

DMR Notes and Tricks

by Ralph Boyd KK4GUB

Introduction

This document contains some features for DMR Radios, Hotspots, and DMR Networks. The following sections describe some little known and unused functions on DMR by Amateur Radio Hams. Most users only use voice communications and they neglect the digital data functionality of DMR. In addition, Hotspots are used only as Gateways to DMR Networks and not used as connections between Hotspots. The document is a work in progress as each of the features are discovered by trial and error experimentation.

It should be noted that some of the DMR radios used by Hams are not fully compatible with the DMR Standards. Some of these radios have proprietary protocols for passing Digital Data. For Voice most radios use the standard TDMA technology, but for Data some Manufacturers make radios with different compression and packet protocols that are not the Motorola standard. Therefore, different radios may or may not be able to send Text Data from radio to radio. However, the BrandMeister DMR Network does support a Crossover feature for sending Text between incompatible radios. In addition, the BrandMeister DMR network can route Text Data to an external partner, SMSGTE.org, which will send an SMS Message to a Cell Phone (described later). As for other technologies such as Fusion, DSTAR, P25, etc, the BrandMeister Network provides a crossover ability.

The author only has DMR and Fusion radios for experimentation. Therefore, this document will not cover the other technologies. Never the less, users with such radios may be able to follow functional descriptions in this document to get their radios working for these features.

What follows are Sections for each feature. As new functionality is discovered, the document will be expanded. Depending on your type of radio, some of these features may or may not work. In such cases, maybe a work-around can be discovered with trial and error. There is not guarantee that all radios will be able to use the features. And don't forget to check out the [Appendix](#) for more details.

But before we begin, you may need to know about how **BrandMeister** uses **Static, Dynamic, and Auto-Static Talkgroups**. Advanced DMR users may wish to skip this section, but novice DMR users should at least read this section to understand how Talkgroups work on BrandMeister.

A BrandMeister Static Talkgroup is always active. Once you connect to a Static Talkgroup, it will continue to send traffic to your DMR radio. Dynamic Talkgroups will send traffic so long as you key up at least within 15 minutes, otherwise at the timeout the Dynamic Talkgroup will become inactive.

Auto-Static Talkgroups are a new special case only used on Hotspots. When you key up on a Talkgroup via your Hotspot it will be Auto-Static, but it will act as if it were Static. It will not timeout. However, if you connect to some other Talkgroup, it will become the new Active-Static Talkgroup. The previous Auto-Static Talkgroup will act as if it were Dynamic. So, it will remain active for 15 minutes after which such time it will be disconnected if you don't key up within that period.

There is more information on Talkgroups in the following links. **Whether you are an advanced or novice DMR user, you should check out these links:**

[BrandMeister dynamic, static, and auto-static talkgroups](#)

[Using the BrandMeister API](#)

Disclaimer

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Be advised that any modification to your Codeplug and/or equipment settings may result in damage. Therefore it is wise to make any backups necessary so that you can make a recovery in the unlikely event of a mistake or inaccurate information in this document. If you do make any changes or additions to this document, please add your name and Callsign in the Section Heading.

Hotspot1 to Hotspot2 Private Call on BrandMeister

by Ralph Boyd KK4GUB

Introduction

This document will explain how to configure two DMR Radios and Hotspots to connect a Private Call between the Hotspots using the Brandmeister DMR Gateway Network. This example will be for Pi-Star hotspots but should also work of other hotspots like the Open Spot. Any two DMR radios need to have their Codeplugs programmed with the “remote user’s” DMR ID and a Channel needs to be set up on the radios to connect to their respective Hotspot Frequency (typically Simplex), Color Code, Time Slot, and Access Permission. In addition, the Pi-Star Hotspots should also use the same DMR ID of their respective DMR Radio with their respective Brandmeister Password.

The document will be a step-by-step description on how to create a Hotspot on Brandmeister for users who have not already done so. Advanced users may want to skip the following section if they have already established a Hotspot on Brandmeister. The sections that follow will show how to configure the radio’s Codeplug for the Private Channels and the Pi-Star Hotspot.

Creating a Brandmeister Hotspot

This step is rather simple. It is assumed that the user has already got a DMR ID from RadioID Net. If not go to this link: [RadioID Net](#), register and get a DMR ID. You will only need a single DMR ID as the DMR Radio, your Hotspot, and Brandmeister all use the same DMR ID.

Now either create or login to your Brandmeister Account. Once you have login’ed, click on your ID in the upper right corner of the Brandmeister Webpage and select the SelfCare. Go down to the Hotspot Security section and enter your “Hotspot Security Password”. You may want to use the same password you use for your Brandmeister Login Password or create a different one if you wish. Just remember this password as you will need to enter it into the Pi-Star Hotspot Security section later. This Hotspot Password is required on Brandmeister to enable your Hotspot, otherwise your Hotspot will not work.

At this point, Brandmeister will wait until you have updated your Hotspot (see below) with this password and saved it in your Hotspot. Once you have reconnected to Brandmeister, your Hotspot should be displayed with a **green** Icon under My Hotspots in the left-side bottom menu on the Brandmeister User Dashboard. If it is **red**, then recheck or reenter your password on Brandmeister and/or your Hotspot. Be sure to save them too.

Configure the Pi-Star Hotspot

Now login to your Pi-Star Hotspot. If this is the first time you are logging into your Pi-Star, follow the example below, otherwise skip ahead to the next paragraph:

Most Pi-Star Hotspots have a built-in AP Access Point. On your PC, click on your WiFi Icon and connect to the “Pi-star” AP. Open your Internet Browser and enter:

<http://pi-star> or <http://pi-star.local>

Then enter the User Name: **pi-star** and the default password: **raspberry**.

If either of these links don’t work, go to this Website: [Amateur Radio Notes](#).

The Amateur Radio Notes document in that website may do things out of order. It has been found that it is easier to set up each of the Menu Sections in the Pi-Star Configuration one at a time from the top down before attempting to disconnect from the AP Access Point to [connect](#) to your Home Network. Be sure to Apply Changes for each Menu as you work your way down the Configuration list. The software will disconnect, make the changes, and then reconnect. In the last step you can either Scan for your Network or enter its SSID and PSK password manually. The select **Save and connect**. This should disconnect from the AP Access Point, connect to your WiFi Network, and register your Hotspot on BrandMeister. Now you can connect your Browser to your WiFi Network and login to the Pi-Star Dashboard. Just enter **pi-star.local** in your Browser. If you then click on Configuration from the Dashboard, you will need to enter your Username and Password. The defaults are **Pi-Star** and **raspberry** (all lowercase) if you didn't change them when you configured your Pi-Star. For more information on IP Connectivity see [Appendix A](#).

Special Note: If you change the Hostname on the Pi-Star Configuration, it will become the new Username (default is Pi-Star). This should be done if you have more than one Pi-Star Hotspot on your Network. This will avoid any Network conflicts so you can login to each of your Hotspots.

Warning: If you have 2 or more Pi-Star Hotspots connected to the same Network, you may find that there will be an IP Address Collision when you try to Login by <http://pi-star.local/>. To solve this potential problem, just “power up” one Pi-Star Hotspot at a time. Configure it as you wish, then power it off and power up the next Pi-Star and work on it. If you want to create Bookmarks on your browser for these Hotspots, you can then edit the Bookmarks by changing the URL from <http://pi-star.local/> to <http://IP-Address>. Find the IP Address in the Pi-Star's Configuration page under the WIFI section. Then right-click select the Bookmark on browser and edit the Bookmark's Link. Although this next option has not been tested, perhaps by changing the Pi-Star's Hostname (see above) the IP Address Collision can be avoided altogether.

You should login to your BrandMeister account and click on **MyHotspots**. Check to see if your Hotspot's DMR ID and ESSI are active (see the **Green** icon). If the icon is **Red**, you may need to re-enter your Selfcare Hotspot Password both on BrandMeister and your Pi-Star.

This document will assume you have connected to your **Pi-Star Dashboard**. If so, click on **Configuration**. Now go to the following YouTube link and configure your Pi-Star (click below):

[YouTube How to configure a Pi-Star Hotspot](#)

Configure your Pi-Star Hotspot for the modes (be sure to enable DMR) you desire as described in the YouTube video. This document will only explain the changes needed for setting up Hotspot-Hotspot Private Calls for DMR.

Setup the Private Call on Pi-Star

In the Pi-Star **General Configuration** Section you should have already setup your Node Call Sign, DMR ID, and Frequency. It is wise to use different Frequencies if you have more than one Hotspot. Doing so, will avoid making Private Calls which will loop. In addition, you should use the same DMR ID that is assigned into your DMR Radio (see later). This will only allow your radio to connect to your Hotspot and no other “near-by” DMR radios. **BE SURE TO SET THE RADIO NODE TYPE TO PRIVATE.** Once this is done, your DMR radio and Hotspot DMR ID's must be the same or the

Private Call will not work. Now click on **Apply Changes**. Wait until the Pi-Star Configuration screen re-appears before performing the next step.

Now in the Pi-Star **DMR Configuration** section select your BrandMeister Master, if not already done so and enter the **same Hotspot Security Password** you entered into BrandMeister in the **BM Hotspot Security** textbox. Check to be sure the **BrandMeister Network ESSID** is the same DMR ID entered in the previous paragraph (normally this done automatically when you enter and Apply the DMR ID in Pi-Star General Configuration). If you have more than one Hotspot, be sure to add to it the **ESSID ext** by selecting the appropriate extension from the drop-down box (for example: xxxxxxxx.01).

Be sure to enable the **BrandMeister Network Enable**. All other settings should be OK. Click on **Apply Changes** to save the changes. Once these changes are made and saved to your Pi-Star Hotspot, BrandMeister should enable your Hotspot. You can check on your BrandMeister Dashboard. Be patient as this may take a few minutes. Normally, it won't be too long once the Icon turns from **Red** to **Green**. You are now done setting up your Hotspot and next you need to setup your DMR Radio. If you will be using different Hotspots, just be sure to use different Frequencies.

NOTE: An ESSID may be required for the latest Pi-Star software in order to connect to BrandMeister. So if you cannot see if your Hotspot is active on BrandMeister, be sure to set a number value for ESSID on your Pi-Star Hotspot. In addition the BrandMeister Network Enable may not displayed in the latest Pi-Star software as this feature is automatically built-in to the software.

Setting up your DMR Radio

This section will describe how to set up your DMR Radio for a Private Call to another DMR ID user via your Hotspot to the other user's Hotspot using the BrandMeister Network. This will depend on your specific manufacturer's radio, so the following example will be for a Radioddity GD-77 and an AnyTone D686UV. The methodology should be the same or similar on other DMR radios.

The point is to use the same DMR ID assigned to the DMR radio and the Pi-Star Hotspot with the Hotspot Node configured as Private. This will only allow the user's DMR radio to "pass-through" the Hotspot to BrandMeister which has the same DMR ID as the user's Hotspot. The target for the initiated DMR Call is the "other user's" DMR ID which is also the same DMR ID on his/her Hotspot. Thus, the two Hotspots can enter a Private Call across the BrandMeister Network.

Let's assume we have two Ham users, Alex and Bob. Each user has a DMR ID and Hotspot enabled on BrandMeister. Alex will set up a Private Call pointing in his radio's Codeplug to Bob's DMR ID and likewise Bob will point his Private Call to Alex's DMR ID in his own Codeplug. In addition, assume Alex has a Radioddity GD-77 radio and Bob has an AnyTone D686UV radio which he has set up two **Call Sign's** for himself and his wife Connie (more on this AnyTone feature later).

In the first example we will setup Bob's Radioddity GD-77. This radio, like most, is set up for a "single" DMR ID unlike the AnyTone D686UV (or D868UV) which can have multiple DMR IDs installed. The first step on all DMR Radios is to add the remote Ham's DMR ID as a Private Call (not a Group Call). On the GD-77 this is done in the "Digital Contacts" section. For testing purposes, you should also add BrandMeister's **Parrot (DMR ID 9990)** as a Private Call. Thus, Alex enters Bob's DMR ID and Parrot's DMR ID as Private Call Contacts.

Next Alex creates two “Channel’s” for Bob’s and Parrot’s Contacts. The TX-RX Frequencies should be the same Simplex value for Alex/s Hotspot. Alex sets his Hotspot for Color Code 1 and Time Slot 2 (the Pi-Star defaults). Since this is a Private Call there is no need for a “RX Group List”, so Alex sets it to “None” (default). Lastly, Alex sets the “Contact Name” to the Bob’s Channel and the Admit Criteria to “Always”.

Similarly, Alex does the same for the Parrot Contact, but uses the 9990 Parrot Private DMR ID. As the final step, Alex adds these two Contacts into a Zone of his choice. You may want to create a new Zone for all your Private Calls, but that is up to you. Now, you can select and make a Call to the Parrot. Push the PTT and make a short voice call (i.e. “[Your Call Sign] This is test on Parrot”). If you receive back your test voice, everything is working. If not, then recheck the previous steps. If your Hotspot display “lights up” but you don’t hear your voice test, recheck your BrandMeister’s Password and the status of your Hotspot on BrandMeister.

In the same fashion, Bob performs the same steps above but uses Alex’s Digital Contact DMR ID. Bob enters his parameters on his Hotspot. If you are using 2 or more Hotspots which may be within RF range of each other, be sure to use different Simplex Frequencies so you won’t cause a TX-RX Loop. Since Bob’s radio is the AnyTone D686UV the “Channel” screen also has a field to assign the Channel to a specific user’s Call Sign. Normally this is assigned to Bob’s Call Sign, but he can select another Ham’s Call Sign if he has already entered it into the **Radio ID** List on his radio. He can do this by selecting the **Radio ID** drop down box on the “**Channel**” screen.

Now Alex and Bob can make Private Calls to each other. But Bob has another option and that is to set up Connie’s Private Call parameters since they both share the same AnyTone D686UV radio. Bob just creates another “Channel” for Connie and sets it to her Radio ID Call Sign. Of course he must also enter her DMR ID in the “Contact List”, her Call Sign in the Radio ID List and add the channel to the proper Zone. So when Connie wants to use the “shared” AnyTone D686UV to make a Private Call, she needs to change the Radio ID to her Call Sign using the Radio’s Menu button. She then goes to the “**Settings\Chan Set\Radio ID**” screen and selects her Call Sign from the list. Since the Hotspot is setup for “Private” only, her **Radio ID Call Sign** and her **Channel Radio ID** must match or her Private Call will pass-through to BrandMeister. When Bob wants to use the shared radio, he needs to select his own **Radio ID Call Sign** in the reverse manner as described above using the radio’s Menu.

Summery

This completes the basic setup for Private Call between Hotspots via BrandMeister. These same steps need to be repeated to make Private Calls to other Remote Ham users. You can setup as many such Channels as you wish for each Target User’s DMR ID. Just be sure to use different Hotspot Frequencies if you have more than one so you won’t cause Looping. And remember, your Call Sign must match on your Radio, Hotspot and BrandMeister.

This procedure has been tested only for a Private Call. But you may want to see if it can work for a Group Call between multiple Hotspots and Ham users (**See: next Section below**). I’m not sure how to do this as it may require a special Group ID for all the users in the Group and the Pi-Star Hotspot may need to be Public so any near-by radios can Pass-Through to the Hotspot. I think this is how it works on a DMR Repeater since it has its own DMR ID (6 digits). But how it may work on a Hotspot DMR ID using 7-digits with a potential ISSID 2-digit extension is unknown. With a little experimentation, maybe someone can figure this out.

Have fun! And 73!

Hotspot1 to Hotspot2 Group Call on BrandMeister

by Ralph Boyd KK4GUB

Introduction

This document will explain how to configure two DMR Radios and Hotspots to connect a Group Call between the Hotspots using the Brandmeister DMR Gateway Network. This example will be for Pi-Star Hotspots but should also work of other Hotspots like the Open Spot. All the DMR radios need to have their Codeplugs programmed with the “Target” DMR ID and a Channel needs to be set up on the radios to connect to their respective Hotspot Frequency (typically Simplex), Color Code, Time Slot, and Access Permission.

The Section assumes you have already set up your Hotspot on Brandmeister . For users who have not already done so, please refer to the previous Section on how to set up your Hotspot on BrandMeister. The sections that follow will show how to configure the radio’s Codeplug for the Group Channels. The process is similar to the Section on **Hotspot1 to Hotspot2 Private Call**. The main difference is that all the DMR Radios will connect to the same “Target” DMR ID via their own Hotspot. This will let multiple users to have a QSO or run a NET on the “Target” Hotspot. Thus, one of the users is assigned as the “Group Call Master” using his/her DMR ID as the Group’s Target. Although this example is for Hotspot to Hotspot, it can also work between Hotspots and Repeaters.

Setting up your DMR Radio

This section will describe how to set up your DMR Radio for a Group Call to another DMR ID user via your Hotspot to the other user’s Hotspot using the BrandMeister Network. This will depend on your specific manufacturer’s radio, so the following example will be for a Radioddity GD-77 and an AnyTone D686UV. The methodology should be the same or similar on other DMR radios.

The point is to use the same DMR ID assigned to the one of the DMR radios in the Group as a Group Call acting as if it is a “Master” for the Group. BrandMeister allows a user to use his/her DMR ID as a Group Call. So one of the Hams in the Group should set up a Group Call to his/her own DMR ID. All the other users should configure their DMR Radios to point to the “Master DMR ID” with their Hotspot Node configured as a Group Call. Thus, all the Hotspots can join into the Group Call across the BrandMeister Network at the same time.

Let’s assume we have three Ham users, Alex, Bob and Carol. Each user has a DMR ID and Hotspot enabled on BrandMeister. Alex will set up a Talk Group Call to his own DMR ID. His Radio will act as the “Master” for the Group. Then Bob and Carol will set up their Radio’s with Group Calls pointing to Alex’s DMR ID.

Alex creates a **Contact** Talkgroup using his DMR ID in his Codeplug. He then creates a **Channel** to his Hotspot for Color Code 1 and Time Slot 2 (the Pi-Star defaults). Since this is a Group Call he must add this Talkgroup to his **“RX Group List”**. Lastly, Alex sets the **“Contact Name”** to the Talkgroup (i.e. containing his own DMR ID) and the Channel **Admit Criteria** to “Always”. And, of course, he adds this Channel to his **Zone**.

In the same fashion, Bob and Carol perform the same steps above, but use Alex’s Digital Talkgroup DMR ID (not their own) as the **Channel’s Contact**. First they create a **Contact** Talkgroup using

Alex's DMR ID. Then Bob and Carol create a **Channel** entering their parameters (i.e. Frequency, Color Code, Slot Number, and Alex's Contact ID) on their Hotspots. They also must set up an **RX Receive List** containing Alex's Talkgroup DMR ID and the Channel to their **Zone**.

Caution: If you are using 2 or more Hotspots which may be within RF range of each other, be sure to use different Simplex Frequencies so you won't cause a TX-RX Loop.

Now Alex, Bob and Carol can make a Group Call to each other. Each member in the Group must first connect to the Group Call Channel by "Kur-chunking" their Radio to "Register" their Hotspot on BrandMeister. Just hit your PTT. BrandMeister needs to see your Hotspot to get its IP Address. When you make a voice call with your PTT or you "Kur-chunk" the Channel with your PTT, BrandMeister will identify (i.e. register) IP connection and keep it "alive" while there is Traffic on the connection. After 15 minutes with no Traffic, BrandMeister may disconnect. This may be like a Dynamic Call, not a Static Call. However, this has not been tested. It's just wise to use your PTT to keep it alive.

For more detail here is a YouTube Video Link: [How to Create Private and Group Calls](#)

Summery

This completes the basic setup for Group Call between Hotspots via BrandMeister. The same process can be used between Hotspots and Repeaters as well between Repeaters and Repeaters. It's just a matter of using appropriate **Channels**. Remember if you are using a Repeater as a Channel, but sure to properly set up the RX and TX frequencies as a Repeater is not Simplex.

This procedure can also work over other Networks other than BrandMeister. It is left up to the user to set this up on his/her Radio. Just be sure that all Group Members are using the same Network.

You can use a Group Call to keep in contact with friends and family members, but another nice use would be to run your very own Ham Radio Net. The Net can talk about Ham Radio, Hobbies, Sports, Astronomy, Weather, etc. What ever you like!

Have fun and enjoy. 73!

Sending SMS Message on BrandMeister

by Ralph Boyd KK4GUB

Introduction

There is a free service by a group of developers at [SMSGTE](#) that will send an SMS Text Message to a Cell Phone. They do this by “bridging” APRS and SMS. A DMR user sends a specially formatted DMR Text Message to BrandMeister’s APRS Talkgroup. BrandMeister then passes the Text part of the Data Packet to SMSGTE which in turns forwards the SMS Message to the target’s Cell Phone Number. The Cell Phone user can then reply back to the DMR radio user by applying the same special formatted message containing his/her Text. What follows is a description on the changes required to make this happen either through a DMR repeater or a Hotspot over the BrandMeister Network. This will be shown using a Radioddity GD-77, an AnyTone D686UV, and a Pi-Star Hotspot. Furthermore, this Section assumes you have already set up the Pi-Star (or some other) Hotspot (see previous Section).

There is an excellent YouTube video created by BridgeCom which gets the credit for showing how to make all the codeplug changes. To view this video click on this link: [How to send an SMS Message on BrandMeister](#). What follows is a step-wise description on setting up the codeplugs for the two radios above and the BrandMeister Selfcare requirements for radio type and APRS.

For more DMR information, check out the BridgeCom YouTube Channel: [BridgeCom Videos](#).

Setup the Selfcare on BrandMeister

As explained earlier, some DMR radios are incompatible for Text Messaging due to Manufacturers using non-Standard protocols. BrandMeister is able to crossover these incompatible protocols, but you must select the correct Brand for your radio in the BrandMeister Selfcare text box. For the following example, we will be using a Radioddity GD-77 which is compatible with the Motorola Brand protocol. **(Special Note: AnyTone radios are also Motorola branded.)** Since this example will be using a Hotspot, the user Alex will set his radio’s Brand to Motorola on respective Hotspot BrandMeister Account. What is necessary is that a user needs to inform (i.e. select the Brand) BrandMeister what “type” of radio they are using on their respective radio’s DMR ID. So, if you have more than one radio/Hotspot with different protocol Brands, you will need different DMR ID’s which are properly setup as their correct Brand under their respective Selfcare. **Setting the correct Brand is mandatory.**

The next setting in Selfcare is for the APRS callsign (i.e. SSID). Normally, you will be using an HT radio. The APRS standard for such radios is to append a “-7” to the end of your callsign. The “-7” indicates the you are using an HT. If you are using some other device, such as a mobile radio or fixed station, you should append a different suffix. Refer to the following document: [APRS SSID Suffixes](#). And remember, be sure to do this for each radio or device that have a different DMR IDs.

In our example Alex will be using his respective Hotspot which has the same DMR ID as his HT radio, so he will set the Brand to Motorola and the APRS Callsign to his “Callsign-7”. This is all that BrandMeister requires.

Setting up the Codeplug for SMSGTE

Since BrandMeister will use APRS to route the Message to SMSGTE you need to send the message to the APRS Talkgroup (999) on BrandMeister. To do this create a specially formatted Digital Contact that BrandMeister will identify as a Text Message that should be send to the SMSGTE Service. The format involves setting a prefix on the 999 Talkgroup. The prefix should be the BrandMeister Master that you are using. In our example below, we will assume the Alex is in the USA and will be using the 310 Talkgroup. Therefore, he will create a Private Call Digital Contact naming it **SMSGTE** equal to **310999**. **Be sure you use a Private Call and not a Group Call or it won't work.**

Next he sets up a Channel named, let's say, **SMSGTE** with the proper Frequency, Time Slot, and Color Code for either a Repeater or in this example his Hotspot. Since this is a Private Call, there is no need to use a RX List so Alex sets it to None. And lastly, Alex needs to create a new Zone for this Channel or add it to one of his available Zones. The following example assumes Alex will use a new Zone named **HS SMSGTE** which stands for his Hotspot Channel. If he will also be using a Repeater, he needs to set up another Channel for the Repeater's parameters as well with a different name.

This is all the Codeplug needs to send SMS Messages to a Cell Phone. The Text Message will contain the target's Phone Number that will be used by the **SMSGTE** Service to route the SMS Message (see below). The front of the Message acts as a pre-amble that BrandMeister and SMSGTE use to send the SMS Message to the target Cell Phone. Optionally you can enter this pre-amble (described below) omitting the phone number as one of your Radio's Saved Text Messages so it will easier to send a Text message to different phone numbers.

Connecting to the Channel

You need to first make sure you are connected to the SMSGTE Channel. You can do this by KerChunking using your PTT. This will disconnect you from some other Talkgroup and register your Radio with the APRS Talkgroup on the SMSGTE Channel. If you fail to do this and are not on the APRS Talkgroup, your message will not be accepted by BrandMeister. So in our example, Alex selects his SMSGTE Channel and presses his PTT to insure he is registered on his Hotspot.

Sending the SMS Message to SMSGTE

BrandMeister does not actually send the SMS Message to the target's Cell Phone. This service is done by a third party at SMSGTE over a dedicated phone line. To do this, you need to set a "pre-amble" at the front of your message's text. The following "pre-amble" text must be at the beginning of the message:

SMSGTE @phonenumber

Replace "phonenumber" with the phone number of the target user's Cell Phone and follow it with a "space". Then enter your SMS Text Message. Next you need to "Send" the message. Refer to your radio's User Manual to select the "Send" button. You will be asked to select the "Talkgroup" that you wish to send the message to. Once you do that, the message will be sent and you will receive feedback as to its success or failure (depending on your radio of course). Sometimes the SMSGTE Service is slow and may take up to about 3 minutes or less. Eventually, the message will arrive on the target Cell Phone. The cell phone user can then use the same "pre-amble" method without the "@phonenumber" part to send back his/her reply text. It will be routed to the SMSGTE dedicated phone line back to BrandMeister which will format the message and send it back to the user's DMR radio.

BrandMeister is actually using APRS to “route” the SMS Message between the DMR radio and the Cell Phone via the SMSGTE “free” Service”. The key point to remember is that BrandMeister needs to check the “pre-amble” for how to pass-thru the Text and phone number to SMSGTE. If this “pre-amble” is omitted, then BrandMeister will route the Text Message by either APRS or DMR Text.

Now let’s get to the example. Alex wants to send an SMS message to his wife’s cell phone. He selects the **Menu** key on his GD-77 radio and scrolls down to select the **New Message** key. Using the keypad he enters the following text:

SMSGTE @wife’s phonenumber Let’s go out tonight for dinner.

Alex hits the GD-77’s **Green** key to accept the Text and selects the **Send** key followed by the **Contact** key. He now can scroll down to select the **SMSGTE** Digital Contact Talkgroup. Notice that this is the **310999** Talkgroup and not the SMSGTE Channel. This is different than sending a voice over a Channel. That is why Alex has to KerChunk the SMSGTE Channel to register on his Hotspot (see above). The message will then be sent to his wife’s Cell Phone. When she receives this SMS Message it will look like this:

@Alex’s Callsign-7 Let’s go out tonight for dinner.

Notice that the @ sign shows Alex’ APRS Callsign with the dash -7 appended. Her phone will also show the SMSGTE phone number that was used to send her the SMS Message. She can reply to this phone number by copying and pasting this message into Message Text Box on her phone removing and replacing Alex’s text part and enter her own reply text. So her reply may look like this on her Cell Phone:

@ Alex’s Callsign-7 OK! Let’s go to our favorite place.

When she sends her reply it will be sent to the SMSGTE phone number SMSGTE sends it back to BrandMeister which in turns routes it back to Alex’s DMR Radio into his New Message Text Box.

Summery

This completes the basic setup for sending a Private Call SMS Message via BrandMeister and SMSGTE to a Cell Phone. It is also possible for a Cell Phone user to initiate a Message to a DMR user using the SMSGTE Service as long as the DMR user has registered with SMSGTE.

For more information on sending messages from SMS to APRS, check out the: [SMSGTE Website](#).

Enjoy and have fun. 73!

Setting Up Local Call on a Repeater

by Ralph Boyd KK4GUB

Introduction

Sometimes you may want to make a call to another DMR user using a DMR Repeater, but not over a busy Talkgroup. Normally, Slot 1 is used on most repeaters for a particular Talkgroup(s) that are busy with a lot of traffic. Slot 2 is reserved for other Talkgroups that can be used without affecting the main Talkgroup(s) on Slot 1. The LOCAL Talkgroup (usually 2) is for QSOs in the local area. This will be the Talkgroup for the focus of this section. Some DMR Repeaters may also allow access to other Regional Talkgroups for QSOs over a wider distance. For the following section, you may want to replace the LOCAL Talkgroup with a REGIONAL Talkgroup in the below instructions.

But first let's look at how most Repeater Sysops configure their DMR Repeaters. The following information is from the BrandMeister Web Page:

Repeater owners like to offer a talkgroup dedicated for hams within the coverage area of the repeater and refer to it as the "local talkgroup". This can be achieved two ways, depending if you want a talkgroup:

1) that only local users within the repeater coverage can use

As you know, all valid talkgroups numbers are routed between BrandMeister master servers. There is however an exception for talkgroups 1 through 90. QSOs on these talkgroup numbers will never route past the repeater.

Considering that single-digit talkgroup numbers are usually used for clusters, using a talkgroup number between 10 and 90 for your local-only talkgroup(s) is a good choice.

One might think that Talkgroup 9 on Timeslot 2 is an option because traffic doesn't seem to route. However it is not a good idea because TG9/TS2 is dedicated for reflector usage. As soon as someone connects a reflector on the repeater: all the traffic that users think is local on TG9/TS2 is now broadcasted on the matching talkgroup on the worldwide BrandMeister without them knowing! (*unless the connected master is configured to disable reflectors, but better be safe than sorry!*).

2) that is dedicated to the local community of the repeater users but also available outside of the coverage area if someone travels and want to use a different repeater or hotspot to talk to hams at home

What is recommended in this case is to simply use a talkgroup number that matches the 6-digit DMR ID of the repeater. This avoids any possible collision if choosing an arbitrary talkgroup number, since all repeaters have a unique ID on the BrandMeister network. 4-digit and 5-digit talkgroups are usually dedicated to regional talkgroups. There no need to make this talkgroup static since it is for the repeater's local users.

Setting up the Codeplug for a LOCAL Call

First, you need to check if your chosen DMR Repeater is using the LOCAL Talkgroup on Slot 2. If so, check to see what is the DMR ID for that LOCAL Talkgroup. Normally it will be BrandMeister's TG2. For this section, we will assume it is Local 2. In your codeplug you need to create a Group Call (not Private) **Contact** for Talkgroup 2 and name it let's say **Local**. Next create a **Channel** for your local DMR Repeater with its Frequency, Color Code, Admit Criteria, RX Group List and Time Slot (which is normally 2). Be sure to add this to your desired **Zone**.

In the same manner if your local DMR Repeater has other Regional Talkgroup on Time Slot 2, you may want to setup Contacts for those Talkgroups to make QSOs outside the coverage area of the Repeater. If you do this, it is wise to add the BrandMeister Disconnect **Talkgroup 4000** to the **Zone** so you can disconnect from any Dynamic Talkgroups.

Making a LOCAL Call

To make a local call, select the Channel in the Zone and just press your PTT. Announce your Call Sign and the Call Sign of who you want to contact. Just remember that the Local Call will only be over the coverage area or Regional area of your Repeater.

Summary

A DMR Local Call is very similar to an Analog Call on a Repeater. Since the Local Talkgroup will not route beyond the Repeater, it is not possible to make a Local Call between two Hotspots. For a Repeater to contact a local Hotspot, it must know its IP Address. BrandMeister knows your Hotspot IP, but your Repeater does not. This would be a nice feature but unfortunately it is not in the DMR protocol.

Quick Keys, Text and Button Tips

by Ralph Boyd KK4GUB

Introduction

Some DMR Radios may have special buttons, function quick/number keys, and pre-set text messages. This section will describe how to use these features to enhance the user experience of your radio.

Quick Actions

Most DMR radios have two or more buttons that can be programmed by the user. For the AnyTone and Radioddity radios there are 3 buttons, two on the side and one orange button on the top of the radio. These buttons can be programmed to perform different functions via a long and short press. Setting up these buttons is done from the programming software, so refer to your manual for instructions. What follows are some suggestions on how to use these Buttons to perform some Quick Functions.

Lets' say you want to program one of the Buttons to make a Quick Group or Private Call. In the Radioddity GD-77 software select the **Buttons** menu. Choose one of the Side-Keys (e.g. **SK1**) for a Short press. From the Drop Down List select the **One Touch Access Key 1**. Then in the Quick Access box below use the Drop Down Lists to set the **Mode** to Digital, the **Call Type** to Call, and the **Call** to the desired Group/Private Channel. Now when you "short" press on **SK1**, the screen will display a message informing you to press the **PTT** to make a call to the specified Channel.

In a similar fashion, you can instantly send an SMS message to a Cell Phone by setting up a "Long" press on **SK1** saving you from having to type a lot of keys. To do this you need to set up pre-Text Message under the **Text Message** menu. As an example, Bob wants to create an SMS for his wife's Cell Phone telling her to call him on his Cell Phone. First he should create the following message:

MSGTE @wife's phonenumber Alice call me on my Cell Phone. Bob.

and Add it to the **Text Message** menu. Then, he needs to select this message from the Drop Down Box in the **Text Message** Quick Access Field from the **Buttons** menu. Now when he makes a "Long" press on **SK1**, his SMS message is sent instantly to Alice with no further action on his part. A One Button push, how cool is that?

Summary

You might ask why do this from your Radio when you can do this from your Cell Phone. Well what about in the case of an Emergency or Personal Safety Critical Event. You could set up Text Message Use Cases for such events. This would be even more practical especially for ARES members.

It's left up to the user to determine how to set up his or her Buttons. As DMR Radios are different, you will need to refer to your Radio's User Manual to set up these special features assuming your Radio has such support.

Good Luck and have fun experimenting with your Radio. 73!

Setting Up Bluetooth on the AnyTone 878 UV II Plus

by Ralph Boyd KK4GUB

Introduction

The instructions for how to set up Bluetooth on an AnyTone 878 UV II Plus DMR radio are not completely described in the **Bluetooth(BT) UserGuide**. The following section will explain how to pair the **BT Button** and the **878 UV II Plus** to your vehicle's audio system.

Pairing the BT Button

To pair the **BT Button** to the **878** radio, short press the **BT Button** to start the pairing process and the blue LED will begin blinking. Next, turn on the 878 radio and go into the **Menu** to select the **BT On/Off** and then select the **Bluetooth On** to enable the Bluetooth. Next press the **-Back** button to return to the Bluetooth Menu and place the **BT Button** near the radio. Scroll down to the **12 BT PTT Pair** and select it. Wait for a few seconds to allow the pairing to complete. If pairing is successful, a blue **P** will appear in the upper right side of the radio. Repeat this process if it is not successful.

Depending on the audio system in your vehicle, you may have to experiment a little to pair the 878 radio to your vehicle. Refer to your vehicle's User Manual to begin the pairing process. The following is how I paired the radio to my Chevrolet Silverado pickup truck. Start the vehicle's Bluetooth Pairing to a New Device by selecting it from the Audio Touch Screen Display. Be sure the 878 radio's Bluetooth is **On**. On the 878 radio select **Menu/Bluetooth/BT Pairing/Seek BT** to start searching for the BT device. The AnyTone instructions say to select the **ELEC...** device that should be displayed on the 878's screen. However, only the Chevy's Audio System was shown on the screen. So I selected it on the 878 radio and returned to the 878's previous Menu screen to select the **BT Names** to find the new **ELEC...** device. Selecting it from the 878 radio the pairing process was successful once I chose to set the **Pin Number** on the Chevy's Audio Display. This last step may require some experimentation trial and error on your vehicle. So refer to your vehicle's User Manual.

Once the all the devices were paired, I had to select the **ELEC...** device from the Chevy's display screen. This appeared to disconnect my cell phone's Bluetooth connection replacing it with the **ELEC...** device. I then tested the Bluetooth Audio in the Chevy selecting the **BrandMeister Parrot** channel (previously set up) by pushing the **BT Button**. The test was successful when **Parrot** echoed back my voice over the Chevy's Audio speaker.

Summary

Recently it has been brought to my attention that some vehicles have a limited number of simultaneous Bluetooth connections. That is why I had to turn off my Cell Phone connection and select the **ELEC...** device to use the **BT Button**. You may encounter this with your own vehicle.

Good Luck and have fun experimenting with your Radio. 73!

Setting Up APRS on the AnyTone 878 UV II Plus

by Ralph Boyd KK4GUB

Introduction

The instructions for how to set up APRS on an AnyTone 878 UV II Plus DMR radio are not completely described in the **UserGuide**. The following section will explain how to configure APRS Selfcare on BrandMeister and the **878 UV II Plus**.

Setting Up APRS on BrandMeister

Refer to the previous Section [Setting Up SMS on BrandMeister](#) and follow the instructions to enable APRS on BrandMeister. Change the **APRS Interval** to some value other than zero. Be sure to set your APRS Call Sign with the proper APRS SSID. For an HT choose the -7. Use -9 for a mobile radio. You may also turn on **In Call GPS** and **Text Capture**. These features may be optional. The **Text Capture** is a new feature in BrandMeister for Store & Forward of SMS Messages. This will send (i.e. forward an SMS that was sent to your Radio even when it has been off. I'm not sure what **In Call GPS** is, but it may be required to report your location to the **APRS.fi** website so your APRS icon can be displayed on the map.

Setting up the Codeplug for APRS on a Hotspot

Since this Section describes how to set up APRS on the AnyTone 878 HT Radio, it would be impracticable for mobile use cases. Normally APRS is mostly used by 50 watt Mobile Radios. The low powered HT's may not be able to reliably contact a Digipeater with an APRS Gateway. But if a Hotspot is used with a connection to the Internet (eg. Wifi or direct), the HT/Hotspot arrangement can be used for Mobile APRS in an area with no RF coverage. So the following will describe how to set up your Hotspot to use the BrandMeister APRS Gateway. Of course, you may want to use a Gateway via a DMR Repeater. In this case, just create a DMR Channel with the Frequency, Color Code, and Time Slot for the Repeater instead of your Hotspot. I will be describing how to set up a Pi-Star Hotspot in this Section. A similar process should work for other Hotspots.

If you referred to the aforementioned Section for configuring SMS on your radio and it is working, you need to create a new Private Call for APRS. Open up the Programming software, connect to and read the 878 Radio. Make sure the GPS and APRS menus are enabled by selecting the **Tools/Options** in the Top Menu and check the **GPS** and **APRS** Checkboxes.

Next select the **APRS** from the left-side Menu. On the top left side of the **APRS** Menu section set the **Aprs Auto Tx** to some time value you want for automatic Beacons. Set the **Aprs Alt Data** to your desired distance unit. Although the next steps may not be necessary, in the Analog Menu section set **Your Call Sign** and **SSID (-7)** appropriately. Make sure the **Digipeater Path** is **Wide1-1, Wide2-1**. You may want to enter a text message in the **Enter Your Sending Text** Textbox, but leave all other entries to their defaults. In the top right side **Digital** Menu section fill in the four columns with the **Report Channel, Report Slot, Aprs TG** and **Call Type**. These values should be the APRS Channel (see below on how to create the Channel), the APRS's Channel Slot number, the **310999** APRS Talkgroup, and Private Call. **Note: BrandMeister may require APRS to work only for Private Calls, although this not very clear. For APRS on a DMR Repeater it may work for Group Calls. You may want to experiment with this feature.**

Now we will assume you have indeed followed the Section on [Setting Up SMS on BrandMeister](#) and it is working. You can reuse that Channel for **APRS**. But you will need to create a new Channel with a different name just to make things more intuitive and to set up some other options. Following the example in the previous Section, Alex copies the **SMSGTE** Channel from the Channel List by a Right-Click of his mouse and pastes it into an empty line in the Channel List. He now double clicks the new Channel and renames it to **Digital APRS**. This new Channel is already set up with his Hotspot's Frequency, Color Code, and Time Slot. He needs to check the **APRS RX** and the **SMS Configuration** checkboxes. The **Receive Group List** should be set to None since the **SMSGTE** Contact is a Private Call Talkgroup already set to **310999**. On the left side of the Channel Menu, Alex sets the **APRS Report Type** to Digital, **APRS PTT Mode** to On (optional: since he may want to send manual Beacons via his PPT as well as the previously set automatic times), and the **Digital APRS Report Channel** which is the same Channel Number he used in the previous paragraph most likely set to 1 by default. Lastly, Alex needs to add this Channel to one of his **Zones**.

Summary

This has been a basic setup for Digital APRS on a Hotspot. You can do the same thing using a Repeater by replacing the Frequency, Color Code, and Time Slot for the Repeater. The reason you may want to do this is you want to use APRS from a fixed location (eg. a station) instead of a mobile location. In the **APRS** Menu you can turn on the **Fixed Location Beacon** and then entering the Latitude and Longitude in the textboxes below in the **ddd.ddddd** section. In this case, you should either set the **Aprs Auto Tx** to a large value or turn it off altogether. You can experiment with the other options to setup APRS for your particular use case.

Check out the following link for detailed information on how to set up APRS on a standard AnyTone 878 radio: [Setting up APRS on an 878](#).

Good Luck and have fun experimenting with your Radio. 73!

Setting Up a Scan List on the AnyTone 878 UV II Plus

by Ralph Boyd KK4GUB

Introduction

The instructions for how to set up a Scan List on an AnyTone 878 UV II Plus DMR radio are straight forward on the **Anytone 878 User Manual**. However, using the Scan function is not explained very well. The following section will explain how to create, start and stop a scan. Some tips on how to use the buttons and keys on the radio are also included. This may be similar on other radio brands.

Setting up a Scan List

This Section describes how to set up a scan list. On the AnyTone 878 UV II Plus DMR radio you can have a maximum of 250 Scan Lists. From the left-hand Menu in the Programming Software select the **Scan List**. Double click an empty row in the pop up window. At the top, enter a name for your Scan List. We assume you have already set up your **Talkgroups, Digital Contact, Channels, Receive Lists and Zone**. Select the Channels on the left-side and click the ">>" button to add them into your list. All the other Controls below can be set to their default values. You may want to experiment with them later, if you wish. Click **OK**, save and write this to your Codeplug in the radio.

Starting a Scan

To start a scan, first click on the radio's **Menu** scroll down to **Scan/Scan List** and scroll to Select the list you just created. Now scroll down again to **Select Cur List**. You must select the Scan List first before you start a scan by clicking on the choice button. Now go back and scroll up to **Scan On/Off** and select **On**. Now, it will go back to the Main screen and you should see the Display scanning through your list. The **Green** led will be flashing. Notice that scan will be running on either the upper or lower **Band** of the radio.

By default short click on the **PF-2** is set to Start a Scan. During scanning you can press this side key to Start/Stop a scan. The **Menu** and the **Zone** keys are disabled. The **Red List** will also stop the scan and you can click it again to enter the **Talk Group** list. The **Menu** and **Zone** keys will now be enabled. After using these keys you can restart your scan by short clicking the **PF-2** key once again.

Another way to stop a scan is to press the **P1** key. Short pressing (default value) a second time will change the **Band**. You can work that **Band** and later re-select back to the **Band** you were scanning by using the **P1** key again. You can re-start scanning by short clicking on **PF-2** key. What is nice about this feature is that scanning is remembered by the radio between power off. Turning the power back on you can start scanning again via the **PF-2**.

Summary

You might think that you can scan both **Bands** simultaneously, but that is not allowed by the radio. This makes since because it will cause great confusion. During a scan if there is activity on a Channel, you can press the **Menu** key to momentarily stop the scan so you can pause the screen. If the call is for you, press the **PTT** to reply to the Caller. Sometimes these keys are not intuitive. Just experiment a little and you'll soon the hang of it.

Good Luck and have fun experimenting with your Radio. 73!

Setting Up a Radio to Radio Simplex Call

by Ralph Boyd KK4GUB

Introduction

What if you want to use your HT DMR radio in the field where you don't have access to a Repeater or a Hotspot (i.e. no Internet) and you want to contact other Hams in the same location. What do you do? That's simple. Set up a direct Simplex call for all the radios in the group. You might be working with a group/club of Hams at a community service event or at an ARES RACES emergency service event. All the Ham radios can be set to a common **Simplex Frequency, Color Code, Time Slot, and Talkgroup 99**. This special **Talkgroup 99** is for Simplex use between radios. The following Section will describe how to set up your Codeplug for a Simplex Call.

Setting up a Simplex Call

To set up your Codeplug you must first choose a common Simplex Frequency for use by all DMR radios. Check your **Band Plan** for allowable **FM Simplex**. In the 70cm Band, the frequency range is 433-435MHz and 445-447MHz. I will use 446.555MHz (i.e. the triple-nickle) in the example.

Alex, Bob, and Carol are ARES RACES Hams asked by FEMA to support rescue workers following a CAT 3 Hurricane on the Florida Panhandle coast. Alex and Bob are in the field with the local Fire Department using their DMR HT radios and Carol is near by within range at the Field Command Station using her mobile DMR radio. They have chosen to use the **446.555 Frequency, Color Code 1, Time Slot 1, and Talkgroup 99**.

Using their Codeplug software each of them enter **Talkgroup 99** into their **Contact List**. Next they create a **Digital Channel** giving it the Name **TG99 Simplex** and enter the parameters above for their **Frequency, Color Code, Time Slot**, and choose **Talkgroup 99** as the **Contact**. They also set the **Channel's Power Level** to its maximum for the most range. They then set the **Channel's Receive Group List** to a list of their choice. For this example we assume they have already created a special Receive Group and named it **Emergency** (Note: of course any Receive Group would be OK and they don't have to share the same name). Lastly, they add this **Channel** to a **Zone**. They are now ready to support the Rescue Workers.

Summary

Using DMR Simplex in this manner is limited by direct line-of-site range. But in such an event they may be the last resort if all other communication systems are down. That's where Hams come to the rescue.

Of course you don't have to be in an emergency event to use DMR Simplex. You may be camping with other Hams, at a Hamcation, supporting a sports/parade event, or some other Community Service. Direct Radio-Radio DMR Simplex can be used where you don't want to tie up traffic on a local repeater. Remember to be courteous as a Ham. Check out these links for more detail:

[YouTube Howto Setup a Scan List on AnyTone 878](#)
[YouTube How to Switch between Scan Lists](#)

Setting Up Weather Channels

by Ralph Boyd KK4GUB

Introduction

What if you would like to have your local NOAA Weather radio frequencies on your DMR radio. You need to enter the NOAA local Analog frequencies into your Codeplug. The follow Section will show you how to do this.

NOAA Weather

There are a total of 7 NOAA Weather VHF frequencies in the US. They are in the 162MHz band, specifically, 162.400, 162.425, 162.450, 162.475, 162.500, 162.525, and 162.550. They are VHF with 25KHz bandwidths which you can add to your Analog Channels in your DMR Radio. Some of the frequencies may not be in your local area, so you can look up which NOAA Frequencies are available in your locale via a Google search. Of course you could enter all 7 if you wish, but in the example below I will be entering all the 6 frequencies in South Florida and name them accordingly with their Station IDs (optional), even though this is not necessary. You may want to name them as NOAA [Transmitter] so you can identify them as weather stations at a known location. Remember some of these Stations may be out of range from your locale.

TRANSMITTER	STATION ID	FREQUENCY
Miami	KHB34	162.550
Spanish (Hialeah)	WZ2531	162.550
Princeton	WNG663	162.425
West Palm Beach	KEC50	162.475
Naples	WWG92	162.525
Belle Glade	WXM58	162.400

Note: The new Hialeah Station has been recently added for our South Florida Spanish community. For all of Florida's Frequencies here is a link: [Florida NOAA Weather](#).

On the **AnyTone 868/878** DMR radios (your radio may be similar) using your Codeplug software, open up the **Channel** menu. It is rather simple to create these Channels just by Naming them, entering the Receive and Transmit (not necessary) Frequencies as Analog with 25K Wide bandwidth. Be sure to check the **TX-Prohibit** checkbox since you are not allowed to transmit on these frequencies. Then create a special **Zone** naming it **NOAA** (if you like) and add all these Channels to that Zone. You may also want to create a special Scan List for **NOAA**. Just be aware if you add one or more of these Channels to some other Scan List, you will receive their traffic and it may interrupt you QSO on some other Channel. **Caution: Be sure to disable VOX as it may inadvertently activate the PTT and the TX-Prohibit may lock up your radio with an alert tone. Push PTT to abort the alert.**

For detail check out the link below:

[YouTube Setting Up NOAA Weather Channels on DMR](#)

The new AnyTone 878 UV II Plus has a new setting for **Weather Alert/On/Off**. It may sound a Weather Alert on this radio, but I have not tested it. The older AnyTone radios don't send alerts. I'm not sure if AnyTone mobiles send an audio alert but you should check your Mobile's setting to see if there is an Enable for Weather Alert.

Now you should also be careful when scanning a Weather Scan List as I have discovered on my **AnyTone 878 UV II Plus**. If your radio is set up for Dual Band and you are scanning your Weather Scan List, you may find that buttons on your radio may become disabled. This will happen on the **AnyTone 878** where the Zone button cannot activate because the “scanner” will lock the radio on the Weather Channel. The same thing will happen when you click the **P1** button to change the **Band**. Even the **Menu** button may be disabled. To correct this problem, just use the Control Knob to change to a different “out of range” non-active Weather Channel. Scanning should stop. Then click on **Menu** or a short click on the **PF-2** side panel button to turn off Scanning. Now you should have normal control of the radio. I don’t know if this is the intended way this feature should work. It’s not very intuitive, so don’t panic if this happens. Just experiment a little and you may find a solution.

Normally on AnyTone radios that come with a pre-installed Codeplug, it may have the 7 NOAA Weather Channel listed as **NOAA-1** to **NOAA-7**. So why did I elect to name my Weather Channels as **NOAA [CITY]**? I did this just for my knowledge of my locale. If you travel from Miami to Atlanta, both Weather Channels are on 162.550MHz. Entering both of these Channels into my Codeplug is redundant. When I’m in either location, I could just scan the normal 7 NOAA Channels to find the active frequency. But this opens up the possible lock up problem described in the previous paragraph. My method of naming the Weather Channel with its Locale, I can just select the Channel without using the Scanner. It’s all up to you. Just see what works best.

My naming method also works well when traveling long distances. Set up a **Zone** with each Channel between cities along the route so you can connect to get the weather as you travel. You could scan, of course, but it might be better to just momentarily connect to the next Channel, get the weather, and connect back to some other non-Weather Channel without being annoyed by constant weather traffic.

Here are some more links to the Southern Region Weather Frequencies:

[Alabama](#), [Georgia](#), [Mississippi](#), [Louisiana](#)

KK4GUB 73!

Appendix

A. Local Network IP Connectivity

Although not part of the **DMR Standard**, this Appendix explains how devices like the Pi-Star Hotspot connect to your Internet Browser. It is for information purposes only.

Besides the well-known IP Address, there are many other Addresses used by computers and devices to establish connectivity on a Local Area Network (**LAN**) and the World Wide Web (Internet). Every device is assigned a unique 48bit Hexidecimal **MAC** (not the Apple computer) Address by the Manufacturer. The first part of this Address is the Manufacturer and the last part is the Device. The **MAC** Address is fixed and is part of the Device's Firmware. When a Device is powered-up and needs to connect to the **LAN**, it sends out a Broadcast Message over the Network via the **ARP** Protocol requesting to acquire an **IP** Address from the **DHCP Server**. This server assigns a temporary **Dynamic IP** Address. Such an Address is not **Static** (permanent), so it may be changed during a future connection by the Device. This is what causes connection problems with your Hotspot.

When you power up your Pi-Star for the first time, it searches your WIFI Network(s) for a known **SSID**. This is a name given to each WIFI Network. If your Hotspot cannot find a known **SSID**, it turns on its own internal Access Point (**AP**). This is just a local WIFI that has no connection to the Internet. It only connects to an internal **Dashboard Web Page** on the Hotspot. You use this Web Page to configure the Hotspot's settings. Each time you **Apply** a section of settings, the Pi-Star will save them, perform a reset, and then reconnect to its **AP**. The last setting to **Apply** is the **WIFI Configuration**. Here is where you will scan for available WIFI Networks and select your Local **SSID** and enter its **Password**. When you click on **Save and Connect**, the Pi-Star software will create (or modify) a file in the Hotspot's memory on its USB microSD card. This file in the Root directory, **/etc/wpa_supplicant**, is a text file that contains your Local **SSID** and **Password**. The Pi-Star then reboots and upon restart it checks this saved file to find which WIFI to connect. When it finds your Local WIFI, it will use these parameters to login to your Network. It then can connect to BrandMeister via your **ISP** to register your Hotspot. Now, if for some reason you want to connect to your Hotspot's Pi-Star Dashboard, you can just enter <http://pi-star.local/>. Your Hotspot will now be connected to your WIFI not its **AP**.

Once you have login'ed to your Hotspot's Dashboard, you can find its **IP** and **MAC** Addresses in the WIFI Menu in the Configuration section. If you create a **Bookmark** on your browser, just keep in mind that the Dynamic IP may be changed in the future, so the Bookmark may not work. You need to know the Hotspot's IP address to login by [http://\[IP Address\]](http://[IP Address]). You may be able to find the IP on your router's webpage, assuming you have access to your router. Failing in that, you can either turn off your Local WIFI or move your Hotspot far away from your WIFI to disconnect. Then power up your Pi-Star to connect to its **AP** and then remove your Local **SSID** from Pi-Star's WIFI Configuration. Now when returning the Hotspot back to your Local WIFI, it will reconnect via the Pi-Star's **AP** and you can reconfigure it to your Local **SSID**. It is the **/etc/wpa_supplicant** file that contains all of your WIFI connections. So if you use your Hotspot in other locations, it will automatically connect upon powering up.

B. Duplicating the Pi-Star's microSD Card

Sometimes a microSD may fail, so it is wise to create a backup SDcard. You may want to do this before upgrading the version of the Pi-Star software just to be safe if something goes wrong. This is easy to do with a free Application called **Balena Etcher**. You can find this App on the Web. It works with Microsoft Windows, Apple MAC, and Linux. You will need another microSD of the same size to make a fully duplicated copy. Keep this card as a backup in case you make a mistake when configuring the Pi-Star software or if the card fails. If your PC does not have a writable SDcard slot, you need to get an SDcard Read/Writer adapter. You can download the program at: [Balena Etcher Download](#).

The method above will backup the entire SDcard including the Raspberry OS. The SDcard will be bootable. But you may only want to backup/restore the Pi-Star's Configuration. You can do this from the Pi-Star's Dashboard.

C. Backing up, or restoring, your Pi-Star configuration

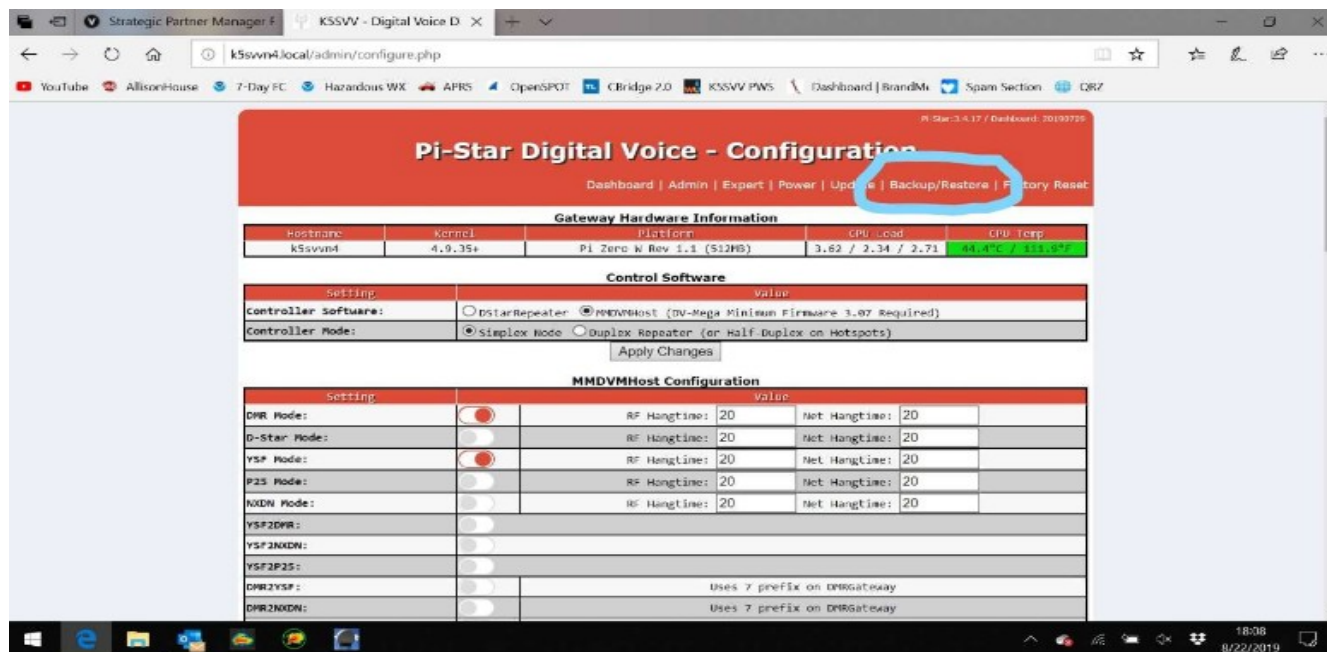
Creating backups of your Pi-Star Hotspot configuration is easy and works very well. Follow these steps to navigate to the Backup/Restore screen. Open Pi-Star and Click "Configuration". You might be asked to log in to Pi-Star. If so, log in.

The screenshot displays the Pi-Star Digital Voice Dashboard for K5SSV. The dashboard is divided into several sections:

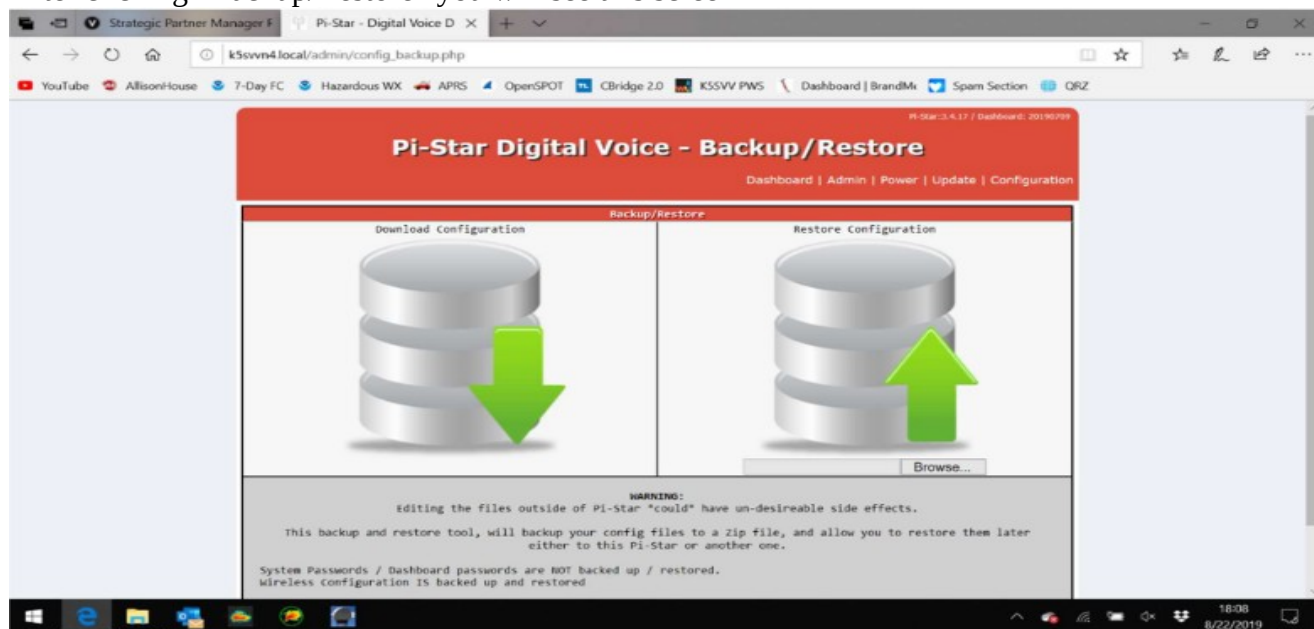
- Modes Enabled:** Lists enabled modes such as D-Star, P25, YSF, and DMR.
- Network Status:** Shows network status for various modes like D-Star, P25, YSF, and DMR.
- Radio Info:** Provides details about the radio, including TX, RX, and TCKD frequencies and power.
- DMR Repeater:** Shows DMR ID (3148618), CC (1), TS1 (disabled), and TS2 (enabled).
- Gateway Activity:** A table showing gateway activity with columns for Time (GMT), Mode, Call Sign, Target, Src, Dup(C), SBL, and RSSI.
- Local RF Activity:** A table showing local RF activity with columns for Time (GMT), Mode, Call Sign, Target, Src, Dup(C), SBL, and RSSI.

The 'Configuration' link in the top right corner of the dashboard is circled in blue.

On the Configuration screen Click “Backup/Restore”



After clicking “Backup/Restore” you will see this screen



The process is pretty simple. To download (backup) a configuration click the green down arrow to save the config to your PC. I suggest you append the date or a version number to the file name so you can identify it later. Be sure and save this file to a folder so you can find it later. As noted on the screen the download will create a .zip file. If you want, or need, to restore a configuration file use the “Browse” window to locate the .zip file you wish to load onto the Hotspot. Then click the green up arrow to upload (restore) the file to your Hotspot. This feature is very useful when experimenting with different Hotspot configs. Be sure and save a working master” config before you start experimenting.