An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

Formerly the RSGB Microwave Newsletter and now published by the UK Microwave Group

2005 SEPTEMBER

GW8KQW/P and GW3FYX/P put the Blorenge (IO81LS) on the 24GHz/47GHz map during the August UKuG millimetre bands contest ... See reports in this issue's Activity News section

In this issue ...

Latest News ...

- **World 47GHz record shattered by USA microwavers**
- **125 miles on 2.4GHz WiFi !**
- **ZLs set new national 24GHz DX record**
- **UK Microwave Group AGM on November 13**

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

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From the Editor's Desk

Many thanks to our contributors this month. Most of them didn't know that they would be in this issue as their material has been pulled from the public domain of the various internet reflectors, especially our own UK Microwave one. The reason for this is that, other than activity reports, very little new material for Scatterpoint has reached the editor's desktop! As for all amateur publications **we rely entirely on articles submitted by our readers**, so please put pen to paper or fingers to keyboard and let me have details of your latest microwave project, problem, experiences or what have you! While you won't receive payment you will certainly see your name in print and become known in over 20 countries around the world (UKuG membership really does extend that far).

The summer contest season will be over by the time the next edition of Scatterpoint reaches you. Then will be the time to reflect on the important issues that have arisen this year ... eg the use and value of the KST chat room in contests, the contest programme and grouping of bands, contest awards and your own activity. Please try to get to the Martlesham Microwave Round Table in mid November as it will there that decisions will be made!

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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.

CRAWLEY ROUND TABLE NOTICE
Due an oversight, the original date for this event was found to clash with a UKuG Cumulative Contest. As result, the meeting will now be held on Sunday, 25 September 2005.
All previous details, other than the date, remain as before.

HAVE YOU RENEWED YOUR UKuG SUBSCRIPTION YET? YOU CAN CHECK THE RENEWAL DATE ON YOUR ENVELOPE ADDRESS LABEL IF YOU RECEIVE A PRINTED SCATTERPOINT. THE DATE IS ON THE LOWER RIGHT CORNER OF THE LABEL. IF YOU STILL DON'T KNOW YOUR RENEWAL DATE PLEASE EMAIL THE SECRETARY, G0CZD, AS SOON AS POSSIBLE!

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

UK MICROWAVE GROUP
ANNUAL GENERAL MEETING

Sunday 13 November 2005

Notice is hereby given that the Annual General Meeting of the UK Microwave Group will be held at 10am on Sunday, 13th November 2005 as part of the **Martlesham Microwave Round Table** event which takes place over that weekend.

The AGM will include the election of the committee for the year 2005-6. Anyone wishing to stand for election should contact the UKuG Secretary (see page 2 of this newsletter) as soon as possible and provide the names of two UKuG members who are willing to second his application. All committee positions are available but many of the present committee members may also choose to stand for re-election. **The present Secretary,G0CZD, has indicated that he wishes to stand down in** November to pursue his degree studies, so his job will be vacant and we would like to hear from any-one willing to take it on. It is a very busy and most vital UKuG committee job! **Sam, G4DDK** is also looking to stand down as a committee member. Several of the Committee members have taken on specific responsibilities such as public relations, trophies, contest manager, newsletter editor, etc. If you have a particular expertise to offer we would very much like to hear from you!

The present committee (2004-5) is as follows:

Chairman: Peter Day, G3PHO (and UKuG rep on the RSGB Spectrum Forum)
Secretary: Martyn Kinder, G0CZD
Treasurer: Steve Davies, G4KNZ
Scatterpoint Editor: Peter Day, G3PHO

Ordinary members:

Sam Jewell, G4DDK (Radcom Microwave Columnist)
David Wrigley, G6GXK
David Powys, G4HUP (Trophies)
Paul Marsh, M0EYT (Publicity and Beginners CD)
Murray Niman, G6JYB (Webmaster and UKuG Spectrum Forum microwave rep.)
Simon Lewis, GM4PLM
Kent Britain, WA5VJB (USA liaison)
Mike Dixon, G3PRF (corresponding member/RSGB Microwave Manager and member of the RSGB Spectrum Forum

The AGM will receive the annual reports prepared by the Chairman, Secretary and Treasurer. These will also be published in Scatterpoint as soon as possible after the AGM so that **every** UKuG member will be able to read them.

For further information about the Martlesham Microwave Round Table, please check the UKuG website **www.microwavers.org** and follow the link to 2005 events. There is a link from there to the official Martlesham Amateur Radio Society website at which you can register for the weekend's event and obtain information about hotel accommodation and the two day programme.

The Ofcom-commissioned report into possible interference of Ultra Wide Band (UWB) on Broadband Fixed Wireless Access (BFWA)

This report is now available at:
http://www.ofcom.org.uk/research/technology/cet/uwb/background_uwb_rpt/

Summary of Economic Evaluation:
http://www.ofcom.org.uk/research/technology/cet/uwb/background_uwb_rpt/summary_uwb

Technical Evaluation:
http://www.ofcom.org.uk/research/technology/cet/uwb/background_uwb_rpt/tech_evaluation

Radio Amateurs have, of course, been arguing that UWB would cause unacceptable degradation to the noise floor which would adversely affect weak signal working. I was glad to see the report acknowledges the considerable harm that UWB would cause to the comparatively strong signal BFWA services.

While "detect & avoid" would be an improvement on current proposals, restricting operation to above 6GHz should be the preferred solution. Although the report says that no chipsets are currently being designed for 6GHz+, this is incorrect .... they are available. In fact chipsets for 6GHz+ will be available in a far shorter timescale than the 5 years the report envisages.

73 from Trevor M5AKA

Daily Amateur Radio RSS News Service: http://www.southgatearc.org/
Add News Service to your Website: http://www.southgatearc.org/rss/index.htm
Add News Service to your PC: http://www.southgatearc.org/rss/newsreader.htm
Upload Your News Items: http://www.southgatearc.org/news/your_news.htm

New website created for South Coast Repeaters & Beacons

Following extensive work by Paul, M0EYT, during his recent "holiday", the South Coast Repeater & Beacon Group (SCRBG) has now established a website. Paul has managed to obtain space on the host server in exchange for setting up one of the new VoIP companies - the thing works quite fast and is based in a secure Central London location. It has fibre and SAT linking at 100Mb/sec so it should be adequate.

Anyone interested in learning about the Group's activities can view the contents at **www.SCRBG.org** . There are interactive areas and live beacon telemetry graphs , pictures and descriptions of the kit etc.

The site is intended to become a major reference deposit for microwave activities and will eventually link to all known similar sites. To this end, submissions are welcomed via the site as are reception reports and technical feedback. It is even possible to donate towards the ongoing upkeep on-line .

You will have noticed that Ralph G4ALY has already copied rain-assisted RTTY from the 10GHz beacon and such observations will form part of the ongoing investigations into non-CW modes.

73 from John, G0API

FT290 Mk 1 Fault ...

by Chris, G8BKE

A lot of microwavers use the FT290 Mk1 as a tuneable IF and thus might find this experience useful.

A recent fault manifested itself on my pretty aged 290. Pressing the PTT made the usual audible "click" but produced no red TX LED and no RF output.

Investigations showed that the relay contacts on the relay, at the rear of the unit, on the top PCB were dirty. You can carefully prise off the clear plastic cover and remove it. Then a squirt of contact cleaner into the relay seems to clear the problem. The relay cover can then be replaced to keep the contacts clean.

73 from Chris, G8BKE

From Paul, G8ILO, comes this follow up:
I had the very same problem but unfortunately the cleaning of the relay contacts only lasted a short time. Rapid Electronics, (http:www.rapidelectronics.co.uk/) do a relay of the same footprint (I don't remember the coil details) which I replaced mine with and all is well.

Items for Sale

I have decided to dispose of two further tripods.

The first is a substantial wooden tripod originally used with a theodolite or some similar surveying instrument. It has extending hardwood legs and a large diameter male thread for attachment of the 'payload'. I'm asking **£12.50** o.n.o for this one.

The second is not as substantial as the first but is still quite robust. I'd say it was probably intended to support a large wood & bellows plate camera. It has wooden legs and a ball & socket fitting on the top. Some of the metal parts of this one are aluminium alloy in contact with brass and there is some bimetal corrosion so it needs a bit of a fettle. Asking price for this one, **£8.00 ono**.

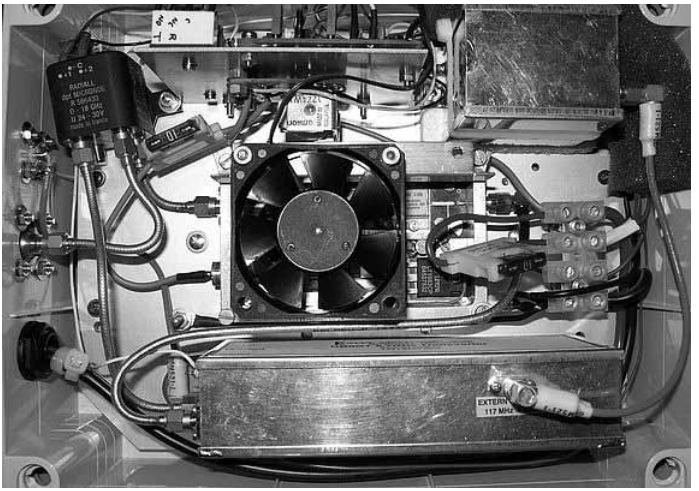
Both items are 'buyer collects'. I'm in Petersfield, in the shadow of Butser.

I also have for disposal one of the aluminium alloy fighter-aircraft nose-radar dishes, sold by AH Supplies some years ago. This is in good condition, not used by me but stored indoors since I bought it. **Sensible offers please and buyer collects**.

G8ZKZ, Peter Weedon
<Pete.weedon@ntlworld.com>

Pictured right is the latest version of M0EYT's 5.7GHz transverter. The original was described in last month's Scatterpoint. The essential differences shown in this photograph are the additional of a cooling fan for the new PA shown beneath it. The last paragraph of Paul's previous article mentions the PA design.

With this improved gear he put out a pretty convincing signal in the recent 5.7GHz cumulatives



Microwave Update 2005: Technical Workshops and Things to Do

CERRITOS, Calif., August 25, 2005 — The San Bernardino Microwave Society (SBMS) and the Western States Weak Signal Society (WSWSS) announce their preliminary listing of Technical Workshops and Sessions for Microwave Update (MUD) 2005, from Thursday, October 27 to Sunday, October 30, 2005 at the Sheraton Cerritos Hotel, less than 10 miles north of Disneyland.

In addition to technical seminars, **microwave-specific electronics sellers** such as Down East Microwave will be open for business at the event. Donations for door prizes or items for the raffle for the various auctions will be greatly appreciated. **Please contact Dave Glawson, WA6CGR, via e-mail at wa6cgr@ham-radio.com**.

Thursday October 27:

- **Goldstone Deep Space Tracking Complex tour** . You MUST pre-register for this exclusive MUD-only event: Deadline is September 30. N on-US citizens will be provided additional information regarding the Goldstone tour. Register immediately .... a limited number of tickets is available.
- **An informal Surplus Tour** will also run on Thursday. Meanwhile, YLs and XYLs can participate in various Ladies Activities, including tours, outlet mall shopping and coffee gatherings. Pre-registration is required for most of the Ladies activities, so register immediately.

Friday October 28:

- **Technical forums and presentations**. World-renowned microwave hams will present a wide range of topics from the latest EME experiments and getting operational on the upper microwave bands to practical solutions and scrounging surplus parts for microwave band rigs. In the evening, we will have a microwave swap and trade meet indoors.

Saturday October 29:

- **The WSWSS yearly meeting** will begin in the morning , and technical talks continue, with t he MUD Banquet in the evening. Dr. Bill Weber N6CI, Director of Interplanetary Network NASA/JPL, will present "Solar System QRP with NASA's Deep Space Network."
- The world famous "**TRW" Swap Meet** occurs early Saturday morning. Since you are in the neighbourhood, you may want to stop by to see what the buzz is all about.

Sunday October 30:

- **The MUD 2005 Antenna Measurement Session** will cover the amateur microwave bands from 1296MHz to 47GHz. The swap meet moves outdoors near the antenna range.

Receiver Noise Figure and LNA Measurements Clinics will be performed from 902MHz to 47GHz and a **Network Analyzer/Spectrum Analyzer Workshop** will be held during the conference.

Special hotel rates are available to MUD 2005 attendees. Be sure to mention the Microwave Update 2005 when making hotel reservations.

In addition to special rates at the host hotel, effective immediately, and until September 30, 2005, the Conference Fee for MUD 2005 is US $40. The fee includes an entry to a special pre-registration drawing as well as one copy of the MUD 2005 Proceedings, valued at US $20. After September 30, the fee is US $45, and US $50 at the door. **We now accept registration funds via PayPal for your convenience**. Note: There is a $5 fee for paying with PayPal.

Go to **http://www.microwaveupdate.org or http://www.ham-radio.com/sbms/mud-2005/** for more details and registration forms.

About the SBMS

The San Bernardino Microwave Society (SBMS), founded in 1955, is a non-profit technical organization and Amateur Radio club and dedicated to the advancement of communications above 1,000MHz. Meetings are held the first Thursday of each month in Corona, Calif. For more SBMS information, go to http://www.ham-radio.com/sbms/

About the WSWSS

The Western States Weak Signal Society (WSWSS) promotes the use of weak-signal Amateur Radio communications above 50MHz. The WSWSS participates in all band planning activities and supports ARRL band plans for weak signal segments of the VHF bands. For more WSWSS information, go to http://www.wswss.org/

CRYSTAL OSCILLATORS

~ Some ongoing discussion from the UKuG Microwave Reflector~

Kevin Murphy, ZL1UJG, <zl1ujg@yahoo.co.nz> posted the following on the UK Microwave Group internet reflector. It started off a most interest discussion as emails went back and forth over several days .....

I am working on some crystal oscillators for beacons. I have a G4DDK004 oscillator and also some Minikits EME65 PCB's, which both use the 2 transistor Butler crystal oscillator. I have looked at the DC across the V (base-emitter) on the 2 transistors (using a 10k resistor to isolate RF from the digital voltmeter and they both are below 0.5 Volts. (below 0.3 Volts in some cases). The voltage (b-e) on the transistors should be 0.6 to 0.7V so that constant source and load terminations are seen by the crystal. I remedied this by putting two 1N4148s across the tuned circuit, which gave 0.58 to 0.7V across each transistor base emitter, with minimal drop in harmonic output.

I added a choke across the crystal to cancel out the stray capacitance of the crystal holder (5 to 7 pF). I additionally raised the impedance of the 1st transistor, by putting a small resistor in series with the base (~ 30 ohms SMD) Measurements indicate that this raises the RF level and should increase the carrier noise, although it will degrade crystal operating Q. I used a resistive 20dB probe to make some comparative level measurements.

Although the oscillators should run off a low noise regulator, these ones are run off a bench PSU. The complete oscillator will be run off a heavily filtered 7808 regulator, with the 2 transistor oscillator being run off an active finesse filter. (see www.wenzel.com). I measured the wideband noise and this measures around -160 dB below the carrier (referred back to the crystal oscillator frequency). (The instrument appears to have some margin left. (I can see the roll off of the wide-band noise, due to a pipe cap filter used in a 13 cm LO output.)

I looked at the G8ACE website and the wideband noise floor of his oscillator, referred back to the crystal frequency, appears to be of the same order. Then I came across this link:

http://www.nitehawk.com/sm5bsz/linuxdsp/hware/lotest.htm

I understand what is being said and tried a 1uH in series with the emitter resistor of the 1st transistor of the Butler 2 transistor oscillator and, hello! ....I measured no difference!
The comments indicate that the KD6OZH oscillator is really good (-178dBc for wideband noise) (-172dBc in the original article).

Have I missed something? Should I try a FET as the 1st device, since it apparently has less noise? Is the noise generated by the BFS17 (which I have used for the 2 oscillator transistors) that much higher?

Why is the G8ACE oscillator apparently not as good as the KD6OZH oscillator? Instrument limitations? Is there another noise source in the oscillators? I know that PSU noise from 78## and 78L## regulators is an issue. I notice that these 2 transistor Butler oscillators, have an extraordinary tuning range, pulling the output frequency +/- many 10s of kHz on the 13cm band, before the crystal oscillator stops. Is this normal? I expect the FET/bipolar version from G8ACE, would have less tuning range as the overall gain in the oscillator circuit is less but is the sensitivity to tuning similar?

I know there are probably better oscillators, but I haven't seen any schematics/circuits.
It has been an interesting exercise taking measurements and learning a little more about oscillators.

Comments and discussion please! Kevin ZL1UJG

Following Kevin's post, the following replies were received.....

From SAM JEWELL, G4DDK, <jewell@btinternet.com>
KD6OZH states in his QEX article that it is important to achieve and retain low noise figure and high linearity in the second stage of the oscillator to obtain the very low noise performance he claims. The use of a cascode second stage can sometimes make this difficult to achieve because the available supply volts is shared between the two devices in series, which might lead to less than optimum performance. My experience is that you need to use a transformer coupled output or a tuned output although the use of low voltage silicon/germanium devices in the cascode might also work.

From John Hazell, G8ACE: The importance of Crystal Temperature Control
The debate on oscillator stability has to date been centred around the Q of the crystal and other parameters of the RF circuit used. Crystals are unstable with temperature and this stability aspect needs addressing just as carefully as the RF electronics. The following comments relate to AT cut overtone crystals as commonly used in microwave equipments. The cutting angle of the quartz controls the knee point. That is the operating point at which the frequency shift is least with temperature change. Common cut angles give knee points of 25C, 40C and 60C although since the angle is so critical some variation from the expected point will be found. 25C is satisfactory for low frequency equipment with little internal heating and has the advantage that the knee slope angle is shallow with temperature changes. 40C is useful for clip heaters but if the equipment temperature rises above the clip temperature then the stability is lost. 60C ensures that for the majority of the time the crystal is above the influence of ambient temperature changes within the equipment. In the G8ACE MKII OCXO part of the setup procedure is to explore for the knee point during the alignment. This is for two reasons: firstly, suppliers do not necessarily supply what is required and prefer their own spec of quoting stability in ppm over a given temperature range. Most cut angles will easily fit into this spec.

It is most important when ordering a crystal to quote for OCXO use and the required turnover point. Secondly, as mentioned above, the precision required for the cutting angle leads to some variation anyway in the actual knee point and only by individual oven adjustment will this point be found with certainty. A guide to the enormity of the frequency change with temperature is that a commonly used 106.5 MHz/60C crystal will move some 800Hz during the heating phase, starting from 15C. Multiplied by 96 for 10GHz this represents some 75kHz of system calibration shift. To confirm this point consider a commercial 5 or 10MHz OCXO where large shifts in frequency occur during warm up but then is quite stable.

Once the knee point has been determined, the stability can be good but some crystals do move in frequency very slowly. This is assumed to be part of the ageing process. However, it has been observed that small adjustments to the oven temperature around the knee point affect the amount of frequency creep. For a crystal operated for say 8 hours daily the crystal will retrace overnight and each subsequent day will repeat the process. Powering the OCXO 24 hours a day the frequency creep will slow down but there will be variations between samples. It has been noted that the creep amount is dependent on exactly where the oven temperature is set about the knee point. Nothing has been found in documents relating to this unless the writer has misunderstood that published.

Eric, F1GHB has spent some time also looking into the finer aspects of stability and has kindly sent his results which are shown in page two of his pdf document. For the advanced setup Process, access to either GPs or Rubidium or similar source is necessary. Once the creep rate of the OCXO has been determined the OCXO temperature is adjusted in increments to +/- 0.5v either side of the knee point and the change in the frequency creep noted until the flattest time/ frequency response is achieved. In the absence of a high stability source for advanced setup a beacon could be used in the 3cm instance but it must be chosen with care. GB3MHX, whilst free running, is quite stable. GB3SCX is also very stable with Hz errors quoted by Andy G4JNT from time to time. Other beacons driven by Adret sources could also be suitable. This document plus

the additional information from Eric F1GHB can be found at these sites:

http://www.microwaves.dsl.pipex.com/mk2/advanced.pdf
http://www.microwaves.mcmail.com/mk2/advanced.pdf

73 from John, G8ACE.

From Chris Bartram, GW4DGU <yahoo@blaenffos.org>
I agree completely with John about finding the inflection/turnover/knee point being the key to good OCXO performance.

Trying to significantly temperature compensate oscillators with compensating capacitors is a bit of a nightmare - I know, I've been there! For amateur usage, over a limited temperature range, it's probably possible but it's a slow process, particularly as you have to wait for the oscillator to reach thermal equilibrium every time you change a capacitor. One of the problems with trying to temperature compensate a crystal oscillator is that the frequency/temperature curve isn't linear. Also, you really need some form of controllable thermal environment.

Very many years ago, Dave Tong (of Datong fame) wrote a very nice article about compensating VFOs using that technique in 'Wireless World' which very succinctly details how to do it. That can be applied to crystal oscillators. Julian, 'YGF, described a circuit using a thermistor and varactor in Radcom about 15 years ago. There's also a good book on the subject by a guy called Marvin Frerking, if anyone is seriously interested.

For low-power portable operation, I'd probably find a good (0.5ppm) TCXO at a rally (or even buy a new one!!) and lock the DB6NT oscillator to it using one of the techniques that Andy, 'JNT, has recently described. That will give at least an order of magnitude better frequency stability than a simple crystal, and I'd be prepared to lay good odds that it could be done with a current drain of <25mA at 12V.

Kevin's measurements of his oscillator are very interesting. He's seeing better performance than I would have expected from my simulations, but, from memory, he's breaking the loop differently, and we may well have used different component values. Mine were lifted from the RSGB Microwave Manual. My simulations of three years ago are now stored on a deep backup CD somewhere.

The important points to note are:

a. He's clearly got a good crystal! But then Rakon (a NZ company) is a VERY good crystal supplier, a world leader, in fact. I've specified them for work projects where excellent crystal performance was required.

b. He shows the reduction in loaded Q with drive-level very clearly.

c. >15dB open-loop gain is grossly excessive and will cause the oscillator maintaining amplifier, operating with the loop closed, to be cut-off most of the time, resulting in very severe degradation of the loaded Q. Typically, I'd design a crystal oscillator for about +6dB open-loop gain. That would ensure reliable starting.

I'd also use a separate limiter, such as a pair of 'crossed' schottky diodes, so that the amplifier is forced to operate in class-A. This could also be used to control the crystal dissipation. There are other ways of making a suitable limiter, such as using a 'long-tailed-pair' (I did work on this many years ago using a Plessey (remember them?) IC limiter, and the idea found its way back into the device data sheet!) but 'crossed' Schottkies are a good solution and much simpler to implement.

There are a few points to note about the use of formal limiters in an oscillator design. Firstly, because the amplifier is operating in class-A, large levels of harmonics are not available. I like balanced schottky diode frequency multipliers, as they add almost no additional phase noise. Alternatively resistive mode FET or BJT multipliers can be good but beware of highly efficient BJT multiplier, as they are probably at least partially employing some form of parametric effect, and can act as highly efficient phase modulators, transferring supply-line noise to the carrier...

Secondly, it's quite a good idea to take the oscillator output across the limiter, as the amplitude-domain noise will be 'squashed'. Don't try to take the output from in series with the crystal - you'll just reduce the loaded Q. There's no free lunch there!

A third point to note is that the use of AGC instead of a limiter to keep the amplifier in class-A can easily lead to the generation of phase noise due to the amplitude-to-phase conversion in the gain control device. I hope that's useful to someone.

For what it's worth, it doesn't come as a surprise that changing a crystal in an oscillator to one on a frequency not so different from the previous one results in the crystal coming-up on frequency! If the oscillator had been set-up to put the frequency of the first crystal on its nominal frequency and the loop phase response of the maintaining amplifier was essentially unchanged, then I'd expect the second crystal to also come-up on frequency, give or take the crystal calibration.

There's no reason why the Driscoll oscillator can't be turned into a VCXO. It's entirely possible to tune it, and in an more controlled way an the current alternative. The balloon-board 'Butler' works quite well as a VCXO in a rather uncontrolled manner because the loaded Q of the resonator is relatively low. But, it has disadvantages. In particular, both ends of the varactor diode float above RF ground, and it's quite difficult to get good loaded Q, which means that you won't get the best phase noise, and short/medium term frequency stability.

Why do I call the emitter-coupled oscillator, known to the amateur microwave community as a 'Butler' oscillator, the 'balloon board' oscillator? The ancient history is that in the early days of narrowband microwave operation the blessed Mike Walters, G3JVL, was able to procure a significant numbers of a meteorological balloon transmitter which was designed to send data as FSK at about 400MHz. This was an empirical design produced before even most professionals had access time but it was designed to accommodate relatively wide shift direct FSK at UHF, not as a high-quality source. It was never designed as an oscillator intended for multiplication to microwave frequencies! Nonetheless, as a convenient source of 384MHz it was used in most of the early 10GHz transverters as a driver for a step-recovery diode multiplier, and formed the basis of a number of subsequent 'designs'.

I know, as the result of simulation and analysis, that the 'balloon board' oscillator isn't terribly good. That was clear even with the relatively crude software tools we had 20+years ago. I've been using both FET and BJT Driscoll-type oscillators for the highest performance applications since the early 1980s, and I've yet to find a better circuit topology for a VHF overtone crystal oscillator. My transverter designs of 20+ years ago for muTek used a single JFET Butler oscillator. (I think DB6NT still uses something similar.) This was acceptable at VHF, but I wouldn't use it at higher frequencies, as it's quite difficult to control crystal dissipation, so it drifts and the loaded Q isn't **that** good. The phase shifts, and thus frequency changes, due to temperature dependent changes in maintaining amplifier component values make it unsuitable for applications which have to meet commercial approvals even at VHF. In other work applications I've used the impedance inverting overtone oscillator with good results and a single transistor version of the Driscoll.

73 Chris, GW4DGU

Editor's comment...

The previous four pages are an excellent example of how an internet reflector should be used ... useful and informative discussion between three or four experienced microwavers, posted for all to read. We wish there was more of this kind of discussion on the various reflectors instead of the "back biting" that we sometimes see! So our thanks go to the authors of the posts you have just read. Comments from readers are most welcome.

If you do not already read he UKuG Reflector then register for it by visiting the Group website at **www.microwavers.org** and follow the link to the relevant Yahoo group page.

ACCESSING THE ON4KST MICROWAVE CHATROOM VIA GPRS .... Tip: disable DNS!

From: Uffe, PA5DD <uffe.noucha@hccnet.nl>

This year, on my vacation in OZ, I noticed, that my GPRS traffic was significantly higher than last year. After investigating I found out that there was a lot of idle traffic (approx. 100kB/hour) going on even if no Telnet connections or other programs were active!

By logging the traffic, I found out that my computer tried to open a connection to the DNS server every 10 seconds (UDP port 53). This happened on both my computers. This traffic cannot be controlled by the Zone Alarm firewall. I do not have the protocol knowledge to know why this is happening, but since it is generating a lot of traffic, I have a suspicion, that it is an overbilling strategy by the provider.

My solution to the problem was to disable DNS by setting the local loopback IP (127.0.0.1) as my DNS server (TCP/IP settings). This way the DNS requests are not routed out trough the GPRS connection. The downside is that you cannot use Internet names (such as www.on4kst.info) but only IP addresses (like 194.146.226.26). Resolving the names you use to connect, using NSLOOKUP.exe in the command window on a proper Internet connection beforehand, should not be a big problem.

Later...

My provider is off the hook! The UDP connection attempts are caused by SKYPE. It looks like a good idea to shut down SKYPE, when using GPRS.

All these things can be handled by the firewall (Zone Alarm). The tricky thing is that SKYPE snipes its way trough the firewall by using the DNS port.

I have summarized my findings on this page:

http://home.hccnet.nl/uffe.noucha/gprs.htm

73 from OZ/PA5DD OZ1DOQ JO55SV

Using Old laptops & Win98

Reading comments regarding old Toshiba laptops used for GPRS and ON4KST, I have had a similar experience (one of the PCs I still use is a creaky old IBM Thinkpad 486DX100 with 24MB RAM). Readers may be interested in some freeware called **"98lite",** available for download from **www.litepc.com.**

This allows you to streamline Win98 to various degrees, and make it run faster (and usually more stably) by stripping out a lot of the unwanted bells & whistles. You can de-integrate Internet Explorer from Windoze for better stability and security, and even use the smaller/faster Win95 shell with Win98 if you want.

I was so impressed that I ended up forking out for the "full" version — still only a small outlay, but you may find the freeware version quite sufficient.

I hope that's of some use. **73, Kevin G1HDQ**

Students Set WiFi Record

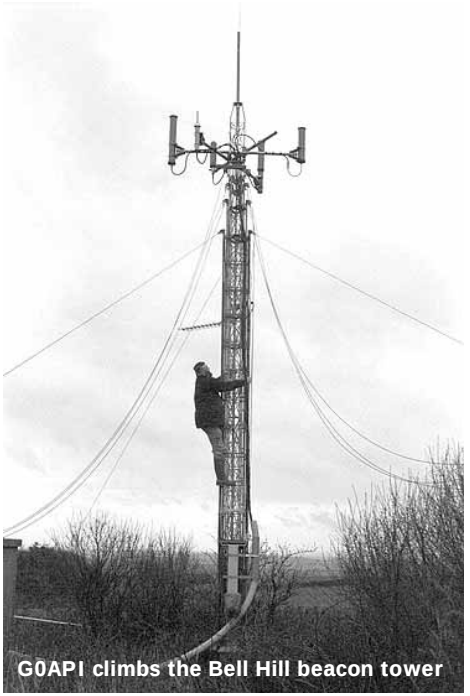
1 August 2005 LAS VEGAS --

"Loaded for bear" a quaint phrase that means that you have the biggest, baddest gun, loaded with the biggest, baddest bullet, because you may have to shoot a big, bad bear. It indicates that you have gone all out in an effort to be prepared for any situation. "Loaded for bear" describes perfectly a team of determined young college students calling themselves "iFiber Redwire," who, with parents, family and friends in tow, travelled from Cincinnati, Ohio to a rugged desert area near Las Vegas, Nevada to compete in the 3rd Annual Defcon Wifi Shootout Contest. The contest challenges teams to wirelessly connect two computers at extreme distances using the radio technology known as "WiFi," and, on July 30, 2005, the efforts of iFiber Redwire paid off in an impressive way. After part of the team drove a trailer loaded with equipment to Utah Hill, near Beaver Dam in the state of Utah, iFiber Redwire used a fascinating collection of homemade antennas, surplus 12 foot satellite dishes, home-welded support structures, scaffolds, ropes and computers to wirelessly connect to their comrades who were located southwest of Las Vegas at the top of Mount Potosi. The final result was a full 11 Mbps data transfer rate over a distance of **125 miles**, a new world record for an unamplified wireless networking connection.

Source: http://www.unstrung.com/document.asp?doc_id=3D78229

FRARS HAMFEST REPORT

Editor's comment: While the FRARS Hamfest, held at Wimborne on August 7th this year, is not a microwave event per se, it nevertheless always attracts a fair gathering of microwave enthusiasts from the southern region (and the odd one or two from further afield). The Flight Refuelling Amateur Radio Society itself is a veritable hotbed of amateur microwaves in that is has a goodly number of microwavers among its membership .... G0API, M0EYT, G0NZO, G4JNT, G8BKE, G3YGF and others for example. In addition it has, through the South Coast Repeater and Beacon Group, set up a formidable microwave beacon system at Bell Hill (IO80UU), the GB3SC# series, right up to 47GHz. The editor believes there is no other club, apart from perhaps the Martlesham Amateur Radio Society, who could claim to have such a microwave flavour! A visit to the FRARS website will convince you even further that this is indeed a "go ahead" amateur radio club. I'm therefore delighted to publish John Fell's(G0API) report ...



G0API climbs the Bell Hill beacon tower

The photo below, taken by our Club president , Tony G3PFM, shows a few of the Microwavers at Hamfest (those who had not taken off to do the 24/47GHz contest!).

The South Coast Repeater & Beacon Group would like to thank all of you who attended the event and generously donated money and "kit" to sell. We managed to raise approximately £450 on the day and actually finished up with twice the amount of kit that we took to the event. My garage is now fully filled and we have had to resort to filling some of the many nooks and crannies at the Flight Refuelling ARS clubhouse!

The photo on the left was taken by G3YGF during the build of the Bell Hill beacon complex and will feature in a Radcom article that Andy G4JNT and I are in process of writing .

Paul M0EYT has started the process of constructing a website devoted to the beacon complex, which includes live data from the site of various temperature and psu values .This can be found at: **www.scrbg.org**
Reports of beacon reception are most welcome and as the site expands it will contain detailed technical descriptions of the installation and ways to contribite to its future expansion.

Best 73 from John, G0API

REVERSE BATTERY POLARITY PROTECTION

... a note from John, G8ACE

I stumbled across this useful application note : **http://www.infineon.com/cmc_upload/documents/012/7168/Reverse_Battery_Protection.pdf**

It's **option three** which is the obvious choice. I guess a 10K pot initially will determine what the right value is for the zener. I found this whilst searching for mosfets in parallel. The answer there is just do it as they have a positive temperature coefficient and therefore become self balancing for current sharing. On the same sink. It also supports the case for good sinking for T/R switching to minimise voltage drop where you need all the supply volts.

HANDY ITEMS....

Paul, G8AYY, provided this useful information...

The low-cost, discount supermarket **LIDL** is selling a 0-150mm Electronic Digital Caliper for £9.99, which is a lot less than prices elsewhere.

LIDL is also selling a Sat-Finder Set for £3.99 as part of a satellite TV receiving system. This is useful for aligning dishes particularly with digital satellites.

Solar noise and ground noise are most impressive on the bar graph display!

There is also 0.6dB NF LNB for £3.99 and an 80cm offset dish in the system.

(Many thanks Paul...editor)

LOOKING FOR A GOOD 2.4GHz SAT DOWNCONVERTER?

Your search could be over. Visit the Keps Communication webpage at **http://www.keps.it/index.html** and you'll find a really good selection, with various IFs and all having a very good performance. From what we've seen, these modules are beautifully made and look totally weatherproof.

Right:

13PBC2 - 01 = 144MHz IF
13PBC7 - 01 = 432MHz IF

Left:

13LNC72 - DB = dual band, switchable IF (144/432MHz)

NEW MICROWAVE RECORDS ....

47 GHz World Record extended to 313km

From:Frank, W6QI,
<Frank.Bauregger@novariant.com>
Date: 23 Aug 2005
To:<microwave@lists.valinet.com>

This past Sunday afternoon, during the "10 GHz and Up Cumulative Contest" W6QI and AD6FP completed a 47 GHz contact over a **313 km** distance to extend the current world record on that band. **W6QI operated from Frazier Mountain, DM04MS,** north of Los Angeles. **AD6FP operated from Devil Peak DM07DM** just south of Yosemite. Signal margins were >40 dB on the W6QI end and about 8 dB on the AD6FP end. The weather conditions were sunny, clear, warm, and dry at both locations. An earlier attempt was made from Mt. Frazier to Mt. Oso (375 km path) at 0600 on Saturday morning with no results. However, after successful completion of a 170 km QSO between Frazier and the valley floor (DM06AB) on Saturday evening, it was decided to try Devil Peak on Sunday.

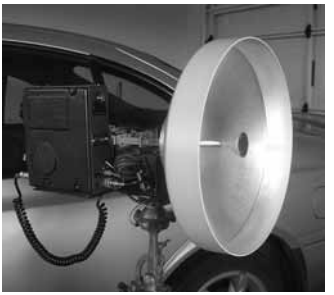
The station details are as follows:
W6QI: 12" splash plate dish, +10 dBm TX Power, 8 dB NF, OCXO locked
AD6FP: 36" Cassegrain dish, +45 dBm TX Power, 4 dB NF, Rb locked
73 from Frank, W6QI

(Heartiest congratulations from the UK Microwave Group !)

NEW ZEALAND 24GHz RECORD NOW 142km

From: Steve ZL1TPH
<stephen_hayman@xtra.co.nz>
Send reply to: stephen_hayman@xtra.co.nz
To: <usuallyqrt@dsl.pipex.com>
Subject: My 142Km on 24G
Date sent: Sun, 28 Aug 2005

Hi John
Just thought to show you a pic of my 24GHz station and a contact today in ZL to my good friend Brian ZL1AVZ at a distance of 142Km. It was a path down the coast and **a new ZL record pending**. The existing ZL record was between ZL2AQE and ZLAZQ at a distance of 126Km. I believe ZL2AZQ is your Steve Davis G4KNZ. Myself and Brian have to submit a record claim so this is not confirmed as a ZL record yet. Your milliwave PA was used as my preamp. I just thought to share my contact today with you as I am so excited with this achievement. So thanks for the friendly advice John and all the help once again.
Regards Steve ZL1TPH



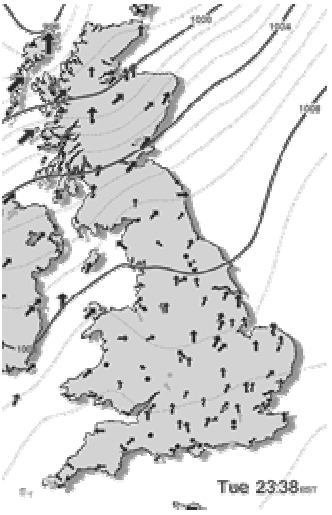
ZL1TPH's Portable 24GHz station

View from the Northen end of the record breaking NZ contact on 24GHz

SOFTWARE REVIEW

Maidenhead Grid Wizard - a multi-purpose aid to microwave operating
Written by John, M0ELS

When John asked me to try out his software suite I was very pleased to do so as it would form the first review of its type for Scatterpoint.
The software is available at **http://myweb.tiscali.co.uk/m0elswebsite/page7.htm**
It's a 9MB download and is written in Visual Basic. John has recently updated it to include the ON4KST microwave chat room. To get a fully operational version it is necessary to register your download with John. Without the registration you would not get, for example, the ON4KST chat room.



Basically the "Wizard" is an interlinked collection of very handy programs and includes quick access, at the click of screen button, to the KST chat room via a Telnet connection. There is also a weather "window" providing UK precipitation maps, UK synoptic charts, aurora maps, pressure and wind maps such as the one shown on the left. These require an internet connection and some are almost in real time. You can also access the DX cluster for the bands 50MHz to 23cm.

The main screen (see above) is a Maidenhead locator and distance bearing calculator but from this window you can access all the other sections of the software suite.

The suite includes a useful Locator map facility which allows you to keep a tally of squares worked band by band, up to 24GHz. A number of other regions of the world are available in Locator square format. These include South Africa and Cuba (!) and are obviously the result of John's travels! Most of the windows can be on screen at the same time as each other. A video capture facility is included but the writer could not find an immediate use for it.

Installation was quite straight forward and it's important to quit any other programs that may be running during the installation. You must also create a folder named "pics" and place it in the same directory in which the software is installed. This folder is used to store the various weather maps and grid maps that you create during normal use of the software.

The suite is not a complicated affair and is certainly geared up to further additions and upgrades, as and when John feels them necessary. John is anxious to hear from users so that any bugs may be ironed out.

Though the software includes a Help file (in several languages), I felt the suite could do with a rather more detailed user manual as it does take a little bit of trial and error to get the best out of each facet of the software.

Many thanks to John for making this useful program available to amateurs and for allowing me to try it out.

Peter, G3PHO

It's been a good month for activity and much fine DX has been worked, particularly by east coast UK operators. Many thanks to all who have sent in reports.

First however, there is some useful beacon information and a timely comment from Nick, GJM4OGI:

From : Nick, GM4OGI <gm4ogi@blueyonder.co.uk>
A change is required to the **F5XAJ beacon details for 23cm**. I had an e-mail from Michel, F6HTJ advising me that the power of F5XAJ in JN12ll is now 100w erp as the PA has been repaired. He also confirms that the antenna is a slotted 10dB increase. This puts the beacon back to the power level it was running in 2003 when it was received last in the UK (as far as my incomplete records show).

By the way, trying to generate an accurate list of 10GHz beacons is worse than herding cats or trying to carry jelly in a string bag! The exercise is taking much longer than expected but I shall persevere. Either UK beacons are not being heard or not operating as see few cluster spots (which is my prime source for telling me if something is active).

A passing comment ... In the early 1990s when I first got started on 23cm I could rely on almost daily propagation over to Scandinavia between May and the end of September. This year I have had two days (so far) and last year I had 2 days. Seems like a good topic for a debate!
Regards, Nick - GM4OGI

From Dave Powys, G4HUP, located in "DX paradise" (East Anglia !) comes an impressive list of mouth watering DX worked on 23 and 13cm from April to July this year:

23cm:

CALLSIGN	DATE	LOCATOR	DX(km)
DL3YEE	04/06/2005	JO42ge	494
DLØGTH	05/06/2005	JO5ØJP	678
G4ALY	05/06/2005	IO7ØVL	423
DF6NA	05/06/2005	JN49XS	660
DL0DX	20/06/2005	JO31jf	393
DJ6JJ	21/06/2005	JO31lg	403
SK7MW	21/06/2005	JO65MJ	853
OZ1FF	21/06/2005	JO45BO	594
DL0VR	03/07/2005	JO31mi	404
DL1EJA	03/07/2005	JO31ds	346
DL3YEE	03/07/2005	JO42ge	494
GM4LBV	03/07/2005	IO86RQ	566
DFØOL	03/07/2005	JO4ØBP	501
DLØTUD	03/07/2005	JO6ØLK	831
SM6ESG	10/07/2005	JO67CC	894
OZ1CTZ	12/07/2005	JO46OE	686
SM6EAN	12/07/2005	JO57WQ	916
SM6AFV	12/07/2005	JO67gq	948
DK2MN	14/07/2005	JO32mc	394

13cm:

DLØVR	05/06/2005	JO31LG	401
DL3EAG	05/05/2005	JO31dk	353
DL3YEE	21/06/2005	JO42GE	494
ON4SHF/P	03/07/2005	JO2ØVB	388
DFØOL	03/07/2005	JO4ØBP	501
DL3YEE	03/07/2005	JO42ge	494
PI4GN	03/07/2005	JO33II	390
SM6ESG	10/07/2005	JO67CC	894
OZ1CTZ	12/07/2005	JO46OE	686
SM6EAN	12/07/2005	JO57WQ	916
SM6AFV	12/07/2005	JO67gq	948

UKuG Millimetre Bands Contest - 7 August 2005

This was a superb day out on 24 and 47GHz. It had great weather, plenty of activity considering what we have had in the past and some really excellent contacts were made. Propagation was very good indeed as the following reports indicate. Many thanks to everyone who made the effort to be active, especially as, for many of us, the activity started after lunch for we were at the FRARS Hamfest in the morning!

An extra special thanks goes to Martyn, **GW3UKV**, and Dave **GW8VZT** who had the inspired urge to go up a 2,600ft mountain for the afternoon. **They were rewarded by making what must be one of the longest, if not the longest, overland path worked in the UK on 24GHz ... 184km** from Pen y Gadair Fawr to Butser (where Ian, G8KQW and Roy, G3FYX, were also having a great time in the sun). Martyn and Dave had chosen a day when the relative humidity dropped to a low 25% during the morning, possibly enabling their contact with Ian and Roy. However, on checking the path later in the afternoon the signals were still there even though the RH had gone up considerably.

Gordon, G0EWN/P at Ventnor (IO90JO) on the Isle of Wight had a great time. He worked 8 stations and heard **G4EAT(JO01HR)** but not strong enough for a contact ... all at the amazing distance of **210km**!

Peter, G3PHO/P operated from both sides of Walbury Hill (IO91GI) for this contest. The following stations were heard active: (the bands are shown where appropriate)

(*****) means G3PHO personally worked them from the edge of Walbury, IO91GI. (u) means he tried unsuccessfully.

G3PYB/P	24G (*) and 47G (*)	Chidden	IO90LX
G8ACE/P	24G (*) and 47G (*)	Lane End	IO91JA
G8KQW/P	24G (*) and 47G (*)	Butser	IO90MX
G3FYX/P	24G (*) and 47G (*)	Butser	IO90MX
G0EWN/P	24G (*)	Ventnor IoW	IO90JO
G0MJW/P	24G (*)	Lane IO1JA & Walbury	IO9GI
GW3UKV/P	24G (*)	Pen y Gadair	IO81KW
GW8VZT/P	24G (*)	" " "	"
G4LDR	24G (*)	Home station	IO91EC
G4MAP/P	24G (u)	Titterstone	IO82QJ
G8BKE/P	24G and 47G	Povington	IO80WP
G1JRU	24G	Home	IO90HU
G4EAT	24G (u)	Home	JO01HR
G3UYM/P	24G and 47G	Therfield	IO91AX
G3PHO/P	24G and 47G	Walbury	IO91GI
F6DKW (!)	24G	Home, Paris	JN18CS

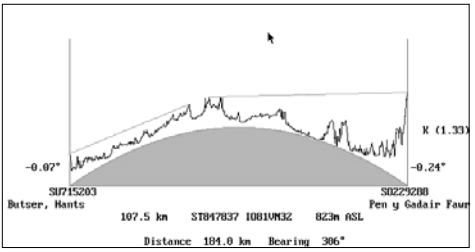
TOTAL: 15 G AND 1 F in 6 LOCATOR squares

To those who were not involved with yesterday's day out, I hope this report will encourage you to become active on a most interesting band.

We particularly need new 24GHz stations in the Midlands and down to the edge of the very active southern region (IO90/IO80 area). If you are looking for a new band to build for this winter then why not chose 24GHz?

By the way, 24GHz is NOT like 10GHz! Distances worked are well down in comparison with 10GHz but the average performance is getting better and better as people are stepping up their power output (500mW to 3 Watt PAs are available these days). Non-LOS paths are nowadays very workable. If in doubt, check out the path worked between **Butser and Pen y Gadair** (see profile below)! We need lots more activity to really show what this band is capable of.

73 from Peter, G3PHO



From: Ian,G8KQW/P Butser Hill IO90MX: <ianlamb@btconnect.com>

I was very pleased with the level of activity on 24 & 47GHz. The northern guys (G0EWN and G3PHO) should bring their morse keys down this way more often!

Here is my list of stations worked from Butser Hill:

24GHz: G0EWN/P 45km, G8BKE/P 90km, GW8VZT/P & GW3UKV/P 184km,G8ACE/P 18km, G3PHO/P 55km, G0MJW/P 18km, G4LDR 49km &G3PYB/P 6km

47GHz: G8ACE/P 18km, G3PYB/P 6km & G3PHO/P 55km

So, a very enjoyable afternoon and evening out. According to various mutterings our 184km is some sort of overland record for 24GHz...

I'd be very interested to read any ideas on possible site(s) for me to activate in future to try and bridge the "north / south divide" on 24 and 47GHz.

From Roy, G3FYX/P Butser, IO90MX:

We had a good day in general in spite of trouble with the main 24GHz rig. It seems the problem is that it's fine on the 13.8 v power supply in the shack but won't perform on the 12.8 v from the battery when on site , Anyway I got out the 500uW rig and had two way contacts on **24GHz** with G8KQW IO90MX, G0EWN/P IO90JO. G8BKE/P Povington , GW8VZT/P IO81KW (one way), GW3UKV/P IO81KW(one way), G8ACE/P IO91JA, G3PHO/P IO91GI, G0MJW/p IO91JA, G4LDR IO91EC, G3PYB/P IO90LX. Worked two way on **47GHZ** were G8ACE/P & G3PHO/P. It was a pity so many were shopping (at FRARS), etc, in the morning!

From John, G4EAT, JO01HR, Essex:

I only worked Harold, G3UYM/P, IO92XA at 57km. All other attempts failed (G4LDR, Walbury, Butser, Ventnor (maybe heard by G0EWN)) but I note they were all in the direction 227 to 255 degrees which is probably my station's closest horizon (Warley Brentwood Essex ridge).

Relative Humidity here was 40% at 19 deg C during the activity peak which gives an attenuation loss of half that experienced during the very humid July contest.

Hoping next contest we see a few other directions activated. **73 from John, G4EAT**

John, G8ACE/P Lane End, IO91JA, reports working the following during the August millimetre band event:

24GHz: G0EWN/p, G4LDR, G8BKE/p, G8KQW/p G3FYX/p, G3PHO/p, G3PYB/p, G0MJW/p

47GHz: G8KQW/p, G3FYX/p, G3PHO/p

From: "Chris G8BKE/P Povington, IO80WP: <chris.towns@tiscali.co.uk>

24GHz all two way:-

G8KQW/P IO90MX, G3FYX/P IO90MX, G0EWM/P IO90JO, G8ACE/P IO91JA, G0MJW/P IO91JA, G4LDR IO91EC, G3PYB/P SU671193

47GHz:

G8KQW/P IO90MX: nothing heard either way: no qso
G3FYX/P IO90MX: nothing heard either way: no qso
G8ACE/P IO91JA I heard him abt S1; nothing from

me: no qso
G3PYB/P SU671193 I heard him S9 at times, unable to hold signal level; nothing from me; no qso.

From: Mike, G0MJW/P, IO91JA and IO91GI:
<m.j.willis@rl.ac.uk>
I am afraid I only managed to work 11 stations and that was from two locations. I need more power! There were several repeats as I moved in the late afternoon to **Walbury** to work the stations I could not work from **Lane End**.

Contacts from Lane End IO91JA:
G0EWN/P IO90JO 46k
G4LDR IO91EC 31k
G8BKE/P IO80WP 77k
G8KQW/P IO90MX 18k
G3FYX/P IO90MX 18k
G3PHO/P IO91GI 41k
Failed F6DKW, G1JRU, G4EAT, GW3UKV/P

Contacts from Walbury IO91GI:
G4LDR IO91EC 30k
G8ACE/P IO91JA 41k
G3PYB/P IO90LX 51k
GW3UKV/P IO81KW 132k
GW8VZT/P IO81KW 132k
Failed G4MAP/P, G4EAT

From Harold, G3UYM/P (Therfield,IO92XA):
I worked John G4EAT in JO01HR for a new square. Two other paths were tried, to G8KQW/P and G0EWN/P but were unsuccessful.Congratulations to G8KQW/GW3UKV/P on working the **184Km path**. This just exceeds the 182km N LOS path worked by Paul G0HNW/P on Winter Hill IO83RO and myself /P at Broadway IO92CA back in April 2002. The power at that time was 500/700mW.

From: Neil, G4LDR(IO91EC) Home station
<g4ldr@btinternet.com>
Following a quick visit to the Flight Refueling Hamfest I began operating at 1230 UTC, from the home QTH. Equipment, 80 cms dish, 12m agl, 150m asl, rf output 1W. I had a total of 10 contacts (with 9 different stations, G0MJW/P from two locations). Is this a record for the number of 24GHz stations worked by a home station in a contest? *(I would say yes!.. editor)*
I even suffered from QRM at one point and had to QSY to find a clear frequency!

Stations worked:

G0EWN/P	IO90JO	59 <>59	63km
G8ACE/P	IO91JA	59<>59	31km
G3PHO/P	IO91GI	59<>59	30km
G0MJW/P	IO91JA	59<>59	31km
G1JRU	IO90HU	59<>59	30km
G8BKE/P	IO90WP	59<>59	62km
G8KQW/P	IO90MX	59<>59	47km
G3FYX/P	IO90MX	319<>59	47km
G0MJW/P	IO91GI	59<>59	30km
G3PYB/P	IO90LX	59<>59	43km

Stations tried but not worked:

F6DKW	JN18CS	378km
G4EAT	JO01HR	171km
GW3UKV/P	IO81KW	139km
G4MAP/P	IO82QJ	157km

It would have been nice to have tried with stations between 60 and 100km had there been any.

A great day, and thanks to all the portable stations that made it possible for me to work from home.
73 Neil G4LDR

Above: G0EWN/P near Ventnor, Isle of Wight (IO90JO) during the August 24/46GHz contest

EME NEWS

From: Brian Coleman, G4NNS
<brian-coleman@tiscali.co.uk>
Date: Mon, 8 Aug 2005 19:20:08 +0100
On the evening of Monday 8 August this year, I completed my **first EME QSO on 3456MHz** with Al Ward, **W5LUA**. We exchanged O reports later amended to 539. Details of my system can be found at:

http://myweb.tiscali.co.uk/g4nns/G4NNSEME34G.html

I will add a recording of Al's signals later. Peter G3LTF was listening in on the side.

The following day, on Tuesday afternoon, 9 Aug 2005 I worked **LX1DB on 3400.100 EME.** It was Willi's first EU QSO ! and only my second one on 9cm.

I understand from Peter G3LTF that yesterday's QSO with W5LUA was a UK first but am not sure. I did contact Mark GM4ISM in case he had already had a qso but he told me he is not QRV. Does someone record these matters ? If so I would be interested to know if this was indeed a first. Peter G3LTF was listening in to both QSOs.

On the 31st August I'd just got the **5.7GHz** system onto the dish and, on hearing my echoes, put a posting onto Moon-Net. Al Ward **W5LUA** responded and we made a QSO at 1440 local time (semi random as we did not have time to arrange a sked). The moon was rapidly approaching my tree line. Initially I sent Al an O report and he gave me 539. The PA having survived the first over, I gained enough confidence to send Al a proper report of 549. Equipment here consists of 20W at the feed of the 3.7m dish. The feed is a VE4MA type providing linear vertical polarisation. At present I am seeing about 16dB of Sun Noise and just under 1dB of Moon noise.
(Congratulations Brian .. excellent work! — ed)

AUGUST 5.7GHz & 10GHz CUMULATIVE CONTEST

Conditions for this contest seemed quite poor across much of the country but nevertheless some interesting contacts were made and activity was very good indeed, particularly on 5.7GHz.

There is no doubt that the twinning of the two bands for the cumulatives has really improved activity on each, without the dilution of either. You only need to look back at the contest logs for the years when the 10GHz cumulative was held in isolation to see the difference. So on to this month's reports...

From Paul, M0EYT/P, IO80UV: We were again active in the 5.7/10GHz cumulative but from a different site. Bell Hill had a crop that was due to be collected in, so we found an alternative site, about 1.5Km away, locator IO80UV. The site was fairly clear apart from trees in the South West which obstructed the path to Ralph G4ALY.

Best DX of the day on both bands was with Peter, G3PHO/P, at 366Kms. The conditions seemed variable, but generally not brilliant. Several 10GHz beacons were monitored but not received until late in the day, indicating a poor path. Overall, 14 stations were worked on 5.7GHz and 22 on 10GHz, which wasn't too bad.

This cumulative saw the first use of the new 5.7GHz PA built from eBay parts, and it certainly seemed to generate reports of 'rock crushing signals' which was pleasing. A picture of the rebuilt transverter is online at:

http://pjm.dyndns.org/hamradio/5.7ghz/new_xvtr.jpg and should be a lot neater than the temporary wiring that appeared in the last Scatterpoint. *(see page 5 in this issue for a photo of the new version!)*

From: Gordon, G0EWN/)IO93PW: <gordonfiander@hotmail.com>

So far this year I have been trying new sites in the Peak District but decided for the 4th cumulative to try the Pocklington site on the Yorkshire Wolds, IO93PW, in order to try and better my previous DX @ 292kms on 3cm which has been limited by the distance to the S coast from the Peak District. Did it work--could the 250mw signal carry over 300kms under average conditions?

Stations worked on 3 cm: G4EAT @ 261kms, G3UYM/P @ 217kms, G3LRP via reflection @ 57kms, G3PHO/P @ 157kms, M0EYT/P @ 355kms, G4LDR @ 321kms, GW8AWM/P @ 270kms, G3NEO--one way---JVL mixer!!! @ 82kms, GoMJW/P @ 292kms G8KQW/P and G3FYX/P @ 322kms

On 6cm 6 stations were worked: G3LRP, G3PHO/P G3ZME/P, M0EYT/P @ 359kms and G4LDR @ 321kms

The weather was good all day. I tried calling lots of other stations on 2m but this was the weak link--the 4 ele yagi plus 30watts was just not enough to attract attention otherwise I would have had more contacts on both bands. Operation in the cumulatives has been a case of two steps forwards one step back--however my 24v system seems to work great with stable 13.8v being maintained without voltage drop all day.

Steve G1MPW + Dave G6KIE worked from Firle Beacon JO00AU again for the August contest -- what a difference to last month !! The sun shone, it didn't rain and there was only a gentle breeze instead of a howling gale -- much more pleasant !! We managed to work 19 stations which was better than any other time but the best was saved until last when F1ANH (IN 88 RR) responded to a CQ call which resulted in a FB QSO at 319 Km and then, just before we were going to call it a day, Peter G3PHO/P, appeared and we were rewarded with another new square and **a best DX ever at 423Km** - many thanks OM. To round it all off Steve misjudged a big pothole in the farm track while driving off the hill -- there was a bit of a sickening crunch but nothing dropped off -- however two of the dashboard lights that haven't worked for years burst back into life to round of a thoroughly enjoyable day!!

From: Keith ,GW3KTH/P, IO81LS: < GW3TKH@aol.com>

I operated from Cefn y Galchen, IO81LS,(sometimes called the Blorenge, though the true Blorenge summit is to the north of this car park) on 21st August. I was running 1w on 3cm & 200mw on 6cm to a 60cm dual feed dish. Best dx on **3cm** was G4EAT, JO01HR, at 253 km and on **6cm** was G4LDR, IO91EC, at 123 km.

Signals were heard both ways on both bands with F1GHB/P but were unfortunately too weak for a contact. Powering the gear from 24v batteries via a regulator solved the problem of wandering frequencies suffered on the last outing. It was an excellent day, sunshine a cooling breeze and 17 contacts in all. Thanks to all those who made it possible.

From Peter, G3PHO/P, IO84KD:

I'd been asked by several people to activate IO84 and so checked a few possible sites in the Yorkshire Dales area but none came close to Birkrigg Common, IO84KD, in Southern Cumbria. Though not very high above sea level (about 150m) it has a fabulous take off over the sea to the south and is normally at the end of a veritable microwave pipeline in that direction. So it was a little disappointing to have got out of bed at 0500BST ready for a 0600 start and a three hour drive and arrive on site before 0900 to set up for the contest only to find poor microwave conditions! The weather was great until 1900BST when drizzly rain started.

Once again I took out the laptop and GPRS card for KST access and once again KST proved to be a hindrance rather than an asset as it most definitely slowed down the QSO rate... something you don't want in a contest! The Telnet link seemed to drop out every so often and needed to be re accessed. However, I had a superb Vodafone GPRS signal due to the very kind gift of an external antenna for the GPRS card ... many thanks Chris, G3WIE! In my view, a major disadvantage of KST in contests is that you can't make crossband qsos (one ways) like you can do with 2m to 3cm for example, so you lose valuable contest points. In view of this, I believe KST is best used outside of contests and I will certainly use it in tropo openings to Eu when I go out /P on the hills. 144MHz would be unnecessary then, when there is no pressure to work lots of stations per hour. It could, in fact, make setting up a /P station something that could be done in just a few minutes.

The final tally for the day was **18 stations** worked on **10GHz** with **best DX** being **F1GHB/P in IN88 at 622km**. Eric had to resort to CW (this is very non-GHB!!!) to get this new square! Well done Eric and many thanks for a new square in return! My average points per contact stood at 338.6, the highest I think I've ever achieved. On 5.7GHz the results were very disappointing with only 5 stations worked, even though there were over 20 known to be on the band that day. Several tried and trusted paths refused to work but the **best DX on 6cm was M0EYT/P (IO80UV)** at **366km**. Outstanding 144MHz talkback signals came from G8KQW/P (IO81PH), GW8AWM/P, F1GHB/P and F6DKW.

It was very pleasing to find **John, GI7UGV/P** on 2m. We tried a 10GHz contact but nothing was heard either way, in spite of the path being almost an all sea one. In the event it turned out that John had gear problems and will be out in the next one, hoping to make his first contacts outside of GI.

From Neil, G4LDR, IO91EC:

This was one of the few Sunday's I was able to operate all day and it proved to be a good day for the level of activity and being able to work paths that had not gone in the past. G3PHO/P was the **best DX at 353km** on both bands. G0JMI was worked for the first time without the aid of rainscatter. Another first on 3cm was GW4DGU in IO71SV. The total contacts were 27 and 16 on 3cm and 6cm respectively.

That's all we have space for this month...keep the reports coming in please! 73, Peter G3PHO

Adjudicator'sComments:

There were just 8 entries (6 fixed stations and only 2 portable), somewhat down on the April event (which attracted 7 portable entries, plus 6 fixed).

The result was a very convincing win for **John G3XDY**, who operated with a self-imposed handicap of no talkback, no ON4KST and no soliciting skeds on the DX cluster, to see how much of a benefit these are on the lower bands.

This did seem to reduce the 9cm contacts and score quite significantly. John was running 250W on 23cm to 4x23 element Yagis, plus 120W on 13cm & 15W on 9cm, both to a 60cm offset-fed dish.

On 1.3GHz, John **G3XDY** still won easily, despite his handicap. **On 2.3GHz**, Neil **G4BRK** was not far behind G3XDY, with a couple more QSOs but lower average score per contact putting him in second place. **On 3.4GHz**, Peter **G3PHO/P** leads by a good margin, where it seems talkback of some kind really is needed to do at all well.

This event was timed to coincide with continental activity, and there were some comments that this was welcome, though G3PHO reported hearing only two other portable stations. Activity levels were generally not great. It would be helpful to have any comments from those who operated in April but missed this event as to why they were unable to support it, before the 2006 calendar is decided?

Conditions were reported mostly as generally poor, with few contacts made to mainland Europe, except from the East coast.

Thanks to everyone who sent in an entry. A similar event is scheduled for later this year in November - lets hope for plenty of activity - **and do please send in your entry, however small!**

Regards, Steve Davies G4KNZ

UKuG Low-Band Contest Results 5 June 2005

Overall Normalised and Final Scores

	1.3	2.3	3.4	Total
G3XDY	1000	1000	284	2284
G4BRK	726	896	255	1877
G3PHO/P	490	0	1000	1490
G4HUP	649	557	0	1206
G4WYJ/P	291	483	0	774
G4LDR	284	0	364	648
G6XDI	65	0	0	65
GW3HWR	30	0	0	30

Individual Band Scores (km points)

1.3GHz	Best DX	Located	Distance	QSOs	Score
G3XDY	DL0TUD	JO60LK	837	24	9131
G4BRK	DF9IC	JN48IW	799	23	6632
G4HUP	DF6NA	JN49XS	662	22	5928
G3PHO/P	G3KTU	IO90CR	407*	21	4474
G4WYJ/P	G3PHO/P	IO94MI	389	16	2654
G4LDR	G3PHO/P	IO94MI	364	17	2597
G6XDI	G4HUP	JO02PC	137	6	598
GW3HWR	G4BRK	IO91DP	142	4	270

* One way

2.3GHz	Best DX	Located	Distance	QSOs	Score
G3XDY	DL3IAS	JN49EJ	585	10	3034
G4BRK	DL0VR	JO31LG	602	12	2717
G4HUP	DL0VR	JO31LG	401	8	1691
G4WYJ/P	G3LRP	IO93HO	313	8	1465

3.4GHz	Best DX	Located	Distance	QSOs	Score
G3PHO/P	G3PYB/P	IO90LU	389	9	2979
G4LDR	G3PHO/P	IO94MI	364	9	1085
G3XDY	DK3MN	JO32PC	416	3	845
G4BRK	G3PHO/P	IO94MI	306	7	760