VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

There's not a great deal to report this month. I'd guess that the cold snap across the south of the country probably has a bit to do with that with most people staying inside huddled around the fire (or heating source of their preference) rather than venturing out to the icy confines of the shack. Melbourne has reportedly had the coldest July for 20 years.

Hobart (as it does) has been even colder, experiencing its heaviest snowfall for many years with snow right down to the water's edge. Rex VK7MO awoke to about 10 cm of snow, some of it beautifully balanced on the elements of his 2 m yagi array (see photo).

Snow at VK7MO

Anyway, enough of the weather. It's starting to sound like 80 m.

3.4 GHz Band

The new / interim / re-made LCD has been released by the ACMA and has made official the changes to our access to sections of the 9 cm band. Of relevance to weak-signal operators, the block from 3400 MHz to 3425 MHz is to be withdrawn from Amateur use in a number of geographic areas surrounding most mainland capital cities - Adelaide, Brisbane, Canberra, Sydney, Melbourne and Perth. Interestingly, Hobart and Darwin are unaffected. The restrictions will only come into force when (if) licences are issued to the NBN for fixed wireless services in metro fringe and hard to service areas of these cities.

So, why don't we just continue to use 3400 MHz until our area is affected? The problem is that as soon as any area is restricted, operators in that area will have to move frequency and we'll end up with a split of operations. While there are only a relatively small number of active stations on 9 cm (dogpiles there aren't!), that number is expected to grow significantly with the ready availability of ex-3.5 GHz radio link units that can be readily converted (contact the GARC for more information). So, it is probably better if we move frequency en-masse, now, to avoid this sort of confusion.

So where are we moving to? Until NBN is actually running, we have no idea of the sort of interference that may occur. 3395 MHz was mentioned. Now the Band Plan has been updated and a frequency of 3398 MHz has been listed. This probably makes a lot of sense in the short term as it is within tuning range of most IF radios

without any need to change LO frequency or retune the transverter or antenna. If we do find that there is significant interference from NBN, then we can always move down further.

With a touch of irony, rumour is that the NZART are planning to move their 1 MHz weak-signal segment from 3399 MHz to 3400 MHz. Whether this is to align with VK (as it was) or to conform to international convention (as we should) is not clear.

6 m Band

Long time readers will recall that there was a 6 m "Magic Band" section within the VHF/UHF Column for many years. Unfortunately, the various authors of this section were unable to continue with it and, with nobody stepping in to take over, it fell by the wayside. So, again I ask, if anyone would like to compile a section with 6 m news, then please contact me.

Meanwhile, Richie VK8RR reports that on July 5th, he made 24 SSB contacts on 6 m into Europe. The areas worked were SV, IW, IK, TA, 9H, J4 and also heard OZ. On June 24th, he heard LZ1QI, IK0FTA and YU6MM.

Please send any Weak Signal reports to David VK3HZ

Meteor Scatter

Dr Kevin Johnston – VK4UH

Well at long last the error light on the 10MHz shack GPSDO has gone out! The "Thunderbolt" based system had been warning of the impending leap-second for many months.

Last month I reported on attempts by Scott VK4CZ and Bob ZL1RS to complete 50MHz MS QSOs. This month Scot has provided the following report:

VK/ZL 6m FSK Meteor Scatter Trails.

The fun of working meteor scatter on 6 m has produced some good contacts over the years. The now regular morning Meteor Scatter contacts that Brad VK2QO was instrumental in fostering on 50.2 MHz has enabled regular contacts to be made. And from here in QG62lp the 'ever reliable' 1,720 km path to Frank VK7DX, and up to 1,795 km when Glenn VK7AB was active, seemed to be the available limit due to activity levels and station locations in VK. The challenge of extending a 6 m MS contact to over 2,000 km would require thinking a little differently. This raised my interest in trying to complete the path between VK4 and ZL via Meteor Scatter on 6 m and had been growing in appeal for a while. However, I needed someone at the other end of the path. With growing interest in the domestic VK 6 m MS activity and in particular the increased level of activity now observed most weekends on 6 m FSK, and with ample encouragement from Kevin VK4UH, it was finally time to use that momentum and generate interest in seeing if ZLs would join in the challenge. Kevin VK4UH kicked things off and started a thread on the VKLogger Forum. Supporting that, a few emails were sent to a few ZL stations who had a keen interest in 6 m, had known to operate digital modes and had capable stations. The process had started. Warily Mark ZL2WHO responded and with a little arm-twisting, offered to run the first sked. The first activity commenced on Sunday June 28 at 19:30z (07:30 am ZL, 05:30 am VK) on 50.230 MHz FSK running for 60 minutes. Liaison conducted via the VKLogger 6 m iChat facility. In keeping with convention the ZLs making the northbound and westbound transmissions were to operate in first period and VK4 making the southbound and eastbound transmissions were in second period. On

June 28, not only was Mark ZL2WHO operating, but Bob ZL1RS surprised us and was supporting with Rx only capability (due to a feedline issue at the time). This first attempt didn't result in anything being seen here in VK4, but Bob ZL1RS reported decodes of my CQs. A great start, raising my interest more and immediately proved that the path was going to be possible! On Saturday July 11 and July 12 the skeds produced limited decodes, but nothing allowing the contacts to progress.

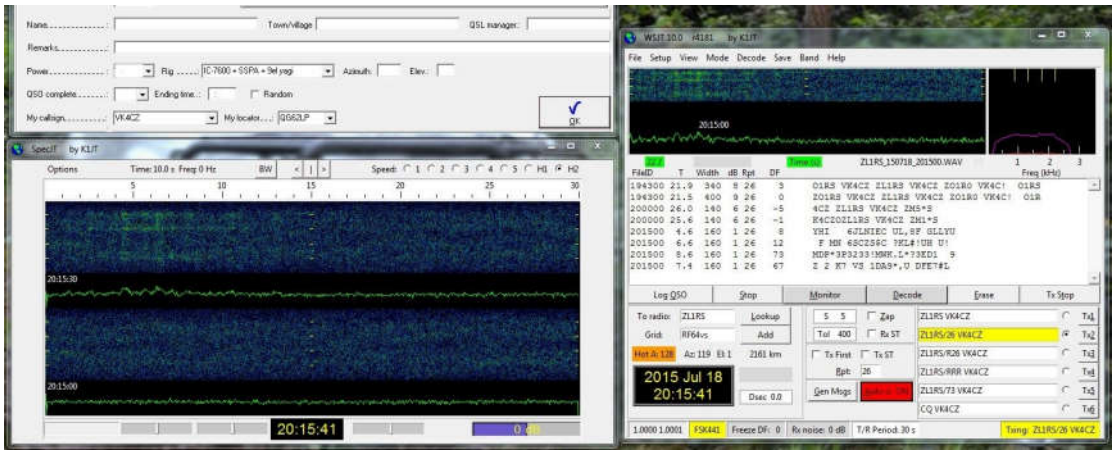

Fig 1 - 50 MHz MS signals received by ZL1RS (July 18 2015)

The sked on Sunday July 19 provided the best results so far. Decodes between VK4CZ and ZL1RS were achieved enabling progression to the next logical report to be sent. We patiently persisted for the full hour but unfortunately, we were unable to complete on that occasion. Now with three weekends of operating behind us, we're gaining more interest and seeing a growing number of ZLs joining in – with Bob ZL1RS, Mark ZL2WHO, Chris ZL2DX, Peter ZL4LV, Rod ZL3NW and Roger ZL3RC all participating at various times. The results to date have been produced on purely random meteors. I anticipate that with the assistance of a meteor shower we will complete this path very soon. And with the Southern delta-Aquarids set to peak on July 28, the weekend of July 25 and 26 will be our best chance yet. For VKs and ZLs wishing to participate, please follow and join in on the VKLogger Forum thread entitled 'VK4 to ZL 6 m M/S skeds' and announce your activity on the VKLogger 6 m iChat.

At the GippsTech meeting in VK3 this month, Rex VK7MO gave a comprehensive presentation on recent updates and the future of the WSJT software suite from K1JT. Although most of the recent developments have been aimed around subtle improvements in the software to optimise the decoding of aircraft rather than meteor scatter on the higher microwave bands, there have been some new options which may be of interest to the MS community. Currently, a pre-beta version (my words) is available (WSJT V. 10.0 Rev 5639) under test. This latest version has two new features in the ISCAT modes. Bearing in mind that ISCAT was originally intended for Meteor Scatter operation on 6 m, although it is currently being reincarnated for Microwave Aircraft Scatter where the recovered signals have many characteristics similar to meteor pings.

The first of these features is the inclusion of 10 and 5 second periods in the timing options in addition to the normal 30 and 15 second periods. These can be selected by clicking on the T/R period box in the bottom menu bar of the main WSJT screen.

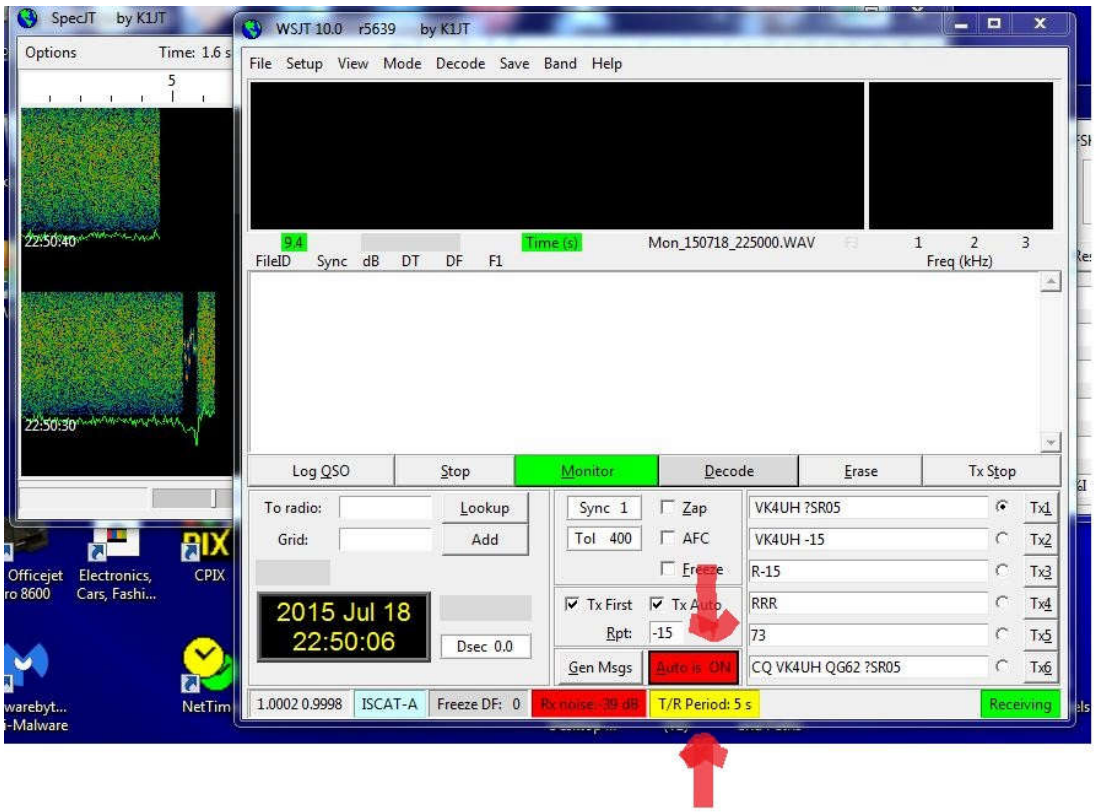

Fig 2 - GUI from WSJT 10.0 R5639.
Red arrows indicating the "T/R period" box and the new "Auto QSO" mode.

Shorter periods allow completion during very short periods of signal returns. See Fig 2. The standard messages in Tx6 (CQ) and TX1 (CALL) is annotated:- "?SR05" or "?SR10" to indicate which time period is being transmitted.

The second feature is a new "Auto-QSO" mode. When activated this allows the automatic increment of the QSO stages through Tx1 to Tx6 as the previous report is correctly decoded. Once "73" is received in both directions then the system reverts to stand by. If unanswered there is also a time-out feature included to prevent continuous transmission. "Auto-Increment" or "Auto-QSO" is included in the PSK2K meteor scatter package, as described in previous articles. PSK2K does not seem to have many enthusiasts in VK-ZL, however It is very widely used by "ping-jockeys" in Europe.

The new revision R5639 is not available as a formal release on the K1JT site at this time. A search will find links to it on Google Drive (WSJT_SS_ISCAT@yahoogroups.com). A number of tests have been made by VK4UH and VK4MIL direct on 2 m to try out this Auto-QSO feature. It certainly works but is not quite what I would describe as "intuitive". It requires a bit of practice to get it to run as intended – but certainly worth a look.

The next Major Meteor showers for the diary will be the Perseids around 13th August with a predicted ZHR of up to 100/hr.

Please send any reports, questions or enquiries about Meteor Scatter in general or the digital modes used to Kevin VK4UH