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# VHF/UHF – An Expanding World

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David Smith VK3HZ

## Weak Signal

David Smith - VK3HZ

About the only enhanced conditions reported during the month occurred in early May. On the afternoon of the 9<sup>th</sup>, the VK6REP 2 m beacon at Esperance was heard in Adelaide. No contacts were reported. On the morning of the 10<sup>th</sup>, a high-pressure cell had drifted across the south bringing some reasonable conditions with it. Many 2 m contacts were reported between VK3, VK5 (Adelaide) and northern VK7 stations. On the morning of the 11<sup>th</sup>, Phil VK5AKK in Adelaide worked Karl VK7HDX in Launceston on 70 cm, but conditions were not good enough for 23 cm.

## Mid-Winter VHF/UHF Field Day

As has been advertised elsewhere in this issue, due to popular demand, a third VHF/UHF Field Day has been created to fill in the lull between the JMFD and the Spring event. To align with a minor peak in Es propagation that normally occurs in late June, the Field Day will be held on the weekend of 21-22 June. This date may also be early enough to beat the coldest part of winter. A number of stations have indicated their intention to be out on a hilltop somewhere, although winter track closures and the presence of snow may hamper some efforts and many may only be out for an 8-hour stint. If you are not intending to be out in the field, please provide as much support as you can from the comfort of your shack by providing contacts and contest points to those who have braved the conditions.

## 70 cm Band Under Threat

It is sad to see that, once again, one of our bands is under threat. As reported last month in the WIA notes, the ACMA has commenced a review of operations within the 403 – 520 MHz band seeking input on future options. The discussion paper to be found on the ACMA site states that the frequency range of 430 - 440 MHz is out of scope for the discussion. However, it specifically states that the use of the section of our band from 440 – 450 MHz is up for review. In many of the populated areas, we recently lost large slabs of the 420 – 430 MHz allocation. Now it looks as though 440 – 450 MHz is up for similar treatment. I would urge all of you to contact the WIA to insist that we voice our objection to this to the ACMA in the strongest possible terms.

## GippsTech 2008

GippsTech - the premier conference in Australia for VHF/UHF and Microwave enthusiasts - is on again over the weekend of 5-6 July. Not only will you hear presentations from other fellow amateurs on subjects of interest, but you also get to meet the voices behind the microphones. This is one event that should not be missed if you are interested in the VHF and upwards bands. Try to come for the informal Friday evening meal as it provides a good opportunity for some informal discussions.

## EME

Trevor VK4AFL has been a keen EME enthusiast for many years. Early operations were on 70 cm where he developed a large array that was rotatable about its axis to cope with changes in signal polarisation. Then he erected a satellite TV dish and commenced operations on 23 cm. Now, with a change in feed, he has the dish operational on 13 cm and is finding it the best of the bands he has used so far. He participated in the recent DUBUS EME contest and reports:

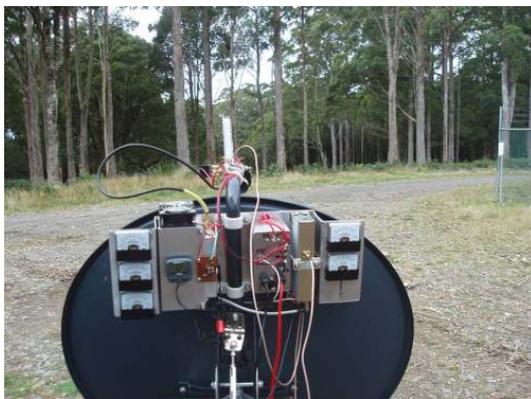
*I found 13 cm to be definitely a good band and certainly suits a smaller dish such as my 3.7 m dish. It was helped a lot by WD5AGO's excellent preamp. With about 90 W, CW echoes are quite loud and SSB returns Q5. Earlier in the year I had a handful of contacts limited to 2301 and 2304 receive, but I purchased a 2320 receive converter from Kuhne Electronic, which I switch in and out as required. A few days prior to the contest I had a check contact with G3LTF to confirm that 2320 was working. In the contest I worked W5LUA, WA6PY, WW2R, VE6TA, VK3NX, ES5PC, OKICA, G3LTF, DL4MEA, F2TU, SD3F and OZ4MM. For the next contest I expect to have 2424 receive going for the JAs. Carl, SD3F was my EME contact number 1000. One problem is the continual tuning required to cover the various European frequencies within the 13 cm band, which I found very inefficient and frustrating. I am thinking that a better system might be to announce prior that I will listen 2304 only for a certain time frame and then listen only 2320 for another. I still have the 13 cm setup in place and will change to the 23 cm feed just prior to the 1296 contest in May.*

Please send any Weak Signal reports to David VK3HZ

## Digital DX Modes

Rex Moncur – VK7MO

During April, David VK3HZ and Rex VK7MO set a new Digital Record for 10 GHz of 224.7 km using JT65 between Mt Cowley near Lorne, Victoria and Mt Baw Baw in Gippsland, Victoria (see Photos). David was running 0.8 watts to a 43 cm dish and Rex 10 watts to a 65 cm dish. Both stations were GPS locked to meet the stability requirements of JT65. The path is line of sight except for heavy tree cover at the Mt Cowley end. Signals were very strong at up to S8 on SSB so the weak signal capabilities of JT65 were not really tested.



**All Clear at Mt Cowley**



**Fogged in at Mt Baw Baw**

In order to explore the application of JT65 at 10 GHz tests were conducted over a number of paths from David's QTH in Melbourne to Strathmore (17 km), the Pentland Hills (69 km), Mt Buninyong (104 km), Mt Alexander (115 km) and to the QTH of Des VK3CY (202 km). From Strathmore it was necessary for Rex to beam through two

large trees just a few metres away, such that signals were scattered and weak and the antenna could be beamed in any direction with little change in signal strength. While at Mt Buninyong there appeared to be a clear path through the trees about 10 metres away, signals were again scattered widely and signals were available from many directions. At Mt Cowley the trees were around 100 metres away and while they fully blocked the path the longer distance to the trees limited scattering at wide angles and it was possible to discern a reasonably sharp pattern of the antenna. While experienced 10 GHz operators will be well aware of the problems of scattering from trees, this was all a new experience and something to be aware of in planning 10 GHz operations. Despite the problems of scattering, JT65 performed extremely well and with GPS locking, WSJT always reported a DF of zero Hz indicating that both stations were within one 2.9 Hz bin.

The 202 km tropo-scatter path to the QTH of Des VK3CY proved much more demanding and on the first attempt with JT65C, no decodes were achieved and there was only slight evidence of signals at David's end where he could make use of the higher power being transmitted. Following a visit to Alan VK3XPD, Rex was able to replace his feedline with hardline and improve transmit performance by 1 dB. In addition, with stability sufficient to allow the use of JT65a, it was decided to move to this mode to gain another 2.2 dB. With this 3 dB improvement, a second attempt was made and this time David was able to decode signals. With the presence of signals it was possible to carefully optimise beam headings until David was receiving consistent signals of around -22 dB from Rex's 10 watts. At this time Rex started to see traces of David's 0.8 watts and, after an hour and a half, a QSO was completed with Rex obtaining only four very weak decodes that peaked at -29 dB. It was found that it was in fact easier to get the RRR message through in conjunction with call signs rather than to use the shorthand message approach. A lesson from our experience is that on very weak tropo-scatter paths at 10 GHz with antenna beamwidths of a few degrees, it is necessary to have a means of very accurately pointing the antenna so that when the tropo-scatter signals rise out of the noise you are in the right direction – it is just too difficult to peak the antenna on a fading signal you can't hear. While it was pleasing to complete a tropo-scatter contact, signal levels were 8 dB below that calculated for tropo-scatter and 20 dB below that calculated with Radio Mobile computer program. Further tests are planned on paths from VK3 to VK7 to explore these anomalies.

Please send any Digital DX Modes reports to Rex VK7MO

## **The Magic Band – 6 m DX**

Brian Cleland – VK5BC

After a few "E" and JA openings in early April as reported in last months notes the band went back into sleep mode with very little to report for the remainder of the month and early May.

On the 11th April Brian VK5BC reports working VK2's FA, BZE, JDS & ZT.

The best openings of the month were on the 13th April with many contacts being reported. Kerry ZL2TPY worked John VK4FNQ, David VK4ZDP and Russel VK4BEG with Brian VK5BC also reporting good conditions to Northern Queensland completing contacts with VK4s ZDP, ABW, FNQ, BEG, RF and APE. David VK5AYD at Coober Pedy also worked John VK4FNQ, Andrew VK4KAY and Wayne VK2XN. Andrew VK4KAY completed a good contact with Wally VK6WG at Albany. Andrew also worked VK2XN. John VK4FNQ at Charters Towers worked many VK2s and VK5s and John VK4TL in the Atherton Tablelands worked John VK2FAD. The Alice Springs beacon was heard by both Kevin VK4BKP in Mackay and Jeff VK5GF (ex

8GF) at Victor Harbor and Phil VK2FHN reported the FK8SIX beacon.

Some brief openings on the 21st April with Joe VK7JG working Frank VK4FLR and Brian VK5BC working Neville VK2YO and Alan VK4SN. Then on the 25th April Jeff VK5GF worked John VK4FNQ.

Meantime Joe VK7JG has been continuing to have success with EME contacts and reports:

*Conditions this month were good for 6 m EME on the days that I operated. Although I had to get up rather early on a couple of mornings - 0230 one day then 0330 the next - it was well worth it. On May 1st, I completed with Mick W1JJ and Lance W7GJ with the moon between 2 and 5 deg. The next morning I had a sked with Gary VK4ABW and with his new array it was rather easy. Then Lance called me just to have another contact for the day. May 3<sup>rd</sup> I had a sked with GD0TEP and we completed with a very high moon at 16 deg. Not having elevation control limits my operating time with his best signal being -21. This was followed by working Matteo IW5DHN.*

Hopefully June brings some good winter "E" openings.

Please send any 6 m information to Brian VK5BC