
VHF/UHF – An Expanding World

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Weak Signal

I am pleased to report that claims regarding the demise of weak-signal activities from the southwest have proven to be grossly exaggerated. Following last month's statement that Wally VK6WG seemed to be the sole remaining serious weak-signal station in southern WA, I received emails from two people – both national distance record holders, no less - begging to differ.

Bob VK6BE in Albany says that he is still very much active, and serious, on 6 m, 2 m and 70 cm. While his location is down the hill from Wally, Bob has worked many VK5 and VK3 stations over the years. However, he found this year to be a bit down, only working into VK5 on 2 m. Bob holds the national distance record for a 70 cm contact to a mobile station (VK3KAJ/M3 – 2224.5 km). He complains that he often hears the beacons but there never seems to be anyone at the other end. I've heard that before!

Darrell VK6KDC in Manjimup also put up his hand as an active station in the southwest. He currently holds the VK6 record on 2 m and the national record for 70cm, both to VK3DEM (now VK3EK) – 2862.2 km. He also complains that he hears beacons but there is no one at the other end.

My apologies to both of you, and to any other active stations in that area. We look forward to hearing more from you over here in the east.

In view of the comments above regarding the difficulties in raising stations at the other end when the band is open, it's probably time to mention a few Internet resources that may help for weak signal work. Many shacks now have a permanent PC with an Internet connection and so the following may be useful:

- The VK-VHF email reflector is a hub for discussion of all aspects of VHF/UHF weak signal work. Band openings and the like are often notified through this reflector. Currently, 265 people are registered on the site. Refer to the NSW VHF DX web site (see below) for details on how to register.
- The NSW VHF DX web site - <http://www.vhfdx.oz-hams.org/> - contains a wealth of VHF/UHF information. The site is a "work-in-progress" so check back regularly.
- The VK/ZL VHF-UHF Propagation Logger website - <http://www.vk4cp.com/vklogger.php> – is a relatively new site with a chat-style interface. Notification of band openings, arranging QSOs and general VHF/UHF chat is encouraged here.
- Hepburn's VHF/UHF Tropospheric Ducting Forecast - http://www.iprimus.ca/~hepburnw/tropo_au.html - this site almost takes the skill out of tropo work. It uses weather forecasts to predict tropo conditions and can be uncannily accurate.
- DX Summit - <http://oh2aq.kolumbus.com/dxs/> - this site lists reports of openings and DX contacts on all bands. It's probably of most interest to 6 m operators.
- Microwave mail list - <http://mbs.valinet.com/mailman/listinfo/microwave> - for those interested in the microwave region, this US-based mail list has lots to offer.

EME

Guy Fletcher - VK2KU

The 2-metre EME scene in VK is slowly growing again with active stations at present in VK2, VK3, and VK7; doubtless others too! VK9LS was also recently activated on Lord Howe Island for 2m EME by Rex VK7MO, who was able to work several of the big guns in America and Europe.

Until recently the continuous spread in capability of 2 m EME stations could be roughly divided into 3 levels – the really big stations like W5UN and a handful of others who could hope to work small stations running limited power at home and on expeditions, the medium stations running 6 to 8 yagis (or 4 very long ones) and at least 1000W, and the small stations like me who could only really work medium and large stations. Then along came Joe Taylor's WSJT program and the JT44 digital mode. A 4th level of small station has emerged with 1 or 2 yagis (often without elevation) and relatively low power, and which can work level-2 stations (and level-3 sometimes) on JT44. And suddenly level-3 stations can work each other with JT44 relatively easily. I'm having a ball, and so are the others!

I still enjoy CW contacts, and happily accept CW scheds. Many stations in fact refuse to work JT44, either from personal choice or because they see it as somehow an inferior mode! If you want to work them, then it has to be on CW.

In the last month or so (mid April to the end of May) I have made 5 EME contacts on CW and 17 with JT44. Countries include OK, I, ZS, PA, DL, GW, CT, K/W, GI, and UA9. Most of these are new "initial" contacts with only a few repeats, increasing my initials to 74 and my countries to 29.

13 cm Band Interference

From VK6 comes news of interference being suffered by AO40 users in the 2.4 GHz band. It turns out that the QRN corresponds with the commencement of trials of the new 3G mobile phone services in Perth. There are a handful of such test sites spread over the metropolitan area. The 3G services operate in the range 2 - 2.2 GHz which falls into the image response of the S-Band down converters when using a 2 m I.F. Possible solutions include the use of better filtering in the front end of the converter, or changing to high-side local oscillator injection.

With the projected future explosion in the use of 3G mobile phones, this could be a problem that many users of the 13 cm band may encounter.

Digital Modes

Rex Moncur - VK7MO

Welcome to Bill VK5ACY at Kangaroo Island who is on 2 m FSK441 and will be looking for skeds. Also Jim VK3ZYC who was copied at Lord Howe Island on 2 m FSK441 and is operating JT44 on 23 cm.

A number of stations have been exploring the use of JT44 on 23 cm for DX on tropo and via Aircraft Enhancement. Contacts of around 500 km plus have been made by VK2KU, VK3FMD, VK3XLD (his first JT44 contact), VK3ZYC, VK3KAI and VK7MO. Guy VK2KU and Peter VK3KAI created a new digital record on 23 cm of 625 km.

These contacts require a lot of skill, as you are dealing with many variables due to the short durations of enhancement, problems of frequency stability at both ends, the need to beam accurately and the fact that you cannot hear the signal most of the time. Because of the short duration of enhanced signals, Guy VK2KU has been looking at an improved format for terrestrial QSO's and even looking into the mysteries of K1JT's source code.

Last month Leigh, VK2KRR, reported on the initial Lord Howe Island VK9 2 m contacts. VK9LS (with VK7MO as the operator) changed location on 10 May to get a better take-off to Eastern Australia. Unfortunately, Brisbane was still obstructed by hills and, despite extensive testing, only a weak tropo signal of around 3 dB in 0.3 Hz bandwidth could be detected from VK4AFL on 70 cm. In addition to last month's report the following contacts were made - JT44 2 m (VK2KU, VK2JJK), JT44 2 m EME (SM7BAE), JT44 70 cm (VK2KU), FSK441 2 m (VK3AFW, VK3CY, VK7DM, VK3UM, VK7JG, VK3HZ, VK3AXH, VK3HY, VK3AEF, VK3BWT, VK3AUU & VK2EI). There was even some SSB with VK2ZAB on 2 m and 70 cm and VK2KU on 2 m.

2 m & 70 cm FM DX

From my location here, at The Rock, NSW, over the month of May, there was 26 days of dead band conditions, or very poor conditions at the least on 2 and 70 FM. The cold weather has finally caught up with us and the changing weather conditions are certainly hampering chances of extended distance Tropospheric radio contacts. The other 5 days of May provided some excitement offering some particularly good conditions in most cases.

Significant Ducting conditions occurred on only two separate occasions during the month of May in the south. Initially, the month got off to an excellent start, when at approximately 6.40 pm EST on the 1st of May, a Duct became workable. The paths workable varied over time, but took in Southern and Western VK2, most of VK3 and VK5. Significant simplex contacts occurred between myself and with VK5AJW, Jim, in Cowell, with a 5/3 signal at 947 km. Also with VK5ZMB, Brian, in Gawler, with a weak 4/1 signal at 735 km. These stations were operating only very basic systems; I think Brian may have even only been on a hand held even. Some of the more distant repeaters noted pushing their signals across to the east on this night were 146.750, 5RAC from Pillaworta Hill at 1019 km; 146.800, 5REP from Coolanie at 961 km; 146.975, 5RAE from near Port Augusta at 910 km. An interesting one in from up in the northwest was 147.000, 2RBH from Broken Hill at 638 km. Of the bigger signals from the repeaters, Port Augusta appeared to peak at S9 +40 dB, with Port Pirie, Mt Kitchener and Murray Bridge S9 +20 dB. The majority of the repeaters had all but faded out by 2 am, that is all except for Port Augusta and Port Pirie, which were accessible still at 7 am the following morning, with Port Augusta still at S9 +40 dB. They rapidly dropped out by 7.30 am. Noted also during the morning of the 2nd of May was VK2ALN in Canowindra accessing the little, if ever used, 146.850 repeater in Griffith central VK2. VK3ANW at Kyabram and VK3JGL at Bendigo making the grade into 146.950 VK1RGI, a good distance at 400 + km. On 70 cm VK3DCZ reported hearing the Wagga repeater on 438.025 in Yarrowonga. It would appear that the 70 cm long distance repeater contacts are proving quite a challenge at this stage.

Following the first big opening for the month, the band was quite dead until the evening on Saturday the 3rd. A Duct became useable which appeared to cover mostly the western side of VK3 and southeastern VK5. This started around 9 pm and went to 10.30 pm. Extending as far as Mt Gambier at 630 km, and Naracoorte on 2 m, also taking in Mt. William in the Grampians, which is not often heard these days. VK3ANW and VK3XDP were copied simplex but had bad QSB.

Then on the 4th of May, a really interesting and unusual Duct opening into Adelaide. Unusual because it began here at lunch time, around 12.20 pm. A number of stations from in the east were having a great time taking part in a multi operator, multi location QSO via the Murray Bridge repeater (great voice ident on this repeater), which took in stations from 3 different states. Those involved were VK5NRV, VK5ZMB, VK5PDL, VK3JGL at Bendigo, VK5ZLT at Naracoorte, VK5MM, VK2LRR at The Rock at 733 km, and VK3MTV in Mildura. A number of other repeaters were noted from VK5 also but was not to the extent of the opening on the 1st. This opening ended at 4 pm.

Later that evening the Duct area shifted and contacts were being made into VK7 by some stations as far north as the NSW border. I was first alerted to the situation when I came across VK3ANW in Kyabram, northern VK3, making a simplex contact with VK7LCW in Penguin on 146.500. The distance involved was 540 km. This was at around 8.30 pm. I believe VK3JOO may have made a similar contact from Bendigo. Other simplex of note was between VK3YD in Monbulk and VK2LRR, 5/7 signal here at The Rock.

For a bit of 70 cm activity, which there seems to be very little of; late at night on the 10th of May, a simplex contact was completed between myself VK2LRR and Peter VK3XDP in Eppalock. Signal from Peter was 5/5 and the distance was 298 km, second furthest on 70 for me. This could have possibly been an aircraft scatter contact as it lasted merely a few overs.

In the evening of Friday the 30th and morning of the 31st I have had reports of a Duct workable from central VK3 up to Central VK2. Being unable to work FM in the latter part of the month I missed this one, but did hear of Bendigo stations in VK3 working into VK1RGI on 2m and a station in Bathurst doing the same.

Meteor Scatter for Winter

Want to know how to put some life back into FM VHF DX during those cold winter months? WSJT's FSK441 Meteor Scatter is the answer! DX contacts are still possible during the colder months because FSK441 is used by copying short bursts or 'Pings' of signals, which have been reflected or 'Scattered' from incoming meteors somewhere along the path. The meteor 'Pings' carrying the stations signal may only be received at the far end from as little as 20 milliseconds to over 1 second, but this is enough time to enable the receiving station to get at least some of the information contained in the signal.

Towards the end of the month an experiment was carried out on FM using the weak signal meteor scatter mode FSK441. This occurred between VK7MO, Rex in Hobart and VK2KRR Leigh at The Rock. Distance between us is 847 km. Success was had and FM signals made it through to be copied each end of the path. Amazing. If you would like to download the program WSJT, visit Joe Taylor's website at <http://pulsar.princeton.edu/~joe/K1JT>

FSK441 is not designed with FM as a mode of operation, but, with patience, it still seems to work. For better results, a Yagi and pre amplifier are desirable. Some

further experiments need to be carried out using JT6M, which from my initial testing, may be better yet.

A new group e-mail reflector has been activated, called the VK VHF FM DX Group. The e-mail reflector is really handy for exchanging information on the subject and organising contacts. Yahoo site address is at:
http://au.groups.yahoo.com/group/VKVHFFMDX_Group/