
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

Early in March, there was some interesting propagation across the south of the country.

On the evening of March 2nd, both Phil VK5AKK and Brian VK5BC reported hearing the VK6REP 2 m beacon in Esperance at 5x1-2. Phil also heard the beacon the following evening and on the morning of the 4th, although no contacts were forthcoming. Finally, that evening at 0922Z, he worked Wally VK6WG in Albany at a good 5x7 on 2 m and 5x9 on 70 cm over a path of nearly 1900 km.

Meanwhile, on the morning of March 4th, conditions picked up between Adelaide and VK1 / 2. At 2214Z, Col VK2BCC worked Jeff VK5GF on 2 m at 5x1 over nearly 1100 km. Multiple contacts occurred on 2 m between Jeff VK5GF, Phil VK5AKK, Brian VK5BC, Bill VK5ACY and Chris VK1DO, Rob VK1KW, Ian VK1BG, John VK1CJ. Phil VK5AKK also worked Ian VK1BG on 70 cm with a 4x1 report. At times, signals on 2 m rose above S9 and Jeff VK5GF reports being able to work into the VK1RGI repeater with a vertical omni.

On the morning of March 6th, there were some unusual conditions up the coast of NSW. At 2125Z, Chris VK1DO worked Adrian VK4OX on 2 m at 5x4 SSB and 529 CW over a distance of 1015 km. Over the next 15 minutes, Chris then went on to work Rod VK4ARN and John VK4JMC in what was presumably a tropo opening.

March 17th brought a high level of meteor activity. At 2126, Jim VK3II worked John VK4JMC on 2 m SSB at 5x8 via a long MS burn. Brian VK3BBB also worked John. Norm VK3DUT just failed to complete a QSO with John, losing him at the end.

Aircraft Enhancement Activities

Jim VK3II located near Phillip Island always has good results via aircraft enhancement (AE) into the Sydney area and beyond. This seems to be due to both his excellent takeoff and favourable alignment of the path with the Sydney to Melbourne aircraft routes. As with real estate, in the AE game it's mostly about location, location.

During the AE net that operates on 144.2 MHz from 8 am to 9 am local time of a morning, Jim features highly in the list of stations worked. On a recent morning (April 1st), he reports working VK1CJ, VK1BG, VK2BCC, VK2BXT, VK1DO/M, VK3AJN and VK3BJM. In addition, he worked VK7MO on 144.225 MHz JT65a and had tropo SSB contacts on 144.1 MHz with VK3AIG and VK5ZK.

Jim reports on a good recent contact:

I had an unusual AE 2 m SSB contact with Ron VK4DD and Ron VK4CRO on Saturday morning 25th February from my home QTH (QF21RN). They had stopped at Snapper Point south of Newcastle QF56TT at a sightseeing location on their way to Wyong (see picture). They were running 250 W into a 4-element yagi mounted on the car. The SSB signal peaked to 5x3 over a distance of about 800 km. They commented that it was great fun being mobile and portable with the car and agreed that next year they would be mobile again on 2 m SSB while driving to Wyong.

Just before this I worked Chris VK1DO mobile. Not sure where he was, but presumably on his way to work in Canberra.



Ron VK4DD and Ron VK4CRO portable near Newcastle

ZL1TPH Portable Setup

Further to the report a few months ago about the excellent work by Steve ZL1TPH working VK9NA and across to mainland VK on 2.4 GHz from his portable location, I received a picture of Steve's portable setup packed into his vehicle. To say it looks a tight fit might be understating things a little!



ZL1TPH/P Ready To Roll

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

VK2KU Qualifies for Digital DXCC on 144MHz

Congratulations to Guy VK2KU on being the first VK to work 100 countries on 144 MHz and qualify for DXCC. Guy provided the following report:

DXCC is a good award because it is eminently achievable, especially on the HF bands. When I began playing with EME in late 1999, the only mode was CW except for SSB with super-stations. A DXCC on 2 m is of course only possible using EME, but for an ordinary station to achieve this on CW is an almost impossible dream. The arrival of the WSJT Digital modes (JT44 at the end of 2002 and JT65 four years later) changed all this, and DXCC became a real possibility.

The first award to which EME stations aspire is WAC (Worked All Continents), not trivial with the lack of stations in some continents, but not hard either. At the other end of the scale of difficulty lie the American WAS (Worked All States) and the Australian WAS VHF awards; these are particularly difficult on EME because you have to work all 50 American States, or all 8 prefixes VK1 to VK8 in Australia, and there just aren't the necessary EME stations in some states. DXCC is easier than those awards because you don't have to work them all, just 100!

I now have 21 DXCC entities on 2m EME CW, but I have also worked all of those again using the Digital modes. So it has taken from December 2002 to March 2011, rather more than 8 years to work the magic 100 entities or "countries" on 2 m Digital EME. Of course the first countries worked were the easy ones: the USA, Germany etc, and all of those early countries have been worked again many times since, up until Cyprus 5B in January 2005. I have not worked Cyprus again, so in one sense the 100 countries have taken only 6 years or so. The 100th was HL5QO in March 2011.

The first 50 come fairly easily and steadily. These are the countries with at least several resident EME stations, sometimes dozens. The next 30 are harder because where only 1 or 2 stations operate regularly in a country, they often have only 1 or 2 yagis and quite modest power. They may also live in RF-noisy cities, creating serious problems of deafness! VK was once quite a rare country on 2m EME, but we now have enough regular stations to have met most of that demand. Above 80 countries you are relying more and more on EME expeditions to rare countries, usually well equipped, but with limited time and very much in demand with the corresponding pileups. The last 10 come quite slowly and consist almost entirely of such expeditions with the occasional resident station like HL5QO, my 100th. It's a great feeling to have made it at last, though I still have a few QSLs to collect. They say that the next 10 actually seem easier! It's also time I worked some more CW EME, which has its own special satisfaction.

ISCAT for Microwave Aircraft Scatter

Rex VK7MO and Dave VK3HZ have been experimenting with digital modes for aircraft scatter at 10 GHz. They are using around 7 watts to 65 cm dishes. While the WSJT mode JT65c works well for aircraft that cross at angles of up to 10 or 15 degrees, at greater angles the variation of Doppler (more than 40 Hz per minute) becomes too great for WSJT to follow even with AFC. It has been found that for larger crossing angles the new ISCAT mode in WSJT9 works well and can cope with Doppler variations of up to 1000 Hz per minute as occurs at 10 GHz when jet aircraft cross at right angles.

While ISCAT has an averaging feature that works to around -17 dB (on the WSJT scale) it has been found that at 10 GHz aircraft scatter comes in short bursts of a second or so and that non-averaged decoding by clicking on the waterfall produces better results even though it works to only around -10 dB. On shorter aircraft scatter paths such as 450 km the bursts of signal can peak at +5 dB and even on long paths of 700 km peak signals of -2 dB have been measured – albeit for only a fraction of a second. Good decodes can still be obtained on weaker bursts down to -10 dB on longer messages such as two callsigns and a report and -12 dB on short messages such as RRR. For aircraft crossing near at right angles it is found that an aircraft produces only one or two burst of a second or so duration but these still decode well through clicking on the waterfall – but it does take some practice to learn the operating procedures and react quickly when a burst of signal is detected.

ISCAT provides for TX/RX periods of 30 and 15 seconds as selected by clicking on the box near the centre at the bottom of the WSJT 9 window. It is recommended that 15-second periods be used for microwave aircraft scatter as this potentially allows a QSO to be completed on a single aircraft crossing as has been achieved with aircraft crossing at 30 degrees. At larger crossing angles it will usually be necessary to use multiple aircraft but still the faster TX/RX period is an advantage.

New 10 GHz Digital Record

On 11 March Dave VK3HZ operating portable from Andy VK3ES's property on the North side of Mt Macedon and Rex VK7MO operating portable from near Peterborough, South Australia achieved a new 10 GHz digital record of 715 km. The QSO was achieved using ISCAT on aircraft crossing at between 65 and 75 degrees on either the Sydney-Adelaide or Adelaide-Sydney flights. Signals peaked at -2 dB. It took bursts from 5 separate aircraft over 90 minutes to complete the QSO and some produced no signals at all.

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5BC

March proved to be a very interesting month on 6 m with many TEP openings from VK4, northern VK6 and VK8 to Japan, China, Hong Kong, Philippines, Korea etc. The highlight of the month being a contact between Wade VK4WM and UX0UN in Ukraine.

Wade VK4WM in Hervey Bay reports on his contact with UX0UN:

On the 25th I had just finished working Hide JR6EXN when Nick UX0UN called me and gave me RST 559 but when he put it back to me there was really quick QSB on his signal that made it hard to read his callsign and I was expecting a JA callsign, I managed to send him his report of 419 but after he repeated his callsign a couple of times he disappeared, I still thought he was a JA however looking at what I had written down, it leapt off the paper at me who he really was! His email got to me before I found his address on QRZ.COM, it was a genuine QSO, and QSL's are in the mail!

Congratulations Wade, both Wade and Nick were running 100 W, Wade was using a 6-el on a 6 m boom YU7EF design Yagi and Nick was using G0KSC 7el on a 9.5 m boom yagi. Wade's complete log summary for March is as follows:-

05/03/2011 05.24 - 07.24 Z JA stations 4 x SSB, 22 x CW

06/03/2011 04.54 - 07.00 Z JA's 44 x CW
 08/03/2011 07.04 - 08.03 Z JA's 20 x CW
 10/03/2011 04.21 - 07.00 Z JA's 22 x CW
 13/03/2011 04.04 - 04.38 Z JA's 6 x CW
 15/03/2011 04.50 - 06.01 Z JA's 22 x CW
 17/03/2011 04.36 - 06.37 Z JA's 4 x SSB, 2 x CW
 23/03/2011 05.16 - 0624 Z JA's 14 x CW
 25/03/2011 05.00 Z 50.100 MHz CW Hide JR6EXN S 519 R 559
 25/03/2011 05.03 Z 50.100 MHz CW Nick UX0UN S 419 R 559 KIEV
 UKRAINE KO50fk 14,427.83 Km
 27/03/2011 10.13 - 10.44 Z CW JA1QOP S 559 R 599, JK3HLP S529 R 539,
 JA2BNK S559 R 559.

The band was open on many days in March from VK4 to the various areas of Japan with openings extending south to Brisbane to Cairns in the far north. There were reports of 60 – 70 JA's being worked in an opening and Dale VK4SIX in Atherton reports that Charlie VR2XMT in Hong Kong could be heard and worked on many evenings. Willem DU7/PA0HIP was also regularly worked in VK4 along with several Chinese stations.

David VK5AYD in Coober Pedy northern VK5 has also been enjoying good conditions and reports the following:

04 Mar 2011 VK4's FNQ, EK, XGE, NPF, on SSB 50 MHz and 52 MHz and the last two on 52.525FM as well....Plus VK4 beacons, RHT, RTL, RGG.....
 05 Mar 2011 26 x JA's 0 - 9 areas plus a surprise call from Joel KG6DX.....
 06 Mar 2011 9 x JA's 1,2,7,8 and 9 areas....
 08 Mar 2011 11x JA's 1,2,3,5 and 6 areas.....
 10 Mar 2011 Nothing worked but heard JA's working VK4's ssb and cw.....
 13 Mar 2011 13 x JA's 0, 1, 2, 3 and 8 areas.....finished of with Marc VK8MS....pipeline to Darwin.....
 15 Mar 2011 JA2IGY Beacon + plenty of JA's on ssb and cw.....worked none.....
 17 Mar 2011 DU7/PA0HIP Willem, 5x9 best contact so far with Willem, HL2KV Mike on CW 559 both ways....
 20 Mar 2011 5 JA's 0, 7 and 8 areas.....
 24 Mar 2011 Weak JA0 on 50.110 heard only.....
 27 Mar 2011 4 JA's 1 and 3 areas...Rx JA6 only..... M/s pings from VK5's ZK and PO, couple of good long burns.....

Further south in VK5 JA's were worked on 12th March with Garry VK5ZK and Brian VK5BC working JA6WJL and JH6CDI, Brian also worked JP3WAU. A little after the JA's at 0838z Brian VK5BC worked BA4SI. This opening to China also extended to VK7 where Frank VK7XX, Norm VK7AC and Laurie VK7ZE also worked BA4SI. Then on 26th March a good opening which started around 0745z and lasted for approx 3hours, John VK5PO worked all call areas except JA8 and 9 on CW. Brian VK5BC also worked JA6UOU 59/ SSB early in the opening. Although JA beacons were being heard unfortunately there didn't appear to be many stations active either end.

There are now several active stations in the Pilbara area of NW VK6 including Michael VK6BHY and Rod VK6KP (home call VK3TG) in Karratha, Steve VK6HV in Wickham and Rex VK6ARW in Exmouth. They have all been making the best of the good conditions to the north during March.

Rod VK6KP who working in the Pilbara on a 2 year term is using a FT897D and 4el yagi reports the following;

March has been excellent.

Late morning you start to hear JS2IR on 43.650 and the MUF slowly rises until 49.750 comes alive with many signals. These build up and most late afternoon 50 is full of "birdies".

Typical pattern - around 0700 to 0730Z mid to late afternoon opening to JA. Most days the TV is there but not all the time. Gradually drops away and then reappears in force anytime around 1100Z onwards. These evening openings last many hours and can still be open up to 1500/1600Z.

TEP flutter is there especially with Willem (DU7/PA0HIP) and Charlie (VR2XMT). Over the last week or so Charlie has been heard almost every night.

The most consistent JA beacon has been JA6YBR 017. It can be heard nearly everyday at the moment. JA2IGY 010 is there most days but not as often as YBR. I have heard JR6YRG a few times which is promising.

On a few occasions I have heard DU1EV on 008 up to S5.

From Rod's log:-

01/03/2011 1126Z BV2JD 5/5 followed by a few JA6s through to 1240Z.

05/03/2011 0720Z - 0800Z 38 JA's 1, 2, 3, 4, 5 and 6 on CW and SSB mostly S9+.

07/03/2011 0930Z - 1325Z JA's 1, 2 and 6 plus JA6YBR/B.

08/03/2011 1117Z - 1140Z JA's 1, 2, 3, 5 and 6.

1155Z BA4SI 50.110 5/5 SSB

1210Z BA4SI 50.120 599 CW

1223Z VR2XMT 50.110 5/8 SSB

09/03/2011 1033Z - 1103Z JA's 1, 2, 4 and a number of 6s (YBR/B S9+)

1306Z VR2XMT 50.110 5/7 SSB

10/03/2011 1243Z DU7/PA0HIP 50.110 599 CW

13/03/2011 0600Z - 0842Z Massive JA opening all areas and all Sigs 9+ (Like the good old days!!) Huge QRM! Did remember from years gone by to ask the JA's to standby and QRZ outside of JA! Sure enough at 0657Z HL1VAU 50.130 59+ SSB.

15/03/2011 0430Z - 1330Z JA beacons and few JA's not strong.

16/03/2011 0730Z - 1230Z JA beacons IGY/YBR and YAG all in at varying times up to S9. Some JAs around.

18/03/2011 1300Z VR2XMT 50.110 5/5 SSB

19/03/2011 0623Z - 0634Z DU7/PA0HIP 50.110 5/7 SSB and a few JA's 1 and 2.

All of the above was worked using a three element yagi at 24ft fixed to the north. Gear FT897D or FT625D/amp.

Rod now has a 4-el yagi up.

A little further south Rex VK6ARW is active from Exmouth who has also enjoyed some good conditions and reports:-

06/03/2011 I had 4 QSOs with JA stations between 0710 – 0730 UTC.

21/03/2011 at 1208 UTC VR2XMT in Hong Kong..

24/03/2011 at 1230 UTC VR2XMT, JR6EXN , DU7/PA0HIP

26/03/2011 at 11:30 JR6EXN and on

27/03/2011 at 09:44 UTC JE6EZU.

Rex is using an IC7000 and a Moxon antenna.

Great to see so many stations active from Northern VK6.

During March there was a new release of VKLogger. January is a busy month on the air and online! With a high number of simultaneous users (140+), VK Logger crashed the shared-server it was hosted on. Since then, VKLogger has been redeveloped, and now includes an integrated chat feature. Appearing to be running much quicker, VK Logger also includes some new features such as the ability to enter WSPR and Radar reflection spots, and features for quick checking of other band loggers, DX clusters etc. Although it is still settling in, it appears to be an improvement on what was an already valuable tool for VHF operators.

Because of the Logger's server crash in January, temporary restrictions were placed upon idle chat, and other sites became available to carry out general chat. One of these sites is the ON4KST 50MHz IARU Region 3 chat site, where there is often some international stations reporting 6 m conditions and can be of value when openings to overseas countries occur.

However, unlike chat sites, VK Logger users can post propagation information, known as "spots". This information remains useful long after the bands have closed, where the historical information gathered can be used to help predict openings and identify windows of opportunity in the future. This data also demonstrates to the authorities that amateurs are actually engaged in propagation experiments, justifying their spectrum allocations, and not just idle Internet chatter requiring no bands at all.

Testament to the value of collecting local and relevant propagation data was made by Roger Harrison, VK2ZRH, who recently produced a paper "A NEW MODEL OF VHF SPORADIC E PROPAGATION". This is a very interesting paper, in which Roger used data from VK Logger to help form the basis of his conclusions. The short-form of this paper can be read on the VK Logger Discussion Forums in the "Propagation and Solar Cycle News" forum. Stay tuned to "AR", as the full paper will appear in a future issue.

VK Logger now enjoys a better hosting arrangement, where the previous disk space and limited monthly bandwidth restrictions, should no longer be an issue, even during the peak times.

In some late news band opened from Perth area to JA on 31st March. John VK6JJ, Andy VK6OX and Graham VK6SIX working several JA's, the 1st opening to Perth from JA for over 12 months.

Please send any 6 m information to Brian VK5BC