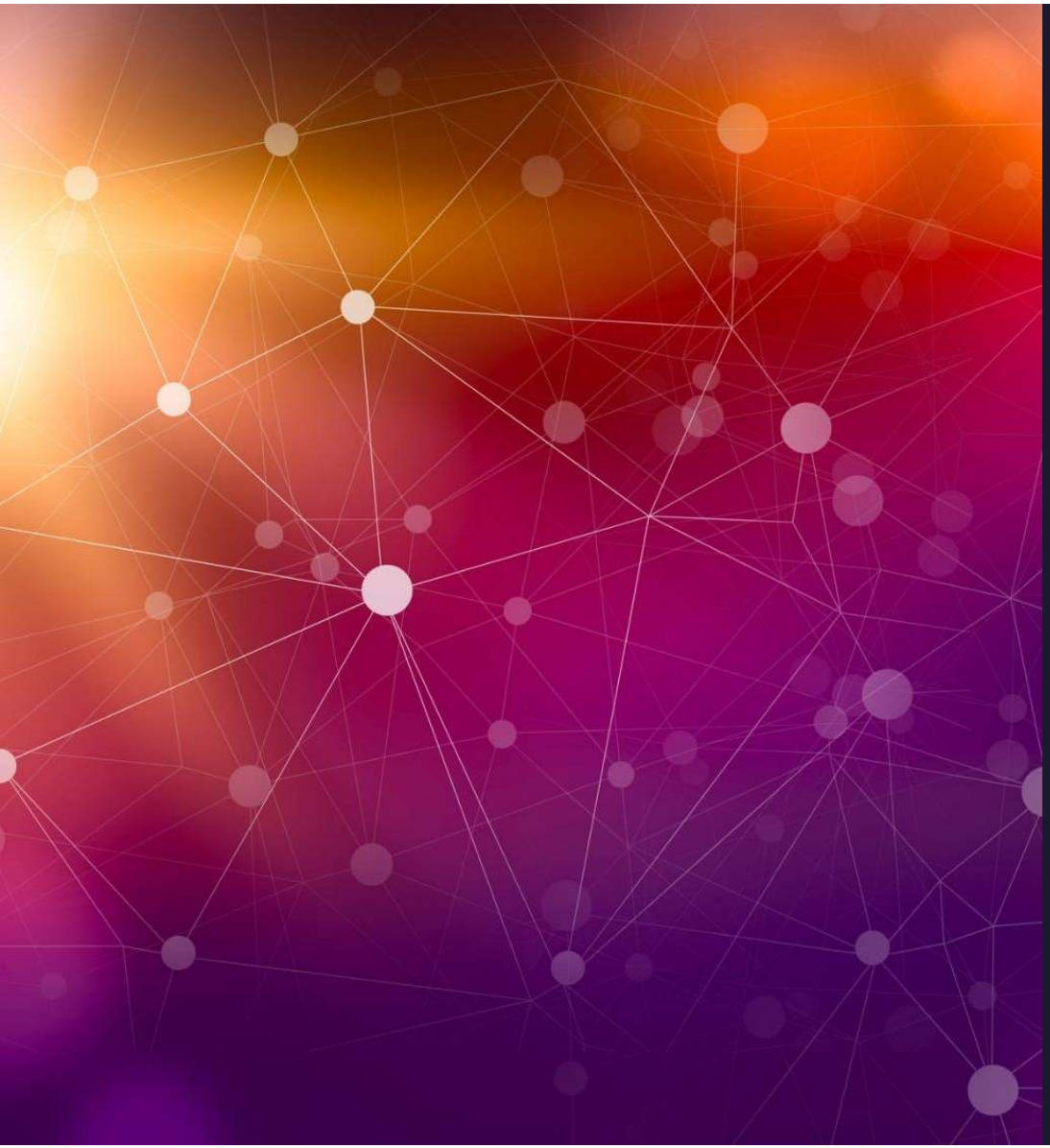


Cherokee DMR

Field Day 2025

Version 27 June 2025

Agenda

- What is DMR
- Why DMR
- Terminology
- Configuration
- APRS.TO
- NET Operations
- Hands on
- Bonus!

Details Rob to Cover

- Configuration
  - WA4EOC ID: 3215969
  - **WX4CAR:** 3217955
  - APRS via DMR
  - SMS via DMR
- Equipment Discussion
  - Anytone D878UVII Plus (HT) Anytone D575UVIIPro
  - OpenSpot4 Pro

What is DMR?

What is DMR

- DMR stands for Digital Mobile Radio and is an international standard that has been defined for two-way radios.
- The DMR standard allows equipment developed by different manufacturers to operate together on the same network for all the functions defined within the standard.
- The aim of the DMR standard was to create a digital radio system with low complexity and low cost that still allows for equipment from different manufacturers to work together.
- The European Telecommunications Standards Institute (ETSI) is responsible for the creation and maintenance of the DMR standard. The standard was first ratified in 2005 and has subsequently been updated and revised several times, most recently in November 2018.

Advantages of DMR?

Advantages of DMR?

- DMR is four times more efficient when it comes to spectrum usage.
- For one 25 kHz analogue FM channel, you could fit four DMR transmissions.
- DMR offers some very flexible calling facilities - you can call one person, a group of people, or everyone in your team/group at once.
- While not every DMR network supports it, sending of data and short messages (SMS) and APRS is also possible.
- Wide coverage areas using a network of DMR repeaters is already built-in; cover your city or cover the entire country!
- DMR transmitter is only turned on about half the time due to it transmitting in bursts, battery life is longer.

Why DMR for Cherokee ?

Why DMR for Cherokee ?

- DMR is another tool we can add to our toolbox to allow members to check into the NET or stay in touch when out of town or unable to access our standard county repeaters.
- We can communicate on a custom Talkgroup only known by our members to avoid unnecessary noise/traffic and allow us to monitor for key Cherokee Activity.
- We can send SMS message or make direct call to another member.
- We have published two Talk Groups (TG)'s that we can use for Cherokee County:
  - WX4CAR- Cherokee Club related activity
  - WA4EOC- Cherokee ARES related activity

DMR Terminology

DMR Terminology

1. **Color codes:** Every DMR transmission uses a "color code" which is very similar to CTCSS or PL tones in the analogue radio world. On a repeater or simplex frequency, every radio must use the same color code to be able to communicate together. The main use for color codes is for where two repeater coverage areas on the same frequency may overlap, different color codes are used to ensure each radio accesses the correct repeater.
2. **Timeslot:** A timeslot is a slice of time, about 30ms long, that a radio can transmit in, or receive in. There are two timeslots per frequency, and you need to have your radio configured for the right color code for the repeater, the correct timeslot and correct talkgroup for you to be able to hear anything.

DMR Terms

3. **Zones:** This is simply a collection of channels & talkgroups, all grouped together in one "zone" or bank. A radio user can switch zones to access a different lot of channels & talkgroups that they may wish to use. Typically a zones are divided into repeaters for different areas, so you might have one zone for the west side of a city, and another covering the east side of the city - but there's nothing to say that you must set up a zone that way.

4. **Code Plug:** This is a Motorola term that has stuck over the years, and in the DMR context means a complete configuration file of channels, talkgroups, zones, contacts etc. for a radio. The code plug can be saved to a computer and is used to program a radio to give it the functionality a user requires.

5. **CPS:** Another Motorola term, meaning Customer Program Software. Simply put, this is the software you'd use to create a "code plug" and configure your radio. Your DMR Radio will have a CPS specifically generated by your radio manufacture that must match the firmware on the radio.

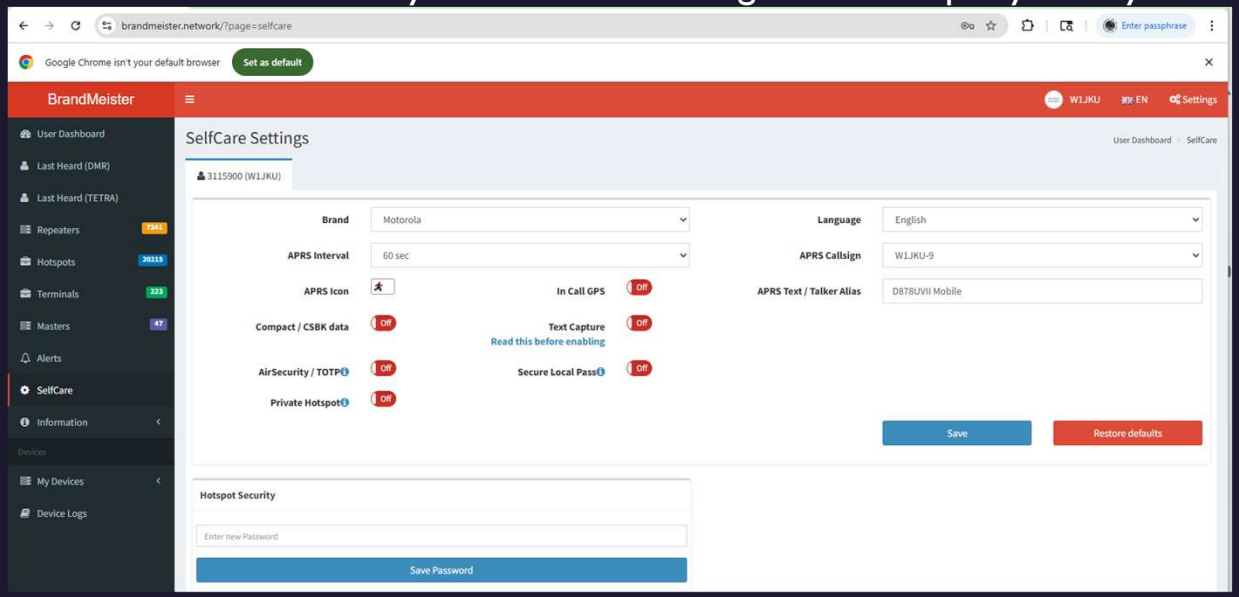
DMR Terms

6. **Hotspot:** A small box that connects to the internet and acts like your own personal low power DMR repeater, useful if you're not in range of a DMR repeater to access.
    A. You can even take them with you and use your cell / mobile phone wireless data to connect the hotspot to the internet and be able to use DMR anywhere you get cellular signal.
    B. Most hotspots are multi-mode, handling not only DMR but DStar, Yaesu Fusion and P25 as well.
    C. ZUMspot, Jumbospot, Openspot, MMDVM etc are all examples of hotspots that you can buy or build yourself.

DMR Configuration

Brandmeister.Network Setup

1. Setup DMR Radio ID that is linked to your callsign via Radio-ID.net
2. Register an Account on the Brandmeister.Network website and login to manage settings
    1. Go into SelfCare and set your values according to the hotspot you may use or radio if no hotspot



Brandmeister.Network Setup

3. Goto My Devices and when Hotspot is online to Brandmeister the entry will be green, if offline it will be red.
4. If using more than one Hotspot, give each one a unique Radio ID suffix 01,02,03 per your hotspot documentation so that Brandmeister sees each one individually and you can mange the setting by hotspot should they be different.
5. Enter a unique password you control on the field Network Security, and configure that value in your hotspot to match. Your hotspot will need that setting to access and use Brandmeister.
6. You will use this webpage often so make it a favorite!

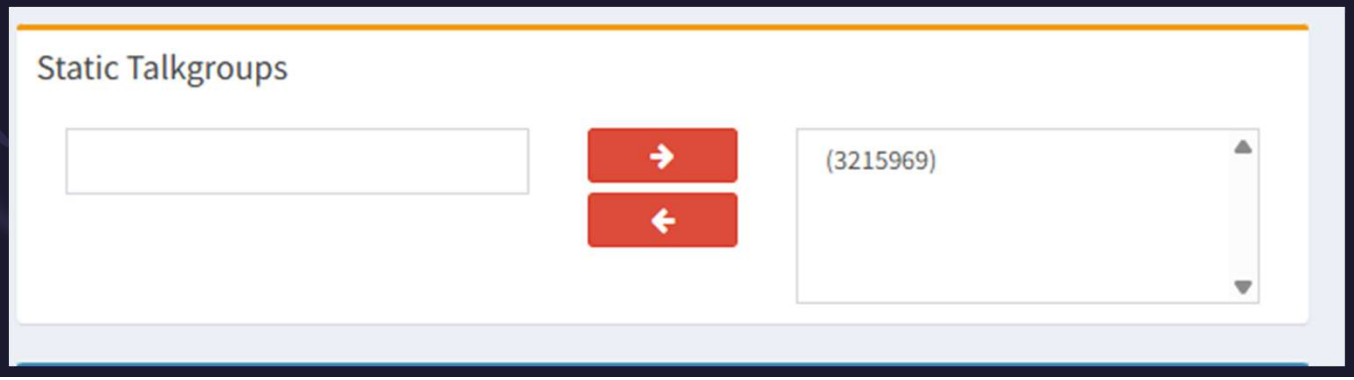
Cherokee Talkgroup

- Add a Group Call to the Digital Contacts for Cherokee ARES (WA4EOC) and Club (WX4CAR)

TG/DMR ID	Call Alert	Name	Call Type
3215969	None	WA4EOC 3215969	Group Call

TG/DMR ID	Call Alert	Name	Call Type
3217955	Online Alert	WX4CAR 3217955	Group Call

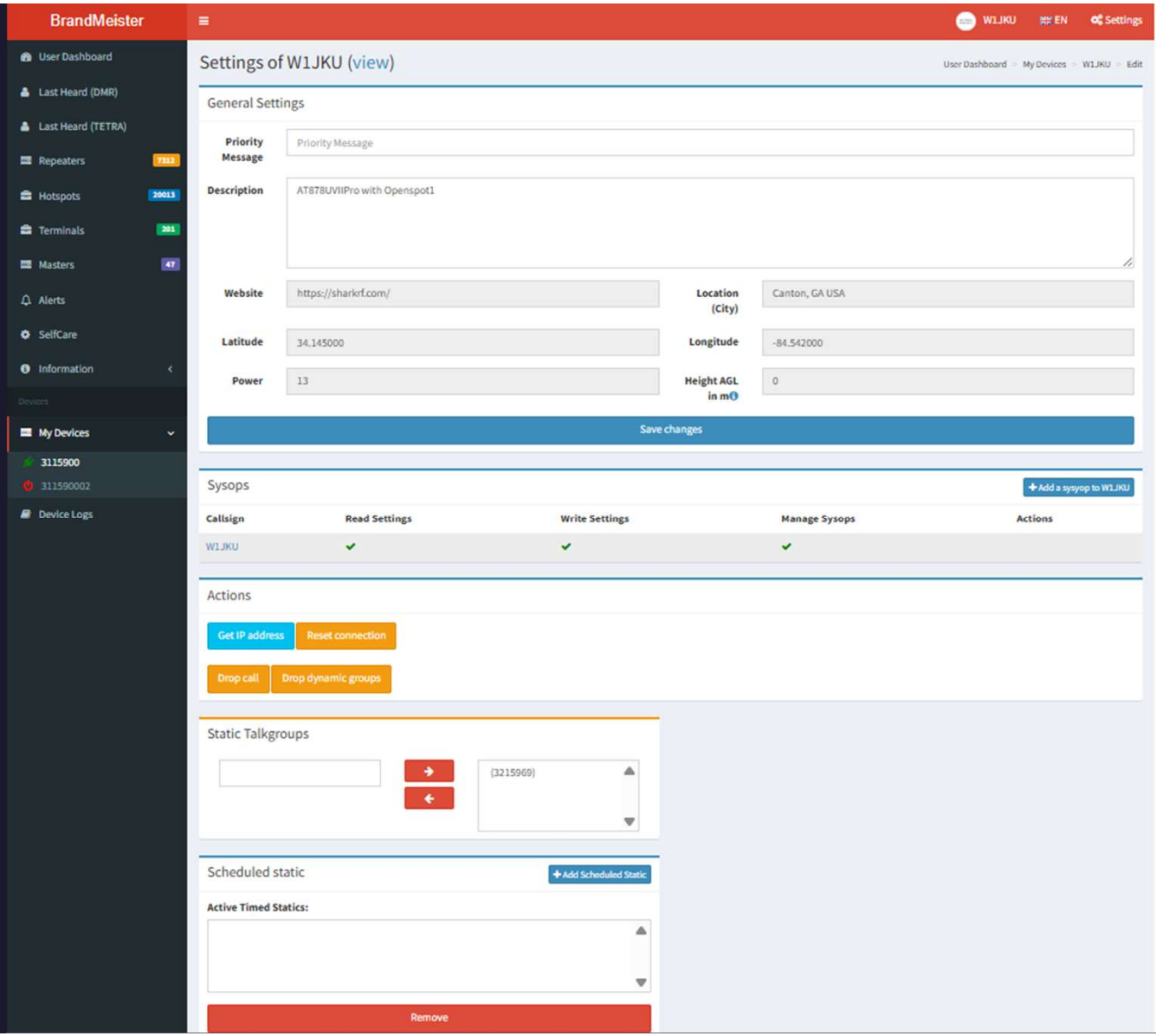
- Suggest you add the Cherokee ID as a Static Talkgroup on your Brandmeister account so that no matter what channel your on, your radio will intercept traffic on WA4EOC and optional WX4CAR



Brandmeister.Network

Full Screen Example

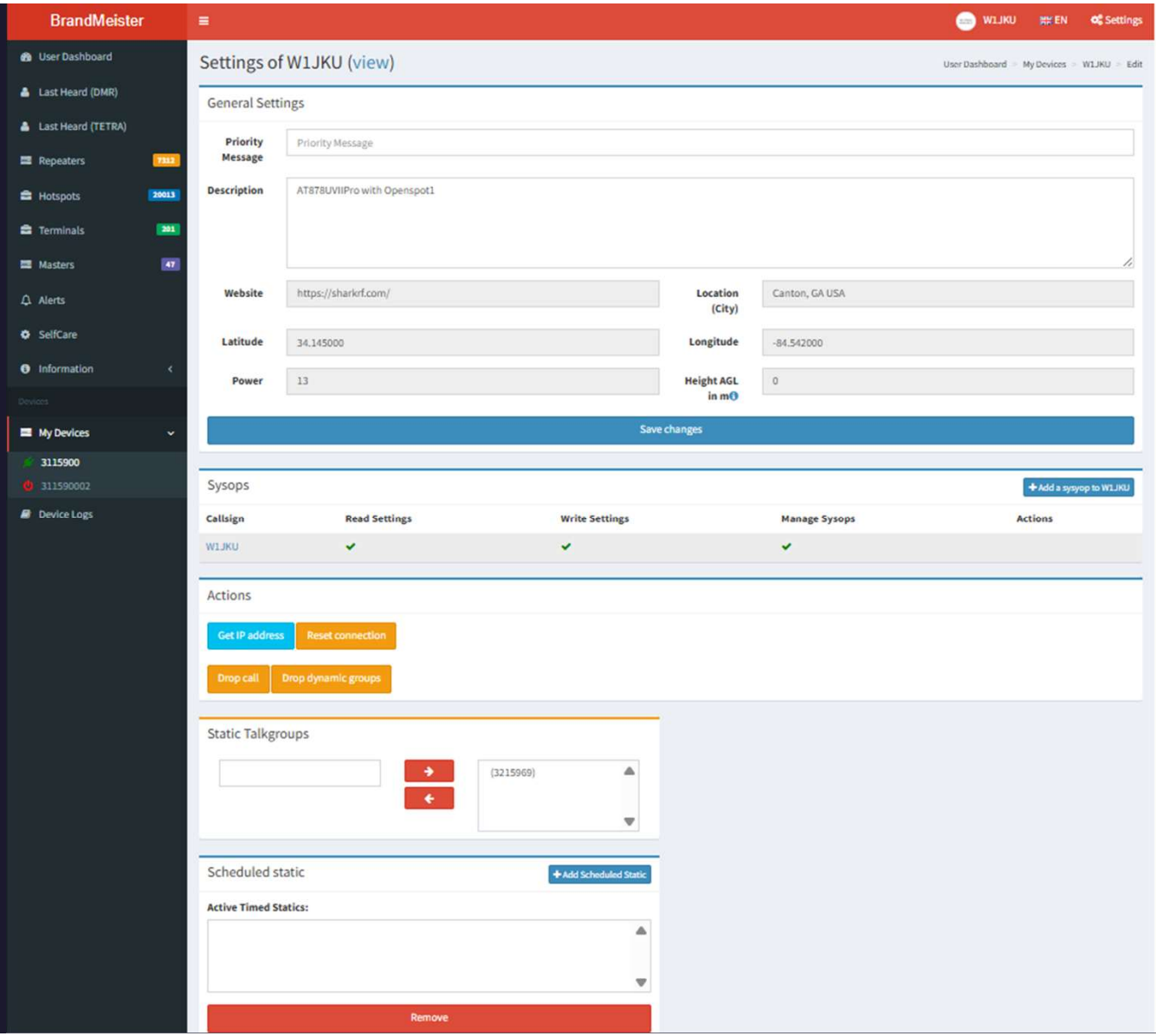
Cherokee ID added at a Static Talkgroup



Brandmeister.Network

Full Screen Example

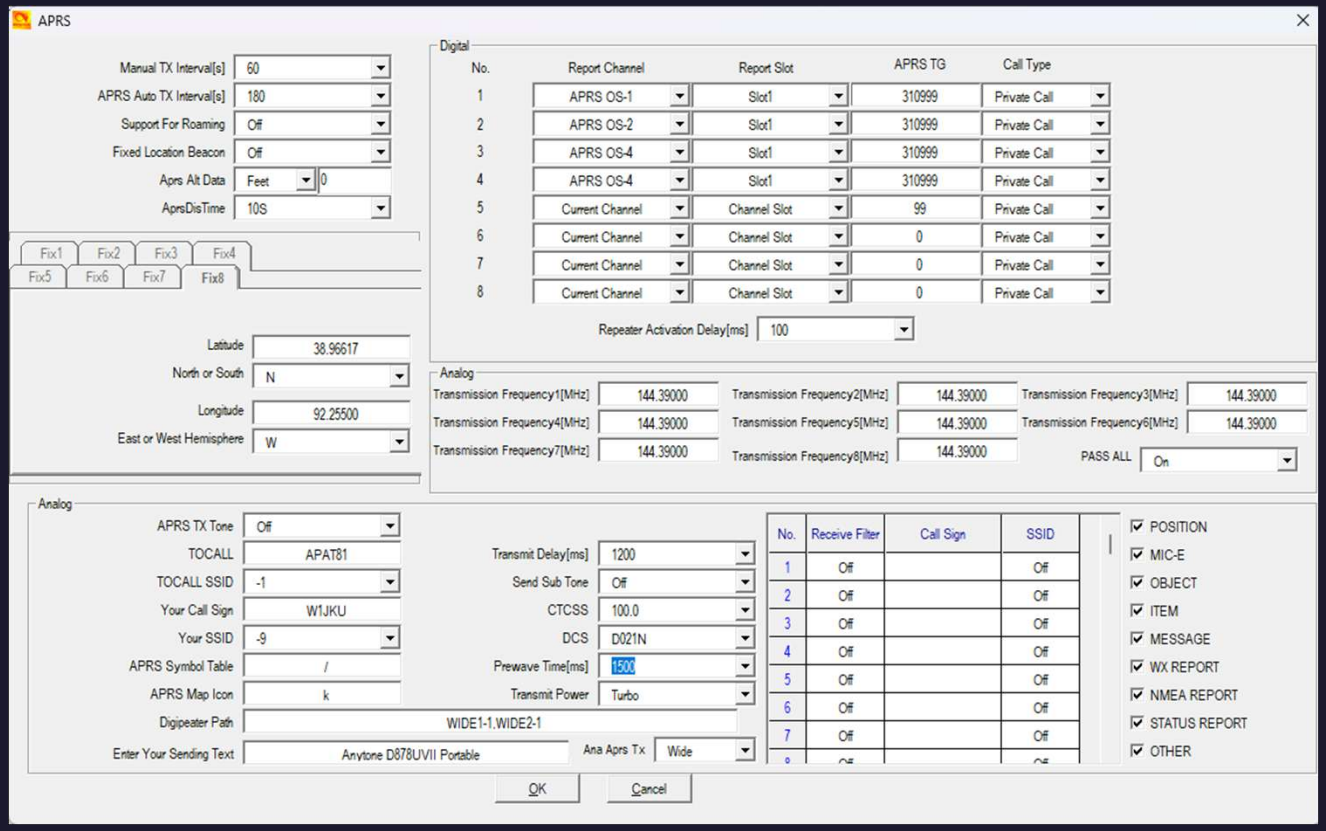
Cherokee ID added at a Static Talkgroup



APRS Anytone D-878 UVII Plus Configuration

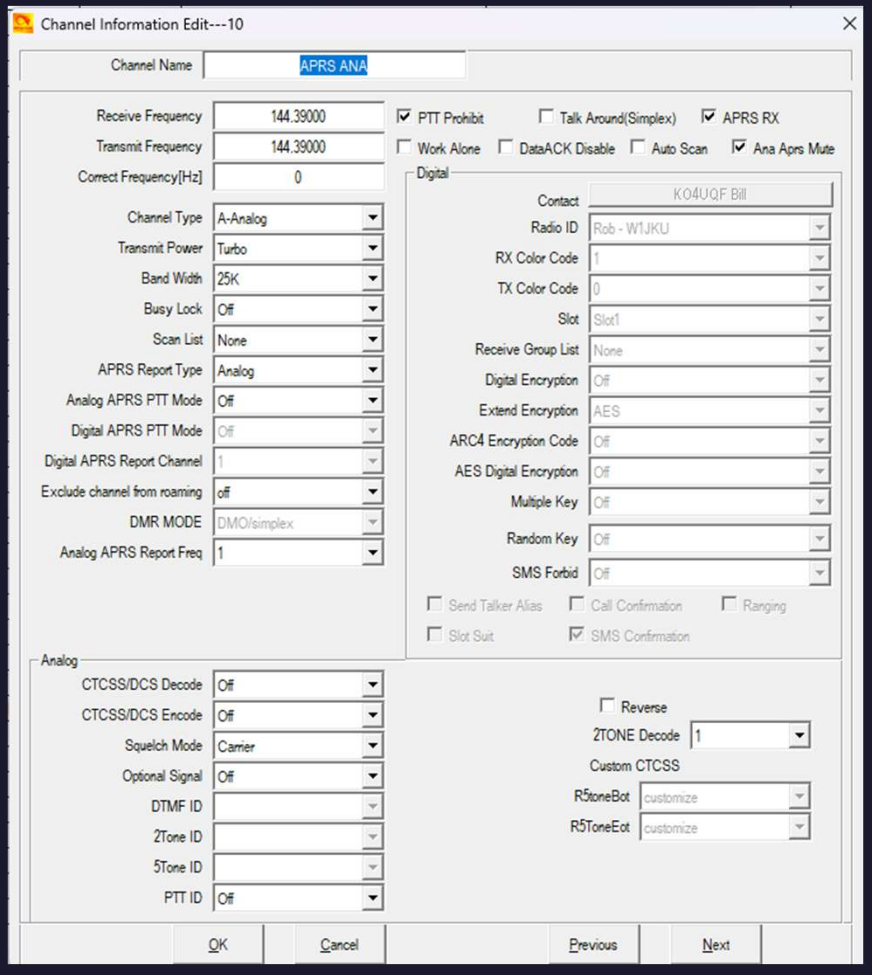
D-878 UVII Pro APRS Settings

- The following Settings work for Analog APRS.
- Transmit Delay and Prewave may need adjusting but currently working for me.
- Digital # 1-4 is based on having multiple Host spots, your list may be less.
- Digital #5 is used for APRS over Digital via Simplex.
- The TOCALL is unique per Radio Model.



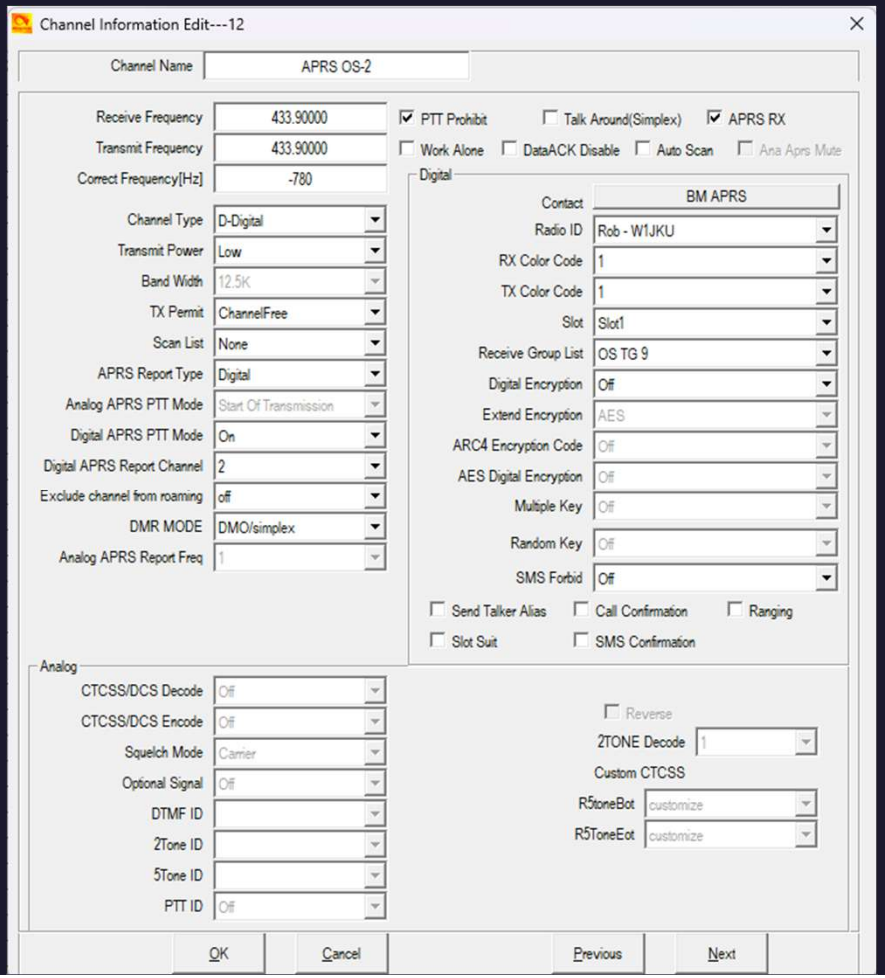
D-878 UVII Pro APRS Settings
Analog Channel

The following Settings work for Analog APRS



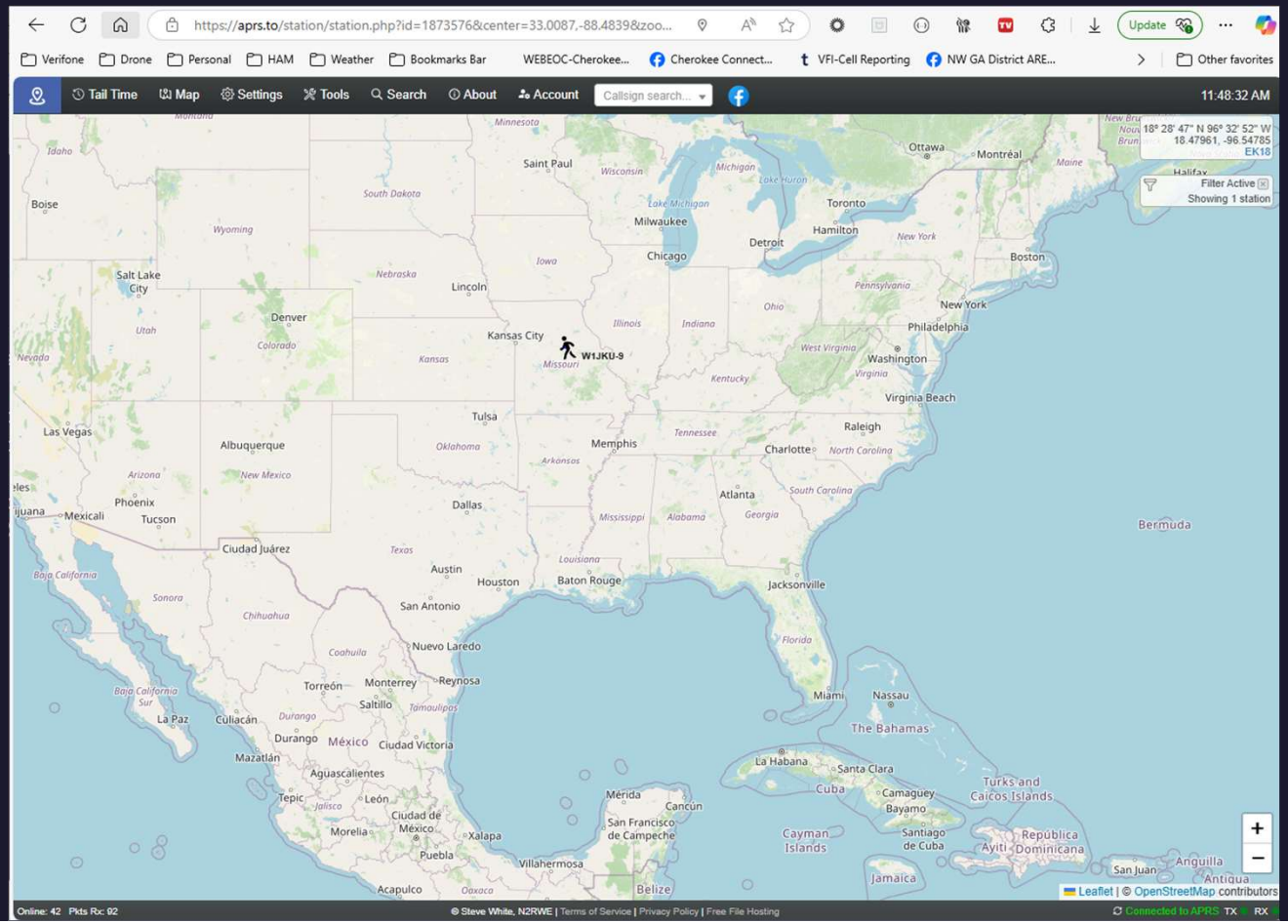
D-878 UVII Pro APRS Settings
Digital Channel

- The following Settings work for Digital APRS via Hotspot /Brandmeister using Openspot.
- Digital APRS Report Channel shall match your APRS Digital Setting
- Sample Code Plug can be found on the Cherokee-ARES.ORG website for the Anytone D-878UVII Pro



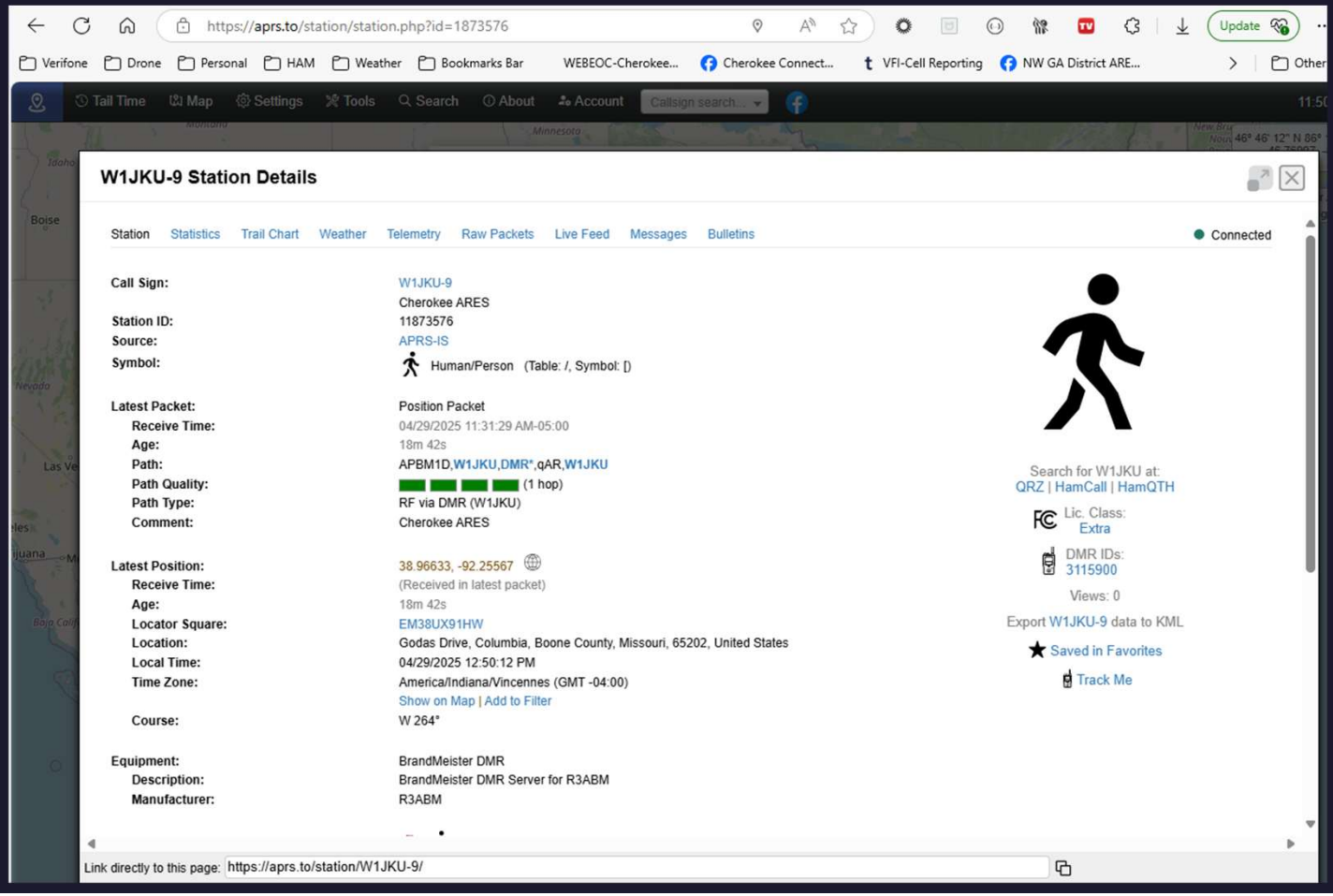
D-878 UVII Pro APRS Viewing
APRS.TO

Browser Based APRS Viewing



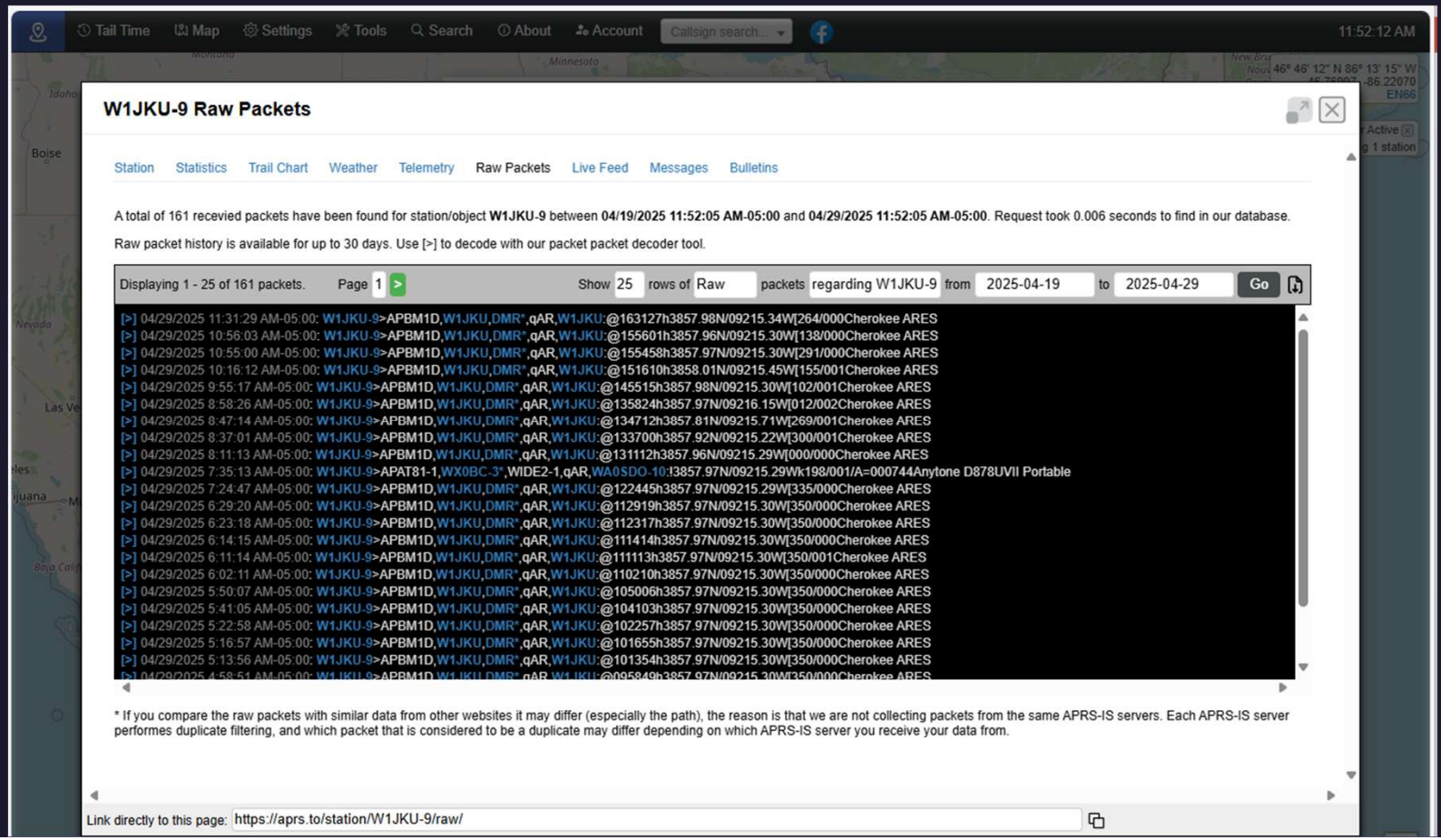
D-878 UVII Pro APRS Viewing APRS.TO

Station Details with ability to drill down on Map, Raw Packets, etc



D-878 UVII Pro APRS Viewing
APRS.TO

Raw Packets view



Troubleshooting

WA4EOC Talk Group

WA4EOC Communication Troubleshooting

- You must use Group Call and Not Private Call to talk to other members on the WA4EOC-ARES, WX4CAR-Club Digital Radio ID
- If you configure as a Private Channel, no one will hear you!
- Hint- On the Brandmeister Last Heard Portal, In Destination if you see WA4EOC (3215969) via Brandmeister dashboard versus just 3215969, then you incorrectly attempted call via Private instead of Group Call.

Time	Link name	My call	Talker Alias	Source	Destination
6 Hours	Motorola IP Site Connect	AI4AK [Warren J] (3135564)	AI4AK Georgia	KD4Z Sweat Mnt (311338)	(3215969)
6 Hours	Motorola IP Site Connect	AI4AK [Warren J] (3135564)	AI4AK Georgia	KD4Z Sweat Mnt (311338)	(3215969)
6 Hours	Motorola IP Site Connect	AI4AK [Warren J] (3135564)	AI4AK Georgia	KD4Z Sweat Mnt (311338)	(3215969)
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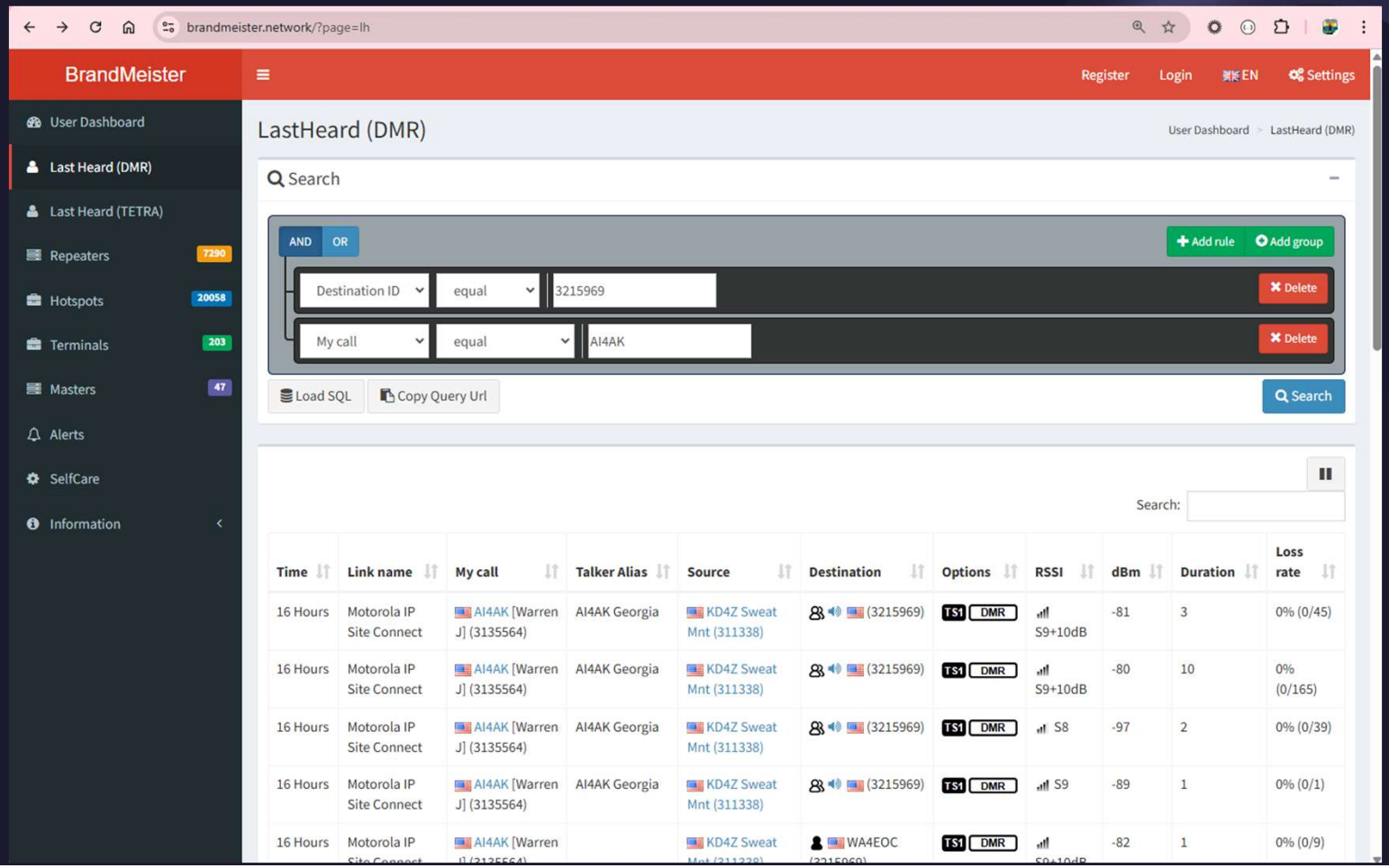
6 Hours	Motorola IP Site Connect	AI4AK [Warren J] (3135564)		KD4Z Sweat Mnt (311338)	WA4EOC (3215969)
6 Hours	Motorola IP Site Connect	AI4AK [Warren J] (3135564)		KD4Z Sweat Mnt (311338)	WA4EOC (3215969)

WA4EOC Communication Troubleshooting

SAMPLE- Search



DMR Simplex

DMR Simplex

- Ability to communicate via DMR over Simplex, no repeater or Hotspot. Great option for local communication.
- Primary Voice 441.000 and SMS
- Primary Voice and Send APRS: 446.500
- All others below are optional frequencies

No.	Receive Frequency	Transmit Frequency	Channel Type	Power	Band Width	CTCSS/DCS Decode	CTCSS/DCS Encode	Channel Name	Contact	Radio ID	Optional Signal
403	441.00000	441.00000	D-Digital	Turbo	12.5K	Off	Off	441.000 SMS SIM	TG 9 LCL RPT	Rob - W1JKU	Off
404	446.50000	446.50000	D-Digital	Turbo	12.5K	Off	Off	446.5 APRS SIM	TG 9 LCL RPT	Rob - W1JKU	Off
405	433.50000	433.50000	D-Digital	Turbo	12.5K	Off	Off	433.500 DMR SIM	TG 9 LCL RPT	Rob - W1JKU	Off
406	445.92500	445.92500	D-Digital	Turbo	12.5K	Off	Off	445.925 DMR SIM	TG 9 LCL RPT	Rob - W1JKU	Off
407	443.00000	443.00000	D-Digital	Turbo	12.5K	Off	Off	443.000 DMR SIM	TG 9 LCL RPT	Rob - W1JKU	Off
408	434.00000	434.00000	D-Digital	Turbo	12.5K	Off	Off	434.000 DMR SIM	TG 9 LCL RPT	Rob - W1JKU	Off
409	435.00000	435.00000	D-Digital	Turbo	12.5K	Off	Off	435.000 DMR SIM	TG 9 LCL RPT	Rob - W1JKU	Off
410											

DMR Net Operations

DMR Net Operations

1. The WX4CAR Talk Group is encouraged for rag-chew/adhoc discussions at any time.

2. The WA4EOC Talk Group is reserved for ARES related activities and discussions.
   A. The WA4EOC is an alternate means to check into our SKYWARN or ARES NET if you are unable to reach the standard NET Repeater.
   B. You will be afforded to Check in to the net and if there are any pertinent traffic, that traffic can be shared over the DMR-WA4EOC Talkgroup.
   C. This allows individuals who are remote or unable to access the repeater to remain engaged and maintain situational awareness.

DMR Net Operations

3. DMR NET Control

A. We will need a volunteer that has DMR Capability to assist in capturing Check-In Details Before and During the NET and then Relay the Check-Ins to the Standard NET Control.

B. DMR NET Control will pass traffic as needed between DMR NET and Standard NET.

C. We will test these procedures and refine, as necessary.

4. DMR Check in Procedures:

A. NET Control will simply announce "**This is [my Call] I am the Cherokee ARES DMR Net Control. Any Station wishing to check into the Cherokee ARES DMR NET, please call now.**"

B. Stations will then announce CallSign, Say CallSign Phonetically, and state their Name and Location.

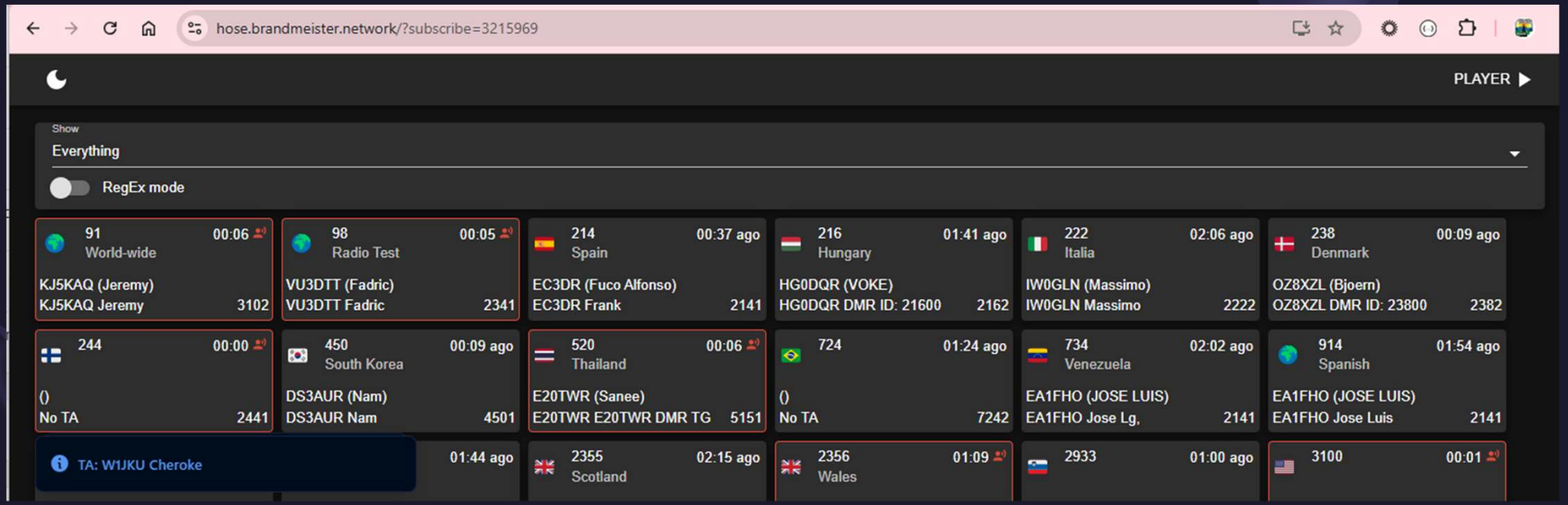
C. NET Control will relay any announcements provided on Standard NET for anyone listening via DMR.

D. NET Control will ask all DMR Stations if they have priority traffic to be relayed to the standard NET, and will capture that data and relay accordingly.

E. The DMR NET will be closed after the Standard NET is over.

DMR Net Operations

5. Monitoring TG 3215969-WA4EOC
   A. If you do not have a DMR Radio, you can listen to DMR Activity on TG 3215969 from your computer.
   B. Click on the Brandmeister Link and wait for traffic: https://hose.brandmeister.network/?subscribe=3215969



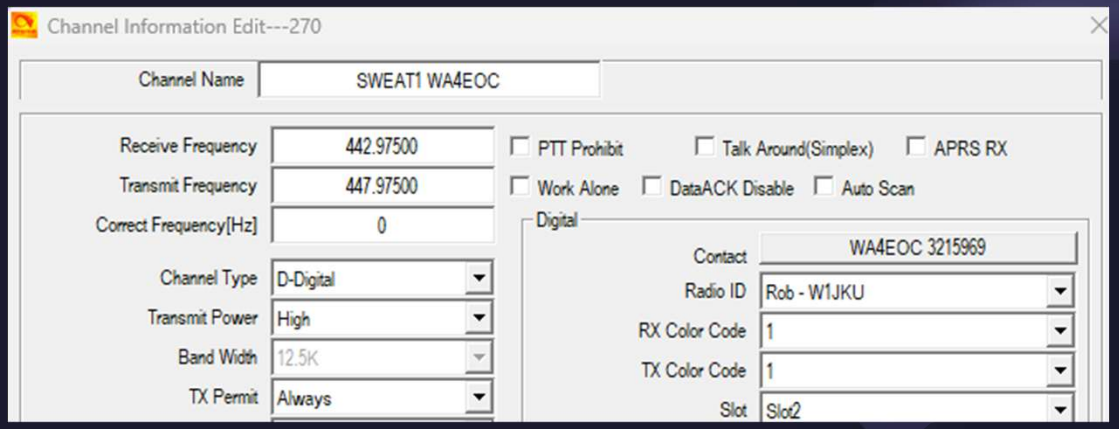
Cherokee ARES Confirmed DMR Users

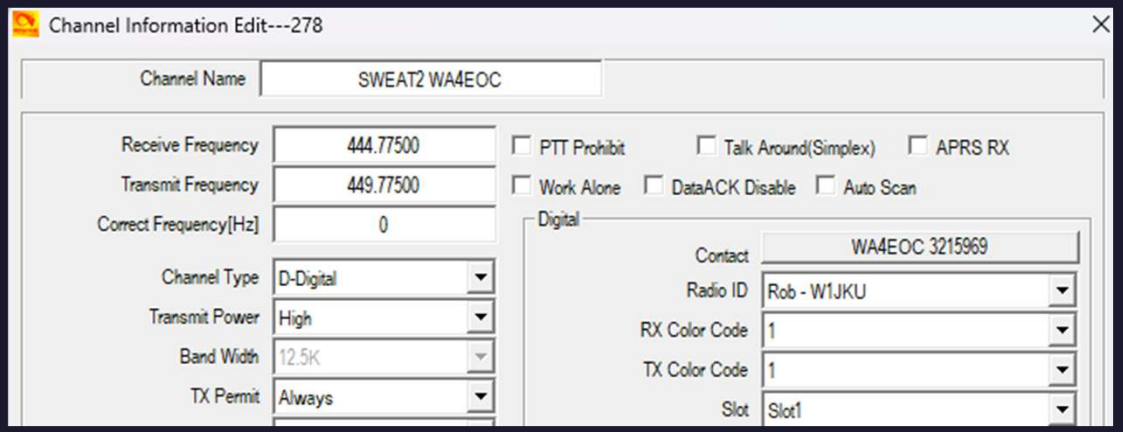
Callsign	Name	Radio ID
W1JKU	Rob	3115900
KD4KHO	Randy	3113031
KO4UQF	Bill	3200778
KO4PWB	Rod	3202328
K9APD	Jim	3113465
AI4AK	Warren	3135564
KB4SYV	Ed	3187047
K4QO	Lee	3202338
N4CDH	Dudley	3201220
WA4LIK	Robin	3163200
WB9GFA	Stan	3110991

Callsign	Radio ID	Comment
WA4EOC	3215969	Cherokee ARES Only
WX4CAR	3217955	Cherokee Club

Local DMR Repeaters for Cherokee County

Detail	Sweat1	Sweat2
RCV	442.9750	444.7750
TX	447.9750	449.7750
Color Code	1	1
Time Slot	2	1
Network	Brandmeister	Brandmeister
Repeater Callsign	KD4Z	W4KIP
Location	Sweat Mtn Cobb County	Sweat Mtn Cobb County





DMR Training Exercise

DMR Training Challenge if you have a DMR Radio

Goals /Tasks to Complete

1. Check and Confirm Brandmeister Configuration and Static Talk group for Cherokee
2. Enter Cherokee Talk Group into radio as a Group Channel
3. Enter Simplex Channel into Radio
4. Test Coms with WA4EOC & WX4CAR Talk Group
5. Test Coms with Direct/Private Connection to W1JKU - 3115900
6. For Supported Radios Test APRS Sending
7. For Supported Radios Test APRS Receiving
8. For Supported Radios Test SMS

Hands On – Live Demo

Lets Play Radio….

Bonus – Radios for Sale KD4KHO

First Come, First Serve.

Many great options for DMR!

Email KD4KHO@comcast.net

Bonus – Radios for Sale KD4KHO

TYT-MD380

IC-92AD

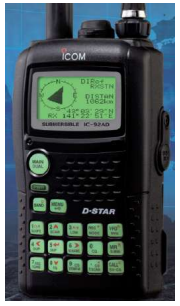
Bonus – Radios for Sale KD4KHO

	Brand	Model	Description	$$	Quantity
	TYT	MD380	UHF DMR and Analog HT	$25.00	2
	TYT	MDUV380	VHF-UHF DMR and Analog HT	$35.00	1

Bonus – Radios for Sale KD4KHO

	Brand	Model	Description	$$	Quantity
	Radioddity	GD77	VHF-UHF DMR and Analog HT	$35.00	2
	Radioddity	GD73	UHF DMR and Analog HT	$25.00	1

Bonus – Radios for Sale KD4KHO

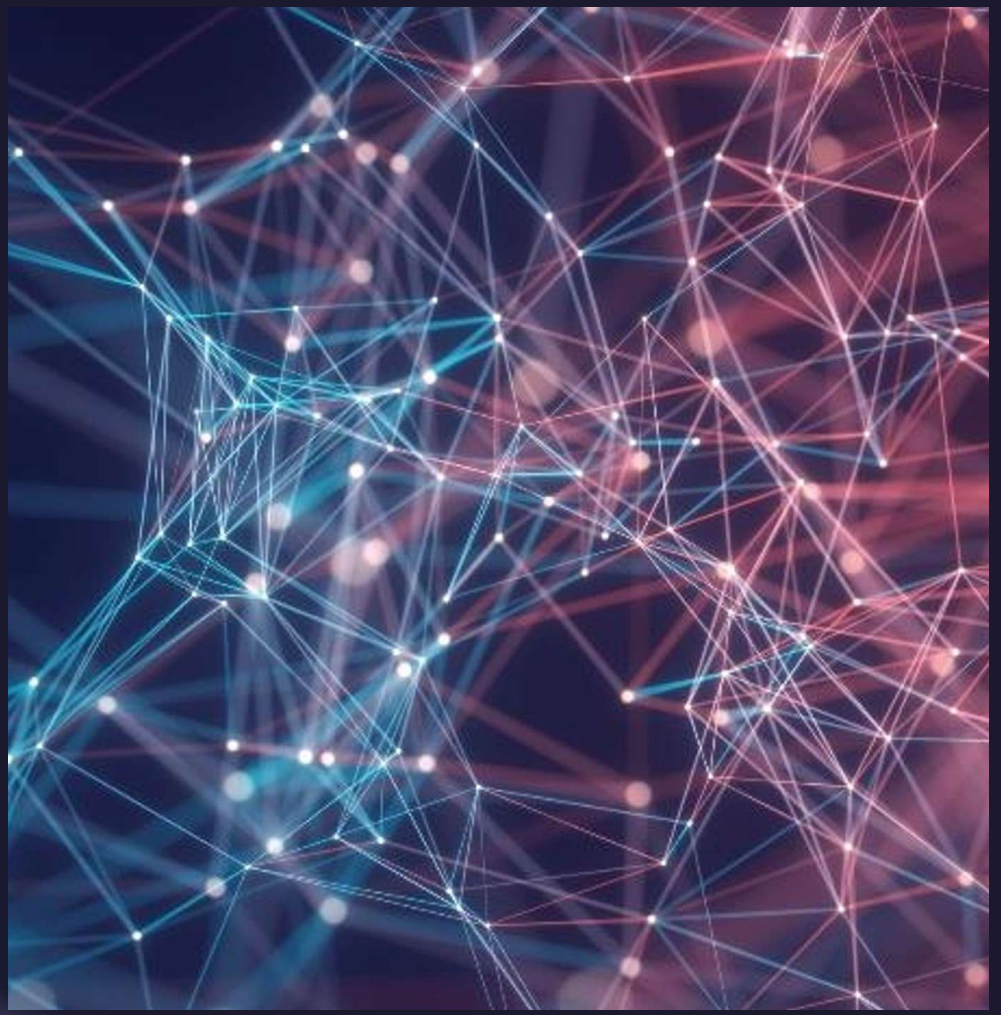
	Brand	Model	Description	$$	Quantity
	ICOM	IC92AD	VHF-UHF DSTAR and Analog HT	$45.00	1
	Uniden	BCD996T	Multi-Band Digital TrunkTracker Scanner	$65.00	1

Thank you

Rob Bruderer

W1JKU

DMR ID: 3115900



References

- Radioddity
- talkpod.com
- Dashboard | BrandMeister
- Radio-ID.net
- BridgeCom Systems - your source for two-way radios and systems
- Cherokee Sample Code Plug: See Anytone Code Plug on Cherokee-ARES.ORG