
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

In early June, it was good to see some winter Tropo enhancement, thanks to a slow-moving high-pressure area traveling across central VK2.

On the evening of June 3rd, stations in the Adelaide area worked across into northern NSW on 2 m - a distance of over 1100 km. Stations involved included Phil VK5AKK, Peter VK5PJ and Bill VK5ACY to the west, and Wayne VK2XN, Brent VK2PB (both in Narrabri) and Colin VK2BCC, east of Sydney.

The following morning (June 4th), Bill VK5ACY worked Rob VK1KW on 70 cm with reports up to 5x7.

Winter VHF-UHF Field Day

As is not entirely unexpected at this time of the year, the Winter VHF-UHF Field Day on June 22/23 was a crisp time with overnight temperatures in areas of VK3 plunging to below zero. And while it was relatively dry in this area, VK5 was looking particularly damp on the weather charts.

Nevertheless, there was a reasonable level of activity - many stations choosing to operate from the comforts of home.

Rob VK2GOM braved the Wentworth Falls area and reports:

The first round of operating from contest open was ticking along reasonably, tapering off to the three hours point, then it got very quiet indeed once everyone in earshot had worked each other.

VK2BCC managed to track me down, and came to my operating spot to say hello. Great to meet Colin, and thanks for the assistance disassembling my mast.

Quite cold up at Wentworth Falls, I'm guessing it must have been around 5 or 6°C, with plenty of drizzle on and off.

I heard very few /P station; most were operating from home.

Looking forward to more activity for the Spring FD!

Things I will change next time:

- 1. Give my IC910 an RF front end tuneup as per the W6PQL instructions.*
- 2. Use my Yamaha 4 stroke generator and 13.8V PSU for more power rather than relying on the 4x4 battery.*
- 3. Fit some sort of T handle to the mast for simpler rotation.*

Doug VK4OE's Field Day experience was one of mixed fortunes:

There's a classical saying that starts: "The best laid plans of mice and men....." Well, that seems applicable to my situation as far as operating in this event is concerned.

Saturday evening's operating from Mt Gravatt in Brisbane was a fair bit of fun with forty-two contacts had in four hours on all bands from 50 MHz to 24 GHz (excepting 5.7 GHz where a still-unexplained equipment failure has arisen), and it was a superb clear night, and not oppressively cold (though I was wearing two pairs of socks and a lined coat that I use when it's snowing in the UK!)

As planned for the Sunday morning, I left home about 3:00 a.m. to drive the two and a half hours down to the Border Ranges National Park, as I have done twice before. When driving at night it seemed like an especially long journey, but the moon light was beautiful and the sky clear (until just across the border where it had been raining - but that's not the point right now).

In my mind I had everything planned right and it would have come off well, except that about 5:40 a.m. and just 2 km from the final look-out destination (1+ km altitude and North-facing) I faced a large metal bar across the road declaring that it was closed to all traffic! Suddenly my plans ended with no immediate alternatives.

I quickly wondered about 'bigger' options and, knowing that there aren't any alternative sites near there plus the fact that I was a long drive from anywhere, I started to feel depressed about the remainder of the Winter FD event and my chances of spending maximum hours operating on this Sunday morning.

So, instead of planning to operate, I made a snap decision to abandon my contesting efforts and to check out something that I had been wanting to do, and that was to compare the alternative way (distance, road quality, traffic, etc.) of getting to this superb microwave site that had been my goal. That took me a long way further, returning to Brisbane via Murwillumbah and Coolangatta. All along the way I thought several times of the possibility of diverting to one or other familiar elevated place to make a few contacts but, after already having driven for 5+ hours I reckoned that I was just not ready to do all the setting-up of the gear for just a couple of possible hours of operating. And even on the drive up the highway I was fighting fatigue - potentially dangerous - and it would have been even worse had I exerted myself even more.

I have subsequently noticed that the NSW Parks and Wildlife Department does have an "Alert" on their website for the Border Ranges National Park saying that the part of the park road I was wanting to use was closed but, I think understandably in view of my previous history of just going there without any problems, I never even thought to check this website. Lesson learned!

Despite the loss of Sunday morning's activity - and I apologise to those folk who were looking for me - I prefer to remember the fun that was had on the Saturday evening. It's a good antidote for the depressing influence of Sunday's experiences!

Looking forward now to the VK4 Microwave Activity Day at the end of July, as well as the Spring VHF-UHF Field Day Contest later in the year!

VK3 Microwave Test Day - 9th November

Following on from last year, early planning is in progress for another VK3 Microwave Test Day, again to be held at the EMDRC Club Rooms. Tentative date is Saturday November 9th avoiding the Cup "long" weekend and comfortably before the Spring VHF-UHF Field Day on November 23rd/24th (subject to the Federal Election). We're planning some different activities this time.

So, get to work on that Microwave gear, ready for Test Day.

77 GHz New World Record

Following on with the theme of 77 GHz activity, US amateurs have claimed a new World Record on that band.

On June 13, Bob Johnson KF6KVG and Goran Popovic AD6IW had a successful QSO over a distance 252.49km. Bob was on Mt Hamilton, just east of San Jose

while Goran was in Kings Canyon national park. The contacts were made on FM and SSB with strong signals at both ends.

The previous record distance was 228 km from DL2AM and DL2GWZ.

Bob's equipment produces 100 mW to a 300 mm dish and used a locked DRO oscillator for excellent stability. Goran runs 120 mW to a 600 mm dish, again using a DRO oscillator locked to 10 MHz. Goran's dish has a gain of 50 dB and a beamwidth of 0.3 deg, so alignment must have been a little tricky.

It's worth noting that, as discussed in an earlier column, the band 77.5-78 GHz is under consideration at WRC 2015 for an allocation for automotive short-range radar, leaving the fate of the amateur primary allocation uncertain.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

Meteor Scatter by Kevin VK4UH

The winter solstice and the absence of any significant meteor showers in June marks the low point for the Meteor Scatter propagation calendar, at least in the Southern Hemisphere. Despite this interstate and trans-Tasman contacts have been made throughout the month, in and out of the normal Saturday/Sunday morning activity sessions, albeit with patience of perseverance.

Here in SE VK4 I am still waiting to hear my first decodable “ping” from ZL. Interestingly from here all the major west-coast ZL cities are at a similar distance, all close to the magic 2500 km, the effective maximum distance obtainable without some form of propagation enhancement at one or both ends of the path. There is a regular Saturday morning VK-ZL MS activity session on 144.330 from 20:00 to 21:00 UTC. I'm there most sessions and regularly see stations not that far south of me making contacts across the ditch. Although close to the theoretical limit this path should be possible for us with a bit of Tropo or Es enhancement on the path.

Reviewing the VK Logger MS reports for June most stations have experienced a low return rate, with “pings” being faint, infrequent and of short duration. Difficult conditions for the FSK441 mode. Southern state stations aiming north appear to have been experiencing better results than those in the north beaming south. Certainly there are now more VK4s operating each weekend than from the southern call areas, so there are more pings to see in the South, but the return rate to the north has seemed poor even allowing for that. Could an element of one-way enhancement exist?

It was gratifying to see some new callsigns appearing last month. The special event station VK100ACT, operated by Waldis VK1WJ was worked by many and welcome to Rob VK1KW, new to MS and to the “learning curve” of FSK441.

The poor general conditions, especially with short pings less than 100 ms, has given the opportunity to trial the new MS mode JTMS that was mentioned in last month's column. At least nine VK stations have gained some experience and success with the mode. Activity has mostly been before or in parallel with the normal Sunday activity session but on 144.330 – since the two modes are incompatible on the same frequency. Although there are some differences to master with JTMS, in particular the “S” setting being quite critical, most stations are finding better decode rates with very short pings albeit allowing for more on-screen garbage and partial decodes

being common. Here I have been able to complete with the same stations using both modes in a single session and usually the time required is shorter with JTMS during these challenging conditions.

The other strategy available for conditions like this month is the use of Short Text (Single Tone) or "ST" in FSK441. Since not everyone may be familiar with this option I thought it timely to describe it here. To enable Short Text "ST" it is necessary to check the STTx and STRx boxes on the WSJT Consul screen in FSK441 mode. Doing so allows the program to send and detect single tones in place of the normal "machine-gun modulation" for the Text windows Tx3, Tx4 and Tx5. These windows are usually used for Report (eg R26), RRR, and 73 respectively.

There are four possible ST messages: - R26 represented by a pure 882 Hz tone, R27 – 1332 Hz, RRR – 1764 Hz and 73 – 2205 Hz (These being the four component tones used by FSK441).

To use this option to make a valid MS contact there are a few points consider. Firstly there is no modulation or identification of the transmitted signal just a single tone, ie a single transmitted carrier, and only its frequency conveys information. Consequently there must be a 2-way exchange of callsigns before ST can be used. Secondly since there is nothing to identify the source or destination of the signal there can only be the two stations operating on that frequency at that time. So ST cannot be used during normal activity sessions where there may be other stations transmitting and receiving otherwise total confusion will reign. Either a different frequency or a different time slot must be used. Remember also that any carrier or birdy near one of the signal tones will be decoded as the message so false decodes can occur.

For those who might question the validity of "ST" bear in mind that in JT65, used for EME, then the equivalent RO, RRR and 73 reports, required to make a valid contact, also do not contain any other identifying information.

When ST is used there must be no callsign typed in the text window used only one of the four allowable messages as above. If correct the window will change colour from yellow to blue and if monitored only a single audio single tone will be heard. On receive; even the shortest return (ping) of one of the four allowable tones will be decoded on screen. Thus providing a significant dB and duration advantage over normal FSK441.

So in short, ST has advantages in completing a difficult QSO BUT Callsigns must have been received in both directions first, the frequency (DF) needs to be close and there can't be any other stations transmitting on that frequency. Like all things digital this needs a bit of practice to get right. Give it a try on a quiet frequency, often you will see a decode on a ping that it was hard to hear at all.

New Version of VK1XX's EME Doppler Correction Program

Glen VK1XX has added a half-self-Doppler setting to his program which can be downloaded at:

www.vk3hz.net/microwave/doppler141.zip

If the half-self-Doppler setting is invoked by all stations this gives a constant frequency on the Moon. With this setting it is possible to use a single focus frequency of say 10368.225 MHz and all stations will appear on the same frequency on the waterfall independent of their location on Earth. Tests of the new feature between G3WDG and VK7MO on 10 GHz have shown frequency errors of less than 20 Hz.

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

John McRae - VK5PO

This report compiled from back home, here in Lewiston. Great to catch up with many stations in the US and Canada. My simple full wave loop and IC7000 worked very well on six metres.

The place to STILL be is DARWIN, as yet another VK8AW log will show. VK8MS also worked many stations, but a report was not received from Marc at this time. VK8RR snared a few stations also.

Gary, VK8AW writes:

June has seen a few openings into eastern and southern Europe on six metres from up here in Darwin.

Early in June, six metres was rather lacklustre, but on the 22nd, from 1104z through to 1132z, worked on CW where these stations: UK8FF, UR5QU, UR5MID, LZ2WO, US4EX, UT9FJ, UX0UN, UT7QF, YO3DDZ and the band quietened down as I managed to get UT4EEH into the log.

The 24th saw a more widespread opening, and using CW, these stations were worked between 1107z and 1250z. Nearly two hours of activity prevailed.

LZ1QI, SV2DCD, I4EAT, SV8CS, IK4WMA, S57BVM, I7CSB, HA5CW, IZ8MWG, HA5FW, IW0FFK, SV8RX, I4MKN, IK0FTA, IW0GBU, IK4GME, IK0MS, IZ0DZM, IZ7SE, I6WJB, IZ7FLS, SV2CXW and to finish off, I2WDX was the lucky last that I put into my log at 1250z.

On the 25th, one solitary station was worked at 1111z. UT5URW in Ukraine.

Some winter "E's" are more commonplace, the 25th was lively, with a widespread opening from VK5 to FK8, VK2,4,3 and even VK6. VK6KXW was 599+ on CW, a real surprise! VK3 and VK7 into VK4 on the same day.

On the 27th, VK2ZQ heard the VK8VF beacon at Darwin at 0450z, and at 0500z snared VK8RR on SSB with 55 reports both ways.

The southern Aurora was prevalent on the 29th June, with Stations at lower latitudes able to complete QSOs. VK5DK, VK3ZAZ, VK3DUT, VK3OE, VK3GHZ, VK7DX and VK7DD all made contacts between each other with this phenomena.

It is very refreshing to see many more VK stations using the domestic calling frequency of 50.200, and lots of stations calling, then QSY to complete a QSO. This is great, as it is highly likely there may be some EU DX in the coming months, and it is really imperative that 50.110 be kept clear for ease of hearing and calling DX stations. It can, and will mean some will miss out on the rare DX if VK stations are calling other VK stations on 50.110. Please encourage others to observe the sanctioned Band Plan, so we all can enjoy any opportunities that arise.

Good DX!

Please submit reports, logs or other info you may consider useful to John VK5PO