# Treasure Coast Ham News

**SPECIAL HURRICANE PREPAREDNESS ISSUE**

# 2025 Hurricane Season Expected to be Active

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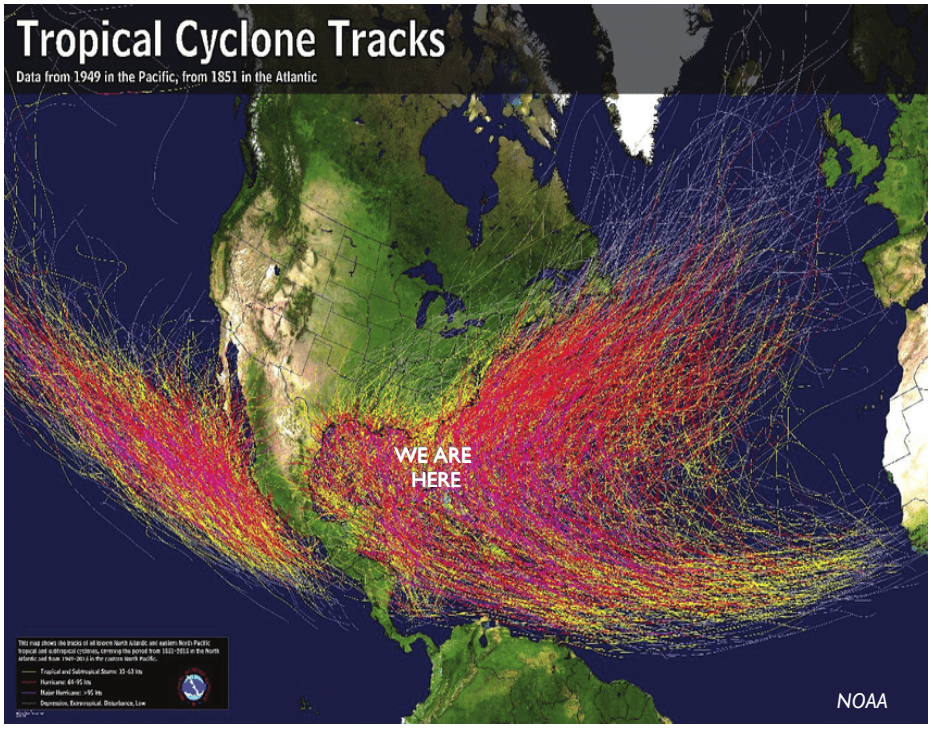



**W**e are almost at the start of the 2025 Atlantic Basin Hurricane Season. Colorado State University has issued their first version of the *Forecast for 2025 Hurricane Activity*. CSU is anticipating that the 2025 Atlantic basin hurricane season will have above-normal activity. Current La Niña conditions are likely to transition to a more neutral condition in the next couple of months.

**A**ccording to CSU *"there remains considerable uncertainty as to what the phase of ENSO will be this summer and fall. Sea surface temperatures across the eastern and central Atlantic are generally warmer than normal, but not as warm as they were last year at this time. A warmer-than-normal tropical Atlantic combined with likely ENSO neutral (or potential La Niña) conditions typically provides a more conducive dynamic and thermodynamic environment for hurricane formation and intensification. We anticipate an above-average probability for major hurricanes making landfall along the continental United States coastline and in the Caribbean. As with all hurricane seasons, coastal residents are reminded that it only takes one hurricane making landfall to make it an active season. Thorough preparations should be made every season, regardless of predicted activity."*

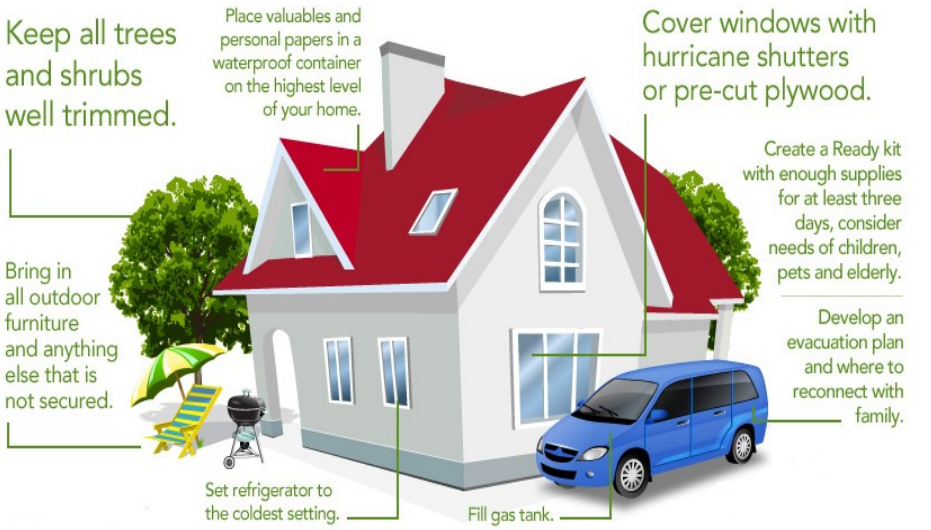
We are nearly at the beginning of hurricane season. All is quiet now. But that can, and probably will, change as we near the season peak in late August and September.

Whether you shelter in place, evacuate, or operate in your community in support of CERT, now is the time for you and your family to get prepared and be ready. If you plan to evacuate know your route. Leave in plenty of time and make sure you have enough fuel. **Be prepared by getting prepared!**

## HAVE A FIRST AID KIT

. Non-latex Surgical Gloves
. Cleansing agent – soap, antimicrobial towelettes or hand sanitizer.
. Breathing Barrier with one-way valve for use during CPR.
. Space Blanket
. Sterile Dressings – 3″x 3″, 4″x 4″
. Roller Bandages for sterile dressings
. Adhesive Cloth Medical Tape
. Adhesive Bandages (Band-Aids)
. Triangular bandages for arm slings
. Scissors & Tweezers
. Petroleum jelly or other lubricant
. Cold Compress
. Antibiotic Ointment
. Burn Ointment
. Insect Bite Cream
. Eye wash solution to flush eyes
. Aspirin, Ibuprofen , etc.
. Snake bite kit
. Prescription medications. Periodically rotate medicines to account for expiration dates.
. Power Bars or Candy Bars for quick energy.
. First Aid Instruction Booklet
. Personal Emergency Contact Info and a copy of your ID – in case you become injured.
. Think about any other items you may need and add them to your kit.

## Hurricane Preparation




## PREPARE A 72-HOUR KIT

. 1 gallon of water for each person per day
. Non-perishable food that is easy-to-prepare
. Mess kit or light weight cook pot
. Sharp knife, cups, plates, utensils
. Gasoline for generator & car/truck
. Flashlight & extra batteries
. Cell phone, chargers / battery packs
. Radio (with NOAA Weather Channels)
. Whistle/horn to signal for help
. Paper and pencils
. Insect repellent and sunscreen
. Sanitation & personal hygiene items
. Portable shelter – Tent or large tarp . . . bedding or sleeping bags
. Change of clothing
. Rain gear
. Pet care items & IDs
. Compass (needs no batteries), GPS
. Duct Tape
. Extra set of car and house keys
. Cash
. Pictures of family members for ID
. Matches in a waterproof container
. Fire starter (ferrocerium rod)
. Magnifying lens (wallet size)
. Family and emergency contact information & documents (a USB stick)

## MAKE A RADIO GO-KIT

A radio go-kit can be a duffle bag, backpack, or carry case. Many hams use hard-sided Pelican style cases. These cases come in different sizes and are waterproof. If you are deployed to a shelter your radio needs may be different than if you shelter in place. Some hams build a portable station in a box that includes radio, power supply/battery pack, meters, antenna, microphone, digital interface, radio and programming manuals, etc.

Items to have in your possession at all times are your official FCC Amateur Radio License and if an ARES® member, your County issued Communications Response Volunteer credentials.

Make sure your VHF/UHF radio is programmed for your county ARES® repeater(s) and your local radio clubs. SARNET repeaters (our's are Martin County and Sebastian) are a must as well as designated simplex frequencies.

WinLink® / VARA savvy? If not, get training now from your ARES® group.

# Portable Generator Usage & Safety

**Hurricanes can be very devastating.** Our electrical infrastructure is not always resilient to the force of a hurricane. Many of us could find ourselves without electricity during, and for many days after, a hurricane event.

**A portable generator is one solution** when the electrical grid is temporarily interrupted. Portable generators are good, but that doesn't mean you should not understand a generator's capabilities before a hurricane strikes, nor not take precautions when using a generator during and after the event.

**How much critical wattage you need** will help size a portable generator. Running a portable generator at peak output for a long period of time is not always good. Estimate your total critical wattage needs and then add at least 25% spare capacity when looking to purchase a portable generator or when upgrading the one you have.

**During a storm is not the best time** to test your generator. Test your generator on a regular basis. While most have low oil shutoff, performing regular oil changes is a must. Many of us learn how to operate the generator when it is new, but quickly forget as time passes. Have the generator manual and start-up procedure readily available. Review before the storm.

**Generators should not be run** in an enclosed area, such as a garage. They should always be used in an area with lots of outside ventilation. A covered screened porch can be used. Allow plenty of open space around the generator. Make sure you are using the right size power cords. You should never plug your portable generator into your home's electrical service. A permanently installed whole house generator is meant for that purpose and has approved home electrical switching capability. Always store fuel in an approved container and in a cool, dry, ventilated and secure area. Many generators now have built in carbon monoxide detectors and automatic shutoffs.

**Remember to ground your generator** according to the manufacturer's recommendations. Thoroughly read and understand all recommended safety precautions. Being prepared is always best. **BE SAFE!**

# National Amateur Radio Emergency Frequencies

**E**mergency communications networks in North / Central / South America and the Caribbean are encouraged to establish their operations within 20 kHz +/- of these frequencies (kHz): 3750 or 3985 LSB; 7060, 7240, or 7290 LSB; 14300 USB; 18160 USB; 21360 USB.

**Maritime Mobile Service Net** (and others):
14300 kHz USB (mmsn.org)
**Hurricane Watch Net**:
14325 kHz USB (hwn.org)
**National Hurricane Center** (during hurricanes):
14325 USB (day/primary); 7268 LSB (night & alternate)
**Caribbean**: 3815 LSB; North FL: 3950 LSB; South FL: 3940 LSB

**IRLP Node**: 9219; Alternate Node: 9508 or 9123
**EchoLink Conference**: "WX-TALK" Node 7203
**EchoLink Alternate Conference**: "VKEMCOMM"

**Frequency Info:** w4ehw.fiu.edu/wx4nhc-contact.html

**Amateur Radio Calling Frequencies** (MHz)
80 Meters: 3.885 AM
40 Meters: 7.290 AM
20 Meters: 14.286 AM
6 Meters: 50.125 SSB; 52.525, 52.540 FM Simplex
6 Meters: 50.620 Digital (packet)
2 Meters: 144.200 SSB; 146.520 FM Simplex
1.25 Meters: 222.100 CW/SSB
70 Centimeters: 432.100 CW/SSB
70 Centimeters: 446.000 FM Simplex
33 Centimeters: 902.100, 903.100 CW/SSB
33 Centimeters: 927.500 FM Simplex
23 Centimeters: 1294.500 FM Simplex
23 Centimeters: 1296.100 CW/SSB
FM amateur calling frequencies use carrier squelch. A mixture of digital modes or mixed modes could be found locally (P25, NDXN, DMR, D-Star, etc.).

Source: National Interoperability Field Operations Guide Version 2.01 MARCH 2022

# Florida Division of Emergency Management

**T**he Florida Division of Emergency Management encourages all Floridians to begin home, business and family preparations now ahead of any potential storms that may impact our state this coming hurricane season. You can find information on how to prepare for hurricane season at FloridaDisaster.org.

**B**etween now and the beginning of the hurricane season, the Florida Division of Emergency Management will be working with regional coordinators and emergency management personnel to help them prepare for the season ahead. In addition to local, county and regional governments, every Floridian should take steps to ensure that their families and businesses are ready for the 2025 hurricane season.

**T**he 2025 Atlantic Hurricane Season officially begins June 1 and runs through November 30, with the historical peak of the season occurring in September. In anticipation of potentially an extremely active hurricane season, it is imperative for residents to understand their risks and take steps to prepare for the many hazards that hurricanes can bring. Regardless of hurricane season predictions, it only takes one storm to harm a community.

## Understanding Hurricane Season

**Know Your Zone, Know Your Home** – It's important for residents to know if their home is in an evacuation zone, a low-lying flood-prone area, a mobile home or an unsafe structure during hurricane season. Residents should also take the time to understand their home and its ability to withstand strong winds and heavy rain. This information will help you better understand orders from local officials during a storm. For more information and to determine evacuation zones, be sure to visit FloridaDisaster.org/Know.

**Have Multiple Ways to Receive Weather Alerts** – Residents should have multiple ways to receive weather alerts and follow all orders from local county emergency management officials. Every household is encouraged to have a battery-operated or hand-crank weather radio to ensure they can continue to receive alerts from the National Weather Service in the event of power outages or damaged cell towers.

**Sign up for alerts at:** FloridaDisaster.org/AlertFlorida.

**Turn Around, Don't Drown! –** Flooding can occur with little to no warning and individuals should never drive or walk in flooded areas. Remember, it only takes one foot of floodwater to move most vehicles, and more than half of all flood-related deaths result from swept away vehicles. If flooding occurs, get to higher ground immediately!

**Build a Disaster Supply Kit –** Following the impact of a hurricane, residents may lose access to basic services, such as power and water, or experience limited or no access to essentials like food, drinking water and medicine. Households are encouraged to have enough essential supplies to last every member of the family, including pets, at least seven days. For a disaster supply kit checklist, visit FloridaDisaster.org/Kit.

**Keep Gas Tanks Half Full –** Residents and visitors should keep their gas tanks at least half full during hurricane season to ensure they have enough fuel to evacuate as soon as possible without worrying about long lines at gas stations and to avoid gas shortages prior to a storm. For Floridians with electric vehicles, it's recommended that the battery be maintained between 50% - 80% capacity at all times, depending on the type of vehicle and what the vehicle's manual recommends. Visit FloridaDisaster.org/HalfwayFull for more information.

**Hurricane Hazards –** Hurricanes bring with them an increased threat of tornadoes, damaging winds, flooding, rip currents and severe thunderstorms, both before, during and post-landfall. These risks have the potential to affect the entire state of Florida. That is why it's important to make a plan for each member of the family, pets included. For more information, visit FloridaDisaster.org/PlanPrepare.

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Visit FloridaDisaster.org/Guide to download the 2025 Florida Hurricane Guide.

For weather updates and safety tips, follow the Division on Instagram and Facebook.

# ARES® RACES CERT

**Many new hams** join the hobby because they want to become involved with an Emergency Response Organization. We thank you for wanting to help out during times of crisis!

**New hams will have a lot to learn** before they become effective. Some key learning points are:
- Ability to function under pressure
- Knowing good radio procedure
- Knowledge of the served agencies we work with
- Knowing how to use your equipment

**The last one is most important** because under pressure you will make mistakes. The fewer and more minor they are, the less the impact will be. I have seen new hams forget how to change frequency when pushed a little outside their comfort zone. I can only imagine how they might react in a life threatening event.

**PRACTICE, PRACTICE —** Then practice some more! Listen to the various nets. When you understand how they operate, check in. Do so on a regular basis. If the net holds on air drills, participate! Your nervousness will diminish over time and you will gain confidence that you can pass traffic.

**ARES®** is one of the larger groups serving agencies such as the Red Cross. As an ARES® member you should know the types of traffic you may be expected to pass and in what format. A lot of ARES® groups assist with events like marathons and bike rides. This is a great way to get practice for a real world situation.

**RACES** is a parallel group but their only served agencies are governmental. A lot of hams actually belong to both groups, but you can commit to only one for a call out! RACES will handle traffic for Emergency Management, Police, Fire, EMS, Roads and other services. If you are going to join this group get to know the folks you will work with before your services are needed.

**CERT** is a neighborhood group. It is very strong in some areas. It's a grassroots effort training people to handle emergencies on their own when professional help is unavailable. CERT is often used for traffic control, and special events. As a ham you are valuable because you can pass traffic to other teams and the controlling agency.

**Because of the nature of the work,** members of all groups must often be vetted. You may need to be fingerprinted and have a background check. Costs for these services are often borne by the group, but check to determine if you are required to pay for them.

**No matter which group** you participate in, be ready to serve at a moments notice. You might be part of a life saving team!

73, Dolph WA2NTW

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**What is** Winlink Global Radio Email®? It is a worldwide messaging system for amateur radio operators.

**Using primarily FCC amateur radio frequencies** it enables hams to send emails with attachments such as forms, situation and positional reports and weather bulletins. Most ARES® groups now use WinLink® for primary messaging and reporting to EOCs during emergencies.

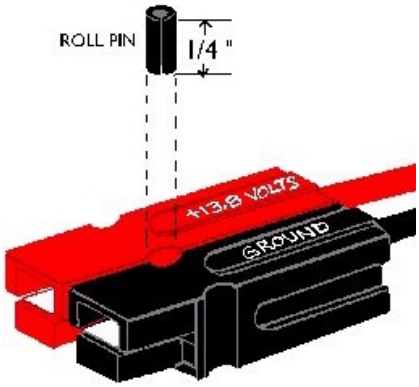
**How do I learn** WinLink®? The first step is to find your local ARES® group and join. Almost all ARES® groups offer training. As a licensed amateur radio operator you should register your call sign with the WinLink® organization. Go here.

**Next,** determine if your radio has a built-in sound card. If not, Masters Communications in Palm Coast has some excellent products. Many hams have chosen VARA applications such as FM, HF, etc. to enhance their digital communication. It is not required, but is an option. Ask other hams.

# Powerpole® Assembly Instructions

In the stress of emergency situations it is easy to reverse DC polarity. When this happens, your rig may be making a trip to the repair bench. To avoid this dreaded situation many hams use Powerpoles®.

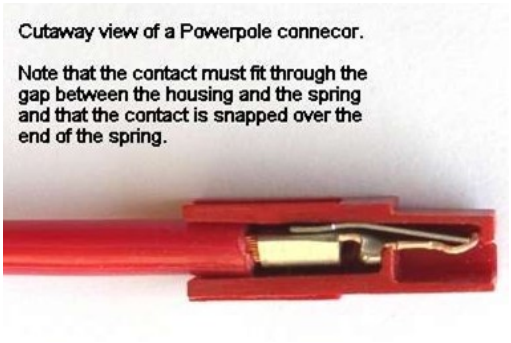
Powerpoles® are standard for emergency communications power sources. When soldering or crimping wire make sure the contacts are oriented so that they are both facing the correct direction and they go into the housings without twisting the wire. The housings are held together with dovetail joints. Always slide these joints together! They will be damaged if you try to snap them together or apart. They slide together in one direction only.




Use of slotted retaining pins is recommended. If you want to make pairing permanent, use glue to hold the connector bodies together. The contacts go in the housings only one way. Insert the contacts with their sharp edge down against the flat spring that is in the housing. They should slide in and click. If you do not hear a click they are not fully seated, fix them.

When they are inserted fully you should see that the contacts and wires "float" slightly inside the housings. When looking in from the front of the housing the contact tip should slide over the top of the internal housing spring.

When crimping, you may make the contact out of round, and it will not slide into the contact easily. To fix, this you may need to rotate the contact 90 degrees from the original crimping orientation and re-crimp either with the original crimper or a pair of pliers. In any case push the pin into the body. If you bend the contact blade in relation to the crimp area you should straighten it before putting it into the body. Tug slightly on the assembled connector to make sure the contacts are locked in place. If you have trouble getting the contact to lock into the housing you may have deformed the contact.





Look at the side profile of the contacts before and after crimping. You may have to bend them straight before inserting into the housing.

When soldering the contact pins, be careful not to use too much solder. Keep the solder inside. Should solder get on the outside of the connector, you may have trouble inserting the contact. Solder on the contact surface area will allow a good contact.

When crimping the contact pins make sure the wire is completely inside the pin and does not spread the connector apart. A good crimp is one where the crimped portion looks the same as an un-crimped pin. If the crimp is flattened too much you will not be able to easily insert it.

**And** most important, make sure you have the polarity correct before plugging into your equipment. "Measure twice, cut once" as the saying goes. For more information refer to: https://powerwerx.com/help/powerpole-assembly-instructions


**T**he Hurricane Watch Net is a group of licensed Amateur Radio Operators, trained and organized to provide essential communications support to the National Hurricane Center during times of hurricane emergencies. We are not housed in a single location - as some of our followers believe - but strategically disbursed across North America, throughout the Caribbean Basin, Central America, and the northern coast of South America, so that we can provide a continuous path of communications from storm-affected areas to the forecasters in the National Hurricane Center in Miami, and when needed, the forecasters in the Canadian Hurricane Centre in Dartmouth, Nova Scotia.

**T**he primary mission of the Hurricane Watch Net is to disseminate tropical cyclone advisory information to island communities in the Caribbean, Central America, along the Atlantic seaboard of the U.S., and throughout the Gulf of Mexico coastal areas. We also collect observed or measured weather data from amateur radio operators in the storm-affected area as well as any post-storm damage reports, and convey that information to the Hurricane Forecasters in the National Hurricane Center via the amateur radio station in the center (WX4NHC). In addition, we provide the same service for the Canadian Hurricane Centre whenever a hurricane threatens their country.

**T**he Hurricane Watch Net generally activates whenever a system has achieved hurricane status and is within 300 statute miles of populated landmass (this can vary, however, due to the forward speed and intensity of the storm) or at the request of the forecasters at the National Hurricane Center or the Canadian Hurricane Centre.

**O**ur area of coverage includes the Caribbean, Central America, Eastern Mexico, Eastern Canada, as well as all US Atlantic and Gulf Coast States. When activated, you will find us on 14.325 MHz (USB) by day and 7.268 MHz (LSB) by night. When required, we will use both frequencies simultaneously. Why do we state these frequencies without a plus or minus amount? Because many non-hams listen in via shortwave radio and know this is where to find us when we are activated. Before any net activation, if either frequency is in use, we always ask permission to use it.

**A**dditionally, it is our practice of being on the air ahead of the amateur radio station at the National Hurricane Center (WX4NHC) for the explicit purpose to establish our net operating frequency, read the latest advisory information, and line-up reporting stations. It helps us tremendously to know the operator's location, name, and weather data measuring capabilities in advance of the storm's arrival.

* * * * *

**Streaming Audio of Net Activations is Often Povided by Private Owners.**
(Delivery of these services is not guaranteed.)

**NA5B WebSDR RECEIVER SYSTEM**
Washington, D.C.

To listen to audio on 14.325.00 MHz USB,
Click Here.

To listen to audio on 7.268.00 MHz LSB,
Click Here.

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**Streaming Audio from Minnesota**
For 14.325.00 MHz
Click Here.

Please Note: When the Hurricane Watch Net is active, the listing may show a frequency of 14.300 MHz but you will actually be listening to 14.325 MHz. Whenever the Hurricane Watch Net is NOT active, the audio will be from the nets of 14.300 MHz.

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KØQEI - Click Here.

Please Note: This stream is not guaranteed to be active all of time. At times, there will be be dual audio streams, with the right and left speakers rebroadcasting different nets. To listen to just one net, simply reduce (or mute) the volume of one of your computer speakers.

# Digital & Voice Modes for Emergency Communications

**In the public safety world**, radio interoperability (the ability to communicate with each other) has been a major problem. Since September 11, 2001 much has been done by governments to overcome the issue. With the help of federal and state partners, many local governments now have an infrastructure to support interoperability. Radio vendors and public safety groups wishing to participate in the interoperability inrush have developed radio communication protocols such as P25, DMR, NDXN, NEXEDGE, TETRA, etc. Many hams have ventured into these commercial protocols, with DMR probably the most common.

**Digital Mobile Radio** (DMR) - Digital Mobile Radio was developed by the European Telecommunications Standard Institute for commercial two-way radio communication. DMR lets devices from various manufacturers connect to the same network as long as their functions abide by the standard. Introduction of the DMR radio standard resulted in significant manufacturing cost efficiencies. China successfully entered the DMR market with inexpensive radios, to the delight of many hams. The standard is open to any vendor who wishes to compete. DMR receives regular operational updates to extend its capabilities.

**DMR** is used extensively by hams; but another protocol, D-STAR, is increasing in popularity. Is D-STAR better than DMR? And what about System Fusion? Let's look at the strengths and weaknesses of each.

**D-STAR** - a digital radio standard developed in the late 1990s by the Japan Amateur Radio League. It allows local and distance communication using digital voice, control data, and data messaging. In terms of spectrum efficiency, D-STAR repeaters perform very well using low-speed digital voice and data transfer. This is made possible because it requires only a 6 kHz channel. D-STAR compatible radios are manufactured by Icom, Kenwood, Flex Radio Systems and possibly others.


**System Fusion** - was developed by Yaesu, but it is not an open standard. System Fusion radios are relatively easy to program. System Fusion uses true multimode repeaters designed to work with both analog and digital modes. Using a WiRES-X internet-connected repeater you can connect to different reflectors" (virtual chat rooms created by linking multiple repeaters together via the internet). System Fusion's downside can be its availability. Locally, Port St. Lucie and Vero Beach have Fusion repeaters, but it is unknown how active they are at this time.

**Communications -** D-STAR is very suitable for most users. DMR has extensive capabilities to communicate long distances, but relies on Internet communications to do so. System Fusion via WiRES-X offers local and long range communication capabilities. Many D-STAR and DMR radios come with a pre-installed list of all known repeaters worldwide. Most digital radios also support analog mode.

**Cost -** With D-STAR's ham only user base, the typical commercial sector's drive down of radio system costs is not present. Some D-STAR handhelds can cost as much as an entry level SDR HF transceiver. DMR has benefited from its use by the commercial sector. Handheld Chinese DMR capable radios start at under $100. Mobile radios start in the $200 range. Yaesu System Fusion radios are generally competitively priced for the ham market.

**Demand -** Hams considering DMR, D-STAR, or Fusion may initially lean toward DMR because of its lower cost and wide range communications capability. While DMR is very capable and cost effective, D-STAR is gaining in popularity and may become the dominant ham digital mode in the near future.

**Ease Of Use -** Digital radios and modes are fairly easy to use, but may take some time to learn as their operation and terminology are not exactly the same as analog.

*(continued on page 9)*

# Digital and Voice Modes for Emergency Communications

*(continued from page 8)*

**Ease Of Programming -** Programming varies by radio type and mode. You will need to learn new concepts to program a digital radio. In the beginning DMR programming meant that you had to develop a "code plug" which included a variety of information such as talk groups, time slots, etc. Some DMR vendors (ex. Bridgecom, etc.) have preprogrammed their radios to alleviate the difficulty of using DMR software to build code plugs and upload into the radio. System Fusion programming is not as difficult, more like analog. The real power of System Fusion lies in the WiRES-X repeater programming.

**Flexibility -** All digital radios offer some degree of flexibility. D-STAR and System Fusion were developed for hams and offer the most. DMR offers less since commercial radio systems on which it is based are not designed for end user programming. You just pick a channel and talk. No doubt dedicated hams will find ways to create more DMR flexibility. Hams typically are never satisfied with a radio's capabilities.

**Survivability -** D-STAR uses the Internet DNS (domain name system), a kind of phone directory, to connect its' nodes. If one node goes down, it does not affect your ability to connect to another one. D-STAR is probably the most survivable mode. DMR requires connection to a C-bridge (a central controller) to function. All communication must go through the C-bridge. If the C-bridge becomes unavailable the DMR repeater will only work locally. That is something to think about with hurricanes and our ever increasing man-made and natural disasters.

**Brandmeister** - Is a type of DMR. It does not use C-bridge architecture. It employs more safeguards to ensure the connected repeaters still function. But if we have a significant interruption, this DMR flavor will revert to standalone operation. System Fusion's survivability is generally good. WiRES-X looks for directory servers in Japan and the U.S. WiRES-X is a peer-to-peer system. Therefore it does not rely on the central servers for voice data. If directory servers go down after a node has downloaded a server list it most likely will not have any effect, unless the node is restarted or requests updated directory lists.

**Extendibility -** All digital modes provide some degree of extendibility beyond radio-to-repeater. D-STAR may be best, followed by System Fusion.

**Field Programmable -** Most digital mode radios can be field programmed, but do you want to do this? That is up to you. When I bought my DMR handheld, I could not find a code plug for my model of radio. If it were not for Craig, KK4CID and Michael, W4PPM giving me copies of their radio's code plugs and descriptions, I would have struggled. Even though their code plugs were for a different brand, I was able to figure out how to create my own. Digital radios made specifically for hams will have a much easier approach for programming, whether in the shack or in the field. That moves these radios way up on the ladder.

**So what radio is best for you?** That depends. Analog radios are a proven mode, but can have limitations when tasked with more than just communicating. Digital radios offer vastly improved capabilities but need connected technology to make full use of those capabilities. For me, I think of VHF/UHF radios as tools for emergency disaster use. So I don't want a radio that is too complicated or too reliant upon connected technology. The best thing to do is study the modes in more detail. And be sure to talk to fellow hams to determine the digital modes supported in your area.

***If only there was a Swiss Army radio that had all three digital modes. Let's hope…..***

*73 TCHN*

# VHF and UHF Antennas for Emergency Communications

**V**HF and UHF antennas are very important for emergency communications. They can be almost any size or shape. Dual band versions are best because both VHF and UHF is used. They can be vertically or horizontally polarized. Vertically polarized antennas will provide the best all around communication between multiple stations. Horizontally polarized antennas such as YAGIs are best for communicating directly to an EOC or net control point. Fixed location antennas that exhibit gain are very important.

**I**onized propagation can be rare, but sporadic E skip is possible and capable of reflecting signals many thousands of miles. This is usually not a desired factor when communicating in an emergency.

**N**atural and man-made objects such as trees, terrain, and building types can impede VHF/UHF signals. Inside building electrical wiring, appliances and lights can affect signals. Shorter wavelength antennas and higher frequencies work better just make sure they are mounted as high as possible.

**C**ommon antenna shapes include dipoles (vertical & horizontal), 1/4, 1/2, & 5/8 wavelength verticals, J-pole, ground plane, YAGI, loops, log periodic, etc.

**A**long with VHF/UHF antennas, the list of analog and digital modes available for VHF/UHF grows almost daily. From the early beginnings of converting simplex Motorola and Johnson VHF public safety mobile radios, today's radios available to the ham operator have exceeded many lifetimes and product life cycles. While analog is still a viable mode, packet X-25 (being repurposed) and the newer digital modes such as DMR, D-STAR, System Fusion and APCO P-25 have evolved to become the new standards. Generally, the same antennas used for voice are also suitable for digital modes.

**F**ollowing public safety, many hams moved on from simplex to repeaters, although simplex is still used for ARES® and local talk. Now, many of these repeaters are being linked (such as SARNET) to provide wider area coverage.

**W**hat was once the exclusive purview of HF, digital modes using Internet backbone linking enable long distance world-wide communications. WinLink® is a de facto standard when communicating with government Emergency Operations Centers (EOC).

**S**o where do we find emergency communications VHF/UHF antennas? Many hams start at a ham radio dealer, Amazon®, or eBay®, preferring to buy rather than build, but this is not always the case. VHF and UHF antennas are generally easier to build than their HF cousins because of their smaller size. VHF and UHF antenna can be dipoles. The more prevalent construction materials are aluminum, copper tubing and steel rod. That is not to say wire is not viable. An excellent antenna can be made from window or twin lead wire cut to be a J-pole. This design was popularized by Ed Fong in February 2003 and March 2007 QSTs.

**I**f you want to try your hand at building, an article on the ARRL® web site describes an easy to build VHF ground plane that can be made with an SO-239 connector and #10 copper wire or hobby brass tubing radials. The radiating element and 4 radials are cut for 1/4 wavelength. The radiating element is soldered to the SO-239 center and the 4 radials are attached or soldered to the connector's 4 bolt holes.

**A**nother easy antenna for VHF or UHF is a Delta loop. Using the loop formula of 1005 divided by the frequency will give a total length. For VHF it is about 6 feet. The antenna can be mounted on a house window using suction cup hooks and fed from a corner with a 75 ohm 1/4 wavelength coax matching transformer. Remember to multiply the matching length by the coax velocity factor. The design is on the Internet. Search for "Indoor VHF Delta Loop."

**W**ith hurricane season approaching, now is a good time to investigate VHF and UHF antennas. To be prepared, try building an antenna.

**R**emember to use the best coax (LMR-400 or RG-213) you can afford. Skip that cheap Hamfest and big box store RG-58/59 coax.

# Prepare for an Emergency - Know Your SMA Connector Type

*[Radio SMA connectors can be confusing to both new and experienced hams. While many Icom, Kenwood, Yaesu & Alinco HTs use SMA connectors on their radios, some Chinese manufacturers do not. Hopefully, the following guide will take some of the mystery out of which connector your radio uses. Be sure your emergency antenna has the proper connector to mate to your radio. Verify before needing the radio in an emergency.]*

### Determining SMA Connector Polarity

Before describing the specifics of **SMA-F**emale and **SMA-M**ale, please note that ***polarity*** is determined by the center pin. Generally, the SMA connector with a center pin is **Male**. The SMA connector without a center pin is **Female**. The key to male or female is the presence or absence of a center pin. A cause of confusion for hams is that they expect the one with threads on the outside to be **SMA-M**ale, but it is usually **SMA-F**emale.

**SMA-F**emale radio antenna connectors were very rarely seen until about 2014. That is when many Chinese manufacturers began building inexpensive radios capable of operating on amateur radio frequencies. Since that time Yaesu, Icom, and Kenwood have adopted the **SMA-F**emale connector. These radios require **SMA-M**ale antennas. With today's proliferation of Chinese radios, knowing your SMA connector is critical.

**SMA-M**ale radio connectors are used by many of the more "traditional" amateur radio manufacturers, including Motorola, Vertex, and others.

### Amateur Handheld Portable Radios

The following are picture examples of radio antenna connectors. It is by no means complete as new handheld radios show up almost daily. Remember to verify your radio's antenna connector.

**SMA-F**emale (radio)

**SMA-M**ale (antenna)

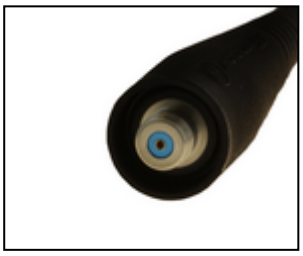
(Alternate HT connector configuration)

**SMA-F**emale (<u>antenna</u>)

**SMA-M**ale (<u>radio</u>)

(Motorola/ICOM/Kenwood/Alinco/Vertex-Yaesu)

**SMA-F**emale (<u>radio</u>)



**SMA-M**ale (<u>antenna</u>)

(Baofeng/Wouxon/Radioditty/AnyTone/TYT/Bridgecom)

**SMA-M**ale (<u>radio</u>)

**SMA-F**emale (<u>antenna</u>)

Some older handheld radios can use a BNC connector.

Now that you have a better idea of handheld radio antenna connectors, what happens if you are deployed during an emergency and need to connect your radio to an external male (PL-259) or female (SO-239) UHF antenna connector? Easy - get an adaptor/cable. But what if you don't know what you might need? For my emergency go-kit I have a number of adaptors and cables.

Stock adapters. While you can't predict everything during an emergency you can - and should be - prepared.

*73, TCHN*

# Are 5-watt handheld radios dependable in emergencies?

**M**any hams include a 5-watt VHF/UHF handheld in their emergency radio cache. They may also include a 10, 25 or 50-watt mobile, or a 100-watt base radio as well. And sometimes, to avoid too many radios, hams buy an HF rig with VHF/UHF capability. With so many options, modes and capabilities it really is a "soup de jour" when it comes to VHF/UHF choice.

**O**f course radios need antennas and again, there is no shortage of types to consider. Handheld radios typically come with a "rubber duck" style antenna. Given all the after market handheld antennas available, and that many hams toss out the rubber duck that came with the radio in favor of an aftermarket, it makes me wonder why one is included at all.

**M**obile antennas can be 1/4, 1/2, or even 5/8 wavelength. Magnetic mounting is the generally accepted mounting method, but I have used glass mounts as well as screw mounts with good success. Permanent mounting is also an option.

**V**HF/UHF base station antennas can either be dedicated VHF/UHF or combined with HF antennas. A recent look at what is available is overwhelming: verticals, yagis, log periodics, j-poles, loops, discones and more. A 2015 Nuts & Volts magazine included an article about using aluminum crutches for 6-meters. Now that is ingenuity!

**S**o a ham buys a super duper antenna. The advertisement states 15dB gain and broadband. (Not quite sure how that works?) Anyway one Saturday morning up it goes on the house, pole, tower, tree or where ever. The ham gets on the local simplex frequency and asks for a signal report. A fellow ham responds that his signal is pinning the S-meter and the audio is good. We are off to the races. A few days later the ham is back on the simplex frequency and asks for another signal report. This time however his signal is not as strong. What gives?

**S**everal years ago SLC ARES® conducted a simplex drill between the EOC and primary shelters. Most stations used high power mobile radios, but several had 5-watt handhelds. One ARES® participant used a handheld with a magnetic mount antenna instead of the handheld's rubber duck antenna. From my location at Tradition Hospital his signal was very strong. Almost as strong as the higher power mobiles.

**A** variety of factors could have been at play. We were approximately 9 miles apart with no appreciable manmade or natural obstacles to speak of. Maybe it was just a good radio day, but I wanted to see if the path was a fluke or could the same results be obtained using propagation modeling.

**P**ropagation modeling requires many factors to be considered including terrain, radio system type, antenna type and height, frequencies, coverage goals and more.

**C**ommercial modeling applications use very robust Irregular Terrain (Longley-Rice) propagation modeling and USGS or Shuttle Terrain Mapping (SRTM) elevation data. Radio Units (stations) can be placed via latitude / longitude. Individual radio unit performance can be modeled using power, sensitivity, antenna parameters, etc. Radio paths between units (base or mobile) can be modeled.

**W**hile commercial modeling applications can be very expensive, there are alternatives such as Splat. It can give good VHF/UHF results.

**T**he modeling application I like is Radio Mobile. The application is written by a Canadian ham, Roger Coudé, VE2DBE. Radio Mobile is a commercial application, but Roger makes it freely available for non-commercial use. There are a number of "How To's" available as well as a forum, but understanding this application takes time. Ian G3TVU (SK) wrote several excellent tutorial books that made the learning process much easier for me. Try Radio Mobile and get ready for some modeling fun.

And the conclusion? Yes, a 5-watt handheld can work in an emergency as long as you understand its limitations.

*73, TCHN*

# Treasure Coast Ham News 2-meter and 70-centimeter Repeater Frequencies, WinLink® RMS and Net Listings

The listings below are compiled from club websites, the Florida Amateur Spectrum Management Association (FASMA), FCC, and other sources. It is believed to be correct as of date of publication; however is not guaranteed. Please consult with your ARES® organization for corrections and additions.

**Treasure Coast Ham News 2m & 70cm Repeater Frequencies, Winlink RMSs & Local Nets**

| Freq (input) | Freq (output) | Offset | Tone/Color Code | Call | Location | Sponsor | County | Use | Modes | Nets |
|---|---|---|---|---|---|---|---|---|---|---|
| 144.5300 | 145.1300 | -0.6 MHz | 107.2 / 107.2 | AB4AZ | Vero Beach South | Treasure Coasters Repeater Assoc. | Indian River | OPEN | FM Fusion WIRES-X | IRC ARES: Tues 7:30p |
| 144.9900 | 144.9900 | | | K4WOF-10 | Sebastian | J E Lineback | Indian River | OPEN | VARAFM / VARA FM Wide | Digipeat |
| 144.9900 | 144.9900 | | | KG4ORQ-10 | Vero Beach | David A Wheatley | Indian River | OPEN | VARAFM / VARA FM Wide | Digipeat |
| 145.3100 | 145.3100 | -0.6 MHz | 107.2 / 107.2 | W4IRC | Vero Beach, Indian River Med. Ctr | Treasure Coasters Repeater Assoc. | Indian River | OPEN | FM Fusion | |
| 145.4000 | 145.4000 | | | WA4TCD | Not listed in Repeaterbook.com | James K. Davis, W2JKD | Indian River | OPEN | DSTAR | IRC D-Star Net: Tues 8:30p |
| 146.0400 | 146.6400 | -0.6 MHz | 107.2 / 107.2 | W4PHJ | Vero Beach, North County | Treasure Coasters Repeater Assoc. | Indian River | OPEN | FM EchoLink Fusion | IRC Emergency Net: Mon 8p |
| 443.4100 | 443.4100 | | | No Call | Vero Beach | From W4OT website | Indian River | | P25 | |
| 443.7000 | 443.7000 | +5 MHz | | W4OT | Vero Beach | VBARC (Craig P Jerome, K4CPJ) | Indian River | OPEN | FM | |
| 444.3250 | 444.3250 | | | KJ4YZI | Vero Beach | VBARC (Craig P Jerome, K4CPJ) | Indian River | | DMR | |
| 444.3500 | 444.3500 | +5 MHz | CC1, BrandMeister | W4JEA | Sebastian | Craig P Jerome, K4CPJ | Indian River | OPEN | DMR EchoLink | |
| 444.3750 | 444.3750 | +5 MHz | 107.2 | WB4HIS | Sebastian | WB4HIS | Indian River | OPEN | FM (SARNET node) | |
| 444.8500 | 444.8500 | +5 MHz | 107.2 / 107.2 | KA4EPS | Vero Beach | AT&T ARA South Florida | Indian River | OPEN | FM AllStar | |
| 447.6000 | 442.6000 | +5 MHz | CC1 NAC 293 | KB1YBB | Vero Beach | Craig P Jerome, K4CPJ | Indian River | OPEN | DMR EchoLink P-25 | |
| 144.5500 | 145.1500 | -0.6 MHz | 107.2 | WX4MC | Stuart, EOC | Martin Co ARES/RACES | Martin | OPEN | FM | MCARA R/T Net: Mon 8p |
| 144.8400 | 145.4400 | -0.6 MHz | Module C | KB4DD | Stuart, EOC | Martin Co ARES/RACES | Martin | OPEN | D-Star | |
| 144.9900 | 144.9900 | | | WX4MC-10 | Stuart | Martin County ARES EOC | Martin | OPEN | VARAFM / VARA FM Wide | Digipeat |
| 146.0250 | 146.6250 | -0.6 MHz | 110.9 / 110.9 | W4JUP | Hobe Sound | Jupiter/Tequesta RG | Martin | OPEN | FM | |
| 147.6600 | 147.0600 | +0.6 MHz | 107.2 / 107.2 | K4ZK | Stuart, Martin Mem. Hosp. North | MCARA | Martin | OPEN | FM | |
| 443.9000 | 443.9000 | +5 MHz | 107.2 / 107.2 | N4PSK | Hobe Sound | N4PSK | Martin | OPEN | FM | |
| 444.1500 | 444.1500 | +5 MHz | 107.2 / 107.2 | KA3COZ | Stuart | KA3COZ | Martin | OPEN | FM (SARNET node) | |
| 444.9000 | 444.9000 | +5 MHz | CC7 | WX4MC | Stuart, Stuart Public Services | Martin Co ARES/RACES | Martin | OPEN | DMR EchoLink | |
| 444.9625 | 444.9625 | +5 MHz | CC5 | KF4LZA | Stuart, Allapatah Flats | KF4LZA | Martin | OPEN | DMR | |
| 444.9750 | 444.9750 | +5 MHz | CC1 | N4IRS | Stuart | N4IRS | Martin | OPEN | DMR DSTAR Fusion | |
| 147.6900 | 147.0900 | +0.6 MHz | 100.0 / 100.0 | K4OKE | Okeechobee | Okeechobee ARC | Okeechobee | OPEN | FM | |
| 147.7950 | 147.1950 | +0.6 MHz | 100 | K4OKE | Okeechobee | Okeechobee ARC | Okeechobee | OPEN | FM | OARC Net: Mon 8p |
| 444.0500 | 444.0500 | +5 MHz | 100.0 / 100.0 | K4OKE | Okeechobee | Okeechobee ARC | Okeechobee | OPEN | FM | |
| 144.6700 | 145.2700 | -0.6 MHz | 151.4 / 151.4 | W3IFI | Port St Lucie | W3IFI | Saint Lucie | OPEN | FM | |
| 144.8400 | 145.4400 | -0.6 MHz | | KB4DD | Ft Pierce | Treasure Coaster Digital Group | Saint Lucie | OPEN | DSTAR | |
| 144.9900 | 144.9900 | | | W4SLC-10 | Ft Pierce | St. Lucie County ARES EOC | Saint Lucie | OPEN | VARAFM / VARA FM Wide | Digipeat |
| 145.5300 | 145.5300 | | | W4SLC-10 | EOC (Midway Rd) | SLC ARES | Saint Lucie | OPEN | W4SLC-RMS | SLC ARES |
| 145.5300 | 145.5300 | | | W4AKH-2 | Ft Pierce (Rock Rd) | Ft Pierce | Saint Lucie | OPEN | W4AKH-4 RMS | FPARC |
| 146.3550 | 146.9550 | -0.6 MHz | 107.2 / 107.2 | K4PSL | Port St Lucie, WAVW tower | PSLARA | Saint Lucie | OPEN | FM Echolink Fusion | PSLARA R/T Net: Thurs 7:30p |
| 146.7750 | 146.7750 | -0.6 MHz | 107.2 / 107.2 | AF4CN | Ft Pierce | St Lucie Repeater Assoc | Saint Lucie | OPEN | FM | Treasure Coast R/T: Sun 8p |
| 147.0150 | 147.6150 | +0.6 MHz | 107.2 | W4SLC | Port St Lucie, SLC * | St Lucie Co. Public Safety ARES | Saint Lucie | OPEN | FM | |
| 147.3450 | 147.3450 | +0.6 MHz | 107.2 / 107.2 | W4AKH | Ft Pierce, WQCS-FM Tower | FPARC | Saint Lucie | OPEN | FM Echolink Fusion Wires-X | FPARC Net: Tues 8p |
| 147.8400 | 147.2400 | +0.6 MHz | 107.2 / 107.2 | W4SLC | Ft Pierce, EOC | St Lucie Co. Public Safety ARES | Saint Lucie | OPEN | FM | |
| 443.6500 | 443.6500 | +5 MHz | 107.2 | K4PSL | Port St Lucie | PSLARA | Saint Lucie | OPEN | FM | |
| 444.0000 | 444.0000 | +5 MHz | CC1, Time slot 1 | K4SRN | Port St Lucie | Kurt E. Ellmers, K4SRN | Saint Lucie | OPEN | FM DMR | |
| 444.0750 | 444.0750 | | | | Ft Pierce | | Saint Lucie | OPEN | Packet | |
| 444.3500 | 444.3500 | +5 MHz | 141.3 | KJ4YZI | Port St Lucie, Savanna Club | Craig P Jerome, K4CPJ | Saint Lucie | OPEN | FM | |
| 444.5000 | 444.5000 | +5 MHz | | W4AKH | Ft Pierce | FPARC | Saint Lucie | OPEN | DSTAR | D-Star Net: Tues 8:30p |
| 444.6000 | 444.6000 | +5 MHz | 107.2 | W4SLC | Ft Pierce - Rock Rd * | St Lucie Co. Public Safety ARES | Saint Lucie | OPEN | FM | |
| 444.8000 | 444.8000 | +5 MHz | CC1 | W4AKH | Ft Pierce | FPARC | Saint Lucie | OPEN | DMR Echolink IRLP | |
| 444.9875 | 444.9875 | +5 MHz | CC14 | KF4LZA | Ft Pierce | KF4LZA | Saint Lucie | OPEN | DMR | |
| 445.7500 | 440.7500 | +5 MHz | CC0 | No Call | Port St Lucie | | Saint Lucie | OPEN | DMR | |
| 447.0000 | 442.0000 | +5 MHz | 107.2 | W4SLC | SLC - Rangeline Rd * | St Lucie Co. Public Safety ARES | Saint Lucie | OPEN | FM | |
| 447.5750 | 442.5750 | +5 MHz | 110.9 / 110.9 | W4RCC | Port St Lucie, St Lucie Med. Ctr | R. Conrad Clark, W4RCC | Saint Lucie | OPEN | FM | |
| 448.4750 | 443.4750 | +5 MHz | 107.2 | W4SLC | Port St Lucie, Pt St. Lucie HS * | St Lucie Co. Public Safety ARES | Saint Lucie | OPEN | FM | |
| 144.2000 | 144.2000 | | | | Nationwide ** | US Dept of Homeland Security | USA | OPEN | SSB | SSB Calling Frequency |
| 146.5200 | 146.5200 | | | | Nationwide ** | US Dept of Homeland Security | USA | OPEN | FM Simplex | FM Simplex Calling Frequency |
| 222.1000 | 222.1000 | | | | Nationwide ** | US Dept of Homeland Security | USA | OPEN | CW/SSB | CW/SSB Calling Frequency |
| 432.1000 | 432.1000 | | | | Nationwide ** | US Dept of Homeland Security | USA | OPEN | CW/SSB | CW/SSB Calling Frequency |
| 446.0000 | 446.0000 | | | | Nationwide ** | US Dept of Homeland Security | USA | OPEN | FM Simplex | FM Simplex Calling Frequency |

**NOTES:**

Repeater & Net information compiled from club pages, Repeaterbook.com, FASMA, & other sources. Believed to be correct, but is not guaranteed. To report an error, please email TCHN@gmail.com.

* These SLC ARES repeaters employ basic linking.

FASMA is the Florida Amateur Spectrum Management Association, Inc. Formerly the Florida Repeater Council.

Repeater call signs are hyperlinked to Repeaterbook.com where applicable.

**These frequencies are not Public Safety. A valid Amateur Radio Operator License of the appropriate class is required in order to transmit on these frequencies.

FM amateur calling frequencies use carrier squelch. A mixture of digital modes or mixed modes could be found locally (P25, NDXN, DMR, etc.)

Revised: 04/29/2025

# USING GENERAL MOBILE RADIO SERVICE (GMRS) FOR EMERGENCY COMMUNICATIONS

At a recent ARES® meeting GMRS was a topic of discussion. As I listened, questions kept popping into my head. What is GMRS? Should ARES® use it as part of their emergency communication arsenal? Can our ham (Part 97) or those Part 90 Chinese radios owned by so many hams be used legally for GMRS?

According to the FCC, the General Mobile Radio Service (GMRS) is a licensed radio service that uses UHF 462 MHz and 467 MHz channels. The most common use of GMRS channels is for short-distance, two-way voice communications using hand-held radios, mobile radios and repeater systems. GMRS is designed for facilitating activities of individual licensees and their family members. There is a voluntary provision to render assistance to the public during emergencies and natural disasters.

A GMRS licensee can use a combination of portable, mobile, fixed, and repeater stations consistent with the operational and technical rules in Subpart E of Part 95. The use of some channels is restricted to certain types of stations. In addition, certain channels are reserved for voice-only operations, while other channels allow voice and limited data operations. Family Radio Service (FRS) shares many of the GMRS UHF channels.

A GMRS user can expect a communications range of one to twenty-five miles depending on station class, terrain, and if a repeater is used. GMRS stations cannot be interconnected using public switched telephone networks for the purpose of carrying out GMRS communications. Networks can be used for remote control of repeater stations. In other words, repeaters may not be linked via the Internet. Examples of prohibited uses would be to link GMRS stations to extend the range of the communications across a larger geographic area, something we do in ham radio. Linking multiple repeaters to enable a repeater outside the communications range of the handheld or mobile device to retransmit messages also violates sections 95.1733(a)(8) & 95.1749 of the Commission's rules and potentially other rules in 47 C.F.R. Again, repeaters may only be connected to the telephone network or other networks for purposes of remote control of a GMRS station, not for carrying communication signals.

***NOTE:*** *Be advised that as per 47 CFR § 95.1761, no GMRS transmitter will be certified for use in the GMRS radio service if it is equipped with capabilities to operate in services that do not require equipment certification, such as the* ***Amateur Radio Service*** *where Part 97 does not require type acceptance.*

*Additionally, all frequency determining circuitry (including crystals) and "programming controls" for GMRS radios must be internal to the radio and not be accessible from a radio's exterior panel or enclosure. (That includes hand-held, mobile, and base station front-facing or external keypads capable of radio programming. Microphones with a keypad cable for programming are not allowed.)*

Now that we understand the ins and outs GMRS, can a ham radio operator use GMRS frequencies under his or her FCC amateur radio license?

First of all, a ham radio license does not grant you privileges to use the GMRS licensed only UHF channels. Of course anyone can use the "license-by-rule" FRS channels even if they are also GMRS providing they abide by the FCC rules. (Remember 0.5 watt transmitter and no use of a radio with a keypad capable of programming.)

Secondly, your ham radio, unless it's FCC Part 95E accepted, is not allowed to transmit on GMRS only channels. If you intend to use the GMRS only UHF channels, in all likelihood your Chinese radio is not legal to use. So put away your Baofeng, etc. and get a legal Part 95E radio. Remember, the FCC may be listening!