

The Official Newsletter of the Auckland VHF Group Inc.



Contesting into the Night — February 2005

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Auckland VHF Group Inc.

Branch 66 NZART

PO Box 10138, Dominion Rd, Auckland 1446

Clubrooms: 30 Hazel Ave, Mt Roskill

Office	Name	Call sign	Work / Mobile	E-mail
President	Matthew King	ZL1YOT	022 649 3310	president@aucklandvhf.org
Vice President	Brendon Reid	ZL1XXX	021 970 785	vicepresident@aucklandvhf.org
Secretary	Vaughan Henderson	ZL1VH	021 844 804	secretary@aucklandvhf.org
Treasurer	George Raffles	ZL1TUX	021 735 361	treasurer@aucklandvhf.org
Committee	Greg Storz	ZL1GSG	09 849 2878	greg@aucklandvhf.org
	Darryl Grange	ZL1TCI	021 123 7733	darryl@aucklandvhf.org
	Mark Howie	ZL1UMK	022 047 3240	mark@aucklandvhf.org
AREC Group Leader	Matthew King	ZL1YOT	022 649 3310	mattking@gmail.com
Deputy Group Leader	Currently Vacant			
ZL1BQ Trustee	Matthew King	ZL1YOT	022 649 3310	zl1bq@aucklandvhf.org
Head Repeater Trustee	Vaughan Henderson	ZL1VH	021 844 804	repeatertrustee@aucklandvhf.org
Klondyke Manager	Vaughan Henderson	ZL1VH	021 844 804	6625@aucklandvhf.org
670 Manager	Vaughan Henderson	ZL1VH	021 844 804	670@aucklandvhf.org
690 Manager	Dennis Seymour	ZL1UET	09 278 0381	690@aucklandvhf.org
850 Manager	Vaughan Henderson	ZL1VH	021 844 804	850@aucklandvhf.org
Spectrum Editor	Peter Loveridge	ZL1UKG	09 427 6362	spectrum@aucklandvhf.org
Trading Table	Vaughan Henderson	ZL1VH	021 844 804	tradingtable@aucklandvhf.org
Account Reviewer	Basil Orr	ZL1TOW	021 867 367	
Webmaster	Terry Corin	ZL1BPA	027 697 4686	webmaster@aucklandvhf.org
Club Web Page:		http://aucklandvhf.org		
ZL1VHD Dstar gateway administrator: Laurie		ZL1ICU	634 5130 0274 817463	perma@xtra.co.nz
ZL1VHD Dstar gateway registration URL :		http://zl1vhd.dstar.org.nz		

Club News and Net:

The combined Auckland VHF Group and Auckland Regional Branch News and Net are held on 146.625 MHz and 439.875 MHz at 8.15 pm each Sunday or after the ZL6A National Broadcast on the last Sunday of the month.

Club meetings are held at the Clubrooms at Hazel Avenue, on the second Monday of each month at 7.30 pm. For other details, listen to the News and Net each Sunday evening.

SPECTRUM is the official journal of the Auckland VHF Group Inc. Opinions expressed are those of the authors and do not necessarily reflect club points of view. The closing date for SPECTRUM articles is by the 1st of each month. Articles to be submitted to the editor Peter ZL1UKG
spectrum@aucklandvhf.org

Auckland VHF Group (Inc) Branch 66

Via the Internet

Notice of Annual General Meeting

Members are advised that the 2021 Annual General Meeting of the Auckland VHF Group Inc., will be held using Microsoft Teams on Monday 8 November 2021, commencing at 7.30pm. To access the Teams session, please use the link which can be found on our web site under Meetings and Events:

<https://aucklandvhf.org/meetings-events/>

The business of the AGM meeting will be:

1. To ratify the Minutes of the 2019 AGM Meeting.
2. To receive the reports of Officers.
3. To elect a President, Vice-President, Secretary, Treasurer, and four committee members for the ensuing year.
4. To appoint an account reviewer; an AREC Group Leader; Head Repeater Trustee and Editor for Spectrum Magazine.
5. Amendment to the Constitution: Please refer to Spectrum September 2021 Pages 5 to 7 for the proposed amendments to the Group's Constitution **. Following any discussion, the following motion will be put "That this meeting approves the proposed changes to the Auckland VHF Group's Constitution as detailed on Pages 5 to 7 of the September 2021 issue of Spectrum"
6. General Business

** Anyone wanting a copy of the Constitution amendments by email, please advise the Secretary as soon as possible.

Important – the amendment to the Constitution requires a 75% majority of the full members present. To assist us get these important amendments to the constitution approved, PLEASE make every effort to be present for the Teams meeting.

Please give serious consideration to offering your services to the club.

Coming Events:

- Field Day Contest 04-05 December, All Bands 6m and up. (Travel permitting)
See page 16 for more information.

Auckland VHF Group Inc.
Minutes of the 2020 Annual General Meeting
Held at the clubrooms, Hazel Avenue on 9 November 2020

The meeting commenced at 7.45 pm.

Attendance: 16 members as per the attendance book. Plus ZL1XXX, ZL1AOX, ZL1BPA and ZL1ACY via teams.

Apologies: ZL1BFB, ZL1TIA

AGM Minutes 2019:

That the minutes of the 2019 AGM as printed in November 2020 Spectrum be taken as read.

Moved: ZL1UKG Seconded: ZL1TCI Carried.

Matters Arising: - NIL

President's Report:

Matthew ZL1YOT presented his report as printed on page 8 of November 2020 Spectrum.

Moved: ZL1YOT Seconded: ZL1TCI Carried.

Vice-President's Report:

As there was no Vice President for the year there was no Vice President's Report.

Secretary's Report:

No Secretary's Report Presented.

Treasurer's Report:

ZL1 TUX presented his Treasurer's report as printed on pages 10 and 11 of November 2020 Spectrum.

Moved the report be received: ZL1TUX Seconded: ZL1YOT Carried

Digital Presence Group Report:

ZL1XXX presented the report as printed on page 9 of November 2020 Spectrum.

Moved the report be received: ZL1XXX Seconded: ZL1YOT Carried

Spectrum Editor's Report

Peter spoke to the meeting about content for articles, General and Committee Meetings to keep the Club informed.

Moved: ZL1UKG Seconded: ZL1VH Carried

AREC Report:

No AREC report was presented.

Repeater Report:

ZL1VH presented his report as printed on pages 11 to 13 of November 2020 Spectrum

Moved the report be received: ZL1VH Seconded: ZL1YOT Carried

Trading Table Report:

ZL1VH presented his report as printed on page 13 of November 2020 Spectrum

Moved the report be received: ZL1VH Seconded: ZL1YOT Carried

Election of Officers:

President:

Nominee: ZL1YOT Moved By: ZL1VH Seconded By: ZL1UKG Carried

Vice President:

Nominee: ZL1XXX Moved By: ZL1VH Seconded By: ZL1YOT Carried

Secretary:

Nominee: ZL1VH Moved By: ZL1YOT Seconded By: ZL1TUJ Carried

Treasurer:

Nominee: ZL1TUX Moved By: ZL1YOT Seconded By: ZL1TOW Carried

Honorary Reviewer:

Nominee: ZL1TOW Moved By: ZL1TUX Seconded By: ZL1VH Carried

Committee:

Nominee:

ZL1TCI	Moved By: ZL1VH	Seconded By: ZL1YOT)
ZL1GSG	Moved By: ZL1AOX	Seconded By: ZL1TCI)
ZL1UMK	Moved By: ZL1YOT	Seconded By: ZL1VH)
ZL1BPA	Moved By: ZL1YOT	Seconded By: ZL1TCI)

Head Repeater Trustee:

Nominee: ZL1VH Moved by ZL1YOT Seconded by ZL1TCI)

AREC Section Leader:

No nomination received. This position not filled pending an upcoming re-organisation of AREC in Auckland.

ZL1BQ Callsign Trustee

Nominee: ZL1YOT Moved by ZL1VH Seconded by ZL1TUJ)

Spectrum Editor

Nominee: ZL1UKG Moved by ZL1VH Seconded by ZL1BPA)

Klondyke Site Trustee

Nominee: ZL1VH Moved by: ZL1YOT Seconded by: ZL1TUJ)

Motion: "That all the Committee and Officer positions be approved"

Moved ZL1YOT Seconded ZL1TJU Carried

General Business:

Basil ZL1TOW raised the matter of the close off date for our accounts and recommended that we change it to 30 June to allow time for the annual accounts to be prepared and reviewed in time for our Annual General Meeting. This would also allow these to be included in the November Spectrum and brings us into line with many other similar organisations. There was general agreement with this proposal.

“That we make the End of Financial Year 30 June to allow the accounts to be prepared in time for the AGM”

Moved ZL1TOW Seconded ZL1YOT Carried.

There being no further business, the meeting concluded at: 20:00.

Auckland VHF Group Presidents Report

The Year 2021

I guess the highlight of the year has been the contract securing the Klondyke site for ten years. The darker side is lockdown which has delayed work on the tower and deprived us of the enjoyment of each other's company and guest speakers. Online meetings are OK, but they aren't quite the same.

Lockdown has also given some of us some time at home to work on projects. It would be great to have a photo and little story of some of these to embellish Spectrum and maybe Break-In (I had to explain to Janice that I haven't joined a jolly band of burglars).

I'd like to thank the committee for cheerfully keeping the club going; particularly George for doing the finances and Vaughan for Klondyke, other repeaters and the trading table. If anyone else is interested in joining the committee we would welcome you along. Several of us are standing again but there is always room for more, and the meetings are not as long as they once were!

With approval of the constitution changes at the impending AGM we will be certified as "non-profit" and will be able to proceed with fundraising efforts. We look forward to having Klondyke repaired and up and running again. Here at Wainui (West of Silverdale) I have to go up a hill if I want to hit a repeater further away than Rodney. But then, I haven't tried throwing a Yagi up on a pole yet. It might help!

It looks like our AGM will be on line this year. To join in, find your way to the website (<https://aucklandvhf.org>) and then to "Meetings and Events". There is the invitation to join the meeting. Or just hit this link <https://tinyurl.com/y9p4nxpa> And shine a light on your face so we aren't all shadows and silhouettes. Those days are gone!

That's it from here. See you Monday.

Cheers, Matthew King 022 6493310



Auckland VHF Group Inc., 2020-2021 End of Year Treasurer's Report

This report is provided for the End of Year AGM Meeting, but will include some information from the 2021 financial year, full 2021 results and accounts are still being completed and reviewed.

The club has available cash in the bank, in accelerator and investment of \$40,000. But with expected \$11,000 expenses going forward for the next 3 months, this level looks to go to approximately \$27,000. With some income from site users, this will improve the amount close to the \$40,000 limit. Expenses for utility services for all sites is expected to be approximately \$600 a month.

Klondyke Site

Klondyke maintenance is having a large amount of time and money being spent on it over the last 3 years, and I can see it will still be there for two to three more years. Over the last 3 years, replacement of some tower steel segments, Land Lease/license to occupy, cable tray and ladder replacement. The continuation of cable tray and ladder updates in the near future, then tower painting and antenna's need to be maintained.

Updates Lease/license renewal for radio users at the Klondyke Site are all due and are in progress, and once updated, these should be able to be processed and backdated to end of the previous agreement. This will assist with recovery of some of the expenses the group is experiencing with maintenance of the Klondyke Site.

Grants

Grants are need to be obtained before work on the projects start, otherwise the funds must come out of the club existing funds.

The club will need to look at the activities, and see what it can do and needs to be put on hold until money can be sourced, rather than be impulsive and keep doing things that have not been budgeted for and take money away from important commitments.

The club Exec are looking at grants to assist with the maintenance of Klondyke, along with IRD Tax Exemption and IRD Not for Profit society status.

Club Projects;

Some of the Projects the club has in progress, but most of these are not funded.

We need to get these priced and where the money is coming from, (Grants Preferably) before we start them. We cannot use the grants if we start working on the projects.

1. Klondyke Cable Tray Replacement (approx. \$14,000) (\$7,200 paid for Hardware)
2. Klondyke Tower Painting (\$50,000 approx. quote was 2 years ago)
3. Klondyke Aerials Maintenance (Require Estimation)
4. Nihotapu Hut (Beacon Hut) Beacons and Aerials. (Requires Estimation)
5. Clark Tower Trailer update (Require Estimation)
6. Clubrooms, Equipment for Audio – Visual configuration at the clubrooms, (Installed but not Estimated)
7. Leases to be updated for Klondyke space (Due November 2020 & March 2021)
8. Klondyke Land Rental (require \$1500.00 per year, Due Mid 2029)
9. Digital Amateur Television Repeater at Nihotupu. Estimated cost \$1500.00

Subscriptions.

The Membership has slightly decreased over the year, and we thank all the members for supporting the club and its activities. The club also needs to have more support for the committee and roles to assist with various projects.

The club had seen the passing of 3 members over the last 3 months of the year. We wish the families our sincere condolences for their loved ones.

Have sent out Invoices to members for subscriptions. Have received a response of 80% payment in members that have renewed their subscription. Have added to the bottom of the meeting notice your membership type, and end date for membership renewal. Looking at running this by Mail-merge using Excel, Word and outlook.

Donations

I would like to thank all members, clubs, and non-members who have donated and supported the club, especially for Klondyke Refurbishment, Repeater Licenses, their time and any materials used to keep the club operational.

The club still needs these to keep looking at donations and grants to maintain and keep our hobby up to date.

Trading Table:

The trading table sales has decreased significantly over recent years. The orders from web site are coming in slowly, but the cost of a person going to the club and picking components and shipping is well in excess of the value of the goods. For low value items ordered, a surcharge may be added to recover some of the value our Trading Staff spend on looking after the trading table. The trading table has also been affected with Covid-19 as sale opportunities have had to been cancelled/postponed due to lockdowns.

I wish to thank Vaughan for his diligence in looking after the trading table and updating the web site with stock. This is always an ongoing and time-consuming job.

Auckland VHF Group End of Financial Year and Annual General Meeting;

The End of Financial year this year is shifting to 30th June 2022. The Subscription year is also changing to 30th June 2022. This will allow the accounts to be completed and reviewed then presented to the AGM for the end of that financial year. Once the AGM has passed the accounts, they can then be sent to the society's office.

Finally, I would like to thank Basil Orr (ZL1TOW) for his work acting as honorary reviewer for the accounts.

73

George Raffles, ZL1TUX

Treasurer

Auckland VHF Group Inc

29th October 2021

Repeater Report 2021

Annual report on the status and work done on repeaters operated by the Auckland VHF Group.

670 Repeater

This repeater is located in the Airways Corporation building at Ruatowhenua and no attention was needed during the year. One site visit was made in May to check the equipment, coax feedline and antenna. No problems found.

This repeater is used Internet Repeater Linking (IRLP). My thanks to Ian ZL1VFO who provides the node for this facility.

690 Repeater

This repeater is located in Chorus premises on the Bombay Hills. The repeater gives reasonable service but since 2017 has had a damaged antenna. This has resulted in the repeater being "deaf" to the south. A site visit is needed to investigate/repair or replace.

This is proving very difficult to arrange. Although the site is under Vital (was TeamTalk) management, the site is owned by Chorus who have tightened up on the access procedures. Thanks to Stuart Watchman ZL2TW who has been negotiating with Chorus on behalf of NZART, we are very close to have an access agreement in place and once the Covid-19 lock down restrictions ease, we should be able to finally get to the site and undertake the required repairs.

850 Repeater

This is currently off the air. Site negotiations with the Department of Conservation to continue to site the equipment at North Head came to an unsatisfactory conclusion during 2017, complicated by the fact that the land is now owned by local Iwi.

An approach to have it located on the Auckland Hospital building did not eventuate and we are currently trying to get approval to relocate this repeater to 400 East Coast Road on the AEM building. The application has been in place for some time and we await a favourable decision.

DMR UHF Repeater

This repeater was established at Quinns Road in the Waitakere's in 2015 as part of the national AREC digital mobile radio network. Frequency is 439.7 MHz with a -5 MHz split. The repeater does not get much use by AREC in Auckland but remains available for use as required. There is growing interest and use of DMR and some regular nets which members are welcome to participate in. Coverage is primarily the Auckland CBD but can be accessed from the North Shore and southern parts of the central city area.

Brynderwyn Site

Although owned by the Group, the majority of the maintenance at this site is undertaken by members of Whangarei Branch, in particular Don Ewen ZL1DTE and Peter Aitken ZL1TVP. From this location the 560 2m repeater gives excellent coverage of S.H.1 and surrounding

districts. The National System link operates through this site and on to the Bay of Islands. The Auckland Regional Helicopter Trust air-band repeater was removed in 2019, so we have some capacity at this site for another tenant. Our grateful thanks to members of the Whangarei Amateur Radio Club for their assistance in maintaining the site in good condition.

Klondyke Site

This remains the Group's largest site with the National System links to Egmont, Brynderwyn, and Kaimai, the 6625 Repeater and 9875 National System access. This site also has the 2m and 70cm D-Star repeaters, plus a 6m repeater.

The original 20+ year old 1802 CMOS repeater controller on the National System, controlling the local UHF repeater as well as the links north, south and east is still in service but remains a potential weak link. Thanks to Richard ZL1BNQ, a new micro-controller has been built and was trialled at the site in earlier this year. The testing found some small software changes were needed and these have been implemented. Weather conditions and time availability have held up replacing the controller.

The remote-controlled HF system at Klondyke currently off the air with the equipment removed for a thorough overhaul. The interface between the TS-440 transceiver and the linear amplifier required some work and the audio levels to the micro controller have been set to prevent over-modulation. The HF system equipment will be re-installed in the near future.

In April, the Group approved a budget of \$13,900 for urgent work to replace the cable trays up the tower and the ladder used to climb up the vertical section. A combination of material supply delays, Covid-19 lock-down and adverse weather has prevented this work, which started in July, from being completed and we now hope that the riggers will get the work done before the end of November. Very strong winds in September caused some damage up the tower to the coax feeders for the 6625 2m repeater and to prevent further damage to the power amplifier, the repeater has been turned off. We very much regret the inconvenience this has caused. Once the new cable trays are in place and the weather improves, it will be possible to get back up the tower and locate the faulty feedline or connector.

My thanks to club members who have assisted with work at various times throughout the year at this site. It is likely that two or three working bees will be needed this coming summer to get all the required maintenance done on the tower.

Beacons

The Group holds licences for a 2m beacon and 70cm beacon which are located at the Nihotupu site in the Waitakere Ranges. The antennas for these beacons and the wooden cross arm they were mounted on came down during a winter storm a few years ago and have yet to be replaced. Thanks to Greg ZL1GSG, we have new beacon transmitters ready to go for 2m and 70cm, and new 23cm beacon. Weather has delayed access to the site with a cherry picker to replace the antennas and check feedlines. It is hoped to have these back on the air before the end of 2021.

Vaughan Henderson ZL1VH

Head Repeater Trustee

Trading Table Manager's Report 2021

Trading Table sales for the 2021 year has not contributed as much financially to the Group's income as I would have liked. Covid lock downs and restriction on numbers of people able to be in any one place meant the Hamilton Radio Club and Western Suburbs Radio Club sales did not take place. This limited our opportunities to raise funds through trading table sales. A small selection of stock and pre-loved "junk" was taken to Whangarei and this was quite successful.

Last year we rolled out an on-line version of the Trading Table. This is slowly starting to take off with quite large orders from overseas. There is still very little interest from amateurs in New Zealand, however our ranking in web site searches is improving. A challenge with the web site orders is to make sure we can supply the quantities ordered.

The Trading Table on the web site uses Woocommerce and allows me to update and add/delete items easily. It is still a work in progress, and I'm slowly working through the listed items, checking the actual stock quantity and entering that so the problem with orders for more than we have on hand will eventually disappear. Some of the product images are not very good and those are also being updated. In addition, the .PDF version of the Trading Table list is also downloadable from the web site for people who want to do that.

In 2020 I had hoped to do more selling on TradeMe but this did not eventuate. 2021/22 brings some new opportunities to do more with TradeMe, listing items we have large stocks of and this in turn should bring in more revenue to help with club projects.

Our regular "Open Days" at the clubrooms on a Saturday morning were popular and it would be good to try and get a small team of volunteers to continue this activity. Currently the clubrooms are only open in conjunction with our committee meetings and general meetings.

I would appreciate some offers of help with the Trading Table, in particular going through and sorting the stock. If we can get everything counted and in a known location, this makes filling orders very much quicker.

Finally, my thanks to all those club members who have willingly given of their time to help pack up, transport, unpack and help with sales at the locations away from Auckland. Without your help we could not continue our successful Trading Table operation.

Vaughan Henderson ZL1VH Trading Table Manager

Spectrum Editor's Report 2021

During the year the Newsletter has varied between 13 and 23 pages but 18 pages was more usual. It varies with contributions from members or topical themes the Editor comes across. Thanks to Vaughan ZL1VH for his regular reports on the state of Repeaters, the Proof Reading of Spectrum to protect the readers from the Editor's mistakes and his delving into our past from Spectrum 50 years ago.

I invite the members to describe their interests to put them in writing to share with the members. The Editor has undertaken to document one of his before he forgets all the details learned over the years. Photos of your activities also give the Newsletter a more lively look. Let us hope that a good Newsletter will also attract new members.

Peter Loveridge ZL1UKG Editor

Designing a Linear Power Supply – Part 1 – The Transformer

Using Simetrix to optimise your ideas

The author has been using Simetrix occasionally for 15 years since meeting it at Navman. It is good for documenting your circuits. It is simple to use. It is also simplistic with default values for all of its components. It is available from www.simetrix.co.uk. The cut down free version has a limit on the size of the circuit. The author stopped downloading at Version 7. Version 8 and beyond instituted more limited size but at the same time added some more of the professional features. The Icons on the control panel have a large range of components except for J-Fets and Op Amps. You alter the default component values to your design.

The Voltage and Current source Icons and “Place” Menu have individual components that require parameters to be set for the value of the component. Part 1 will concentrate on “Place / Magnetics / Ideal Transformers” with capacitors on the side. You first set the “Primary 1 inductance”. A starting value is 5. Then you set “Define windings”. Click on “Select winding” and set the Ratio(s). Where your design uses the fixed specified current of the Secondaries or the voltage variation with load in your application does not matter you may pass on to Part 2.

When your junk box has undocumented transformers or the Internet has some specifications for your part number it is unlikely to be enough for accurate simulation. It is simple to measure the resistance of the windings and put the values in series with each winding. The Ratio must be calculated for each “Secondary” and added to the circuit for each winding. The specification will be expressed as Amps (per secondary winding) or VA of the whole transformer. You will need to calculate the current in each secondary and the copper loss (primary and secondary) is added to the specified on load voltage to determine the Ratio. In the case of DC load current specification you will need to use diodes and capacitor(s) to provide DC. From the measured voltages you can set the “Ratio to primary” of the voltage for the load ahead of you.

The “Primary 1 inductance” is a more devious parameter to set. It determines the magnetising current of the transformer and the additional wire loss. A starting value is 5 H. It only takes 4 more components to help you determine the inductance value. Two resistors and an inductor L1 are placed across the AC Source to the power transformer. R0 is in series with the primary winding resistor. R0 should have around 1 % of the source voltage across it. R1 has the same value as R0 and R2 has the same value as the winding resistance, then L1. You adjust L1 and measure the voltage across R1 until it is close to the same value as R0 in series with the wire loss and primary. When you have found the value for L1 it is applied to the transformer. Now you can remove R0. The author leaves the R1, R2, L1 in place to document the primary inductance value. This allows you to get the simulator to equal the performance of the real thing in your circuit.

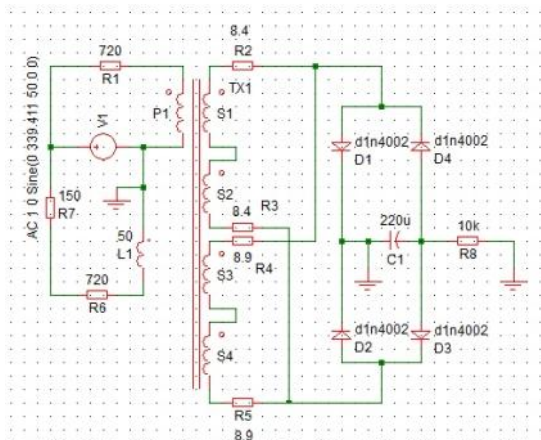
R0 will be in the range 150 ohms for a small E-I transformer to 22 ohms for a large E-I transformer to measure around 1-2 % for 230 Vrms sources. Toroid transformers appear to have much higher inductance. Most capacitors used in power supplies are Electrolytic. The Passives / Electrolytic Capacitor (Simple) allows you to add series resistance and parallel resistance to represent the real world. This is optional. You can have a series resistor of the order of milli-ohms with a perfect capacitor instead. In power supplies they don't have time to discharge themselves much between cycles.

Some examples with 230 V primaries

Tiny E-I transformer

2 x 0 / 7.5 / 15 @ 3 VA

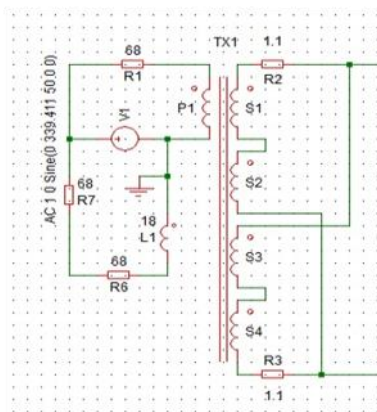
Variable for Low voltage – low current



Small E-I transformer

2 x 7.5 / 0 / 7.5 @ 36 VA

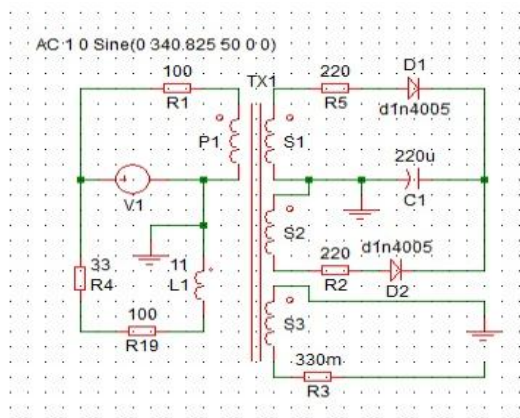
Charger for 13.8 V Gel Cell for QRP use



Small E-I transformer

150 / 0 / 150 @ 30 mA; 6.3 V @ 1.5 A

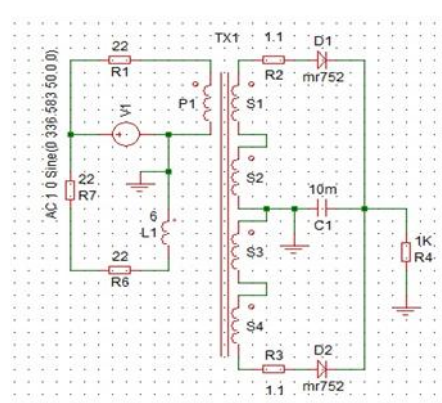
Variable for low voltage valve circuits



Medium E-I transformer

15 / 0 / 15 V @ 150 VA

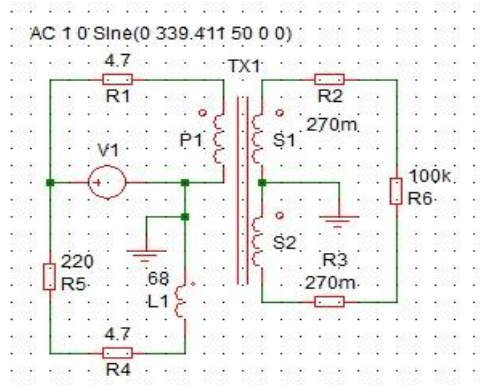
13.8 V for radios to 50 W



Large Toroid transformer

2 x 0 / 35 V @ 300 VA

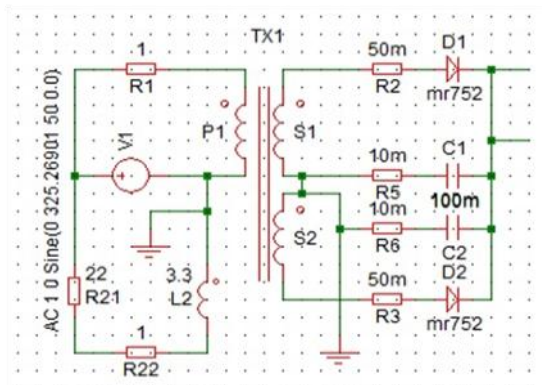
Current source for Peltier oven



Huge E-I transformer

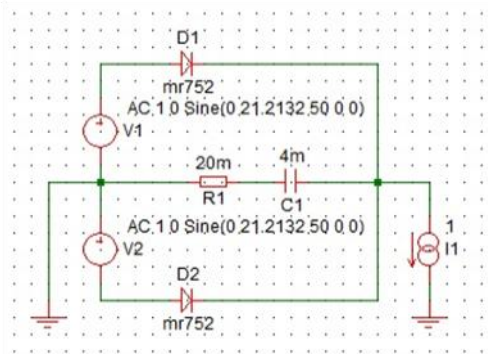
2 x 0 / 22 V @ 40 A

13.8 V for 2 x 25 W radios + 100 W linears

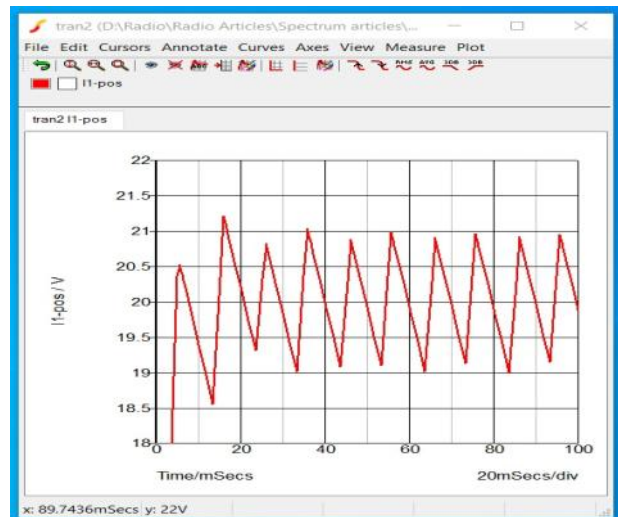


The Capacitor

Simple regulators require a minimum of 3 V headroom for smooth output. 4V or more is required to allow for some variation in mains voltage. One or two diodes (0.8 V forward drop each) supply the capacitor. A common transformer has 15 V secondaries, usable for 13.8 V DC. A 15 Vrms gives 21.2 Vpk less 2 diodes leaves 19.6 Vpk. The capacitor ripple must be less than 1.6 Vpk. A simple rule of thumb is $4000 \mu\text{F} / 1\text{A}$ which will produce 2 Vpp (50 Hz). The pulse diode current is $\sim 6 \text{ Apk}$. You can check the copper loss in the transformer vs the diode loss to see if 2 diodes or a bridge gives less loss. The capacitor can be chosen depending on the current required.



The Regulator acts like a Current Sink to the capacitor. There will be a little loss R1 in a capacitor.



Capacitance scaling applies here. For a 2x Input and Output voltages the headroom will tolerate Ripple x 2 and Capacitance x 0.5. Looking at the specs for capacitors it is worth buying screw terminal connection type. Once the max ripple current exceeds 10 A it may be worth buying two smaller capacitors. They can be mounted side by side with strips of copper sheet used to join them. High current wiring can be soldered to the strips. Two in parallel will have a higher ripple rating than a single capacitor.

There is a trade-off for stability in the face of varying mains voltage or minimising waste heat in the regulator. Two smaller capacitors will have less ripple but higher DC voltage available resulting in slightly more heat dissipation in the regulator. More complex regulators may also require more headroom. This will determine what the minimum secondary(s) must provide. The author lives near a Substation where the supply is 235 – 240 V and might get away with it.

Alternative uses for the Transformer

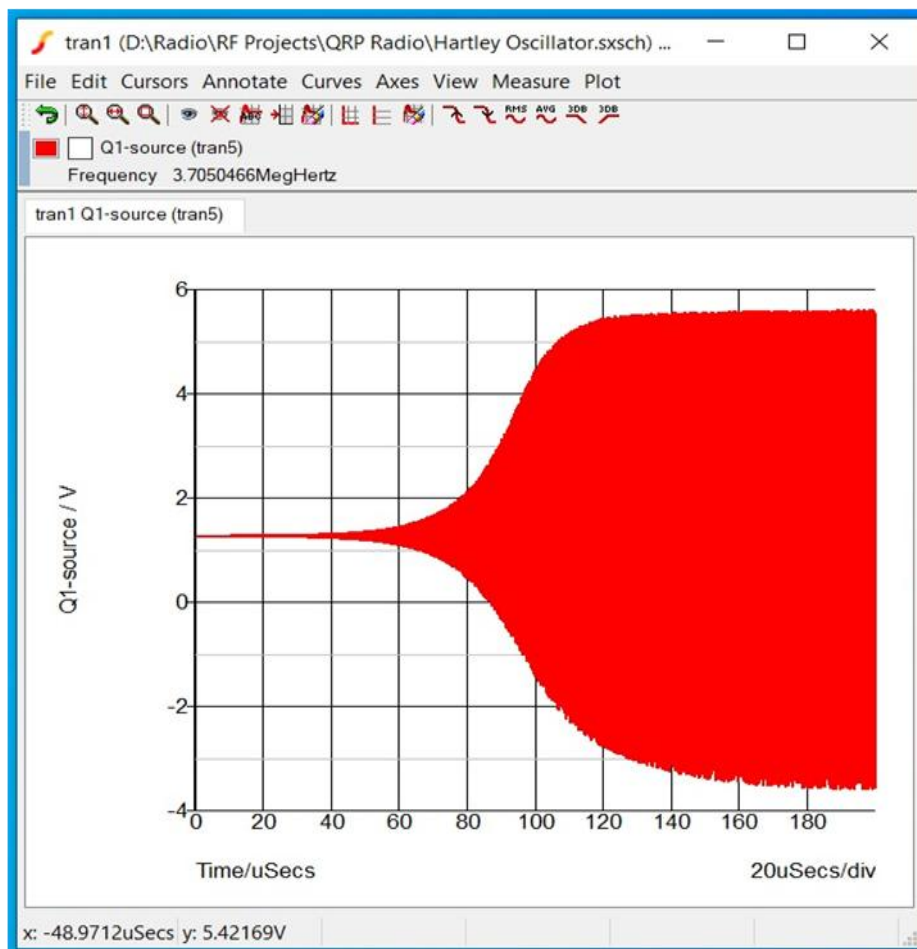
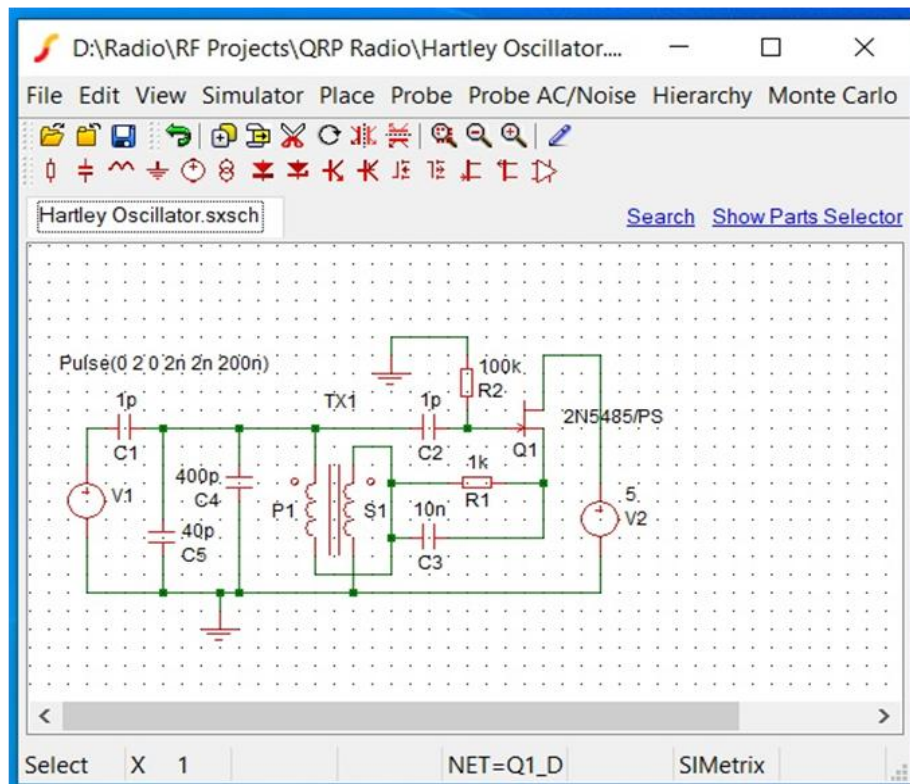
Don't knock the transformer, it is very versatile. For example you can also use it to define the coil and tap for a Hartley Oscillator on RF frequencies. The only addition required is a single Pulse Generator coupled by a small capacitor to get it started. There may be other possibilities!

The position of the tap is controlled by the winding ratio. It will also alter the effective inductance of the transformer.

In this example the Primary was set to 2.2 uH. The ratio was 0.333 for a 1/4 tap. Select "Measure / Frequency" and the predominant value is displayed = 3.705 MHz. The value needed for 3.705 MHz is approx. 4.2 uH.

You will have to try primary inductances to get your oscillator on frequency. Adjust C4, C5 or the primary inductance for the wanted frequency.

More time is needed to investigate how accurately Simetrix is copying the real world.



Peter Loveridge ZL1UKG October 2021

50 Years Ago in Spectrum

November 1971 Spectrum – This issue opened with an urgent notice to members regarding the financial position of the Club magazine “Spectrum”. The cost to publish 11 issues of Spectrum was costing the club \$990 per year. Offsetting this was income from subscriptions and advertising totalling \$913 per year. This resulted in a loss of \$77.00 per year which had to be made up from other income. A questionnaire was included inviting members to complete and return to the Secretary.

The minutes of the November General meeting (35 members in attendance, and 5 apologies) reported that NZART would be approaching the Post Office re the \$3.00 licence fee as questioned by some amateurs. The club had been asked by the Federation of Trailer Boat Clubs to assist with a VHF field survey to take place in January 1972. The Auckland VHF Group’s 2m Channel A repeater to be commissioned early in the new year took a step further forward with Bruce ZL1TDR being appointed trustee.

The Hamilton Radio Club advised some revisions to the Rose Award Rules – Overseas stations were required to contact 5 Hamilton Stations. On VHF ZL1 stations to contact 5 Hamilton stations plus ZL1UX, ZL2, ZL3 and ZL4 only required to get 1 Hamilton station plus ZL1UX to qualify.

Ken ZL1TLK reported that a team comprising Neil ZL1ANM, Simon ZL1THU, Nigel ZL1TLM and Ken ZL1TLK would be operating a field day station from Mt Karioi near Raglan.

Bruce ZL1WB from Whangarei wrote regarding the international action being taken by the IARU to secure allocations for the amateur satellite service on various amateur bands. The most recent World Radio Conference had not had a good outcome with allocations for the amateur satellite service only being confirmed in the 2m and 70cm band with the 70cm allocation being “slap bang in the middle of the amateur TV allocation”. He felt that amateurs everywhere needed to get the message that they needed to take immediate action to restore our public image, thus eliminating at least one major obstacle that needlessly confronts the IARU representatives who seek to protect the future of our amateur radio service. He concluded with “Let us also put the ‘proficiency’ back into our certificates...”

A page was given over to the Waikato VHF Award – sponsored by the Waikato VHF Group in reward for confirmed contacts with amateurs in the Waikato area. Operation on any one or a combination of VHF bands within any 12 month period. Stations within the Waikato area required 15 contacts, Other ZL1 stations 10 contacts, ZL2 stations 5 contacts and ZL3 and ZL4 to get 5 contacts. The boundaries of the “Waikato Area” were straight lines drawn between Port Waikato, Thames, Waihi Beach, Taupo, Taumaranui, Kawhia and back to Port Waikato.

Part Five the Waikato VHF Group’s FM repeater design was presented – the muting and shut down equipment. The repeater design featured facilities to allow remote shut down of the repeater during contests, and/or any other times when a shutdown may be desirable or required. The shutdown was activated by transmitting on the repeater input frequency, two tones in the frequency band between 2kHz and 3kHz. The two tones are detected by the Two-Tone receiver, the outputs of which operate the associated muting circuitry on the Muting Board. Detailed descriptions of the Two Tone receiver and Muting Board followed including circuit diagrams and pc board layouts. A description of the Shutdown Encoder to be used by the control station initiating the shutdown concluded the article.

Results of the 2021 Microwave Contest – 2/3 October

VHF-UHF-SHF-EHF Contests, as administered by the Auckland VHF Group Inc; on behalf of all VHF groups, including all New Zealand radio amateurs and supported by NZART.

Overall Winner	Station	Points
	ZL4DK	643
	ZL1IU	220
	ZL1GSG	89
	ZL1EW	40
	ZL2VS	27

Band winner	Station	Points
23 cm (1296MHz)	ZL4DK	643
	ZL1IU	220
	ZL1GSG	89
	ZL2VS	27
	ZL1EW	19

Band winner	Station	Points
9 cm (3400MHz)	ZL1EW	21

Greatest DX	Stations	Distance
23 cm	ZL1IU – ZL1AKW	348 km
9 cm	ZL1EW – ZL1BK	7 km

Active Stations (14 in total)

ZL1AKW, ZL1BK, ZL1BQE, ZL1EW, ZL1GSG, ZL1IU, ZL1UET
ZL2VS
ZL3DC, ZL3JJ, ZL3NW
ZL4DK, ZL4OL, ZL4TH

Operator Comments

Only a few stations active. Weather was relatively calm. 23cm Contacts with Christchurch were strong and steady on Sunday morning but had QSB and weakening later in the day.

I went out portable on Sunday, only two contacts made on 1296 at Mt Curl RF70RB91BC

Lockdown! Pleased to be able to work ZL1IU on 23cm from the backyard.

Thanks to all that participated and a special thanks to the 2 field stations.

Simon, ZL1SWW

Greg, ZL1GSG

VHF / UHF Field Day Contest 2021

The annual VHF UHF Field Day Contest is scheduled for the first weekend in December – this year that's the 4th and 5th of December. Although it's called a "Field Day", this does not prevent home stations from taking part.

If you haven't taken part for some time, how about dusting off the rig and set aside some time to have a go. Most operation will be on 2m and 70cm and the frequencies to listen and call on are 144.2 MHz, 432.2 MHz. If you've also got 6m, then the calling frequency is 50.15 MHz. On 1296 MHz, look for stations on 1296.2 MHz. Most SSB operation uses horizontally polarized antennas. If you are operating from a home station, and only have a vertically polarized antenna, still give it a go!

The contest starts at 1700 NZDT on Saturday 4 December and finishes at 2300 NZDT. On Sunday the 5th, activity gets underway again at 0700, but if that's a bit early for you, just join in when you can on Sunday and the contest finishes at 1300. On both days the contest is divided up into one-hour periods, so starting at 1700 on Saturday, the first period is 1700 to 1800 NZDT. The aim is to work as many stations as possible during each hour but no repeat contacts on the same band please. You can work them again in the next hour and so on right through the contest.

For more detail and the Contest Rules, go to the NZART web site:

<https://www.nzart.org.nz/activities/contests/vhf-and-above-contests>

Hope to hear you on during the contest weekend.

73

Greg ZL1GSG

Contest Manager.



Amateur Radio Emergency Communication.

**Volunteers in radio communications.
Using our resources to help the community.**

INFORMATION

The Auckland VHF Group has an AREC Group that works closely with Auckland Council Emergency Management. They provide advice, resources and manpower to assist in times of need.

The AREC section is headed by Group Leader Matthew King ZL1YOT.

From time to time the VHF Group has training sessions and exercises. Members also assist with sports events, parades and other community activities. For further information about AREC please see the NZART web site: <http://www.nzart.org.nz/arec/>

JOIN BRANCH 66 AREC

All members of the Auckland VHF Group are encouraged to join the AREC section. Your contribution, large or small is appreciated by all involved. For further information about joining Branch 66 AREC contact the Group Leader:

Matthew King ZL1YOT

022-6493310

mattking@gmail.com

The Deputy Leader position is currently vacant

AREC News:



AUCKLAND VHF GROUP (INC)

SUPPORT THE EFFORTS OF THE VHF GROUP THROUGH YOUR
SUBSCRIPTION

SUBSCRIPTIONS FOR 2021

THE SUBS GO TOWARDS;

- Maintenance and on-going improvements to beacons, repeaters and linking systems for the national system, including the Klondyke repeater site.
- Providing on-time and free access to spectrum magazine as soon as it is available.
- Providing facilities for good speakers and lecturers at our general meetings.
- Discounted access to our trading table goodies.
- Access to test equipment and technical help when needed.

FULL MEMBERSHIP **\$55.00**

ASSOCIATE MEMBERSHIP **\$50.00**

FAMILY MEMBERSHIP ADDITIONAL **\$20:00**

SEE ATTACHED MEMBERSHIP RENEWAL FORM (next page)

**REMEMBER TO KEEP US INFORMED OF YOUR EMAIL
ADDRESS!**

OTHERWISE WE CANNOT SEND YOU SPECTRUM!



Thought for the month:

"The most difficult thing is the decision to act. The rest is merely tenacity."



AUCKLAND VHF GROUP INC.

P O Box 10138, Dominion Rd, Auckland 1446,
30 Hazel Avenue, Mount Roskill, Auckland,
Web: <http://www.aucklandvhf.org>
NEW ZEALAND



NAME				
Mr/Mrs/ Miss/Ms	Christian or given		Surname	
Address			Date:(dd/mm/yy)	
			Phone: (home)	
			Phone: (work)	
Email			Phone (Cell)	
Occupation:			Callsign:	
NZART Member	Yes/No		Branch assigned	
AREC Member	Yes/No		Branch assigned	
Family Member 1	(Name)	(Call)	(Email)	(Mobile #)
Family Member 2	(Name)	(Call)	(Email)	(Mobile #)
Family Member 3	(Name)	(Call)	(Email)	(Mobile #)
Category			To pay	
Membership	Full		\$55.00	\$
New/Renewal/Change	Associate		\$50.00	\$
Receipt #	Family (per member)		\$20.00	\$
Donations	Klondyke Refurbishment			\$
Auckland/Brynderwyn/ Klondyke/670/690	Repeater Maintenance			\$
	Data/D-Star			\$
	Beacon/Repeater/Links/ Licences			\$
	Other			\$
			Total	\$
Payment (Mark One →)		Cash <input type="checkbox"/>	Cheque <input type="checkbox"/>	Internet deposit <input type="checkbox"/>
Invoice/Statement required		<i>Please Advise Treasurer</i>		
Internet	To account ASB 12-3011-0830580-00. Account name is: Auckland VHF Group Inc. Include your Name/Callsign for us to track. Note: this form needs to be sent to us to update records. Email to: treasurer@aucklandvhf.org .			
Post	The Treasurer, Auckland VHF Group Inc., PO Box 10138, Dominion Road, Auckland 1446.			
In Person	Bring this form and payment to the next club meeting, 2 nd Monday of the month or to the Committee meeting the 4 th Tuesday of the month.			
Privacy	Unsubscribe from Email Notifications <input type="checkbox"/>		Do Not disclose contact Information <input type="checkbox"/>	

The Auckland VHF Group Inc Branch 66 NZART
*gratefully acknowledges the sponsorship of Branch 66 Beacons, Repeaters and
Fixed Links license fees and the Group's repeater operations by the following
radio amateurs and NZART Branches for 2021*

2021-04-13, Donations for Repeater Licences and Klondyke Refurbishment

Frequency + Operation	Location	Donation	Donor Name
53.725 Repeater	Klondyke Road	\$50.00	Gwynne Rowe
144.253 Beacon	Nihotupu		Waiting for Antenna
144.575 Digipeater	Whitford		
145.625 Data Rptr	Klondyke Road		
145.650 D-Star Rptr	Klondyke Road		
146.625 Repeater	Klondyke Road	\$50.00	David Wilkins
146.700 Repeater	Ruaotuwenua	\$50.00	Dennis Thornton
146.900 Repeater	Mt Puketutu	\$50.00	David Wilkins
432.253 Beacon	Nihotupu		Stability testing
438.175 D-Star Rptr	Klondyke Road		
438.450 Repeater	Klondyke Road		
438.500 Repeater	North Head		
439.850 Kaimai Link	Klondyke Road	\$50.00	George Marr
439.875 Nat System Rptr	Klondyke Road	\$50.00	Soren Low
439.900 Egmont Link	Klondyke Road		
439.950 Brynderwyn Link	Klondyke Road	\$50.00	Kylie Peterson
1291.900 Repeater	217 Glenfield Rd	\$50.00	Michael Sheffield
DMR Rptr (Waitakere)	Quinns Rd	\$50.00	Auckland Area AREC
		\$450.00	

2021-04-13, Donations for Refurbishment

Auckland Branch	\$100.00
Manukau Radio Club	\$100.00
Brenton Faithfull, ZL1BBF	\$50.00
Papakura Radio Club	\$500.00
Ann Walker ZL1BFB	\$100.00
Soren Low ZL1SLK	\$100.00
	\$950.00

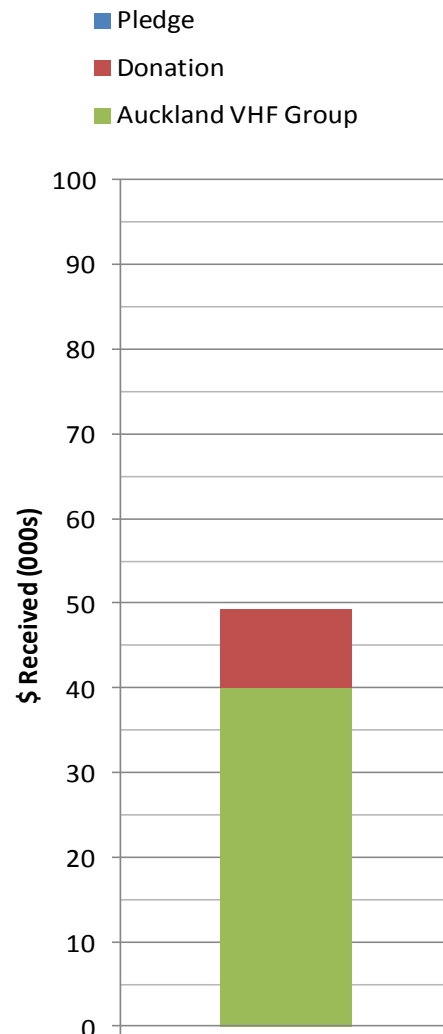
Total \$1,400.00

Klondyke Tower

Target 100,000

Name	Donation	Pledge	Tower	Other	
					27268.25
Donations 2018 - 2020	8444.00		63,245.00		27,268.25
			GST	9,486.75	
Margaret Dingley ZL1AYV	100.00				
David Dingley ZL1TIA	100.00				
Jennie Dingley, ZL1TDB	100.00		Total	72,731.75	Total 27,268.25
Yuri Muzyka ZL1GYM	50.00				
Martyn Seay ZL3CK	500.00				
Martyn Seay ZL3CK \$100			Auckland VHF Group	40,000.00	40.00
Yuri Muzyka, ZL1GYM \$50					

Klondyke Funding



Total	9444.00	-
Percent	9.39	0.00

TRADING TABLE

Currently our Trading Table is only open on meeting nights.

NEW – Printed Circuit Board. Thanks to a generous donation from N.Z.'s last circuit board production company (now closed down), we have a large quantity of single sided fibreglass printed circuit board material in sizes ranging from 1200 x 600 down to smaller pieces. There's some double sided board as well. Come along to our May meeting if you want some – prices can be negotiated!

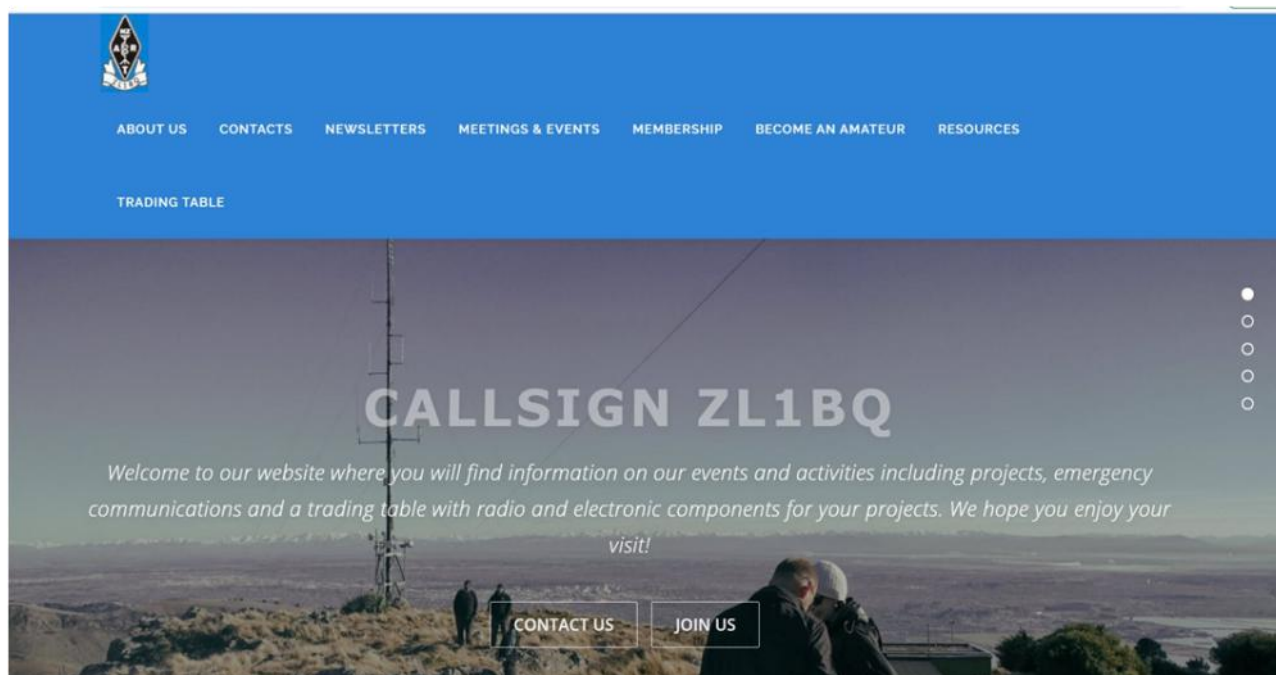
NEW – RG58C/U 50 Ohm Coaxial Cable. Thanks to a bulk purchase we are able to offer this good quality coax at a competitive price. The cable has tinned centre conductor and screen braid making it resistant to long term corrosion. The price is \$2.00 per metre with a discount for purchases of 20m or more. See Vaughan ZL1VH on meeting nights to get this quality coax cable.

The Trading Table is now on line. Navigate your way to our new look web site at <https://aucklandvhf.org/> and click on TRADING TABLE (the most right hand tab).

Wait a few seconds and the on-line version of the Trading Table will pop up. From here you can browse the various sections, dig deeper to look at what's available and even place your order online.

If you prefer to just look at the Trading Table List, just hover your mouse pointer over the TRADING TABLE and a pull down list will appear. From this you can access the full trading Table list and download it in .PDF form.

We also have heaps of parts from dismantled commercial analog TV gear – transmitters, filters, circulators, patch panels, power supplies. Too much to list individually, so come along to the clubrooms and have a look.



Recent Additions to our Trading Table Stock

Electrolytic Capacitors SMD (Packed in bags of 10 for 50c):
 10uF 16V electrolytic 47uF 16V electrolytic 100uF 16V electrolytic

Resistors:
 50 Ohm 0.4W +/-1% tolerance. 10 for 50c
 0.25 Ohm 5W wire wound
 0.27 Ohm 3W Wire wound vertical pcb mount

Siemens Gas Surge Voltage Protection Tubes:
 SVP Tube type B13-A230. 230V D.C. minimum strike voltage. \$1.00 for 10
 2-electrode type with wire leads, pre-bent for 10mm hole spacing.

ETAL P1200 600:600 Ohm line matching transformer \$3.00 each

Quartz Crystal: 6.000 MHz HC49SMD package marked CQ6.0000 \$1.00 each

BNC plugs 50 ohm R/Angle for RG58 coax (solder/clamp type) \$2.50 each

Relays:
 12V coil, DPDT 1A non-latching (EB2-12NU) SMD package \$2.00 each
 12V coil, DPDT 1A 2-coil latching (EB2-12TNU) SMD package \$2.00 each

LED Holder panel mount 5mm Kingbright nylon in bags of 50 \$3.00 per bag

Lacing Twine black plastic, in 10m rolls. \$1.00 each

Ceramic feed-thru insulators, 500V rating, solder in. 50c bag of 10

Semiconductors:

RURP30120	1200V 30A ultrafast switching diode	\$1.00 each
1SS55	Silicon switching diode. 70V 100mA DO-35	10/\$1.00
2N5777	NPN Light detector, Photo-darlington 45V TO-92	\$0.50 each
2N6027	Programmable Unijunction Transistor 40V 300mW	\$0.10 each
2N6122	NPN TO220 60V 4A 40W GP amplifier	\$0.50 each
2N6292	NPN TO220 70V 40W GP amplifier	\$0.50 each
2N6609	PNP TO3 140V 16A 150W audio/driver	\$1.00 each
BUK457-500B	Power MOSFET 500V 9A 150W TO-220	\$2.00 each
SGP15N60	NPN IGBT 15A 600V fast switch TO-220	\$1.00 each
SGP20N60	NPN IGBT 20A 600V fast switch TO-220	\$1.00 each
UDN2965W-2	Dual high power stepper motor driver. 20 to 50V out at 4A SIP package.	\$1.00 each

LM3909N	LED driver/flasher. 8-pin plastic DIL package.	\$0.5each
LM3911N	Temperature Controller IC. 8-pin plastic DIL package.	\$10 .00 each
LM3914N	LED Bar-graph driver. 18-pin DIP plastic package.	\$5.00 each
PIC16C54B	8-Bit CMOS Microcontroller. 18 pin SOIC SMD package Limited quantity	\$2.00 each