An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

Published by the UK Microwave Group

2008 OCTOBER

A Very welcome new 24GHz station in South Wales!

Pictured left is the /P station of Keith GW3TKH who writes : I'm now up and running on 24GHz after a rebuild of the OCXO on the equipment I acquired from the estate of Dave, G0RRJ. I had my first contacts with the Telford group on Brown Clee in the last cumulative contest, and have since heard beacons GW4DGU & GB3SCK. SCK is also readable at S7 on our GB3AMU site and this showed up the poor stability of 'AMU using the existing DDK004 unit oscillator when multiplied to 24GHz, so now we are trying to improve things! The photo shows the view towards Brown Clee, IO82QL where G3UKV and G8VZT were located for my first QSOs.

In this issue ...

Latest News ...

UKuG's very first Technical Compendium, "Backscatter", should be on sale at Martlesham. Be there to buy yours before the rush starts! The 450 page book contains the very best of the Microwave Newsletter and Scatterpoint technical articles from 1996 to 2006. No price available yet but it will be a bargain! Mail order details and a review next month ….

MANY THANKS TO ALL OUR CONTRIBUTORS THIS OCTOBER ... WITHOUT YOU THERE WOULD BE NO SCATTERPOINT!

UK Microwave Group Contact Information

Chairman: G4NNS Brian Coleman **Email:** chairman@microwavers.org **Located:** Hampshire (IO91FF) **Address:** Woodlands, Redenham, Andover, Hants., SP11 9AN **Home Tel: - n/a**	**General Secretary: G8KMH Lehane Kellett** **Email:** secretary@microwavers.org **Located:** Hampshire (IO91) **Address:** Honey Cottage, Bent Street, Nether Wallop, Hants., SO20 8EJ **Home Tel:** ++44 (0)1264 781786	**Membership Secretary: G8DKK Bryan Harber** **Email:** membership@microwavers.org **Located:** Hertfordshire (IO91VX) **Address:** 45 Brandles Road Letchworth Hertfordshire, SG6 2JA **Home Tel: n/a**	**Treasurer: G4FSG Graham Murchie** **Email:** treasurer@microwavers.org **Located:** Suffolk (JO02) **Address**: 42 Catherine Road, Woodbridge, Suffolk, IP12 4JP **Home Tel:** ++44 (0)7860 356775
Scatterpoint General Editor: G3PHO, Peter Day **Email:** editor@microwavers.org **Located:** South Yorkshire (IO93GJ) **Address:** 146 Springvale Road, Sheffield, S6 3NU, United Kingdom **Home Tel:** ++44 (0)114 2816701 (after 6pm)	**Scatterpoint Activity News Editor: G8APZ Robin Lucas** **Email:**Scatterpoint @microwavers.org **Located:** Essex (JO01) **Address:** 84 Woodman Road Brentwood Essex, CM14 5AZ **Home Tel:** ++44 (0)1277 211126	**Contest & Awards Manager: G3XDY John Quarmby** **Email:** g3xdy@btinternet.com **Located:** Suffolk (JO02OB) **Address:** 12 Chestnut Close, Rushmere St. Andrew, Ipswich, Suffolk, IP5 1ED **Home Tel:** ++44 (0)1473 717 830	**RSGB Microwave Manager: G6JYB Murray Niman** **Email:** mjniman@iee.org **Located:** Essex (JO01) **Address:** 5 5 Harrow Way Great Baddow Chelmsford Essex, CM2 7AU **Home Tel:** ++44 (0)1245 474969

From the Editor's Desk

Hello again folks,

I'm sorry this issue's over a week late but you'll realise why when you read the following!

The really exciting and latest news is the imminent publication of UKuGs long awaited technical compendium. It's presently at our printers and they've promised me I could collect all 200 of the first run in time to bring them to Martlesham on Nov 8/9th. With 448 pages and entitled **BACK-SCATTER,** it's the result of many weeks of hard work by John, G3BAO, who has collated and edited 10 years worth (1996-2006) of RSGB Microwave Newsletters and Scatterpoints, plus a little post editing production work by myself. I'm sure the book will meet with your approval. However please remember that it is the first time John (or myself) have ever done anything on this scale so the next edition should be even better!

No price has been fixed yet but we expect something just into double figures. It's about the same size and thickness of the well known Dubus Technik V and is in black and white text with grey-scale pictures. We've tried to retain the original quality of the diagrams but since some go back well before Scatterpoint they may not all be as good as what you get nowadays.

The book was finished just two days ago on 20th October so that explains why you are reading this a little later than normal...

73 from Peter, G3PHO Editor

News, views and articles for this newsletter are always welcome. Please send them to G3PHO (preferably by email) to the address shown above. **The closing date is the Friday at the end of the first full week of the month** if you want your material to be published in the next issue.

Talks programme for the Martlesham Microwave Round Table 2008

Note: Attendees MUST pre-register for this event. See www.microwavers.org and follow the links to the Martlesham R.S webpage

Saturday: **8 November 2008**

09:00 - Breakfast at the Orwell Crossing Truck Stop for early arrivals
11:00 - Open Martlesham
11:00 - Test gear and chats
12:00 - Lunch
13:00 - Welcome and Intro
13:15 - Visit to Newbourne radio observatory (10 minutes by car). To ease parking, car sharing will be organized on Saturday morning
15:00 - Break
15:30 - 16:30 - WA5VJB
16:45 - close for the day

Test equipment runs during the whole of the period from 11:00 on Saturday, but only until early afternoon on the Sunday.

Sunday: 9 November 2008

09:00 - Martlesham open
09:30 - UKuG AGM
10:15 - 11:00 - TBA
11:00 - 11:15 Break inc 1 minutes silence.
11:15 - 12:15 - G3YLA 'Weather and microwaves'
12:15 - 13:00 - Lunch
13:00 - 13:45 - WW2R – 'Using an SDR as a Microwave IF'
13:45 - 13:50 - Changeover break
13:50 - 14:50 - GW4DGU –'Frequency Synthesis on the Microwave and mm-Wave Bands ... the Next Steps?'
14:50 - 15:05 - Break
15:05 - 15:50 - DL1YMK – 'Portable Microwave EME from South-America'
15:50 - 16:00 - Preparation Break
16:00 - 16:30 - Contest forum
16:30 - Close

UK MICROWAVE GROUP SUBSCRIPTION INFORMATION

The following subscription rates now apply. **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!

Your personal renewal date is shown at the foot of your address label if you receive Scatterpoint in paper format. If you are an email subscriber then you will have to make a quick check with the membership secretary if you have forgotten the renewal date. From now please try to renew in good so that continuity of newsletter issues is maintained. Put a **renewal date reminder** somewhere prominent in your shack (the editor suggests having it tattooed on your forearm !)

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

Renewal of subscriptions requiring a **paper copy** of Scatterpoint are as follows

Delivery to:	**UK £**	**US $**	**Euro**
UK	14.00	-	-
Europe	18.00	36.00	26.00
Rest of World	24.00	48.00	36.00

Payment can be made by:

*** Paypal to ukug@microwavers.org**
or
* **by 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!)

The standard membership rate for 2008 is:

UK £6.00
US $12.00
Euro 10.00

This basic sum is for **UKuG membership.** For this you receive Scatterpoint for FREE by email. If you want a paper copy **then the higher rates apply.**

Building a 10GHz FM Television Link
by John Jaminet, W3HMS

This article originally appeared in the US magazine "CQ-VHF", Spring 2008

In the Winter 2007 edition of CQ-VHF, I described on pages 22-28, the work we are doing here in central PA using the 1280MHz and 3480MHz bands. We have obtained very high quality television pictures using FM for both the video carrier and the audio sub carrier. Not so long after we went on the air with this system in 2002, the desire to design and create a very high quality linking system to cover a 17 mile path between 2 sites began to emerge.

The basic requirements for this system developed as follows:

a. Super reliable 24/7, that is to say, never off the air (OK, almost never, Hi!).
b. The ability to withstand rain, snow, sleet, hail, heat, cold and wind ,all common in central PA.
c. The ability to send very high quality FM video and FM audio sub carrier signals (commercial quality) over this path with no apparent degradation of video or audio.

Receiving

This is the simplest part and uses a Bob Platts , G8OZP, (See Note 1) Ku Band LNBF with an LO of 9.0GHz mounted on a 24 inch /60 cm offset dish made for satellite TV reception. This dish has a gain in the range of 31.5-33dBd. The IF is 1400 MHz for an input of 10.400GHz to a surplus analog "headend" cable TV system satellite receiver. In our case, we have used the Scientific-Atlanta 9660, Blonder-Tongue, Holland, and PICO receivers. We know that the IF is right to use US analogue satellite receivers as well. There are no doubt other equally fine receivers; these are just the sub-set of our experience.

Of these receivers, the Scientific- Atlanta Model 9660 has given us the best audio and video signals due to the ability to adjust the audio de-emphasis to zero. This is an option not always present in satellite receivers. The others will work but their audio quality will be reduced. The audio and video signals are taken from the satellite receiver for viewing and/or retransmission, recording, etc.

Transmission

This set of requirements started a search for what is available in the market place to meet our needs. We initially considered Gunnplexors as Joe, WA3PTV and I had exchanged full colour ATV pictures at 51 miles using about 250mW at one end and 5-10mW on the other end, using 2 ft dishes. While the pictures were P5, the best, we had no extra signal to combat fading or bad weather. We also had no 10GHz audio as we used 2 meters for the audio channel. We soon realized that both power and frequency stability above the Gunnplexer level were needed plus an audio sub carrier. That also suggested that using a Gunnplexer with a linear amplifier of 500mW to 1 watt output was not viable due to cost and the drift problems inherent in Gunnplexors. Next we looked at the Kuhne Electronics ATV transmitters of 250mW and 1 watt output which use DRO oscillators and require a baseband video/audio unit for use on the air. Although I ordered the transmitter on a frequency of 10.400GHz, it is adjustable plus and minus 50MHz. The modulation is FM and the deviation can go to 10.750MHz. The 1 watt model features a diode for monitoring the power output where 1 watt out equals 1.4VDC.

As a weak signal operator on all bands 50MHz - 47GHz, I use considerable equipment made by Kuhne and considered it the Cadillac of the business. It also came with, alas, prices to match, particularly considering the much higher Euro to dollar rate of exchange since 2002. None the less, I decided to order their 1 watt transmitter and to test the sub-carrier audio capability using a well-known commercial sub-carrier generator moved to 5.5MHz. I say 5.5MHz instead of the usual 4.5MHz as we planned to demodulate the signal with a satellite TV receiver.

The test worked to a point but the sound bars on screen were intolerable so that option was out.

After these tests, we tried to get a baseband audio and video unit from a western European country vendor corresponding by phone calls and email with the vendor. This was an experience of supreme frustration and time wasting, for after some 2-3 months of lies we learned that he had only 1 or 2 units available and no further units were going to be produced . So we turned to the German firm of ID-Elektronik, Inc. and after several email exchanges learned that this unit would indeed fulfill our needs, so one unit was ordered by Gary, WA3CPO, our ATV project leader. The nomenclature is BBA2.4 which cost $249.00 delivered in October 2006. We estimate the price today at about $293 due to the dollar to Euro rate at US $1.466 to 1 Euro at the time of writing .

This unit can accept mike or line level audio input and has adjustment pots. The Tech Manual is in German although the online Babelfish translator produced a copy which yielded good information albeit in grammatically very poor English, HI!!. One note of caution ... the shell of the power plug is HOT, i.e. +12.6VDC which to me is not the normal amateur equipment expectation .

We decided to mount a Cincon 20 watt switching power supply sold by Mouser in the space vacated by the unneeded decoder in a Blonder -Tongue Model 6166 satellite receiver. This power supply outputs 15VDC at 1.4 amps. We wanted plus 15VDC to allow for cable loss and still have 12-15VDC for the transmitter as specified by Kuhne . The cost is about $24. We mounted the BBA 2.4 in this satellite receiver with suitable jacks so we could patch received video and audio directly into the BBA or connect the BBA video and audio inputs to other sources.

The BBA 2.4 is also mounted in this space. There are but two RG-6 cables to the transmitter box, one for the 15 VDC and the other for the modulation output of the BBA which contains both audio and video. The sub carrier can be set in a frequency range from 5.5 to 7.5MHz by grounding/leaving open one or more of three pins. We chose to use 6MHz as that is the stock frequency from the factory where no set pins are grounded. For a single point to point relay, any subcarrier frequency is just fine as long as the satellite receiver can tune to the frequency.

We decided to build the unit in a diecast waterproof box to be mounted under the arm of a 2ft/60 cm satellite receiving dish to make the feedline very, very short. Losses at 10GHz are huge with coaxial cable which is fit only for attenuators and poor ones at that!

The feedline line is thus the small UT141 semi-rigid cable. We selected a weatherproof box made by Markertek.com with catalog # KAB 3742. It is 7.5 inches x 4" x 2" at $21.95 each. We subsequently learned that the box can be much smaller as only the transmitter is mounted in it plus some small components. The UT141 cable is not flexible and should be bent very carefully by hand all the while avoiding sharp bends. I often bend around a medium size screw driver so that any bends are circular and about like the curve in a US 25 cent piece.

Other components are a fuse after the power supply and a LED with series resistor on the panel, which is optional as it just tells you the unit is powered on. Some might consider the fuse optional but at the low cost involved, I don't!. The transmitter does not need a separate heat sink but must be mounted in a metal box for proper heat transfer. In our case, the box is mounted to a metal dish which is itself mounted on a tower, thus ALL this metal is the heat sink.

For the dish feed , we found that a satellite Ku-band LNBF made by DMS International Model ASC 321 "Spitfire" and sold at $9.00....yes nine dollars..... could be converted to a feed by removing the two separate vertically and horizontally polarized LNBs and replacing the LNB probe in the same hole with a new probe that is 9.5 mm long. Cutting away the .141 shield requires a small hack saw or a commercial wire stripper.

This probe was made from a piece of .141 rigid cable with a SMA male at the end. If the probe is inserted into the bottom of the feed it is vertically polarized; if on the side, the polarization is horizontal. This aspect is actually non -critical for the feed can be easily rotated 90 degrees in its retaining ring to change polarization.

The option would have been to buy a transition for about $20 used...much more new.... along with some brass sheeting and design and build a feed using the plans of W1GHZ in his Microwave Online Line Handbook or his HDL.ant PC program. As I was curious about the gain and general effectiveness of this LNBF turned feed, I tested it along side my W1GHZ dual band 10 and 24GHz feed also on a 60cm offset dish.

The result: I could hardly tell the difference yet my W1GHZ dual band feed has made several 300 mile plus 10GHz QSOs in CW and even some in SSB!

In installing the system, keep in mind that antenna pointing is very precise on 10GHz and the difference between P0 (just pix traces) and P5 (snow-free picture) may be just a few degrees in pointing of either dish. You can calculate the pointing angle using free software by W1GHZ called HDL.ant available on his Website... just Google on W1GHZ.

I emphasize again that pointing is very critical. Unlike the pointing of a 2 metre beam where you have some signal long before it is the strongest, you do not see the picture until it is just about at its strongest point. You may end up with a perfect picture but see NOTHING at all just a few degrees before your success.

You will need to know your longitude and latitude or your 6 digit grid square from a GPS receiver or other source to input to this HDL.ant program. Then, you can use a compass to get the bearing between sites allowing for the Variation which in our area of central PA is +11 degrees. This is to say that a true bearing of 90 degrees would be found with a compass reading of 101 degrees which is called the magnetic bearing.

Results

The Kuhne/DB6NT transmitter and BBA 2.4 combination have delivered perfect results to date in reliability. Operating 24/7 with a 100% duty cycle, the units have logged more than 3000 hours (in Feb 08) of continous operation since about 10 Sep 07 without even one second of downtime; compare all the other equipments in your shack or your local 2m repeater with that performance level !

All transmissions have been in full colour and sound at the commercial TV level. The transmitter does not seem to need a blower in spite of 100 plus days in hot WX and low temperatures in the winter with rain, snow, sleet, hail, wind and ice. The transmitter cost information is $351 delivered in PA for the 250 mw model and $530 for the 1 watt model.

Future Improvements

No system is ever perfect and ours is no exception. One known Achilles Heel in the microwave ATV world is the radome over LNB/LNBFs which tends to degrade thanks to the elements. I have had to replace at least 2 Dishnet LNBs over a 10 year period. I just recently found that the radome over my 10GHz beacon had vanished. This was a plastic refrigerator bottle designed to hold cold water in cold temperatures. In its particular installation site, it is very possible that ice chunks melting and falling from a tall tower (see photo left) have come crashing down on the radome breaking it into many small pieces. One solution used in Switzerland and perhaps elsewhere is to mount the offset dish upside down thereby pointing the LNB down and not up. Gravity being what it is will cause water to flow out of the feed and not into it in the event the radome is cracked or absent.

Dish Installation

Recent tests suggest we can use a slot antenna wrapped with Scotch #33 electrical tape shin-

gle fashion (from the bottom up) and avoid radomes subject to breakage. Even thick PVC seems not to be too lossy but we have not tested that at a distance.

Cost Information
Resist the temptation to "do it on the cheap" as is often the amateur mind set which is just fine for short- term occasional operation, equipment. We know this transmit and receive system is expensive by ham standards but, it is also VERY, VERY dependable. The system cost recap is as follows; all prices are in US dollars including shipping to the USA:
Transmitter 1 watt $530
BBA 2.4 (now BBA 2.5) $293
Satellite receiver $20
Equipment Box $24
Power supply $24
.141 cable $10.00
LNBF for feed $15
Platts LNBF $50
24 inch dish $30...qty 2=$60
RG-6 cable $20
Misc connectors and small parts $10
Tower mounting $5
Total $1061

The 250 milliwatt system cost is $882 and this may be sufficient power for some installations. Other hardware and misc items were donated and amounts not recorded.

In pricing, we have assumed the two systems will be tower mounted and have shown only a modest sum for these mounting costs. We know they can range from a few dollars when volunteers have much free hardware and time available up to the "to the moon" price level if professional riggers are used who supply their own hardware. We also note that the "big ticket items" are sold in Euros and the Euro/dollar rate has been quite changeable in recent times ……..and not in our favor, HI!

As you can see, when you come into the domain of the commercial operator with his super high reliability and performance standards it is indeed a "whole new ballgame" for hams.

Note 1: The Ku Band LNBF by Bob Platts, G8OZP, can be obtained from him by EMAIL to g8ozp@btinternet .com for £30 Sterling and payment by PAYPAL to this EMAIL address. The price includes air mail shipment to the USA. Bob needs with your order: full name, callsign, EMAIL address, residence and shipping address and phone number, if no EMAIL address. For this amateur band LNBF, Bob has replaced the normal 10.75GHz LO with one of 9GHz and retuned the input filter for 10.0-10.5 GHz. Bob's phone is ++44-(0)12-8381-3392
I can be reached at W3HMS@aol,com or 717- 697-3633. 73, John Jaminet, W3HMS

FOR SALE

I am slowly getting rid of my gear and probably the most useful 'bit' left is a HP 431 Power Meter, which has a perfectly good 10GHz WG16 Thermistor Head checked only last week. Without the head the meter is worth little. I want £40 for it plus and carriage charges.
Because these heads are very easily burnt out by careless use, it will be Sold with No Return.

I also have a WG16 Round Flange Variable attenuator working but not in too good external condition. It's very heavy so transport would be difficult/costly. Unit Will sell for say £7.50 but cost to send will be far more! Therefore it's best collected.
73 Bob G3GNR (South Devon)

The UkuG 24GHz initiative

Brian G4NNS & Graham G4FSG

In order to encourage activity on this band from both fixed and portable stations the UKuG Committee would like to remove some of the stumbling blocks to getting a 24GHz system on the air. Many of us find the "plumbing" quite challenging enough on the lower bands so we felt that by making some of the more difficult components available we might get more folk on the band.

Quite a few of you already have some of the key components. Amongst these are Power amplifiers, RelCom WG22 switches from the Wellington VHF group, DB6NT transverters and pre amps and some useful "white box" surplus material including that from Alcatel.

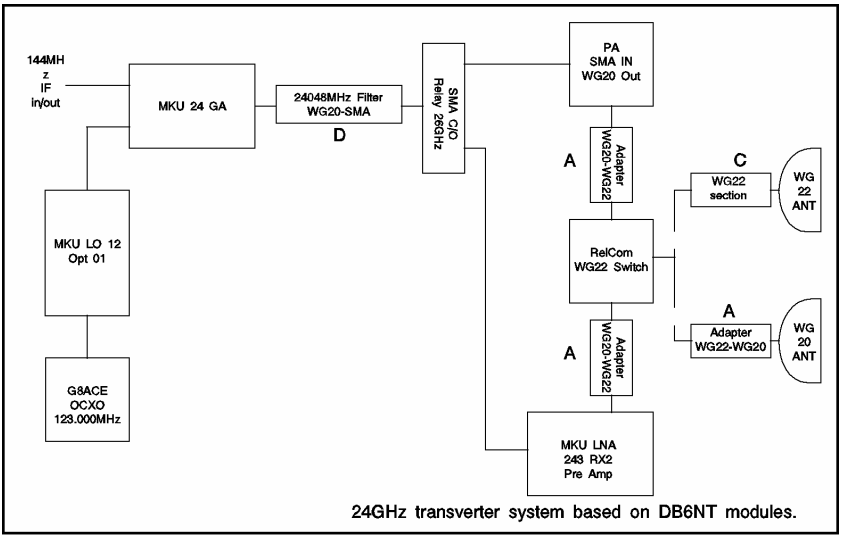


Figure 1

Fig 1 shows a possible system configuration based on DB6NT modules.

Typically the input / output of the transverter needs a filter to suppress the unwanted image from the mixer. With the waveguide version MKU 24 GA the filter typically requires a WG 20 / WR42 interface at one end. If the other end is provided with a transition to SMA this can conveniently be coupled to an SMA C/O relay to separate the TX and RX paths to / from a TX power amplifier and an RX pre amplifier. **Such a filter (see Fig 2 photo right) is now available from the UkuG as Item D**.

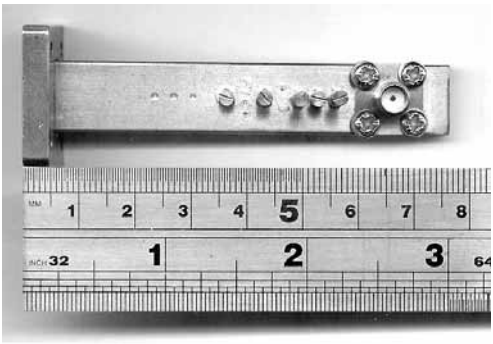
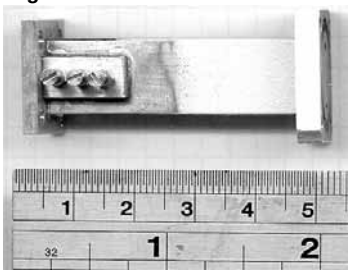


Fig. 2: Waveguide filter—UKuG Item D

Fig 3: WG 20 to WG 22



To keep losses to a minimum the preferred change over switch for the antenna is a **waveguide switch**. Whilst WG20 / WR42 switches are not common, the Wellington VHF group have been supplying WG22 / WR28 switches by RelCom at a reasonable price. Some of us already have these but for those that don't, the UkuG has secured a small stock (Ref RelCom Waveguide 22 switch). These do however require adapters to use them with WG20 / WR42. **These adapters are available from UKuG as Item A**. **(see Fig 3: photo left)** If the PA , Pre-amp and Antenna are all WG20 / WR42 then three adapters will be needed. There are some WG22 / WR28 antennas on the surplus market and if you have one of these, only two adapters and a short section of WG22 / WR28 will be required.

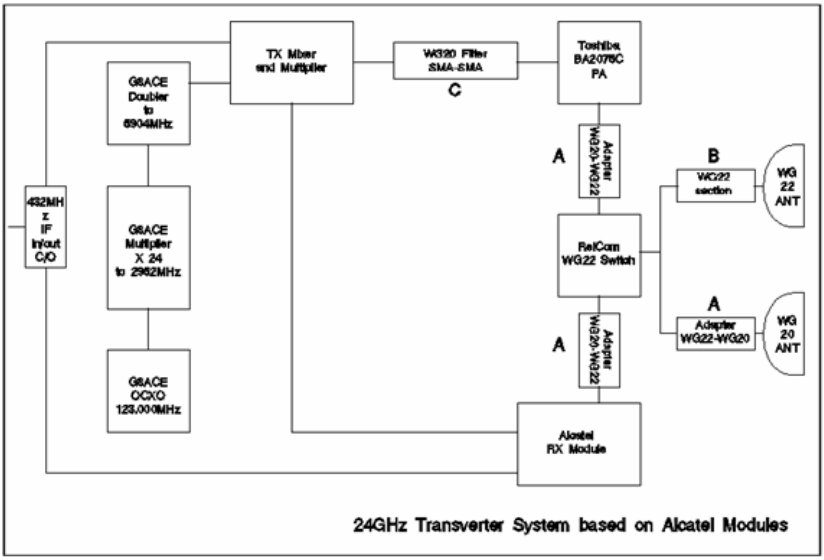


Figure 4

Fig 4 shows a system based on Alcatel modules. These employ image cancelling mixers with about 10dB of image rejection. On receive this is sufficient to suppress the image enough to ensure that the NF is not significantly worsened. On transmit this rejection is insufficient and would result in an unacceptable out of band spurious emission. So a filter is required for the transmit path and this most conveniently has SMA inputs and outputs. **This item is also available from the UKuG as Item C** (See Fig 5 right). Note that these will be supplied with the tuning screws on the opposite surface of the waveguide to the plugs and not as shown. This makes the tuning screws more accessible in most configurations.

Fig 5: TX Filter

As with the DB6NT based system, a waveguide switch is desirable and the RelCom WG22 switch with adapters (Item A) provides an Ideal solution.

Systems using these components and based on the configurations illustrated in Figures 1 and 4 have been constructed by the author and others and exhibit very satisfactory performance. The components will also be useful in systems using other configurations of commercial and surplus (white box) components.

It is hoped that by providing these components the UKuG will enable more folk to join the fun on 24GHz and explore the possibilities of this interesting band.

While we have arranged for the manufacture of small batches of the machined parts for stock, we will only assemble (and test) the finished items on a batch basis in response to firm orders.

This is not a commercial exercise on the part of the UKuG and apart from the supply of material and some of the machining, which we have to "buy in", this initiative relies upon volunteer labour.

Material available from the UKuG

Note that flanges are made with the waveguide hole slightly under size so they will need careful filing to fit the wave guide. This is because the outside dimensions of waveguides vary a little and a tight fit is required.

Item A

This is the WG 22 to WG20 adapter with matching screws. This is supplied complete and tuned for my RelCom WG switch. Some final tuning may be needed for yours.

Item B

WG22 section with 2 flanges. We do not currently stock the parts for these and they are only required if you are using a WG22 antenna and don't have suitable guide yourself. Let me know if there is a demand for this.

Item C

This is the filter fitted with 2 SMA sockets as required for the Alcatel based system. It is supplied assembled and tuned to 24048MHz. It consists of Item G with blanking plates, 2 SMA sockets and tuning screws. Matching screws are not supplied as they are not needed.

Item D

This is the filter with a WG20 flange at one end and SMA socket at the other. This is required for the DB6NT transverter system. It is supplied built and tuned to 24048MHz. It does not include matching screws as these are not normally required. You can add them if required.

Flanges for WG20 and WG22 may be difficult to find and the UKuG can help by supplying these.

Item E

Waveguide 20 Flange.

Item F

A special flange with WG22 fixings but to fit WG20 guide. To make adapters.

Item G

Waveguide 22 Flange.

Note that waveguide holes in these flanges are made slightly under size so may need filing to fit the guide. Copper Guide can usually be pressed into the flange using a vice, G Clamp or press before soldering.

RelCom Waveguide switches.

The UKuG has secured a small stock of the RelCom WG22 switches and these are available on a first come first served basis.

	Members Price		Non Members Price	
Item A WG22-WG20 adapter	£	20.00	£	25.00
Item B WG22 section with flanges	POA		POA	
Item C Filter with 2 x SMA	£	28.00	£	33.00
Item D Filter with WG20 Flange and SMA transition	£	28.00	£	33.00
Item E WG20 Flange	£	5.50	£	6.00
Item F Special flange WG22 fixing holes WG20 Guide hole	£	5.50	£	6.00
Item G WG22 flange	£	5.50	£	6.00
RelCom WG 22 Switch	£	37.00	£	42.00
Postage and Packing any item	£	2.50	£	2.50

- Some material will be available for collection at Martlesham if ordered well in advance and provided I have time to assemble and test it in time.
- Please place your orders by email to me at brian-coleman@tiscali.co.uk with UKuG 24GHz initiative as the subject.
- Payment is not required until the goods are ready to ship and may be by cheque or by Pay-pal to UK Microwave Group. For goods not collected at Martlesham please add £2.50 to cover post and packing in the UK. Overseas customers should ask for a quote. Pease re-member this is not a commercial exercise and most of the labour is provided on a voluntary basis and will be subject to availability of that most precious of commodities ...TIME.
- Additional components that may be available from other sources include:-
- If you are building the Alcatel version, G8ACE may be able to supply suitable OCXO, Multiplier to 2.8GHz and Doubler to 5904MHz kits. A 432MHz IF is a good choice and for this a123MHz Crystal will be required. (123MHz Xtal x 48 = 2952MHz x 2 = 5904MHz for input to the Alcatel TX mixer and LO multiplier module).
- Lehane G8KMH has produced a sequencer and driver PCB for the RelCom switch.
- Please contact Lehane or John regarding any questions on these parts.

GB3CAM 24GHz Beacon

Finally, the 24GHz GB3CAM beacon is now operational from IO92WI with about 250mW to a 10dBi slotted waveguide. The antenna has no "wings so has its major lobes pointing SE and NW, and it's minor lobes we reckon are about 6dB down (according to Brian NNS's measurements) pointing SW and NE. The antenna is blocked by another dish to NNW. It's about 30dB above noise here in Waterbeach JO02CG on a 45cm dish at around 25km, and is S9+ at G4BEL's at Haddenham JO02BI at 17km on a 60cm dish.

Reports please to me AND to www.beaconspot.eu

John, G4BAO email: john@g4bao.com

GB2CCX 1OGHz Beacon, Cleeve Common

I thought I would bring you up to date regarding GB3CCX IO81XW Cleeve Common.

After being refurbished it was put back on site on a new mast & 6 metre higher on Sat 18 Oct 2008 by the Glos.Repeater Group & is a good signal in Bristol. Various mods have been carried out . There is a new G8ACE OCXO fitted by G8BKE & new keyer from GW3TKH. Some more decoupling has been added to the supply line. Power to the antenna is just below 1W.

The new OCXO together with the new pic keyer now resides in the equipment hut at the bottom of the mast allowing access to adjust the freq if & when required. After 10 years the crystal should be well run in ,its final intended freq being 10368 .940

73 from Roy, G3FYX

March 2008 Low Band Contest Results

Overall

Pos	Callsign	1.3GHz	2.3GHz	3.4GHz	Total
1	G4BRK	1000	1000	1000	3000
2	GW3TKH	120	229	1000	1349
3	G4RFR	668	0	0	668
4	GM4CXM	574	0	0	574
5	G3UKV	554	0	0	554

1.3GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	G4BRK	IO91HP	12	PI4GN	579km	3068
2	G4RFR	IO90AS	15	G4FSG	269km	2048
3	GM4CXM	IO75TW	5	G0RRJ	561km	1761
4	G3UKV	IO82RR	8	GM4CXM	375km	1699
5	GW3TKH	IO81JM	4	G4ALY	137km	368

Check log: GW3HWR

2.3GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	G4BRK	IO91HP	5	PA6NL	380km	1148
2	GW3TKH	IO81JM	2	G4ALY	137km	263

3.4GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1=	G4BRK	IO91HP	1	GW3TKH	128km	128
1=	GW3TKH	IO81JM	1	G4BRK	128km	128

March 2008 Lowband Contest Results

Conditions and activity were poor for this event. It was timed to align with the European all band contest which might give some DX, but in practice only one or two stations in the south were able to make it into ON and PA.

Some comments from the logs:

GW3HWR: I worked Ralph G4ALY at miserable signal stengths, got despondent and chucked it!
GM4CXM: Conditions: Awful
G4RFR: Conditions - Flat to worse than average – mucho QSB + QRN from the 2 co-sited cellphone towers

Congratulations to Neil G4BRK who won all three bands and the overall contest. Runners up were G4RFR (1.3GHz) and GW3TKH (2.3/3.4GHz).

April 2008 Low Band Contest Results

Overall

Pos	Callsign	1.3GHz	2.3GHz	3.4GHz	Total
1	G4BRK	623	1000	1000	2623
2	GM4CXM	1000	0	0	1000
3	G0DJA	518	0	0	518
4	GW3TKH	59	279	265	603
5	G8AIM	327	157	0	484
6	GM8ZKU	0	4	0	4

1.3GHz

Pos	Callsign	Locator	QSOs	Best DX	Points
1	GM4CXM I	IO75TW	12	G3XDY 564km	4460
2	G4BRK	IO91DP	13	GM4CXM 517km	2777
3	G0DJA	IO93IF	11	G4ALY 366km	2310
4	G8AIM	IO92FH	7	GM4LBV 492km	1458
5	GW3TKH	IO81JM	2	G4ALY 137km	263

2.3GHz

Pos	Callsign	Locator	QSOs	Best DX	Points
1	G4BRK	IO91HP	7	G3LRP 218km	944
2	GW3TKH	IO81JM	2	G4ALY 137km	263
3	G8AIM	IO92FH	2	G3VKV 113km	148
4	GM8ZKU	IO97BJ	0.5	GM3UAG 9km	4

3.4GHz

Pos	Callsign	Locator	QSOs	Best DX	Points
1	G4BRK	IO91HP	4	G3LRP 218km	475
2	GW3TKH	IO81JM	1	G4BRK 126km	126

April 2008 Lowband Contest Results

Conditions were again below par, but at least this contest generated activity across the country, with G, GM, GI and GW represented in the logs. As far as I can determine no contacts outside the UK were recorded.

GM4CXM commented that conditions were pretty poor and qsb vicious with some dire signal reports floating about but invariably ending up complete 5 and loud.

A special mention goes to Simon GM8ZKU who made his first crossband QSO on 13cm with GM3UAG during the contest.

Congratulations to Neil G4BRK who again won the overall contest and the two higher bands, but was pushed into second place on 1.3GHz by a good score from Ray GM4CXM. GW3TKH was runner up on 2.3 and 3.4GHz

June 2008 Low Band Contest Results

Overall

Pos	Callsign	1.3GHz	2.3GHz	3.4GHz	Total
1	G3PHO/P	490	0	1000	1490
2	GM4CXM	1000	0	0	1000

1.3GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	GM4CXM	IO75TW	14	G4EAT	571km	5781
2	G3PHO/P	IO93AD	17	GM4CXM	349km	2831

3.4GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	G3PHO/P	IO93AD	7	G8KQW	239km	1248

June 2008 Lowband Contest Results

The almost total lack of entries for this event was a surprise and disappointment, as there were upwards of 20 stations active on 1.3GHz during the event. Please do send in logs so that we can record the true level of activity.

Congratulations to Peter G3PHO/P who won the overall contest and 3.4GHz band, and to Ray GM4CXM who made a good score from “up North” to win 1.3GHz by a large margin. No entries were received for 2.3GHz.

TIPS FOR USING THE KST MICROWAVE CHATROOM DURING CONTESTS … by Uffe, PA5DD

I really would urge everyone to try out KST2Me. Scrolling is not a issue when using the "filtered" window. I wish I had made a screen dump of the chat this weekend, because that would have shown it quite clearly.

This it how it works:

KST2Me has two windows, originally intended to allow to be connected to two chats at a time (eg. 144/432 and GHz). In the setup the bottom second window can be set to be a filtered version of the chat in the top window. "/CQ" type messages go automatically into the filtered window, but also messages fulfilling the user set "watch"-rules.

These rules can be defined in great detail. You can set different colours for the different categories of messages.

On top of that you get a lean client using much less data and CPU load than the Web interface, because it connects via Telnet. You get roughly the same functions as in the Web interface (ie. user list, cluster spots, locator lookup etc.). Because the client is connected via Telnet the messages are instant (no delay between they are sent and displayed at the other end). That makes a huge difference when setting up skeds.

The program is free, but you need to obtain a key file. In my experience the programmer, Bo OZ2M, is very open to feature requests that have a wider audience.

http://rudius.net/oz2m/software/kst2me/index.htm

73 Uffe PA5DD

CRAWLEY MICROWAVE ROUND TABLE ... A BRIEF REPORT BY SAM, G4DDK

I would like to thanks Chris, Allan, Derek and the other fine folks at the Crawley Microwave RT for staging an extremely enjoyable Round Table ... especially the catering staff!!

For a small-venue event, these guys manage to pack a lot into the day. Although I didn't do the driving this year, I was still shattered when I got home. I don't know how Dave, G4HUP, must have felt!

Congratulations to Mike, G3LYP, for winning the UKuG Construction contest. I was very impressed by the entries this year and I think we had a truly deserving winner of the G3VVB trophy. Well done Mike. Mike will receive the engraved trophy at Martlesham.

If you couldn't find something of interest in the 'flea market' you weren't looking !

One of the Crawley Club told me that the club may be under threat from an over zealous Council accounts department in Crawley, with a huge rise in rent for the club house in the offing. The Crawley Club runs this event for free, although a small donation to club (rent) fund is always welcome, but not mandatory. Please come along next year and support them and show the local council that this is a progressive, well-thought-of group of hobbyists who really do something for the local (and not so local) community.

Thanks Guys. Keep up the good work.

73 de Sam, G4DDK

DB0KI BEACON NOW QRT

A CONDENSED VERSION OF A REPORT BY
Reinhold, DL6NAA

DB0KI is silent since beginning of September 2008 after an incessant job for many years.

This beacon had its location at the mountain which is called "Grosser Waldstein", one of the highest mountains from the "Fichtelgebirge", in the north-eastern part of Bavaria, near the border to the Czechian Republik.

This beacon was supported by DK5NI, DC9NL, ex DK2GNX (nw DK3FT), DB6NT, DL6NCI, DC9NI and many others.

As the callsign was applied for the VFDB OV Bayreuth it was possible to fit the antennas on the tower from a TV- and broadcast- transmitter. The place for the antennas was about 100m over the ground- level.

Nearly all the time the beacon was transmitting on all bands from 144MHz to 24GHz. Receiving reports from many countries gave a feedback that it was a good occasion to check the propagation on the frequencies over 144MHz.

It was not easy to keep all components running for all the time. Sometimes it was necessary to climb up the tower, even during the "cold period". Also there were many problems with high electromagnetic fields from the TV- transmitter (500KW ERP) and different BC-transmitters with 30KW ERP.

The reason for the QRT and reduction of all components is a tremendous demand from the DFMG, the company which is now the owner of most of the radio- towers in Germany.

The hardware for 144MHz, 432MHz and 1296MHz will be modernized by DC9NL and DK5NI and will be given to DB8UY, who is responsible for the QTH from the microwave- beacons DB0FGB on top of the "Schneeberg", the highest mountain from the "Fichtelgebirge". Maybe there will be again a 2m,70cm and 23cm beacon transmitting from our region.

My special thanks to all the friends who spent a lot of time and much money to keep DB0KI for 30 or perhaps some more years alive. I have to thank Dieter, DC9NL for the photographs

144.444MHz beacon DB0KI

Manfred, DL1NMO climbed 100 metres up the tower to remove the antennas

By Robin Lucas, G8APZ

In the July/August issue, I referred to a contact between F2CT/p and LX1DB as a new 24GHz world record. The validity of this contact has since been queried, on the basis that one of the operators did not receive RRR.

In the July/August issue, I referred to a contact between F2CT/p and LX1DB on 24GHz as a new world record. The validity of this contact has since been questioned, on the basis that "one of the operators did not receive RRR".

Soon after the contact took place, I asked both operators for details by email, and received replies from each of them. Both replies mentioned the receipt of reports and RRR from the other. I have since reconfirmed that this was the case.

Guy and Willi were both satisfied that the contact was complete, having exchanged callsigns, reports and RRR with each other, and have also exchanged QSLs. I trust that this will clarify the position.

CONTEST and ACTIVITY REMINDER

October

21-Oct 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
25/26 Oct French Journée Activite (Activity Day)
26-Oct 0900 - 2000 All-band Activity Day
Non competitive (last Sunday in month)

November

18-Nov 2000 - 2230 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
30-Nov 0900 - 2000 All-band Activity Day
Non competitive (last Sunday in month)

December

7-Dec 0900 - 2000 Low band 1.3/2.3/3.4GHz
16-Dec 2000 - 2230 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
28-Dec 0900 - 2000 All-band Activity Day
Non competitive (last Sunday in month)

RSGB 2009 RULES - RULE 5c

The VHF Contest Committee have released the general rules for next year, and there is an implication for the higher microwave bands in rule 5c, which will probably be used for the May and October multi-band events.

Under rule 5c, the points gained on bands above **10GHz** will be combined into a single "Microwave Band" and the score will be the sum of the points scored on each of the bands, using the following multiplication factors:

24GHz(1), **47GHz**(2), **76GHz**(3)
120GHz(5), **144GHz**(6), **248GHz**(10)

For the purposes of calculating the contest overall results the "Microwave Band" will count as a single band during normalisation.

CONTESTS

23/13cm UK Activity Contest September

Ray **GM4CXM** (IO75) felt the event went well despite conditions being very poor. He said they were as miserable as the weather in Scotland, which was very light but consistent rain with poor visibility.

Alan **GM0USI** teamed up with Ray to do his "own thing" on **13cm**. Ray's loft window was removed, and using a mast base (which he uses when portable), Alan assembled cables, poles, rotator and a 35el **13cm** Tonna sticking out of the space where the window had been (a thin plastic decorating sheet was used to stop rain getting into the loft by jamming it under the tiles!) Alan set up his gear by 8pm.

Meanwhile, Ray hadn't had time to do some beacon checks but he realised things were going to be challenging once the first contact attempt took place. Where was **GW4DGU**'s troposcatter signal?

This turned out to be the story for a lot of contacts and it was just a case of being patient and waiting for a convenient aircraft to enable communication to take place by using aircraft reflection.

John, **GM4LBV** was much weaker than usual and Jim **GM3UAG** (IO87) who is normally just above the noise in a very bad direction was totally inaudible.

There is not much air traffic between Glasgow and Aberdeen, and with the poor conditions Ray felt he had missed out on a few "regulars" in the north of England (unless they were absent), but overall ended up with his best points per QSO ratio of the year at 422.

Most contacts exceeded 500km (due to air-

craft scatter contacts). Success with aircraft reflection contacts is never guaranteed but do score very highly if successful.

Ray's contact with John **G3XDY** (JO02) was reminiscent of his 2m SSB meteor scatter days. They were operating 30 second periods on CW with reflections few and far between. Ray sent a "roger" report within his exchange to let John know that he had everything except "rogers".

After almost 10 minutes he started receiving a weak set of "rogers" and half way through his 30 second period John sent "break" (BK) and Ray responded with "RRRR BK". A quick reply of 73 each way and the QSO was in the bag.

If you are trying a contact using AS and you start to hear your partner during their transmit period, don't assume that the reflection is going to last all of your 30 seconds - be prepared to "break" to enable some rapid contact information exchange.

Ray's contacts on 23cm (* = A/S) were:

G4EAT*(JO01) 572km, **G4DDK***(JO02) 572km, **G3XDY***(JO02) 565km, **M0GHZ**(IO81) 521km, **G8DKK***(IO91) 518km, **G4BRK**(IO91) 517km, **GW4DGU***(IO71) 450km, **G8OHM** (IO92) 425km, **G4PBP**(IO82) 399km, **GW8ASD**(IO83) 332km, **GM4LBV**(IO86) 141km, and **GM0UHC** (IO85) 52km

Nobody was heard randomly at all, and CQ calls generated only 2 contacts and one tail ender (**G8OHM**).

From Ray's loft, Alan **GM0USI/P** had one contact with Ian **GM0UHC** on **13cm**, and had heard John **GM4LBV** but nothing was heard from Neil **G4BRK** and David **M0GHZ**.

Bryan Harber, **G8DKK**(IO91VX) was QRV in this **23cm** activity contest, and made 8 contacts. His best DX was **GM4CXM** at 517km. He also worked **M0GHZ**, **G3ZMF**(IO91VH), **8OHM**, **G7CQH/P** (IO92IR), and **GW8ASD**(IO83LB).

10GHz Cumulative - September

The most recent cumulative session took place on 21st September, 2008. A number of stations were out portable in the North of England, amongst them was **Clive Davies, G4FVP** who found that the hot and sunny weather was much better than the conditions.

Clive was active from IO94DO near Shildon in County Durham for 4¾ hours on **3cm** but found it was hard going with a total of five stations worked. His main problem was not on **10GHz** but on 144.175MHz - He heard many portable stations on 2m talkback but with their beams (probably) pointing southwards or towards the Midlands, and he found it difficult to break in to arrange a QSY to **3cm**. (Rob **M0DTS** on the North York Moors had the same problem also)

Clive was sure that if he had got through on 2m more **10GHz** QSOs would have resulted. His best DX on the day was **G4ZXO/P** at the very respectable distance of 426km.

Richard Newstead, G3CWI was in IO83VQ at Hail Storm Hill. As usual, Richard walked to the site with his equipment which took him an hour. On **10GHz** he runs 1Watt and a 40cm dish with 2m SSB and 'KST for talkback. Richard operated for three and a half hours, netting 17 contacts, with his best DX at 299km. He found that using 'KST on a portable trip was a qualified success - the PC screen was very hard to read in full daylight and the GPRS link dropped out several times. However, 'KST did not yield many extra contacts and was far more fiddly to use than 2m SSB. It was just about worthwhile but could really only be used in the very finest weather, which fortunately was the case this time.

Richard says... *"Carrying a 40cm dish was not compatible with pleasurable walking with a 12Ah battery and 'KST as well as a walk across a muddy morass. I felt that this site was quite a good one - probably a better all-round option than Winter Hill. although I would only recommend it after a dry spell though as it is a deep peat bog."*

Harold, G3UYM/p was at Therfield, **IO92XA** where his best DX on **10GHz** was **F6DKW** at 395km. Not far away, **Bryan Harber, G8DKK** (IO91VX) made 11 contacts, his best DX being **G4FVP/P** (IO94DO) Bryan mentions good weather and activity, with some new stations worked.

Graham **G4FSG** (JO02) also participated in this cumulative contest on **3cm** and **6cm**, but despite the hint of possible good conditions, he found it very average with his 60cm offset dish just above the apex of the house at about 8m surrounded on many sides by 15m trees!

Graham managed six contacts on **3cm** and three on **6cms** with his ODX being **G4ZXO/G3WYJ** in IO90 at about 177km.

Portable operators do not necessarily have 'KST available, and they rely heavily on 2m talkback, so do please look to the north and check 144.175MHz during these contests.

AUTUMN OPENINGS BEGIN

From: Graham Murchie, G4FSG (JO02PC)

On Friday evening (26 Sept) **G4DDK** and I were on Skype and commented that according to 'KST the **OZ/SMs** were hearing the beacons at Martlesham (**GB3MH***).

Between 18:30 and 21:30GMT I worked my best DX on **13, 9, 6** and **3cm**!! Soon after switching on I worked Carl Gustav, **SM6HYG** in JO58RG (940km) on **23, 13, 9** and **6cm** with little difficulty. This was my first non **G** station on **6cm** and increased my ODX from 177km to 940km! - on **9cm** the ODX also increased from under 200km.

About an hour afterwards I made it with Jens, **SM6AFV**(JO67) 948km on **6cm** and later I succeeded with **OZ2LD**(JO54) 748km on **3cm** to increase my ODX from 306km to 748km. Several more contacts

were tried, but the conditions were extremely unstable and it was very evident that the 'lift' just reached just a few kilometres inland (I am 12km from the sea) since **G4EAT** and **G4BAO** were hearing very little.

John, **G3XDY** did even better than me as he has a much better take off particularly on the higher bands. Sam, **G4DDK** also worked **SM6HYG** on **3cm** but it was a bit of a struggle.

Everything appeared to have gone before midnight BST with no signs of anything the following morning. The next day there was some very localised coastal ducting obvious on **9cm** with very strong Belgian 'beacons' which don't key(!) being heard.

It just goes to show that getting metal into the air is a key objective. Even though I can hear very little most of the time on **5.7GHz** and **10GHz** with significant screening, when the conditions are right then anything is possible!

73, Graham G4FSG

The high pressure area which enabled these enhanced conditions covered the North Sea from Scandinavia to the southern UK, but on this occasion it favoured the Scandinavians. It was rather selective though, with the best paths only available to stations sited near the coast.

Kjeld **OZ1FF**(JO45bo) worked **G4EAT**(JO01hr) on both **6cm**, and **3cm,** and Kjeld was also successful on **24GHz** when he worked **SM6AFV** (JO67) at 357km, and **SM6HYG** (JO57) at 359km.

BEACON NEWS

G4FSG referred to Belgian unkeyed beacon(s) on **9cm** and there is a rather unusual explanation. I contacted Pedro, **ON7WP** who is Chief of Production Facilities at Belgian TV station VRT, who gave me the following information:-

"First of all, **3.4 GHz** is NOT a ham radio band in Belgium. It is used by public TV (VRT) for live video coverage of cycling events. For this purpose, we have a mobile high gain receive station equipped with two parabolic dishes. This station is placed wherever there is an event to cover.

In order to calibrate these parabolic dishes, we need a fixed signal to point to, and for this purpose THREE beacons were installed on high TV transmitter towers. They are based on Kuhne **DB6NT** beacon transmitters with FET power stages. Antennas are 10 dBi high gain WiFi co-linears using VERTICAL polarisation.
Overview 2008/09 status :
Sint-Pieters-Leeuw JO20CS 210m agl 100W ERP
Schoten JO21EE (?) 50 W ERP 50m agl
Genk JO20RX (?) 50 W ERP 50 m agl

Another one will be installed in Egem, JO10PX soon. None of the beacons are keyed and all have a slightly different frequency around **3400.900MHz.** They are all on air 24h a day simultaneously, so you need to find the exact frequency to differentiate between them. JO20CS should be the strongest, in height and ERP. The callsign mentioned (**ON0VRT**) comes from a VHF-UHF repeater system located also on the same tower in JO20CS. But these are NOT HAM beacons... I just choose the frequency in such a way they could also be convenient for hams being a ham myself. The JO20CS signal is huge and should be heard all over Europe with some tropo....

There is a plan to key the beacons in the future but it is low priority as it is not useful for our application."

Since the new **GB3CAM 24GHz** beacon went on air, it has been received by **G4BAO** (JO02) and **G4EAT** (JO01), and during the cumulative contest on 21st September, it was also received by Harold, **G3UYM/p** from Therfield (IO92) who copied **GB3CAM** at 599. Three reports from three locator squares!

WWW.BEACONSPOT.EU

The site was launched at the Bath RT in April 2008, and the number of registered users has just reached 300 in only five months.

For the launch, the database was populated from 2007 data retrieved from the DX Cluster history, which was heavily "cleaned" by manual intervention! This was a very labour intensive exercise, but it achieved the best "true" record of microwave beacons across Europe.

The spots submitted via the website are passed on to the DX cluster, but unless it is regularly spotted, a beacon's status becomes uncertain. If a beacon has not been spotted for 365 days, the status is changed to reflect the need for a more recent "spot".

Your regular beacon spots submitted via this site will help to keep the database as the most reliable list of microwave beacons in Europe.

ANOMALOUS PROPAGATION

From: John Worsnop, G4BAO, JO02CG
(via the ukmicrowaves reflector)

At around 22:17 on Friday 26th September, whilst the "East coast boys" were working in to **SM** and **OZ**, I was checking the two **GB3CAM** beacons **3cm** and **24GHz** and noticed that the dish heading for the **3cm** one seemed to have shifted from the boresight 293 degrees to around 299 degrees. I also found a secondary smaller peak at around 291, almost as if the signal had split in to an interference pattern with a null down the boresight. The **24GHz** one was a normal single peak at 293. This was still the case Saturday 27th at around 07:00.

On checking on Saturday evening, the signal directions had returned to normal and the offset had disappeared.

I use a **W1GHZ** dual band feedhorn in a 45cm offset Sky minidish. The path length is 23.5km, and the direct line of site ray is not obstructed.

On further investigation, a narrow knife edge pro-

trudes in to the first Fresnel zone at 5.5km downrange from me. On **24GHz** the obstruction protrudes in to the first Fresnel ellipse by less than 20% but (due to the larger size of the ellipse) at **10GHz** by around 50% . Hence the **10GHz** path is effectively more obstructed.

Can any of our propagation experts give me an explanation as to this fascinating effect? If anyone else wants to plot the path profile, I'm at TL49926522 (antenna 8m agl) and **GB3CAM** is at TL28007380 (antenna 33m agl). **73, John**

It is interesting that this observation was made (once again) whilst ducting was present not far away. If we recall the lecture by Dr Watson at the Bath RT in April 2008, one of the experiments at the university involved reception of a **38GHz** link in which severe dips were seen in the LOS signal in certain atmospheric situations.

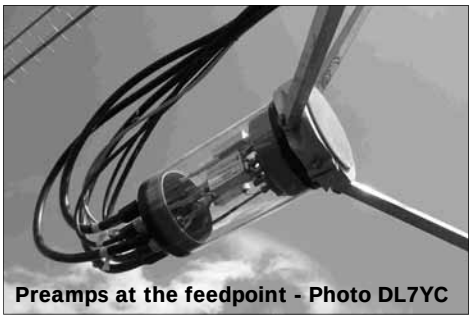
EME

From: Peter Blair, G3LTF Andover, IO91GG
I had a great time in the microwave section of the ARRL EME contest, working 34 stations on **13cm** and six on **9cm**. Brian **G4NNS** was QRV on **3cm** and Howard **G4CCH** on **13cm**.

Both Howard and I were able to work **DL7YC** using his 1.9m dish with linear polarisation (LP) and 130W at the feed. That means that as we use circular polarisation (CP) for EME work he was effectively running only 65W. OK, it was a marginal QSO but there are probably a few more out there in this country who can put 65W into a 2m dish!
73, Peter

From: Manfred Ploetz, DL7YC
For the first time I tried to use my LP multi-band tropo station for EME. It's a 1.9m mesh dish only with ring feeds - but all preamps are at the feedpoint.

On **13cm** with 130watts (2320MHz only) I worked



Preamps at the feedpoint - Photo DL7YC

G3LTF O/O (thanks Peter for the nice report for my 2dB signal in 50Hz BW :-)) and **G4CCH** O/O also very easy and quick. I heard but did not work: **DL4MEA**, **OK1CA** and many other unidentified stations. The problem was random activity (short durations) and high speed CW (not so good for M grade signals).

On **9cm** with 60watts, no QSOs but I heard several unidentified stations with M-O signals. Much too fast CW to decode in random.

On **6cm**, with 40watts, I worked **F2TU** (M/M) and heard **OK1KIR**, **W5LUA** plus several unidentified stations.

It is amazing what can be done with such simple equipment. Knowing this, I will start to build up **RA3AQ** modified CP horns for my 0.45 dish for all 3 bands. If this +3dB does not help much, I can expand my dish to 3m diameter for another +3dB. Last but not least, power can be improved by an additional 3dB.

Thanks to all stations for trying to make a contact with a non EME grade operator.

I'm also very busy with my **24GHz** EME setup and plan to be ready very soon. I have a 0.33 solid prime focus 2.4m dish already installed to follow the moon in increments of 0.05 deg. I get 45watts output at **24GHz** from my TWTA and I have a preamp with 1.1dB noise figure. Cabling and the reminder of the mechanical work should be done in the coming days and hopefully everything will run just as it does on the workbench.
vy 73 Manfred, DL7YC

From: Russ K2TXB
In the ARRL EME contest, there was one station that got away on **3cm**. He was one of the first stations that called us, and he was very persistent. We could recognize his and our drift curve on Spectran every time, but the signal was pretty weak, there was a lot of signal spreading and at times his signal would actually break into two separate components and drift in opposite directions.

Finally, we managed to copy the call. It was Brian, **G4NNS**. With joy we answered and gave a report but no response. We repeated the transmission to no avail. I guess you finally gave up on us Brian. Sorry, we were a bit of an alligator station with the high power but poor NF. We would really have loved to work you.
73, Russ K2TXB

...AND FINALLY

The Martlesham Round Table is not far away (the weekend of 8th/9th November), so if you haven't already booked, do so now!

Here's hoping for lots of autumnal openings on the microwave bands!

73 Robin, G8APZ

Please send your activity news for this column to:

scatterpoint@microwavers.org

Free replacement SMDs

Following a recent discussion on the UK Microwave reflector about losing small components, GH Engineering is now pleased to offer a 'get you going' service for constructors who find themselves missing one or two small Surface Mounted Devices which are needed to finish a particular project.

All that is required is that a Stamped, Self-Addressed Envelope be sent with a note of which component(s) is/are required and replacements will be sent free of charge. This applies to any constructor building any project from any supplier - not just GH Engineering kits.

GH Engineering has a wide range of SMDs in stock which are used either for in-house projects or Power Amplifier kits. This service is offered to relieve the frustration of losing a single, small component which would be expensive to buy from the usual distributors in small quantities, and not available to amateurs as samples.

The list of components in stock is :-

Capacitors

0603 size -	0p5, 0p75, 1p0 and then all values in E24 range to 820p 1n and then all values in E6 series to 1uF
0805 size -	0p47 and then all values in E12 series to 1u
1206 size	10p, 22p, 47p, 100p, 1n, 4n7, 100n, 330n only

Resistors

0603 size -	0R, 1R0 and then all values in E12 series to 8R2, 10R and then all values in E24 series to 1M0, 1M5, 2M2, 3M3, 4M7
0805 size -	0R, 8R2, 10R, 15R, 22R, 33R, 47R, 51R, 56R and then all values in E12 range to 2k2 3k3 and then all values in E6 range to 1M, 2M2, 4M7, 10M
1206 size	0R, 10R and then all values in E24 range to 1M
E6 -	1, 1.5, 2.2, 3.3, 4.7, 6.8 and multipliers
E12 -	1, 1.2, 1.5, 1.8, 2.2, 2.7, 3.3, 3.9, 4.7, 5.6, 6.8, 8.2 and multipliers
E24 -	1, 1.1, 1.2, 1.3, 1.5, 1.6, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3, 3.6, 3.9, 4.3, 4.7, 5.1, 5.6, 6.2, 6.8, 7.5, 8.2, 9.1 and multipliers
0603	0.06" x 0.03" (1.5 x 0.75mm)
0805	0.08" x 0.05" (2 x 1.25mm)
1206	0.12" x 0.06" (3 x 1.5mm)

Please state VALUE and SIZE. Nearest value will be supplied if exact value not available. 0805 size will be supplied if not specified. A small, un-padded envelope will suffice. Please allow 5-7 working days for delivery. Overseas deliveries are fine - just ensure that the correct International Reply Coupons are used. Enquiries about this service by email only.

What's the catch? There isn't one! No sales pitch, no glossy brochures, no annoying adverts, no questions asked, no surveys to be filled in, just a genuinely free service to the amateur microwave community aimed at helping constructors in need. It is assumed that quantities will be small (less than 5), but exceptions may be made as appropriate. Note that GH Engineering is not in the business of selling SMDs, so please don't ask - the usual distributors offer a far superior service.

GH Engineering
The Forge
West End
Sherborne St. John
Hants
RG24 9LE

sales@ghengineering.co.uk
Grant Hodgson G8UBN
GH Engineering

Readers will surely join with us in thanking Grant for this very generous offer... true "ham spirit" indeed!