



Our July General meeting will be held TODAY, Wednesday, July 20th, at 6:30 pm.

Please join us!

Dick Paige (KE0VT) and Bob Smith (N0ZFV) will be presenting a review of our LARC Field Day event.



July Meeting will be on Zoom on Wed, July 20th, at 6:30 pm.

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

See p. 2 for more info.



Inside this Issue

- July Meeting & Ham Jargon2
- Help LARC with Amazon Smile.....3
- Useful Ham Radio Website3
- President’s Corner4
- LARC Nets & Poll — VOTE!5
- Special Events & Contests.....6
- LARC Facebook, Authors & Articles7
- VE Exam Session Info & Schedule8
- Ham Breakfast & Decoding Space9
- Membership Monitor10
- Cable Builder Workshop10
- You are Limited by your Junkbox.....11
- Hamvention Attendance Figures12
- S-Meters13
- Drone-Equipped HF Antenna.....14
- Antenna Mast Support Ideas14
- Colorado 14er Event15
- Talking with the Moon.....16
- Hidden Winlink Features16
- Upcoming LARC Events17
- The 5th Degree—What do you Know..18
- Hamfests & LARC Event Calendar19
- Label Your Gear, Dayton Flea Mkt20
- Wire Winder/Holders20
- Tire Press. SDR, 5th Degree Answers...21
- Smith Charts: Why Useful?22
- LARC Logo Apparel!.....27
- Are Your Dues Current?28
- Advertise with LARC!28
- Support Your Club in Many Ways29
- Club Mission & Officers30
- LARC Supporters & Advertisers31
- June Puzzle Answer, July Puzzle32

Please Join Us for our General Meeting

Our July General Meeting will be held TODAY, Wednesday, July 20th, at 6:30 via Zoom.

The meeting topic will be a review of our LARC Field Day that we held over the weekend of June 25-26th. Dick Paige (KE0VT) and Bob Smith (N0ZFY) will be the presenters.

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 field 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, and interact with 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 began at approximately 7:15 pm.

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

Our Zoom Meetings are held and found 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 have to miss this meeting, you can see our meetings at
<https://w0eno.org/meeting-presentations/>



Ham Jargon

Boatanchor

Slang for a heavy, old (vintage, antique, obsolete) tube radio that's typically powered by AC (house current) for its internal power supply, which lends to its extra weight; see [https://en.wikipedia.org/wiki/Boat_anchor_\(metaphor\)](https://en.wikipedia.org/wiki/Boat_anchor_(metaphor)) and <https://boatanchor.net/#luxe-info>.

LARC's YouTube Channel

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 under the LARC History menu. 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 <https://smile.amazon.com/charity?orig=%2F>, Amazon Smile donates to the Longmont Amateur Radio Club — at no cost to you!* Last quarter, they sent LARC \$50.84 as their donation from our members' shopping. Every last dollar helps! *You can also just click on the picture below to log into your Amazon 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!*

** Currently only 11 LARC members/families are using this link — please join them to help raise funds for our club repeaters and activities!*

Useful Ham Radio Web Site

<https://hamradioinsider.com/>

A site where you can learn about amateur radio topics, whether you are a beginner or have been on the air for a long time.

“Summer will end soon enough, and childhood as well.” *George R.R. Martin*

Currently Boulder County is open with no mask requirement. With that said, the board is looking to get meetings back face-to-face. We have some planning to do to get hybrid (both virtual and in-person) meetings going, so the work has begun.

I would like to welcome Dick Paige (KEØVT) as our new Event Planning Chair!

Upcoming event — Boulder County Fair Parade, Saturday, August 6, 2022.

Join the Tuesday night and Thursday night nets for fun and educational talk! Want to try being a net control station (NCS)? [Contact Jerry \(NØOUW\)](#) or me for details! We have a challenge for you!

Do you have an idea for a presentation? Know someone who would like to present to your club? Contact a board member and let's get them in front of LARC! We are currently looking for presenters for our 2022 General Meetings.

Keep your ideas coming for new events and/or activities for the club. I ask that if you have an idea, that if you could run it (with help if needed), it would be a big help to make it successful.

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 2022 Above and Beyond recipient so far:

- January “Above & Beyond” recipient Steve Shearer (KØSTE) - for all the monetary and volunteer hours you put in to support the club.
- April “Above & Beyond” recipient Doug Altman (KEØSI) - for all his service as Event Planner for our Club through many years.
- April “Above & Beyond” recipient Richard “Dick” Paige (KEØVT) for putting together a HAM-FEST with fewer than 30 days notice!
- April “Above and Beyond” recipient Sebastian Wessels (NSØW) for supporting the club with activities, all on his own.
- May “Above and Beyond” recipient Harlan Olson (WØHLO) - helping a silent key widower.
- June “Above and Beyond” recipients Bob Smith (NØZV) and Richard “Dick” Paige (KEØVT) for putting on a Summer Field Day Event for the club to remember.

Who can YOU recommend for their service to LARC to get this Award?

I have always said that this is your club. How can you help? We’re looking for individuals to help with committees and general volunteering for our LARCFest 2023 Committee (already in planning stage), Christmas Party, and other club events. If you can help or want to become more involved with your club, please [contact a board member](#).

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

Charles Poch - KØITP
LARC President

KØITP@WØENO.ORG



Take our Poll!

Please take LARC's quick and fun Poll by answering this 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/56253969>

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.*

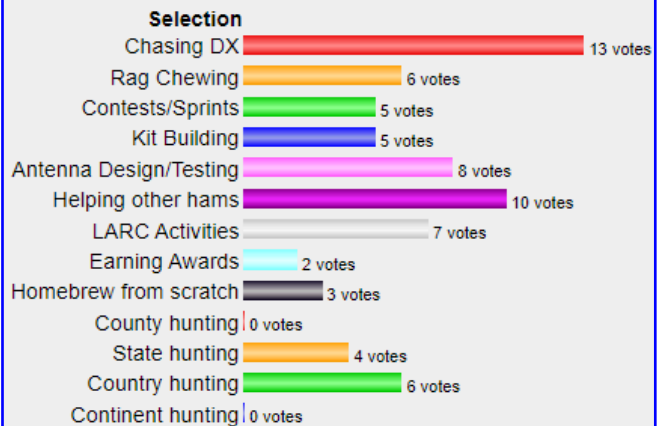
You can also reach our nets on the internet via [EchoLink!](#)

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!**

In which ham activities do you participate regularly?



19 voters

**May/June
Poll Results
—Thanks
for voting!**

SUMMER

How many contacts did you make for Field Day?

- 0
- 1-5
- 6-10
- 11-15
- 16-20
- 21-25
- 26-30
- 31-40
- 41+
- What's Field Day?

pollcode.com [free polls](#)

Take our July Poll [Now!](#) It will only take about 2 minutes!



TAKE OUR JULY POLL!

Either click on the poll on the left, or go to: <https://vote.pollcode.com/56253969>

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

Upcoming Special Events and Contests

Here are some selected upcoming QSO Parties and Special Events that you could get on to pass the time this spring. See the links below for more information, rules, logs, and QSL card information. They all present a great opportunity to get on the air and have some fun, and are great for beginners as well! Plan your calendar! Lots of radio fun coming right up!

Start Date	End Date	More Info
07/20	07/20	Apollo 11 Moon Landing Commemoration https://limarc.org/
7/21	07/22	Walk for the Bacon QRP Contest https://qrptest.com/pigwalk20/
07/23	07/23	YOTA (Youth on the Air) Contest https://www.ham-yota.com/contest/
07/30	07/31	RSGB IOTA Contest https://www.rsgbcc.org/hf/rules/2021/riota.shtml
07/30	07/31	Tennessee State POTA http://www.tnpota.org/
08/04	08/04	NRAU 10m Activity Contest https://nrrlcontest.no/index.php/nrrl-contests/nrau-nac/10m/nrau-nac-10m-english-rules/278-nrau-nac-10m-english-rules.html
08/06	08/07	NRRL MGM Weekend Contest https://nrrlcontest.no/mgm-weekend-en
08/06	08/07	ARRL 222 MHz & Up Distance Contest http://www.arrl.org/222-mhz-and-up-distance-contest
08/06	08/07	North American QSO Party, CW http://www.ncjweb.com/NAQP-Rules.pdf
08/09	08/09	Worldwide Sideband Activity contest https://wvsac.com/rules.html
08/10	08/10	VHF-UHF FT8 Activity Contest http://www.ft8activity.eu/index.php/en/
08/13	08/13	Kentucky State POTA https://k4msu.com/kypota/
08/13	08/14	Maryland-DC QSO Party http://w3vpr.org/mdcqsop/
08/21	08/21	ARRL Rookie Roundup, RTTY http://www.arrl.org/rookie-roundup
08/27	08/28	ARRL EME Contest http://www.arrl.org/eme-contest
08/27	08/29	Hawaii QSO Party http://www.hawaiiqsoparty.org/
08/27	08/28	W/VE Islands QSO Party http://usislands.org/qso-party-rules/
08/27	08/28	Kansas QSO Party https://ksqsoparty.org/rules/KSQPRules2021.pdf?1
08/27	08/28	Ohio QSO Party http://www.ohqp.org/index.php/rules/

- You can see much more QSO Party and Contest Information at:
<https://www.contestcalendar.com/contestcal.html>
- You can see many more Special Event station information and dates at:
http://www.arrl.org/special_events/search/page:1/model:Event
- 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>

2022 BOARD OF DIRECTORS

President: Charles Poch, K0ITP
Vice President: Michael Ritchie, W0KKI
Secretary: Pat Engstrom, W1PGE
Treasurer: Don Lewis, KE0EE

ADDITIONAL VOLUNTEERS:

Membership: Steve Shearer, K0STE
Technical: Mark Skelton, N7CTM and
Bryan Gonderinger, AF0W
Publicity: Steve Haverstick, KF0AGY
Splatter Editor: Kat Gonderinger, W0UM
Planning/Special Events: Doug Altman,
KE0SI & Mark Mollenauer, KD0GOC
BCARES Representative: Jerry Schmidt,
N0OUW
Repeater Trustee: Bryan, AF0W
Education: Kat, W0UM & Bryan, AF0W
LARCfest Chair: Dick Paige, KE0VT
VE Team Leads: Aaron, AJ7R & Kat, W0UM

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, K0ITP](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:

W0ENO-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, WD0EJA
- Bryan Gonderinger, AF0W
- Lynne Mears, K0CLM
- Ed Mohrman, WA7EM
- Chuck Poch, K0ITP
- Mike Ritchie, W0KKI
- Steve Shearer, K0STE
- Bob Witte, K0NR

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) detailing 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, W0UM, Splatter Editor](mailto:Kat,W0UM,SplatterEditor)

LARC VE Exam Session Information

LARC sponsors a VE Exam Session every month. Our *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 — (but on the 2nd Sunday in November). April has two sessions.

June 25th VE Exam Session Results

A LARC ARRL VE Exam Session was held on Saturday, June 25th. Led by Aaron Rees (AJ7R), the additional Volunteer Examiners (VEs) were Jeanne (AC0XA), David (AD0UF), Robert (WC0R), Lloyd (KF0UOC), Kat (W0UM), and Bryan (AF0W).

At this session, 11 applicants were tested, which resulted in 6 new Technicians, 3 Generals, and 2 upgraded new Amateur Extra. There were a total of 13 passed exams in all. One candidate, Jesse (AE0RC), passed all three levels in one sitting! Wow!

Congratulations to everyone who passed their exams!



License	#
Technician	6
General	3
Extra	2
Total	11

Next Exam Session is SATURDAY, August 27th @ 10am

Our next VE Exam Session will be on Saturday, August 27th, at 10:00 am in the Professional Building, 350 Terry Street, Longmont, 80501.

As this will be an ARRL session, a \$15 test fee must be paid to take an exam at this session.

*If you do not already have a license, you must obtain an FRN (FCC Registration Number) prior to attending the test session, and bring a copy of it to the session for verification. You can do so at: <https://apps.fcc.gov/cores/userLogin.do>. Your email address is **REQUIRED**.*

To pre-register for this session, please go to <https://w0eno.org/2021/10/12/contact-us/>.



Upcoming LARC VE Exam Schedule

Date	Day	Time	Exam Session Info	Exam Options
Aug. 27	Sat	10:00 am	LARC ARRL VE Team	In person on paper
Sep. 18	Sun	9:00 am	LARC/PVET VE Team	In person on your laptop or tablet, or on paper
Oct. 22	Sat	10:00 am	LARC ARRL VE Team	In person on paper
Nov. 13	Sun	9:00 am	LARC/PVET VE Team	In person on your laptop or tablet, or on paper

Ham Enthusiast Breakfast Every Saturday Morning

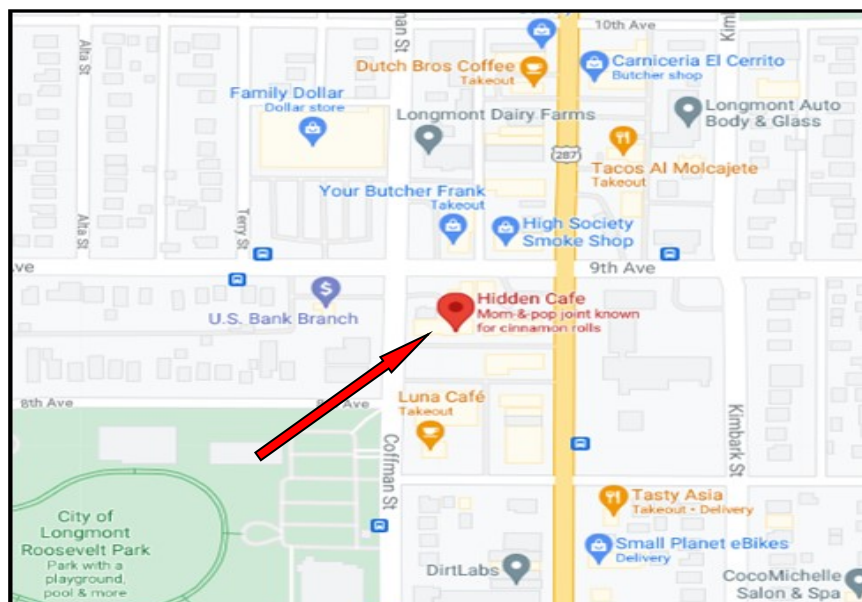
Want some social time with other ham radio operators in a small group?
Join us for breakfast!

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.



Decoding Deep Space Tianwen-1 Signals using GNU Radio

Three amateur radio operators working with AMSAT-DL (AMSAT-Deutschland) describe their success at using various radio receivers (including a Software-Defined Radio, or SDR) to receive signals from China's Tianwen-1 mission to Mars. These signals were then decoded using a real-time GNU Radio (<https://www.gnuradio.org/>) decoder.

Their paper describes the decoding process they utilized, as well as the hardware involved in the reception and processing of the signals.

You can read all about it at: <https://amsat-dl.org/wp-content/uploads/2022/04/Deep-space-reception-of-Tianwen-1-by-AMSAT-DL-using-GNU-radio.pdf>.



We had 6 new members join the LARC in June, and the majority of them joined the LARC at or based on the experience from our ARRL Exam Session or from attending Field Day.

LARC Newest Members — June						
Call	First Name	Last Name		Call	First Name	Last Name
KFØFVI	Robert	Logan		KFØJTN	Mark	Mims
KFØJSX	Leslie	Sartor-Mallo		KFØHLO	Gary	Mallo
KFØIAH	Jarold	Self		KFØJHL	David	Painter

There was no General meeting in June, so most planning efforts could be dedicated to our ARRL Field Day.

The Club is always looking for additional donations of door prizes to give away at the meetings. If you have something to 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 July 20th. Any questions or issues, feel free to contact me.

73,

Steve Shearer (KØSTE)
 Membership Chairman
KØSTE@WØENO.ORG
membership@w0eno.org
 303-915-9942



Beginner & Expert DIY Cable Builder Workshop

Will, KFØFEC

Please join your fellow ham operators for a hands-on workshop of repairing any power and communications cables you desire for your station, mobile, or GoBox. If you’ve ever wanted to learn how or experiment with building your own cables, this is your chance to have special tools and experienced mentors to assist. We will provide a few soldering stations, wide variety of power and communications wire, the club’s specialized cable crimpers & terminations for Anderson Power Pole connectors, and much more.

Saturday, July 23rd, from 9:30 am to 12:30 pm.

Location: 950 South Sherman Street, in Longmont, in the rear of the building off Iowa Ave.

For more info, contact Will at KFØFEC@outlook.com or 303-499-2455.



My Splatter articles have been tomes of obscure circuits in a Ham radio. This time, it is more like advice from Ben Franklin's "Poor Richard's Almanac."

1. "Your fun in Ham Radio is limited by the size of your junk box."
2. Fast Prototyping is fun! Maybe it will work, maybe not; nothing ventured nothing gained."
3. *"I have not failed. I have just found 9,999 ways that do not work"* – Thomas Edison commenting on his tests of many lightbulb prototypes.

2 Quick Stories:

1. The "waterfall" model for software design was in vogue for many years. It was supposed to guarantee project success if you did every step in a repeatable manner and in the right order. Despite that, projects continued to fail and mediocre software was produced. More recently, "Agile" development models have come more in favor. In "Agile", you do quick small prototypes and quickly evaluate how well they work.
2. In "Escaping Gravity" by Lori Garver, she describes how NASA's traditional subcontractors floundered in their attempt to incrementally evolve 1970s technology into a replacement for the Space Shuttle. At the same time, using private funding SpaceX and others produced new technology reusable rockets that lower launch cost to 1/10th.

What's the point of these 2 stories? My career doing "waterfall" development caused me to be embarrassed if any personal project I did was not a roaring success. The aerospace industry must have spawned many engineers into risk-averse, slow, cautious individuals. The point is that we, as hams, can enjoy quick, small technical projects without fear or expectations that every one of them must end up being a major part of our future "dream station."

I am sure some of you say "I love DX or ragchew or public service." That's great, enjoy yourself. This is just a little nudge in the direction of the technical side of the hobby. I am also sure, some say "I am not Elon Musk" and can't waste money and time on filling my junk box with failed experiments!" You're mostly right. We each have our limit on how much money and time we can spend on ham radio. But, perhaps a percent of your radio budget can go into experiments, leaving another percentage for the "will not fail" safe commercially built radio and/or antenna.

One of the best things I have done in radio is to carve out a space in the unfinished part of the basement for a radio workbench. It is separate from another area that holds my HF and VHF "appliances." Over time, I bought some tools, some QRP radio kits, and some antique Heathkit

You are Limited Only by the Size of your Junk Box

tube radios. Some of this stuff is now collecting dust or never did work right. But, sometimes, I dip into the junk box to quickly try another idea. Nothing is quite as exhilarating as reading some article about some project someone did and thinking “My junk box has most of the stuff to put one of those together....”

If “the junk box is good,” then when you need one resistor, instead you look for the jumbo pack of 100 values. It costs \$5 more, but now you are equipped for future projects. At a hamfest, you buy some boat anchor that maybe you can get back on the air. If it sits on the shelf, that’s OK. Maybe later, you will find a use for it. Give it a try!

BTW – the “junk box” doesn’t have to be hardware nuts and bolts. It can be software. It can be antennas. It can be lots of things you want to learn about and experiment with.

73, Ed WA7EM



Hamvention Attendance Figures Announced

The Dayton Amateur Radio Association (DARA) has announced the attendance figure for the 2022 Hamvention, the first event since 2019.

The official attendance at Hamvention 2022 was 31,367. General Chairman Rick Allnutt (WS8G) said although that was about 1,000 less than 2019, he considered it not bad for a pandemic recovery year. Hamvention was cancelled in 2020 and 2021 because of the Covid pandemic.

2022 - 31,367
2019 - 32,472
2018 - 28,417
2017 - 29,296
2016 - 25,364

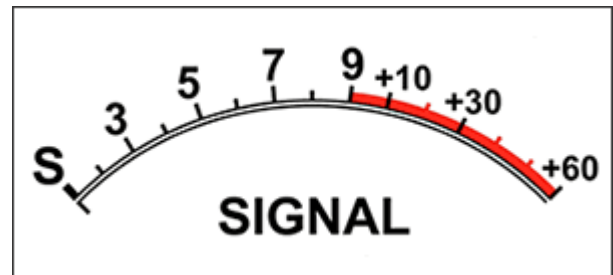
Hamvention site: <https://hamvention.org/>

http://www.southgatearc.org/news/2022/may/hamvention-attendance-figure-announced.htm?utm_source=amateur-radio-weekly&utm_medium=email&utm_campaign=newsletter

Virtually all receivers have them. Are they of value for measuring signal strength?

When a signal is strong, of course. When a signal is weak, the meter is not so good.

Most S-Meters are driven by the "Automatic Gain Control" circuit, or AGC. This can be done in a variety of ways. AGC voltages can be applied to one or several amplifier stages in the receiver. This makes it difficult to standardize S-Meter values.



In time you will know how your S-Meter reacts. It is common to hear an operator state that his S-Meter is stingy, or generous. After using a radio for a time, you can get an idea of the sensitivity of the S-Meter. It certainly is not a standard measurement.

Some like to estimate that 1 S unit equals 6 dB gain. This could be, but there is no guarantee. It may be mentioned in the specifications of your receiver. If so, then you have something definite to go by.

S units are a relative reading. So we can use it to make comparisons. When an operator changes antennas, you can give him the difference of the S-Meter reading. The S-Meter values did not change, only the other operator's antenna.

The S-Meter can be used for listening to two operators from the same location and make comparisons. Using the S-Meter to compare signals on ground wave is another use. Just keep in mind it is only a relative reading.

What about the section that is over S-9?

It is not S-10. It is a 10dB increase over the S-9 value. If the S-meter reads 6 dB per S unit, then you have gained almost 1.5 S units.

Keep in mind that the S-Meter is a relative measurement and works well in measuring antenna comparisons.

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



Chuck, K0ITP, and I have discussed the possibility of using a balloon to hold up an HF antenna for use at LARCFest, but I just came across something more high-tech, and that is using a drone to raise the antenna!

Now this is not simply using a drone to install an antenna in a tree (which I have read about people accomplishing successfully), but rather using the drone to continuously support the antenna wire while operating.

A post on grz.com titled "A Failed Experiment in Verticality," details the experiences of a group of hams who attempted this very feat, with somewhat less-than-useful results.

You can read all about it at: <https://forums.grz.com/index.php?threads/a-failed-experiment-in-verticality.641744/>.

While the possibility of holding an antenna up while transmitting with a drone seem to be a bust, here are a couple of YouTube videos showing a drone being used to get HF antennas up into trees: https://www.youtube.com/watch?v=kKWu6_8mCr4 and https://www.youtube.com/watch?v=k_kzTwGRrhc.

Other methods include slingshots, bow and arrows, fishing poles, and potato cannons, but this is the only one I've seen that involves using RF to install your antenna!



Antenna Mast Support Ideas

John Kennedy, KD0JPE, wrote a great article about his Field Day antenna system in last month's Splat-ter. I recently came across a couple of YouTube videos by Mike Dahlhoffer, K8MRD, reviewing the MFJ -1917 telescoping fiberglass mast. In it, he demonstrates a similar method for securing the mast. You can view his review video at: <https://www.youtube.com/watch?v=A5fWT3R1cd8>.

Both John and Mike show some really easy, lightweight techniques that you can put to use in your own portable operations!

If you tend to operate portable close to your vehicle, I saw a possible solution at the At Home store in Longmont – a weighted base for patio umbrellas. The \$23 stand was rectangular and weighed 24 pounds. On their web site (<https://www.athome.com/search/?q=umbrella+stand&lang=default>), it looks like they have a number of other models, all the way up to one that weighs 130 pounds. There are also a number of drive-on and trailer hitch bases that you can buy, or you can make one with wood and some plumbing parts (<https://www.huyettm.net/portable-masts.html>).

Another setup I've seen was constructed by Chuck Poch, K0ITP, and consisted of a Home Depot "orange bucket" partially filled with cement with a pipe to which he attached his metal flag pole to use as an antenna mast. I was surprised at how stable the flag pole was given that the diameter of the bucket isn't that large.

For the LARC Radio in the Park event, we typically have a Hamstick dipole atop some military camo netting poles, and just anchor it with three guy ropes from the top (although this does take multiple individuals to handle).

In short, don't let a lack of trees get in the way of your radio operations!

Amateur Radio operators from around Colorado will be climbing many of **Colorado's 14,000-foot mountains** and **Summits On The Air** (SOTA) peaks to set up amateur radio stations in an effort to communicate with other radio amateurs across the state and around the world. Join in on the fun during the annual event and see how many of the mountaintop stations you can contact. Be aware that many mountaintop activators will hit the trail early with the goal of being off the summits by noon due to lightning safety concerns.



This event is normally held the first full weekend in August. Following up on the success of the 10-day W0C SOTA event in 2021, in 2022 we will add **two bonus days** to the Colorado 14er Event. The main two days remain **Saturday and Sunday (Aug 6 & 7)**, while the bonus days are **Friday Aug 5 and Monday Aug 8th**, for those SOTA enthusiasts that need more than two days of SOTA fun!

The 14er event includes **Summits On the Air (SOTA)** peaks, which includes over 1800 summits! If you aren't up to climbing a 14er, there are many other summits to choose from (with a wide range of difficulty). See the W0C SOTA web page at w0c-sota.org.

Important: The recommended 2m FM frequencies have been changed to **146.58**, 146.55, and 146.49 MHz, to align with the use of the **North America Adventure Frequency for SOTA (146.58)**. The National Simplex Calling Frequency (146.52) may be used as appropriate. See the operating frequencies page at <https://ham14er.groups.io/g/ham14er/wiki/23190>.

See the very cool **Colorado 14er Event gear** available at <https://www.cafepress.com/mtngoatwear>.

Radio operators who plan to activate a summit should post their intent on the ham14er group via the [ham14er groups.io](http://ham14er.groups.io) website. Also, be sure to check out the event information at <http://www.ham14er.org>.

And there is more!

On the same weekend, SOTA enthusiasts in Montana, Idaho, Washington, and Oregon will activate summits for the [Pacific Northwest Not-Quite-Fourteener \(PNW-NQF\) event](#). Also on the same weekend, the Southern California SOTA group will hold their [SOCAL SOTAFEST](#). So there will be plenty of SOTA stations to work that weekend.

Warning: Climbing mountains is inherently a dangerous activity. Do not attempt this without proper training, equipment, and preparation.

Sponsored by *The Colorado 14er Event Task Force*

Although not amateur radio related, a blog post by Ken Shirriff titled “Talking with the Moon: Inside Apollo's Premodulation Processor” (PMP) has some very interesting information on the component responsible for combining voice, scientific data, TV, and telemetry for transmission to Earth.



His post includes detailed pictures and high-level diagrams of the various boards comprising the system, which was installed in the Apollo Command Module.

There are a couple of mentions that might interest amateurs. The first is describing one of the modules: “The next mixer input is the emergency key signal. The purpose of emergency key is that if voice communication failed, an astronaut could send Morse code by using the XMIT key on their communication cable. This key signal might be able to get through to Earth even if voice communication fails or is unintelligible.”

The second is a nameplate on the device showing that the premodulation processor was built by Collins Radio in 1966. The company, founded in 1933, has gone through a few changes, but it now operates as part of Collins Aerospace, a subsidiary of Raytheon Technologies. In its earlier years, it was responsible for amateur gear such as the Gold Dust Twins (75A-4 / KWS-1) and S-Line (75S-1 / 32S-1).

If you are at all interested in the moon landing, analog radio design, or communications system design, it's well worth the read at: <http://www.righto.com/2022/05/talking-with-moon-inside-apollos.html>.

More Information:

- <http://www.collinsradio.org/cca-collins-historical-archives/the-equipment-of-collins-radio/>
- <https://www.electronics-notes.com/articles/history/radio-receivers/collins-radio-company.php>
- https://www.si.edu/object/command-module-apollo-11%3Anasm_A19700102000



Hidden Winlink Features

View videos about Winlink and Hidden Winlink Features as soon as it's posted at <https://wavetalkers.com/>. It was recorded on July 17, 2022, and will be viewable later this week.

Boulder County Fair Parade - August 6, 2022. If you can help, we need 15 ham radio volunteers to help with this parade! Contact Dick (KE0VT) at Gwabi2@hotmail.com, put "Parade" in the subject.

Burro Races in Fairplay and Leadville — Before you know it, it will be time for the Burro Races in Fairplay and Leadville. We're hoping that many of you will be able to help out once again. The dates for the 2022 races are July 30 for Fairplay and August 7 for Leadville. Brian Leet, K9ATK, will serve as Net Control and race-day coordinator for the Leadville race.

The number of racers has been increasing every year and is expected to continue this year.

Please reply to heck.n0dsv@gmail.com and let me know if you can help with either or both races. We've lost a few long time volunteers the past few years, so please talk to your friends and invite them to help out as well with their radios!

Please include your t-shirt size in your reply. The organizer in Fairplay has provided t-shirts in the past. I haven't heard from her yet this year, but I expect that this will continue.

If you have the 4WD capability, please let me know that as well or any other preferences for check-point locations.

Thanks for your support in the past and we look forward to working with you again this year. Please be assured that if you have never helped out before, we will provide guidance and will attempt to match you up with an experienced operator if possible. Sharon, NØDSV

Ned Race — Indian Peaks Radio club hams are supporting this race with their radios. Additional volunteers are needed from LARC for this race in Nederland on September 10th. Please contact Charley at canyonfireguy@gmail.com for more information and to volunteer your services.

IPRC WØNED Repeater Project - contact Charley at canyonfireguy@gmail.com for more information. Update: We are planning our very first work day to begin construction on the IPRC club repeater up at the MRS. On Saturday, 23 July, we will be putting in our first day of work on the repeater, and will be laying out, forming, and hopefully pouring and finishing the concrete slab that the cabinet will sit on.

Due to the repeater site being somewhat hard to reach - there is only a foot path for the last 100 feet to the tower site - we will be moving the mixed cement up to the site in 5 gallon buckets. We will need plenty of help with this, as our plan is to form a good old fashioned bucket brigade to get the cement up the hill, and we will also need folks to help with the mixing, screeding, finishing, clean up, etc.

Work will begin at 0800 Saturday morning, and we will work as late as needed (within reason) to get the slab poured and finished, if at all possible. To keep the traffic up to the site to a minimum, and to keep the parking situation under control, we will be asking volunteers to park at the MRS visitor center and putting as many of us as possible in each vehicle driven up to the repeater site. We will be coordinating these efforts using the Airlink repeater, with simplex frequency 146.550 MHz as a backup, so bring your radio when you head up.

If you are available and can help out, please reply (not reply all) to this email and let me know. I will then create a new email thread to coordinate the work party and work day without clogging up everyone's inboxes. Please feel free to extend this invitation to anyone else who might be interested, willing, and able to help out with the build.

Don't forget the **Denver Radio Club Hamfest - August 28th, 2022!** See the flyer on p. 33.

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 T6D05

What type of circuit controls the amount of voltage from a power supply?

- A. Regulator
- B. Oscillator
- C. Filter
- D. Phase inverter

General Exam Review -- Question G6A05

What is the approximate junction threshold voltage of a conventional silicon diode?

- A. 0.1 volt
- B. 0.3 volts
- C. 0.7 volts
- D. 1.0 volts

Extra Exam Review -- Question E6A05

How does DC input impedance at the gate of a field-effect transistor compare with the DC input impedance of a bipolar transistor?

- A. They are both low impedance
- B. A FET has lower input impedance
- C. A FET has higher input impedance
- D. They are both high impedance

Check your answers on page 21!

Upcoming Hamfests and Conventions

You can use this info to plan some of your upcoming travel to get away from home. You will find the local events in bold print.

Some conventions and hamfests may have been canceled or postponed — 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
07/22-07/23	Ham Holiday 2022—ARRL Oklahoma Section Convention https://hamholiday.com	Oklahoma City, OK
07/30	KARS (Kootenai ARS) Hamfest http://www.k7id.org	Post Falls, ID
08/13	RCKARA Hamfest 2022 http://rckara.org	Hutchinson, KS
08/28	Denver Radio Club Hamfest http://W0TX@W0TX.org	Brighton, CO
09/03	Alamogordo ARC 36th Annual Hamfest https://www.qsl.net/k5lrv/hamfest.htm	Alamogordo, NM



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. We're 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!

** volunteers needed!*

Date	Day	Event	Date	Day	Event
Jun. 25	Sat	ARRL Field Day*	Sep.	tbd	tbd
July 23	Sat	Cable Building Workshop	Oct. 29	Sat	Longmont Halloween Parade*
Aug. 6	Sat	Boulder County Fair Parade*	Nov. 12	Sat	Turkey Trot Race*
Aug. 6	Sat	Radio in the Park	Dec.	tbd	LARC Christmas Party*

One issue we ran into during LARC's Field Day was that someone found an unattended cell phone and wanted to return it to its owner. There was nothing on the cell phone itself pointing to the owner, and the phone was of course locked, so finding the owner was very difficult!

I had a personal experience with this at a LARC Field Day a few years ago. I brought along my Yaesu FT-60 HT, but wound up not needing it, so I left it in a box I brought. Someone appropriated the box, and my radio wound up "unclaimed." I did not have any identifying information on it, and actually forgot all about it until I heard on a later net that someone found a radio.

One thing that would have helped immensely in both scenarios would have been for the owner to label their device(s). A name, call sign, or email address would have made returning the device to its rightful owner much easier!

On my cell phone, I have the ability to add a line to the lock screen, and have used my name and email address. It also looks like my Android phone has the capability to set emergency contacts that can be pulled up without unlocking the device. Of course, neither of these would do any good if the battery in my phone had died, so I'll probably put a label between my phone and case.

The same could be done with an HT – remove the battery and stick a label to it or the back of your radio. Some radios, like the Baofeng UV-5R series allow you to program a sequence of characters to be shown when the radio powers up – setting this to your call sign will go a long way to getting reunited with lost equipment!



You may also want to label equipment such as coax and power cables that you might bring to group operating events. Even placing a sequence of different colored tape bands on a cable would at least allow you to quickly identify your own equipment.

Anything you can do to associate your device with you and your other equipment (labeled) will help it find its way back to you!



Dayton Flea Market at Xenia Hamfest

If you were unable to make it to the 2022 Dayton Flea Market / Hamfest, but are still interested in seeing what was there, Nick England has posted a bunch of pics at: <https://photos.app.goo.gl/JcQw86War4py9XkH6>.

While on a recent trip to visit my parents, the tire pressure warning light on their 2014 Honda Accord came on. It's just an idiot light – there is no indication of which tire(s) are low. We took it to a tire repair place and had them air everything up, and figured we'd keep an eye on the light to see if it was just a slow leak or something bigger. The light never went off. We later found that there's a procedure you must go through to reset the system after it is tripped, but in the meantime, I remembered seeing an article about using a Software-Defined Radio to intercept and decode the Tire Pressure Monitoring System (TPMS) transmitters which are located in the tires to see which one had the issue.



I found the article (<https://www.r-c-y.net/posts/tpms/>), and was all ready to give it a try when I found that the TPMS system in that model vehicle uses directly-wired wheel speed sensors rather than RF transmitters in the tires.

Since many hams likely have an RTL-SDR (<https://www.rtl-sdr.com/rtl-sdr-quick-start-guide/>) or similar device, I thought others might find this article interesting, and perhaps want to experiment with their own devices.

The rtl_433 application will also decode signals from devices such as wireless weather stations, smart meters, vehicle remote entry systems, and security systems that operate in various ISM (Industrial, Scientific and Medical) bands. It supports direct decoding and display of information from a number of devices, and includes functionality to analyze signals so you can add decoders for missing devices.

For more information on the tool, see: https://github.com/merbanan/rtl_433 and <https://trig.org/>.



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

Exam Level	Question	Answer
Technician	T6D05	A
General	G6A05	C
Extra	E6A05	C

Many of you may be very familiar with Smith Charts, others may wonder why they are used or have never heard of them. For those latter groups, maybe this article will help.

Smith Charts were invented in the mid-30s independently by Phillip Smith and Mizuhashi Tosaku. They were especially useful before computers came along since they provided a mechanism for manual design of RF circuits. They are still useful today since they provide an easy way to visualize impedances and associated matching circuits.

There are multiple versions of Smith Charts but perhaps the most used is the impedance version (see figure 1).

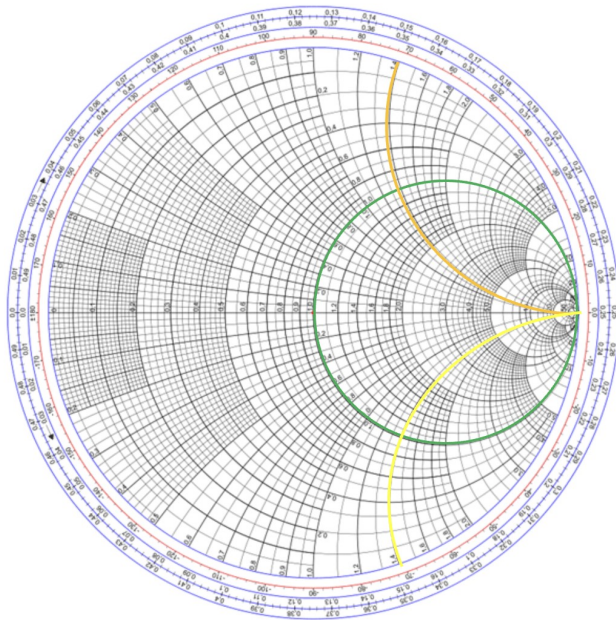


Figure 1. Smith Chart – Horizontal axis is resistance. Impedances with constant a resistance form a circle such as the highlighted green circle.

Constant reactance Impedances form arcs such as the orange one for positive reactance and the yellow one for negative reactance.

The outside circular scales are wavelengths in either degrees or fractions of wavelength.

On this type of Smith Chart, complex impedances ($Z=R+jX$) are plotted by the components of resistance (R) and reactance (X). The circles on this chart, such as the green one on figure 1, are curves of constant resistance, meaning points of a given resistance, but varying reactance would all lie on a circle. The Chart's arcs have constant reactance, such as the orange one for positive, or inductive reactance ($X=2\pi fL$) and the yellow one for negative or capacitive reactance ($X=-1/(2\pi fC)$). The central horizontal axis has zero reactance so pure resistances would be plotted as points on that axis. Smith Charts are typically normalized to a characteristic impedance, such as 50 ohms, but this can be any impedance. For instance, a 50 ohm resistor would be shown as a point at 1.0 on a chart normalized to 50 ohms (Figure 2, point A), 25 ohms is 0.5 (point B), and 0 ohms (point C). Impedances of 50 ohms plus 25 ohms of inductive reactance (point D) and 75 ohms plus -100 ohms of capacitive reactance (point E) are also shown. The outside wavelength scales are for use with impedance transformations down transmission lines.

>> Continued >>

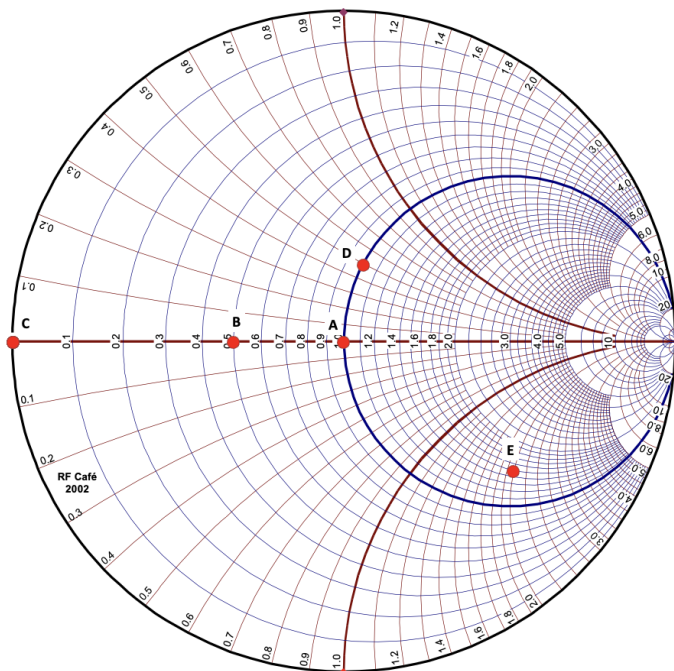


Figure 2. Smith Chart showing various impedance points.

Smith Charts allow an easy way to determine SWR. This is because a Smith Chart is basically a polar plot of reflection coefficients. The distance from the center of the chart is proportional to SWR, and thus constant SWR is a circle. Figure 3 shows SWR circles for SWRs of 2 and 5. Points closer to the center than the SWR circle of 2 for instance, have $SWR < 2.0$. The 25 ohm resistor (point B), or a normalized resistance of 0.5, when connected to a 50 ohm generator would create a SWR of 2 and, as expected, is right on the SWR circle of 2. Point E shows an impedance of 75-j100 or a normalized impedance of 1.5-j2.0 (point E). When this is connected to a 50 ohm generator, a SWR of 4.6 results, and as expected, is within the SWR circle of 5.

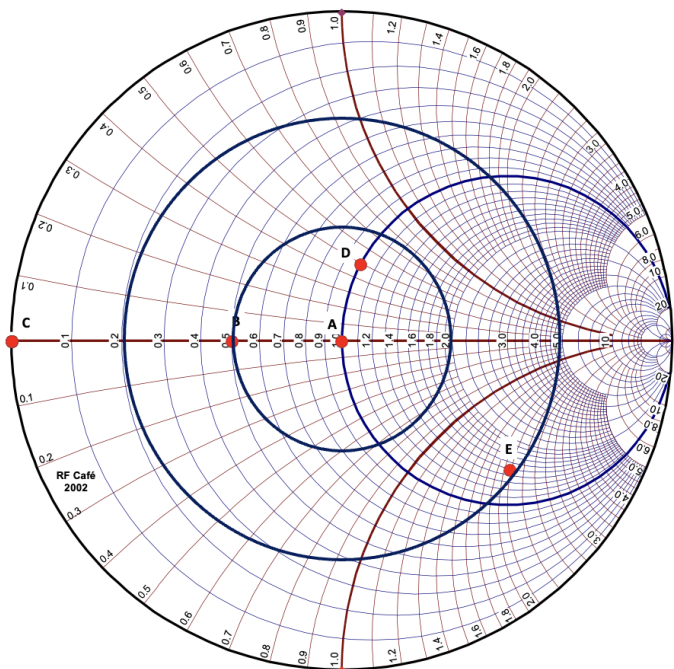


Figure 3. Smith Chart with SWR circles of 2:1 (inner black circle) and 5:1 (outer black circle).

The examples used to this point have just been fixed values. One of the most useful applica-

>> Continued >>

tions of a Smith Chart is to show how impedances change with frequency. For example, figure 4 shows a 75 ohm resistor in series with a 2 uH inductor over the frequency range of 3 to 30 MHz. At 3 MHz, 2 uH creates a reactance of 37.7 ohms, so the series combination is a normalized complex impedance of $1.5+j0.75$. As expected, the impedance over frequency overlays the constant 1.5 circle, representing the normalized resistance of 1.5. The curve crosses the various reactance arcs from 0.75 to 7.5, representing the increase in reactance from 3 to 30 MHz. When connected to a 50 ohm source, the SWR would be 2:1 at 3 MHz, and as expected due to the further distance from the center, the SWR increases to 40:1 at 30 MHz.

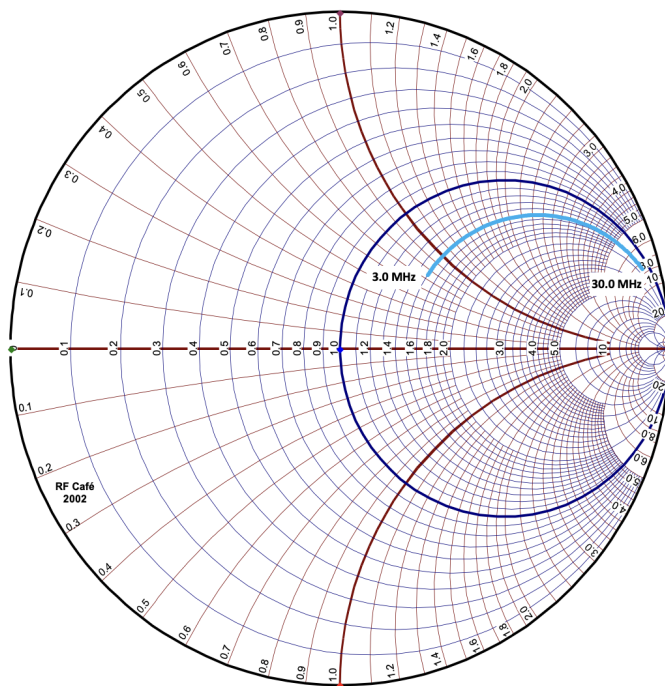


Figure 4. Impedance for a 75 ohm resistor in series with a 2 uH inductor over the frequency span of 3 to 30 MHz.

A perhaps more interesting case is that of figure 5. First, note that this chart is both a Smith Impedance Chart (red arcs) and a Smith Admittance Chart (blue arcs). The admittance chart is useful when combining circuit elements in parallel; more on this shortly. This chart shows the modeled impedance for a half wave dipole with length of 19.4 m per side, center fed with 15.2 m of RG-8X coax connected to a 50 ohm source. The chart enables you to quickly see where the lowest SWR would be and how fast it changes. As modeled, the SWR is lowest at ~ 3.75 MHz with a SWR of 1.4 and has a SWR of <3 from 3.6 to 3.9 MHz.

The chart shown in figure 5 was produced using the tool SimNEC developed by AE6TY. It is a very useful free tool for antennas and impedance matching. It is useful not only for designing impedance matching networks and modelling antennas, but also is a good tool to learn basic principles. You can download that and play with circuits to help understand impedance matching basics as well as model your antenna if interested. While the specific frequencies referred to above are not obvious in the figure, they are easily determined when using the tool.

>> Continued >>

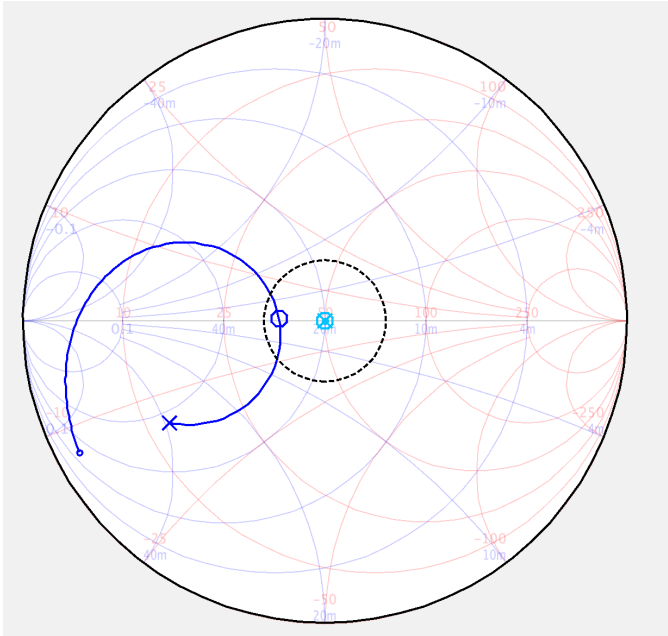


Figure 5. Smith Chart showing modeled behavior of a halfwave dipole. Small circle is 3.0 MHz, large circle is 3.75 MHz, and X is 4.0 MHz. A SWR circle of 1.5:1 is shown.

Note this Smith Chart is both an impedance (red arcs) and admittance chart (blue arcs).

Back to the combined admittance and impedance chart. In circuits, series impedances are added, whereas for parallel circuit elements, the admittance, the reciprocal of impedance are added. Using the combined chart makes it easier to facilitate both parallel and series circuits.

For an example of this, there is currently an antenna tuner kit that is available called the ATU-100. This uses a L-network with a series variable inductor and a shunt capacitor either at the input of the inductor or the output, depending on what the impedance being matched is. An often-asked question with that design is what is the maximum SWR that can be matched. We can use a Smith Chart to provide insight into that. While there are a number of versions of this design, one of the primary versions has a maximum inductance that is offered by that design is 8.42 uH and the maximum capacitance is 1869 pF.

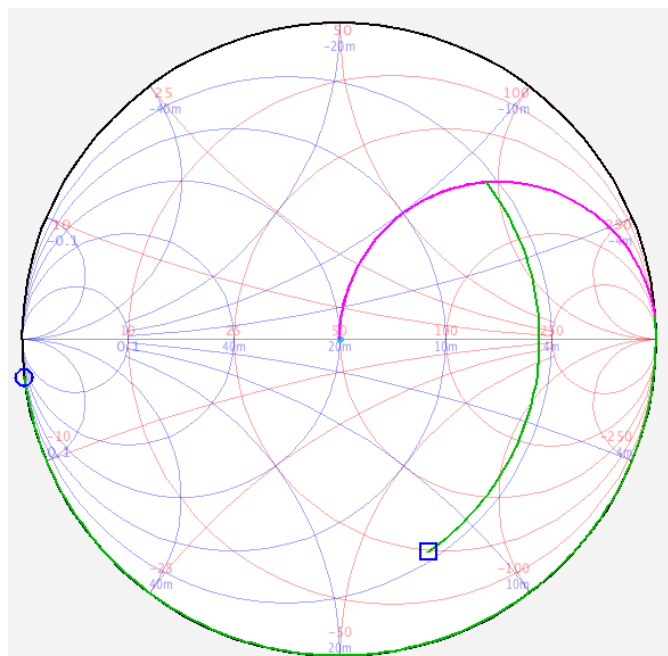


Figure 6. ATU Impedance transformation from 50 ohm generator at 1.8 (square marker) and 28 MHz (round marker) with max series inductance and max shunt capacitor at the output.

Figure 6 shows the impedance transformation that is possible with the max inductance and capacitance, with the capacitance on the output side of the inductor. You can see

>> Continued >>

how the purple trace shows the inductive reactance following along the impedance curves representing the series addition, just as we've seen in the previous example. Then, the green traces show two traces, one for 1.8 MHz, one for 28 MHz for the shunt capacitor. Those traces follow the same curvature as the admittance curves. At 1.8 MHz, the inductive reactance is ~93 ohms, hence the green trace picks up at this point and follows the curvature of the admittance lines. At 1.8 MHz, the capacitor has an impedance of ~-j47 ohms or an admittance of 0-j0.021 siemens.

With the shunt capacitor at the input, a different impedance matching can be obtained. The purple trace showing the capacitance in this case starts at the 50 ohm generator impedance and follows the admittance curves until just pass the 20 mS curve for 1.8 MHz and then the inductor reactance picks up. At 28 MHz, the capacitive admittance is higher so the curve continues before the inductive reactance picks up.

So how high of a SWR can be handled with the tuner? It depends on frequency of course, as well as the exact type of impedance is present at the antenna, which is why this question is so hard to answer, leading to so many questions. But with knowledge of the type of antenna configuration you are trying to match and some impedance estimates you could make a determination on your particular case using these techniques. Note that for the illustrations presented here, the maximum inductance and capacitance was used.

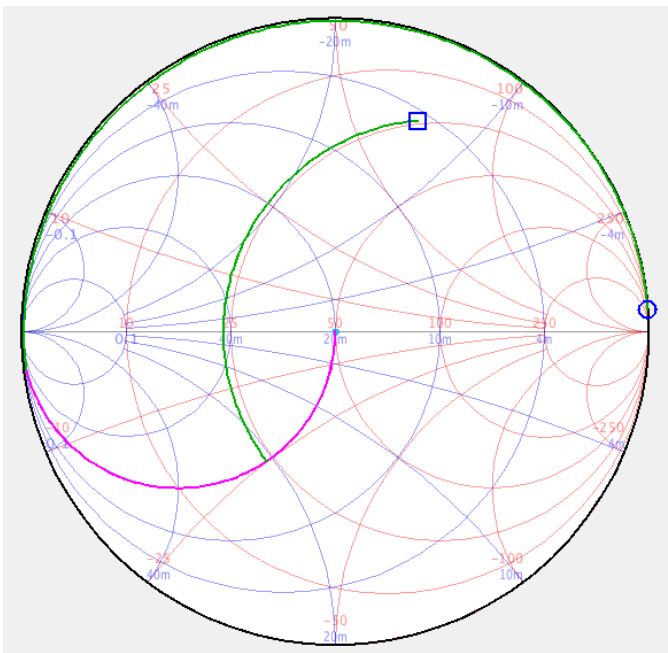


Figure 7. ATU impedance transformation from 50 ohm generator with the shunt capacitor at the input.

The actual values of inductance and capacitance can be reduced, in discrete steps for the ATU-100, meaning you would expect to be able to

>> Continued >>

handle most impedances less severe than these cases. Remember though that this also just looked at impedance transformation. At the output of the tuner, voltages and currents can vary quite a bit from what would be expected with 50 ohms due to the different load impedance. This must be considered to make sure components are adequately rated.

Hopefully this discussion has been useful to some readers. If there is interest, I'll follow with a subsequent article to provide some more examples on how Smith Charts can be used to design impedance matching networks. If you have questions, or feedback, feel free to email me at KØCLM@icloud.com.



LARC Logo Apparel

These are great items 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>.

					 4.5"  1.5"
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 the 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 Businesses, 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, they were both 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

amazonsmile
You shop. Amazon gives.

*See them all on page 27! 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 picture(s) 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.



Longmont Amateur Radio Club 2022 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	Dick Paige	KEØVT
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.



COWORKING
WORKING MORE SOCIALLY

350 Terry St.
Longmont, CO. 80503

Contact us at support@cosolve.co for more information



Shop with King Soopers to have them donate to LARC!
Read more about it on page 28.



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/>



Work-Sat.com
K6LCS
(909) 999-SATS

Clint Bradford, K6LCS

work-sat.com



Harlan Olson, W0HLO

atomicprints.com

May-June Puzzle Solution
Ham Radio Word Scramble

- | | | |
|-----|-------------|-------------|
| 1. | TNAANNE | ANTENNA |
| 2. | EIRFIAMPL | AMPLIFIER |
| 3. | RNRMSREOTAF | TRANSFORMER |
| 4. | ERALY | RELAY |
| 5. | TCCIAESHM | SCHEMATIC |
| 6. | SYTLRCA | CRYSTAL |
| 7. | UETB | TUBE |
| 8. | TMEER | METER |
| 9. | LCLORSATIO | OSCILLATOR |
| 10. | RCSVRNEIAET | TRANSCEIVER |
| 11. | DDIEO | DIODE |
| 12. | EKERY | KEYER |
| 13. | RECERVEI | RECEIVER |
| 14. | ELRTIF | FILTER |
| 15. | SRSETOIR | RESISTOR |
| 16. | URDTONCI | INDUCTOR |
| 17. | MACRNIHOS | HARMONICS |
| 18. | ITCCIRU | CIRCUIT |
| 19. | STCWIH | SWITCH |
| 20. | MESODECOR | MORSECODE |



July Fourth Word Search



ADAMS
AMERICA
BARBECUE
COLONIES
CONGRESS
DECLARATION
EQUALITY
FIREWORKS

FOURTH
FREEDOM
HOTDOGS
INDEPENDENCE
JEFFERSON
JULY
LIBERTY

NATION
PARADE
REVOLUTION
RIGHTS
STATES
THIRTEEN
UNITED

Sunday August 28, 2022- Adams County Fairgrounds

DENVER RADIO CLUB HAMFEST



NOTE: NEW PLACE AND DATE!!!

Adams County Fairgrounds

9755 Henderson Road in Brighton

Sunday August 28, 2022

9:00 am – 1:00 pm

\$6.00 Admission

(Children under 13 free w/adult)

Exact Change appreciated

Doors open to the Public at 9am

Six-foot tables Advance Purchase..... \$13.00 each

Tables at the Door..... \$20.00

No guarantee of availability of "at the door" tables!

Vendor Setup begins at 7:30 on August 28th

Table assignment will be available at check-in

License Testing/VE Exams at 10 am

Talk-In: 145.490 or 448.625 PL 100.0Hz

GPS: Lat 39d 43' 19" N Lon 105d 10' 15" W

Handicapped Parking & Access Available

Visit our website for table reservations or email our hamfest manager Cathy

Villhauer at drcfest@w0tx.org

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 _____

QB

Access

Website

Mail

Welcome

Office use only



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 QST or On the Air 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 QST via standard mail for Canadian members
International	\$76	\$147	\$217	Monthly QST 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
Toll free (US) 1-888-277-5289 or 860-594-0200 ■ www.arrl.org/join