
VHF/UHF – An Expanding World

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Weak Signal

David Smith - VK3HZ

My apologies that, owing to a production error, the July column didn't appear. So, this month, a combination of news from the last two months is included.

It seems that most of the weak signal activity at present is happening during the morning aircraft nets. Peter VK2BIT has been operating portable from a hilltop near Young on 2 m on several weekends recently, putting a good signal into Melbourne.

Mark VK2EMA in Tottenham in central NSW is being worked regularly by a number of stations in Melbourne on both 2 m and 70 cm. It appears that flights from Melbourne to Brisbane pass along the ideal path for aircraft enhancement between these two locations. Recently, VK2WWV at Trangie, northwest of Dubbo, was also heard in Melbourne.

Peter VK5ZLX has recently moved to the eastern side of the range near the Barossa Valley. With only a small yagi on a pole off the side of the shed on 144 MHz, he has already been able to work VK3II, VK3BG and VK2KRR. Look out when Peter gets the tower up.

Since returning home from a successful Meteor Scatter Dxpedition, Rex VK7MO has quickly racked up an extra 10 grid squares on 144 MHz EME bringing his current total to 31 squares.

There were several periods of tropo enhancement in the south of the country during the month of June, but it appeared to be a case of "the lights are on, but no-one's home" for the most part. It's a little frustrating to hear the beacons pounding in, but be unable to raise anyone at the other end.

Leigh VK2KRR reports that on June 5th, he worked Peter VK5ZLX near Barossa Valley – a distance of 735 km - with signals up to S9+20 dB. He also worked Barry VK5KCX at Gawler - 764 km – at good strength.

During the evenings of June 16th and 17th, Peter VK5ZLX and Leigh VK2KRR tried some tropo scatter tests over the 735 km path. There was no tropo duct enhancement and general conditions were poor with no beacons heard. Contacts were completed with reasonable ease, with signal reports noted at VK2KRR's end on the 16th up to S4 and on the 17th up to S7. At both ends single yagi's were used with around 150 watts.

On June 21st, a slow-moving high-pressure cell settled over western NSW, producing some good conditions. On the morning of the 21st, Leigh VK2KRR worked Terry VK3ATS in Mildura and Garry VK5ZK in Gawler. In the evening, he worked Phil VK5AKK - S9+10 at 763 km, Bill VK5ACY - S3 at 894 km, Peter VK5ZLX - S9 at 735 km and Garry VK5ZK - S7 at 754 km.

On the morning of the 22nd, the high had moved across favouring north/south paths from Melbourne. Mark VK2EMA in Tottenham worked Ron VK3AFW and David VK3HZ in Melbourne – a distance of 650km - on both 2 m (S9+20) and 70 cm (S6). Signals were steady for quite a while indicating tropo rather than aircraft enhancement. Phil VK5AKK was worked by VK3HZ at S5, although enhancement to the west had dropped right off. Unfortunately, Phil had been getting strong signals from the Melbourne area beacons and calling for most of the morning, without any

takers. That evening, Peter VK5ZLX was S9+ in Melbourne. Norm VK2XCI was also worked at S3. Leigh VK2KRR worked Colin VK5DK in Mt Gambier (630km) with signals up to S9+10 dB.

ACA changes

By now, you should all have received a letter from the ACA regarding the outcomes of the review of amateur service regulation. There are obviously a significant number of changes that will affect us all, but much has already been said about that. However, what changes are of specific importance to the VHF/UHF weak signal operator?

The most significant change is that all classes of licence will be given access to all of the 2 m and 70 cm bands. The Standard licence class (formerly Novice) will also be able to use the 6 m, 23 cm, 13 cm and 6 cm bands. (In what appears to be an anomaly, Foundation licensees will be able to use all "Voice" modes – including SSB – but Standard will be limited to the current Novice modes – not including SSB). Thus we should look forward to an increased number of active stations on the low ends of those bands.

The ACA did back away from proposals to allow us parity with our US brethren regarding maximum power limits, arguing that EMR problems were highly likely in the urban environment. However, for the Advanced licence class, they are proposing a maximum power of 400 W PEP for ALL modes, not just SSB. That means 400 W RMS for modes like CW, FM and WSJT.

Beacons

Paul VK2YVG in Broken Hill reports that new beacons have been installed on Mt Darling, about 20 km east of Broken Hill in far western NSW. They are on 52.525, 144.525 and 432.525 MHz. The beacons are on a time cycle, running through all 3 bands in about 50 seconds. Each beacon is active for about 14 seconds and transmits in CW "VK2RBH Broken Hill". On 2 m & 70 cm the beacons run 10 watts to a pair of crossed folded dipoles. There is a catch though. Only the 2 m beacon is running at the moment. The 70 cm beacon is suffering from RF feedback, but should be fixed soon. The 6 m beacon has been held up waiting for the licence to be issued. The 2 m beacon is getting out quite well and has been heard several times in Melbourne.

The VK3RGL 70 cm beacon's frequency has been reset and now appears to have stabilised somewhat. It is now approximately 30 Hz lower than its assigned frequency of 432.530 MHz.

Gippstech 2004

The annual Gippstech conference has just concluded. The 70 people who attended once again experienced an event that should not be missed by anyone interested in weak-signal operating. There were 15 excellent presentations given by 11 amateurs on a wide variety of topics, some of them practical, some theoretical, some historic and many of them intended simply to stimulate the thought processes. I'll bet there are many attendees now back in their workshops hatching new project plans (I know I am). Thanks to Peter VK3KAI and his many tireless helpers for making the event again a huge success.

The date has already been set for the next conference – July 9th and 10th 2005 – so put that in your diary now.

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

Digital Modes

Rex Moncur – VK7MO

The new version of WSJT (v 4.7.0), which includes Spectran, is a winner for small station EME as one can detect stations on Spectran that are well below the level that can be decoded and wait for them to come out of the noise (set Spectran to 1.3 or even 0.67 Hz bandwidth). While contacts might take an hour or more, it is amazing to see the occasional peaks in signal give a perfect decode in the average. Possibly the prime advantage of Spectran is psychological, in that if you can see a signal you are more inclined to wait around for it to peak sufficiently to decode. The technical advantage is that once you see a signal you can narrow the tolerance to 25 or even 10 Hz and avoid birdies and stronger noise peaks on adjacent frequencies. The use of Spectran makes it practical for single yagi stations to work other small or medium stations and greatly increases the numbers of possible contacts. To work the smaller stations it is best to use JT65A and this in turn requires very good stability at both ends (better than 2 Hz over a minute). JT65A is 1 dB better than JT65B and while 1 dB does not sound much it is equivalent to reducing the time to make a contact from say three hours to two. For those with limited patience this can be the difference between making a contact or not. Before trying JT65A, do some test transmissions with single tone R27 on FSK441A set to 60 second TX period with a local station who has good stability and can watch for you on Spectran in a bandwidth of around 0.2 Hz.

It is good to see the ACA will allow the Digital modes the same power limit as SSB (400 watts PEP), subject to EMR assessment.

Garry VK5ZK and Leigh VK2KRR have regularly been working 754 km on JT44 using less than 10 watts and single yagis. Gavin VK3HY was excited to get perfect copy from a Czech station on EME using JT65. Rod VK2TWR has sorted out his computer and is working into Hobart on JT44. Cec VK6AO is going to the North of the state and will run some meteor scatter tests with Don VK6HK.

Something not mentioned in last month's report is that VK2KRR was able to copy VK7MO/6 on a 1731 km direct tropo path while Rex was on his DXpedition from Eucla in May. Rex's 144 MHz FSK441 signal was weak but audible at times.

During the morning FSK441 session on June 19th, a huge "burn" from a large meteor was experienced by most of the stations involved - VK1CJ, VK2AWD, VK2EAH, VK2FZ, VK2XCI, VK3AXH, VK3HY and VK7MO.

The burn was at least one minute and 3 seconds long. It is by far the longest burn we have had during our normal meteor activity sessions in around 3 years of running tests, although there were many similar long burns during the Leonid peak a few years ago that produced great SSB contacts.

The fact that the signals were seen by Waldis VK1CJ in Canberra and also by Gavin VK3HY in Melbourne suggests it was somewhere between these two locations. Gavin received Norm VK2XCI first and then Adrian VK2FZ second suggesting that the meteor was going from west to east. Therefore, a large, hot rock might have hit the ground in Eastern Victoria somewhere, up to the Snowy Mountains.

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

Out of one DX season and into another, the 2003 / 2004 season was filled with excitement.

I'd like to announce two end-of-season awards for Outstanding Achievement in FM DX for 03 / 04. I feel that the two stations that stand out as making some amazing contacts and made for some great reading to this column during the past season were – Brian VK5UBC from Gawler, and Dion VK7YBI from Burnie.

Brian and Dion made some jaw dropping FM DX contacts during the year. Here is a quick look back at a few of these beauties.

Dion made a number of contacts into the Adelaide area from his home QTH near Burnie in Tasmania. These included a 913 km trip to the Murray Bridge repeater on 146.875, a 925 km trip to the Crafers repeater 147.000 and also a 947 km trip to the Barossa Valley repeater on 146.825. Dion also worked simplex on 2 m with Shane VK5NRV in Woodside at 921 km. Many people mentioned the rarity of hearing VK7's into Adelaide. Dion has his sights set on cracking the 1000 km mark so watch this space.

Over the period of only a single season, one quick look at the ANVDG FM DX Records list tells you that Brian VK5UBC holds 7 of the 8 records for VK5 on 2 m; five of these are near or in excess of 2000 km! Brian's top two simplex contacts were - 1900 km from his home QTH at Gawler to VK6DM in Albany, and 1044 km from a portable location at Corny Point to VK7LCW in Penguin, Tasmania. Brian's top two repeater distances were to sites in Western Australia – 2102 km from Gawler to VK6RMW at Mt William and 2062 km to Mt Saddleback VK6RMS.

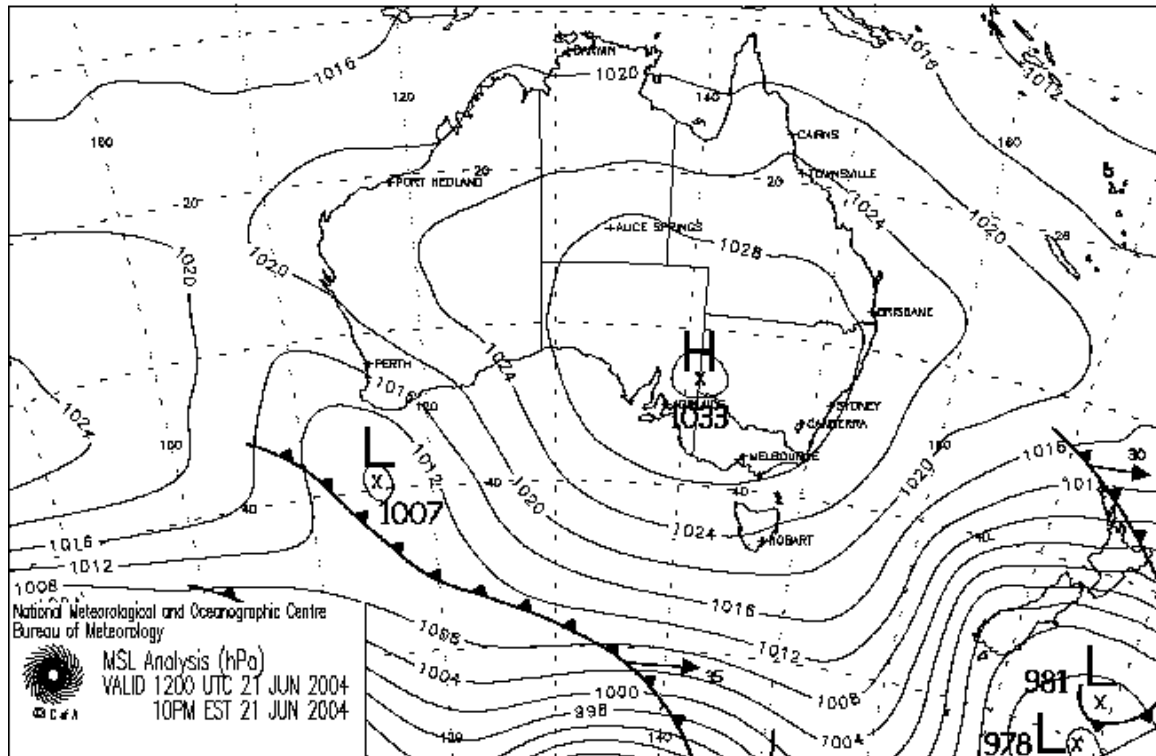
Thanks also go to everyone who made an effort in the search for 2 & 70 FM DX during the past season. It's been fascinating. Let's see now what the new season has in store for us. I'm sure it will be even better.

Onto current activity reports. June was quite good in the south east providing a good end to the season. Conditions from VK4 remained poor.

On the 5th of June in the SE conditions came up in the evening after around 6.30 pm. From here the path was initially to Mount Gambier, which faded and then some good signals were noted from the Adelaide and Port Augusta directions. The Port Augusta repeater was up to S9 at 913 km. Conditions into Adelaide were rather poor.

Around 9.10 pm the VK5RMN Port Pirie repeater came in and I had a few good overs with Arnie VK5NEX and Daryl VK5HBK both in Whyalla, also Jim VK5AJW called in from Cowell, their locations are on the west side of the Spencer Gulf, and the Port Pirie repeater is 867 km from here.

The big one for the month ran from the morning of the 21st to the afternoon of the 23rd of June. A lovely big high-pressure cell loomed on the weather maps and was drifting east. From about 4.30 am on the Monday signals began coming in. I was initially woken by the Adelaide beacon on 144.450 and then checked the Adelaide repeaters and found Murray Bridge, Crafters, Lobethal and Barossa Valley. The Mildura repeater was also present and Terry VK3ATS was worked on 146.500 at 466 km. Bill VK3LY in Nhill was able to work to the Crafers repeater VK5RAD.



That evening things were looking good. At 7 pm the Adelaide beacon was S7 and a number of Adelaide repeaters were coming in OK. Also present was the Central North repeater, Port Pirie and Port Augusta.

I noted some slight enhancement to the north, and at about 8 pm a very noisy signal was heard opening the Canberra 146.950 repeater. This lasted around 2 overs of a one sided QSO and I am quite sure I heard the station sign as a VK4. There is a repeater at Glen Innes, far NE NSW on the same frequency as Canberra. So if there was a VK4 station somewhere in QLD beaming south into the Glen Innes repeater around 8 pm on Monday the 21st of June, you may not know it but you were also getting to Canberra.

Helping confirm the possibility of this VK4 to VK1 path was Alan VK2KAW in Wagga who was able to work David VK2AYO in Dubbo via the Coonabarabran VK2RCC repeater at a similar time. This is a good 480 km trip for Alan and an interesting path.

A little later, on the Canberra repeater, around 10.30 pm while speaking with Steve VK2ZSZ about the VK4 station, we had a couple of interesting stations call in. Initially Noel VK3ANW at Kyabram was able to call in and say g'day. This is around 345 km for Noel over the mountains. After this a noisier signal came through from Ian VK3IDL at Ballarat. Very surprised to hear Ian call in from down south at 493 km considering he was only using an omni vertical.

On the Tuesday, conditions seemed to be running along OK for most of the day. Reasonable signals in the morning from the west. In the evening though, signals appeared to be getting weaker from the Adelaide area and slowly picking up from the VK3 direction, there were also small signals from some parts of VK2.

Colin VK3LO and Laurie VK3AW were worked here on 146.500 via aircraft enhanced tropo. Good signals were also showing from the Melbourne repeaters, extending even to the 70 cm band, where some pretty awesome signals were noted, especially from Mt Macedon 439.275 up to S9+40 and the Grampians 438.675 up to S9+50dB at 471 km.

At around 9 pm conditions took an interesting twist and let the Broken Hill repeater through. The Broken Hill repeater on 147.000 peaked at a fantastic S9+10 dB signal at 638 km and held in there for about an hour. I had a good chat with Paul VK2YVG and Steve VK2SRN, both in Broken Hill. Was also able to contact Steve on simplex up to 5/5 signal, which was nice to see.

Good to hear of Greg VK3MTV lurking about the bands from Mildura. On the same night, Greg was able to get into the Canberra repeater and to the Wagga repeater, as well as a few from VK5.

In the morning on the Wednesday there were good signals into VK3 including Mildura, but all VK5 signals were totally gone. Signals were still good even on 70 cm, and Mt Macedon 2 m was running at 60dB+. The rarely present Warrnambool repeater was up to S9 at 512 km and even Broken Hill was still available but weak.

Terry VK3ATS was doing well from Mildura this morning and was also able to get to Broken Hill, we gave simplex a try and Terry was S9+40 here, Terry could also access the Wagga repeater and Canberra, but Terry did comment that he was not hearing anything down Melbourne way, which was interesting to note.

That afternoon, everything was gone and conditions were back to their usual quiet state.

That's about it for this month. Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at ...