
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

Welcome back after the summer break.

Compared to last summer, this season started very slowly, possibly due in part to the odd weather we have been having. Up and down the east coast, we have had LOTS of rain and the weather in Melbourne has been very mild, apart from a one-day scorcher on New Year's eve.

All were waiting expectantly for another bumper year of Sporadic E, but there has only been a little activity on this front so far. I'm writing this on January 4th, so still lots to happen, I hope.

Back to November, on the evening of the 24th, a 3-day tropo opening formed from the east coast to ZL. On the VK side, VK4OZ, VK2DVZ, VK2ZT and VK2KOL were involved, while ZL3TY and ZL1IU held up the NZ side. No contacts were made above 2 m.

Early December was fairly quiet. On the evening of the 7th, VK2AH and VK2BCC worked across to ZL2OK on 2 m.

On December 19th, Nick ZL1IU had a busy time with what was most likely a Sporadic E opening. Between 0635Z and 0730Z, he worked VK2DVZ, VK2KOL, VK2BCC, VK2BLF, VK2TS, VK2MER, VK2DAG, VK2FAD, VK2ZTV, VK2PC, VK2ZT and VKAMS – all on 2 m. Signals were reportedly quite strong at times, sometimes dropping out, so Sporadic E is strongly suspected.

On December 29th, a more widespread Sporadic E opening formed between VK3/5 and VK4. FM stations from all over were pounding into Queensland. At about 0310Z, VK3GHZ worked VK4OE and VK4OX. VK4OX also worked VK3DUT and VK7AC. At about 0535Z, VK4KAY worked VK5AKK, VK5GF, VK5ZK, VK5BC/P and VK5LA. VK4BZP also worked VK5AKK and VK5ZK. At about 0600Z, it was the turn for Melbourne stations. John VK4FNQ was about the only opportunity and was S9+ for nearly an hour working many stations. Nick VK4FMAG on Magnetic Island also appeared briefly, working several VK3 stations. In the meantime, "nearer" VK4 continued to work into the Adelaide area. The opening continued until about 0830Z.

On the morning of December 31st, good tropo conditions were present up the southeast coast. Rex VK7MO worked Steve VK2ZT on 70 cm SSB.

On the evening of January 3rd, another Sporadic E opening occurred between VK2/1 and ZL. At 0510Z, VK2ZT worked ZL1IU. Others also worked in the brief opening that only lasted 15 minutes or so. By 0845, the opening resumed but with the cloud shifted favouring a different path. VK2DO worked ZL3AAU and ZL3NW, then went mobile to work ZL3NW again and ZL3ADT. VK3DUT to ZL2TAL and VK2ZT to ZL4LV. VK1KW worked ZL3AAU, ZL3JT, ZL3ADT and ZL3NW. At 1005Z, VK3EK worked ZL2TAL after which the propagation closed.

Throughout December, the VK6REP 2 m beacon has been heard from time to time in the Melbourne area. Unfortunately, there seems to be a shortage of active 2 m weak signal stations in the Esperance area and no contacts have been made. The Albany beacons are both currently off the air, so no indicators are available from that area. Derek VK6DZ to the west of Albany has recently become active and is trying a bit of digital mode operation which is good to see.

Spring Field Day

Quite a few stations went out and braved the glorious conditions for the Field Day.

Peter VK3TPR reports on a somewhat challenging day:

Had a great time on Arthur's Seat with Mike VK3KH. However, it got very windy about 4pm, the sea breeze was close to a gale until about 7.30pm. My dish and 10 GHz transverter blew over, over the guardrail and was heading down the slope.

When I climbed over and started picking it up, it looked OK except a piece of hardline was ripped from its SMA (regular problem for me) but I couldn't see the FT-817 anywhere! It had slid off in the dirt and long grass and appeared a bit dusty when I finally found it.

Managed to do a re-setup after a while when the wind dropped and with the tripod tethered to the wagon tailgate hinge and Michael's spare piece of coax managed to work VK3UHF and VK3ER although with the distortion problem on SSB both contacts were made on FM.

I also worked VK3HZ and VK3MQ at Johns Hill Reserve so I'm counting 4 contacts on 10GHz - five including Rex VK7MO's JT65 from QF30. It would have possibly been a couple more if the wind wasn't so strong. Michael had some initial cable/connector problems on 10 GHz trying to work Rex at QF30 so he did not set up at Arthurs Seat until after the wind dropped and I was working VK3UHF - he also worked VK3UHF on 10.

I worked Rex at QF30 at sigs of -25 and -16, Rex told me later by email that it was knife edge refraction of up to 10 degrees to make the contact.

We had a pretty good contest overall, 2.4GHz was quite productive and we logged a modest number on 2, 70 and 23 cm and a couple on 6 metres so we were happy except for the strong and cold wind. Everyone else we gather was basking in warm sun.

Bryon VK3YFL, pictured below, was operating his 10 GHz system for the first time from a location to the north of Melbourne, and managed a few good contacts with it.



Chas VK3PY joined the VK3UHF team for another enjoyable Field Day outing. He reports:

What a fabulous event the Spring FD turned out to be for us. The weather, for once, was absolutely perfect. All our equipment worked as expected with no dramas, and we had a ball with the microwave bands. Who'd have ever thought we'd make well over 80 contacts on the microwave bands (2.4 to 47 GHz inclusive)?

A real buzz was seeing the VK3NX and VK3QM 47 GHz gear in action. Another highlight was being at the other end of Bryon VK3YFL's inaugural 10 GHz contact.

More than 200km on his first shot in anger, and his signal was huge.

Yet another pleasant surprise was working Rex VK7MO/P in QF30 (southern tip of Wilson's Promontory) on 10 GHz. Rex had announced his intention prior to the contest, but when we set up our station at the usual QTH on "our" hill we discovered the farmer had left a combine harvester strategically parked a couple of hundred metres away, in precisely Rex's direction. Hmmmm....what to do? The most expedient solution was to take David VK3QM's "spare" 10 GHz system to a spot a little further south of the main station where it would have a clear view towards Wilson's Promontory. We needn't have bothered. When Rex came up he was a VERY big signal on both rigs. Maybe combine harvesters are transparent at 10 GHz!

I hope that participants elsewhere had as good a time.

Andrew VK1DA / VK2UH was another to experience a few challenges during the Field Day. He writes:

I think this FD may be a turning point for my field day efforts. First the site. Mt Ginini used to be virtually bald apart from grass, over a circle of about 100m surrounding the compound fence. You could drive around to any part of the perimeter and decide on whatever corner you wanted to use. The North West corner was the favourite of Ed VK1VP, who I accompanied on quite a few field day efforts up there. That corner is now much less useful as the forest has grown taller and now you'd need a 10m or higher mast to get above the tree tops for best microwave performance. The foliage is not being prevented from growing partly because ACT Forests have fenced the hilltop, preventing cars from accessing all but one side of the rectangular compound. So plenty of foliage is growing around the other three sides of the compound. Hence I only operate from the southern face of the compound, which is close to where the 146.95 repeater is located. To put distance between my antennas and the repeater, I usually set up about 30 metres from the compound. To the north east there is almost the same level of foliage as on the NW corner. Due north is the compound fence and even the top of my 6m mast is only just clearing the compound fence. So my path to the Bathurst and Orange area is problematical. These all make for a less than ideal site for ordinary field stations like mine.

There are other much better local sites, like Mt Coree, which being mainly rock at the top probably won't have the foliage problem for a long time. But that is no longer practical to drive to with an ordinary passenger car like mine, you do need much more agile cars for those sites.

Second my gear. I arrived at the site and unpacked the antennas from the roof bars only to find that my 2m yagi no longer had a reflector element. I searched through my stuff but could not figure out a way of using other materials like stiff coax, to replace the reflector. (reflector later found in the grass at home, split in two pieces, apparently broken when I retrieved the antenna from its temporary storage location, overgrown with grass). So I operated the weekend without a reflector on the 2m antenna. I got the impression that the forward gain and directivity were only slightly different from normal. The F/B ratio was shot. This is convenient in some ways as I was able to hear NW and SE almost as well, whether the antenna was pointed in either direction. The directivity of the antenna in the rear half of the pattern was quite different from normal. And for the first time in some years of operating there I got some serious interference from the gear in the compound, with a mixing product producing highly distorted fuzz, modulated slightly by 6950 repeater audio, at s9 on 144.190. This may have been partly due to lack of antenna directivity, or even due to corrosion in the antenna. Such things often occur in the presence of strong signals.

However looking at the antennas I have been using for FD work I do realise that the time may have come to replace them. There is considerable corrosion on the

connectors (N sockets) and this is probably due partly to the antennas being stored outside for 51.5 weeks of the year, without caps on the connectors. The rear feed on the 432 MHz antenna is a rotten system because it means there is a lot of stress on the connector of the feedline. It's much better in my view to be able to tape or velcro the feedline to the boom.

My 1296 antenna setup is also quite inferior to what it could be with only minor effort in either building or acquiring higher gain antennas and feeding them with better cable (currently CNT400). This weekend I did try to use two yagis with a home made power splitter even though it had been measured and found to have a higher than desirable input VSWR. I thought this might not matter much with a 6m length of CNT400, and in fact the IC910 did indicate almost full output power was being delivered, however the performance was quite a bit down on past years. I could not hear anything of the VK3RGL beacon on 1296. Though I worked Gavin 3HY it was with somewhat more difficulty than in the past, and a contact with 3ER, even with the splitter taken out of circuit and using a single yagi, took 20 or 30 minutes to complete (on CW - ssb was out of the question). And while VK1PWE near Batemans Bay was good strength on 144 and 432, he was undetectable on 1296 both with and without the second yagi, and I knew he had worked up the coast to some Sydney area stations on that band. So was this caused by conditions or problems in my antenna? My impression was that conditions on the higher bands were quite depressed compared with past events. The Sydney beacons were not as strong as usual except on Saturday night and I heard nothing of the Mildura 2m beacon.

I did hear more people than I worked but once again some of the problem is caused by continuous contacts being made on the so called "calling frequency" and it is simply not possible to make contacts with dx stations, let alone ask them to QSY, when you are competing with the mass of QRM caused by these contacts, which are between you and the dx. We need to stop operating in these contests as though we have been all allocated a single frequency to use. And yes I also made some contacts on 150, but there is no other choice when CQ calls on other frequencies produce no replies, giving the impression that everyone is apparently queuing up on 150 as if it's an FM repeater. (It's a band, not a channel.)

I was pleased to have made contacts on 2.4, 3.4 and 10 GHz with Ted VK1BL who went up to Mt Ainslie in Canberra to make it happen. Signals on 2.4 were very good, quite good on 10GHz despite beaming through the trees and I was receiving well on 3.4 but in the reverse direction it was necessary to use CW to complete a contact. These contacts were made while Ted was using the usual dish feed on 2.4 and 3.4, but without the dish.

Thanks to Dale VK1DSH who lent me his 10 GHz station and to Ted VK1BL who lent me his "second" 3.4 GHz station for this event. And full marks to Dale for arriving back from Geneva via London on Sunday morning and getting on the air within 30 minutes to hand out some contest numbers. Amazing!

Peter VK3QI reports on the microwave activities of the VK3ER team:

Our conditions on Saturday afternoon didn't seem as good as for those stations nearer to the coast line, as further inland at Mclaughlin's Lookout (which averages 120 km from the coast), we could not hear the Mt Gambier boys on any band with any decent signal.

It was interesting to monitor the 4 main beacons on 1296:

VK3RXX in Burwood was the usual 59+ (over a distance of 100 km)

VK3RLP at Langwarrin was 59 but a bit up and down

VK3RGI at Mt Carrajung was a steady 57 all the time

VK5RSE in the SE was inaudible until 8 a.m. Subday when it came up to S3 for an hour or so.

Strangely, late on the Saturday evening conditions came up on 10 GHz and we had a fantastic QSO with Ralph VK3WRE with S9+ sigs over a distance of 220 km.

We had the feeling that there were not as many stations about over lengthy periods this time around, so fewer repeat QSO's.

Our score will probably be a little down on this time last year.

6 m was hopeless to interstate North, although we still managed 10 grid squares - no sporadic E at all.

It seems since the Spring Field Day was moved closer to the solstice, the Sporadic E has been scared off!

It was a disappointment to not work Ken 3AKK on Sunday morning, but it was abundantly clear that Ken needed more height to make it north to us on the higher bands, as the west end of the Brisbane Ranges around Steiglitz, are just that little too high and wide in the direction Ken was from.

Nevertheless, it was a good weekend with good weather and a chance to blood a new operator in Steve VK3QW, in the ways of VHF/UHF propagation in VK3 (he being an ex VK6!)

A special thanks to Andrew VK1DA who persisted with 1296 CW on Sunday morning. Just at the critical time, one of the microswitches in the rotator control box decided not to work, so the dish would not turn back and forth. Strangely, the bumpy ride back seems to have dislodged whatever was stopping the switch from working.

The picture below shows offset 700mm dishes for 3, 5 and 10 GHz (top) with 3 watt DEMI transverters mounted on the foldout arms of the dishes. Special high-tech weather proofing of the transverters, courtesy of Glad.



Finally Colin VK5DK reports on the VK5SR group activities:

The South East Radio Group were portable on our usual hilltop "The Bluff" (QF02GG) and conditions were only average, which is reflected in our score of contacts on all bands.

The wind was extremely strong on Saturday afternoon and evening causing our 1.2

m dish to blow over causing damage to the centre of the dish and damaging the short cable from the feed to the Transverters. This dish was used for 2.4GHz, 3.4GHz and 5.7GHz. We used a 1.8 m dish for 1.296GHz which worked quite well and were able to work into Melbourne (400 km) with reasonable signals.

Apart from these problems, Saturday evening was extremely cold and windy and as a result contacts were few and far between.

It would be nice to be able to work 10 Gridsquares from this location, but geographically it is a tall ask as we are situated where the only activity is to the east and a maximum of 5 Gridsquares only worked with only VK5ZK worked in VK5.

There have been discussions between a few serious VHF/UHF/Microwave operators about having the scoring system changed to distance-based rather than Gridsquare based scoring, as the present system favours areas that are able to work Gridsquares in all directions. A scenario was discussed where an opening to ZL on 144 MHz produced a new Grid Square and a very good contact, if a second station was worked in that same Grid Square it is worth the same points as working an FM station 25 km away.

New Microwave Records

Several new microwave records have recently been set:

13cm EME record: VK3NX to CT1DMK, 17678.7 km (13 Dec 2010).

13cm Digital Modes record: VK3KH to VK3XPD/5, 390.3 km (11 December 2010).

5.7 GHz Digital Modes record: VK3XPD/5 to VK3ZQB, 162.5 km (12 Dec 2010).

Congratulations to all involved.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

Almost New Digital Record

A “nearly well done” to Derek VK6DZ and Jim VK3II in almost completing a JT65 contact over a distance of 2497 km which would have been a new 2 metre national digital record. This was Derek’s first attempt at JT65 and unfortunately he did not know the terrestrial reporting procedure as necessary to complete a QSO and claim the record. Nevertheless, Derek and Jim did exchange callsigns both ways a -8 and -15 dB. Derek’s QTH is west of Albany with a not-too-good take-off and he was using only a 6-element beam and 10 watts. As you may expect, Jim has now given Derek some coaching so be ready to work Derek on JT65 next time there is an opening to VK6.

FSK441

Welcome to Robert VK4LDH and Dave VK4KSY who have been trying out FSK441 on 2 metres.

JT65

Good to see Ross VK2DVZ is again active on JT65.

ISCAT

The beta version WSJT9 includes a new mode called ISCAT, short for ion-scatter. It was designed primarily for six metres where it can take advantage of both the meteor

pings (which are longer than on 2 metres) and the weak background ion-scatter signals. On a weak and continuous ion-scatter or tropo-scatter signal, it works down to around -20 dB and on one or two second meteor pings it can work down to -9 dB. The program does averaging so it does better with short messages where it can average a number of times. Tests show it also works well on 2 metres meteor scatter and while it is more sensitive than FSK441 which works to around +2 dB, it does not do as well as FSK441 on short pings of less than a second. Thus FSK441 still has the edge on 2 metres. ISCAT has been shown to also work well on 10 GHz aircraft-scatter due to its ability to cope with rapid Doppler shifts combined with reasonable sensitivity and the ability to decode the short bursts of a second or so that occur with what is believed to be specular reflections that come as "glints". You can adjust the TX/RX period to either 30 seconds or 15 seconds by clicking on the time period at the bottom of the WSJT screen. The 15 second period seems preferable for microwave aircraft scatter as this allows a contact to be completed in the short period that an aircraft is within the beamwidth of the antennas.

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5BC

This summer's E's season was a little slow to start, about 2 weeks later than recent summers. It was patchy and variable late November early December with several dead days but the band really warmed up with excellent openings all around VK/ZL in late December early January.

14th Nov opening from northern VK2 and southern VK4 to VK5 and VK3, Neville VK2YO worked Brian VK5BC and Garry VK5ZK and Brian worked Chris VK4HJ. Denis VK4ACE worked Kevin VK3WN and Mike VK3XL. JA1RJU reported hearing JohnVK4ZJB near Gympie calling CQ.

15th November Brian VK4EK in Sapphire reported working several northern VK7's including Joe VK7JG, Norm VK7AC, Frank VK7DX and Norm VK3DUT. Dennis VK4ACE also worked Kevin VK3WN in Ballarat and then Brian VK5BC, Colin VK5RO and Garry VK5ZK. Not to be left out of the action several Far Northern VK4's including David VK4ZDP, John VK4FNQ and Gary VK4ABW worked Willem DU7/PA0HIP. Joe VK8VTX in Darwin reported hearing the VK4RBP repeater and David VK4ZDP reported the Darwin VK8VF beacon.

Not much happened in the way of openings during the Spring field day contest except on Sunday morning 21st Nov Hauke VK1HW worked Steve VK5AIM and Keith VK5OQ both portable near Kulpara in the Hummocks. The same day 1st 'E's opening across the Tasman to South Is of NZ. Bob ZL3TY, Rod ZL3NW and Peter ZL4LV all worked into VK2 and 3.

24th Nov Garry VK5ZK worked Chris VK4HJ.

The long anticipate 6 m activity from the ZL8X DX expedition occurred on the 25th Nov and they had no sooner put their beacon on and they were heard and then worked on CW by Bob ZL1RS, good work Bob. The morning of the same day an opening from VK4 to VK5 with Brian VK5BC working Phil VK4FIL and Brian VK4DDC.

November 26th saw the 1st 'E' opening for the season to VK6 with Brian VK5BC and Mal VK5MH working several stations including Peter VK6KXW, Andy VK6OX, Kevin VK6AB, Igor VK6ZFG, John VK6JJ, Graham VK6RO and Barry VK6ZSB. The opening occurred mid afternoon and lasted for 1 1/2 hours with all signals S9+. Early

evening the same day the VK8RAS beacon in Alice Springs was S9 into VK5 and Greg VK8GM was worked by Jeff VK5GF, Brian VK5BC and Garry VK5ZK. Great to hear activity from the Alice.

The 1st opening to New Caledonia was on the 28th November when Pascal FK8IA worked several VK2's including Brad VK2QO, VK2GJC, Steve VK2ZT and John VK2FAD. The same day ZL2WHO worked several VK4's as north as Gary VK4ABW near Townsville south to Brian VK4DDC Gold Coast.

Early morning the 8th December Victor made his 1st appearance this season into VK working several VK2, 3, 4, 5 and 7's. Victor was S9 in VK5. Next morning the 9th Dec band again open early to Victor E51CG from VK3, 5 and 7 but not quite as strong as previous day. Same day Pascal FK8IA and Remi FK8CP worked many VK2 and VK4 and then a little later VK5ZK, VK5BC and VK5GF. Great to see some activity from FK8 this season. The day also produced a very strong opening VK5 – VK2 with VK3 and 7 to VK5 contacts on backscatter and an opening from VK2 and VK4 to VK8 (Darwin) and VK6.

The 8th Dec also saw the 1st appearance from the ZL8X DX Expedition in VK. They worked several VK2 and 4's as well as Steve VK3ZAZ and Garry VK5ZK. Gary VK4ABW also worked them on the 9th Dec.

12th Dec saw good opening from both the Darwin and Alice Spring areas. Richie VK8RR, Mark VK8MS and Stui VK8NSB in Darwin and Greg VK8GM in Alice Springs worked several VK2, 3 stations as well as Brian VK5BC, Jeff VK5GF and David VK5AYD in Cooper Pedy. Greg VK8GM also worked Rick VK6XLR in Geraldton.

14th Dec another interesting day because although there was not a lot of local E's, during the afternoon Willem DU7/PA0HIP worked several VK4's from Brisbane to as far north as Townsville, ZL3JT on SSB (Willem's 1st SSB contact to ZL) and Richie VK8RR and Mark VK8MS in Darwin.. Richie and Mark also worked several JA stations.

Meanwhile Bob ZL1RS was experiencing some interesting propagation across the Pacific and submitted the following:

So far this season's significant DX for me has gone like this:

07 Dec 04:52 to 05:40 - DU7/PA0HIP, DU1GM

08 Dec 05:39 - JH6VXP

11 Dec 01:00 to 01:30 - K6QXY, K6QG heard only (also a trace of N5TSP)

14 Dec 01:20 - K6QXY heard only

15 Dec 04:59 - KG6DX (Guam)

16 Dec 04:09 - JA6YBR beacon heard

21 Dec 01:20 - K6QXY heard only, AC4TO heard extremely weak

23 Dec 23:14 to 00:40 - OA4TT (weak, but consistent signal)

25 Dec 01:34 - N5JEH

02:30 - K6QXY

26 Dec 01:54 to 02:25 - N5JEH, N5TSP, AE5B, K5RLA, N5BLH, W5OZI

As you can see, the 01:00 to 01:30 utc slot is very active here.

The equipment here is an IC-756pro + Acom1000 Amplifier and a pair of 6 element G0KSC LFA Yagis at 25ft and 40ft.

Rod ZL3NW has also worked K6QXY and the DUs, and Chris ZL2DX has heard K6QXY at much better RST than I have, but is limited by his location to QRP so was not heard in California. ZL3TY has also worked DU.

Good work Bob, just shows it doesn't have to be at the top of the sunspot cycle to

experience some very interesting conditions and contacts on 6 m.

Willem DU7/PA0HIP has continued to work into VK most afternoons during December and it is great to have somebody so keen and looking for contacts into VK most days. It is remarkable how consistent the path from the Philippines is.

The 26th Dec also saw a good opening from VK6 to VK5. Remi FK8CP worked several VK6's including Andy VK6OX, Graham VK6SIX, Wally VK6YS and Peter VK6KXW and late in day Willem DU7/PA0HIP worked VK5BC, VK5KC and VK4BKP.

Rick VK6XLR reports the following;

I finally made it outside VK on 6 m. On 1st December 2010 though a very brief opening, worked Willem DU7/PA0HIP.

A great New Years Day with 20 contacts from 0422z-0905z. VK's 1,2,3,4 and 7. Also ZL1 and ZL2. Thanks to Kerry ZL2TRY for my first ZL.

Well done Rick.

Steve VK6VZ reports;

I got started on Es again on 26/12/10 at 0656Z with a SSB contact with VK5ZK (Goolwa). This piqued my interest and on 29/12/ recorded SSB QSOs with VK5PO (1117Z), VK5BC/p (1157Z) and VK5CZ (1223Z). The following day promised much to the north with the VK6RSX beacon in Dampier booming in at S9 and CW contacts with VK4DB (0013Z) and VK4ABW (0021Z) in Townsville and SSB with VK6BHY (0415Z) in Karratha, but the prop didn't extend much farther here. On 30/12/10 so far (at 0400Z) it is back to listening to band noise again.

Using 100W here with an Elecraft K3, with a Softrock SDR off the first IF and CW Skimmer/Rocky software as a bandscope, and a 5-element Cushcraft yagi antenna at 23 metres.

Good to see you active on 6 m again Steve.

The New Year saw some great conditions across all of VK and ZL. On the 2nd January Kevin VK0KEV Macquarie Island was S9 into northern VK7 and was worked by Norm VK7AC and John VK7XX. Andrew VK3OE and John VK4ZJB also managed to complete contacts with Kevin. On the 3rd January Chris VK5CP holidaying on Lord Howe Island worked many VK2, 3, 5 and 7's.

Please send any 6 m information to Brian VK5BC