May 2026

2026 Issue 5

Mount Vernon Amateur Radio Club

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Inside this issue

MVARC ARES Sunday Night Net

Mount Vernon 146.790 MHz Repeater

Check-in starts at 9:00 pm

Unable to access the repeater from your location?

We are on IRLP (EchoLink) K8EEN-R Node 80980

Presidents Message

Roger, KE8ICI

Greetings All, Welcome to May,

I will start with an apology to the group for not keeping up with my presidential duties for the month of April. I had an appointment with my urologist on the first of March due to ongoing issues from the treatment for prostate cancer that I received in January 2010. That treatment involved implantation of radioactive seeds injected into the prostate to stop the cancer and indeed that treatment did stop the cancer. But it did a whole lot of damage to other areas around the prostate that I have had to deal with for the last 16 years.

At this appointment he wanted to schedule me for surgery to correct an issue that I have been dealing with for the last few months. The schedule date was April 17th so I needed to get several medical clearances before they would clear me up for surgery. Everything was going according to plan; I had all my appointments completed and had a green light for the procedure. Then on the first week of April, I came down with the flu, and it was not good, a temperature of 102+ and several days in bed then the cough started and that went on for another two weeks.

I coughed so hard that I developed a small hernia in my abdomen and ended up in the ER for a CT scan. The ER doctor said that the tear was not critical and if I take it easy the repair could wait until I had my already scheduled surgery. I called the Urologist's office and informed them about the issues that had developed to see if I needed to be re-scheduled because it was now the 14th of April and did not want to have to start all over again with all pre-surgical appointments. They had me come into the office on Thursday the 16th and it was decided that I could still proceed with the surgery on Friday.

I did survive the surgery after 4.5 hours in the operating room. My wife thought I had died because the procedure was supposed to take 2 to 2.5 hours and due to a shift in the surgical waiting area no one informed her that it was taking a little longer. I opened my eyes in the recovery room, and my wife was standing over me, and I knew something was wrong, even in my drugged-up condition. So, I am doing a lot better and hope to keep up with presidential duties for upcoming events the rest of the summer.

On to more pleasant items the weekend of April 25 was ARRL NVIS day, and it ran from 10:00 am to 4:00 pm and we usually set up two stations, Wolf Run Park on Yauger Road and Thayer Ridge Park on Thayer Road off of SR 36. There were six attendees at Thayer Ridge Park were Frank (KC8EVS), Tom (KD8HSA), Emery (W8TW), Dan (ND8J) Rob (KF8FXE) and me. I was there to see how things were going (still recovering from surgery).

Rob tried out his new antenna from Radioddity Model HF-010 Portable HF Antenna that tunes 80 thru 6 meters but I was leaving as he set it up so not sure how it worked out. I wanted to go over to Wolf Run to see how things were going at that park, but no one was there. I did talk to Don (W8PEN) and he said that he did set up and operated for a while and made several contacts, but he had some other obligations to attend so he must have just left before I arrived.

Frank said that the band conditions were not that great and was having limited success. The running of this event has not been a huge success, very limited contacts from Ohio and not sure how many people or clubs participate. I think that setting up in a state park and doing POTA contacts would be a better use of our time but that's just my opinion.

The only up-coming event for the month of May is the Dayton Hamvention. This event is scheduled May 15 through 17 at the Greene County Fair and Expo Center (210 Fairgrounds Road, Xenia, Ohio 45385). If you are going it is best to park at the school and ride the buses to the fairgrounds. This is a great event and if you have never attended you are missing a mind-blowing experience. The only thing I can advise is that you take a wheel barrel full of money because there are a lot of goodies you will want to take home with you

That's all for now! 73

Up Coming Club Events

ARRL Field Day	June 26-28
Mount Vernon First Friday	August 7
OSPOTA	September 12
Centerburg Old Time Farm Festival	September 26-27

MVARC Welcomes New Members

Rick Shoemaker, KF8GLE
Robert Zoldak, KF8GF

We hope to see both of you and all other members at future club meetings.

Radio Activity

Don Russell, W8PEN

I know all thoughts in May and June turn to the club participation in ARRL Field Day. Or, at least for me and a few other members it does. However, I just read in the ARRL Club News of an event we should consider for activating the club station.

The event is called "***The Club QSO Party***" and is being held the week before Field Day. This is not a contest but a friendly event promoting Amateur Radio Clubs.

Here is an excerpt from the ARRL club news:

Upcoming QSO Party

When the South Jersey Radio Association (SJRA), K2AA, turned 100 years old in 2016, it created the club QSO party to celebrate. All members of SJRA signed their call signs/100 for the entire year of 2016. During 2026, SJRA is celebrating 110 years.

SJRA members had so much fun with the Club QSO Party in 2016 that we're inviting all clubs to celebrate this year. We've created a special event station to coincide with ARRL's Year of the Club initiative. This provides an opportunity to share club information with other radio amateurs.

Members of other clubs sign their call sign/###, indicating the age of the club they're affiliated with. We also encourage clubs to put their club stations on the air as well, making this a large-scale coordinated effort.

Please join us in celebrating your radio club's age and history, as we celebrate our own. The June 2026 Club QSO Party is co-sponsored by the Phil-Mont Mobile Radio Club, South Jersey Radio Association, and Kent Amateur Radio Society.

When: June 20, 2026, 00:00 UTC to June 21, 2026, 23:59 UTC (48 hours).

Objective: Contact as many amateur radio club members and listed amateur radio club stations as possible.

Bands: All amateur radio bands (except for 60, 30, 17, and 12 meters) and modes, including repeater, satellite, and EME contacts will be accepted.

For more information:www.clubqsoparty.org. Questions: Email us at info@clubqsoparty.org.

I am not saying we should participate in this event. It might be too much to ask, giving up two weekends in a row. But we should consider it.

How old is the Mount Vernon Amateur Radio Club? From the 2023 results of the ARRL Sweepstakes, the club reported that it was first licensed in 1958 (the ARRL shows the affiliated date as 9/29/1958, Ed.). That is when we were affiliated with the ARRL, not the year the club originated. Although it could be the same. But we will would have to go with it. That would make the club 67 years old in June. So, anyone participating in this event went would sign as "your-call/67". Example: K8EEN/67.

If interested in participating, visit the rules on their info page shown above.

EchoLink

EchoLink continues to work well with no known issues.

It's a Wrap!

Short column this month. Are you Radio Active? I would like to invite any club member wishing to share his/her experience in ham radio to be a guest columnist for Radio Activity. This would be one and done, but it could be more.

Send me a Word file. Anything ending in Doc or .TXT should work. Or just send me an outline of what you want to write about.

73. See you at the May meeting.

ARES

Tony, KE8OOE – Knox County EC

The Critical Role of Skywarn Spotters
Eyes on the Ground Since the 1960s

In the world of severe weather, technology has come a long way — Doppler radar, satellites, and sophisticated computer models give forecasters powerful tools. But even with all that, nothing replaces the human eye on the ground. That's where Skywarn spotters come in, and for decades, licensed amateur radio operators have been at the heart of this vital volunteer network.

Skywarn is the National Weather Service's (NWS) program of trained severe weather spotters. Today, it includes between 350,000 and 400,000 volunteers nationwide who provide real-time "ground truth" reports of tornadoes, large hail, damaging winds, flash flooding, and other hazards. These observations help meteorologists issue timely and accurate warnings, verify what radar sees (or sometimes misses), and ultimately save lives and property.

A Brief History of Skywarn

The program traces its roots back to the 1960s, when it began as a grassroots network of amateur radio operators relaying ground-level information about hazardous weather to the National Weather Service. In those early days, radar technology was far less advanced, and communications could quickly fail during storms. Hams stepped up, using their radios to bridge the gap when phone lines went down or cell service was overwhelmed.

By the early 1970s, Skywarn had formalized into the volunteer program we know today. A key milestone was the partnership between the NWS and the American Radio Relay League (ARRL), formalized through a Memorandum of Understanding that encouraged amateur radio emergency service (ARES) groups to support spotting and communications during severe weather. Over the decades, Skywarn has grown alongside improving technology, but the core mission remains the same: trained volunteers providing eyes and ears where machines can't always reach.

One early educational effort even included "Owlie Skywarn," a cartoon character introduced in 1976 to teach children about weather safety — showing how the program has always *emphasized community education*.

Why Skywarn Spotters Matter So Much

Radar can detect rotation or heavy precipitation, but it can't confirm whether a tornado has touched down, measure exact hail size, or tell you if flooding is already blocking roads. Spotters provide that critical ground truth.

A single well-timed report from a trained spotter can make the difference between a watch and a warning — or help forecasters refine an existing warning to protect more people. In an average year, the U.S. sees about 10,000 severe thunderstorms, 5,000 floods, and over 1,000 tornadoes. Skywarn volunteers form the nation's first line of defense against these events.

For amateur radio operators, the connection is especially strong. Many Skywarn spotters are hams who activate nets during severe weather, relaying reports directly to NWS offices. When cellular networks and landlines fail — which often happens in major storms — amateur radio remains reliable. Many NWS forecast offices even maintain dedicated ham stations manned during activations, allowing spotters to communicate observations and receive updates in real time.

Getting Involved as a Ham Radio Operator

- Understanding safe spotting practices (never put yourself in harm's way).
- Proper reporting procedures to your local NWS office.

As club members, we already have the communication expertise that makes us natural fits for Skywarn. Many clubs run or participate in local spotter networks, activate during severe weather watches, and support emergency management.

Skywarn isn't just about chasing storms, it's about service. It's about using our hobby and skills to protect our families, neighbors, and communities in central Ohio and beyond. Whether you're mobile with a go-kit or monitoring from home, your reports and reliable communications can provide those precious extra minutes that save lives.

Let's keep the tradition alive, because when severe weather threatens, amateur radio and Skywarn spotters stand ready.

73 and stay safe out there!

MVARC MEETING

DATE
11 MAY 2026

TIME
7:00 PM

790 Fairgrounds Rd.
Mount Vernon, OH

Enter from back of building

Mount Vernon Amateur Radio Club
Serving Greater Knox County, Ohio

Meeting Minutes

Darlene, WS8W

Call to Order

The April 2026 meeting of the Mount Vernon Amateur Radio Club was called to order by Vice President Michael, KE8HGE at 7:00 PM. There were 16 members in attendance.

Minutes of the Last Meeting

The minutes of the previous meeting were approved as presented in the Club Newsletter without objection.

Treasurers Report

Terry, KI8N was not present, so there was no Treasury report.

Committee Reports

- **Amateur Radio Emergency Service (ARES)**

  Tony KE8OOE reported on several ARES related topics:

  - The hospital radio testing is done, and the Sheriffs will be done this week.
  - MVARC ARES did a great job during the recent storms.
  - Tony has updated the text recipient list, however if you would like to be removed, please let him know. Likewise, if you would like to be added to the recipient list and receive weekly comm tests text and other weather notifications, let him know.

  Michael, KE8HGE commented that the hospital is participating in an exercise in the middle of May. This will involve 20 regional hospitals and clinics. It will be a civil unrest drill.

American Radio Relay League (ARRL)

Scott, N8SY was not present, so there is no ARRL report.

- **Repeater**

  Michael, KE8HGE reported on several Repeater related topics in Roger's, KE8ICI absence:

  - Real time clock IC chip repaired and working.
  - Duplexer and repeater are at VASU but should be back soon.
  - Don, W8PEN brought up that the 444.600 MHz repeater location needed to be updated in Ohio records. He updated the profile with the new location.
  - Steve no longer has any club equipment.
  - The time on the repeater has been corrected.
  - The repeater amplifier is installed and wired but is not turned on yet.
  - The battery back-up will power the amplifier also.

EchoLink

Don, W8PEN reported the following on EchoLink:

- The EchoLink system is working fine currently.

Directors

Frank, KC8EVS indicated that there is nothing to report from the directors this month.

- However, he did inquire about the Go-Box headphones and took suggestions on type, brand, and cost.

New Business

- Evan asked if the club wants to put an ad in the Cidar Press regarding ARRL Field Day. Last year we put a smaller ad in at the cost of $20.00, but do we want to put in a full-page ad? He did not know the exact cost of a full-page ad but indicated he would investigate it. Evan will coordinate with the Directors once the cost is confirmed. Larry, AC8YE offered to pay the cost of a full-page ad.

Future Club Events

- Gravel Grinder – Roger, KE8ICI spoke to Steve Harvey, but he has not gotten back to him yet.
- MVARC POTA Hunter event – Don, W8PEN suggest the contest will possibly change to 2-hour event on September 5th, 2026. The June MVARC newsletter will have the rules published.
- ARRL Field Day is the 4th weekend in June. Request suggestions about having pizza or a potluck.
- NVIS is on April 25th between 10AM-4PM. Frank, KC8EVS will be at Thayer Ridge and Don, W8PEN will be at Wolf Run Park. If anyone would like to try an antenna or operate, come out to either location.
- Barry, N8PPF won the 50/50 raffle.
- Meeting adjourned, motion by Jim KD8IZT, Kevin KD8NGV second.

Present at the March Club Meeting

Frank, KC8EVS	Emery, W8TW	Larry, AC8YE
Jim, KD8IZT	Michael, KE8HGE	Don, W8PEN
Tom, KD8HSA	Tony, KE8OOE	Barry, N8PPF
Don, KB8QPO	Darlene, WS8W	Rob, KF8FXE
Les, WA1L	Bill, KD8WHQ	Kevin, KD8NGV
Evan, KF8APC		

"The true sign of intelligence is not knowledge but imagination." Albert Einstein

Training Class Schedule

G. Michael, KE8HGE

Sessions meet weekly on Tuesday evenings, starting at 6:30 pm.

Study Session Schedule, 2026

Session 2 - General	**Session 3 - Technician**
6/30 – 8/18	10/27 – 12/15
Testing 8/19	**Testing** 12/26

MVARC Calendar / Events

WEEKLY EVENTS

Sunday: 9:00 pm ARES Sunday Night Net

Wednesday: 4:45 pm — Dinner at Southside Restaurant

Friday: 9:00 am Breakfast—Ariel-Foundation Park

MAY 2026

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

ARRL Sanctioned Ohio Hamfests

https://arrl-ohio.org/hamfests/

My Adventures in Ham Radio

Don, W8PEN

Chapter 10 – From Phone Patches to Factory

Lynn would come down for a visit every so often, and we'd spend an entire weekend in my shack or head out to catch a movie. Mostly, though, we just hung out and talked about antennas, dream shacks, DX fantasies, and what the future might look like for two teenage hams with more enthusiasm than direction.

Lynn knew exactly what he wanted: he was going into the Navy. I, on the other hand, had no plan at all. My grades weren't good enough for college, and I didn't have a clue what came next.

In the end, Lynn got his wish. He passed the entrance exams and joined the Navy. He was proud, but also a little disappointed. After basic training he was assigned—if I remember right—to a ship, or maybe just a base. Either way, instead of seeing the world, he spent most of his time running phone patches for servicemen calling home. It was important work, no doubt about it, but I think he had hoped for something a little more adventurous.

After I graduated high school, I landed a job pumping gas. Not exactly thrilling, but it put money in my pocket. I worked hard, and the manager liked me. Mom eventually talked me into trying junior college. I wanted to be a basketball coach, and in Ohio back then you needed at least a secondary education degree and a teaching certificate.

I made it through the first semester. Then I looked at my grades and realized that dream wasn't going anywhere. I wasn't dumb—I just wasn't "college smart." At least I could say I gave it an honest try.

That left me with a dilemma. Pumping gas wasn't a long-term plan. I wasn't a car jockey. I was a radio enthusiast through and through. I needed a job that paid real money, something I could build a life on.

Before long, I was hired at the local glass plant. We made milk jugs, pop bottles, and just about any kind of bottle you could imagine. It was rough at first. It was August, the temperature was in the 90s, and inside the factory it was another 20 or 30 degrees hotter. I wasn't used to that kind of heat and thought about quitting more than once. But I kept reminding myself that without a college degree, factory work was one of the few solid options I had.

In the end, the glass plant turned out to be a good job. I stayed there for more than 16 years. After that I worked at two other factories before retiring. Each had its ups and downs, but they gave me a decent living—and they funded my ham radio addiction, which continues to this day.

Back to that first real job. Dad helped me buy a car so I could get to work. And not just any car—a 1967 Mercury Cougar XR-7. I was going bold!

With steady paychecks coming in, I finally had enough money to buy a Heathkit HW-101 transceiver kit. SSB was becoming the thing, and I needed to keep up.

Around the same time, my brother Chuck graduated from Dayton University. He was still working in Mansfield, now full-time instead of just summers. Since he was still a Technician and his Novice license had expired, he decided to spend some of his new income on a Heathkit SB-110A—the latest and greatest SSB rig for technicians.

He didn't stop there. He bought 40 feet of tower to put behind Dad's garage and a three-element 6-meter beam.

Back in the late '60s, there were no 2-meter FM repeaters—none that I'd ever heard of, anyway. If you were a technician, 6 meters was *the* band. AM or SSB, take your pick. Mount Vernon had its share of Techs on 6 meters, and even a few mobiles cruising around town with whips bouncing off the roofs of their cars.

Sidebar: Heathkit HW-101 — The Everyman's HF Workhorse

Heathkit SB-110A

Heathkit HW-101

When the Heathkit HW-101 hit the scene in the late 1960s, it quickly became *the* transceiver for hams who wanted full HF capability without paying Collins or Drake prices. For thousands of operators, the HW-101 was their first "serious" HF rig — a true all-band, all-mode station you built with your own hands.

A Kit That Felt Like a Factory Rig

The HW-101 was part of Heathkit's legendary "Hot Water" series, and it delivered:

- 80–10-meter coverage
- SSB and CW
- Around 100 watts PEP
- A clean, stable signal from a well-designed tube lineup.

Heathkit's manuals were famously clear and building the HW-101 taught you real radio theory: mixers, IF strips, balanced modulators, and the magic of neutralizing finals. When you finished the kit, you didn't just own a radio — you *understood* it.

The Sound of the ’70s

The HW-101 became a fixture on HF nets, ragchews, and DX hunts. Its audio was warm, punchy, and unmistakably “Heathkit.” Operators loved its:

- solid receiver
- smooth VFO
- dependable transmit audio

It wasn’t fancy, but it was honest, capable, and rugged — the kind of rig that stayed on the desk for decades.

Easy to Fix, Easy to Love

Because it was a kit, the HW-101 was designed for maintenance:

- tubes easy to reach
- boards removable
- alignment straightforward
- parts common and inexpensive

Even today, vintage enthusiasts keep HW-101s alive with fresh caps, new tubes, and the occasional dial-cord tweak.

A Classic for the Everyday Ham

The HW-101 democratized HF operating. It gave the average ham a station that could work the world, teach valuable skills, and deliver years of dependable service. For many, it was their first real taste of HF SSB — and the memories still glow as warmly as the tubes inside.

Sidebar: Heathkit SB-110A — The Technician’s SSB Flagship

Before 2-meter FM repeaters took over the VHF world, **6 meters** was the technician’s kingdom — and the Heathkit SB-110A was the crown jewel. Introduced as part of the SB “Single-Band” series, the SB-110A gave Technicians a true high-performance SSB transceiver built specifically for 50 MHz.

A True 6-Meter Thoroughbred

Unlike converted HF rigs or surplus gear, the SB-110A was purpose-built for 6 meters:

- 50–54 MHz coverage
- SSB and CW
- Tube finals with clean, stable output
- A receiver designed for weak-signal VHF work

This wasn’t a compromise rig — it was a serious transceiver for serious 6-meter operators.

Heathkit Quality, SB-Series Style

The SB-110A shared the look and feel of the famous SB-101/102 HF rigs:

- green panel
- matching knobs
- clean layout
- excellent documentation

Building one was a badge of honor. You learned VHF alignment, neutralization, and the quirks of 6-meter front-end design.

The Golden Age of 6 Meters

In the late ’60s, 6-meters was alive with:

- AM locals
- SSB weak-signal work
- summer E-skip
- the occasional F2 opening that made legends

The SB-110A put Technicians right in the middle of it. With a good beam and a bit of height, you could work states you’d never dreamed of.

A Rig That Encouraged Experimentation

Owners often added:

- cooling mods
- audio improvements
- VFO stabilization tweaks
- cosmetic upgrades

Like all Heathkits, the SB-110A rewarded curiosity and careful hands.

A Milestone for the VHF Operator

For many Technicians, the SB-110A was their first taste of high-quality SSB on 6 meters. It represented a moment when VHF was wide open, exciting, and full of possibility — and when building your own gear was part of the adventure.

> “In real life, I assure you, there is no such thing as algebra.” Fran Lebowitz

Miscellaneous Rambling

Terry, KI8N

Last month I stated I was trying to come up with a new and better designed template for this newsletter. However, I have given up that super frustrating effort. I do not have enough hair to pull out trying to make Microsoft Word do what I envision it doing. So going forward I guess you will just have to put up with the current newsletter design and format offering unless someone else has mastered Word design and formatting and can show me how to make a more interesting newsletter layout.

This month I finally got my dual band antenna mounted at the top of the western eave of the house. It seems to be working well but I can tell it isn't able to hit some of the more distant Ohio repeaters that it did when it was 30 feet in the air. But I can participate in ARES nets from the shack and be active in Skywarn nets when activated. Thanks to Frank, KC8EVS for giving me the old satellite dish mount I used to install the dual band antenna onto. I also drilled a new hole through the house for coax to enter the basement shack. I thought a 2-inch opening lined with a PVC pipe would give plenty of room for any additional coax cables. But after drilling it I see that it is probably much larger than I needed or anticipated. I am planning to install a utility enclosure, as shown from DX Engineering, to clean up the opening, prevent rodent/bug entry, and move the lightening arrestors into.

I sent out an email from the ARRL Ohio Section regarding putting W1AW/8 on the air May 6 – 12 for the USA 250 celebration. Is anyone interested in being W1AW/8 for an hour or more? I am scheduled to operate May 6 for six hours using a combination of SSB, FT8, and FT4. I wanted to operate more but my schedule that week will not allow me to be available. If you are interested in participating as an activating station you must contact Anthony Luscre, K8ZT (k8zt73@gmail.com) to be included in the activity. You can view the public schedule of activations using this link: ***tiny.cc/w1aw8.*** I think it will be a fun activity having other stations chase for Ohio as this is the first of two times we will be on the air. The next scheduled W1AW/8 activation is in August.

Is anyone else actively trying to make contacts with the various W1AW portable stations working from each state in the USA 250 celebration? I was initially trying and had contacted each of the early state activations, but my desire has waned in the last month. I keep telling myself I will try to contact the ones I missed during their second week of activating but my attention and give-a-hoot factors are disappearing. Let us know at the next meeting if you are having any luck contacting each state so far.

I attended two hamfests in April; Cuyahoga Falls and TUSCO. The Cuyahoga Falls hamfest had many people with tables selling their items and it was well attended by hams looking for deals. While the TUSCO hamfest was not as well represented and there were fewer attendees. I still believe hamfests are experiencing a decline in attendance and vendors. Wonder if it is because some sellers have their equipment prices close to what a new transceiver or component would cost with a manufacturer warranty?

An item Cath, WA8KJJ and I attended was the annual Cooper-Young Porchfest in Memphis on the 19th. This is a party where bands set up on neighborhood porches and play for an hour. To make this work the person with the porch registers and requests a band(s) and the bands register to say they are available. Then they are paired up and the party lasts from Noon until 6:00 pm. There were thousands of people wandering the streets listening to over 150 bands as they played throughout the Cooper-Young district. It was interesting and the music was varied from originally created songs to Pink Floyd. To make it even better there was none of the violent nonsense or trouble we hear on TV every day.

This month I had three successful POTA activations; Mohican-Memorial State Forest (US-5444), Cuyahoga Valley National Park (US-0020), and First Ladies National Historic Site (US-0813). These were quick, under one hour, set up, activate, tear down and go home activations. Mostly just to get out and play radio when the atmospheric conditions and weather participated.

That's it for this month. I will not be at the May meeting since Cath, and I will be out of town. "*Stay safe and continue radioing!"* 73

NVIS Day Photos

Thayer Ridge Park NVIS Day. In Attendance; Frank, KC8EVS, Tom, KC8HSA, Emery, W8TW, Dan, ND8J, Rob, KF8FXE.

Photos by Roger, KE8ICI.

"Everyone is a genius! But if you judge a fish by whether it can climb a tree, it will spend its whole life thinking it is stupid." Albert Einstein

Final Takeaway

Want to understand how a Yagi-Uda antenna works?

The visual guide on the next page explains its structure, working principle, radiation pattern, gain (6–15 dBi), and directivity (up to ~20 dBi) in a simple and clear way.

A Yagi-Uda antenna is a directional antenna made up of a driven element and parasitic elements (reflector and directors) to focus energy in one direction, providing high gain and excellent front-to-back ratio. Antenna gain increases with the number of parasitic elements used.

First off what is meant by dBi? Antenna designers prefer to compare gain to that of an *isotropic radiator in free space*. This is a theoretical antenna that radiates equally well in all directions, and by definition, has a gain of 0 *dBi* (dB isotropic).

Radio amateurs, however, are comfortable using a dipole as a standard reference antenna, mainly because it is *not* a theoretical antenna. In free space, a dipole does not radiate equally well in all directions: it has a figure-eight azimuth pattern, with deep nulls off the ends of the wire. In its favored directions, a free space dipole has 2.15 dB gain compared to the isotropic radiator. You may see the term *dBd*, meaning gain referenced to a dipole in free space. Subtract 2.15 dB from gain in dBi to convert to gain in dBd. Remember that gain expressed in dBd (or dBi) refers to the counterpart antenna in free space.

The gain of a Yagi is largely a function of the length of the boom. As the boom is made longer, the maximum gain potential rises. For a given boom length, the number of elements populating that boom can be varied, while still maintaining the antenna's gain, provided of course that the elements are tuned properly. In general, putting more elements on a boom gives the designer added flexibility to achieve desired design goals, especially to broaden the response across a frequency band.

What is meant by front-to-back ratio? An antenna's front-to-back ratio compares the transmitted signal strength in a forward (front) direction to that transmitted in a backward (reverse) direction at the same time. (The ratio of the forward response to the averaged response over the entire 180° rearward section is called the *front-to-rear ratio*.) Front-to-back ratio is usually expressed in decibels (dB).

The Yagi I am most familiar with is a Cushcraft X7. This is a tri-band Yagi with seven elements. However, the maximum number of elements per band is three. This antenna has an 18-foot boom, and the longest element is 37.2 feet. The specifications state this antenna has a 12.5dBi gain on 20-meters at one wavelength above ground. Also, a front-to-back ratio of 30 dB making it highly directional in the front direction.

Yagi antennas are widely used in amateur radio, wireless links, and long-range communication systems.

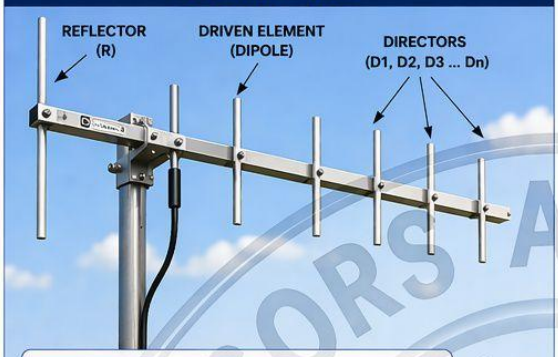
"Do not run after the past and lose yourself in the future. The past is no more. The future has not yet come. Life is here and now." Buddha

Sensors and Antenna Lab

YAGI-UDA ANTENNA

A directional antenna that uses parasitic elements to achieve high gain and front-to-back ratio in a specific direction.

ANTENNA IMAGE



ELEMENTS OF YAGI-UDA ANTENNA

- **Reflector (R):** Slightly longer than driven element. Reflects energy toward the front.
- **Driven Element (DE):** Half-wave dipole. Directly excited by the feed.
- **Directors (D1, D2, ... Dn):** Slightly shorter than driven element. Direct energy in the forward direction.

EXPLANATION

The Yagi-Uda antenna consists of one driven element, one reflector, and one or more director elements mounted on a boom.
The reflector is placed behind the driven element and is slightly longer to reflect energy forward.
The directors are placed in front and are slightly shorter to direct the energy in the forward direction.
This configuration provides high gain, good directivity, and excellent front-to-back ratio.

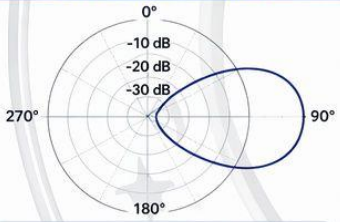
KEY FEATURES

- High gain and strong directivity
- Excellent front-to-back ratio
- Simple structure and easy to build
- No external power required (passive antenna)
- Widely used for VHF and UHF applications

COMMON APPLICATIONS

- TV Reception (VHF/UHF)
- Wireless Links
- Amateur Radio
- Satellite Communication
- Point-to-Point Communication
- Long Range Communication

RADIATION PATTERN (HORIZONTAL PLANE)



Unidirectional pattern with high forward gain and low radiation to the rear.

GAIN

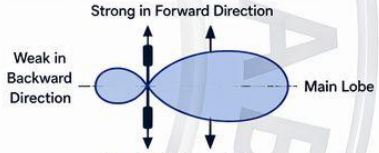
Typical Gain

6 – 15 dBi

(varies with number of directors, element length, and spacing)

More directors
→ Higher gain and better directivity

DIRECTIVITY



Typical Directivity

7 – 20 dBi

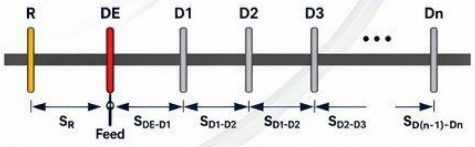
High directivity with excellent front-to-back ratio

KEY PARAMETERS (Typical Values)

Parameter	Typical Value / Range	Description
Frequency Range	VHF: 30 – 300 MHz UHF: 300 MHz – 3 GHz	Commonly used in VHF and UHF bands
Gain	6 – 15 dBi (typ.)	Increases with number of directors and boom length
Bandwidth	5 – 10% (typ.)	Depends on element diameter and spacing
Input Impedance	300 Ω (balanced)	At resonance (half-wave dipole)
Polarization	Linear (Horizontal or Vertical)	Typically horizontal polarization
Front-to-Back Ratio	15 – 30 dB (typ.)	High F/B ratio reduces interference from behind
VSWR	≤ 2.0:1 (typ.)	Good matching for efficient power transfer
Power Handling	100 – 1000 W (varies)	Depends on element size and construction
Boom Length	~ 0.2 λ to 1.0 λ	Increases with more directors and higher gain
Elements Material	Aluminum / Copper	Good conductor, lightweight, and corrosion resistant
Mounting	Mast Mount	Mounted on non-conductive or conductive mast
Operating Temperature	-40°C to +85°C	Typical operating temperature range

Note: λ = Wavelength at operating frequency (λ = c / f), where c = 3×10^8 m/s

TYPICAL GEOMETRY AND SPACING (AT RESONANCE)



Typical Dimensions (at f_0)		
Element	Length (approx.)	Spacing (approx.)
Reflector (R)	0.53 λ	$S_R \approx 0.15 – 0.25$ λ
Driven Element (DE)	0.50 λ	$S_{DE-D1} \approx 0.10 – 0.20$ λ
Directors (Dn)	0.45 – 0.48 λ	$S_{Dn-D(n-1)} \approx 0.10 – 0.20$ λ

λ = Wavelength at operating frequency (λ = c / f)
Dimensions are approximate and may vary with design.

DID YOU KNOW?

A Yagi-Uda antenna with more directors offers higher gain, but the boom length and bandwidth also increase.

ADVANTAGES

- High gain and directivity
- Simple, lightweight and reliable
- No external power required
- Cost-effective for high performance

DISADVANTAGES

- Narrow bandwidth
- Larger size for higher gain
- Performance affected by exact dimensions and alignment

★ HIGH GAIN ★ DIRECTIONAL ★ RELIABLE ★ EFFICIENT ★

Focus Energy. Reach Farther. Communicate Better.

ARRL Sanctioned Hamfests

https://arrl-ohio.org/hamfests/

2026 Upcoming MVARC Events

Club QSO Party	June 20 - 21
ARRL Field Day	June 26-28
Mount Vernon First Friday	August 7
OSPOTA	September 12
Centerburg Old Time Farm Festival	September 26-27

Ham Radio Contest Calendar

https://www.contestcalendar.com/

MVARC 2026 Club Officers

President	Roger Gorrell, KE8ICI
Vice President	G. Michael Jacobs, KE8HGE
Secretary	Darlene Pudlinski, WS8W
Treasurer	Terry Windsor, KI8N
PIO	Evan Koontz, KF8APC
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Director	Barry Butz, N8PPF
Director	Emery Bennett, W8TW
Director	Scott Yonally, N8SY
Director	Evan Koontz, KF8APC

The MVARC CQ Newsletter is delivered to club members via email containing a link to the MVARC webpage, Newsletters button.

** MVARC CQ is the official newsletter of the Mount Vernon Amateur Radio Club. **

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"Whoever wants to build high towers must dwell long on the foundation." Anton Bruckner