
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

So far this summer, we've had one of the best VHF DX seasons for many years – some say 20 years. On the 2 m band, there have been good openings to ZL, VK6 to VK3 and from VK7 to the mainland far and wide (including VK6). The 2 m Sporadic E openings have been numerous, long-lasting and widespread with several contacts that appear to be double-hop. What more could we want!

Firstly, thank you to all those who sent me reports of their contacts. Unfortunately, there's been so much happening (not helped by the one month break for AR) that I have no hope of reporting it all without earning a stern reprimand (and slash of the red pen) from our illustrious editor. So, I'll try to summarise what's happened and give you the highlights.

On 19/11, 2m opened from VK2's AWD, FZ and EAH to ZL3TY.

On 21/11, Norm VK7AC worked Colin VK5DK in Mt Gambier on 2 m, 70 cm and 23 cm with 5/9 signals on all bands.

On 23/11, 2m again opened across to ZL.

On 24/11, Norm VK7AC worked into the Adelaide area making contact with (2 m) VK5ZLX 5/9+, VK5BC 5/9, VK5AKK5/9+, VK5OM 5/9, VK5ZK 5/9; (70 cm) VK5ZLX 5/9, VK5BC 5/6, VK5AKM 5/2, VK5ZK 5/9, VK5AKK 5/9. The highlight of the day was the 1009 km contact with Phil VK5AKK on 23 cm at 5/9 – a new VK7 23 cm distance record.

On the same day, Mark VK2EMA in central NSW also managed to work into Adelaide, to (2 m) VK5ZLX 5/9+, VK5BC 5/2, VK5ZK 5/9, VK5AKK 5/9; and (70 cm) VK5ZLX 5/9, VK5AKK 5/9, VK5ZK 5/9.

On 27/11, Wally VK6WG reports working (2 m) VK5NY 5/9+, VK5AKK 5/2, VK5ZAI 5/4, VK5BC 5/5, VK5DK 5/5 VK3AAK 5/1, VK3XPD 5/1 VK3TW; (70 cm) VK5NY 5/8. On 23 cm, Wally was heard by VK5BK. On 2 m, he was heard by VK7AC. The Mt Gambier VK5RSE beacon was audible all day.

On 28/11, between 0550Z and 0900Z, Wally reports hearing VK5RSE on 2 m, 70 cm and 23 cm and VK3RGI (Gippsland) on 2m, 70 cm and 23 cm. Despite numerous calls on 144.1, no contacts were made. Huge signals from VK3 to VK7 –VK3PY to VK7AC S9+20 on 23 cm.

On 7/12, Brian VK5BC reports working VK4FNQ.

On 8/12, the Sporadic E openings started in earnest. Phil VK3YB worked ZL1IU 5/1. ZL1BT worked VK3VHF 5/8, VK3ZYC, VK3EK 5/8, VK3YB 5/1 (2616 km), and is heard several times by VK3NX on (very) sporadic E. Jim VK5OM with a very modest station (25W to two stacked halos) worked VK4KAY and VK4BKP. VK5BC worked VK2DAG and VK2ZT.

On 9/12, probably the best contact of the season (so far) when Nick ZL1IU worked Garry VK5ZK and Peter VK5ZLX on 2 m – a distance of 3160 km. Gordon VK3ACC and Trevor VK3VG also both worked Nick. Both of them reported hearing both sides of the VK5/ZL contacts, leading to speculation that the mode of propagation was either double-hop Sporadic E or tropo-enhanced Sporadic E. Trevor reports that he tried 70 cm to Nick, but nothing was heard despite the S9+ signals on 2 m, backing

up the theory that Sporadic E was involved, at least to central Victoria. This is the longest distance VK 2 m contact for many a year.

Continuing on the 9/12 (which was a very busy day), Glenn VK4TZL reports working VK7AC 5/9+40, VK5ZK, VK3ZQB 5/9, VK3XQ, VK3AKK, VK3CAT, VK3AMK, VK3DMW, VK3KAQ, VK3KAI and VK7AC again. Norm also worked VK4CP and VK4KK. Russell VK3ZQB reports that he gave up trying to watch TV as there were 3 Ch 2 stations competing for his viewing. On 2 m, he then worked VK4TZL 5/9, VK4WS 5/8, VK4ARN 5/9, VK4ZAA, VK4ARS 5/3, VK2FMB, VK2BA, VK2DVZ 5/9 and VK2FAD 5/9+ at Taree. Ross VK2DVZ reports working VK1, 2, 3, 4, 5, 7 and both islands of ZL. Steve VK2ZT reports the same spread of coverage, with 20 contacts and 22 on the 10/12. VK3VHF worked ZL1IU 5/5. Phil VK4CDI reports working ZL1IU, then 7 VK3's and 1 VK7. David VK2BA reports that he was working VK6's on 6 m and, with the short skip, decided to try 2 m. The band opened strongly to VK3 and he worked 10 VK3's through the only pileup of interstate stations he has ever heard on 2 m. He also worked VK7AC 5/9 – all with his beam towards VK6.

Still on 9/12, Andy VK2AES reports working ZL1IU. He then contacted some Canberra stations and, as a result, Ian VK1BG and Rob VK1ZQR both had good contacts with Nick. This is possibly the first opening on 2m from the VK1 area into ZL for a couple of decades.

On 10/12, tropo was the main form of propagation. On 2 m, ZL3TY worked 13 VK2's and 9 VK3's. VK5ZLX was also heard. Rhett VK3VHF worked ZL3TY 5/5 on 2 m and -23 on 70 cm JT65.

On 11/12, the tropo enhancement had moved and ZL3TY reports working 15 VK2's and 3 VK4's on 2 m. VK2FZ was worked on 70 cm.

On 16/12, Simon ZL1SWW reports working VK2FZ, VK2ARA and VK2BX on 2 m and heard "someone from the Dandenongs" (probably VK3KAQ).

On 22/12, another strong Sporadic E opening. Paul VK3DDU reports working 8 VK4 stations on 2 m. Colin VK5DK worked 7 VK4s, 2 VK2s and 2 VK3s. Steve VK2ZT reports 1 VK3, 3 VK4s, 6 VK5s, 2 ZL1s and 5 ZL3s (over 2 days). Rex VK7MO reports working VK4KDD, VK4WS, VK4ZBH, VK4APG, VK4ZAA, VK2YO, VK4ADM, VK4EME, VK5AKK, VK5EME, VK5UK, VK5ZBK and VK5ZK. Doug VK4OE reports working VK5BC, VK3KAQ and having a 15 min rag-chew with VK3PY at S9+. Then the skip shortened to VK2AYM (Albury). Then VK3DDU, VK5ZK, VK3DUT, VK3VHF, VK3AMK and VK3WN. After a break, he worked VK7AC, VK5ZAI, VK5DK and VK3ZQB. He also heard VK4TZL (Hervey Bay) work VK7ZIF near Hobart.

On 23/12, another spectacular contact occurred. At 0900Z, Cec VK6AO worked Joe VK7JG on 2 m, in a brief opening, over a distance of 2977 km. This is a new VK6 and VK7 2 m distance record and, it is believed, the first 2 m contact between VK6 and VK7.

Still on 23/12 (and the same opening), Colin VK5DK worked VK6HK 5/3 and VK6AO 5/7 and heard VK6ADI 5/6. The opening only lasted about 30 mins and the VK6RPH 144.460 beacon was audible. VK7MO worked (2 m) ZL4LV, ZL4DK, ZL3TY, ZL3NW, ZL3OZ, ZL3AAU, ZL3AIC, ZL3MF and ZL3CU. Murray ZL3MH worked VK1BG and VK2KU on 2 m.

On 25/12, plenty of sleigh-enhancement early morning. Jeff VK8GF worked VK4ARN, VK4CP, VK4APG, VK4JMC, VK4ASB, VK4TJ and VK4AFL. The VK4RTT beacon was S9+ from 0045-0155Z.

On 26/12, Rob VK4TWR reports working VK2GKA 5/9, VK2BXT 5/8, VK3NX 5/3, VK3ACC 5/4, VK2EMA 5/9+, VK3AMK 5/9+, VK3AAK 5/9+, VK3XQ 5/5, VK3II 5/5, VK3BBB 5/9 and VK2KRR 5/5.

On 2/1/07, Neil VK2EI reports working VK4BOF 5/6, VK4FNQ 5/9, and VK4BEC 5/5.

On 4/1, several big E's openings occurred. A dogpile built up on 2 m, although operation was reasonably orderly with most stations calling on 144.1 but announcing that they were listening on another frequency. Trouble was, quite often you would QSY and find the other frequency now in use! There were many QSOs between VK1, 2, 3, 4, 5 and 7 stations – too many to list. The opening lasted for about 4 hours. John VK4FNQ reports working 36 stations.

5/1 was a similar day. Ron VK3AFW reports that he observed 3 E's opening periods – 0030 to 0100Z, 0300 to 0540Z and 0905 to 0908Z. For the VK4's the opening was continuous from 0030 to past 0600Z. VK4 stations that were consistently heard in Melbourne included VK4TWR, VK4BKP, VK4BLK, VK4FLR and a Foundation License holder Tom VK4FTDX who seemed to be having a ball. Many other VK4s came and went as the enhancement moved around. Gordon VK3ACC on the Murray reports working 13 VK4 stations. Trevor VK3VG in central Victoria reports working VK1, 2, 3, 4, 5, 7 and 8 in the UTC day and had excellent back-scatter signals when beaming west, but no VK6. Steve VK2ZT reports working ZL3FV and VK8GF – both just over 2000 km in opposing directions from him.

So, it's been a very lively two months. Hopefully there's a lot more to come before the season ends.

Spring Field Day

As I write this, Summer VHF/UHF Field Day is almost upon us. I received a few notes about the Spring Field Day that may be of interest.

It's good to see a bit of activity from the VK1 area, with several stations perched on the hilltops. Ted VK1BL reports:

What a fantastic weekend. Thank you to everyone who participated. VK1 and surrounding area saw quite a lot of activity, although things started pretty slowly on Saturday afternoon. It was great to have home stations coming up in support of people in the field, and the tropo duct on Saturday night up the coast was just great for those willing to stay up to 1am Sunday...

Greg VK1AI and I had a great time on Mt Corree (QF44iq). We'd planned to camp down in the forest, but the activity Saturday night kept us on the summit where we eventually slept under the stars after closing down at 1am Sunday. Rain woke us at around 3:30am but we caught a few hours sleep cramped in the front of Greg's Range Rover until about 7am...

Here's for even more fun on the Summer Field Day in January.

Doug VK4OE also had some fun:

I, as usual, had a great time operating five bands as a single operator during the recent Spring VHF/UHF Field Day event, but I particularly want to describe the best tropo QSO that I have experienced during such a contest. Normally, good propagation seems to be reserved for times other than contests...

Early on the Sunday morning I set up my portable gear on Springbrook Mountain which is just inland from the Queensland Gold Coast, right on the NSW border (QG61PS) and at 2000 immediately made contact with some Brisbane stations. A weak signal coming from the North was evident behind those strong stations and it

was a thrill to discover that it was John VK4FNQ in Charters Towers (QG39EX). The ensuing contact at 1148 Km was a steady 5x1 to 5x2 without QSB over a few minutes, and very satisfying. Attempting 70 cm was without success.

The weather chart showed a large, long and stable high pressure ridge in the right place to make this contact possible through enabling a coastal duct to form.

A point that interests me about this QSO was that Brisbane stations in elevated locations or with a good take-off to the North, those who can and do occasionally work North Queensland stations when there is a coastal inversion in place, were not hearing John at this time. Propagation at the Southern end was to the 1050 m. elevated site where I happened to be.

Some other Queensland coastal paths that have been worked, e.g. Brisbane to Cairns and the Atherton Tableland area, are longer. However, for propagation to occur when operating portable is rather special!

Microwave

Colin VK5DK reports some interesting activity on the 24 GHz band:

Russell VK3ZQB at Port Fairy and Trevor VK5NC and myself in Mount Gambier have had our first contact on 24 GHz since we altered the feeds on our systems.

On the evening of November 19th, a check of the VK5RSE 1296.550 MHz beacon by Russell showed a very strong signal at 5x9+. I set up at my portable location on the edge of the crater of the Blue Lake and was able to hear the 10GHz beacon, located temporarily at Russell's QTH, at 5x9. Russell then proceeded to his portable location in the sands dunes just outside Port Fairy – a distance of just over 200 km. A 5x9+ SSB contact was made on 10GHz.

We set up the 24GHz units and Russell transmitted a signal to me but nothing was heard. I then transmitted a signal back to Russell who found me about 40Khz lower than he expected. After aligning our dishes, we had good 5x9 signals both ways. This is the best signal heard over this path on 24GHz with very steady signals over the 30 minutes QSO.

Alan VK3XPD reports on some further activity:

On Tuesday, November 28th at 1010Z, the current National VK Record for 24 GHz was extended from 201km to 230.05 km.

Russell VK3ZQB, operating from the summit of Mt Warrnambool (east of Warrnambool) worked Alan VK3XPD operating from Berwick in the eastern suburbs of Melbourne. Signal Reports were 5x5 both ways.

Our 10 GHz systems were initially used for determining bearings because the "pointing" of our 24 GHz systems is extremely sharp/critical. Several other QSO's followed on from this initial record claim with signal reports up to 5x9.

An attempt was made over a longer path of circa 400 km to Colin VK5DK and Trevor VK5NC operating from a site near Mt Gambier. However, this proved unsuccessful. It was later found, when Russell & Alan tried again, that the propagation had collapsed. This phenomenon occurred within a matter of minutes and is usually the result of rising humidity, which attenuates 24 GHz signals heavily.

Station parameters are Tripod mounted 600mm Dishes fed by Transverters which develop a rather modest 500 Milliwatts on 24048.1 Mhz and 2 metre IF's.

The weather conditions prevailing at that time of our Record attempt (2110 hours EDST) were fine and calm and coincided with some excellent propagation south into VK7 and west to VK6 on several days prior.



VK3XPD 24 GHz Setup

EME

Beacons

A short note from Doug VK4OE to advise that VK4RBB has commenced transmission on 432.440 MHz, 1296.440 MHz and 2403.440 MHz from its permanent location at Murrarie in Brisbane, QG62NM. Transmitter powers are 8W, 9W and 2W respectively, and each antenna is horizontally polarised and omnidirectional. Reception reports from distant stations would be greatly appreciated to Doug at friends@squirrel.com.au

The northern Tasmania 2 m beacon – VK7RAE – on 144.474 MHz has been put back into operation at a new site on Don Hill near Devonport (QE38DU). It is running 10 W to a Big Wheel antenna, and has been heard several times already in VK3. Thanks to Joe VK7JG and the others involved in the work.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

John VK4JMC joined the group and puts out a good signal on FSK441. Peter VK3SO is operational and getting his feet wet by listening in to the activity sessions held from 0700 to 0800 local each Saturday and Sunday.

The procedure developed by the group for working more than one station at a time is working well and has advantages even when working one station in that other

listeners can identify the transmitting station and, as it takes fewer characters, it will sometimes get through on a shorter ping. Thus it is suggested that this procedure be generally applied in VK-ZL even when working only one station at a time. An example of this procedure is as follows:

Message Sent	Station Transmitting
CQ VK2AWD	VK2AWD
VK2AWD/27 VK4CDI/37 VK3II	VK3II
VK3II/R26 VK3AXH/38 VK2AWD	VK2AWD
AWD/RRR VK4CDI/26 VK3II	VK3II
II/73 VK3AXH/38 VK2AWD	VK2AWD

There is a limit of 28 characters on the WSJT program which means it is not possible to work more than two stations at a time.

Around 18 November, a number of stations were testing the limits of FSK441 at the time of the Leonids meteor shower. While the Leonids did not produce more than a marginal increase in meteor pings, they did encourage activity. There were more burns than normal and the best burn recorded was of 88 seconds duration from VK4EME that was copied in VK1, VK3 and VK7 at the same time. A number of stations attempted QSOs over longer distances to ZL with the following results:

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ZL4LV VK7MO 1862 km QSO
ZL3TY VK7MO 1951 km 4 x QSO
ZL3TY VK2EAH 2003 km Identifiable ping
ZL3CU VK7MO 2045 km 2 x QSO
ZL3TY VK1WJ 2077 km 2 x QSO
ZL3TY VK3ZYC 2093 km Identifiable pings
ZL3TY VK3VHF 2162 km Identifiable pings
ZL3TY VK3HZ 2272 km Identifiable ping
ZL1IU VK7MO 2431 km 4 x Identifiable pings in 4 hours
ZL3TY VK4EME 2451 km Identifiable ping when VK4EME working VK1WJ
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These results show the maximum distance QSO was 2077 km but that a few pings were seen out to as far as 2400 km. The results support the view that there is a practical limit of just over 2000 km for meteor scatter.

There is strong evidence that meteor scatter can be extended beyond the practical limit of 2000 km by tropo-ducting, with pings copied last year by Gary VK5ZK and Peter VK5ZLX from Bob ZL3TY at around 2800 km. In order to explore this dual mode of propagation, Nick ZL1IU has been running tests with Rex VK7MO. They report that on both 11 and 26 December, when the Hepburn charts indicated ducting on Nick's side of the Tasman, that QSOs were completed with ping rates of up to 60 per hour compared to less than one per hour under normal conditions. Thus it is worth watching for this dual mode of propagation whenever the Hepburn charts indicate the possibility of a tropo extension. While a tropo extension will generally not go over high mountains, the meteor scatter part of the path is well above mountains and would, for example, allow stations West of the Great Dividing Range to work into ZL. Similarly a duct on the VK side of the Tasman will allow ZLs on the other side of the New Zealand Alps to work extended paths into VK.

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5BC

After some good openings in October the band continued to improve in November and by December the sporadic E season was in full swing with openings on most days. Most operators consider the season as one of the best sporadic E in memory with high activity from all call areas. Typical of comments and a summary from a VK6 perspective are those I received in a message from Graham VK6RO.

The December 2006 6 m sporadic E DX season was the best I have ever experienced in the 28 years I have been DXing on 6 m.

I use a quarter wave vertical at about 10 metres high and an old Kenwood TS 680s as my scanning setup. This TS 680s has been scanning every day for about 20 years. For QSO's I have a 6 element log periodic.

This past season was outstanding for the number of openings to indicators or actual QSO openings. The band was open to New Zealand for 1 day in November and 4 days in December, this is outstanding, I do not remember this number of ZL openings before.

Please see below some statistics from my log. I log every indicator etc as they show up.

November 2006 [NUMBER OF OPENINGS IN BRACKETS]

Days open: 6

Beacons heard: VK6RSX [4] VK5VF [1] VK8RAS [1]

TV: 46.240 [1] 46.172 [2] 45.250 [1] 57.250 [3] 57.260 [1]

Hams worked VK5BC AND VK7AC

December 2006

Number of days open to indicators or hams: 25 This must be a record for my shack.

New Zealand QSO

Openings occurred the following 4 days,

16th with ZL3AAU

17th with ZL3NW, TY, MF and AAU.

23rd with ZL2AA, DX, ZL3NW, DAC, ZL1CX and ZL3TY

26th with ZL3TY

This number of QSO openings to ZL is virtually unheard of in OF77XX

BEACONS: See below the number of openings to each beacon heard.

VK6RSX (17), VK8RAS (9), VK5RBV (2), VK3RMV (6), VK5VF (7), VK7RAE (2), FK8SIX (1)

VIDEO OR AUDIO INDICATORS:

46.172 (25), 57.260 (15), 57.250 (20), 46.240 (14), 45.240 (16), 45.250 (9), 45.260 (9), 50.740 (1) 50.750 (1) [not all recorded, too exciting trying to work ZL's to listen] 48.239.6 (1), 55.250 (1), 55.250.1 (2), 55.260.5 (1), 57.750 (1)

QSO results:

All states were worked except VK6. Usually VK6JQ in Broome is heard, but nothing this season so far.

BEST DAY

The best day overall in my shack was December 23

Cheers from Graham VK6RO/VK6SIX IN OF77XX

In VK5 the band was open of most days in December often from first thing in the morning until late in the evening. On many days all states were worked with often very short skip occurring. There were several openings to VK3 and during one of these opening Stations from Mt Gambier were S9+ into the Adelaide area. Also on several occasions both sides of VK6/ZL contacts could be heard.

A welcome addition this season is the Darwin VK8VF beacon on 50.310. It has been heard in most states and it has been great to work several stations including Mark VK8MS, VK8AH, Richie VK8RR and Joe VK8VTX from the Darwin area. Along with the Darwin stations, Jeff VK8GF has been worked regularly from Alice Springs and this season Wayne VK8ZAA has been active from Alice.

Activity from VK7 has also been high this season with several active stations both from Northern Tasmania and Hobart active.

I received the following information from Jack VK2XQ.

53 MHz Repeaters: Auckland (no callsigns on ZL repeaters) has a great repeater on 53.725 MHz in RF-73, it's into Sydney most days, worked Grant ZL1WTT and Michael ZL1ABS, not many other ZL1's use it.

Christchurch repeater was in on Saturday (06th Jan) morning on 53.850 MHz, no one worked, must have all been on 50 MHz!!! Cannot get this repeater as Sydney WIA repeater on this frequency, however, it has been off air during the past three days which is a bonus.

Both Adelaide repeaters regular into Sydney, however a lack of operators mean calls go unanswered, worked Steve VK5AIM and a couple of others in recent days.

Both Tassie repeaters also into Sydney, a few VK7's worked on both.

52.525MHz Simplex: VK4, VK5, VK7 and ZL3 worked during Dec/Jan festive season break. Congestion means it becomes unusable many times, I often get my contacts to drop to 52.500 or 52.475 MHz to escape the melee on 525. Rod ZL3NW in Christchurch worked at 2330z on 52.525 MHz 5X9 report on Sat 06th Jan.

52.050MHz (old call frequency): Some ZL2's and ZL1's heard/worked on this one, these ZL's are not allowed on 50/51 MHz due to Channel-1 TV restrictions and thus are only allowed 52 MHz and above. These fellows are largely forgotten there, one chap said I was the 1st VK he had worked in 7 years as everyone is on 50.110 these days. Also worked a VK4 and a VK7 on 52.050 MHz, the VK7 was a "H" call and said they are not allowed below 52 MHz.

Interesting Grid Squares worked:

VK2KRR QF-34, VK3AS QF-13, VK4EK QG-36, VK5ZPG PF-97, VK5GA QF-05, VK5AYD PG-71, VK6BE OF-84, VK6WG OF-84, VK6RO OF-77, VK8MS PH-57, VK8GF PG-66, FK8GX TG-28, FK8BG RG-28, ZL2TMB RE-79, ZL2DX RE-78.

Last week (end Dec) the ZL's came in just after 5.00am local time (1800z) with James ZL3FV at Hokitika RE-57 worked 5X7 at 1815z or 5.15am local!! I am usually up around 4.30am. Also yesterday I heard VK8RAS beacon at 1945z or 6.45am local, very surprising, VK2KRR was also hearing it.

Gary VK4ABW north of Townsville reported hearing the V73SIX beacon in the Marshall Islands 579 around noon on New Years Eve and at the same the KH6 was just audible.

The New Caledonia beacon FK8SIX on 50.080 has been heard regularly in all states but unfortunately there appears to be very few active 6 m operators from FK8 and only a few contacts have been made.

The month of December certainly was a very busy one on 6 m with high activity from all states. It also has very been pleasing the work many stations new to 6 m, my log indicates that I worked approx. 60 new callsigns.

Please remember to send any 6 m information to Brian VK5BC