
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

The first trans-Tasman VHF tropo contact for the season occurred rather unexpectedly for those concerned. On the morning of September 19th, Rex VK7MO in Hobart was operating on the 2 m FSK441 meteor scatter session, beaming towards New Zealand. Bob ZL3TY in Greymouth, 1950 km away, was hearing Rex's signal continuously rather than in occasional bursts from the meteors. They switched to SSB and exchanged 5x3 reports each way. They then had a JT65A digital contact with signals peaking at a very strong -4 dB. Unfortunately, 70 cm was not operational at Bob's end, so higher bands were not attempted.

VK9NA VHF / UHF / Microwave DXpedition Norfolk Island (OC-005) (RG30XX) 3rd January – 14th January 2010

A team of experienced VK amateurs is heading to Norfolk Island in January to operate bands from 6 metres to 10 GHz. The team from the VK Microwave Group will be Alan VK3XPD, Kevin VK4UH and Michael VK3KH. Preparation and planning is progressing well with accommodation and airfares already booked. As with most remote operations, the airfare cost and arrangement are the most difficult part, particularly as the group plans to take a 1.2 metre dish for all bands from 1296 MHz through to 10 GHz.

A group of VK5 and VK3 operators has organised to travel to Port Macquarie on the NSW coast, with full Microwave gear, to take advantage of the opportunity. A number of ZL operators have also indicated their interested in setting up at favourable locations on the NZ North Island.

It is hoped to use 2 metres as the main propagation indicator, and then move up the bands as propagation / conditions permit. The group will have Internet access, and will use the VK Logger (www.vklogger.com) as the main method of liaison. Operation will be SSB, CW and where possible Digital modes for Meteor Scatter and Tropo paths.

6 metres will be part of the operation, and they are hoping for opportunities on the "magic band" in all directions. As this is the main Sporadic E season, anything is possible. They will have HF capabilities, but these will be limited as VHF, UHF and Microwaves are the prime focus.

The group is excited about this venture, and hope to receive support from VK and ZL operators to make it worthwhile. Updates will be posted closer to the time. For further information, contact Michael VK3KH

10 GHz New Digital Record

I'm always a bit reluctant to write about things I've been doing, but hopefully this is of general interest too.

Rex VK7MO and I have been attempting to work over increasing distances on 10 GHz. To dig down into the noise, we are using equipment with very high frequency stability allowing the use of the JT65 weak signal digital mode. As a predictor of the signals over a given path, I have been using the excellent Radio Mobile software

package written by Roger VE2DBE. While this software is intended to analyse VHF/UHF paths, the predictions for 10 GHz have matched our actual results fairly closely.

Our latest attempt was on September 10th from Mt Buninyong near Ballarat to Mt Barrow in northern Tasmania. For that path, Radio Mobile predicted a margin of about 6 dB for a digital contact using JT65A. That meant a signal of about -19 in WSJT terms.

I arrived at Mt Buninyong at 11:30 am to meet Ian VK3AXH who was doing some work on the VK3RMB beacon installation (back on air on 70 cm and 23 cm very soon).

The lookout tower has several levels with public access, then above that the fire lookout level and at the top is an equipment room (almost empty) with Perspex windows and a clear view to Melbourne and beyond. This was where we set up, so the gear had to be carted up the steps, up through two hatchways to the top - with Ian doing a good imitation of a packhorse.

Just as we hoisted the last bit of equipment up, the mobile rang with Rex VK7MO reporting he was all set on Mt Barrow. Joe VK7JG was assisting him. Soon after, Ian VK3YCQ joined us, struggling up the hill in his slightly sick 3-cylinder Anglia.

We were set up and all running by about 12:40 and immediately Rex's JT65 "bagpipes" were audible - just. By 12:45, we had exchanged reports and set a new 10 GHz Digital record of 510.5 km. The reports were -14 and -17 that, in JT terms, is probably about S2 and was slightly better than Radio Mobile had predicted.

We then continued to transmit to each other to see what the path would do. At about 13:00, signals had risen significantly to -6, which is getting towards voice contact level. Rex switched to SSB and we struggled through an SSB contact (4x1 / 3x1) with lots of rapid QSB.

However, signals were still on the rise, and Joe and I then exchanged 5x1 reports easily. We continued to chat with signals at one stage getting to 5x7 / 5x9! We seemed to be getting very strong QSB over a several-minute cycle, together with the rapid 2-second QSB noted earlier.

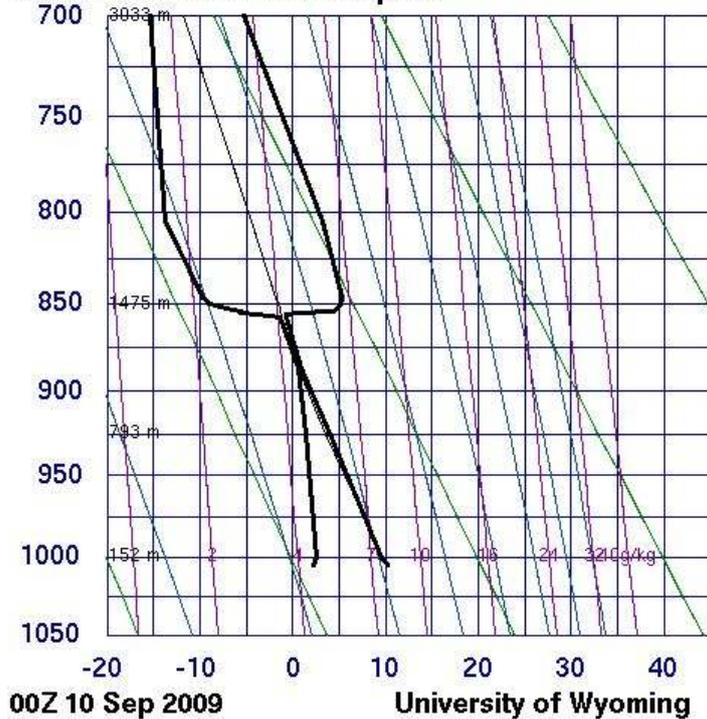
I switched to transmitting a carrier, and Rex observed the results on Spectrum Lab. Unfortunately, my GPSDO internal batteries had come adrift, so when I'd unplugged it from the car, it died completely. So, it was still settling down again (after being powered up again when we reached the top of the tower) causing a 30-sec cyclic 3 Hz wobble in my carrier. Switching to "hold" fixed that, although slightly off frequency.

I then worked Alan VK3XPD (5x9 / 5x7) in Melbourne, although the dish was pointing through the wooden window frame. Unfortunately Alan did not succeed with Rex, possibly due to obstruction of his dish in that direction.

Signals to Rex continued to vary up and down with some quite strong periods until we packed up just after 15:00.

Later, Joe VK7JG back in Launceston observed that the Geelong 2 m beacon was 5x7 so it appears that we had some good conditions come across as we were operating. This seems to be confirmed by the radiosonde temperature trace from 0000z at Melbourne airport. This shows around 5 degree inversion at 1450 metres which is just high enough given that Rex was at 1286 metres on Mt Barrow.

94866 YMML Melbourne Airport



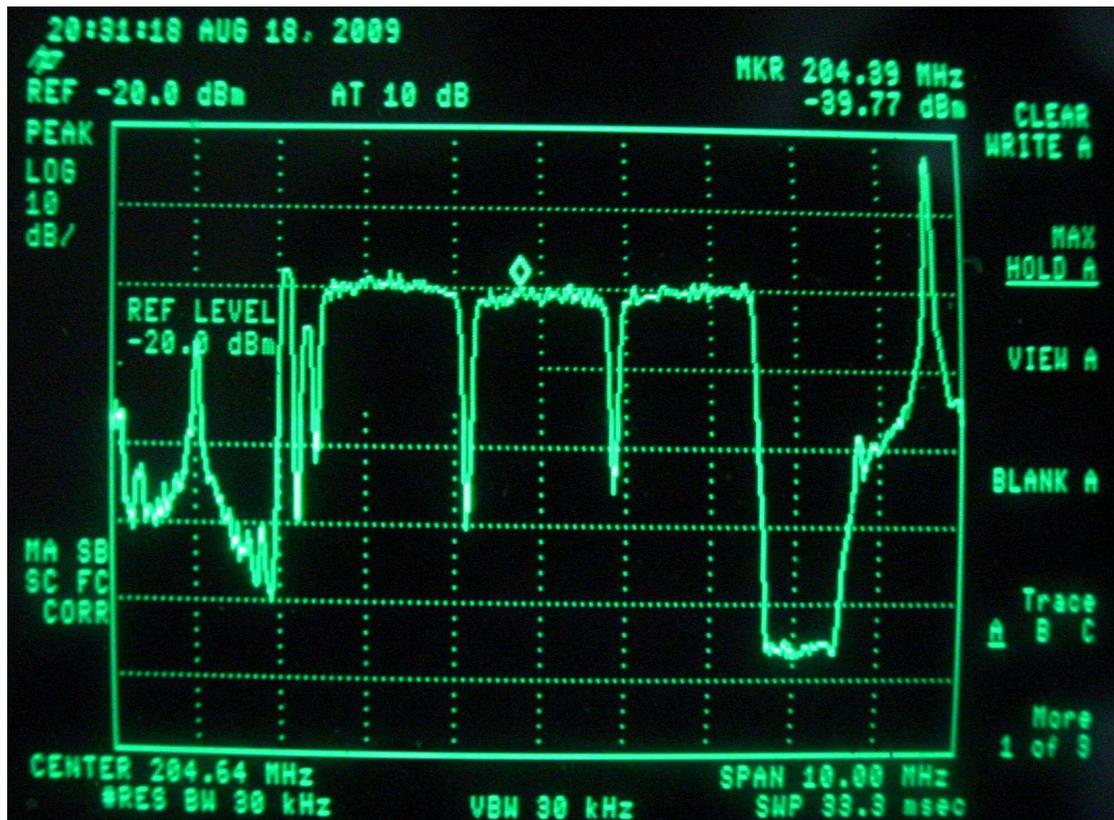
Thanks to Ian VK3AXH for providing access to the tower and for carting the gear and to Ian VK3YCQ for his assistance.

And thanks to Rex VK7MO and Joe VK7JG for being at the other end!

New Interference Possibility

No doubt you have all heard of the new DAB+ digital radio system that has been recently introduced in the major capital cities. Apart from the strong possibility that it will become a white elephant, it also introduces a new interference potential for certain VHF transverter configurations.

Rod VK4KZR runs a fairly standard transverter setup on 2 m, converting from 144 MHz down to 28 MHz where an HF rig performs the IF duties. Recently, he noticed a sudden and drastic increase in noise level on the 2 m band making operation almost impossible. With some detective work, he traced the cause to the new DAB+ transmitters that are putting a whopping signal into his QTH. With a Spectrum Analyser connected to the antenna, he recorded the following:



The three broadband signals are the 3 DAB+ carrier channels shared by the many radio stations. They are at about -40 dBm which is a big signal.

Rod eventually figured out what was happening. The first harmonic of his 116 MHz LO at 232 MHz was mixing with the DAB+ signal at around 204 MHz to produce the 28 MHz interference. His solution was to make up a filter to block out the DAB+ signal.

Please send any Weak Signal reports to David VK3HZ

The Magic Band – 6 m DX

Brian Cleland – VK5BC

Band conditions continued to be quiet during September with only a couple of minor 'E' openings. Main activity has been the morning scatter contacts and Brad VK2QO reports the following:

There are a lot of operators working scatter now and more and more showing an interest on the weekends with ZL and VK6 watching the logger as well. At the moment interest is high on the east coast being more VK4's and VK7's then 1's, 2's and 3's. On the weekends there can be up to 15 operators on in the mornings taking part or just watching and listening. Also many are now taking an interest in the digital modes in the evening on 50.230.

Here are a few September reports:

From Scott VK4CZ:

4th at 2023z Brad VK2QO 519, 5th at 2149z Gerry VK2APG 5/5,

18th at 1930z Darrell VK2BLS 519, at 1954z Brad VK2QO 519.

From Phil VK4FIL:

10th Gerry VK2APG with FSK441, 14th Darrell VK2BLS (JT6M),

15th Gerry VK2APG (JT6M),

22nd David VK3AUU 5/4 SSB.

From Glenn VK7AB:

9th Peter VK5PJ 5/3.

From Brian VK4EK:

too many to report - worked Dave VK1DJA, Gerry VK2APG, Darrell VK2BLS, Brad VK2QO, Trevor VK3VG, Ron VK4CRO and Phil VK4FIL with signals ranging between 5/1 to 5/6 in SSB, CW and digital.

From Brian VK5BC:

3rd Kevin VK3WN and Joe VK7JG both SSB,

4th Joe VK7JG SSB.

October is looking better with John VK7XX and Joe VK7JG joining in the fun weekdays.

Early morning on the 1st September, Brian VK4EK in Saffire completed several 'E' contacts with VK1, 2 and 3 during a 30 minute opening and on the 9th Brian reported the Barossa beacon VK5RBV and worked Brian VK5BC 5/9. On the 20th David VK4ZDP Innisfail worked Mike VK2ZQ, Brad VK2QO and Darrel VK2BLS with signals up to 5/9 and the VK2's reported hearing the Atherton VK4RHT beacon on 50.281 MHz.

Please send any 6 m information to Brian VK5BC.