An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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2008 JUNE

23cm EME Japanese style…

This monster, 9 metre dish at JR4ZZS completely dwarfs both the house and the operator, JR4AEP.

Look carefully and you'll see a smaller dish behind the mesh one. Most of us have to be content with a single 60cm offset on the chimney!

In this issue ...

- DME 10GHz PA— a review
- Microwave Field Strength Meter
- Modifying an FT817 for transverter control voltage
- Beginners' Corner
- 2 Hills 2 Squares 2 Wheels 3 centimetres
- Activity News
- Roundtable news
- For sale and Wanted
- General announcements

Latest News …

- **Northern Microwave Roundtable to be held in Sheffield 12/13 July so register now!**
- **Summer is a little late this year**

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

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From the Editor's Desk

Hello again,
It's nice to be back in the editor's chair after a month in VK/ZL. Many thanks indeed to Robin, G8APZ, for holding the fort in my absence. I had a great trip meeting some sixteen radio amateurs in the course of travelling through the North Island of NZ, Victoria, NSW and Western Australia. However, only two had an interest in the bands above 1GHz, the rest being long time friends I work regularly on 20m.

It was especially nice to meet up with UKuG member and friend of long standing, Lyle Patison VK6ALU (formerly VK2ALU). In his VK2 days he made the first 10GHz EME contact with the UK, back in the mid 90s when he worked G4KNZ and G3WDG, Now in his 80s, he lives in an RAAF retirement village south of Perth, WA. He has very little of his microwave gear around him but is presently trying to get his 10GHz portable narrowband going once again, after several years of it lying untouched. Hopefully he will be able to interest others at his local radio club. Lyle wishes to be remembered to his UK microwave friends.

The next issue of Scatterpoint will be the July/August edition, spanning the two months of the UK "summer" period (when will summer arrive?). It will most likely appear in mid August. Meanwhile we would appreciate articles and reports of your microwave activities. Our archive of material is now empty so next month's content depends entirey on you the reader … go to it!

73 from Peter, G3PHO — Editor

G3PHO: editor@microwavers.org

G3PHO: Peter Day ++44 (0)114 2816701

**G3PHO, Peter Day,
146 Springvale Road,
Sheffield, S6 3NU, UK**

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

24GHz FIRST CLAIMS
GM-GM and GD-GD

24/2/1996 11:05 UTC
GM8BJF - GM8BKE/p

03/05/2008 15:54 UTC
GM8BJF/p - GD0EMG

If anyone has a prior claim, or knows of earlier 24GHz firsts, please contact John Quarmby, G3XDY
E-mail: g3xdy@btinternet.com
or Tel: 01473 717830

HAVE YOU RENEWED YOUR SUBSCRIPTION YET? YOU CAN CHECK THE RENEWAL DATE ON YOUR ENVELOPE ADDRESS LABEL IF YOU RECEIVE A PRINTED SCATTERPOINT.
THE DATE IS ON THE LOWER RIGHT CORNER OF THE LABEL.
IF YOU STILL DON'T KNOW YOUR RENEWAL DATE PLEASE EMAIL THE SECRETARY, G8KQW, AS SOON AS POSSIBLE!

SUBSCRIPTION ENQUIRIES SHOULD BE SENT TO THE UKuG GROUP SECRETARY AT THE ADDRESS SHOWN AT THE TOP OF THIS PAGE

DJ9BV now Silent Key

This email appeared on Moon-net on the 5th June, posted by Dick Harms, PA2DW:

"It has come to my notice that Rainer DJ9BV has become silent key. Another great radio-pioneer is lost. Rainer was very ill for some time but we hoped he had overcome his disease. Regretfully we will have to live on without him. His great contribution to radio and especially antenna science however, will live amongst us for eternity."

Rainer was well known for his work on VHF aerials and for his DJ9BV Yagis. He was in charge of the highly respected VHF Magazine **DUBUS** until becoming too ill to continue. He was near the top of the 70cm listings, active on modes such as EME. Rainer also published a number of items such as articles on low noise pre-amps. He was a wealth of knowledge and will be missed by all VHFers.

Chris, GW4DGU adds: Anyone using yagi antennas on the VHF - microwave bands will owe Rainer a great debt. I first met him in the early 1980s. He was a very impressive individual, both in terms of intellect and energy, who contributed a great deal to the advancement of our hobby. I was very pleased to have known him.

Useful website

A post by MM1FMF on the SOTA reflector has reminded me of this useful site:

http://www.viewfinderpanoramas.org/panoramas.html

It could be handy for planning portable activities. Incidentally they claim that the longest UK LoS is Merrick-Snowdon.

73 Richard G3CWI

SHEFFIELD MICROWAVE WEEKEND

By the time you read this, we will be just about a fortnight away from the first northern amateur microwave meeting for many a year. If you haven't yet registered your intention to come along (and this applies even if you only intend to come to the Sunday round table meeting and not Saturday's workshop) please do so before you read anymore of this issue of Scatterpoint! Peter, G3PHO, who is organising the weekend has to have definite attendance figures to give to the venue's management who will be providing the catering over the weekend.

An updated information pack, containing the programme and access details, can be found at **www.microwavers.org**. In addition, a list of registered attendees (which includes two GMs and Giles Read, the RadCom technical editor) should be on the same website by the time this Scatterpoint reaches you.

As we go to press, numbers are a little disappointing but we hope some of you will make a last minute decision to come along. Don't let the rising cost of petrol, the wife's birthday, or holidays in France put you off!

FOR SALE: SILENT KEY EQUIPMENT

I'm handling the disposal of the late G3JMY's equipment. and have been having a look at Teds equipment to decide what works & what doesn't . I know he had trouble with some of it so I can't guarantee much of it.

His 3cm set up was a G3WDG transverter, driving a ten watt TWT which was new when he bought it and powered by one of G3JVL's heavy mains power supplies which sometimes doesn't want to come on when changing over. Part of this set up is an IC202. It would be nice if all this could go as one lot together. I've got people who are interested in the WDG set up but not the other parts, bearing in mind that the power supply is heavy.

Other parts are:

Yaesu Transceiver FT840 No WARC bands
Home brew linear believed 400W o/P. May need attention
Tokyo Ant coupler & SWR Bridge
FT780 10w 70cm transceiver
Trio2 m transciever TR9000
RM linear amp mod 145 110 watt ssb 144MHz
Yaesu power supply FP80 A

There are other things including a 60MHz scope but but not a lot of Microwave bits. Much better if someone can see it but if interested please contact me on 01454 778288 73 from Roy Emery, G3FYX (Bristol)

A NOTE FROM THE RSGB MICROWAVE MANAGER

From: "Murray Niman g6jyb (mjniman@iee.org):

The VHF-Microwave proposals that will be discussed at the IARU-Region 1 Conference in Cavtat are now available.

The International Amateur Radio Union Region 1 General Conference will be held in Cavtat, Croatia, from the 16th to 21st November.

The proposals that will be discussed by the conference C5 committee can be seen at:

http://www.ok2kkw.com/iaru/cavtat_list_en.htm

MANY THANKS to our contributors this month ..

G8DKK
M0ELS
W3HMS
G3CWI
G8KQW

and all who sent in activity reports to Robin's column.

Plug and Play 9cm Systems

Beautifully made 3.4GHz systems are now available from the Czech Republic. Visit **http://www.btv.cz/en/pdf/BTV_microwapp_HR_3A_eng.pdf** for details.

The 100mW system is priced at €546Euro and the 1W system at €899Euro.

Contact:

B PLUS TV a.s., Požárnická 140, 742 83 Klimkovice, Czech Republic.
tel.: +420 556 420 360,
tel./fax.: +420 556 420 301

Or email: elfmark@btv.cz

Or: GSM: 603 540

Gear for other bands can be seen at **www.btv.cz** and there is an English version available by clicking on the Union Jack on the homepage.

Many thanks to G8KQW for this information.

WANTED !

Articles, reports, photos and any other item you may think is of interest to Scatterpoint readers. We presently have run dry of material and need your material for next month's issue!

From time to time, we may publish articles and reports that have already appeared on the UK Microwave Reflector. In fact G3CWI's article on page 14 about his portable exploits is one example. We make no apology for using such items as they are of interest to a wider audience than the reflector enjoys. Not all UK microwavers read the reflector these days, many having been put off by argumentative postings in the past! Remember also that the reflector is **not** the official voice of UKuG… that job remains here with Scatterpoint. If you are in the habit of posting informative articles on the reflector maybe you could send them to this desk instead and just post a pointer to Scatterpoint on the reflector. This might encourage others to join UKuG and get educated!

CAMBRIDGE 10GHz BEACON … UPDATE

From: bernie <bernie@earf.co.uk>
Friday, 6 June, 2008
Subject: G4AKD/B (10 GHz GB3CAM test beacon)

G4AKD/B (on 10368.775 MHz) was turned off at 15.30 and dismantled ready for the move to full GB3CAM operational status. The new NoV for the RAF Wyton site is already here - I'm just waiting for the insurance to come through, and the site contract to be agreed and signed.

73 Bernie G4HJW

The Down East Microwave (DEM) 3-3PA, 10GHz PA

A review by Bryan Harber, G8DKK

The DEM 3-3PA is a 10GHz, 3W power amplifier from Down East Microwave Inc. in the USA. It is available in both kit form and ready-built versions. Currently, there are 4 versions listed in the DEMI on-line catalogue: an assembled and tested version and 3 kits, of which the version reviewed here is the 3-3PACK full kit. The 2 other kit versions are PCB only or PCB + components (no metalwork).

I should start by pointing out that this kit was ordered in July 2007 immediately following the completion of a move of premises by DEMI from their long established New Jersey base to Live Oak in Florida. As a result of the move and unpacking of shipping boxes, it is has been confirmed by Steve at DEMI that one of the metalwork parts I received was from a previous version of the PA – see later.

Mechanical Construction

The kit is supplied with an instruction sheet (8-pages) that includes: the specifications, components list, circuit and PCB layout diagrams as well as the assembly and testing instructions. The assembly instructions strongly advise reading all of the instructions before starting the assembly because there are some instructions and anomalies in the text that are worth sorting out before the build gets too far advanced. In my case a dry run with some of the mechanical parts was necessary to understand which of the screw holes were necessary and which were not.

A data sheet in PDF format can be downloaded from the DEMI web site that provides colour photos of the completed unit. However, these photos are a little out of date and show a previous version of the amplifier with a finned heat sink that is no longer advertised. The free-standing 3Ω 10W resistor shown in the photo has been replaced with a gold coloured, contact cooled version.

The current kit is the 3-3PAP version that does not include a finned heatsink and is now supplied as the palette version only. The palette is a 6.3mm thick piece of aluminium (105mm x 50mm) on which is mounted the PCB and the single PA device. The PA is actually a GaAsFET mmic (microwave integrated circuit) from Eudyna (was Fujitsu semiconductors), the FMM5061VF. I found it useful to print a copy of the Eudyna datasheet for reference.

The remainder of the metalwork comprises an aluminium enclosure with a thin lid. I was initially surprised that the enclosure did not completely enclose the PCB and initially expected to have to scalpel the board to fit but on reading the instructions for the second time it became clear that the PCB is attached to the palette and the enclosure sits on top and clamps down on the PCB via the SMA connector screws.

During the assembly dry run it was noticed that the pre-drilled mounting holes for the contact cooled resistor were not in the positions described in the assembly instructions. In fact, the instructions state that one of the screws shares one of the mounting holes of the SMA output connector where my unit clearly had separate holes for each component. Sufficient screws had been supplied to assemble either way and so the supplied pre-drilled holes were tested for best fit. This showed that the lower mounting screw for the resistor could not be fitted with a retaining nut because this fouled on the head of one of the PCB mounting screws.

Faced with this dilemma, I opted to drill an additional hole in the enclosure and to mount the resistor as described in the instructions using one of the SMA connector holes. The additional hole was drilled to move the position of the top mounting hole for the resistor.

At this point and still with no components on the PCB I made a decision to make some further mechanical alterations to the original design. My 10GHz transverter box is mast mounted and has become rather a 3D jigsaw puzzle to fit or remove the many small modular boxes within it. Space is rather tight and the arrangement in the DEM PA where the connectors are on opposite sides of

the 2 longer sides of the unit plus the palette being even longer in this dimension (105mm) would render mounting of this PA impossible without changing the IP66 box in which the transverter is mounted. I decided therefore to cut down the size of the palette to the length of the enclosure (76mm). The palette needs to be attached to an efficient heatsink anyway as stated in the DEM instructions. A further incompatibility with my transverter system is the size and position of the RCA (phono) sockets for the power supply and PTT lines that are mounted on one end of the enclosure. These did not fit in with my proposed mounting arrangement so two new holes were drilled next to and above the input SMA connector for a pair of filtercon feedthroughs.

Electrical Construction

This was very straightforward especially as all the surface mount components are separated in well marked conical containers. All other devices are conventional leaded components that require the leads to be bent as clearly described with diagrams in the instructions. Fitting the GaAsFET mmic requires a little care by rigidly following the supplied instructions and it is recommended that anti-static precautions should be adhered to for fitting and soldering of this part. One oddity is that the instructions detail fitting a link across the output device to link the two V_{dd} pins. I do not know the purpose of this link as the Eudyna datasheet clearly states they are internally linked.

Testing

The instructions clearly detail the initial tests and setting up of the DC conditions. The unit I constructed met all the required values. Note though, the palette should be coupled to a finned heatsink of adequate size as the Eudyna mmic dissipates about 14W (7v @ 2A) at full output. The enclosure also dissipates heat generated by the 3Ω 10W contact cooled resistor and this amounts to another 12W at full output. In fact I am considering whether it may be better to provide a regulated 7V at 2.5A rail from a regulator external to the PA in order to reduce the local power dissipation around the PA device.

Measurements

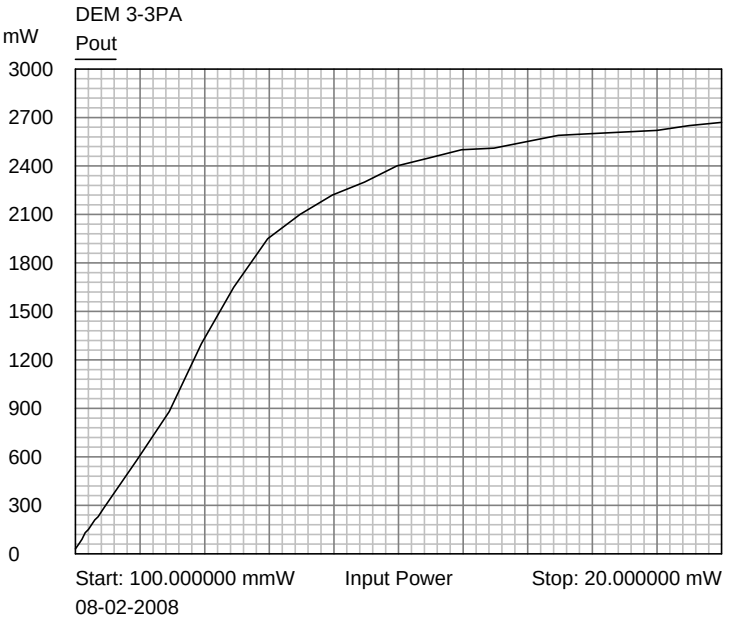
I set up a microwave test bench with an 8GHz to 12GHz signal source and 2 microwave power meters. This allows me to use a power splitter to control the source match into the input of the PA under test and to monitor both input and output power simultaneously. My power splitter is a Weinschel 1870A device with 18GHz type N (f) connectors that has port to port phase tracking of better than 0.5° and <0.2dB amplitude tracking. When using two milliwatt power meters each with its own 1mW, 50MHz reference it is always better to calibrate each one against the reference of one of them – less chance of variation that way when they are long past the calibration date. I then check the system by connecting one meter to each side of the splitter and after setting the correct sensor cal factor for each sensor head check the readings to see they are the same. If they are slightly different a small change in the cal factor of one of the meters will do the job – you have to guess which one you trust!

The head that will be used to measure the output is removed and the splitter is connected to the input of the PA by the shortest piece of 0.141" semi-rigid cable with SMA connectors via a SMA to N adapter – about 6cm long in my case.

I fitted the SMA PA output connector with a SMA to N adapter, a 30dB, 18GHz, 5W attenuator pad and then connected the output power meter.

The input power is first set to a low value, I chose 100µW and the PA powered up. The input/output curve was then plotted in steps by adjusting the signal source power as measured by the input power meter. I chose 100µW steps up to 1mW then 1mW steps up to the maximum of 20mW input.

The results were recorded in a spreadsheet and processed with a plotting program, they are shown opposite:



The slightly strange nomenclature of "mmW" comes from the plotting program but is technically accurate as milli-milliWatt or therefore microWatts.

One disadvantage of using a power splitter at the input is the loss of 6dB power in the resistors within the splitter. My signal source produced 6mW max at the input of the PA so in order to reach the required 20mW it was necessary to place an amplifier between the signal source output and the input of the power splitter. A spare WDG006, 200mW amplifier was used to achieve this. The plot shows I can measure about 2.7W out of my unit although repeat measurements have indicated 2.8W is available and the curve shows that at the maximum power level the PA is at or near to its -1dB compression point. My measured results show that my amplifier meets the Eudyna specification for the FMM5061VF MMIC.

Conclusions

At a cost of roughly £150 (including VAT and shipping) the DEM 3-3PAP amplifier kit represents very good value for a 10GHz power amplifier that can deliver close to 3W output with 25dB of gain. It would provide a substantial increase in output power for all of the currently available transverters from the DB6NT stable and also the older G3WDG units like mine. Only the value of a SMA attenuator pad needs to be determined and sourced to set the required input level for correct operation with other than a DEM transverter.

The amplifier is very straightforward to build electrically but the mechanical layout should be carefully considered and noted before populating the PCB.

Bryan Harber, G8DKK
February 2008

References:

1. DEM datasheet 3-3pa_pdf.doc (19th Nov 2006) available at www.downeastmicrowave.com
2. DEM instruction sheet supplied with 3-3PA kit: 3-3pack.doc Rev. B 24th July 2007
3. Eudyna datasheet for FMM5061VF X-band power amplifier MMIC, edition 1.2 (July 2004)

uW Field Strength Meter, My Way
by John M0ELS

I recently had to remount my father–in-law's satellite dish, as the Sky crew had mounted it on an aerial pole which, when swayed by the wind, would cause havoc with the received signal, as one could imagine. I used an "el cheapo" satellite finder model SF-95, purchased on Ebay, to correctly position the dish. I then realized that the finder covered 950 MHz to 2150 MHz and which, of course, included the 23cm band and perhaps 13cm.

I connected everything up as shown in the photos below and it worked beyond my expectations. An added bonus was that it has an audio indication as well as the meter. The audio pitch rises as the signal gets stronger.

I have not tested the unit on 13cm as I don't have any equipment for that band but would guess that, being a broad band unit, it would be ok there as well. One word of caution from the manufacturer is not to allow the meter to reach fsd for long periods, as the detection diode will be destroyed. To prevent this, simply adjust the sensitivity pot so that the meter indicates a maximum of half scale at all times.

The psu was one that was sold cheaply at one of the VHF and above 'get togethers' on a Saturday morning. It gave 12–18Vdc @ .75A

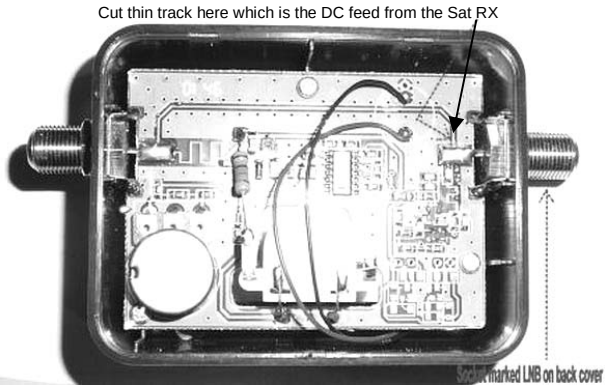
The antenna (6" piece of wire) was connected to the LNB F-socket while the psu was connected to the REC F-socket.

One can also remove the F-sockets and replace them with sma sockets or modify the male F-sockets as follows.

1. Find a piece of round plastic tube (straw)which fits snugly into the male socket for the length of the barrel
2. Position the ant whip in the center of the tube and fill the tube with a quick setting putty or sealant.
3. Once it has set, bend the antenna into 90deg whip and trip as required. Note that male socket should ideally have a 3mm spike sticking out of it. If its too long, then the extruding pin will bend and short out as the male f-socket is screwed onto the female f-socket.
4. On the psu side, one can remove the f-socket and solder the wires directly to the pcb.

Another use for the unit is to place an attenuator pad on the antenna's side and use it as a probe for fault finding/aligning equipment.

Since setting up this equipment, I went around to Sam, G4DDK after the VHF & above get together and we did some simple tests on the sat finder/come uW FSM. The results can be seen in the excel file shown on the next page. We tested the unit on the following frequencies and was surprised to see that it detected a

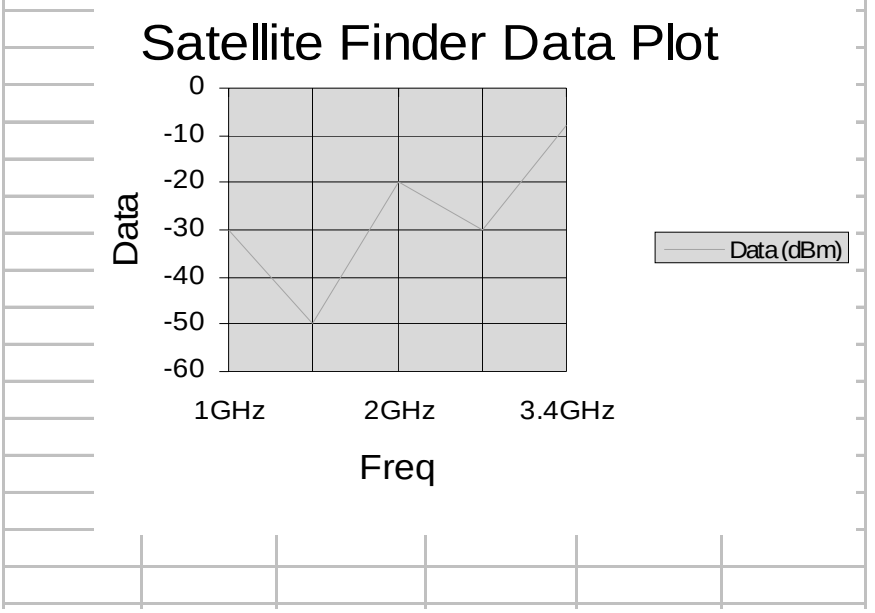


signal at 3.4 GHz, but at only -8dBm,whereas at 1.296 GHz it detected a signal at-50dBm. It would appear that these units can be used from 23cm to 13cm with no modification at all but at 3.4GHz, it's tough going & will possibly need modifying. My thanks to Sam for the donation of a 23cm printed log periodic pcb from WA5VJB covering 900MHz to 2600 MHz, as well as his help in testing this unit, which will allow me to conduct more useful tests in the future.

Calibration method: the unit also contains an audio indication of signal strength, the gain was adjust to the point where there was no audio indication and did not touch this control again. This was the reference point for each frequency we tested. We then injected a -10dBm signal into the unit and added attenuators until we got a midscale reading of 5 on each frequency (see Excel sheet below).

I checked the unit inside and it already has a decoupling cap on the LNB input side, but there is a thin HV track which runs from the decoder side and feds the LNB. I simply cut this track where it connects to the LNB f-socket.

Freq	1GHz	1.296GHz	2GHz	2.3GHz	3.4GHz
Data (dBm)	-30	-50	-20	-30	-8



One Rover's Dream is Answered!

Anyone roving with some of the reasonably priced surplus high power amplifiers in the 25-200 watt class has noted often with chagrin the frequent need for 28 VDC at high current, i.e. to 17 amps or so. In my own case, a 40-60 watt amp for 2304 MHZ was powered in past by three 12.6VDC batteries. I used one for the transverter and IF and two in series for 25.2VDC. With the new device, built for WA3PTV and for myself, we now have one 12 VDC to 28 VDC inverter sized as follows:
Width 6.75 inch/170 mm
Height 4.5 in/115 mm
Front to back 4.75 in/120 mm
I estimate the weight at under 8 lbs/4kg.

I plan to use one battery for the lower power stages at 2304 MHz and one for the 12-28 inverter. This will free-up one large 50 plus amp battery for my steadily increasing rover load.

I tested my unit with a brief 2304 MHz CW/SSB contest transmission less than 30 seconds long. The VDC under about a 15 amp load was 27.9 VDC and the output was 38 watts at an estimated 20% efficiency for a total load of 190 watts.
In the testing phase, Dan used a load of 300 watts at 28 VDC for 20 minutes.

Joe, WA3PTV, and I both checked for RFI on 6m, 2m, 222 MHz es 70 cm and found the two units surprisingly clean.

In writing about this unit, I am not attempting to sell the reader, just informing microwavers of a device which will I believe will solve my needs for 28 VDC power as a rover. As a matter of interest, I have confirmed with Tim that the following information is correct. The price should continue at $230.00 depending upon cable lengths. The shipping will be around $36.00 to Europe and up to $18.00 for US for delivery.

I have two photos that I will EMAIL on request.

Please direct any questions, comments or orders to:

Timothy Gerdeen
T.G. Electronics
54677 Canal Rd.
Houghton, MI 49931
Ph:906 487-9063
Cell: 906 370-5031

Website: http://
www.tgelectronics.org

73, John, W3HMS, 16 May 2008


W3HMS Portable c. 2002

A Coax Fed Signalling Voltage from the FT-817

By Richard G3CWI

Introduction

The FT-817 is a popular choice as an IF radio for use with microwave transverters. The DB6NT range of transverters offer two choices for switching between receive and transmit. The first is a ground-on-transmit system which is simple to implement using the relevant pin ACC socket on the FT-817 but this carries with it the potential either to forget to plug in the ACC plug or for the signal wire to fail. In both cases, the result is likely to be that the user will transmit into the receive converter of the transverter, possibly causing some rather costly damage.

As an alternative, DB6NT provides a system where a voltage on the centre core of the IF coax is used as a signal that the transceiver is in transmit mode and switches the transverter to transmit. This signal was provided as a standard feature on some older radios (FT290 Mk1 and IC202) but is not present on the FT817. This method is rather more foolproof and is thus preferred for portable operating.

Solutions

While there are plenty of points in the circuitry of the FT817 that have a suitable positive voltage present on transmit, actually utilising them is a problem due to the way in which the FT817 is constructed. One possibility is found on DL1RQ's website (http://www.bergtag.de/technik_18.html). This is a good option for the older FT817s. However, more modern ones have slightly different construction with several ICs mounted on small daughterboards. One of these makes it impossible to gain access to the point used by DL1RQ. All is not lost though and in fact this version of the FT817 is even easier to modify.

Method

Towards the centre of the main board, accessed by removing the top cover of the FT817 (with speaker attached) is a single IC on a daughterboard. It is an SA602 mixer. Looking from the front of the FT817, the pin at the rear left-hand end is the one you need. This has 5V on TX.

Having located the pin, it is a simple matter to run a wire out to the BNC connector on the front of the FT817.

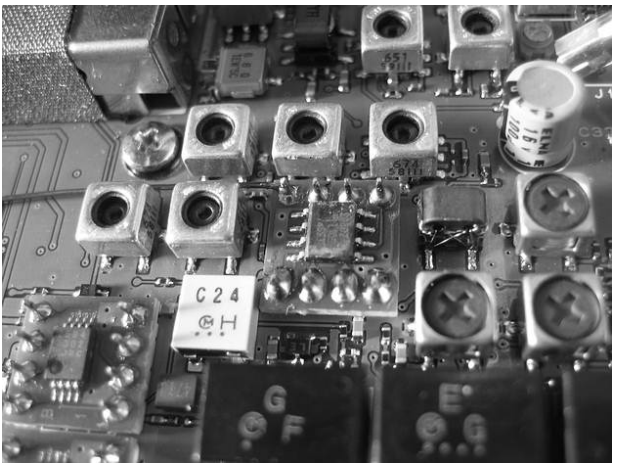
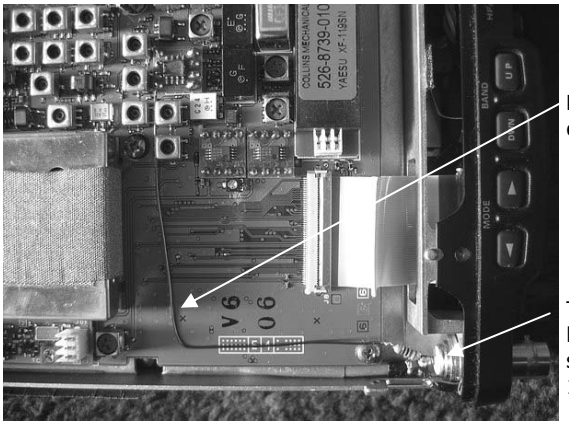


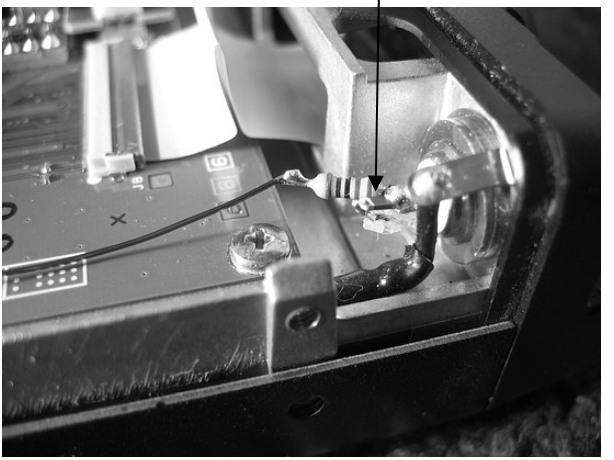
Photo right: View of the SA602 with wire attached – seen from front of FT817



Run a wire out to the BNC connector

The switched 5V is connected to the BNC via a 2k resistor and the DC is stopped from entering the radio by a 1n chip capacitor.

The arrangement at the BNC socket

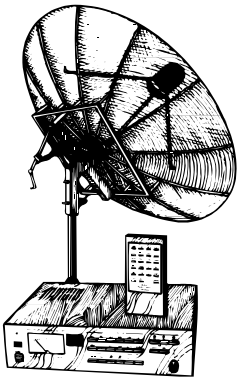


Note
It must be remembered that this is just a signalling supply and will not provide enough current to switch a relay or power a preamplifier. If that is required a different technique will have to be adopted.

Conclusion
This is a quick and worthwhile modification. Time to fit, less than 15 minutes. Special skills required – none.

No guarantees are given that this is a suitable solution – it works for me.

73 from Richard, G3CWI



BEGINNERS' CORNER

How simple can it be?

Richard Newstead, G3CWI

Newcomers to 10GHz probably find things a little daunting. Even with a ready-built transverter there seems quite a lot to do to get on the air. The Quick Starter project brings together much useful information but being lazy I wanted an even quicker start. An early excellent tip from Peter G3PHO was that the DB6NT transverter's input and output sockets are the same distance apart as the sockets on a standard microwave relay. That helps because the relay can be connected directly to the transverter using SMA M-M connectors. Alan Melia, G3NYK, sells these but they are available from many other sources.

Using this technique leaves the relay quite close to the transverter and a co-ax lead with a right-angle connector will be needed to allow connection to the transition. Various people advised against using right-angle SMAs at 10GHz but I bought a couple of ready-made leads off eBay and a friend tested them and found them to be perfectly OK. Perhaps modern right-angle SMA connectors are better than they used to be but having a lead tested before use makes sense.

The Quick Start project includes a 12 Volt – 24 Volt converter to power the relay. This is switched using the DC output from the transverter. The converter is simple enough but I decided to eliminate that as well. 12 Volt microwave relays are relatively rare but after a few weeks eBay delivered the goods and I was able to buy a 12 Volt relay that could be switched directly from the transverters 12 V on TX line. Incidentally this line MUST be properly fused and the relay must have a protection diode across it.

My next project was to add an amplifier. The DB6NT amplifiers are very small and so are ideal for lightweight systems. A glance at the specifications of the amplifiers and the transverter showed an interesting possibility. The transverter gives a little over 200mW output. DB6NT makes a 1 Watt amplifier that requires 200W drive – perfect.

But there is even better news. The current drawn by the amplifier and the relay can easily be supplied directly by the DC output from the transverter. Thus an incredibly simple switching system is possible.

A few experiments with the mechanical arrangements showed that by turning the relay through 90 degrees a barrel connector could still be used on the RX port while allowing access to the TX output on the transverter and RF input to the relay. A flexible lead was used to connect the drive to the amplifier and a piece of hardline was made with an S bend to connect the RF out from the amplifier to the relay. I cut the hardline with a Junior hacksaw and got it right on the second attempt. It was nowhere near as scary as terminating long runs of LDF7-50!

The resulting system has been extensively tested and is completely reliable. I should warn there are some risks in this approach, primarily related to timing. Ideally one would switch the relay before powering the amplifier and also one would power the amplifier before applying the drive. But I like taking risks…

1. http://www.microwavers.org/
2. http://www.alan.melia.btinternet.co.uk/componen.htm

Two Hills, Two Squares, Two Wheels, Three Centimetres

Richard Newstead, G3CWI

I had been waiting with eager anticipation for the first of the 3cm Cumulatives. I had booked the date in the diary weeks in advance and had worked out an ambitious plan. However, this all went by the board when a few weeks ago, my wife said she needed the car and no amount of sulking was going to change her mind. I needed to revert to plan B except there was no plan B.

One option was to use the bus. This was certainly possible but rather inflexible. Doing a hill on foot from home was also an option although doing a hill that would be good to the east would require walking further than I would wish to with my 10GHz gear. At this point, my wife offered to drop me somewhere on her way out. This gave rise to another ambitious plan - to activate two locator squares using a bicycle ….

Choosing the first site was easy. Axe Edge was perfect for my plan, having a good take off in most directions (although not quite as good as Merryton Low). That was IO93 taken care of but a suitable site for a second square remained elusive until the Sunday before the contest when I identified the perfect spot in IO83. This was a small hill with no name on the map but with quite an amazing takeoff for its diminutive size. At just under 12 miles as the crow flies from Axe Edge, it qualified nicely for the Rover Rules.

With the gear packed, the run-up to the contest was tense. My plan could be stopped by just one thing - rain. I woke early on Sunday morning to find the wind howling and garden furniture strewn across the lawn. A glance at the weather forecast resulted in two changes to the plan.

Firstly, I decided to use a 17dB horn instead of a 20dB one to reduce windage and secondly I changed my plans from the southern top of Axe Edge to the northern one which I knew had a low cairn that could be used to give some respite from the wind (**see photo left** … editor). Looking at the list of declared stations and their bearings before I set off showed that I would need to set up carefully to get the best results, least wind and least blockage by the cairn for likely paths.

The car was being buffeted by a gusty, gale-force wind as we arrived at the bleak pull-in close to Axe Edge. Fortunately this spot was slightly sheltered, a welcome bonus as I offloaded the bike and packed the gear into the panniers and my rucksack. A wave from my wife and I was alone on a bleak hillside in a gale. The first challenge was to get the gear to the top of the hill. I opted for pushing the bike the 800m to the summit along a faint path. This was hard going across a heather moor and once the road was behind me I was in the full force of the wind.

Arriving at the summit my pre-planning kicked in and I quickly got the compass out and my bearing sheet. This was well worth doing as it turned out that there was just one spot that would allow me to operate out of the wind (albeit that I would have to operate lying down) and still have a clear shot to GW3ZME/p, M0DTS/p and the East Anglia microwave mob.

Minutes later I had the 3cm gear well guyed and operating. The first four contacts were achieved with no talkback thanks to rainscatter and my good location. A well known Sheffield operator was heard to complain that his dish had blown away confirming again my belief that for real lightweight portable dishes have no place!

Things were looking good; at least until I tried to get the 2m beam up. Although only just over two metres off the ground, this was in the full force of the wind and much amusement was had picking it up and re-erecting it at various points during the ensuing hours. A last minute idea to bring a tether for the front of the beam proved a sound one as I could keep it pointing in the right direction. The wind continued to howl over my head as I lay on the ground underneath he microwave beam and the contacts came thick and fast. Two and a quarter hours operating gave 14 contacts by which time I was getting very cold and had taken shelter in my bivvy bag in a effort to keep warm.

Highlights from Axe Edge were QSOs with GW3ZME/p in IO72, G4WYJ/p and G4ZXO/p on the South Coast (ODX 288km) and M0DTS/p and G0EHV/p on the North York Moors.

Reluctantly I realised that if I did no make a move soon or I would not have time for my second site. I packed as rapidly as the wind would allow and again pushed the bike the 800m across the moorland to the road. (**see photo next page**) The cycling was "interesting". My route took my by the Cat and Fiddle (England's highest pub) and down the most dangerous road in the UK; something that was weighing heavily on my mind as

I was buffeted from side to side alternating between being blown off the road with a long fall on one side or blown into the path of impatient cars behind me on the other side. Not fun.

In under an hour I was back at home where I had a quick bite of lunch, replenished my thermos flask and picked up a new battery. G4EAT was on KST and said that he would look for me from IO83 as it was "a rare square"! Barely half an hour after arriving home I set out again on the bicycle for my next site.


Approaching the Cat and Fiddle pub from Axe Edge

Although it was still windy, it was nothing like as bad down on the Cheshire Plain and in half an hour I was at the second location. The farmer's 4x4 was there but there was no sign of him (I had got permission to operate beforehand so I was not too worried). A 250m push of the bike and I was at the summit. It was breezy but not too bad. Rather more worrying was the occasional raindrop in the wind as I set up. No special planning was needed to set up on the second site as there s really only one option. A spoil heap was in the way to the North York Moors team but as the site was poor in that direction anyway, no QSO would be possible in any case.

The start was slow with a one way contact with G4UVZ in IO80. The North York Moors team called me but were very weak on 2m. I pointed the 3cm gear at the spoil heap and elevated the horn a little and blow me if they weren't stronger on 3cm than on 2m! I fact we had quite an easy contact much to my amazement. Did I say no contact would be possible? G4ZXO/p near Brighton was audible on 3cm but could not hear me well enough for a two-way so we had a one-way contact instead (thank for the try!). The icing on the cake from this hillock was working G4EAT to give him his rare square. It was a tricky contact but with perseverance it went! Two got-aways were G4PBP and G3FYX, both heard at good strength but not worked - perhaps they thought I was still in IO93?

The rain was getting closer by now and I was finding signals best with up to about 20 degrees elevation. Not wishing to get wet, I packed up and walked with the bike done the hill. The farmer had left and had locked the gates making getting a difficult exercise ? not really what I wanted at the end of a long day. After that, the cycle ride home was mercifully uneventful in light rain.

Conclusions

In the main everything worked as planned. My batteries lasted longer than expected and were not a limiting factor. More QSOs were made than I expected (probably due to the rainscatter).
I suspect that some stations did not notice that I had moved and so did not call me on the second hill. Cycling is viable for a rover entry but only just. I am pretty fit and this was at the upper end of what I can manage in a day. A while back someone suggested that a rover entry on foot was viable - I don't agree.

Favourite comments:

"I think the path between us is a bit obstructed" (path passed across Snowdonia!) **GW3ZME/p**
"My dish has blown away and I'm working you on open waveguide" **G3PHO/p**
"Is Cheshire near the North York Moors?" **Anon**.

Statistics

Axe Edge - 14 Contacts, 9 locators squares
IO83 site - 6 contacts 5 locator squares (1 new one)
ODX 288km (2 way), 300km (1 way).
Cycling 18 miles, 334m ascent + pushed bike 1.5 miles across rough ground.

73 Richard G3CWI/p

By Robin Lucas, G8APZ

It is not often that we can report new 24GHz firsts, but the first GM-GD was made during the May contest. Congratulations to GM8BJF and the GD0EMG group for achieving this.

Last month's column was a little shorter than usual because of pressure on space, so there is some material carried over from May.

CONTEST and ACTIVITY REMINDER

June

17-Jun 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
21/22-Jun French Journée Activite (Activity Day)
22-Jun 0900 - 2000 2nd 5.7GHz Cumulative
22-Jun 0900 - 2000 2nd 10GHz Cumulative
22-Jun 0900 - 2000 2nd 24GHz Cumulative

July

5/6-Jul 1400 - 1400 VHF NFD (1.3GHz)
Arranged by VHFCC (RSGB Contest)
13 Jul French Journée Activite (Activity Day)
Mont Blanc scatter tests.
15-Jul 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
20-Jul 0900 - 1700 2nd 47 / 76 GHz Cumulative
26-27 Jul French Journée Activite (Activity Day)
27-Jul 0900 - 2000 3rd 5.7GHz Cumulative
27-Jul 0900 - 2000 3rd 10GHz Cumulative
27-Jul 0900 - 2000 3rd 24GHz Cumulative

Aug

19-Aug 1900 - 2130 1.3/2.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
24-Aug 0900 - 2000 4th 5.7GHz Cumulative
24-Aug 0900 - 2000 4th 10GHz Cumulative
24-Aug 0900 - 2000 4th 24GHz Cumulative
30-31 Aug French Journée Activite (Activity Day)

MORE MAY CONTEST REPORTS

From: Bryan Harber, G8DKK
<bryanharber@fastmail.co.uk>

Here is a brief report of our activity on **3cm** during the May **10GHz** trophy and UHF contest:

With limited resources the **M0RRC** contest group (Rusty Radios) decided to participate with only 2 bands, 70cm and **3cm** from our local site at **IO91TW**, near Hitchin. Our activity on **3cm** included both the **10GHz** trophy on the Saturday and the 24 hour RSGB contest.

Conditions on Saturday during the trophy were below average and the small amount of rain scatter didn't favour our location.

Although we worked **PA6NL** in JO21 (308km) our best DX was with **GD0EMG,** IO74 (375km). We tried and failed with **F6DWG/P**,JN19 **ON4HRT/P**,JO20 and **ON7BV/P**,JO20, the difficult conditions meant that although we could just detect the signals on the SDR Rx we were unable to complete the contacts even with 10W to a 1.2m dish.

For us, Sunday was a different story as we were comfortably able to work all 3 stations and **PA0EZ**,JO22 with good signals plus the icing on the cake of **OZ1CTZ** in JO46OE for our best DX of the 24 hour contest at 783km.

The Sunday rain scatter was also favourable allowing us to find and record 8 UK **10GHz** beacons: **G4AKD/b**, **GB3MHX**, **GB3SEE**, **GB3SCX**, **GB3KBQ**, **GB3LEX**, **GB3CEM**,and **GB3XGH**.

Sunday UK activity was not as good as the Saturday and it was hard going to increase our score but we ended with a nice rain scatter contact with Ralph, **G4ALY**,IO70 to end with 25 stations worked. **73, Bryan**

John, **GM4LBV**, IO86RQ gave way to some arm twisting on my part, and has sent a list of the contacts made in the May contest.

On the Saturday, on **23cm** he worked **PA6NL**,JO21BX (59), **PI4GN** (59), **G3XDY**,JO02 (52) **G3OHM/P,**IO92 (54), **G3CKR/P** (53) whilst **13cm** yielded **PA6NL** and **PI4GN**, both at 59.

The next day on **23cm** John worked **PA2M** (55), **ON4HRT/P**,JO20MW (57), **GM0USI** (52) and on **13cm G30HM/P** at 53 (both stations were very pleased with that).

On **9cm PI4GN** was worked at 59++ using a new 1.4 M dish/feed on its first outing, just 3M above ground level.

The final QSO was on **23cm** with **PA0EZ** at 54, but he missed a **13cm** QSO with Arie, since he ran out of contest time !!

John says "**GB3MHL** was being received well for about 2 hrs before the contest started and then it was away. This has been my best worked for a long time in the May contest but not too bad since conditions were against us."

From: Brian Flynn **GM8BJF/P**, **IO74WV**

"...I was also on **10GHz** and we worked **G3ZME/P** and **G8KQW/P**. We also managed a one way QSO with **G4RFR/P** in Dorset. I just did not have enough power for that one. They were running 15W and I only have 1 Watt. Even at that power level their signal was very weak, just over the noise."

On **24GHz**, Brian made a QSO on 3rd of May at 15:42 with **GD0EMG** in **IO74QD**. Which leads us to....

...24GHz FIRST GM to GD

From: Peter Bates, GM4BYF

I witnessed the first QSO between Scotland and the Isle of Man between **GM8BJF/p** and **GD0EMG**.

Brian, **GM8BJF** uses Endwave modules and is achieving about 1 Watt output. The path was 56 miles line of sight over the sea and the SSB signals were very strong both ways. I was very impressed by the stability achieved - no noticeable drift throughout the QSO. Brian may be a bit too modest to blow his own trumpet - so I am doing it for him.

I am now working on getting my own set up going on this band.

So congratulations and well done Brian and the team. A recording of the QSO and some photos are on the Lothian group's website: http://www.lothiansradiosociety.com/index.html under the heading "Society Activities".

GM4BYF (left) with GM8BJF (seated)

Someone on the recording mentions a **24GHz** QSO which took place 10 years ago. Was this another first **GM**-**GM** on **24GHz** for **GM8BJF**?

10GHz NEWCOMERS

During the May contest, two stations mentioned that they had their first QSOs on 3cm. The QSOs were with **M1CRO/p** (JO01PU).

The stations concerned were Jiri, **M0ITY** (JO02RF) and Gus, **G3ZEZ** (JO01NT) who was only using 15mW at the time! Welcome to both.

BEACONS

From: Brian Harber, G8DKK

....just to let you know that the **24GHz** beacon at **GB3DUN** is back on air as of 18th May 2008.
We had more than our fair share of problems and nightmares following a site visit last Thursday and again this afternoon (18th).

The result is that the **23cm** beacon is off-air as I have broken the crystal during the rework process and the **DB6NT** beacon module is also a bit the worse for wear. So there is now a new project to add an external frequency source.

The **24GHz** beacon had a working crystal oscillator but the following x2 multiplier had a sticky Murata trimmer. I replaced both trimmers and then found the oscillator will no longer tune anywhere near the licensed frequency of **24048.890MHz**.

In consultation with the UKuG we decided to put it back on a frequency that would cope with potential power outages. The result is that it is now on a frequency around **24048.600MHz**. We decided that it's better to have it running somewhere in-band than not working at all!

Long term, we'll have a think about better frequency conditioning.

73, Bryan

From: Brian Flynn, GM8BJF, Edinburgh

I run a personal beacon on **10368.080MHz**± from my home QTH. It uses one of the **G3WDG** transmit modules running about 50mW to a small horn placed just out side the window of my shack. It gives quite good coverage to the west of Edinburgh as I am quite high up on the south side of Edinburgh. My shack is in the attic and get a good view out of the window! I has a few faithful listeners and I get a few reception reports.

I am also the keeper for **GB3EDN** on **1296.990**. It is located at my work QTH. From www.beaconspot.eu I see it gets right over to the Baltic sometimes when propagation is right. The antenna is on the roof of a small multi-story block and has a clear view out to the Firth of Forth and the North Sea. It will be celebrating its 30th birthday this year with more or less the same hardware. It generates its RF on 432 MHz and uses a MM varactor tripler to give about 5 W on 1296. Ancient stuff now! **73 Brian**

BEACON ON STRANGE HEADING

From: Gordon Fiander, G0EWN, (IO93FK)

Late on the evening of the 13th of May I decided to check beacons. Conditions looked favourable - it was a clear night following a hot day. Hepburn was suggesting strong ducting (cat 5 on Hepburn scale) over the lower North Sea but no ducting over land.

At 23.08 I decided to check **ON0RUG (JO11OB)** around **10368.890 MHz** (heading 125 degrees, at a distance from my QTH of around 443km). I located **ON0RUG** which was 40db/N strong and stable. The signal on Spectran showed as a nice solid narrow line.

Following this I checked **GB3MHX** on a beam heading of 128 degrees. After moving the dish a few degrees I started to tune down from .**890** and was surprised to find a beacon transmitting on **.850,** and after listening I picked up the callsign **GB3SEE**.

This is very unusual, since I have only heard **SEE** once before via RS and there was no RS this evening. I tried to move the antenna closer to the direct heading of 159 degrees but lost the signal within a couple of degrees. Nothing was audible on 159 degrees.

Back on 128 degrees the signal was 529 with rapid QSB that sounded like mobile flutter on 70cm. Checking the signal on Spectran showed that the signal was spreading symmetrically around the centre frequency by + and – 50Hz then coming back to a single signal with a regular 10sec periodicity.

Both the QSB and frequency spreading were unusual. I carried on tuning down to **.830** but there was no sign of the **GB3MHX** beacon. On **6cm, ON0GHZ** (JO20KV) was 40db/N at 519 km on a beam heading of 121 degrees.

GB3SEE maintained its signal on the unusual heading for over an hour and a half with the same unusual characteristics of rapid flutter and frequency spreading.

I have observed beacons on unusual headings previously, especially on **23cm** where I frequently hear **GB3NO** whilst beaming 75 degrees. (i.e. NE as opposed to SE). Others have also mentioned similar occurrences. Sam, **G4DDK** suggested a reason for the 23cm occurrences - a strong sea duct followed by reflection from the **PA/ON** coast.

I thought my reception was connected with reflections from gas platforms in a field some 20 miles off the Humber estuary.

On **3cm** I have only once previously experienced a similar occurrence, when during strong duct conditions I worked a station on Brown Clee whilst beaming SE (**G4ERP** from memory). However whilst people occasionally mention unusual propagation such as the case above, because we have no term for them we get no further. Are the signals arriving via multiple modes or is there something else going on? Can the front edge of an area of high refraction act like a prism bending light?

In order to record and thus better understand these occurrences I would like to float the term Tangential Propagation to denote signals arriving from unusual headings which cannot be accounted for by other mechanisms such as simple reflection or rain scatter.

If you have encountered or do encounter strange propagation then please make it known.

Gordon G0EWN

*Recalling some recent KST exchanges between John, **G4EAT** and a Scandinavian station, I asked John for his recollections and observations. These are on the following page, and make very interesting reading.*

From: John Wood, G4EAT, JO01HR Danbury

....I remember the Scandinavians discussing this subject but not the name of the place! It was close to **OZ** I recall.

My regular observation is hearing the **LA4** beacon on **23cms** at 90degrees QTF and nil on the direct path. It happens too with **GB3MHX** (JO01) on a local basis.

My theory is that like all things with a mathematical physical model, that a reflection will occur at a place where the refractive index changes rapidly. The North Sea often has low level ducts formed in summer after temperature inversions occur. The adjacent coastal land will have a different temperature profile, so more often than not the sea duct does not extend inland. (Frustrating to hear DX being worked but inland no signals).

So I think the sea duct tends to have a very sharp change in refractive index at the coastal line and this allows reflections (bending is the wrong word) to occur. The **LA4SHF** beacon in **JO28** beams south and will inject a signal all the way down to the Normandy-Calais coast. I believe I get strong reflections from this discontinuity.

It's too regular to be a one-off and I am sure the Scandinavians have similar reflections points. They also mentioned it was published in QEX or QST or similar? **73 from John**

The place which John referred to is the island of Laeso, which is situated in the Kattegat between Denmark and Sweden. John's mention of QEX/QST and a subsequent request in 'KST led to a copy of the QEX article being mailed to him by Jens, **SM6AFV**. It was written by Carl, **SM6HYG** and referred to events in 1980 when signals arrived from the wrong direction.

Another document which Jens forwarded referred to reflections from the same area, with some theories as to what is happening. Between the two documents, there are some good clues.

I decided to have a look at some radar literature, since weather radars at **10GHz** are often affected by AP (anomalous propagation). In weather radar terms, echoes from non-precipitation sources have been referred to by several different names - angel echoes, anomalous propagation and also as clear-air echoes.

The origin of clear-air echoes has been associated with many different meteorological phenomena, two of which are the sea breeze front, and the other due to gradients in the refractive index of the atmosphere.

Air mass boundaries may produce large enough gradients of refractive index to result in radar backscatter. Since we are not looking at rain as being the scatter or reflecting medium and we know that, at the time of **G0EWN**'s observation, there was a severe temperature inversion we can probably assume that either of the above anomalies would fit the bill.

If anyone has other examples of this phenomenon, please let me know the details.

EME ON 23cm

On 1st June, 2008 Dan, **HB9Q** posted a message in 'KST "*CQ EME 1296.077 1st JT65C, 15m dish 600W, you only need one yagi and 50W to work us*!"

John, **G4BAO** responded to say he had 40W to 4x23 and was copying Dan well (about -16). At the time, the moon was about 10 degrees higher than the maximum elevation of 45 degrees for John's antenna. Despite this, just half an hour later he had completed his first EME QSO! **G4BAO** received 000, RRR, and 73 to complete the QSO.

Dan remarked that this was one of the smallest stations he had worked on EME, with John's RF only being about 30W at the antenna. Well done to both stations.

IO72 ACTIVATED ON 10GHz

At the end of May, a group from Telford & DARS travelled to the Lleyn Peninsula as an extension of a Marconi Heritage Trail trip in the Caernarfon area. The operators were Dave **G8VZT**, Martyn **G3UKV**, Jim **G8UGL** plus **M0EMM, M0ECM** and Pat lending a hand.

With rain forecast across the UK, rainscatter to get signals across Snowdonia and other Welsh hills seemed likely. It was dry, but windy on our arrival.

Rhiw Mountain (Mynedd Rhiw) in **IO72QT** must rate as one of the most beautiful portable sites in the UK, but the view soon was lost in mist and oncoming rain from the south.

The first QSO was with Richard **G3CWI/P** (IO93AF) at 184 Km. That was quite straightforward, and some dish elevation confirmed that RS was helping. But it was downhill from then on, as the wind and rain began to really penetrate. Jim's new **10GHz** station went airborne and suffered extensive damage. However, we made further QSOs with Peter **G3LRP** (231 Km) on both **6cm** and **3cm**, and finally with Rob **M0DTS** (IO94LI, ODX, 291Km) on **3cm**. **G0EHV/P** was heard, but no QSO completed.

Thanks to all who had a go. It is exposed and remote in west Wales, but if the rain had given us a bit of relief, many more QSOs would surely have been made. Emergency supplies of fish and chips raised our spirits a little, but reluctantly we abandoned the mountain mid-afternoon.

RAINSCATTER

From: Gordon Fiander, G0EWN, (IO93FK)

The rainscatter season had been underway for some weeks but most of the scatter points had so far been over 450kms from my home location, ruling out contacts with the EU. (Very occasionally exceptional storms 400km+ can provide extreme DX but are not frequent).

Continued on Page 20.....

This changed on the 2nd of June when a belt of thundery rain travelled from France up the east side of the country.

Having checked the progress of the weather/rain both via rain-radar sites and Blitztung (lightening strike site) things looked promising around 17:30 and on checking the **3cm** band I heard and worked **G4EAT** at 52s both ways. A few minutes latter I was called by Xtof, **ON4IY** again at 52s. A while was spent calling without success so I arranged a sked with **DJ5BV**, Gerd in JO30KI. Straight away I heard Gerd at 54s and a good QSO resulted---distance between in the direct line some 671kms---good DX for **3cm** RS.

G4FSG called me on 'KST to say he was hearing my signal. I could tell Graham was trying to call me but couldn't quite pick out details to make a QSO—perhaps next time. Not long after my CQ call was answered by **G3CWI/P**—Richard had gone out portable to try and work some RS DX. Over the next hour or so we hooked up several times—also **G4EAT** called in to say he was receiving my signal at 56s at times. No other new stations appeared on the band so I closed the station at around 2130pm.

Most RS thunderstorms seem to track up from France and then into Germany on a SW to NE line. This makes it difficult but not impossible, to find DX producing thunderstorms from the north of the UK---RS certainly favours the SE. It was interesting to note a large increase in stations attempting **24GHz** RS. At least one of these was successful and produced a **24GHz** DX contact over 420kms. RS contacts are fantastic fun and a method of working out of otherwise 'poor' microwave sites.

Best wishes all, Gordon G0EWN

.... AND FINALLY

The next issue will be the combined July/August one, which has a later deadline than normal. Despite this, I would appreciate your input for the column sooner rather than later. **Good DX and 73 Robin, G8APZ**

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

www.beaconspot.eu - microwave beacon site

Now over 200 users in 19 countries

SHEFFIELD MICROWAVES 12-13 JULY 2008

REGISTER NOW!

Here's a further reminder about this event, reported in last month's newsletter. Please contact G3PHO at as soon as possible if you plan to attend as prior registration is required. By now, if you need overnight accommodation, things may be difficult so get in touch with Peter as soon as you can. Details can be found at www.microwavers.org or email G3PHO at:

sheffieldmicrowaves@g3pho.org.uk

The Sunday Roundtable session includes talks by Richard, **G3CWI**, on Backpack 10GHz portable and SOTA, Peter, **G3PYB** , on DATV coding and Streamers, Bernie, **G4HJW**, on "Don't underestimate the humble satellite LNB" and David **G6GXK** on "Building your own microwave antenna test range"

Keep looking at www.microwavers.org

CRAWLEY ROUND TABLE 14 SEPTEMBER 2008

Allan G8LSD and Chris G0FDZ are organising things this year. There are normally three talks in the afternoon and provisionally, David G0MRF will give a talk on the 5.7GHz beacon on the satellite that is due for launch in July, but that is dependant on a successful launch. If anyone would be willing to give a talk on any microwave subject, please email Chris at

chris@g0fdz.com

It's not intended to be another Martlesham or Bath but a more informal meeting where people can have a good chat in the morning. A pub is nearby for lunch, and there is also the construction contest for the G3VVB trophy which is then formally presented to the winner at Martlesham.

Crawley ARC HQ - Hut-18,
Tilgate Forest Recreational Centre,

www.carc.org.uk/find_us/directions.shtml