

**The Official Newsletter of the
Auckland VHF Group Inc.
Spectrum**



The Bridge of a large vessel. At the other end is the small yacht with little space to find out where the wiring goes.

Taken from Vaughan Henderson's presentation on Marine Electronics

The General Meeting Notice + Working Bee — page 3

The President's Report — page 4

July Minutes + ATV in Wellington — page 6

Marine Electronics — page 9

50 Years Ago — page 11



Auckland VHF Group Inc.

Branch 66 NZART

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 Clubrooms: 30 Hazel Ave, Mt Roskill

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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

General Meeting Notice

Monday 9th August 2021 7.30pm

At the Hazel Avenue Clubrooms
(Located on the left at the end, 30 Hazel Avenue)

Meeting topic for August General Meeting

Construction Night

If you are having any problems with your current project, bring it along to show and ask the members about how to solve them

The meeting will conclude with our usual supper and time to chat over a cup of tea or coffee.

If you are unable to attend in person, we will have the meeting live via Microsoft Teams. Go to the Group's website at <https://aucklandvhf.org/> and navigate your way to "Meetings and Events" where you will find the link to join us on Teams.

Clubrooms Working Bee — Sunday 15 August from 10:00 am

Members are asked to help out for two or three hours on Sunday 15 August from 10am to tidy up inside the clubrooms and do a little bit of maintenance. We are installing new lights inside and will have our friendly registered electrician supervising the work!

In addition, weather permitting, would like to get the bulk of the Tait radio equipment currently stored inside the clubrooms out to the container. This will require making some space in the container by re-stacking and removing "junk" which we are unlikely to need. The "junk" will be free to take away!

Inside, there's a small amount of work left to finish off painting the back wall and get the light switches fixed back in place. Would also like to review the items of dead and unloved test equipment on the bench along the left hand side and dispose of those.

Coming Events:

- 21 August Hamilton Market Day at Gordonton Hall from 10:00 am

Auckland VHF Group Presidents Report August 2021

Not a lot to say this over. We all had the flu, which knocked me out for weeks and I missed both the committee and general meeting. As soon as I was on my feet there was farm work to do. This calving is the hardest time of the year, often working into the night with little time to prepare meals so we eat out often and don't get enough sleep. On top of that my yacht mooring owner has requested it back, so I am seriously hunting for one up Whangaparaoa/Mahurangi way.

The initial three element double disk 70cm aerial I built was slightly too small, so I have built a second one slightly larger. And I have revived the Vector Network Analyser I bought a year ago by disassembling and reassembling it. It must have dirty pin contacts. So this second prototype gives a reading of -30dB, but unfortunately at 381 MHz. Some more trimming is required!

As I write this Branch 29 is running another ham cram weekend. Good luck to all. And Hibiscus Coast Radio Club has its anniversary dinner later this month. The Lighthouse competition is fast approaching, too. I have brought the wood burning furnace ashore from the boat for repair, and I want that reinstalled so I can head off to some remote lighthouse and join in the fun. I have yet to set up HF on the boat, but have bought an antenna tuner at a junk sale. Ha!

At last week's committee meeting we discussed the upcoming construction night, leases for tenants on our sites, streamlining the AV gear at the clubrooms, lighting, insulating and alarming the rooms. An AREC newsletter has recently arrived, and we have an on line regional managers meeting this week, so things are coming together and we should start training and exercises in the next few months.

Cheers Matthew King
 022 6493310



Minutes of the July General Meeting of the Auckland VHF Group Inc.

Held on Monday 12 July 2021 at the Clubrooms, Hazel Avenue, Mt. Roskill

Meeting started at: 19:40

Present: 11 members as per the Attendance Book .

Visitors: Sam Dykes ZL1FBT, Ross Matheson ZL1RDM, Ross Boswell ZL1DRB

Apologies: ZL1YOT, ZL3CK, ZL1TIA

Minutes of June General Meeting – as published on page 5 of the July 2021 issue of Spectrum.

Moved the minutes were a true and correct record: ZL1UKG Seconded: ZL1TCI **Carried**

Matters arising: NIL

Reports:

Secretary – As part of the NZART Conference in Napier, delegates were asked to discuss a proposal regarding the size of Council. Currently nine, but Council are having difficulty filling a vacancy in the Northern District.

Proposal as per page 6 of July Spectrum:

Option one One Councillor NI, One in SI and three anywhere in NZ

Option two Five Councillors to be nominated from anywhere throughout New Zealand

Option three Two Councillors Northern, two in Central and two for the whole of the South Island.

Option four do nothing, remain status quo.

Following some discussion, it was moved by Basil ZL1TOW, seconded by ZL1UKG "That the Auckland VHF Group recommend to NZART Council, a preference for Option 3: 6 Councillors being two from the Northern District, two from the Central District and two for the whole of the South Island". **Carried**

Correspondence:

In – newsletters from North Shore Branch 29, Branch 65 Papakura Radio Club, Hibiscus Coast Radio Society and Musick Point Radio Group Inc..

General Business:

#1

Amateur Television in the 33cm band. Michael ZL1ABS presented a proposal to establish a 33cm ATV repeater at Nihotupu (Waitakere Ranges). Repeater output to be DVB-T format television on a nominal centre frequency of 921 MHz. Repeater input to be in the 23 cm band (1250 MHz). Having the repeater output as a DVB-T format signal means that standard domestic TV sets with a down converter from 921 MHz to an unused Freeview channel can be used. 33 element loop Yagi kits can be obtained from Directive Systems in the USA for \$US109.00. A suitable modulator can be obtained from Jim Andrews KH6HTV – price not known. Question of either building or buying a suitable power amplifier for 33cm. Discussion followed, would be useful to be able to stream TV material and re-broadcast (e.g. NASA TV). In response to a question, ZL1VH estimated the total cost of establishing the repeater would be about \$1500 to \$2000.

“Skinny Jump” suggested as a low cost internet connection (\$5 per month for 15 GB of data). Agreed more information to be published in next month’s Spectrum to allow a wider selection of members to have input.

Footnote: - The Skinny Jump website does not provide service to the nearest address, 479 Scenic Drive, Waiatarua. This is due to limited coverage and capacity of the cell sites in this area.

#2

Ross ZL1DRB drew members attention to ARRL Membership. For \$US49 per year, can get access to QST, QEX, NCJ and some back issues.

There being no further General Business, the meeting closed at 2035.

Guest Speaker Vaughan Henderson ZL1VH gave a presentation on Marine Electronics, looking at the current equipment available, some older systems and what happens when corrosion gets into the electronics on a boat.

Meeting closed at 2225, followed by a cup of tea/coffee and informal chat. Thanks once again to Margaret ZL1AYV for organising supper.

Reprinted from the Q-Bit magazine July 2021 issue

The latest Q-Bit from Wellington contains a good summary of the technical requirements which are outlined by Doug Ingham ZL2TAR. The Auckland VHF Group has permission to reprint it in Spectrum.

ATV in the 33cm (915 to 928 MHz) Amateur Band

©2021 J.D. Ingham

INTRODUCTION

NZART Council has given final approval to the 33cm Band Plan.

THE APPROVED NZART BAND PLAN

915 – 916 MHz Narrowband Repeater Inputs

916 – 917 MHz Point-to-Point Links

917 – 925 MHz Amateur Television – Analogue and Digital

925 – 926 MHz Standard 1 MHz wide Narrowband segment: beacons, simplex, contests, etc.

926 – 927 MHz Point-to-Point Links

927 – 928 MHz Narrowband Repeater Outputs

The existing Propagation Beacons in the 925 to 926 MHz segment continue unchanged. Already, there are several DMR-mode repeaters licensed to use the 915 to 916 MHz and 927 to 928 MHz segments, with more to follow. There is some interest in using 917 to 925 MHz for the output of an Amateur Television Repeater.

RADIO SPECTRUM MANAGEMENT CONDITIONS OF USE

The General User Radio Licence for Amateur Radio Operators, Dated 5th May 2016, contains the following General Condition for the 33cm band: +14 dBW Maximum e.i.r.p.

The General User Radio Licence also contains the following Special Condition No.7 for this band:

Amateur operators must ensure that unwanted emissions from 800-915 MHz must not exceed

-79 dBW (-49 dBm) e.i.r.p. The reference bandwidth for emissions is 100 kHz.
THIS IS 93 dB BELOW OUR MAXIMUM PERMITTED +14 dBW TRANSMIT e.i.r.p.

WHY?

An inspection of RSM's Licence database shows that 800 to 915 MHz is full of Cellphones, Point-to-Point Links and Land Mobile, all having very sensitive receivers.

MEASUREMENTS

Fortunately, John, ZL4JY, has access to specialised test equipment that is more sensitive than RSM's specified limit. He reports that the Professional DMR equipment being used by AREC in Q-Bit 7 June 2021 this band complies with Special Condition No.7.

AMATEUR TELEVISION REPEATERS

With the renewal of existing licences, and the creation of new licences, in the 502 to 510 MHz channel being "on hold", other options for the output frequency of Amateur TV Repeaters are being investigated.

Broadcast TV transmitters usually occupy the lowest available frequencies because this minimises propagation losses and transmission costs. Based on this philosophy, and the current unavailability of 502 to 510 MHz, 917 to 925 MHz seems to be least-worst option for the Repeater output, provided that the repeater's transmitter complies with the severe requirements of RSM's Special Condition No.7.

The repeater transmit polarisation is Horizontal. Most of the communication services on adjacent frequencies are vertically polarised. The resulting cross-polar isolation could be in the range of 10 to 15 dB.

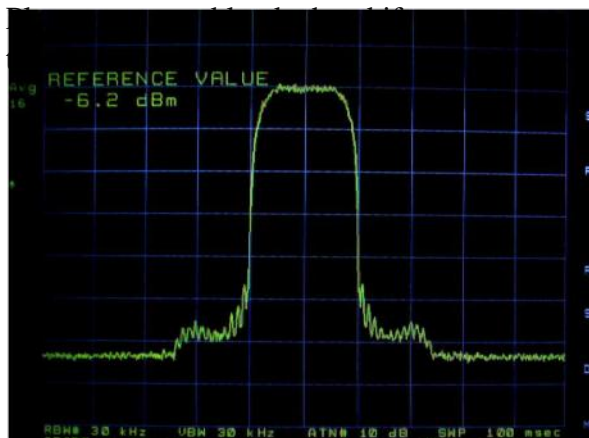
WHY NO RECEIVE (REPEATER INPUT) FREQUENCY ON TV REPEATER LICENCES

The answer is simple: The policy of Radio Spectrum Management is to not have receive frequencies on a television licence. More details of the repeater's input frequency, and modulation mode, can be found below.

THE REPEATER TRANSMITTER

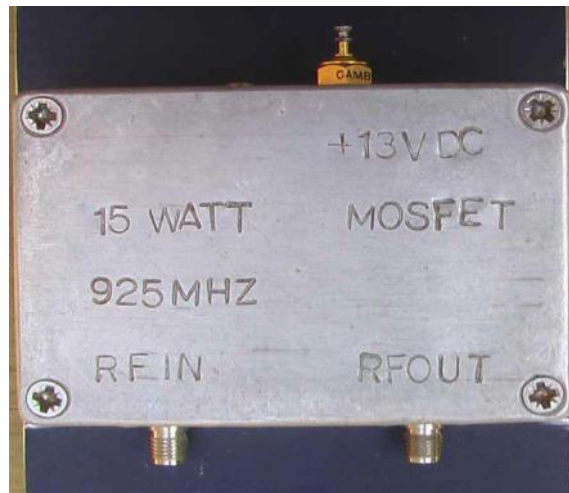
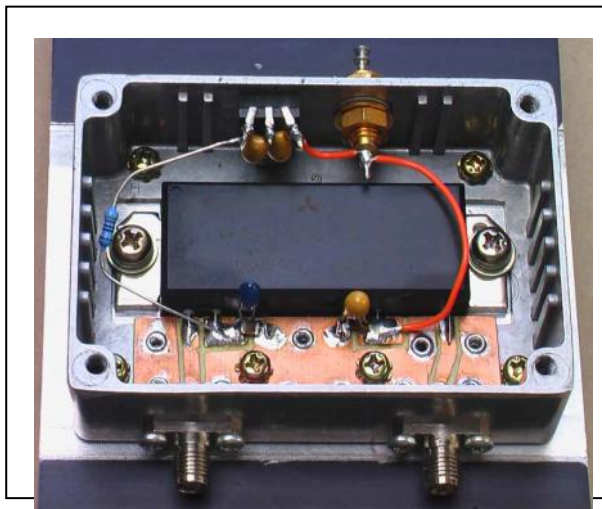
At this point, Special Condition No.7 needs to be considered. A DVB-S mode transmitter is simpler to construct and inherently produces less Out-Of-Band radiation than a DVB-T transmitter. Therefore, our repeater's first transmissions will feature the DVB-S mode. The spectrum photograph shows the output of a prototype 4 MHz wide DVB-S exciter, centred on 1284 MHz. The vertical divisions are 10 dB high; the horizontal divisions are 2 MHz wide. The spectrum of the prototype 4 MHz wide DVB-S 921 MHz centre-frequency exciter is almost identical. Note that there is an unknown

amount of radiation below 915 MHz. Unfortunately, it is invisible in the -63 dB noise floor of the spectrum analyser being used. A high performance band-pass output filter, and a tuneable band-pass filter for the existing spectrum analyser, or a better spectrum analyser, will be required, to confirm compliance with the licence condition.



It is likely that the parameters of our first 4 MHz wide 921 MHz transmissions will be: DVB-S mode with a Symbol Rate of 2950 kS/s, and FEC of 3/4. With these settings the theoretical emission bandwidth is 3.95 MHz. Horizontal Polarisation will be used.

The other two photographs show the outside and inside of the prototype 921 MHz power amplifier. The resistor on long leads, between the +5 V bias regulator and the RF module bias pin, adjusts the RF module's standing current for the best output linearity and minimum out-of-band radiation.



The heat sink is a 150 mm by 90 mm extrusion with 48 mm high fins. The power module mounting surface was milled perfectly flat by Leon, ZL2AOC. The diecast RF enclosure is 80 mm long x 55 mm wide by 25 mm high. It has a hole milled in its base so that the power module bolts directly to the heat sink.

REPEATER INPUT FREQUENCY

The proposed Primary input frequency and modulation mode is the same as that of the Belmont TV repeater:

1284 MHz centre frequency, DVB-S mode, Symbol Rate 2950 kS/s, FEC $\frac{3}{4}$. With these settings the theoretical emission bandwidth is 3.95 MHz. Horizontal Polarisation.

THE 23 cm NZART BAND PLAN

The 23cm Band Plan shows two sub-bands for All Wide Modes at 1240 to 1256 MHz and 1274 to 1290 MHz. The plan was originally designed to permit two, 16 MHz wide, FM-TV transmissions centred on 1248 and 1282 MHz, or a total of four, 8 MHz wide, conventional VSB-AM-TV transmissions. 1240 to 1256 MHz and 1274 to 1290 MHz are available over most of the country. However the Hawkins Hill Aeronautical RADAR is licensed to occupy 1244 to 1261 MHz, eliminating Amateur access to the 1240 to 1256 MHz Amateur TV sub-band around Wellington. Tests many years ago showed that excellent picture quality could be obtained with the 4 MHz RF bandwidth DVB-S mode, neatly dividing each 16 MHz wide sub-band into four 4 MHz DVB-S channels. The DVB-S repeater input is centred on 1284 MHz.

DVB MODULATION MODES

The DVB family has three main modulation types: DVB-S (S for Satellite), DVB-T (T for Terrestrial) and DVB-C (C for Cable). DVB-S is designed for weak signal reception, and is ideal for Amateur use. The transmission has a relatively constant envelope, simplifying power amplifier design and minimising out-of-band radiation. DVB-S has relatively low spectrum efficiency, typically 4 MHz being required for one high quality video channel when using the economy encoders that we can afford. The expensive encoders, used by satellite broadcasters, typically achieve a coding efficiency about three times better.

DVB-T is designed for the reception of signals that are about 10 to 15 dB stronger than DVB-S. The DVB-T envelope has a peak to mean ratio which is typically 8 to 10 dB worse than that of DVB-S, complicating transmitter power amplifier design and requiring output filters with a rectangular-shaped pass-band.

DVB-T has the advantage of being able to carry four times as many video channels as DVB-S. DVB-C is designed to maximise the possible data rate. It only works in the noise and ghost-free environment of a cable TV system. The relatively high cost of DVB-C encoders and decoders has caused many cable TV systems to use the DVB-T mode instead, with some reduction in programme capacity.

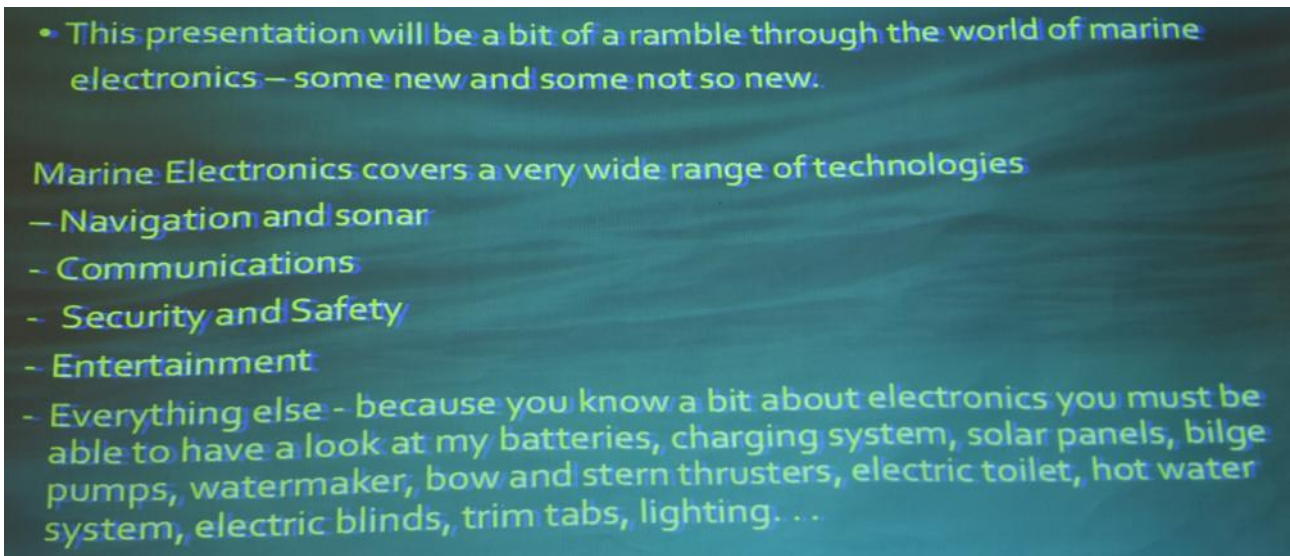
It seems that DVB-S is the most suitable mode for Amateur TV use.

THE REPEATER LICENCE

Radio Spectrum Management has granted Licence 291138. You will notice that it has three transmission emission designations, to keep our options open:

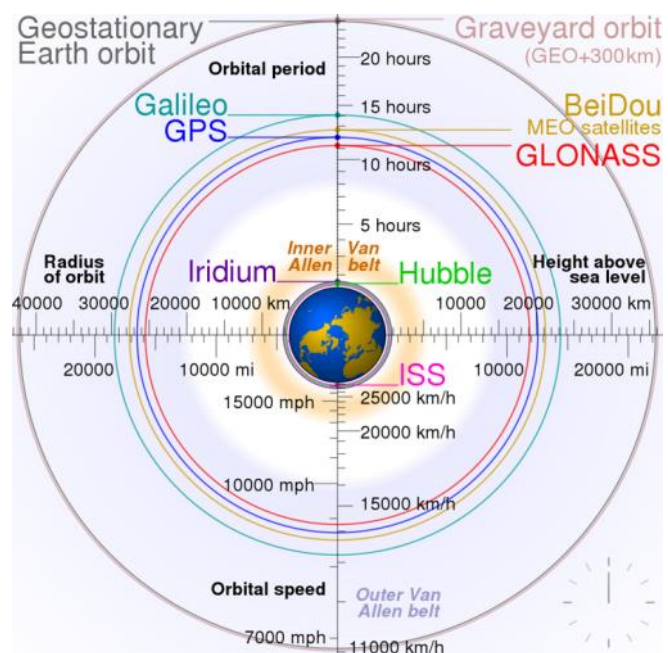
- 3M95G7WWX 4 MHz wide DVB-S
- 7M90G7WWX 8 MHz wide DVB-S
- 7M70D7WWW 8 MHz wide DVB-T

Vaughan Henderson on Marine Electronics



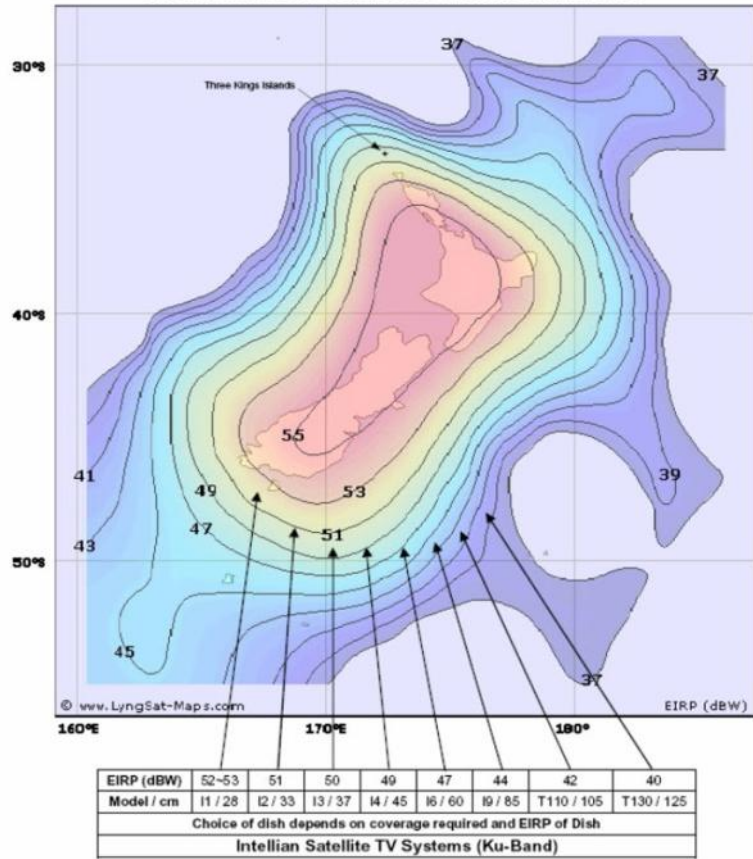
The work involves selecting, installing, commissioning, training the owner to use the item, maintaining them, diagnosing the faults and fixing them. It may involve more than plain Electronics like navigation, dealing with corrosion, safety and security.

HF and VHF Radios are only a small portion of the instruments you meet. Navigation is more important. There are now 4 different satellite systems. The satellites operate at different heights to avoid collisions. Once the Safety is taking care of, Entertainment can soak up much more of your budget. \$40—60,000 can easily be spent.



Television is broadcast by several satellite systems along with Internet services. This is one system that covers New Zealand. The diagram shows the signal strength in the vicinity of land.

**NEW ZEALAND SATELLITE FOOTPRINT FOR OPTUS D1
IN USE BY SKY TELEVISION AND FREEVIEW**



Salt water is the bane of Electronic Equipment. Below is the result of sea water leaking into the compartment with a large battery. Corrosion was rife, dissolving joints and connectors and even getting into the battery in this case. No wonder the winch was not operating. What awkward places these things can be located.



50 Years Ago in Spectrum

August 1971 Spectrum – meetings continue at the Auckland Technical Institute, Wellesley Street on the 2nd Monday of the month.

The President's Log notes that a number of Grade III licences had upgraded including several who had been "T" calls for some time. Among them were ZL1THX/ZL1BIZ, ZL1TBR/ZL1BKL/, ZL1THG/ZL1BKX, ZL1TBW/ZL1BLI, ZL1TAZ/ZL1BDY, ZL1TNR/ZL1AJL and ZL1TJG/ZL1BLX. He suggested that often successful exam candidates were being advised not to go onto the VHF bands with their Grade III licence because if they do, they will never get their morse. President Doug ZL1TFY believed that every Grade III licensee should ignore such advice and enjoy the use of that part of the spectrum for which they had qualified and the pleasure they would derive from VHF would be long remembered.

Saturday November 13th had been set aside for a VHF Mobile Rally. A visit to the Warkworth Earth Satellite Station had been arranged for Monday 6 September at 8pm. This planned visit already had 36 names and as numbers were limited, members were urged to let Carol ZL1AJL know as soon as possible.

Anthony ZL2AZJ reported via the Wellington VHF Group newsletter that their lecture for July was to be from Vern Lill ZL2TMI on the subject of receivers. Vern designs these for a living, and it was expected that those attending would be able to learn much from his knowledge of up-to-date ideas and techniques. The Group was taking orders for BLY35 transistors, available from EDAC surplus stock at a considerably reduced price. The transistors were capable of almost 15W output on 144 MHz FM and 8W on AM.

A discussion on the benefits of Frequency Modulation v. Amplitude Modulation continued with a letter to the Editor from Phil Howell ZL3RH asking about the ratio of the energy in the sidebands of an FM transmission to that of the average energy in the carrier.

In another letter to the Editor, Ralph ZL1TFE bemoaned the lack of activity on the 2m band and suggested, based on his reading of overseas amateur publications, that the solution was to establish a 2m repeater! He asked why the Auckland VHF Group was lagging behind in this area when there were a number of repeaters throughout the length of the country including Whangarei.

Part Two of a seven part series on the Waikato VHF Group's F.M. Repeater was presented by Ian ZL1TAT. The power supply circuit and design details; the front-end converter board from 2m down to the 10.7MHz I.F. and the metering circuit to monitor the charger current, battery volts, 10 V regulated rail and R.F. power output. All this information accompanied by a detailed circuit description and details of operation.

Graham Bender ZL1AHQ had part 2 of his design for a 10.7 MHz I.F. strip with details of how to mark out and drill the circuit board. He recommended using a sharp tool to mark all the hole positions, drill out the wire holes with a No 60 drill, and the coil former positions with a 13/64" drill. He gave a recipe for the flux used to coat the copper on the board before soldering: The best flux is made from a piece of rosin obtained from a musical instruments store. Wrap in cardboard and hit with a hammer. Place the powder in a small bottle and dissolve with pure methylated spirits – just enough to make a thick liquid.

The final technical note in the August issue was a diagram and description by Brian ZL1CJ on how to get both 750V and 250V from an AWA DC to DC Converter by using a bridge rectifier to get 250V and voltage doubling to get 500V and connect in series with the 250V output.



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	Ruaotuhenua	\$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		
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
		\$400.00	

2021-04-13, Donations for Refurbishment

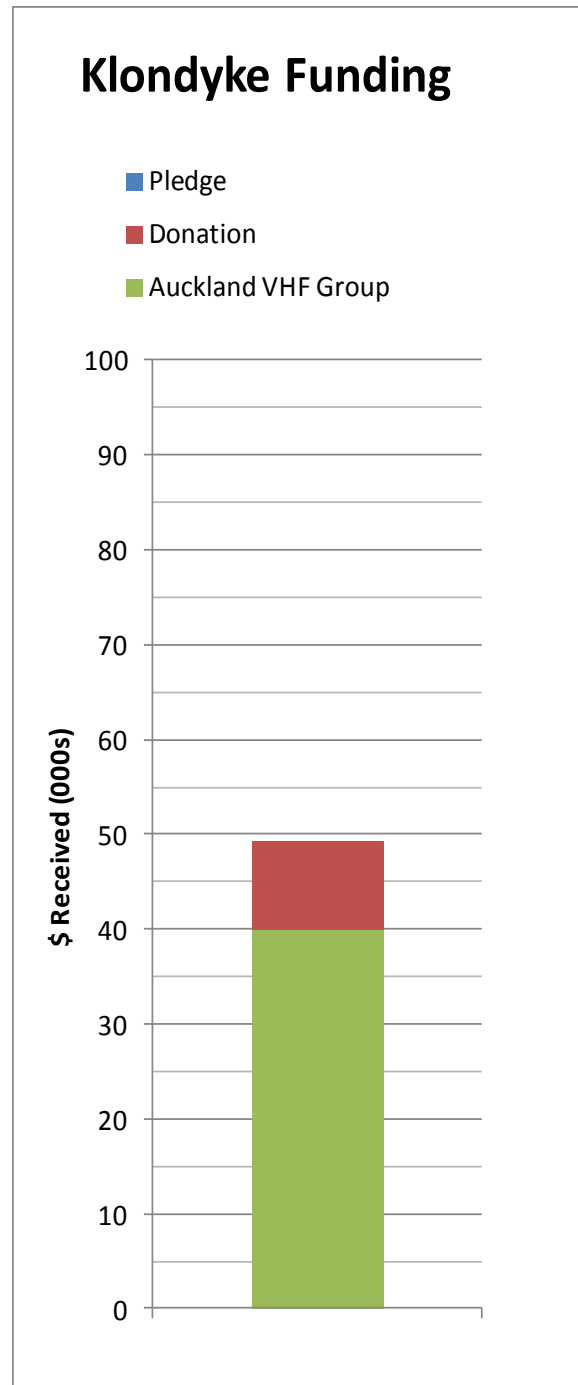
Auckland Branch	\$100.00
Manukau Radio Club	\$100.00
Brenton Faithfull, ZL1BBF	\$50.00
Papakura Radio Club	\$500.00
Ann Walker ZL1BFB	\$100.00
Soren Low ZL1SLK	\$100.00
	\$950.00

Total **\$1,350.00**

**Klondyke Tower
Donations towards Maintenance**

Target 100,000

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



Total	9394.00	-
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!

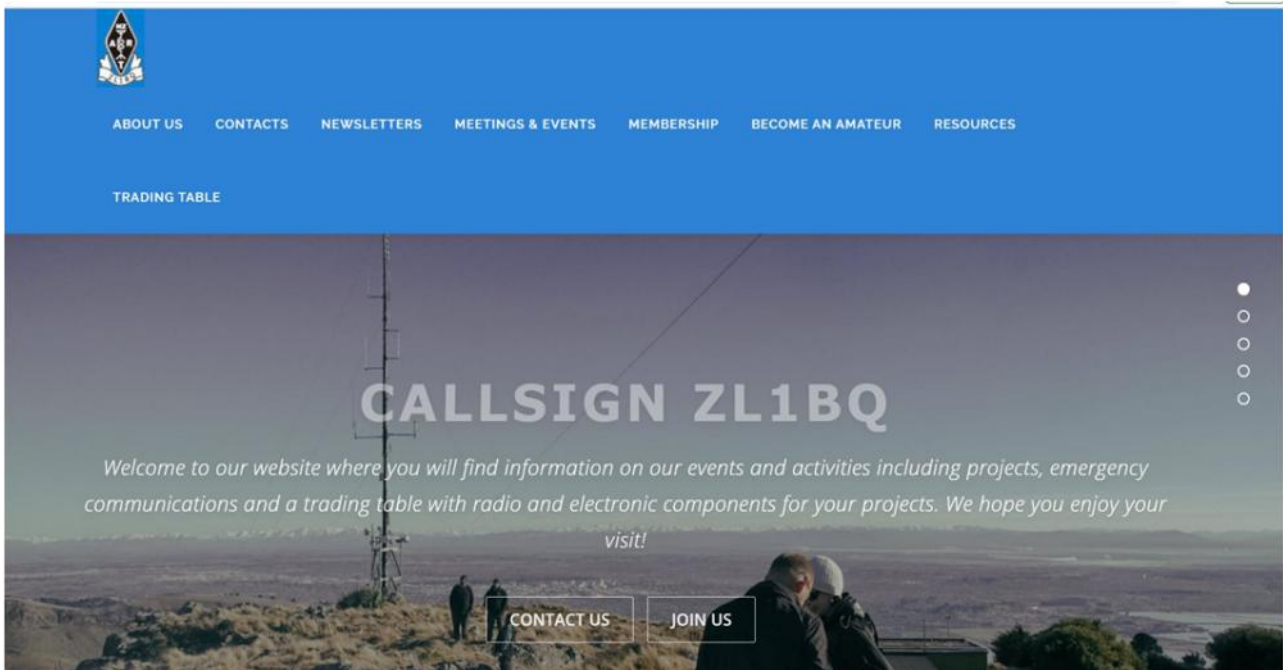
NEW – RG58C/U 50 Ohm Coaxial Cable. Thanks to a bulk purchase we are able to offer this good quality coax at a competitive price. The cable has tinned centre conductor and screen braid making it resistant to long term corrosion. The price is \$2.00 per metre with a discount for purchases of 20m or more.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