THE WORLD BELOW 400 GHz

September 2010 Issue

WAIKATO VHF GROUP EXECUTIVE

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General Meeting September 2010

A General Meeting of the Waikato VHF Group will be held on
Sunday September 5th, 2010 at 1:30pm,

The Venue is at the Tauranga Coastguard at Sulphur Point, and the meeting room booked is behind the radio room. As you go into the Sculpture Point Marina area, it effectively has two car parks, the division in the middle has the Coastguard on the right. Enter the front door, immediately inside on the right is the radio room and the door on the right after it enters the meeting room. See location map on club website at – www.zl1is.info/meetings.html

The speaker will be Kevin Murphy, ZL1UJG, who will be speaking on
The Signal Hound Spectrum Analyser,
and if sufficient time WSPR (Weak Signal Propagation Reporter)

News Items from last Committee meeting:-

Te Uku – notch filter installed ahead of '5675 receiver. Has stopped brief bursts of interference.

Te Weraiti – approval has been given to establish '695 on this site. New Icom FR5000 repeater equipment to hand.

FMTAG – applications submitted for relocation of '695 & IRLP link, plus request for new link between Te Weraiti & Te Uku.

Beacons – licences have been issued for the 3 Hamilton beacons on the new frequencies.

Licences & 840 – when the licence falls due in September for '840 Te Aroha, it will not be renewed, so will be turned off permanently.

Funding – committee looking for sources of funding. Please contact committee with any ideas.

General Meeting – the next general meeting to be held at Branch 39, Tauranga club rooms at Tauranga Coastguard, on Sunday, 5th September, at 1.30pm.

Funding for Repeaters

As all members will know, the Waikato VHF Group is to loose access to the Te Aroha Kordia repeater site in early 2011. With the shut-down of the 695 repeater imminent, we have therefore commenced a project to establish a new linked repeater network aimed at providing coverage even better than that currently experienced from Te Aroha.

A great deal of work has gone into this project, and the first stage, the complete re-building of the Raglan repeater and relocation to Te Uku has been completed. The next stage is the building of a new repeater on the Kaimai Ranges at Te Weraiti. This second repeater will operate on 146.950 MHz, so will go live when we have to shut down Te Aroha. These sites include linking radios and control and voice bridges to join our proposed wide area network, and keep the IRLP connection.

Your committee resolved to use new radio equipment for these core repeaters to establish a sound reliable installation that will last many years, and through prudent management of our available finances, have been able to complete all purchases from existing resources.

We now move to the next stages, the establishment of repeaters in the north Waihi area and the North-West Waikato, and we need to seek funding sources. There are a number of possible sources for grant and subsidy funding for bodies of our nature, but what the Waikato VHF Group needs now is an individual with the enthusiasm to research funding opportunities for our club, identify precisely what detailed information is needed for each, and assist the committee prepare the applications. This volunteer would not be expected to handle the full applications, just to co-ordinate research and collate response information.

If you are keen to assist us develop the best wide-area linked repeater system in the country, and have some time available for internet searching and making some phone calls, please consider putting your name forward to the committee for this role. If you would like more information, contact any committee member, or directly to Gavin our secretary zl1gwp@nzart.org.nz

Alan Wallace, ZL1AMW

President

For those not attending the talk, this is a short article on the topics.

SignalHound

The Signal Hound is a USB powered Spectrum Analyser, using a PC as the control/display. The unit covers from 1 Hz to 4.4 GHz and has filter bandwidths from less than 1 Hz to 250 kHz. (There is also a 5 MHz filter bandwidth). Using technology similar to that used in Software defined Radios (SDR) there are many features available, that wouldn't normally be on a unit in this price range.

The first version of software had basic graphics, but good features. The second version of software currently in Beta mode, gives displays that rival those on much more expensive units.
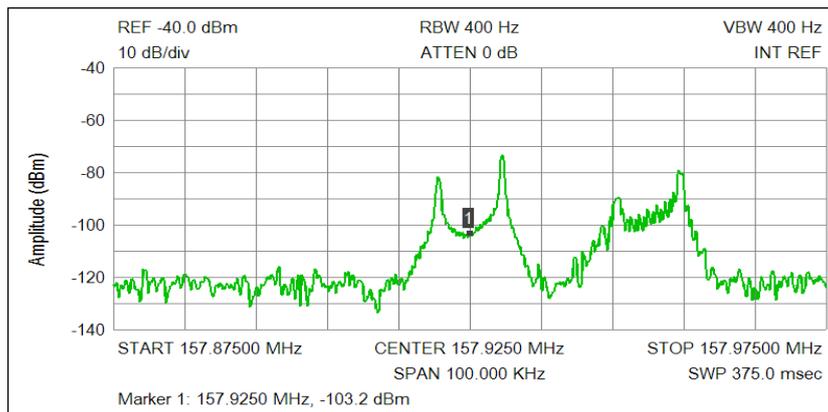
Displays can be saved and added to Documents. The image at left is two VHF transmissions that were received with a short antenna. With the addition of a medium power attenuator, one can look at a TX. Demodulation is also available, and host of other features.

www.signalhound.com

There are other types of Test equipment that are powered by the USB and use a PC as the display. Other examples are Network Analysers, Oscilloscopes, DVM's, Counters

WSPR

WSPR is a digital mode developed by Joe Taylor K1JT. The transmitter and computer sends a low power narrow - bandwidth signal (6Hz) which is decoded by other stations around the world. The transmissions include Callsign, Maidenhead locator and power. This information can be uploaded to the internet in real-time and give propagation information. There is no need for lots of power, as the software allows signals buried in the noise (~ 30 dB BELOW the noise level in a 2.4 kHz bandwidth) to be decoded.

http://physics.princeton.edu/pulsar/K1JT/wspr.html
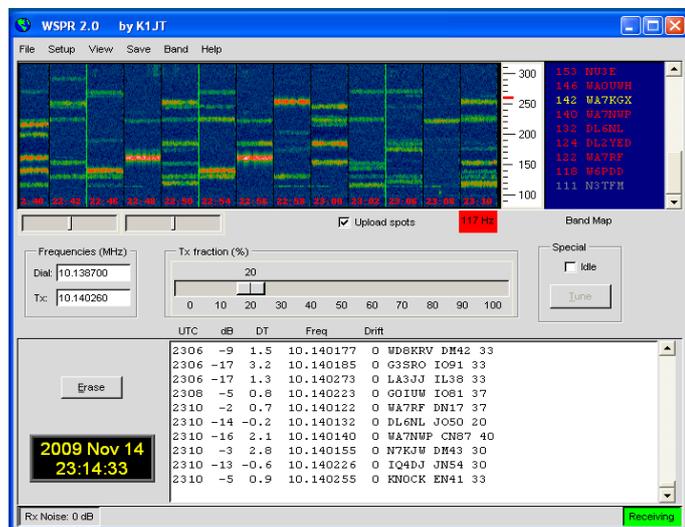
The image at left shows a typical WSPR screen.

The scribe has experimented with 1 Watt on the 30m band and has been received in Europe consistently, with similar reception of European stations. The antenna was ~ 10m of wire about 2m above ground. As I mentioned before the transmission is 6 Hz wide, and the bandwidth for this activity is 200 Hz wide!! So one has to know ones frequency accurately and have minimal drift. Having said that, a workmate is experimenting with frequency stabilizing his elderly Yaesu FT101B with an X-lock. The difference in frequency drift is amazing.

http://www.cumbriadesigns.co.uk/x-lock.htm

There are other methods of generating stable oscillator signals such as with a Si570 IC
http://www.qsl.net/k5bcq/Kits/Kits.html
WSPR allows lots of experimentation such as improving ones antenna, frequency stability, frequency readout and using a computer with your radio.
Just below the WSPR frequencies, QRSS is used (Slow CW) where the CW can be received visually as the sending can be very very ssssllllllooowww....
When using PC's with radios, it is recommended that an interface is used to reduce the probability of having mains hum loops. This consists of a few audio transformers for AF isolation and an optocoupler (and possibly an additional transistor) for PTT.
The scribe uses a PCB that was previously available through the VHF Group. WSPR can run on a small laptop such as a Netbook. The scribe found out that the microphone/headphone connector on his netbook is a single connector so an adaptor was required.

When using the PC with the radio on HF, it was found there were effects from RF getting to the hardware and Vice versa (Electromagnetic Compatibility or EMC) and tying the hardware grounds together and use of ferrite chokes helped.
Some hints.
Run a short cable from the equipment to external ground (if possible) otherwise one could try using a counterpoise.
Tie all unit chassis' together.
Note some budget DC Power Supplies have the case earthed, but the DC Negative is floating.
Looping the DC cable of the little PC SPMS through a ferrite choke reduced interference.
Looping other DC cables (Transceiver, ATU) through ferrite chokes helped.
Doing this enabled full operation of the Netbook, while transmitting, while previously it was virtually unusable.

Of course with a PC to Radio interface, many other digital modes can be experimented with, not only on HF, but on LF, VHF and UHF frequencies as well. I made different cables for my homemade interface so it could be used with different transceivers/receivers. If one has access to Rx audio before the volume control on the Rx or Transceiver, then the audio output level will be fixed in level (when above AGC threshold).

Hamilton Market Day
The scribe and Tom ZL1THG manned the tables during the recent Branch 12 Market day, held in a new venue in Hamilton. The day was quite wet, but there were many hands and trolleys available to get ones items into the building. There was a good turnout and the table was frequented by many people during the day, with sales occurring from very early on, even to when the scribe was packing up. Although there were no big ticket items on display, about $175 was raised with on the day sales.

DON'T FORGET THE 'NEWS & NET' ON '695 AT 8.45PM, EVERY SUNDAY EVENING

Also check out the club website at – www.zl1is.info – you never know what you may find.
Items for the website always welcome. Please forward to - branch.81@nzart.org.nz