
VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

As I write this, Spring has arrived and conditions are on the improve. In recent weeks, there have been several minor tropo openings from VK3 into VK5 and VK7. Newcastle Channel 5A TV sound has been heard in ZL, although no contacts were achieved. So, fingers crossed that we're in for a season as good as, if not better than, last year. Keep an eye on the weather charts, Hepburn site and the VK/ZL Logger for potential activity. And above all, have that equipment sharpened up and ready to go.

Spring Field Day

The Spring Field Day is coming up shortly on the weekend of 17/18 November. There have been several minor rule changes/clarifications. Full details may be found on the WIA web site: www.wia.org.au/contests/vu_fieldday/index.php

Already, a number of stations have indicated their intention to be out on hilltops. Ted VK1BL reports that there'll be a crowd of stations in VK1:

For the Spring Field Day, there should be at least 4 stations in the field, all with capability up to 23 cm and some with 13 cm and above. A preliminary agenda:

*Mt Coree: Andy VK2AES and crew
Gunning: Ted VK1BL and Greg VK1AI
Mt Aggie: Scott VK1PWE
Mt Ginini: Andrew VK1DA and possibly Chris VK2DO*

For the Summer Field Day, VK1BL will be active from Mt Coree (bush fire season permitting). In addition, I intend to be active on a number weekends (Saturday mornings) throughout spring and summer operating from either Mt Coree or Mt Ginini with 1296, 2.4 GHz (with potentially 3.4 GHz and 10 GHz) capability.

Chas VK3PY has indicated that VK3 will be ready to work the VK1 crowd:

I will be operating with David VK3QM and Charlie VK3NX from the Barrabool Hills (QF21CU), 15 km west of Geelong in both the Spring and Summer field days.

We will have all bands from 50 MHz to 24 GHz inclusive. We expect to have a 1.2 m dish functional for 2.4 GHz this year, which ought to be several dB better than the smaller grid-pack antenna we previously used. Power is 25 W (although 60 W might be available).

If you are planning on portable operation for the Field Day, please announce your intentions on the VK-VHF mail list and on the VK/ZL Logger Forum - Contest, Field Days, Portable Operations. That way, people will know to look from time to time in your direction.

Even if you are not planning to go portable, put in some operating time so that those in the field have plenty of stations to work. It looks like there'll be lots of activity.

For those going out in the field, it would be useful to add an entry in the VK/ZL Logger OpInfo table with details of your operating location. Adam VK4CP – owner of the VK/ZL Logger site – has added the ability to use a /P callsign as an identifier (e.g. VK4CP/P). Such an entry will allow those using the Radio Site Display to analyse the propagation paths to the /P sites.

Speaking of the Radio Site Display, there is now an experimental version running on Google Maps. You'll find the link here: <http://home.exetel.com.au/dwsmith/>

The GM version has the advantage that it is just a web page that displays in your browser - you don't need to install any special application (you do need an up-to-date browser though). The down side is that GM doesn't have all the powerful features of Google Earth, so the display is somewhat limited. Anyway, if you can't run Google Earth for whatever reason, the GM version should give you an idea of what it's all about.

New Optical Record

Optical communication is occasionally mentioned here – it is, after all, VERY high frequency communication. Much of the optical activity in Australia is discussed on the Optical DX Yahoo group (http://groups.yahoo.com/group/optical_DX/). A regular contributor to the group is Clint KA7OEI who has been gradually refining his receiver design. He has now achieved some 12 dB improvement over the popular design by Mike VK7MJ – a significant gain.

Clint and associates recently took his systems out into the field in Utah and broke the world record for non-coherent light communication. The previous record of 167.7 km was held by Mike VK7MJ and Chris VK3AML. Clint has now reset this to 172.3 km.

Full details of their efforts, including sound bites and details of the equipment used can be found at: http://ka7oei.com/optical_comms/optical_qso_107mile.html

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

Sun Noise Measurement

Because of the statistical variability of noise, it is not possible measure Sun noise to much better than about 0.5 dB (at 95% confidence) in SSB bandwidth receivers with a typical analogue or digital multimeter. However, if you are set up for Digital Modes with an interface from your receiver to a computer with a sound card, Owen Duffy, VK1OD, has produced a program that can integrate the noise over much longer periods and achieve resolutions well below 0.1 dB. Owen's program is designed to provide accurate measurements of noise figure and is called NFM for Noise Figure Meter. NFM can be downloaded at: www.vk1od.net/nfm/

While NFM is aimed at Noise Figure measurement, it includes a high-resolution true RMS audio voltmeter, calibrated in dB, which can be used for Sun noise measurements. In its unregistered version, the program integrates noise for up to 0.5 seconds but for a nominal fee one can extend this to 100 seconds and improve the resolution at the 95% confidence level to well below 0.1 dB. Owen provides information on the relationship between resolution and integration time, bandwidth and confidence level at the following URL: www.vk1od.net/fsm/nmu.htm

For sun noise measurement, all one needs to do is set the integration time in the box marked "Interval (s)" in the top yellow area of the program to an appropriate value, say 30 seconds. Then point the antenna at cold sky and press the "1 Noise LO" button which will produce a cold sky measurement in a bit over 30 seconds; then point to the Sun and press the "2 Noise HI" button which will, after a similar period,

give the sun noise measurement. The sun noise in relation to cold sky or Y factor measurement is then shown under the box identified as “Y(2) (dB)”.

As Sun noise varies as a function of Solar Flux, one needs to know the actual Solar Flux at your frequency of operation and Owen has produced a useful tool for interpolating this from data provided by NOAA derived from various solar observatories around the World. You can access this tool at: www.vk1od.net/qsrf/index.htm

If you feed the Solar Flux into a program such as VK3UM's, EME Calculator with your station parameters it will give you the expected sun noise rise which can be compared to your measured sun noise rise as an indicator of station performance. Doug's program can be downloaded at: www.vk3bez.org/vk3um_software.htm

NFM can also be used to assist measurement of antenna patterns at microwave frequencies using Sun noise as the signal. Figure 1 is an example of the pattern of VK7MO's 2.3 metre dish at 2.3 GHz plotted from noise measurements made with NFM.

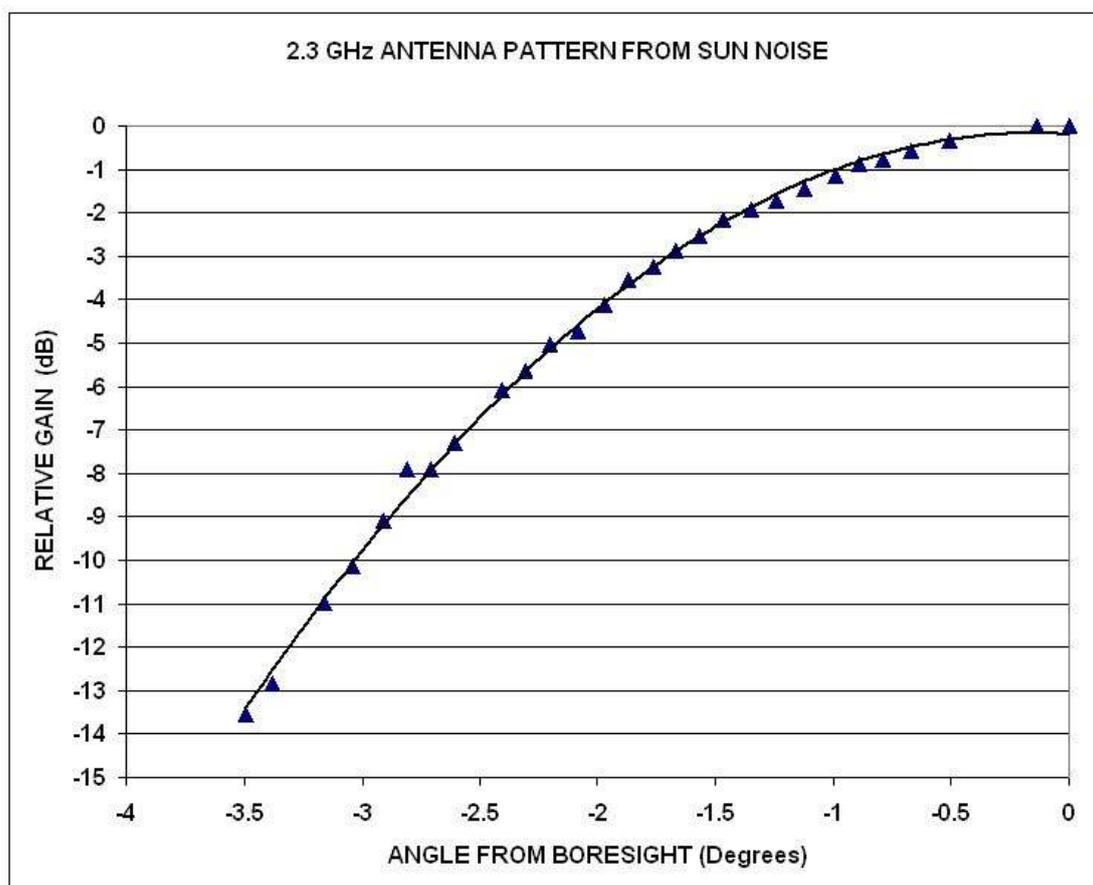


Figure 1: Example of Antenna Pattern plotted from sun noise measurements with NFM

Please send any Digital DX Modes reports to Rex VK7MO

The Magic Band – 6 m DX

Brian Cleland – VK5BC

August has been a very quiet month on 6 m. The only reports of band openings have been from northern Queensland to VK3 and a few reports of briefly hearing beacons.

Even John VK4FNQ only reports the following log entries;

Date	Time	Frequency	Call Sign	Comments
3 Aug 2007	0453	50.314.30	VK5RBV	BCN 559
4 Sep 2007	2103	50.287.23	VK2RHV	BCN 559
	2305	50.314.30	VK5RBV	BCN 529
5 Sep 2007	0430	50.046.30	VK8RAS	BCN 51

With the lack of 6 m activity, much discussion has taken place on the VK/ZL Logger and its associated forums of what is needed to be successful in working the much anticipated overseas DX during the next sunspot cycle peak with the ultimate aim of obtaining DXCC. Those living in the northern areas of Australia certainly find this achievement easier but with perseverance appropriate equipment and the available time, success can be achieved from most areas of Australia. Steve VK3OT in South Western Victoria is testament to this.

Gary VK4ABW is a keen 6 m DX'er from north of Townsville and writes:

My tips and tricks for DXCC are as follows;

- Optimise your equipment and antennas for maximum performance. Use the best cables you can afford, use RF chokes on power leads, audio leads, monitor leads, etc.
- Use Digipan as an early warning indicator and for identifying possible indicators.
- Use an audio recorder for those moments when you think you heard something, or your brain took a few nanoseconds holiday. I use voice recorder on my PC and keep it running during peak cycle activity. I heard VQ9 in the middle of last year (06) and thanks to the audio recorder I was able to play it back.
- Use a spectrum scope if available. Listening to 110 or casually tuning the band, you will miss things. Use all visual and audio means available. Investigate that strange bump 20kHz up ... you never know.
- Be prepared to operate different modes, it's a long way to get 100 countries on SSB alone!
- Use more than 1 receiver if possible. Parking on 110 won't bring them to you, have 1 channel on 110 and use the other for manually or auto scanning a segment eg: 090 to 150. That's how I got PY2 last cycle; they were on 120 and didn't go near 110. Also, try calling up and down a bit from 110. I bagged Iraq on 105 that way.
- Low angle radiation is essential for working long haul stuff. We live in Australia and I'm pretty sure there aren't 100 countries nearby.
- Post reception reports of indicators, calls on the clusters, web pages etc. and check the clusters every day (obviously not during the solar minimum).
- Check web pages for expeditions, etc.
- Check back through your log book to see what was happening last cycle. This will give you a 'rough' guide to what may happen next cycle. Look for trends...
- Check back through the clusters for what contacts were made last cycle. Again, look for trends.
- Keep the cluster going on a spare monitor during the cycle peaks. This way you can keep an eye on where everyone spreads out during pile ups and alerts you to that rare country you might be chasing.
- Use an external speaker and high quality headphones when working DX. Internal speakers are a poor excuse for missing contacts.

- If you can't spend the time sitting at the ready position in front of the radio, remote the audio to your handheld and continue with other duties. I've done the lawn numerous times with a handheld in my pocket and headphones on!

- Entertain the thought of going portable on your next outing/holiday, that's how I bagged Western Samoa.

I've received requests for information of where to listen to assist newcomers to 6 m. Below is a list of Australian, New Zealand and New Caledonian 6 m beacons that are presently operational and most likely to be heard at this point of the Sunspot cycle.

Australia

Frequency	Callsign	Location	Grid locator	Mode
50.046	VK8RAS	Alice Springs	PG66wf	CW
50.057	VK7RAE	NW Tasmania	QE38du	CW
50.058	VK4RGG	Gold Coast	QG62qa	CW
50.066	VK6RPH	Perth	OF88aa	CW
50.087	VK4RTL	Townsville	QH30jp	CW
50.288	VK2RHV	Hunter Valley	QF57sc	CW
50.289	VK2RSY	Sydney	QF56mh	CW
50.293	VK3RMV	Wannon	QF02wh	CW
50.297	VK7RST	Hobart	QE37pb	FSK
50.304	VK6RSX	Dampier	OG89ii	CW
50.306	VK6RBU	Bunbury	OF76wr	CW
50.310	VK8VF	Darwin	PH57kn	CW
50.315	VK5RBV	Barossa Valley	PF95mk	CW
50.345	VK4ABP	Longreach	QG26dn	CW
52.438	VK3FGN	Mildura	QF15ct	CW

New Zealand

50.040	ZL3SIX	Christchurch	RE66ej	CW
50.043	ZL1VHF	Auckland	RF73	CW
51.030	ZL2MBH	Napier	RF80	FSK
52.275	ZL2MHF	Upper Hutt	RE78ns	FSK
52.490	ZL2SIX	Blenheim	RE68	FSK

New Caledonia

50.080	FK8SIX	Noumea	RG37fr	FSK
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There are other beacons either planned or not operating at present and I will advise of any updates. If your equipment has the capabilities, it is worth programming the above frequencies into memories and regularly scanning them, it is surprising how often you will find the band opens and you hear a beacon.. It is also useful to listen for Channel 0 TV, in particular, Toowoomba sound on 51.672 and Wagga sound on 51.740. The International call frequency is 50.110 and the Australian calling frequency 50.200 with most SSB operation taking place between 50.110 and 50.200. For more information check the Australian Amateur Callbook.

Hopefully 6m will start coming to life during September.

Please send any 6 m information to Brian VK5BC