



Illawarra Amateur Radio Society

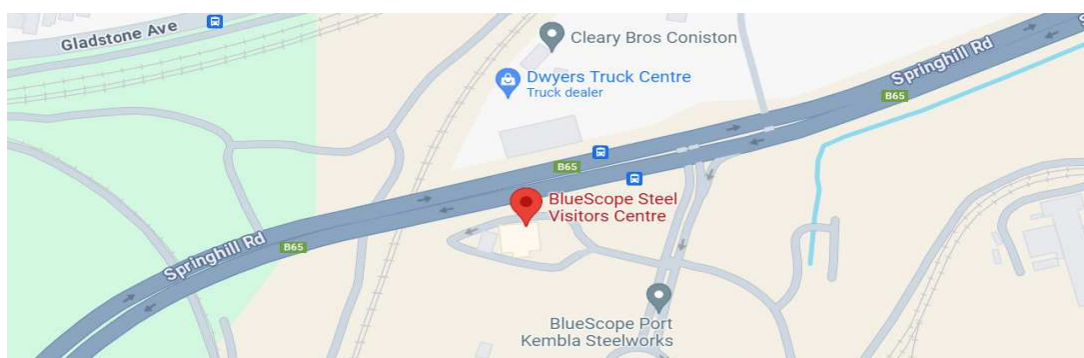
Propagator July 2025

.. . --- ... / .- -. -.. / .. -. --- .- -- .- -.. --- -.

Upcoming Meeting on the 8th July 2025

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)



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

Our last meeting 10th June 2025

SHOW And TELL

Even though it was cold and miserable on Tuesday night, it did not stop some real enthusiastic Illawarra members for a night out at the Blue Scope visitors centre.

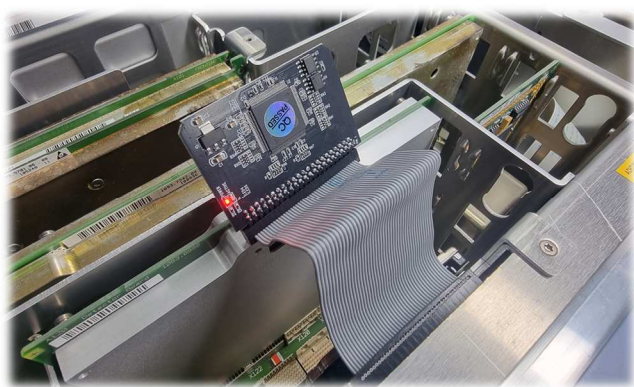
There was definitely a good measure of variety at Tuesday evenings meeting. We had three great show and tell presentations.

Mal VK2DXM, Fixing and using legacy equipment using today's technology.

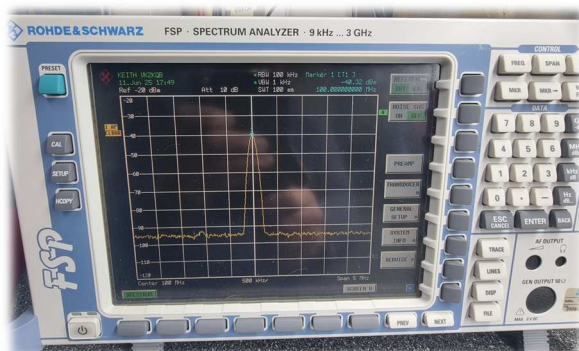
Mal shared the methods and processes he uses to get old parallel printer ports operational for modern computer systems. Even having modern replacement for older IDE parallel hard drives using SD card technology. Mal recently helped with the backup of a Rohde and Schwarz FSP 3GHz Spectrum Analyser by mapping the images off the hard drive and converting the system to a SD – IDE environment as older hard drives are getting very scarce.



SD CARD with the Special adaptor



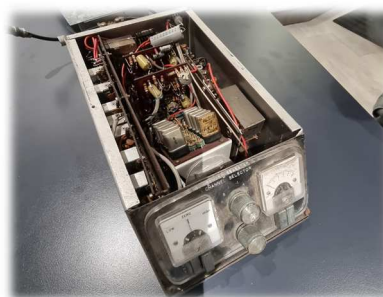
Installed and working perfectly as a 30GB Parallel HDD



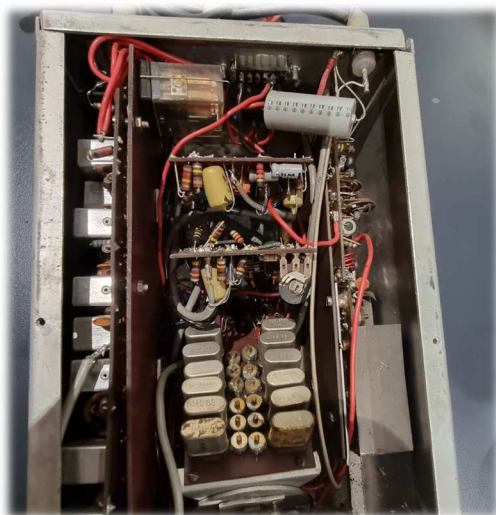


>>>>>>>>>>>>><<<<<<<<<<<<<<<<

Barry VK2ADQ, Home Brew 6m xtal controlled transceiver. Barry demonstrated the real meaning of amateur radio,
BUILD YOUR OWN GEAR !!



Custom made Mobile transceiver purposely build for his car, even cutting out the centre console for a snug fit!

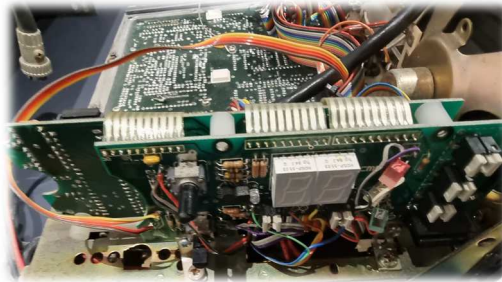
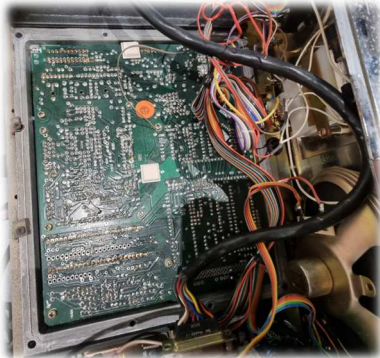


Complete with light switch this custom 6m 25Watt Transceiver

Simon VK2XQX, with his stealthily hidden 2m transceiver in an unsuspecting disused Regal CB homebase enclosure. Simon brought a new meaning to “recycling your old gear”.



That's the outside, let's take a look inside



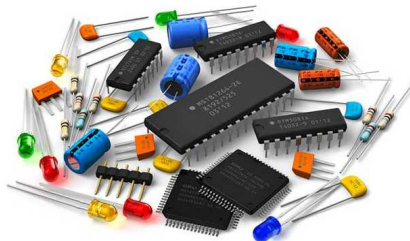
As always there was refreshments and a good chinwag afterwards.

The Disposables Table

If you have anything you no longer use, bring it along to the next meeting and give it a second life.

There is nothing to report on this months disposable table.

Please bring along your unwanted parts, radios, microphones, antennas and anything else that may get some use at its new home.



SNOWBALL

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



The Snowball was postponed until the next meeting in July

NEXT Meeting

Project Mania

Simon VK2KU will be reviewing projects from the past and proposing some awesome new ones for the future.

Licensing and upgrades?



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 ACMA assessors that can offer remote or face to face assessments for the **ACMA**

Please contact Keith VK2KQB at iars.keithb@gmail.com for further information on training and assessments.

Your society supports further learning, please find out more on how we can help you.

This year the IARS has already assisted in getting six new amateurs licenced, is it your turn next?

YES!!!

The IARS is helping Amateur Radio grow in Australia!!! Avg 1 per month

IARS NETS



1. Saturday Morning, the 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 and Angelo, VK2NWT who are is always willing to assist whilst Steve is away.

2. IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM using VK2AMW.

Every Tuesday evening, (except the second Tuesday of the month) for a great get together on 80m. Signal reports, news and general discussions are the agenda. Normally runs for around 60minutes.

3. IARS Wednesday evening weekly 6m NET, 8PM on 53.650Mhz with a – 1Mhz offset Hosted by Geri VK2UTE or Simon VK2XQX, (123Hz CTCSS tone enabled due to interference) Maddens plains 6m Repeater General discussions about building antennas for 6m, transceivers and what else comes to mind, this net is normally between 30 and 60minutes.

4. IARS Thursday evening weekly 10m NET, 8PM on 28.466Mhz +/- for QRM/QRN Hosted by Tony VK2TS General discussions about building antennas for 10m, transceivers and what else comes to mind, this net is normally between 30 and 60minutes.

5. IARS Friday evening weekly 70cm NET , 8PM on 438.675MHz ** with – 7MHz offset (No CTCSS required) Hosted by Rob VK2XIC

General discussions keeping the repeaters in work, *“If we don’t use it, we may lose it “*

**** note frequency changes as from 20th June 2025**

IARS REPEATERS



VK2RUW (Knights Hill)



VK2RMP (Maddens Plains)

146.675 MHZ >>>> [linked](#) <<<< 146.850 MHZ

Current Repeater STATUS

- 439.675 with a – 7MHz offset, C4FM Enabled. **OK – On Air ****
- 147.275 with a + 600kHz offset NO CTCSS, C4FM enabled **OK – On Air ****
- 146.850 with a – 600kHz offset (linked to 146.675) NO CTCSS **OK– On Air**
- 146.675 with a – 600kHz offset (linked to 146.850) NO CTCSS **OK– On Air**
- 53.650Mhz with a – 1Mhz offset (123Hz CTCSS tone enabled due to interference) **OK– On Air**
- 438.725Mhz with a -5mHZ offset DMR only, **OK – On Air**
- 1296.850Mhz Experimental Beacon/Simplex repeater, Maddens Plains **OK – On Air *****
- Echo-link VK2MT-R via 146.850MHz also linked to 146.675MHz and VK2BGL-L **OK**
- APRS DIGI-PEATER on 145.175MHz **OK– On Air**
- PACKET 2M on 147.575Mhz **OK– On Air**

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”

If the repeaters are silent, why not just give out a call, who knows who may be on the other end of the tower.

XX

Latest Repeater Report:

All systems A-OK

**** Please note the current new repeater frequencies as from the 20th June 2025**

***** Note, this will be changing to 1.273 800 GHz Simplex in the next few weeks, however, plans are in place for it to become a Full Duplex repeater system, before the year end 2025.**



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

Electronic component and service suppliers

Need a quick PCB in a hurry to put that latest project on, JLCPCB



<https://jlcpcb.com>



<https://au.element14.com>



<https://au.rs-online.com/web/>



<https://au.mouser.com>



<https://www.digikey.com.au>



<https://www.minikits.com.au>



<https://core-electronics.com.au>



<https://www.wagneronline.com.au>



<https://littlebirdelectronics.com.au>



ATR
Amateur Transceiver Radio Supplies

<https://amateurradiosupplies.com.au>



YAESU Sales and repairs <https://www.vkradio.com.au>



<https://dxing.com.au>



<https://www.telcoantennas.com.au>



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



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

If you know of a good supplier of electronic stuff or services 😊, please share it with us so we can all benefit.

Send information to iars.keithb@gmail.com and we will publish it in the next propagator.

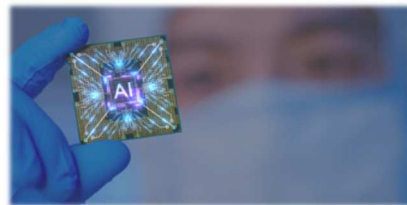


Share it with us, this could be suggestions, technical ideas, circuit diagrams, IARS community projects, pictures of your latest shack project, in fact **ANYTHING of interest**

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

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.**

Can AI speed up critical communications chip design?



Radio frequency integrated circuits (RFIC) are critical to advancing communications capabilities — think moving from 5G networks to 6G — and many other technological applications. But these chips are also really hard to design.

A multi-university team with heavy involvement from industry leaders is working to change that. The team, led by researchers from The University of Texas at Austin, plans to infuse artificial intelligence into the design process for RFICs to reduce the difficulty of making these important chips

“Design productivity is a huge problem for RFICs; in most cases, it takes at least months to design a single chip,” said David Pan, professor in the Cockrell School of Engineering’s Chandra Family Department of Electrical and Computer Engineering and the project’s principal investigator. “Our goal is to significantly enhance design productivity by reducing development time and cost through an AI-assisted design flow, while also lowering the experience barrier for performing RFIC designs.”

To support this research, the team received a \$9.6 million, 30-month award from Natcast, a non-profit that operates the National Semiconductor Technology Center (NSTC). The centre is a consortium established by the CHIPS and Science Act of 2022 to help bolster all aspects of semiconductor production in the United States. The award is one of three, totalling approximately \$30 million, and the first ever through the NSTC’s Artificial Intelligence Driven Radio Frequency Integrated Circuit Design Enablement program. The centre is a consortium established by the CHIPS and Science Act to help bolster all aspects of semiconductor production in the United States.

The research

Titled “GENIE-RFIC: Generative ENgine for Intelligent and Expedited RFIC Design,” the project targets both silicon complementary metal oxide semiconductor (CMOS) RFICs and gallium nitride (GaN) monolithic microwave integrated circuits (MMICs). The AI-driven tools will perform rapid “inverse” designs based on target specifications, optimising circuit topologies and parameters.

Today, RFICs require extensive hands-on design, time-consuming, expensive simulations and tedious trial-and-error work. The field is very specialised, with few researchers studying it and few companies capable of designing these chips.

The researchers aim to use AI to upend these processes, deploying the technology to probe for unconventional designs and optimise them much faster. The AI tools will speed up the early design and optimisation steps. “Golden simulation,” as David Pan referred to it, would still come at the end to finalise the work and make sure the chips perform as they’re intended.

“By leveraging AI and ML technologies, US companies and research institutes are poised to transform the RFIC design landscape, enabling greatly reduced design cycles and achieving higher RFIC performance,” said Marcus Pan — no relation to David Pan — program manager of Natcast’s Artificial Intelligence Driven RF Integrated Circuit Design Enablement (AIDRFIC) program which funds the GENIE-RFIC project. “This AIDRFIC investment underscores Natcast’s commitment to driving innovation and ensuring that the US semiconductor sector remains at the forefront of technological advancements in broadband, 5G, and next-gen RF hardware.”

Why it matters

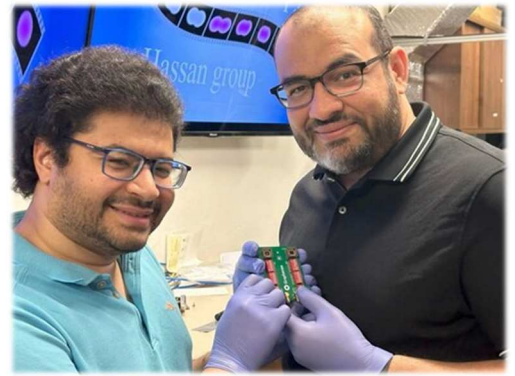
RFICs are critical to everything from communications to radar to next-generation technologies like autonomous vehicles and quantum computing. By lowering the barrier to entry and speeding up the design process, RFICs could become more accessible to researchers and companies that otherwise wouldn’t have the expertise or resources to use them.

“When you can open up a key technology like RFIC to more creative minds, that can only be a good thing,” said Sensen Li, assistant professor in the Chandra Family Department of Electrical and Computer Engineering. “It means it can be used to solve more problems and advance technological innovation that much faster.”

Petahertz-speed phototransistor built for ambient conditions

What if ultra-fast pulses of light could operate computers at speeds a million times faster than today's best processors?

A team of scientists, including researchers from the University of Arizona, are working to make that possible.



Logan Burtch-Buus, University of Arizona Communications

In a ground-breaking international effort, researchers from the Department of Physics in the College of Science and the James C. Wyant College of Optical Sciences have demonstrated a way to manipulate electrons in graphene using pulses of light that last less than a trillionth of a second. By leveraging a quantum effect known as tunnelling, they recorded electrons bypassing a physical barrier almost instantaneously, a feat that redefines the potential limits of computer processing power.

The study, published in *Nature Communications*, highlights how the technique could lead to processing speeds in the petahertz range — over 1000 times faster than modern computer chips.

“Sending data at those speeds could revolutionise computing as we know it,” said Mohammed Hassan, an associate professor of physics and optical sciences. Hassan has long pursued light-based computer technology and previously led efforts to develop the world’s fastest electron microscope.

“We have experienced a huge leap forward in the development of technologies like artificial intelligence software, but the speed of hardware development does not move as quickly,” Hassan said. “But, by leaning on the discovery of quantum computers, we can develop hardware that matches the current revolution in information technology software. Ultrafast computers will greatly assist discoveries in space research, chemistry, health care and more.”

Hassan worked alongside U of A colleagues Nikolay Golubev, an assistant professor of physics; Mohamed Sennary, a graduate student studying optics and physics; Jalil Shah, a postdoctoral scholar of physics; and Mingrui Yuan, an optics graduate student. They were joined by colleagues from the California Institute of Technology’s Jet Propulsion Laboratory and the Ludwig Maximilian University of Munich in Germany.

The team was originally studying the electrical conductivity of modified samples of graphene, a material composed of a single layer of carbon atoms. When a laser shines on graphene, the energy of the laser excites electrons in the material, making them move and form into a current.

Sometimes, those electric currents cancel each other out. Hassan said this happens because the laser’s energy wave moves up and down, generating equal and opposite currents on either side of the graphene. Because of graphene’s symmetrical atomic structure, these currents mirror each other and cancel each other out, leaving no detectable current.

But what if a single electron could slip through the graphene, and its journey could be captured and tracked in real time? That near-instant “tunnelling” was the unexpected result of the team modifying different graphene samples.

“That is what I love most about science: the real discovery comes from the things you don’t expect to happen,” Hassan said. “Going into the lab, you always anticipate what will happen — but the real beauty of science are the little things that happen, which lead you to investigate more. Once we realised that we had achieved this tunnelling effect, we had to find out more.”

Using a commercially available graphene phototransistor that was modified to introduce a special silicon layer, the researchers used a laser that switches off and on at a rate of 638 attoseconds to create what Hassan called “the world’s fastest petahertz quantum transistor”.

A transistor is a device that acts as an electronic switch or amplifier that controls the flow of electricity between two points and is fundamental to the development of modern electronics.

“For reference, a single attosecond is one-quintillionth of a second,” Hassan said. “That means that this achievement represents a big leap forward in the development of ultrafast computer technologies by realising a petahertz-speed transistor.”

While some scientific advancements occur under strict conditions, including temperature and pressure, this new transistor performed in ambient conditions — opening the way to commercialisation and use in everyday electronics.

Hassan is working with Tech Launch Arizona, the office that works with investigators to commercialise inventions stemming from U of A research in order to patent and market innovations. While the original invention used a specialised laser, the researchers are furthering development of a transistor compatible with commercially available equipment.

“I hope we can collaborate with industry partners to realise this petahertz-speed transistor on a microchip,” Hassan said. “The University of Arizona is already known for the world’s fastest electron microscope, and we would like to also be known for the first petahertz-speed transistor.”

SWR - the persistent myth



How many times do you hear of someone trying to get from a 1.5 : 1, down to a 1 : 1 SWR, and in fact will spend days and even weeks trying to get lower than the acceptable 1.5:1 ratio, in the belief that a perfect 1:1 SWR will get them across the globe?

Firstly, one of the biggest myths surrounding SWR (Standing Wave Ratio) and the "1:1" value is that a 1:1 SWR guarantees perfect antenna performance and efficiency.

While a 1:1 SWR indicates a good match between the antenna and the feedline, it doesn't necessarily mean optimal performance or efficiency.

A 1:1 SWR simply means there's no reflected power, not that the antenna is radiating optimally.



- **Perfect Antenna:** A 1:1 SWR is often seen as proof of a perfect antenna system, meaning all transmitted power is radiated and none is reflected.
- **Optimal Performance:** A 1:1 SWR guarantees maximum signal strength and range



- **1:1 SWR is a Match, Not a Performance Guarantee:**

A 1:1 SWR means the antenna is presenting a 50-ohm impedance to the feedline, preventing reflected power. However, it doesn't say anything about how well the antenna radiates or how efficiently it's converting power into radio waves. Dummy loads have a 1:1 SWR!

- **SWR Above 1:1 Doesn't Necessarily Mean Bad Performance:**

SWR values between 1:1 and 1.5:1 are generally considered acceptable, and in practice, it's very unlikely that you will see any noticeable difference in performance compared to the golden perfect 1:1. *In fact this difference is almost immeasurable with standard equipment, yet amateurs will spend hours if not days trying to improve on 1.5 : 1.*

- **Other Factors Impact Performance:**

Factors like antenna height, ground system, and even the environment can affect signal strength and range more than a slightly higher SWR.

- **SWR Changes with Frequency:**

Even a perfectly resonant antenna at a specific frequency will have higher SWR values at the edges of the frequency band.

- **SWR is a Tool, Not a Final Answer:**

SWR measurement is a helpful tool for troubleshooting and tuning antennas, but it's not the sole determinant of antenna performance.

- **Reflected Power is Not Loss Power:**

Reflected power is power that's sent back from the antenna to the transmitter, but it's not necessarily lost. This reflected power can be directed back to the antenna again and eventually radiated

Damage Concerns:

While high SWR (e.g., 4:1 or higher) can damage the transmitter's output stages, the reflected power itself is not the direct cause of damage. The heat buildup due to the transmitter trying to maintain a high output signal against a mismatched load is what can cause damage.



OK, lets get into some more of the technicals 😊

What SWR Actually Measures

SWR is simply a measure of how well the impedance of your antenna system matches the output impedance of your transmitter (typically 50 ohms). A 1:1 SWR means a perfect match. A 2:1 means a mismatch, with some power reflecting back. Important: Reflected power is not lost—it's reflected. Like an echo in a hallway, the energy bounces back and forth until it's either radiated or absorbed.

Where Does the Reflected Power Go?

Here's the part many get wrong:

- Reflected power does *not* get "lost" in the feedline (unless losses are high).
- It does *not* radiate from the braid (unless you have return currents—**another issue altogether**).
- It does *not* evaporate into the ether.

In a typical system without a tuner, some power bounces back from the antenna, reflects off the transmitter output stage, and continues back and forth in the coax. Over time, the power ends up being radiated anyway—unless the feedline is lossy or long. Then yes, some energy is lost as heat due to standing waves. But it's rarely as dramatic as people think.

Visualizing the Power Flow

Imagine a swimming pool with waves bouncing off the edges. That's what's happening inside your coax with a mismatch: forward and reflected waves superimpose, creating standing wave patterns. The energy is still in the system, sloshing around.

Eventually:

- The transmitter re-absorbs part of the wave.
- Part of it gets radiated.
- Some of it is lost as heat in the coax if the cable is long or very lossy.

This means your power isn't just *disappearing*. It's still trying to reach the antenna—just not very cleanly.

The Real Losses: Coax and Tuner So where do we *really* lose power?

- **Coaxial Feedline Losses:**
 - High SWR increases the voltage and current peaks in the coax.
 - This amplifies the coax's internal losses (especially in cheap RG-58 or at high frequencies).
- **Tuner Losses:**
 - Tuners don't eliminate SWR at the antenna—they only hide it from the radio.
 - Matching a high SWR can require extreme inductance/capacitance, resulting in several dB of loss in the tuner.
- Sometimes the tuner **adds more loss than the coax** would've with the mismatch! ??



Practical Example Let's say you have, 10m of RG-213 coax and an 3:1 SWR at the antenna.

- Your tuner brings it down to 1:1 at the shack

Result:

- The coax sees standing waves with moderate loss—maybe 1.5–2 dB
- The tuner may add 1–2 dB more loss
- Net result: 3–4 dB lost

Compare that to a system where you accept the 3:1 mismatch and feed it directly:

- The coax loss may only be 1.5–2 dB total
- You skip the tuner and save its losses

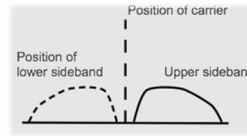
Sometimes the *imperfect* match is the better choice!

Myth: 1:1 SWR Means Efficient Antenna

Nope.

You can have a dummy load with 1:1 SWR—it radiates zero. You can have a very lossy antenna that matches perfectly.

Efficiency is about radiation resistance and losses—not SWR.

[illegible]

Handy On Line Calculators

Send us your favourite handy calculator link so we can post it here!



Ladder line calculator www.smrcc.org.uk/tools/OpenWire.htm

Cavity Filter designer https://www.changpuak.ch/electronics/Coaxial_Tank_VHF_Filter_Designer.php

Cavity resonance calculator https://learnemc.com/ext/calculators/cavity_resonance/index.html

COAX LOSS Calculator <https://kv5r.com/ham-radio/coax-loss-calculator/>

Impedance <https://www.omnicalculator.com/physics/rlc-impedance>

Wavelength <https://www.omnicalculator.com/physics/wavelength>

PI attenuator values <https://www.omnicalculator.com/other/pi-attenuator>

Xc <https://www.omnicalculator.com/physics/capacitive-reactance>

XL <https://www.omnicalculator.com/physics/inductive-reactance>

Cut Off <https://www.omnicalculator.com/physics/cutoff-frequency>

VSWR <https://www.omnicalculator.com/physics/vswr-voltage-standing-wave-ratio>

LM317 Regulator resistor selector <https://www.omnicalculator.com/other/lm317>

Resistor Colour code calculator..... <https://www.digikey.com.au/en/resources/conversion-calculators/conversion-calculator-resistor-color-code>

Resistor Heat rise <https://calculator.academy/resistor-heat-calculator/>

Volt Drop Calculator AC and DC <https://www.rapidtables.com/calc/wire/voltage-drop-calculator.html>

Helix antenna calculator <https://sgcderek.github.io/tools/helix-calc.html>

Parabolic dish calculator <https://www.everythingrf.com/rf-calculators/parabolic-reflector-antenna-gain>

We are looking for more handy on-line calculators, if you have one that isn't listed above, please share with us so that more amateur radio enthusiasts can benefit 😊

OR

If you have any links to handy hints or information please send it to us!



How many of these can you still answer correctly?

1. In typical bipolar transistors, collector leakage current:
 - (a) tends to increase with a rise in temperature
 - (b) tends to decrease with a rise in temperature
 - (c) is independent of temperature fluctuations
 - (d) is non-existent
2. The term 'maximum collector dissipation' of a power transistor refers to the maximum:
 - (a) current it can handle
 - (b) power output it can handle
 - (c) possible safe dissipation at the collector
 - (d) voltage that can be applied to the collector
3. The current flowing in the forward-biased base-emitter junction in a transistor is:
 - (a) equal to zero
 - (b) smaller than the collector emitter current
 - (c) equal to the collector emitter current
 - (d) greater than the collector emitter current
4. Semiconductor material has:
 - (a) low resistance
 - (b) high conductivity
 - (c) less conductivity than an insulator
 - (d) greater conductivity than an insulator
5. Heat sinks are often used with transistors and semiconductor diodes to:
 - (a) increase the forward current
 - (b) increase the reverse current
 - (c) isolate the transistor from earth loops on the chassis
 - (d) prevent excessive temperature rise of the diode junction
6. The level of gate bias needed on a FET to reduce the drain current to zero, is known as:
 - (a) cutoff voltage
 - (b) channel voltage
 - (c) pinch-off voltage
 - (d) source voltage

Answers next propagator ☺

Answers to the last propagator questions ... Q1 = B ; Q2 = C ; Q3 = D ; Q4 = C; Q5 = A ; Q6 = A

How well did you do, will you still pass the Amateur Radio test?



THE PROPAGATOR



ILLAWARRA AMATEUR RADIO SOCIETY

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY.
VOLUME - 87, NUMBER : 6 JULY, 1987
REGISTERED BY AUSTRALIA POST PUBLICATION NUMBER : NBH - 1491.

MEETINGS ARE HELD ON THE SECOND TUESDAY OF EACH MONTH,
(EXCEPT JANUARY) AT 7.30.PM. AT THE STATE EMERGENCY SERVICES,
BUILDING, IN MONTAGUE STREET, NORTH WOLLONGONG.
VISITORS ARE MOST WELCOME TO ATTEND THE MEETING'S.

F.R.L. 3. BE IN IT.

NEXT LOTTO

-----*****-----
The next lotto (fund raising list No 3) will start with the first lotto draw in July (Monday 6th July). Come along to the July meeting and hand over \$25 (or part thereof). This next scheme will run for twenty-five weeks (not twenty-six as before).

Members who were fully paid up on the last lotto scheme will be given preference for the same number they had in the last scheme, but it's strictly first-come first-served, so get in early.

These lotto schemes are our only means of fund raising - if you do not patronise them, then you cannot expect the club to provide YOU with the services you want (Repeaters, Propagator posted before the meetings, etc.)

BE IN IT TO WIN. F.R.L. 3.

Some members have not paid their LOTTO FUND RAISING fees and this makes problems with allotting numbers and prizes so please get your money in to Dave VK2VAV. The first draw in the F.R.L. 3. is the first Monday in June 1987.

-----*****-----
ANNUAL GENERAL MEETING
The annual general meeting is the next Monthly meeting on 14th July 1987. Try to be there and help in keeping the Club active and well run.

NEW CLUB APPLICATIONS

Those members who have not filled in forms to join the reformed Club should have received forms with their Propagator. Anyone who hasn't a form can get one from Dave and fill it in before the July meeting.

NO XMAS FOR NOVICES:

In June Propagator we reprinted an item from Westlakes A.R. Club magazine stating that Novices could obtain other band privileges by applying to DOC.

This information was in error and the editors would like to apologise to any members or readers who were misled. In future all such items will be referred to DOC for confirmation.



EARLY START FOR COMMITTEE

-----*****-----
Committee members should try to be half an hour early at the JULY meeting as it will be necessary to hold a committee meeting before the annual general meeting to tidy up nomination of members to the new club IARS INC.

REPEATER REPORT GRAEME VK2CAG

I.A.R.S. Repeater report for July 1987.

Last month's repeater report.

The repeater report in the June issue of the Propagator created considerable controversy one way or another. Quite a lot of the information contained in the report relating to pager interference became irrelevant by the time the Propagator reached the members, because action had been taken by DOC in the two week period from when it was written to the time when it arrived in members mail-boxes.

I am happy to say that the pager interference to channel 6850 has been eliminated, and in the case of 7275 it has been reduced greatly. All this is a result of the work carried out by our local office of the DOC. The interference remaining on 7275 shows up only as occasional triggering of the repeater on the tail end of a pager transmission, causing the repeater to occasionally ident. A bandpass cavity filter has been fitted to the receiver of the repeater but no improvement noticed.

A new pager transmitter has recently been installed at Sublime Point adjacent to 7275. Severe de-sensing of 7275 repeater occurs when the pager keys up. Weak signals into 7275 will disappear for the duration of the pager transmission, and very strong signals will become noisy. This problem has occurred in the last month since the last repeater report was written, and has not been mentioned before in the Propagator. The operators of this new pager are being very co-operative with the repeater committee in attempting to eliminate the problem. At this time of writing, they have installed a notch filter on the pager, and we have installed one on our repeater, but the de-sense has been reduced from 30db to 20db; still far from satisfactory. We are still working with the pager company towards a solution, so in the meantime its best to avoid using 7275 in business hours when pager activity is highest, to avoid being cut off in the middle of a QSO.

Mt. Murray.

on 22/6/87 during high winds, the top Western guy wire snapped causing weak and varying signals from 6850 repeater while the aerial was waving about in the wind. Temporary repairs were done quickly by Fred VK2FCP until a working party could be organised to do a permanent job. On Saturday 27th a working bee was held at Mt. Murray, and the following work was carried out:

- The main mast was lowered and a new and better type of insulated guy ring was fitted, using proper nylon thimbles to terminate the Debeglass guys.
- The aerial on the packet digipeater was replaced with an extended Ringo, and the entire co-ax cable run replaced. The original cable was part of the old split-site repeater of some 10 years ago.
- Two cavity notch filters were installed in the digipeater feedline and tuned up to give better isolation between the two repeaters. The result was zero de-sense to 6850 from the digi, and a reduction from 10db to 2db desense to the digi from 6850 transmitter. This level of isolation is very satisfactory and users of each repeater will not be aware of any interference between the two.
- The cubicle was measured up to enable work to commence on the cabinet and equipment rack for the new 6850 repeater.

It was a great turn-out for such a freezing cold windy day. Thanks to VK2EXN, VK2BIT, VK2FCP, VK2TPH, VK2XGJ & VK2KHE for a great effort.

Will share more oldies next month.

To read more information about this old propagator and others, use the link below

<https://www.iars.org.au/wp-content/uploads/2020/09/1987-07-July.pdf>



[Become a WIA member](#) and support Amateur Radio

www.wia.org.au



Advocacy Education
Support

maker ▲ electronics ▲ wireless ▲ projects ▲ on-air ▲ news

AMATEUR

Radio

Auroras!

A TYRO'S TOUR



Guides go global on the air

Simple shortwave receiver project

Do digital modes empower more ops?

ISSN 0002-6859



9 770002 685059

03

Volume 93 ◀ Number 3 ▶ 2025 Price: \$14.50 incl GST

What's in the latest edition of AR magazine?



Advocacy Education
Support

SINCE 1910

Editorial

Editor in Chief

Roger Harrison VK2ZRH
editor@wia.org.au

PUBLICATIONS COMMITTEE

Phil Fitzherbert VK3FF, *Tech. Editor*
Tom George VK3DMK, *Tech. Editor*
Bruce Kendall VK3WL, *Tech. Editor*
Jules Perrin VK3JFP, *Tech. Editor*
Ewen Templeton VK3OW
Eric Van De Weyer VK2VE

PubComm Manager

Bruce Kendall VK3WL
vk3wl@wia.org.au

PubComm Secretary

Jules Perrin VK3JFP
vk3jfp@wia.org.au

Pre-press image processing

Phil White VK3MB

HOW TO SUBMIT MATERIAL

Phil Fitzherbert VK3FF
pjfitzherbert@yahoo.com.au

HAMADS

editor@wia.org.au
www.hamads.com.au

LETTERS TO THE EDITOR

editor@wia.org.au

ADVERTISING

nationaloffice@wia.org.au

Registered office

Unit 20 11-13 Havelock Road
BAYSWATER VIC 3153 Australia
Phone: 03 9729 0400 Fax: 03 9729 7325

Production deadlines

All articles, columns, Hamads, and
advertising bookings for Volume 93,
No. 4 – 27 June 2025.

The contents of *Amateur Radio* are Copyright
Wireless Institute of Australia © 2025
All Rights Reserved.

AMATEUR Radio

maker ▲ electronics ▲ wireless ▲ projects ▲ on-air ▲ news

Serving
Australian
radio amateurs
since 1933

Volume 93
Number 3
2025
ISSN 0002-6859
Proud to
be produced
and printed in
Australia

The Journal of the Wireless Institute of Australia

THEME THIS ISSUE Simplicities & Complexities

Columns

ALARA	55
Below 25	53
Contesting	49, 54
Editorial	4
Newcomers' Notebook	50
Silent Key	8
Spectrum Horizons	58
Over to you	64, 65, 66
WestNews	60
WIA DX Awards	62
WIA News	44
Your WIA working for you	6, 8, 9



Technical

Shortwave receiver project reveals innovation and . . nostalgia Dale Hughes VK1DSH	27
What happens when you hit push-to-talk Dr George Galanis VK3EIP	32
Amateur Deep Space stellite reception Trevor Benton VK4AFL	41
A simple 2-band antenna for 10 & 12 metres Chris Flak VK5CF	47

General

Auroras – a tour for tyros Brett Carter and Elizabeth A. Macdonald	10
WSJT and democratisation of the airwaves in amateur radio Justin Giles-Clark VK7TW	16
Book Review - War Diaries: Stalemate Richard Murnane VK2SKY	21
Annual Awards: 2024 authors awards Roger Harrison VK2ZRH and the Publications Committee	22
Historic QSL Bureau Fred Swainston VK3DAC, VK4FE	24

Our cover: Aurora Australis photo from amateur photographer Rob Lord. Taken 1 May 2025 at 2115LT from Cradle Mountain, Tasmania. Inset: Winston Hills Girl Guides with Norma VK2YL, February; see ALARA column. Design, Sergio Fontana VK3SO.

NEXT ISSUE: Antennas and Earths

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.

Missing out ? <https://www.wia.org.au>



Your **WIA** working for you

Spectrum Strategy Committee responds to latest ACMA FYSO consultation **WIA renews call for 5 MHz allocation, plus preserving 51-52 MHz and 2300-2302 MHz**

Roger Harrison VK2ZRH

Taking a firmly positive approach, "Strengthening the Future of Amateur Radio in Australia" is the title of the Institute's formal response to the ACMA's latest stakeholder consultation.

Developed by the Spectrum Strategy Committee and lodged on 20 April, the submission sets out six key areas that the WIA asks the ACMA to focus on over the coming year.

- Clarifying Operator Rights Under the Class Licence
- Fixing Callsign Administration in External Territories
- Planning for Higher Power Access
- Enhancing Exam Administration
- Streamlining Repeater and Beacon Call Sign Allocations
- Expanding and Preserving Critical Spectrum

The submission's introduction sets out strong supporting reasoning, as follows:

"The WIA recognises the critical role that the Amateur Service plays in fostering innovation, education, and skills development across Australia. The continued development of a vibrant and relevant Amateur Service is directly aligned with the objectives of the national Science, Technology, Engineering, and Mathematics (STEM) agenda 1.2.

"By providing a platform for practical experimentation, hands-on learning, and community engagement, amateur radio contributes meaningfully to building Australia's sovereign capabilities in

**acma**

**Australian
Communications
and Media Authority**

Five-year spectrum outlook and 2025–26 work program

Issued in March and known as the "FYSO," the authority's detailed consultation document covered its forecast of issues arising up to 2030, and set out its work plan for the next year. These consultations are a regular event to which the WIA always develops and submits a response.

telecommunications, electronics, and emergency communications preparedness.

"The Amateur Service is unique in its ability to attract individuals of all ages—from school students to retired professionals—who seek to explore, understand, and contribute to advances in radiofrequency technologies. These contributions often translate into broader societal benefits, including enhanced technical literacy, innovation in wireless technologies, and improved resilience in times of natural disaster or communication system failure.

"Given these benefits, we are keen to see the ACMA maintain a dedicated and active work program that continues to support the Amateur Service.

"This includes ensuring ongoing access to relevant spectrum, enabling flexible licensing and regulatory frameworks that encourage participation, and recognising

the public value derived from the service.

"These actions are essential to ensuring that the Amateur Service can continue to deliver outcomes in the national interest."

Class licence issues

Despite being aware of widespread opposition and concern across the Australian radio amateur community, the ACMA went ahead with its Class licence proposal (formally the Radiocommunications [Amateur Stations] Class Licence 2023), launching it on 19 February 2024.

While the WIA voiced objections during the authority's consultations, making a number of submissions, as the ACMA was determined to proceed the Institute marshalled considerable effort, consulting with amateurs and the ACMA to ensure the least adverse impact to "amateur radio as we know it."

Upcoming Contests

Trans-Tasman Low-Band Contest

Trans Tasman Low Band Contest

Contest Manager

Alan Shannon VK4SN



Contest Introduction

Next contest - 19 JUL 2025

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.

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

Remembrance Day Contest

Next contest 16th & 17th August 2025

Contest Manager

Alan Shannon VK4SN
vk4sn@wia.org.au

Rule changes in 2021:

1. Foundation Licence sections discontinued
2. Remote station operation is allowed.

Contest Introduction

This contest commemorates the Amateurs who died during World War II and is designed to encourage friendly participation and help improve the operating skills of participants. It is held on the weekend closest to the 15th August, the date on which hostilities ceased in the southwest Pacific area.



For more information use this link <https://www.wia.org.au/members/contests/rdcontest/>



23cm Fun day on the 23rd of EVERY MONTH !!



If you are interested in 23cm or higher communications, the local IARS members are getting together with the MSCARC members on the 23rd of every month to have a fun day around the Illawarra area.

The SHF team are even looking at 13cm fun day on the 13th of every month, for more information please contact the SHF organiser Rob Heyer VK2XIC at vk2xic@gmail.com

The VK2AMW Illawarra team that operated from Penrose came in at third place, better luck next time! 🙏

24 Hour Portable Operation – Multiple Operator

Call Sign	Operator s	Mode	Band	Contacts	Score	Locator	Place /Award
VK3ER	Multi	All	All	450	3,937	QF22DM	1
VK4IZ	Multi	All	HF	473	1,004	QG62NS	1
VK4WID	Multi	All	HF	106	226	QG52XN	2
VK2SRC	Multi	Phone	VHF	211	4,377	QF69FU	1 / 1st
VK2RT	Multi	Phone	HF	439	878	QF44WO	1
VK1JP	Multi	Phone	HF	343	686	QF45RM	2
VK2AMW	Multi	Phone	HF	332	662	QF56CH	3
VK2WG	Multi	Phone	HF	228	456	QF34RR	4
VK4WIT	Multi	Phone	HF	202	404	QH21VE	5
VK4GLA	Multi	Phone	HF	167	334	QG56PC	6
VK2MB	Multi	Phone	HF	151	302	QF56OX	7
VK2FRE	Multi	Phone	HF	136	272	QF68GB	7
VK4DTS	Single	Phone	All	185	404	QG62BS	1
VK4KR	Single	Phone	All	110	210	QE36KQ	2
VK7C	Single	Phone	HF	400	800	QF39NA	1
VK3KK	Single	Phone	HF	333	666	QF12UN	2
VK2SW	Single	Phone	HF	138	276	QF34QV	3
VK4NUT	Single	Phone	HF	15	30	QG62MT	4



FIRST PLACE HARRY ANGEL SPRINT



***Congratulations to IARS Vice President Rob VK2MT,
FIRST place winner of the Harry Angel Sprint Contest***

Interesting note !

Out of the approximate 55 participants during the NATIONAL Harry Angel sprint contest, almost 10% were Illawarra Amateur Radio Society members, how good is that 🤔

<https://www.wia.org.au/newsevents/events/>



More information to follow on the club website, Facebook and email updates.

Radio Society of Great Britain <https://rsgb.org/main>

Amateur Radio Germany <https://www.darc.de/der-club/referate/ausland/english-version/>

Italian Amateur Radio <https://www.ari.it>

Amateur radio France <https://www.radioamateurs-france.fr>

Amateur radio Russia <https://srr.ru/sbory24> 6/

Amateur Radio Japan <https://www.jarl.org/English/>

DX ATLAS DOWNLOAD <https://dxatlas.com/Download.asp>



Status information and latest updates >>> <https://www.amsat.org/two-way-satellites/>

<https://amsat-uk.org/satellites/frequencies-of-active-satellites/>

<https://ararm.org/status.html>



Ham Radio Deluxe Software® Makes Satellite Communications Easy

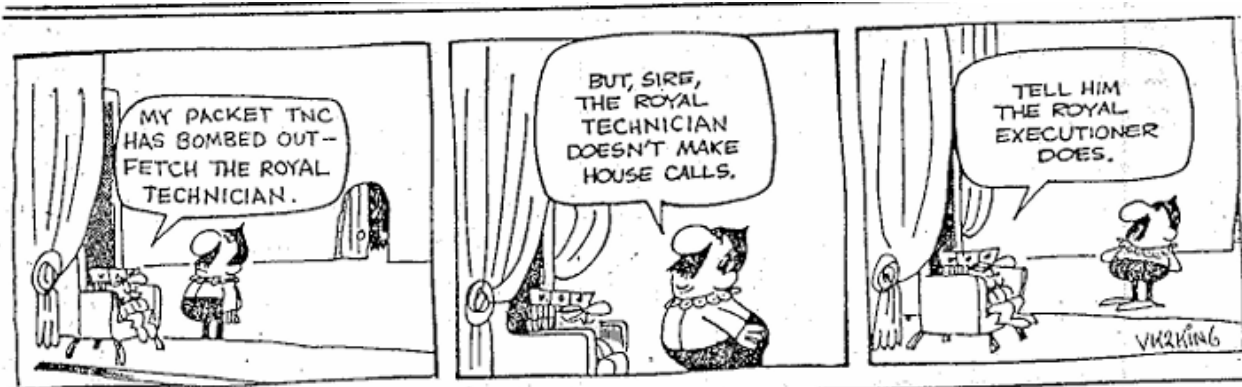
<https://www.hamradiodeluxe.com/features/sattrack/>

[illegible]

- **July 2025** : Project mania , Simon VK2KU unleashes the next awesome IARS project
- **August 2025** : IARS AGM
- **September 2025** : **SHOW and TELL**, bring along that latest project ot share with us.
- **October 2025** : Surface mount soldering and reworking “HANDS ON” workshop. Let’s do it!
- **November 2025** : Famous IARS Auction with Simon VK2XQX
- **December 2025** : Christmas dinner party (surprise 😊) with Home Brew Contest awards

Fun Corner

Please send in your funnies to iars.keithb@gmail.com
Thanks to all that sent in funnies.



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 are 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 iars.keithb@gmail.com

That's all for now, hopefully catch you all at the
Blue Scope visitors centre on the 8th July 7.30pm,

73

Keith VK2KQB
IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948