



# UK Microwave Group Report to RSGB Spectrum Forum

## Introduction to UKuG

The UK Microwave Group represents the interests of amateur GHz bands radio enthusiasts in the UK. Its Committee is an elected body representing the interests of UK amateur microwave enthusiasts. The UKuG is open to membership for both UK and overseas microwavers. UKuG is now 18 years old, having been formed at the Martlesham Microwave Roundtable in November 1999 and it is affiliated to the RSGB. Current membership is still growing at 494, up by 14 this year.

## Events organised and supported during 2017

- Martlesham Microwave Roundtable with UKuG AGM – April
- RAL roundtable organised by Harwell Club - June.
- Microwave Roundtable and buildathon organised by the Finningley Club – July.
- Microwave Roundtable organised by the Crawley Club - September
- Scottish Microwave Roundtable, Burntisland near Dunfermline - November
- RSGB Convention 2017

## Club and outreach

The group has members on the RSGB Board, the Spectrum Forum, Propagation Studies Committee, Contest Committee, EMC Committee, ETC Committee, Examination Standards and Audit Committees, IARU Committee, and one of our members Chairs the Technical forum.

Members have visited several clubs to present talks on Microwaves or Millimetre-waves. The Group membership provided ten speakers at the RSGB convention.

## Technical Support and loan equipment

UKuG members provided technical support as part of our scheme, including beacon repair, construction and advice. Members have continued to support Joe Taylor K1JT to further develop the WSJT-X suite of Digimode programs.

We have four "members' loan" transverter systems, covering 5.7, 10, 24 and 76GHz. Providing support for beginners and established microwavers.

The UKuG responded to the two Ofcom consultations on 5GHz FWA and 5G-telecoms near 24 GHz

## Chipbank

The chipbank offers a completely free service to members, and includes a comprehensive selection of chip resistors, capacitors and inductors as well as a good selection of semiconductors and other components. In the nine months to the end of September, 27 requests were received and serviced. This is about 20% up on the same period last year. Components were also distributed to members at the Martlesham and Finningley microwave roundtables. The online catalogue was updated twice to reflect

donations from the estate of the late G4HUP and from other sources. We would like to thank the various companies and other sources that donated components

## Publications

UKuG members still write four of the regular columns in RadCom, write for Practical Wireless and regularly contribute technical articles and the European activity report for Dubus magazine.

## Scatterpoint

The e-newsletter of the Group, under the Editorship of Martin, G8BHC, is published at least 10 times a year and continues to attract top-line technical articles as well as being a comprehensive repository of reports of activity. Having successfully migrated from Yahoo during the year, there are nearly 500 members of the new groups.io Scatterpoint group. Copies of the monthly magazine are also available to members via Dropbox links. Older issues are available from the UKuG web site (issues for 2016 will become available at the end of December 2017). An annual index is produced for members.

Scatterpoint carries a regular activity report column, compiled by Neil G4LDR, which has detailed reports from members of their activities on the microwave and millimetre bands, illustrating the breadth of propagation modes and modes of operation in regular use. These reports cover Wideband, Narrowband and Machine Generated Modes (MGM) activity used for both local and DX operations.

## Group web presence

The Group launched its new information Wiki in the November GHz bands column. The UKuG has several GHz related videos on its YouTube video channel. The Twitter feed @UKGHZ attracts many likes and retweets, highlighting innovation such as long-distance QSOs on the 47, 76 and 122, 134 and 241GHz mmWave bands. Our main website, microwavers.org, also provides listings for Operating Firsts/DX records, Chipbank stock updates, a regularly updated beacon maps and a rolling events calendar.

- Web: <http://www.microwavers.org/>
- Wiki: <https://wiki.microwavers.org.uk/>
- Twitter: <https://twitter.com/UKGHZ>
- Youtube: <https://www.youtube.com/c/UKMicrowaveGroup>

Our sister site, Beaconsport.eu, created and run by UKuG member G8APZ continues to be very popular with DXers from VHF upwards. It now has nearly 3500 registered users.

## Beacons

The Group was pleased to see a new 3.4GHz beacon GB3LPC on the air along with GB3KEU on 5.7GHz now operating at its new site. Approvals were granted for changes to GB3FNM 2.3 GHz, GB3FRS 1.3GHz, GB3KBQ 10GHz. Two others were rejected but are subject to appeal. Two 10GHz beacons and one on 24GHz are still in progress. **We thank the society for their support with beacons and ask them to continue to pursue this issue at the highest level within Ofcom.** See [http://www.ukrepeater.net/vetting\\_beacons.php](http://www.ukrepeater.net/vetting_beacons.php)

## Operation

Group members continue to support ongoing developments in digital modes applied to weak signal/small ground station EME. Development work on the 241GHz band continues. Small groups continue to encourage activity on 1296 digital modes by promoting a centre of activity at 1296.165MHz, but these modes have not yet "taken off" as a terrestrial DX mode like they have on the lower bands.

Activity on the microwave bands seems to be increasing in the North. There are at least three stations in the North East on 76 and 134GHz (G8AGN, G0EWN, M0DTS) and renewed interest on 47GHz (G8AGN, G0EWN). There is also some interest in 10GHz EME and 5.6GHz ATV using low cost FPV modules.

These two initiatives aside, most other most other GHz activity is still clustered around UKAC and other contests. We need to be aware of the undesirable effects of this on overall activity on the higher bands outside contest times. The danger is that microwave activity will be seen as a once a month activity, becoming an issue as commercial operators vie for spectrum.

## Nanowaves

There is continued interest in nanowaves "up North." Main activity at present is centred on G8AGN, G0EWN and GORPH and efforts have been concentrated on daylight contacts, usually in very bright, sunny conditions. Best daylight DX this year has been 80km. This is difficult even on LOS paths with high power red LED transmitters (630nm) and optical filtering in the Rx due to the high levels of optical QRM. When operating at night, tests over such distances are almost trivially easy even when visibility is poor since the red light seems to penetrate haze well and we have found that IR (850nm) is even better.

Stations have concentrated on daylight contacts since many are reluctant to operate /P at night and if nanowaves are ever to become more popular then it's likely that daylight operation would be preferred. There should be scope for home to home working at night using cloud or clear air scatter but QRM from street lights etc is a major issue; also, the potential negative publicity of shining bright red beams into the sky! This could most probably be overcome using IR radiation but has not yet been tried. Some effort has been made to look at a modulation system based on a modified form of QRSS which involves sending a pair of alternating audio tones, each tone being of a different duration. A tone pair can be used to send a piece of information such as a callsign, signal report or part of a Maidenhead locator. The tones can be decoded via software such as Spectran and a decoding table or via a specially developed stand-alone decoder based on an Arduino. This system has been tested successfully over the 80km path mentioned above. No work has been done on digital modes such as WSPR or WSJT due to the need to keep the gear lightweight for portable operations, possibly on hill/mountain tops.

## UKuG Trophies

The UKuG presents trophies annually to recognize the achievements made by microwave operators in several different areas.

1. The RSGB Fraser Shepherd award went to G8CUB and G0FDZ for their mmWave work.
2. The G3BNL Trophy is presented for innovation or technical development of microwave equipment or techniques, in honour of Les Sharrock G3BNL. This award was not presented in 2017.
3. The G3EEZ Trophy is presented for contributions to microwave communications, in honour of Alan Wakeman G3EEZ. The 2017 recipient is Mike Willis, G0MJW for his path profile software which is recognised for its extreme effectiveness in the microwave field.
4. The G3VVB memorial trophy is presented for the best microwave home project exhibited at a microwave roundtable, in honour of Cyril James G3VVB. The 2017 recipient is Jeff Easdown, G4HIZ.
5. The G3KEU trophy is presented to the leading entry in the 5.7GHz cumulative contests, in honour of Tim Leighfield G3KEU. The 2017 recipient is Telford and district ARS, G3ZME.
6. The G3RPE trophy is presented to the Winner of the 10GHz cumulative contests (Open Section), in honour of Dain S. Evans, G3RPE. The 2017 recipient is again Telford and district ARS.
7. The G3JMB memorial trophy is presented to the Winner of the 10GHz cumulative contests (Restricted Section, 1-Watt max), in honour of Jack Brooker G3JMB. The 2017 recipient is Stewart Wilkinson, G0LGS.
8. For the first time, we awarded the G4EAT trophy in Memory of John Wood. It is presented to the leading station on 1.3GHz in the UKuG Low Band Championship. The 2017 recipient is the Coombe Gibberlets, M0HNA/P.
9. The two 24GHz trophies, the G0RRJ and 24GHz Trophies were awarded to G4LDR.
10. The 47GHz Trophy was won jointly by G8CUB and G0FDZ

## UKuG Contests and Certificates

Locator squares awards on 1.3GHz have been awarded to John Worsnop G4BAO at the 100 squares level and Tony Collett G4NBS at the 75, 80 and 85 squares levels. On 2.3GHz awards went to G4NBS at the 20 squares level and to Gordon Emmerson G8PNN at the 40 squares mark.

Firsts awards were issued to Roger Ray G8CUB and Chris Whitmarsh G0FDZ for pioneering contacts made on the 122GHz and 241GHz bands in July and February 2016 respectively.

The UKuG contest programme for 2017 did not change much from 2016. Participation levels on the 5.7GHz and 10GHz bands are up over 30% on 2016. Activity on 2.3GHz in UKuG contests is also up 20% over last year, whilst 3.4GHz activity has remained static and the number of entries on 1.3GHz has declined a little. Some changes to the dates for the mm-wave contests were made for 2017, entrant numbers have held steady.

The UKuG Contest Manager also adjudicates the SHF UK Activity Contests. In 2017 the date/time clash with the 50MHz events was removed, so participation has markedly increased, particularly on 2.3GHz and 10GHz, with entry levels now

running at 30% above 2016 levels. The availability of low cost video senders, amplifiers and antennas for 5.7GHz has driven a substantial increase in WBFM operation on that band with distances over 100km now routinely achieved.

Submitted by G4BAO on behalf of the UK Microwave Group, October 2017