An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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

2006 NOVEMBER/DECEMBER

IF IT STAYED UP LAST WINTER IT WASN'T BIG ENOUGH …

Somehow we don't think this old saying will apply to the latest acquisition by Philippe, F6DPH ! This picture was sent to G4ALY by André, F1PYR, when he and Dom, F6DRO, (and others) went there in mid-October and swung a bottle of French wine on a rope to mark the official opening of it as Philippe's new /P site. The impressive tower is 50 metres high and has nothing in the way for miles and miles in all directions.

Jaloux ... moi? Peut être un peu!

In this issue ...

- ***Latest News …***

- **G3PFR and ON4KST to receive UKuG top award**
- **G6JYB becomes new RSGB Microwave Spectrum Manager in Jan 07**
- **Record breaking Eu millimetre band contacts made in November**
- **Denis Bagshaw, G3FNQ, now Silent Key**
- **Ofcom confirm permanent UK 75.5-76GHz amateur allocations**

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

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From the Editor's Desk

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

This is the usual bi-monthly issue covering November and December. The first Scatterpoint of 2007 should appear during the last week of January.

It's been an eventful month since the last edition. There have been wonderful DX contacts made on 24, 47 and 76GHz (see Activity news). We also have a new RSGB Microwave Manager in the shape of Murray, G6JYB (who tales over from Mike Dixon, G3PFR)in January ... congrats Murray and an infinite measure of thanks to Mike who has dedicated himself to our cause for several decades. "Bon retirement" Mike and see you on 10GHz!

Your scribe did as he promised to do three years ago and stepped down from the Chair of UKuG at this year's Martlesham AGM in favour of a younger fellow in the shape of Brian, G4NNS. I know you will give him the same tremendous support I've enjoyed from 99.9% of you over the past three years. I can now get on with finishing the beacons I started three years ago!

UKuG has moved forward at a rapid rate since 2004 and we have many plans to make this group perhaps the best in the world. Please continue to give us your support.

73 and

A Very Happy Christmas and a Good new Year to everyone ...

from Peter, G3PHO

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UK MICROWAVE GROUP COMMITTEE 2006-7

The committee for the coming year was elected at the Martlesham AGM on the 12th of November 2006. Bold type indicates new committee members:

CHAIRMAN: Brian Coleman G4NNS

SECRETARY: Ian Lamb G8KQW

TREASURER: Steve Davies G4KNZ

SCATTERPOINT EDITOR: Peter Day G3PHO

ORDINARY MEMBERS:

Robin Lucas G8APZ
Julian Gannaway G3YGF
Simon Lewis GM4PLMO (Dubus)
John Quarmby G3XDY (UKuG Awards)
Paul Marsh M0EYT (Publicity)
Murray Niman G6JYB (Website, RSGB/Ofcom liaison)

CORRESPONDING MEMBERS:

Kent Britain (North Texas Microwave Society)
Sam Jewell G4DDK (Radcom uW Columnist)
Mike Dixon G3PFR (RSGB Microwave Manager)

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

UK Microwave Group Press Release

Special Awards

At its annual Round Table conference on 12th November 2006, the UK Microwave Group announced two highly prestigious, one off, Special Awards.

These accolades are the highest level of commendation made by the UK Microwave Group.

Mike Dixon, G3PFR ,has been awarded a **lifetime achievement** award for his outstanding work in support of UK amateur microwave radio spanning some three decades to the present day. Mike was chairman and secretary of the RSGB Microwave Committee at various times until the late 1990s when he became the RSGB Microwave Spectrum Manager, representing the interests of microwave operators at IARU, RA (later Ofcom), WARC and other organisational levels. Mike dedicated himself entirely and unselfishly over this long period to promoting the interests of all UK microwave operators, often to the detriment of his own spare time pursuits. The UK Microwave Group are extremely grateful to Mike for his lifetime contribution and wish him a very happy "retirement" as he steps down from office at the end of 2006.

Alain Stievenart ON4KST has been awarded an **outstanding contribution** award in recognition of the outstanding contribution he has made to amateur radio through the hosting of the free ON4KST web pages, Alain's web pages are used by amateur radio enthusiasts throughout the world and the UK Microwave Group recognises that the ON4KST web pages have revolutionised amateur radio communications and is pleased to be first in recognising Alain's contribution.

Both awards will be presented personally to Mike and Alain in due course.

Ian Lamb
Secretary
UK Microwave Group

OFCOM & RSGB MATTERS

A meeting between RSGB and Ofcom, scheduled for the last week of November, has been cancelled as Ofcom are rather too busy getting ready to post 60,000 new licences to us all....

Related to that is the changes to the microwave frequency schedules, due on 1 Jan 2007, will not be included in the mass posting and will have to go out as a separate notice.

Ofcom has recently published provisions for opening the 71-76GHz and 81-86GHz bands for licensed use which will increase the opportunities for broadband fixed wireless services. Further details can be found at: **http://www.ofcom.org.uk/consult/condocs/71-86GHz/statement/**

Amateur & Amateur Satellite Allocations

3.2 The consultation sought views specifically on the Amateur and Amateur Satellite allocations in the 75.5 -76GHz and 81-81.5GHz bands. These allocations are covered by international footnote regulations 5.559A and 5.561A respectively. In addition the 75.5-76GHz band is also covered by the European Table of Frequency Allocations footnote EU35, which states that the band 75.5-76 GHz is in Europe also allocated to the Amateur and Amateur Satellite services after year 2006, whilst the UK Frequency Allocation Table footnote UK7 currently permits Amateur and Amateur Satellite operation in the UK on a primary basis until 31st December 2006.

3.3 With respect to the Amateur and Amateur Satellite Allocations in the75.5-76 GHz band, the majority of respondents to the consultation were supportive of the Ofcom proposal for permitting continued amateur use of the 75.5-76 GHz band on a secondary basis after 31st December 2006. There was support from one joint respondent (comprising the Radio Society of Great Britain, UK Microwave Group & Amsat-UK) to permit the Amateur allocations on a co primary basis with the fixed service after 31st December 2006. The support to maintain primary amateur allocations in the 75.5-76GHz band was based on recent CEPT allocation discussions concerning79GHz automotive short range radar systems and the associated frequency allocation issues.

3.4 Ofcom considers that it would not be practical to allow the Amateur and Amateur Satellite services to operate in the 75.5-76GHz band on a co-primary basis where commercial fixed wireless systems will be operating. Retaining primary allocations for the amateur services would require commercial fixed wireless operators to coordinate their assignments with the amateur services so as to ensure protection to individual amateur stations. Ofcom does not consider this to be an appropriate way forward and wishes to minimise co-ordination requirements to allow rapid and flexible deployment.

3.5 Ofcom has noted that the proponents of primary amateur allocations operate narrow band CW/SSB systems at 75.976GHz which is outside of the main FWS data block and inside a guard band. **Ofcom has therefore decided to permit the use of the 75.875-76GHz band on a primary basis by the Amateur and Amateur Satellite services and on a secondary basis in the 75.5 -75.875 GHz band.** We believe this will substantially benefit future fixed wireless systems and not pose a major inconvenience to the amateur services. The UK Frequency Allocation Table will be modified accordingly to reflect this decision.

Simple RF Power Reference

For RF power meter calibration

Paul Wade W1GHZ © 2006
w1ghz@arrl.net

You've just finished building a new RF power meter, like the ABPM from Down East Microwave (**www.downeastmicrowave.com**) – how do you calibrate it? Or perhaps you've acquired a surplus unit – how do you check the calibration? You need some known reference point or a friend with a calibrated meter.

Some recent commercial power meters, like the HP 435, include a reference output to check and set the calibration of the meter. These fine meters are occasionally found as surplus at very reasonable prices, probably because the RF sensor heads command such exorbitant prices that the meter alone is unattractive. However, the meter is worth a modest amount for the reference output alone, to be used to check other power meters, either homebrew or older surplus.

With inexpensive RF power detector chips made for wireless networking, it is easy to homebrew a good microwave power meter like ABPM – so I started thinking about ways to make a reproducible reference source for RF power. The obvious starting point was the HP 435; I looked at the schematic, but it didn't feel right.

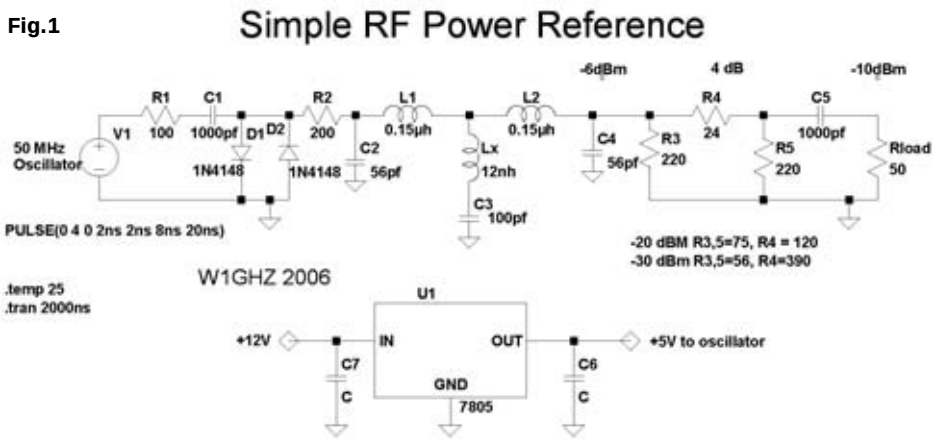
One readily available, reproducible, component is a diode. If we use a pair of anti-parallel (back-to-back) diodes as a clipper, we get a pretty predictable voltage. Of course, the clipping action generates lots of harmonics – this is a good way to make a frequency multiplier or harmonic mixer – so a low-pass filter is needed to get a sine wave output. Many power detectors are sensitive to harmonics and give erroneous readings unless the signal is pretty clean. Finally, filters are only predictable with matched resistive loads, so an attenuator helps keep things matched.

For an oscillator with a reasonably predictable output, I chose a standard computer oscillator. Since the HP 435 output is at 50 MHz, high enough for microwave instruments but low enough for VHF and down, it seemed like a good idea. For diodes, the 1N914 or 1N4148 is available almost anywhere for pennies. The low-pass filter uses RF chokes for inductors and ordinary disk capacitors, and the attenuator is just three resistors. A small 3-terminal regulator provides constant voltage to keep things stable. The complete schematic is shown in **Figure 1**.

The real question is whether it is reproducible. Figure 1 was drawn in free Linear Technology LTSpice/SwitcherCAD III software (**www.linear.com**) to simulate the circuit. I fiddled with the values of R1 and R2 at different temperatures and oscillator outputs to find a combination where the final output was pretty constant as the temperature and oscillator output varied. The simulation file is power_ref50.asc.

Time to build a couple. I was ordering some Miniboards (3 for $59) from ExpressPCB (**www.expresspcb.com**) for another project, so I added this layout to a corner of the PCB using the free software, pushed the button, added my credit card number, and got the boards four days later.

Fig.1



The low-pass filter was designed with free Ansoft Designer SV software (**www.ansoft.com**) , using the filter design wizard. I chose a "Chebyshev type-3" filter – the extra inductor in series with the middle capacitor, C3, forms a series-resonant circuit at the third harmonic which greatly increases rejection. Calculated filter performance is shown in **Figure 2**, and the filter design file is LPF50.asdn.

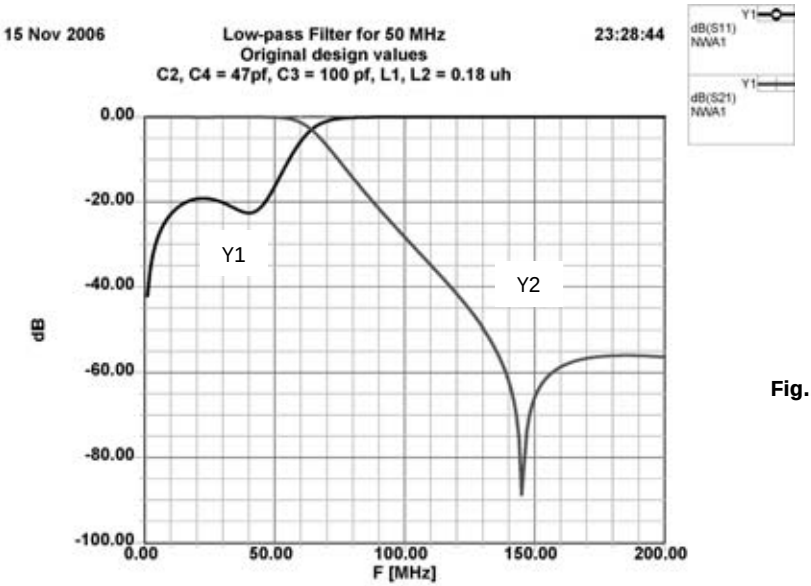


Fig.2

Available parts

Since I had only used common parts with standard values, I didn't order any parts. A quick tour of the junk box found everything except inductors of the right value, 0.18nh. The closest available were 0.15nh and 0.22nh. Back to the Designer software – I couldn't get the filter to work well above 40 MHz with the 0.22nh inductors, but I had a bag of 40 MHz oscillators so I made a unit at 40 MHz. With the 0.15nh inductors, juggling capacitor values gave better results at 50 MHz than the original design, as shown in **Figure 3.**

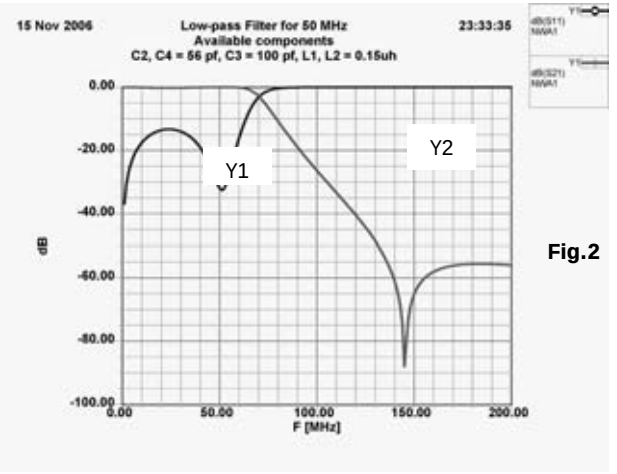


Fig.2

The measured outputs, from one unit at 40 MHz and one at 50 MHz, were just a hair (within 0.25 dB) higher than the design value of -10 dBm, 0.1 milliwatts. I was pleasantly surprised. The filter seems to work pretty well, with the second harmonic down 45dB and the third harmonic down 68dB, so the output is a clean sine wave.

A photo of the complete unit is shown in **Figure 4.** The only problem I found is that one of the oscillators apparently draws a bit too much current for some 78L05 voltage regulators, so the board layout now includes larger holes for the larger 7805 version in a TO-220 package.

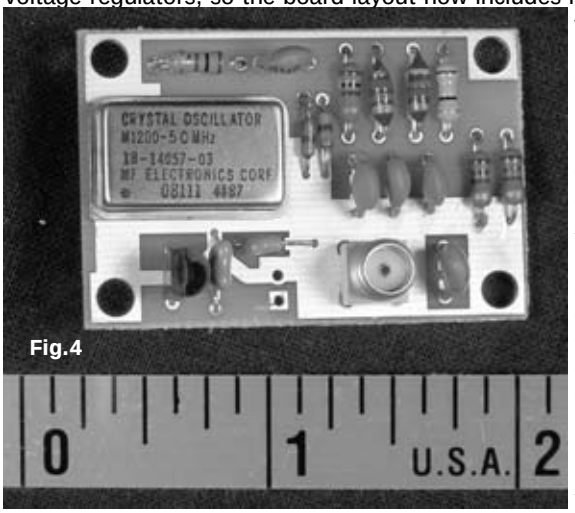


Fig.4

To calibrate a power meter, this unit and a step attenuator (or a few fixed attenuators) are needed. No attenuation = -10 dBm, add a 10 dB step for -20 dBm, etc. For higher powers, a small amplifier, like a simple MMIC is also needed. Insert attenuation after the amplifier to get back to a -10 dBm indication to find the amplified power level, then work up and down from there.

Having a known power level is useful for calibrating other instruments, like a spectrum ana-

lyzer or an RF voltmeter, and could be used to calibrate a receiver S-meter for meaningful readings.

Summary

I believe copies of this unit should be within 1 dB of the nominal -10 dBm output, close enough for amateur use. How accurate is a surplus meter that hasn't been calibrated in ten or twenty years, anyway? The circuit should work fine at any lower frequency for which an oscillator is available, but the filter must be recalculated. Parts cost from Digikey or Mouser should be about $5 for components, plus box and connector — the expensive parts, but this will fit fine in the traditional Altoids tin. The circuit is certainly simple enough for dead-bug construction, but I am willing to have some more PC boards made if there is enough interest. The board layout and design files, all for free software, are available at my **www.w1ghz.org** webpage.

MEET YOUR NEW CHAIRMAN

At the recent UKuG Annual General meeting, **Brian Coleman, G4NNS**, shown here in characteristic pose, was not only elected onto the Committee but also found himself voted in as the new Chairman! After three years in the saddle, the retiring chairman, Peter G3PHO, was delighted to see the reins being taken up by such a well known and highly respected UK microwaver.

Brian was first licensed 1967 as G8AZU and has always been interested in microwaves, starting with 10GHz wideband in 1969-73. After a long absence due to work commitments, he returned to the fold in 1998 and is now regularly active on 3cm and 6cm terrestrial as well as being operational on 3.4, 5.7, 10 and 24GHz for EME. He brings a wealth of "savvy" to the Chairman's position as he was in business before he retired. He's also very interested and involved in Radio Astronomy. He's the only UK amateur to work into the USA on 24GHz EME.

Brian has the added advantage that he started out in amateur microwaves during what many regard as the 'Golden Age' when, in the 1970s and 80s, it meant climbing Scottish and Welsh mountains to work someone a couple of hundred kilometres away on 10GHz wideband FM with only a handful on milliwatts. So there isn't much he hasn't experienced! He should easily, during his term of office, be able to empathise with beginner and hi-tech microwaver alike.

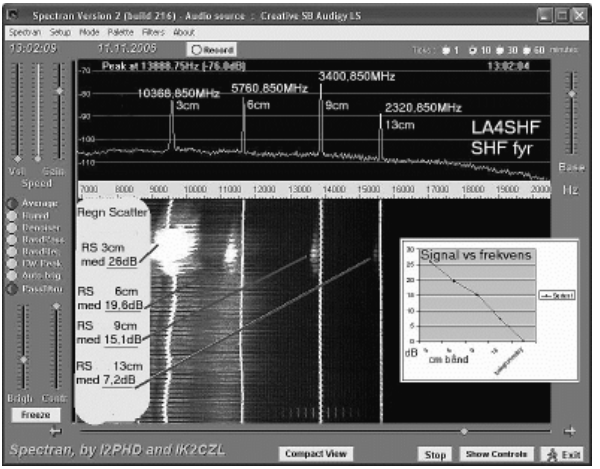
Welcome aboard Brian!

Rainscatter in Norway

.. Some observations by Jan, LA3EQ

I have always wondered how much difference there really is between the different SHF bands under rainscatter conditions. So I did a test today to find out....

Here are the results of a rainscatter test I did with LA4SHF's beacons for 3cm, 6cm, 9cm and the 13cm band. The test was with all beacons running the same power (200mW) and all having the same type of antenna (LP on pcb board) and pointing the same way.



The receiving systems were all DB6NT transverters (all adjusted to the same IF level out) and each had their own 9 turn helix with right hand circular polarisation. The antennas all pointed the same way. All transverter 144MHz outputs where connected to the same coax via BNC T-connectors and 6dB at pads, going to my rig, a TS2000X.

Spectran V2 was used to view the 12kHz IF from the TS-2000X. All beacons were received with approximately +20db signal, except the 9cm one, which had a local reflection giving it a little more signal in the direct path. I also adjusted the crystals a little, so they all spaced up nicely on the display.

Then a rain shower came along and I captured the image shown above. I also made a diagram of frequency vs RS signal strength. The 23cm and 1.5cm beacons where not in this test as my transverter outputs for those two band are not 144MHz. One can see the normal signal levels and also the down frequency doppler shifted signals when the rain shower came along. (Strangely, on 3cm, the main doppler shift is both down and up in frequency!)

If we say the background noise is 0dB (-108dB on Spectran) then the rainscatter signal level results over noise level are:

13cm band + 7.2dB S/N
9cm band +15.1dB S/N
6cm band +19.6dB S/N
3cm band +26.0dB S/N

I confirmed these values live with a HP3586C Selective Meter with a 144/28MHz converter to get 0.1dB steps in signal values and they were within +/- 0.2dB.

So 3cm band is a clearly a winner!

73 from LA3EQ Jan (JO28UX)

PS: I am now QRV with a new 55 watt PA on the 9cm band if anyone would like to try troposcatter!

The annual gathering at Martlesham over the weekend 11/2th November was a great success once again. This time it combined a beginner's workshop, on the Saturday, with the more usual lectures, a flea market, antenna and equipment test facilities and the like. Saturday night saw over 60 people attend the annual dinner. A very good time was had by all at the Holiday Inn, Ipswich, our new venue for accommodation and dinner. The food was markedly better than in previous years!

The lectures on both days were all well attended, the audiences being treated to very informative and interesting ones on Microwave Cavities (G3OKA), EME Update (G4NNS), Backyard EME (WW2R) Using BIG antennas (WA5VJB), Microwave Propagation (G0MJW), Software Defined Radio (G8UBN).

The beginners' workshop had some 10 willing and interested attendees, all ably taught by G4DDK, G4FSG, G8KQW and M0BXT.

Graham, G4FSG introduced each lecturer in his usual inimitable style and John, G3XDY, manned the test gear for much of the weekend, while Jason, G7OCD, did the same with the Antenna Test Range. On the catering side we saw Iain "The Food" keeping us all well watered and fed during the day, while Robin Gape did sterling work at the reception desk. To these people , Martlesham Radio Society and all the fleamarket traders, we say many thanks indeed for helping to maintain the high standards of our annual Martlesham Microwave Round Table.

If you missed it his year why not make it a date for next year? It's on over the same weekend in November 2007.

See you in 2007!

Microwave Update, 2006

Dave Powis, G4HUP / ND8P

Holiday Inn, Dayton North, Oct 19 – 22 2006

Having not been able to get to a Microwave Update since 1992, it was a great treat to be able to attend this year's event which, coincidentally, happened to be only about 50 miles from where I was staying – and finding myself the only G station attending this year! I passed up on the Surplus Tour on 19 October, due to other commitments, but the reactions from those who did go were mixed – the electronics industry in this part of the country does not provide the pickings that can be found in Dallas/Fort Worth or on the West Coast!

The lecture programme was on Friday and Saturday – a full 2 days from 8am till 5pm, packed with interesting talks on all aspects of Microwaves from design (Ansoft designer tutorial W2PED), operating (VE4MA on 10/24G terrestrial, WA1ZMS on mm band operating), technological advances - WA1MBA updating the progress on 77/78GHz LNAs, NX1N on a novel concept for multiband microwave transceiver design using sampling mixers as part of the synthesis of the LO's.

Measurements also feature as a popular part of the programme, as at the UK Round Tables – Al Ward, W5LUA, and helpers provided a comprehensive test capability but the majority of requests were for Noise Figure, of course!

Both the trade stands and the flea market generated much activity and interest, with Down East Microwave being the principle trader and several 'local' surplus traders and interest groups in there as well. On the flea market, 70W amplifiers for 13cm at $25 each attracted considerable interest!

Keynote speaker at the banquet was the ARRL president, Joel Harrison, W5ZN, who delivered a very timely and thought provoking dissertation, based on recent dealings with the FCC. Briefly, the issue had arisen due to the BPL debate but the focus was an attempted action by the FCC to quietly change the amateur class regulations relating to primary service privileges. If the change is successful, primary users in the amateur service could have to accept interference from other users. His fascinating presentation was based around feedback from the ARRL's lawyers that the FCC were likely to contend that amateurs were a 'bunch of hobbyists using outdated technology. After demolishing that view in his talk, he urged all amateurs to make efforts to show their colleagues and friends that the technology we use is far from outdated – and that was also reflected in a significant number of the technical presentations during the two days.

A new award was instigated this year by the Mid West VHF/UHF Society, this years sponsoring group for MUD – the Earl Price Award, W8MGJ. This is given in memory of a local SK who was noted not just for his microwave skills, but also for the fact that his door and his expertise were constantly open to those who needed assistance, newcomers and old hands alike. His son, Terry, K8ISK, and a principle member of the DC to Light Contest Group, K8GP, gave a short talk, sometimes humorous and sometimes quite touching, as a reminder of his father's activities. The first recipient was a very well known and popular microwaver – Jeff Kruth, WA3ZKR – known to many European microwave ops by his eBay id of kmec@aol.com. Jeff is highly regarded for his microwave skills and for his commitment to helping others to either get on the bands or improve on their station performance.

As always, the banquet door-prize draw created a lot of interest and fun, with some very nice prizes being donated – everyone went away with something!

The photo shows the trading area in full swing at MUD 2006. The table in the centre houses the measurements facility. Just visible 3rd from left, facing camera, is Jeff Kruth, WA3ZKR, the Earl Price award recipient for this year.

Noise figure results

Martlesham Microwave Round Table 2006

12-Nov-06 **Tcold =298**

Band	Callsign	System	Gain (dB)	NF (dB)
144MHz	G4ODA	2 x BF998 Preamp	21.9	0.85
	G0MRF	ATF21186	24.2	1.65 (1.5 at 146MHz)
432MHz	WW2R	G0MRF design broadband ATF54143	23.0	NA RF Pickup
	G4RGK	Preamp	21.7	4.17
902MHz	WW2R	G0MRF design broadband ATF54143	21.9	0.48
1.3GHz	G3XDY	ATF54143/MGA53543 preamp (modified YU1AW)	32.6	0.46
	WW2R	G0MRF design broadband ATF54143	19.1	0.54
	G0EWN	23cm Transverter MGF1302	8.8	2.20
	G4BAO	WD5AGO 2 stage NE325/ATF10136	19.2	0.58
	G4DZU	WD5AGO 2 stage (Commercial)	32.6	0.35
	G4DZU	WD5AGO 2 stage NE326/MGF1412	32.7	0.36
	G4DZU	DJ9BV FHX35	16.7	0.44
	G4DZU	Angle Linear	14.1	0.83
	G3XDY	G3WDG design Cavity preamp MGF1400	14.5	0.65
	G7ACD	Commercial L Band amp	52.0	1.33
	G4FSG	DB6NT and Relays	19.2	0.65
	G0RRJ	DEMI Preamp kit ATF10136	17.9	0.84
1.5GHz	G3LYP	GPS Preamp MGA86576	20.6	2.12
	G7ACD	Commercial L band amp	58.0	0.84
2.3GHz	G3XDY	2320 Transverter	7.8	9.00
	G3XDY	Preamp 2 x ATF54143	28.9	0.71
	WW2R	G0MRF Design Broadband Preamp ATF54143	14.2	0.85
	WW2R	WD5AGO Preamp	11.7	1.30
	G3LQR	13cm Preamp ATF36077	16.1	0.33
3.4GHz	G3XDY	DB6NT Transverter & relay	20.6	1.41
	WW2R	DEMI 3456 Preamp	13.8	0.90
	G3LTF	DJ9BV Preamp ATF36077	13.2	0.42
	G3LTF	DJ9BV Preamp ATF36077 V2	13.2	0.39
	G3LQR	DJ9BV ATF36077	11.0	0.60
	G3LQR	DJ9BV NE325	13.3	0.48
	G3LQR	2 stage preamp ATF36077/FHX05	22.0	1.47
5.7GHz	No equipment presented			
10GHz	G3XDY	DB6NT Transverter & Relay	14.3	2.04
	G0RRJ	DB6NT 102B Preamp	21.6	0.74
	G0NZO	DB6NT Transverter and Relay	18.9	2.64
	G0NZO	DB6NT Transverter only	20.0	1.27
	G0NZO	DB6NT Transverter and 15cm cable	19.6	1.67

G3FNQ ~ SILENT KEY

Sadly I have to report, via MW1GGQ and G1BQQ, that Denis Bagshaw, G3FNQ, passed away during the early part of November. His funeral was on the 16th of that month, in Southport, Lancashire, where he lived.

Denis must have been in his late 80s. I first met him decades ago on Winter Hill when I was out there doing some wideband 10GHz FM. An elderly chap came up to me and I said, without waiting for him to speak, "This is amateur radio microwaves and I'm trying to contact another person down on Brown Clee". He replied, "I know, I'm G3FNQ" ! I'd previously worked him lots of times over the Merryton Low to Amlwch (Anglesey) path. We also did 24GHz wideband tests over shorter paths and he was always out there in the cumulatives.

Denis had a home station 10GHz beacon . I remember hearing it with my handheld 10GHz wideband rig with 17dB horn antenna one very cold February day from the top of Snowdon. During the 80s and 90s he also ran a regular 10GHz wbFM sked with Ray, G3NKL in Longridge, Lancs. He took up narrowband in the 1990s with a modified surplus "whitebox".

I'd not heard anything of him for some years until just this news came to me via email.

Yet another OT from the old days now gone ....

RIP Denis, from Peter, G3PHO

Very sad news indeed.
Like Peter, I knew Denis since my teens when I was first active on 10GHz wideband in Birmingham with G3AYJ and our other late friends G3YJH and G8MWR. Denis was a most helpful, enthusiastic and patient person, I too had totally lost contact with him in recent years.

RIP Dennis, from Ian Lamb - G8KQW

I too am sorry to hear this news. My condolences to his family.

Dave, G0DJA

2007 Contests: New 10 and 24GHz winter events

There have been several requests for additional microwave contests over the winter period, and in response to this, the UK Microwave Group has decided to trial a series of three combined **10GHz and 24GHz** short duration events in January / February 2007.

Dates: 14 January 2007 (all Sundays)
28 January 2007
11 February 2007

Times: 1300 to 1700 GMT

There will be one table for each band, but entries from the leading fixed and leading portable stations will be marked in the table (with certificates awarded) in both cases.

Each date is a stand-alone event, ie scored individually (not cumulative).

The timing is chosen so that it does not take up the whole of the day for those operating from home, and is of a manageable length for those wishing to operate portable in the colder weather. There have been mixed views as to the timing, and the hours selected - 1300 to 1700 - are a compromise which should just about allow any portables to operate most of the sessions in daylight.

The usual general rules will apply (per 2006), with scoring on a points per km basis (no locator multiplier), and in these events, rover stations are allowed on both bands.

There is no all-band activity session in January or February, and instead we are encouraging people to support these new events.

In March, a shorter duration Low-band contest is planned for 04 March (1000 - 1500 GMT), and a non-competitive all-band activity session on 18 March (0900 - 2000 GMT). The full 2007 contest calendar and rules will be published in the January Scatterpoint (and will also be available from the UKuG web site shortly).

Steve, G4KNZ, UKuG Contest Manager

10GHz PUCKS FOR SALE

I have a number (100+) brand new 10GHz pucks for sale. Their nominal frequency is 10.0GHz but can be stacked, ground, etc, to change their frequency £ 12.00 including P&P to the first to shout !

Adrian Whatmore, G4UVZ, Medical Electronics & Telecommunications Manager, T&S NHS Trust, Tel: 01823 342484 or Fax: 01823 342481

UK MICROWAVE GROUP ANNUAL REPORTS 2006

CHAIRMAN'S REPORT : 12 November 2006

As I come to the end of my three year tenure as Chairman of the UK Microwave Group I would like to thank everyone present committee for their for the enthusiasm and support. Many of this year's committee members have taken on extra responsibilities that have made my own job that much more easier to do. In particular I must thank, yet again, the invaluable work done by Murray, G6JYB. Not only has he kept our Group website going all year but he has also been our "kingpin" at the RSGB Spectrum Forum, working very closely with the RSGB Microwave Manager, G3PFR, to produce a seemingly endless stream of written responses to the multitude of Ofcom documents that have come our way this year. His expertise and background knowledge is a very valuable resource for the Group.

Achievements of the Group since the 2005 AGM

Membership has been growing steadily (see secretary's report) and the Group is in very good financial shape (see Treasurer's Report).

UKuG continues to work with RSGB, IARU and Ofcom at high level.

Scatterpoint, our website and the UK Microwave Internet reflector continue to keep UKuG's profile high.

On the publications front, UKuG produced its second Proceedings in April while the RSGB Yearbook 2007 published 3 full pages about microwaves and UKuG.

May 27th this year saw the first of three Microwave Beginners' Workshop Programme. These have been very successful and have helped swell our membership as several new microwavers have joined our ranks as a result of attending a workshop. In fact, the programme has impressed our microwave brethren in the USA and we expect to see workshops over there before too long.

In the past few weeks, I have been able to get the RSGB to finally agree to the transfer of RSGB Microwave Distance and Squares Awards to UKuG. At the time of writing this report, the changeover has not yet gone ben completed but we expect to be dealing with requests for these awards very soon. We have also introduced some new UKuG Awards in the form of "Firsts and Furthests". I'm delighted that Committee member John Quarmby, G3XDY, has volunteered to do the administration connected with the awards.

Earlier this year, a UKuG Beacon Group & Beacon internet reflector were set up. We expect these to develop into an effective means of developing a much wider interest beacon building. You should expect to see some real progress being made over the coming year with regard to new beacons and some significant UKuG input and support. I was also delighted when, earlier this year, Nick Shaxted, GM4OGI, offered to become our official Microwave Beacon List Keeper.

The Contest Programme continues to flourish and there has been much debate this year re the 2007 programme. Steve Davies, G4KNZ, does a wonderful job with this, having the unenviable job of trying to keep everyone happy all of the time (and we all know that's impossible, don't we!)

Problem Areas

Several items have left me with some dissatisfaction at the end of my term of office:
We have not reached our own deadlines, in some instances, such as the proposed Technical Compendium. We are now aiming for a Spring/Summer 2007 publishing date but be prepared for an even later one. We want to get this book right!)

Beacon licensing has not always run to plan. There have been many delays (usually due to Ofcom deadlines not being maintained) and it's easy to blame these on our own UKuG beacon co-ordinators but they have worked extremely hard and are, I'm afraid, at the mercy of officialdom .

The UK Microwave Internet Reflector has not always lived up to its original purpose. There have been several cases of it being abused and used as a vehicle for some folk to vent their spleen on others. Please keep your battles private and use personal emails rather than the reflector to sort out your differences. In any case, the Reflector does not represent the official policy of this Group. It is merely a vehicle for discussion of matters microwave. The fact that UKuG announcements appear on it from time to time does not mean it's the "voice" of the Group. Scatterpoint is our official organ. These problems raise the question of to what extent should UKuG be identified with the reflector in the future?

Kitsets and Components have also become a topic for debate and we are trying to clarify our Group policy on these .... should UKuG provide this service?

Contests and contest exchanges also created a very heated reflector debate some months ago raised the questions regarding the pros and cons of UKuG laying down strict guidelines re what constitutes a contest. How many contests should we have each year ? When and How?

Finally, in my other life as editor of Scatterpoint, I have recently become very much aware of how much of a "one man band" it is. Scatterpoint is vulnerable to temporary breakdown. As I have become older and well into the Free Bus Pass stage of life, I can see a time when I might be incapacitated to such an extent that I might not be able to produce the newsletter for some time. To this end I have now started making plans to form a small editorial group which will facilitate the continued production of Scatterpoint. Be prepared to see one or two issues this coming year edited by a microwaver other than myself!

With regard to Scatterpoint articles: Pleases end email attachments in Word.doc or plain text. PDF is acceptable but not as convenient. All photos and diagrams should be sent as separate files, not embedded in the main document. Please check that diagrams print clearly before submission ... many CAD types do not and have to be redrawn by the editor! Photos should be in JPEG or BMP format in high resolution. Diagrams should preferably be sent in GIF format.

MEMBERSHIP

UKuG membership is very healthy at almost 330 members, in over 20 countries in Europe, North America, Australasia and Japan. Members are joining at the average rate of one a week.... thanks to G8KQW, our dynamic Secretary! A few requests, if I may:

- Please make a note of your renewal date.
- Please renew promptly if you wish to retain Scatterpoint continuity.
- Expiry date shown on envelope label for those who receive Scatterpoint by post.
- The Secretary emails you in advance regarding subscription renewal but please try to keep a note of the date.
- Please inform us of email and postal address changes!

Representation: RSGB, IARU AND OFCOM

UKuG is represented on RSGB Spectrum Forum by myself, (G3PHO) and Murray, G6JYB. For the whole of the past year we have continued to work through the RSGB Microwave Manager (who is also a co-opted UKuG committee member) Mike Dixon, G3PFR. Mike is retiring very soon and we are very hopeful that he will be replaced by G6JYB as the new RSGB Microwave Manager. Mike has been a pillar of strength over several decades. His contribution to UK amateur microwaves will certainly not go unrecognised!

The Group is held in high regard by the Spectrum forum because of the many papers and discussion documents submitted by us in reply to various Ofcom and IARU Region 1 issues and also because of the highly valued expertise of Murray, G6JYB. I would also personally like to thank individual UKuG members for their submissions to Ofcom. They are invaluable and help to open the eyes of Ofcom as to just how dedicated we all are to our microwave pursuits.

CONTESTS & TROPHIES

A very successful annual programme was organised and adjudicated by Steve, G4KNZ. UKuG awards attractive A4 certificates for contest achievers. We now offer several contest trophies:

G3KEU Trophy - 5.7GHz Cumulatives
G3RPE Cup - 10GHz Cumulative
G3JMB Trophy - 10GHz (Restricted power section)
24GHz Trophy
47GHz Trophy

Non-contest Trophies include the **G3VVB Trophy** – for home construction and the **G3BNL Trophy - for experimentation and design**

Round Tables – supported by UKuG

Martlesham and RAL are now the UK's premier amateur microwave gatherings with attendances of around 100. Crawley always has an excellent meeting in September with an attendance of around 40. Martlesham regularly attracts overseas microwavers from Europe and the USA and is now an annual TWO DAY event with annual dinner. UKuG wishes to thank Martlesham Radio Society, Rutherford Appleton Labs staff and the Crawley Amateur Radio Club for supplying the venues and local organisation for these events. We welcome overseas attendees at all our Round Tables. If you live outside the UK, please "make the pilgrimage" next year!

OVERSEAS LINKS

Strong and valued links with overseas microwavers, groups and newsletters have been established including WA5VJB and the North Texas Microwave Society, the San Bernardino Microwave Society, the Packrats (Philadelphia, USA), New Zealand Break In Magazine (via ZL1UJG), Paul Wade, W1GHZ (technical articles), Paul

Drexler (24GHz PAs), the Wellington VHF Group, NZ (microwave surplus) and Amsat – via Freddie, ON6UG

FUTURE PLANS – suggested, not decided!

- Beginners' CD – ongoing
- More Beginners' Workshops
- Free membership for under 21 year olds?
- UKuG Technical Compendium – late Spring 07?
- UKuG Sponsored beacons in remote areas
- Monographs (short booklets) on specific technical microwave topics ..eg "How to ... " series
- Revision of contest programme
- Contest participation certificates
- Microwave Museum
- T shirts an caps?
- Joint conferences with BATC, AMSAT UK and QRP CLUB?
- ANY OTHER SUGGESTIONS?

In closing, I offer my thanks to everyone for their support over the past year and .... good luck to the new Chairman!

Peter Day, G3PHO

SECRETARY'S ANNUAL REPORT:

Membership Data

We have 327 current members at the time of this report being written of which 61 are new members since last the last AGM in November 2006. At the same time there has been some loss of membership, with a 4% attrition rate. This has largely been due to the following: Silent keys (3), Other reasons (10).
16% of the membership is now paying by PayPal and 64% opt for the electronic Scatterpoint.

Membership Issues

Some 20% of members need reminding for renewal. The Secretary does not have ESP! So please inform me of any change in your postal and/or email addresses as soon as they have taken place.
Since they were introduced earlier in the year, 100 UKuG badges have been sold. We have lots available from stock at only £2 including UK postage. Other merchandising in future could include polo shirts, caps and sweat shirts. Please let me know whether or not you think these are good items for UKuG to produce for its members. Have you any other ideas.

Members Survey

Launched in August 2006, the membership survey has produced some interesting and useful data. Its objectives were to
- Measure members overall satisfaction with UKuG activities
- Understand members opinions and experiences
- Highlight areas for improvement
- Use the collected data to assist in decision-making and defining future UKuG plans
- Find members who are prepared to contribute to activities

Sadly, to date we have had only a 14% response rate to the survey. Maybe this reflects a very high proportion of already very satisfied members?

Ian Lamb, UKuG Secretary. November 2006

TREASURER'S REPORT

The group finances are in a very healthy state as shown by these two balance sheets. In view of this situation it has been decided, once again, not to increase subscriptions, in spite of rising postal and other costs over recent months. The committee is also looking very seriously at giving financial support to bona fide microwave projects that will clearly benefit all microwavers, for example beacons, beginners' workshops and publications. The committee welcomes enquiries from any interested member of the Group. A pro forma has already been devised to assist in the administration of any such assistance scheme.

It should be noted that, in the balance sheet for 2006, it appears that the Proceedings book is running at a loss (an apparent deficit of some £22). This is definitely not the case as it has more than "broken even" during the period this report was being compiled.

2005 Accounts

UK Microwave Group

Summary of Accounts 2005
Covering period 01/Jan/2005 to 31/Dec/2005

Item	Income	Expenditure	Balance	Notes
Opening balance 01/Jan/05			**3807.33**	
Subscriptions	2498.58			
Donations	118.70			Includes raffle proceeds
Other income	513.72			Proceedings
Subscription refunds		7.13		
Newsletter printing & postage		1042.98		Includes Proceedings postage
Other expenses		574.93		Proceedings, RSGB, certificates
Sub-totals	**3131.00**	**1625.04**		
Closing balance 31/Dec/2005			**5313.29**	

S. J. Davies G4KNZ
Treasurer

2006 Accounts

UK Microwave Group

Summary of Accounts 2006
Covering period 01/Jan/2006 to 31/Dec/2006

Item	Income	Expenditure	Balance	Notes
Opening balance 01/Jan/06			**5313.29**	
Subscriptions	2923.90			
Donations	29.05			
Proceedings	740.46			
Interest	28.48			
Other income	172.47			Badges; SP back issues
Subscription refunds		6.00		
Newsletter printing & postage		997.07		
Proceedings printing & postage		762.64		
Other expenses		425.01		Badges; Trophies; Workshop
Sub-totals	**3894.36**	**2190.72**		
Closing balance 06/Nov/2006			**7016.93**	

S. J. Davies G4KNZ
Treasurer

What a fantastic period the past month has been for microwave propagation!

24, 47 and 76GHz all produce best ever Eu terrestrial DX QSOs

Some superb DX has been worked on all bands from 1.2GHz to 76GHz and new records established. Many thanks to all of you for sending in reports, some of which have had to be curtailed somewhat here due to lack of space.

First of all are two most interesting reports from Scotland, covering the **tropo opening in mid-October** and showing how different things can be compared to the more southern parts of the UK:

From Nick, GM4OGI (IO85DX): Please find attached my report on the activities during the opening of 14-17th October 2006. An AVHRR image from NOAA-18 reinforced my view that the High Pressure area allowed propagation into SP/OK. Ekofisk Radiosonde data showed quite clearly the temperature inversion that took place during the period. ***(Daily radiosonde data can be obtained from the following website. Just choose Europe for your regional data … editor)***

http://weather.uwyo.edu/upperair/sounding.html

Like many other others, I noticed a High Pressure building and anchoring itself over the North Sea. Unlike many though, I reached for the radiosonde data and kept a close watch on data from several Eu sources. The data from these measurements showed without a doubt that propagation should be good from GM to SP and possibly OK. In fact this was borne out by the success Ray GM4CXM experienced on 432MHz.

Propagation over the period was characterised by the fact that all beacons heard on 23cm over the period, OZ1UHF, SK6MHI, SK6UHI, OZ7IGY, SK7MHL and DB0VC remained quite weak. However, numerous stations were worked over the period. It was clear the band was in very good shape but to an area of nil amateur activity! It was, though, gratifying to work and welcome some new stations onto 23cm.

SM7GEP and SM6EAN were worked frequently on during the period to assess the path; both stations provided excellent and consistent signals until conditions changed on Tuesday 17th when it I could only to work Kjeld, OZ1FF. I worked SM7GEP on 9cm again on the 15th October .... this time on both CW and SSB so proving the contact we had earlier was not a single chance event, at the same time increasing the DX record for SSB on the band too.

Many opportunities were taken to work all stations on 3cm but no successful contacts resulted.

Here is a log extract for those who collect such data ...

```
Date Time C/sign Loc sent rcvd Band mode km

14 Oct 2056 SK7MW  JO65MJ 559   559   23cm  CW  1049
       2131 SM7GEP JO77IP 519   519   23cm  CW  1132
       2248 SM6AFV JO67GQ 559   529   23cm  CW  1004

15 Oct 1258 SM7GEP JO77IP 579   559    9cm  CW  1132
       1346 SM6EAN JO57WQ 549   539   23cm  CW   964
       1452 DL1SUN JO53PN 519   519   23cm  CW   996
       1509 SM7GVF JO77GA 539   549   23cm  CW  1122
       1933 DK1KR  JO53HW 519   529   23cm  CW   941
       2101 SM7ECM JO65NQ 599   599   23cm  CW  1049
       2155 SM7GEP JO77IP 539   559   23cm  CW  1132
       2215 OZ1FKZ JO56AA  55    56   23cm  SSB  853
       2228 OZ2ABI JO46WD  53    51   23cm  SSB  842

16 Oct 0824 SM6EAN JO57WQ 539   529   23cm  CW   964
       0903 SM7GEP JO77IP 539   529   23cm  CW  1132

17 Oct 1716 OZ1FF  JO45BO 519   519   23cm CW    740
```

The next 23cm report is from Nick's pal Ray, GM4CXM, located near Glasgow in IO75TW: Ray was using just 10 watts to bay of four x 44 element yagis, with masthead LNA:

23cm DX contacts:

```
10-9-06  F6DKW  JN18CS   918km #
         SM6AFV JO67GQ  1045km
14-10-06 SM6AFV JO67GQ  1045km
15-10-06 SM7GEP JO77IP  1175km #
         SM6EAN JO57WQ  1005km
         OZ1FF  JO45BO   782km
         SM7ECM JO65NQ  1091km
         OZ1CTZ JO46OE   842km
         OZ1FKZ JO56AA   895km #
```

November 6-7th Tropo Lift

The Monday 6th and Tuesday 7th of November saw another remarkable tropo opening into Western Europe from the UK. This one appeared to have a different pattern to the October one. The lift proved to be quite selective in that, particularly on the higher microwave bands, many operators reported the DX "going over their heads" towards the fortunate ones who could get into the duct. At the western end, Nottingham's radiosonde data (see next page) showed a marked temperature inversion between 218 and 842 metres. The same inversion could be seen right across the northern half of Central Europe, with markedly low temperatures than Nottingham and with its base increasing in height a.s.l somewhat and then tapering off to the east (see the Prague data). For those lucky enough to be in the right place at the right time it was a most rewarding experience!

The data in the shaded box shows the temperature inversion

RADIO SONDE DATA FOR NOTTINGHAM, UK, AT 0000GMT 7 NOVEMBER 2006

PRESSURE hPa	HEIGHT m	TEMP C	DEW PT C	REL H %
1010.0	117	3.6	3.4	99
1008.0	132	3.4	2.5	94
1001.0	186	2.8	2.7	99
1000.0	**194**	**2.8**	**2.7**	**99**
997.0	**218**	**3.4**	**3.4**	**100**
995.0	**235**	**5.3**	**5.0**	**98**
992.0	**260**	**8.2**	**7.4**	**95**
985.0	**318**	**9.8**	**6.1**	**78**
979.0	**369**	**11.4**	**-8.6**	**24**
970.0	**446**	**12.0**	**-15.0**	**14**
961.0	524	11.7	-14.7	14
947.0	646	11.1	-14.2	16
930.0	797	10.4	-13.6	17
925.0	842	10.0	-12.0	20
915.0	932	9.6	-9.3	25

RADIO SONDE DATA FOR PRAGUE,CZECH REPUBLIC, AT 0000GMT 7 NOVEMBER 2006

PRESSURE hPa	HEIGHT m	TEMP C	DEW PT C	REL H %
1000.0	213			
989.0	303	8.2	4.7	79
955.0	591	6.6	3.2	79
925.0	854	5.2	1.8	79
901.0	1066	3.3	1.0	85
857.0	1471	-0.3	-0.4	99
850.0	1536	-0.7	-0.7	100
842.0	1612	-1.1	-3.2	86
839.0	**1641**	**6.4**	**-8.6**	**33**
835.0	**1680**	**6.8**	**-20.2**	**13**
825.0	**1779**	**7.4**	**-26.6**	**7**
741.0	2655	2.4	-24.6	12
734.0	2732	2.8	-30.2	7
700.0	3115	1.6	-31.4	7
669.0	3479	0.0	-41.0	3
563.0	4826	-9.8	-37.7	8
528.0	5328	-13.5	-36.5	13

In Sheffield, your scribe **Peter, G3PHO** (IO93GJ)and Gordon, **G0EWN(IO90FK)**, found themselves in the hotspot for a change. Peter missed out on the Monday night opening due to a local radio club meeting but Tuesday afternoon saw him set up an indoor station in the 60cm offset dish and 5W 10GHz transverter in a bedroom whose window looks east (his only good direction). This was the set up that worked a fair bit of Eu DX in the "Mother of 10GHz Openings" during October 1994 (still the best one in his experience). In the late afternoon of Tuesday, a quick call to G0EWN found Gordon's signals very weak indeed, even though the path is only 5 miles or so. Suspecting a problem with his own gear he promptly pulled it apart to replace what he thought was a faulty antenna relay (this eventually proved to be a waste of time ... see G0EWN's report later!). Once this was done, at around 1730GMT, the transverter was switched on and **OK1JKT/P** in JO60RN was immediately heard on 10GHz! A quick adjustment of the dish (looking through a double glazed window) brought Karel up to an RST 579/599 signal. A CW contact was quickly made, finishing on ssb at S9+ for Peter's first ever 1000km+ contact on 3cm (1070km being the actual distance). At 1754z, **DK2MN's** beacon (JO32WL) was heard at good strength followed by an SSB QSO with Hans at RS57 both ways at 843km. OK1JKT/P was worked several more times after that in a attempt to contact his friend OK7RA but the latter station proved to be inaudible. OK7RA is much higher above sea level than Karel and it's assumed he was higher than the duct, which seemed to suit Karel's altitude. A strange thing about the Tuesday night opening was that no beacons were heard. Usually, during a lift, Peter hears the DB0GHZ beacon on Heligoland but maybe it was either off the air or too low for this duct. By Wednesday morning everything had faded away....

Meanwhile, **Gordon, G0EWN, in Sheffield (IO93FK) [gordonfiander@hotmail.com]** had been working some excellent DX on both the Monday and Tuesday. Here's Gordon's report:
Excellent tropo conditions arrived for the start of the working week on the 6th and 7th November--all bands from VHF up seemed to be open. Conditions were excellent as the high pressure started to decline on the Monday (predicted by EWN the previous Thursday and posted on UK Microwaves site). Notable contacts included:
HB9AMH/P on 3 and 6cm(JN37OE), **OK7RA** on 3cm--1051km JO60LJ, **DB6NT** 965km on 3 and 6cm JO50TI and OK1JKT/P ØDX at 1076km in JO60RN.
This last contact had a twist--it was a bit of a struggle as Karel gave me 529.(He was RS59) A few minutes later, chatting with Peter, G3PHO, who had come on to join the fun, I learnt that I was quite weak even with him. Thinking the problem was at his end he proceeded to check & fit new relay to his system. Meanwhile, I thought I better check my system. At first I couldn't get a reading on my power meter. Having removed all the attenuation it read 2mW ! I had worked OK1JKT/P with 2mW. I'm now looking for a new 2w amp!

I then noticed things happening on 24GHz so I took the 10GHz system off line for repair (new amp) and contacted G4EAT. We QSYed to 24GHz but it took a few minutes before I located John's signal for the 2nd time this year. We exchanged CW reports then tried SSB with success. Signals were not as strong as our January QSO but at the top of the QSB, which was more noticeable this time, John was 55. I have put some photos of the obvious effects of subsidence inversion on the UK Microwave Reflector photo album for those interested in WX and Propagation. All in all it

was a great tropo event--new squares, countries (HB9--OK) and I broke 1000k on 3cm for 1st time. A 'gotaway' was OE5VRL. He seemed to be bombarded on KST with requests for tests so I never got to try or ØDX would have been another 150k or so more. I hope the ducting was kind to you. If anyone has a spare 2w+ amp please contact me. **73, Gordon G0EWN**.

Down in Essex, John **G4EAT(JO01HR)** reports the openings as he found them: **Monday 30th Oct** saw good tropo to the south, moving south east to HB during the afternoon. Arnold,HB9AMH/P was very strong and received me with 60dB to spare. Alas, **24GHz** over 693km was not possible but **he worked F6DKW JN18 412km and F1PYR/P JN19 422km for his first new squares on 24GHz in 10 years**!

Monday **6th November** started out exactly the same with Arnold 60dB above noise again and no 24GHz qso. Tropo continued to improve to the east. OK7RA in JO60 was a good signal on 3cm. The was also good tropo to the south and F6FHP IN94 was a new square on 3cm.

Tuesday 7th November, tropo was good to northern Germany and DK6AS JO52 was strong on 13cm. **F6DKW** reported GB3MHX 599 so we tested 3cm and he was end stop (probably 80dB above noise). **Then we tried 24GHz ... at long last, 11 months since the last one-way, we had a 348km 24GHz qso 529/579.**

Gordon G0EWN came up for a **24GHz** test with no 10GHz as his 3cm PA had failed. After searching with the antennas, we had a nice SSB qso at **241km**. I tried and failed on 24GHz with André, F1PYR/P, JN19 313km and Hans DK2MN JO32 442km. PA5DD JO22 heard me on 24GHz 539 at 282km but alas no qso with his 500mW. Save this for next time!! **My 24GHz tally is now up to 11 squares worked and 2 one-ways.**

The 24GHzband is getting very interesting with many stations now having high ERP and the prospect of 20W+ TWTs to come! **73 from John, G4EAT**

47GHz Produces massive DX!
(a report forwarded by by by Dom, F6DRO)

On Saturday November 11th, **F6ETU/P** was located in **JN02XR** (Col de Paillères) , and **F6BVA/P** on top of Mont Ventoux in **JN24PE**. They wanted to try a path in excess of 300km long on 47GHz. Meteofrance forecast a cold and dry wind from the north on Saturday morning, ideal weather for millimetre bands This turned out to be wrong(!) as the Ventoux end was wet and foggy with wind coming from the east. At F6ETU/P, there was a clear sky and a south west wind but foggy down in the valley toward Ventoux. A quick test on 10GHz enabled an accurate antenna bearing to be set up. Then a 24GHz QSO was made, with huge reports, giving hope for the higher band.


F6ETU/P JN02XR

The first attempt on 47GHz failed so they went back to 24GHz to re-check the antenna direction. Once done, a return to 47GHz soon found them hearing each other. There was some QSB on the signals which peaked at around 20dB above noise. At 0918 local time, RS52 reports both sides were exchanged via SSB and they kept on until 1000 local.


F6BVA/P JN24PE

Equipment used at each end is very similar. All is homebrew: A sub-harmonic mixer using an HSC9521 (DB6NT design), running **100 microwatts** on TX and around 6dB NF. F6BVA/P is using a 80cm offset dish , and F6ETU/P a 1m offset.

47GHZ "FIRST" and NEW RECORD

Rudi, OE5VRL/5 (JN78DK) and Pavel OK1AIY(JO70SQ) have made the first contact on 47GHz between Czech Republic and Austria. The QSO was made on 07 Nov 2006 at 2025 UTC, over a remarkable distance of 266km under tropo conditions. Signals were 519 at both ends. Ten minutes later they worked on ssb/cw at 52/559. **This path is NOT line of site!**

OE5VRL/5 equipment: DB6NT transverter 7db NF-DSB, CW-TX with 20mW output power, 3m dish 17m above ground, 800m ASL

OK1AIY/p equipment: DB6NT transverter + DB6NT 47GHz RX/TX Amplifier, **only 10mW** output power, 5db NF, 25cm dish. According to Rudi, it was a tough work, first they aligned antennas on 10 GHz and after many tries over period they finally could make the QSO in CW. Rudi also could hear Pavel in SSB but due to 20dB less RF power from the transverter (mixer) a 2 way QSO was not possible.

76GHz FIRST AND NEW EU RECORD

On November 19. 2006, Hans **OE2JOM/2** and Wolfgang **OE3WOG/5** have successfully completed a **76GHz** QSO over a distance of **106 km**.

OE2JOM/2, JN67NT, 1320masl: CW TX 4mW output power, 60cm dish, RX diode subharmonic mixer,

OE3WOG/5, JN78CJ, 810mASL, CW TX 3mW output power, 75cm dish, RX diode subharmonic mixer

Signals in CW approx. 6dB above noise, SSB was not possible due to 10dB less RF output power from the mixers. They struggled for an hour to get the thing done. Conditions were not as good as expected. There was some fog between them at the start but, later in the evening, close to sunset, the temperature went down a bit, so the fog disappeared and the signal level increased by approx. 2-3dB.The pair will continue to prove that path in winter at lower temperatures and dry air. **73 de OE3WOG**

Errata: The 24GHz report on page 18 of the October Scatterpoint listed M1CRO/P as operating from JO01GN. They were actually in their usual spot of **JO01PU.**

SORRY! Due to lack of space, a number of reports have had to be held over until January 07 Scatterpoint. 73 from Peter, G3PHO Editor

UK Microwave Group 2006 Cumulatives

Results of the 5.7GHz Cumulatives

		21-May	18-Jun	23-Jul	20-Aug	24-Sep	**Points**	Mult	**Total**
1	G4WYJ/P	972	2079	2096	2042	1830	**6217**	11	**68,387**
2	G3PHO/P	0	2249	2406	1911	1571	**6566**	9	**59,094**
3	G3ZME/P	0	1635			1082	**2717**	9	**24,453**
4	M0EYT/P	0	0	0	1252	0	**1252**	6	**7,512**

Congratulations to the winner, **Jim G4WYJ/P**, who operated from Ditchling Beacon (IO90WV) and who was the only entrant active in all five sessions. Jim was using a DB6NT transverter and amplifier running 6W to an 80cm offset fed dish at 3m agl. Jim's best DX was G3PHO/P on Blakey Ridge (IO94MI) at 389km.

Runner up was **Peter G3PHO/P**, operating from a different site each session and, despite having a slightly higher number of points per km total, came in at second place due to a lower number of multipliers. Peter ran 12 watts output from a DB6NT transverter plus surplus PA to a 1.2m prime focus dish, tripod mounted.

The events again proved reasonably popular, combined with 10GHz, with some 26 stations on 5.7GHz appearing in the logs (approx 1/3 portable), though only 4 entries were received for this table, which is somewhat lower than 2005 (10 entries). Thanks to those who did send in entries and to F1GHB/P who regularly supported the events from IN88IN. Similar events are planned for 2007.

Open Section

		21-May	18-Jun	23-Jul	20-Aug	24-Sep	**Points**	Mult	**Total**
1	G4EAT	4580	5528	5954	5466	6146	**17628**	20	**352,560**
2	G3PHO/P	0	7859	6791	3501	3558	**18208**	18	**327,744**
3	G4ZXO/P	0	3124	3711	3192	4312	**11215**	17	**190,655**
4	G3ZME/P	0	3824	0	0	3392	**7216**	14	**101,024**
5	M0EYT/P	0	0	3874	2517	0	**6391**	12	**76,692**
6	G3JMY	872	0	2098	1758	1482	**5338**	9	**48,042**

Restricted Section

		21-May	18-Jun	23-Jul	20-Aug	24-Sep	**Points**	Mult	**Total**
1	G3YGF	1455	2685	2821	2560	3491	**8997**	16	**143,952**
2	G4WYJ/P	1916	2715	3077	2211	2946	**8738**	15	**131,070**
3	G1MPW/P	129	2555	2848	1832	2544	**7947**	15	**119,205**
4	G6KIE/P	0	2555	2597	1512	2541	**7693**	15	**115,395**
5	G4WGE/P	843	1977	0	1866	3127	**6970**	14	**97,580**

Results of the 10GHz Cumulatives

Congratulations to the **winner of the open section**, **John G4EAT**, who also won in 2005. John's 10GHz home station (JO01) comprised 10W to a 60cm offset dish mounted 20m above ground. John's best DX was DJ5BV (464km), in the June session.

Runner up in the open section **was Peter G3PHO/P**, operating from IO94, IO93 and IO83 and running 5W to a 1.2m prime focus dish but, as per 5.7GHz, lost out due to the lower number of Locator squares worked.

Congratulations also to the **winner of the restricted section, Julian G3YGF**. Julian's home station (IO90) comprised 300mW to a 50cm dish mounted at 45ft agl. Julian's best DX was G3PHO/P (IO94MI) at 376km.

Runner up in the restricted section was **Jim G4WYJ/P**, running 1W to a 45cm prime focus dish and operating portable from Ditchling Beacon (IO90WV).

The event was again reasonably popular, and from the logs, a total of 74 stations were recorded as active (again, approx 1/3 portable), though as per 5.7GHz, the number of entries received was somewhat lower than previous years. Thanks to all those who did send in entries, and to those European stations who regularly supported the events. As per 5.7GHz, similar events are planned for 2007.

Results of the 24GHz Cumulatives

		07-May	09-Jul	10-Sep	08-Oct	QSOs	Best DX	Points
1	G3ZME/P	0	774	1063	784	25	147km	**1847**
2	G8KQW/P	831	0	0	599	17	147km	**1430**
3	G3FYX/P	688	355	578	0	18	92km	**1266**
4	G3PHO/P	201	359	552	664	18	116km	**1216**
5	G0EWN/P	0	0	535	628	17	117km	**1163**
6	G0MJW/P	335	292	792	0	15	147km	**1127**
7	G3UYM/P	0	0	335	687	10	147km	**1022**
8	G4MAP/P	419	0	456	0	11	102km	**875**
9	G8BKE/P	0	0	333	0	6	81km	**333**
10	G0JMI/P	0	86	58	0	4	43km	**144**

Note: QSOs is the scoring QSOs in the best 2 activity periods

Congratulations to **Telford & DARS group G3ZME/P**, who won the 24GHz cumulatives, with excellent scores in the three sessions entered, and some 25 QSOs over the 2 scoring sessions. The group made good use of the Rover rule available for these events, operating from three different sites in the July and September sessions, and from two different sites in October. Equipment consisted of a H/B transverter plus a Milliwave PA, running 0.6W output to a 0.8m dish, mounted 2m agl. Best DX was 147km, from Brown Clee to Walbury in the September session.

Runner-up was **Ian G8KQW/P**, with good scores in May and October, who also worked the 147km path from Brown Clee to Walbury in May.

From the logs, a total of 21 stations were active on 24GHz (22 in 2005), and virtually all the activity on this band was portable, the exceptions being G4LDR (IO91EC) and G4EAT(JO01HR). Thanks to all those who sent in entries.

Results of the 47GHz Cumulatives

		07-May	09-Jul	10-Sep	08-Oct	QSOs	Best DX	Points
1	G8KQW/P	334	0	0	283	8	98km	**617**
2	G3FYX/P	92	133	253	0	7	92km	**386**
3	G3PHO/P	0	0	0	211	3	97km	**211**
4	G8BKE/P	0	0	179	0	3	81km	**179**
5	G0JMI/P	0	86	58	0	4	43km	**144**
6	G0EWN/P	0	0	0	124	2	96km	**124**

Note: QSOs is the scoring QSOs in the best 2 activity periods

Con- gratulations to **Ian G8KQW/P**, who won the 47GHz cumulatives by a large margin. Ian was using a DB6NT transverter plus 45mW SSPA to a 0.3m dish, and best DX was 98km from Brown Clee to Alport Height in the October session. **Runner up was Roy G3FYX/P**, using a DB6NT transverter and 3mW multiplier to a 60cm offset fed dish.

From the logs, a total of 10 stations were active on 47GHz (10 in 2005), and all the activity on this band was portable. Thanks to all those who sent in entries, even if only for one session.

The combination of 24 and 47GHz seems to work well, as often the same dish is used for both bands, and 24GHz is often used to align the dish before a 47GHz contact is attempted, so this format is to be continued in 2007. Events are scheduled for July, August, September and October, though finishing at 1700 GMT, since it is rare for stations to be active much beyond this time.

Steve Davies G4KNZ, Contest Adjudicator, November 2006

OCTOBER 2006 LOWBAND MICROWAVE CONTEST RESULTS

Overall results Table

	1.3	2.3	3.4	Total
G4BRK	876	1000	714	2590
G8IAM	111	537	1000	1648
GM4CXM	1000	0	0	1000
G3UKV	728	0	0	728
G8KQW	644	0	0	644
GB4BDS	242	0	0	242
G6XDI	95	0	0	95

Individual Band Results

1.3GHz	Best DX	Located	Distance	QSOs	Score
GM4CXM	G8KQW	IO91OC	587	13	4571
G4BRK	DF9IC	JN48IW	777	21	4006
G3UKV	GM4LBV	IO86RQ	440	18	3328
G8KQW	GM4CXM	IO75TW	587	19	2944
GB4BDS	G3LRP	IO93HO	267	9	1106
G8IAM	G8KQW	IO91OC	144	6	507
G6XDI	G4DDK	JO02PA	133	6	434

2.3GHz	Best DX	Located	Distance	QSOs	Score
G4BRK	G4ALY	IO70VL	237	7	676
G8IAM	G8ACE	IO91IB	140	5	363

3.4GHz	Best DX	Located	Distance	QSOs	Score
G8IAM	G8ACE	IO91IB	140	3	287
G4BRK	G8AIM	IO92FH	76	3	205

There were only 7 entries, all fixed stations, similar to the June and August events and about half as many as received in the April event. Checking through the entries, there was not a single portable station logged. Perhaps this Was due to the bad weather, with heavy rain at least in some places. The number of entrants for 2.3 or 3.4GHz was disappointing and activity on these bands was fairly low.

Conditions were generally reported as very poor to at best average, and there were almost no contacts outside the UK, the exception being G4BRK, who managed to work as far as JN48 on 23cm, at 777km.

Ray GM4CXM was leader on 1.3GHz, running 10W to 4x 44el at 11m agl. Although the number of contacts (13) was lower than several others, Ray benefited by being so far north from most of the activity (in IO75) that his average DX was around 350km.

Neil G4BRK (in IO91) was leader on 2.3GHz, while **George G8AIM (in IO92) was leader on 3.4GHz**.

The overall winner was Neil G4BRK, running 200W to a 35el on 1.3GHz, 60W to an 80cm dish on 2.3GHz, and 40W to the same 80cm dish on 3.4GHz (using the 2.3GHz feed!).

Again, thanks to those who sent in entries, however small. Similar events are planned for 2007, this time in March, April and June (the March event being reduced hours).

Regards from Steve Davies, G4KNZ (Contest Adjudicator)

FOR SALE: EQUIPMENT OF THE LATE DOUG NASEY, GW3ATM

Please email realistic offers to his son, Roger Nasey, at the following address:

rpnasey@btinternet.com

Yaesu FT290R

Watson PSU: 13.8V @25Apeak, 22A continuous

Kenwood TS130V

4 Way coax switch (good to 500MHz)

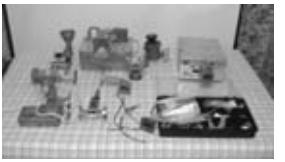
TR2300

Yaesu FT817ND

Tr2300 mount

Avo test meters

Kenwood VB2300



Various WG16 bits including a Solfan Doppler module, WG16 attenuator, feedhorn, etc

Brass Morse Key

Various morse keys including iambic paddle and keyer

Bonnartel Surplus Stock For Sale

Elliptical Waveguide - £4 per Metre
Andrews EW220 – 200m Drum.
Andrews EW127 – 20m Box - Connectors available.
Andrews EW 77 – 20m Box - Connectors available.
Andrews EW 77 – 20m Box - Connectors available.

Flexible Waveguide - £22 Each

FLEX/TWIST 2000MM PDR120 – WR75 – WG17	Quantity 2
FLEX/TWIST 1000M PDR120 – WR75 – WG17	Quantity 10
FLEX/TWIST 1000M PDR120 – WR75 – WG17	Quantity 9
FLEX/TWIST 1000M PDR120 – WR75 – WG17	Quantity 12
FLEX/TWIST 2000MM PDR140 – WR62 – WG18	Quantity 27
FLEX/TWIST 2000MM PBR220 – WR42 – WG20	Quantity 32
Boxed 1000mm. 2 in each box PBR220.- WR42 – WG20	Quantity 6
Loose in a bag 1000mmm PBR220 – WR42 – WG20	Quantity 1
FLEX/TWIST 1000MM PBR220 – WR42 – WG20	Quantity 2
FLEX/TWIST 1000MM PBR220 – WR42 – WG20	Quantity 2
FLEX/TWIST 915MM PBR320 – WR28 – WG22	Quantity 2

Waveguide Flanges (Andrews & Alroy) - £6 each

H BEND 75X75 PDR120 FLANGE– WR75 – WG17	47	AME-17-90-HB-75x75
STRAIGHT 100MM PDR120 FLANGE– WR75 – WG17	49	AME-17-S-100
PRESSURE INLET PDR120 FLANGE– WR75 – WG17	60	AME-17-PS-100
90 TWIST 100MM PDR120 FLANGE– WR75 – WG17	60	AME-17-90-T-100
E BEND 75X75 PDR120 FLANGE– WR75 – WG17	22	AME-17-EB-75x75
90 TWIST 100MM PDR140 FLANGE– WR62 – WG18	38	112563
STRAIGHT 100MM PDR140 FLANGE – WR62 – WG18	35	AME-18-S-100
PORT TERMINATION LOAD KIT PBR220 – WR42 – WG20	70	
STRAIGHT 100MM PBR220 FLANGE– WR42 – WG20	8	
H BEND 75X75 PBR220 FLANGE– WR42 – WG20	34	AME-20-HB-75x75
EW220 Feed Through Flange Kits	24	Type 35849A-19
PORT TERMINATION LOAD KIT PBR320 - WR28 – WG22	92	AME-22-WEL-CTL0850
STRAIGHT 100MM PBR320 FLANGE - WR28 – WG22	66	AME-22-S-100
H BEND 75X75 PBR320 FLANGE - WR28 – WG22	28	AME-22-90-HB-75x75
E BEND 75X75 PBR320 FLANGE - WR28 – WG22	26	AME-22-90-EB-75x75
PORT TERMINATION LOAD CPR112G – WG15	100	AME-15WGL-STL0490
PORT TERMINATION LOAD CPR112G – WG15	80	39099-112
H BEND 75X75 CPR112G FLANGE – WG15	32	
E BEND 75X75 CPR112G FLANGE – WG15	23	55220-112
E BEND 75X75 CPR112G FLANGE – WG15	17	AME-15-90-EB-75x75
STRAIGHT 100MM CPR112G FLANGE – WG15	41	AME15-S-100
100MM PRESSURE INLET CPR112G FLANGE WG15	45	AME-15-PS-100
CPR112G –WG15 CONNECTOR PRE-TUNED-EW76 7.125 TO 8.5 GHz	20	117DEP-3
CPR112G-WG15 CONNECTOR FOR EW77	14	Type 117DE
Pressure Window, CPR112G-WG15	24	

Cable

1 Box of Andrews LDF 4-50 – 100m - £50.
1 Drum of Andrews LDF4-50 – 150m - £70.
3 Boxes of Belden 9248 75 Ohm Cable – 305m - £20
1 Drum of 200m RFS Cellflex 50 Ohm CF 14-50 with 6 N Type Con - £50
3 Drums 100m, Black 25mm Tri-Rated Power Cable - £10

DMC RF Units From £15

"Brick Type" with F type connectors – Frequencies available
M Series – N Type connector
Spectrum II – TNC connector

DMC Local Oscillators - £12 each

	Quantity	Freq from	Freq to
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**13**	12,440	12,670
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**7.5**	7,610	7,855
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**7.5**	7,554	7,799
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**7.5**	7,470	7,715
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**13**	13,031	12,765
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**13**	12,849	13,115
DMC M Series ODU Oscillator, D-PLO, part Number 131-111455-005	**13**	12,905	13,171

Andrews RF Connectors - £4 Each

	Quantity		
N Type Male	**14**	L2PNM-H	L9732C
N Type Male	**289**	L5PNM-H	L9622B
N Type Male	**75**	L6PNM	L9615B
N Type Male Hex Head	**6**	L6PNH	A9646C
7/16 Male	**175**	L5PDM	L9626A
7/16 Male	**25**	L6PDM	L9652A
7/16 Female	**35**	L6PDF	L9618A
7/16 Female	**60**	L7PDF	L9619C
7/16 Female	**15**	L5PDF	L9745E
N Type Female	**20**	L5NF	L9730B

Antenna's – Parabolics £20, Yagis £5

1 of Andrews 0.6m Dish VHP2 – 370A-415 (37GHz Boxed).
1 of Andrews 0.6m Dish VHPX2-240-415 (24GHz X Poled Boxed).
1 of Andrews 0.6m Dish VHPX2-220A-415 (22GHz X Poled Boxed).
1 of Andrews 0.6m Dish VHPX2-130-415 (13GHz X Poled Boxed).
2 of 3 Element 458 MHz Yagi.
2 of 6 Element 420-470 MHz Yagi.
3 of 7GHz Andrews Feed Horn Assembly.

Most of the equipment is surplus stored stock that has not been previously deployed, and none have been tested, so all is sold "as is". We are closing our warehouse shortly and do not want to transport the surplus stock to our new premises. Some items will only be available till the end of November.

20% of all ex-VAT sales will be donated to the UK Microwave Group.

On all enquiries please quote UKMG. All Prices exclude VAT and shipping.
Enquiries to anton@bonnartel.com Contact Mob: 07719 301843

Many of the items can be viewed at **www.bonnartel.com** on the Equipment Supply page.

No sensible offer for the 'job-lot' will be refused.