

THE WORLD BELOW

400 GHz

The Periodical Newsletter of the
WAIKATO VHF GROUP Inc.,
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October General Meeting 2006

The next General Meeting of the Waikato VHF Group, will be held on Sunday, 15th October, at 1.30pm at the Te Puke Amateur Radio Club rooms.

Alan Wallace will be talking on Fibre Optic Cable

He will also be demonstrating methods of cable termination.

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KAIMAI SITE BUILDING

This building is in need of some TLC. We therefore need your assistance at a working bee, to be held on either the 21st or 28th October. If you are able to attend, please advise Kevin Hampshire, ZL1KRH, at <zl1krh@nzart.org.nz>. Those attending to meet at the main road gate at 9.30am. Actual date decided upon will be announced on the preceding Sunday Night Net. If the working bee has to be canceled due to inclement weather, an announcement will be made at 7:30pm on 695, on the preceding Friday evening. We plan to renew the exterior walls and give them a coat of paint. The building is to be strengthened internally, so as the holding down stays don't pull the building apart.

IRVING SPACKMAN - ZL1MO - SILENT KEY

Irving passed away on Thursday, 7th September, 2006, after a short time in hospital. Irving became interested in amateur satellite operation from the time they started appearing on the scene. His interest in this aspect of amateur radio was such that he wrote a column in "Break-In" for more than 15 years. For many years, up to about 2001 he also gave a weekly report on the Waikato and Auckland VHF Group nets. Besides being a founding member of the Auckland VHF Group, Irving was also a member of the Rodney Amateur Radio Club. We acknowledge his input, countless technical lectures at Conferences and club meetings and involvement in amateur radio over many years. Irving will be sadly missed.

MEMBERSHIP

The Branch has 46 financial members this year, so far. However, if you know of anybody who would like to join or can encourage others to join, it is not too late. Subs help maintain our equipment.

USEFUL WEBSITES

The scribes website www.qsl.net/zl1ujg
 Simon ZL1SWW website www.qsl.net/zl1sww
 Alan ZL1AMW website <http://zl1amw.wallace.net.nz/index.html>
 Miscellaneous VHF/UHF kit manufacturers
www.minikits.com.au
www.downeastmicrowave.com
www.db6nt.com
 Society of Amateur radio Astronomers www.qsl.net/SARA/
 UK Microwave group www.microwavers.org/

PCB's

The scribe has had another run of the filter PCB's produced, just as the other boards ran out. It was thought that this run of PCB's would be more expensive due to increasing costs, but the price is still NZ \$3.50 for 1, and \$10 for 3. These PCB's can be used for filters, multipliers from a few 100 MHz to 1700 MHz

VHF / UHF DX

This is the the time of year where the VHF/UHF DX starts coming in from VK. 2m and 70 cm always give a good number of contacts. The activity on 23cm's to VK is increasing as well This will be an interesting DX season as a large number of ZL stations have more microwave capability than before and it will be interesting to see whether there are any DX contacts on some of the higher Microwave bands.

Using Digital modes such as the WSJT FSK441 mode, specifically made for meteor scatter, this allows contacts to be made virtually anytime from the South Island to the Auckland Region. There is activity most Saturday and Sunday Mornings. A frequent user of this mode is Bob, ZL3TY for both NZ contacts and contacts to VK. Moderate power (50 to 100 w) and modest antennas can be used.

See <http://pulsar.princeton.edu/~joe/K1JT/index.htm> for the software.

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There has been some experimentation using Digital modes on the 5.76 and 10.368 GHz amateur bands. Simon ZL1SWW and Steve ZL1TPH have contacted each other over a 70km obstructed path using FSK441. It will be interesting to see whether the distances can be improved using Digital modes. At microwaves a major hurdle is the frequency stability of the equipment.

The picture left of Simon's (ZL1SWW) equipment shows a 10 GHz transverter on the dish with a 5.76 GHz transverter and small horn antenna in the background. There is a ridge to the north where the equipment was pointed. The feed on the dish is an old LNB which has been gutted and the dish is an

offset feed system like SKY equipment. The feed has been inverted (ie fed from the top) so horizontal paths can be worked.

There is an article in a recent Wellington VHF Group Q-bit newsletter which shows changes to the mount so that it can be fed from the lower side. The nice tripod was picked up from the Cambridge Junk Sale. 2m IF transceiver and computer is inside

VHF/UHF CONTESTS

There are a number of VHF/UHF Contests throughout the year. The main VHF/UHF contest is during the first full weekend in December. There is activity on all bands 6m and up. There are numerous well-sited Field stations throughout the country and contacts are often made from the upper North island into the Wellington region. Home stations are active giving points to their local clubs, and also seeing how far they can work. With the increasing activity on the Microwave bands, it will be interesting to see whether any records are broken. Look at the weblink for the revised rules as they may affect how you participate. There are some changes to the dates of the contests and also the scoring of them.

<http://www.nzart.org.nz/nzart/Update/Contests/vhfcontestrules0606.html>



5.76 GHz have been done on 500 mW or even less.

Teams like the Auckland VHF Group always put in a huge effort during VHF Field day covering most bands with multiple operators. The image left shows some of their setup.

There will be also coverage on the higher microwave bands this year.

There are many stations, around the country running the surplus DXR transverters on 5.76 GHz so that band will be very active. The unit is available from the Wellington VHF Group, but needs modification for correct performance. There is a lot of information on Simon's webpage (details previous page). With the 6 watt PA's this makes a very potent combination. Some early records on

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Beacons

The Christchurch ZL3UHF Beacon on 432.285 MHz is on the air again, now using a Tait 800. The original Tait 500 was retired. If you hear their Beacon, let the scribe and the Christchurch Amateur radio club know.

Box Resonance

With the increasing performance of MMIC's, sometimes oscillations occur when the PCB is boxed up. The box may look like a section of waveguide. Waveguide has very low loss!! If there is sufficient gain in the MMIC at GALI-3 MMIC on a VHF Group AMP PCB was fitted in a small diecast box. (Oscillation occurred at 7.5 GHz) The oscillation may be stopped in several ways.

Try low resistance (LT 10k ohms) static foam, which is relatively cheap, around the sides and cover of the enclosure. (Static foam is used in DB6NT equipment) **Recommended**

Also leaving the Lid off. (interference may occur). If the lid is fitted put a metal strip down the middle (may not be physically possible).

Put Radiation absorbing material (RAM) around the inside of the box. (This is quite expensive and not normally available in Amateur circles.) Try magnetic sheets sometimes available for printing for sticking on vehicles.

Some rubber compounds used in tyres have some lossy properties associated with their performance.

If the amplifier is still oscillating even with the cover off, check the vias, thru wires, grounding near the MMIC as the grounding should be very close to the device, and there should be multiple wires.

LOW POWER RF MODULES

Over the last few years the Mitsubishi "M" series Bipolar RF modules have been replaced by Mosfet RF modules The High power versions are usually what is in most transceivers. There are also a range of low power modules such as the RA08H1317M and RA07M4047M units capable of ~ 7 watts. The footprint is only 30x10x5.4mm. Check www.rfparts.com for further information.

WA5VJB Antennas

Kennt has produced some information on very simple roll your own Yagi antennas. www.wa5vjb.com/yagi-pdf/cheapyagi.pdf.

He also produces a range of PCB antennas including Yagi's, Quad patches and wideband log periodic antennas, from 400 MHz to 11 GHz.

A 2 to 6 GHz Log periodic antenna is shown left.

The website has lots of great info



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