An Amateur Radio publication for the Microwave enthusiast

MICROWAVE NEWSLETTER

Published by the Radio Society of Great Britain and edited by G3PHO and G8AGN.

Lambda House, Cranborne Road, Potters Bar, Hertfordshire EN6 3JE

FROM THE EDITOR

2004 – JANUARY

A very Happy New Year to you all! The year ahead looks challenging, with changes in the way UK microwavers are to have their interests taken care of, with frequency changes on 24GHz and promises of more and more activity on our bands. Whatever these changes, you can be sure that this Newsletter will always strive to bring its readers the most up-to-date information possible.

Many thanks for the Christmas and New Year greetings sent to the editorial desk by a number of readers. Some signed with only their first name but no callsign, so please accept this rather anonymous, but grateful, acknowledgement.

You will notice a paucity of technical information in this issue, except for material trawled from the depths of the Internet. The simple fact is that nothing has been sent into the editor! It's basic physics folks ... zero input gives zero output! If you have anything that might be of interest then please let us have it. This Newsletter is the one place where anyone of you can become an author!

Traditionally the January issue is the one in which you will find the contest calendar and rules for the coming year. They form the centre pages of this edition so that you can easily pull them out and stick on the shack wall for future reference. In spite of this "aide mémoire" and its Internet and RadCom counterparts, there will still be folk who won't remember what day it is! C'ést la vie!

In this issue ...

News, views and articles for this newsletter are always welcome. Please send them to G3PHO (preferably by email) to the address shown below. The closing date is the Friday at the end of the first full week of the month if you want your material to be published in the next issue.

G3PHO: Peter Day 0114 2816701

G3PHO, Peter Day,
146 Springvale Road,
Sheffield, S6 3NU, UK

G3PHO: Email: microwaves@blueyonder.co.uk

SUBSCRIPTION ENQUIRIES SHOULD BE SENT TO RSGB HEADQUARTERS AT THE ADDRESS SHOWN AT THE TOP OF THIS PAGE AND NOT TO THE EDITOR ..

MAKING MICROWAVE VOICES HEARD…

From: Brian Coleman, G4NNS [BrianColeman@compuserve.com]

I think we need to get much better at telling the amateur radio community at large (and the professionals) what we are up to. I have given talks to local Radio and Astronomy clubs on "Amateur Radio Astronomy" and have been asked to prepare a talk on Microwave operations. Perhaps we should try to establish a network of speakers who can cover the whole country on Microwave topics, starting with the basics. Most Radio clubs are desperate for speakers and would welcome offers of talks. With newcomers entering Amateur at a very basic level, this might encourage them to move on to more interesting and challenging aspects of the hobby and thus fulfil the "Purpose" of the licence as set out under section 1 Para 1 which speaks of "Self Training" and "Technical Investigations". In addition to attracting more to the Microwaves, this will raise awareness of the achievements of our branch of the hobby and reinforce the need for proper representation when our vulnerable bands come under attack. The old adage "use or loose" needs updating to "Use and shout about it or loose".

What do readers think of Brian's ideas? Please write in to the newsletter (and to Brian of course). Maybe we can draw up a list of speakers, topics, geographical areas available, etc, to publish on the Internet and around the radio clubs.

EME NEWS and a new website

From: Brian Coleman, G4NNS, [brian-coleman@tiscali.co.uk]
Sent: 19 November 2003

I have started to set up a web page at **http://myweb.tiscali.co.uk/g4nns** following the arrival of broadband in darkest NW Hampshire. I hope the pages will improve rapidly as various kind folks educate me on how to make them better. In the mean time I have a couple of pages including **various sound clips of 10 and 24GHz EME.**

I managed to work 7 stations in the first leg of the ARRL EME contest in October and 3 during the second leg on November 15/16. I had rather a short window on the moon due to the elevation at rise and set being too much for my semi polar mount. I'm now dreaming about a full az/el mount for the 3.7m dish to give more time on the moon and make the system more suitable for some Radio Astronomy.

73 from Brian G4NNS

UK BEACON NEWS

From: Russ Stewart [russ@g8bhh.demon.co.uk]
Sent: 30 November 2003

GB3CEM on 10368.880 MHz should now be working again. It has a new antenna, a 9dBi slotted waveguide and probably has nulls.

Reports are vital for correct orientation. Please email me at : russ@g8bhh.demon.co.uk.

73 from Russ G4PBP

TELFORD BEACONS INCREASED TO THREE

From: M.Vincent [ukv@globalnet.co.uk]
Sent: 03 January 2004

I've just commissioned the third (and final) GB3ZME microwave beacon here in Telford, on 5.7 GHz. It will be QRV from Sunday 10th January. (QRP initially)

I notice in the 2004 RSGB Year Book that our other beacons need updating too. Info as follows:

3400.910MHz GB3ZME IO82SQ slotted wg. QRV.

5760.910MHz GB3ZME . IO82SQ slotted wg. QRV wef 10/01/04

24192.910MHz GB3ZME IO82SQ slotted wg qrv (QSY to 24048.910MHz during 2004)

The beacons are sponsored by the Telford & DARS, I am the NoV holder.

73, Martyn Vincent G3UKV

INTRUDER ALERT !

(Editor's note: UK 6cm operators, especially those in rural areas who think they are immune from the rising tide of wireless LANs and the like, might be excused for becoming alarmed at the possible consequences of the following DTI press release ...)

DEPARTMENT OF TRADE AND INDUSTRY
P/2003/629 19 December 2003
5.8GHZ SPECTRUM OPEN

DTI is opening the 5.8GHz Band C spectrum to a wide user base ranging from Existing Telecommunication and Internet Services Providers through to Community, Health and Educational Sectors. Authorisation to use this band will be under the management of the new OFCOM regime from Monday 2 February 2004 and will help boost the availability of broadband services especially in rural areas.

Applicants will need a licence to authorise the use of the spectrum. The licensing framework aims to minimise burdens on business and communities, and protect existing essential users.

Opening this band is expected to boost the development of fixed wireless access services, such as low cost internet access in areas not currently reached by broadband services. This will benefit the rural economy.

Ofcom will be accepting licence applications from Monday 5 January.
Licence fees will initially be set at an annual fee of £1 per terminal, subject to a minimum annual charge of £50.

Notes for editors:

1. DTI is opening 5.8GHz Band C (5725 to 5850 MHz) on Monday 2 February for the provision of broadband fixed wireless access services.

2. Details of the licensing regime are at www.Ofcom.org.uk or by calling the Ofcom Contact Centre on 0845 456 3000.

Department of Trade and Industry
7th Floor
1 Victoria Street
London SW1H 0ET

Press Enquiries +44 (0)20 7215 5976
(Out of Hours) +44 (0)20 7215 3234/3505
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Textphone +44 (0)20 7215 6740
(for those with hearing impairment)
Press Office Fax +44 (0)20 7222 4382
www.dti.gov.uk

(Readers' comments on this paper are most welcome ..... Editor)

GOT THE CONNECTION ?

The following interesting and amusing notes come from K2RIW's recent posting on the WA1MBA Microwave Reflector on the Internet .....

From: Richard T. Knadle, K2RIW
[rknadle@suffolk.lib.ny.us]
Subject: Connector Name Origin.

Concerning microwave connectors, the story goes ....

N is for Neil**, C** is for Councilman. Those are the connector names.

BNC is Bayonet Neil Councilman, **TNC** is Threaded Neil Councilman.

Likewise, I was told **SMA** was Sub Miniature type "A". **SMB** was Sub Miniature type "B" and **SMC** was Sub Miniature type "C", all originally Bendix names (they invented the SMA).

I did not originate this story; I got it from an older issue of the "Cheese Bits", the monthly journal of the Mount Airy VHF Radio Club (The Pack Rats), from the Philadelphia, PA area. I've repeated the story to many RF people and have encountered older engineers who remember the creation of those connectors. Sometimes they confirm the story, so it might be true.

Most people who served in the US Navy have been told that the N Connector stands for Navy Connector, instead of the Paul Neill Connector.

I've worked in the RF and Microwave world for over 35 years. RF people use coaxial connectors every day and almost every other day they hear the word RADAR. To me it's amazing that most engineers never ask what these abbreviations stand for. When you tell them, they are amazed that the letters really stand for something, as apposed to being randomly chosen letters such as C Band, S Band, or V Band.

Here is a way you can have some fun with your fellow engineers. Just ask them what do the letters stand for in N, C, BNC, TNC, SMA, SC, HN, RADAR, or SONAR. You will probably find that less than one engineer in 10 knows what ANY of those abbreviations stand for, regardless of their years of experience.

I've run that experiment at AIL, Kmec, Rockwell, Northrup, Sanders, Cutler Hammer, MPD, Narda, Telephonics, Bell Labs, Johns Hopkins APL, Edwards AFB, Wright Paterson AFB, Eglin AFB, NASA Goldstone, NASA Goddard, NASA Kennedy, NASA Johnson, China Lake NAWC, Pt. Mugu NAWC, Johnstown NAWC, Rome ADC, Bell Northern Research (Canada), Westinghouse, Comtech, Bendix, Lockheed Martin, AEL, IBM, Microwave Associates, Amplica, HP, Agilent, Avantek, Mitec, Eaton, EDO, and a few more! The ratio is always the same and the amazement of the engineers is always the same. The information seems to be a well kept secret and I wonder how it happened. I'm saddened that the engineers who created these great connectors are such unsung heroes.

There are companies (such as AIL) where almost every product, for the last 55 years, has something to do with RADAR -- Receivers, Transmitters, Exciters, Jammers, Antennas, Direction Finders, Surveillance, Reconnaissance, Diplexers, DSP, Range Doppler Matrix, Pulse Forming Networks, Rotary Joints, Pulse Compression Networks, Synthetic Aperture RADAR (SAR), Inverse SAR, TWTs, HPAs, LNAs, etc. Choose an engineer who has worked there for 20 years (or any other number) and tell him the following: "RADAR has put food on your table for the last 20 years, it's one of the most important words in your vocabulary; what does it stand for?" You will see him struggle to find a word for the first A in RADAR -- there isn't one, it's not a real acronym. RADAR is a contraction that stands for RAdio Detection And Ranging -- according to Skolnik, "Introduction to Radar Systems", 1962, page 1. While he is struggling to come up with the definition I will say, "you know, Pete in the Transmitter Department knows RADAR so well that he can even spell it backwards".

I once asked that question of 15 engineers at a RADAR savvy company before getting the correct answer. It was the 5th engineer in the RADAR Department who knew the answer!

Before you try any of these tricks on your fellow workers, be sure you have chosen someone who likes you and has a reasonable sense of humour. Some people take themselves so seriously that they can't stand to have any of their weaknesses exposed without blaming you, the exposer.

Have fun with this information but be careful -- there is a mine field out there of people who can't take a joke concerning their profession. We all make mistakes, and we all have missing pieces of information -- try to enjoy the educational process. If you can't laugh at yourself, you're probably taking things too seriously and living a much harder life than you have to. Mother Nature didn't make this RF Universe in such a way that it's easy for anyone to really understand a whole lot of it. It's probably that challenge that got most us into the Microwave business/hobby in the first place.

By the way, that beautiful little (~ 2mm) push-on RF connector that's located on your Wireless LAN Card (it's a closed-circuit jack intended for an external antenna) is an **MMCX** Connector (Micro-Mate C). There are different companies that sell a gold plated SMA to MMCX (Male) adapter for prices that range from about $8.00 to about $60.00 each. The quality seems to be the same. There are experimenters that have gotten miles of 802.11b DX with an external 2.4 GHz Dish antenna connected to their barefoot Wireless LAN Card.

For further details on all connectors see: http://www.wa1mba.org/rfconn.

73 and Good DX with Connectors and RADAR,
Dick, K2RIW

Grid: FN30HT84DC27
web: http://consult-li.com/listings/RKnadle.htm

FOR SALE

K9EK 2C39BA cavity PA for 13cm.
Produces 50W+ output for about 2W drive with 1kV HT. Includes 2C39BA, blower and diecast box plenum chamber with bias circuit and heater transformer. Cost over £200 new, selling for £75. Also available is a suitable mains power unit that provides 1kV at up to 300mA, 27V at 1A and 12V at 3A for £30. Buyer to inspect and collect (Ipswich) for both items. Contact **G3XDY (QTHR) or email g3xdy@btinternet.com**

WANTED

I am looking for a 70cm PA for use on the AO40 uplink. Please email me with specs and price etc.

Harold Groves, G3UYM
[harold.groves@ntlworld.com]

WANTED – URGENTLY

MACOM "Whitebox" LocalOscillator MVS part no. 1840460-1

If anyone has a spare LO module for the 10GHz "whitebox" there are two folk who are desperately in need of one!

First is Doug, **GW3ATM (telephone01594530379)** who is trying to get a whitebox working to enable a friend to become active on 10GHz narrowband.

Second is **Adrian, G4UVZ**, who wants one to replace an unstable LO in the Taunton beacon, GB3KBQ. At present he has been forced to use his portable 10GHz transverter LO in place of the faulty one.

Adrian is QTHR and can be emailed at:
Adrian.Whatmore@tst.nhs.uk

G3WDG IS FIRST UK AMATEUR MICROWAVER TO HEAR THE MARS SPACECRAFT

Editor's note: *The following AMSAT report confirms, in more detail, an earlier email we had received from Charlie, G3WDG, the UK's foremost 10GHz EME operator. It describes a remarkable achievement especially when one considers the distances involved and the relatively modest size of Charlie's dish antenna for such a path. As far as we know, Charlie is the first amateur microwave home station operator to have heard the craft. It had been picked up earlier by the AMSAT DL group using a professional dish some six times bigger than Charlie's but G3WDG has done this entirely by himself. We're sure all readers will join with us in congratulating him on a fine achievement.*

UK amateur copies signal from Mars Express spacecraft

Using what he described as "just a quick throw-together" system, Charlie Suckling, G3WDG, has received a signal in the UK from the European Space Agency's Mars Express spacecraft. Now in deep space, Mars Express was expected to reach the Red Planet on Christmas Day and deploy its Beagle 2 lander for six months of exploration. G3WDG reports he heard the Mars Express signal on X band (8.4 GHz) December 9, 2003, using a 3 metre dish. In a message to James Miller, G3RUH--who had provided him with advice on setting up his equipment--Suckling said his system noise factor was about 1dB and he used Miller's S-Band 2.25-turn helix scaled to 8.4GHz as the feed (LHCP). "Signals seemed very consistent for about two hours," he said. The signal level was "very approximately" 0 dB S/N in 2.5 kHz. G3WDG said it was not too hard to locate the signal -- about 10 minutes of searching plus or minus 100kHz and tweaking his azimuth and elevation settings.

In mid-November, a team of German amateurs were able to copy the Mars Express signal from a far more sophisticated setup in Bochum, Germany, that's equipped with a 20 meter parabolic antenna. Reception of the Mars Express signal provided a test run for the facility, which will serve as the ground control station for AMSAT-DL's Phase P5-A Mars orbital mission planned for 2007.

AMSAT-DL President Peter G¸lzow, DB2OS, says it was the first time ever that a signal of an interplanetary deep-space probe was received in Germany. "It was probably also the first time ever that such a signal was received by Amateur Radio operators," he added.
There's a complete report on the AMSAT-DL Web site

ONLINE VHF - MICROWAVE COMPETITIVE TABLE

Happy New Year 2004 with lots of DX !
I have build a new online TOPLIST for Gridsquares for 6m - 241 GHz:

http://www.vhf-dx.net/top.shtml

Please spread the news and make use of it. Let me know of any problems or if you wish any features not included yet.

vy 73, Rainer, DF6NA

FRENCH CONTEST CALENDAR

http://www.ref-union.org/concours/calendrier/calendrier.php

Many thanks to Dave, G0RRJ, for this information

UK MICROWAVE CONTESTS 2004

Aims and comments:

General Rules (applicable to all events)

ALL THE CONTESTS (except the 10GHz Trophy) run from 0900 to 2100UTC on a Sunday.

The Contests are open to all comers (you do not have to be an RSGB member), except for the 10GHz Trophy where contestants must be members of RSGB if they wish to submit logs.

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).

The following VHF/UHF/SHF General Rules will apply unless stated otherwise: 1 a, e, f, h; 2 e, i; 3 b, c unless the Rover rule is invoked, d, f, g; 4 d, e, f unless the Rover rule is invoked, g, h, i, k; 5 b, c; 6 a.
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.

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 frequency. Where the Locator is not known, a full six-figure National Grid Reference (UK only) must be provided. 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).

Mobile phones must not be used to exchange any contest log information. All such information may only be exchanged by amateur radio.

Paperwork/Entries: Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed. The adjudicator will not do this for you!
All entries must be prefaced with an appropriate summary / cover sheet (either an RSGB VHF / UHF type or a personal one) showing: Title of contest, name(s) of operator(s), location(s) of station, section entered, callsign used, band score(s), multipliers or bonus points, final claimed score. The sheet should also detail equipment used, particularly the power output, antenna and receiver for both the microwave band and the talkback. This is very important if the logs are entered in one of the restricted sections. Where the contest has a 'rover' facility, it is essential that each location used is clearly stated.

Where Locator squares and / or countries are used as multipliers for bonus points, a summary list of the squares and countries worked must be attached to the contest cover (summary) sheet. This list should include the callsign and date of the first contact for each square / country.
Log entries may be submitted directly on paper, using standard RSGB VHF Contest sheets or self-prepared contest sheets, on a 3.5in diskette (IBM PC format), or via e-mail. For electronic entries, the format should be one of the following: ASCII text, Microsoft Excel, Microsoft Word, or the G4JNT contest software format. E-mail entries will be acknowledged to confirm receipt.
All logs should be sent to the Contest Adjudicator, G4KNZ, *within 16 days of the end of the contest. Late entries will be acknowledged but not used in the* final ranking. G4KNZ's address is: 17 Haywood, Bracknell, Berks RG12 7WG, UK; or e-mail: steve.davies@nokia.com
Awards: Certificates will be awarded to overall contest winners and individual section leaders and their runners up. Additional Certificates of Merit may be awarded at the discretion of the adjudicator. 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 16 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. Details of the equipment used for this type of operation should be included on the log summary/cover sheet.

Low Band Microwave Contest Rules

This contest aims to encourage home station operation on the three lowest bands in the amateur microwave allocation, particularly as there is growing UK interest in 3.4GHz equipment and triband antenna feeds for these three bands. Portable operators are, of course, welcome to enter, in spite of the chances of inclement weather at the time these contests are staged!

1. The General Rules listed above apply.
2. There are two contests, one in March and the other in November.
3. There is only one section - open.
4. Each band will be scored and tabulated separately. The total points for each band will then be normalised by the adjudicator to 1000 and the normalised band totals added up and tabulated.
5. Each session will be scored separately - there are no cumulative scores.
6. For each session, March and November, certificates will be awarded to
- the leading entry on each band
- the overall leading entry across the three bands
- the runners up to both the above categories

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of each of the two contests.

5.7GHz Cumulatives Rules

The 5.7GHz and 10GHz cumulatives have been run concurrently because of the growth in activity on 5.7GHz, and the ease of combining the two bands on the same dish. Although they are on the same days, they are completely separate contests. Either band or both bands can be used on any of the 6 days, and any three days submitted for either band.
1. The general rules shown above apply.
2. There are six, monthly, events, from May to October inclusive.
3. Any three of the six events may be used for final scoring purposes. Logs for all events entered should be submitted.
4. There are two sections:
Open
No power or antenna restrictions (other than those laid down in the amateur licence) on either 5.7GHz or on the talkback band.
Moving location during the contest is allowed - the Rover concept is applicable.
Restricted
5.7GHz transmit output not to exceed 0.5 watt to the antenna.
No power restrictions on the talkback band. No antenna restrictions
Moving location during the contest is allowed - the Rover concept is applicable.
5. The final, total kilometre score for the best three cumulative sessions will be multiplied by the total number of different Locator Squares ("grids"), for example IO92, IO81, etc) contacted over the entire cumulative (ie up to the six events maximum). To claim this bonus it is therefore essential to submit logs for all events entered, not just the best four. Please include a separate check list of the squares worked with your cover sheet. This multiplier is applicable to all sections. A one-way contact to a new locator square can be counted as a half-square for the purposes of the multiplier.
6. The final results table will show entries in rank order for each section. In addition to the usual leader/runner-up certificates for each section, the following certificates/trophies will be awarded:
- leading entry in the Open section - 5.7GHz the G3KEU Memorial Trophy
- leading home station in each section

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

10GHz Cumulatives Rules

The 5.7GHz and 10GHz cumulatives have been run concurrently because of the growth in activity on 5.7GHz, and the ease of combining the two bands on the same dish. Although they are on the same days, they are completely separate contests. Either band or both bands can be used on any of the 6 days, and any three days submitted for either band.
1. The general rules shown above apply.
2. There are six, monthly, events, from May to October inclusive.
3. Any three of the six events may be used for final scoring purposes. Logs for all events entered should be submitted.

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.

No power restrictions on the talkback band. No antenna restrictions

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

Wideband:

100 milliwatts maximum transmit power to the antenna. Modulation bandwidth to exceed 50kHz. This section includes wideband modes such as FM (voice), MCW, ATV and data.

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

(There is no separate section for portable stations.)

5. The final, total kilometre score for the best three cumulative sessions will be multiplied by the total number of different Locator Squares ("grids"), for example IO92, IO81, etc) contacted over the entire cumulative (ie up to the six events maximum). To claim this bonus it is therefore essential to submit logs for all events entered, not just the best four. Please include a separate check list of the squares worked with your cover sheet. This multiplier is applicable to all sections. A one-way contact to a new locator square can be counted as a half-square for the purposes of the multiplier.

6. The final results table will show entries in rank order for each section. In addition to the usual leader/runner-up certificates for each section, the following certificates/trophies will be awarded:

- leading entry in the Open section - The G3RPE Memorial Trophy
- leading home station in each section.

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

24GHz Cumulatives Rules

After experimenting with separate events in 2003, the 24GHz and 47GHz cumulatives have reverted in 2004 to being run concurrently. Often the same dish used for both bands, and 24GHz is often used to align this dish before a 47GHz contact is attempted, so that a number of operators expressed the wish that they were once again combined. Although they are on the same days, they are completely separate contests. Either band or both bands can be used on any of the four days, and any two days submitted for either band.

1. The General Rules listed above apply.

2. There are four sessions to the 24GHz cumulative in April, May, June and September. The best two sessions out of four will be used for scoring purposes.

3. There is only one section - open.

4. Operation may be from portable sites or home stations.

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

6. Certificates will be awarded to:

- the leading station and runner-up for the two sessions combined

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

47GHz Cumulatives Rules

After experimenting with separate events in 2003, the 24GHz and 47GHz cumulatives have reverted in 2004 to being run concurrently. Often the same dish used for both bands, and 24GHz is often used to align this dish before a 47GHz contact is attempted, so that a number of operators expressed the wish that they were once again combined. Although they are on the same days, they are completely separate contests. Either band or both bands can be used on any of the four days, and any two days submitted for either band.

1. The General Rules listed above apply.

2. There are four sessions to the 47GHz cumulative in April, May, June and September. The best two sessions out of four will be used for scoring purposes.

3. There is only one section - open.

4. Operation may be from portable sites or home stations.

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

6. Certificates will be awarded to:

- the leading station and runner-up for the two sessions combined

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

Other Microwave Contests

The first weekends of May and October see the RSGB 432MHz -248GHz Multiband Contests staged in parallel with the Region 1 IARU UHF/SHF Contests. As a result on considerable discussion, it was felt unnecessary to add yet a third "layer" of contest activity on those weekends.

The 10GHz Trophy is run by the VHF Contest Committee on the 4th May, and the rules can be found in the VHF contest rules.

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

MICROWAVE CONTEST CALENDAR 2004

Dates 2004	Time UTC	Contest name	Sections
25 Jan	0900 - 2100	All-band Activity Day	Non competitive
22 Feb	0900 - 2100	All-band Activity Day	Non competitive
28 Mar	0900 - 2100	1.3GHz/2.3GHz/3.4GHz	Open
4 Apr	0900 - 2100	1st 24GHz Cumulative	Open
4 Apr	0900 - 2100	1st 47GHz Cumulative	Open
1 May (Saturday)		10GHz Trophy	See VHFCC Rules
9 May	0900 - 2100	2nd 24GHz Cumulative	Open
9 May	0900 - 2100	2nd 47GHz Cumulative	Open
23 May	0900 - 2100	1st 5.7GHz Cumulative	Open, Restricted
23 May	0900 - 2100	1st 10GHz Cumulative	Open, Restricted, WB
6 Jun	0900 - 2100	3rd 24GHz Cumulative	Open
6 Jun	0900 - 2100	3rd 47GHz Cumulative	Open
20 Jun	0900 - 2100	2nd 5.7GHz Cumulative	Open, Restricted
20 Jun	0900 - 2100	2nd 10GHz Cumulative	Open, Restricted, WB
25 Jul	0900 - 2100	3rd 5.7GHz Cumulative	Open, Restricted
25 Jul	0900 - 2100	3rd 10GHz Cumulative	Open, Restricted, WB
22 Aug	0900 - 2100	4th 5.7GHz Cumulative	Open, Restricted
22 Aug	0900 - 2100	4th 10GHz Cumulative	Open, Restricted, WB
5 Sep	0900 - 2100	4th 24GHz Cumulative	Open
5 Sep	0900 - 2100	4th 47GHz Cumulative	Open
19 Sep	0900 - 2100	5th 5.7GHz Cumulative	Open, Restricted
19 Sep	0900 - 2100	5th 10GHz Cumulative	Open, Restricted, WB
17 Oct	0900 - 2100	6th 5.7GHz Cumulative	Open, Restricted
17 Oct	0900 - 2100	6th 10GHz Cumulative	Open, Restricted, WB
28 Nov	0900 - 2100	1.3GHz/2.3GHz/3.4GHz	Open
26 Dec	0900 - 2100	All-band Activity Day	Non competitive

NOTE: All dates shown above are **SUNDAYS** unless otherwise indicated.

The UK Microwave Group

.. An open letter from the UK Microwave Group Treasurer, G4KNZ

Dear Microwave Enthusiast,

At the Martlesham Microwave Round Table on 09 November 2003, the **UK Microwave Group (UKuG)** held its AGM, following on from some lively discussions about the disbandment of the RSGB Microwave Committee and whether the group could take over various tasks from the microwave committee. The group was able to form a full committee this year, chaired by Peter Day G3PHO; you can find further details on the Group's web site --- **www.microwavers.org**

Since then, Peter has started discussions with the RSGB as to how we can work with the new Spectrum Forum which came into existence on 01 January 2004, and what responsibilities the UKuG could take over - for example the Microwave Newsletter and Contests.

The initial reaction from RSGB has been quite positive, though mostly the details have to wait until after the new Spectrum Forum, to be chaired by Colin Thomas G3PSM, comes into existence in January.

In the meantime, we have already agreed the contest calendar for 2004 - it is similar to the 2003 calendar, with a few date changes, except that the 24GHz and 47GHz events are combined to the same days. The calendar should be published in the January RadCom *(editor's note: The contest calendar published in January RadCom had two errors: the January all-band event should be on 25/Jan (not 26th) and the July 5/7/10G cumulative should be on 25/Jul (not 22nd). The September dates are correct, despite not being being listed in date order. The dates published elsewhere in this Newsletter are all correct).*

We would like to transfer over completely from the RSGB the editing, production and distribution of the Microwave Newsletter so that there is no uninterrupted service, and existing subscriptions continue to be valid. We have suggested 01 May 2004 as a target to complete this, and will keep you informed of progress. Possibly we could offer the option of the newsletter in printed form similar to now, as well as PDF version sent by email (and at a lower cost).

A printed newsletter would be the biggest expense out of subscription income, and until the transfer is resolved, it is difficult to set UKuG subscriptions for 2004. With a printed newsletter (10 issues per year, same size/format as the microwave newsletter) we hope we can set subscriptions under £15 per year. If we offer an electronic format option, our costs are much reduced, so subscriptions could be set much lower, perhaps at around the £5 level.

Meanwhile, we have decided not to make any charge for membership until these issues are resolved.

A few people have already sent me subscriptions, and I will ask them individually they wish me to return them, or hold on to them pending resolution of the above points.

Regards,
Steve Davies G4KNZ.

Multi-band microwave dish feeds ...

The following notes were gleaned from the WA1MBA Internet Microwave Reflector, often a mine of very useful information. Many thanks to Tom, K5VH and to Tom WA1MBA for this nice little Newsletter "filler" . Tom wrote this in answer to a question on this topic from Richard, G8JVM .

From: microwave-admin@wa1mba.org on behalf of Tom Haddon [k5vh@texas.net]

In 2001 I built a multi-band feed system for use with a 0.9m/ 0.38 f/D dish (bought stock from DEMI). In this case, I put a 2.3GHz loop just in front of the mouth of a 5.7/10.3GHz horn (W5LUA design). It works quite well, considering. The design is described as part of my article in the 2002 SEVHF Society proceedings, p.219 and published by ARRL. The article is entitled "Multi-band Microwave Loop Feeds (and Variations)."

In the article, I discovered that a loop in front of the feed will not offer much degradation of the beam as long as it is slightly larger than mouth. In fact, it somewhat improves the 5.7/10GHz patterns, perhaps because the horn was under-illuminating the dish in its stock configuration before adding the loop.

I was fortunate to get the help of Paul Wade W1GHZ with his elegant software for the five simulations on this design: two of the stock W5LUA feed on 5.7 and 10.3GHz, then two with the loop mod, and finally one for the 2.3GHz loop and reflector assembly. By comparing the stock feed to the mod feed simulations, you can draw the following conclusions:

10GHz:

1) Max theoretical efficiency remains the same for both configurations

2) Theoretical efficiency of feed into 0.4 f/D improves from 63% to 70% over stock design (but is still somewhat under-illuminated). Note: Real-world efficiency is always at least 15% less.

3) Backlobe worsens slightly from -25dB (stock) to -20dB (mod).

5.7GHz:

4) Max theoretical efficiency improves slightly from 67% to 70%

5) Broad peak of efficiency remains about 0.4 f/D for both configurations

6) Back lobe improves slightly from about -12dB (stock) to approx -18dB (mod).

2.3GHz:

7) Theoretical efficiency peaks at 60% for 0.4 f/D dishes.

In practice, the system just works fine. I suggested in my article that a tri-band feed can be accomplished by putting a 3.4GHz loop in front of 10/24 GHz dual band feed (several designs exist) - if the 10GHz horn is circular. I believe this is what Richard wants to do, essentially. It should work OK. Some design notes:

The loop should be spaced about 0.1 wavelength from your reflector surface, not 0.25 lambda as Richard mentioned. Adjust fine spacing for best VSWR or return loss.

The actual loop needs to be slightly larger (5-10%) than a wavelength in length, depending on

For the W5LUA feed, you will need to provide a reflector ring spaced about 1/8 inch back from the mouth of the horn. I had one machined out of 1/8 inch brass; ID is 49mm, OD of 66mm. I used set-screws for my adjustments and cut a small slot in it to mount the UT-141 feedline.

For Richard G8JVM's 0.6m/24 in dish, he will probably still be under-illuminated on 10GHz but who cares, since even at 30% efficiency this gives 31dBi of gain (from my handy TRW calculator). On 3.4GHz he should get 23.7dBi for 50% efficiency or 21.6dBi for 30% efficiency. This is certainly useful gain and comparable to a looper. Considering his constrained conditions, this looks like a good way to go.

No guys, I don't offer reprints of this 17 page article but suggest you obtain a copy of these proceedings (a fat 314 pages) from ARRL. I do intend to put this article up on our Roadrunner's club website at sometime in the future (see www.k5rmg.org).

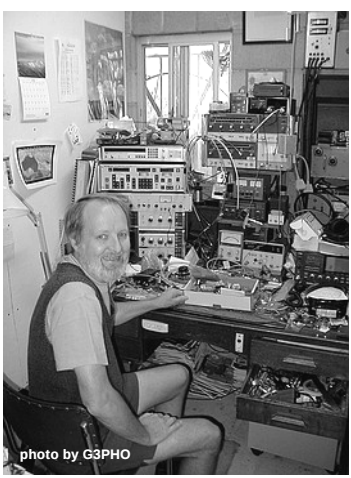
I continue to experiment with multi-band loop feeds and have some new designs in mind for a future article.

Have fun with it guys!

73 from Tom Haddon K5VH
Roadrunners Microwave Group

New Owner Wanted ...

This 3.7m dish belongs to Lyle, VK2ALU and he wants someone dedicated to microwaves to make him an offer! Unfortunately, due to health reasons, Lyle is no longer able to do his 10GHz EME work and is moving across the continent from New South Wales to Western Australia where he and his wife Dot will be living in much more modest accommodation. He'll be keeping his 10GHz portable gear and all his happy memories of 3cm EME QSOs with G3WDG, WA7CJO and others.



Pictured left is Doug Friend, VK4OE, who lives in Brisbane, Australia

Doug is an extremely keen microwaver is an area where you can count such folk on the fingers of one hand! He builds all his own transceivers and has gear for most bands to 47GHz. Shown here, in his basement shack, is the fine array of test gear and well-stocked drawers of spares. Your editor was delighted to be able to stay a couple of days with Doug and his wife Ruth while on a trip around VK/ZL last October. We were part of a 10GHz portable trip to nearby Mount Tambourine from where Doug made a solid contact with a friend to the North.

Some readers will have worked Doug when he operated on 10GHz and 2.3GHz as M/VK4OE/P during a visit to the UK a few years ago.

THE OUTER LIMITS ... 241GHz

From: wa1zms@arrl.net
Sent: 03 December 2003
I'd like to claim a **new DX record for the 241GHz** band.

We had some rather dry WX here in Virginia and I just couldn't pass up trying to better our own DX record for the band. After shorting out a set of gel cell battery terminals while setting the gear up, I thought we'd never make the QSO! No fire, just a melted 1/4" plug on the cable end of the CW straight key.

The new claimed record is 61.8km and here are some specifics:

Date: Dec 3rd, 2003
Time: 01:48z
Locations:
W2SZ/4 (WA1ZMS op) : FM07FM
7-31-04N/79-30-40W
W4WWQ/4: EM97XE 37-10-49N/80-03-59W
Distance: 61.8km

The weather at the time of the QSO at the W2SZ/4 QTH was:
Temp: -6.1C
Dew Point: -17C
Relative Humidity: 40%
Station pressure: 876mb
These WX conditions result in a total atmospheric loss of 0.541dB per km.

The weather at the W4WWQ/4 QTH was not logged, but since his elevation was around 600 meters lower than mine, his dew point should have been slightly higher.

I elected to use the W2SZ/4 club callsign for this QSO since several people within the club have helped me with this 241GHz project.

Several people have asked about photos and more info about the millimetre wave and sub-millimetre wave QSOs from last week. The info is now posted on the web with some new photos and can be found at:

http://www.mgef.org/zms_403.htm

http://www.mgef.org/zms_241_3.htm

My favourite photo is titled "The 241GHz dishes" and shows what a great job the local machinist did when he turned the dishes on a CNC lathe for me. He did not polish them at all. That's the actual finish. I'm not sure I can even detect the tools marks by hand!

73, Brian, WA1ZMS/4

[I'm sure everyone will join with me in congratulating Brian on another remarkable achievement. Apart from being a dedicated millimetre man he is also a reader of this Newsletter! ... editor)

NEWS FROM WESTERN AUSTRALIA ...

From: Walter Howse, VK6KZ [wjhowse@bigpond.com]
Trevor Niven VK5NC in Mt Gambier has access to computer controlled machinery and has volunteered to make a slotted waveguide antenna for our 24GHz beacon. One thing that concerns us is the orientation of the waveguide in a vertical sense and to ensure that the beacon is not so high that the signals go over our heads! We have the 300 metre high Darling Scarp to the east of Perth and so do not plan to use that site! Perth is on the coastal plain!

The WA VHF Group has added a 10GHz beacon at Mt Barker (50km north of Albany) with about 200mW and a 400mm dish pointing towards Adelaide, Melbourne and Mt Gambier. I really want to repeat the contact across the Great Australian Bight and lengthen the path so this beacon may help! Of course if it is heard I have a 420km drive to get to the south coast so

the propagation better remain there for at least 5 hours!

Another 10GHz beacon of similar specifications is to be installed at Busselton (200 Km south of Perth) with the dished oriented towards Perth. With our local 5.7 and 10GHz ones in Perth, we are in the process of making a 2.4GHz beacon as well as the 24GHz one.
73 Wally, VK6KZ

MICROWAVE EME REPORT

From: Peter K. Blair, G3LTF (IO91GG) [100633.1656@compuserve.com]

In the two legs of the ARRL E.M.E. contest (Oct and Nov 2003), I ended up with 13 contacts on 13cm: OZ4MM, F2TU, G3LQR, OE9ERC, HB9SV, SM4DHN, W5LUA, JA4BLC,JA6CZD, ZS6AXT, OK1CA, DL0SHF,and OH2AXH. I was very pleased with this as we in the UK have to cope with the two cross band issues to work stations on 2304 and 2424MHz. I used the 6m dish with 50W at the feed and 0.4dB NF. I see about 0.6 dB of moon noise. I also caught a good tropo opening on 4th Dec and extended my best dx on 13cm to 1170km with a qso with OE5VRL/5 in JN78DK. **Best wishes 2004, Peter G3LTF**

TERRESTRIAL REPORTS

From: G3XDY [g3xdy@btinternet.com]
Sent: 10 January

Rather quiet on the microwaves here at present. I have fixed my 2m PA problem (relay contact stuck) so at least I have working talkback again now.

My 13cm system is in pieces on the bench as I write for a rebuild to go fully solid state. As a result my K9EK 2C39A PA is now surplus to requirements and so is now advertised in this issue of the newsletter.

2003 had several spells of excellent tropo and some very good rainscatter, so 2004 has a tough act to follow. To give some idea of how good 2003 was, I worked 8 new squares on 23cm last year, whereas my long term average over the past 8 years is about 2 squares per year. The European 6cm distance record was broken 3 times during the year, first by Neil G4BRK with his QSO with SM6ESG, then my QSO with OK2BFH, and finally by F6APE with SM6ESG and all of these were in separate tropo openings.

One issue that the UK Microwave group may wish to consider is compatibility between narrowband weak signal modes (CW/SSB) and Digital ATV on 23cm. I know that a group local to me have been looking to put a 23cm TV repeater on the local hospital roof (about 1km from here) and we have discussed the very stringent filtering that would be needed to prevent interference around 1296.200. I believe that the problems could be even greater with digital TV, particularly the types using COFDM multi carrier modulation which require very linear PAs and could produce unacceptable intermod products in the narrowband segment. Some advice from those professionally engaged in Digital TV systems might help shape a suitable band plan and technical specification. I hear that narrowband operation in the Hamburg area has been rendered impossible by the introduction of a DATV repeater there, and would not want to see the same happen in the UK.

I also note that Ofcom announced at the end of December that 5.8GHz Band C has been allocated for community WLAN networks with EIRPs up to 2W. One of the 5MHz channels is centred on 5760MHz, so we may experience a degree of interference. On a more positive note these systems will have to include automatic move to a clear frequency, so if you have a QRM problem it looks like transmitting beamed at the offending node for a period should cause it to QSY to another channel.

Finally, some beacon news. I have received a couple of reports that the GB3MHS 9cm beacon is no longer being heard on a regular basis in Holland. The transmitter is OK and Neil G4BRK reports the signal on the West beam is normal. When the weather is suitable and I can arrange access to the antenna gallery I will check out the East antenna and feeder, and will advise when it is back to normal. **73 from John, G3XDY**

That's it for this month .... please send in news, views and technical items by the end of the first full week of February... ie February 7th ... if you want to be certain of having it published in that month's edition.

Low-band Microwave Contest - 30 November 2003
Adjudicated scores

Individual Band Tables

1.3GHz	Best DX	Located	Distance	QSOs	Score
G4BRK	G4ALY	IO70VL	218	12	1517
G4SJH/P	G4DEZ	O03AE	220	11	930
G3PHO/P	G0UPU	IO91AX	123*	7	346
G0UPU	G3PHO/P	IO93FB	123*	3	187

* Cross-band

2.3GHz	Best DX	Located	Distance	QSOs	Score
G4BRK	G3XDY	JO02OB	206	5	547
G4SJH/P	G4BRK	IO91DP	98	1	98
G0UPU	G4MAP	IO82XH	37	1	37

3.4GHz	Best DX	Located	Distance	QSOs	Score
G3PHO/P	G8ACE	IO91IB	222	6	809
G4BRK	G3XDY	JO02OB	206	6	663
G4KNZ	G3PHO/P	IO93FB	193*	2	172
G0UPU	G3PHO/P	IO93FB	124	1	124

* Cross-band

Overall results table

	1.3GHz	2.3GHz	3.4GHz	Total
G4BRK	1000	1000	820	2820
G3PHO/P	228	0	1000	1228
G4SJH/P	613	179	0	792
G0UPU	123	68	153	344
G4KNZ	0	0	213	213

There were 5 entries (3 fixed stations and 2 portable). Activity levels were not as good as the March event, with a few stations who had expected to be about not appearing. Conditions were not particularly good either; Neil G4BRK reported that, unusually no continental stations were being heard. Barry G4SJH, also commented that, on 23cm, not everyone was aware there was a contest on, so maybe we need more publicity in 2004.

Neil G4BRK was the leader on two bands, **and also the overall winner**, despite starting somewhat late after running a 10km race in the morning! Neil was running 200W on 23cm to a 67 element Yagi, 40W on 13cm to an 80cm dish, and 6W on 9cm to an 80cm dish, **from IO91DP**.

Peter G3PHO/P was second, operating from **Alport Height, IO93FB**, with 18 watts to a 23 element yagi on 23 and 15 watts to a 1.2m prime focus dish on 9cm. Due a TX/RX control line failure on the 23cm transverter, he was only able to work cross band on 23cm, somewhat reducing his score. His best DX with G8ACE was interesting in that John was using nothing more than a surplus domestic Ionica flat plate antenna, with 15 watts to it .. a very small but effective antenna system.

There are similar events scheduled for 2004 - lets hope for more activity next time - and please send in your entry!

Regards, Steve Davies G4KNZ.