
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

The main activity of any note for the month involved the Eta Aquarids meteor shower. Adrian VK4OX was heavily involved with the northern end of the VK4 to VK3 path and reports:

The Eta Aquarids (EA) for 2012 once again proved a very reliable source of 144 MHz, 2-way SSB QSO's over the VK4-VK3 path.

The OH5IY Meteor Scatter Predictor program stated "The EA meteor shower peaks on 2012-05-05 at 1900Z. Above half Max 8 days. Prediction has accuracy of \pm 48 hours. ZHR 60 meteors/hour. Velocity 65.5 km/sec". Predictor programs suggested, for the QF22-QG63 path, a minor peak around 1800Z, a null around 2000Z-2100Z and the major peak between 0000Z and 0200Z. (To avoid confusion with UTC dates and times, all following dates and times are AEST).

I started monitoring the VK3RGL beacon on 144.530 MHz on Wednesday, 2nd May and managed to work VK3HY at 1105. On Thursday at 0859, I worked VK3HY and VK3XQ on the same burn. Friday morning I worked VK3HY at 0932 and again at 0950 on two good burns.

Saturday morning had lots of FSK441 activity and many were reporting super long burns - one up to 180 seconds long around 0700. I worked on SSB VK3HY, VK3AMZ, VK3BBB and VK3DUT several times during the morning.

Sunday morning was possibly the best time because there were many stations on. Many long, loud burns from 0800 right through to 1100.

Monday morning was another very good day with long burns occurring from 0530 right through to 1220. One burn over 120 seconds with VK3AMZ and another allowing us to complete a 2 way CW QSO.. I was very happy with that QSO!

Tuesday morning, the shower was noticeably weaker and only VK3AMZ active but still a few good burns.

Wednesday morning - shower over.

General observations. I thought the predictions were quite accurate. The peak seemed to be Sunday morning (that's Saturday, UTC time). The QF22-QG63 path of 1420 km is ideal for 144M Hz meteor scatter. The common window for two, well equipped stations is very large so the footprint for these burns is vast. I have worked Sydney stations off meteors that produce a burn for VK3RGL. VK3RGL is using 7.5 watts to a 7dBd yagi pointed up this way and is a fantastic meteor scatter beacon. VK3AMZ was using Channel 5a Newcastle as a beacon and it is a very reliable indicator for a burn on the QF22-QG63 path, even though I am almost 700 km north of Ch5a. Any average ham station of "100 watts to yagi" should be able to participate in this exciting mode.

Next decent Meteor showers suitable for 144MHz SSB are:

- *Orionids: Oct 21 (disappointing last year)*
- *Leonids: Nov 17 (unreliable but every 33 years fantastic. Next big event, 2030).*
- *Geminids: Dec 14. very reliable .*

Catch a falling star!

Arie VK3AMZ was busy at the southern end of the path. He reports:

The Eta Aquarids meteor shower delivered a mixed result but certainly meteor scatter conditions were much enhanced due to their presence over the weekend of 4th and 5th of May. I principally concentrated on completing two-way SSB QSOs on 2 m. One technique that I adopted from Adrian VK4OX was to monitor a signal for a meteor ping - in this case Channel 5A Vision carrier on 138.276 MHz - and then call CQ on either 144.1 or 144.2. This technique proved to be quite successful, completing two-way SSB contacts with the following stations on the 4th of May: VK4OX, VK2BCC and VK2KOL.

Conditions ramped up on the 5th of May where I completed two-way SSB contacts with the following stations: VK4OX, VK2ZT, VK2BCC, VK2KOL, VK4VDX, VK4JMC. Good meteor scatter conditions continued on the 6th of May where I completed numerous two-way SSB contacts with VK4OX, (one ping lasted just over 2 minutes), VK4VDX, VK4NE, VK4JMC. A very memorable contact on this day was the completion of a two-way CW contact with VK4OX! This I consider quite a rare event and was the result of a very favourable meteor burn. Both of us used hand keys and relied on the grey matter between our ears to decode the signals (very unusual these days!).

By the 7th of May, meteor scatter conditions had deteriorate but despite this I completed two-way SSB contacts with VK4OX (four times) and VK4JMC.

Meteor showers occur throughout the year and its worth noting their dates and times to exploit the opportunity of long haul VHF DX.

As Adrian said once (and I agree), "a 5 second meteor burn is a waste on FSK441 - it should be used for SSB".

Gavin VK3HY submitted the following regarding his experience from the southern end of the VK4-VK3 path:

144MHz SSB QSOs from VK3HY during Eta Aquarids Meteor Shower, May 2012

				Sent	Rcvd
2nd	May	0105z	VK4OX	5x2	5x5
		2258z	VK4OX	5x7	5x5
		2350z	VK4OX	5x3	5x5
3rd	May	2332z	VK4OX	5x5	5x7
		2350z	VK4OX	5x7	5x5
4th	May	2105z	VK4OX	5x7	5x9
		2105z	VK4VDX	5x7	5x7
		2106z	VK4NWH	5x5	5x7
5th	May	1937z	VK4OX	5x5	5x5
		2022z	VK4OX	5x2	5x5
		2031z	VK4OX	5x6	5x7
		2036z	VK4OX	5x7	5x7
		2253z	VK4OX	5x2	5x4

Stations heard but not worked on 5th May: VK2KOL VK4NE VK4JMC.

There were many contacts made by others in VK2 VK3 & VK4 with plenty of burns of

sufficient length for complete SSB QSOs.

Lots of listening to 'white noise' in between the pings and burns but plenty of rewards for those who persevered.

GippsTech 2012

A late reminder that GippsTech 2012 is just around the corner. This year it's being held over the weekend of 5-7 July. It's an event not to be missed by VHF/UHF/Microwave enthusiasts.

Details: http://www.vk3bez.org/gippstech_ver1.htm

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

FSK441

Welcome to Paul VK2XDX at Wauchope (near Port Macquarie NSW) who has joined in the weekend activity sessions and has worked down to VK3 and VK7.

FSK441 VK Procedure

WSJT provides two standard procedures for North America and Europe. In VK we have developed our own procedure that is optimised for the activity sessions and has advantages that it allows one to work more than one station at a time and explicitly identifies the transmitting and receiving stations. The short hand or signal tone messages used in Europe and North America are not used during activity sessions as these are not identified with callsigns and would cause confusion. An example of a QSO with two stations is as follows:

Transmitted by VK7MO	Transmitted by other Stations
CQ VK7MO	
	VK7MO/26 VK4KSY
VK4KSY/R27 VK7MO	
	VK7MO/27 VK1WJ/26 VK4JMC
VK4KSY/R27 VK4JMC/R37 VK7MO	
	7MO/RRR VK1WJ/26 VK4JMC
VK4KSY/R27 4JMC/73 VK7MO	
	VK1WJ/26 VK4JMC
	7MO/RRR VK4KSY
4KSY/73 VK7MO	

The messages can be typed by hand into any of the 6 TX message positions on WSJT. Even if you are working only one station there is benefit in using this procedure as it helps others who are monitoring to identify the station transmitting as this station does not have a "/" after the callsign. ZL stations also use this procedure.

Note that after callsigns are exchanged in full both ways it is acceptable to abbreviate the callsign of the station you are working but your own callsign should be sent in full for the benefit of other stations who might wish to call you. It is generally impractical to work more than two stations because of the limitation of WSJT on the number of character that can be transmitted. If you do attempt to transmit a long message check the message actually being transmitted in the bottom right hand corner of the WSJT window in case it is truncated.

Activity Sessions are held on Saturday and Sunday mornings as below and all are welcome to participate. Times are local times in VIC/NSW/ACT/TAS.

Day and Time	Frequency	Stations involved	Stations transmitting First Period
Saturday 0600 to 0700	144.330	VK to ZL	ZL
Saturday 0700 to 0800	144.230	VK3/5/7 to VK1/2/4	VK3/5/7
Sunday 0700 to 0800	144.230	VK1/2/3/5/7 to VK4	VK1/2/3/5/7

It may seem odd that all stations operate on the same frequency but the above procedure ensures that stations in the same area are transmitting and receiving at the same time and if their computer times are accurately set should not interfere. In general meteor pings from stations in the same area do not overlap as the foot print of a meteor ping on two metres is typically only a few km.

Small Station 10 GHZ EME

Following last month's report of initial tests Alan VK3XPD (10 ft dish and 75 watts) completed an EME QSO to Rex VK7MO's small portable station (64 cm dish and 8 watts). This work took advantage of a time of low lunar libration (less than 10 Hz) so that JT65c could be used and also used a program by Glen English, VK1XX to automatically tune Rex's IC-910-H to correct for Doppler from the moon. While Alan's 75 watts was reliably decoded with libration spreading as wide as 80 Hz Alan had to wait until the libration was below 15 Hz before he could gain sync on Rex's signal – even then he had to use Deep Search averaging over several periods to achieve a decode. A full report of this work is at:

<http://www.vk3hz.net/microwave/10-GHz-EME-QSO-with-64-cm.pdf>

Following this work a paper has been prepared on the Occurrence of Low libration spreading which is available at:

<http://www.vk3hz.net/microwave/Low-Libration-EME.pdf>

It was found that libration spreading is best for stations on the same longitude, worst for stations 90 degrees apart in longitude and improves again for stations 180 degrees apart. It is also improves for stations nearer the poles than at the equator.

Please send any Digital DX Modes reports to Rex VK7MO