

5MHz Working Portable QRP

By Dave Cutts M0TAZ

The Easter weekend was ideal for blowing away those winter cobwebs, dusting off the QRP radio and heading for the hills (well Brentwood actually) for some full on QRP working.

I had recently obtained my full amateur radio licence, after progressing through the Foundation (2003) and Intermediate (2004) and now the full monty - M0TAZ.

Having spoken to many M3's and 2E0's over the years, one common mistake is the belief that the next stage doesn't really add much to their privileges.



Like you, I at times was guilty of saying "Well I already have 50W, and that's plenty enough to work most people" I guess we underestimate the sense of personal achievement one gets from working your way up the system.

One of the little known privileges is the access to NoV's (Notices of Variation) and these documents give full licence holders the opportunity to apply for a special licence to experiment on 5MHz. [200 Watts (23 dBW) max power – ed]. The band is already very well known to the MOD, as any of you who have listened to various uses of that band will know.

As some may already know, the band is well suited to NVIS (Near Vertical Incidence Skywave). In simple terms that usually means the ability to reliably communicate with stations 0 to 200 miles away. More info is available at <http://www.qsl.net/wb5ude/nvis>

NVIS can depend on a number of factors, but most important is the band conditions as 5MHz, good as it is, will not always support this type of communication. The subject of HF propagation is fascinating, but also outside the scope of my short article (phew), but the web is full of excellent sites to review.

So back to my setup, I used a recently purchased Yaesu 817 radio, maximum output is 5w. Having worked HF portable before, I already have a trusty roach pole and this is ideal to support a inverted V antenna. People will tell you that the best type of antenna to use for NVIS propagation is a low slung dipole, after all you want your signal to go straight up, and to reflect of the earth.

In a nutshell, it's the F layer which is usually involved in reflecting our signals back to earth, while the D layer absorbs our signals. The E-layer can either help, or hinder.



Having made dipoles before, and used them in an inverted V configuration, this was going to be my antenna of choice. All of my inverted V antennas are home made, the process is very simple. You calculate the amount of wire required to make a ¼ wave, remembering that if you slope the ends down to ground this will usually have the effect of requiring the antenna to be shorter. Using programs freely available on the web, <http://www.csgnetwork.com/antennaeivcalc.html> is just one example, I calculated it would be around 41 feet per leg.

As mentioned, you usually find the antenna will require some trimming, and this process can be speeded up with the use of an antenna analyser. If you don't have access to one, you could always use the old fashioned method; cut the antenna a little too long and, using a VSWR meter, trim until the reflected power is zero. The advantage of using this type of antenna is that the bandwidth is wide enough to cover all the allocated frequencies without a tuner.

Unlike other amateur bands, 5MHz has spot channels, 3kHz wide for activity, although these are strictly on a second user basis. Anyone can listen on these channels, and many radios already provide the ability to Rx although most will not Tx without modification.

The RSGB provide a helpful guide to 5MHz operating
<http://www.rsgb-spectrumforum.org.uk/5mhz%20operating%20practice.htm>

The spot channels are listed as :-

| Centre frequency (kHz) | USB carrier frequency (kHz) | Also known as |
|------------------------|-----------------------------|---------------|
| 5260 | 5258.5 | FA |
| 5280 | 5278.5 | FB |
| 5290 | 5288.5 | FC |
| 5368 | 5366.5 | FK |
| 5373 | 5371.5 | FL |
| 5400 | 5398.5 | FE |
| 5405 | 5403.5 | FM |

I have previously used the Yaesu 817 and the Icom 706MKIIg and can confirm both of these work exactly as expected on this band. However the Icom 756 Pro2 is not happy and will refuse to output more than 10W. The advice on the web is not to use this radio for 5MHz, as the radio has some filtering that prevents use on this band.

I found the 817 to be ideal for QRP portable working, drawing just 2 amps max on Tx and 200 mA on Rx; you can complete an afternoon operating on just one 7Ah gel cell.

My afternoon operating netted me:-

GD3YUM Martin on the I.O.M (report rx 48 sent 59)
 G4ENA Peter in Stroud (report rx 41, sent 57)
 G4UNS Dave in Upminster (report rx 55, sent 59)
 GW4BVE John in mid Wales (report rx 54, sent 59)
 G4CPA Geoff in Skipton (report rx 55 sent 59)

So what does the setup look like up in the air? Below is a picture of me operating portable from Cromer using the inverted V for 40 meters. I have over drawn the wires, so they are clearly visible in the picture.

73

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Top left: Typical operating position
Top right: 40M inverted V
Bottom: Another view of 40M inverted V