
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

There has been a minor surge in activity on the 23 cm band recently. One of the reasons for this seems to be the local availability of relatively cheap 60 W power amplifiers.

Most people on 23 cm run either a commercial 23 cm-capable rig (IC910H, TS2000X, IC1275 etc.) or use a transverter from an HF rig. In nearly all cases, these setups will use one of the Mitsubishi power modules in the output, providing 10 to 15 watts of power. A few stations have amplifiers to produce higher power, but these are either home-built, or purchased from overseas at substantial cost. So, the majority stick with the standard 10 W or so.

The 60 W power amplifiers are commercial units converted from 1800 MHz and require 10W of drive. This means they are ideal for connecting to the typical 23 cm setup. And while 60 W doesn't sound like a huge increase in power, it makes a substantial difference on marginal paths, particularly if both ends are running the higher power. Of course, a masthead preamp is almost mandatory on 23 cm to overcome feedline losses, which rise to significant levels for all but the thickest feedlines.

Mike VK3AAK, on the Mornington Peninsula, is running one of these PA's and reports the following:

Ian VK1BG and myself are working hard at a contact between Canberra and the Mornington Peninsula on 23 cm. Despite a number of tests, we have heard each other's SSB signals but have yet to complete a contact. We will continue to work at it until it is achieved.

On Sunday 22 July at 8.30 am, Peter VK5ZLX was heard on 2 metres calling CQ. A contact was completed 5/9 both ways. As signals were so strong, we decided to try 23 cm and quickly exchanged 5/1 reports both ways. This is a distance of 671 km. The copy was comfortable, and after exchanging pleasantries we thought we should try 70 cm. The Trifecta was completed with 5/5 both ways on this band. An enjoyable morning's work!

Ian VK1BG, who also has one of the PA's, subsequently reports:

After a struggle lasting many weeks, Mike VK3AAK and I completed a 23 cm SSB QSO on Tuesday 7 August at 8.25 am. Both he and I are quite chuffed about it, as the achievement did not come easily.

For me, the QSO broke a rather long drought on 23 cm. Except for a contact with Charlie (then VK3FMD) in 2003, I had not had a contact into the Melbourne area since about 1992 when Airservices shifted the aircraft tracks.

Chris VK2DO has also been having fun on 23 cm, having recently put up a large array with 100 W at the feed. He reports:

Thanks to David VK3HZ, Mike VK3AAK, David VK3QM, Chas VK3PY and Charlie VK3NX for contacts on 23 cm last night (6 August).

Charlie VK3NX had such a good signal, that I managed to work him some half an hour before he arrived in his shack?! (My apologies to David VK3QM for the incorrect identification. This must have been the ultimate annoying conclusion to have erroneously jumped to, yet it was all resolved eventually).

Interesting to note the contact with Mike 3AAK was markedly stronger than any other signal previously heard from him, so some combination of night flights made all the difference.

I look forward to some action on 23 cm in the coming season.

Hepburn Tropo Ducting Forecasts

I've written a few times in this column of the excellent site provided by William Hepburn, which gives tropospheric ducting forecasts based on weather information (www.dxinfocentre.com/tropo_au.html).

While the forecasts often prove to be uncannily accurate, one of the downsides is that they were only done once per day at 1800Z. This corresponds to 4 am local time, when not many amateurs are out of their beds. For the more popular evening lift, the forecasts were a bit out of date (the weather can change quickly, if you hadn't noticed).

Mr Hepburn seems to have realised this and is now producing forecasts for 6-hour intervals, up to 42 hours ahead. All we need now is an animated view (like the Bureau of Meteorology weather radars) and we can watch the ducts coming and going!

Radio Site Display

I've been having a bit of a play with Google Earth recently, seeing how it could be adapted for use by VHF/UHF weak signal operators. With the help of John VK3ZJP, we've come up with the Radio Site Display that I demonstrated at the recent GippsTech conference. You can find the notes on getting started here:

http://home.exetel.com.au/dwsmith/radiosites/radio_site_display.html

The Radio Site Display shows an aerial view of the Earth with overlays providing the locations of amateur radio beacons, amateur stations, Field Day sites and other information. The view is customised for each user, centred on the user's own location. Other overlays can be added, including aircraft positions and the Hepburn Tropo forecast.

The position information used by the Display comes from the VK/ZL Propagation Logger database. Thanks to Adam VK4CP who has provided access to the database, and who has added Latitude/Longitude fields to the Operator Info and Beacon tables to provide more accurate results. It would be appreciated if all active VHF/UHF weak signal operators entered their precise home coordinates to give everyone better results.

EME

Charlie VK3NX reports on his operation during the DUBUS 3.4 GHz activity weekend:

Great to be on 3.4 GHz on the weekend. It's a pity quite a few stations didn't have a common moon window to me. Nonetheless I had very good results with the new feed.

The new feed is a scaled version of RA3AQ's stepped septum, originally for 23 cm. Compared with the previous "screw polariser", I am getting much better dish efficiency, circularity and the RL and isolation figures are excellent. Consequently, I have gone from echoes barely perceptible to very loud (> 10dB above the noise

according to Spectran).

I will be staying with this feed and I will now build a scaled version for 2.3 GHz as I look to getting on that band very soon. In time I will try versions for 5.7 GHz and compare it with my Screw polariser (which already works well on this band). If all works OK then I will try it on 10 GHz.

My reports on 3.4 GHz showed a VAST improvement over last activity weekend, although moon conditions were the same (if not slightly worse). I worked G3LTF, OK1KIR and LX1DB (also on SSB). I tried with N9JIM but nothing heard. I also tried with WW2R but only partial copy my way, while Dave reports hearing me well.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

September to December is the best time of the year for Meteor Scatter with around 35% more random meteors than in the first half of the year. Activity sessions using WSJT's FSK441 mode are held each Saturday and Sunday morning on two metres and some stations are also arranging skeds via the VK-ZL logger on 6 meters at the same time. Arrangements for activity sessions are as follows in local times for Victoria and NSW:

0500 to 0600 Saturday, ZL first period to VK on 144.330 MHz

0600 to 0700 Sat and Sun, ZL South Island first period to ZL South Island on 144.230 MHz

Around 0600 to 0700 Sat and Sun, unstructured activity in VK on 144.230 MHz

0700 to 0800 Saturday, VK3/5/7 first period to VK1/2/4 on 144.230 MHz

0700 to 0800 Sunday, VK1/2/3/5/7 first period to VK4 on 144.230 MHz

At 0800, a callback is held on 40 metres, 7083 KHz to share experiences. Newcomers are welcome to join in the callback and ask questions.

The best distances for meteor scatter are in the range 800 to 1800 km where contacts can typically be completed on 2 metres in 30 minutes. The maximum distance is around 2400 km less around 100 km for each 1 degree of horizon lost at each end. As one approaches the maximum distance, the only meteors common to both stations are those that pass close to the centre of the path and thus the number of useable pings diminishes rapidly and it can take an hour or more to complete a QSO. It is possible to extend the distance of Meteor Scatter with tropo-scatter extensions so watch the Hepburn charts for large "Yellow" patches at one end as an indicator. The number of usable meteors increases significantly on 6 meters and thus this band can be useful for maximum range meteor scatter such as from the East Coast of VK to ZL or from Adelaide to Perth.

For further information on Meteor Scatter using WSJT look at the NSW VHF DX Group site under Digital Modes at <http://www.vhfdx.radiocorner.net/>

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5BC

July continued to be very quiet with very few reports of openings on 6 m, the winter sporadic E season being almost non-existent.

One of the few openings occurred on July 12th & 13th when Kevin VK4BPK in Mackay completed contacts with Rob VK3XQ, Norm VK3DUT, Kevin VK3WN and VK3VG on both days.

In the Northern hemisphere though, things have been different and many areas have been enjoying an excellent sporadic-E summer season. I received a message from Fred KH7Y who says they have had a fantastic 6 m sporadic-E summer season in Hawaii. Fred says:

We have had 17 openings to the mainland USA during May and June.

Here is the data from my log. If there is only one time the opening was less than 3 hours. Those longer openings are as indicated. There were a few more weak openings where I received the K6FV/B but no contacts and they are not listed.

May 16, 1900 UTC - West coast USA

May 17, 0400 UTC - West coast USA

May 17, 2051 UTC - K6FV/B

May 21, 1904 UTC - W5/W6/W7/XE

May 23, 0342-0530 UTC - W2/W0/W6/W7/XE, 185 QSO's this opening

May 24, 1700-2300 UTC - W7/W6/W8/W9/W4/VE7/W0, 490 QSO's this opening

May 28, 2057 UTC - W6/W6/W6, K6QXY loud, very localized

June 01, 1840-2230 UTC - W7/W6/W0/UY5??/W0/TI8II, 200 plus QSO's

June 17, 17:00 UTC - W4/W4/W/, only and only two counties very localized no other states or beacons

June 18, 1800-2200UTC - this was a big one to east coast USA. Worked all call Districts & all VE except VE8/VY1, 300 QSO's

June 19, 0440 UTC - K6QXY loud, a few other sixes

June 19, 2300 UTC - 11 JA stations worked, all very loud with JA1VOK 20 over!!!

June 21, 1800 UTC - W4,5,6,7,0 and VE 5,6,7

June 26, 0000-0330 UTC - Big opening again to east coast USA W1,2,3,4,8,9, XE

June 27, 1950 UTC - W0,1,2,3,4,5,7

June 28, 0020 UTC - W0/8/9/3/2 weak opening and short

June 30, 1900-2100 UTC - big opening east coast USA W1, 2, 3, 4,8,9,0.

Well that is about it Brian. All of the above contacts were multi-hop sporadic-E and looks like 18-2200UTC is the window to work mainland USA from Hawaii on six metres. A very good year indeed.

Aloha, Fred (ex W6YM, now KH7Y and trustee NH6P contest station).

I worked Fred on 20m since he sent me the above and he says there has been a further 2 openings in July. Now who says sporadic-E isn't good fun. Let's hope it translates into another good summer season down here.

As reported last month the VK5VF beacons are off the air including the 6 m beacon on 52.450 MHz. Fortunately though, the Barossa Valley beacon VK5RBV on 50.315 MHz is operational. This beacon is about 55 km NE of Adelaide in grid PF95mk, about 580 m ASL and a good indicator of conditions into VK5.

Please send any 6 m information to Brian VK5BC