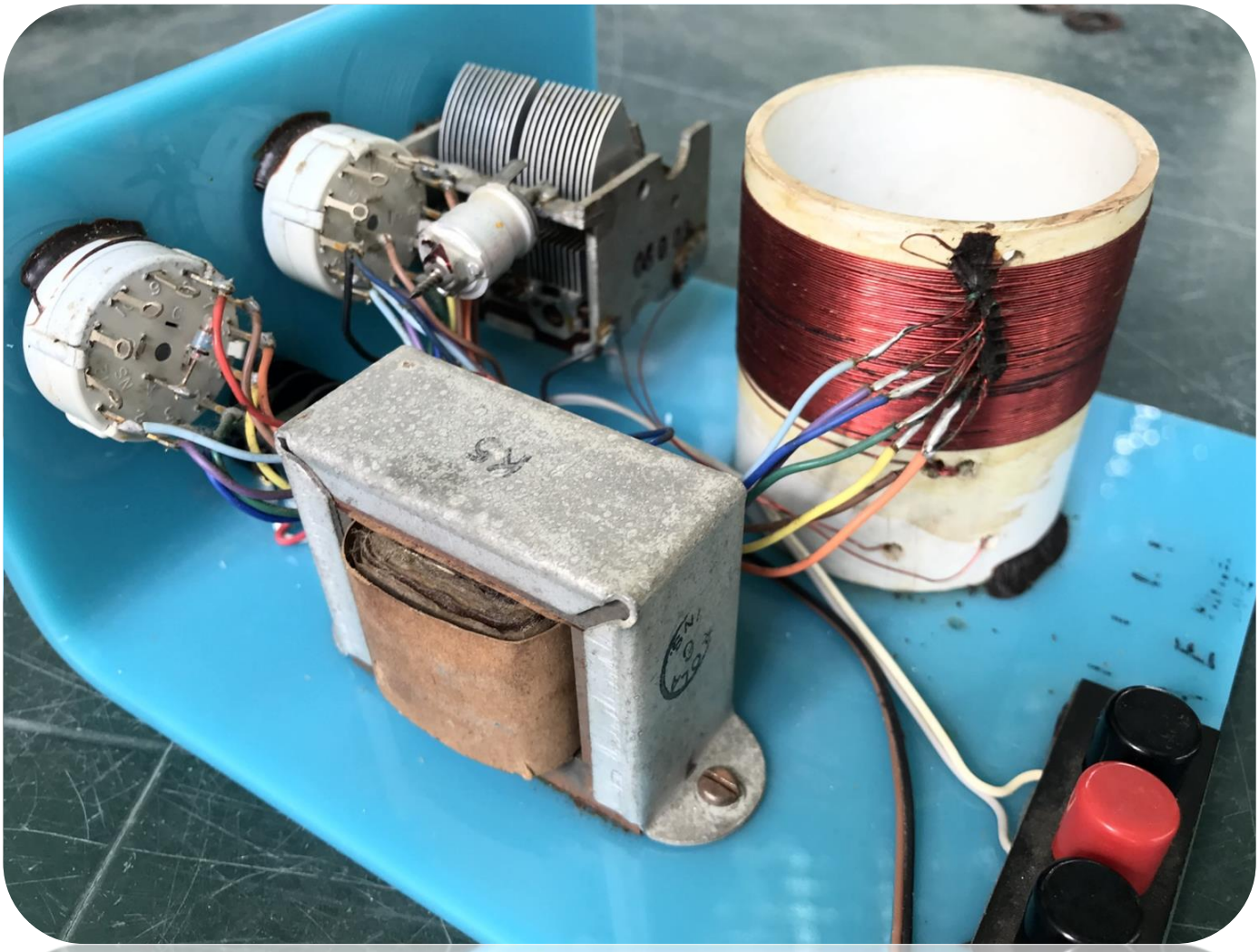
GATEWAY

The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc A0016893M

October 2023



Diamond X-50 2m/70cm Antenna.

Switchmode Repairs.

Fun with Lapel Mics.

And More

WIA Affiliated Club

Cover photo, A crystal set, from a very early Electronics Australia design.
(If you have any good photos, please send them in)

Contents.

Event Queue

October:

6th	7:30	Prac night
20th.	8:00	General Meeting
21st.	12:30	JOTA

November:

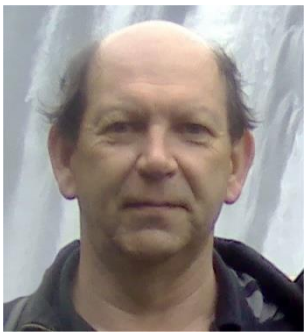
3rd	7:30	Prac night
17th.	8:00	General Meeting

December:

1st	7:30	Prac night
--.	--	General Meeting – *Usually not held in December.*

Club run events are only possible with the involvement of ALL members.
Without volunteers to coordinate and participate in club events the club will fail to prosper

President's Message



Greetings GGREC members

A big part of Amateur radio is to step out of the mainstream comfort zone and do something different. Perhaps that is just to build a strange looking antenna, or to go camping on a remote hilltop to see if you can hear something you can't get at home. Regardless, it starts with doing more than just sitting around home channel surfing with a TV remote. Maybe some aspect won't go right and the result will be bothersome. That's ok and it is still a risk worth taking. Sure, there are excuses for lines you may not want to cross, limits you cannot exceed, but not having tried a new endeavour before should not be a reason for giving new things a go

This month Di VK3JDI and myself are in Japan. We are working our way across the southern parts by train, moving every 2-3 days. There are almost 10,000 train stations here, so there are plenty of stops to choose from. I haven't been here before, don't speak a word of the language, have no guide, but so far it is going well.

The power infrastructure here is interesting. The southern half runs on 100V AC at 60 Hz. The North half at 50Hz. My holiday multimeter (below) confirms this. There are no earth pins on any appliances (No earth leakage protection) and there are no switches on any power outlet. My shaver and laptop don't seem to care. I hadn't planned on doing any arc-welding in my hotel room, so maybe it doesn't matter.

Presently we are in Kobe. The city that had nasty earthquake issues in 1995. There were two items of interest for us here. I wanted to check out the Akashi bridge and I wanted to get a picture of a certain statue next to a train station. The bridge is the world's largest suspension bridge at nearly 4km long, with 2km between the supporting pylons.

We went to a visitors centre where they showed a short movie about its construction by a cartoon character that looked like a bar of soap. We didn't understand a word it said. The bridge is probably the largest human-made object I am likely to see. Quite an amazing achievement.

I suspect there are more than a few readers that can cast their minds back to the Saturday mornings of the mid 1960's when strange Japanese cartoons reigned supreme, like Speed Racer, Astro boy and of course, Gigantor the Space-Age robot. Extra points if you can remember the theme song.
A weekend festival was taking place in a plaza, featuring Japanese drummers, all under the watchful eye of an iconic 18 metre tall statue of Gigantor. Why is it there? Who knows or cares? This is Japan. If you haven't seen something strange in the past hour, then you are probably asleep.

The Japanese anime was one of the motivators for visiting this country. A lot of the modern content is quite sophisticated. The backdrops and buildings in many of the animated movies are real places you can actually visit. In Tokyo's Akihabara. We visited a six level building dedicated to models, cards, toys and books of popular shows. For some reason, most of these seem to feature large-breasted Japanese schoolgirls with oversized eyes. Still to visit before our return is the famous Gundam robot that actually moves and walks. This one is in Yokohama.

There is an odd transposition between Australian and Japanese cultures. Japanese society has quite a rigid framework that its citizens conform to, whereas Aussies are far more casual. Yet, the Japanese dare to create things of whimsy and excess that nobody would ever consider in our own land. The land of Yaesu, Icom and Mitsubishi has a lot going for it.

To local issues.

By now most operators will have read some of the details of what amateur radio will look like from early next year. Changes are afoot on the examination process. This may well make it easier for new operators to enter the hobby, but it will take a while for the transition to settle down. We will help to share this information as new facts come to hand.

I trust that many will be able to attend the general meeting this Friday night. Sorry I can't make it. There will be discussion there about the field day the Club is planning for Cranbourne in November. It sounds like a bit of fun. We also have a Christmas lunch planned in the calendar. As usual, we want to have a hamper raffle for our members and we have begun to collect some donated items for that. No expired tins of sardines please. Drop in a few items that you would actually like to have yourself.

Coming up on the 21st is JOTA. I am pleased that several members have come together to make it happen. It does mean a lot to the guides and it is good for the relationship that the GGREC has with the local chapter.

Paul our magazine editor is always looking for content in Gateway, so if you have a fresh experience you can share with others, please give it a shot. Pictures always help.

Cheers, Ian VK3BUF.

From The Treasurer

Here some reminders on GGREC activities.

General Meeting
A reminder on this Fridays General Meeting which will be held at the Girls Guide Hall start at 2000h.
Bruce VK3BWR will be presenting CHIRP a universal programming tool to program a lot of different radios.

"Laundry Net"
This Thursday evening at 2000h (8pm) Mike VK3TDK will be holding this "Laundry Net" on 7128kHz LSB.

JOTA 2023
Also GGREC will be supporting the Girls Guides for the JOTA 2023.
We will meet at the club rooms this Saturday at 1230h.

If you hold a valid Working With Childrens Card, come and assist us with the Girls Guide.
If you involved in other scout groups and are interested in a sked between the Cranbourne Girls Guides and your group let me know.

VK3IU
Treasurer

From The Editor

This month I've kind of had my foot in too many places, from making a short video about my TRS-80 computer in response to one on YouTube, to spending ages re-ripping all my CD's in a much better audio format than I had been using.

I had for ages been using the MP3 format as that was what everyone was using, however things have moved on and my ear seems to be getting more attuned to quality, and all the subtle problems that can exist. I had been playing around with several amplifiers etc., and as a test source I obtained some Hi-Res audio, but later in thinking of this, what's wrong with mine, well for the most part it's far from Hi-Res, been 99% in MP3 format – suitable for iPods and portable players that also supported that format. Why waste ones time digging through a pile of CD's looking for a track when I can find it in a flash on my computer.

I find CD's a bit of a pain, as you have to keep getting up and changing the disc, especially a pain if I'm in the backyard, covered in garden goo whist listening on my backyard speakers to then have to de-gunk etc., just so I can go inside to change a CD. Yes there are various streaming services; however I occasionally just want to listen to a full album I own.

MP3's have kind of shown me another way to do things, and on the other hand made me a tad lazy, why change disc's when I can use a remote control/phone to do it. In the end the price I was paying was lack of quality, not evident years ago, but now's a different time.

I'm now using FLAC, the 'Fee Lossless Analogue Compressor'. Trouble is the files are way bigger, now I have 45Gig of music data to manage. One terabyte drives are not that expensive, it's just that I have to rearrange how I do thing a fair bit, as having several copies spread about on memory sticks etc. no longer works.

Well at least I now have a new antenna up my Nally tower, I've had no joy with the clubs 70cm repeater ever since it shifted frequency, Now I get quite a bit of multipath distortion, trouble is it's mostly on the input to the repeater, I hear mostly no Rx problems, however others have issues hearing me. Now it's not my end, as those who can hear me on reverse can attest.

So to settle one argument about it being my antenna, I bought a new one, I had never been overly happy with the 2M whip atop my Nally, it always had issues, well now I have shiny new white stick that also does 70. I've just got to get to bed a lot earlier so I can get up early enough to get onto the morning net.

Paul VK3TGX

Diamond X-50 2m/70cm Antenna

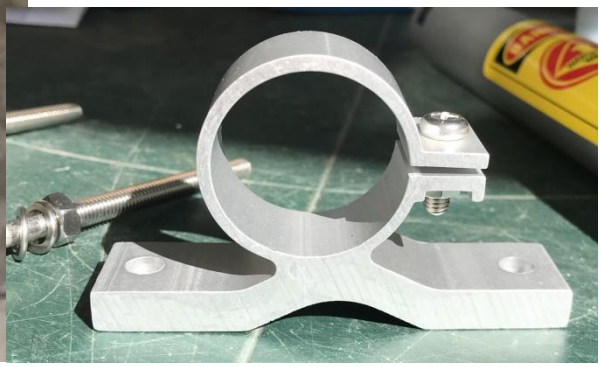
Recently I have been having issues accessing the clubs 70cm repeater, VK3RGW. Now I have one slight problem here, in that I only really had one 70cm antenna, so nothing to compare it with, no plan 'B'. Yes I have two 70CM beams, however they are firmly fixed in the horizontal plane.

Anyway, the other day I was in range of Strictly Ham, so I paid him a visit and for $140 I now have a Diamond X-50 *'dual band high performance gain vertical antenna'.*

These come with either an SO239, or as I bought, an 'N' connector. Whilst a PL239 is called a 'UHF' connector, the N series performs way better up here, it also has a rubber seal to keep out moisture. However in the X50 the connector sits up high inside a mounting tube, so it is well out of the weather, whatever option you choose.

I was initially confused by the bottom of the antenna as it had holes for ground plane elements, however with nothing obvious in the bag, I assumed they were using a common base that did have radials for other models, but not this one. Wrong, it does, they are just quite short, obviously only working on 70, they were wrapped up inside the mounting tube, so not visible when inspecting the antenna on the hook at Strictly Ham.

Also in the kit is two mast mounts complete with U bolts, however they can be mounted on a flat surface should you need too.



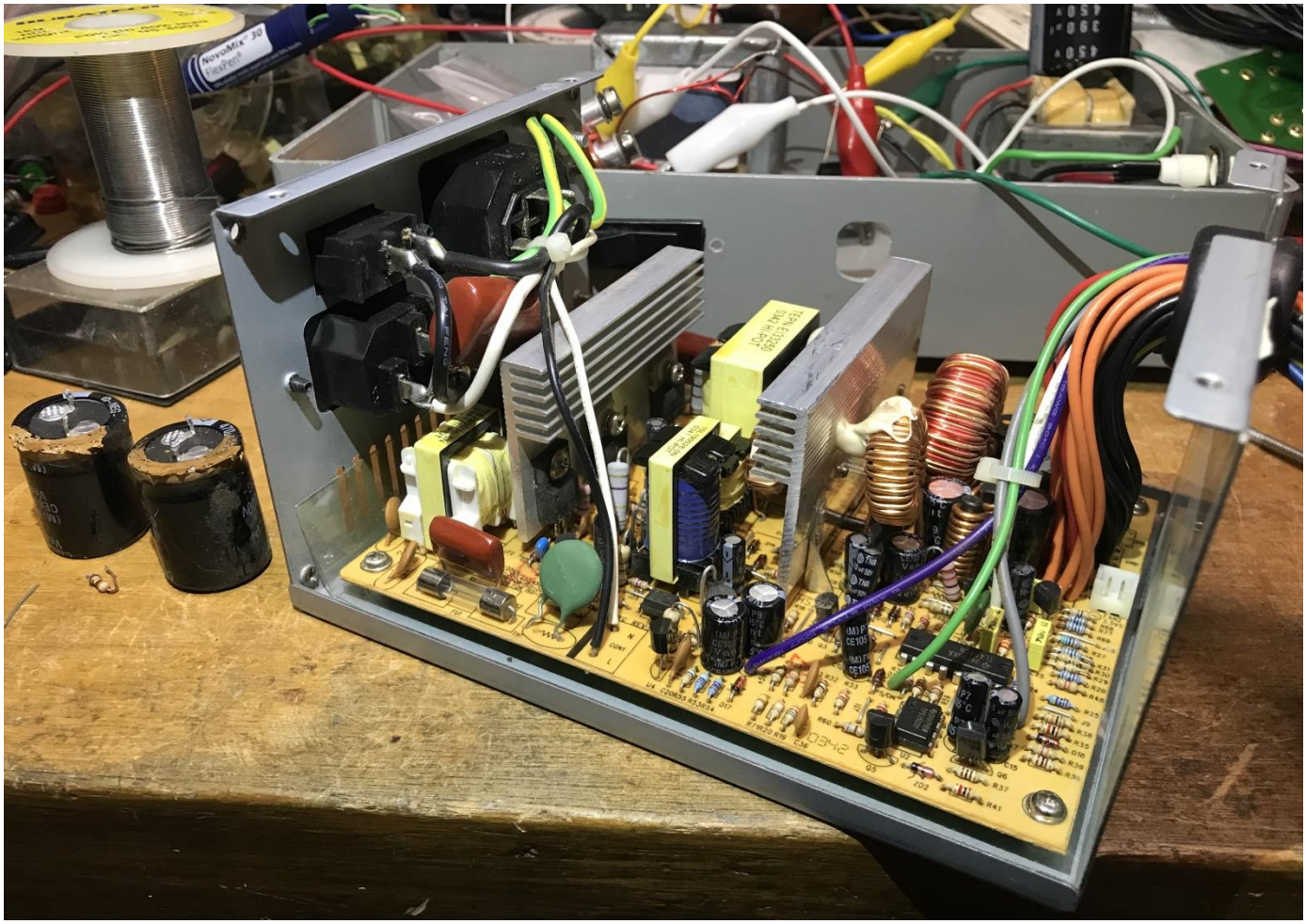
The only issue I had was screwing the antenna to its mounting tube, as I had elected to do this up my tower, my fault. Once you have the tube attached to the antenna you lose access to the coaxial socket, so if you have issues bringing your feed line down to ground level, this could be a challenge for you (a small one).

However with it up in the air on my Nally radio tower it worked flawlessly, with low SWR on both bands. I now have a much stronger signal into the repeater, however as this antenna is many meters higher than the old antenna, it's not really practical to compare them. It is however of a very stiff construction, so it should fend off the cockies and corellas that had great fun with the older flexible whip I was using, their sharp beaks making a right mess of things.

So has this fixed my access issues, well not quite, the signal is now way stronger – but with matching stronger multi-path….

Paul VK3TGX

Switchmode Repairs



Recently, when playing with things I needed to write some files onto a floppy disk – remember them? Anyway the weapon of choice was my old Windows XP box, however it just did not want to start, it just sat there with its power and hard drive LED's hard on, with no error beeps. Kind of like what you see if the reset line is held low.

My first suspect was the CMOS battery, a 3.6V lithium '2032' button cell as it as testing near zero volts – a VERY common cause of locked up at power on computers. – Not this time though.

Next was the power supply, so I grabbed a spare and plugged it in – Bingo.

So now for the swap, and get this party back on the road (to the disassembly of my T&D generator ROM's – see last month's mag). Trouble was it was a non-standard, to me, size. The regular almost cube ones everyone uses were too big, that just left a very slim 'Mini (micro?) ATX' supply, although if you go on the web that description also applies to mush larger units – awfully confusing. Anyway that supply would need some custom brackets made, and it was also only rated at 150W as opposed to the 400W rating of the original… Whilst the computer was averaging only 65W consumption, I was worried about peak draw, this thought was confirmed when I had trouble getting the hard drive to start.

This lead me to a very strange place that basically nobody goes, actually repairing a PC power supply – nobody, I repeat Nobody does that, they just chuck them and fit a new one.

Now before we begin, a word of warning, these things are kind of designed to KILL YOU, especially if you pull the board out of the case. The 240V mains is rectified and stored in the input

DC ‘filter’ caps, usually about 390VDC, these are the large caps near the input side of the board. And don’t get complacent if you live in 120V land, as these supply’s usually double that so you also see 390V – this is (was) done to make the following circuit design easier as the resultant incoming DC voltage to the switcher is always the same, just shy of 400V.

So I plopped the supply on my repair bench, hooked up an old hard drive as a load and started it up. The drive spun up, however my scope could see 100Hz blips in the DC. There is only one place that this can come from, and that is the above mentioned DC filter caps, for any mains AC should be well and truly squashed there, especially with the feeble load I was using.

And here they are, often there are two, they are wired in series to allow for the option of a voltage doubler when used in 120V countries.

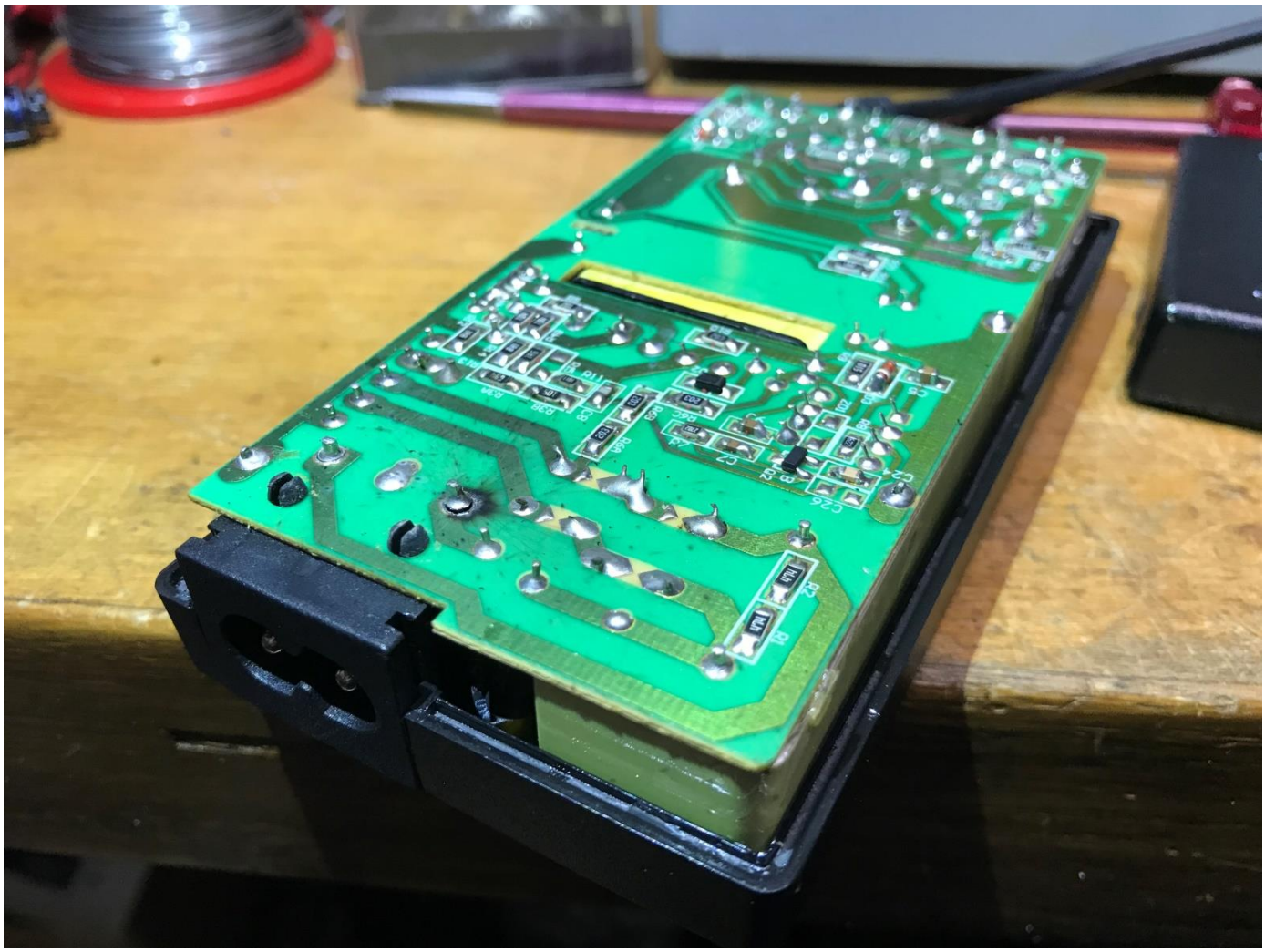
Whilst one was ok, the other was basically open circuit.

In the foreground is two 400K resistors, these perform two functions, one is to blead away any charge after the mains power is removed, the other is to balance the voltage between them. They are in series and in the non-voltage doubling configuration; these resistors are the only thing that does the balancing. Trouble was one of them was also open circuit, this would mean the remaining good resistor was now steering most of the voltage into the other capacitor, whist the one with the good resistor was seeing little voltage, so one was being slowly cooked to death. Whilst you can see some brown ‘gorilla snot’ glue on the two caps, there was way more in there, with a lot of it of a much darker and crusty appearance. This glue gets rather conductive as it ages – Have a look at the base of the coil on the crystal radio on the magazine’s cover, it’s all but black and I can easily get a resistance reading with my multimeter. Add ~400V and you’re asking for trouble.

I’m told this stuff becomes rather hydroscopic, which means it draws in water. Now water and some DC current make for a good dose of electrolysis, and this was quite apparent here is it was slowly devouring the resistors and a wire link on the board, rendering one resistor open circuit.

Actually, when I first found the dead cap, I didn’t look any further, and just dropped in two caps I had handy, they were of a lot lower capacitance, however their voltage was good. Given the light load this supply sees, I figured I could get away with it, (no-way if it was a repair for someone else….) Anyway after doing so I power it up, and it ran the computer ok, even booting the drive that was troubling the smaller supply I tried. However I then heard some troubling noises, clicks etc., something was under stress, so I quickly shut it down and started investigating, that’s when I found out all about these resistors.

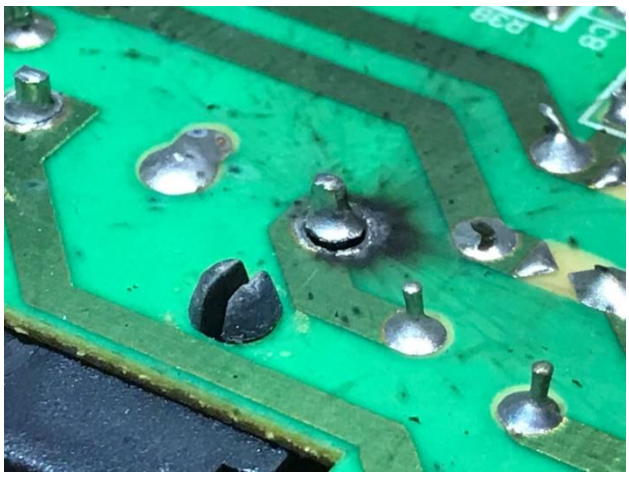
Whilst the low value caps are still in there, all of that glue has been removed, so along with a new set of 470K resistors, (closest value I had) it’s all back together and I can resume my job of disassembling the SC/MP code, the task that started all this.



Next came a power supply ‘brick’ that came with a Lacie brand external drive case, these are often seen marketed to the Apple community and seem to be a premium brand. I picked this one up at a swap meet purely for the brand.

Anyway, I’ve been recently re-ripping all my audio CD’s to the much better format of Flac (Free Lossless Audio Compression) as it blows the doors off of MP3, that I kind of have been using religiously for years – brought on by my earlier years of iPod etc. use where limited storage was always the issue, now with improving gear, I can now literally hear the errors of my ways…

As computers these days generally don’t come with CD drives – or even bays to take one, external is the go. Trouble was mine was not happy, so out came the Lacie, trouble was unless I pulled the mains lead hard to one side it would not run.



I kind of correctly surmised what the problem was, trouble was getting inside these plastic bricks can be a right pain. Some luckily have screws, however many do not, this being one of them.

I’ve found that if you ‘loosen them up’ with a small tack hammer and maybe a sharp chisel with a restrained amount of force, I can usually get in.

Start by placing the supply on a very firm surface, the back of my vice has a flat ground section ideal for this kind of thing, otherwise outside on a concrete pathway is another option.

When you are tapping you want all the shock energy to go into the plastic wall and not to be absorbed by something like a bouncy work bench, otherwise you'll end up over compensating with the hammer and that will be the end of…. Something – even your eyes.

The idea is to work along the seam, listening for a very slight cracking sound as the glue gives way. You want just the top area your tapping to be flexing inwards with the rest kind of standing still, hence a nice firm surface.

An alternative is to sit a sharp chisel blade into the slot an give it a tap, you only really want it to go in about 1 mm, anymore and it's probably inside the supply dismembering something – probably indicating bin time.

Does this always work – No, it would not be the first time the energy used has crossed over to the excessive side and severe damage has ensued. After all the supply is already broken, so breaking it a bit, or a LOT more is not going to change the 'broken' status. As above, there is always a bin waiting for your failures.

Anyway once inside my supply you can easily see the fractured solder joint and all the sparking that has obviously gone on for quite a while. You can also see that the other terminals solder joint is not far behind.

After its all is cleaned up, it's time for re-assembly. For this I usually use superglue, that and a nice weight or a vice to hold it together whist it dries usually leaves a good joint,

If you need cable ties etc., then your gluing efforts are way below par, go back and get it right, we are dealing the 240V power here, IT HAS TO BE RIGHT, either that or permanently disable it (a few aggressive hammer blows) cut off its leads and throw it into the bin. Definitely don't leave it about with a partially closed case, you will forget, your big toe (etc.) will find its way in and you, or some poor kid will get a nasty boot. When done it should look near identical to a bought one.

Some people use a hacksaw etc. to open these, the trouble is you are now missing a few mm of plastic and the case will never completely close. Electrical tape and cable ties are not a suitable replacement.

Paul VK3TGX

Fun with Lapel Mics

Recently I've been having fun with lapel mics and wireless transmitters, primarily at church, however these are usable for talks at the club rooms and maybe even with two way radios, that is if you want to be discreet.

These Rode units are amazing, in that they are made in Australia! They are primarily intended for portable field use, with the receiver being battery powered and intended to be attached to a camera, or a mobile phone via USB. Unfortunately they were not overly practical for use in our church as the receiver has to be turned on and then off at the end of a service. Usually everything is turned on by one master switch, Unfortunately these don't 'time out' they just keep going until the battery is dead. So the next day there will be a pause as someone (me) gets it charging and restarts the connection, they are not going to last long at all.

Most of our lapel systems are made by Shure, no pesky battery receivers, just a 12V plug pack, and a mechanical switch, perfect for a turn-key system (as in the daily masses where we try and keep it simple). The priest wants to just turn it on and use it, they generally don't have the time for a startup & shutdown procedure.

So these went back as unsuitable for the job

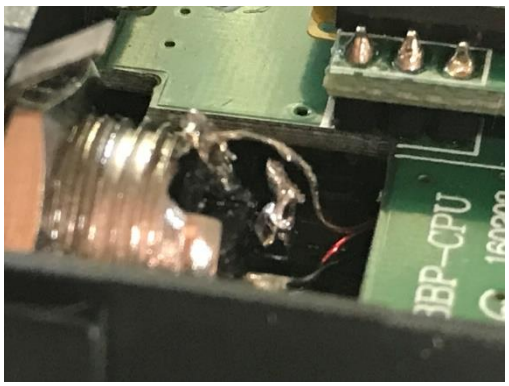
This is unfortunately a common occurrence with modern gear, it's sealed in a package and the sales staff generally don't know enough about the product to be able to say if it'll work with what you've got. This receiver is not much bigger than the XLR connectors we use to feed audio into the mixer, so in use these would probably need some form of mounting frame to hold them and the adapters needed to bring the output up to an XLR balanced input.

This is another system we use, unfortunately the belt pack transmitter is not quite rugged enough and a trip to the floor saw it crackling quite badly

Fortunately they are not that hard to get open, the biggest pain is the top panel that hides the last two screws.

The problem here is the mic socket is not circuit board mounted and it appears that it gets connected rather late in assembly when access to its terminal is quite restricted – evidenced by the all but tacked on wires.

One of these had come adrift during impact with the floor (carpeted & wooden, so not that severe)



A small dab of flux and a hot iron soon had those rather tacky joints looking way less blobby.

The wire was just touching that 'shoe' shaped pad, a small screw driver soon showed that it wasn't really attached.

Generally these systems go for around $300 dollars and up, not bad if you use them on a regular basis, although there are ongoing costs, mainly in the lapel mic. The lead is necessarily thin and breakages do occur. See the last pic, bottom of this page.

On the other hand, for infrequent use these costs are a touch discouraging. In the lapel end, and maybe also for instruments it can be possible to use a mobile phone as the beltpack transmitter, although something to stop you bumping the screen could help.

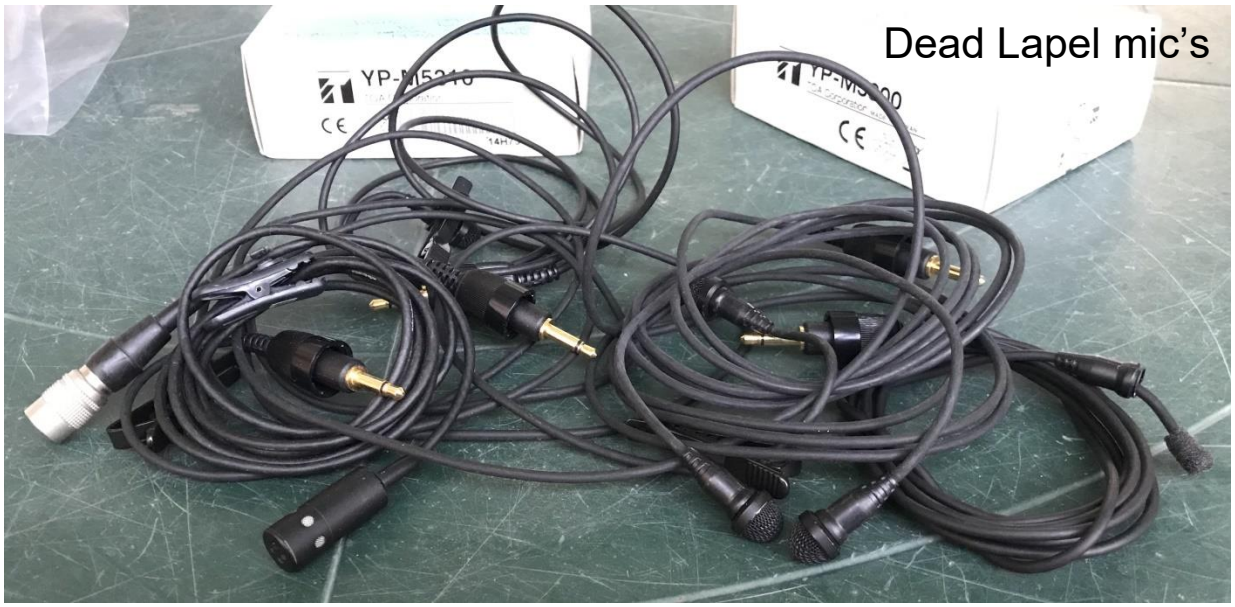
Whilst you could connect up a regular mic, that setup would seem strange to most who expect an all in one when it comes to wireless mic's, not so with lapels etc.

They, VB-AUDIO, also offer a way to digitally broadcast audio to a largish ordinance – well 250, via a similar free app on a mobile.

We, at church were thinking of installing an audio loop system, however the hearing aid industry seems to be leaving that one behind with modern hearing aids now offering Bluetooth and other digital options. Whilst it's still out there, it is not standard fitment and many users have never heard of it.

I've asked about it a few times a while ago and usually get a blank stare from hearing aid users, so I'm taking the solution as dead.

On the other hand most cannot put their phones down, so why not use of them – all we have to do is encourage them to install a free app…

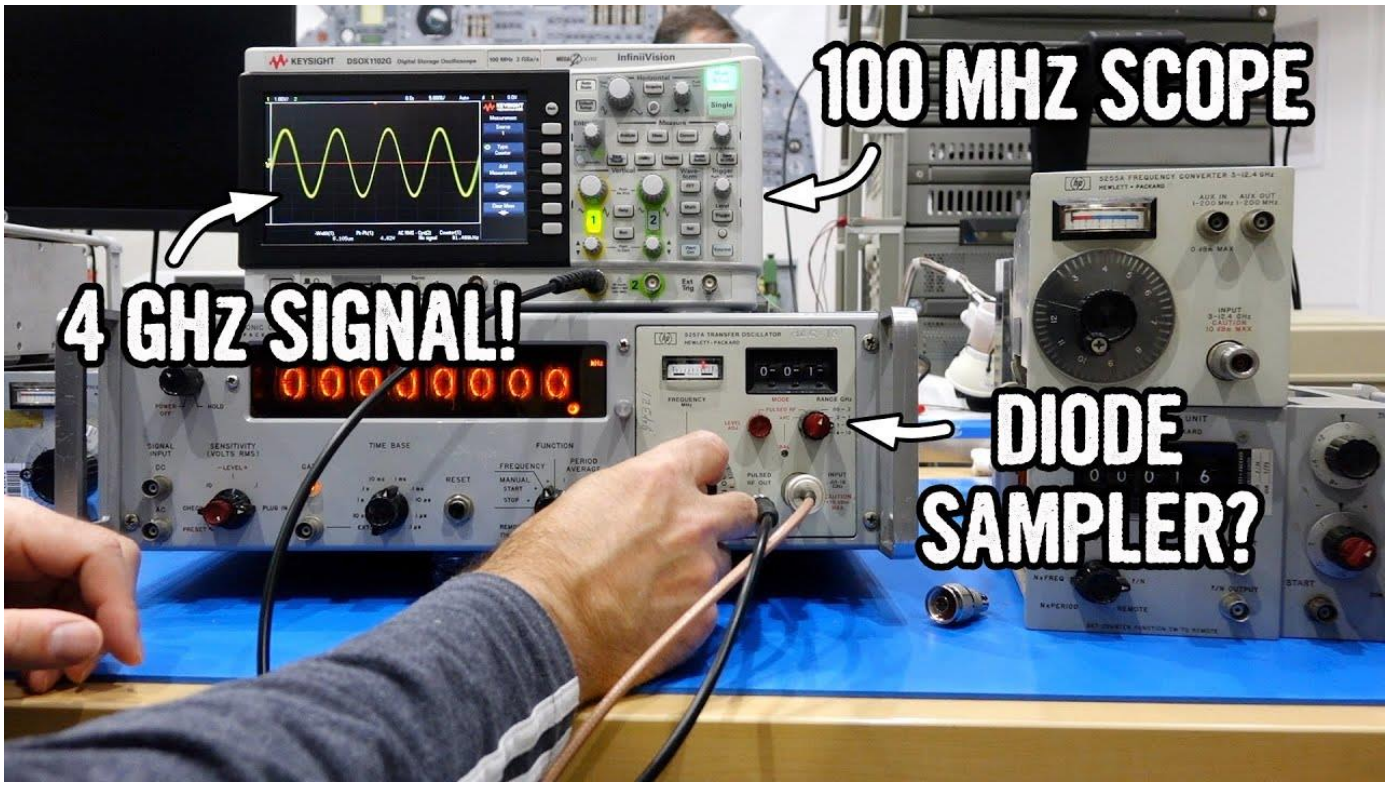


Paul VK3TGX

Meet 15/09/2023 & Prac 6/10/2023

Interesting YouTube Videos

A Look at our Magnavox Concert Grand Console Stereo
https://youtu.be/6-RwKvcdFGo



Diode Sampler Magic
https://youtu.be/KoBdPis59kI

WIA Affiliated Club

The GGREC is an affiliated club of the WIA
https://www.wia.org.au/

We also give Thanks to

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

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

For their generous support over the years

Club Information

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

Office bearers

President	Ian Jackson	VK3BUF	General 3	Gerard Watts	VK3ZXC
Admin Sec	vacant		Web Master	Mark Clohesy	VK3PKT
Treasurer	Klaus Illhardt	VK3IU	Magazine Editor	Paul Stubbs	VK3TGX
General 1	Fred Reid	VK3FWR	Property Officer	'committee'	
General 2	Bruce Williams	VK3BRW	Assoc. Secretary	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 VK3RGW, In 431.425MHz Out 438.425MHz CTCSS 91.5Hz
VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794 **offline**.
70cm Repeater Seaview VK3RWD, In 431.575MHz Out 438.575MHz CTCSS 91.5Hz
Simplex VHF - 145.450MHz FM, Simplex UHF - **TBA**
VK3RLP Beacons 1296.532MHz & 2403.532MHz **(currently offline)**

Membership Fee Schedule

Pensioner 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 by each April Annual General Meeting (AGM)

Magazine Articles to editor@ggrec.org.au Cut off, 10th of the month
All other Club correspondence to: secretary@ggrec.org.au
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