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# VHF/UHF – An Expanding World

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David Smith VK3HZ

## Weak Signal

David Smith - VK3HZ

### Winter VHF/UHF Field Day

The main event for the month was the Winter VHF/UHF Field Day, held this year on June 20/21 – one day before the shortest day of the year. Despite the time of year, the weather was quite reasonable in this (south eastern) part of the country and a number of portable stations set up – for quite a number it was their first time out. However, it seemed that only a hardy few elected to remain out overnight for the 24-hour duration.

Andrew VK1DA braved the hills around icy Canberra:

*I operated on Saturday only in this event, from Red Hill, a location in the south of Canberra not far from Parliament House. My contacts were limited to 6 m, 2 m and 70 cm on which I worked 4, 24 and 12 contacts respectively. The only other VK1 portable station heard was Dale VK1DSH, who I worked on 2 m and 70 cm.*

*Conditions appeared to be very poor. Signals into the Sydney area were well down on last year. Only one VK3 was heard or worked and that was Norm VK3DUT. Weather at my location was quite mild and I had a few minutes of very light rain, the rest of the time it was fine but with a heavy overcast.*

*I had two site visitors, one was Aaron VK1FAPH and the other was Johan VK1ABB, neither of whom I had met before. This was a result of publicising my intended location on the local mailing list and inviting visitors.*

*Thanks to those who did operate either as a portable or home station. And a special thanks to Brad VK2QO who has already sent me an EQSL for the very nice CW QSO we had during the afternoon.*

Steve VK3DAG reports on his efforts to the northeast of Melbourne:

*My father Rex, Spud Dog and I had an uneventful trip to Mt Terrible in the 4WD with A-Van Caravan in tow. The last 16 km up on to Mt Terrible is a dirt 4WD track but, with the centre diff locking engaged, we climbed it OK. Mt Terrible is 10 km south of Jamieson and 1310 metres high. On top, there is a fire spotter's tower, some communication gear and a high country hut. We set up about 1 km south of the tower.*

*I set up four bands for the contest - 6 m, 2 m, 70 cm and 23 cm. All bands used yagi's stacked in a Christmas tree arrangement on a 6.5 m length of black pipe and using the 4WD as ballast. Rotation was by hand in an Armstrong fashion.*

*The shack was located in the end of the caravan annex. I used a Kenwood TS2000x that was interfaced with a PC running the VKCL software to automatically synchronise with the transceiver frequency and band data. All that had to be entered was Call Sign, Number Received and Maidenhead Locator. This made the logging job a lot easier. The microphone was hand held although it would have been easier with Vox Headset or a Desk Microphone to keep your hands free for data entry.*

*The caravan and annex was heated with a Cow Cooker Stove that burned on wood. This kept the camp inside dry and warm considering that we had quite a bit of rain outside. I powered the portable station with a 240 Volt Generator, which gave ample*

power for the lights, transceiver, and PC.

*The greatest distance for a contact was made to Mackay Queensland on 6 m. I made a lot of contacts into the Melbourne area. I believe it was a successful weekend considering the weather was no greater than 5 degrees C in the clouds.*

*I look forward to the next field days and hope to hear you call CQ Contest.*



Tim VK5ZT was out again, but with a more restrained approach this time:

*I am fortunate to be within easy reach of sites that permit the use of three grid squares working into Adelaide so we set up the wife's Falcon with portable gear again. The Beemer had a bit of a hammering around the pine forests for the foxhunt championships 2 weeks ago as a last minute vehicle option (again) as a result of an eleventh hour failure of the van (lost a cylinder the night before we were due to pack!) One of these days that van will actually make it to a contest...*

*I did not want to jam dishes and stuff in BMW boot so I opted for the roomier Falcon instead. I bolted the tri-band dish to a bracket on the towbar, along with the mount for the verticals. I got some interested looks from vehicles coming up behind me who found themselves staring into the dish! Unfortunately our microwave efforts were a disaster, as explained later.*

*I started out at the hilltop site I used for the JMMFD. The single tree was perfect to sling up the 6 m antenna. It comprised of a wire dipole zip clipped to a nylon cord I threw up into the tree...worked very well. There was a bitter wind blowing and it started raining just after I arrived. All bands from 6 to 23 cm worked well and I racked up a few contacts. 10 GHz was a dead loss - .the current system had never been tried over the distance (around 100 km) and I heard nothing of VK5LZ at the other end. A similar result happened on 3.5 GHz but I was unable to persevere due to heavy rain.*

*After a couple of hours I moved down the coast about 50 km to a hill overlooking Ardrossan (new grid square). All bands to 23 cm were good into Adelaide, with extra 23 cm signals heard. This area was windy but sunny and I had better hopes for the microwave gear - no such luck. When tuning around on 3.5 GHz there were signals all over the place. It turned out that the hill I was on was the ideal site for a number of commercial installations, which appeared to be spraying the area with microwave energy, which the very broad receiver I was using readily brought to my attention! Forgetting the 10 GHz stuff, I tried 5.8 GHz....it turns out that there were a number of sources on the single frequency I had. They were scattered across the Adelaide plains and I could pick them out as I swept the dish up the coastline - everyone except VK5LZ, that is. Well, I made a number of contacts on the lower bands and was happy with that and moved back north to my tree on the hill after a couple of hours. I could work everyone again as 3 hours had passed. One last try on 3.5 GHz actually heard VK5LZ but they could not find me, and it rained yet again!*

*After contacts petered out I headed north towards home, passing with 1 km of VK5AGZ, Derek, who was doing a bit of grid hopping himself. I had one last site in mind (new grid square) that was on my way home - the lookout at Lochiel. I rolled in there in darkness much to the surprise of a couple of campers in a van who thought they had a nice isolated spot! It was the last half hour of my 8-hour stint so I hastily deployed the 6 metre wire antenna...by now looking a lot like a tangled ball of wet string but still with an acceptable SWR! I worked everyone I could hear within 15 mins but found I could not hear a thing on 23 cm. I wanted the points for that last grid square so bundled the gear in the car and took off back down Highway One to a hill nearer the city. I went up a muddy dirt track then up another track that would scare goats, to a hilltop. Here, stood on a dirt mound holding the 23 cm beam high above my head I managed to exchange numbers with VK5LZ with a couple of minutes to spare.*

*VK5AGZ was still lurking about and wanted a contact on 6 m so I rapidly deployed the "ball of string" antenna into an adjacent bush - all of this in pitch blackness using only light from inside the car (left the torch home..). The SWR was still OK and the radio was happy to dump 100 watts into it but Derek could barely hear me due to a large hill in the way and we could not exchange numbers as my last minute ticked away.*

*So, there we have it, my first winter field day. I resolved to rebuild all the microwave gear and renew my efforts on the cursed Nissan Nomad to make life easier. Needless to say, as soon as I got home, she who must be obeyed commanded that I get that junk off her car.....73s, Tim VK5ZT.*

*Alan VK3XPD, Mike VK3KH and Peter VK3TPR set themselves up on the side of Arthur's Seat to the south of Melbourne, with all bands covered to 24 GHz. While the lower bands were quite active, the microwave side was fairly quiet. They did achieve contacts into Melbourne and Ballarat on 2.4 GHz and into Melbourne on 10 GHz. They did have quite a spectacular view of the sunset to keep them entertained.*



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

## Digital DX Modes

Rex Moncur – VK7MO

## FSK441

Welcome to Tim VK2XTT who has joined in the weekend meteor scatter activity and completed his first QSO. Congratulations to Waldis VK1WJ who continues to complete with ZL on just 20 watts.

## New Australian 10 GHz, 3 cm Digital Record

On 23 June Rex VK7MO and Justin VK7TW ventured up Northern Tasmania to Mt Barrow and Dave VK3HZ went to Mt Fatigue in Gippsland to attempt a 10 GHz digital contact over a 325 km path. The mode used was JT65a, which works to around 28 dB below the noise in a normal SSB passband. However, to achieve this performance JT65a uses 64 separate tones spaced just 2.9 Hz apart and requires an extremely stable frequency. To meet the stability requirements at 10 GHz both stations used GPS locked transceivers and transverters. At the Mt Barrow end, transmitter power was 10 watts to a 65 cm diameter dish antenna. The antenna power amplifier and transverter were mounted on the roof of a rock hut on Mt Barrow and remoted a few meters to the transceiver and computer in Rex's car (see picture). Justin was on the roof of the hut adjusting the antenna in azimuth and elevation and Rex down below operating.



At the Mt Fatigue end, 7 watts was going into a 45 cm diameter dish antenna. The plan was to leave the radio equipment outside in the cold and operate the laptop from within the car. In the event, it was a balmy 18 degrees on the hilltop so the deckchair operating position was adopted.



Almost as soon as the Mt Barrow end was set up SSB signals were copied at up to S6 with very deep and rapid QSB. A change to the digital mode JT65a produced immediate results and a new Australian 10 GHz digital record with signal levels peaking at -2 dB giving around 26 dB to spare. While the contact and new record was completed in a few minutes testing continued for around half an hour with the pleasing result that the difference in frequency was less than one 3 Hz bin for the full period. This represents a frequency error for both stations of less than 3 parts in 10 to the 10th or 3 parts in ten thousand million. In the case of the oscillator used at the Mt Barrow end, this was locked to GPS frequency at Rex's home and maintained frequency over some 4 hours driving over the sometimes rough dirt road up the mountain. A review of the radiosonde data from Melbourne Airport showed no evidence of ducting high enough to be useful so the contact can be put down to normal tropo-scatter and should be repeatable under normal conditions. Given that there was some 26 dB to spare, there is the opportunity to extend this distance significantly in the future and further tests are planned.

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

## The Magic Band – 6 m DX

Brian Cleland – VK5BC

Although there were several winter 'E' openings, they were generally of short duration with signals low in strength and overall a disappointing winter season.

Below is a summary of the 'E' openings:

23rd May      VK3 – VK5, VK4 – VK5

24th May VK4 (Mackay area) – VK5, VK5 – VK6  
25th May VK4 (Far North area) – VK5, VK3 & VK2  
2nd June VK4 (Mid North area) – VK5 & VK2  
9th June ZL3 & 4 –VK3 & VK4, ZL2 – VK2 & VK4  
13th June VK4 (Brisbane area) – VK3 & VK7  
14th June VK4 (Mackay area) – VK5 & VK3  
(Best day) VK6 - VK4 & VK5, VK4 (Brisbane area) – VK7 & VK2  
22nd June VK4 (Mackay area) – VK2 & VK3, FK8 Beacon – VK2 & VK4  
23rd June VK2 – VK5  
24th June VK4 – VK5  
26th June VK5 – VK6

Brad VK2QO reports:

*May was quite for me this year but June has been a lot of fun with M/S and A/E, also some E's. The E's have not been in favour for VK2 but has been good for other states. Only two contacts for June via E's, VK4CZ Scott and VK4MA Paul both on the 14.6.09 (at work when E's are around on other days).*

*Now for the M/S and A/E in the mornings. VK5RBV, VK5VF, and VK4RGG the only beacons heard in June with some good burns lasting up to 40 sec and up to S2 at times. Contacts were made in CW with Scott VK4CZ, Brian VK4EK, Phil VK4FIL, and Dougal VK4EKA and in CW & SSB with Brian VK5BC.*

73's & cheers

*Brad VK2QO*

The Atherton beacon on 50.281 CW is now running in test mode and was reported being heard by Adam VK4CP and Grant VK2MAX on 22nd June.

Several stations including Joe VK7JG (Launceston), Brad VK2QO, Scott VK4CZ, Brian VK4QB, Brian VK4EK and Brian VK5BC have all been monitoring for M/S early morning with several contacts being completed. Watch the VKLogger early on Saturday & Sunday mornings.

Interest has also been shown in WSPR, (pronounced "whisper") which stands for "Weak Signal Propagation Reporter." This program is designed for sending and receiving low-power transmissions to test propagation paths on the MF and HF bands. Users with Internet access can watch results in real time at WSPR.net. Several stations have been running tests with this software on 6 m with varying success. Although Doppler shift appears to affect decoding of signals, it is showing promise and could be of assistance as a form of beaconing to indicate band openings. If interested search for WSPR on the internet and download the program (free). As with WSJT you require interfacing between your radio and computer.

Now is a good time to check you station out and carry out any antenna maintenance or upgrade in preparation for the coming new Sunspot cycle and next summer 'E' season.

Please send any 6 m information to Brian VK5BC at ...