

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

MAY 2010 ISSUE

WAIKATO VHF GROUP EXECUTIVE

President	Alan Wallace	ZL1AMW	07 843 8738
Vice President	Morris Beale	ZL1ANF	07 884 8416
Secretary	Gavin Petrie	ZL1GWP	07 843 0326
Treasurer	Ian Brown	ZL1TAT	07 847 3709
Projects	Tom Bevan	ZL1THG	07 846 5425
Committee	Phil King	ZL1PK	07 847 1320
Committee	David King	ZL1DGK	07 579 9930
Committee	Neill Ellis	ZL1TAJ	07 576 7876
Committee	Kevin Murphy	ZL1UJG	07 847 0041
Editor	Kevin Murphy	ZL1UJG	07 847 0041

General Meeting May 2010

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

at the St. Stephen's Presbyterian Church Hall,
cnr. Ohaupo Rd. & Mahoe Str., Hamilton.

The speaker will be Kevin Murphy, ZL1UJG, who will be speaking on
The Minikits EME175 Oscillator and the EME72B 1296 MHz transverter.

The Te Aroha 146.950 MHz repeater will be monitored for anyone requiring directions.

RAGLAN - 145.675MHz Repeater

In the last few months this repeater has changed sites, due to the construction of a power generation wind farm in the vicinity of the previous building. The new site is nearer to the top of the Raglan deviation and gives much better coverage into Hamilton, while still retaining most of the coverage that was available from the previous site. New radio equipment (Icom FR5000) was installed in late April, in time for the repeater to be used for the World Car Rally Championship in early May. This site will eventually be linked to a new site that will replace Te Aroha 695 when the time comes to vacate the Kordia building on Mt Te Aroha. This will also include relocating the IRLP node to Raglan as part of the re-arrangements that will be taking place over the next 12 to 18 months. Details of the new Raglan site can be found on the Waikato VHF Group website at:- www.zl1is.info/raglan.html

NATIONAL SYSTEM

The National System, south of Christchurch, was disconnected around 10:15am on 11th May, due to intermittent noise. It is to stay disconnected until such time as the problem is located and repaired. As of 18 May it is still disconnected. Indications are that there is a problem with the duplexer.

ITEMS DISCUSSED AT THE APRIL COMMITTEE MEETING

Raglan Repeater: New radio equipment has been installed at Te Uku

Other Repeater Sites: progress is being made on a replacement site for Mt. Te Aroha and coverage of other areas.

NZART AGM: President Alan, ZL1AMW was appointed to be our delegate

Kaimai National System Node: A recent fault was traced to a transistor in the transmitter

Constitution: The updated Constitution has been signed - will be available on website

OTO Digipeater: Additional receiver on 144.575MHz still awaiting installation

Sponsorship: The sponsorship of repeater licences to be promoted

Equipment Ex. Raglan: A solar panel & regulator to be sold on 'Trade Me' if not sold prior

WAIKATO VHF GROUP WEBSITE - www.zl1is.info/

Don't forget to look at the Group's website for information on up coming meetings, the status of our repeaters and National System nodes, plus news and notices of interest to members. There are also details on the IRLP Node and its operation and some websites of interest to amateurs. We are always interested in receiving news, notices or links to websites that are of interest to members. Please send any items to -

branch.81@nzart.org.nz

FUNDS FOR THE GROUP The Scribe attended the recent Radio Electronics Group Junksale in Hamilton as a seller. Although there appeared to be a small attendance, there was good sales during the day and many bargains were snapped off the table with funds going towards the Waikato VHF Group. With sales on the day and some miscellaneous other sales, ~ \$300 was raised.

The Scribe will also be attending the Branch 12 Market Day later this year, so spend your pennies (and your \$\$\$) at the Waikato VHF Group table.

There is very significant increase in costs, in the repeaters of the Group, so any donations to the Group, monetary or otherwise, will be well received.

Any additional memberships that you can rustle up will be well received.

The membership forms are on the www.zl1is.info website.

Donations towards sponsoring the Repeaters/Beacons fees will help offset the costs that the Groups incurs on a yearly basis. Remember one doesn't personally pay for a Amateur License anymore. But the costs are towards clubs in running the Repeater networks throughout the country. You wouldn't like to be without your favorite repeater...

For a \$1 a week, you can pay for a repeater license for a year. (There is no ownership of the Repeater... Hihi)

Crystals

The scribe gave a talk, which included some crystal information, at the Hamilton Amateur Radio Club on the 19th May (at very short notice) and this forms the basis of the talk that I will give at the meeting on the 30th. I will also be attending the NZART conference as a speaker on the Sunday, with similar material. By then I should have it verbatim.

With work done in the last 6 months, I have found that quartz crystals can be wildly different in their performance. Rakon in NZ no longer supplies crystals for our sort of market. After extensive investigation of overseas manufacturers the scribe has located a suitable manufacturer in Europe. If you have a need for a crystal (for amateur purposes ONLY) then let the scribe know.

When ordering crystals, give as much information as possible. If you don't, then don't blame the manufacturer if you get something not suitable. These are some points to remember when ordering.

Frequency	Give to 1 Hz Resolution
Package	Size of crystal holder, wires or pins, Thru- hole or SMD Most crystals are resistance weld now. Cold weld is the best, but less common, and solder weld has lots of contaminants.
Temperature range	Is the crystal at room temperature? Specify the temperature range. Is it in an oven/heated? Specify the oven temperature
Tolerance with Temperature.	Will you accept significant drift with temperature, or is it critical. This is specified in +/- ppm over your specified temp range.
Calibration Tolerance	How accurate do you want it. (Measured in +/- ppm). Remember this is at the operating temperature
Type of Crystal Cut	For normal amateur projects this is an AT cut. There are many other types of cut. Some much more expensive !!
Overtone	At frequencies around the HF spectrum, crystals are often operating in a fundamental mode, and as frequencies increase, they operate on odd harmonic vibrational mode, 3 rd , 5 th , 7 th , etc. Note

these are not exactly 3x, 5x, 7x. There are some crystals that operate on overtone modes in the HF frequencies.

Crystal loading

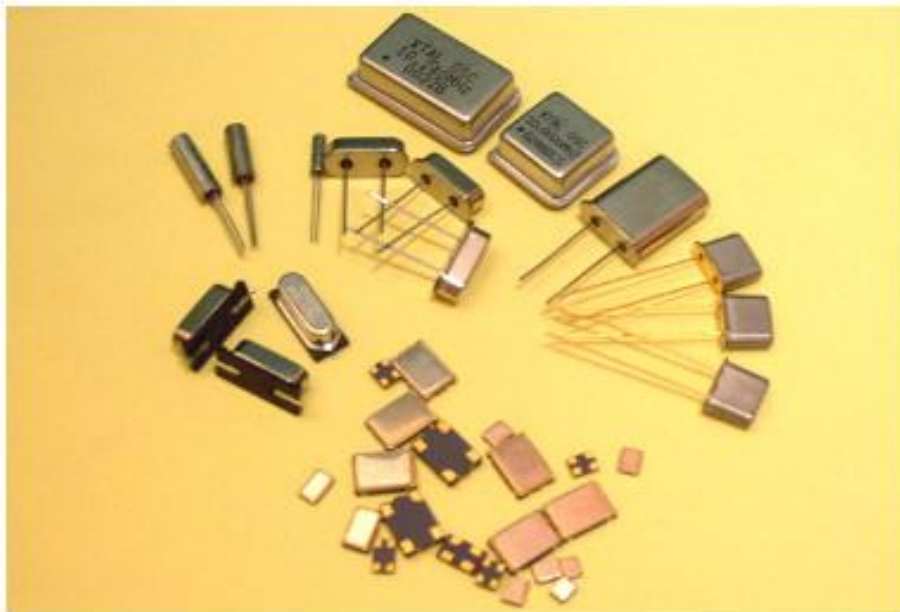
Most amateur circuits around HF use the crystal operating in parallel mode with a small capacitor, typically 32 pF. The crystal is seen as a high impedance. There are some circuits where the crystal operates in series mode where the crystal appears as a low impedance. Overtone oscillators operate in series mode. Depending on the circuit the crystal may operate at series resonance, or with some specified series capacitor. This is very important as this is often the cause why certain crystals don't want to tune to the correct frequency.

Series Resistance (ESR). The better the crystal is, the lower the series resistance. You can't measure this with a multimeter. This is normally in manufacturers catalogues. Specify, otherwise don't complain.

Aging

Will you accept drift over time as the frequency drifts due to stress relief and (re & de-contamination.) Early in a crystal's life this can be quite severe. Manufacturers can pre-age their crystals so this becomes minimal. Aging can be specified in +/- ppm/ year or day.

This sounds like quite a lot, but if you supply the right information to the manufacturer, it only takes a few lines and you should get what you require. If you're unsure, then contact the manufacturer. Most manufacturers have lots of information on their site.



Some different types of crystals and crystal oscillators.