
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

The main activity of note this month surrounded the meteor scatter activity associated with the Eta Aquarids at the start of May. Adrian VK4OX/VK2FZ was active over this period and had some interesting contacts. He writes:

According to the OH5IY Meteor Scatter Predictor, the Eta Aquarids this year were predicted to be active between the 1st and 8th of May with the maxima on the 6th at 1250Z ± 48 hours. OH5IY predicted the best times for the VK4 to VK3 path as between 0000Z to 0100Z.

During the best time period, I started by listening for the VK3RGL 144.530 MHz beacon. I have 144.5293 MHz USB stored in a memory so it is then just a button press to get to the main operating frequency. This is not ideal but I do not have a second receiver. When the beacon appears, I switch frequency and call, coming back to check to see if the beacon is still burning. Some of the beacon burns were very weak. Sometimes I was not even sure it was the beacon burning but I call just in case. I used a headset with a boom microphone and a footswitch for PTT. A second receiver would make it much more relaxing - I have to be poised over the memory button so as not to lose too much time switching between frequencies. This can be tiresome after an hour or so but all good fun!

This is a summary of the events over the period:

2011-05-01: Hardly a ping.

2011-05-02: Hardly a ping.

2111Z - 144.071 CW VK2BCC 800 km

2011-05-03: One 30 sec burn, five miniburns (1 – 2 sec) and 9 pings

0044Z - 144.200 SSB VK3HY 1420km

2011-05-04: Three 30 sec or longer burns, one miniburn, 11pings

0016Z - 144.200 SSB VK3HY

0036Z - 144.200 SSB VK3HY

0055Z - 144.200 SSB VK3HY with incomplete VK2BCC

2011-05-05: One 5 sec burn, two miniburns 9 pings

0047Z - 144.100 SSB Incomplete VK3HY and VK3II

2347Z - 144.100 SSB VK3HY and incomplete VK3II

2011-05-06: Zero burns, zero miniburns, 11 pings

2011-05-07: Two 30 sec burns, one 10 sec burn, four miniburns, 14 pings

0020Z - 144.200 SSB VK3DUT 1311 km two long burns and two excellent qso's

2133Z - 144.200 SSB VK3VFO 1406 km

2149Z – 144.200 SSB VK3AMZ 1458 km

2011-05-08: Did not clock

2011-05-09: One 60 sec burn, one 12 sec burn. one 8 sec burn, 1 ping.

0058Z - 144.100 SSB VK3HY and VK3II 1469 km

The OH5IY predictor proved quite good although the predicted max of the 6th was quite poor with days before and after much better. I believe this just to be bad luck! The predicted best time of 0000Z to 0100Z for the VK3 to VK4 path was spot on.

I worked ZL3TY on FSK441 on the 4th 1900Z-1945Z (2407 km) which was quite a stretch for MS. We tried again 24 hours later but no go and again another 24 hours later and still no go. That was Saturday morning and ZL3TY worked quite a few VK's with distances of 2000 km - we just couldn't get the extra 400 km. ZL3TY commented on the long burns and many pings occurring. I was monitoring VK3RGL at this time and there was hardly a ping from it.

The VK3RGL 144.530MHz beacon is a fantastic source of pings (I believe 7 watts to a 7dBi yagi). This takes the guesswork out of meteor scatter work. The big long burns can have a huge footprint extending as far north as Sydney (VK2BCC), east to at least VK3DUT, and west to I-don't-know-where. A pity no VK7's were on to test that path.

Thanks to all who took part and to those responsible for VK3RGL on 144.530MHz.

VK9NA / ZL1TPH Records

The VK9NA Dxpedition over summer resulted in quite a few new records. In particular, the contacts with Steve ZL1TPH over a distance of 598.3 km, reported in a previous column, resulted in 4 new VK records and 6 new ZL records listed below:

VK Records:

New VK9 record for 3.4 GHz

New VK9 record for 5.7 GHz

National 2.4 GHz Digital Modes record

National 5.7 GHz Digital Modes record

ZL Records:

National record for 2.4 GHz

National record for 3.4 GHz

National record for 5.7 GHz

National 1.2 GHz Digital Modes record

National 2.4 GHz Digital Modes record

National 5.7 GHz Digital Modes record

Congratulations to all involved.

Roof Mounted Antenna

David VK3ZJG is returning to activity on VHF after a hiatus of a few years. His current situation does not lend itself well to a tower and so he has designed a through-the-roof mounting system for the antenna pole. The rotator is mounted on the ceiling joists and a 1.3 m sleeve of 2-inch water pipe is secured to the roof trusses and pokes through a hole in the tiles. The mast is a 6.5 m length of 48.3 mm tube with 3.2 mm wall thickness.



Antenna Support Pipe

He had a recent antenna raising party where, with the help of a cherry-picker, the mast was put in place, complete with 10-element 2 m yagi and coax run. A 6 m yagi will be added in due course, which can be done with the pole in place. Of course, all work on the roof (2 storeys up) was done with the appropriate safety harnesses, anchor points, etc.



New Antenna in Place

Expect to hear more from David as he develops his station with the next step planned to be an increase in power from the current 10 W.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

ISCAT – A Tests

David VK3HZ and Rex VK7MO have been testing a further revision, r2433, of the new experimental mode ISCAT-A, in WSJT9 for 10 GHz aircraft scatter. The test results have been very promising with 10 GHz QSO's completed from VK3ES's QTH

near Mt Macedon Victoria to QF18 near Willcannia NSW (656 km), QF19 White cliffs NSW (733 km – new 10 GHz digital record) and QF48 North of Dubbo NSW (703 km). The QSOs to QF18 and QF19 used the Sydney to Adelaide flights which cross at near right angles resulting in Doppler variations of up to 1000 Hz per minute. ISCAT-A copes well with these large Doppler variations, firstly because its bandwidth is limited to 900 Hz allowing more than 1000 Hz variation in a typical SSB passband and secondly by using inbuilt Costas arrays to provide AFC correction for Doppler. Wikipedia describes Costas arrays as follows:

“In mathematics, a Costas array (named after John P. Costas) can be regarded geometrically as a set of n points lying on the squares of a $n \times n$ checkerboard, such that each row or column contains only one point, and that all of the $n(n - 1)/2$ displacement vectors between each pair of dots are distinct. This results in an ideal 'thumbtack' auto-ambiguity function, making the arrays useful in applications such as sonar and radar.”

In the case of ISCAT-A it uses a 3x3 Costas array (ie a sequence of three tones representing the array) transmitted approximately each second which is used to synchronize the timing of message tones and provide a frequency reference to decode the message tones and provided AFC.

A features of the new revision is that it searches each received wave file looking over periods of 2.2, 4.4 and 8.9 seconds and decodes the period that gives the most confidence. Thus if the signal gives only a short burst of 2 seconds this will decode in preference to a longer period, but if the signal gives a weaker but longer burst of around 9 seconds or more this can be averaged to decode the weaker signal. Good decodes have been achieved with weak signals of several seconds down to -15 dB.

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5BC

I'm preparing these notes from Darwin where I'm attending the national WIA AGM. This has given me the opportunity to meet many of the Darwin 6 m operators including Mark VK8MS, Richie VK8RR, John VK8JM, Stuie VK8NSB and Trevor VK8TH and to hear many stories of the 6 m DX experienced from Darwin.

Mark VK8MS reports:

The TEP season in Darwin started 12th Feb at 1308z with JA2IGY/b 519 50.010 and JR6YAG/b 519 50.037. Then 14th Feb Willem DU7\PA0HIP was in at 1325z at 5x9, we then Willem worked almost every day up until him leaving to go back to Europe on the 30th April.

Most evenings from 15th Feb many JA's were worked on TEP with Hide JR6EXN being the most regular.

On some exceptional days when it was when it was very busy we were working into JA, KH2, 9W6, VR2, DU1 and 7, BV,BA,YB, XV and by the end of march we were having regular TEP contacts with all the Asian country's. The main Video we were hearing was the 49.749.6MHz and 49.750MHz carriers and warbler every evening with the DU TV on 55.249.6MHZ also most evenings.

Then following the equinox things started to change around 29th March we started to hear the 48.259.7MHz, 48.250.5MHz and 48.251MHz video from the Middle East with the Dubai TV on 48.250.7MHz coming in most evenings.

Then on the afternoon of the 5th April at 0756z I worked KH6SX Art on 50.110 cw

519, the first time worked for seven years and then following him at 0824z worked Fred KH7Y on 50.106cw 519. Early in the evening at 0916z 48250.7 Dubai TV came in S9 for the next hour no Amateurs that evening many JA's, BV9BU and Eddie DU1EV were worked.

6th April at 0635z Fred KH7Y 5x9 ssb and also Art KH6SX 5x5 on 50.132 ssb and that evening at 1027z Joel KG6DX 599 cw followed by a pile of JA's also on cw and at 1058z worked Shin DS2KGJ 5x7. That evening typical TEP with DU1EV, BD9BU, DU7/PA0HIP, VR2XMT, YB9AY, 9W6RT, BV2NT all worked. As the many JA's and Asian stations started to disappear the 48.250.7MHz Dubai Video started to become stronger and at 1420z I was just checking some mail and about to go QRT as it was getting late all of a sudden when A92IO starts calling 5x9. Of course I couldn't grab the mic quick enough so had the first VK to Bahrain contact on six meters with Dave A92IO 5x9 both ways 9680km to LL56fe (Dave commented that this is the First Official VK-A92 six meter contact as they only got privileges in 2010).

Dave was in until around 1500z then the Asian TEP picked with Yf1OO-B 559 and JA's starting to come back in again, the next few days saw the same TEP with many Asian stations being worked.

8th April at 1049z Dave A92IO was back in again but this time at 1146z 4X4DK, 4Z1TL.

9th April Dave A92IO was again in at 5x7.

10th April 0705z worked Jeff NH7RO for first time for many years at 5x1 and at 0754 Fred KH7Y at 5x8.

12th April it was good to work Chris A45XR in Oman 559 50.105cw again. Then that evening typical TEP and regular evening chat with Willem DU7/PA0HIP and George DU1GM. The Pacific and Middle east now dropped off but most evenings TEP to Asian region except 15th April when Dave A92IO was back in 519 on 50.109 cw and the 25th April Fred KH7Y 519 to 559 cw on 50.110.

Had thought that wasn't a bad TEP and F2? enhanced season but TEP stayed in most evenings and on the 2nd May at 0531z had Bert KH6HI come in on ssb 5x2 for a chat followed by Fred KH7Y.

Well after this it did drop off and noticed many stations dropping off the DX summit sites etc as the sun moved further north there has been the odd evening with 49.749.6MHz video and 55.2496MHz pretty quiet until today 29th May winter E's came with 0730z VK8RAS/bB 599+10 50.046.7cw with David VK5AYD in Coober Pedy 5x9+10 at times. David was in for a few hours then at 1045z 49.749.6MHz Video and Warbler 5\9+10 and 48.249.7MHz 5\5 and then at 1050z JR6EXn 5x9+10 and at 1052z JA4UDN 5x7.

So in concluding, TEP and winter E's still around.

Thanks Mark for the extensive report on 6 m activity into Darwin and well done with the A92, will be very interesting to see what next year brings.

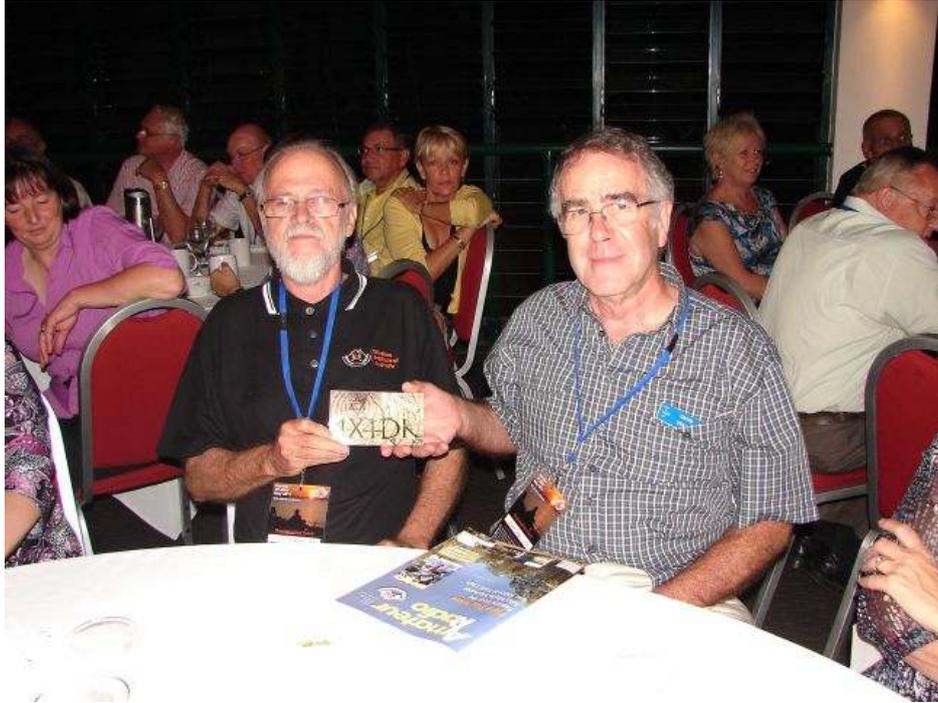
Whilst in Darwin I also had a chance to catch up with Gary VK4ABW who has recently been transferred to Darwin with his employment. Gary already has a 5 element yagi up and has managed a few TEP contacts.

Also found another keen 6 m operator in Darwin in Mike VK2BZE who says he will probably be here until early next year. Mike said that on a recent trip back to NSW he worked Willem DU7/PA0HIP while mobile south of Darwin over a 3 hour period giving Willem several new grid squares.

Looks like there will be many active 6 m operators in Darwin in the next 12 months.

Whilst in Darwin, I had a listen on 6 m using my 5/8 2m vertical and other than working the locals did manage to work David VK5AYD in Coober Pedy during the 'E' opening on 29th May with signals up to 5/6.

Pictured below at the WIA AGM dinner is Richie VK8RR showing David VK5KC a QSL card from 4X4DK who he had recently worked on 6m.



From southern VK there has been very little to report, the only major activity being a good opening from JA to VK3 and VK5 on the 2nd May. In VK5 many JA's were worked from call areas 1, 2, 3, 6, 9 and 0 between 0630z and 0730z.

Please send any 6 m information to Brian VK5BC