



An Amateur Radio publication for the Microwave Enthusiast

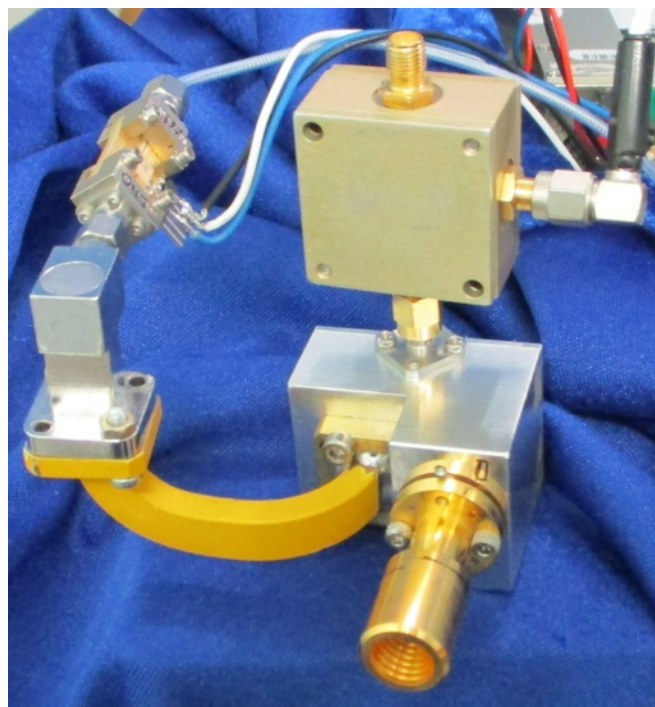
scatterpoint

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Published by the UK Microwave Group

122GHz Receiver and Transmit Source
Including lessons learnt about multipliers and quasi-optical horns

By Roger Ray G8CUB



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Loan Equipment

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

5.7GHz

10GHz

76GHz

Contact John G4BAO for more information.

Subscription Information

The following subscription rates apply.

UK £6.00 US \$12.00 Europe €10.00

This basic sum is for **UKuG membership**. For this you receive Scatterpoint for **FREE** by electronic means (now internet only) via the [Yahoo group](#) and/or Dropbox. Also, free access to the Chip Bank.

Please make sure that you pay the stated amounts when you renew your subs next time. If the amount is not correct your subs will be allocated on a pro-rata basis and you could miss out on a newsletter or two!

You will have to make a quick check with the membership secretary if you have forgotten the renewal date. Please try to renew in good time so that continuity of newsletter issues is maintained.

Put a **renewal date reminder** somewhere prominent in your shack.

Please also note the payment methods and be meticulous with PayPal and cheque details.

PLEASE QUOTE YOUR CALLSIGN!

Payment can be made by: PayPal to

ukug@microwavers.org

or a cheque (drawn on a UK bank) payable to 'UK Microwave Group' and sent to the membership secretary (or, as a last resort, by cash sent to the Treasurer!)

Articles for Scatterpoint

News, views and articles for this newsletter are always welcome.

Please send them to

editor@microwavers.org

**The CLOSING date is
the FIRST day of the month**

if you want your material to be published in the next issue.

Please submit your articles in any of the following formats:

Text: txt, rtf, rtf, doc, docx, odt,
Pages

Spreadsheets: Excel, OpenOffice,
Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

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

Thank you for your co-operation.

Martin G8BHC

Reproducing articles from Scatterpoint

If you plan to reproduce an article exactly as in Scatterpoint then please contact the [Editor](#) – otherwise you need to seek permission from the original source/author.

You may not reproduce articles for profit or other commercial purpose.

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

UKμG Chip Bank – A free service for members

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

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

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

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

There is an order form on the website with an address label which will slightly reduce what I have to do in dealing with orders so please could you use it. Also, as many of the components are from unknown sources, if you have the facility to check the value, particularly unmarked items such as capacitors, do so, and let me know if any items have been mislabelled.

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

Mike G3LYP

UKμG Project support

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

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

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

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

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

www.microwavers.org/proj-support.htm

UKμG Technical support

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

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

Please understand that you, as a user of this service, must expect to fit in with the timetable and lives of the volunteers. Without a doubt, the best way to

make people withdraw the service is to hassle them and complain if they cannot fit in with YOUR timetable!

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

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

The current list is available at

www.microwavers.org/tech-support.htm

80m UK Microwavers net – Tuesdays 08:30 local on 3626 kHz (+/- QRM)

73 Martyn Vincent G3UKV

Chairman's Thoughts

YOTA2017 (Youngsters on the Air) takes place in the UK at Gilwell Park in August 2017. The RSGB has invited the Group to participate in this event which is meant to introduce young persons to Amateur Radio. Your committee has been discussing what we, as a group, could do to assist the RSGB to make this event the best yet. However, when we started to delve into the sort of thing that was wanted it became quite obvious that we would find it difficult to come up with something suitable.

As a group we were formed to promote the interests of UK amateur microwave enthusiasts by lobbying to retain and even increase spectrum for our interests, develop and promote beacons for propagation research, make operating awards etc. Primarily the group is a weak signal and microwave DX group. Amsat UK and BATC are specialist groups with interests that overlap with the UKuG interests. Where this is the case we have good links with those interest groups. This leaves us in an interesting position because we don't, on the face of it, seem to appeal to the up and coming generation of radio amateurs. Those areas of possible interest are already taken care of by AMSAT and BATC as well as the various high speed data groups around the country.

One area where we may have an appeal is EME. There does seem to be something that stirs the imagination of younger people, judging by the response to the survey that the RSGB ran with a

group of younger amateurs, a few years ago. However, most EME systems are not well suited to transporting to events such as YOTA2017, because of their size. An exception is probably a small dish 10GHz system. We have yet failed to identify anyone who has such a portable 10GHz system in the UK who might be willing to get involved in YOTA2017. If you have such a system, you are invited to get in touch with a member of your UKuG committee.

All of this does raise the question of how we are best able to promote ourselves better, both to new radio amateurs as well as to the public, when necessary.

We are doing our bit for YOTA2017 having donated £500 to the RSGB, from our funds, to help run the event. Now we need to decide what if anything we can do to promote our side of the hobby at YOTA2017.

Can I also remind everyone that the AGM is coming up soon. The AGM will be held at the Martlesham Microwave Round Table on the 8th and 9th April. If you want to stand for committee we would be pleased to hear from you. Please contact our Hon sec, JOhn, G3XDY, as soon as you can so that your name can go forward.

We have the usual great line-up of talks (all on Sunday this year) at MMRT. Please register through www.microwavers.org and follow the links.

Sam Jewell, G4DDK, Acting chairman

Beacon Coordinator Vacancy

The UKuG Committee would like to recruit a volunteer to assist the group to coordinate UK microwave Band beacons.

The UKuG supports the UK beacon network with hardware finance, technical help and beacon applications.

The RSGB ETC Committee and the RSGB Microwave Manager are responsible for the interface to OFCOM, specifying beacon frequency allocations and overseeing the issue of the NoV to the beacon keeper.

The beacon keeper (NoV holder) is responsible for the technical design and maintenance of their beacon, maintaining the close-down list details and ensuring that the NoV is renewed at the specified intervals.

The successful candidate will be responsible for interfacing between the Committee and beacon keepers/groups to enable the smooth operation of the network, identifying problems and keeping the Committee up to date on issues and the state of the beacon network.

The post would suit an active microwave enthusiast who has good organisational, communications and technical skills and who wishes to help keep the UK amateur beacon network in good operational condition.

If you think that this post would be of interest please contact the (Acting) Chairman, Sam Jewell, G4DDK at sam@g4ddk.com for more details.

Ofcom News: 5GHz (5725-5850 MHz)

Ofcom has today confirmed plans to increase the amount of spectrum available for Wi-Fi in the 5 GHz band. In the future, this could enable better wireless broadband for consumers.

As broadband delivered to the home gets faster, people increasingly expect their Wi-Fi to provide several services at once – such as video streaming, video calls, gaming and remote working. This demand puts pressure on the spectrum which carries Wi-Fi signals.

Many Wi-Fi routers in the UK currently use a part of the spectrum called the 2.4 GHz band, which is becoming increasingly congested and can impair broadband performance. Many people have newer broadband routers, which use not only the 2.4 GHz band, but also the 5 GHz band – which has much more spectrum and is less congested.

Ofcom has decided to open up an additional 'sub-band' within the 5.8 GHz section of the 5 GHz band. In deciding to do so, we have taken into account the impact on other existing users, such as satellite services.

The extra sub-band will result in 125 MHz more spectrum. This will allow for two more 80MHz channels to accommodate data-hungry applications. These extra channels are already being used in other countries, including the US.

In order to implement the decision, Ofcom is now consulting with UK stakeholders on proposed regulations which will allow Wi-Fi use in this band. The making of the new regulations will also be contingent on any comments the European Commission may have on the technical parameters we propose to apply to the use of the band.

The closing date for responses to this consultation document is 11th April 2017..

Martlesham Round Table: 8 – 9 April



Adastral Park

Image: heritage.atadastral.co.uk

<http://mmrt.homedns.org>

Booking (essential!) is now open for the Martlesham Microwave Round Table, taking place over the weekend of April 8/9 2017 at Adastral Park (BT labs), Martlesham Heath, Ipswich IP5 7RE.

We look forward to welcoming you to the Round Table in April.

Accommodation

For 2017 we are returning to what is now the Ipswich Hotel, Old London Road, Ipswich, IP8 3JD.

Telephone: 01473 209988

Concessionary room rates are £50.00 double/twin B&B for the 8th April.

Please book by phone on 01473 209988 and quote booking code CH003751.

Don't book online as you won't get the special rate.

Dinner

Please book for the dinner on the main registration page

Menu

Starters

Tomato and basil Soup with crunchy croutons

Bacon and mushroom salad with a balsamic dressing

Duo of melon with a berry compote and mint syrup

Main Courses

Roast Turkey, Pork and Beef

Fillet of salmon with a herb crust and white wine sauce

Roasted vegetable risotto

Desserts

Lemon tart with crushed meringue and raspberry coulis

Homemade Chocolate Brownie with Chocolate Sauce and Ice Cream

Apple crumble tart with creamy custard

Tea or Coffee

Price: £26.00 per person

Draft Programme

Saturday 8th April 2017

- 10:00 Breakfast at Harvest Moon Café, Capel St Mary.
- 12:00 Doors Open
- Refreshments available from 12:00 (drinks, biscuits & sandwiches)
- 13:00 Welcome & opening
- 13:15 Afternoon Workshop
- 15:00 Refreshments
- 16:30 Close
- 19:30 Meet for Dinner at 20:00

Sunday 9th April 2017

- 09:00 Doors Open
- 09:50 Welcome and Opening
- 10:00 UK Microwave Group AGM, Trophy Presentations
- 10:45 Refreshments & Judging of the Construction Contest
- 11:00 DL4OGI: Reflections on Aircraft Scatter
- 11:45 G8WRB: How not to fool yourself with vector network analyser (VNA) measurements.
- 12:30 Lunch Break
- 13:30 G0EWN: A Mixer Block for the Millimetre Wave Bands.
- 14:15 G8AGN: Antenna modelling at 134 GHz and 241 GHz using openEMS
- 15:00 Refreshments
- 15:15 UKuG Contest Forum – John G3XDY
- 16:00 Close

UKμG Notice: 2017 Annual General Meeting

Notice is hereby given that the 2017 Annual General Meeting of the UK Microwave Group will be held at 10:00am on Sunday, 9 April 2017 as part of the Martlesham Microwave Round Table event which takes place over that weekend.

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

John Cooke GM8OTI is standing down, Martin GM8IEM has been approached to be appointed as Scotland rep.

All other Committee officers/members are prepared to stand again, however, new members would be very welcome. We need a deputy Editor for Scatterpoint (see page 23).

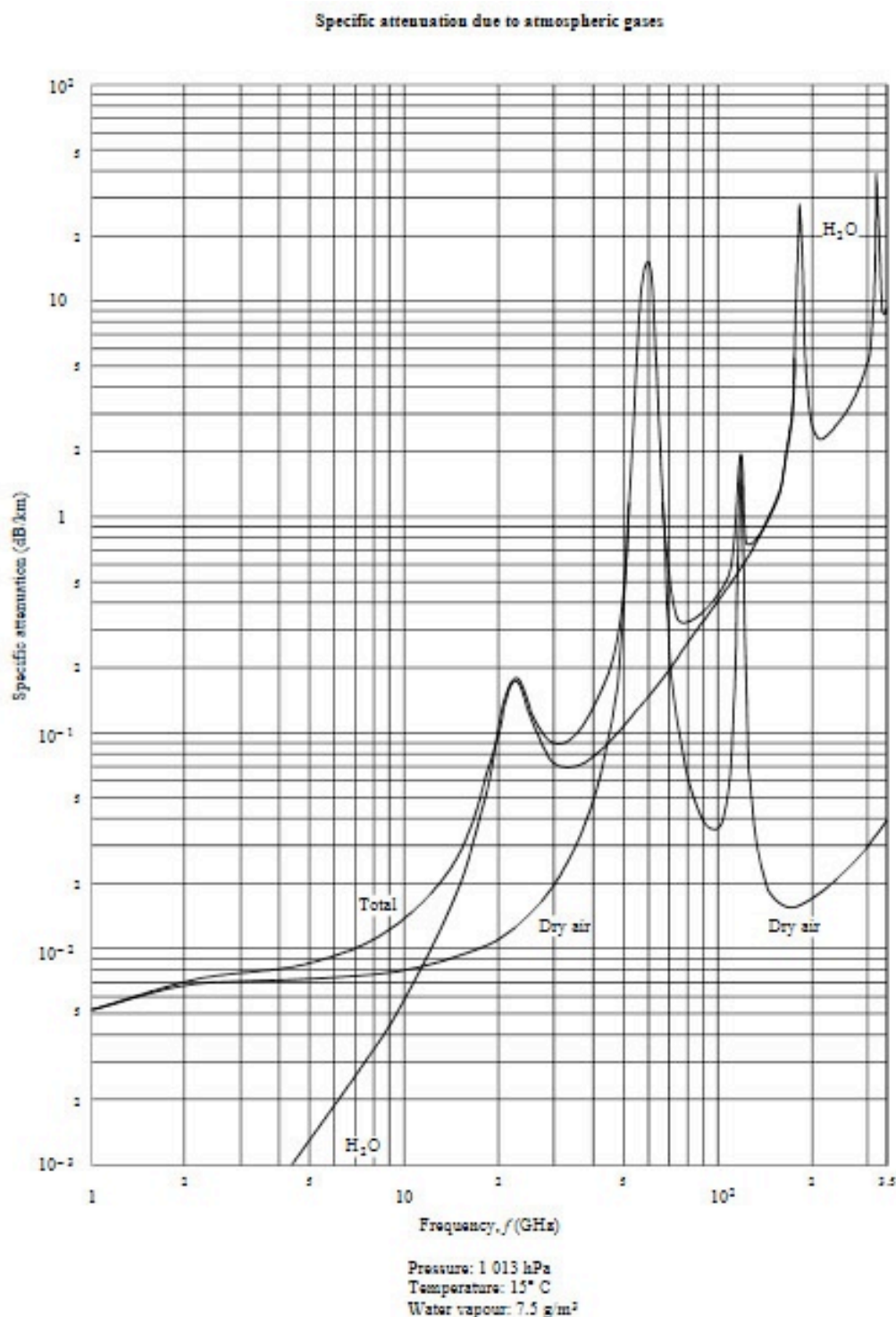
Any UKuG member wishing to stand should notify the UKμG Secretary, John Quarmby G3XDY, by 11th March 2017.

If you have any agenda or AOB items for the AGM then please contact the UKμG Secretary, John Quarmby G3XDY by 11th March 2017, email: secretary@microwavers.org

122GHz Receiver and Transmit Source

Including lessons learnt about multipliers and quasi-optical horns

Roger Ray G8CUB



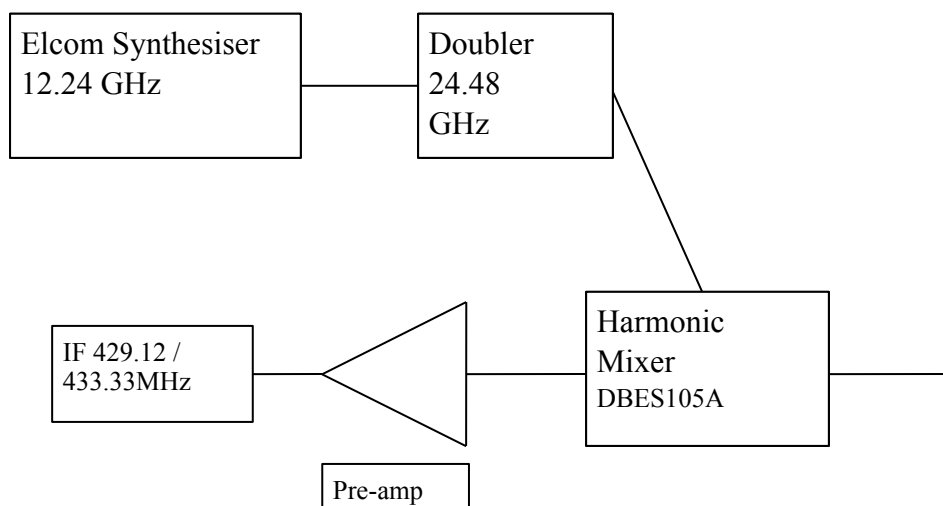
The above diagram from ITU-R shows the high oxygen loss at 120GHz at sea level.

Looking at the graph of loss against frequency, 122GHz does not look too favourable. With such high losses due to oxygen, which exist whatever the dew point, why bother with 122GHz at all? A fair question and probably why 122GHz has generally been ignored in the UK. The preference being, to use 134GHz, where the losses are lower, and there is a primary Amateur allocation. However with the appearance of some commercial

122GHz radar modules, there may be an easy way to get on the band. Also on 122GHz it is easier to get powers of a milliwatt or so, due to the availability of 40GHz output multipliers.

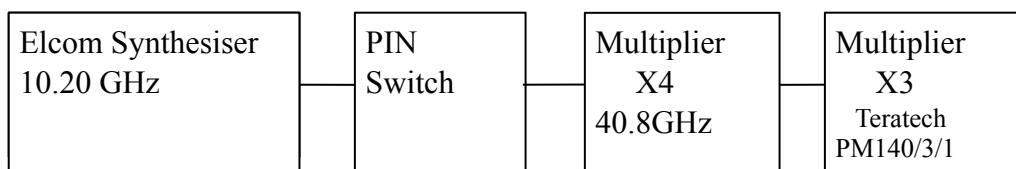
Long distance contacts on the band have always been at altitude, where the oxygen losses are lower.

The receive converter and transmit source show my solution to getting on the band.



Simplified 122GHz Receive converter block diagram

For the Receive LO, the Elcom synthesiser frequency is 12.240GHz, which is multiplied x2 in a doubler module (Broadcom AMMP-6120), then x5 in the mixer. It can also be switched to 12.283333GHz, so that I can check my own TX signal. It was decided that I would transmit on 122.4GHz, and Chris on 122.829GHz. In that way we could look for each other's signals at the same time.

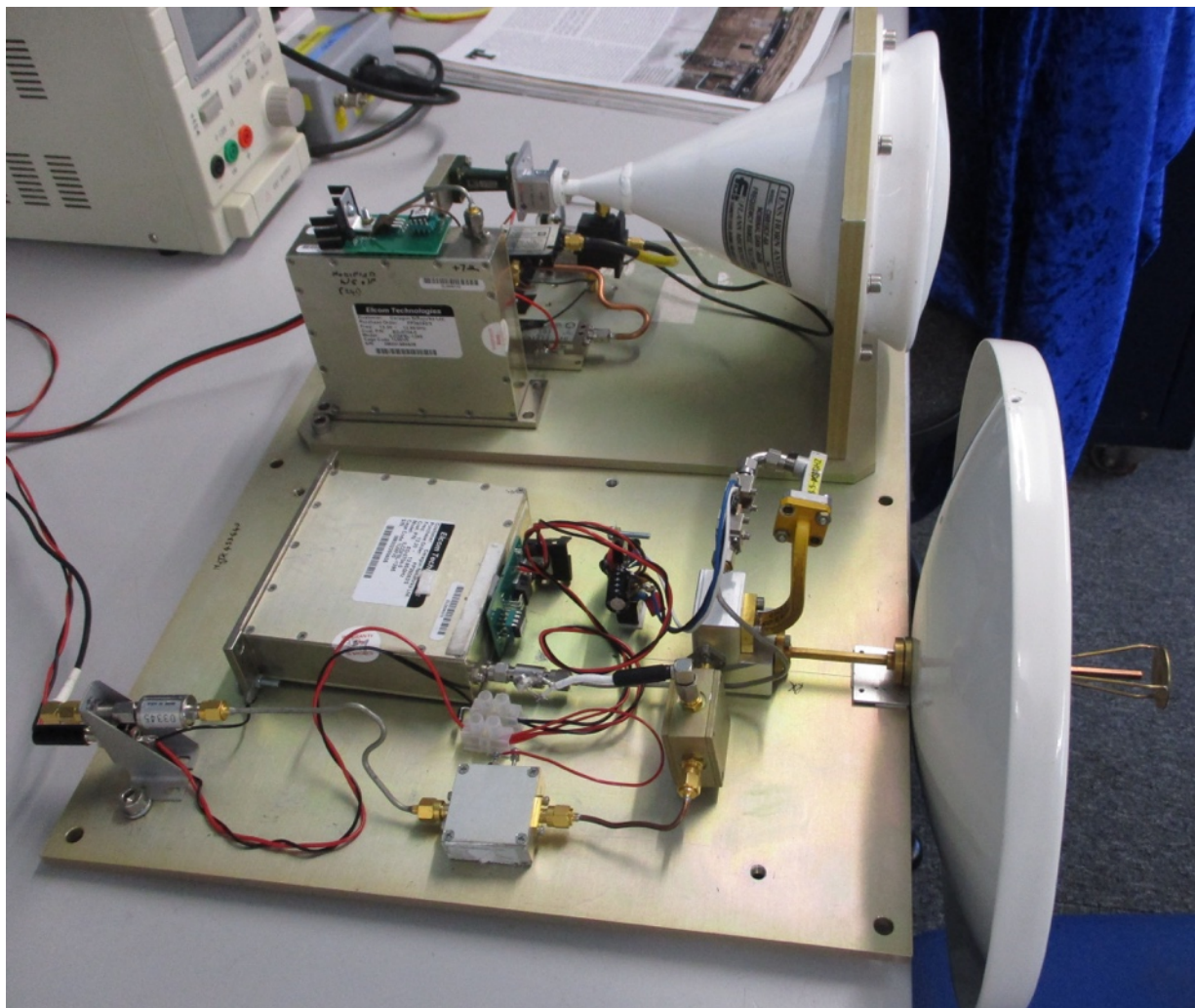


Simplified 122GHz Transmit source.

For transmit the Elcom synthesiser frequency is 10.20GHz¹, which is multiplied x4, in a little OS5PO unit giving 15mW at 40.8GHz. This multiplier worked best with a 7.5V DC supply. A waveguide WR-28 transition to WR-19 connects to the Teratech x3 multiplier. This multiplier is quite efficient giving 0.5 mW out for 20mW drive. However as this is its maximum level, it was felt prudent to slightly drop the drive to 15 mW.

The multiplier's waveguide output (WR-6.5) connects directly to a 150mm 77 GHz horn, which works effectively enough on 122 GHz. The multiplier output waveguide cut-off nicely removes any product at 81.6 GHz.

¹ Elcom synthesiser programmed for 12.75 GHz, with x4 multiple of the VCO selected instead of x5, by adding a piece of ceramic to two internal filters



The above configuration was used for the first UK QSO on the 122 GHz band which took place with Chris G0FDZ/P when we were both located at Hackpen Wiltshire (IO91CL). The distance was only 120m but the CW reports were 599 both ways.

An earlier attempt for a two way QSO at 5km had failed. Power levels were 70 μ W for Chris G0FDZ and 300 μ W for my source. One feature of G0FDZ's system was the use of a slab type mixer which he has recently published.

After that we tried a 2.5 then 1.1km path a Higham in Kent. The result was just a one-way contact, with Chris receiving my signal. Obviously my receiver was just not functioning correctly. So back to the bench.

Looking at the receive converter, the LO was on frequency, there was plenty of diode mixer current, so what was wrong? I was getting a good signal from a small beacon situated 8 metres away. Well it was good but not rock crushing. Ah, I thought, could it be the input circular waveguide hole in the block. It was a DL2AM block sold for 134GHz. So I checked it, it was 1.7mm. That should be fine for 122GHz. So where was the problem?

I was using a 24GHz doubler with coax output, which went via a coax/WR-28 transition, through an odd bent bit of wr-28 waveguide to the mixer block.

I tried changing the connector between doubler and transition. Yes, an improvement. Trying various lengths of coax, was producing widely changing results. With mixer current changing 2:1, I was getting around 20dB variation in IF output. However the maximum mixer current was not giving maximum IF signal. What I found was, that the phase of the LO drive very important.

The harmonic mixer is a DB6NT pcb No.47, using a DBES105A diode. Once the matching was sorted by using the best lengths of waveguide and coax. The best performance coincided with maximum LO output on the output waveguide port. Using my power meter it had increased from 0.15nW to 9nW.

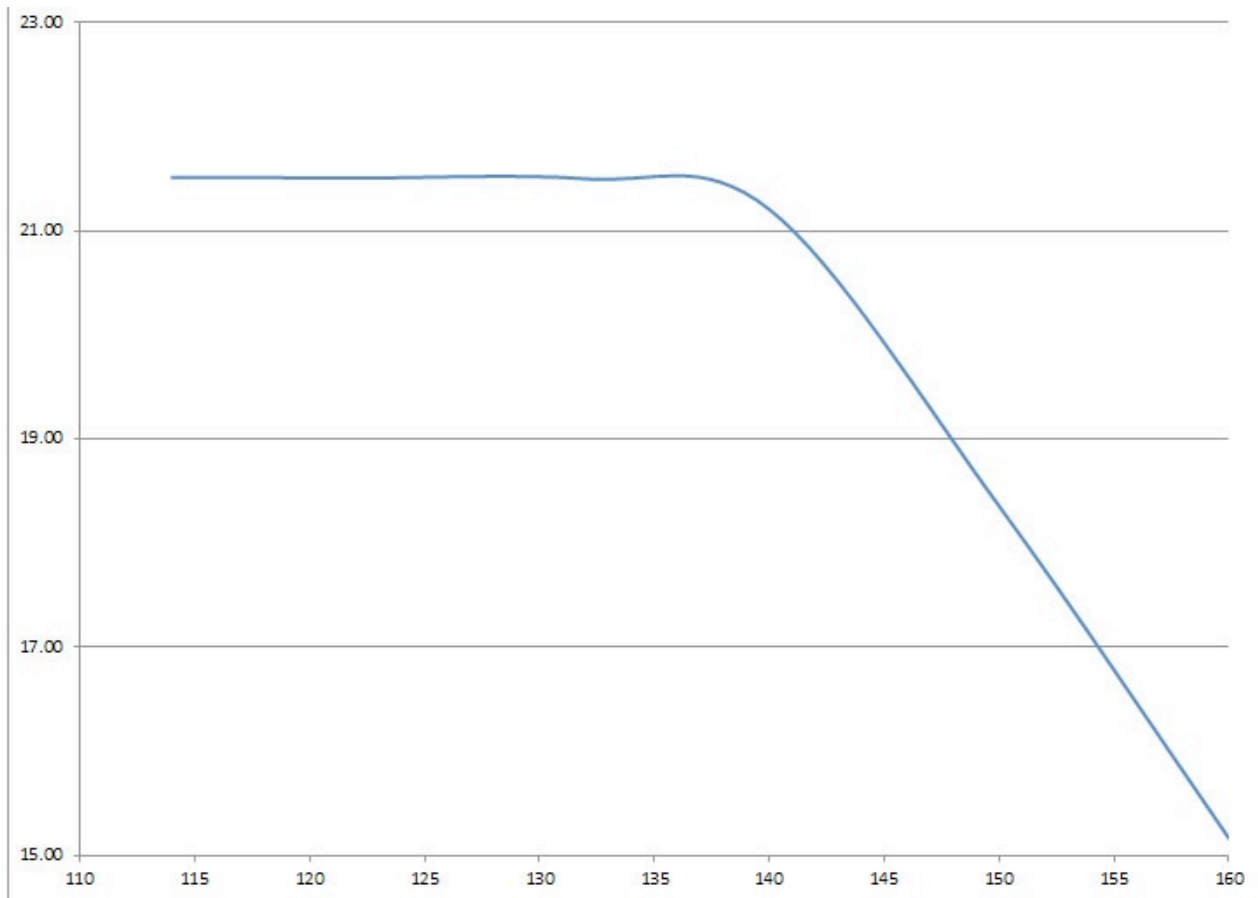
The initial tests on 122GHz used a Procom 250mm dish. However, mainly due to my poor mechanics. Every time I checked the alignment, the dish was pointing in a different direction. When some quasi-optical horns appeared on the usual auction website, it was decided to give one a try.

The Millitech GOA-10 Gaussian optic horn was only 112mm diameter, however the specification was 88 – 110GHz, 41dBi gain. The antenna consists of a small launch corrugated horn, and a separate plastic lens. The

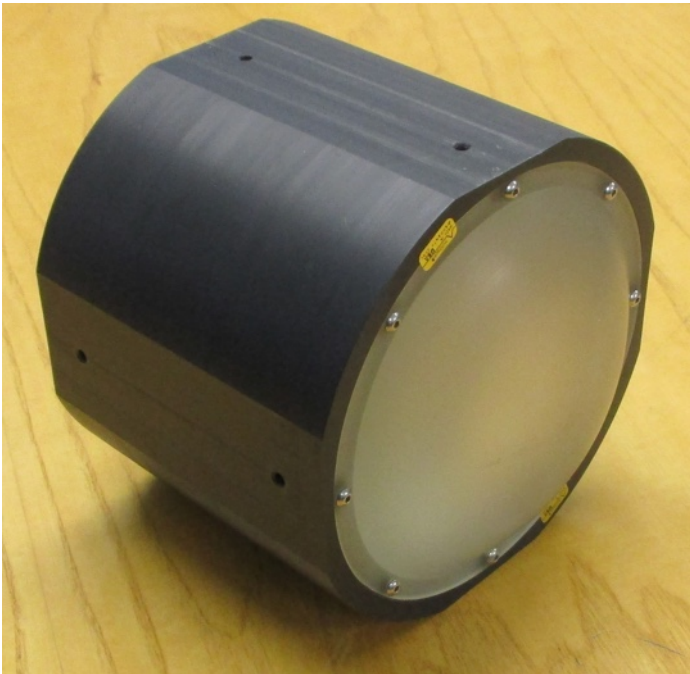
housing is plastic, so totally different to the usual metal horns. Not knowing too much about the design, I did a bit of research. This suggested that the lens should be relatively frequency independent, but the horn having a limited range due to the grooves. Reading up on the theory, it suggested that it should work roughly over a 1 – 1.5 frequency range. So if the lowest frequency was the oddly specified 88GHz, it should just about work to 134GHz.

To prove this I did some loss measurements, between two of the horns. Using a combination of path loss, and Rayleigh distance equations, I concluded that at 6 metres apart the loss should be 8dB, for 2 horns with 40dBi gain. At closer distances the true gain would not be realised. To do this I used the Tripler from the Tx section driven from a 33-50GHz Agilent Tripler with 5 – 10dBm output, that being driven from a signal generator. The received signal was large enough to measure directly on a power meter. Using the path loss equation in a spread sheet, I could calculate the gain of the horns.

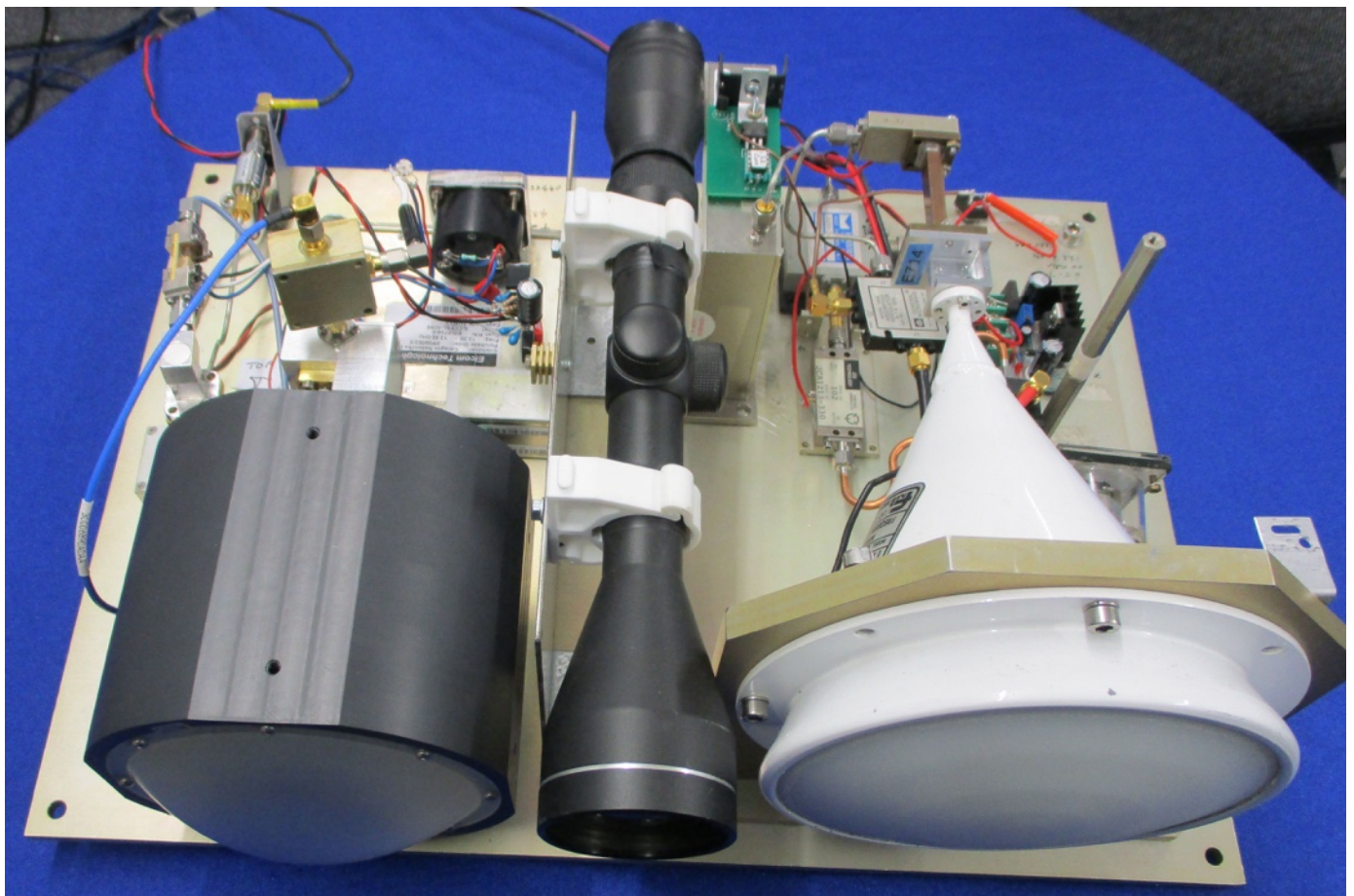
Measured gain came out at 39dBi at 122GHz. But the response varied with small changes in frequency. As the lens is not frequency dependent. I plotted the response of the feed horns. Due to the small size I could do this at a spacing of 30cm. The response is shown below, which basically agrees with my original guesstimate. Showing that it has very useful gain at 122 & 134GHz.



Measured response of the feed horns at a distance of 30cm.
Gain dBi on the left, Frequency in GHz along the bottom.

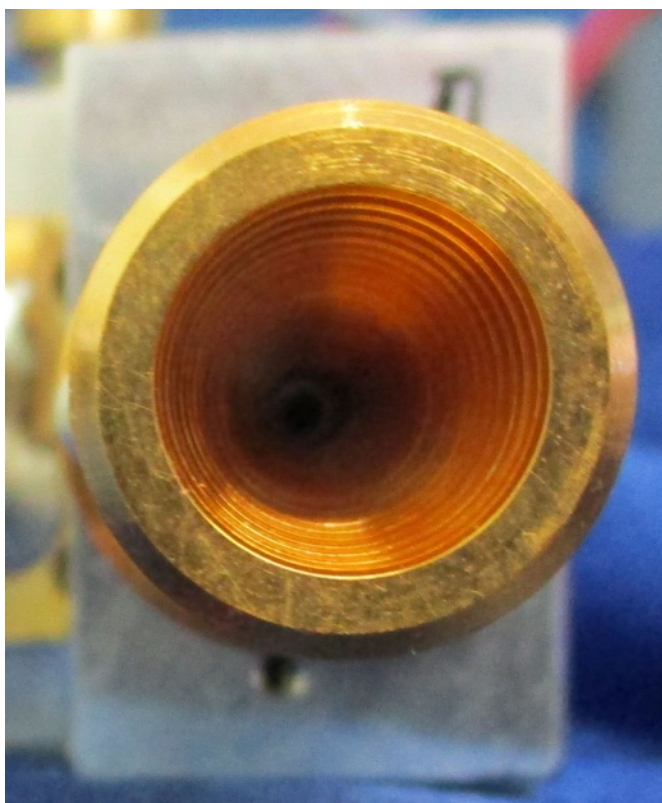
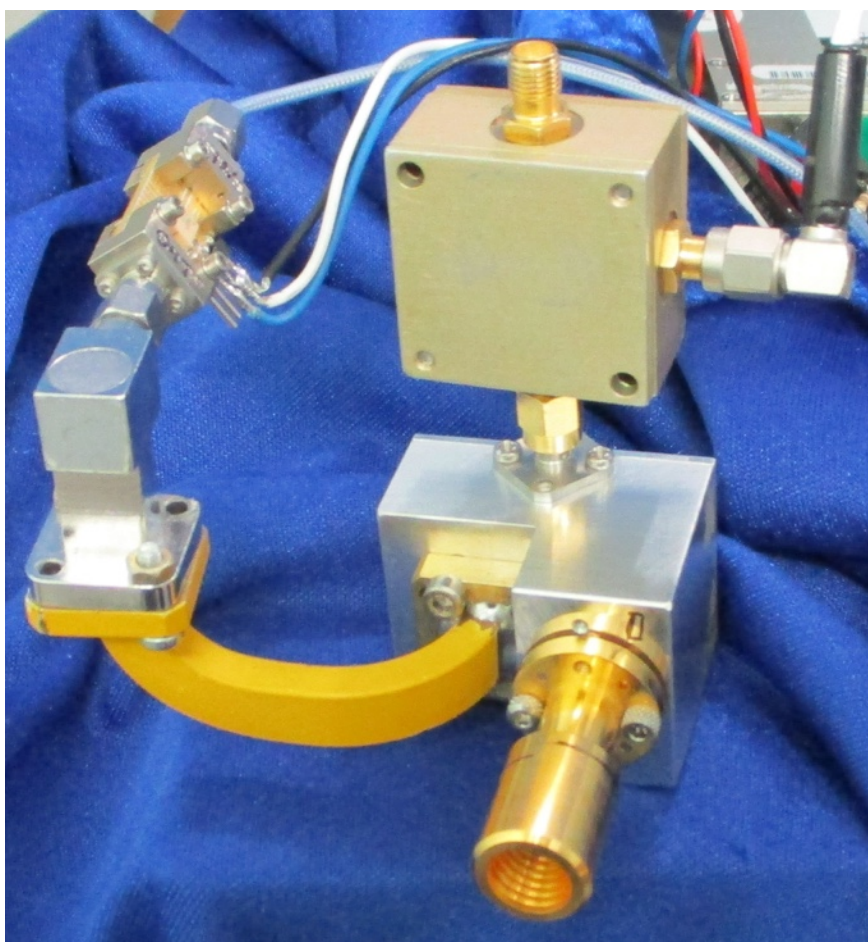


Millitech Quasi-optical horn

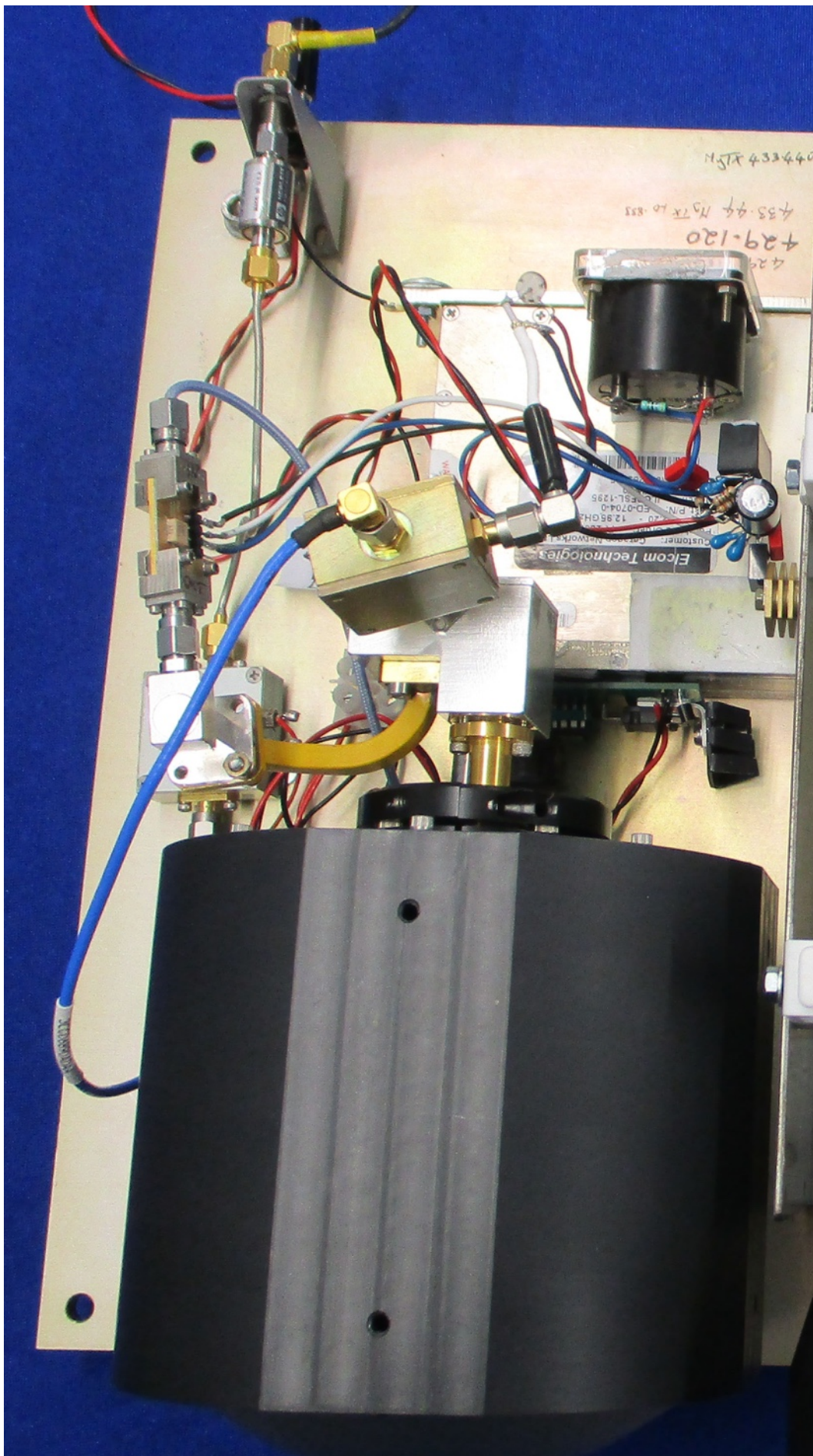


Receive on the left now using the quasi-optical horn. Transmit on the left is on a detachable plate

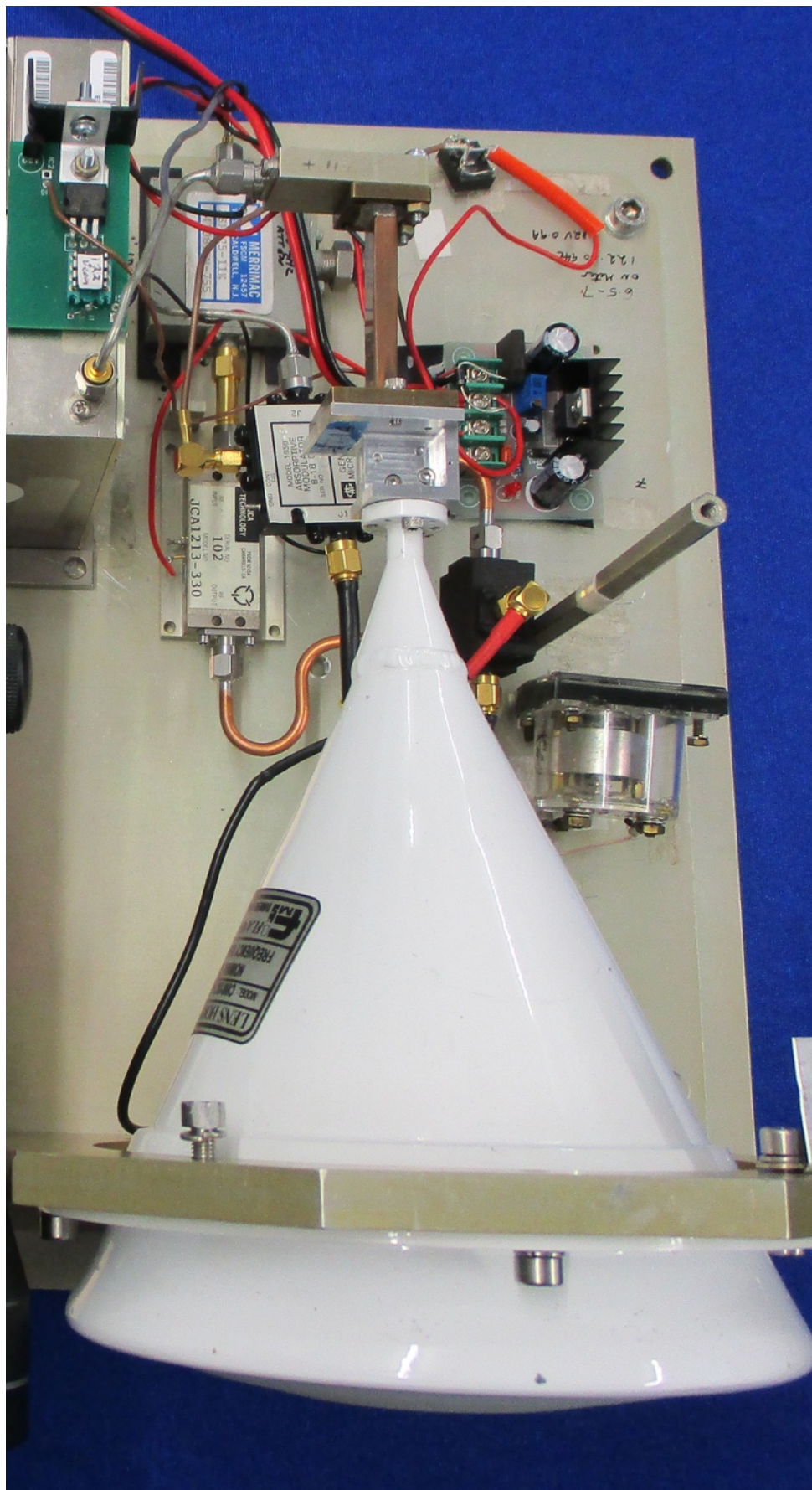
Detail of the receive mixer – showing
12/24GHz multiplier, waveguide
transition, mixer block, corrugated
horn from the Millitech antenna, and
bias-T



Conical feed horn, direct onto mixer block



Receive converter – showing mixer block directly attached to the antenna



Transmit source

On the transmit beacon, between the synthesiser and 40GHz multiplier, is an attenuator, amplifier and power monitor. The later to ensure that drive to the Teratech multiplier is not exceeded. Although the 77GHz horn certainly works, the next stage will be to replace it with a second Millitech horn.

Availability of parts:

The Elcom modules I used were borrowed from other projects, as the availability of the 12.2 - 12.95GHz version is limited.

The AMMP-6120 doubler is from Mouser

An alternative to the Teratech tripler is the use of a higher power 40GHz multiplier, mixer housing and MA46H146 diode – all from DL2AM. With that set up powers of 1 – 2mW are possible. PCBs from Kuhne.

The pair of Millitech horns were found on ebay for less than the cost of a Procom dish (when they were available). It is intended to try some Fresnel lenses to see if they can be reproduced. The green Flann 60GHz horns work well at 122GHz with around 37dB gain.



122GHz in operation at Higham Kent in February, using the quasi-optical horn for the first time. Received signals at 2.44km were 599. A two way QSO was quickly completed with Chris G0FDZ/P.



The final derivative of the system using two of the Millitech horns. In operation at Coalhouse Fort East Tilbury on 24th February. Working Chris across the Thames at Higham at a distance of 6.1km. Signals were 579/539. Dew point 0 deg.C.

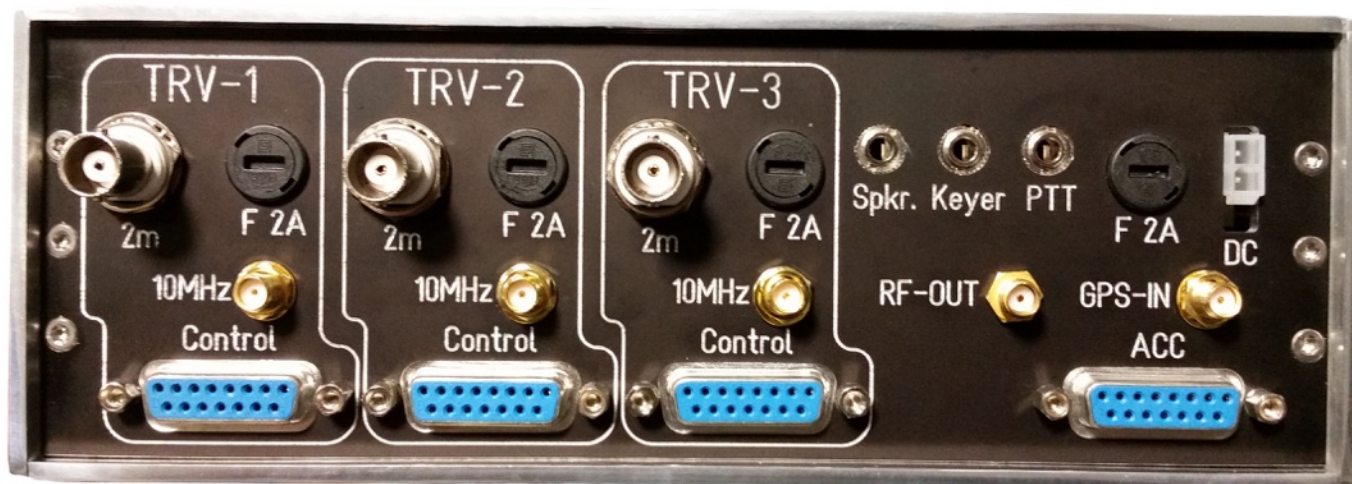
SDR Transceiver development – new ideas wanted

Dirk, DK2FD and DF0MU

We are engineering a new SDR-2m-Transceiver which is designed for SHF-operation. If you like you can watch a video at youtube (just search for DF-202 and/or DK2FD) and I attach some photos of front and backpanel. This is the 2nd Generation and we are working on the third (and we hope last hi) Generation. As its a SDR (with DSP, I-Q Modulation, etc.) it's possible to modify some parts of the Transceiver using Software.

I am looking for ideas – maybe we have not thought about all details.





Overview:

[Google Translate from the German flyer. Ed.]

- Frequency range 144–148 MHz in 10Hz steps (step width programmable 10Hz ... 1kHz)
- Modulation: USB, CW, LSB, FM – Output power > 50mW (17dBm) – NF <5dB
- Control of up to three switchable SHF transverters
- Internal GPS-disciplined frequency processing with 10MHz (GPS receiver and OCXO – the OCXO is active when the operating voltage is applied, also in stand-by mode)
- Supply of the transverter with DC, GPS stable 10MHz and control signals (RX, relay, TX) – Integrated sequencer with programmable switching times (up to 10 seconds → servos)
- GPS provides the time and position, calculator for QRB and QTF is installed
- In the future: calculation based on exact coordinates → blurring of the ww locator is omitted – electronic morse key (twin paddle, straight key) with memory, etc.
- 2 VFOs, Memory, RIT, NB, Tacker (sending dashes or dots automatically), EOT pip tone, database for beacons and counter stations
- Intuitive operating concept with soft keys → problem-free operation without a manual!
- LO frequencies of the transverter can be programmed as a shelf, therefore display of the "real" frequency (eg 76.088, 100.00 MHz) up to max. 999 GHz
- Advanced SDR concept, highly integrated processors, bright TFT display
- Use of high-quality components, helix filters, multilayer boards, etc.
- Connector for SDR stick (SMA socket) for tape monitoring with tablet computer, one
- Support for a 7"-8" tablet is provided on the upper case cover.
- A suitable tablet is available – ready configured – available.
- Software updates via USB socket (remove top hood)
- Matching transverter housings (stackable) with standard front panel available

There's an English language video at <https://www.youtube.com/watch?v=6ZyleMYKDQc>

73 Dirk, DK2FD and DF0MU (contest from 144 MHz to 76 GHz, and Lightwave)

DK2FD@t-online.de

UKuG Microwave Contest Calendar 2017

Dates	Time UTC	Contest name	Certificates
5-Mar	1000 - 1600	1st Low band 1.3/2.3/3.4GHz	F, P,L
23-Apr	1000 - 1600	2nd Low band 1.3/2.3/3.4GHz	F, P,L
7-May	0800 - 1400	3rd Low band 1.3/2.3/3.4GHz	F, P,L
21-May	0900 – 1700	1st 24GHz Contest	
21-May	0900 – 1700	1st 47GHz Contest	
21-May	0900 – 1700	1st 76GHz Contest	
28-May	0600 - 1800	1st 5.7GHz Contest	F, P,L
28-May	0600 - 1800	1st 10GHz Contest	F, P,L
4-Jun	1000 - 1600	4th Low band 1.3/2.3/3.4GHz	F, P,L
18-Jun	0900 - 1700	24/47GHz Trophy / 76/122-248 GHz	
25-Jun	0600 - 1800	2nd 5.7GHz Contest	F, P,L
25-Jun	0600 - 1800	2nd 10GHz Contest	F, P,L
30-Jul	0600 - 1800	3rd 5.7GHz Contest	F, P,L
30-Jul	0600 - 1800	3rd 10GHz Contest	F, P,L
27-Aug	0600 - 1800	4th 5.7GHz Contest	F, P,L
27-Aug	0600 - 1800	4th 10GHz Contest	F, P,L
17-Sep	0900 - 1700	3rd 24GHz Contest	
17-Sep	0900 - 1700	3rd 47GHz Contest	
17-Sep	0900 – 1700	3rd 76GHz Contest	
24-Sep	0600 - 1800	5th 5.7GHz Contest	F, P,L
24-Sep	0600 - 1800	5th 10GHz Contest	F, P,L
22-Oct	0900 - 1700	4th 24GHz Contest	
22-Oct	0900 - 1700	4th 47GHz Contest	
22-Oct	0900 – 1700	4th 76GHz Contest	
19-Nov	1000 - 1400	5th Low band 1.3/2.3/3.4GHz	F, P,L

Key:

F	Fixed / home station
P	Portable
L	Low-power (<10W on 1.3-3.4GHz, <1W on 5.7/10GHz)



Activity News : February 2017

By Neil Underwood G4LDR

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

Winter is not the best time for microwave activity as the recent lack of activity reports indicate, I was therefore pleased to have received a report from Edward G3VPF. Hopefully by next month the weather will have improved and more reports will be forthcoming.

1296 MHz Band

From Ed G3VPF, IO80.

With the weather improving at the end of February and early March it was time to reorganise the home station aerals. The 3cms dish has gone (1 qso in three years is not good!) and it's time to improve the 23 cms station and see if I can do better on that band. My QTH is at the bottom of a valley on the seaward side of the Dorset Ridgeway so super DX is never going to happen. Most of my operation is portable but it would be good to be able to work at least one microwave band from home.

So, with the dish out the way I now have a 14 element Flexayagi at 4.2 metres with an SHF Electronics preamplifier. To keep the aerial cable run short the transverter is in the garden shed at the bottom of the mast. The shed is solar-powered as it's a long way from the shack. The transverter IF is 28 MHz. The main transceiver is a TS50 located in a warm comfortable shack. The transverter is a Kuhne G3 unit giving about 1 Watt output. At present the aerals are manual rotation only.

This was finished just in time for the March low-bands contest. Was pleased to hear two stations strong enough to be identifiable and two more very weak stations. More of a surprise was that the IOW beacon is audible most of the time. The path is over the highest part of the Purbecks. While monitoring, two other beacons were heard via an AS path. The bursts were too short to confirm identity but they were believed to be GB3USK and GB3MHZ. Aim now is to add a rotator and up the power to 30 Watts.

A new portable station is coming together for 23cms. Until the National Trust see the light and open up the Hardyes Monument car park for more than 6 hours a day 4 days a week and summer only, I need a hand-carryable station to take up the hill. Station will be an FT817 with SG Labs transverter and 14 ele Flexayagi. Hope to be on for a number of contests this year, WX permitting!

Millimetric Bands

Chris G0FDZ

Roger G8CUB/P and Chris G0FDZ/P had a 6.1 km CW contact on the 122 GHz band today between Coalhouse Fort, Tilbury (JO01FL), Essex and Higham (JO01FK) in Kent.

Signals were suffering from some QSB, but were on average 539/579 with several noticeable peaks at times. An earlier contact was made over 2.44 kms in the Higham area on the 16th of February.

EME

From John Worsnop G4BAO

I've now re-meshed my 1.9m EME dish with 2.7mm and built feed/transverter systems for 10GHz and 5.7GHz over the winter so should be starting some experiments on those bands soon.

I had my first 2300MHz NoV EME QSO on March 4th with ES5PC on 2301.950 as he is also licensed there. I'm about 2dB down on power on that band but working on it. Using a K3 driving a 124MHz Anglian transverter driving a 2320 DB6NT G3 for 2300. *I'm claiming my 2300 QSO with ES5PC as a "first EME QSO" for the 2300 NoV* as Dave G4FRE has confirmed he hasn't had an EME QSO yet and I don't think anyone else has tried. Also worked WW2R (alias G4FRE) and W5LUA on 2301 on 5th March. Same station, different operators, but I can now claim 3 "initials" on 2300 EME :-)

Also had an SSB EME QSO with Peter G3LTF on 2320MHz, exchanging 54/41 reports. Not bad going with a 1.9m dish here!

February highlights

1.3GHz

06/02/2017 21:36	WA3RGQ	EL97	JT65	EME
06/02/2017 21:08	W3HMS	FN1ØMF	JT65	EME
06/02/2017 22:08	NC1I	FN32OB	JT65	EME
21/02/2017 21:37	GU6EFB	IN89RK	SSB	TR
08/02/2017 12:40	G4ALY	IO7ØVL	CW	ACS
21/02/2017 20:41	GW4HXO	IO71JV	SSB	TR
21/02/2017 20:25	GI6ATZ	IO74AJ	SSB	TR
21/02/2017 21:07	GD8EXI	IO74PC	SSB	TR
01/02/2017 17:44	DF2VJ	JN39LI	JT65	EME
21/02/2017 21:02	DF9IC	JN48IW	SSB	TR
21/02/2017 20:14	ON4KBE	JO2ØBI	SSB	TR
01/02/2017 17:11	LA3EQ	JO28XJ	JT65	EME
21/02/2017 20:36	OZ1FF	JO45BO	CW	ACS

3.4GHz

08/02/2017 12:44	G4ALY	IO7ØVL	CW	ACS
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PS I also was issued a 20 squares UKuG award for 10GHz.

.....and finally

The deadline for activity news for the next edition of Scatterpoint is Wednesday 1st April 2017.

Found: Deputy Editor

I'm very grateful to Roger Ray G8CUB for considering the Deputy Editor position when he retires later this year. Also to Robin Gape G8DQX who has offered to help.

Martin Richmond-Hardy G8BHC

17th Microwave Technical Meeting – Bydgoszcz, Poland

April 22-23 www.mikrofalesq24.pl/default.asp?grupa=160446&temat=447910

Location: JO83xc The meeting will be held at the Inn Fojutowo <http://www.zajazd-fojutowo.pl/kontakt>

Saturday 22 April

10:00	Welcome, the start of the meeting.
10:15 – 13:00	papers and an individual; measurement devices;
14:00	Lunch
15:00 - 16:30	papers and an individual; measurement devices;
17:30	Dinner
18:30	meetings and discussions in groups of interest;

Sunday, 23 April

08:00 - 09:00	Breakfast
9:15 - 12:30	measurement devices; meeting in groups of interest; Other topics ...
13:00	End of the meeting;
14:00	Lunch

Tomasz Babut SP5XMU / SN5R, RadioActive 50MHz & above, www.sp5xmu.pl

Websites are only in Polish so many of you will have to rely on Google Translate. Ed.

Events calendar

2017

Apr 8	CJ-2017, Seigy	cj.ref-union.org/
Apr 8–9	Martlesham Microwave Round Table & UKμG AGM	mmrt.homedns.org
Apr 22	RSGB AGM, Cardiff	rsgb.org/agm
April 22-23	17th Microwave Technical Meeting – Bydgoszcz www.mikrofaie.iq24.pl/default.asp?grupa=160446&temat=447910	
May 19 – 21	Hamvention, Dayton	www.hamvention.org/
June 11	RAL @ Chiltern Village Hall OX11 0SH	
July 14 – 16	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 8 – 9	Finningley Roundtable	www.g0ghk.com/
Sept 8 – 10	62.UKW Tagung Weinheim	www.ukw-tagung.de/
Sept 17–21	IARU-R1 Conference, Landshut, Germany	www.iaru2017.org/
Sept 29–30	National Hamfest	www.nationalhamfest.org.uk/
Sept 10	Crawley Roundtable	carc.org.uk
Oct 13 – 15	RSGB Convention, Kents Hill Park Conference Centre, Milton Keynes	rsgb.org/convention/
Oct 14 – 15	Amsat-UK International Space Colloquium, Kents Hill Park Conference Centre, Milton Keynes	https://amsat-uk.org
Oct 8 – 13	European Microwave Week, Nürnberg	www.eumweek.com/
Nov 4 (tbc)	Scottish Round Table	www.gmroundtable.org.uk/
tbc	Microwave Update, San Jose, California	

2018

June 22–24	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
August 17–19	EME2018, Egmond aan Zee,NL	https://www.eme2018.nl
Sept 23–28	European Microwave Week, Madrid	www.eumweek.com/

2019

June 28–30	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Sept 15–20	European Microwave Week, Utrecht	www.eumweek.com/

NB Some of the 2017/18/19 event links may not be working/updated yet.

EME 2018

The website <http://eme2018.nl/> is online. Only very basic info yet. More soon!

And a Facebook page was created: <https://www.facebook.com/EME2018/>

73!

Jan

PA3FXB (team PI9CAM)

team EME 2018