



BARS Billerica Amateur Radio Society

NEWS FOR AND BY BARS MEMBERS

OCTOBER 2024

BARS meetings are now “hybrid” – the meeting will be held at the Chelmsford Bible Church and available simultaneously on Zoom.

The safety and well-being of our membership is important to us. Those members who feel uncomfortable attending in person can continue to join us over Zoom.

--BARS Management.

A Message from the President By Doug Bruce, N1WRN

Greetings Fellow Members,

I hope everyone had a great summer. I don't know about you, but I am really enjoying the mid 60's weather lately with no humidity! With the days getting shorter, that means the nights are getting longer, so the bands should be opening for a lot longer than they did during the summer.

I have been quite active lately on FT8 on 12 meters. I need to make hay while we are still close to the Solar Maximum as this band will not be open much as we approach and pass the next solar minimum around 2031.

I have been reading ON4UN's book, “Low Band DX'ing” lately and there is so much information crammed into this book that it is a must read for any ham interested in DX'ing.

In the book, there is an emphasis on the “low” bands, 160, 80 and 40 meters. I have worked a lot on 80 and 40, but I have not gone on 160 very much. It is a very challenging band and from what I read in the book, 160 will make a man out of you while you chase DX down there! I am looking forward to that challenge!

Right now I am closing in on my 5 Band DXCC Award, with only 15 countries to go on 12 and 40 meters! My eyes light up like a

Christmas tree when I see that red stripe come across the FT8 screen!

The book goes into propagation in great detail and how it is important to pay attention to where the Gray Line is (where darkness meets light) as this line is prime DX territory. As my Elmer says to me quite often, you have to be on when THEY (the DX station) is on, not when it's convenient for you to get on the air!

The study of propagation is the meat and potatoes of DX'ing. You can have a \$50k radio and \$50k in antennas, but if there is no propagation to that country you are chasing, you will never work them!

The book also covers receiving and transmitting equipment, antenna design and software, general antenna theory, I would along with several sections on various types of antennas such as receiving antennas, dipole antennas verticals, loop antennas and beams and Yagi's and quads.

It is up to each ham to sit down and set out goals of what they want to work on the bands and this book is an excellent resource for any ham to have in their “DX Toolbox!” I take this book upstairs to my chair almost every night and discover a new topic every time I open the book. There is so much to learn about our great hobby!

I would also recommend a new book put out by the ARRL entitled “Here To There: Radio Wave Propagation” which is an in-depth look at just propagation and how to navigate our ever changing upper levels of the atmosphere, such as the D, E and F layers, which all play a prominent role in how radio signals are reflected and refracted so that we as hams can make contacts all over the world.

It covers radio wave propagation, the sun and solar activity, ionospheric propagation, and most importantly how we can predict propagation given the time of day, year and how far along in the 11 year Solar Cycle that we are.

In closing I would highly recommend both of these books to any ham interested in chasing DX. These “tools” will make the HF aspect of our hobby much more fun when you understand the principles covered in these two great books.

Finally, I want to remind everyone that we are having Club Elections at the November 6 meeting, so please think about becoming an officer or volunteer to help keep our great Club moving forward. Feel free to nominate yourself or anyone else that you feel could make a positive impact on the Club.

Make sure to fire up those rigs and GOTA (Get On The Air!) Those microphones do not key themselves!

Until next time,

73,
Doug
N1WRN

Next BARS Zoom meeting: October 2 at 7:00 PM - “Sunspots and Radio Propagation”

Presenter: Terry Dennison, K9TAD

We are pleased to announce that Terry Dennison, K9TAD, will be our Guest Speaker via Zoom on Wednesday Night, October 2, 2024. Terry will give a talk on Sunspot and Radio Propagation.

Here are some biographical details about Terry:

- FCC Extra Class Amateur Radio License (2010), First Licensed in 2007 Callsign: K9TAD.
- Memberships: American Radio Relay League (ARRL); Volunteer Examiner (VE) - authorized to participate in Amateur Radio License Examinations, Accredited to the Greater Los Angeles Amateur Radio Group (GLAARG) VEC, VE # 3208E.
- Associated with: the AD4VE team Southern California DX Club; Southern California Contest Club; PAPA System (Southern California FM/DMR/D-Star Repeater Club); AMSAT (Radio Amateur Satellite Corporation); G-QRP Club (UK Low-Power QRP Club).



We will announce the link to join the Zoom meeting before the meeting, but it will be posted to the BARS email list and should not be shared outside our Club. Are you on the email list? If not, please send an email to bars-subscribe@w1hh.org and then simply reply to the robot response from the server and you will be subscribed.

Observing our Zoom meeting requires only a web browser and headphones/speakers. You do not need a webcam or microphone unless you want to speak or be seen.

Before our meeting date, please go to <https://zoom.us/test> and see if it will function for you. If you have problems, we can try to assist – feel free to ask questions on the BARS email list.

I am looking forward to “seeing” many of you there on Wednesday 9/4 at 1900.

Doug, N1WRN
President, Billerica Amateur Radio Society

From the Editor’s Desk By Marla Wallace, WA1GSF

Where did September go? I can’t believe it’s already fall. Solar cycle 25 has already exceeded all predictions and may not have peaked yet. Just goes to show that even after nearly three centuries of watching our sun, we still don’t know all the tricks it can play.

Besides making pretty lights in the night sky, when the sun throws a temper tantrum, it affects radio propagation. HF tends to suffer if the sun throws a flare while it’s overhead; the x-rays from the flare cause increased absorption of RF in the HF bands.

VHF may bounce off the enhanced ionosphere for a while. VHF may also bounce from aurora when a coronal mass ejection (often spawned by a flare) impacts the Earth’s magnetic field (two or three days later).

Propagation over the north and south polar regions may be degraded when streams of protons are dumped into the ionosphere, sometimes from flares that weren’t even visible from Earth because they happened on the other side of the sun.

All in all, what’s happening ninety-three million miles away is often important to the ham trying to work DX or 6 meters. So it behooves us to keep track of what the sun is doing. I check the following two sites every day: spaceweather.com and [NOAA Geophysical Alert](http://NOAA.Geophysical.Alert).

[Ironically, I composed this before I found out what this month’s program would be. – ed.]

Feature Article: “Unlocking the potential of the Quansheng UV-K5 and UV-K6 HTs”

By Jon Lyna, KC1MII

I would like to introduce everyone to a new inexpensive Chinese HT that has the potential to unseat the current reigning champion, the Beofang UV -5R. This new radio is the Quansheng UV- K5, and it’s sister radio the UV-K6.

Out of the box these new Quansheng HT’s have some interesting features that the Beofangs do not. They have a larger LCD display, they have AM/ FM receiving on the Air Band. All for a comparable price of a Boefang UV-5R. This article isn’t about what these radios can do straight from the factory, it is about the added functionality custom firmware can unlock in these units.

From a hardware standpoint the UV-K5 and UV-K6 are identical. The only difference is the aesthetics of the outer plastic case. The UV-K5 is all black, while the UV-K6 sports a grey bezel around the LCD screen.

The best part of these radios is the hardware they share. They are both built on the BK4819 radio chip. This analog two-way radio IC is capable of operating on frequencies from 18 MHz to 660 MHz and also 840MHz to 1300 MHz. Through a firmware upgrade this radio can be opened up to receive on the full range of this chip. Since the transmitter hardware is designed for the 2M and 70 CM bands the firmware upgrade only allows transmission on these bands, any attempt to transmit on the increased unlocked frequency range will only create spurs and harmonics on unintended frequencies.

Upgrading the firmware is easy. Browser-based programs have been written to allow quick flashing of a custom firmware. A repository of multiple developers’ custom firmware can be found at https://github.com/spm81/Quansheng_UV-K5. There are many forks in the development of the firmware as can be seen at this link. So for the rest of the article, I will focus on EGZumer latest release v0.22 available at <https://github.com/egzumer/uv-k5-firmware-custom/releases/tag/v0.22>.

In the author’s opinion this firmware had the best mix of usability and functionality. The EGZumer link has a web based upload tool, and the v0.22 firmware. You just need to set the web tool to the COM port assigned to the Quansheng programing cable on your computer. Plug the other end into your HT, and turn the radio on while holding the PTT Button. The white LED light at the top of the radio should be on showing that the radio is ready to be programed. Press the Upload firmware button in the browser to flash v0.22 to the radio.

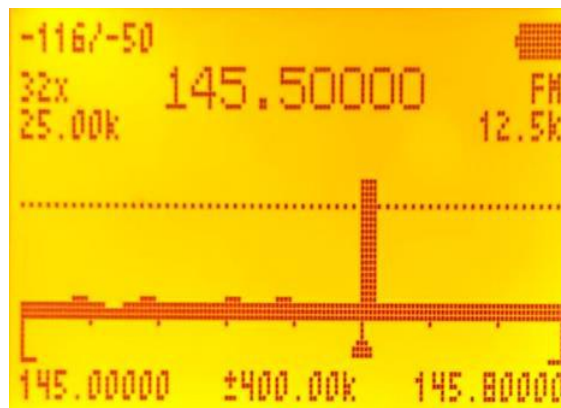
In order to make room for the added functionality, some of the factory firmware features will be deleted. You will lose the “Voice Menu Prompts” and the dedicated NOAA frequencies mode. The radio will still be able to receive them just not in a dedicated mode. This is a small price to pay for the increased functionality in the custom firmware.

Upgrading the firmware unlocks a lot more than just the increased frequency range. The custom firmware makes using the radio easier to use for normal operations. The alternate functions of the keys on the front of the radio have been made accessible with a long press of the key button. From the factory one would need to press the Function (F) button and then the keypad button to access the second layer of the keypad functions.

The custom firmware has also fixed a bug with the AM receive function of the Factory firmware that has not been addressed by Quangsheng. This is where the AM frequency would become overloaded, and the reception would be garbled. The AM receive is much better on the custom firmware.

A SSB demodulation mode has also been added to the custom firmware to allow receiving on the additional bands available to the BK4819 radio IC.

Best of all since this is an SDR radio, spectrum display functionality has been added to allow monitoring the band like modern SDR radios. This functionality is accessible from the keypad by pressing Function (F) then 5 (NOAA). Long press 5 does not access this menu. Once in the menu the current VFO/Memory frequency will be the center frequency of the spectrum sweep

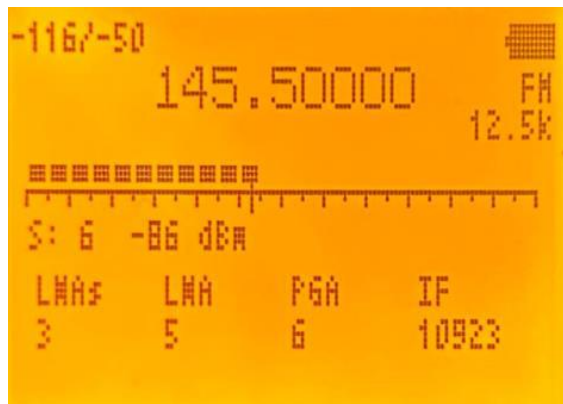


Spectrum Sweep

Below are the button functions for the Spectrum Sweep screen:

- 1 / 7 - increases/decreases frequency step between consecutive bars
- 4 - toggles the number of bars (channels) in the graph
- 2 / 8 - increases/decreases frequency step size by which the graph is scrolled with UP/DOWN buttons
- 5 - shows a frequency input box for lower sweep frequency (value in MHz, * - decimal point)
- 3 / 9 - increases/decreases maximum dB value (vertical scale)
- 6 - toggles receiver bandwidth
- * / F - increases/decreases squelch level
- 0 - toggles modulation type (FM/AM/USB)
- Side Button I - excludes current frequency from the spectrum scan

- Side Button II - toggles backlight
- EXIT - exits to a previous screen/function
- PTT - switches screen to detail monitoring of last received frequency (see below)



Detailed Monitor screen

Button functions for the Monitor screen:

- M - Scrolls through the parameters displayed at the bottom of the screen which can be adjusted with UP/DOWN
- LNAs - Short Low Noise Amplifier
- LNA - Low Noise Amplifier
- PGA - Programmable Gain Amplifier
- IF - Intermediate Frequency
- EXIT - exits to the previous screen of the spectrum analyzer

In my opinion the custom firmware increases the usability of the radio as a “Daily Driver”, but also unlocks new features that allow experimentation on other bands, then the designed 2M and 70CM.

Happy Modding,

Announcements

The Nutmeg Hamfest will be held on October 13th.

[This is a bit outside our area, but I pass it along anyway ed.]

The 32nd Annual Nutmeg Hamfest will be held Sunday October 13, 2024 at Maloney High School, conveniently located off I-91 in Meriden, CT. Ticket/table information and event flyer are below. For additional information, visit the Nutmeg Hamfest website, nutmeghamfest.com.

Gates open at 6:00 AM for Tailgating and Inside Vendor Setup; the building is open from 8AM to 2PM for the general public. Note: No one except inside vendors and staff will be admitted into the building prior to 8:00

Talk-in: 147.36 R, +600, PL 162.2 Hz.

General Admission \$10.00, Under 12 free; Tailgating \$15.00 per space; Inside Tables \$25.00

Baystate Marathon is Sunday, October 20, 2024

This year's Baystate Marathon and Half-Marathon race is scheduled for Sunday, October 20, 2024.

Amateur Radio operators have been asked once again to support the Baystate Marathon and Half Marathon. This year the event is on Sunday, October 20th. Our operational time period is from approximately 0700 until event completion (estimated 1400). Our assistance has been requested by Lowell Office of Emergency Management and Lowell Fire Department. The communications team will be employing Amateur Radio to provide this communications asset.

Amateur Radio will be used for the Accountability Net. The purpose of this net is to coordinate with a race public information booth the status of runners who are unable to complete the race for any issue to anyone is seeking this information.

Race info may be found at <http://baystatemarathon.com>. The course map is found at <https://www.baystatemarathon.com/course-map-description>.

This is a pretty laid back event and suitable for first time public event participation.

Please contact me if you can assist or would like more information. Terry M. Stader - KA8SCP

Haystack Observatory Fall 2024 Open House is Thursday, October 10

MIT Haystack Observatory is pleased to announce that we will hold an Open House event on our Westford campus on the evening of Thursday, October 10, from 6:00 p.m. to 8:30 p.m. We are looking forward to welcoming our friends and neighbors.

Tickets are very limited (sorry; we have a small space). You must go to haystackopenhouseevents to reserve tickets via Eventbrite. There is a limit of 5 tickets per group; please do not claim tickets for people who cannot attend. If you cannot attend, please revisit Eventbrite and cancel your tickets. If you have already attended an Open House, please let someone else attend this one—we have a long waitlist of interested people.

Please note: there will be additional Open House events! Don't worry if you don't get a ticket to this event. We'll see you eventually!

Strays

Becoming an ARRL member or is your membership up for renewal?

One of the benefits of being an ARRL Affiliated Club is a commission for recruiting new ARRL members and securing timely ARRL member renewals.

Each new ARRL member earns the club a \$15.00 commission. New members are defined as never having been a member or a returning member that has not been a member for two years. Each renewal earns the club a \$5.00 commission. There is no limit to the amount a club can earn in this program.

Multiyear memberships earn only one commission. Life, Family, International, Blind, and Student memberships are not eligible for a commission. The member will not be eligible to receive a gift or incentive if the club collects a commission on the membership.

Currently at least 82 BARS members are also ARRL members. If we all renewed through the club, we could potentially receive \$410 per year from the ARRL.

If you are interested in renewing your ARRL membership through the club fill out the following form [ARRL Affiliated Club Membership Application \(pdf\)](#). Then forward it to WILUS@hotmail.com

Is your Email address on the FCC site up to date?

§ 97.23 Mailing and email addresses.

Each license grant must show the grantee's correct name, mailing address, and email address. The email address must be an address where the grantee can receive electronic correspondence. Revocation of the station license or suspension of the operator license may result when correspondence from the FCC is returned as undeliverable because the grantee failed to provide the correct email address.

[85 FR 85533, Dec. 29, 2020]

I recommend that you log on to the "your FCC Registration" at <https://apps.fcc.gov/coresWeb/updateRegistrationPre.do> to make sure that your email address is up to date. Also, in the future should you change your home address, or your email address be sure to remember to update it on the FCC site.

[The \$35 FCC application fee applies to new, renewal, rule waiver, and modification applications that request a new vanity call sign. The fee will be per application.]

Administrative updates, such as a change of name, mailing or email address, and modification applications to upgrade an amateur radio licensee's operator class or to request a sequentially issued call sign, are exempt from fees. – ed.]

--de Bruce, WILUS

Making ZOOM available to Elmers

In this time of social distancing, we have been using Zoom for our monthly club meetings. I have been thinking that Elmers could also be using Zoom to coach new hams instead of actually going to visit with them. Elmers could perhaps help with programming a new

radio with the new ham sharing their computer screen and the Elmer helping to walk them through the process. An Elmer could have Zoom on their cell phone and show a new ham how their shack was set up. Use your imagination and see how you might use this tool. If you would like to use Zoom for this, contact Bruce, WILUS@hotmail.com, with a date and a time and a meeting will be setup for you. You may also contact Bruce if you would like training in using Zoom to Elmer someone.

--de Bruce Anderson, WILUS

Friday and Sunday Night CW Slow Speed Contest

Every Friday and Sunday night, there is a weekly slow-speed CW contest run by the local K1USN guys. This is a good way to polish up your CW skills. See <http://www.k1usn.com/sst.html> for details. Currently, the schedule is:

Fridays 20:00-21:00 UTC (3-4pm EST) and
Mondays 00:00-01:00 UTC (7-8pm EST Sunday).



-- de Tom Walsh, K1TW

Upgrading Your License? Here's a Resource

If you are thinking of upgrading your license using one of the Online exam sites. I recommend that you take some free practice exams on HamStudy.org. I recommend it because the software used to generate practice exams on HamStudy.org is the same software that is used to create exams for online tests. By doing that when you take an online upgrade exam the test question format will be familiar. With HamStudy.org practice tests you should use the keyboard to select the answer, A, B, C, or D and not your mouse as that is the way online exams are run.

--de Bruce Anderson, WILUS

Secretary's Reports

from Marla Wallace, WA1GSF, Secretary

September BARS General Meeting

Doug, N1WRN called the meeting to order at 7:00.

There were several announcements:

- The BARS Holiday Party will be at the Great Wall restaurant in Bedford on January 15th at 7:00 PM.
- Elections will be held at our November meeting. Nominations are now open.
- The BARS loaner program has several pieces of gear available: a TS970, two IC756s, and an IC756pro.
- The next VE Exam session will be on 9/12.
- Thanks to the members who made BARS visible at the Northeast Ham Exposition.
- The BARS Newsletter took 2nd place at HamExpo.
- Thanks to Irving for donation of several Baofangs and a Yesu 2900.

The program began at 7:20.

It ended at 8:15.

There was lots of discussion in the room afterward.

Doug adjourned the meeting at 8:35.

September BARS Board of Directors Meeting

There was no Board of Directors meeting in September.

BARS Membership

Our current combined membership is 144. Please check your email and your "Junk email" to see if you have a renewal invoice from PayPal.

Anyone with a question about their renewal status can email me at WILUS@hotmail.com to get your current membership status.

from Bruce Anderson, W1LUS, Treasurer

2024 BARS Member Dues

A \$15 annual BARS membership begins on January 1st and expires on December 31st. Any renewal or new membership made after September 1st will be valid until December 31st of the following year. Memberships allow us to

- pay our bills,
- maintain our great web page,
- fund field day,
- and bring the membership a great variety of informative meetings and speakers.

Treasurers Report for September 2024

Dues for 2024 are now due. Dues for 2024 will remain at \$15.

Dues can be paid several ways:

- via bank-to-bank transfer with Zelle, Venmo, PayPal, etc. by sending \$15 to bars.dues@outlook.com,
- with credit card by using the Join/Renewal membership form on the W1HH.org website,
- or with cash or check by mailing \$15 to Billerica ARS, 16 Regis Road, Tewksbury, MA 01876

In September, we had one new member and one renewal for \$30 income; our expenses were Zoom \$16.99, and PayPal \$1.01. We now have \$442.57 in the bank and \$1182.42 in our PayPal account for a total of \$1624.99.

Bruce Anderson

W1LUS

BARS Needs You!!!

We are looking for a few good hams to act as net control on the regularly scheduled Wednesday night nets! All it takes is one night a month; if you are interested contact Doug, N1WRN.

Also, the club needs volunteers for light tasks of about 1 hour a month. Are you able to pitch in? Contact Doug Bruce, N1WRN.

Wednesday Night Net

Join us on the Westford 146.955 Repeater for the weekly BARS net each Wednesday at 8:00 PM (**except on the first Wednesday of the month which is club meeting night**). *Note: Thanks to the Westford Police Amateur Radio Team (PART) for their generous act of making their repeater available to us.*

Repeater info:

WB1GOF

146.955 MHz

-600 kHz (normal) offset

Encode CTCSS 74.4 Hz

Reminder: "kerchunking" the repeater is not only impolite, it's illegal. It constitutes an unidentified transmission. If you need to check that you're making the repeater, say something like "This is <your call> standing by on the frequency." Thanks for your courtesy.

Club Meetings

Club meetings are held in person (weather permitting) and via Zoom. A link will be sent via the BARS email reflector to all currently paid-up members who might wish to attend via Zoom.

Club meetings are held on the first Wednesday of the month at 7 PM Eastern time.

VE Sessions

Our VE sessions are held in-person at the Chelmsford Bible Church. Pre-registration for our in-person exams is suggested. Contact w1lus@hotmail.com for registration information.

VE sessions are held every month on the 2nd Thursday at 7:00 PM at Chelmsford Bible Church, 128 Gorham St., Chelmsford MA. Park in back and enter by rear door. [Chelmsford Bible Church Hall, 128 Gorham St, Rear Door, Chelmsford MA 01824-3220](#) ([map](#))

VE Session Report for September 2024

We had one person show up for the September 12th VE exam session, resulting in an Extra upgrade. Thanks to Gary W1GFF, Peter N1ALO and Bill W1ZL for helping run this exam session.

Our next exam session will be on October 10 at 7:00 PM at the Chelmsford Bible Church. While walk-ins are still welcome it speeds the process up if you pre-register for your BARS VE exam session at HamStudy.org.

--de Bruce Anderson, W1LUS

BARS Does breakfast every Saturday.

On Saturday mornings at 8:15AM, we meet for a casual, social breakfast at Stelio's restaurant in Billerica. [Stelio's Family Restaurant, Billerica, MA](#)

Future Meetings

The November meeting will be on 11/6 and will be hybrid – in person and via Zoom.

Subscribe to the BARS Mailing List

To subscribe to the BARS email list, send a blank email to bars-subscribe@w1hh.org and watch for an automated reply. Note that bars-subscribe is all one word.

Reply to that message from the list server and you are then subscribed.

To post to the list, address your email to bars@w1hh.org

October Get-on-the-Air Suggestions from Scott Ginsburg, K10A

BARS is a “get-on-the-air” (GOTA) club. We encourage members to participate in the varied events on HF and VHF.

Here are the popular suggestions for this month:

Date	Event
Oct 5-6	Oceania DX Contest, Phone https://www.oceaniadxcontest.com/
Oct 5-6	California QSO Party https://www.cqp.org/Rules.html
Oct 12-13	Oceania DX Contest, CW https://www.oceaniadxcontest.com/
Oct 26-27	CQ Worldwide DX Contest, SSB ** https://www.cqww.com/rules.htm

** Top recommendation for this month

Recurring Events – visit webpage for exact times and dates:

K1USN Slow Speed Test - Every Friday 20:00 UTC / Every Monday 00:00 UTC
<http://www.k1usn.com/sst.html>

Straight Key Century Club (SKCC) Weekend Sprintathon – the Saturday following the 6th of every month at 1200 UTC
http://www.skccgroup.com/operating_activities/weekend_sprintathon

Details on each contest above and more events can be found every week on the WA7BNM contest calendar at:

<https://www.contestcalendar.com/weeklycont.php?mode=custom&week=current>

BARS Leadership Team

OFFICERS:

President: Doug Bruce, N1WRN
Vice President: Mark Nelson, KA1INE
Treasurer: Bruce Anderson, W1LUS
Secretary: Marla Wallace, WA1GSF
BoD: Bill Poulin, WZ1L
BoD: Steve Wedge, W1ES/4
Ex Officio: Gary Frascarelli, W1GFF

VOLUNTEERS:

Net Coordinator: Doug Bruce, N1WRN
Newsletter Editor: Marla Wallace, WA1GSF
New Member Outreach: John Fisher, KC1FTJ
Field Day Chair: Mark Nelson, KA1INE

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