

# Collecting Gridsquares on VHF and UHF Bands

by Guy Fletcher VK2KU

In Australia collecting "countries" on the 144MHz band (and up) is not really practicable. Except by using moonbounce the most countries you can reasonably expect to work is about three. Collecting gridsquares provides a sensible alternative.

## Latitude and Longitude

The most well-known system for specifying position on the earth's surface is by latitude and longitude. This is a good system which can be used to any precision you like. My own QTH is at 34 degrees S (latitude), 150 degrees E (longitude); this locates it within about 50km. With greater precision the latitude is 33degrees 43 minutes S and the longitude is 150 degrees 27 minutes E, tying the position down to about 1km, good enough for most purposes. Most people now measure their location with a GPS receiver to an accuracy approaching 10m. Auslig maps of scale 1:25000 are oriented along lines of latitude and longitude, with minutes marked along the edges. With care you can transfer your location on the map onto the minute lines with 1mm accuracy, and thus measure your location to 25m on the ground.

To give a position in Australia over the air in degrees and minutes takes 11 characters including the S and E.

## Big Squares

The Maidenhead locator, also known as the QRA or QTH locator, was devised in the UK in the 1980s to reduce the number of characters needed for an accurate position. The system was described in detail in an article by John Morris GM4ANB in the UK magazine Radio Communication, October 1984.

The earth's surface is divided into 324 "fields" by gridlines every 20 degrees of longitude and 10 degrees of latitude. Each field is labelled by 2 letters in the range A to R, with the first letter ("bottom first") giving longitude running from left to right (W to E), and the second letter latitude running from bottom to top (S to N). The field AA runs from longitude 180 degrees W to 160 degrees W and from latitude 90 degrees S to 80 degrees S.

Perth lies in the field OF, Adelaide in PF, Sydney and Melbourne in QF, Hobart in QE, Brisbane in QG, and Darwin in PH; see Figure 1. Note that these letter pairs label whole

"squares", whereas latitude and longitude designate the gridlines between them. The fields are of course not really squares, more like rectangles but with slightly curved sides. But most people refer to them as "squares".

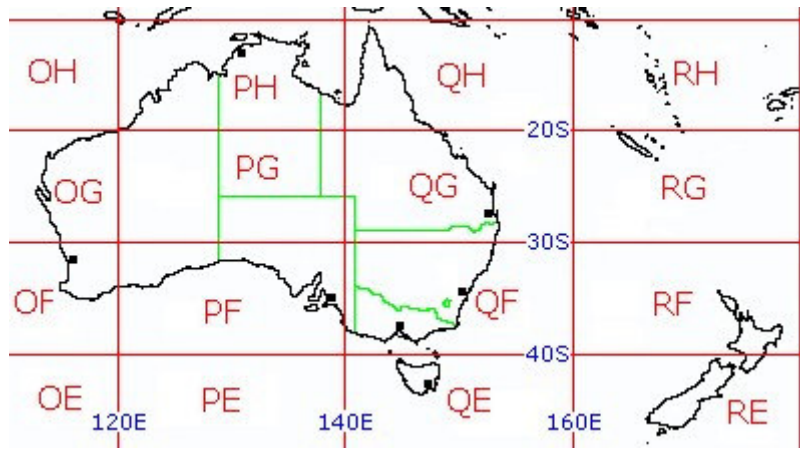


Figure 1. Locator Fields or "Big Squares" covering Australia and New Zealand.

### Medium Squares

The big squares (fields like QF) are each subdivided by a 10x10 grid into 100 medium squares. Numbers are used this time with the first digit again for longitude ("bottom first") running from left to right, and the second for latitude running from bottom to top. So 00 is in the bottom left corner of each field; see Figure 2.

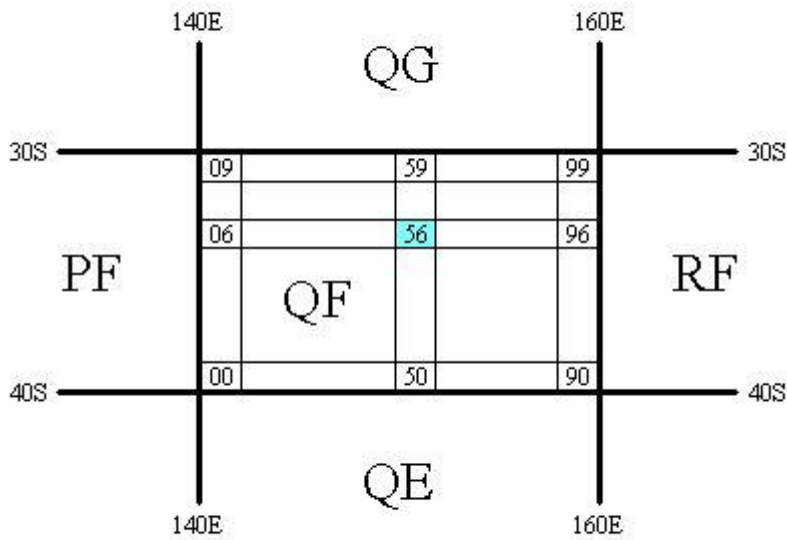


Figure 2. Subdivision of fields into medium squares. The shaded square is QF56, containing Sydney.

Each medium square measures 2 degrees of longitude by 1 degree of latitude. These are the squares people collect.

Perth is in OF78, Adelaide in PF95, Sydney in QF56, Melbourne in QF22, Hobart in QE37, Brisbane in QG62, and Darwin in PH57.

## Little Squares

The medium squares, like QF56, are further subdivided by a 24x24 grid into 576 little squares, each labelled by 2 letters in the range A to X ("bottom first") with AA in the bottom left corner of each medium square; see Figure 3. Each little square measures 5 minutes of longitude by 2.5 minutes of latitude. This is about 7.7km by 4.6km at the latitude of Sydney.

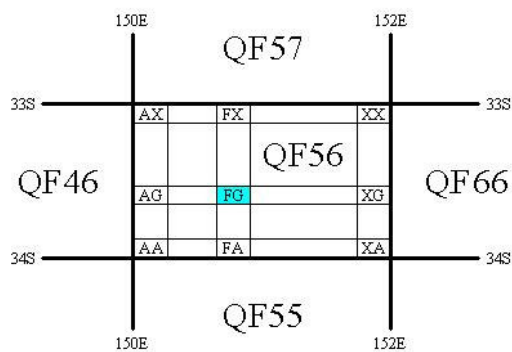


Figure 3. Subdivision of medium squares into little squares. The shaded square is QF56fg, containing the author's QTH.

My location at Hazelbrook in the Blue Mountains is QF56fg, which with only 6 characters is precise enough for most purposes. It is possible to add a further pair of digits to the locator if greater precision is required, but in practice most amateurs revert to latitude and longitude for this purpose (e.g. for calculating record distances).

## Collect Countries or Squares?

On the HF bands and to a lesser extent on 50MHz (6 metres), it is quite easy for serious operators to work lots of countries, so these are appropriate "objects" to collect (like stamps). On 144MHz (2 metres) and at higher frequencies in Australia it is scarcely possible to work more than 3 countries, except by EME (moonbounce). Gridsquares (4 characters) are then far more appropriate. Nevertheless DXCC and Gridsquare awards are both available from the WIA on all amateur bands.

## WIA Gridsquare Award

The number of gridsquares required for each band naturally varies: 30 on 2m, 25 on 70cm, 10 on 23cm. It would be difficult (but not impossible) to achieve these numbers using FM, and most serious operators use SSB, CW or in more recent times the digital Meteor Scatter mode FSK441.

The difficulty of achieving the necessary number of squares depends on where you live. The amateur population in Western Australia live mostly in a thin NS strip, and the numbers required for the award are therefore more difficult to reach. Amateurs in NSW and Victoria are better placed with contacts possible in all directions, including with ZL. In these states 30 squares on 2m is well within reach with a lot of persistence and a reasonable location.

The 10 squares required on 23cm is limited more by available stations than by intrinsic difficulty; a few portable expeditions by friends to appropriate hilltops should fill in most of the gaps. 25 squares on 70cm is probably the most difficult because squares which can be reached easily by Es (sporadic E) propagation on 2m are mostly not likely to be achieved on 70cm.

The rules for the WIA gridsquare award are given on the WIA (Federal) website at [www.wia.org.au/](http://www.wia.org.au/), also in the VK Callbook, and in more detail in the December 1993 issue of Amateur Radio magazine.

## **Gridsquare League Table**

The VK-VHF Email Reflector publishes a league table, updated every 3 months, of gridsquares claimed as worked by VK amateurs on 2m, 70cm and higher frequencies. The rules for entry in this table do not require confirmations of contacts (QSL cards), and are published on this website along with the latest table of standings. They also appear on the VK-VHF Reflector and often in Amateur Radio magazine. Any VK amateur can lodge his/her figures at any time by post to VK2KU (QTHR 2005) or by email to [vk2ku@clearmail.com.au](mailto:vk2ku@clearmail.com.au), but read the rules first.

If you have worked stations in 30 squares on 2m you are doing very well. 40 squares is excellent, and 50 or more puts you among the elite. 60 or more squares is achievable from a good location in the right part of Australia.

## **Calculation of Locator and Distances**

It is quite easy to work out your locator by common sense from your latitude and longitude using the diagrams above. Alternatively there are computer programs available which convert latitude and longitude to gridsquare locator, and also calculate the distance between 2 stations from their locators (or from latitude and longitude).

One such program was written by John Martin VK3KWA. This program has the advantage of being the one used for calculating distances between stations for VK record purposes, but doubtless there are other programs around. Or why not write your own?

## **Conclusion**

Collecting gridsquares is fun. It provides a continual challenge to improve your score, wherever you live. It also promotes activity by getting people out on hilltops to activate rare gridsquares. Why not join the party?