



Founded 1979 Incorporation No A6677 P.O. Box 692, Shepparton 3632

VK3RGV repeaters and transmitter operating frequencies

53.725MHz (-1 MHz offset), **In Service**
146.65MHz (-600 kHz offset), **In Service**
438.2MHz (-7 MHz - offset -D-Star), **Off-air (to be re-installed) ***
438.650MHz (-7 MHz offset and 91.5 Hz tone access only), **In Service**
438.900MHz (-7 MHz offset- DMR repeater), **In Service**
439.775MHz (-5 MHz offset), **In Service, IRLP (node #6990)**

Access to most analogue repeaters is by sub-audible 123 Hz tone or noise/carrier mute (less sensitive).
Club informal on air get togethers - Wednesday evenings. All welcome. Club call sign VK3SOL:-
2mx repeater 8.00pm 146.650 MHz, 3.63 MHz SSB ± interference 8.30pm.

Meetings are held at 1 pm on the first Saturday of the month (except January when no meeting occurs)
at Vision Australia, Channel Road (just off the southern end of Archer Street), Shepparton.
Variations in these times, days and location are normally notified in the preceding newsletter.

Website – www.sadarc.org Face book - www.facebook.com/sadarc.org
Info for the page contact - Denny French on denny3782@gmail.com

Note: Want to get your licence? SADARC has examination assessors, contact the secretary for details.
The vintage radio club (including many SADARC members) have a sked at 11.00am Sunday on the
2 mx repeater.

The following repeaters do not belong to our club but provide good signals for many members.
Mount Major VK3RDU repeaters and TX operating frequencies, 146.850 MHz and 439.875 MHz
UHF CB Repeater WBT03 Mt Wombat Channels 3- 33, 476.475 MHz, In Service 25/06/2019
(*) This service will be back on air as soon as practical.

DISCLAIMER:- No guarantee is given as to the accuracy of information in this newsletter.

Warning: - There is a danger of electrocution or injury when working on electrical/radio gear or working
at heights doing antenna work. You do so at your own risk.

President: - Peter Rentsch	VK3FPSR	peter@rentsch.com.au
Secretary: - Andy Ashley	VK3AJA	secretary@sadarc.org
Vice-President: - Barrie Halliday	VK3KBY	
Treasurer (acting): - Andy Ashley	VK3AJA	secretary@sadarc.org
Membership Sec (acting): - Andy Ashley	VK3AJA	"
Webmaster: - Ray Gardner	ray@etheira.net	VK3YNV
Publicity Officer: - Vacant		
Communications Managers (External Events):- Bruce (VK3PNF) 0427 715 663 & Darren (VK3HEN) Glasson		
Tech. Committee: Geoff VK3ZNA, Ray VK3YNV & Rodney VK3UG		
Newsletter: - Rodney VK3UG (Editor)	rodlynn6@bigpond.com	Peter & Andy (Printing/ Distribution)

Presidents Report June 2019.

We continue to have a excellent attendance at our meetings which is great to see. Members are enjoying the new venue and the atmosphere it has created. Thank you to all those who made the effort to attend. Thanks to Ray who filled in at the last minute with a talk on IRLP.

Bruce and his team did a great job again representing the Club at the Echuca Steam Rally. Some photos and a report from Bruce can be found later on in this Newsletter. Unfortunately I was unable to attend in the end as the XYL was not well. Karen had slipped and fell after a shower and hit her head. After two stitches and a trip to Shepparton for a MRI where no bleeds were found she is now only this weekend, (23rd June) stopped taking medication for dizziness and nausea after a suffering severe concussion. Three weeks from the time of the accident to starting to feel she can walk without losing her balance. The Doctor basically said that even though there is no bleed the brain is bruised and like any bruise it takes time for the damage to heal. She is much better now but is still not back to normal. Oh, how life can change in a second!

Your annual membership is also now due and Andy has provided everyone with a form to send back with your Membership details. We also now have the facility to allow payment via direct deposit. Account details are on the membership form. If paying via direct deposit please put your call sign on your deposit.

There will be no guest speaker at our next meeting but we will still be busy. We will commence at about 11.00am with working bee to get the station set up as best we can and also do some repairs to the shade cloth in the BBQ area. After the Echuca Steam Rally Bruce and Graham have the Club Radios. These will be returned to the next meeting where it is planned to set them up. If anybody has suitable tools to bring along to repair the shade cloth and help set up the station can they please bring them along. I am not sure what we will need but the usual handyman tools would be good. Perhaps some basic Amateur Radio tools might not go astray either to set up the shack.

After all our hard work in tidying up we will have some Pizza for lunch followed by our regular meeting.

That's it for this month and I look forward to seeing you all on the 6th July.

Peter – VK3FPSR
President – SADARC

Calendar

6th July - Regular Meeting at Vision Australia – Working Bee

3rd August – Regular Meeting at Vision Australia – Show and Tell – your latest project and Hamfest Planning

7th September – Regular Meeting and Hamfest Finalisation – to be confirmed

8th September - Hamfest – all hands on deck

5th October - Regular meeting and AGM

SADARC MEETING MINUTES

1st June 2019

Meeting start 1:00 pm

Apologies; VK3AO Alan, VK3FALN Alan.

In attendance was; VK3DSF Max, VK3OV Pat, VK3YYY Ian, VK3ASK Peter, VK3EB Dallas, VK3PNG Bruce, Geoff Russell, VK3KBY Barrie, VK3AFD Arthur, VK3BPH Kevin, VK3PGK Graeme, VK3UG Rodney, VK3HEN Darren, VK3ZYZ Denys, VK3TJS Jacek, Peter Glasson, Stevo, VK2TLR Ron(Visitor), Josh and VK3YNV Ray, VK3ZNA Geoff, VK3KJB John, VK3ZE Huntly, VK3XNW Neil, VK3FPSR Peter, VK3AJA Andy.

Correspondence in; Com bank statement (Old account)

Reports;

Financial, read by Andy.

Money has been deposited in Bendigo bank account.

Moved by Andy, second by John, all agreed.

Technical, read by Rodney.

Some minor issues were found on repeaters, possible cause power outage. Ray is investigating and is working on a new system for remote power cycling.

DMR repeater also had issue, all these problems are now sorted.

D-Star repeater has had software update and will be installed on Mt Wombat at some stage.

Peter mentioned leaving a short break on IRLP repeater between overs.

Report moved by Ray and second by Barrie.

Echuca Steam rally report, read by Bruce.

Bruce has asked for volunteers to attend and has a (very small!!) list of members to help out.

Graeme will collect club radios from Les during the week.

Hamfest, ready by Geoff. Date confirmed 8-09-2019 Sunday.

He has drawn up floor plans of hall to help with table booking/placement.

It was mentioned that we will need volunteer for the day, PLEASE.

Andy will place add in AR mag.

General Business,

Andy talked about his day at Days Mill "Mills on the air"

Peter suggested we send sympathy card to Max Matthey, all agreed.

Andy will find out from ACMA about CB repeater licence (SADARC to take over)

Peter Simpson has suggested we just keep paying for the use of new meeting venue, all agreed.

Ray has moved we stay here as long as we can, second by John, all agreed.

Dallas will update Shepp. News events page (thanks Dallas)

Rodney suggested we put webpage URL in events listing.

Barrie has some equipment he wants to part with.

The new 2 Meter antenna has been ordered and Paul Watters will advise on progress.

Meeting finished 1:56 pm.

Steam Rally Echuca 2019

SADARC set up a display at the Echuca Steam Rally once again this year on the Queen's Birthday long weekend on Saturday the 8th and Sunday the 9th June.

Graeme VK3PGK, Andy VK3AJA and Bruce VK3PNG arrived early on the Saturday morning to erect the marquee and set up our display of vintage radios. Along with this display of vintage radios we set up a working amateur radio station allowing us to make contact with other radio operators on these two days to give those looking on some idea on how amateur radio works.

On the Sunday Darren VKEHEN added to our display by setting up an early Black and White TV playing an old video of early Bathurst 1000 car racing creating a lot of remarks and interest. On Sunday an Echuca Scout leader approached us to see if SADARC could attend one of their meetings to explain to their troop what is involved in obtaining an amateur radio licence. Over these two days we had many of the people present visit our site to look at the goods on display, some were current amateurs and some ex amateurs and others just wanted to find out what amateur radio is all about.

The weather was good for both days of the Steam Rally; the usual array of vintage cars, tractors and machinery was on display. There were several traders selling their wares and an excellent choice of food was available both days.

Attending this event each year gives us an ideal opportunity to promote amateur radio.

Report from Bruce VK3PNG and Darren VK3HEN

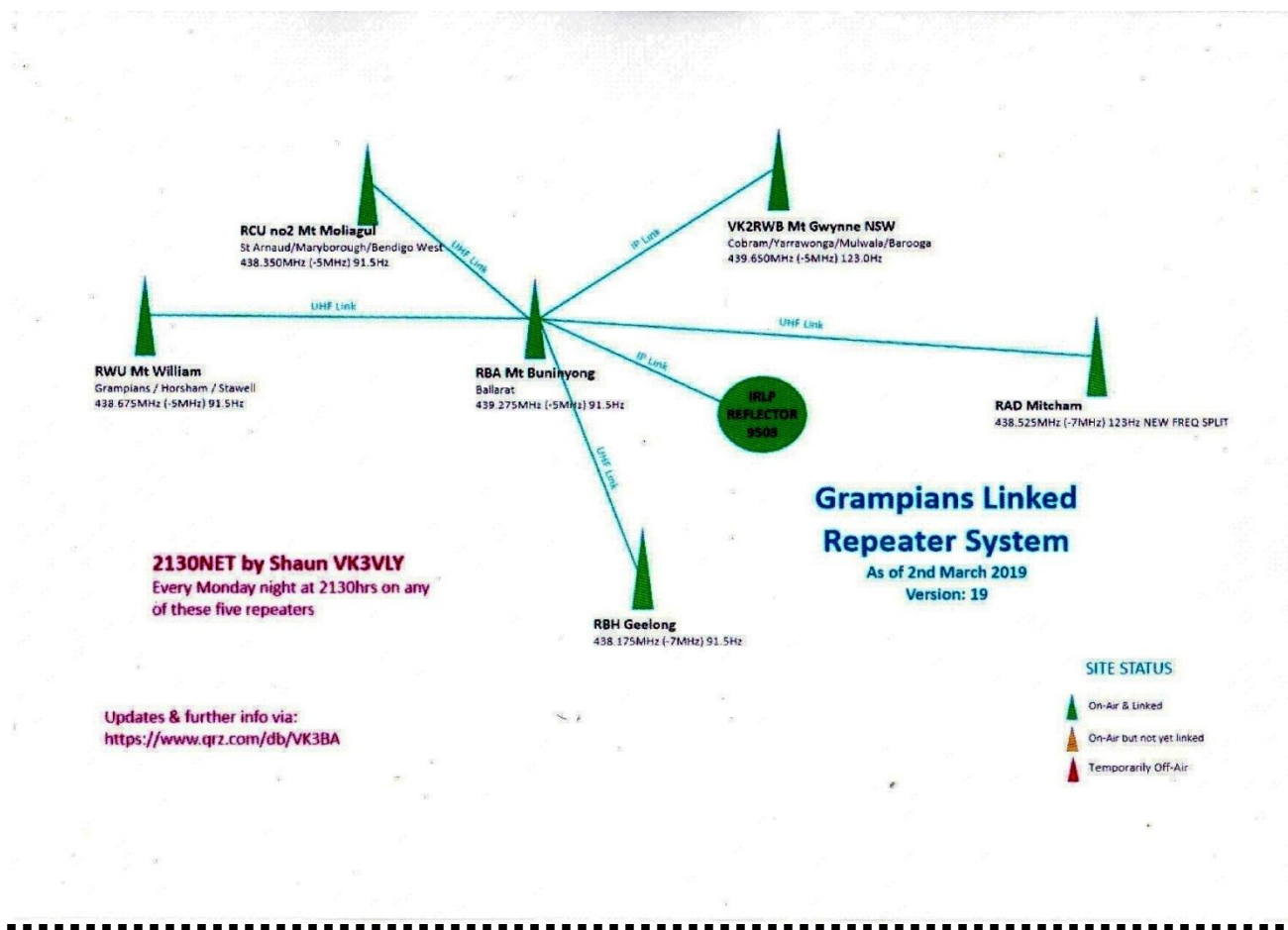


Editor's Ramblings

- Members are enjoying our new venue with 27 members at our June 1st meeting. It is more comfortable, with better facilities and the likelihood that we will have more BBQs. PeterVK3FPSR has floated the idea that we may make BBQs a more common occurrence with the early start aiding having a good chat and looking at projects.
- Dallas VK3AB has agreed to update our *Shepparton News* club contact details in "Bill Boards". It has become rather dated. Bill boards is a page that appears weekly in the paper which advertises the activities of dozens of groups. Individual mentions appear about every second week.
- Andy VK3AJA flew the club flag at the "Mills on the Air" at the old flour mill at Murchison. He felt that he was able to give the organisers information they were completely unaware of regarding amateur radio. He said that there were about 1000 through the gates over the two days of the function.
- Denys VK3ZYX brought to the meeting several boards and instructions on an Audiono VFO Version 1 which looks very interesting. Denys gave out several boards and 12 pages of information. That is a bit too much for the newsletter but I'm sure he can help you further if you contact him. Maybe I can persuade Denys to give me some general information on this VFO so members can decide whether it is something that they would like to build and use.
- Due to unexpected work commitments our speaker VK3BA was unable to attend our meeting to speak about the linking of repeaters and IRLP. Ray VK3YNN ably stepped into the breach. How to get into the system has been explained by Ray in recent newsletters and a diagram of the network shows in this newsletter.
- During the meeting Andy played some recordings of interference that we may experience on the various bands - mostly HF. Some were recognised some not. Andy himself has a nasty interference source on 3630 kHz which he has been unable to trace. A bit cold to be trolling around the neighbourhood these cold evening to find it.
- Ray showed us a small \$60 Spectrum Analyser kit that is available. He is going to do some tests on it and will give us the results. He is highly suspicious that it will not do all that it is claimed of it – if it does great. A good quality bottom end Spectrum Analyser with tracking generator can easily set you back around \$2,000. Several members do have such instruments.
- All being well the tubing mast on the scout hall will be removed before the end of June.
- **Remember 11am start on 6th July to do some work around the meeting venue. Some pizzas for lunch and the meeting starting about pm.**

Repeater News

- Not much this month. The repeaters are performing as expected, with only minor aberrations. Note it is possible for members to monitor the voltage on the batteries and the general usage of the repeaters by going onto the club website. Thanks for that facility Josh.
- Due to the extremely cold weather the new 2 mx antenna is not expected to be installed by the end of this month.
- Diplexer cables are being made up for the D-Star repeater as the repeater location in the racks has had to be changed and the existing cables weren't long enough to reach the cavities.
- The original 2 metre diplexer is being refurbished so it can be put back into service. The terminations of the coaxial cables which are currently BNC are being changed to Type N and the interconnecting cables to RG214 (the double shielded version of RG213). This upgrade is expected to improve the rejection of the transmit frequency in to the receiver and vice-versa from 100 dB to around 115 dB. A worthwhile improvement.
- The linking system that our 5 meg split repeater is connected into is shown in the following diagram – see previous newsletters on this facility.



How good is your VHF/UHF diplexer/duplexer?

Various amateur radio equipment suppliers sell such devices as do amateurs at swap meets. Diplexers often have a nearly square block of metal with an antenna connector on one end of the block and two short coaxial cables with antenna connectors on them coming out the other end. A photo of a couple of available devices is shown below.

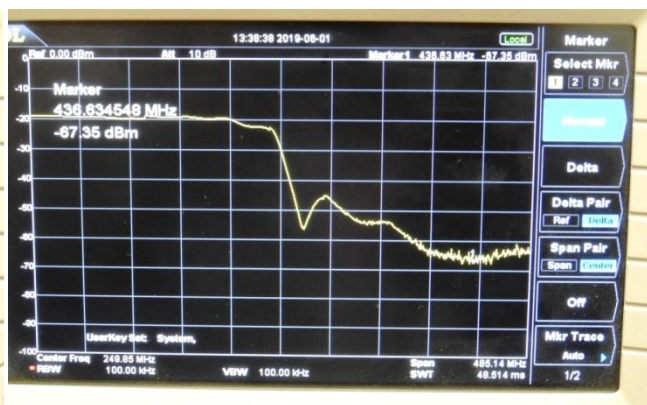
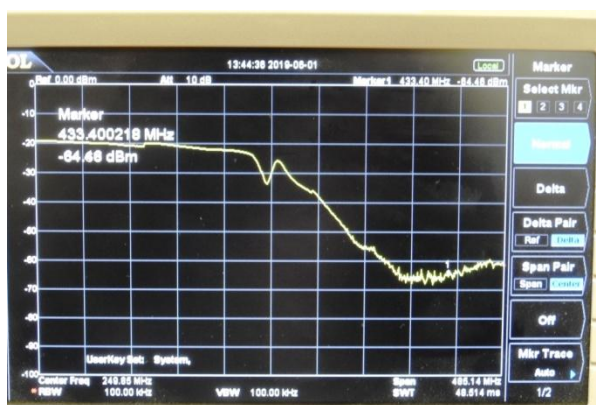


You could ask what do these devices do? In the case of the above duplexers/duplexers if you have a 70cm antenna and a 2m antenna and have a set that produces both 2m and 70cm out of and into the one coaxial

connector, the diplexer separates the signal coming from the transceiver so that if a 2mx signal is being produced it will go off to the 2mx antenna with virtually nothing going to the 70cm antenna. Likewise if 70cm is being used the signal will be separated within the diplexer and signal will go to and from the 70cm antenna, and all of this is automatic without changing over antennas - which can be a bore.

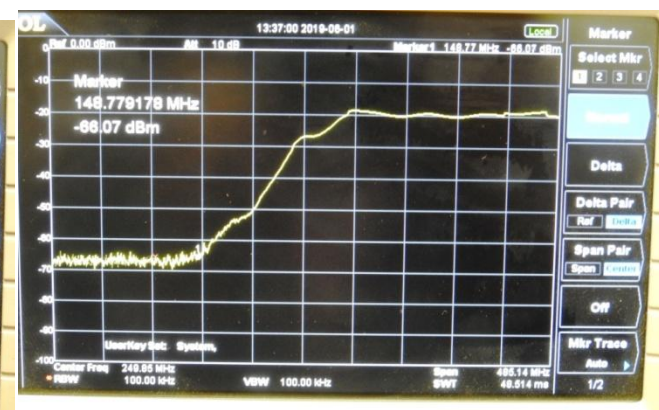
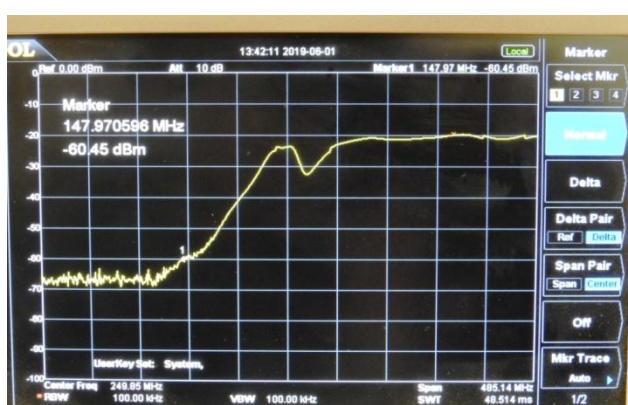
If you have a multiband 2mx/70cm antenna, which most seem to be these days, it is possible to connect a 2mx transceiver on the 2mx port of the diplexer and a 70cm transceiver to the 70cm port and use both at the one time. However it is critical that if this is done that the diplexer has a lot of RF isolation between the 2mx and 70cm ports (the units tested claim 60dB isolation between the two ports but I feel this is a bit fanciful) otherwise the receiver on either port could be damaged by the transmitter on the other port. Many diplexers do not cut the mustard with this task.

Most of our repeaters on Mt Wombat have diplexers (cavities) so that the receivers and transmitters do not cause problems to each other. The three 7 MHz split repeaters have a multiplexer which steers signals to the appropriate repeater without interference from another repeater. These diplexers/multiplexers are extremely high quality as they are isolating signals in the case of the 2mx repeater that are only 600 kHz apart and this is even more stringent with the UHF CB repeater which has only got 750 kHz spacing between the input (receiver) and the output (transmitter). This means that transmit and receive frequencies are only 0.157% different to each other, not nearly 300 MHz apart with the diplexers this article is about. The repeater diplexers/cavities do have very high Q and low RF losses.



In the two photos above can be seen the response of the Jetstream (left) and the Diamond (right) as traced by a spectrum analyser. In all of these photographs each division from the left side of the screen is 50MHz per division, which means that the third division from the left is 150 MHz (146 MHz). The almost flat line two divisions down from the top of the display shows nominally zero attenuation of a signal from zero up to 200MHz.

Above roughly 200 MHz the low pass filter in this section of the diplexer progressively blocks (attenuates) signals going up into the UHF range. Both diplexers have around 45 dB of attenuation at 434 MHz., which means a 100 watt signal on 2mx will be down to around 3 milliwatts.



In the next two photos the performance of the UHF port on the duplexers can be seen. The Jetstream (left) has around 40 dB of attenuation at 2 mx and this decreases until at around 300MHz there is nominally no attenuation of UHF signals through the duplexer. The Diamond (right) has about 45 dB of attenuation at 2 mx and by 300 MHz nominally no attenuation so 70cm signals will freely pass through.

Further test were made on the duplexers which are not as easily seen on the spectrum analyser, that is their insertion loss on their favoured band. The Jetstream claims 0.1dB loss on the 2mx port (measured 1.6dB) and 0.2dB at 434 MHz (measured 1.3 dB). The Diamond claims 0.15dB loss on the 2 mx port (measured 0.45 dB) and claims 0.25 db on UHF (measured 0.45 dB). Their claims of insertion loss if they were real would be wonderful but are almost impossible to achieve. I suspect the manufacturers don't expect users to be able to determine whether their claimed figures are right or not. Let the buyer beware.

Tests in the real world, with 11 watts on 2mx input, the output from the Diamond was 9 watts and from the Jetstream 6 watts. On UHF the Diamond with 10 watts input gave 8.5 watts whilst the Jetstream gave 4 watts. As can be seen neither of these filters is wonderful although the Diamond isn't too bad. The claimed power that these duplexers/diplexers can handle is 400 watts peak envelope power on VHF and UHF but on HF 1000 watts peak envelope power. How do they define PEP, I suspect a very elastic figure I'm sure. If even 50 watts on UHF were put into the Jetstream it would dissipate 30 watts of your signal and become very hot. Note also that the attenuation applies to both the transmitted signal and the received signal.

These filters cost around \$70, I believe. The Diamond MX-72H is reasonable, but really it could be better. The Jetstream JTDUP is in my opinion so poor making it a waste of money. I'd be happy to change my opinion if I could be shown an example that works as claimed. The circuits of these appear to be designed as constant K filters although there does appear to be a possibility of an M derived section too – or is it a spurious response in the filters.

There is hope on the horizon as Ray VK3YNV is experimenting with a diplexer which hopefully will be able to be used with up to 50 watt transmissions without getting too hot to handle. I'm looking forward to that.
