An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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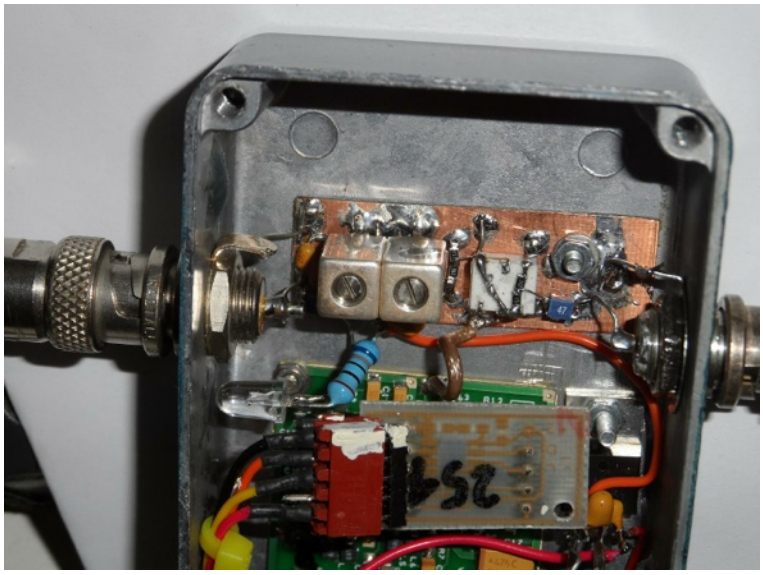
A Frequency Locking Scheme for Receivers with Unstable Local Oscillators

By Andy Talbot G4JNT, with user comments by John Fell G0API



In this Issue

HAVE YOU REGISTERED YOUR USE OF THE 2.3GHZ BAND WITH OFCOM YET?

Don't forget that

Every Monday evening is Microwave Activity Evening

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Editor's corner

Congratulations to Brian Coleman G4NNS on completing 50 years membership of the RSGB!

73s de Martin G8BHC

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

UK MICROWAVE GROUP

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!)

Colour codes

Editorial & Events

Activity & Contests

Technical

Nanowaves (optical)

Commentary

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.

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UK Microwave Group AGM Minutes

Contests & Awards

John Quarmby G3XDY & Dave Powis G4HUP

- The new championship for 5.7/10/24GHz was inaugurated, with entries on 10GHz up by 50% over 2012, but down on the other two bands. Conditions were unexceptional during the events.
- The Low Band events (1.3/2.3/3.4GHz) again showed a drop in numbers of entries.
  The session in October did not align with the RSGB event the same weekend, so it has been moved to May for 2014.
- The mmwave event in July saw a great increase in entries, with all bands from 24GHz to 134GHz in use.
- This year there were few changes to the contest calendar and rules.
- Further feedback will be sought at the Contest Forum later today.
- No Firsts or SquaresCertificates have been issued since the last AGM.
- A revised Distance Award will be launched in conjunction with the SOTA awards programme.

Contribution Awards

G3BNL:	**G4EAT, G8ACE, G8CUB, G8KQW** for their efforts on 76GHz path and equipment
G3EEZ:	**GW3XYW** for his consistent efforts in EME operation from a difficult location
Fraser Shepherd Award:	**G3WDG** for work on GaN PAs for amateur band use

UkμG 'Operating' Awards 2013

G3KEU (5.7GHz)	Telford & DARS G3ZME/P
G3JMB (10GHz)	Nick Pearce G4WLC
G3RPE (10GHz)	Neil Underwood G4LDR
G0RRJ (24GHz)	Keith Winnard GW3TKH
24GHz	Ian Lamb G8KQW
47GHz	Ian Lamb G8KQW

Minutes 2013

Minutes 2013 (as published in Scatterpoint May 2013) No dissent.

Chairman's Report – An 'Interesting' Year

Chris Bartram GW4DGU

PSSR Consultation

- An excellent response – thanks to all who responded. A better outcome than many would have thought possible
- Grateful thanks and special kudos to our Microwave Manager, Murray, G6JYB for his dedication and negotiating skills!

Common Interests

Start to establish links with other 'amateur' users of the microwave spectrum:

- BATC
- SOTA
- Radio Astronomers
- Deep Space Group

Trophies and Contests

- Remodelled the G3VVB Trophy as a 'Projects Competition' rather than as a 'Construction Contest'
- Instigated work on a series of joint SOTA/UKuG operating awards

Nations and Regions

- Commenced work attempting to remove the apparent 'East Anglian Microwave Club' bias seen by many members in locations other than SE England and East Anglia. This will require some changes to the Constitution and the Committee Structure.
- As Chairman, attended every Roundtable held during my period of Office.

No questions asked.

Treasurer's Report

Martin R-H G8BHC pp John Worsnop G4BAO

UK Microwave Group **2013**

Covering period 01/Jan/2013 to 31/Dec/2013

Item	Income	Expenditure	Balance	Notes
Opening balance 01/Jan/13			**14693.03**	
Subscriptions	2481.40			
Beacons	0.00	0.00		
Interest	5.15			
Other income	0.19			
websites		22.56		
Chipbank		29.05		
Beacons	0.00	0.00		
Trophies		119.99		
Other expenses		729.90		incs. 6cm and 3cm loan kit + insurance
		0.00		
Sub-totals	**2486.74**	**901.50**		
Closing balance 31/Dec/2013			**16278.27**	

J Worsnop G4BAO

Treasurer

01/01/2014

No questions asked. Approved nem con.

UKμG Membership April 2013/2014

Bryan Harber, G8DKK

2014

426 Members (4/2014)
30 New Members (Jan to April 2014)
Yahoo Scatterpoint
394 members subscribed
23 pending
82% members pay by PayPal

2013

406 Members (4/2013)
48 New Members (calendar year 2013)
Yahoo Scatterpoint
393 members subscribed
34 pending

From the Membership Secretary and Treasurer:

- Thanks to those members who remembered to add their callsign to PayPal payments and the back of subscription cheques.
- The problem of associating payments with call-signs now is mainly new members joining.
- Increase in new members triggered by recent RadCom columns & articles.

Nominations

The outgoing Committee comprised:

Officers & Membership Secretary

Chairman	Chris Bartram	GW4DGU	RETIRING
Treasurer	John Worsnop	G4BAO	
Secretary and Editor	Martin Richmond-Hardy	G8BHC	RETIRING
Membership Secretary	Bryan Harber	G8DKK	
Activity News column	Bob Price	G8DTF	
Beacon Coordinator	Tony Pugh	GW8ASD	
Spectrum	Murray Niman	G6JYB	
Contests	John Quarmby	G3XDY	

Corresponding members

USA Liaison	Kent Britain	WA5VJB/G8EMY	
Northern Ireland	Gordon Curry	GI6ATZ	
Scotland	Ray James	GM4CXM	RETIRING
Scotland	John Cooke	GM8OTI	co-opted to replace Ray
Wales	Tony Pugh	GW8ASD	
ATV	Noel Matthews	G8GTZ	co-opted for link to BATC
Beaconspot	Robin Lucas	G8APZ	
Trophies coordinator	Dave Powis	G4HUP	

There were no nominations for the posts of Chairman and Secretary.

Martin G8BHC will remain as Scatterpoint Editor

Graham Murchie G4FSG proposed that the those willing to stahd again be elected en bloc and that the Committee meet as soon as possible and elect from within the committee. Seconded G4NNS. AGREED.

Other nominations: Chris Whitmarsh G0FDZ, Mike G3LYP (Chip Bank)

AOB

None.

Martin Richmond-Hardy G8BHC

UKµG Chairman's Report 2013 - 2014

by Chris Bartram GW4DGU

In the sense of the reputed Chinese greeting, this has been an 'interesting' year for the UK amateur microwave community!

When I was asked to consider standing for Committee, I had no idea that I'd end up as Chairman of the Group, still less did I expect the amount of work that attempting to defend our community from Ofcom's proposals for reducing access to 'our' 2.3 and 3.4GHz bands as part of their Public Service Spectrum Release programme entailed. The response to the associated Ofcom Consultation, largely from UkuG members following an appeal on the 'ukmicrowaves' Yahoo Group, and at Roundtables, was very gratifying. I'm told that the people managing the PSSR process at Ofcom were rather surprised to receive such a large, and passionate response from such a well-qualified group of individuals. This was apparently one of the biggest responses that Ofcom has ever had to a consultation on Amateur Radio issues. Not bad for a 'minority interest' within Amateur Radio. Congratulations!

There is a tendency in the UK for many professionals in the RF/microwave community to hide an interest in amateur radio. This seems not to take place to the same extent in many other technically advanced countries. In the case of the Ofcom Consultation, our Group encouraged people to say a few words about their technical and professional background. Judging by the published responses, we are a very well-qualified – both academically and by experience - bunch! We shouldn't hide our interests at work: we have nothing whatsoever to be ashamed of!

The result of the Consultation has been better than I'd expected. A lot of this was due to Murray, G6JYB, the RSGB Microwave Manager. The 'time-share' to which our Primary User has agreed is a vastly better result than some other countries across Europe have achieved. But we are not out of the woods, and must treat our new licence conditions with respect. We now have to consider the potential problems with the expansion of the LTE/data networks. Even if we are initially able to continue much as before, we need to seriously 'up our game' technically! In the medium to long term we will need to pay MUCH more attention to factors such as broadband noise, and low-level spurii from our transmitters. The increased occupancy of bands adjacent to our allocations will make very severe demands on the intermodulation and spurious response performance of our receivers. We will no-longer be able to treat those bands which we've been used to sharing with very rarely heard 'other users' as wide-open, empty, spaces. Those 'other users' will also doubtless be looking to find reasons to limit or eliminate our activity … We need to more than be squeaky clean, both in terms of our signals, and operating practices; the Primary User has very big ears!

Common interests

'Our' bands are shared by a number of interests within Amateur Radio: Amateur Television and SOTA are two that spring to mind. We don't just represent and encourage Microwave DXing! I believe that it's important for UkuG to engage with the wider community.

There are groups such as the Amateur Deep Space Group, and the Amateur Radio Astronomers which have interests which are not Amateur Radio in the sense of making 'contacts' or the use of amateur frequency allocations, but which share many of our concerns, and with whom we can share both technical information and members.

I have initially tried to build bridges with both the SOTA Group and BATC. Your Committee has co-opted the BATC Chairman, Noel, G8GTZ, to the UkuG Committee, and the presentation regarding the PSSR proposals at the Finningley Roundtable, was jointly chaired by Noel and myself.

UKuG's relationship with SOTA has begun with planning for a range of SOTA Microwave Awards which will be validated by UkuG, and I'm hoping that a SOTA member will join our Committee, either by by election or co-option.

We can best help the Astronomers by providing technical support, and it has been gratifying to see our former Chairman, Brian, G4NNS, directing members of the BAA Radio Astronomy Group to our Technical Assistance network. This may not be 'proper amateur radio' to some, but offering our expertise can only pay dividends in the long-term.

G3VVB Projects Award.

In recent years, the G3VVB Trophy has been awarded at the Crawley Roundtable for individual microwave 'construction' projects. Construction from component level has become less common in recent years, as there has been wide utilisation of ready-built modules, and modification of surplus commercial equipment. Also there are other aspects of equipment development which at the time of the instigation of the Award, barely registered with most people. The most obvious of these is software.

The reason for the revision of the rules – actually, I couldn't find the original rules, if they ever existed(!) - is firstly to broaden the scope of the Trophy to include all microwave, mm-wave and nanowave related projects, whether they be hardware, software, or operational. The operational aspect could, for example, include propagation studies.

Secondly, it seems highly desirable to make the Trophy more accessible to potential entrants around the UK. With this in mind, with the positive encouragement of the organisers of the Crawley, the Committee has decided to encourage the all of the UK Microwave Roundtables to organise heats of the Award.

Chipbank

The Chipbank stock continues to increase under the very capable management of Mike, G3LYP, to whom we all owe our thanks. Please don't forget that access to this facility is a benefit of Membership. Even P&P is free! Of course we're also very happy to receive in-kind donations of useful components …

Nations and regions

As, I believe, the first Chairman of UkuG to live outside England, I feel a particular responsibility to ensure that we are representative of the whole of the UK. There is certainly a surprisingly strong feeling amongst many in the Nations and Regions which make-up the UK that the UkuG equates to a (fictional) East Anglian Microwave Society. I would like to see our Committee to have more elected members from outside the South and East of England. That implies a future change to our Constitution to include regionally elected Committee Members, and AGMs held in other locations around the UK.

Committee

I'd like to thank the Committee for their support, particularly at the beginning of my term as Chairman when it felt as though I was thrown into a maelstrom.

A few members of the Committee are leaving this year. For sheer hard work and dedication we'd find it difficult to replace our Editor, Martin, G8BHC. He is resigning as a Committee Member, but, fortunately, he is continuing as the Editor of 'Scatterpoint'. Also, going is Ray GM4CXM, who is ignoring Noel Coward's dictum, and putting himself very successfully on the stage. With parts in a couple of significant films, and a desire to further his new career, he no longer is able to give the time and energy to representing our Scottish members that they deserve. The Committee co-opted John, GM8OTI to replace him during the last year.

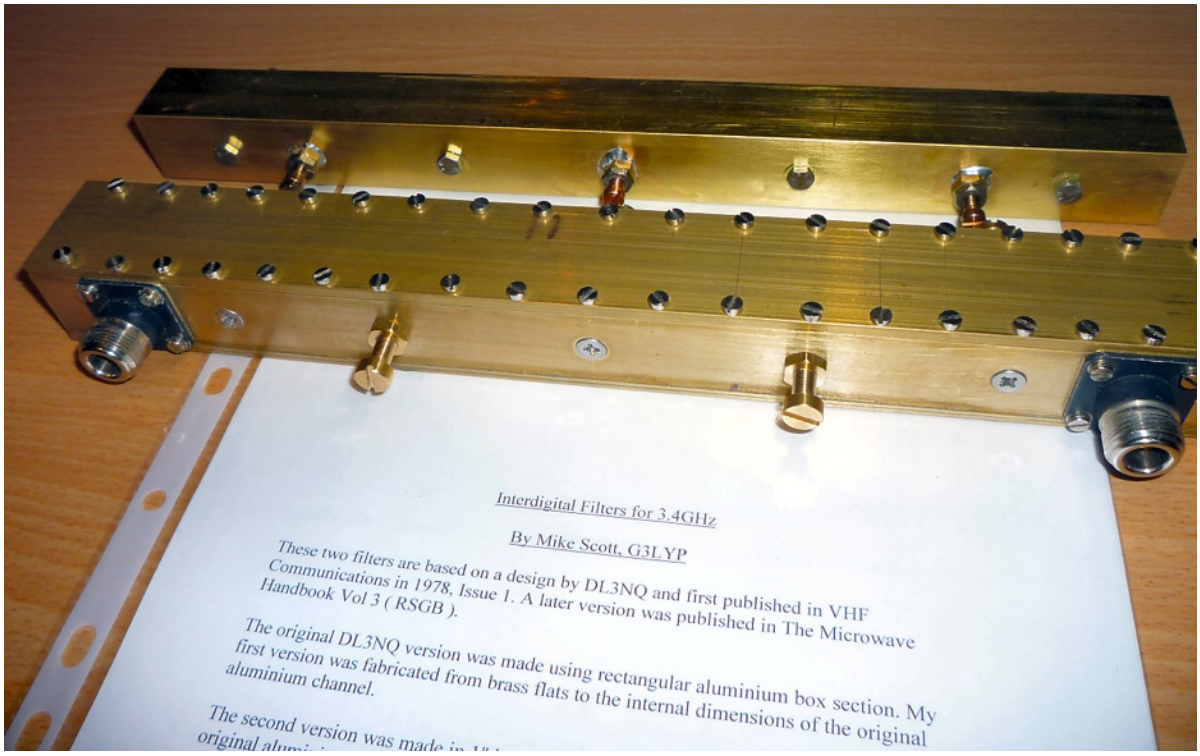
If anyone feels that they could contribute constructively to the running of the Group, please make yourself known! We need fresh blood in order to stop the Group from ossifying – please don't leave it to the 'usual suspects'. Standing for membership of the Committee of an organisation such as UkuG isn't a job for ego-trippers: it occasionally requires considerable commitment, but it can also bring a great deal of satisfaction.

On a personal level, I agreed to initially take-on the job of Chairman for a year. Despite my deep reservations, regarding any involvement with our semi-related hobby of Amateur Radio Politics, I have tried to lead and to represent the group well at every level. At my own expense, I've travelled to every Roundtable which has taken place since my election, and have given technical talks at both Crawley and the Scottish roundtables, as well as co-leading the PSSR discussion at Finningley. I've enjoyed meeting and getting to know many of our members. However, my personal circumstances changed significantly last Autumn, and I regret that I can no longer devote the time or energy which this important job demands. I will not be standing for Chairman at this AGM. However, as I believe that continuity is important, I am prepared to continue as an ordinary member, if elected back to the Committee.

73

Chris GW4DGU
gw4dgu@chris-bartram.co.uk
07545 094490

Pictures from MMRT 2014



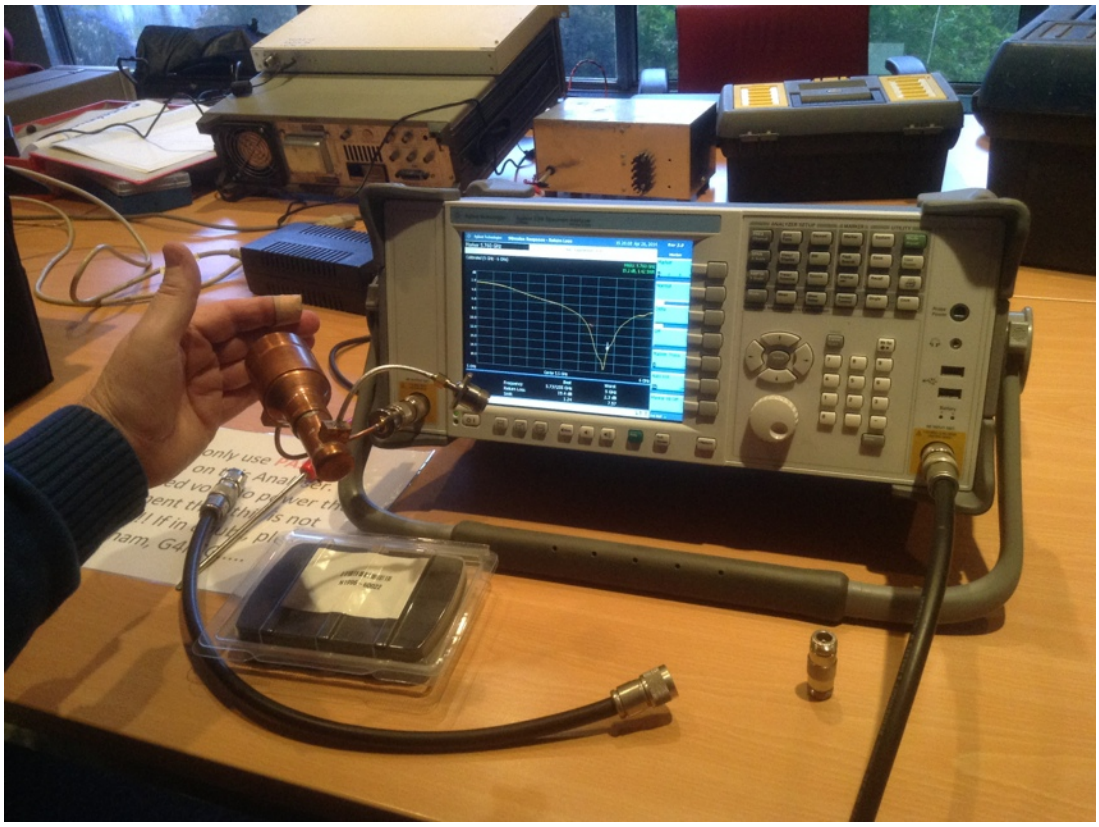
Mike Scott G3LYP received a Commendation in the Construction Competition with this interdigital filter for 3.4GHz

Setting out his stall for the Chip Bank - FREE stuff!

Lecture theatre with AV Team (Jason G7OCD and Mark Riley M5BOP)

The measurement facility.

L–R: Jenny G0VQH, Vince G8CZP, Paul M0PDA, John G3XDY, Bryan G8DKK



Finger tuning a small feed (just before the white smoke escaped)

I'm sure most of you are aware there was a loud bang and smoke whilst testing noise figures on the Saturday of the Round Table.

I have now had time to take the covers off the HP8970A and confirmed our suspicions that it was a mains filter capacitor that had blown up.

I have removed the remains of the offending capacitor, see attached photo. I don't think it's essential to replace it (however it might not be quite so good on meeting EMC specs as a result).

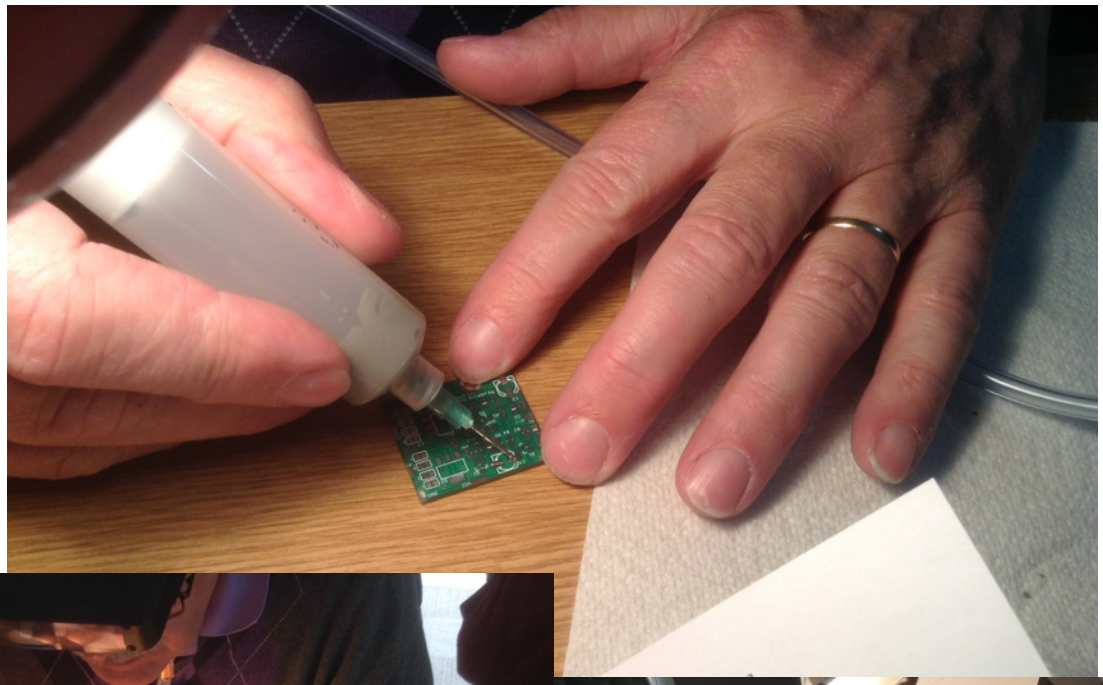
It all powers up OK so I think all is now well.

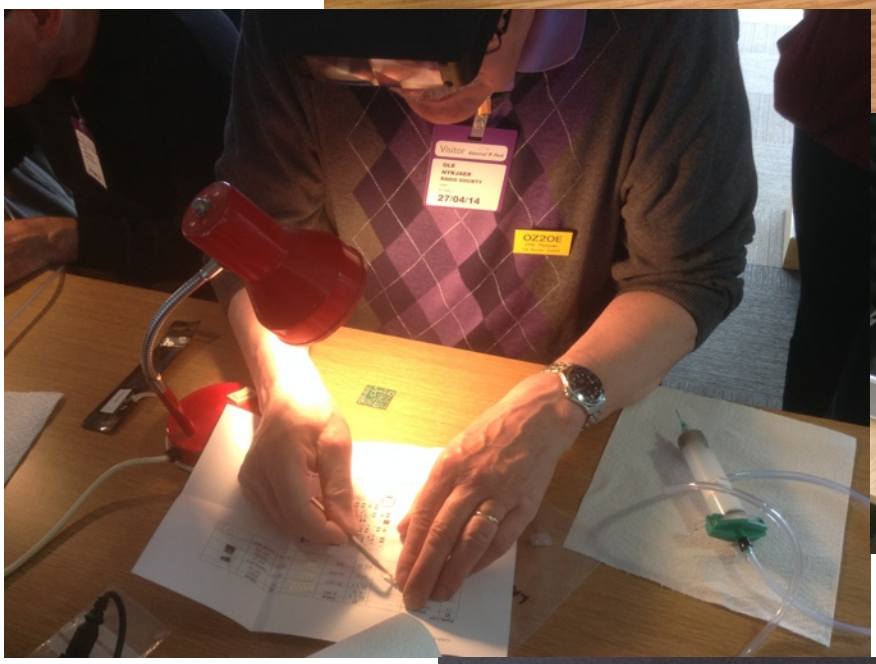
73

John G3XDY

Is the GPO significant? That would date it! Ed.

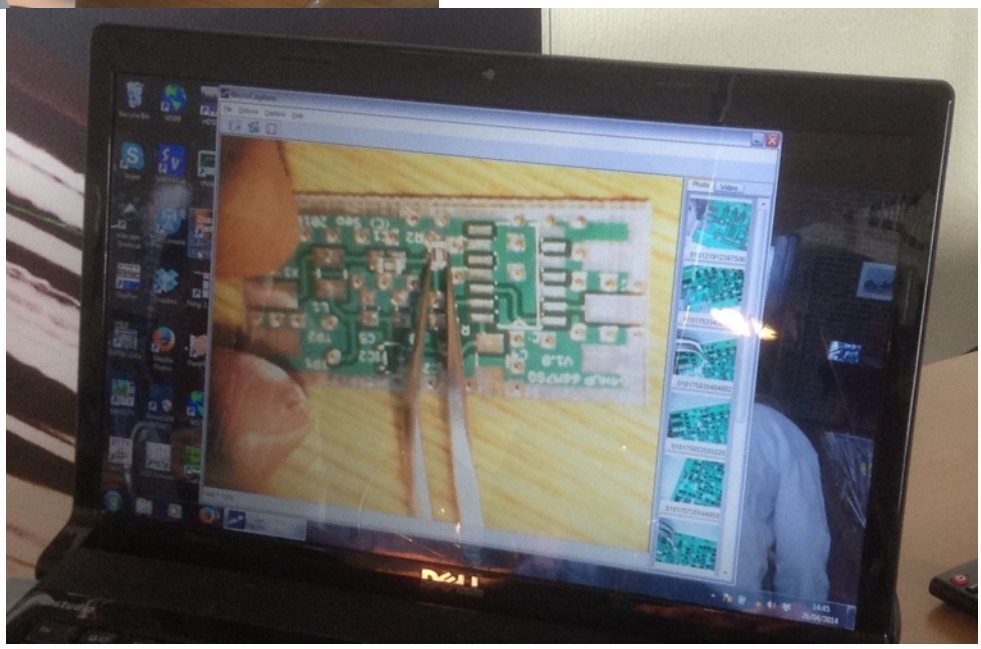
Applying the solder paste





Build a G4DDK kit?

Forgot to bring your spectacles?



A Frequency Locking Scheme
for Receivers with Unstable Local Oscillators

by Andy Talbot G4JNT, with user comments by John Fell G0API

This idea was suggested by John G0API who uses a 10GHz Octagon LNB, but finds it too unstable as the temperature changes. When mounted at the masthead, shifts of many hundreds of Hertz were occurring as the sun shone on the unit then disappeared behind clouds. John didn't want to open up the LNB to add a stable reference input, but at the same time didn't want the dynamic range limitations of the Bernie Box with its non linear-LNA-carrying-second-LO-approach. So he wondered if something could be built using my frequency tracking / beacon monitoring software [1]

This software searches a section of the audio spectrum output from a receiver looking for a peak. It then checks this peak is a real signal and not just a random event or noise spike. It then measures the (audio) frequency and the signal to noise ratio then displays and logs the value at repeated intervals. For a frequency tracking scheme, would it be possible to measure the audio frequency, then issue commands to a tuneable secondary converter, adjusting it for a constant audio tone?

Second IF Frequency Converter

The output from the LNB when receiving at 10368MHz is nominally at 618MHz, +/- a few tens of kHz. The first requirement is a tuneable down-converter. As the ultimate intention was to feed an SDR-IQ or a transceiver, it had to be suitable for 28 or 144MHz, which meant sufficient image filtering would be needed to reduce the mixer image at 618 – 2*28 = 564MHz. The Octagon has a huge gain, in excess of 50dB, so a simple converter was built using a 618MHz helical filter [2], an ADE-30W diode ring mixer and a couple of attenuator pads. A bias supply for the LNB was also incorporated. The single helical filter provides a bit over 20dB of image rejection which is enough to suppress noise and avoid degrading the overall noise figure. When used with a 144MHz IF, rejection is in excess of 40dB. The circuit is shown in Figure 1 with Photo 1 and Photo 2 showing the finished converter.

The tuneable second LO at 590 or 474MHz is an LMX2541 Fractional-N synthesizer module [3] with its RS232 controlled 'operating system'.

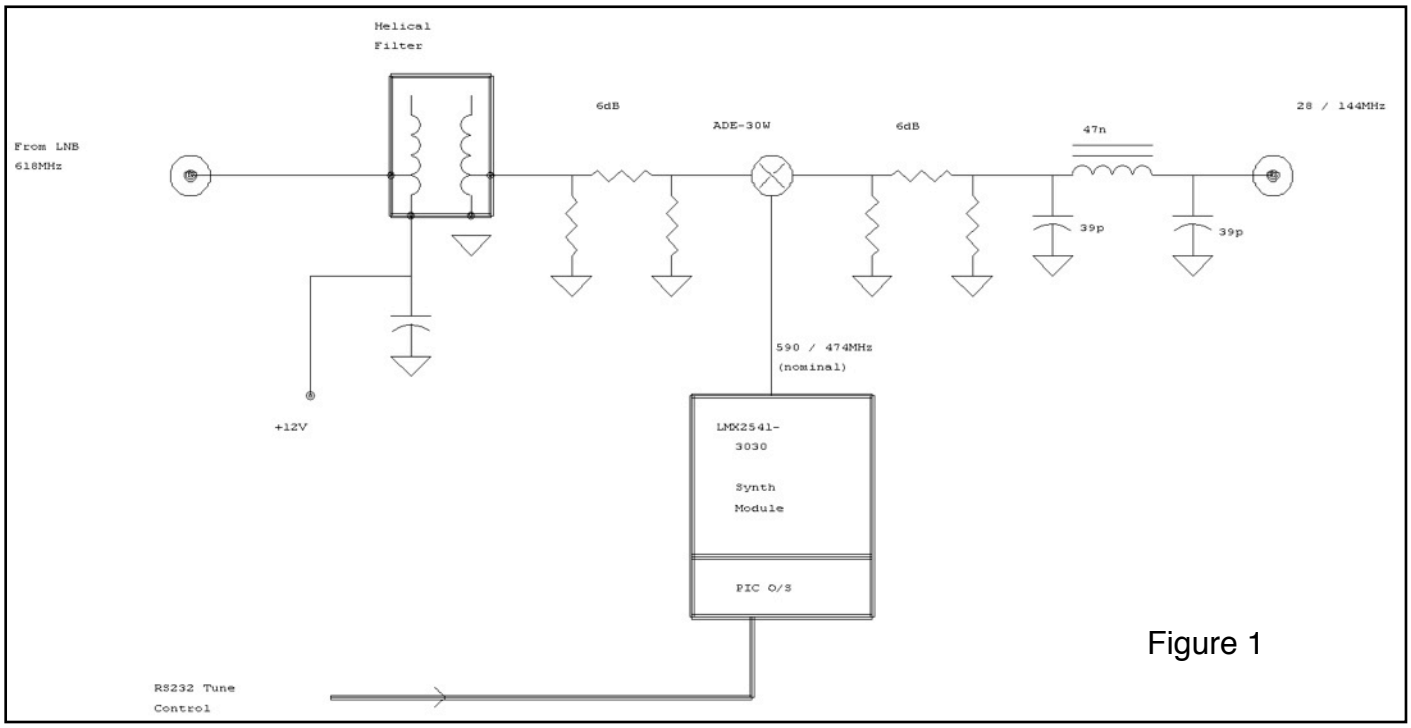
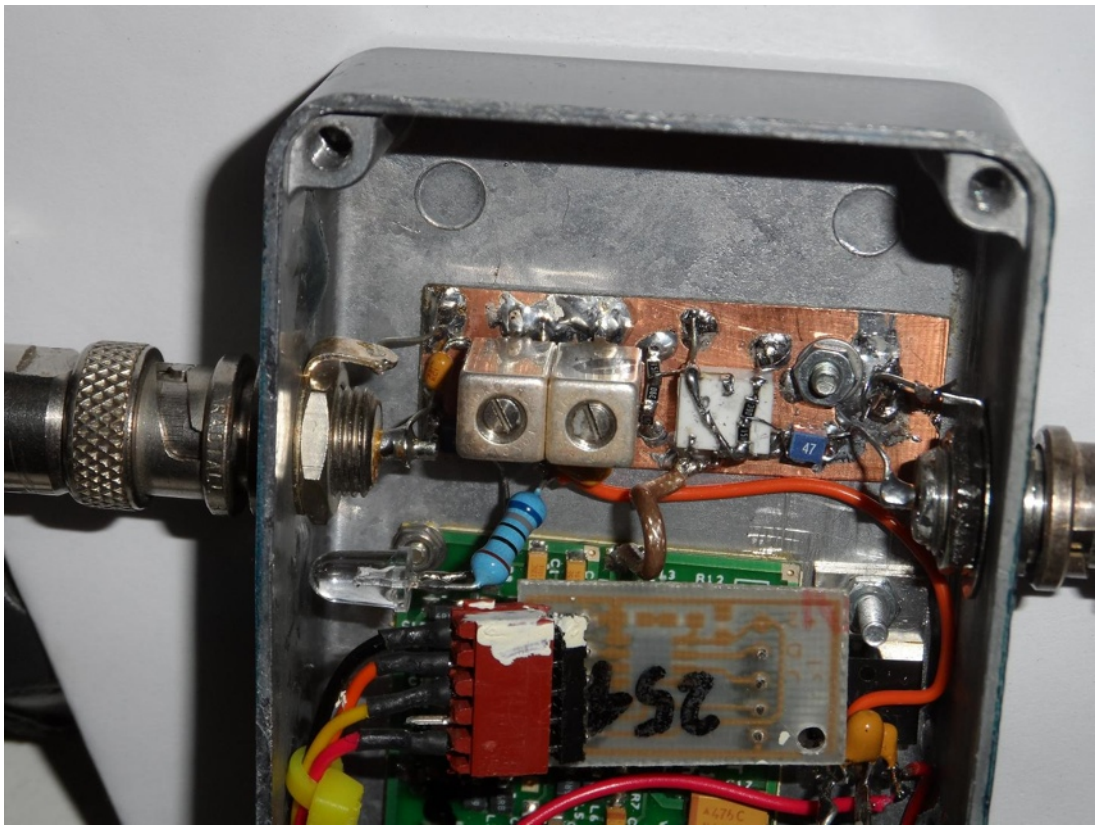


Figure 1



Photos 1 and 2. Two Views of the finished LNB Downconverter. The LMX2541 Fractional-N synthesizer module is shown partially concealed below its PIC controller PCB

Software

A stripped-down version of the beacon monitoring software was used with control of the synthesizer over the PC's COM port added. To keep things simple, and stay compatible with existing LMX2541 PIC control modules, the PC software calculates the register contents that have to be loaded into the synthesizer chip and issues these commands to update the tuning. A better solution would be to have the PC issue absolute frequency commands, for example "FRQ474002323Hz". The controller on the synth would interpret these and generate the register contents. While not particularly difficult to do, it would still be tedious code to write, and was another level of programming the basic experiment did not need.

For the initial trials and experimenting, all the controls and variables inside the tracking loop were made user adjustable to see the best way to operate the system. The user screen can be seen in Figure 2.

The audio input is sampled at a suitable rate, then an FFT is used to repeatedly generate the spectrum of the audio band. Any peaks are identified and initially deemed to be a valid signal. Limits can be defined between which two tones a search is made

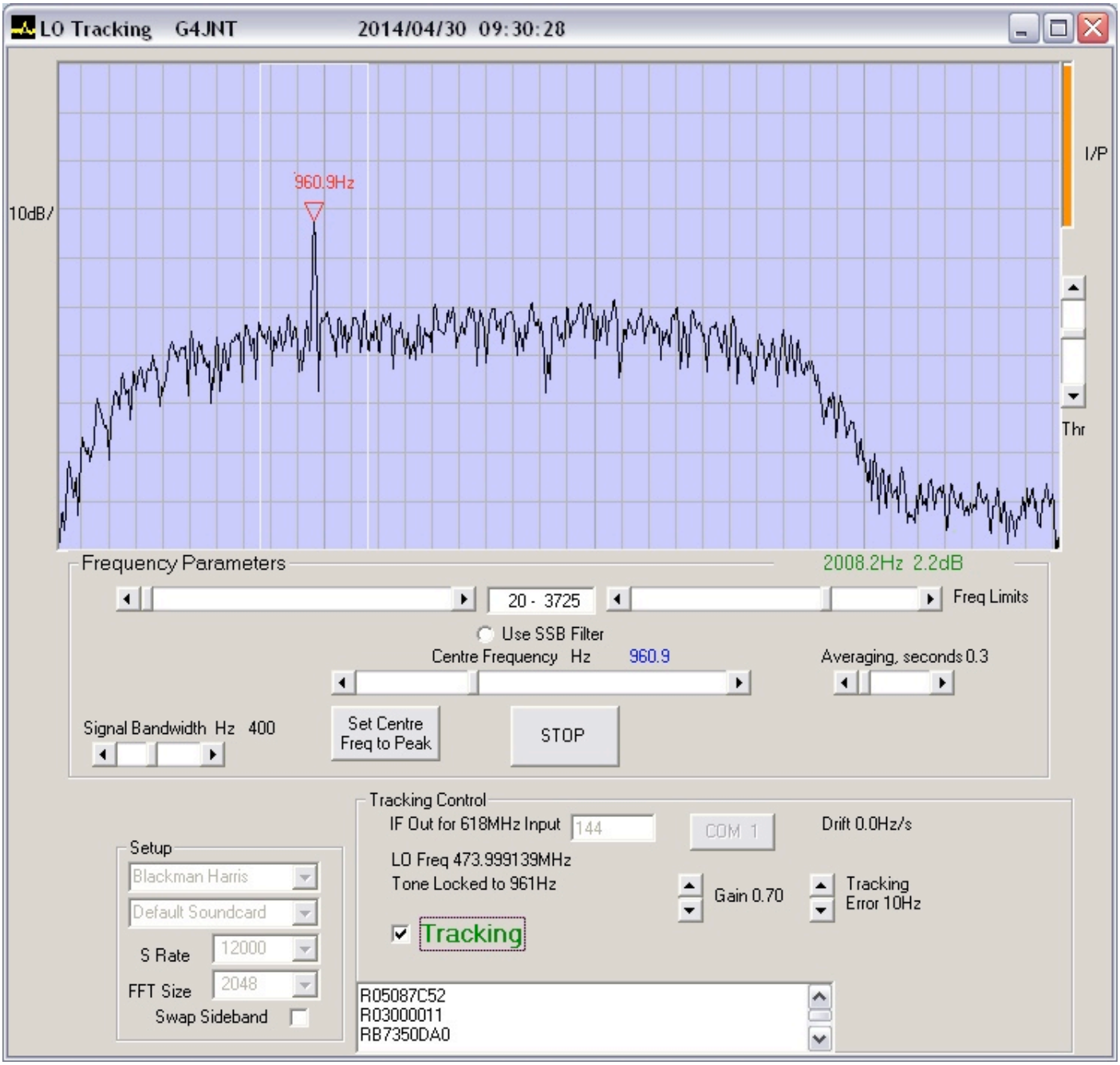


Figure 2: LO Tracking Software User Screen

for a single carrier or peak. The peak is checked for validity by ensuring the same frequency has to be detected a few times in multiple FFTs and several 'hits' in succession are required to guarantee it is genuine.

The search band can be specified, which allows users to trade off expected drift against the situation where the signal might be expected to change frequency due to modulation. For example, when receiving JT4G signals with 315Hz tone spacing the tracking filter, or limits, can be set to be say 100Hz either side of nominal. This ensures only one tone is tracked. If a separate tracking tone is added, the bandwidth can be made as wide or as narrow as needed. FFT size allows frequency measurement error to be traded against update rate – again trying to match slow or fast drifting – and to allow weak and noisy,(albeit it with only slight drift) signals to be tracked. Variables like tracking loop gain and averaging were included as I was not sure how stable the tracking algorithm would be under all circumstances.

Hardware Limitations

The development scheme was programmed specifically for the LMX2541-3030 chip as this includes both wanted LO ranges within its allowed range of output frequencies. Note that LOs for output IFs in the range 68 – 112MHz will not allow the chip to stay within its specified range, although in practice it usually is possible to go outside these. 28 and 144MHz IF outputs are within its proper operating region. The software assumes most of the synthesizer setup is done from inside the EE storage within the PIC 'control system' , and that only registers 2, 1 and 0 are programmed remotely with this version of the software. If you only keep to one nominal IF, this usually means the down-converter will be already working at a fixed 2nd LO frequency before the PC software is operational.

In Use

There are two (or more) ways to use this system. The simplest is to try to track the signal of interest, If this has a constant carrier, or a frequency component present most of the time in a suitable part of the spectrum (like pulsey modulation or the wider spaced WSJT modes).

Initially enter a value of second LO that brings the audio tone onto the FFT display at any convenient tone frequency. Click on that, and set Tracking On. This defines the nominal LO. As the received tone slowly drifts, provided it stays within the tracking window defined by the white lines, the synthesizer will be adjusted away from nominal in small steps to pull the tone back to the nominal value defined at startup.

The gain control defines the difference in measured frequency error and the correction issued. A gain of 1 means full correction each step, and while the fastest can lead to a bit of overshoot and instability. A gain value of 0.7 to 0.8 seems ideal. Averaging does not seem to help much, and the shortest period seemed to be the best.

Another way to use the locking is to generate a weak but stable carrier within the audio passband. A suitable signal can come from a diode multiplier on the output of a synthesizer controlled from a stable reference source. Using a single receiver means the locking tone has to be within the audio passband and the injected frequency has to be adjustable. If a second receiver is used, and this need only be a simple mixer and stable LO, the reference can be separated from the main receiver. For instance, injection of a tone at exactly 10368MHz could be followed by a second converter tuned to 28.000 or 144.000, which itself could be a direct conversion receiver. In this case any drift in the main receiver is not included within the drift cancelling , but as all this is at low frequencies should not be a major issue.

There will always be a small amount of frequency error, as this is a frequency locked system. The allowed error is made a user defined variable, and can be traded off with tracking speed and signal drift rate.

As this scheme was designed at G0API's request, and I have little use for it myself, a final working scheme was handed over so John could be the guinea pig. Here are his comments :

Using the LoTrack LNB frequency locking - by G0API

At some point during the 3 months of Winter rains and Gales my last LNA converted waveguide flanged LNB decided to become water cooled and subsequently terminally deaf.

I had been using an Octagon Model :OTLSO , twin LNB Slim Optima during the last 12 months , taking its 618MHz output into an AR8000 handheld scanner for /P 10GHz RX operations. The sensitivity of this crystal LO reference based device was an eye opener and easily outperformed earlier generation Hempt based front ends. The only issue was one of temperature drift experienced during periods of Sunshine/wind - it was reasonably slow but not quite good enough for use with JT4G based beacons.

Having nothing else to hand I decided in March to test the Octagon on my mast mounted 60cm offset dish and found it performed as expected - it was whilst twiddling the controls of the shack SDR-IQ , which was supplied with a down-converted 28MHz signal that I wondered if it was possible to feed-back the detected signal to allow locking. As the LNB is well engineered to survive in the outside world I wanted a means of doing this without the need to open it up to add GPS based 27MHz LO injection.

After talking this through with G4JNT , I was surprised when a few weeks later he told me that he had devised a scheme to do the job.

As the first user I am pleased to say that the LO Track system works well. My initial request was to stabilise a specific beacon and this can be done. However the system requires a minimum input level to allow lockup and locking is obviously lost when changing frequency , so I realised that a local stable 10GHz reference would be a way to avoid both problems.

I had a 1296MHz synth of G4JNT design available , which is referenced from a 10MHz GPS derived source. The 8dBm output is passed through a 3 section G3JVL design waveguide filter at 10368MHz and into a 20db horn antenna sat on the shack window sill and pointing upwards towards the mast mounted dish/LNB. The resulting down converted 144MHz signal is detected using a USB Dongle based SDR RX and associated soundcard and provides the feedback channel to lock the dish based LNB. A second RX ,using a 144/28MHz downconverter , feeds an SDR-IQ RX , teed off the locked 144MHz output from the LoTrack synth module.

This second RX is fully tuneable over the 10GHz narrowband area and all its associated functions are available , including decoding of JT4G via the associated programme. From switch on I allow the LNB 5 minutes or so to warm up and locate the reference signal on 10368MHz showing on the SDR-IQ - this will be offset from true frequency as the LNB LO is unlocked. Noting the offset ,the LoTrack software is opened , soundcard set and an offset to the indicated 144MHz output keyed in. The COM port number in use is verified and the programme started.

The Dongle based RX is now enabled on screen and the local 10368MHz signal centred in either a USB or CW bandwidth - the LOTrack screen should then have the reference located between the 2 vertical white lines indicating the locking limits and the Locked box indicating a locked condition. Sounds a bit long winded but takes a lot less to do it and when you then look at the independent SDR-IQ RX you notice that drift has gone - dependant on selected parameters I have run for many hours in a fully locked condition. Looking in a very narrow span it is possible to see the active tracking allowing approximately 20Hz of variation ,which can be detected by ear on strong signals but not noticeable on the weaker ones.

Using this setup I can pre-set all the UK beacons into memory and rapidly QSY between them or during rainscatter use 190kHz span to band stare - I have also used my IC746 as a 144MHz IF.. and had it locked on to weak signals even when using the narrowest CW filtering available. Unwanted In- band products seem to be of a low order compared to direct GPS locked multiplied up LOs and dynamic range is also suitably good - living 23km LOS from GB3SCX does reveal the capabilities of RX systems. ...

Photo 3 and Photo 4 show the signal tracking in use. Different values were set for the allowed error and this is reflected in the greater wobble seen on screen in the first shot.

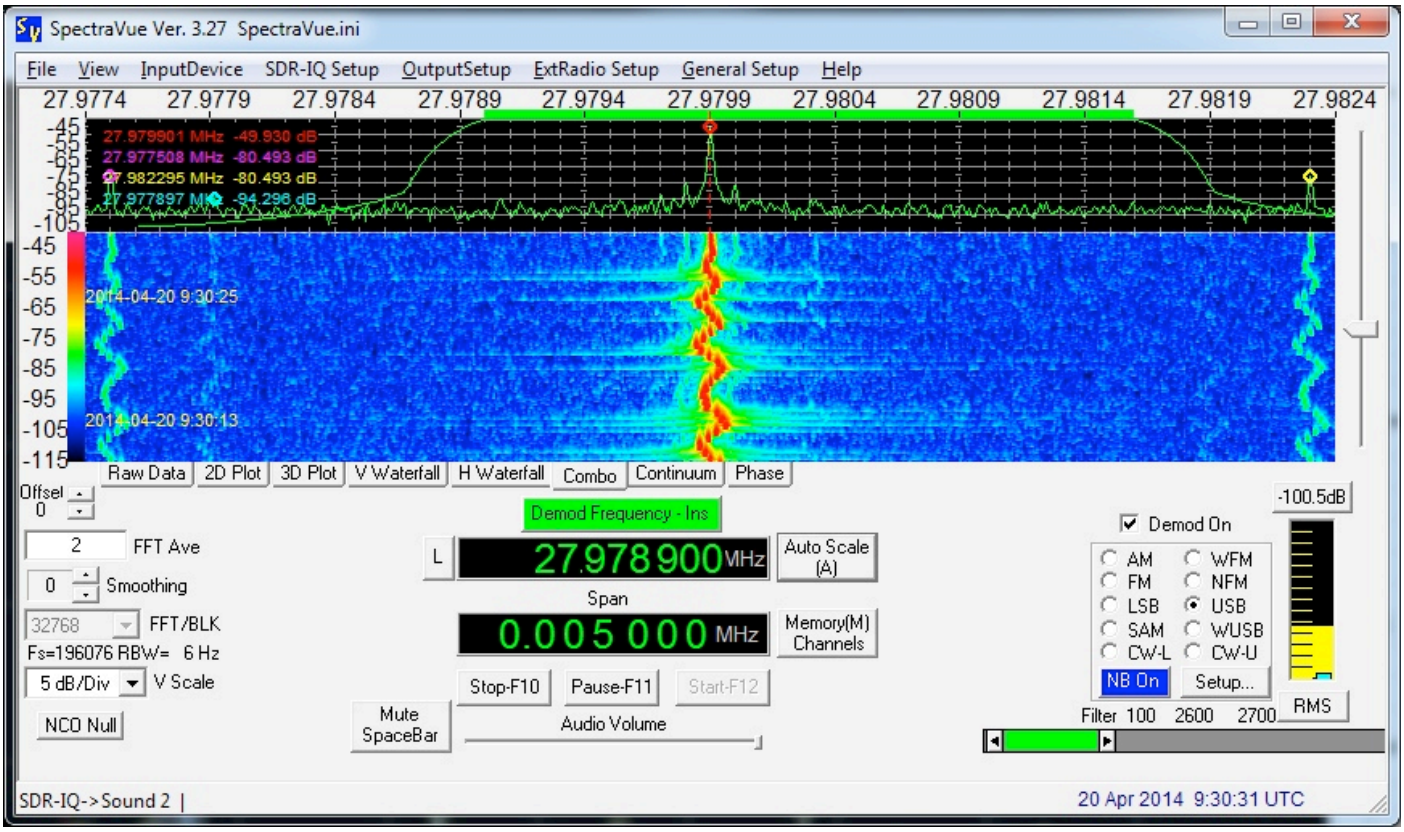


Photo 3: First attempt at Frequency Locking using the LOTrack software. A high allowed tracking error value leads to 20Hz of wobble.

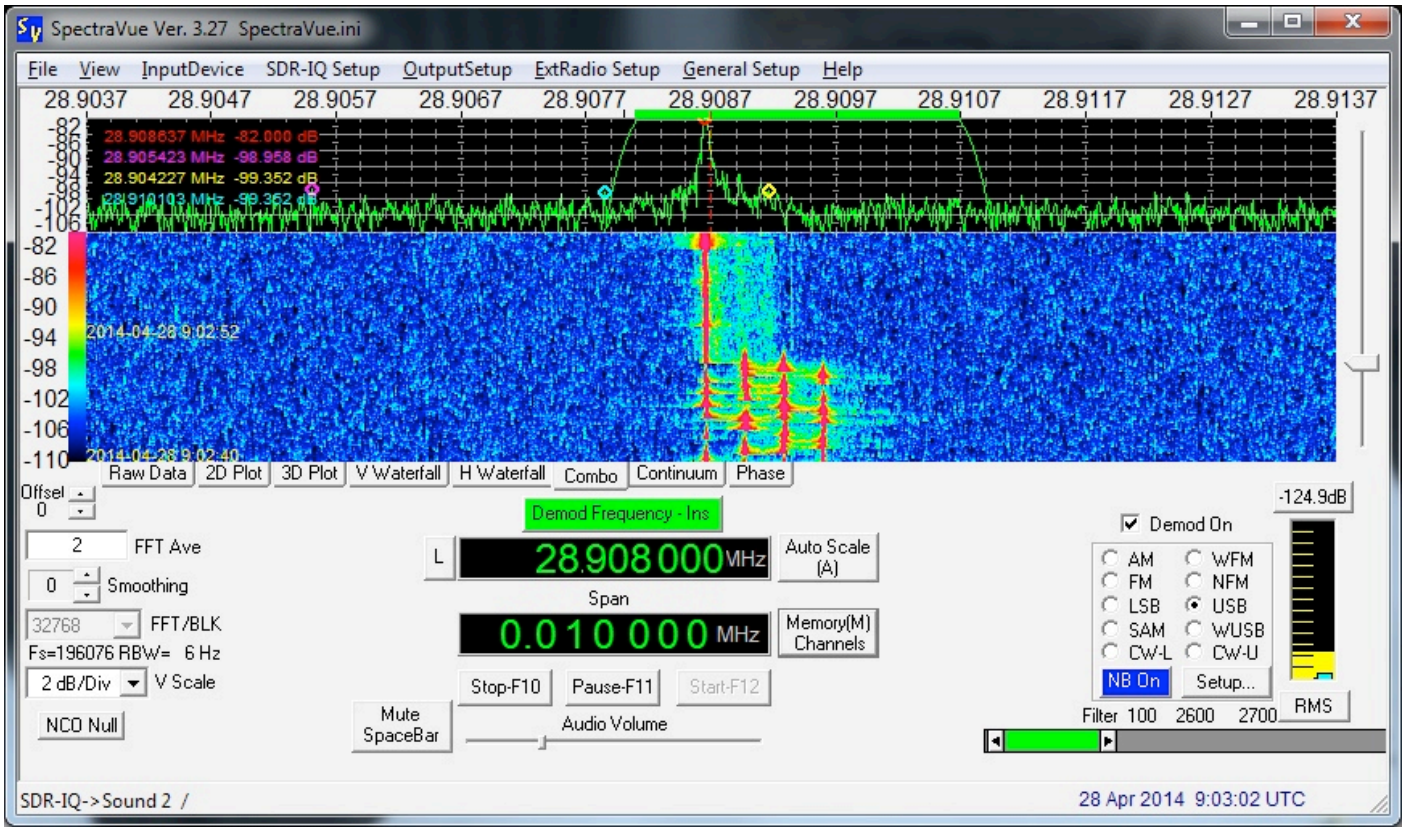


Photo 4: Using the LOTrack software while receiving GB3SCX sending JT4G,taken during recent rains so the haze to the right of the waterfall plot is Doppler scattered energy not a spread signal.

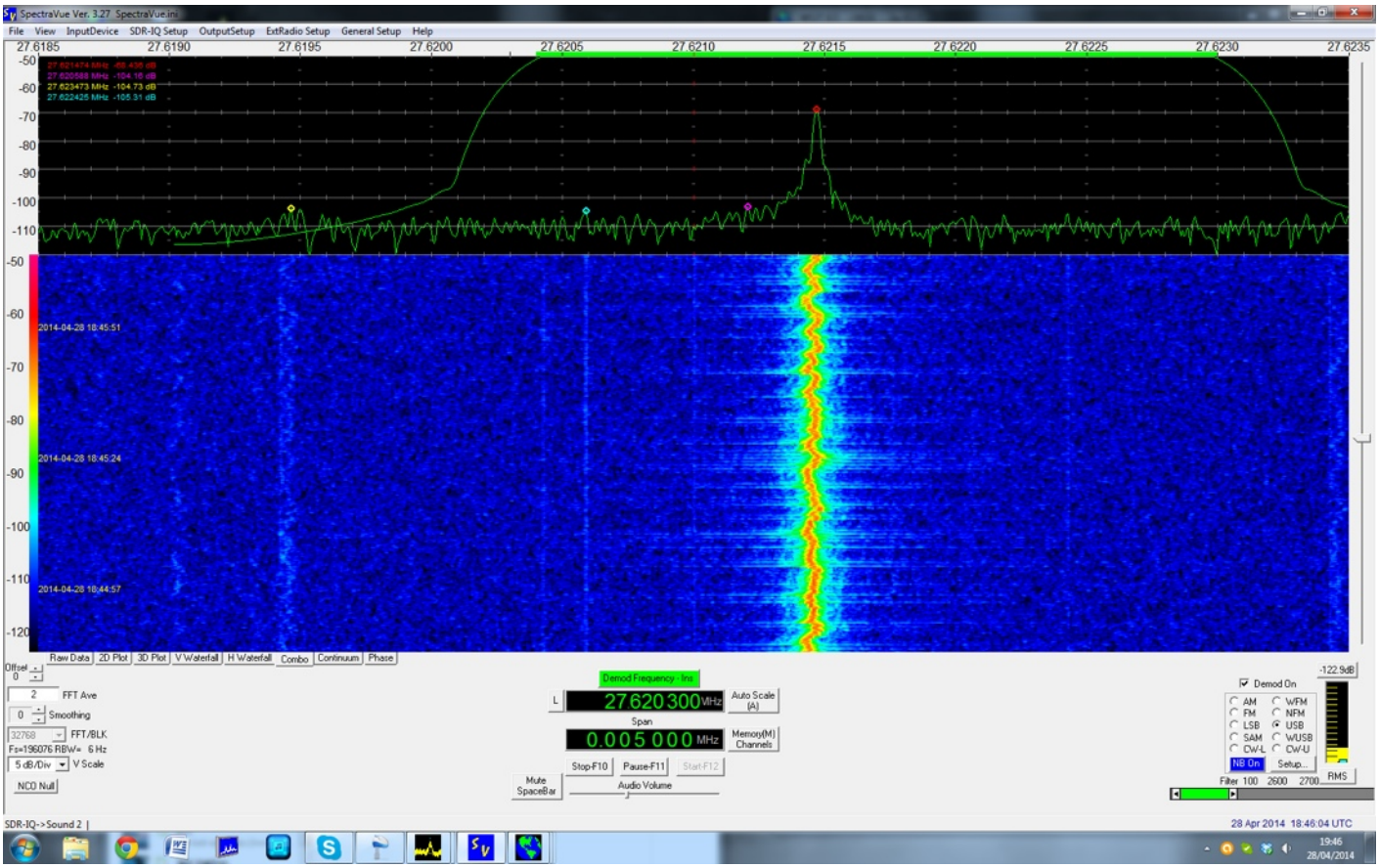


Photo 5: G4JNT LocTracking system in use with a standard satellite LNB- DRO LO showing the 10368MHz local reference signal from 300mm away from LNB@40db/noise in 6Hz BW. System had been locked without intervention for over 1.5Hrs at this point . Signal frequency deviation indicated is approx 20Hz total.

STOP PRESS ! A Follow Up – using a Dielectric Resonator Oscillator LNB

Just after posting the report on the locking system I had one of those thoughts....what if I tried a bog standard £5 bought from Maplin some years ago. A DRO-based LNB in conjunction with the local signal source / Dongle / SDR / IC746 / LoTrack system ?

So 6 metres of thin satellite-TV cable with F types ; the LNB sat on window sill of shack , horn leaning against glass and warmed for 5 minutes ..... a 25dB above noise signal seen on the SDR from GB3SCX via back scattering on buildings so local 10368MHz signal source ON and found on dongle RX.

Loads of rapid drift but after the second attempt it locked and has sat there for the last 2 hours . Many JT4G decodes including some A graded ones - the system works !

It even survived the rear French doors being closed , which caused the window in the shack to bounce in sympathy with the air pressure wave induced by the door closure - the LNB horn was resting on the window glass in the shack after all..and DROs can be easily modulated mechanically. A plot from this can be seen in Photo 5

References

[1] Beacon monitoring Software
www.g4jnt.com/dspsw.htm

[2] A suitable helical filter, with a 3dB bandwidth of around 20MHz was made by carefully dismantling a two-chamber 470MHz unit then cutting off 2.5 turns of the helical resonator. (Start by removing a bit less than this, reassemble and check the tuning range. Repeating as necessary). Suitable filters, that will just about tune down to 432MHz without modification, can be found on the surplus stands at several roundtables and rallies ; they are built into old telemetry and telecommand modules. (Usually those made by a company with a W and a D in its name)

[3] LMX2541 FractN synthesizer and PIC operating system www.g4jnt.com/LMX2541_Synth_Module.pdf

Nanowaves

Barry Chambers, G8AGN

Just to let you know that UK nanowave activity is not totally dead!

Richard, G0RPH, Gordon, G0EWN, and myself spent a happy hour doing a red light test over the 66km path between Manton and High Bradfield, near Sheffield. This is a path we've done several times before but the purpose of last night's test was to check Richard's tx modulation level and Gordon's new receiver.

We started proceedings about 2115, not long after sunset, when the sky was still quite bright, especially looking towards the west. Visibility from Bradfield was mixed, good towards the NE but only fair to the E, in Richard's direction. Nevertheless, Richard's phlatlight was seen with the naked eye by both Gordon and myself as soon as it was switched on and good copy received of Richard's cw keyer and then speech. Richard then kept reducing his LED current and eventually started obstructing his Tx lens with a clip board. By this point, his red light was almost invisible to the naked eye through the haze but signals were still easily copied. Throughout the test period of about an hour, scintillation was evident both visually and on received speech.

There seemed to be little, if any, difference in the strength of signals received by Gordon's and my receiver. These are both based on a PCB version of Clint's v3 design but using the SFH203 photodiode. I plan to make the PCB layout available soon for others to copy.

Richard took the opportunity to adjust his Tx modulation level as we listened to his speech signal. As Clint has observed before (see his web pages), it appears that you can almost never have too much modulation and that clipping on speech peaks doesn't really affect intelligibility.

For Dad's Army devotees, the new catch-phrase is "turn that light up!"

Unfortunately, Gordon had no nanowave Tx capability last night but Richard was easily able to see my phlatlight against the bright sky and received good copy of my cw keyer and then speech signals.

We finished "playing" at about 22.15 so had an earlier night than we had anticipated.

Not having had a nanowave contact since last autumn, despite several abortive efforts, it was good to get out again and "see the light".

73 Barry, G8AGN

How to download Scatterpoint from Dropbox

I still get the odd complaint from people who have difficulty in downloading Scatterpoint from Yahoo and Dropbox.

1. You don't need a Dropbox account.
2. Click on the dropbox link in the message you receive, either from Yahoo Scatterpoint group or other route. It may be a shortened url (an **https** one), which will expand in your browser.
3. Let the image of the first page load then click the Download button

Following some security action by Dropbox, the links to editions before May became unavailable. These have now been restored.

UKµG Chip Bank – A free service for members

The catalogue is now on the UKµG web site See www.microwavers.org/?chipbank.htm

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!

73, Mike, G3LYP

UKµG Technical support

Another free service for members!

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

Region	Tech Support volunteer	Facilities
NW England, N Wales Wales	David Wrigley G6GXK 07811776432 Chris Bartram GW4DGU	Spectrum Analysis to 24GHz Power measurement to 76GHz Freq Measurement to 26GHz Freq sources to 47GHz NF Measurement to 10GHz Antenna Test range to 24GHz
NE England Yorks and Humberside	Peter Day G3PHO microwaves@blueyonder.co.uk	Spec Analyser to 24GHz Power measurement to 24GHz (up to 5W on 24GHz), RF sources to 24GHz, direct freq measurement to 3GHz. Setting up/tuning up transverters, etc + general advice.
S and SW England	Brian Coleman G4NNS Paul Marsh M0EYT pjmarsh@uhf-satcom.com	Spectrum analyser to 24GHz Power measurement to 26 GHz Scalar Network analyser and sweeper 2 to 15GHz Antenna test range 2.3, 3.4, 5.7, 10 and 24GHz Wavegide directional couplers for 10GHz and 24GHz Coax couplers 1.3 – 26GHz. Power measurement to 12GHz High power dummy load @ 10GHz (500W) Frequency measurement to 22GHz Spectrum analysers to 6 and 18GHz Frequency generation to 18GHz.
SE England and London	Allan Wyatt G8LSD allan@virtual-museums.org	not known
East Anglia, Essex & Suffolk Herts.	Sam Jewell G4DDK sam@g4ddk.com David Kirkby G8WRB, Chelmsford CM3 6DT Bryan Harber G8DKK Letchworth, Herts	Spectrum analysis to 24GHz Power measurement to 24GHz Direct frequency measurement up to 3GHz VNA to 3GHz RF sources to 24GHz Spectrum analyzer to 22 GHz Vector network analyzer to 20 GHz, with calibration kits for N (18GHz), 3.5 mm (26.5 GHz), APC7 (18 GHz), WR90 and WR62 waveguide. Waveguide couplers at X-band. Some other couplers at lower frequencies. Signal generator to 4.5 GHz. Power measurement to 18 GHz
West Anglia East Midlands	John Worsnop G4BAO john@g4bao.com	Spectrum analysis to 24GHz Power measurement to 24GHz Direct frequency measurement up to 18GHz VNA to 1.3GHz RF sources to 24GHz High current PSUs at 12, 28 and 48V
W Midlands	Richard Bown G8JVM richard@g8jvm.com	power measurement to 18 GHz Sig gen to 1.3 GHz but can mix up to 3cms SA to 1.3 GHz but can down convert from 3 cms and probably other lower bands , check NF to 3 cms with IFs of 144 and others , check Freq measurement to 18 GHz, Rb standard
Scotland	John Cooke GM8OTI gm8oti@gmail.com	Lot of mutual assistance in GM via GM microwave reflector including David Anderson GM6BIG and Ian Ropper GM0UHC
N Ireland	Gordon Curry GI6ATZ	

Activity News : April/May

By Bob Price G8DTF

Please send your activity news to:

scatterpoint@microwavers.org

Introduction

First I must say a big thank you to John G4BAO for stepping in and writing the column whilst I was indisposed. I seem to be well on the road to recovery now though and I am managing to do some operating.

There are some reports this month on beacons, of activity in the April Low Bands Contest, the 23cm UKAC, the SHF UKAC, ATV and other activity.

This month has seen some changes to operating on 13cm, because of the PSSR, as many stations will now be restricted to evening and weekend operations.

Beacons and Reverse Beacons

GB3XGH in Rochdale has now changed its callsign to GB3MAN (10368.810MHz).

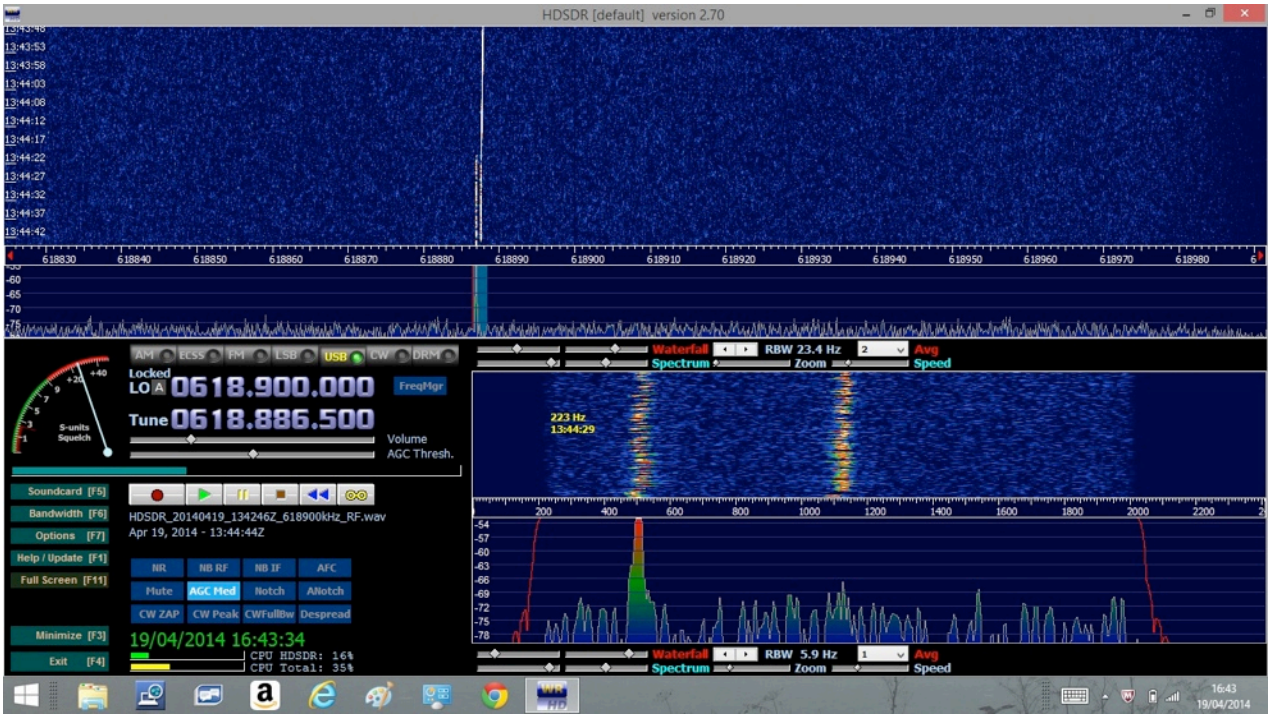
From Shaun G8VPG IO81

I have just subscribed to Scatterpoint and so am a newcomer to narrowband microwaves. I have been active on 23cm ATV for 30 years or so.

I was intrigued by the recent article reviewing the Octagon OTLSO PLL satellite LNB. Since I have been dabbling with satellite TV for about the same time I have been on 23cm ATV, I thought another LNB would be useful and ordered one from a British supplier for a very reasonable £16.99 plus postage. It arrived the next day and I tried it on one of my satellite dishes, where it performed as well as another LNB with a claimed 0.1dB noise factor.

I then mounted it on a 60cm prime focus dish, which I fastened to a tripod. I used a cheap satellite splitter with power feed through (less than £3 from Screwfix!) to provide 12V to the LNB. For the 618MHz IF, I used a Funcube Dongle Pro+ SDR and a small laptop PC running HDSDR software. I was surprised at how many 10GHz beacons there are, and looking through the list thought that GB3CCX in Cheltenham (IO81XW) would be a good local test. I took the system up a local hill top with a good take off to the North (Tog Hill, IO81TK, 200m ASL), a path length of about 60km.

I found the beacon very quickly and it was a good signal, 20-25dB above the noise level. I needed to turn the LNB through 90 degrees to get the polarisation right. I did a recording in HDSDR and attach a still from it. The frequency calibration is about 52kHz out.



I did find that the frequency drift of the LNB was quite marked, reminding me of an old valve HF receiver that I built as a school boy in the 1970's! However, I only ran it for 20-25 minutes, so perhaps I should have left it longer to stabilise. It was settling down better at the end.

I hope you find my somewhat primitive experiment of interest. This LNB does seem to work well, but needs some time to warm up. Next, I will take it up to another hill top with an outlook towards the South & West, to see if I can receive the Taunton and Swansea beacons

April Low Bands Contest

The April Low Bands Contest saw entries from 8 stations on 1.3GHz, 7 stations on 13cm and 3 stations on 9cm.

From Dave G4FRE/P IO92 – 13th April

After finishing 6m contest tried out the 23cm gear on low bands contest for a little while to make sure it still worked after a year!.

I worked G8XVJ/P, GW3TKH/P, G4BRK (much louder than at home) and G8OHM.

Equipment: 23 ele F9FT at 15' DEMII transverter

From Bob G8DTF IO83

I managed to get both 23cm and 13cm antennas on the mast for the Low Bands contest. I've fitted a new rotator cage, which is more rigid than the old arrangement. The picture below shows the 23cm and 13cm antennas on the mast.

In the Low Bands contest I managed to work the following stations. There were a few other stations I tried with, but conditions were not good enough the permit QSOs. The best DX on 23cm was with John G3XDY at 296km even with my transverter only producing about 2W and no masthead preamp.

23cm

M0HNA/P	IO91	287km
G4HGI	IO83	18km
G8OHM	IO92	130km
2E0NEY	IO81	233km
G4MVU	IO83	1km
G0RUZ	IO93	65km
G8XVJ/P	IO93	54km
G3XDY	JO02	296km

13cm

No locals at all, not one in my own square. The best DX was with M0HNA/P at 287km.

G4WLC/P	IO81	187km
G8OHM	IO92	130km
G3VKV	IO81	183km
M0HNA/P	IO91	287km
2E0NEY	IO81	233km
G4BRK	IO91	221km
G4KIY	IO92	189km

April 23cm UKAC

There were 13 entries in the AO section, 19 entries in the AR section and 58 entries in the AL section.

From Eddie G0EHV/P IO84

The UKAC event of 14th was blessed with a fine evening of weather and reasonable conditions.

I was /P in IO84 this time, experiments with mobile phone (for KST access) determined the best signal from a quite distant cell site – plastic bag around phone and taped to the roof bars and an extension USB cable to computer worked very well!

I also used the 55 element for a change with 100W amplifier. 38 QSO's, best DX being M0LNE at 424Km. Nice to work GW0PEB/P in IO73 for a new square.

Calling CQ was productive with a few mini pile ups!

From Bob G8DTF IO83

The 23cm UKAC was pretty busy in IO83 with lots of local stations active. The best DX was with G8CUL at 230km. Most surprising was the QSO with GW0PEB/P in IO73, which is a very poor direction from here.

GW8REQ/P	IO83	75km
GW4BVE/P	IO82	105km
G4BRK	IO91	221km
G8XVJ	IO83	15km
G4NTY	IO83	6km
G3VKV	IO81	183km
G3UVR	IO83	50km
GW8ASD	IO83	65km
G4JLG	IO83	6km
G4HGI	IO83	18km
G0MRL	IO83	11km
M0ICK/P	IO83	11km
G4MVU	IO83	1km
M0COP/P	IO82	111km
G8HXE/P	IO83	11km
G8OHM	IO92	130km
G4NBS	JO02	221km
G8ONK	IO83	41km
G3TDH	IO83	29km
G4HWA	IO92	180km
G1SWH	IO83	15km
GW0PEB/P	IO73	134km
G8DOH	IO92	178km
G8CUL	IO91	230km
G4KIY	IO92	189km

April SHF UKAC

The SHF UKAC saw 23 entries on 13cm, 9 entries on 9cm, 6 entries on 6cm and 11 entries on 3cm.

From Eddie G0EHV/P IO84

13cms

By contrast 23cm UKAC, the 13cms event a week later was pretty dire. KST was again working well, very much essential on this band. The previous test showed that the site is viable.

The weather was very foggy with visibility down to 10 meters or so made driving a bit difficult.

The late start requirement was an issue, as was forgetting to remove the dummy load from the TX port of the amplifier!

70W and a 25 element resulted in 13 QSO's, best DX being John G3XDY at 374Km. Conditions poor and a few attempts would not go. Looks like IO84 was a new square for several.

This may be my last 13cms UKAC this year, the move to Sunday evening not being very family friendly. Maybe we could return to Tuesday evenings in the autumn?

From Bob G8DTF IO83

Back on for the SHF UKAC this month, but only with 13cm. The 3cm and 9cm systems are undergoing a bit of a rebuild at the moment after the 3cm system failed.

Conditions did not seem great for the UKAC and seemed better to the North than to the South. Local activity was good with a few locals up on the hills.

The best DX of the evening was with Ray GM4CXM at 296km

G4BRK	IO91	221km
G8OHM	IO92	130km
G1SWH	IO83	15km
G4JLG/P	IO83	11km
GM4CXM	IO75	296km
G4MVU	IO83	1km
G4NBS	JO02	221km
M0UFC/P	IO83	30km
G3UVR	IO83	50km
G6GVI/P	IO83	11km
GW8ASD	IO83	65km

Other activity

From G0EHV/P IO94

Almost daily use of 2328Mhz to access the local TV repeater GB3KM. I use a loft mounted cardboard/ tinfoil horn antenna to receive the 3406Mhz signal from GB3KM!

I may try 3cms from IO84 in one of the UKAC events in summer now I know KST is possible there.

From Ralph G4ALY IO70

Not too much activity as conditions have been poor from the SW.

17 March

F6APE 23/13/6/3cm at 435km IN97QI

F2CT/P 3/6cm at 815km INO3GJ

Usual daily tests on 3 or 6cm with F9OE 247km IN78QG

" " 3/6/9/13/23cm with G3LRP IO93HO 399km

From Dave G4FRE/P IO92

20th April

I went to a portable spot near Broadway (IO92BA) and heard GB3ZME(24GHz) on an 18" dish at 0815 at 5dBn with a 2dB NF. GB3AMU was also audible from the same spot at 4dBn I also put a post dated spots on beaconspot.eu but, as it did 2 years ago, it hasn't appeared in the spots list!

...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, but also local activity with low power or WB equipment.

Please send your reports to Scatterpoint@ukmicrowavers.org, remember the deadline is the 1st of the month.

73

Bob G8DTF

Public Sector Spectrum Release: A reminder!

Amateur use of 2310 to 2450 and 3400 to 3475 MHz - Statement

Ofcom Statement published 07|04|14

FOR IMMEDIATE ACTION

5.29 Amateurs are required to comply with this guidance with immediate effect.

Specifically:

5.33 In order to manage coexistence of government systems with amateurs, it would be helpful for Ofcom to understand the number and location amateurs using the 2310 to 2350 MHz band.

5.34 In order to facilitate communication of any information related to future changes to other uses in this band, we are therefore requesting amateurs using 2310 to 2350 MHz register their use and provide contact details by emailing pssramateurs@ofcom.org.uk providing the following information:

- Name
- Address (and location of use)
- Call sign
- Location of use
- Frequency range uses
- Type of use
- Regularity of use (e.g. evenings and weekends; 24/7; occasional)
- Transmit power

Contests

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

www.microwavers.org/?contesting.htm

April 2014 Lowband Contest Results

A continuing overall fall in entries to these events is a concern. A substantial number of UK stations were active but did not submit logs for this event. Entrants suggestions for changes to encourage more entries are very welcome.

The only continental station appearing in the logs was F1RJ, worked by M0HNA/P on 1.3GHz.

M0HNA/P won 1.3GHz, with a large margin over G0RUZ as runner up. GI6ATZ (IO74) provided the best DX for most entrants.

M0HNA/P also leads on 2.3GHz, but with a close fought battle with G8DTF who emerged as runner up.

On 3.4GHz G4LDR took the top spot with M0HNA/P as runner up.

The overall winner was the “Combe Gibberlets” group consisting of G3TCU, G3WBQ, and G4SJH, who won 1.3GHz and 2.3GHz, and were runners up on 3.4GHz. Overall runner up and leading fixed station is Neil Underwood G4LDR who was the band winner on 3.4GHz.

Certificates go to the overall Winner M0HNA/P and Runner-up G4LDR and to the following winners:

1.3GHz M0HNA/P, G0RUZ, GW3TKH/P (Low Power)

2.3GHz M0HNA/P, G8DTF, GW3TKH/P (Low Power), G4KIY(Radio Talkback)

3.4GHz G4LDR, M0HNA/P

73
John G3XDY, UKuG Contest Manager

Pos	Callsign	1.3GHz	2.3GHz	3.4GHz	Total
1	M0HNA/P	1000	1000	692	2692
4	G4LDR	436	809	1000	2245
3	G4BRK	498	776	328	1602
6	G8DTF	267	966	0	1233
7	GW3TKH/P	227	539	0	766
5	G4KIY	305	392	0	697
2	G0RUZ	537	0	0	537
8	GM8IEM	90	0	0	90

STOP PRESS:

After further feedback on possible date/time changes to avoid potential interference to the primary user on 2.3GHz, it has been decided to retain the fourth Tuesday slot for the SHF UKAC, move the start times for 2.3GHz later during the summer months, and shorten the period for that band to 2 hours.

The other bands will remain as they were, running 2000-2230 clock time.

The times for 2.3GHz will be 2130-2330 BST for the months of May, June and July.

Timings will revert to 2000-2230 clock time from August onwards.

April 2014 Lowband Contest Results

Overall					
Pos	**Callsign**	**1.3GHz**	**2.3GHz**	**3.4GHz**	**Total**
1	M0HNA/P	1000	1000	692	2692
2	G4LDR	436	809	1000	2245
3	G4BRK	498	776	328	1602
4	G8DTF	267	966	0	1233
5	GW3TKH/P	227	539	0	766
6	G4KIY	305	392	0	697
7	G4WLC/P	0	592	0	592
8	G0RUZ	537	0	0	537
9	GM8IEM	90	0	0	90
1.3GHz					
Pos	**Callsign**	**Locator**	**QSOs**	**Best DX**	**Points**
1	M0HNA/P	IO91RF	22	GI6ATZ 507km	4762
2	G0RUZ	IO93FR	12	G3YPQ/P 395km	2555
3	G4BRK	IO91HP	14	GI6ATZ 433km	2371
4	G4LDR	IO91EC	10	GI6ATZ 468km	2078
5	G4KIY	IO92WN	9	GI6ATZ 437km	1451
6	G8DTF	IO83SM	9	G3XDY 296km	1273
7	GW3TKH/P	IO81LS	9	G3XDY 294km	1080
8	GM8IEM	IO78HF	1	GI6ATZ 428km	428
2.3GHz					
Pos	**Callsign**	**Locator**	**QSOs**	**Best DX**	**Points**
1	M0HNA/P	IO91RF	10	G8DTF 287km	1480
2	G8DTF	IO83SM	7	M0HNA/P 287km	1430
3	G4LDR	IO91EC	8	G8DTF 275km	1197
4	G4BRK	IO91HP	9	G4ALY 237km	1149
5	G4WLC/P	IO81WU	9	G3XDY 230km	876
6	GW3TKH/P	IO81LS	6	G3XDY 294km	798
7	G4KIY	IO92WN	4	G8DTF 189km	580
3.4GHz					
Pos	**Callsign**	**Locator**	**QSOs**	**Best DX**	**Points**
1	G4LDR	IO91EC	5	G3XDY 223km	613
2	M0HNA/P	IO91RF	4	G3XDY 153km	424
3	G4BRK	IO91HP	3	M0HNA/P 75km	201

Low Band Championship 2014							
	After two events, the best three events count towards the total						
Overall							
Pos	Callsign	3/2/14	4/13/14	5/4/14	6/8/14	11/23/14	**TOTAL**
1	G4LDR	1833	2245	0	0	0	4078
2	G4BRK	2113	1602	0	0	0	3715
3	M0HNA/P	0	2692	0	0	0	2692
4	G4NBS	1879	0	0	0	0	1879
5	G3UKV	1788	0	0	0	0	1788
6	G4BAO	1456	0	0	0	0	1456
7	G8DTF	0	1233	0	0	0	1233
8	GW3TKH/P	0	766	0	0	0	766
9	G4KIY	0	697	0	0	0	697
10	G0RUZ	0	537	0	0	0	537
11	G3TCT	527	0	0	0	0	527
12	G4WLC/P	521	0	0	0	0	521
13	G4DZU	154	0	0	0	0	154
14	GM8IEM	0	90	0	0	0	90
1.3GHz							
Pos	Callsign	3/2/14	4/13/14	5/4/14	6/8/14	11/23/14	TOTAL
1	G4BRK	816	498	0	0	0	1314
2=	G4NBS	1000	0	0	0	0	1000
2=	M0HNA/P	0	1000	0	0	0	1000
4	G4LDR	439	436	0	0	0	875
5	G4BAO	685	0	0	0	0	685
6	G0RUZ	0	537	0	0	0	537
7	G3TCT	527	0	0	0	0	527
8	G3UKV	320	0	0	0	0	320
9	G4KIY	0	305	0	0	0	305
10	G8DTF	0	267	0	0	0	267
11	GW3TKH/P	0	227	0	0	0	227
12	G4DZU	154	0	0	0	0	154
13	GM8IEM	0	90	0	0	0	90
2.3GHz							
Pos	Callsign	3/2/14	4/13/14	5/4/14	6/8/14	11/23/14	TOTAL
1	G4LDR	986	809	0	0	0	1795
2	G4BRK	1000	776	0	0	0	1776
3	G4WLC/P	521	592	0	0	0	1113
4	M0HNA/P	0	1000	0	0	0	1000
5	G8DTF	0	966	0	0	0	966
6	G4NBS	879	0	0	0	0	879
7	G4BAO	771	0	0	0	0	771
8	GW3TKH/P	0	539	0	0	0	539
9	G3UKV	468	0	0	0	0	468
10	G4KIY	0	392	0	0	0	392
3.4GHz							
Pos	Callsign	3/2/14	4/13/14	5/4/14	6/8/14	11/23/14	TOTAL
1	G4LDR	408	1000	0	0	0	1408
2	G3UKV	1000	0	0	0	0	1000
3	M0HNA/P	0	692	0	0	0	692
4	G4BRK	297	328	0	0	0	625

UKuG Microwave Contest Calendar 2014

Dates	Time UTC	Contest name	Low Band#	Certificates
4-May	0800 - 1400	Low band 1.3/2.3/3.4GHz	3	F, P,L,R
25-May	0600 - 1800	1st 5.7GHz Contest		F, P,L,R
25-May	0600 - 1800	1st 10GHz Contest		F, P,L,R
25-May	0600 - 1800	1st 24GHz Contest		F, P,R
8-Jun	1000 - 1600	Low band 1.3/2.3/3.4GHz	4	F, P,L,R
29-Jun	0600 - 1800	2nd 5.7GHz Contest		F, P,L,R
29-Jun	0600 - 1800	2nd 10GHz Contest		F, P,L,R
29-Jun	0600 - 1800	2nd 24GHz Contest		F, P,R
20 -Jul	0900 - 1700	24GHz Trophy / 47 / 76-1000 GHz		
27 -Jul	0600 - 1800	3rd 5.7GHz Contest		F, P,L,R
27 -Jul	0600 - 1800	3rd 10GHz Contest		F, P,L,R
27 -Jul	0600 - 1800	3rd 24GHz Contest		F, P,R
3 -Aug	0900 - 1700	Microwave Field Day		F, P,L
31 -Aug	0600 - 1800	4th 5.7GHz Contest		F, P,L,R
31 -Aug	0600 - 1800	4th 10GHz Contest		F, P,L,R
31 -Aug	0600 - 1800	4th 24GHz Contest		F, P,R
28 -Sep	0600 - 1800	5th 5.7GHz Contest		F, P,L,R
28 -Sep	0600 - 1800	5th 10GHz Contest		F, P,L,R
28 -Sep	0600 - 1800	5th 24GHz Contest		F, P,R
23 -Nov	1000 - 1400	Low band 1.3/2.3/3.4GHz	5	F, P,L,R

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

The latest EME calendar is available from DL7APV's website

Radio Astronomy Interest Group

Overview

- The Radio Astronomy Interest Group is an initiative operating nationally to engage and foster the growth of regional practical amateur radio astronomy groups.
- Catalyst to create a collaborative initiative supported by strong national organisations such as Universities, BAA RAG and RSGB, and to discover their shared roadmap & objectives.
- Work with various parties to seed regional interest groups and assist in their growth.
- Kick off and support amateur projects aligned with BAA RAG, RSGB and UK academic projects.
- Assist in ensuring that suitably accessible resources are available to support said projects.

Next Steps

If you feel that you could contribute to this initiative, please contact us. We will gather your contact details and within the next few weeks send out a survey to find out how different people can assist in growing interest in practical radio astronomy in the UK.

Regards

Chris Jackson M6JXC and Victoria Penrice M6JXV

07415094820

president@nottinghamastro.org.uk

secretary@nottinghamastro.org.uk

More details next month

RSGB & UKµG Contests 2014

Month	Contest name	Certificates	Date 2014	Time GMT	Notes
Apr	5.7GHz EME	*Arranged by DUBUS*	*5-Apr to 6-Apr*	0000-2359	DUBUS EME Contest
Apr	Low band 1.3/2.3/3.4GHz 2	F, P,L,R	13-Apr	1000 - 1600	
Apr	1.3GHz Activity Contest	*Arranged by RSGB*	15-Apr	1900 - 2130	RSGB Contest
Apr	2.3GHz+ Activity Contest	*Arranged by RSGB*	22-Apr	1900 - 2100	RSGB Contest
May	*10GHz Trophy*	*Arranged by RSGB*	*3-May*	*1400 - 2200*	Saturday, to coincide with IARU
May	*432MHz & up*	*Arranged by RSGB*	*3-May to 4-May*	*1400 -1400*	RSGB Contest
May	3.4GHz EME	*Arranged by DUBUS*	*3-May to 4-May*	0000 - 2359	DUBUS EME Contest
May	Low band 1.3/2.3/3.4GHz 3	F, P,L,R	4-May	0800 - 1400	Aligned with RSGB/IARU event
May	1.3GHz Activity Contest	*Arranged by RSGB*	20-May	1900 - 2130	RSGB Contest
May	10GHz & Up EME	*Arranged by DUBUS*	*24-May to 25-May*	0000-2359	DUBUS EME Contest
May	5.7GHz/10GHz/24GHz	F, P,L,R	25-May	0600-1800	
May	2.3GHz+ Activity Contest	*Arranged by RSGB*	27-May	1900 - 2130	RSGB Contest
May/Jun	1.2GHz EME	*Arranged by DUBUS*	*31-May to 1-Jun*	0000 - 2359	DUBUS EME Contest
Jun	Low band 1.3/2.3/3.4GHz 4	F, P,L,R	8-Jun	1000 - 1600	Aligned with some Eu events
Jun	1.3GHz Activity Contest	*Arranged by RSGB*	17-Jun	1900 - 2130	RSGB Contest
Jun	2.3GHz+ Activity Contest	*Arranged by RSGB*	24-Jun	1900 - 2130	RSGB Contest
Jun	5.7GHz/10GHz/24GHz	F, P,L,R	29-Jun	0600-1800	
Jul	VHF NFD (1.3GHz)	*Arranged by RSGB*	5-Jul to 6-Jul	1400 - 1400	RSGB Contest
Jul	1.3GHz Activity Contest	*Arranged by RSGB*	15-Jul	1900 - 2130	RSGB Contest
Jul	24GHz - 248GHz Contest	O	20-Jul	0900 - 1700	
Jul	2.3GHz+ Activity Contest	*Arranged by RSGB*	22-Jul	1900 - 2130	RSGB Contest
Jul	5.7GHz/10GHz/24GHz	F, P,L,R	27-Jul	0600-1800	
Aug	Microwave Field Day	O,L	3-Aug	0900 - 1700	
Aug	1.3GHz Activity Contest	*Arranged by RSGB*	19-Aug	1900 - 2130	RSGB Contest
Aug	2.3GHz+ Activity Contest	*Arranged by RSGB*	26-Aug	1900 - 2130	RSGB Contest
Aug	5.7GHz/10GHz/24GHz	F, P,L,R	31-Aug	0600-1800	
Sep	1.3GHz Activity Contest	*Arranged by RSGB*	16-Sep	1900 - 2130	RSGB Contest
Sep	2.3GHz+ Activity Contest	*Arranged by RSGB*	23-Sep	1900 - 2130	RSGB Contest
Sep	ARRL Microwave EME	*Arranged by ARRL*	27-Sep to 28-Sep	0000 - 2359	ARRL EME 2.3GHz & Up
Sep	5.7GHz/10GHz/24GHz	F, P,L,R	28-Sep	0600-1800	
Oct	*1.3 & 2.3GHz Trophies*	*Arranged by RSGB*	*4-Oct*	*1400 - 2200*	RSGB Contest
Oct	*432MHz & up*	*Arranged by RSGB*	*4-Oct to 5-Oct*	*1400 - 1400*	IARU/RSGB Contest
Oct	1.3GHz Activity Contest	*Arranged by RSGB*	21-Oct	1900 - 2130	RSGB Contest
Oct	ARRL EME 50-1296MHz	*Arranged by ARRL*	25-Oct to 26-Oct	0000 - 2359	ARRL EME Contest
Oct	2.3GHz+ Activity Contest	*Arranged by RSGB*	28-Oct	1900 - 2130	RSGB Contest
Nov	ARRL EME 50-1296MHz	*Arranged by ARRL*	15-Nov to 16-Nov	0000 - 2359	ARRL EME Contest
Nov	1.3GHz Activity Contest	*Arranged by RSGB*	18-Nov	2000 - 2230	RSGB Contest
Nov	Low band 1.3/2.3/3.4GHz 5	F, P,L,R	23-Nov	1000 - 1400	
Nov	2.3GHz+ Activity Contest	*Arranged by RSGB*	25-Nov	2000 - 2230	RSGB Contest
Dec	1.3GHz Activity Contest	*Arranged by RSGB*	16-Dec	2000 - 2230	RSGB Contest

Key:

F Fixed / home station

P Portable

L Low-power (<10W on 1.3/2.3/3.4GHz, <1W on 5.7/10GHz)

R Radio Talkback

Main changes from 2013 calendar

1. ARRL/DUBUS EME updated
2. Low Band event moved from October to May
3. No separate radio talkback sections

73 John G3XDY, UKUG Contest Adjudicator

UKµG Contest Portal

Journées d'Activité

Robin G8APZ

Here are the dates for 2014 provided by Jean-Paul F5AYE (JN36dh).

All are Sat/Sun weekends apart from the scatter tests via Mont Blanc.

1296 GHz and up

24/25 May

21/22 June

13th July morning - F6BSJ Memorial JA - Scatter tests via Mont Blanc, (Last year a scatter contact of 600 km was made...)

26/27 July

30/31 August

27/28 September

25/26 October

73
Robin, G8APZ

Events calendar

2014

Apr 12	CJ-2014, Seigy	cj.ref-union.org/
April 26-27	Martlesham Round Table	mmrt.homedns.org/
May 16-18	Hamvention, Dayton	www.hamvention.org/
Jun 22	RAL Roundtable	
Jun 27-29	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
July 1	Scatterpoint 10th Anniversary	www.scatterpoint.org/
July 12–13	Finningley Round Table	www.g0ghk.co.uk/
July 25–27	AMSAT Colloquium, Holiday Inn, Guildford	www.amsat-uk.org/colloquium/
July 23- Aug 3	Commonwealth Games, Glasgow	www.glasgow2014.com/
August 23–26	EME2014, Pleumeur-Bodou near Lannion	www.eme2014.fr
Sept 6–7	European Conference on Amateur RA, Bad Münstereifel- Eschweiler, Germany	
Sept 12–14	59.UKW Tagung, Weinheim [*note date correction*]	www.ukw-tagung.de/
September 21	Crawley Round Table [date tbc]	
Sept 26–27	National Hamfest	www.nationalhamfest.org.uk/
Oct 6-9	European Microwave Week, Rome	www.eumweek.com/
Oct 10-12	RSGB Convention	www.rsgb.org/rsgbconvention/
Oct 18-19	Microwave Update, Rochester, New York	www.microwaveupdate.org/
Nov 1	Scottish Round Table	www.gmroundtable.org.uk/

2015

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/
Sep 28 – Oct 2	European Microwave Week, Paris	www.eumweek.com/

2016

May 20-22	Hamvention, Dayton	www.hamvention.org/
Oct 4-7	European Microwave Week, London	www.eumweek.com/