An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

Published by the UK Microwave Group

2010 MAY

Present and past UKuG Chairmen John G4BAO (left) and Brian G4NNS (right) set up an antenna at the RAL Microwave Round Table meeting in April this year. The antenna test range facility is held on the Saturday at Brian's home location near Andover, leaving Sunday free for the main RT meeting at the Rutherford Appleton Laboratories near Didcot.

A photographic review of the RAL event can be found in this issue ...

In this issue ...

Latest News ...

- **UK is still waiting for improved microwave conditions ... when will they come?**
- **Scatterpoint needs more reader input**

MANY THANKS TO ALL OUR CONTRIBUTORS THIS MONTH ... WITHOUT YOU THERE WOULD BE NO SCATTERPOINT!

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From the Editor's Desk

This issue went to press by the skin of its teeth! One day before the printer's deadline we still had two empty pages with nothing to put in them! Many hours of web trawling and searching the editor's archives finally found something but we wouldn't want to go through all that again folks, so PLEASE send in material for next month otherwise we will have no Scatterpoint or, at most, a much reduced one!

The article cupboard is bare!

My thanks go to ZL1TPH, M0ELS and WA6KBL for their much appreciated articles and to those happy few who sent in activity news to Robin.

This newsletter is what you, the readers, make it .....

73 from Peter, G3PHO
Editor

News, views and articles for this newsletter are always welcome. Please send them to G3PHO (preferably by email) to the address shown above. **The closing date is the Friday at the end of the first full week of the month** if you want your material to be published in the next issue.

TVI FROM AMATEURS CURED IN ONE FELL SWOOP!

Mast fire leaves 400,000 without TV signal

The BBC report that about 400,000 homes have been left without terrestrial television reception after an 'intense fire' at the Beckley transmitter mast in Oxfordshire.

Firefighters said part of the structure was in danger of collapse following the blaze, which started at about 1400 BST on Thursday May 13. The Beckley mast provides the TV signal for Oxfordshire and parts of Wiltshire, Buckinghamshire and Northamptonshire. Maintenance has been taking place on the mast in preparation for digital switchover in 2011.

Read the full BBC report 'Oxfordshire mast fire leaves 400,000 without TV signal' at:
http://news.bbc.co.uk/1/hi/england/oxfordshire/8680692.stm

Thanks to the Southgate News Service for this item)

RSGB CONVENTION 2010

You can now book your place at the RSGB Convention, which takes place from 8 to 10 October near Milton Keynes. Full details of the convention, booking information and prices, are on the **www.rsgbevents.org** website.

Formerly known as the HFC, the RSGB Convention has broadened its remit to include the whole amateur spectrum. As usual there will be lectures by the very best amateur radio speakers on a wide range of topics.

UKuG will be strongly represented with, to date, their own stand and microwave lectures given by G4BAO, G3PHO, GM4CXM and M0EYT.

UK MICROWAVE GROUP SUBSCRIPTION INFORMATION

The following subscription rates now apply. **Please make sure that you pay the stated amounts** when you renew your subs next time. If the amount is not correct your subs will be allocated on a pro-rata basis and you could miss out on a newsletter or two!

Your personal renewal date is shown at the foot of your address label if you receive Scatterpoint in paper format. If you are an email subscriber then you will have to make a quick check with the membership secretary if you have forgotten the renewal date. From now please try to renew in good time so that continuity of newsletter issues is maintained. Put a **renewal date reminder** somewhere prominent in your shack (the editor suggests having it tattooed on your forearm!).
Please also note the payment methods and be meticulous with Paypal and cheque details.

Renewal of subscriptions requiring a **paper copy** of Scatterpoint are as follows:

Delivery to:	**UK £**	**US $**	**Eur €**
UK	14.00	-	-
Europe	18.00	36.00	26.00
Rest of World	24.00	48.00	36.00

Payment can be made by:

*** Paypal to ukug@microwavers.org**

or

*** a cheque (drawn on a UK bank) payable to 'UK Microwave Group' and sent to the membership secretary** (or as a last resort, by cash sent to the treasurer!)

The standard membership rate for 2010 is:

UK	**£6.00**
US	**$12.00**
Europe	**€10.00**

This basic sum is for **UKuG membership.** For this you receive Scatterpoint for FREE by email. If you want a paper copy **then the higher rates apply.**

Echoes of Apollo activity weekend in ZL

by Ralph, ZL2TV, Steve, ZL1TPH, Harry ZL1BK

Steve ZL1TPH aligning for a range check to Ted ZL2IP

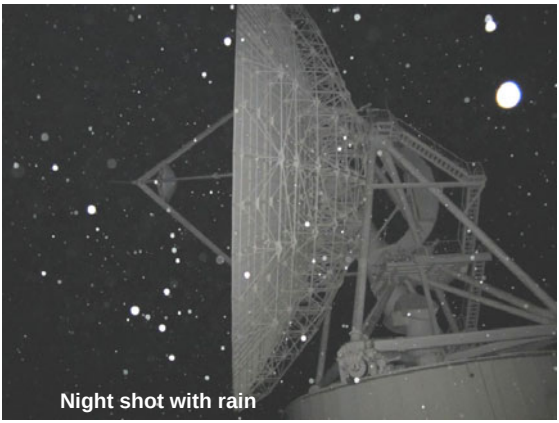
Last year, when the inaugural EofA project to activate as many large Apollo-era dishes for a day of Moon talk on 23cm was announced, I had good reason to be interested. My workplace had one remaining 30.5 metre, fully steerable antenna that had been replaced with a smaller new model and the site was being decommissioned.

Permissions were obtained and I had 3 weeks left to plan the technical aspects of making it work on 23cm. The best way would have been to do a prime focus feed or attach another dish across the throat of some 2.7m diameter, as done by hams at Ibaraki, Japan a few years back.

Within the timeframe and logistics to meet, there were options of fitting sub-optimal gain antennas around the rim of the throat, or a smaller dish across the throat, or removing the existing C band launchers and substituting one of our own. This is a beam waveguide-fed Cassegrain dish and the feed comprises of a corrugated horn of 0.85m diameter. I constructed a dual probe, cylindrical feed with 90 degree hybrid coupler, whilst Steve ZL1TPH constructed a round septum feed. The plan was to try both and go with one that worked, as the exact size of the hole in the horn could not be determined till the day.

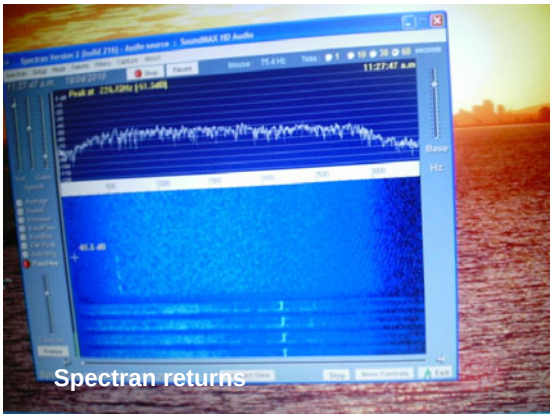
Then a problem occurred requiring the old dish for service and we had to sit that one out for a year. Constructed equipment and plans were kept till the day came, about 2 days before this years EofA, that word came "go for launch".

Again there was no opportunity to pre-test any systems. Harry ZL1BK arrived to help with the final installation and keep the moon in our sights for the duration. The moon was already up but, our Saturday being early for most (12 hrs ahead of UTC), we weren't in a hurry. Sun noise was checked and less than anticipated .... final calibration suggests 12db ENR at the RX port was received.



Night shot with rain

None of the 4 receivers used had AGC disable, so attempting a valid noise was problematic but did help to calibrate our headings to keep ahead of the moon. After connecting a Spectran monitor laptop to the audio, echoes were identified and then heard on the speaker, once tuning and tracking were established. Opportunity was taken to measure the sun -3dB beam width


Spectran returns

when slewing the elevation. This occurred at 0.6 degrees, suggesting 0.2 degrees beam width in the antenna, something I expected as a consequence of illuminating the sub reflector from the same area of horn aperture designed for 4GHz. In effect, we were lowering the gain by limiting the field of view on 23cm to that provided on 3.7GHz, spilling the rest of the beam out to cold sky and/or the walls of the beam waveguide system and its 4 periscope mirrors and tube.

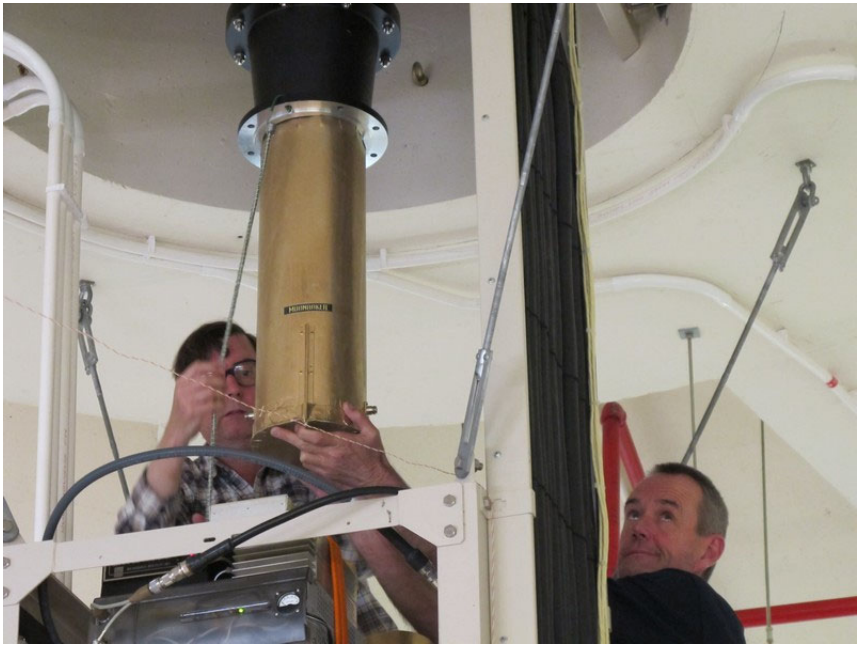
As far as possible, in keeping with EofA, 1970s equipment was used ... MMT1296 transverter, an IC202s modified with Qindar tones [http://everything2.com/title/Roger%2520beep] and 100mW transmit IF feed, one IC202 for X-pol RX, one more for co-pol RX (to see if anyone, or indeed us, had managed the wrong polarisation - don't laugh, these dishes are complicated beasts) and an IC245 to drive the Spectran laptop so that Doppler settings could be easily dialled in. The LNA and SSPA were somewhat more modern Mini Kits from VK and a 60 watts output TX, a combined pair of Aprisa TX boards from 4RF in ZL.


Ralph ZL2TV and Harry ZL1BK connecting the feed

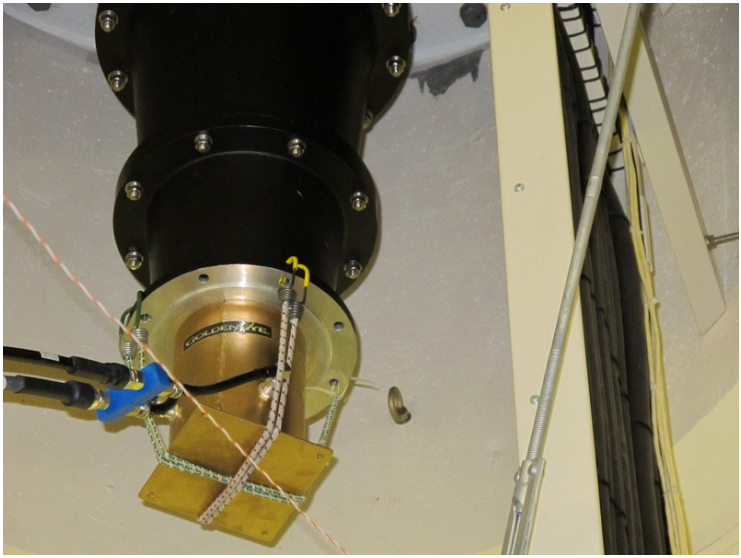
It's just a few days on and we're still going through the results (important to record as much raw data as available) and we are very pleased to have had the opportunity to put the antenna, which I was involved in building and testing during 1984, through some new paces - or should I say frontiers - thanks to TNZI (Telecom New Zealand Ltd's International company).

73 from the Moon base Alpha team - Ralph ZL2TV, Steve ZL1TPH, Harry ZL1B

More photos on the next page ....



Installing the septum feed "Moonraker" – 23 cm transverter and SSPA below

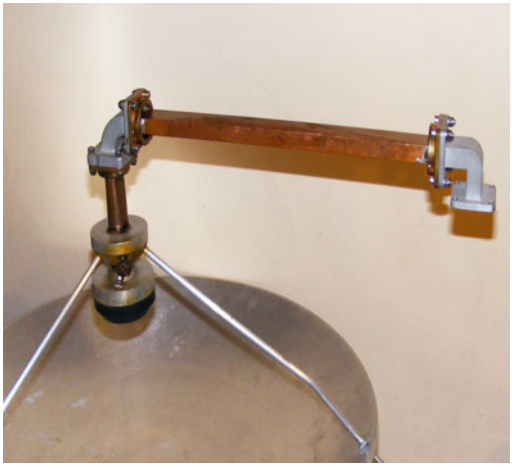


Crossed dipole feed "Goldeneye" - yes the hybrid is connected

3cm or bust !

By John, M0ELS

After a lot of scrounging around, I managed to purchase some square wg16 flanges from the USA and began to rebuild the 3cm dish feed. I also had a length of wave guide and duly managed to solder the flanges to the cut wg and the result is shown in the picture below.



Surprisingly, everything went according to plan (and even impressed me) and I needed to complete one more stage, which was a suitable back mount for the dish. I opted to weld an aluminium pot to the back of the dish, on which a mast mount would be attached. Having never welded with aluminium, I found a website promoting durafix rods. This is a low heat alu rod which only needs ~ 396 deg C. I used a propane/ butane mix in the form of a Taymar T3500 can, obtained from screwfix.

The aluminium pot was wire brushed to a height of about 5mm around the lip and tinned with a rod, by preheating the rim and rubbing the rod along the surface. I kept the heat source about 1 inch in front of the rod approx and 1 inch away from the surface and this worked really well. The horror is to now tin the dish and then "blend the two together. I managed to "weld" the dish and pot together with no problems at all. One word of caution is that as the thin alu dish is heated up, it may have the tendency to sag under the weight of the pot, so do watch out for this. The end product is seen in the picture to the right and the dish can now easily be mounted onto a suitable mast or tripod, in my case.

My next project is to weld a small tray onto the tripod which will hold the 2m if transceiver as well as the 3cm transverter etc.

73 John - M0ELS

SOFTWARE DEFINED RADIO AT 144MHz

By Jeffrey Pawlan, IEEE Senior member, WA6KBL
www.pawlan.com & www.winrad.org

Most ham transceivers at 1296MHz and higher use 2 meters as the IF in order to make the rejection of the image frequency easier. For example, the DB6NT transverter contains an LO at 10224MHz which is low side injection and makes the unwanted X-band image response at 10080MHz. This is still within the amateur band so it is unlikely that a strong signal will be present at that frequency. The pipecap filters in the transverter are sufficient to eliminate noise contribution while receiving and they greatly reduce the transmitted signal at this image frequency.

For decades, we have been using various multimode conventional analog transceivers at 144MHz as the IF radio. In the past, only a few people have experimented with SDR receivers in their portable stations. Lars, AA6IW, has used the DSP-10 and later used a commercial form of SDR that was once made by Tentec. I had modified a Quicksilver QS1R and used this for a few contacts.

Recently I purchased a second Perseus receiver (www.microtelecom.it) and modified it for undersampling. I incorporated this into my 10GHz portable rig and have successfully demonstrated contacts using it with Winrad running on a laptop computer. Testing confirmed that my new matching network worked very well at 2 metres and also was quite acceptable at 6m and 432MHz. An external preselector and preamp are necessary in order to pass only the desired band to the SDR receiver.

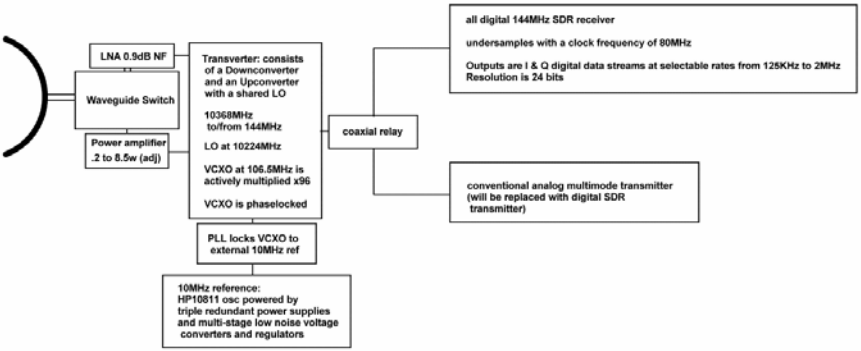
I was invited to give a lecture and demonstration of SDR for microwave applications at the annual IEEE MTT-S (Microwaves, Theory, and Techniques Society) workshop held at the Stanford Linear Accelerator Lab on May 9, 2009. Approximately 100 engineers and students were present. The location was not ideal as there were bushes and trees nearby and some paths to other hams were partially blocked by homes or hills. However, we were able to make good two-way contacts in spite of these obstacles.

How Does Undersampling Work?

All digital samplers including A/D converters are capable of undersampling. Nyquist's principle is that one may digitally represent and then recover a signal up to one-half of the sampling rate. Therefore the Nyquist frequency is defined as half the sampling rate. All frequencies appearing at the input of any digital sampler including A/D converters will be folded into the spectrum along with the normal frequency range, which we will call Nyquist Region 1. In the case of the Perseus, the sampling rate is 80MHz; therefore the Nyquist Frequency is 40MHz and the Nyquist Region 1 is from 0 to 40MHz. If you turn off the preselector of the Perseus, then you will be able to receive 50MHz (6 meters) at 30MHz. This is in Nyquist Region 2. Even numbered Nyquist regions are folded back on the odd regions, just like high-side LO injection. So the tuning will be backwards. 79MHz, for example, will be heard when the receiver is tuned to 1MHz. The Nyquist Region 3 is from 80MHz to 120MHz. At least one Perseus user heard his local FM station at 95MHz by tuning the Perseus to 15MHz. Since this is an odd-numbered region, the tuning will be direct, not inverted. Nyquist Region 4 is from 120MHz to 160MHz. So when I want to listen to 144MHz, I tune the Perseus to 16MHz and the spectrum would be inverted.

We have a new beta version of Winrad that contains the correct algorithms to send the Perseus the correct

Block Diagram of the 10GHz Transceiver:



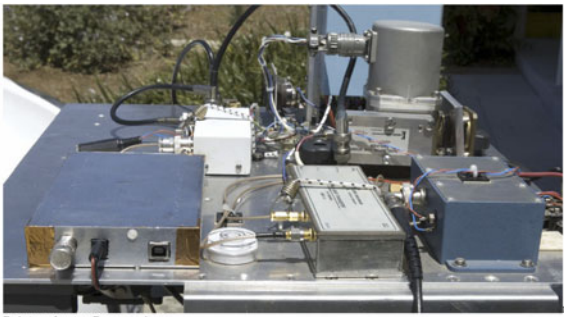
frequency while displaying the desired frequency. It also knows whether to re-invert the spectrum so that increased receive frequencies appears correctly left to right on the screen and also USB is correctly demodulated as USB and not as LSB. My 144MHz IF frequency is directly displayed on the screen in Winrad. We could also add the fixed offset of the transverter LO so the screen displays 10368MHz but then there would be so many digits that it becomes less readable.

The Modified Perseus Receiver

I decided to buy a second Perseus and modify it for undersampling because of several factors. The design of the receiver is very good. The FPGA cores range from 125KHz to 2MHz and they are quite flat and do not have spurs or spurious responses in them. So any spurious responses are all due to the A/D converter and any circuitry preceding it. The drivers for Winrad are excellent and work flawlessly every time. And most importantly, I love to design, build, and test new circuits so this was a good challenge for me.

It is important to note that the Perseus was purchased knowing that once I modified it, then it was mine and could not be repaired by Microtelecom. The Perseus contains a differential amplifier that must be disconnected or removed since it does not have the bandwidth for 144MHz. The preselector circuitry ahead of this is also only applicable to HF. The A/D converter is a Linear Technology LTC2206-14 and that datasheet is available at www.linear.com. The datasheet contains enough detailed information to design and make the modifications. The receiver schematic is company proprietary but is not needed for the modification. The problem with the removal of the differential amplifier and its components was that ROHS lead-free solder was used and this melts at nearly 30 degrees C higher than regular solder. Fortunately I have hot air tools that are accurately temperature regulated so I provided heat from the bottom as well as heat from the top through a correctly sized rectangular nozzle. It was not easy to remove those components without damaging the other components on the board.

I added the correct unbalanced to balanced transformer and changed other matching components. The receiver input was now made with a piece of teflon RG316/U coax and the appropriately sized BNC connector. A fitted aluminum shielded box was fabricated in my shop. This is shown in the photo.



End view of custom Perseus enclosure

Some Notes about Bench Tests

Since this receiver is a direct digital sampling system, it is not applicable to do two tone IMD tests. Instead, the noise floor was measured, and the Minimum Detectable Signal was tested with both the dual stage MOSFET 144MHz preamplifier and with the 10GHz transverter. On 144MHz without any preamplification, the spurious free dynamic range was tested with a single tone. This was found to be approximately 80dB and came from a 4th order product. This is less dynamic range than the LTC datasheet indicates, so it can be improved with a lower jitter clock and with some optimization of the input matching circuitry. However, the MDS on both 2m and on 10GHz was around .–140dBm so this system is ideal for operation on quiet bands without large interfering signals. The preamplifier gain was set to 20dB. The older dual gate MOSFETs that I used do not have a huge dynamic range either, but their input and output tuned circuits are high impedance and very selective. It is important that no energy outside of 2m is allowed to reach the A/D converter else this will be added to the wanted band. Bench tests at 432MHz without a preamp showed that the A/D converter and my matching network was only 3dB down from 2 meters. This can be utilized in future projects which need 70cm.

Future Improvements

The Perseus receiver will be modified by using an external low phase noise and low jitter 80MHz clock that is phase locked to the 10MHz reference. This should improve the dynamic range. I am also working on a SDR transmitter which would then completely replace the analog transmitter that is currently used. In the future, affordable direct sampling receivers may become available that have more than 300MHz sampling frequency. Undersampling multiplies both the clock jitter and the inherent noise and problems in the sample and hold circuit within the A/D converter. However, an A/D converter with a very high sample rate may or may not perform better because the effective number of bits and the spurious free dynamic range of converters go down as the sample rate increases.

Credits

Thank you to IEEE MTT-S member Michael Forman for his great photographs
Thank you to the following members of the 50MHz and Up Group of N. Calif. who provided contacts for my demonstration:
Randy Neals KI6TWT
Brian Yee W6BY
Jim Moss N9JIM
John Ekiss AA6HA
Thank you to Nico Palermo, the designer of the Perseus receiver
Thank you to Charles Buse HB9EGW for his work on improving and adding features to Winrad

RAL MICROWAVE ROUNDTABLE 2010

This year's meeting was held on 17/18 April, at the edge of the RAL campus, in the staff sports/social club room. The RAL radio club antennas are those on the towers by the way…. The dish is not theirs!

UKuG boasts many fine trophies for technical and other achievements, including contesting. RAL is now the tradition venue for their presentation.

Left: UKuG Chairman G4BAO (nearest in photo) presented Robin G8APZ with his much deserved G3BNL Plaque and Trophy for innovation or technical development of microwave equipment or techniques. Robin developed and implemented the invaluable UKuG Beaconspot website

Right: Roger G8CUB receives the G0RRJ 24GHz Memorial Trophy from Dianna Cox, the wife of the late Dave, G0RRJ

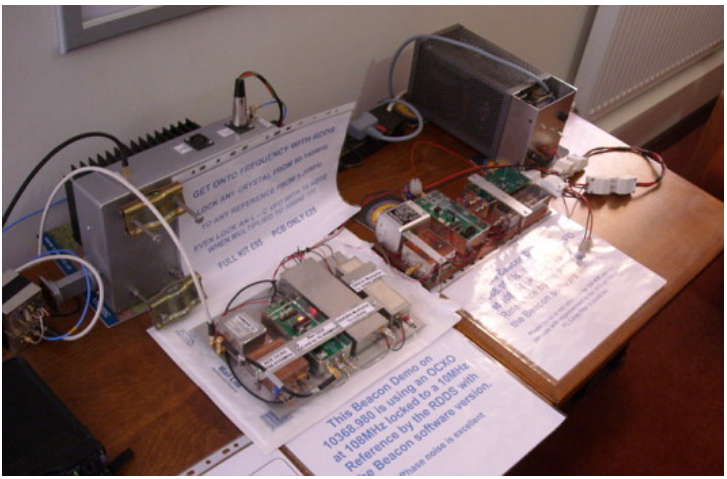
Left: Martyn G3UKV and Dave G8VZT (centre and right in photo) represented the G3ZME group to receive the 24GHz Cumulative trophy for the 2009 series.

Left: Peter G4ZXO receives the G3RPE trophy awarded to the leading station in the 2009 series of the 10GHz Cumulative Contest, Open Section.

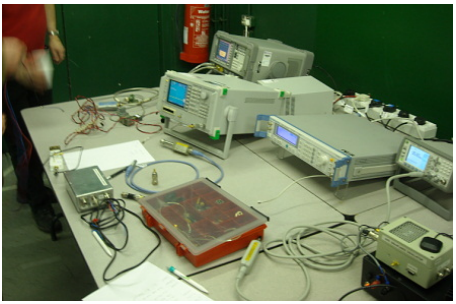
Right: Steve G1MPW is awarded the G3JMB Trophy as leading station in the Restricted Section of the 2009 10GHz Cumulatives

On show at RAL was a working **RDDS system** as described in recent editions of Scatterpoint.

This is an excellent way of ensuring superb local oscillator stability and frequency accuracy, together with very good phase noise characteristics. Kits are available from G4NNS and G8ACE and already several UK beacons have been retrofitted with them



RAL 2010 …. More photos



The test gear facility was a popular item at the Round Table

Fleamarket “goodies”, while not in the quantity we usually see at RAL, was nevertheless of high quality and many bargains were to be made

BRITTANY BEACON NEWS

On a sunny afternoon of 20 April 2010, the 3 microwave beacons in IN88HL (in the north of Brittany) were re-started with their new calls :

F1ZAO 5760.060MHz 30dBm slotted antenna

F1ZAP 10368.108MHz 30dBm slotted antenna

F1ZAQ 24048.252MHz 23dBm slotted antenna

More info at: http://millimeterwave.free.fr/index_g.htm

Thanks to Maurice F5EFD for the full maintenance and Jean-Pierre F1LHC (+YL) for the site access

73 from Eric, G1GHB

USEFUL SOLDER SOURCE

Richard G8JVM has found a company who sell solder, solder wick and flux pens at about half the price of RS , Maplin and Rapid and has very kindly arranged for UKuG members to get a discount!

The flux pens are £4.35, compared to the RS price of about £8. Solder braid 1.4 mtrs 1.9 mm wide is £1.98

Richard is “fishing” whether small quantities of silver loaded solder are available at good prices.

Mark Day of **MR Technical Services** has replied to Richard as follows:

I can offer -10% off all products for the UK Microwave Group. Discount is excluded from the Carriage cost. Note that all prices quoted are shown exclusive of VAT which will be calculated at the 'Checkout'.

Promo code: UKMG

Mark Day

MR Technical Services
Parson's Paddock
Ames Lane
Kilmersdon
Bath
BA3 5TB
Tel: +44(0)1761 432615
Fax: +44(0)1761 432615
Web: http:/ / www.mrtechservices.co.uk

Many thanks Richard for arranging this for UKuG members...

By the way Mark Day is no relation to the Scatterpoint Editor!

Receiver for Interplanetary Amateur Radio Satellite

With the launch of the first interplanetary Amateur Radio satellite to Venus just a few weeks away, OZ9AEC has made a video of equipment to receive its 5840.0 MHz beacon.

The YouTube description reads:

5.8 GHz receiver for UNITEC-1 based on the Universal Software Radio Peripheral (USRP), WBX RF board, Kuhne KU LNC 5659 C PRO and GNU Radio software. Testing on the air using OZ7IGY beacon 50 km away.

Watch 5.8 GHz Receiver Test using OZ7IGY

http://www.youtube.com/watch?v=6UToyq7yptg

Amateur Radio heads for Venus
http://www.southgatearc.org/news/march2010/ar_heads_for_venus.htm

73 Trevor M5AKA
Daily Amateur Radio Email/RSS News:
http://www.southgatearc.org/

Hello fellow Bodgers ....

For those of you with a more "mathematical bent" I've come across an interesting paper on Microwave power amplifiers from Gigatronics.

http://www.gigatronics.com/downloads/appnotes/AN-GT101A-Microwave%20Power%20Amplifier%20Fundamentals%2008-10-27.pdf

Also ,in case you haven't noticed (!):
My presentation from RAL "The Bodger's guide to scattering parameters " is available on the downloads page of www.g4bao.com.

73 John G4BAO

24GHz "First" Claim

A claim has been received from Hans, PA0EHG for the first Netherlands to UK contact on 24GHz, between PA0EHG and G3LQR. The contact took place on 23rd March 1995 on SSB, using homebrew equipment. If anyone knows of an earlier QSO with PA0 please let G3XDY know, otherwise Hans will be issued with a certificate in May.

73 John G3XDY
g3xdy@btinternet.com

RSGB MICROWAVE NEWS LETTER AND SCATTERPOINT ARCHIVE PROJECT

With the aid of back issues provided by Peter G3PHO, Murray G6JYB is gradually archiving all copies of these two newsletters to DVD. This involves scanning a vast number of sheets of paper, especially for the years 1981 up to the late 90s after which we already have computerised PDF files available.

While Peter has almost every issue of the two newsletters (he began editing the RSGB one in 1985 and carried on doing the same with its 'offspring" Scatterpoint in 2004) there are a few missing from the collection. If anyone has the following RSGB Microwave Newsletters that they are prepared to lend to Murray for scanning, it would complete what will be a most valuable archive of UK microwave history, both from a technical and an activity point of view.

RSGB Microwave Newsletter:
Sheets 1/80 and Sheet3/80 plus 1981 issues 7 and 8

Please email Murray directly at:
Murray.Niman@baesystems.com

UKuG hopes to eventually make the archive available to everyone in DVD format.

South Yorkshire Microwave Round Table

The UK Microwave Group and the Finningley Amateur Radio Society are pleased to announce that this popular event will once again take place over the weekend of **10-11 July 2010** and will be held, as last year, at the HQ of the Finningley Amateur Radio Society, near Doncaster, South Yorkshire.

Registration facilities and more information are now online at:

http://www.g0ghk.co.uk/table.php

There are no charges for attendance.

The programme will be as follows:

SATURDAY 10th July: **10am—4.30pm Microwave Beginners' Workshop**

* Introduction to Microwaves
* Getting started on 23cm & 10GHz
* Antennas for microwaves
* Surface mount techniques (including a practical workshop)
* 'Hands on' operating on the microwave bands – outdoors on the club field and local area

The emphasis for the whole course will be on practical, hands on activities.

Course leaders: G3PHO, G3PYB, G4HJW

Sandwich lunches and refreshments will be available at low cost

Prior registration is essential numbers will be limited to approximately 20 attendees.

SATURDAY EVENING: Pub meal and get-together at the nearby Green Tree pub. All are welcome, beginners and those attending Sunday's event.

SUNDAY 11th July: 10am-4.30pm Microwave Round Table Meeting

* 10am-1200 noon: Informal
* 1200 noon-1pm: Lunch (Sandwich lunches and refreshments will be available at low cost)
* 1.15—4.30: LECTURES

ALL DAY: LARGE FLEA MARKET & BRING & BUY, MICROWAVE ANTENNA TEST RANGE, TEST EQUIPMENT FACILITIES

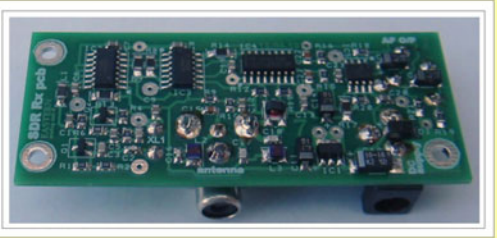
Note: Prior registration for Sunday is also essential as numbers may be limited to approximately 50 attendees

Further information may also be obtained from Peter, G3PHO at:

microwaves@g3pho.org.uk

Finningley 2010 Microwave Round Table

80m SDR rx dongle

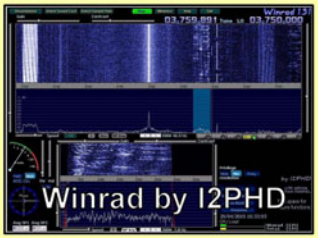


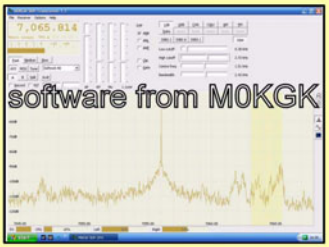
Optional 'take home' project to finish off the smd soldering course for the Saturday session of the Finningley microwave Round table - 10 and 11th July 2010.

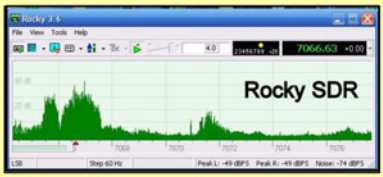
Kit cost will be £6.00 for course attendees

The board interfaces to the line input socket of the users PC sound card, and will tune +- 24 kHz of 3750 KHz for a 48 KHz sample rate sound card. Use a 96 kHz sample rate card, and the coverage will double to +- 48 KHz.

There are several free SDR software programmes that can be downloaded, a selection of which are shown below:







Please let Kevin G3AAF or Peter G3PHO know if you will be on the course and would also like to build a kit

By Robin Lucas, G8APZ

CONTEST and ACTIVITY REMINDER

May

18-May 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
30-May 0900 - 2000 1st 5.7GHz Cumulative
30-May 0900 - 2000 1st 10GHz Cumulative
30-May 0900 - 2000 1st 24GHz Cumulative

Jun

15-Jun 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
27-Jun 0900 - 2000 2nd 5.7GHz Cumulative
27-Jun 0900 - 2000 2nd 10GHz Cumulative
27-Jun 0900 - 2000 2nd 24GHz Cumulative

July

3/4-Jul 1400-1400 VHF NFD (1.3GHz)
Arranged by VHFCC (RSGB Contest)
18-Jul 0900 - 1700 2nd 24/47/76 GHz Cumulative
20-Jul 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
25-Jul 0900 - 2000 3rd 5.7GHz Cumulative
25-Jul 0900 - 2000 3rd 10GHz Cumulative
25-Jul 0900 - 2000 3rd 24GHz Cumulative

FRENCH JOURNEES d'ACTIVITE (JA)

29/30-May Activity weekend - 30th matches UKuG
19/20-Jun Activity weekend
24/25-Jul Activity weekend - 25th matches UKuG
28/29-Aug Activity weekend
25/26-Sep Activity weekend - 26th matches UKuG
30/31-Oct Activity weekend - 31st matches UKuG

Duration of all JAs is 1700 Saturday - 1700 Sunday

MONDAY NIGHT ACTIVITY

Brian **G4NNS**, reminded me that Monday Night is still activity night in the south and southwest.

Between November 2009 and February 2010 he has had the following numbers of QSOs from Andover (**IO91FF**) on Monday nights: **23cm** (12) **6cm** (10) **3cm** (11) and on **24GHz** (10).

It is also activity night across the rest of the country, but maybe now is as good a time as any to remind you! The activity is informal, with talkback on '**KST** chat or on the **144.175MHz** calling frequency.

BEACONS

Bryan Harber, G8DKK wrote to say that **GB3IOW** may have had a "service" visit from the beacon keeper recently, since it is now very close to its listed frequency of **1296.900MHz**. It also seems to be a stronger signal than of late but that may be conditions of course.

The frequency change is good news for Bryan in view of the imminent arrival of a new crystal for the **GB3DUN** beacon on **23cm** which should be on **1296.890MHz**, close to where '**IOW** has been spotted for the last year or so.

Bryan also noted that Beaconspot.eu listed **'IOW** as having A1A keying but he can confirm it is definitely keying in FSK (F1A).

A new **3cm** Dutch beacon **PI7ALK** from JO22ip was spotted in early April on **10368.930MHz.** It has already been heard via rainscatter by **G4EAT** (JO01hr) at a distance of 296km.

GB3CCX on **10368.940MHz** has also been reported on numerous occasions via localised rainscatter, whilst **GB3SCX** on **10368.940MHz** was heard at 386km by **F1RJ** (JN18at).

The **F1ZAO** and **F1ZAP** beacons (IN88hl) returned to the air in April, following some maintenance work, and a callsign change. These beacons in were previously **F1XAO** on **5760.060MHz** and **F1XAP** on **10368.108MHz**.

EME ON 3cm, 6cm AND 13cm

From:- Peter Blair, G3LTF, Andover

For the DUBUS **10368MHz** contest weekend, March 27/28th, I decided to fit the 6m dish with a **3cm** feed and preamp (a modified LNB which measures 1dB NF). Illuminating the centre 4m with a **W2IMU** type feed I found I was about 5dB short of sun noise and the moon noise was only 0.5dB.

I tried several different feed horns but without any improvement and concluded that there is an error somewhere in the profile. (Finding this out in fact made the whole effort worthwhile!)

However, I did hear **F5JWF**, **OK1KIR**, **G3WDG**, **F2TU**, **IQ4DF** (big signal!), **OK1CA**, **LX1DB** and **G4NNS**. It was quite exciting to hear **3cm** EME signals on my own system for the first time. I was quite amazed at what I could hear with this **3cm** Kluge!

On 17th April I was on **13cm** transmitting on 2320MHz (*=crossband QSO) and worked **RK3WWF**, **SV1BTR**, **LA9NEA**, **SP6OPN**, **OK1KIR**, **PA3DZL** #83, **LZ1DX**, **OK2DL** #84, **F2TU**, **SV3AAF**, **DL3EBJ** #85, **OK1DFC**, **OK1CA**, **ES5PC**, **DF3RU**, **DL4MEA**, **OH2DG**, **HB9SV**, **PA0BAT**, **DL1YMK**, and **W5LUA***.

On 18th April I continued with **VK3NX***, **OZ4MM**, **SP6GWN**, **SD3F**, **LA8LF***#86, **IW2FZR**, **VE6TA**, **SM2CEW**, **WW2R***, **K2UYH***, and **WD5AGO***

I also exchanged reports with **WD5AGO** on SSB, and heard **K8EB***, **W7JM***, **N8UO***, and **IK2RTI***

The next weekend I was on **6cm** having finally got my new system all up and working. The main change from last August was more power, about 25 watts compared to about 7w. The whole system fits in place with 4 plugs and 3 wing nuts. Echoes are now easily heard.

On April 24th I worked **F2TU**, **OK1KIR**, **IK2RTI** #8, **SV3AAF**#9, and **OK1CA**#10.

73 Peter, G3LTF

AIRCRAFT SCATTER (LACK OF)

The volcanic eruptions in Iceland played havoc with aircraft movements across Europe, and with UK airspace closed down for total of six days, the longer distance paths which depended on aircraft scatter were unavailable.

Bryan Harber, G8DKK mentioned that the conditions for the activity contest on 20th April were fairly poor. For the first time in ages he didn't work Ray, **GM4CXM** and he noted that John **G4EAT** failed with Ray as well. Bryan's ODX was **GW8ASD** who was probably south of the cold weather front across the northern UK.

13CM ACTIVITY

Bryan **G4DDK** was pleased to work **G4EAT** in SSB on **13cm** for the first time following the change to his **13cm** feeder following water ingress into the N connector. He hopes to have 40W on **13cm** soon.

23cm RECEIVE PROBLEM CURED

From:- Dave Ackrill, G0DJA

On **23cm** my pre-amp seemed to be open circuit and I was getting no signals, even from **GB3MHL**, which is normally a reasonable signal with or without the pre-amp switched on.

On a recent reasonably calm day - the first where I had the time, and it wasn't raining or snowing - I climbed up, removed the pre-amp and put a temporary connector in instead.

On receive, I was again hearing **GB3MHL**, which suggested that the antenna and connectors were OK so my suspicions returned to the pre-amp. I took it apart, unsoldered the lids and had a look inside. I couldn't see any obvious problem so I connected the bias-T, and switched the pre-amp on and off a few times watching the relays click in and out. Then I put it back in line with the antenna and TS2000X and looked at the signals from **GB3MHL**. When I switched it on the signal came up a bit, when I switched off it went down a bit...so, I put it all back together, climbed back up the side of the house and put the pre-amp back in place.

On receive everything is back to normal again. I've no idea what was wrong, unless the cold weather caused the relay contacts to be intermittent? I'm now copying the JT4g signals from **GB3CSB** again, not 100% of the time, but quite often.

On **3cm** I have had to put the gear away in the garage for a while as we had visitors over Christmas, the new year and even in February.

I'm still trying to work out how to fix the various dishes to a steady mounting for portable use and how to fabricate a feed system for one of the dishes as well.

I hope to be out portable in the Summer for a couple of the activity days, but I'm off to Dayton this year, so that's taking up quite a lot of my spending money and time in May.

73, Dave, G0DJA

APRIL LOW BANDS CONTEST

Mike **G0JMI** operated portable from IO91ME, on all three of the low bands at Holybourne Down, Hampshire on 11th April.

On **23cm**, Mike worked four stations with his best DX to **G3PHO/p** (228km). **13cm** and **9cm** also produced four complete QSOs, along with a **9cm** to 2m cross band contact with Peter, **G3PHO/p**.

Mike's best DX on **13cm** and **9cm** was to **GW3TKH/p** at 158km.

MAY 3cm TROPHY CONTEST

All of the higher bands are included in the twice a year IARU "DC-daylight" contest. The first eight hours of the contest in the UK includes the **10GHz** Trophy contest.

M1CRO/p (JO01pu) operated from the Essex coast near Walton on the Naze, and worked 28 stations during the **10GHz** Trophy section.

The best DX was with **GD0EMG** (IO74) at 470km with 52 reports on CW both ways. Amongst the top ten stations worked were **DF0MU** (JO32), together with **DH8AG, DL5EAG, DK6JL**, and **DF0HS/p** all in JO31.

For long periods of time, **DF0HS/p** could be heard calling CQ on **3cm**, but conditions didn't appear to be penetrating very far inland.

In the UK, some intense rain around Monmouth, Hereford and Gloucester produced rain scatter on some signals, but didn't produce any RS enhanced contacts. Attempts were made to work Ralph **G4ALY** in Cornwall via the rain, but to no avail.

Overall, 28 stations were worked in 18 squares, covering **G**, **GD**, **F**, **PA**, **DL**, and **ON**. Conditions appeared to be normal, although the amount of activity in **G** seemed on the low side.

Many of the usual supporters of this event appeared to be otherwise occupied, and it was a bit of a struggle to find anyone to work in the last two hours. Some of the usual stations in Holland also appeared to be missing.

The VHF talkback channel on 144.175MHz was noted as being in use by a number of stations, together with **'KST**. Unfortunately, many stations stay logged in, despite being away from their shacks, and this meant quite a lot wasted effort in asking for a QSO!

In the early hours of Sunday morning, the weather took a turn for the worse. The intense rain which had been noted to the west on the Saturday had arrived. Gales and torrential rain caused a few concerns with the station.

The soft ground wasn't retaining the wooden guy pegs for the 12-man Army tent, which meant it required constant attention, and the high wind was causing worries about the 40' masts. A decision was made to cease operating, and to get the masts down.

A high point on the Saturday was when a Sea King helicopter on exercises was hovering close to the cliff edge about 100metres or less from the masts for almost an hour. What a noise!

Nick Peckett, G4KUX, Bishop Auckland (IO94BP) was also QRV during the contest, and says he enjoyed the activity.

On **3cm** Nick worked **M1CRO/p** and **G4EAT**, both in JO01, together with Bryan **G8DKK** and another initial **G8KQW**, both in IO91. Other successes were **G3SVJ/p** and **G4PBP**.

Tests with **G4ALY** and **F6DKW** both failed, but signals were heard both ways.

Nick has a superb radio QTH, but says that 10W on **23cm** in flat band conditions isn't enough, so he has just ordered a 250w pa from **PE1RKI**.

RSGB MAY 432 & UP CONTEST

The Telford and District A.R.Society seem to have had an eventful weekend according to **Martyn, G3UKV's report** ...

The weekend was a bit of a disaster - or more accurately, a series of small disasters. We wanted to air our special contest call, G3Z, and chose to add /P to it to indicate our hilltop presence, although it's not necessary under RSGB rules.

We activated 7 bands, but activity was abysmal overall. When you go out portable, you

have to put in a lot of effort, especially for a multiband whole weekend event like the "432 and Up" contest.

Most fixed stations (with a few notable exceptions) can take a more laid back approach, especially on our chosen uWave bands. Anyway, with 6 of us available (but not all of us all of the time !) we decided to go for bust and got to site four and a half hours before the kick off. Even so, we were only just ready in time. 70cm and 23cm were relatively straight forward, using commercial equipment and antennas on both bands. David and Chris (M0EMM and M0ECM) did us proud there, having 53 QSOs on 70cm (ØDX PA6NL JO21BX at 463km on both bands) and just 23 on 23cm !

On 13cm, 9 and 6cm we had a meagre 4 QSOs per band, with Chris and the lads at GD0EMG providing the best DX of the weekend. They were also our best DX on 3cm, once the tripod was re-positioned to give us a clear take-off to the NW. We had 9 QSOs on 10GHz in total, with nothing out of the ordinary worked. Finally, on 24GHz, we had one solitary QSO (thanks Keith !) with GW3TKH/P at an unpronouncable site near the Blorenge (which I can pronounce and even spell.....). I had left the tripod at home, so we claim the first UK hand-held DX QSO ever for this band - signals were a wobbly S9 both ways.

And now for the problems, apart from driving rain and wind, particularly on Saturday.

70 and 23 cm - brand new KW generator failed after a few hours; the engine kept running but the electrons were in short supply for no obvious reason (alternator internal short ?)

13cm - Spectrian 70W PA unit burst into flames after a very short while; load or relay problem? Resorted to 10W for the rest of Sunday.

13cm 70W Spectrian PA belonging to Mike G4NRC, after the flames died down

Chris M0ECM puts the final touches to repairing the 6cm dish feed which was badly damaged by a mast collapsing

6cm dish (plus 2m yagi) mast broke lose from one critical halyard, and collapsed. Butane gas torch fixed broken horn feed, but then overnight water ingress into TS700 killed transmit drive on 2 metres, and that curtailed 6cm activity on Sunday.

3cm Xverter came apart from dish in windy conditions, and tore away some semi-rigid coax, which fortunately we were able to replace immediately.

I'm left asking myself why we go portable at all, especially for multi band contests. Still, we had lots of fun and will probably return for more masochism.

73 from Martyn G3UKV for Telford & DARS microwavers.

... AND FINALLY

The weather has well and truly changed since the arrival of Spring. It's a good time to brush the cobwebs off the portable station, or to start building for a new band, perhaps do both!

I still need far more input for this column, and your photos are always welcome.

73, Robin, G8APZ

Please send your activity news for this column to:

scatterpoint@microwavers.org

March 2010 UkuG Lowband Contest Results

Although there was only one more entry this year, numbers of contacts and scores were up, particularly 1.3GHz. However, entry levels on 2.3GHz were disappointing this year. Some good DX was achieved on all three bands by the leading stations.

Congratulations to Sam G4DDK who won 2.3GHz and 3.4GHz and the overall contest, with Ray GM4CXM in overall runner-up slot and winner by a large margin on 1.3GHz. GW3TKH/P was the runner up on 2.3 and 3.4GHz, and G4BRK on 1.3GHz. All will receive certificates.

73 John G3XDY

March 2010 Low Band Contest Results

Overall Positions:

Pos	Callsign	1.3GHz	2.3GHz	3.4GHz	Total
1	G4DDK	466	1000	1000	2466
2	GM4CXM	1000	0	0	1000
3	G4BRK	549	0	0	549
4	GM4GUF/P	345	0	0	345
5	GW3TKH/P	60	71	91	222
6	GW6GVI/A	30	0	0	30

1.3GHz:

Pos	Callsign	Locator	QSOs	Best DX		Points
1	GM4CXM	IO75TW	19	PI4GN	768km	7288
2	G4BRK	IO91HP	16	GM3SBC/P	524km	3999
3	G4DDK	JO02PA	10	DH2SAV	671km	3394
4	GM4GUF/P	IO85EO	13	M0GHZ	473km	2517
5	GW3TKH/P	IO81LS	5	G8CUB/P	208km	434
6	GW6GVI/A	IO81PQ	4	G4BRK	93km	217

2.3GHz:

Pos	Callsign	Locator	QSOs	Best DX		Points
1	G4DDK	JO02PA	6	DL0R	626km	1939
2	GW3TKH/P	IO81LS	2	G3VKV	70km	138

3.4GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	G4DDK	JO02PA	4	DL0R	626km	1145
2	GW3TKH/P	IO81LS	1.5	G3VKV	70km	104