Q-FIVER

THE OFFICIAL NEWSLETTER OF THE OH-KY-IN AMATEUR RADIO SOCIETY
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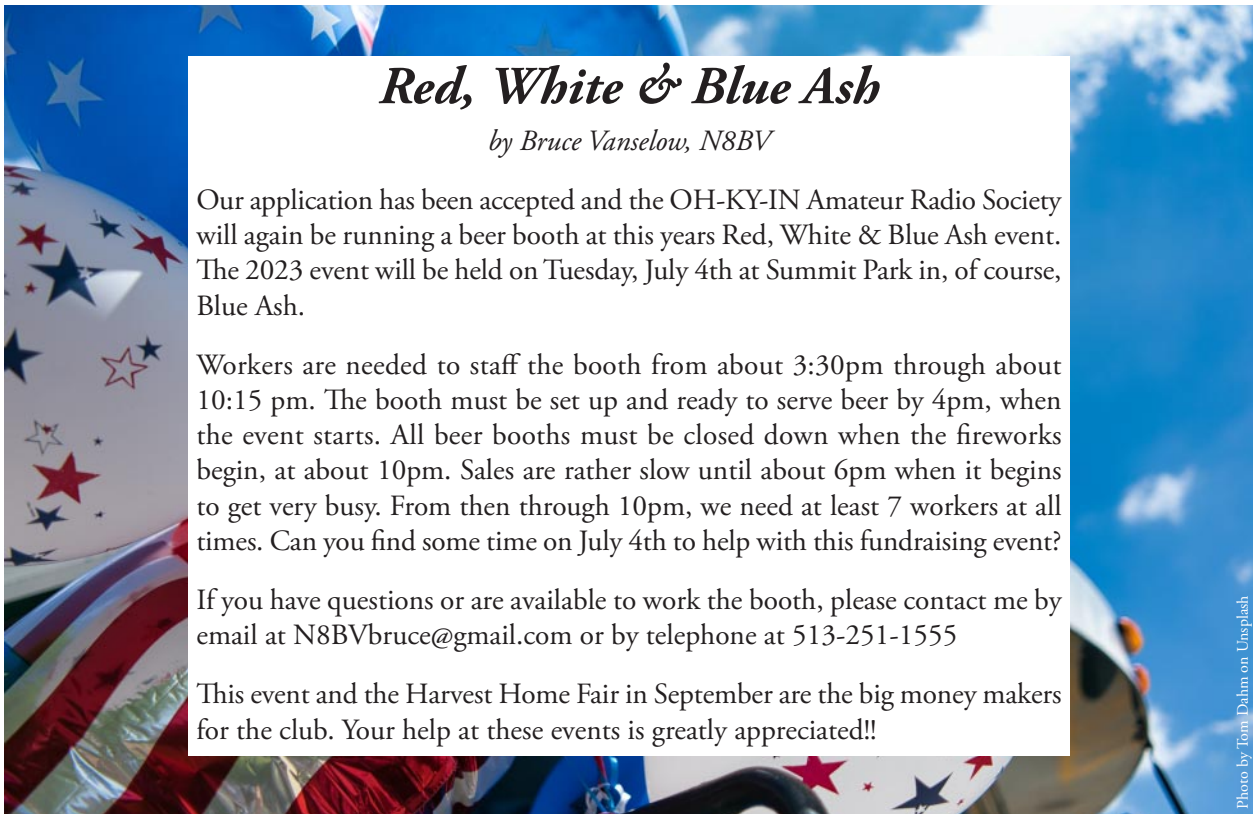
Photo by Ryan Owens AC8UJ



Red, White & Blue Ash

by Bruce Vanselow, N8BV

Our application has been accepted and the OH-KY-IN Amateur Radio Society will again be running a beer booth at this years Red, White & Blue Ash event. The 2023 event will be held on Tuesday, July 4th at Summit Park in, of course, Blue Ash.

Workers are needed to staff the booth from about 3:30pm through about 10:15 pm. The booth must be set up and ready to serve beer by 4pm, when the event starts. All beer booths must be closed down when the fireworks begin, at about 10pm. Sales are rather slow until about 6pm when it begins to get very busy. From then through 10pm, we need at least 7 workers at all times. Can you find some time on July 4th to help with this fundraising event?

If you have questions or are available to work the booth, please contact me by email at N8BVbruce@gmail.com or by telephone at 513-251-1555

This event and the Harvest Home Fair in September are the big money makers for the club. Your help at these events is greatly appreciated!!

Photo by Tom Dahm on Unsplash

Brunch Bunch

by Bruce Vanselow N8BV

The next Brunch Bunch will be held Saturday, May 13th, at 1pm. The location for May is Camp Washington Chili located at 3005 Colerain Avenue, 45225, in Camp Washington. It is at the corner of Hopple Street and Colerain Avenue, a very short distance off I-75.

> "Since 1940, Camp Washington Chili has been proudly serving 'chili-heads' from Cincinnati and all over the world from the corner of Hopple and Colerain Streets, in the heart of Cincinnati's Camp Washington neighborhood. While our secret chili recipe speaks for itself, there are other ingredients that help make Camp Washington Chili the premier chili parlor in Cincinnati. Thank you for your patronage. We look forward to serving you."

For a look at the menu, please go to: www.campwashingtonchili.com

Remember that the Brunch Bunch always meets the second Saturday of every month at 1pm at a location to be announced each month. If you can't join us this month, maybe you'll be available to join us in the months ahead.

As always I'm looking for suggestions on what restaurant you think might be a good place for the Brunch Bunch to visit in the future.

73, …… Bruce N8BV

The Reading & Radio Ranch: Notes from the Library

by Justin Patrick Moore, KE8COY

May is here, and for many hams in our area, and further afield, it means making the annual pilgrimage to Hamvention, on the green fields of Xenia, Ohio. At Hamvention you can twist the knobs of state of the art radios, if that's your thing, or you can happily hunt for boat anchors, military surplus communications gear, and all things retro out in the extensive flea market area. You can probably find some old books and manuals too.

Photo by Louis F. Sander, 1958, Public Domain

◆ **Heathkit DX-100, an amateur radio transmitter sold in kit form during the 1950s and 1960s**

If you pick up an old piece of equipment, you might need to service it yourself, and perhaps that is part of the joy you get out of the hobby. The club library has a bunch of books about general electronics, but I thought these two might be of interest to those who are going to be repairing their scores from the flea market. Or finally thinking about fixing that thing in their basement that they bought at Hamvention five years ago.

Handbook of Solid-State Troubleshooting by Hershal Gardner is the book you want if you're equipment is vintage mid-seventies, or earlier, as it was published in 1976.

How to Test Almost Everything Electronic, by Jack Darr, will give you the basics of using your test equipment and practical tips for doing so.

> "Staying away from hard-to-understand theory and mathematics, this practical handbook shows you how common devices such as multimeters, frequency and logic probes, signal traces, and oscilloscopes are used. You'll pinpoint problems in everything from TV sets and computers to automotive electrical systems."

Until next time, keep on practicing you're three R's: Reading, Radio and Repairing.

And always Remember: Keep Your Batteries Charged & Your Aerials Up!

Your club librarian can be reached via email at: justinpatrickdreamer@gmail.com

◆ **Heathkit HG-10B, DX-60B circa 1969**

Photo by https://commons.wikimedia.org/wiki/File:Heathkit_DX-60B_HG-10B_090403.JPG by RadiomanPA

Modulation and Bandwidth – an Inseparable Couple

by Steve Weeks, AA8SW

At an OHKYIN event, the question was raised – how wide is the transmitted FM signal on a 2-meter band OHKYIN repeater? I had an idea about the answer since a very similar question appears in the General Class license exam question pool, but I did not know any of the details and decided to share my research results in this brief article, in case anyone else is also interested in how FM differs from the older and more familiar AM and SSB modulation types.

By the way, the bandwidth of a 2-meter FM signal is something that repeater users do not ordinarily need to be concerned about. Ham radio equipment designed for that band is already calibrated to use the standard modulation and demodulation parameters and channel spacing. However, if repeater signals are being received on non-Ham equipment, such as a software defined radio (SDR), then it becomes an important question, and that was the context in which the query was made.

Any method of audio modulation of a radio signal must encode, and be able to decode, the two fundamental properties of audio – (1) the level (volume) of the audio, and (2) the frequency (pitch) of the audio signal. How the modulation method accomplishes this will dictate how much frequency spectrum (bandwidth) it must necessarily occupy in that process.

Since FM characteristics are most effectively described by comparing them to the more basic and familiar amplitude modulation (AM), and its close relative single sideband (SSB), let's briefly review the latter.

AM, the original method of transmitting sound, is the essence of simplicity at a technical level – a constant-frequency RF carrier wave is mixed directly with the audio signal that is to be transmitted. Mixing two waves together produces the sum and the difference of the two waves (that's a General Class exam pool question, also). The amplitude of the audio is reflected in the amplitude of the combined signal, and the frequency of the audio is reflected by how much the transmitted signal deviates from the fixed carrier frequency. For example, if a 1 kHz tone is transmitted, then as viewed on an oscilloscope or waterfall, a spike 1 kHz above the carrier is generated, and another spike also occurs 1 kHz below the carrier. In other words, two sidebands are created, above and below the carrier, which contain all of the volume and pitch information of the audio signals, and the sidebands are mirror images of each other. Each sideband has the same maximum distance from the carrier as the maximum audio frequency, so the total bandwidth is double the maximum audio frequency. For amateur radio, where it is not legal to transmit music, something in the range of 3 kHz maximum is adequate (to transmit the sound of a voice with reasonable fidelity), so that is the maximum audio frequency used by convention (and in some cases by FCC rule), resulting in a typical maximum 6 kHz AM bandwidth.

Before long, it occurred to radio experimenters that transmitter power was being wasted on the AM carrier (which conveys no information) and in sending two duplicative, mirrored sidebands. So SSB was born, with the carrier and one of the sidebands being suppressed, and only one sideband transmitted – with all of the power concentrated into that sideband, typically having a maximum bandwidth of about 3 kHz when used for voice or FT8.

So how is frequency modulation (FM) different? As discussed above, AM encodes the two essential characteristics of audio – volume and pitch – simultaneously, by embedding an image of the complete audio signal onto the RF carrier. FM, on the other hand, separates out the two critical audio characteristics and handles them in two different ways. The volume of the audio signal is encoded as the deviation up and down of the FM carrier frequency, within arbitrary limits that the designer of the mode can determine. For 2-meter amateur radio FM in the United States, the standard maximum deviation for the volume portion of the signal is 5 kHz (both up

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and down, so a maximum of 10 kHz of bandwidth). Then the pitch components of the voice are encoded as frequency deviation in addition to the deviation related to volume, up to a maximum deviation (up and down) equal to the highest frequency of the audio. Thus, the standard maximum frequency of 3 kHz for voice audio can consume an additional 6 kHz of bandwidth (in addition to a maximum of 10 kHz for the volume information, yielding a total maximum bandwidth of 16 kHz). This formula is known as Carson's Rule, after the person who developed it as a method of estimating maximum FM bandwidth in 1922. In practice, the bandwidth will usually be less than that because at any given time, either the volume or audio frequency or both will be at less than maximum levels and the FM bandwidth needed at that instant will be correspondingly narrower.

In an unrealistically-simplified example, with just the volume varying, the result could look like:

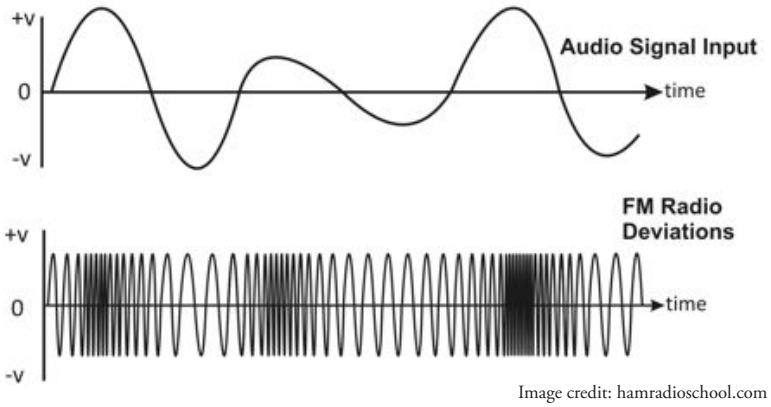

Image credit: hamradioschool.com

Note that the amplitude of the waves remains constant, only the frequency varies. The loudest audio (see the two peaks near the beginning and end of the graph) result in the highest frequency (dark areas in the FM graph where the waves are packed closely together). The lowest audio input results in the lowest frequency, with the waves farthest apart on the graph.

Of course, a real-life example with pitch as well as volume constantly varying would result in an enormously more complicated graph than this – it's greatly simplified just to demonstrate the principle.

So, the mystery behind this General Class exam question is dispelled (where "deviation" refers to the maximum frequency change on each sideband based on the volume component at the maximum audio level):

G8B06 What is the total bandwidth of an FM phone transmission having 5 kHz deviation and 3 kHz modulating frequency?
A. 3 kHz
B. 5 kHz
C. 8 kHz
D. 16 kHz

To summarize, 5 kHz maximum deviation based on volume plus 3 kHz based on the audio modulation pitch equals 8 kHz maximum RF frequency deviation for each sideband, or 16 kHz total bandwidth.

It's probably not just a coincidence that the parameters used by the examiners in this question match the norms for 2-meter FM transmissions.

Next time you use one of the OHKYIN 2-meter repeaters, you will have greater appreciation for the complexity involved in encoding and decoding those signals. 73!

April, 2023 Meeting Minutes

OH-KY-IN Amateur Radio Society
Minutes of April 4th, 2023, Member Meeting

The meeting was called to order at 7:31 PM by Ryan AC8UJ with the Pledge of Allegiance. The club held a hybrid meeting at the Lockland Church of the Nazarene and via Zoom.

Guests: Al Peters AC8GY, Jack Purdum W8TEE, Eric Duval N8DER, Edwin Clements KE8MYA, Brad Cooper KY4JG

New Licenses or Upgrades: Donald Mortimer KE8WYK New Tech, Edwin Clements KE8MYA Upgrade to General, Eric Duval N8DER Upgrade to General

Attendance:
- 23 in person
- 17 via zoom

Health and Welfare: None

Awards & Achievements: None

Prior Meeting Minutes: Dennis KD8ILY made the motion, and Don KE8WYK seconded accepting the meeting minutes for February as published in the Q-Fiver. Motion passed.

Membership: Not present. 115 have renewed for the year out of 148 from last year. Please renew at http://renew.ohkyin.org/.

Treasurer: Brad KE8JTM. Treasures report read and filed for audit.

Silent Key: Brian DeYoung K4BRI

Tech Committee: All the repeaters are working, just need people to use them.

Classes and Exams: With a joint effort between QCEN & OHKYIN, All the classes went well. More classes in the future, with a possible Extra class if an instructor is found.

Fox Hunts: Bob WA6EZV. Multiple events coming up. Contact Bob WA6EZV for more info.

Library: Contact Justin KE8COY if you would like to check out items from the library.

Nets: None

Website: None

QCEN: The next meeting is April 21st at 7PM at the Red Cross building.

ARES: None

SSTV: None

WINLINK: The VARA FM is up and running 144.950

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Brunch Bunch: Saturday April 8th at 1PM at Chicken on the Run in Deer Park.

Events:
- Ohio NVIS day April 22nd
- Flying Pig Marathon May 5th-6th
- Field Day June 24-25th
- Dayton Hamvention May 19th-21st

Old Business:
- By-laws Updates: Still on hold
- Repeater Internet Connectivity Grant: Filing final updates on the grant at this point.
- Portable Satellite Ground Station Grant: Cesi KD8OOB advised nothing at this point going on.

New Business:
- None

Program: Al Peters AC8GY and Jack Purdum W8TEE will discuss the design and building of the T41 SDR Transceiver

Split the Pot: $59.00 The winner will receive $30.00. The winner this month is Philip KE8LYG

Motion to adjourn made by Drew KE8JTL Seconded by Karl KG8GC. All in favor. Meeting adjourned at 8:45PM.

Respectfully submitted, Steve Crase N8PUP, Secretary

ARRL Survey on Dues Increase

This Monday, May 1, ARRL will launch a survey for members, encouraging their participation as we consider a dues increase.

The survey will include some short questions about raising dues and modifying the way some membership benefits are bundled. The survey will also include an opportunity for members to share their feedback.

The participation of every member is important. Please encourage all the ARRL members in your radio club to complete the survey in May.

The survey will open on May 1 at www.arrl.org/take-dues-survey. This is a member-only page. Members need to be logged into the ARRL website to take the survey. Members who are not logged in may select the Login button on the top of the web page, and they will be prompted to enter their ARRL website username and password. If they have not logged in since April 2022, they should use these Login Instructions.

Thank you in advance for urging all ARRL members to complete the survey.

73

Mike Walters, W8ZY

ARRL Field Services Manager

OH-KY-IN SSTV Net Samples

Here's a sample of the images you could be receiving if you tuned into the weekly SSTV net on the 146.670 repeater. The net meets every Monday night at 9:00 PM Eastern time. No special equipment is required. If you have a 2 meter receiver and a computer or smart phone, you can receive images. If you don't know how, check in to the weekly Tech Talk net Wednesdays at 9:00 PM Eastern and ask for help. Hope to hear you all on the nets!

DX Spots - May 2023
DE KA3MTT

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 3D2LYC - Fiji thru 5-5 	2 5UA99WS - Niger Thru 6-15 	3	4 HK0 - San Andreas & Providencias Thru 5-11 	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20 OJ0 - Market Reef Thru 5-27 
21	22	23 V47JA - St Kitts & Nevis thru 6-7 	24 9X2AW - Rwanda Thru 6-14 	25	26 TF - Iceland thru 5-29 	27
28 MM0UKI - Scotland Thru 5-31 	29	30	31			

Prepared by Nathan Ciufo, KA3MTT

Calendar of Upcoming Events

Monday	May 1 @ 9:00 PM	SSTV Net (146.670 Repeater)
Tuesday	May 2 @ 7:30 PM	Club Meeting (Zoom & Lockland Church of the Nazarene)
Wednesday	May 3 @ 9:00 PM	Tech Talk Net (146.670 Repeater)
Monday	May 8 @ 9:00 PM	SSTV Net (146.670 Repeater)
Tuesday	May 9 @ 7:30 PM	Board of Directors Meeting (same Zoom info as club meeting)
Wednesday	May 10 @ 9:00 PM	Tech Talk Net (146.670 Repeater)
Monday	May 15 @ 9:00 PM	SSTV Net (146.670 Repeater)
Wednesday	May 17 @ 9:00 PM	Tech Talk Net (146.670 Repeater)
Monday	May 22 @ 9:00 PM	SSTV Net (146.670 Repeater)
Wednesday	May 24 @ 9:00 PM	Tech Talk Net (146.670 Repeater)
Monday	May 29 @ 9:00 PM	SSTV Net (146.670 Repeater)
Wednesday	May 31 @ 9:00 PM	Tech Talk Net (146.670 Repeater)

Meeting Information

Our monthly club meeting will be held at Lockland Church of the Nazarene (335 W. Wyoming Ave.). We will continue to offer Zoom video conferencing as an option. Please join us at 7:30 PM Eastern time each first Tuesday of the month. The Zoom call will open at about 7:20 PM for you to join. The passcode is 146670

https://zoom.us/j/996062859

If you are unable to join online, you may join by telephone at (301) 715-8592 with a meeting code of 996 062 859 and passcode of 146670. Long distance rates will apply.

OH-KY-IN Repeaters

146.670 (-) Clifton

146.625 (-) Edgewood (Fusion & analog WIRES-X)

146.925 (-) Delhi (Fusion & digital WIRES-X)

443.7625 (+5) (off-air)

All repeaters require a 123.0 Hz CTCSS (PL) tone.

APRS on 144.390 MHz K8SCH-10 Edgewood WIDEn (off-air)

Packet on 145.010 MHz K8SCH-7 Digipeater (off-air)

Life Members

John Phelps	N8JTP
Kenneth E Wolf	N8WYC
John W Hughes	AI4DA
Karl R Kaucher	KK4KRK
Fred Schneider	K9OHE
Dan Curtin	KF4AV
Steve Weeks	AA8SW
Kelly Hoffman	K8KAH
Jerry Shipp	W1SCR
Mick Cook	KD8IOQ
Steve Crase	N8PUP
Joe Felix	K8NW

Support OH-KY-IN by Shopping

Of course we appreciate your membership dues and all of the ways you give time and energy to the club, but did you know you can also support OH-KY-IN just by doing things you already do?

Kroger Community Rewards is a great source of income for the club and requires no effort! Visit http://www.krogercommunityrewards.com/ and set us as your charity. We are organization **QY352**.

Contact Bruce N8BV for details about the program.

PANDA/stock.adobe.com

Meeting Location

The board has decided that we will continue meeting indefinitely at Lockland Church of the Nazarene, located at 335 West Wyoming Avenue in Lockland. It's right off I-75 at exit 12 (the Reading/Lockland exit southbound and the Davis St./Lockland/Reading exit northbound). Enter through the glass door by the mailbox under the awning. Be aware that there are about 5 steps down into the meeting room. Thanks to Steve N8PUP for making this facility available to the club for our meeting! We will also continue to offer Zoom for those wishing to join us online. If you have any symptoms of illness, please join us online to protect other club members.

Newsletter Submissions

Please send any submissions you would like included in upcoming newsletters to Ryan, AC8UJ. All content is welcome! You can e-mail content to him at his callsign at arrl.net. Please send all content either as plain e-mail text (attach any photos or graphics) or as a PDF file. Depending on the spacing needs of the particular issue, Ryan may reformat your content and adjust the layout. Because of this, if you send a PDF, please also include any graphics used as attachments.

Please renew your membership, if you haven't already

Committee Chairs & Appointments

Technical Operations . . . . . .Gary Coffey KB8MYC

ARPSC Representative . . . . . .Jerry Shipp W1SCR

Volunteer Examiners . . . . . .(open)

QCEN Representative . . . . . .Pat Maley KD8PAT

Membership . . . . . .Nathan Ciufo KA3MTT

Fundraising . . . . . .Bruce Vanselow N8BV

Education . . . . . .(open)

Repeater Control Ops Mgr. . .Bruce Vanselow N8BV

PIO . . . . . .Devin Spielman KE8PEQ

SSTV Net Mgr . . . . . .Steve Crase N8PUP

Librarian . . . . . .Justin Moore KE8COY

Q-Fiver Editor . . . . . .Ryan Owens AC8UJ (interim)

ARRL Field Day . . . . . .Eric Neiheisel N8YC

Historian . . . . . .Dale Vanselow KC8HQS

Fox Hunters . . . . . .Dick Arnett WB4SUV

Equipment Manager . . . . . .(open)

Webmaster . . . . . .Rocky McGrath KE8DZS

Silent Key . . . . . .Bryan Hoffman KC8EGV

Tech Talk Net Manager . . . . .Bruce Vanselow N8BV

K8SCH QSL Manager . . . . . .Bob Frey WA6EZV

TV/RFI . . . . . .Dick Arnett WB8SUV

OH-KY-IN Officers

President . . . . . .Ryan Owens, AC8UJ

Vice President . . . . . .Cesi DiBenedetto, KD8OOB

Secretary . . . . . .Steve Crase N8PUP

Treasurer . . . . . .Brad Hast KE8JTM

Director . . . . . .Drew MacDonald KE8JTL

Director . . . . . .Bruce Vanselow, N8BV

Director . . . . . .Dennis McGrath, KD8ILY

Trustee . . . . . .Bruce Vanselow, N8BV

Consider a Donation to OH-KY-IN

Did you know that OH-KY-IN ARS has been recognized by the Internal Revenue Service as a 501(c)(3) charitable organization? That means anyone who itemizes on their Federal return can take a charitable deduction for a contribution to OH-KY-IN, as long as it qualifies under the general rules applicable to all other charitable contributions (for example, the contribution must be in cash, or other property which the organization has agreed to accept; the value of volunteered services is not deductible). Membership dues, such as the cost of a life membership, may even be deductible; consult your own tax advisor for details if considering that. Posthumous donations by Will or by naming the organization as beneficiary of a financial account are also welcome.

Please remember to renew your membership!

We need all of you to keep OH-KY-IN going strong!

OH-KY-IN Amateur Radio Society is one of the leading amateur radio organizations in the Cincinnati, Ohio area and has been for most of its 50-plus year history. We are a 501(c)(3) nonprofit organization dedicated to the advancement of all things radio. No matter the amateur radio interest, OH-KY-IN members are involved.