



*An Amateur Radio publication for the Microwave Enthusiast*

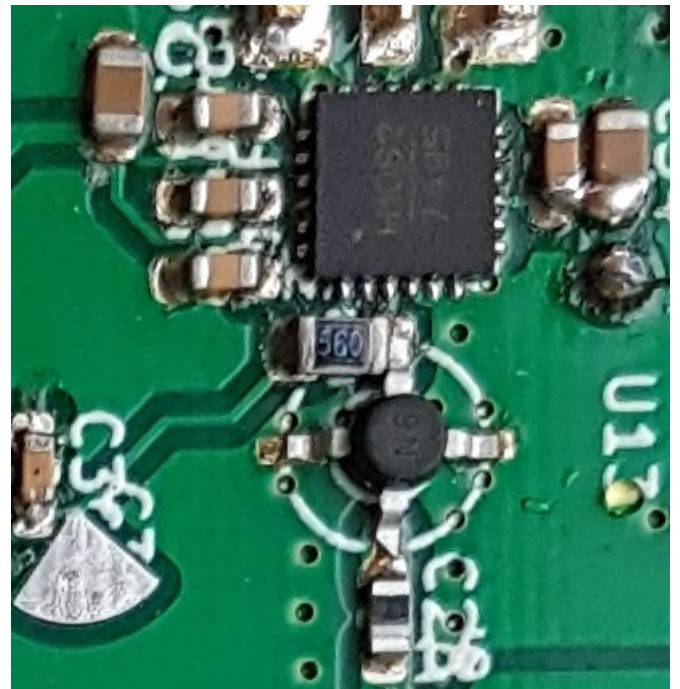
# scatterpoint

December 2020

Published by the UK Microwave Group

## In This Issue

Articles for Scatterpoint .....	2
Subscription Information.....	2
UKμG Project support .....	3
UKμG Technical support .....	3
UKμG Chip Bank – A free service for members.....	3
UK Microwave Group Contact Information.....	4
Loan Equipment.....	4
UKuW Group branded clothing .....	5
Third UKuG online Lecture .....	7
Microwave News .....	7
Editors Comments.....	8
Scatterpoint activity report .....	14
From PA3DZL Jac de Bruijn .....	14
Contests.....	15
2021 Contest Calendar .....	20
EVENTS 2021 .....	22
80m UK Microwavers net .....	22



10GHz transverter by Maarten PA0MHE



UKuW Group branded clothing

## Subscription Information

The following subscription rates apply

UK £600      US \$1200      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](mailto: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](mailto: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

**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.

*You may not reproduce articles for profit or other commercial purpose. You may not publish Scatterpoint on a website or other document server.*

## UKμG Project support

The UK Microwave Group is pleased to encourage and support microwave projects such as Beacons, Synthesiser development, etc. Collectively UKμG 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 UKμG Secretary, after which they are reviewed/ agreed by the committee

[www.microwavers.org/proj-support.htm](http://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 UKμG 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](http://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](http://www.microwavers.org/chipbank.htm)

# UK Microwave Group Contact Information

Chairman: Neil Underwood G4LDR email: <a href="mailto:chairman@microwavers.org">chairman@microwavers.org</a> located: Wiltshire IO91EC Tel: 01980 862886	General Secretary: John Quarmby G3XDY <a href="mailto:secretary@microwavers.org">secretary@microwavers.org</a> located: Suffolk JO02OB Tel: 01473 717830	Membership Secretary: Bryan Harber G8DKK <a href="mailto:membership@microwavers.org">membership@microwavers.org</a> located: Hertfordshire IO91VX
--	--	--

Treasurer: David Millard M0GHZ email: <a href="mailto:treasurer@microwavers.org">treasurer@microwavers.org</a>	Scatterpoint Editor: Roger Ray G8CUB <a href="mailto:editor@microwavers.org">editor@microwavers.org</a> located: Essex JO01DP Tel: 01277 214406	Beacon Coordinator: Denis Stanton G00LX <a href="mailto:beacons@microwavers.org">beacons@microwavers.org</a> located: Surrey
--	---	---

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

## Assistants

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

## UK Regional Reps

Martin Hall	Scotland	GM8IEM	<a href="mailto:martinhall@gorrell.co.uk">martinhall@gorrell.co.uk</a>
Gordon Curry	Northern Ireland	GI6ATZ	<a href="mailto:gi6atz@qsl.net">gi6atz@qsl.net</a>
Peter Harston	Wales	GW4JQP	<a href="mailto:pharston@gmail.com">pharston@gmail.com</a>

## International

Kent Britain	USA	WA5VJB/G8EMY	<a href="mailto:wa5vjb@flash.net">wa5vjb@flash.net</a>
--------------	-----	--------------	--

## 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



## UKuW Group branded clothing



In conjunction with a well-known UK supplier of clothing to the amateur radio market we have arranged for Prism Embroidery to supply both polo shirts and fleeces directly to members of the UK Microwave Group.

To place an order please do NOT use the form on the Prism website or contact the UKuW Group, but instead please e-mail [Tracie@PrismEmbroidery.co.uk](mailto:Tracie@PrismEmbroidery.co.uk) and state that you are a member of the UK Microwave Group, the size that you require of either a polo shirt or a fleece, your name and your callsign to be embroidered (state clearly by printing), and the address for it to be posted to you in the UK.

£14.00 royal blue polo shirt with UKuG logo and name callsign – sizes up to 6XL

£20.00 fleeces with UKuG logo name and callsign - sizes up to 4XL

Postage will be an additional £4.00 per order (2nd class signed for) so if a customer orders a polo and fleece its £4.00, or they order only a polo or only a fleece £4.00. If they double up on an order (2 customers going to one address, 3- 4 garments) then it is £6.00.

Orders from outside the UK will mean extra postage costs which you will be advised of when ordering.

The item once paid for will then be made to a standard UK Microwave Group design and colour.

Sizes required can be determined from the sizing charts which are shown below.

From time to time it is possible that Tracie has run out of your size and she will advise you that it will be ordered but will take longer than normal to complete your item.

To pay you can use either PayPal or direct bank transfer and Tracie can send you details when you order.

Please note that this is an arrangement simply between you and Prism Embroidery and that the UK Microwave Group does not benefit from any profits made on any transaction.

Size Chart - Body Measurement	Xs	S	M	L	XL	2xl	3xl	4xl	5xl	6xl
Chest To Fit <b>(Inch)</b>	36-38	38-40	40-42	42-44	44-46	46-48	50-52	52-54	54-56	58-60
Chest To Fit <b>(Cm)</b>	87-92	92-97	97-102	107-112	112-117	117-122	122-132	132-137	137-142	147-152

International Conversion										
Austria, Switzerland, German, Netherlands, Sweden	44	46	48	50	52	54	56	58	60	62
Belgium, Spain, France, Portugal	36-38	38-40	40-42	42-44	44-46	46-48	48-50	50-52	52-54	54-56

UC102 Premium Poloshirt - Garment Measurements	Xs	S	M	L	XL	Xxl	3xl	4xl	5xl	6xl
Chest 1/2 Measurement (1" Below Armhole)	19	20	21	23	24	25	27	29	31	33
Length (Neck Point On Shoulder To Hem) Front <b>(Inch)</b>	25	27	28	29	30	30	31	32	33	34
Length (Neck Point On Shoulder To Hem) Back <b>(Inch)</b>	26	28	29	30	31	31	32	33	34	35

UC102 Premium Poloshirt - Garment Measurements	Xs	S	M	L	XL	Xxl	3xl	4xl	5xl	6xl
Chest 1/2 Measurement (2.5cm Below Armhole) <b>(Cm)</b>	48	51	53	58.5	61	63.5	68.5	73.5	78.5	84
Length (Neck Point On Shoulder To Hem) <b>(Cm)</b>	63.5	68.5	71	73.5	76	76	78.5	81	86	89
Length (Neck Point On Shoulder To Hem) <b>(Cm)</b> Back	66	71	73.5	76	79	79	81	84	86	89

\*Garment Measurement are subject to tolerances. They are not be taken as absolute measurement values. When a garment is measured, the values may vary and can be above, below or the same as the values stated.

Size Chart - Body Measurement	Xs	S	M	L	XL	2xl	3xl	4xl	5xl	6xl
Chest To Fit <b>(Inch)</b>	36-38	38-40	40-42	42-44	44-46	46-48	50-52	52-54	54-56	58-60
Chest To Fit <b>(Cm)</b>	87-92	92-97	97-102	107-112	112-117	117-122	122-132	132-137	137-142	147-152

International Conversion										
Austria, Switzerland, German, Netherlands, Sweden	44	46	48	50	52	54	56	58	60	62
Belgium, Spain, France, Portugal	36-38	38-40	40-42	42-44	44-46	46-48	48-50	50-52	52-54	54-56

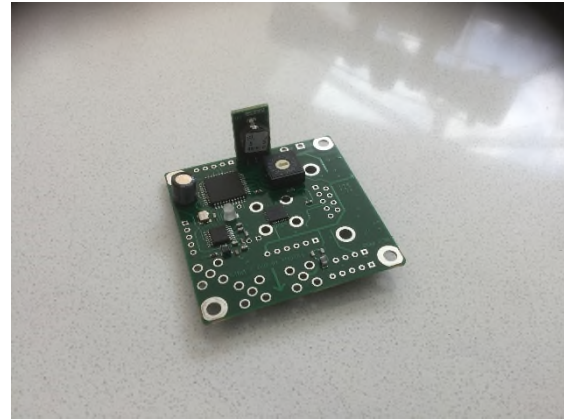
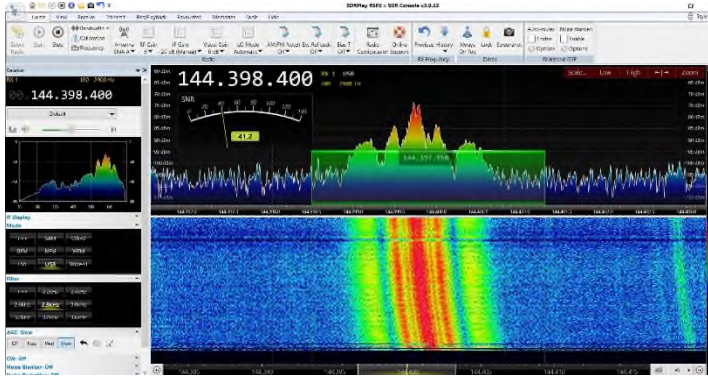
UC604 Classic Full Zip Micro Fleece Jacket - Garment Measurements	Xs	S	M	L	XL	Xxl	3xl	4xl	5xl	6xl
Chest 1/2 Measurement (1" Below Armhole) <b>(Inch)</b>	21	23	24	25	26	27	29	31	32	33
Length (Neck Point On Shoulder To Hem) Front <b>(Inch)</b>	26	28	29	30	31	31	32	32	34	35
Sleeve Length (Shoulder To End Of Sleeve Including Rib) <b>(Inch)</b>	22	23.5	24	24.5	25	25.5	26	26	26.5	27

UC604 Classic Full Zip Micro Fleece Jacket - Garment Measurements	Xs	S	M	L	XL	Xxl	3xl	4xl	5xl	6xl
Chest 1/2 Measurement (2.5cm Below Armhole) <b>(Cm)</b>	53	58.5	61	63.5	66	68.5	74	79	81	84
Length (Neck Point On Shoulder To Hem) Front <b>(Cm)</b>	66	71	74	76	79	79	81	81	86.5	89
Sleeve Length (Shoulder To End Of Sleeve Including Rib) <b>(Cm)</b>	56	60	61	62	63.5	65	66	66	67	68.5

\*Garment Measurement are subject to tolerances. They are not be taken as absolute measurement values. When a garment is measured, the values may vary and can be above, below or the same as the values stated.



## Third UKuG online Lecture



The next on-line talk will be at 20:00UTC on Wednesday 13th January 2021.

### 122 GHz and the VK3CV transceiver – by Barry Chambers G8AGN

Barry G8AGN will be covering 122 GHz and the VK3CV transceiver board that has been driving strong interest in this amateur millimetre wave band.

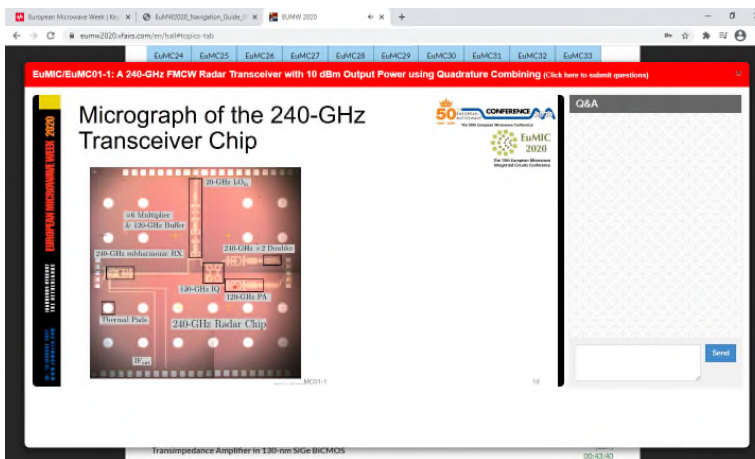
The talk will be streamed on this URL: [batc.org.uk/live/ukmicrowave](https://batc.org.uk/live/ukmicrowave)

We look forward to welcoming all to the talk.

The following talk in the series will be on Wednesday 10<sup>th</sup> February (provisional) by Kent, WA5VJB on Antennas.

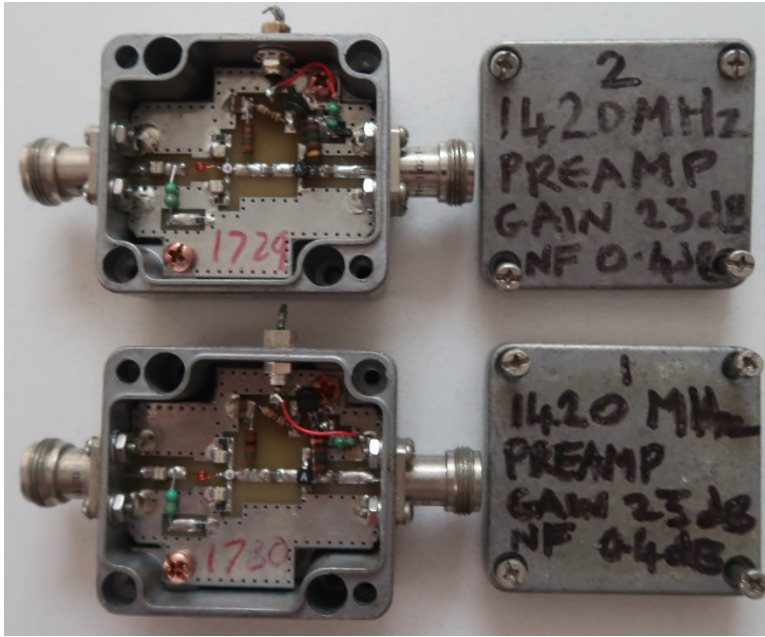
## Microwave News

The 50<sup>th</sup> European Microwave Conference is under way.



A 240GHz transceiver 4x3mm 10mW 16dB NF

Seen on ebay – 1420MHz Pre-amplifiers from Taunton School radio observatory



I could not resist having supplied them 30 years ago!

They use the ATF10136. NF as measured now 0.9 / 3.1dB.

I would love to say I designed and built them. But alas no. They were Down East Microwave (DEMI) 23cm pre-amplifiers that I re-tuned to 1420MHz.

From Trevor Hill: *'Strange that these excellent preamps should find their way back home. They detected the quasar 3C273 at 2.5 billion light years.'*

The Taunton Radio Observatory is featured on the link below:

<https://www.youtube.com/watch?v=PmGvzrF1rl8>

Anyone know the path loss for 2.5 billion light years?

Roger G8CUB

## Editors Comments

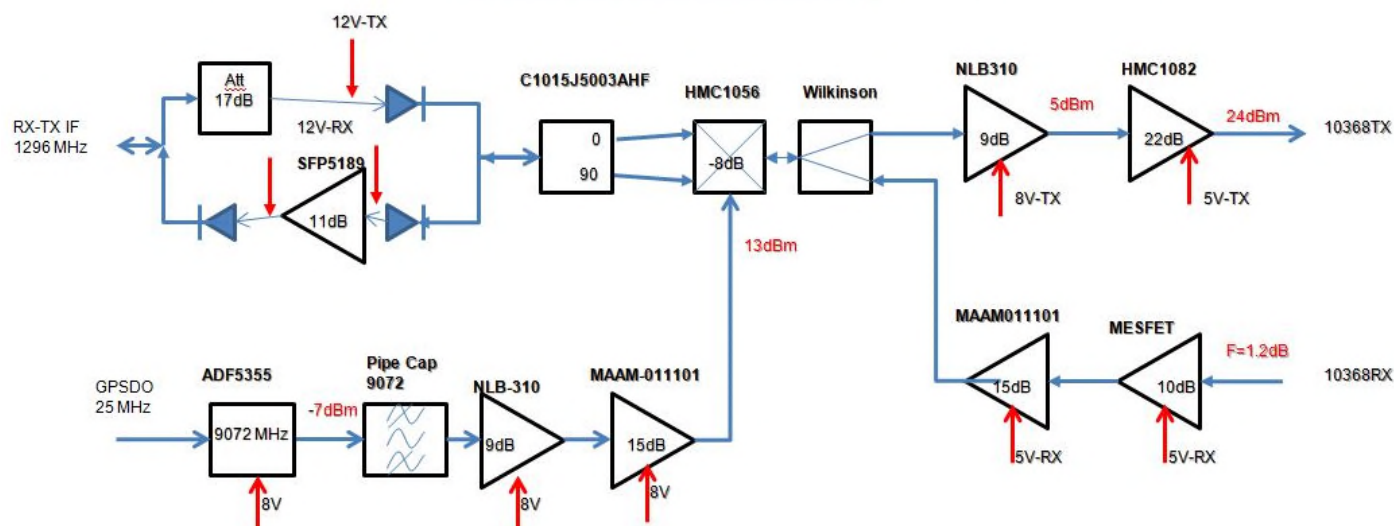
With no portable operation likely in the near future. I look forward to details of all those construction projects going on at home.

The content of the magazine can only be as good as the contributions. It looks like the lack of any good propagation of late is a limiting factor in activity news.

Many thanks to Maarten PA0MHE, for the article on the 10GHz transverter in this issue



# 10 GHz transverter PA0MHE



Block diagram

By Maarten PA0MHE

An experimental I/Q-mixing based 10GHz transverter on cheap FR4 .

In my area most HAM's are using a DB6NT transverter for 10GHz, as this is no fun for me I decided to do an experiment. I designed and built a 10GHz transverter, using I/Q mixing on cheap double sided 0.6mm FR4 using relatively modern components. The idea was that nowadays silicon on FR4 is cheap compared to Rogers base material . The total 10GHz PCB track lengths for both TX and RX are less than 10mm, so losses are less than 1dB.

The advantage of I/Q mixing is an image rejection design without the need for filtering or alignment. Only the LO signal needs filtering, for this an Ebay ADF5355 testboard is used and controlled by an ATTiny85. The big challenge for me was the (reflow) soldering of the various very fine pitch components. The IF frequency used is 23cm and except for the 90 degree hybrid the design is broadband.

Key components used:

PCB: JLCPCB 0.6mm FR4 Er=4.5 Loss 50ohm track 10368MHz 0.07dB/mm

LO: ADF5355(controlled by ATTiny85)--> PipeCap filter-->NLB310-->MAAM011101

MX: HMC1056, C1015J5003AHF Anaren 90dB Hybrid

RX: MESFET (donated by cheap LNB) -->MAAM011101

TX: NLB310-->HMC1082

IF: SPF5189Z

Results so far:

TX power 23dBm (10368MHz) Spurious rejection: LO -27dB (9072 MHz), Image -19dB (7776MHz) not yet optimized.

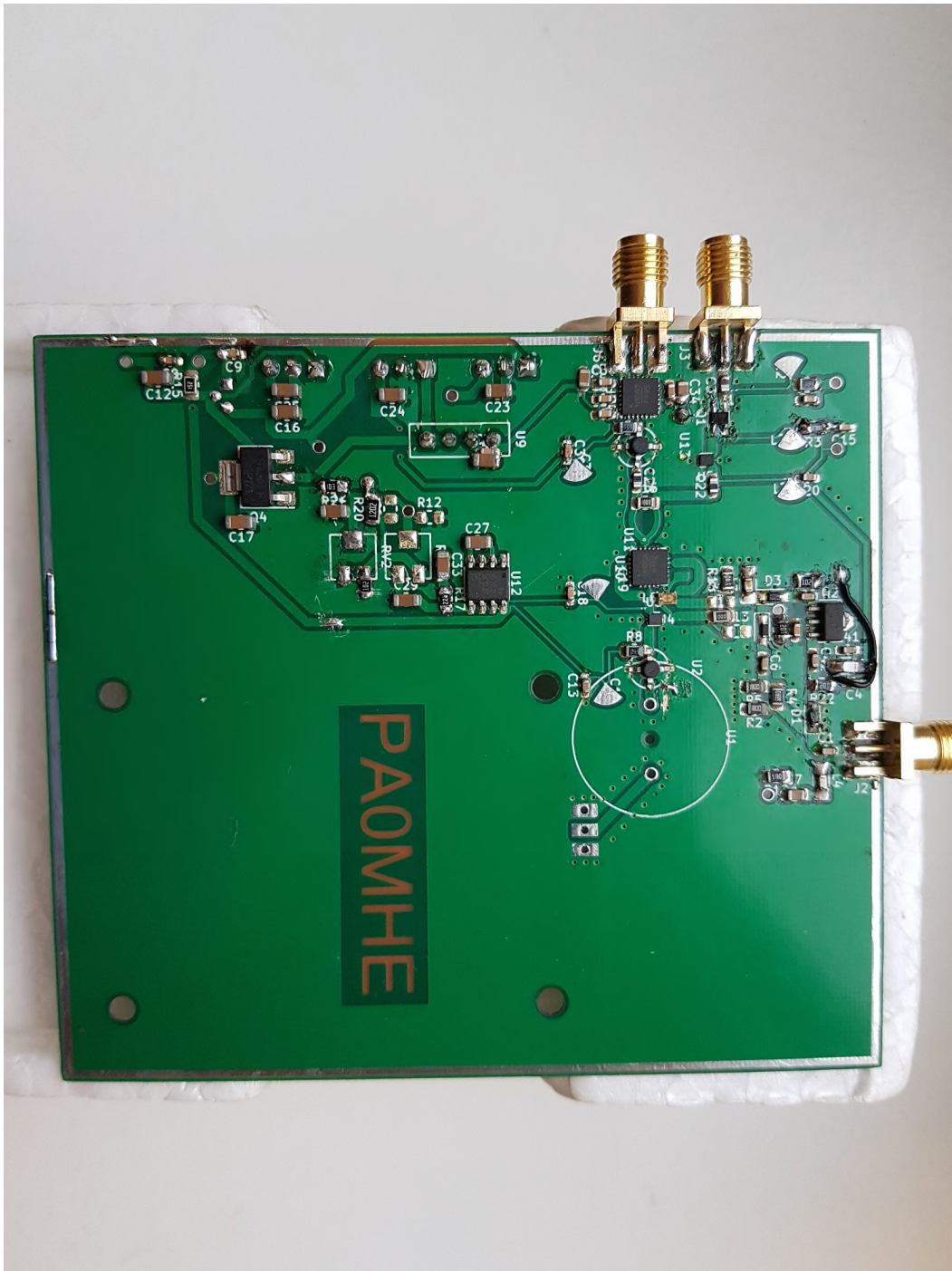
RX: Nf=4.5dB, G=22dB (This was planned as Nf=1.2dB, G=23dB) So for the time being an LNA is needed

Conclusions and what I have reached:

- I/Q mixing a reasonable image rejection is possible.
- FR4 can be used on 10Ghz, 0.6mm loss 50ohm track 10368MHz ~0.07dB/mm
- Soldering components with pitch 0.4mm is possible, provided using stencil for solder dispensing and "reflow" soldering
- When using a (0.2mm width) quarter lambda track for bias network must be dimensioned with correct length :).

Next steps:

- Adding tin plate enclosure.
- Add an LNA in front and to make some contacts
- Perhaps make a V2 layout....



Bottom

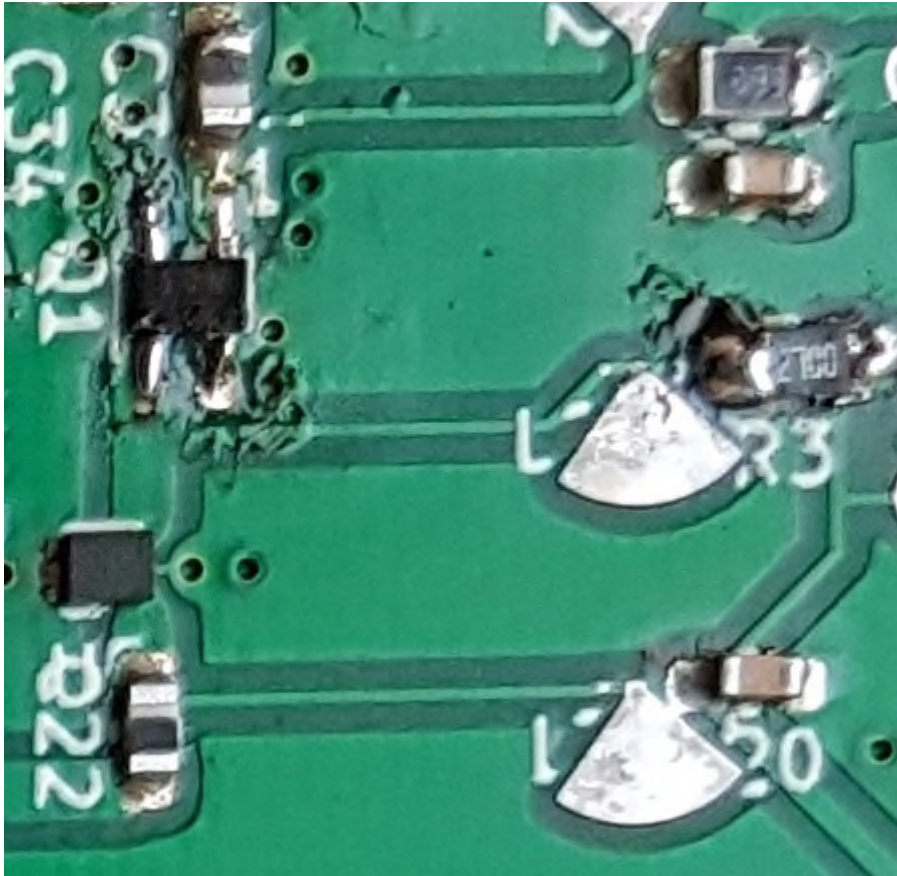
Special thanks to Robin G1YFG for support on soldering, Ronald ON7FLY for support on measurements

Success and thanks a lot for all your effort,

Maarten PA0MHHE

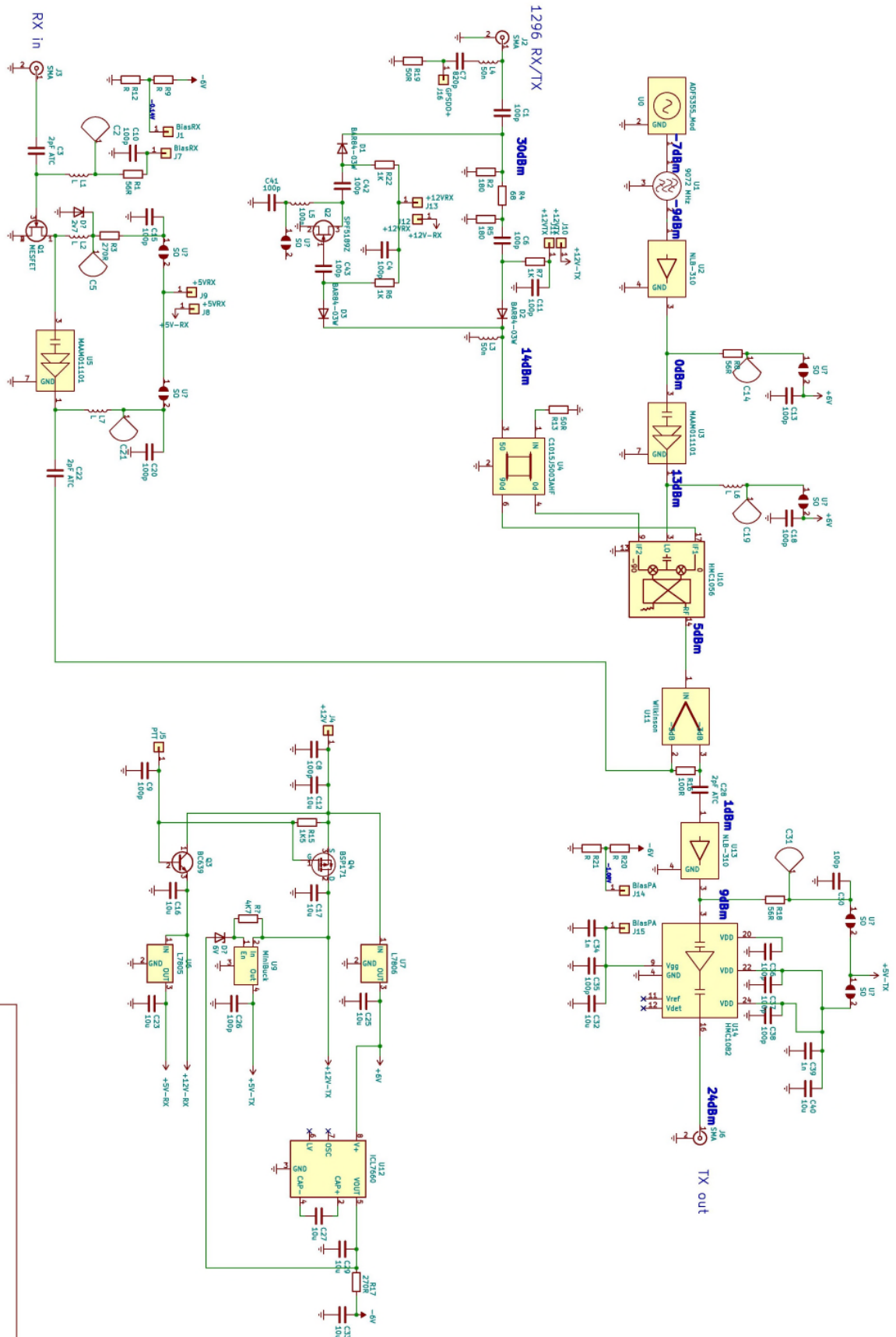


IQ Mixing & Hybrid

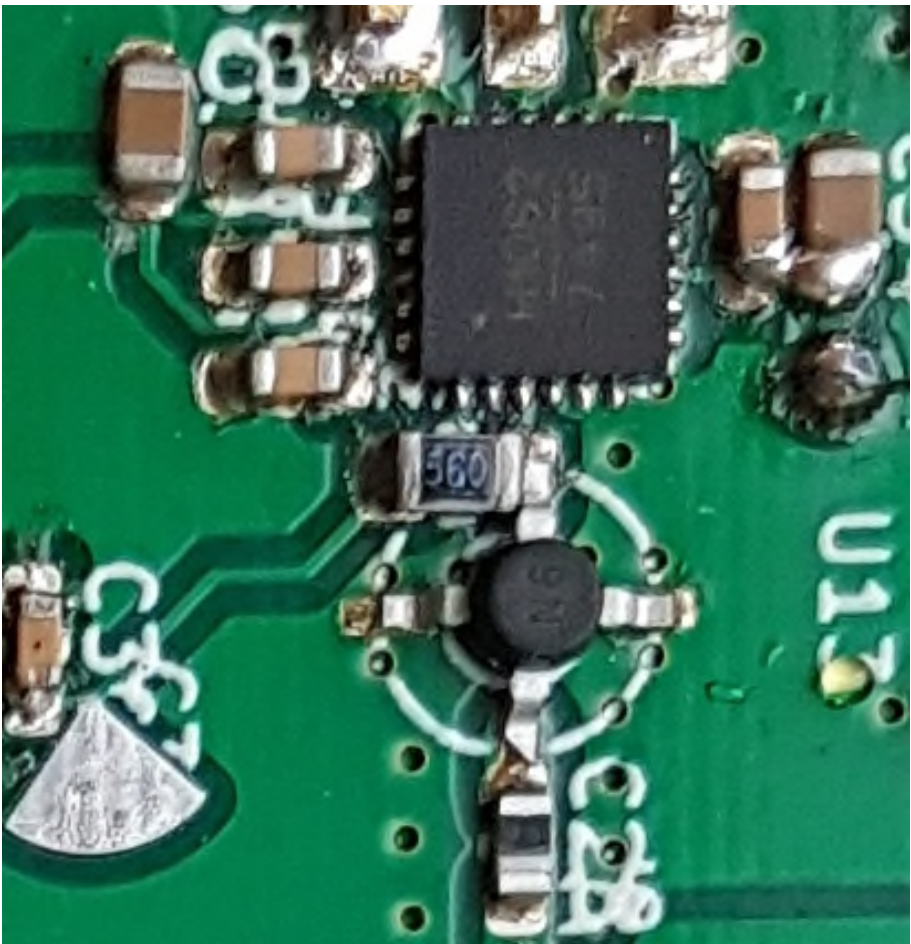


RX path

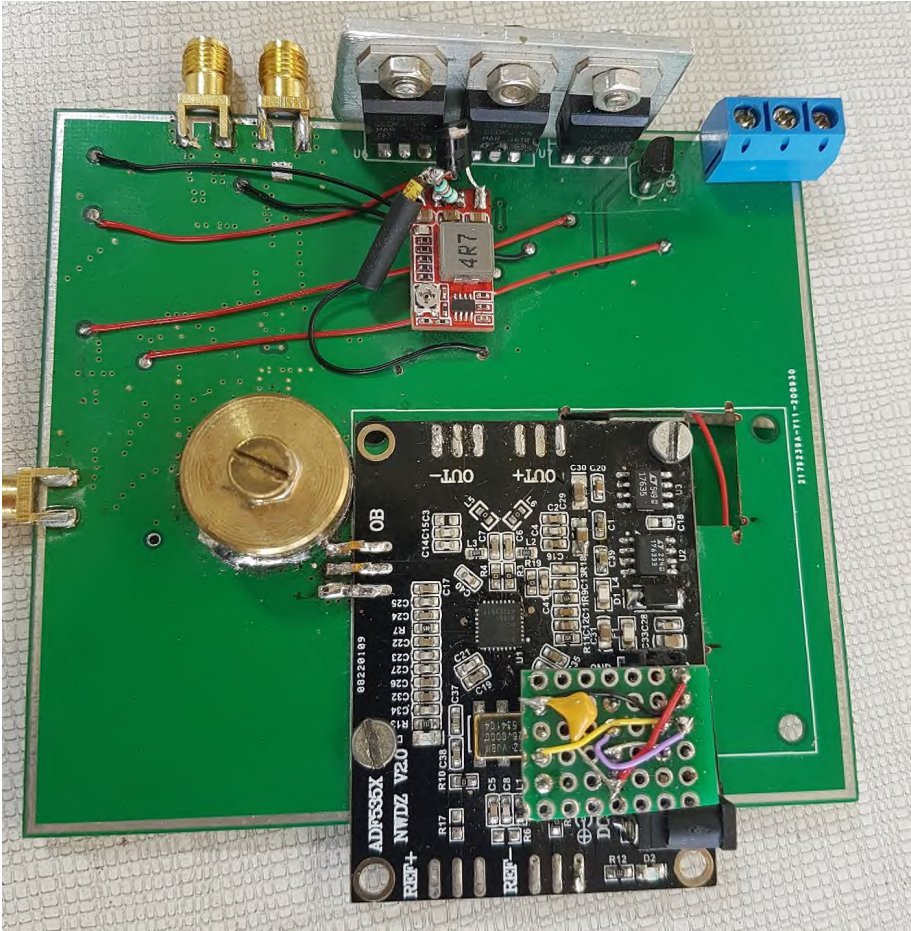




Sheet: /  
 File: 10GHzTransverter.sch  
 Title:  
 Size: A3  
 Date:  
 Kicad EDA kicad (5.1.7)-1  
 Rev:  
 id: 1/1



TX path



Top

# Scatterpoint activity report

Activity News: December 2020



By John G4BAO

**Please send your activity news to:** [scatterpoint@microwavers.org](mailto:scatterpoint@microwavers.org)

**From PA3DZL** Jac de Bruijn

On 6<sup>th</sup> January I made a nice eme QSO on 10GHz via the moon with HB9Q.

Nothing special however, I used my terrestrial/tropo station for this.

Rig: 80cm offset dish, 1dB NF and about 8W at the feed, polarization Horizontal !!

The QSO was made in mode QRA64D

Conditions were definitely not the best: high spread 180Hz and during our QSO it was snowing at Dan's QTH.

Also not optimal because I have linear polarization and HB9Q circular.

The signals were: HB9Q best -16 with me and PA3DZL -23 at HB9Q.

Nice to see that with an average terrestrial station on 10GHz you can even make an EME QSO.

Of course the biggest credits go to Dan for his really MACNIFINENT station.

Good luck to everybody who wants to try QRP EME, just try it ....

73s de Jac, PA3DZL – *from moon-net*



# Contests

"Over the years only a handful of claims have been received for the 3.4GHz Squares Awards, so it was with great pleasure that Gordon G8PNN was awarded the 5 Squares Certificate with a recent batch of cards. With the increasing levels of activity on 3.4GHz many more stations should be able to start climbing the Squares Award ladder, so I look forward to more claims in due course. The Squares Awards are available for all bands from 1.3GHz to 24GHz in five square increments.

John G3XDY UKuG Awards Manager"

## UKuG MICROWAVE CONTESTS - 2021

### Aims and comments:

The increasing activity on 122GHz means that the mm-wave events will change in 2021, see below.

The low band event dates will be similar to last year, with the March, May and June sessions running on IARU coordinated dates. Stations wishing to take part on 2300MHz are reminded that they must be in possession of the relevant Notice of Variation, and to take part on 2320MHz that they must register their station with Ofcom by emailing [pssramateurs@ofcom.org.uk](mailto:pssramateurs@ofcom.org.uk) to provide the following information:

1. Name
2. Address
3. Call sign
4. Location of use
5. Frequency range used
6. Type of use
7. Regularity of use (e.g. evenings and weekends; 24/7; occasional)
8. Transmit power (ie. EIRP) .

The high band events will continue on 5.7 and 10GHz, the dates will continue to be on the last Sunday of May, June, July, August and September. The sessions will run between 0600 to 1800 UTC, with operators able to choose any 8 hour slot (or two slots with at least a 1 hour gap). As in previous years the overall table and trophies will be determined using the best three scores made by each station across the five events. The high band events will coincide with the French Journée d'activité dates.

The millimetre events will be split into a four session series for 24, 47 and 76GHz, and there will be two 122GHz and upwards events on different dates. The 24/47/76GHz events will run in May, July, September and October. The 24GHz trophy will be awarded for the September event, the 24GHz scores from the best three of the four events will count towards an overall score for the GORRJ Memorial Trophy, and the best three session scores on 47GHz will determine the award of the 47GHz Trophy. The 76GHz events will contribute to the 76GHz championship where the best three session scores will count to the total.

The new 122GHz and upwards events will take place in June and October. The two events will be run as separate contests, there will be no overall championship.

Microwavers outside the UK are most welcome to join in our contests. There is already a core of French, Dutch and Belgian stations that appear regularly in our summer contests. We would like many more to do the same!

### THE RULES listed below are final and binding for 2021.

The following contests are scheduled for 2021:

- Low Microwave Bands - 1.3GHz/2.30GHz/2.32GHz/3.4GHz (5 contest days). An overall championship will be decided on the best three scores out of five.
- 5.7GHz (5 contest days with 3 to count for the championship), on the same days as the 10GHz contests.
- 10GHz (5 contest days with 3 to count for the championship), on the same days as the 5.7GHz contests.
- 24GHz GORRJ Memorial Trophy Contests (4 contest days with 3 to count for the championship).
- 24GHz Trophy awarded to the leading station on 24GHz in the event in September.
- 47GHz Trophy (4 contest days with 3 to count for the championship)
- 76GHz (4 contest days with 3 to count for the championship)
- 122GHz and up (2 contest days)

The full contest program and rules are published in the January 2021 issue of the Scatterpoint Microwave Newsletter and are also available on the Internet on the UKuG website at <http://www.microwavers.org>

### **General Rules (applicable to all events)**

The Contests are open to all comers (you do not have to be an RSGB or UK Microwave Group member). Stations located outside the UK (G, GW, GM, GI, GD, GU, GJ) may enter a contest, and will be tabulated within the overall results tables, but will not be eligible for UK Microwave Group awards.

Contestants are expected to enter in the true spirit of the event and to adhere strictly to any equipment or power restrictions that apply to the particular contest.

Operators may enter as home station or portable (either mixed or separately in the championships) unless specified in the rules for a specific event. In multi-band contests, single-band entries are always acceptable.

Stations: Entrants must not change their location or callsign during the contest, unless the Rover rule is invoked. In multi-band events, all stations forming one entry must be located within a circle of 1000m radius. An operator may reside outside the station's area ("remote station"), connected to the station via a "remote control terminal". In such a case, the Locator for the contest is the Locator of the station's position. An operator may only operate one single station, regardless if it is locally or remotely operated, during the same event.

Contacts: Only one scoring contact may be made with a given station on each band, regardless of suffix (/P, /M, etc) during an individual contest or cumulative activity period, unless the station worked is a Rover when each QSO from a different location may be counted. When operating as a Rover, a maximum of one scoring QSO can be made with any given station from each location visited. Contacts made using repeaters or satellites will not count for points. Contacts with callsigns appearing as operators on any of the cover sheets forming an entry will not count for points or multipliers.

Scoring: Contacts are scored on the basis of 1 point per kilometre (rounded up to the nearest kilometre) for full, two-way microwave contacts and at half points for one-way (ie crossband) contacts. Any contacts made by EME are scored at 1 point per kilometre up to 1000km, and will be scored at 1000 points above that distance.

Exchanges: Contest exchanges on the microwave bands consist of RS(T) + serial number (starting at 001). In addition, the six (or eight) figure QTH Locator must be exchanged either via the microwave band or on the talkback medium. In multiband contests, the serial number will start at 001 for each band (ie a common sequence across the bands is NOT to be used). No points will be lost if a non-competing station cannot provide an IARU locator, serial number, or any other information that may be required. However, the receiving operator must receive and record sufficient information to be able to calculate the score.

Talkback: Talkback can be used to assist in setting up a QSO, but note that the contest exchange must be made via the microwave band. It is not permissible to use the talkback as a means of checking the report or serial number – they must be copied via microwaves – and after the QSO is complete, care should be taken to avoid accidentally repeating the exchange via talkback. There is no restriction on the talkback methods that can be used – other amateur band, internet, phone, etc. In setting up the QSO, it is also permissible to send back received audio to the other station, for example to help with antenna alignment. An exception is that our contests do allow one way (cross-band) QSOs for half points, and in this case, the other band can be used by one of the stations.

Entries: Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed.

Log entries must be submitted via the online log portal at <http://microwave.rsgbcc.org/cgi-bin/vhfenter.pl>. When uploading electronic logs, the format should be one of the following: ASCII text, RSGB Standard Format, Cabrillo, SDV and GOGJV log outputs, and IARU REG1TEST format (preferred). Paper logs may be entered using the online log editor at <http://microwave.rsgbcc.org/cgi-bin/cover.pl>. Entries must be submitted no later than 7 days after the conclusion of the contest session. Rover stations should list which contacts were made from each location in their logs.

Awards: Certificates will be awarded to overall contest winners and individual section leaders and their runners up. Additional Certificates of Merit will be awarded to stations in certain categories, as indicated in the rules for each event. With these, as with the logs, the adjudicator's decision is final.

Special Rules: Applicable if called up for the specific contest:

Rover Concept: The 'Rover' concept is to encourage lightweight, low power portable activity. This allows the location of the station to be moved as many times as desired and by a minimum of 5 linear kilometres, at any time during the contest period. From each new location, stations worked from any of the previous locations during the event may be worked again, both stations involved in the contact gaining points. The serial number, however, will not revert to 001 each time a move is made but will carry on consecutively from the previous contact.

## **Low Band Microwave Contest Rules**

First introduced in 2004, these contests aim to encourage operation on the lower microwave bands, particularly as there is growing UK availability of 2.3GHz and 3.4GHz equipment. There are five of these events, in March, April, May, June, and November. The March, May and June events are timed to overlap with UHF/SHF events in some other IARU Region 1 countries. The times for the November event are shortened to make portable operation more practical.

1. The General Rules listed above apply except as modified by these rules.
2. There are five contests, one each in March, April, May, June and November. The March, April and June events run from 1000 to 1600 UTC. The May event runs from 0800 to 1400 UTC to coincide with the RSGB UHF Contest. The November event is from 1000 to 1400 UTC.
3. Entrants in the May event need not start serial numbers from 001 if they are also participating in the RSGB UHF Contest.
4. Operation may take place on the following bands: 1240-1325MHz, 2300 – 2302MHz, 2310 – 2350MHz, 3400 – 3410MHz. The same station may be contacted for points on each of the four bands.
5. Each event will be scored and tabulated separately. There is an annual championship determined by taking the best three normalized scores from each entrant across the five events for each band. The overall champion will be declared based on the normalized championship scores from each band.
6. For each session, certificates will be awarded to the leading entry plus runner-up on each band, the overall leading entry and runner-up across the four bands, plus for each band the leading stations in each of the following categories: home station, portable station, station running less than 10 watts output. Championship certificates will be awarded to the winners and runners up for each band, and to the overall championship winner and runner up.

## **5.7GHz Contest Rules**

The 5.7GHz and 10GHz contests are being run concurrently to grow activity on 5.7GHz. Although they are on the same days, they are completely separate contests. Any band or both bands can be used on any of the 5 days.

1. The general rules shown above apply.
2. There are five, monthly, events from May to September inclusive, and the events run from 0600 to 1800 UTC on a Sunday. Entrants can operate for a period of up to eight hours during each event, either as a single period or two separate periods with a minimum off time of 1 hour between.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. Certificates will be awarded to the leading station and runner-up, and to the leading fixed, portable and low power (<1W) stations.
5. The G3KEU Memorial Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

## **10GHz Contest Rules**

The 5.7GHz and 10GHz contests are being run concurrently to grow activity on 5.7GHz. Although they are on the same days, they are completely separate contests. Any band or both bands can be used on any of the 5 days.

1. The general rules shown above apply.
2. There are five, monthly, events from May to September inclusive, and the events run from 0600 to 1800 UTC on a Sunday. Entrants can operate for a period of up to eight hours during each event, either as a single period or two separate periods with a minimum off time of 1 hour between.
3. Contestants may submit logs for any one of the following sections:

### **Open**

No power or antenna restrictions (other than those laid down in the amateur licence).

The 'Rover' concept does not apply to this section.

### **Restricted**

10GHz transmit output not to exceed 1.0 watt to the antenna.

Moving location during the contest is allowed - the Rover concept is applicable.

4. Certificates will be awarded to the leading station and runner-up in each section, and to the leading portable and fixed stations.
5. The 10GHz championship will be determined based on the best three normalized scores from each entrant over the five sessions. In addition to winners and runners-up certificates for each section, the following certificates/trophies will be awarded:
  - Leading entry in the Open section - The G3RPE Memorial Trophy
  - Leading entry in the Restricted section - The G3JMB Memorial Trophy
  - Certificates to the leading home station and portable station in each section.

## **24GHz GORRJ Contest Rules**

The 24GHz GORRJ Contest will take place over four sessions, coincident with 47GHz and 76GHz events.



1. The general rules shown above apply. Eight character locators must be used in this contest.
2. There are four events from May to October inclusive, and the events run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable. Please provide a list of which contacts took place from each locator used (this can be in the soapbox area of the log).
4. Certificates will be awarded to the leading station and runner-up in each section, plus the leading home and portable stations.
5. The GORRJ Memorial Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

#### **24GHz Trophy Rules**

The 24GHz Trophy contest coincides with the September 47GHz/76GHz events

1. The general rules shown above apply. Eight character locators must be used in this contest.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable. Please provide a list of which contacts took place from each locator used (this can be in the soapbox area of the log).
4. Certificates will be awarded to the leading station and runner-up, and the winner will receive the 24GHz Trophy.

#### **47GHz Contest Rules**

The 47GHz contest will take place over four sessions, coincident with 24GHz/76GHz events.

1. The General Rules listed above apply. Eight character locators must be used in this contest.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable. Please provide a list of which contacts took place from each locator used (this can be in the soapbox area of the log).
4. Certificates will be awarded to the leading station and runner-up.
5. The 47GHz Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

#### **76GHz Contest Rules**

The 76GHz contest will take place over four sessions, coincident with 24GHz/47GHz events.

1. The General Rules listed above apply. Eight character locators must be used in this contest.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable. Please provide a list of which contacts took place from each locator used (this can be in the soapbox area of the log).
4. Certificates will be awarded to the leading station and runner-up.
5. A certificate will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

#### **122GHz – 248GHz Contest Rules**

The 122GHz – 248GHz contest will take place over two sessions, in June and October.

1. The General Rules listed above apply. Eight character locators must be used in this contest.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable. Please provide a list of which contacts took place from each locator used (this can be in the soapbox area of the log).
4. The overall score will be determined by adding together the normalized scores from all bands entered.
5. Certificates will be awarded to the leading station and runner-up on each band and overall in each event.

#### **Other Microwave Contests**

The first weekend of May sees the RSGB 432MHz -248GHz Multiband Contest staged in parallel with the RSGB UHF/SHF Contest. The 10GHz Trophy is run in parallel by the RSGB VHF Contest Committee on the Sunday of that weekend, and the rules can be found in the RSGB VHF contest rules.

BATC run the UK section of the IARU ATV contest on the second weekend in June, plus other ATV events, see [http://www.batc.org.uk/contests/contest\\_news.html](http://www.batc.org.uk/contests/contest_news.html)

The first weekend in July is RSGB VHF National Field Day which includes 1.3GHz as one of the bands.

The first weekend of October sees the RSGB 432MHz -248GHz Multiband Contest staged in parallel with the Region 1 IARU UHF/SHF Contest. The 1.3GHz Trophy and the 2.3GHz Trophy are run in parallel by the RSGB VHF Contest Committee on the Saturday, and the rules can also be found in the RSGB VHF contest rules.

The RSGB also runs a cumulative UK Activity Contest on 1.3GHz on the third Tuesday from 2000-2230 local time, and on 2.3GHz – 10GHz on the fourth Tuesday of every month, from 1930 – 2230 local time.

In addition there are other Continental UHF/SHF Contests held during the year and interested UK microwavers are urged to be active during these. Their details may be found on the Internet.

## 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	1400 - 2200	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



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

### Main changes from 2019 calendar

Activity Weekends deleted  
122-248GHz events added

## EVENTS 2021

Events may be subject to cancellation due to the Coronavirus

For latest information consult <https://microwavers.org>

### 2021

January	Heelweg <b>Cancelled</b>	<a href="http://www.pamicrowaves.nl/">www.pamicrowaves.nl/</a>
January 10-15	European Microwave Week '2020' - now virtual	<a href="http://www.eumweek.com/">www.eumweek.com/</a>
February 20	Tagung Dorsten –refer to web page	<a href="http://www.ghz-tagung.de/">www.ghz-tagung.de/</a>
April 24	CJ-2021, Seigy	<a href="http://www.cj.r-e-f.org/">www.cj.r-e-f.org/</a>
April 24	RSGB AGM – likely to be virtual	<a href="http://www.rsgb/agm">www.rsgb/agm</a>
May 21-23	Hamvention, Dayton	<a href="http://www.hamvention.org">www.hamvention.org</a>
June 25-27	Ham Radio, Friedrichshafen	<a href="http://www.hamradio-friedrichshafen.de">www.hamradio-friedrichshafen.de</a>
August 19-22	EME 2021, Prague – rescheduled from 2020	<a href="http://www.eme2020.cz">www.eme2020.cz</a>
October 10-15	European Microwave Week, London, Excel	<a href="http://www.eumweek.com/">www.eumweek.com/</a>

## 80m UK Microwavers net

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

73 Martyn Vincent G3UKV