

THE WORLD BELOW

400 GHz

The Periodical Newsletter of the
WAIKATO VHF GROUP Inc.,
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WAIKATO VHF GROUP EXECUTIVE

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November General Meeting 2016

A General Meeting of the Waikato VHF Group will be held on
Sunday, 20th November, 2016 at 1:30pm
at the NZ Fire Service National Training Centre, 67 Te Huaki Cres, Rotorua.
See website - <http://www.zl1is.info/meetings.html> - for location map.

This will be a guided tour of the facility by Peter ZL1PR

Rotorua (Branch 33) members also very welcome
Non Members and visitors most welcome.

Items from Committee Meeting:-

1. KAIMAI - A working bee is to be held at the Kaimai Hut in February, on the 14th or 21st or 28th. This site, on the ridgeline of the Kaimai Range, is rather exposed and weather can be rather nasty at times. This is why we've selected 3 possible dates for the work with the hope that one of them will have suitable weather. Painting needs to be done, roofing iron needs some maintenance, aerials need checking, etc... Helpers are appreciated; please contact Gavin (ZL1GWP) at gavinwp@ihug.co.nz to verify the actual date or for postponement information.

2. SUBS - Numbers of subscriptions are down a bit this year. If you don't remember if you have paid yours, please contact Gavin (ZL1GWP) at gavinwp@ihug.co.nz

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VHF Group fundraising:-

You may be aware that Kevin (ZL1UJG) has been running our sales tables for many years. He has stepped down from that role which prompted the following letter of gratitude :-

Greetings Kevin

We acknowledge your email that you will no longer be raising funds for the Group through Branch 12 and Branch 89 Market Days.

Members of the committee, along with members of the Group, wish to sincerely thank you and appreciate the time and effort you have given over the years, in raising many \$100's for the Group.

Regards

Gavin Petrie (ZL1GWP)

Secretary

Waikato VHF Group

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Amateur Radio 5 GHz to 10GHz Lunar Transponder Mission planned for September 2018

AMSAT-NA plan a satellite carrying transponders for 5 GHz to 10 GHz that is expected to launch into a Lunar orbit in September 2018.

Heimdallr is a 3 axis stabilized 6U CubeSat with a mass of approximately 8 kg. It will have a Cold Gas Thruster for inertia dump and a star tracker for navigation. Deployable, gimbed solar panels will produce up to 100 watts of DC power, electric propulsion will be used to achieve lunar orbit.

There will be a combination of omni and directional patch antennas on one side of spacecraft.

The first part of mission is to provide Telemetry, Tracking, and Command (TT&C) to obtain lunar orbit. The second part is to perform the data downlink experiment while the final part is to provide a two way regenerative repeater and analog repeater in lunar orbit for lifetime of satellite.

Proposing these downlinks:

- Omni transponder: 10.451 GHz +/- 0.5 MHz
- Directional transponder: 10.4575 GHz. +/- 3.5 MHz
- Analog transponder: 10.4665 GHz. +/- 2.0 MHz

For the first part of the mission (TT&C) using 300 bps BPSK 1/2 rate viterbi Ranging 1.5 Mbps BPSK DSSS. For the second part of mission 4.5 Mbps QPSK $\frac{1}{2}$ rate DVB-S2. For the final part of mission 25 kbps BPSK 1/5 rate DVB-S2.

Proposing these Uplinks

- Omni transponder: 5.651 GHz +/- 0.5 MHz
- Directional transponder: 5.6575 GHz. +/- 3.5 MHz
- Analog transponder: 5.665 GHz. +/- 2 MHz

A link budget is available at

<https://drive.google.com/folderview?id=0B3u-mSOWBMISYnZyZGJpeThKeU0&usp=sharing>

It is anticipated that a 1 or 2 metre dish will be required using the AMSAT designed ground station equipment.

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Hand-carried QRP antennas (VK3YE)

More amateurs than ever are enjoying HF portable operating. Whether transmitting from a SOTA peak, national park, beach or motel room, success requires an antenna that's easily carried yet delivers good performance.

Of all topics that could be in an amateur radio article or video, my experience is that those on antennas are the most popular. With so many different types and variants it's understandable that they also provoke the most questions. Manufacturers may muddy things further with performance claims of varying veracity.

Antenna construction is full of compromises. There are some that you can get away with and some which you can't. It's sometimes hard to know the difference. This is especially when there are further requirements like needing an antenna that folds up small for carriage yet can be put up and taken down quickly.

Here are three thoughts on portable antennas.

1. Imagine yourself using the antenna

Think hard about what you'll take, where you'll be and who you will work while portable. This includes details like time of day, frequency and distance. There is no one 'good' antenna and different types have their pros and cons for different paths and distances.

Getting an idea of what you want to work (eg within ZL or mainly DX) will help narrow down your antenna choice. I also suggest looking at the results of others who have gone portable with QRP to get

an idea as to what is reasonably achievable. If you don't you may get discouraged by pursuing an aim with a low chance of success. The many QRP operating demonstrations on YouTube can help sort the achievable from the fanciful.

2. It's hard to make an antenna appreciably better than a dipole but easy to make one that's inferior.

Yes you can try, but for now I suggest getting set up with one or two practical and reliable antennas on busy bands such as 40 and 20 metres. They don't have to be dipoles though; if you find one that gives close to dipole performance but is much lighter and easier to erect then that's a win in my book. More elaborate antennas can be tried later, and by then you'll have had operating experience to determine whether it's really much better or not.

3. Material selection and construction are important

Antennas may be electrically similar but how they are built and what materials they use greatly affect their portability. You may even choose to buy an antenna because it's more robust than one you could build yourself. But for portable operation be careful that this does not mean greatly increased weight. Because if you have to carry everything by hand to your operating site before long you will be cursing your antenna choice and yearn for something lighter.

Hand-carried QRP Antennas is a new book that covers these and other points in more detail. After inviting you to assess your needs, it discusses the pros and cons of popular antenna types. A separate chapter gives ideas on materials suitable for portable lightweight antennas. Finally there's construction details on a variety of simple but practical antennas and accessories suitable for portable and pedestrian mobile operating. All have been built and tested by the author over almost 30 years of successful QRP activity.

Hand-carried QRP antennas is brisk and practical with almost no maths. It's available in ebook form readable on most devices. It's the author's second book, following on from the popular *Minimum QRP*, released in 2015.

More information: <http://home.alphalink.com.au/~parkerp/handgrp.htm>

Facebook page: <https://www.facebook.com/vk3yeradiobooks/>

YouTube: <https://www.youtube.com/watch?v=imFk17gARiA>