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# VHF/UHF – An Expanding World

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## Weak Signal

David Smith - VK3HZ

Everything is getting back to normal now following last month's overload. So, I'll try to summarise the happenings over the last few months, if the editor will allow me the space.

The 29/11 was a good time in several areas. Conditions between Melbourne and Adelaide were good, with Charlie VK3FMD managing to work Roger VK5NY on 23 cm. On the east coast, there was an opening from VK2 into ZL. Ross VK2DVZ, Neil VK2EI and Gordon VK2ZAB report working Bob ZL3TY, Brian ZL1AVW, Ray ZL2TAL, Nick ZL1IU and David ZL1BT and ZL1AVZ on 2 m and some of them also on 70 cm.

Then in December, there were a number of Sporadic E openings of note. On the evening of 8/12, David ZL1BT reports working Trevor VK4AFL, Peter VK4APG, Rob VK4ZDX and Bill VK4LC on 2 m. Signals peaked to S9 with a best distance of 2319 km. On the 10/12 Bob ZL3NE/1 in Auckland reports briefly working VK2BHO on 2 m.

Phil VK3YB reports that, just before lunch on Christmas Day, a very intense opening occurred into VK4 pushing his S meter into previously unexplored territory. Stations on the northern end included VK4's CV, ARN, CY, CDI, AML, KK, ZQ and AFL. At the southern end, VK3's AUU and KAQ were also involved. The opening extended into eastern VK5 where VK5's DK and NC also worked the northern stations. That evening, an opening occurred between VK7 and ZL for nearly 2 hours. Mike ZL3MF reports working VK7's ZOO, YBI, BBW, KRR, JG, XQ and YBY. Deon VK7YBI peaked to well over S9. Murray ZL3MH also worked these station plus Norm VK3DUT. Murray was heard by Andrew VK3KAQ on Mt Dandenong, but they did not make a contact.

On the following morning 26/12, Brian VK5UBC reports working VK4's AFL, LC, KSS and DH. Signals peaked to S9, but the opening only lasted for about 10 minutes. That afternoon, another brief opening across to ZL saw VK2's DVZ, EI and ZAB work ZL1's BK, TN and SWW at S9 levels

On New Year's Day, Robbie VK3EK reports working VK4's BLK, KK, AFL and ZAA.

The next morning, Leigh VK2KRR reports hearing the Alice Springs 2 m beacon via a sporadic E opening. The signal was around S7 for about 10 minutes, but no stations could be raised.

On 10/01, another sporadic E opening occurred at about midday between VK4 and VK2/3. Leigh VK2KRR reports working John VK4KK (S9+) and Ray VK4BLK (S7) both at Yeppoon (near Rockhampton). Alan VK2AW also worked into VK4. To the south were VK3HZ, VK3AFW and a number of others. Bryon VK3YFL came home from work when he heard of the opening, and ended up also working John from his car (vertically polarised) on his way back to work. The opening lasted for more than an hour, with very strong signals from the north (S9+20).

On 06/02, a strong high settled on western Victoria, producing good conditions between VK2, 3 and 5. At the western end were VK5's ZK, UBC, ZLX, BJE, RO, JL and BQ. In VK2, contacts were had by VK2's KRR and DO. Also involved were VK3's KEG, AXH, HZ, II, FMD, AUU, UH, AMZ and AFW. Several Melbourne stations worked Les VK5JL at Grange, a beachside suburb of Adelaide. This is

difficult to achieve because of the Mt Lofty ranges, immediately to the west of Adelaide. Unusually, the opening lasted until after midday before dying out.

In summary, so far this summer we've had high Sporadic E activity, but good tropo conditions have been limited. Only one tropo opening has occurred between VK3 and VK6, and VK2/4 to ZL tropo openings have also been very limited. Let's hope that the remainder of summer brings better conditions.

In early January, Ron VK3AFW spent some time at the summit of Mt Buller with his portable station, consisting of an IC706MkIIG with 5 el beams for 2 m and 70 cm. His best contacts were, on 2m VK4ABW near Townsville - 1988 km - and Brian VK5UBC/P York Peninsula - 886 km - and on 70 cm Peter VK5ZLX - 730 km. He also worked into Adelaide proper, to Les VK5JL on 2m.

### **VK/ZL Attempts on 2.4 GHz**

Steve ZL1TPH reports on attempts to work across the Tasman on 2.4 GHz. On Friday 14/1, Steve worked Ross VK2DVZ on 144, 432 and 1296 (2100 km) from his portable site at Muriwai. Numerous attempts were made on 2.4 GHz throughout the afternoon to Ross, but no contact was made. Nick ZL1IU also made attempts to Ross at the same time. In the evening Brian ZL1AVZ also from Muriwai and Nick made attempts on 2.4 GHz to Ross VK2DVZ and also Adrian VK2FZ in Sydney. Although no contacts were made it was an encouraging start and will hopefully inspire others to participate. Stations involved -- ZL1AVZ ZL1IU ZL1TPH VK2DVZ VK2FZ - till the next opening.

### **People**

Gordon VK2ZAB has had a major family crisis and, as a consequence, has closed down his station and is in the process of selling off all of his equipment. This is a substantial loss to the VHF/UHF weak signal community, of which Gordon has been a key member for a very long period. We wish Gordon well for the future and hope that everything turns out for the best.

Guy VK2KU has had some misfortune at his new QTH and will probably be off air for several weeks. On 01/02, a prolonged and severe electrical storm caused fairly extensive damage to his shack equipment. Initial checks showed lots of blown fuses, a dead radio, a HV supply which trips the circuit breaker when turned on, and both az and el rotator controls out. Some of it may be just blown fuses, but certainly not all!

Roger VK5NY reports that he has a new VK2 QTH at Bowraville in a deep valley, but under the northbound aircraft flight path from Sydney to Brisbane so there is hope at QTH No 2 for some VHF contacts. In time he will have a rig set up there on VHF. His present location at Mount Wilson will continue to be his home base with breaks to VK2.

### **Gippstech 2005**

As you may see elsewhere in the magazine, Peter VK3KAI is calling for papers for this year's Gippstech conference. This is a not-to-be-missed event for anyone interested in weak signal VHF/UHF/Microwave operation. It's also a good opportunity to catch up with people with a common interest. Mark it in your diary now - the weekend of the 9<sup>th</sup> and 10<sup>th</sup> of July.

### **Summer VHF/UHF Field Day**

The Summer VHF/UHF Field Day on the 15<sup>th</sup> and 16<sup>th</sup> of January saw a good turnout of portable stations in VK3, despite the initially inclement weather. Of the stations worked from my QTH in Melbourne, 15 were Field Day stations - perhaps the most memorable being David VK3KAB and Alan VK3XPD in the Cranbourne Tip! There were a number of field stations out in the Geelong district too, and a number of locals from that area popping up to work them. I understand that quite a few stations were out in VK5 also. However, the other states were very quiet.

As of 02/02, John VK3KWA had received Summer VHF/UHF Field Day logs from VK2AES, VK3's EK HZ JS UH ATL AWT CAT KAI TRD YDK YFL, VK4's EV DFG and VK5's AR DC FD MX OQ ADE AIM.

Peter VK3KAI was out on Saturday afternoon in his rover setup, working from a number of gridsquares on all bands from 50 MHz to 10 GHz. What's more, Peter is able to operate mobile on all of those bands. The photograph of his setup shows all of the antennae sprouting from the roof of his vehicle, consisting of: 6 m – 144 MHz 5/8 whip, 2 m - Big Wheel, 70 cm - 2 x stacked Big Wheels, 23 cm - Alford slot, and 2.4 GHz to 10 GHz - VK5ZO slotted waveguide antennae. Inside the vehicle, a 19-inch rack holds all of the equipment, consisting of an IC706IIG for 6m, 2m & 70cm, an FT-817 as an IF driver, and transverters for 1.2 to 10 GHz. Nearly all of the transverters and antennae are homebrew. The system is being constantly improved, so we can expect to hear more big signals from Peter on future Field Days.



## **Microwave**

Russell VK3ZQB reports that conditions suitable for microwave contacts have been fickle this season, probably worse than last season. They have had a few sessions with poor results but it has shown up some problems with the equipment. So it has been full-on at the workbench repairing gear in case the band opens.

On the evening of 24/1, Russell worked Col VK5DK and Trev VK5NC on 10 GHz from Port Fairy to Mt Gambier. Signal reports were 5-9+ and at times it was possible to hear Colin with the dish pointing 180 degrees off the path. They tried 24 GHz but had no success at all. They will have to check the 24 GHz gear and perhaps try and

make contact over a shorter path to prove the gear. With the lack of good tropo openings they are getting a nervous twitch and will jump at anything that looks like a tropo opening.

Charlie VK3FMD, Alan VK3XPD, Chas VK3PY, David VK3XLD and Bill VK3AMH have also been involved in microwave hilltopping in recent times. While contacts on 10 GHz seem to be readily achieved, 24 GHz is proving much more of a challenge. One of the reasons is that attenuation due to moisture in the air is substantial at the higher frequency. The two bands are quite different in characteristics.

On the other side of the world, it seems that Brian WA1ZMS, just can't get enough Gigahertz. He reports that on 21/12, WA1ZMS/4 worked Pete W4WWQ/4 on 403 GHz CW for a new distance record of 1.4 km. Signals were very weak on the W4WWQ end, while several dB of margin existed on the WA1ZMS end. The QSO exceeded the stations' former "best DX" on 403 GHz of 0.5 km. It also conquers the 1 km barrier for amateur frequencies above 400 GHz - except for visible light.

## **Beacons**

Terry VK3ATS in Mildura reports that the Broken Hill VK2RBH 70cm beacon is off the air at the moment due to equipment problems/failure.

The VK2RSY beacons at Dural are finally getting some much-needed attention. The 23 cm beacon on 1296.420 MHz has its horizontal slot antenna higher up the tower. The other beacons currently online are those on 10 m and 70 cm. The 2 m beacon still requires a rebuild.

Colin VK5DK reports that the new VK5RSE 432.550 MHz & 1296.550 MHz beacons are now on air from Mt Graham, 40km NW of Mt Gambier. The old 70 cm beacon had repeatedly failed and was finally replaced. Frequency stability should be very much improved. Both beacons are driven by a common keyer. The 23 cm beacon uses 2 x 10 element yagis pointing east and west at the top of a 30 m tower, and power is approx 25 watts. The 70 cm beacon uses 2 x 8 element yagis east & west at the 15 m mark on the tower. Thanks to Russell VK3ZQB for the construction of the new beacons plus DTMF tone access so the beacons can be remotely switched on & off if necessary. The 23 cm beacon is being regularly heard in Melbourne. Any reports on these new beacons are most welcome to Colin at [vk5dk@internode.on.net](mailto:vk5dk@internode.on.net).

Towards the upper end of the spectrum, the VK3RWL Mt Warrnambool 10GHz beacon is being heard around Victoria and eastern SA. It is currently a little low in frequency on approximately 10368.430 MHz. The VK5VF 10 GHz beacon is currently off-air until further notice while some site issues are being dealt with. Wal VK6KZ reports that the VK6RST Albany 10 GHz beacon is alive and well, but several kHz higher than its nominal 10368.564 MHz. With the dish directed at VK5/3, it's hoped that one day the beacon may be heard across the Bight.

Finally, a reminder about the VK/ZL Logger Beacon Status page - <http://vklogger.brizwebz.com.au/>. Please don't forget to update the beacon information on that page if you become aware of any change.

## **6 m Activity Reports**

Readers may have noticed a lack of reports on 6 m activity in this column. None of the current contributors are seriously active on this band, and so we hear very little news of 6 m happenings. To remedy this, I'm asking for a volunteer to contribute notes each month regarding 6 m. You don't have to have a degree in journalism or

anything like that. It simply requires someone active on 6 m who is across the various sources of news and who can collate / summarise these into a short section for this column. Please help out and at the same time, foster more interest in your band. If you are interested, please contact me (VK3HZ) at the email address below.

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

## Digital Modes

Rex Moncur – VK7MO

Joe Taylor, K1JT, has released version 4.9.2 of WSJT, which provides for some 4 dB of improved sensitivity for JT65. It uses the existing transmission scheme and is thus compatible with older versions. The program achieves this improvement by using what Joe calls a "deep decoder" that digs further down into the noise. The "deep decoder" works by comparing a series of possible messages with the output of the receiver and working out a correlation factor. If it finds good correlation it prints out the message. The expected message can be from any of 4200 stations in the program's database who might be calling CQ, calling you, or sending you a report. It is also possible to put the program into sked mode where it looks only for the call sign of a station with whom you are in sked. One might feel this is pushing the boundaries too far as if you try long enough it is certainly possible to find a period of noise that corresponds to any given weak signal message. Of course every mode we use is subject to some error rate that we might hear an expected signal in the noise - the real question is whether the error rate is acceptable. To determine the error rate I conducted a test where the program was set up in sked mode to work a particular station at a marginal signal level. I then changed the message by just one letter in the call sign and in 6 hours of testing it did not once incorrectly give a decode of the expected sked message. In fact the error rate is less than 1 in 100,000 and thus the new decoder is extremely robust.

Welcome to Mark, VK2EME, who has joined the weekend activity meteor scatter activity sessions on FSK441 and has also been testing JT65. The activity sessions are held each Saturday and Sunday morning on 144.230 from 0700 to 0800 local Vic/NSW time. Southerly stations, VK3/5/7, transmit in the first 30 seconds of each minute and Northerly stations, VK1/2/4, in the second 30 seconds. FSK441A is used on Saturday and FSK441B on Sunday. After the sessions we have a callback on 7085 or nearby to share experiences. Newcomers are welcome and even if you are not yet operational on the digital modes please call in on 7085 and someone will be ready to help with your questions.

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

## 2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

For most of January, weather conditions were very fast moving and unstable, and thus tropospheric conditions were very poor for most of Australia.

A very interesting and (in Australia) rare 146 MHz Sporadic E opening occurred on the 10th of January. Just after 10 am, John VK4FNQ from Charters Towers, north Queensland made it into the Canberra 146.950 repeater on Mt Ginini. Lucky stations at the Canberra end were Rob VK1ZQR and Leigh VK2KRR who had the pleasure of speaking to John, who was coming into the repeater over a 1735 km path, virtually noise free.

Also making it into the Canberra repeater at the same time as VK4FNQ was Felix VK4FUQ at Ingham, north Queensland. Felix did not quite have as good a signal as John did but was still in there, albeit briefly, over his 1893 km path via Sporadic E to the repeater.

It was quite amazing to hear these guys from north Queensland coming into the Canberra repeater via Sporadic E like they were locals.

John VK4FNQ also managed to get a few words into the Wagga repeater 146.750, but the path just wasn't there for him at that time.

On the 24th of January, conditions were very good around the south coast of VK3 and into VK7. Charles VK5XCP in Mt Gambier worked across to Gippsland to make contact with Peter VK3NPI (490 km). Charles had a full-scale signal on 2 m and a 5/9 on 70 cm simplex from Peter. Karl VK7HDX made it to the Otway Ranges repeater VK3ROW.

On the 30th of January, Brian VK5UBC at Corny Point was able to make it to the Mt Macedon repeater VK3RMM and contact John VK3HJW. This was 725 km for Brian.

Mike VK4MIK advises that it's been very quiet along the VK4 coast. But on the 31st he was able to make the 451 km distance to the Hayman Island repeater where he worked David VK4DJC. Mike also worked Mark VK4KMR via Hodgson Range, VK4RHR.

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