, while the Lindenblad may perform better under certain low elevation conditions.
This reminds us of something fundamental:
The best design depends on the satellite we want to work.



The Big Advantage: We Don't Have to Chase the Satellite

This is probably the most attractive reason to build an Eggbeater.
Imagine a simple station:
A VHF/UHF transceiver.
A computer or phone to track the satellite's position.
A mast.
And an Eggbeater installed on the roof.
When the satellite appears above the horizon, we begin receiving it.
As it climbs, the antenna continues providing coverage.
When it reaches higher elevation, its polarization behavior changes.
And eventually, the satellite descends back toward the horizon.
We haven't physically moved the antenna a single degree.
That is the real appeal of an omnidirectional satellite antenna.

But There Is a Price to Pay

Every solution involves a compromise.
The Eggbeater sacrifices gain in exchange for coverage.
A properly aimed Yagi can greatly outperform an Eggbeater in terms of gain toward the satellite.
That's why an Eggbeater shouldn't be presented as a "miracle" antenna.
It isn't.
It's an antenna designed to solve a specific problem:
Providing broad sky coverage without using a mechanical tracking system.
For strong signals, it can be extraordinarily practical.
For weak satellites, demanding signal modes, or links where we need plenty of signal margin, a tracked directional antenna still has significant advantages.

The Eggbeater II: An Interesting Evolution

Over the years, different hams have developed modifications of the original concept.
One of the best known designs is the Eggbeater II, associated with the work of K5OE and later reproduced and modified by numerous builders.

There are homebrew versions for 2 meters and 70 centimeters that use relatively inexpensive materials, including copper tubing or wire, PVC, coaxial cable, and support hardware.
One documented build uses 2 meter loops approximately 51 cm wide by 63 cm tall, along with a reflector structure, while the 70 centimeter version uses considerably smaller dimensions. These measurements correspond to one specific implementation and should not be copied directly without considering the exact design and target frequency.

That last point is extremely important.
There is no single universal dimension chart for Eggbeater antennas.
Changing the geometry means changing the antenna.

The Invisible Enemy: Precision

An Eggbeater may look easy to build.
Mechanically, it is.
But electrically, it requires care.
AMSAT points out that the element dimensions and spacing need to be sufficiently precise to achieve truly circular polarization.
At 2 meters, a small error may be tolerable.
At 70 centimeters, that same error represents a much larger fraction of the wavelength.
That's why a 70 centimeter antenna requires particular attention to:
dimensions
symmetry
connectors
electrical length of the coax
velocity factor
spacing between elements
distance to the reflector
nearby metal objects
And here we come to a tool that has transformed homebrew antenna construction: the NanoVNA.

From "I Think It Works" to "I Can Measure It"

For decades, many hams built antennas using formulas, experience, and an SWR meter.
Today, we have remarkably affordable tools.

A NanoVNA allows us to observe:

- resonant frequency,
- SWR,
- impedance,
- reactance,
- bandwidth,
- feed system behavior.

But there is one fundamental warning:
a 1:1 SWR does not mean an antenna is perfect.
An antenna can have excellent SWR and still have a mediocre radiation pattern.
It can also have a perfectly reasonable impedance and still have a poor axial ratio.
With an Eggbeater, we need to think beyond SWR.
We want to understand how the entire antenna behaves.



An Eggbeater Doesn't End at the Connector

This is another concept we need to keep in mind before starting the build.
When we connect the coax to the antenna, the complete system includes:
radiating elements + reflector + mast + feedline + connectors + surroundings.
The coax can also interact with the antenna.
An appropriate RF choke may be necessary to prevent common-mode current from traveling along the outside of the coax shield and altering the radiation pattern.
This is especially important with omnidirectional antennas.
If the coax accidentally becomes part of the radiator, the pattern we obtained during the design process can change considerably.

An Antenna Designed to Look Up

There is an important conceptual difference between a conventional terrestrial communications antenna and a satellite antenna.
In terrestrial communications, we normally want to maximize energy near the horizon.
With LEO satellites, we want to cover a much larger region of the sky.
The goal isn't simply:
"maximum gain."
The goal is:
"useful gain over a wide range of elevation angles."
An Eggbeater represents precisely that compromise.
It doesn't concentrate all its energy in one direction.
Instead, it distributes its coverage in a way that is much more useful for an object that is continuously moving across the sky.

So, How Well Does It Really Work?

Practical experience is perhaps the best answer.
There are homebrew builds that have been used to receive low Earth orbit satellites, including digital transmissions and telemetry.
One documented 70 centimeter Eggbeater project was tested with satellites transmitting at power levels ranging from approximately 100 mW to 1 W, with signal measurements taken at different elevation angles.
There are also modern installations using commercial 2 meter and 70 centimeter Eggbeaters specifically for LEO satellite operations.
And the concept isn't limited exclusively to amateur radio.
A university project in 2025 used an Eggbeater designed for approximately 915 MHz as part of a ground station intended to demonstrate a LoRa link with a LEO CubeSat, specifically taking advantage of the ability to eliminate the need for a complex Az/El tracking system.
The idea is still perfectly relevant today.

What We've Learned

After analyzing how it works, we can summarize the Eggbeater in five concepts:
1. Two Loops:
The radiating elements are positioned orthogonally.
2. Quadrature:
The currents should have approximately a 90° phase difference.
3. Circular Polarization:
The combination of the two fields produces a rotating electric vector.
4. Broad Coverage:
The antenna allows us to cover a large region of the sky without a rotor.
5. Compromise:
In exchange for that coverage, we sacrifice some of the gain that a directional antenna could provide.
And this is precisely where the most exciting part begins.
So far, we've understood why it works.
In the next installment, we're going to build it.

ICOM IC 7110

Powerful. Versatile. Innovative.





ICOM OFFICIALLY INTRODUCES THE NEW IC-7110 AT HAM FAIR 2026

BREAKING NEWS

BREAKING NEWS: ICOM OFFICIALLY INTRODUCES THE NEW IC-7110 AT HAM FAIR 2026

The successor to the IC-7100 now has a name and arrives with SDR architecture, a color touchscreen, simultaneous reception, and coverage from HF through 430 MHz

As this issue of SWR Magazine was entering its final stages, one of the most anticipated announcements of the year in amateur radio arrived from Japan. Icom officially introduced the new IC-7110 during Ham Fair 2026 in Tokyo, finally revealing the transceiver that had been known for months only by its development name, X-026.

The presentation took place today, August 29, during the opening of Ham Fair at the Ariake GYM-EX venue in Tokyo. The announcement also confirms the rumors pointing to the IC-7110 as the natural successor to the well-known IC-7100, whose production ended in 2025 after more than a decade on the market.



A WAIT THAT ENDED IN TOKYO

The mystery surrounding the X-026 began several months ago. Icom had displayed the concept at various international events, including Dayton Hamvention 2026, but had made it clear that the final introduction would take place in Tokyo.

We now finally know its identity: IC-7110.

At first glance, it retains one of the concepts that made the IC-7100 distinctive: a multiband transceiver with the control panel separated from the main body. However, this new generation represents a technological shift



Important: The IC-7110 uses a direct-sampling SDR receiver architecture, bringing it technologically closer to transceivers such as the IC-705 and other recent Icom SDR models.

HF, 50, 70, 144 AND 430 MHz

The new IC-7110 is designed as an All Band, All Mode transceiver, covering HF, 50 MHz, 70 MHz, 144 MHz, and 430 MHz in the European version.

The full-power version delivers 100 watts on HF and 50 MHz, while providing 50 watts on 144 and 430 MHz. The European version also includes the 4-meter band, a particularly important detail for radio amateurs in that region. The announced modes include SSB, CW, AM, FM, RTTY, and D-STAR, making the IC-7110 capable of everything from HF DX to VHF/UHF communications and digital operation.

A DISPLAY THAT CHANGES THE EXPERIENCE

One of the most obvious changes compared with the IC-7100 is its interface. The IC-7110 features a 4.3-inch color touchscreen, accompanied by a real-time spectrum display and waterfall. It also incorporates an audio scope and backlit physical controls, seeking to combine the flexibility of a modern interface with the traditional operation of a transceiver.

The control panel design is clearly oriented toward mobile use. Icom has integrated the speaker, front microphone connector, and SD card slot directly into the controller.

DUALWATCH AND SIMULTANEOUS RECEPTION

Another feature generating considerable attention is the ability to receive simultaneously on different bands.
The system allows configurations such as HF with VHF or HF with UHF, along with other combinations. This opens up interesting possibilities for operators who use the transceiver for field activities, monitoring multiple bands, or digital communications.
For radio amateurs accustomed to the IC-7100, this feature represents one of the most significant leaps between the two generations.

CONNECTIVITY FOR MODERN AMATEUR RADIO

The IC-7110 arrives prepared for a much more connected ecosystem than its predecessor.
Its features include Wi-Fi, Bluetooth 5.3, GNSS, USB Type-C, and an SD card slot. It also incorporates D-STAR related functions, firmware updates via an Internet connection, and compatibility with remote operation solutions such as RS-BA1.
Icom has also included a CW decoder, a feature that has already received positive attention in recent models from the company.

THREE VERSIONS

According to the information presented during Ham Fair, Icom plans three variants of the new transceiver.
The IC-7110S will provide 10 watts on HF and 20 watts on the higher bands, while the IC-7110M will deliver 50 watts on all bands. The IC-7110 will be the highest-power version, with 100 watts on HF and 50 MHz and 50 watts on 144 and 430 MHz. This could allow different types of radio amateurs to find a version suited to their needs, from low-power operation to a more capable mobile or fixed station.



NOT EVERYTHING IS THE SAME AS THE IC-7100

Although the IC-7110 is clearly the successor to the IC-7100, Icom did not simply try to update the old design.
The new transceiver moves away from the traditional receiver architecture of its predecessor and adopts direct-sampling SDR technology. The goal is to offer a platform that is closer to the philosophy of today's SDR transceivers, with a waterfall display, advanced digital processing, and greater integration of features.
It also retains the separate-controller concept, something many IC-7100 users particularly appreciated for mobile installations.
One important detail is that the new transceiver does not include a built-in automatic antenna tuner. Icom is instead pointing toward the new AH-6 as an external solution for certain installations.





THE NEW ICOM MOBILE BENCHMARK?

It is still too early to answer that question.
The IC-7110 brings together many of the features radio amateurs have been waiting for in a modern transceiver: SDR, HF, VHF and UHF, D-STAR, touchscreen, waterfall, Dualwatch, Wi-Fi, Bluetooth, GNSS, and a separate control panel.
But two fundamental pieces are still missing: the price and the commercial availability date. Icom confirmed the introduction of the transceiver, but those details have not yet been officially announced.
And that is precisely where one of the biggest questions in the market will emerge.
The IC-7110 enters a segment where there are already very capable radios, including Icom's own IC-705 and other SDR transceivers from different manufacturers. The combination of price, performance, and features will ultimately determine what place the new Icom will occupy.

SWR MAGAZINE WILL BE FOLLOWING IT CLOSELY

The launch of the IC-7110 came virtually at the last moment for this issue, but it was simply a story that could not wait until the next edition.
After months of rumors, concept images, and speculation surrounding the mysterious X-026, we finally have a name, a design, and a much clearer picture of what Icom is preparing.
The IC-7110 is now official.

Now the second part of the story begins: learning its price, availability, real-world performance on the bands, and, above all, determining whether this new transceiver can become the true spiritual successor to the legendary IC-7100.
At SWR Magazine, we will be watching every new development closely.
The next generation of Icom mobile amateur radio has arrived.



THE COILED COAX CHOKE “BALUN”

Why Turns Alone Don’t Tell the Whole Story

By John Lenahan, KØRW

The problem of common-mode current owing on the outside of the shield of an unbalanced coaxial feed line was discussed in the May issue of SWR Magazine. Several methods of stopping, or at least reducing, that unwanted current were presented. One method that has become common in Amateur Radio is deceptively simple: coil several turns of coax and use the resulting coil as a common-mode choke. The idea seems straightforward. Coiling the outside shield of the coax produces inductance, and inductive reactance opposes common-mode current. From that simple model it is tempting to conclude that adding turns produces more inductance and therefore a better choke.

But a real coil is not an ideal inductor.

THE CAPACITANCE WE TEND TO FORGET

When we rst learn about resistors, inductors and capacitors, they are normally treated as ideal components. That rst approximation makes the principles easier to understand, but real components include characteristics that the ideal model leaves out.

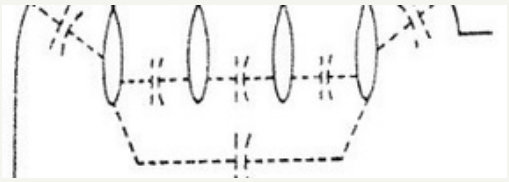
A coil of coax is no exception.

The coiled shield provides inductance, but capacitance also exists between adjacent turns. The dimensions of the coax, its insulation, the diameter of the coil, the number and spacing of the turns, and the way the coax is physically arranged can all in uence the resulting behavior.

The combination of inductance, distributed capacitance and loss gives the coil a self-resonant response. A parallel-resonant equivalent circuit is a useful rst model for understanding that behavior, but the physical choke is a distributed RF structure rather than an ideal lumped LC circuit.



11-turn air-core choke • 10 ft RG-58/U
Photo / measurements: John Lenahan, KØRW



Distributed capacitance exists between adjacent turns.

This distinction matters because the impedance of the choke is frequency dependent.

Below a self-resonant region, its reactance may be predominantly inductive. Above it, the behavior may become predominantly capacitive. Near resonance, the magnitude of the common-mode impedance can reach a maximum for that particular construction.

Move far enough away from that frequency and the choking impedance can fall substantially.

That is why a coiled-coax choke cannot be characterized reliably by turn count alone.

MEASURING WHAT THE CHOKE ACTUALLY DOES

Today, an antenna analyzer or VNA makes it practical for an amateur operator to examine common-mode choke impedance over a range of frequencies.

I have made many kinds of common-mode chokes over the years, and I measure their impedance versus frequency rather than assuming that a particular number of turns will produce the desired result.

I also measure commercial chokes when their impedance-versus-frequency characteristics are not provided.

The reason becomes obvious when actual coils are measured.

In one experiment previously documented in my work, I wound 10 feet of RG-58/U into an 11-turn air-core coaxial solenoid on a paper form.

The measured self-resonant frequency of the outside shield was approximately 16.4 MHz. Near that resonance, the measured impedance was about 1.1 kΩ.

But that value did not remain constant as frequency changed.

At 7.1 MHz, the measured reactance was approximately 200 Ω and inductive. At 10.12 MHz, it was approximately 340 Ω inductive. At 14.1 MHz, it had increased to approximately 790 Ω inductive.

Above the measured resonance, the reactance became capacitive. The measured magnitude was approximately 970 Ω at 18.1 MHz, 580 Ω at 21.1 MHz and 270 Ω at 28 MHz.

The practical lesson is not that these particular numbers apply to every coiled-coax choke. They do not.

The lesson is that one physical choke can present very different common-mode impedance at different frequencies.



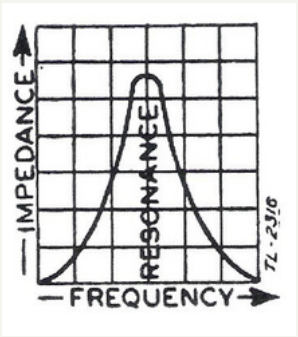
The actual 11-turn RG-58/U solenoid used in John's reported measurements.

REPORTED RESPONSE

7.1 MHz	200Ω	INDUCTIVE
10.12 MHz	340Ω	INDUCTIVE
14.1 MHz	790Ω	INDUCTIVE
≈16.4 MHz	≈1.1 kΩ	RESONANCE
18.1 MHz	970Ω	CAPACITIVE
21.1 MHz	580Ω	CAPACITIVE
28 MHz	270Ω	CAPACITIVE

Measurements reported by John Lenahan, KØRW. Discrete values; no interpolated curve.

CONCEPTUAL RESONANCE RESPONSE



Explanatory figure — not measured DUT data.

SAME COAX, DIFFERENT GEOMETRY

The physical arrangement changed. The RF behavior changed with it.

An even more revealing experiment was to take the same 10 feet of RG-58/U and change the winding geometry.

Instead of the conventional solenoid, I wound the coax into an open woven form approximately five inches in outside diameter.

The measured self-resonant frequency moved to approximately 7.65 MHz, where the measured impedance was about 3.5 kΩ.

Think about what changed.

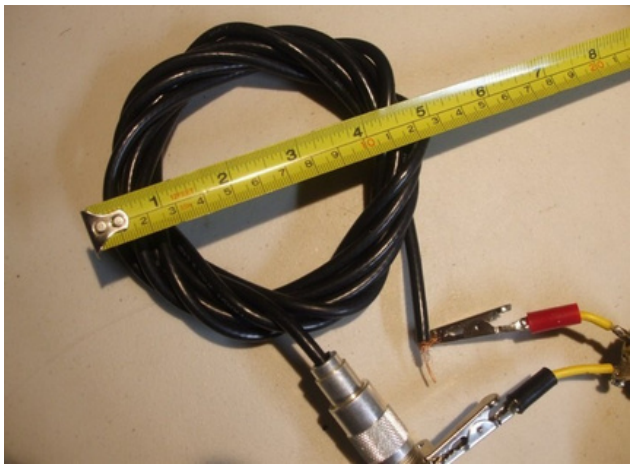
The coax was the same. The length was the same. But the physical arrangement was different, and the resonant behavior changed dramatically.

This is one reason that a construction instruction stating only the number of turns and coil diameter cannot completely describe how a coiled-coax choke will behave.

Turn spacing, coax construction, insulation, coil geometry and the physical relationship between turns all contribute to the result.

Even coax sold under the same general designation may not produce identical results. I have measured coils made from two different brands of RG-8X and found different resonant frequencies.

That does not mean a coiled-coax choke cannot work well. It means that we should be careful about assuming exactly where it will work well without characterizing the actual construction.



Open / woven form using the same 10 ft of RG-58/U.

SAME 10 FT OF RG-58/U

SOLENOID	WOVEN / OPEN
≈16.4 MHz	≈7.65 MHz
≈1.1 kΩ	≈3.5 kΩ

Reported measurements • John Lenahan, KØRW

TURNS ALONE DON'T DEFINE A CHOKE

The same length of coax can behave very differently when winding geometry changes.

WHAT IT MEANS IN PRACTICE

RESONANCE IS NOT THE WHOLE STORY

It is also important not to reduce choke performance to a simple pass/fail judgment at resonance.

A choke does not suddenly become useless merely because the operating frequency is away from its impedance peak. Inductive or capacitive reactance can still oppose common-mode current.

What matters is the common-mode impedance the choke presents at the operating frequency and how that impedance interacts with the rest of the common-mode circuit.

The amount of current reduction therefore cannot be predicted from the choke impedance alone without considering the impedance of the unwanted common-mode path.

In practical terms, higher choking impedance generally provides greater opposition to common-mode current, but no single impedance number describes every antenna and installation.

This is why impedance-versus-frequency information is much more useful than simply knowing that a choke contains a certain number of turns.

WHY COMMON-MODE CURRENT MATTERS

The desired RF currents in a coaxial transmission line travel on the center conductor and the inside surface of the shield.

Common-mode current flows on the outside surface of the shield.

BUILD IT. MEASURE IT.
KNOW WHAT IT DOES AT YOUR OPERATING FREQUENCY.

When significant common-mode current is present, the outside of the feed line can become part of the radiating system. That can alter the antenna system, contribute to unwanted RF in the station, and allow the feed line to couple energy into nearby conductors and equipment.

A common-mode choke adds impedance to that unwanted current path while leaving the desired transmission-line currents inside the coax largely unaffected.

But for the choke to do that effectively, it must provide useful common-mode impedance at the frequencies where the station actually operates. That brings us back to the central problem with treating a coil of coax as an ideal inductor.

Its impedance does not simply keep increasing as frequency increases.

THE PRACTICAL LESSON

A coiled-coax choke can be a useful tool for reducing common-mode current, but copying a recipe based only on the number of turns can give a false sense of certainty.

If you build your own coiled-coax choke, know the frequency range for which the design has actually been characterized.

Better still, if you have access to suitable test equipment and understand the measurement method, measure the common-mode impedance of the choke you actually built over the frequencies where you intend to use it.

Do not assume that more turns automatically mean more choking across every HF band.

Do not assume that two coils that look similar will necessarily have the same resonant frequency. And do not assume that a choke that works well on one band will provide the same common-mode impedance on another.

ABOUT THE AUTHOR John Lenahan, KØRW

John Lenahan, KØRW, was first licensed in 1973 and has held an Amateur Extra license since 1976. His professional background includes communications electronics and 27 years teaching electronics at Iowa community colleges. Since retiring from teaching, he has written antenna-related articles for RadCom and QST and authored Antennas as Transmission Lines and The Vertical Antenna Book. He also teaches an Extra Class license course for his local amateur radio club.

For common-mode chokes, turns alone do not tell the whole story.

THE BASICS OF HAM RADIO CONTESTING

By Mike Goldstein, VE3GFN

WHAT IS A HAM RADIO CONTEST?

Atits simplest, a ham radio contest is a friendly competition between radio amateurs to see who can make the most contacts, or achieve the highest score, within a defined period of time and under a specific set of rules.

Some contests allow only CW, or Morse code. Others use RTTY, SSB, or other modes. Some are limited to the HF bands, while others concentrate on VHF, UHF, or combinations of bands. Depending on the event, you may operate as a single operator or as part of a multi-operator station, and you may compete from home or from a portable location almost anywhere in the world.

Portable contesting has always appealed to me. In years past, I would take a station up to Ontario's Rideau Waterway to operate the North American QSO Party from a remote cabin. The local noise level was practically nonexistent, and a large nearby field accommodated a three-element collinear array about 200 feet long. That antenna became my secret weapon.

A friend of mine, Tom, VE3RSA, has also taken portable stations to interesting international locations, sometimes operating in a QRP category. Experiences like these are part of what makes contesting so varied. You can approach the same basic activity from an enormous range of locations, station sizes, power levels, modes, and competitive categories.



Mike Goldstein, VE3GFN, operating a portable contest station at Ontario's Rideau Waterway, where low noise and room for a large wire array made the location a memorable contesting site.

Contests are especially common on weekends, when more operators are available, although many events also take place during the week. In fact, there are enough contests throughout the year that on many weekends you are likely to encounter at least one of them somewhere on the bands.

That level of activity does occasionally create friction. Operators who are not contesting may resent finding portions of their favorite bands crowded during major events. At the same time, contests put large numbers of amateurs on the air and demonstrate active use of amateur spectrum, one part of the broader effort by amateur-radio organizations to protect and defend our frequency allocations.

Contesting also develops useful operating skills. Accurate copying, efficient message handling, equipment reliability, rapid problem-solving, and the physical and mental endurance needed for long operating periods can all become important during a contest.

Some events are centered on a particular geographic area. The California QSO Party, for example, focuses on contacts involving California stations. Others, including the ARRL International DX Contest and the CQ World Wide contests, are international in scope.

Amateur radio contesting itself goes back to the early years of the hobby. The ARRL International DX Contest traces its history to 1932 and remains one of amateur radio's major international competitions. Today, ARRL DX includes separate CW and Phone weekends and encourages W/VE stations to work DX stations while DX stations work the United States and Canada.

All contests operate within a specified time period. Some are short enough to fit into an hour. Others extend across an entire weekend. Those differences change the nature of the challenge. A one-hour event places a premium on immediate decisions and operating rate. A long event adds endurance, station reliability, propagation changes, and fatigue to the equation.

SO WHY SHOULD YOU ENTER A CONTEST?

Contesting, often called radiosport, is one of the best ways I know to test your operating skills and find out whether your station is really working the way you think it is. It gives you an opportunity to compete with stations that may have similar capabilities, with friends you know personally, or with operators around the world whom you may never meet.

Most contests provide a range of entry categories so that operators can compete under broadly comparable conditions. But there is another way to look at competition, and it is the philosophy I have followed for years.

"I compete against myself."

I keep accurate records from past contests and try to beat my previous score. Sometimes I do. Sometimes I do not. Propagation can change dramatically from one year to another, participation changes, and no two contests are ever exactly alike. But that is part of the appeal. The score gives me a benchmark against which I can measure my own progress.

One of the high points of my more than sixty years in ham radio contesting came in the 2014 ARRL International DX Contest, CW, when I earned the top Canadian score in the Single Operator, Low Power, Unlimited category with my usual "Little Pistol" station and modest antennas. I had not set out expecting a major result. I was doing what I usually do: trying to beat my previous score.



Mike's 2014 ARRL International DX Contest plaque, recognizing VE3GFN as the Canada winner in Single Operator Low Power CW.

That idea of competing against yourself becomes especially clear in shorter contests.

I have been operating the CWops Tests, or CWTs, for about ten years. These are one-hour CW operating sessions held several times each week. CWops currently schedules four 60-minute CWT sessions each week, at times intended to accommodate operators in different parts of the world.

They are fast, furious, and a lot of fun.

Because a CWT lasts only an hour, it is an excellent place to see immediately whether an operating decision works. When should I call CQ and run stations? When should I switch to S&P, or Search and Pounce? When should I change bands? When should I make a tactical adjustment?

In a long contest, the effect of a decision may take considerable time to become obvious. In a one-hour CWT, you can often see the result in your contact rate almost immediately.

PRACTICE, RATE AND NECESSARY SKILLS

When I first began operating CWTs seriously, my goal was 60 contacts in the hour. That works out to an average of one contact every minute, and I often fell well short of it.

Over the years, my station and antennas have not changed very much. Participation has increased, and propagation has certainly changed with the solar cycle, but something else changed too: my operating skills.

With experience, I became faster and more comfortable making tactical decisions. I learned how to run stations effectively by calling "CQ CWT." I became better at judging when to search for new stations and when to stay on a productive frequency.

Today I can sometimes reach 60 contacts near the halfway point of the session. My personal best to date is 122 contacts in one hour, an average of more than two contacts per minute.

That improvement did not come from suddenly acquiring a giant station. It came from practice.

That is one of the reasons I recommend contesting to operators who want to improve their skills.

122

contacts in one hour
Mike's personal best

If you are going to operate CW contests, your ability to copy Morse code accurately is obviously important. The faster and more accurately you can copy, especially callsigns, the easier it becomes to maintain a good contact rate. If you send CW manually, clean and accurate sending also matters.

Practice copying callsigns until they become familiar patterns rather than isolated letters and numbers.

There are computer programs specifically designed to help with this. One that has been recommended to me is RufzXP, which presents callsigns at changing speeds and becomes progressively more demanding as your accuracy improves. CWops also incorporates RufzXP into some of its advanced training material for callsign-copy practice.

But copying the call is only part of the process.

If you use a computer for contest logging, do not let typing become the bottleneck that limits your contact rate. Learning to touch type is an extremely useful mechanical skill for contesting.

Ideally, you should be able to enter callsigns and exchanges without repeatedly looking down at the keyboard. When your attention stays on the radio and the signals rather than on finding keys, the entire operating process becomes smoother.

I learned this lesson the hard way.

TOUCHTYPING, FINDING A CONTEST AND LOGGING



Mike added unmistakable tactile markers to the F and J home keys so his fingertips could return to position without looking away from the radio and logging screen.

The first time I tried to teach myself touchtyping, I kept getting lost on the keyboard. Eventually I came up with a simple solution. I glued tiny balls of solder onto the F and J keys of my QWERTY keyboards. Those are the home keys, and the small tactile markers let my fingertips find their way back without my having to look down.

Modern keyboards usually already have small raised indicators on those keys, but I wanted something I could feel unmistakably. My fingertips could find those little solder bumps immediately.

It is a small modification, but it solved a real problem for me.

The keyboard is easy to overlook when people think about a contest station, but if you are logging hundreds or thousands of contacts, it becomes part of the physical interface between you and the contest.

If SSB is your preferred mode, the skill set changes somewhat but the basic objective remains the same: communicate accurately and efficiently.

Learn to speak clearly. Learn to recognize callsigns as they are spoken. Keep the exchange concise. Contest contacts are not the time for unnecessary conversation. If you have an accent that may be unfamiliar to some of the stations calling you, slowing down slightly and speaking very clearly can save far more time than having to repeat information several times.

The goal is not simply to be fast. The goal is to be fast and accurate.

Once you are ready to try a contest, finding one is not difficult.

There are many contest calendars available. Radio Amateurs of Canada maintains an online contest calendar, and other dedicated contest-calendar sites list events taking place throughout the year. Major organizations such as ARRL also publish information about their own contests.

Before entering any contest, however, read the official rules.

The rules tell you who you may contact, what exchange must be sent, what bands and modes are allowed, how scoring works, what category you are entering, how long the contest lasts, and how your final log must be submitted.

That last point is important because logging is part of contesting.

Most serious contesters today use computer logging software. I use N1MM Logger+ for contests and LOGGER32 for my everyday station log.

Computers are remarkably reliable, right up until the moment they are not.

For that reason, develop a backup habit.

During a contest, I periodically make a backup copy of the actual contest log or database so that a computer failure does not erase hours of operating. I may also export contacts in ADIF when I need to move QSO information between programs or computers.

ADIF, the Amateur Data Interchange Format, was created specifically to allow amateur-radio data to be exchanged between different software applications. Modern .adi files are text-based ADIF files commonly used for that purpose.

It is useful, but an ADIF export should not automatically be treated as a complete replacement for backing up the logger's own database. Contest-specific information may not always transfer identically between programs, so the safest approach is to back up the actual contest database and use ADIF when you specifically need interchange between applications.

I was reminded of the value of that preparation during a California QSO Party when the keyboard on my usual contest computer stopped functioning. I had to change stations in a hurry. Being able to move my log data and continue operating turned what could have been a disaster into an inconvenience.

At the end of a contest, I also transfer my contest QSOs from N1MM Logger+ into LOGGER32, which is the program I use for my normal station log.

AFTER THE CONTEST

Then comes another important step: submitting the contest log.

Every contest has its own rules and submission procedures. The sponsor will specify the deadline, required information, and accepted file format. Many major contests use the Cabrillo format for official submissions, while ADIF is commonly used for exchanging QSO data between logging systems.

Do not assume that posting your score somewhere on the Internet is the same as submitting your official contest entry.

After a contest, many operators post their claimed scores and comments to 3830scores.com. The purpose of the site is specifically to allow contesters to share claimed scores and impressions shortly after an event.

It is a useful way to see how your score compares with others while memories of the contest are still fresh. But a 3830 posting does not replace submission of your official log to the contest sponsor.

Contesting also has its own publications and literature.

ARRL publishes the National Contest Journal, or NCJ, which concentrates on radiosport. Over the years it has covered contest results, stations, techniques, equipment, personalities, and many other aspects of competitive amateur radio. I have had the pleasure of writing the "Little Pistols Page," a column aimed at operators like me who enjoy contesting without necessarily owning the biggest station on the band.

KEEP LEARNING

That "Little Pistol"idea is important.

It is easy for a newcomer to look at the enormous stations used by some world-class contesters and conclude that contesting is only for operators with multiple towers, huge antenna systems, amplifiers, and sophisticated switching.

It is not.

Those stations are impressive, and competing at the very highest levels of radiosport may require extraordinary equipment and skill. But you do not need any of that to begin contesting or to enjoy it.

Another book I often recommend is J.K. George's Contact Sport: A Story of Champions, Airwaves, and a One-Day Race around the World. George, N3BB, takes readers inside the 2014 World Radiosport Team Championship and captures much of the intensity and personality of competitive amateur radio. The book was published in 2016 and provides a very different look at radiosport from a conventional operating manual.

If reading about contesters at that level inspires you, wonderful.

But do not make the mistake of believing that you must become one of them before you can participate.

Start with the station you already have.

Pick a contest.

Read the rules.

Make a few contacts.

Then make a few more.

Keep your log and your score. The next time that contest comes around, see whether you can do better. That has been my approach for decades.

You can compete against the other stations if you want to, and sooner or later you probably will. But one of the most satisfying competitors you will ever find is the operator you were last year.

“Beat that fellow, and you are making progress.”

ABOUT THE AUTHOR



Mike Goldstein, VE3GFN, was first licensed as VE1ADH in Halifax, Nova Scotia, in 1956. With more than six decades of amateur-radio contesting experience, he remains an active CW contester and CWT participant. His contesting background includes national and international competition, and he has contributed “The Little Pistols Page” to National Contest Journal. Mike's approach to radiosport reflects a philosophy central to this article: meaningful competition and personal improvement do not require a superstation.

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