Illawarra Amateur Radio Society

Propagator December 2024

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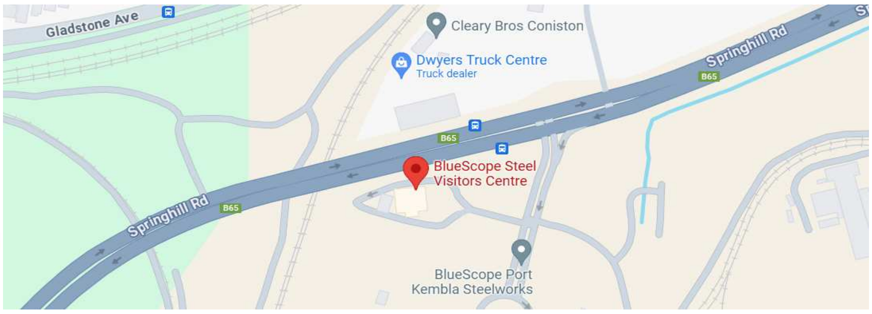
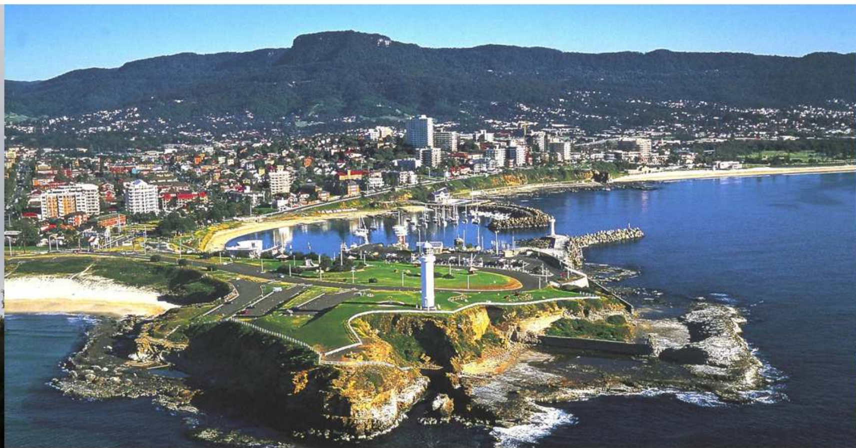
Upcoming Meeting on the 10th December 2024

A Merry Christmas To All

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)





AMATEUR RADIO IN THE ILLAWARRA SINCE 1948

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

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

VK2AMW

Our last meeting 12th November 2024

A great evening of entertainment was had by all who attended the last IARS meeting.
Auction night 😊 , if it wasn't for the hard work involved, we would have it every second meeting.
There was not much leftovers after the auction with only a couple of the bigger ticket items not reaching the reserve, everything else was SOLD!

You name it, we had it !

Coax, TNC's, Transceivers, world clocks, power supplies, speakers, antennas and yes, even solar panels for portable QSO's

Log Periodic anyone?

Vin VK2VIN thinking about choices, which one, sooo many?

From Test Equipment right through to coax cable, there were bargains everywhere

Simon and Rob working up a sweat? ….not, easy job 😊

Appreciation to the auction team especially Simon VK2XQX.

The Auction finished off with some blueberry muffins, choc chip muffins and biscuits with the favourite cuppa.

If you missed out this year, no worries there is always next year November 😊

NEXT MEETING

IARS Christmas End Of year Meeting

Next Meeting will be our end of year dinner with Pizza to go around. Also to keep it technical 😊 , we will be doing a NOISE check on handhelds. Yes , uncovering the noise generators of the world.

If you have a handheld and want to make sure you are NOT transmitting into the neighbours PA system, then bring it along, we will have a couple of spectrum analysers to play with.

There will be a prize and certificate for the cleanest handheld, we may need to drill right to the last dBm to make sure we don't have everyone winning. Of course, there will also be a certificate for the dirtiest handheld of the evening. (May not want to hang that one anywhere 😊) We will be using attenuators and dummy loads, so we won't be crashing the local PA system LOL.

And during that time we will be enjoying our well-deserved pizza party!

Please note that **RSVP** is essential else **"no pizza for you"** unfortunately these have to be ordered before the time and if we don't get enough pizza, then someone will go without.

Pizza is free for IARS financial members, non-financial members a $5 donation.

BE THERE OR BE SQUARE! RSVP By 6th December

Disposables Table

__Will be back at the next meeting__, please bring along the stuff you forgot to take to the auction, someone will give it a new home 😊

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 drawn was __TAD VK2LNX__ who was unfortunately not present, and the snowball has snowballed, who knows? It could be an early Christmas present for __**you**__ at the next meeting. $5 could = > $100, only catch, you have to be there, and in it to win it.*

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** accessors__ 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 assisted 4 members in getting *on air*, so why wait?

TUNE IN to the IARS NETS

Echo-link

1. Our main net on 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, who is always willing to assist whilst Steve is away.
(Also, a special thank you to Angelo, VK2NWT who assists when either Steve or Doug is unavailable)
Lots of backup here 😊

2. **IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM using VK2AMW.**
   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. Normally runs for around 60minutes.

3. **IARS Wednesday evening weekly 6m NET *** new time is at 8PM on 53.650Mhz with a – 1Mhz offset Hosted by Geri VK2UTE or Simon VK2XQX, (123Hz CTCS 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 *** new time is at 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.

IARS REPEATERS

VK2RUW (Knights Hill) **VK2RMP (Maddens Plains)**

146.675 MHZ >>>>> *linked* <<<<< 146.850 MHZ

Current Repeater STATUS

- **438.225 with a - 5MHz offset. OK**
- **146.975 with a -600kHz offset NO CTCSS, C4FM enabled OFF AIR ****
- **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 enabled due to interference) -OK**
- **438.725Mhz with a -5mHZ offset DMR only, OK**
- **1296.850Mhz Experimental Beacon with simplex repeater function, located Maddens Plains – OK**
- **Echo-link VK2MT-R via 146.850MHz also linked to 146.675MHz and VK2BGL-L – OK**
- **APRS DIGI-PEATER on 145.175MHz - OK**
- **PACKET 2M on 147.575Mhz - OK**

Repeater Report November 2024:

We have received our shiny new Tri-Banders and will be replacing these over the next few weeks.

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.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

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 Transreceiver Radio Supplies

https://amateurradiosupplies.com.au

https://www.elitecommunications.com.au/mobile-communications-category/communication-equipment/amateur-radio/amateur-radio-accessories/

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.*

Light waves instead of radio waves?

Faster space communication with record-sensitive receiver

Lovisa Håkansson, Chalmers University of Technology

IARS members experimented with light communication a few years ago

In space exploration, long-distance optical links can now be used to transmit images, films and data from space probes to Earth using light. But in order for the signals to reach all the way and not be disturbed along the way, hypersensitive receivers and noise-free amplifiers are required.

Now, researchers at Chalmers University of Technology, in Sweden, have created a system that, with a silent amplifier and record-sensitive receiver, paves the way for faster and improved space communication.

Space communication systems are increasingly based on **optical laser beams rather than radio waves**, as the signal loss has been shown to be less when light is used to carry information over very long distances. But even information carried by light loses its power during the journey, and optical systems for space communication therefore require extremely sensitive receivers capable of sensing signals that have been greatly weakened before they finally reach Earth. The Chalmers researchers' concept for optical space communication opens up new communication opportunities — and discoveries — in space.

"We can demonstrate a new system for optical communication with a receiver that is more sensitive than has been demonstrated previously at high data rates. This means that you can get a faster and more error-free transfer of information over very long distances, for example when you want to send high-resolution images or videos from the Moon or Mars to Earth," says Peter Andrekson, Professor of Photonics at Chalmers and one of the lead authors of the study, which was recently published in the scientific journal *Optica*.

Silent amplifier with simplified transmitter improves communication

The researchers' communication system uses an optical amplifier in the receiver that amplifies the signal with the least possible noise so that its information can be recycled. Just like the glow of a flashlight, the light from the transmitter widens and weakens with distance. Without amplification, the signal is so weak after the space flight that it is drowned out by the electronic noise of the receiver. After 20 years of struggling with disturbing noise that impaired the signals, the research team at Chalmers was able to demonstrate a noise-free optical amplifier a few years ago. But until now, the silent amplifier has not been able to be used practically in optical communication links, as it has placed completely new, significantly more complex, demands on both transmitter and receiver.

Due to the limited resources and minimal space on board a space probe, it is important that the transmitter is as simple as possible. By allowing the receiver on Earth to generate two of the three light frequencies needed for noise-free amplification, and at the same time allowing the transmitter to generate only one frequency, the Chalmers researchers were able to implement the noise-free amplifier in an optical communication system for the first time. The results show an outstanding sensitivity, while complexity at the transmitter is modest.

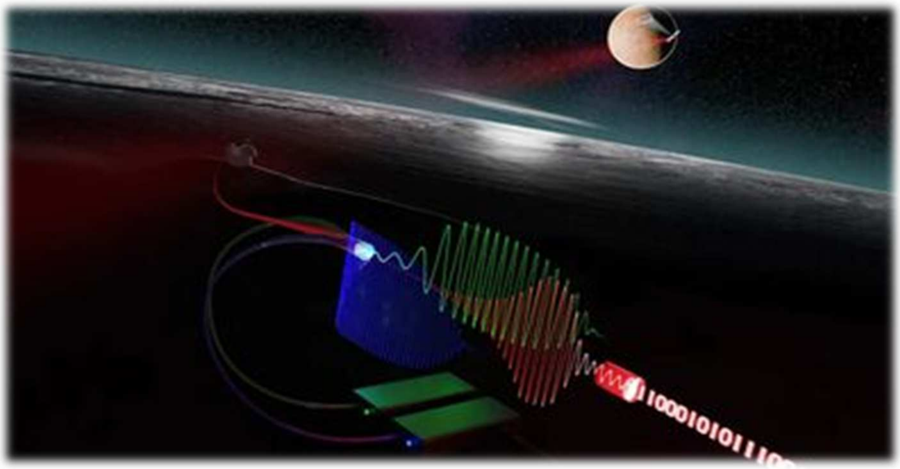
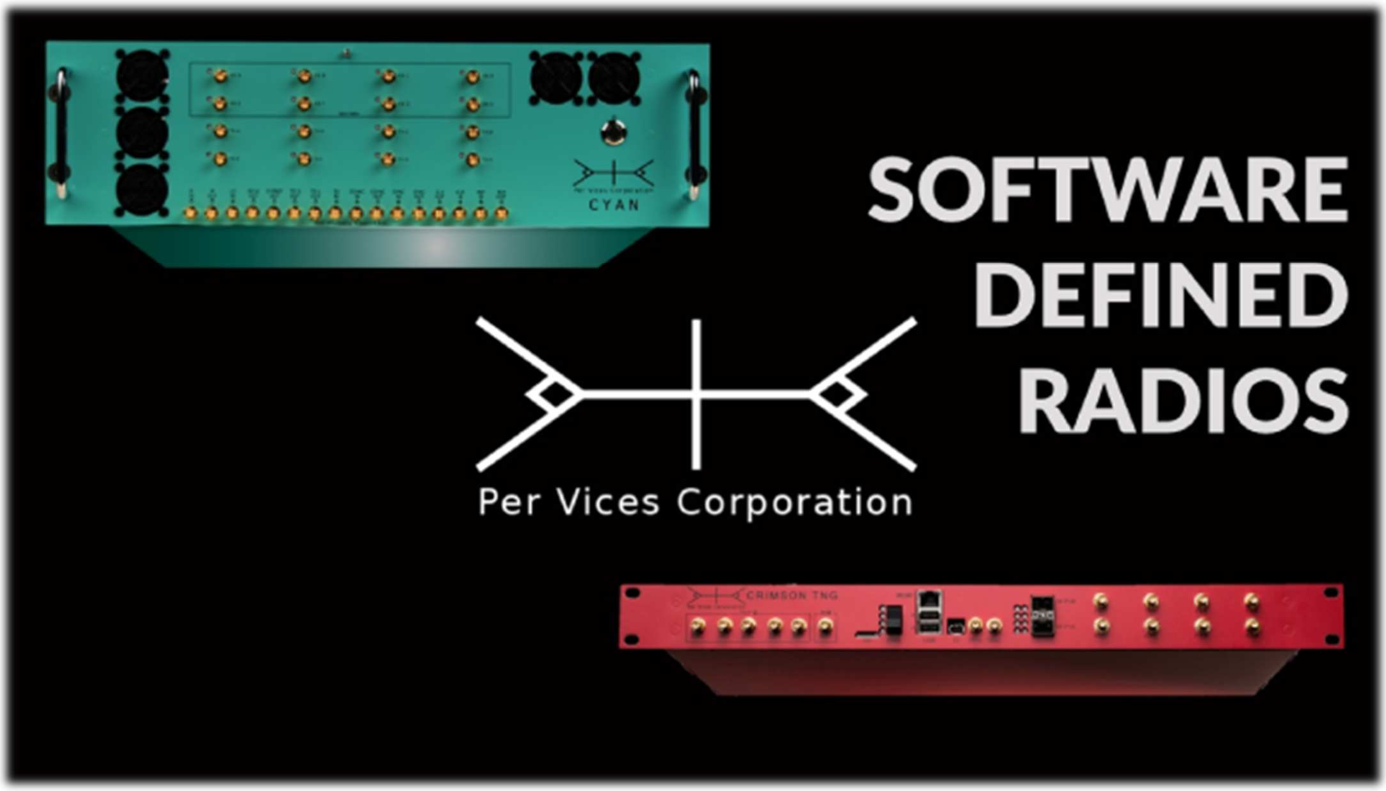


Image caption: In the new communication system from researchers at Chalmers University of Technology, in Sweden, a weak optical signal (red) from the spacecraft's transmitter can be amplified noise-free when it encounters two so-called pump waves (blue and green) of different frequencies in a receiver on Earth. Thanks to the researchers' noise-free amplifiers in the receiver, the signal is kept undisturbed and the reception on Earth becomes record-sensitive, which in turn paves the way for a more error-free and faster data transmission in space in the future. Image credit: Chalmers University of Technology, Rasmus Larsson.

"This phase-sensitive optical amplifier does not, in principle, generate any extra noise, which contributes to a more sensitive receiver and that error-free data transmission is achieved even when the power of the signal is lower. By generating two extra waves of different frequencies in the receiver, rather than as previously done in the transmitter, a conventional laser transmitter with one wave can now be used to implement the amplifier. Our simplification of the transmitter means that already existing optical transmitters on board satellites and probes could be used together with the noise-free amplifier in a receiver on Earth," says Rasmus Larsson, Postdoctoral Researcher in Photonics at Chalmers and one of the lead authors of the study.

The use of two radio signals for weak signal in noise detection was presented by IARS member Ciaran VK2ETC a few months ago, see previous propagator October 2024 *"Detecting Signals in Noise"*

For more information regarding the **IARS light communication experiments** please send an email to iars.keithb@gmail.com



Brandon Malatest

Pioneering the Wireless Frontier: The Evolution and Future Horizons of Software Defined Radios

In the expansive realm of modern communication, Software Defined Radios (SDRs) represent a revolutionary leap forward. Unlike traditional radios reliant on fixed hardware components, SDRs offer unparalleled flexibility and adaptability through programmable software-defined capabilities. Beyond mere communication systems, SDRs have found indispensable roles in radar, spectrum monitoring, signals intelligence, test and measurement, GPS/GNSS, and beyond. This article embarks on a comprehensive journey to unveil the historical origins, evolutionary trajectory, and future prospects of SDR technology, underscoring its transformative impact on the landscape of radio communication.

Brief Overview of Software-Defined Radios

At the heart of SDRs lies a fundamental shift in the way we conceive and implement radio systems. Unlike their traditional counterparts, SDRs leverage software-defined capabilities to perform a myriad of functions, including modulation, demodulation, filtering, and signal processing. This inherent flexibility not only streamlines development and deployment processes but also facilitates seamless upgrades and modifications through software changes alone. Consequently, SDRs have become indispensable tools across a spectrum of applications, transcending the confines of conventional communication systems.

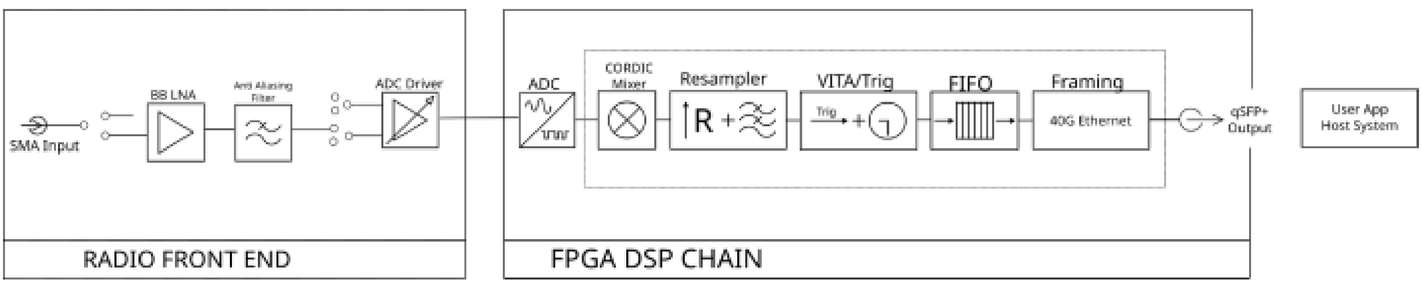


Figure 1: Overview of Software Defined Radio (Receive Only)

Importance of SDRs

The significance of SDRs extends far beyond the realm of communication systems. By enabling RF to digital and digital to RF systems, SDRs have catalysed innovation and advancement across a diverse array of domains. From radar systems guiding aircraft through the skies to spectrum monitoring ensuring the integrity of wireless networks, SDRs serve as the cornerstone of modern technological infrastructure. Moreover, their pivotal role in signal intelligence, test and measurement, and GPS/GNSS underscores their indispensability in shaping our digital landscape. Thus, the importance of SDRs lies not only in their versatility but also in their transformative potential across multifaceted applications.

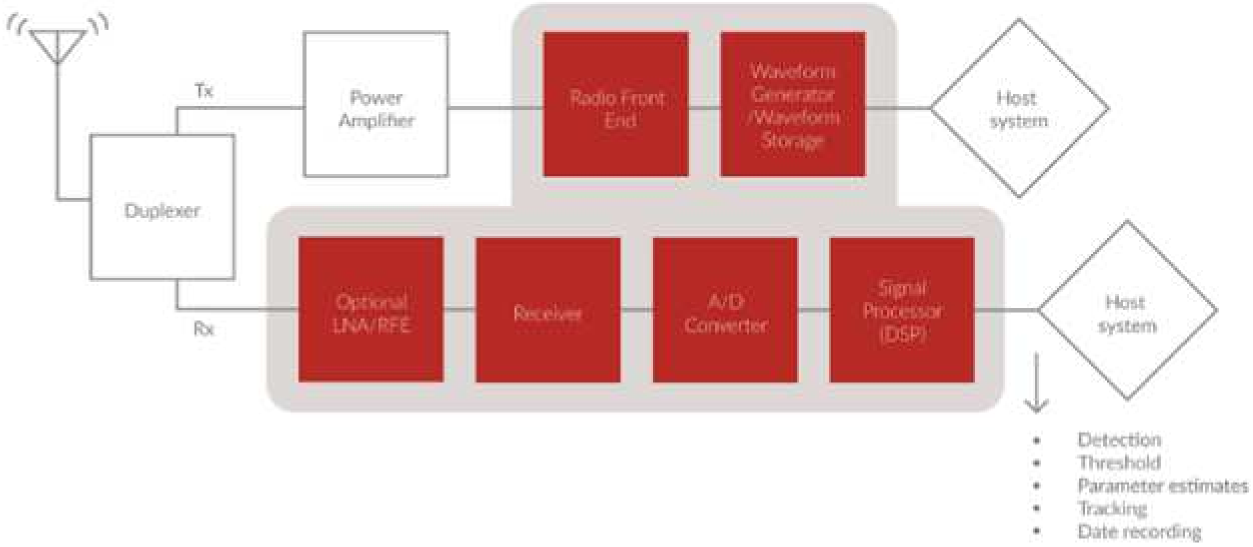


Figure 2: Example of SDR in Radar System

Historical Background

The roots of SDR technology can be traced back to the early developments in radio communication. In its early stages, each application approached its needs differently, relying on bespoke components tailored for specific tasks. However, this fragmented approach hindered adaptability and scalability, limiting the potential for innovation. The emergence of the SDR concept heralded a paradigm shift, aiming to decouple hardware from functionality and embrace reconfigurability through software control.

Initial applications of SDR technology were met with a mix of excitement and scepticism. While early adopters recognized the potential benefits of SDRs, including increased flexibility and efficiency, others were wary of perceived limitations. Nevertheless, pioneering efforts laid the groundwork for subsequent advancements, propelling the evolution of SDR technology and broadening its applicability across diverse domains.

Evolution of SDR Technology

The evolution of SDR technology has been marked by a series of transformative advancements, each pushing the boundaries of performance and capability.

First-generation SDRs represented the start of this groundbreaking technology. Though revolutionary in their approach, these early systems were constrained by limitations in bandwidth, processing power, and hardware resources associated with the silicon available at the time. Nonetheless, they laid the foundation for subsequent innovations, setting the stage for the development of more sophisticated SDR architectures.

Advancements in bandwidth capabilities have been a driving force in the evolution of SDR technology. Early systems were confined to narrow bandwidths, limiting their utility in high-data-rate applications. However, breakthroughs in digital signal processing and hardware design have led to the development of wideband SDRs capable of supporting broader frequency ranges and higher data rates primarily driven by advancements in integrated circuit technologies. The latest SDRs are able to support multiple radio chains operating at 1 GSPS and 3 GSPS sampling rates with dedicated radio front ends.

Increasing channel count has been another notable trend in SDR development. Early systems were typically single-channel architectures, limiting their ability to handle multiple signals simultaneously. However, advancements in hardware design, including the integration of Field-Programmable Gate Arrays (FPGAs) with multiple high-speed interfaces, have enabled the development of multi-channel SDRs capable of processing multiple signals in parallel. This advancement has allowed for SDRs to support very high bandwidths with up to 16 independent radio chains in a single enclosure.

The role of FPGAs in SDR development cannot be overstated. These programmable logic devices provide the flexibility and scalability needed to implement complex signal-processing algorithms and protocols in hardware. By leveraging FPGAs, SDR developers can achieve high-performance signal processing with low latency and power consumption, making them ideal for real-time applications.

Integration of digital signal processing techniques has further propelled the evolution of SDR technology. Early systems relied primarily on analogue signal processing techniques, which were limited in terms of flexibility and scalability. However, the advent of digital signal processing has revolutionized the way signals are processed and manipulated in SDR systems. By digitizing signals early in the processing chain, SDRs can leverage the power of digital signal processing algorithms to perform a wide range of functions, including modulation, demodulation, filtering, and error correction.

The impact of Moore's Law on SDR evolution has also been profound. Moore's Law, which estimates that the number of transistors on a microchip doubles approximately every two years, has driven exponential growth in processing power and hardware capabilities. As a result, SDR developers have been able to pack more functionality into smaller, more power-efficient devices (integrated circuits), enabling the development of high-performance SDR solutions that are capable of more than ever before.

Figure 3: High-Performance SDR

Technical Advancements

In addition to the evolutionary trajectory of SDR technology, there have been significant advancements in its technical capabilities.

Improvements in tuning range have expanded the operational envelope of SDRs, enabling them to operate across a broader range of frequencies. Early systems were limited to narrow tuning ranges, constraining their utility in applications that require operation over multiple frequency bands. However, advancements in RF front-end design and signal processing techniques have broadened the tuning range of SDRs, allowing them to cover a wide spectrum of frequencies from DC to microwave frequencies.

Frequency agility and adaptability have been key areas of advancement in SDR technology. Early systems were typically designed to operate at relatively fixed frequencies, limiting their ability to adapt to changing operating conditions. However, modern SDRs are equipped with agile frequency synthesizers and digital tuning algorithms that allow them to rapidly tune to different frequencies on the fly. This frequency agility enables SDRs to adapt to dynamic RF environments and changing operating conditions, making them ideal for applications that require flexibility and versatility.

Enhanced signal-processing capabilities have empowered SDRs to perform a wide range of signal-processing tasks with unparalleled efficiency and accuracy. Early systems were limited in terms of processing power and computational resources, restricting their ability to perform complex signal-processing tasks in real-time. However, advancements in digital signal processing techniques and hardware design have enabled modern SDRs to achieve high-performance signal processing with remarkable precision and speed. These advancements have enabled SDRs to handle complex modulation schemes, advanced waveform generation, and adaptive signal processing tasks with ease, making them suitable for a wide range of applications, from wireless communication to radar and remote sensing.

Software advancements have played a pivotal role in driving the evolution of SDR technology. The development of user-friendly interfaces and open-source software has democratized access to SDR technology, making it more accessible to researchers, hobbyists, and industry professionals alike. Open-source SDR software packages, such as GNU Radio, have become popular tools for prototyping, experimentation, and development of SDR-based applications. These software packages provide a rich set of tools and libraries for implementing signal processing algorithms, protocol stacks, and applications, enabling users to explore the full potential of SDR technology. Moreover, the availability of open-source software fosters collaboration and knowledge sharing within the SDR community, driving innovation and advancement in the field.

Extended channel counts and sampling bandwidths per radio chain, coupled with increased digital throughput, have further enhanced the capabilities of SDRs. These advancements enable SDRs to support high data rates and process multiple channels simultaneously, making them ideal for applications that require real-time processing of large volumes of data. By leveraging these technical advancements, SDR developers can design systems with unprecedented levels of performance, flexibility, and efficiency, unlocking new possibilities in a wide range of domains.

Applications of SDRs

The versatility and adaptability of SDR technology have led to its widespread adoption across various industries and applications.

In military and defence applications, SDRs offer distinctive flexibility and interoperability, enabling rapid reconfiguration and adaptation to changing mission requirements. SDRs are used in a wide range of military systems, including tactical radios, electronic warfare platforms, and satellite communication terminals, providing soldiers and commanders with reliable and secure communication capabilities in the most challenging environments.

Telecommunications and wireless networking have been revolutionized by SDR technology, enabling dynamic spectrum access, spectrum sharing, and cognitive radio capabilities. SDRs are used in cellular base stations, Wi-Fi routers, and other wireless infrastructure equipment, enabling operators to optimize spectrum utilization and enhance connectivity for users. Moreover, SDRs play a crucial role in emerging technologies such as 5G and Internet of Things (IoT), where they enable flexible and efficient communication solutions to meet the diverse needs of modern wireless networks.

Remote sensing and radio astronomy have benefited immensely from the capabilities of SDRs, enabling precise data acquisition, processing, and analysis for scientific research and exploration. SDRs are used in ground-based and space-based observatories to capture and analyse signals from celestial objects, enabling astronomers to study the universe with unprecedented detail and accuracy.

Radar systems of all types rely on SDR technology to achieve advanced waveform generation, signal processing, and target detection capabilities. SDRs are used in air traffic control radars, weather radars, and military surveillance radars, providing operators with accurate and reliable information about the surrounding environment. Moreover, SDR-based radar systems offer advantages such as improved flexibility, reduced size and weight, and lower cost compared to traditional radar systems, making them attractive for a wide range of applications.

Test and measurement applications leverage the versatility and precision of SDRs for comprehensive characterization and validation of RF systems. SDRs are used in laboratories and manufacturing facilities to perform a wide range of tests and measurements, including modulation analysis, spectrum analysis, and channel emulation. Moreover, the programmable nature of SDRs enables researchers and engineers to develop custom test setups and protocols tailored to specific applications, enabling faster and more efficient testing processes.

Future Outlook

As we look to the future, the outlook for SDR technology is bright, with a myriad of opportunities and challenges on the horizon.
Trends shaping the future of SDR technology include advancements in bandwidth, channel count, and tuning range, as well as integration with emerging technologies such as artificial intelligence (AI) and machine learning. These advancements promise to further enhance the capabilities and versatility of SDRs, enabling new applications and services that were previously unthinkable. For example, the development of wideband SDRs with agile frequency synthesizers could enable the implementation of dynamic spectrum access and cognitive radio capabilities on a large scale, revolutionizing the way wireless networks are managed and operated.

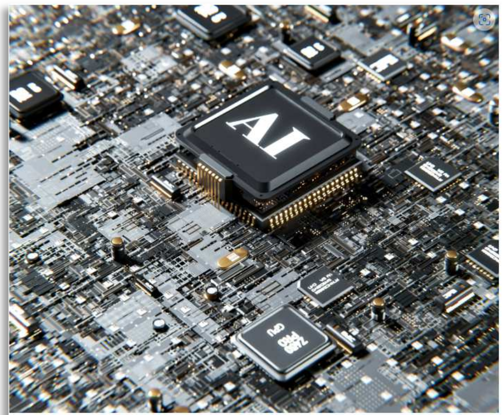


Figure 4: Rendering of AI on Chip

The anticipated advancements in bandwidth, channel count, and tuning range hold promise for expanding the capabilities of SDRs and enabling new applications in diverse domains. For example, the development of SDRs with wider bandwidths and higher sampling rates could enable the implementation of advanced modulation schemes and waveform processing techniques, enabling faster and more efficient communication systems. Similarly, the integration of AI and machine learning algorithms into SDRs could enable intelligent spectrum management and adaptive signal processing, leading to more efficient use of radio resources and improved performance in dynamic environments.
The implications of advancements in SDR technology extend far beyond communication systems, impacting society as a whole in profound ways. By enabling flexible and adaptable communication solutions, SDRs have the potential to revolutionize the way we communicate, interact, and collaborate. For example, in the field of emergency response and public safety, SDRs could enable the rapid deployment of communication networks in disaster-affected areas, providing critical connectivity when traditional infrastructure is unavailable. Similarly, in rural and underserved communities, SDRs could enable the delivery of affordable and reliable communication services, bridging the digital divide and empowering individuals and communities to access information and resources.

Conclusion

In conclusion, Software Defined Radios have emerged as a transformative force in the field of radio communication, offering unparalleled flexibility, adaptability, and performance across a wide range of applications. From their humble beginnings rooted in early developments in radio communication to their current status as indispensable tools in modern technology, SDRs have come a long way in a relatively short time. As we look to the future, the potential of SDR technology is limited only by our imagination, with exciting possibilities waiting to be explored and realized. By embracing innovation and collaboration, we can unlock the full potential of SDRs and harness their transformative power to shape the future of communication systems and society as a whole.

Next Propagator we will be looking at building you very own GUNN Diode 9cm transceiver, Awesome !!!
If you have any interesting technical information to share, please send it to iars.keithb@gmail.com for publishing.

IS YOUR SHACK SAFE and EMC Compliant ???????????

Analyse Your Station for EMR Safety Compliance

Date : 06 / 11 / 2024
Author : WIA Education Committee

Analyse Your Station for EMR Safety Compliance

The WIA's Education Committee, in consultation with the Spectrum Committee, have released a new EMR/EME awareness presentation and a station analysis tool.

The package consists of a PowerPoint/pdf presentation, a station analysis flowchart, and a link to the RSGB's online EMR/EME calculator.

Thanks to the RSGB for approving the calculators use by the WIA.

Links to calculators and more info here https://www.wia.org.au/newsevents/news/2024/20241106-1/index.php

Handy On Line Calculators

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

HANDY 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

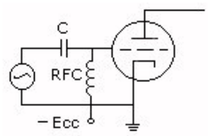
Parabolic dish calculator ………. https://www.everythingrf.com/rf-calculators/parabolic-reflector-antenna-gain

How many of these can you still answer correctly?

Question 1. To increase the efficiency of a simple electromechanical relay the relay coil (motor) is wound on:

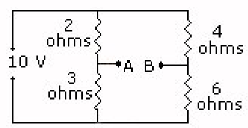
a) aluminium
b) soft iron
c) ceramic
d) lead

Question 2. The bias used in this amplifier circuit is:



a) fixed bias
b) grid leak bias
c) cathode bias
d) combination bias

Question 3. The voltage across terminals A, B is:



a) 0 volts
b) 3 volts
c) 6 volts
d) 10 volts

Question 4. The time constant of a 500 microhenry inductor and a 50 Ohm resistance is:

a) 0.2 microsecond
b) 5 microseconds
c) 10 microseconds
d) 125 microseconds

Question 5. The maximum frequency deviation in an FM transmitter is 3000 Hz. The modulation index, when the highest modulating audio frequency is 1000 Hz, is:

a) 0.3
b) 1
c) 3
d) 30

Question 6. _A 10.7 MHz first stage IF is commonly used in VHF receivers to:

a) provide a high degree of adjacent channel selectivity
b) reduce noise generated in the receiver
c) achieve the high gain required
d) provide an adequate degree of image rejection

Don't be afraid, give it a go, no one is watching, answers next propagator 😊

Answers to last month's questions … Q1 = C ; Q2 = B ; Q3 = D ; Q4 = B ; Q5 = C ; Q6 = B

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

Send your answers to iars.keithb@gmail.com to go into the draw for a prize at the end of the year

OLD PROPAGATOR MEMORIES

NOV.

THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

P.O. BOX 1838 WOLLONGONG N.S.W. 2500

IARS is a Member Club of the Wireless Institute of Australia

PRESIDENT
Keith Curle, VK2OB
24 Beach Drive
Woonona 2517

SECRETARY
John Doherty, VK2NHA
7 Risley Road
Figtree 2525

EDITOR
Kieran Kennedy, VK2DAN
166 Osborne Parade
Warilla 2528

MONTHLY MEETING- Second Monday of each month, 7.30pm at:-

The Congregational Hall, Coombe St. Wollongong.

CLUB STATION- VK2AMW

CLUB REPEATERS- VK2RAW, Channel 5 2 metres.
VK2RUW, Channel 1 70 centimetres.

MONTHLY BROADCAST- 7.15pm EAST on the Sunday preceeding the meeting night. IARS Broadcast frequency:-
Repeater Ch5 or Simplex Ch40
Relay on 28.460 MHz & UHF repeater Ch1

CLUB NETS- 6 Metres 8.30am Sundays - 52.525 MHz FM.
10 Metres 8.00pm Sundays - 28.460 MHz USB.

AUCTION;

THIS MONTH'S MEETING-
There will be an auction, so bring along that piece of gear that you have been thinking of selling.

CONDITIONS OF AUCTION;
1. No useless junk (only good junk please)
2. Reserve prices may be set by seller.
3. A commission of 10% paid to club. (Max. limit $10.00 comm.)

COMING SOCIAL EVENT;
The committee is organizing a bar-b-que outing at Sadleback Mountain on Sunday 16-Dec-79.
Cooking facilitys will be provided. (BYO)

NEXT MEETING- 12-Nov-79.

MACELEC PTY. LTD.

Professional & Industrial Electronics

KENWOOD

KENWOOD TL120 - Linear Amplifier 3-30MHZ...........$234.00

KENWOOD TS520S - H.F. Transceiver..................$650.00

KENWOOD TS8205 - H.F. c/w Digital Display (1 only).$890.00

KENWOOD TS120V - H.F. Mobile 10 Watt Output........$600.00

KENWOOD TS120S - H.F. Mobile 100 Watt Output.......$730.00

KENWOOD AT200 - Antenna Tuner-SWR..................$160.00

KENWOOD AT120 - Antenna Tuner-SWR...................$96.00

KENWOOD RD300 - Dummy Load 300 Watt to 150 MHZ (1 KW Peak)..........................$79.00

KENWOOD MC501C - New Economy Base Station Microphone.................................$29.00

* * NEW PRODUCTS AVAILABLE SOON * *

* KENWOOD R1000 - Digital Reciever 200KHZ to 30 MHZ P.L.L................................$498.00

* KENWOOD TR2400 - Digital Hand-Held 2M Transceiver L.C.D. - 10 Memories - Scanning............$ POA

* KENWOOD Programmable Digital World Time Clock......$ POA

* * *

We also Stock..

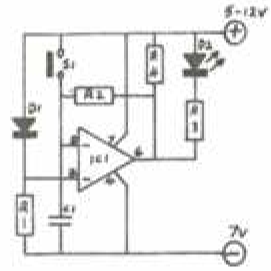
H.F. Antenna's - Ringo Rangers - Morse Keys - Oscilloscopes - Digital Multimeters -

AND DISTRIBUTORS FOR THE SCALAR RANGE OF ANTENNA'S

MACELEC Pty Ltd,
99 Kenny Street,
WOLLONGONG. N.S.W. 2500

SUPPLY FAILURE INDICATOR

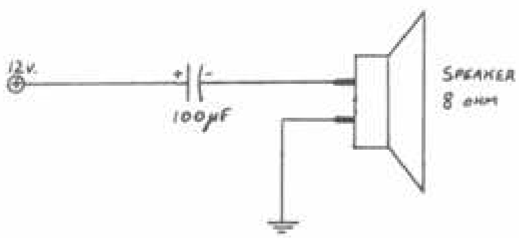
Many circuits, such as random access memories and digital clocks, must have a continuous power supply to ensure correct operation. If the supply to a RAM is interupted then the stored information is lost, asis the time in the case of a digital clock.
The supply failure indicator described here will sense the interruption of the power supply and will light a LED when the supply is restored, thus informing the microprocessor user that the information stored in RAM is garbage and must be re-entered, and telling the digital clock owner that his clock must be reset to the correct time.
When the supply is initially switched on the inverting input of IC1 is held at 0.6V below positive supply by D1. Pressing reset button takes the non-inverting input of IC1 to positive supply potential, so the output of IC1 swings high, holding the non-inverting input high even when the reset button is released. LED D2 is therefor not lit.
When the supply is interupted all voltages, of course, fall to zero. Upon restoration of the supply the inverting input is imediately pulled up to its previous potential via D1. However, C1 is uncharged and holds the non-inverting input low, so the output of IC1 remains low and D2 lights.



R1	100K
R2	1-10K
R3	1K
R4	10K
C1	10n
D1	Gen. purpose 1N914, 1N4148 etc.
D2	LED.
IC1	741
S1	P/button N.O.

VK2DAN

This simple circuit tells you if there' anything wrong with your car alternator by analyzing the whine. A clean-sounding whine means the alternator's OK. Whine with a buzz means one or more diodes burnt out. If whine frequency doesn't keep pace with motor speed, the fan belt is loose.



VK2DAN

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/2020/09/1979-11-November.pdf

Silent key

It is with a very heavy heart that we share the passing of long time IARS friend and supporter, Roy Soondra.

Although Roy did not have a call sign, he was one of us. He was very fond of the hobby and many IARS members will remember Roy as the kind gentleman who unselfishly gave part of his property to be used as the remote IARS shack, even permission to lay a slab and build a shed.

Roy always popped over when we were there, ensuring we were happy and comfortable.

Many contests and field days were had at Roy's place, where he would always join in around the campfire and have a good old yarn.

Roy was only 65 years old, gone too soon ……….

Our thoughts are with his family and friends, he will be sorely missed,

VALE   Roy Soondra

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Upcoming Contests ……………………………

The Month of January 2025

Ross Hull Memorial VHF/UHF Contest

Ross Hull Memorial VHF/UHF DX Contest (Marathon)

Contest Manager

TED THRIFT VK2ARA

We look forward to a successful and rewarding Ross Hull Memorial VHF/UHF+ Contest (Marathon).
Logs email to: rosshull@wia.org.au

Contest Introduction

The Ross Hull Contest is a VHF/UHF++ DX contest, with points awarded for distances worked. There are also band multipliers to encourage activity on the higher bands.

Ross A. Hull 1902 - 1938

See link for more information https://www.wia.org.au/members/contests/rosshull/

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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**

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AR NEWS

Election of Directors - Call for Nominations as a Director of the WIA

Date : 01 / 11 / 2024
Author : WIA Returning Officer

Call for Nominations as a Director of the WIA

Pursuant to clause 14.1 of the Constitution the Wireless Institute of Australia, the Board of the WIA has determined that the election of directors shall be conducted by ballot.

Four directors retire at the conclusion of the next Annual General Meeting which will be held in May 2025, namely Scott Williams VK3KJ, Peter Clee VK8ZZ, Peter Schrader VK4EA and Giles Kirby VK5GK. Each retiring director is eligible for re-election.

WIRELESS INSTITUTE OF AUSTRALIA

Nominations are called for from persons seeking election as a director of the WIA.

A director must be a voting member of the WIA and must hold an Australian amateur radio license and a Company Director Identification Number.

More information >>> https://www.wia.org.au/newsevents/news/2024/20241101-1/index.php

IARU Region 3 Conference

Date : 04 / 11 / 2024
Author : Peter Clee - VK8ZZ

The official Opening of the IARU Region 3 Conference was met with traditional dance.

There are a number of delegates attending in person in Bangkok Thailand. There are also several members attending virtually.

After the opening ceremony the conference got down to business dealing with agenda items. One of the first agenda items was a debate on the structure of the IARU R3. The meeting agreed to keep 7 voting positions on the executive. The position of Secretary was retained as a non voting member of the executive.

More information >> https://www.wia.org.au/newsevents/news/2024/20241104-1/index.php

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IARU creates a new Youth Award

Date : 06 / 11 / 2024
Author : Peter Clee - VK8ZZ

The International Amateur Radio Union has created a new award for youth excellence

The new award should be given "In recognition to an individual under 25 years old for an outstanding contribution to Amateur Radio".

This Award wants to encourage excellence from all YOTA programs and individuals from around the world, recognising the importance of young people and their contributions to the Amateur Radio Service.

More info >> https://www.wia.org.au/newsevents/news/2024/20241106-3/index.php

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IARU R3 Conference - Update

Date : 10 / 11 / 2024
Author : Peter Clee - VK8ZZ

IARU R3 Conference - Update Day 2

Day 2 - Tuesday was dedicated to consider input papers from societies to the conference by

More information >>> https://www.wia.org.au/newsevents/news/2024/20241110-1/index.php

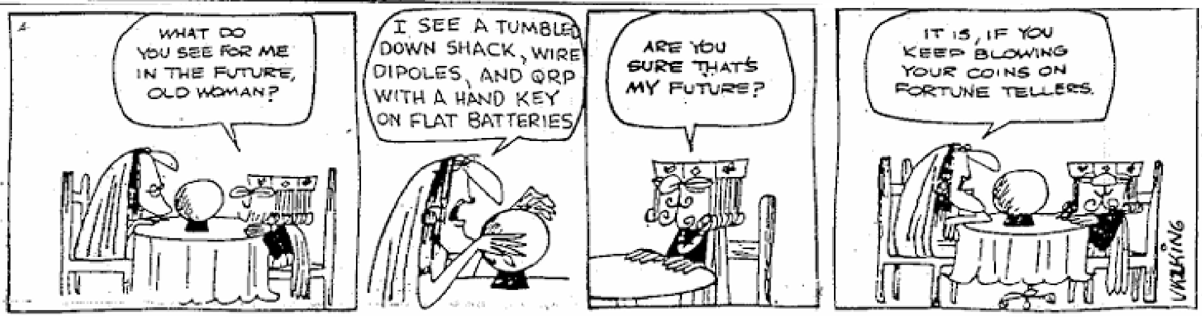
Upcoming meeting presentations ……………………………

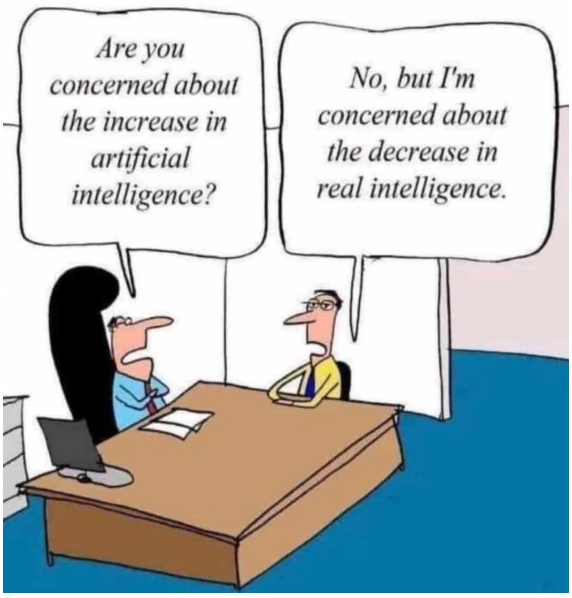
- **December 2024** : **Pizza Dinner** The annual IARS end of year celebration. Test your Baofeng or other imported device for harmonics with a presentation on testing. (Bring along any gear to be tested)
- **February 2024** : Project mania with Simon VK2KU. Simon will be sharing his latest, greatest project, if you want to know what it is, you will have to come along to the February meeting
- **March 2024** : Maritime mystery with Ned, VK2AGV. We all know Ned has some really good stories and this is another one of those interesting ones, I promised Ned we would not divulge. Come along and learn the truth.

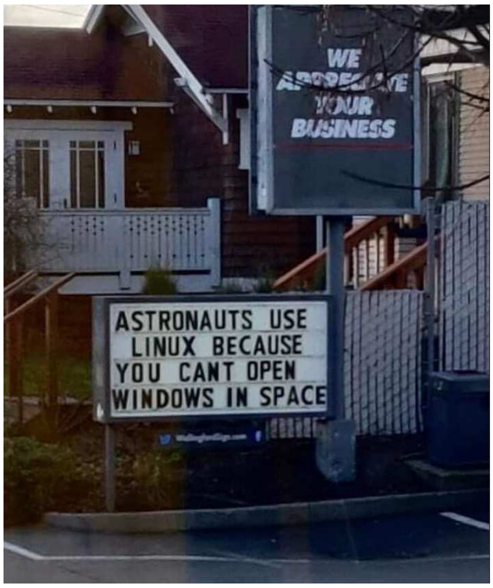
Fun Corner

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 10th December 7.30pm, RSVP Required please.

73

Keith VK2KQB

IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948