GATEWAY

The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc.

February 2019

Australia Day

UTAS/AMC wins amateur tender

IRLP Stops Working

Australia Day BBQ

And More

Contents.

Note: - club meeting minutes are on the club website

Event Queue

February:

15th	General meeting – Guide hall

March:

1st	Prac Night – Club rooms
15th	General meeting – Guide hall
17th-18th	John Moyle Field Day

PRESIDENT'S REPORT FEBRUARY – Bruce Williams VK3BRW

Hi everyone welcome to the 2019 February addition of the GGREC magazine.

MAJOR CHANGES TO THE AMATEUR LICENSING ASSESSMENT & CALLSIGN SERVICES SCHEME

This month's GM will be largely dedicated to the above matter. Where members can express their views and ask any questions they may have. We will do our best to answer them. For those that haven't heard, the Australian Maritime College in Launceston TAS., were the successful tenderer to handle the above. Refer to the club email sent out to members on 6th February.

TRAIN & HOBBY SHOW

At this Friday's meeting we will discuss whether we have the numbers to participate at this important event, which takes place over the Australia day long weekend (9th to 11th March).
So far the numbers we have don't look all that good. So if you can volunteer, Even if it's for only half a day, please let me or Chris know, before Friday, if at all possible.

GGREC Repeaters

70cm Repeater (RLP)

Last month, after hearing what the committee had to say on the matter, members voted to rescind Option 9, previously accepted at the June 2018 meeting (I.E. to fix, maintain and replace selected parts only), to one in favor of replacing the RLP repeater with a new one. This then led to Noel (VK3CJJ) and others deciding to donate towards its replacement. Since that meeting a lot has happened with Graeme Wheatley (VK3XTA)) volunteering to pay for a complete replacement, which has now been ordered and paid for. It is now planned that any additional donations will go towards ancillary equipment such modems, licenses, internet access and the like. I will discuss this and other related matters when we meet at the GM this Friday.

Repeater IRLP

Refer to Ian's detailed article.

6m Repeater (RDD)

This repeater is now up and running. There is, however, still a question mark, against the Relay (or its driver transistor), that switches the main power to the Transmitter's, Power Amplifier (PA). One of which may need to be replaced in the near future.
My thanks go out to Albert (VK3BQO) for taking the time and making the effort to going out to have a look at RDD, two days before the prac night, looking for possible issues and for resetting the memory error codes. I would also like to thank Ian (VK3BUF), Michael (VK3GHM) and
Bruno (VK3BFT) for taking various transmitter output measurements and for testing the repeaters input sensitivity and making sure they were all within specifications.
Members please let me know if any of you are still experiencing any problems with this repeater.

VHF – VHF SUMMER FIELD DAY

This turned out to be a great event; however, I'll let Helmut (VK3DHI) tell the story in his own words. Refer to Helmets article in this magazine.

AUSTRALIA DAY BBQ

Many members attended the Australia Day BBQ held at the clubhouse on Monday 28th January. It was great opportunity to catch up and talk to other club members and their partners. A special thanks to Bruno for supplying Bread and soft drinks and for firing up the BBQ. Also thanks to Dorothy for taking the time to make a cake and Pat (VK3OZ) for supplying Cream & Jam scones on the day.

Show & Tell

Last month's theme was portable Antenna analyzers. This month's theme will be portable Multimeters. (analogue, digital or both).
So make sure you bring along your favorite multimeter to give a quick talk, on the pros and cons on what you own, so others can learn from your experiences.

Wants & Needs

Don't forget to think about your wants and needs, prior to the meeting. This is your chance to see if other members can help you out with components, or gear you're having trouble locating, or finding at the right price.

PRAC Night

At the next Prac night we will discuss what methods we intend to use, to build the interference tracking Receiver and what some of the key components actually do.
Remember this receiver complements our 2m antenna build.

Financials

As usual Chris, will give a brief description on how we stand financially.

I hope to see you all at the GM this Friday (15th February 2019).

Regards and 73s
Bruce

From The Editor

And for something different I'm off into woodworking land.

Actually I'm trying to finish off that Nixie-tube clock I started ages ago, 99% of the electronics is done, along with the software, all that basically remains is the clock colon and a suitable case to put it in.

I went off to Bunnings to buy some nice wood to make a sleeve style case. Bunnings has a section for 'craft' that includes a selection of laser cut templates, & boxes etc. However they are all made of craftwood, fine if you plan on finishing off with some bright coloured paint, like one sees in the various home reno TV shows, where woodgrain is now so 'yesterday' and some coloured paint is more the go. However Nixie tubes are quite old, and in those days a polished woodgrain case was a more likely choice (or a grey Hammertone painted metal case). Unfortunately, Bunnings wood selection was not that appealing to me. Apart from some nice marine plywood, 98% of their stock was pine (that is stock in suitable dimensions for my box)

Pine I find is far too soft, as in it marks up far too easily, then there is the colour, yes some deep coloured varnish would probably fix that, otherwise you almost end up with a near white finish.

Then I remembered a chunk of Red gum I found under my house. Years ago the house was restumped, I'm guessing the original stumps were red gum, and the re-stumpers accidentally left this bit behind.

I originally borrowed a Triton Mk3 woodworking 'machine', however it could only cut half way thorough, and when I flipped it over I had trouble getting the two cuts to align, so I have up and just used the Triton to cut a 15mm slot all around, then I finished it off with a regular saw.

I had visions of putting in a picture in the magazine of a lovely polished wood creation, but that was just asking too much in too little time.

So what is your favourite wood (and where do you get it), do you lacquer it, or are you into a good oil to enhance its colour?

Otherwise my shack is getting awfully busy, and hopefully soon I'll have a few electronic repair stories to put in here, ranging from a 'stereo' valved radio, through to a 'MarkBase' base guitar amplifier, and a few others in-between.

Hopefully the MarkBase amp won't kill me, as it uses a switch-mode supply to run the amp, and it's mostly all on one board, as is the audio, 240VAC, 400VDC – Yikes, almost as bad a live chassis radio/TV - What were they thinking?

Project wise, I have a few idea's, however between looking after Marianna, fixing the house, and getting on top of my repair jobs, there is no real free time left.

Paul VK3TGX

University of Tasmania/Australian Maritime College (UTAS/AMC) wins amateur radio exam and callsign tender.

Many will have already heard by now that the ACMA has awarded the outsourced services (Examination Services and Callsign Administration) to the Australian Maritime College (AMC). The AMC is a part of the University of Tasmania and is based out of Launceston in Tasmania.

AMC has been delivering maritime radio exams successfully (over 80,000 exams) on behalf of the ACMA for over 16 years.

The contract with the WIA ("the Deed") expired on 1st February 2019 and at the end of 2018, the ACMA invited interested parties to respond to its Approach To Market (ATM) and submit a tender. Three parties submitted a tender: AMC, WIA and Trainsafe.

On 1st February, ACMA announced AMC as being the successful tenderer. Over the preceding two weeks there have been some mixed messages and confusion surrounding recent events.

Andrew Smith, VK6AS, has been appointed as an Advisor to AMC. From a press release by Andrew VK6AS:

"I think it is time that there was some myth busting:

- *Amateur Radio Assessments and call sign allocations will continue with only a minor interruption.*
- *There will be little initial change in the delivery of assessments and the AMC will be in contact with all the current assessors as soon as it can to explain how the process will occur. Goodwill of the current team is considered critical.*
- *Despite rumours there will not be a significant increase in cost for those wishing to obtain a certificate of proficiency or call signs.*
- *The current tiered structure of licences and call signs together with the underlying educational syllabus will not change in the short term and the ACMA through the College has outlined a methodology for engagement with the sector so that there will be engagement in any changes that may be proposed for the future."*

Stay tuned for more information. As soon as the ACMA or AMC release more information we'll inform members.

This is Chris, VK3QB

IRLP TRANSMITTER STOPS WORKING

A report by Ian Jackson VK3BUF

The Club has a special IRLP (Internet Radio Linking Project) connection to its Cranbourne repeater. This allows operators to access our repeater from other parts of Australia and around the world.

The connection for this is not at the repeater site. It is some distance away. It has operated at different locations, but recently shifted to Drouin West, where a dedicated beam antenna points to Cranbourne, some 52 kilometres away

Fortunately the path is clear and the signal into the repeater is nearly full scale. The IRLP node is a special computer interface with a continuous ADSL internet connection and a UHF transceiver that can both listen to the repeater and transmit about ten watts in its direction.

Cows check out the IRLP node

Signals reach the node from other internet linked repeaters and transmits into our repeater for the duration of a contact.

Over Christmas the node was shifted to this new location and it worked ok for a few days, then we had a couple of hot days, it became unstable and stopped transmitting. The transmitter had developed a fault.

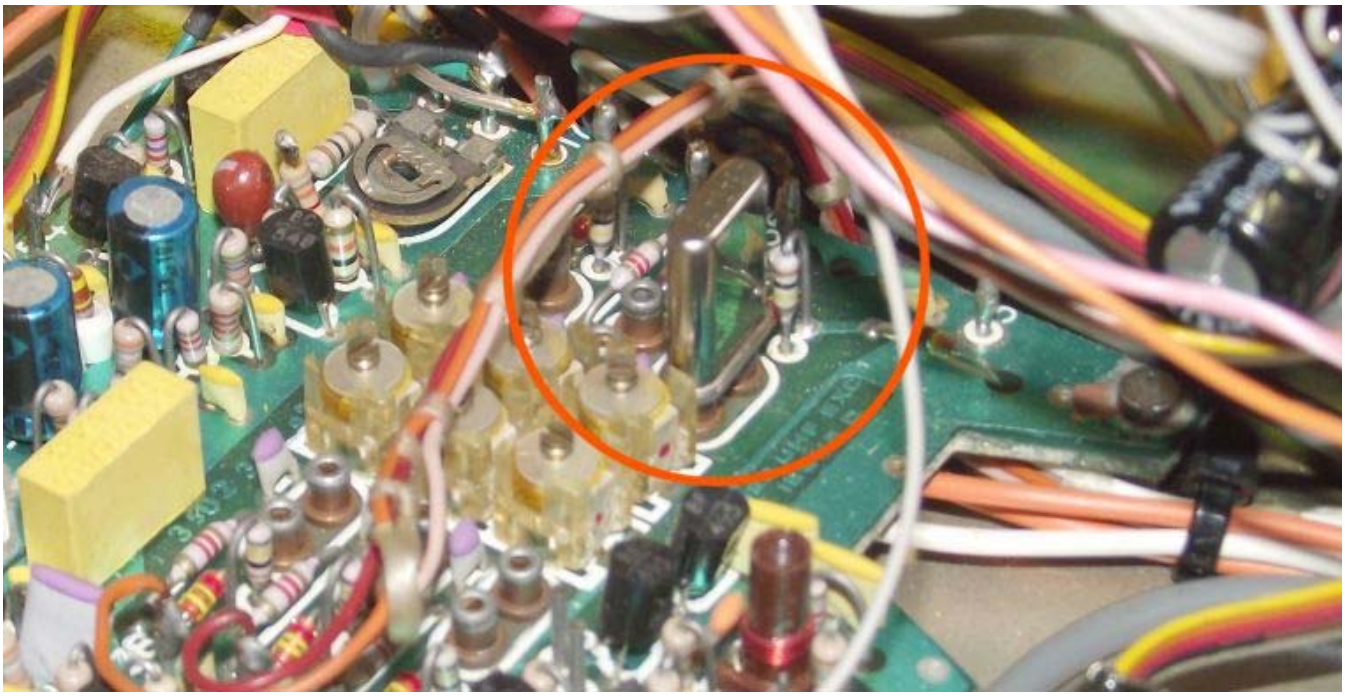
The transmitter/receiver combination is a 1970's style Philips 828 rack mount unit with some special modifications. While old, these generally have a good reputation for reliability.

The interior of the Philips 828 Rack Mount transceiver

I put it on the workbench and coupled it to the Schlumberger UHF Test Set. There was no RF out and no discernible signal on the repeater input frequency. I isolated the driver from the P.A. stage hoping to see some RF out of the exciter, but it too was dead.

The next step was to check for output from the crystal oscillator at the first testpoint with an RF probe. Even though the correct 10V was being applied to the oscillator stage when the transmit button was pressed, there was no RF output from the oscillator.

I went through the junk box and found an old crystal somewhere near the normal transmit frequency. I plugged this into the radio instead of the normal TX crystal and the oscillator sprang to life. This pretty much proved that the crystal had died.



The transmit crystal (circled) on the TX exciter board had died

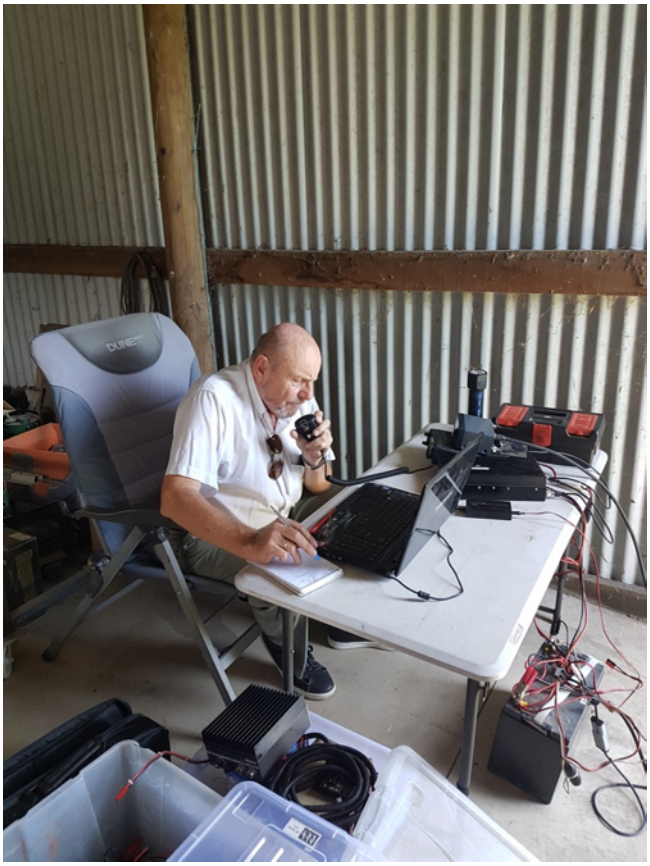
Of course we now need a replacement crystal cut to the right frequency and one has been ordered from Hy-Q. It is costing the Club around $55 including postage and should arrive at the end of Feb. Sadly, until then our IRLP node will remain off the air.

I have checked the receiver integrity and that's fine, better than 0.5uV for a quieting signal, which is pretty good.

The node should be fully functional again early in February. Normal repeater operation should remain unaffected. When the new crystal arrives, I will go through the transmitter alignment procedure from scratch and it should be good to go.

So now you are up to date.

VHF – UHF Summer Field Day 2019



A few members of the GGREC decided at the November 2018 prac night to participate in the 2019 VHF – UHF Summer Field Day to be held on the 12/01/2019. The participants, who put their hands up, were Albert VK3BQO, Ian VK3BUF, Bruce VK3BRW, Bruno VK3BFT, Tony VK3QX, Mike VK3KTO, Robby VK3XIN, Ron VK3FRDL and I Helmut VK3DHI. In our discussions about the event the question came up as to what was a suitable location and how long should we operate for and on what day of the event. We decided to operate in an 8 hour time slot.

Bruno VK3BFT thought he could ask his father in law if he would allow us to set up our stations at his 30 acre property near the township of Koo Wee Rup. His father in law graciously agreed and we set up three main stations in three different sheds. This was to avoid interference to each other during operation.

The three main stations were to operate on the 6M, 2M and 70CM bands. The 6M station was manned by Albert VK3BQO, the 2M station by Helmut VK3DHI and Tony VK3QX and the 70CM station was manned by Mike VK3KTO. Ian supplied a 3 element 6M antenna and Mike a 13 element 70CM antenna, I supplied a 11 element 2M antenna. Both, the 6M and 70CM antennas were mounted to their respective masts. The 2M antenna was mounted on the boom lift (cherry picker) which Ian brought with him. The height of the antenna was approximately 12 metres.

We used three different radios which consisted of Albert's Yaesu FT897 operating on 6M, Helmut's Icom IC706 on 2M and Mike's Yaesu FT857 on 70CM.

Thanks to Bruno, who organised the lunch and dinner breaks with a nice BBQ. We had some bread, tasty sausages and hamburgers, coleslaw and potato salad. Well done Bruno.

The end result of our operation on this beautiful summer's day was contacts made on:

6M = 14 QSO's
2M = 44 QSO's
70CM = 11 QSO's

It has to be noted that this field day, in all aspects, was a lot of fun. Everyone enjoyed themselves, even if there was a bit of work involved in setting up and dismantling the stations and antennas.

Refer to the accompanying Photographs taken at the event.

Thanks everyone for their efforts.

Helmut VK3DHI

Bruce's Footnote

It was also a great opportunity to look at each other's power supply setups, compare notes and to learn about the software used to log such events. And thanks also to you Helmut for organising such an event.

Australia Day

Keeping up with technology change is of paramount importance in business.

Recently I went to CVS Pharmacy to have some USA style photos taken for my Green Card application and I was surprised to find that the manufacturer of the automated machine that processed the Passport style photographs was made by Kodak.

That made me cast my mind back many years when Kodak was a household name not only in Australia but also Worldwide. With the advent of digital photography regrettably Kodak did not follow the digital path until it was too late. Other Companies such as Canon and HP captured the market and. Such a household name as Kodak Eastman founded around the turn of the 20th Century by George Eastman the pioneer of celluloid and of course the Brownie Box Camera faded into oblivion, well almost.

I asked myself what happened to this once mighty giant and history shows that in January 2012 they filed for Chapter 11 Bankruptcy. Later in 2013 they sold many of their digital world products and other entities off to the likes of Amazon, Facebook, Apple to name just a few.

Today on Television was an ad for a driver glare shield that is affixed in the vehicle and can be dropped down by the driver to view through the visor in inclement weather giving a clear view ahead.

I noticed that the manufacturer of the Visor was Bell and Howell, a name I only associated with the Movie projector and camera industry. As a youth I owned a Super 8 Bell and Howell projector. I recall it being a very sturdy unit. Very heavy and very well made and I would have thought, although wrongly I should say that the Company was now out of business.

Not so.!! . When I researched through my inquisitive nature I found that the Bell and Howell Company merged with a Venture Capital company around 2002 and prior to that they sold their imaging processing business to Kodak.

They subsequently worked with Apple to produce the Apple 11 Computer and now are an incorporated LLC business situated in Rochester New York.

I just marvel at the fact that a Company like Kodak Eastman can fade into oblivion through not keeping up with technology change, yet a Company like Bell and Howell can stave off bankruptcy and re build its core business of digital Cameras, Education related technology equipment and the digital age through recognized transition within the market share.

By 1995, the one-time leader in cameras and projection equipment had morphed into an information management business, with an emphasis on manufacturing mail processing systems and providing micrographics services as a re-publisher of newspapers, periodicals, dissertations, and books on microfilm. In early May 1995, Bell and Howell once again went public, trading on the New York Stock Exchange under the ticker symbol BHW.

It appears from my research that in fact Bell and Howell are a larger and more diversified company that Kodak these days.

David Backholer 28th January 2019

Article via Graeme Brown

Fun with a GPSDO

So what is a GPSDO I hear you ask. It is a very high accuracy frequency source that derives its accuracy from the GPS satellite network.

Each of the satellites has an atomic clock onboard, and these in turn are linked back to a master clock in the USA.

The GPS system normally uses these extremely precise clocks to basically measure the distances between the satellites and the user to determine your position on earth.

However as a side service they also produce an extremely accurate 1Hz pulse.

These pulses are then used to control or discipline a high stability 10MHz crystal oscillator so it is as close as possible to exactly 10MHz. Hence the name a GPSDO, or 'GPS-Disciplined-Oscillator'

So what use are they?, Well for starters, most decent frequency counters have an external 10MHz reference input on their back panels, so no more iffy frequency measurements. Actually a lot of half decent test equipment will have an external reference input.

Radio wise, there are high-end sets out there with an external reference input, probably overkill for a casual QSO on HF, but if you plan on playing with the upper bands, as in microwave, especially if SSB up there is your goal, one of these is all but compulsory.

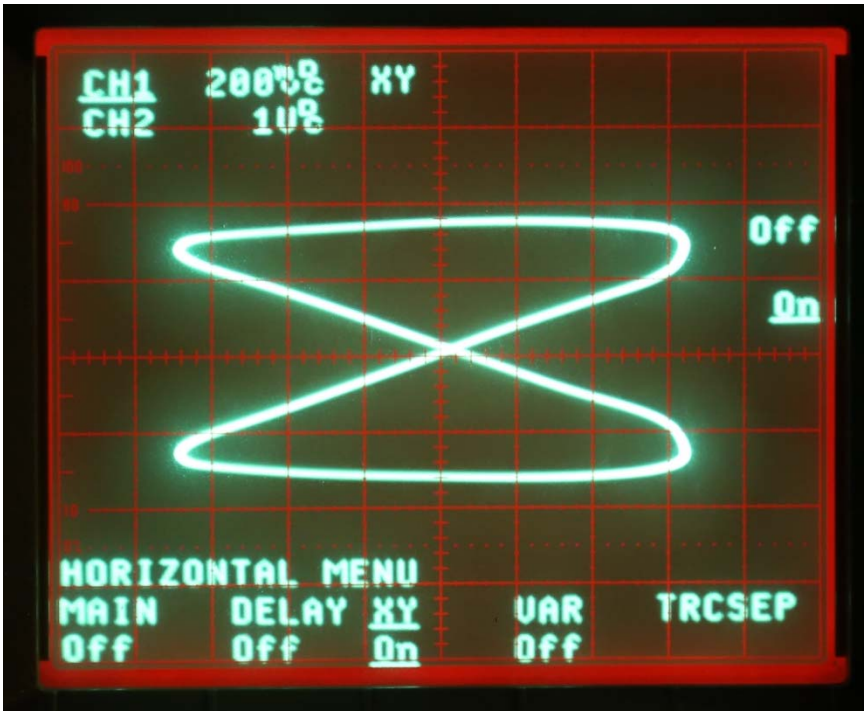
A few parts in a million, frequency error on HF will mean you're a few hertz off. You would never know, however, up in the GHz bands this sort of error can mean your 20KHz of more off frequency. So two in-range stations purportedly on the same frequency will not hear each other – so much for that arranged QSO.

The other side of GPS use is in the newer digital modes like FT8, while not requiring the super accurate frequency source (yet), having the two stations time clocks accurate is becoming more and more important, accuracy well beyond what a stand-alone crystal can supply.

Many moons ago I made a video switcher box that included a 5MHz oven stabilized oscillator out of an old maritime navigation box, unadjusted (as in by me) its kept the box's clock accurate to one second in 6 months. One day I compared it to the Telstra talking clock, it was exactly one second out. That night on the news it was reported we had just been subjected to a leap second (Leap seconds are sometimes added to keep our clocks is synchronism to the rotation of planet earth). However these clocks etc., use far more power than is available from the clock battery in your computer/laptop, so it is hard to use one to fix your PC's clock.

A good oven controlled oscillator, like this HP105 can be extremely stable and accurate, but how do you adjust it? You need something to reference it to.

Years ago we had a radio frequency reference down as Lyndhurst, but that closed many years ago. There were also boxes available that let you use the local TV network as a reference, that is back in the analogue days, more in TV's halcyon years when the station's engineers used an atomic clock to make sure everything was spot on. I built one of these based on a project published in Electronics Australia, trouble was by the time I got mine up and running the station standards had started to slip, so it was a bit of a dud.



So how do you adjust one's crystal oscillator? First you need a good reference like the Trimble Thunderbolt in the first picture, then just feed the two into an oscilloscope set in the XY mode.

One input controls the vertical, the other the horizontal, it does not matter which is which.

Normally you would get a single circle that rolls over and over, that is until you adjust your oscillator for a stable non-moving display.

In my case we have a 'double loop' because my very, very old HP outputs 5MHz rather than 10MHz so we have a 2:1 ratio (a 3:1 will give you the ABC logo)

So if I have a Trimble Thunderbolt GPSDO, why am I using the HP?, well I was trying to see if the Trimble was any good. I knew the HP105 was very good, so if I could get a good lock between the two of them, that would mean the Trimble was behaving itself.

The Trimble was a second hand unit, courtesy of another GGREC member, so it was in need of a sanity check.

Paul VK3TGX

Modern Hearing Aids

"I was reading about designing the mould that goes in to your ear for hearing aids, They use horn shapes and other shapes and lengths in the ear mould as impedance matching devices, the hearing aid produces a high impedance high-pressure level low volume than the tube shape and size along with cones and reverse cones are used to match the impedance of your ear canal that needs lower sound pressure but higher volume of air moving, it was a complete study/educational document about hearing aid impedance matching,

I can see why the people making the moulds are not just some lackey pouring silicon in to a mould there is a lot of science in making it and they do not just send the impression of my ear to the mould maker they send a copy of my hearing loss graph of dB loss vs Frequency so that they can tune the mould to suit the sound profile the hearing aid will produce

There was a lot of similarities between antenna matching and ear canal matching, this is one reason why it takes a university degree to treat hearing loss"

Courtesy Mark VK3PKT

Club Information

Meetings 20:00hrs on third Friday of the month at the
Cranbourne Guide Grant Street Cranbourne
Prac nights first Friday in the Peter Pavey Clubrooms Cranbourne 19:30hrs
Visitors are always welcome to attend

Office bearers

President	Bruce Williams	VK3BRW	Web Master	Mark Clohesy	VK3PKT
Admin Sec	Michael Van DenAcker	VK3GHM	Magazine Editor	Paul Stubbs	VK3TGX
Treasurer	Chris Chapman	VK3QB	Property Officer	Bruno Tonizzo	VK3BFT
General 1	Barry Hamilton	VK3ABH	Secretary	Ian Jackson	VK3BUF
General 2	Bruno Tonizzo	VK3BFT			

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater Cranbourne VK3RDD, In 52.575 Out 53.575 CTCSS none
70cm Repeater Cranbourne VK3RLP, In 434.475MHz Out 439.475MHz CTCSS 91.5Hz
VK3RLP Repeater supports Remote Internet access (IRLP), Node 6794. (Offline)
70cm Repeater Seaview VK3RWD, In 433.575MHz Out 438.575MHz CTCSS 91.5Hz
Simplex VHF - 145.450MHz FM, Simplex UHF - 438.850MHz FM
VK3RLP Beacons 1296.532MHz & 2403.532MHz (currently inactive)

Membership Fee Schedule

Pension Member rate $40.00 Extra Family Member $20.00
Standard Member rate $50.00 Junior Member rate$25.00
Fees can be paid by EFT to BSB 633000 - Account 146016746.
• Always identify your EFT payments.
• Membership Fees Are Due at each April Annual General Meeting.

Magazine Articles to editor@ggrec.org.au or vk3tgx@gmail.com Cut off, 10th
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