An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

January 2015

Published by the UK Microwave Group

Heelweg & Dwingeloo

by Martin G8BHC

In this Issue

Click on the page number to go there.

UK Microwave Group Contact Information

Chairman: TBA
Email: chairman @microwavers.org
Located:
Address:
Home Tel:

General Secretary: G3XDY
John Quarmby
Email: secretary @microwavers.org
Located: Suffolk JO02ob
Address:
12 Chestnut Close,
Rushmere St Andrew
IPSWICH IP5 1ED
Home Tel:
01473 717830

Membership Secretary:
G8DKK Bryan Harber
Email: membership @microwavers.org
Located: Hertfordshire IO91vx
Address:
45 Brandles Road
Letchworth
Hertfordshire SG6 2JA
Home Tel: n/a

Treasurer: G4BAO
Dr. John C. Worsnop
Email: treasurer @microwavers.org
Located: Cambridgeshire JO02cg
Address: 20 Lode Avenue
Waterbeach
Cambs CB25 9PX
Home Tel:
+44 (0)1223 862480

Scatterpoint
Editor: G8BHC
Martin Richmond-Hardy
Email: editor @microwavers.org
Located: Suffolk JO02pa
Address:
45 Burnt House Lane
Kirton
Ipswich IP10 0PZ
NB editor & scatterpoint email addresses go to both Bob and myself

Scatterpoint
Activity News: G8DTF
Bob Price
Email: scatterpoint @microwavers.org

Contest & Awards Manager: G3XDY
John Quarmby
Email: g3xdy @btinternet.com
Located: Suffolk (JO02OB)
Address:
12 Chestnut Close
Rushmere St. Andrew
Ipswich
Suffolk IP5 1ED
Home Tel:
+44 (0)1473 717 830

Beacon Coordinator:
GW8ASD
Tony Pugh
Email: beacons @microwavers.org
Located: Essex (JO01)
Address: Gwersyllt
WREXHAM
LL11 4AF
Wales
Home Tel:
01978 720183

UK Regional Reps

John Cooke	Scotland	GM8OTI	john@marwynandjohn.org.uk
Gordon Curry	NI	GI6ATZ	gi6atz@qsl.net
Chris Bartram	Wales	GW4DGU	

Assistants

Kent Britain	USA	WA5VJB/G8EMY	wa5vjb@flash.net
Dave Powis	Trophies	G4HUP	g4hup@btinternet.com
Noel Matthews	ATV	G8GTZ	noel@noelandsally.net
Robin Lucas	www.beaconspot.eu	G8APZ	
Chris Whitmarsh	24GHz and up	G0FDZ	chris@g0fdz.com
Mike Scott	Chip Bank	G3LYP	

Editor's corner

A slightly belated Happy New Year to you all but I've been to Heelweg, hence the unashamed plug on the cover.
The other big item this month is the Contest Rules.
The AGM approaches – April 26 at Martlesham. Your chance to have your say and perhaps help on the committee? We still don't have a Chairman.

73 de Martin G8BHC

Subscription Information

The following subscription rates apply.

UK £6.00 US $12.00 Europe €10.00

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

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

If you plan to reproduce an article exactly as per Scatterpoint then please contact the Editor – otherwise you need to seek permission from the original source/author.

You may not reproduce articles for profit or other commercial purpose.

You may not publish Scatterpoint on a website or other document server.

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 end of October – 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 miss-labelled. G4HUP's Inductance/capacitance meter with SM probes is ideal for this (Unsolicited testimonial!!)

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

Mike G3LYP

UKµG Technical support

While many of you will have taken advantage of the "test equipment rooms" that we run at the Round Tables, sometimes that project just cannot wait for the few occasions per year when we hold them. 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, more importantly, 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

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

RAL

Mike Willis G0MJW

Or I should say, nearly RAL as we have had to move venue.

As most of you know, I am not at RAL any more and that has been making things increasingly difficult. The event this year is being sponsored by Harwell Amateur Radio Society (HARS) and we have made a booking for 14th June which will be held at a nice yet affordable venue, the village hall in East Hagbourne. Hall - Hagbourne Village | East Hagbourne Parish Council in Oxfordshire www.easthagbourne.net/local-info-indiv.php?id=462

www.easthagbourne.net/local-info-indiv.php?id=462

Hall - Hagbourne Village | East Hagbourne Parish Council... www.easthagbourne.net/local-info-indiv.php?id=462
Hall - Hagbourne Village | The website of East Hagbourne Parish Council in Oxfordshire

View on www.easthagbourn... www.easthagbourne.net/local-info-indiv.php?id=462

Preview by Yahoo

There is plenty of parking and two large halls. I will be looking for some offers of talks. I think it would be quite nice to hear about innovative new experiments going on in the new allocations in the lower bands, e.g. 146MHz and 2300MHz.

Mike G0MJW

ISCAT-B EME tests

Charlie Suckling

On 5 and 7 January 2015 we did some tests here on own echoes using ISCAT-B on 10GHz. Rex VK7MO suggested that the B variant of ISCAT would be more suitable based on the message repeat period being short enough duration to catch a complete sequence.

We managed to get some good decodes as shown in the link below. The purpose of the experiment was mainly for fun, and I'm not proposing the mode for normal digital EME! With 15 sec periods though, you could make quite a quick digital EME QSO if signal levels/spreading permit!

I transmitted for 15 sec and then decoded the available echo, so not much chance of any enhancement via averaging. Not every frame decoded reliably.

I have put a few .wav files and a summary of the tests to date at

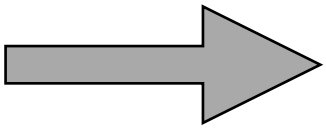
http://www.sucklingfamily.free-online.co.uk/ISCATB.zip

It is interesting that decodes are still possible even though the received signal widths at the times were some 2-3x the tone spacing of ISCAT-B (43.1Hz). (We have seen by experiment the same with JT4 modes where even if signals merge into one another, WSJT can often still decode them).

I plan to repeat the tests under lower libration spreading conditions and see if messages with more characters can be decoded, and also see if it is possible to get results with lower power.

73
Charlie

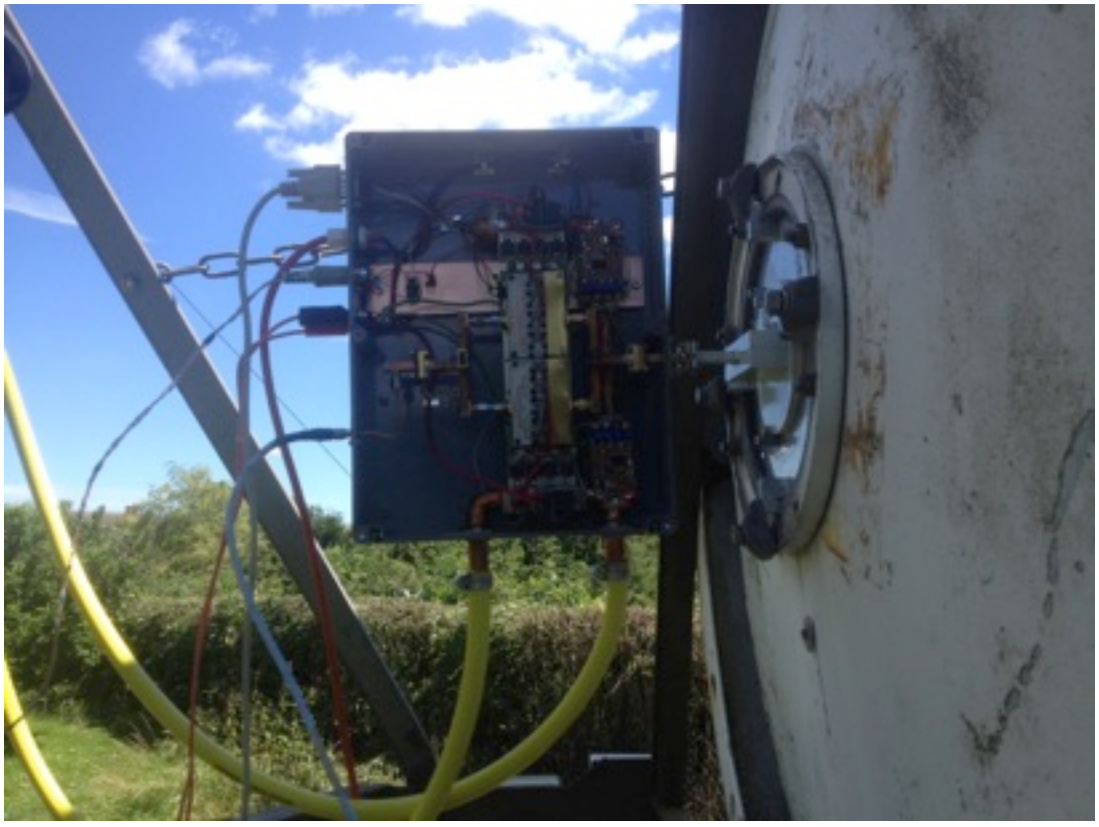
Here are a few photos of our 24G EME system



feedpoint (WG22 switch,

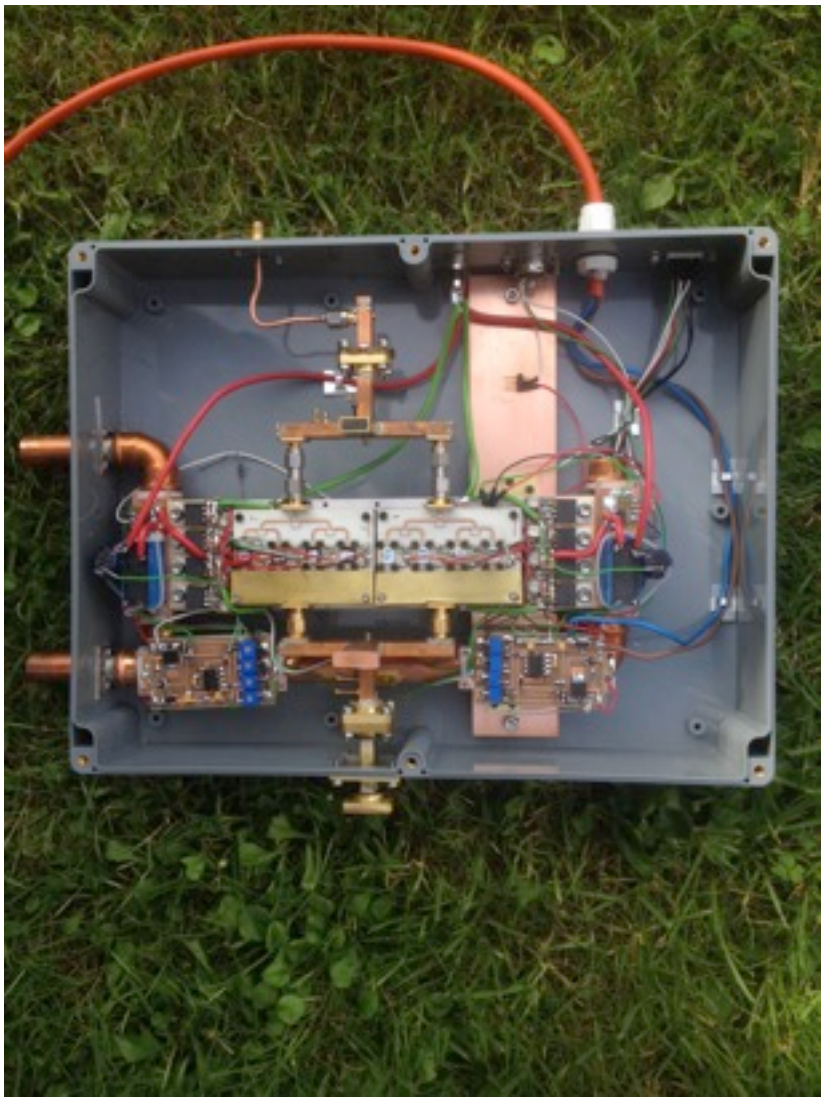
DB6NT preamp and scaled VE4MA style feed),

WG run from centre of dish to feed carrying TX power,



20W PA mounted on the back of the dish,

water cooling (bucket of water with submersible fish tank pump),



and the 24GHz PA off this dish.

PA is 2 x microstrip combined 4xTGA4905-CP devices with magic Tees to split and combine the two nominal 10W amps.

New 10GHz record

Two Amateur Radio microwave enthusiasts in Australia are claiming a new distance record on 10 GHz. On January 5, during a tropo opening across the Great Australian Bight, VK6DZ and VK7MO exchanged reports over a 2732 km path, using JT4f mode as well as SSB. The distance surpasses by 36 km the previous World Record of 2696 km from Southern Portugal to Cape Verde Island.

VK6DZ was portable at Torbay Hill, 24 km west of Albany, Western Australia. He was running 10 W to a 60 cm dish. VK7MO was portable Cape Portland in northeastern Tasmania, running 50 W to a 77 cm dish.

Rex Moncur, VK7MO

24 GHz Tests between VK7MO and OK1KIR and G3WDG

(31 December 2014)

by Rex Moncur VK7MO and Charlie Suckling G3WDG

On 31 December VK7MO went out portable to a new location in Tasmania, and managed QSOs with OK1KIR to extended the OK ODX to 16438 km and with G3WDG, operated by G3WDG and G4KGC, to extend the the World 24 GHz EME record to 17464 km. The QSOs spanned the New Year (2015 in VK, 2014 in OK/G).

These results follow careful planning after analysis of losses due to Earth-moon distance, libration spreading, longest common windows as well as atmospheric water vapour absorption, cloud and rain. It turns out that only a few days each month are potentially suitable for such long distance QSOs with low moon elevations at both ends where atmospheric losses are higher, and then one must ideally also have no cloud or rain. On the three previous months we planned these tests cloud or rain prevented us even making an attempt. On this occasion we were lucky in that there was clear skies at VK7MO and G3WDG.

VK7MO Location at QE36wv

Fig 1: Location at QE36wv on the Tasman Peninsular

Rex chose his location to be as far as one can be away from the UK in Tasmania or Australia and still have a good take-off to Moon-set. As shown in Figs 2,3&4 the good take-off was only because a section of the forest had been recently cleared. The distance is about 60 km greater than the previous World Record from G3WDG to VK7MO at Mt Wellington, but did not have the advantage of Mt Wellington's 1270 metre height to reduce atmospheric absorption - although this was compensated by both stations having 3 dB more power.

Fig 2: VK7MO Location in a Forest Clearing with a good take-off to Moon-set as in Figs 3 & 4

Fig 3: VK7MO Operating location

Fig 4: Take-Off to moon-set - red arrow shows operating location

Equipment

VK7MO portable station: 1.14 meter dish and 20 watts fully GPS locked and corrected for Doppler.

OK1KIR: 4.5 meter dish and 22 watts output transverter GPS locked

G3WDG: 3 metre dish and 18 watts output, transverter GPS locked

For the previous World Record VK7MO and G3WDG only had 10 watts available.

Planning

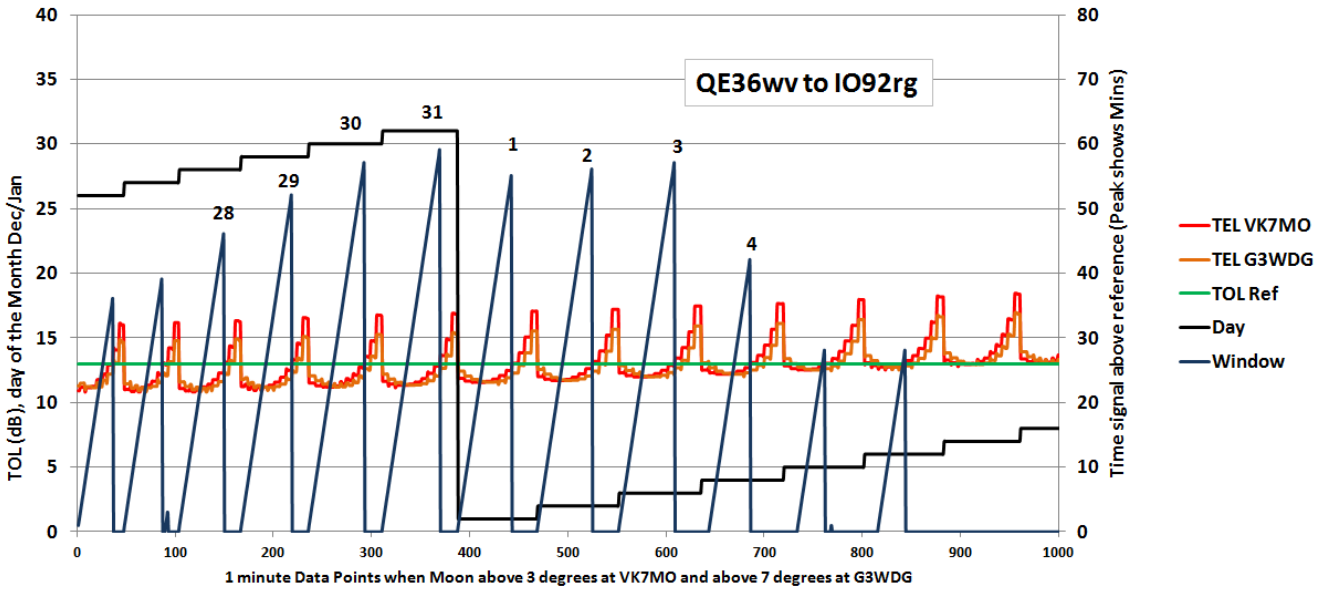


Fig 5: Planning Chart

VK7MO has developed a spreadsheet to assist with planning 24GHz EME tests, and Fig 5 shows the chart used for this test. The red and orange lines are the total extra losses at both ends, based on free space path loss above perigee loss (degradation) , effect of libration spreading (wider signals need stronger signals to decode) and calculated atmospheric losses at actual moon elevation angles and expected precipitable water (PW) values. PW was estimated at 15 mm at both ends based on forecast data. The green line is the reference Total Extra Loss of 13 dB, which we have found can be tolerated for our systems from previous tests. The blue saw-tooth lines show the time that is available for a QSO when the Total Extra Losses are below the reference and it is seen that the

maximum time is 31 December at about 58 minutes. Even at the best there is only 2 dB to spare and this can be lost with just light cloud at either end. This means that often we need to use averaging over several frames to achieve decodes and longer windows allow more time for this.

Conditions on the day

It turned out that the moon was in the clear for both G3WDG and VK7MO for the duration of the tests and this made for relatively quick QSOs. PW at Hobart airport at 12Z was 19.9 mm and at Nottingham 82 km from G3WDG it was 8.65 mm. Surface extrapolation by G3WDG estimates the PW at his location at 14 mm. While the Nottingham radiosonde data gives the best estimate of the upper air PW the surface extrapolation takes better account of local surface PW. The best we can do is estimate the PW based on half way between at 11 mm. While we were fortunate in having no cloud for the duration of the QSOs between G3WDG and VK7MO there was cloud prior to and at the end of the tests and we noticed that when cloud was present we lost even the 1270 Hz single tone - so undoubtedly we were very lucky to have clear skies for the QSOs.

At OK1KIR PW was 12.86 mm and there was 3264 metres of cloud as well as heavy rain in the direction they had to beam.

Comparison of Conditions with Earlier World Record from Mount Wellington

Parameter	**Mt Wellington**	**Tasman Peninsular**
Degradation Loss	**1.2 dB**	**1.2 dB**
Spreading	180 Hz	154 Hz
Effective Spreading	110 Hz	94 Hz
Spreading Loss	**6.7 dB**	**6.5 dB**
PW VK7MO	6 mm	19.9 mm
PW G3WDG	12.2 mm	Use 11 mm
Total of Elevations for both ends	22 degrees	21 degrees
Best PW Loss	**3.2 dB**	**5.4 dB**
Less G3WDG Gain over W5LUA reference	**1.5 dB**	**1.5 dB**
Total Extra Loss	**9.6 dB**	**11.6 dB**

As seen above conditions were 2 dB worse for the Tasman Peninsular test but this is offset by the fact that we are running almost 3 dB more power - thus we should be about 1 dB in front. In fact the QSOs were much easier from the Tasman Peninsular reflecting the 1 dB improvement (there was also cloud present for much of the time during the Mt Wellington test). The Total Extra Losses of 11.6 dB for the Peninsular test can be compared with the 13 dB Total extra loss limit we have found in other tests (with the same TX power). Thus there was around 1.4 dB to spare which is consistent with the fact that VK7MO and G3WDG completed two fairly easy QSOs during the available window. A number of single-line decodes were achieved, although averaging was still needed to complete the full exchange of information.

In addition, G3WDG and G4KGC received a New Year greeting message from VK7MO from a three frame average as shown below:

```
142200  4  -17  2.6  -26  46 *
142400  2  -18  2.6  -53  59 *
142600  2  -18  2.6  -42  53 *
142600  1   3/3                HNY CH AND PE        1   0
```

Analysing the received files at VK7MO later showed a three frame average decode of the reciprocal greeting:

```
140500  2  -19  2.3  -63  28 *
140700  3  -17  2.3  -66  35 *
142100  0  -20  2.5  -68  37 *
142100  2 3/3                HNY HNY 2015         1   0
```

To facilitate a stub installation

André Jamet F9HX agit@wanadoo.fr

They should be set!

Number of internal settings must be made to an electronic device to obtain a minimum or a maximum of voltage or power. One may have to act on windings, cores, adjustable capacitor or resistor. Generally, we observe the effect of the setting by the needle movement of an analogue meter, on the screen of an oscilloscope or a spectrum analyzer – with more difficulty, by the digits scrolling on a digital meter. This often requires good eye-hand co-ordination – the eye on the meter, the hand on the trimming tool.

The view is the organ highlighting the hand on the setting component. It does not allow, at the same time (even if we have two eyes!), to see the hand which acts. This is usually no bother because action is to produce a portion of sufficient size so as not to require a very specific attention.

Yes, but for a stub?

There are not only experienced OM hypéristes [microwavers] who read this magazine. So let's remember what a stub is and its purpose.

We often use transistors with internal tuning to produce inputs and outputs 50 ± j Ω in a frequency band which is not one we want to work. For example, a number of transistors [in surplus equipment] are tuned for 14 GHz while our 3 cm band is around 10 368 MHz. So we have to change these internal adjustments by external reactance, the addition of a stub. Along a line 50 ohms, welding a small flag that changes its impedance by providing a reactance, usually capacity at a specific line location (Figure 1).

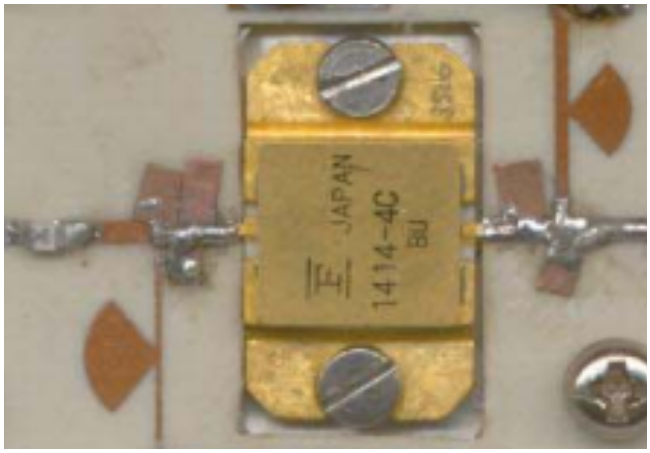


Figure 1: Example of several stubs on a 3 cm SSPA

It is obvious that the location and size of a stub are hardly predictable as they are critical. So this is where the art of laying a stub. If a design has already been carried out by an OM, we can find a photograph that he was led to do. This gives a good indication of the location and dimensions of the stub to be positioned. However, we must put it in turn to find the best location.

I have to position my stub!

And this is where we will be faced with a dilemma: I look at the stub or I look at my screen, analyzer, the needle of my meter? As the flag is just waiting to walk, we must look to make sure it is in the space provided: but you cannot see the spot on the screen! Obviously, the stub will move to short circuit the transistor bias (the very very expensive component goes slam) or between the output line and ground, it will melt!

We have all been faced with this problem and everyone tries to do their best.

Another way to use?

If the eye is already used to follow the stub, we have another sense – hearing.

The signal to be monitored can be translated into a sound frequency. So there are two ways to monitor the amplitude of the signal: the amplitude or the frequency.

I chose the second option because the ear is very sensitive to sound frequency variations.

Description of the device used

A DC voltage proportional to the signal is usually available with a power meter, spectrum analyzer or a single detector. It is amplified to obtain a sufficient level to drive a VCO to provide a frequency/voltage conversion. Frequency of the sound decreases when the signal increases, and vice versa. A power amplifier allows you to listen to a speaker or headphones.

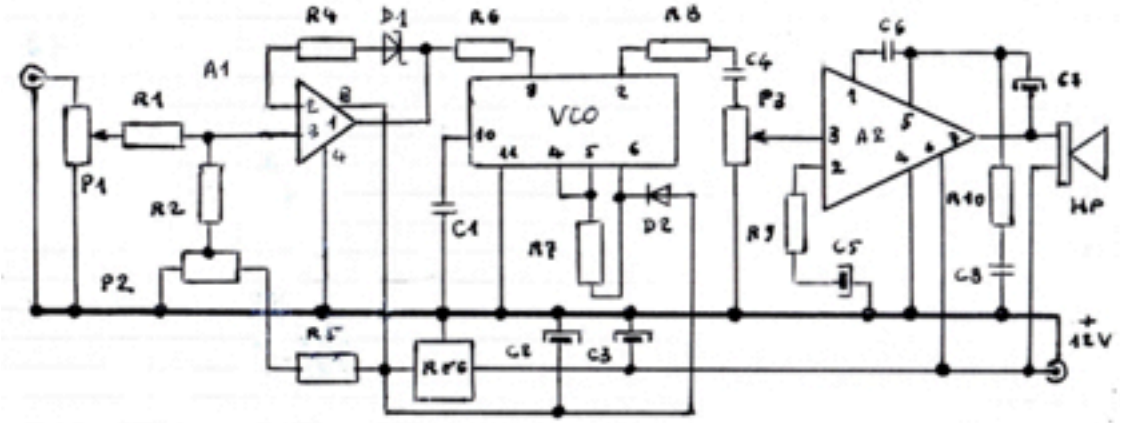
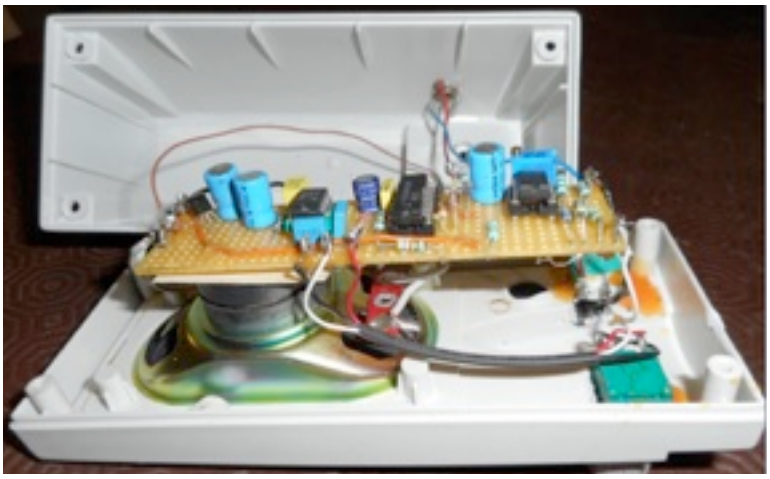


Figure 2. Schematic diagram and component list

position	value		position	value
A1	LM 358		P2	4,7 kΩ adjustable 10-turn
A2	TBA -820 M		P3	10 kΩ
C1	4,7 nF		REG	78 L 09
C2	100 µF 16 V		R1	100 kΩ
C3	100 µF 16 V		R2	100 kΩ
C4	100 nF		R3	none
C5	47 µF 16 V		R4	47 kΩ
C6	1 nF		R5	47 kΩ
C7	100 µF 16 V		R6	47 kΩ
C8	220 nF		R7	4,7 kΩ
D1	Zener 6,2 V		R8	47 kΩ
D2	2 x 1N4148 série		R9	220 Ω
P1	10 kΩ		R10	1 Ω
			VCO	ICL 8038

The A1 amplifier is preceded by potentiometer P1 to adjust the voltage available to that required for the ICL 8038 VCO. The power stage is a TBA820M, but comparable model would be suitable. The power supply is made at 12 V with a 78L09 regulator for sensitive stages.

The assembly was carried out on the insulating support in Veroboard copper strip board (0.1” / 2.54mm) and housed in a miniature loudspeaker unit. The picture only shows the two potentiometers, signal input and volume control, and jacks for the signal input and the 12 VDC supply



In this arrangement, the VCO 8038 must receive a voltage of 6 to 8V at its terminal 8. This explains the presence of the zener diode for this range by the amplifier.

The 10-turn adjustable P2 provides no signal but sets the highest desirable frequency.

At full sensitivity, for a DC input voltage varying from 0 to 250 mV, the frequency varies approximately from 5000 to 250 Hz.

Instructions

It is very simple and it takes a few moments of practice to regret not having done it sooner! When looking for a maximum, you just adjust the setting of the potentiometer input for the rate of change of the signal voltage in order not to stop at the lowest frequency while still within the adjustment range.

For rough adjustment, it is preferable that the measuring element has a logarithmic response (in dB scale), so that significant variations in level do not require too many adjustments of the input potentiometer of our apparatus. On the contrary, when it is at fine tuning, a linear response will better see the effect of the current setting.

Conclusion

Try it, you will see and hear!

One tip

Without claiming to innovate or even to give advice, here's the trick I use to position a stub. I stick with cyanoacrylate glue at the end of a wooden toothpick, one end was slightly flattened. The stub must be very flat, very clean and not oxidized. The optimal location found, I weld stub and verifies that it is well positioned.

Otherwise you have to start over!

But another tip: it is not the stub plate against the PCB during the search, but leaving a millimetre. This allows subsequently to "fine tune" playing on the distance to get the best result. You must fight for the stub remains at the right distance when it wants to return to the initial distance...

Another method that used in LNB for receiving satellite TV channels:

Tilt the stub which can increase the length by bridging adjacent tracks which make up the (Figure 3).

Another method that used in LNB for receiving satellite TV channels:

Tilt the stub whose length can be increased by coupling the adjacent tracks which are (Figure 3).

Figure 3: adjustable stub

NB: The ICL 8038 is no longer produced by INTERSIL. It is still available on the WEB.

Heelweg & Dwingeloo

Martin Richmond-Hardy G8BHC

On Friday evening Sam G4DDK, Dave G4FRE, John G4BAO, Dave Powis G4HUP and Martin G8BHC set off for Harwich on what is becoming an annual pilgrimage to the "Heelweg" microwave event, but my first time.

It is actually held in the village of Westendorp – just to confuse.

You can tell the excitement is mounting, can't you...?

I joined Dave P for the road trip and the others remained with Sam and, by the wonders of GPS, taking the scenic route via some microwave dishes at Hoek van Holland.

After a long drive (thanks to chauffeurs, Sam & DaveP) we arrived in Westerndorp and found

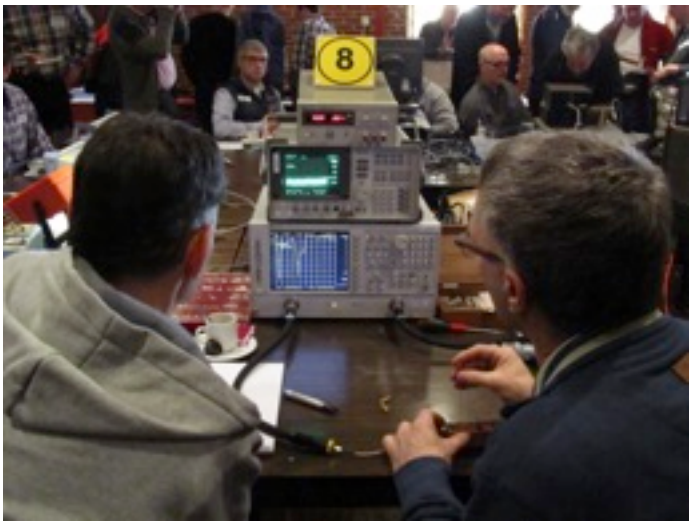
Café Zaal de Vos already heaving with people and kit.

The central tables carried an array of test equipment and around the room were a number of trading stalls.

As the room was rather hot, I went for a stroll around the village and discovered a potential lunch venue, to which we later adjourned.

John G4BAO was convinced it was a Yorkshire establishment.

We can highly recommend http://pan-west.nl/ if you visit next year.



Top: PA3EXV (Gerrie)+PE1NFE (Frank) G4HUP Dave demonstrating SMD soldering

Bottom: PB0AOK (Bram) G4DDK Sam “You need one of these”

Other Brits there were Kevin Avery G3AAF and ex-pat, Ian G4EXP.

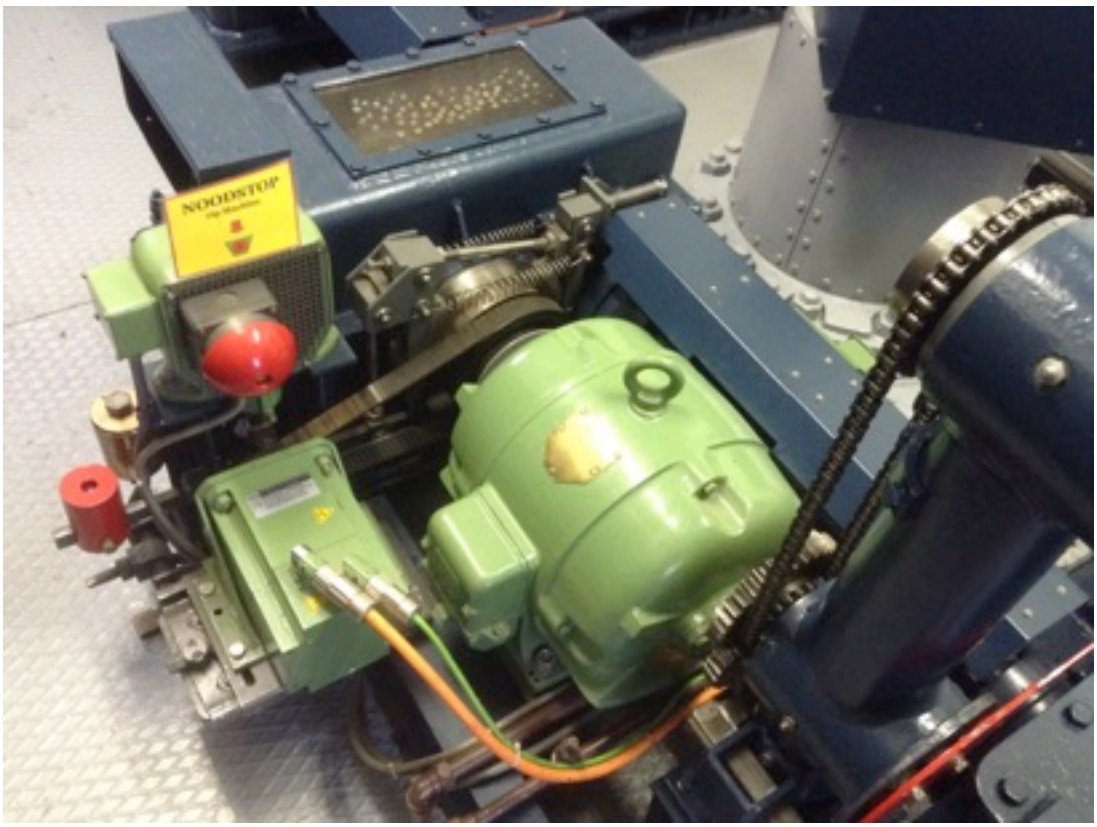
Afterwards we went for the famous Chinese meal. Yes, we all spotted that... stop sniggering at the back!

G4BAO tastefully arranges his dessert

Dwingeloo

Dave P went off to Leiden for a family visit and the rest of us had an overnight stay at the hotel restaurant 't Zwaantje in Lichtenvoorde (no, John, it's not a Yorkshire chain). The next day we set off bright and early for Dwingeloo – the C.A. Muller Radio Astronomy Station http://www.camras.nl/index.php?lang=en

And it's all driven by the little rectangular green motor. The old motor remains in place for its shaft just to connect the hand crank with the gear chain.



We were made very welcome by the guys who look after the dish and equipment. Jan PA3FXB, Harry PE1CHQ, Gert-Jan PE1GJV, Eene PA3CEG, Cor PE0SHF, Dirk ON5GS and visitor Gert-Jan PE1GJV

They tried moonbounce (FM and SSB) on 23cm – very loud echoes!

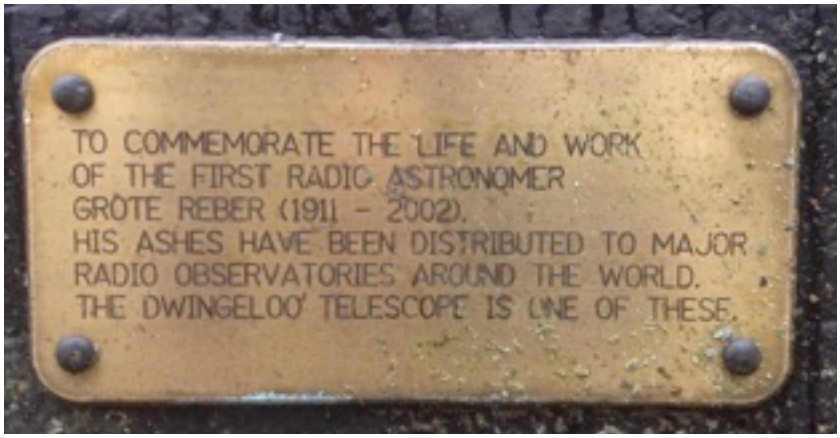
They then tried using satellites (Cosmos 1823 and ICOF2) as passive reflectors but without success as the distant station had problems, and the transit time was too short to hear our own echoes.

From G4BAO: Now if my moon echoes were THIS loud! Moonbounce Dutch Style on 1296 with a 20m dish at PI9CAM: https://youtu.be/rl2hwdhG4R8

A reminder that aluminium paint doesn't stop rust!

And while we're on an archaeology theme...

Some of Gröte Reber's ashes are buried in the foundations.



And so farewell
Behind the camera is Gert-Jan PE1GJV

A grand day out –Tot volkende kier!

A long drive in sleet and rain back to Hoek van Holland, a quick shop for Dutch cheese and Belgian beer in the local Albert Heijn supermarket (yes it's open after 4pm on Sundays!) then onto the ship and home.

Drieenszeventigs

Martin G8BHC

Transverter controller / switcher

Mike VK3UBM

You may wish to share with your newsletter readers a link to my video demonstrating a transverter controller / switcher for field day use that leverages the FT-817 library for the popular Arduino AVR development board. http://vimeo.com/57373241

Apparently a number of microwave enthusiasts in VK have been inspired by the video to explore the same technique for building a control box to enable rationalising the amount of gear taken up a hill - although they rolled their own PIC based solutions in general. In VK rover or portable operations are exclusively vehicle based but it still saves on the number of transceivers that a solo operator requires.

Mike VK3UBM

Proposed Australia (VK) to EU Microwave DXpedition, June/July 2015

Alan Devlin VK3XPD

Following our visit to the popular Friedrichshafen Hamfest in 2014, Australian Amateurs… Alan – VK3XPD and David – VK5KK in conjunction with Wolfgang – OE4WOG and "friends" decided we would participate in a VK – EU, DX Expedition in 2015. This idea was born over Dinner in a local Friedrichshafen Restaurant, June 2014.

So, once again, David and I will be attending the 2015 Friedrichshafen Hamfest over the weekend of June 26 & 27th. This time however, we will also be bringing with us "portable" Transverters for various Microwave and Millimetre Wave Bands. In the week following the Hamfest, it is our desire to work as many EU stations as possible… on as many Bands as possible from OE, DM, F, HB, I and depending on the Propagation, to other more distance countries.

Our Operating "window" will also include the popular "European 3rd Sub Regional Contest"... better known as the VHF Field Day on the weekend of July 4th and 5th, 2015.

By necessity due to our International travel, the Portable RF gear we bring will generally be QRP. We will however have GPS Locked capabilities for our Transverters on 23cm (2 Watts), 10 GHz (1 watt), 24 GHz (1 Watt), 47 GHz (25 mW), 76 GHz and 122 GHz. The latter will be "bare" Mixers feeding a 250mm Dish. We will also have 2 Metres and 70 cms (5 Watts) from our FT-817 IF Radio's. Wolfgang has investigated/suggested several Operating sites. These are both high Mountains in Austria - Pfander Mt in JN47vm, Elevation 1064 metres ASL and Zugspitze Mt in JN57lk, Elevation 2962 metres ASL.

So… to summarise our proposed DX Expedition :

OPERATORS : Alan – VK3XPD and David – VK5KK.

DATES : Monday, June 29th through to Sunday, July 5th, 2015.

BANDS : 2 Metres, 70 cms, 23 cms, 10 GHz, 24 GHz, 47 GHz, 76 GHz and 122 GHz.

OPERATING SITES : Pfander Mt and Zugspitze Mt.

We will be Posting more specific details to the usual Forums and Websites progressively in 2015.

For the latest Updates... I refer you to Alan's Website... rfresale.com

We would welcome any comments or questions you may have regarding our proposed DX Expedition.

Thank you.

Alan – VK3XPD, David – VK5KK, Wolfgang – OE4WOG and friends.

Activity News : October

By Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

Christmas has been very quiet from a microwave perspective. No microwave contests until January. I was not able to get on much over the Christmas season mainly because of the weather. I was planning to get on for the December UKAC, but the weather was no suitable for climbing on the shed roof to change antennas.

Beacons and Reverse Beacons

From Bob G8DTF IO83

I listened a few times over the Christmas period for GB3ZME on 13cm and most of times it was between 529 and 549.

From Sam G4DDK on behalf of the Martlesham Radio Society beacon group.

The 23cm Martlesham beacon is back on. No fault found.....

The new feeders should be installed soon, so the beacon will be back to using all four antennas.

10GHz is now likely to be off for some time, pending a re-build, call sign change and introduction of MGM. It had been operating on low power for some time due to a fault. Even so, it was still being heard widely. The new beacon will run a full 1W into a new slotted waveguide antenna. As for the last few years, it will be frequency locked on 10368.830MHz

December 23cm UKAC

No Reports

Monday Nights

From David G6KWA JO02

Have been testing Homebrew Transverter with about 40 w out (from G4BAO PA) and 24 element G4CQM Powabeam (from DX shop). Transverter at top of mast no pre-amp.

A very cold and frosty night outside with armstrong rotation of 12m SCAM at 15m ASL, a very poor location, under cover of darkness. Very pleased with stability and results.

29th December worked G8DMU, G3UVR (worst of the 3 QSO's we have had), G4LDR and G0DTS best at IO94IL 274 km over what Rob describes as a difficult path. Thanks to them for taking the trouble. The band was in very poor shape with no direct signals but all stations were peaking on aircraft scatter nicely, although the QSB was savage.

...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

UKuG MICROWAVE CONTESTS - 2015

John G3XDY, UKuG Contest Manager

Aims and comments:

Some options for the UKuG contest programme were proposed in the October 2014 edition of Scatterpoint, with a request for feedback. About a dozen stations provided comments and alternative suggestions for changes, and the calendar for 2015 takes forward several of the best supported proposals.

The low band events on 1.3/2.3 and 3.4GHz will continue in the same format as 2014, with an overall championship table based on the best three sessions out of five. The event dates will be similar to last year, with the March, May and June sessions running on IARU coordinated dates. To encourage operation on the new 2300-2302MHz segment, the same station may be worked for points on both 2320 and 2300MHz. Stations wishing to take part on 2300MHz are reminded that they must be in possession of the relevant Notice of Variation, and to take part on 2320MHz that they must register their station with Ofcom by emailing pssramateurs@ofcom.org.uk to provide the following information:

1. Name
2. Address
3. Call sign
4. Location of use
5. Frequency range used
6. Type of use
7. Regularity of use (e.g. evenings and weekends; 24/7; occasional)
8. Transmit power (ie. EIRP) .

The high band events will now be on 5.7 and 10GHz only, recognising that the propagation characteristics of 24GHz don't match up well with the site choices made to get good results on 6 and 3cm. The dates will continue to be on the last Sunday of May, June, July, August and September. In view of the increasing activity on 10GHz, the sessions will now run between 0600 to 1800 clock time, with operators able to choose any 8 hour slot (or two slots with at least a 1 hour gap). As in previous years the overall table and trophies will be determined using the best three scores made by each station across the five events.

There will be a new series of events for the millimetre waves. These will comprise the all band event in July covering 24GHz – 248GHz, and 24/47GHz events in June, August and September. The 24GHz trophy will be awarded for the July event, the 24GHz scores from the best three of the four events will count towards an overall score for the G0RRJ Memorial Trophy, and the best three session scores on 47GHz will determine the award of the 47GHz Trophy.

Due to lack of support, the Microwave Field Day contest previously held in August will no longer take place. The award of certificates for Radio Talkback has been discontinued.

Microwavers outside the UK are most welcome to join in our contests. There is already a core of French, Dutch and Belgian stations that appear regularly in our summer contests. We would like many more to do the same!

THE RULES listed below are final and binding for 2015 (there are some changes from 2014). The following contests are scheduled for 2015:

- Low Microwave Bands - 1.3GHz/2.3GHz/3.4GHz (5 contest days). An overall championship will be decided on the best three scores out of five.
- 5.7GHz (5 contest days with 3 to count for the championship), on the same days as the 10GHz contests.
- 10GHz (5 contest days with 3 to count for the championship), on the same days as the 5.7GHz contests.
- 24GHz G0RRJ Memorial Trophy Contests (4 contest days with 3 to count for the championship).
- 24GHz Trophy awarded to the leading station on 24GHz in the 24GHz -248GHz event in July.
- 47GHz (4 contest days with 3 to count for the championship)

The full contest program and rules are published in the January 2015 issue of the Scatterpoint Microwave Newsletter and are also available on the Internet on the UKuG website at http://www.microwavers.org

General Rules (applicable to all events)

The Contests are open to all comers (you do not have to be an RSGB or UK Microwave Group member). Stations located outside the UK (G, GW, GM, GI, GD, GU, GJ) may enter a contest, and will be tabulated within the overall results tables, but will not be eligible for UK Microwave Group awards.

Contestants are expected to enter in the true spirit of the event and to adhere strictly to any equipment or power restrictions that apply to the particular contest.

Operators may enter as home station or portable (either mixed or separately in the championships) unless specified in the rules for a specific event. In multi-band contests, single-band entries are always acceptable.

Stations: Entrants must not change their location or callsign during the contest, unless the Rover rule is invoked. In multi-band events, all stations forming one entry must be located within a circle of 1000m radius. An operator may reside outside the station's area ("remote station"), connected to the station via a "remote control terminal". In such a case, the Locator for the contest is the Locator of the station's position. An operator may only operate one single station, regardless if it is locally or remotely operated, during the same event.

Contacts: Only one scoring contact may be made with a given station on each band, regardless of suffix (/P, /M, etc) during an individual contest or cumulative activity period, unless the Rover rule is invoked. Contacts made using repeaters or satellites will not count for points. Contacts with callsigns appearing as operators on any of the cover sheets forming an entry will not count for points or multipliers.

Scoring: Contacts are scored on the basis of 1 point per kilometre for full, two-way microwave contacts and at half points for one-way (ie crossband) contacts. Any contacts made by EME are scored at 1 point per kilometer up to 1000km, and will be scored at 1000 points above that distance.

Exchanges: Contest exchanges on the microwave bands consist of RS(T) + serial number (starting at 001). In addition, the six (or eight) figure QTH Locator must be exchanged either via the microwave band or on the talkback medium. In multiband contests, the serial number will start at 001 for each band (ie a common sequence across the bands is NOT to be used). No points will be lost if a non-competing station cannot provide an IARU locator, serial number, or any other information that may be required. However, the receiving operator must receive and record sufficient information to be able to calculate the score.

Talkback: Talkback can be used to assist in setting up a QSO, but note that the contest exchange must be made via the microwave band. It is not permissible to use the talkback as a means of checking the report or serial number – they must be copied via microwaves – and after the QSO is complete, care should be taken to avoid accidentally repeating the exchange via talkback. There is no restriction on the talkback methods that can be used – other amateur band, internet, phone, etc. In setting up the QSO, it is also permissible to send back received audio to the other station, for example to help with antenna alignment. An exception is that our contests do allow one way (cross-band) QSOs for half points, and in this case, the other band can be used by one of the stations.

Entries: Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed.

Log entries must be submitted via the online log portal at http://microwave.rsgbcc.org/cgi-bin/vhfenter.pl. When uploading electronic logs, the format should be one of the following: ASCII text, RSGB Standard Format, Cabrillo, SDV and G0GJV log outputs, and IARU REG1TEST format (preferred). Paper logs may be entered using the online log editor at http://microwave.rsgbcc.org/cgi-bin/cover.pl

Awards: Certificates will be awarded to overall contest winners and individual section leaders and their runners up. Additional Certificates of Merit will be awarded to stations in certain categories, as indicated in the rules for each event. With these, as with the logs, the adjudicator's decision is final.

Special Rules: Applicable if called up for the specific contest:

Rover Concept: The 'Rover' concept is to encourage lightweight, low power portable activity. This allows the location of the station to be moved as many times as desired and by a minimum of 5 linear kilometres, at any time during the contest period. From each new location, stations worked from any of the previous locations during the event may be worked again, both stations involved in the contact gaining points. The serial number, however, will not revert to 001 each time a move is made but will carry on consecutively from the previous contact.

Low Band Microwave Contest Rules

First introduced in 2004, these contests aim to encourage operation on the three lowest bands in the amateur microwave allocation, particularly as there is growing UK availability of 2.3GHz and 3.4GHz equipment. For 2015, there are five of these events, in March, April, May, June, and November. The March, May and June events are timed to overlap with UHF/SHF events in some other IARU Region 1 countries. The times for the November event have been shortened to make portable operation more practical.

1. The General Rules listed above apply except as modified by these rules.
2. There are fivecontests, one each in March, April, May, June and November. The March, April and June events run from 1000 to 1600 UTC. The May event runs from 0800 to 1400 UTC to coincide with the RSGB UHF Contest. The November event is from 1000 to 1400 UTC.
3. Entrants in the May event need not start serial numbers from 001 if they are also participating in the RSGB UHF Contest.
4. To encourage operation on the new 2300-2302MHz segment, the same station may be worked for points on both 2320 and 2300MHz. Contacts on the new band segment should be identified in the logs by adding a suffix such as /L to the callsign.
5. Each event will be scored and tabulated separately. There will be an overall championship determined by taking the best three normalized scores from each entrant across the five events for each band. An overall champion will also be declared based on the normalized championship scores from each band.
6. For each session, certificates will be awarded to the leading entry plus runner-up on each band, the overall leading entry and runner-up across the three bands, plus for each band the leading stations in each of the following categories: home station, portable station, station running less than 10 watts output. Championship certificates will be awarded to the winners and runners up for each band, and to the overall championship winner and runner up.

5.7GHz Contest Rules

The 5.7GHz and 10GHz contests are being run concurrently to grow activity on 5.7GHz. Although they are on the same days, they are completely separate contests. Any band or both bands can be used on any of the 5 days.

1. The general rules shown above apply.
2. There are five, monthly, events from May to September inclusive, and the events run from 0600 to 1800 UTC on a Sunday. Entrants can operate for a period of up to eight hours during each event, either as a single period or two separate periods with a minimum off time of 1 hour between.
3. Logs for all events entered should be submitted in the two weeks after each session.
4. Moving location during the contest is allowed - the Rover concept is applicable.
5. Certificates will be awarded to the leading station and runner-up, and to the leading fixed, portable and low power (<1W) stations.
6. The G3KEU Memorial Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

10GHz Contest Rules

The 5.7GHz and 10GHz contests are being run concurrently to grow activity on 5.7GHz. Although they are on the same days, they are completely separate contests. Any band or both bands can be used on any of the 5 days.

1. The general rules shown above apply.
2. There are five, monthly, events from May to September inclusive, and the events run from 0600 to 1800 UTC on a Sunday. Entrants can operate for a period of up to eight hours during each event, either as a single period or two separate periods with a minimum off time of 1 hour between.
3. Logs for all events entered should be submitted in the two weeks after each session
4. Contestants may submit logs for any one of the following sections:

Open

No power or antenna restrictions (other than those laid down in the amateur licence) on either 10GHz or on the talkback band.

The 'Rover' concept does not apply to this section.

Restricted

10GHz transmit output not to exceed 1.0 watt to the antenna.

Moving location during the contest is allowed - the Rover concept is applicable.

5. Certificates will be awarded to the leading station and runner-up in each section, and to the leading portable and fixed stations.
6. The 10GHz championship will be determined based on the best three normalized scores from each entrant over the five sessions. In addition to winners and runners-up certificates for each section, the following certificates/trophies will be awarded:
   - Leading entry in the Open section - The G3RPE Memorial Trophy
   - Leading entry in the Restricted section - The G3JMB Memorial Trophy
   - Certificates to the leading home station and portable station in each section.

24GHz G0RRJ Contest Rules

The 24GHz G0RRJ Contest will take place over four sessions, coincident with 47GHz events and also the all millimeter wave event in July.

1. The general rules shown above apply.
2. There are four monthly events from June to September inclusive, and the events run from 0900 to 1700 UTC on a Sunday.
3. Logs for all events entered should be submitted in the two weeks after each session
4. Moving location during the contest is allowed - the Rover concept is applicable.
5. Certificates will be awarded to the leading station and runner-up in each section, plus the leading home and portable stations.
6. The G0RRJ Memorial Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

24GHz Trophy Rules

The 24GHz Trophy contest coincides with the 47GHz and 76GHz - 248GHz events

1. The general rules shown above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. Certificates will be awarded to the leading station and runner-up, and the winner will receive the 24GHz Trophy.

47GHz Contest Rules

The 47GHz contest will take place over four sessions, coincident with 24GHz events and also the all millimeter wave event in July.

1. The General Rules listed above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. Certificates will be awarded to the leading station and runner-up.
5. The 47GHz Trophy will be awarded to the leading entry in the championship, determined from the best three normalized scores during the series of events.

76GHz – 248GHz Contest Rules

The 76GHz – 248GHz contest coincides with the 24GHz Trophy, and 47GHz event in July

1. The General Rules listed above apply.
2. The contest will run from 0900 to 1700 UTC on a Sunday.
3. Moving location during the contest is allowed - the Rover concept is applicable.
4. The overall score will be determined by adding together the normalized scores from all bands entered.
5. Certificates will be awarded to the leading station and runner-up on each band and overall.

Other Microwave Contests

The first weekend of May sees the RSGB 432MHz -248GHz Multiband Contest staged in parallel with the RSGB UHF/SHF Contest. The 10GHz Trophy is run in parallel by the VHF Contest Committee on the Saturday of that weekend, and the rules can be found in the RSGB VHF contest rules.

The first weekend in July is RSGB VHF National Field Day which includes 1.3GHz as one of the bands.

The first weekend of October sees the RSGB 432MHz -248GHz Multiband Contest staged in parallel with the Region 1 IARU UHF/SHF Contest. The 1.3GHz Trophy and the 2.3GHz Trophy are run in parallel by the VHF Contest Committee on the Saturday, and the rules can also be found in the RSGB VHF contest rules.

The RSGB also runs a cumulative UK Activity Contest on 1.3GHz on the third Tuesday from 2000-2230 local time, and on 2.3GHz – 10GHz on the fourth Tuesday of every month, from 2000 – 2230 local time (subject to some variations in timing on 2.3GHz).

In addition there are other Continental UHF/SHF Contests held during the year and interested UK microwavers are urged to be active during these. Their details may be found on the Internet.

UKuG Microwave Contest Calendar 2015

Dates, 2015	Time UTC	Contest name	#	Certificates
8-Mar	1000 - 1600	Low band 1.3/2.3/3.4GHz	1	F, P,L
19-Apr	1000 - 1600	Low band 1.3/2.3/3.4GHz	2	F, P,L
3-May	0800 - 1400	Low band 1.3/2.3/3.4GHz	3	F, P,L
31-May	0600 - 1800	1st 5.7GHz Contest		F, P,L
31-May	0600 - 1800	1st 10GHz Contest		F, P,L
7-Jun	1000 - 1600	Low band 1.3/2.3/3.4GHz	4	F, P,L
21-Jun	0900 - 1700	1st 24GHz Contest		
21-Jun	0900 – 1700	1st 47GHz Contest		
28-Jun	0600 - 1800	2nd 5.7GHz Contest		F, P,L
28-Jun	0600 - 1800	2nd 10GHz Contest		F, P,L
19 -Jul	0900 - 1700	24GHz Trophy / 47 / 76-248 GHz		
26 -Jul	0600 - 1800	3rd 5.7GHz Contest		F, P,L
26 -Jul	0600 - 1800	3rd 10GHz Contest		F, P,L
16- Aug	0900 - 1700	3rd 24GHz Contest		
16- Aug	0900 - 1700	3rd 47GHz Contest		
30 -Aug	0600 - 1800	4th 5.7GHz Contest		F, P,L
30 -Aug	0600 - 1800	4th 10GHz Contest		F, P,L
13 -Sep	0900 - 1700	4th 24GHz Contest		
13 -Sep	0900 - 1700	4th 47GHz Contest		
27 -Sep	0600 - 1800	5th 5.7GHz Contest		F, P,L
27 -Sep	0600 - 1800	5th 10GHz Contest		F, P,L
15 -Nov	1000 - 1400	Low band 1.3/2.3/3.4GHz	5	F, P,

Key:		
	F	Fixed / home station
	P	Portable
	L	Low-power (<10W on 1.3-3.4GHz, <1W on 5.7/10GHz)

Events calendar

2015

Jan 17	Heelweg Microwave, Westendorp Netherlands	www.pamicrowaves.nl/website/
Feb 21	Tagung Dorsten	http://www.ghz-tagung.de/
Apr 11	CJ-2015, Seigy	cj.ref-union.org/
April 25 – 26	Martlesham Round Table	mmrt.homedns.org/
May 15 – 17	Hamvention, Dayton	www.hamvention.org/
June 26 – 28	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 11 – 12	Finningley Round Table	www.g0ghk.co.uk/
July tbc	Amsat-UK Colloquium, Holiday Inn, Guildford, Surrey	
Sept 6 – 11	European Microwave Week, Paris	www.eumweek.com/
Sept 11 – 13	60.UKW Tagung Weinheim	http://www.ukw-tagung.de/
Sept 25 – 26	National Hamfest	http://www.nationalhamfest.org.uk/
Oct 9–11	RSGB Convention	http://rsgb.org/convention/
Oct 16–18	Microwave Update, San Diego	http://www.microwaveupdate.org/

2016

May 20 – 22	Hamvention, Dayton	http://www.hamvention.org/
Jun 24 – 26	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Oct 3 – 7	European Microwave Week, London	http://www.eumweek.com/
Oct 7–9	RSGB Convention	http://rsgb.org/convention/