

Hello and Welcome to TARA's Beginnings into DMR!

Hopefully, this document will help you program your DMR radio for TARA's DMR Repeater.

This document is written with the terms used for the Tytera MD-380 but can be useful for other radio manufactures if you understand the nomenclature.

Additionally, [TARA's repeater is using the BrandMeister network](#), so this programming guide only works for TARA's repeater (or other BrandMeister connected repeaters). Most of the [SNARS repeaters use the C-Bridge network](#) and require different Group ID numbers (and they also are fixed in what talk groups are available through their repeaters due to the nature of the C-Bridge network)

Finally, if you haven't registered for your DMR ID number, here's the web site to do so. You'll need this to activate your radio.

<http://dmr-marc.net/cgi-bin/trbo-database/register.cgi>

First some terms:

Code Plug – the settings and parameters you load into your DMR radio via a program on your computer. This “code plug” will have the zones, channels, digital contacts and other Parameters necessary to get your radio talking through the DMR network.

Please note: there are many helpful groups and organizations that will provide code plugs to download for your radio for a given area. **Be aware there is some danger** with using these as a given code plug MAY include a password AND the original user's ID. These need to be changed for your radio (password is not really needed, but YOUR ID IS! If this is confusing to you, DON'T load the code plug until you're sure you've checked the code plug and removed the password and changed or added YOUR ID. Otherwise, get help from a knowledgeable ham.

CPS – customer programming software. This is the program you load into your computer to build the “code plug” and then load into your radio.

Color Code – this is a setting used to help activate the particular repeater you are trying to access. Very much like a P.L. code.

Zone – A group of sixteen channels (Talk Groups). It's a product of the commercial nature of DMR. **Think of a zone as a memory bank.**

Time Slot – this setting determines which “slice” of the repeater channel you'll use to talk to the available talk groups.

C-Bridge & BrandMeister – these are the names of the “servers” used to interconnect the DMR Amateur Radio repeaters over the internet.

Tones – your radio will provide tones to inform you if you’ve gained access to the repeater you’re trying to talk through.

Digital Talk Groups – This information is entered in your “Code Plug” to tell the DMR network where to route your communication. There are **TWO types of contacts**.

Group Call – The name and ID number to setup communication to the entered talk groups. As in “NorCal” for the name, “31068” for the NorCal network ID. This information will later be used when you setup your actual channels (not frequencies, but talk groups) to activate through the repeater.

Private Call (or individuals) - This is the information that will be displayed on your radios screen when you activate your connection. There are data bases that can be loaded into your radio for individuals participating in DMR so you’ll see their name and ID number when they talk back to you. (This also facilitates “texting”, but that will be another tutorial)

DMR – Digital Mobile Radio This is Motorola’s version of digital radio designed for commercial use and adopted with modifications for ham use.

Talk Group – sort of a term to define the “**Virtual Channel**” you want to talk on. While not a “channel” in the usual sense, it does define the group of repeaters you’re trying to communicate through.

Static Talk Group – this type of talk group will always be broadcast through the repeater.

Dynamic Talk Group – also known as “User Activated” talk groups. These talk groups will NOT automatically be broadcast through the repeater. They require a key up from a user to tell the repeater to allow that talk group to be broadcast over the repeater. This activation lasts for 15 minutes unless you’ve pressed your PTT again within that time period. This keeps the repeater open for communication, otherwise, with the hundreds of talk groups from around the world, it would never be available for local users to talk through.

TARA is using the BrandMeister for our interconnectivity (connecting the repeater to the other DMR repeaters via the internet).

This allows you, the user, to decide what talk groups you’d like available in your own radio. Just program YOUR radio with the talk groups you’re interested in and you’re ready for amateur radio communications from across town to across the globe!

In the world of DMR repeaters, we use “Talk Groups” as a type of “Channel” for the Area you would like to communicate with.

So, a talk group named Nevada would imply talking with all the participating DMR Repeaters in the state of Nevada.

There are numerous talk groups for you to load into your radio.

Now, an understanding of how the “Talk Groups” are activated.

The “**Static**” Talk Groups will automatically be broadcast through the Repeater. These Talk Groups are determined by the repeater Owner/administrator. So, if you have the appropriate Talk Groups programmed in your radio, you’ll hear that traffic without intervening by pressing your PTT.

You WILL need to have those STATIC Talk Groups programmed in your radio for this to work.

Unlike our analog repeaters, you won’t hear just anything being transmitted out the repeater. *(there are exceptions for monitoring DMR systems, but it is radio dependent)*

If your radios busy light is on and you’re not hearing any voices, then you either don’t have that talk group programmed in (if scanning), or you’re sitting on another talk group channel.

The rest of the “Talk Groups” are dynamic, or “User Activated”.

This means activity on those talk groups will NOT automatically be transmitted over TARA’s repeater WITHOUT someone pressing their PTT on their radio with that talk group channel showing.

Again, if someone activates a particular dynamic talk and it’s NOT programmed in your radio, you would probably see your activity light on but no audio. Your radio is hearing the signal from the repeater, but not opening the squelch because it doesn’t have the information to decode that talk group.

With that said, TARA’s repeater has TWO talk groups in the “STATIC” mode.

1) **NorCal 31068** - this group talks with DMR repeaters in the Northern California Area. *(NorCal is the Talk Group Name and 31068 is the group ID #)*. So this group allows you to talk through all participating DMR repeaters in Northern California.

2) **SNARS 31328** - this group talks with the SNARS area repeaters. (Reno & Tahoe)

Because DMR actually can provide two operating channels at the same time, we need to coordinate this capability so the talk groups don’t interfere with each other, meaning we can have one of the static talk groups active at the same time a dynamic talk group is active.

This concept uses a “**Time Slot**” to separate the two different conversations.

The convention on the BrandMeister system is:

Time Slot 1 is used for the **dynamic talk groups**, or the talk groups that require a PTT into the repeater to activate any traffic to be transmitted over the repeater.

Time Slot 2 is used for the **Static (or local) talk groups**. In our case the talk groups “NorCal” and “SNARS”.

IT IS POSSIBLE to use either time slot for any talk group on TARA’s repeater because it uses the BrandMeister system.

So, while you can be successful with your communications, you would be negating the ability of dual talk group (conversations) use in certain circumstances.

So, it’s important to program the proper Time Slot in your radio.

While our DMR repeater is not widely used at this time, I expect it to become a popular system in the near future, so following this guideline will ensure both efficient use of the repeater, the BrandMeister network, and NOT having to re-program your radio.

First some standard info..

Set you channels to receive on 442.475 MHz and transmit on 447.475Mhz.

The color code is 3. This is the information to use the TARA East Peak repeater for each Talk Group you want to use.

Add the following to your **digital contacts**. This is only a “SMALL” representation to get you started!

These are the Group Call ID’s for “Talk Group” DMR communication.

Private Call contact information is for individual ID’s to show up on your radio screen.

If you don’t have an individual’s information in the digital contacts list, you’ll still be able to communicate, but only the ID number of that individual will be shown on your radios screen.

Contact Name	Call Type	Call ID	Call	
Tac 310	GroupCall	310	no	
Nationwide	group call	3100	no	
Regional 6	group call	31906	no	
Snars SLT	group call	31328	no	
Local SLT	group call	2	no	
California	group call	3106	no	
Nor Cal	group call	31068	no	
WA6EWV Paul	Private Call	310728	no	<i>(this my DMR ID information and will display on YOUR radios screen when we talk to each other)</i>

Then setup the actual channels for these groups using the 442.475 frequency.

Be sure the admit criteria is set to color code, or it can cause other QSO's to fail on other repeaters.

So for the NorCal Talk Group, use this information in the "Channel Information" part of the code plug you are building for your radio.

Channel Name: **NorCal** (this is only a label that will show up on your radios screen when you turn the Talk Group knob to select the TG you want to talk through)

Channel Mode: **Digital** Bandwidth: **12.5Khz**

Scanlist: **blank or list to use – info in later tutorial**

Squelch: **Normal** RX Freq: **442.47500** TX Freq: **447.47500**

Color Code: **3** Admit Criteria: **color code**

Contact Name: **NorCal** (as listed in your Digital Contacts)

Grouplist: **grouplist1** (later tutorial)

Repeater slot: **2** (because this is considered a local use channel-always active)

Other channel information can remain at default values. Many of the parameters are not explained, and will be addressed in the referenced "Later Tutorial"

The tac 310 is the proper talk group for rag chewing and I've had some nice qso's from all over the planet! If you start a qso on nationwide or other talk group that ties up a lot of repeaters, ask them to move to tac 310 for a longer qso and not tie up repeaters all across the system!

Below are the pages I've found for programming your radios for repeaters using the BrandMeister for their network connection.

I haven't tested to see how they "ALL" work, but hey, that's half the fun! Kind of like calling CQ on the HF bands.

<http://norcal-brandmeister.org/network/talk-groups>

<http://www.dmr-utah.net/talkgroups.php#Available>

Also, there are numerous sites connected with DMR for monitoring groups, servers, audio checks and more. This all takes time and studying, but is very interesting at watching and learning about this new facet of Amateur Radio Communication.

Here are the BrandMeister pages:

<https://brandmeister.network/?page=lh>
<https://hose.brandmeister.network/31268/>

This is really just the "tip of the Iceberg!"

Indeed, as I update this information page, many aspects of the networking have changed and improved the ability of DMR to communicate with the many different "portals" into the world of Amateur Radio Digital Communications.