Illawarra Amateur Radio Society

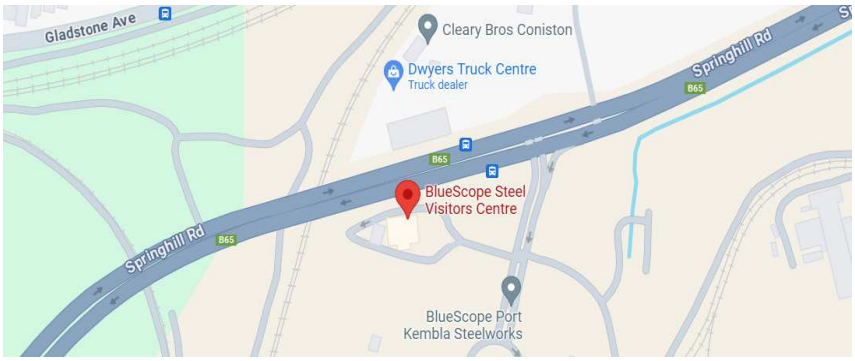
Propagator October 2026

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Upcoming Meeting on the 13th October 2026

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 8th September 2026

It was another absolute blast of an evening watching vintage tech flex its muscles. Ned showed us that old-school gear still rules the airwaves with his brilliant automatic Morse code encoders, recorders, and transmitters.

We also had some serious eye candy on display with the legendary Rohde & Schwarz CMS53 test gear! A few brave members stepped up to the bench to put their handhelds to the ultimate truth test—checking to see if their radios were actually putting out their claimed power and deviation on the exact frequency, or just telling tall tales.













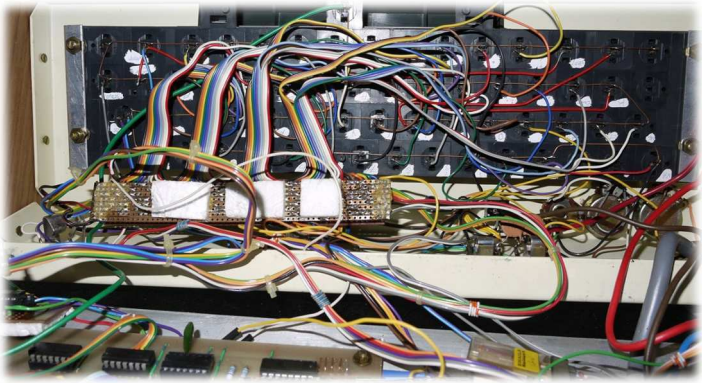
Below are the details for Ned's projects, which he asked to share for show-and-tell.



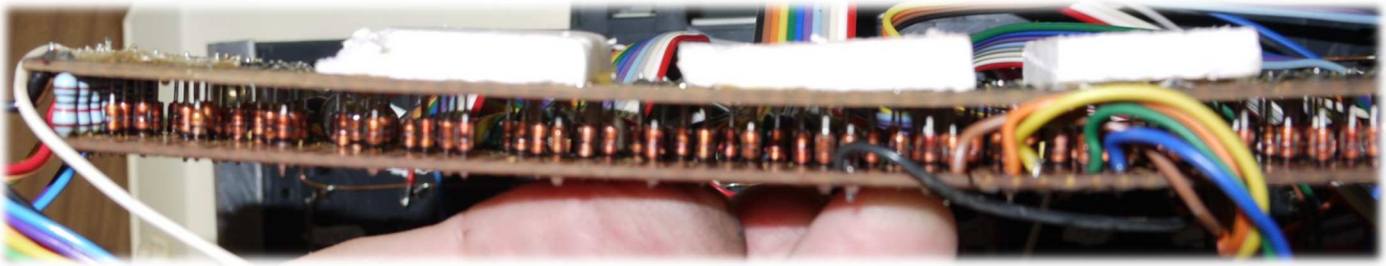


Automatic morse keyer with programmable memory, THREE layers of TTL

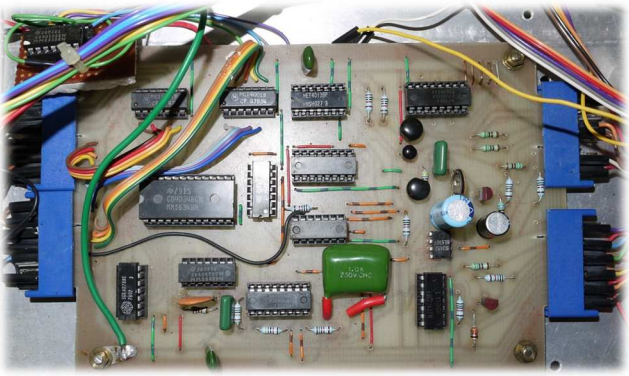




We can only assume many hours of work went into this system, more wires than an old Telstra exchange!



Note the Diode matrix for the keyboard on the automatic morse keyboard system





What a fantastic project, Ned! I bet half the club is already zooming the photos to decode every single TTL device on that board. Thanks for always bringing something incredibly fun and nerdy to our show-and-tell nights.

As always it was a great evening with members and the usual cuppa with biscuits.



There was no Snowball winner this month but will be back at the next meeting.

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



If you want a chance at winning some good cash money, don't forget to play SNOWBALL at the next meeting.

The Disposables Table

Thanks to our memebers there were some more goodies added to the disposable table





There were some small gadgets and good books on offer! If you missed out don't stress, there will be more at the next meeting so be sure to come along and find that missing part!

NEXT Meeting…….



The FAMOUS IARS Trivia evening with Kahoot!!!

We may make it just a bit more tricky this time because the prizes on offer are awesome giveaways.

If you want to lay your hands on the great prizes you need to do **three** things, ONE; make sure you are a financial member, if you are not a financial member you can still play the game but the prizes are for memberships up to date(its only fair 😉) , TWO; clear the cobwebs by reading through some old amateur radio books, including history wow back to school, then THREE!!; make sure you are there 😊

The IARS Flying Gang



The Flying Gang is a volunteer team to support IARS members who are unable to install or repair their antenna systems due to age, injury, or other limitations. Many members are finding it increasingly difficult to stay active on the air—especially when antennas are damaged by storms or when new systems need to be installed.

If you need assistance, simply reach out to the team using the email addresses listed below. We'll coordinate with you to provide the help you need.

The flying gang team members, please REACH OUT to anyone of the team below.

Simon VK2XQX, Simon VK2KU, Keith VK2KQB, Adam VK2AEV, Phil VK2CPH, Tony VK2TS, Bruce VK2ZPN and last but not least Mal VK2DXM

Or contact us using any one of the emails below.

iars.keithb@gmail.com ; iars.simonr@gmail.com ; simon.ferrie3@det.nsw.edu.au

IMPORTANT NOTE: Due to possible IARS insurance limitations we have unfortunately had to park the Flying Gang in the hanger for a short period until we can clarify our insurance coverage. Once we have that sorted it will be business as usual, thank you for your patience and understanding.

Licensing and upgrades?



IARS

RES
RADIO & ELECTRONICS SCHOOL

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.

The IARS helping Amateur Radio grow in Australia

Since January this year the IARS has assisted 10 new amateur radio enthusiasts to get their licence, this is one a month!

ACMA NEWS and MORE!!

September 2026 Administrative Updates: The ACMA refreshed its official guidelines and portal timelines for Amateur radio call signs and Amateur radio licences to assist operators under the ongoing class licensing framework

Useful Links here >>>>>>>>> https://www.acma.gov.au/amateur-radio-call-signs
and here >>>>>>>>> https://www.acma.gov.au/amateur-radio-licences

If you would like to find out more about amateur radio upgrades, here are some handy links to help.

https://www.acma.gov.au/qualifications-operate-amateur-radio

https://www.acma.gov.au/amateur-radio-resources

https://www.acma.gov.au/amateur-radio-accredited-assessors

https://www.acma.gov.au/amateur-radio-licences

https://www.acma.gov.au/technical-details-amateur-radio-licences

https://www.acma.gov.au/amateur-radio-operating-procedures

https://www.acma.gov.au/amateur-radio-call-signs

https://www.acma.gov.au/amateur-class-licence

https://www.acma.gov.au/amateur-radio-related-fees

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 always willing to assist whilst Steve is away.

2. NEW NET Yes we have a NET IARS net on 2m , 144.150MHz USB on Monday Evenings from 8pm. Chairman Phil VK2CPH will be your host.

3. **IARS Tuesday evening weekly 80m NET on 3.666MHz will be operating from 8.00 pm May through to September every year, with October to April 8.30pm start. Hosted by an IARS member 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.

4. **IARS Wednesday evening weekly 6m NET, 8pm Maddens plains 6m Repeater on 53.650Mhz with a – 1Mhz offset. 123Hz CTCS tone enabled due to interference**
Hosted by Chris VK2CDB and Simon VK2XQX, (While Geri VK2UTE is unavailable)
General discussions about building antennas for 6m, transceivers and what else comes to mind, this net is normally between 30 and 60minutes.

5. **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.

6. **IARS Friday evening weekly 70cm NET , 8PM on 439.675MHz ** 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 "***

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 (at Knights Hill, 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 Temporarily off 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.

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

Latest Repeater Report:

* Note, this will be changing to 1.293 800 GHz Simplex soon, however, plans are in place for it to become a Full Duplex repeater system. The equipment has been sourced and should be ready before the end of the year if all goes to plan.

** **146.850MHz repeater (which is 146.250MHz RX)** at Maddens Plains is operating off a temporary antenna until the main dipole is repaired/replaced. We are in talks with an authorised tower maintenance team to carry out the works.

*** All signals into Wollongong will be affected until this is rectified. (This will most likely be carried out at the same time as item ** previous



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

JLCPCB **https://jlcpcb.com**

element14 AN AVNET COMPANY https://au.element14.com

RS https://au.rs-online.com/web/

MOUSER ELECTRONICS https://au.mouser.com

DigiKey https://www.digikey.com.au

Minikits https://www.minikits.com.au

core ELECTRONICS https://core-electronics.com.au

Elite Communications & Electronics https://www.elitecommunications.com.au

Little Bird Electronics https://littlebirdelectronics.com.au

ATR Amateur Transreceiver Radio Supplies **https://amateurradiosupplies.com.au**

BNCom Australia. https://bncom.com.au

VK RADIO **YAESU Sales and repairs** https://www.vkradio.com.au

DXing https://dxing.com.au

TELCO ANTENNAS https://www.telcoantennas.com.au

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

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

TWR Technology ICOM agent **carlo.twr@gmail.com**

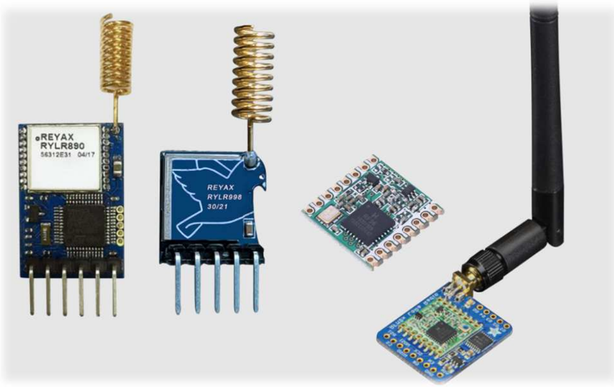
Radio Communications Equipment Supply, Service including radio and antenna installations, support local Wollongong business

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

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The Chirp that is changing the Airwaves: A Ham's Guide to LoRa

The new kid (or should we say bird) on the block!! Everyone is talking about LoRa for amateur radio, but what is it?

If you tune a traditional SSB transceiver to a modern digital signal, you usually hear an unstructured hiss, a robotic buzz, or the rhythmic data-screams of FT8. But out in the license-free 915 MHz band (or the 70cm amateur band), there is a digital bird singing a completely different tune.

It is called **LoRa** (short for **Long Range**), and its signal literally "chirps."

For decades, amateur radio has pushed the boundaries of weak-signal communication. We bounced signals off the moon, ran complex phase-shift keying, and let computer algorithms dig signals out of the noise floor. But while the ham world was perfecting FT8, the commercial Internet of Things (IoT) world engineered a brilliant, highly robust RF protocol that hams are now aggressively adopting.

Here is the simple, technical, and slightly magical breakdown of how LoRa works, why it defies the laws of physics, and why it belongs in your shack.

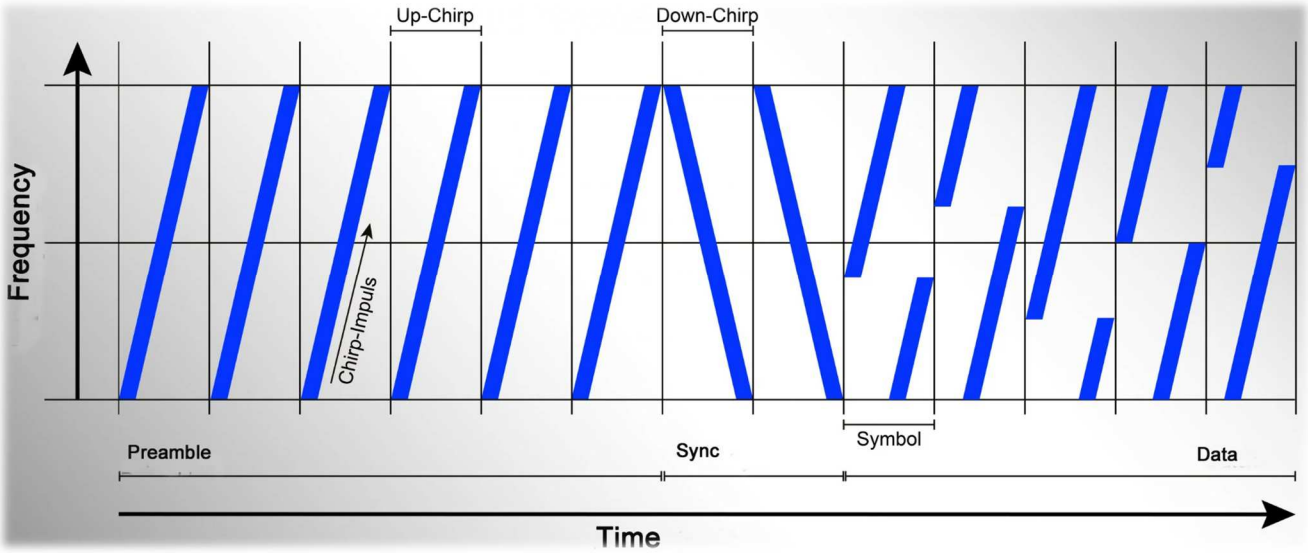
The Core Secret: What is a "Chirp"?

Traditional digital modes change a signal's frequency or phase instantly to represent binary 1s and 0s (think of FSK or BPSK). If a burst of static hits the exact frequency at that exact microsecond, the data is lost.

LoRa throws that rulebook out the window. It uses a modulation technique called **Chirp Spread Spectrum (CSS)**.

Instead of staying on one static frequency, a LoRa transmitter sweeps across a block of spectrum over time.

- **Up-Chirps:** The signal starts at a lower frequency and continuously sweeps *upward* to a higher frequency.
- **Down-Chirps:** The signal starts at a high frequency and sweeps *downward*.

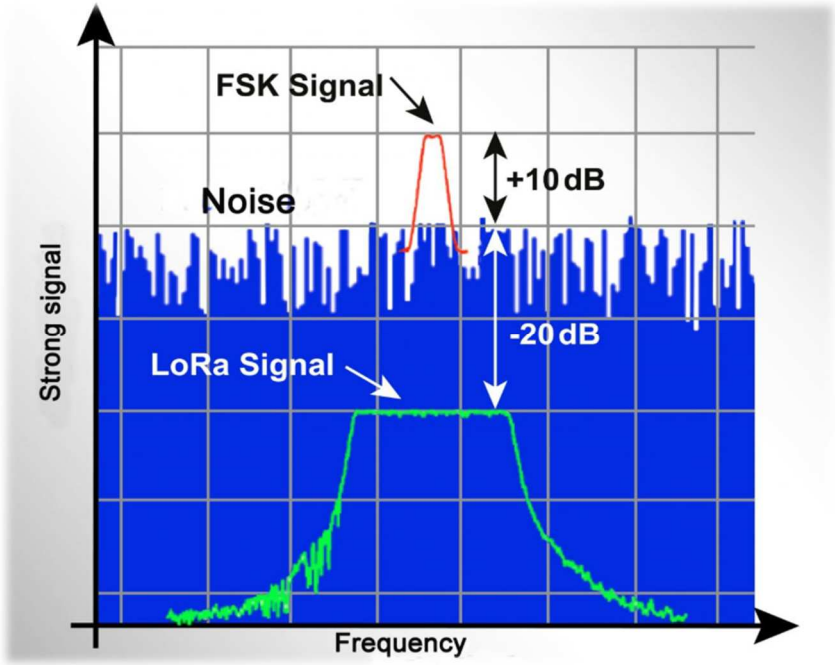


To encode data, LoRa shifts the exact starting point of these sweeps. Because the signal is constantly moving, a sudden burst of narrowband static on a single frequency only destroys a tiny fraction of the sweep. The receiving chip easily recalculates the missing pieces.

Punching Through the Noise Floor (The Math Under the Hood)

LoRa's true superpower is its ability to decode signals that are completely buried beneath the static. In the RF world, this is measured by the **Signal-to-Noise Ratio (SNR)**.

While a human ear struggles when a voice signal drops below +6 dB SNR, and FT8 can dig down to -21 dB SNR, LoRa can successfully decode signals at a staggering **-20 dB to -25 dB SNR**. This means the signal can be *100 times weaker* than the background static of the room, and the receiver will still read it flawlessly.



This magic relies on three adjustable knobs built into the LoRa protocol:

- **Bandwidth (BW):** The physical width of the spectrum the chirp sweeps across (typically 125 kHz, 250 kHz, or 500 kHz). Wider bandwidths mean faster data but less sensitivity.
- **Spreading Factor (SF):** This dictates how long each chirp takes. It ranges from SF7 (fastest chirp, highest data rate) to SF12 (slowest chirp, deepest range). An SF12 chirp stays on the air longer, giving the receiver more time to mathematically average out the random noise and extract the signal.
- **Coding Rate (CR):** This is the forward error correction (FEC). It injects extra bits into the transmission so that if pieces of the chirp are entirely obliterated by interference, the receiver can reconstruct the lost data without asking for a retransmission.

LoRa Data Rate (Rb) Formula : -

$$R_b = SF * \frac{\left[\frac{4}{4+CR}\right]}{\left[\frac{2^{SF}}{BW}\right]} * 1000$$

SF = Spreading Factor (6,7,8,9,10,11,12)
CR = Code Rate (1,2,3,4)
BW = Bandwidth in KHz (10.4,15.6,20.8,31.25,41.7,62.5,125,250,500)
Rb = Data rate or Bit Rate in bps

Data Rate (DR)	Spreading Factor (SF)	Channel Frequency	Bitrate (Bits/Sec)
0	SF10	125 kHz	980
1	SF9	125 kHz	1,760
2	SF8	125 kHz	3,125
3	SF7	125 kHz	5,470
4	SF8	500 kHz	12,500

Why Hams Are Obsessed: The Meshtastic Revolution

LoRa chips are incredibly cheap, drawing mere milliwatts of power while transmitting at tiny fractions of a watt (typically 100mW to 1W). Because of this efficiency, a global movement called **Meshtastic** has exploded within the amateur radio community.

Meshtastic uses off-the-shelf LoRa hardware to create decentralized, off-grid text routing networks.

- **The Mesh Effect:** Every tiny radio acts as a repeater. If Node A wants to talk to Node C, but a hill is in the way, Node B automatically grabs the encrypted packet and hops it over the terrain.
- **The Power Paradox:** Running a 100-watt HF rig to chat across town requires a car battery. A LoRa mesh node can run for days on a single 18650 lithium cell, or indefinitely on a tiny solar panel the size of a paperback book.

A New Tool for the Toolbox

LoRa isn't a replacement for the magic of HF skip or the high-fidelity audio of local VHF repeaters. Instead, it represents a brand new discipline in amateur radio: **extreme efficiency through mathematical modulation.** Whether you deploy an automated LoRa weather telemetry node in the mountains or carry a pocket-sized mesh radio during a search-and-rescue operation, understanding the "chirp" expands what it means to be a modern radio amateur.



Keen to start playing ?

The most critical rule for deploying LoRa or Meshtastic gear in Australia is the frequency band. You **must select the 915 MHz version** (often sold under regional labels like *AU915* or *US915*). *Never purchase the 868 MHz variant (which is for Europe) or the 433 MHz variant, as those conflict with local Australian allocations*

Core Electronics (Newcastle, NSW): An exceptional local stockist. They carry RAKwireless WisBlock Starter Kits pre-flashed with firmware.
IoT Store Australia **(Perth, WA):** Excellent inventory for RAK WisBlock Meshtastic Starter Kits and high-quality upgraded antennas.
Little Bird Electronics: A popular maker repository stocking generic LoRa transceivers, development hats, and matching antennas.
Amazon Australia**:** Ideal if you prefer all-in-one consumer-ready handheld nodes like the **LilyGO T-Echo** or **Heltec V4 Dev-Boards**

Getting your first node on the air takes less than 15 minutes and requires absolutely no coding.

Step 1: Connect the Antenna (Mandatory)

- **Never power on a LoRa board without its antenna securely screwed into the IPEX or SMA connector.**
- Without an antenna to dissipate the RF energy, transmitting—even at fractions of a watt—can permanently fry the sensitive onboard power amplifier chip

Step 2: Flash the Firmware (If Not Pre-Flashed)
Most modules bought as "Meshtastic Starter Kits" come with the open-source software ready to roll. If yours is completely blank, flashing it is simple:

1. Connect the node to your PC or Mac using a high-quality USB-C data cable.
2. Open a Chromium-based browser (Chrome or Edge) and go to the official web installer: **flasher.meshtastic.org**.
3. Select your exact hardware type from the drop-down menu (e.g., *Heltec V3*, *LilyGO T-Beam*, or *RAK4631*).
4. Click **Flash**, approve the USB connection prompt, and wait about two minutes for the installation utility to complete

Step 3: Pair with Your Mobile Phone

1. Download the official **Meshtastic App** from the Apple App Store or Google Play Store.
2. Turn on Bluetooth on your mobile device and open the app.
3. Look for your node in the pairing window (it usually shows up with a default random name like Meshtastic_a1b2).
4. Enter the matching 4-digit or 6-digit PIN code that pops up directly on your node's tiny OLED screen to secure the Bluetooth bond

Step 4: Regional Setup (Crucial for Australian Hams)

1. In the app, navigate to **Settings > Radio Configuration > LoRa**.
2. Set your Region to **ANZ** (Australia/New Zealand, which defaults routing to the legal 915 MHz ISM band boundaries).
3. For standard amateur radio and community mesh channels, leave the channel settings on **LongFast**. This configuration automatically matches the modulation parameters (Spreading Factor, Coding Rate, and Bandwidth) used by the rest of the Australian mesh community to maximize propagation distance

Once configured, anything you text into the app's global chat window will bridge over Bluetooth to your node, transform into an RF chirp, shoot out across the airwaves, and hunt for peer nodes to hop through

The good NEWS!!!

If this is all too hard for you, relax, your society will be putting together a project with our projects master Simon VK2KU in the very near future. We will be also looking at a possibility of a module installed at Maddens with the assistance of Alex Abela VK2PGN.

BACK TO BASICS

SSTV

The Retro Radio Picture Show, a basic Guide to Slow Scan TV (SSTV)

If you have ever spun the VFO dial across the HF bands and stumbled upon a sound that resembles a screaming dial-up modem or a cybernetic cricket chorus, you have likely tuned into an **SSTV (Slow Scan Television)** broadcast.

While modern internet infrastructure allows us to stream high-definition video instantly, amateur radio operators have been doing something far more resilient for over half a century: sending full-colour photographs across the globe using nothing more than a standard HF voice channel.

Here is the quick, high-flair breakdown of how this classic mode works, how to decode it using your smartphone, and how the Illawarra Amateur Radio Society (IARS) can get visual on the airwaves.

The Basics – How Do You "Hear" a Picture?

At its core, SSTV is a narrowband television transmission technology designed to operate within the exact same bandwidth as a normal human voice (around 3 kHz). Because the bandwidth is so tight, we cannot transmit live moving video. Instead, we transmit static images, line by line, agonizingly slowly.

The Black & White Foundation (Frequence Modulation)

To understand SSTV, think of an old-school fax machine or a retro scanner. The computer or interface takes a digital photo and breaks it down into a grid of horizontal lines.

- It scans the image from left to right, top to bottom.
- It converts the brightness and colour values of each pixel into a matching audio frequency (tone).

In the most basic black-and-white modes:

- **1500 Hz** represents pure black.
- **2300 Hz** represents pure white.
- Any frequency in between represents a specific shade of grey.

When the receiving radio hears a 1500 Hz tone, it draws a black pixel on the screen. When the tone jumps to 2300 Hz, it draws a white pixel. By continuously sweeping these tones across the air, the image unfolds on the receiver's screen like a slow-moving curtain.

Injecting Colour and the Synchronization Secret

How do we get full-colour images out of a single audio tone? We use RGB colour separation. The transmitting software splits the digital image into three distinct layers: **Red, Green, and Blue**.

When transmitting a colour line, the radio sends three consecutive tone sweeps back-to-back for *every single horizontal row* of the image: first the red details, then the green details, and finally the blue details. The receiving computer stacks these three coloured lines on top of each other to reconstitute the true, vibrant colour of the original photograph.

The SSTV Command Centre: Modes & Calibration

SSTV isn't just one single format; it relies on a variety of "modes" engineered over the decades by different hams. They vary based on transmission speed and image resolution:

SSTV Mode	Total Transmission Time	Resolution (Pixels)	Best Use Case
Scottie S1	110 seconds	320 x 256	The classic HF favorite. Excellent color accuracy under noise.
Martin M1	114 seconds	320 x 256	Highly popular in Europe. Sharp contrast.
Robot 36	36 seconds	320 x 240	High speed, lower resolution. Used heavily by the International Space Station (ISS).

Staying in Sync

To prevent the picture from tilting or turning into a scrambled mess, the transmitter sends a brief **1200 Hz synchronization pulse** at the end of every single horizontal line. This tells the receiving software: *"Stop drawing line 1, drop down one pixel, and immediately begin drawing line 2 from the left edge."*

How to Get Started for Free (The No-Cable Method)

The best thing about modern SSTV is that the barrier to entry is practically zero. You do not need expensive modems or custom computer interfaces to start decoding images today.

1. The Mobile Acoustic Hookup (The Simplest Method)

1. Download a free decoding app on your mobile phone: **Robot36** (Android) or **SSTV Slow Scan TV** (iOS).
2. Tune your HF receiver or an online WebSDR (like the Southern Cross DX WebSDR networks) to the international SSTV calling frequency on the 20-meter band: **14.230 MHz USB**.
3. When you hear the distinctive dial-up sound, launch the app and hold your phone's microphone right up to the radio's speaker.
4. The app will listen to the tones, automatically identify the mode (using a digital handshake called a VIS code), and start drawing the image directly on your phone screen!

2. Rig Interfacing for Transmission

If you want to start transmitting your own graphics, call sign badges, or weather photos, you can link your shack computer to your transceiver using a standard digital interface (like a **SignaLink USB**, **Digirig**, or a homebrew audio cable). Software like **MMSSTV** (Windows) or **QSSTV** (Linux) handles the heavy lifting, turning your images into WAV audio streams ready to feed into your transmitter's mic jack.

An IARS Challenge: The Next ISS Pass

Several times a year, cosmonauts aboard the International Space Station (ISS) activate an amateur radio transceiver on **145.800 MHz FM** and beam down spectacular commemorative SSTV images using the **Robot 36** mode as the station orbits 400 km above Australia.

With a simple 2-meter handheld radio (HT) and your smartphone held to the speaker, any IARS club member standing in their backyard in Wollongong can pull an image directly out of orbit!

ARISS International Space Station (ISS) SSTV Calendar

Activation Window	Event Theme	Expected Downlink Frequency & Mode	Operating Notes
Friday 3 October – Monday 6 October 2026	**Sputnik Launch Celebration:** Commemorating the 1957 launch of the first artificial satellite.	**145.800 MHz FM** Mode: *PD120* or *Robot 36*	Will temporarily pause for ~60 minutes on Saturday 4 October for an scheduled educational voice contact.
Friday 17 October – Monday 20 October 2026	**Jamboree on the Air (JOTA):** Special scout-themed image collection.	**145.800 MHz FM** Mode: *PD120* or *Robot 36*	Will pause briefly on Saturday 18 October for a student voice contact. Excellent tie-in for local Illawarra Scout groups!

Because the ISS orbits at roughly 27,600 km/h, it will pass over the **Illawarra / Sydney footprint** 2 to 3 times a day during these windows, with each pass lasting roughly **10 to 15 minutes**.

1. **Calculate the Pass Times:** Download tracking apps like *Heavens-Above*, *ISS Detector*, or look at the web tracker **AMSAT-LU Satellite Predictor**. Enter your location as Wollongong/Sydney to get precise local acquisition of signal (AOS) times.
2. **Set Up the Rig:** Open your standard 2-meter FM transceiver (base station or hand-held). Program **145.800 MHz** with the squelch completely off (open carrier noise).
3. **Capture & Upload:** Once you decode an image, you can submit their cleanest copy to the **ARISS SSTV Gallery** to receive an official electronic participation certificate.

Get Hooked on the Retro Radio Picture Show!

Have some real fun with amateur radio SSTV this month! Seriously, who knows? You might just get completely hooked on the absolute magic of this mode, and it could easily become a facet of the hobby you fall in love with, one you either never knew existed or completely forgot about over the years.

There is a unique, addictive thrill to sitting in your shack, watching a line of bright green static slowly march down your screen, and realizing that a crystal-clear photograph of a cosmonaut, a distant ham's backyard, or an overseas club shack is appearing right before your eyes, pulled purely out of the air static. It feels like a cross between 1970s espionage, retro computing, and pure radio sorcery.

Whether you are a veteran op who hasn't sent a pixel since the days of bulky CRT monitors, or a newly licensed tech with nothing but a pocket handheld and a smartphone, SSTV is an absolute blast to play with. Fire up your gear for the October Space Station passes, join in the fun, and let's get visual on the airwaves, Illawarra!

Are you still plagued by noise?

If you have tried all the noise cancellers out there and still having troubles with your next-door neighbours brand new super bright powerful 100 inch flat screen TV! Then this may be the answer to you getting back on air.

Kostas, SV3ORA, from Greece is the designer of the NR-1 Antenna Noise Blanker.

The NR-1 is a noise blanker that operates directly on the antenna signal. It can significantly reduce strong impulse noise, such as power-line interference, without requiring the separate noise antenna typically used by QRM eliminators. The IARS and its members are not saying that this is guaranteed to solve your noise issues, we have also not personally tested this device but, feedback from around the world on this units operation seems very promising.

Check it out for yourself! Or please see the review below from Pavel OK7PM





There are many ways of reducing noise and interference present in received signals in amateur-radio practice, and these methods naturally evolve as interference in the received spectrum evolves.

Technical and theoretical development has brought the advent of digital DSP technology in signal processing and, in particular, SDR receiver technology, where it is possible to work with a wide spectrum and more easily distinguish between a wanted signal and interference. In principle, however, noise-reduction techniques can be divided into the following areas:

1) Processing at the receiver input (conditioning of the antenna signal). This also includes noise reduction using selective preselectors and, of course, diversity reception methods.

2) Processing of the signal in the received channel at baseband. This is a very broad field and today benefits especially from DSP methods in the frequency domain as well as statistical processing of the baseband signal. In fact, practically every transceiver incorporates such functions under names such as NB, NR, and similar.

3) A special category consists of sophisticated solutions in SDR receivers, where noise processing uses not only the baseband signal but also the overall state of the wide spectrum visible in the panadapter window. The latest developments include algorithms using artificial intelligence applied to the interfering background, as well as statistical algorithms working with the energy values and characteristics of a broader portion of the received spectrum.

The **NR-1** was designed and is manufactured by Kostas, SV3ORA. It has been on the market for less than a year.

For this test I received NR-1 serial number 266. What we have here is a small device. The manual describes its operation as follows: The NR-1 is a type of impulse-interference suppressor (Noise Blanker). It therefore removes only impulse noise.

This noise usually takes the form of short-duration, high-amplitude pulses or “spikes.” Its repetition rate may range from a few Hz to several kHz. On the waterfall display of an SDR monitor, this noise may appear as repeating horizontal lines covering most (if not all) of the band, provided that it does not overload the receiver's A/D converter.

Such noise may be caused by anything that produces radiated interference from electrical equipment, for example: • Faulty nearby power-line transformers and insulators,

• Motor brushes/commutators (elevators, household electrical appliances, etc.),

• Spark plugs in internal-combustion engines (cars, motorcycles, electric-fence generators, etc.),

• Faulty or inadequately suppressed inverters and switching power supplies (solar-panel systems, chargers, LED lamps, routers, etc.),

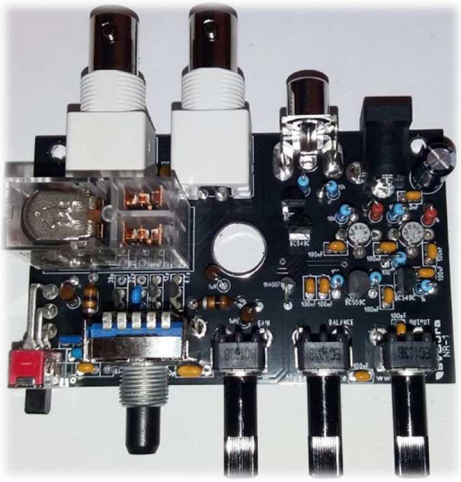
• Any other device (faulty or otherwise) that produces and radiates impulses and sparking.

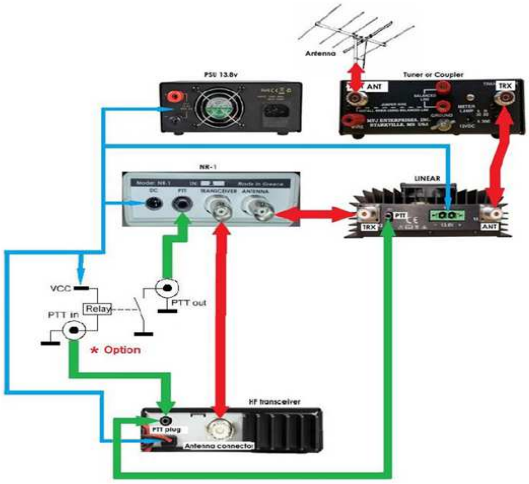
The NR-1 is exceptionally effective against noise originating from the power grid, a type of interference that other noise-removal devices often have difficulty dealing with. The frequency range over which the NR-1 has been tested is from 1.6 MHz to more than 70 MHz (modification for lower frequencies is possible). It is broadband and can be used both inside and outside the amateur bands (for example, for listening to commercial shortwave stations).

No additional noise-sensing antenna is required for operation.

- It removes RF noise arriving directly from the antenna (unlike DSP methods), thereby improving the signal-to-noise ratio and dynamic range.
- No separate antenna and feedline are required (as they are with some QRM eliminators).
- It removes noise arriving simultaneously from any direction (interference from the power grid, appliances, etc.).
- Its operation does not distort the received signal (as most noise blankers do).
- It reduces noise visible in the displayed spectrum of SDR receivers.
- It works in all receive modes.

The designer supplies a detailed manual with the device. It describes the basic characteristics of the unit and how to use it. However, it reveals little about the technical implementation. The designer protects this information, although the device itself is not particularly complex. It is built using conventional technology on a single-layer PCB with components mounted on one side.





By looking at the printed circuit board, we can at least describe some of the circuitry. The upper side carries the BNC connectors for the antenna and transceiver connections, followed by an RCA connector for PTT and the power connector. On the left, the dominant component is a double changeover relay, in our unit an OMRON G2RL-2. Its contacts in the bypass/transmit path are rated for 8 A. The lower side of the board faces the front panel. On the left are the power switch, an 8-position selector marked IMD, and three Alps potentiometers used to control the operating parameters according to the labels on the panel. Around the selector we can identify inductors and capacitors forming the RF band-pass filter. We can also distinguish three BC-series transistors and two BFR91 transistors belonging to the RF amplifier. The components are identified on the board. When the unit is switched off, one half of the relay galvanically connects the two BNC connectors, so the device is completely bypassed in the signal path. When switched on, the relay changes over to the receive state. During transmission, PTT is activated by pulling the control line to ground and the relay drops out, once again providing a direct through-path for the transmitted signal. It is worth noting that setting a TX delay in the transceiver (approximately 10 ms) is certainly advisable to protect the relay and the circuitry in the receive signal path. The relay is safely rated for 100 W operation. The NR-1 is housed in a plastic enclosure with metal front and rear panels, measuring 90 × 35 × 64 mm and weighing 152 g. The supply voltage is the standard 13.8 V, with a current consumption of 68 mA; with PTT keyed, consumption falls to 36 mA.

I also measured several additional parameters: Insertion loss in bypass (unit off or PTT active) is better than 0.2 dB. The band-pass filter positions are as follows: position 1 = 1.85 MHz, 2 = 3.7 MHz, 3 = 7 MHz, 4 = 10 MHz, 5 = 15 MHz, 6 = 21 MHz, 7 = 24 MHz, 8 = 28.7 MHz. The GAIN control affects the frequency and Q of the passband. The user manual (1) contains essential operating information for using this unusual device. It is highly advisable to become familiar with it. Attention should also be paid to how the unit is connected into the station system.

The diagram, however, is clear and simple. In the manual (page 7), the designer also gives additional instructions. In particular, he recommends protecting the PTT cable against induced RF energy by using suitable ferrites. In the diagram above, a relay PTT interface is included as an option, although it may not be necessary; this depends on how the PTT output is implemented in the particular transceiver

This article was too large to fit into this propagator but most of the important bits were published, however there are plenty links below for you to review and decide whether you need one of these for your QRM/QRN troubles!

Eham reviews https://www.eham.net/reviews/view-product/16072

This full article ..... http://qrp.gr/nr1/NR1_Noise_Blanker_Review_English.pdf

http://qrp.gr/nr1/CCARC0862026.pdf

manual ..... http://qrp.gr/nr1/sv3ora_NR-1_Antenna_Noise_Blanker_manual_EN.pdf

where to get it https://shop.elisys.gr/products/nr1/

The Ultimate Frontier: Why Amateur Radio is the Greatest Hobby You've Never Tried

In an era where everyone carries a smartphone, it is easy to think that global communication is a solved problem. We tap a screen, a server handles the data, and a message appears on the other side of the planet. But what happens when you strip away the commercial towers, the fibre-optic cables, and the monthly subscription fees?

What happens when you rely entirely on your own gear, your own intellect, and the invisible physics of the Earth's atmosphere to bridge continents?

Welcome to the world of **Amateur Radio**, a deeply meaningful, high-adrenaline hobby that blends cutting-edge technology, global community, and vital public service into one lifelong adventure.

Discovering the Magic of the Airwaves

Amateur radio is not just about listening to the radio, it is about active exploration. As a licensed operator, you are granted access to a vast playground of the electromagnetic spectrum. The variety of things you can do is staggering:

- **Bounce Signals Off the Space Station:** Using a pocket-sized handheld radio, you can talk to astronauts aboard the International Space Station or download digital photographs beamed directly from orbit.
- **Chase Weak Signals Across the Globe:** Using high-frequency (HF) bands, you can project your voice or Morse code across thousands of kilometres, bouncing your signal off the ionosphere to chat with a fellow enthusiast in a remote island nation or an Arctic research station.
- **Join the Open-Source Digital Revolution:** Modern ham radio is heavily digital. Operators build decentralized, off-grid text messaging networks using ultra-efficient smart grids (like Meshtastic) or transmit crystal-clear digital data on micro-power, running nodes on solar panels no larger than a paperback book.

A Lifelong Community with Universal Language

When you earn your call sign, you instantly gain a pass to a global family. There is a beautiful, egalitarian culture in radio, age, background, and profession vanish the moment you say "*CQ*" (the universal call for anyone listening). You might find yourself discussing antenna design with a retired NASA engineer, exchanging signal reports with a student in Tokyo, or enjoying a local weekend "Fox Hunt", a high-tech game of hide-and-seek where operators use directional antennas to track down hidden transmitters.

It is a hobby that keeps your mind sharp, continuously offering something new to learn, whether you love hands-on soldering, software programming, or the art of conversation.

Purpose When It Matters Most

Beyond the technical thrill, amateur radio carries a profound sense of purpose. When severe storms, floods, or bushfires strike and standard infrastructure fails, taking down cell towers and power grids, amateur radio operators step in.

Hams provide the resilient, independent communication backbone that emergency services rely on to save lives. There is a deep fulfillment in knowing that the skills you hone for fun on a Tuesday night could become a community's ultimate lifeline during a weekend crisis.

How to Start Your Journey

Getting started is easier and more accessible than ever before.

In Australia, the **Wireless Institute of Australia (WIA)** and local clubs like the **Illawarra Amateur Radio Society (IARS)** offer free training, mentoring, and pathways to secure your official licence. You don't need a degree in engineering, just a healthy sense of curiosity.

Amateur radio transforms the way you look at the world around you. You stop being a passive consumer of technology and become an active master of the airwaves.

Turn on the rig, drop your call sign into the ether, and see who answers.

The world is listening.

Handy On Line Calculators



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

Skin Depth Calculator https://www.omnicalculator.com/physics/skin-depth

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!





Radio & Electronics School
Established 1997

WIRELESS INSTITUTE OF AUSTRALIA

How many of these can you still answer correctly?

Question 1. If an alternating current has a peak voltage of 100 Volts, what is its approximate Root-Mean-Square (RMS) voltage?

(a) 50.0 Volts
(b) 70.7 Volts
(c) 141.4 Volts
(d) 63.6 Volts

Question 2. Which atmospheric layer is primarily responsible for long-distance HF skywave propagation during the daytime at the peak of the solar cycle?

(a) D Layer
(b) E Layer
(c) F2 Layer
(d) Troposphere

Question 3. What basic component configuration creates a high-pass Pi-network filter?

(a) A series inductor flanked by two parallel capacitors to ground.
(b) A series capacitor flanked by two parallel inductors to ground.
(c) Two series resistors isolated by a centre transformer.
(d) A parallel combination of a quartz crystal and a variable trim pot.

Question 4. In digital modes, what is the term used to describe the phase noise or time-domain variation of a digital signal clock relative to an ideal reference clock?

(a) Jitter
(b) Doppler shift
(c) Intermodulation Distortion (IMD)
(d) Chirp rate

Question 5. Why is a standard balun (balanced-to-unbalanced) typically installed at the feed point of a wire dipole fed with coaxial cable?

(a) To lower the high voltage of the transmission line for safety.
(b) To match the 50-ohm line to a high-impedance end-fed wire.
(c) To prevent RF currents from flowing down the outer shield of the coax braid.
(d) To shift the phase of the signal by 180 degrees for digital decoding.

Question 6. If two non-harmonically related signals (e.g., 14.200 MHz and 14.250 MHz) mix in a non-linear stage of a receiver, what type of unwanted artifact is generated?

(a) Thermal Johnson noise
(b) Phase inversion
(c) Intermodulation Distortion (IMD) products
(d) Image frequency bleed through

Answers next propagator ☺

Answers to the *last propagator* questions … Q1 = b; Q2 = a; Q3 = d; Q4 = b; Q5 = c ; Q6 = a

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

BLAST FROM THE Past

OLD PROPAGATOR MEMORIES

THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY
PO BOX 1838 WOLLONGONG NSW 2500

VOLUME 81, NUMBER 9
Registered by Australia Post Publication No. NBH1491 OCTOBER 1981

MEETINGS ARE HELD ON THE SECOND MONDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. IN THE CONGREGATIONAL HALL, CORNER OF COOMBE AND MARKET STREETS, WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

NOTICE OF MEETING:

The October General Meeting of the Illawarra Amateur Radio Society will be held on Monday 12th October at 7.30 p.m., in the Congregational Hall, Coombe Street, Wollongong.

It is hoped to have a visiting speaker at the meeting.

The club store will be operating as usual - bring your money for some good value buys. 1981 callbooks will be on sale for $3-50 (regular price is $3-95).

A solid-state morse code keyer will be raffled at the meeting.

LAST MONTH's MEETING:

About 50 people were in attendance, and Keith VK2OB provided a demonstration of hard-copy radioteletype with his model 15 teleprinter, ST6 demodulator and cathode ray tube tuning indicator. The raffle prize - a foreign call-book - was won by Jock VK2JT, and the store kept up a brisk trade in components.

RED-LINE ISSUE:

Is there a RED LINE under the postcode on your address label this month? If so, your annual club subscription is terminally ill, and the only remedy is to immediately forward $5 to the treasurer at P.O. Box 1838 Wollongong, or at the October meeting. Without this immediate cash injection, your monthly posting of the Propagator will decease with this issue.

AMATEUR CLASS SUCCESSES:

Keith VK2OB certainly prepared his Friday night tech. class well - of seven who sat for the full licence theory examination in August, six have passed - indeed an excellent result. Among those now waiting for their full calls are Ron VK2VOE, Ian VK2VXN, Paul VK2VES, Bill VK2VYL and Morry VK2VVN. Pat VK2PKJ is waiting for his K call.

The full course class on Friday nights is now producing ST6 teleprinter demodulators which, together with restoration of some of the Creed 7B teleprinters available through the club should see an increase in local RTTY activity.

The novice class, also on Friday nights, is preparing for the November novice examination, and also looking at designs for an inexpensive receiver and low power transmitter for the 80 metre band.

CLUB AUCTION:

This year the club auction will be held on the Saturday afternoon of November 14th, beginning at 1.30 p.m.

This is being done because club meeting auctions are lasting more than four hours.

This year you can deliver your goods to the auction site at Fernhill Auctions, Princes Highway Fernhill, up to two weeks prior to the sale. Please make sure that you mark your gear with a name and adequate description of the goods. Start clearing out your shack and getting all the good stuff (?) out of the way.

Will share more oldies next month.

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

https://www.iars.org.au/wp-content/uploads/2020/09/1981-10-October.pdf

News & Upcoming contests

Oceania DX Contest

Oceania DX (OCDX) Contest

Contest Manager

The Oceania DX (OCDX) Contest is managed by the Oceania DX Contest Committee.

Contact email is **info@oceaniadxcontest.com**

Contest Introduction



The OCDX contest is Oceania's only international style contest where contacts with stations all over the globe are able to participate.

Oceania stations may contact any station for QSO points whilst non-Oceania stations are required to contact any station in Oceania for QSO points.

The contest runs over the first two full weekends in October and has SSB, CW and SWL categories. Go to the contest web site for more information.

More Information https://www.wia.org.au/members/contests/oceania/



WIA NEWS

HAVE YOU SEEN THE LATEST WIA WEBSITE NEWS SECTION ?

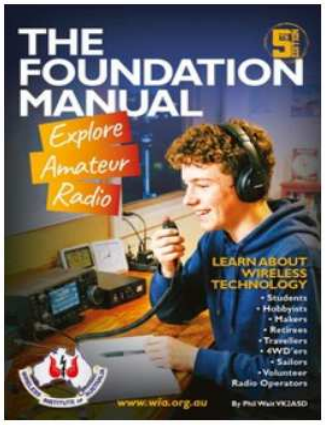
The WIA team have really gone out of their way to upgrade the website in many places and keep it refreshed with the latest of all goings on, no need for the IARS do the work anymore 😊

For all your local and international news , the WIA has all the information at this link……

The WIA keeping you informed >>> https://www.wia.org.au/newsevents/news/2026/index.php?month=9

What's New in the Foundation Licence Manual 5th Edition?

Date : 12 / 09 / 2026
Author : WIA & Phil Wait VK2ASD



The release of the Wireless Institute of Australia Foundation Licence Manual, 5th Edition marks the most significant update to the manual in recent years. While the familiar structure remains, the new edition has undergone a comprehensive review with numerous updates, rewrites and additions throughout. The result is a modern learning resource that not only prepares candidates for the Foundation Licence examination but also provides a broader introduction to radio and communications technology. The new edition is available through the WIA's print-on-demand service and can be ordered directly online.

One of the most important changes is the extensive update of the regulations section, reflecting the introduction of the Australian Amateur Radio Class Licence and other recent regulatory changes. Information relating to callsigns has also been revised, while the section covering the WIA Band Plan has been updated to reflect current operating practices and spectrum usage. For anyone entering amateur radio today, these changes ensure the manual aligns with the current operating environment rather than historical arrangements that no longer apply.

The 5th Edition also introduces a brand-new appendix titled "Real World Passive Components". This practical guide helps readers understand how to select the right components for RF projects and introduces concepts often overlooked in beginner texts, including Equivalent Series Resistance (ESR), dielectric loss, self-resonant frequency, component noise and safety considerations. These topics bridge the gap between theory and practical construction, helping newcomers understand why components that appear identical on paper can perform very differently in radio applications.

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**

Amateur radio news from around the world!

Use these handy links if you would like to see what is going on around the amateur radio world.

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

American Radio league https://www.arrl.org

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

South African Radio League www.sarl.org.za

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

https://daily.hamweekly.com

Communications Satellites

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

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



Mid South Coast
Amateur Radio Club Inc.

www.mscarc.org.au



&

IARS Illawarra Amateur Radio Society

Amateur Radio to Wollongong since 1948

Invite you to a
Joint picnic/day out

WHEN : 26th September 2026

TIME : From 09H30 till whenever

WHERE : Fitzroy Falls Reservoir Area

WHAT TO BRING : Lunch, refreshments, portable gear and fox hunting gear.

The club will be offering soft drinks for a gold coin donation

There are gas BBQ's, Hot Water and toilet facilities

For more information please contact

David VK2LDW
mscarcinc@gmail.com

Keith VK2KQB
lars.keithb@gmail.com



Upcoming IARS meeting presentations …….

Please note the changes to the meeting schedule.

We have moved back to having an official committee meeting every month and a general meeting every second month.

Doors open at 6:30pm, giving you time to settle in, Committee meetings start at 6.30pm but presentations and general meetings kick off after 7:30pm. The Snowball draw happens every month, except January when there are no gatherings or if the raffle master is not available 😊

Members are very welcome to arrive from 6:30pm to enjoy a cuppa and catch up with friends in the foyer before things get underway.

We need to wrap up and be out by approximately 9:30pm, so please lend a hand on your way out by popping empty cups in the correct bin and straightening your chair or putting it back if you have moved it.

A big thank you to everyone for skipping the coffee machine. Because of your help, we are back in the good books with the centre management and everything is running smoothly again. Cheers for helping us keep the peace

- **October 2026** : Committee and General meeting, doors open 6.30pm.
  After General meeting IARS Trivia Kahoot!!!! with Prizes 😊
- **November 2026** : Committee meeting at 6.30pm. No General meeting.
  IARS Annual Auction with Simon VK2XQX. Doors open at 6.30pm for sellers for looking to sell their gear. Equipment must be booked in before the auction starts at 7.30pm. Please NO latecomers.
- **December** : Committee starts at 6.30pm then general meeting at 7.30pm. Doors open 6.30pm 
  IARS year end Christmas function with a Show and Tell

Fun Corner

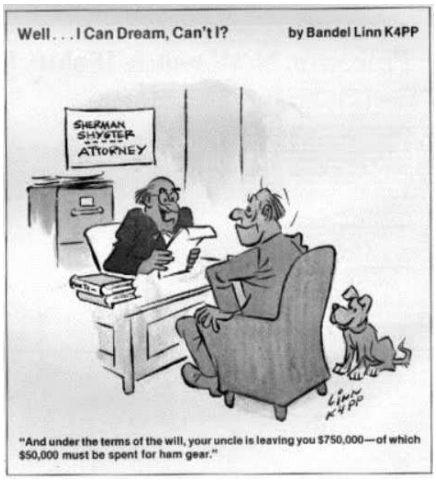
Please send in your funnies to iars.keithb@gmail.com

Thanks to all that sent in funnies.













Please submit 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 13th October from 7.30pm,

73
Keith VK2KQB
IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948