Getting started in…
HF Contesting

Your first steps in competitive amateur radio

INTRODUCTION. What is it about contests? They are a bit like Marmite: you either love them or hate them. Rarely is there anything that generates so much heated discussion in amateur radio circles as contests. And yet, contests are an increasingly popular aspect of amateur radio – as the entry numbers in the major contests show – and in this article I will try to explain why this might be, and how *you* can join the increasing numbers who are fascinated by this competitive aspect of amateur radio.

THE CASE FOR CONTESTING. There is an in-born human trait to compete. We see it in sport, we see it in business and we see it in day-to-day life. Competing can have a destructive aspect, or it can build strong bonds and camaraderie amongst competitors and lead to heightened performance. Contesting does the latter. Contesting allows you to test your station – and you. It tests the technical capability of your station, its reliability, and it tests your understanding of propagation and of efficient and speedy operating.

Over the years, contesting has been responsible for developing the operating skills of many thousands of the top DXers and has also been the catalyst for many of the technical developments that we now take for granted in modern amateur equipment. In short, it advances amateur radio and those who pursue it.

Contests require each competitor to maximise his score, through working stations and (generally) looking for 'multipliers' – these are new countries or zones or some more local attribute like Russian Oblast numbers. The contest exchange between stations (as defined in the rules) is generally a signal report and some additional information like zone, IOTA reference or Oblast number. The total score is then (generally) the result of multiplying QSO points by total multipliers. QSO points can also depend on the continent of the station being worked, encouraging DX contacts. So the successful contest operator will work out what will make for the highest score, and plan his strategy accordingly, taking account also of likely propagation etc.

Some look on contesting as an endurance test, but this is not necessarily
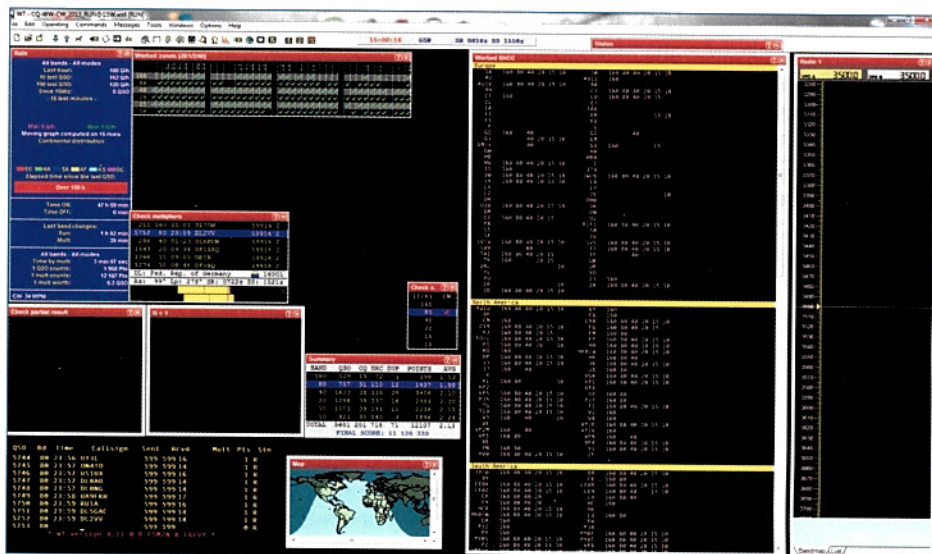
FIGURE 1: A typical fully-featured contest logging program screen.

the case. Most contests have a number of entry categories. Depending on the contest, these might include a range of maximum hours of operation, multi- or single-band entry, antenna type (single wire or multi-element) and power (QRP, low-power or full power). So it is generally possible to choose a category of entry that suits *your* particular circumstances. It pays to read the rules of each contest carefully, as there are many differences between contests.

When considering entering a contest, you will want to consider the competition. In UK-based contests that is self-evident, it is the other UK stations in your chosen category of entry, but in the large global contests, who do you measure yourself against? Certainly not the stations that are optimally located (perhaps in North Africa or the Canary Islands) to take advantage of being in a different continent from most of the activity. It is near-impossible to compete on a level playing field with these super-stations in hand-picked locations, but you should expect to measure yourself against other UK stations, perhaps checking progress from year to year against this peer group.

So the first rule of contesting is to *be realistic*. Choose your category of entry and your competitive peer group to reflect the capabilities of your station and the degree of time you can give to contesting. Never forget, however, that the most important person you are competing

against is yourself – can you do better this year, are you learning from last year's efforts and so on?

A CONTEST STATION – THE ESSENTIALS. In many ways, a basic contest station is similar to any other amateur station with just a few differences. Looking at the key elements:

- A transceiver. You will ideally need twin VFOs and perhaps twin receivers. The filters in your transceiver should be good enough to provide good copy in a crowded contest band. Similarly the IP3 (third order dynamic range) should be good enough to operate in a band of very strong signals without introducing additional noise or distortion. Furthermore, your transceiver should have CAT – the reading of the transceiver frequency/mode etc by the logging computer. Most modern transceivers offer this facility.
- Software for logging – there are many options but perhaps the more popular ones are:
  - *N1MM+* – freeware
  - Ei5DI's *SD* – freeware
  - *Win-Test* – a paid-for application

A typical screenshot from one of the fully-featured contest loggers is shown in **Figure 1**. Contest logging programs provide a comprehensive 'management information' service to the contest

operator, as well has handling the routine of logging QSOs. *N1MM+* and *Win-Test* are capable of supporting the more complex requirements of networked computers in a multi-station contesting environment, but for the beginner in contests, where single operator, unassisted (ie no packet cluster support) operation is planned, *SD* is more than adequate.

- A voice keyer for SSB contests or a CW keyer for CW contests. Generally these are integrated into the more comprehensive contest logging programs, using the sound card of your computer for voice keying through a suitable interface.
- An appropriate antenna for the band(s) you will be using in the contest. Remember that a good strategy when starting out in contests would be to choose a single band entry using your 'best' band in terms of antenna(s). Single band entries can also help in often not requiring 24 hour operation in the major contests, as some bands will be closed for part of the daily cycle.
- Internet connectivity, if you want to enter into an 'assisted' category – one where you can use Packet Cluster or the Reverse Beacon Network to help you find multipliers.
- If you are entering contests more seriously, and on a multiband basis, you may also want to consider:
  - Automatic antenna selection, based on the chosen band. Most contest logging software provides for this through a simple hardware interface. Some of the commercially available station controllers integrate voice keying, CW keying and antenna selection in one box.
  - If you are using a SteppIR or similar dynamic beam antenna, the control of antenna tuning directly from your transceiver.

The whole objective of automating as many functions as possible is to make QSYing from band to band in a contest as quick and foolproof as possible.

Unless you are considering multi-station contesting (for example multi-single or multi-two – see below) you will not need to bother about bandpass filters, but these add some additional complexity to the more elaborate contesting stations.

TAKING THE FIRST STEPS.

So let's assume you have decided to take your first steps in contesting. Here's how you might proceed, having assembled the necessary equipment.

- Start by 'dabbling'. Don't worry about a serious entry – just get on the air and get used to the style of operating. Dabbling allows you to check out your

PHOTO 1: A contest-winning QRP transceiver!

station, get used the contest logging software and generally get used to the way things happen. Remember that in CW contests in particular you can do well with a very modest station. You will find that the cacophony of QRM that may seem the norm for busy CW contests eases as you move up the CW segment of the band – so it may be sensible to start listening quite high in the CW segment of the band. The same applies to a lesser extent on SSB. But in both cases, remember to check the rules, as some contests set out band limits for contest QSOs. Remember though, that you should still submit a log – even if just dabbling. It helps with cross-checking, and if you wish you can submit it as a check-log, meaning that you will not be listed in the entrants, but your log will be publicly acknowledged.

- Once you have gained a little confidence, choose your contest for a first serious try. Here you will take into account the station you have available, your own commitment and time availability. Read the contest rules carefully and plan your approach. Look at the last results and try to work out what makes for a good score – in particular the target QSO and multiplier numbers of the leading stations.
- For CW contests, it pays to practice your CW so that you are comfortable with reading calls and exchanges correctly first time. A useful free tool for practising is *Pile-up Runner* by Alex Shovkoplyas, VE3NEA. This is an outstanding piece of software that realistically simulates a contest with noise/fading etc. It is well worth spending some hours practicing with it. Remember that in nearly all

contests, you are penalised for errors you make in copying callsigns and exchanges. So it pays to hone your skills in properly copying and logging incoming exchanges.

- In long contests, research the likely propagation and tentatively plan your rest breaks at times when the QSO points to be found are likely to be lowest.
- Make sure the layout of your station makes for minimum physical effort on the part of the operator. Not so important for short contests, but vital in long ones, where fatigue can set in.
- Set up your logging software for the contest involved, including the necessary CW messages accessed by the function keys. Make sure you can enter calls quickly enough onto the keyboard – practice your typing skills!
- Check that any new features you have added to your station are working correctly – for example the CAT link between your logging program and your transceiver, your voice or CW keyer, any automatic antenna switching you have installed and, if you plan to use it, your link with the Packet Cluster, checking that it populates the band map in your logging program. If using Cluster, set your band map appropriately – do you want it to display multipliers only, or all unworked stations?
- Remember also that most logging programs include the facility to make an audio recording of the contest. Consider setting up this facility as it can help in your training and also is a useful check on QSO content.
- Work out your strategy – will you try to hold a transmit frequency, working stations as they call you (called 'running') or will you tune the bands

looking for stations and those all-important multipliers (called 'search and pounce', or S&P)? Your choice here will most likely depend on the relative strength of your signal. It is much easier to 'run' with a strong signal, whereas S&P can work well (when coupled with good skill in timing your calls) when you have a more modest signal.

- Think about your operating technique in advance. Whilst we all want to be polite during contests, think about how to keep unnecessary words (or letters on CW) to an absolute minimum. See **Table 1**.
- If you are unclear about any aspect of preparing for a contest, don't be afraid to ask. There is a great community of contesters in the UK who will be more than willing to help. Join the Yahoo reflector, which is a source of advice and guidance for all contesters.
- But remember, you can enter contests with the simplest of equipment – **Photo 1** shows equipment that G3BJ has used in the past to win a QRP contest!

So enter the contest and have fun! Don't be disheartened when there are periods when you can't find a station to work – this happens from time to time. Keep your motivation up and vary the mix between running and S&P. Also remember that in a multi-band contest, a low QSO rate may indicate that you are on the wrong band for the time of day or your beam (if you have one) is set for the wrong direction. Keep an ear on the other bands for high activity.

After the contest, your contest logging program will generate a file for you in the 'Cabrillo' format – the format required for all contest entries. This can be opened with any basic text editor, so before submitting your log to the adjudicator, check it for silly typing errors – perhaps the most common is the interchange of O for 0. This will lose you points! A good way to check the log is to take the Cabrillo file, put it into *Excel*, then sort the QSOs by callsign. This often highlights where the typing errors are. Then remember to get the checked log to the adjudicator by the due date – read the rules!

Immediately after the contest do one other thing – write down what went well and what went badly. This is an invaluable check list for next time, and forms the agenda for future work to improve your station (and yourself as an operator). Remember to refer back to that list before the next contest.

FURTHER DEVELOPMENTS. Most
people are happy working contests with a relatively 'normal' station – one transceiver, perhaps an amplifier, and

---

TABLE 1: Optimised contest exchanges. Remember every additional word wastes time – keep it short!

Station	In CW	By voice
Me	G3BJ G3BJ TEST	G3BJ Golf Three Bravo Juliet, Contest
Him	G4ABC	Golf Four Alpha Bravo Charlie
Me	G4ABC 5nn 143	G4ABC 59 143
Him	5nn 178	Thanks 59 178
Me	TU G3BJ TEST	Thanks – G3BJ, Contest

---

antennas for the bands in question. It can be a life's work to optimise you and your station's performance. But an increasing number of people are dipping their toes into the water of more elaborate contesting:

Single Operator Two Radio (SO2R). This is a technique where the station can operate on any two bands simultaneously, and where the operator is able to 'run' on one band and 'S&P' on a second, interleaving the QSOs in real time. It requires two separate stations (including antennas), with the transceivers side-by-side, a logging program that supports SO2R, and a special SO2R controller to control the routing of audio, PTT, CW/voice and transceiver selection. It also requires proper bandpass filtering of the outputs of each station to avoid inter-station interference. Whilst it is a technical challenge to build the SO2R station, it is much more of a challenge to the operator to handle the dual inputs from the two bands and process all that data in the brain. It takes time to develop SO2R skills but the rate of score advancement during a contest can be significantly improved with SO2R facilities.

Team Contesting. If you are able to establish a station with two separate transceivers and sets of antennas, you may alternatively want to consider team contesting. Most contests have entry categories for forms of multi-operator operation – typically multi-single and multi-two.

In *multi-single*, only one transmission is allowed at any one time unless the station being worked is a new multiplier. This means that the station is configured with one transceiver as the 'run' station and the second as the multiplier hunting – 'mult' – station. Both operating positions are manned throughout the contest and there is no limit on the total number of operators. This can lighten the load of a long contest, by allowing operators to work in shifts, taking rest periods in between.

In *multi-two*, both stations can 'run' but the secret here is to get the balance right between acquiring multipliers and maximising QSO numbers.

In both multi-single and multi-two there are limits to the number of band changes that can be made (typically in each hour) – read the rules carefully. Most logging programs will keep a check on this parameter to make sure you don't transgress.

Don't think that team contesting is just for the mega-stations – a competent multi single capability can be created by adding a multi-band vertical to an existing station: you do not necessarily need two sets of beams.

Team contesting is great fun, building up a team spirit and having fun together. Several UK contest groups run team entries in the major contests from portable locations – this is hard work but can be very rewarding.

A HEALTH WARNING. After taking your early steps in contesting you may find that it becomes addictive. That human trait to compete can take over and you may find yourself becoming very focussed on doing better next time. This is natural – we all like to succeed – and it will do a lot for your station and for you as an operator for a little bit of addiction to take over. But keep it under control.

So happy contesting, and remember – by joining the ranks of the contesters, you will be joining one of the fastest growing aspects of amateur radio and a world-wide community of like-minded people ready to support and help you take your first steps into this exciting world. Even if you only join in to 'give a few points away' you can contribute to this world-wide phenomenon.

WEBSEARCH

[1] Sherwood Engineering:
www.sherweng.com/table.html
[2] N1MM+: http://n1mm.hamdocs.com/tiki-index.php
[3] EI5DI: http://www.ei5di.com/
[4] Win-Test: www.win-test.com
[5] Microham: www.microham.com/
[6] *Pile-up Runner*: www.dxatlas.com/pileuprunner/
[7] Yahoo reflector: uk-hf-contesting@yahoogroups.co.uk