



The RELAY)))

JANUARY
2021

The Official Publication of the Arrowhead Radio Amateur Club

A.R.A.C. Inc. P.O. Box 7164 Duluth MN 55807-7164 <http://www.thearac.org> Dues: Member \$20/Family \$25

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HAM RADIO/PHONE COMBOs

Love Them or Not, Has Their Time Finally Come?

Once upon a time, some amateur radio operators thought about creating a new generation handheld radio that could also be used as a cellphone. Some hams thought they were crazy (those from the “why would we ever need that?” camp), while some said that it was a interesting idea, but doubted that such a product could truly be a first-rate, high quality handheld. It would have to be something good enough to actually make hams willing to give up their favorite handheld radio and their favorite smartphone, right?

So, around eight years ago, several groups of people started working on the concept. Some products came to market with various capabilities and very mixed reviews. Brands like Rangerfone, Sure 8s, Outcome S15, Runbo, RFinder and others were tested and reviewed by the very astute ham radio community. As a result, some companies went out of business and some went back to the proverbial drawing board to incorporate feedback from hams. One company, RFinder, started to rise to the top, relentlessly pursuing improvements through several generations of their product until the recent release of a unit they feel leaves every other competitor in their dust. It is the RFinder B1.

If you've talked to other hams or read about RFinder ham radio/phones at online forums, you may remember the K1 or M1 versions. Most everyone seemed to agree they were generally making progress, but not quite there yet. And way too expensive for not quite hitting the mark! It's not to say the B1 will be for every ham, but this version is actually turning heads in the ham radio community, causing many to take a serious look at this for the first time. Especially if you travel for work or pleasure, or if you pursue wilderness activities in remote areas with fewer cell towers, requiring you to switch back and forth from cellphone to ham radio in key situations or emergencies. In these instances a highly capable all-in-one unit is great.

To thoroughly familiarize yourself with the B1 there are several You Tube videos and online reviews you can see to get an unbiased assessment and description. One You Tube video I like is **HamRadioConcepts** review entitled **New RFinder B1, Advanced VHF/UHF 4 Watt DMR/Analog Ham Radio Smartphone, NO CODE PLUGS NEEDED!** You can also see the RFinder official videos, but it's great to hear what other hams think.

If you haven't read the November 2020 issue of **QST Magazine**, there is a well-written product review by Pascal Villeneuve, VA2PV. If you don't receive **QST**, you can download a copy of the review by going to

Bottom Line

The RFinder B1 combines a dual-band DMR and FM handheld and Android smartphone into one highly capable package. The RFinder application eliminates the need for a DMR code plug, making operation easier.



Continued on page 23



2021



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facebook!

Co-Editors:

Kim & Steve Waller

Kim - KEØNQS • Steve - KEØNQT

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KEØNQT@gmail.com

ARAC Board Meeting Minutes - December 1, 2020

PRESIDENT



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VICE PRESIDENT



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SECRETARY



NØCALL
Robin Davis

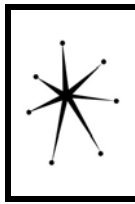
218-391-3Ø77
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Duluth, MN 55811
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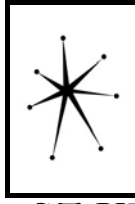
3RD YEAR BOARD



AAØME
Randy Johnson

randy@nsw4x4.com

2ND YEAR BOARD



KD9ABS
Gary Minter
1621 N 26th St
Superior WI 5488Ø

1ST YEAR BOARD



AAØAC
Dave Davis

218-348-6649
aaØac@outlook.com

Present: Gene Ellefsen-NØVRM, Mike Lovold-NØPDG, Robin Davis, Dave Davis-AAØAC, Randy Johnson-AAØME, Gary Minter-KD9ABS, Randy Wabik-KRØB, Kim Waller-KEØNQS, Steve Waller-KEØNQT, Grant Forsyth-KCØWUP

Guests: John Aasen-KFØBXQ

Meeting called to order by President Gene-NØVRM at 6:35 pm

Minutes:

Minutes posted in newsletter and on the web site. Motion to accept by Bruce-KEØNIT, seconded by Dave-AAØAC motion passed

Treasurer's Report:

Checking	1,624.43
Savings	2,173.57
Cash Subtotal.....	\$3,798.00

Outstanding Checks:

Mahtowa Repeater	-1,100.00
Bob Boyd-KDØLYN Memorial	-1,020.00
Subtotal Checks	-\$2,120.00

Winter CD	1,714.03
CD Subtotal.....	\$1,714.03

Grand Total\$3,392.03

Two (2) bills that are coming for payment. Merger is our Liability Insurance and that is due in January 2021. Normally, we also pay \$150.00 to Coppertop Church for six (6) months of use of their fellowship hall for our monthly meetings. We have not met for most of 2020 due to the Pandemic. Mike-NØPDG made a motion to continue our bi-annual payment of \$150.00, seconded by Dave-AAØAC, discussion ensued. Call for the Question - motion to accept by Randy-AAØME, seconded by Gary-KD9ABS, motion passed

Elections:

White ballot for all offices, how do we do this over the air on the 94 Repeater? Per Grant-KCØWUP, put out that everyone is running unopposed. Ask for motion for a white ballot, get a second and listen for discussion. Anybody opposed to the white ballot, a no response from all is considered passed, nominated are now elected. This task should be handled by either the Second or Third Year Board Member over the air at the General Membership meeting. Gary-KD9ABS stated he nominated Randy-AAØME to handle this task, as he is the newest Board Member. Randy-AAØME agreed to handle this task

Thomas J Reibold Award W9IBM Memorial Award:

Elmer Berg-KCØNGY is the only name brought forward for the award this year and it is a good choice. Decision to announce it at the monthly meeting, over the air and then work on getting the plaque to him. Possibly could deliver the plaque to his home. Dave-AAØAC will work with Doug-AAØAW to write up the Declaration of Elmer-KCØNGY receiving it. The plaque is at the Engravers now

Grant Money:

Discussion on writing applications for possible grants. The Minnesota Council

Continued on Page 3

ARAC Board Meeting Minutes , continued

Continued from page 2

of Nonprofits puts out a yearly book that can be a good resource. Start by looking at the relationships the Club already has to see if they have funds available. We use the 94 Repeater for the National Weather Service, used by the race community, used in Emergencies such as the Husky Fire several years ago. This was a multi-state response team, coordinated over the 94 Repeater. During Pagami Creek Fire, we were responders, using our repeaters and emergency response system. Consider the fact that Canadian National has \$10,000.00 a year to give for community relationships. Enbridge also has a large pool. We are a non-profit but not a 501C3 (tax-deductible organization). Write up language showing what we do for the community and what we would do with the money. Our #1 priority is to redo the 94 Repeater, upgrade what we have. We need a new controller, power supply, complete new unit, etc. Look for sponsors. It helps if we have a personal relationship or contact with whom we are asking for a grant. Randy-KR0B will put together a list of needs, with a rough estimate (plus 15%). Discussion on including Mahtowa Repeater to upgrade to a whole new set up, including the generator. Randy-KR0B will make up a wish list - Phase 1 Duluth, Phase 2 Mahtowa. Some of the applications will require a short video. Dennis Anderson-W0DIO volunteered before to be the voice on the videos. Kim-KE0NQS and Steve-KE0NQT will work up storyboards, do the required writing, etc. and bring back a product for Board to review

Committee Reports:

Repeater:

During Randy-KR0B's last conversation with John Kruk-N9UPC, he learned our controller on the hill is discontinued. John-KR0B said he will work with anything but if something goes wrong, we are screwed as far as the programming. The last person to program and maintain the Mahtowa Repeater was Jim Watten-KD0DZX, who is deceased. To install a new 94 Repeater, it makes sense to install a new controller at the same time. Feed line & connectors (700 feet), \$31.50 for cable, antenna \$1,200.00, tower crew \$3,500.00, we're at \$10,000.00 to upgrade the feed line with quality. Controller, \$700-800, amplifier, \$1,000.00, bringing us up to \$15,000.00 at a glance

Christmas Party:

Looking for something to replace the Christmas party that was cancelled to try and connect all our members over the air. Maybe a Christmas carol sing along using Zoom? We can use Kim-KE0NQS's Zoom Account. Several ideas were brought forth but no further action was taken

Programs:

DX Engineering is set up for January's program. Tom Ferguson-WB0DHE is scheduled for the February program. He is retired from MN Power and teaches Electrical Engineering at UMD

Newsletter:

Newsletter is 95% done. Kim-KE0NQS and Steve-KE0NQT were out of town, just returned and the newsletter will be completed soon. Distribution by email and on the web page

Historian:

Grant-KC0WUP brought a box of DVDs full of pictures, old new clippings, etc., for Kim-KE0NQS to add to the collection

Ham Fest

Planning to have Ham Fest in May, first Saturday, depending on conditions. Bob Schultz-KC0NFB will be contacting the Superior Fair Board about securing the location for us. We have a security deposit that has rolled repeatedly a few years

Motion to adjourn by Randy-AA0ME, seconded by Gary-KD9ABS, motion passed





ARAC Club Meeting Minutes

December 10, 2020

Present:

President Gene Ellefsen-N0VRM
Vice President Mike Lovold-N0PDG
Treasurer / Membership Bruce Carlson-KE0NIT
Secretary Robin Davis
Third Year Board Dave Davis-AA0AC
Second Year Board Randy Johnson-AA0ME
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Property / Picnic Scott Ahlgren-N0BYU
Newsletter / Historian Kim Waller-KE0NQS
Newsletter Steve Waller-KE0NQT
Testing Doug Nelson-AA0AW

Absent:

First Year Board Gary Minter-KD9ABS
Chaplain (Visiting) Rolland Bockbrader-KB0CK
Parliamentarian Grant Forsyth-KC0WUP
Repeater Randy Wabik-KR0B
Repeater Derek McCorison-W0DNF
Repeater Randy Haglin-N0BZZ
Web Site Thomas Dorr-KE0RHA

Meeting called to order by President Gene-N0VRM at 7:00 pm via 94 Repeater

Calling for a moment of silence as Ken Douglas-N9UCJ became a silent key. Thank you

Minutes:

Minutes posted in newsletter and on the web site. Motion to approve by Randy-AA0ME, seconded by Scott-N0BYU, accepted unless there are objections

Treasurer's Report:

Checking	1,624.43
Savings	2,173.57
Cash Subtotal	\$3,798.00
Outstanding Checks:	
Mahtowa Repeater	-1,100.00
Bob Boyd-KD0LYN Memorial	-1,020.00
Subtotal Checks	-\$2,120.00
Winter CD	1,714.03 (Due around Christmas time to renew)
CD Subtotal.....	\$1,714.03
Grand Total	\$3,392.03

Any questions on the Treasurer's Report? Motion to accept by Randy-AA0ME, seconded by Lewie Davis-N0LGD, consider that passed

Elections:

Randy-AA0ME will handled the elections at this point. We have what is known as a White Ballot. Therefore, the question is, are there any objections to a White Ballot? If so, call Randy-AA0ME now. All position stay the same, all officers and board members continue their positions for the next year. Thank you for your attention. I'll return this meeting back to Gene-N0VRM

Committee Reports:

Education:

Bob-KC0NFB – The next class will start on January 19, 2021, anywhere in the nation, connect via Zoom. It will be posted the second week of January on the Duluth Community Education Site for registration. Testing for the current class will be next Tuesday, December 15, 2020

Continued on Page 5



ARAC Club Meeting Minutes, *continued*

Testing:

Doug-AA0AW – Next test session is December 8, 2020, at the House of Refuge. Two (2) test sessions - 3:00 pm and 5:30 pm. Each time slot has four (4) candidates registered at this time. There is room for a couple more. Please get a hold of Doug-AA0AW to arrange accommodations due to COVID. Walking are welcome. Fee is still \$15.00.

AA0AW@ARRL.net or check out the newsletter for further information. Keep everyone safe while testing, new licenses and upgrade testing is available

Program:

Mike-N0PDG – Tonight is a Zoom program. January is DDX Engineering with a program on connectors. February will be Tom Ferguson-WB0DHE from UMD

Repeater:

Randy Haglin-N0BZZ was at Mahtowa on Sunday, December 6, 2020. It is a labor-intensive project, very time consuming. He may be done this weekend. He is bringing down some test equipment. Progress is being made on getting the Mahtowa Repeater back on the air and working properly

Ham Fest:

Bob-KC0NFB – We will be putting in our reservation for the Ham Fest in the near future. We are planning for a 2021 Ham Fest

Dues:

We do need dues to be sent in this year because there is no face-to-face contact due to the Pandemic. Dues can be sent to Bruce Carlson, 906 Anderson Rd, Duluth, MN 55811 or to ARAC, PO Box 7164, Duluth MN 55807-7164. These addresses are included in the Pres Sez each month. We use the dues money to continue the operation of the Club

Thomas J Reibold Award W9IBM Memorial Award:

From 3rd Year Board Member, Dave-AA0AC:

Mr. President, Members of the Board and the Radio Community:

I would like to read a resolution of accommodation for the Thomas J Reibold W9ABM Memorial Merit Award for this year. The resolution of accommodation is Elmer Berg-KC0NGY, who came highly recommended

WHERE AS, Elmer Berg has been a member of the ARAC Arrowhead Radio Amateurs Club for many years; and
WHERE AS, Elmer Berg is known for his integrity determination, honesty, loyalty, imagination, and energy; and
WHERE AS, Elmer Berg has been a former Property Chair for the ARAC; and
WHERE AS, Elmer Berg has been a steadfast member of the Carlton County ARES/RACES group; and
WHERE AS, Elmer Berg has volunteered to assist with numerous community events such as Grandma's Marathon, North Shore Inline Marathon, Wild Duluth Races, Gene Curnow ½ Ultra, Voyager Trail Ultra Marathon, and others; and
WHERE AS, Elmer Berg has been assisting with ARRL VEC testing as a certified VE, and
WHERE AS, Elmer has assisted with many tower and antenna projects including setting up for Field Day; and
WHERE AS, Elmer Berg is known to like coffee and the conversation that goes with it; and
WHERE AS, Elmer Berg has been the corn cook for many years at the club picnic

THEREFORE, BE IT RESOLVED that the Arrowhead Radio Amateurs Club not only commends and wishes to thank Elmer Berg for his years of dedicated service to the ARAC, but we also would like to bestow upon him the Thomas Reibold Memorial Merit Award for 2020

ARAC Board of Directors – Dave Davis-AA0AC, Gary Minter-KD9ABS, Randy Johnson-AA0ME

Elmer - KC0NGY was so excited when he passed the Extra Class after trying for several times. He had that determination. He has earned the respect of many of the members of ARAC

Any other news or questions?

Motion to adjourn by Dave-AA0AC moves, seconded by Bruce-KC0NIT, any objections? Meeting adjourned at 7:20 pm



Prez Sez...

Hi everyone,

I hope you all had a very Merry Christmas and got to enjoy Family and good food despite the Covid restrictions.

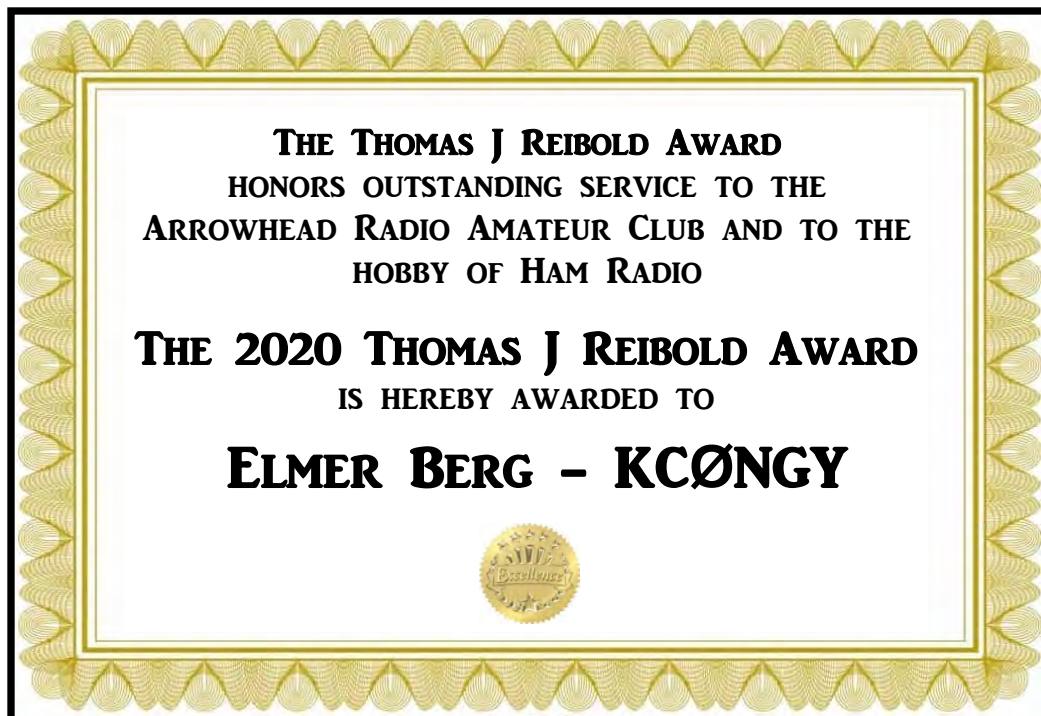
The January A.R.A.C Board meeting will be Tuesday, January 5th at the House of Refuge Church at 6:30 PM

The January A.R.A.C club meeting will be on Thursday, January 14th at 7:00 PM on the 146.94 repeater with a zoom program afterward.

Have a safe and Happy New Year !!!

Gene Ellefsen NØVRM

The 2020 Thomas J Reibold Award





U.S. AIR FORCE MILITARY AUXILIARY RADIO SYSTEM

Minnesota State MARS Director
Reginald B. Cass / AFS5MN

Gene Ellefsen
NØVRM

Thank you for your time and interest.

Air Force MARS membership could be for you. We do hope that it is.

If you have the following interests, and capabilities, we are interested in recruiting you to become an Air Force MARS member. Completion of the following on line training is mandatory:

Personally, Identifiable Information (PII) <https://iatraining.disa.mil/eta/piiv2/launchPage.htm>
Cyber Awareness https://iatraining.disa.mil/eta/disa_cac2018/launchPage.htm

If you have completed: [Incident Command System](#) (ICS) -100, 200, 700, and 800 training, and have obtained certification for Air Force MARS or are willing to obtain this training, again, Air Force MARS could be for you.

You must be interested in joining a group of individuals that are dedicated to amateur radio, emergency communications, and willingness to learn and used military communications procedures for voice and digital communications.

You must have equipment that will meet the minimum requirements for voice and digital operation. The equipment will be: transmitter, receiver, (transceiver) modified to operate out of amateur radio bands, computer, modem, and antenna's that are designed to operate on military assigned frequencies. (The best antennas will be a dipole cut to the operational frequency. NVIS antennas work best. You will not need a linear amplifier, however if you have one that will operate on out of amateur radio bands that will be a plus)

You must go through and complete training. You are allowed up to 180 days to do so.

Air Force MARS operation's and procedures are based upon "MARS Operating Instruction", (MOI). The MOI manual uses as its basis for instruction a series of Allied Communications Publications (ACP's), Department of Defense Directives, Department of Defense Instructions, and Department of Defense Manual.

If you already belong to a MARS program and would like to consider Air Force MARS, please contact one of the recruiting team members.

Our recruitment team is as follows:

AFA5XK Dave, WB7DRU wb7dru@gmail.com

AFA5ZV Randy, KRØB afa5zv@gmail.com

AFA5JY Reg, KAØRJY reg_cass@msn.com

CW Abbreviations

AR End of Message	AS Pse QRX	BK Back to You	SK End of Contact
TU Thank You	PSE Please	K Invite to Transmit	
QST Calling all Amateurs	QRL Are You Busy?	QRU Have anything for me	
QRV Are You Ready?	QRX Standby	QRS Transit Slower	

A	●■■■	M	■■■■	Y	■■■■●
B	■■■■●	N	■■■●	Z	■■■■●●
C	■■■■●●	O	■■■■■	1	●■■■■■
D	■■■■●●●	P	■■■■●●	2	●●■■■■■
E	●	Q	■■■■●●●	3	●●●■■■■■
F	●●■■■■	R	■■■■●●	4	●●●●■■■■
G	■■■■●●	S	●●●	5	●●●●●
H	●●●●	T	■■■	6	■■■■●●●●
I	●●	U	●●■■■	7	●●●●●●
J	■■■■■■■	V	●●●■■■	8	■■■■■■■●
K	■■■■●●■	W	■■■■●●●	9	■■■■■■■●●
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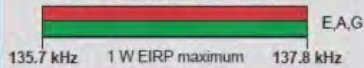
US Amateur Radio Bands

US AMATEUR POWER LIMITS

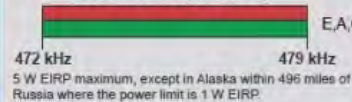
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

On March 28, 2017, the Federal Communications Commission adopted rules that will allow Amateur Radio access to 472-479 kHz (630 meters) and to 135.7-137.8 kHz (2,200 meters). However, amateurs cannot use these frequencies until 30 days after the Report and Order is published in the Federal Register and the final procedures for registering stations with the Utilities Telecom Council (UTC) have been approved and announced. At the time this chart was created, the Report and Order had not been published and the UTC online registration site is not yet available. Follow ARRL news for further information. New charts will be published at www.arrl.org/graphical-frequency-allocations when the bands are fully available for use.

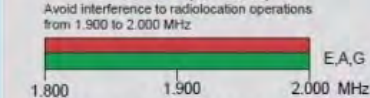
2,200 Meters (135 kHz)



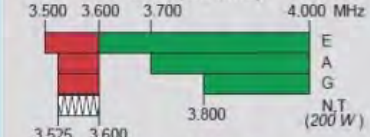
630 Meters (472 kHz)



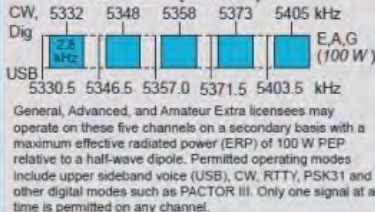
160 Meters (1.8 MHz)



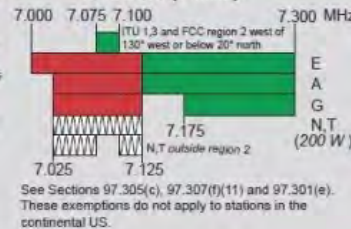
80 Meters (3.5 MHz)



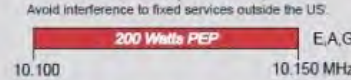
60 Meters (5.3 MHz)



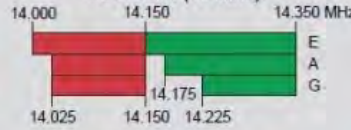
40 Meters (7 MHz)



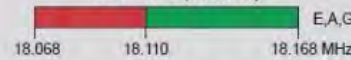
30 Meters (10.1 MHz)



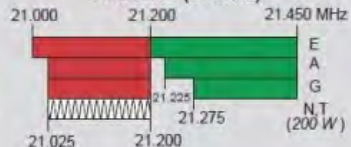
20 Meters (14 MHz)



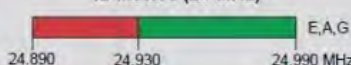
17 Meters (18 MHz)



15 Meters (21 MHz)



12 Meters (24 MHz)



Effective Date for
2,200 and 630 Meters
to be announced



ARRL The national association for
AMATEUR RADIO

KEY

Note: CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.

Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See **ARRLWeb** at www.arrl.org for detailed band plans.

ARRL We're At Your Service

ARRL Headquarters:
860-594-0200 (Fax 860-594-0259)
email: hq@arrl.org

Publication Orders:
www.arrl.org/shop
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email: orders@arrl.org

Membership/Circulation Desk:
www.arrl.org/membership
Toll-Free 1-888-277-5289 (860-594-0336)
email: membership@arrl.org

Getting Started in Amateur Radio:
Toll-Free 1-800-326-3942 (860-594-0355)
email: ncwham@arrl.org

Exams: 860-594-0300 email: vec@arrl.org

NETS

Have a favorite HF/6m/2m/1.25m/70cm net that you check into or listen in on? Also, please send corrections and we will add it to the list below - Kim KEØNQS at my email KEØNQS.mn@gmail.com.

- **Northland Weather Group Net:** Mondays 2000 on the ARAC repeater (146.940 MHz with a tone of 103.5 and standard offset).
- **Minnesota D-Star Net:** Sundays at 19:30 on Reflector 53A
- **Minnesota Section Net** 1200 and 1730 on 3.860 [Net Manager: NØYR] http://www.mn-section.org/dept_stm.html
- The non-non-net: Evenings 2000 144.200 USB except for Sunday evenings.
- Badger WX Net: 0500-0715 on 3.985. Give 24 hour high/low/current temperature, precipitation and snowfall.
- **PICONET:** 3.925 from 0900-1100 CT Mon-Sat and 1600-1700 CT Mon-Fri. Info at: <http://www.piconet3925.com>
- Michigan Upper Peninsula Net: 1600 (CST) on 3.921 MHz Sun-Sat and 1200 Sun. Info: <http://www.michupnet.com>
- Great Lakes Marine/Maritime Mobile Net: Morning 07:30 - 3.932; 08:15 - 7.261 MHz and evening 18:30 - 3.1730927; 19:15 - 7.268 MHz. Weekend extra net: 10:00 - 7.261/7.268 MHz. All CST, LSB and +/- QRM. See: <http://www.sailblogs.com/member/glimmnet/>
- MIDCARS: 07:30-13:00 - 7.258 MHz. See: <http://www.midcars.net>
- Iowa snowbird net on 14.257MHz, M-W-F at 10:00 am Local Time. This is an open net.
- Spider Web Net (Marco Island FL) on 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Maritime Mobile Service Network: Daily at 1100—2100 Central on 14.300. <http://mmsn.org> and <http://www.14300.net>
- RV Radio Network: Every day at 1900 Central on 7.265 MHz. Web site: <http://www.rvradionet.com>
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.480 MHz USB
- Wisconsin Sideband Net: Daily @ 5:15 PM – 3985 [or 3982.5] KHz LSB
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.480 MHz USB
- Hobby Helpers Net - Tuesday @ 8 PM – 28.330 MHz USB (Isanti MN) LSB [Net Manager: WOØA].
- Northstar Trader Net: 3.908 +/- at 0830 CST Sundays
- WARFA: 3.908 +/- Sun/Tue/Thu nights at 2200 CST, <http://warfa.org/>
- Youth Net: 14.320-14330 Sundays 1800-1900 UTC, Net Control: AC8PI
- YACHT: Saturdays 1900 CST on EchoLink #481872, <http://yachthams.webstarts.com>
- Northwestern Ontario ARES Net: Evenings at 20:15 (Central) on +/- 3.750Mhz
- The Iron Range Net: Saturdays at 0800 Central time on or near 3.919 Mhz. Look them up on Facebook!
- FORX Net: Mondays at 1900 Central at 3.941 Mhz +/- QRM. WAØJXT — Grand Forks, North Dakota
- HF CW: Fridays 08:00 CST, 7.112 MHz. Informal slow speed CW Net. W8IRT NCS. Email: w8irt@aol.com
- Minnesota ARES Digital Net: Thursdays at 2000 CST, 3.5835 MHz USB +/- QRM, Mode: Olivia 8/500.
- SARA Digital Net: Sundays at 1900 Local, 3.582.150 MHz USB +/- QRM, Mode: BPSK31/BPSK63
- Spider Web Net (Marco Island FL): 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Broadcaster Net: 7.231 or 3.855 M/W/F @ 1500 UTC. 14.255 M-F @ 2130 UTC. <http://www.cbsretirees.com/ham.htm>
- Old Military Radio Net: 7.268 +/- nightly at 0200z. Other times/Frequencies too. See: <http://www.mrca.ar88.net/>
- Rag Chew Crew/Tailgaters/Freewheelers Nets: 3.916 +/- nightly at 1900 CST, <http://www.tailgatersnet.com>
- North South Net: 7.214.6 +/- at 0700 CST, Monday-Saturday



Next ARAC Board Meeting

Tuesday, January 5, 2020
@ 6:30 p.m.

House of Refuge

Next ARAC Club Meeting

Thursday,
January 14th
7 p.m.
on the 94 Repeater

Join us on Zoom immediately
following the club meeting!

JANUARY 14TH PROGRAM

DX Engineering Zoom Presentation

- ◆ soldering pl259 connectors
- ◆ crimping on connectors from mini cable to rg58 and rg8 coax.

You do not need a Zoom account to participate!

Interested in providing a program, or have an idea for one?

Contact Mike NØPDG at
lovoldm@gmail.com

General License Class via Zoom!

January 20th—March 31st

This 12-week course will be held
Wednesdays at 19:00 CST

Lead Instructor:
Diane Saunders KØDSL

Associate Instructors:
Bob Schulz KCØNFB
Paul Dallavia KCØWDQ

To register for this **FREE** class, please contact KØDSL at k0dslae@gmail.com with the following information:

- ◆ Name
- ◆ Address
- ◆ Current Technician Class call sign
- ◆ Email address
- ◆ Daytime or evening phone number

Required Text

2019-2023 *General Class* book by Gordon West WB6NOA, available from Amazon at \$24.95.

Highly Recommended (optional) Additional Material
ARRL publication *Understanding Basic Electronics, 2nd Edition*, available from ARRL at \$32.95.

Required Equipment

Handheld calculator without programming functions or capability (scientific calculator is recommended--- such as the Texas Instruments TI-30XIIS Scientific Calculator, white, available from Amazon for \$15).

Handouts for the class will be sent via email the week before class begins and will also be available at the start of the class.

This class is available to anyone anywhere. All that is needed is a desire to obtain an upgrade from Technician to General Class. Any additional questions, please contact KØDSL at kc0dslae@gmail.com

Upon completing this class, individuals in the Twin Ports region can seek testing by contacting Doug Nelson AAØAW at aa0aw@arrl.net All others, please contact your local club or go to <http://www.arrl.org/find-an-amateur-radio-license-exam-session> to find an exam near you.

Duluth Area Repeaters



ARAC System WØGKP

Freq. Offset Tone Location

146.940	minus	103.5	Duluth
146.940	minus	107.2	Lakeside (rcv)
146.940	minus	151.4	Two Harbors (rcv)
146.940	minus	100.0	Gary-New Duluth (rcv)
146.940	minus	123.0	Solway (rcv)
146.940	minus	110.9	Cloquet (rcv)
147.000	minus	103.5	Mahtowa
444.100	plus	103.5	Duluth UHF Link

N9MMU/N9QWH System (WI)

145.310	minus	110.9	Duluth
145.490	minus	110.9	Solon Springs
147.255	plus	110.9	Hayward
145.110	minus	110.9	Rice Lake
147.345	minus	136.5	Holcombe
145.230	minus	110.9	Eau Claire

WECOMM – WI Statewide Linked System WE9COM

147.075 plus 110.9 Meteor Hill (closest repeater to Duluth)

LSAC System #1

147.330	plus	151.4	Proctor
147.330	plus	103.5	Duluth (rcv for Proctor)
147.330	plus	156.7	Duluth (North) (Fish Lake)
147.270	plus	114.8	Two Harbors
147.270	plus	103.5	Wales
147.090	plus	114.8	Silver Bay
145.410	minus	114.8	Finland
147.300	plus	114.8	Isabella
145.150	minus	103.5	Washburn, WI
146.700	minus	103.5	Bayfield, WI
443.850	+5.00	none	Bayfield, WI
147.165	plus	110.9	Hurley, WI
146.640	minus	151.4	Ely
443.500	+5.00	141.3	Gilbert
147.060	plus	103.5	Virginia
147.360	plus	162.2	Cook
147.165	plus	114.8	Coleraine
443.925	+5.00	110.9	Brainerd
443.200	+5.00	114.8	Tamarack
147.360	plus	203.5	Aitkin
146.865	minus	146.2	Giese
147.570	simplex	146.2	Hinckley
444.575	+5.00	146.2	Hinckley
443.325	+5.00	146.2	Isanti

NARC System NAØRC

145.45Ø	minus	1Ø3.5	Solway Twp
145.45Ø	minus	114.8	Park Point (rcv)
147.135	plus	114.8	Park Point (rcv)
147.135	plus	1Ø3.5	Knife River

Stand Alone Repeaters

145.21Ø	minus	11Ø.9	Clam Lake, WI
146.88Ø	minus	123.Ø	Grand Rapids
146.91Ø	minus	146.2	Duxbury, MN

Fusion and D Star

Fusion (Analog has tone and C4FM digital with no tone)

147.15Ø	plus	151.4	NTØB Gilbert Fusion Rptr
145.17Ø	minus	11Ø.9	WA9KLM Superior –
Douglas County RACES/ARES Fusion Repeater			
443.1ØØ	+5.ØØ	1Ø3.5	KBØYHX Cloquet –
Carlton County RACES/ARES Fusion Repeater			
444.3ØØ	+5.ØØ	1Ø3.5	NØEO Spirit Valley Amateurs Fusion
Repeater WIRES-X NØEO (Analog only) Fusion Room 40494			
147.375	plus		NØEO D Star
442.2ØØ	plus		NØEO D Star

Repeater list compiled by Dr. Frequency—KCØWDQ

ST. Louis County Department of Emergency Services Net Control Roster

N9DMG	Scott Swanson	NØVRM	Gene Ellefsen
AAØAW	Doug Nelson	KCØWDQ	Paul Dallavia
WØNWO	Dave Miller	WØDIO	Dennis Anderson
KØDSL	Diane Saunders	AAØME	Randy Johnson

Sunday Nights at 21ØØ on the ARAC System
(See Calendar for net control schedule)

Ten Meter SSB Net Control Roster

AAØAW	Doug Nelson	WØLWU	Joe Meese
NUØW	Gary Hanson	K9KDK	Al Babcock
WØDIO	Dennis Anderson	NØVRM	Gene Ellefsen
AAØME	Randy Johnson	KØDSL	Diane Saunders

Sunday Nights at 2ØØØ on 28.45Ø MHz USB

Ten Meter CW Net Control Roster

AAØAW	Doug Nelson	NØPDG	Mike Lovold
-------	-------------	-------	-------------

Sunday Nights at 193Ø on 28.125 MHz

Northland Weather Group Net Control Roster

KCØMKS Jeff Nast

Monday Nights at 2ØØØ on the ARAC System

Douglas County Net

Tuesday Nights at 2ØØØ on 145.49Ø (N9QWH System)

Central Carlton County Net

Tuesday Nights at 2Ø3Ø on the ARAC System

Lake County RACES/ARES Net

2nd & 4th Wednesday Nights at 19ØØ on the LSAC 1 System

Elmers

El-mer / el-mær/ [el-mer]

1. a male given name: from Old English words meaning "noble" and "famous."
2. an adhesive used to bond like or unlike materials
3. An experienced ham radio operator who mentors new and prospective hams.

Name	Call	Expertise
Jeff Nast	KCØMKS	APRS, EchoLink, WinLink, Fusion, Contesting
Bob Schulz	KCØNFB	Contesting
Jim Anderson	NØJWA	QsoNet
Doug Nelson	AAØAW	HF, VHF/UHF, Contesting, Packet, APRS, Morse Code, VE testing, Echolink, Allstar, EmCom...

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Contact Kim or Steve Waller to include your name in this listing!

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Members, please check your name and email address for accuracy. If you are not on this list and want to be on the list, contact us with your info. If you need to make a change, please let us know at KEØNQS.mn@gmail.com Or KEØNQT@gmail.com

Co-Editors,
Kim & Steve Waller
KEØNQS & KEØNQT



JANUARY

CLUB EVENTS

SUNDAY NIGHT NETS

1930 - CW - 28.125 MHz USB-CW
 2000 - USB 28.450 MHz
 2100 - Southern St. Louis County
 Emergency Services Net

MONDAY NIGHT NETS

2000 - Northland WX Net - ARAC Repeater

TUESDAY NIGHT NETS

2000 - Douglas Cty 145.490 MHz
 2030 - Central Carlton County

WEDNESDAY NIGHT NETS

1900 - Lake County - LSAC1
 2nd & 4th Wednesdays
 2100 - BWAR

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3 CW 1930 NØPDG USB 2000 NØPDG ES 2100 AAØME	4 WX 2000 KCØMKS	5 ARAC BOARD MEETING - 18:30 House of Refuge DC Net 2000 CC Net 2030	6 2100 - BWAR	7	8	9
10 CW 1930 AAØAW USB 2000 AAØAW ES 2100 N9DMG	11 DC ARES/ RACES Mtg 1900 DC EOC WX 2000 KCØMKS	12 DC Net 2000 CC Net 2030	13 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	14 ARAC Club Meeting 94 Repeater 7 pm	15	16
17 CW 1930 NØPDG USB 2000 WØLWU ES 2100 AAØAW	18 WX 2000 KCØMKS	19 DC Net 2000 CC Net 2030	20 St. Louis County ARES/ RACES Mtg 1630 Pike Lake EOC 2100 - BWAR	21	22	23
24 CW 1930 AAØAW USB 2000 K9KDK ES 2100 KCØWDQ	25 WX 2000 KCØMKS	26 DC Net 2000 CC Net 2030	27 Lake County Net 1900 2100 - BWAR	28 Carlton County ARES/RACES Meeting 1900 CC EOC	29	30 Club Breakfast @ The Chalet 0800-0900
31 CW 1930 NØPDG USB 2000 ES 2100 WØNWO						

Get this newsletter *faster*
via email!
Email Doug AAØAW at
aa0aw@arrl.net

Next Meeting: Thursday,
January 14, 2020 - 7 pm
On the 94 Repeater

ARAC Committee Chairs



Club License Trustee:

Ray Barnes KEØZN

Control Operators:

AAØAW - NØKXT - KCØNFB

Newsletter/Historian:

Kim KEØNQS & Steve KEØNQT
Waller

Education Chair:

Bob Schulz KCØNFB

Hamfest Chair:

Bob Schulz KCØNFB

Chaplains:

Visiting Chaplain:

Denny Anderson WØDIO

Parliamentarian:

Grant Forsyth KCØWUP

Website:

Thomas Dorr KEØRHA

Membership:

Bruce Carlson KEØNIT

Property Chair:

Wulf Gar WU1FGR

Testing:

Doug Nelson AAØAW

Field Day:

Dennis Anderson WØDIO

Picnic Chair:

Scott Ahlgren, NØVYU

Repeater Chairs:

Randy Haglin NØBZZ
Randy Wabik KAØJZV

Contest Calendar at www.contestcalendar.com

National Contest Journal at www.ncjweb.com

QSO Party Note: State/Province/National QSO Parties are abbreviated with the 2 or 3 letter abbreviation for the state/province/national designation followed by QP for QSO Party:

Examples: Minnesota QSO Party is MNQP
British Columbia QSO Party = BCQP

QRZ web site at www.qrz.com

VHF Propagation site at www.aprs.mountainlake.k12.mn.us

Reminder: The Contest Corral monthly listing of contests can be found in each issue of QST. ARRL sponsored contests can be found in Contest Corral, highlighted, or on the ARRL's web site at arrl.org.



FCC Adopts \$35 license fee for amateur radio service applications

As you may have heard, the FCC made a proposal to add/change service fees on Amateur Radio transactions. On December 23rd, they issued a ruling in the form of a 97 page document you can read in full here: <https://docs.fcc.gov/public/attachments/FCC-20-184A1.pdf>

As you know, there was a proposal a few months ago for a \$50 fee to accompany nearly any amateur radio license application.

The FCC published their Report and Order (MD Docket No. 20-270) adopting a \$35 license fee after reviewing numerous requests from amateur radio operators and organizations like the ARRL stating that the fee was excessive for a mostly automated process.

The FCC seems to have “split the difference” on the proposal agreeing that \$50 was too much, but free was too little considering the number of applications they receive and process annually.

The following is language from page 11 of the FCC Report and Order

30. We adopt the categories of personal license application fees proposed in the NPRM. The Commission proposed a fee of \$50 for each of these applications. The Sonoma County Radio Amateurs, Amateur Radio Relay League (ARRL), and many individual commenters contend that the proposed \$50 fee for Amateur Radio Service applications is too high and will prevent amateurs from joining the amateur radio service; instead, they contend, the Commission should adopt no fee or a nominal fee. We agree with commenters asserting this fee is too high to account for the minimal staff involvement in these applications and therefore adopt a reduced amount of \$35 fee for all personal license application fees.



Federal Communications Commission

New license	\$35
Special temporary authority	\$35
Rule waiver	\$35
Renewal	\$35
Vanity Call Sign (Amateur Radio Service)	\$35

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I. INTRODUCTION

1. In this Report and Order, we adopt a new application fee schedule that significantly updates the Commission's previous fee schedule in both types of applications and other processes covered by the fee requirement and also in the fee amounts. The new and revised application fees we adopt today apply to a broad spectrum of filings processed by the Commission, including applications, modifications, amendments, and renewals of wireless, broadcast, and satellite licenses, applications to participate in auctions, tariff filings, formal complaints, and certain petitions. This new application fee schedule is

Thanks to all the members of **Arrowhead Radio Amateur Club** who participated in the FCC Proposal Feedback process alongside the American Radio Relay League. Amateur Radio Operators perform valuable services to our communities and our country and deserve to have our voices heard.

FOR SALE



Our thanks to the family of Bob Boyd KDØYLN, who have graciously donated Bob's ham shack equipment to the ARAC.

Bob became a silent key on May 31, 2020 & was serving the club as a 1st Year Board Member. N0PDG found sales for 3 items totaling \$970 thus far.

The Board has voted to earmark all proceeds from Bob's equipment toward replacement of our aging repeater.

THE FOLLOWING ITEMS ARE AVAILABLE FOR SALE:

We are taking offers on non-priced items & will present offers for discussion on all items for consideration as appropriate. Contact N0PDG at lovoldm@gmail.com to make offer.

YAESU 767GX, built in power supply. Comes with matching speaker (no cables to hook up the speaker). This radio has an issue with all the lights coming on all the time. Sometimes they come on, sometimes not.

MAKE OFFER

KENWOOD TS-940S Receives Great! No mic, built in power supply, power button missing. Unit powers up by pushing the display button, likely had work done to it. Unknown on power output.

MAKE OFFER

ICOM 718 RADIO with mic and power cord. No manual. New are selling for \$625.

ASKING \$400

Morse code book with a cd for learning. Also oscillator, no keyer.

ASKING \$20

ICOM IC-Z1A Handheld dual band. Comes with manual. Unknown if works as there is no power cord or charger. Worked fine when gifted to Bob by Randy Johnson AA0ME.

MAKE OFFER

ADDITIONAL ITEMS FOR SALE ON PAGES 17 & 18!

FOR SALE



Larry Mattfield KEØPJW, of Bovey, Minnesota became a silent key July 25, 2020. NØVRM was contacted by Minton Miller NØNWO who is handling the sale of the radio equipment benefiting Larry's wife of 48 years, Betsy.

Please contact Minton Miller NØNWO at mdfamily@mchsi.com or 218-256-6708 with questions or offers on the following items:

Icom 7300 \$935.00

Icom sm30 desk mic \$119

Samlex sec1235m \$110.50

LDG AT 600 Prow II auto tuner for Icom \$ 314.50

Yaesu 857d hf/vhf/uhf \$680

Yaesu ft70d 2m ht \$148.75

Yaesu SBH-28 rapid charger \$25.50

Yaesu SBR-24Li batteries (2X) \$34 each or \$68 for both.

MFJ 941E manual antenna tuner \$119

Ameritron ALS 500m mobile 500 watt amp \$850

Ameritron ALS 500 rc mobile amp remote \$55.25

Ameritron SPS 75MV switching power supply \$246.50

vantage pro 2 weather station. \$990.25

diamond 2m/440 X50A bass antenna \$80.75

Solarcon A 99 cb antenna with GPK-1 Ground Plane \$123.25

Alpha Delta DELTA 4b coax switch. \$89.25

**MORE ITEMS
FOR SALE on p.18!**

FOR SALE

Denny Burt KB0SPA has a close friend—Lynn Johnson KB9PFF of Siren, WI—who became a Silent Key. KB9PFF's radio equipment is now located in Barnum at the house of KB0SPA.

For those interested in the following items, please send texts to KB0SPA
at **218-341-4033**

1. a pair of uniden frs or gmrs radios, with cradle charger 20.00
- 2.lafayette swr field strength meter. with box. 30.00
- 3.radio shack 2 meter mobile radio model htx-242 60.00
4. ic-2000 2 meter mobile lcom, 65.00
- 5.ic-2100 2 meter mobile icom 65.00
- 6.Yaesu 2800 2 meter mobile 65.00
7. yaesu 2900 2 meter mobile 75.00
8. Kenwood ts-480 200 watt radio hf-6 meters. 500.00
- 9.palamar tx-100 3-30 mhz mobile hf amp 50.00
10. hygain 2.5 amp power supply 15.00
11. yaesu 757gx hf radio 200.00
12. astron ss-25m with meters built in, 45.00
- 13.kenwood at-200 tuner. 60.00
14. astron rs-20a power supply. 65.00
15. mirage 35 watt 2 meter fm amp 30.00
- 16.uniden 40 channel cb radio 10.00
17. sears roadtalker base mic 30.00
18. realistic pro 2023 scanner 10.00
19. mfj 259 analyzer 150.00
20. mfj 862 144/220/440 swr watt meter.25.00
- 21.realistic 2024 scanner 10.00
22. bc60xlt handheld scanner x2 of these 20.00 a peace.
- 23.tv antenna rotor with 3 wire wire. 35.00
24. realistic pro 2003 scanner. 15.00
25. 2 vintage regency scanners crystal operated. 10.00 each.
26. auto rotator tra rotor with control box 45.00
27. lil tarheel screwdriver 225.00
28. 50 feet raw coax on a spool 10.00
29. 1/4 inch guy wire cable 80-100 feet. 20.00



Contest Calendar - January 2021

<u>+ AGB New Year Snowball Contest</u>	0000Z-0100Z, Jan 1
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jan 1
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 1
<u>+ NCCC Sprint</u>	0230Z-0300Z, Jan 1
<u>+ SARTG New Year RTTY Contest</u>	0800Z-1100Z, Jan 1
<u>+ AGCW Happy New Year Contest</u>	0900Z-1200Z, Jan 1
<u>+ AGCW VHF/UHF Contest</u>	1400Z-1700Z, Jan 1 (144) and 1700Z-1800Z, Jan 1 (432)
<u>+ QRP ARCI New Years Sprint</u>	1500Z-1800Z, Jan 1
<u>+ PODXS 070 Club PSKFest</u>	0000Z-2400Z, Jan 2
<u>+ WW PMC Contest</u>	1200Z, Jan 2 to 1200Z, Jan 3
<u>+ RSGB AFS Contest, CW</u>	1300Z-1700Z, Jan 2
<u>+ Original QRP Contest</u>	1500Z, Jan 2 to 1500Z, Jan 3
<u>+ Winter VHF Sprint</u>	1600Z-1659Z, Jan 2
<u>+ ARRL Kids Day</u>	1800Z-2359Z, Jan 2
<u>+ ARRL RTTY Roundup</u>	1800Z, Jan 2 to 2400Z, Jan 3
<u>+ EUCW 160m Contest</u>	2000Z-2300Z, Jan 2 and 0400Z-0700Z, Jan 3
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jan 4
<u>+ RSGB Hope QSO Party</u>	0930Z-1100Z, Jan 4 (RTTY)
<u>+ OK1WC Memorial</u>	1630Z-1729Z, Jan 4
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jan 5
<u>+ ARS Spartan Sprint</u>	0200Z-0400Z, Jan 5
<u>+ RSGB Hope QSO Party</u>	1100Z-1230Z, Jan 5 (SSB)
<u>+ RTTYOPS Weekspint</u>	1700Z-1900Z, Jan 5
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 6
<u>+ Phone Fray</u>	0230Z-0300Z, Jan 6
<u>+ RSGB Hope QSO Party</u>	1230Z-1400Z, Jan 6 (FT4)
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jan 6
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Jan 6
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jan 6

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Contest Calendar - January 2021, Continued

<u>+ UKEICC 80m Contest</u>	2000Z-2100Z, Jan 6
<u>+ AWA Linc Cundall Memorial CW Contest</u>	2300Z, Jan 6 to 2300Z, Jan 7 and
<u>+ AWA Linc Cundall Memorial CW Contest</u>	2300Z, Jan 9 to 2300Z, Jan 10
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jan 7
<u>+ RSGB Hope QSO Party</u>	1400Z-1530Z, Jan 7 (CW)
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 7
<u>+ NRAU 10m Activity Contest</u>	1800Z-1900Z, Jan 7 (CW) and
<u>+ NRAU 10m Activity Contest</u>	1900Z-2000Z, Jan 7 (SSB) and
<u>+ NRAU 10m Activity Contest</u>	2000Z-2100Z, Jan 7 (FM) and
<u>+ NRAU 10m Activity Contest</u>	2100Z-2200Z, Jan 7 (Dig)
<u>+ SKCC Sprint Europe</u>	2000Z-2200Z, Jan 7
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jan 8
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 8
<u>+ NCCC Sprint Ladder</u>	0230Z-0300Z, Jan 8
<u>+ YB DX Contest</u>	0000Z-2359Z, Jan 9
<u>+ Old New Year Contest</u>	0500Z-0900Z, Jan 9
<u>+ SKCC Weekend Sprintathon</u>	1200Z, Jan 9 to 2400Z, Jan 10
<u>+ UBA PSK63 Prefix Contest</u>	1200Z, Jan 9 to 1200Z, Jan 10
<u>+ North American QSO Party, CW</u>	1800Z, Jan 9 to 0559Z, Jan 10
<u>+ NRAU-Baltic Contest, SSB</u>	0630Z-0830Z, Jan 10
<u>+ NRAU-Baltic Contest, CW</u>	0900Z-1100Z, Jan 10
<u>+ DARC 10-Meter Contest</u>	0900Z-1059Z, Jan 10
<u>+ Midwinter Contest</u>	1000Z-1400Z, Jan 10
<u>+ RSGB AFS Contest, Data</u>	1300Z-1700Z, Jan 10
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jan 11
<u>+ 4 States QRP Group Second Sunday Sprint</u>	0100Z-0300Z, Jan 11
<u>+ RSGB Hope QSO Party</u>	0930Z-1100Z, Jan 11 (FT4)
<u>+ OK1WC Memorial</u>	1630Z-1729Z, Jan 11
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jan 12
<u>+ RSGB Hope QSO Party</u>	1100Z-1230Z, Jan 12 (CW)
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 12
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 13
<u>+ Phone Fray</u>	0230Z-0300Z, Jan 13
<u>+ RSGB Hope QSO Party</u>	1230Z-1400Z, Jan 13 (RTTY)
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jan 13
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Jan 13
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jan 13

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Contest Calendar - January 2021, Continued

<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jan 14
<u>+ RSGB Hope QSO Party</u>	1400Z-1530Z, Jan 14 (SSB)
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 14
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jan 15
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 15
<u>+ NCCC Sprint Ladder</u>	0230Z-0300Z, Jan 15
<u>+ Hungarian DX Contest</u>	1200Z, Jan 16 to 1159Z, Jan 17
<u>+ PRO Digi Contest</u>	1200Z, Jan 16 to 1159Z, Jan 17
<u>+ RSGB AFS Contest, SSB</u>	1300Z-1700Z, Jan 16
<u>+ NA Collegiate Championship, SSB</u>	1800Z, Jan 16 to 0559Z, Jan 17
<u>+ North American QSO Party, SSB</u>	1800Z, Jan 16 to 0559Z, Jan 17
<u>+ WAB 1.8 MHz Phone/CW</u>	1900Z-2300Z, Jan 16
<u>+ ARRL January VHF Contest</u>	1900Z, Jan 16 to 0359Z, Jan 18
<u>+ Feld Hell Sprint</u>	2000Z, Jan 16 to 0559Z, Jan 17
<u>+ Run for the Bacon QRP Contest</u>	2300Z, Jan 17 to 0100Z, Jan 18
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jan 18
<u>+ OK1WC Memorial</u>	1630Z-1729Z, Jan 18
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jan 19
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 19
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 20
<u>+ Phone Fray</u>	0230Z-0300Z, Jan 20
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jan 20
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jan 20
<u>+ NAQCC CW Sprint</u>	0130Z-0330Z, Jan 21
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jan 21
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 21
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jan 22
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 22
<u>+ NCCC Sprint Ladder</u>	0230Z-0300Z, Jan 22
<u>+ BARTG RTTY Sprint</u>	1200Z, Jan 23 to 1200Z, Jan 24
<u>+ UK/EI DX Contest, CW</u>	1200Z, Jan 23 to 1200Z, Jan 24

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Contest Calendar - January 2021, Continued

+ K1USN Slow Speed Test	0000Z-0100Z, Jan 25
+ QCX Challenge	1300Z-1400Z, Jan 25
+ OK1WC Memorial	1630Z-1729Z, Jan 25
+ QCX Challenge	1900Z-2000Z, Jan 25
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Jan 26
+ QCX Challenge	0300Z-0400Z, Jan 26
+ RTTYOPS Weeksprint	1700Z-1900Z, Jan 26
+ SKCC Sprint	0000Z-0200Z, Jan 27
+ QRP Fox Hunt	0200Z-0330Z, Jan 27
+ Phone Fray	0230Z-0300Z, Jan 27
+ CWops Mini-CWT Test	1300Z-1400Z, Jan 27
+ CWops Mini-CWT Test	1900Z-2000Z, Jan 27
+ UKEICC 80m Contest	2000Z-2100Z, Jan 27
+ NAQCC CW Sprint	0130Z-0330Z, Jan 28
+ CWops Mini-CWT Test	0300Z-0400Z, Jan 28
+ RTTYOPS Weeksprint	1700Z-1900Z, Jan 28
+ NCCC RTTY Sprint	0145Z-0215Z, Jan 29
+ QRP Fox Hunt	0200Z-0330Z, Jan 29
+ NCCC Sprint Ladder	0230Z-0300Z, Jan 29
+ CQ 160-Meter Contest, CW	2200Z, Jan 29 to 2200Z, Jan 31
+ Feld Hell Sprint	0000Z-2359Z, Jan 30
+ REF Contest, CW	0600Z, Jan 30 to 1800Z, Jan 31
+ UBA DX Contest, SSB	1300Z, Jan 30 to 1300Z, Jan 31
+ Winter Field Day	1900Z, Jan 30 to 1900Z, Jan 31

Our thanks to **Bruce Horn, WA7BNM** for use of this calendar!

Please visit Bruce's site at
www.contestcalendar.com/contestcal.html

www.moonraker.eu/downloads/dl/file/id/528/product/11213/2020_11_qst_prod_rev_villeneuve_rf_finder_b1.pdf

Here are key points excerpted from the Pascal Villeneuve, VA2PV (va2pv@arrl.net) overview:

- ◆ The RFinder B1 supports DMR and FM modes on 2 meters and 70 centimeters, one band at the time, with a maximum transmit power of 4 W on both bands.
- ◆ It has a 4-inch touch-screen and is resistant to dust and moisture (the radio complies with the IP67 standard). **Editor's Note: See Figure 4 on page 25 for more about IP67.**
- ◆ Unlike most smartphones, this unit has a large removable battery on which you can attach a belt clip or optional swivel belt loop. The 7.2 V, 2,500 mAh battery can last a long time (more than a day) as a standby phone, and a little bit less when monitoring the bands with the radio application on. With two batteries, you should never run out of power, as they can charge without the radio in the desktop charger.
- ◆ The package includes the B1 transceiver, a screen protector, a battery, a standard belt clip, a hand strap, a USB-C cable, and a desktop charger with the ac adapter.
- ◆ You can buy optional accessories, such as spare batteries, a speaker-microphone, a swivel belt loop, and a 13.8 V “cigarette lighter” power cable for your vehicle. This cable is used with the desktop charging cradle, not directly with the radio.
- ◆ The documentation does not say how much the radio supports in terms of memory channels, DMR talk groups (TG), digital contacts, and radio IDs, but with the RFinder app, it's irrelevant because it uses the phone's memory. The device has 4 GB of RAM and 64 GB of internal storage, plus you can add two microSD cards up to 128 GB each. You won't run out of memory with the B1.

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Figure 1 —
Two views of the
RFinder B1.



Front: 4-inch IPS color touchscreen, with the three typical Android buttons below. Top left corner of the screen, there is a five-megapixel front camera.

Rear: Top right, 13-megapixel camera that can record full HD video (1,920 × 1,080 pixels, 30 frames per second) & an integrated flash that is also a flashlight.

Left side: Top two buttons are for push-to-talk (PTT). The top button is for the radio, and you can use the other to operate half-duplex communication applications, such as Zello, which lets you use your phone as a walkie-talkie. Below there's a fingerprint sensor to unlock the phone. Sensor works okay, could be more responsive.

Right side: Connector for the optional external speaker-mic has no cover, so the pins are exposed, but the manufacturer says it's still IP67 weather resistant. Up and down volume buttons and a USB-C port under a rubber cap. The USB port can only be used to connect the unit to a computer — it does not charge the battery.

Top: Dual-function step knob toggles between volume control or channel selection in the RFinder radio application. On the other side, there's an inside-thread SMA male connector for the radio antenna. The GPS antenna is also on top, in between the knob and the radio antenna, under a cover with a satellite image engraved into the case.

Bottom: Latch to remove or secure the battery.

Under the battery: A rubber door that flips up to expose four slots, two for cellular service SIM cards and two for microSD memory cards

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Ham Radio Operation

Here's what VA2PV reports on operation:

"The B1 is different from other DMR radios because it doesn't require CPS programming software for con-figuration. Instead, it uses its own RFinder application database from the internet. You can use it on a Wi-Fi network or on your cellular connection if you have a data plan. You can download and store your regional repeater database into the B1, if you need to use it offline. Another nice feature is that you can store your memories in the cloud, and you can restore them from the internet later. You can transfer any repeater found in the database to the B1's memory or create your own repeater listing. Unfortunately, there's no scanning feature in the RFinder application."



Figure 2 — The RFinder B1 application's main window.

Figure 2, LEFT: The bottom of the screen has 3 different ways to sort the repeaters — by distance (DIS), frequency (FREQ), or repeater call sign (CALL). Next to CALL is the power on/off; grayed out when off and red when on. Next to that is a volume level indicator, adjusted using the knob on the top of the B1. Toggle the knob between volume and memory channel by touching the indicator on the screen. If you touch MAP, it will show the repeaters on a map.

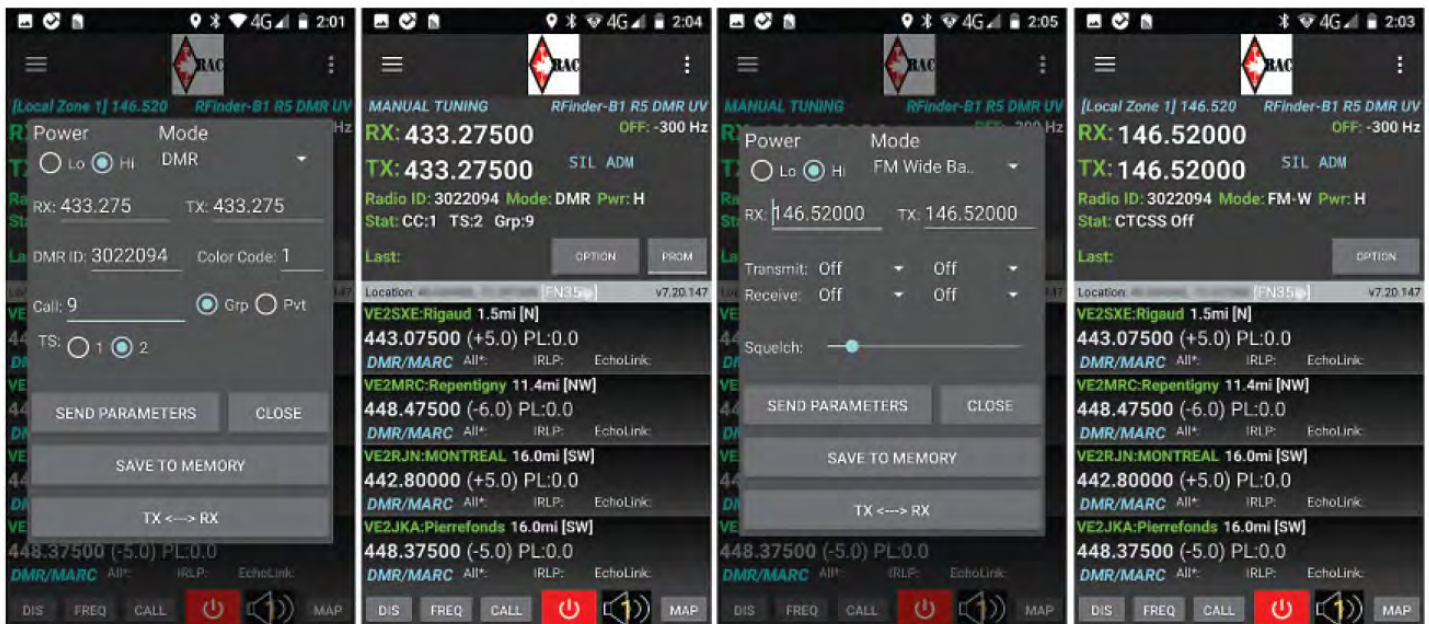
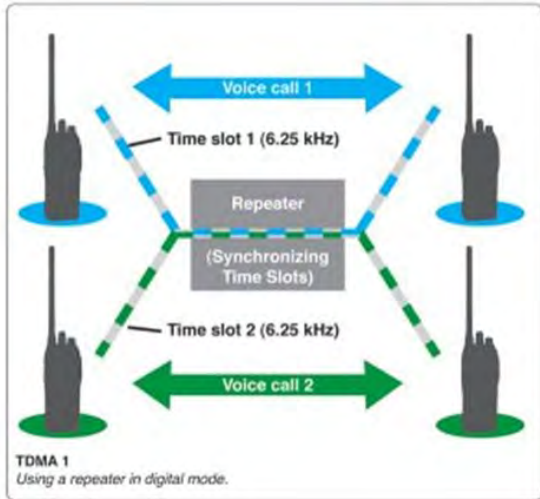


Figure 3 — Left to right, the DMR VFO setup screen, the applied DMR configuration from the setup screen, the FM VFO setup screen, and the applied FM configuration from the setup screen.

For those new to ham radio, **DMR** means **Digital Mobile Radio**. Bentvision's D4D website describes it this way:

"DMR uses the Motorola TRBO protocol for communications. Like other digital modes such as D-Star, C4FM and APCO P25, the TRBO protocol converts your voice into a digital form and sends it out via RF (with other bits of information included) and allows you to communicate to other DMR radios and also DMR repeaters, which are networked together around the world via the internet. What makes DMR stand out from some of the other digital modes is that it utilizes TDMA (Time-Division Multiple Access) to divide a single frequency into 2 distinct "channels" or time slots. By doing this, you can have two conversations going on at the SAME TIME, using one frequency. Imagine using one frequency while radio A is talking to radio B on time slot 1, and radio C is talking to radio D on time slot 2 ... SIMULTANEOUSLY."

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MORE DMR BASICS

D4D says: "Although the graphic (LEFT) relates to how a DMR repeater works, this same principal applies to using a simplex frequency as well. To make matters a little more fun and complicated, each radio must have a unique Radio ID for digital identification between radios and you can also use Talkgroups to separate traffic and target specific groups of DMR users.

What is a Radio ID?

A Radio ID is a unique number assigned to you (and your callsign) by the Radioid.net Team. Like a telephone number or IP address, your Radio ID identifies you as a unique radio user on the various DMR networks and repeaters around the world.

What is A Talkgroup?

A DMR talkgroup is simply a way of grouping many Radio IDs into a single digital contact. Or put another way, a talkgroup is a method of organizing radio traffic specific to the DMR users that all want to hear the same thing and not be bothered by other radio traffic on a DMR network that they are not interested in hearing."

VA2PV has more important comments about using the B1:

"Because the B1 relies on an Android application for operation, you will need a Google account to update the RFinder app. Just like all the other DMR radios, a DMR ID is required for operation in this digital mode (no charge for an ID; see www.radioid.net). You will also need a subscription to the RFinder application to use the radio. The software is preinstalled, and you can upgrade to the latest version using the Google Play Store. The RFinder app comes with a free 30-day trial, but after that, you will need a subscription that costs \$12.99 per year. It's a good value, considering that you always have access to the latest repeater and DMR ID databases. The first time you open the app, you will have to register before operating the radio. The app will ask for your DMR ID the first time you set the radio in the DMR mode. The RFinder application main window is split into two sections — VFO settings on top and a list of nearby repeaters from the database at the bottom (see Figure 2). When in DMR mode, you can toggle to promiscuous (PROM) mode in the top section if you want to monitor all the TGs available on the repeater. There's also an OPTION button to activate minor settings. The repeater database includes listings for repeaters on 10 meters through the UHF bands, and all modes including FM, DMR, D-STAR, and YSF. It's possible to filter the data for only the bands and modes supported by the B1, and that's what I did. Note that the screen is only showing DMR and FM repeaters on 2 meters and 70 centimeters.

"Changing frequencies is easy and intuitive. Touch the top part of the screen (VFO), and it will pop up a win-dow for manual settings. The fields will change depending on the mode, as shown in Figure 3. on page 25. You must send the configuration to the radio before it's



WHAT IS RFinder?

Yes, it's a radio brand, but actually way before that, the **ARRL** created **RFinder Worldwide Repeater Directory**, so it's the online repeater directory of ARRL. Get access to listings for 55,000+ repeaters in 175+ countries. RFinder is integrated with EchoLink on Android and iOS.

An annual subscription includes access to the directory in the Apps, RT Systems, CHIRP, web.rfinder.net, routes.rfinder.net, and a growing list of third party applications that use repeater data!

To get the app:

1. Go to Subscribe.RFinder.net on your phone's browser.
2. Click the **Google Play** or **Apple App Store** logo [in most cases it detects the device and redirects to the apps store]

If you do not have an Android or Apple device, just subscribe on that webpage!

Figure 4.
WHAT AN IP67 RATING MEANS

What is IP?

IP stands for "Ingress Protection" and is the International Protection Marking per IEC standard 60529. The most common use of an IP rating is how protected a product - such as a transducer - is from a solid or liquid entering the product.

What do the numbers mean?

Following the letters "IP" are typically 2 digits which indicate the level of protection of the product. The first digit indicates the level of protection a product has from a solid - i.e. a finger, screwdriver, or even dust. The second digit indicates the level of protection a product has from liquid intrusion in certain volumes, pressures, or temperature.

For example, an **AXD** pressure transducer that is IP67 rated will remain protected and fully operational in most industrial applications, including those where the transducer is exposed to water spray, rain, debris, etc. The "6" indicates the sensor is completely protected against solid objects from entering the sensor, including dust, while the "7" indicates the sensor can be completely submerged in 1 meter of water for up to 30 minutes before the moisture penetrates the housing.

effective, and you can save the configuration in a memory. When finished, close the window manually. When you touch the three lines on the top left corner of the screen, it will pop up the app menu."

VA2PV concludes, "The RFinder B1 is in a class of its own. Once you get used to using the application, it's extremely easy to operate. For DMR, it's the easiest and fastest way to get on the air, because there is no need to create or locate a code plug."

I recommend reading the full review for additional technical info on the B1, as well as its operation as a very capable cellphone. Though still expensive at \$999, the B1 is the same price as the iphone 12 and one hundred bucks cheaper than the iphone 12 ProMax.

Is the RFinder B1 the "Holy Grail" of ham radio/phones? Not yet. But it's definitely striving to meet the demands of modern hams and they're working on more upgrades as we speak. Give us your feedback on why-or why not-you'd like to see more development in the radio/phone market segment at ke0nqs.mn@gmail.com ★