FREQUENCIES VHF, UHF, SHF NEWSLETTER NZ

This newsletter is compiled by Kevin Murphy ZL1UJG to promote operational and construction activity on the VHF, UHF and SHF Amateur Radio allocations in New Zealand (and overseas).

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CONTENTS VHF Scene 1-4

Running a new version of the Jaws PDF Creator. If there are any problems please notify me. Thanks.

VHF Scene Nov/Dec 2005

After a quiet few months, the activity on the bands is starting to liven up, with the DX season approaching. There are a number of people working on various projects

Microwaves.

Microwave Components available from the Wellington VHF Group, have proved to be very popular, both in New Zealand and now increasingly overseas. The DXR700 units, which include Up and Downconverters (around 7 GHz) are being modified to provide output on the 5.76 GHz band. External interdigital type filters, (around 7 GHz) have been retuned to 5.76 GHz , using Kiwi ingenuity. The associated power amplifiers, which work well on 5.76 GHz are going to provide excellent signals. Simon, ZL1SWW has lots more information on the website www.qsl.net/zl1sww. Simon ZL1SWW, Harry ZL1BK, Keith ZL1BQE and a number of other stations, both here and overseas are developing their knowledge on this equipment.

Scott ZL1KB went to the Western Suburbs Radio Club sale on Saturday 5th November. He saw Harry ZL1BK, Simon ZL1SWW, Brian ZL1AVZ, Andrew ZL2ALW. Harry and Simon had their 5.7GHz equipment there, and Scott saw the progress of the their work.

In the UK, surplus equipment and kits gave the 10 GHz band dramatic growth, with high levels of activity. The availability of equipment here, for 5.76 GHz should also promote activity. The scribe is constructing a N1BWT type transverter that was previously marketed by Minikits. This will be followed with a 5 watt PA (from the Wellington VHF Group.) It is interesting to note that the current 6 cm NZ record, (held by ZL1TPH and ZL1TBG) at 317km was made with only 500 mW, so it is expected that this distance will be exceeded in the near future.

On the 8th November, Harry ZL1BK had a QSO with Ian ZL1AOX on 5.76 GHz. Harry was using his recently converted DXR-700.

On the evening of October 30 W6QI and AD6FP completed a 47 GHz contact over a 343 km path, 30 Km farther than the current world record. W6QI operated from Frazier Mountain DM04MS North of Los Angeles. AD6FP operated from Pilot Peak DM07BS near the northern entrance to Yosemite. The path is near line-of-sight with an obstructing peak about 20 Km south of Pilot Peak. 10 GHz was used as the liason frequency and the contact was made after dark.(Not intentionally but Murphy's Law had left its touch that day)

ATV.

Grant ZL1WTT has been experimenting over the winter months with digital TV on the 9cm and 3cm bands, and has posted further information on www.qsl.net/zl1wtt

Beacons.

During the second week of November, Quentin ZL1QF reinstalled the Auckland 2m and 70cm beacons after retuning them onto their new frequencies. They are now transmitting on 144.253 MHz and 432.253 MHz. (Thanks for rechannelling the beacons, Quentin). The 144.253 MHz Beacon is being copied by the scribe in Hamilton, as the column is being written.

Digital Modes/ Meteor Scatter.

A report from Bob ZL3TY on MS activities:- 2m meteor scatter skeds continue each weekend and Nick ZL1IU joined in on 28th October with an immediate result. Nick worked Peter ZL4LV (~1210km) followed by ZL3TY. Congratulations Nick and Peter! (Kevin ZL1UJG) It is often is the case that others assist and it is the team effort that gives results. Well done to you both and the others involved. (Steve ZL1TPH) The skeds are each Saturday and Sunday morning, 8am to 9am local time, on 144.230MHz using FSK441A - note the mode change. FSK441A is being adopted as the standard and is the only FSK441 mode now included with the WSJT software.

A report from Nick, ZL1IU on Terrestrial DX using Digital modes. Bob ZL1RS (using ZL1IU callsign) had a digital mode contact with Bob ZL3TY via direct troposcatter propagation over the 831km path using JT65B. The signal from ZL3TY was fading in and out of the noise, but the WSJT software was decoding his signal well. As well as the standard QSO format we managed to exchange a few lines of random information. There was no special propagation lift apparent at the time.

After a phone call from Rex VK7MO, I tried a Meteor Scatter (MS) sked with him on 2m. I had one good meteor burn that resulted in 3 call-sets decoded from Rex ... and then nothing else for 2 hrs. The distance to Rex is 2430 km, which is right at the outer limit for meteor scatter propagation and will require "large" meteors burning in the upper ionosphere to allow a contact to be made. We plan to try again next month during the predicted meteor shower event that should improve the potential for good meteor burns.

On the 28th of October I worked Peter ZL4LV in Dunedin via MS using FSK441A at a distance of approximately ~1210km. This could be a digital distance record in ZL on 2m meteor scatter. I also worked Bob ZL3TY the same morning. Bob ZL1RS repeated the meteor scatter contacts with Peter ZL4LV and Bob ZL3TY on the 5th of November as well (from my home station using ZL1IU callsign).

The 2m antenna system at the QTH of Nick ZL1IU, is a stacked array of 4 home made 12 element Yagis designed by VE7BQH and the power output is 500 watts. WSJT software is available freely from K1JT at http://pulsar.princeton.edu/~joe/K1JT or the European mirror site http://www.vhfdx.de The accurate time synchronisation of the computer clock that is required for WSJT was achieved by GPS using the program NMEA Time (trial version available free from http://www.visualgps.net/NMEATime), or could be done via Internet time update if one has a good connection. (Thanks for the great reports on your activities)

EME

Bob, ZL3TY has been active on numerous modes as this report shows. September was a quiet month with 12 QSOs. October was much better, with 71 QSOs, 26 being during the ARRL EME contest on the weekend 22/23 October. The highlight for the period was a contact on 13 October with EA2AGZ which extended the world record distance to 19435km.This distance was exceeded by a ZL1IU/EA5 QSO on 23 October. One of the QSOs during the ARRL contest was with ZL1IU and may be the first ZL - ZL EME QSO. (Congratulations to both Bob, and Nick on extending the world record distance on 2m).

Nick ZL1IU and Bob ZL1RS also report on the ARRL EME contest

Bob ZL1RS and I took part in the contest on 2m only. Bob arrived the day before the contest after having flown back here from Europe. Bob was suffering badly from jetlag which later would prove to be a curse in the form of blown GaAsFETs in the receive preamps while setting up his EME equipment. This meant a slow start for the first day of the contest. After a good sleep and repairing the preamps we worked 30 stations overall, 29 of them using the JT65B digital mode and also W5UN on CW. We were operating in the "assisted" class using the JT65 EME Link web site to announce the frequency we were calling CQ on, and to find the frequencies that other stations were using. http://www.chris.org/cgi-bin/jt44eme Conditions appeared to be reasonable for the contest.

During the contest we had a nice moonbounce QSO with Bob ZL3TY. Was this the first ZL to ZL EME contact on 2M? There was absolutely no trace of direct signals with our respective antenna arrays pointed at the moon.

The day after the contest we worked a few more stations via EME and Bob (using ZL1IU callsign) worked EA5SE on JT65B for a potential world record digital EME contact distance of 19,451km. At the time Bob was trying to work EA1YV with no luck when EA5SE's signal lit up the SpecJT display in WSJT version 5.8.6. Hermogenes had a very good signal, audible in the speaker at times just as the moon was setting here for us. The contact only took a few minutes to complete in the available 10 minute window between our two stations.

Contests

I had an email from a South Island station wishing to take part in VHF Contests. I highly recommend that individuals and also Clubs wishing to take part, join the ZLVHFContest reflector at http://groups.yahoo.com/group/zlvhfcontest/ . For NZART Contest rules see http://www.nzart.org.nz/nzart/Update/Contests/vhfcontestrules.html . There are some time changes to the VHF contests and this will be posted at these locations.

I hope that club stations will take part in VHF/UHF contests either from clubrooms or from portable locations. Clubs may use these contests as a training ground for less experienced operators. VHF/UHF Contest activity is predominantly on the SSB frequencies around XXX.200 MHz, however there is no reason why FM contacts cannot be made on FM simplex channels.

A number of stations (6 to 10) on the zlvhfcontest reflector will have taken the opportunity to test their station equipment (VHF to Microwave) on air before contests. This is an informal testing day This enables stations to check equipment operation, frequency offsets, etc. This not only useful from a practical sense, but also increases activity on the bands, especially the Microwave bands. It is hoped that this become a regular occurrence.

FM Repeaters/ SSB

On Thursday, 3rd November at 8pm, Scott ZL1KB (Auckland) monitored a small opening to Wellington and accessed the Belmont 710 repeater. Scott worked Jim ZL1TYF (Wellington) via the repeater.

On Saturday 5th November, at 2pm, Scott also worked Steve ZL2KG via Belmont 710. After this contact, Scott, tuned down to 144.200 and called CQ and was rewarded with a contact with Cliff , ZL1RP in Pokeno. Although it wasn't great DX, it reinforces the fact, that it always pays to call CQ, as you don't know who is listening.

Satellites

Dx worked from ZL3MH Murray in Christchurch . I have been looking at AO-07 in the last few weeks. I have worked VK4ZQ Roy and VK4AKZ Alan several times but on the 21st October I worked VK6AKI Ron in Perth Western Australia. The Satellite has a very high orbit of 1444 to 1459 km so the coverage of the Pacific and Australia is extremely good and long compared with Hamsat (VO-52). AO-07 can be a bit frequency modulated on SSB but reducing power usually overcomes that. The batteries have open circuited about 2 years ago and in sun light the satellite mainly operates on Mode B. The satellite has been dormant for 26 years and it was launched in 1974. The center transponder frequency uplink is 432.150 MHz LSB and downlink is 145.950 MHz USB. This is where most of the activity is.

A useful URL is http://www.emilyshouse.com/experthams/ao7/main.php

There are three analog satellites that can be worked on SSB and CW. On the 24th October ZL3MH and VK6AKI worked all three satellites in a day. It took a bit of luck and lots of time and emails to do so. Below are the problems we had to over come to make it possible.

1. AO-7. FMing and passband full of birdies . Runs of solar cells only so a daytime satellite only. Modes A and B, although mostly on Mode B now.
2. VO-52 was launched about 5 months ago and is a mode B satellite. The signals are extremely strong but to work over to Western Australia from Christchurch there are only one or two passes a week because you are at the outer limits of the footprint.
3. FO-29 was launched in 1996 and is a mode J satellite. There is a J digital and a Digi Talker mode but as the satellite is getting to the end of it's life it seems to be nearly always on Mode J analog.
4. The other major problem is time zones from Christchurch to VK6 as we have daylight saving making it five hours difference. A typical AO-07 pass is 6.15 am WAST time and 11.15am NZDST. FO-29 typical time is 6.15 pm WAST and 11.15 pm NZDST so it can be a long day to do all three satellites and a bit of luck that they are all turned on or working.

Ron VK6AKI runs a TS790, 15 element Quagi on 70cm and 10 element yagi on 2m. Murray ZL3MH uses for 2m TX, a IC202s, QQU6/40 Amp to a 11 element Yagi.While on 70 cm TX, he uses a IC402 to a 10 watt amp and 20 element Yagi. For 2m and 70 cm receive, a FTV250 transverter and Microwave modules 435-28 MHz RX converter feed a Yaesu FT101ZD MK2.

Propagation

News from Bob, ZL3NE/1. Bob has been in contact with different Amateurs overseas and more recently has been persuaded to rewrite his papers on the subject. Bob has allowed Volker Grassmann, DF5AI to publish his

papers on the net at www.df5ai.net. It will found via the Articles section from the the main menu. You will find plenty of examples to read about with the accompanying weather maps and a chart detailing exactly when anticyclone tropo will occur. Bob has included a calendar describing which are the main modes of propagation for each month and how to predict what the coming summer season will be. All modes of propagation are detailed and how to find them. The papers have been re written for ease of use.
I have not included F2 nor F2 linking to tropo as it will be three years before this is paramount enough to write about.
I do not know if you have heard but there is now a big interest in my propagation modes as the Rutherford Scientific laboratories in England have just recently proved my theories on lightning increasing the intensity of the E layer and so making propagation possible to be correct this produces a lot of propagation which has been called sporadic E. I have also described when long distance propagation takes place on 2 meters when and why, so there is plenty of reading to do!
(Great news, Bob. I am sure many of those who are really active on the bands both here in NZ and overseas, will read the papers closely and use the information to help with their activities.)

Thanks for the great updates from the stations, mentioned in the column. With improved activity and propagation at this time of year, I look forward to receiving more interesting reports.
Information may be sent to Kevin at rfman@xtra.co.nz

Book review by Kevin Murphy, ZL1UJG
VHF Propagation. A Practical Guide for Radio Amateurs
Written by Ken Neubeck, WB2AMU and Gordon West, WB6NOA
Published by CQ Publications, Inc.
ISBN 0-943016-30-4
Available from www.cq-amateur-radio.com
Price US$ 17.95 + P&P

Review:-
This book of approximately 130 pages, gives an overview of various VHF propagation modes. Modes such as Tropospheric ducting, Sporadic E, Aurora, Meteor Scatter, F_2 Transequatorial propagation, Combination modes, plus EME. There are numerous excellent illustrations illustrating both theory and actual events. Although this book is written from a North American viewpoint, in that examples are from that area, the conditions exhibited also appear down in New Zealand. We have our summertime ducting to VK, Sporadic E, Meteor Scatter, etc.
Most material is for 6m and 2m, as these are both commonly used in the US, and also most of the modes outlined are more efficient on those bands.
There is no mention of Troposcatter, Aircraft Scatter or Knife Edge Refraction. Troposcatter is when long distances are acheived on VHF through to Microwaves, given enough TX power, good antennas and good locations. This mode is present all the time and VHF/UHF DX stations, around the world use this mode frequently. VK VHF amateurs use aircraft Scatter.
Overall I think the book has its place in a Radio Amateurs collection and would help with the understanding of some VHF propagation modes.

I managed to spend some time at the Hamilton Market day run by the Hamilton Amateur Radio Club during early September.
Here is an image of some of the people who attended, noted for their activities on VHF/UHF. Some of the names frequently appear in the column
Left to right, Chris ZL2DX, Brian ZL1AVZ, Andrew ZL1TAP, Harry ZL1BK, Kevin ZL1UJG, Nick ZL1IU, Steve ZL1TPH, Simon ZL1SWW.