



An Amateur Radio publication for the Microwave Enthusiast

Scatterpoint

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Published by the UK Microwave Group

Directional Coupler – Sunwave
CP15-0825

Bryan Harber G8DKK



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Loan Equipment

Don't forget, UKμG has loan kit in the form of portable transceivers available to members for use on the following bands:

5.7GHz 10GHz 24GHz 76GHz

Would someone like to build a second 76GHz system?

Contact John G4BAO for more information.

Subscription Information

The following subscription rates 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

<https://groups.io/g/Scatterpoint> and/or Dropbox. Also, **free access to the Chip Bank**.

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.

PLEASE QUOTE YOUR CALLSIGN!

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!)

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, rtf, 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 your co-operation.

Martin G8BHC

Reproducing articles from Scatterpoint

If you plan to reproduce an article exactly as in 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 commercial purpose.

You may not publish Scatterpoint on a website or other document server.

UKμG Project support

The UK Microwave Group is pleased to encourage and support microwave projects such as Beacons, Synthesiser development, etc. Collectively UKuG has a considerable pool of knowledge and experience available, and now we can financially support worthy projects to a modest degree.

Note that this is essentially a small scale grant scheme, based on 'cash-on-results'. We are unable to provide ongoing financial support for running costs – it is important that such issues are understood at the early stages along with site clearances/licensing, etc.

The application form has a number of guidance tips on it – or just ask us if in doubt! In summary:-

- **Please apply in advance of your project**
- **We effectively reimburse costs - cash on results (eg Beacon on air)**
- **We regret we are unable to support running costs**

Application forms below should be submitted to the UKuG Secretary, after which they are reviewed/agreed by the committee

www.microwavers.org/proj-support.htm

UKμG Technical support

One of the great things about our hobby is the idea that we give our time freely to help and encourage others, and within the UKuG there are a number of people who are prepared to (within sensible limits!) share their knowledge and, what is more important, test equipment. Our friends in America refer to such amateurs as “Elmers” but that term tends to remind me too much of that rather bumbling nemesis of Bugs Bunny, Elmer Fudd, so let's call them Tech Support volunteers.

While this is described as a “service to members” it is not a “right of membership!”

Please understand that you, as a user of this service, must expect to fit in with the timetable and lives of

the volunteers. Without a doubt, the best way to make people withdraw the service is to hassle them and complain if they cannot fit in with YOUR timetable!

Please remember that a service like our support people can provide would cost lots of money per hour professionally and it's costing you nothing and will probably include tea and biscuits!

If anyone would like to step forward and volunteer, especially in the regions where we have no representative, please email john@g4bao.com

The current list is available at

www.microwavers.org/tech-support.htm

UKμG Chip Bank – A free service for members

Chipbank Updated October 2017

By Mike Scott, G3LYP

Since the Martlesham Roundtable, I have received a number of donations to the Chipbank. Included are a considerable number of MMICs from G4HUP's estate including MARs and the Agilent MSA equivalents. We also have a further supply of Kent's “Funny” MAR-6s (Thanks Kent!).

Paul Nickalls G8AQA donated 48 pcb mounting SMA sockets (through hole) and Paul Entwistle G8AFC, two large bags of BZX85C5v1 and BZX85C11v 1watt Zener diodes.

John, G8ACE, presented me with a large box of reeled components which has added to our range of

SM Rs and Cs. If you need a value not listed in the current catalogue, ask as it may now be available.

Finally, as a result of a posting I made on the Reflector just before Martlesham, Bill, N6GHZ, kindly sent me a large collection of microwave components from California. These are mainly diodes, including Gunn and varactor as well as some transistors. These are listed in the July issue on page 5. In many cases Google produced full or abbreviated data sheets, some appear to be specials as I could find no data. The quantity available is listed after the item. If you want any items(s) please use the usual Chipbank order form on the website.

The catalogue is on the UKμG web site at www.microwavers.org/chipbank.htm

Chairman's thoughts – on The RSGB Convention



RSGB Convention Display

This year's RSGB Convention was one of the best yet. I understand that the attendance was over 600 during the two days and with the Friday non-RSGB Space Weather Knowledge Exchange Workshop that was open to scientists and radio amateurs and the AMSAT-UK Colloquium, there was plenty to interest everyone.

I was only able to attend the RSGB Convention on the Saturday due to other commitments on the Sunday, but I thoroughly enjoyed my day.

Having to pay to attend I was determined to get to a few of my chosen talks rather than spend all my time on our UKuG stand. In the event I was able to get to just two talks as I spent a lot of time speaking to members and prospective new members. I am pleased to report that we did very well. Our membership secretary will be able to tell us more in due course.

Although we were in close proximity to the popular AMSAT-UK and BATC stands we attracted a good number of visitors to our stand. Many were curious about the different forms of propagation on the higher bands and with the solar cycle currently in decline, many were looking for something different to try now that there were fewer HF contacts to be made on a daily basis.

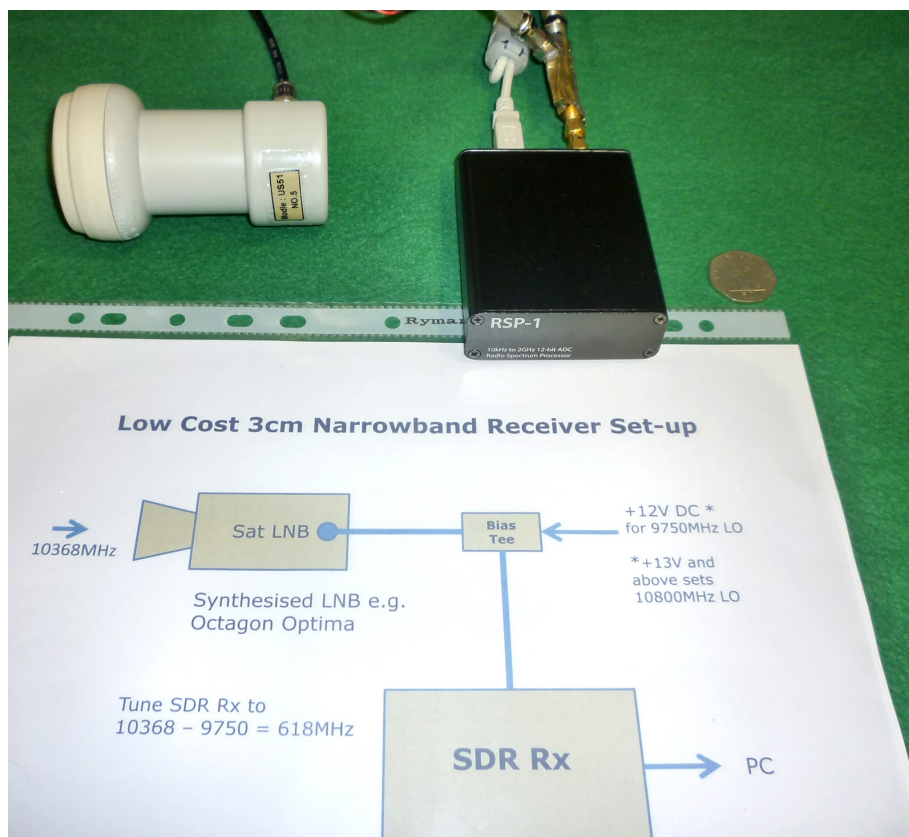
Amateur digital TV is currently attracting a lot of attention with the efforts of many of the BATC and UKuG members not only building ADTV gear, but also getting out portable and making ADTV contacts on all of the bands from 2m up to 24GHz. Some of this gear was on show on the BATC stand.

Very soon now (we hope) the Qatar satellite Es'hailSat satellite will blast into orbit and provide us with reliable communications over a large part of the earth. The 2.4GHz uplink and 10.48/49GHz downlink is attracting a lot of attention from radio builders and the recent issue of Oscar News (219) carries an interesting article by DH2VA on a suitable dual 10GHz downconverter for use with the new generation of SatTV LNBs we are becoming familiar with. The experience of our members and the amateur microwave radio community in general will be in great demand as many of those who 'just' operate on the HF bands start to see the potential of the new satellite transponders.

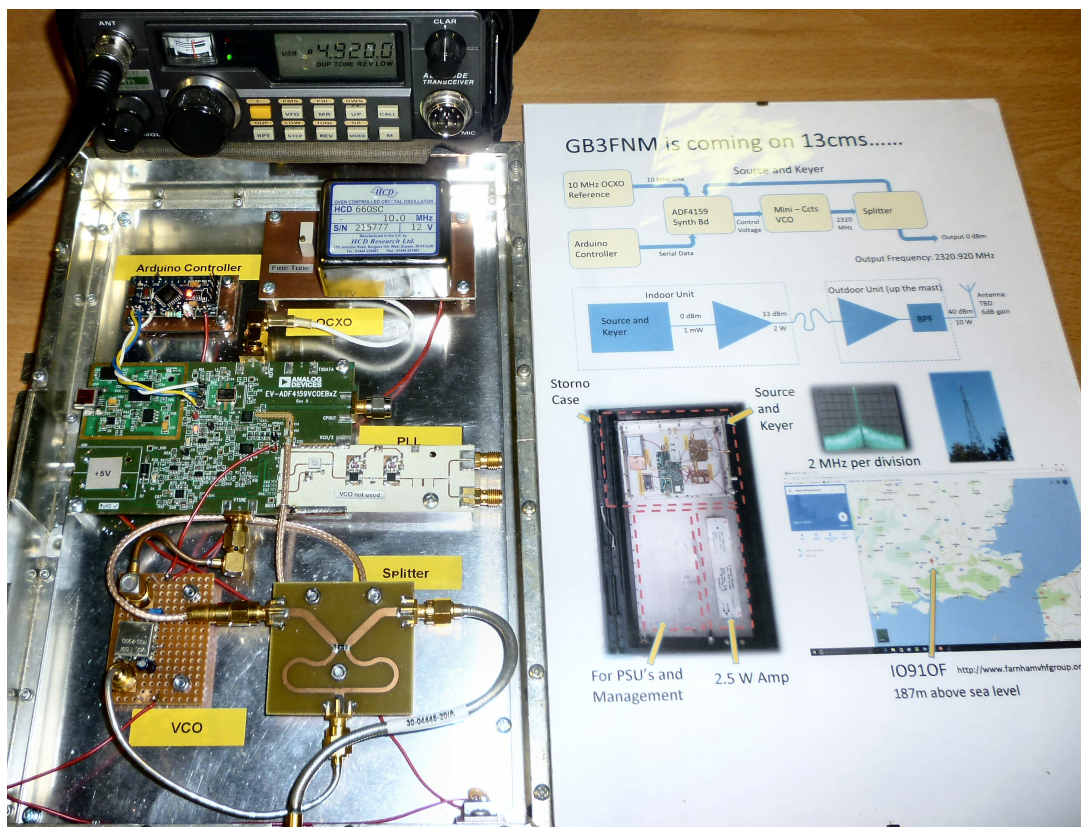
One of the talks at the Convention was by Peter Gulzow, DB2OS, project manager for the Es'hailSat amateur transponders. Unfortunately, due to a clash with a VHF talk I wanted to go to, I was unable to get to Peter's talk. I understand that the talk was to be live video streamed. I don't know if it will appear on YouTube in due course. I am sure we will be hearing more about this exciting project in the coming months.

Altogether, the RSGB, BATC and AMSAT did a great job of organising the Convention and are to be congratulated on a first class event that ranks with some of the best American and European Conventions I have attended.

73 de Sam, chairman UKuG



Low Cost 10GHz Rx Close up



New GB3FNM 13cm Beacon - Barry G4SJH et al

Pictures by Murray Niman G6JYB

PS: The Amsat Colloquium talks that were at the Convention inc the Es'hail-2 one are now online on the Amsat-UK youtube channel at <https://www.youtube.com/user/AMSATUK/videos>

UK Microwave Group Report to RSGB Spectrum Forum

Introduction to UKuG

The UK Microwave Group represents the interests of amateur GHz bands radio enthusiasts in the UK. Its Committee is an elected body representing the interests of UK amateur microwave enthusiasts. The UKuG is open to membership for both UK and overseas microwavers. UKuG is now 18 years old, having been formed at the Martlesham Microwave Roundtable in November 1999 and it is affiliated to the RSGB. Current membership is still growing at 494, up by 14 this year.

Events organised and supported during 2017

- Martlesham Microwave Roundtable with UKuG AGM – April
- RAL roundtable organised by Harwell Club - June.
- Microwave Roundtable and buildathon organised by the Finningley Club – July.
- Microwave Roundtable organised by the Crawley Club - September
- Scottish Microwave Roundtable, Burntisland near Dunfermline - November
- RSGB Convention 2017

Club and outreach

The group has members on the RSGB Board, the Spectrum Forum, Propagation Studies Committee, Contest Committee, EMC Committee, ETC Committee, Examination Standards and Audit Committees, IARU Committee, and one of our members Chairs the Technical forum.

Members have visited several clubs to present talks on Microwaves or Millimetre- waves. The Group membership provided ten speakers at the RSGB convention.

Technical Support and loan equipment

UKuG members provided technical support as part of our scheme, including beacon repair, construction and advice. Members have continued to support Joe Taylor K1JT to further develop the WSJT-X suite of Digimode programs.

We have four "members' loan" transverter systems, covering 5.7, 10, 24 and 76GHz. Providing support for beginners and established microwavers.

The UKuG responded to the two Ofcom consultations on 5GHz FWA and 5G- telecoms near 24 GHz

Chipbank

The chipbank offers a completely free service to members, and includes a comprehensive selection of chip resistors, capacitors and inductors as well as a good selection of semiconductors and other components. In the nine months to the end of September, 27 requests were received and serviced. This is about 20% up on the same period last year. Components were also distributed to members at the Martlesham and Finningley microwave roundtables. The online catalogue was updated twice to reflect donations from the estate of the late G4HUP and from other sources. We would like to thank the various companies and other sources that donated components

Publications

UKuG members still write four of the regular columns in RadCom, write for Practical Wireless and regularly contribute technical articles and the European activity report for Dubus magazine.

Scatterpoint

The e-newsletter of the Group, under the Editorship of Martin, G8BHC, is published at least 10 times a year and continues to attract top-line technical articles as well as being a comprehensive repository of reports of activity. Having successfully migrated from Yahoo during the year, there are nearly 500 members of the new groups.io Scatterpoint group. Copies of the monthly magazine are also available to members via Dropbox links. Older issues are available from the UKuG web site (issues for 2016 will become available at the end of December 2017). An annual index is produced for members.

Scatterpoint carries a regular activity report column, compiled by Neil G4LDR, which has detailed reports from members of their activities on the microwave and millimetre bands, illustrating the breadth of propagation modes and modes of operation in regular use. These reports cover Wideband, Narrowband and Machine Generated Modes (MGM) activity used for both local and DX operations.

Group web presence

The Group launched its new information Wiki in the November GHz bands column. The UKuG has several GHz related videos on its YouTube video channel. The Twitter feed @UKGHZ attracts many likes and retweets, highlighting innovation such as long-distance QSOs on the 47, 76 and 122, 134 and 241GHz mmWave bands. Our main website, microwavers.org, also provides listings for Operating Firsts/DX records, Chipbank stock updates, a regularly updated beacon maps and a rolling events calendar.

- Web: <http://www.microwavers.org/>
- Wiki: <https://wiki.microwavers.org.uk/>
- Twitter: <https://twitter.com/UKGHZ>
- Youtube: <https://www.youtube.com/c/UKMicrowaveGroup>

Our sister site, Beaconsport.eu, created and run by UKuG member G8APZ continues to be very popular with DXers from VHF upwards. It now has nearly 3500 registered users.

Beacons

The Group was pleased to see a new 3.4GHz beacon GB3LPC on the air along with GB3KEU on 5.7GHz now operating at its new site. Approvals were granted for changes to GB3FNM 2.3 GHz, GB3FRS 1.3GHz, GB3KBQ 10GHz. Two others were rejected but are subject to appeal. Two 10GHz beacons and one on 24GHz are still in progress. **We thank the society for their support with beacons and ask them to continue to pursue this issue at the highest level within Ofcom.**

See http://www.ukrepeater.net/vetting_beacons.php

Operation

Group members continue to support ongoing developments in digital modes applied to weak signal/small ground station EME. Development work on the 241GHz band continues. Small groups continue to encourage activity on 1296 digital modes by promoting a centre of activity at 1296.165MHz, but these modes have not yet "taken off" as a terrestrial DX mode like they have on the lower bands.

Activity on the microwave bands seems to be increasing in the North. There are at least three stations in the North East on 76 and 134GHz (G8AGN, G0EWN, M0DTS) and renewed interest on 47GHz (G8AGN, G0EWN). There is also some interest in 10GHz EME and 5.6GHz ATV using low cost FPV modules.

These two initiatives aside, most other most other GHz activity is still clustered around UKAC and other contests. We need to be aware of the undesirable effects of this on overall activity on the higher bands outside contest times. The danger is that microwave activity will be seen as a once a month activity, becoming an issue as commercial operators vie for spectrum.

Nanowaves

There is continued interest in nanowaves "up North." Main activity at present is centred on G8AGN, G0EWN and GORPH and efforts have been concentrated on daylight contacts, usually in very bright, sunny conditions. Best daylight DX this year has been 80km. This is difficult even on LOS paths with high power red LED transmitters (630nm) and optical filtering in the Rx due to the high levels of optical QRM. When operating at night, tests over such distances are almost trivially easy even when visibility is poor since the red light seems to penetrate haze well and we have found that IR (850nm) is even better.

Stations have concentrated on daylight contacts since many are reluctant to operate /P at night and if nanowaves are ever to become more popular then it's likely that daylight operation would be preferred. There should be scope for home to home working at night using cloud or clear air scatter but QRM from street lights etc is a major issue; also, the potential negative publicity of shining bright red beams into the sky! This could most probably be overcome using IR radiation but has not yet been tried. Some effort has been made to look at a modulation system based on a modified form of QRSS which involves sending a pair of alternating audio tones, each tone being of a different duration. A tone pair can be used to send a piece of information such as a callsign, signal report or part of a Maidenhead locator. The tones can be decoded via software such as

Spectran and a decoding table or via a specially developed stand-alone decoder based on an Arduino. This system has been tested successfully over the 80km path mentioned above. No work has been done on digital modes such as WSPR or WSJT due to the need to keep the gear lightweight for portable operations, possibly on hill/mountain tops.

UKuG Trophies

The UKuG presents trophies annually to recognize the achievements made by microwave operators in several different areas.

1. The RSGB Fraser Shepherd award went to G8CUB and G0FDZ for their mmWave work.
2. The G3BNL Trophy is presented for innovation or technical development of microwave equipment or techniques, in honour of Les Sharrock G3BNL. This award was not presented in 2017.
3. The G3EEZ Trophy is presented for contributions to microwave communications, in honour of Alan Wakeman G3EEZ. The 2017 recipient is Mike Willis, G0MJW for his path profile software which is recognised for its extreme effectiveness in the microwave field.
4. The G3VVB memorial trophy is presented for the best microwave home project exhibited at a microwave roundtable, in honour of Cyril James G3VVB. The 2017 recipient is Jeff Easdown, G4HIZ.
5. The G3KEU trophy is presented to the leading entry in the 5.7GHz cumulative contests, in honour of Tim Leighfield G3KEU. The 2017 recipient is Telford and district ARS, G3ZME.
6. The G3RPE trophy is presented to the Winner of the 10GHz cumulative contests (Open Section), in honour of Dain S. Evans, G3RPE. The 2017 recipient is again Telford and district ARS.
7. The G3JMB memorial trophy is presented to the Winner of the 10GHz cumulative contests (Restricted Section, 1-Watt max), in honour of Jack Brooker G3JMB. The 2017 recipient is Stewart Wilkinson, G0LGS.
8. For the first time, we awarded the G4EAT trophy in Memory of John Wood. It is presented to the leading station on 1.3GHz in the UKuG Low Band Championship. The 2017 recipient is the Coombe Gibberlets, M0HNA/P.
9. The two 24GHz trophies, the G0RRJ and 24GHz Trophies were awarded to G4LDR.
10. The 47GHz Trophy was won jointly by G8CUB and G0FDZ

UKuG Contests and Certificates

Locator squares awards on 1.3GHz have been awarded to John Worsnop G4BAO at the 100 squares level and Tony Collett G4NBS at the 75, 80 and 85 squares levels. On 2.3GHz awards went to G4NBS at the 20 squares level and to Gordon Emmerson G8PNN at the 40 squares mark.

Firsts awards were issued to Roger Ray G8CUB and Chris Whitmarsh G0FDZ for pioneering contacts made on the 122GHz and 241GHz bands in July and February 2016 respectively.

The UKuG contest programme for 2017 did not change much from 2016. Participation levels on the 5.7GHz and 10GHz bands are up over 30% on 2016. Activity on 2.3GHz in UKuG contests is also up 20% over last year, whilst 3.4GHz activity has remained static and the number of entries on 1.3GHz has declined a little. Some changes to the dates for the mm-wave contests were made for 2017, entrant numbers have held steady.

The UKuG Contest Manager also adjudicates the SHF UK Activity Contests. In 2017 the date/time clash with the 50MHz events was removed, so participation has markedly increased, particularly on 2.3GHz and 10GHz, with entry levels now running at 30% above 2016 levels. The availability of low cost video senders, amplifiers and antennas for 5.7GHz has driven a substantial increase in WBFM operation on that band with distances over 100km now routinely achieved.

Submitted by G4BAO on behalf of the UK Microwave Group, October 2017

Scatterpoint Distribution Change from Yahoo to Groups.io

Thank you to all who have braved the transition to groups.io. Following the Scatterpoint migration to [Groups.io](https://groups.io) (and a lot of hard work by Bryan/XYL to clean up the members list)...

- The download instructions have been updated at: <http://www.microwavers.org/scatterpoint/download.htm>
- The membership@microwavers.org address is now aliased to both Bryan's email addresses
- Paypal will now auto cc Bryan's membership address as well as the treasurer (pending further Paypal refinements)
- I have slightly updated the free Under-21 form which was using older info as well
- Membership applications to the old Yahoo Scatterpoint group have been blocked

Previous experience of migration requires some preparation by yourself to ensure this goes smoothly – and this varies depending whether you have ever used Groups.io. See September Scatterpoint.

SCATTERPOINT INTERNET DOWNLOAD:

Scatterpoint is distributed to UKuG members by Groups.io download. This is the most reliable way of getting Scatterpoint each month. What's more, you will have a choice of two formats to download: A4 single pages and A5 booklet editions (both in colour), which look really great when printed out on your colour printer.

Download Site: To join the Group go to: <https://groups.io/g/Scatterpoint> and click on the button

[+Apply for Membership in this Group](#)

Groups.io User-ID / Email Address: Groups.io uses your email address as a user-id.

It is extremely important to set up your account user profile to make your identity/callsign clear, otherwise UKuG reserves the right to reject your group membership if we cannot identify you as a current UKuG member (typically caused by obscure email addresses). The Editor and Membership Secretary will particularly appreciate making their life easier!

Notes:

Do not confuse this group with the [UK Microwaves Yahoo Reflector](#), which nothing to do with UKuG.

The only emails you will receive from the Scatterpoint Group will be the monthly advice to say your new Scatterpoint is ready for download. It will typically remain there for TWO months.

At any one time, there will always be the present month's Scatterpoint and that of the previous month available. Very occasionally, we might send readers a special important message. We are also planning to send membership renewal notices this way as the system lends itself nicely to that. Many thanks for your co-operation.

NB1: Only paid up UKuG members are be able to use this facility so there is no danger of 'freeloaders' or spurious mail affecting you.

NB2: If you joined by being migrated from the former Yahoo Scatterpoint group - it is necessary that you reset and apply a fresh password; and logon to ensure your account profile clearly identifies your name/callsign as per the User-ID note above.

Membership of the new groups.io Scatterpoint group will be managed by the UKuG Membership secretary who will verify if you are a current paid-up member in a similar manner to its Yahoo predecessor. Contact: membership@microwavers.org

Tip: It can be worth adding the scatterpoint@groups.io email address to your contacts in order to 'train' any local spam filter.

From The Editor

Thanks to Murray for the explanation!

We've also launched the UKuG Wiki.

Martin RH G8BHC

Directional Coupler – Sunwave CP15-0825

Bryan Harber G8DKK



I came across this unit while browsing the web site of the “Dutch RF Shop” [1]. It was at the end of the section showing “kits for 144MHz” where it is labelled as a directional coupler at a cost of 17.95 Euros. Digging a bit deeper to its own page there is a brief specification giving it a frequency range of 800MHz to 2500MHz and 200W through power, ideal for many of the higher power amplifiers at 23cm and 13cm. The coupled line is 15dB (1:30 ratio) down on the main line so it is a 15dB coupler.

There is also a statement that it works on frequencies below 800MHz and that it had been tested at 100MHz with 500W through power. Operation at frequencies below the lowest stated frequency is normal because the shorter coupling line will provide reduced coupling so the coupling ratio increases with decreasing frequency [2].

As I do not have any slugs for my Bird thru-line power meter that are rated for operation below 100MHz I decided to purchase the Sunwave coupler – a pity the £ to Euro rate is not too good at the moment. While waiting for the unit to arrive I did a little digging on the web to see if Sunwave provide a more detailed specification. A Google search for Sunwave revealed a Japanese supplier of bespoke kitchens! Searching for Sunwave Technology was more successful and shows it is a Chinese company involved with mobile ‘phone projects based in the Shenzhen and Hong Kong area. There was no specification available but the website does show a

Measured Values

photo of a few directional couplers that confirm the origin of the Sunwave coupler offered by the Dutch RF Shop.

The unit duly arrived packaged in a cardboard box in a bubble wrap bag. The unit is equipped with 3 type N connectors protected by dust caps. Unlike the majority of directional couplers advertised on Ebay these units are new and therefore have new, undamaged connectors. The dimensions of the coupler are: 120mm long, 40mm wide and 18mm thick not including the connectors. The connectors increase the length and width to 157mm and 58mm respectively.

A word of caution regarding the type N connectors fitted to this unit; they have flats on each side, presumably to fit within the thickness profile. This makes them a little more vulnerable to cross-threading than a conventional type N connector.

Table 1 below shows the specification provided by the Dutch RF Shop.

Directional Coupler	
Frequency Range	800MHz-2500MHz
Power Handling	200W
Connector	Type N Female
Coupling Factor	-15dB
Lower Freq Tested	100MHz, 500W

Table 1 Dutch RF Shop Specification

Frequency MHz	Coupling Factor dB
50MHz	-36.3
70MHz	-33.4
145MHz	-27.2
433MHz	-18.3
1296MHz	-14.6
2300MHz	-15
2320MHz	-15

Table 2 Measured Coupling Factors

I used the DG8SAQ vector network analyser (VNA) to measure some key parameters over a frequency range of 50MHz to 1300MHz and a USB signal generator with a built-in ADC scalar analyser for measurements up to 2500MHz. The measurement of particular interest is the coupled port coupling factor below the lowest specified frequency of 800MHz and the variation of coupling factor over the specified range. The VNA was calibrated with a type N cal kit over 50MHz to 1000MHz as its dynamic range drops steadily above 500MHz and becomes more noisy above 1GHz. Separate calibrations were performed for the frequency ranges shown in Tables 2 and 3 from 50MHz to 1000MHz and 1000MHz to 1300MHz.

The frequency range shown as 1000MHz to 2500MHz was measured with the USB signal generator where the scalar input to the ADC has lower precision than the VNA.

Table 3 below shows the coupling factors at amateur band frequencies along with the isolation and directivity [2][3] of the coupler. The directivity of a coupler defines its ability to separate signals travelling through the coupler in opposite directions, in other words its ability to make VSWR (return loss) measurements. Directivity can be reasonably gauged by measuring the isolation of the coupled port when a signal is sent in the reverse direction from that used to make power measurements. Isolation though includes the coupling loss so the loss must be subtracted to obtain the directivity. Ideally the relative phase of the two signals should be taken into account but the values obtained in table 3 were consistent with expectation. Two sets of values are shown at 1000MHz where the second set of values represents recalibration of the VNA over the narrower range of 1GHz to 1.3GHz.

Freq MHz	Ins loss dB	Coupling dB	Isolation dB	Directivity dB
50MHz	-0.02	-36.3	-67	30.7
70MHz	-0.02	-33.4	-64.7	31.3
145MHz	-0.04	-27.2	-59	31.8
433MHz	-0.12	-18.3	-51.5	33.2
1000MHz	-0.22	-14.6	-42.7	28.1
1000MHz	-0.23	-14.6	-43	28.4
1297MHz	-0.13	-15.2	-42	26.8

Table 3 Measured coupling factor, isolation and directivity

I have included the measured plots shown below in figures 1 and 2. Figure 1 shows the low frequency performance from 50MHz to 1GHz and is a smooth curve showing a value close to -15dB at 1GHz and dropping to -36dB at 50MHz. These values probably will not vary much from coupler to coupler so can be applied to all of these Sunwave couplers to measure power at 6m, 4m, 2m, 70cm and 23cm.

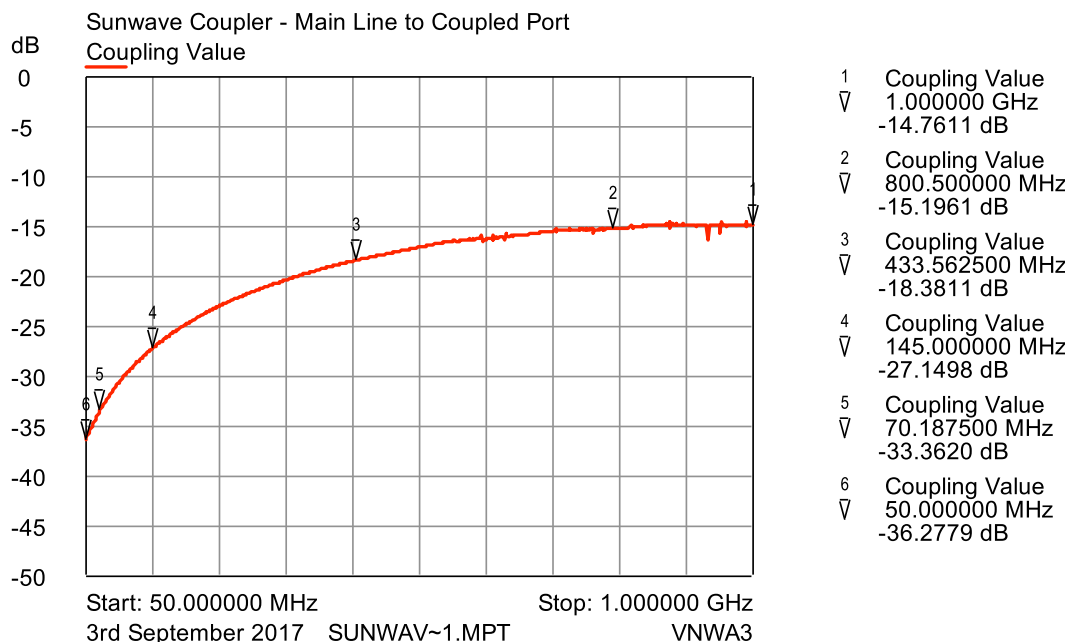


Figure 1. Coupler Response 50MHz to 1000MHz

Figure 2 shows the coupling for frequencies between 1GHz and 1.3GHz which, as expected, are pretty flat over this narrow range and are close to the specified -15dB.

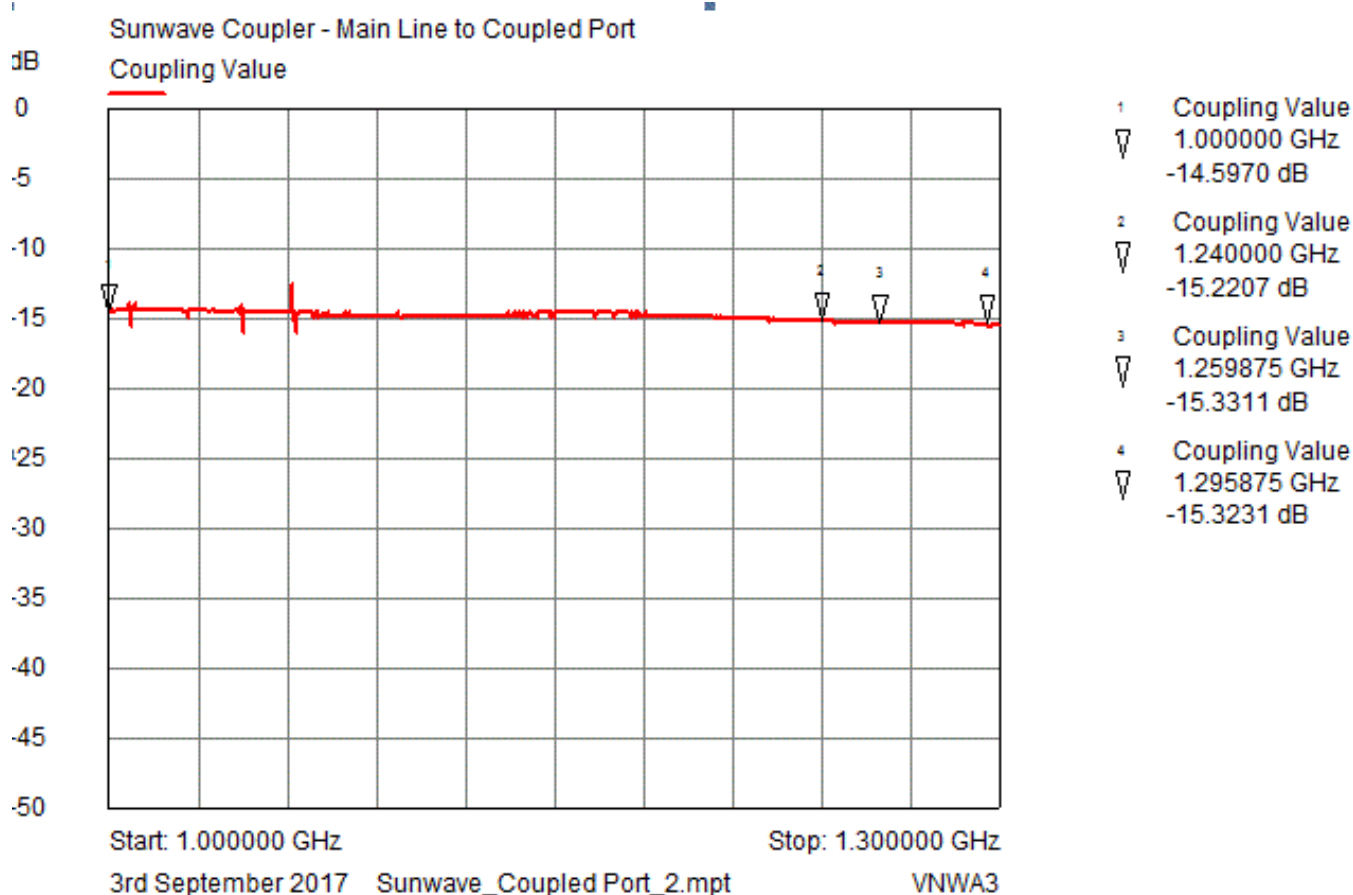


Figure 2. Coupler Response 1000MHz to 1300MHz

I have not included the main line insertion loss plot as this plots the values already shown in table 3 above. The insertion loss values measured with the USB signal generator and its associated scalar analyser are not as good. This was caused by mismatch ripple within the test equipment, even with additional padding provided by 18GHz attenuator pads.

Conclusion

The Sunwave coupler appears to be a useful addition to station test equipment for measuring transmitter power up to at least 200W from 50MHz to 2.3GHz at an affordable price. I have not attempted to use it yet to measure VSWR as the VNA does a better job up to 1.3GHz but at some point I shall try it out at 2300MHz where there will be some limitations due to the directivity.

References

1. www.dutchrfshop.nl
2. "Directional Couplers" G8DKK Finningley MRT 2012
3. Narda (L3) Microwave – www.nardamiteq.com

Contest Results

John G3XDY, UKuG Contest Manager

The missing June 2017 Lowband Contest Results

Although there was a coincident microwave contest in several nearby European countries, not many continental contacts were made by stations away from the East coast, as tropo conditions were fairly average. Activity in the UK did seem rather sparse.

On 1296MHz John G4ZTR takes the leading position by a substantial margin, with some nice continental DX mainly worked using aircraft scatter. Neil G4BRK was runner up.

M0HNA/P worked G4DBN on 2300MHz as the only entry for that segment of 13cms. They also won 2320MHz by a fair margin from Neil G4BRK. The best DX worked was F8DLS at 369km.

Entry levels were very low on 3.4GHz, with M0HNA/P taking the lead over G4BRK, with best DX of 271km to G4ALY.

The overall winner was M0HNA/P with leading positions on three bands. Overall runner up was G4BRK, who was second on 1.3GHz, 2.32GHz and 3.4GHz.

Certificates go to the overall Winner M0HNA/P and Runner-up G4BRK and to the following winners and runners up:

1.3GHz	G4ZTR, G4BRK, G3YJR (Low Power)
2.30GHz	M0HNA/P
2.32GHz	M0HNA/P, G4BRK, G3YJR (Low Power)
3.4GHz	M0HNA/P, G4BRK

In the overall Low Band Championship M0HNA/P have already secured top places on the higher three bands and overall. However, the top two places on 1.3GHz and the runners up positions on the other bands are all to play for in the final event in November.

1296MHz June Lowband Contest

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G4ZTR	JO01KW	26	9220	F6KNB	797
2	G4BRK	IO91HP	11	2448	DF0MU	597
3	G3YJR	IO93FJ	11	1965	DF0MU	579
4	GM4BYF	IO85JV	5	1871	G3XDY	515
5	GU6EFB	IN89RK	4	1219	G3XDY	394
6	G1DFL	IO91NL	5	439	G3XDY	158
7	M0XIG/P	IO91GI	5	342	G4ZTR	174
8	G8EOP	IO93EQ	3	311	G4BRK	228

2300MHz June Lowband Contest

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	M0HNA/P	IO91RF	1	279	G4DBN	279

2320MHz June Lowband Contest

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	M0HNA/P	IO91RF	7	1528	F8DLS	369
2	G4BRK	IO91HP	6	1001	G4KCT	256
3	G8EOP	IO93EQ	5	643	M0HNA/P	284
4	G3YJR	IO93FJ	5	593	G3XDY	238
5	GM4BYF	IO85JV	1	27	GM4COX/P	27

3400MHz June Lowband Contest

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Loc	ODX km
1	M0HNA/P	IO91RF	4	465	G4ALY	IO70VL	271
2	G4BRK	IO91HP	3	322	G3XDY	JO02OB	184

Overall

Pos	Callsign	5-Mar-17	23-Apr-17	7-May-17	4-Jun-17	TOTAL
1	M0HNA/P	3646	4000	3920	3000	11566
2	G4BRK	1251		2435	1613	5299
3	G4LDR	446	1848	1884		4178
4	G3UKV	1219	1773			2992
5	G4ZTR	1000	688		1000	2688
6	G3YJR		716	707	601	2024
7	G8EOP	57	951		455	1463
8	G8OHM			1435		1435
9	G4KIY			1229		1229
10	GM4BYF	385	251		221	857
11	G0LGS/P		838			838
12	GI6ATZ		695			695
13	G3WJG		159	475		634
14	G4BAO	492				492
15	G1DFL	147	102	17	48	297
16	GU6EFB		152		132	284
17	GM8IEM		66	112		178
18	G6KWA		154			154
19	M0XIG/P		12	91	37	140
20	G7SOZ/P			48		48
21	GM7GDE		9			9
22	GM4DIJ/A	8				8
23	M0GDX/P		1			1

Lowband Championship 2017

After four events, the best three events count towards the total.

1296 MHz

Pos	Callsign	5-Mar-17	23-Apr-17	7-May-17	4-Jun-17	TOTAL
1	G4ZTR	1000	688		1000	2688
2	M0HNA/P	646	1000	1000		2646
3	G4BRK	314		534	266	1114
4	G3YJR		337	480	213	1030
5	G4LDR	113	488	296		897
6	GM4BYF	385	205		203	793
7	GI6ATZ		695			695
8	G8OHM			630		630
9	G3UKV	206	376			582
10	G4KIY			449		449
11	G4BAO	308				308
12	G0LGS/P		294			294
13	G8EOP		259		34	293
14	GU6EFB		152		132	284
15	G1DFL	113	61	17	48	222
16	GM8IEM		66	112		178
17	G6KWA		154			154
18	M0XIG/P		12	91	37	140
19	G3WJG			94		94
20	G7SOZ/P			48		48
21	GM7GDE		9			9
22	GM4DIJ/A	8				8
23	M0GDX/P		1			1

2300MHz

Pos	Callsign	5-Mar-17	23-Apr-17	7-May-17	4-Jun-17	TOTAL
1	M0HNA/P	1000	1000	1000	1000	3000

2320MHz

Pos	Callsign	5-Mar-17	23-Apr-17	7-May-17	4-Jun-17	TOTAL
1	M0HNA/P	1000	1000	920	1000	3000
2	G4BRK	615		1000	655	2270
3	G4LDR	333	695	615		1643
4	G3UKV	615	770			1385
5	G8EOP	57	692		421	1170
6	G3YJR		379	227	388	994
7	G8OHM			805		805
8	G4KIY			780		780
9	G0LGS/P		544			544
10	G3WJG		159	381		540
11	G1DFL	34	41			75
12	G4BAO	74				74
13	GM4BYF		46		18	64

3400MHz

Pos	Callsign	3-May-17	4/23/17	5-Jul-17	6-Apr-17	TOTAL
1	M0HNA/P	1000	1000	1000	1000	3000
2	G4BRK	322		901	692	1915
3	G4LDR		665	973		1638
4	G3UKV	398	627			1025
5	G4BAO	110				110

September Contests

September 5.7GHz Contest 2017

A slight drop in entries this time out, with just one station commenting that conditions were slightly enhanced. M0HNA/P christened a new WBFM rig in addition to using their narrowband system.

Keith GW3TKH/P takes first place, with David M0GHZ in the runner up spot. Congratulations to both.

This was the final event in the High Band Championship for 2017. The overall winner was Telford & District Amateur Radio Society G3ZME/P who dominated by winning three sessions and taking the runners-up spot in a fourth. Runner up was the Combe Gibberlets Group M0HNA/P who won one session and were runners up in two more. The leading fixed station was Neil G4LDR.

The G3KEU Memorial Trophy goes to Telford & DARS G3ZME/P. Congratulations to all those mentioned.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	GW3TKH/P	IO81LS	6	943	F9ZG/P	344
2	M0GHZ	IO81VK	8	852	F9ZG/P	289
3	GW4HQX/P	IO81LS	5	822	F9ZG/P	344
4	M0HNA/P	IO91GI	9	693	G4ALY	216
5	G4LDR	IO91EC	5	529	G4ALY	195
6	G4JNT	IO90IV	4	330	GW3TKH/P	156
7=	2E0MDJ/P	IO81XW	5	217	G8GTZ/P	91
7=	G0LGS/P	IO81XW	5	217	G8GTZ/P	91

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
9	M0RKX/P	IO92DB	4	112	M0BUX	29
10=	G4NZV	IO82WA	3	51	M0RKX/P	29
10=	M0BUX	IO82WA	3	51	M0RKX/P	29

September 10GHz Contest 2017

Better conditions were reported by several stations for this event, with generally fine weather. Nick G4KUX made a good contact at 712km with F6DKW.

G4KUX also heads the Open section this time, with Graham G8HAJ in second place, and in the Restricted section David M0GHZ takes the honours, with M0HNA/P in second place. Congratulations to all those mentioned.

As this was the final event in this year's High Band Championship, the overall results show that in the Restricted Section the Combe Gibberlets Group M0HNA/P won with leading scores in the second and fourth events and second place in the third and fifth sessions. Runner up was Stewart G0LGS/P who won the first session and was runner up in the fourth and fifth events. The leading fixed station was David M0GHZ.

In the Open Section a great performance from the Telford & District Amateur Radio Society G3ZME/P had the series sewn up after three sessions, and they eventually ran out winners of two sessions and runner up in another two. Not too far behind in the runner up position was the leading fixed station, Neil G4LDR, who won the second event, and also took the runner up slots in the first and third events.

The G3JMB Trophy goes to the Combe Gibberlets Group M0HNA/P, and the G3RPE

Open Section						
Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G4KUX	IO94BP	13	3895	F6DKW	712
2	G8HAJ	JO01JR	15	3308	G4KUX	370
3	G4ASR	IO81MX	17	3086	F6DKW	512
4	G4LDR	IO91EC	18	2955	G4KUX	395
5	GW3TKH/P	IO81LS	16	2673	F9ZG/P	344
6	G6TRM/P	JO01QD	10	2418	G4ALY	400
7	G3PHO	IO93GG	9	1734	G4UVZ	280
8	G4BAO	JO02CG	8	1586	F6DKW	415

Restricted Section						
Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	M0GHZ	IO81VK	17	2751	F6DKW	433
2	M0HNA/P	IO91GI	16	1953	G4KUX	368
3	G0LGS/P	IO81XW	14	1814	G4KUX	302
4	2E0MDJ/P	IO81XW	14	1720	G4KUX	302
5	GW4HQX/P	IO81LS	10	1216	F9ZG/P	344
6	MW0KSW/P	IO81LS	4	498	G4ALY	166
7	G8EOP/P	IO93PV	4	223	G4KUX	113
8	G4RQI	IO93IR	3	136	G7AVU	50

24GHz Contest Sept 17th

With 9 entrants this was the best supported 24GHz event for some time. G1DFL/P roved to three sites during the event, the other stations remained at a single location.

Congratulations go to Roger G8CUB/P as winner, with Pete GW4HQX/P as runner up.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G8CUB/P	IO91CL	8	459	G3ZME/P	125
2	GW4HQX/P	IO81LS	5	419	M/VK4OE/P	93
3	GW3TKH/P	IO81LS	4	326	G8CUB/P	93
4	G3ZME/P	IO82QL	3	286	G8CUB/P	125
5	G4LDR/P	IO81PH	4	246	G8CUB/P	67
6	M/VK4OE/P	IO91CL	5	174	GW4HQX/P	93
7	G1DFL/P	IO91AK	10	127	G8ACE/P	67
8=	G4FVP/P	IO94GQ	1	46	M0DTS/P	46
8=	M0DTS/P	IO94MJ	1	46	G4FVP/P	46

47GHz Contest Sept 17th

No roving took place for this event, with 5 entries including visitor Doug VK4OE . The event was won by Roger G8CUB/P with Neil G4LDR/P as runner up, both with 4 QSOs.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G8CUB/P	IO91CL	4	315	GW3TKH/P	93
2	G4LDR/P	IO81PH	4	246	G8CUB/P	67
3=	GW3TKH/P	IO81LS	3	242	G8CUB/P	93
3=	GW4HQX/P	IO81LS	3	242	G8CUB/P	93
5	M/VK4OE/P	IO91CL	2	186	GW3TKH/P	93

76GHz Contest Sept 17th

Keith GW3TKH/P managed 3 contacts to win this event, with Roger G8CUB/P as runner up with 2 QSOs. Congratulations to both stations.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	GW3TKH/P	IO81LS	3	242	G8CUB/P	93
2	G8CUB/P	IO91CL	2	186	GW3TKH/P	93
3	GW4HQX/P	IO81LS	2	149	G8CUB/P	93
4	G4LDR/P	IO81PH	2	112	GW3TKH/P	56

mm-wave Championship latest positions

Positions after three events, the best three count to the overall total

24GHz

Pos	Callsign	21-May-17	18-Jun-17	7-Sep-17	TOTAL
1	G4LDR/P	747	1000	536	2283
2	G8CUB/P	0	987	1000	1987
3	GW3TKH/P	544	639	710	1893
4	GW4HQX/P	0	881	913	1794
5	G3ZME/P	1000	3	623	1626
6	M/VK4OE/P	0	0	379	379
7	G1DFL/P	0	0	277	277
8=	G4FVP/P	0	0	100	100
8=	M0DTS/P	0	0	100	100

47GHz

Pos	Callsign	21-May-17	18-Jun-17	17-Sep-17	TOTAL
1	GW3TKH/P	1000	863	768	2631
2	G4LDR/P	790	1000	781	2571
3	G8CUB/P	656	873	1000	2529
5	GW4HQX/P	0	863	768	1631
4	M/VK4OE/P	0	0	590	590

76GHz

Pos	Callsign	21-May-17	18-Jun-17	17-Sep-17	TOTAL
1	G8CUB/P	1000	1000	769	2769
2	GW3TKH/P	762	0	1000	1762
3	GW4HQX/P	0	0	616	616
4	G4LDR/P	475	116	463	1054

80m UK Microwavers net

Tuesdays 08:30 local on 3626 kHz (+/- QRM)

73 Martyn Vincent G3UKV

High Band Championship final positions

Final positions, the best three scores count to the total

5.7GHz

Pos	Callsign	28-May-17	25-Jun-17	30-Jul-17	27-Aug-17	24-Sep-17	TOTAL
1	G3ZME/P	1000	973	1000	1000	0	3000
2	M0HNA/P	0	1000	827	671	735	2562
3	GW3TKH/P	461	457	0	663	1000	2124
4	G4LDR	500	704	668	381	561	1933
5	M0GHZ	0	0	0	407	903	1310
6	GW4HQX/P	368	305	0	426	872	1099
7	G4JNT	216	283	0	342	350	975
8=	2E0MDJ/P	27	21	41	30	230	301
8=	G0LGS/P	27	21	41	30	230	301
10	M0RKX/P	62	0	93	86	119	298
11	2E0NEY	0	0	0	226	0	226
12	G4EML/P	0	0	0	183	0	183
13	G4FRE/P	0	0	0	151	0	151
14=	M0BUX	28	21	43	38	54	135
14=	G4NZV	28	11	43	38	54	135

10GHz Open

Pos	Callsign	28-May-17	25-Jun-17	30-Jul-17	27-Aug-17	24-Sep-17	TOTAL
1	G3ZME/P	1000	985	1000	907	0	2985
2	G4LDR	870	1000	869	548	759	2739
3	G8HAJ	559	639	690	1000	849	2539
4	G4KUX	0	0	873	595	1000	2468
5	GW3TKH/P	436	308	0	583	686	1705
6	G4ASR	0	0	0	455	792	1247
7	G6TRM/P	567	0	0	0	621	1188
8	G4BAO	0	0	394	0	407	801
9	G3UVR	0	270	330	0	0	600
10	G4KCT/P	0	448	0	0	0	448
11	G3PHO	0	0	0	0	445	445
12	G4EML/P	0	104	99	99	0	302
13	G4CLA	238	0	0	0	0	238
14	G8EEM/P	0	81	0	0	0	81

10GHZ Restricted

Pos	Callsign	28-May-17	25-Jun-17	30-Jul-17	27-Aug-17	24-Sep-17	TOTAL
1	M0HNA/P	0	1000	740	1000	710	2740
2	G0LGS/P	1000	558	492	547	659	2217
3	M0GHZ	0	0	375	438	1000	1813
4	2E0MDJ/P	621	424	481	547	625	1793
5	GW4HQX/P	619	325	0	511	442	1455
6	GW3TKH/P	0	0	1000	0	0	1000
7	M(W)0KSW/P	0	0	740	0	181	921
8	M0RKX/P	430	0	122	130	0	682
9	G3YKI	0	0	651	0	0	651
10	G1DFL/P	570	61	0	0	0	631
11	2E0NEY	0	0	0	220	0	220
12	G8EOP/P	0	98	0	0	81	179
13	G4RQI	0	0	0	0	49	49
14	G3YJR	0	0	0	42	0	42

Awards

Congratulations to Tony Collett G4NBS who has recently been awarded only the third 85 squares award on 1.3GHz. Tony has been assiduously tracking down QSL cards and the latest batch takes him to 88 squares confirmed. A reminder that there are several operating awards available, including for collecting squares and for "Firsts", full details are on the UKuG web site at <http://www.microwavers.org/awards.htm>

73

John G3XDY, UKuG Awards Manager

UKuG Microwave Contest Calendar 2017

Dates	Time UTC	Contest name	Certificates
19 -Nov	1000 - 1400	5th Low band 1.3/2.3/3.4GHz	F, P, L
Key:	F	Fixed / home station	
	P	Portable	
	L	Low-power (<10W on 1.3-3.4GHz, <1W on 5.7/10GHz)	

This month I 'ave been mostly..

From Graham Coyne G3YJR

... testing bits of semi-rigid coax & coax relays for losses with a view to getting 3cm operational again. I found my Radiall relay (rated 18 GHz) lost 0.9 dB, whereas my Micronetics relay (rated 12GHz) lost about half this.

The bits of semi-rigid varied widely. Some bits about 20cm long lost nearly 3dB, half the power!

Some little right-angle M-F SMA connectors that I'd bought from China lost about 1dB, the best losing 0.8dB.

I was pleased to work Jon GM4JTJ on 13cm using the SG-Labs transverter running 2W:

<https://g3yjr.wordpress.com/2017/09/26/26-sept-2017-shf-ukac-2w-on-13cm/>

Scatterpoint errata

The September issue mis-named G3YJR. Apologies for that. Revised versions are in Dropbox – the links still work.

Martin R-H G8BHC



Scottish Microwave Round Table

The GMRT reverts to the first Saturday of the month this year, so it will be held on Saturday 4 November.

The venue for the Round Table will be the Museum of Communication as in previous years, and the evening meal has again been booked in the Kingswood Hotel.

Currently three speakers are confirmed:

- Mark GM4ISM - "A 10 GHz Home Station"
- David GM6BIG - "A High Quality 10GHz Beacon"
- Andy MM0FMF - "13cm SOTA"

As before, it will include the GM round of the UK Microwave Group Projects Trophy, so get that project completed before November – built, modified, hardware or software.

Places will be limited to about 50 as usual, and booking will be available through this website soon.

Announcements will also appear on the ukmicrowaves Yahoo reflector.

EME 2018: CALL FOR PAPERS

With less than one year to go until EME 2018 I want to invite you to submit papers and presentations for the conference.

This time we will have three ways of sharing your information with the participants.

1. The classical presentation of about 30 minutes in the main conference room. Slides, small movies and sound examples can be presented during such a presentation.
2. Poster presentations. This is a way of presenting your story/information on a big piece of paper (the poster). Those posters will be on the wall of the conference room during the whole conference so everybody can have a look and read your information anytime they like.
3. Table top presentations. You are behind a table, presenting your information, showing your stuff on the table before a relatively small but highly interactive audience.

You choose when, for how long or how many times you want to do such a presentation. It's all up to you.

We would like to try these three ways of communication because not all subjects are suited for a full size classical presentation. Yet they might be very interesting for a poster or a table top presentation. And not everybody is happy to tell his story for a big audience. Using these three ways of communication gives you the opportunity to choose the way that suits you and your subject the best.

For now it's good enough to send me an abstract.

The deadline for abstracts is April 2018

The deadline for the full presentations is June 2018

Please send your contributions to [jvm\(at\)netvisit.nl](mailto:jvm(at)netvisit.nl) or [janvmu\(at\)gmail.com](mailto:janvmu(at)gmail.com)

See you in the Netherlands at EME 2018!

73!

Jan PA3FXB (team PI9CAM)

www.eme2018.nl



Activity News : September 2017

By Neil Underwood G4LDR

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

This month the reported activity has all been on the mm-wave bands. This includes activity in the south of England during the mm-wave contest on the 17th September and some late news of activity in the north of England in early October.

mm-Wave Bands

From Peter Walsh G1DFL

Peter reports making 10 contacts on 24GHz, including a VK!

On Sunday 17th September it was the third 24GHz/47GHz/76GHz UK Microwave Group contest. After proving my loan gear worked with Dave G1EHF as previously reported in ScatterPoint I was determined to try and work some stations and learn a bit more about 24GHz propagation and operating on the higher bands. I'm fascinated by discovering how different the band performs compared to 10GHz.

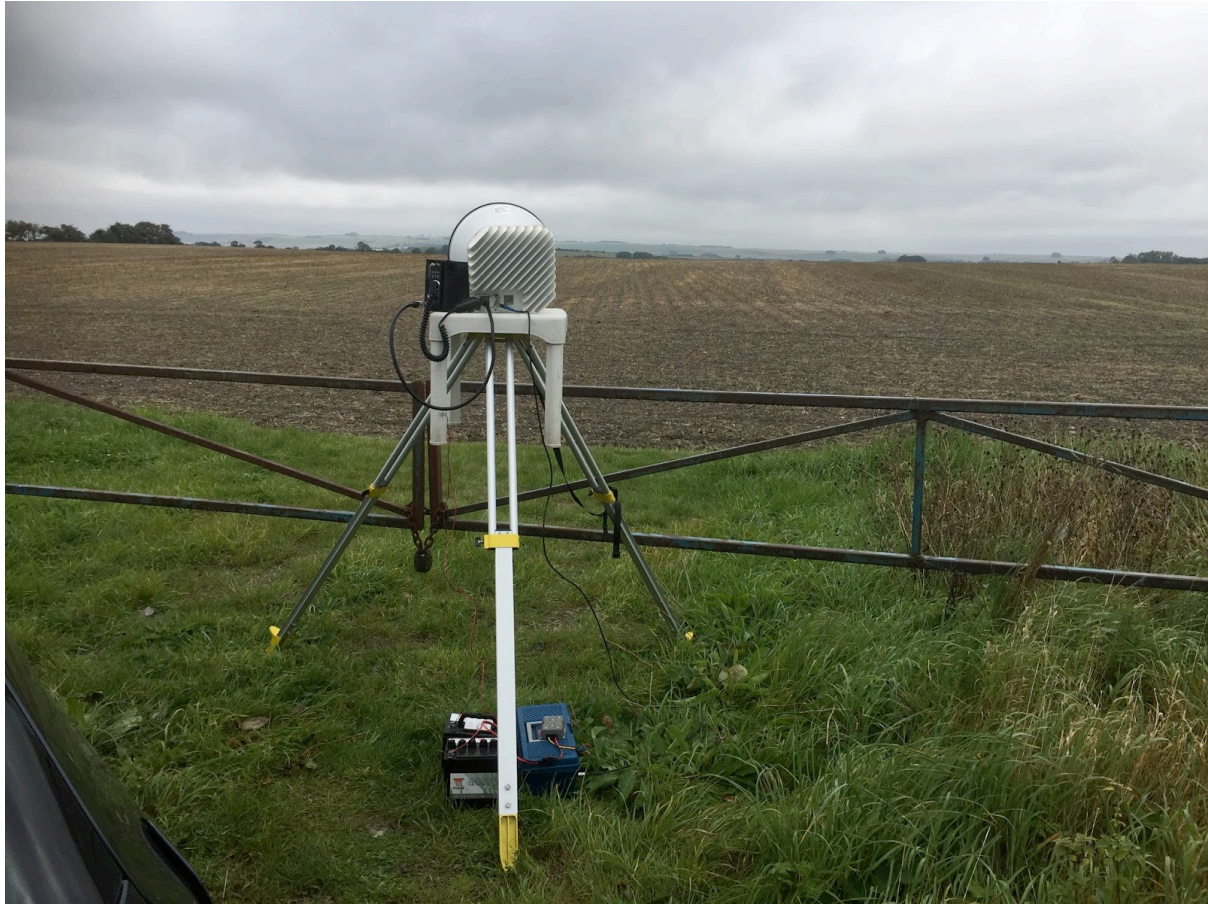
None of my local sites near Reading that are within 15 to 45 minutes drive were going to be good enough for 24GHz, so I decided to venture west over to Swindon about 1 hour and 15 minutes drive from Wargrave. My plan was to try and work Roger G8CUB/P, Chris G0FDZ/P and Doug M/VK4OE/P who were going to be on Hackpen Hill just south of Swindon.



G1DFL/P 24GHz Contest roving locations

The prospect of working my first VK on 24GHz was particularly appealing even if Doug was actually in the UK! My plan was to provide some "local sport" for these 3 stations, in-between them working long distance over to GW-land.

My first stop was a lay-by just off the Yattendon road near the A4 at Chervil Down IO91AK (577ft or 175m ASL) which is about 9km SW and LOS of Hackpen. After quickly setting up I made contact with the team at Hackpen on 2m just using the FT817ND whip and we moved to 24GHz FM and all 3 Hackpen stations were worked at solid copy and strong signals. I was really pleased to get off to such a good start.



G1DFL/P at Chervil Down with Hackpen Hill in the distance.

I packed up and drove to the next location Clyffe Pypard IO91BL (594ft or 181m ASL). The spot I chose here was on the top of the ridge near a field gate with fantastic views N and NW. I tried with Martyn G3ZME/P at Brown Clee (IO81LS) but nothing was heard. I swung the dish W and worked the Hackpen trio again at about 5km LOS, but this time signals were much weaker. My location was not in the clear and the view was obstructed by hedges and trees. Some of the QSO's had to be via SSB but we made it again!

Finally I roved to Hackpen Hill IO91CL (879ft or 267m ASL) to a spot about 500m S along the Ridgeway track from the car park. It was great meeting up with Roger and his XYL Sue M6SUA, Chris and Doug. After spending some time admiring their amazing 24GHz, 47GHz and 76GHz works of art, I set-up my 24GHz station (FT790R IF and Nortel ODU 250mW with 30cm dish), nearby just along the path.

Everyone seemed to be curious, slightly amused and fascinated by my low-tech tripod mount. I haven't sorted out a bracket for the transverter/dish (a project before the next contest). So everything sits rather precariously on a white plastic patio table atop my surveyor's tripod. This is not great as the whole unit is slightly elevated and also makes pointing difficult. Despite it being very Heath-Robinson, it works!

I tried again with Martyn G3ZME/P but we could not find each other. John G8ACE/P was over at Cheesefoot Hill near Winchester and seemed to work the Hackpen trio fairly easily on SSB. I could hear John and he could hear me but my dish orientation was not helping things so Roger came over and provided some GHz expertise in steadying and pointing, and I managed to exchange details with John at a new ODX and PB of 67km!

The Hackpen team started to call and work Keith GW3TKH/P and Pete GW4HQX/P on Cefn y Galchen car park on The Blorenge (IO81LS) on all three bands. Pointing W I was really impressed that I could hear both of them at moderate strength with some QSB on SSB at 93km. I called a couple of times over to Keith and Pete but it was a bit half-hearted as I had to start packing up. Before leaving I quickly worked all 3 stations on Hackpen from Hackpen to get a few more points, and was really pleased to achieve 10 24GHz QSO's - albeit 9 of those with 3 stations from 3 locations!

It was great not to have to use KST, all contacts were scheduled via the Microwave talkback frequency of 144.175MHz SSB. At some points during the day there were several conversations happening at the same time between QSO partners which meant that 144.155 to 144.185 were super busy! My 2M talkback station (FT817ND 100W HB9CV) proved essential for organising skeds. On 2M I heard Noel G8GTZ/P on Win Green (IO80WX) and Neil G4LDR/P on Charterhouse (IO81PH). If I'd have been able to stay longer on Hackpen (or have gone straight there) it would have been interesting to try those paths.

Must say the 24GHz UKuG Contests are super fun and it was very satisfying to make some QSO's. I plan to venture out in October to have another play. I may well try somewhere new like Dunstable Downs (IO91RU) to try and work some different stations.

Hackpen Hill is a truly fantastic GHz site and well worth a visit. The Ridgeway path was potholed and very muddy almost needing a 4x4. It was also very busy with about 300 students of Marlborough College hiking past on a 20km charity walk! I'd love to try 3cm from there. Maybe next time I visit Wiltshire to play GHz.

From Roger G8CUB

A very busy but enjoyable day at Hackpen for the millimetre contest in September. All did not start well with the gate apparently locked to the Ridgeway. Fortunately Sue M6SUA managed to talk to a local farmer, who showed her the lock could be slid off the hasp to give access.

A very misty start of the day, but signals 24GHz from G3ZME/P @ 126km were unexpectedly strong, and 59 reports were exchanged. Even Doug M/VK3OE/P could detect the signal on a 20dB horn, although strangely Chris G0FDZ/P could hear nothing on his dish. There was a good level of activity on 24GHz. However it was far from quite with a few hundred runners on a 'marathon' going in one direction, quickly followed by a school run in the other. Signals from Noel G8GTZ (at Wingreen, Wiltshire) were heard from several directions, a tree being in the way, so unfortunately no qso resulted.

A contact with John G8ACE on 47GHz was in a new direction, from Hackpen. It looked like it was only going to be one way, then he found my signal.

Doug's had contacts on 47GHz with G8ACE/P, G4LDR/P, GW3TKH/P & GW4HGX/P they were all one-way, with apparent TX failure (possibly because the FT817 was on repeated shift - oops!).

**Doug M/VK4OE/P on Hackpen
working G8ACE/P on 47GHz**

Both Keith GW3TKH/P & G4HGX/P were big signals on 76GHz. Using FM they strengthened to be peaking over S9 at 94km. Unfortunately an attempted QSO with Neil G4LDR/P at Charterhouse Somerset failed, for as yet an unestablished reason, possibly pointing error or beam bending. Chris G0FDZ managed a one way contact with Keith on 76GHz, using his new 100mW CW TX, although we were not convinced that the TX was pointing in the right direction.

Peter G1DFL joined us later, having already worked us from two other locations on 24GHz. His wobbly table dish mount, caused some amusement, with several of us trying to hold the dish in the right direction.



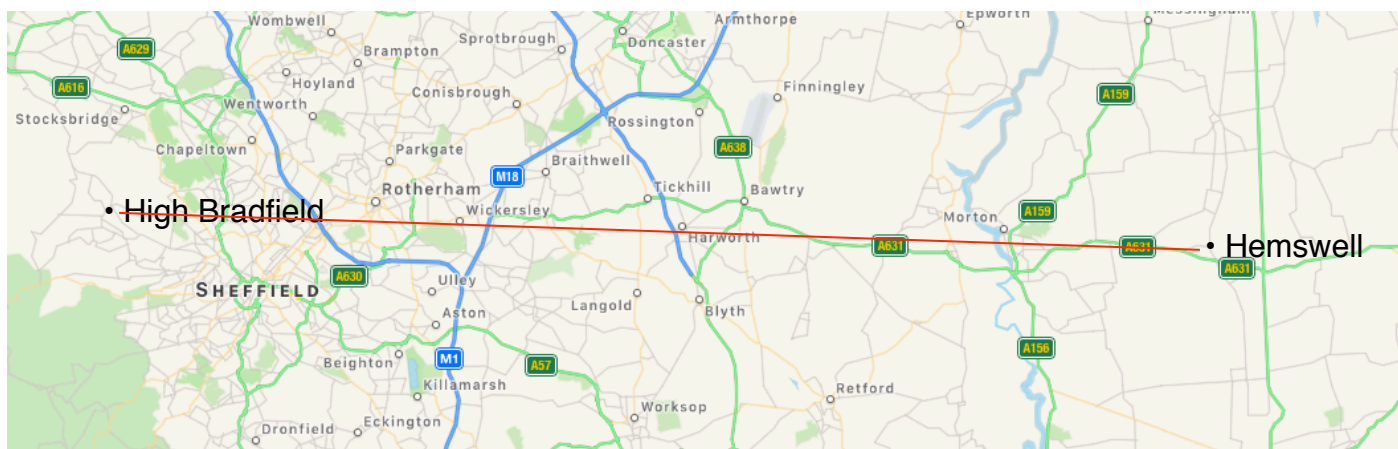


From left to right, Peter G1DFL, Doug VK4OE, Roger G8CUB & Chris G0FDZ all in QSO at the same time.

From Barry G8AGN

Barry reports on some recent activity on the mm-wave bands in the north of England.

On the 8 Oct 2017, Gordon G0EWN and I had a 65km contact on 47GHz NBFM between Hemswell in Lincolnshire (east of Gainsborough) and High Bradfield (just north of Sheffield). Reports were 5/8 and 5/8-9.



Although the contact was made in the afternoon and hence with high light levels, my high power red-light LED nanowave transmitter was used to aid initial alignment on 47GHz. Visibility was good over the path but there was enough haze to change the apparent colour of the red LED to almost white.

For receiving Gordon's 47GHz signal, I used a SDRPlay RSP2 as the 144MHz IF. I find that use of an SDR makes life very easy when initially searching for weak signals of unknown frequency and when the dish is not yet aligned properly. Also it is easy to adjust the receiver bandwidth to match the incoming signal bandwidth for best S/N.

....and finally

The deadline for activity reports to be included in the next issue is Wednesday 1st November 2017.

Events calendar

2017

Oct 26 – 29	Microwave Update, Santa Clara, California	www.microwaveupdate.org
Nov 4	Scottish Round Table	www.gmroundtable.org.uk/

2018

January 13	Heelweg	info@pamicrowaves.nl
February 9–11	Hamcation, Orlando, Florida	www.hamcation.com
February 17	Tagung Dorsten	www.ghz-tagung.de/
April 7	CJ-2018, Seigy	http://cj.r-e-f.org
April 21	RSGB AGM	http://rsgb.org/agm
May 18–20	Hamvention, Dayton	www.hamvention.org/
June 1–3	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 7–8	Finningley RT	www.g0ghk.com/
August 17–19	EME2018, Egmond aan Zee, NL	https://www.eme2018.nl
Sept 7–9	63.UKW Tagung Weinheim	http://www.ukw-tagung.de/
Sept 23–28	European Microwave Week, Madrid	www.eumweek.com/

2019

May 17–19	Hamvention, Dayton	www.hamvention.org/
TBA	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Sept 15–20	European Microwave Week, Utrecht	www.eumweek.com/

NB Some of the 2018/19 event links may not be working/updated yet.

EME 2018: Booking

The website <http://eme2018.nl/> is online. Booking now open! Email info@eme2018.nl to register interest and for updates.

There's also a Facebook page:

<https://www.facebook.com/EME2018/>

73!

Jan PA3FXB (team PI9CAM) team EME 2018

Editor's note

As I shall be enjoying some antipodean sunshine during November, Roger Ray G8CUB has kindly volunteered to act as chief assembler of your articles for the November issue. Be gentle with him.

73 de Martin RH G8BHC

HEELWEG MICROWAVE MEETING 2018



**SATURDAY
JANUARY 13th 2018**

LOCATION:

KULTURHUS "DE VOS"
HALSEWEG 2
7054 BH WESTENDORP



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