

THE WORLD BELOW

400 GHz

The Periodical Newsletter of the
WAIKATO VHF GROUP Inc.,
ZL1IS,
PO BOX 606,
Waikato Mail Centre
Hamilton 3240.



NZART
BRANCH 81

www.zl1is.info

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WAIKATO VHF GROUP EXECUTIVE

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General Meeting June 2022

The General Meeting of the Waikato VHF Group will be held on

Sunday, 26th June 2022, 1:30pm

at the Silver Fern Farms Event Centre, (aka Te Aroha Events Centre), 44 Stanley Ave, Te Aroha

Our guest will be Vaughan Henderson (ZL1VH). He will be talking about his company VH Marine and electronics install/repair in the marine environment.

The "WaiPlenty" 2m network on 146.950 will be monitored for anyone requiring directions.

A sub renewal/joining form can be found [HERE](#).

Meeting suggestions

- Please don't attend the meeting if you have cold, flu or COVID-19 symptoms, you should get a test. You must stay home until you get a negative result.
- Face masks are encouraged for those attending unless you carry an exemption.

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Repeaters/Beacons

The Waikato VHF Group owns and maintains a number of repeaters and beacons in the greater Waikato and Bay of Plenty area. These are available for sponsorship for a period of 1 year. Please see <http://zl1is.info/sites.html> for a list of repeaters, beacons & links that are currently available for sponsorship. If you are interested in sponsoring one of them, please contact our Secretary (ZL1GWP) or Treasurer (ZL1TAT).

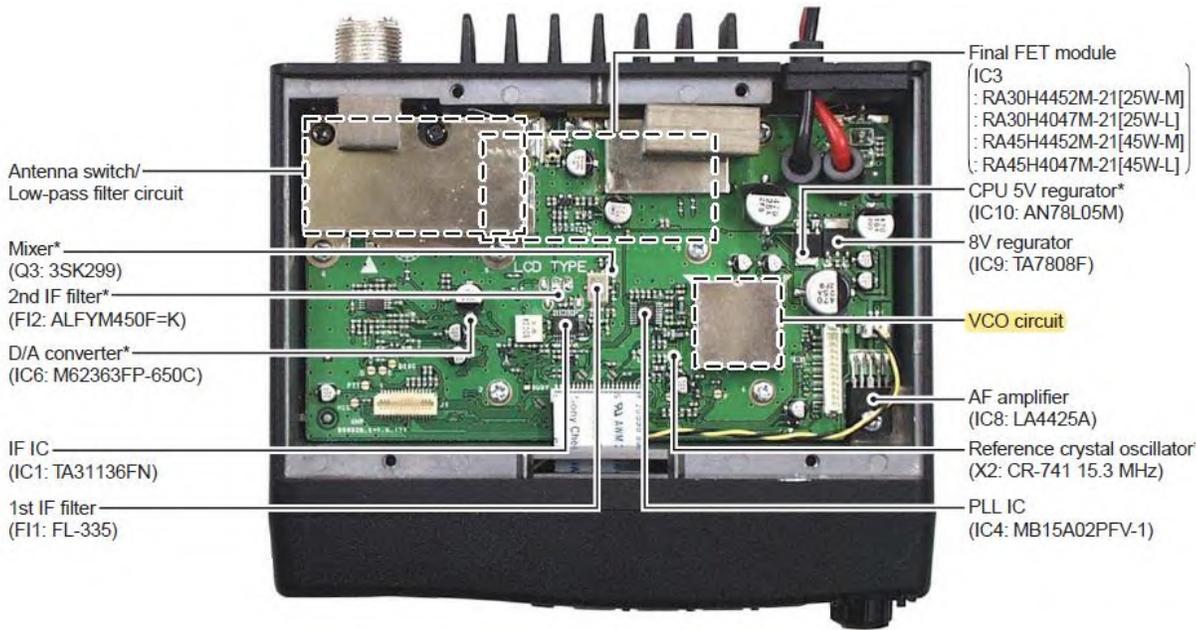
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WaiPlenty Repeater Network - News

Linking between TeUku '5675 and TeWeraiti '695 failed intermittently in early April, splitting the network in two. Around the same time, signal strength measured remotely from '695 was observed to have reduced. In both cases, it appeared antenna issues at TeWeraiti was the likely cause. Reduced field strength from at least one of the commercial channels sharing the same Tx antenna as '695 also resulted in customer complaints.

TeWeraiti was visited on 2 May by a maintenance contractor to investigate. Upon arriving at the site, they found a badly damaged four-dipole Tx array (used by multiple channels on site) plus the VHF Group's link Yagi facing TeUku had been destroyed by hardware collapsing onto it. Emergency repairs were carried out to substitute the Tx antenna array (most of which had ended up on the ground). Without a replacement Yagi to restore VHF Group link facing TeUku, a unity gain monopole antenna was installed, which has reduced the signal margin over that link path. Major repairs are needed to fully restore performance of all antennas on that mast, which probably won't take place until next summer. In the meantime, those emergency repairs have restored the WaiPlenty network to a four-repeater system.

While all that was being dealt with, IRLP node 6549's access into the WaiPlenty repeater network failed, due to the link transceiver at Hamilton having stopped transmitting. Investigation on the bench found its Tx phase-locked loop had drifted out of range, causing a 'no lock' condition to block the transmitter from keying up. The transceiver's PLL circuitry is contained within a solder-sealed can, which needed to be taken apart to gain access for adjustment. After re-assembling the link transceiver, it was soak tested on the bench for several days prior to being returned to service on 5 May.



Inside view of the transceiver used at the IRLP node in Hamilton
Source: Icom IC-F210S Service Manual

Who funds our repeaters?

The WaiPlenty 2-metre repeater network along with National System repeaters at Kaimai and Hamilton are funded and operated by the Waikato VHF Group Inc. These facilities don't run on fresh air, but rely on funds derived from **membership subscriptions and donations** to keep them on the air. Annual expenditure includes 14 radio licence fees, electricity and site access payments plus maintenance costs, which last year exceeded \$2000.

For less than fifty cents a week, members of our VHF Group support these facilities thereby helping keep them on the air. If your subscription has lapsed (you won't have been emailed a subscription receipt for 2022), or you know someone using our repeaters who's not currently a member (ask them), how about contributing a subscription payment. Simply complete the membership form included with this newsletter (below), scan or photograph it, and email to branch.81@nzart.org.nz to advise your details required to register your membership and reconcile with your payment.

INCORPORATED SOCIETIES ACT

114 years after the old Act came into force, new legislation is in the wings. The Incorporated Societies Act 2022 was passed on 6 April 2022, and will supersede the 1908 Act over the next few years. The new Act with 270 clauses (original had 37) introduces numerous changes, and

requires all societies like the Waikato VHF Group Inc. to reregister over a 2½ year transition period from October 2023 through to April 2026.

This new legislation will require us to review and update our constitution, although that doesn't need to happen until after the government releases regulations in 2023 developed under this new Act. In the meantime, you can read the new Incorporated Societies Act 2022 at: <https://www.legislation.govt.nz/act/public/2022/0012/latest/whole.html#LMS100813>

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KAIMAI BEACON FREQUENCY CHANGE

Our 2GHz beacon at Takaurunga (Kaimai) is changing frequency down to 2400.256MHz to comply with the new 12cm band plan. ZL1THG has QSY'd and bench tested the beacon, and it is likely to be back on site shortly after our upcoming general meeting.

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Early Radio History

Development of radio technology mostly refers to events around the beginning of the twentieth century. However, discoveries enabling development of radio extended back some seventy years earlier to 1830's as set out in https://www.pbs.org/tesla/res/res_radtime.html

For a more detailed history of radio, see https://en.wikipedia.org/wiki/History_of_radio

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Dambusters 80th Anniversary

Hello My name is Robert, I am the Vice President of the vhf group at wireless hill Perth WA. Next year is the 80th of the Dambusters Raid. March this year UK, Canada and Australia remembered the first sortie by the Lancaster bomber with a special event call sign in all three countries. Gb80lan, ve80lan and vk80lan. The organisers of that event have been asked if we could do the same for the Dambusters. As there was crews from New Zealand the invitation join in the event was put forward, hence this email. Looking for someone to organise the event in New Zealand. We will give as much assistance in the headaches that come with it. We are looking for a individual or club which would be better, spread the headaches, to organise things in New Zealand That is if they wish to take part. Need more information please get in touch. Rob Vice President of the vhf group Perth Australia Keep safe

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Silent Key

Murray Greenman ZL1BPU by ZL1NUX

Murray was well known for his Digital Modes Column in "Break-In" and won awards for the quality of his work, He received awards in 2017 (presented by Richard - right) and in 2021 also received the best technical article award. Murray spoke at several club meetings on a variety of topics, and these were always well received by members.

My memories of Murray include visiting his home in Waiuku to "expand my knowledge" about the "Other" HF bands, where he introduced me to the low HF frequencies, and of course the digital modes such as whisper, he also showed me his extensive collection of radio receivers, sadly my wife also discovered

his love of brass bands, and they shared a lot of time discussing his other passion of music. He was to later help one of my sons who joined a brass band where Murray also taught.

He is a loss to both music and amateur radio and will be missed by many. Gavin ZL1NUX

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Single Sideband on 2 Meters: The Other VHF Mode

Most new hams get started on the ham bands using FM, with 2m and 70cm being the most popular bands. This is a great way to get started using VHF simplex and repeater communications. FM is the most popular mode primarily due to the wide availability of FM repeaters. These repeaters extend the operating range on VHF and enable low power handheld transceivers to communicate over 100 miles. FM is also used on simplex to make contacts directly without repeaters.

The main disadvantage of FM is relatively poor performance when signals are weak, which is where SSB really shines. A weak FM signal can disappear completely into the noise while a comparable SSB signal is still quite readable. How big of a difference does this really make? Perhaps 10 dB or more, which corresponds to one or two S-units. Put a different way, using SSB instead of FM can be equivalent to having a beam antenna with 10 dB of gain, just by changing modulation types. So this is a big deal and radio amateurs interested in serious VHF work have naturally chosen SSB as the preferred voice mode. (You may also hear them using Morse code or CW transmissions, which is even more efficient than SSB.)

Frequencies

The bottom of the VHF band has been allocated with 2 SSB calling frequencies, 144.1 for Oceania DX calling and 144.2 for ZL calling (144.5 is also allocated for FM calling along with 146.675) once a contact has been made any other frequency up to 144.25 can be used for the QSO. 144.3-144.575 is also available for all modes if there is no space left due to busy SSB operations (Very Unlikely). Most operators will by convention use USB, but there is no reason you cannot use LSB if you prefer, but others may have trouble understanding you.

In the 70cm band (if you are lucky enough to own a rig that does SSB at 70cm) 432.1 for calling outside NZ and 432.2 for inside NZ are allocated but without specifying modes, So I guess SSB is ok there too. Check the band plan for frequencies so you can avoid the beacons. Also remember that both of these are up for review, so hopefully we will see a draft version before the committee finalises these to make room for newer digital modes. Also remember, we are to be frequency agile to avoid licensed spectrum, and other users who also have rights to operate.

Equipment

The required equipment for getting started on 2M SSB is pretty basic - a transceiver capable of 2M SSB and a 2M antenna.

The 2M antenna you already have is probably vertically polarized since that is what we use for 2M FM, both mobile and base stations. All of the 1/4-wave and 5/8-wave antennas that are commonly used for 2M mobile work are vertically polarized. Most omni-directional base station antennas are vertical, too. These antennas will work for SSB but most of the really active 2m SSB stations will be using horizontally polarized antennas.

Vertically polarized stations can work horizontally polarized stations but there will be a substantial signal loss (about 20dB). If vertical is all you have, then give it a try. If you can get a horizontal antenna, then your results will be much better.

But chances are you will find others who also are trying SSB will also use a vertical, so you will not be alone in operating with a less than perfect setup.

So if you're ready for a change of pace, flick the knob (or push the button) and try the SSB mode. You never know what might happen.

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“WAIHI NORTH”

‘5475 Repeater

installed 317m ASL 7.8km north-east of Waihi



Electricity Check Meter measures consumption by VHF Group equipment. AC Surge Suppressor to right.

‘5475 Repeater, with Te Weraiti facing link module inside

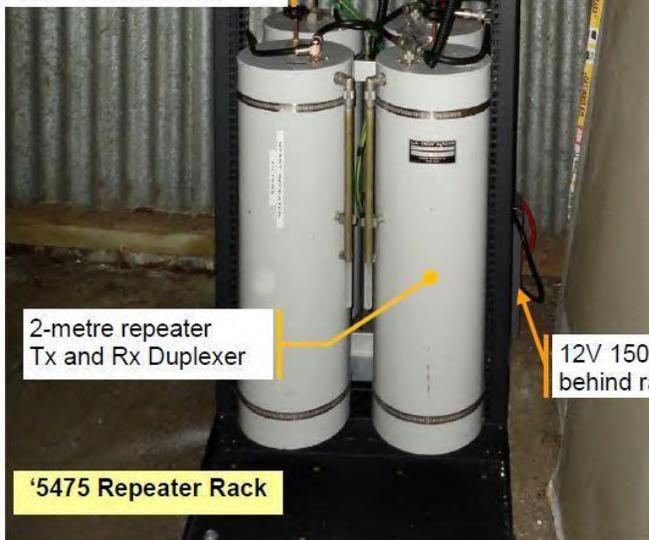


Max/Min Thermometer

Repeater Tx Isolator plus Link UHF filter behind this panel

Power Supply & distribution shelf

Antenna feeder termination, Coax Surge Arrestors, rack Earth Connection and band-splitting Diplexer behind



2-metre repeater Tx and Rx Duplexer

12V 150Ah Battery behind rack

‘5475 Repeater Rack



Mast from South



Dual-Band Colinear Antenna atop 6.5m purpose-built mast



Repeater rack is protected inside a ventilated Dust Cover with viewing window in front



Outlook south from ‘5475 site

Tauranga Harbour

Mt Maunganui

Whakatane

Bowentown & Waihi Beach

Kaimai Ranges & Te Weraiti

