

All Access

A newsletter for members and friends of ARNSW,
facilitating access to all areas of Amateur Radio.

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Editor: Eric VK2VE

Editorial

Hi again from the editor's desk. I can't believe that we're into the last edition of All Access for 2024. I really don't know where this year has disappeared. I hope that everyone is enjoying our little newsletter every couple of months.

We are always looking for short articles to include in this newsletter and this month we have an article from Mark on a 23cm PA amplifier. If you would like to put one out there to the other members, this is the place to do it. Pictures are also most welcome.

To correspond with us, you can just email editor@arnsw.org.au or write to The Editor, ARNSW, PO Box 6044, Dural DC, NSW, 2158.

Eric - VK2VE - Editor

VK2WI Upgrade

Readers will be familiar with our official station VK2WI, not only as the official station of ARNSW, but also as the source of VK2WI news bulletins twice a week on Sundays.

The station has multiple transmitters operating from 160 m through to 23 cm, including the use of the VK2RWI Sydney repeaters. There is also a dedicated studio and control room facility, allowing for both live presentation and production of news material. In this regard VK2WI is unique as a club owned dedicated facility. Other groups - including the WIA - relying entirely on the personal capabilities and equipment of individual members in the production and dissemination of news material.

VK2WI uses custom made electronics to handle both the audio switching and processing required, along with control of the transmitter and receiver facilities. The first microprocessor based control system was commissioned in the early 1980s by former station engineer, Jeff VK2BYY - a system considered quite advanced by contemporary standards. Several modifications and upgrades followed throughout the years, including a complete overhaul by current station engineer Mark VK2XOF, in the early 2000s.

While the timing may only be coincidental, we are now in the final stages of planning the next upgrade of the facility. Technology has changed considerably, and similar to how the first control system in the early 1980s used microprocessors – at a time when this was considered relatively new technology - our current project will use digital audio processing, and audio transfer over IP, to allow considerable flexibility in future station operations.

We are planning a staged introduction of the upgrades to minimise disruption and allow our volunteers to become familiar with new equipment as it is introduced. Along With these upgrades will be some

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refurbishment and refresh to the buildings and other physical parts of the facility. Once the upgrades are complete, we will have a facility which not only maintains its status as a unique resource amongst the Australian amateur radio community but showcases contemporary technology and a spirit of innovation and experimentation which has been part of the Radio service.

Mathew – VK2YAP - President

Have you changed address, callsign or other details?

Over time, people change addresses, emails, phone numbers, callsigns and so on. This often results in our correspondence being returned. **PLEASE**, if any of your details change, remember to let us know your new details otherwise you are likely to miss out. Now that the ACMA database will no longer have your details for us to check against, this is going to be even more important into the future because if you don't tell us, no one else is going to.

All Access goes out to all members who have an email address—it is NOT sent by post. So, if you don't keep us up to date you won't receive it,

or other correspondence from us.

To notify any changes to your details, you can use the membership form on our website at https://www.arnsw.org.au/forms/ARNSW_Membership_23.pdf. The one form can be used for new applications, renewals, updates or badge requests—just tick the appropriate box(es) at the top of the form and mail it to PO Box 6044, Dural DC 2158, or email to membership@arnsw.org.au. If you are making a payment, our preferred method is direct deposit, remembering to send us the details of your payment so we know what to attribute the payment to. Preferably, do not send credit card details in emails.

For convenience, I have included the membership form on the last page. Use it to update your details or give it to a friend so they can join.

Eric – VK2VE - Secretary

Lost & Found

Are you missing something? People are often leaving things behind at Dural after events.

For instance, there is a Bunnings Umbrella just inside the entry door to the Centenary Building and, after a recent event, a key was found on the floor. See the photo. If it's yours, please let me know and you can pick it up next time you're at Dural.



Eric – VK2VE - Editor

RadNet Update

ARNSW RadNet Expands Coverage with New DMR Repeater

The ARNSW RadNet continues to grow, now boasting a network of 16 DMR repeaters that extend from the Victorian border up to areas north of Coffs Harbour, effectively covering a wide range of locations in between.

This week, we're excited to announce a new addition to this network, thanks to the support of the Waverley Amateur Radio Society. The VK2ROT UHF repeater in Paddington, East Sydney, has been converted from FM to DMR, further enhancing ARNSW's reach. Operating on 438.575 MHz with a receive

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frequency of 433.575 MHz, VK2ROT offers improved coverage, especially in light of the recent loss of the VK2RCG DMR repeater from the VKDMR network.

Strategically positioned in East Sydney, VK2ROT provides robust coverage across the eastern suburbs, harbour areas, the CBD, and coastal stretches to the north and south. Initial tests with handheld devices have shown impressive reach, with connectivity extending into areas served by neighbouring repeaters. For those interested in seeing the full extent of VK2ROT's range, coverage maps are available on the ARNSW RadNet microsite at arnsw.net.

ARNSW RadNet remains eager to identify further locations for network expansion. We have high-power UHF repeaters ready for prominent sites and low-power 10-watt microsite repeaters for smaller areas around towns. If you or your club has a suitable site or an underutilised UHF repeater that could be upgraded to DMR, please get in touch at radnet@arnsw.org.au.

Matt - VK2FLY - RadNet.

Member Meetup & Disposals

Next Sunday, November 24th, is the next Member Meetup and disposals day (Trash and Treasure) in the morning and the ARNSW Experimenters' Group meeting from midday. Members will also be able to sell their own items on the day so bring along any items you'd like to sell and browse the items available for sale.

It starts at 9:00 am for buyers with sellers allowed access from 8:00 am to set up their stalls.

The Experimenters' Group meeting will commence at midday.

There may be a coffee cart on site from around 8 am and we are reintroducing the BBQs at the meetups, starting with the November one.

Below are some items which will be for sale in the disposals room. Credit card facilities will be available.

Transceivers

Standard C5608D mobile 2m 50 W and 70 cm 40 W FM Transceiver. With microphone and manual. In good condition Price \$200.00

Power Supplies.

Professionally constructed 13.8 V 20 A DC supply suitable for 100 W HF Transceivers. With current limiting (about 25 A) and overvoltage protection. Price \$75.00

Power Amplifiers.

Microwave Modules 70 cm 50 W Linear amplifier.

Model 432/50 10 W input to 50 W output in good condition Price \$75.00

Test Equipment

Rhode and Schwarz Polyskop SWOB 5

Sweep generator and display (Scalar network analyser) 0.5 to 1000 MHz No probes but are just simple diode detectors. Circuits and PCBs in the manuals which are available on the web or can be supplied. Collect only Works but output drops after 5-10 minutes and recovers if the marker buttons are pressed or powered off for 10 minutes. Price \$330.00

Wandle and Goltermann SPM6 selective level meter and PSM 6 level generator.

6 KHz to 18.6 MHz signal generator and level meter Good for testing and aligning filters. SPM-6 manual on line. Price \$220.00

Anritsu MG714A microwave sweep generator 3.6 to 6.5 GHz

Has output across the full frequency range. In good physical condition. Price \$275.00

Marconi TF2300B AM/FM modulation meter 8 MHz to 1200 MHz AM and FM modulation meter AM to

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100% and FM to 200 KHz in working condition after repair. All bands now work. Price \$200.00
Wandle and Goltermann SNA23 9 KHz to 26.5 GHz Spectrum analysers x 3
SOLD AS IS! 2 of these spectrum analysers are good physical condition but operational status is unknown.
1 has been used to supply parts to repair another several years ago. These are PC Based (DOS Pentium
486) A copy of the software and PDF Manuals can be supplied. Price \$250.00 each.
Farnell synthesised signal generator DSG2
0.001 Hz to 110 KHz balanced and unbalanced outputs with output level meter. Price \$50.00.
Gould-Advance J35 low distortion (0.05%) sine wave signal generator
10 Hz to 100 KHz. In good condition and working Price \$50.00.
Dick Smith Q1810 100 MHz dual channel oscilloscope with probes. Working. Price \$100.00

Microwave Links

Codan 5700 C band converter and 5720 20 W power amplifier
5.8 GHz Transmitter and power amplifier with 3.6 GHz receiver. Installation and operation manuals
online.
RF input and output 70 MHz IF to C Band the converter is one module and the 5720 PA is a second
module both for outdoor use. Requires MS series military connectors and N coax to connect to and
between the modules. No cables are supplied. Sold as is but have tested OK tags on them. 2 pairs at
\$550 each
Commwave 04-134-02 2.0 to 2.2 GHz power amplifier 50W module
Runs from 10V and negative bias supplies No data online, SMA connectors Price \$170.00
NUCOMM Transmitter 130FT4 and NUCOMM Receiver 130FR4.
Currently tuned to 12 GHz 2 W output. Sold as is
Price is for the pair \$110.00
Farinon M2SD60515 2.4 GHz 20 W power amplifier
Sold as is untested Price \$110.00
Ex ABC 13 GHz 1 W receiver and transmitter portable link
Sold as is untested. These are Continental Microwave VML120 D27/1 and VML120 DRI/1 "Photos on line
in an Allbids auction of ABC gear," Price is for the pair \$110.00
NEC 6 W 14 GHz power amplifier
Sold as is untested 4RU box mains power Price \$55.00

HF Transceiver

Granger 174 HF Transceiver
This is a SSB Hybrid transceiver (valve RF output and driver) Crystal locked Pictures on the HF Radio sales
web site
Sold as is untested Price \$55.00

Audio.

Perreaux 3000B dual channel amplifier
Complete except for a broken fuse holder. Sold as is for repair. Price \$120.00

Mark—VK2XOF—Disposals

Experimenters' group meeting.

The last gathering of the ARNSW Radio Experimenters Group was on Sunday 29th September.

Coming up on November 24th (next Sunday) is the next meeting of the ARNSW Experimenters Group. At
this meeting as well as the usual "show & tell" Owen Holmwood VK2AEJ will be giving a presentation on
covert antennas. Many amateurs live in locations where they would need to install antennas that are
discrete or not very visible.

The January meeting will focus on Software Defined Radios. In recent years amateurs have been using

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inexpensive SDR dongles as receivers. This will be a practical session where members can bring along their laptops and new dongles and get them working.

There are many such dongles available on-line, some of which are easy to set up, some of which aren't and some which are just fake! At the November meeting there will be a short presentation outlining which SDR dongles to buy and from whom.

For those who are looking for something new in Amateur Radio, the Radio Experimenters Group can be what you are looking for.

So come along to the members meet up and Trash and Treasure on Sunday the 24th of November, and stay around for the Experimenters Group meeting from noon. We are expecting to have the BBQ running as well.

Peter - VK2EMU - Experimenters Group.

We Need YOU!

ARNSW is always looking for more volunteers for the broadcast team as well as for other events. The broadcasts have been provided by ARNSW for many decades. I remember listening to them as a kid on my shortwave radio back in the 60s. Lately we have lost a number of both presenters and engineers, which puts a greater load on the rest of the team. We are still looking for more, especially for the evening broadcasts.

Of course, there are many jobs which go into putting out bulletins every week. Some of them are obvious, such as reading and engineering, which do require on-site participation at this time. Others operate in the background, such as compiling the news items, assembling the script, organizing the rosters and so on. Many of these can be done offsite and don't require any travel.

If you are able to help in any way, including remotely doing preparation, editing etc. please drop a line to the team at news@arnsw.org.au. Even if you are unable to get to Dural or are unwilling to go on air live, you can still assist behind the scenes in other roles.

Eric – VK2VE – Secretary

23cm power amplifiers.

Now Mitsubishi has discontinued the RA power modules for 23cm an alternative is required. Thinking about future requirements for replacement PAs for the 23cm repeater at ARNSW Dural I have been searching for a solution.

After an Experimenters Group lecture at ARNSW on 23cm FM transceivers I was made aware of Chinese amplifier modules available on Aliexpress. I decided to buy some to try.

My first purchase was a 40W module that claimed to cover 1160 to 1280MHz. That covers the repeater need for 1273.5MHz. The question is how much further would the power output be maintained?

These Chinese modules require 28V DC at about 3A for 40W out. So roughly 50% efficient.

I also purchased a 5A 12 o 28V regulated converter that is fitted into a diecast aluminum case. This makes the conversion process simpler.

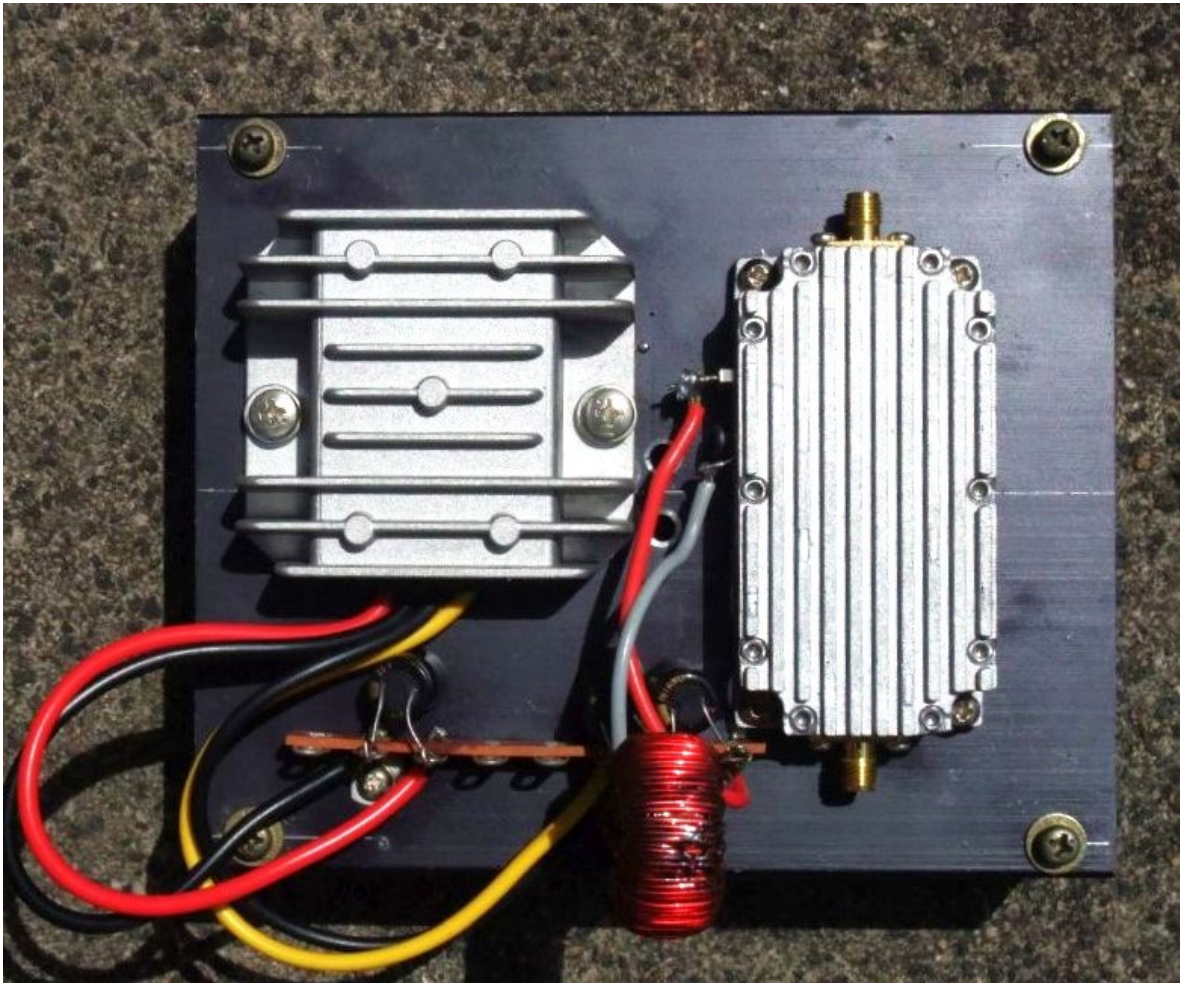


Photo shows a 15W amplifier and DC to DC converter mounted on a 155 x 130 x 50mm heatsink. The 30W amplifier is currently mounted on overly large heatsink as I had no idea how much heatsinking it would need.

The 40W amplifier requires a slightly larger heatsink such as an Altronics H0336 200 x 75 x 48 finned heatsink. The voltage regulator is quite efficient and can be mounted on the same heatsink.
Performance 40W Module.

The 40W power amplifier produces 35 to 40W across 1200 to 1290MHz dropping to 30W at 1300MHz. This is for 3mW input and 28V DC. That looks to be the maximum saturated power output. Idle current at zero input is less than 1A and full power is 3.2A. Please note obviously this is a sample of one but does show this amplifier is useful across the 23cm Band.

Performance 15W Module.

I required the option of less power so purchased a 15W module. These claim to work at 1250MHz, and this turned out to be the case. But the power drops at 1200 and 1300MHz. At 1250MHz 15W was available dropping to 10W at 1290 to 1300MHz and 8W at 1200MHz. This is for 3mW input and a maximum of 1.7A @ 28V DC.

Mechanical assembly.

First UP NO self-tapping screws!!! It is hard to get good alignment and even pressure with self-tappers so damage is more likely. They are just for sheet metal such as the garden shed!

Both Modules mount on the flat surface of the heatsink using four M3 screws, flat washers and spring lock washers. There are four recessed mounting tabs with untapped holes. Thus, the heatsink requires either tapped holes or access between the fins for screw heads.

Use the amplifier to mark the hole positions and centre punch to locate the drill accurately.

Start with a 1.5mm drill and then go to a 2.5mm drill to allow M3 tapping. Check the hole positions at each step!

Unless you have heatsink with just the right fin spacing you will need to tap the mounting holes. You need at least an M3 starting tap and suitable tap handle plus tapping compound for lubrication. Never force the tap as M3 taps break easily. When the tap is getting stiff wind it out, clean the threads, apply more tapping compound and start again. You may need to do this 3 or 4 times.

When all 4 holes are tapped and before fitting the amplifier clean the heatsink of all tapping debris and slightly countersink the tapped holes around 1mm deep to make sure there are no raised edges.

You may wish to add 4 mounting holes for the heatsink (in the corners see photo 1) while you are creating tapped holes.

USE HEATSINK COMPOUND! If not, the amplifier will most likely have hot spots and transistors will fail!

Make sure there is no swarf or stray bits of metal from drilling and tapping as the amplifier case must sit flat on the heatsink with no chance of being bent or warped as the corners are tightened down. Use a steel rule to check how flat the heatsink surface is. (N the thin long edge rule standing up in the flat surface) and look for any gaps between the rule and heatsink surface.

If the case is bent there is a good chance a transistor or other surface mounted part will crack and write off the amplifier. This was true for the Mitsubishi modules as some discovered to their cost. Generally, no repair is possible.

If you think this is a lot of work, consider it was about the same for the Mitsubishi amplifier modules and they were just as prone to being damaged. Generally, 4 to 6 screws were required, 2 for the amplifier and 4 for the PCB to supply RF and power to the amplifier.

Testing

When testing the amplifier take care not to exceed 5mW input power and always have a 50-ohm load of at least 50W on the output.

Ideally test with a current limited 28V supply before connecting up the final supply using the DC to DC converter. Only apply RF power to the input after DC power is connected. You require around 4A for the 40W module and 2A for the 15W module.

Never run the amplifiers without first fitting to the heatsink, no matter how short the duration!

Mark-VK2XOF-ARNSW

Build-a-thon Review

Sunday 13 October 2024 saw around 50 members congregated in the centenary building for the 2024 buildathon



Registered members pre-ordered Kevlar wire and 1:1 or 4:1 balun kits with the object of assembling their own balun

The start for the morning was a presentation by Compton Allen VK2HRX on the dipole antenna

Compton is very experienced in field activities and explained the various types of feed lines and displayed examples of each

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It was then time for the troops to go into action assembling the balun kits

They sat at the tables provide in groups

Examples of the completed baluns to view were on each table for those not familiar with a completed kit.

Solder stations were supplied together with a tray for their bits and pieces plus a dispenser for 'neutral cure' silicone to waterproof the components.

Prior to becoming too involved in the construction, we had a break for lunch.

Lunch was catered for by the same company AR NSW have been using for years.

The food was excellent and the quantity more than sufficient.

Then back to assembly.

For those who wished, their balun was tested prior to leaving.

The day was designed as a 'hands on' learning exercise for our members and as such it was a success.

We sold over 30 baluns and cut around two kilometres of Kevlar wire.

Al- VK2OK-Events

Dural Update.

The new kitchen has arrived and is awaiting installation which is currently being organized. It will then need to be plumbed in and an under sink heater installed, as well as being wired in for the heater and a microwave.

Eric – VK2VE – Secretary.

Education

Our dedicated education team consists of a team of ACMA assessors and a couple of non-assessors who provide regular foundation courses at Dural, usually on the second weekends of March, May, July, September and November. They also provide upgrade assessments for those wanting to upgrade to Standard or Advanced level.

At the latest course, held last weekend, we had eight people sit the Foundation course and assessments, as well as two advanced upgrades. All candidates passed and should be sporting nice new callsigns very soon.

The next course weekend will be March 8th & 9th, 2025. If you know anyone wanting to do the foundation course, or upgrades, they should contact education@arnsw.org.au for details and to reserve a place.

Eric – VK2VE – Education Team



Don't forget— Member Meetup and Trash and Treasure

:- When: next Sunday, November 24th

:- Where: 63 Quarry Road Dural

:- Starting at 9:00 am for buyers

:- Sellers admitted from 8:00 am to set up

:- Coffee van may be on site from about 8:00 am

:- Sausage sizzle will be running

:- Experimenters' Group starting from Midday

We hope to see you there.

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ARNSW Membership Application/Renewal/Update & Badge Form

Please Print **CLEARLY**.

Membership: New Renewal Update Badge Request (Tick all that apply)

Title Family Name Given Name(s)

Callsign Other/previous call(s)

Postal Address.....

..... Suburb State Postcode

Phone (Home) Mobile Work

Email

You will automatically receive the majority of notices, annual reports and other communications to your email address unless you advise otherwise. The VK2WI News Bulletins, ARNSW Face Book and Web Site (www.arnsw.org.au) are also used to provide general information to members.

I wish to receive official notices by post.

As per the constitution, a proposer and seconder are required for new membership applications. They must both be current financial members of ARNSW.

Proposed by: Name Callsign Signature.....

Seconded By: Name Callsign Signature.....

As a member, I agree to be governed by, and abide by, the Constitution of Amateur Radio New South Wales

Signature..... Date:/...../202...

Badge Details – I request a member badge as follows:

Preferred Given Name: Call sign: VK2

RETURN THIS PAGE to 'The Secretary' at the office

You can scan and email to membership@arnsw.org.au or mail to: ARNSW PO Box 6044 Dural Delivery Centre NSW 2158.

Badges are only produced when there are sufficient requests for a production run of 25 or more.

Payment Details - Choose \$20 for 2 years or \$50 for 5 years (Tick one)

Payment options: Cash Cheque Direct Deposit Credit Card (Tick one)

1. Cash in person or cheque in person or by mail to: ARNSW, PO Box 6044, Dural Delivery Centre, Dural 2154.
2. Direct deposit to Amateur Radio NSW, BSB 082-167, Account # 85-742-3723 using your callsign or membership number as the reference. Please also email receipt to membership@arnsw.org.au.
3. Email/post/deliver this form with your credit card details below to membership@arnsw.org.au.

I authorize payment of \$..... to be debited from my Mastercard Visa Amex (Tick one)

Card #

Expiry/..... Cardholder's Signature