



scatterpoint

March 2016

Published by the UK Microwave Group

First UK QSO on the 241GHz
(1.2mm) band

Chris Whitmarsh G0FDZ



In this Issue

UK Microwave Group Contact Information	2
Loan Equipment	2
Subscription Information.....	3
UK μ G Chip Bank – A free service for members	4
AGM Notice	4
RSGB Job Vacancy – Microwave Manager.....	5
Martlesham Microwave Round Table Programme	5
Martlesham Round Table and UK μ G AGM.....	6
Silent Key – Doug McArthur VK3UM.....	7
From moon-net	9
Quick and Cheap Omni Antenna for 23 cm.....	12
BATC 2016 Convention for Amateur TV (CAT 16).....	13
This month I 'ave mostly been building... ..	14
BroadBand HamNet (BBHN) Meeting 22nd May 2016	14
Extracting data from Agilent equipment - a query	15
Squares awards	15
First UK QSO on the 241GHz (1.2mm) band.....	15
Activity News : February 2016.....	17
UK μ G Microwave Contest Calendar 2016.....	19
Events calendar.....	20

UK Microwave Group Contact Information

Chairman: G8DTF Robert E Price	General Secretary: G3XDY John Quarmby	Membership Secretary: G8DKK Bryan Harber	Treasurer: G4BAO Dr. John C. Worsnop
Email: chairman @microwavers.org	Email: secretary @microwavers.org	Email: membership @microwavers.org	Email: treasurer @microwavers.org
Located: Manchester IO83sm	Located: Suffolk JO02ob	Located: Hertfordshire IO91vx	Located: Cambridgeshire JO02cg
Address: Birchfield Drive Boothstown, Manchester M28 1ND	Address: 12 Chestnut Close, Rushmere St Andrew IPSWICH IP5 1ED	Address: 45 Brandles Road Letchworth Hertfordshire SG6 2JA	Address: 20 Lode Avenue Waterbeach Cambs CB25 9PX
Home Tel: n/a	Home Tel: +44 (0)1473 717830	Home Tel: n/a	Home Tel: +44 (0)1223 862480

Scatterpoint	Scatterpoint	Contest & Awards	Beacon Coordinator:
Editor: G8BHC Martin Richmond-Hardy	Activity News: G8DTF Bob Price	Manager: G3XDY John Quarmby	GW8ASD Tony Pugh
Email: editor @microwavers.org	Email: scatterpoint @microwavers.org	Email: g3xdy @btinternet.com	Email: beacons @microwavers.org
Located: Suffolk JO02pa		Located: Suffolk (JO02OB)	Located: Essex (JO01)
Address: 45 Burnt House Lane Kirkton Ipswich IP10 0PZ		Address: 12 Chestnut Close Rushmere St. Andrew Ipswich Suffolk IP5 1ED	Address: Gwersyllt WREXHAM LL11 4AF Wales
NB editor & scatterpoint email addresses go to both Bob and myself		Home Tel: +44 (0)1473 717 830	Home Tel: 01978 720183

UK Regional Reps

John Cooke	Scotland	GM8OTI	john@marwynandjohn.org.uk
Gordon Curry	NI	GI6ATZ	gi6atz@qsl.net
Chris Bartram	Wales	GW4DGU	

Assistants

Kent Britain	USA	WA5VJB/G8EMY	wa5vjb@flash.net
[Vacancy, p5]	Trophies		
Noel Matthews	ATV	G8GTZ	noel@noelandsally.net
Robin Lucas	www.beaconspot.eu	G8APZ	
Chris Whitmarsh	24GHz and up	G0FDZ	chris@g0fdz.com
Mike Scott	Chip Bank	G3LYP	
Tony Pugh	Beacon Coordinator	GW8ASD	gw8asd@gw8asd.co.uk

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 76GHz

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 the [Yahoo group](#) and/or Dropbox.

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 Chip Bank – A free service for members

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

Thanks to the Harwell club, I came away from their rally on 14th February with a bagful of reels of chip resistors which they have donated to the Chipbank. I have updated the resistor spreadsheet to include quite a number of new values. Please take a look at the catalogue on the website

Non members can join the UKμG by following the non-members link on the same page and members will be able to email Mike with requests for components. All will be subject to availability, and a listing of a component on the site will not be a guarantee of availability of that component. The service is run as a free benefit to all members and the UK Microwave Group will pick up the cost of packaging and postage.

Minimum quantity of small components supplied is 10. Some people have ordered a single smd resistor!

The service may be withdrawn at the discretion of the committee if abuse such as reselling of components is suspected.

There is an order form on the website with an address label which will slightly reduce what I have to do in dealing with orders so please could you use it. Also, as many of the components are from unknown sources, if you have the facility to check the value, particularly unmarked items such as capacitors, do so, and let me know if any items have been mislabelled. G4HUP's [Inductance/capacitance meter](#) with SM probes is ideal for this (Unsolicited testimonial!)

Don't forget it is completely free, you don't even have to pay postage!

Mike G3LYP

AGM Notice

Notice is hereby given that the 2016 Annual General Meeting of the UK Microwave Group will be held at 10:00am on Sunday, 17 April 2016 as part of the Martlesham Microwave Round Table event which takes place over that weekend.

This will include the election of the officers of the committee and the presentation of the Chairman's, Secretary's and Treasurer's Annual Reports.

This year the following Committee officers/members are standing down:

- Bob Price G8DTF is retiring as Chairman and Activity Report editor for Scatterpoint
- Chris Whitmarsh G0FDZ is standing down from the committee

Other existing committee members are prepared to stand again, however new members would be very welcome.

Vacancies

- The position of Trophies Manager still needs to be filled.

The Trophies Manager

- i. is responsible for ensuring that the Committee decides in good time to whom to award the UKμG Annual contribution trophies.
 - ii. liaises with the Contest manager as to whom to award the Operation Trophies.
 - iii. is responsible for the safe keeping of the trophies and having them engraved with the Winner's callsign where necessary.
 - iv. ensures that the Trophies get to the relevant event for presentation by the Chairman and that a record is kept of all winners past and present.
- Scatterpoint editor Martin G8BHC needs a deputy able to cover for holidays/illness and to take over the Activity Reports section.

We are therefore interested to hear from anyone who would be willing to take on these vital UKμG positions. Any UKμG member wishing to stand should notify the UKμG Secretary, John Quarmby G3XDY, by 18th March 2016.

If you have any agenda or AOB items for the AGM then please contact the UKμG Secretary, John Quarmby G3XDY by 18th March 2016, email: secretary@microwavers.org

RSGB Job Vacancy – Microwave Manager

Following the recent appointment of Murray Niman G6JYB to be the overall Chair of the Spectrum Forum, the Society is now seeking applications for his previous role of Microwave Manager.

Whilst the full terms of reference can be found on the RSGB website <http://rsgb.org/main/about-us/honorary-officers/microwave-manager/>, applicants should be knowledgeable in microwave operation and technology developments.

Candidates should ideally have experience in spectrum management matters, good communication skills and be able to develop good working relations with the groups represented on the Spectrum Forum as well as bodies such as Ofcom and IARU Region-1.

The successful applicant will join the RSGB Spectrum Forum and, as with all positions within the Society, will be required to subscribe to the Society's Code of Conduct and Ethos, which is detailed on the RSGB website here <http://rsgb.org/main/about-us/rsgb-code-of-conduct/>.

Candidates should apply with a short CV to Graham Coomber, G0NBI, RSGB General Manager, via email to graham.coomber@rsgb.org.uk.

Martlesham Microwave Round Table Programme

Saturday 16th April 2016

- 10:00 Truck Stop Breakfast
- 12:00 Doors Open
- Refreshments available from 12:00 (drinks, biscuits & sandwiches)
- 13:00 Welcome & opening
- 13:15 G8KQW - '*134GHz The New Frontier - a progress update*'
- 14:15 WA5VJB - '*Circular polarisation*'
- 15:00 Refreshments
- 15:15 G4HUP - '*Dish Azimuth Drive Update*'
- 19:30 Meet for Dinner at 20:00

Sunday 17th April 2016

- 09:00 Doors Open
- 09:50 Welcome and Opening
- 10:00 UK Microwave Group AGM, Trophy Presentations
- 10:45 Refreshments & Judging of the Construction Contest
- 11:00 F2CT - '*EME adventure with PB8 13m dish*'
- 11:45 G8GTZ - '*Tim Peake, on a TV near you*'
- 12:30 Lunch Break
- 13:30 G8DKK - '*23cm and 13cm PA LPFs*'
- 14:15 C8CUB/G0DFZ - '*241GHz- a new challenge*'
- 15:00 Refreshments
- 15:15 UKuG Contest Forum - John G3XDY
- 16:00 Close

Martlesham Round Table and UKμG AGM

The MMRT web site <http://mmrt.homedns.org> is live.

The 2016 Martlesham Microwave Round Table is planned for the weekend of 16th and 17th April 2016, at the Adastral Park, Martlesham, Ipswich.

This year the dinner will be held at the Holiday Inn Ipswich, London Road, IP2 0UA and accommodation is available at concessionary rates. See <http://www.hiipswichhotel.co.uk>

Concessionary room rates are £65.00 double/twin B&B and £55 single B&B for the 16th April.

Please book by phone (not via their web site) on **01473 786700** and quote booking code **MGG**.

Dinner Menu

Please book for the dinner on the main registration page

Starters

Honey Roasted Carrot and Parsnip Soup
Prawn and Crayfish Cocktail with Marie Rose Sauce
Brussels Pate with Onion Chutney and Toasted Ciabatta

Main Courses

Roasted Pork Rump with Cassoulet
Grilled Smoked Cod Loin with Beetroot, Sauteed New Potatoes and Samphire
Spinach and Ricotta Cannelloni with Garlic Ciabatta and Roquette and Parmesan Salad

Desserts

Homemade Chocolate Brownie with Chocolate Sauce and Vanilla Ice Cream
Sticky Toffee Pudding with Toffee Sauce and Caramel Ice Cream
Vanilla Bean Panna cotta with Coffee Syrup and Chantilly Cream
Tea and Coffee

Price: £20.00 per person

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 accomodation will be at:

Holiday Inn Ipswich, London Road, Ipswich, IP2 0UA

See <http://www.hiipswichhotel.co.uk>

A regular bus service between Ipswich and Stansted is available at a reasonable price.

For more details and booking, see : <http://www.nationalexpress.com/>

Refreshments

The usual catering services of sandwiches, biscuits, hot and cold beverages will be available on both days.

Silent Key – Doug McArthur VK3UM

From 73 Rex Moncur VK7MO

I am both sad and shocked to report that Doug passed away on the night of Monday the 21st of February. Only on Sunday afternoon we had been working together on EME Calc.

From Dave Dibley G4RGK

Doug and I first met on the 20m net around 30 years ago, in those days Doug was running 24 yagi array on 432 and I had just built a group of 4 NBS yagis. We made many 432 EME skeds but could never make it. Doug was not convinced his array was working well and mine certainly wasn't, so when Rainer DJ9BV designed a new 8 yagi array using open wire feeder, Doug built one, the results were remarkable. I still have the plot of Sagittarius he did with his array using his software. Shortly after this I built my own version of the using the experience that Doug had gained in building his. Once they were both running properly, we were easily able to exchange reports via the Moon using these two arrays, at the time we were both using K2RIW amplifiers, Doug managed to get more out of a K2RIW than anyone else I have ever seen, probably by using the knowledge he gained in keeping Radio Australia's transmitters on the air.

Over the years we continued to meet up on the 20m net and at various EME conferences. Doug would keep us all entertained with his stories of his time in Darwin working with Radio Australia, his time in the Middle East. Alice Springs and working for the ACMA. Doug's speciality was the effects of EMR. The EMRcalc program he wrote is used by widely used by professional bodies to assess radiation risks.

In the late nineties he was able to buy a piece of land and build Tikaluna on top of a hill in the wilds of Victoria, which he did despite severe health problems. Wanting to get back on eme, He then built a substantial mount and hydraulic system, on which he mounted a 28ft Kennedy dish . As well as being a first class software engineer, he was also a first class mechanical and electrical engineer. As can be seen from his many magazine articles, papers at conferences and the pictures on his website.

Doug and Bev came to England in 2001 and again in 2012, my wife and I were pleased to be able to spend four days with them.

Our last qso was during the Dubus CW EME contest last month as the Moon rose in England, there was Doug calling cq on 432.018 (he was always on .018 on any band)

Although the 20m net was abandoned over the last few years, we had continued to meet up a couple of times each week on TT or Skype to discuss the latest innovation to his software and generally put the world right. Doug was a smashing bloke and I'm going to miss him a great deal.

My condolences to Bev and the family.

R.I.P.

From Mansueto Grech 9H1GB

I never met Doug But used his software many times. I am very sad to hear of the loss. Let me take this opportunity to send most most sincere condolences to his family and loved ones.

Rest In Peace Doug

From Reg Woolley G8VHI

I met Doug and Bev many times. Drove him around Europe the first time they came to the Thorn EME convention. Last time just after the UK EME convention. He was, to say the least, one of life's characters.



From Ian GM3SEK

Doug was everybody's idea of a typical Australian - open, cheerful and always straight to the point! Many of us met him at EME2012, and even more will know about his EME Planner and System Optimisation software.

Not so many will know that, shortly before retiring as Superintendent of broadcast transmitters for the State of Victoria, Doug suffered a massive stroke that would have been the end of active life for most people. But not for Doug: with massive effort he clawed his way back to a complete recovery, both physical and mental. He and his wife Bev then went on to build 'Tikaluna', their dream retirement QTH on a hill, complete with a 28ft dish for EME; and of course he continued to develop his software in ever-greater depth of detail, along with many other technical developments.

Doug and Bev also lived through two disasters. First was the Darwin Cyclone of 1974, which Doug always maintained was far worse than ever officially admitted, and left them always wanting to "be prepared" against disasters in the future. And that preparedness saved their lives in 2009, when Victoria's Black Saturday bush fires killed 173 people and came right up to their boundary fence. If all the land surrounding Tikaluna had not been regularly cleared of all dry brush, then as Doug himself said, "We'd have been goners."

And many more tales we could tell... many of which were related on the regular 20m EME nets with SM2CEW, ZL3AAD, G3LTF, G4RGK and others.

The worldwide EME and microwave community has lost one of its real characters, and also a major driver of technical developments.

RIP, mate.

From Doug Friend VK4OE

The accompanying image was taken by Alberto I2PHD and was passed to me by Phil VK4CDI.



Doug, at the left, with Leif SM5BSZ and Jan DL9KR

Alberto says of it:

"This is how I remember him..."

This picture was taken by me at the Wuerzburg EME Conference in 2006. Doug, at the left, is together with Leif SM5BSZ and another gentleman whose call sign in this moment I do not remember. [Jan DL9KR]

Doug was distributing bottles of beer. To obtain one, I was forced by him to spell "beer" in Morse code, just whistling.... an extraordinary man...."

From Peter Blair G3LTF

Doug's death is a real loss to the EME community. I will personally miss him greatly as we were very regularly in touch on a wide range of topics including modifications to EMECalc and the EME planner and of course the merits of our cricket teams and the quality of our beers!

He was a real mate, we first worked on 432MHz CW EME in 1985 and on 1296MHz in 2006 but didn't meet in person until the Wurtzburg EME conference the same year. We last worked in January this year on SSB and CW on both bands.

As someone else has said "Moonrise in Europe will never be the same again".

Doug was first class CW operator with a great signal on both bands and an excellent engineer. You don't get to erect a fully steerable 28ft dish with excellent performance together with QRO PAs and PSUs and keep it all running without top class engineering skills in all departments. In addition his software skills enabled the development of a range of extremely useful software tools for EME and related areas, used by hundreds of people. He was continually looking for ways to improve them further and to add new ones and always ready to assist the newcomer to EME in making use of them.

Doug VK3UM and his xyl Bev stayed with us for two lovely (and hilarious!) days in 2012 after the EME conference, we listened to my 13cm echoes and talked about 6cm, a band he was preparing for but sadly never got finished, that would have been a whale of a signal!

Our thoughts now are with Bev and the family, Doug you will be sorely missed, RIP old friend.

From moon-net

From Bob W1QA

"Very sad to report that Doug McArthur, VK3UM passed away on 22nd February, 2016."
I'm shocked and saddened ... RIP Doug - you'll be missed ...

From Ingolf, SM6FHZ

It is hard to comprehend, even after two days of pondering. As many have said here, few have contributed as much to the EME community as Doug has with his EME related SW. And he did this over many (30+) years without hesitation or any signs of getting tired, evolving it to the most comprehensive EME support tool suite of them all.

He always responded swiftly to any suggestion or comment on this fabulous EME related SW suite. We all owe Doug a big Thank You. Moon rise on 23 cm EME will not be the same anymore.

Rest In Peace Doug.

From Ed - KL7UW

The outpouring of e-mail in reaction serves how much Doug was an influence in eme. I don't think we met though its possible if he attended EME Conference in Dallas-2010. He was writing me eager to work me on 1296. Sadly that will not happen. Of course I've used the EME Calc and Planner and other of his fine sw. Certainly hope someone can continue support of that.

Australia has long been a destination for travel and I have hoped to visit Doug and see his fine home and station.

Condolences to his wife and family. RIP

73, Ed - KL7UW

Jan PA3FXB (team PI9CAM)

So sad...

A giant has left us...

The memories remain.

May he rest in peace.

- ..- -.. --- ..- --.

From Alex, HB9DRI (ZS6EME)

A sad news, a big loss.

My wife and I remember Doug when we meet him first time during the EME Conference in Dallas.

Definitive a big loss for his family and for our community.

From Mike, KL6M

His is a shocking, and tragic loss for EME and humanity.

Condolences to Doug's family and friends.

I will really miss his big signal in our Pacific window, and his fabulous software and guidance.

Truly a great man.

From Joe, K1JT

I am very, very sorry to hear this news. Doug was so full of life... it necessarily seems a contradiction to think that he is gone.

From Peter PA2V

What a coincidence. This early morning during a 1-hour trip I was watching full moon and had thoughts on my memorable EME contacts over the last years. One was a CW QSO with Doug while I was running a single Yagi on 432 September 2014. I was excited to work him that easy, he was excited because he did not expect that loud signals from a single Yagi station.

Many e-mails followed and he gave me valuable tips for accurate sun noise measurements. Some random QSO's followed.

Most is being said on moon-net, I would like to mention the motivation he brought. Motivation to go to the edge for what is possible for a ham.

He will be missed, for sure.

RIP Doug.

From Barry VE4MA/ K7

Very sad day indeed ! He was a good man who contributed so much to the EME hobby and WILL be sorely missed.

Sincere Condolences to the family

From Ric CX2SC from Uruguay

Farewell dear friend Doug. My respects and sincere condolences to his family.

From Conrad PA5Y

I spent quite some time in the company of Doug and Bev. Doug was a great guy. I feel like David, truly devastated. What a great loss.

Please pass my condolences to the whole family.

RIP my friend.

From Aldo IK3COJ

Yet another loss. One of the most prestigious amateur stations, always present at the most important events EME.

RIP Doug, condolences to your family.

From Chris SP7DCS

I am very sad to hear that. We have lost a good friend and real guru. And I just cannot accept that loss.

We used to have qosos almost each contest on 70/23cm when Doug was the big signal from down under.

RIP Doug, I will certainly miss you!

From John G4BAO

Shocked and saddened at the news. Quite simply, I would not have even tried EME without Doug and his software.

Many people do Amateur Radio, few change it and Doug was one of the few.

RIP

From Sam Jewell G4DDK

I awoke to read this very sad news.

Like so many EME ops, I regarded Doug as a friend even though we had met only a few times. His software was a constant reminder of his presence. There was hardly a day when I didn't consult it to investigate something about the moon or my EME equipment. We frequently swapped e-mails and in that unique Aussie way we would swap friendly insults about sport, POMs, lunar measurements and much else!

He will be sadly missed.

Now he will get to make those measurements in close-up.....

Vale Doug

From Giorgio IK1UWL

Shocking news. His sw icons are on my desktop, and using them will give me nostalgia of a great OM.

RIP Doug, condolences to family.

From Paul WA6PY

This is very bad and shocking news. Doug was a very good friend, EME operator and gentlemen. He contributed to the EME community so much. Without his work we would not be where we are today. I will miss Doug very much.

RIP my friend.

From David, G4YTL

It is very sad news indeed, all the more so for being unexpected. It had been a pleasure to meet Doug at previous EME conferences, never mind the many QSOs, and I was looking forward to seeing him in Italy in August. At least his memory will live on every time we use EME Planner or EME Calc – which for many of us is almost daily.

From another Doug G4DZU

That's really sad news from out of the blue.

I think of him every time I move the dish, as he made it easier to track the moon with one of his original dish controllers that I've used for over 25 years.

Rest in peace Doug

From Manfred DL7YC

Very sad to say: I lost my most important hidden teacher.

RIP Doug, you was really a great HAM.

From Dragan 9A5AA

In our EME community nothing will be the same any more.

I had the privilege to make our last EME SSB QSO only a few days ago.

Doug RIP

From AI K2UYH

It will not be the same. So sad. Doug will be not just missed, he cannot be replaced! So Sorry.

From Paul W1GHZ

We were very sorry to hear about Doug. Beth and I had the opportunity to visit Doug and Bev at Tikaluna in 2012 and enjoy their gracious hospitality, and to see wild kangaroos running near their house.

Doug's EME software is invaluable to all of us, and I was pleased to be able to make a small contribution for some of the antennas.

But my biggest disappointment was never have worked Doug off the moon. The dish at W1AIM was not able to elevate low enough to reach VK, so I had set a goal of getting my dish going this year to work Doug. RIP

Picture from Guy F2CT



August 2012 during nice parties at Peter G3LTF and Brian G4NNS after EME 2012

Plus many more tributes...

Thank you to all who contributed with words and pictures. Ed.

The funeral to celebrate his life was on Friday, 4 March, at 2pm in the William Matthews Funeral Home, 45 Cave Hill Rd, Lilydale. The family requested no flowers. The WIA was represented by Hon. Secretary David Williams VK3RU.

Although licensed for almost 60 years, Doug was probably most well-known – across Australia and around the world – for his moonbounce exploits over decades, in particular with the 8.6 metre dish (picture on p7) he commissioned in 2001. In 2006, using this dish on 1296 MHz, Doug gained a moonbounce DX record on 10 June 2006, working CT3/DL1YMK in Portugal, a distance of 18,342.3 km.

<http://www.wia.org.au/newsevents/news/2016/20160303-20/index.php>

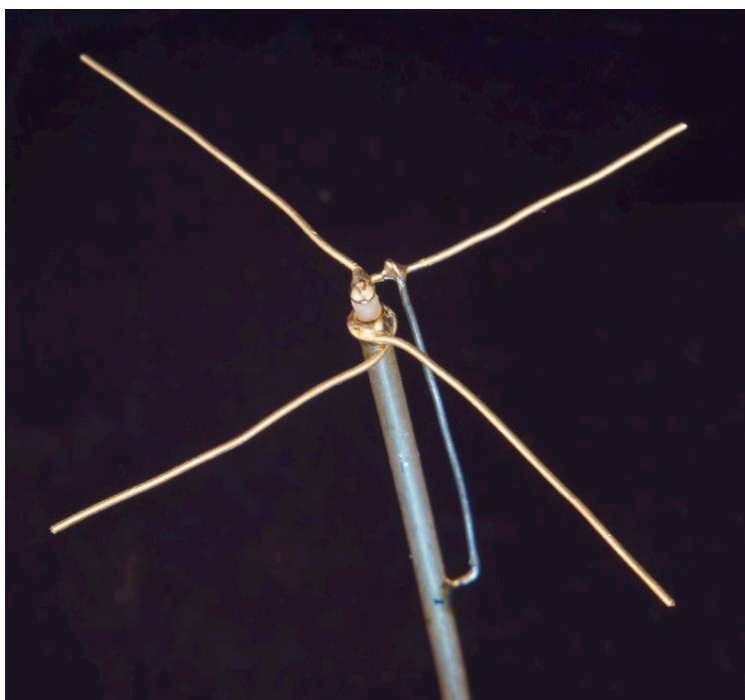
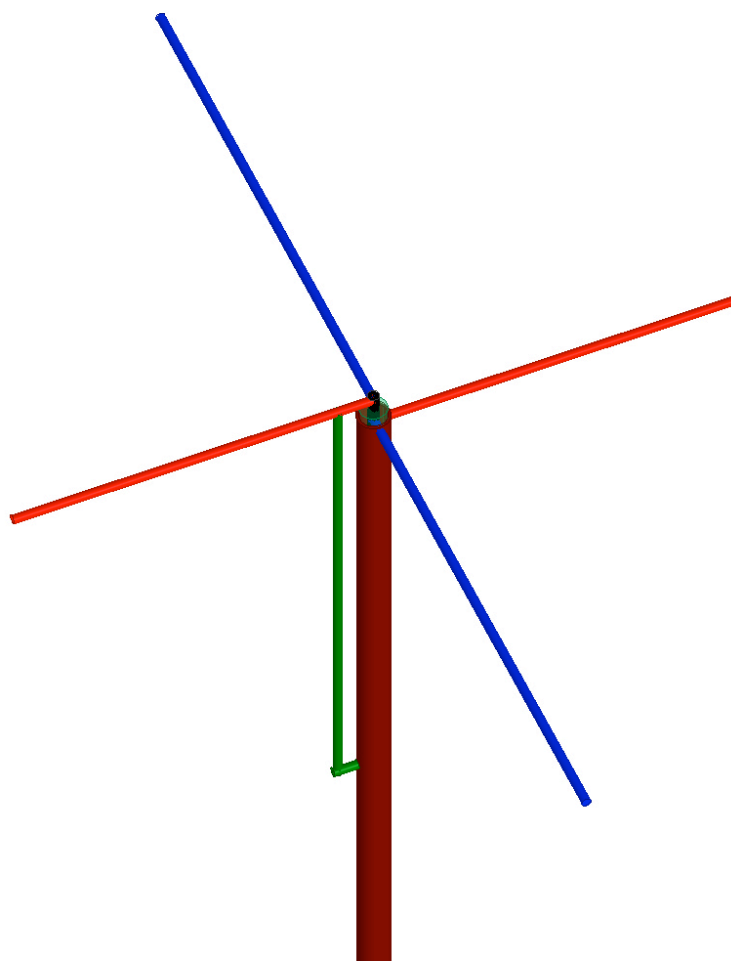
Quick and Cheap Omni Antenna for 23 cm

Paul Wade, W1GHZ w1ghz@arri.net

Recently, I was browsing through the latest IEEE Antennas and Propagation Magazine, where they publish papers without enough divergences, curls, or triple integrals for the regular Transactions. In one article on Crossed Dipole Antennas¹, I came across a sketch of an antenna simple enough that it could be easily built. Details were limited, since it was taken from another paper² in a journal to which I don't have access, but I could build one and try it. I left the magazine on my bench, open to that page, and it occasionally re-emerged as a reminder until I finally decided to build one.

The antenna, shown in the sketch in Figure 1, has two crossed dipoles of unequal length. The longer one, shown in blue, is specified as $\sim 0.527\lambda$ long, while the shorter one, shown in red, is $\sim 0.42\lambda$ long. They are fed by coax, with a $\frac{1}{4}\lambda$ balun shown in green. The idea is that the longer dipole has an inductive reactance, while the shorter one has a capacitive reactance to compensate. The antenna is claimed to radiate circular polarization in the boresight direction.

The sketch in the article has dimensions for 1.7 GHz and uses 0.086 inch semi-rigid coax. I scaled the dimensions to 1296 MHz and found a piece of 0.141 inch semi-rigid coax with an SMA connector on one end. The wire size was the first spool I found on the workbench, and the whole thing was soldered together in a few minutes, resulting in the precision assembly shown in Figure 2.



I then plugged the SMA connector into my miniVNA Tiny (miniradiosolutions.com) to sweep the Return Loss. With the initial dimensions, best return loss was at 1.14 GHz, so I pruned the dipoles proportionally to move it up to 1296 MHz. As can be seen in Figure 3, I trimmed a bit too much, so it ended up tuned to 1340, but the Return Loss is still a very good 22 dB at 1296 MHz. I couldn't find my tool for putting stuff back on, so I figured this is good enough. The dimensions for 1296 are 55mm for each side of the long dipole, 45mm for each side of the short dipole, and 57.5mm for the length of the balun – but leave a little extra on the dipoles for trimming.

So how does it work? A quick test with both dipoles horizontal shows that the radiation favors the longer dipole, and the polarization is mostly linear and horizontal. However, radiation in the boresight direction, along the coax axis, has less variation with polarization, and may be more circular. Better evaluation will require an antenna range better my shack.

W1GHZ

Simple Omni Antenna for 1296 MHz

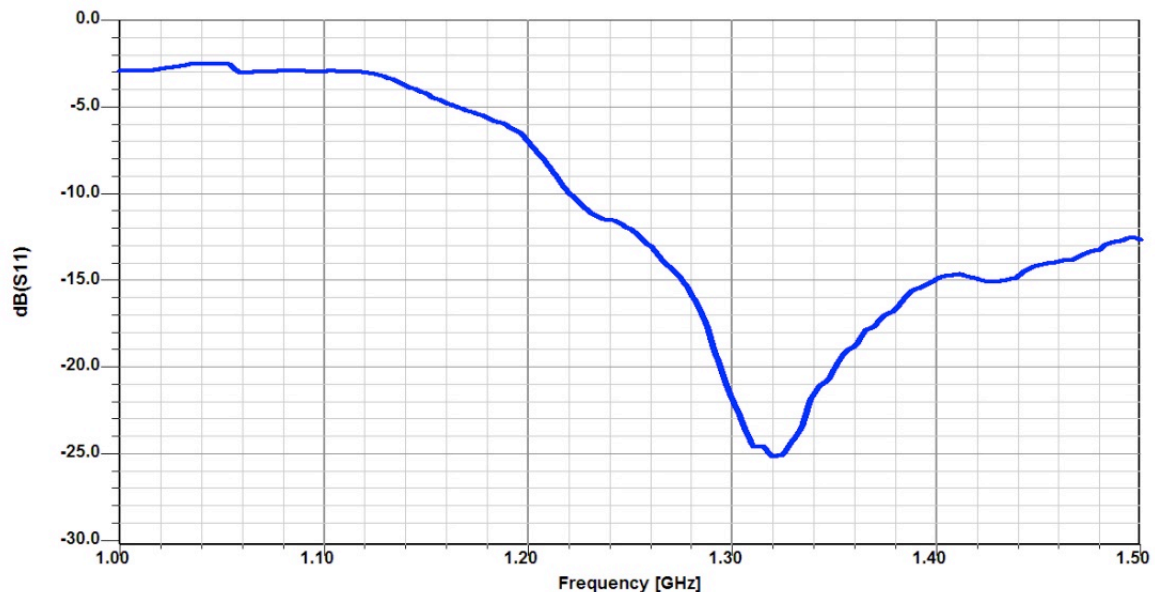


Figure 3 – Return Loss of 1296 MHz Antena

But whether this is a great antenna or not, it is really simple to build, costs nothing, and is handy for a test source or local beacon or whatever. And it can be scaled to whatever frequency you might need.

References

1. Son Xuat Ta, Imko Park, and Richard W. Ziolkowski, "Crossed Dipole Antennas, A review," *IEEE Antennas & Propagation Magazine*, October 2015, pp. 107-122 (Fig 9).
2. B. Y. Toh, R. Cahill, and V.F. Fusco, "Understanding and Measuring Circular Polarization," *IEEE Trans. Educ.*, Aug. 2003, pp. 313-318.

BATC 2016 Convention for Amateur TV (CAT 16)

The BATC has run a number of highly successful rallies and conventions known as CAT (Convention for Amateur Television) at locations around the UK.

The 2016 Convention for Amateur TV will be held at the [RAF Museum Cosford](#) on **24 and 25 September** 2016.

The Events will start at around 1:00 pm on the Saturday, and conclude with the Biennial General Meeting early afternoon on the Sunday. Attendees will be free to wander around the Museum at no extra charge; we hope to arrange some guided tours. Arrangements are also being made for an informal dinner at a Hotel in Telford on the Saturday evening.

Latest news and discussion about the Convention can be found on the [BATC Forum](#).

Previous events have been recorded and are available online:

- The recording from the 2015 and previous years conventions are now available on the BATC Online Youtube channel - [Click here for more details](#).
- Some rare black and white footage from [CAT70](#) is available here.

This month I 'ave mostly been building...

A column (idea borrowed from the [SBMS Newsletter](#) and with a hat tip to Mark Williams' character [Jesse](#) of the Fast Show) designed for those of you who don't want to write a full technical article – but also those of you who do but only have a snippet to contribute such as a new project or a progress report.

From Mike Scott, G3LYP

Following Franco's (I2FHW) article in Scatterpoint June 2011, I have had a RFMA7185-S1 sitting on the shelf which I have now built up as a driver for a DB6NT 5W 10GHz SSPA.

Since then there have been several reports of the use of this device (eg G10GDP, Scatterpoint November 2014, also F1PYR , F1FDB). I modified Franco's artwork slightly as I did not have a SM 78L06 but had several of the TO92 leaded versions. Also I wanted to include the PSU and RF section on a single pcb sized to fit in a 55x110mm tinplate box. The RF device and the LM317T regulator were mounted on a copper heat sink, the latter using an insulating pad.

With 10mW input I got about 800mW output on 10,368MHz, slightly less than the expected 1W, but this may be due to the negative bias being -5.5v rather than the recommended -5v. A pot or resistive divider would correct this, but as I needed only 500mW to drive the DB6NT, I left things as they were.

From John Worsnop G4BAO

Been finishing off my 24GHz /P system and building a 124MHz version of the G4DDK 144MHz Anglian transverter to drive my 2320MHz DB6NT Transverter to 2300MHz. See g4bao.blogspot.com for news and updates

BroadBand HamNet (BBHN) Meeting 22nd May 2016

Location: Crawley Amateur Radio Club <http://www.carc.org.uk/>

A get together of BBHN Mesh Operators and those interested in this system of digital communications on the amateur microwave bands

We will be holding an initial meeting for all those interested in BBHN and hope to attract attendees from across the southern part of England for this event. Objectives for the day are to introduce the Mesh Network concept to newcomers and to allow existing operators to exchange information, opinions and even system components!

The morning will feature introductory presentations and a brief demonstration of a small BBHN system running on 2.4 GHz. Easily available and low-cost digital microwave transceivers will be displayed and explained which all use Open Source, FREE software/firmware!

The program of the meeting is flexible and, after lunch, will include open discussions on the potential for forming a UK-wide organisation to promote BBHN and microwave Mesh networking.

The usual "legendary" hospitality of CARC will be available including the famous bacon butties!

Please come out of the Cloud and Mesh together in a friendly environment.

Please contact Ted, G4ELM on BBHN.Event.2016@gmail.com to receive a copy of the agenda and to indicate likely attendance numbers - as a courtesy to the organisers and the venue hosts.

Access to Site:

The access road into Tilgate Recreational Centre and the CARC Clubhouse (Hut18) is via the slip-road at the new traffic lights on the southbound carriageway of the A23 (Brighton Road), just south of Crawley heading towards Brighton, and about 200m from the Broadfield Football Stadium roundabout which is well signposted.

The Clubhouse is accessed via a fairly narrow track for about 200m. Watch out for deliberate pinch points and other traffic restricting measures then turn right at the 3rd sleeping policeman!

More Detailed Directions are available on the [CARC Web site](#).

Extracting data from Agilent equipment - a query

Do you know someone who can help me with control and readout from my Agilent equipment?

I have an Agilent E4422B and a S.A. Agilent 8561EC and I want to dump the data into an Excel file. Preferably a not-too-difficult program as I am not a software freak, unfortunately.

Thanks for helping!

73, Harry Keizer PE1CHQ

Squares awards

It has been quite a while since the last Squares award claim arrived. John G4BAO has recently submitted two, one for 23cm at the 60 squares level, and one for 13cm at the 20 squares mark. Both include lots of EME contacts with some really nice DX such as TI2AEB and XE1XA on 23cm, and JW/DL3NUD and PY2BS on 13cm. The EME contacts were all made on a relatively small dish system so it shows what can be achieved with modes such as JT65. John was issued with award number 9 for each band on 27th February.

We can now accept eQSL confirmations for contacts with stations that have validated their details with eQSL.

More claims would be very welcome - see <http://www.microwavers.org/squares.htm> on how to apply.

John G3XDY, UKuG Awards Manager

First UK QSO on the 241GHz (1.2mm) band

Chris G0FDZ

The first UK QSO took place on 19-Feb-2016 at 15:00z on the 241GHz (1.2mm) band between Roger G8CUB/P and Chris G0FDZ/P in locator square JO01EP. The distance was 30 metres and the CW signals were 559 and 589. With signal to spare both ways an attempt was made to increase the distance to over 50m but with deteriorating weather likely, a decision was taken to limit to 30m as antenna alignment was taking a very long time to achieve. A full report on today's QSO and the work that led up to it will appear in the next Scatterpoint. Photos and video will be available soon.

UK First / Distance Record:

30m by Roger G8CUB/P and Chris G0FDZ/P on CW 19-Feb-2016

Location JO01EP near Brentwood, Essex

Mode: CW, A1A

Power: ~1μW

Antennas: 250/300mm dishes

Operating details

Roger G8CUB was transmitting on 241.01 GHz, Chris was on a nominal 241.02 although it was 1.3 MHz low at 241.0187 GHz. Both used separate Tx & Rx. All Tx's (and Chris's LO) were derived from Elcom synths. Roger was using 16.0385 as LO (x15) into a Tektronix mixer. Chris used a 1mm diameter hole in the block on Rx with cut-off around 175GHz, whilst Roger used a piece of WR-03 - 173GHz cut-off.

The video (see below) is of the first UK QSO that took place on 19-Feb-2016 15:00z on the 241GHz (1.2mm) band between Roger G8CUB/P and Chris G0FDZ/P in locator square JO01EP, Essex. With signal to spare both ways, an attempt was made to increase the distance to over 50m but with deteriorating weather likely, a decision was taken to limit to 30m as antenna alignment was taking a very long time to achieve.

The video is available here <http://microwavers.org/241ghz.htm>



Chris G0FDZ Tx+Rx - and the outdoor test path



Activity News : February 2016

By Martin RH G8BHC & Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

This month there are some reports of activity in the UKACs, some millimetre wave activity and some Monday Night Activity.

Monday Night Activity

From Neil G4LDR IO91

I've continued to take part in the Monday evening activity periods although numbers participating have been down of late due to equipment failures or family commitments. Ralph G4ALY and I have managed to keep things going. We usually manage to have contacts on all bands between 1296 and 10368 MHz over the 200km very obstructed path (10GHz usually the strongest signals). Having had regular contacts with Ralph over the last 15 years or so the only conditions where we really struggle (i.e. have to resort to CW) is on cold, clear and frosty evenings. I assume with a relatively homogeneous atmosphere there is very little scatter. At the end of February we were joined by Adrian G4UVZ on 10GHz. We were able to work me through his shack window, with rain on the path we ended up on FM with 59+++ signals. No 24GHz activity of late due to the absence of G1JRU and G4NNS. If anyone wants to join in you can find us on 144.195 from about 20:00 each Monday. Depending on activity we may also use 144.185 (thus leaving the calling frequency 144.175 clear for others to use!).

SHF UKAC

From Neil G4LDR IO91

I have also been active in the Tuesday evening UKAC contests. The 2.3GHz and up event on February 23rd suffered from very poor conditions due to the fact that it was a cold, clear frosty evening. Regular paths did not go and the only long distance paths worked were aircraft scatter assisted. During the contest I tried a contact with John G7JTT, who is only 18 km from me but over a slightly obstructed path. Although we heard each other signals were too weak to exchange information. John was operating from inside his shack using a slot antenna.

Millimetre Wave Activity

From Neil G4LDR

I'm currently gathering components to build a second 47GHz system (having purchased Roy's (G3FYX) system from Keith GWTKH) last September. I'm also gathering parts for my own 76GHz system for when the loan system is passed on to someone else. Unfortunately the wet weather of recent months have prevented any more tests on 76GHz. I'm looking forward to the 24, 47 and 76GHz contests in the summer.

Tests on 134GHz

From Barry G8AGN

Gordon G0EWN and Barry G8AGN have carried out several tests on 134GHz in the last 10 days. One way signals up to just over 700m have been copied (G8AGN to G0EWN) using the 100mm gas canister antennas and rigs based on the G8CUB design. Work is under way to improve both our rigs and antennas.

The photo shows G8AGN's rebuilt rig.



G8AGN's rebuilt rig.

Other Activity

From Steve G4HTZ JO01

Recently got going on 10GHz from Great Wakering , Essex JO01JN

Set up is:

- DB6NT MK3 432MHz IF transverter
- DL2AM 11 Watt amp
- Leobodnar 10MHz GPS locked
- Zone 2 sky dish mounted with transverter on top of 12m scam mast with 2m extension pole.

Have worked G4BAO and G4DDK : G4BAO on SSB and JT4G via tropo and rain scatter.

The G4BAO JT4G rain scatter contact was with the dish at only 4m agl, as it was windy and scam mast was not pumped up...really surprised me that we worked each other .

Can work G4BAO under flat band condition on SSB @ 86km ..which was another surprise to me as this is the path plot with up to 400ft hills in the way.

Would be interested in any tests with others...I am around most days from 08.00 onwards .. Contact details ...you can print if you wish to use them..

Essexsteve@icloud.com @G4HTZ on Twitter Or on KST microwave chat

... and finally

I want to encourage you to get on the air as often as possible and report your activity to clearly document use of the amateur microwave bands. This means not just DX or EME, but also local activity with ATV, low power or WB equipment.

Please send your reports to Scatterpoint@microwavers.org, and remember the deadline is the 1st of the month.

Editor's post script

As you will have seen from the AGM notice on page 5, Bob is stepping down as Chairman of UKμG and as editor of the Activity column. It has been a great support to have Bob doing this column and we wish him well.

Perhaps it is now time for younger members to step up and volunteer? No excuse that you are too busy – just wait until you retire – you'll be even busier ;-).

73 Martin RH G8BHC

UKμG Microwave Contest Calendar 2016

Dates	Time UTC	Contest name	Certificates
6-Mar	1000 - 1600	1st Low band 1.3/2.3/3.4GHz	F, P,L
10-Apr	1000 - 1600	2nd Low band 1.3/2.3/3.4GHz	F, P,L
8-May	0800 - 1400	3rd Low band 1.3/2.3/3.4GHz	F, P,L
29-May	0600 - 1800	1st 5.7GHz Contest	F, P,L
29-May	0600 - 1800	1st 10GHz Contest	F, P,L
5-Jun	1000 - 1600	4th Low band 1.3/2.3/3.4GHz	F, P,L
19-Jun	0900 - 1700	1st 24GHz Contest	
19-Jun	0900 - 1700	1st 47GHz Contest	
19-Jun	0900 - 1700	1st 76GHz Contest	
26-Jun	0600 - 1800	2nd 5.7GHz Contest	F, P,L
26-Jun	0600 - 1800	2nd 10GHz Contest	F, P,L
17-Jul	0900 - 1700	24GHz Trophy / 47 / 76/122-248 GHz	
31-Jul	0600 - 1800	3rd 5.7GHz Contest	F, P,L
31-Jul	0600 - 1800	3rd 10GHz Contest	F, P,L
14-Aug	0900 - 1700	3rd 24GHz Contest	
14-Aug	0900 - 1700	3rd 47GHz Contest	
14-Aug	0900 - 1700	3rd 76GHz Contest	
28-Aug	0600 - 1800	4th 5.7GHz Contest	F, P,L
28-Aug	0600 - 1800	4th 10GHz Contest	F, P,L
11-Sep	0900 - 1700	4th 24GHz Contest	
11-Sep	0900 - 1700	4th 47GHz Contest	
11-Sep	0900 - 1700	4th 76GHz Contest	
25-Sep	0600 - 1800	5th 5.7GHz Contest	F, P,L
25-Sep	0600 - 1800	5th 10GHz Contest	F, P,L
13-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)

Contest results are also published online – please follow the link from the UKuG Contests page at:

www.microwavers.org/?contesting.htm

73

John Quarmby G3XDY

Events calendar

2016

Jan 23	Heelweg	www.pamicrowaves.nl/
Feb 13	Tagung Dorsten	www.ghz-tagung.de/
Apr 9	CJ-2016, Seigy	cj.ref-union.org/
Apr 16–17	Martlesham Microwave Round Table & UK μ G AGM	http://mmrt.homedns.org
Apr 16–17	IARU-R1, Vienna	
Apr 16–17	EUCARA (European Conference on Amateur Radio Astronomy)	https://www.eucara.nl
Apr 23	RSGB AGM, Scotland	rsgb.org/agm
May 20 – 22	Hamvention, Dayton	www.hamvention.org/
May 22	BroadBand HamNet (BBHN) Meeting, Crawley ARC	BBHN.Event.2016@gmail.com
June ?	“RAL” Round Table (RAL will probably change venue again to Chilton)	
Jun 24 – 26	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 9–10	Finningley Round Table	
Jul 29 – 31	Amsat-UK Colloquium, Holiday Inn, Guildford	www.amsat-uk.org/colloquium/
Aug 19–21	EME2016, Venice	www.eme2016.org/
Sept 9–11	61.UKW Tagung Weinheim	www.ukw-tagung.de/
Sept 18	Crawley Round Table	
Sept 24 –25	BATC Convention, RAF Museum Cosford	www.batc.org.uk/convention.html
Sept 30–Oct 1	National Hamfest	www.nationalhamfest.org.uk/
Oct 3 – 7	European Microwave Week, London	www.eumweek.com/
Oct 7 – 9	RSGB Convention	rsgb.org/convention/
Oct 14–15	Microwave Update, Saint Louis, Missouri	www.microwaveupdate.org/
Nov 12 (tbc)	Scottish Round Table	www.gmroundtable.org.uk/

2017

Jun 23 – 25	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Oct 6 – 8	RSGB Convention	rsgb.org/convention/
Oct 8 – 13	European Microwave Week, Nurembourg	www.eumweek.com/

2018

June 22–24	Ham Radio, Friedrichshafen	http://www.hamradio-friedrichshafen.de/
Sept 23–28	European Microwave Week, Madrid	http://www.eumweek.com/

NB Some of the 2017/18 event links may not be working yet.