# GATEWAY

**The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc A0016893M**

**April 2023**

## Arduino's at 2.4GHz

## Antennapalooza 2023

## John Moyle field day

## And More

WIA Affiliated Club

Cover photo, John Moyle Field day, with an earie purple glow – courtesy of Klaus VK3IU
(If you have any good photos, please send them in)

# Contents.



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# Event Queue

**April:**

| | | |
|---|---|---|
| 14th | 7:30 | Prac night |
| 21st. | 8:00 | General Meeting & |
| | | Annual General Meeting (Nominations open on the 24th March) |

**May:**

| | | |
|---|---|---|
| 5th | 7:30 | Prac night |
| 19th. | 8:00 | General Meeting |

**Club run events are only possible with the involvement of ALL members.**
**Without volunteers to coordinate and participate in club events the club will fail to prosper**

# *President's Message*

April 2023, Presidents Message.

Thank you for the opportunity to be president of GGREC for the last 12 months.

I felt that it has been a quiet year until Klaus reminded me of what the Committee has achieved thanks to the great participation of enthusiastic members and a treasurer with drive and determination. Here is a brief summary of what we have achieved.

- Introduced the membership award based on years of membership.
  Recognising the contribution of members is important and their contribution should not be taken for granted.

- GGREC Service award.
  We recognised the significant efforts by certain members that have contributed to the benefit of all GGREC members for many years.

- Cape Schanck lighthouse weekend.
  Klaus organised the activation of the Cape Schanck light house where members were able to enjoy operating outdoors in very picturesque surroundings. Thank you Klaus.

- Bunnings BBQ.
  Klaus was also the main driver behind the Bunnings BBQ fund raising event that we will be repeating in the 2023-2024 Club year

- Tour of the Australia Synchrotron.
  In November 2022 I organised a tour of the Australian Synchrotron to give GGREC members an opportunity to have a private guided tour of this amazing site.

- Christmas Party BBQ January member free BBQ.
  Following a successful Christmas party BBQ in November, GGREC put on a free BBQ for all members in place of a Prac night. This social event was very well attended and enjoyed by members.

- Successful Mid-Year lunch.
  The mid-year lunch at la Porchetta in Pakenham was very well supported and enjoyed by members. I'm sure we will be back again for another lunch.

- Participated in Jamboree of the Air.
  I was very glad to see all the Club members that participated in the Jamboree of the Air. Your participation contributed to a great outcome for the Girl Guides.

- Editorial and Anti bullying policies.
  The Committee researched and published the GGREC Bullying and Harassment policy and thanks to Ian Jackson's input, we published the editorial guidelines.

- Interesting Guest Speakers.
  We were able to provide interesting and informative guest speakers including an overseas Flex Radio presentation via Zoom. I also called upon knowledgeable GGREC members to tell us about their amateur radio experiences.

- Replacement of the outside shack lighting.
  The Club shack outside lighting was replaced thanks to David Rolfe VK3JL. The new LED lights are a vast improvement on the old lights.

- Morse code tutoring.
  Klaus has used his Morse code expertise to tutor Club members wishing to learn how to send and receive Morse code.

- Prac Night projects.
  Prac nights are very well attended thanks to the talent and experience of Bruce Williams VK3BRW. Bruce has provided excellent discussion topics, construction kits and passed on a wealth of information to members.

- Repair and maintenance of the Log Periodic Antenna.
  Although not a Club event, Ian Jacksons effort to repair and maintain the Log periodic antenna is very much appreciated and will benefit all Club members.

- Continuing with the morning coffee group post Covid.
  The morning Coffee Group was only started to provide contact between Club members while we were all locked down during Covid. It has continued and is well supported by members and friends.

- HF "Laundry Net".
  Mike VK3TDK's enthusiasm for working on HF prompted him to start a Net on Thursday Nights. The Net has been very successful and well supported by amateurs around Australia. Thanks also to Fred VK3FWR and Don VK3ABI who provide support to Mike when called upon.

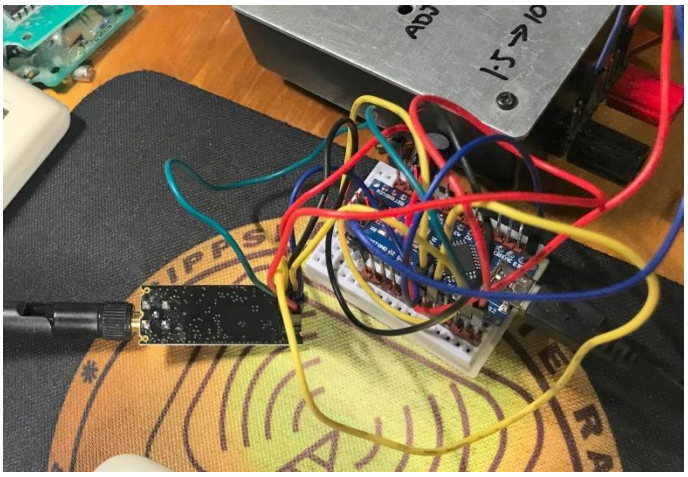
- John Moyle Field Day.
  Mike VK3TDK and Fred VK3FWR organised and participated in the 2023 John Moyle Field Day. The site was excellent with zero RF noise and it was available for all GGREC members to participate.

Finally, I'm sure the new Committee will continue to grow the Club and provide members with support and development opportunities. We will need to determine if we can resume Prac nights in the Club shack or remain in the Guide hall. Mike Ide, VK3KTO has suggested that we could have a mini Hamfest in the Masonic hall in Tooradin. This will be decided by the new Committee.
I would also like to thank the outgoing Committee members, Klaus VK3IU, Bruce VK3BRW, Helmut, VK3DHI and Yarn VK3NOV who was willing to help the Committee but had to withdraw due to health issues and to Mike VK3TDK for his contribution to the Committee.

I will continue to offer the new Committee and Club members my help and support.

Bruno Tonizzo VK3BFT
President GGREC Inc.

# From The Editor



This month I'm back at the Arduino's, it seems a while since I did as some points were getting rusty in my old brain, I was trying to define a text string with some embedded binary values, however how to format that was alluding me and good old Google was not being overly helpful either.

I was attempting to send messages between two Nano's via a wireless link, trouble was I was just seeing one message, then nothing. So I'd hit the reset button and that did nothing as well. So I tried to reprogram the Arduino, and was promptly given an error message – the reprogram was unsuccessful. As far as my PC and the Arduino IDE was concerned, that device had just disappeared from the face of the earth.

So I unplugged it and repowered it – it was back – then it wasn't, so try again, same thing.

So faulty Arduino, no, faulty USB lead, no, faulty USB port, no…..

What it was in the end was the attached NRF24l01 wireless module, for I had another one sending out test messages once a second, this NRF would receive that message then go to send an acknowledgement back, this was exceeding the Nano's 3.3V supply capacity and completely crashing the Arduino's micro, AND it's attached CH340G USB to serial chip. I was pressing the Nano's reset button, which was probably binging back the Atmel processor, but not the USB IC, so my PC just kept saying there was no USB device attached. I'd power reset it, but a second later another message arrived, and crashed it again.

After much head scratching I disabled the NRF module, by pulling its power lead, and sanity returned to my desk. So why was I using that 3.3V rail?, well I was watching several YouTube tutorials about these NRF modules, and they were all doing It this way. Yes they did advise to add a cap to the NRF, but the notes basically revolved around loss of Tx power, nothing about 'killing' the Arduino, I had one on the sender side, but not the receiver – that I was told only needed 12mA of current. Also with a test range of under a meter across my desk, I was not at all concerned about losing Tx range.

The instructions on the remote control does mention adding an extra regulator if you don't have enough power, but not how this 'lack of power' would manifest itself. Most people I assume would associate that with lack of range from the remote, not a totally crashed system.

Oh well, I suppose this is my second fight with the onboard regulators. I'm more used to devices like the 7805 1A 5V regulator, that get really hot if pushed, however these SMD devices poop out real quick with no warning signs, no overheating etc., even when running flea loads, Or is it just the price one has to pay for buying your boards from Ali express or Banggood etc., Yes they are cheap but what are we loosing. It would be interesting to pick up a board from a local shop to compare, however at $24-ish each, I think I'll pass

Paul VK3TGX

# NEWs FROM THE TREASURY

from Klaus VK3IU

## Membership fees are due now!

As our financial year has officially ended in March, all your membership fees are due now.

We have managed to maintain the same fees as last year thanks to the success of our fundraisers.

The fees are now due latest by the AGM in April 2023.

We prefer electronic fund transfer as the method of payment

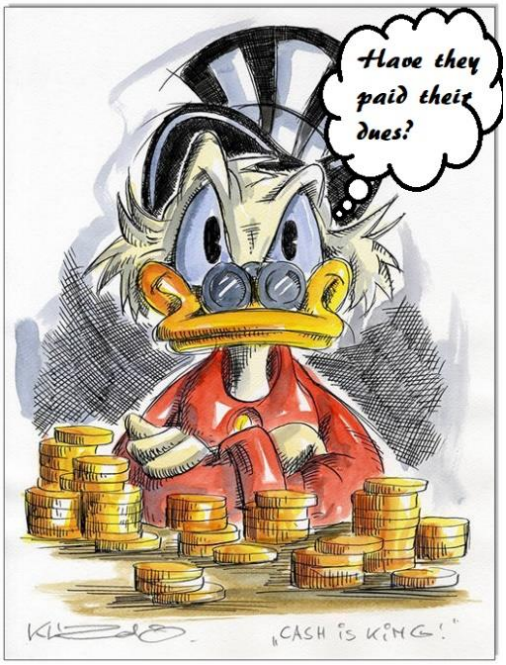
**GGREC BSB 633000 - Account 146016746**

always identify your EFT payments with your call sign or for SWL with your last name.

- Full Member $50.00
- Pensioner Member $40.00
- Junior Member $25.00
- Extra Family Member $20.0

I will confirm your payment by email within a week. If you don't receive a confirmation email after a week of making the payment, please contact treasurer@ggrec.org.au. No need to inform us that you have paid as we will see it in our accounts.

If any member is experiencing financial difficulties, we encourage you to reach out now to our President in confidence so we can find a way to support you and ensure you don't leave the club.




If you decide not to renew your membership, please let us know by email before the AGM so we don't follow up on your payment.

# Antennapalooza 2023



Once again Ian Jackson VK3BUF has organised and hosted another great Antennapalooza event.
I arrived before the start on Saturday and met members from the other radio clubs attending the event. The camp sites, motor homes and caravans we busily being setup for a comfortable overnight stay. The weather was good and the site of the marque was well sheltered by a row of large trees at the bottom of the farm.

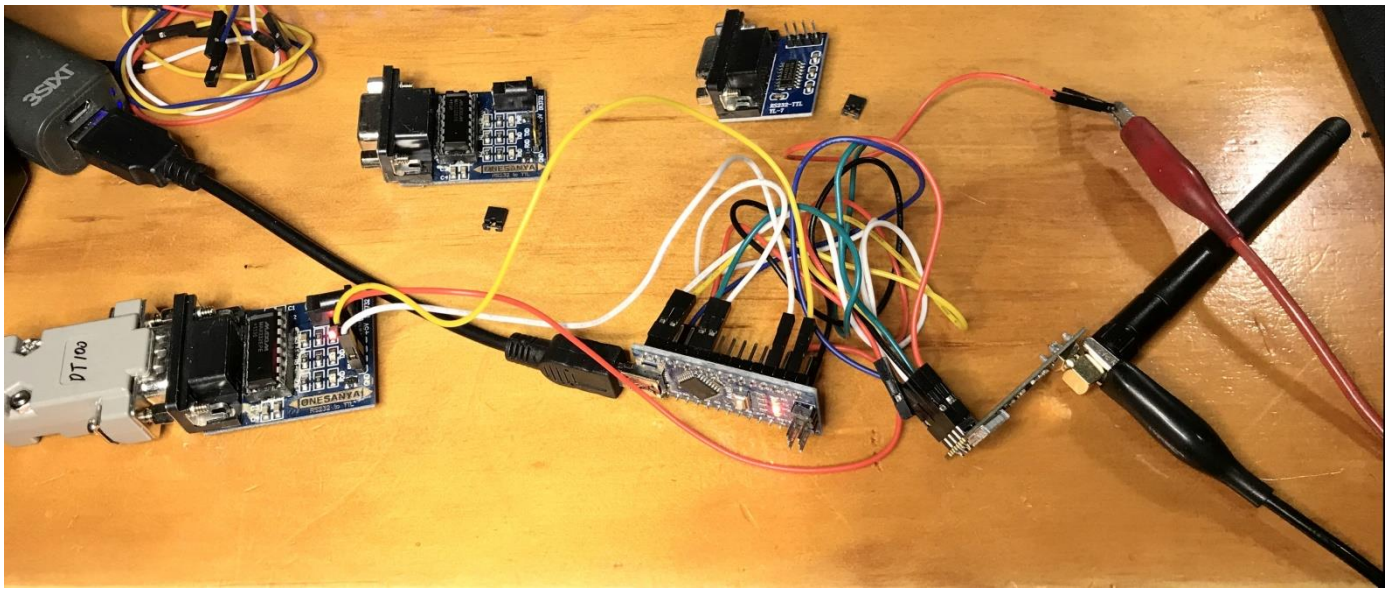
The presentation started around 11:30am and we were treated to excellent presentations on amateur radio considerations for outback travel that included a lot of information on personal safety should you need assistance hundreds of kilometres away from civilisation.
The presentation by the EMDRC Balloon launch team was excellent with lots of audience participation and a very good rundown on what is involved to prepare, launch and recover the data recorder and associated electronics.

Mark Clohesy gave a comprehensive talk about running your ham shack off the grid. Mark has done extensive work and development to run his shack totally on solar / battery power.

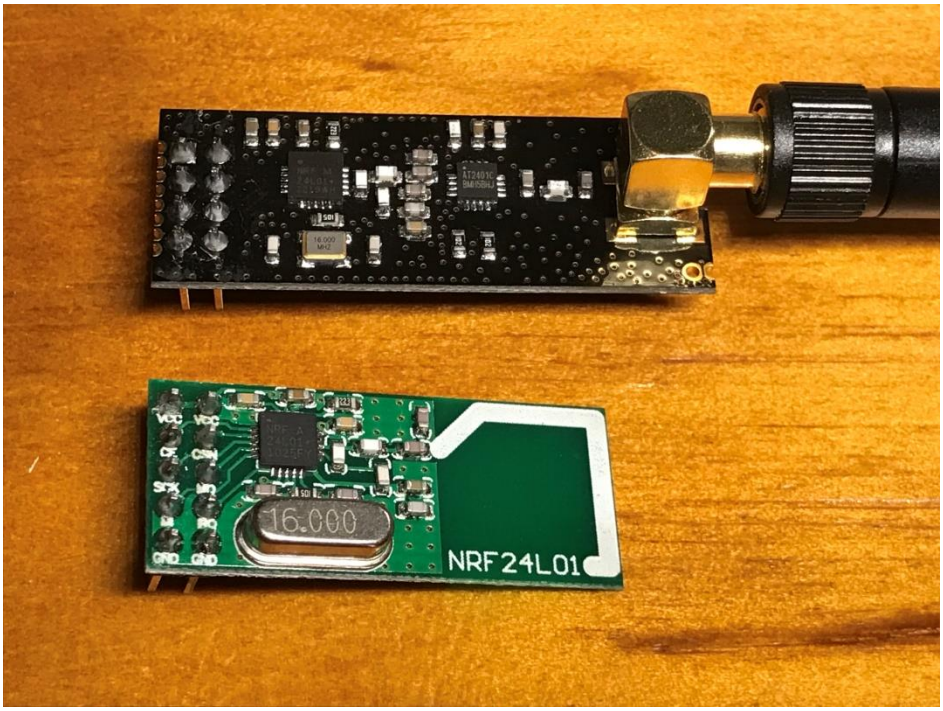
Unfortunately, I was not able to attend the Sunday session but I'm sure more photos will appear in the next edition of Gateway.
Thanks again to Ian Jackson for a great event.

Kind regards
Bruno Tonizzo VK3BFT

# 2.4 GHz Arduino Fun



And now for some 2.4GHz fun. Normally to play with these sorts of frequencies you need to be well versed in microwave black magic, or you can do as I have with a touch of cheating.




These NRF24L01 based units from Nordic Semiconductor come in two basic flavours; one with a built in circuit board antenna, and the slightly larger one that uses an SMA connector to attach an antenna, the latter also has an RF amplifier stage to up the power levels for extended range. (0 dBm)

I have labelled this as Arduino, however that is not exactly correct, whilst I am driving mine with a pair or Arduino Nano's, you can use any device that talks SPI, 'Serial Peripheral Interface', However as there is a fair few registers to configure etc., using the pre-written Arduino library's sure makes one's life a lot easier. The Arduino family now encompasses quite a large set of micro controllers so that there is surely one to suit your needs. If you want to talk something a lot larger like a PC etc., then a cheap small Arduino can serve as a USB to NRF24l01 interface.

In the top picture 'tangle of wires' is my experimental setup, whilst these DuPont based patch leads allow a quick lash-up it sure is messy, I'll soon have it on a pref-board of some sort. Normally I use the reusable proto boards for early tests, however the dual row header on the NRF24l01 does not suit, so I'm temporarily in a tangles nightmare, the quicker I can get those pesky patch leads back into the 'junk box' the better.

Years ago I setup a remote display 'system' around my house, with a few display points that showed temperature's & time etc. (hopefully, soon, solar) I had run 12VDC and several extra lines to several outlets here and there, I was pulling one lead, so might as well make it a few at the same time – i.e. no more effort. It's only lately that the idea of wireless has started to sound appealing. I was initially thinking WiFi, however the complexities of that protocol vs the simplicity (basically RS232) of my data feed, seemed to be at odds with one another, then along came these – well not quite, they have been out for many years.

WiFi is a very complex protocol, and it's only getting worse, as in WiFi 6, as the protocol is slowly evolved to handle more and more devices, speeds, and security improvements. Currently many are using the ESP32 series of controllers to do WiFi, Lately Espressif have released an updated 'chip', the ESP32-C6: a Wi-Fi 6 + Bluetooth 5 (LE) SoC. I should probably learn this one, however for now, keeping this project simple(er) has an appeal to me.

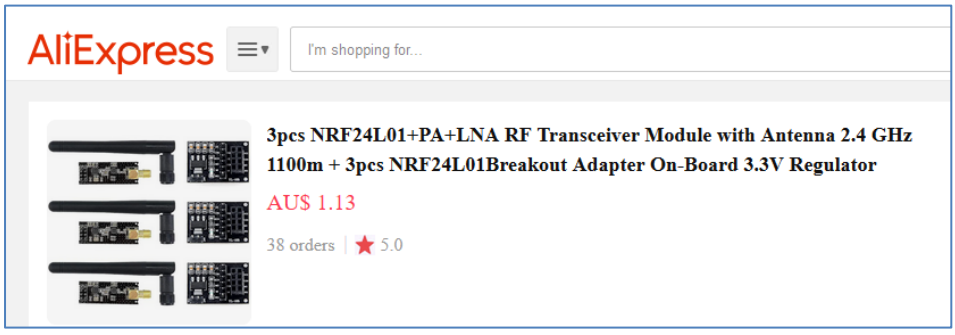

**NRF24L01 Getting Started Guide**

https://youtu.be/uiIIwkJGtfI

There is heaps of info and projects out there, I used this one as a starter, his sample code was a lot cleaner I thought.

There was one catch that caught me out and had me up scratching my head into the wee hours, and that was it's NOT a good idea to try and run the larger NRF modules from the 3.3 VDC supply from the Nano as shown, maybe it's ok with the smaller board, however I could not get anything to work and it took me a while to figure out it was a power problem. I kept jumping back between transmitter and receiver ends, not realising I had issues both ends. Actually there is almost no Tx and Rx ends, as the two boards handshake and acknowledge successful data transmission, so my receiving only end was also transmitting, meaning I had power issues both ends.

The NRF modules run on 1.9V – 3.6V only, **NOT 5V**, so I could not just parallel them up with the Arduino's USB 5V I was using. (While not 5V power wise, they can handle 5V signalling)




Maybe I should have ordered them from this AliExpress site as they also come with 3.3V regulators.

As you can see these are super cheap.


They are rated for 100M, more with the larger units, however with some beam antennas, and standing on the right spot with your lips at the right angle many Km are possible.

https://youtu.be/4XRp7pkZgPM

It will be interesting to pop one onto the top of my Nally tower and go for a walk to see what is possible.

Maybe the club could use these for a DF hunt for JOTA etc.

After getting my current use off the ground I'm wondering about running audio over them, as in making a private digital HHT/walkie talkie with a pair. As in for having a remote audio link to the shack, as in crossband, however without the risks that can pop up with doing via regular radio's. Risks like someone hearing you on that other link frequency and coming up there to talk to you, not realising they are breaking into your link – or a novice etc. then getting translated to a band that they are not supposed to be using.

The NRF modules operate from 550K to 2Mb data rate, one man ran IP traffic and video over one between two Raspberry Pi's, so audio should not be an issue. They also have channel numbers, so hopefully that can be run alongside other NRF projects. Icom brought out a digital HHT that runs over your WiFi, neat, I could easily find a use, however the price….. yikes.


If you are looking for a project to build, then how about this one?

On looking at the list of parts I was surprised I basically had everything.

Leftovers, nobody wanted, form that recent deceased estate I was trying to move.

**DIY RC Transmitter & Receiver/Controller**

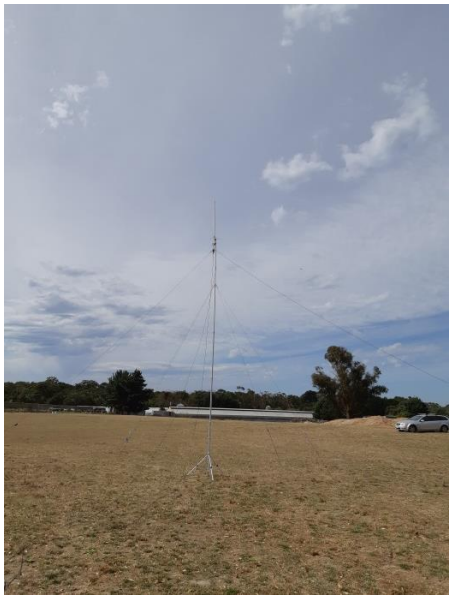
https://youtu.be/47eBRwFQp-g

Paul VK3TGX

# John Moyle Field Day

Following the mini working bee, I travelled just a short distance to the site where the John Moyle Field day was being set up. Mike VK3TDK, Fred VK3FWR and his son Ollie were busy setting up the antennas to be used for the event. Although it was a hot day, we were set up next to a large stand of trees that provided shade and a cooling effect. The location was a property belonging to a good friend of Fred's and also fellow amateur. The terrain was flat and a nearby large pond provided water for ducks, foxes and many rabbits. The antennas worked perfectly and it wasn't too long before the logbook was filled with contacts. Don VK3ABI arrived and set up his transceiver and more contacts were made. One advantage of the site was that there was zero RF noise. This made it very easy to hear weak and QRP stations.
Thanks to the Club members that visited the site and joined in on the fun, and thanks to Mike and Fred that put in a great amount of work setting up the site for the benefit of GGREC members.

Kind regards,
Bruno Tonizzo VK3BFT
President GGREC Inc.







# BEING HEARD IS IMPORTANT

**The Radio Amateur Society of Australia**

vkradioamateurs.org

## If you would like to support the future of Amateur Radio in Australia, become a member

All we require is: **Name**
**Callsign…**(if you have one)
**Email address.**

**Membership to RASA is only $10**

Click the **JOIN RASA** button on our website:

*vkradioamateurs.org*

- RASA inc. is ASIC registered as a National not-for-profit Association
- Member details are not shared with any other organisations
- All RASA rules are available for viewing on our website.
- Management Team is selected via annual democratic vote

All RASA resources, including our quarterly magazine QTC are free and downloadable by anyone. **So why would you bother to join?**

People join RASA because they want to, not because they are forced to. We are focused on the future of the hobby, maintaining our privileges as operators and working with Clubs. In the past 3 years RASA has visited and listened to 30 different clubs, events and Hamfest sales. We have obtained the 2x1 Callsigns for DX operators and sponsor the QRM Guru website dedicated to the reduction of radio interference and much more! RASA are also co-sponsors to Perthtech and Antennapalooza.

***We are actively working for Amateur Radio, not just talking about it.***

**Check out our digital magazine at:** https://qtcmag.com/
**Learn about interference reduction at**: https://qrm.guru/

# Club Shack Repairs

Following last month's break-in at the Clubrooms and BBQ shed, a small band of members gathered at the Clubrooms early Saturday morning to repair the shed and strengthen the door locks. It was a hot day and a total fire ban had been declared. An early start meant that we were able to complete the work before the hot weather set in.

The door latches were reinforced and are now very secure. Hardware was fitted to the outside gate near the BBQ shed to bolt it shut. Fred VK3FWR, Max VK3TMK and I returned a few days later and fixed the BBQ shed doors to secure the shed. I hope the work we did deters any further break-in attempts.

Kind regards,
Bruno Tonizzo VK3BFT
President GGREC Inc.

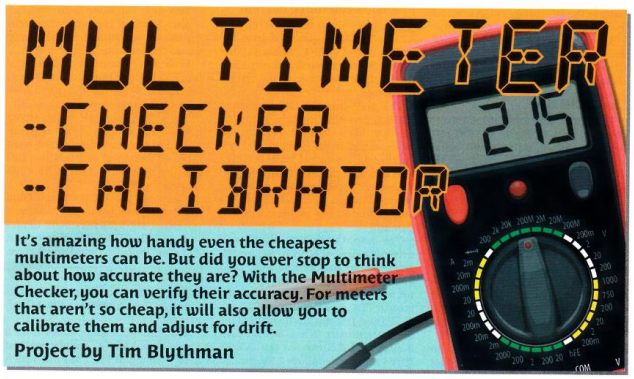



# Multimeter Talk


At our 14th April prac night, Bruce VK3BRW gave us a good talk all about multimeters and how best and what type to use for our education.

Several members brought in their meters and these were shown and discussed.

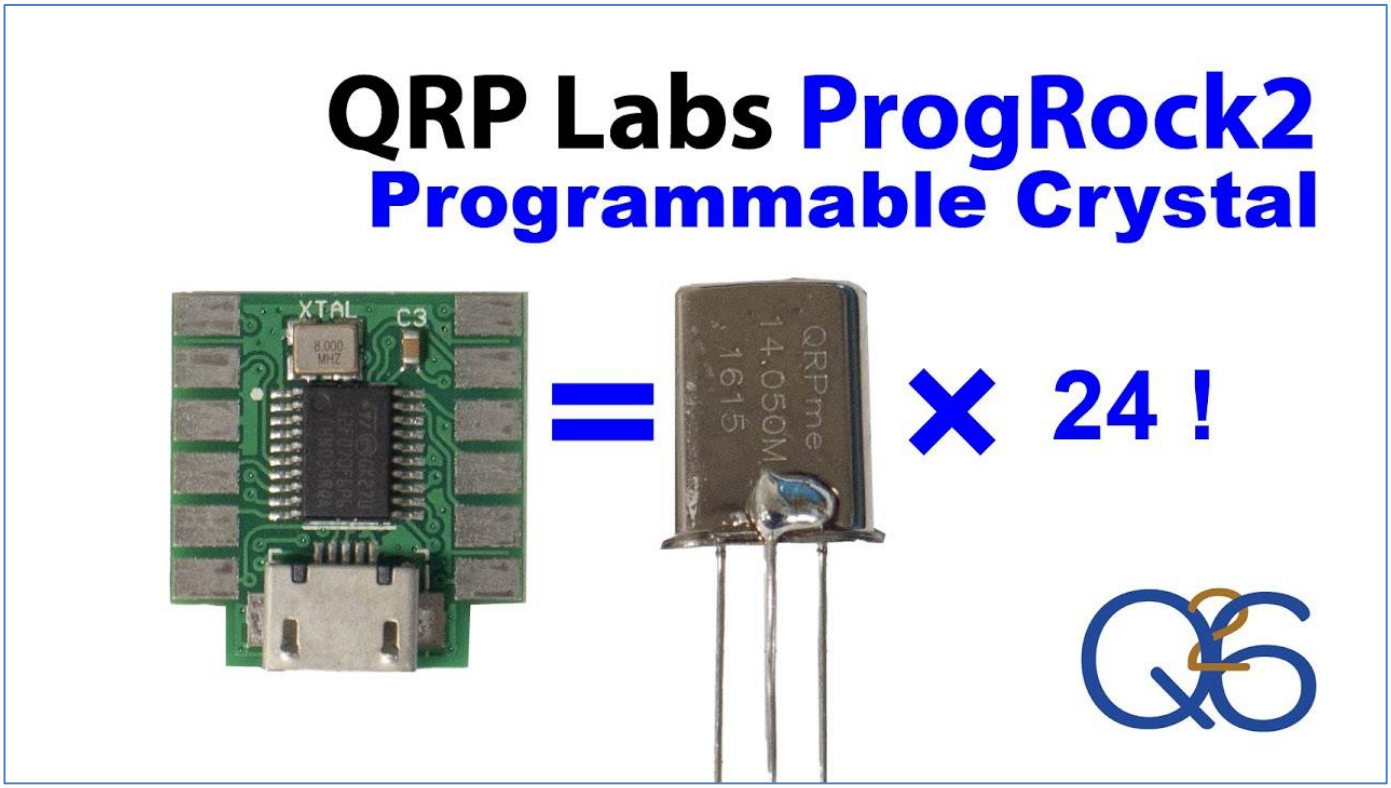
Some members have also started building a meter calibration kit from Silicon chip magazine




July 2022 https://www.siliconchip.com.au/

# Interesting YouTube Videos


The Mysterious Bird Cages Of Chernobyl's Duga RADAR
https://youtu.be/voKw6nNWrZE




Making a multiple crystal receiver with QRP Labs ProgRock2
https://youtu.be/dMahysI1frY

WIA Affiliated Club

The GGREC is an affiliated club of the WIA
https://www.wia.org.au/

We also give Thanks to

https://www.jaycar.com.au/

&

https://www.altronics.com.au/

For their generous support over the years

# Club Information

Meetings 20:00hrs on third Friday of the month at the
Cranbourne Guide hall, Grant Street Cranbourne
Prac/Natter nights first Friday in the Peter Pavey Clubrooms Cranbourne 19:30hrs
Visitors are always welcome.

## Office bearers

| | | | | | |
|---|---|---|---|---|---|
| President | Bruno Tonizzo | VK3BFT | General 3 | Yarn Oncken | VK3NOV |
| Admin Sec | vacant | | Web Master | Mark Clohesy | VK3PKT |
| Treasurer | Klaus Illhardt | VK3IU | Magazine Editor | Paul Stubbs | VK3TGX |
| General 1 | Bruce Williams | VK3BRW | Property Officer | 'committee' | |
| General 2 | Helmut Inhoven | VK3DHI | Assoc. Secretary | Bruno Tonizzo | VK3BFT |

## Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater Cranbourne VK3RDD, In 52.575 Out 53.575 CTCSS none
70cm Repeater Cranbourne VK3RGW, In 431.425MHz Out 438.425MHz CTCSS 91.5Hz
VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794 **offline.**
70cm Repeater Seaview VK3RWD, In 431.575MHz Out 438.575MHz CTCSS 91.5Hz **'Testing'**
Simplex VHF - 145.450MHz FM, Simplex UHF - **TBA**
VK3RLP Beacons 1296.532MHz & 2403.532MHz **(currently offline)**

## Membership Fee Schedule

Pensioner member rate $40.00, Extra family member $20.00
Standard member rate $50.00, Junior member rate $25.00
Fees can be paid by EFT to BSB 633000 - Account 146016746
• Always identify your EFT payments
• Membership fees are due by each April Annual General Meeting (AGM)

Magazine Articles to editor@ggrec.org.au Cut off, 10th of the month
All other Club correspondence to: secretary@ggrec.org.au
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