An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

February 2013

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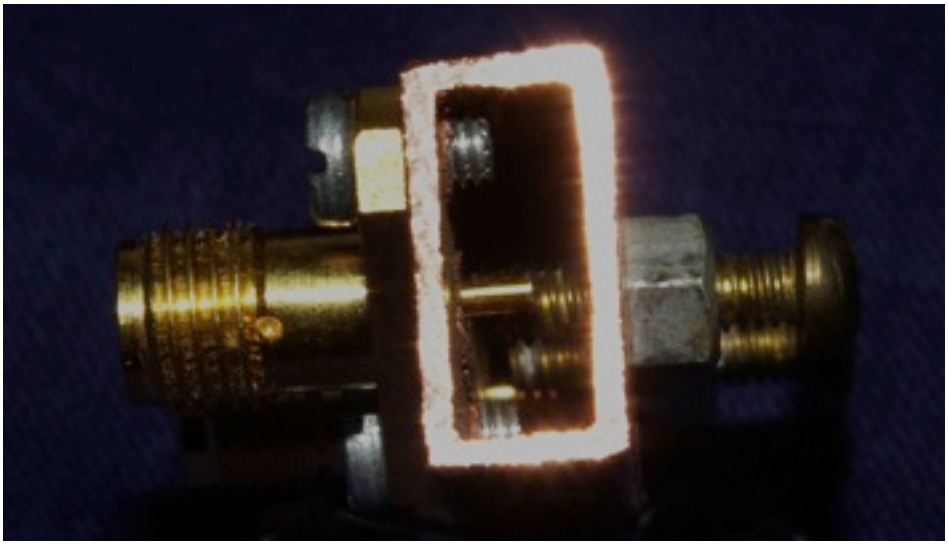
A Quick 10GHz Evanescent Filter

by Andy Talbot G4JNT



In this Issue

STOP PRESS!

Congratulations to Graham Murchie, G4FSG who is now an RSGB Board member (see p4).

SK6OSO 25m antenna 23cm EME July 13–14

The West Coast Microwave Group is once again planning to use the 25M dish of Onsala Space Observatory for 23cm EME on the week-end of July 13-14.

We plan to use CW/SSB and JT (for the small guns)

We can also use FM for the big guns...

73, Ulf Kylenfall SM6GXV
Onsala Space Observatory
Chalmers University of Technology
Sweden

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Editor's corner

The calling Notice for the UK Microwave Group AGM is on page 26

Two officers are standing down so there are vacancies on the committee.

Beacon Managers – please tell Scatterpoint about your beacon (e.g. design, usage, running costs) and be the *Featured Beacon of the month*. We hope this might help the hosting group to solicit support from UKµG members. Perhaps members might consider adopting a beacon, particularly where the beacon is remote and is not supported locally by a large, well-funded group?

I'm preparing an index of Scatterpoint from 2004 (and some earlier editions), which I hope to publish shortly.

73 de Martin G8BHC

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

UK MICROWAVE GROUP

SUBSCRIPTION INFORMATION

The following subscription rates apply.

UK £6.00 US $12.00 Europe €10.00

This basic sum is for **UKuG membership.** For this you receive Scatterpoint for **FREE** by electronic means (now internet only) via 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.

QUOTE YOUR CALLSIGN PLEASE!

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!)

Colour codes

Editorial & Events

Activity & Contests

Technical

Nanowaves (optical)

Commentary

Reproducing articles from Scatterpoint

If you plan to reproduce an article exactly as per Scatterpoint then please contact the Editor – otherwise you need to seek permission from the original source/author.

You may not reproduce articles for profit or other

UKµG Chip Bank

A new free service for members

The catalogue is now on the UKµG web site See www.microwavers.org/?chipbank.htm

Non members can join the UKuG by following the non-members link on the same page. and members will be able to email Mike with requests for components. All will be subject to availability, and a listing of a component on the site will not be a guarantee of availability of that component.

The service will be run as a free benefit to all members and the UK Microwave Group will pick up the cost of packaging and postage, that is, Jiffy bags, small plastic bags for individual component values, and Large letter 2nd class postage, currently 69p.

The service may be withdrawn at the discretion of the committee if abuse such as reselling of components is suspected. We have asked Mike to check with the Chairman (or designated officer) if any individual is making excessive requests, and we will ensure that the service is only available to members.

John Worsnop G4BAO Chairman UKuG

First order received today [5 Feb]! 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!!)

73, Mike, G3LYP

From the RSGB: Member-elected Directors

As you will know, under the revised Memorandum, Articles and Bylaws (approved at the 2012 EGM) there is provision for four elected Directors on the new Board. We have received verified applications from three candidates, who are -

Graham Murchie G4FSG
Dr John Rogers M0JAV
Len Paget GM0ONX

Full details and candidate statements will appear in the April RadCom.

The above three candidates will be appointed unopposed. The remaining vacancy may be filled by co-option by the new Board which takes over from the Interim Board immediately following the 2013 AGM.

Nominated Directors

Under the revised Memorandum, Articles and Bylaws (approved at the 2012 EGM) there is provision for three Nominated Directors. The Nominations Committee has started work to identify the three nominated Directors. Their names will be published in the April RadCom and put forward for membership approval at the forthcoming AGM.

The President

No nominations have been received for the post of President. It is the intention of the Interim Board, working with the new Board members, to fill this important post by co-option for a period of one year. The Interim Board asks members to consider making proposals for this position and suggestions should be forwarded to the Company Secretary, Rupert Thorogood G3KKT g3kkt@rsgb.org.uk, as soon as possible.

This notice will appear on the website within the next few days and may be shared.

Best Wishes,

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Heelweg and Dwingeloo

Or three men in a boat!

by Sam Jewell G4DDK

For the last seven or eight years one or more of us have attended the annual Heelweg (actually Westendorp) Microwave meeting. This Dutch meeting regularly attracts upwards of 150 microwave enthusiasts from across Europe. As the location is close to the German border and not too far from Belgium, it is a convenient location for such a meeting. What makes the Heelweg meeting different is that it is mainly about measurements, with parts trading a low priority. Much higher up the list comes the socialising! And since the event is now held in the Cafe Vos in Westendorp, rather than the nearby Heelweg venue of several years ago, it is easy to sit down and talk with fellow enthusiasts from across Europe, eat a freshly prepared lunch, have a beer or coffee and generally catch up on all the news.

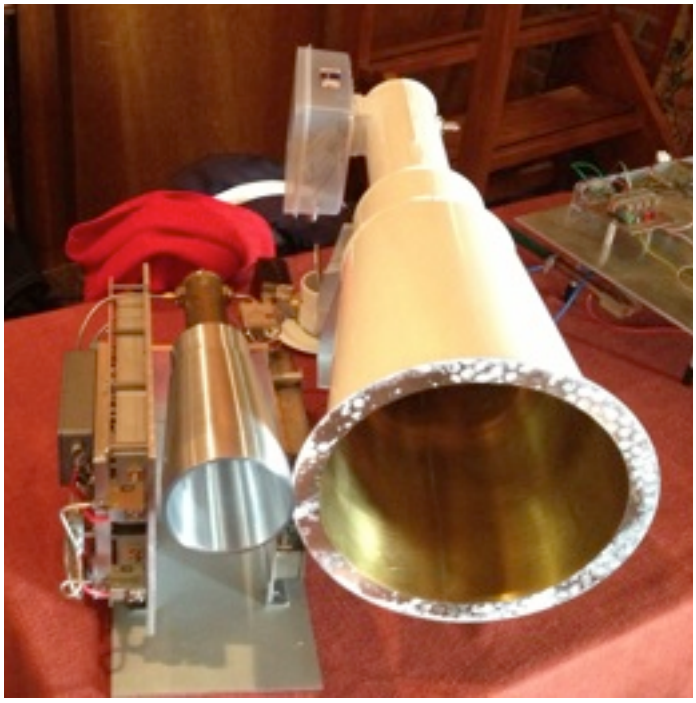
In previous years the three of us, that is Dave, G4HUP; John, G4BAO and myself, G4DDK, have stayed as guests of Hans, PH0V and Ruud, PE1BTV and travelled the 200 or so km from western Netherlands (the 'real' Holland) in one car, returning in the evening to stay at their QTHs. Both Hans and Ruud (and their XYLs) have been kind enough to accommodate us and even pick us up and drop us back at Schipol airport.

This year was to be different. It was not possible to stay with our Dutch guests and so we decided to go by car instead. This is something G8CUB did last year. Taking a car over had several planned and one unexpected advantage.

Several years ago the Stena Line fast catamaran service, using the 'Discovery', has been stopped and replaced by two 'new' conventional ferries, the Hollandica and the Britannica. These luxury ferries are actually old ferries that have been lengthen and refitted and the result is a pair of cruise ship-like ferries. The only problem is that now they take between 6 and 8 hours to cross. But, since they are overnight ferries it is possible to book (you have to – no sleeping on the floor) a cabin. These are positively luxurious compared with the cabins of old. I have been crossing the North Sea and Irish Seas by ferry for more than 60 years and I don't remember anything as nice as these two ships.

Suitably refreshed and breakfasted we set out for Westendorp at about 08:00 to arrive at about 10:30. After coffee we set up at our small trading tables and enjoyed a fair trade and lots of questions. Interspersed with trading the three of us managed to walk around the small hall attached directly to the cafe and bar area, looking at all the test gear and other trade stands. This side of the 'Heelweg' meeting seems to grow each year. When I first came here in about 2005 there was, perhaps, three traders. This year the trade side of things seems to have grown to be as big as the measurements. It also has to be said that the level of trading was noticeably down on some previous years, with much less money changing hands. Kevin, G3AAF, was the fourth 'G' at Heelweg this year and he seemed to be enjoying the event.

Among the many items on show were some of PA7JB's beautifully made feed horns. Old friend, Hubert, DJ3FI, also had some of his microwave amplifiers and feed horns on show (and for sale, maybe?). Another old friend is Ruediger, DK6JL, who also had several tables and was selling some of his wares including preamplifiers. Some of you will remember Ruediger from his visits to the Martlesham Microwave Round Table.



PA7JB's feedhorns

After the event closed, mid afternoon, it was the now traditional Chinese meal in nearby Varsseveld before finding our overnight accommodation in Leichtenvoorde, just a few km from Varsseveld.

Now, this is where it began to get a bit worrying. We had been wary of travelling by road to Westendorp as there had been heavy snow the previous day and this was still laying around. Indeed, we had all kept a close eye on the weather forecast before our ferry crossing. We decided to go ahead as no more snow was forecast - until Sunday. The whole time we were in The Netherlands the temperature had not risen above -4°C. But the roads were clear.

On Sunday morning there were forecasts for fresh snow coming up from the direction of Belgium. But is wasn't expected for some hours. Just enough time to take in our visit to Dwingeloo and the PI9CAM facilities and maybe a quick look at the newer Westerbork radio telescope facility. Dwingeloo is located in the northeast of the Netherlands, a few km SW of Groningen in JO32 locator. We had been invited to visit the Dwingeloo dish on each of our previous visits to Heelweg, but since we were travelling with our Dutch hosts, who had to be back in 'Holland' later on the Saturdays, we had had to postpone our visit. This year, taking the car, it was going to be possible and we weren't going to let the weather put us off!

It took around 2.5 hours to get to Dwingeloo and we were met by our host and guide, Jan, PA3FXB.

Those of you who were at EME2012 will have heard Jan's illustrated talk on the refurbishment of the Dwingeloo 25m dish in 2012, continuing into 2013.

Much of the refurbishment has now been completed and the dish is back on the mount, the operating room has been cleaned up and everything is now ready for the quadrapod feed support to go back up and the radio equipment to be re-connected. Obviously, our visit wasn't going to allow us to see the dish in operation. That is for another visit.

This was Jan's first visit back to Dwingeloo since the dish was lifted back into place and I think he was rather anxious to see what had been done. I don't think he was disappointed. The contractors had done a great job on this Dutch national monument to a famous Dutch radio Astronomer, Jan Oort.

The Dwingeloo dish is located inside a national park and adjacent to the Astron facility. A public viewing area lies next to the dish and large display boards inform the public what the dish is all about. the Dutch people are rightly proud of their monument. The "C.A. Muller Radio Astronomy Station" foundation ("CAMRAS" for short) restored the telescope to working order, with the consent of ASTRON, the owner of the telescope. A large amount of money was found to do the re-furbishment, which has allowed the PI9CAM group to use the dish for EME, look after the dish and control systems and generally ensure public awareness of the importance of the dish.

Dwingeloo dish construction began in 1954 and it saw first light in 1956, just one year ahead of our own Jodrell Bank. Of course it is much smaller than JB.....! but was the first to complete mapping of the Hydrogen line, for which Jan Oort will always remain as famous as for the Oort Cloud.

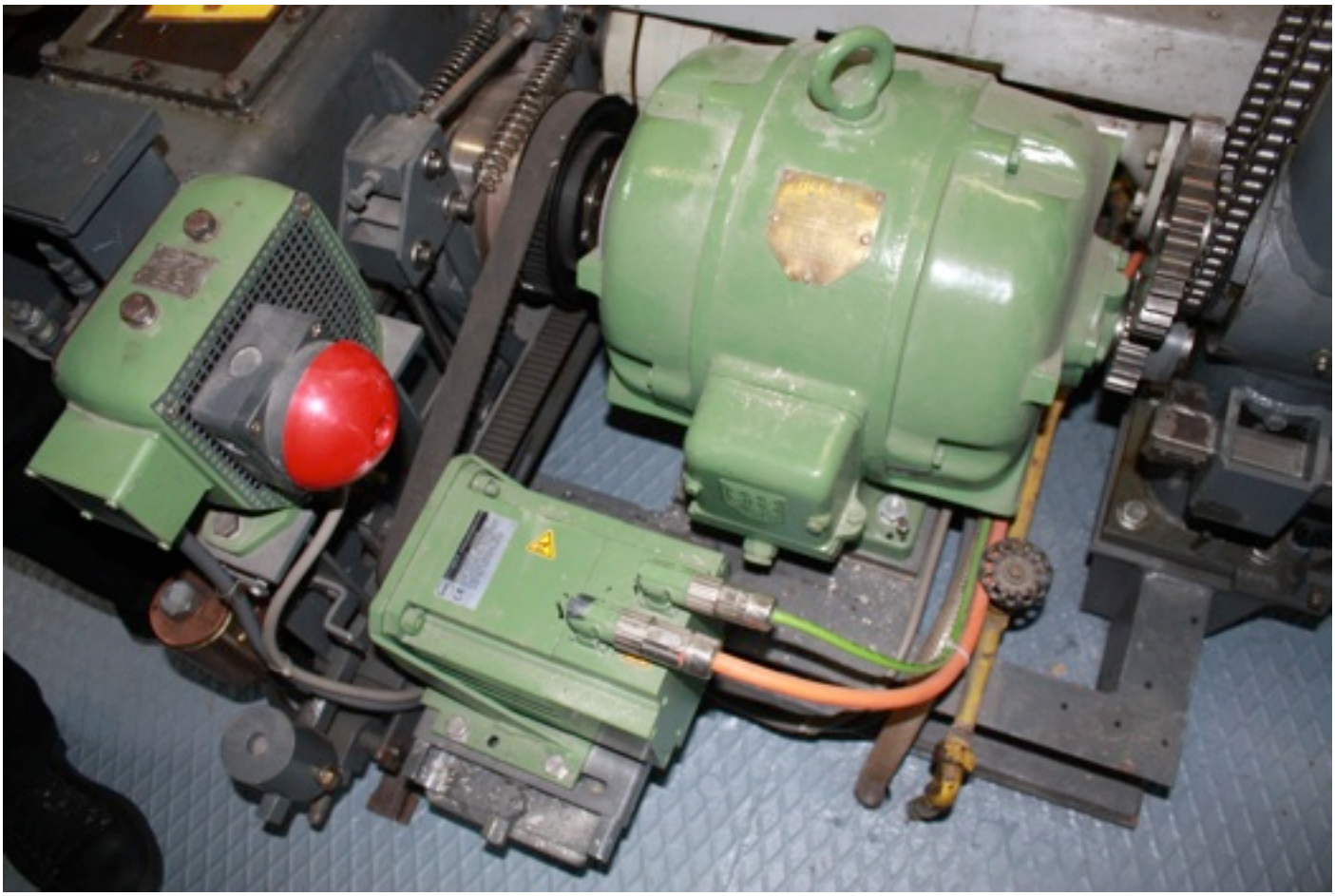
It was a very cold day when we visited and we were unable to spend much time on the platform above the operating room. But it was enough to examine the dish and supporting mushroom-shaped pieces of metal used to achieve the desired profile. And also to see the elevation drive motors. We felt privileged to be allowed up on the platform and get such a close view of the mesh and construction.

One of the things we all found surprising was that the dish azimuth (and probably elevation. I forgot to ask) drive no longer uses encoders but instead relies on a large stepper motor to move the dish on its conical shaped mount, using precise steps. The dish and operating room are supported on four large metal wheels that run on a circular track. It obviously works very well!

Below the circular track there is a plaque. This marks the place where some of the ashes of Grote Reber have been interred. Grote Reber is probably the best know amateur (ex-W9GFZ) radio astronomer and when he died he was cremated and some of his ashes were distributed for interment at a number of radio telescopes around the world, including, of course, Dwingeloo.

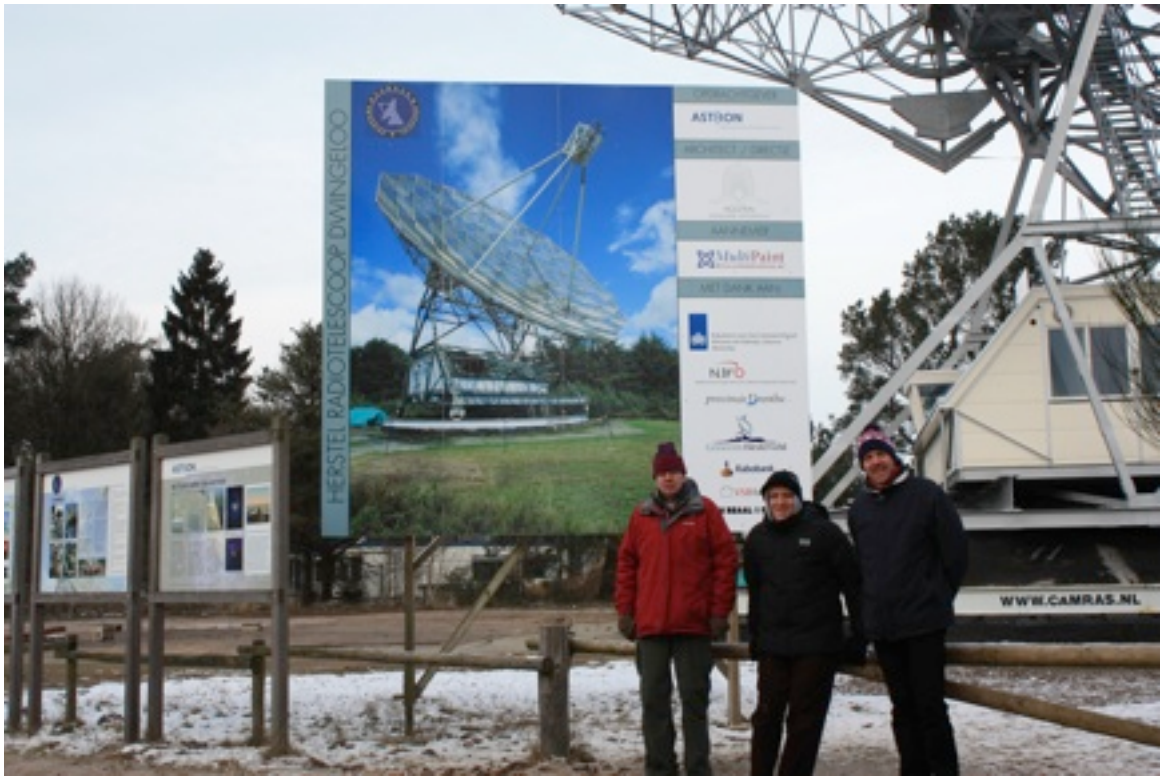
After our visit we had a short lunch and decided it was getting too late for the visit to Westerbork. So we decided to head back towards The Hoek to catch our ferry. As it turned out. this was probably a sensible decision as shortly after we left Dwingeloo we ran into the band of snow that had been coming up from the south. It took us nearly 4 hours to get back to The Hoek over some very badly snowed-up roads. Fortunately the Dutch Highway agency and some heavy traffic kept the main roads open and we made it back to The Hoek in time to board the ferry, find our cabins, have dinner and a drink and settle in for the crossing, arriving back in Harwich early the following morning.

The Grote Reber plaque



The dish azimuth stepper motor with the 'old' drive motor

John attempts to move the dish by hand



Dave, John and Jan in the cold!

One further part to our trip was that we met Graham, G3VZV, on the ferry. He was on his way back from Delft University where he had been at a meeting with the FunCube satellite team. It's a small world!

Why was it a better choice to drive? Due to the snow there had been extensive flight delays!

And, we got to see Dwingeloo at last.

My thanks to my two travel companions and to the Heelweg organising team.

73 de Sam, G4DDK

Cabin

No, it's not a dish they bought [Ed.]

Filter Bodging at 6cm

Peter Blair G3LTF

The output spectrum from my homebrew 6cm transverter was not very pretty; with a 144MHz IF the LO was down by 45dB and the lower sideband by only 35dB. I needed something better than the single pipe-cap filter to clean it up and make me legal. At one of the Martlesham events I picked up a nice looking filter with 5.6-6.2GHz inscribed on it, small and light, it looked like it could be the answer. It was a 5 active section inter-digital type with SMA connectors. I put it on the test gear and tried to retune it by moving the pass-band higher, yes it would go there but only just and the pass and stop bands were then far from optimum, so it went on the shelf. Then, a few weeks ago I came across it again and thought, “it’s a cute little filter, all milled out of aluminium, including the resonators, and silver plated… I wonder if I could use the body, keep the input and output coupling resonators, and make it into a 3 resonator filter with a much smaller bandwidth?”

My inter-digital filter designs come out of the ARRL’s UHF/Microwave Experimenters manual, Chapter 6, which has a useful set of charts that give resonator spacings and diameters for up to eight active resonators. I have built about ten or so of these filters using the charts for frequencies from 1.3 to 3.4GHz with excellent results. An internet search will also provide inter-digital filter design data and programs but, in this case we need to work backwards from the case dimensions and so graphs are the simplest way to do that.

First I measured the centre to centre spacing of the two connectors, 35.5mm. The dimensions on the charts are normalised to the ground pane spacing so that was also measured as 7.6mm. The task then was to find a set of resonator spacings that added up to 35.5mm. Obviously I would not have control over the percentage bandwidth but I knew that by using 3 resonators with wide spacings it would turn out to be narrow and I was only really interested in getting rejection of the spurious signals and having a low pass-band loss.

The spacings are denoted as C01, C12 etc, being the centre to centre spacings between resonators 0 and 1 and 1 and 2 respectively, C0 and C4 are the input and output resonators fed directly from the SMA connectors. In a three resonator filter the spacings are symmetrical about the centre resonator, i.e $C_{01} = C_{34}$ and $C_{12} = C_{23}$ and so it becomes a very simple sum:

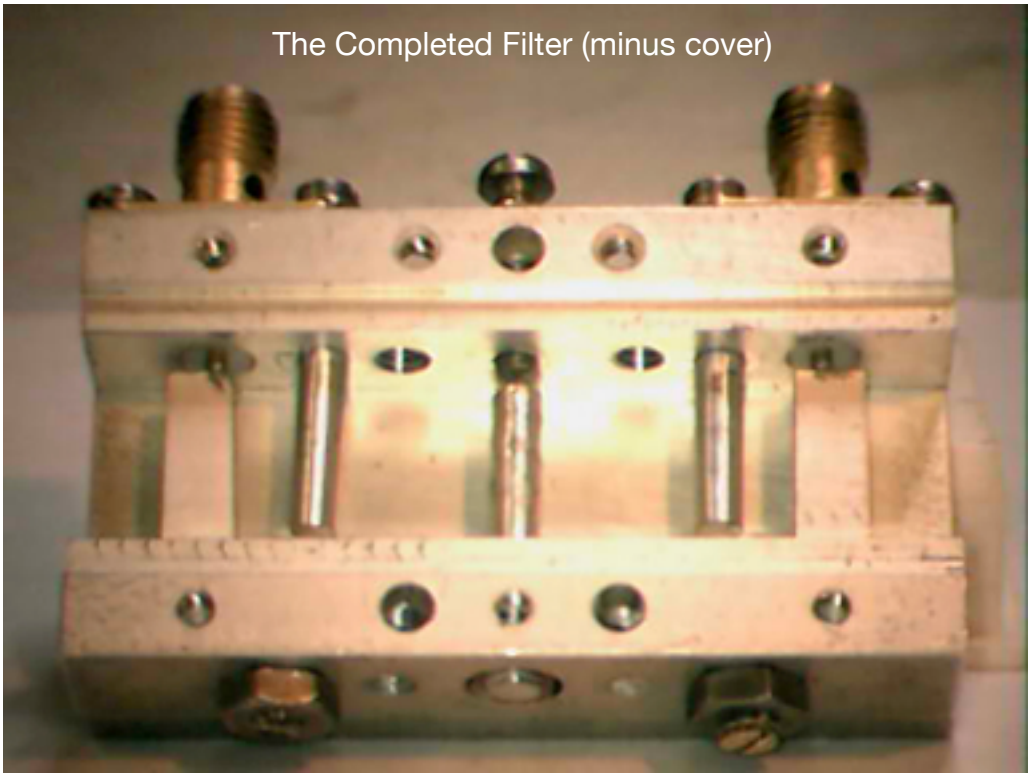
$7.6 \times 2 [C_{01} + C_{12}]$ must equal 35.5.

A few trials produced values for the bandwidth of about 2.2% with normalised spacings of 0.84 and 1.5, that is 6.4mm and 11.4mm. Now we need the resonator diameters and these are read from a second set of charts entering with the same percentage bandwidth figure, 2.2%. Again there is symmetry, resonators 1 and 3 and 0 and 4 are the same. So now I had all the dimensions, but… the input and output resonators, 0 and 4 had to be preserved with their silver plating for the connectors to be soldered into. They were rectangular, 5mm wide and 2.5mm thick but I needed round with 4mm diameter. Remember we’re bodging here… so I filed down the side nearest to resonators1 and 4 so the face to face spacing would be about right and the width 4mm. The other resonators, 1,3 and 2 came out at 2.85 and 2.91 mm diameter respectively.

I then cut off all the unwanted resonators and cleaned up the surfaces and turned up on the lathe the three required resonators from 4mm aluminium rod, I had to make a decision on the length, nominally this is a quarter wavelength, 13mm, but allowing for some tuning capacitance I decided to make them the same length as the original resonators, 11mm. I stripped out all the original tuning slugs, they were all in the wrong place, and by a combination of good luck and some mechanical skill I fitted all three resonators. Numbers 1 and 3 were tapped and held in place with 8BA screws and number 2 was made with a larger diameter base and threaded to tightly fit the 4mm hole that previously held the tuning slug.

It wasn't possible to fit tuning screws for resonators1 and 3 exactly opposite the top of the resonators… but that doesn't really matter, they only have to provide a small amount of adjustable capacitance. The hole sizes meant that I had to use small pieces of 4BA brass studding.

So, quite a bit of bodging then, and its 6cm, so how did it turn out? I do have a rather old network analyser but the filter could have been tuned up on a simple detector system. It didn't work first time, I'd made the centre resonator 1.5mm too long by error but as soon as I corrected that I got a nice passband, about 130MHz wide (2.3%) and -30dB at the LO and -43dB at the lower sideband. The VSWR at 5760MHz was 1.1 and the loss 0.6dB. When I fitted it in the transverter the improvement was dramatic, all spurious 50dB below the transmit signal.



The Completed Filter (minus cover)

The conclusion from this exercise is that unless one is trying to produce a super flat passband or some other exact characteristic you can get away with quite a lot of bodging even at 6cm. I suspect that the results would still have been quite good if I had used standard 3mm stock for the resonators rather than turning them exactly. So keep a look-out for useful units and have a go at filter bodging!

Peter Blair G3LTF

Next month

Modifying surplus 13cm linear amplifiers – a team effort

Stuart Wisher, G8CYW

Most of the NE Optical Communications group are also keen microwavers and over the past two years we've obtained between us no less than five of the commonly available surplus 13cm ex-telecoms amplifiers and 50V switch mode power supplies. Whilst we have had some success in getting some power out of them we have been plagued with problems of low output power and with them abruptly switching off as power increases.

Tests on a DIGITAL TV LNB for 10GHz narrowband

Andy Talbot G4JNT

Paul M0EYT mentioned that he was playing with a new low cost Satellite TV Low Noise Block that used a PLL synthesised Local Oscillator. He said that it appeared to receive GB3SCX very well, and the JT4G decoded perfectly. As soon as the Ebay link /www.ebay.co.uk/itm/170940689242 appeared on the Email chat page, I ordered one which arrived two days later. The LNB is described as “Octagon Optima Narrow Feed Twin 0.1dB HD 3D Ready LNB With 3 Year Warranty Model OTLSO”. It cost £19. See Figure 1.

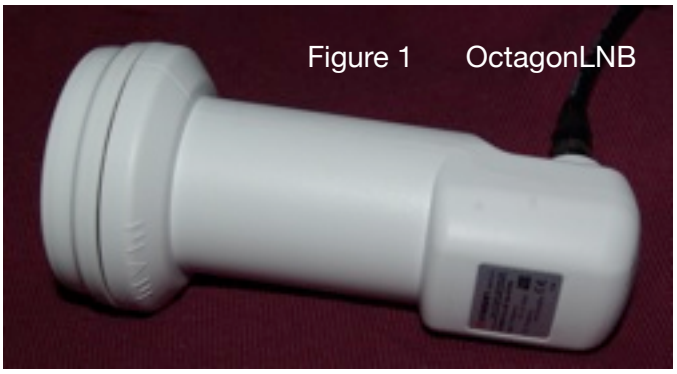


Figure 1 OctagonLNB

Paul had already looked at its innards and produced the photograph in Figure 2. The PLL/Mixer chip is RDA3560m; a short data sheet can be obtained from

www.uhf-satcom.com/misc/datasheet/RDA3560m.pdf

The photo shows the RF inputs (right hand side) and the RF path going leftwards through to the chip with a 27MHz reference crystal – it’s interesting to note that there is not the usual PCB band pass filter as found in other LNBs. What is not visible on the photo is that there is a duplicate crystal and mixer /PLL / IF amplifier chip on the other side of the PCB, giving a dual channel IF output. The RF input is via a ‘standard’ satellite TV feedhorn, with circular waveguide probes for vertical / horizontal polarity, selectable via the usual +12V/+18V voltage switching. The unit is marked as being dual LO 9.75 and 10.6GHz. For normal operation, a 22kHz tone superimposed on the feed up to the LNB selects the higher LO frequency. A plain 12V DC supply selects 9.75GHz.

Narrow Band Performance

Using a bias tee to supply +12V up the feed coax to either of the two F connectors selects 9.75GHz LO and the polarisation is in line with the connectors and an arrowhead marked on the front casing at the top. For narrowband reception at 10368MHz the resulting

Figure 2 LNB_Innards

IF is 618MHz. If the higher 10.6GHz LO were to be used, the sideband sense would be inverted, the IF output at 232MHz is rolling off, and there is the hassle of providing a 22kHz switching tone.

I was mainly interested in the phase noise performance and stability of the LNB, so had to use suitable test signals with low inherent phase noise – this meant my otherwise very nice Gigatronics microwave synthesizer

couldn't be used. The test signal at 10368 came from my transverter (WDG modules with RDDS locked LO) and IC202 drive. The 618MHz IF output was mixed down in a MiniCircuits ZLW-11 DBM. with a 85MHz LO generated from a DDS source, with known good phase noise performance. The DBM operated as a harmonic mixer (7 * 85 = 585MHz) for a resulting output at 23MHz which was fed to the SDR-IQ receiver for display. For phase noise measurements it was not necessary to include any image filtering, but remembering the added image response does then increase the output noise level by 3dB

Saturated output power of the LNB was in the region of +5dBm at 618MHz, and the harmonic mixer loss was 33dB, so it was important to keep the output from the mixer at 35dBm or lower to avoid saturating the mixer. Transverter output, at a few milliwatts, was fed to a PCB log-periodic antenna and the spacing and orientation of the two antennas arranged to give the required output level from the mixer.

Figures 3 , 4 and 5 show respectively the plot of the received signal in spans of 100kHz, 10kHz and 1kHz. Figs 3 and 4 use a resolution bandwidth of 12Hz, so phase noise in dBc/Hz is 10.log(12) = 10.8 dB lower than the curve, plus another 3dB for image noise. Say 14dB correction factor. For Fig 3 the value is near-enough 5dB

At 20kHz spacing the phase noise has pretty well fallen to a flat level of 82dBc/Hz that is maintained out to around 1MHz spacing. At 2kHz spacing it lies around –72dBc/Hz, and very close in at 200Hz spacing from the carrier is a remarkable –61dBc/Hz. This close in it is not entirely possible to guarantee all the phase noise is even entirely due to the LNB. The two distinct spikes at 90Hz spacing are unknowns – they could be the computer fan vibration getting though my 10GHz transverter all part of the same bench assembly, or the central heating pump the other side of the partition wall, or anything. The ones at 100Hz spacing are self explanatory.

To put the figures into perspective, take the far out 20kHz spacing value of –82dBc/Hz. In a 2.5kHz SSB filter, the resulting noise from a pure carrier will be –82 + 10.log(2500) = -48dBc. So any 59++ carrier anywhere in the passband, or a combination of many signals adding to this sort of level will make itself heard as a rise in background noise, 48dB down.

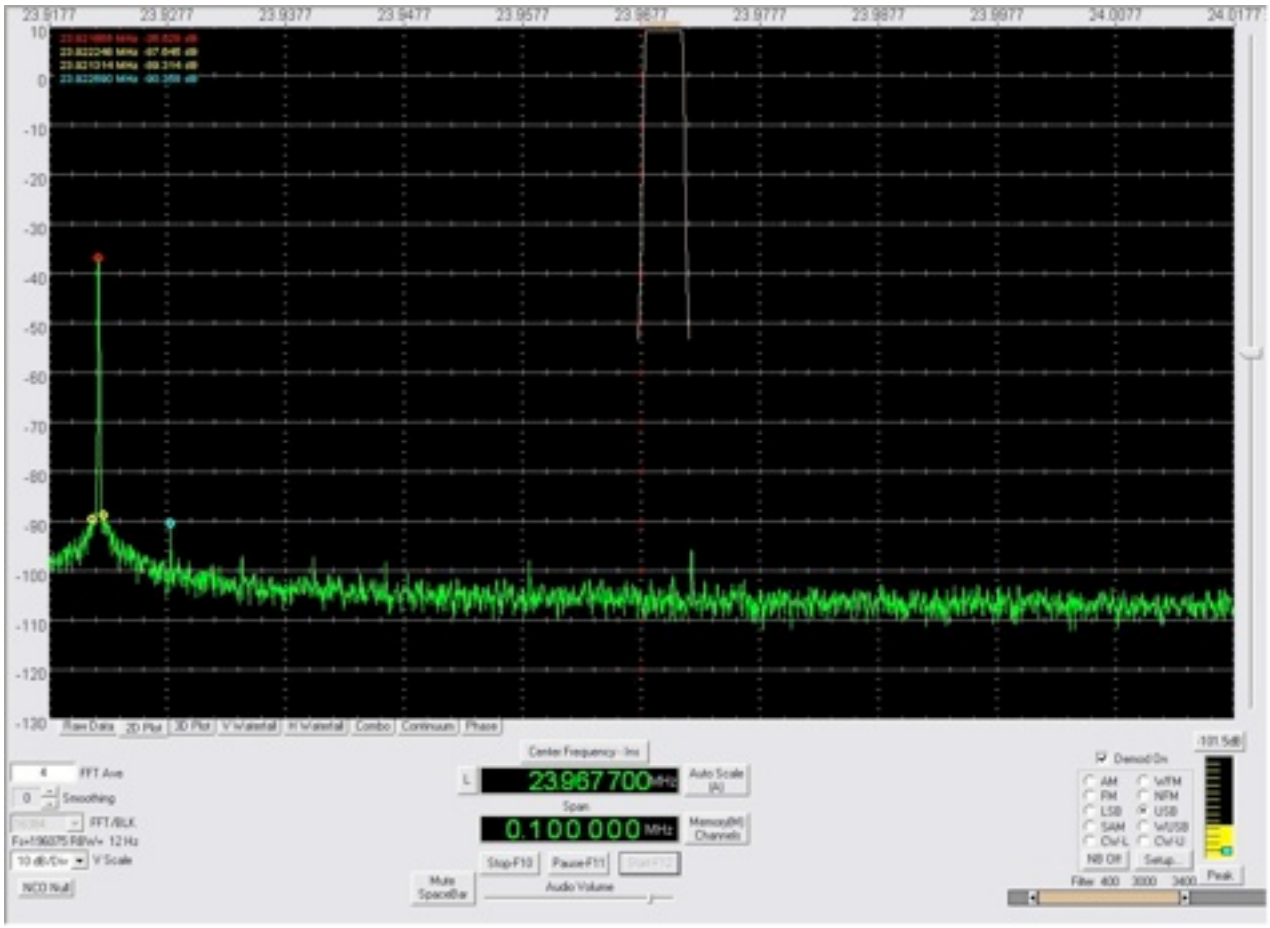


Figure 3: LNB Phase Noise plot of the received signal in span of 100kHz

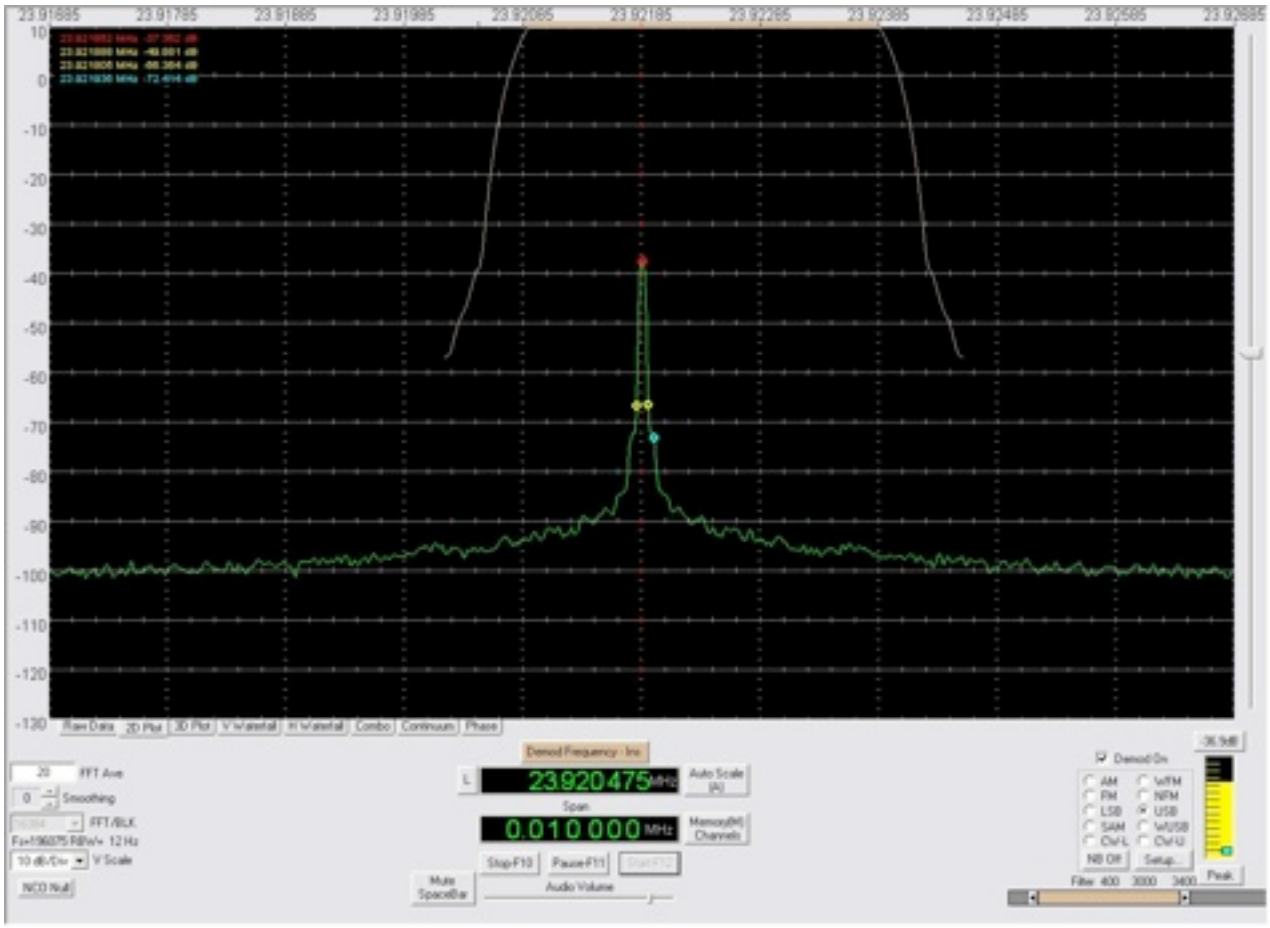


Figure 4: LNB Phase Noise plot of the received signal in span of 10kHz

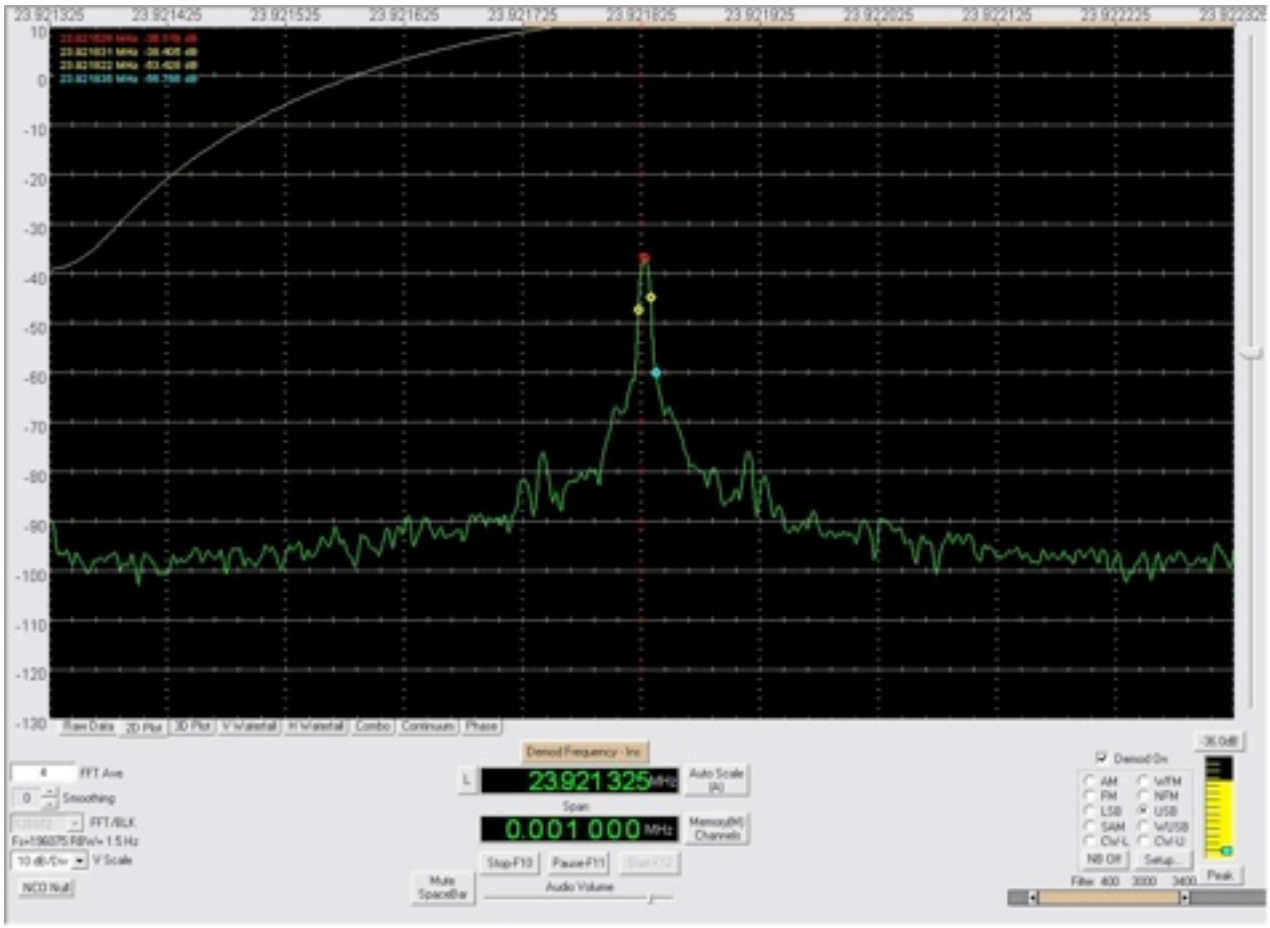


Figure 5: LNB Phase Noise plot of the received signal in span of 1kHz

But the close in performance is very impressive; it "sounds perfect". Although that phrase is meaningless in the face of absolute measurements. That the phase noise is more-or less flat out to 1MHz suggests a high loop bandwidth is used, so the stability is just that of the crystal, multiplied up.

Stability is also pretty good considering it comes from an unovenned fundamental mode 27MHz crystal. From turn on at room temperature it drifted a couple of kHz at the most (I didn't measure it thoroughly) and after being on for a hour or more, no more than a few tens of Hz were detected over several minutes. Certainly it appears stable enough in a domestic environment for JTxx decoding. How much worse this would be outside with sun and wind is still to be determined.

Changing the LO, and using an External Reference

The internal 27MHz crystal (there are two of them, for two independent conversions via the two output connectors) is effectively multiplied by 361.111 inside the RD3560 chip. Paul removed one of his crystals and supplied 27MHz from a GPS locked signal generator – it worked perfectly, as before, and now with a rock steady output. In fact Paul, who can receive GB3SCX very strongly, could see the Simple-GPSDO induced wobble of a few Hz on the beacon using this LO in locked mode, something he hadn't observed before.

He then tried changing the injection frequency to 27.515076Mhz, which after multiplication yields an LO of 9936MHz and means 10368 is converted to 432MHz. He reported GB3SCX reception as being just the same as it was at 618MHz – so that works. (It would not really be fair to ask it to generate a 10224MHz LO as the IF circuitry has rolled off considerably at 144MHz, so that wasn't tried).

Special high resolution frequencies can easily be generated from a DDS, but be careful not to add in unwanted close in spurious signals as these will get passed straight through the PLL and be effectively multiplied in amplitude by 3612 = 51dB. The reference must be very clean!

Paul added a separate miniature coax cable for the reference input. The reference input should be fed to one of the RDA3560m XTAL input pins via a 150R SMT resistor and a 1nF SMT capacitor in series. Using this method, it is possible to leave one complete converter running from its IF output connector and internal 27MHz XTAL whilst having an externally referenced converter from the other IF output connector. [So far] I've left mine well alone.

Ideas for a Bottom End Box

618MHz is quite a benign IF to work with. A scanner (with SSB facility) is useable directly, but my AR8200 has a vastly worse phase noise than this LNB and ruins its performance as a narrowband monitor receiver. Amongst all the synthesizer modules I've made over the last year, one using an LMX2326 and MiniCircuits JTOS-535 will run at 474MHz (but only just, with this VCO) thus allowing a 144MHz IF from 618MHz. An alternative would be a 94.8MHz crystal oscillator and 5th harmonic mixer. Or perhaps an old surplus 96MHz crystal giving a 138MHz 2nd IF – within the tuning range of many modern 2m receivers. With the huge gain available in the LNB, the losses of harmonic mixing are perfectly acceptable.

The image response at 330MHz will be a straightforward task to filter out using high pass or bandpass LC elements. It is only necessary to reduce it by 20dB or so to kill the added noise – its not as if there are likely to be many image-frequency signals present. For direct feed to an SDR, an I/Q conversion using one of the chips described in RadCom Design Notes last year would do

The bottom end box will also have a DC injection bias-tee, and input attenuation to overcome the huge gain in the LNB.

Conclusions

This LNB offers an extraordinarily good performance as a low cost, low noise narrowband 10GHz monitoring receiver. If placed at the focus of a suitable dish, it will make for a very potent 10GHz receiving system. The Noise Figure is quoted as being 0.1dB, but in light of the Noise Figure measurement presentations at recent Microwave Roundtables, we'll take that with a pinch of salt! But, it is still very good. With snow on the ground as I write, I don't feel inclined to set up outside and do cold sky/[not very] hot ground tests.

Time will tell just how stable the internal crystal really is, but use with an externally generated reference, a high stability converter can result.

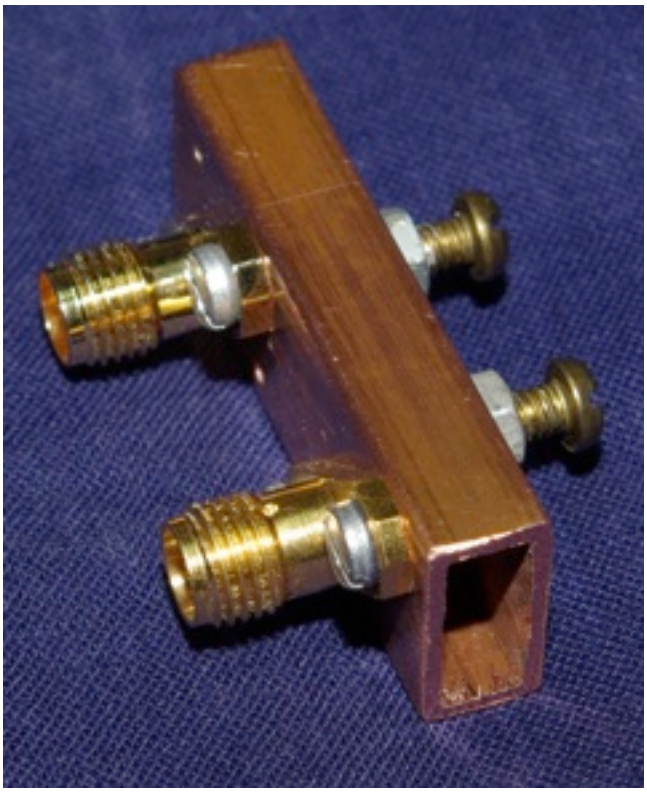
Andy Talbot G4JNT

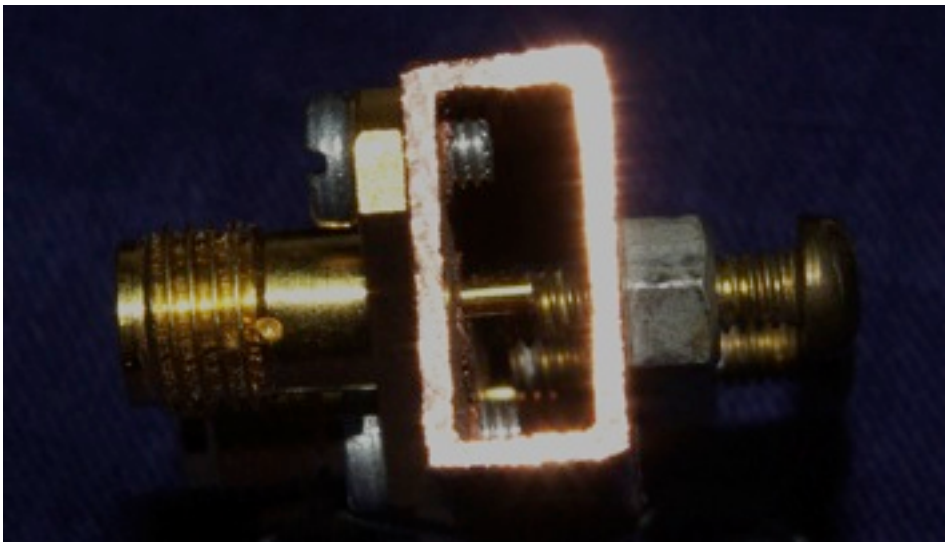
A Quick 10GHz Evanescent Filter

Andy Talbot G4JNT

Based on the designs for evanescent mode filters for 3.4 and 5.76GHz www.g4jnt.com/EVANFILT.pdf here is a simple two section filter built in WG20 (WR42). It was intended for extracting the fourth harmonic from a 2.5GHz multiplier to make a simple beacon source.

WG20, with an internal a dimension of 10.6mm has a cutoff at 14GHz, so any filter built in this waveguide will not have brilliant performance above the passband, but is suited to attenuating the higher amplitude lower frequency outputs from a multiplier.

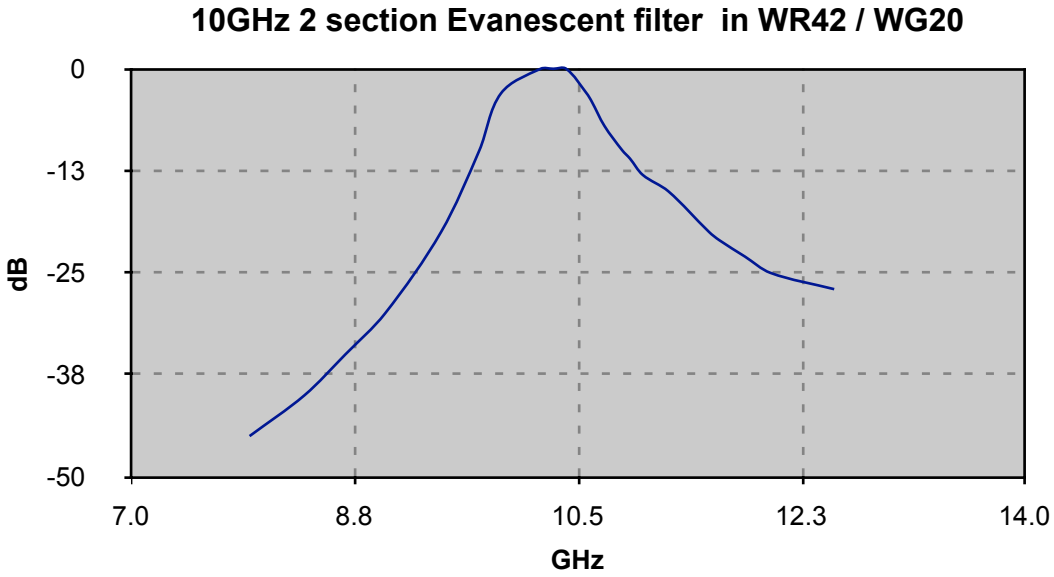




I roughly scaled the values from the 3.4GHz filter in WG10, and guesstimated a resonator spacing of 13mm. The resonators consist of 6BA brass screws (see note below) with suitable holes drilled and tapped into the WG broad face.

Input and output coupling probes were made from the spigots of SMA sockets mounted on the waveguide using M2.5 screws into threads tapped into the waveguide as shown in the photographs. The coupling probes were spaced 3mm from the resonators (19mm spacing between the two ports), and mounted on the opposite face of the waveguide. I started out with a probe length half the width of the waveguide, intending to trim this if the initial frequency response looked too much like a camel.

It wasn't worth setting up for a Dishal tuning procedure with a simple filter like this so using the maximum smoke approach, both tuning screws were adjusted to give the response shown.



This was about what I expected; coupling wasn't so way-out that a double hump resulted so I didn't bother changing probe length. It may possibly benefit from slightly longer probes if a flatter response is essential, but that would compromise the cutoff region. The filter did what I wanted so left it alone.

The important point on the response is at 7.5GHz, the unwanted third harmonic from the multiplier, and this is attenuated by around 50dB. With my spectrum analyser, it was impossible to measure the response much below 50dB. Insertion loss at the peak of the curve, at 10.37MHz is around 2.5 to 3dB; the 3dB bandwidth 9.89 to 10.56GHz

Andy Talbot G4JNT

Note on filter tuning screws.

Back in the year dot, when I worked in an RF industry that actually built real hardware, at the bench next to a bunch of satellite filter gurus…

One of them once told me that BA threads were preferred for filter tuning because the shallower thread helix angle of 47.5° gives a deeper thread cut that allows better metal-to-metal contact than the 60° helix angle of metric threads. Since I have a 6BA tap, it's a piece of advice I've followed ever since.

Confessions of a Nanowaver

Stuart Wisher, G8CYW

Well, it all started at about the point where we were trying to get round the QRM generated by powerful street lights when using baseband AM. Not streetlights as such, actually powerful airport lighting. We had just discovered the cure to our AM system being blocked by such things, go over to using sub-carrier FM. What better test we thought than for us to try operating our new-fangled stand-alone FM system than for the other lads to operate through the glow of the airport lighting!

So there was I, located on Currock Hill some 800 feet asl, actually on a track leading down from the top of the hill which led to the local Gliding Club Airfield in the middle of the dark countryside. Well, how was I to know that the club members were safely ensconced inside the clubhouse as I set up my gear? Convinced about the wisdom of aiming my red light in its tube on my tripod towards Newcastle International Airport some 15km away, where the others were parked up on a road on the opposite side of the Airport. Not that we were in any danger of causing problems to the air traffic, a low hill prevented any chance of illuminating any aircraft. We had a ball with clear contacts and tried several experiments chatting on until……

It came the time when the Gliding Club members decided to shut up shop and drive home. As they drove up the track, I can just imagine their surprise at the sight that met them, a red shaft of light above them, getting stronger as they neared my location. Being already nervous about the security of their expensive gear located in the depths of the dark countryside, and now this strange character behaving very oddly, a certain three-digit telephone number was called, and they passed the matter over to the authorities.

The call must have been escalated a couple of notches before I was aware of the result. The first I knew of this was a 4 x 4 truck with a lot of antennas and a green glow from all the monitoring gear located in the rear of the truck, pulling up in front of me. The gentleman got out of his mobile shack and approached me. He already appeared to know my name and callsign which took me aback, I gathered he had the nation's security from terrorists at heart, although he didn't bother introducing himself.

"What were we supposed to think?" he said, "here you are with a black tube mounted on a tripod, located at one airfield, aiming at an International Airport?" Oops….."and a red beam of light aimed in precisely that direction". I explained what we were doing and laid the blame fairly and squarely on the others, but I think he saw through that ruse! Can I phone anywhere to tell you of any further experiments so you are not inconvenienced in future?" I said. "Nope" was the reply, "we'll know"…..So I gave him the frequency we used for talkback on 70cm and offered to stick to it in future. I suspect he had already discovered this. Phew, I breathed a sigh of relief as he left and I told the others over the radio what had happened, I suspect there was some rather rapid packing up and leaving going on some 15km to the north-east of me.

Some time later, we were again pushing the limits and trying a longer path. I was this time located at Hisehope Head, some 1500 feet asl in the Durham countryside. Well into the night's activities with red beams of light projecting over the countryside, over the top of the main road to one side of us, we were suddenly lit up with a bright white searchlight. "Hoy, what's going on here?" came the gruff audio baseband voice over the heather from the big 4 x 4 Police truck that had stopped nearby. I went over to the vehicle and having gained some confidence from my previous encounter, and seeing this was just the ordinary "boys in blue", I explained what we were doing and even managed to pluck up the courage to ask "can you turn that light off? you are spoiling our experiment!"

Still no trip to the cells…….

Then even later in the summer we got into infra red daylight communications. I once again found myself 1500 feet up at the same site, this time right at the road's edge, in the middle of the day. I was hoping to make a contact using IR leds at a range of 46km. The contact went fine, in fact we were lined up and

communicating within a couple of minutes of setting up, much to our surprise and delight. Because the signals were so good I was trying out my precision optical attenuator, er, hole in a sheet of cardboard, to test the link. Busy with this I did not take much notice of the noise that appeared, I suppose I was used to the sound of vehicles labouring up the hill to one side of me. I then realised that the noise was rather more jet than juggernaut and looked up from my efforts to be met by the sight of one of the other sort of “boys in blue” the sort who used to Brylcreem their hair (I think they are into gel these days). There was a fighter jet bearing down on me! Whoosh, straight over me at low altitude, a hard turn right round by standing the aircraft on one wing, then over me again and then away. Thinking about this, they must have some sort of infra red sensors and even a display in the cockpit for locating the enemy. I must have been a very bright dot low down, maybe even set off some sort of alarm. No missile fired! Good job he never got into my main beam otherwise I may have had a bill for a burnt-out sensor!

I heard nothing further about this, but they would not be admitting anything would they? The moral of my tale is clear, when you are on top of a hill, mind where you are aiming that very bright red light folks!

Stuart, G8CYW

EME2014

at Pleumeur-Bodou, France

The Board of the French National Society (REF) met in January, their minutes are online and Google's translation gives:-

Conference EME2014:

EME2012 conference held in Cambridge (UK). A group of French OM present proposed for the next conference site Pleumeur-Bodou, a symbolic place in the history of space telecommunications. This proposal has received a majority of votes of the speakers facing the Italian proposal for Venice.

The Board approved the principle of logistical support and participation at this conference became prestigious and brings together experts from around the world. Other decisions will be taken based on the project's progress and specific requests made by the organizers.

Meeting adjourned at 15 h 30.

Lucien Serrano, F1TE
Secretary of REF-Union.

Jean-Paul Louis, F6BYJ
President of REF-Union

The latest EME calendar is available from DL7APV's website

UKµG Technical support

Another free service for members!

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!

I have emailed the people currently listed on the web site and checked if they can continue in the role. The people listed have confirmed that they are happy to continue in/take up the role. If anyone would like to step forward and volunteer, especially in the regions where we have no representative, please email john@g4bao.com

Region	Tech support volunteer	Facilities
NW England, N Wales	David Wrigley G6GXK 07811776432	Spectrum Analysis to 24GHz Power measurement to 76GHz Freq Measurement to 26GHz Freq sources to 47GHz NF Measurement to 10GHz Antenna Test range to 24GHz
NE England Yorks and Humberside	Peter Day G3PHO microwaves@blueyonder.co.uk	Available from Spring 2013 Spec Analyser to 24GHz Power measurement to 24GHz (up to 5W on 24GHz), RF sources to 24GHz, direct freq measurement to 3GHz. Setting up/tuning up transverters, etc + general advice.
S and SW England	Brian Coleman G4NNS	Spectrum analyser to 24GHz Power measurement to 26 GHz Scalar Network analyser and sweeper 2 to 15GHz Antenna test range 2.3, 3.4, 5.7, 10 and 24GHz Wavegide directional couplers for 10GHz and 24GHz Coax couplers 1.3 – 26GHz.
	Paul Marsh M0EYT pjmarsh@uhf-satcom.com	Power measurement to 12GHz High power dummy load @ 10GHz (500W) Frequency measurement to 22GHz Spectrum analysers to 6 and 18GHz Frequency generation to 18GHz.
SE England and London	Allan Wyatt G8LSD allan@virtual-museums.org	not known
East Anglia, Essex & Suffolk	Sam Jewell G4DDK sam@g4ddk.com	Spectrum analysis to 24GHz Power measurement to 24GHz Direct frequency measurement up to 3GHz VNA to 3GHz RF sources to 24GHz
Herts.	Bryan Harber G8DKK Letchworth, Herts	
West Anglia East Midlands	John Worsnop G4BAO john@g4bao.com	Spectrum analysis to 24GHz Power measurement to 24GHz Direct frequency measurement up to 18GHz VNA to 1.3GHz RF sources to 24GHz High current PSUs at 12, 28 and 48V
W Midlands	Vacancy	
N Scotland	Vacancy	
S Scotland	Vacancy	
N Ireland	Vacancy	

The current list of technical support volunteers is kept at www.microwavers.org/tech-support.htm

27 – 28 April 2013

Martlesham Microwave and UK Microwave Group AGM

http://mmrt.homedns.org/

Draft Programme

Saturday 27th April 2013

10:00	Truck Stop Breakfast
12:00	Doors Open
13:00	Welcome & opening G4BAO
13:15	Talk
14:00	Refreshments
14:30	Trophy Presentations TBD
14:45	Talks
16:55	Close
19:30	Meet for Dinner at 20:00 at the Cameo Hotel Ipswich

Sunday 28th April 2013

09:00	Doors Open
09:50	Welcome & Opening G4BAO
10:00	UKuG AGM (details page 26)
10:30	Refreshments
11:00	Talks
12:30	Lunch break
13:30	Talks
15:00	UKuG Contest Forum G3XDY
15:45	Close

Please let Sam G4DDK have topics of interest and offers of talks/ presentations.

Testing

Test equipment will be available throughout the day subject to qualified personnel to operate the test and measurement equipment (yes, staff would like to attend the talks too!).

Noise figure testing on many bands.

Travel & Accommodation

The talks and testing will be held at:

BT Adastral Park, Martlesham Heath, Suffolk, IP5 3RE. This is located a few yards off the A12, just east of Ipswich. CLICK for map.

The evening meal and accommodation will be at:

Cameo Hotel Copdock, London Road,

Ipswich, Suffolk, IP8 3JD, England.

Accommodation costs are £61 for single occupancy and £67 for double/twins, including breakfast.

Please phone the hotel direct on 01473 209988 to book and quote reference BK55466.

Payment for the meals: Payment for the dinner should be made at the time of booking, by Paypal, at least 1 week before the event. Please send £24 to Martlesham Radio Society (g4mrs@btinternet.com).

Visitors from abroad may pay cash at the dinner by previous arrangement with John G3XDY

MMRT Dinner Menu Saturday 27 April

Price £24.00 per person

Starters

Duck & port parfait served with toasted brioche & red onion marmalade

Strips of beef marinated in Thai spices served with a salad

Poached pear, blue cheese & walnut salad

Main Courses

Choice of Beef, Pork, or Turkey Carvery with a selection of vegetables

Please select which meat you would prefer

Vegetarian option:

Mushroom and chestnut Wellington with a tomato & red pepper sauce, served with new potatoes and vegetables

Desserts

Double chocolate & praline torte and chocolate sauce

Bramley apple slice with cream

Lemon & ginger cheesecake

Coffee and Mints

Activity News

By Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

The weather has been an issue this month and has certainly had an impact on my own operating. My rotator direction indicator failed just before the 23cm UKAC and I have now fixed it, but only after missing the SHF UKAC as well. I had to resort to 6m with a fixed dipole instead.

The problem was water ingress into the lower compartment of my ProSisTel rotator. This had filled with water via a leaky gland for the cable to the multi-turn pot. It must have operated OK in this wet state, but then we had freezing conditions. I turned the rotator and it must have had ice in the pot. It had pretty much destroyed the pot, so I have fitted a new one and it is working again now. Waterproofing has been changed to hot met glue and a layer of butyl tape over the top, so hopefully there will be no more leaks.

This month I have sent a number of stations, requests for reports and pretty much all have responded. Thank you all for your reports this month.

January 23cm UKAC

From Richard G4HGI

The evening started off really slowly, but as the contest progressed there seemed to be an improvement in conditions. Stations in the south were weak in comparison to previous months. Then Ray GM4CXM came on the band to the relief of many! The signal from Ray was excellent.

Best DX was as usual GM4CXM @ 294kms, followed by David M0GHZ and the Harwell gang - G8CUL, G0MJW and G4BRK. 3 out of the 5 were worked on CW. Excellent evening in the end and actually achieved my highest score ever in a 23cms UKAC. The equipment used was a FT897D, Down East Microwave transverter with 3 watts in the shack, 15 mtrs of LDF550 and 55ele Tonna. No LNA yet, but that's in the plan ..as is a bit more power ! KST free zone :-)

From Mark M0UFC

I was fortunate this month to be able to borrow an Icom IC-910H (courtesy of G4JLG) with my 21 element Tonna. Freezing conditions made /P risky from Werneth Low (IO83XK), but very worthwhile, as I was able to work and hear more stations than previously possible using the Bolton Wireless Club's MM transverter. It was great to be back on the band after a year absence. I worked the following stations in IO83 - M0SDA, G3UVR, G4NTY, G8HXE/P, G4JLG, M0ICK, M1EEV, G1SWH, GW4EVX, G0CDA, G4HGI, GW8ASD, G6GVI and G8KBH, plus GD8EXI (IO74) GW4BVE/P (IO82), G8OHM (IO92) and G8EOP (IO93).

January SHF UKAC

From Mark M0UFC

Because of the icy conditions again on Werneth Low, I decided to use a longer length of cable so that I could mount the 18dBi panel on a mast outside the car, rather than through the sun roof. I was then able to keep warm operating inside with only a narrow window gap for the coax. RX strengths were down, but TX reports were good from the Club's G8LMW 13cm 10mw transverter. I do have to be careful not to over-drive the TX from the FT-817, as this rig has confusing output indications depending on how it is powered.

Lower activity on this band enabled me to operate on 6m and submit a log for the contest, as well as working the following stations in IO83 - G6GVI, G3UVR and G4MVU.

From David M0GHZ

Conditions on the SHF UKAC were the worst I can remember, perhaps due to the snow.

On 13cm many regulars were not missing and I struggled to work PA6NL who is normally a very easy contact. Other contacts were with G8NVI (IO91), G8CUL (IO91), G4LDR (IO91), G3VKV (IO81), G8OHM (IO92) and G4BRK (IO91).

On 9cm I worked G3UKV (IO82), G4LDR (IO91), G4BRK (IO91)

On 6cm I worked G1JRU (IO90), G4LDR (IO91)

I finally repaired the 3cm transverter and am back on the air after a 3 year absence. I was delighted to work Del, G1JRU (IO90), Neil G4LDR (IO91) and G3VKV (IO81) who was very strong on snow scatter.

From Ian G8IFT (G8OHM)

A slow start on 13cm this month, with ON4KST showing less than the usual activity, signals seemed much lower than usual. After four initial QSOs, 30 minutes passed before a QSO was made with PA0S at 440km, whom was best DX for the top six claimed scores, but then there was a slow but steady stream of QSOs, many very difficult to complete.

With GM4CXM, G8PNN and of course OZ1FF missing, both the multipliers and points per QSO were down and of course noted easy contacts with G8DTF, G8KQW, G4NBS, etc, also missing.

At the end of the event some 16 QSOs had been completed from 6 UK squares.

In this event a IC910 was used plus transverter and solid state amplifier producing 400w to a 1.3m grid dish 17m AGL, complete with masthead mounted low noise pre-amp.

From Ross G6GVI

I had quite a successful session in the January 13cm UKAC. My first four 13cm QSOs were entirely unscheduled. I'd left my receiver "somewhere near" .200, and my beams pointing in a "roughly South" direction, so I could hardly believe it when at 7:50 I heard a voice just inside my SSB filter. Once I tuned it in, I realised that it was Dave G4MVU – and even leaning out of the window and twisting my mast, I couldn't improve on my initial beam-heading! Dave G4MVU was the first in my log once the event began.

Then a few minutes later I heard Denis G3UVR, and as usual I got him best when beaming SE (not SW!). He heard me as soon as I called him.

Next I heard Gerry G1SWH, and again got the best signal to him from the SE (not W), and as soon as

Map of 13cm QSOs at G8OHM

this QSO was complete I was called by Mark M0UFC/P, who didn't seem to be able to hear Gerry from Werneth Low. Well done Mark for going out /P in this weather – and operating on 6m too!

So 24 minutes into the event I thought that I had my "full house" of contacts, but kept on tuning and beaming around until just after 9pm I heard G8OHM beaming North and briefly very loud (due to an aircraft reflection?). Then I noticed a message from them on 'KST, and was able to use that medium to let them know that I could hear them, and we were soon able to complete on-air.

I heard DaveG4MVU and Gerry G1SWH "tail-end" them after I'd finished – and was amused that my QRP station was able to get through before my higher-power colleagues.

I didn't think about it until after the event, but I should have loaned my 9cm kit to Mark M0UFC at the BWC AGM and maybe passed your Bernie-Box and my spare 13cm converter to G4JLG, to try for some cross-band contacts with G4MVU. It's something to try next month.

So I ended up with 5 QSOs and 2 multipliers - the best I can manage from home under "flat" conditions.

From Dave G4MVU

Well, over the winter I had taken down the 3cm kit and had a rebuild. The original unit was based on an Eyal Gal 10Ghz unit and a Stellex controlled YIG for the oscillator. The stability was not good, so we have now used, the same Eyal Gal unit with a synthesizer out of an AS4000 microwave link unit intended for 1.8Ghz. As this has two synthesizers in it we decided to add 6cm to the system using a modified Ceragon 7Ghz unit. To multiply up the synthesizer to the correct injection frequency Mini Kits multipliers have been used. This has now given 1 watt (3cm) and 2.5 Watts (6cm) at the input to the feed horn. For the feed horn I have built a W5LUA dual feed, based on 22mm and 42mm copper plumbing fittings.

This outing for the new kit was its first Microwave UKAC, but due to the terrible propagation conditions no one was worked, but the Manchester beacon was heard 59. So we will have another go in February and see what happens.

For 13cm and 9cm there were much better pickings. On 13cm using 20w out, DB6NT transverter and a 67 element WIMO, we managed to work 5 stations G6GVI, G3UVR, M0UFC/P, G1SWH and G8OHM. But as noted in the log comments in the UKAC no stations in the south could get past Birmingham. On 9cm we are using a pair of modified AS4000 3.4Ghz units with a 23cm IF. We managed to work G4JLG, with his station pointing through a closed window. Both stations were running 0.4 to 0.5 watts out.

So, roll on the summer, when a few more stations get out portable and we should have some cracking fun.

From Dave G4JLG

I entered the UKAC 3,4GHz contest on 26 Jan using equipment borrowed from Dave, G4 MVU. This comprised two modified AS4000 units, one for TX and one for RX. Each comprised a patch antenna and the "transverter" electronics with inputs/outputs at 1296MHz. These had been modified by Dave to operate on 3.4 GHZ. The As4000 units were driven by a Microwave Modules 1296 MHz transverter , powered in turn by a 144MHz FT290. In view of the weather just prior to the event I was unable to mount the AS4000 units on my mast in the back garden, and instead had to fix them on an old photographic tripod and position them in the front bedroom bay window from which there is a reasonable path to Dave's QTH, a few km away.

During the contest I was able to work Dave with 59 reports each way with no difficulty at all. Given the temporary location, I did not try for any other contacts during this event, although I ought to have been able to work Bob (G8DTF) had he not been off the air with rotator problems.

Next month I hope to have the AS4000 units on the mast. I'll be looking out for Bob and either Mark (M0UFC) or Ross (G6GVI) who will hopefully be active with similar equipment modified by Ross. I have acquired another AS4000 which when modified should allow another BWC member to operate on this band, potentially giving us 5 stations active on this band later this year.

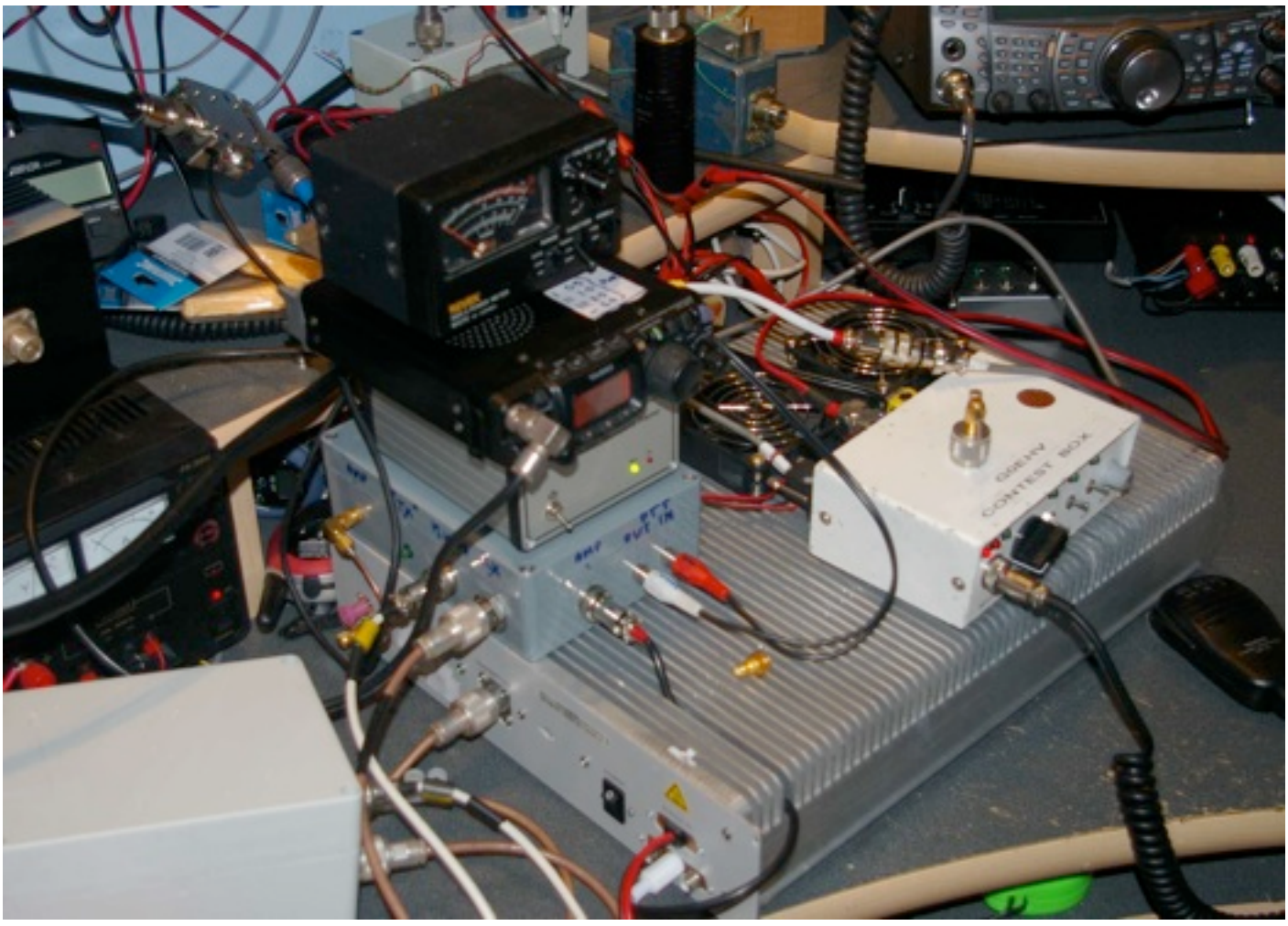
Other Activity

From Eddie G0EHV

Not a report on the UKAC as such from me, just a bit of an update.

My 13cms station is now built and ready to go /P, I normally operate all portable with only indoor antennas at home!

Dave G4MVU' s two modified AS4000 units mounted on an old photographic tripod and position them in the front bedroom bay window



Eddie G0EHV's 13cm station

However the weather has put a stop to play so far this year with no 23cms or other band activity.

Station on 13cm is FT-817, "Scatter" transverter giving me 0.5W driving Remec power amplifier. This gives me 60W or so out. Antenna is 25 element Tonna or grid mesh dish, tests so far indicate the Tonna is a slightly better performer but further tests required. No preamp as yet but working on it.

Operation will be UKAC events, look for me in either IO94ET or IO84XT. KST is new to me and has to be tested fully with my laptop /P, so please be kind!

I'll also try as many of the microwave events as possible. QRV on 13 and 3cms, always /P!

...and finally

January has been a very quiet month with low activity because of the weather and I hope next month will have better weather. I will hopefully be back on for the 23cm and SHF UKAC in February.

I want to encourage you all to report your activity to clearly document use of the amateur microwave bands. This means not just DX, but also local activity with low power or WB equipment.

Please send your reports to Scatterpoint@ukmicrowaves.org

73, Bob Price G8DTF

Don't forget that

Every Monday evening is Microwave Activity Evening

UK MICROWAVE GROUP
ANNUAL GENERAL MEETING – SUNDAY 28th April 2013

Notice is hereby given that the 2013 Annual General Meeting of the UK Microwave Group will be held at 10:00am on Sunday, 28 April 2013 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 UKuG.

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

John Worsnop G4BAO is standing down as UKuG Chairman

Graham Murchie G4FSG is standing down as UKuG Treasurer

so we are interested to hear from anyone who would be willing to take on these vital UKuG officer positions. If any UKuG member is interested in the office then please submit your name (and the name of your seconder) to the UKµG Chairman G4BAO as soon as possible.

Note: the Secretary's task is made less onerous by the fact that there is a separate post of Membership Secretary, currently held by Bryan Harber G8DKK which deals with all day-to- day membership issues.

On behalf of the UKuG Committee and the UKuG membership I would like to formally thank John and Graham for their dedication and efforts during their years as Chairman and Treasurer respectively.

If you are interested in joining the committee, have any agenda or AOB items for the AGM please contact the UKuG Secretary, Martin Richmond-Hardy G8BHC by 31 March 2013 by email to secretary@microwavers.org.

73 Martin Richmond-Hardy G8BHC
General Secretary UK Microwave Group

RSGB Contests 2013

Month	Contest name	Certificates	Date 2013	Time GMT	Notes
Feb	1.3GHz Activity Contest	*Arranged by RSGB*	19-Feb	2000 - 2230	RSGB Contest
Feb	2.3GHz+ Activity Contest	*Arranged by RSGB*	26-Feb	2000 - 2230	RSGB Contest
Mar	Low band 1.3/2.3/3.4GHz	F, P,U,R,L	3-Mar	1000 - 1600	First 4 hours coincide with IARU event
Mar	1.3GHz Activity Contest	*Arranged by RSGB*	19-Mar	2000 - 2230	RSGB Contest
Mar	2.3GHz+ Activity Contest	*Arranged by RSGB*	26-Mar	2000 - 2230	RSGB Contest
Apr	10GHz & Up EME	*Arranged by DUBUS*	*13–14-Apr*	0000-2359	DUBUS EME Contest
Apr	1.3GHz Activity Contest	*Arranged by RSGB*	16-Apr	1900 - 2130	RSGB Contest
Apr	Low band 1.3/2.3/3.4GHz 2	F, P,U,R,L	21-Apr	1000 - 1600	
Apr	2.3GHz+ Activity Contest	*Arranged by RSGB*	23-Apr	1900 - 2100	RSGB Contest
May	*10GHz Trophy*	*Arranged by RSGB*	*4-May*	*1400 - 2200*	Saturday, to coincide with IARU
May	*432MHz & up*	*Arranged by RSGB*	*4–5-May*	*1400 -1400*	RSGB Contest
May	1.3GHz EME	*Arranged by DUBUS*	*11–12-May*	0000-2359	DUBUS EME Contest
May	5.7GHz EME	*Arranged by DUBUS*	*18–19-May*	0000-2359	DUBUS EME Contest
May	1.3GHz Activity Contest	*Arranged by RSGB*	21-May	1900 - 2130	RSGB Contest
May	5.7GHz/10GHz/24GHz	F, P,U,R,L	26-May	0600-1800	
May	2.3GHz+ Activity Contest	*Arranged by RSGB*	28-May	1900 - 2130	RSGB Contest
Jun	Low band 1.3/2.3/3.4GHz 3	F, P,U,R,L	2-Jun	1000 - 1600	Aligned with some Eu events
Jun	2.3GHz EME	*Arranged by DUBUS*	*15–16-Jun*	0000-2359	DUBUS EME Contest
Jun	1.3GHz Activity Contest	*Arranged by RSGB*	18-Jun	1900 - 2130	RSGB Contest
Jun	2.3GHz+ Activity Contest	*Arranged by RSGB*	25-Jun	1900 - 2130	RSGB Contest
Jun	3.4GHz EME	*Arranged by DUBUS*	*29–30-Jun*	0000-2359	DUBUS EME Contest
Jun	5.7GHz/10GHz/24GHz	F, P,U,R,L	30-Jun	0600-1800	
Jul	VHF NFD (1.3GHz)	*Arranged by RSGB*	6– 7-Jul	1400 - 1400	RSGB Contest
Jul	1.3GHz Activity Contest	*Arranged by RSGB*	16-Jul	1900 - 2130	RSGB Contest
Jul	24GHz - 1THz Contest	O	21-Jul	0900 - 1700	New Format
Jul	2.3GHz+ Activity Contest	*Arranged by RSGB*	23-Jul	1900 - 2130	RSGB Contest
Jul	5.7GHz/10GHz/24GHz	F, P,U,R,L	28-Jul	0600-1800	
Aug	Microwave Field Day	O,L	4-Aug	0900 - 1700	
Aug	1.3GHz Activity Contest	*Arranged by RSGB*	20-Aug	1900 - 2130	RSGB Contest
Aug	5.7GHz/10GHz/24GHz	F, P,U,R,L	25-Aug	0600-1800	
Aug	2.3GHz+ Activity Contest	*Arranged by RSGB*	27-Aug	1900 - 2130	RSGB Contest
Sep	1.3GHz Activity Contest	*Arranged by RSGB*	17-Sep	1900 - 2130	RSGB Contest
Sep	2.3GHz+ Activity Contest	*Arranged by RSGB*	24-Sep	1900 - 2130	RSGB Contest
Sep	ARRL Microwave EME	*Arranged by ARRL*	28–29-Sep	0000 - 2359	
Sep	5.7GHz/10GHz/24GHz	F, P,U,R,L	29-Sep	0600-1800	
Oct	*1.3 & 2.3GHz Trophies*	*Arranged by RSGB*	*5-Oct*	*1400 - 2200*	RSGB Contest
Oct	*432MHz & up*	*Arranged by RSGB*	*5–6-Oct*	*1400 - 1400*	IARU/RSGB Contest
Oct	1.3GHz Activity Contest	*Arranged by RSGB*	15-Oct	1900 - 2130	RSGB Contest
Oct	2.3GHz+ Activity Contest	*Arranged by RSGB*	22-Oct	1900 - 2130	RSGB Contest
Oct	ARRL EME 50-1296MHz	*Arranged by ARRL*	26–27-Oct	0000 - 2359	
Nov	ARRL EME 50-1296MHz	*Arranged by ARRL*	16–17-Nov	0000 - 2359	
Nov	1.3GHz Activity Contest	*Arranged by RSGB*	19-Nov	2000 - 2230	RSGB Contest
Nov	Low band 1.3/2.3/3.4GHz 4	F, P,U,R,L	24-Nov	1000 - 1400	
Nov	2.3GHz+ Activity Contest	*Arranged by RSGB*	26-Nov	2000 - 2230	RSGB Contest
Dec	1.3GHz Activity Contest	*Arranged by RSGB*	17-Dec	2000 - 2230	RSGB Contest

Sections		
	F	Fixed / home station
	P	Portable
	L	Low-power <10W 1.3/2.3/3.4GHz, <1W 5.7/10GHz)
	R	Radio talkback
	U	Unlimited Talkback

Main changes from 2012 calendar	
1	ARRL/DUBUS EME updated
2	Lightwave event deleted
3	5.7/10/24GHz Cumulatives replaced with individual events

UKµG Microwave Contest Calendar 2013

Dates, 2013		Time UTC	Contest name		Certificates
3	Mar	1000 – 1600	Low band 1.3/2.3/3.4GHz	1	F, P,U,R,L
21	Apr	1000 - 1600	Low band 1.3/2.3/3.4GHz	2	F, P,U,R,L
26	May	0600 - 1800	1st 5.7GHz Contest		F, P,U,R,L
26	May	0600 - 1800	1st 10GHz Contest		F, P,U,R,L
26	May	0600 - 1800	1st 24GHz Contest		F, P,U,R
2	Jun	1000 - 1600	Low band 1.3/2.3/3.4GHz	3	F, P,U,R,L
30	Jun	0600 - 1800	2nd 5.7GHz Contest		F, P,U,R,L
30	Jun	0600 - 1800	2nd 10GHz Contest		F, P,U,R,L
30	Jun	0600 - 1800	2nd 24GHz Contest		F, P,U,R
21	Jul	0900 - 1700	24GHz Trophy / 47 / 76-1000 GHz		
28	Jul	0600 - 1800	3rd 5.7GHz Cumulative		F, P,U,R,L
28	Jul	0600 - 1800	3rd 10GHz Cumulative		F, P,U,R,L
28	Jul	0600 - 1800	3rd 24GHz Cumulative		F, P,U,R
4	Aug	0900 - 1700	Microwave Field Day		F, P,L
25	Aug	0600 - 1800	4th 5.7GHz Cumulative		F, P,U,R,L
25	Aug	0600 - 1800	4th 10GHz Cumulative		F, P,U,R,L
25	Aug	0600 - 1800	4th 24GHz Cumulative		F, P,U,R
29	Sep	0600 - 1800	5th 5.7GHz Cumulative		F, P,U,R,L
29	Sep	0600 - 1800	5th 10GHz Cumulative		F, P,U,R,L
29	Sep	0600 - 1800	5th 24GHz Cumulative		F, P,U,R
6	Oct	0800 - 1400	Low band 1.3/2.3/3.4GHz	4	F, P,U,R,L
24	Nov	1000 - 1400	Low band 1.3/2.3/3.4GHz	5	F, P,U,R,L

Key:

F Fixed / home station

P Portable

L Low-power (<10W on 1.3-3.4GHz, <1W on 5.7/10GHz)

R Radio talkback

U Unlimited talkback

73 John G3XDY, UKUG Contest Adjudicator

UKµG Contest Portal

Events calendar 2013/14

2013

Feb 16	Tagung Dorsten	www.ghz-tagung.de/
April 6	CJ-2013, Seigy	cj.ref-union.org/
April 27-28	**Martlesham Microwave Roundtable and UK*µ*G AGM**	mmrt.homedns.org/
May 17-19	Hamvention, Dayton	www.hamvention.org/
June 9	**RAL Roundtable**	www.ntay.com/hars/RAL2013.html
June 28-30	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 13–14	**Finningley Roundtable**	detail tbc
July 19–21	Amsat-UK Colloquium, Holiday Inn, Guildford, Surrey	www.uk.amsat.org/Colloquium/
Sept 9	**Crawley Roundtable**	detail tbc
Sep 13-15	58.UKW Tagung Weinheim	www.ukw-tagung.de/
Sept 27-28	National Hamfest	www.nationalhamfest.org.uk/
Oct 6-11	European Microwave Week, Nuremberg	www.eumweek.com/
Oct 11-13	**RSGB Convention**	www.rsgb.org/rsgbconvention/
Oct 18–19	Microwave Update, Morehead, Kentucky	www.microwaveupdate.org/
Nov 2	**Scottish Roundtable**	www.rayjames.biz/microwavert/

2014

July 1	Scatterpoint 10th Anniversary
August	EME2014, Pleumeur-Bodou near Lannion
October 6-9	European Microwave Week, Rome