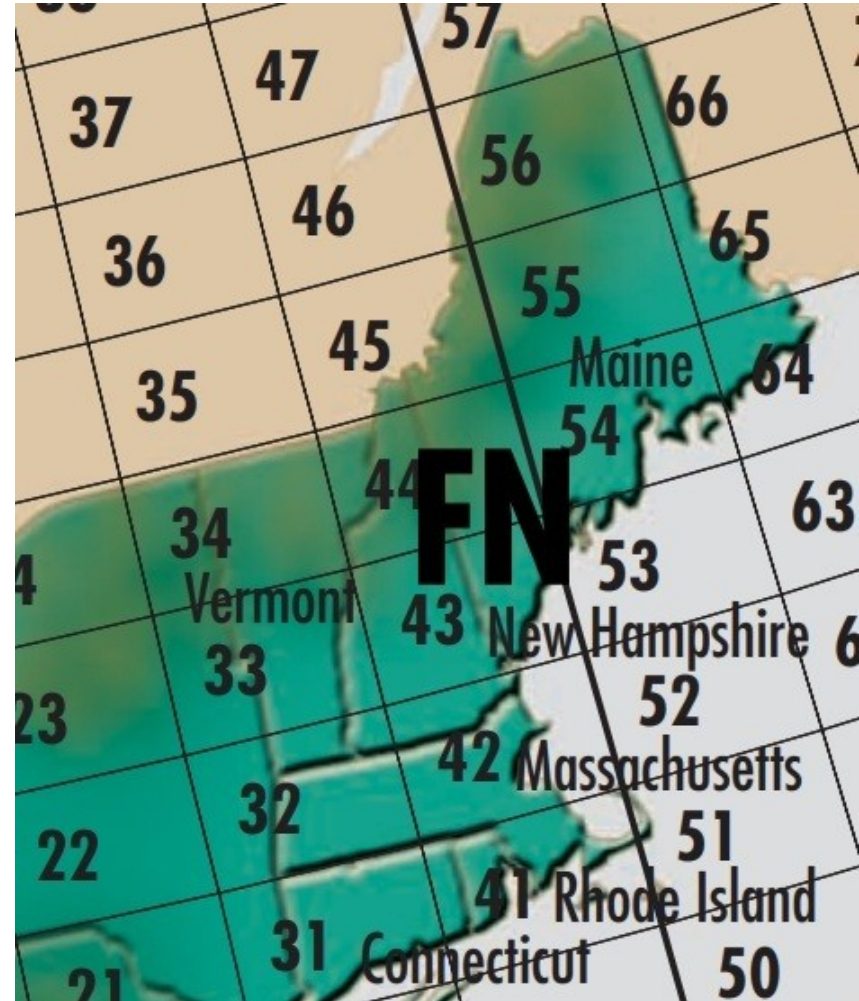


A Primer On VHF Contesting

We will be discussing what you need to know to get started and enjoy your first VHF contest.

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I) Introduction

Reasons For Participating in a VHF contest:

- 1) **It's fun** - you can make a lot more contacts on the VHF bands than are usually possible, you meet some interesting people who also have an interest in VHF work and during lull periods in the contest you can catch up with people you don't normally interact with and enjoy the camaraderie.
- 2) **Station Improvements** - over time as you apply lessons learned in each contest it leads to station improvements which enhance your non-contesting VHF capabilities and increases your overall enjoyment of the amateur radio hobby.
- 3) **Combine Interests** - if you have other amateur radio interests that include the VHF+ bands you can combine them with VHF contesting; e.g. POTA (Parks on the Air) and SOTA (Summits on the Air).

There are four major VHF contests each year:

ARRL January VHF Contest - 3rd or 4th full weekend in January as announced, 1900 UTC Saturday through 0359 UTC Monday

ARRL June VHF Contest - 2nd full weekend in June, 1800 UTC Saturday through 0259 UTC Monday.

ARRL September VHF Contest - 2nd full weekend in September, 1800 UTC Saturday through 0259 UTC Monday.

The ARRL VHF Contests use any amateur band 50 MHz and above through Daylight, any mode, and many entry categories.

CQ World Wide VHF Contest - 1st full weekend in July for CW/SSB/FM and 3rd full weekend in July for Digital modes. These are two separate contests. The CQ WW VHF Contest only uses 6 meters (50.0 - 54.0 MHz) and 2 meters (144.0 - 148.0 MHz), and entry categories based on Single Operator, Hilltopper, Rover, or Multi-Op.

Sprint Contests – Fall and Spring

There are also the Fall and Spring Sprint Contests which last for 4 hours and each contest is single band only for 50 MHz, 144 MHz, 222 MHz, 432 MHz, and 902 MHz and up.

The Spring Sprints are sponsored by the The Central States VHF Society
The Fall Sprints are sponsored by the Mt. Airy VHF Radio Club.

During the sprints both analog and digital modes may be used. The Sprint Contests generally attract sophisticated high power stations. FM QSOs are rare and generally only happen through scheduling.

Sprint scores are posted on the 3830 Scores web site: <https://3830scores.com/contests.php>

This presentation will focus on the 4 major VHF contests.

VHF Contests only allow Simplex contacts when using FM mode. The use of repeaters, satellites, and air mobile is prohibited.

II) Preparation - Getting Ready For The Contest

Know your 4 character Maidenhead grid square, e.g. FN42

https://www.levinecentral.com/ham/grid_square.php

<https://hamdeck.com/tools/gridsquare-lookup/>

Preparation is key. Murphy's Law is the one constant in VHF Contesting. Propagation conditions at any one QTH can vary a great deal during a VHF contest and from one VHF contest to another. If things can go wrong with your station or operational procedures during the contest, rest assured that they will. It is far better to identify and fix weaknesses prior to the contest when there is no pressure to perform. Allow at least a couple of weeks to prepare for one of the 4 major contests.

1) Read The Rules!

Download a copy of the current rules for the contest you are interested in by going to the sponsor's web site. Read the rules several times through, making sure that you understand what they mean. If you are not sure of something or have a question then email the contest sponsor and ask for clarification.

2) The Contest Exchange

The contest exchange is identical for all four major VHF contests. Call signs and 4 character grid squares for both operators must be exchanged.

What follows is a sample voice exchange:

A: CQ Contest Whiskey 1 November India Victor

B: Kilo Charlie 1 Whiskey Victor Quebec

A: KC1WVQ from W1NIV copy Foxtrot November 42 QSL?

B: W1NIV copy Foxtrot November 42 here also

A: Copy your FN42. Thanks for the contact and good luck in the contest. 73

A: W1NIV QRZ?

There can be variations on the format of the exchange depending on signal strength and operating styles. Both call signs and both 4 character grid squares must be successfully exchanged, otherwise the contact is not valid and contest sponsor log checking will toss the contact for both operators.

3) Where Do You Fit In?

After reading the rules decide what contest category you will probably end up in based on your station capabilities and then plan accordingly.

4) What Are Your Goals For The Upcoming Contest?

You could simply aspire to be a casual contester who hands out a few contacts during limited operating time. Or you could decide to make more of an impact and operate for a few hours of the contest. Lastly, you could decide to go all out and make as high a score as you can. For a first contest either the casual or moderate approach is probably best.

5) Don't Forget Murphy's Law!

Check out thoroughly the equipment you will be using for the contest - radios, cabling, antennas. This means giving it a good workout, preferably with some lengthy rag chewing. You want to experience equipment problems before the contest and fix them.

6) Schedules

If you want to make more than a casual VHF contest effort then it is a good idea to set up schedules in advance of the contest via email with operators you are confident you can complete a contact with even in modest propagation conditions. The schedules don't have to be to the minute. Just let the other operators know what times you intend to be on the radio and what frequencies you will be monitoring and calling CQ on. Get an idea of when they intend to operate. Generally you will end up with a schedule that is ballpark.

7) UTC Date / Time

Make sure you have a clock set to UTC time rather than local time. All contest contacts are logged with UTC date and time. If the clock battery is not reasonably new, replace it with a new battery. A few hours before the start of the contest go to an internet UTC date/time web site and set your UTC clock exactly to what the web site has as the minute updates.

The ARRL contests allow a 10 minute leeway between UTC date/time in two different logs for the same contact. If your date/time is spot on then you will have done the best you can.

8) Logging

If you are going to be using logging software during the contest then practice with the software until you feel comfortable with it. If logging by hand then have some score sheets handy along with some sharpened pencils and erasers.

9) Scoring

Scoring varies by contest, check the rules for the specific contest you will be doing. Generally the higher you go in frequency for the various bands the more points are awarded, e.g. 1 point for each complete 50- or 144-MHz QSO, 2 points for each 222- or 432-MHz QSO, etc.

Multipliers are the unique Maidenhead grid squares you contact, counted once per band. For example, W1NIV makes 3 QSOs on 6 meters, 4 QSOs on 2 meters, and 2 QSOs on 70 Cm, all of which are in grid square FN42. W1NIV's score is 11 QSO points times 3 (FN42 on 3 bands) = 33 contest points.

If one of the 2 meter QSOs had been with FN43, then W1NIV's score would be 11 times 4 (FN42 on 3 bands + FN43 on 1 band) = 44 contest points.

III) Location

You can work a VHF contest from most any land location. For a lot of people the easiest and most convenient location is their home QTH using commercial power. Working from home significantly cuts down on contest preparation time.

Some VHF contest operators combine their contest effort with a POTA (Parks On The Air) or SOTA (Summits On The Air) effort.

VHF contest operators known as Rovers operate from multiple grids during a VHF contest by driving to different grids and doing a temporary setup at each grid. This is a lot of work. There are different categories of Rovers depending on how many people are involved.

Portable contest category - for ARRL contests output power is limited to 10 W PEP. Stations must use a portable power source, equipment, and antennas. The CQ WW VHF Contest has a somewhat similar entry category known as Hilltopper - any power source acceptable, output power 100 W max, limited in time to 6 continuous hours. Both of these categories are geared towards taking advantage of height ASL for making VHF contacts.

IV) Propagation

The default for VHF propagation is Line of Sight plus 15% over flat terrain with no large obstacles. However, sometimes you can experience enhanced VHF propagation which will greatly extend your geographic reach. It is good to be able to recognize when some form of enhanced propagation is occurring so that your station can take advantage of it.

Enhanced VHF propagation occurs primarily on 6 meters and 2 meters, though occasionally on 1.25 meters and above. For this discussion we will look at 6 meters and 2 meters.

1) 6 Meters - Enhanced propagation on the 50-54 MHz band usually involves Sporadic Es whereby areas of the E Layer of the atmosphere known as "Clouds" are ionized by the Sun and tend to move in a North West direction at approximately 180 mph until they break up. A Sporadic E opening can last for just a few minutes up to several hours.

Sporadic Es propagation can extend up to 1200 miles for a single hop. A Sporadic E opening can also act as a springboard to Trans Equatorial propagation which will significantly extend the range of the opening to well above 1200 miles.

Sporadic Es openings vary in intensity. Some will be extremely strong with the distant contacts sounding like they are right next door; others will be weak and you will have to work for your QSOs. Sporadic Es openings are independent of the sunspot cycle.

Sometimes, at or near the height of the sunspot cycle, F2 propagation can be experienced on 6 meters where a single hop can cover 2500 miles.

The narrower the bandwidth of the your signal, the better able you will be to take advantage of enhanced propagation. SSB will work much better than FM and CW will work noticeably better than SSB in making contacts with the same distant station.

2) 2 Meters - Enhanced propagation on the 144-148 MHz band usually involves Tropospheric Ducting resulting from a temperature inversion when a warm, dry air mass overrides a cooler, denser layer of air near the ground.

This creates a waveguide effect where radio signals are trapped and refracted over the horizon rather than continuing in a direct path towards outer space. Tropospheric ducting can extend up to about 800 miles, though is generally shorter, and is most common along coastal areas.

V) Execution - Operating During The Contest

1) Making the contest exchange - let's review:

A: CQ Contest Whiskey 1 November India Victor

B: Kilo Charlie 1 Whiskey Victor Quebec

A: KC1WVQ from W1NIV copy Foxtrot November 42 QSL?

B: W1NIV copy Foxtrot November 42 here also

A: Copy your FN42. Thanks for the contact and good luck in the contest. 73

A: W1NIV QRZ?

It is important to get confirmation from the other operator that they have both your call sign and grid square correct, especially under marginal propagation conditions. You can do this by saying QSL in a questioning tone of voice or sending QSL? on CW or saying "How Copy?" on voice. Operators who are running pileups may not confirm and simply move on right away by saying their call sign QRZ which means "who's calling me", looking for their next contact. If that is the case, then you can assume that they copied your information correctly. However, if they are quickly running stations they may have made the contact with someone besides you whom you never heard.

If you feel you need a repeat on their information then ask for it right away, even if it means responding to their QRZ after they have finished with you. If that doesn't work then put a ? next to the log entry if you are logging by hand or make a note if you are logging by computer. Later in the contest you may be able to work that operator again at a less hectic time and confirm the QSO with them. If the operator's signal is strong and they are enunciating clearly then explicit confirmation is less important.

2) Other Bands – Maximizing Points With the Operators You Work

As your contact with a contest operator finishes you may be asked "Any other bands?" Now is the time to speak up and tell the other station what your capabilities are. Or, don't be shy, and as a contact finishes then you ask the other operator "Any other bands?"

3) Monitor Calling Frequencies

If possible, monitor the calling frequency on all the bands that you are working during periods of low activity. If you are moving another operator to a different band for another QSO, settle on a frequency on the new band that you think is probably open or know it is if you are monitoring the frequency on a different radio.

4) Use Your Common Sense

If you are a low power station then you are probably better off with a search and pounce strategy unless the bands are quiet. This means staying off the calling frequencies while high power stations are holding or trying to hold them.

As a low power station, trying to break a pileup is usually a losing proposition and a time waster. Make a note on a piece of paper of the station, grid square, and frequency. Check back in 5-10 minutes and you may find the station still there but with no pileup to compete with. If you don't hear anything after listening for a bit, then call the station, e.g. "W1VIV from W1NIV". If that doesn't produce results then call CQ Contest yourself on that frequency.

On SSB, most search and pounce stations start low in the band segment and then move up gradually looking for contacts. This is generally fine. However, if there is a lot of activity it can be rewarding to start in the upper portion of the band segment and gradually move down looking for contacts. This is a particularly good idea on 6 meters with a strong sporadic E opening in progress. In fact, if you find an open spot away from the action high in the band segment you should try calling CQ yourself. You may find yourself on the receiving end of a pileup from stations 1200 miles away.

5) Be Courteous - this means using good operating practices.

When first landing on a frequency listen for a bit before calling CQ unless you have been monitoring the frequency on a different radio for a while. This is one of the benefits of having multiple radios to monitor different bands.

Keep in mind that you may not be able to hear one end of a contact at all while hearing only the operator nearest you - all the more reason to listen for a little while to be sure there isn't already a contact in progress on the frequency.

When moving operators from one band to another suggest frequencies a little off the beaten path. For example, if moving someone to 2 meters FM then suggest 146.550 rather than the calling frequency 146.520. Or, if moving someone to 2 meters SSB then suggest 144.220 instead of the calling frequency 144.200.

6) Be Patient

If the propagation for a contact is marginal or the operator is unsure of what they are doing then keep trying and keep a pleasant tone of voice. In the heat of battle, especially if things don't seem to be going your way, it is easy to become frustrated and let that show through in your voice.

Be aware that the logging time for the end of a contest contact is the time when the exchange of both call signs and grid squares is complete, not the start of the exchange.

If someone tells you they are new to contesting then help them and explain what is going on and how to determine their grid square.

If you start participating in VHF contests on a regular basis you will find that you bump into a lot of the same people time and time again. You want to have a good reputation within the VHF contest community. If you do then you will find that people are willing to make an extra effort to work you even during marginal propagation conditions and to mention you to other operators they are making contacts with. However, if your operating practices are somewhat questionable then some people will simply ignore you.

VI) Post Contest - Submitting A Log

No matter how modest your contest effort and how small your number of contest QSOs is, you should submit a log. There are two main reasons for this:

- 1) It helps the contest sponsor with the log checking process via cross checking of submitted logs. During log checking, call signs, UTC date/time, and grid squares are compared to make sure that they line up. It also helps the people you worked during the contest as it confirms their QSO(s) with you. And it cuts down on the number of "Uniques" - call signs which only appear in one log.
- 2) It demonstrates use of the amateur radio bands. High log submission numbers show contest sponsors and others that VHF/UHF amateur bands are actively used.

If you operate as a very limited casual tester and won't be submitting a log, please try and make at least 2 contacts per band that you use, hopefully both of your contacts will be submitting logs. This will help to prevent you from showing up as a "Unique" in someone else's submitted log. Too many unique call signs in a submitted log leads to scoring penalties.

ARRL VHF Contests allow 10 days after the contest for log submission and the CQ WW VHF Contest allows 6 days.

Logs are submitted in the Cabrillo format, which is a type of formatted text file. Contest logging programs are available for logging VHF contests both during the contest and in post contest mode if you logged by paper during the contest. Examples are N3FJP VHF Contest Log - \$8.99 registration with free lifetime updates and N1MM Logger Plus - free.

Both the ARRL and the CQ WW VHF web sites give examples of VHF contest Cabrillo files.

<https://www.b4h.net/cabforms/> - This web site has WA7BNM Cabrillo Web Forms for various contests, including VHF contests. You type in your paper log and a Cabrillo log submission file is generated for you.

Both ARRL and CQ WW VHF have Cabrillo log submission web pages on their internet web sites. The current rules for these contests will have the URL for contest log submission.

How Did It Go?

For ARRL VHF contests it takes about 2 weeks after the end of the contest for raw scores to be posted. Raw scores are simply the Claimed Score that each contestant's Cabrillo file shows. For the next several months log checking takes place and final results with final scores are posted anywhere from 3-6 months after the end of the contest. Along with the final scores being posted each contestant is able to obtain a Log Checking Report (LCR). The LCR shows the contestant the result of the log checking process on his Cabrillo submission file. If points were deducted the LCR shows why. It is important to download your LCR and review it so that for the next contest you can make adjustments if desirable.

For the CQ WW VHF Contest raw scores are not posted and it takes about 6 months after the end of the contest for final results with final scores to be posted. Log Checking Reports are not generated for the CQ WW VHF Contest though they are for the CQ WW DX Contest on HF.

The End