



Our December General Meeting was held on Wednesday, December 15th, via Zoom, at 6:30 pm.

Chuch Poch (K0ITP), our club President, will go over some of the best features of our new web site at this meeting.

After that, we had a holiday celebration and social event. Be sure to come!

For more meeting info, please see page 2!



December Meeting will be presented again via Zoom!

Wed, Dec. 15th, at 6:30 pm. Go to:

<https://us06web.zoom.us/j/81928642821?pwd=WxNStjdEdHd5emZaaDRaaENQdnFWZz09>

See p. 2 for more info.



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December General Membership Meeting

Our General Meeting was on Wednesday, December 15th, at 6:30 pm.

Chuck Poch, K0ITP, our club President, went over some of our web site's new features, and then we had a holiday social event for the rest of the meeting.

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 December 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

Choke / filter choke

An Inductor that blocks higher-frequency alternating current in a circuit.

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

<http://www.hamcall.net/>

A useful selection of amateur radio products, services, and other information.

“As we look to the new year, hold onto what is good. Let go of what is bad. It really is that simple.” - Mandy Hale

Happy holidays to you and your families! Let there be love, peace, and joy this month and all the months to come.

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 are in every town. Recently, Covid cases are starting to decline a little, but with another variant out, the future is still unknown. Mask requirements still here for indoor activities in many counties. So, with that said, 2022 is still a little unknown.

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!

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 are currently looking for presenters for our 2022 General Meetings.

I hope 2022 will be a year to remember as good and not bad. As your Club President, I am looking for new ideas to help keep our club active and fun! If you have an idea, please let me know! I have a few, and they will be announced soon.

I always mention our LARC appreciation award I was doing for the club. If you know someone in the club that deserves an extra “Thank you” or “Above and Beyond, please let me know! I’m looking for recipients for our 2022 awards and recognition. Every month would be great!!

Congratulations to the 2021 Above and Beyond recipients so far this 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.
- 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 (planning has started — it’s in the spring!) 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 **December 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/62421339>

What Gifts Would You Like?

- Radio - HF
- Radio - VHF/UHF
- Radio - SDR
- Antenna - Vertical
- Antenna - Dipole
- Antenna - Mobile
- Antenna - Microwave
- Antenna - Portable
- POTA Gear
- SOTA Gear
- Arduino
- Raspberry Pi
- NanoVNA
- CW Key
- CW Keyer
- Ham Radio Book(s)
- Soldering Gear
- Custom Callsign Gear
- Custom Callsign Apparel
- Solar power for Radios
- Batteries for Emergency Operations
- Other(s) - put in comments
- New QSL Cards

Vote View

pollcode.com free polls

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!

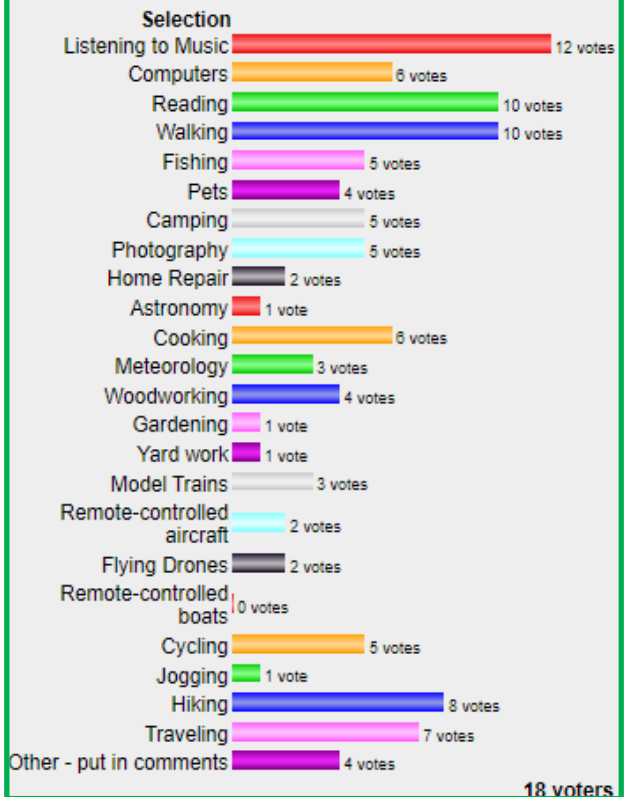
Nov. Poll Results — Thanks for voting!



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



Check all non-ham activities you enjoy:



TAKE OUR DECEMBER POLL!

Either click on the poll on the left, or go to:

<https://vote.pollcode.com/62421339>

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
12/18	12/18	RAC Winter Contest https://www.rac.ca/wp-content/uploads/2021/10/CanadaWinterContestRules2021_English.pdf
12/19	12/19	ARRL Rookie Roundup CW http://www.arrl.org/rookie-roundup
12/26	12/31	American Revolution—Battle of Trenton https://www.w2zq.com
12/30	12/30	YOTA Contest https://www.ham-yota.com/contest/
01/01	01/01	AGB New Year Snowball Contest http://www.qsl.net/eu1eu/agb_nysb.htm
01/01	01/01	ARRL Kids Day http://www.arrl.org/kids-day
01/01	01/09	American Revolution—Battle of Princeton http://www.w2zq.com
01/02	01/31	16th Annual Straight Key Month https://www.skccgroup.com/k3y
01/08	01/08	YB DX Contest http://ybdxcontest.com
01/08	01/09	ARRL RTTY Roundup http://www.arrl.org/rtty-roundup
01/15	01/16	North American QSO Party, CW http://www.ncjweb.com/NAQP-Rules.pdf
01/19	01/24	80th Anniv. Of he 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	02/06	Vermont QSO Party http://www.ranv.org/vtqso.html
02/05	02/06	Mexico RTTY International Contest http://www.rtty.fmre.mx/
02/055	02/06	British Columbia QSO Party http://www.orcadxcc.org/bcqp_rules.html

- 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.K0ITP).

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:

- Doug Altman, KEØSI
- Ralph Bilal, WDØEJA
- Bryan Gonderinger, AFØW
- Ed Mohrman, WA7EM
- Chuck Poch, KØITP
- Scott Pyles, WX1J
- 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,W0UM,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.

VE Exam Session Results

Our LARC PVET VE Team held an Exam Session on Sunday, November 21st, led by Kat (W0UM) and Bryan (AF0W) Gonderinger. Also assisting with this Exam Session were David Casem (AD0UF), Lynn Mears (K0CLM), Chuck Poch (K0ITP), Michael Ritchie (W0KKI), Jamieson Rust (KF0ABA), and Mike Stember (AE0MS). Thank you to our volunteer examiners for your service! We couldn't have done it without you!

At this session, 7 candidates were tested, which resulted in 2 new Generals who passed Technician also at this session, 1 new reinstated General, and 1 new Extra. There were a total of 9 passed exams in all. Congratulations to everyone who passed their exams!



License	#
Technician	0
General	6
Extra	1
Total	7

NEXT Exam Session on SUNDAY, January 16th @ 9 am

Our next VE Exam will be with the LARC Patriot VE Team led by Kat (W0UM) and Bryan (AF0W) on Sunday, January 16th, at the Terry Street Professional Building at 350 Terry St., Longmont, 80501, *upstairs in the Onyx Room*. This is a free exam session, which may be taken in-person online on the candidate's personal laptop or tablet.



Please pre-register at <https://hamstudy.org/sessions/w0pct>. Walk-ins are also allowed, and will be seated as seats become available.

Upcoming LARC VE Exam Schedule

Date	Day	Time	Exam Session Info	Exam Options
Jan. 16	Sun	9:00 am	LARC/PVET VE Team	In person on laptop or tablet, or on paper
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

Ham Enthusiast Breakfasts Every Saturday Morning

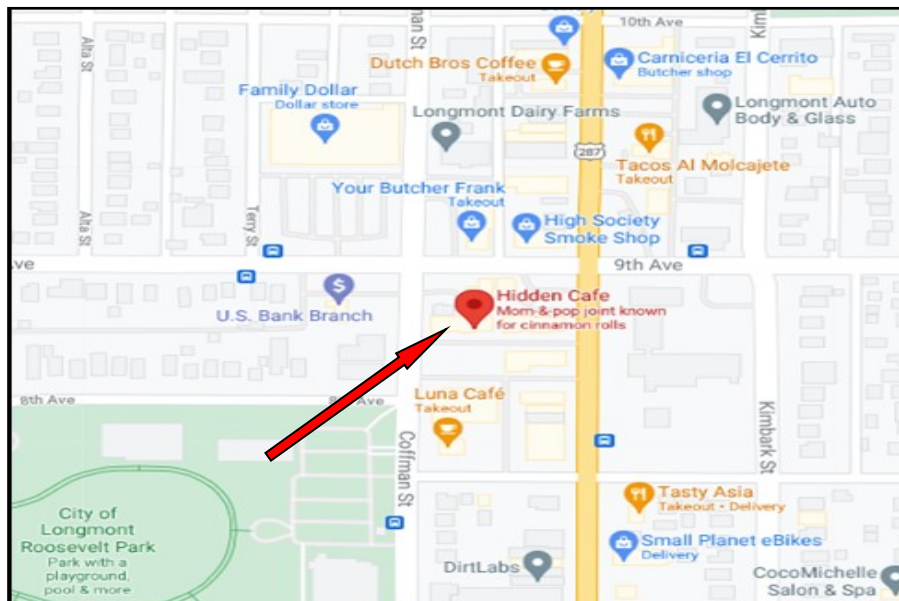
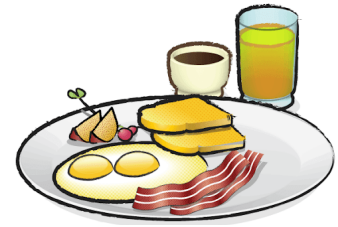
Want some social time with other ham radio operators in a small group? Join us for breakfast!

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.



Field Day Results

Doug, KE0SI

You can find LARC's Field Day Results from the 2021 ARRL June Field Day Event in the December QST on page 68, right-hand column, half-way down the page. Our scores were better than many, less than many.

The following link has more information for LARC, and a few other Longmont hams. You'll find LARC'S listing on line 1924 in the spreadsheet.

<http://www.arrl.org/database-downloads>



We had three new club members join us in November. When you meet them or hear them on the air, please say hello!

LARC Newest Members — November		
Call	First Name	Last Name
KN6CFI	John	Bennett
KEØWIB	Casey	Coomes
Not Yet	John	Nelson

Following the November meeting, a random winner of a door prize was selected. John (KN6FI), our newest member, was the winner who selected the *ARRL Best of the Doctor is In* book as his prize. This book was donated by another member of the LARC.

We hope you continue to attend the General meetings for the presentations, comradery, and for questions/answers that come up before, during, and after the meetings. Plans are being made to have some additional well-known ham-involved people as presenters for the upcoming club meetings for 2022, and to start in-person and Zoom hybrid meetings. Watch for an email and check our website for updates.

Did you miss out on the General meeting? You can access the Meeting Presentations link on our web site at <https://w0eno.org/meeting-presentations/> to watch the recordings of this and our previous meetings.

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 General Meeting on December 15th. Any questions or issues, feel free to contact me.

73,

Steve Shearer (KØSTE)
Membership Chairman

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



100th Anniversary Of the 1st Transatlantic Radio Test

The 100th Anniversary of the first transatlantic radio test was last weekend, and the Radio Club of America (RCA) re-enacted the transmission.

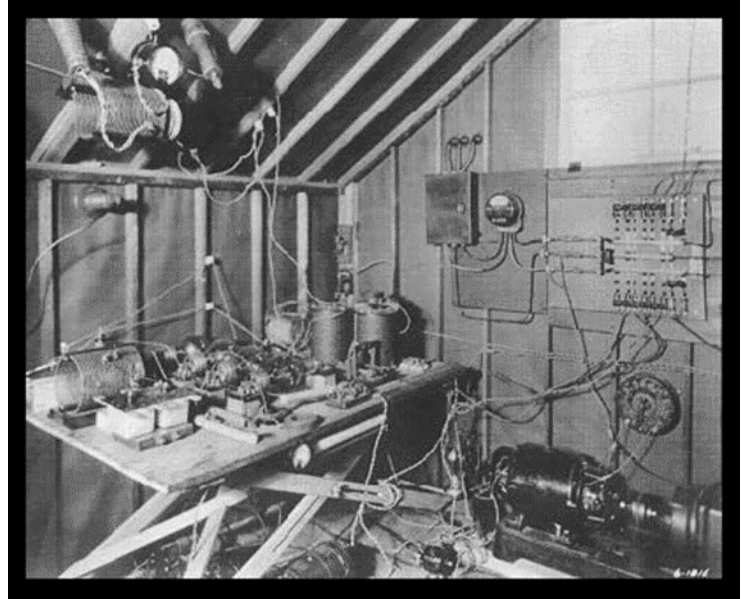
You can watch a slide show that includes the information, details, and history of the first transatlantic radio test at:

https://www.youtube.com/watch?v=zt_M5VVvSR1Q

Watch the YouTube video of the Transatlantic Test Re-enactment at <https://www.youtube.com/watch?v=PDU88Hb1F1s>.

Read more about this at:

- <https://forums.qrz.com/index.php?threads/100th-anniversary-of-the-success-of-the-transatlantic-tests.791389/>
- <https://www.radioclubofamerica.org/transatlantic-test-centennial>



New Release of DigiPi Radio Hot Spot

A new release of DigiPi has been issued. The DigiPi is a Radio Data Hot Spot that will boot on a Raspberry Pi Zero, Pi3, or Pi4. It works with JS8Call, FT8, FLDigi, SSTV, APRS, TNC, AX.25, BBS, Digi, and Packet radio. You can watch a video about it at <https://www.youtube.com/watch?v=xIdspAJdWR0>.

You can read more about this project and download Version 1.6 at <http://craiger.org/digipi/>. Information about the hardware build and parts information are available on this website as well.



A Big Thank You to our Volunteers!

The Longmont Parade of Lights was held on Saturday, December 11th. We had nine volunteers help with this community event. THANK YOU for volunteering your time and effort with us to help monitor the parade! Our volunteers included:

- Steve Andrews, KM6SJA
- Doug Altman, KE0SI
- Mark LaBlanc, N7PUR
- Steve Robbiano, N0FTI
- Amrita George, KF7YCC
- Chip Blach, KF4WBK
- Harlan Olson, W0HIO
- Dan Fitch, KF0BIA
- Mike Stember, AE0MS



Photos from Longmont Times-Call newspaper.

SatMatch Satellite Prediction Tool

Bryan, AF0W

One area of amateur radio that is “out of this world” is communicating via satellite. Most satellites function in the VHF and UHF ranges, and can be utilized by all license levels. The ISS even has a cross band FM repeater installed on it.

One of the constraints of communicating via satellite is that both stations must be visible to the satellite (in its footprint) at the same time.

Most satellite pass prediction web sites and applications are geared toward determining when a single station will be within coverage of a satellite, which makes it difficult to set a time to make a contact with a specific station.

Justin McAllister, K5EM, has put together a web site called SatMatch (<https://www.satmatch.com/>) that allows you to enter two locations along with a list of satellites which then shows predictions as to when both stations are with sight of the satellites for a contact.



A CubeSat is a miniature satellite which orbits the Earth in Low Earth Orbit (LEO), typically at an altitude around 220 to 435 miles. Many of these CubeSats contain transmitters which broadcast telemetry back to Earth, and some even contain amateur radio cross-band repeaters.

A new satellite named LightCube, constructed at the Arizona State University, will include a novel capability – a xenon flash which can be commanded by an amateur radio station, and which will be visible from the ground at night!

The satellite is scheduled to be delivered to NASA for launch no earlier than September 2022, and will orbit for approximately two years before reentering the atmosphere and burning up. Follow the project at: <https://lightcube.space/>.

More information:

- <https://news.asu.edu/20210520-asu-student-built-spacecraft-interact-public>
- <https://room.eu.com/news/a-cubesat-that-produces-visible-light-on-the-ground-to-be-launched-in-nasa-initiative>
- <https://www.nasa.gov/feature/nasa-announces-12th-round-of-candidates-for-cubesat-space-missions> (includes 3 CubeSats from CU Boulder!)



The Receiver in my 1965 Era HW16 Transceiver

Ed, WA7EM

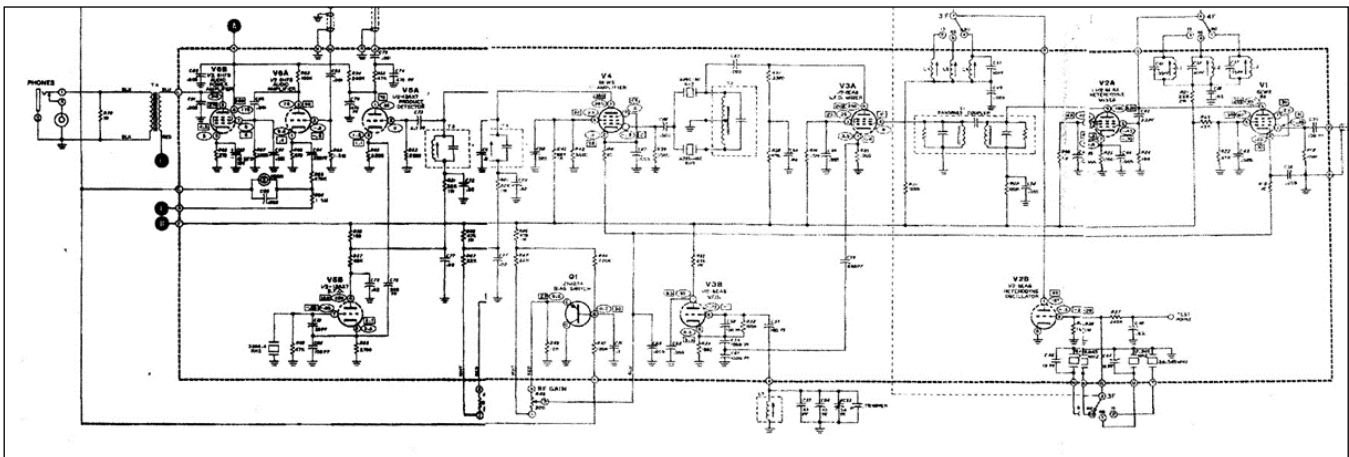
What We Can Learn from the Receiver in my 1965 Era HW16 Transceiver

In prior articles, we walked through the transmitter stages of my HW16 HF vacuum tube transceiver, seeing what radio principals are easy to see in an old, simple CW transmitter. Now, lets talk about the receiver.

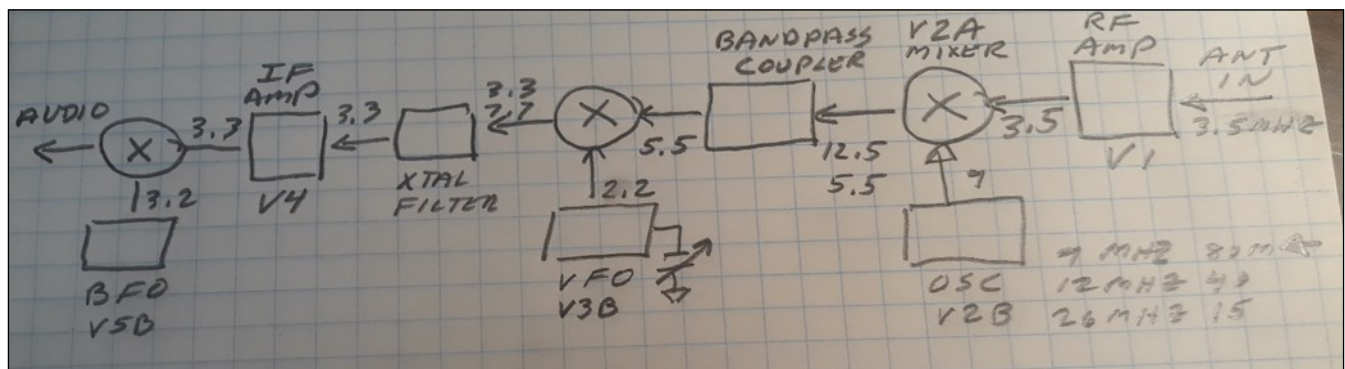
The “Superheterodyne” (superhet) receiver architecture was invented by E.H. Armstrong in 1919. Armstrong also invented Frequency Modulation (FM). Both are still used today, although Software Defined Radio (SDR) is gaining market share. SDRs use classic math/trig to separate 2 sine waves of different frequencies. The basic motivation for the Superhet was that in a multi-band receiver, if you were going to spend a lot of circuitry on effective narrow band filters, you only want to spend it once and have it work for all bands. So, you down-shift all signals from all bands to a consistent *Intermediate Frequency (IF)* and do all your fancy stuff there.

The science of down-shifting (heterodyning) is that when you apply 2 different frequencies to a “mixer”, the output contains two frequencies – the sum and the difference of the 2 input frequencies. The mixer is typically followed by a filter that filters out one frequency (typically the sum), while passing the other (typically the difference) through to the next stage.

The receiver section of my HW16 is below. The signal flow is from right to left – antenna to speaker.



Using 80 meters as an example, the signal flow and frequencies are:



>> continued >>

The V1 broadband RF amplifier amplifies all signals at the antenna. The V2B oscillator frequency is set by the operator setting band switch. The V2A mixer will always produce a 250 KHz wide signal at 5.2-5.5 Mhz and 12.2-12.5 Mhz (the sum and difference of the 2 inputs). The coupler passes the 5.5 and eliminates the 12.5. The VFO frequency is around 2 Mhz and is set by the user adjusting the main tuning dial. The VFO signal is mixed with the output of bandpass coupler presenting 250 KHz wide signals around 3.3 and 7.7 Mhz. The narrow crystal filter eliminates all of the 7.7 Mhz signal and most of the 3.3 Mhz signal, passing only the narrow (500 Hz) signal at the IF frequency (3396 KHz). Hopefully that is just the one signal the operator wants to hear (assuming no other station is within 500 Hz of the desired signal).

I tried tracing some of this with my oscilloscope. I could see the oscillators. However, the mixer signals are pushing the upper frequency and low voltage limit of my scope. Also, mixer output signals contain multiple frequencies, so triggering the scope is hard. Since I couldn't do analysis in the time-domain on a 'scope I switched to my tinySA (Tiny Spectrum Analyzer) where I could look at things in the frequency domain.

Using the tinySA, you don't have to actually touch a point in the circuitry. Every stage of a radio is a tiny transmitter and the tinySA is a very sensitive broadband sweeping receiver. So, all I need do is hold a simple probe near the circuit in question. In this picture, I hold my probe (stripped end of scrap of coax) against V1 to view the RF amplifier output.

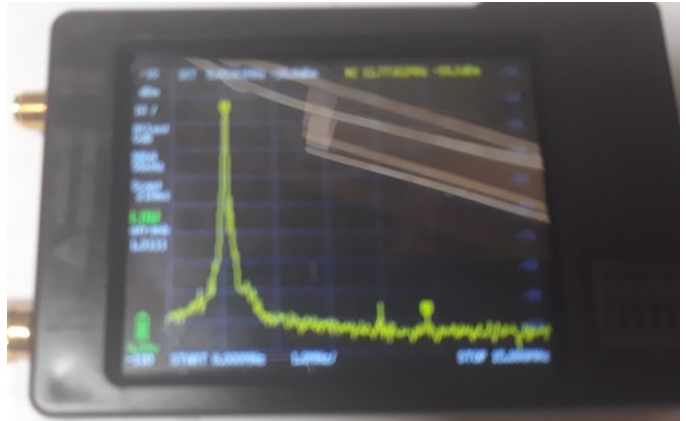
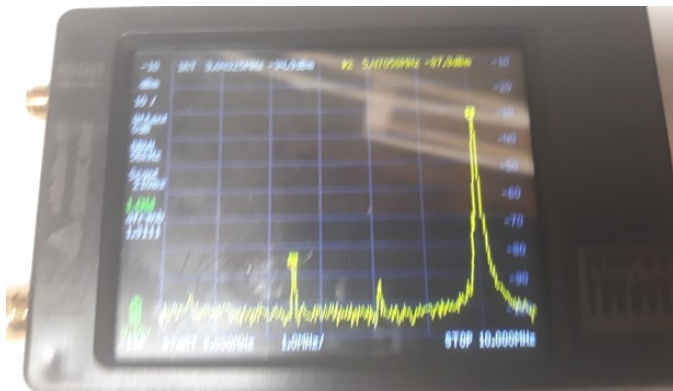


The downside is that you will also see signals from other stuff nearby and that can confuse you as to what is coming from where. Also, the low cost tinySA has a limited number of points it can plot in it's sweep of a frequency range. So, you can't just set a wide range and expect to see everything in one display. The signal you expect to see may be skipped over because of the way

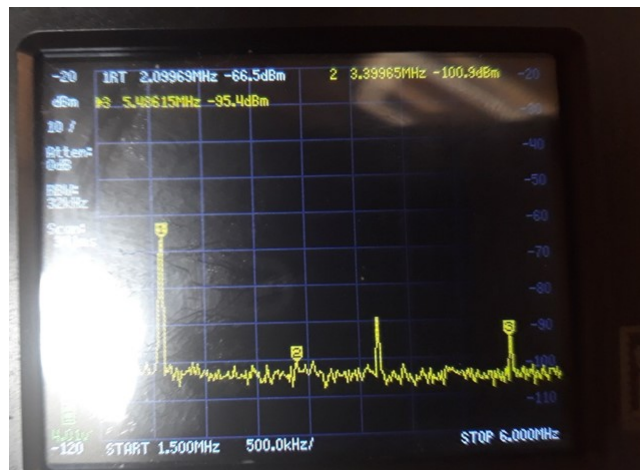
the tinySA spreads its display points and jumped right over the exact frequency where you expected to see a signal. You have to set narrow sweeps and then piece the whole picture together mentally. A big classic \$10K SA would do better (and would have built in ability to save jpeg files instead of requiring shaky cell phone photos).

Below are 2 photos of the 9Mhz oscillator mixed with the 3.5 Mhz input signal from the rf amplifier. They show the 5.2Mhz and 12.2 Mhz sum and difference. Two pictures because the NanoSA cant sweep that full range and show everything in one setting

>> continued >>

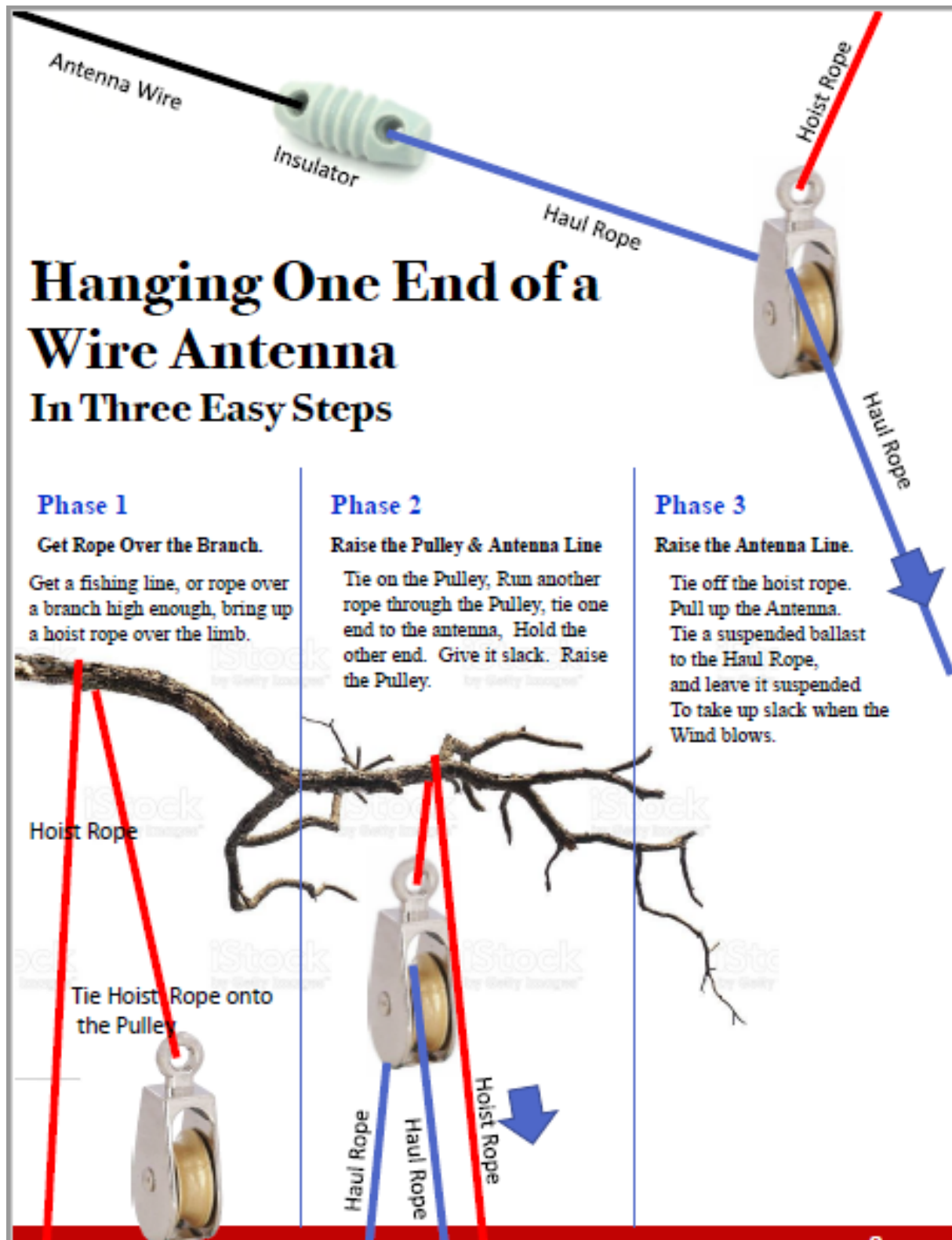


Below is a picture of the 2 Mhz VFO, 5 Mhz Output of 1st Mixer and 3.396 Mhz Output to the IF amplifier.



It would take some considerable experience to use this technique to diagnose a non-functioning radio and determine the failed components. It takes all I have to understand a correctly working radio. But, with some hints from these techniques, one could start “shot-gunning” swapping out suspect parts, check values of parts, comparing a known-good radio to a failing radio, etc.





Reprinted with the permission of the Cherryland Amateur Radio Club, Traverse City, MI.
Author Scott Pyles, WX1J. First appeared in the Cherry Juice newsletter, May 2021.

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 T6A08

What electrical component is used to connect or disconnect electrical circuits?

- A. Magnetron
- B. Switch
- C. Thermistor
- D. All of these choices are correct

General Exam Review -- Question G6A08

What is an advantage of using a ferrite core toroidal inductor?

- A. Large values of inductance may be obtained
- B. The magnetic properties of the core may be optimized for a specific range of frequencies
- C. Most of the magnetic field is contained in the core
- D. All of these choices are correct

Extra Exam Review -- Question E6A08

What term indicates the frequency at which the grounded-base current gain of a transistor has decreased to 0.7 of the gain obtainable at 1 kHz?

- A. Corner frequency
- B. Alpha rejection frequency
- C. Beta cutoff frequency
- D. Alpha cutoff frequency

Upcoming Hamfests and Conventions

You can use this to plan some of your upcoming fall and winter 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
01/14 — 01/15	Cowtown Hamfest http://cowtownhamfest.com	Forest Hill, TX
01/15	Thunderbird ARC Hamfest http://www.w7tbc.org	Glendale, AZ
01/15	Winter Hamfest 2022 http://ncarc.net	Loveland, CO
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

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



QSO Today Virtual Ham Expo Looking for Presenters

The next QSO Today Virtual Ham Expo is being held on the weekend of March 12th, 2022. They are looking for speakers who can make a virtual presentation, to be seen and shared by thousands of amateurs. If you are interested in presenting, go to: <https://www.qsotodayhamexpo.com/speakercall.html>.

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>.

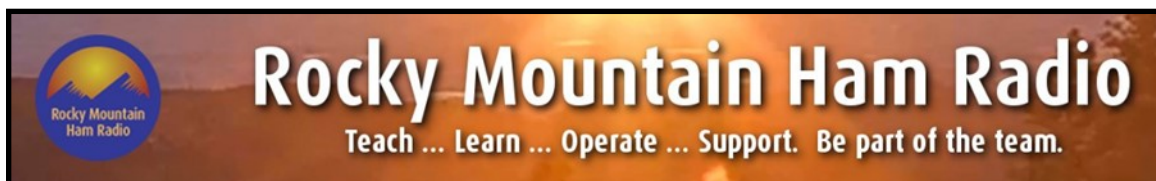


Date & Time	Presenter(s)	Topic
Jan. 8, 8:30 am	James KI0KN and Mark, N7CTM	Motorola and Kenwood Radio Programming Lab How to program commercial radios from Motorola and Kenwood for DMR, analog and P25. Managing code plugs. Special topics like use of older radios for packet stations, DMR roaming and data transmission. Zoom Meeting ID: 818 7427 5580 Passcode: 031606
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

RMHAM Past Presentation Videos Available

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

Upcoming 2022 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.



A slingshot can be handy for shooting a line up into trees to hang antennas, but did you know there is an antenna design which mimics the y-shaped construction of a slingshot (or football goalpost)?

Each side of the horizontal portion of the radiating element is $\frac{1}{4}$ wavelength long, while each vertical portion is $\frac{1}{2}$ wavelength long. For 2m, this total length of $\frac{3}{4}$ wavelength is approximately

60 inches, which results in a manageable overall antenna size. The 440 MHz/70 cm version is even smaller - only about 16 inches wide and 13 inches tall.

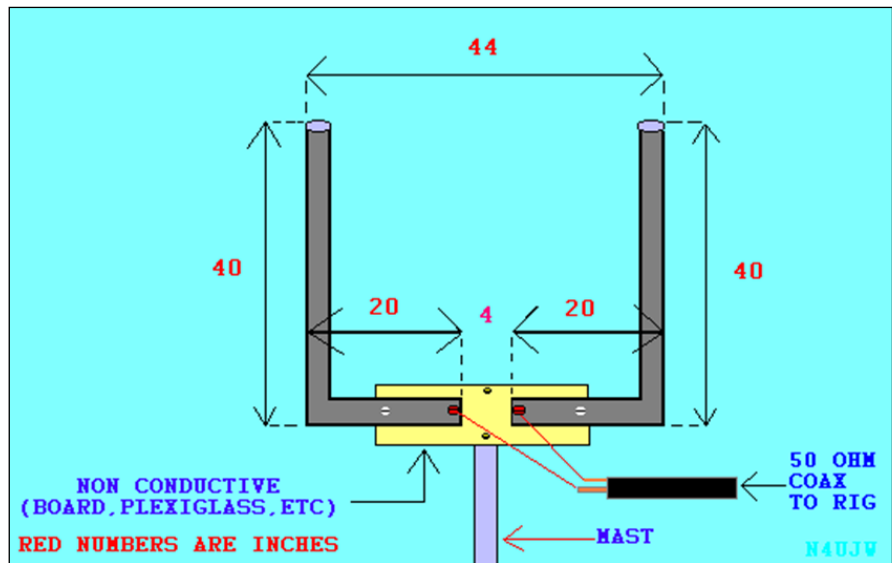
You can construct the elements from copper or aluminum tubing – or even wire, as long as you have a way to support it.

The article I found does not state the polarization, but I assume it is vertical. It does mention that the radiation pattern is a rough figure eight with the maximum signal being off both ends.

I've not tried this particular antenna, but it does look it would be easy to make, so if you are up for the challenge, give it a try and let us know how it works!

Antenna Details:

- <https://www.hamuniverse.com/slingshot.html>
- <https://www.hamuniverse.com/440slingshot.html>



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

Exam Level	Question	Answer
Technician	T6A08	B
General	G6A08	D
Extra	E6A08	D

Many have purchased these analyzers. They come in a variety of models depending on your needs. They can do a simple to quite extensive analyses of your antenna or network system.

Of course, I am focusing on the simple.

Many of us have these to check our individual antennas. Looking for the resonant point and why possibly the SWR is not as low as we would like it at resonance. The VNA is capable in determining this in most cases.



Setting Up the Analyzer

The VNA comes with some hardware. Three terminations: open, shorted and load. It also has two short lengths of RG/405 coax and a coupler.

You will need to acquire adapters if you are using UHF or other connectors than SMA. One adapter is at the VNA side and another at the end of the coax you are using.

For a common antenna installation, Port 1 (S11) or output port will be the only one to use. Port 2 (S21) is a receiving port.

Connect one RG/405 to Port 1. This will eliminate a strain on the VNA connector.

Put the adapter you need for your coax on the RG/405. Connect your coax. The antenna end of the coax should be open or not connected.

Put another adapter on the end of your coax.

Now you can turn the VNA on.

With the stylus, touch the right side of the screen to bring up the menu. Select "Stimulus".

Select "Start". A numbered key pad comes up. Select the lowest frequency you are testing. For example, if you are testing a 40 meter antenna, you may want to select 7M. This is 7 MHz. Then touch "OK". You will see 7.000 MHz on the bottom left screen.

Back to the menu. Select "Stop". Enter 7.3M, then OK. You will see 7.300 MHz on the right bottom of the screen. You can expand or reduce the span as needed.

On the end of your coax, put the "Open" terminator on. Open your menu. Go back one step so you can see "Cal" and select it. "Calibrate" is on the next window, select it.

Next menu will have "Open" at the top. Select it and wait until it is finished.

Exchange the "Open" terminator for the "Shorted" one. Select "Shorted" Do the same.

Exchange the "Shorted" terminator for the "Load". Select "Load". Do the same.

>> continued >>

Go back in the menu, then back again. Select "Recall/Save". Then select "Save". Save your data in one of the "Save files (0 - 4)". This way if you turn your VNA off you will not lose your calibration.

Return back to the main menu and select "Display". Select "Format". Select "SWR".

Now you can connect the antenna. The SWR graph of the antenna under test will display. It is measuring values of the antenna using that specific length and type of coax.

How did you do? Need to see or do more? In January's *Splatter*, there will be more information.



Elecraft KX2 Used by Military

Bryan, AF0W

Wayne Burdick, N6KR, co-founder of Elecraft and principal designer of various Elecraft radios including the KX2, posted a thread on the Elecraft mailing list (<http://elecraft.365791.n2.nabble.com/>) titled "Elecraft KX2 military use."

In the article, he posts the reply of a U.S. military customer (in Special Forces) who described how they use the radio in the field.

The user remarked on the ability to interface with civilian amateur radio operators in situations where cell phone and internet communications were non-existent.

See the full post at: <http://elecraft.365791.n2.nabble.com/Elecraft-KX2-military-use-td7658288.html>.

Roy Lewallen, W7EL, author of EZNEC, a popular antenna modeling and analysis application for Windows, has announced that he will be retiring on January 1, 2022. At that time, all sales and support for the EZNEC applications will cease, and it will be released into the public domain and become free of cost (although he does not plan to release the source code). Currently, this application retails for \$99 (\$149 for EZNEC+, and \$525 for EZNEC Pro/2).

To read more, see: <https://www.ez nec.com/retirement.htm>.

Wires

Conn	X (ft)	Y (ft)	Z (ft)	Conn	Diameter (in)	Segs
W4E2	0	51	50	W2E1	#12	6
W1E2	51	51	50	W3E1	#12	6
W2E2	51	0	50	W4E1	#12	6
W3E2	0	0	50	W1E1	#12	6

Antenna Notes

This multiband horizontal loop antenna was created by Paul Carr, N4PC described in December, 1990 CQ Magazine. A unique feature is that opposite corners by out-of-phase signals as in the W8... an overhead null on all bands. If you look at the Wires see two sources shown IN phase. This is necessary d... assumed to flow in the wires. When multiple sources are ... in connected

2D traces track in all displays

3D and View Antenna positions track

Convenient Windows controls

Full Windows interface and menus, on line context sensitive help

Antenna Notes... Saved with each description

Selectable colors

End 1 markers

Wire numbers

Select wires from either the Wires or View Antenna windows



Best Attic Antenna?

Michael Martens, KB9VBR, has a recent video on antennas for your attic that won't interfere with HOA guidelines. See his excerpt on HamRadio QA, or check out his YouTube channel at <https://youtu.be/wKUfLVELAKQ>.

You can also do a Google search of "attic ham radio antenna" and find a great deal of pictures, links, and directions.



Antenna Farm

Bryan, AF0W

I recently came across what I would truly call an "antenna farm" when looking at the QRZ page of Stan Schwartz, KE5EE: <https://www.qrz.com/db/KE5EE>

Scroll down to after his house construction pictures to see a ton of antenna and station pictures that would make any ham drool (and many HOA board members scream)!

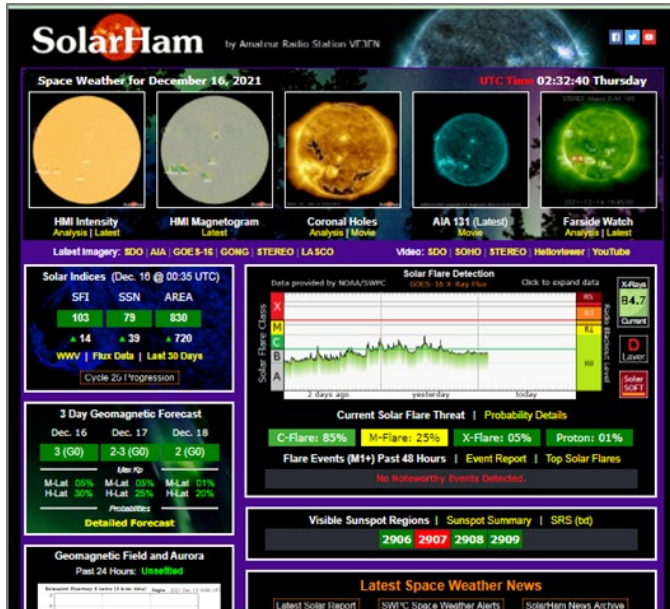




Static and dynamic talkgroups can be confusing to users who are used to analog FM repeaters and are new to DMR.

Here is a posting on Reddit that addresses the differences between the two: https://www.reddit.com/r/DMR/comments/m2gfvu/guide_to_understanding_static_dynamic_talkgroups/

SolarHam Web Site Updated



Kevin Gibeau, VE3EN, has updated the format of his SolarHam web site at <https://www.solarham.net/>.

Launched on March 15, 2006, its goal is to provide real time space weather news and data all in one location for easy navigation. Information and imagery is relayed from sources such as the NOAA Space Weather Prediction Center (SWPC), Solar Dynamics Observatory (SDO), and Deep Space Climate Observatory (DSCOVR).

Space weather plays a big part in amateur radio propagation, so having access to all this information in a single location is a great tool.

LARC Logo Apparel — New Sale Prices!

These are great clothes to wear for all our club-related activities, and to show your pride in our club at other ham events! 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=3Y4UZGXSVC9W. 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

amazonsmile

You shop. Amazon gives.

*See them all on page 26! On Sale through end of 2021 with Reduced Prices!
Get Your Items Now!*

- Short-sleeve Shirts (\$32) embroidered with your call sign, name if desired, and our LARC Logo patch.
- Long-sleeve Shirts (\$40) embroidered with your call sign, name if desired, and our LARC Logo patch.
- Fleece Jackets (\$43) embroidered with your call sign, name if desired, and our LARC Logo patch.
- Soft-shell Jackets (\$55) embroidered with your call sign, name if desired, and our LARC Logo patch.
- 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 December Meeting will be on Wednesday, 12/15, 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

Please Visit LARC's Sponsors & Supporters

(there's always room for more!)

Spaces for entrepreneurs to set up an office, as well as meeting and conference rooms available.



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WORKING MORE SOCIALLY

350 Terry St.
Longmont, CO. 80503

Contact us at support@cosolve.co for more information



Jim Andrews, KH6HTV

Get your FREE ATV Handbook at

[https://
kh6htv.files.wordpress.c
om/2021/02/an-55a-atv-
handbook-1.pdf](https://kh6htv.files.wordpress.com/2021/02/an-55a-atv-handbook-1.pdf)

Get the FREE newsletter at

<https://kh6htv.com/>

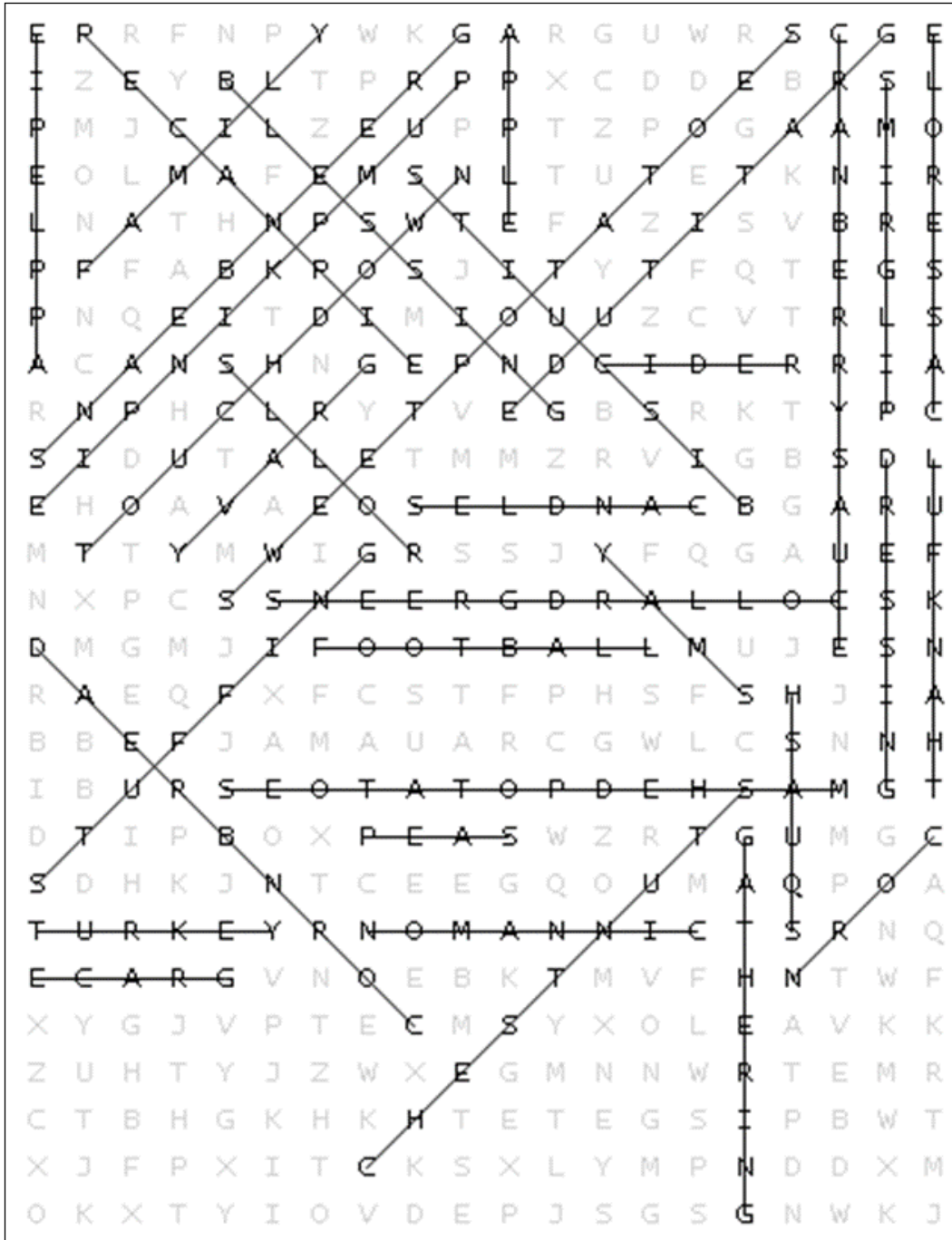


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K6LCS
(909) 999-SATS

Clint Bradford, K6LCS

work-sat.com

November Puzzle Results



December Puzzle



WORD SCRAMBLE!

SKOICOE _____

ASTAN ULCSA _____

OTH COOLTHACE _____

GLIHES SELBL _____

LOCARS _____

LIMSOTTEE _____

BIGGEEDARRN _____

SHLITG _____

EONGGG _____

VAINTYIT _____

PURHOLD _____

YADNC NECA _____

MOWNANS _____

BEEEDRCM _____

GLANE _____

TINCKGOS _____

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2022
HAPPY NEW YEAR



Longmont Amateur Radio Club

P.O. Box 86

Longmont, CO 80502-0086

w0eno.org

Membership Application

Tax Deductible Donation to LARC: \$20 per year [] New Member: [] Renewing Member Payable via PayPal with [sent application](#).

First Name: _____ Last Name: _____ Birth Year: _____

Address: _____ City: _____

State: _____ Zip: _____ - _____ Call Sign: _____ Class: _____

E-mail: _____ (needed for correspondence)

H-Phone _____ C-Phone: _____ B-Phone: _____

I am a member of: [] ARRL [] BCARES [] VE

DISCLAIMER AND WAIVER: I apply for membership in LARC. I understand that some LARC activities are potentially hazardous. If I am injured or killed while participating in a LARC activity, I and my heirs agree to hold harmless LARC and its officers, directors, and members.

SIGNATURE: _____ DATE: _____

OTHER LICENSED FAMILY MEMBERS (Same Address) (No extra cost)

Name: _____ Call: _____ Signature: _____

Name: _____ Call: _____ Signature: _____

Name: _____ Call: _____ Signature: _____

Note: A tax deductible receipt will be provided.

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 _____



ARRL The national association for
AMATEUR RADIO®

Membership Application

Application for use by ARRL Affiliated Clubs

Contact Information

I am a brand new member or my membership has been lapsed for 2 or more years. My club will keep \$15 of my dues.

I am renewing (includes lapsed members of less than 2 years). My club will keep \$2.00 of my dues.

Name _____ Call Sign _____

Address _____

City _____ State _____ ZIP _____

Email _____ Phone _____

Date of Birth ____/____/____ **Get an annual birthday coupon (US only)**

My Family Member is Joining or Renewing: (\$10 per member)

Name _____ Call Sign _____

Name _____ Call Sign _____

Your Annual Membership Dues – Circle Your Choice/s.

	1 Year	2 Years	3 Years	
US	\$49	\$95	\$140	Monthly <i>QST</i> or <i>On the Air</i> via standard mail for US members
Youth	\$25			Must be 21 years old or younger AND the oldest licensed Radio Amateur in the household
Canada	\$62	\$120	\$177	Monthly <i>QST</i> via standard mail for Canadian members
International	\$76	\$147	\$217	Monthly <i>QST</i> via standard mail for International members
International/Canada – no print magazine	\$49	\$95	\$140	Digital magazines
Family	\$10	\$20	\$30	Must reside with primary member and have corresponding membership dates; no extra copies of magazine
Blind	\$10	\$20	\$30	No delivery; all other member benefits apply. Requires a one time signed and dated statement of Legal Blindness

Additional membership options available online at www.arrl.org/join. US Memberships include \$21 per year for magazine subscriptions. Dues are subject to change without notice and are non-refundable. Memberships may not be combined with any other promotion or special offer.

I do not want my name and address made available for non-ARRL related mailings.

Choose your print magazine:

QST, ARRL's membership journal for active radio amateurs (12 monthly issues)

On the Air – New! Beginner-to-intermediate-level help and advice (6 bimonthly issues)

All members can access the digital edition of both magazines

Payment Information

Please charge my ARRL dues less my club's commission. I have paid the commission directly to my club.

\$ _____ Total Charge to: Visa MasterCard Amex Discover Check Enclosed

Card Number _____ Expiration Date _____

Card Holder's Signature _____

ARRL ■ 225 Main Street ■ Newington, CT 06111-1400 ■ USA
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