



Illawarra Amateur Radio Society

Propagator JUNE 2023

Upcoming Meeting on the 13th JUNE 2023

The next meeting **will be at the** Blue Scope Steel visitors centre **7.30pm**

Blue Scope Northgate entrance off Springhill Road (See website for detailed map)

THE  FOLLOWS A COVID19 SAFE PLAN



VK2RUW (Knights Hill)
34.6231° S, 150.6942° E
QF55IJ



AMATEUR RADIO IN THE ILLAWARRA SINCE 1948

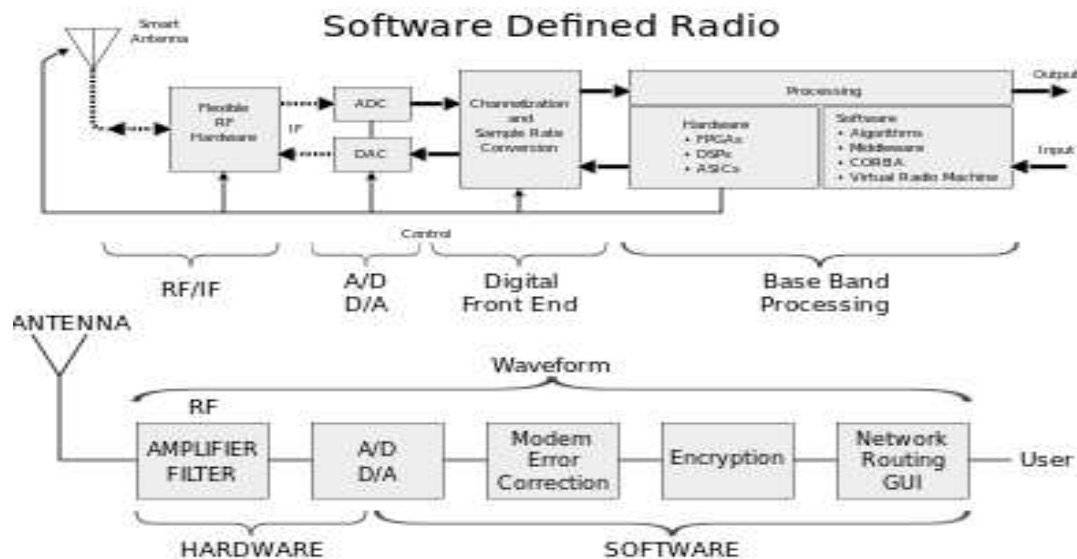


VK2RMP (Maddens Plains)
34°15'30.6"S 150°56'47.4"E
QF55LR

VK2AMW

This year is our 75th anniversary

Our last meeting 9th May 2023



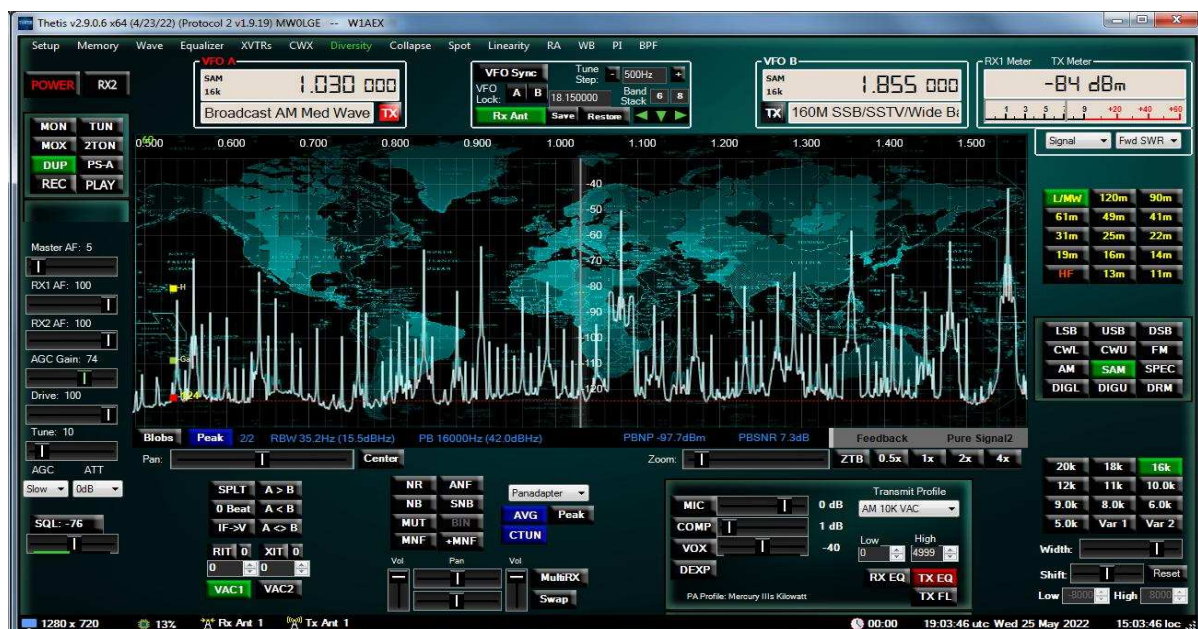
Software defined radios with beam forming.

A special thanks to Mal VK2DXM our SDR guru, who took us through the paces of the SDR setup and operation.

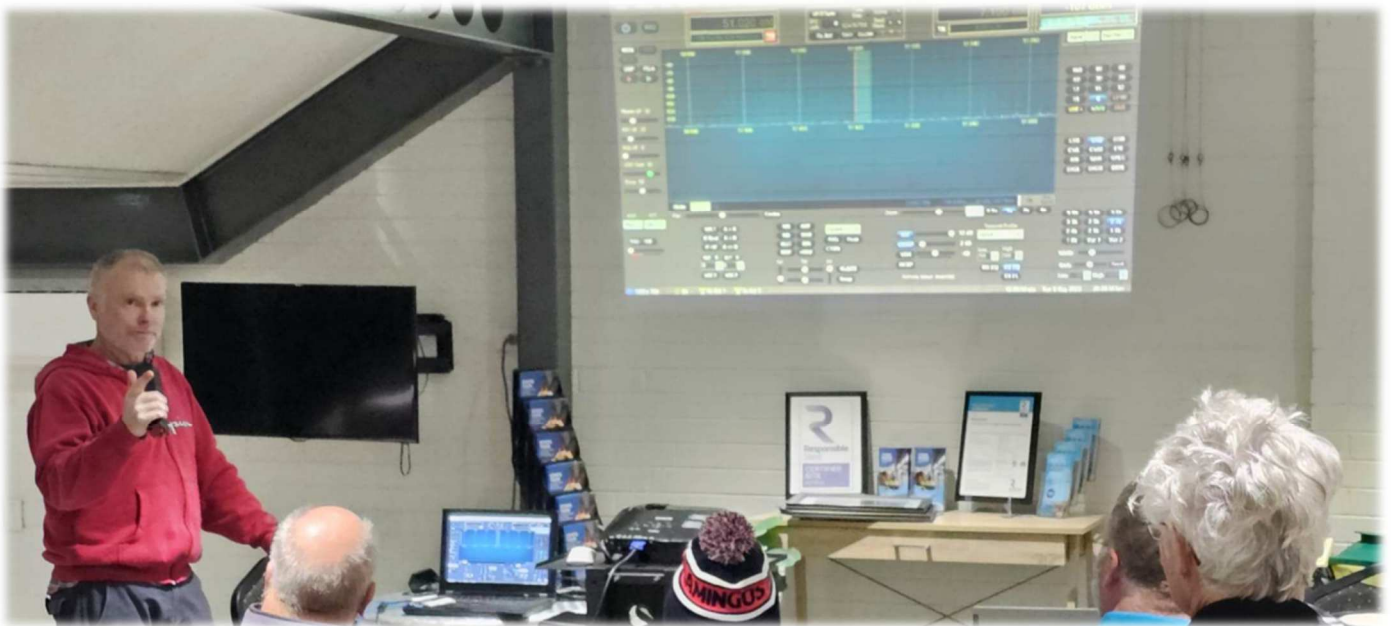
Mal made a great effort by setting up multiple antennas outside the visitor's centre to demonstrate the amazing power and control that the ANAN100D from Apache labs has. Mal setup a 6-meter vertical ground plane for the noise input and an 84foot OCF dipole for the main antenna.



Besides active noise cancellation that the system offers, it was the “steerable beam forming” demonstration using the THETIS software platform that was the big attraction.



Anticipation while Mal sets up the system



Thank you Mal for a very entertaining presentation and an extra big thanks for the effort you put into the prestation setup.

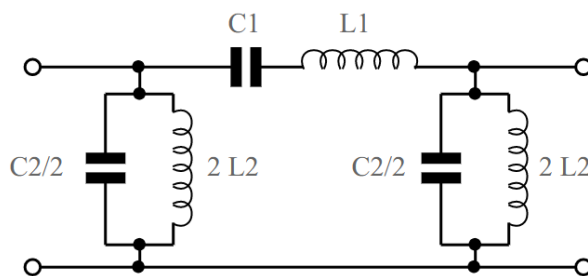
There was the usual chinwag with chocolate biscuits and a nice hot cuppa.

If you missed out and want to learn more about SDR and the uses of multiple antennas for beam forming and noise cancelling, Mal will be more than happy to share the information, please send an email to iars.keithb@gamil.com and I will send your request to Mal.

NEXT MEETING

Using analysers and low cost signal generators with oscilloscopes for testing filters and other items of interest

We will be tuning cavities, filters and even working with simple coaxial stub filters to demonstrate the use of everyday low cost equipment, and more advanced spectrum analysers. (Make and test your own filters)



Disposables Donation Table

Please keep the support for this going and bring oddities in and take some home for a small donation to the IARS. With the next meeting please bring along and donate those old items that you no longer use and may even have thought about throwing it in the bin, someone else may be looking for that very part. Wire, pieces of coax, old parts, plug packs, power supplies, capacitors, resistors, coils, tubes, knobs, anything that someone can use. Thanks to those that support this every month, awesome!



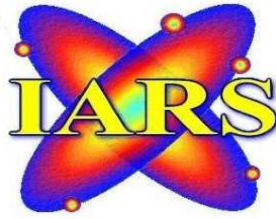
For \$5 you can earn some good cash and all monies go to your society, win-win.

As usual see Simon VK2KU, the fella with the coloured balls and big smile



Congratulations to John VK2EJL who won \$115.00.

Upgrading or new licence? It is as easy as One, Two, Three 😊



**Looking to Upgrade to Standard or advanced and even obtaining your Foundation license
we have remote assessing available**

The IARS **can help** with obtaining your Foundation, upgrading to Standard or Advanced from *the comfort of your own home.* , and its FREE!!! *

We have approved AMC accessors that can offer remote assessments for the AMC.

Please contact Keith VK2KQB at iars.keithb@gamil.com for further information.

Your society supports further learning, please find out more on how we can help you. AMC website is [Australian Maritime College - Australian Maritime College | University of Tasmania \(amc.edu.au\)](http://AustralianMaritimeCollege-AustralianMaritimeCollege|UniversityofTasmania(amc.edu.au))

(* Training, assistance, and assessment is free, however there are costs associated with the ACMA call sign and AMC examinations)

Don't forget the THREE weekly IARS nets as below (yes there are three now)



to the IARS NETS



IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM and Rob VK2MT

Join us every Tuesday evening, expect the second Tuesday of the month for a great get together on 80m. Signal reports, news and general discussions are the agenda.

Saturday Morning EAST COAST NET hosted by Steve VK2BGL at 9.30am

You are invited to join Steve every **Saturday at 9.30am** on our **146.850MHz** repeater (linked to 146.675MHz) or **VK2BGL-R** on Echo-link for a very enjoyable morning of general discussions from amateurs who log in from all over the world. This NET is linked to multiple repeater systems including VK2RFS south coast. Join Steve and everyone for a very enjoyable 2 hours on Saturday morning.

The IARS would also like to thank Doug VK2XLJ, who is always willing to assist whilst Steve is away.

Thursday afternoons at 12pm and is run by Chris VK2CY.

This Net is made up of many retired Marine Radio Operators and Radio Inspectors, but everyone is welcome. As you can imagine their topics of discussion can be far reaching, informative and enlightening. The Net operates on the Society's 2 metre repeaters of 146.850 and 146.675, while out-of-towners can check-in on Echolink via VK2MT-R.

(Please note that VK2MT-R is currently unavailable due to maintenance)

IARS REPEATERS



VK2RUW (Knights Hill)

146.675 MHz >>>>>

linked

VK2RMP (Maddens Plains)

<<<<< 146.850 MHz

Current STATUS

- 438.225 with a - 5MHz offset. **OK**
- 146.975 with a -600kHz offset NO CTCSS, C4FM enabled **OK**
- 146.850 with a – 600kHz offset (linked to 146.675) NO CTCSS **OK**
- 146.675 with a – 600kHz offset (linked to 146.850) NO CTCSS **OK**
- 53.650Mhz with a – 1Mhz offset 123Hz CTCSS tone **OK**
- 438.725Mhz with a -5mHZ offset DMR only, **OK**
- 1296.850Mhz Beacon with simplex repeater function – **OK**
- **Echo-link VK2MT-R** is currently off air due to upgrades and maintenance, please be patient while we do our best to get this back on line

The IARS welcomes any feedback on our repeater systems.

Please send all your feedback to iars.keithb@gmail.com and it will be passed on to our repeater team.

Any donations to help us maintain our great repeater system will be greatly appreciated. Please check our banking details on our website at www.iars.org.au under the Contact details page.

As reference of the donation please add your Call sign and the words "Repeater Donation"

[illegible]



LOOKING FOR SOMETHING to SWAP, BUY, SELL, an OLD PART

Parts you may need for repairs or some radio gear you no longer need that could go to a new home.....?

Email iars.keithb@gmail.com

- **Looking for** a 12m Spider-beam or similar squid pole email keith at vk2kqb@gmail.com
- **Looking for** old test equipment laying around in your shack, **working or NOT!** Email Keith at vk2kqb@gmail.com
- **GIVEAWAY** We have two valve radiograms to anyone interested. Please email the secretary at iars.keithb@gmail.com or secretary@iars.org.au for pickup details



Share it with us, this could be suggestions, technical ideas, circuit diagrams, IARS community projects, pictures of your latest shack project, in fact **ANYTHING of interest**

Let us know by return email iars.keithb@gmail.com

Also, if you have some IARS related pictures or information that we can put on the **IARS website**, please let us know and we can get that happening.

This month's Tech Corner contribution comes from Mike VK2ZQ

"dBm from Heaven" with an HF Transceiver

Exploiting the band noise/noise floor margin for quieter reception

by Adam M. Farson VA7OJ/AB4OJ and George T. Baker W5YR

Inspired by the article "USING ORION'S RECEIVER" by [Sinisa Hristov](#) YT1NT/VA3TTN, Feb. 28, 2004

Fig.1: ANT, Preamp, ATT & RF Gain controls.



Radios Covered:

All superhet HF transceivers fitted with an antenna selector*, an RF gain control, an RF attenuator and an S-meter.

Initial Conditions:

- Antenna connected to ANT 1
- ANT 2 terminated in 50Ω, or not connected (*if ANT 1 and ANT 2 are both in use, terminate RX-ANT in 50Ω or leave it open.*)
- Preamp off
- ATT = 0 dB
- RF Gain at 100%

Setup Procedure: (Refer to Fig.1. The Icom IC-756Pro II is illustrated as a typical example.)

1. Tune off the signal and note S-meter reading on band noise alone (Example: S4).
2. Bring in sufficient attenuation (ATT) to reduce S-meter reading to S2 (ATT = 12 dB in this example).
3. Switch RX input from ANT 1 to ANT 2 (*or ANT 1 to ANT 1/R*).

4. Adjust RF Gain to raise S-meter reading from S0 to S2 (the reading obtained in Step 2 after attenuation was added).
5. Switch RX input back to ANT 1.

This procedure quiets down the background noise, *but without degrading S/N*.

By inserting 12 dB attenuation, we are reducing the band-noise/noise-floor margin from 12 dB to 0 dB. This is still acceptable, as we are degrading system NF only slightly if at all (provided that the margin remains positive.) *The worst-case theoretical NF degradation is 3 dB.*

Then, by setting RF Gain for an S2 reading, we raise the AGC threshold *after attenuation* (i.e. the input power level at which AGC starts levelling) from -96 to -90 dBm (3.5 to 7 μ V). Now, the band noise will barely develop AGC voltage; almost all AGC action will be derived from the signal. As S/N is unchanged, the desired signal is pushed further down the receiver's transfer characteristic (S/N vs. C/N). Refer to the [AGC gain-reduction curve](#).

- The trick is to ensure that the AGC responds **only** to the signal, not to band noise.

The result is a much quieter receiver, but with no evident loss of sensitivity. We intend to study this further, and see how it works with weak DX signals as well as strong signals. The procedure appears to work best on 80m and 40m. We have not tried it on 160m.

The 3rd-order intercept point (IP₃) increases by the amount of attenuation inserted. This is a very welcome secondary effect, *without S/N penalty as long as the band-noise/noise-floor margin is 0 dB or greater.*

Narrowing the IF passband will also cut the remaining noise level down noticeably.

* If the radio has only one antenna port (e.g. IC-7300), disconnect the antenna for Step 3, then reconnect it.

⚠ Note: For direct-sampling SDR transceivers and receivers (IC-7300, IC-7610, IC-R8600) the procedure is even simpler:

1. Tune off the signal and note S-meter reading on band noise alone (Example: S6).
2. Turn down RF Gain (RFG indicator will light) and/or insert attenuation until band noise just deflects the S-meter, and is barely visible on the spectrum scope and waterfall.
3. Tune in the signal again. Band noise will not stimulate AGC action; this will allow the AGC to operate only on the signal.
4. This is the optimum operating point for the receiver. On 7 MHz and below, the band noise can be as much as 12-15 dB above the receiver's noise floor.

Note contributed by Matt, KK5DR: When operating CW with IF filter bandwidths in the 50 to 250 Hz range, slight DSP artifacts can sometimes be heard. These sound like cellophane being crinkled, and are caused by DSP processing of band noise. Changing AGC settings has little effect on this.

Using the above method, decrease RF gain to the point where only the desired CW signal is audible. At this point, the artifacts will be almost inaudible. Start by reducing the RF gain, then try various combinations of RF attenuator and pre-amps. This will redistribute the gain in the front end.

This method worked nicely for me. I was able to fully copy a CW signal which did not register on the S-meter to begin with, and I was able to still copy it very well with the RF gain setting the S-meter at S9 + 20dB and 18dB of attenuation engaged. The "cellophane" sound was gone.

[See Links below](#)

AGC gain-reduction curve link :

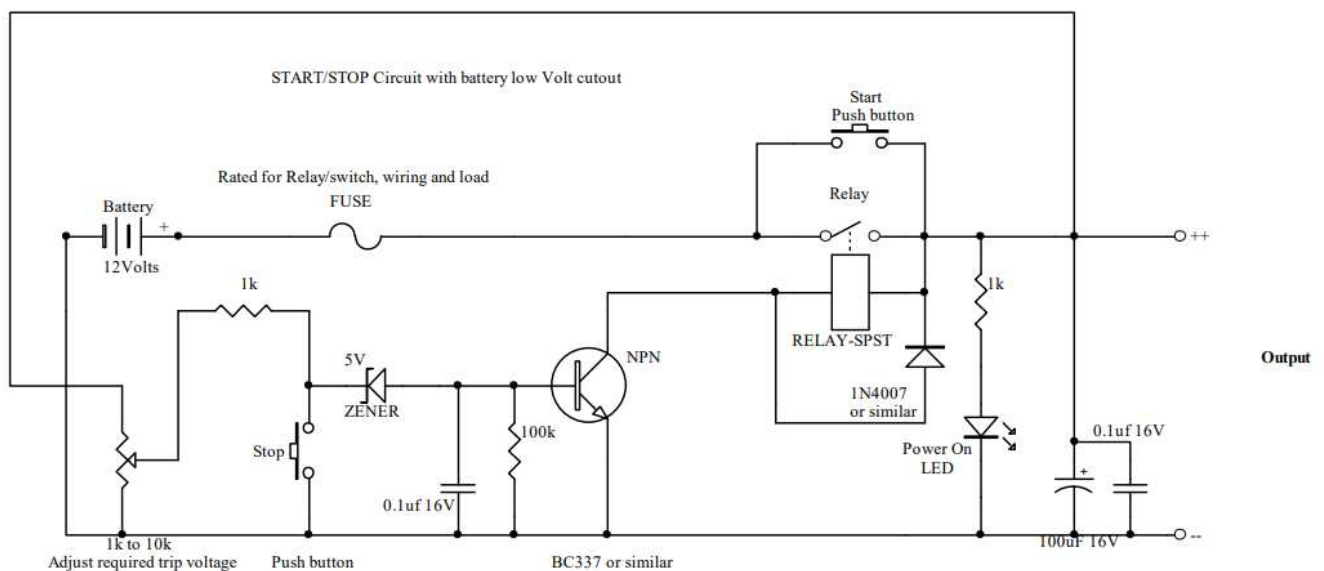
SDR RF GAIN Management :

C-756Pro II S-Meter & Spectrum Scope Calibration Curves

Antenna and Receiver Noise Figure

Thank you Mike VK2ZQ for sharing this with us

Power Start / Stop circuit with Low Volt Battery Saver.



Have you ever destroyed a lead acid battery by leaving it connected to your portable equipment only to find that the battery ran completely down and is now unrecoverable?

If the answer is yes, or you would like to avoid the situation from ever happening, here is a very simple circuit that can be built from scraps around your shack.

The circuit is very simple, **and** you can use anything similar. The only considerations would be the relay contact current, the fuse selection and wiring. In fact, any Zener diode below 7 Volts can be used as this is only the reference trip voltage which can be adjusted by the variable resistor. It is recommended to set the trip to a battery voltage of around 10.5Volts under full load or 11.5Volts open circuit voltage.

To setup the unit, use a variable power supply and adjust the trip for the desired voltage.

This circuit was supplied because of a member request, if you need a circuit for something you are building, send us an email to secretary@iars.org.au and we will do the work for you ☺

BLAST FROM THE Past

OLD PROPAGATOR MEMORIES

The Propagator

	<p>Official Newsletter of the Illawarra Amateur Radio Society</p> <p>Issued 7 Jan 2003 Published Bi-Monthly</p> <p>Editor – Rob Heyer VK2XIC</p> <p>IARS meets at 19:30 Hrs. on the second Tuesday of each month (except January) in the SES LHQ Montague St. North Wollongong.</p> <p>VK2AMW Since 1948</p>
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IARS PO Box 1838 Wollongong 2500.

Winding a HF Helical Whip Antenna

First there are some decisions that need to be made.

How long do you want the whip to be?

Common sense says that a long whip will perform better than a short one, but will a long whip be a nuisance on a vehicle?

Good results can be achieved with a whip 1.5 m long.

A fibreglass rod is needed, such as a discarded CB antenna, fishing rod blank, etc.

A brass base to fix (glue) the rod in place and a threaded hole on the opposite end to suit your vehicle antenna connector.

The amount of wire in metres is, $256/\text{freq (Mhz)}$ provided the wire is wound as described.

e.g at 28.5 Mhz wire length is $256/28.5$ is equal to 8.982 m

Thickness of wire depends on size of the rod and the frequency of operation **BUT** thicker the better. (*Some are thicker than others. ED*)

Procedure

Mark the rod off in nine equal parts. As an example if the rod was 1200mm long each part would be $1200/9$ equal to 133mm

Starting from the bottom call the sections A, B, C, D, E, F, G, H, I.

A. has 1% of the wire

B. “ 2 %

C. “ 4%

D. “ 6%

E. “ 7%

F. “ 9%

G, H and I have the remaining wire 71% which is close wound over these sections.





Snapshots of the 'Dam Picnic'

The BBQ held at Cataract Dam Saturday the 18 December, was an enjoyable time for all. For some, a time to meet new people, and a time to see old friends who have travelled far and wide since the last face to face 'contact'.

Rob Skelcher VK2TNK



Top left Allan Walker VK2ZEW

Above right David Downie VK2EZD & Bob Freebain VK2ZRF

Above Hank Laauw VK2BHL and his Great Dane !

**To the right is John Lawer VK2KET
Maybe It was all a little too much !**

Old folks need their 40 Winks ? ZZZZZZZZZZZZ

Photos Rob Heyer VK2X1C



Colour photos can be sent via email, just ask Rob VK2X1C

Propagator downloads are available, contact Rob - email vk2xic@yahoo.com.au

Will share more oldies next month.

To review the WIA AGM please see this link <https://www.youtube.com/watch?v=bEf-tF1PWqs>



More information at this link <https://www.wia.org.au/newsevents/news/2023/20230522-1/index.php>

For more information, please use this link <https://www.wia.org.au/newsevents/news/2023/20230413-1/index.php>

Class licence coming or not?

Due to some rumours and misguided information, which even I fell victim to, we have found this article from the latest AR magazine which hopefully will set things straight.

Amateur Class licence on-hold! Hams in Australia who have been waiting for the introduction of the new Amateur Class licence on July 1st are going to have to wait a little longer. The Australian Communications and Media Authority (ACMA) announced on 29th March that it must make certain determinations concerning the licence's operational policy arrangements and to further clarify the implementation of higher power authorisation. According to the ACMA website, that includes call sign administration, public register options, amateur operating procedures, arrangements for amateur clubs, and international reciprocity for Advanced amateurs travelling overseas. The ACMA's review also includes, among other things, its proposed access for Standard level Amateur licensees to the 50–52 MHz band. The ACMA said it will provide an update in the second quarter of this year. John Williams VK4JJW

More information in the latest NEW AR magazine out and about.

Join the WIA and receive your own AR magazine free!





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Australian
radio amateurs
since 1933

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This issue's cover: Starting out? - Your 1st test bench helps out (pix - Andy VK2AAK). That big probe is an AC/DC voltmeter! (pic - VK2ZRH). Will that darling of the clickerati, ChatGPT, debase AR? (AI image by Phil VK2ASD). When wireless was cool, ham clubs were hip (image - Justin VK7TW).

NEXT ISSUE: Promoting your club and ham radio

Contributions to Amateur Radio



Amateur Radio is a forum for WIA members' amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are welcome and will be considered for publication. Articles attached to email are especially welcome. The WIA cannot be responsible for loss or damage to any material. Information on house style is available from Phil Fitzherbert.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at \$8.00 each (including postage within Australia) to members.

Photostat copies

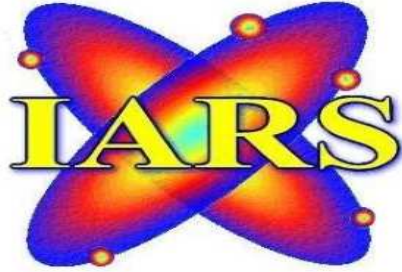
If back issues are unavailable, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

IARS Field Day Weekend

To commemorate the



The Illawarra Amateur Radio Society is turning 75 years young this year, and to celebrate this, we are having a field weekend on the 15th and 16th July 2023 at our Penrose site.

We are planning to have a fantastic weekend with a BBQ, Fox hunt and, it will coincide with the WIA Trans-Tasman Low Band contest on the 15th July 2023, perfect timing 😊

More info can be found here https://www.iars.org.au/?page_id=43

RSVP Essential

Recent Contests



The most recent contest was the Harry Angel Sprint, this year did not see many members participating.

Log submission is now closed, the results are not yet available

This was the first year that electronic logging was the preferred option.

“Good luck to those that participated”.

For more information use this link :- <http://www.wia.org.au/members/contests/harryangel/>

Upcoming Contests

VHF UHF Field Days



The Field Days provide VHF-UHF operators with the opportunity to "head for the hills" and see how far distant and how many stations they can work.

The Field Days have separate sections for single and multiple operator stations. The duration of the Field Day is 24 hours, but there are also 8-hour sections for operators who may not be able to camp overnight. Most club stations prefer to operate for the full 24 hours.

The overriding aim is to get away for the weekend and have fun! But next after that, the aims are:

- to encourage more activity on VHF and microwave bands;
- to encourage people to work greater distances than usual by operating portable, and
- to provide opportunities for people to activate or work into new grid squares.

Upcoming Contest Date & Time

- **Summer 2023** - 0100 UTC Saturday 14 through 0059 UTC Sunday 15 January (0400 / 0359 in VK6).
- **Winter 2023** - 0100 UTC Saturday 24 June through 0059 UTC Sunday 25 June (0300 / 0259 in VK6).

More info visit WIA @ <https://www.wia.org.au/members/contests/vhfuhf/>



VK SHIRES Contest

Saturday 10th June 2023
START TIME 00:00 UTC to 23.59 UTC

The objectives of this contest are for amateurs around the world to contact as many VK shires as possible in the contest period.

VK amateurs are to work the world including VK, whilst the rest of the world can only work VK

More information can be found at this link <https://www.wia.org.au/members/contests/wavks/>



The Trans-Tasman contest, held on the 3rd weekend in July, aims to encourage Low Band activity between VK and ZL

Only contest bands 160 80 and 40M are allowed with SSB, CW and Digital (RTTY OR PSK)

From 2018 this contest is an official WIA Contest and will count towards the Peter Brown Contest Champion Awards.

Start Time is 08:00 UTC and finish time is 14:00 UTC 15th July 2023

More information please use this link <https://www.wia.org.au/members/contests/transtasman/>



Upcoming meeting presentations

- June 2023 : **Hands on use** of signal generators, oscilloscopes and spectrum analysers to test and setup filters and cavities and have fun
- July 2023 : Show and Tell with a prize for the most interesting.
(not necessarily the best presented)
- August 2023 : IARS AGM, with a chinwag and Christmas in ~~July~~ August, possibly plum pudding.
NEED TO RSVP for the delicious PLUM PUDS homemade by John VK2EJL
- September : Simon VK2KU , Projects for your Shack
- October : Show and Tell
- November : Auction with our hilarious and esteemed Simon VK2FO / XQX
- December : Xmas dinner



This Propagator is **your** newsletter, it lets **you** know what's happening with your society, including some info thrown in for your enjoyment of course 😊.

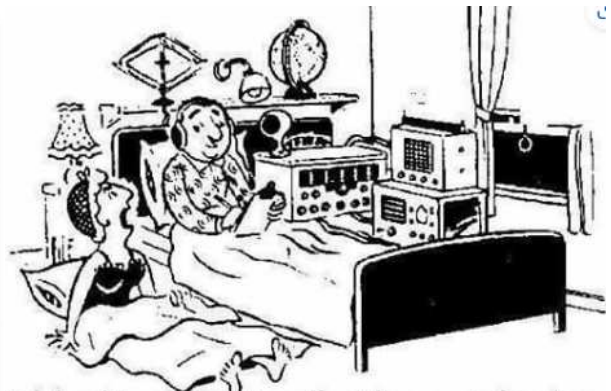
The published content is only as good as the information sent to us.

The **IARS needs YOUR input and support**, any technical items, amateur radio news, any projects you would like to share, in fact any AR related goings on is welcomed.

Feedback is also very important for us as it helps maintain a good read, if you would like to see more of something, or would like to see a subject added. Please let us know , secretary@iars.org.au

Fun Corner

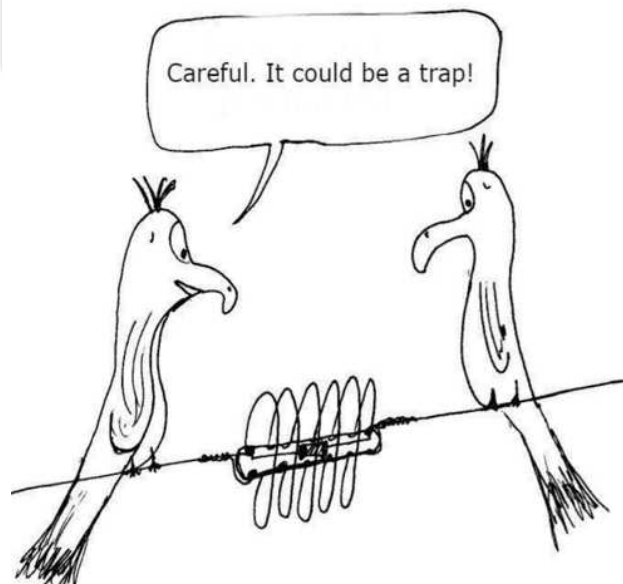
Please send in your funnies to iars.keithb@gmail.com



I don't understand! I've got knobs, why won't you twist mine?



"I dont care if the divison doesn't send QSL cards, "Private, Get On That Radio!"



That's all for now, hopefully catch you all at the [Blue Scope visitors centre on the 13th of June 2023](#)

Stay Safe

73's

Keith VK2KQB

IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948