DMR Arkansas Amateur Radio Net
Those DAARN Hams!
Thursdays 9:00pm Central time
Talk Group Brandmeister 3105

WHY I Chose DMR FOR MY HT Radio

It all started after I finally passed my General Exam. I already owned an analog Baofeng BF-F8HP for my entry into Ham radio, but was finding it difficult to use the radio anywhere except at home with our local repeater. After attending several seminars on DMR and with the help of a couple of great 'Elmers' in our area (N5DDW and WB5BHS), I soon discovered the major digital channels in my area, so all I had to do was get the software in, then reload my computer and download a code plug and it just pushes everything to your radio and you're done…. its that simple.

Now, it IS complex (I swear the 1st time I got this I was very confused but there are videos out there to help you so you don't lose anything with digital, right ? So that's my big key point here, you keep everything you have and you add digital capabilities. You might be asking yourself, now, "why would I even want digital," right?

Because it connects all the other repeaters in the whole world !!

So, I decided to buy another BAOFENG, this time the DM-1701. Creating a code plug and formatting the radio for basic functions, my Elmers suggested I add to my digital toolbox a so-called 'hotbox'. I learned that with a hotbox, I could run the unit off of my car's 12v. Cigar lighter socket, tap into the internet through my cellphone's built in hotspot, and be able to talk to any repeater I wanted through the BRANDMEISTER global network ! This was the answer I was looking for, because I did not currently have a mobile rig, I travelled frequently out of sate, and was not very comfortable having to find, setup, and test every repeater I encountered on the road manually. Using the hotpot we could construct for

about $ 35.00, we needed a basic Raspberry Pi module and attached a wireless 'hat' to the mini computer. I followed the slide presentation found here on the DAARN.ORG Web Site: (http://daarn.org/DMRv2.1.pptx), and we had a build 'party' where about 5 of our club members built and formatted our Hotspots. The devices have a mini screen where each callsign is displayed and the device has allowed me to talk to everyone back home AND actually host our weekly DAARN Net from 650 miles away from home !!

So, with a little help from your peers, YOU TOO can set up your hotspot and join us on Brandmeister 3105 FROM ANYWHERE IN THE WORLD (that has a repeater) !!

--Thom Raup, KG5STP

DAARN Nets — Information

The DAARN Net meets every Thursday Evening at 9PM or 2100 Hours Local Time. Our DAARN Net is conducted on the Brandmeister Network, using the Arkansas Talk Group 3105,

While the DAARN Net is not a Traffic Net, we do accept any traffic coming into Arkansas or going out of Arkansas. This is why we stand by for any Emergency or Priority Traffic at the

beginning of each net.

The DAARN Net is not specific to any repeater. We have folks from all over the world check in via their local DMR Repeaters or HotSpots.

DEMYSTIFYING CODE PLUGS

Last month we discussed the 4 Major Components of a Code Plug. The Digital Contacts, Channel Information, Zone Information and General Settings are the sections we will cover in detail during the following months. This week we will discuss Digital Contacts. Let's get started.

The Digital Contacts Section is like a Phone Directory, it is basically the translation from a DMR ID to an English, Human Readable, Description.

The Digital Contacts Section of the Code Plug, contains not only your Contacts, but all of your favorite Talk Groups and Names and/or Call Signs of your DMR Friends.

There are four pieces of information needed to complete a Digital Contact Entry. The Contact Name, the Call Type, the DMR ID and the Call Receive Tone.

The Contact name is the description assigned to each entry. As an example many Amateur Radio Operators in AR have a Talk Group called AR WX associated with the Talk Group ID 31051. Others use the name of AR SkyWarn. The choice is yours. Just use a name that that is meaningful to you.

For Individuals in your Digital Contacts, many want the other station's Call Sign to show up, while others just want their name. This is entirely up to your liking. You can either enter their name or call sign or both, providing your radio has enough room on the display.

The next entry in the Digital Contacts Section is the Call Type. There are two different types associated with a Call Type either Group Call or Private Call. The Group Call is used for DMR IDs associated with Talk Groups. Private Calls are used for Radio to Radio Communications or DMR Commands such as Disconnect or Unlink Commands.

The Call ID is the DMR ID or number associated with either the Talk Group or Individuals. In Arkansas, some groups use the Repeater's ID and identify this contact as a FOX Channel. Just a common Talk Group specific to that given repeater.

The last entry in the Contacts Section is the Call Receive Tone. This entry allows for enabling or disabling the Tone. If the Call Receive Tone option for this contact is Enabled you will hear a tone when that DMR ID is decoded by your radio. This attribute is useful for knowing when your Spouse or Friend is talking on DMR.

The only Hard and Fast Rule for programming Digital Contacts is you can not have two entries with the same DMR ID or the same Contact Name.

When building your own Code Plug from scratch, it is easier to start with the Digital Contacts Section.

The Contacts Section of a Code Plug is equivalent to a phone book. Provides translation between DMR IDs and English Descriptions.

Amateur Radio In Action—Medical Emergency

Amateur Radio was instrumental in helping a hiker in the Great Smoky Mountains National Park.

The hiker was exhausted on the trail with possible dehydration.

Tim Luttrell, KA9EBJ, put out a call on the evening of April 11th over the W4KEV Linked VHF Repeater in Gatlinburg, TN. He requested assistance in extricating the injured Hiker. There was no Cell Phone coverage from their location.

David Manuel, W5DJR responed to the Call over the repeater and got additional information, then called 911. The call was routed to the GSMNP EMS (Great Smoky Mountains National Park Emergency Medical Service), Manuel provided the link between Luttrell and EMS Personnel as well as the Hikers Family. Manuel's battery was so low he had to turn off his radio between transmissions.

Luttrell put out the "All Clear" message at 2AM.

From the ARRL/ARES News

Personal Achievement

Let's start off by a big shout out to Al, NK5K, on his accomplishment of making 75 Contacts/QSOs in the ARRL's International SSB DX Contest March 5th 7th, 202. There is more to this accomplishment than meets the eye. This contest is one of the biggest SSB DX Contests of the year, if not THE biggest SSB DX Contest of the year. There are many Amateur Radio Stations both Stateside and Foreign that only operate their big Super Stations once or twice a year. Usually the DX CW and the DX SSB Contests.

Some stations bring in other top notch Amateur Radio Operators from all over the world to make sure their station has the highest score. These guys play hard ball and they go for blood, whatever it takes to be number 1. Many Super Stations have multiple towers at over 200 feet with multiple high performance antennas. They have rigs for every band and run full legal power on each and every band.

Our very own Al walked up and went face-to-face with these guys and made contacts. Just like enter-

ing the Indy 500 race with your pick-up truck from the farm. No you did not win, but you entered the race and you finished. And when the dust settled, Al walked away with 75 Contacts. Again-- Great Job Al.

Next Al, jumped right into the middle of the Arkansas QSO Party and logged nearly 200 Contacts. Mostly by calling CQ and then working down the pileups.

http://www.arrl.org/arrl-dx

https://arkqp.com/

DMR SIMPLEX OPERATION

One myth or falsehood about DMR is that you have to communicate through a repeater. You can easily communicate from one DMR radio to another DMR radio on simplex.

Performing simplex communications among DMR Radios is simple and not much different than using Analog VHF/UHF FM Radios. If you are using Analog FM Radios to provide communications for an event and everyone is close enough to communicate without using the

repeater, simplex operation is the preferred configuration. You just pick one of the common recognized Simplex Frequencies. Then everyone programs their radios on the same frequency and all is good. Some events use PL Code, but it is not necessary and just adds another level of complexity to the configuration.

With DMR, when entering Simplex Channels into your Code Plug's Channel Information Section, all

you have to do is select Time Slot 1 and Color Code 1 for each of the channels that you program. The last and very important step is to assign Talk Group 99 to each and every Simplex Channel.

The common problem most individuals have is not everyone is on Talk Group 99 or not everyone is on the same frequency. Some folks change nearly everything correctly, they just forget and leave the default offset to 5 MHz.

Common Recognized DMR Simplex Frequencies

UHF

441.0000 MHz

446.5000 MHz

446.0750 MHz

433.4500 MHz

VHF

145.7900 MHz

145.5100 MHz

Power Supplies—Linear vs. Switching

In the Amateur Radio World you will encounter two different types of power supplies, Linear and Switching.

The linear power supplies can easily be identified by their weight from the iron core transformer. This type of power supply takes standard house voltage of 120 VAC and steps the voltage down via the transformer. This lower voltage is

then rectified from AC to DC. Next the lower voltage is filtered to remove any ripple and finally it is regulated to stay within a tight tolerance very close to 13.8 VDC.

Switching Power Supplies on the otherhand takes the AC Line Voltage and converts it filtered DC Voltage. Then this high voltage DC drives an oscillator that switches or

chops it on and off at a rate of about 20 KHz to 500 KHz. This pulsating DC Voltage goes into a smaller transformer to be stepped down to 13.8 VDC. Most modern Switching Power Supplies are designed to suppress or eliminate any RF Hash or Noise.

Many Old Timers still prefer the "Big Iron".

Switcher Pros
- Inexpensive
- Lightweight

Switcher Cons
- Electrical Noise
- Complex Design

Linear Pros
- Noise Free
- User Repairable

Linear Cons
- More Expensive
- Excessive Weight

Where to listen for DMR Traffic?—Feature Story by Daniel N5DDW

So you decided you would jump on the bandwagon and buy yourself a DMR radio. You may have had someone help with the setup, or you may have jumped all in by setting up your own code-plug. If you are like me, you wanted to setup your own to work the way you think it should work and not the way someone else thinks it should work. But the question then becomes, where is all the traffic? I want to explore all these talk groups I hear about!

A lot of code plugs I have seen have entries for just a few talk groups and are setup on the local repeater. The wonderful thing about DMR is that all repeaters can link on demand to any talk-group in the world from anywhere in the world. Sadly, the ability to dynamically select a talk-group does not exist in many radio's or is a pain to setup a new channel/talk-group from the keypad of the radio just to listen. I personally use a Baofeng DM-1701 (yes like the starship piloted by James Tiberious Kirk) and it does not have the ability to add group channels from the radio itself. Any new talk-groups must be programmed via the code-plug and CPSoftware.

A list of the 1,540 available talk-groups is readily available from brandmeister at this link: https://brandmeister.network/?page=talkgroups

But with so many talk-groups, which ones are the most active? Which ones are people using? Which ones are more active during the day, or the evening?

These are all questions I asked when I first started with DMR as I wanted to participate or at least listen to something other than silence, or the local chit chat. I wanted to reach out across the globe and talk to people from other countries. But which talk group should I setup?

As someone with a programmer past, I knew that talk-group activity had to be available from Brandmeister because their website would show last heard information and other statistics. The last heard page https://brandmeister.network/?page=lh is great for seeing activity going on right, but it does not include the talk-group number and is not provided in a way that answered my questions. Another page: https://brandmeister.network/?page=callstats would let you select a talk-group from the drop down to see it's activity over the past month, so I knew the data was there. I could spend hours looking through each talk-group on that page or find a better way…

This is where the page: http://www.daarn.org/dmr3.asp on our daarn.org web site originated from. By using an API (Application Programming Interface) from Brandmeister, I can query the master server periodically for the list of DMR activity and shove that into a database. From there it is a matter of writing queries against the database for what I want. That is exactly what this web page does, it gets a list of the activity over the past 5 minutes, and displays it in a list sorted by most active. Anytime you want to see how many people are active in a talk-group, you can use this page.

So now to answer the question, where is all the traffic? What are the most popular talk-groups and when are they active?

DMR Quick Facts
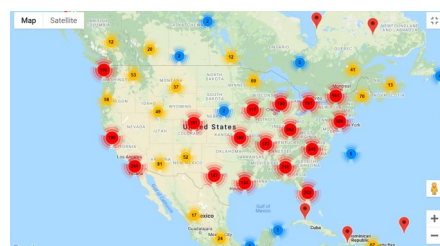
174,022   Users Worldwide

196,870   DMR IDs

8,322   Repeaters Worldwide

World Wide Talk Group 91 had over 2 MILLION Key Ups the past year. Someone's finger is tired.

"I often hear people from Australia, China and Europe on DMR Talk Groups."

Where to listen for DMR Traffic?—Feature Story by Daniel N5DDW (Cont'd)
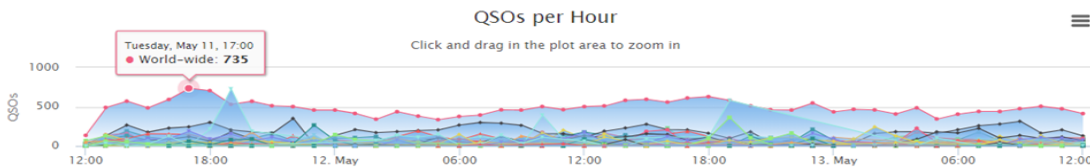
This chart is a record of over 1 years' worth of DMR data that I have collected. It shows the **top 20 active talk-groups** over that time based on the number of key-ups.

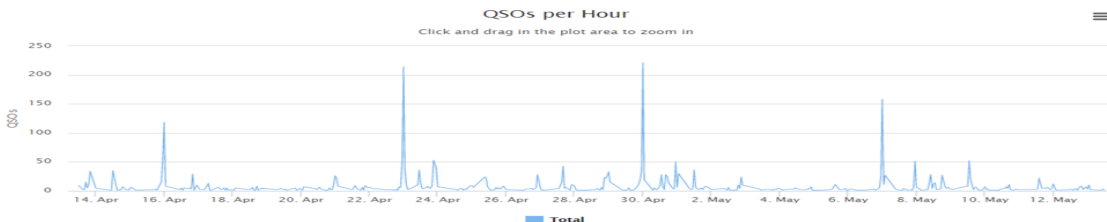| Talk-Group name	Talk-Group ID	Number of key-ups
World-wide	91	2278182
America-Link	31656	1153854
Nnational Multi mode	46001	929005
DM US Nationwide Bridge	3100	873923
Spain	214	844255
Hubnet UK	23526	673955
Pegasus-Projekt	262810	558724
Italia (Italy)	222	452639
Deutschland (Germany)	262	452425
PAPA Bridge	31078	442243
BlindHamsgroup.io	31679	376115
Brazil Nacional	724	350033
Russia EchoLink	2504	343957
North America	93	269086
WiresX-Room-ITA	22299	264687
Alabama Link	31010	253164
South Korea	450	247288
Poland	260	246287
Argentina Link	7227	220030
Nederland	204	210163

By far the most active talk-group on Brandmeister is talk-group 91. This is the world wide talk-group and has double the next highest one. You can usually hear someone if you just listen for a couple of minutes. Another good talk-group that I sometimes listen on is 3100, but with any of these top 20 you would hear some traffic and be able to talk to others.

The callstats on Brandmeister's website is also a good source of information and will help you visualize what time of day these talk-groups are active. You can see that worldwide is very active 24x7.

"There are plenty of Tools Available to aid you in choosing the right Talk Group to listen to!"

Here is a graph of the Arkansas 3105 talk-group. You can clearly see when we have the DAARN net. Note the times are UTC, so Thursday night shows up as Friday morning.

As you can see, there are tools available to help you find where to listen, and when to listen. The next step of course is making sure you have those talk-groups setup in your code-plug and loaded into your radio. Do not forget that you have to key-up your radio to activate that talk-group on your repeater or hotspot, and that most repeaters will time-out the talk-group and deactivate it if you do not transmit or key up within 10 minutes.

The two references I use most are:
http://www.daarn.org/dmr3.asp
https://brandmeister.network/?page=callstats

Organization

**DAARN Hams
May 2021**

How to Contact us
On the Web:
DAARN Hams

Facebook:
DAARN Hams 3105

E-Mail
info@daarn.org

DMR Arkansas Amateur Radio Net

DAARN is not affiliated with any clubs and is a worldwide group of Amateur Radio Operators that check into the net held on Brandmeister Talk Group 3105 from anywhere on or in proximity to our planet. The DAARN net is not specific to any repeater or dependent on any club assets and can be heard on ANY repeater or hotspot that has access to Brandmeister and allows Talk Group 3105.

The main focus of DAARN is to spread all the information we can about DMR Communications.   We do this by helping others, making presentations and producing educational materials about DMR.

DAARN Membership Information

The BASIC DAARN MEMBER-SHIP is totally **FREE** to anyone interested in DMR Communications and spreading the word to the General Public about Digital Communications.   Again, **DAARN Membership is totally Free.** The only requirement is to have an interest in DMR Communications and willingness to help others.

We do offer two levels of paid memberships. They are the SuperStation and the BigGun categories. These paid memberships usually belong to commercial accounts.

BigGun Member dues are $100 per month.   If you pay in advance you will receive two months for free. After you pay the $1,000 in annual dues you will receive a Hand Held DMR Radio, also with a Custom Code Plug written to your specifications.

SuperStation Member dues are $1,000 per month.   By paying in advance you get two months for free. Also after paying the $10,000 annual dues, you will receive a Mobile DMR Radio and mobile antenna, along with a Custom Code Plug programmed to your specifications.

Again, the BASIC HAMSHACK MEMBERSHIP IS FREE. You have all the same rights and access as the Paid Membership Subscriptions.

All DAARN Members will have access to any training material or presentations produced by DAARN Hams.

And of course all levels of DAARN Membership will receive the DAARN Hams Newsletter, DAARN Hams Net Reminders and breaking news concerning Amateur Radio and DMR Communications.

New Members for May 2021
DAARN Welcomes

KI5SR, Ross — SuperStation

KB8AOB, Richard — SuperStation

A big Shout Out to our two newest SuperStation Members.