



GATEWAY

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

November 2017



**Ancient Large format TV's
Fun with Sub woofers
Junked TV's – Why?
And More**

**President's report
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Event Queue

November:

- 3rd Prac Night – Club rooms
- 5th BARG Hamvention greyhound racing track, Ballarat
- 12th Rosebud RadioFest www.rosebudradiofest.com
- 17th GGREC General Meeting
- 26th- 27th CQ WW DX / CW CONTEST (always Novembers, Last full weekend)

December:

- 1st Prac Night – Club rooms
- 9th Christmas breakup party – See page 5

Note – No general meeting in December.

PRESIDENTS REPORT – November 2017 by Ian VK3BUF

So this months Prez report was written at 60,000 feet on the way back from China. The movies are a bit crap, most of the passengers are asleep and I have a good charge in my notebook PC. Motive and Opportunity. I had just completed a ten day tour of four Chinese cities with Bruno VK3BFT, Michael VK3GHM and Chet Cline. (Who was a guest speaker at the Club earlier this year) The aim was to visit some suppliers and factories and to do some shopping at the world's largest electronics market in Shenzhen. I'm thinking that I'll keep the details here brief and over the next few months prepare separate articles on PCB manufacturing and Electronics Market shopping.

The trip all went very smoothly for us. The connecting flights to Shanghai worked ok and we visited a CNC Milling machine manufacturer, who also took us out to a local restaurant for lunch. (Duck's tongues anyone?)

Also in Shanghai, we visited the observation deck of the World Financial centre, also known as '*The bottle opener*' and spent a lot of time zig-zagging the city using the extensive subway system at just 80 cents per trip.

The 300kph train ride to Hangzhou was a scenic addition to the journey. Much more can be seen from these trains than plane hopping. The ancient city of Hangzhou is famous for its, picturesque West Lake area. Walking a few km around this lake required a lot of cold beer to keep our energy levels high and by depending on the 'kindness of strangers', we didn't get too badly lost during our two day stay.



The Pearl Tower from the observation deck

Another 2.5 hour flight took our little group to Shenzhen, a vast city complex just north of Hong Kong. Our hotel room was 27 floors above Huaqianbei, the main electronics market district, where literally a thousand or more tiny shops sold every imaginable electronic device and component for absurdly low prices. My friends in this city, Ava Yang and her husband Terry, acted as guides through this labyrinth of parts and retailers. We all purchased loads of stuff, some of which will be sent home by courier in another week's time. That night we were guests of honour at a lavish Chinese banquet provided by Jimmy my main parts supplier.



On the following morning, we took the subway to an industrial area about 50 km away. (This city has nearly 300 km of subway and 200 stations.) Two cars met us at the station and escorted us to the nearby Wanhexing pcb manufacturing facility for a private tour. With plastic covering on our shoes to stop the sulphuric acid making holes, we were given a comprehensive examination of the factory. The plant has around 200 people split into day and night shifts, to produce circuit board blanks and ship

them to distant places around the world, including Drouin. After the tour and a private room luncheon at a nearby cantina, we were driven to a second factory not far away where a different supplier manufactures specialised appliance labels for some of my electronic equipment. Our contact 'Holly' showed all the fabrication steps and quality control methods that transform a few bits of plastic into a finished product.

The following day we were escorted by four friends to a university campus to have a look at the **2017 Maker Faire**, where students had assembled many interesting electronic gadgets. Lots of laser cutting and 3D printing merged with Raspberry Pi and Arduino platforms to produce a

terrific collection of projects and wearable electronics. Unbeknown to me, my camera strap under my backpack had given way and my camera had disappeared somewhere in this city of 11 million people. I hadn't taken many pics that day and believing it was within the pack, I only



The Canton Tower

noticed its absence later that evening after a big night out at another restaurant. Many valuable images had been lost with it. The next day we had to move on to Guangzhou. Although we had planned on taking the subway across town to the high-speed train terminal, Jimmy the owner of our parts supply company, kindly showed up with a passenger van to take us across the city, directly to the high-speed train station.

So while the four of us trooped up and around Guangzhou's awesome 600m tall Canton Tower, Ava and Terry back in Shenzhen had mobilised the city police and backtracked through the subway security checkpoints before successfully finding the missing camera at the Maker fair venue. A major accomplishment that warranted



Terry and the police locate my camera

a series of celebratory images before sending it back to Australia. I

should have it next week.

So we returned to Oz after having achieved all aims of the tour for a surprisingly low cost, arriving just a few days before the last General Meeting for the year. The group took away a fresh view of what makes China tick. It is hard not to be impressed by the vast futuristic cities that have been created there and the friendliness of its people.

This was about my tenth trip to China, spread over many years and big changes are evident. I was able to try a bit more of my limited Chinese and I feel sure that the rest of our group are now quite confident about the art travelling through this land. To detail the experience and imagery of the entire adventure would take a much longer article, but perhaps this short snapshot has been of interest.

VK3RDD INSPECTION

In other news, we have an interesting night lined up this Friday night. Our 6 metre repeater VK3RDD will be transported to the Guide Hall and we will spend a little time going over what makes it tick. For those of you who have not seen the inside of a VHF repeater closeup, this is a good opportunity to get inside the box before we permanently reactivate it from the Club shack.

LAST MEETING THIS FRIDAY NIGHT

Please note that while there will be a December 1 Prac Night in the shack, the November General Meeting night will be the last one for 2017.

ANTENNAPALOOZA 2018

Working away in the background, a small team spread over several clubs is putting together a plan to stage a 2018 Antennapalooza field event. You will hear more about this early in the new year, but we hope it will be the biggest event of its type to date. Watch this space.

BRING STUFF FOR THE CLUB HAMPER

This Friday Night we will also be collecting donations for the GGREC Christmas hamper. Something of an annual tradition, **we ask members to bring an item along to put into the hamper**, such as a wine, a cake, a box of chocolates, a stuffed toy or something decorative. (No out-of-date pickles from the back of the pantry please.) We sell some low-cost raffle tickets for the hamper and draw the winner at the Christmas breakup party on December 9. There's only one winner, but the odds are better than a lotto draw!

CHRISTMAS BREAKUP PARTY ON SATURDAY DECEMBER 9



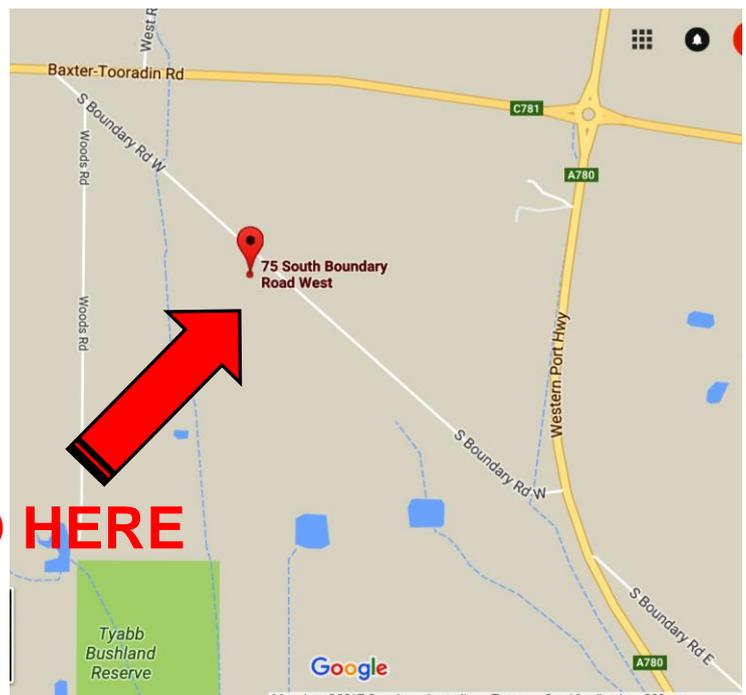
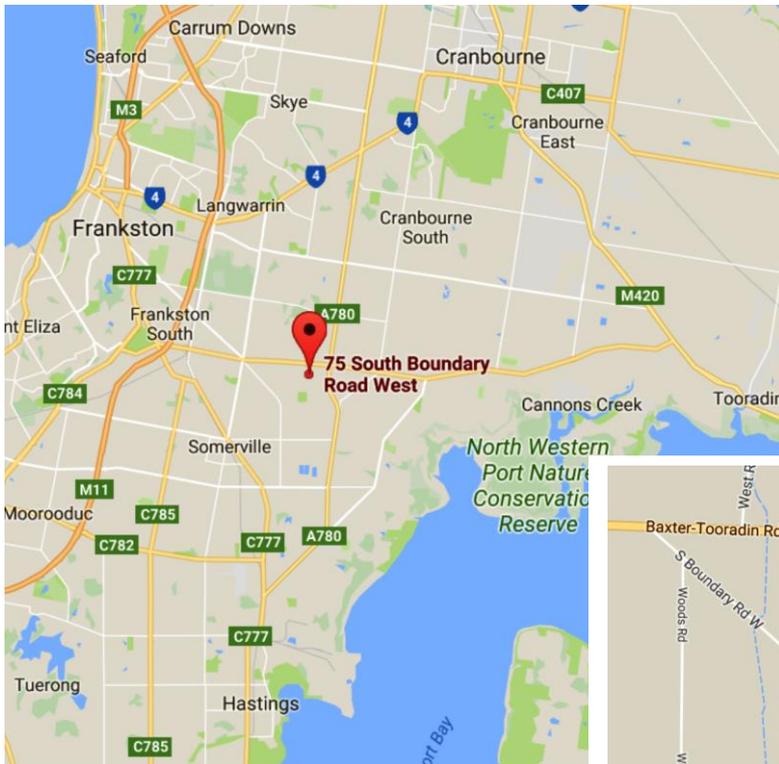
This will be an afternoon and evening event kindly hosted by Geoff VK3HGG at his Pearcedale home. Bring chairs, food and drinks of your preference and join in the fun.

If something else is scheduled to happen that day, cancel it, fake an illness, or just point to an eagle in the sky and quietly run away, but don't miss out on one of the biggest events of the GGREC year

The address is 75 South Boundary Road West. Yes, it's a bit of a mouthful, but if you follow the map below with care you should find it ok. Look for the 2KW laser beams pointing into the sky. Well...that's actually a lie, but there should be at least two balloons tied to a stick out the front. At least one will have air in it.

GETTING TO THE GGREC CHRISTMAS PARTY

Depending upon where you are coming from, most will want to get onto the Westernport Road, head South of the **Baxter-Tooradin Road** and take a right hand turn into **South Boundary Road West**. (Not to be confused with South Boundary Road East)



GO HERE

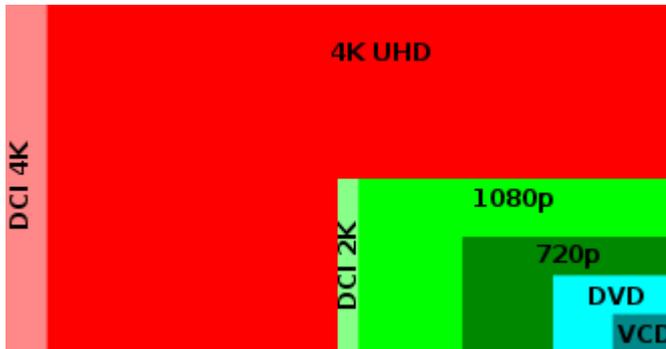
From The Editor – Junked TV's

November – Wow, time to get scared, Christmas is almost here. Not that I find Christmas scary as such, it's the fact that we've chewed through another year already. (So much for the previous new year's resolutions, whatever they were). So what has been keeping me busy this time of year? Apart from church and my volunteering there that seems to burn so many hours, it's the hard rubbish collection time in Frankston. Usually I don't find that much to throw out, well nothing that I cannot 'lose' by other methods. Two years ago I put a pile of computer related junk out on the nature strip for recycling – Blast, no recycling was done, it all got stuck into the garbage crusher on the back of a garbage truck, along with couches, plant pots, and everything else. So now I don't put electronics out (apart from speaker boxes) but instead take it to the local recycling centre – where hopefully (that's still a big hope) it's done properly.

That then leads to the other side of the collection (and this story), I usually take a wander to see what is being put out, this year I was surprised by the number of flat panel TV's out there, I thought that after going over to digital TV, and seeing a surge in old CRT analogue TV's being tossed, there would be a several year break from seeing much in the way of TV's being put out. Wrong, whilst there is still the odd CRT analogue TV being put out, there was a surprising number of much more modern flat panel sets. So what is going on here? Are these new sets a hell of a lot less reliable than the old CRT sets they are replacing? For one, the older CRT sets are technically far simpler in design, in the older black and white valve days, it was possible to make a set with a handful of valves, colour made things somewhat more complicated (Thankfully we skipped the all valve colour set's the USA saw) probably with about a hundred transistors. Now we have gone flat panel digital, the transistor count has gone through the roof. Take an LCD active matrix display panel for starters, each pixel on the screen has a red, green, and blue sub pixel, each of these has a transistor or two deposited on the actual glass panel next to the colour dot you can see. (I bet you never realised, that when watching a TV, you are literally looking through a grid of transistors) Take a 'normal' Full HD panel for instance, that is 1920 by 1080 pixels, that's a tad over 2 million pixels, multiply that by 3, to allow for the RGB sub pixels, we are now talking over 6 million transistors, that's just on the glass panel, let alone all the rest in the driving/scanning/multiplexing circuits that surround the panel. Next in complexity is probably (originally) the digital receiver. In the 'good old' analogue days, the set would pick up one carrier (with sound & colour sub carriers added), using nothing much more than a supped up radio receiver. With digital, the picture is sent using DVB-T, which consists of a 7MHz wide 'channel' made up of 6,817 carriers, spaced 1 KHz apart. Each of these carriers is modulated using 64QAM, meaning that each carrier can be in one of 64 possible 'states' (remember, we are talking digital here, everything is in 'steps'). As you can imagine, the circuitry to demodulate, and decode this is far far more complex than anything imagined before, even after the raw data (signal) has been recovered, it is not a straight picture and sound, but rather several pictures and sound channels all compressed and multiplexed together. For instance, the seven network has channel 7, 71 (HD) 72, etc. etc., are all combined into that single digital transmission. Not content with that complexity, modern sets also basically include a computer in the mix (originally, just to do all the signal processing) to offer more and more 'smart TV' functionality. So how reliable are they, it would appear no way as good as the best of the old analogue CRT TV's of yesteryear.

There are 3 possible explanations out there I can think of:-

1/ Changing DVB-T standard. In Australia the only changes to analogue TV were Colour and stereo sound, both of which had little to no effect on existing TV's, however with Digital they have changed the spec, mainly by adding Mpeg4 compression to the standard. This allows more channels, more HD to be squeezed into that 7MHz channel they transmit. Trouble is 99% of TV's are not upgradable to this new compression scheme, being stuck on Mpeg2. Now you cannot blame the set manufacturers for that, they made the set to the published DVB-T standard, it's probably better to blame the TV networks for wanting more & more for nothing (stuff the customers, they can just buy a new TV). Note: be wary of TV's (and set top boxes) for sale at flea markets, etc. they probably cannot receive half the channels currently available.



2/ Resolution - TV manufacturers keep adding more pixels, as in the newer 4K, or ultra HD TV's now been pushed upon us, with resolutions of 3840 × 2160 pixels etc. Note, before buying one of these, broadcast TV does not (and probably will never) transmit 4K, only regular HD at best. So unless you plan on NBN TV etc., you'll probably never see any UHD/4K content – so a

waste of money? At least you can console yourself in having possibly future proofed your TV – assuming it lasts that long!

3/ Smart TV. The other push is to add more and more 'functions', i.e. Android TV etc. However if my experience is anything to go by, be cautious. My Samsung smart TV is one of the earlier generations, I didn't actually buy it for that functionality, it was bought as a digital replacement for my ageing CRT TV. When I set it up it had all these 'apps' on it, with more added on a regular bases. Now my set is not the latest, so the supply quickly dried up, Worse than that, the ones I had, after falling out of support (on my set) were 'pulled' by Samsung, as in the sods started deleting software from MY set – NOT HAPPY JAN. (At least it didn't catch fire in my pocket)

And I can forget D.I.Y. apps, there was basically no information out there on my set, bar 'rooting' the set, a dubious activity that has a possible, published outcomes of trashing the TV. Maybe you'll be luckier, assuming your tech savvy in that direction.

And don't be fooled by Android TV – as in the Google Android marketplace is now quite huge, so plenty of content right? – Wrong, most is written for a phone/tablet with a touch screen interface. When's the last time you grabbed you're 80 inch screen TV, propped it portrait mode in your lap and tried swiping your fingers across the screen trying to control an app!



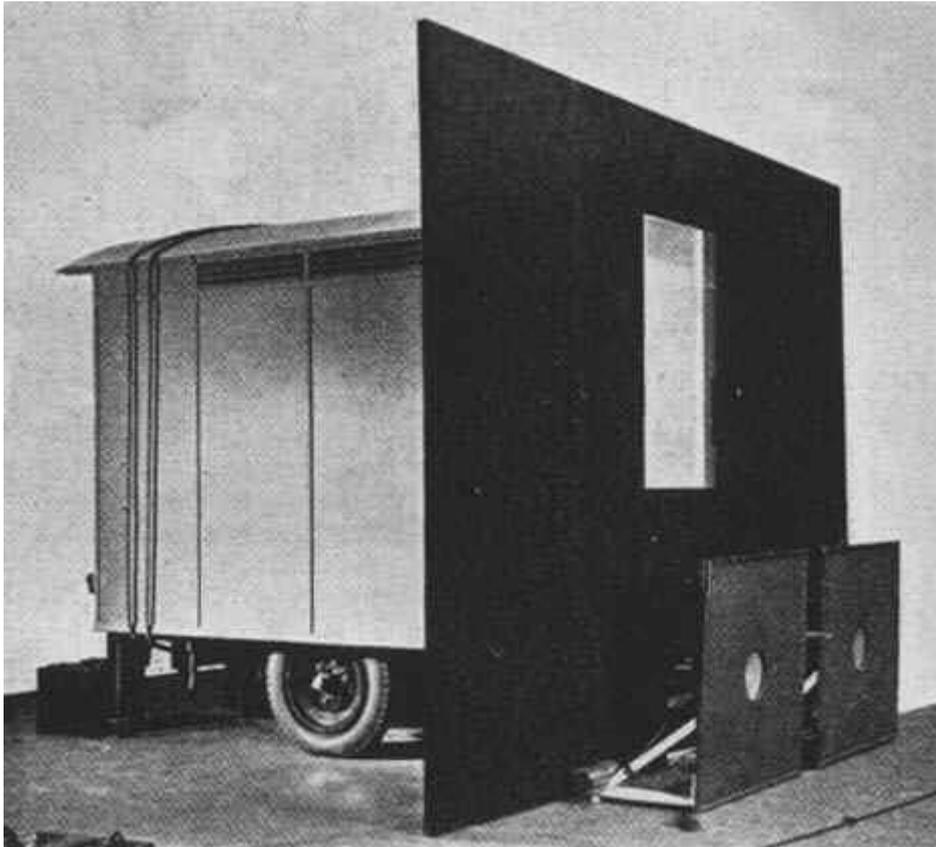
If your Current TV has at least a HDMI input socket, and you would like all the new stuff, like NetFlix or Stan etc. (Sorry Presto, R.I.P.) then don't chuck your TV, but instead buy a box, like a Telstra TV, etc. (it basically depends who you get your internet from) and use that for all the new stuff (even Aldi sell them occasionally)

These cost a lot less than the latest LG, Sony, or Samsung etc. and are much easier and cheaper to replace when their shine wears off.

Paul VK3TGX

Ancient TV / First flat panel displays?

You've probably heard of John Logie Baird and his mechanical television; however here are a few other ways tried in the early days, for a larger display (Baird's original image was ~1 inch.)



This one is actually also by Mr Baird, as a way of demonstrating his new invention to the masses at a demo in 1930.

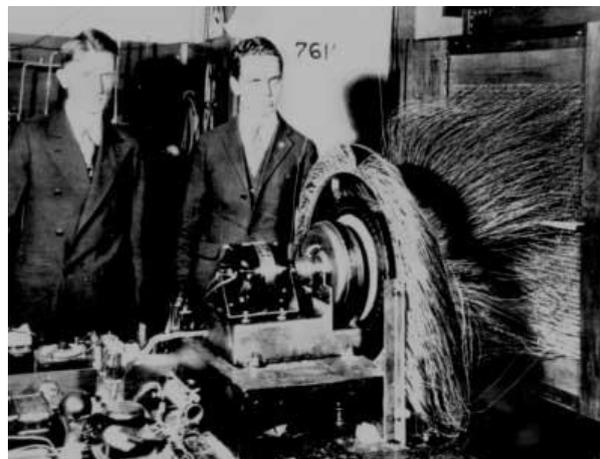


"The screen is composed of an array of 2,100 lamps spaced one inch apart and operated by mechanical commutator switch to give a picture measuring 30 inches wide by 70 inches. All the display equipment is housed in a 'caravan' that can be wheeled onto the stage." (from website)

See http://www.terramedia.co.uk/media/cinema-television/Baird_large_TV_1930.htm



However in this case he was preceded by Bell labs in 1927 (although he had patented his bulb version in 1925)



This one used a neon gas filled tube, also driven by a switch – so is this the first plasma TV?

http://www.earlytelevision.org/bell_labs_matrix.html

Fun With Sub-Woofers



Recently I was given this sub-woofer, I'm not sure where it came from, but it definitely looked like it had spent some time in a rather damp environment (Sitting on the nature strip, hoping for a new home?) This is not the first one of these devices to come my way. I've now got a sub-woofer on all my sound systems, bar the radio shack, that is till now. As it will probably be buried under a bench in my workshop/radio shack, it's less than pristine look is not a problem.

These units are usually intended to be used as part of budget home cinema system, providing you with 5.1 channels of audio. 5.1 channels means 5 normal channels plus a sub-woofer, as in two front speakers, two back speakers, a centre speaker (usually placed directly under the screen, and the sub, which can be placed off to one side, as the human ear cannot tell where sub-audio is coming from. Electronically, this unit seemed to have no problems, however the box had quite a few rattles, probably due to glue failure after been un-loved & damp for so long – or maybe that's just how it was built in the first place (that would not surprise me) Anyway, with the integrated amplifier module, and port tube removed, I had sufficient access to apply liquid nails to most of



the joints, I was surprised by just how much of this glue I was able to push into the joints with my finger, the tolerances of the joints in the box were truly horrific, as in you could park a bus in them – Not good!

One common problem with 99% of home theatre equipment, bar the expensive top of the line equipment, is audio quality; the amps in this unit looked extremely cheap and nasty, with some obvious cost cutting applied. Normally most discreet component amplifiers have what is known as a Zobel network? on their output, this is to make sure the amplifiers are stable at very high frequencies, and do not oscillate, the circuit board had room for the inductors, but they had been left out, replaced by wire links. – yea, cheap'n nasty.



The other problem with these units is the 5 supposedly full range speakers that come with them, usually they are quite small, and only reproduce the upper frequencies. I had previously acquired several sets of these, with the idea of putting a sound system into my caravan, they all sounded crap, an NEC communications speaker (as in commercial 2way) I had sounded far better – scary. The end result is a system that reproduces all the bangs, booms and gunshot noises in the movies, but murders the dialog – end result; out it goes – onto the nature strip.

At one point I was going to bring one of those satellite speakers down to the club rooms to serve as a remote speaker on the club's new Yaesu FT950 HF rig, but none could reproduce a good spoken word – So how on earth do the drongo's who make this crap expect them to satisfy a TV viewer, Forget the news, or comedy shows etc., be happy with bangs, booms and ricochet gunshots type movies only. (Don't get me going about the speakers in small LCD TV's)

So if they are so bad, how on earth do I/you get any use or joy out of them? - Easy.

First off, toss the satellite speakers (assuming they are as I have described them), second, ignore the 5 supposedly full range channels, Apart from far too much distortion etc., quite often they are filtered, to suit the small speakers supplied with them, so even if you connect a decent set of HiFi speakers, they will sound like the small speakers they are replacing – yuk.

I had this sub/home theatre amp setup for testing in the back yard, being driven by my iPad, when a mate came visiting. So he could hear what I was playing (rather than just hearing boom, boom, boom), I connected a three way speaker to one of the channels. Darn, I thought that speaker has a dead woofer, as only the mid-range & tweeter were working. No, it was fine; it was the in-built filter I just described biting me.

What I use is a normal, decent quality HiFi amplifier with a pair of decent sounding full range speakers. The output from this amp is then used, via an attenuator, to drive the "Sub" jack on the subwoofer for some extra bottom end punch, when the music you're listening to calls for it.

If on the other hand, I'm listening to a podcast, the news, or ABBA, etc., with little bottom end, I don't even think of turning on the subwoofer.

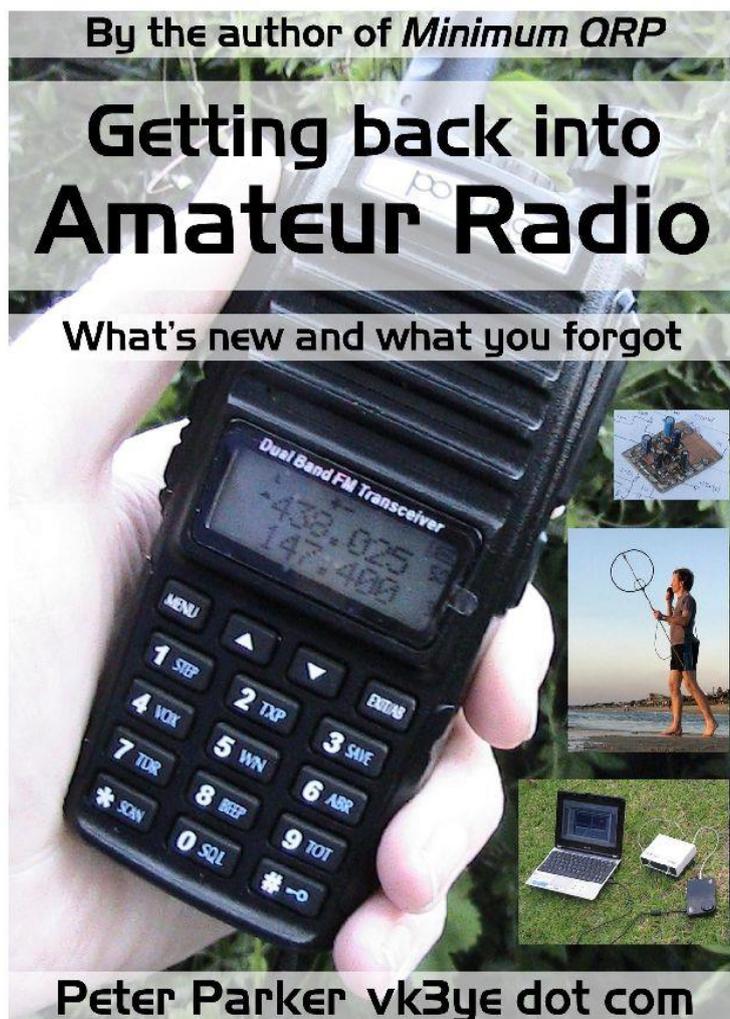
So why do I connect it (via an attenuator) to the HiFi amp output (as in speaker out)?, Its so that the audio level from the sub follows the main amp's volume. If I connected it up to the input of the HiFi amp, then I would have to adjust two volume controls – a right pain....

At one stage I did try connecting to the output of the volume control, but the level was insufficient, plus the stereo to mono mixing network load, applied the high-ish impedance of the output side of the volume control was seriously compromising the stereo separation. Yes, I could have built a buffer amp, but I decided to just use the main power amps as the buffer.

In my case, with a mid-powered amp (40W/channel) I found two 4.7K resistors, one to both Left and Right, with a 1k resistor from the mid-point to ground did the job. I built this network inside the HiFi amp, with a single RCA socket as the output for the sub.

It could be built external to the amp (In fact, pre-built units are available, look at car audio), but I thought the internal solution to be cleaner, and less trouble prone, than having two sets of leads pushed into the speaker output terminals of my amplifier. Do this part 'properly', in a proper box, etc., not just some parts wrapped up in electrical tape. If a short should occur you risk blowing your HiFi amp, not a good outcome. Hence me building it inside my amp.

Extracts from *Getting back into Amateur Radio*



About *Getting back into Amateur Radio*

(Last part)

Maybe you've let radio activities lapse but are considering a return. Or are perhaps just curious about what we get up to. Either way *Getting back into Amateur Radio* could be for you.

In a clear, conversational style, it brings you up to date with what's changed and what you may have forgotten. In almost no time you'll be tuning the bands even if you don't yet own a receiver.

Getting on air is easier and cheaper than ever before, with a huge range of modes, bands and activities to choose from. There's sure to be a specialty that appeals to you, with major recent developments including low-cost digital modes and software defined radios. You may even be able to become relicensed without sitting another test, depending on your country and documentation.

New amateur equipment these days is cheaper relative to other things than it was. You might prefer the nostalgia of restoring something you remember. Or the anticipation then joy of making contacts on something you built yourself. *Getting back into Amateur Radio* discusses all these equipment choices.

Then there's antennas. Ideas on what to use and what to avoid are given, with special help for those with limited space. Except in extreme cases you should be able to stick up something that's heard.

Forgotten operating procedure? A refresher course on the various way to make contacts is in this book.

A big part of amateur radio – then and now – is meeting other amateurs and learning new things. My 100 page book can't hope to cover everything. But there's links to ideas and resources that will keep you reading for hours and help you interact with amateurs.

***Getting back into Amateur Radio* is an ebook readable on most devices. It's the author's third, following on from the top-selling *Minimum QRP* and *Hand-carried QRP Antennas* titles. It's available through Amazon for \$6.99. Search the title on Amazon, like 'VK3YE Radio Books' on Facebook or visit vk3ye.com for more details.**

General Meeting Minutes

None – The formal part of the meeting was “cancelled due to lack of interest”

After the presentation by Shane Clayton from Gippsland Solar, on ‘his’ Tesla electric car, most of the night was gone. Ian said to members “Have a cuppa, then the meeting proper will commence” (as usual), however too many members ended up going home after the cuppa. So those left could only do likewise – give up and go home!







Club Information



Meetings 2000hrs on third Friday of the month at the
 Cranbourne Guide Grant Street Cranbourne
 Prac nights first Friday in the Peter Pavey Clubrooms Cranbourne 1930hrs
 Visitors are always welcome to attend

Office bearers

President	Ian Jackson	VK3BUF	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	Mark Clohesy	VK3PKT	Secretary	Ian Jackson	VK3BUF
General 2	Ron Lacey	VK3FRDL			

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
 6m Repeater VK3RDD – Currently de-commissioned until further notice - *sorry*
 70cm Repeater Cranbourne VK3RLP In 434.475MHz Out 439.475MHz CTCSS 91.5Hz
 VK3RLP Repeater supports Remote Internet access (IRLP), Node 6794.
 70cm Repeater Drouin 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

Membership Fee Schedule

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

Magazine Articles to editor@ggrec.org.au or vk3tgx@gmail.com Cut off, 10th
 All other Club correspondence to: secretary@ggrec.org.au
 or via Snail Mail : GGREC, C/O Ian Jackson, 408 Old Sale Rd, Drouin West 3818
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