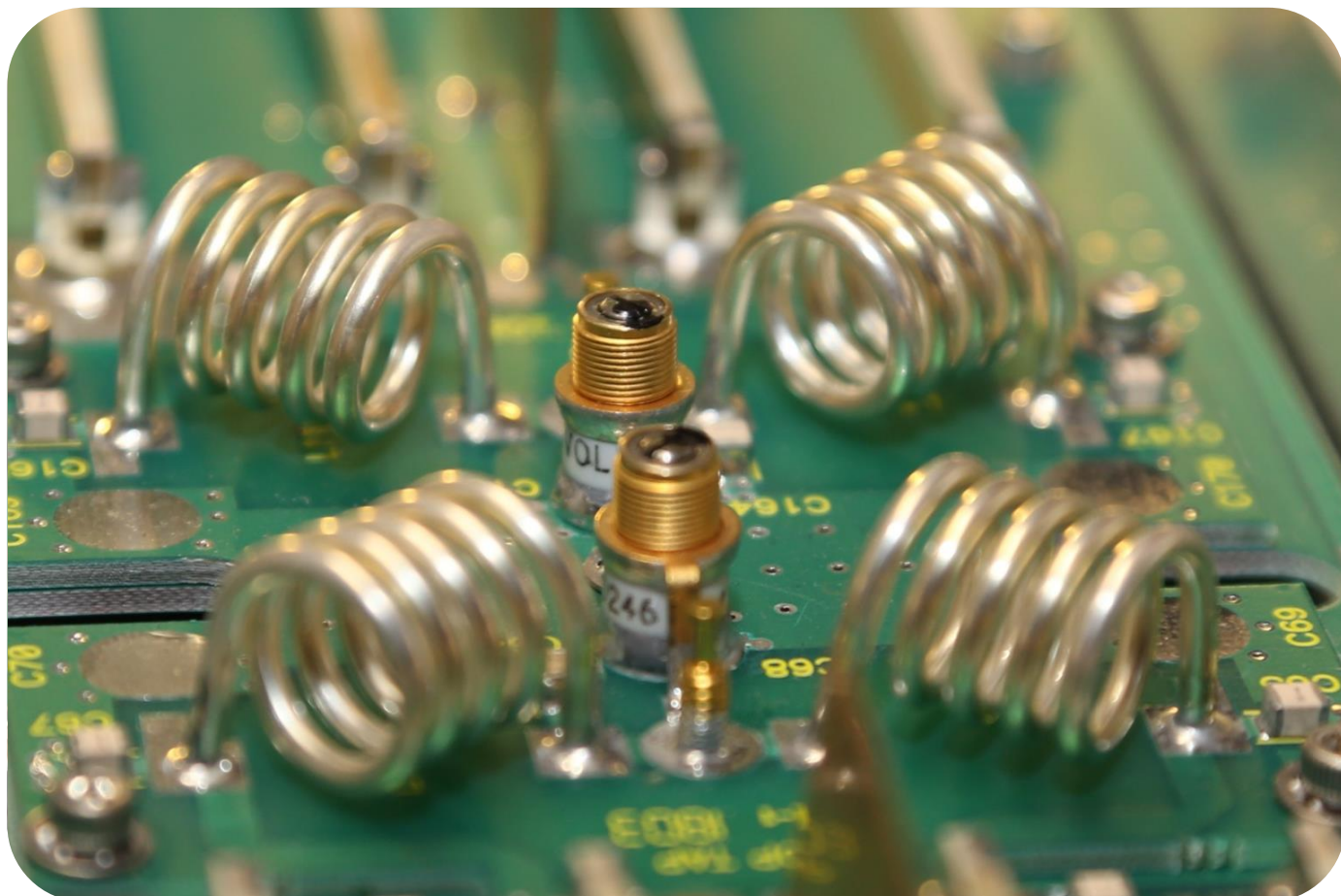




GATEWAY

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

November 2019



To VNA or not to VNA

What's in a sticker

Wi-Fi Beam Antenna

And More

Cover photo, RF power combiner in a 150W industrial laser, see the Editor section.

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Note: - club meeting minutes are on the club website

Event Queue

November:

- 2nd Melbourne QRP by the Bay at 3pm. (VK3YE - WIA)
- 4th Prac night – in the club rooms
- 15th General meeting – Guide hall
- 17th Rosebud Radiofest November 17 (WIA)
- 23-24th Spring VHF-UHF field day

December:

- 14th Christmas Party – see presidents report, p3

The GGREC is planning to hold some Club Events. These are the Summer Field Day, the John Moyle Memorial Event and possibly the Winter Field Day. Dates will be forwarded at a later date. The Clubs participation in these events means that, besides having fun in setting up and operating our gear, we also promote our club. Furthermore the club is equipped with a complete set of portable gear. Why not use it? Please consider to be part of these events. The Committee of the GGREC

President`s Report - Tony Doyle VK3QX

Hi Members,

The weeks until Christmas are now measured in single digits.

A reminder that the Christmas party is on the 14th of December and is graciously being hosted by Leigh VK3FACB starting at 12pm.

Please see Leigh or the Committee for the address if you have not been there before.



It has been a reasonably busy month since the last GM.

On the 19th of October we conducted the JOTA/JOTI event for Cranbourne Guides and also Narre Warren Scouts. This was a great event and we saw keen participation from the kids and enjoyed a nice morning tea put on by the Guides. Many thanks to the members who attended on the day and helped make it a success, Bruno VK3BFT, Max VK3TMK, Pat VK3OZ, Bruce VK3BRW, Dave VK3JIL, Graeme VK3FGKE, Leigh VK3FACB, Jamie VK3JGP (guest) and new member Don Malek. Special thanks to Bruno VK3BFT for taking the lead on the day and sharing his experience with us newbies and Rob VK3BRS for the extensive behind the scenes co-ordination effort. Watch out for the article from Bruno.

Prac Night this month saw us building foxhunt antennas and was a good turnout with plenty of members along to assist and have a chat.

The Foxhunt event on the 9th of October had a small turnout, possibly due to the miserable weather. Myself, Rob VK3BRS and Bruce VK3BRW turned out to host the day for Lou, Craig VK3FHCC, Arthur and Rob's Granddaughter Louise. It was a fun day with some challenges so look out for the article by Rob VK3BRS. As a result, Arthur might be joining at the next GM.

As noted at the last GM, the club PC was found to be lacking in the speed department and it was agreed that we would look for upgrade options. Since the meeting, Graham VK3FGKE has generously donated a refurbished i3 desktop PC preloaded with Windows 10 which I have already set up in place of the old machine. This new machine is much quicker and a far more pleasant experience. It will probably benefit from some additional RAM which I hope to install on the night of the GM. Thank you Graham, much appreciated.

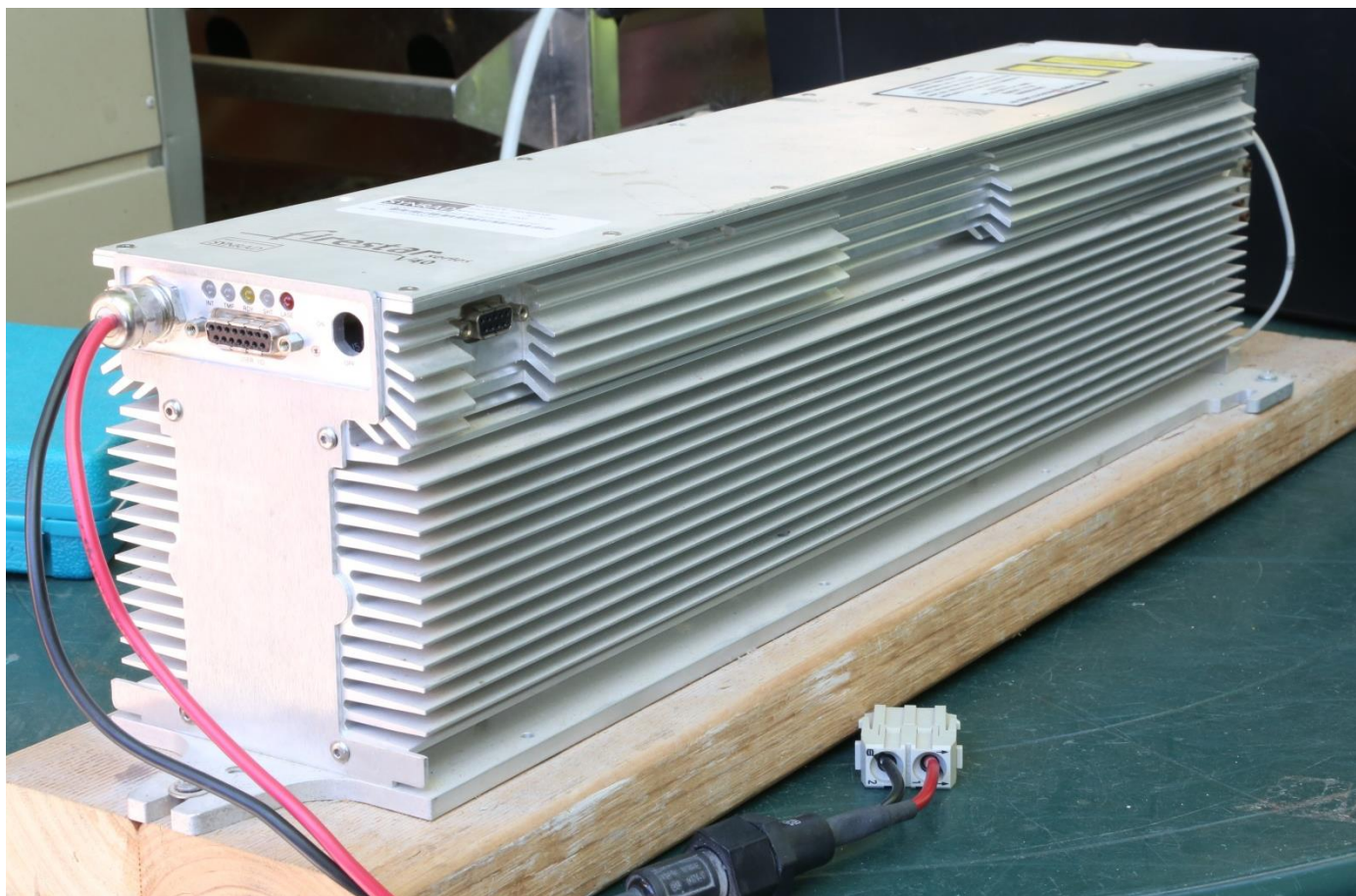
The relocation of the IRLP node is now just waiting on some free time which is becoming more difficult in the leadup to Christmas. It will likely now be a job for the Christmas holidays.

See you at the final GM for 2019 on Friday night, 15th of November.

Tony (VK3QX)

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From The Editor



This month it is 'Fun with a 150W Laser'; pity all that has been 'burned' so far is money.

Ages ago my brother, Mark purchased a non-working laser engraver, it turned out the problem was with the laser unit, a Synrad firestar V40 150W laser. The sales rep for the engraver was all too happy to fix it, at a standard \$10,000 changeover, a tad outside of my brother's financials.

The sales man looked rather perplexed that my brother was a little taken aback by that quote, it seems this sort of thing is quite normal in this industry, but a bit of a shock after picking the whole machine up at an auction (or was it eBay) for a mere fraction of that amount.



When it was powered up Mark noticed a bit of a flash from that hole in the end. On inspection it looks like there was once a key switch there, that someone had removed the mech, leaving just the actual switch floating on the end of some wires. It was noted that there was a bit of a flash mark where it had shorted to the aluminium chassis. As soon as I found 24V on the main logic 'CPLD' IC, I threw in the towel, and the small controller board was sent off to a crowd in the states. A few hundred dollars later it came back, but still dead – still with 24V on the main 5V logic rail!

Unfortunately, way too much time has now passed and the trail is cold, so getting anything from that particular repairer is highly unlikely. (Not that we would trust them as far....)

So it's back to eBay, for more parts, or just to unload the whole lot.

Darn...

Paul VK3TGX

JOTA 2019

JOTA is a lot of fun and it gives us a chance to “show off” amateur radio to bright young Guides and Scouts that may not have seen a working amateur radio station before. I recently counted my Jamboree badges the other day and found that I have attended at least 20 years’ worth of JOTA/JOTI days with the Cranbourne Guides. I know some of you that have been in the Club longer than me may have more. It just goes to show that donating a few hours of your time isn’t too hard if you have time to spare on a Saturday morning. Before JOTA started, Tony and I took the opportunity to swap over the 12V power supply for VK3RGW. The extra power put out by the new repeater was too much for the old power supply which would have failed in the not too distant future.



This year we tried something different with excellent contacts on DMR talk groups dedicated to JOTA. 2m and 70cm repeaters were busy with Scouts having a great time and we were able to have some contacts there as well. Tuning around on HF and calling “CQ JOTA” did not result in a contact. The “Fox hunting” is always very popular and kept the Guides and Scouts busy for quite a while. Our operating hours were from 9:00am to 1:00pm, and the time flew by very quickly fuelled by tea, coffee and loads of biscuits from the Guide Leaders.



Pat Pavey applied her Morse code talents to teach the Guides and scouts how to communicate with Morse. Pat commented that some of the children were very good at learning and using Morse code.



We had an excellent turn out of GGREC members to help run JOTA and we were never short members to run activities. A big thankyou to the following GGREC members who did a fantastic job on the day. Pat Pavey VK3OZ, Tony Doyle VK3QX, Max Hill VK3TMK, Dave Rolfe VK3JL and his guest Jamie Pole VK3JGP, Bruce Williams VK3BRW, Graham Eldrett VK3FGKE, Leigh VK3FOAB and new GGREC member Don Malek.

Bruno Tonizzo

VK3BFT

GGREC Foxhunt November 2019

It was a cold and overcast morning as I drove up to the clubrooms on Saturday morning for the Foxhunt and I was wondering "is the weather going to hold out for us" ?

Just after driving through Tooradin the heavens opened up and I was starting to think that the Foxhunt would have to be cancelled and we would have to find something else to do for the "hunters" on the day. When I arrived at the shack the rain had stopped and the weather still wasn't too bad albeit a bit "cool", even for this old Refrigeration Mechanic.

As the hunters started to arrive the weather hadn't deteriorated any further so it was decided to continue on with the Foxhunt as planned. A short note here, the rain held off for the rest of the day with only one or two sites having a weak temporary drizzle when taking some bearings, no one had to break out the wet weather gear ☺

The hunt kicked off at 9:30am with Tony (El Presidente) being the Fox and leaving for the first "unknown" site of the day, with the hunters taking their first bearing from the Girl Guide hall carpark. The hunters then moved down to the "Shopping on Clyde" shopping centre for the second set of bearings on the fox.



I had been talking to my daughter earlier in the week, and with my Granddaughter Louise showing an interest in all things electronic at the moment, I picked up Louise before the start of the Foxhunt and she "chaperoned" me for the day. As I was "hunting with the hunters" and making sure everything ran smoothly I tasked Louise to be "the official photographer" for the day, most of these photos were taken by her ☺ (watch out Paul Hi Hi)

At this time Murphy struck, I got a call from Tony saying that when he tried to move to the second fox position his car wouldn't start and could I meet him and jump start him. Bruce stepped up and offered to get Tony going which would leave me with the hunters. Bruce then followed Tony for the rest of the hunt to make sure he was mobile for the day.

The next location for the hunters was the Cardinia sports grounds to take some bearings on the Fox.

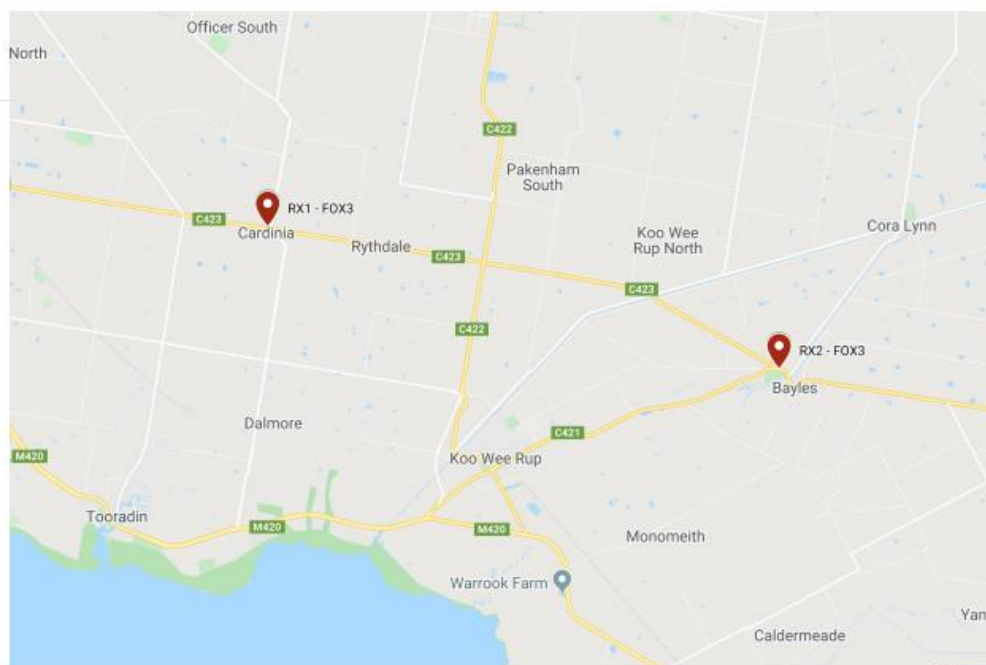


After taking their bearings on the fox the hunters then moved down to the Bayles Fauna reserve opposite the Bayles general store.

GGREC Foxhunt 2019

FOX3

All items



At 12:30 we broke for lunch at the Kooweerup Bakery for a delicious lunch and of course a ginger bread man for the official photographer.



After lunch the hunters moved just around the corner to Cochrane's Park, or as the locals know it the Kooweerup public pool for the second last set of bearings to be taken on the fox .



More bearings were taken on the fox and the hunters made their way back to the Cardinia sports field for the last set of bearings before heading back to shack. Once everyone arrived back at the shack the triangulation maps were marked and the winner announced.

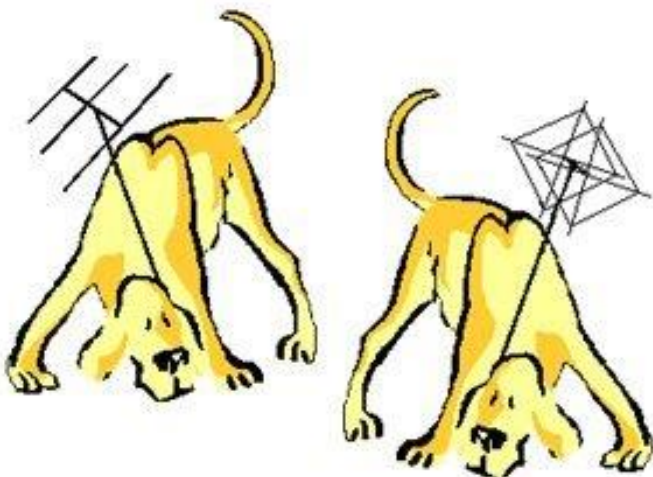


With a score of 73 Lou was the overall winner with Craig and Arthur coming in second with a score of 60 points. Bruce came in 3rd with a DNF but with an honorable mention for assisting Tony when Murphy struck.

Thank you to everyone that attended and assisted with the 2019 GGREC Foxhunt. An enjoyable day was had by all who attended. ☺ About the only thing that could have been changed was the weather. I believe that it kept quite a few people away on the day but, it's one of the things that can't be organised for the day. To quote one of the club members, "it is what it is".

Cheers and 73,

Rob. VK3BRS



Contest report for October 2019

October and November are the months for the CQ Worldwide DX contests. A CQ WW DX contest is a truly international affair and is operated as two events each over 48 hours. The first event is the SSB mode contest (October) and the second event is for CW mode (November). Both events are truly global events where over 35000 operators take part. For specific info on the contest see <https://www.cqww.com/>

This year I, VK3TIN, teamed up with Lee VK3GK, Peter VK3FN and Chris VK3FY as a last-minute team entry into the contest. By last minute we mean, ringing around, one hour before it started. Originally Lee intended to run as single operator all band, then after we invited ourselves over it was multi-one (multiple operators one radio) and then finally after I arrived with low band gear we ended up as multi-two with my equipment and a borrowed amp and tuner filling in as the low band 80m/160m station.

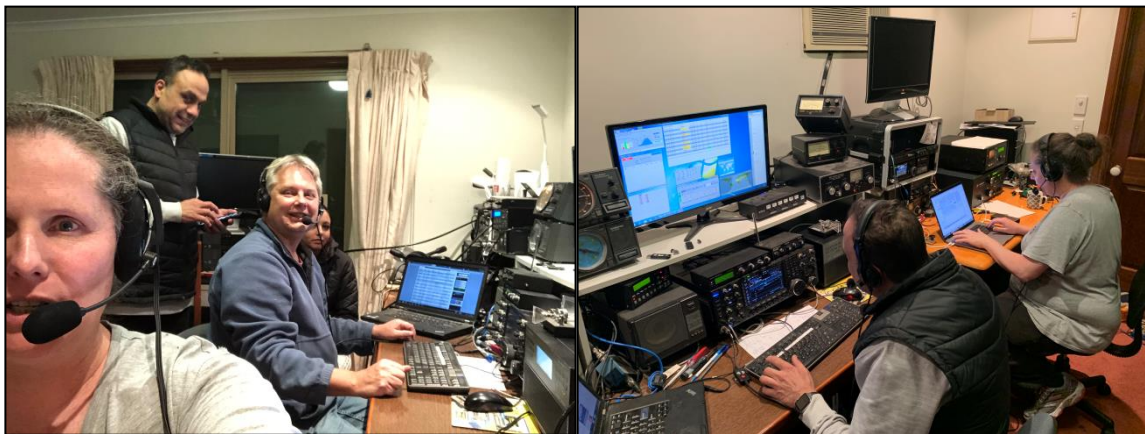


Figure 1, Peter VK3FY, Lee VK3GK and Megan VK3TIN

Operation 40m and shorter bands:

The high band station was an IC-7851, running 400w into a three element SteppIR on a Nally tower at 15m height.



Figure 2 SteppIR DB-18e and 20-6m

At the contest open, operation was on 20m and 15m. Given the sunspot number was zero and the A index was high due to some solar anomalies the conditions were very unfavorable.

To compound this there were thunderstorms blowing in every 30 minutes or so throughout most of Saturday. Calling and tuning around 10m yielded only 9 contacts. From sunset onwards on 40m it was a bit busier but not like other years, QRN was high and stations were hard to pull from noise despite a very capable radio station.

Operation on 80m/160m:

The low band station was an IC-7300, running 400w into a vertical antenna, comprised of a wire for 80m and a second wire for 160m as an inverted L. Both wires were cut to correct length and feed from the same feed point without any match transformer. A simple toroidal RF choke was deployed involving a few loops of coax (RG213) and large clip on ferrites.



Figure 3 VK3TIN assembling the low band antenna, and we snagged the lemon tree on the way up.

The vertical component of the antenna was 18m tall using a SpiderBeam fiberglass mast and tuning was provided by a number of tuners but most notably a Palstar HF Auto. More on that later.

Chasing grey line on 80m was hard work with the operator calling for 6 hours and only working approximately 29 contacts. These contacts included all the major US contest stations. VK4KW reported that they called CQ on CW and were not reported by the reverse beacon network.

Band conditions were tough with S9 noise due to thunderstorms and other unknown sources. Many stations were heard but almost none workable after the first couple of letters.

What didn't help is that we burnt our antenna, about 16m from the ground. At approximately 1:30am on Sunday morning the other station became severely affected by the low band station and the SWR would quickly increase tripping the linear before the tuner had a chance to catch it. At this point we didn't know our antenna was more or less burnt through, so we replaced tuners, replaced cables and inspected connections in the shack.

Later we went outside to try and find hot spots as best we could in the dark thinking we may have had arcing within a connector. Ultimately, we didn't find anything and abandoned the low band station around 3:45am.

The following morning after pulling everything apart and inspecting it we decided to lower the antenna and we found that both elements had burnt through and we think it may have been arching via the hose clamp that is used to lock the pole segments.

After removing the burnt sections and belling the cable so there was 10cm or more clearance between the wires and the hose clip we were able to get stable tuning on 80m which allowed the low band station to be used that night.



Figure 4 The difference between standing waves on each element was such that there was enough potential to cause arcing via the hose clip.

Summary of claimed results:

Band	QSOs	Pts	ZN	Cty	Pt/Q
1.8	3	0	1	1	0.0
3.5	29	45	10	7	1.6
7	395	1069	29	74	2.7
14	159	361	25	53	2.3
21	44	110	11	11	2.5
28	9	21	2	2	2.3
Total:	639	1606	78	148	2.5

Claimed score: 362,956

Tactical disadvantage of being a VK station in CQ WW DX contests:

Scoring in CQ WW is based on each contact but for the first contact you get in a new CQ zone you are entitled to a multiplier. A contest station in CQ WW must do two things to achieve a high score. The first is to work as many scoring stations as they can but they must also dedicate part of their time to finding stations in new CQ zone in order to obtain multipliers.

The problem for VK contest stations is that there are so few of us that once a foreign station gets their first VK contact it is tactically advantageous for them not to waste any time trying to work more VK stations but to focus on huge endless queues of stations in Japan, Europe and the USA.

It is also worth pointing out that most of the contestants will not be using large beam antennae and high power, these will be stations running 100w into a wire. At the moment these smaller stations will be work land masses in the northern hemisphere, but it is unlikely they will work a lot of VK stations.

Finally:

I would like to thank Lee Moyle for making his QTH available for this contest, as usual it was a lot of fun and it even sent us a few curve balls!

Megan Woods VK3TIN

To VNA or not to VNA, that is the question.

With the plethora of electronic tools coming out of China these days, it is easy to be left wondering on which one is suitable for a purpose, its features, or even the build quality of the tool.

Some months ago a small Network analyzer hit the market based on a design that was a few years old, enter the “NanoVNA”.



Since this instrument became available on the market it has become a very popular little tool due to its functionality as well as its price. At around \$80 AU delivered to your letter box, it is cheaper than a lot of the more “traditional” analyzers on the market, and performance wise it compares to equipment worth 1000’s of dollars.

With this “Vector Network Analyser” it is possible to calculate and graphically display a whole host of electrical parameters including gain (or loss), return loss, voltage standing wave ratio (VSWR), reflection coefficient, amplifier stability, frequency response and many others.

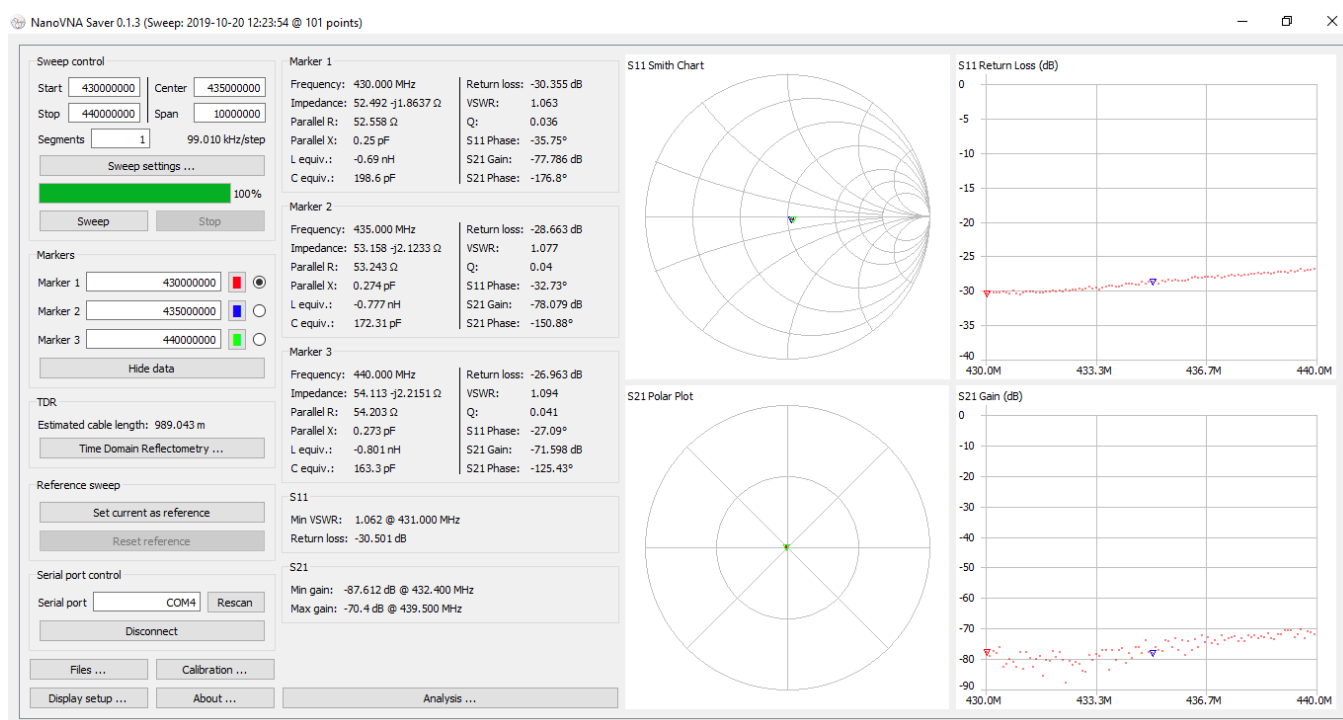
Have I got your interest yet?

What makes the Vector Network Analyzer a unique instrument is that not only can it measure and compare the amplitude of RF signals, it can also compare the Phase Relationship of these signals to each other and to a precisely generated Reference Signal. This is what separates the VNA from the Scalar Network Analyzer (SNA, no Phase measurements available) and the Spectrum Analyzer.

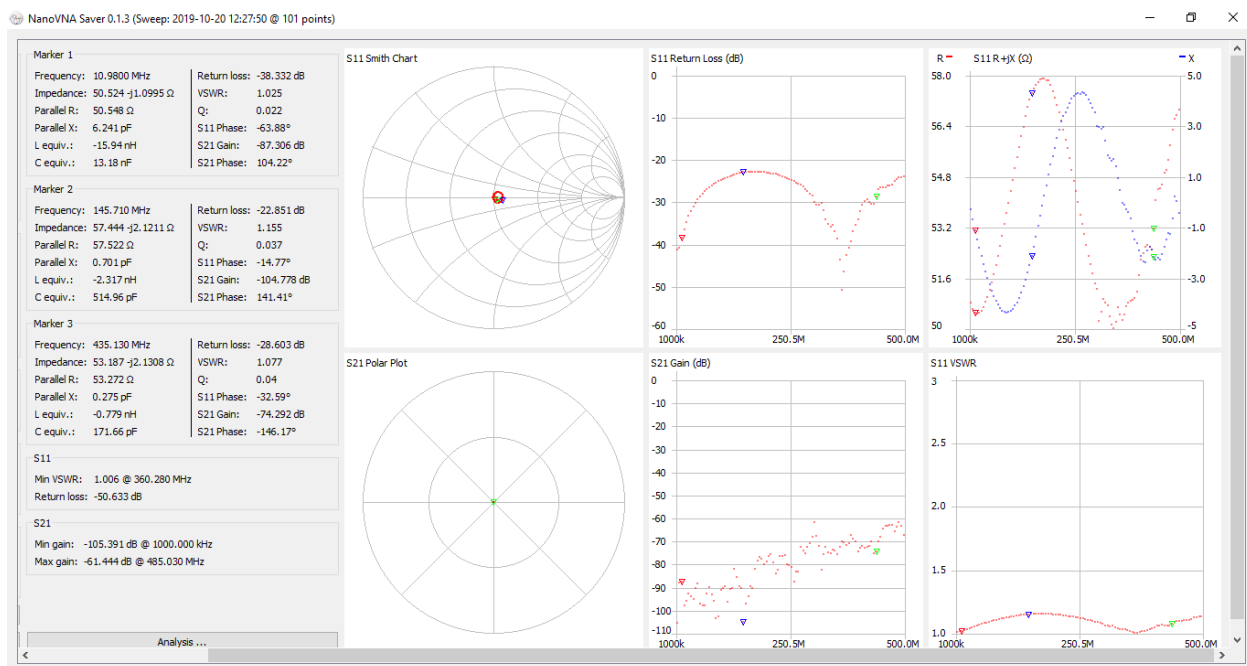
Operational knowledge of how to use a VNA must begin with at least a rudimentary understanding of S-parameters, otherwise known as Scattering Parameters. The study of S-parameters comes out of the study of Optics. It is in the study of Optics that we can observe first-hand, the relationship between light and the medium through which it travels. When light rays from an image encounter a photographic lens, most of the light rays – BUT NOT ALL – pass through the lens. Some of the light rays are ‘scattered’ back toward the source. In Optics this is referred to as the S11 scattering parameter. The light that does pass through the lens can be examined on the output side of the lens and studied as the S21 scattering parameter.

This same study of “incidence”, “reflection” and “transmission” can be applied to the RF energy that exits an oscillator or transmitter circuit, travels through a piece of coaxial cable as its transmission medium and terminates at an antenna or some other type of load. Similarly, RF amplifiers and filters can be examined in this same way.

Below is a sweep of a 50 Ω “dummy” load between 430 MHz and 440 MHz



And the same “dummy” load between 1 MHz and 500 MHz



Quite a lot of information to digest. 😊 Some quick comparisons against my spectrum analyser (worth 25 times the cost of the NanoVNA) showed the return loss and VSWR plots to be within 1 dB. Quite impressive for the cost.

Being a true VNA, it must be calibrated before its first use. It has 5 “memories” for 5 different calibrations, a great idea because you can have a calibration from say, 1 MHz to 900 MHz stored in memory 0, a calibration for 1 to 30 MHz stored in memory 1, a calibration for 50 to 54 MHz stored in memory 2 and so on (you get the idea) which can be pulled up quickly when working at a particular set of frequencies or “band”.

Owing to circuitry and cost restrictions, the NanoVNA is only capable of measuring the S11 and S21 parameters and it can be reasonably calibrated for these measurements using the supplied calibration tools for a SOLT type calibration (Short, Open, Load and Thru). By reversing the DUT, (Device Under Test) the S22 and S12 parameters can be measured as well and with an equivalent degree of measurement accuracy. Here is a snippet of the calibration procedure out of one of the manuals....

19. CALIBRATE

Note 11:

At this point none of the seven softkeys on the right side of the display are highlighted. Place an OPEN SMA-Male connector on the CH0 cable end. This will require using the F-F SMA adapter. The OPEN connector does not have a centre pin. Leave the CH1 cable alone.

20. OPEN

Note 12:

Replace the OPEN SMA connector with a SHORTed SMA connector. Again, leave the CH1 cable alone.

21. SHORT

Note 13:

Place 50 ohm SMA-Male terminators on the ends of BOTH CH0 and CH1 cables. This will require a second 50 ohm terminator and a second F-F adapter.

22. LOAD

Note 14:

If you have two 50 ohm SMA terminations; leave them connected as discussed in Note 13. If only one termination is used; place it on the end of the CH1 cable using the Female-Female adapter.

23. ISOLATION

Note 15:

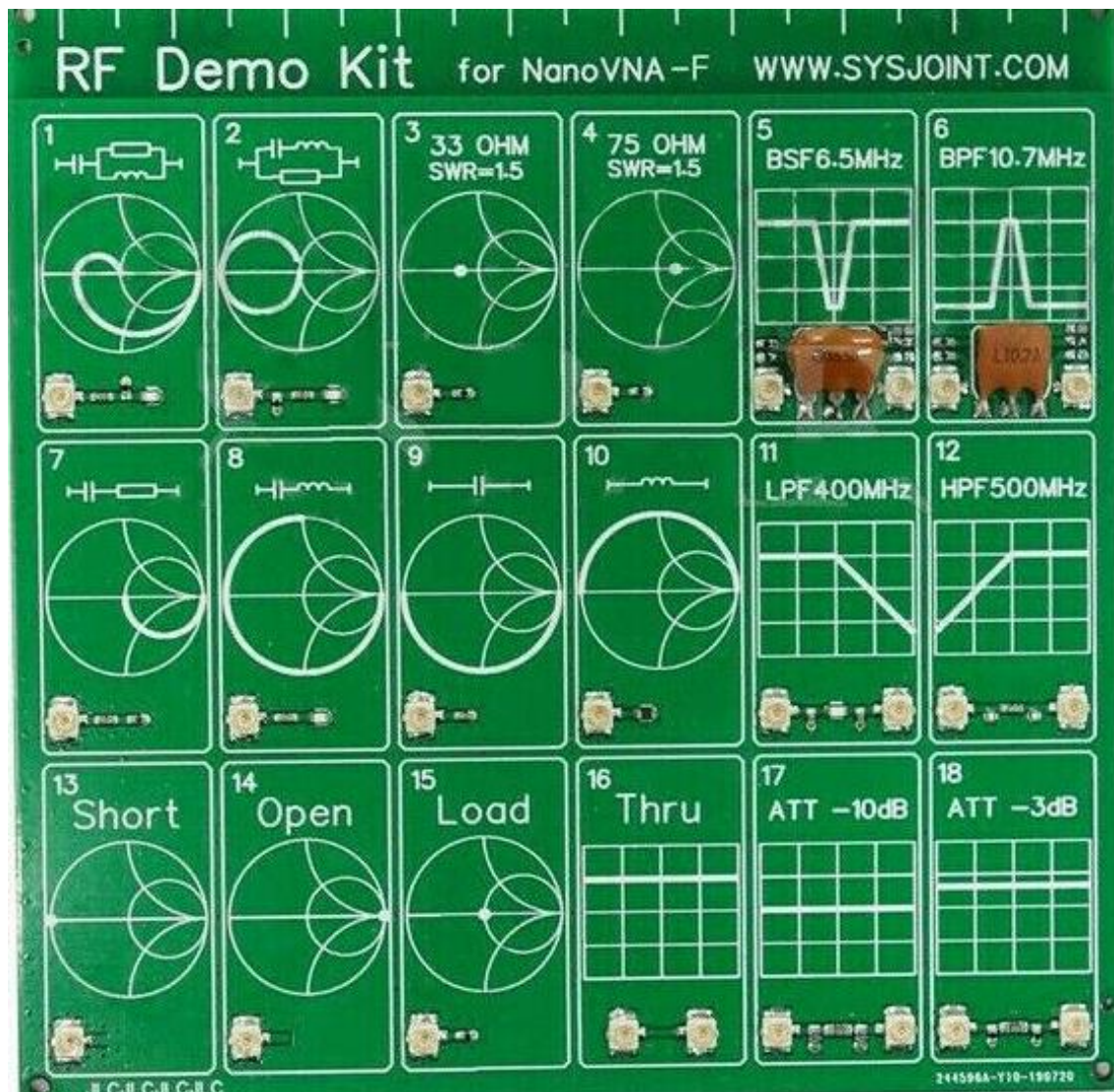
Remove the two 50 ohm terminators and connect the two cables together. This will require the use of only one F-F SMA adapter.

24. THRU

25. DONE

Etc... This has to be done for every saved calibration but once it's done it usually won't need to be carried out again for a while unless something changes.

A nice little touch is that the unit has a touch screen as well. A stylus will be needed because having a 3" screen and a $\frac{3}{4}$ " finger it is hard to hit the correct button that is required. Someone has also come up with a "Demo kit" for the NanoVNA, a great little tool for those learning about VNA's and their operation.



Pro's and Cons.

Good points.

- Cheap.
- A huge amount of information can be extracted from the Device Under Test including logmag, phase, delay, Smith Chart, return loss, VSWR, Polar chart and linear display.
- Portable, it contains an internal LiPo battery that charges from a USB cable.
- Connects to the computer for a large display of information.
- Developers are getting behind the NanoVNA writing new firmware and software for it. At the moment there are 3 current firmware issues that allow the NanoVNA to be a 2 trace, 4 trace or a dedicated antenna analyser. There are copies of software compatible with Windows, Linux and Android operating systems. There is also software for the Raspberry Pi. There are hardware "hacks" coming out as well.
- A wide operating frequency span, from 50 KHz to 900 MHz.
- Did I mention cheap?

Bad points

- You need to be very wary when purchasing a NanoVNA. There are substandard “copies” on the market that struggle to perform like the original and do not work properly.
- You are going to need your glasses to read the display directly from the unit. It has a 3” display.
- This 900 MHz NanoVNA will be superseded early next year by a 3.5 GHz version of the same size and cost as the current 900 MHz model.
- There is a larger version of the NanoVNA called the NanoVNA F which has a 4 ½” screen and costs 3 times as much as the NanoVNA. The “F” is not to be confused with the “H”.

Summary

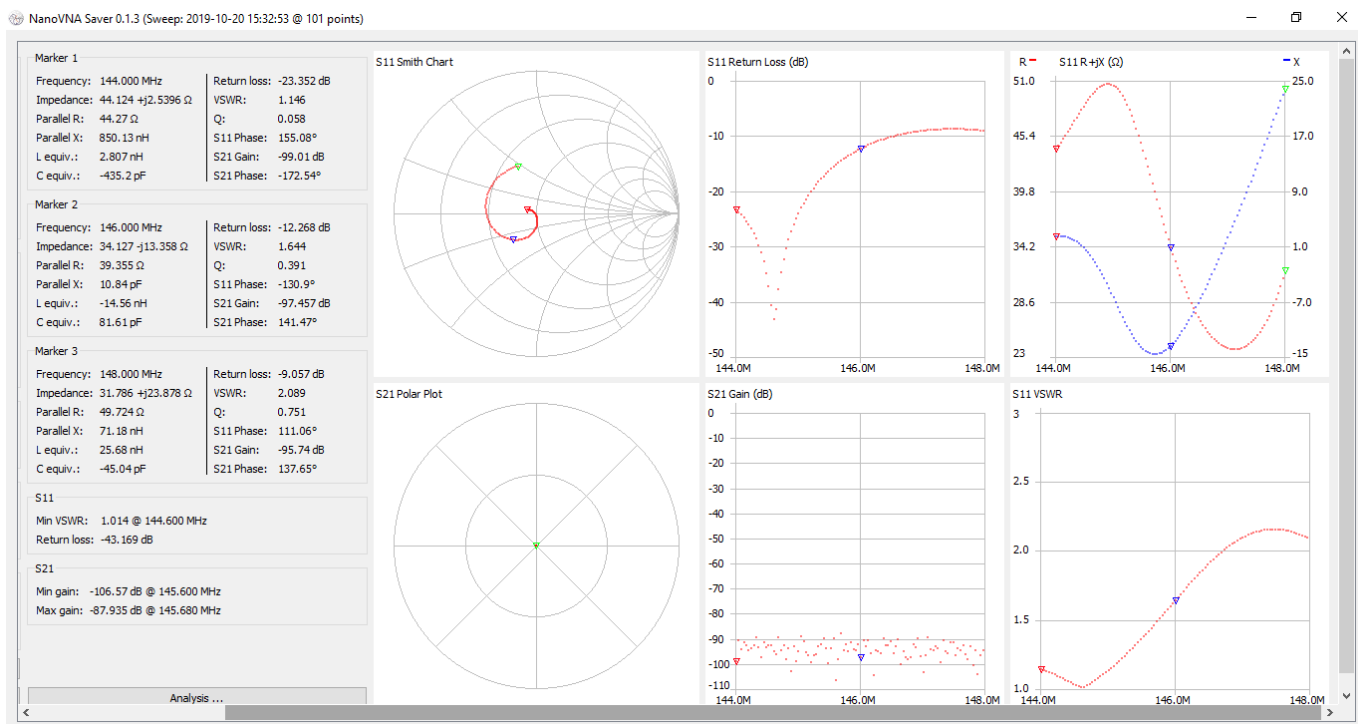
All in all a great little unit with ongoing support and improvements popping up all of the time. Easy to install software that shows a lot of information about the D.U.T., and as an antenna analyser it would be hard to beat for its price. For someone learning about transmission line / AC theory or Smith Charts this is a great little tool to get some hands on experience at a fraction of the price that it would have cost not so long ago. It’s also great for tuning antennas, traps, filters and the like.

Specifications

Basic performance :

- PCB: 54mm x 85.5mm x 11mm (No connectors /switch)
- Measuring Frequency: 50KHz ~ 300MHz (50KHz -900MHz) using Extended Firmware)
- Radio Frequency Output:-13dbm (Maximum -9dbm)
- Frequency accuracy:<0.5ppm
- Dynamic range: 70dB (50kHz-300 MHz), 50dB (300M-600MHz), 40dB (600M-900MHz)
- Port SWR: < 1.1
- Display: 2.8inch TFT (320 x240)
- USB Interface: USB type-C Communication mode : CDC (serial)
- Power Supply: USB 5V 120mA, Built-in400mAhBattery, Maximum charging current 0.8A
- Number of calibration points: 101 (fixed)
- Number of scanning Points: 101 (fixed)
- Display tracking: 4, sign: 4, Settings save: 5

And finally, a sweep of my 2M Antenna at home, (looks like I need to do some fine tuning ☺)



Cheers and 73,

Rob de VK3BRS

WHAT'S IN A STICKER

Ian Jackson VK3BUF

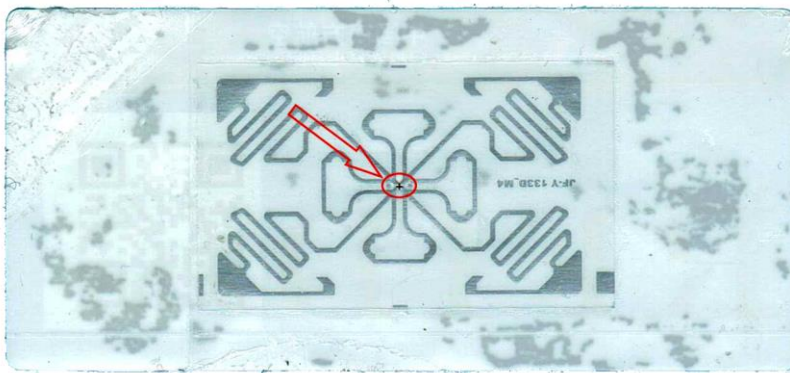
Recently I had to check my bags through an airline to get from Chengdu to Melbourne. They put a sticker on the case. It was as high as a business card and maybe a bit wider. It was being used to identify the case within their baggage handling network.

Apart from the obvious QR code ID image, it was labelled RFID for Radio Frequency Identification.

This is the same technology used to gain entry into the Club shack.



Upon my return, I removed the sticker and turned it over to see what makes it tick. A weak RF carrier of maybe 100KHz is subjected to the label. On the back were two printed antenna loops. They are interesting in their layout, resonant at different ends of the radio spectrum. The low frequency loop is rectified and used as a power source for a tiny microprocessor chip.



The rear view of the RFID sticker, showing a tiny dot in the centre

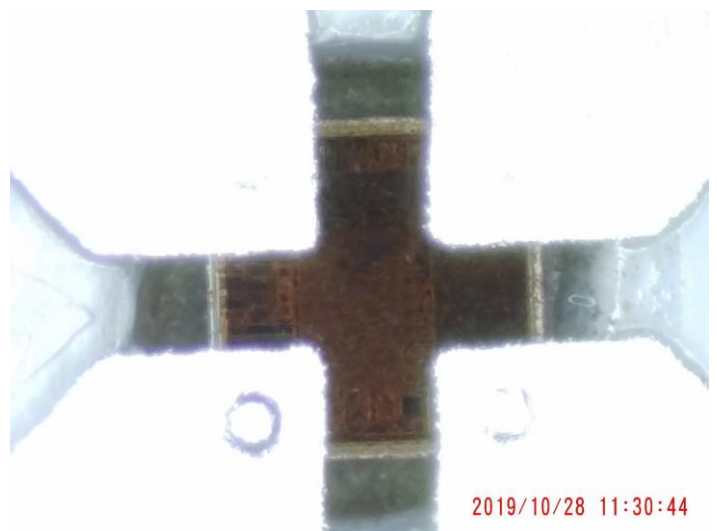
The chip is barely 0.4mm x 0.4mm. I put this under the microscope for a closer look.

The microprocessor is a small miracle of engineering. Tiny tracks can be seen inside the square when the image is slightly overexposed. The silver tracks of the loop antennas bond to the four corners of the RFID device.

Presumably, the QR code on the label contains similar data to the RF transmission string, so that if the chip has a problem, a handler can still perform a manual scan.

That the device can be made at all is amazing. Being able to make them cheap enough to be a disposable item for every bag is even more surprising.

Yet another example of micro-electronics that nobody really thinks about in the field, but it is always right around us.



The RFID device is a tiny square 0.4mm x 0.4mm

Wi-Fi Beam Antenna



I have heard of some rather spectacular efforts with long range Wi-Fi, so why not give it a go myself?

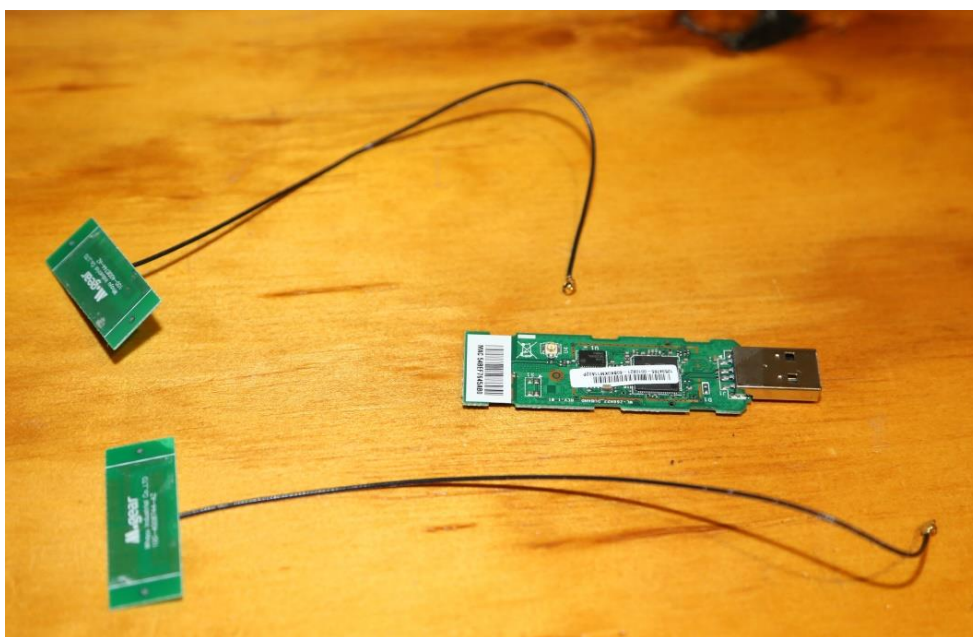
The antenna you see here was originally a pay TV antenna from many years ago, from probably the first system 'Galaxy'. These antennas operate from 2.5 to 2.7 GHz, and all pointed back to Melbourne where the transmitters were located.

Usually when a customer lost interest in the service, the antennas were never recovered so it wasn't too hard to score one, either as a 'favour' to the householder to remove the junk from their roofs, or if desperate by paying with some form of 'liquid' etc.

These days they are all but long gone, however I had one complete unit, and two more minus the reflectors.

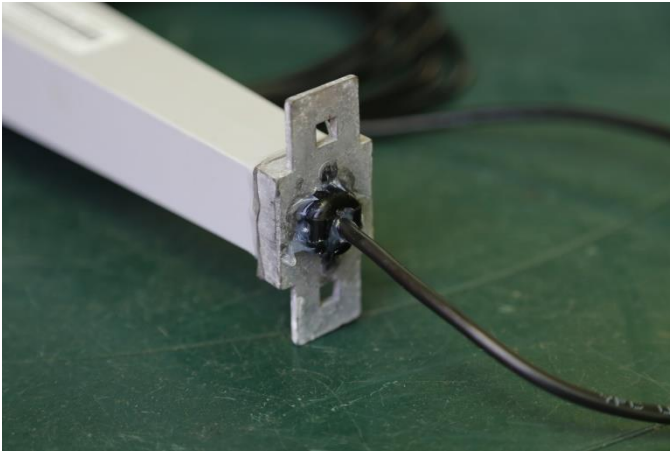
proved rather interesting, it looks like these things had transmit as well as receive abilities, the dipole at top feeds into a filter block that has two outputs, so I'm guessing there was some form of telemetry back to the head end.

Anyway for my use I only needed the housing, into which I installed a USB Wi-Fi dongle. Mine came from an old Telstra TV box that I picked up from the Dandenong trash and treasure market that runs from the Luna drive-in cinema. However a 'normal' USB Wi-Fi stick from your local computer shop will probably work better than the one I ripped out of the old (as in pre 'Roku' boxes) Telstra TV (alongside a handy hard drive)



It has two antenna boards that lived at either side of the Telstra TV box.





I drilled out the hole where the F connector was mounted so a USB extension cable could be run in, afterwards the cable was held in place with a mains power cable clamp and a good dose of silicon sealant.

I also used some silicon sealant to attach the cast aluminium bracket onto the plastic housing, I'm not sure how long that will last – it was all originally held together by the cast aluminium frame that supported the original electronics.



Here you can see where I placed the two antennas, with a 'normal' USB Wi-Fi stick, the stick would be placed at this point. I have seen glass jars/pill bottles etc. placed at the focal point of the dish to hold the Wi-Fi dongle, and keep the elements from destroying it. Yes there are outdoor rated Wi-Fi access points available – it would be interesting to see how one of them would perform. They are usually connected using an Ethernet cable, and are also powered over it by POE. (Power Over Ethernet)

This leads us to a limitation of this arrangement, and that is USB. It would be nice to try this atop my Nally radio tower, however getting the USB to it is a problem. Various USB extenders exist – I have a nice optical fibre based USB hub/extender, however they can easily exceed the price of the actual Wi-Fi stick.

With this I can now get Wi-Fi access from my shack back to the house, at the full speed of my NBN link, however having to route all my shack traffic through that one USB connected PC is a problem.

If you would like to play with it, say so, currently it has plenty of room for improvement – probably by using a much better Wi-Fi adapter.

Paul VK3TGX



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.

Office bearers

President	Tony Doyle	VK3QX	Web Master	Megan Woods	VK3TIN
Admin Sec	Rob Streater	VK3BRS	Magazine Editor	Paul Stubbs	VK3TGX
Treasurer	Megan Woods	VK3TIN	Property Officer	'committee'	
General 1	Helmut Inhoven	VK3DHI	Assoc. Secretary	Rob Streater	VK3BRS
General 2	Leigh Findlay	VK3FACB			

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 434.475MHz Out 439.475MHz CTCSS 91.5Hz
VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794.
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

- 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

or via post : GGREC, 408 Old Sale Rd, Drouin West 3818

GGREC Web Site & Archive may be viewed at: www.ggrec.org.au

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