



The RELAY)))

AUGUST
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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SUMMER 2021



Join us on
facebook!

Co-Editors:

Kim & Steve Waller

Kim - KEØNQS Steve - KEØNQT

KEØNQS.mn@gmail.com
KEØNQT@gmail.com

2021 Top 5 RV Antennas

Choosing the Right Antenna for Your Camper

Ok. Summer's still here, so after the graduations, weddings and reunions of June and July, you might just be able turn your attention to your RV, specifically installing a new antenna. Two full months (or more) of nice weather lie ahead on the calendar, ample time for a nice getaway in your RV.

First, we'll talk about appropriately mounting whatever antenna you choose and then some features of a few popular antennas. There are a lot of suitable antennas on the market, but we are featuring the top five most-purchased by hams so far in 2021. As you know, amateur radio operators typically thoroughly research and discuss equipment with other hams before making a buying decision, so this carries weight. Of course the type of camper you have will make a difference in which antenna you choose, so survey your RV for appropriate places to potentially mount your antenna.

Antenna Mounting Considerations

- ♦ Mounting area should be open from all sides so that there's nothing to block signals
- ♦ Antenna should be visible to you and easily accessible for inspection.
- ♦ Be sure that the mounting hardware and antenna do not limit or interfere with any other equipment functions on your RV.
- ♦ Check out similar RVs & antenna mounts with your fellow hams online and in-person, if you can. Ask advice!

Types of Mounts

RVContext.com describes ways to mount antennas on RVs as follows:

Magnet mounts are the most convenient antenna mounting method. So you can use it for long-term as



Before a Rover Contest, Carrie Tai-W6TAI hoists an equipment box and antenna system atop a camper. This unit, which includes transverters and amplifiers for four microwave bands as well as antennas for six bands, weighs about 50 pounds, far more than you might suspect from the way she's swinging it around. Photo and caption courtesy of The N6NB Rover Page, overbeck.com/rover

Editor's Note: For new hams: A rover is a mobile station that travels during a contest to activate multiple geographic locations (typically grid squares) during the course of a contest.

Continued on Page 14

ARAC Board Meeting July 6, 2021

PRESIDENT



NØVRM
Gene Ellefsen
371Ø Chambersburg Ave
Duluth, MN 55811
218-39Ø-3272
lspitech@mail.com

VICE PRESIDENT



NØPDG
Mike Lovold
386Ø Birchwood Rd
Downtown Arnold, MN
558Ø3
lovoldm@gmail.com

SECRETARY



NØCALL
Robin Davis
218-391-3Ø77
davisfam2858@yahoo.com

TREASURER



KNØNUL
Bruce Carlson
9Ø6 Anderson Rd
Duluth, MN 55811
763-315-2967
carlsbr@gmail.com

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:

Board Members

Gene Ellingsen-NØVRM, Mike Lovold-NØPDG, Bruce Carlson-KNØNUL, Gary Minter-KD9ABS

(Robin & Dave Davis were on vacation & couldn't attend)

Board Advisors (Non-Board Members)

Grant Forsyth-KCØWUP, Doug Nelson-AAØAW

We did not have a Board Quorum (Quorum = 5 out of 7 Board Members present), so this meeting conducted no official business. However, Bruce Carlson shared the June Treasurer's Report with those present.

Reminder: If Board Members cannot attend in person, you may join the meeting via phone & still be counted as present. This will help the Board reach a quorum if at all possible. No pressure to do this when you're on vacation, however! 😊

June 2021 Treasurer's Report

Treasurer's Report:

Checking	2,938.92
Savings	2,174.01
Subtotal Cash.....	\$5,112.93

Winter CD	1,724.37
Summer CD.....	0.00
Subtotal CDs	\$1,724.37

Assets Subtotal: \$6,837.30

Outstanding Checks:

Mahtowa Repeater	-1,100.00
Bob Boyd-KDØLYN Memorial.....	-1,190.00
Reserved Subtotal.....	-\$2,290.00

Grand Total \$4,547.30

Submitted by Bruce Carlson-KNØNUL



ARAC Club Meeting

July 8, 2021

There were no official Minutes taken for this meeting, however the Club voted on two measures:

1. Approval of up to \$300 for the August 1st Club Picnic's food & supplies.
2. Acceptance of the June Treasurer's Report, submitted by Bruce Carlson - KN0NUL as follows:

June 2021 Treasurer's Report

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Bob Boyd-KD0LYN Memorial	-1,190.00
Reserved Subtotal	-\$2,290.00

Grand Total..... \$4,547.30

The Program was presented via Zoom and featured **ICOM AMERICA**.





Prez Sez ...

Hi everyone!

Looking to buy some used Ham Equipment?

This is a good Tailgate event and the Brainerd Hams are loyal supporters of our Hamfest so let's support them !!!

Gene Ellefsen NØVRM



ARAC Annual Club Picnic

IT'S BACK!

We skipped the Annual Club Picnic last year, but we're excited to remind you of the **2021 Picnic** on **Sunday, August 1** at **Chambers Grove Park** in **Fond du Lac**! The event is **11:00 a.m. - 1:30 p.m.** and will have Club-furnished hot dogs, brats, corn-on-the-cob & water. **Please bring a pot-luck dish to share!**

We'll also have a raffle for a Yaesu-FT-1500M VHF FM Mobile Transceiver Radio for just \$2 a ticket. Visit www.yaesu.com for a full list of features on this ultra-rugged powerhouse!



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	■■■■●●●●●●
L	■■■■●●●●	X	■■■■●●●●	0	■■■■■■■■■



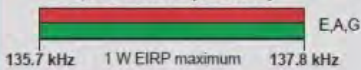
US Amateur Radio Bands

US AMATEUR POWER LIMITS

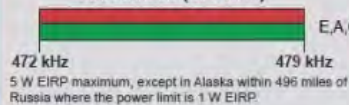
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

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.

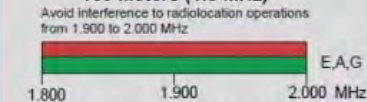
2,200 Meters (135 kHz)



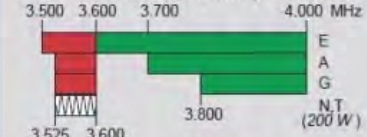
630 Meters (472 kHz)



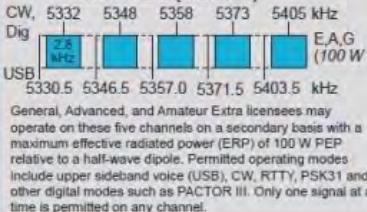
160 Meters (1.8 MHz)



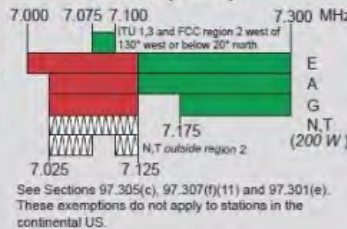
80 Meters (3.5 MHz)



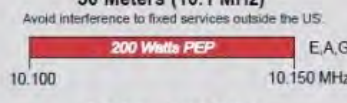
60 Meters (5.3 MHz)



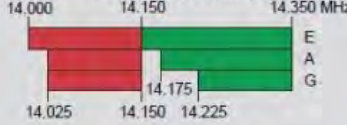
40 Meters (7 MHz)



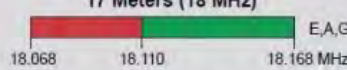
30 Meters (10.1 MHz)



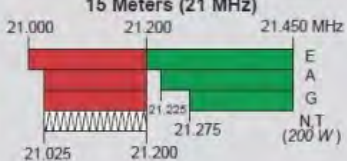
20 Meters (14 MHz)



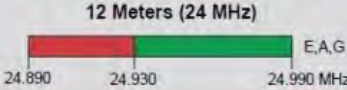
17 Meters (18 MHz)



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

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Toll-Free 1-888-277-5289 (860-594-0355)
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



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.rvradionetwork.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, August 3, 2021
@ 6:30 p.m.
Sammy's Pizza

Next ARAC Club Meeting

Thursday,
August 12, 2021
7 p.m.
Coppertop Church!

PLEASE WEAR A MASK,
as requested by our hosts at the
Coppertop Church!

August 12th
Club Meeting

**ARRL Dakota
Division Director
Bill Lippert - ACØW**

VIA ZOOM

*You do not need a Zoom
account to participate!*

*Interested in providing a pro-
gram, or have an idea for one?*

Contact Mike NØPDG at
lovoldm@gmail.com

ARAC Club Picnic

Sunday, August 1

11 a.m. - 1:30 p.m.

**Chambers Grove Park
Fond du Lac**

**Please bring a
Pot-Luck dish to share!**

*The Club will furnish hot dogs, brats,
corn-on-the-cob & water*

RAFFLE!

A Yaesu-FT-1500M VHF FM Mobile
Transceiver Radio

JUST \$2 A TICKET!



**WE'RE
HAVING A
PICNIC!**

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.

<u>Name</u>	<u>Call</u>	<u>Expertise</u>
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...

Membership E-mail Directory

Ahlgren, Scott NØVYU
sahlgren01@msn.com

Anderson, Jim NØJWA
kcØmko@centurylink.net

Anway, Allen KC9LJN
allen@a2d2.com

Bakke, Richard KDØQHE
rabakke46@aol.com

Barnes, Ray KEØZN
KEØZN@outdrs.net

Blodgett, Warren KDØXI
kdØxi@aol.com

Blotti, Nick KBØMHD
NickBlotti@hotmail.com

Bockbrader, Jonah KEØCXD
j@pelirrojo.ninja

Bockbrader, Rollie KBØCK
Rollie.bockbrader@q.com

Clemens, Butch KBØSMG
kbØsmg@2z.net

Currier, Barb
bjcurrier@peoplepc.com

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Dall, Teresa KAØCDO
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kcØwdq@yahoo.com

Daly, Ed KØYMF
eddalymn@aol.com

Ellefsen, Gene NØVRM
lspitech@mail.com

Ferch, Tim AKØTF
akØtf@aol.com

Ferguson, Tom WBØDHB
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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,



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

AUGUST

CLUB EVENTS

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 Annual ARAC CLUB PICNIC Chambers Grove 12:00 Noon CW 1930 NØPDG USB 2000 NØPDG ES 2100 AAØAW	2 WX 2000 KCØMKS	3 ARAC BOARD MEETING Sammy's Pizza 6:30 pm DC Net 2000 CC Net 2030	4	5	6	7
8 CW 1930 AAØAW USB 2000 AAØAW ES 2100 KCØWDQ	9 DC ARES/RACES Mtg 1900 DC EOC WX 2000 KCØMKS	10 DC Net 2000 CC Net 2030	11 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	 12 ARAC Club Meeting Coppertop! 7 pm	13	14
15 CW 1930 NØPDG USB 2000 WØLWU ES 2100 WØNWO	16 WX 2000 KCØMKS	17 DC Net 2000 CC Net 2030	18 St. Louis County ARES/RACES Mtg 1630 Pike Lake EOC 2100 - BWAR	19	20	21
22 CW 1930 AAØAW USB 2000 K9KDK ES 2100 NØVRM	23 WX 2000 KCØMKS	24 DC Net 2000 CC Net 2030	25 Lake County Net 1900 2100 - BWAR	26 Carlton County ARES/RACES Meeting 1900 CC EOC	27	28 Club Breakfast @ The Chalet (by Menards in Hermantown) 8 a.m. - 9 a.m.
29 CW 1930 NØPDG USB 2000 TBD ES 2100 TBD	30 WX 2000 KCØMKS	31 DC Net 2000 CC Net 2030	2100 - BWAR			

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

Next Meeting: Thursday,
August 12, 2021 - 7 pm
at the Coppertop Church!

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

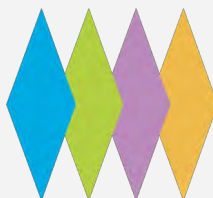
Reminder: The Contest Corral monthly listing of contests can be found in each issue of QST. ARRL sponsored contests can be found in Contest Corral, highlighted, or on the ARRL's web site at arrl.org.

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.

Denny has difficulty hearing phone calls, so those interested in the following items, please send texts to KB0SPA at **218-341-4033**

- 1. Lafayette swr signal strength meter. 30.00**
- 2. Radio shack htx 242, 2 meter mobile 50.00**
- 3. Icom 2000 2 meter mobile.65.00**
- 4. Icom 2100 2 meter mobile 65.00**
- 5. Kenwood ts-480 hf 200 watt radio 550.00**
- 6. Palomar dx-100 hf mobile amp 3-30 MHz 50.00**
- 7. mirage 35 watt 2 meter mobile amp FM only 30.00**
- 8. Mfj 259 antenna analyzer 150.00**
- 9. Uniden bc60lt handheld scanner 20.00**
- 10. Kenwood HT-22at 60.00**
- 11. Mfj RF line insulator 25.00**
- 12. 2 tv antenna rotors 40.00 each**
- 13. 2 vintage regency crystal scanners 10.00 each**
- 14. Homemade 80 meter antenna 30.00**
- 15. 1/4 inch guy wire 80 feet. 20.00**
- 16. Stud finder 3.00**
- 17. Straight line Lazer tape 5.00**
- 18. 2 realistic speakers 5.00**
- 19. Homemade 2 meter beam 5.00**
- 20. Yaesu hf 757 gx Radio 200.00**



RV Antennas , Continued from Page 1

Short-term antenna mounting purposes. The magnet and metal keep it grounded, and It does not require drilling holes on the roof of your RV. It is enough to support VHF / UHF frequencies. It can accumulate crud on the magnet's bottom, and if you remove it in a hurry, it will scratch your RV's paint.

Mirror and Roof Rack Mounts

Other convenient methods are mirror and roof rack mounts. It is not essential to ground them electrically to the body. In that case, you will require a ½ wave no ground plane antenna (NGP).

Trunk Lip/ Universal Lip Mounts

Many RV enthusiasts prefer trunk lip/ universal lip mounts as they can be conveniently placed on any vehicle. They can fit a hood, the edge of a chest, a door or anywhere on our RV.

You can use a Diamond K400 bracket to adjust your antenna in an upright position. They require a ground connection, so you will have to scrape some paint from under the set screws to reach the bare metal. Then you can attach them with set screws tightened in the metal's bottom edge. The metal can be protected from corrosion by applying dielectric grease on it.

Fender/ Bracket Mount

A fender/bracket mounting is also a good option for grounding. You can hold them with Comet No-Hole Fender Brackets designed for RVs. Add angle brackets on the stainless sheet screws and mount it on doors, trunk groove or rear hatches. The gap must be spacious enough to allow opening and closing without touching the bracket.

Glass Mount

Glass mount antennas are designed for automobile glass which has a nominal thickness of 5/32". They are not meant for over embedded AM/ FM antennas, glasses with tinting films and on glasses.

PHOTOS FROM AROUND THE WEB: Examples of various RV antenna installations that Hams have posted from the past few years.



Use your RV's ladder to assist in mounting your antenna. Photo courtesy Paul Young, Pinterest



High Sierra HF Screwdriver Antenna with hinged mount attached to ladder. Photo courtesy Bill Moneysmith - W4NFR, from moneysmith.com



Another HF Screwdriver antenna mounted right on top of an RV. Brian Kress KB3WV decided to fix the hole in his roof by mounting this! Image courtesy Brian Kress



Mark Goldberg's (W7MLG) Great West Sprinter RV with the antenna fully up. The top of the cap hat is still below 13'6", which is a typical minimum clearance for US overpasses. Photo courtesy Mark Goldberg, Peoria, AZ

Continued on Page 15

RV Antennas, Continued from Page 14

All right, now on to the top selling antennas, according to RVContext.com:

1. Top Mobile HF Antenna:

Super Antenna MP1LXMAX Deluxe Tripod 80m-10m HF +2m VHF 2 meter antenna for RV

Super Antenna MP1LXMAX is a portable antenna system that delivers top performance for both receiving and transmitting. It is designed for travel and comes with two bags for super portability and convenience.

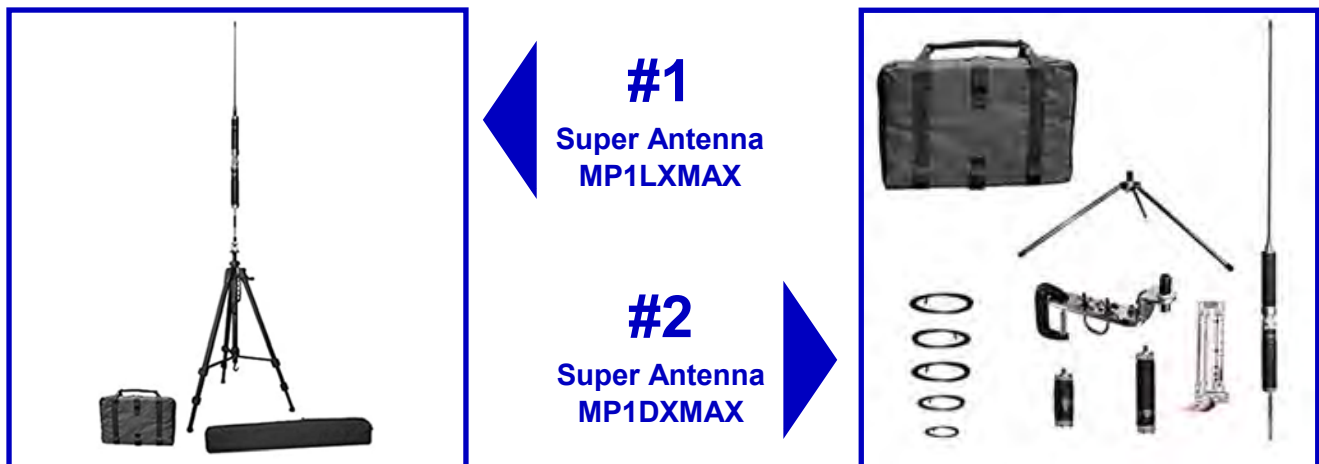
Antenna: The MP1C antenna is designed for unmatched precision and the same outstanding performance upon every use. It features an MC2 Super Plexer 2 meter band for operating HF at 144 MHz. Super Slider is ready to work on your favorite frequency as soon as you start transmitting.

Tuning: It gives a fantastic SWR when dialed on HF bands and 2 meters, without the use of an autotuner. It will let you enjoy all bands and all HF and VHF frequencies.

Super Whip: it is an ultimate durable antenna that features an SW1 Super Whip ruggedized Titanium. It is a characteristic feature of the Super Antenna.

Tripod: The Super Antenna comes with a TM4 Deluxe Tripod which can be easily set up on any indoor or outdoor surface.

Mount: It has a UM3 Mount that adheres to the SuperSpike ground mounting stake or a tripod.



2. Top 2 Meter Mobile Antenna:

Super Antenna MP1DXMAX Low Profile Tripod 80m-10m HF +2m VHF Portable Antenna With Go Bags ham radio fiberglass RVS

This Super Antenna is designed to work with every HF bands from 80m – 10m on simultaneous VHF 2 meters. It is a world's number one HF Portable Vertical Antenna, chosen by perfectionist operators for transmitting/ receiving. It is full HF-VHF setup from Super Antenna that comes with all essentials packed in one bag.

Antenna: This MP1C antenna peaks its performance with unmatched precision. The MC2 Super Plexer 2 adapter handles 144 MHz while working on HF.

Tuning: You can dial a reasonable SWR on all HF bands and at least two bands, without using an autotuner.

Frequencies: It covers all frequencies between 3.5 to 30 MHz, including a VHF between 144 to 148 MHz on one antenna.

Mount: A UM2 Universal mount can be used either with the clamp or the U-bolt to attach on any flat surface.

Coverage: With the help of MC60 and MC80 SuperCoils it can provide 80, 75 and 60-meter bands on 5 MHz.

Continued on Page 16

3. Top Mobile Ham Radio Antenna: Super Antenna MP1DXTR80 HF SuperWhip Tripod All Band 80m MP1 Antenna

A stable, reliable and compact system which is easily portable, Super Antenna MP1DXTR80 Super-Whip Tripod is the choice of top operators.

Antenna: It features a Q coil military-grade nickel beryllium Super Slider for unmatched precision. Choose your required frequency soits ready for transmission.

Tuning: You can dial a good SWR on all HF and VHF bands, without requiring an autotuner. You can operate with all bands and all frequencies along with a 6 meters VHF.

Super Whip: A ruggedized Titanium Whip increases the durability of this Super Antenna more than any other antenna.

Tripod: It comes with the TM1 low profile tripod allows you to set up your antenna on any available flat surface.

Mount: It features a UM2 Universal Mount which conveniently attaches with the help of a clamp or U-bolt. You can keep it anywhere, and it is easily portable.

Radials: It covers all frequencies due to its pre-tuned, quarter-wave, multi-length Super Wire Stealth Radial Sets which can be extended to full 80 and 75-meter bands.



#3

Super Antenna
MP1DXTR80

#4

Eightwood Dual
Band VHF UHF



4. Top Dual Band Mobile Ham Radio Antenna: Eightwood Dual Band VHF UHF Ham Mobile Radio Antenna

Eightwood Dual Band VHF UHF Ham Mobile Radio Antenna is a lightweight and portable ham antenna that is suitable for your RV, Motorhome and trailer truck. It is made of durable material and can be carried anywhere safely without getting damaged.

This Eastwood Dual-band mobile ham antenna delivers a great sound without any disturbance.

Frequency: It operates on 136 – 174 MHz for VHF and 400 – 470 MHz on UHF. It is pre-tuned for 144 and 430 MHz.

Mount: The magnetic mount base makes it convenient to install. The compatible antenna mount connector is PL-259. The compatible extension cable connector is PL-259 UHF Male.

Versatile: It can be used as a dual-band antenna. It works perfectly for both transmitting and receiving signals. The height at which the antenna is installed further determines the quality of the signals. It works well with both low and hi-power of the rig.

Extension Cable: Extension cable length is about 16.4 feet. The magnetic base is adequate for the antenna.

SWR: It gives higher SWR, which is around 1.5:1 when at its lowest. It performs well while going through repeaters. It makes no noticeable noise and therefore prevents from smash and grab criminals. It transmits signals to at least 2 miles on 25 watts

Continued on Page 17

5. Top Mobile Antenna for 2m 70 cm: Dualband Mobile Antenna 2m/70cm VHF/UHF

Connectors and Adapters: This Dualband Mobile Antenna is made for PL259 connection radios. It does not adapt to SMA connections. An SMA – FEMALE to PL – 259 connectors when using these antennas will be useful.

It can be used with an SMA-Female adapter to work with a handheld radio. If you mount the antenna on a motor vehicle having a steel body, you can enjoy better signals. It comes with a 10 Ft RG58 Cable.

Mount: It has to be mounted vertically, and it receives signals from all directions. The 2.95-inch magnetic mount makes it an ideal for RV, Motorhomes and other vehicles. This dual-band magnet mount antenna can deliver up to 3 dB of gain. The 6.6 ft long heavy duty RG-58 cable allows you to install your antenna on any vehicle.

Material: It is made of corrosion-resistant stainless steel that is durable and an RG58 Heavy Duty antifreeze cable that will withstand all weather.



#5

Dualband Mobile Antenna
2m/70cm VHF/UHF

Well that's a scratch-the-surface look at RV antennas and their mountings. Though Super Antenna seems to be a popular brand for 2021, taking the top three slots, there are a lot more great ones on the market. We'd love to hear from you hams who've installed an antenna on your RV. Send your photos and project description to us at ke0nqs.mn@gmail.com so that we can feature it in next month's Relay! Happy RVing! ★



ABOVE: Side view of a very unique installation by Mike Kane, KB1JTB. He had a large piece of diamond plate attached to the roof of his motor home. The antenna, a Scorpion 680, is hinged at the bottom, so once parked, he raises the antenna, and he's in business. Albeit expensive, it sure eliminates the hassles of a tripod, or dipole installation, and is probably as efficient, all considering. Photo courtesy k0bg.com/otrrv.html

W
O
W



ABOVE: John Neeley's (W6ZKH) fifth wheel RV set-up: A 2002 Dodge 3500 Diesel-Dually with an Icom IC-2800 Dual-bander in truck, and a 2011 Forest River Wildcat 313 with a Yaesu FT-1900R 2M Xcvr. Photo courtesy John Neeley W6ZKH



LEFT: Brent Macaloney's (WM1T) Toyota Tacoma 4X4 camper. He made an antenna pole holder using the jack bracket on the passenger rear of the camper. Photo courtesy macaloney.blogspot.com

Contest Calendar - August 2021

<u>+ SARL HF Phone Contest</u>	1400Z-1700Z, Aug 1
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Aug 2
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Aug 3
<u>+ ARS Spartan Sprint</u>	0100Z-0300Z, Aug 3
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 3
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Aug 4
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Aug 4
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Aug 4
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Aug 4
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Aug 5
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Aug 5
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 5
	1700Z-1800Z, Aug 5 (CW) and
	1800Z-1900Z, Aug 5 (SSB) and
	1900Z-2000Z, Aug 5 (FM) and
<u>+ NRAU 10m Activity Contest</u>	2000Z-2100Z, Aug 5 (Dig)
	1900Z-2000Z, Aug 5
<u>+ EACW Meeting</u>	1900Z-2100Z, Aug 5
<u>+ SKCC Sprint Europe</u>	0100Z-0230Z, Aug 6
<u>+ QRP Fox Hunt</u>	0145Z-0215Z, Aug 6
<u>+ NCCC RTTY Sprint</u>	0230Z-0300Z, Aug 6
<u>+ NCCC Sprint</u>	2000Z-2100Z, Aug 6
<u>+ K1USN Slow Speed Test</u>	0000Z, Aug 7 to 2359Z, Aug 8
<u>+ Batavia FT8 Contest</u>	0001Z, Aug 7 to 2359Z, Aug 8
<u>+ 10-10 Int. Summer Contest, SSB</u>	1200Z-2359Z, Aug 7
<u>+ European HF Championship</u>	1200Z, Aug 7 to 2400Z, Aug 8
<u>+ SKCC Weekend Sprintathon</u>	1300Z-1330Z, Aug 7
<u>+ Two-Meter Classic Sprint</u>	1600Z-1800Z, Aug 7
<u>+ FISTS Saturday Sprint</u>	1800Z, Aug 7 to 1800Z, Aug 8
<u>+ ARRL 222 MHz and Up Distance Contest</u>	1800Z, Aug 7 to 0559Z, Aug 8
<u>+ North American QSO Party, CW</u>	0000Z-0100Z, Aug 9
<u>+ K1USN Slow Speed Test</u>	0000Z-0200Z, Aug 9
<u>+ 4 States QRP Group Second Sunday Sprint</u>	

Continued on Page 19

Contest Calendar - August, Continued

<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Aug 10
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 10
<u>+ NAQCC CW Sprint</u>	0030Z-0230Z, Aug 11
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Aug 11
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Aug 11
<u>+ MMonVHF/DUBUS 144 MHz Meteorscatter Sprint Contest</u>	1500Z, Aug 11 to 1459Z, Aug 13
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Aug 11
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Aug 11
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Aug 12
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Aug 12
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 12
<u>+ EACW Meeting</u>	1900Z-2000Z, Aug 12
<u>+ QRP Fox Hunt</u>	0100Z-0230Z, Aug 13
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Aug 13
<u>+ NCCC Sprint</u>	0230Z-0300Z, Aug 13
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Aug 13
<u>+ WAE DX Contest, CW</u>	0000Z, Aug 14 to 2359Z, Aug 15
<u>+ QRP ARCI European Sprint</u>	0800Z-1100Z, Aug 14
<u>+ SARL Youth Sprint</u>	1200Z-1300Z, Aug 14
<u>+ Kentucky State Parks on the Air</u>	1400Z-2200Z, Aug 14
<u>+ Maryland-DC QSO Party</u>	1400Z, Aug 14 to 0400Z, Aug 15
<u>+ 50 MHz Fall Sprint</u>	2300Z, Aug 14 to 0300Z, Aug 15
<u>+ SARL HF Digital Contest</u>	1400Z-1700Z, Aug 15
<u>+ NJQRP Skeeter Hunt</u>	1700Z-2100Z, Aug 15
<u>+ FISTS Sunday Sprint</u>	2100Z-2300Z, Aug 15
<u>+ Run for the Bacon QRP Contest</u>	2300Z, Aug 15 to 0100Z, Aug 16
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Aug 16
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Aug 17
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 17
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Aug 18
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Aug 18
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Aug 18

Continued on Page 20

Contest Calendar - August 2021, Continued

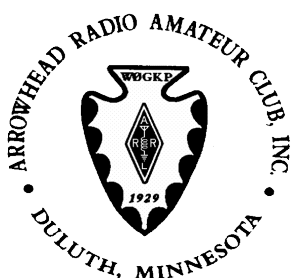
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Aug 19
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Aug 19
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 19
<u>+ EACW Meeting</u>	1900Z-2000Z, Aug 19
<u>+ QRP Fox Hunt</u>	0100Z-0230Z, Aug 20
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Aug 20
<u>+ NCCC Sprint Ladder</u>	0230Z-0300Z, Aug 20
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Aug 20
<u>+ SARTG WW RTTY Contest</u>	0000Z-0800Z, Aug 21 and 1600Z-2400Z, Aug 21 and 0800Z-1600Z, Aug 22
<u>+ ARRL 10 GHz and Up Contest</u>	0600 local, Aug 21 to 2400 local, Aug 22
<u>+ Russian District Award Contest</u>	0800Z, Aug 21 to 0800Z, Aug 22
<u>+ Keyman's Club of Japan Contest</u>	1200Z, Aug 21 to 1200Z, Aug 22
<u>+ Feld Hell Sprint</u>	1600Z-1759Z, Aug 21
<u>+ North American QSO Party, SSB</u>	1800Z, Aug 21 to 0559Z, Aug 22
<u>+ CVA DX Contest, CW</u>	2100Z, Aug 21 to 2100Z, Aug 22
<u>+ ARRL Rookie Roundup, RTTY</u>	1800Z-2359Z, Aug 22
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Aug 23
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Aug 24
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 24
<u>+ SKCC Sprint</u>	0000Z-0200Z, Aug 25
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Aug 25
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Aug 25
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Aug 25
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Aug 26
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Aug 26
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Aug 26
<u>+ EACW Meeting</u>	1900Z-2000Z, Aug 26

Continued on Page 21

Contest Calendar - August 2021, Continued

+ QRP Fox Hunt	0100Z-0230Z, Aug 27
+ NCCC RTTY Sprint	0145Z-0215Z, Aug 27
+ NCCC Sprint Ladder	0230Z-0300Z, Aug 27
+ K1USN Slow Speed Test	2000Z-2100Z, Aug 27
+ RTTYOps WW DX RTTY Contest	2200Z, Aug 27 to 1200Z, Aug 28 and
+ Hawaii QSO Party	0400Z, Aug 28 to 0400Z, Aug 30
+ ALARA Contest	0600Z Aug 28 to 0559Z, Aug 29
+ YO DX HF Contest	1200Z, Aug 28 to 1200Z, Aug 29
+ World Wide Digi DX Contest	1200Z, Aug 28 to 1200Z, Aug 29
+ W/VE Islands QSO Party	1200Z, Aug 28 to 0300Z, Aug 29
+ Kansas QSO Party	1400Z, Aug 28 to 0200Z, Aug 29 and
+ Ohio QSO Party	1400Z-2000Z, Aug 29
+ CVA DX Contest, SSB	1600Z, Aug 28 to 0400Z, Aug 29
+ SARL HF CW Contest	2100Z, Aug 28 to 2100Z, Aug 29
+ K1USN Slow Speed Test	1400Z-1700Z, Aug 29
+ QCX Challenge	0000Z-0100Z, Aug 30
+ QCX Challenge	1300Z-1400Z, Aug 30
+ Worldwide Sideband Activity Contest	1900Z-2000Z, Aug 30
+ QCX Challenge	0100Z-0159Z, Aug 31
+ RTTYOPS Weekspint	0300Z-0400Z, Aug 31
	1700Z-1900Z, Aug 31

Our thanks to **Bruce Horn, WA7BNM** for use of this calendar! Please visit **Bruce's site at www.contestcalendar.com/contestcal.html** for many other helpful contest calendar formats.



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