
VHF/UHF – An Expanding World

David Smith VK3HZ
Leigh Rainbird VK2KRR

Weak Signal

David Smith - VK3HZ

The Summer VHF/UHF Field Day over the weekend of January 14/15 was blessed, in this southeast corner of the country anyway, with good conditions – both weather and propagation. Many stations – club and individual - were out on the mountaintops for the duration. On Saturday night and Sunday morning, good tropo conditions occurred across the south of VK3 into VK5. Ralph VK3WRE set up his portable microwave station on Mt Tassie in central Gippsland and worked Colin VK5DK near Mt Gambier on all bands to 10 GHz over a distance of 531.1 km. In the process, they set new VK3 records for the 2.4 GHz and 3.4 GHz bands.

On the Sunday evening, the Mt Gambier beacons were the loudest I've ever heard them in Melbourne. The 23 cm beacon was well over S9. The 70 cm beacon was S7 when it WASN'T keyed, rising to S9+40 when keyed.

Paul VK7BBW reports that there have been several good openings from northern Tasmania up to VK3/VK5. On January 13, he worked Chas VK3PY on 70 cm at S3-4. The following day, he worked John VK5NJ on 2 m FM at S5. On January 20, he did the "traps" with John working him on 2 m SSB (S1) and 70 cm (S1). The opening also included contacts with various VK3's including VK3HZ and VK3XL. Finally he reports the somewhat old, but nevertheless very interesting, news that he worked VK4CV on 2 m SSB around Christmas 2004.

On the evening of January 24, an opening from VK3/5 to VK6 produced a number of good contacts. At 0830Z, Phil VK5AKK reports working Wally VK6WG on 2 m (S7) and 70 cm (S6). They attempted a contact on 23 cm, but nothing was heard. At 1050Z, VK6WG worked VK3II, VK3UH and VK5UBC. VK5ZBK then worked Wally on 70 cm. VK5RU had success on 2 m, 70 cm and 23 cm.

On Friday evening January 27, the bands opened from the east coast across to ZL. Bob ZL3TY seemed to be holding up the eastern end of the opening and had a bumper time working many stations in VK2 and VK4.

By the Saturday evening (January 28), the opening had extended southwards to southeast Victoria, and several interesting contacts were had. See the following Digital DX Modes section for more details. Southern stations worked by ZL3TY include VK7MO, VK3HZ, VK3VHF and VK3EK. The opening continued into Sunday with contacts to VK1WJ (FSK441), VK3BDL, VK3AMK, VK3DUT, VK3KAQ, VK3BBB, VK3ZYC, VK3KAI, VK3II and VK3ALA. Conditions finally faded out at about lunchtime on the Sunday. Unfortunately, Bob's 70 cm antenna was down, so all contacts were on 2 m. He reports that it was a great weekend for him, working 20 x VK2, 12 x VK3, 3 x VK4, VK7MO and VK1WJ and a near miss with 2 x VK5.

At the same time, conditions were excellent along the east coast between VK2 and VK4. Chris VK2DO near Canberra worked Trevor VK4AFL in Brisbane and Kev VK4KKD on 2 m. Chris then worked Trevor on 70 cm at S3. Rod VK2TWR worked Glen VK4TZL on 2 m.

Finally, it's good to hear of a station in a rare area becoming active on the low end of the band. Doug VK9ZLH is on Lord Howe Island for the next 3 years. Kerry VK2BXT to the south of Sydney reports that on Friday January 27, he worked Doug on 2 m with signals peaking to S9+40. Kerry was Doug's first 2 m contact, as he had

only put up his 10-element beam the day before. Doug runs 80 watts. Many Sydney stations subsequently worked him during the opening that extended to ZL.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

From 25 to 29 January 2006, Peter VK5ZPG undertook a DXpedition to the northern Flinders Ranges to activate the rare grid square PF99 on 2 m using FSK441. Peter had some equipment problems, which reduced his power output to around 50 watts, and advises that this was a learning experience. However, he did copy 11 stations and completed contacts with VK2KRR, VK3HZ, VK3ZYC, VK3KAI and VK3II.

On 27 January 2006, Bob ZL3TY worked Dave VK2AWD, Dave VK3HZ, Rhett, VK3VHF and Rex VK7MO on JT65 on 2 m. There were two interesting things:

Firstly, there was a strong tropo-duct opening to VK2 that was allowing Bob to work the VK2s on SSB but the Hepburn chart showed this did not extend to VK3 and VK7 and no SSB contacts were made South of Wollongong. The extra sensitivity of JT65 allowed an extension well beyond that indicated by Hepburn but still took advantage of the tropo-duct at ZL3TY's end. From the Hepburn chart it would appear that the first 500 km or so from VK3/7 would have been achieved by tropo-scatter and the last 1500 km by tropo-duct. From this one can conclude that it is worth attempting JT65 contacts when ducts do not extend over the full path – up to a further 500 km or so to take advantage of possible multi-mode propagation.

Secondly, the JT65 contacts were affected by meteors and both Bob ZL3TY and Dave VK3HZ noted many meteor pings on a path of 2287 km. In the past, attempts at meteor scatter over this path have not shown any pings at all. The fact that meteors were being received suggested that tropo-ducting might be extending the range of meteor scatter. A little later Garry VK5ZK (at Goolwa, 2892 km from ZL3TY) reported he could see some pings from Bob's JT65 transmission and a sked was set up using FSK441. Bob decoded a number of pings from Garry. Peter, VK5ZLX at Angaston (2919 km) then reported pings from Bob and started transmitting. Bob also saw pings from Peter. The best was a short burn of 1.1 seconds reported by Peter. However, no contacts were completed.

The following day, ZL3TY made numerous SSB and JT65 contacts into VK3/7, as far as Melbourne, indicating that the duct had extended further South and further towards VK. A further attempt was made between ZL3TY and VK5ZK/VK5ZLX but only one decodable ping was received by ZL3TY. A few hours later, when the duct was no longer reaching Melbourne, a second attempt was made and VK5ZK received 5 decodable pings but nothing was received by ZL3TY or VK5ZLX. During the same day Ian, VK3AXH, near Ballarat, reported pings when listening to ZL3TY's JT65 signal over a path of 2387 km at the time when Bob was working JT65 into Melbourne – but JT65 was not detectable on tropo at Ian's QTH.

While a VK5 contact was not completed, this exercise was sufficient to show that the normal limit of around 2300 km for meteor scatter can be extended if there is a good tropo-duct at one end.

It is worth some conjecture about what conditions allow a tropo-duct extension of meteor scatter. It would be expected that for efficient entry to a duct the signal would need to arrive at a very low angle and thus the meteor scatter component of the path would need to be reasonably long - say 1500 km or more. Inspection of the Hepburn chart indicates this was the case between ZL3TY and the VK5s. However, the pings

received by VK3AXH and VK3HZ are unlikely to have entered at the start of the duct, which was within a few hundred km, as the entry angle would be several degrees. Also, meteor scatter is unlikely over such a short path. This in turn suggests that some of the meteor extensions were entering the duct somewhere in the middle of region which is shown on the Hepburn chart to suggest a duct. There is some evidence on the Hepburn chart of variability in the strength of the duct nearer to ZL. Thus while the best situation might be is a strong duct at one end combined with a non-ducted region of around 1500 to 1800 km it seems one should not overlook the possibility of entry somewhere in the middle of a duct.

The results achieved into VK5 suggest that it is well worth looking for tropo extensions of meteor scatter to the west of the Great Dividing Range whenever Hepburn indicates enhanced tropo conditions at the ZL side of the Tasman. Contacts of 2900 km and more seem to be possible.

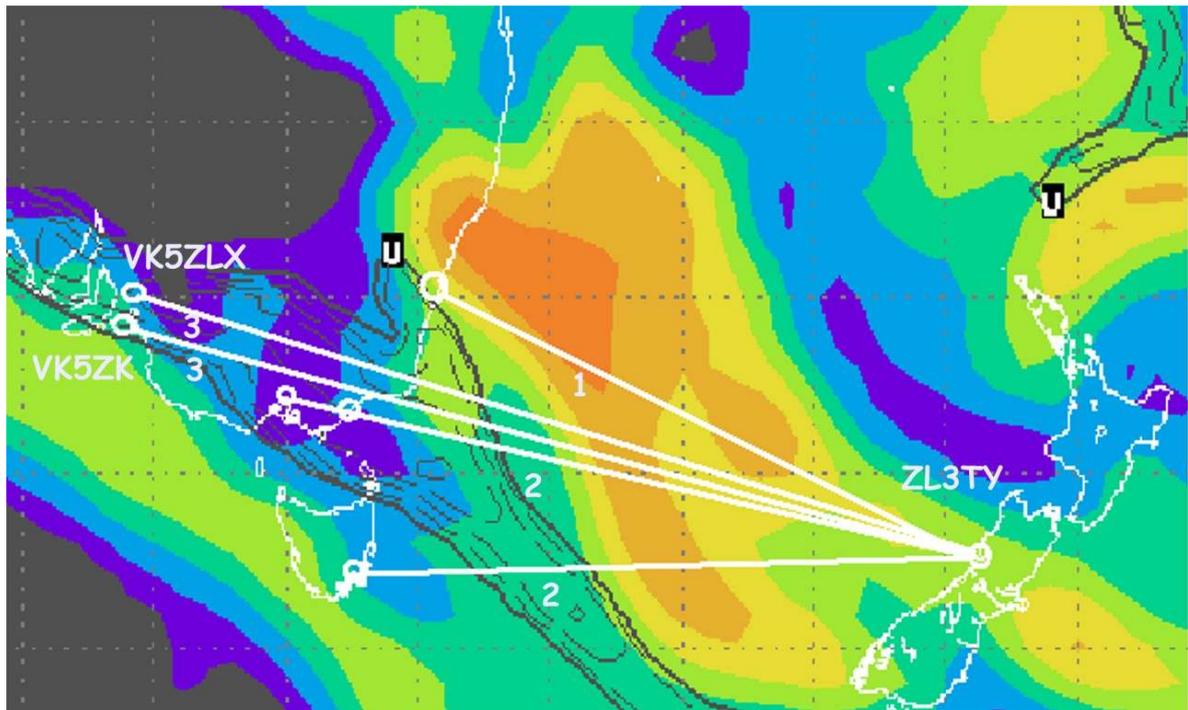
000830	21.4	160	2	26	22	3TY VK5ZK3 L3TY K ZHZQF3
004130	4.6	100	5	16	109	ZL3TY VK5ZK ZN3DY
004130	4.8	140	2	26	109	3TY VK5ZK ZL3PY VK5ZK
004130	4.6	160	1	26	109	I3TY FK7YK ZL3TY VK5ZK ZN
004130	4.6	120	4	26	109	K ZL3TY VK5ZK ZN3DZ
004130	4.8	140	2	26	152	Y VK5ZK ZL3PY VK5ZK /
004130	4.6	120	4	26	109	K ZL3TY VK5ZK ZN3DY
004730	11.4	360	3	26	109	9 VK5UK ZL3TY VK5ZK ZL3TY VK5ZO ZL3TY3RK
004730	12.0	240	2	26	152	ZL3TY VK5ZK ZL3TY VK5ZK ZL3TY VK5ZK E
004830	10.1	100	4	16	-21	L3TY 26 VK5ZLX 6Y
005830	19.3	280	4	26	109	I#K TQ R25 LY6A F 26 D 5ZLX F3 G5YLK
005830	19.3	280	3	26	109	E1TY BT 8?G6 TI UK X8KZH3F P ,/K MHFQ
005930	7.7	220	3	26	65	LX 2626WZL3VY 26 VK5ZLX 2226 ZO1EQ
005930	8.0	200	5	26	65	ZLX 2626 ZL3TY 26 VK5ZLX 2626 Z
005930	8.2	440	4	26	65	VK5ZLX 2626 ZL3TY 26 VK5ZLX 2626 ZL3TY

Decodes received by ZL3TY from VK5ZK and VK5ZLX at a distance of around 2900 km on the first day of testing.

235800	23.2	80	2	16	-150	K ZK VK5ZL ZM
233700	20.0	260	2	26	-64	5ZLX ZL3TY VK5ZK VK5ZLX ZL3TY VK5ZK VK5Z
233700	17.7	120	2	26	-64	X ZL3TY VK5ZK VKUZN
233200	7.0	80	2	16	-64	K5ZK VK5ZLX ZO
232600	4.6	80	2	16	-107	ZL3TY KQ ZL0TY

Decodes received by VK5ZK on the second day of testing.

While Garry heard around 15 pings on the first day of testing, these did not decode due to a set-up problem with clip set to full at 99, thus eliminating meteors (Murphy's Law). Note that while hard clipping can be useful for eliminating meteors from tropo signals on JT65, clip should not be used on FSK441. Later versions of WSJT avoid this problem by automatically changing to the default values on change of mode.



Hepburn chart for 1800 UTC on 27 January 2006

1. Tropo-ducting to Sydney area
2. Tropo-scatter extending duct to Melbourne and Hobart
3. Meteor-scatter extending duct to VK5ZK and VK5ZLX

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5UBC

Sporadic E openings continued to occur during January and early February without any highlights although some good openings occurred from VK6. Odd openings occurred on many days in January with good openings down the eastern seaboard and to VK5 on the 12th, 14th, 15th & 16th January with the band being open several hours on these days. Norm VK3DUT made a good contact with VK6KDD in Port Hedland on the 16th January.

Bumper openings occurred from VK6 to VK5, 3 & 2 on the afternoons of the 4th & 6th February. Many VK6's including VK6HK, ZAK (Kalgoorlie), JJ, JR, AB, IP, RZ, RO, KDX, ZWZ, CO were worked in VK5 and on the 4th February the opening extended to Southern NSW where Leigh VK2KRR worked 8 VK6's on his dipole. Also during this opening Noel VK6ZAK in Kalgoorlie was able to work stations in the Perth area on backscatter. On the 6th February the opening extended to Northern VK3 where Norm VK3DUT worked several of the VK6's. It was great to hear so many VK6's on the band.

A good opening from John VK4FNQ in Charters Towers to VK6 on the 9th January when John worked VK6RO, IQ, ZKO, JJ & RZ. John also had an opening to ZL on the 7th January where he worked ZL2TPY & ZL2BPL.

On the 7th January ZL'S were also worked by Brian VK5UBC from his portable QTH at Corny Point (PF85mc).

It is also worth looking out for the odd tropospheric contact. Recently I have worked Leigh VK2KRR (The Rock 760km) and Terry VK3ATS (Mildura 300km) early in the morning. These contacts are normally possible when good tropospheric conditions are being experienced on 2m.

Received a note from Jack VK2XQ in Sydney summarising December/early January activities as follows:-

Only two openings to Japan noted in December, nothing in January so far. The two JA openings have been quite short, only 10 to 20 minutes or so and on 4th December I worked JA2DDN. Nothing from South Korea, Hong Kong or China heard.

The path to ZL is the only regular event, sometimes open as early as 2000z and closing as late at 1300z. All of ZL call areas (ZL1, ZL2, ZL3 and ZL4) have been heard/worked in Sydney.

New Caledonia is also fairly regular from mid to late morning onwards, from 2230z right through to 1000z on some occasions. FK8SIX beacon often 20dB over, but only operator heard this season was FK1TK working VK4's.

Interstate DX has been good with all of VK4 noted and although VK4ABP beacon has been heard many times as yet no one has been worked in Longreach, odd paths to VK3, mostly on scatter and the VK7 path has been irregular, but when open the regulars from Hobart and Launceston have been worked or heard. VK6 path in the afternoon to late evening has produced some lengthy openings with good signals, not regular though, just have to be on the right time to get this path.

VK5 and VK8 Alice Springs also about, VK8 beacon comes in when the VK5's are strong indicating the path has extended.

Jim VK9NS has not been heard on six this season, usually when the FK8 beacon is strong Norfolk Island can be worked.

Not many new ops on six this season, same old voices, same old grid squares means I have lost a little interest. The radio often runs for hours but I have not worked anyone but have heard the same old calls etc. Many of the regular six ops in Sydney are absent this season too, some days I am the only Sydney station on air.

Despite being reported as back on air in "test" mode, I have yet to log the Launceston beacon, the VK5RBV beacon beats the VK5VF beacon hands down. The ZL1VHF beacon in Auckland is off air until further notice. Only VK4 beacons on air are RTL, ABP and RGG, rest are off air and have been for some time.

Thanks Jack, my observations in VK5 are fairly similar, my log indicates that the number of contacts and different stations worked this season to be about 30% down on the previous season. Generally there appears to have been less regular openings with activity down. One very disappointing aspect is there is very little activity from the NT with Jeff VK8GF in Alice Springs being the only active station with no reported contacts into the Darwin area. Also I do not know of any beacons or activity from Papua New Guinea.

Please remember to send any 6 m information to Brian VK5UBC

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

FM DX during January was quite eventful with some good openings, mainly in the south of the country.

A pretty big duct opening occurred on the public holiday Monday 02/01/06. This opening spanned the legendary Great Australian Bight Path. During this opening, conditions noted from my QTH were reasonable to the Adelaide area repeaters. Though better signals were noted from the repeaters at Mt Gambier and Naracoorte. Of more significance, I was also able to access the VK6RMS Boddington, Mt Saddleback repeater on 147.250 MHz, approximately 120 km SE of Perth and 2817 km from my QTH. Did not hear any response to my CQ calls and the repeater signal was only as good as an S2 here.

Things were very quiet in VK4 during January. But one quick report from Mike VK4MIK near Cairns showed a long path on 04/01/06, where Mike was able to get into the VK4RGA Monto repeater over a big 951 km distance down the coast. Sadly no reports of Papua New Guinea 2m signals heard in VK4 again this summer.

Noted on the 09/01/06, a rare contact from Grant VK2AXB in Orange way down to Mt Macedon VK3RMM. Here Grant worked John VK3HJW mobile and some other VK3's.

More big tropo openings in the south on 13th and 14th Jan and a Bight Path opening on the 25th Jan made for some big signals. VK5 repeaters such as Lobethal, Crafers, Barossa Valley, Central North, Naracoorte, Bordertown, Murray Bridge, Port Lincoln, Port Augusta were all 5/9+ into my location at some stage. A call on 146.500 produced a small pile up from here with stations VK2PDW Wagga, VK2AYM Albury, VK3YLV Horsham, VK3FIQ Stawell, VK2RO/m Yarrawonga, VK3JRA/m Kyabram. VK5AEP at Port Lincoln was also worked on a separate occasion.

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