SPECTRUM **December 2021 Vol. 58 No. 12**

The Official Newsletter of the

Auckland VHF Group Inc.

Spectrum

Progress on replacing the Cable Trays on Klondyke Tower
The increased width avoids coaxes being stacked on each other

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Auckland VHF Group Inc.
Branch 66 NZART

PO Box 10138, Dominion Rd, Auckland 1446
Clubrooms: 30 Hazel Ave, Mt Roskill

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	Darryl Grange	ZL1TCI	021 123 7733	darryl@aucklandvhf.org
	Mark Howie	ZL1UMK	022 047 3240	mark@aucklandvhf.org
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Deputy Group Leader	Currently Vacant			
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Klondyke Manager	Vaughan Henderson	ZL1VH	021 844 804	6625@aucklandvhf.org
670 Manager	Vaughan Henderson	ZL1VH	021 844 804	670@aucklandvhf.org
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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

Notice of General Meeting

At the Hazel Avenue Club Rooms
(Located on the left at the end of Hazel Avenue)

The Auckland VHF Group Meeting will be held on Monday 13 December at the Clubrooms, 30 Hazel Avenue from 7.30pm onwards

This is our end of year informal Xmas gathering.
All members and visitors are welcome.

The club will be providing a selection of non-alcoholic drinks and some snacks.
If you would like to bring a plate to contribute to the supper,
you are welcome to do so.

Working Bee Sunday 12 December at 2pm.

Please come along and give a hand to tidy up the clubrooms in preparation for our end of year Xmas function on Monday 13th.

The outside needs a bit of a tidy up, the weeds and grass are growing faster than we can keep under control. If you've got a weed-eater that would be useful. Inside the clubrooms, we need to get this ready for the meeting on the 13th.

If there's enough people and time, the back wall could use a final coat of paint along with the kitchen and operating room doors.

Auckland is now in a Red Zone with regard to COVID-19
This allows for a maximum of 100 people with Vaccine Passports inside a building

The VHF Group has a QR Code poster at the entrance to identify the location you are entering. It helps to reduce the risk to the greater population by enabling tracking of possible sources of infection. The author has experienced this in a Café and a local Hall in Silverdale. In the Hall we are now recognised and are not asked to display it again. It will probably be the same for the VHF Group.
I hope that you don't mind the Editor bringing this matter to your attention.

Coming Events:

- AUS VHF-UHF Summer Contest 15-16 January, All Bands 6m and up (Propagation permitting)
- Dx Field Day Contest 05-06 February, All Bands 6m and up. (Passports permitting)

Auckland VHF Group President's Column

VHF Group Presidents Report
December 2021

This month we are holding our final meeting of the year, on 13th December. This is an "actually, really there" event. And to celebrate this easing of gathering restrictions we are having a working bee the preceding day, the afternoon of Sunday 12th at 2pm. There are weeds everywhere, spouting to repair, and a lick of paint needs throwing at some walls and doors. If you aren't up to doing anything energetic, just come along and encourage those who are doing stuff.

The Sunday night News and Net is back up and running on 670. Last week we had the monthly National Broadcast linked in thanks to some deft manoeuvering by Vaughan who has removed the 670 timeout so transmissions can run longer than the normal period of about 3 minutes. Dennis ZL1UET is working on linking 670 to 690, but there is a little problem with that locking up, so it is not operational yet.

Down on the farm I'm putting a 2m yagi above the carport, hoping to hit 670 (and nearby Coast-guard channels) without driving up the hill.

I want to thank members for their support over the year and wish everyone a healthy and happy Christmas.

That's it from here. See you Monday.

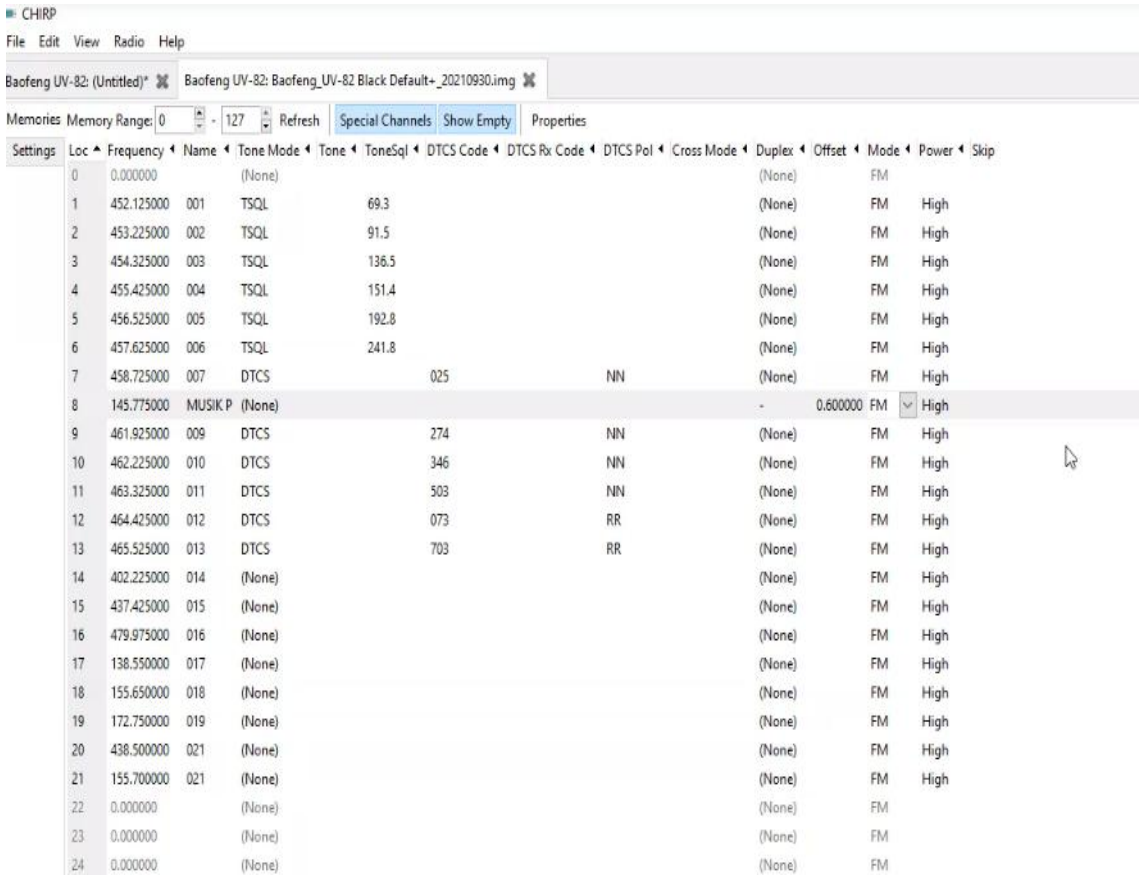
Cheers, Matthew King 022 6493310

Minutes of the October General Meeting of the Auckland VHF Group Inc.
Held on Monday 11 October 2021 via Teams

Meeting started at: 19:41
Present: Mark ZL1UMK, Ian ZL1AOX, Peter ZL1UKG, Alastair, Darryl ZL1TCI, George ZL1TUX, Vaughan ZL1VH, Dennis ZL1UET, Basil ZL1TOW, Greg ZL1GSG, Simon ZL1THH, Brendon ZL1XXX (chair).
Visitor: Marcin SQ5FNQ, originally from Poland, now resident in New Zealand.
Apologies: None
Minutes of the August General Meeting – as published in September 2021 Spectrum.
Moved the minutes were a true and correct record: ZL1TCI Seconded: ZL1UKG Carried
Matters arising: NIL
Note- the was no General Meeting in September, so there are no minutes for that meeting.

Reports: ZL1VH advised that the 6625 Repeater would be off the air for several more weeks while repair work was done at Klondyke. Thanks to Dennis, ZL1UET, we should be able to resume the Sunday night News and Net using the 690 and 670 repeaters linked together.

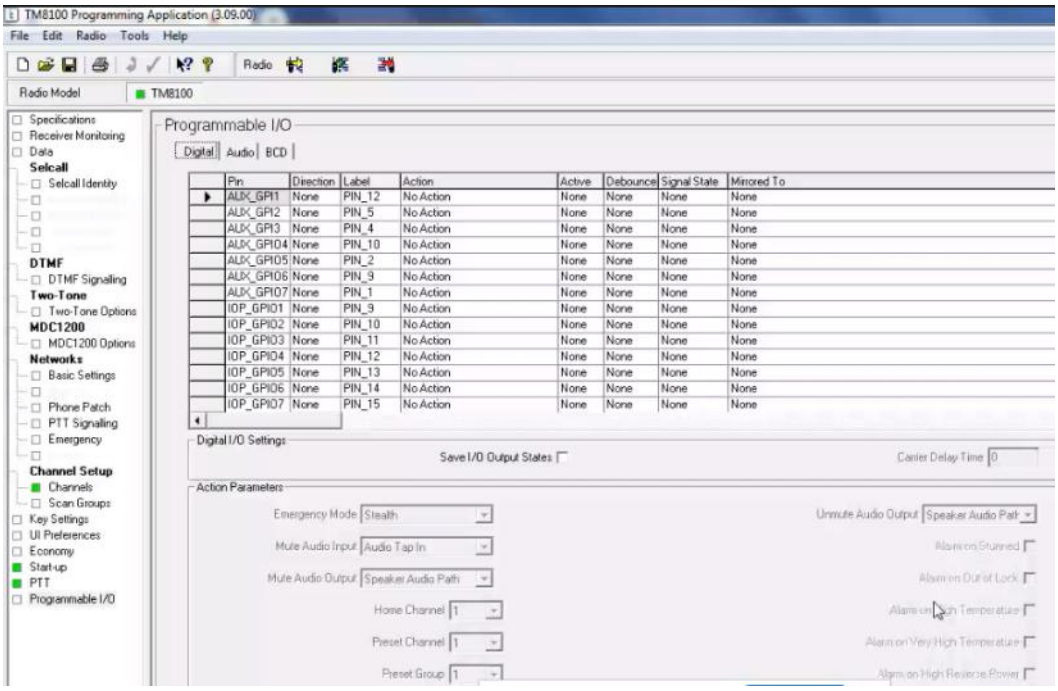
General Business:
Mark ZL1UMK Gave a presentation on Programming Baofeng via the Chirp Software using Klondyke 6625 as an example.



Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
0	0.000000		(None)							(None)		FM		
1	452.125000	001	TSQL		69.3					(None)		FM	High	
2	453.225000	002	TSQL		91.5					(None)		FM	High	
3	454.325000	003	TSQL		136.5					(None)		FM	High	
4	455.425000	004	TSQL		151.4					(None)		FM	High	
5	456.525000	005	TSQL		192.8					(None)		FM	High	
6	457.625000	006	TSQL		241.8					(None)		FM	High	
7	458.725000	007	DTCS			025		NN		(None)		FM	High	
8	145.775000	MUSIK P	(None)							-	0.600000	FM	High	
9	461.925000	009	DTCS			274		NN		(None)		FM	High	
10	462.225000	010	DTCS			346		NN		(None)		FM	High	
11	463.325000	011	DTCS			503		NN		(None)		FM	High	
12	464.425000	012	DTCS			073		RR		(None)		FM	High	
13	465.525000	013	DTCS			703		RR		(None)		FM	High	
14	402.225000	014	(None)							(None)		FM	High	
15	437.425000	015	(None)							(None)		FM	High	
16	479.975000	016	(None)							(None)		FM	High	
17	138.550000	017	(None)							(None)		FM	High	
18	155.650000	018	(None)							(None)		FM	High	
19	172.750000	019	(None)							(None)		FM	High	
20	438.500000	021	(None)							(None)		FM	High	
21	155.700000	021	(None)							(None)		FM	High	
22	0.000000		(None)							(None)		FM		
23	0.000000		(None)							(None)		FM		
24	0.000000		(None)							(None)		FM		

Guest Marcin Stolarski SQ5FNQ, asked about getting a ZL amateur licence and was advised to contact Debby Morgan ZL2DL at NZART HQ (email address supplied). He also wanted to know how to get onto the DMR network in New Zealand. Vaughan ZL1VH was able to assist him with some contacts and links.

Dennis ZL1UET then took us through Tait Programming and some key radio settings and discussed some of the little traps to be aware of when using the programming software with different models.



Ian ZL1AOX noted the report in the October Spectrum about the death of Tom Clark K3IO, former AMSAT-NA President and Director. Ian had met Tom on several occasions in connection with his AMSAT work.

Brendon ZL1XXX thanked everybody for their attendance and especially the two presenters Mark ZL1UMK and Dennis ZL1UET.

The meeting closed at 20:41

Auckland VHF Group Inc
Minutes of the 2021 Annual General Meeting
Held via Teams on 8 November 2021

The meeting commenced at 1938 pm.

Attendance: Matthew King ZL1YOT (Chairman), Brendon Reid ZL1XXX, Ian Ashley ZL1AOX, Mark Howie ZL1UMK, Terry Corrin ZL1BPA, Darryl Grange ZL1TCI, Greg Storz ZL1GSG, Martin Seay ZL3CK, George Raffles ZL1TUX, Stephen Pilcher ZL1SRP, Basil Orr ZL1TOW, Peter Loveridge ZL1UKG, Vaughan Henderson ZL1VH (Secretary).

Apologies: NIL

AGM Minutes 2020:
"That the minutes of the 2020 AGM as printed in November 2021 Spectrum be taken as read."
Moved: ZL1YOT Seconded: ZL1XXX Carried.

Matters Arising: - NIL

President's Report:
Matthew ZL1YOT presented his report as printed on page 7 of November 2021 Spectrum.
Moved: ZL1YOT Seconded: ZL 1XXX Carried.

Vice-President's Report:
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 8 and 9 of November 2021 Spectrum.
Moved the report be received: ZL1TUX Seconded: ZL1VH Carried

Spectrum Editor's Report
ZL1UKG presented his report as printed on page 12 of November 2021 Spectrum.
Moved: ZL1UKG Seconded: ZL1YOT Carried

AREC Report:
No AREC report was presented.

Repeater Report:
ZL1VH presented his report as printed on pages 10 and 11 of November 2021 Spectrum
Moved the report be received: ZL1VH Seconded: ZL1XXX Carried

Trading Table Report:
ZL1VH presented his report as printed on page 12 of November 2021 Spectrum
Moved the report be received: ZL1VH Seconded: ZL1YOT Carried

Election of Officers:

President
Nominee: ZL1YOT Moved By: ZL1BPA Seconded By: ZL1UKG Carried

Vice President:
Nominee: ZL1XXX Moved By: ZL1YOT Seconded By: ZL1AOX Carried

Secretary:
Nominee: ZL1V Moved By: ZL1YOT Seconded By: ZL1XXX Carried

Treasurer:
Nominee: ZL1TUX Moved By: ZL1YOT Seconded By: ZL1BPA Carried

Honorary Reviewer:
Nominee: ZL1TOW Moved By: ZL1UKG Seconded By: ZL1TUX Carried

Committee:
Nominee:
ZL1GSG Moved By: ZL1AOX Seconded By: ZL1VH)

ZL1UMK Moved By: ZL1YOT Seconded By: ZL1TUX)
ZL1TCI Moved By: ZL1YOT Seconded By: ZL1TUX)

Head Repeater Trustee:
Nominee: ZL1VH Moved by ZL1YOT, Seconded by ZL1XXX)

AREC Group Leader:
Nominee: ZL1YOT Moved by ZL1BPA, Seconded by ZL1XXX

ZL1BQ Callsign Trustee
Nominee: ZL1YOT Moved by ZL1VH Seconded by ZL1BPA)

Spectrum Editor
Nominee: ZL1UKG Moved by ZL1YOT Seconded by ZL1BPA)

Klondyke Site Trustee
Nominee: ZL1VH Moved by: ZL1YOT Seconded by: ZL1XXX)

Motion: "That all the Committee and Officer positions be approved"
Moved ZL1YOT, Seconded ZL1BPA. Carried.

General Business:

Amendment to the Club's constitution. "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"

Moved: ZL1UKG, Seconded ZL1XXX CARRIED

ZL1AOX asked if there were any other changes. Answer no, we will be reviewing the Constitution again once the new Incorporated Societies Bill becomes law, probably early in 2022.

There being no further business, the meeting concluded at: 19:59.

Minutes of the November General Meeting of the Auckland VHF Group Inc., held on Monday 8 November 2021 via Teams.

The meeting commenced at 2005, following the November AGM.

Attendees: Matthew King ZL1YOT (Chairman), Brendon Reid ZL1XXX, Ian Ashley ZL1AOX, Mark Howie ZL1UMK, Terry Corrin ZL1BPA, Darryl Grange ZL1TCI, Greg Storz ZL1GSG, Martin Seay ZL3CK, George Raffles ZL1TUX, Stephen Pilcher ZL1SRP, Basil Orr ZL1TOW, Peter Loveridge ZL1UKG, Vaughan Henderson ZL1VH (Secretary).

Apologies: NIL

Minutes of the October General Meeting – These should have been published in the November 2021 issue of Spectrum but were not. The October General Meeting Minutes will be published in the next issue of Spectrum.

Note- the was no General Meeting in September, so there are no minutes for that meeting.

Reports: ZL1VH advised that the 6625 Repeater would be off the air for several more weeks while repair work was done at Klondyke. Thanks to Dennis, ZL1UET, we should be able to resume the Sunday night News and Net using the 690 and 670 repeaters linked together.

General Business

Klondyke Repeater Site – The land is again up for sale. Current land owner Fortlane Ltd have put the whole property on the market. ZL1VH has been in contact with the person handling the sale from Barfoot and Thompson (Rod McFarlane) and he has contacted Fortlane. ZL1VH has had an exchange of emails with Rod McFarlane assuring us that the new purchaser whoever that is will be informed about our interest. It is reasonable to expect that we might get a refund of the balance of the 10 year licence to occupy from Fortlane. Fortlane are legally obligated to tell the new owner about the existence of our Licence to Occupy – we have that clause in the agreement.

The current Licence to Occupy was signed in November 2019 and is for a term of 10 years.
ZL1XXX is getting some legal advice.

670 Repeater – ZL1VH has disabled the transmitter time-out timer on the transmitter (it was set to 4 minutes) and Denis ZL1UET is working on being able to link 670 and 690.

Meeting concluded at 2015

50 Years Ago in Spectrum

December 1971 Spectrum – The Group's AGM held on the 13th of December saw several changes to the Group's executive and committee. Marion Lister ZL1BKL was elected President, Bruce Harding ZL1TDR Vice-President, Secretary Murray Greenman ZL1TCL, and Treasurer Carol Johnston, ZL1AJL. The new committee was Neil Barnett ZL1ANM, John Watson ZL1TIQ, Ron Harvey ZL1TBM and Dave Dingley ZL1TIA. The meeting voted to keep the subscription the same at $2.75 for full members and $3.00 for family. The meeting decided to continue the production of Spectrum but with the requirement that it would have to stay within budget. Members were urged to try and get new members and attract more advertising so Spectrum could continue to be produced with a bigger size as required. Dave Johnston ZL1AMN and Graham Bender ZL1AHQ were elected life members; Ian Brown ZL1TAT proposed the possibility of hosting the 1973 VHF Convention Hamilton. Offers of the use of the North Shore Club's clubrooms and Auckland Branch Clubrooms were made in case the Group's current arrangements to meet at the Auckland Technical Institute fell through for any reason.

Financially, the Group ended the year with a surplus of $652.10. Major sources of income were subscriptions ($714.42), Trading Table ($428.23) and sale of 2m convertors ($734.80). The single biggest item of expenditure for the year was Spectrum, costing $943.76.

The first meeting for 1972 was at the Manukau Radio Clubrooms on 10 January and the combined Auckland Branches Picnic was to be held at Kennedy Park, Castor Bay, the site of the North Shore Clubrooms, on Sunday 16th January, commencing at 10am, wet or fine.

The Scout Jamboree was being held at Pukekohe form the 1st to the 8th of January 1972 and Franklin Branch 10 had asked for assistance from licenced amateurs to help man the Jamboree station.

Reports from members from outside Auckland included Les ZL1TOP from Matamata, an active 2m operator who advised that he was going on holiday, visiting New Plymouth, Stratford & Stratford Plateau, Wanganui and Palmerston North. He planned to operate both mobile and portable on 146 MHz. Richard Howarth ZL2BIJ from Wanganui reported on 6m openings to VK. 6m contacts had to be before 2pm when the TV transmitters started. He had a number of contacts with VK2, VK3 and VK5 but found it very frustrating as he was crystal controlled on 52.25 MHz and could not move to net with the VK stations using 52.0 to 52.1 MHz. Richard was running 18W from a QQE03/12 final transmitter and a 2N3819 FET converter on receive with a 3 element Yagi at 22ft.

Part Six the Waikato VHF Group's FM repeater design was presented – the telemetry equipment. The repeater's telemetry allows remote checks to be made via the repeater output frequency of the battery terminal voltage, battery charger current, and the RF output voltage as measured across the transmitter output socket. Adding the telemetering capability to the repeater meant that important parameters could easily be checked without the need to visit the repeater site. The telemetry circuitry was contained on two circuit boards – the Telemetry Encoder and the Telemetry Transmitter. The Telemetry Encoder is triggered by the second tone of the two-tone shutdown command and causes the repeater to send a 15 second telemetry sequence. The first 15 second sequence was the battery terminal voltage, the second 15 second sequence contained the battery charger current and the third 15 second sequence was the RF output voltage measurement. The Telemetry Transmitter used frequency shift keying, the same as used by the OSCAR series of amateur satellites to transmit telemetry data. On receive, a frequency meter is used to decode the telemetry with the audio tone frequencies plotted on a graph to determine the original parameter.

Designing a Linear Power Supply – Part 2 – The Regulator

Using Simetrix to optimise your ideas

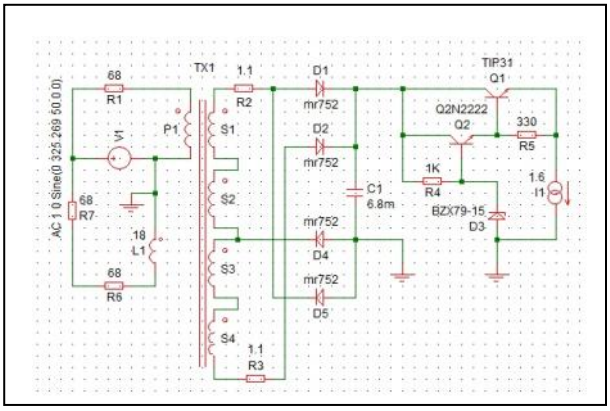
Voltage References

Prior to 1950s there were gas discharge valves and Weston Cells or Mercury cells followed by the discovery of the Zener diode in the 1950s. For more precision it had to be 5.6 V @ 7.5 mA and be run in for > 100 hours. It is the cross-over of the temperature coefficient between –ve below 5.6 and +ve above 5.6. The first IC controller LM723 was developed at National Semiconductor in 1967. It is versatile with programmable output voltage and current limiting. It needs other components around it for practical use. The first 3 terminal LM109 regulator LM109 was developed at National Semiconductor in 1969 with temperature compensation on the chip. In the early 70s Band-Gap and in the mid 70s the Buried-zener was developed. National Semiconductor developed the 1.25 V reference LM185 in 1982 and Linear Technology developed a low dropout regulator using the recent references enabling adjustable output down to 1.25 V in 1988. In the 90s a combination of Buried-zener and Band-Gap was utilised called XFET and in the 2000s the Super-bandgap was developed. Linear Technology LT1461 achieved ±0.04% initial accuracy and < 3 ppm / °C tempco.

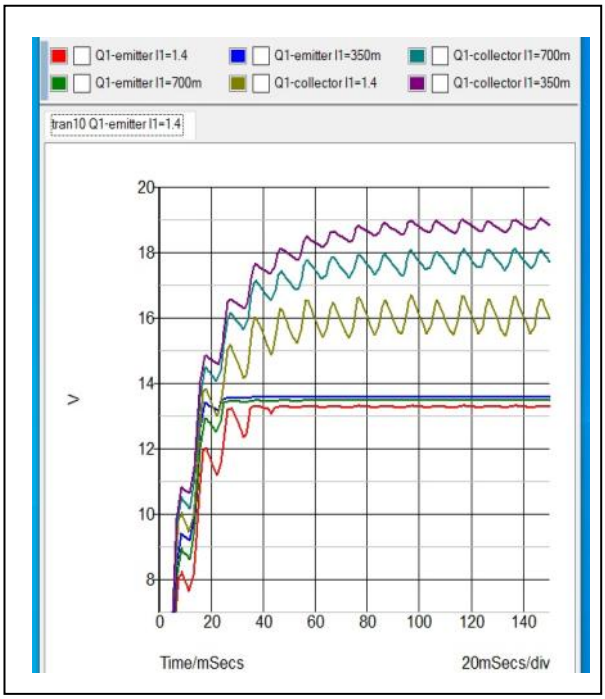
For those interested in knowing more try “Current Sources & Voltage References” by Linden T. Harrison, published by Newnes, an imprint of Elsevier. It can be obtained from Amazon.

Basic Regulators

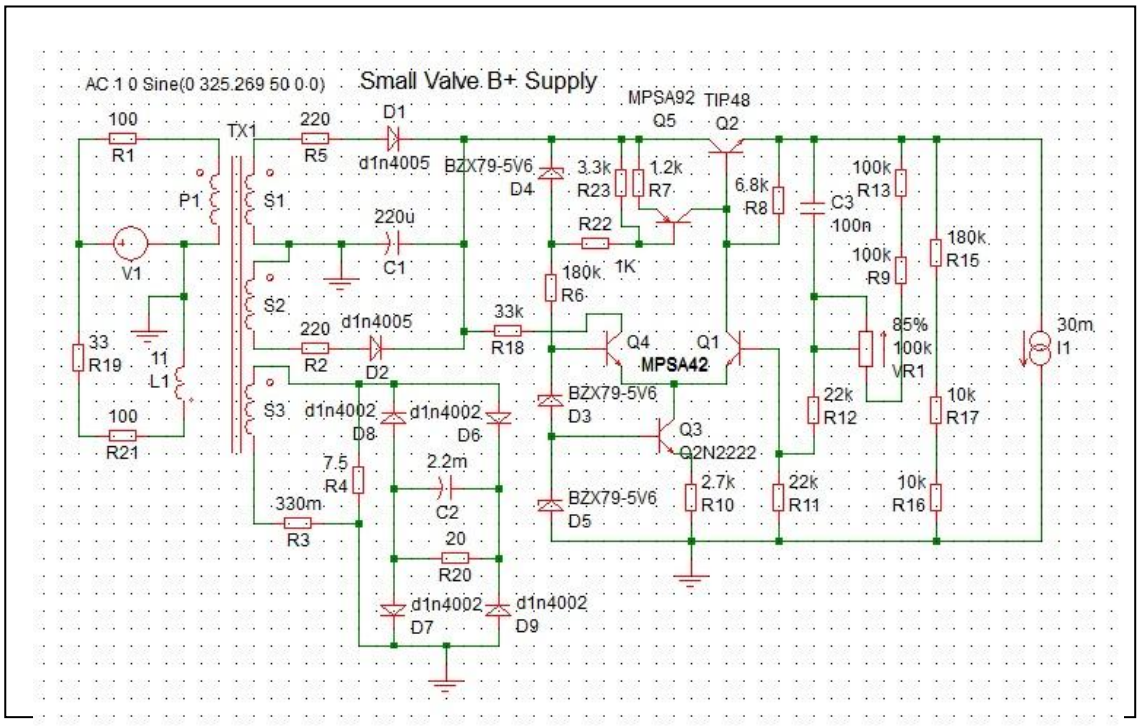
The early circuits used Zeners.



15 V secondaries in parallel have only 2 V headroom at 1.4 A. A 16+ V secondary or a bigger transformer with lower copper loss is required. This transformer has a 2.6 V peak copper loss. The diode loss is 0.8 Vpk x 2.



If the secondaries were in series the copper loss would be 4.5 Vpk and the diode loss 0.8 Vpk x 1. The difference is 1.1 Vdc in favour of parallel. Where the voltage exceeds the Voltage Limit specification for an IC a regulator can be designed using discreet components. The target is to provide a range of 25 – 175 V at currents up to 40 mA and to provide 6.3 V at up to 1 A ac or 1.5 / 3.0 V dc to repair or modify a small valve radio (eg 48 Set).



Resistors R9, R13 can be switched in or out to provide 50 V ranges with VR1. C3 helps keep the ripple down. Values were chosen around 5.6 V zeners. R16, R17 represent a 20 V 1 mA meter movement.

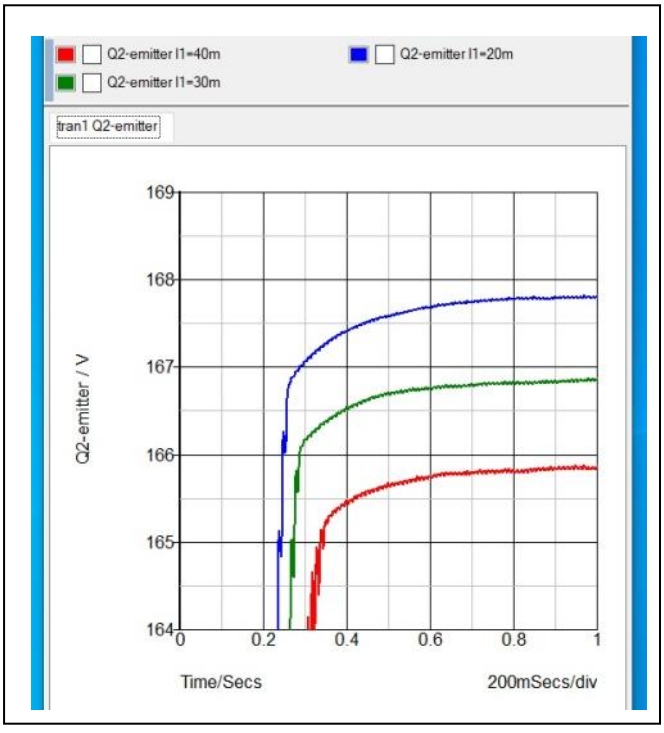
It is not precision performance but suits my requirements. It is doing better than the original mains supplies.

The transistor configuration is found in IC regulators. See the LM723 Specification. R10 was chosen for 1 mA at Q3.

Resistors around Q5 were chosen for 0.5 mA current and to minimise voltage across Q5 at 100% voltage, 40 mA.

C3 reduces ripple on the Output.

The transformer is a Beacon Radio R01 from my junk box. An R70 could be used as well. ETE in Avondale holds the Beacon designs and could make them to order. A 1958 Catalogue can be found on the Internet.



IC Packages

Unfortunately Simetrix only does discrete components. It may be possible to provide a simple circuit to mimic the function of an IC regulator. If you need to simulate your regulator circuit, watch this space. For the moment it will be a Black Box in the circuits that follow. When 3 terminal regulators came on the market it made simple regulators a doddle.

Initially they had fixed voltages from 3.3 V to 24 V with a limit of 1 A more or less. When you need a voltage higher than the IC available specifications you can design a regulator using discrete components with the 3 terminal IC as the voltage reference or you can start from scratch.

The LM723 controller offers a Voltage reference, a programmable Output voltage, a programmable Current limit and a Frequency response limit. This takes more design time but can provide bespoke results.

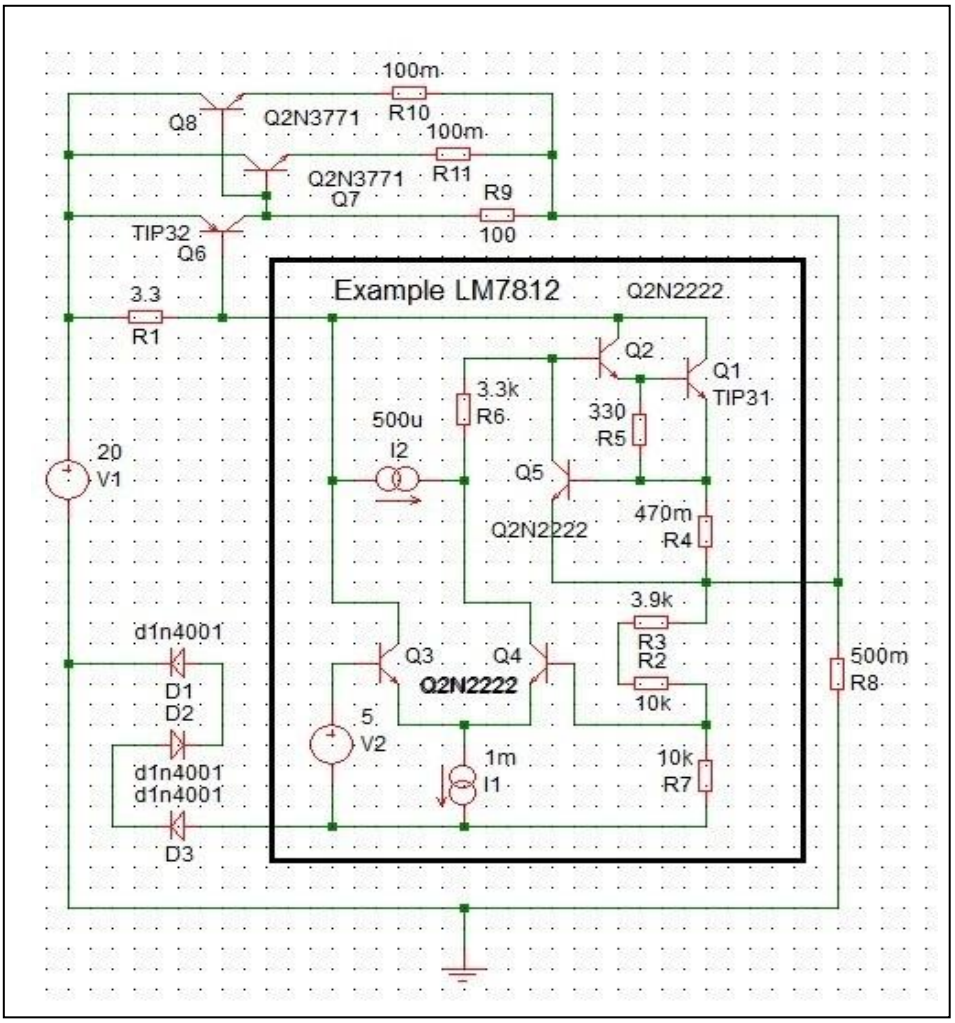
Using 3 terminal ICs, to increase voltage you can place Diodes, LEDs or Zeners in series with the Common pin to increase IC regulator. To increase the current capability a power PNP across a resistor in series with the Input pin supplements the Output pin. This may require a Darlington configuration.

The box contains my interpretation of an LM7812, created for this article. It allows Simetrix to simulate the performance of the design.

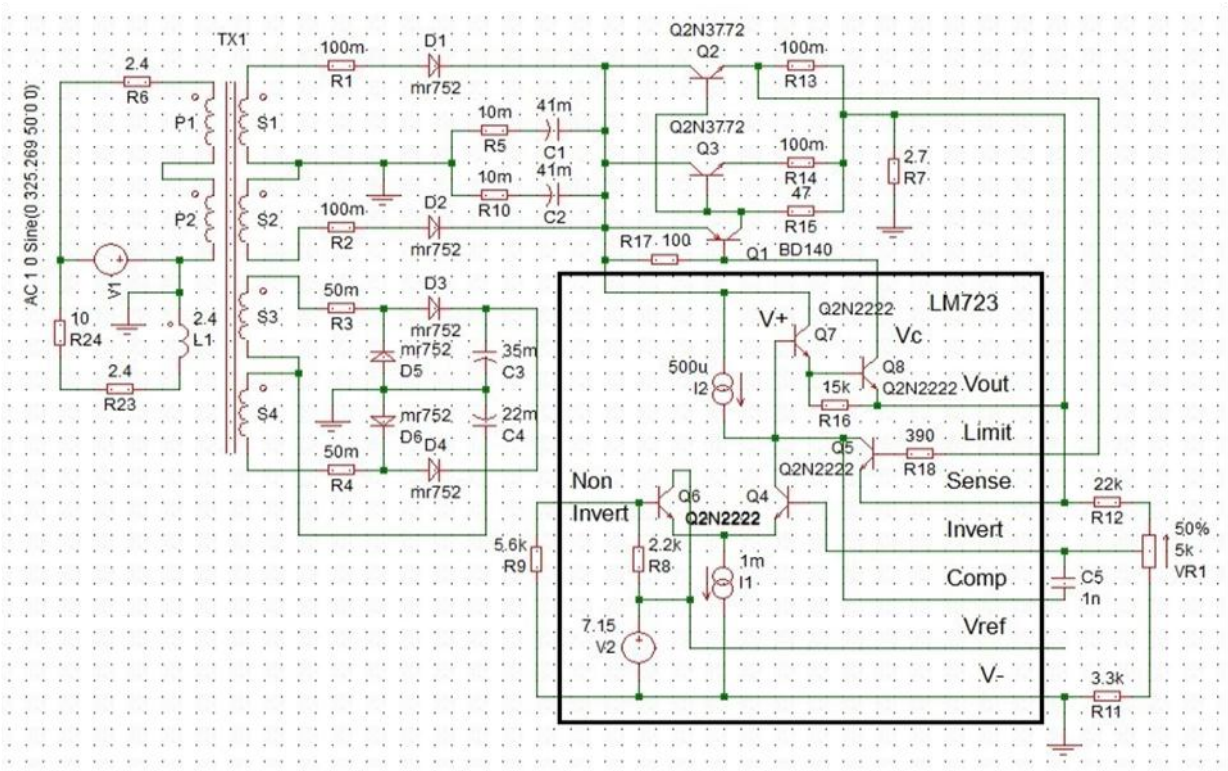
In practice use a Red LED (1.8 Vdc) to lift 12 V to 13.8 Vdc.

R10, R11 are recommended to share the current in Q7, Q8. The result is 27 A at 13.72 Vdc output with a 0.5 R load.

You can adjust R2, R3 for 5, 8, 12, 15, 24 V, the range of fixed 3 Terminal regulators.



Using the LM723

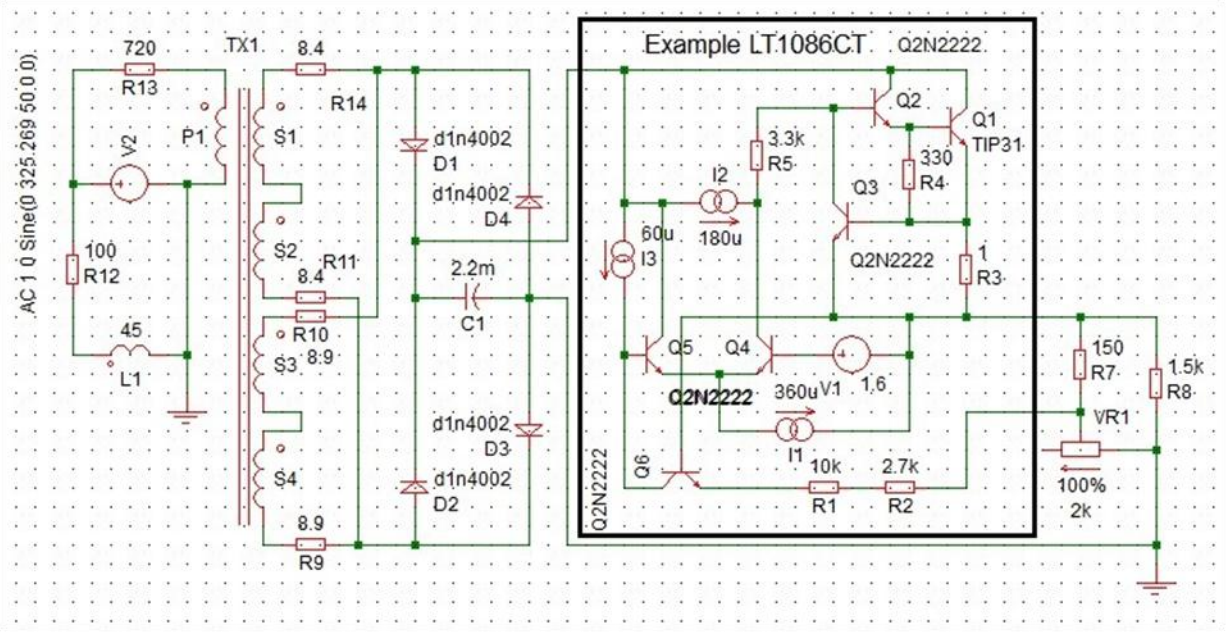


The box contains my interpretation of an LM723, created for this article. It allows Simetrix to simulate the performance of the design. It requires external components to provide significant current to the load. This circuit will Current Limit at about 11.2 A based on R13, R14 = 0.56 V. In this case TX1 from the author's Junk Box was a little low in S1, S2 voltage so that it does not Limit before outputting ripple on the output with a 2.7 R load. TX1's source was the power supply from a 90s Main Frame disk drive. It now provides 13.2 V and 6.6 V supplies using LM723s as well as 26.4 V.

Creating the LM723 circuit has enabled the author to optimise the design by changing from Q1 as BD139 NPN at Vout to a BD140 PNP at Vc, resulting in a lower head-room requirement. Now I will have to update my own supply! The circuit above has a limitation in that the LM723 Data-sheet allows 2-7 V applied to the Non-invert input but you should use 2-6 V with the circuit above. Reading the LM723 Datasheet is worthwhile as it shows a number of configurations to meet different requirements.

20 years on the LT1086 was available. It made variable power supplies a doddle too, with only one fixed resistor and one variable. The datasheet does not give away so much about how it works. The give-away is the specification for the Adjust Pin Current (typ = 55 uA, max 120 uA). This tells you that it controls the voltage between Vout and Vadj by means of the current flowing at the Vadj pin. In manufacture it must use laser trimming on the chip (R1, R2 in my interpretation) before packaging to operate at 1.25 V. There are many transistors on the chip that may have some variation in gain during diffusion of the layers. The Vout Limit is 0.5 A. I have tested it with different loads (R8) and different Vout values (R6), as sufficient for my purposes. The Data-sheet also has an Applications Information section.

Using the LT1086CT



A low current power supply, a 150R resistor and a 2k pot is all you need.

Simetrix software does not calculate thermal effects. The transistors don't change characteristics with temperature. The gain changes with current. Much of the real circuit on a chip is managing thermal stability but is discarded in the examples the author created. The author does not provide specifications. Diodes don't melt with over current. There isn't a selection of 40A+ diodes but smaller diodes survive. The Voltage and Current Sources are very convenient but are made with discrete devices on a chip.

Another 10 years on the LM2940/1 (TO-220) low drop-out regulator appeared. It is like the earlier regulators except that it uses mostly PNP transistors. The low drop-out arises from the series output transistor base being pulled down towards ground so that the Emitter/Collector can approach saturation while keeping control. The datasheet provides a lot of explanation of use and a couple of examples. The author used it at Navman.

Yet another 7 years on the LP2950/1 (TO-92) appeared. It is also low drop-out. The datasheet provides specifications, explanation and many graphs along with block diagrams of function. The author used this in a home brew receiver for the NI Mountain Radio Service on 3261 kHz. Powered by 4 x AA batteries, the oscillator (NE602) at 5 V was likely to be more stable. Although a preamp ahead of the NE602 is not recommended, an MFE121 was used to much reduce the dipole length with a tuned network at the centre and 300 R ribbon to the radio. The MFE121 also lends itself to ADC control based on audio signal strength.

I hope that the readers are inspired to use these articles to design their own power supplies.

2N2222 is the Simetrix default NPN transistor.

Update to the Repeater @ Maddens Plains — Grid Reference QF55IS

What

- FM Simplex Repeater operating on 1296.850MHz - RF Power 20 Watts. - Vertical Omnidirectional Antenna of 11dB gain. - Person in picture at Maddens Plains, IARS President Rob VK2MT (Working hard?)

Where

Latitude: 34.27Deg South Longitude: 150.94Deg East - Height: 371 Metres above sea level. (Not including the height of the tower).

Purpose

The purpose for the development of this particular repeater is; To encourage interest and experimental development in the higher bands such as 23cm. It can be used to assist amateur radio operators to develop their own station transmitters, receivers, RF amplifiers, pre-amplifiers and antenna design. Test the operators experimenting with various modes. It is a beacon which can be used to monitor propagation on the 23cm band.

Basic Description

The general principle of the repeater is that it is simple. The transmitter stages consist of a 2 Metre exciter, followed by a transverter. The transverter has an IF input of 144.850 MHz, up to, but no greater than 1.0W or else it may be over driven. The RF output is of the order of 2.0W. The next stage is the RF PA of 25W.

The memory of the controller chip has been programmed to function for a period of 240 seconds (4 minutes) more than ample time to conduct any form of experimental test. The antenna is a vertical omni directional antenna with approximately 11dB gain.

Operation of the Beacon

Approximately every 10 minutes a string of Morse Code will be transmitted from the beacon. The interesting part of this Morse code is that it is part dynamic. There are two values which are actively monitoring the unit on site.

The first is the Temperature inside the cabinet in degree Celsius. The second is the system voltage currently at the repeater site. The Morse code message is structured as follows:

“”VK2RMP experimental beacon test QF55LR TEMP XX.X Deg SYSTEM VOLTS XX.X””

During the Beacon operation the Simple section will not operate. The beacon will not transmit whilst the simplex repeater operation is in progress and will wait until the simplex process is complete.

Operation Procedure of Repeater

It is a simple process after selecting the Repeater frequency.

1. Listen and wait 5 seconds if you hear anything.

2. Press your PTT once for 1 second, (no longer)

3. If a tail and beep comes back to you, you good to go.

4. If nothing comes back to you then it could be that your signal is not getting through OR there is someone using it but you may not hear them. (they could be far away) Remember Maddens plains has a very good coverage into Sydney, what it hears you may not and it is 23cm

5. You could try again after 30 seconds by going to step 2 and trying again.

Pressing the PTT quickly to see if it responds (similar to a duplex repeater tail) will not interfere with someone else's transmission, as long as the PTT is quick, and not multiple times, this could be annoying for someone trying to record.

Summary : One quick one second PTT should give you a Tail and a roger beep. If not someone is using the repeater OR your signal is not been received by the beacon.

If there was no response it may be good to wait for at least 30 seconds to see if the unit was in use. Preferably 150 seconds as it may be a SSTV transmission.

Once deciding to commence your transmission it is best to operate the PTT button for about 1 second before speaking or transmitting data of pictures.

The reason for this is to stop any clipping at the start of the transmission. The repeater has a 0.5 second noise suppression timer to avoid false triggering.

Once you release the PTT there is a one second delay before the recording stops and the current reception cycle is terminated, this is to allow for short signal drop off's during your over.

Without this timer, a signal drop off may prematurely terminate your over and begin re-transmitting what you have just transmitted, whilst you are still recording, rather messy.

After this one second delay the repeater will commence to re-transmit your over. When the repeater has concluded your transmission you will hear an audible 'Rodger Beep' of approximately 750Hz. It is after this Roger beep that a respondent or yourself may commence the next transmission. If you do not hear the 'Rodger Beep" wait until you do.

Please make the transmission long enough to finish the job and short enough not to cause any others to be impatient.

Remember to be patient - including hearing the "Roger beep" - and avoid any difficulties. When transmitting data modes such as RTTY or SSTV, ensure the transmission DOESN'T exceed the 240 second time window, because if you do, the signal will be unintelligible and fail.

Keep to the simple operating procedure and you will be able to enjoy our hobby that much more.

73 Notes by Rob Heyer VK2XIC Vice President.

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 ☐	Cheque ☐	Internet deposit ☐
Invoice/Statement required	*Please Advise Treasurer*		

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, 2nd Monday of the month or to the Committee meeting the 4th Tuesday of the month.
Privacy	Unsubscribe from Email Notifications ☐ — Do Not disclose contact Information ☐

Membership Renewal Form 2020-2021_v5_2020-09-08.pdf

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	Ruaotuwhenua	$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

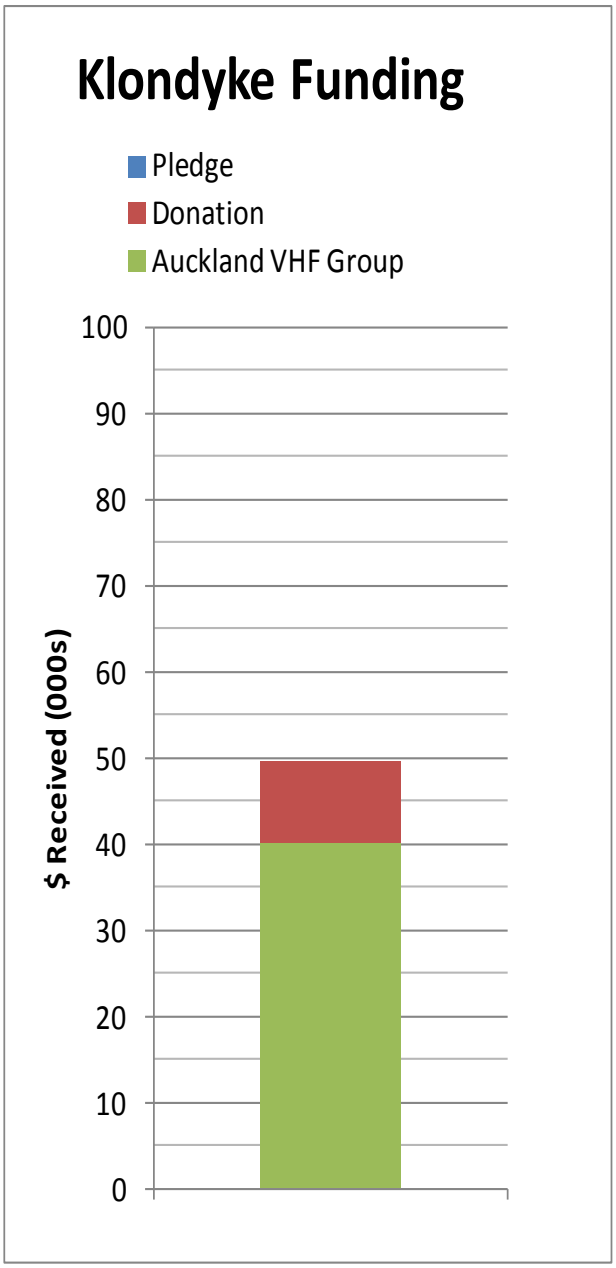
Total **$1,400.00**

Klondyke Tower
Donations towards Maintenance

Target **100,000**

Name		Donation	Pledge
Donations 2018 - 2020		8444.00	
Margaret Dingley	ZL1AYV	100.00	
David Dingley	ZL1TIA	100.00	
Jennie Dingley	ZL1TDB	100.00	
Yuri Muzyka	ZL1GYM	50.00	
Martyn Seay	ZL3CK	500.00	
Anne Walker	ZL1BFB	50.00	
Martyn Seay	ZL3CK	100.00	
Yuri Muzyka	ZL1GYM	50.00	
Dave Dingley	ZL1TIA	205.00	
Total		9699.00	-
Percent		9.70	0.00

Tower	63,245.00	Other	27268.25
GST	9,486.75		
Total	72,731.75	Total	27,268.25
Auckland VHF Group		40,000.00	40.00



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!

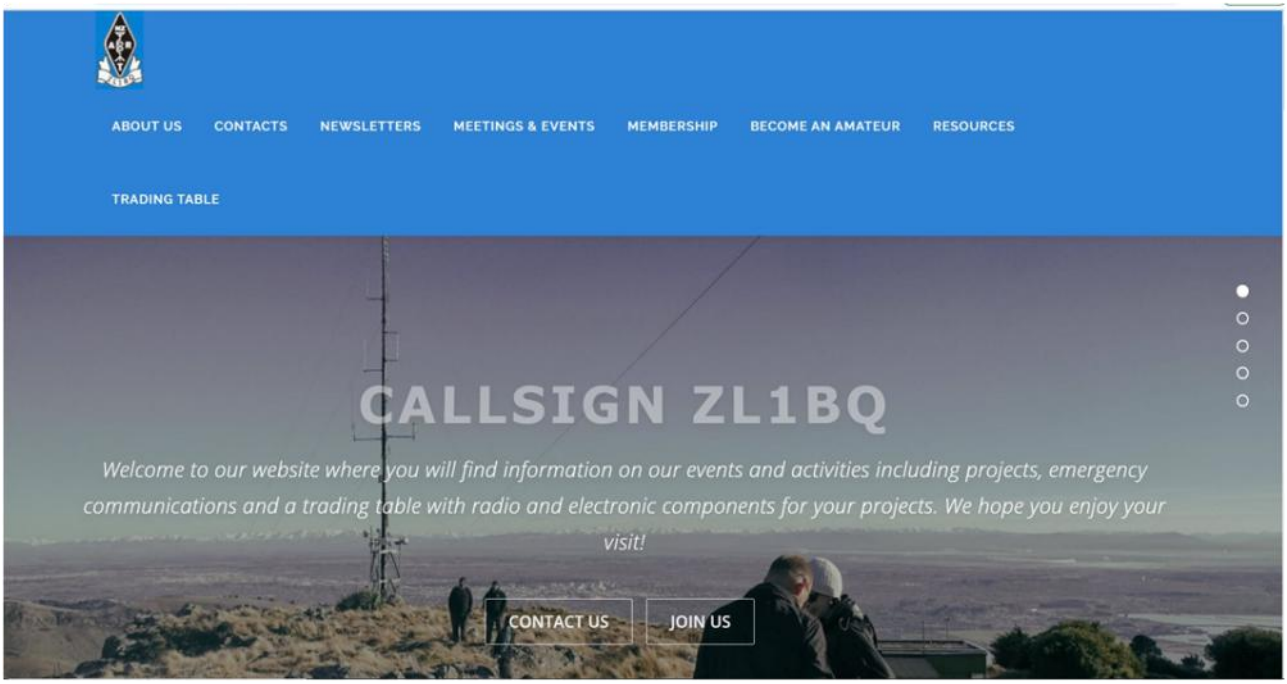
NEW – RG58C/U 50 Ohm Coaxial Cable. Thanks to a bulk purchase we are able to offer this good quality coax at a competitive price. The cable has tinned centre conductor and screen braid making it resistant to long term corrosion. The price is $2.00 per metre with a discount for purchases of 20m or more.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