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# VHF/UHF – An Expanding World

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David Smith VK3HZ  
Leigh Rainbird VK2KRR

## Weak Signal

David Smith - VK3HZ

This month has seen several periods of enhanced propagation over the southern region of the country. The openings covered a region stretching from Adelaide to East Gippsland and as far north as Canberra. Many contacts were had, and those of note are listed below.

On 16/2, Leigh VK2KRR reports strong signals from Adelaide with several S9+ contacts on 2 m. He also worked Richard VK5USB (S5) on 70 cm. Leigh also picked up traces of the VK6REP Esperance 2 m beacon on Spectran.

From 24/2 to 27/2, a slow moving high-pressure system produced an extended period of good conditions. Roger VK5NY, Brian VK5UBC, John VK5PO, Garry VK5ZK and Phil VK5AKK were busy working many stations from the Adelaide end.

Bill VK6AS has been worked from as far as Mt Gambier and, on several occasions, worked into Adelaide. On the morning 25/2, Leigh VK2KRR was hearing VK6REP at up to S3. Bill then appeared calling CQ on 144.1 MHz and Leigh worked him at S9 level – a distance of 2315 km. Soon afterwards, Ed VK3BG also managed to work Bill.

On the evening of 25/2, conditions were good to the north from southern Victoria. Peter VK3KAI reports working Ed VK3BG on 23 cm at good strength, with some QSB. Ralph VK3WRE and George VK3HV also managed to work Ed. The following night, Dave VH3HZ managed to work Leigh VK2KRR on 23 cm.

On 2/3, Brian VK5UBC, near Adelaide, reports excellent conditions, working, on 2 m, VK3AUU, VK3HZ, VK3II, VK2KRR, VK3RW, VK3ANP, VK3AXH, VK3LY, VK5OM/p and VK1ZQR (945 km). He also worked VK3HZ and VK2KRR on 70 cm.

On the evening of 2/3, Ross VK2DVZ reports working Nick ZL1IU on 2 m. The following morning, he worked Brian ZL1AVZ, also on 2 m.

On 3/3, Chris VK2DO worked VK5UBC, VK5PO, VK5AKK and VK5NY on 2 m. No luck on 70 cm.

## Microwave

Colin VK5DK reports that on the morning of 14/3, conditions were very good for microwave operations. The VK3RXX 23 cm beacon in Melbourne was S9 in Mt Gambier. Colin headed off to a local hilltop about 40 km NW of Mt Gambier with equipment for 5, 10 and 24 GHz. At the Melbourne end, Alan VK3XPD went to his local site. Ralph VK3WRE also set up on Mt Tassie, near Traralgon in Gippsland with 5 and 10 GHz gear.

On arrival at Mt Edward, Colin set up on 10 GHz with a CW identifier running. He then received a phone call from Ralph to say that he was copying the signal quite well. Ralph and Colin exchanged 59 reports both ways on 10GHz, and then changed to 5.7GHz and exchanged 59 reports. Unfortunately, the site that Alan had chosen proved not to be good, as he was not able to hear signals on either band.

The distance of the contact is around 525 km, which is about 20 km short of a VK3 record. However, it was the best distance on both bands for Ralph & best on 5.7GHz for Colin.

On 10 GHz, Colin was running 1 watt and 12 watts on 5.7GHz. 600mm dishes are used on both bands. Ralph was running 500mW on 10GHz and 5 watts on 5.7GHz using offset feed dishes with horn feed.

## **EME**

Doug VK3UM has released a new Windows version of his EME Planner and Autotrack, called EME2004. The older DOS-versions of these programs are widely used within the EME community, but are now becoming a little dated.

The new program has most of the features of the old, along with many additional features for Spatial and Real time Noise displays, an extensive database, as well as the prediction planning features. All planet and selected quiet and noise source tracking is provided so if you want to track Mars or Jupiter noise this will do it for you.

The program is available for download from the SM2CEW website at <http://web.telia.com/~u92010241/index.html>.

Doug also has a handy tip. If you have some unwanted critters gaining entry to your shack (like a 4' tiger snake) he suggests you use steel wool stuffed into the cable ducts (away from any possible moisture). It can be obtained in long rolls and is very easy to install and remove for cable modifications. Mice don't chew it either and hopefully it impedes the passage of long worms? Using the expanding foam stuff works fine but is expensive and you always need to add or remove a cable the day after it sets!

Doug said "I have done that now (to the EME shack) this season after the tangle with the snake. Sure gets the adrenalin going. Fortunately I spotted him as soon as I opened the EME shack door. If I had been sitting there at the time then leaving the shack with headphones on would have been quite a sight ... the mind and heart boggles!" Snakes are a common problem in the bush, and so far it's Douglas 6 ... Snakes 4.

## **Beacons**

Ron VK3AFW reports that the VK3RTG beacon in Melbourne on 144.430 MHz is back on air, in test mode.

The beacon failed a few months ago and, upon further investigation, it was found that the crystal itself had died. Ron decided to do a post-mortem on the crystal and found that the drop of silver-loaded paint that provides the electrical connection with one of the electrodes that sandwich the wafer of crystal was missing, and appeared never to have been applied during manufacture, around 40 years ago. When Ron approached the manufacturer – Hy-Q Crystals – about the problem, they offered to repair it at no cost. How's that for an outstanding warranty!

So now the beacon is on test with occasional shut downs for various adjustments. For the next few weeks it will be radiating into a directional antenna with a NE heading. Ron asks for reports to him by email at [vk3afw@optusnet.com.au](mailto:vk3afw@optusnet.com.au).

The Dural committee has been busy refurbishing the VK2RSY beacons. The 23 cm beacon on 1296.420 MHz has had the feedline replaced which, by all reports, has greatly increased its level. The 70 cm beacon has also had some work and has been restored to normal level. 2 m is still off air, awaiting a total rebuild.

Rod VK2TWR reports that the VK2RSF beacon at Nimmitabel on 144.414 MHz is undergoing some much-needed refurbishment. It is currently under test from his QTH running 12 W to a pair of "big wheel" antennas and signing VK2TWR. The beacon may not go back to its old site, as there is some doubt about the availability of the site.

Glenn VK2JPR reports that the VK2RMS beacon at Bald Hill on 144.510 MHz is off-air indefinitely as the site has been closed by the National Parks people.

Please send any Weak Signal reports to David VK3HZ at ...

## Digital Modes

Rex Moncur – VK7MO

Joe Taylor K1JT has released a document on the technical aspects of JT65 which can be found at <http://pulsar.princeton.edu/~joe/K1JT/JT65.pdf>. Major topics include:

- Motivation and Design Philosophy
- Complete Technical Specifications
- Details of Present Implementation in WSJT
- Measured Sensitivity and Error Rate

The document indicates that Joe has found another 0.8 dB in the next version of JT65 (version 4.9.5, just released) that gives 50% correct decodes at -28.8 dB relative to the noise in a 2.5 kHz passband.

Dave VK2AWD reports that WSJT's new 'deep decoder' has made a major difference to the stations he can work via EME. Leigh VK2KRR and Gary VK5ZK have been experimenting with 2 meter JT65 QRP over a 754 km path and are getting copy of special messages down to 2 watts without enhanced conditions. Joe VK7JG, in Launceston, took QRP to the extreme and still received 50% copy from 0.25 milli-watts over the mountains from Rex VK7MO, in Hobart (168 km), without enhanced conditions.

Welcome to Gerry VK2APG who has joined the FSK441 activity sessions and has made his first contacts.

Some news from "Across the Pond". Bob ZL3TY has been fairly active on EME of late, using WSJT JT65b digital mode. His setup consists of a TS790A driving a homebrew 400W linear amplifier to an array of four 12 element K1FO yagis. On 14/12, he worked F6FHP at a (terrestrial) distance of 19,294 km, breaking the current world record by 7 km.

### **VK0MT Macquarie Island Activity**

Dave VK0MT on Macquarie Island has recently become active on 2 m, running 100 watts to a single 10 element yagi. On 16/3, he succeeded in working Rex VK7MO on FSK441A Meteor Scatter. This is the first time that VK0 has been worked from VK7 on 2 m. Not much has yet been heard of Dave from VK3 as the distance (2150 km) is approaching the upper limit for MS.

On 17/3, Dave completed the first EME contacts from VK0, Macquarie Island, on 2 m on JT65 with W5UN and KB8RQ.

Unfortunately, Dave's time at Macquarie Island is coming to an end, as he is due to return to the mainland at the end of March.

Please send any Digital Modes reports to Rex VK7MO at ...

## 2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

A slow start to February, but it ended up being a cracker in the south of the country after around the 20th of February.

Early on the 1st of Feb, Mike VK4MIK picked up a good path on 70 cm down south from the Atherton Tablelands into the Hodgson Range repeater 438.500. The distance of 639 km was a beauty on 70 cm and is now top spot in the ANVDG VK4 FM repeater records.

The 6th of Feb saw the first good opening in the south of Australia for quite a while. Probably the most interesting occurrence on FM during this opening was at 11.30 am my time. I was talking to John VK5PO on the Barossa Valley 146.825 repeater, we had just finished QSO and all of a sudden Chris VK3VSW calls in from Geelong and then straight after, Dion VK7YBI called in from near Burnie, Tasmania! Only got about one over from Chris before he dropped out as Chris has a big hill in that direction. Dion was OK coming in over 949 km to the repeater! VK5PO could hear Dion direct so they went to 146.550 to try the simplex contact, which I believe they made it through, this is 938 km.

On the evening of Monday the 7th of Feb, some very unusual tropo conditions were noted by some in the SE. A weather front and trough were passing across the SE. The leading edge of the front was around Melbourne and extended back to near Port Augusta. When looking on Internet weather charts, it appeared to be raining under cloud cover over a wide area covering Adelaide to Melbourne and around the coast. I initially dismissed this as being 'rain' and poor conditions.

That was, until VK5UBC and VK5ZLX started reporting some strong conditions on the VK Propagation Logger. Both Brian and Peter reported hearing the Geelong 2 m beacon, then, Brian was able to access the Echuca repeater 146.675. This got my attention and I thought I had better take a closer inspection.

It then appeared there was a strong surface based duct condition, partially before and mainly trailing the weather front. The indicated rainfall on the rain radar was actually radar enhancement caused by the strong conditions. It was very strong and wide spread across the land behind the front. Amazing!

Brian VK5UBC ended up being able to access the Shepparton 146.650 repeater noise free for quite a while. Brian was also able to access Charlton and other VK3 repeaters. At this time Peter VK5ZLX also commented on a second Ch10 TV signal interfering with his local TV reception!

The morning of the 16th Feb saw another good opening in the south. The main Adelaide Hills repeaters were worked here on 2 m but nothing from the 70 cm repeaters. Furthest repeaters worked here were Port Augusta at 913 km, Port Pirie at 867 km and Central North at 833 km. VK5UBC was worked here on FM simplex and Brian also had a good copy on the Wagga repeater.

Some rare news from the west, courtesy of Phil VK6ADF at Katanning. Phil mentions, "during early February I managed to hear the Mt Barker repeater being used while I was driving around in Katanning. Something that is not a normal occurrence for me, and a contact via the Mt Barker repeater from home that normally I do not trigger." Phil also mentions, Sunday 13th Feb, VK6ET in Geraldton made contact to a Perth repeater for a short period, around 380 km.

The 21st Feb, Charles VK5XCP was aware of the conditions and went portable on a hill at Mt Gambier and worked the 486 km across to the Mt Baw Baw repeater and found George VK3HV, John VK3HJW and Jeff VK3VFL.

From around the 23rd to the 26th of Feb, conditions were absolutely HUGE. Mainly in the southeast, but there were also paths extending into VK6. There was so much going on during these few days that it all blends in and becomes a bit of a blur. This will probably be the strongest opening over the widest area in the SE for the whole year if last year was anything to go by.

I have nothing noted here that was particularly outstanding for FM. I was able to get to the usual repeaters in VK5 and VK3. The 70 cm band was not good to the west during this opening, though it was OK into VK3.

The morning of the 26th saw probably the strongest conditions of the period. Contact to the Mildura repeaters was excellent, full scale on both bands at 466 km. VK3FGN, VK3MTV, VK3NRJ and VK3KYF both at Mildura were worked simplex.

On the evening of the 27th Feb, Charles VK5XCP portable at Mount Gambier worked Dion VK7YBI from Burnie on 146.500 simplex. This was 570 km and Charles' furthest simplex contact. Charles was also going right over Melbourne and working to Yarra Valley and Mount Tassie repeaters.

Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at ...