



An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

Published by the UK Microwave Group

2007 OCTOBER

G TO EA ON 10GHz



G4ALY IO70VL

...and on 2.3GHz and 5.7GHz... all in one day!

G4ALY makes three 'Firsts in a row on a day of superb N-S propagation.

Read all about it on page 13



EA2/F2CT IN921A

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- G to UK on 10GHz
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- DCFWi mod applied to Bell Hill beacon
- 10GHz EME pile up !

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

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From the Editor's Desk



What an interesting month this has been, culminating in the remarkable G to EA contacts described on page 13. As this news came in, literally an hour or so, before your scribe was due to write this editorial and decide on the front page photo, G4ALY emailed his exciting news of that day. Other excellent DX was being worked across Europe that Sunday. GOEWN in IO93FK, Sheffield, worked OK1JKT once again over the >1000km path that both he and myself worked last winter. Hepburn was forecasting good NE/SW propagation and we know of several long paths from France into Scandinavia being worked. If you have any news of this opening then please send it into Scatterpoint. You wouldn't think so, but Robin G8APZ, our Activity News columnist had a big problem producing the 3 pages contained in this issue because hardly anyone had sent in any news, right up to his deadline! Once again he waved his magic wand and managed to make a lot out of very little input. Regarding submitting items to Scatterpoint, please read the item to the right of this editorial.

I'm really looking forward to Martlesham so I hope we can have lots of interesting conversations with many of you.

73 for now from
Peter, G3PHO Editor



G3PHO: editor@microwavers.org



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**G3PHO, Peter Day,
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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 at the end of the first full week of the month** if you want your material to be published in the next issue.

Please note that if you send an item for publication in Scatterpoint, your email address maybe included, **unless you state otherwise before publication**

PLEASE NOTE!

The email address for the Activity News column has changed. Please use this in future:

scatterpoint@microwavers.org

Technical and other items should be sent to :

editor@scatterpoint.org.uk

Please do NOT send items to G3PHO or G8APZ via their personal email addresses.

SUBSCRIPTION ENQUIRIES SHOULD BE SENT TO THE UKuG GROUP SECRETARY AT THE ADDRESS SHOWN AT THE TOP OF THIS PAGE AND NOT TO THE EDITOR OF SCATTERPOINT

IMPORTANT NOTICE UKuG Constitution Revision

The UKuG AGM, to be held at Martlesham on November 11th, has a very important item on the agenda concerning a revision of the Group's Constitution. All members are advised to read the revision paper which should be posted on the UKuG website: www.microwavers.org by the time you receive this edition of Scatterpoint.

If you have any comments to make, please address them to the Secretary, whose address details can be found on page 2 of every Scatterpoint. However, by the time you receive this newsletter, it will be too late to put forward further items for the AGM agenda. Those of you coming to Martlesham will, of course, have the opportunity to vote on all items presented at the meeting.

First Claim for two way 3.4GHz QSO between GW and GD

John, G3XDY, has received a formal claim from GW3TKH for a **3.4GHz First between GW4BRS/P and GD3FYB/P that took place on 11th September 1978 at 14:00**, using NBFM derived from a "Balloon Board" and SRD multiplier into a 4 foot dish.

John will issue a certificate in October if there are no other claims for this First before then. It will also appear as an update on the Microwavers.org web site.

DFCWi Software Update

The latest version of DFCWi.exe for generating DFCWi audio tones now gives stereo 0/90 degree outputs for direct drive to I/Q upconverters.

It also includes for a continuous looped message option.

Find it at : www.scrbg.org/g4jnt/DFCW.htm

Andy G4JNT

ERRATA

Page 14 of last month's Scatterpoint contains an misleading error. For 'GB3GXX: Rochdale 10GHz beacon' please read GB3XGH. G6GXH is the builder and keeper of the beacon.

Scientist Beats Speeding Ticket With His Invention

(or is this man a microwaver ?)

SUNDERLAND, England -- .

A British scientist, charged with speeding, escaped prosecution when a device built into his cell phone proved he was under the limit.

Dr. Phillip Tann was accused of driving at 42 mph in a 30 mph zone - but told magistrates he was only doing 29.177196 mph.

His lawyer then produced data from a revolutionary device he was testing showing the exact time, location and speed of his car. Instead of being 12 mph over the limit when his Mercedes was zapped by a mobile speed camera in Sunderland, England, Dr. Tann was actually less than 0.8 mph under. The case has now been dropped.

Dr. Tann, 45, who runs his own technology firm, plans to talk to police chiefs about how his invention, built into a cell phone, could help stop speeders.

"They looked flabbergasted," said the scientist. "Police cameras are not 100 per cent accurate but my system is."

Dr. Tann plans to release a similar product in December for parents who want to know the location of their child.

(Thanks to Kent, WA5VJB for this item...editor)

Modification for Icom IC-251A 2M transceiver for use with VHF and up transverters

By Scott Littfin, N0EDV
<http://corbenflyer.tripod.com/>

As always, USE THIS AT YOUR OWN RISK...I assume no responsibility resulting from using this modification.

Remove J2 on the main board. This disables Q31 and Q32 in the transmit path by removing Vcc to them. This plug, I believe, is used to allow setting quiescent current during alignment procedures. This results in a 2 metre output of right around -5 to -8 dBm at the antenna jack on the radio. This is with the Mic Gain and RF

Power controls fully clockwise. Turning these CCW reduces the output further. I checked the output level in SSB, CW and FM and all were at this level. This is a good thing! (My Downeast Microwave 902 transverter can be built to accept IF input in the range of -20 to 0 dBm, so I modified it today as well for this range. I assume all their units can accept IF power in this range).

This modification does NOT affect the receive sensitivity at all.

I bought a plug to fit the 24 pin Molex accessory jack on the back of the radio and used two pins that were not connected to anything inside the radio to provide a PTT (ground on TX) output to start a sequencer. I did this by disconnecting the PTT wire from the mic jack and brought a new wire from the mic jack out to one of these unused pins (pin 14 in my case). I then connected the wire that was originally connected to the mic jack to another unused pin on the accessory jack (pin 18 in my case). So, when keying the radio mic, a ground is presented on pin 14 to start the sequencer. The sequencer provides a ground (in sequence) that goes to pin 18 and keys the IC-251A. If you never plan to use a sequencer, skip this step. You will have to provide a PTT ground from the radio to key the transverter, so you will need to bring a PTT line out to an unused pin anyway.

I reiterate: As always, USE THIS AT YOUR OWN RISK...I assume no responsibility resulting from using this modification.

Scott N0EDV
<http://corbenflyer.tripod.com/>
Gotta Fly or Gonna Die
Building RV-4 (Super Slow Build Version)

Editor's note: Scott had been a member of UKuG less than a month when he sent us this article for Scatterpoint. Many thanks indeed OM! There are quite a few folk out there who've been members for several years but have not yet communicated with their newsletter in all that time! Let's here from more of you please ...

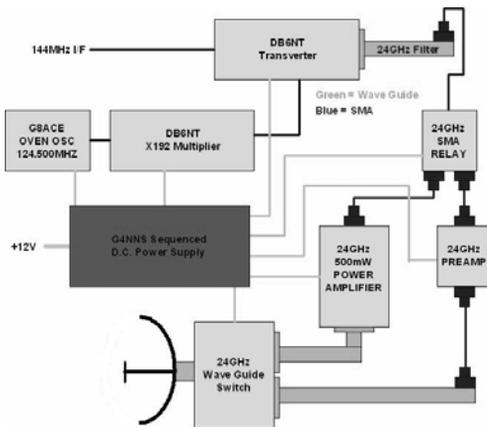


Getting on 24GHz from Home

By David Cox, G0RRJ

<dave@g0rrj.com>

Editor's notes: Over the past few years, David Cox, G0RRJ, has steadily added new bands to his home microwave station. He described his 5.7GHz station in the 2005-6 edition of the UKuG Proceedings and his 1296 transverter will appear in the 2007 edition of the Proceedings, due out in the near future. In this issue of Scatterpoint, we are pleased to have a short item about his 24GHz home station. 24GHz from home is not to be undertaken lightly since power levels and location are much more important for success on this band than on lower frequencies. 24GHz home station activity is steadily increasing but don't forget the portable operators who have poor home locations and/or low power systems. To them, the hill top portable site is still the way to go!



After a lot of help from Brian, G4NNS, I am now operational on 24GHz from home. I finally got my system on the mast on Thursday, 23rd August, this year..

Since then, I've worked G4NNS/P and G8ACE/P over a 11km path (Chute Causeway, north of Andover) to claim my first two contacts from home followed by G1JRU over 37km with 59 reports both ways on nbFM, home station to home station. So I have now worked two squares from home IO91 & IO90.

Brian, G4NNS, is currently testing the 24GHz Farnham beacon from his home QTH. I can just hear him over an obstructed 7km path.

I had to mount the 24GHz system with a 180 degrees offset because, on the direct heading, the 10GHz dish obstructed the 24GHz dish. The photograph above shows the dish in question looking in the opposite direction to the other antennas!

Prior to putting the system on the mast, I went out with Brian and Mike, G0MJW, in the August 2007 24GHz contest from Walbury Hill. I used all the cabling I intended to use when I operated from home, so it was a useful test. We all worked G3PYB/P, G8VOI/P, G8KQW/P & G8ACE/P at 59 each way. I now have a 24GHz section on my web site www.g0rrj.com and am now QRV 23,13,9,6,3 & 1.2cm, all from home. **73 from Dave, G0RRJ**





UPDATES FROM THE RSGB MICROWAVE MANAGER

Murry Niman, G6JYB

One for the 23cm interests...

The EU commission has detailed its public funding plan (yet to be approved) for rolling out Galileo, see the headline at :

<http://news.bbc.co.uk/1/hi/sci/tech/7001892.stm>

- and quite a bit more detail at

http://ec.europa.eu/dgs/energy_transport/galileo/what_snew/index_en.htm

Don't forget that a fallback bandplan for 23cm will be the topic for the follow up paper to Vienna 2007-B15 in a few months

I've made recent input available on our UKuG website - at bottom of the operating page

<http://www.microwavers.org/papers/Sept-2007-Joint-10-40GHz-reply.pdf>

If you want a good link to follow **Ofcom frequency sales**, try this:

<http://www.ofcom.org.uk/radiocomms/spectrumawards>

10GHz SRDs in Eire

This item is mainly addressed to any EI/GI members on the list as I am short of valid addresses...

I'm not sure if you in Ireland are aware of the item below from ComReg but it would be of concern for experimenter/amateur microwavers in the 10GHz band, especially with the prospect of crossborder leakage into Northern Ireland.

I would be interested if IRTS or anyone else has made comments to ComReg.....

Short Range Devices (SRDs) on 10 GHz

ComReg is proposing to open the segment 10.4 to 10.42 GHz to licence-exempt Short Range Devices or SRDs. These will be mainly for movement detection in the context of traffic control and will have a power level of 500 milliwatts. There is an experimenter secondary allocation at 10.0 to 10.5 GHz. The EU notification procedure and the standstill period for observations means that a final position on this will not be adopted until early October at the soonest. The relevant document is ComReg 07/37 and is available on the ComReg website at www.comreg.ie. Any experimenter having concerns about this proposal can write to Jim Connolly at ComReg.

More at:

http://www.comreg.ie/_fileupload/publications/ComReg0737_60143967.pdf

73 from Murray, G6JYB
RSGB Microwave Spectrum Manager

SCATTERPOINT DELIVERY PROBLEMS?

Last month saw a handful of people having problems receiving their printed and emailed Scatterpoints. At least two of them were due to non-delivery by Royal Mail. All of these have now been attended to.

If you do not get your copy in any particular month could you **please contact the Editor**, not the Treasurer or the Secretary, **as soon as possible**. A couple of readers were accidentally left off the editor's mailing list (the editor gets all the printing and mailing done locally) and did not get their newsletter for several months but didn't let us know for ages! Please keep us up to date with your email addresses, telephone numbers and postal addresses.

You should receive ten newsletters a year. Only a few back copies of the paper ones are kept so if you leave it until 6 or 7 months have elapsed there may not be a back copy of the early ones available. The emailed version of course is easily supplied as it's kept on permanent file.

Many thanks ... Peter, G3PHO Editor

IQ Upconverter chips

Andy Talbot, G4JNT

<andy.g4jnt@googlemail.com> writes ...

I have an order with Analog Devices for 25 AD8346ARU chips. These devices are 800MHz to 2.4GHz I/Q upconverters, featuring an internal quadrature network, accurate to 1 degree, and will work with the G3PLX SDR transmitter software to form a direct conversion transmitter source covering the 1.3 and 2.3GHz bands.

Data can be found at:

<http://www.analog.com/en/prod/0%2C2877%2CAD8346%2C00.html>
and

http://www.analog.com/UploadedFiles/Data_Sheets/AD8346.pdf

The chips are in a 16 pin TSSOP package with 0.65mm pin spacing, so it shouldn't be a headache to use even in a dead-bug style breadboard configuration.

LO drive required is <0dBm, gain is cheap and easy with ERA or GALI modamps and no image filtering is needed, unlike a transverter from 144MHz drive, so a transmitter source ought to be a 'doddle'.

Without knowing if/what any import duty will be, its impossible to say precisely what the cost will end up at. The raw price from AD was \$4.85 each, so we're probably looking at somewhere in the region of £3 each, ultimately. Delivery won't be until the second week in October.

Hopefully they will have arrived by Martlesham time...

DFCW on Microwaves

There is now a full description of DFCW on my website at www.scrbg.org/g4jnt .

As well as the *.wav file of the pure noise-free transmitted DFCW signal with conventional CW identification at the end for comparison, two more files have been generated with different levels of full-Nyquist-bandwidth synthetic Gaussian noise added to the waveform.

The files have S/N ratios of roughly -7dB and -17dB when referred to the standard SSB

bandwidth of 2500Hz. These equate to +7dB and -3dB in 100Hz, so are respectively weak, and very weak, by CW listening standards. The latter is particularly difficult to hear and it is probably only just possible to decode the CW by ear, although Spectrogram set to the right settings clearly shows the DFCW.

Neither include the break-up characteristic of scattered 10GHz + propagation. I don't know how to model that!

73 from Andy G4JNT
www.scrbg.org/g4jnt

Martlesham Beacon Frequencies

Thu, 4 Oct 2007 :

I have re-set the following beacons late this afternoon (measured using a GPS locked reference) Resolution is approx ± 10Hz at 1296 to ± 50Hz at 5.7GHz :

GB3MHL	1296.830MHz	Measured 1296.830060
GB3MHS	2320.830MHz	Measured 2320.830080
GB3MHC	5760.830MHz	Measured 5760.830050

GB3MHS on 3.4GHz and GB3MHX on 10GHz will be adjusted shortly.

73 from John G3XDY

More beacon news can be found on pages 10 and 11 of this issue..editor

SCOTTISH 10GHz FM REPEATER PROJECT

I am in the process of making a 10GHz FM repeater here, GB3TC. It was hoped, but not tried yet, to use a sat tv lnb for users to receive it. I have noticed the newer digital LNBS are better than the old analogUE ones, in that they are a lot less wobbly & noisy on FM.

Although not specifically aimed at WBFM, I am trying to accommodate it.

It does seem to have got the interest going in a few others, looking out the old Gunn gear ready for a listen. One SOTA chap here plans to gear up for it too, even if just to receive it.

The primary purpose of the 10GHz repeater/beacon is to get the activity going, so I would hope some more narrowband will appear as a result.

I'm Still on the scrounge for a few bits for it.... 10GHz SMA circulator. A 2W PA would also be nice ! I've been promised a 16 Slot single-sided waveguide antenna but time is running short (it's being made in Libya), so I might be interested in a borrow of one...

Cheers, David GM6BIG <aware@freeuk.com>

MARTLESHAM 2007

Time is drawing near to the biggest event in UK Amateur microwaves, the **Martlesham Microwave Round Table**, which will take place over the weekend 10-11th November 2007. If you haven't yet registered to attend but wish to do so then **do it right now** as there's very little time left. All rooms at the Holiday Inn, Ransome Park, Ipswich, (the venue for Saturday night's Dinner) are now fully booked so you will have to search elsewhere if you plan to stay overnight in the area. The cheapest by far, at £30 per night B&B, is the Carlton Hotel in Ipswich, whereas everywhere else seems to be £70 +. You'll find more details of the event and registration procedures online at: <http://mmrt.homedns.org/index.html>

PROGRAMME

Saturday 10th

10:30 Admission to site permitted (note: you MUST be pre registered to get past security)

10:40 Test equipment available

13:30 **Lecture 1:** TBD: Lloyd, **NE8I**

14:30 **Lecture 2:** Aircraft scatter: Henning, **DF9IC**

15:30 Break

15:45 **Lecture 3:** The uncertain German beacon situation: Rainer, **DF6NA**

16:00 Testing completes

16:30 Site closes

Sunday 11th

08:50 Admission to site permitted

08:55 Flea market opens

09:00 UK Microwave Group committee meeting

09:45 **UK Microwave Group AGM**

10:30 Break

10:45 Welcome speech

11:02 **Lecture 4:** Remote operation of your station: Jens, **SM6AFV**

12:00 **Lecture 5:** ESEO satellite: Graham, **G3VZV** or Martin, **G3YGO**

13:00 Lunch

14:00 **Lecture 6:** 3.4GHz EME Activity days: Peter, **G3LTF**

14:45 Break

15:00 **Beacons forum**

15:45 **Lecture 7:** Flexible DFS: Dave, **G4HUP**

16:30 Flea market closes

16:45 Site closes

Refreshments including tea, coffee, and biscuits will be available Saturday with the addition of filled rolls and cakes throughout Sunday

We are very pleased to announce that **Angus Annan, MM1CCR, the President of the RSGB**, will be attending the meeting and, hopefully, will give the traditional After Dinner Speech on Saturday night.

Overseas visitors this year include:

WA5VJB, NE8I, WW2R, N2NQI from the USA

DF6NA, DF9IC, DL1YMK, F5VHX, PA4ZP and SM6AFV from mainland Europe

With 81 attendees already registered at the time of editing this edition of Scatterpoint we expect around 100 total attendance.

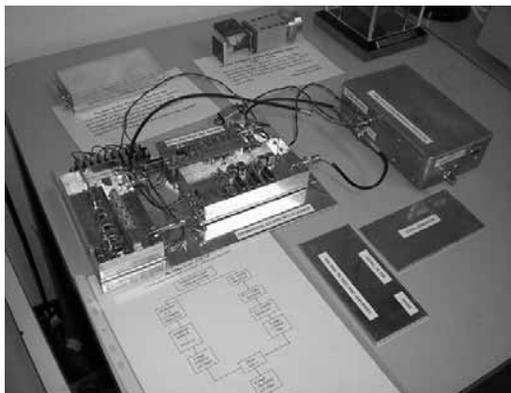
CRAWLEY ROUND TABLE SEPTEMBER 2007



All photographs are courtesy of Murray Niman, G6JYB

Chris, G0FDZ (seen on the right here) receives the G3VVB Construction Trophy from Grant, G8UBN

A few of the entries for the construction competition: G3LYP's experimental 106.5MHz GPS locked source (centre), G4HUP's Flexible DDS (top left) and waveguide to Septum feed horn for 10GHz, also by G4HUP (top centre)



G4NNS (wearing sunglasses, stands by his "Quickstart" 10GHz system outside the Crawley clubhouse.

Others in the picture include John, G8ACE (extreme left) with Alan, G3NYK, to his immediate right and Graham, G4FSG, behind the tripod. Alan is looking down at an FT817 receiver. Because of 'building and tree scatter', the GB3SEE beacon was clearly heard no matter where the antenna was pointed!



From: Andy Talbot, G4JNT
19 September, 2007

GB3SCX now with DFCWi

From 1100z today, the 10GHz beacon GB3SCX located on Bell Hill in Dorset, IO80UU59, carries a new modulation type - DFCWi - to assist in evaluation of the mode.

The beacon modulation still carries a normal on/off CW identification, followed by 15 seconds of carrier on its GPS locked frequency of 10368.90500MHz (nominally!). This is then followed by a DFCWi transmission with tones 400Hz higher than this for a Dot and 400Hz higher for a Dash, ie:

"." = 10368.9054 and "-" = 10368.9056. (All subject to +/- 11Hz error due to DDS resolution issues).

Dual Frequency CW, with a third idle tone, or DFCWi, is described in more detail at www.scrbg.org/g4jnt and was discussed on the Beacon Yahoo group a few weeks ago, but is briefly summarised here again for any newcomers...

DFCWi is coded as normal CW but, instead of different length dot and dash symbols separated by breaks in the carrier to indicate intersymbol gaps, the dot and dash symbols are made of equal length but instead occur at different tone frequencies. The gaps between the symbols are greatly shortened and replaced by a third tone frequency rather than a break in transmission. Consequently DFCWi is a 100% duty cycle transmission mode.

DFCWi is primarily aimed at reception/decoding using a Spectrogram, or colour waterfall display but, with a bit of practice, it can be resolved by ear.

- The parameters used on GB3SCX are :
- Symbol Interval 0.5 second
- Idle period, 10% of symbol = 50ms
- Recommended tuning tones :
- Idle 600Hz (or 400Hz)
- Dot 1000Hz (or 800Hz)
- Dash 1200Hz (or 1000Hz)

Both of these tuning-points 'sound' quite pleasant to listen to with their tonal harmonic relationship, but make no difference to their appearance on a waterfall

display. There are several suitable pieces of display software around, but the most versatile is Spectrum Lab by DL4YHF, which can be downloaded from:

<http://freenet-homepage.de/dl4yh/spectra1.html>

This can be quite complex to drive, and there are a host (nay, quintillions) of settings. A good starting point is :

11025Hz sampling rate, 1024 FFT, 50% overlap (this makes the display move faster and CW symbols look better), Black/White palette (that's my preference, anyway!) and Horizontal scrolling (unless you want to get a cricked neck)

The 0.5 second symbol length is optimised for an FFT of 5 - 10Hz in size, so should give the ability to decode at a few dB below what is copiable by ear. Part of this experiment is to see if these parameters are suitable for microwave use such as whether longer symbols lengths might help, optimum tone spacing, etc.

A sample plot from the new beacon received and plotted with **Spectrum Lab** appears on my website. **Spectran** (<http://www.weaksignals.com>) is also an excellent monitoring program.

Andy G4JNT. www.scrbg.org/g4jnt

Beacon Monitoring Software

I've produced an updated version of the Beacon Monitoring software. This latest version will now take in I/Q stereo inputs from quadrature downconverter (moving it into the SDR era) with switchable sideband selection.

The working sampling rate has been changed to 11025 from 8kHz to avoid the problems with implementation of 9kHz on many modern sound cards (they often give 8100Hz these days). This has the additional advantage of giving more audio bandwidth to work with.

Also the soundcard can be chosen rather than having to accept the default and the FFT window type can be selected instead of being forced to Hamming.

Most importantly, I've corrected a rather embarrassing programming bug! How many users of this software noticed that a strong tone generated a wide trace rather than the spike expected? I was only half filling the FFT buffers with input data, leaving the others empty so the FFT wasn't doing its job properly. Now the display looks as it should.

This could have knock-on effects in the rest of the signal analysis, so can any users of this software download the latest version and put it through its paces.

The new software is now called uWBcnMonIQ and can be downloaded from :

www.scrbg.org/g4jnt/dspsw.htm
73 from Andy, G4JNT

DFCWi ... a different modulation system

From **John Fell, G0API** of the Flight Refuelling Amateur Radio Society: Just a brief note about a recent first QSO using DFCWi , the mode recently fitted to our 10GHz beacon on Bell Hill, GB3SCX.

On Thursday September 27th at approx 1930 GMT, the Flight Refuelling ARS station, G4RFR, worked Brian G4NNS on 10GHz EME. This was the first EME attempt since the station was first activated off the Moon during 1994 . Following this conventional CW exchange of O reports (all details copied) an additional hour of echo tests and exchanges with G4NNS followed , including what is the first use of DFCWi mode .

This involved a one way TX from G4RFR of the DFCWi tones and a WAV file recording made by G4NNS + Clive of incoming EME signals played back over a 144MHz talkback link .The following day WAV files arrived from Brian containing the experimental transmissions and the callsign G4RFR could be detected by ear .

What to me was amazing (apart from the 10GHz systems working !) was the way the DFCWi was generated and transmitted ... an open mic ,held by Andy G4JNT in front of a speaker fed by a PC. The 144MHz FT221R driver rig was set for normal bandwidth SSB and that was it !

If you want to hear Brian's WAV files of the event they are available on Andy's site at www.scrbg.org/g4jnt .

The use of DFCWi , normal reference steady state carrier (which can be interrupted by conventional CW keying if required) and additional FSK components of equal length at +600Hz (DOT)and + 800Hz (DASH) has proved itself over heavily scattered paths .There are no doubt many computer generated heavily coded options but this mode has the distinct advantage of being workable WITHOUT the use of a PC.

If you have a PC running Spectran or SDR you can see nice Waterfall/Glacier displays and read it off screen .

CAMBRIDGE 10GHz BEACON NOW BEING TESTED ON AIR

28 Sep 2007

The proposed GB3CAM beacon is now running temporarily from a site about 1 mile from its final site at Madingley. The locator is **J002AF**. It is using the callsign **G4AKD/B**, and runs 0.5W into a 10dB slotted waveguide at 3m.... not very high, but there is a clear take-off from 80—170 degrees. Can readers monitor **10368.750MHz** from time to time, please? Please post reception reports on the reflector.

A big round of applause to Bernie, G4HJW, who

designed, built and installed the beacon. It has already been received on the East coast by G3LQR and G4DDK(both in JO02 square) Well done! **73 John G4BAO**

No longer will WB/NBFM experimenters need to travel to find a beacon!

On Sunday I was able to receive the beacon using my "white LNB" (unmodified rf stages, so not optimised for 10368 by any means, 10 GHz local oscillator and about 2.5 dB noise fig) at the top of Chapel Hill and also at Mark's place in Bar Hill, using my scanner as an IF.

Signals were a bit warbly in SSB, hardly surprising considering the local oscillator in the LNB. The point is that it was good enough and the drift was quite slow, the main problem being thermal drift as the temperature changed from that in the car to the air. Neither are very far but both are well obstructed paths. I will try from the roof of my shack with a dish on the front next weekend.

All very unremarkable this of course, with the beacon being heard in Ipswich on narrowband, but the point is now we HAVE a reliable signal source of known frequency so we can finish off the WB stuff and get on with the transition to NB.

I would point out that many people are having much fun on WB with paths worked up to 100 - 150 km so there is plenty to do.

So let the fun begin and let's hope this news is the Viagra of 10GHz in the Cambridgeshire area!

73 from David G6KWA

MOBILE BEACON MONITORING!

G00LX recently went 3cm mobile on a trip to Sheffield. He started listening to GB3SEE at Reigate whilst on the M25, then heard GB3LEX when on the M42 near Ashby for a short period. On the return trip to the South GB3LEX was heard again whilst on the M1 going South from the Ashby turnoff to well past Leicester. He then diverted off the M1 down the A14 and the Cambridge Beacon was heard just past Huntingdon to the Duxford Junction. GB3SEE was then heard again on the Northern side of the M25 whilst hill topping, re-appearing on the Southern M25 at Junction 6 to the home QTH at Caterham.

New 10GHz beacon in UR

Callsign: **UR0DMX**

QRG: **10368.925MHz**

Loc: **KN18DP**

Power out: 1W into a 2x8 slots waveguide antenna

The team of UR7D in KN18JT made also **the first QSO from UR on 10GHz** during the July contest (first UR-HA and first UR-S5)

Thanks to DL6NCI for this news item....editor

GB3FNM BEACONS ON AIR FROM IO91OF

We put the beacons on the mast and switched on today, 13 October 2007. The **5.7GHz** one is a good signal 56/7 here in IO91FF. It is on a nominal **5760.920MHz** but just measured here as 5760.9193 so a bit low. It has been reported by aircraft scatter in IO70 already. The **24GHz** one is on a nominal **24048.920MHz** and the **47GHz** one is on a nominal **47088.920MHz**

We await reports on the 24GHz and 47GHz beacons.

73 Brian G4NNS

DMC based 24GHz transverter

"DMC-theme" is HOT these days, so I want to share an interesting approach to get cheaply into 24GHz narrowband. The whole idea came from Norbert, DL4DTU, and was successfully repeated by many others. I have been given all the units needed to complete my first 24GHz transverter by Norbert himself at the Zielieniec (JO80EI) meeting in August this year:

<http://www.dl6nci.de/news.htm>

The unit already has a good RX with some 4dB NF and plenty of gain (can be regulated at IF stage), 20-30mW 'barefoot' output with up-converter alone or 200-250mW with DMC PA. You can watch my first steps at:

http://uk.youtube.com/watch?v=3DpSz5X0_aicM

As many of you will notice, my LO brick seems to be 'odd'. Yes, this is the newer type, that needs only 8.4V. Additional -5V is needed in older types. A second change is that it has the circulators built in, so no need to attach external ones. The beacon heard is SR7VC/B on 24048.820MHz temporarily on my balcony during test run before putting it on the final location. There is a fine site where you can find more details about this approach to 1.25cm:

<http://ok1vvm.aitech.cz/projekty/24g.htm>

<http://ok1vvm.aitech.cz/projekty/24Gnew.htm>

If anyone is interested in sharing their details and ideas, please don't hesitate! I'm preparing a presentation based on meeting materials. Maybe it can find the place in 'files' section of the UK Microwave Yahoo reflector

Best 73 Peter, SP9TT

5GHz WI-FI RECORD

(Taken from <http://www.theinquirer.net/default.aspx?article=41863> .
Wednesday 22 August 2007)

PEDDLER of wireless kit Ubiquiti Networks has, along with the Italian Centre for Radio Activities, or CISAR, announced a new world record for a 5GHz Wi-Fi link .

The link, which bagged an impressive distance of **188.89 miles**, was set up using Ubiquiti's rather extreme Xtreme Range 5 High-Power Carrier Class mini-PCI radio modules and 35dBi 5GHz parabolic dish antennas.

A connection was made all the way from old Sardinia Island into central Italy and managed to achieve a data rate of around 5Mbps.

Mirco Paesante of CISAR, a group of Italian amateur radio operators, bizarrely "plugged" Ubiquiti's kit thus: "The alignment of two 35dBi antennas at 188.89 miles spanning sea and land is a very difficult and complicated technical endeavour, but with the Ubiquiti Networks XR5 this was made simple.

STOP PRESS – G TO EA ON 13, 6 & 3CM !



On Sunday 14 October, just a few hours before this edition of Scatterpoint was sent to the printers, news came in of a remarkable series of microwave contacts made between Ralph Bird, **G4ALY** and **EA2/F2CT** on **2.3, 5.7 and 10GHz**. As far as we know, the three contacts are **"Firsts"** on these bands. Ralph is well known to West European and UK microwavers as he is a very active operator, in spite of living in the "Microwave Wilderness" that encompasses South West England, the whole of Wales, NW England and Scotland! Living so far down in the South West of the UK has meant he has had to work very hard indeed for his UK microwave QSOs and as a result has tended to look South and South East to France and the near Continent. It could be said he is as well known in France as he is in the UK!



These remarkable contacts are not just the result of a chance opening. Ralph and the French operators have been testing over similar paths for some time now. Careful listening and propagation monitoring has finally paid off.

Here's Ralph's email, "hot off the press". Read it, then drool over it and envy him but would **you** like to live over 250km from the centres of UK microwave activity? Many congratulations Ralph on the three contacts. You've deserved them!

From: "Ralph Bird"<Ralph.bird@bt.internet.com>

Subject: G/EA

Date: Sun, 14 October 2007 20:43:38

EA2/F2CT IN93IA—G4ALY IO70VL 858km.

Today starting at 1500utc on French 2m talkback (59+40dB) EA2/F2CT and I started testing on 13cm. A CW QSO was completed with some difficulty due to QSB. We moved to 3cm and a CW QSO was completed again with some difficulty taking approx 10 minutes due to fading. Finally to 6cm where an SSB QSO was achieved with excellent reports. I hope I am right in saying this but I think they are classified as 1st G/EA contacts on those bands.

I used a 75cm dish on 3/6cm with 4.5W on 3cm and 12.5w on 6cm. A 67 el Wimo yagi and 20w were used on 13cm.

We have tried at least 4 times throughout this year to achieve this but either weather or band conditions were against us.



**Left and Right:
EA2/F2CT's equipment:
200W on 13cm to a 42el
Tonna.**

**10GHz and 5.7GHz used
the dish shown propped
up against the tripod
legs.**

The location looks good!



Surplus Conversions in New Zealand

... an overview of projects based around the DMC DXR 700-768 modules made available some months ago by the Wellington VHF Group

The April 207 issue of FUNewsletter, the New Zealand VHF/UHF/Microwave newsletter edited and published by UKuG member Kevin Murphy, ZL1UJG (rfman@xtra.co.nz), contains the following item which may be of interest to readers who managed to obtain one or more of these units from the Wellington VHF Group last year.....

Simon ZL1SWW, has been playing around with yet another incarnation of the DXR-700-768 converter units, using one MC68HC908-QY4, this is an adaptation from the recently built 10GHz variant of the DXR700-710 where one micro was used to control two YIG PLL oscillators. Phase noise was good for the 10GHz unit and it was decided to try and use the same PCB and micro to drive the 5.7 GHz units as well. Thanks go also to Keith ZL1BQE, the "PLL Coding Gun!" for assistance in this project.

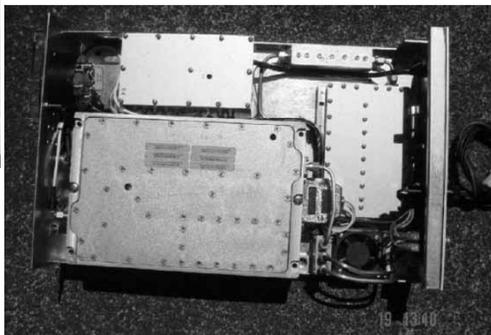
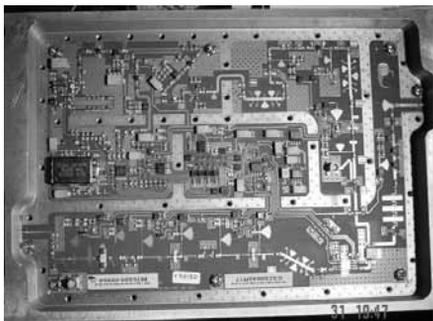
Some minor code changes and numbering was needed to drive the PLL on the 5.7GHz unit. The 5.7 GHz unit uses an LMX2326 PLL and the 10GHz uses an ADF4118, both of which share the same serially programmed word format.

A 2MHz offset is used for the PLL that is in standby mode so that there is no beating of the PLLs due to "Bleeding" of RF from the TX side to the RX side and vice versa. Now we have one board that will control both units and allows for more simple construction, without having to drill holes in the chassis for LO links to both sides. These units are a really cost effective way to get on 5.7GHz and it just takes a little patience and knowing someone with a bit of test gear to help out.

Full details may be found at Simon's website:

<http://www.qsl.net/zl1sww/DXR700conversion.htm>

<http://www.qsl.net/zl1sww/10gigxvert.htm>



Australian Microwave News

Quite a lot is going on in the microwave scene "Down Under". Peter, VK3KAI is running a series of articles in the Wireless Institute of Australia's journal "Amateur Radio" to encourage newcomers to amateur microwaves (see below) while the annual GippsTech Conference was held in Victoria during early July this year. This microwavers get-together originally began in 1998. Along with Western Europe, North America and Japan, Australia is an important part of the amateur microwave world scene.

Not fast food – an AR introduction to "microwaves"

Peter Freeman VK3KAI.

The "Microwave" is ubiquitous in the kitchen in Western society. The microwave oven provides fast food in the home, using RF energy from a magnetron at around 2,450 MHz at power levels of 600 W to beyond 1000 W. Fortunately for the cooks, the energy is radiated into a shielded enclosure and absorbed by the water molecules in the foodstuff inside. The result is that the food rapidly heats up as the water molecules become excited by the RF energy.

There are a relatively small number of licensed amateurs that are excited by microwave RF energy. Not those getting "beated up", rather those who find microwaves intellectually stimulating. Why might this be so? What are the microwave bands and what do they offer? Are we the only users? This article intends to give an introduction to the amateur microwave bands. It will be followed by additional articles giving extra information, initially focusing on the bands that are now available for the first time to Standard Licence holders.

Many Standard Licence holders are keenly exploring their new privileges on HF, VHF and UHF (although many Advanced Licence holders are happy to continue their existing activities and

have not explored into the microwave spectrum – of course, that is their right). One of the attractions to amateur radio (for some) is the diversity of "the hobby". We have many bands and modes of operation available. There are many aspects of the hobby that can give great satisfaction to the amateur interested in exploring those aspects that mentally stimulate.

So, why should we consider exploring the microwave bands? The reasons are many and varied, probably different for every amateur that takes the plunge to invest time and dollars in equipment to operate beyond the 70 cm band. Some of the reasons may lie in the band allocations for each band, as described in the LCD documents. Together, all of



A taller configuration of the VK3KAI "Rover" machine for the Summer VHF/UHF Field Day Contest. This configuration is fully mobile, with pre-directional horizontally polarised antennas for all bands 144 MHz to 10 GHz, plus a vertical whip on 6 m. The antennas are (L-R): 23 cm Allport slot, spaced pair of Big Wheels on 70 cm, scaled logarithmic antennas for 2.4 GHz, 3.4 GHz, 5.7 GHz and 10 GHz, with the 2 m Big Wheel behind. 5 m vertical not visible. The vehicle curiously attracts attention when in transit between operating sites!

Amateur Radio August 2007

Gippsland Microwavers



L to R: Rob VK3EK, Ralph VK3WRE, George VK3HY, Tom VK3XBG, Ken VK3DMW, John VK3ZRX and Peter VK3KAI.

Photo by Denis VK3ZUX.

About 10 years ago, a small number of individual amateurs in the Latrobe Valley in Victoria were interested in weak signal VHF/UHF and microwave communications. The result of their discussions was the running of the first GippsTech Conference in 1988.

The Conference has increased interest locally and more broadly around south eastern Australia and beyond. The 10th annual GippsTech event was held in early July – see our report inside the magazine.

The photo shows some of the Gippsland Microwave operators with just a small sample of their gear.

GippsTech dates for the next three years...

- July 5th & 6th 2008
- July 11th & 12th 2009
- July 10th & 11th 2010

More info can be found at: <http://vk3bez.org/>

The extract (left) from Peter Freeman's microwave column in Amateur Radio is part of a three page article, the first of a series to be published in the WIA's journal.

If you are planning to visit Australasia in the next year or so, why not make it known among the VK and ZL microwavers? You'll be made very welcome indeed.



ACTIVITY NEWS FROM THE WORLD ABOVE 1000MHz

By Robin Lucas, G8APZ

This month, I pick up the column again, after my annual migration to France. The last time I prepared it was in May/June, when the rain scatter season was starting to get under way.

Continental Europe seems to get far more of this type of propagation than we do in the UK, mainly because of the higher temperatures over a large land mass, which give rise to high altitude rain. I have included a brief summary of the season from various sources. It was tantalising to watch ON4KST when it seemed that everybody else had reflection points but nothing of use from the UK on many occasions.

The October IARU "DC to Daylight" contest is now behind us and some UK reports suggest that the activity was disappointing, although that very much depended on the location. It seemed to me that a common thread for many stations was one of equipment malfunctions!

I would like to widen the scope of this column by including relevant input from our European neighbours, and especially when there are QSOs to report to the UK. If you are a member from outside the UK, please do send in your reports, which I will be pleased to include.

Finally, thanks to all our contributors this month... your reports are always very welcome. Please do remember to send in your reports and comments for the next issue. Without them there will be no column!

73, Robin

RAINSCATTER SEASON 2007

A very useful aid by PA5DD to help identify reflection points is available at this URL:
<http://home.hccnet.nl/uffe.noucha/weurope.htm>

Maurice, F6DKW (JN18cs) reports that the 2007 rainscatter season was one of the poorest he has ever experienced, and only a few real DX contacts (over 800km) were made.

On **10GHz**, his first good opening was on 13th May when he worked **DB6NT**(JO50), **DK5AI**(JO51) and **OK1JKT/P**(JO60) (835km). On 7th June, **DB6NT**(JO50) and **DF9QX**(JO42) went in the log. On 10th June **DL1GGT**(JN58) and **OK1JKT/P**(JO60) were worked, and on the 19th **F9ZG/P**(JN02) at 672km. On 20th June **F6HTJ**(JN12) 678km and (as they say in French microwave circles) "la cerise sur le gâteau" **TK/F5BUU**(JN41js) in Corsica at an incredible 933km. This QSO was reported in France as a new record RS distance.

There were many others in the 600km range but Maurice found it mostly very average during the season. He also worked **F6DRO**, JN03, almost every day and says that **OK1JKT** is very active and easy to work on RS (*rather more difficult from UK! Ed*) There are a few other OK stations QRV, but they are never found on RS, only on tropo.

Dom, F6DRO (JN03) had his first QSO on **24GHz** rainscatter at the end of May with his friend Jean, **F6CBC**. The 245km path to **F6CBC**, IN94 is obstructed, and there is normally no tropo signal. Both stations used 2.5W output and a 1M dish. Signals were S5 on CW and SSB and, when the QSO was complete Jean tried to optimise his antenna position and found that **24GHz** needed more elevation than **10GHz**. Signals then increased to 59s.

Karel Tvrđý, OK1JKT(JO60rn) had many RS contacts on **10GHz**. For us in the UK, the distance to JO60 was just too far. Karel now has a fault on his laptop and was unable to access his log to supply his list of DX on RS. Luckily he had backed up his logs!!

From John Wood, G4EAT(JO01HR)
Danbury, Essex:

Essential Tools: **ON4KST** for talkback. 2m is unsatisfactory due to distances and rain noise. **PA5DD** Rain Spotting tool with cursor. This is a new page on Uffe's great site that

gives the big picture of NW Europe. Generally weekends are best for activity from noon until sometimes as late as 10pm BST. During weekdays, activity rarely kicks off before 4pm BST due to QRL for most. Events started earlier than the usual May time frame. The following were all on **3cm**.

April: 28th **F6APE** IN97qi 55s during French contest. 29th after the **French** contest had finished (!) **F6DKW** JN18cs 57s, **F6DWG** JN19aj 53s, **F6APE** IN97 55s, **G4NNS** IO91 58s, **F5HRY** JN18 55s

May: 13th **DJ5BV** JO30 56s, **DJ1KP** JO40 54s, **DL7QY** JN59 (new sq) 52s. 22nd **DD7PC** 1Watt JN49 51s, 24th **DG1KJG** JO30 52s, **ON5TA** JO20 56s. 25th **F6APE** IN97 55s, **HB9AMH/P** JN37 59s (as usual!), **DK3IK** JN39 31s

June: 7th **F6DWG** JN19 55s, **DL3IAS** JN49 42s, **LX1DB** JN39 58s, **G4BRK** IO91 59s, **PA0BAT** JO31 59s (tried but NC **24GHz**), **DJ6JJ** JO31 59s (tried but NC **24GHz**). 11th **F9ZG/P** JN15 (new sq) 51s. 14th **PA0BAT** JO31 55s, **F1PYR/P** JN19 57s, **G4BRK** IO91 58s. 18th **DJ5BV** JO30 57s, **DH8AG** JO31 52s. 19th **F4CKC/P** JN19 59s, **F1RJ** JN18 54s, **F6DKW** JN18 54s

July: 3rd **DF9QX** JO42 55s, **GORRJ** IO91 59s 16th **ON4IY** JO20 54s. 20th **G4DDK** JO02 56s

August: 2nd **G8KQW** IO91 59s

September: Nil

Higher temperatures and therefore better DX possibilities exist in August but it is very noticeable that German activity drops due to vacations. Certainly, several major events in August, September but I suspect a combination of tired operators and vacations reduces activity in later months, despite fine conditions. Best DX this year is considerably down on my best contact of 920Km 4 years ago. **73, John**

So there it is...see what you have been missing! By watching the **PA5DD** rain map of Europe, we can now see the rain cells and their density, thus enabling potential paths to be identified. Try it!

The email address for this Activity News column has changed. Please use this in future:-

scatterpoint@microwavers.org

OCTOBER IARU CONTEST 6/7 October 2007

This year, there were widely differing views expressed about activity and conditions. It was rather like the curate's egg.

John, G3XDY, JO02, focussed on the **1.3GHz** and **2.3GHz** trophy contests during Saturday. He writes: Early on in the contest **DK6AS**, JO52 was worked with good signals on **23cm**, whereas **DK2MN**, JO32 was weaker than usual. A good haul of German stations boosted the score on **1.3GHz**, but contacts were harder to come by on **2.3GHz** this year. Signals on **3.4GHz**, **5.7GHz** and **10GHz** seemed down on usual, resulting in failures with regulars such as **PA0EZ** on **10GHz**. Nevertheless, the overall number of stations worked on **1.3GHz** was up, and inter-G conditions were above normal. There were very strong signals from **G3OHM/P**, IO82 and **G3CKR/P**, IO93.

There did not appear to be a lot of activity on **1.3GHz** from the areas experiencing good 70cm conditions. **DM7A** came up well on an aircraft scatter peak, other good QSOs included **DK0OX**, JN48, **DL0GTH**, JO50, **OZ1FF**, JO45, **DF0YY**, JO62, **F6BHI/P**, JN15, **DFOMTL**, JO61, and **F/OK4W/P**, JN38. The final tally on **23cm** was 81 QSOs with the best DX being **OL4A**, JO60rn at 867Km.

Signals were heard both ways with **DM7A** on **2.3GHz**, but we never had a good enough peak to make a full QSO, and it was the same story with **DL0GTH**. **DK0ZB**, JO42(513Km) was the best DX from a total of 32 QSOs.

3.4GHz suffered from a failure of the T/R switching on Sunday. **DF0OL** was heard quite well and might have provided the best DX if the transmitter had been working. Both **5.7GHz** and **10GHz** were very disappointing this year, with very weak signals that appeared to be well below normal levels, hence scores are well down. **73, John**

A rather different picture was observed in **JO03** by **Bryn Llewellyn, G4DEZ**, whose comment on **23cm** in his claimed scores was: "Operating inside a Faraday cage!" His best DX was with **PA6NL**, JO21bx at 307Km.

Your scribe, **G8APZ**, was with **M1CRO/p**,

JO01pu on the Essex coast at Walton-on-the-Naze, where conditions seemed quite reasonable.

On **23cm** we made 123 QSOs and the top 20 stations worked were all over 500km, so we cannot complain about activity. Towards the end I think we had run out of stations to work! The best DX on **23cm** was **F5KDK/P**, JN24VC at 925km. Other stations worked at distances over 600km were **DFOYY**, JO62(771km), **DL8NCR**, JN59(729km), **F6BHI/P**, JN15 (704km), **HB9G/P**, JN36(698 km), **HB9AMH/P**, JN37(672 km), **DFOXG**, JO51(658 km), **DK6AS**, JO52(651 km), **DKOOX**, JN48(614 km), and **DF6IY**, JN48(603 km).

On **13cm** we bagged **DL3IAS**, JN49 (570km) as our best DX. Others over 400km were: **F6APE**, IN97(520km), **DKOZB**, JO42 (509km), **DC8UG**, JO30(480km), **F6KUP/P**, JN29(414km), **DK2MN**, JO32(412km), and **PI4GN**, JO33(402km).

The best DX of the 11 QSOs on **9cm** was **PI4GN**, JO33(402km), whilst on **6cm** the best was **HB9AMH/P**, JN37(672km) from a total of 12 QSOs. On **3cm**, the best DX from 21 QSOs was **HB9AMH/P**, JN37 on SSB. **24GHz** was hard going due to high humidity and poor activity. Just 3 QSOs from the 7 paths we tried. Best DX was **G4EAT**, JO01 at 48km.

Murphy struck several times, resulting in a dead transceiver and an annoying intermittent fault with the **3cm** masthead transverter.



Photo: Dave, G1OGY, atop one of the 10M high masts at M1CRO/p. The stub mast has a 144MHz 9ele F9FT at the top, 24GHz transverter with horn, and a 90cm dual feed dish for 3cm and 6cm.

Ian Lamb, G8KQW, was out with the South Birmingham RS, and sent this report on their **76GHz** activity:

6th October: **G8KQW/P** IO82QL on Brown Clee Hill to **G8ACE/P** at Brockton Telephone Exchange. The path length was 9km. Direct contact was made without any pre-alignment on **47GHz** Very strong FM signals.

7th October: **G8KQW/P** Brown Clee Hill to **G8ACE/P** Barr Beacon IO92BN. The path length was 48km. **G8KQW** heard **G8ACE** signals 500Hz LF of the previous day settings. **G8ACE** used **G8KQW 47GHz** to pre-align the **76GHz** dish. The QSO was completed on FM, signals S9 with OSB to smooth noise. At the time of the QSO the WX was < 10Km visibility, Temperature 16C & the Relative Humidity 84% at Brown Clee Hill. Interestingly, **76GHz** seemed to work better than **47GHz**. This QSO was **G8KQW**'s best DX to date.

The contest in Mainland Europe

Some remarkable scores were being clocked up to the east:

DLOGTH, JO50JP reportedly made 269 QSOs on **23cm**, and 64 QSOs on **3cm**.

OK1JKT/P, JO60RN from his site at 922 metres asl. worked about 51 QSOs on **3cm**, his best DX being **ON4SHF/p** at 606Km. Karel uses 5.5W and a 1.2m dish.

To the south, **F5KDK/P**, JN24VC was another high altitude station, operating from the Montagne de Lure at 1826m asl. They used the same 1.2M dish with interchangeable transverters and feeds for four bands. Power output was 100 W on **23cm**, 80W on **13cm** 35W on **6cm**, and 14W on **3cm**. The operators used the tripod mounted dish in the open air without the benefit of any shelter!

They had just one QSO with the UK with **M1CRO/p** on **23cm**, and heard **G3LTF** on **23cm** but no QSO resulted. Their best DX on **13cm**, **6cm** and **3cm** was **F6KPL**(815Km), with very good signal reports.

The team consisted of Yannick, **F1NSR**, Dave **F5SDD**, **F4CWN**, **F6BVA**, **F5IVP**, and **F11KA**. Some photographs of the QTH, the team, and their transverters are on the next page.



Montagne de Lure
JN24VC
1826m

F5KDK/P
Team
members
and dish



Transverters and horn feeds ready for the dish

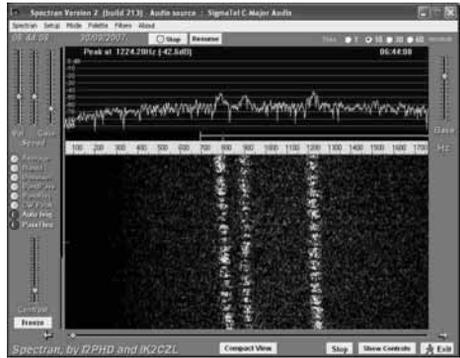
Many thanks to Yannick, **F1NSR** for his help in providing the photos and the information.

PILEUP ON 10GHZ EME!

From: **Brian Coleman, G4NNS (IO91ff)**

The ARRL EME contest took place over the weekend of 29/30 September, 2007. During the first session on the Saturday morning, it was raining here. The moon was at a high elevation and water was collecting on the feed horn membrane providing a dB or so of attenuation. This is one of the (few) disadvantages of a cassegrain feed. Despite this I managed to work 4 stations.

For the second session on Sunday morning, I did not have this problem and managed to work



Above: Spectran image at G4NNS showing three EME signals!

another 6 stations including two initials **HB9SV**, and **GW4DGU**. At times, there were so many stations on that **10GHz** sounded more like 20m.

These two new initial contacts plus the one with **G4RFR** on 27th September bring my total to 30 on **10GHz**. **73 Brian**

and FINALLY....

... On 11th October, 2007 there was a spectacular opening for those to the east of us.

On **24GHz**, Staszek, **SP6GWB**, JO80 worked **DB6NT**, JO50 (367Km) and a few hours later worked **OK7RA**, JO60 (272Km).

On **3cm**, **SP6GWB** went on to work **F6DKW**, JN18 for what is believed to be a first between **F** and **SP**, followed by **F5HRY**, JN18 (1055Km.) who reported Staszek's signals peaked at S9. QSOs with **F6DWG**, JN19 (1069Km), and **F1PYR**, JN19 (1050Km) brought the total to four stations in excess of 1,000Km.

PAOBAT, JO31 worked **OK1JKT/P**, JO60 with 57 signals, and **F6DWG**, JN19aj heard **SP9TTG** at 1238Km but lost him in deep QSB. He had a good QSO with **OK7RA**, JO60 (791Km) at S9 on SSB as a consolation!

On **23cm**, **F1PYR**, JN19DA worked **SP6GWB** (1050Km), and also **OK1TEH**, JO70fd (887Km) though his luck ran out when he heard **SP6GWB** on **13cm** but no QSO resulted.

F1PYR described the opening as "exceptional, almost incredible", which I am sure we would all agree with. Congratulations to all involved with these super DX QSOs. That's all for this month. **73 and good DX. Robin, G8APZ**

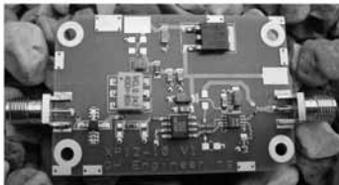
Second Division

	W	D	L	F	A	Pts
1 PLYMOUTH ARGYLE	26	12	8	86	41	90
2 QUEENS PARK RANGERS	22	14	7	80	53	83
3 Bristol City	23	13	10	58	37	82

First Division

	W	D	L	F	A	Pts
1 NORWICH CITY	28	10	8	79	39	94
2 WEST BROM. ALBION	25	11	10	64	42	86
3 Sunderland	22	13	11	62	45	79

Premier Division



XP12-10 12.5GHz Divide by 10 prescaler

Broadband - input frequency range 50MHz - 12.5GHz Other prescalers available - /2, /4, /8, /20, /40

Unique input buffer stage gives excellent sensitivity :- -15dBm@12.5GHz

Can be used to extend the range of frequency counters - with no loss of accuracy

Available as built and tested PCB with SMA sockets - only £85 Requires 12V DC @ 220mA

Box-kit - tinsplate box (requires drilling/soldering), feedthrus, SMA plug+skt, screws - £12

In development - machined aluminium box, expected Oct 2007

GH Engineering

The Forge, West End, tel 01256 889295
Sherborne St. John, fax 01256 889294
Hants RG24 9LE sales@ghengineering.co.uk

Also available - new range of VHF/UHF Linear Power amplifiers
70MHz - 1.3GHz, output powers from 10W to 100W
mini-kits from £67 - see website for more details

FOR SALE

I need to raise some project funds so I'm having one of my infrequent sales. Not got around to most of the microwave bits and pieces yet, that's next, but I have the following 'up for grabs'....

ICOM 275H c/w PBT mod and 500Hz CW filter (110W) Price: £250
Yaesu FT780R 10 70cms multimode. Price: £150

ICOM T7E dual band hand held c/w charger Price: £80
Mirage D1010 70cms PA (>110W) Price: £100

Microwave Modules 432/100 70cms PA (> 110W) Price: £100

Farnell modulation meter (model AMM ~1500MHz) Price: £50
Adret 5104 synthesiser Price: £100

HP 432A + 478A head (got a funny mains plug + lost the lead) Price: £130

Datong clipper + Heil HM5 mic (boxed with 12V dryfit battery) Price: £40

Yaesu FT8000 dual band pro mobile Price: £80

Yaesu YS 2000 HF/6M power meter (nice big meter) Price: £40

Continental 3400MHz brick on original chassis with lock meter Price: £35

(locks to an Adret / was going to be my 9cm beacon)
Tokyo 6mtr PA modified for 4mtrs (60W) Price: £80

Eagle 40 el 23cm Ae (now 39 el but nice condition!) Price: £35

Lots of power attenuators + loads, mainly to 4GHz / 30W but not checked the all out yet.

If you are interested in anything, email me on g4pbp@blueyonder.co.uk

or phone me on 01902 830280

73 de Russ G8BHH/G4PBP