THE WORLD BELOW 400 GHz

NZART
BRANCH 81

JUNE 2009 ISSUE

WAIKATO VHF GROUP EXECUTIVE

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General Meeting June 2009

A General Meeting of the Waikato VHF Group will be held on
Sunday June 21st, 2009 at 1:30pm.
at Branch 12 Clubrooms, Seddon Road, Hamilton.

Ian ZL1TAT will give a presentation on
"Digital Mobile Communications",
in which several current technologies will be described, including D-STAR used in amateur radio circles. During this presentation, you'll be able to evaluate digital and analogue radio communications side by side. Come along to see and hear what's on the horizon.

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

Items discussed at Committee Meeting

Contribution to NZART charges from Kordia ($500) and donation to Kiwisat ($1000).

Revision of Constitution - Ongoing

Vote of thanks to organizers of Technology Convention

OTO – New equipment being installed

Remits – recommendations for NZART AGM.

Hamilton Market Day 2009

Claudelands Events Centre

Saturday August 15th 2009

Vendors from 8.00 am

Buyers (Free entry) from 10.00 am

All enquiries to:

Market Day

Hamilton Amateur Radio Club

PO Box 606, Hamilton

E-mail: harcmday@nzart.org.nz

The Waikato VHF Group will have a table to raise funds for the Group. This assists with the running of Repeaters and Beacons. Any items to sell are welcome. Please support us.

Beacon Bandplan:-

Kevin ZL1UJG reported that the way the frequencies had been allocated by this bandplan had resulted in adjacent channel interference and the VHF Group had applied to change some of its beacon frequencies. It is understood that FMTAG are considering rearranging the bandplan.
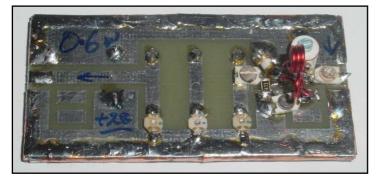
When beacon monitoring is done, in adjacent frequencies close to local beacons, there is significant interference. Examples are Auckland and Hamilton (2-3 kHz apart), however other regions could possibly have problems.

The original bandplan allows for 50 frequencies (spaced 1 kHz apart) throughout NZ (aligned with regions, cities and towns).

It was very unlikely (scribes words) that 50 beacons would ever be active on one band, and it was suggested at the Technology Convention that the beacon spacing be increased to 5 kHz.

On higher frequencies, such as in the Microwave bands, there are other issues such as phase noise, and more noticeable drift, that would also impact, with the existing 1 kHz spacing.

Look in the FMTAG notes (at the NZART website), and in Break In, for developments.

1296 MHz Auckland Beacon

At the Technology Convention (or VHF Convention, depending on who one speaks to) the scribe gave a presentation on the Auckland 1296 MHZ Beacon progress. The talk is on the Minikits site (www.minikits.com.au) as quite a bit of the hardware is from Minikits.

A 1296 MHz source

Tom ZL1THG, has been working on a prototype 1296 MHz source (shown left). This could be used with a scanner which has

Rx capability at 1.3 GHz, for a simple Transceive setup.

The driver is a low power 70cm handheld (~ 1.5 watts), or W.H.Y. The board shown acts as a tripler.

About 600 mW is available. The simple design uses some surplus Varactors, and works quite well. If using a transceiver, of course the deviation will be 3x more (~15 kHz peak), so speak quietly, or use microphone at arms length.

The source could also be used for checking antennas. A simple antenna is a "Figure 8", Double Quad, and information on the web is available. The above board could be used to drive one, and a second one for Rx, (saving a change over relay).

 If you are interested in one of these multiplier PCB's, drop the scribe an email at rfman@xtra.co.nz

This antenna although for 2.4 GHz, shows the principle.

For 1.3 GHz, each segment is 62mm from center to center (bend to bend), with the antenna ~ 30mm off the reflector.

If you wish to support the antenna top and bottom, then a high value resistor could be used. The polarization shown is horizontal.

Some rigid-type coax is used for central support.

Tom ZL1UJG is also experimenting on a simple RX converter for 1296 MHz... (We will keep you posted on developments.)

Contests

The scribe took part (2m only) in the recent NZART VHF/UHF contest, on the 1st weekend of June. Next contest is first weekend of August.

Activity is predominantly on the SSB/CW/Digital modes portions of the bands. There is no reason why you can't take part on a simplex FM frequency,

For more contest related information look at the NZART website. Alternatively you can log onto the ZLVHFContest reflector on Yahoogroups. Activity on contests during the colder months is a little quieter, however good contacts on bands from 144 MHz through 3.4 GHz was documented. You will be surprised at the distances that one can work, even under normal conditions.(ie not enhanced). Although most people run horizontal antennas, quite often paths allow vertically polarized signals, although weaker.

Dave ZL1AKW in the Tauranga region had good contacts up to Orewa on 1.3 GHz. 2m Contacts from Auckland to New Plymouth region were also noted. (I could just hear Ted ZL2IP, in Inglewood from here in Hamilton, where the path to Ted is virtually impossible from this QTH)
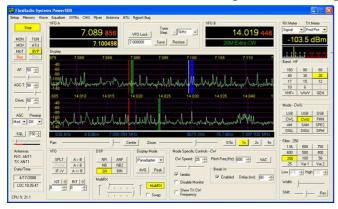
SDR

One of the hot topics at the moment is Software Defined Radio.

At www.kb9yig.com , run by Tony Parks, there are SOFTROCK kits available at a very low cost. These kits produce signals which are processed by your PC, which allows demodulation in almost every mode, including FM. The processing requires a soundcard (either internal or a external unit. There are even kits allowing Transmit as well as Receive.

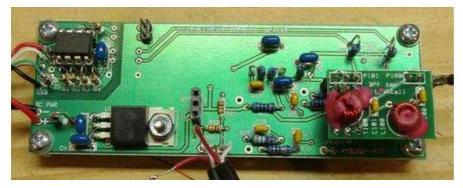These are a very cost effective way of getting into this exciting field.

There are a number of software programmes which give a spectrum display, waterfall, Smeter readings. One can monitor the activity away from the operating frequency, (within certain limits), useful if looking for other signals which may be outside the normal Rx bandwidth, or looking for signal enhancement such as with antenna rotation, or via scatter off aircraft or other medium. The waterfall displays give an indication of signal level over time.

This is a display of one of the pieces of software that works with the Softrock radios This is Flex-radio software. Flexradio also produce SDR hardware, and a new product called Flex -1500 should be out soon, which VHF operators could use as a driver for getting onto 2m and higher bands. This covers 160m to 6m with powers to 5W. Signal Processing is done by internal hardware in the Flex-1500

This is one of the Softrock RX kits built up as a single band unit. There is a switched Bandpass filter unit available, which allows reception across 1.8 thru 30 MHz. A new Programmable Oscillator IC allows tuning of the RX across all the HF bands using a USB interface. All these features for under US$60. That's correct $60 !! These SDR units aren't the most sensitive RX on the block, although on the lower HF bands one can get away with it. However on the higher bands a moderate gain preamp would improve reception of weaker signals, and also help when using a VHF converter.

You could even connect one to the IF (Intermediate Frequency) of an old FM 2m or 70cm radio, to give all mode RX capability. (Useful for listening to Kiwisat). This would be a good project for the long winter evenings. The Wellington VHF Group has a Softrock project running at the moment.

Technology Convention 2009

A number of the members attended or took part in the Convention held in Hamilton. There are a number of writeups of the event, either in Break In or with the Wellington and Auckland VHF Groups.

The Speakers gave great presentations on their subjects, from Software Defined Radios (Ian Ashley ZL1AOX) to Antenna design (Andrew Barnett ZL2ALW), with diverse subjects in between. The VHF Forum, run by Vaughan ZL1TGC discussed many subjects, of interest to others.

Almost every free moment was taken by discussions between attendees, of various topics, and it was over yet again. The attendees are already looking forward to the next one…