

Hello, and welcome to the North Shore Radio Association (NSRA) and Digital Mobile Radio (DMR). I am David/KB1MSR, a member of the NSRA and part of the Technical Team supporting the new DMR repeater at our Danvers, MA repeater site. The club hosts/maintains multiple Amateur Radio repeaters at this site and at our Salem, MA site; this specific information is available on our website, www.nsradio.org, as <http://www.nsradio.org/Pages/info2.htm#Repeaters>.

NSRA recently joined the Amateur DMR world (exclusive of our existing digital EchoLink, IRLP and APRS services) when the club purchased a Motorola UHF commercial MotoTRBO repeater to replace our older Analog UHF amateur repeater. This was a direct swap out, utilizing the existing UHF antenna and duplexer infrastructure and we are working to optimize the performance of the new repeater. NSRA acknowledges the New England Digital Emergency Communications Network (NEDECN) and NEAR-Fest organizations for their assistance in this acquisition and ongoing operations.

DMR utilizes the Internet to link repeaters into a worldwide network. The NSRA has joined that network thru its affiliation with the NEDECN (<http://www.nedecn.org/>). The NEDECN provides the local (New England, New York, New Jersey, Eastern Canadian Maritimes) interconnection to the broader DMR Motorola Amateur Radio Club (DMR-MARC) US network and then onto worldwide connections. While not required in order to utilize the DMR network, the NSRA encourages its members that use the DMR network to support the NEDECN by joining this Amateur Radio club.

A good initial primer to DMR is the “Amateur Radio Guide to Digital Mobile Radio” by John S. Burningham/W2XAB, available at the DMR-MARC website as http://dmr-marc.net/media/Amateur_Radio_Guide_to_DMR_Rev_I_20150510.pdf. There are also many Wikipedia pages, YouTube videos and regional clubs that support DMR, both thru DMR-MARC-affiliated, DMR+ and Brandmeister-affiliated repeaters and clubs.

The DMR-MARC website is also a good reference and launch point to the latest in personal DMR+ (and other digital mode) hotspots, such as the DV4Mini, DVMEGA and RFShark OpenSpot. These devices allow users who are outside of DMR Zone coverage (such as while travelling) but still accessible to Internet connectivity (home WiFi, cellular hotspots, etc.) to connect to selected DMR Talk Groups on DMR+ and Brandmeister or other modes (D-Star, P25, Yaesu Fusion, NXDN).

Programming a DMR radio, both mobile and portable, is not as simple as programming an Analog Amateur radio. Most of the radios available to Amateur operators, other than the commercial Motorola, Hytera, etc. manufacturers, are from Chinese manufacturers and are lower cost; common amongst those are from Connect Systems, AnyTone and TYT, etc. Each radio has its own peculiarities when programming, as there is no truly-common interface or CPS (Computer Programming Software) program that interfaces with each brand; each manufacturer has their own CPS program. There are common programs, such as Contact Manager (available for download from <http://n0gsg.com/contact-manager/>) that allow the movement of Code Plugs between different radios types and manufacturers.

The Danvers, MA DMR site provides access to the following NEDECN Talk Groups, as noted on the DMR-MARC Networked Repeaters page:

Callsign: NS1RA
Frequency: 442.80000
Offset: +5.000
ColorCode: 4

NEDECN
Danvers, Massachusetts

Time Slot #1 - Group Call 9998 = Parrot*
Time Slot #1 - Group Call 1 = World Wide (Sat. Net)*
Time Slot #1 - Group Call 13 = WW English*
Time Slot #1 - Group Call 3 = North America
Time Slot #1 - Group Call 3172 = Northeast
Time Slot #1 - Group Call 3133 = NH Statewide*
Time Slot #1 - Group Call 8801 = NETAC1*
Time Slot #1 - Group Call 113 = UA113*
Time Slot #1 - Group Call 123 = UA123*
Time Slot #1 - Group Call 310 = TAC310*
Time Slot #1 - Group Call 311 = TAC311*
Time Slot #1 - Group Call 759 = SKYWARN/911

Time Slot #2 - Group Call 3181 = New England Wide
Time Slot #2 - Group Call 8 = Region North
Time Slot #2 - Group Call 3125 = MA Statewide
Time Slot #2 - Group Call 8802 = NETAC2*
Time Slot #2 - Group Call 9 = Local Site and NSRA Club use

*** = PTT Activated**

The notation "Time Slot" defines which of the two narrowband (6.25 Khz) time slots in the 12.5 Khz frequency allocation carries your audio. Both Time Slots can be active simultaneously on the Zone's repeater, providing for twice the traffic carrying capability of normal Analog traffic within a wideband 25 Khz allocation.

As the DMR protocol was designed for business (ie MotoTRBO on the ETSI TS 102 361 protocol), "Talk Groups" would define a subgrouping of an overall "Zone". Using the BAA Marathon as an example where MotoTRBO is utilized as part of the Communication Plan, there are three Zones (Start, Course, Finish) similar to VHF/UHF Amateur Repeaters in Massachusetts (Boston, Danvers, Hyannis, Southboro, etc.). Each Zone (or repeater) has multiple local (only on that repeater) or global (across multiple Zones) groups of interest; for the BAA Marathon, common (across all Zones) Talk Groups would be Boston Ops, Medical Admin, etc., while local (restricted to a specific Zone) Talk Groups would be Announcers, Bus Loading, Bikes, Vehicles, etc. This example is expanded to the Talk Groups noted above for the Danvers, MA DMR repeater (or Zone). We've selected those NEDECN Talk Groups that are of interest to the local

Amateur Community, both Common and Local. All common Talk Group radio traffic travels over the DMR-MARC network while the Local Site (Talk Group 9) radio traffic is simple repeated locally (like a conventional repeater, ie. not thru the DMR-MARC network thru any remote repeaters, or Zones).

By now your head is probably starting to burst; this is normal for most new DMR users. With time, you will better understand the concepts and constructs of DMR, along with the nuances of your particular radio. There are Email lists that are hosted thru the NEDECN club that share operational and programming information for the various DMR radios. There are also sample Code Plugs located on the NEDECN website and members of the NSRA can try to assist you if there isn't a Code Plug for your specific radio model. Just like any other Amateur radio activity, find an Elmer who can assist you with learning the ropes. DMR is a fast-growing digital medium within the Amateur Radio community which has followed (and sometimes led) commercial radio development over the years. Welcome to the newest flavor of the hobby.

73

David/KB1MSR