



An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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Pete G1DFL operating on 24 & 47GHz



G8CUB's visit to Iban EA3FRN

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

payukug@microwavers.org

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

Articles for Scatterpoint

News, views and articles for this newsletter are always welcome

Please send them to

editor@microwavers.org

The CLOSING date is the FIRST day of the month

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

Please submit your articles in any of the following formats:

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

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

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

Thank you for your co-operation

Roger G8CUB

Reproducing articles from Scatterpoint

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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

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

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

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Loan Equipment

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

5.7GHz	10GHz	24GHz	47GHz	76GHz
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12 Things you should know about Filters

by Ken, G3YKI

Filter Theory

There are, of course, many textbooks that have been written on the topic of filters. One of the most famous of these books is:

Matthaei, George L.; Jones, E. L.; Young, Leo (1980). Microwave filters, impedance-matching networks, and coupling structures. Dedham, Mass: Artech House Books. ISBN 0-89006-099-1.

This book was originally published in 1964, but is of such standing that it is still often a primary reference cited in recent literature. I have seen such a reference where the author had given it an unofficial subtitle “The Bible”.

It can now be found on line:

Microwave Filters, Impedance-Matching Networks, and Coupling Structures (Artech Microwave Library) | G. Matthaei, E.M.T. Jones, L. Young | download (b-ok.cc)

Microwave Filters, Impedance Matching Networks, And Coupling Structures : G. L. Matthaei, E. N. T. Jones, L. Young : Free Download, Borrow, and Streaming : Internet Archive

For anyone seriously interested in learning more about microwave filters this is worth taking a look at and it covers a wide range of topics. The first couple of chapters are quite readable as an introduction to the subject matter of the book, but the bulk of it is uncompromisingly technical. If you have not got the time or inclination, or are allergic to equations, maybe the following will tell you some of the useful things you would learn by studying the 1000+ pages.

It is not an attempt to explain filter theory but maybe to reveal some of the practically useful facts that will help you when making or using filters. Some of our “Old Hands” will know all this, but among our 600 or so readers there must be quite a few who have never studied the topic.

It was written with microwave bandpass filters in mind but the principles apply just as well to low frequency lumped component filters using coils and capacitors.

12 Things you should know about Filters

1 Synchronous Tuning

It does not matter whether a bandpass filter with multiple resonators is tuned to give a “Butterworth” (Flat) or “Chebyshev” (Equal ripple) passband response, all the resonators are tuned to the same frequency. It is completely wrong to think that the ripples in the response are somehow due to tuning each of the resonators to different frequencies. The only way to change the bandwidth or degree of ripple in the passband is to change the **coupling** between the resonators.

2 Loss in Filters

To a first approximation, filters are lossless, and any incident power that is not transmitted through the filter is reflected back to the source. The response of a filter as usually plotted on a graph and often termed “Through Loss” should perhaps more precisely be called “Transmission Coefficient” as the RF energy is not lost but it is split between the reflected and transmitted parts. The Reflection Coefficient (r) and Transmission Coefficient (t) will be related: $r^2 + t^2 = 1$

Reflection	% Power	Transmission	% Power
-20dB	1	-0.05dB	99
-10dB	10	-0.5dB	90
-3dB	50	-3dB	50
-0.5dB	90	-10dB	10
-0.05dB	99	-20dB	1
Etc.			

Of course, real filters do have some losses, due to the electrical resistance of the metal used or losses in the dielectric. This mainly affects the pass-band of the filter. It has little practical effect on the performance at other frequencies. In fact it is greatest at the edges of the passband, not at the centre and hence has the effect of “rounding the corners” of the passband.

3 Size Matters

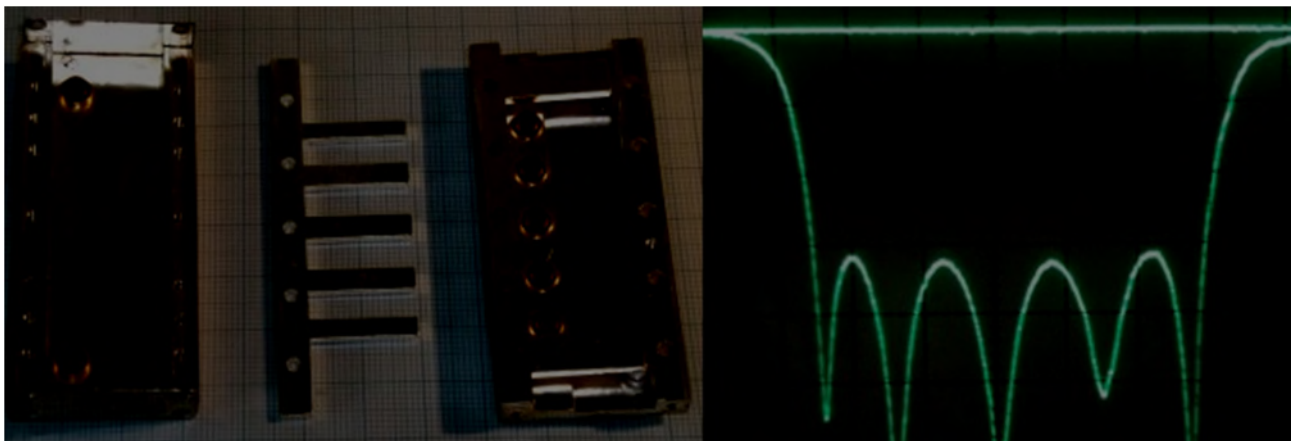
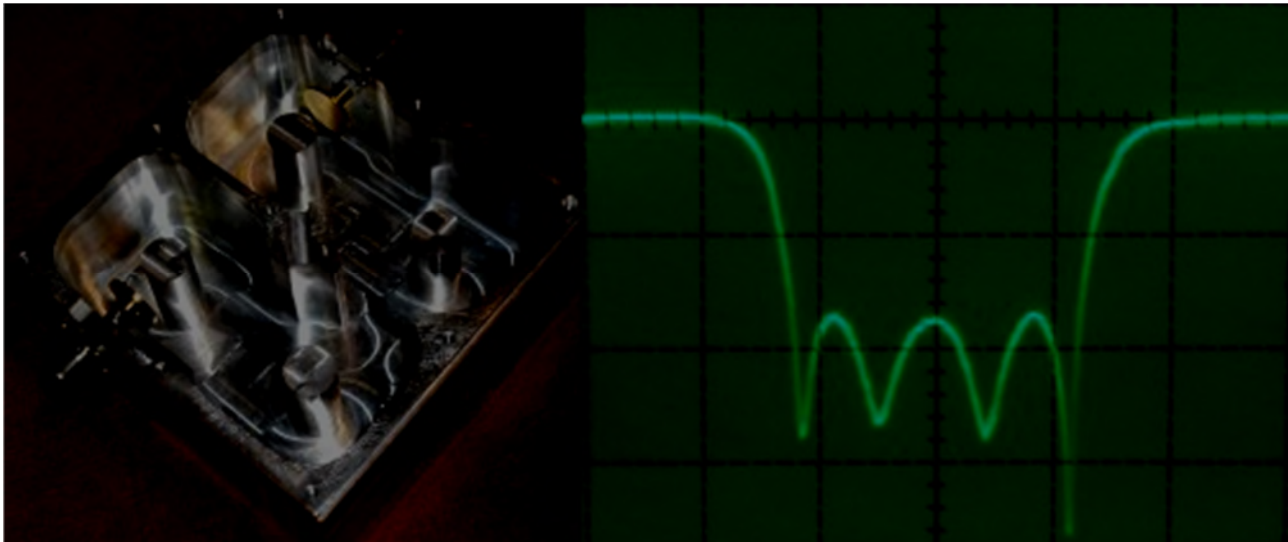
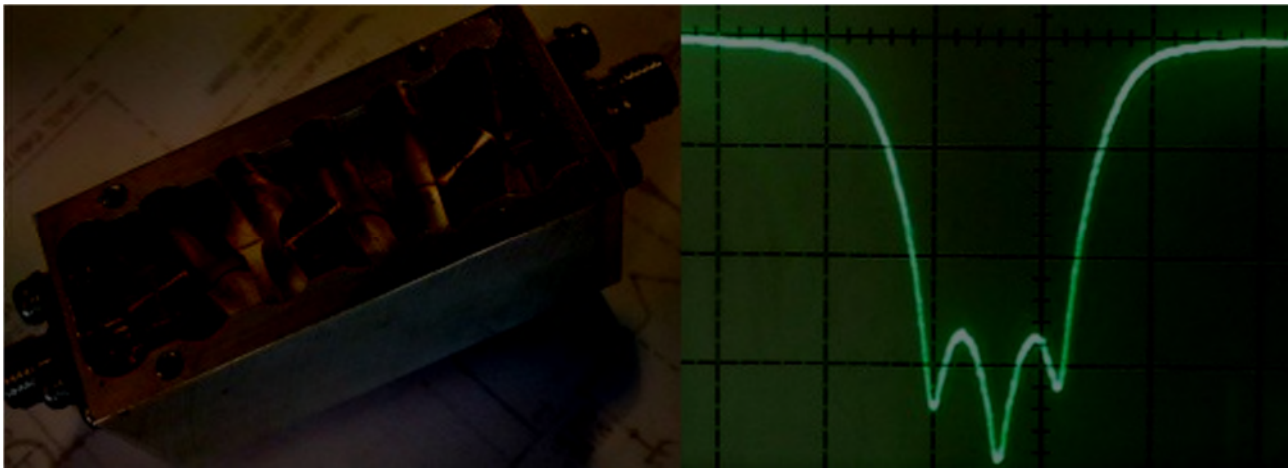
If you want a low loss filter, there is no substitute for size. Obviously, you should use the best materials you can, silver or copper, rather than brass or aluminium. After that, making it bigger is the only option you have. Doubling the diameter of a coaxial resonator will approximately halve the loss. To handle high power you need to consider voltage breakdown as well as the loss and its thermal consequences. The maximum voltage on a coaxial resonator will be many times the filter input voltage. A larger filter will give scope for increasing the voltage rating.

4 Narrow band filters are more lossy

A filter set up for a narrow passband will always be more lossy than a comparable filter set up for a wider passband. Doubling the bandwidth will approximately halve the losses in the resonators. It will also halve the voltage on the resonators. So if you need a low loss filter, aim for a bandwidth that just achieves your out of band rejection requirements. Unfortunately, in the case of protecting an amateur receiver from local signals on adjacent frequencies, it is rarely possible to make an accurate assessment of the rejection required to cover all circumstances. On the other hand, at the output of a power amplifier, it might be known that the second harmonic must be reduced from, say, -20dB to -60dB. The filter requirement can then be precisely defined. An increase in the number of resonators in the filter will give increased rejection of out of band signals for the same pass-bandwidth, but the loss in the pass-band will also be increased, very approximately in proportion to the number of resonators.

5 Return loss pattern

The plot of return loss against frequency for a correctly set up, equal ripple, multi-resonator filter will show a number of dips which corresponds to the number of resonators in the filter. As a result of point 2 above the dips also correspond to the peaks of the ripples in the through response of the filter. Here are some examples. If you get results similar to this you have a filter that is working well.



6 Pafutny Chebyshev 1821-1894 was a Russian mathematician. As you can deduce from those dates, he did not know the first thing about microwave filters. His contribution was that he developed series of equations which describe functions that oscillate between +1 and -1. These equations were incorporated into the design of filters when it was intended that all the ripples in the pass-band or stop-band should be equal in amplitude.

End of Part 1. To be continued.

Standing waves and multipath propagation VHF to Microwaves

Ian Dilworth G3WRT

One crucial property to appreciate in using microwave and millimetre wave detectors with antennas is that three dimensional standing waves seriously complicate measurements. Figure (1) illustrates a 5GHz system and the results from propagating that in a building environment! I know from experience the same happens with reflections off foliage (wet and dry) and basically everything! Including parts of humans. Whole humans resonate around 70MHz, see figures (2,3 and 4), whereas our brains have resonances around 1GHz and parts of our ears much higher as illustrated in figure (5). Putting a mobile phone to one's ear is still a debate that has not been resolved from the biological viewpoint. Heating due to RF power is the only recognised problem at our current state of understanding as of 2021 and as with all human medical knowledge relies on statistics. So, the RF and human interactions experiments we are all participating in continue as we move from 2G to 6G and beyond, currently 5GHz and 18GHz mobile phones/laptops/tablets. The recent (Aug 2021) physiological problems of embassy staff in many parts of the world may illustrate the dangers? As reported in the national press and not for the first time, that microwaves are reported to be used to detect window reflections and hence doppler shift resulting from conversations, in a room, modulating the window by acoustic pressure waves. That's my guess, I do not know.

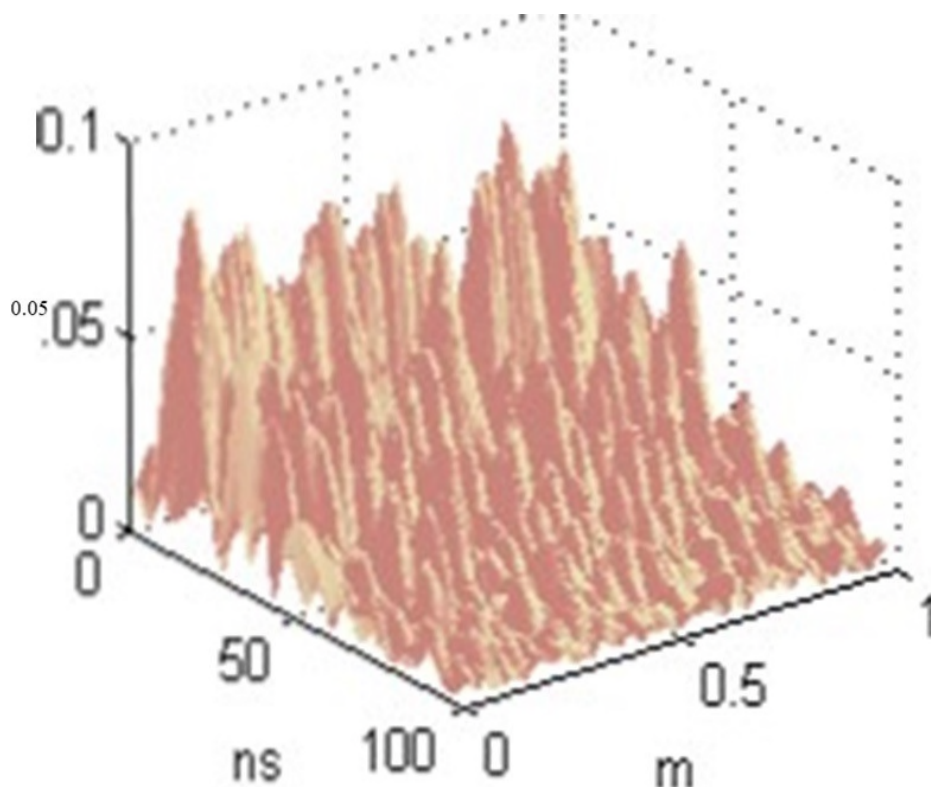


Figure (1)

Measured 5GHz standing waves in a real environment. Sort this one out!

Amplitude, time (dispersion), and distance. Wavelength 6cm and the standing waves are 3cm apart.

At VHF frequencies there are strong human body and RF interactions as illustrated here. These result in standing waves, reflections, and absorption.

Figure (2)

At VHF (184MHz for example), the human body can have a significant effect. Here a person starts walking toward the transmit antenna, which is an electrically small vertically polarised slot antenna used for remote metering from a water -pit. In this measurement the transmit antenna is mounted 1m above ground. The person walks toward this antenna from several metres away, the receive antenna is more than 30m distant (well into the far-field region) and it is mounted at 3m height agl. On the left graph more than 11dB attenuation can be seen to result from interposing an adult directly between the Tx and Rx antennas but only when close to the transmit antenna. The distance shown is about 20m and the interaction starts to be significant at about 3m distance. The normal level for direct propagation appears at the 11dB line. Above about 5m distance interaction results in <2dB loss.

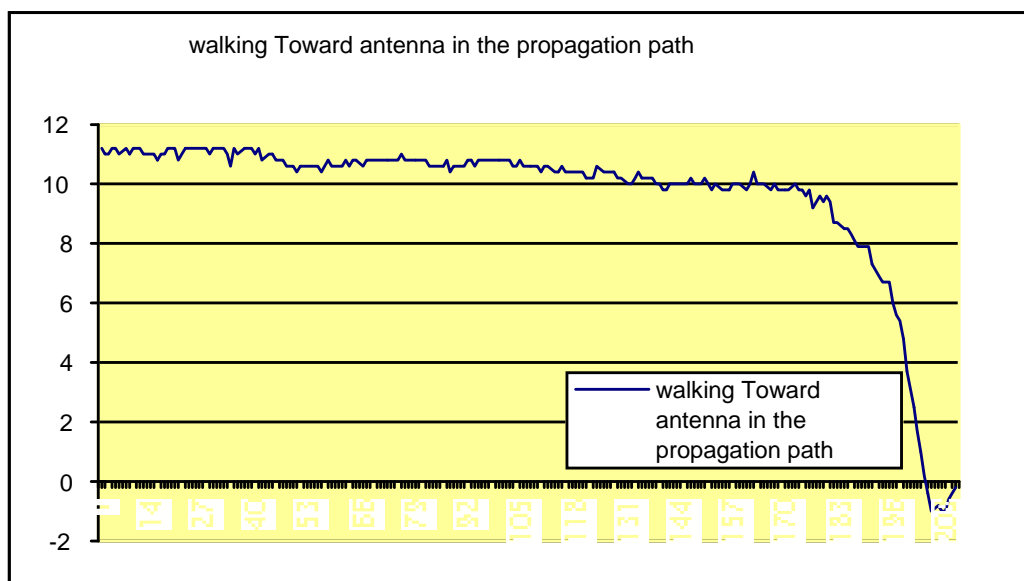


Figure (3)

At 184MHz an adult person walks toward and then away from the transmit antenna (described in slide 1). Standing behind the antenna i.e., not in the direct TX-RX path. Total distance toward and away from the antenna was 10m. The peak variation in received signal is about +3dB and -3dB with respect to the received level without any human body interaction (9dB). NB the human body acts as a re-radiator (and absorber) at 184MHz and, as can be seen, it can act as a good reflector at certain distances from the driven antenna, resulting in an increase of the signal amplitude at the receiver. Conversely up to 3dB loss can be induced by the same mechanism.

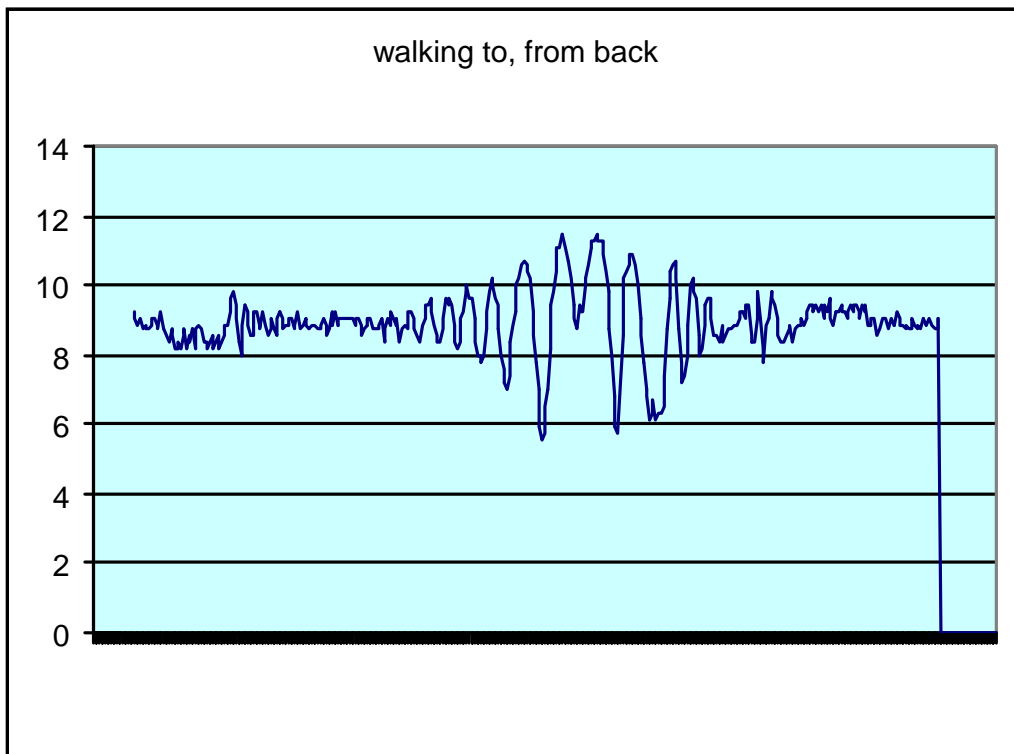


Figure (4)

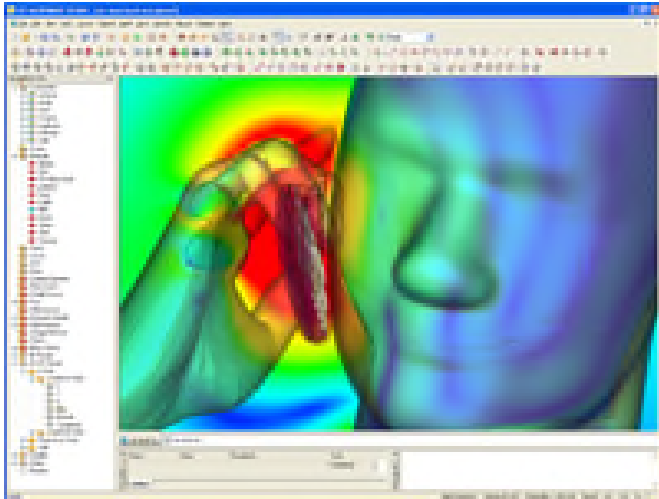
An adult walking from the side of the vertically polarised transmit antenna, relative to the direct Tx-Rx path, again the transmit antenna is 1m above ground level. The resulting interaction takes place over about 10m. The human body is acting as a re-radiator producing two propagation paths to the receive antenna which is 30m away. The radiation from the antenna and the interacting body adds vectorially at the receive antenna and hence the two components can result in a level above and below 'normal propagation'. The latter results in a level of approximately 9dB on this dB scale.



Figure (5)

Human brain resonances 3D modelled (due to standing waves from reflections within the brain) at 900MHz. Of course, things get more complicated at higher frequencies and individual resonances in the inner ear are particularly of concern because of the danger of developing tinnitus. This is my speculation and I have no data to back that up! It just seems

obvious to me that the small (micro) blood vessels there are susceptible to RF heating. Remembering that resonances can increase the field by at least 6dB.



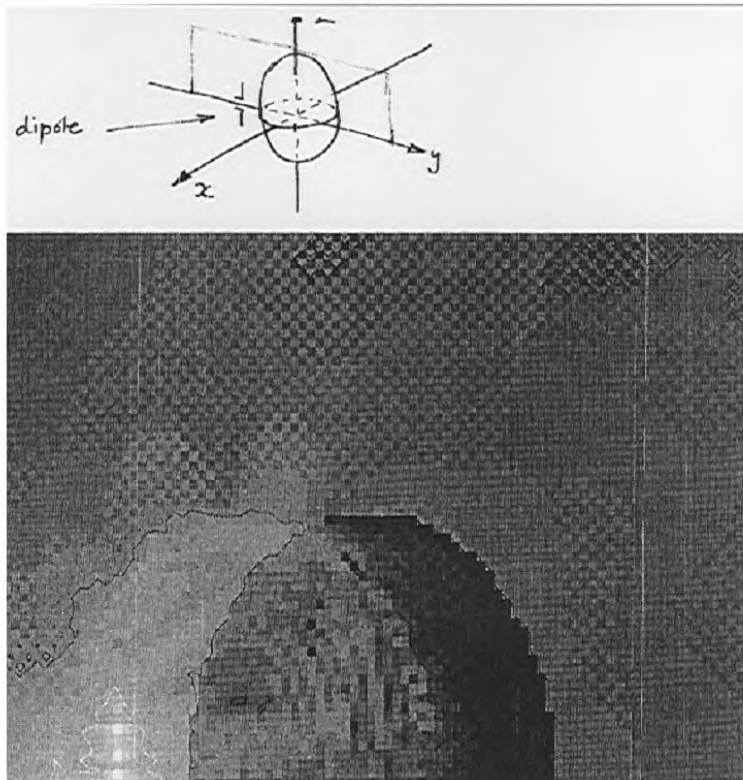
The standing waves are indicated deep in the 3D modelled brain, quite a way from the mobile phone on the left.

Method requires extensive computing power

Each node, with stubs, generates an 18×18 matrix of terms.

The values of these terms are related to the permittivity and permeability of the surrounding medium.

Results



Multipath propagation

We tend to ignore multipath propagation in VHF and upward communications because our antennas are fixed. However, they always are subject to multiple signal paths which interfere

constructively and destructively in a 3D space with peaks and troughs of halfwave length dimensions as indicated in figure (1). It suggests using antennas that encompass this 3D space, for example slot antennas, stacked dipoles Figure (7) and reflector backed fractal antennas as illustrated in figure (6) broadband and occupying 2D space although there is the possibility of 3D (Banggood 6 quid). Plus, my standing wave defeater antenna for my lowly shack TV reception using adhesive copper tape.

Figure (6) Fractal printed broadband antenna without reflector. Banggood supplied.

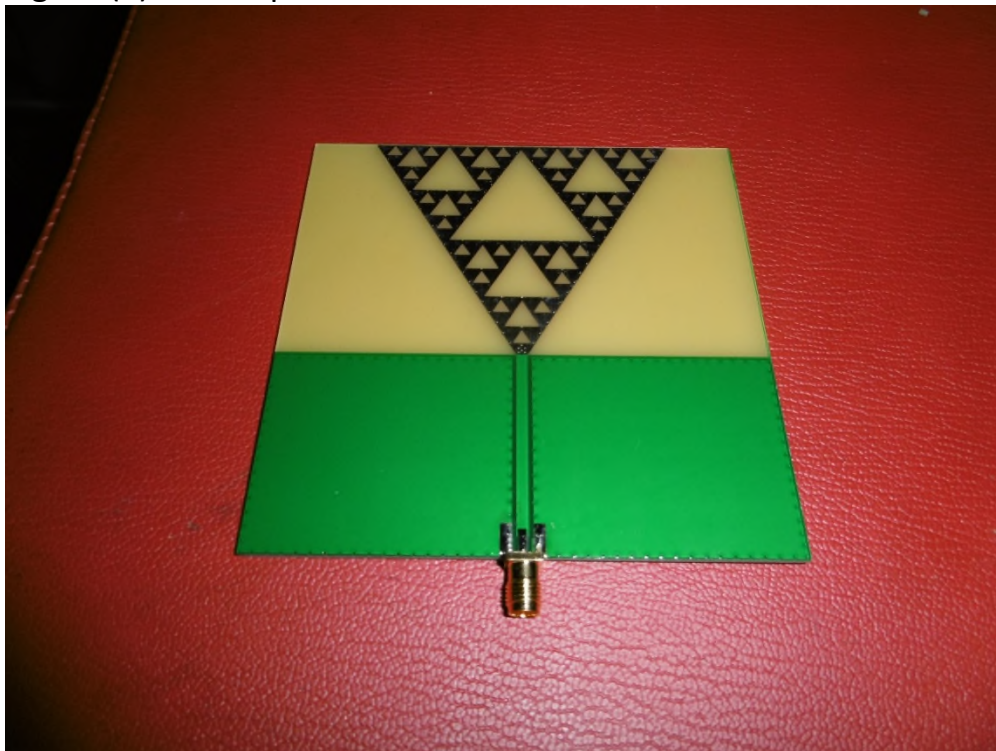
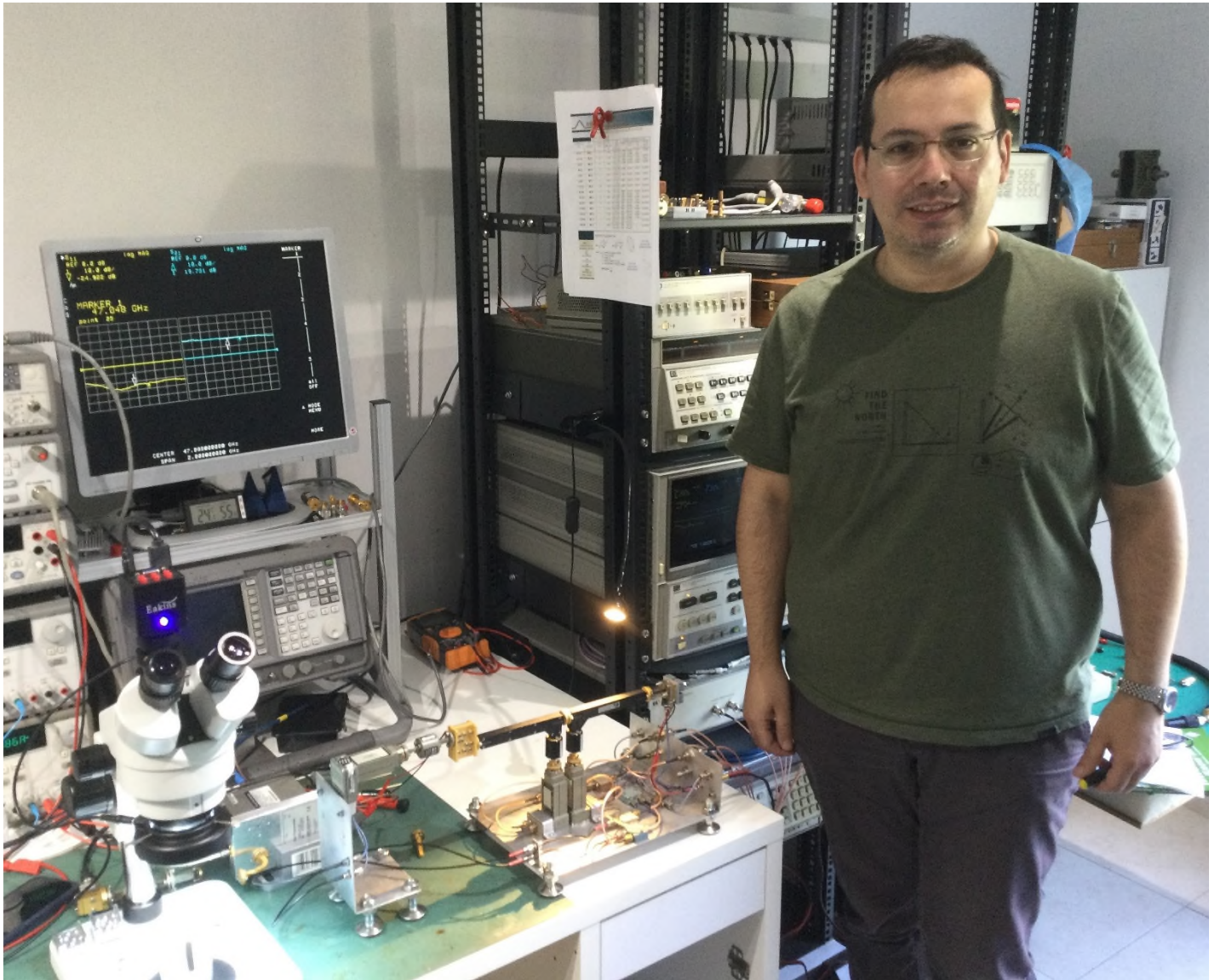


Figure (7) adhesive tape stacked dipoles without reflector for TV reception and mitigating standing waves (a bit!) in my shack.

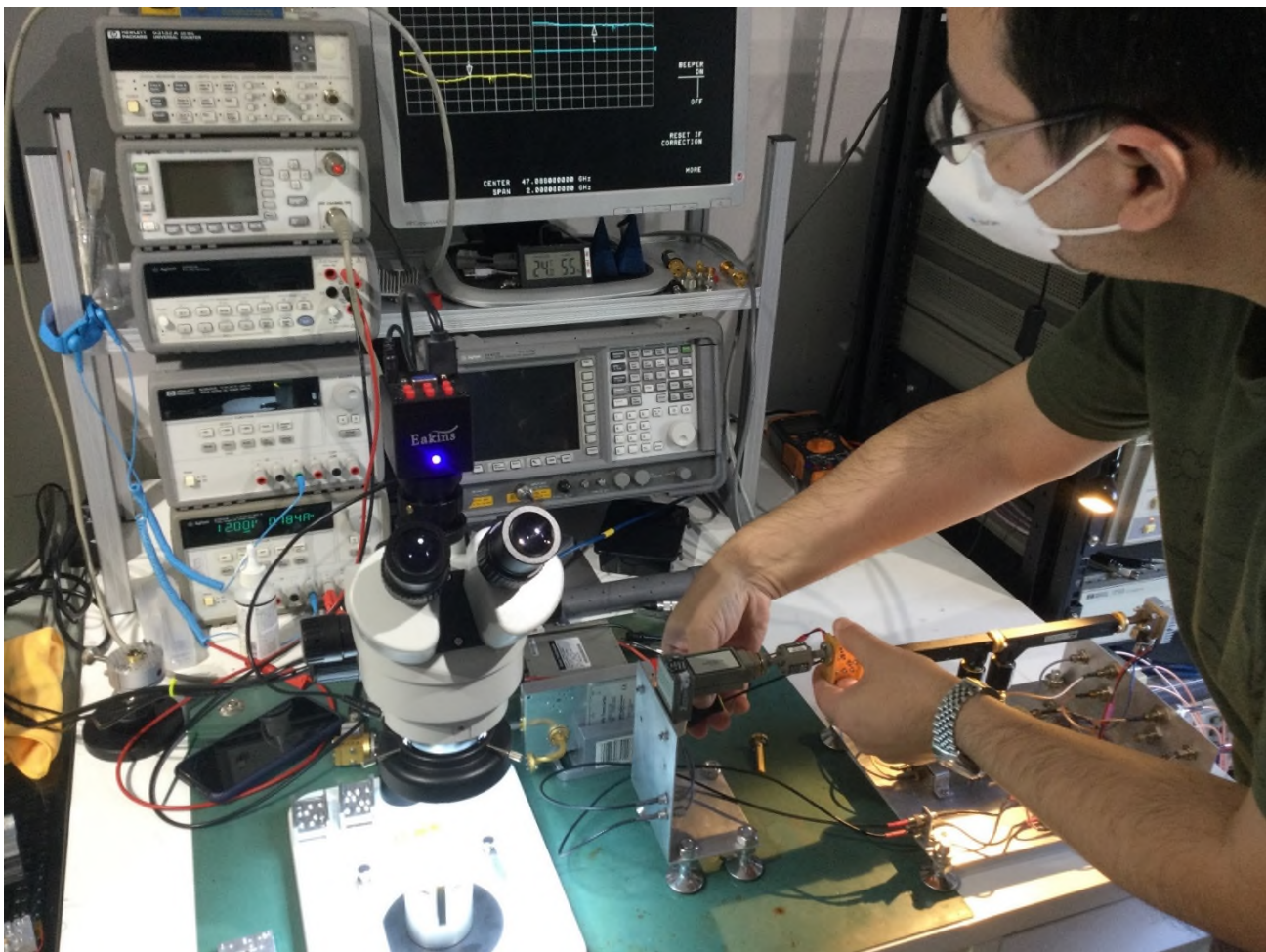


All material copyright I.J.Dilworth , 2021, except figure (1) which is copyright elsewhere but with permission to publish here.

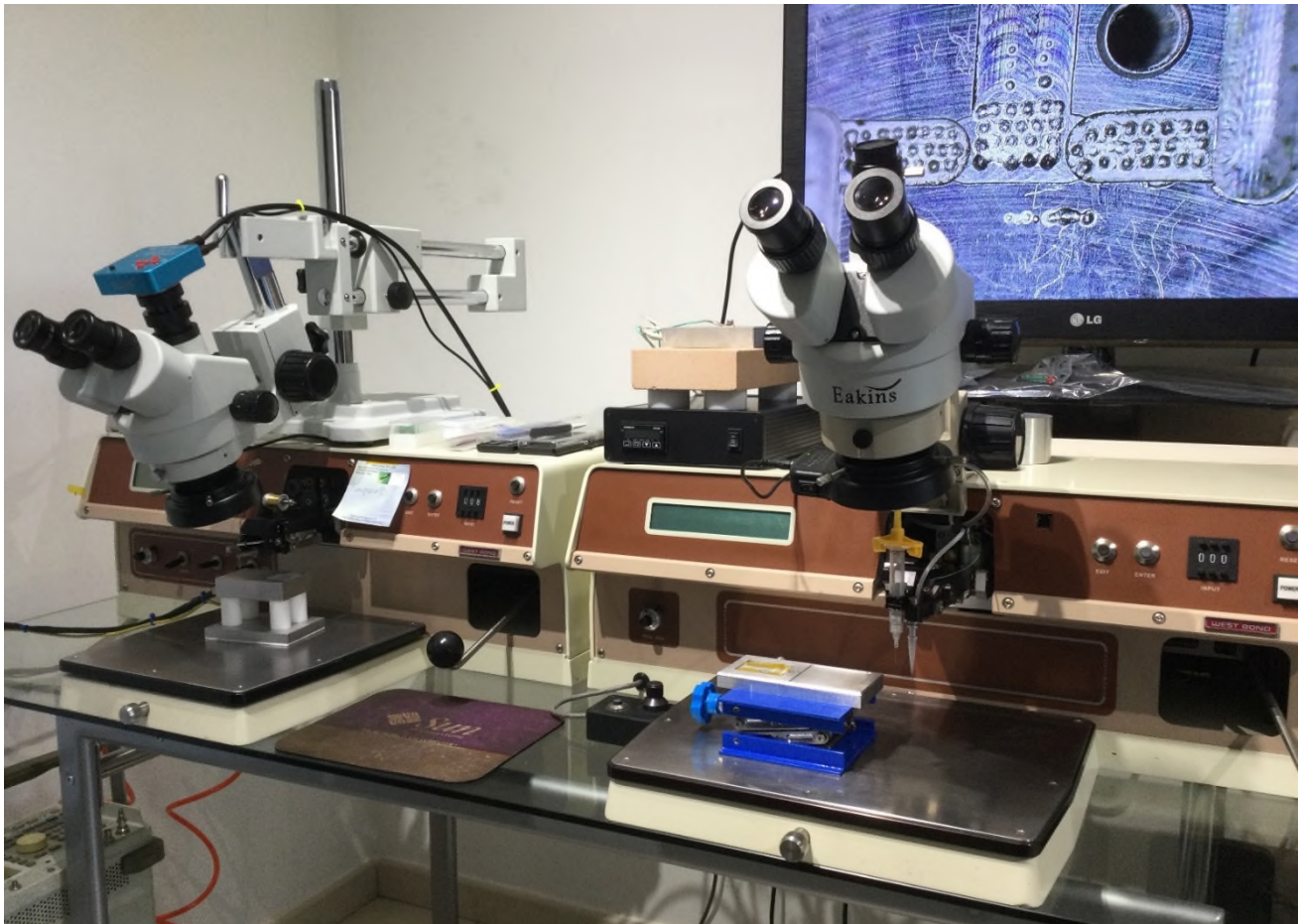


While staying in Spain, I found that Iban's qth was only a 40 minute drive away. As we had already been in contact, regarding the 47GHz LNAs that he is making. I decided to drive over and have a look at his setup. Wow, what a setup!

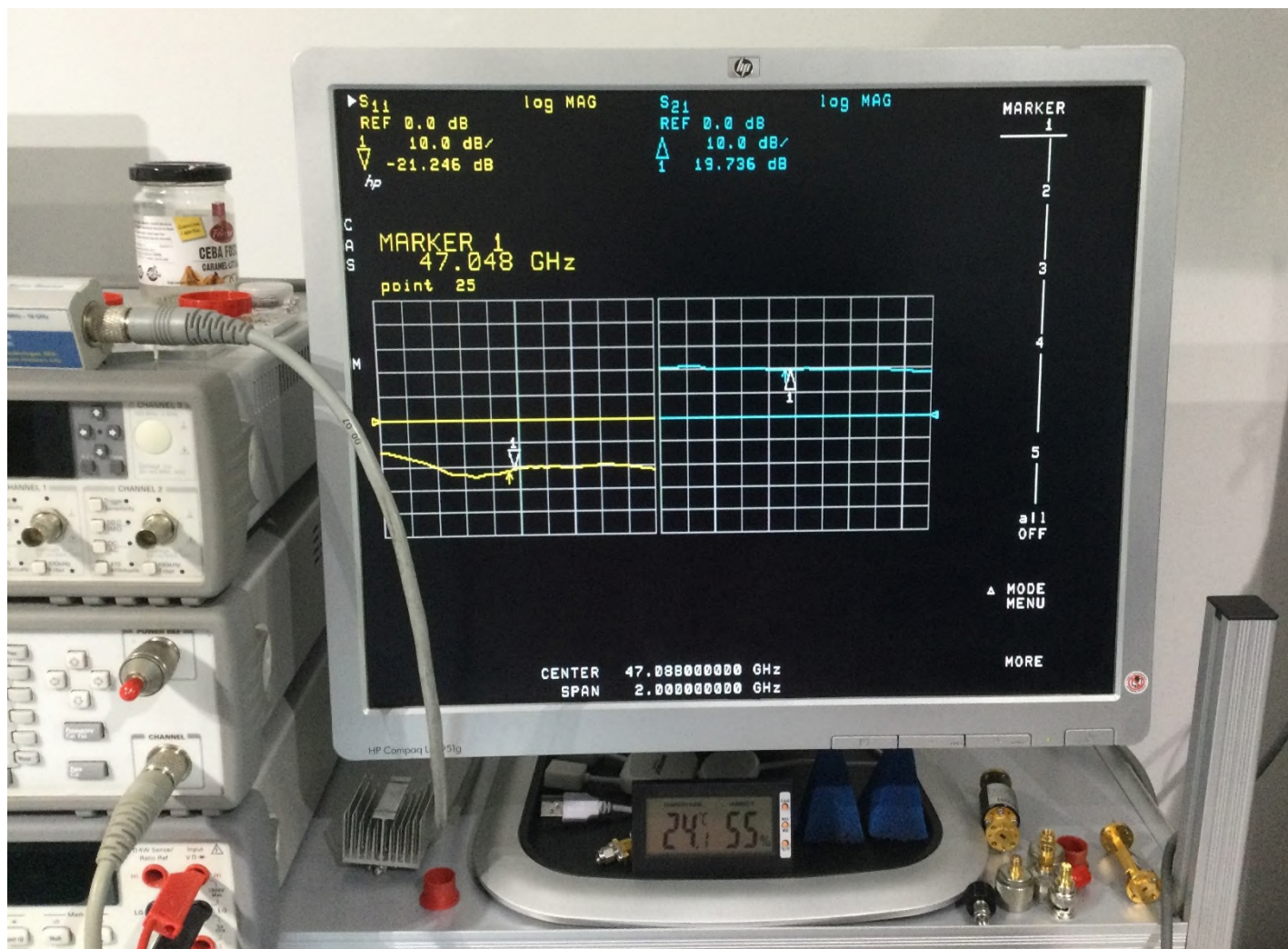
Iban is working on a very high performance LNA for 47GHz. The die is a CGY2260UH-C1 from OMMIC. Published data suggests 20dB gain and 2.2dB NF as being possible at 47GHz. Early results suggest performance very close to those figures. The project is a joint venture between Iban EA3FRN, Jose EA3HMJ, and Luis EA5DOM. Also with collaboration from Pascual EA5JF.



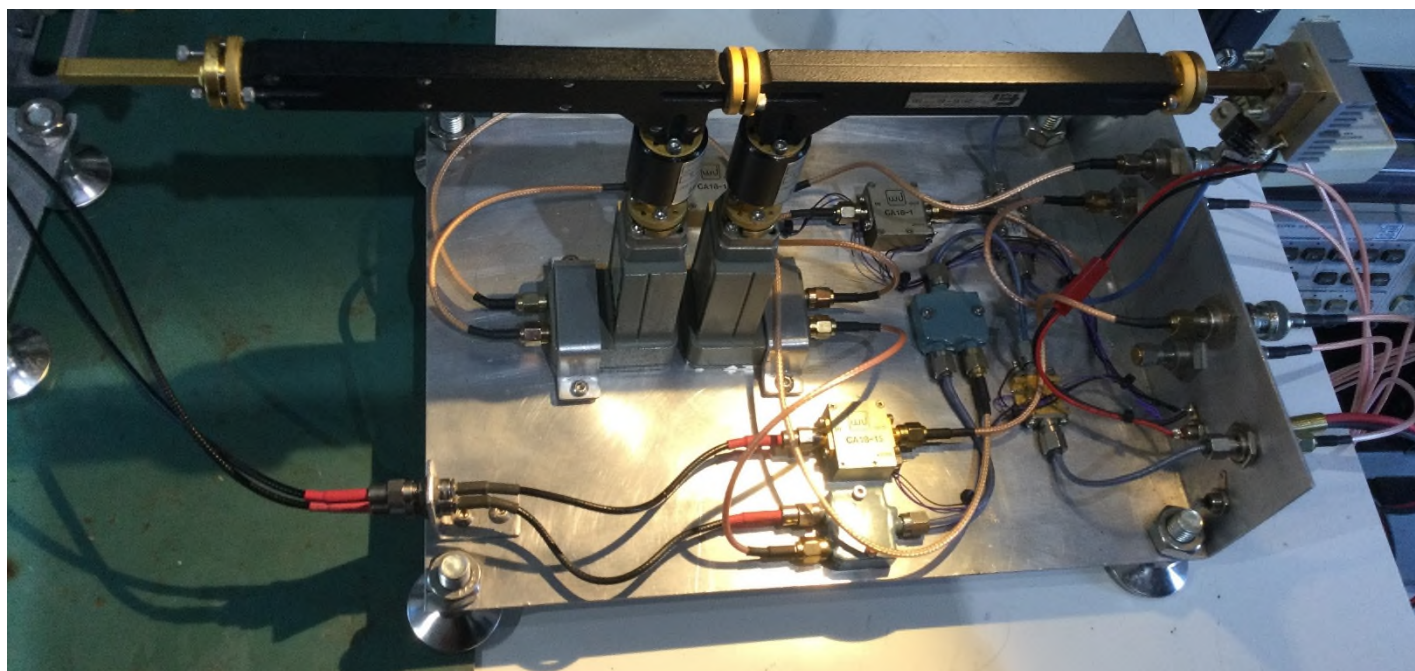
Making adjustments to the LNA.



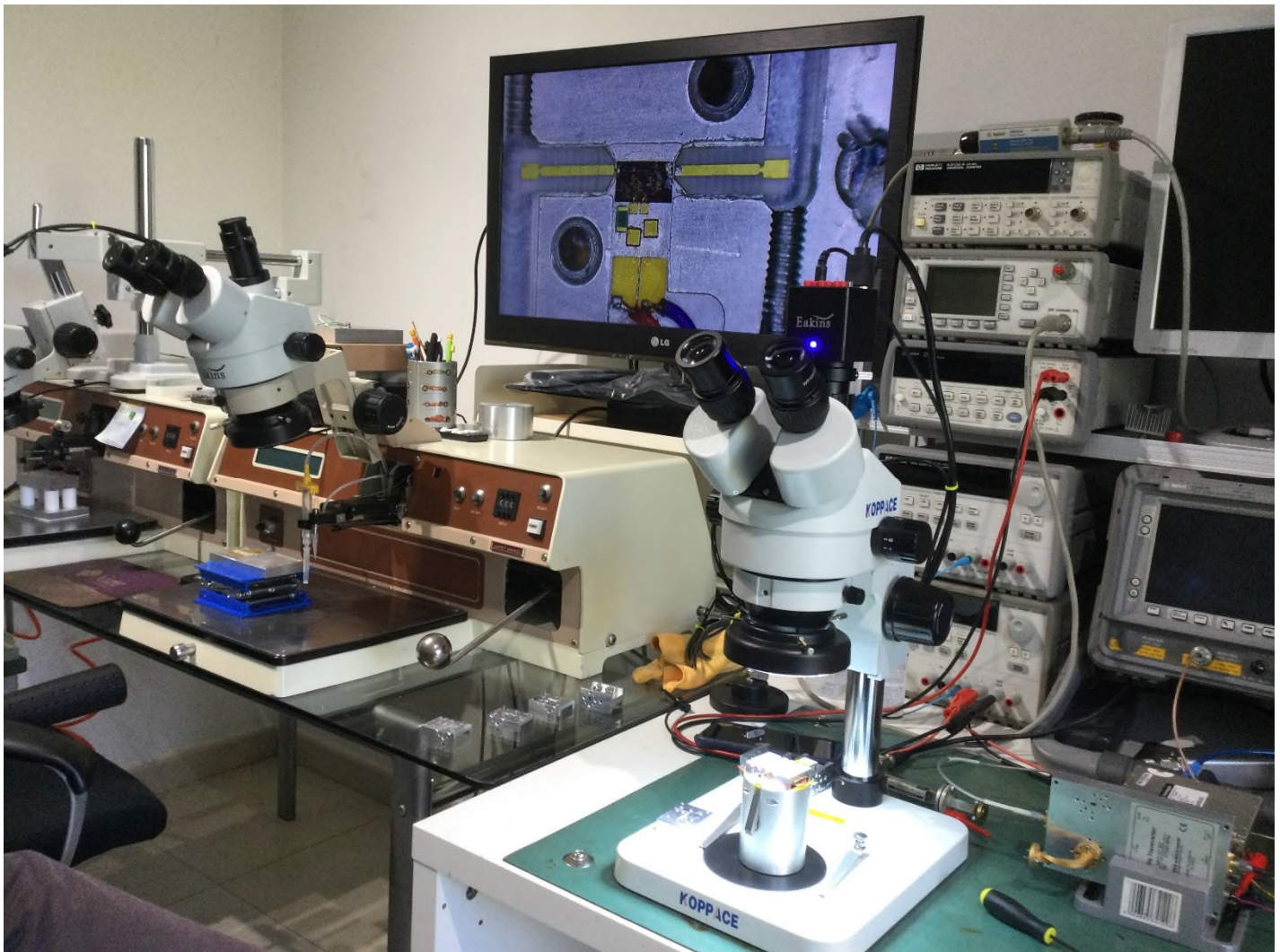
West bond wedge bonder, and glue / place equipment.



Very good input return loss on the 47GHz LNA.



Full network analysis capability using WR-15 couplers, this allows operation at 47 & 76GHz. Interestingly WR-28 mixers can be used, as a good match is ensured by the use of WR-15 isolators.



A serious binocular microscope is essential in millimetre work. Note the DB6NT transverter on the bench. Nice to see a proper noise figure analyser.

See link below for their record 47GHz QSO a few years ago. They hope to test 76GHz in March 2022, over the same distance.

<https://microwavers.es/index.php/28-245km-valle-del-ebro-47ghz-record-ea>

Chairman Position

Neil G4LDR has had to step down from the UkuG Chairman position, for personal reasons. The committee would like to thank Neil for his service and excellent work during his time as Chairman. The committee are now looking to appoint an interim chairman through to the next AGM.

The UK Microwave Group is looking for a member who is willing to take on the role of Chairman.

Scatterpoint activity report

Activity News: October 2021



By John G4BAO

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

From Jim GM3UAG

The extended high pressure at the end of August produced only one notable event - on the 29th August GB3NGI was coming in at 559 as opposed to being usually just audible.

Late in the afternoon of the 8th September things suddenly came alive with GB3MHZ on 23 at 579, PI7ALK and PI7QHN both at 529 and on 9cm GB3MHZ, PI7ALK and PI7RTD all about 549. Nothing heard on 13cm.

Then at 1510Z on 23cm I was delighted to hear PA3AKP calling CQ on CW. Once we'd made contact and got the beams sorted out we enjoyed a 59+ SSB contact.

Things quietened down in the early evening then about 2200Z GB3MHZ and ON0VHF were logged on 23cm at about 539 and GB3ANT and ON0VHF on 13cm were coming in also about 539.

The morning of the 9th September produced a weak signal on 23cm from PI7ALK but things faded out quite quickly.

From Phil G0JBA

I worked Steve G4HTZ on 5th August on 24GHz on a 42km obstructed path. We exchanged 59+ on SSB. Both fixed stations. I was Steve's first 24GHz QSO and he later worked G4BAO later that day via Q65 digimode.

My second 24GHz QSO of the year was with John G3XDY 12/09/21 we tried on CW in the morning of the 24GHz contest and I could tell a signal was there but too weak (1030hrs). We arranged a follow up attempt later that afternoon, we tried again at approx. 1455hrs with 53 each way on SSB. A 91km path with about 40km of it over the sea.

During the 12/09 contest I also tried with Barry G4SJH/P on 24GHz but nothing heard, so I'm planning some 24GHz portable operation. Pete G1DFL has been very helpful with information re portable operation and potential sites., and I have cobbled together a portable 24GHz system and will attempt portable operation on Sunday 3rd October from Walton on The Naze during the UHF Contest weekend (callsign either mine or M1CRO/P depending on circumstances).

I further plan to be out on Sunday 17th October (during the last 24GHz MG Contest) from a site 8km West of Folkestone, Kent. All dependant on weather. The objective is to work the stations around Walbury Hill - distance of 177km.

The portable station is the same as my home set up - 40cm off set Dish and 1.8W at feed.

A final note on my 10GHz set up. I have not been on the band for some time due to various reasons, but my system needed to be rebuilt due to water ingress. That is coming along now and should be QRV again on 10GHz in the next month or so.

From Pete G1DFL

It was great to take the millimetre wave kit out again for a play in September's third 24/47/76GHz contest. Roving westwards, I visited Bisham Hill (near Maidenhead), Britwell Hill (near Henley) and Applepie Hill (near Compton). A total of 9 QSO's on 24GHz were completed. Enjoyable local contacts in the range 24km to 77km were logged with Dave G1EHF/P, Barry G4SJH/P, Roger G8CUB/P, Noel G8GTZ/P and Dave G4FRE/P. All sites are hill-side farm gates with clear views albeit in restricted directions. Sadly, at the first site there was significant industrial fly tipping. I've made the local council aware of the problem.

In terms of talkback there seemed to be very little KST activity, nothing on Zello and surprisingly little on 144.390MHz SSB. Most QSO's were organised using 433.450MHz FM or by mobile phone. I always try and accommodate several options!

On 47GHz a record 3 contacts were made. I was pleased to extend my ODX to 77km with Dave G4FRE/P. This was over a super clear path from Britwell Hill to Cleeve Hill near Cheltenham.

Big thanks to Roger G8CUB and Mike G0MJW for the loan of their 47GHz and 24GHz kit. I am most grateful to continue experimenting and learning. Looking forward to the final session in October.



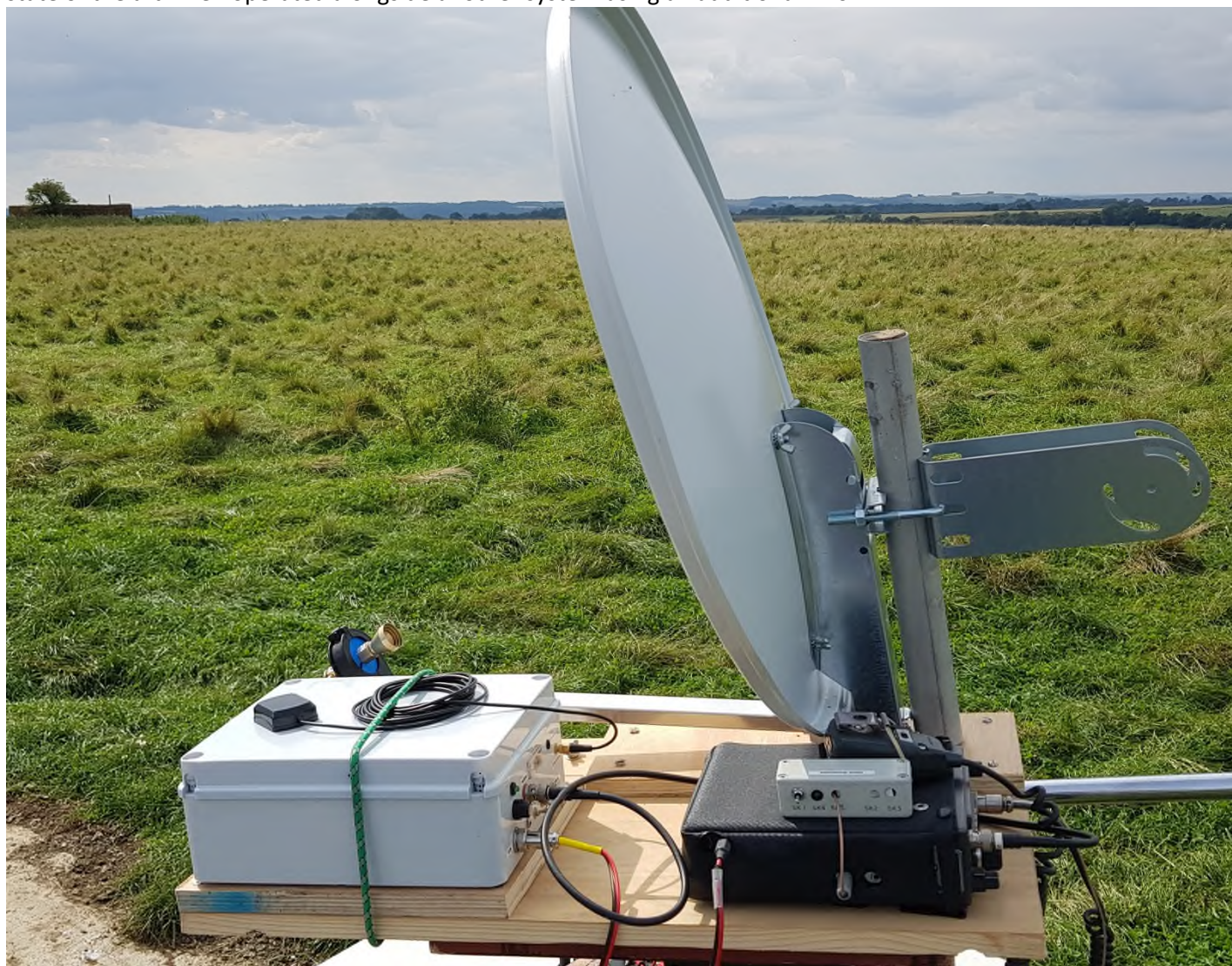
47GHz and 24GHz looking west from Britwell Hill towards Cleeve Hill

From John G4BAO

Here on the Fen Edge, my August - September log seems to be full of 144MHz contacts (mainly FT8 with some CW) including working EA8JK at 3000km on FT8 on the 18th of August for my best ever DX on that band. I did manage one 1.3GHz CW contact of note, with LA3EQ (JO18XJ) at 771km during the North Sea tropo on the 1st of September. While I'm just too far inland to really benefit from the coastal effect like my friends in East Suffolk and Norfolk do, we managed to exchange 529 on CW after an initial QSO using FT8. At the same time 144MHz signals up both North Sea coasts were hugely enhanced.

From Barry G4SJH

Walbury Hill (IO91GI44) was busy again during the last millimetre wave activity session on the 12th September. I was activating 24GHz with the new loan kit, using its dedicated 60cm offset dish antenna. In addition, Dave G1EHF and Noel G8GTZ both had 24GHz systems as well as higher bands at 47GHz and 76GHz. The loan kit with the new antenna seemed to work well with 11 QSO's completed (no CW needed!) and managing to get out of IO91 square into IO81, working GW3TKH/P and G4HQX/P at 121km. Propagation wasn't anything special with nothing heard from G3ZME/P or G4ODA. I also failed to make it with G8GKQ/P located on the Purbeck Hills (IO80WP) despite this path working on a previous occasion. Looking at the path profile I suspect finger trouble. Nice to work G4FRE/P for the first time on 24GHz in IO81XW without difficulty at 74km. It was interesting to compare the new DB6NT based system with the other 24GHz stations and it was clear that the 2W power level is helpful but it was also clear that the sensitivity is not state of the art when operated alongside another system using an additional DB6NT LNA.



The new UKuG 24GHz loan system in use at Walbury Hill

From Dave G6HEF

Update on EME progress at G6HEF. Mostly it can all be found at g6hef.com.

I'm building a homebrew 3m dish for 23cm EME. I'm really not sure at this point if it wouldn't have been easier and cheaper to buy an RF Ham Design one, although the lead times were getting to be a problem and I wanted to crack on. Anyway, that's all due to be mounted on the mast I bought from Aerial-Parts Colchester along with a BigRas Az/El rotator. As it happens having researched dishes for a long time I feel there is a lack of practical designs in any literature. Perhaps a proper article is needed from someone at some point? I need to fix the G4DDK preamp, although I have a Khune LNA if need be, but I think if setup right the DDK will be better. I also need to build a circular feed and associated hybrid phasing stuff and need to sort out feed switching. I have also got a working W6PQL 600w RF deck but it needs to be put in a box, PSU properly sorted, metering, sequencing etc.... Hopefully I'll be easily able to hear my own echos and perhaps even be good enough to work stations slightly less well equipped than me. I might explore 13cm after that.

From Neil G4DBN

Due to "circumstances" (condolences from everyone at Scatterpoint Neil,) your scribe has been ploughing through Neil's Twitter feed @g4dbn to get his usual input as it always contains something fascinating!

Seems like he's been doing the usual "Heavy Metal" machining thing and making stuff for dishes and the like, plus dreaming about owning a MASER! Does this man's urge for QRO know no bounds?

Neil posted some nice stuff about 10GHz aircraft scatter. Particularly flight KC135R over the middle of the North Sea reflecting the 10.368920 GHz beacon from PI7ALK near Alkmaar, Netherlands JO22IP to his QTH at IO93NR. At 394 km it was loud enough to copy the CWID and produce a nice decode of the PI4 data transmission! Quite rare for 10GHz and follow up comment summed up his surprise.

"Ninety flippin' seconds of aircraft scatter on 10 GHz! Truly you are spoiling us, Mister Ambassador. I thought it was a duct until I checked Airscout. KC135R is a big not-very-stealthy lump, and I'm just waiting to see if it lines up with other PA/ON/DL beacons now"

His regular sked with G4UVZ on the 14th of September was added to with 10GHz contacts with GW4MBS at 291km in IO70 via rain scatter. He also copied 10GHz beacons GB3SCX, KBQ, LEX, GCT, FNY, CAM, P, KT and OSW and the following day a pleasant surprise at afternoon coffee break, with a quick contact on 10GHz with Colin G4EML out portable in IO91 almost 300km away through the rain.

Sudden tropospheric duct appeared between me and the south-west of England on 10 GHz. GB3KBQ at 340 km was S9+, GB3SCX made an appearance, and then, just above the noise, GB3MCB in IO70OJ, Cornwall, 460km, heard for the first time since Sept 2019 duct. Lasted 1hr.

Scatterpoint Activity October 2021

From Phil G0JBA

I operated 24GHz from Herne Bay, Kent during the October 24/76GHz UKuG event. As expected, the GB3PKT beacon near Clacton on 24048.945MHz was "end stop" over the sea path across the Thames Estuary. I managed one QSO with G3XDY but failed with G4BAO and G4SJH/P. On the Same day I moved to Common, Kent where I tried with G1DFL/P and G4SJH/P, but 170km was too far with no conditions



G0JBA/P operating from Herne Bay

From John G0API

I decided to update my small portable 10GHz RX system so have installed it into an old plastic blowlamp box. Within this lightweight enclosure I put my Explorer synth based signal generator to output 0dBm of 25MHz as the external LO ref. for a Gold Star LNB. An inline DC Tee module is inserted in the RX through line at 618MHz. DC (10V) is supplied to the LNB via the T from a pair of 1200mAH LiPo Poundland power banks. (These were £1 each!) Constant on life is about 3 Hours. The sig gen is LiPo powered internally, so all DC is within the case and can be recharged from Vehicle sockets. The 618MHz i.f. signal is taken via an external inline 20dB pad and an internal 10dB pad, so plenty of gain to play with and 30dB just allows noise to be detected on the AOR handheld scanner on SSB/CW. I used a "Dorset" clone of Chris G4DGU's dish feed as a low gain antenna to test it and could easily hear GB3SCX scattering all around.

From Pete G1DFL

For the October 24/76GHz UKuG event 24GHz I went roaming. Starting at a site just before Hackpen carpark, near Swindon. Field gate with fantastic views SW to Walbury Hill 26km.



I then moved on to Lane End layby next to the reservoir, just east of Winchester, I worked G4SJH/P at Coombe.

From John G4BAO

In the true tradition of “flogging a dead horse” I made myself available from home for 24GHz during the October 24/76GHz UKuG event. Again, no QSOs were made, despite attempts with G3XDY, G0JBA/P and G4SJH/P. Sadly defeated by location and trees. I did briefly see a very scatterry CW signal from G3XDY, but as we often sometimes struggle on 10GHz over the 78km path over the “Suffolk Alps” no real surprise. 24GHz is very much a rainscatter band for me now, with just the local GB3CAM beacon on 24048.870 at 28km to listen to.

In the 10GHz UKAC on the 28th of October. While I only operated for an hour, my ODX was 298km with G4KUX IO94BP, and was pleased to have my first QSO since 2009 with Peter G3PHO at his “new” QTH IO93GG at 158km over a very obstructed path. Dave G4ASR was a good signal on at 219km from IO91MX. All QSOs on CW.

On 10 GHz EME I worked one two new EME initials #28 and 29. Jan, PA0PLY in JO32LR, and for a new DXCC, David G4YTL, just up the road (83km) in IO92MB! My first UK station on the band. I was pleased to host David here on the Fen Edge last month when we checked out and calibrated his new 10GHz power meter.

My plans for 24GHz EME seem to have stalled for this year, but I hope to pick it up again after I install my bigger dish this autumn.

From Dave G4GLT

On 24th September 2021 I arrived at my portable spot at IO80DO at 0600z to find that the majority of the southern beacons on 10GHz were 599 including GB3SEE, GB3CAM and GB3LEX. The Hepburn chart showed an area of high pressure spread across the northern half of France down to Switzerland. From the western side I was receiving F1ZUQ strongly and from the eastern side ON0VHF was strong too (and ON0EME but weaker).

For well over three hours I was receiving HB9G and HB9BBD beacons at varying strengths up to 579. I do hear these beacons from time to time and I was aware that I might be missing something here. I have never seen an HB station on ON4KST looking for contacts during an opening, though I gather that there was in the past. In July of this year during such an opening when HB9G was very strong I looked very hard on 10368.928 MHz for FIZOD beacon on the side of Mont Blanc and for a few minutes only heard a carrier and some weak identification. I did not put it on beacons spot as there had been no positive ID. This time I was intent on hearing it as the main focus of my activity. Later in the opening after a lull, I was very pleased to hear the HB beacons strengthening again and I did positively identify the FIZOD beacon at 529 at 1027z.

It came through for about 10 to 15 minutes with QSB. I gather that it is located up at 1600m. It would seem that the Alps must be an impenetrable barrier for 10ghz signals but with the possibility of tropo plus rainscatter I am ever an optimist!

From Barry G4SJH

I went out portable from Combe Gibbet and met with G1EHF for the October 24/76GHz UKuG event. Despite what seemed a busy day, not so many stations out but great to work G3ZME at over 140km on 24GHz.

From Julian G3YGF

Activity during the 1st ARRL EME contest 23/24th October.

This was the first time G4RFR entered the ARRL contest. There was a visible moon for the majority of the time.

We had 200W to the 3.4m dish with 0.6 degree beamwidth, 13.5dB sun noise, Octagon LNB with 1.3dB moon noise, 3dB ground noise.

After the loud whine of the 400Hz blower in the TWT psu, the new 50Hz one was barely audible - a great improvement.

On 10GHz, we worked 16 stations on Q65D and one on CW.

UA5Y, IW2FZR, PA0PLY, OZ1LPR, SP6JLW (CW), DL4DTU, DL6ABC, W3SZ, F6BKB, DL7YC, UR5LX, W6YX, WA3RGQ, IK0HWJ, OK2AQ, G4YTL, F2CT (Partial) and OH1LRY. Many of the reports on our signal were around -3 or -4, F6BKB gave us strength 0!

Frequencies got a bit confused later on, probably because the sole operator G3YGF was getting tired, having been up for 24h, but it was an enjoyable event. It was a pity it was not given more publicity - the emphasis was on the lower bands, but 10GHz was quite popular.

G3YGF obo G4RFR





Contests

August 5.7GHz Contest 2021

Dave G1EHF/P takes the honours this time out, pushing G6ZME/P into the runner-up spot. Best DX was Dave's QSO with F8DLS at 430km.

There is still all to fight for in the overall Championship, with G1EHF/P and G6ZME/P vying for top spot. The last session is on Sunday September 26th.

73

John G3XDY

UKuG Contest Manager

5.7GHz Contest August 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G1EHF/P	IO91GI	12	1426	F8DLS	430
2	G6ZME/P	IO82QL	10	1381	G3XDY	265
3	M0GHZ	IO81VK	10	1209	G3XDY	246
4	G1PPA/P	IO93RI	5	853	M0GHZ	242
5	GW4HQX/P	IO81LS	6	802	G3XDY	294
6	G4BRK	IO91HP	7	655	G4ODA	152
7	G1DFL/P	IO91OQ	4	357	G6ZME/P	154
8	M0EYT/P	IO80WP	5	349	G4BRK	123

August 10GHz Contest 2021

John G4ZTR won this session in the Open section, ending up well ahead of runner up David M0GHZ. Leading portable station was G3ZME/P. G3ZME/P recorded the best DX with F6DKW at 535km. In the Restricted section Barry G4SJH/P was the winner by a substantial margin, with Pete G1DFL/P as runner up. Entrants felt that propagation was poor to average for this event, with no rain scatter or tropo enhancement.

John G4ZTR has an unassailable lead in the Open section of the Championship after three wins from four sessions, and in the Restricted Section Barry G4SJH/P has sewn it up with a clean sweep of four victories.

73

John G3XDY

UKuG Contest Manager

10GHz Contest August 2021

Open Section

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G4ZTR	JO01KW	28	5971	G0HIK/P	371
2	M0GHZ	IO81VK	19	3520	F6DKW	433
3	G3ZME/P	IO82QL	21	3226	F6DKW	535
4	G4KUX	IO94BP	10	2547	G4UVZ	417
5	GW3TKH/P	IO81LS	13	2463	F6DKW	501
6	G0HIK/P	IO84JE	8	1915	G4ZTR	371
7	G1PPA/P	IO93RI	12	1682	M0GHZ	242
8	GW0MDQ/P	IO82KW	9	1636	G4ZTR	294
9	M0EYT/P	IO80WP	8	1156	G4ODA	274
10	G4MBS/P	IO92IH	8	1135	G4KUX	263

11	G4RQI	IO93IR	8	865	G4ZTR	247
12	G4BXD	IO82UJ	6	696	G4ZTR	222
13	G0WZV	JO01KV	5	418	G3ZME/P	248
14	G3YJR	IO93FJ	3	226	G4ODA	118

Restricted Section

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G4SJH/P	IO91GI	15	1849	G8DMU/P	303
2	G1DFL/P	IO91OQ	7	600	GW3TKH/P	156
3	G4TNX/P	IO93UK	4	358	G3ZME/P	190
4	M0CWX	IO82XK	1	40	G3ZME/P	40

September 5.7GHz Contest 2021

The top three stations had a close battle, with Paul M0EYT/P moving up to take the top slot this time. The Telford & District ARS, G6ZME/P, were runners-up. Best DX was the QSO between M0GHZ and F6APE at 467km.

73

John G3XDY

UKuG Contest Manager

5.7GHz Contest September 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	M0EYT/P	IO80WP	9	1453	F5HRY	391
2	G6ZME/P	IO82QL	10	1373	G3XDY	265
3	M0GHZ	IO81VK	8	1364	F6APE	467
4	G4BRK	IO91HP	6	595	G4ODA	152
5	G8AIM	IO92FH	2	152	G6ZME/P	76

September 10GHz Contest 2021

John G4ZTR was the winner in the Open Section of this final session of the 10GHz Contest. The Telford & District ARS G3ZME/P tried hard to boost their score with two rover stations and achieved the runner up position, but were compensated by working the best DX of the day, a 535km contact with F6DKW.

In the Restricted Section Dave G1EHF/P blew the cobwebs out of his rig to make his first entry of the year on this band and had a substantial lead over runner up David G6KWA/P.

A number of stations from France and Belgium featured in the logs, conditions were generally considered quite good.

73

John G3XDY

UKuG Contest Manager

10GHz Contest September 2021

Open Section

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G4ZTR	JO01KW	24	5141	PA0BAT	383
2	G3ZME/P	IO82QL	33	4910	F6DKW	535
3	M0EYT/P	IO80WP	18	4013	G4KUX	446
4	G4KUX	IO94BP	9	2737	M0EYT/P	446

5	M0GHZ	IO81VK	14	2288	F6DKW	433
6	G0WZV	JO01KV	13	2256	F5HRY	373
7	GW4MBS/P	IO71XW	6	1110	G4ODA	282
8	G4BXD	IO82UJ	9	1065	G4ZTR	222
9	GW0MDQ/P	IO82KW	4	738	G4ZTR	294
10	G8AIM	IO92FH	3	280	G1EHF/P	107

Restricted Section

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G1EHF/P	IO91GI	15	2643	F6DKW	389
2	G6KWA/P	IO92XA	3	418	M0EYT/P	211
3	M0CWX/P	IO82XJ	3	129	M0PNN/P	44
4	GW7MHF/P	IO82KW	1	62	G3ZME/P	62

Highband Championships 2021

5.7GHz

For the first time I can remember we have a tie for first place this year, with both Dave G1EHF/P and the Telford & DARS G6ZME/P on 2913 points. They will share the G3KEQ Memorial Trophy. Dave won two sessions and was runner up in a third, while Telford won one and were runners up in another three.

Entries this year dropped from 16 to 13 stations.

10GHz

Barry G4SJH/P retained his winning position in this contest with wins in all four sessions he entered. Runner up was Pete G1DFL/P who was runner up in the same four sessions. Pete operated as a rover station throughout.

The Open Section also has the same winner as last year, with John G4ZTR in the lead with four session wins and one runner up slot. Telford & DARS G3ZME/P take the runners up position with one session win and two runners up places. The number of entries is slightly down this year, dropping from 24 to 22.

The G3JMB Trophy goes to Barry Lewis G4SJH/P, and the G3RPE Memorial Trophy goes to John Lemay G4ZTR. Congratulations to all those mentioned.

73

John G3XDY

5.7/10GHz Championship Tables

Final positions, best three count to the total

5.7GHz

Pos	Callsign	30/05/2021	27/06/2021	25/07/2021	29/08/2021	26/09/2021	TOTAL
1=	G1EHF/P	633	1000	913	1000	0	2913
1=	G6ZME/P	1000	930	0	968	945	2913
3	M0GHZ	628	886	722	848	939	2673
4	G4BRK	544	474	1000	459	409	2018
5	G4LDR	692	636	673	0	0	2001
6	GW4HQX/P	578	0	538	562	0	1678
7	M0EYT/P	0	0	0	245	1000	1245
8	G7LRQ	688	0	390	0	0	1078
9	G1DFL/P	44	477	0	250	0	771
10	G4CLA	737	0	0	0	0	737
11	G1PPA/P	0	0	0	598	0	598
12	G8AIM	0	0	0	0	105	105
13	G0WUS	64	0	0	0	0	64

10GHz Open

Pos	Callsign	30/05/2021	27/06/2021	25/07/2021	29/08/2021	26/09/2021	TOTAL
1	G4ZTR	801	1000	1000	1000	1000	3000
2	G3ZME/P	1000	764	0	540	955	2719
3	M0GHZ	397	375	733	590	445	1768
4	G4KUX	532	497	0	427	532	1561
5	G4LDR	423	676	374	0	0	1473
6	GW3TKH/P	428	0	424	412	0	1264
7	G(W)4MBS/P	339	338	341	190	216	1018
8	M0EYT/P	0	0	0	194	781	975
9	GW0MDQ/P	0	0	457	274	144	875
10	G4CLA	709	0	0	0	0	709
11	G4BAO	0	162	447	0	0	609
12	G4BXD	184	95	175	117	207	566
13	G4DBN	341	215	0	0	0	556
14	G1PPA/P	264	0	0	282	0	546
15	G0WZV	0	0	0	70	439	509
16	G0HIK/P	147	0	0	321	0	468
17	G0WZV	0	0	426	0	0	426
18	G4RQI	0	0	234	145	0	379
19	G3YJR	0	87	0	38	0	125
20	GM4DIJ/P	16	0	42	0	0	58
21	G8AIM	0	0	0	0	54	54
22	GM0ONN/P	0	0	42	0	0	42

10GHz Restricted

Pos	Callsign	30/05/2021	27/06/2021	25/07/2021	29/08/2021	26/09/2021	TOTAL
1	G4SJH/P	1000	1000	1000	1000	0	3000
2	G1DFL/P	771	242	421	324	0	1516
3	G1EHF/P	0	0	0	0	1000	1000
4	GW4HQX/P	698	0	0	0	0	698
5	G0WUS	301	0	0	0	0	301
6	G4TNX/P	0	0	0	194	0	194
7	G6KWA/P	0	0	0	0	158	158
8	M0CWX(/P)	0	0	0	22	49	71
9	GW7MHF/P	0	0	0	0	23	23

24GHz/47GHz/76GHz Contest September 2021

Activity was good for this event, although concentrated in the western Home Counties and South Wales, with G3ZME/P and G0JBA as more outlying entrants.

Congratulations go to Dave G4FRE/P who won all three bands. Keith GW3TKH/P was runner up on 24GHz and 76GHz, with Roger G8CUB/P the runner up on 47GHz.

John G3XDY

UKuG Contest Manager

24GHz Contest September 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G4FRE/P	IO81XW91	9	670	GW3TKH/P	79
2	GW3TKH/P	IO81KR73	6	633	G4SJH/P	121
3	G4SJH/P	IO91GI44	11	545	GW3TKH/P	121
4	GW4HQX/P	IO81KR73	5	486	G4SJH/P	121
5	G8CUB/P	IO91GI25	10	445	GW3TKH/P	94
6	G1EHF/P	IO91GI44	9	395	GW3TKH/P	121
7	G1DFL/P	IO91ON71	9	394	G4FRE/P	76
8	G8ACE/P	IO91JB00	5	210	G8CUB/P	62
9	G3ZME/P	IO82QL83	2	148	G3VKV	74
10	G0JBA	JO01PG63	1	91	G3XDY	91

47GHz Contest September 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G4FRE/P	IO81XW91	5	378	GW3TKH/P	79
2	G8CUB/P	IO91GI25	6	287	GW4HQX/P	94
3=	GW3TKH/P	IO81KR73	3	244	G8CUB/P	94
3=	GW4HQX/P	IO81KR73	3	244	G8CUB/P	94
5	G1DFL/P	IO91LO78	3	162	G4FRE/P	76
6	G8ACE/P	IO91JB00	3	108	G8CUB/P	39
7	G1EHF/P	IO91GI44	2	26	G1DFL/P	24

76GHz Contest September 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G4FRE/P	IO81XW91	4	298	GW3TKH/P	79
2=	GW3TKH/P	IO81KR73	3	244	G8CUB/P	94
2=	GW4HQX/P	IO81KR73	3	244	G8CUB/P	94
4	G8CUB/P	IO91GI25	3	160	GW4HQX/P	94
5	G8ACE/P	IO91JB00	1	39	G8CUB/P	39
6	G1EHF/P	IO91GI44	1	2	G8CUB/P	2

24GHz/47GHz/76GHz Contest October 2021 and mm-wave Championship

Unlike previous years the last session of this series was not as well supported as earlier in the year. Some good contacts were made from G3ZME/P to G4SJH/P and G1EHF/P on 24GHz, but generally conditions for the higher bands were poor. G3ZME/P emerged as winners thanks to these two DX contacts, with G1EHF/P as runner up.

On 47GHz John G8ACE/P worked Dave G1EHF/P to share the winners rostrum.

This was the last event in the mm-wave Championship for 2021. Compared with 2020, entries were somewhat down on 24GHz, and slightly up on the higher two bands.

On 24GHz Telford & DARS G3ZME/P is the leader with two winning sessions. Barry G4SJH/P was the runner up with one session win.

John G8ACE/P takes first place on 47GHz, with entries on three sessions including one win, with Dave G1EHF/P as the runner up not far behind.

76GHz sees Pete G(W)4HQX/P take first place, with Roger G8CUB/P runner up. They were joint winners in July and the outcome was decided by the September result.

Congratulations to all the winners and runners up. Telford & DARS G3ZME/P will receive the GORRJ Memorial Trophy for 24GHz, and the 47GHz Trophy will go to John G8ACE/P.

John G3XDY

UKuG Contest Manager

24GHz Contest Oct 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Kms
1	G3ZME/P	IO82QL83	5	387	G4SJH/P	146
2	G1EHF/P	IO91GI25	8	341	G3ZME/P	146
3	G4SJH/P	IO91GI25	7	291	G3ZME/P	146
4	G1DFL/P	IO91JA47	4	136	G4SJH/P	41
5	G8ACE/P	IO91GC68	4	80	G4SJH/P	27
6	G0JBA/P	JO01NI79	1	78	G3XDY	78

47GHz Contest Oct 2021

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Kms
1	G1EHF/P	IO91GI25	2	54	G8ACE/P	27
2	G8ACE/P	IO91GC68	2	34	G1EHF/P	27

24/47/76GHz Championship Tables

Final positions after four events, best three count to the final total

24GHz

Pos	Callsign	16/05/2021	11/07/2021	12/09/2021	17/10/2021	TOTAL
1	G3ZME/P	1000	977	221	1000	2977
2	G4SJH/P	660	1000	813	752	2565
3	G1EHF/P	660	592	590	881	2133
4	G1DFL/P	597	756	588	351	1941
5	GW3TKH/P	0	870	945	0	1815
6	G(W)8CUB/P	0	870	664	0	1534
7	G8ACE(/P)	312	579	313	207	1204
8	G(W)4HQX/P	0	368	725	0	1093
9	G4FRE/P	0	0	1000	0	1000
10	G4LDR(/P)	348	378	0	0	726
11	G0JBA(/P)	0	0	136	202	338
12	M0HMO/P	0	67	0	0	67

47GHz

Pos	Callsign	16/05/2021	11/07/2021	12/09/2021	17/10/2021	TOTAL
1	G8ACE/P	0	684	286	1000	1970
2	G1EHF/P	0	711	69	1000	1780
3	G(W)8CUB/P	0	724	759	0	1483
4	G(W)4HQX/P	0	724	646	0	1370
5=	G4LDR/P	0	1000	0	0	1000
5=	G4FRE/P	0	0	1000	0	1000
7	G1DFL/P	0	382	429	0	811
8	GW3TKH/P	0	0	646	0	646

76GHz

Pos	Callsign	16/05/2021	11/07/2021	12/09/2021	17/10/2021	TOTAL
1	G(W)4HQX/P	0	1000	819	0	1819
2	G(W)8CUB/P	0	1000	537	0	1537
3	G4FRE/P	0	0	1000	0	1000
4	GW3TKH/P	0	0	819	0	819
5	G4LDR/P	0	309	0	0	309
6	G8ACE/P	0	0	131	0	131
7	G1EHF/P	0	0	7	0	7

October 122GHz – 248GHz Contest 2021

The October session of this event resulted in a good entry on 122GHz, but none on the higher bands this time. There were two pockets of activity, one around Cambridge, and the other in the Southern Home Counties. Winner of the October event was Dave G1EHF/P.

The overall certificates over the two events go to John G8ACE/P as winner on 122GHz, with a tie between Dave G1EHF/P and Roger G8CUB/P for the runner up slot. On 134GHz Roger G8CUB/P is ahead of John G8ACE/P, and on 248GHz the same two stations share top billing.

73

John G3XDY

UKuG Contest Manager

October 2021 122GHz Contest

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX kms
1	G1EHF/P	IO91JH01	3	30	G8ACE/P	12
2	G8ACE/P	IO91KF42	2	21	G1EHF/P	12
3	G8GTZ/P	IO91KF42	1	9	G1EHF/P	9
4	G4HJW/P	JO02FE28	4	7	G0VQH/P	4
=	G6GZH/P	JO02EF91	4	7	G0VQH/P	4
6	G8MLA/P	JO02FE28	3	3	G6GZH/P	1

Overall 122-248GHz Contest 2021

122GHz

Pos	Callsign	20/06/2021	10/10/2021	Overall
1	G8ACE/P	833	700	1533
2	G1EHF/P		1000	1000
=	G8CUB/P	1000		1000
4	G8GTZ/P		300	300
5	G4HJW/P		233	233
6	G6GZH/P		233	233
7	G8MLA/P		100	100

134GHz

Pos	Callsign	20/06/2021	10/10/2021	Overall
1	G8CUB/P	1000		1000
2	G8ACE/P	833		833

248GHz

Pos	Callsign	20/06/2021	10/10/2021	Overall
1	G8ACE/P	1000		1000
2	G8CUB/P	1000		1000

"The Awards Manager has recently received a claim for the first QSO on 10GHz between England and the Dodecanese Islands (SV5) by EME. Does anyone have a claim to this first prior to 2nd October 2021?"

Membership

"Over the last 3 or 4 months we have been notified that members who pay their membership renewal through the UKuG website www.microwavers.org have been experiencing a problems with a button labelled "return to merchant" after making a PayPal payment. When activating this button they receive a notification that payment has been cancelled and this has led to a second payment.

We can confirm that, in general, the first payment has completed and a receipt for the payment has been generated by PayPal. We are still investigating the problem that seems to be generated by PayPal rather than the UKuG website.

We have credited members with a 2 year subscription where they have paid twice.

The following advice is offered: preferably do not activate the return to merchant button, either exit the site or your browser.

If you do activate the button ignore the message "payment cancelled" and instead check your PayPal account directly. If all else fails email either the membership secretary or the treasurer to confirm. We are not set up to handle large numbers of enquiries so please help us by checking your PayPal account in the first instance"

Bryan Harber

Please ensure that you use the new PayPal address of payukug@microwavers.org as a number of members have continued to use the old address which is no longer in service.

Editors Comments

This a combined September / October edition. In part because I have been in Spain since September. This has given me the chance to visit Iban EA3FRN while here, as reported in this issue.

I am looking forward to a real round-table meeting next month. I shall endeavour to have a clear-out and get rid of some junk – I mean high-class equipment.

I am still waiting for all these technical articles to flood in. They must have got stuck in the pipeline somewhere!

For millimetre enthusiasts, you may be interested in ECC draft report [Draft ECC Report 335](#) for UWB (ultra-wideband commercial bands)

It looks like there are no concerns about spreading across the 122 / 134 / 241 GHz Amateur bands. The saving grace is that with UWB the power in a narrow bandwidth is extremely low.

Beacon News

The OZ5SHF beacon system is back "On Air" after repair and adjustment.

As we no longer have access to the 2300-2400 MHz part of 13 cm in OZ, the old 13 cm frequency has been changed to 2400,900 MHz.

Other frequencies are unchanged: 1296,900 MHz, 3400,900 MHz, 5760,900 MHz, 10368,900 MHz and 24048,900 MHz.
73 Ole, OZOE

John G3XDY reports hearing a new French Beacon on 23cm.

F1ZUY, 1296.980 MHz, JN18BQ.

It uses A1A modulation with a power of 5W using a Big Wheel antenna.

Midlands Round Table - Sunday 5th December 2021



This will be an opportunity to meet up with others with similar interests. It is aimed at UkuG, BATC and AMSAT interests.

There will be test equipment available and help with getting your projects working. This will include SMD facilities.

There will be space for a junk sale. Tables provided FOC. There will be plenty of free stuff as well.

There will be couple of short talks with an EME theme. The first will be on 2m fixed and portable and the second will be on higher bands such as 10GHz and 24GHz.

Brian G4NNS will give an introduction to the 50MHz Radio Meteor Beacon.

The BATC will give an update.

There will be an operational QO100 demonstration rig. Unfortunately the moon is not co-operating so no EME demo.

It will be held at Eaton Manor Country Estate, Eaton-under-Heywood, Church Stretton, SY6 7DH. It will be in the banqueting room and the room to the side.

eatonmanor.co.uk

<https://www.eatonmanor.co.uk/location/how-to-find-us/>

Proceedings will start at 10:00 am but the venue will be available from 09:00.

For those who wish to continue with projects etc. the venue will be open on Monday.

The admission charge will be £15 per head which will include a two course sit down lunch, all day teas and coffees etc., and will also cover the heating and lighting. **This must be paid in advance** but will be refunded if you have to isolate for Covid.

Bank transfer preferred. - Paul Nickalls 20-53-22 53708810

PayPal paulnick@btinternet.com.

Cash in grubby brown envelope.

Numbers will be limited to 50

Accommodation

We have arranged limited accommodation on site at well below the normal prices for the estate. Further accommodation may be available elsewhere in other houses on the estate. Check the website for availability but book with the estate office mentioning the round table.

For details of the heavily subsidised accommodation. Please telephone me 01694 771 441

Covid

This is an in person event. In order to do this there will be many precautions in place to limit the spread of Covid 19.

You must comply with any legislation current at the time.

In addition we will be asking you to take 2 lateral flow tests. One within 48 hours of the event and another as late as practical before your departure for the event. (At present the test kits are free from your chemist or online.)

It is hoped that you will be fully vaccinated as well. (This may become compulsory in which case we may be required insist on passports).

Your respect for fellow amateurs who may be vulnerable would be appreciated so please cooperate with the measures.

Contact

If you have any particular requests please give me a call.

Paul Nickalls G8AQA
Holy Mill
Longville
Much Wenlock TF13 6ED

01694 771 441

2nd November 2021

ADF4351

If anyone needs a simple program to run on an Arduino and initialise one of the various ADF4351 boards, you can have a look at my adaptation of some other code picked up around the net.

https://github.com/rszemeti/ADF4351_Loader

It calculates the register values needed on the fly, so you don't need to use the manufacturer's config tool to work out the values, just put in the reference frequency you have, the output frequency, done. from Robin G1YFG

EMF Calculation

UK stations must have Electromagnetic Field (EMF) assessments in place for operation above 110MHz from **18th November 2021**. Some RSGB guidance on EMF is here: <https://rsgb.org/main/technical/emc/emf-exposure/>

The RSGB has been developing a tool that incorporates the Ofcom EMF Calculator but extends the models to include single and multiple Yagi's plus various sizes of dish antennas, and takes account of the directivity of the antenna.

For high frequency microwave something better was required.....

The excellent presentation on EMF Calculation for Microwavers by Ian GM3SEK and Peter G4DSE can be found here:
https://wiki.batc.org.uk/CAT_21

It is also available on YouTube. Search for:
Amateur gm3sek EMF

A readable version will be published in an updated Scatterpoint, as soon as it is available

My own thought, is something that I have already started working on. For portable millimetre operation, it is to include a PIR switch opening the PTT line.

When operating millimetre contests I may well be operating across a track. Unless I physically move the tripod from one side to the other. Here the dish is around head height, which is the worst position for exposure. My EIRP can easily exceed 1kW with a high gain dish and 10mW plus power. Also I can often be busy aligning something, on talk-back etc.

The PIR when sensing anyone approaching the dish, senses the person, and opens the PTT line. This is no great issue, as that person would block the signal anyway. But, it avoids public exposure in that situation, thus complying with Ofcom requirements.

This is my personal idea, and will likely generate some discussion....

Roger G8CUB

122GHz

A few days ago, Gordon, G0EWN, and I were checking out his new VK3CV 2nd batch board and trying to use the B command to change the default callsign beacon message. We were using a standard RS232 to USB converter lead between the VK3CV and a laptop. The terminal software was Terminate. We could receive data from the VK board but could not transmit a B message back to it.

Today, I tried again but this time using the PuTTY software and had no problems at all.

Further testing on Gordon's 122GHz board has highlighted the real problem of getting a terminal program to send data (e.g. B and E commands) to the board. The problem seemed to be that the laptop was not plugged in to a mains PSU and hence the voltage at the laptop USB socket was sagging below 5v. Once the laptop WAS plugged into a mains supply, the terminal program worked as it should with no problem.

I also took the opportunity to program a new frequency into Channel E which is right up at the top end of the band, well away from the oxygen absorption peak at 118 GHz. The required E message is:

E10720117F1081072011804AC

This string, which is in Hex, is made up of 4 blocks of 6 characters (3 bytes). The first two blocks correspond to the R1 and R0 register settings of the ADF4351 PLL chip for the Rx LO frequency and the second two blocks are the corresponding register settings for the Tx frequency.

The new channel E frequencies are Tx: 122.9996 GHz and Rx LO: 122.8552 GHz. These give a Rx IF of 144.4MHz.

If the frequency of channel E is changed and the user has fitted one of my/Mark's display boards, the sketch which runs the display will also have to be changed to reflect this (basically two numbers need to be changed in the table of frequencies).

Barry, G8AGN

UKuG MICROWAVE CONTEST CALENDAR 2021

Dates, 2021	Time UTC	Contest name	Certificates
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

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/RSG B 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

For the latest information please see: <https://microwavers.org>

2021

October 10-15	European Microwave Week, London, Excel - Postponed until 2022	www.eumweek.com
October 17-21	IARU-R1 Conference, Part-2 Novi Sad	conf.iaru-r1.org
December 5	Midlands Round-Table, Eaton Manor, SY6 7DH	

2022

February 12	Tagung Dorsten	www.ghz-tagung.de
February 13-18	European Microwave Week, London, Excel	www.eumweek.com
March 26	CJ-2022 Seigy	cj.r-e-f.org
May 20-22	Hamvention, Dayton	www.hamvention.org
June 24-26	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de
August 12-14	EME 2022, Prague	www.eme2020.cz
September 25-30	European Microwave Week, Milan, Italy	www.eumweek.com

80m UK Microwavers net

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

73 Martyn Vincent G3UKV