



The SPARC

Amateur Radio - Communicating Worldwide for A Century

**Newsletter of the Boston Amateur Radio Club
Serving Hams in the Greater Boston Area**

January 2022 - VOLUME 34, NUMBER 1

www.barc.org - w1bos@arrl.net



The President's Pronouncements – *Brendan Baldonado, NW1S*



Happy New Year to everyone! COVID continues to keep us on our toes with new variants and prolonging this pandemic. While we navigate the changing mandates and the importance of maintaining our own health, the club continues to adapt and search for activities for members to participate in.

Fortunately Ham Radio continues to allow us to interact and brings us together through our nets and HF contacts. Winter is a slow time for many industries and hobbies alike, so call out on HF or that local repeater and make contact. Make a new friend and learn more about our great hobby. Be the Ham you want to find on the air. I look forward to hearing everyone on the air soon. A Happy and Healthy New Year!

Message from the Editor – *Doc Kinne, KE1ML / M7RCK*

Impressive. Most impressive.

I just mention here last month that I was “disappointed as to the number of submissions” I got and that little problem was solved this month. Nice going, folks!

Not much from me this month, honestly. While the beginning of this year has us dealing nicely with Omicron (what’s next? We’re running out of Greek letters!), some of us managed to get to the Holiday Party, which was great.

As I write these words, it is the coldest it has been in E MA apparently, in 3 years. This is why we went from the moniker “global warming” to “climate change.” Things will change significantly in two days when it will be nearly 10C. Use that time, perhaps, to make sure you’re antennas are good since February is usually our cruelest month.

Stay warm. Stay healthy. And stay safely irradiated with low-ish electromagnetic radiation...as only an Amateur Radio Operator can appreciate it!



Repeaters: 145.230 (-) CTCSS 88.5 in/100.0 out

Simplex: 147.420

449.175 (-) DMR CC1

BARC General Meeting – No January Meeting!

BARC went back to tradition, holding their January event as its Holiday Party.

Our regular club meetings – on Zoom – will recommence in February. Get ready!

In this Issue of The SPARC

- BARC's Holiday Party
- SPARC Your Knowledge: The Questions
- My First Transceiver
- BARC at First 2022 New England Cabinet Meeting
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- SPARC Your Knowledge: The Answers

BARC's Online Discussion Group – Joe Harris, N1QD



BARC has an online forum at Groups.io. The group serves as a sounding board for members to post their suggestions and comments, and is intended to foster discussion. The group can also be used to share photographs from club events! Come visit us at: <https://groups.io/g/BostonARC>. You can join, if you're not already there, by sending an email to "BostonARC+subscribe@groups.io."



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BARC's Holiday Party – Brendan Baldonado, NW1S

On the 9th of January 2022 the Boston Amateur Radio Club met for its Holiday Party at the Stockyard in Brighton. We had 10 members in attendance and all enjoyed an excellent meal. We had two newer members join us: Chris, W1GBH and Nicole who is not yet licensed. It was a great event where we discussed the plans for Field Day and some upcoming events for the club.

One topic that came up was the need for a Club Ham Radio Public Service Liaison. This person is typically responsible for being the contact person for amateur radio operators interested in doing public service events, being the BARC liaison with the Eastern MA ARES, and advertising such events in the *SPARC* and on the website among other things.

If you are interested in learning more or in volunteering for the position please contact me, at NW1S@arrl.net.

SPARC Your Knowledge: The Questions – Brendan Baldonado, NW1S

SPARC your knowledge! Each month we will include three questions from the Technician, General and Amateur Extra exams. The correct answers will be in a separate area of the Newsletter with a short explanation as to why.

Technician: Which of the following is used to convert a radio signal from one frequency to another? [T7A03]

- A) Phase splitter
- B) Mixer
- C) Inverter
- D) Amplifier

General: What is one advantage of selecting the opposite, or "reverse," sideband when receiving CW signals on a typical HF transceiver? [G4A02]

- A) Interference from impulse noise will be eliminated
- B) More stations can be accommodated within a given signal passband

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- C) It may be possible to reduce or eliminate interference from other signals
- D) Accidental out-of-band operation can be prevented

Amateur Extra: What is “dither” with respect to analog-to-digital converters? [E8A04]

- A) An abnormal condition where the converter cannot settle on a value to represent the signal
- B) A small amount of noise added to the input signal to allow more precise representation of a signal over time
- C) An error caused by irregular quantization step size
- D) A method of decimation by randomly skipping samples

My “first” Transceiver – Phaser 20m – Almost... – Gregory Kenley, KC1NRJ

Excited by my first FT8 experience with an SDR and Receive only Mag Loop – The Phaser20 Kit.



Several years ago I was “trapped” in Richmond, VA for the Winter to avoid the cold and COVID. I picked up an ARRL Technical License Exam paperback and decided to study for the license. I had put together a crystal radio as a kid and I guess I decided to finally give it another try. I had recently stumbled over the RTL-SDR and was amazed at what you could do today with a \$30 kit that included a USB dongle and a telescopic dipole antenna. The SDR is actually a “gateway drug” for equipment upgrades. It wasn’t too long before I longed for something better than the \$5 telescopic dipole that came with the online RTL-SDR kit.

In Richmond I was holed up on the 3rd floor with power lines on one side and

an enclosed courtyard on the other. I decided on the great HOA savior – the Magnetic Loop. Without in person ham radio meetings to locate the infamous ham radio “Elmers,” I had to resort to scanning YouTube for information. I came upon Larry from California who made excellent receive only Magnetic Loop antennas with filters to block out powerful AM And FM stations.

Using some nice YouTube videos from the SDRUNO crowd, I was able to configure my next generation SDR receiver to the Mag Loop and experience the mystery and joy of configuring WSJT-X, after some more YouTube of course.

My first FT8 “QSO” was a woman from Florence, Italy. From Italy to Richmond, VA on just a few watts – and into my courtyard to my Mag Loop no less! It was great. However I could not send a signal back to her – I was receive only. This had to change. (I did send her an email!) To do that I needed both a General License to get on 20 & 40 meters *and* I needed a full-fledged Transceiver and a transmit antenna. No problem. I studied for the Exam, bought an MFJ 1820T telescopic antenna (did NOT know what a *radial* was at the time) and ordered a \$60 20m FT8 Kit – called the “Phaser 20.”



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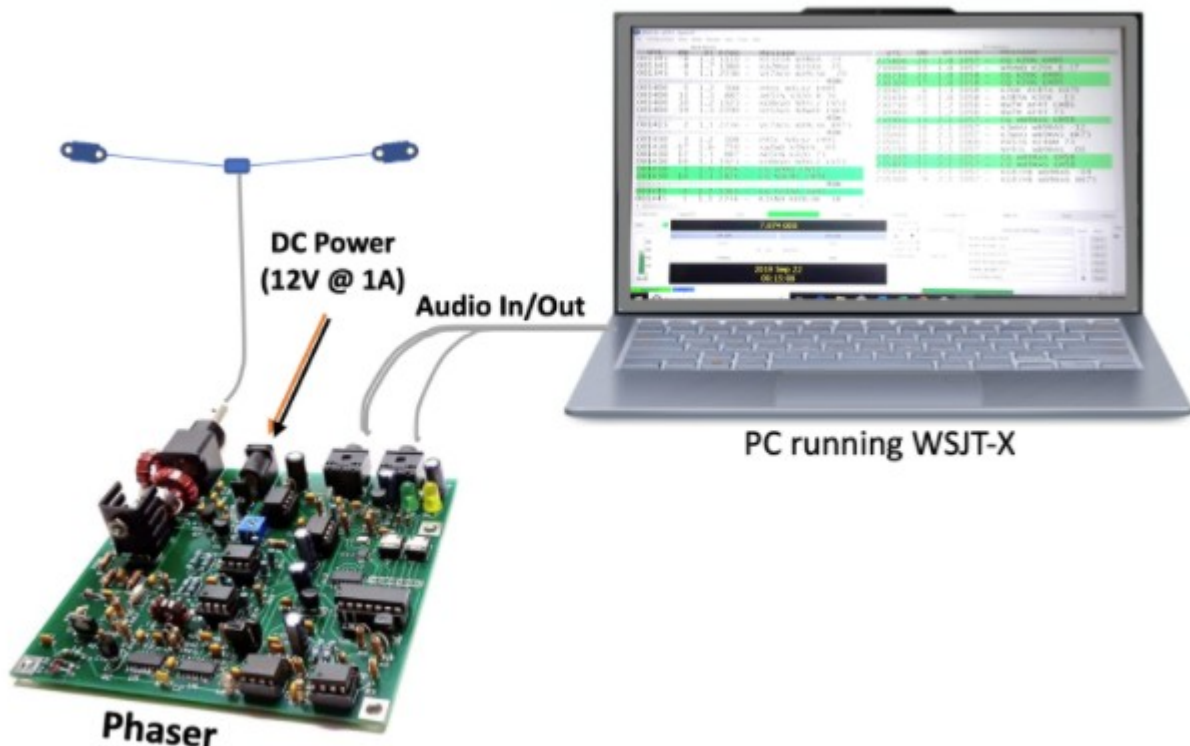
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I passed the exam. The MFJ 1820T showed up, and I just needed my first ham transceiver. I waited and waited. I was the victim of early supply chain problems. It took almost 9 months to receive the Phaser 20 Kit.

In the meantime I joined BARC, bought a Xeigu G90 and a Wolf River Coil, and started joining the POTA ventures. I learned about 20 watts vs 100 watts and bought an ICOM IC-7300.

On my recent winter trip to Richmond, VA I learned how to POTA hunt and was having a ball making actual contacts. I learned how to use WEBSDR.com to see where traffic was active. Life was good again.

A notice from my bank concerning their desire to get out of the safe deposit box business during the depths of Boston winter brought me back for a short stay. No ham equipment in Boston – what to do?



Phaser hookup diagram showing simple interface to the PC running WSJT-X

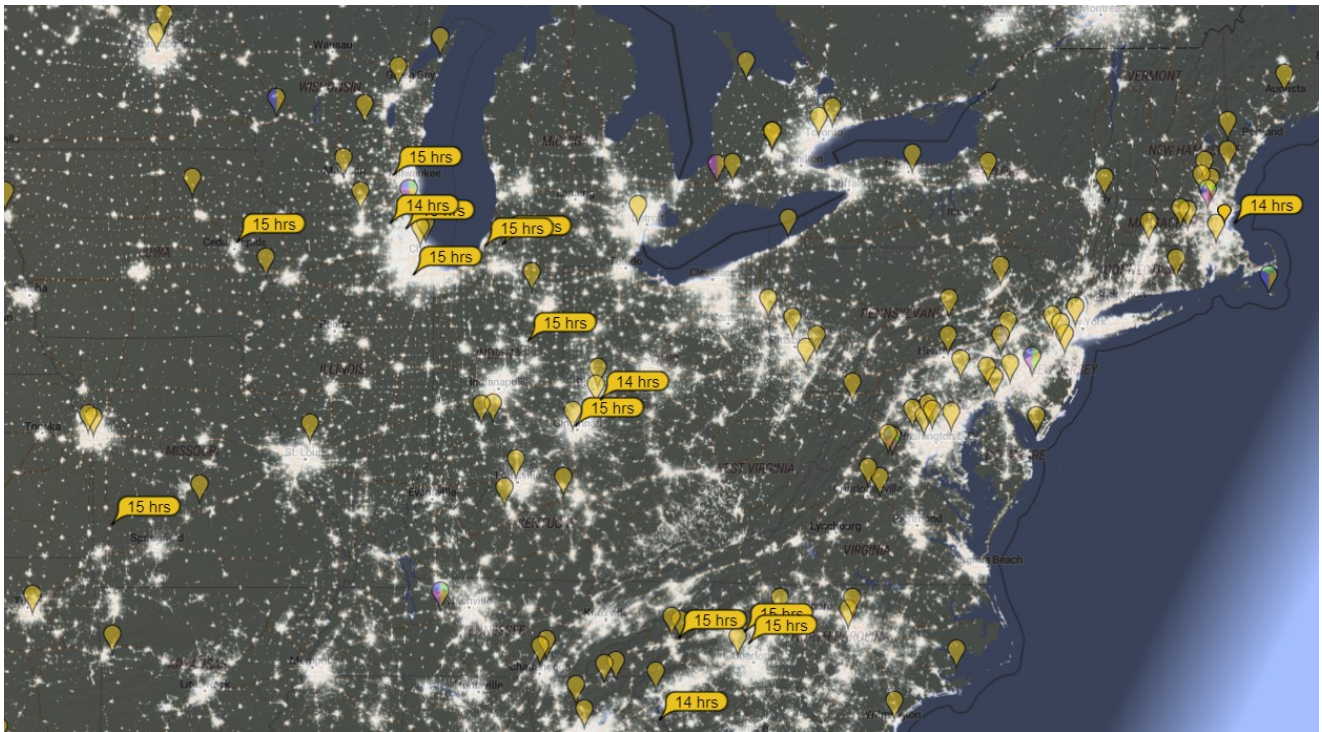
I got the Phaser 20 out of mothballs and connected it up. After setting up FT8 on the IC-7300, FT-891 and Lab599 TX-500 (have never gotten the G90 to work...) I had this little unit up and on the air in a few hours. The FT8 decodes just starting flowing in. But something was wrong. The Transmit did not work. Darn. (*Not* what I said). PSKReporter Map confirmed my fears. No one was hearing my little 3.5 Watt Phaser 20. After playing with the Audio levels (with WSJT-X and FT8 it is ALWAYS the Audio levels) the receive level was where it needed to be – 32db instead of the 50s. Good. Reading the Phaser FAQs I read about an issue with Transmit and output power. Pushing the output lever on the right to maximum the Transmit Light came on! PskReporter said fellow Hams were hearing me.

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This was the post SDR “baby step” that I had wanted to achieve last year while I searched for the perfect long term Transceiver. Felt good to finally get it done.



I’m not done with this little single board 3.5 watt transceiver. Like the Blues Brothers “Good Ole Boys” line it has both kinds of Digital – FT8 and an alternative Frequency – JS8CALL. I’ll give that a try soon.

BARC Represented at First 2022 New England Cabinet Meeting – Brendan Baldonado, NW1S

On January 8th, I attended the first 2022 New England Cabinet meeting hosted by our New England Division Director Fred Kemmerer AB1OC. The meeting was an introduction and discussion on issues with Club officers from all over the New England area. The focus of the Zoom call was to lay out a plan for the NE Division and ask the Clubs what they need to be a successful club. Fred did a great job keeping the meeting on track and focusing the efforts on a

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Saturday morning.

After Fred's quick presentation, each Section Manager spoke briefly on what's going on with their Sections. Other notable people spoke about their own areas of expertise, like our own Skywarn Coordinator Rob Macedo who spoke on the successes of the Skywarn program and its activities in Eastern Massachusetts.

Fred's plan for New England is to grow each club in both size and engagement through programs he found success with in Nashua. Part of that plan involves creating a Ham Mentoring Program on the Division level but also getting clubs to create their own Ham Elmering Groups. Fred wants clubs to focus on Youth Outreach and STEM Learning through ARISS contacts with local schools as well as finding local Middle and High School teachers and helping them develop lesson plans that involve Ham Radio technology. Several programs and websites already exist in helping clubs or individuals start this type of outreach and there is even a grant program that gives money to teachers that are using Ham radio as a focus in the classroom to buy equipment and radios for students that become licensed. I took some notes during the meeting and have started to brainstorm some excellent ideas as a club that I would like to try and accomplish in the new year. As such if you are interested in helping me with some of these projects I am looking for willing volunteers to get several projects off the ground. These projects include: An Elmering group, Youth/School Outreach Group, and a YL Outreach Engagement Group.

If you are interested in helping me get these groups off the ground please email me at; NW1S@arrl.net

Project Big-E Looking for Volunteers – Brendan Baldonado, NW1S

The Hampton County Radio Association president Larry Krainson, W1AST, is coordinating an effort to organize an amateur radio booth at “The Big E” in West Springfield, Massachusetts for 2022. This exhibition runs for 17 days from September 17th through October 3, 2022.

According to Wikipedia, “The Big E,” formally known as The Eastern States Exposition, is billed as “New England’s Great State Fair.” It is the largest agricultural event on the eastern seaboard and the sixth-largest fair in the nation, W1AST says the 2016 event had 1.4 million visitors, and over 1.6 million visitors in 2019. The club is looking for volunteers and operators to promote and educate people at this event about Ham Radio. Currently they are open to any club or person getting involved in any way they can. Please visit <https://nediv.arrl.org> for more information.

SPARC Your Knowledge: The Answers – Joe Chapman, NV1W

Technician: B

A **mixer** is a circuit used to shift a signal from one frequency to another. Radio frequencies are much higher than the frequencies we hear so, speaking in very general terms, in a receiver we need to shift signals way down, and in a transmitter we have to shift them way up.

At this point you might be forgiven for rolling your eyes like a teenager receiving helpful dating tips from Mom or Dad. *Why in the name of Hiram Percy Maxim’s toupé is a thing that converts a frequency called a mixer?*

The answer is when you combine (or mix) two signals, the output will contain two different frequencies that are the sum and difference of the input. This is how you shift frequencies in a radio. In the usual receiver design, the input radio-frequency signal will be fed into a mixer along with a signal from a variable-frequency oscillator (or VFO)

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which you might control by turning the big dial on your rig. This will produce an *intermediate frequency* or IF which is then processed further to yield the signal you hear.

General: C

Recall that most voice transmissions on the HF bands are single-sideband or SSB, which is the more efficient result of removing the carrier and one of the sidebands from an AM signal. If you remove the lower sideband you get USB, and if you remove the upper one you get LSB. If you switch between the two while listening to an SSB signal, one will be intelligible and the other won't be.

In CW, the analogous control switches between normal CW and reverse CW (different manufacturers have different names). However, unlike voice, CW is just the presence or absence of a carrier, so you'll still be able to understand it, and in fact if you're tuned in exactly (a process called zero-beating) there will be *no difference at all*.

What will happen is that nearby signals will be moved up or down, which may **reduce or eliminate interference**.

Amateur Extra: B

Analog-to-digital conversion consists of taking an analog signal like a sound wave and converting it to a series of digital values. This process is called quantization. There's usually some error involved: if I have a value of 1.0246 and record it as "1", the error is .0246. The problem is if you just truncate or round the values and don't do anything else, it can produce artifacts that certain detectors are sensitive to. In audio, for example, the human ear just happens to be one of those detectors and the result will be distortion.

Dithering (the name is from a part in the mechanical computers used in World War II aircraft, which performed better when flying than on the ground due to small random errors caused by vibration during flight) is the process of adding a small amount of random noise **to an input signal to allow more precise representation of a signal over time**.

One of my old image processing colleagues, Mike Hiller, thought that "The Dithering Techniques" would be a great name for a band.

BARC Meeting Calendar for 2022

We are in the process of looking at and garnering physical meeting space hopefully for the Winter onwards, again, depending on developing conditions. Watch this space, and the BARC Website (<https://barc.org>) for up to the minute details.

VE Sessions

None scheduled at this time.

BARC Net Preamble

The control operator for the BARC Net is Joe, W1JJF. He rarely misses a net, but when he does any ham can take up the position and run the net. To assist you in opening and closing the net The BARC Net Preamble is printed below. Do not be afraid to step up and take the challenge.

Is there any further business for the repeater before we begin the Boston Amateur Radio Club Net? This is «YOUR CALL». Calling the Boston Amateur Radio Club Net. This is «YOUR CALL», my name is «YOUR NAME» and I am located in «YOUR TOWN». This net meets each Monday evening at 9 pm Eastern Time on the 145.230 Boston

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repeater, PL 88.5. This net is an informal round table discussion concerning matters of interest to the members of the Boston Amateur Radio Club and the Boston Amateur Radio community in general. When checking into the net, please say, “this is” and drop your carrier to check on doubling. Then give your call sign, name and location. All amateurs are welcome to join the net. Any check-in’s for the Boston Amateur Radio Club Net please call now.

[Compile the list of the check-ins and proceed with the net.]

Is there any further business for the net before I close? Hearing nothing, this is «YOUR CALL» closing tonight’s session of the Boston Amateur Radio Club Net. I would like to thank everyone who participated in the net and those who stood by while I ran the net. The Boston Amateur Radio Club Net will return next Monday evening at 9 pm Eastern Time. This is «YOUR CALL» returning the repeater to general amateur use. 73.

I See the Future

15-17 January	ARRL January VHF Contest
12 February	SPARC Article Deadline
14-18 February	ARRL School Club Roundup

▲ Note change from usual date and/or location

Before going to any event over the next few months, please confirm that the event will take place and what the hours are.

As you might expect, there are many more events (public service, hamfests, flea markets, etc.) taking place—some only peripheral to ham radio. For information on these, covering much of the Northeast, the “Ham - Electronic Flea Market” and the “PSLIST” lists tell the story. Of course, if you know of an event that would be of interest to the readers, please let the Editor know.

For an up-to-date calendar of events, including web links, visit <http://www.barc.org/calendar>.

Businesses Can Advertise Here

The SPARC accepts commercial advertisements. BARC encourages monthly promotion of your products and services which would be of interest to hundreds of our members and others interested in the Amateur Radio Service.

The rates for display advertising are:

1 col × 2 in. (business card)	\$15 per issue
1 col × 2 in. (business card)	\$75 per 6 consecutive months
1 col × 2 in. (business card)	\$125 per 12 consecutive months
1 col × 4 in. (½ column)	\$30 per issue
1 col × 9.5 in. (full column)	\$60 per issue

Originals of ads must be presented to the Editor in MS Word or .jpg format to print 1:1. Other composition will be at extra cost. We will be glad to quote other ad sizes and durations. Members are urged to seek prospective advertisers who are appropriate to our readers. For additional information, contact Doc Kinne, KE1ML, at 617.297.2718 or kinnerc@gmail.com.

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Two Ways to See Yourself in Print! (well, PDF) – Joe Chapman, NV1W

We are always looking for articles for the newsletter. I have reserved this space for your articles, reviews, tips, how-tos, hints, kinks, photos, schematics, or other ham related information. Photos of you operating or your shack are especially welcome. Send your submissions to the Editor, Doc, KE1ML, at kinnerc@gmail.com. Articles for the September issue must be received by September 6.

Are you a depressed BARC member because you have a treasure you must turn to cash? Cheer up, Bunky! The SPARC will run your (non-business) ad for free. Of course, a 10% donation if you sell it will be cheerfully accepted. Just send your ad to Doc Kinne, KE1ML, kinnerc@gmail.com.



NEW ENGLAND SCI-TECH

New England Sci-Tech Inc is a new 501(c)(3) STEM education center, amateur radio training center, and maker space located at 16 Tech Circle, Natick. It is home to New England Amateur Radio Inc (NE1AR) and the youth radio club Sci-Tech Amateur Radio Society (STARS). NE Sci-Tech welcomes memberships and donations via www.NESciTech.org or www.NE1AR.org.



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The Boston Amateur Radio Club is a non-commercial association of persons interested in the Amateur Radio Service. The Club is organized for the promotion of interest in Amateur Radio communication and education, for the establishment of emergency communications in the event of disasters or other emergencies, for the advancement of the radio art and the public welfare, for the representation of the radio amateur in legislative and regulatory matters, and for the maintenance of collegiality and a high standard of conduct.

The Club is open to all persons interested in Amateur Radio without regard to race, color, religion, creed, national origin, gender, disability, or sexual preference. Our General and Business meeting locations are handicap accessible. Other meeting and activity locations may be handicap accessible by arrangement.

The Club is an ARRL-affiliated club, and is a member of the New England Spectrum Management Council (NESMC). The Club is also an associate member of the Courage HandiHams system.

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Greater Boston Net Directory

Daily 7 pm	MARI (Mass/Rhode Island CW Net) (NTS)	3.565
Daily 8 pm	Eastern Mass 2M Traffic Net (NTS)	145.230 (PL 88.5 in/100.0 out)
Daily 8 pm	Slow Speed CW Net	28.160
M,T,F,S 8:30PM	Massachusetts Rhode Island Slow Net	3598
First Mon 8:30 pm	EMA Section ARES Net	146.610 and all MMRA links
Mon 8 pm	New England DMR Net	DMR New England Talk Group (TG 3181)

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Mon 9 pm	BARC Club Net	145.230 (PL 88.5 in/100.0 out)
Sun Mon Wed Fri 10 pm	Heavy Hitters Traffic Net (NTS)	MMRA-linked repeaters: 146.610, 146.670, 146.715, 146.820, and all 222 and 440 repeaters
Mon-Sat Sat, 5 pm	MA RI Phone Net (NTS)	3.978
Tue 8 pm	Sci-Tech Amateur Radio Society (STARS) Net	446.325 (PL 146.2)
Tue 8 pm	MMRA Club Net	146.610 and all MMRA links
Wed 8 pm	Wellesley Amateur Radio Society Net	147.030; 444.600 (PL 88.5)
Wed 9 pm	Waltham Wranglers Swap Net	146.640 (PL 136.5)
Thu 8 pm	Wellesley Amateur Radio Society Net	28.3MHz
Sat 9 am	Northeast SATERN Net	7.265MHz
Sun 9:30 am	Yankee SSB Net	50.275MHz
Sun 8 pm	Algonquin Amateur Radio Club Net	446.675 (PL 88.5)
Sun 8:30 pm	NSRA Net (with Newslines)	145.470 (PL 136.5)
Sun 9 pm	CAARAnet	145.130 (PL 107.2)

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