An Amateur Radio publication for the Microwave Enthusiast

# scatterpoint

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**June/July 2024**

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New Antenna for GB3FRS – Phil G3TCU

Noel G8GTZ on holiday during 24GHz contest

UK Microwave Group

# Subscription Information

The following subscription rates apply

UK £6.00 US $9.00 Europe €9.00

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

payukug@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, rtfd, doc, docx, odt, Pages

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

Please send pictures and tables separately, as they can be a bit of a problem.

Thank you for you co-operation

**Roger G8CUB**

## 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.

# 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 (e.g. 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 contact the committee.

The current list is available at

www.microwavers.org/tech-support.htm

# UKµG Chip Bank – A free service for members

**By Mike Scott, G3LYP**

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 components on the site will not be a guarantee of availability of that component.

The service is run as a free benefit to all members of the UK Microwave Group. The service may be withdrawn at the discretion of the committee if abused. Such as reselling of components.

There is an order form on the website with an address label which will make processing the orders slightly easier.

Minimum quantity of small components is 10.

These will be sent out in a small jiffy back using a second class large letter stamp. The group is currently covering this cost.

As many components are from unknown sources. It is suggested values are checked before they are used in construction. The UKµG can have no responsibility in this respect.

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

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# Loan Equipment

Don't forget, UKuG has loan kit in the form of portable transceivers available to members for use on the following bands: **Contact Neil G4DBN for more information**

**5.7GHz 10GHz 24GHz 76GHz 122GHz**

# Mast rotation in a vehicle

Clive Elliott GW4MBS

I am quite accustomed to operating portable in the rain whether it is thrust upon me or whether it was already raining. In the last year much effort has been expended in developing a form of tentage at the rear of the Land Rover to allow me to rotate the mast and accurately read off where it is pointing without me getting wet. Unfortunately, I have found out that often when it rains the wind blows strongly which brings about a partial collapse of the shelter. I have made a much more robust shelter from bits of military tentage, but it does not lend itself to rapid deployment especially if it is raining or space is limited.

I have decided that the shelter is now for weekend trips away where I am camping and operating. So, I had to grasp the nettle of devising a means of rotating the mast from within the Land Rover and obtain an accurate readout of bearing without getting wet.

The problem with a traditional rotator is that the motor and gearbox sit at the bottom of the mast, the diameter of the rotator means that the mast would project too far from the side of the vehicle. I was anxious that the top clamp of the mast should remain in the same position as it was in military service. The choice of rotators is with AC or DC motors, but they rely on an AC mains supply for the rotator and for a rather imprecise indication of bearing.

The SPID rotator is rather different although the gearbox with worm drive sits beneath the mast, the motor is fitted to the side of the gearbox housing. For my application the motor is a projection I could do without, my initial thoughts were to mount the motor in a waterproof box in the wheel arch and drive the gearbox directly. This not was not possible because of the proximity to the exhaust tail pipe and besides I did not like the idea of the motor, although boxed, in the muddy wheel arch of a Land Rover. So, I decided to mount the motor inside the vehicle and use a flexible drive shaft to the gearbox.

The other problem is that the SPID rotator is that it rather tall, and I did not want my 5m Hilomast to project any higher than it once did.

This was soon solved with an angle grinder that reduced the height by 15cm.

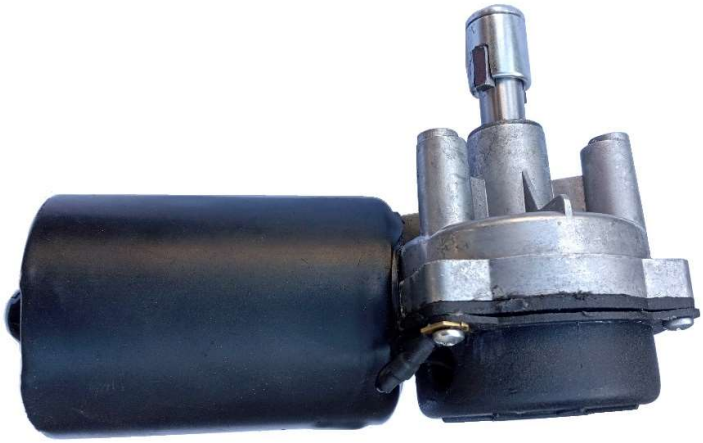
With the gearbox cover removed, the worm drive can be seen. With motor removed the triangular mounting plate can also be seen. The next issue was how to apply rotation to the worm drive. In the original arrangement a slot in the motor shaft engaged with a bar within a tube in the gearbox. I found that the internal diameter of this tube was the same as the external diameter of the socket end of a short extension piece for a 1/4in socket drive. With an angle grinder I cut slots in the extension piece that would engage precisely with the worm drive shaft held centrally by the extension piece fitting snuggly into the tube of the worm drive.

I now needed to have a means of retaining the 1/4in drive in place and supporting it. I found that an 11mm socket from a 3/8in socket set was a snug fit.

The socket had to be cut with an angle grinder to make the edge flush with the triangular mounting plate. The 1/4in shaft could still move outwards but the addition of four M8 washers kept it in place.

I now had to turn this 1/4in shaft with a flexible extension drive. These are readily available in 45cm lengths and would allow drive from the motor through a 90° bend up inside the Land Rover. The next issue was to transfer the drive from the motor to a 1/4in compatible termination. For this I selected a 1/4in drive socket that was a snug fit over the shaft from the motor, then with angle grinder cut a slot in it the same size as in the shaft. I cut a small piece of steel bar to engage a tight fit into the slot in the motor shaft that then matched the slot I had cut into the 1/4in socket.

It was important to ensure there was no free play and to be certain that the keyway in the socket did not work lose with time, I placed a spot weld at each end of the bar to the socket.



The motor is based on a 12-volt windscreen wiper motor which is remarkably powerful, and it was important that it was fixed rigidly in place. I mounted it on a plate that was then screwed down to the vehicle body.


With a hole drilled in the vicinity of the rear seat, the motor shaft now extended downwards into the wheel arch. The 45cm 1/4in flexible drive shaft just plugged into the shaft and curved through 90° to join up with the shaft to the gearbox that protruded through a small hole in the Land Rover bodywork at the base of the mast.

The flexible shaft was fed through a loose-fitting length of flexible plastic conduit. This protected it from the worst of the muck from the wheel arch and gave control against the flexible shaft bowing when changing the direction of rotation. It is important to lavish plenty of grease around the drive connections on the gearbox and motor and I am pleased to say I have found no backlash in the system.

The SPID rotator is ideal for portable work as it requires only 12 volts, although my Land Rover is a 24-volt system it is regulated down to 13.6 volts for radio equipment. Supplying this to the SPID controller means in my system the voltage delivered to the motor is 11 volts which gives 1.5 minutes for a full rotation this is far too fast for homing in on a signal. By switching in a series resistance of 4.7 Ohms gives 2.5 minutes per revolution, although this is still rather fast for peaking on a signal. Switching in 9.1 Ohms brings the speed down to 3.5 minutes for a revolution. Any further resistance does not deliver enough power to the motor to provide sufficient torque.

The beauty of the SPID is that the rotation buttons can be flipped to bring the mast onto bearing gradually and provides a digital display to one degree. Zero setting the mast on North or calibrating on a known bearing of a station is quite easy.

My original base support for the Hilomast was secured into the original military mast fitting that was of 6mm aluminium sheet supported by four M8 bolts that were secured into the vehicle bodywork. I have used the original support but mounted it onto a larger plate so as to extend the base lower and now secured by nine M8 bolts.

The base support for the rotator was an original SPID base plate that I just cut to line up with the shape of the military bracket.

Clearly such a brutal assault on the SPID rotator would void any warrantee, so it is important to satisfy yourself that the original system is fully working, and some experience gained first in its operation. This is not a recommendation to modify your vehicle in any way but is just my experience in overcoming the problem of avoiding getting wet when portable. If you do decide to make similar changes to your vehicle it is important to inform your insurance company sending details and photographs of what you have done.

Because my Land Rover has uprated springs to cope with the weight of Bowman radios, the rear is raised up. To compensate for this my mast is mounted so that on level ground the mast will be vertical. This change in axis is helpful because it takes the rotator base forwards avoiding the exhaust tail pipe.

Although I am pleased with the SPID rotator the display is rather dim. It would be alright in the dark part of a shack but not portable as sunlight can make the screen invisible.

I have played with different pieces of cardboard to shield the display, but it was an unreliable arrangement keeping it in place when portable. I thought I had an ideal solution by cutting out the base of a black plastic ice cream box, but it let in too much light. I needed more of a tunnel vision to see the display screen but not so that it would make it difficult to press the control panel buttons.

After sorting through all manner boxes and containers for all sorts of things I gave up as there was nothing suitable and besides securing it to the controller would be a problem. So, I decided to make something up from a sheet of scrap aluminium. The display is now quite readable, and the shield is robust as it is attached by the existing countersunk screws.



I hope this might give some ideas for those who want to drive their rotator from a remotely located motor and only have an angle grinder and a drill in their workshop!

# The replacement of a beacon antenna

Phil G3TCU

I became keeper of 23cm beacon GB3FRS, 1296.850, IO91LC when sadly Mike G8ATK, the previous keeper, became SK in May 2022. Mike had engineered this beacon very professionally, it was written up in RadCom Oct 2020. I replaced the drive unit in June 2023 as the original one used a DB6NT free running crystal unit and the frequency accuracy was not too good.

The original antenna was a professionally made and installed 12 ele Yagi but I had always been suspicious of its performance; Mike had it beaming at about 330°, in his words 'along the spine of the country' but the cumulative Beaconspot map below showed a remarkable lack of any spots in that direction. It had been suggested that the difficult geography may have been the reason for this, both the Chilterns and the Cotswolds clip the path but I used Mike G0MJW's path plot software to estimate expected signal strength at a couple of stations in that direction and what they were receiving was very much below the predicted strengths. So, I decided I'd like to replace the antenna and there was a consensus that an omni direction antenna would serve the community better, so I prepared an Alford slot that I had made years ago.


GB3FRS is co-sited with 2m repeater GB3SN, Dave G4EPX is responsible for that and he wanted to do some work on the feeders for it but all these antennas are installed on top of a concrete water tower and the water company had been reluctant to give us access for a very long time. Part of the reason for that was the internal ladder failing a safety inspection and needing to be replaced. Finally on 8-July, we were allowed access and Dave and I went up the tower, helped by a 'ground crew' of Mike G3VYI, Alex G8YKM & Paul M6AXN.

Climbing the ladder was a bit daunting but fortunately, the new ladder had been fitted with a proper fall arrest system.

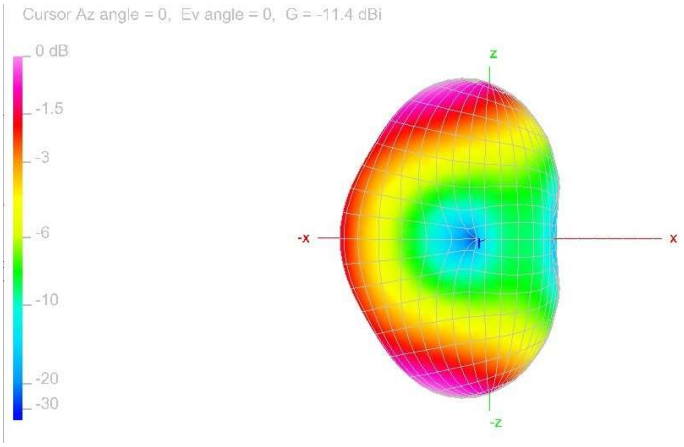
The antenna replacement went smoothly, with tools etc. (even coffee!) hoisted up from the ground on a rope system but it was found that only 0.85W was reaching the antenna with 3.0W from the Tx at ground level. Dave's work on the 'SN feeders showed the LDF4-50 had been scuffed right through the plastic jacket & the copper outer where the feeders pass over the concrete rim of the water tower, despite the installer being asked to provide protection there. The same thing has probably happened to the 'FRS feeder. The old and new antennas are shown here. Reports on the beacon with the new antenna have been encouraging. Despite the low power, many people have reported hearing it when the signal from the old Yagi was undetectable.

Our curiosity has driven us to try to evaluate the old Yagi and both from 'field trials' and modelling in MMANA, the suspicion that it is defective has been confirmed. An MMANA model suggests a forward gain of -11.4dBi, slightly better off the back at +3.5dBi and even better upwards at +5dBi ! No wonder reports from the NW were lacking!

The MMANA 3D predicted response is shown below. Yes, +X is the forward direction. It is not yet understood how this bizarre radiation pattern is achieved, despite a 1.0:1 VSWR.

It is hoped to soon increase the Tx power by about 6dB to achieve the originally intended 25W ERP.

Some more photos of the antenna replacement operation can be seen here:
https://photos.app.goo.gl/k2ejnaiVdo7P17657



# Activity News June/July 2024

By John G4BAO

***Please send your activity news to:*** **scatterpoint@microwavers.org**

## From Clive GW4MBS

Re 24GHz cumulative contest. Nothing much to report, but it wasn't for lack of trying. Only one QSO with G4UVZ at 128km, very marginal but he has been stronger over that path on previous occasions. I had 7 failed contacts and no takers for 47GHz. As you know there are no easy roadside lay-bys round me so I have to make my own. From the vegetation you can understand why hay fever took its toll so I had to retire before the end.

A bit of vegetation sorts out the men from the boys. Not a place for a piece of plywood on a tripod!

## From David M0GHZ

The 14th of July contest day was a disaster! I went to Westbury White Horse IO81WG, which is a fine site but found I couldn't get a reliable signal O2 signal so no Zello or KST. The only station I could hear on 433.450MHz was Pete G1DFL/P but too weak to copy, I was using a 1/4wave vertical and 20W.

I then went to Cold Ashton IO81TK where I have had good success in the past. A good phone signal and KST connection. Unfortunately, I couldn't hear either the Bell Hill or Cardiff beacons, both previously heard at S5. Tried with GW4MBS/P, G8CUB/P, G8KMH/P and G8IKP/P (thanks all) with no success so packed up and went home.

The day after I tested my Wavelab system on the bench and was unable to hear the harmonic from my signal

generator, but after some fiddling around it came to life. I'm not really sure what the problem was, but rotating the transverter and dish assembly did cause it to stop working a couple of times. I found the DC supply connector was a little intermittent which might have been causing the Wavelab interface board synthesisers to get confused? Connector replaced now so I will test from time to time to see if the failure repeats itself. Unfortunately, I will be away for the 24GHz Trophy but maybe we can organise another activity day?
I expected to see a lot more people on the activity list with Wavelab transverters - where were you all?

## From Dave G1EHF

I visited Walbury Hill (IO91GI44) for 14th July session with 250mW to 60cm prime-focus dish on 24GHz and 80mW to 2 x 35mm horns on 47GHz. Unfortunately, activity and conditions were a little poor, with seven stations worked on 24 and four on 47 (although some of those were generous chaps who went roving). My ODX on 24GHz was 140km with Paul G0MDQ/P but that was a tricky CW contact with QSB and my poor Morse skills! 47GHz ODX was John G8ACE/P at 40km.

I agree with M0GHz that our talkback for mmW contests is spread too much. I don't have Zello but was using 144.390, 433.450, KST and WhatsApp/phone call yesterday. Those alone make enough distraction, with the 24 and 47GHz IF rigs making noise too. Inevitably the 2m rig and KST computer are separated from the tripods, so there's plenty of running about and loud audio involved. The H/H usage started on 122GHz, where LOS is typical and dish peaking on fed-back audio is often used but I agree that they are of limited use for more distant 24G contacts. Should we all just stick to 144.390 and forget internet-based channels? Or go just 144 + KST? Would that suit everyone? I'm guessing there will be no consensus!

## From Noel G8GTZ

Also on the 24GHz contest. I was working Peter GW4JQP to give him his first QSO on 24GHz from the campsite in IO71OV.  Other attempts failed to work Clive and Adrian.

## Comment from G4BAO on the talkback issue

I'm not going to suggest anything more about talkback, but just post 3 maps of the UK digital 70-cm repeater network. (from UKrepeaters.net) for you to draw your own conclusions.
Most of these repeaters are comprehensively linked and one of these stations must be within RF range of every potential GHz portable or home station site.

Thoughts?


**Figure 1 70cm DSTAR Repeaters**


**Figure 2 70cm DMR repeaters**


**Figure 3 70cm Fusion Repeaters**

## From Adrian G4UVZ

I was really looking forward to my first 24GHz contest from home! Since setting up at home IO80KX, my 2watt Wavelab transceiver can receive both Bell Hill and Cardiff beacons pretty much 100% of the time.
I have worked Clive GW4MBS at his home location over a very tortuous path and also John G8IKP at Hardys Eggardon and Beaminster . Hardys and Beaminster using passive reflectors like TV masts and the Quantock Hills and notably an excellent contact via back scattered rain.
During 14th July the mmWave contest sadly I worked just two stations. Clive and John. Conditions were nothing special but the stations available to the SW peninsula were just too far away for any possibility of a contact. So my heart felt plea to all with 24 and 10 GHz .. you will have a significant investment in your equipment. to use it 3 or 4 time a year during a contest is a very poor investment. probably about £30 a QSO over the life of the equipment! Good conditions are extremely unlikely to coincide with contest days! So set up at home!
Clive and I have a daily sked on 10 GHz over 130K highly obstructed path it is very unusual not to be able to exchange CW reports. But even without rain of other apparent enhancement modes at least once a week we can work on SSB FM and Digital Voice. I use a standard rotator and satellite Jack for elevation control.. very important if you are going to explore scattering options!

## From Jan PA3FXB (team PI9CAM)

On the 13th of July we held the annual EME SSTV moon landing party at the Dwingeloo 20m dish in the northern Netherlands using the call PI9CAM. Once again it was big fun! The Moon was low and far away so it was a bit difficult sometimes but quite some people received our images, and we received some nice images too. It's always amazing to see that SSTV via the moon is possible!

Below is a moonbounced portrait of Al K2UYH we sent to the moon and was received by DL1YMK/SA6BUN.

It felt like the right thing to do after Al passed away suddenly recently…

Thanks to all who participated in the EME SSTV party, namely IK1FJI, DL1YMK, F4KLO, I0NAA, GM0PJD, LU8ENU, N5TM and XE1XA.

## From John G0API

On Sunday July 28th G0API,G3PFM and G3YGF , all members of the Flight Refuelling ARS EME Group ,G4RFR, took part in the Dubus 5.7GHz EME Contest .

The equipment used was finished on the evening of the 27th , with the addition of Sorbo rubber RAM to the final stage driver device and the Gate of the output stage of the 40W SSPA , supplied by Jac PA3DZL .This fixed a tendency to Hoot .
No problems were encountered during the 10 Hr Moon window of the contest .

The system uses the standard IC746 10GHz driver at 144MHz , which is interfaced to WSJT via CAT .DC on the common 144MHz i.f. TX/RX cable controls the initiation of a 4 stage sequencer mounted on the feed plate in the centre of the 3.65m prime focus dish .
Also on the plate are a MK2 DB6NT transverter , with 10MHz GPS referenced input feeding an OZ5N Auto PLL LO .
The feed used is one built to the SM6FHZ circular dual port septum feed design with Kumar choke , which matches the 0.43 F/d of the dish .A linear actuator remotely adjusts the feed position for optimum gain , from the operating point..
A "Franko" board 1.2dB LNA was used for this test but a DU3T device is on order , which should improve the 12.7dB Sun noise measured ....solid Echoes in the 15dB region were seen .
As this was a relatively quick lash up we used a pcb Log periodic antenna mounted on the dish rim , adjacent to the boresight video camera , which had an SMA diode detector to provide DC back to a shack mounted AVO8 .A good visual method of power output confirmation with no power needed and a pair of wires .
As the contest rules specify no talkback of any kind during the operating window and the use of CW or SSB only , the reality was CW search and pounce and mainly traditional CQing .
However to our surprise we were able to make 14 contacts across EU and NA with several who we could read but were just too weak for them to copy us . There would no doubt be many others within the system capability if we used JT , but that is for another day .
This 5.7GHz system , follows the 2.3 and 3.4GHz systems built by the Group for EME this year , so probably it will be 24GHz next ...

We worked a couple of stations on 5.7GHz skeds today and after investigated the system front end .
Using a noise head source/meter and SA combo we found that incorporating a 3 pole Evanescent filter and a "DODGY" bit of flexible SMA cable between the isolation relay on the RX Horn feed and the TVTR , managed to increase the overall NF to 2dB and a resultant 0.5dB/Ground noise .
The Moon set before we could test the revised layout in the dish but the bare horn Sky/ground was 4.4db - I did say it was a lash up .....and bodes well for the final arrangement performance .

# Beacon News……..

Bell Hill Beacons:
All beacons and 70MHz Telemetry are now running .

GB3SCS  320.905MHz

GB3SCF 3400.905MHz

GB3SCC 5760.905MHz

GB3SCX 10368MHz

GB3SCK  24048.905MHz

G4JNT/b  70.0308MHz

BIG Thanks to all involved in recent works .

John
G0API

# Editors Comments

As always any articles greatly appreciated. August sees the 24GHz Trophy contest, as a stand-alone event for the first time. A time to test out all these Wavelab units….

It would be great to have some articles for forthcoming issues of Scatterpoint……

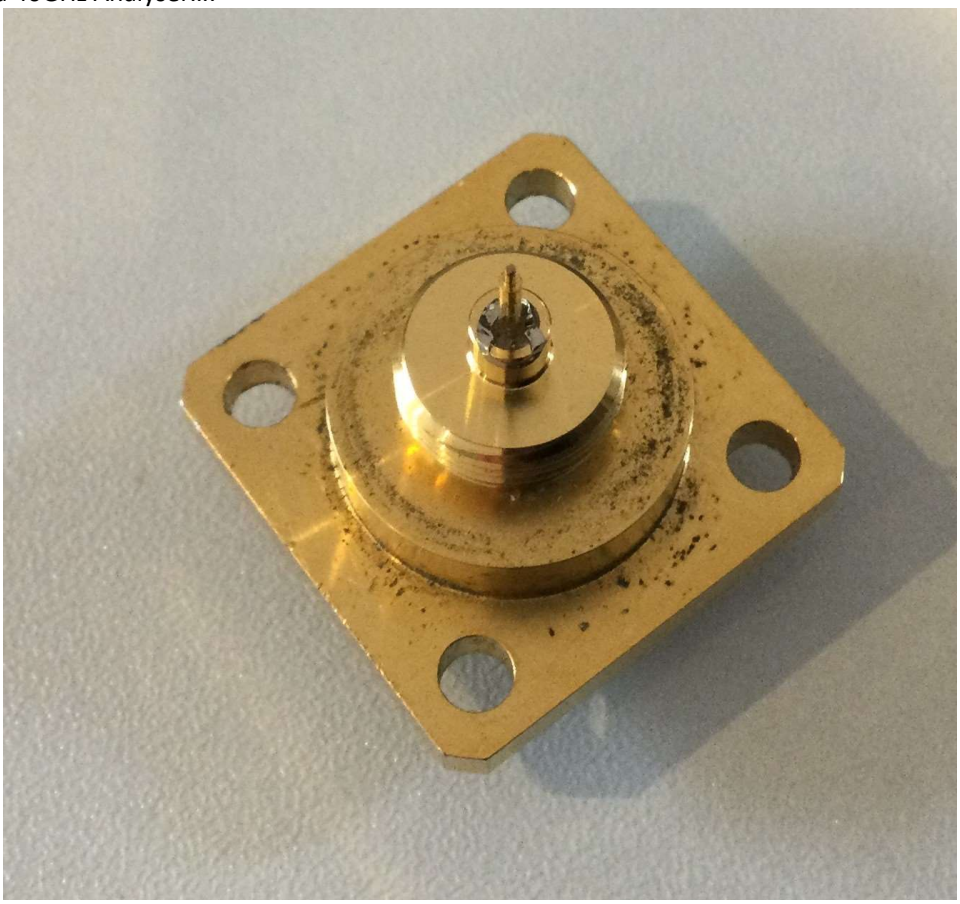
# Silent Keys

Eddy Jespers
ON7UN

I was very sad to hear of the passing of Eddy Jespers ON7UN on 23rd July 2024.
He was a well known microwaver, as well as HF, EME and apparently Deepspace.

# This Month I have been…..

Trying to repair a 40GHz Analyser….



The HP 8564E analyser was suffering from YIG oscillator failure. Now quite a common fault on these analysers. To see if the rest of the analyser still worked. I used a sig gen to replace the YIG, and but a signal on the input connector. With the 40GHz 8564E the input is a 2.4mm connector, which is NOT compatible with sma.
Several years ago the analyser had been sent to a test equipment company to quote for repair (before I acquired it).

They had obviously given it to the apprentice, who had forcibly wound an sma in. The outer thread was mullered.
I could get something to connect, so did the trial with a signal at the input. Absolutely no response at all!

So I decided to try and take the connector apart. Not easy as it needed a 12.3mm across flats spanner, that was less than 2mm thick. Solved in the end by modifying a 'give away' muti-tool, to make the spanner.


The problem was immediately obvious, as I unscrewed it. A piece of the thread, had dropped down inside the connector, forming a very direct short. There was nothing visible with a magnifying glass from the outside. So, if I had not taken the connector apart, I would never have found it!
The outer thread of the 2.4mm connector is M7. However without being able to take the connector further apart, due to some internal circlip. It really needs a plug tap to be ground down, as there is only 2.5mm thread visible. However I managed to do a reasonable job, with a sacrificial adaptor.

With what I regard as modern analysers being now 40 plus years old. Failures are more and more likely. Common failures being YIG oscillators, and power supplies.
First step with the power supplies, is to replace the big caps. Though there are a host of other potential problems after that.
Does anyone have a spare working 5086-7906 YIG? Or alternatively want to make me an offer for a 40GHz HP8564E, with a partially working PSU needing a YIG oscillator?

# Finningley Round Table 2024

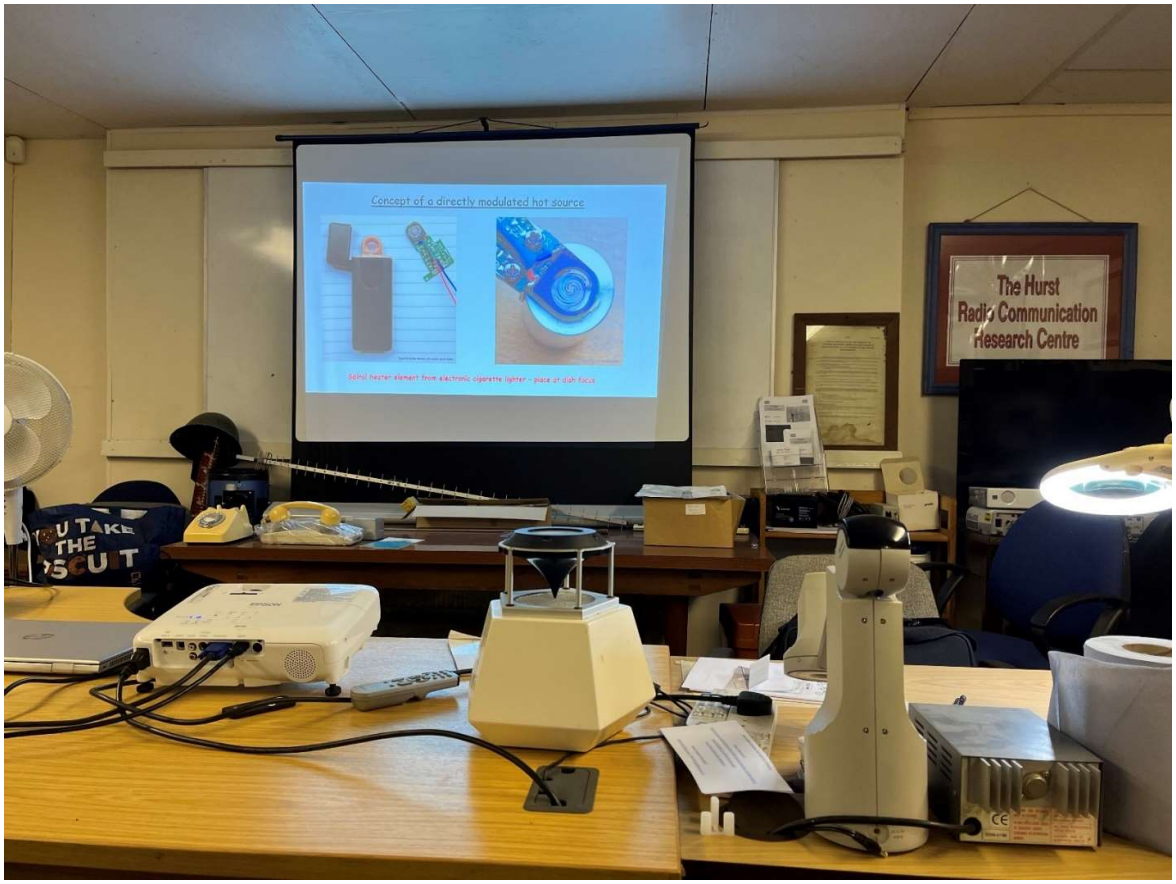
Kevin G3AAF explaining the virtues of a small 'watch-makers' lathe. The trick it seems is to replace the existing mains motors, with modern 12V types. Although EMCO is the unit of the moment. Other makes are available. With a vast array of available attachments, allowing milling and screw cutting. I don't know how I have done without one!

For those not having been before, this is an excellent, relaxed microwave round table. The facilities are amazing, with measurement and workshop possibilities. This year we were blessed with some showers, but hey this is England, so what do you expect.

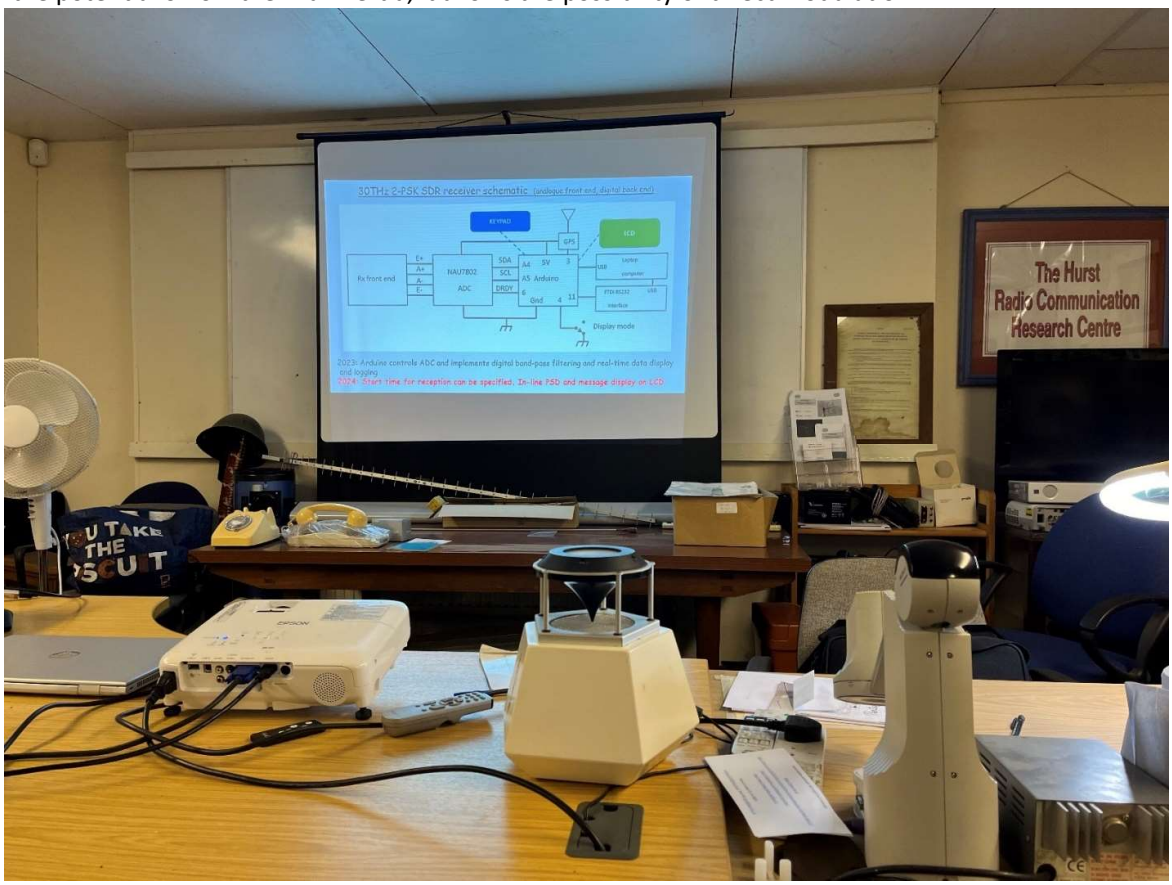
Roger G8CUB & Barry G8AGN, demonstrated Opera mode on 122GHz in the grounds. This showed up some issues with USB ports at Barry's end. That is a good reason to do a short distance trial like this.

Sunday's first talk was by Roger G8CUB, covering the recent 122/134Ghz record contact, "and the way forward to increase distance"

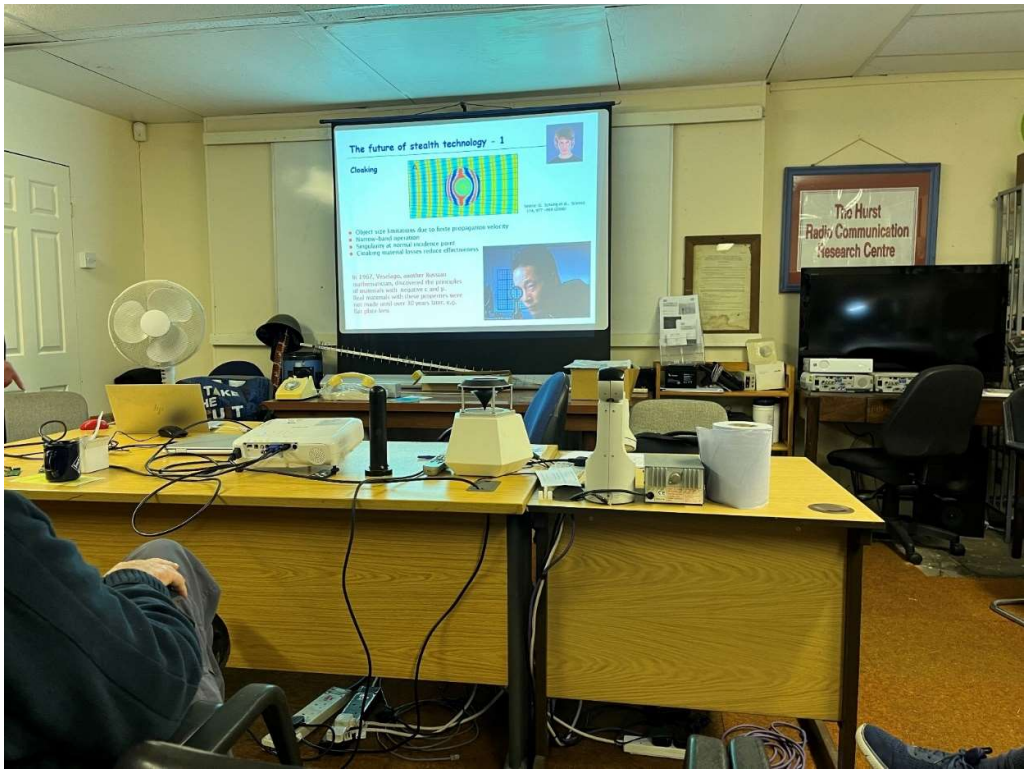
The way looks good, for the possibility of increasing range towards 100km. We are still waiting though for the Dual band 122/134 VK boards to appear.




Saturdays talk by Barry G8AGN covered his advances in 30THz. On screen is a vehicle cigarette lighter. With the potential of low thermal inertia, it allows the possibility of direct modulation.




The simple block diagram of the 30THz receiver




Stealth technology: a review – Barry Chambers G8AGN

Barry's second slot on the Sunday. A very interesting talk on his involvement in making aircraft have a low RF reflection profile.

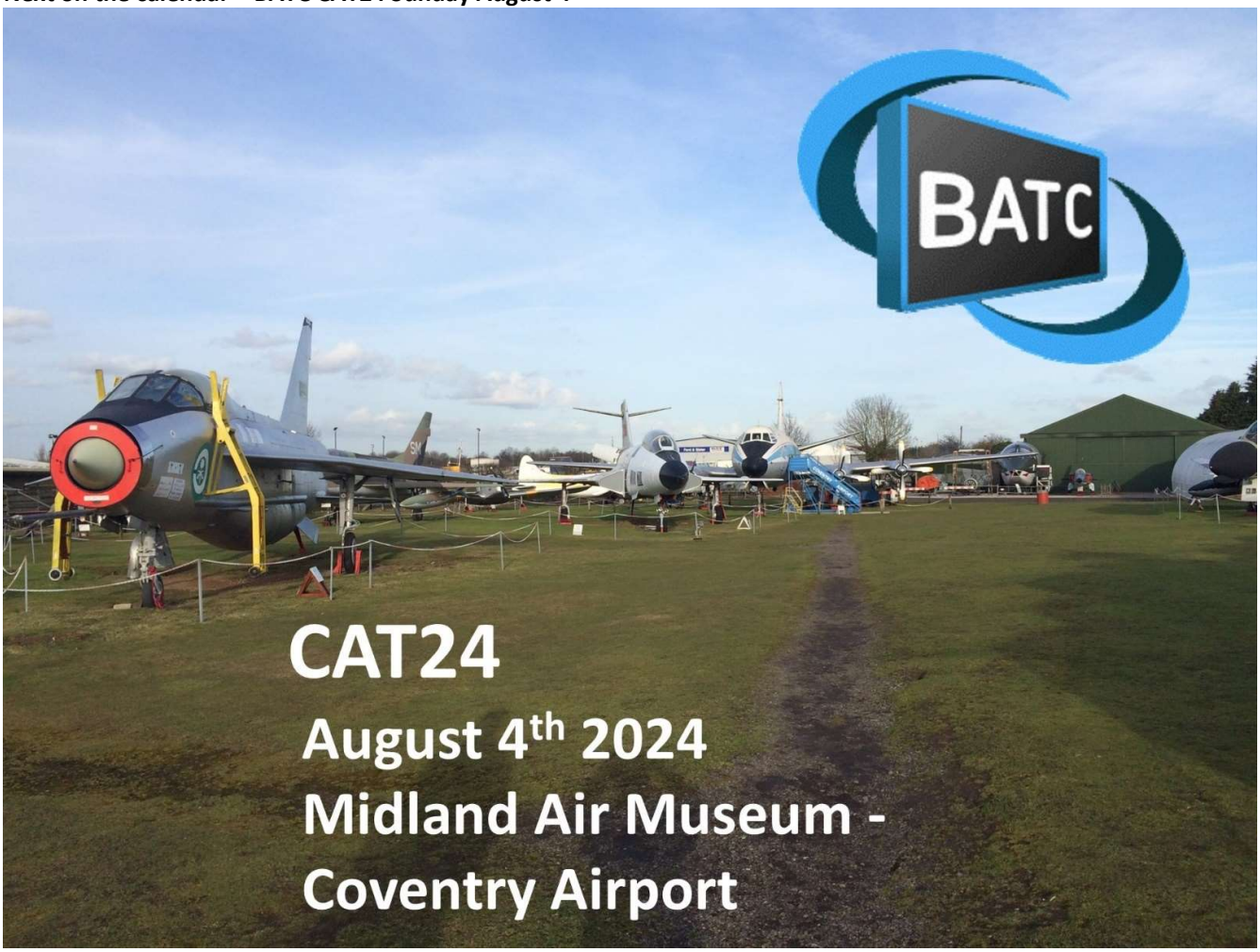
Final talks on the Sunday afternoon were, by Terry G0EZY on SDR Hardware & Software Review. And, by Dave G0LBK, on "The use and setup of QMap software on EME".

Outside, Rob M0DTS had brought his van, with very impressive ATV and microwave setup. It was the first view for many of us, of the IC905 in operation. Also again portable operation From Steve G1PPA was demonstrated.

A big thanks to Michelle who took care of the catering kept us well fed and supplied with tea and coffee at lunchtime. Plus a thank for to Kevin and all those from the Finningley club, for providing an excellent event.

# Microwave Meetings 2024

**Next on the calendar – BATC CAT24 Sunday August 4th**




The BATC CAT meeting is this Sunday August 4th at the Midland Air Museum in Baginton near Coventry.

Doors open at 10 am and entry is free to BATC members – note the normal museum entrance is £8.50 so joining the BATC as a cyber member is 50p cheaper and you get all the benefits of BATC membership, including the excellent CQ-TV magazine, for a full year!

You will be able to pre-order lunch from the café early in the day, and we are arranging for extra seating to be available in the venue for relaxed discussions.

Entrance tickets, which are free to BATC members, are available from the BATC shop. Please reserve your tickets in advance so that we can plan for numbers and prepare badges.

There will be the usual test and fix-it, QO-100 and portable station demonstrations. If you are having trouble setting anything up (including laptops), bring it along and the experts will try to help you.

The bring and buy is always popular and we are encouraging members to bring their surplus items to help others join and progress in the hobby. If you have particularly heavy items, please contact one of the Committee to gain easier access to the venue.

## 5.7GHz Cumulative May 2024

Plenty of rain accompanied this first event of 2024 on 5.7GHz, which perhaps discouraged some activity, but reasonable numbers of contacts were made. Congratulations go to winner David M0GHZ, and to runner up Dave G1EHF/P.
John G3XDY

| Pos | Callsign | Locator | QSOs | Score | ODX Call | ODX kms |
|---|---|---|---|---|---|---|
| 1 | M0GHZ | IO81VK | 9 | 924 | G7WHI/P | 157 |
| 2 | G1EHF/P | IO91GI | 7 | 812 | G7WHI/P | 154 |
| 3 | G7WHI/P | IO92IR | 4 | 471 | M0GHZ | 157 |
| 4 | GW4HQX/P | IO81KR | 3 | 286 | G1EHF/P | 123 |

## 10GHz May 2024

John G4ZTR wins this first session of the 2024 cumulatives with a substantial lead over David M0GHZ as runner up. David had the consolation prize with the best DX worked, from IO81VK to ON4MU/P in JO20BM. Rain scatter provided some good contacts within the UK, but probably discouraged portable entrants.
John G3XDY

| Pos | Callsign | Locator | QSOs | Score | ODX Call | ODX kms |
|---|---|---|---|---|---|---|
| 1 | G4ZTR | JO01KW | 17 | 3567 | F6DKW | 365 |
| 2 | M0GHZ | IO81VK | 16 | 2651 | ON4MU/P | 455 |
| 3 | G0WZV | JO01KV | 14 | 2551 | ON4CJQ/P | 298 |
| 4 | G4SJH/P | IO91GI | 12 | 1746 | G4RQI | 265 |
| 5 | G4RQI | IO93IR | 8 | 1701 | G4SJH/P | 265 |
| 6 | GW3TKH/P | IO81KR | 7 | 1177 | G4ZTR | 276 |
| 7 | GW4JQP | IO71KR | 5 | 1145 | G4HWA | 290 |
| 8 | G7WHI/P | IO92IR | 7 | 941 | G0WZV | 175 |
| 9 | G3YGF | IO90IX | 1 | 44 | G4SJH/P | 44 |

## 5.7GHz Cumulative June 2024

Not much comment on this session, however activity was low and conditions flat. Best DX was from G3ZME/P to G3XDY at 265km.
John G3XDY

| Pos | Callsign | Locator | QSOs | Score | ODX Call | ODX kms |
|---|---|---|---|---|---|---|
| 1 | G3ZME/P | IO82QL | 7 | 846 | G3XDY | 265 |
| 2 | M0GHZ | IO81VK | 5 | 681 | G3XDY | 246 |
| 3 | GW4HQX/P | IO81KR | 4 | 363 | G4NNS | 123 |
| 4 | M0PAI/P | IO93AD | 2 | 278 | M0GHZ | 191 |

## 10GHz June 2024

John G4ZTR carried on his winning streak in this year's event, but with a narrower lead over runner up G3ZME/P. Best DX was again worked by M0GHZ, this time with F6DKW (JN18CS). Although the weather was better than in May, conditions and activity were worse.
John G3XDY

| Pos | Callsign | Locator | QSOs | Score | ODX Call | ODX kms |
|---|---|---|---|---|---|---|
| 1 | G4ZTR | JO01KW | 8 | 2085 | GW4JQP | 413 |
| 2 | G3ZME/P | IO82QL | 12 | 1649 | G6TRM/P | 286 |
| 3 | M0GHZ | IO81VK | 8 | 1484 | F6DKW | 433 |
| 4 | GW4JQP | IO71KR | 6 | 1237 | G4ZTR | 413 |
| 5 | GW4MBS/P | IO71XW | 7 | 1027 | G0HIK/P | 257 |
| 6 | G0HIK/P | IO84JE | 4 | 1022 | G4ZTR | 371 |
| 7 | M0PAI/P | IO93AD | 6 | 969 | G4ZTR | 235 |

## 5.7/10GHz Championship Table

Positions after two events, best three count to total

**5.7GHz**

| Pos | Callsign | 26/05/2023 | 30/06/2023 | TOTAL |
|---|---|---|---|---|
| 1 | M0GHZ | 1000 | 804 | 1804 |
| 2 | G3ZME/P | 0 | 1000 | 1000 |
| 3 | G1EHF/P | 878 | 0 | 878 |
| 4 | GW4HQX/P | 309 | 429 | 738 |
| 5 | G7WHI/P | 509 | 0 | 509 |
| 6 | M0PAI/P | 0 | 328 | 328 |

**10GHz Open**

| Pos | Callsign | 26/05/2023 | 30/06/2023 | TOTAL |
|---|---|---|---|---|
| 1 | G4ZTR | 1000 | 1000 | 2000 |
| 2 | M0GHZ | 743 | 711 | 1454 |
| 3 | GW4JQP | 320 | 593 | 913 |
| 4 | G3ZME/P | 0 | 790 | 790 |
| 5 | G0WZV | 715 | 0 | 715 |
| 6 | GW4MBS/P | 0 | 492 | 492 |
| 7 | G0HIK/P | 0 | 490 | 490 |
| 8 | G4SJH/P | 489 | 0 | 489 |
| 9 | G4RQI | 476 | 0 | 476 |
| 10 | M0PAI/P | 0 | 464 | 464 |
| 11 | GW3TKH/P | 329 | 0 | 329 |
| 12 | G7WHI/P | 263 | 0 | 263 |
| 13 | G3YGF | 12 | 0 | 12 |

# UKuG MICROWAVE CONTEST CALENDAR 2024

| Dates, 2024 | Time UTC | Contest name |
|---|---|---|
| 28 -Jul | 0600 - 1800 | 3rd 5.7GHz Contest |
| 28 -Jul | 0600 - 1800 | 3rd 10GHz Contest |
| 18-Aug | 0900 – 1700 | 24GHz Trophy Contest |
| 25-Aug | 0600 - 1800 | 4th 5.7GHz Contest |
| 25-Aug | 0600 - 1800 | 4th 10GHz Contest |
| 15-Sep | 0900 - 1700 | 3rd 24GHz Contest |
| 15-Sep | 0900 - 1700 | 3rd 47GHz Contest |
| 15-Sep | 0900 - 1700 | 3rd 76GHz Contest |
| 29 -Sep | 0600 - 1800 | 5th 5.7GHz Contest |
| 29 -Sep | 0600 - 1800 | 5th 10GHz Contest |
| 6 -Oct | 0900 - 1700 | 4th 24GHz Contest |
| 6 -Oct | 0900 - 1700 | 4th 47GHz Contest |
| 6 -Oct | 0900 - 1700 | 4th 76GHz Contest |
| 10 -Nov | 1000 - 1400 | 5th Low band 1.3/2.3/3.4GHz |

# MICROWAVE CONTEST CALENDAR 2024

| Month | Contest name | Organiser | Date 2024 | Time GMT | Notes |
|---|---|---|---|---|---|
| Jan | 1.3GHz Activity Contest | *Arranged by RSGB* | 16-Jan | 2000 - 2230 | RSGB Contest |
| Jan | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 23-Jan | 1930 - 2230 | RSGB Contest |
| | | | | | |
| Feb | 122GHz Contest | UKuG | 4-Feb | 0900 - 1700 | New event |
| Feb | 1.3GHz Activity Contest | *Arranged by RSGB* | 20-Feb | 2000 - 2230 | RSGB Contest |
| Feb | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 27-Feb | 1930 - 2230 | RSGB Contest |
| | | | | | |
| Mar | Low Band 1296/2300/2320/3400MHz | UKuG | 3-Mar | 1000 - 1600 | First 4 hours coincide with IARU event |
| Mar | REF/DUBUS EME 3.4GHz | *Arranged by REF/DUBUS* | 17-Mar | 0000 - 2400 | REF/DUBUS EME 3.4GHz |
| Mar | 1.3GHz Activity Contest | *Arranged by RSGB* | 19-Mar | 2000 - 2230 | RSGB Contest |
| Mar | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 26-Mar | 1930 - 2230 | RSGB Contest |
| | | | | | |
| Apr | Low Band 1296/2300/2320/3400MHz | UKuG | 7-Apr | 0900 - 1500 | |
| Apr | REF/DUBUS EME 2.3GHz | *Arranged by REF/DUBUS* | 14-Apr | 0000 - 2400 | REF/DUBUS EME 2.3GHz |
| Apr | 1.3GHz Activity Contest | *Arranged by RSGB* | 16-Apr | 1900 - 2130 | RSGB Contest |
| Apr | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 23-Apr | 1830 - 2130 | RSGB Contest |
| | | | | | |
| May | *432MHz & up* | *Arranged by RSGB* | 4-May to 5-May | 1400 -1400 | RSGB Contest |
| May | *10GHz Trophy* | *Arranged by RSGB* | 5-May | 0800 - 1400 | Sunday, to coincide with IARU |
| May | Low Band 1296/2300/2320/3400MHz | UKuG | 5-May | 0800 - 1400 | Aligned with IARU event |
| May | 24GHz/47/76GHz | UKuG | 5-May | 0900-1700 | Aligned with IARU event |
| May | REF/DUBUS EME 1.2GHz | *Arranged by REF/DUBUS* | 11-May to 12-May | 0000 - 2400 | REF/DUBUS EME 1.2GHz |
| May | 1.3GHz Activity Contest | *Arranged by RSGB* | 21-May | 1900 - 2130 | RSGB Contest |
| May | 5.7GHz/10GHz | UKuG | 26-May | 0600-1800 | |
| May | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 28-May | 1830 - 2130 | RSGB Contest |
| | | | | | |
| Jun | Low Band 1296/2300/2320/3400MHz | UKuG | 2-Jun | 0900 - 1500 | Aligned with some Eu events |
| Jun | REF/DUBUS EME 24GHz | *Arranged by REF/DUBUS* | 8-Jun | 0000 - 2400 | REF/DUBUS EME 24GHz |
| Jun | REF/DUBUS EME 10GHz | *Arranged by REF/DUBUS* | 9-Jun | 0000 - 2400 | REF/DUBUS EME 10GHz |
| Jun | 1.3GHz Activity Contest | *Arranged by RSGB* | 18-Jun | 1900 - 2130 | RSGB Contest |
| Jun | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 25-Jun | 1830 - 2130 | RSGB Contest |
| Jun | 5.7GHz/10GHz | UKuG | 30-Jun | 0600-1800 | |
| | | | | | |
| Jul | VHF NFD (1.3GHz) | *Arranged by RSGB* | 6-Jul to 7-Jul | 1400 - 1400 | RSGB Contest |
| Jul | 24GHz/47/76GHz | UKuG | 15-Jul | 0900-1700 | |
| Jul | 1.3GHz Activity Contest | *Arranged by RSGB* | 16-Jul | 1900 - 2130 | RSGB Contest |
| Jul | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 23-Jul | 1830 - 2130 | RSGB Contest |
| Jul | 5.7GHz/10GHz | UKuG | 28-Jul | 0600-1800 | |
| Jul | REF/DUBUS EME 5.7GHz | *Arranged by REF/DUBUS* | 28-Jul | 0000 - 2400 | REF/DUBUS EME 5.7GHz |
| | | | | | |
| Aug | 24GHz Trophy Contest | UKuG | 18-Aug | 0900 - 1700 | New event |
| Aug | 1.3GHz Activity Contest | *Arranged by RSGB* | 20-Aug | 1900 - 2130 | RSGB Contest |
| Aug | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 27-Aug | 1830 - 2130 | RSGB Contest |
| Aug | ARRL Microwave EME | *Arranged by ARRL* | 24-Aug to 25 -Aug | 0000 - 2359 | ARRL EME 2.3GHz & Up |
| Aug | 5.7GHz/10GHz | UKuG | 25-Aug | 0600-1800 | |
| | | | | | |
| Sep | 24GHz/47/76GHz | UKuG | 15-Sep | 0900-1700 | |
| Sep | 1.3GHz Activity Contest | *Arranged by RSGB* | 17-Sep | 1900 - 2130 | RSGB Contest |
| Sep | ARRL Microwave EME | *Arranged by ARRL* | 21-Sep to 22-Sep | 0000 - 2359 | ARRL EME 2.3GHz & Up |
| Sep | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 24-Sep | 1830 - 2130 | RSGB Contest |
| Sep | 5.7GHz/10GHz | UKuG | 29-Sep | 0600-1800 | |
| | | | | | |
| Oct | *432MHz & up* | *Arranged by RSGB* | 5-Oct to 6-Oct | 1400 - 1400 | IARU/RSGB Contest |
| Oct | *1.3 & 2.3GHz Trophies* | *Arranged by RSGB* | 5-Oct | 1400 - 2200 | RSGB Contest |
| Oct | 24GHz/47/76GHz | UKuG | 6-Oct | 0900-1700 | |
| Oct | 1.3GHz Activity Contest | *Arranged by RSGB* | 15-Oct | 1900 - 2130 | RSGB Contest |
| Oct | ARRL EME 50-1296MHz | *Arranged by ARRL* | 19-Oct to 20-Oct | 0000 - 2359 | ARRL EME Contest |
| Oct | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 22-Oct | 1830 - 2130 | RSGB Contest |
| | | | | | |
| Nov | Low Band 1296/2300/2320/3400MHz | UKuG | 10-Nov | 1000 - 1400 | |
| Nov | ARRL EME 50-1296MHz | *Arranged by ARRL* | 16-Nov to 17-Nov | 0000 - 2359 | ARRL EME Contest |
| Nov | 1.3GHz Activity Contest | *Arranged by RSGB* | 19-Nov | 2000 - 2230 | RSGB Contest |
| Nov | 2.3GHz+ Activity Contest | *Arranged by RSGB* | 26-Nov | 1930 - 2230 | RSGB Contest |
| | | | | | |
| Dec | 1.3GHz Activity Contest | *Arranged by RSGB* | 17-Dec | 2000 - 2230 | RSGB Contest |

| Sections | | |
|---|---|---|
| | **F** | Fixed / home station |
| | **P** | Portable |
| | **L** | Low-power <10W 1.3/2.3/3.4GHz, <1W 5.7/10GHz) |

**Added 24GHz and 122GHz events, rescheduled 24/47/76GHz events for 2024**

# EVENTS 2024

| | | |
|---|---|---|
| August 4 | BATC Convention, Midland Air Museum, Coventry | www.batc.org.uk |
| August 9-11 | 20th EME Conference, Ewing NJ, USA | EME2024Trenton.org |
| September 6-8 | 69.UKW Tagung Weinheim | www.ukw-tagung.de |
| September 22 | Crawley Roundtable | https://carc.org.uk/ |
| September 22-27 | European Microwave week, Paris | www.eumweek.com |
| October 3-5 | Microwave Update, Vancouver, Canada | microwaveupdate.org |
| November 9 | Scottish Roundtable | www.gmroundtable.org.uk |
| November 30 | Midlands Roundtable SY6 7DH | |