An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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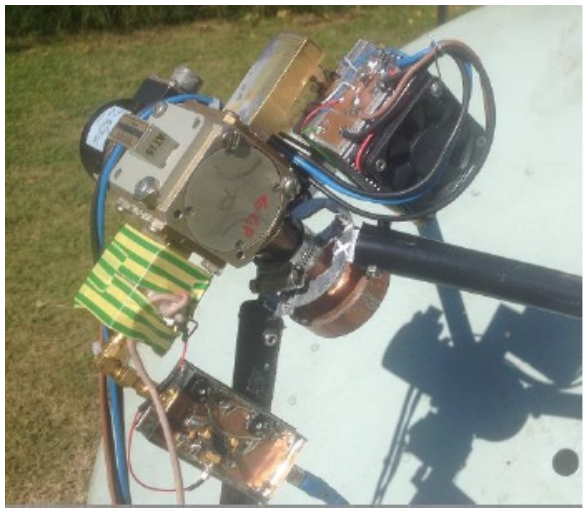
Small dish EME operation from Hungary

Charlie Suckling G3WDG



In this Issue

Stop Press: John Hazell G8ACE has been awarded the G3VVB Trophy this year for his 134GHz system. See page 14.

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The following subscription rates apply.

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This basic sum is for **UKuG membership**. For this you receive Scatterpoint for **FREE** by electronic means (now internet only) via the Yahoo group and/or Dropbox.

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

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

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

PLEASE QUOTE YOUR CALLSIGN!

Payment can be made by: PayPal to

ukug@microwavers.org

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

Articles for Scatterpoint

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

Please send them to

editor@microwavers.org

The CLOSING date is the FIRST day of the month

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

Please submit your articles in any of the following formats:

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

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

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

Thank you for you co-operation.

Martin G8BHC

Reproducing articles from Scatterpoint

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UKµG Chip Bank – A free service for members

The catalogue is now on the UKµG web site at www.microwavers.org/?chipbank.htm *Latest Stock Update was May 2015 – so do take a look!*

Non members can join the UKuG by following the non-members link on the same page and members will be able to email Mike with requests for components. All will be subject to availability, and a listing of a component on the site will not be a guarantee of availability of that component. The service is run as a free benefit to all members and the UK Microwave Group will pick up the cost of packaging and postage.

Minimum quantity of small components supplied is 10. Some people have ordered a single smd resistor!

The service may be withdrawn at the discretion of the committee if abuse such as reselling of components is suspected.

There is an order form on the website with an address label which will slightly reduce what I have to do in dealing with orders so please could you use it. Also, as many of the components are from unknown sources, if you have the facility to check the value, particularly unmarked items such as capacitors, do so, and let me know if any items have been mislabelled. G4HUP's Inductance/capacitance meter with SM probes is ideal for this (Unsolicited testimonial!)

The chipbank catalogue has been updated to reflect donations received at the various RTs this year.

Quite a few resistors and inductors have been added as well as a few other bits and pieces. Have a look at the website and stock up for your winter projects!

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

Mike G3LYP

UKµG Project support

The UK Microwave Group is pleased to encourage and support microwave projects such as Beacons, Synthesiser development, etc. Collectively UKuG has a considerable pool of knowledge and experience available, and now we can financially support worthy projects to a modest degree.

Note that this is essentially a small scale grant scheme, based on 'cash-on-results'. We are unable to provide ongoing financial support for running costs – it is important that such issues are understood at the early stages along with site clearances/licensing, etc.

The application form has a number of guidance tips on it – or just ask us if in doubt! In summary:-

- Please apply in advance of your project
- We effectively reimburse costs - cash on results (eg Beacon on air)
- We regret we are unable to support running costs

Application forms below should be submitted to the UKuG Secretary, after which they are reviewed/agreed by the committee

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

UKµG Technical support

One of the great things about our hobby is the idea that we give our time freely to help and encourage others, and within the UKuG there are a number of people who are prepared to (within sensible limits!) share their knowledge and, what is more important, test equipment. Our friends in America refer to such amateurs as “Elmers” but that term tends to remind me too much of that rather bumbling nemesis of Bugs Bunny, Elmer Fudd, so let’s call them Tech Support volunteers.

While this is described as a “service to members” it is not a “right of membership!”

Please understand that you, as a user of this service, must expect to fit in with the timetable and lives of the volunteers. Without a doubt, the best way to make people withdraw the service is to hassle them and complain if they cannot fit in with YOUR timetable!

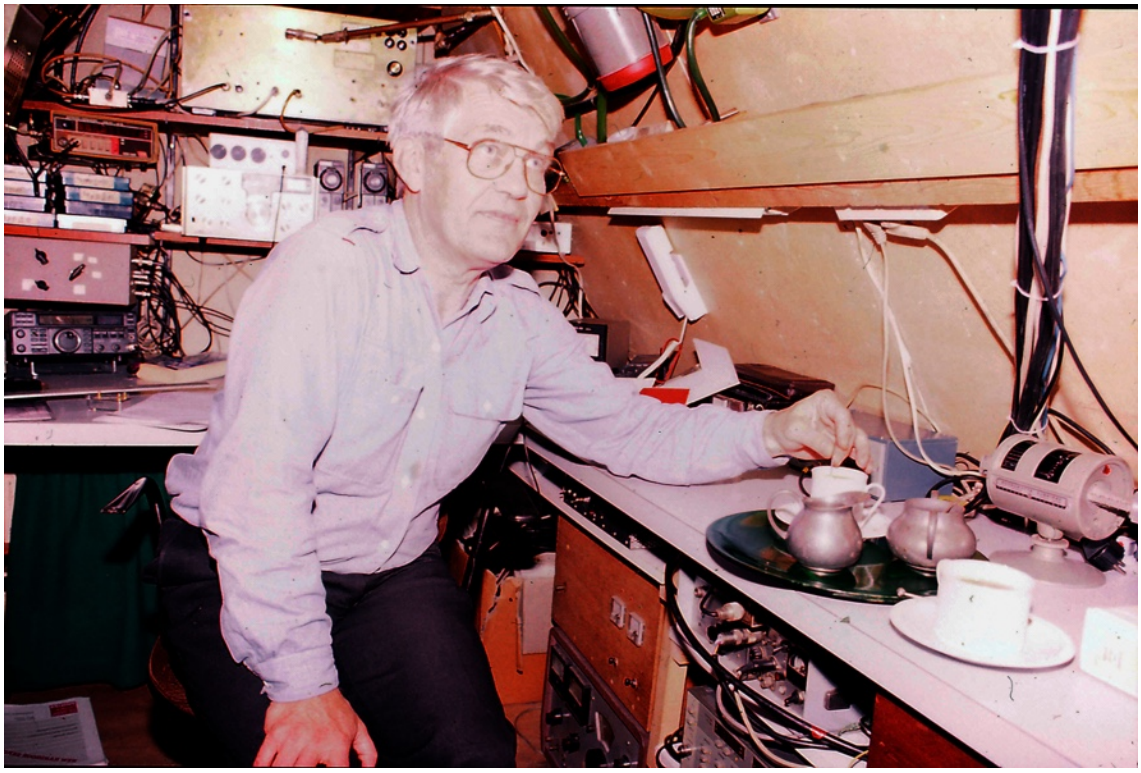
Please remember that a service like our support people can provide would cost lots of money per hour professionally and it’s costing you nothing and will probably include tea and biscuits!

If anyone would like to step forward and volunteer, especially in the regions where we have no representative, please email john@g4bao.com

The current list is available at
www.microwavers.org/tech-support.htm

Silent Key – Arie Dogterom PA0EZ

Pictures from Doug Friend VK4OE



Some pictures that I took of Arie in his 'shack' back in 1995 when I visited him at his home in Hilversum. The pictures are presently in 35mm 'slide' format. I enjoyed meeting Arie on that occasion and, at that time (1995), he was in the prime of his microwave DX achievements, continually at or near the top of the DUBUS "Top Lists" for many bands. He didn't operate below 432 MHz!

From the ukmicrowaves message board:

24 September Arie PA0EZ passed away.
I know that a lot off amateurs worked Arie on 70 cm and higher.
He is no longer with us. Arie was 78 years old .....

RIP Arie

John PA7JB

Very sorry to hear that news John, Arie was an ever present signal on the bands when I started on microwaves in the mid seventies and eighties. He was always workable on any band under any conditions, and was a keen contester with leading positions in the IARU region 1 UHF contests of that era.

RIP Arie.

John G3XDY

Many thanks for passing-on that sad news. Many years ago, with a new VHF-only call, Arie gave me my first PA0 contacts on both 432 and 1296MHz from ZL24e. I think at that time we were both on AM, and he inspired me to try harder! He remained an inspiration for his pioneering work on the microwave bands.

RIP Arie

Chris GW4DGU

Very sad news indeed. Arie was a legend! I have worked him many times on various microwave bands.

Peter G3PHO

Sad to hear about Arie's passing. Worked him many times on 23cms and used to chat with him at Heelweg most years.

Nice Guy, sadly missed

John G4BAO

I am incredibly sad to hear of Arie's passing. We had many a chat on 70cm and above as well as face to face at various meetings in the Netherlands. But most of all I remember him staying with us during a Martlesham Microwave meeting weekend, many years ago.

He was one of the first Europeans to use SSB on the microwave bands with his phase locked NBFM transmitters.

No longer will I be told I am 1Hz off frequency on 23cm! Those of you who knew this fine gentleman will know what I mean!

I will miss hearing his voice. I am truly sad.

Vale Arie

A true microwave enthusiast.

Sam G4DDK

Small dish 10GHz EME Operation from Hungary

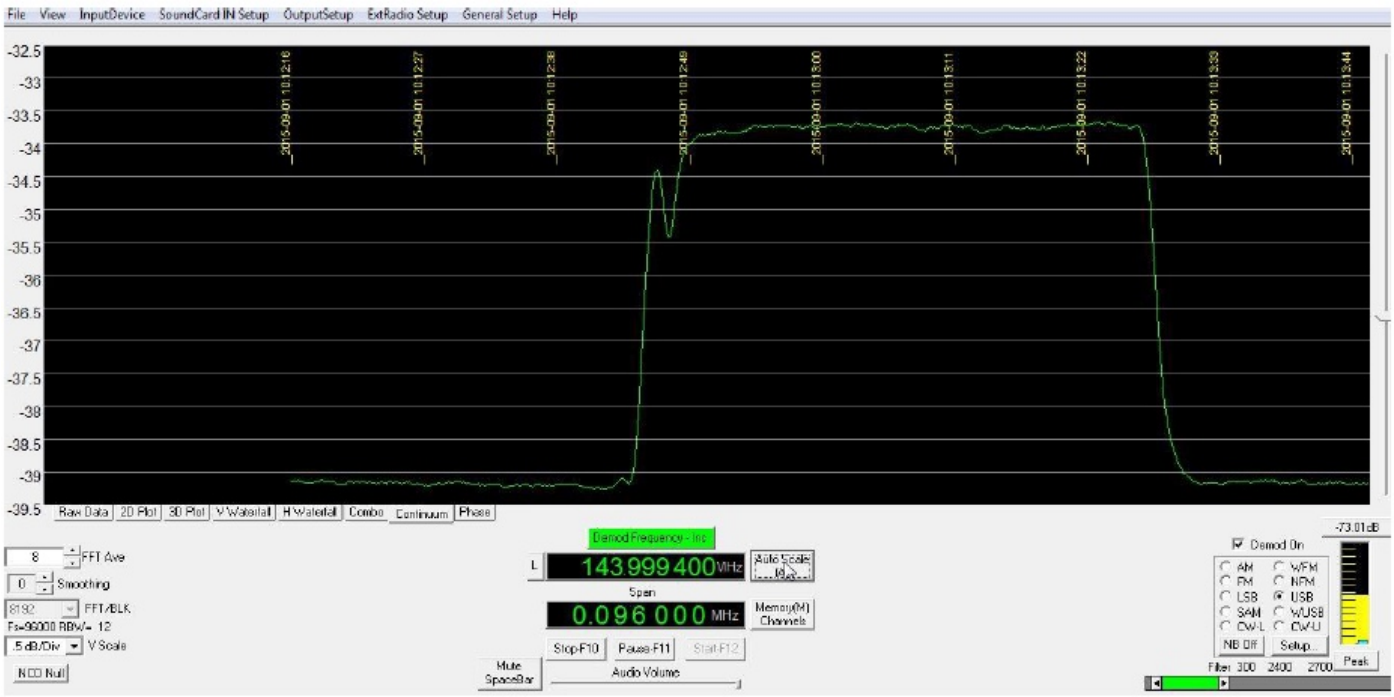
By Charlie Suckling G3WDG

Recently I had the opportunity to operate as HA/G3WDG on 10GHz EME with a small (76cm) dish. The choice of antenna was limited to something small enough to fit in the car, and based on VK7MO's success with this size of dish on 10GHz EME, I had confidence that it would be capable of making some QSOs, at least with the bigger stations.

One of the aims was to field test a new PA that I had been developing recently, which uses a pair of Qorvo TGA2623-CP GaN devices, with microstrip input splitter and output combiners. The PA produces 50W output at 100mW drive with 43% DC to RF efficiency. The devices are part of a new family of packaged MMIC devices that have much higher gain than the 10GHz GaN devices we have been using up to now, meaning they can be driven directly from a typical transverter.

The dish is a prime focus type with f/D of 0.4. The feed is a linearly polarised version of one of SM6FHZ's high performance CP feeds (with no septum) - Ref 1. The 22mm o.d./ 20.2mm i.d. tube was squeezed in a vice until it fitted snugly inside a WG16 square flange. The feed was tuned to better than -25dB return loss with a single tuning screw (in the right place). Sun noise with the feed alone was consistently 5.5dB, which reduced slightly to 5.2dB with the WG16 relay and PA in place (probably a combination of extra loss and blockage effects). The 5.5dB level of sun noise corresponds to a dish efficiency of about 70%.

Moon noise could just be detected (at slightly under 0.2dB). This was just about sufficient for tracking the moon under clear sky conditions. With cloud or rain present, the moon noise was barely or not detectable, and under these conditions the DL0SHF beacon was used to peak the dish using the signal on the Combo display of the SDR.

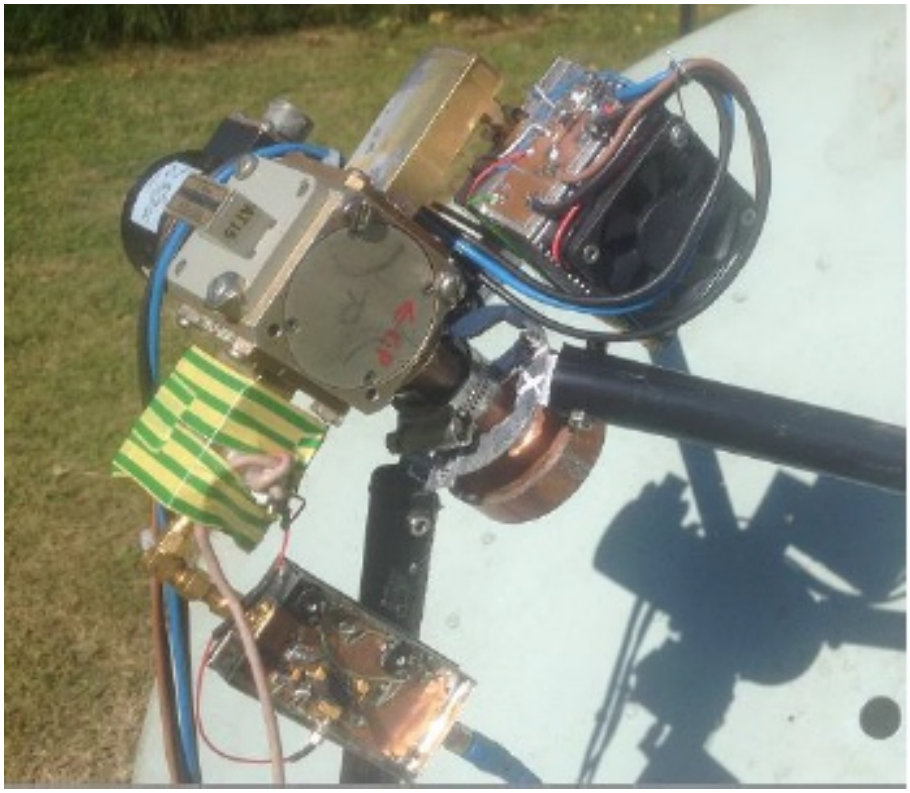


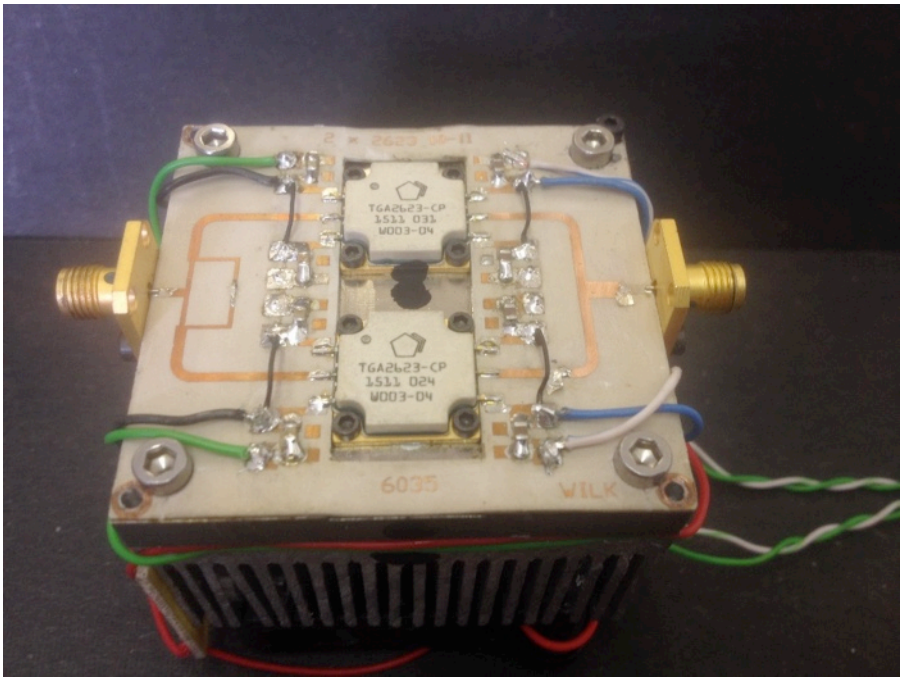
Sun noise with the feed alone, measured using the SDR and Spectraview in continuum mode. Cold sky reference was at same elevation as the sun (about 50 degrees).

Preamps were a waveguide input WDG004 (using an MGF4919) as the first stage followed by a two stage version of the WDG004, also using MGF4919s. Overall NF was in the region of 0.9-1.0dB. The rest of the equipment was the home station transverter based on WDG002 and 003 modules, G4DDK004 LO + G8ACE RDDS, Isotemp 134 10MHz OCXO , IC202 radio and a homebrew 96kHz bandwidth "Softrock" based SDR. Timing was done using GPS. A single PC was used, running WSJT-X v1.6.0 for JT4, the "Spectravue" SDR software, VK3UM's EME planner and the HB9Q logger. Rather too many windows to keep an eye on!

The dish was set up on a tripod (temporarily held together with G-Clamps!), and 12V linear actuators used for remote elevation and azimuth control. Elevation and azimuth readouts were a low-tech spirit level and calibrated base with pointer.

Feed assembly showing SM6FHZ feed, WG16 switch, preamps and 50W PA





50W PA using 2 x TGA2623-CP devices with fan cooled heatsink

Elevation actuator and dish mount using a tripod and scaffold tube

Azimuth actuator giving about 50 deg of movement.

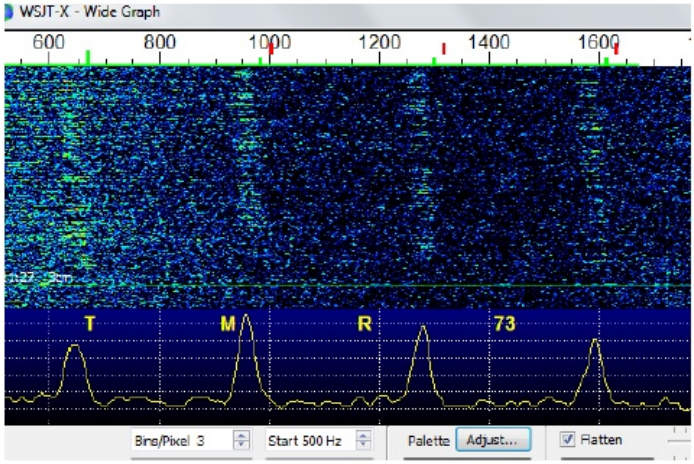
Complete system. 10GHz transverter + LO, power supplies etc on top of box.

Operating position showing PC, Morse key, PSU, IC202 and SDR

Results

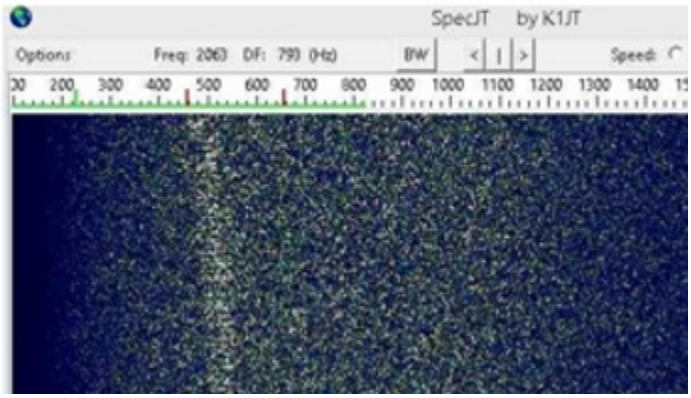
Solid single-line decodes were obtained at all times from the DL0SHF 10GHz EME beacon running at its normal 50W level, with several dB margin.

```
0602  -9 3.25   678 * DL0SHF   02RAN        * B
0603 -20 3.43   678 *
0604 -10 3.25 1352 * DL0SHF   04NOB        * C
0605 -20 4.80   945 *
0606 -12 3.20 1260 * DL0SHF   06TAR        * C
0607 -20 4.91 1247 *
0608 -11 3.14 1175 * DL0SHF   08CAF        * D
```



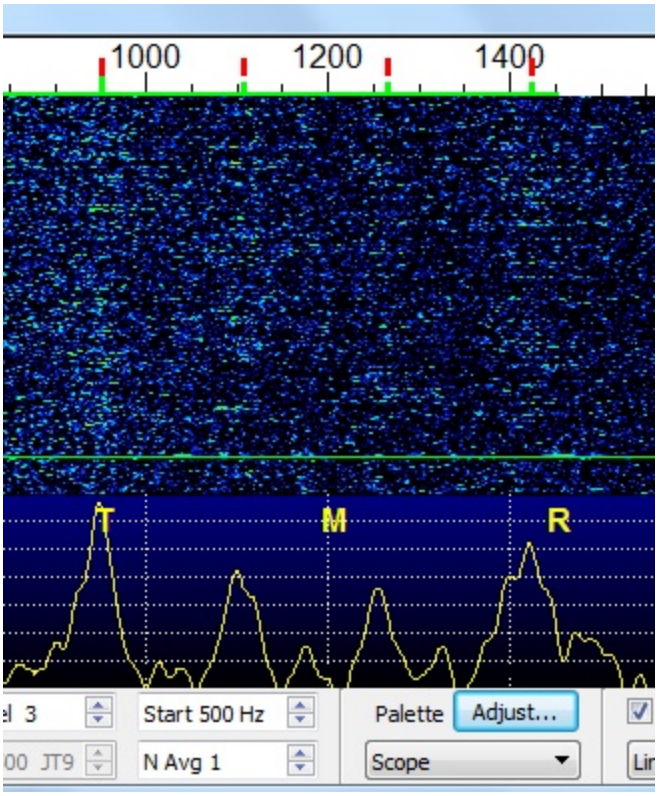
Decodes of the DL0SHF EME beacon (JT4G) and corresponding waterfall/linear average spectrum display

Over two days, with a limited window to moonset, a number of QSOs were also made. Stations worked on JT4F were OK1KIR, W5LUA, OZ1LPR, OZ1FF and HB9Q. OK1KIR was also worked on CW (with M/M reports). Best JT report sent was -9 to OK1KIR and best received was from W5LUA (-12). The QSOs with OZ1LPR, W5LUA and HB9Q are believed to be firsts from Hungary. A number of stations were able to do full two-way Doppler compensation, which made the QSOs much easier at my end with the IC202. In addition to the QSOs, OK2AQ was able to decode my signal (on one occasion) using his 1.8m dish. UA4HTS and DL7YC also reported being able to easily detect my single tone transmissions.



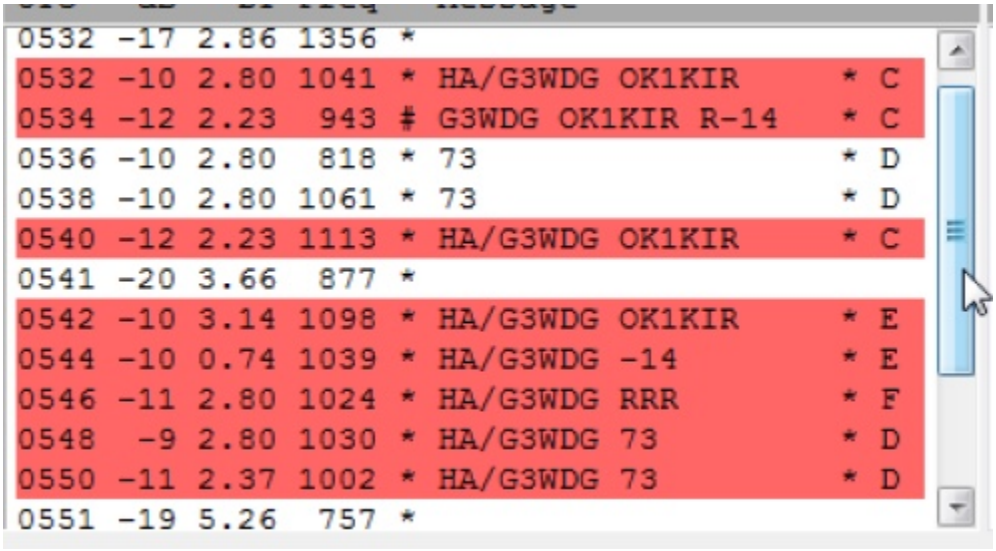
HA/G3WDG's CW signal as received by OK1KIR (no Doppler compensation)

One unforeseen problem occurred when trying to use the SDR as a second receiver for split frequency operation. It seems that on transmit, noise from the SDR was being mixed in the PC with the tones generated by WSJT, which degraded my transmitted S/N and made transmissions more difficult to decode on occasions!



OK1KIR's JT4F signals
(with Doppler compensation)

Two JT4F QSOs with OK1KIR
(including free-text messages)



A couple of issues were found with WSJT during the QSOs. My use of a "Type 1 Compound Callsign" led to the more sensitive correlation decoder being unable to decode messages from some lower erp stations containing reports and/or RRR. WSJT-X's automatic averaging came to the rescue during the QSO with OZ1FF – his report to me was finally decoded with the convolutional decoder as an average over three periods, and his RRR by using a single tone "message". I also noticed that clicking on decoded messages to generate the report automatically, the TX3 message (R + report) was incorrectly selected and TX2 had to be manually selected. This also appears to be due to the use of a compound callsign. Both issues have been reported to the WSJT development team.

I hope to be able to operate again from JN86. Next time I plan to use an IC735 plus transverter for the 144MHz IF, so Doppler compensation can be done using WSJT-X as we normally do at home. Hopefully this will also help reduce the frequency uncertainty (+/- 500Hz with the IC202 system), and avoid any added noise problems on transmit.

Ref 1 www.2ingandlin.se/10GHz%20septum%20feeds%20for%20EME_A.pdf

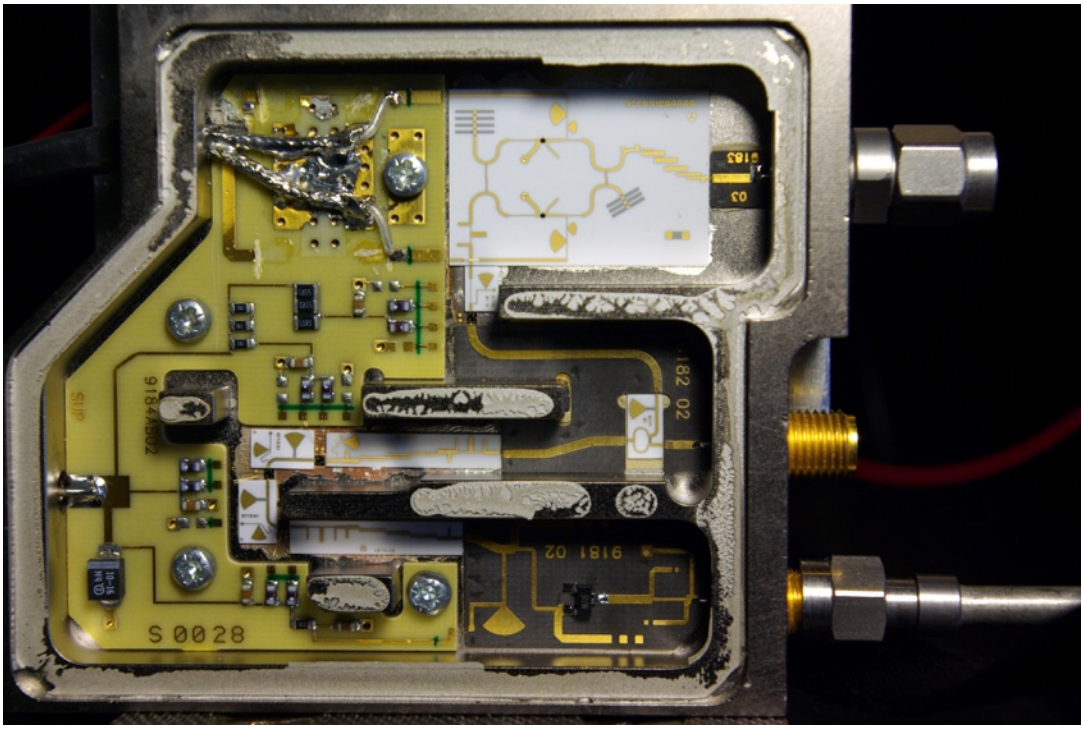
Direct IQ upconversion with the Alcatel White Box Transmit Module

Andy Talbot G4JNT

Some years ago I published some notes on modifying these units for conventional IF use as a transverter. See http://www.g4jnt.com/WhiteBoxMods.pdf for more details. The RF upconverter mixer consists of a pair of anti-parallel diodes fed with two portions of the IF signal 90 degrees out of phase supplied by a quadrature hybrid. The diode pairs are pumped with a 12GHz LO supplied in equal phase to each. The resulting RF is combined in a 90 degree Lange coupler which cancels one sideband while reinforcing the other. The original IF and the hybrid ran at around 600MHz. While I managed to replace this with a 144MHz unit, the result was a bit messy even though it did work to an acceptable degree. Results of that can be found in the URL above.

Direct baseband drive to a quadrature mixer in the transmit module can, however, open up some interesting possibilities for direct upconversion transmitters. For example, any waveform, including speech can be generated as a quadrature pair where the two channels are exactly 90 degrees out of phase at all frequencies. (Such an IQ pair is known mathematically as a complex signal). So first of all, one Tx module was modified for direct input to the mixers.

Modifying the Mixer module



Alcatel 'White Box' Transmit converter modified for I/Q direct baseband IF drive.

In the same that was done for the original modifications for the 144MHz IF, the old IF hybrid has to be removed. The first job is to remove the old one. With a sharp knife cut the PCB tracks close to the existing combiner. This is to prevent further damage if the removal process causes them to be lifted – it is essential at all costs that the wire bonds and chip components of the 24GHz hardware are not damaged. These are probably irreparable if damaged.

It is near-impossible to unsolder the original combiner, even with a large soldering iron bit and maximum temperature setting because the heat conductivity of the microwave substrate is just too high. Instead, while applying heat (soldering iron setting 400C and a large bit) to the top of the combiner, lever it up with a thin screw driver. Almost certainly the module will bend and break up. Be vicious and use small side cutters to chop away all the bits while applying as much heat to the device as you can, but at the same time being very careful to keep away from the 24GHz components. Eventually you will manage to remove all the remnants from the PCB, leaving no more than a probably damaged grounding track underneath the original unit which by now should now be no more than a few tatters of metal and white plastic on the floor!

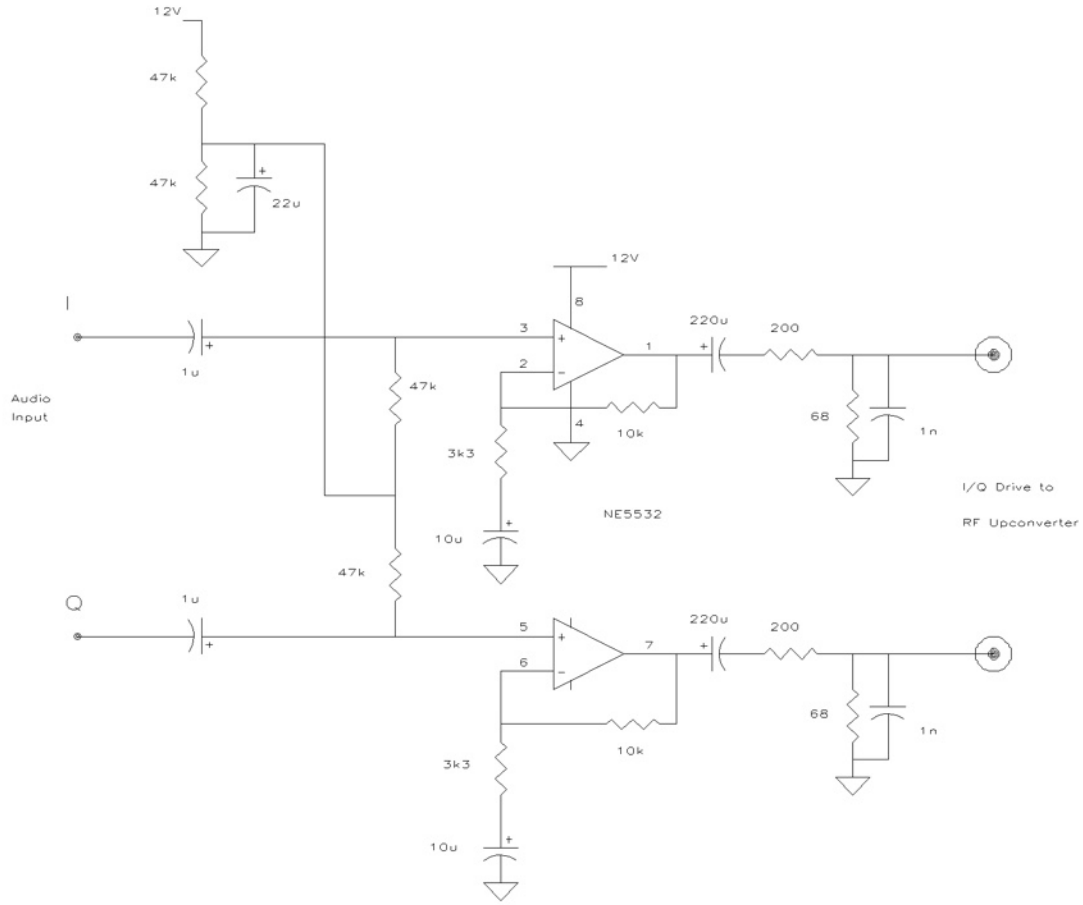
Using two lengths of thin PTFE Coax, connect the inners to the IF tracks leading to the mixers, and their braid to whatever remnants of ground have survived the onslaught on the original hybrid. (If the thought of removing the old hybrid sounds too drastic and potentially terminal, it is possible to just cut the tracks and feed the coax round). Photo 1 shows the final result.

Baseband Drive

A feel for how well the mixers work can be obtained by simply passing DC though them. Apply a 6GHz LO signal and monitor the RF output level using, for example, a diode probe. Using a variable voltage supply with 1k resistor, pass a current from 0 to 10mA though the diodes, observing how the RF output level changes. In my case, saturation appeared to set in around 10 – 15mA. Some measurements of diode ring mixers as attenuators when driven from DC can be found in Design Notes, RadCom June 2014, page 73 . That shows there is remarkable linearity of RF voltage out for DC drive from a 50 ohms source.

Most mixers give best linearity when all ports are driven from 50 ohms and this is as true for baseband as it is for RF and V/UHF IF signals. So for any serious baseband upconversion drive with audio frequencies should come from a 50 ohm source impedance. To achieve 15mA (the saturation level) at 50 ohms requires something like 0.5 to 1V swing at this impedance. Figure 1 shows the circuit of a suitable driver. The NE5532 series of OP amps can happily drive 200 ohm loads and when running from a 12V rail can deliver a 10V peak to peak waveform. The potential divider values shown reduce this to the correct level and maintain a 50 ohm source impedance for the mixer. Overall gain from input to output is around unity, meaning that typical 0.5V maximum RMS drive from a PC soundcard will drive the mixers to their limit.

There is a roll off below about 8Hz which in practice generates a small notch in the middle of the passband, and does prevent pure carrier with zero offset from the RF being generated. While it would be possible to use a DC coupled drive amp, this is only useful if the source goes down to DC. In practice, drive waveforms can be arranged to no actual DC term is ever needed. For plain carrier testing, a separate DC feed to the mixer diodes can be switched in.



JT4 can be generated using audio tones of -472, -157, +157 and +472Hz from the audio DDS. Negative frequency values programmed in automatically swap the I/Q phase so the conversion sideband is shifted. The JT4 controller software has been adapted to cope with sending negative values to a DDS.

Conclusions

Image rejection is dependent on phase and amplitude matching of the drive signal, which is not an issue with DSP derived waveforms. The biggest error is in the mixer diodes themselves. If image rejection is very poor, some amplitude trimming (gain change) between the two channels ought to improve things, phase trimming may also help. All SDR packages allow this to be made in software, although it is nicer to trim the actual gain in the hardware to match the mixers. My breadboard managed typically 15dB rejection without trimming.

While this may not sound very good, it is actually not very important with baseband upconversion.. The whole point of this technique is that the unwanted sideband lies on top of the wanted one and occupies no extra spectral space. A -15dB interference on top of the wanted signal is rarely important.

At 24GHz generating multi-FSK modes like JT4 or JT65 using either Fract-N synthesizers or the RDDS (at least with a 32 bit DDS architecture) is beset by tone accuracy problems. This technique using upconversion allows precise audio tone changes to be translated. RF drive, which for the Alcatel boxes needs to be at Fout/4, i.e. around 6GHz, can come from a Fract-N synthesizer to allow continuous tuning. There are several such units around now that will run at 6GHz directly (using an external VCO) or even internal VCO ones at 3GHz to be followed by a doubler. For fixed frequency operation, an integer N synth like the LTC6946-4 will generate 6GHz directly.

Andy Talbot G4JNT

Wanted

John Hazell G8ACE

I'm looking for a white plastic Nortel/Nurad 30cm Dish either waveguide 20 or 22 sold at the Martlesham RT a few years back. These also had a label saying *Broadband Wireless Access made in Canada*.

Please email me at hazellje@gmail.com if you can help.

Gordon Reason

Info for a :

Watkins Johnson , 6 to 18 GHz Yig osc .

Type 5810 – 301F DEMO

Circular , 8 connections numbered 1 to 8 , 7 being a ground .Pins 1 , and 3 linked together , and pins 6 and 8 linked .

Output , sma female .

Also Wanted: Trophies Manager

Dave Powis G4HUP retired as Trophies manager at the AGM and we thank him for all his work in discharging this task. We now need a replacement.

Please contact the Chairman or Secretary if you would like to help with this duty.

G3VVB Trophy

I have the great pleasure of informing Members that John Hazell G8ACE has been awarded the G3VVB Trophy this year for his 134GHz system. The Trophy is being engraved and the most appropriate event at which to present the Trophy will be decided shortly.

Congratulations, John!

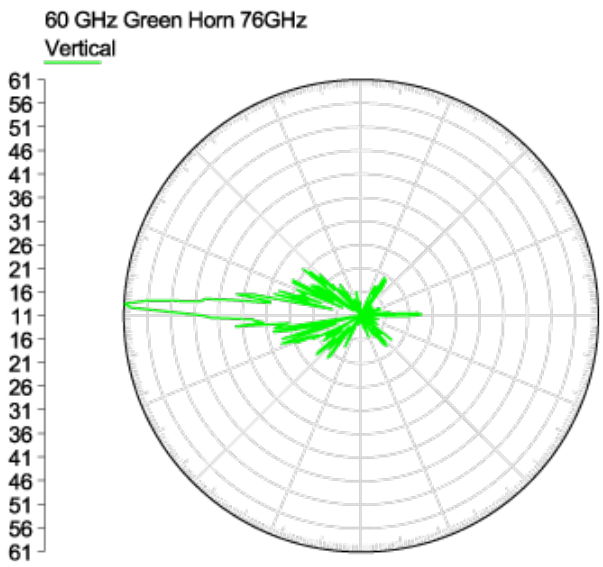
73 Bob G8DTF
Chairman, UK Microwave Group

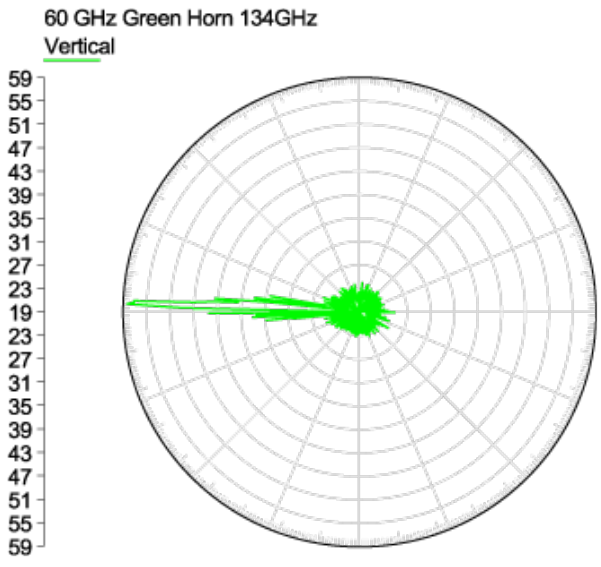
This month I 'ave mostly been building…

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

Roger Ray G8CUB

Having a further look at the 60GHz green horns, that have been most popular at 76GHz, and are now being used by G8ACE at 134GHz. I decided to make a polar plot of the antenna pattern at both frequencies. The rotator uses a stepper motor with steps down to 0.1 degree possible. Getting the LO feed to the harmonic mixer was a challenge, however it seemed to work OK. The off-axis peak, was not the horn squinting, just my bad alignment.





Activity News : September 2015

By Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

This month there are some reports of activity in the UKACs and Microwave Group Contests.

23cm UKAC

From Bob G8DTF IO83

This month I worked 16 stations in IO83 – a pretty good level of local activity. The stations were 2E0BMO, G4NTY, G8PEF/P, G3TDH, GW8ASD, G8XVJ, GW8REQ/P, G4HGI, G6GVI, G1SWH, G3UVR, G8HXE/P, G4AQB, G4HYG/P, GW4IGF/P and G4JLG.

Conditions seemed quite poor with lots of QSB on more distant stations. I worked the following stations outside of IO83 square. G4BVE/P (IO82), M1DDD/P (IO93), M0COP/P (IO82), G4BRK (IO91), GM4CXM (IO75), G8EOP (IO93), G8BUN (IO93), G3VKV (IO81), G8CUL (IO91), G3TCU/P (IO91), G8DOH (IO92), GD8EXI (IO74), G4NBS (JO02) and G4KIY (IO92).

SHF UKAC

From Bob G8DTF IO83

Conditions seemed very poor indeed on 13 cm. This month I worked 5 stations in IO83 – G3UVR, G4MVU, G4JLG/P, GW8ASD and G8PEF/P.

Other stations worked were G8EOP (IO93), G3VKV (IO93), G4BRK (IO91), G8SFI/P (IO93), G8CUL (IO91), G0MJW (IO91), M0GHZ (IO81), M0UFC/P (IO93) and very surprisingly G8PNN (IO95). I tried with Ray GM4CXM, but conditions were so poor it would not go.

On 9cm I still have a very deaf system. I managed to work G4JLG/P (IO83), G4MVU (IO83) and M0UFC/P (IO93). I did try with Martyn G3UKV and I could just hear his CW, but no QSO.

From John G8PEF IO83

Worked something on all 5 bands, although I missed the Wiltshire DX on 3.4GHz, because I was 'busy' on 6m.

The 10GHz kit worked to Denis G3UVR on the Wirral (although I did have a bit of trouble with my contact with Mark M0UFC/P in IO93AK - not sure what that was all about).

5.7/10GHz Contest

From Peter G1DFL IO91

An enjoyable Sunday afternoon and wonderful weather up on the Chiltern Ridge. First location was Christmas Common just west of the M40 gap, a North-facing sloping field complete with sheep and twitchers. First in the log was G0LGS/P Stewart on Cleeve Hill, then after several attempts I finally worked Martyn G3ZME/P on Brown Clee Hill for ODX of 147km, after correcting my offset dish elevation which somehow had gone wonky! I then roved to a second site further east near Lacey Green Windmill in Buckinghamshire, which was much better to the west. Here I managed to utilise a gate post next to another field full of sheep (see photo of my 3cm basic lash-up 60cm offset and 0.2W, I must get my tripod operational). A call on 144.175MHz raised G0LGS/P again, this time with end-stop signals both ways at 90km on 3cm. Apologies to Stewart my battery volts were dropping so the audio was a bit distorted. Mobile phone and 2M talkback worked much better than ON4KST due to poor Wi-Fi at both sites. I noted

that a separate 2M SSB talk-back radio for next time would have been most useful, as well as a small beam. Sorry to those that tried me including G8CUB/P, M0DTS/P, G4LDR and 2E0NEY - I hope to work you all next time.

Peter G1DFL/P Lacey Green Windmill IO91MP looking West

From Roger G8CUB IO91

For the 5.7/10GHz contest, I went back to the same spot at Hackpen IO91CL as for the last 24/47G contest. Friday had been difficult as the new 10W PA drew too much current, and was causing the PSU to shut down. So the 5W PA was quickly reinstalled. The 9.30 start ended up being 1.00pm as I spent a difficult morning trying to fix my son's house electrics.

So I was very pleased to make 15 contacts on 10GHz in 4 hours. Best DX was Nick G4KUX at 353km. It was good to work other home stations G4BAO, G3VKV, G4LDR and G4ALY. M0DTS/P was a good signal at over 300km. Conditions appeared fairly flat, attempts with French stations failed. However the weather was great, and the grand-children enjoyed kite flying nearby.

24/47/76GHz Contest

From Roger G8CUB IO91

For the 24 & 47GHz contest on the 13th July, I travelled to Hackpen IO91CL12. This time going down the track South of the car park. Chris G0FDZ arrived at about the same time.

Keith GW3TKH/P IO81LS was first worked on 24GHz a huge signal, then on 47GHz 59/57.

Other contacts on 24GHz were with Brian G4NNS, G4LDR/P, and then with Neil again at a different site at Hinton Prava. Chris and I hand carried my 24GHZ system to the trig point, to try and work Tony G4CBW, but without any luck. Rain in some areas had reduced activity, but the 76GHz contacts made up for that.

From Keith GW3TKH IO81

For the 24/47GHz contest on the 13th September, I also took along a 76GHz loan system belonging to G8CUB, to Cefn y Galchen, IO81LS.

In a later brief gap in the rain, I managed to work GW4DGU/P on 24GHz for my

first GW contact on 24GHz, a momentous day!

Other 76GHz Activity

From Roger G8CUB IO91

Keith had with him my old 76GHz system, so with Chris's help I set my 76GHz on a slightly wobbly tripod.

I found the signal from Keith in the first minute of looking, within 20kHz of the nominal 75.979,8. Knowing where to look helped greatly. I transmitted 100kHz below that, so that Keith's receiver was not swamped by his beacon. We exchanged 539/519 to complete Keith's first 2 way 76GHz contact at 94km! His TX was 20mW from an injection-locked Gunn diode, RX sub-harmonic mixer. My TX was 90mW, with RX using a pre-amp into a fundamental mixer.

Turning the 76G antennas further south, we then worked Neil G4LDR/P IO81XW on FM 59/59. Neil was using the clubs 76GHz loan system, and that was his first contact at 28km.

Roger with 76GHz transverter working G4LDR/P

From Keith GW3TKH IO81

Roger also had 76GHz with him at Hackpen, IO91CL. After the 24 & 47GHz contest exchanges, we made a successful 76GHz CW contact, 519/539, over a distance of 94km, my first two way contact on the band.

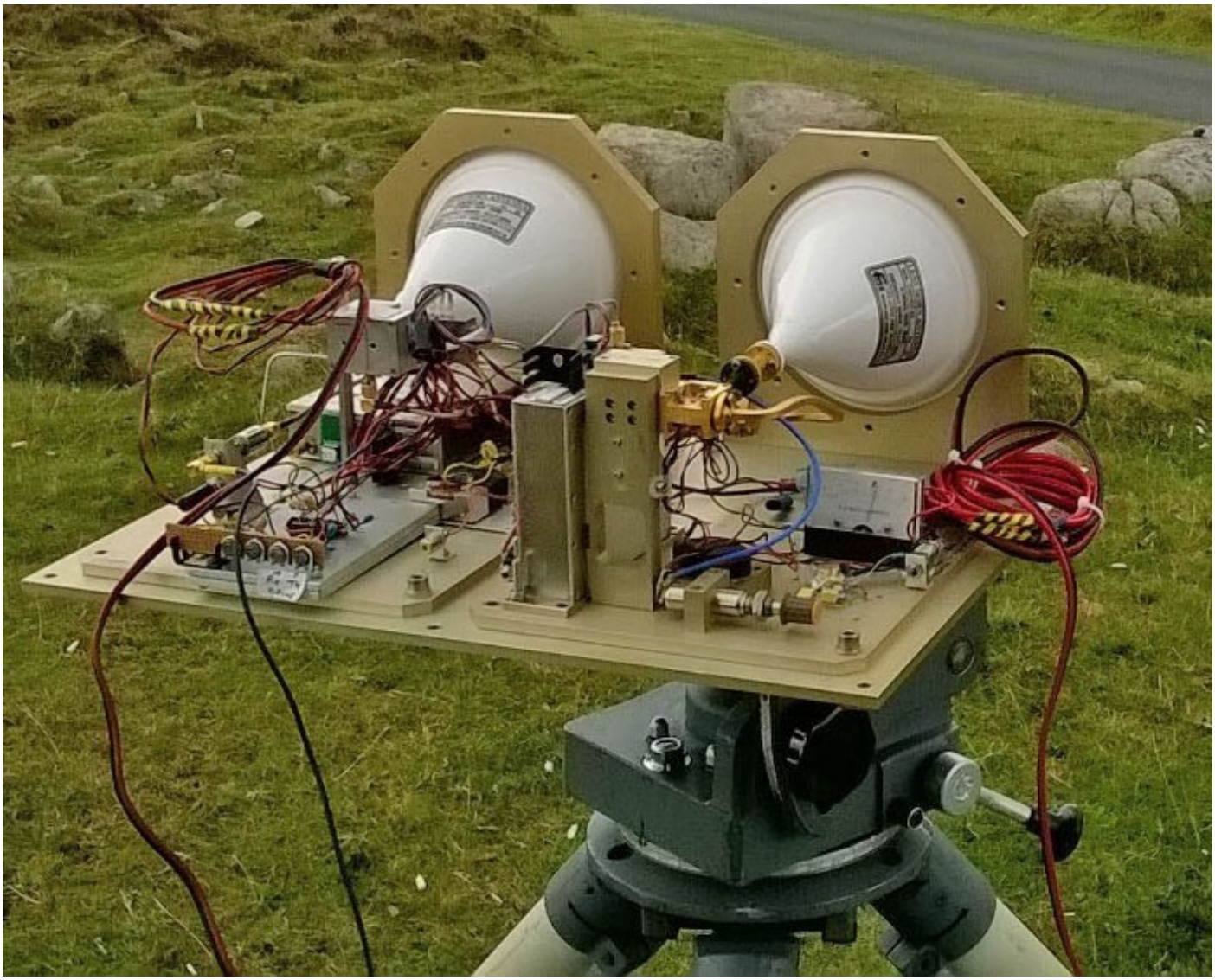
Within 10 minutes the rain started, ending the contest for me, and a proposed 76GHz test with G4LDR/P.

...and finally

I want to encourage you get on the air as often as possible and report your activity to clearly document use of the amateur microwave bands. This means not just DX and EME, but also local activity with ATV, low power or WB equipment. Please send your reports to Scatterpoint@microwavers.org, remember the deadline is the 1st of the month.

73 Bob Price G8DTF

76GHz loan system belonging to G8CUB at Cefn y Galchen, IO81LS



Detail: 76GHz loan system belonging to G8CUB

Contest Results

John G3XDY, UKuG Contest Manager

August 5.7GHz Contest 2015

Much better activity levels were in evidence for this event, with Ian G8KQW/P appearing from the South Downs in Sussex to take the top spot again, with Neil G4LDR in second place. Once again French stations provided some DX interest for the early birds in the contest.

5.7GHz Contest August 2015 - Results						
Pos	**Callsign**	**Locator**	**QSOs**	**Score**	**ODX Call**	**ODX km**
1	G8KQW/P	IO90WV	14	2851	F1HNF/P	427
2	G4LDR	IO91EC	11	1630	F6APE	424
3	G3ZME/P	IO82QL	10	1465	G3XDY	265
4	2E0NEY	IO81VK	10	1158	G3XDY	246
5	G4BRK	IO91HP	8	930	G4ALY	237
6	GW3TKH/P	IO81LS	6	744	G8KQW/P	225
7	M0HNA/P	IO91GI	8	724	G4ALY	216
8	G3VKV	IO81XV	4	332	G4CBW	131

August 10GHz Contest 2015

Activity levels were good for this event, with a wide spread of activity around the UK and some reasonable DX worked, with fair weather for most.

Ian G8KQW/P takes the top spot in the Open section , with Neil G4LDR in the runner up slot. In the restricted category it is good to see an Intermediate licencee in top spot, in the form of Pete 2E0NEY. Stewart G0LGS/P takes the runner up position on this occasion.

10GHz Contest August 2015						
Open Section						
Pos	**Callsign**	**Locator**	**QSOs**	**Score**	**ODX Call**	**ODX km**
1	G8KQW/P	IO90WV	27	5941	G0EHV/P	499
2	G4LDR	IO91EC	23	4789	G0EHV/P	460
3	G4KUX	IO94BP	12	3503	F6DKW	712
4	G3ZME/P	IO82QL	18	3066	G0EHV/P	309
5	G0EHV/P	IO85XF	10	2722	G8KQW/P	499
6	G3VKV	IO81XV	10	1115	G4KUX	307
7	GW3TKH/P	IO81LS	6	744	G8KQW/P	225
8	G8CUB/P	JO01DH	3	506	F6DKW	315
Restricted Section						
Pos	**Callsign**	**Locator**	**QSOs**	**Score**	**ODX Call**	**ODX km**
1	2E0NEY	IO81VK	14	2352	F6DKW	433
2	G0LGS/P	IO81XW	14	2125	G4KUX	302
3	G0PEB/P	IO90JO	9	1209	ON5TA	394
4	M0HNA/P	IO91GI	12	1159	G4ALY	216
5	GM8OTI/P	IO86JF	4	461	G4KUX	196
6	G6MXL/P	IO80WP	1	65	G0PEB/P	65
Checklog received with thanks from GW4DGU/P						

24GHz Contest September 2015

This was the concluding event in this series of four contests, with lower participation this time. The winner was Keith GW3TKH/P, with Neil G4LDR/P in the runner-up position.

The overall winner of the series receives the G0RRJ Memorial Trophy, and with three wins in the events he entered this goes to Ian Lamb G8KQW/P. Runner up overall is Keith GW3TKH/P. Congratulations to both stations.

A checklog was gratefully received from GW4DGU/P.

24GHz Contest September 2015

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	GW3TKH/P	IO81LS	4	372	GW4DGU/P	97
2	G4LDR/P	IO81XG	7	331	GW3TKH/P	89
3	G8CUB/P	IO91CL	4	196	GW3TKH/P	93
4	G0FDZ/P	IO91CL	4	196	GW3TKH/P	93

47GHz Contest September 2015

Just two entrants took part in this event, and as they just worked each other it is honours even for Keith GW3TKH/P and Roger G8CUB/P.

The overall winner of the series receives the 47GHz Trophy, and with two wins and one runner up slot in three events, this goes to Ian Lamb G8KQW/P. Runner up overall is Roger G8CUB/P. The overall table will be published in Scatterpoint. Congratulations to them both.

47GHz Contest September 2015

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G8CUB/P	IO91CL	1	93	GW3TKH/P	93
2	GW3TKH/P	IO81LS	1	93	G8CUB/P	93

24/47GHz Championship Tables

Final Positions, the best three count to the overall total

24GHz

Pos	Callsign	6/21/15	7/19/15	8/16/15	9/13/15	TOTAL
1	G8KQW/P	1000	1000	1000		3000
2	GW3TKH/P	945		480	1000	2425
3	G4LDR/P		319	578	890	1787
4	G8CUB/P	576	229	272	527	1375
5	G0FDZ/P		229		527	756
6	G4NNS/P		609			609
7	G8ACE/P		149	458		607
8	G3ZME/P	193	359	604		552
9	GM4BYF/P			316		316
10	GM0USI/P			143		143
11	GM8BJF			136		136
12	G3UKV	133				133

47GHz

Pos	Callsign	6/21/15	7/19/15	8/16/15	9/13/15	TOTAL
1	G8KQW/P	956	1000	1000		2956
2	G8CUB/P	891	420		1000	2311
3	GW3TKH/P	1000		389	1000	1389
4	G8ACE/P		433	226		659
5	GW4HQX/P			389		389

5.7/10GHz Championship Tables

Positions after four events, the best three count to the overall total

5.7GHz

Pos	Callsign	31/05/15	6/28/15	7/26/15	8/30/15	TOTAL
1	G8KQW/P		1000	1000	1000	3000
2	G4LDR	784	773	526	572	2129
3	G3ZME/P	1000			514	1514
4	M0HNA/P	736	350		254	1340
5	GW3TKH/P		223		261	484
6	G3VKV		241	107	116	464
7	2E0NEY				406	406
8	G4BRK				326	326
9	GJ4HQX/P			168		168

10GHz Open

Pos	Callsign	5/31/15	6/28/15	7/26/15	8/30/15	TOTAL
1	G8KQW/P		1000	1000	1000	3000
2	G4LDR	1000	603	711	806	2409
3	G4KUX	382	0	531	590	1503
4	G3ZME/P	355	0		516	871
5	G0EHV/P			281	458	739
6	GW3TKH/P	117	361		125	603
7	G8CUB/P		487		85	572
8	G4BAO		546			546
9	G3UKV	225	0	250		475
10	G3VKV	130	102	111	188	429

10GHz Restricted

Pos	Callsign	5/31/15	6/28/15	7/26/15	8/30/15	TOTAL
1	G0LGS/P		1000		903	1903
2	M0HNA/P	1000			493	1493
3	G0PEB/P		751		514	1265
4	2E0NEY				1000	1000
5	GM8OTI/P				196	196
6	G6MXL/P				28	28
7	G1DFL/P			0		0

Scottish Microwave Round Table

Saturday 7 November

GMRT 2015 - registration now open

http://www.gmroundtable.org.uk/

We now have both the event venue (Museum of Communication, Burntisland) and the venue for the evening dinner (the Kingswood Hotel) finalised, so can confirm the date of the GM Round Table is Saturday 7 November.

Details of the programme will follow in due course. As before it will include the GM round of the UK Microwave Group Projects Trophy, so get that project completed before November - built, modified, hardware or software.

Places will be limited to about 50 as usual, and booking will be available through this website later in the year.

Announcements will also appear on the ukmicrowaves Yahoo reflector.

The registration forms for GMRT 2015 on Saturday 7 November are now open. Follow the links in the right hand menu on the website.

We are sorry that the process is complicated as last year; hopefully next time we will have found a better registration add-on to handle the bookings.

Key points:

- please give your forename, surname **and callsign** in the "name" box
- if you want to register for dinner, you need to register on both forms
- if you want to register your XYL (or OM) for dinner then you need to do a separate registration (use their name, but you can use the same email as for your own registration)

The system should send you an email confirming your registration.

The dinner menu and meal price are now confirmed (see the website).

Please remember that you need to do bookings for both the event and the dinner if you intend to be at both.

UKuG Microwave Contest Calendar 2015

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

www.microwavers.org/?contesting.htm

Events calendar

2015

Oct 9–11	RSGB Convention	rsgb.org/convention/
Oct 15–18	Microwave Update, San Diego	www.microwaveupdate.org/
Nov 7	Scottish Round Table	www.gmroundtable.org.uk/

2016

Jan 23	Heelweg	www.pamicrowaves.nl/
Feb 13	Tagung Dorsten	www.ghz-tagung.de/
Apr 9	CJ-2016, Seigy	cj.ref-union.org/
Apr 16–17	Martlesham Microwave Round Table & UKμG AGM	
Apr 23	RSGB AGM, Scotland	rsgb.org/agm
May 20 – 22	Hamvention, Dayton	www.hamvention.org/
Jun 24 – 26	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Aug 19–21	EME2016, Venice	www.eme2016.org/
Oct 3 – 7	European Microwave Week, London	www.eumweek.com/
Oct 7 – 9	RSGB Convention	rsgb.org/convention/

2017

Jun 23 – 25	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Oct 7 – 8	RSGB Convention	rsgb.org/convention/
Oct 8 – 13	European Microwave Week, Nurembourg	www.eumweek.com/

Loan Equipment

Don't forget, UKµG has loan kit in the form of portable transceivers available to members for use on the following bands:

5.7GHz **10GHz** **76GHz**

Contact John G4BAO for more information.