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# VHF/UHF – An Expanding World

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David Smith VK3HZ

## Weak Signal

David Smith - VK3HZ

Despite a number of days where very promising propagation maps were produced by the Hepburn Tropo Ducting Forecast web site, there hasn't been a great deal of long-distance propagation to report for the month. No VK-ZL contacts have been reported, although the forecast for this weekend for the John Moyle Field Day is looking very promising. In the other direction – across the Bight to VK6 – there have been some reports of the beacons in Esperance and near Albany being heard in Adelaide, but no contacts noted.

There has been more localised enhancement thanks to some slow-moving High-Pressure cells. The pattern, repeated a number of times through the month, starts with enhancement from Adelaide into Mt Gambier and Melbourne. As the High moves east, the Mt Gambier-Melbourne path can become quite intensely enhanced with 23 cm signals over S9. At that point, the keen microwavers at each end normally scurry to the tops of their respective mountains to make contacts on all bands up to 10 GHz, with 24 GHz proving a little more challenging due to water vapour in the air. The High then generally slides to the south between the mainland and Tasmania, producing good conditions between VK3, 5 and 7, before moving out off the east coast lifting the VK7 to coastal VK2 path.

On February 17<sup>th</sup>, Matt VK2DAG and Rex VK7MO used such conditions to good advantage as Matt reports:

*I started to have a JT65 QSO with Rex VK7MO but he was 59+ so we went to SSB instead and were able to work each other on 2 m for an hour with 59+ signals with some rapid deep fades. So we decided to try 23 cm JT65c on 1296.100 and within 10 mins the QSO was in the bag! Rex's best was -14 and I had 100% decodes on him. My VK5EME Transverter seems to have some bad drift on Tx up to 100 Hz but on Rx it only drifted 10 Hz up over Rex's Tx periods. 1120 km on 23 cm - that's easily beaten my best to date of 302 km.*

Colin VK5DK has also been having a busy time:

*Recently, there has been some very good 144 MHz, 432 MHz and 1296 MHz propagation in the southern parts of VK.*

*On the evening of Monday March 10<sup>th</sup>, there were very good conditions between Brian VK5BC/P at Corny Point on the Yorke Peninsula and Mt Gambier – a distance of around 500 km - with 5x9 signals on 2 m and 5x9 + 20 dB on 70 cm. Brian didn't take his IC910 with him as the 23 cm antenna was not quite ready for installation at the portable location, but I am sure signals would have been very good on 23 cm as well.*

*The same evening, conditions were good to the east from Mt Gambier with beacons on 2 m, 70 cm and 23 cm being received at this QTH from Geelong (VK3RGL) on 2 m and 70 cm, Ballarat's new 23 cm (VK3RMB) beacon under test at VK3ADE's QTH, the VK3RGI 2 m, 70 cm and 23 cm beacons from Gippsland & VK7RAE 2 m beacon from NW Tasmania. Stations worked from this QTH were VK3XPD and VK3ZYC in East Gippsland on 2 m, 70 cm and 23 cm.*

*On the morning of Wednesday March 12<sup>th</sup>, several stations were worked in the Adelaide and Melbourne directions as well as hearing the VK6REP 2 m beacon at S9 and VK6RST 70 cm beacon at S2, but no VK6 stations heard. Stations worked from*

*this QTH were:*

*On 2 m - VK3ESE, VK3AUU, VK5AKM, VK5BJE, VK5KGP, VK5BC, VK5NY, VK3AXH, VK3TPR and VK3XPD; on 70 cm – VK3ESE, VK5AKM, VK5BC, VK5NY, VK3TPR and VK3XPD; and on 23cm – VK3ESE, VK5NY, VK5AKK and VK3XPD.*

*At this stage, no 13 cm contacts have been made into the Melbourne area, but I hope that with the increase in equipment building in the Ballarat and Melbourne area, this will happen in the near future.*

## **VK-VHF Reflector**

The VK-VHF email reflector has once again found a new home after the existing host could not continue to provide the service. Hugh VK2YYZ has generously offered the services of his server that is currently hosting a number of similar reflectors. Details of the new reflector may be found at:

<https://ozlabs.org/mailman/listinfo/vk-vhf>

Note the https prefix and that you may get a pop-up window about a security certificate – click OK to proceed.

Thanks to Gordon VK2DJG who has run and hosted the reflector for the past 8 years.

## **Beacons**

Rod VK2SMC/TWR reports that the south-eastern NSW beacons are well on the way to full time operation again:

*Starting on the JMFD weekend, the VK2 beacons will be running from this QTH. The frequencies are 144.414 MHz and 432.414 MHz with a tiny bit of drift. You will find them without too much trouble. The beacons are going into a permanent home on Emerald Hill prior to winter at a powered site. It has taken a while getting a tower organised and also underground power etc. We are a tiny group with very tiny amounts of reserves so you will understand why the beacons can't be just thrown up.*

Glen VK2CCW nearby in Cooma also has a temporary beacon in operation. Details are:

Freq: 144.5875 +/- 300 Hz.

Mode: FSK 300Hz –shift.

ID: " VK2CCW QF43NS COOMA SE NSW"

Power: 14 Watts into 6" quarterwave filter, 10 W into antenna.

Antenna: 13 elements HPOL AZ : NNE (Brisbane) from Cooma, negative horizon.

Hours of operation: Continuous, 24H, battery backed, until at least 30 May.

Location : VK2CCW QTHR Cooma.

Please send any Weak Signal reports to David VK3HZ

## **Digital DX Modes**

Rex Moncur – VK7MO

Welcome to Ian VK1BG, Rob VK3XQ, and John VK7CEJ, who have all been trying out WSJT. After a number of tries Ian VK1BG was able to complete a JT65A contact with Rex VK7MO over what is an extremely difficult tropo-scatter path from Canberra

to Hobart, with high mountains both ends blocking any tropo-ducting. On 17 February there was a good coastal duct from Newcastle down to Hobart and Matt VK2DAG was able to work Rex VK7MO on 23 cm on JT65C with signal levels of -22 and -14 dB.

With the increasing availability of GPS-locked 10 MHz references, some operators have been locking their rigs to GPS to improve frequency stability and accuracy and thus performance using JT65. These devices are called GPSDOs for Global Positioning System Disciplined Oscillators. Very good quality units such as the HP Z3801A and Z3815A, that can hold frequency on 1296 MHz to better than 1 Hz even after losing GPS lock for 24 hours are becoming surplus with the demise of CDMA telephone systems. Surplus units can be obtained for around 250 dollars. G3RUH, James Miller, has produced a simple low power unit that is more suitable for portable operation. This gives excellent performance while GPS locked but without the complication of a hold-over capability. As Telstra close their CDMA system it is likely that large numbers of high performance GPSDOs will become available.

A number of VK hams have been looking at ways to lock their rigs to these 10 MHz GPSDOs and find they can now report zero DF (Difference Frequency) and no drift on JT65. Peter VK3SO uses an IC-706 which requires a 30 MHz reference oscillator. Peter has found he can lock the 30 MHz oscillator by the simple process of injecting the 10 MHz into a few turns wound over the coil of the existing oscillator. Jim VK3II uses an FT-736 which requires a reference oscillator of 20.480 MHz. Jim, has found that the HP Z3815A has an auxiliary output on 4.096 MHz which can be multiplied by 5 to give 20.480 MHz. Other rigs generally require odd frequencies that require one to use a PLL to lock to the 10 MHz of the GPSDO. David VK3HZ and Rex VK7MO have been designing and testing PLLs to lock the FT-847/817/857/897 which all require a 22.625 MHz reference; the TS-2000 which requires a 15.6 MHz reference; and the IC-910-H which requires a 30.2 MHz reference. At this stage the preferred approach is to use 74AC161 dividers and an XOR gate to produce the control voltage for oscillator. It has been found that reasonably good phase noise can be produced with a relatively cheap VCXO, although a good quality VCXO can give the last fraction of a dB performance improvement.

Please send any Digital DX Modes reports to Rex VK7MO

## The Magic Band – 6 m DX

Brian Cleland – VK5BC

After a couple of good openings in early February reported in last months notes the band quietened down with only a few spasmodic openings which didn't reach any great intensity or longevity.

Interesting day on the 13th Feb where in VK5 the Band was open for several hours to VK2, 4, 7 and VK6 (Albany area). Conditions were quite intense with strong backscatter signals evident, Garry VK5ZK working Brian VK5BC on backscatter. VK7's also worked into VK4 and Wally VK6WG Albany worked several VK2's as well as VK5.

17th Feb saw John VK7CEJ in Launceston work Scott VK4CZ Brisbane and Phillip VK2FHN Sydney as well as Norm VK3DUT near Bairnsdale on Tropo with 5/9 signals over the 393 km path. Meanwhile ZL TV was being heard in VK5 but without any ZL contacts reported. Brian VK5BC managed brief contacts with John VK2BHO and Mike VK2BZE.

On 19th Feb, short openings when Brian VK5BC worked Henry VK2ZHE in Port Macquarie and Neville VK2YO worked Dale VK4SIX.

20th Feb saw some openings; in VK5 the VK2RHV beacon was audible for some hours with Brian VK5BC working Peter VK2ZTV. Northern Tasmania opened to northern VK2 and VK4 with John VK7CEJ working Mike VK2OT in Grafton. Ted VK2ARA worked Rod ZL3NW and Doug VK4DUG worked Garry VK2DJ mobile in Wollongong and VK3TPR.

Norm VK3DUT had the VK5RBV beacon at good strength late in the afternoon of 23rd February and worked Jim VK5ZSA near Mannum. Jim also worked Jack VK2XQ in Sydney.

On 27th February the band was open most of the morning in VK5 when the VK4RGG Gold Coast, VK4ABP Longreach and VK8RAS beacons were audible. Brian VK5BC worked Neville VK2YO and several VK4's from Brisbane to Cairns. Gary VK5DX also worked Wayne VK4WS.

The afternoon of the 29th February, the VK2RHV and VK2RSY beacons were good strength into VK5 with Jack VK2XQ and Kerry VK2BXT working Brian VK5BC. Myles VK6ZRY Perth also reported hearing the Dampier VK6RSX beacon.

Internationally many kept an ear out on 50.105.5 MHz for the VP6DX Ducie Island expedition but unfortunately no contacts eventuated but Dale VK4SIX did hear their beacon on 22nd February.

Please send any 6 m information to Brian VK5BC