An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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Nanowave Communication

Technology, techniques & practice

By Stuart Wisher G8CYW

In this Issue

4 G4DDK retires??
4 SK GM4LBV
5 Heelweg Microwave 2013
6 ARRL UHF/Microwave Band Plan input
6 New GW4DGU website
7 Nanowave Communication
11 Martlesham Microwave Round Table and UKµG AGM
12 Activity News
15 UK Microwave Group Contests in 2013
16 Contest & Activity dates
16 Events calendar

Season's Greetings to all our readers and to our contributors this year, without whom there would be no Scatterpoint!

STOP PRESS!

A number of the UKµG Committee are standing down at the AGM in 2013.

Over mulled wine and mince pies, please mull over suitable replacements.

More details next month!

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Editor's corner

It's a light edition this month, but please welcome **Bob Price G8DTF** who takes on the **Activity column** from this month.

No doubt you've all been busy Christmas shopping, dropping hints to Santa or preparing your escape to the shack.

Perhaps you'd like to show and tell next month?

NB The 2011 volume of Scatterpoint will be available online at the end of December.

Meanwhile I wish you ice-free antennae and GD DX, oh, and a Happy Christmas!

73 de Martin G8BHC

Articles for Scatterpoint

News, views and articles for this newsletter are always welcome.

Please send them to

editor@microwavers.org

The CLOSING date is the FIRST day of the month

if you want your material to be published in the next issue.

Please submit your articles in any of the following formats:–

Text: txt, rtf, rtfd, doc, docx, odt, Pages

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

I can extract text and pictures from pdf files but tables can be a bit of a problem so please send these as separate files in one of the above formats.

Thank you for you co-operation.

Martin G8BHC

UK MICROWAVE GROUP

SUBSCRIPTION

The following subscription rates now apply.

UK £6.00 US $12.00 Europe €10.00

This basic sum is for **UKuG membership.** For this you receive Scatterpoint for **FREE** by electronic means (now internet only) via the Yahoo group.

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!

You will have to make a quick check with the membership secretary if you have forgotten the renewal date. 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.

Please also note the payment methods and be meticulous with PayPal and cheque details.

QUOTE YOUR CALLSIGN PLEASE!

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!)

Colour codes

Editorial & Events

Activity & Contests

Technical

Nanowaves (optical)

Commentary

Reproducing articles from Scatterpoint

If you plan to reproduce an article exactly as per Scatterpoint then please contact the Editor – otherwise you need to seek permission from the original source/author.

You may not reproduce articles for profit or other

G4DDK retires??

Sam Jewell G4DDK has completed 8 years running the GHz column in RadCom. He has done a great job of producing an interesting and newsy column covering 23cm to blue light, with technical features, operating news and educational material for the newcomer in the UK's national amateur radio magazine.

The UK Microwave Group and the microwave community thank him for his sterling work.

[The Movember addition has now gone. Ed]

Silent Key – John R Eaton GM4LBV

I am sorry to have to report that John, GM4LBV has passed away suddenly at his home near Montrose.

John's passion was any aspect of microwave communications, and many will be able to remember QSOs with him, on many bands, from his fantastic costal QTH.

Scotland has lost a big signal, and a real gentleman. He will be missed by all that knew him.

RIP John.

Mark GM4ISM

HEELWEG MICROWAVE 2013

Dear OM,

We'd like to invite you to the Dutch Microwaves Event on:

Saturday January 19th 2013

This meeting will be the place to exchange ideas with amateurs from Holland, Germany, France, United Kingdom, Belgium, Switzerland and more.

We hope all of you will bring your homebrew equipment which can be measured on performance by our 2013 measuring team operated by:

PA0JEN, PE1BMC, PE1FOD, PA0EHG, PA7JB, PA3CEG, PE1FYB,

PB0AOK, PE0SSB, PA1KR, PA2M, PA0RYL and PA3ACJ .

The following equipment will be available:

- Sweeper 0-26 GHz
- Spectrum analyser up to 26 GHz.
- Spectrum analyser 10KHz–3.8GHz + Tracking generator
- Generator 10KHz–3.3GHz (AM, FM, CW, Pulse)
- SWR 5MHz - 3.0GHz (RF-SWR Bridge)
- Spectrum analyzer up to 325 GHz
- Vector network analyser up to 20 GHz
- Tektronix Video generator
- Tektronix VM700 video measuring
- Barco Receiver I & II receiver / video demodulator range 23cm, 13cm and 3cm,
- NKF video demodulator for baseband measuring.
- Spectrum analyser Agilent to 3GHz.
- Noise meter 24 GHz
- Noise meter 47 GHz
- Power meter up to 76 GHz
- Calibration unit for 24 GHz Filters
- Signal generator from 0 –18.6 GHZ (Mar 2031 / HP8673)
- Spectrum analyser from 0–26.5 GHz + Tracking up to 2.7 GHz.
- AM – 70 cm ATV generator
- Counter 24GHz rubidium stabilised.
- Power meter to 250 Watt up to 2.5GHz.
- Rubidium & GPS based frequency standard 10MHz
- HP 5370 Time Interval Meter
- HP 3336 B Signal Generator
- HP 8405A Vector Voltmeter
- GPIB control software based on KE5FX programs

If you have a special project to be measured, please send an email. We maybe can arrange specific equipment.

Please watch our website for updates www.pamicrowaves.nl and our Forum

www.pamicrowaves.nl/website/forum/

Please contact us via info@pamicrowaves.nl

OUR 2012 VIDEO at www.youtube.com/watch?v=fO6jP7G-HHI

DATE 19 January 2013

Time 10.00 to 15.00

LOCATION

CAFE ZAAL "DE VOS"

Halseweg 2

7054 BH WESTENDORP

The Netherlands

73's

PA3CEG, PA0BAT, PA7JB, PE1FOT

One to watch?

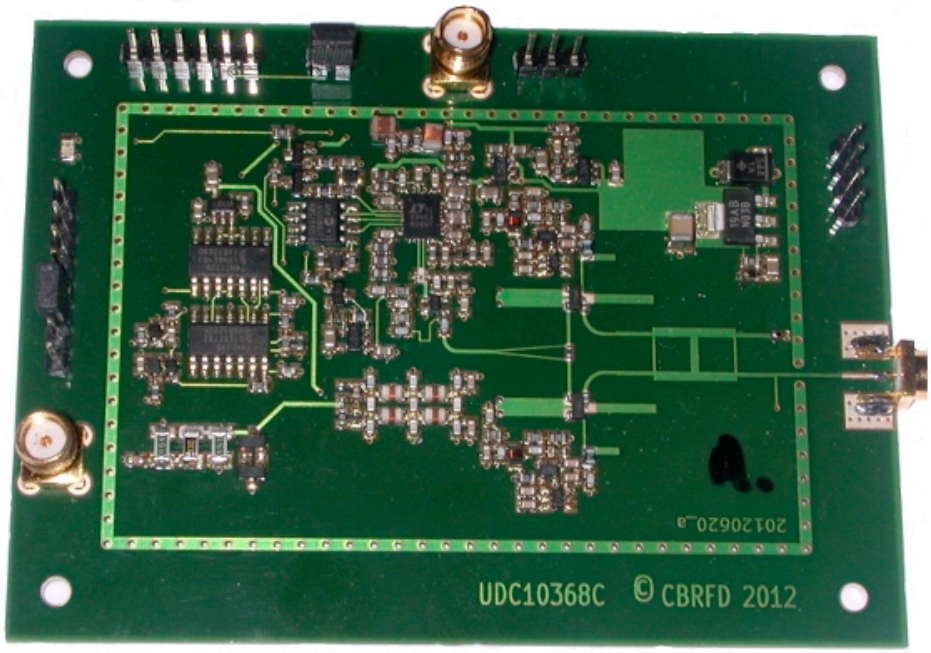
ARRL UHF/Microwave Band Plan Committee Seeks Input on 6 and 3 Centimeter Bands

Last year, in recognition of the need to update the published band plans for our UHF and microwave bands, the ARRL Board of Directors formed the UHF/Microwave Band Plan Committee to develop revised national [USA] plans for the amateur bands between 902 MHz and 3.5 GHz. After receiving extensive user input, the committee completed its task and the resulting band plans were approved by the Board in July 2012. The committee has now received an additional assignment to conduct a similar update to the 6 and 3 centimeter bands. In order to do this effectively, the committee needs to know how various segments of these bands are now being utilized around the country. You can help them by sharing what you know about local usage in your area and by asking other users -- both individuals and groups -- to do the same. Read more here.

GW4DGU launches new Amateur Radio microwave system component website

Chris Bartram, GW4DGU, will be remembered by many as the founder of muTek limited and the designer of much of the still highly regarded range of VHF/UHF equipment manufactured by the Company.

Although he has remained an active VHF/UHF/microwave dx'er for much of the intervening time, since 1986 Chris has worked as a consultant in RF and microwave circuit design. Recently he has decided to make system components for the Amateur Radio microwave bands, using the wide experience he has acquired to incorporate contemporary technology. These units can be assembled to make complete units such as transverters. The initial range is for the 10GHz band and includes an up-down converter with an integral high-performance frequency synthesiser, a frequency reference for the synthesiser which can be locked to an external 10MHz source such as a GPS derived standard, a feedhorn specifically designed for satellite TV dish antennas, and a low-loss narrow-band bandpass filter which re-uses a single circular waveguide cavity to make a two-pole filter. Other products such as low noise, and power amplifiers will be available soon.



A web site www.chris-bartram.co.uk showcasing these products was launched in late November.

Nanowave Communication

Technology, techniques & practice

By Stuart Wisher G8CYW

Introduction

For those of you who are dyed-in-the-wool microwavers, who have paid scant attention so far to what has been happening at wavelengths a million or so times shorter than your favourite bands, here is your chance to catch up with the activities of the "lunatic fringe" with a conveniently potted history of recent developments, there may be some interest in it for you after all. Every time I listen to an optical sub carrier SSB signal over a long path, I am amazed by the similarity between it and the characteristic sound of DX on 23cm or 13cm.

This is a review of the current state of the art from a NE England perspective, a quick look at the technology, techniques and practice in exploring three new bands of frequencies centred on the visible spectrum. The story so far……..

Red Light

This by far the most popular band, using wavelengths around 630nm (475THz). The simple observation that when the Sun rises and sets it looks red in colour is because the other wavelengths present in the yellowish light from our main sequence star (with its surface temperature of 6000 degrees Celsius) have been filtered and scattered out by travel through long distances in the atmosphere. This leads us to conclude that the best wavelength for long distance communication in the visible spectrum is the region around 630nm.

This band is unique amongst all those used for electromagnetic communication in that it is the only band in which we can actually see the signal that is being transmitted. This is obviously an enormous help in alignment of transmitters and receivers.

Currently, most efforts have involved amplitude modulation of red LEDs either directly at the modulation baseband or indirectly using a sub-carrier at low supersonic frequencies between roughly 15kHz and 25kHz which is itself modulated typically with FM or SSB. Both modulation schemes have resulted in contacts being made through over 100km of the lower troposphere in the UK.

Power LEDs (either Luxeon Star type or Golden Dragon) in the 3W class have largely been used in the past, although recently the Phlatlight type of LED is coming into use with an approximately 10dB or so increase in power, these latter type are capable of operating at up to 20A peak current. Optical receivers have generally used photodiodes in FET input circuits which make very sensitive receivers indeed. The discovery that LEDs also behave as photodiodes, and in some cases, avalanche photodiodes, has led to the development of optical transceivers where the same LED has been used on receive as well as transmit, requiring only one optical system and also greatly simplifying alignment. In this case, full PTT operation is possible without recourse to two sets of optics.

The "antenna" for optical communication is generally a lens of some sort, being analogous to the parabolic dish used for microwave communication and performing the same function of signal collection and focussing on to the active device, using refraction of waves rather than reflection as is common in microwaves.

Initially, a commonly available 100mm diameter lens of some 280mm focal length was used, which was a push fit into 110mm waste pipe. The lens is found in the various "cheap shops" for just £1, a bargain considering that these lenses give a gain of approximately 38dB over the 1mm^2 aperture of some photodiodes or LEDs. A more recent development has been to use "A4 page magnifier" Fresnel lenses made of rigid Acrylic available from similar sources or stationery shops at about the same cost. These are just short of actual A4 paper size but being of considerably greater area than the 100mm lenses they give a further 8dB gain due to the larger size. Most of these lenses have a focal length of around 330mm and are either mounted in a box or on a skeleton frame. The best that can be done with either of the lenses used on transmit is to produce a focussed image of the LED at great distance, this gives a beamwidth of less than one degree in total. On receive, the lens is used to focus the total radiation flux incident on the area of the

lens down on to the sensitive area of the photodiode, the beamwidth on receive being the same as on transmit if the same device area is in use.

A useful development here on transmit, with a LED with a Lambertian pattern of radiation, has been the use of a secondary lens to gather more of the LED output by focussing it on to the main lens. If this secondary lens is a positive meniscus type of around f1 in aperture, then a practical optimum illumination of the main lens is achieved since this lens can be located very close to the LED and therefore intercept a large part of the LED output.

One interesting departure from this practice has been use of the high power Phlatlight LED with only the secondary lens in front of it which produced a radiation pattern with a main forward lobe not dissimilar to that of a four or five element Yagi antenna. This arrangement is obviously easier to aim having a main forward lobe of a few tens of degrees in total, and has resulted in signals at strength S9 being reported at some 30km distance despite the greater spread of the radiation, largely due to the amount of optical power available.

Another departure here has been to attempt to make optical contacts in full daylight instead of in the more usual hours of darkness. Daylight contacts have now been made up to and beyond the 50km mark much against expectations. The use of gel filters and interference filters have played their part in reducing noise levels so that signals are detectable , as have capacitor coupled amplifiers that do not saturate at the general light levels present in full daylight. Use of the LED itself as the receiving element has also helped others here as the LED acts to some extent as its own filter at wavelengths around those that it generates. Although this has been noted, it has not been fully researched to date. One practical difficulty here has been in aiming during daylight hours as it is very hard or impossible to spot the radiation coming from the far end of the contact due to the presence of strong daylight. This has forced stations to improve aiming accuracy and has led to further developments in the use of aiming telescopes for such contacts.

Infra-red (IR)

Two bands of IR frequencies have been explored here, those around 850nm (350 THz) and around 940nm (320 THz). The second of these has been used by the NE Optical Communications Group for a single successful 6km contact using a Golden Dragon 940nm LED running at 3W input, in full sunlight. It was felt that at an early stage in proposing that we try daytime optical contacts, that it would have been necessary to go to IR after some IR photographs were viewed, showing the sky to be very dark even in daylight. This was subsequently found to be incorrect when daytime contacts were indeed found to be possible using red light. It turned out that IR contacts are relatively easy to make using the IR variants of the Golden Dragon LEDs available at both 850nm and 940nm, these operate at the same power input as the visible red type, and using the same optical arrangements after some minor adjustments to the LED to lens distance were made to accommodate the different focal length of the lenses at IR rather than visible wavelengths.

The 940nm band was then left for the meanwhile when it became known that signals on 850nm might fare better on long paths through the atmosphere due to absorption by molecules of various elements and compounds present in air. Photographic “long pass” filters (equivalent to low pass filters in radio terms) are cheaply available for either wavelength and give readily measurable noise reduction when in use out in the field. Both Golden Dragon IR LEDs are also usable as receive photodiodes without the large negative bias required for the red LEDs at visible wavelengths (- 43V for the Golden Dragon and - 64V for the more recent Platinum Dragon), the 12V supply used to power the receive head generally is adequate to use as negative bias for an IR LED of this type.

Using the 3W IR LED, successful contacts have been made in the daytime at up to 46km with ease. Visible red guide lights or beacons are unusable under these conditions as noted earlier and so accurate aiming is called for, but has been found not to be a problem. Indeed on the last such trial, contact was made within two minutes of commencing operations. Signals were so strong on this test that the “precision optical attenuator” (a carefully calibrated hole in a sheet of cardboard placed in front of the Fresnel lens) was used to simulate signal strengths at greater distances still. Due to the inverse-square law, a 6dB attenuator (a hole of exactly a quarter of the total area of the Fresnel lens) mimics the effect of a contact at double the distance. The attenuator is also equipped with a 12dB setting, which frankly looks ridiculous, being just 5cm by 7cm, passing just one sixteenth of the

radiation incident on it. This mimics the effect of a contact at four times the current distance, getting on for 200km in this instance. It must be added that these factors do not include the effect of the increased effect of the extinction coefficient, which is very low indeed on the clear days chosen for tests. More recent work and measurements in an attempt to make a simple mathematical model of propagation seem to indicate that the inverse square law is the much more significant factor than extinction (the simple conversion of energy into another form) as the beam travels through the air. Values as low as 0.01dB per km have been seen reported by others on the internet, implying that a 100km contact would suffer to the extent of just 1dB. How true this is, is not known, but seems likely under the very best seeing conditions.

At 46km, using 12dB attenuation, clear copy of a SSB signal at around 20kHz was obtained on a day when the turbulent atmosphere, due to it being very windy, made sub-carrier FM difficult due to scintillation of the signal. Indeed, further attenuation may have been tried but for the wind grabbing the attenuator and hurling it some distance before it could be recovered. Even the RAF seemed to be aware of the off-axis signal at one point!

It might be of interest to review the characteristics of FM and SSB transmission on an optical sub-carrier here. Due to the action of an FM receiver, scintillation drop-outs from fully quieting reception result in rapid bursts of loud white noise which punctuate the received audio, much like trying to listen to a conversation with someone firing a machine gun nearby. On SSB, the situation is much easier to cope with, scintillation causes the signal to drop in amplitude for short periods, often much less than the length of a spoken word, creating holes in the received speech which are much less noticeable due to the inherent redundancy in speech. One is reminded here of the action of a noise blanker not affecting copy of an rf signal. Of course, on contacts up to 90km so far, where FM has been used and has resulted in fully quieting reception, the quality of the audio on the contact has been every bit as good as a local 2m FM signal. This all sounds exactly like it would using conventional radio frequencies.

In conclusion, it is thought that IR communication has much potential, powerful IR LEDs are available at reasonable prices and IR seems to be more penetrating than red light. IR does not cause so much visible disturbance attracting unwanted attention, except of course, unless you happen to be piloting an aircraft equipped with IR sensors! The main problem that remains here is that of the required aiming accuracy which can be overcome with technique and practice.

Ultra Violet (UV)

The statement on the UKNanowaves Yahoo group home page includes UV for completeness, and this has been investigated by both NE and Sheffield groups. Both groups have used the same low power 5mm through-hole UV LED which has an output power of just 10mW at around 400nm (750THz), some 20dB down on the output power of the 3W red and IR LEDs. Due to the effect of the inverse square law alone, this should result in a factor of ten times less range than with the more powerful devices before the effect of atmospheric losses is considered, which are thought to be greater for UV than the longer wavelengths. This reduction in power means that many short paths which were useful at an earlier stage in the development of visible optical communication, become useful again. Signal strength expectations at 20km using 10mW ought to be comparable with a 200km path (which we cannot find in the UK) for 1W of red light, this is very convenient, but bear in mind we have been investigating a new band with just one-hundredth of the power used for communication on the established red light band.

At UV, as with the other bands explored, both baseband and sub carrier techniques have been used. Because the range was expected to be so limited, thought again turned to making a simple mathematical model of propagation with the hope of checking theory against practice. On the sub carrier front, contact was first established over the well-used path of 6km with very strong signals at strengths above the linear region in the receiver being used, this is a far cry from the previous development on red light, where it was a long time before contact was successfully made at the scaled up equivalent distance, bearing in mind the power differential. It had been thought from internet sources that we should expect some ten times more scatter and attenuation at UV than red light, and some doubt was expressed whether UV would provide a viable means of propagating a signal (over a distance measured in kilometres) at all.

A test at some 21km made us think again here, as a full two-way QSO was made with signals at strength

S8 both ways on matched and calibrated equipment. Here we were on the linear part of the S meter scale of the equipment in use and useful data was gathered. The Sheffield group also completed a one-way contact over a similar distance demonstrating again the similar results gained with either baseband or sub carrier techniques and showing this to be no fluke.

Analysis of data seemed to indicate that under the optical conditions that it was felt worth going out for a test (extremely clear), that it is only the inverse square law that was the major factor. Consequently, it was predicted that signals ought to be S7 at a distance of 32km, the next planned test distance. (at 3dB per S-point on the linear range of the equipment). This indeed proved to be exactly the case although on that occasion only a one-way contact ensued, before things stopped working due to the formation on the optics of a layer of dew that was not noticed until it was too late. A later return to the same site proved negative due to a slight haze being present that was not spotted until, after an otherwise clear day, we arrived on site. Scientifically, the one successful test is enough to demonstrate the possibility of contact over 32km with just 10mW at UV. We are at present considering whether to go for our next path over 46km, it only represents twenty or so more minutes in travelling time, with the same packing, unpacking and setting up time which makes the twenty minutes seem unimportant. Extrapolating our results to 46km leads us to hope that signals will still be S6 and quite usable providing we can find clear enough conditions which are almost as likely as at 32km. There still remains much to be discovered.

Beacons

There are a few known Nanowave beacons in operation at present, one is located at GB3CAM that is modulated at two frequencies, and another is located at G8CYW's QTH, NE England, modulated at around 17kHz with a crystal controlled source. Others are planned. The signals from the NE beacon have been accurately measured at different distances using SDR equipment to aid the mathematical approach to signal strength analysis. An example of this approach is that using a 100mm lens and the by now standard diode and FET front end, signals were found to be 30dB over noise in a 24Hz bandwidth at 6km. The signal strength using the same approach was then calculated over an available path of some 15km and found to be in exact agreement with observations subsequently carried out at 22dB over noise. A further test at 30km is thought to be possible but not yet carried out. The S/N should be 16dB under the same conditions, time will tell. Beacons carrying data mode signals linked to a GPS source are planned for the future and a new variant of the Opera mode has just been announced.

The future

The previously mentioned high power, Phlatlight LED, deserves another mention here as it may be able to take contacts to another level, that of scatter and non-line-of-sight (NLOS) communications. Whether simple cloud bounce, forward or reverse scatter will prove possible is not really known yet, but the first outing of the QRO TX demonstrated the possibilities, focussed by the secondary lens and the A4 Fresnel lens, a strong beam of red light was seen by backscatter projected over miles of dark countryside. It is powerful enough to be able to project a clear image of the LED on to the bottom of low cloud. It is now well known that if an optical signal is visible to the naked eye, then a clear signal is recoverable for a contact.

Geometrically, at 33km distance, the LED image should be some 300m by 400m on a cloud. Someone viewing the same cloud from the same distance will find that the optical set up will essentially reverse this situation and bring the light from all of this rectangular patch to a focus on a photodiode enabling a successful contact to take place hopefully. Other daydreams here include those about the possibility of including rain scatter modes where the optical signal might undergo the same reflection angle as that experienced by sunlight when a rainbow is seen. The field here is wide open here for those skilled and interested in weak signal data modes to set up an interesting path and wait to see if any successful decodes result. One thing seems true about optical communication, the more we investigate this, the more we discover, and the more possibilities seem to open up to us.

Stuart Wisher G8CYW

Martlesham Microwave Round Table

and UK Microwave Group AGM

Draft Programme

Saturday 27th April 2013

10:00	Truck Stop Breakfast
12:00	Doors Open
13:00	Welcome & opening G4BAO
13:15	Talk
14:00	Refreshments
14:30	Trophy Presentations TBD
14:45	Talks
16:55	Close
19:30	Meet for Dinner at 20:00 at the Cameo Hotel Ipswich

Sunday 28th April 2013

09:00	Doors Open
09:50	Welcome & Opening G4BAO
10:00	UKuG AGM (details in January)
10:30	Refreshments
11:00	Talks
12:30	Lunch break
13:30	Talks
15:00	UKuG Contest Forum G3XDY
15:45	Close

Travel

The talks and testing will be held at:

BT Adastral Park,

Martlesham Heath,

Suffolk, IP5 3RE.

This is located a few yards off the A12, just east of Ipswich.

CLICK for map.

The evening meal and accommodation will be at:

Cameo Hotel Copdock, London Road,

Ipswich, Suffolk, IP8 3JD, England.

Direct number 01473 209988
(09:00-17:30 on weekdays)

CLICK for details.

There is a shuttle bus between Ipswich and Stansted every two hours at a reasonable price.

For more details and booking, see here

Testing

Test equipment will be available throughout the day subject to qualified personnel to operate the test and measurement equipment (yes, staff would like to attend the talks too!).

Noise figure testing on many bands.

Activity News

By Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

I must start with a word of thanks to John G4BAO for the great work he has done on the Scatterpoint Activity Column and wish him equal success with the RadCom GHz column.

November Microwave Opening

November saw a good microwave opening around 14th/15th with several stations having 1000km+ QSOs on a number of microwave bands. I managed to miss it completely as my antennas were down.

From Andy G4JNT and John G0API

Bell Hill beacons (IO80uu59) have been heard well into Europe.

These represent the best ever DX reports for the beacons GB3SCS 2320.905MHz , GB3SCF 3400.905MHz, GB3SCC 5760.905MHz and GB3SCX 10368.905MHz. In fact during the last 5 years of the WWW.Beaconspot.EU operation these DX listings are the best in Europe for all 4 bands.

Bell Hill Beacon DX spots from Beaconspot.eu 14/15 Nov 2012

Beacon	Frequency	By	In	QRB
GB3SCX	10368MHz	OK1JKT	JO60RN	1107km
GB3SCS	2320MHz	OE5VRL	JN78DK	1221km
GB3SCC	5760MHz	OE5VRL	JN78DK	1221km
GB3SCX	10368MHz	OE5VRL	JN78DK	1221km
GB3SCS	2320MHz	DL7QY	JN59BD	906km
GB3SCF	3400MHz	DL7QY	JN59BD	906km
GB3SCF	3400MHz	OK1YA	JN79IO	1214km

From Mike G0MJW

I didn't work very much due to being abroad until Thursday and apparent weak signal problems on 13/9cm where power is going out and not coming back, but is not apparently being radiated very well. One might think cable loss but they share TX coax with 23cm which was fine. Maybe it is just by using G4DDK's LNAs I am hearing much better than others.

On 23cm I managed to work OK1MAC, OE5VRL, DH9NBU, DL4EBV and DB6NT. Although GB3MHL/S/C was strong, I heard nothing mid range, (ON, PA, F) and although other Gs were heard working deep into France and Switzerland I heard nothing which was interesting.

From Tony G4NBS

I wasn't around on 14th either, but 15th was interesting.

Signals with me were better on 23cm and 13cm than 70cm with OK1MAC and OE5VRL/5 as strong (59 reports) on 13cm as they were on 23cm despite my small yagi!

I could not hear any OKs on 70cm although I did work 3 OE''s at 53/55 level. Maybe my system, but I think conditions were favouring the higher frequencies.

I didn't hear PA/ON, but appeared to "drop" down along JN38 to JN78/9 line with me. Massive signal on 23cm from F5SVQ, but no other F or HB's heard here.

Did work JO31 on 23cm and 13cm, but rest of signals were 750 to 1100km range.

It's a long time since I've been in the right place to catch such nice QSO's. May they return soon.....

From Gordon G0EWN

The Hepburn propagation pages suggested possible conditions over the period 14th to 16th November associated with a high pressure system. Listening on the 14th was frustrating – no conditions from my home location IO93FK, but I could hear others working DX. The following day the propagation did arrive and during the morning various beacons started to show. I started operating just after 16.00pm on 23cms and first contact was with OE5VRL/5, Rudi – 59/59. After this first contact activity was frenetic, including OK/DK/F and more OE stations. The French stations were amazingly strong – often reaching +60db signal strengths –

some of the strongest microwave signals I have ever received. Best contact was a new ODX, new square and DXCC--OE5VRL/5 on 3cms at 1237kms. Conditions persisted into the 16th November, but activity was much lower.

From Richard G4HGI

On the 15th November on 23cm the following stations were worked using a FT897d, DownEast Transverter 3 watts, 55 ele Tonna, no masthead preamp

F8DLS	JN19SE	645 km
F1PYR/P	JN19BC	591 km
F1EZQ	JN27LS	833 km
PA2M	JO21IP	541 km
F1ISM	JN09VK	547 km
DH2SAV	JN48QU	985 km

Spent a lot of time listening to other stations – very, very, selective ducting – listened to Tony GW8ASD for some time working well in Germany – couldn't hear any of the stations he was working, but the best path for me was down to JN09, 19, 48

From John G0API

This was a magnificent lift by any standards , although as I am only 21km LOS from the GB3SCS/C/X site I was surprised to only find a modest enhancement on 1.3GHz and no other DX - 144MHz was wide open with several HB9 beacons and best heard DB0FGB at 986km using a 10 el Yagi at 3m AGL looking into a fir tree!

I guess the beacon site at 286m ASL was able to launch directly into a high level duct with minimal loss over to EU land .

From John G3XDY

Much of the DX was going over our heads here in the East, there was nothing much beyond the JN7x column heard or worked here. Conditions tended to favour the lower bands in the main. I worked the following:

1.3GHz over 800km:

DL3WW	JO6ØFL	
OK1MAC	JN79IO	
OE5XBL	JN68PC	
OE5VRL/5	JN78DK	1012km
DC8EC	JN57UX	
OK2QI	JO8ØOC	1136km

2.3GHz over 600km:

OK1MAC	JN79IO	985km	New #
DL7QY	JN59BD		
OE5VRL/5	JN78DK	1012km	
DH2SAV	JN48QU		
DB6NT	JO5ØVJ		

3.4GHz over 600km:

OK1YA	JN79IO	985km	New #
DL7QY		JN59BD	

5.7GHz over 600km:

OK1YA	JN79IO	985km	New #
OE5VRL/5	JN78DK	1012km	

10GHz over 600km

OK1YA	JN79IO	985km	New #

From John G4BAO

My 14/15th November log for 10GHz

DATE TIME	C'SIGN	QRA	TX	RX	MODE	PRO	QRB
14/23:00	OK1YA	JN79IO	519	519	CW	TR	1056
14/23:06	OK1MAC	JN79PQ	519	519	CW	TR	1092
15/19:29	OE5VRL/5	JN78DJ	519	519	CW	TR	1086

The stations were my first ever QSOs over 1000km and new DXCCs taking me up to a respectable 9 DXCCs and 28 squares on 10GHz all with 1 Watt from a site 4 metres ASL and 80km from the coast!

November 23cm UKAC

Conditions for the November 23cm UKAC were generally on the poor side. I managed to work most of the usual stations with the exception of Ray GM4CXM and Gordon G8PNN who were weaker than usual and I could not raise them with my 3W.

From John G3XDY

SK7MW (JO65MJ) was worked by aircraft reflection at 860km, the other more unusual DX contact was F6CIS in IN94WL at 849km, by troposcatter. F6CIS seemed to have his own personal duct to N France, the fringes of the UK, Belgium and Holland. No other French stations were worked from here.

November Low Bands Contest

The November Low Bands Contest suffered wet and windy weather. I could not get my mast up to a reasonable height until about an hour before the end of the contest. No reports received.

November SHF UKAC

This is the final session of the SHF UKAC for the year as the next session would be on Christmas Day.

Conditions were poor and a little strange. Some stations were significantly down on flat band conditions with me, with A/S helping with some QSO's.

Activity on 13cm was good with 6 stations worked in IO83. Best DX was David M0GHZ, with 13 stations worked.

3cm was very quiet with just 2 stations worked G3VKV (183km) and G4BLH/P (11km).

From John G3XDY

Generally poor conditions in the UK for this event with many weak signals to dredge out of the noise. Virtually no aircraft went through the common reflection point for OZ1FF all evening, and although there were plenty of planes in the right place for SK7MW, their signals remained elusive, possibly due to pointing problems with their big dish. The exception was DF9IC (JN48IW) who was good copy on SSB at 634km on 13cm, and worked on 9cm with more difficulty on CW. 10GHz was generally quiet, but a test with DC6UW (JO44VJ) at 633km gave weak but consistent signals over several minutes from him. DC6UW uses a QRO TWT amplifier, so it was surprising that he did manage to hear my 10W at one stage, but not for long enough to exchange information. Signals sounded like tropo most of the time, with one or two louder peaks due to aircraft reflections.

Telford's launch into Nanowave activity.

From Martyn G3UKV

More than 15 Finningley/G4HJW nanowave kits have been introduced into Shropshire/Telford in the last few months.

Local tests have checked the gear works very satisfactorily, once the operator gets the hang of optical beam-widths of only about a degree or so, which makes 10 or 24GHz operation look positively wide-beam by comparison.

On 10th November, as dusk fell, Dave G8VZT, Martyn G3UKV, Jim G8UGL, Tony M0PAW and Mike G4NKC all set up their tripods in 3 locations in the Telford area. The air was clear, with just a shower or two about. At the far end, Barry G8AGN and Gordon G0EWN were set up at Merryton triangle (IO93AD). Barry fired up his QRO 'phlashlight' towards the Wrekin, and was easily spotted visually from the Telford hill at about 17:00, and two way contacts followed with G3UKV (IO82RQ41), G8VZT and G8UGL (at IO82SQ02). Tony and Mike both had some equipment problems, but learned valuable lessons. Gordon (G0EWN) also succeeded in working Dave 2X, plus one ways with Jim and Martyn, as condensation on his fresnel lens apparently reduced receiver sensitivity. Distances are 64 and 62Km respectively. Further tests are planned in the coming weeks, as Shropshire is blessed with a good number of excellent hill sites. Skeds are most welcome, and can be made via Martyn G3UKV [ukv@ukv.me.uk] or via the nanowave yahoo group reflector.

73

Bob Price G8DTF

UK Microwave Group Contests in 2013

The calendar and rules for next year's contests are being drafted, but prior to setting them in stone and publishing the final version in January, there is an opportunity to provide some input and feedback on some proposed changes to the rules. These changes are based on feedback from the logs and from the contest forum at the Martlesham Round Table in April 2012. Please send any comments and suggestions to the UK Microwave Group Contest manager, John Quarmby G3XDY, at g3xdy@btinternet.com to arrive no later than 15th December.

5.7, 10 and 24GHz Cumulatives

Instead of the present cumulative format where there are no tables for the individual sessions, it is proposed to hold each session as a standalone contest and have an overall championship table published at the end of the season which would determine the trophy winners, using normalised scores from the individual events and taking the sum of the best three scores for each station. This will provide more timely publication of results and hopefully encourage more participation by stations that might only get on for one or two sessions

The other change proposed is to make start and finish times more flexible, so entrants choose their own activity period of up to six hours in a total contest period from 0600 – 1800 GMT, an activity period can be a single period of up to six hours, or two segments with a combined total of 6 hours maximum.

Low Band Contests

The four low band contests will count towards an overall championship based on the best three normalised scores.

76GHz Trophy Contest

The trophy will be awarded based on combined normalised scores on all the amateur bands from 76GHz upwards.

Lightwave Contest

In the absence of any entries for this event, continuation next year is unlikely.

Microwave Field Day

A new section will be added for fixed stations. Fixed stations may call CQ and work each other as well as portable entrants, but contacts with portable stations will attract a bonus or multiplier.

Rover Rules

New IARU Region 1 rules for Rover contacts state that they must move a minimum of 5km, and into a new grid square (eg IO93 to IO83), to qualify as a rover station. It is proposed to adopt this definition in place of the current UKuG 16km minimum move rule.

John Quarmby G3XDY
UKuG Contest Manager

Contests & Activity Dates 2012

Source: http://www.microwavers.org/?contesting.htm

December

1.3GHz Activity Contest	Arranged by VHFCC	18 Dec	2000 - 2230	RSGB Contest
2.3GHz+ Activity Contest	Arranged by VHFCC	25 Dec	2000 - 2230	RSGB Contest

2013

The proposed dates for the 2013 UKuG Contest programme are as follows:

Month	Date	GHz	Date	GHz	Date	GHz
March	3	1.3	3	2.3	13	3.4
April	21	1.3	4	2.3	13	3.4
May	25	5.7	5	10	13	24
June	2	1.3	6	2.3	13	3.4
June	30	5.7	6	10	13	24
July	21/7/13	24GHz – 1THz Trophy				
July	28	5.7	7	10	13	24
August	25	5.7	8	10	13	24
September	29	5.7	9	10	13	24
November	24	1.3	11	2.3	13	3.4

73 John G3XDY, UKUG Contest Adjudicator

UKµG Contest Portal

Don't forget that

Every Monday evening is Microwave Activity Evening

The latest EME calendar is available from DL7APV's website

Events calendar 2013

2013

Jan 19	Heelweg	www.pamicrowaves.nl/
Feb 16	Tagung Dorsten	www.ghz-tagung.de/
April 6	CJ-2013, Seigy	cj.ref-union.org/
April 27-28	Martlesham Microwave Round Table and UKμG AGM	
May 17-19	Hamvention, Dayton	www.hamvention.org/
June 28-30	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July	Amsat-UK Colloquium, Holiday Inn, Guildford, Surrey	www.uk.amsat.org/Colloquium/
Sep 13-15	58.UKW Tagung Weinheim	www.ukw-tagung.de/
Sept 27-28	National Hamfest	www.nationalhamfest.org.uk/
Oct 8-10	European Microwave Week, Nuremberg	www.eumweek.com/
Oct 11-13	RSGB Convention	www.rsgb.org/rsgbconvention/

2014

August	EME2014, Pleumeur-Bodou near Lannion	