Illawarra Amateur Radio Society

Propagator May 2025

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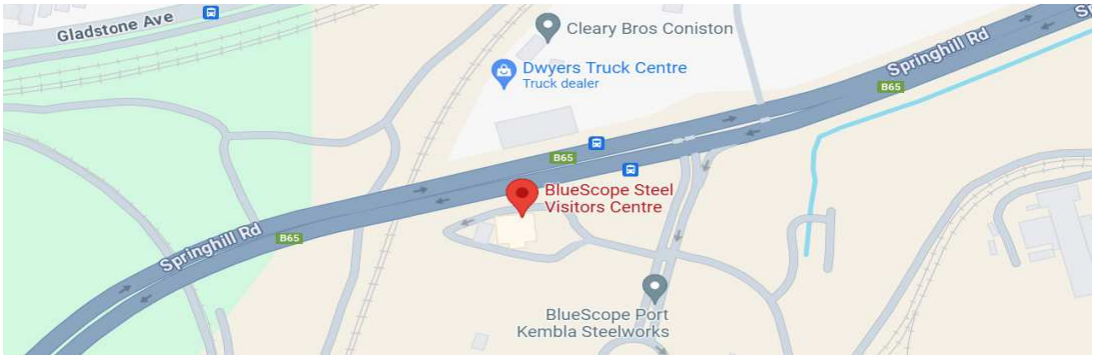
Upcoming Meeting on the 13th May 2025

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

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



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

AMATEUR RADIO IN THE ILLAWARRA SINCE 1948

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

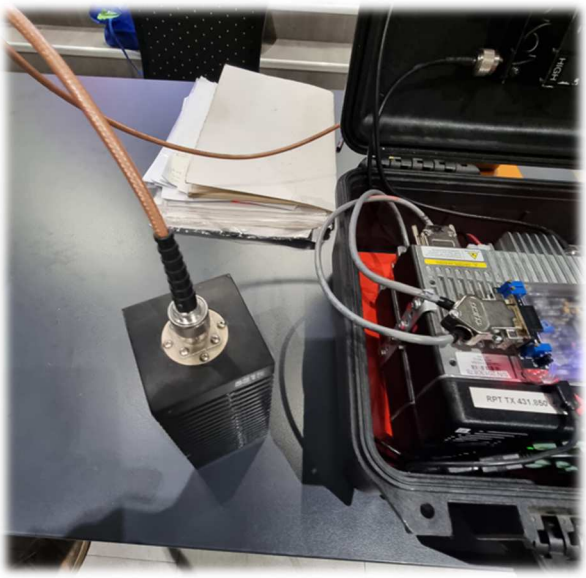
VK2AMW

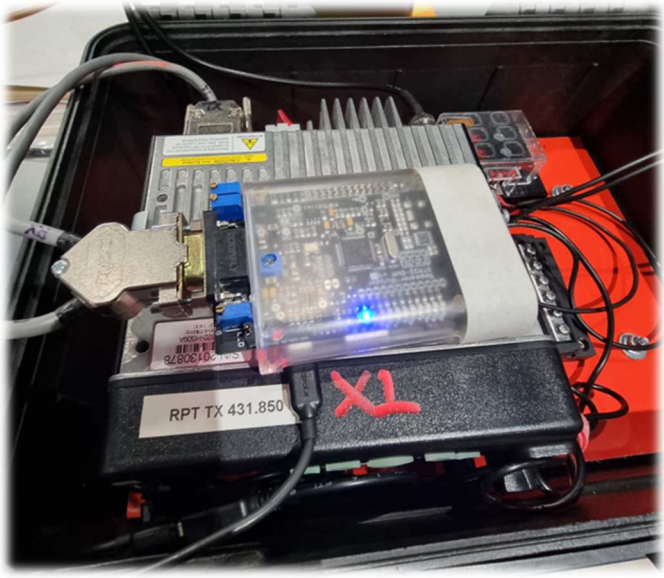
Our last meeting 8th April 2025

RDAR, Repeater in a box ! by Roger VK2VRK

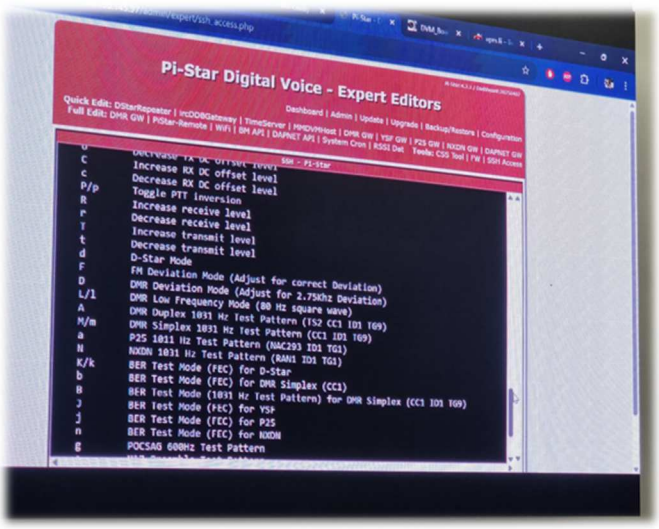
A very interesting presentation by our very own radio tech guru, Roger VK2VRK. Roger demonstrated a complete repeater system in a box to be used as **RDAR.** What is RDAR? Well, it stands for **R**apid **D**eployment **A**mateur **R**adio.

Using a raspberry -pi pi-star system and the Brandmeister network, Roger demonstrated a complete DMR/P25/DSTAR/C4FM operations from a portable station.

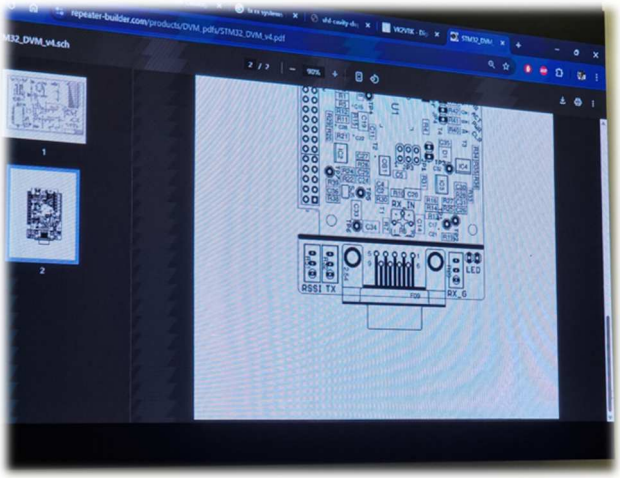




Dummy load for testing with the two transceivers tucked away in the case



One of the setup screen and roger getting the unit ready for TX



The repeater control circuit board on display with the open case showing the flatpack cavities installed for 70cm

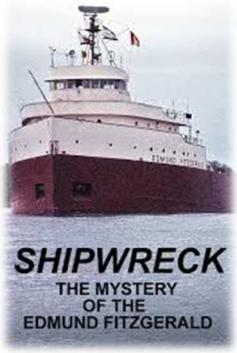
The excellent piece of test gear Anritsu S332E, and excellent piece of chocolate cake for those not on diet 😊

Another great evening of entertainment for the IARS members.

Thanks to everyone who attended the meeting and to those who unfortunately could not attend Roger will be more than happy to discuss the project with you. Please advise with your contact details and we will pass it on to Roger.

Thank you Roger VK2VRK

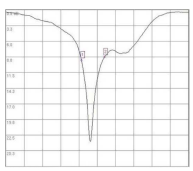
Next Meeting



Part 2

Ned VK2AGV, The Edmund Fitzgerald Part 2 the Conspiracies? (Approx. 30min)
After which we will have some testing fun!

Insertion Loss testing



Have you ever thought about the insertion losses your coax switch, home brew balun, triplexer or duplexer might add to your system. Please bring it along to the next meeting and we will put it to the test, 😊 be THERE or be ☐

Disposables Table

We had an awesome spread at the last meeting with lots of nice goodies thanks to Roger VRK, Tony TS and John EJL who all brought some items in for a second life 😊 thanks to all that contributed, and there is always next meeting!

Bring along your unwanted parts, testers, radios, antennas , power supplies and anything else radio related you have.

There is no better bargain.

SNOWBALL

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

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

The Snowball number 19 was drawn and the IARS member Ian Avery was not present.

That can only mean one thing!!! The Prize money has snowballed for the next meeting 😊

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 already assisted in getting four new amateurs licenced, is it your turn next?

YES!!!

The IARS is helping Amateur Radio grow in Australia!!!

IARS NETS

1. Saturday Morning, the EAST COAST NET hosted by Steve VK2BGL at 9.30am

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

The IARS would also like to thank Doug VK2XLJ and Angelo, VK2NWT who are is always willing to assist whilst Steve is away.

2. **IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM using VK2AMW.**
   Every Tuesday evening, (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, 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, 8PM on 28.466Mhz +/- for QRM/QRN Hosted by Tony VK2TS**
   General discussions about building antennas for 10m, transceivers and what else comes to mind, this net is normally between 30 and 60minutes.

5. **IARS Friday evening weekly 70cm NET , 8PM on 438.225 with – 5MHz 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

- **438.225 with a - 5MHz offset. OK**
- **146.975 with a -600kHz offset NO CTCSS, C4FM enabled OK**
- **146.850 with a – 600kHz offset (linked to 146.675) NO CTCSS OK**
- **146.675 with a – 600kHz offset (linked to 146.850) NO CTCSS OK**
- **53.650Mhz with a – 1Mhz offset (123Hz CTCSS tone 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**

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.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Latest Repeater Report:

All systems OK

BUY..SWAP..SELL..GIVEAWAY

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

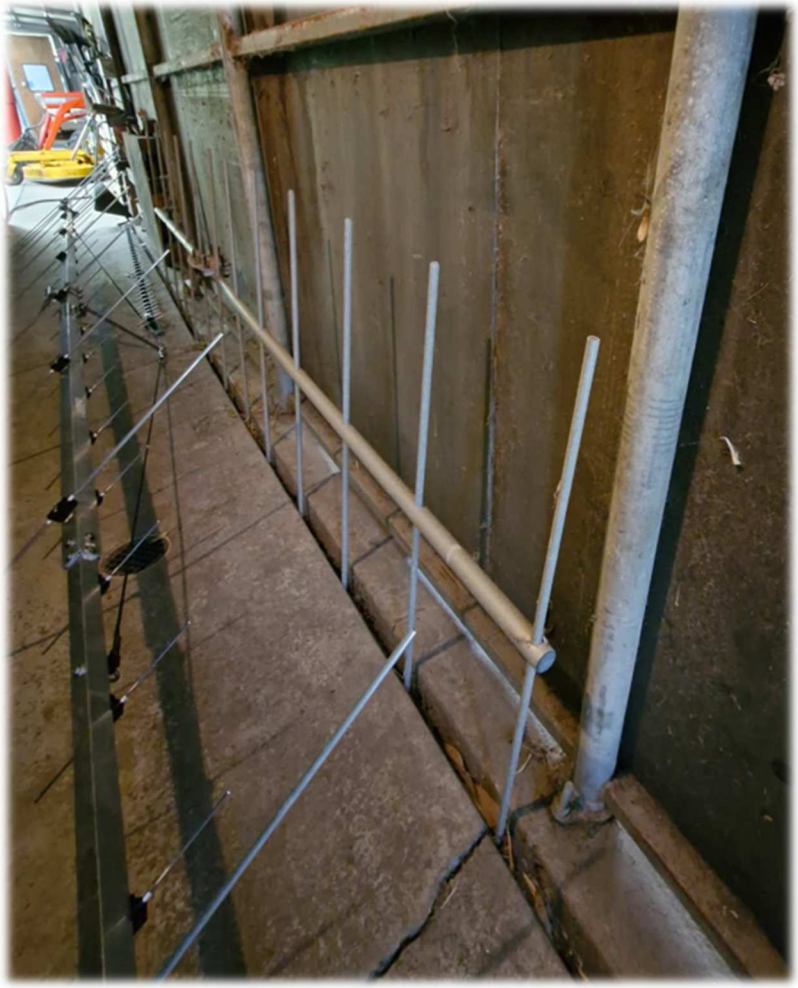
This month's give away

A very big thank you to Mark VK2PH who has kindly offered some gear free to a good home, don't get much better than that 😊. If you are interested, please email iars.keithb@gmail.com and I will pass your details on to Mark.

TWO SECTION TOWER , 18ft , 16ft and 11ft pole for the tower

SOLAR PANELS

8 years old still working only removed to upgrade to a larger solar system. 1.5kW total, 6 panels. Can charge 12Volts systems with the correct charger or DC to DC converter.



Top and bottom picture right,

12 Element Werner Wolf Yagi, free to a good home.

Electronic component and service suppliers

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

Wagner Electronics Super Store https://www.wagneronline.com.au

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

ATR
Amateur Transreceiver Radio Supplies

https://amateurradiosupplies.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

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.*

Choke cookbook for the 160-10m bands (part1)

Using Fair-Rite #31 2.4-in o.d. (2631803802) and 4-in o.d. (2631814002) Toroids

Common mode chokes are added as series elements to a transmission line to kill common mode current. The line may be a short one carrying audio or control signals between a computer and a radio, video between a computer and a monitor, noisy power wiring, or feedlines for antennas. This information focuses on the use of chokes on the feedlines of high-power transmitting antennas to suppress received noise, to minimize RF in the shack (and a neighbour's living room) and to minimize crosstalk between stations in multi-transmitter environments.

Fundamentals Differential mode current is the normal transmission of power or other signals inside coax, or between paired conductors. The currents in the two conductors are precisely equal and are out of polarity (that is, flowing in opposite directions at each point along the line). Because the current in the two conductors are equal and out of polarity, they do not radiate, nor do they receive. Common mode current is carried on the outside of the coax shield, or as the difference of unequal currents on the two conductors of 2-wire line.

A line carrying common mode current acts as antenna for both transmit and receive. Common mode current that couples to the antenna changes the directional pattern of an antenna by filling in the nulls of it's directional pattern. In simple terms, the common mode circuit becomes part of the antenna – the part of it that is close to noise sources picks up that noise; and when transmitting, radiates RF that poorly designed equipment will hear as RF interference. Series and Parallel Equivalent Circuits: The fundamental equivalent circuit of a ferrite choke at radio frequencies simplifies to two parallel resonant circuits, wired in series, as shown in Fig 1. All ferrite chokes have a circuit resonance formed by inductance and resistance coupled from the core and parasitic (stray) capacitance between the two ends of the choke. LC, RC and CC describe this circuit resonance. For a single turn (a wire goes through the core once), the core itself is the dielectric, and the resonance is typically in the range of 150 MHz. We form a choke that is useful at HF by winding multiple turns through the ferrite core. Like all inductors, the inductance (LC) is multiplied by the square of the number of turns (N2), and because the resistance is coupled from the core, RC is also multiplied by N2. Parasitic capacitance is both through the core and also between turns, and increases approximately linearly with N. The result is that the resonance moves down in frequency and the resistance at resonance gets much larger. Some ferrite materials also have a property called dimensional resonance, which is the result of standing waves within the cross section of the ferrite material. Fair-Rite #43 and #61 are NiZn ferrite mixes, and do not exhibit dimensional resonance.

Fair-Rite #31, #73, #75, #77, and #78 are MnZn ferrite mixes, and MnZn ferrites do have dimensional resonance. LD, RD, and CD describe the dimensional resonance (if present). This equivalent circuit describes the impedance of the choke over a broad frequency range – once the values of LD, RD, CD, LC, RC and CC; have been found, they are very approximately constant (the same) for a broad range of frequencies.

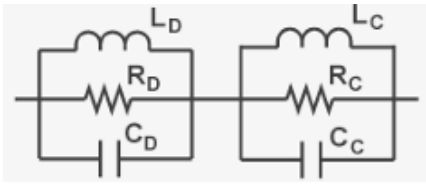
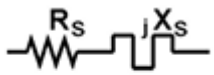


Fig 1

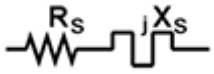
Our measurements of choke impedance provide values of ZMAG, RS and XS, as shown in Fig 2, where XS is positive when the impedance is inductive (below resonance), and negative when it is capacitive (above resonance). ZMAG is the magnitude of the impedance, equal to the Fig 2 square root of (RS 2 + XS 2). These values are different for every frequency, but the plotted (or tabulated) data can be used to find LD, RD, CD, LC, RC and CC. When dimensional resonance is not present, these values can be computed by working backwards from the impedance curves. To a first approximation, RC is simply the value of Z at resonance, LC is the inductance that yields XC well below resonance, and CC is the capacitance that resonates with LC at the measured resonant frequency. At resonance, of course, RC and RS are equal, XS is zero, and the combined reactance of LC and CC is infinitely large. When both resonances are present, the process is significantly more complex.



Feedline
40Ω –j 200Ω

Fig 2

Why the Emphasis on RS? Because XS of the choke can be inductive or capacitive, and because the common mode circuit will be inductive at some frequencies and capacitive at others, XS of the choke can cancel part or all of the Xs of the common mode circuit. This cancellation causes common mode current to increase, which is the opposite of the desired result. But RS of the choke always adds to the common mode impedance, so a high value of RS always reduces common mode current. Fig 3 shows a choke added to a feedline that looks capacitive at some frequency of interest. In this example, the capacitive and inductive reactance's partially cancel, adding to 4,040Ω +j 100Ω. RS and XS values for both choke and feedline will be different at every frequency, with XS values sometimes adding and sometimes cancelling, but RS values always adding. In effect, a large Value of RS makes the choke far less sensitive to line length. [In the common mode circuit, VF is that of the coax shield with its outer jacket, typically on the order of 0.98, not the VF of the coax as a transmission line. This VF is also typical of 2-wire line in the common mode circuit.



Choke
4,000Ω +j 300Ω

Understanding the Common Mode Circuit: Consider a simple dipole fed with coax. In the common mode circuit, the coax shield becomes part of the antenna, acting as a single wire connected between one side of the center of the antenna and ground. As a common mode circuit element, its VF is near 0.98 (depending on the diameter of the shield and the dielectric property of the outer jacket). In the common mode circuit, this wire (the coax) has some impedance, (RS + jXS), by virtue of its electrical length, which is different at every frequency. At some frequencies, XS will be positive (inductive), at others it will be negative (capacitive).

How Much RS is Needed? From the perspective of both noise suppression and power handling, it has been shown that an RS value of 5,000 Ω is a good starting point for most applications, such as at the feedpoint of a reasonably well-balanced and well matched antenna at power levels below about 600W. More demanding applications (higher power, a badly unbalanced antenna) may require higher choking impedance, and, in general, more is better. Rewinding a choke to double RS divides the current by 2, which divides the dissipated power by 2 (because power is I2R). Using two identical chokes in series divides the total power by 2 and divides the power dissipated in each choke by 4. Why Chokes Are Needed Without a choke at the feedpoint, the feedline becomes part of the antenna; if the antenna system, including the feedline, is unbalanced, this causes the feedline to radiate part of transmitted power; when receiving, signal and noise picked up by the feedline is coupled to the antenna. This is most easily understood with coax, where skin effect and proximity effect combine to cause common mode current to flow on the outside of the shield and differential mode current to flow on the outside of the center conductor and return on the inside of the shield. Common mode current also flows on parallel 2-wire feedline (where it shows up as the difference between unequal currents in the two conductors) if any part of the antenna system is poorly balanced. An antenna system, can be unbalanced (that is, not symmetrical) by its surroundings – unequal heights, ground slope, trees, sloping of the antenna itself, conductive elements of a building or tower very close to it. Chokes can be used in series to increase their effectiveness on a single band, or to increase their effective bandwidth, or both. Their combined choking impedance is simply the algebraic sum of their RS and XS values.

Baluns and Chokes: A balun is used to make a transition between balanced and unbalanced circuitry, and can take many forms. Many are not designed to kill common mode current. Chokes and Manufactured Antennas My advice is to always use the balun or other matching elements provided with a manufactured antenna (unless you know it to be defective), and to add a common mode choke between that matching element and the feedline to block common mode current. Rigging Chokes To Beam Antennas A choke is a parallel tuned circuit, and the winding data places the resonance where it is desired for any given antenna. The parallel capacitance is small, typically 4-12 pF; if, for example, we lash coax on either or both sides of the choke so that it runs tight along the boom, capacitance between the coax and the boom appears in parallel with the choke, moving its effective range down in frequency, effectively defeating it. Better to rig the choke by suspending it from the boom, lashing coax to the boom at a single point on each side of the choke, and minimizing the length of coax that is in contact. Antenna Arrays Chokes are most effective when placed at the feedpoint of each element of an array, but care must be taken to make sure that adding the choke does not change the phasing. A choke is simply a coiled up length of transmission line, and the electrical length of the feedline to that antenna is increased by the electrical length of the feedline used to wind the choke. If the feedline and the choke have the same ZO, shortening the coax by that electrical length is all that is required. But if ZO of the choke and feedline are different, the chokes must be added to a model of the array to study their effect and to determine the degree of shortening required.

75 Ω Chokes For 4-Square Transmit Antennas Two possible options are RG302 (0.203 in o.d., solid steel silver coated copper center) and RG179 (0.1-in. o.d., stranded silver coated copper center). RG302 is close enough in size to RG400 that recommendations for RG400 can be used. Grant, KZ1W, sent me some RG179, and I wound chokes on the same test 2.4-in o.d. toroids. (Fig 4) Recommendations are summarized in k9yc.com/ChokesRG179.png and apply to any 0.1-in o.d. coax with FEP or PTFE outer jacket. Loss and dissipation calculations include two 4 in leads. This miniature coax is pretty lossy, so it can't handle a lot of power, but it probably can handle US legal limit power Fig 4 – RG179 Choke equally divided to each of the verticals provided that the chokes are exposed to free air. Cookbook guidelines are for closely spaced turns (touching on the inner diameter), and are summarized below.


Fig 4 – RG179 Choke

RG179 Chokes for Transmitting 4-Square Arrays on 2.4-in o.d. #31 Toroids Band Winding 160M 80M 40M 30M 2.4-in o.d. Toroid 27 turns 24 turns 22 turns 21 turns 4-in .d. Toroid RG400

Noise Coupling and Transfer Impedance: Shielded cables have a property often quantified as their transfer impedance, which is the ratio of the differential voltage induced inside the coax to the common mode current on outside of the shield. Its units are Ohms, a low value is better, and the lower limit is the resistance of the shield at the frequency of interest. The overall quality, percent coverage, and uniformity of the shield also contribute to the transfer impedance – a less dense braid or a shield with poor uniformity raise the transfer impedance, causing more noise to couple by this method. Even with a choke at the feedpoint, most feedlines are ground-referenced at the transmitter end, so any RF will induce current on the shield, which the transfer impedance converts to a differential signal inside the coax. This makes it a receiving antenna for noise. The feedline can also function as a passive element of another antenna nearby, especially vertical antennas. One or more chokes added along the feedline breaks up the common mode circuit, just as egg insulators break up guy wires into non-resonant lengths. I break up the coax feedlines to high dipoles so that they do not act as parasitic elements to my 160M vertical, and the feedlines to my receive antennas to prevent noise coupling via the transfer impedance.

Which Wire/Coax to Use? Over a period of about three months, Glen, W6GJB, and I built, and I measured, hundreds of chokes, wound with RG8-size coax, RG400 (Teflon jacket, stranded silver coated copper center, two silver-coated copper shields), #12 and #10 enameled copper pairs, THHN #12 and #10 pairs, a #12 teflon pair, and a pair formed by the black and white conductors removed from #10 and #12 Romex (NM). As part of the project, I built 30-50 ft lengths of each of the paired lines and carefully measured their transmission line characteristics at MF and HF. That measured data, along with details of the measurement system, is in an Appendix. Thanks to their construction and materials, each of these transmission lines has different capacitance between turns and interacts differently with the ferrite core. ZO depends primarily on dimensions, but dielectric materials affect capacitance between conductors, between turns, and to the core. ZO is in the range of 45 Ω for enameled pairs (a bit lower for #10), but closer to 96 Ω for the #12 Teflon pair, 90 Ω for THHN and 86 Ω for the NM pair. One should not obsess about adding a 95-100 Ω choke to a 50 Ω feedline – the longest length of line in a THHN choke recommended for 160M is 8 ft long, less than λ/50; the longest in Teflon #12 chokes is 8 ft; the longest in chokes recommended for 80M are proportionally shorter, so still less than λ/50. Coax types have a minimum bend radius that depends on their construction, and resonance curves are affected by turn spacing and diameter, especially the RG8. We built and measured chokes with 4-in, 6-in, and 8-in diameter turns. Glen provided invaluable assistance by designing (and fabricating in his shop) some very innovative winding forms for the coax chokes, providing the consistency that allowed meaningful measurements to be made, and by winding the larger RG8 size chokes. Glen also built an excellent test fixture that made the measurements possible! Details are in an Appendix.

Which line to use? Chokes wound with higher ZO line (pairs of #12 THHN, NM, Teflon) work quite well at the feedpoint of a high dipole (or a not very high dipole over poor ground), but may not at the feedpoint of a complex array. The #12 Teflon I found is silver-coated stranded copper, o.d. is 0.109". It's very nice to work with, and chokes wound with it have the lowest loss and the least dissipation for each band. It's expensive, so is best bought from surplus vendors. I paid almost $1/ft, but I've seen long lengths for a bit less. When paired, ZO will vary with insulation thickness and the dielectric properties of the insulation. The other "best" choice, especially for antennas with feedpoint ZO near 50 Ω, is RG400. Harbor Industries RG400 is highly regarded, $230 for 100 ft on EBay. If these cables are too rich for your blood, the next best choice is white and black conductors which are easily removed from NM cable (Romex) by stripping the outer jacket. It has been observed that the jacket of THHN deteriorates with exposure to UV, which may change transmission line properties of paired THHN.

Enameled copper pairs have much greater loss than other paired lines. This is because the magnetic fields produced by currents in very closely spaced pairs used as transmission line cause the current to be concentrated in the side of the conductors closest to each other. This mechanism, which is strongly related to skin effect, is called proximity effect, and is what causes differential current to flow on the inside of the coax shield. Just as skin effect forces current to the skin of the conductor, proximity effect forces it to only one half of the skin! Proximity effect rises rapidly as the center-to-center spacing approaches the conductor diameter, which is the case with enameled wire. As can be seen from the table of measured transmission line data, the enameled pairs have significantly higher loss (and greater dissipation) than other paired cables. It's also possible for the enamel to be scraped by the ferrite core during winding, shorting to the core at multiple points and significantly degrading choke performance.

<u>For both reasons, I no longer recommend chokes with enameled wire</u>.

How the Cookbooks are Organized: For each band and cable type, designs are listed in order of highest to lowest value of RS. For chokes covering multiple bands, that ranking is determined by the band having the lowest RS value.

Table 1 – Choke Cookbook For Chokes Wound on a Single #31 4-in o.d. Toroid

RG400	Teflon #12	NM/THHN #12
160M:		
23 turns (17KΩ) 22 turns (15KΩ) 21 turns (13KΩ) 20 turns (11KΩ) 19 turns (10KΩ) 18 turns (8KΩ) 17 turns (7KΩ) 16 turns (5.5KΩ)	22-23 turns (15KΩ) 21 turns (13.5KΩ) 20 turns (12.5KΩ) 19 turns (11KΩ) 18 turns (10KΩ) 17 turns (8KΩ) 16 turns (6.5KΩ) 15 turns (5.5KΩ)	21-23 turns (12.5KΩ) 20 turns (12KΩ) 19 turns (11KΩ) 18 turns (10KΩ) 17 turns (8.5KΩ) 16 turns (7KΩ) 15 turns (6KΩ)
80M:		
18-20 turns (11KΩ) 21 turns (10KΩ) 17 turns (9.5KΩ)) 22 turns (9KΩ) 16 turns (8.5KΩ) 23 turns (7.5KΩ) 15 turns (7.5KΩ) 14 turns (6.5KΩ) 13 turns (5.5KΩ)	16-18 turns (7.5KΩ) 15 turns (7.2KΩ) 19 turns (7KΩ) 14 turns (6.5KΩ) 20-21 turns (6KΩ) 17 turns (5.5KΩ) 13 turns (5.5KΩ)	15-16 turns (6.7KΩ) 17 turns (6.5KΩ) 14 turns (6.4KΩ) 18 turns (6.2KΩ) 19 turns (5.5KΩ) 13 turns (5.5KΩ) 20 turns (5KΩ)
40M:		
14 turns (7.5KΩ) 16 turns (7.5KΩ) 15 turns (7KΩ) 13 turns (6.5KΩ) 17 turns (6KΩ) 18 turns (5.5KΩ) 12 turns (5KΩ)	13-14 turns (5.7KΩ) 19 turns (5KΩ) 12 turns (5.2KΩ) 15 turns (5KΩ)	12-14 turns (5KΩ)
30M:		
13-14 turns (6.5KΩ) 12 turns (6KΩ)	13-14 turns (5KΩ)	
20M:		
12 turns (6KΩ)		
160-80M:		
21 turns (13KΩ 160M, 10KΩ 80M) 20 turns (11KΩ 160M, 11KΩ 80M) 19 turns (10KΩ 160M, 11KΩ 80M) 22 turns (15KΩ 160M, 9KΩ 80M) 18 turns (8KΩ 160M,10KΩ 80M) 23 turns (17KΩ 160M, 7.5KΩ 80M) 17 turns (7KΩ 160M, 9.5KΩ 80M) 16 turns (5.5KΩ 160M, 8.5KΩ 80M)	18 turns (9.5KΩ160M, 8KΩ 80M) 17 turns (8KΩ both bands) 20 turns (12.5KΩ160M, 6KΩ 80M) 19 turns (11KΩ160M, 7KΩ 80M) 16 turns (6.5KΩ160M, 8KΩ 80M) 15 turns (5.5KΩ160M, 7.2KΩ 80M) 21 turns (13.5KΩ160M, 5.5KΩ 80M)	17 turns (8.5KΩ160M, 6.5KΩ 80M) 16 turns (7KΩ160M, 6.5KΩ 80M) 18 turns (10KΩ160M, 6KΩ 80M) 15 turns (6KΩ160M, 6.8KΩ 80M) 19 turns (11KΩ160M, 5.5KΩ 80M) 20 turns (12KΩ160M, 5KΩ 80M)
160-40M:		
17 turns (7KΩ 160M, 9.5KΩ 80M, 6KΩ 40M) 18 turns (8KΩ 160M,10.5KΩ 80M, 5.5KΩ 40M) 19 turns (10KΩ 160M, 11KΩ 80M, 5KΩ 40M) 16 turns (5.5KΩ 160M, 8.5KΩ 80M, 7.5KΩ 40M)	15 turns (5.5K 160M, 72K 80M, 5K 40M)	

RG400	Teflon #12	NM/THHN #12
160-30M:		
16 turns (5.5KΩ 160M, 8.5KΩ 80M), 7.5 KΩ 40M, 5 KΩ 40M)		
80-40M:		
16 turns (8.5KΩ 80M), 7.5 KΩ 40M) 15 turns (7.5KΩ 80M, 7KΩ 40M) 14 turns (6.5KΩ 80M, 7.5KΩ 40M) 17 turns (9.5KΩ 80M, 6KΩ 40M) 18 turns (9.5KΩ 80M, 5.5KΩ 40M) 19 turns (11KΩ 80M, 5KΩ 40M)	14 turns (6.5KΩ 80M, 5.8KΩ 40M) 13 turns (5.8K both bands) 15 turns (7.2KΩ 80M, 5.5KΩ 40M)	14 turns (6.5KΩ 80M, 5KΩ 40M) 13 turns (5.5KΩ 80M, 5KΩ 40M)
80-30M:		
16 turns (8.5KΩ 80M), 7.5 KΩ 40M, 5 KΩ 30M) 15 turns (7.5KΩ 80M, 7KΩ 40M, 5 KΩ 30M) 14 turns (6.5KΩ 80M, 7.5KΩ 40M, 6.5KΩ 30M)	13 turns (5.8KΩ 80M-40M, 5KΩ 30M)	

4-inch o.d. Chokes for Multiple Bands: A few designs provide good choking impedance (an R_S value of 5KΩ or more) over three harmonically related bands. 16-19 turns of RG400, and 15 turns of a #12 Teflon pair, all provide 5KΩ from 160M to 40M. Many of the RG400 designs provide very high choking impedance on both 160 and 80M, while a few of the #12 Teflon NM/THHN designs provide at least 10KΩ on 160M and at least 7KΩ on 80M.

Table 2 – Choke Cookbook For Chokes Wound on a Single #31 2.4 in o.d. Toroid

RG400	Teflon #12	NM/THHN #12
160M:		
18 turns (10KΩ) 17 turns (6KΩ)	18 turns (9.5KΩ) 17 turns (7KΩ)	18 turns (9.5KΩ) 17 turns (9KΩ) 16 turns (6KΩ)
80M:		
16 turns (8KΩ) 15 turns (7KΩ) 14 turns (6KΩ) 17 turns (5.5KΩ) 13 turns (5KΩ)	15-16 turns (6.5KΩ) 17 turns (5.5KΩ) 14 turns (5.8KΩ)	15 turns (7KΩ) 14 turns (6KΩ)) 16 turns (5KΩ)) 13 turns (5KΩ)
40M:		
14 turns (6.2KΩ) 15 turns (5.4KΩ) 13 turns (5KΩ)	15 turns (6.5KΩ) 14 turns (5.8KΩ) 13 turns (5KΩ)	14 turns (6KΩ) 13 turns (5KΩ)
30M:		
14 turns (6.5KΩ) 13 turns (5.5KΩ) 12 turns (5KΩ)	14 turns (6KΩ) 15 turns (5.5KΩ) 13 turns (5KΩ)	13-14 turns (5.5KΩ)
20M:		
13 turns (5.4KΩ) 14 turns (5KΩ) 12 turns (5KΩ)	13 turns (5.5KΩ) 14 turns (5KΩ) 12 turns (5KΩ)	12-13 turns (5KΩ) 11 turns (4.2KΩ)
15M:		
11-12 turns (4.8KΩ) 10 turns (4.2KΩ)	11-12 turns (4.7KΩ) 10 turns (4KΩ) 13 turns (3.8KΩ)	11 turns (5KΩ) 12 turns (4KΩ) 10turns (4KΩ)
10M:		
10 turns (4.4KΩ) 9 turns (3.8KΩ) 11 turns (3.5KΩ)	10 turns (4.3KΩ) 11 turns (4KΩ)	10-11 turns (4.2KΩ)
160-80M:		
17 turns (6KΩ 160M, 6K 80M)	17 turns (7.5KΩ 160M, 5.5K 80M)	16 turns (6KΩ 160M, 5K 80M)
80-30M:		
	15 turns (6.5KΩ 80-40, 5.5K 30M)	14 turns (6KΩ 80-40, 5.5 KΩ 30M)
80-20M:		
14 turns (6KΩ 80-30M, 5K 20M) 13 turns (5KΩ all four bands)	14 turns (5.8KΩ 80-40M, 6KΩ 30M, 5K 20M) 13 turns (5KΩ all four bands)	13 turns (5KΩ all bands)
40-15M:		
13 turns (4.8KΩ 40-30M, 5KΩ 20M, 4.8KΩ 15M)	12 turns (4.6KΩ 40-30M, 5KΩ 20M, 4.8KΩ 15M)	

Chokes in Series: In general, any combination of chokes can be used in series to provide the desired choking impedance over the desired bandwidth. Their combined choking impedance, RS, will be the sum of their RS values on each band. For example, two 12-turn RG400 or Teflon chokes provide at least 8KΩ from 80 to 15M and 6KΩ on 10M. Combining 14 and 17 turn RG400 chokes provides more than 8KΩ on 160M, about 12KΩ on 80M, 8KΩ on 40M, 7KΩ on 30M, and 5KΩ on 20M. Table 3 lists combinations I found. The spreadsheets at the links in Table 5 show RS values, attenuation, dissipation, and approximate cost and weight for all chokes measured for each band. Use these spreadsheets to find other combinations useful for your station.

Links to Spreadsheets

http://k9yc.com/Chokes-2r4inRG400.png ; http://k9yc.com/Chokes-4inRG400.png , http://k9yc.com/Chokes-2r4inTeflon.png

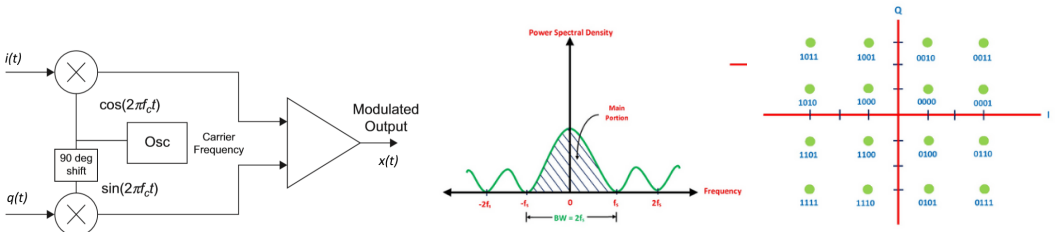
http://k9yc.com/Chokes-4inTeflon.png, http://k9yc.com/Chokes-2r4inNM.png , http://k9yc.com/Chokes-4inNM.png

Next Month Propagator we share part 2 choke cookbook

QAM??

What is QAM (quadrature amplitude modulation) and how does it work?

QAM (quadrature amplitude modulation) is a method of combining two amplitude modulation (AM) signals into a single channel. This modulation scheme helps double the channel's effective bandwidth. QAM is also used with pulse AM in digital systems, such as wireless communications.



What is QAM (Quadrature Amplitude Modulation)?

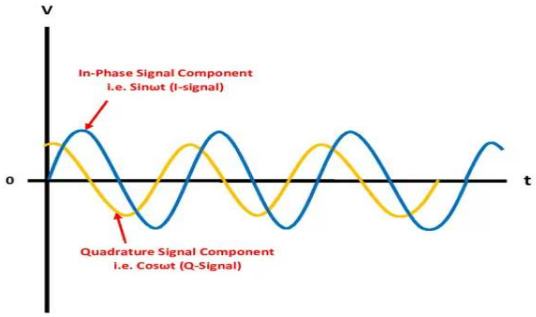
QAM (Quadrature Amplitude Modulation) is defined as a modulation technique that combines phase and amplitude modulation in a single channel. It transmits information by changing both the amplitude and phase of a carrier wave, doubling the effective bandwidth. QAM is also known as quadrature carrier multiplexing.

A QAM signal involves direct modulation of a carrier wave in quadrature. The term “quadrature” means the phase difference between the two carriers is 90 degrees, but both have the same frequency.

One signal is called the in-phase “I” signal, and the other is called the quadrature “Q” signal. Mathematically, one of the carrier signals can be represented by a sine wave (i.e. cos$_{\omega}$t) and the other can be represented by a cosine wave (i.e. sin$_{\omega}$t). cos (θ) = sin (θ-90°)

The two modulated carrier signals are transmitted together at the source and at the destination, these two carrier signals are demodulated (i.e. separated) independently. To demodulate the signal coherent detection method is used.

The waveform of the QAM technique is shown below.



Analog vs Digital QAM

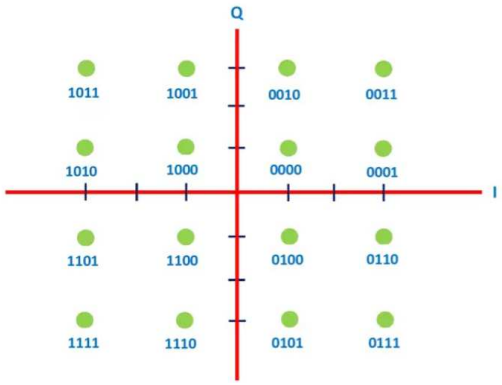
Analog QAMs are used to carry multiple signals on a single carrier. It’s similar to AM (Amplitude Modulation) but with two carrier signals at the same frequency, 90 degrees out of phase.

Analog QAM transmits colour information in PAL and NTSC analogue video TV systems. The I (in-phase) and Q (quadrature) signals carry the components of the colour information. PAL stands for Phase Alternating Line is the video standard which is mostly used in the European and Asian countries and NTSC stands for National Television Standards Committee is the analogue colour television standard which is mostly used in South America and North America.

Digital QAM, also known as Quantized QAM, is commonly used in radio communication systems, including cellular technology and Wi-Fi. Digital QAM supports higher data rates than both amplitude and phase modulation schemes.

In digital QAM schemes, to define the values of phase and amplitude different points can be used. This is known as a constellation diagram. Thus a constellation diagram is the set of possible message points. QAM can be realized by using a constellation diagram. In the constellation diagram, the constellation points are arranged in a square grid with equal horizontal and vertical distance. The minimum distance between the constellation points is known as a Euclidean distance. In the digital communications, data is usually in a binary form and it has two states 0 or 1, so the number of constellation points in the grid is usually a power of 2 i.e. 2, 4, 8, 16, 32…… the most common formats of QAM are16-QAM (2^4), 32-QAM (2^5), 64-QAM (2^6), 128-QAM (2^7) and 256-QAM (2^8).

The bit sequence mapping for a 16-QAM is shown below in the constellation diagram. A diagram shows that binary values associated with different positions for a 16-QAM signal. It can be seen that a continuous bit stream may be represented as a sequence and divided into four groups in each of the four quadrants.



Normally a 16-QAM is considered as the lowest order QAM because 2-QAM is considered the same as for BPSK (i.e. Binary Phase Shift Keying) and 4-QAM is the same as QPSK (i.e. Quadrature Phase Shift Keying). In addition to the error-rate performance of 8-QAM is almost the same as that of 16-QAM hence it is not widely used.

What Are QAM Channels?

QAM channels are the variety of different formats of QAMs which are used in many radio communications and data delivery applications. Some specific variants of QAMs channel are used in some specific applications and standards.
Let us assume that by using QAM we want to transmit a symbol consisting of 4 bits. That means N=4 and there are 2^4 = 16 different possible symbols. Hence the QAM system can generate 16 different distinguishable signals. It is known as a 16-QAM. By using 16-QAM we can modulate the carrier signal into any of 16 different phase and amplitude states.
Examples of some other QAM formats or channels are 16-QAM, 32-QAM, 64-QAM,128-QAM, and 256-QAM.
The number of QAM symbols or states is determined by the number of binary bits per second.

Advantages of QAM

Some of the advantages of QAM include:

- Noise immunity of QAM's is very high hence noise interference is very less.
- QAM has a low probability of error value.
- QAM supports a high data rate. So that the number of bits can be carried by the carrier signal. Hence, it is mostly used in wireless communication systems.
- QAM has a doubling the effective bandwidth.
- By using both sine wave and cosine wave into single-channel the communication channel capacity is doubled compared to the use of only one sine wave or one cosine wave.

Disadvantages of QAM

Some of the disadvantages of QAM include:

- In QAM, amplitude changes are susceptible to noise.
- It is not necessary to use of linear amplifier in a radio transmitter when a phase or frequency modulated signal is amplified, but due to the presence of amplitude component in QAM, it is necessary to use the linear amplifier in order to maintain linearity. These linear amplifiers are less efficient and consume more power.
- It is possible to transmit more bits per symbol but in higher-order QAM formats the constellation points are closely spaced which is more susceptible to noise and produces errors in the data.
- Also in higher-order QAM formats, there is a difficulty for the receiver to decode the signal appropriately. In other words, there is reduced noise immunity. So the higher-order QAM formats are only used when there is a high signal to noise ratio.

Applications of QAM

Some of the applications of QAM include:

- QAM technique is widely used in the radio communications field because of the increase of the bit data rate.
- QAM is used in applications ranging from short-range wireless communications to long-distance telephone systems.
- QAM is used in microwave and telecommunication systems to transmit the information.
- The 64 QAM and 256 QAM are used in digital cable television and cable modem.
- QAM is used in optical fiber systems to increase bit rates.
- It is used in many communication systems like Wi-Fi, Digital Video Broadcast (DVB), and WiMAX.

Handy On Line Calculators

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

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

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

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

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

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

Wavelength …. https://www.omnicalculator.com/physics/wavelength

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

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

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

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

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

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

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

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

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

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

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

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

OR

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

How many of these can you still answer correctly?

1. An antenna which is shorter than one quarter wavelength is:

   (a) inductively reactive
   (b) purely resistive
   (c) capacitively reactive
   (d) resonant

2. A VHF quarter-wave vertical antenna should ideally be installed on a flat earth-plane reflector to ensure:

   (a) uniform omnidirectional radiation
   (b) uniform bi-directional radiation
   (c) uniform uni-directional radiation
   (d) a figure-eight pattern

3. Which of the following antennas commonly used at VHF is omni directional?

   (a) 5/8 wavelength vertical
   (b) cubical quad
   (c) Yagi
   (d) wavelength horizontal dipole

4. "Top-loading" on an antenna will:

   (a) increase the physical height
   (b) decrease the current at the base of the antenna
   (c) reduce the radiating resistance
   (d) reduce the total capacitance reactance at the antenna input .

5. One effect of "top loading" an antenna is to:

   (a) reduce the effective height
   (b) increase the capacitance between the top of the antenna and ground
   (c) reduce the radiation resistance
   (d) lower radiation efficiency

6. The length of the quarter wave radiating element of a ground-plane antenna operating on 52 MHz is:

   (a) 1.37 metres
   (b) 3.0 metres
   (c) 6.12 metres
   (d) 52.0 metres

Answers next propagator

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

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

VOLUME 85, NUMBER : 4 MAY : 1985
REGISTERED BY AUSTRALIA POST PUBLICATION NO. NBH 1491

MEETINGS ARE HELD ON THE SECOND TUESDAY OF EACH MONTH (EXCEPT JANUARY) AT 7:30 PM AT THE STATE EMERGENCY SERVICES BUILDING, MONTAGUE STREET, NORTH WOLLONGONG.
VISITORS ARE WELCOME TO ATTEND MEETINGS.

THE MAY MEETING: The next meeting of the Illawarra Amateur Radio Society will be held on Tuesday, 14th May at the SES headquarters in Montague Street. The meeting will feature a talk by Gill McPherson, technical consultant to Dick Smith Electronics on new developments with kits fron D.S.E. following the successes of the 70 cm "Explorer" kits and the subsequent 2m kits.

For sale will be some more ex VK2ZAG radio equipment. (See inside for complete list.)

LAST MONTHS MEETING: Last months meeting featured a very entertaining and informative discussion by John Robinson VK2XY, on Packet Radio. The discussion involved a live demonstration with several stations in the Sydney area, via Mt. Murray repeater.

The demonstration was set up using a computer terminal, display unit and the dedicated Packet Radio terminal unit.

Thanks to John, Mike VK2DFK, who organized the demonstration, Morry VK2EMV who raced home to get his own computer as a backup, and to the stations who sat patiently on the side while the discussion was conducted, and congratulations on a very successful demonstration.

A mini-auction of some of VK2ZAG's radio equipment was conducted by Dennis VK2DMR in his own inimitable style. Thanks to Dennis,and to Lyle VK2ALU, for organization and transportation of the many items.

As promised last month, here are some more facts relating to Mt. Murray.

IDENT TONE PITCH	FREQUENCY	COMMENTS
#1 LOW	300 Hz. (Buzz)	Voltage below 11.5 Repeater would normally be switched off.
#2 MED -LOW	600 Hz.	Voltage between 11.5 & 12 20 second time-out applies.
#3 MED (NORMAL)	750 Hz.	Voltage between 12 & 12.7
#4 MED - HIGH	1050 Hz.	Voltage between 12.7 & 13.3
#5 HIGH	1900 Hz.	Voltage over 13.3 Battery full and still charging.

All of the other I.A.R.S. repeaters ident at 670 Hz., so by comparison, if Mt. Murray is higher in tone than any of our other repeaters, then the battery voltage is greater than 12, and it is OK to use the repeater for other than emergency traffic.
If it is lower than the other repeaters, then it is safe to assume that it is restricted to 20 seconds time-out, and that messages should be kept brief and to the point.

SOLAR POWER

On a sunny autumn day the solar panel generates 16 AH.
In the same 24 hour period the receiver, control unit and losses consume approx. 3 AH.
THat leaves 13 AH to run the transmitter for one day.
Since the tx draws 5 A, the daily tx time is 13/5 which equals 2.6h
Observation shows that the repeater daily usage is at least twice that figure.
To charge up the battery from flat takes 200AH.
It follows therefore thatTO CHARGE UP THE BATTERY THE AMOUNT OF ENERGY NEEDED WOULD TAKE 200/14 DAYS, THAT IS, JUST OVER 14 DAYS.
SO THE REPEATER WOULD HAVE TO BE SWITCHED OFF FOR 14 SUNNY DAYS

As I see it, we need either,
(1) More solar panels,
(2) Some wind
(3) Patience and understanding from users.
(4) A power point on the mountain top
(5) A TEAM OF STRONG FELLOWS WITH 4 wheel drive vehicles to cart batteries on a regular basis, and to use their own power to charge the spare bank.

PErsonally, I prefer number (3) on the list, but its your repeater, not mine. I do the best I can to keep it going, and sometimes thats not good enough, it seems.

Very Smart use of Morse code frequency Ident tones linked to the battery voltages 😊

Will share more oldies next month.

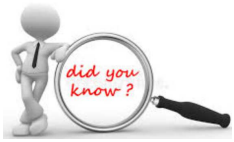
To read more information about this old propagator and others, use the link below

https://www.iars.org.au/wp-content/uploads/2020/09/1985-05-May.pdf

The Latest Edition of AR Magazine out now !!!! Free issue to all WIA members, Not a member ? See below 😊

Not a WIA member? Why not join? Support our hobby!!

Use this link and check out WIA Member benefits, information and WIA services under the "For Members" Tab at https://www.wia.org.au/



The IARS benefits if you are a WIA member, **YES**, we receive reduced annual fees for our public liability insurance. Based on the number of WIA members the IARS has, we can reduce our insurance costs substantially. As this is a compulsory insurance, we have no choice but to have it. With your help, we can keep the membership fees lower, which in turn benefits you, a win - win for all. **The IARS is affiliated with the WIA.**

This month's AR edition is bursting at the seems with great content, check it out!!

Advocacy Education Support

SINCE 1910

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

AMATEUR Radio

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Serving Australian radio amateurs since 1933

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General

Technical

Columns

Our cover: *A late-model transceiver illustrates the dilemma over the 60m band allocation – available on rigs and to amateurs in many countries, but not in Australia. Design by Sergio Fontana VK3SD. Cover lines by Roger Harrison VK2ZRH.*

NEXT ISSUE: Simplicities & Complexities

Contributions to Amateur Radio

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

Back issues
Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.80 each (including postage within Australia) to members.

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

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

Upcoming Contests ……………………………

Harry Angel

Harry Angel Memorial 80m Sprint

Contest Manager

Dr. Kevin Johnston VK4UH, Glenn Mathison VK4GMI
Harry Angel Sprint Manager
c/- Redcliffe and District Radio Club
PO Box 20, Woody Point. Qld 4019

Contest Introduction

The Harry Angel Sprint is an annual 80m contest event, first established in 1999, to commemorate the life of Harry Angel VK4HA who at the time of his becoming a Silent Key was the oldest licensed amateur in Australia.

The duration of the contest is 106 minutes one minute for each year of Harry's life.

The "HA" is held on or around the first Saturday in May each year and is open to all grades of licence holder. This contest is structured to suit both seasoned contesters and operators new to contesting.

More information link here >> https://www.wia.org.au/members/contests/harryangel/

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

VK Shires Contest

VK SHIRES 7th - 8th June 2025

Contest Manager

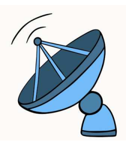
Diane Main: VK4DI. Long time contester and DXer.

Contest Introduction

Held the Saturday and Sunday of the weekend prior to the second Monday of June every year.
Starts: 00.00 UTC Saturday Ends: 23.59 UTC
VK Stations work VK Shires and CQ Zones whereas international stations only work VK Shires

Reworking stations is allowed in 4-hour blocks. The rules for the blocks are, however, somewhat different to what is allowed in the John Moyle Memorial Field Day or VHF-UHF Field Day use, so read the rules carefully.

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



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**

IARS outing planned this MAY

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Illawarra Amateur Radio Society

BREAKING NEWS!

This important information just in from IARS committee member Simon VK2XQX

Hello fellow amateur radio operators and radio enthusiasts.
The Illawarra Amateur Radio Society and the Picton Show Ground Trust are looking for expressions of interest to attend a Radio field day / swap meet in September 2025 at the Picton Show Ground.
At this stage we would like you to ask for expressions of interest from your club members via club meetings, clubs websites ,club Facebook pages and club newsletters and to any other amateurs and radio enthusiasts that you have contact with.
We are asking you to please collect the numbers of people interested in attending such an event so that planning can be made for the event to take place on ***September 2025****.*
This information needs to be communicated to the IARS club website (iars.org.au) and or the IARS club Facebook page before the 15th of June 2025.
At this stage , entry fee would be $5 per person. If you wish to sell from your car boot/ table, you need to book through the Picton Show Ground Trust *once the event has been organized.*

PLEASE be aware that the Picton show ground does not have the same facilities of the Wyong Race course.
There are public toilets available and food vans would be organised for the day. There are no powered sites available/
It may be possible to camp over on Saturday night for setup. if you require this, please communicate this with your expression of interest.
The Hume highway is not far from the Picton show ground which is located on the main road from the Hume into Picton.
Picton railway station is less than 200m from the show ground and some off-street parking will be available.
Gates open for general admission from 8.30 am and for traders from 7.00am

Please send all information gathered to vk2xqx2@optusnet.com.au or iars.keithb@gmail.com

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……more AR NEWS

Notice of Annual General Meeting

WIRELESS INSTITUTE OF AUSTRALIA
ACN 004 920 745
Bayswater, Victoria 3153 Australia
proxy@wia.org.au

Notice is hereby given to members that the Annual General Meeting of The Wireless Institute of Australia will be held on Saturday 3rd May 2025 at 3.00pm Australian Eastern Standard Time. The Annual General Meeting will be a hybrid event which can be attended either in person or by video conference. The Annual General Meeting will be held at Hotel Shamrock Cnr Pall Mall and Williamson Street Bendigo Victoria.

+ The Bendigo Amateur Radio and Electronics Club is holding a technology expo over the same weekend.

The Annual General Meeting may also be viewed on an internet streaming platform.

Notice of BUSINESS

1. To receive and consider the Annual Financial Statements, Directors Report and Independent Auditors report for the year ended 31 December 2024.
2. To confirm the results of the election of Directors
3. To transact any other business that may be brought before the meeting in accordance with the Institute's Constitution

By Order of the Board
Peter Clee VK8ZZ
Secretary of the Wireless Institute of Australia
28th March 2024

NOTES:
A member is entitled to appoint one proxy only who must be another Member of the Wireless Institute of Australia, and that proxy is entitled to vote on a show of hands or on a poll. The Instrument of Proxy is downloadable from the WIA web site (Information about the WIA), or upon written request to the National Office. Members must be financial to register to join the meeting either in person or by video conferencing facilities.

Members must register in order to participate either in person or online at the Annual General Meeting. Registrations to participate are now open and will close at midnight on 30th April 2025.

In order to watch the internet streaming of the event on the internet streaming platform it will not be necessary to register. Details and a link to the internet streaming of the meeting will be published on the WIA news web site on the morning of the AGM.

OPEN FORUM:
Immediately following the Annual General Meeting an Open Forum will be conducted. Additional detailed reports will be submitted on behalf of the Board, by the Institute's co-ordinators, committees, groups and those responsible for particular aspects of the Institutes activities. Any major issues affecting each area of responsibility will be identified.

Members are encouraged to discuss any matter arising from any of the reports, and to raise any other matter affecting Amateur Radio or the Institute. This format will avoid any restriction arising from the requirement to give notice of business to be formally raised at the AGM.

The open Forum will also be a hybrid event and members online for the AGM can participate in the Open Forum. The Open forum may also be streamed live.

Australian Government | acma Australian Communications and Media Authority

Have your say

14 April 2025

Remaking the Amateur LCD

The Radiocommunications Licence Conditions (Amateur Licence) Determination 2015 (the Amateur LCD) is due to sunset on 1 October 2025. We propose to remake the Amateur LCD with minor changes.

The focus of this review is ensuring the Amateur LCD 2025 remains fit for purpose and relevant conditions align to the Radiocommunications (Amateur Stations) Class Licence 2023, where appropriate. We will not be considering major reforms, such as amateur access to additional bands, as part of this review.

Find full details in the consultation paper and draft instrument on the ACMA website.

We welcome your comments by 5 pm (AEST), **Monday 26 May 2025**.

acma.gov.au

Australian Communications and Media Authority

THE RUSH IS ON
to Bendigo for the

Bendigo Technology Festival

and WIA ANNUAL GENERAL MEETING

3rd & 4th May 2025

Hosted by the Bendigo Amateur Radio and Electronics Club (BAREC)
https://barec.net.au

This exciting event will bring together enthusiasts, experts and hobbyists from all over to celebrate and explore the world of amateur radio, electronics, and technology of all types.

Come and enjoy a chat with old friends and make new friends. See the sights around historic gold rush town of Bendigo.

ITINERARY

Friday 2 May 2025 - Networking and Sightseeing around beautiful Bendigo
Friday Night - see Comedian Ross Noble, live in Bendigo

Saturday 3rd May Morning - Sightseeing around Bendigo area
Saturday 3rd May - 3.00pm WIA AGM at the Federation Room at Hotel Shamrock
Saturday Night - Dinner and Networking at Shamrock Hotel

Sunday 4th May - 10.00AM – 15.00 Bendigo Technology Festival, Fosterville Gold Pavillion, Prince of Wales Showgrounds Bendigo
Sunday 4th May - 10.00AM – 13.00 Farmers Market and Food Stalls at Prince of Wales Showgrounds, Bendigo.

Festival admission is $7 per person, tickets will be sold at the gate. WIA members can pre-pay with their AGM booking. No food or drink is permitted on-site. Outside food vendors will be accessible on the day.

Vendors: Tables are $25 and this fee includes 2 admissions. Additional persons required are available at $7 each.

Table bookings are processed in the order they're received. Powered tables are limited so please ensure to register as soon as possible. Table booking will only be confirmed when payment is received. Contact: techfest@barec.net.au

Registrations are now open for the WIA AGM and Gala Dinner via the WIA website.

Visitor information for WIA members and partners is here:
https://barec.net.au/barec_wia_visitor_info.html

WIA Annual General Meeting 2026

Date : 11 / 03 / 2025
Author : Peter Clee - VK8ZZ

The WIA is seeking expressions of interest to hold our 2026 AGM

The WIA are seeking expressions of interest from affiliated clubs to hold our 2026 AGM.

It is hoped that our AGM can be held in conjunction with a field day, expo or car boot sale. Perhaps even a car boot sale or another special event.

Affiliated clubs in South Australia and Western Australia are encouraged to apply.

Information and enquiries can be directed to the secretary @ wia.org.au

The Wireless Institute of Australia Annual General meeting in 2025 will be held in Bendigo Victoria in May in conjunction with the Bendigo Technology Expo so perhaps we can come to your area in 2026.

Peter Clee VK8ZZ
WIA Director and Secretary

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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

Communications Satellites

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

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

https://ararm.org/status.html

HAM RADIO DELUXE SOFTWARE®
The Radio Amateur's Best Asset

Ham Radio Deluxe Software® Makes Satellite Communications Easy

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

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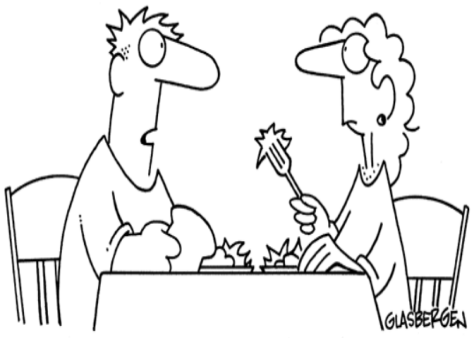
Upcoming IARS meeting presentations ……………………………

- **May 2025** : Ned VK2AGV, The Edmund Fitzgerald Part 2 the Conspiracies? (30min): After which we will have a TESTING the insertion loss of coaxial switches, relays, triplexers, duplexers and coax feedlines. Bring along your parts to be tested.
- **June 2025** : **SHOW and TELL,** bring along that latest project ot share with us.
- **July 2025** : Project mania , Simon VK2KU unleashes the next awesome IARS project
- **August 2025** : IARS AGM
- **September 2025** : **SHOW and TELL,** bring along that latest project ot share with us.
- **October 2025** : Surface mount soldering and reworking "HANDS ON" workshop. Let's do it!
- **November 2025** : Famous IARS Auction with Simon VK2XQX
- **December 2025** : Christmas dinner party (surprise 😊) with Show and Tell

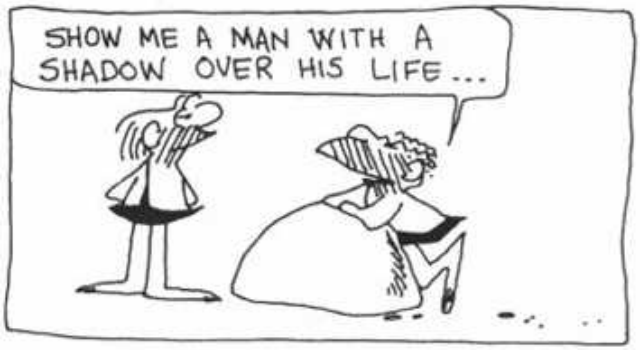
Fun Corner

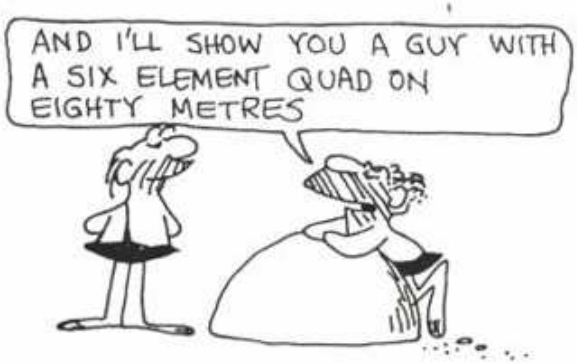
Please send in your funnies to iars.keithb@gmail.com

Thanks to all that sent in funnies.



"You don't appreciate the nice things I do. Yesterday I burped 'I love you' in Morse Code and you didn't even thank me!"





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 13th May 7.30pm,

73

Keith VK2KQB

IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948