An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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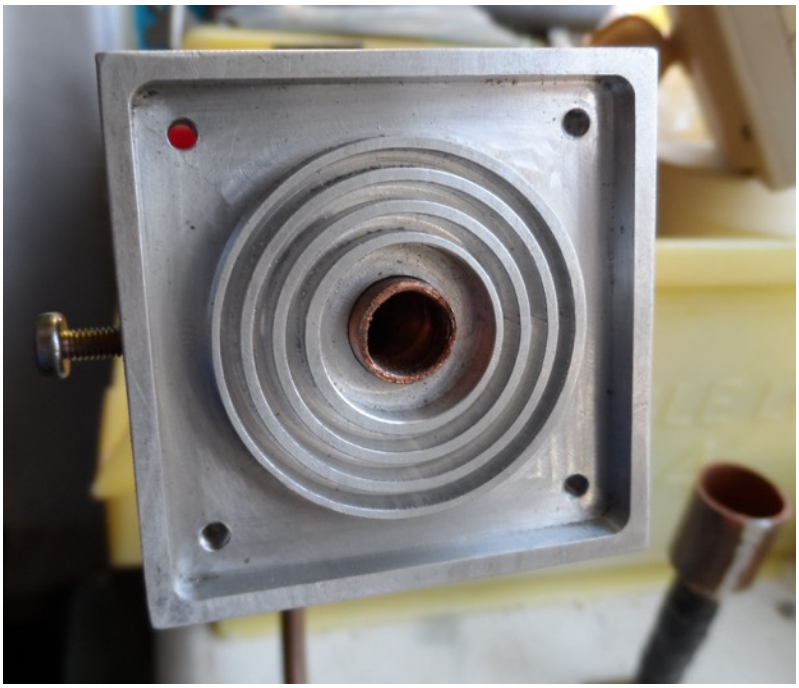
24GHz Waveguide - an alternative?

by John Fell G0APl



And the first rule of electronic faultfinding is ... check the power supplies.

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Editor's corner

And here is version 2 after I missed a significant mis-copy and a typo.
AGM Notice on page 5.

73 de Martin G8BHC

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.

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

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

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

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

PLEASE QUOTE YOUR CALLSIGN!

Payment can be made by: PayPal to

ukug@microwavers.org

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

Articles for Scatterpoint

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

Please send them to

editor@microwavers.org

The CLOSING date is the FIRST day of the month

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

Please submit your articles in any of the following formats:–

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

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

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

Thank you for you co-operation.

Martin G8BHC

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 Chip Bank – A free service for members

The catalogue is now on the UKµG web site at www.microwavers.org/?chipbank.htm *Latest Stock Update was end of October – so do take a look!*

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 miss-labelled. G4HUP's Inductance/capacitance meter with SM probes is ideal for this (Unsolicited testimonial!!)

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

Mike G3LYP

UKµG Technical support

While many of you will have taken advantage of the "test equipment rooms" that we run at the Round Tables, sometimes that project just cannot wait for the few occasions per year when we hold them. 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, more importantly, 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

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: http://www.microwavers.org/proj-support.htm

UK Microwave Group AGM

Sunday 26th April 2015

Notice is hereby given that the 2015 Annual General Meeting of the UK Microwave Group will be held at 10:00am on Sunday, 26 April 2015 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. We are looking for enthusiastic volunteers to join our committee and help shape the future of UKµG.

This year the following Committee officers/members are standing down.

Dave Powis G4HUP Trophies & Awards

and we still don't have a Chairman.

We are therefore interested to hear from anyone who would be willing to take on these vital UKµG committee positions. If any UKµG member is interested in the office then please submit your name (and the name of your seconder) to the UKµG Secretary, John Quarmby G3XDY, as soon as possible.

If you are interested in joining the committee, have any agenda or AOB items for the AGM then please contact the UKµG Secretary,

John Quarmby G3XDY by 10 April 2015 by email to

secretary@microwavers.org.

A full list of the current committee and their roles is at:

www.microwavers.org/cmmittee.htm, and on P2 of Scatterpoint.

73 John Quarmby G3XDY,

General Secretary UK Microwave Group

Martlesham Microwave Round Table

25th & 26th April 2015

Organised by the UK Microwave Group and Martlesham Radio Society

The Martlesham Microwave Round Table will take place on the 25th and 26th of April 2015, at BT Adastral Park, Martlesham Heath, Ipswich, IP5 3RE.

There is no entrance charge for the Round Table. Traders tables in the fleamarket area will be charged at £5 per table.

The booking system for the Round Table and the Saturday evening dinner will open shortly at

http://mmrt.homedns.org

The hotel for this year's event is the Cameo Hotel Copdock, as last year. We have agreed a special rate of £61 single and £67 double/twin room including full English breakfast. The hotel can be contacted on 01473 209988 to make bookings at these rates.

More details of the hotel can be found at: http://www.cameohotels.com/

The dinner will be held at the Cameo Hotel. The three course dinner with coffee will be £24, payable by Paypal. Full menus will be on the booking web site.

The provisional programme for the event is as follows:

Saturday 25th April

10:00	Truck Stop Breakfast
12:00	Doors Open
Refreshments available from 12:00 (sandwiches, drinks, biscuits & cakes)	
13:00	Welcome & opening
13:15	Talks
16:55	Close
19:30	Meet for Dinner at 20:00 at the Cameo Hotel Ipswich

Sunday 26th April

09:00	Doors Open
09:50	Welcome and Opening
10:00	UK Microwave Group AGM, Trophy Presentations
10:45	Refreshments & Judging of the Project Competition
11:00	Talks
12:30	Lunch Break (sandwiches, drinks, biscuits & cakes)
13:15	Talks
14:45	Refreshments
15:00	Talk
15:45	UKuG Contest Forum - John G3XDY
16:30	Close

AMSAT-UK Colloquium 2015 – Call For Speakers

This is the first call for speakers for the AMSAT-UK Colloquium 2015 which will be held from Saturday, July 25 to Sunday, July 26 2015 at the Holiday Inn, Guildford, GU2 7XZ, United Kingdom.

AMSAT-UK invites speakers, to cover topics about micro-satellites, CubeSats, Nanosats, space and associated activities, for this event.

They are also invited to submit papers for subsequent publishing on the AMSAT-UK web site. We normally prefer authors to present talks themselves rather than having someone else give them in the authors' absence. We also welcome "unpresented" papers for the web site.

Submissions should be sent *ONLY* to G4DPZ, via the following routes:

e-mail: dave at g4dpz dot me dot uk

Postal address at http://www.qrz.com/db/G4DPZ

AMSAT-UK also invite anyone with requests for Program Topics to submit them as soon as possible to G4DPZ. Invitations for any papers on specific subjects will be included in the future call. Likewise if anyone knows of a good speaker, please send contact and other information to G4DPZ.

The 1296 MHz ON0EME Moon Beacon

Source: SBMSNewsletter, Feb 2015 and http://users.skynet.be/on0eme/ON0EME/Welcome.html

http://users.skynet.be/on0eme/ON0EME/Welcome.html

This dish in ~~Örebro Sweden~~ Dessel, Belgium tracks the moon when above 10° of elevation and transmits a high power signal direction to the moon. The signal is bounced off the moon and can be received with modest receive antennas. The smallest station reported is from Carlos, CS5RAD using a 1.4m parabolic reflector. The ON0EME group hopes to encourage other radio amateurs to attempt receiving the signals and improve their equipment.

Operational parameters can be seen at http://www.on0eme.org

This month I 'ave mostly been building…

A new column (idea borrowed from the SBMS Newsletter and with a hat tip to Mark Williams' character Jesse of the Fast Show) designed for those of you who don't want to write a full technical article – but also those of you who do but who only have a snippet to contribute such as a new project or a progress (or lack of?) report.

John G4BAO

As well as building a 144MHz SSPA, is currently trying to modify a 200Watt 900MHz PA module to produce an output on 1296. Unfortunately his 23cm antenna or feeder is broken so might not be QRV until the better weather. Meanwhile he's looking for contacts on the higher bands, particularly 10GHz digital modes, and is trying to crack the 190km path to G4CBW on 24GHz, using JT4G. John has been decoded well by Tony but seems to have a "deaf" RX having seen just one full decode the other way. No complete 2 way QSO has been achieved yet.

Chris G0FDZ

This month and last I've been modifying my 134 GHz system to obtain greater mixer drive which should make some improvement to both transmit and receive. The recent cold weather has also demonstrated that need to increase the thermal insulation of the LO source to reduce warm up time.

John G3XDY

I'm currently building a new transverter for 2.3GHz which includes both the 2320-2322 and 2300-2302 segments, using local oscillators based on the DF9IC PLLVCXO design. These feed an old G4DDK004 LO board which currently produces +5dBm at both 2156 and 2176MHz. The mixer has been built (using a surplus JMS-2411 from an Ionica customer terminal) and is waiting to be tested. I'm using 0.8mm thick FR4 to keep the dimensions of 50 ohm lines manageable with SMD parts. The signal path filtering uses miniature 4 resonator ceramic filters made by Lark engineering designed for the Sirius satellite radio broadcast system in the USA, but which nicely cover the band of interest.

Mike G3LYP

I have two projects on the go at the moment. The first is to get Bernie's (Sept '14 S/P) 28MHz crystal replacement for the 10GHz PLL LNBs working. It works some of the time but then stops and so far I haven't found the cause. If anyone else is working on this, I would be interested to hear how they are getting on.

The second project is to get an Ionica SSPA working at masthead for a personal beacon on 9cm. It is virtually complete and seems to be working OK and although getting a bit warm, it has survived several hours of continuous operation on the bench. The only remaning job is to get enough drive up the mast with RG223 coax as I don't want to have to run anything heavier up the pneumatic SCAM mast.

Chris GW4DGU

This month Chris has been mainly involved in putting the finishing touches to a 200W 1.3GHz SSPA. This is actually a commercial project for LAUK/The DX Shop, but is clearly close to his heart! With the increasing commercial activity in the region below 6GHz, this has been designed for, and achieves, very high spectral purity, with >70dB rejection of harmonic products up to 6th order.

As a way of regaining familiarity with the WSJT suite, GW4DGU has also been heard on 2m EME, making QSOs with a single 9ele yagi and ~180W.

Microwave work has included mounting his 24GHz kit on a new 80cm dish, and rework of a successful ten-year-old 432MHz yagi design of his to reduce its noise temperature, and increase its bandwidth without needing to move the position of the elements.

Sam G4DDK

Mainly gathering together the new parts for the upgraded GB3MHZ /3cm beacon.

New 324MHz to 2592MHz multiplier unit assembled. Driven by the OZ next generation beacon platform DDS/clock. Will run MGM.

Arranging talks programme for Martlesham Microwave Roundtable.

Bryan, G8DKK

Not especially microwave. I have been building an IF switch box to route the K3 transverter (28MHz) cables to up to 3 transverters by decoding the K3 band data. It also routes my 4 microwave transverter IF cables at 144MHz to the 2m transverter in the shack (the K3 supports up to 9 transverter bands).

24GHz Waveguide - an alternative?

By John Fell G0API

Winter tends to offer me more in-shack (warm) time and so after a few days of high winds and the mast luffed over at ground level, I decided to add in-shack 24GHz monitoring of my local beacon GB3SCK, which is 23km away, almost LOS.

I did not want to masthead the transverter as it is on loan to me from my local club, FRARS and could be needed at short notice - it was constructed by Andy G4JNT (I packaged it (he does the electronics and I tend to do the Mechanical Engineering of our joint projects , such as this , the EME @FRARS , Bell Hill Beacons (70, 2.3-10GHz).....and several of his home antennas - LOL…) and is mainly for /P activity. So, I considered options for keeping the transverter in the warm shack, which also has the added advantage of temperature change minimisation and full weather proofing at minimal effort.

My solution involved the installation of a 15dBi sector horn on a fixed stub mast at roof ridge height at the rear of my bungalow, feeding into the shack via a continuous 3.6m of homebrewed flanged copper guide, which includes a total of four 90 degree bends, in both the "hard" and "easy" ways. Being a Yorkshireman in exile, cost was a large driver of the way this was implemented.

Back in 1992 when I was involved building the G4RFR 3.2m 10GHz EME dish system, I produced several feed systems, one of which involved a shepherd's crook waveguide, which I made from 22mm standard copper water pipe. Over-moding made the round "guide" high loss and this was reduced drastically when G3YGF applied some crushing effort to turn the circular section into a near oval one. As this was done with a lump hammer over the edge of the Versatower trailer mount for the dish, it did not look exactly like EP90 and we subsequently went for direct mounting of the transverter at the dish focal point using a scalar ring feed. However, I remembered the arrangement and this inspired the latest experiments on 24GHz.

To evaluate the potential I made a short section of formed guide, but for 24GHz this time using 10mm o/d x 8mm i/d soft copper pipe, which comes in reels of 10 or 25m length from the usual two letter DIY barn source. Using the transverter bolted to racking in the shack, with an ex-link 250mm dish at 94 wavelengths AGL pointing down the length of my hallway, a test range of approx 164 wavelengths was setup. Down-converted signals were passed to my SDR-IQ and could be inspected at a gain resolution of 0.1dB with ease.

At the far end of the range I had a test source, comprising a GPS referenced 8dBm signal generator, outputting at 158.45003MHz into a G4JNT comb generator, packaged SMA ported /biased sat. mixer diode(G3PHO) via a homebrew WG transition(G4NNS design), though a 3-stage GaAsfet amp(G8BKE), second HB transition into a Grey Cube PA and finally a third transition into a flanged W2IMU(G3PHO modified) dual mode horn. This simple 162nd harmonic set-up produced a +40dB over noise floor carrier from open guide, in a 6Hz resolution bandwidth on the SDR-IQ.

I was then able to evaluate several feeds and dish combinations and optimise forward gains etc - some good results from a SKY type truncated dish (Tnx G7JDW-my youngest daughter) and scalar ring feed : 37dBi without much effort and around 2 degrees at the 3dB points.

Included amongst this pile of bits was the evaluation section of 10mm pipe, formed into a crook and "carefully " compressed, end flanged (Tnx to M0EYT and his homebrew NC mini mill) and a milled scalar ring feed from the same local supplier.. This seemed to offer minimal insertion loss when compared to the same feed directly on the test source at the same range length, which was encouraging.....purists may wince but it was all very warm, stable and relative !

I solved the problem of remote viewing of the shack end PC screen, when at the source fiddling, by the use of "shared Screens " on Skype - an Ipad borrowed from XYL G7MHO allowed close up viewing of the PC screen signal. I also found later that this WLAN system worked when tweaking the horn heading on the roof.

Subsequent tests at higher screen resolution have involved a borrowed Hudl tablet to video the PC screen in the normal two way Skype conversation mode - I know you can do it with the right apps, but they cost money too.

Incidentally, prior to moving towards the waveguide solution I was able to hear GB3SCK from inside the adjacent room using the tripod mounted transverter and 250mm dish, beaming slightly upwards through double glazing. Well actually I couldn't until I realised that by pointing the dish at the central point of the uPVC framed French doors, externally reflected signals were audible. Thinking about this later the penny dropped and I realised that the double glazing metallic film coating does block 24GHz (a lot more than 10GHz) but the u-PVC frame does not and there was a long vertical "slot" up the central closing point - try this at home.

So, how to make the waveguide run? Well, the way I did it was to first measure and work out the requirements of the run from antenna to shack. I mounted the transverter on top of a rack just under ceiling level, cut a WG42 flange size hole through the plasterboard and passed the pipe through into the loft above and out through the letter box size slot (one brick wide), previously fitted for heliax runs etc. to my external telescopic mast. A 90 degree bend takes it straight up the brick face and via another 90 degree bend onto the roof ridge fixed stub mast that supports the balun of an HF dipole (don't ask). This amounted to 3.6m, allowing for the four bends required each with a radius of 70mm (I had a former of this size and the moral is when making bends in soft copper and to avoid odd waveguide modes, do it slowly).

The appropriate length, plus a few inches, was cut off the pipe reel and straightened by hand. I was able to run the still circular pipe through the complete run, forming as it went and extract it in a single bent piece as shown in photo. This is probably best done with an assistant as it is easy to accidentally add bends. ...

The next bit requires a bit of engineering finesse, a saw bench and a clamped on 4" wide vice to start with. Soft faced jaws on the vice are kinder to the copper - first set the closed, compressed pipe distance between the jaws using a small 6" pipe length. Approach this slowly and finish up with the flattened pipe width such that it is a slight push-fit into a standard WG42 flange - I measured 6.36 x 11.7mm. You will find that using the specified tube this will result in an oval section that "almost" touches on four points within the flange (6.36 x 12.73mm) and allows subsequent soft soldering to in-fill the edges and make the assembly watertight. I use a 300W "chunk- bit" mains iron for this operation, but you could use a flame thrower torch if you must. Polish the flange face with fine emery cloth on a flat plate to produce a good clean result.

The saw horse is the preferred mounting for the vice as it lets you walk around it with the copper pipe outside in the fresh air, rather than beating it against the walls etc. in a garage workshop. With an assistant, the required plane of the guide can be maintained by eyeball - with integral bends over a modest length it is quite easy to forget your 3D memory map of the run - we do not want to have to add in a twist do we ?

Having established the amount of vice wind-up, note the position of the vice handle so it can be repeatedly returned to in subsequent flattening operations - it helps to keep the sample to hand and offer it into the jaw space as you work along the run - just in case you have a Senior moment. If you do over flatten I guess its scrap or add in two pairs of flanges and a new pipe section.....

Flattening straight sections follows this method and bends in the traditional "hard way" can also use this method, taking 4" wide overlapping bites along the way. However, the tricky bit was the "easy" way bends which cannot be done with wide jaws - think about it .

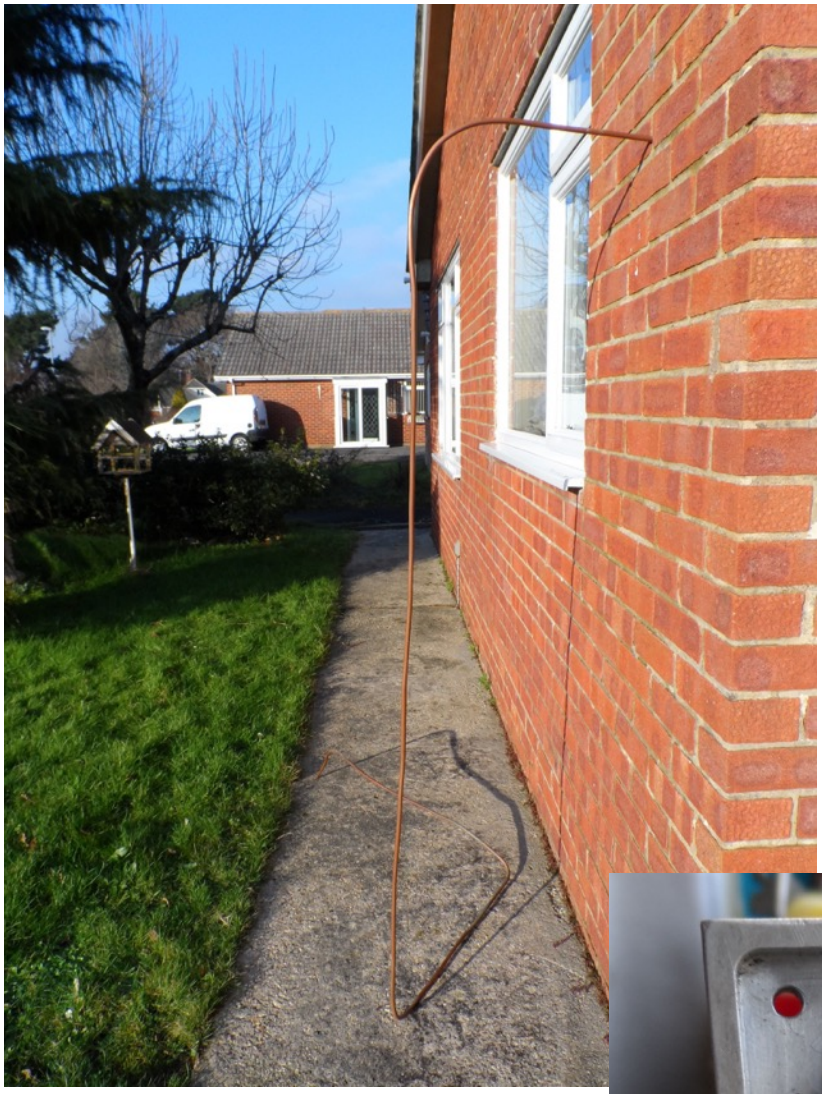
This was solved by cutting some scrap aluminium plate to a triangular shape that converted a standard Mole grip into one with parallel, closed, 1/2" wide jaws - again test before you use and set the clamped, compressed pipe distance between the jaw faces so that it remains flattened like the vice setup. I held the jaw insert in place using PVC tape, which also acts to cushion the clamping - slowly stepping around the bend till it reached the straight again. It helps to wind some tape around the Mole setscrew, to ensure the closed jaw separation remains constant - they do work loose during repeated cycling ops.

Add flanges to suit your requirement and feed it into place, again with assistance. I added a film of silicone adhesive to the flange faces and inserted a 0.005" thick PTFE sheet window at each end and sealant over the flange retaining screws - just in case..

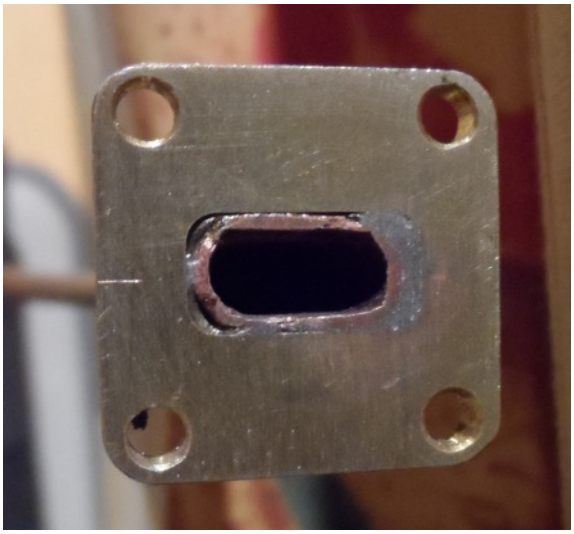
So far the guide has been in place for a couple of weeks in just sub-zero outside temperatures - I added a slight P-trap in the horizontal run into the loft so if water did ingress or internally condensed it would choke the guide and drastically block RF - hopefully alerting me to do something before it flooded the shack....

I have monitored GB3SCK throughout each day since installation and although looking over local buildings and the odd tree branches (leaves will only make it worse) it stays remarkably stable at 40dB above the noise floor and I see mainly B decodes at -12 in JT4G, but occasionally an A class !

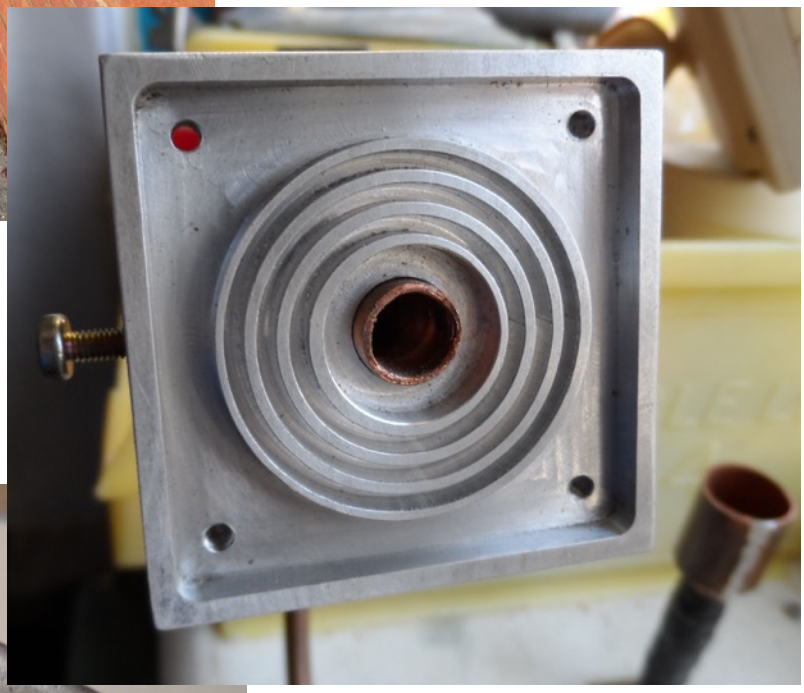
Doubtless this will not be as low loss as conventional guide and "proper" bends but at approximately £2.80 per metre it may be good enough.



After first forming .

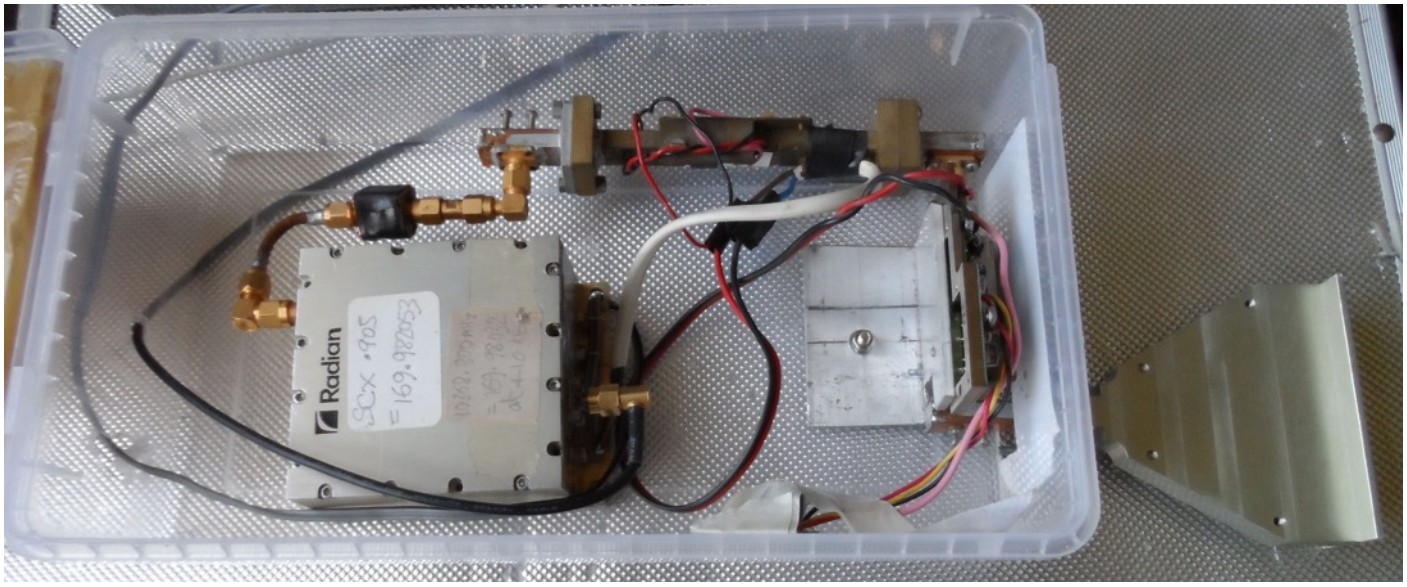


Early test flange - they get better with practice



Scalar ring feed and W2IMU/G3PHO horn

Modified Mole grip
24GHz source

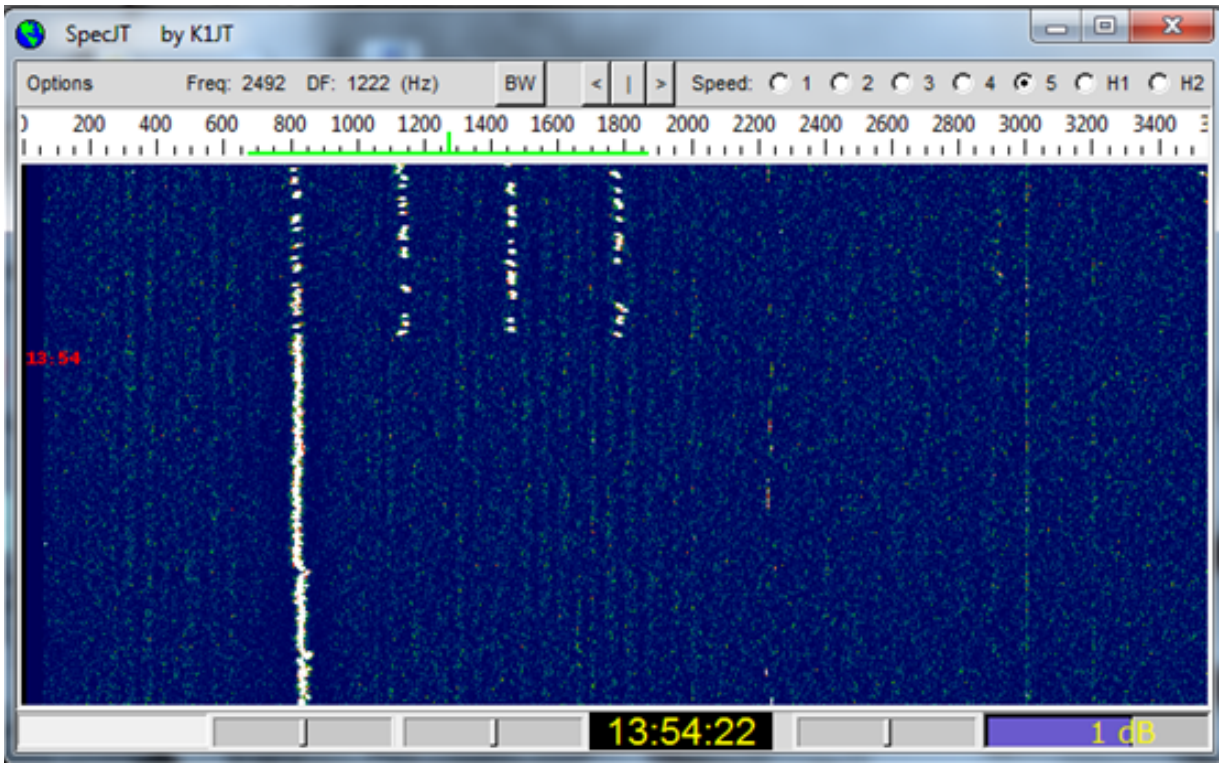


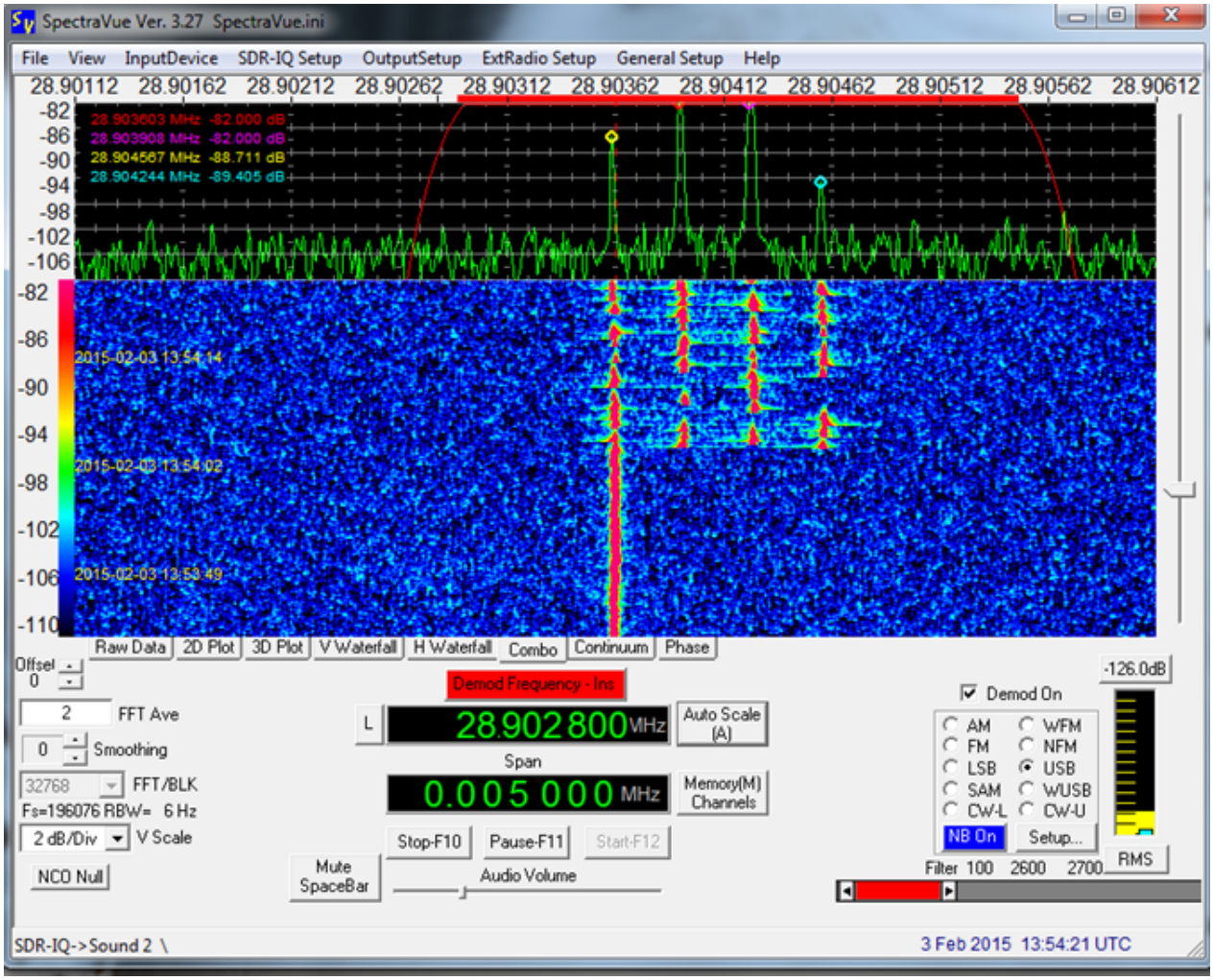
24GHz source

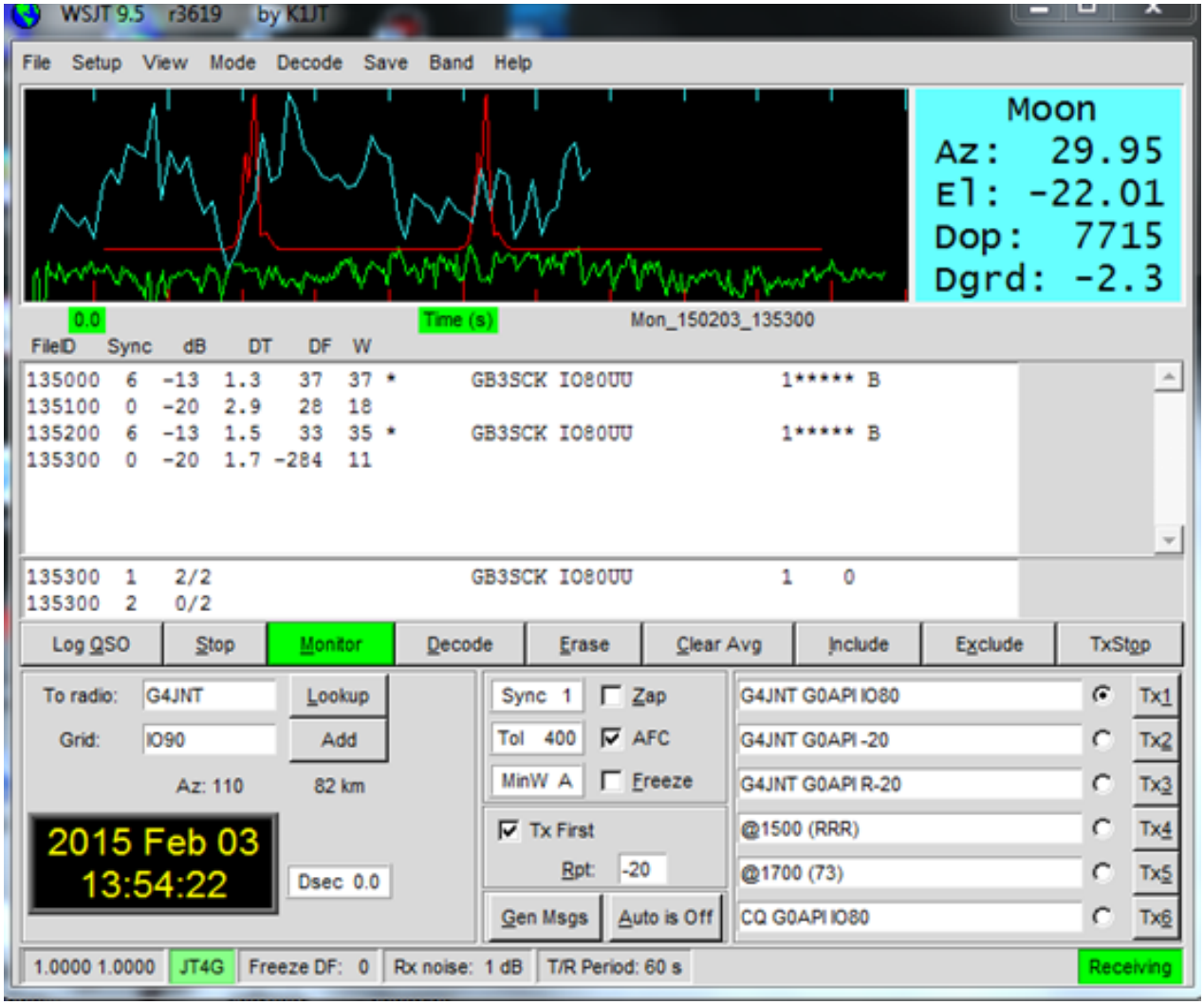
Installed -guide looks lumpy but that's hammerite paint. The 24GHz horn can be seen just outboard of the log feed to the dish(used for 2.3-5.7GHz fixed heading beacon monitoring).

Three Screen pics showing GB3SCK and an A class decode!

-102600 8 -11 1.4 28 31 GB3SCK IO80UU 1**** A







Dish +TVTR on tripod looking thru uPVC

Activity News : January 2015

By Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

The new year has started with less than great conditions, but a reasonable amount of activity. The 23cm and 13cm UKACs were fairly busy with me in IO83. Denis G3UVR has sent a report on ATV activity and Tony G4CBW has sent a report on 24GHz activity. There are also reports from Keith GW3TKH and John G3XDY.

Beacons and Reverse Beacons

From John G3XDY JO02

The Martlesham beacons suffered a power failure during the weekend of 17/18th January and 23cm did not restart automatically, so it was off for a period of over a week. Whilst the 23cm beacon was being restored the opportunity was taken to recover the 3cm beacon exciter in preparation for a makeover by Sam G4DDK, so that band will be off until further notice.

January 23cm UKAC

From John G3XDY JO02

January has been fairly quiet here, I'm busy building a new 13cm transverter which includes the new 2300MHz band segment.

My only microwave activity has been on 23cm.

The activity contest on 20th January was dogged by poor tropo conditions as seen from here, with stations in the 150 - 300km range difficult to work. Aircraft scatter was doing well however, although it was more challenging than usual as the AirScout prediction software had stopped functioning due to a change in the third party data feed. A new version of AirScout is now in Beta test to circumvent this problem. Overall I managed 28 locator squares, split equally between the UK and Europe. DX included SK7MW (JO65), DL0VV (JO64) and 4 x OZ in JO45 & JO46. Best in the UK were GM4AFF (IO86) and GD8EXI (IO74).

From Bob G8DTF IO83

Quite a busy night in 83 square. I am still using very low power (about 3W on a good day and a 44ele WIMO at about 10m). I worked 10 stations in the first 20 minutes of the contest in IO83 with only one non-IO83 (GM4CXM in IO75) during this period. A total of 16 stations in IO83 during the whole contest.

G4BVE/P was worked in IO82, G8EOP and G8BUN were worked in IO93, and G8OHM and G4KIY in IO92. It was good to work Nick G4KUX in IO94 – not an easy path from here. I did eventually find Andy GM4JR in IO85 and have a QSO. G3TCU/P was loud from IO91 and I also had a QSOs with Mike G0MJW, Neil G4BRK and Anne & Mike at G8CUL also in IO91. I managed to work David M0GHZ in IO81. JO02 was also worked via QSOs with G3PYE/P and G4NBS.

Two other stations were heard, but not worked Gordon G8PNN in IO95 and John G3XDY in JO02. I definitely need a bit more power.

Monday Nights

From Bob G8DTF IO83

On the first Monday night in January I managed to get on 13cm. I had been looking at KST and had a QSO with Graham G3VKV. We were joined by Denis G3UVR.

SHF UKAC

From Bob G8DTF IO83

A very busy night as I was also trying to do 6m as well. I focused on the SHF bands between 2030 and 2200.

13cm

Four stations worked in IO83 (G3UVR, G8PEF/P, G4JLG/P and GW8ASD). I also worked four stations in IO93 (G8EOP, G8BUN, G8SFI/P and M0UFC/P). Two stations in IO91 (G8CUL and G4BRK). In also worked GM4CXM in IO75, G8OHM in IO92 and G4WLC/P in IO81.

9cm

The gear worked OK this week and I managed to work Dave G4JLG/P and John G8PEF/P who had braved the weather to go up Winter Hill. I also worked Mark M0UFC/P in IO93.

ATV

From Denis G3UVR IO83

Brian G3SMU IO83SO has a 10GHz analogue FM ATV signal on 10342mhz.. It is on when Brian is in the shack (which is most of the day and night) It runs 1w to a small dish firing through an upstairs window and even with this setup it is P5 received at my QTH IO83KH on an old BSB squarial with modified LNB on the back. Distance is nearly 50km.

Until just before Christmas I was also able to receive a 10ghz signal from G7IEI IO83RN but at the moment it has been unable to use it since it went faulty drifting HF and just out of band. It is hoped to restore it back on 10425mhz as soon as possible.

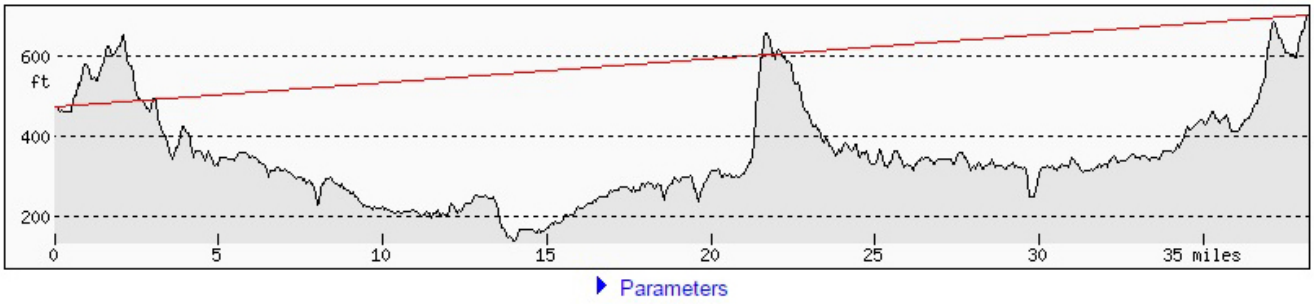
Another local North West ATV station is John G7LLQ from Liverpool IO83NJ. He has a Squarial with Gunn osc on a fixed heading of 241deg firing to my QTH most of the time the signal is P2-3.

So locally there is more activity on 10GHz all from fixed stations than just narrow band and beacons ..

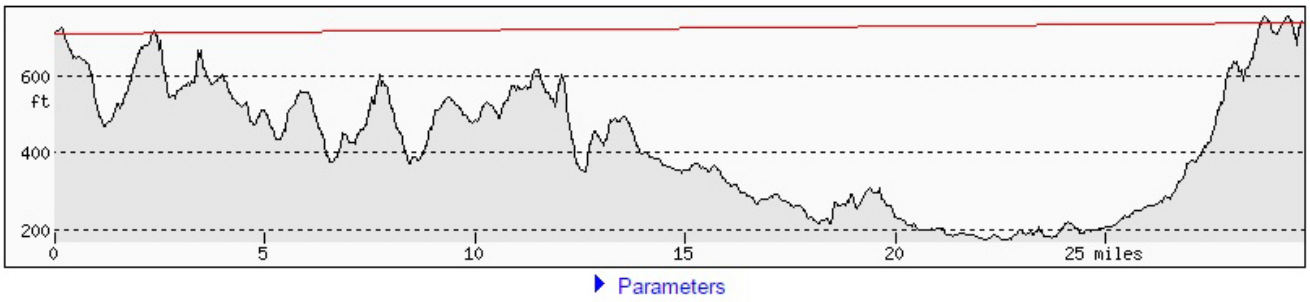
24GHz

From Tony G4CBW IO83

Not been too active of late apart from playing with 24GHz after I bought a complete system or at least most of the modules including a very nice dish feed off eBay. I made up a system to fit at the end of the an offset dish arm, much like an overgrown LNB, phone picture attached. Managed to fit all the critical parts together using an SMA relay plus a number of decent quality SMA swept 90deg adapters inline without any use of coax for the 24GHz RF transmission paths, and limiting WG20 to around 30mm before the dish feed. End results appeared promising with around 4/5dB of sun-noise using an 88cm dish. Testing on air found that I could receive two 24GHz beacons; GB3MAN at 62km, 319-529 and GB3ZME at 48km, 429-549, neither of which are LOS, profiles attached.

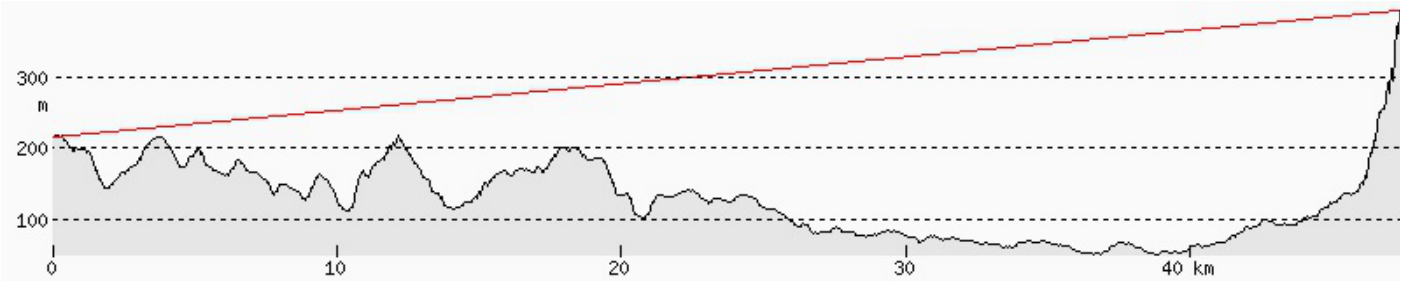


GB3MAN–G4CBW



GB3ZME – G4CBW

It was time to find a QSO partner, so dropped an email to Martyn G3UKV based on the fact that I knew Martyn had 24GHz and lived not too far away. We swapped a few emails to discuss options, but Martyn was only setup for portable with no path towards me from a tripod mounted system, but he did suggest that it might be possible to work a reflected path via the Wrekin TV mast. Martyn is LOS to the TV mast at around 4km. I checked using heywhatsthat.com path profiler and found that I too was just LOS, needed to raise the dish to clear slight rising ground at my end. Profile attached, distance to the Wrekin is around 49km. A sked was set for the evening of Saturday 3rd January, using house phones for communication we immediately got results with Martyn copying my dashes. A few tweaks of the dishes at either end and we swapped 54/56 SSB reports.

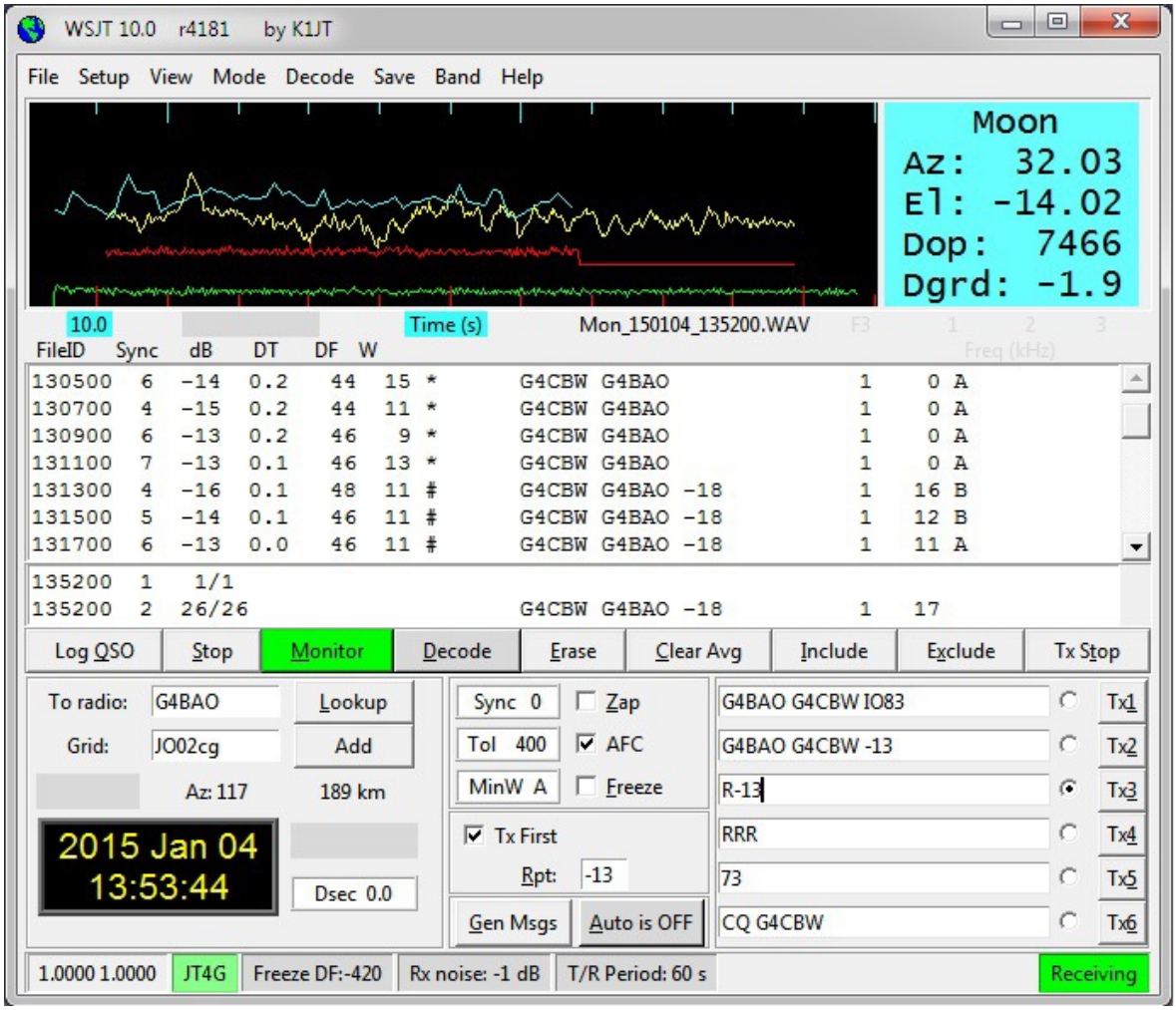


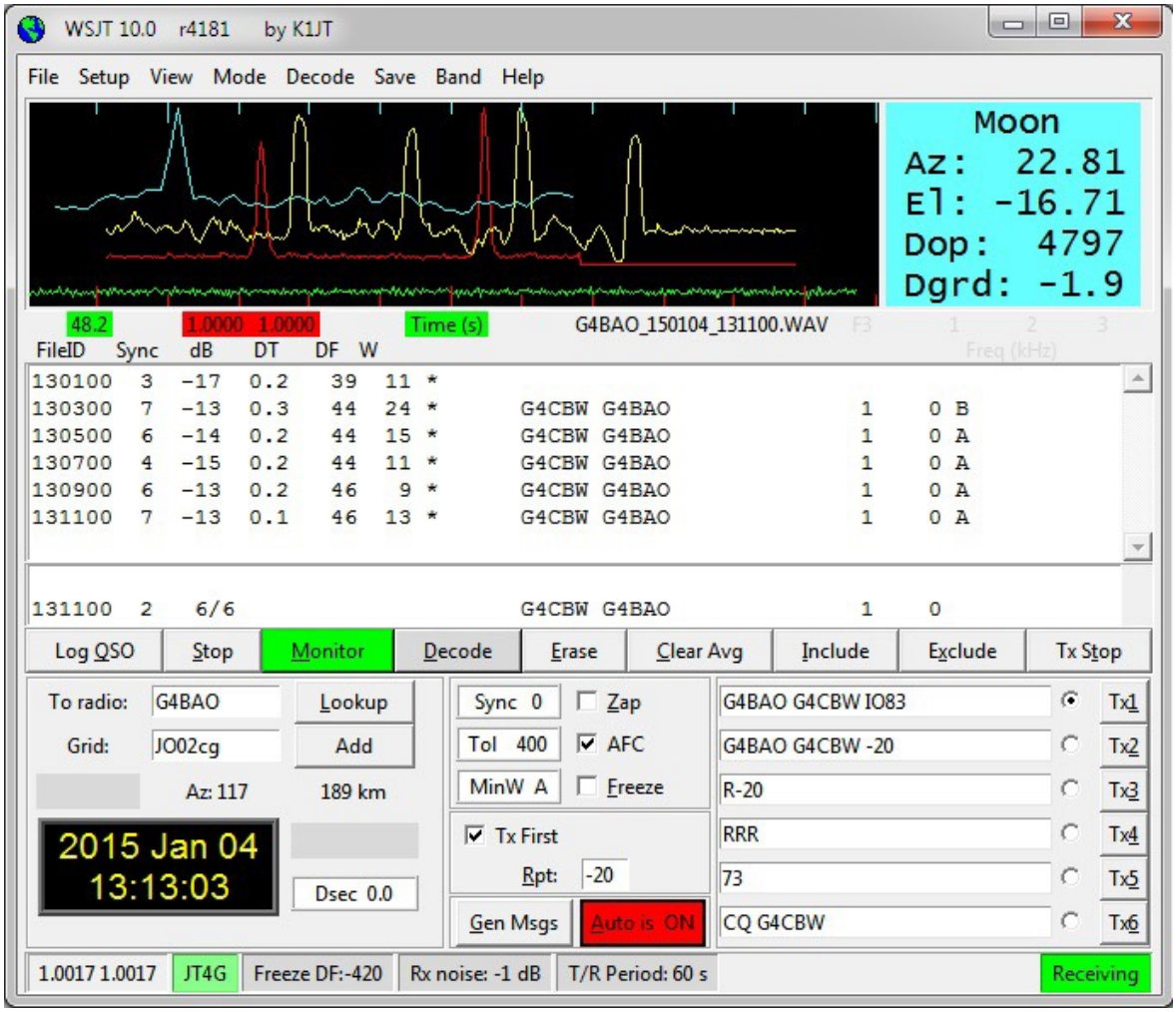
Wrekin Mast IO82rq31 to IO83ub93 G4CBW

The following day conditions were better with a high pressure around and low lying mist, GB3ZME was 589. A repeat test with Martyn produced improved reports of 56/58. I think we were both impressed with our results using the Wrekin TV tower as the reflector, I was sure pleased Martyn suggested it. Have attached a picture of Martyn manning his home portable setup, keen as mustard in the cold.

Later in the day I found John G4BAO on KST and we arranged a 24GHz test. John started by transmitting a carrier and I was amazed that I could see a nice trace on Spectran and suggested it would be good for JT4G, so a two way JT4G QSO was tried. Throughout the test I was copying John's JT4G transmissions 100% decoding over the 189km path. Screen grabs attached of John's super JT4G decodes. Unfortunately, John only manage one decode from me, I think need more power. We didn't make the QSO, but it was an encouraging start to 24GHz from home. Looking forward to future tests with John and others, and I am quite sure this path will go to John's soon. I am keen to have any other tests and particularly interested in non-LOS paths.

For the future, there is a lot of new activity in GM at the present time. At some point over the coming months I am hopeful that a test will be made from my home IO83UB93 to SW Scotland IO74WV32, with Alan GM0USI and possibly Brian GM8BJF. Also planning to try 24g portable operation during one or two of the forthcoming 24GHz contests, possibly from IO93ad, but could be tempted further afield.





Other January Activity

From Keith GW3TKH IO81

I've been optimising dish feeds for 9, 6 & 3cm, with the antenna on a tripod, receiving the SC# beacons through the shack window. 3cm is particularly weak which shows up small adjustments very well.

Pete, G4HQX and I re-crystalled our DB6NT transverters for 2300MHz.

Our first test was 59/59 @ 67km across the Bristol Channel, so we now know that both systems are working ready for the summer.

Back in October we did a 47GHz test of Pete's breadboard rig across the car park, at the Blackwood Rally. He has now got the oscillator chain sorted, so the next test will be the path across the channel, just waiting for some dry weather!

...and finally

I want to encourage you get on the air as often as possible and report your activity to clearly document use of the amateur microwave bands. This means not just DX and EME, but also local activity with ATV, low power or WB equipment.

Please send your reports to Scatterpoint@microwavers.org, remember the deadline is the 1st of the month.

73 Bob Price G8DTF

Using FPGAs for radio projects

The TAPR DCC had a 4 hour tutorial on this. The videos are available here if anyone has ever wondered what it's all about.

https://www.youtube.com/watch?v=eyCWJuBhADo

Recommend to jump to 12min in on part 1 to avoid waffle.

UKuG Microwave Contest Calendar 2015

Contest results are also published online - please follow the link from the UKuG Contests Page at:

www.microwavers.org/?contesting.htm

The contest rules and calendar for next year will be in the next issue of Scatterpoint but will appear first on the UKuG web site in early 2015.

Events calendar

2015

Feb 21	Tagung Dorsten	www.ghz-tagung.de/
Apr 11	CJ-2015, Seigy	cj.ref-union.org/
April 25 – 26	Martlesham Round Table	mmrt.homedns.org/
May 15 – 17	Hamvention, Dayton	www.hamvention.org/
June 14	"RAL" at the village hall in East Hagbourne	Hagbourne Village Hall
June 26 – 28	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 11 – 12	Finningley Round Table	www.g0ghk.co.uk/
July tbc	Amsat-UK Colloquium, Holiday Inn, Guildford, Surrey	www.amsat-uk.org/colloquium/
Sept 5–6	BATC CAT-15, Finningley	
Sept 6 – 11	European Microwave Week, Paris	www.eumweek.com/
Sept 11 – 13	60.UKW Tagung Weinheim	www.ukw-tagung.de/
Sept 25 – 26	National Hamfest	www.nationalhamfest.org.uk/
Sept tbc	Crawley Round Table	
Oct 9–11	RSGB Convention	rsgb.org/convention/
Oct tbc	Microwave Update, San Diego	www.microwaveupdate.org/
Nov tbc	Scottish Round Table	www.gmroundtable.org.uk/

2016

Jan 23	Heelweg	www.pamicrowaves.nl/
Apr 9	CJ-2016, Seigy	http://cj.ref-union.org/
May 20 – 22	Hamvention, Dayton	www.hamvention.org/
Jun 24 – 26	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Oct 3 – 7	European Microwave Week, London	www.eumweek.com/
Oct 7 – 9	RSGB Convention	rsgb.org/convention/

2017

Jun 23 – 25	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Oct 8 – 13	European Microwave Week, Nurembourg	www.eumweek.com/