



**Our January General Meeting
will be on Wednesday, TODAY,
January 19th, via Zoom,
at 6:30 pm.**



Mike Hickerson (WB0MH), will go over some of the Quirks of Call Signs at this meeting. For more meeting info, please see page 2!



**January Meeting will be
presented via Zoom TONIGHT!**

Wed, Jan. 19th, at 6:30 pm. Go to:

[https://us06web.zoom.us/j/81928642821?
pwd=WXNSTjdEdHd5emZaaDRaaENQdnFWZz09](https://us06web.zoom.us/j/81928642821?pwd=WXNSTjdEdHd5emZaaDRaaENQdnFWZz09)

See p. 2 for more info.

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January General Membership Meeting

Our General Meeting will be on Wednesday, January 19th, at 6:30 pm.

Mike Hickerson (WB0MH), will present on
The Quirks of Amateur Radio Call Signs.

Some requests for when you join our meetings:

- When you fill out your name, *please add your call sign after your first name*.
(Example: Chuck (K0ITP) Poch). If you don't have a call sign yet, just put "no call." *You can change your name with the 3 little dots at the top right corner of your screen.*
- You will be muted automatically. (If you need help getting in, call out on our club repeater via VHF, UHF, or on EchoLink). Be sure to have your video going and your volume up, so we can see/hear you!

The Zoom meeting started at 6:30 pm with social time, ask an Elmer, meet a Board member, and general questions. The *actual meeting* begins at 7:00 pm, with intros and club business, and then the presentation will begin at approximately 7:15 pm.

Going forward, this Zoom info will be the same for all Monthly General Meetings.

To Join our January Zoom Meeting, click on this link:

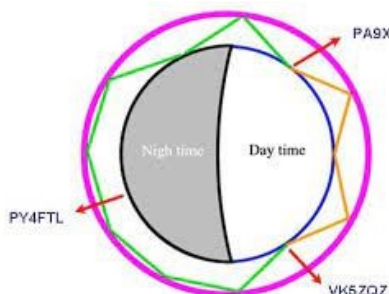
[https://us06web.zoom.us/j/81928642821?
pwd=WXNSTjdEdHd5emZaaDRaaENQdnFWZz09](https://us06web.zoom.us/j/81928642821?pwd=WXNSTjdEdHd5emZaaDRaaENQdnFWZz09)

Meeting ID: 819 2864 2821

Passcode: 787437

Find your local number: [https://us06web.zoom.us/j/
kcsybGuZpe](https://us06web.zoom.us/j/kcsybGuZpe).

If you had to miss this meeting, you can see our meetings at
<https://w0eno.org/meeting-presentations/>.



Ham Jargon

Chordal Hop — Radio wave propagation between two points by two or more successive refractions through the ionosphere before arriving at its destination, resulting in a signal that exhibits less loss than the same signal, had it traveled through the dense ground atmosphere twice. *(from pa9x.com)*

Check out videos of many of our previous meetings and activities at:

<https://www.youtube.com/channel/UC0bX61lXfLHEvix6msKzITg> or by going to the club web site at w0eno.org and selecting Presentations. Subscribe to our channel so you don't miss out!

If you miss a meeting or you don't drive after dark, you will still be able to watch them here!



Help Support your Club with your Online Shopping!

Did you know your purchases can make a difference? *When you shop for anything at smile.amazon.com/ch/84-1056239, Amazon Smile donates to the Longmont Amateur Radio Club — at no cost to you!* Last quarter, they sent LARC \$38 as their donation from our members' shopping. Every last dollar helps! *You can also just click on the picture below to log into your account to shop and to help your Club at the same time.*



When you go to this link, you enter your own username and password, just like you normally do. You can also go to smile.amazon.com and select Longmont Amateur Radio Club. *Shopping with this Amazon link doesn't cost you anything – Amazon provides this donation, and every little bit helps our club!*

Useful Ham Radio Web Site

<https://www.topozone.com/colorado/>

This site contains a great selection of topographic maps for Colorado (and other locations as well). These maps are free and printable to use, and are great for seeking new places to transmit and how to get there. Multiple layers can be enabled for more information, and you can also zoom in to focus an area of interest.

“New Year’s Day. A fresh start. A new chapter waiting to be written.”

- Sarah Ban Breathnach

Happy New Year to you and your families!

LARC is keeping up with what is going on with Covid-19. I ask all members to be safe & take care of yourselves. Vaccines and boosters are here and opportunities to get them abound. Recently, Covid cases have started climbing again. So, that means 2022 meetings are still virtual..

We have several upcoming events. Keep an eye on the website and emails for more information.

Join the Tuesday night and Thursday night nets for fun and educational talk! Want to try being a net control station (NCS)? Contact Jerry (NØ0UW) or me for details! We want You!

Winter Field Day is coming up on January 29/30, and is open for all licensed amateur operators.

Our LARCFest (hamfest) is coming in early April — get involved and help this be a great event!

Do you have an idea for a presentation, or do you know someone who would like to present to your club? Contact a board member and let's get them in front of us! We need presenters for *all* of our 2022 General Meetings except for this month.

If you have some ideas for activities you'd enjoy doing with your radio and LARC, please let me know!

I always mention the appreciation award I do for our club members. If you know someone who deserves an extra “Thank you” or “Above and Beyond,” please let me know! I'm looking for recipients for our 2022 awards and recognition. Please tell me your thoughts.

Congratulations to the 2021 Above and Beyond recipients from last year:

- January “Above & Beyond” recipient Kat Gonderinger (WØUM) for producing the LARC monthly Splatter — Volunteer hours to make it the best Ham Radio Newsletter out there.
- June “Above & Beyond” recipient Doug Altman (KEØSI) for a successful 2021 Field Day after an uncertain 2020!
- October “Above & Beyond” recipient Harlan Olson (WØHLO) for his donations to LARC for his time and effort to help support our marketing efforts.
- November “Above and Beyond” recipient Shane Koch (KEØRVY) for his jump to action when the club was called upon for help.

I have always said that this is your club. How can you help? We're looking for volunteers for our LARCFest 2022 Committee (it's only 3 months away!) and upcoming club events. Please contact a board member with your ideas , suggestions, and desired roles.

As always, please contact me with any questions, comments, suggestions, or concerns.

Thank you and 73,

Charles Poch - KØITP
LARC President
KØITP@WØENO.ORG





Take our Poll!

Please take LARC's quick and fun [January Poll](#) by answering this poll question. Feel free to add any comments you would like. After you have finished and submitted it, you will be given the option to see a summary of all the responses so far. Your answers and identity are completely anonymous if you wish. Please select the answers that apply! If clicking on the polls below doesn't take you to the poll, please go to: <https://vote.pollcode.com/15285526>

Which section(s) of our LARC website at w0eno.org do you like and/or use?

- Google Slides (pictures)
- LARC Calendar
- Support LARC
- About Us
- Join Us/Events
- LARC History
- Jerry's Page
- Splatter
- Presentations
- LARC Archives
- Education
- Licensing/Testing
- Classes
- HamFests
- Repeaters/Nets
- Tuesday Hamlet Net
- LARC Thursday Night Net
- For Sale
- Ham Links
- Silent Keys
- Sponsors
- Facebook section
- Solar-Terrestrial Data
- I don't use the website
- We have a website?

Vote View

Net — [Tuesday Night Hamlet Net, 7:00 pm](#)

The Club sponsors an informal net for newer ham radio operators on Tuesday evenings at 7:00 pm. Learn how to use nets, ask questions, discuss ham radio topics, get familiar with your radio & make new friends on the club's linked repeaters on 147.270 and 448.800 MHz, Tuesday nights at 7:00 pm. *For more information about this net, click on the title above.*

You can also reach our nets on the internet via [EchoLink!](#)

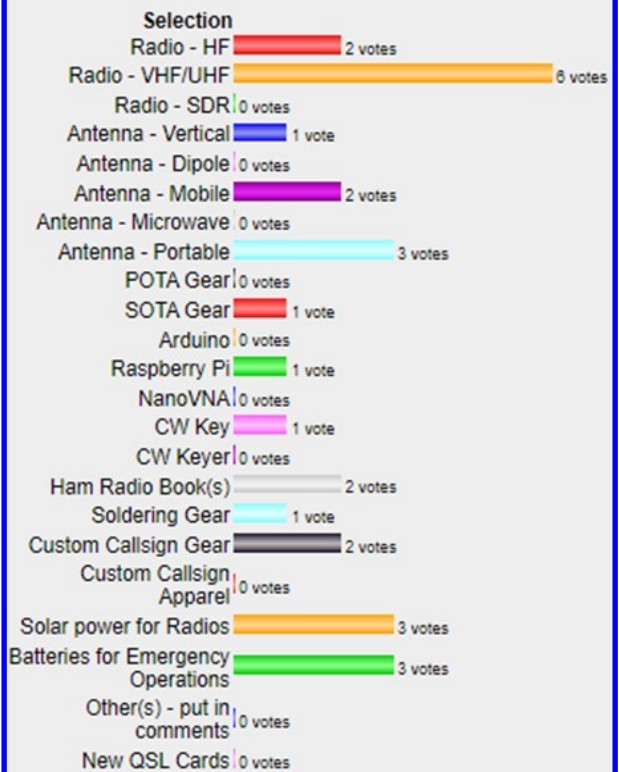
Net — [Thursday Night Club Net, 8:00 pm](#)

The Club also sponsors an informal net each week on Thursday evenings at 8:00 pm to chat about whatever is on your mind and to announce upcoming Amateur Radio Club activities. You will find the net on 147.270 and 440.800 MHz on Thursday nights at 8:00 pm. *Click on the title above for more information.*

STAY CONNECTED TO YOUR FELLOW HAMS! GET ON OUR NETS!

Dec. Poll Results — Thanks for voting!

What Gifts Would You Like?



9 voters

Take our January Poll Now! It will only take about 2 minutes!

TAKE OUR JANUARY POLL!

Either click on the poll on the left, or go to: <https://vote.pollcode.com/15285526>

We want to know your thoughts! Please also add your comments!

Upcoming Special Events and Contests

As found on ARRL.org and other web sites, here are some selected upcoming QSO Parties and Special Events that you could get on to pass the time while stuck in your house over the next 30 days. See the links below for more information, rules, logs, and QSL card information. Some just provide an email address to get more info other than what's on the ARRL web site. They all present a great opportunity to get on the air and have some fun! Plan your calendar!

Start Date	End Date	More Info
01/19	01/24	80th Anniv. Of the 8th Air Force www.qrz.com/db/WW2FLY
01/22	01/23	North American QSO Party, SSB http://www.ncjweb.com/NAQP-Rules.pdf
01/22	01/29	Quartzfest https://quartzfest.org
01/29	01/30	Winter Field Day https://www.winterfieldday.com/
01/29	01/31	California Discovery of Gold http://www.edcarc.net
02/05	02/05	Minnesota QSO Party https://www.w0aa.org/mnqp-rules/
02/05	02/05	Republic of Texas Central National Road sites.google.com/site/rarck5rkw
02/05	02/06	Vermont QSO Party http://www.ranv.org/vtqso.html
02/05	02/06	Mexico RTTY International Contest http://www.rtty.fmre.mx/
02/05	02/06	British Columbia QSO Party http://www.orcadxcc.org/bcqp_rules.html
02/05	02/06	European Union DX Contest https://eudxcc.altervista.org/eu-dx-contest/
02/07	02/07	Minnesota QSO Party https://www.w0aa.org
02/07	02/14	Abraham Lincoln's Birthday www.nationaltrailerarc.org
02/12	02/12	Washington's Birthday www.waarc.net
02/14	02/18	ARRL School Club Roundup http://www.arrl.org/school-club-roundup
02/16	02/20	2022 Speedweek/Daytona 500 www.n4dab.com
02/17	02/17	HL Hunley Commemoration https://www.tridenthams.org/hl-hunley
02/19	02/20	ARRL Inter. DX Contest, CW http://www.arrl.org/arrl-dx
02/26	02/27	North American QSO Party, RTTY http://www.ncjweb.com/NAQP-Rules.pdf
02/27	02/28	North Carolina QSO Party http://ncqsoparty.org/rules/
03/05	03/06	ARRL Inter. DX Contest, SSB http://www.arrl.org/arrl-dx
03/12	03/13	Oklahoma QSO Party http://k5cm.com/okqp.htm
03/12	03/13	Idaho QSO Party http://www.pocatelloarc.org/idahoqsoparty/
03/13	03/14	Wisconsin QSO Party http://www.warac.org/wqp/wqp.htm

- See tons of QSO Parties at <https://qsoparty.eqth.net/index.html>
- See these and also more Special Event Stations at http://www.arrl.org/special_events/search/page:1/model:Event
- You can see much more QSO Party and Contest Information at: <https://www.contestcalendar.com/contestcal.html>
- To learn more about having fun with QSO Parties, take a look at this link: <http://www.arrl.org/files/file/QST/This%20Month%20in%20QST/April2019/KENNEDY.pdf>

2021 BOARD OF DIRECTORS

President: Charles Poch, KØITP
Vice President: Michael Ritchie, WØKKI
Secretary: Pat Engstrom, W1PGE
Treasurer: Don Lewis, KEØEE

ADDITIONAL VOLUNTEERS:

Membership: Steve Shearer, KØSTE
Technical: Mark Skelton, N7CTM and
Bryan Gonderinger, AFØW
Publicity: Steve Haverstick, KFØAGY
Splatter Editor: Kat Gonderinger, WØUM
Planning/Special Events: Doug Altman,
KEØSI & Mark Mollenauer, KDØGOC
BCARES Representative: Jerry Schmidt,
NØOUW
Repeater Trustee: Bryan, AFØW
Education: Kat, WØUM & Bryan, AFØW
LARCfest Chair: Dick Paige, KEØVT
VE Team Leads: Aaron, AJ7R & Kat, WØUM

Contact Us:

Email to: board@w0eno.org will reach all members of the Board.

Board meetings are held on the first Wednesday of each month at 6:30 pm. General Club meetings are held on the third Wed. of each month at 6:30 pm.

Current Club meetings are held online using Zoom and are open to all. Join us!

If you have a suggestion for a topic or for a guest speaker, or would like to present a topic yourself, please send email to [Chuck, KØITP](mailto:Chuck.KØITP).

If you have a general interest article about ham radio that you would like to see in a future issue of Splatter, please email it to [Kat, the Splatter Editor](mailto:Kat,theSplatterEditor).

Articles received by the 25th of the previous month will be considered for publication in the issue for that month.

Longmont Amateur Radio Club
P.O. Box 86
Longmont, CO 80502

LARC is a non-profit organization organized exclusively for one or more of the purposes as specified in Section 501 (c)(3) of the Internal Revenue Code Vol. 17. No.6.

Repeaters:

VHF:

147.270 MHz (+) 600 kHz, 100 Hz CTCSS

UHF:

448.800 MHz (-) 5 MHz, 88.5 Hz CTCSS

Echolink::

WØENO-R, Station #8305

Visit & Post on our Facebook Page!

Our club has a Facebook page — did you know that? Feel free to share your ham-related posts, projects, activities, and news at:

<https://www.facebook.com/LongmontAmateurRadioClub/>.

We'd love to have our members active on both our LARC web site at w0eno.org AND on our Facebook page, so check it out, share, and post today! Tell all your ham operator friends!

Find us on 

Thank You!

Many thanks to our special contributing authors for this month's Splatter:

- Ralph Bilal, WDØEJA
- Bryan Gonderinger, AFØW
- Ed Mohrman, WA7EM
- Chuck Poch, KØITP
- Steve Shearer, KØSTE



Call for Articles!

I am constantly looking for articles to publish in the Splatter monthly newsletter. Topics should apply to Amateur Radio, or other closely-related topics of interest to most ham operators. Tell us about your ham radio activities and projects. Articles (250-500 words) of things you have done and/or built (with pictures!) are always of interest.

Submissions may be edited for spelling, grammar, content, or length if necessary. The deadline for submissions is the 25th of each month; however, submissions received after the deadline will be considered if they fit into the newsletter. If a late entry doesn't make it into the current month's news, it may be used in one of the following months.

[Kat, WØUM, Splatter Editor](mailto:Kat,WØUM,SplatterEditor)

LARC VE Exam Session Information

LARC sponsors a VE Exam Session every month. Upgrade your license before FCC fees start up! Our regular *LARC (ARRL VEC) Exam Sessions* are given on the fourth Saturday of the even-numbered months — (but on the 2nd Saturday for December), and our *LARC/Patriot VE Exams* are given on the third Sunday of the odd-numbered months.

December VE Exam Session Results

Our LARC ARRL VE Team held an Exam Session on Saturday, December 11th, led by Aaron Rees (AJ7R).

Also assisting with this Exam Session were David Casem (AD0UF), Jeanne Lindstrom (AC0XA), Lynn Mears (K0CLM), and Bryan Gonderinger (AF0W).

Thank you to our volunteer examiners for your service!
We couldn't have done it without you!

At this session, 5 candidates were tested, which resulted in 3 new Technicians, 1 new General, and 1 new Extra Class Operator. There were a total of 8 passed exams in all.

Congratulations to everyone who passed their exams!



License	#
Technician	3
General	1
Extra	1
Total	5

February Exam Session on SATURDAY, Feb. 26th @ 10 am

Our next VE Exam will be with the LARC ARRL VE Team led by Aaron Rees (AJ7R), on Saturday, February 26th, at 10 am, at the Terry Street Professional Building at 350 Terry St., Longmont, 80501, *upstairs in the Onyx Room*.

Because this is an ARRL Exam Session, a \$15 test fee applies.



Upcoming LARC VE Exam Schedule

Date	Day	Time	Exam Session Info	Exam Options
Feb. 26	Sat	10:00 am	LARC ARRL VE Team	In person on paper
Mar. 20	Sun	9:00 am	LARC/PVET VE Team	In person on laptop or tablet, or on paper
Apr. 23	Sat	10:00 am	LARC ARRL VE Team	In person on paper

Ham Enthusiast Breakfasts Every Saturday Morning

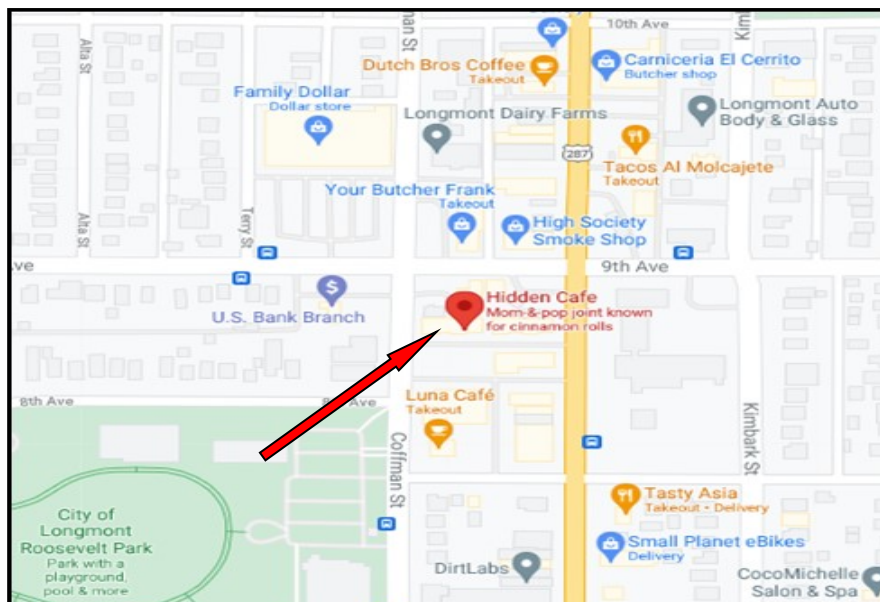
Want some social time with other ham radio operators in a small group? Join us for breakfast!

Saturday morning breakfasts meet at 8:00 am every Saturday.

Join us on Saturday mornings at the **Hidden Café in the Towne Square Shops, at 829 Main Street, #5 in Longmont.** It's easiest to enter the parking lot from Coffman Street, just south of 9th Avenue.

These are hosted by Don Lewis, KE0EE.

We hope you will join us on a regular basis for breakfast. If the group gets much larger, we will relocate to a larger restaurant. Get on the 8 pm Thursday Night Net to confirm the location, and/or check our website to see if the location has changed.



Trying to Learn and/or Practice Morse Code (CW)?

Although the FCC no longer requires that ham radio operators learn CW, this mode of radio communication is more popular than ever. There are many ways for you to learn and practice CW, including online, via Zoom, and in person.

My first way was to learn the characters myself using lcwo.net (Learn CW Online). This is a great program to get you started. Then, after I had learned the characters, I joined the [Long Island CW Club](#), which offers a selection from 75 different classes via Zoom. For these classes, you are sitting at home with your Morse code key/keyer, and participating throughout the live, interactive class with other students. They also have many worksheets, aids, activities, and documents available to their members, which can really enhance your learning and provide a sense of community with the other students and the instructor. I am member #163 — now there are over 2200+ members! Try these methods — you'll like them!

We had four new LARC members join us in December. When you meet them or hear them on the air, please say hello!

LARC Newest Members — December		
Call	First Name	Last Name
KDØWAY	Robert	Danson
KDØJZT	Ileana	Newhall
KFØGON	Robert “Bob”	Libra
KJ7QFK	Jim	Otis

The LARC ended the 2021 year with 155 members. The final door prize of the year was donated by a club member of extending another member’s or family’s dues. The random winner was Bob Matthias (WAØJJC).

Our club is always looking for additional donations of door prizes to give away at the meetings. If you have something you can donate for the drawing(s), you can contact me at the email or cell number below. It does not have to be a ham radio item — but anything that could be beneficial to another member.

Stay safe, and hope to see and/or hear you at the next LARC General Meeting on Wednesday, January 19th. Any questions or issues, feel free to contact me.

73,
Steve Shearer (KØSTE)
Membership Chairman

KØSTE@WØENO.ORG
membership@w0eno.org
303-915-9942



Volcanic Eruption and Tidal Waves



On January 15th, the Hunga Ha’apai volcano in Tonga erupted, causing tidal waves, massive pressure changes, a sonic boom, and lightening in the Pacific Region. You can see this eruption from outer space (and view other videos about the resulting tidal waves) on YouTube at <https://www.youtube.com/watch?v=z0MRwyNhgJ4>.

Dave Casler, KE00G, answers a reader's question about an unlabeled balun in the February 2022 Ask Dave column in ARRL's QST. He shows how to use a resistor and antenna analyzer to figure out whether the balun has a 4:1, 1:1, or any other ratio.

He demonstrates this method in a video at: https://www.youtube.com/watch?v=1Jgrqg_XfK0&list=PLRuRszo_oVMr3YAxN8eHuyWoqBb501a0d



Comm Academy 2021 Videos Available

Comm Academy 2021 is an annual (virtual) training conference for anyone interested in learning more about emergency communications, and was organized around the theme "Disasters Here, There, and Everywhere – Are We Ready?"



Their Archives web page at <https://www.commacademy.org/archives> contains information back to 2001, and includes a YouTube playlist of videos from the 2021 Academy.

Titles include "Out of the Pan(demic) and Into the (Wild)Fire: Communications Support During Large Emergencies," "Winlink, Digital Voice and Tech Based Comms – When Infrastructure Fails," and "The Importance of ICS in Addressing the Big Ones."

If you're interested in emergency communications, this looks like a great resource!

My last article in the December 2021 *Splatter* showed how to set up the VNA to measure the SWR of your antenna. The graph shows the SWR value across the spectrum of band that was chosen. Hopefully you "Saved" the calibration.

If the minimum point of the curve is not on the screen, then you can expand the spectrum by changing the "Stimulus" setting until you see it. At this point you will concentrate on setting the resonant point where you need it.

Having the minimum within the original spectrum you set will measure the frequency it is at. However, you may notice that it may appear to be unstable and the SWR read out is also jumping around. This is due to the VNA measuring minute changes in SWR that are normal.

To stabilize the reading select "Marker" on the menu. Then "Search," Then "Minimum," and then "Tracking". Now the SWR will follow the minimum SWR reading. If you want to measure up or down on the spectrum you will need to take off "Tracking."

To measure how close the antenna is to 50 ohms at resonance, go to "Display" on the main menu. Then "Trace". Select "Trace 2 (green)". You may want to remove "Trace 1 (blue)," as it does not apply to this test.

Be sure Trace 0 (yellow) is highlighted on the main screen. Both traces should read SWR. Now we are going to change Trace 0. Go to "Display," then "Format". Then select "Smith."

Now you will see two graphs. Trace 0 (yellow) is the Smith Chart. Trace 2 (green) is the original SWR graph ("Minimum and "Tracking" are still activated). You will see a reading that will be unlabeled if it is below 1,000. This is the impedance of your antenna at resonance.

Your goal is 50 ohms at the minimum SWR frequency or resonant point. How did you do?



2022 RMD Convention

Planning is underway for the next Rocky Mountain Division convention scheduled for October 8th, 2022 in Cheyenne, WY. The convention committee is soliciting ideas for forums and presentations. If you are interested in presenting please contact Rick Breininger (N1TEK) at n1tek@arrl.org. Put it on your calendar to attend!

While there is not as much need for postage stamps today as there has been in the past, that doesn't stop many hams from collecting them – especially those related to radio.

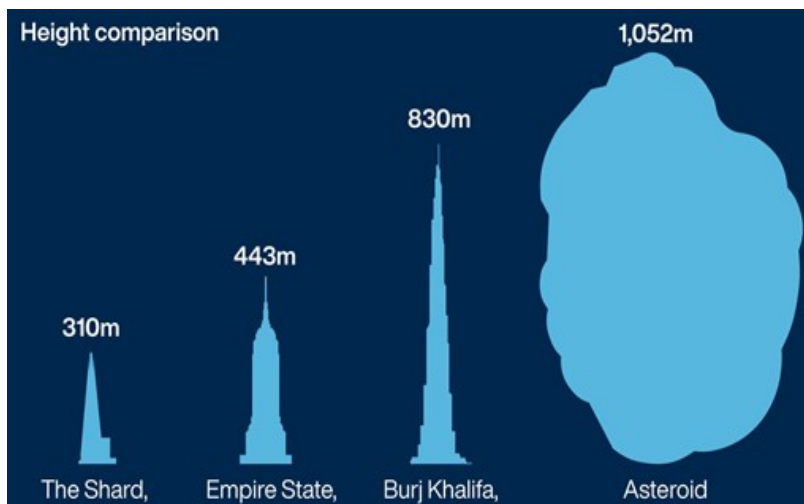
In an article titled "Surfin': Collecting Radio Stamps" on the ARRL web site (<http://www.arrl.org/news/surfin-collecting-radio-stamps-1>), Stan Horzepa, WA1LOU, provides a few links to sites with related articles and pictures of stamps from around the world.

The United States Postal Service issued an Amateur Radio stamp back in 1964 to honor the ARRL (American Radio Relay League) for its important work during the 1964 Alaska earthquake, where amateur operators provided essential emergency communications as well as to celebrate the 50th anniversary of the ARRL.

In fact, the stamp plays a prominent part in the ARRL's 2021 Diamond Club Premium (<http://www.arrl.org/2021-diamond-club-premium>), although you'll need quite a few of the \$0.05 stamp to send a letter (or QSL card) nowadays! You can find out more information about the Diamond Club at: <http://www.arrl.org/the-arrl-diamond-club>.



Giant 1km-wide Asteroid to Pass by Earth



A well-known giant asteroid (7482, 1994 PC1) that measures more than a kilometer in width (3,451 ft.) passed by Earth on Tuesday, January 18th. It is taller than the world's tallest building, and has been studied for decades by our Planetary Defense experts. It flew by Earth 1.2 million miles away. You can track it at eyes.nasa.gov/apps/asteroids/.

From <https://news.sky.com/story/giant-1km-wide-asteroid-to-pass-by-earth-nasa-says-12518328>



I recently saw some discussion about an "evolved antenna." I'd never heard of anything like this, so I did what most of us would do, and searched for the term on the Internet. I found a Wikipedia article covering the topic (https://en.wikipedia.org/wiki/Evolved_antenna) that states "...an evolved antenna is an antenna designed fully or substantially by an automatic computer design program that uses an evolutionary algorithm that mimics Darwinian evolution." What a mouthful!

The article includes a picture of such an antenna that was designed for the 2006 NASA ST5 spacecraft – and it looks like something one would make when playing around with a paperclip, not some sort of high-tech antenna. It was the first such computer-evolved hardware in space.

In summary, the program starts with simple antenna shapes and then adds or modifies elements in a semi-random way to come up with new designs, which are then numerically scored against the overall design requirements. The program then takes the top-scoring designs and repeats the process over and over, until one design with the highest score is selected.

The antenna for ST5 required both a wide beamwidth, circularly-polarized wave, as well as wide impedance bandwidth to cover X band up and downlink frequencies.

According to NASA's Solar System Exploration web site at <https://solarsystem.nasa.gov/basics/chapter6-3/>, the X band covers wavelengths of approximately 3.75 to 2.4 cm (~1.0 – 1.5 inches) and frequencies of 4 to 8 GHz.

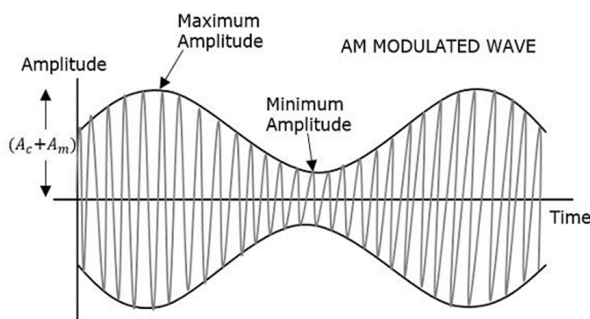
The NASA report in the first reference at the bottom of the Wikipedia article goes into much more detail about the antenna and the design process. There are two X band antennas on the spacecraft, and they performed comparisons on a mockup of the spacecraft. With two conventionally-designed quadrifilar helix antennas, 38% efficiency was achieved. Replacing one of these antennas with an evolved antenna resulted in 80% efficiency, and using two evolved antennas resulted in 93% efficiency.

While these "evolved antennas" aren't likely to be very useful for your typical HT, it is a very interesting concept!



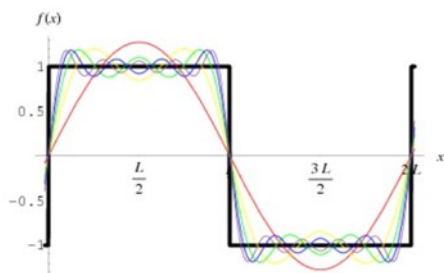
In prior issues of the *Splatter*, I reviewed the transmit and receive stages in my 1965 era Heathkit HW16 transceiver. We reviewed the *superhetrodyne (superhet)* method of upshifting and downshifting the frequency of a signal via *intermediate frequency (IF) mixers*. For example, a transmitter sends an audio signal and a carrier signal thru a *Mixer stage*, producing the sum and the difference between the 2 frequencies. Then these are sent thru a *filter stage* which removes the undesired sum or difference and passes the desired signal forward to the power amplifier. In this article, we talk about the nature of the CW, AM or SSB signal.

A CW signal is a simple pure sine wave at the desired frequency. If your transmitter is perfect (zero spurious emissions), your signal takes a tiny amount of spectrum and can be packed in tight beside other skinny signals. The limiting factor is how selective the receiver is at the opposite end of the radio link.



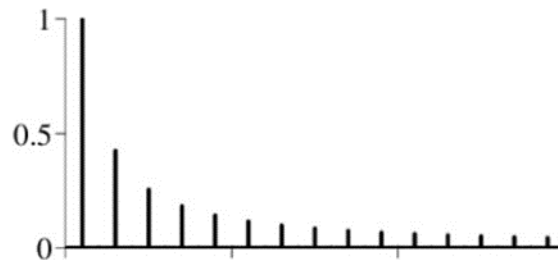
An AM (Amplitude Modulated) signal is that pure CW signal with its amplitude changing according to the frequency and amplitude of the modulating signal (typically voice, maybe data). It is no longer a pure sine wave and is no longer skinny. It is a complex varying waveform. The high frequency carrier is varying per the frequency and amplitude of the low frequency modulating signal.

It is useful to understand this *time-domain* complex waveform (what you would see on an oscilloscope) in the *frequency-domain* (what you would see on a spectrum analyzer). *Fourier Transform* mathematics is used to re-express this complex waveform in the frequency domain. An example of Fourier Transform is that a square wave is the sum of all the odd harmonic sine waves of that fundamental frequency, with decreasing coefficients. BTW – this is why the CPU clock on a computer board or a switching power supply can produce harmonics that can interfere with radios. And why FCC created Part 15 rules to regulate such spurious emissions from digital devices.



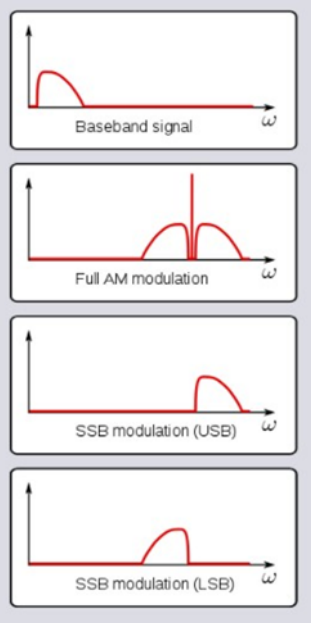
The Fourier series is therefore

$$f(x) = \frac{4}{\pi} \sum_{n=1,3,5,\dots}^{\infty} \frac{1}{n} \sin\left(\frac{n\pi x}{L}\right).$$



The odd harmonics as would be seen on a spectrum analyzer

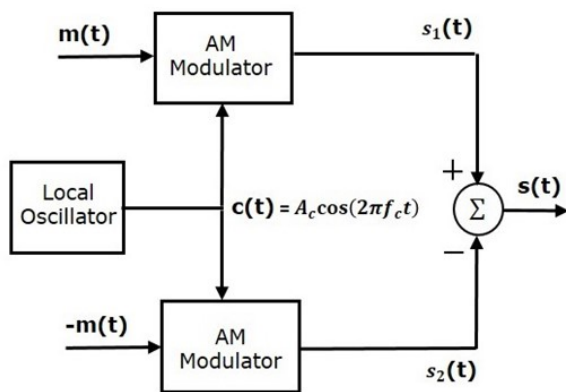
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We won't do a deep dive into *Fourier* math, but the bottom line is that an AM modulated signal contains a range of frequencies from the center carrier frequency out to frequencies that are the sum and the difference of the carrier and modulating signal's frequencies. For ham radio, the typical maximum voice modulating frequency is 2Khz. These frequencies above and below the carrier are called the *sidebands*. You will note that the sidebands convey all the information. You maximize efficiency by concentrating all the transmitted energy in one of the sidebands.

For a transmitter to generate an SSB signal, it uses a Balanced Modulator. You can either generate a *Double Sideband Suppressed Carrier* signal and then filter out the undesired sideband, or you can use two Balanced Modulators and sum the 2 together in a mixer. The HW100 uses the one modulator and a filter method.

A math model for the Double Sideband Balanced modulator depends on a 180 degree phase shift of the signal. It is easy in simple circuitry to invert (phase shift) a signal. When you sum the shifted and unshifted signal, the output is the two sidebands with no carrier.



$$s_1(t) = A_c [1 + k_a m(t)] \cos(2\pi f_c t)$$

$$s_2(t) = A_c [1 - k_a m(t)] \cos(2\pi f_c t)$$

$$s(t) = s_1(t) - s_2(t)$$

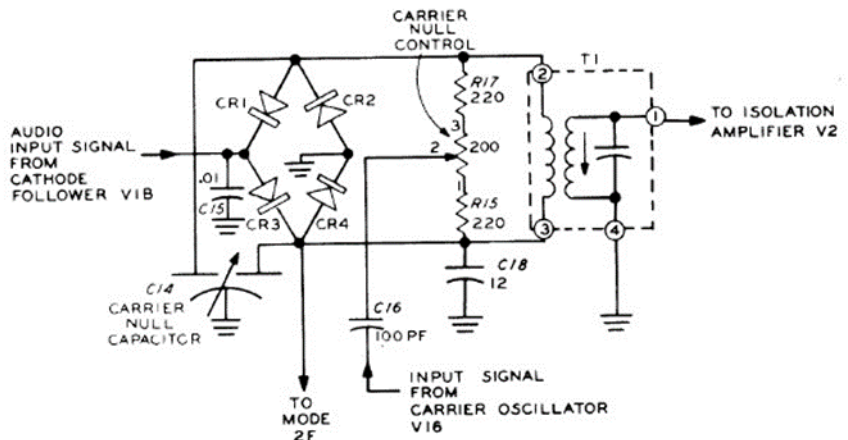
$$s(t) = A_c [1 + k_a m(t)] \cos(2\pi f_c t) - A_c [1 - k_a m(t)] \cos(2\pi f_c t)$$

$$s(t) = A_c \cos(2\pi f_c t) + A_c k_a m(t) \cos(2\pi f_c t) - A_c \cos(2\pi f_c t) + A_c k_a m(t) \cos(2\pi f_c t)$$

$$s(t) = 2A_c k_a m(t) \cos(2\pi f_c t)$$

Math models like the above are used in In-Phase and Quadrature (I/Q) modulation and demodulation schemes in Software Defined Radios (SDR)s where compute power is used instead of analog circuitry.

My 1965 era HW100 SSB transmitter uses a Balanced Modulator built with a transformers and a diode ring. It produces a Double Sideband Suppressed Carrier Output. The Carrier Oscillator frequency is shifted slightly for



>> continued >>

USB or LSB. The output goes through a crystal filter which filters out the unwanted sideband and passes the other.

And, finally, some lab work...

A 2KHz signal generator is connected to the HW100's microphone input. Using a Tiny-SA (Spectrum Analyzer), probed at the input and the output of the crystal filter. Double Sideband, suppressed carrier is at the input to the filter. The selected single sideband (SSB) is at the output of the filter.

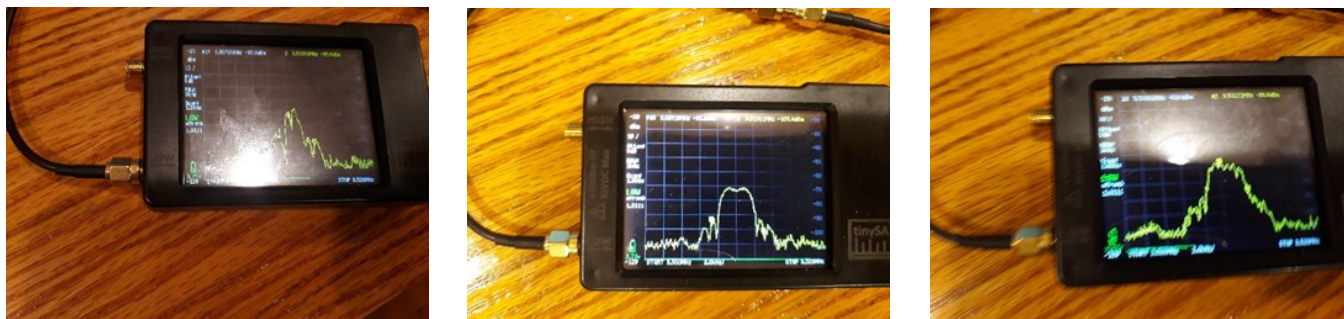


The signal gets wider as you increase the frequency of the audio input signal. The signal disappears entirely when you remove the audio input signal. When you switch from USB to LSB, the frequency of the local oscillator is changed enough so that the crystal filter chops off the other sideband. When in CW mode, there are no sidebands and the CW signal is directly in the middle of the filter's bandpass.

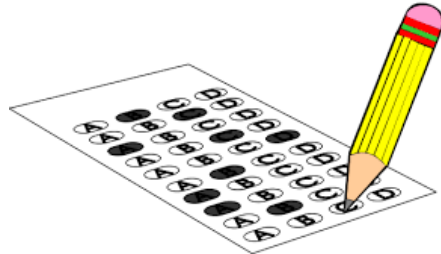
My HW100 only transmits SSB or CW. My modern FT450D does CW, SSB and AM. Below are some pictures of AM, USB and LSB from the 450D transmitting on 3.510Mhz. It's hard to see the bandwidth of the signal in these fuzzy pictures. So, the table below is a good summary:

Mode	Low Freq	High Freq	Bandwidth
AM	3.507	3.513	6 KHz
LSB	3.507	3.510	3 KHz
USB	3.510	3.513	3 KHz

The AM signal is shown with no modulating voice signal, so the sidebands are low amplitude while the carrier is big. The SSB signals disappear if there is no modulating signal. Notice how all the wasted transmit energy that would be expended on the carrier and duplicate sideband is eliminated. Next month – how the receiver's demodulator reinserts the carrier to produce intelligible audio.



Here are some exam questions from the current exam pools. Go ahead and answer them, and then check your answers on page 21. Let's see how you do! We recommend hamstudy.org to study with flashcards and also to take your practice tests. It keeps track of your weak areas for you!



Technician Exam Review -- Question T8A06

Which sideband is normally used for 10 meter HF, VHF, and UHF single-sideband communications?

- A. Upper sideband
- B. Lower sideband
- C. Suppressed sideband
- D. Inverted sideband

General Exam Review -- Question G8A06

Which of the following is characteristic of QPSK31?

- A. It is sideband sensitive
- B. Its encoding provides error correction
- C. Its bandwidth is approximately the same as BPSK31
- D. All of these choices are correct

Extra Exam Review -- Question E8A06

What is the approximate ratio of PEP-to-average power in a typical single-sideband phone signal?

- A. 2.5 to 1
- B. 25 to 1
- C. 1 to 1
- D. 100 to 1

Upcoming Hamfests and Conventions

You can use this info to plan some of your upcoming winter and early spring travel to get away from our cold winter weather. You will find the local events in bold print.

Some conventions and hamfests may have been canceled or postponed due to the Covid pandemic. Check the hamfest event calendar on the ARRL website calendar to be sure it's still on at <http://www.arrl.org/hamfests/search/page:1/model:Event>.

Date(s)	Description	Location
01/23 — 01/29	Quartzfest http://quartzfest.org	Quartzsite, AZ
01/29	26th Annual Albuquerque ARC Winter Tailgate	Albuquerque, NM
02/10 — 02/13	Orlando HamCation , 2022 ARRL National Convention	Orlando, FL
02/18 — 02/19	Yuma Hamfest , ARRL Southwestern Division	Yuma, AZ
02/19	Black Hills ARC Auction & Swapmeet http://w0blk.com	Rapid City, SD
02/20	The Swapfest http://n0ara.org	Brighton, CO
03/05	Elk City Hamfest http://sites.google.com/view/wcoarc/	Sayre, OK
03/05	Irving ARC Hamfest http://irvingarc.org	Irving, TX
03/19	ARRL West TX Section Convention https://hamfest.w5qgg.org/	Midland, TX

If you snowbird in Florida over winter, be sure to check out all the many Florida hamfests in the above ARRL link.

LARC Calendar of Events for 2022

Chuck, K0ITP

I would like LARC to host at least one club event each month. Some are still in planning, but this is what we have planned so far. Open for suggestions on the “tbd” months!

If you would like to host an event, or have ideas for an event you think would be of interest to club members, please contact me at k0itp@w0eno.org. Let's get involved in these events, and come up with ideas for other events that sound fun!

Date	Day	Event	Date	Day	Event
Jan. 29	Sat	Winter Field Day	July	tbd	tbd
Feb.	tbd	Fox Hunt	Aug. 06 or Aug. 13	Sat	Radio in the Park
Mar.	tbd	tbd	Aug. 06 or Aug. 13	Sat	Boulder County Fair Parade
Apr.	tbd	Home Brew “Build & Test”	Sep.	tbd	tbd
Apr.	Tbd	LARCFest?	Oct. 29	Sat	Longmont Halloween Parade
May	tbd	tbd	Nov. 12	Sat	Turkey Trot
Jun. 25	Sat	ARRL Field Day	Dec.	tbd	LARC Christmas Party

Upcoming RMHAM University Classes

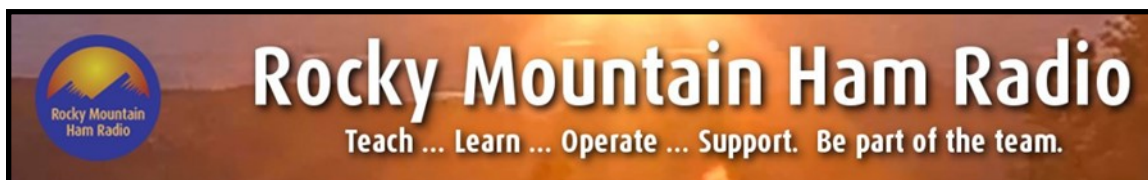
Rocky Mountain Ham (RMHAM) is offering free and very interesting classes for the rest of this class season.

If you are interested in taking one (or more), you can register at:

<https://www.rmham.org/cgi-bin/rmham-u/signup>.



Date & Time	Presenter(s)	Topic
Feb. 12, 8:30 am	Various	NerdFest A bunch of short presentations on esoteric topics in ham radio. Zoom Meeting ID: 836 0184 8546 Passcode: 155428
Mar. 12, 8:30am	John W0VG Willem AC0KQ Gary WB5PJB	Data Transmission via Radio HF, VHF and UHF data communications using packet, pactor, VARA and related methods. How to use WinLink, BPQ and PAT to send and receive messages. Zoom Meeting ID: 864 1974 1417 Passcode: 220340
Apr. 09, 8:30 am	Rob NØRPF	Balloons and things relating to Rob and others from EOSS Edge of Space Sciences will present on balloons, pico-balloons, and other high flying interests. Zoom Meeting ID: 863 4524 9878 Passcode: 327259
May 14, 8:30 am	TBD	Applications of Software Defined Radio Remote receivers and transmitters, direction finding, signal processing and other interesting applications of SDR. Zoom Meeting ID: 863 3471 6368 Passcode: 296183



RMHAM Past Presentation Videos Available

Past presentation and class videos are available if you cannot make it to the classes.

Upcoming RMHAM University classes and Tech Talks are listed at: <https://www.rmham.org/rocky-mountain-ham-university/>. Presentations are free, and classes (not Tech Talks) have the option of in-person attendance.



The FCC regulations in Part 97 section 97.113 titled "Prohibited Transmissions" mentions that "No amateur station shall transmit: ... Music using a phone emission except as specifically provided elsewhere in this section..." (97.113(a)(4))

That "elsewhere" is a bit further down in 97.113(c) which includes "No station shall retransmit programs or signals emanating from any type of radio station other than an amateur station... except incidental music, originating on United States Government frequencies between a manned spacecraft and its associated Earth stations."

The prohibition on transmitting music is there to prevent amateur stations and frequencies from being used as alternatives to the commercial broadcast services, but why the exception for spacecraft?

I attempted to find a reference to this change in the Part 97 rules – the best I could come across was a reference to a change made from "space shuttle" to "spacecraft" (to allow retransmission of other space-based stations, such as the International Space Station). This is most likely due to my lack of familiarity with searching for rule change proposals on the FCC site.

I have heard anecdotally that this change was requested because there were amateur stations that wanted to retransmit audio from the space shuttle, but ran into problems with the prohibition on transmitting music. Apparently NASA plays a "wake up song" in the morning to rouse the astronauts, and this music would wind up being retransmitted by the amateur stations on Earth.

If anyone has any references to this addition, I'd be interested in hearing about them!

Anyway, keep this part of the regulations in mind if you ever have thoughts of starting up your own music radio station!



Answers to The Fifth Degree — What Do YOU Know — Questions from p. 18

Exam Level	Question	Answer
Technician	T8A06	A
General	G8A06	D
Extra	E8A06	A

The most common way to check the tuning of your antenna is by a Standing Wave Ratio (SWR) measurement.

I have noticed for several years there may be some confusion of how to properly obtain this measurement from the modern radios. Some of this confusion is due to not understanding what "**Mode Of Transmission**" means. This can be even more confusing when most of the radios are all-mode units.

Most likely you have LSB, USB, AM, CW, FM and FSK or RTTY. Boy, that is a lot of modes! Which one do you use to check SWR?

Hopefully in future articles, more details will be provided on each mode. However, for now, we just need the basics so you can use the radio effectively.

If your radio has an SWR meter built into it, then this will be the reading preferred. An outboard meter is fine, but the one in the radio is what the radio is going to use. If the SWR in the radio is high, it will reduce your output power (also called "folding back power"). Power reduction can easily be 50 to 90 percent. What is the best way to confirm this?

This is where knowing what mode to use is necessary. USB and LSB modes do not produce RF energy unless you talk or make noise into the microphone. If you key the mic and all is quiet, there is no power out. I have had the humorous experience of operators saying the SWR is 1:1, but they were on USB or LSB and all was quiet. The meter reads nothing because there is no power out.

Many realize this. Their solution is to moan and groan or whistle into the mic. This will put power out, but it jumps around so much it is hard to get an accurate reading.

Some have put the radio into the CW mode. They key the mic and are happy to see a 1:1 SWR. However, they have not realized that their radio does not put power out on CW from the mic switch. A Morse code key is needed for some radios.

Now there are the AM, FM and FSK modes.

AM is OK, but it does not put full power out. Initially you want to check SWR at low power anyway. The mic button will activate the radio. When you have your SWR acceptable, you will want to confirm that the radio will put the full power out. You cannot do this on AM.

What about FM or FSK? Some have been hesitant to switch to these modes because they are not in the portion of the band where it is allowed.

On FM, if you do not make any noise into the mic, it only produces a carrier. This is legal. On FSK or RTTY, it only produces a carrier. These are the easiest modes to use to check SWR.

Start at low power (5 watts). Using the internal SWR meter, check the SWR and make necessary adjustments to your antenna. Once acceptable, bring up the power. Use your "Relative Power Meter" in the radio. If you can get it to go full scale, you are ready to operate.

Your questions are welcome. I will try and answer them in future articles. Email me at wd0eja@isotronantennas.com.

73, Ralph, WD0EJA, Bilal Company, Isotron Antennas

Vance Brand Municipal Airport, Longmont, Colorado



I woke up on Sunday morning, November 28th, to an email from our *Contact Us* form on our LARC website (w0eno.org). It was from the Manager at the airport. He was requesting the club's help to locate a stuck transmitter near the airport. This transmitter was stuck on 122.975 which is UNICOM, but it also controls the lighting system for the runways. They were having to manually control the lights the night before. That is a lot of work for an uncontrolled airport.

Once I saw the email I jumped into action and sent an email to all club members looking for help. Let me say you all heard the call, and I was asking questions and seeing how you could help. Now I know not all of us have radios that can do the air frequencies, but I knew there had to be someone out there, and there was!

I was working on putting a little team together to go hunt for this annoying transmission, but before we could get onsite, the club had stepped up and already found the transmitter.

Shane Koch (KEØRVY) answered the call and found the transmitter. I received an email from Shane and he was asking about fox hunting, since he had never done it. As an amateur pilot, he said he was equipped to help find it but was not sure how. With some suggestions, like using an antenna — even a rubber ducky (using your body as an attenuator), he was on his way.

Within a few hours, Shane was onsite at the airport where the signal was strong. Walking around and eventually removing his antenna, he was able to locate the hanger with the stuck transmitter. Shane was able to find the owner, and it appears that the transmitter was really old and had some mic issues on the radio. Once they removed the mic, it resolved the errant transmissions.

Great Job, Shane!

This is part of what our club does — giving back to help the community where we live.

According to the airport manger, Shane saved the airport several man hours of trying to track this down.

Our club is scheduling some more planned fox hunts in the spring and summer to tune up our hunting skills for situations that occur when we are called upon to help our community.

If you're looking for an easy New Year's Resolution for 2022, why not commit to taking a turn running one of our two weekly Club nets for an evening?

Do you like being in control (ok, bossing people around!)? The Net Controller Station (NCS) is in charge of the net, and participants do not speak unless called upon by the NCS.

Are you mic shy and find yourself wondering what to say on the radio? We've got that covered – the Club web site has pages for each net, and at the bottom of those pages is the "script" that Net Control follows when directing the net. If you can read, you can do it!

Maybe you're worried about being asked a question for which you don't know the answer? Not to worry – there are plenty of people on the net itself to whom you can direct the questions. Worst case scenario – just tell 'em you don't know but will find out, and then get in contact with either the Board or send an email to elmer@w0eno.org for answers.



All you need to run one of the nets is a radio capable of reaching the repeater, a way of recording call signs and names of the amateurs checking into the net (pen & paper, computer, etc.), knowledge of the phonetic alphabet (or a cheat sheet!), and the motivation to give it a shot!

To practice, write down the call signs and names during check ins for one of our nets and see how easy it is.

I've personally served as Net Control for a number of Tuesday Hamlet Nets and a couple of Thursday Night nets. To be honest, there are really only two stressful parts – the first is pushing the mic button and starting the net, and the second is waiting for that first check in.

When I get nervous before the net's start time, I just practice saying the first sentence or two from the script out loud, so it feels comfortable when I press the PTT. As far as check-ins, I've never heard anyone call a net and not have anyone respond (even though sometimes the seconds before someone replies to your call can feel like minutes)!

Running one of the Club nets will give you some great experience handling a net, as well as understanding what an NCS does, which will make you a better net participant in the future!

If you have any questions or when you want to step up and run a net, just get in touch with the current NCS (Chuck Poch, K0ITP, for Tuesday, or Jerry Schmidt, N0OUW, for Thursday), and they'll be more than happy to get you started and ready! More Information:

Tuesday Hamlet Net: <https://w0eno.org/tuesday-hamlet-net/>

Thursday Night Net: <https://w0eno.org/2016/11/06/larc-thursday-night-net/>



reDiscover Radio at HamCation



ARRL, the national association for Amateur Radio® and the Orlando Amateur Radio Club (OARC) will hold the 2022 ARRL National Convention and Orlando HamCation® on February 10 – 13, 2022 in Orlando, Florida. The convention theme, “reDiscover Radio,” is a rallying call for radio amateurs committed to developing knowledge and skills in radio technology and radio communication.

The convention will kick off on Thursday, February, 10 with a series of day-long ARRL Training Tracks and a National Convention luncheon at the DoubleTree by Hilton Hotel Orlando at SeaWorld. Registration is open now at www.arrl.org/expo. [DX Engineering](#) is the Official Sponsor of the 2022 ARRL National Convention Program.

HamCation will host the rest of the convention on Friday, Saturday, and Sunday, February 11-13, 2022 at the Central Florida Fairgrounds and Expo Park in Orlando — an 87-acre lakefront fairgrounds. OARC President John Knott (N4JTK) noted that holding the convention in 2022 will mark the 75th anniversary of HamCation — one of the largest annually-held gatherings of radio amateurs in the US. Over all three days in 2020, 24,200 people attended. “We want our diamond anniversary show to be an exciting, 5-star event,” said Knott. “We look forward to seeing you in Orlando in February.”

HamCation can be followed on [Facebook](#), [Twitter](#), and [Instagram](#).

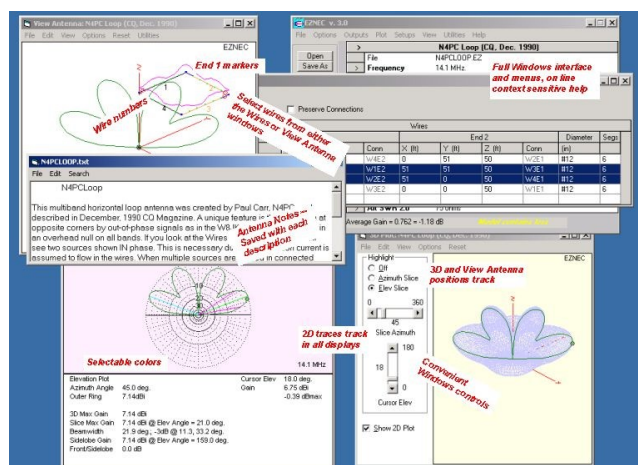
Further details will be shared via these official websites:

- 2022 ARRL National Convention www.arrl.org/expo
- Orlando HamCation www.hamcation.com

from ARRL.com



Free Antenna Design & Modeling Application



As of January 1, 2022, the EasyNEC antenna modeling application (by Roy Lewallen, W7EL), is now free and available for download!

EasyNEC is an easy to use and powerful program that can model and analyze different types of antennas. It plots the azimuth, elevation patterns, and many other data points for antenna design and analysis.

You can download this free software at

<https://www.eznec.com/index.shtml>.

New Amateur Satellites

Bryan, AF0W

105 satellites were launched by SpaceX on their January 13th Falcon-9 Transporter-3 launch, 10 of which carry amateur radio payloads.

Those satellites are AMSAT's EASAT-2 and HADES along with 8 satellites from the Herzliya Science Center in Israel (Teval-1 through Teval-8).



The AMSAT satellite supports FM voice communications and data relay (such as AX.25 and APRS) and also broadcast beacons in FM voice and CW. The Hades satellite includes a miniature camera module that sends captured images via SSTV.



The Teval satellites supports FM voice as well as BPSK beacon transmissions.

More Information:

- <https://www.youtube.com/watch?v=ISbL7fvuDPo>
- <https://amsat-uk.org/2022/01/07/launch-of-easat-2-and-hades-satellites/>
- <https://amsat-uk.org/2022/01/12/teval-satellites/>
- <https://www.space.com/spacex-transporter-3-launch-falcon-9>
- [EASAT-2 and HADES Transmissions description - AMSAT EA](#)

LARC Logo Apparel — New Reduced Prices!

These are great clothes to wear for all our club-related activities, and to show your pride for our club at other ham events and around town! They also make great gifts for your favorite hams!

Order your items today at <https://forms.gle/AgZQSMhrRtR1tLEG8>.

						
Short-sleeved Shirt \$32	Long-sleeved Shirt \$40	Fleece Jacket \$43	Soft-shell Jacket \$55	Cap \$16	Patches SM \$4	LG \$6

Are Your LARC Dues Current?

Did you know that your dues and/or annual renewals can be paid online at the club website (w0eno.org) using PayPal? You don't have to have a PayPal account; you can pay with a credit card (Visa, MC, Discover, AmEx), or select 'bill me later.' You can also join or renew by mailing a check to the club (LARC, P.O. Box 86, Longmont, CO, 80502), or by giving payment to Steve Shearer (K0STE) at a club meeting when we start having them in person again. *If you aren't current on your dues, you are moved to a different mailing list and may not get club info, emails & this Splatter newsletter. Get them paid up, send email, and you're back on list!*

Yearly dues are only \$20 per year for an individual or for a family at the same address. You can find membership information by clicking on the Membership link on our club web page. Contact Steve at membership@w0eno.org if you need to know your current dues status.

Calling All Business Owners, Restaurants, Services, and Retail Shops!

Advertise with LARC in the Splatter!

The Splatter newsletter is published once a month. You can advertise your business with us at very reasonable prices!

Your ad will run for a one-year period (12 months) from when your first ad runs.

Get more business by offering a special promotion code for our readers, or by offering a deal on certain products — or just advertise your business!

Donate to LARC for Monthly Drawings

When you donate products or gift cards to our club for the drawings at our monthly meetings, we will run a business-card sized ad for you or for your business in our next monthly Splatter for free!

You also will be mentioned in the next month's Splatter newsletter and in the final issue of the year as a donor to our Club for the year, as well as on our w0eno.org web site. You will also get a donation receipt from our Treasurer.

If you can make a donation, please send your information to Steve Shearer at k0ste@w0eno.org.

PROMOTE YOUR BUSINESS WITH SPLATTER ADVERTISING

Ad size and cost – *per year.*

Business Card	2" h x 3.5" w	\$ 100
Quarter Page	4.2" h x 3.25" w	\$ 200
Half Page	4.25" h x 7" w	\$ 300
Full Page	8.5" h x 7" w	\$ 500

The above prices are per year – not per month. (12 months of ads)

Your advertisement will be seen by amateurs throughout Colorado, the Rocky Mountain States, and even the rest of the United States. Splatter circulation is approx. 1,500.

Send Ad and/or Contact us for more details at:

Splatter@w0eno.org

Checks are to be Made out to Longmont Amateur Radio Club. LARC is a 501(c)(3) corporation.

Support Your Club!

Usually our annual April LARCFest (hamfest) is our biggest fundraiser each year for LARC. In 2020 and 2021, however, it have been cancelled due to the Covid-19 pandemic. We are trying to raise funds for the club in other ways to be able to support more activities and events for our members, support our community, and also to keep our repeaters up-to-date and add new technology.

1. Get a King Soopers or City Market card and link it to our club. Every time you shop, LARC earns a small portion donated by the grocery store! See the directions at: <https://www.kingsoopers.com/i/community/community-rewards>. Select Longmont Amateur Radio Club as your charity (organization # VW736).
2. Do all your Amazon Ordering on Amazon Smile. Doesn't cost you a cent extra! For every order you submit, Amazon sends LARC a small percentage of your sales amount. Go to https://smile.amazon.com/gp/chpf/homepage/ref=smi_chpf_redirect?ie=UTF8&ein=84-1056239&ref=smi_ext_ch_84-1056239_cl
3. Donate directly to our club on our LARC website at https://www.paypal.com/donate/?hosted_button_id=3Y4UZGXS9W. You can use PayPal or a debit or credit card, and you will be sent a receipt from our club treasurer.
4. Volunteer to participate in or to lead ham-related activities for the club members. Your specific skills and knowledge will be a big help to enrich our club! You'll have a lot of fun, too!
5. Advertise your biz or skills with the Splatter. See page 27 for more details. We want your business!
6. Purchase or gift our LARC Logo Wear, and LARC receives a small percentage of your sale! So far, we have a cap and shirt — more items coming soon! These are a great fundraiser for our club! Be proud to wear to ham radio events everywhere! These are purchased, embroidered, and patched by a local business owner who is also a LARC member! These make great Holiday Gifts



Click here to shop at AmazonSmile and Amazon will donate to LARC

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- Short-sleeve Shirts (\$32) embroidered with your call sign, name if desired, and our LARC Logo patch.
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- Caps (\$16) emblazoned with our LARC Logo patch on the front with your call sign embroidered on the back.
- Individual Patches \$4 (2.5") and \$6 (3.5")
- See the pictures of these new items on page 26 of this Splatter.
- To order any of our LARC Logo Items, go to <https://forms.gle/AgZQSMhrRtR1tLEG8>

Editor's Note

I welcome and thank you for any news items you submit for publication in the LARC Splatter.

Please note that all articles submitted may be edited for spelling, grammar, and length. Files in the form of DOC, DOCX, RTF, PDF, and TXT are all accepted.

If you would like a picture included, please send them in separate files, in JPG or PNG format. If you would like a caption under the picture, please specify what you would like your caption to say.

Longmont Amateur Radio Club

LARC is organized for educational and scientific purposes and to provide public communication services to the local community and adjacent areas through the operation of Amateur Radio. The Club holds regular meetings for the business of the Club, for the presentation of papers, amateur radio topics and their discussion.

Our January Meeting will be on Wednesday, 01/19, at 6:30 pm via Zoom. Click on:

<https://us06web.zoom.us/j/81928642821?pwd=WXNSTjdEdHd5emZaaDRaaENQdnFWZz09>

See p. 2 for more info.

Longmont Amateur Radio Club 2021 Leadership Team & Committee Chairs

Position	Name	Call Sign
President	Charles Poch	KØITP
Vice President	Michael Ritchie	WØKKI
Secretary	Pat Engstrom	W1PGE
Treasurer	Don Lewis	KEØEE
Technical Committee	Mark Skelton	N7CTM
Membership Committee	Steve Shearer	KØSTE
Past President	Jerry Schmidt	NØOUW
Publicity Committee	Steve Haverstick	KFØAGY
Planning Committee	Doug Altman	KEØSI
Repeater Trustee	Bryan Gonderinger	AFØW
LARCFest Committee	Dick Paige	KEØVT
Special Events Coordinator	Mark Mollenauer	KDØGOC
License Exam Coordinator (ARRL)	Aaron Rees	AJ7R
Education Coordinator/Instructor	Kat Gonderinger	WØUM
Education Coordinator/Instructor	Bryan Gonderinger	AFØW
Splatter Newsletter Editor	Kat Gonderinger	WØUM

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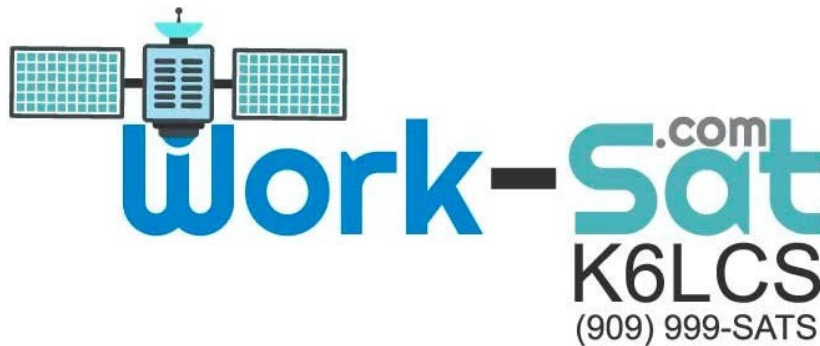
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The Amateur's Code

The amateur's Code is the creed by which all ham radio operators should aspire to live by. Written in 1928 by Paul M. Segal, then general counsel for the ARRL. You can still find the code published to this day in many ARRL books and publications.

The Amateur's Code

The Radio Amateur is:

Considerate... Never knowingly operating in such a way as to lessen the pleasure of others.

Loyal... Offering loyalty, encouragement and support to other amateurs, local clubs, and the IARU Radio Society in their country (ARRL), through which Amateur Radio is represented nationally and internationally.

Progressive... With knowledge abreast of science, a well built and efficient station, and operating practice beyond reproach.

Friendly... With slow and patient operating when requested, offers friendly advice and counsel to beginners, kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

Balanced... Radio is a hobby, never interfering with duties owed to family, job, school or community.

Patriotic... With station and skill always ready for service to country and community.

- adapted from the original Amateur's Code, written by Paul M. Segal, W9EEA (1928)



January Puzzle

WINTER

WORD SCRAMBLE

WEESART _____

MBERECED _____

TRFSO _____

EPRILEACF _____

WSLOKAFEN _____

ZRLIDBAZ _____

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Longmont Amateur Radio Club

P.O. Box 86

Longmont, CO 80502-0086

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SIGNATURE: _____ DATE: _____

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THE CHECKED MEETING TOPICS ARE OF INTEREST TO ME

Training Class for [] Technician [] General [] Extra [] Volunteer Examiner

Band: [] HF [] VHF [] 222 [] UHF [] 900MHz [] Other _____

Mode: [] CW [] SSB [] AM [] FM [] ATV [] Other _____

Digital: [] SSTV [] PSK31 [] MFSK [] PACKET [] FT8 [] APRS [] Other _____

Electronics: [] Components [] Circuit Analysis [] Amplifiers [] Other _____

Other Topics: [] Antennas [] Propagation [] Satellites [] Kit Building [] Fox Hunts [] Soldering

[] DSP [] DX [] ARES [] Contests [] QRP [] HamFests [] Emergency Preparedness

[] Community Service Events [] Other _____

[] Other _____ [] Other _____



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International/Canada – no print magazine	\$49	\$95	\$140	Digital magazines
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