An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

February 2021

Published by the UK Microwave Group

In This Issue

Region 1 241GHz record DK5NJ & DB6NT 60km

30THz Source - Barry G8AGN

UK Microwave Group

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, rtfd, doc, docx, odt, Pages

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

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

Thank you for you co-operation.

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

UK Microwave Group Contact Information

Chairman: Neil Underwood G4LDR
email: chairman@microwavers.org
located: Wiltshire IO91EC
Tel: 01980 862886

General Secretary: John Quarmby G3XDY
secretary@microwavers.org
located: Suffolk JO02OB
Tel: 01473 717830

Membership Secretary: Bryan Harber G8DKK
membership@microwavers.org
located: Hertfordshire IO91VX

Treasurer: David Millard M0GHZ
email: treasurer@microwavers.org

Scatterpoint Editor: Roger Ray G8CUB
editor@microwavers.org
located: Essex JO01DP
Tel: 01277 214406

Beacon Coordinator: Denis Stanton G0OLX
beacons@microwavers.org
located: Surrey

Scatterpoint Activity news: John G4BAO scatterpoint@microwavers.org
Contests & Awards Manager: G3XDY as above g3xdy@btinternet.com

Assistants

Murray Niman	Webmaster	G6JYB	g6jyb@microwavers.org
Kent Britain	USA	WA5VJB/G8EMY	wa5vjb@flash.net
Mike & Ann Stevens	Trophies	G8CUL/G8NVI	trophies@microwavers.org
Noel Matthews	ATV	G8GTZ	noel@noelandsally.net
Robin Lucas	Beaconspot	G8APZ	admin@beaconspot.uk
Chris Whitmarsh	mmWaves	G0FDZ	chris@g0fdz.com
Mike Scott	Chip Bank	G3LYP	g3lyp@btinternet.com
Paul Nickalls	Digital	G8AQA	g8aqa@microwavers.org
Heather Lomond	SDR	M0HNO	m0hno@microwavers.org
Neil Smith	Tech Support	G4DBN	neil@g4dbn.uk
Barry Lewis	RSGB uWave Manager	G4SJH	barryplewis@btinternet.com

UK Regional Reps

Martin Hall	Scotland	GM8IEM	martinhall@gorrell.co.uk
Gordon Curry	Northern Ireland	GI6ATZ	gi6atz@qsl.net
Peter Harston	Wales	GW4JQP	pharston@gmail.com

International

Kent Britain	USA	WA5VJB/G8EMY	wa5vjb@flash.net

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 47GHz 76GHz

UK Microwave Group AGM Calling Notice

Notice is hereby given that the 2021 Annual General Meeting of the UK Microwave Group will be held at 10:00am on Sunday, 18th April 2021, by Zoom. Meeting details are given below.

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.

A vacancy for Trophy Manager exists, a volunteer to look after engraving and maintenance of the trophies would be very welcome.

Other existing committee members are prepared to stand again, however new members are very welcome.
Any UKuG member wishing to stand should notify the UKµG Secretary, John Quarmby G3XDY, by 18th March 2021.
If you have any agenda or AOB items for the AGM then please contact the UKµG Secretary, John Quarmby G3XDY by 18th March 2021, email: secretary@microwavers.org

UK Microwave-Group is inviting you to a scheduled Zoom meeting.

Topic: UK Microwave Group AGM

Time: Apr 18, 2021 10:00 AM London

Join Zoom Meeting
https://zoom.us/j/98353195917?pwd=VFpWbWRNY1ZwWXZZbWZ3bVlvcW84Zz09

Meeting ID: 983 5319 5917

Passcode: 631403

Progress on 30THz – thoughts on modulated sources

Barry Chambers, G8AGN

Introduction

In a previous article, I described a simple Arduino-based receiver for the 30THz band and suggested how it could be tested. In this article, I will consider the design and implementation of a 30THz source and describe how it can be modulated using QRSS. To date, the complete transmitter-receiver pair has been used to pass test messages over a distance of 20m, this distance being limited by current Covid-19 restrictions (the length of my garden), rather than by equipment capabilities.

As discussed previously, a heated object at a temperature T, emits electromagnetic waves at all wavelengths and with maximum power output occurring at a wavelength which depends on the value of T. The higher the value of T, the more power is radiated but the wavelength at which the maximum radiation occurs decreases. Thus, the human body at about 37°C emits maximum radiation at a wavelength of about 9.3µm, whereas an object at 200°C emits maximum radiation at a wavelength of about 6.1µm.

The Melexis 90614 sensor, which is used in the receiver, is sensitive to radiation over the range 5.5 - 14µm. Hence for optimum effect, the 30THz source should be operated at a temperature such that its maximum radiated output power peaks at some point near the lower end of this wavelength range. This corresponds to a source temperature around 250°C. Although probably not important over very short path lengths, there are many wavelengths within the 5.5 - 14µm band at which significant atmospheric absorption occurs due to molecular resonances, as shown in Figure 1 [1].

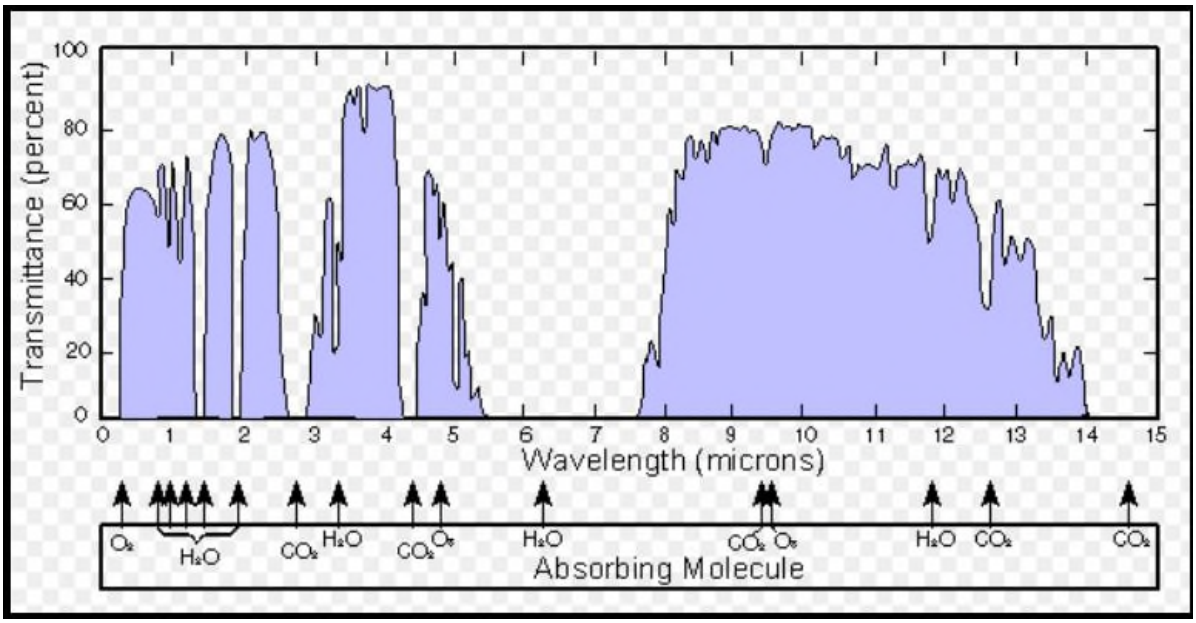


Figure 1 Transmission through the atmosphere at infra-red wavelengths

At wavelengths between about 5.5 and 7.5µm, the atmosphere is almost opaque due to water absorption, whereas for most of the 8 - 14µm range, the atmosphere is very transparent. Since the source and the sensor utilise the whole band, this variation in atmospheric transparency is less important than if they only operated over a narrow bandwidth, as in a conventional radio system.

The other factor which must be considered in 30THz source design is that of source area since the source output power density will be multiplied by the effective source area as seen from the receiver. The source area is also important in that the source will be viewed against a background, which although normally at a lower temperature than the source, will nevertheless provide a contribution to the received signal. Hence the latter can be approximated as

$$Received\ signal\ power = C\left[T_{source}^4 A_{source} + T_{background}^4 \left(A_{background} - A_{source}\right)\right] \quad (1)$$

where C is a constant, T denotes a temperature in K, A is an area in m^2 and the receiver is far enough away from the source so that the receiver field of view is larger than that of the source area. It can be seen that the temperature terms in (1) involve the fourth power of T and this is as a consequence of the Stefan-Boltzmann Law which gives the total power density emitted by a black-body at temperature T over the whole range of wavelengths [2]. Because our sensor only responds to incident radiation over a smaller range of wavelengths (5.5 - 14µm), the Stefan-Boltzmann Law has to be modified by the introduction of a constant whose value is typically around 0.5, but this is included with other factors in the constant C.

If the receiving antenna has an ideal 3D radiation pattern in the form of a cone with a beamwidth of θ, then at a distance R, the field of view (corresponding to the area of the cone base) is $\pi R^2 tan^2\left(\frac{\theta}{2}\right)$; this is equivalent to $A_{background}$ in (1). Furthermore, we surmise that the transmitted signal powers provided by the source and background effectively decrease by $\frac{1}{4\pi R^2}$. Then (1) may be written as

$$Received\ signal\ power = C\left[\frac{\left(T_{source}^4 - T_{background}^4\right)A_{source}}{4\pi R^2} + \frac{T_{background}^4 tan^2\left(\frac{\theta}{2}\right)}{4}\right] \qquad (2)$$

(2) suggests that the received power contribution provided by the background is constant with increasing R and that the temperature differential between the source and the background should be as large as possible. It should be emphasised that this analysis is very approximate but it does seem to mimic common sense. As a preliminary check, the temperature of a flat metal plate held at 200°C was measured at a number of distances using an inexpensive "pistol" non contacting infra-red thermometer and the results are shown in Figure 2. Although these cannot be compared directly with the behaviour suggested by (2), similar data could be useful in giving a quantitive indication of the path-length capability of a particular source-receiver pair.

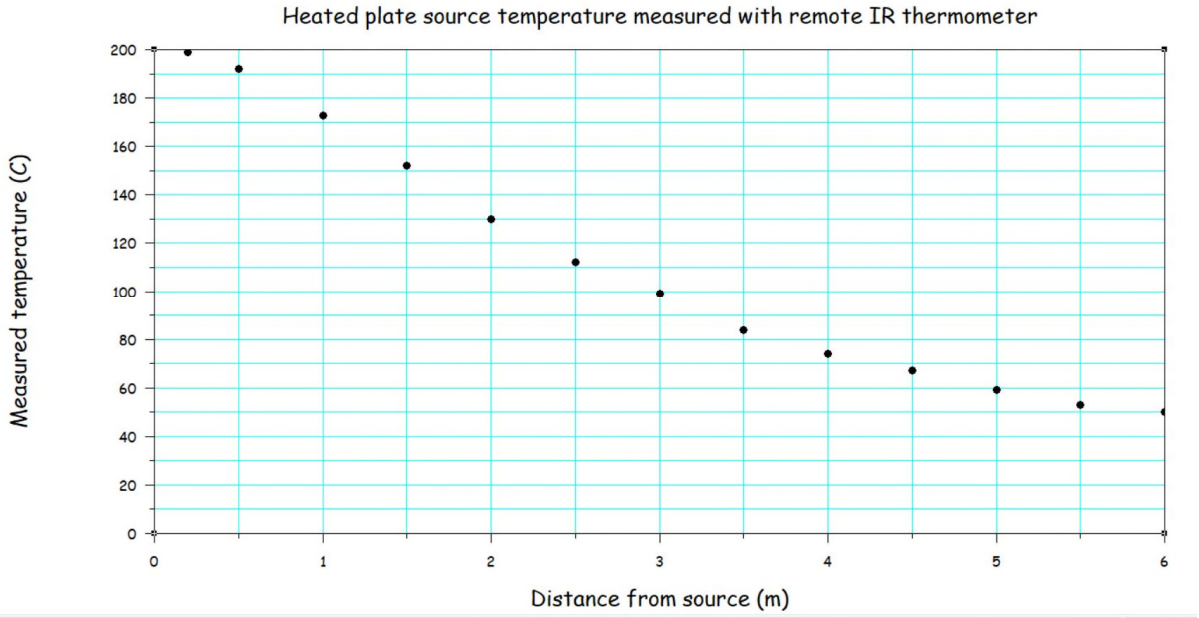


Figure 2 Measured variation of apparent source temperature with distance

Thus, the conclusions to be drawn from this introduction are that to maximise the system path-length capability, the source should be operated at as high a temperature as possible, consistent with the radiation peak lying within the sensor passband, and with as large an effective area as possible. Furthermore, the source should be operated against a background whose temperature is as low as possible. In all the discussion given above, it has been assumed that the sensor ambient temperature is equal to the background temperature; in practice it might be advantageous to reduce the sensor ambient temperature by local cooling.

30THz source design

We already know that the effective area of the source should be as large as possible and this suggests the use of a metal plate which is heated in some manner. Since radiation is only wanted from one side of the plate, ideally the emitting side should be either painted or anodised black and the other, non-radiating side should be highly polished and insulated. Other possible candidate materials for heated sources might include a black ceramic floor tile or a block of silicon carbide. The simplest form of heating is probably via a propane gas torch but a better approach is to use some form of electrical heating via judicious placing of a resistive wire array or several high wattage resistors. Figure 3 shows two examples of flat plate sources. Figure 3(a) shows a 200°C flat plate source, which is housed in a metal biscuit tin and lagged using loft insulation. The plate is held in place using four "hangers" made from thin enamelled copper wire to reduce heat conduction losses. Figure 3(b) shows the estimated temperature variation across a 20cm x 20cm metal plate whose edges are held at an ambient temperature of 10°C. Heating is provided by an array of five high wattage resistors which are held at 150°C.

Figure 3(a) 200°C metal plate source (housing not shown)

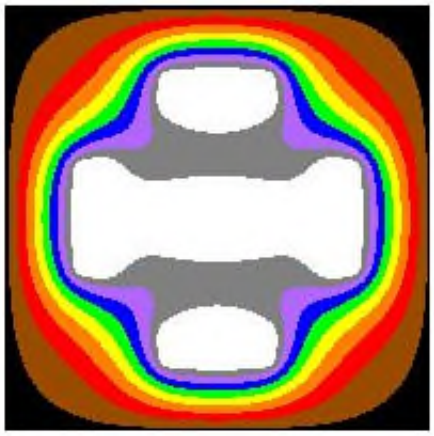


Figure 3(b) Temperature variation across metal plate heated by five resistors at 150°C.
Plate edges at 10°C. Temperature scale: White = 135°C - 150°C, Black = 0 - 15°C

An alternative approach is to use a physically smaller heat source and to place it at the focus of a highly polished reflector, as shown in Figure 4. This arrangement is reminiscent of an old-fashioned bowl electric fire.


Figure 4 Reflector heat source

The reflector shown in Figure 4 was made from the base of a camping gas canister, which although spherical rather than parabolic in profile, seems to work well in practice. The heat source is a cartridge heating element such as those commonly used in 3D printers. In normal use, these are rated typically at 60W but it is being run bare at 25W in this application which results in the cartridge appearing to the eye as a dull red-hot cylinder. A better approach might be to surround the cartridge by a larger mass of black-painted metal of appropriate shape to illuminate the dish efficiently, but this has not yet been tried.

Source modulation

It will be appreciated that applying modulation to the home-made sources described above by simple heating and cooling is not practicable due to the large thermal time-constants involved. In addition, the receiving sensor itself has a time-constant which is typically about one second. Hence it seems likely that the only practical form of modulation which can be used at present is QRSS with a minimum dot time of about one second. To achieve this, it is better for

the source to be maintained at its operating temperature and for modulation to be applied externally, for example by shielding it by a moveable shutter or by redirecting the source radiation via a moveable mirror. Both of these techniques have been demonstrated by VK3CV in [3] but details of the QRSS modulator used in his current world record 60m contact with VK3LN have not yet been given.
A common example of an optical rotating shutter modulation system is shown in Figure 5 and this approach can also be utilised at infra-red wavelengths, as discussed below.

Figure 5 Interior view of emergency vehicle flashing light

The optical source (a light bulb) shown in Figure 5 is fixed and the light it produces is periodically eclipsed by a revolving cylindrical shutter whose included angle is less than 180°, i.e., it is less than half a semi-cylinder. For our purposes, the design could be improved by making the shutter included angle equal to 180° and the width of the source just less than the internal diameter of the shutter semi-cylinder. As the shutter is rotated, the resulting radiated pulse would then be as shown in Figure 6.
As the 180° cylindrical shutter is rotated, the area of the source which is exposed is shown by the black curve. The radiation from the flat plate source is not isotropic in azimuth but Lambertian. This means that its intensity varies with viewing angle θ from boresight as $cos\theta$. The red curve shown in Figure 6 takes this factor into account and so gives the transmitted pulse shape variation with shutter rotation. Hence at least 50% of peak transmitted power is maintained over a shutter rotation angle of 100°. This analysis might not seem to be of importance but it has a bearing on how the shutter should be rotated to achieve a QRSS modulated signal with a suitable pulse shape for optimum detection.

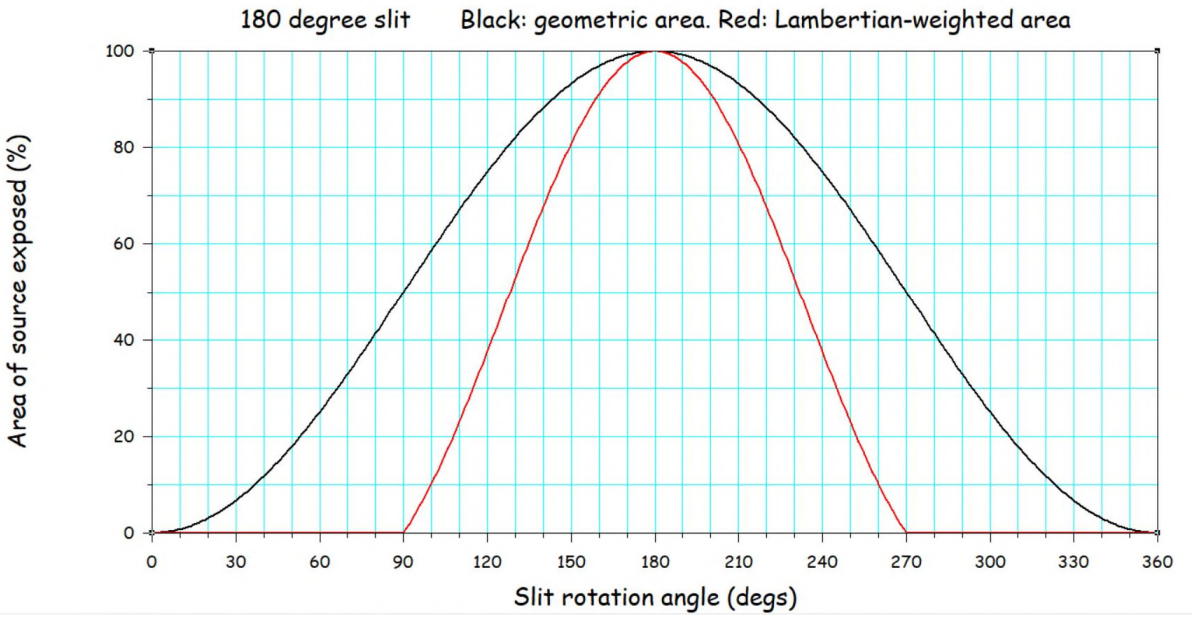


Figure 6 Dependence of visible area of source with shutter rotation angle.

As envisaged so far, the shutter is merely rotated at a constant rate and this will produce a transmitted signal consisting of a train of pulses of equal length. For QRSS, we need pulses of duration equal to one and three dot-lengths and spaced by one, three or seven dot-lengths; these can be produced by rotating the shutter with the aid of a

stepper motor since this allows control of the time during which the source is exposed to view and the shape of the transmitted signal pulse.

A practical 30THz modulated source

My present modulated source is based on rotating the source-reflector configuration shown in Figure 4 using a stepper motor similar to the Nema 17 model which is widely available for use in 3D printers. The motor is controlled using an Arduino Nano or Uno, via an inexpensive L298N driver board. To avoid thermal problems, the heat sink on the driver board should be changed for a much larger one. The message which is to be transmitted using QRSS may be entered "on the fly" using a PS/2 keyboard or may be chosen from several pre-stored messages which are selected using the arrow keys. The Arduino sketch is based on one by K6HX which was originally intended to modulate a CW beacon with a fixed message [4]. I have added code to enable message input via a keyboard and modified the dot and dash functions to produce the appropriate stepper motor rotations and timings for shutter control. A schematic of the modulator is shown in Figure 7. The bi-colour LED shows the state of the modulator; a red LED indicates that a message is being sent and a green one indicates that the modulator is in stand-by mode. The 10K pot is used to vary the number of times (1 to 5) that a message is sent; a better approach might be to make use of a switched resistor chain. Although not shown in Figure 7, an optional side-tone audio output is available from Arduino pin 6. A copy of the Arduino sketch may be obtained from me on request via e-mail [5].

A short video showing the modulator in operation may be found at [6]. As shown in a second video at [7], the received QRSS signal, in the form of a 750Hz tone, is tedious to decode by ear. A better way, suggested by John, G8ACE, is to record the received audio signal and then speed it up using software such as Audacity [8].

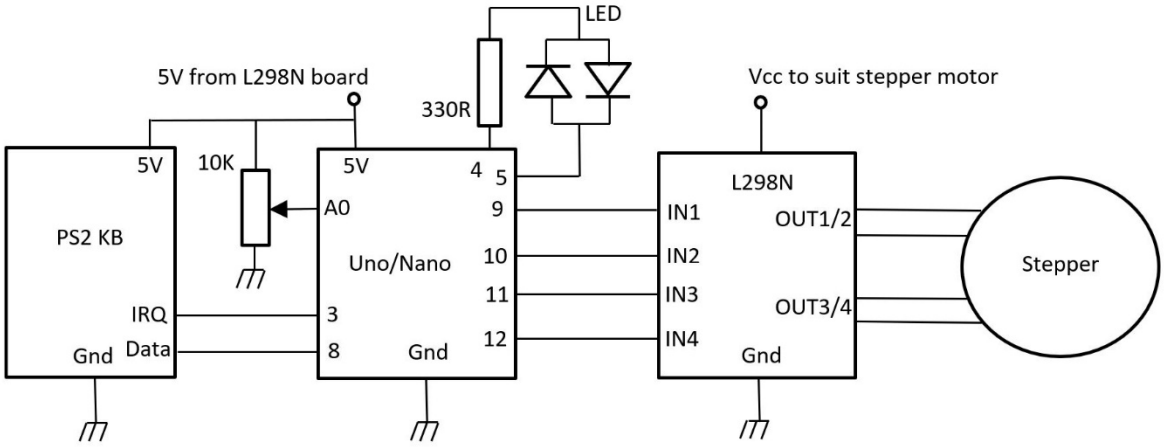


Figure 7 30THz modulator schematic

References

[1] Infrared window - Wikipedia
[2] Infrared Thermometry Theory and Applications with Arduino and Python — Maker Portal (makersportal.com)
[3] https://www.youtube.com/watch?v=6gJtzMLR6T0
[4] Another try at an Arduino Based Morse Beacon – brainwagon
[5] b.chambers@sheffield.ac.uk
[6] https://drive.google.com/file/d/1I604qyjqA2JSls9mDmiH71faP4qwDGIc/view?usp=sharing
[7] https://drive.google.com/file/d/1Kih7m5NvU8USQcsdbT9hBtbm7rbhLx5F/view?usp=sharing
[8] https://www.audacityteam.org/

View from the Aschberg JO60GJ03MN to the direction of Schwedenwache JO50TI29JN

On March 6th, 2021 during the March Contest, Michael DB6NT and Matthias DK5NJ decided to start a new record attempt in the 241 GHz band due to the good weather conditions for the millimetre waves.

First, DB6NT drove together with Matthias DG2NES to Schöneck in JO60DJ. Matthias DK5NJ stayed at the Schwedenwache (DK0NA) in JO50TI. There he devoted himself to the contest in the 70 cm band while waiting. The weather report already indicated that the connection to Schöneck could work: With a relative humidity of approx. 36 % and + 3 ° C temperature – with bright sunshine and clear sight – the first record was set to great cheers on both sides this day with a distance covered of approx. 52 km.

Michael DB6NT in QSO with DK5NJ

But that's not all. Due to the good reports and the relatively rare weather conditions, DB6NT and DG2NES continued on their way to Aschberg. The Aschberg (Czech Kamenáč) is a 936 m high mountain in the Saxon-Czech border area near Klingenthal in Vogtland, the summit of which is in the Czech Republic. The summit is at an altitude of 917 m.

In the twilight, the already achieved daily record could then be surpassed from there. To everyone's delight, the CW QSO on both sides with 599 took place at 17:10 UTC.

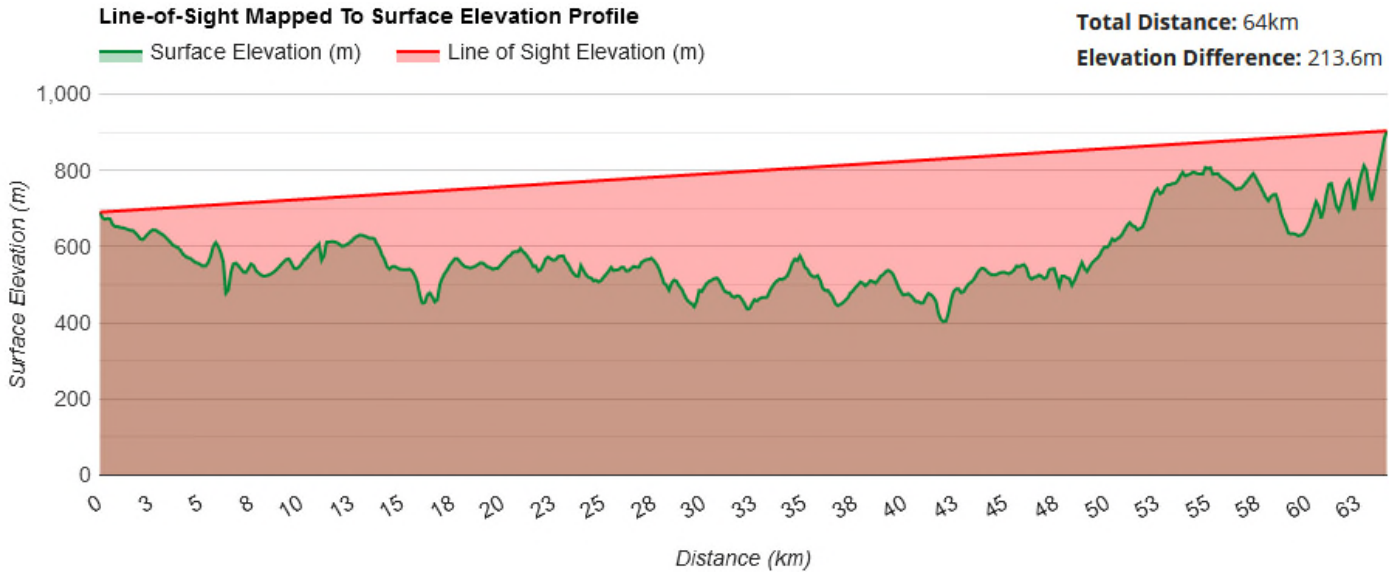
Here is the exact key data of the contact:

17:10 UTC: **DK5NJ** in JO50TI29JN 690m ASL with **DB6NT** in JO60GJ03MN 896m ASL

Distance: **63,987 km**

The reports in CW were **599** on both sides

The relative humidity was now 45% and the temperature was -1 ° C.



Both receivers worked with a subharmonic mixer with 120 GHz LO frequency. The transmission power was 20 mW. 40 cm parabolic mirrors with a gain of 57 dB at a beam angle of less than 0.25 ° were used as antennas.

There was a line of sight and so the antennas could also be aligned using Rifle scopes. The signal strengths were about 30 dB above the noise so that 100 km would have been possible that day.

Setup of DK5NJ at the Schwedenwache JO50TI (DK0NA)

Many thanks to Matthias DG2NES and Alex DH1NAX who really helped us. Further thanks go to our wives and families who support us again and again!

Despite the relatively rare weather conditions, we hope to be able to report on a sequel again in the future.

73 de DB6NT + DK5NJ

Michael & Matthias

Here is a little video of the QSOs: [Report-Record-QSO-241-GHz-2021-ENGLISH]

Many thanks to Matthias DK5NJ and Michael DB6NT for the pictures, information and permission to publish them

This month I have been…..

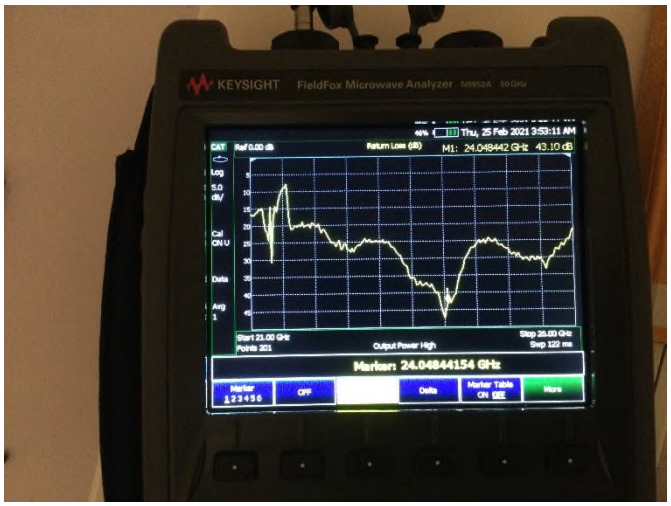
From Roger G8CUB

Making a couple of measurements with a 50GHz VNA

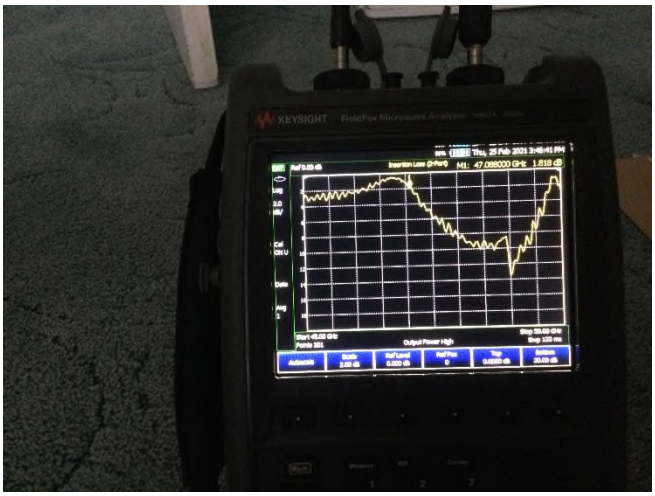
Having the use of a loan Keysight Fieldfox 50GHz VNA Analyser for a couple of hours, before it had to be returned, I thought I would make a few measurements. I had been asked about the response of the Relcomm WR-28 waveguide switch at 24 & 47GHz.

These were quick & dirty measurements, in the case of 24GHz without the use of an offset short for calibration.

Match of the switched port at 24GHz

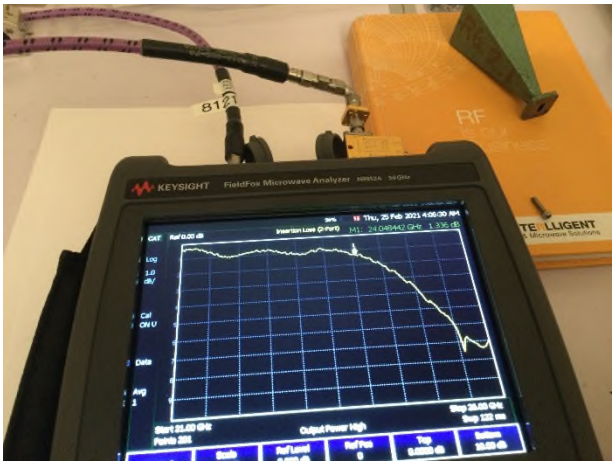


Rough match – no obvious discontinuities at 24G

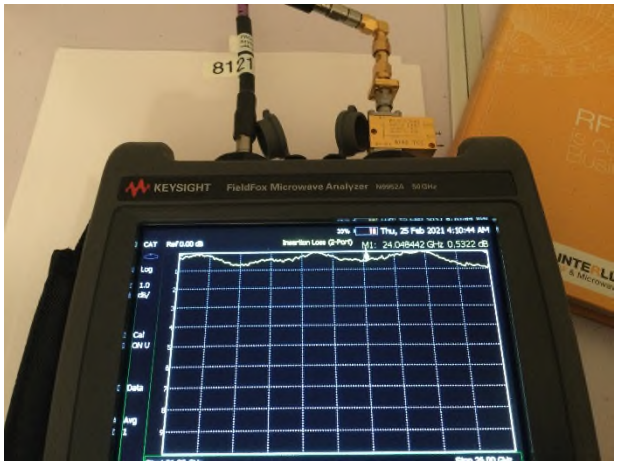


A pair of WR-28/2.4mm adaptors at 47GHz

Normalised response showing 4.2dB loss at 47GHz

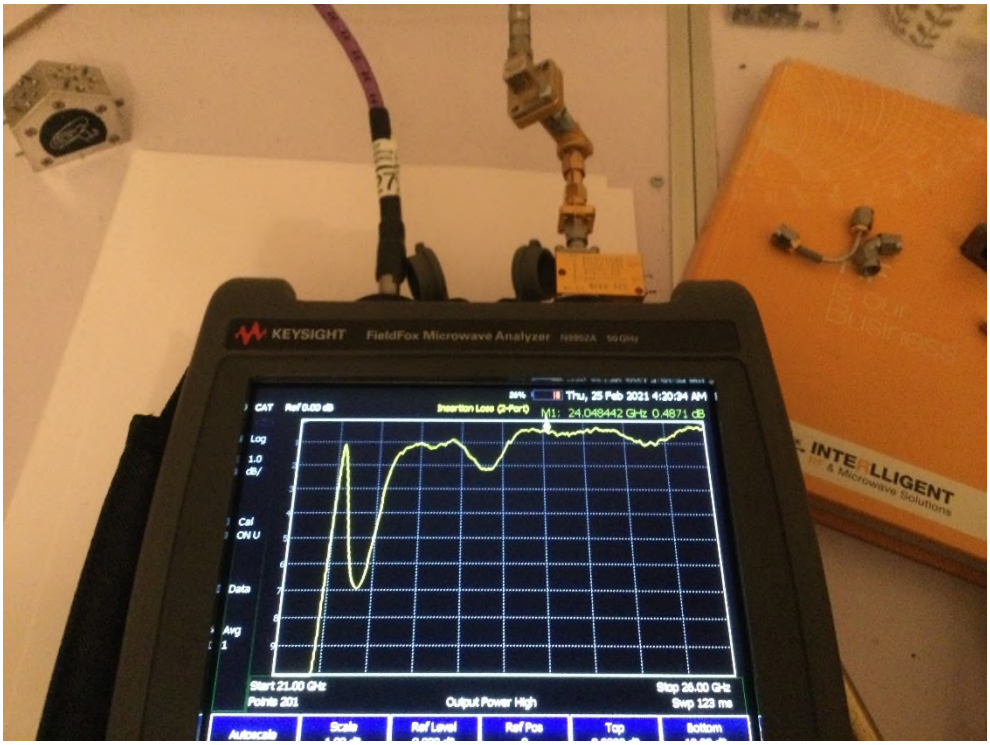


Swept SMA marker @24GHz



Right –angle SMA @24GHz

Measurement of a swept SMA, and Right angle SMA at 24GHz. Of course the swept is best. No!



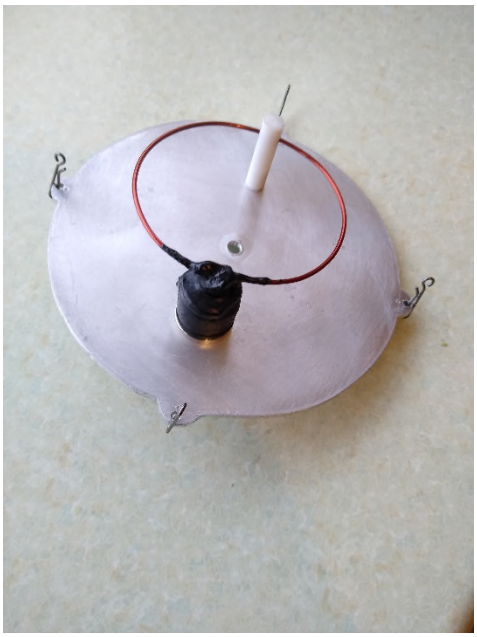
A pair of WR-28 transitions at 24GHz = 0.24dB each. Waveguide cut-off can be seen at the low frequency end.

Editors Comments

As senior Microwavers, we collectively have a wealth of experience. None of us are getting any younger! so can we all consider how our knowledge could help those starting out in microwave Amateur radio.
Starting next month, I want to encourage others to share their experiences, often from lessons through lots of failures, and sometimes, eventual success. I am going to start off with some of my own experience, and learnt do's and don'ts.
In the past, I and others have maybe been reluctant to write down, what may be wrong and risk being criticised by others.
Now I think publish and be dammed. By correction we can learn.

From David Law G0LBK

I built a little 8 rib 1.8m 0.35f/d dish and ring feed for 23 contest use.
It's going up after the snow!



I've built a 16 rib 4m version for EME, but that's not going up until I move QTH later in the year.

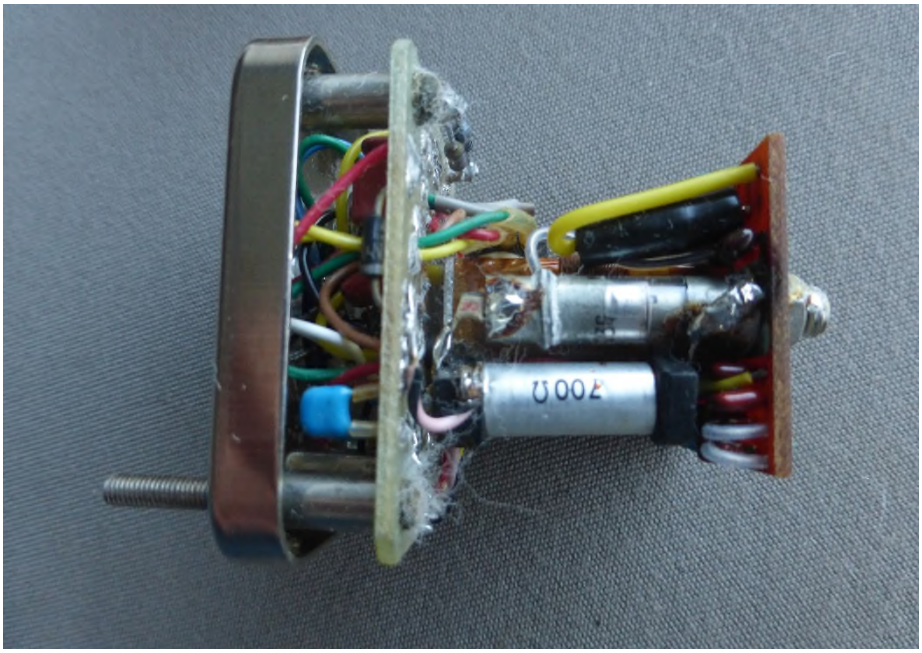
The big one (16 rib 4m 0.4f/d) is now basically a kit of parts ready to assemble when we move to our next home in the Autumn.
It's going to be turned with an Az-el slew and homebrew controller mounted on a short length of tower.

I can’t wait to try it on 23cms and 13cms EME, here is a preview, part made

David G0LBK

GB3KBQ 10368.870 MHz Beacon Upgrade

Built over 25 years ago in memory of John Moxham G8KBQ The beacon has just undergone a major upgrade. The failing PA has been replaced and the electromechanical keying updated to JT4G. Complete new driver system using RDDS synthesiser producing 108 MHz rather than the original 27MHz. Electromechanical Keying ...yes the original 5MHz TCXO was keyed by a reed relay switching a 2.2pf capacitor in and out of circuit !..see attached picture.



Second picture shows the complete beacon in the car boot ready for re installation. Beacon was off air for less than 48 hours !

Early indications indicate that the JT4G is working well with 4 separate decodes reported in the first couple of days.

Adrian Whatmore G4UVZ Beacon Keeper for GB3KBQ

Scatterpoint activity report

Activity News: February 2021

 By John G4BAO

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

G3KKD silent key

I'm sad to report that my close friend, and neighbour across the Fen in Stow-cum-Quy, Ian Waters G3KKD, passed away in Addenbrokes Hospital after a short illness last month. To say that Ian was a legend in the ATV world is an understatement.
Look at this YouTube video, and let him tell you his story himself.
https://www.youtube.com/watch?v=VBbF3Blg3FU
I need say no more other than he was also a keen GHz experimenter, active on 1.3GHz and recently 10GHz. Rip Ian

March low band contest report

The March Low band contest took place on the 7th and conditions seemed flat. The longer Sunday contests sadly don't seem to attract as much interest as the UKACs, and band reports, even on 1.3GHz, noted the low activity. Signals on 1.3GHz suffered much QSB with aircraft scatter the only mode for any serious DX. Hopefully, things will perk up once the lockdown is over, and we can get a few more portables out.
A few QSOs over 500km were reported with G4ZTR managing 31QSOs on 1.3GHz including a 661km contact with DJ3AK. GI6ATZ worked G3TCU at 506km. Much the same on 2.3GHz with M0GHZ reporting a 479km QSO with F8DLS. On 3.4GHz activity was again low, with G4CBW claiming the ODX at the time of writing working G4ZTR at 249km.

From Ross G6GVI

Another report from Ross that says 23cm FM is alive and well in the North West He wrote," I've just had another tot-up in my log and have made 150 contacts already this year on 23cm - of which only 26 were in contests! About two-thirds of them were on FM, including a handful using my Alinco handie in "pedestrian mobile" mode whilst out exercising - there's a roadside seat about 2.5 miles walk from home which is about 650 feet ASL and has a decent take-off. Our Wednesday night FM net is still going strong and we've already had ten different stations taking part this year. I'm also finding regular SSB activity around mid-day at weekends (and even today as well), including G3OHH in Staffordshire and G4HWA in Northants.

From John G4BAO

Here on the Fen Edge, I've been working on a new driver for the 1.3GHz ATV repeater for the Cambridgeshire Repeater Group. The new hardware consists of a pair of raspberry Pi units. For transmit, one uses a Lime SDR running the BATC Portsdown software and the other uses the Ryde receiver Software and a Minitiouner. Initially the RX and TX will connect via demodulated analogue video and audio but Rob, M0VFC will be working with me on software to interconnect the RX and TX feeds digitally. The new driver will use the existing 1.3GHz PA, antennas and combining system at Madingley, but "hooks" are in the new driver design for a second receiver input. 146MHz and 10GHz are under consideration as second inputs.
My 1.3GHz system is currently down, so activity has been low from here apart from a brief "foray" in to the1.3GHz UKAC before I took them down and a couple of 3.4GHz QSOs in the recent Low band contest. No DX of note in either!

Contests

Unless things change Portable operation from single operators will be allowed from 29th March. However it is probably best to monitor news on the Microwave Group & RSGB websites, for the latest information.

UKuG MICROWAVE CONTEST CALENDAR 2021

Dates, 2021	Time UTC	Contest name	Certificates
7-Mar	1000 - 1600	1st Low band 1.3/2.3/3.4GHz	F, P,L
11-Apr	1000 - 1600	2nd Low band 1.3/2.3/3.4GHz	F, P,L
2-May	0800 - 1400	3rd Low band 1.3/2.3/3.4GHz	F, P,L
16-May	0900 – 1700	1st 24GHz Contest	
16-May	0900 – 1700	1st 47GHz Contest	
16-May	0900 – 1700	1st 76GHz Contest	
30-May	0600 - 1800	1st 5.7GHz Contest	F, P,L
30-May	0600 - 1800	1st 10GHz Contest	F, P,L
6-Jun	1000 - 1600	4th Low band 1.3/2.3/3.4GHz	F, P,L
20-Jun	0900 - 1700	122-248 GHz	
27-Jun	0600 - 1800	2nd 5.7GHz Contest	F, P,L
27-Jun	0600 - 1800	2nd 10GHz Contest	F, P,L
11-Jul	0900 – 1700	2nd 24GHz Contest	
11-Jul	0900 – 1700	2nd 47GHz Contest	
11-Jul	0900 – 1700	2nd 76GHz Contest	
25 -Jul	0600 - 1800	3rd 5.7GHz Contest	F, P,L
25 -Jul	0600 - 1800	3rd 10GHz Contest	F, P,L
29-Aug	0600 - 1800	4th 5.7GHz Contest	F, P,L
29-Aug	0600 - 1800	4th 10GHz Contest	F, P,L
12-Sep	0900 - 1700	3rd 24GHz Contest & 24GHz Trophy	
12-Sep	0900 - 1700	3rd 47GHz Contest	
12-Sep	0900 – 1700	3rd 76GHz Contest	
26 -Sep	0600 - 1800	5th 5.7GHz Contest	F, P,L
26 -Sep	0600 - 1800	5th 10GHz Contest	F, P,L
10-Oct	0900 - 1700	122-248 GHz	
17 -Oct	0900 - 1700	4th 24GHz Contest	
17 -Oct	0900 - 1700	4th 47GHz Contest	
17 -Oct	0900 – 1700	4th 76GHz Contest	
15 -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)	

2021 Contest Calendar

Month	Contest name	Certificates	Date 2021	Time GMT	Notes
Jan	1.3GHz Activity Contest	*Arranged by RSGB*	19-Jan	2000 - 2230	RSGB Contest
Jan	REF/DUBUS EME 2.3GHz	*Arranged by REF/DUBUS*	23 to 24-Jan	0000 - 2400	REF/DUBUS EME 2.3GHz
Jan	2.3GHz+ Activity Contest	*Arranged by RSGB*	26-Jan	1930 - 2230	RSGB Contest
Feb	1.3GHz Activity Contest	*Arranged by RSGB*	16-Feb	2000 - 2230	RSGB Contest
Feb	2.3GHz+ Activity Contest	*Arranged by RSGB*	23-Feb	1930 - 2230	RSGB Contest
Mar	Low band 1.3/2.3/3.4GHz	F, P,L	7-Mar	1000 - 1600	First 4 hours coincide with IARU
Mar	1.3GHz Activity Contest	*Arranged by RSGB*	16-Mar	2000 - 2230	RSGB Contest
Mar	REF/DUBUS EME 3.4GHz	*Arranged by REF/DUBUS*	20 to 21-Mar	0000 - 2400	REF/DUBUS EME 3.4GHz
Mar	2.3GHz+ Activity Contest	*Arranged by RSGB*	23-Mar	1930 - 2230	RSGB Contest
Apr	Low band 1.3/2.3/3.4GHz 2	F, P,L	11-Apr	1000 - 1600	
Apr	REF/DUBUS EME 10GHz & Up	*Arranged by REF/DUBUS*	17 to 18-Apr	0000 - 2400	REF/DUBUS EME 10GHz & up
Apr	1.3GHz Activity Contest	*Arranged by RSGB*	20-Apr	1900 - 2130	RSGB Contest
Apr	2.3GHz+ Activity Contest	*Arranged by RSGB*	21-Apr	1830 - 2130	RSGB Contest
May	*432MHz & up*	*Arranged by RSGB*	*1 to 2-May*	*1400 - 1400*	RSGB Contest
May	*10GHz Trophy*	*Arranged by RSGB*	*2-May*	*0800 - 1400*	Sunday, to coincide with IARU
May	REF/DUBUS EME 1.2GHz	*Arranged by REF/DUBUS*	15 to 16-May	0000 - 2400	REF/DUBUS EME 1.2GHz
May	24GHz/47GHz/76GHz		16-May	0900-1700	
May	1.3GHz Activity Contest	*Arranged by RSGB*	18-May	1900 - 2130	RSGB Contest
May	2.3GHz+ Activity Contest	*Arranged by RSGB*	25-May	1830 - 2130	RSGB Contest
May	5.7GHz/10GHz	F, P,L	30-May	0600-1800	
Jun	Low band 1.3/2.3/3.4GHz 4	F, P,L	6-Jun	1000 - 1600	Aligned with some Eu events
Jun	REF/DUBUS EME 5.7GHz	*Arranged by REF/DUBUS*	12 to 13-Jun	0000 - 2400	REF/DUBUS EME 5.7GHz

Jun	1.3GHz Activity Contest	*Arranged by RSGB*	15-Jun	1900 - 2130	RSGB Contest
Jun	122-248GHz		20-Jun	0900-1700	
Jun	2.3GHz+ Activity Contest	*Arranged by RSGB*	22-Jun	1830 - 2130	RSGB Contest
Jun	5.7GHz/10GHz	F, P,L	27-Jun	0600-1800	
Jul	VHF NFD (1.3GHz)	*Arranged by RSGB*	3-Jul to 4-Jul	1400 - 1400	RSGB Contest
Jul	24GHz/47GHz/76GHz		11-Jul	0900-1700	
Jul	1.3GHz Activity Contest	*Arranged by RSGB*	20-Jul	1900 - 2130	RSGB Contest
Jul	5.7GHz/10GHz	F, P,L	25-Jul	0600-1800	
Jul	2.3GHz+ Activity Contest	*Arranged by RSGB*	27-Jul	1830 - 2130	RSGB Contest
Aug	1.3GHz Activity Contest	*Arranged by RSGB*	17-Aug	1900 - 2130	RSGB Contest
Aug	2.3GHz+ Activity Contest	*Arranged by RSGB*	24-Aug	1830 - 2130	RSGB Contest
Aug	5.7GHz/10GHz	F, P,L	29-Aug	0600-1800	
Sep	24GHz/47GHz/76GHz		12-Sep	0900-1700	
Sep	1.3GHz Activity Contest	*Arranged by RSGB*	21-Sep	1900 - 2130	RSGB Contest
Sep	5.7GHz/10GHz	F, P,L	26-Sep	0600-1800	
Sep	2.3GHz+ Activity Contest	*Arranged by RSGB*	28-Sep	1830 - 2130	RSGB Contest
Oct	*1.3 & 2.3GHz Trophies*	*Arranged by RSGB*	*3-Oct*	*1400 - 2200*	RSGB Contest
Oct	*432MHz & up*	*Arranged by RSGB*	*3 to 4-Oct*	*1400 - 1400*	IARU/RSGB Contest
Oct	122-248GHz		10-Oct	0900-1700	
Oct	24GHz/47GHz/76GHz		17-Oct	0900-1700	
Oct	1.3GHz Activity Contest	*Arranged by RSGB*	19-Oct	1900 - 2130	RSGB Contest
Oct	ARRL Microwave EME	*Arranged by ARRL*	23 to 24-Oct	0000 - 2359	ARRL EME 2.3GHz & Up
Oct	2.3GHz+ Activity Contest	*Arranged by RSGB*	26-Oct	1830 - 2130	RSGB Contest
Nov	Low band 1.3/2.3/3.4GHz 5	F, P,L	14-Nov	1000 - 1400	
Nov	1.3GHz Activity Contest	*Arranged by RSGB*	16-Nov	2000 - 2230	RSGB Contest
Nov	ARRL EME 50-1296MHz	*Arranged by ARRL*	20 to 21-Nov	0000 - 2359	ARRL EME Contest
Nov	2.3GHz+ Activity Contest	*Arranged by RSGB*	23-Nov	1930 - 2230	RSGB Contest
Dec	ARRL EME 50-1296MHz	*Arranged by ARRL*	18 to 19-Dec	0000 - 2359	ARRL EME Contest
Dec	1.3GHz Activity Contest	*Arranged by RSGB*	21-Dec	2000 - 2230	RSGB Contest

EVENTS 2021

Events may be subject to cancellation due to the Coronavirus
For latest information consult https://microwavers.org

2021

April 24	CJ-2021, Seigy - cancelled	www.cj.r-e-f.org/
April 24	RSGB AGM - virtual	www.rsgb/agm
May 21-23	Hamvention, Dayton - cancelled	www.hamvention.org
June 25-27	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de
August 19-22	EME 2021, Prague – rescheduled from 2020	www.eme2020.cz
September 24-25	National Hamfest	www.nationalhamfest.org.uk
October 10-15	European Microwave Week, London, Excel	www.eumweek.com/

80m UK Microwavers net

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

73 Martyn Vincent G3UKV