



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

VK3RGV repeaters and transmitter operating frequencies

53.725MHz (1 Meg offset), **Operational.**

146.65MHz (600 kHz offset), **Operational.**

438.2MHz (D-Star) **Off-air (to be re-installed).**

438.650MHz (7 MHz offset and 91.5 Hz tone access only), **(Temporarily out of service.) ***

439.775MHz (5 MHz offset), **(Temporarily out of service.) ***

(*) These services will be back in service once some technical problems are resolved .

Access to most analogue repeaters is by sub-audible 123 Hz tone or noise/carrier mute (less sensitive).

Club Network informal on air get togethers - Wednesday evenings. All welcome. Club call sign VK3SOL:-

2mx repeater 8.00pm (**On 146.650 MHz Mt Wombat**), 3.63 MHz \pm interference 8.30pm.

Meetings are held at 1 pm on the first Saturday of the month (except January when no meeting occurs) at the Mooroopna Scout/Guide Hall off Echuca Road, Mooroopna. 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

The local vintage radio club has a get together at 11.00am of a Sunday on the 2 metre repeater. Many of their club members are members of SADARC too, so join in for a chat.

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 Mt Wombat Channels 3- 33 **(Temporarily out of service) *** 18/9/2018

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

pages.cobram@bigpond.com

Secretary:- Andy Ashley

VK3AJA

andyashley@icloud.com

Vice-President :- Barrie Halliday

VK3KBY

Treasurer: - Graeme Martin

VK3FCVT

vk3fcvt@vk3fcvt.com

Membership Sec :- Pat O'Shannessy

VK3OV

Webmaster :- Ray Gardner ray@etheira.net

VK3YNV

Publicity Officer: - Vacant

Communications Managers (External Events):- Bruce (VK3PNF) 0427 715 663 & Darren (VK3HEN) Glasson

Tech. Committee: - Phil VK3ELV, Ray VK3RW, Geoff VK3ZNA, Ray VK3YNV, Kevin VK3BPH & Rodney VK3UG

Newsletter: - Rodney VK3UG (Editor) rodlynn6@bigpond.com Peter & Andy (Printing/ Distribution)

SADARC Minutes 1st Aug. 2018

Club Rooms Mooroopna.

In attendance were:

VK3ZE Huntly, VK3PNG Bruce, VK3UG Rodney, Max Matthey, VK3TEX Les, John (Stevo) Stevens, VK3PXJ John, VK3BPH Kevin, VK3PGK Graeme, VK3EB Dallas, VK3KBY Barrie, VK3BF Allan, VK3FDV Dave, Lindsay (Washo) Washusen, VK3ZNA Geoff, Bill Crocker, VK3AJA Andy, VK3FPSR Peter, VK3FCVT Graeme, VK3YNV Ray, VK3XNW Neil, VK3COP Ron, VK3TJS Jack.

Apologies: VK3AO Alan, VK3FALN Alan, VK3ASK Peter.

Correspondence:

In- Membership forms

Out- Order for wristbands for hamfest

Minutes of last meeting, moved by Rodney, second by Bruce.

Reports:

Financial; read by Graeme. Moved by Rodney, second by Les.

Tech: Read by Rodney,

Spoke about submission re RA.

Motioned antenna system at Mt.Wombat has some issues and need checking.

Geoff: Spoke about UHF CB repeater and how work was progressing, still working on cavities.

Internet for Hut has been mentioned to Peter Mill and we are waiting for reply.

Power supplies and batteries at hut still need some attention.

Ray Gardiner also spoke about internet at hut with some ideas. We agreed to wait and see.

It was mentioned that Andy may be able to get a deal on internet from a vendor at work, He will advise. This was moved by Darren, second by Graeme.

Bruce spoke about the Quadrathlon 24-25 Nov 2018. Has collected a list of members that can assist.

Rodney has suggested a group visit to Mt.Wombat at some point , perhaps a picnic?

Ray Gardiner has agreed to do website, this was moved by Kevin, second by Rodney, all agreed.

The club thanks Graeme for his initial webpage rebuild, looks great.

Ray has moved that we have November meeting at Vision Centre rooms to check them out, all agreed.

Huntly spoke about his life in 15 min. and has nominated Bill Crocker as next speaker (Victim) Hi Hi

Meeting conclude at 2:08 pm.

Presidents Report September 2018.

Well it's done and dusted for another year, the Hamfest is over and we can all now relax for a bit. Thank you to all those who contributed in any way to make it such a successful day. All indications are that we made some money and that allows us to continue improving our Club facilities. A splendid effort by all those involved. I think most traders were down on the day but as one of them said to me "sales were abysmal but what a great social event".

Another aspect of the day is the fellowship that people experience, not only our Club members in the knowledge that they have done a good job but also with the attendees who meet with each other and have a good chin wag. A great day with a great atmosphere.

Our next meeting, it will be held on Saturday 6th October commencing at 1.00pm. Prior to the meeting will be a BBQ. These always seem popular with members and it gives us time to chat. Following the regular meeting will be our Annual General Meeting at which time office bearers for the following year will be selected. A number of positions within the group need to be filled so if you would like to become involved in the running of your Club please put your hand up to help.

For the Club to be successful in its endeavours we need a group of people who are positive in their direction and willing to get in and get the job done in a friendly and cooperative manner. Yes, there will be differences of opinion and good healthy non-vindictive debate is good for all. This leads to the best outcome and merging of ideas that then solidify into the best direction the Club can take. Please also remember that those involved in the Club donate their time to a hobby that they enjoy and are proud of.

That's it for me this month and I look forward to seeing you at the October meeting.

Peter – VK3FPSR
President – SADARC

Calendar

6th October – BBQ followed by Regular Meeting, Coffee Break and then the AGM

3rd November – Regular Meeting to be held at Vision Australia venue with Guest Speaker – Ray Gardner.
Topic – How to use an Oscilloscope

1st December – Christmas Meeting – venue to be confirmed



The Vision Australia room that we may hire along with the kitchen facilities. Thanks for photos Dallas.

Testing Transmission Lines with A Low Cost Pulse Generator

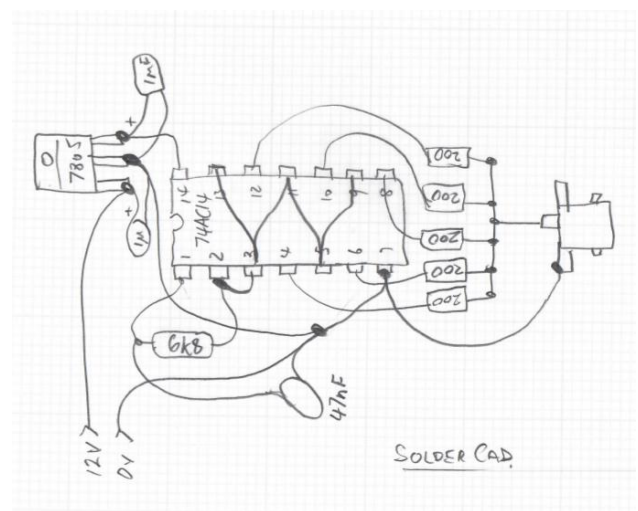
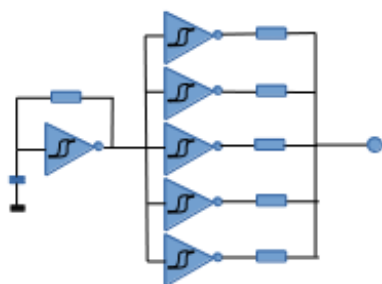
VK3YNV

Time domain reflectometry is a simple and useful way to locate transmission line faults and look for impedance discontinuities. Handy also for measuring coax characteristics like velocity factor and impedance.

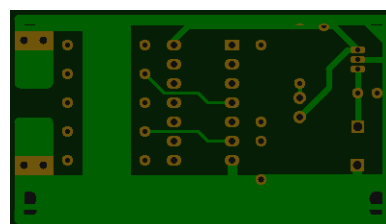
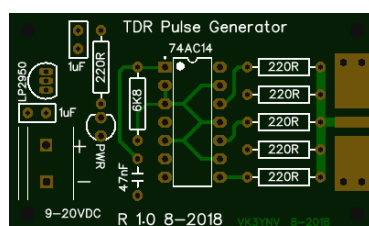
The idea is simple enough, if you send a pulse down a transmission line it will reflect back to the source off any impedance mismatches it encounters along the way. By measuring the time taken for the pulse reflection to return using an oscilloscope you can determine the location along the transmission line of any impedance discontinuities. Saves time and effort by showing where the fault is located.

Alternatively if you know the length of the transmission line, you can use the measured time to calculate the velocity factor of the line, this is vital information if you are making $\frac{1}{4}$ wave matching sections or baluns.

A suitable pulse generator can be made with a low cost IC and a few passive components, the schmitt trigger hex inverter 74AC14 circuit is as follows.



The first inverter is configured as an RC oscillator, 6K8 and 47nF gives a frequency of about (1.5 kHz), the square wave is then buffered by the remaining inverters in the IC package to provide plenty of drive, and 5 x 200 ohm series resistors provide a rough match to 50 ohms, although none of the values are critical



The circuit is simple enough that it can be easily built with point to point wiring, or you can copy the PCB layout shown above. (I got a small number of these boards made if anyone is keen to build one)

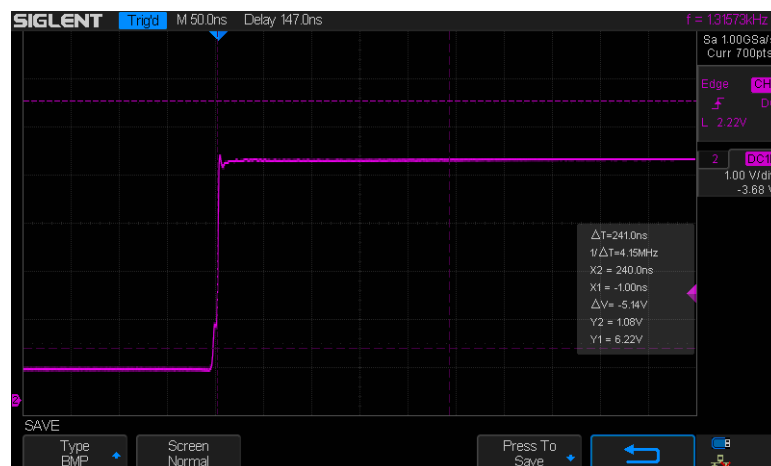
Operation

The output of the pulse generator is connected to the oscilloscope using a BNC T adaptor, so the coax being measured can be connected to the third port.



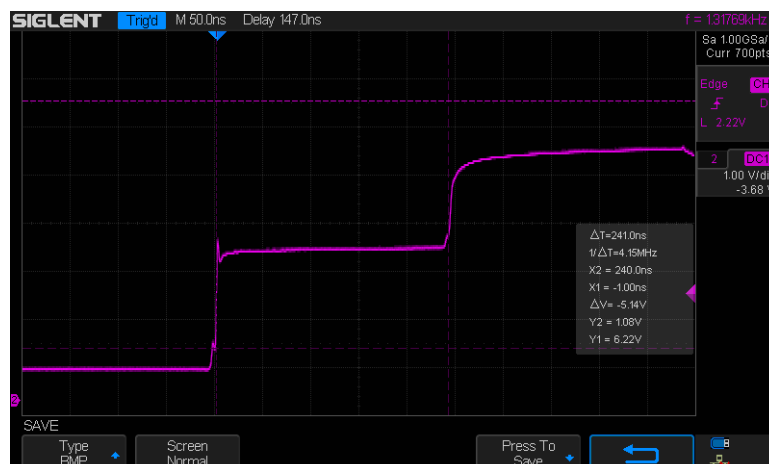
You don't need to be too fussy about matching impedance at the connection point, just a couple of alligator clips or a BNC banana plug adaptor will do just fine.

When you expand the timebase to just see the rising edge of the square wave pulse the oscilloscope will show a trace similar to this. You don't need a high bandwidth oscilloscope, even a 20 Mhz CRO will have a horizontal timebase of 10ns/div. Since light travels at 300mm/ns, and we are looking at round trip times, that works out to 1.5 meters of coax per division.



You can see a small bump on the very start of the leading edge, that's the reflection off the BNC adaptor, and some ringing on the top of the pulse.

When you connect a length of coax, in this case I've connected 29 meters of LDR195 you can see the step in the trace caused by the reflected pulse coming back to the oscilloscope.



Reading off the horizontal timebase, you can measure the time taken for the pulse to travel down the coax, and reflect off the open circuit end and travel back to the oscilloscope, in this example that time is 241 nano seconds.

Since light (and radio waves) travel at 300 mm per nano second, we can measure the distance to the point the reflection is taking place.

$241 \times 300 = 72,300 \text{ mm}$ or 72.3 meters.

But that's the time taken to go out and come back, so we need to divide by 2.

$72.3 \text{ meters} / 2 = 36.15 \text{ meters}$.

That's how far radio waves would travel in air in that time, but since we know the length of the coax is only 29 meters, that means the radio waves are travelling slower in the coax than in air. This is called the velocity factor of the coax.

The velocity factor is $29 / 36.15 = .802$ or which is correct for foam dielectric low loss coax, a solid polythene coax has a velocity factor of 0.66

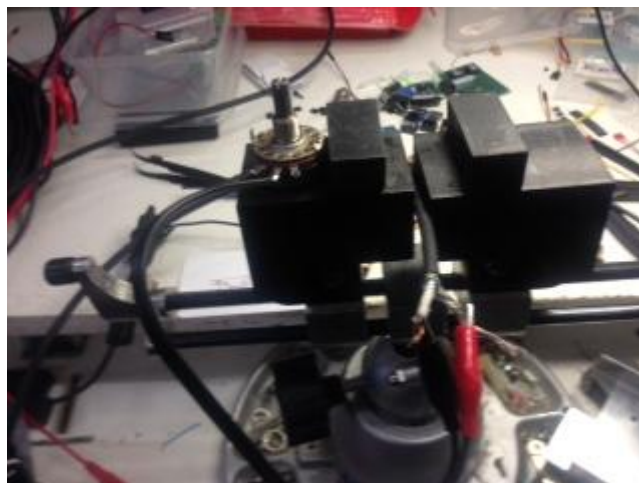
While we are talking about dielectric constants, if you know the dielectric constant you can easily calculate the velocity factor.

$$V_f = 1 / \sqrt{\epsilon_r}$$

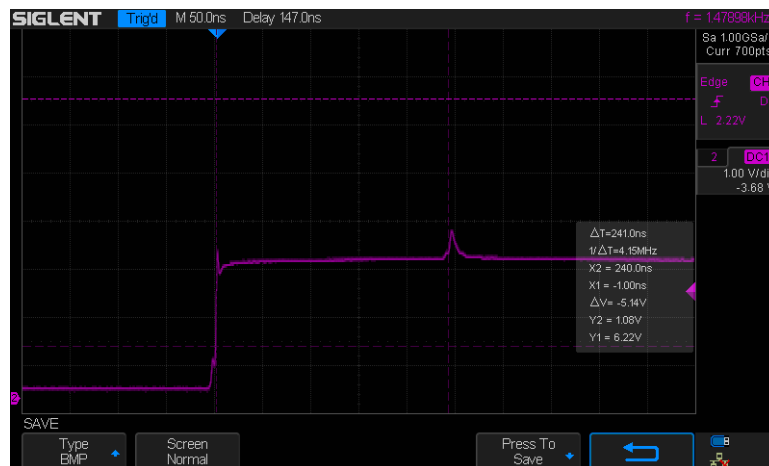
As an example polythene has a dielectric constant of 2.25 so $\sqrt{2.25} = 1.5$, and $1/1.5 = 0.66$.

You can of course work backwards and determine the dielectric constant by measuring the velocity factor.

If you terminate the open end of the coax, with a variable resistor, and adjust the resistor to match the level of the reflected pulse you can directly measure the characteristic impedance of the coax.



Just use a 200 ohm pot connected to the open end with alligator clips. Now adjust the pot to make the reflected signal match the outgoing signal.



Once you match up the levels, you can remove the pot, and measure the resistance with a multimeter. In this case it measured 52 ohms; the little spike is the alligator clip leads.

That's it. The low cost way into the world of time domain reflectometry, if you have a problem with your coax cables, it's cheaper and easier than climbing the tower looking for rusted out PL259's

Ray Gardiner VK3YNV 8/2018

Ray sells the kits for \$10 and for \$2 more he will also supply a small box to mount the TDR in. There is only a limited supply of these. Not too far into the future Ray will have a VHF/UHF diplexer kit available which will handle up to 50 watts. Tests on this device are not yet complete. A review will also show up in a newsletter soon.

Rodney VK3UG

Murray Quad November 24th and 25th 2018

The Murray Quad will be on again this year but held under a totally different format. This year it will be over two days, Saturday the 24th and Sunday the 25th of November.

Saturday will be the 25Km. Peaches and Cream Paddle race starting at 3pm. The canoes will be paddling from Thompson's Beach Cobram and finishing at the Tocumwal town beach, the last canoe should arrive at around 7pm. For this event our radio operators will need to be in position and able to test their equipment by 2pm.

Our radio control for this canoe event will be set up at the Tocumwal town beach and 4 radio operators will be required on this stretch of river at some of the check points from start to the finish line.

Sunday will be the running of the 21.1k Black Bull Half Marathon starting at 7.45am. This event will start from the Yarrawonga rowing club and travel via the lake for shore and finish at the Silverwoods Golf Course and Lifestyle Resort at around 12noon. Radio comms will need to be set up and tested by 6.30 am. Our radio control will be set up at the rowing club and there will be three radio operators stationed along the marathon route.

There will be camping available at Tocumwal Town beach and all SADARC members attending are invited to a BBQ on the Saturday evening at the town beach.

Thanks to all those who volunteered for this event. We have enough volunteers for this weekend but if any members want to come along and assist in some way or just look on I am sure you will be welcome.

Being held over two short days will give us more time to relax and enjoy the weekend away.

Bruce and Darren Glasson outside events coordinators.

Repeater Site Information

- There are reports that stations are able to get into the 2 mx repeater but don't get a good signal back from it. These are stations down towards Melbourne and maybe other locations. It is possible that this is occurring as the top of mast antenna is the receive antenna which gives an omni-directional radiation pattern and the transmitter is on an antenna part way down the North West side of the tower and giving a radiation pattern that is probably not omni-directional. Later on various tests will be done to obtain the best performance possible with various antenna combinations. This will probably be done with all services.
- Once the site is going as well as is practical it has been suggested that we have a regular meeting on Mt Wombat (instead of at our normal meeting room) to show members just what is at the site. Late Autumn might be a good time for this so that we can have a BBQ up there after the fire season finishes.
- Considerable work is being done on the UHF CB repeater. The cavity resonators are being modified and retuned to give better performance and to take up less space in the hut. The original antenna has been overhauled but it is tuning a bit high in frequency (maybe it always has?), so further checks are to be made. The repeater has been physically modified to fit the racks better and it now also has a VK5DJ controller installed. Later there is the thought of replacing the repeater with a more modern repeater as after all the Philips FM828 series transceivers were first put into service in 1977.
- At the next visit to Mt Wombat the 5 MHz split repeater antenna will be hopefully fixed – if not we do have a spare antenna or two that can be used.
- There are ongoing consultations occurring regarding an internet connection to Mt Wombat. Not there yet but getting closer. Andy VK3AJA and Ray VK3YNV are looking at options.

Editor's Ramblings

- It is likely that we may try another venue at our November meeting, more news later.
- Andy gave a short overview talk at our September meeting on various digital modes that we can consider for Mt. Wombat – DStar (Icom and we have ours on test), DMR, Fusion (Yaesu, easier to program than DMR), IRLP (on test). These various systems are not compatible with each other so we need to think carefully which way we go if we decide to have digital gear installed. No one wants to buy gear to suit a mode and find it is not popular.
- **Remember our club AGM in October.** Are you willing to stand for a position, I hope so? Yes, it will take some of your time and the current members have been willing to do this for quite some time but some may feel like a rest.
- As you may be aware Ray VK3YNV has taken over as Webmaster. He would like some personal photos of members shacks, members in their shacks in fact anything that you think members or casual visitors to the website would be interested in seeing. This input helps to make amateurs and those with only slight interest in communications well aware of what communications is about and particularly about our club and members. Ray is titling this section on the website **Show Us Your Shack**. Send your contributions to Ray on ray@etheira.net. **Help make our club a much bigger and better club with your input.**
- Our Hamfest featured around half a page in the *Shepparton News* for Tuesday 11th September. Good on you Andy for organising it.
- Note additional Hamfest photos are on the clubs web site.

At the Hamfest



Kevin , “hilarious” Andy and Graeme



Looking over the goodies for sale



Remember Jaycar do give members discounts!



Tania and Norma with goodies to eat. Good stuff.



Graeme and Peter drawing the raffles.



A violin made by Denys VK3ZYX on a 3 D printer. It is amazing what can be made on a 3D printer