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

1999 – FEBRUARY

Well, it's almost Sandown time! This issue should reach you before that event. If you do come, don't forget to call in at the Microwave Committee stand and make yourself known. Details of the microwave programme are given inside this newsletter.

This is also the time to start looking at the microwave gear in preparation for the coming "season" when the portable stations will be out and about on the hilltops and the summer microwave contests will be in full swing. Have you even started those winter construction projects yet? If not you haven't got many weeks left!

Many thanks, once again, to all our contributors this month, in particular to Dave Wrigley who supplied the main technical article. We hope you will find it useful. Dave would appreciate any comments

10GHz TROPHY CONTEST : RULE CHANGE

Since the last issue of the Newsletter, it has been decided that the VHFCC will adjudicate the 10GHz Trophy Contest As a result, the address for entry logs is changed to the one shown below. However, **G4JNT** remains as the correct log adjudicator for all the rest of the Microwave **Committee** Contests.

Send 10GHz Trophy logs to:
P.O. Box 2399, Reading, RG7 4FB

All this and full rules are available at the following website:
http://freespace.virgin.net/p.day/ghz.htm

IN THIS MONTH'S ISSUE…...

G3PHO: Peter Day 0114 2816701
G8AGN: Barry Chambers 0114 2304202

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

G3PHO: Email: g3pho@geocities.com
or p.day@virgin.net
G8AGN: Email: b.chambers@sheffield.ac.uk

SUBSCRIPTION ENQUIRIES SHOULD BE SENT TO RSGB HEADQUARTERS AT THE ADDRESS SHOWN AT THE TOP OF THIS PAGE.

For Sale and Wanted

FOR SALE

Marconi 6460/1 tft Powermeters, 0.01-18GHz +20dBm, complete with 20dB pad and WG18 adaptor and copy of manuals. Working £50 each. Also some with o/c tfts, £25. Prefer buyer inspects & collects, else carriage £10.
David G8NEY. QTHR. Telephone: 01225 810138

FOR SALE

F1JGP, Patrick, has for sale some THOMSON TWT switching power supplies (without TWTs) . All types are 48V DC types (Telecom standard) . Prices are around £15 to £20 + P & P . Documentation is available with each type .

His address is :PATRICK FOUQUEAU , 1
428 Rue de la Motte Moreau
TRAINOU,
45470 LOURY,
FRANCE

You can also email F1JGP via F5UEC: irtc@wanadoo.fr

DETAILS:

1 - PSU type: WEA603 for TH3608L TWT (17 W on 11 GHz)

Heater	- 5,5 V	0,8 A max
Collector 1	1750 V	25 mA max
Collector 2	650 V	35 mA max
Grid 0	800 to 1200 V	
Grid 1	Vh + 50 V	
Helix	3750 V	3mA max

2 - PSU type : VM691A for TH3515 TWT (20 W on 7 GHz)

Heater	-5/-6 V	1 A max
Collector	1750 V	50 mA max
Grid 0	800 to 1500V	
Grid 1	Vh + 50 V	
Helix	3550V to 3850V	3,5 mA max

3 - PSU type : VM695 for TH3515 or TH3553 TWT
(20 W or 10W on 7 GHz)

Heater	-5/-6 V	1 A max
Collector	1750 V	50 mA max
Grid 0	800 to 1500V	
Grid 1	Vh + 50 V	
Helix	2300 to 2800 V or 3550 to 3850 V (dependant upon TWT type)	3,5 mA

Sometimes TWTs are also available … please ask .

CALLING ALL TELTRA "WHITE BOX" OWNERS! ….

Is that 22GHz white box still gathering dust in your shed? If so, Tim, G3KEU, is prepared to take it off your hands, whether it be intact or partially gutted for your own use. Ring him on 01793 724150 or email tim@g3keu.freeserve.co.uk)

FOR SALE

1 @ HP8445A 0-18GHz preselector: £200
1 @ TM503+DM501+DC503: £200
Divider Kits (1GHz – </= 3GHz) £30

Contact Guy Bouville in France:
Telephone (from UK) 0033 321060878
Or write to him at:
Guy Bouville, 62170 La Caloterie,

ERRATA !

Last month's For Sale Column had an item concerning 5 watt PAs for 10GHz. Due to an editorial error, the email address was given incorrectly. Please amend your copy to read:

Monteil@aixup.univ-aix.fr

You can also write directly to Michael at:

M.J. Monteil, F/GJ6WDK,
34 Rue Universelle,
84000 Avignon, FRANCE

QUALCOMM NEWS

..... Hello again from Chuck, WB6IGP

We are looking into developing the Qualcomm circuit boards to 24 GHz operation. It's just an experiment to see some results but we are still trying! We have had extremely good luck modifying a 1152MHz synth and using it to produce harmonics up through the microwave bands by driving a 3.7 to 4.2 GHz LNA for tv reception. Just remove the strip line tuning and open up the amp to 800 MHz . Some are usable to over 5 GHz. I have found hobby brass tubing a very near match to 24GHz and above wave guide dimensions. It's available here for $3 a foot. We are very glad that so many UK microwavers have been able to put the Qualcomm 1 watt amps to good use on 10GHz. We always feel good when we can spread anything that can be helpful and of a constructive nature to microwavers!

Concerning material, we have plenty of amps for anyone that is still interested. Same price, $55 each with aluminium mounting plate and instructions. Postage is $9.75 air and $16.50 air express mail.

We also have a few synthesizers that are modifiable to 1152MHz, driven by a 10MHz hi-stability TCXO. They are available in a special deal for $45 complete with the 10MHz tcxo. The board is about 5 by 10 inches with additional circuitry not required in the conversion to 1152MHz.

73 from Chuck WB6IGP

E-mail: clhough@pacbell.net

MICROWAVE ANTENNA BOOK – ONLINE

Well-known writer Paul Wade, W1GHZ (ex-N1BWT) has recently uploaded his antenna articles onto his website. These now form an ongoing "Internet book". It is clearly set out like any other book, with contents page and chapters. Paul will be constantly adding to it. Anyone who has read Paul's articles in this newsletter and other publications, such as QEX and Microwave Update, will know that they represent excellent value, being full of practical, as well as theoretical, information.

The chapters are downloadable in the form of *pdf files. You will need Acrobat Reader installed on your PC to take advantage if this format.

Paul's website is at : http://www.qsl.net/n1bwt

When you get there, just click on the book icon!

SANDOWN '99

The RSGB VHF Convention will be held at Sandown on Sunday, 21 February, 1999. Full details have already been published in RadCom.

The programme of Microwave Lectures is as follows and are part of Stream C:

1300-1325: Opening Ceremony

1400-1500: Microwaves the Easy Way - by Bob Platts, G8OZP

1500-1600: Two Decades of 10GHz Portable Operating - by Peter day, G3PHO

1600-1650: Remote Imaging Group AGM

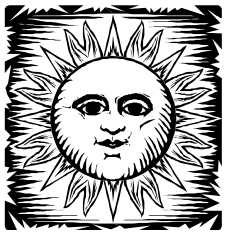
Thes lectures are aimed at newcomers but OTs might like to come along for the nostalgia!

There will also be Noise Figure measuring gear available for up to 24GHz (transverters and preamps only … no tranceivers please). A 2GHz Spectrum Analyser and a 1.3GHz Network Analyser will also be available. Please contact G4DDK (QTHR) prior ro the event if you have any special needs.

MICROWAVE ROUND TABLE R.A.L. '99

This popular Microwave Meeting has been booked for Sunday, 25th April, 1999. A programme of talks is being arranged…. Offers to speak will be gratefully received by Geoff, G3NAQ (email at g.h.grayer@rl.ac.uk) or Andy, G4JNT (email at drassew2@interalpha.co.uk)

MICROWAVE UPDATE '99 ~ this popular USA microwave event is scheduled for 22-23 October 1999, at the Harvey Hotel, Plano, Dallas, Texas. More details to follow but go off and book that cheap return flight right now! (Thanks to WW2R/G4FRE for the info)



SUNSET and MICROWAVE PROPAGATION

Some interesting observations by Paul, OH3LWR

If you are on a ship or live on the West coast, a very beautiful way of observing the structure and refractive properties of the lower troposphere is to look at a nice sunset. The usually round sun is deformed in various ways and in extreme cases can be split into several layers.

The apparent solar diameter is about 0.5 degrees. In fact, the lunar diameter is about the same and thus we have occasional full solar eclipses. When the sun is approaching the horizon, the light is refracted more and more and at horizon, The defraction also happens to be 0.5 degrees (10 milliradians) so, in reality, when the lower part of the sun seems to touch the horizon, the sun is actually just **below** the horizon, as if no atmosphere had existed.

Previously (before computers!), the sun rise and set times were calculated from the centre of the disk without taking the atmosphere into calculations. Currently (at least over here), the rise and set times are given when the upper part of the sun touches the horizon (the average refraction conditions are used for calculations). If you can calculate the expected sun rise or sun set time for your location, observing the actual sun rise or sun set times will give a clue about the refraction and effective earth radius (if you can get the sun set time for a place on the same latitude, add 4 minutes for each degree of longitude west of it).

If the setting sun appears to be strongly flattened, i.e. the lower part is more strongly refracted than the upper part, there is a large gradient of the refractive coefficient, so stable, longer-than-normal radio connections can be expected.

If the sun is split into several horizontal bands, quite interesting ducting conditions can be expected. The dawn or dusk is also a form of troposcatter (although the wavelengths and scattering "particle" sizes and hence directivity characters are different), so if we could see UHF or microwave signals directly, they might look something similar.

While a beautiful sunset has mostly aesthetic values, it also tells us something about the current nature of the tropospheric layers and as such, might give some useful prediction of UHF and microwave propagation. So take a look at the sunrise and sunset more often!

Paul OH3LWR

Jagadis Chandra Bose – Millimetre Wave Pioneer of the 19th Century!

The December 1998 edition of the San Bernardino Microwave Society's newsletter mentioned a most fascinating website ([1]) that contains information about a certain J.C. Bose who was transmitting and receiving signals at frequencies as high as 60GHz, way back in 1890! Naturally we had our doubts at first but on reading the information, a paper presented by D.T. Emerson to the 1997 IEEE-MTT-S International Microwave Symposium at Denver, Colorado, we soon changed our mind!

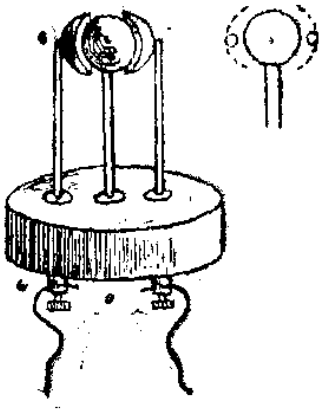
Essentially, Bose had been carrying out research into electromagnetic radiation as a result of reading Sir Oliver Lodge's book "Heinrich Hertz and his Successors". In 1894 Bose converted a small enclosure next to a bathroom in the presidency College, Calcutta, India. In that tiny space he carried out experiments using radio waves of around 2.5 to 5mm wavelength. Refraction, diffraction and polarisation effects were all investigated.

To receive the signals, he had to develop what would now be called diode receivers and used galena crystals for both short radio wavelengths and for white and ultra violet light. Later, writers such as Pearson and Brittain (1955) and Sir Neville Mott (1977) publically acknowledged Bose as being decades ahead of his time. In fact he had anticipated the existence of the P-type and N-type semiconductors!

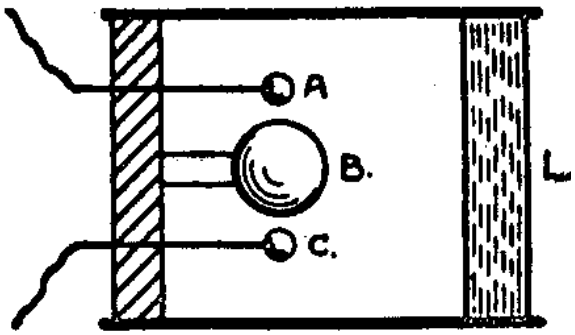
In 1896, one hundred years before your editor even thought of operating on 47GHz, Bose transmitted signals on wavelengths of 2.5 to 5mm over a distance of nearly one mile! This predates Marconi's first successful "wireless" transmissions on Salisbury Plain by almost two years.

Bose also suggested the existence of electromagnetic radiation from the Sun … the much revered"sun noise" of modern microwavers … even though he could not detect it. He correctly surmised that the Earth's atmosphere might attenuate it. The existence of the 1.2cm water absorption line was later only discovered in 1944!

Bose's equipment is fascinating. An experimental apparatus used at a lecture given in 1897 to the Royal Instute in London, in employed a "waveguide radiator" as a transmitter, which beamed a millimetre wave transmission at a plane mirror. From here, the radio waves were received by a "collecting funnel" (a pyramidal horn antenna in other words!) which in turn fed a "spiral spring receiver" attached to a galvanometer.



The Radiator.

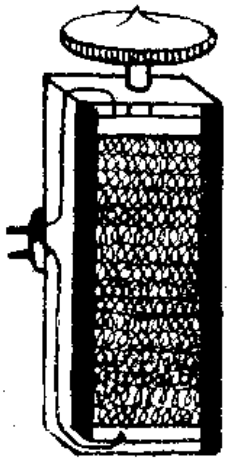


These two drawings show the radiator and the waveguide cavity that Bose designed. Oscillations were created by causing a spark across the two hollow hemispheres (**A** and **B**) and the sphere between them. On occasions Bose even used a glass or sulphur lens to collimate the radiation.

The spark gap operated at the focal point of the lens which is clearly shown on the second drawing as **L** . To measure the wavelength, Bose used a metal polarising grid (or diffraction grating) placed in the aperture of the waveguide. The waveguides were cylindrical and photographs showed them to be remarkably similar to the cylindrical horns used today to feed offset dishes!

The receiver used a similar cylindrical waveguide cavity. Inside it would be placed a point contact detector. This was made of a sharp iron point pressed against an iron plate, the pressure being variable. In fact Bose produced such as "knee voltage" and even classified various junction materials into positive and negative types. He discovered negative resistance characteristics when he found that increasing the voltage to a junction resulted in a decrease in the resulting current.

The Spiral Spring receiver shown on the right was used for receiving his 5mm transmissions. The spring pressure was careful adjusted to get best sensitivity. It probably worked on the basis of the natural oxidation of the springs forming a multi-contact semiconductor.



The Spiral-spring Receiver.

Bose was a master at improvisation and would embarrass even the keenest home constructor of today! For example, he made a polariser by interleaving the pages of a book with tinfoil, the pages acting as a dielectric. He used a twisted bundle of jute (plenty of that available in the local Calcutta jute mills!) to demostrate rotation of the plane of polarisation in much the same way as we might used twisted waveguide today.

Unfortunately this brilliant man turned away from microwaves (a symptom still prevalent among some of our own brethren today!). He diverted his research towards the effects of electromagnetic radiation on plants.

After retiring from the college in 1915, he founded the Bose Institute. He was made a Fellow of the Royal Society in 1920 and died in 1937, just a week from his 80th birthday.

What would he had thought of today's amateur microwavers? He would have enjoyed seeing his original experiments being rediscovered and techniques refined to give us the fascinating "world above 1000MHz" that we enjoy today.

He truly was the "Father of Microwaves"!

(1) If you have Internet facilities then visit D.T. Emerson's website at :
http://www.tuc.nrao.edu/~emerson/bose/bose.html

(For which we gratefully acknowledge the source

Microwave Morse Code and Tone Generator

... by David Wrigley, G6GXK

Overview

This Morse Code and Tone Generator has been designed for use with a Microwave Transverter. Its function is to aid the identification of stations and for antenna alignment in Narrow Band activity. It is a significant improvement over the author's previous method of holding a DTMF Tone Dialler in front of the microphone!

The four functions contained within this design are accessible by means of a four way panel mounted switch.

1. Microphone and PTT (normal transverter operation)
2. Continuous Tone output for setting up antennae, WG matching, Horn feeds and other measurements etc
3. Morse Code ID every 10 seconds - can be left on for others to find.
4. Warble tone - very distinctive as an alternative to Morse Code for others to initially find the frequency and/or direction of the station.

A red LED on the front of the unit shows when the tone is being output and flashes with the code sent. This also acts as reminder that the unit is transmitting. This LED output can also be used to drive a transistor switch as a CW key output for the Morse code enthusiasts.

Design

The unit is based on PIC16C84 4MHz DIL Package. This is plugged into a DIL socket so that an alternatively programmed or updated chip may be inserted at any time. For those not familiar with this chip - it is quite a few years old now - it is a complete computer on a chip with EEPROM included. The program uses a counter timed interrupt routine to provide the frequency of the tones. The dots and dashes are made up of binary bits. One bit "1" equals one dot, three bits "111" equals one dash, three zeros "000" equals space within a character, etc. The required code to be sent is stored as a string of ones and zeros stored in the memory and retrieved one by one by the program and used to enable or disable the tone output. The output audio is in fact a square wave which is rounded off a bit with an RC filter and set to a suitable level for the FT290 by means of a built-in attenuator. The unit plugs into the Mic line of the FT290 and socket wiring information is provided for this. Of course the wiring and attenuator levels can be modified for other transceiver types.

Programming the chip

The loading of the program is easily carried out with a simple home built programmer attached to the printer port of a PC. The sequence of events is as follows.

1. Using a text editor such as "Notepad" in Windows make any changes to the program that you require. (I use Programmers File Editor which has a few more bells and whistles but results in the same thing at the end). Note that you will need to insert your own call sign/locator or other message into the program. The resulting source file must end in ".asm" but the file name itself can be made anything you like as long as you can remember what it is.
2. Use an assembler to convert the text file into a file recognisable by the programmer (and by

programmer I mean that device and its operating software which is going to load the program into the chip). I use MPASM for windows (mpasmwin.exe) downloadable as a zip file from Arizona Microchip website which is a link from David Tait's Site (Ref 1). The assembled file ends with the extension .hex since it is basically a hex file of what we want in memory plus some other information recognised by the programmer. If you want more information on the assembler language or the chip specification/instruction set, it's all there at the Arizona Microchip site.

3. Assuming that the programmer is connected to the PC, move the assembled (hex) file into the same directory as the programmer and run the programmer. I use a batch file to do this which is "pp tone8.hex" where "pp.exe" is the programmmer software and "tone8.hex" is the assembled program. The programmer hardware details are downloadable from ref 1 and it's fairly easy to build one up on a piece of VERO board. Programmer kits with a PCB are available at most UK radio rallies - look for the D2MAC satellite card stalls - a similar processor is also used in the decoder cards but you need the PIC chip programmer and not a card programmer. On the same stalls they usually sell the PIC16C84-04 DIL chips for 2 or 3 GBP each. The programmer software by David Tait is currently at rev 05 and this now also works with Pentium PC's (earlier rev's had problems with the printer port on some Pentiums). I have red and green LED's on the programmer so that I can watch the process - it usually takes only a couple of seconds or so and a message should come up on the screen to inform the user of the success or failure of the operation. Failure can be that you put the chip in the wrong way round - I did that once and amazingly it survived to be reprogrammed and is still working well.
4. Of course you may not be into programming or PC's - but there is usually some radio amateur in your locality with suitable equipment to do it for you. It only takes a few minutes. It takes longer for Windows to load than to program one of these chips!

Construction

The printed circuit board contains most of the components and is designed to be mounted on the rear of the screwed rods which hold together the rotary panel mounted switch (the prototype used a Maplin type). In the author's case, the LED was mounted on the panel above the switch and two sockets were mounted below the switch. Make sure that the PCB is mounted so that the PIC device points to the rear and is easy to extract and replace when in situ.

Acknowledgements, Conclusions and Future Developments

This design is the result of a mixture of sources, principally from a program written by GW6BWX (1998) and published by the British Amateur Television Club but I must mention the work of Gary C Sutcliffe W9XT who published a design for the PIC16C54 in 1995.

The present package is the current state of development and is, as usual, a constantly moving target. Some recent minor changes have been made to the documentation just prior to issue and a further prototype has not yet been built precisely to this latest issue. It is therefore possible that an error has crept in. Please let me know by Email to **david.wrigley@umist.ac.uk.** if anyone finds something inconsistent, wrong or incomprehensible. I will do my best to help. I have been working on some future ideas as follows and they are simply waiting of the time to complete them.

1. The addition of automatic Morse code ID every 15 Minutes on all positions to avoid inadvertently breaching the Radio Regulations.
2. Addition of components on the pcb to give key output directly.
3. Changes to the available alternative tones to suit user requirements.

4. Addition of a 10 second digital voice recorder chip to permit voice rather than Morse code ID.

References

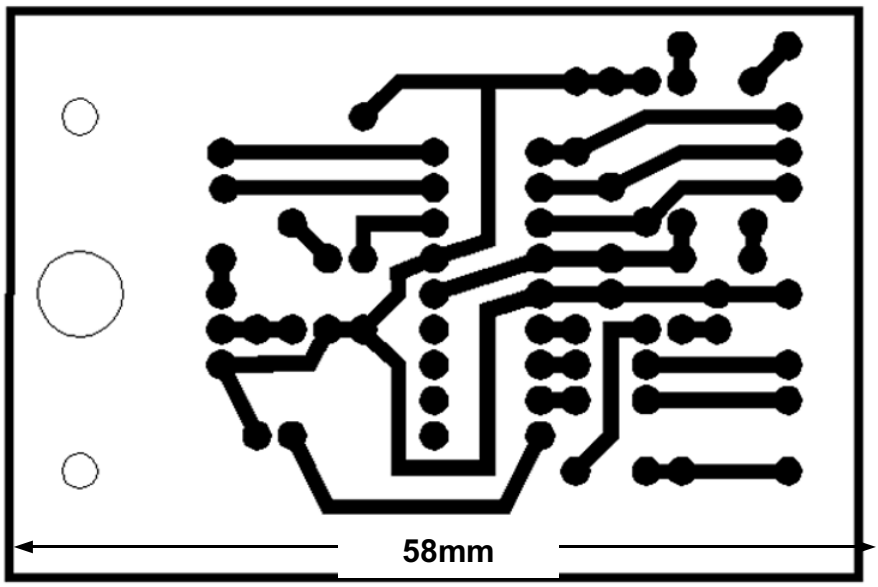
Ref 1: David Tait's web site : **http://www.man.ac.uk/~mbhstdj/piclinks.html**
This is probably the best site for PIC info and links.

Ref 2: British Amateur Television Club (BATC) web sit - this is a good web site and one to which I gladly subscribe. There is plenty of interesting information and software to download. Take care, you might get addicted to ATV!
http:www.batc.org.uk

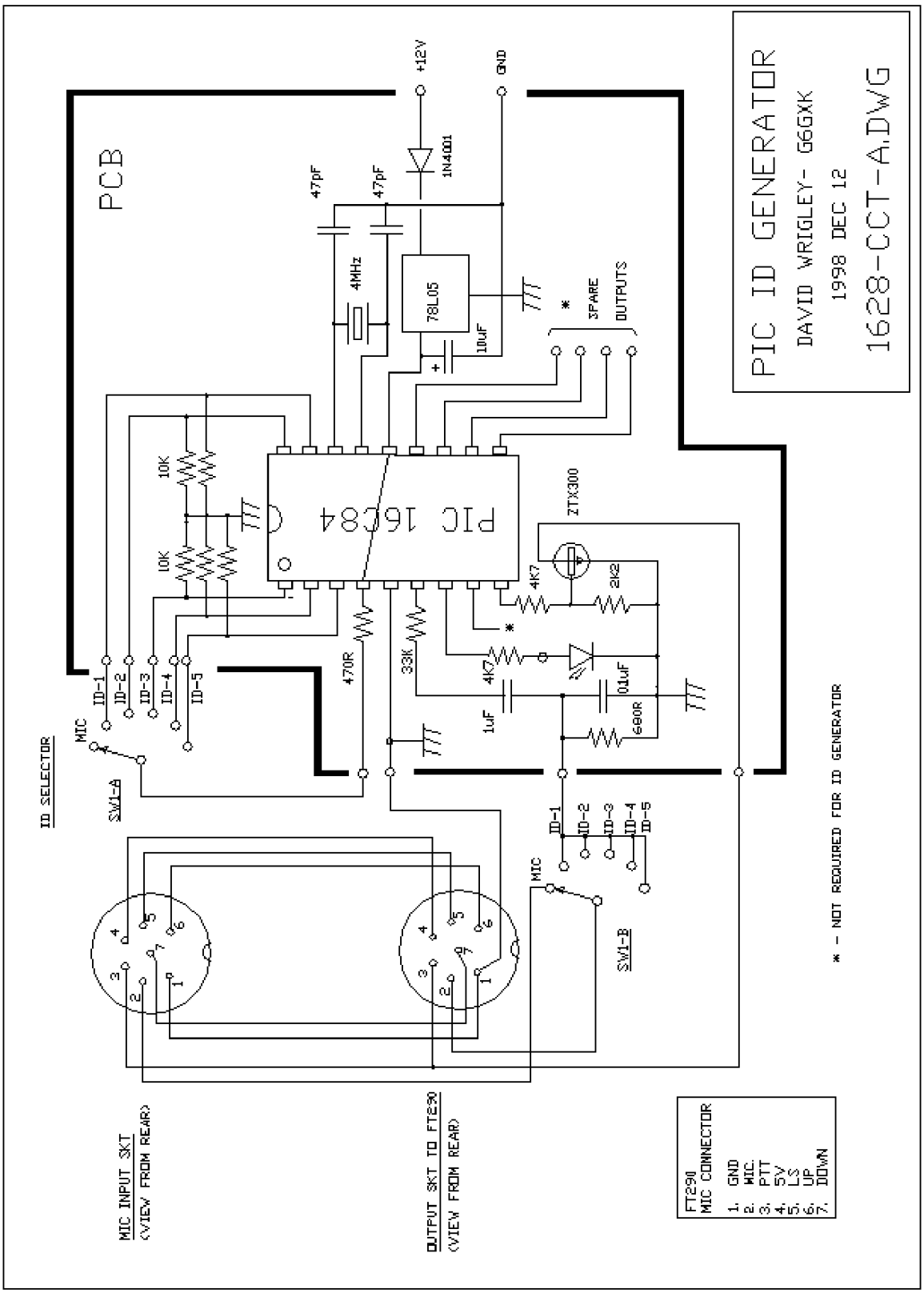
Ref 3: The author can be contacted by Email to **david.wrigley@umist.ac.uk** in case of difficulty or errors

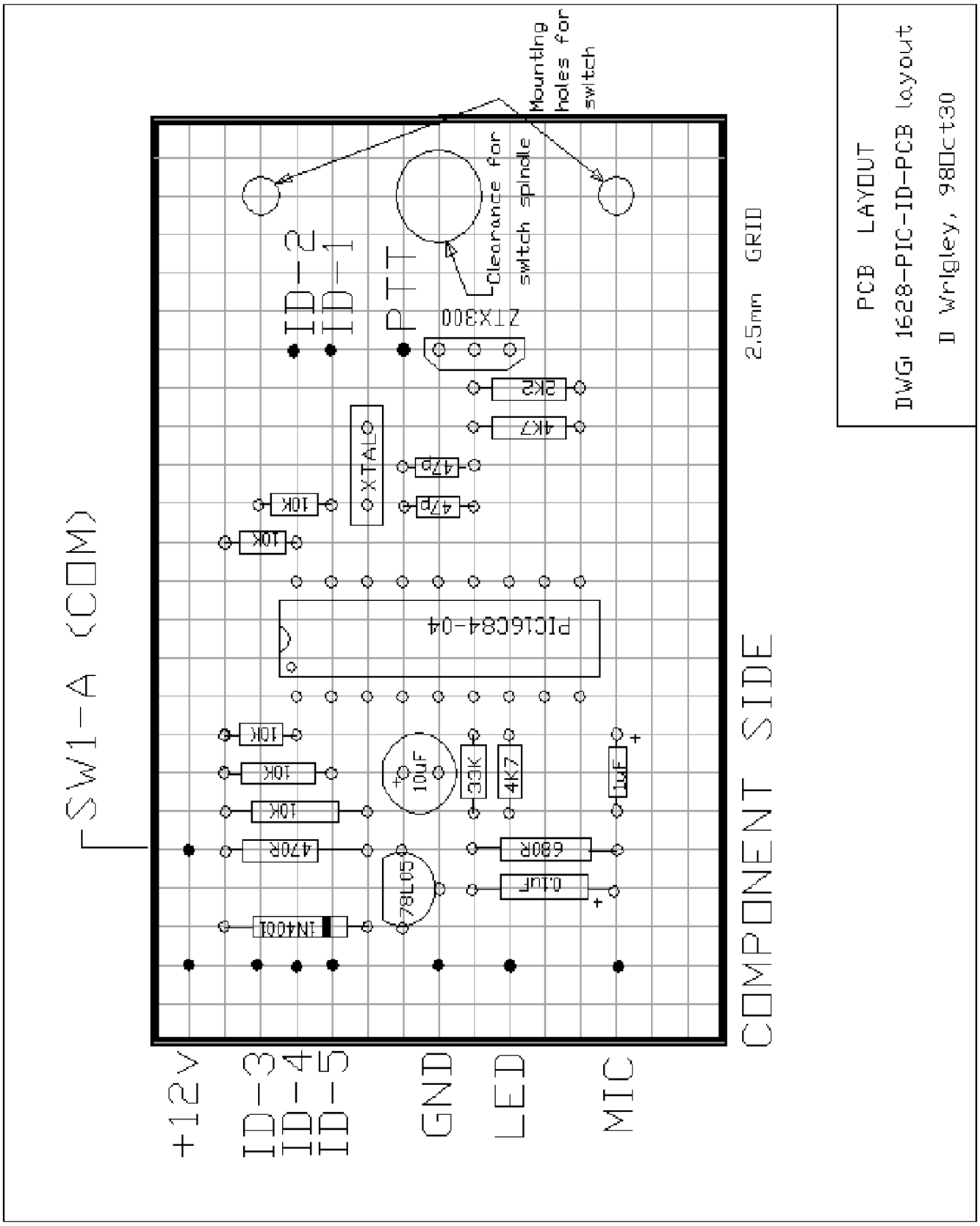
List of files contained in the distributed zip file available for download from G3PHO's "World Above 1000MHz" website (http://freespace.virgin.net/p.day/ghz/htm). From the menu page select "Software":

1628text.doc	Word.doc version of this article file
1628TEXT.txt	Txt version of this file (poor format)
1628-PCB.gif	PCB Layout
1628-cct.gif	Circuit Diagram
tone8.asm	Software source code
1628assy.gif	Component assy diagram



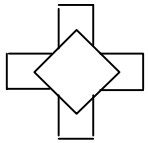
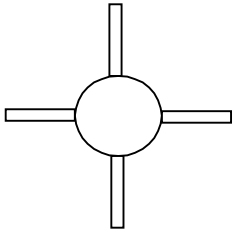
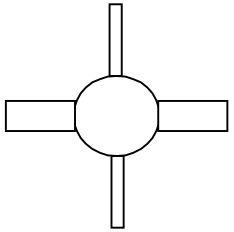
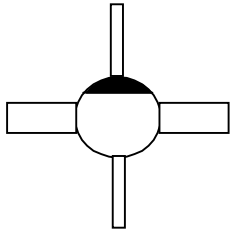
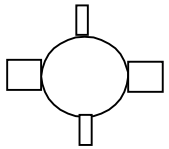
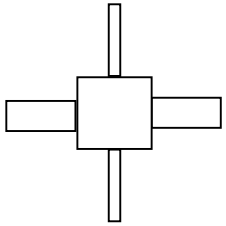
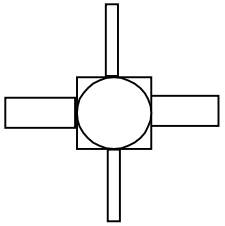
To make a pcb master for etching purposes, photocopy this track layout onto acetate sheet, adjusting the size to that shown, consistent with the IC pin spacing being 7.5mm across the chip and 2mm between adjacent pins.


PIC ID GENERATOR
DAVID WRIGLEY- G6GXK
1998 DEC 12
1628-CCT-A.DWG
PCB
+12V
GND
1N4001
47pF
47pF
4MHz
78L05
10uF
*
3FARE
OUTPUTS
PIC 16C84
10K
10K
ZTX300
4K7
2K2
33K
4K7
470R
1uF
.01uF
680R
ID-1
ID-2
ID-3
ID-4
ID-5
MIC
SW1-A
SW1-B
ID SELECTOR
MIC INPUT SKT
(VIEW FROM REAR)
OUTPUT SKT TO FT290
(VIEW FROM REAR)
FT290
MIC CONNECTOR
1. GND
2. MIC
3. PTT
4. 5V
5. LS
6. UP
7. DOWN
* - NOT REQUIRED FOR ID GENERATOR


PCB LAYOUT
DWG 1628-PIC-ID-PCB layout
D Wrigley, 98Oct30
2.5mm GRID
COMPONENT SIDE
SW1-A (COM)
+12v
ID-3
ID-4
ID-5
GND
LED
MIC
ID-2
ID-1
PTT
Mounting holes for swtch
Clearance for swtch spindle
ZTX300
2K2
4K7
XTAL
47p
47p
10K
10K
PIC16C84-04
10K
10K
10K
470R
1N4001
78L05
10uF
33K
4K7
680R
0.1uF
1uF

MITSUBISHI GAAS DEVICE IDENTIFICATION D.ROBINSON WW2R

DEVICE IDENTIFICATION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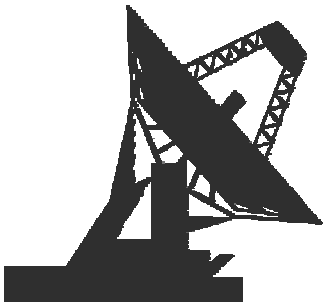
A	MGF1902	MGF1200	MGF1302			MGF4410 SERIES	MGF1801
B	MGF1903	MGF1202	MGF1303			MGF1402	MGF1601
C	MGF1904	MGF1203	MGF1304	MGF4310C SERIES	MGF4910C SERIES	MGF1412	
D		MGF1100	MGF1305			MGF1403	
E		MGF1102	MGF1304A			MGF1404	
F	MGF4900A SERIES		MGF7003			MGF1405	
G			MGF1303B		MGF1902B	MGF1423	
H			MGF1323		MGF1903B	MGF1425	
J					MGF1904B	MGF4401A	
K					MGF4900B SERIES	MGF4402A	
L	MGF4910 SERIES			MGF4310 SERIES	MGF4910B SERIES	MGF4403A	
M			MGF4303A			MGF4410C SERIES	
N			MGF4304A			MGF4404A	
P			MGF4305A			MGF4405A	
R			MGF4301A				
S			MGF4302A				

PRODUCTION DATE

2nd SYMBOL	1991	1992	1993	1994	1995	1996	colour
JAN	h	I	j	k	l	m	red
FEB	h	i	j	k	l	m	green
MAR	h	i	j	k	l	m	brown
APR	h	i	j	k	l	m	blue
MAY	h	i	j	k	l	m	orange
JUNE	h	i	j	k	l	m	black
JUL	h	i	j	k	l	m	red
AUG	h	i	j	k	l	m	green
SEP	h	i	j	k	l	m	brown
OCT	h	i	j	k	l	m	blue
NOV	h	i	j	k	l	m	orange
DEC	h	i	j	k	l	m	black



ACTIVITY NEWS FROM THE WORLD ABOVE 1000MHz

In spite of a relatively mild UK winter, with a great deal of rain, there are not many reports of serious microwave activity. There have been some excellent opportunities for home-to-home station rainscatter contacts on 10GHz (and maybe 24GHz?) but, apart from a small core of regular operators, the activity has been very poor indeed. Before we look at the UK scene let us look abroad for some exciting developments have been taking place there…

From: Gil, F5CAU [f5cau@wanadoo.fr]

F6BVA and F5CAU have established a new world record on 47GHz with a two way SSB qso (report 52 both sides, with QSB) over a distance of **286 km** on December 26th 1998 at 15:40 local time.

F6BVA was situated at the "Tour de Batere" JN12GM, 1400 m asl, temp around 5°C and F5CAU at "Mt Ventoux" JN14PD 1500m asl. WX: temp 3°C, sunny . On the same day, from the same locations they also made a bi-directional ATV QSO on 24 GHz, reports B5, slow and deep QSB.

On December 27th, F6BVA moved to the "Col d'Ares" in JN12FI. F5CAU stayed at "Mont Ventoux" JN24PD; that is a distance of 303 km. They made again the 24 GHz ATV QSO with same successful results as the day before . This could be the **world ATV 24GHz record .**

Best wishes for the new year and 73 de Gil F5CAU. *(and congratulations to all the French stations involved in these excellent contacts...editor)*

PA0EHG, pa0ehg@wxs.nl emails the following description of his microwave station:
All equipment is narrowband.

24 GHz: two stations qrv, first one is a mast - mounted home station with 200 mW and a 50 cm dish, NF about 3.5 dB. I've had QSO's with G3LQR and G4DDK. I'm working on a home station with 4W output into a 75 cm dish and a NF of about 2dB. I hope to be active with this one in February, 1999.

The second 24GHz station is a portable one with 100 mW and a NF of 4dB and a 50 cm dish. With this station I made the first ever UK-PA contact, with G3LQR. It is a combined station with 10GHz and is also in use when I go to the Danish Microwave week.

47GHz station: brand new, with around 15mW output to a 25 cm dish. Noise figure is around 12 dB. I'm interested in portable tests to G and trying to get Simon G3LQR operational for testing.

76 GHz station: 5 mW output to a 25 cm dish with a NF of 16 dB.

If you know anyone for tests on 47 GHz I am interested for these, also perhaps to test the first ever between G and F. I am able to fly to Calais and do a test to Dover. You can reach me via e-mail to. j.c.j. vanalphen@lvnl.nl or via pa0ehg@wxs.nl
Telephone work 0031 204062231
Home 0031 172589349)
Best 73 Hans v Alphen PA0EHG

UK ACTIVITY NEWS

Peter Blair, G3LTF[100633.1656@compuserve.com]
sent in an interesting report including details of his 13cm equipment and results in the November 98 EME Contest…. I hope you chaps might find something of interest in here. (CWNR means" called with no reply ") During the EME microwave contest I had only 4 complete QSOs, (all except one were random) mainly due to the problems of working cross band . Calling people on their exact frequency +/- the differential doppler means they have a far greater chance of hearing you than when they have to tune on a different band with an inevitably higher frequency error.

On 7/11/98 I was on from 0030 to 0600 with a visual moon and consistent echoes and worked ZS6AXT and W5LUA. I got a T report from W4HHK who was 549 with me. I was heard by WA8WZG who had an intermittent problem and couldn't transmit at that time. CWNR were OH2AXH, OZ4MM. Heard were WA8WZG, IK6??? and OH2DG.

Later, on the second moon pass on the 7th , I worked OE9ERC and HB9SV and had a partial with F1ANH , I think we were both having trouble keeping the antennas on the moon as it was quite windy. He didn't get my final R's. CWNR were IK2RDI, OH2AXH,

F2TU. I got no initials which was disappointing but there are several people that I could work on skeds.

I was sorry not to hear anyone else calling on 2320. Several of the guys I heard have that capability for Eu tropo and I would have made some more QSOs.

My gear on 2320/2304 is as follows: 6 m dish,0.38 f/d, polar mounted with VE4MA feed . Pre-amp 0.46 dB NE32684, Tx power at the feed abt 50-60 watts (I have a 50m feedline!!). Sun noise is 20 dB with flux of 149 units. I'm happy to take skeds on 13cm any of the EME weekends +/- one week, work permitting.
73, Peter G3LTF

More **1.3GHz and 2.3GHz News** comes from **John, G3XDY (E.Anglia): [g3xdy@btinternet.com]**
Conditions were poor, particularly during Autumn when more tropo openings than we had during 1998 are normally expected. This is reflected in the lower number of QSOs on 1.3GHz this year (1998) compared with 1997.

2.3GHz was an interesting addition to the bands this year after a 7 year spell without an antenna for the band. My set-up on 2.3GHz is the FT736R on 144MHz, LMW transverter system, MGF0905 driver amplifier, and a 3CX100A5 valve PA using a cavity by K9EK, producing about 30W output. The 13cm antenna is a very corroded 44ele Loop Yagi at about 14m agl , with an MGF1402/NE64535 2 stage masthead preamp.

An opening on the evening of 16 December produced the best DX of the year on 2.3GHz, with F5HRY in JN18EQ at 384km at 59 both ways. This is a new square for me on 2.3GHz. Despite having a Christmas event that evening, I managed to squeeze in a few minutes to make 1.3GHz QSOs with F6DKW, F9OE, F5HRY in JN18, and DK5WO in JO30, plus F5AKK in IN87. The early morning of the 17th gave QSOs with DC9KU in JO30 and ON5NY JO10, not great DX but at least there was some activity!

Peter Blakeborough, G3PYB, moved works and home QTH to the **Portsmouth** area last year and has just recently got his home microwave station up and running. He emails the following report:
From: **[peterb@papine.demon.co.uk]**
The home station 3cm and 2m antennas are up. I can work G3GNR all the time on 3cm at 214km. Monday activity night (2 Feb) was quite busy to the west, I worked G3GNR. G4UVZ was quite weak on 3cm. CW signal conditions are not on the up even with the high pressure wx!

I tried to work Mike, G0JMI at Alton, but it is a most difficult path... into the hill. Mike is keen on 47GHz so expect we will progress some activity there. I can work G0API from home…. quite a good signal, not LOS, but quite workable on 200mW. I ran the TWT up on Sunday so once the WG switch is automatic I should have 12/15 watt back on the air.

The beacon at GB3SCX Purbeck Hill is always a good signal for me at 66km, part sea path, but it is obstructed,. It is most useful to have a beacon again.

I hope to work some more locals in the coming weeks and will try to give a regular signal from the coast in all contests this year. My home LOCATOR is IO90LU, Contest and /p activity is from Portsdown hill top at almost the same locator, IO 90LU05. I regularly look to the South East across the Channel, a clear take off but I have not heard the Paris beacons yet.
I listen on 144.390 and 144.175 most evenings on 133deg to Paris. Please telephone me at . +44 1705 374404 for tests. There is also an answering machine on that number. It's time to improve my poor French!

Now two long emails from Don, G3JHM (Hants) [d.hayter@virgin.net] cover activity just either side of the New Year ……..
Just been looking through the contest results and the tables for the past year and I have a few comments to make:

Many fixed stations are losing interest. Perhaps there should be a fixed section rather than lump the portable and fixed stations together. Even I, at a good QTH, can never compete with the winner even if he had only 10 mW. Having used Butser Hill for over 30 years, I know what can be achieved, similarly from Walbury, the second best qth in the South. Note that G3GNR/G4LDR/G4UVR/G3LQR/G4PBP and myself didn't enter.. nor did G0JMI who was active on the middle bands

I've been monitoring the Convers channel 10368- accessed via AX25 packet. Several G stations now monitor regularly and chat with the potential DX Contacts. G3GNR, G4UVZ and I can keep in touch, concurrent with tests on 3cm. I have sent my complete database list to DG7MR in Bavaria and hope to receive an update from him.

On most evenings there are several DL/OE/OK on the channel, all discussing 10/24GHz results and pleading with us for QRO tests - a little too far I fear for tropo scatter but possible under lift condx-Even Simon, G3LQR, wants these sq JN57/58/68 !!These stations are really active -look at the DX Cluster for their daily RESULTS – they really put the UK to shame!

On December 17/18 there were very good condx on UHF/Microwave bands. I heard DL0VC JO54IF 59+ on 432MHz for hours but didn't try higher. F6DWG, JN19, did and heard DL0VC 599+ on 10 GHz . Thursday morning around 0730. F6HPP also worked G4DDK and G3LQR giving them a new square (JN19PG)on 10 GHz. Conditions were also good to SW France/N Spain with 432MHz beacons 59 in East Anglia. G3LQR also wkd F5JKK IN87 on 1296 for a new

one.

At the Martlesham Round Table I managed to buy a matching head for my Automatic Noise meter which works with 30 or 144MHz IF up to 26GHz. I am only too pleased to help and make measurements if requested.

On Tuesday evening, 2nd February 1999, there was a very interesting opening E-W on 10GHz. The lower bands 2m/70cm were quite good in the early evening from here to S. Wales and Eire when Bob, G3GNR appeared on 2m. A quick qsy to 432MHz found him at 59++ and then then up to 10GHz. I couldn't believe it .. Bob was 599++ against the end stop on the FT290.!! I called Bob with my QRP 60 mW and he heard me at once, 53 for a 2-way. We then continued cross band duplex 432/10GHz just like a telephone link!.

Bob looked around but found no sign of the Taunton beacon although it is only 4 km north of the path to me. Also there was no sign of the Swansea or IOW beacons on 23 cms. A test between G3GNR and G3LQR was negative.

No other stations were active although the news was placed on the DX Cluster. For the next two days EA1VHF was heard here on 2m (Thursday 599 but no EA stations-I'm sure 10 GHz was also open!

Last Sunday (31 January 99), with a set of **24GHz gear** loaned by John, G8ACE, I worked him 53 both ways home qth-home qth, really in the gardens, using 150uW. Signals were 59++ with 250mW from G8ACE. We are now hoping to test the path between G3JHM and G3GNR and G3PYB Portsmouth to G3GNR on 24 GHz. Both paths will certainly go. All 3 stations hope to be qrv shortly from home, on demand, and NOT dependent on occasional /P operation -usually missing the openings!

(Many thanks for the detailed report Don ...editor)

From **Neil, G4BRK (Wilts) [nwhiting@lucent.com]** is an emailed report on the January Activity Day .....

Just a quick note on results yesterday (31 Jan). I was out until 16.30, but put in a bit of time after that. Very pleased to work G8ACE, G3FNQ, G3LRP, G4UVZ, G3GNR, G3VKV and G3KEU. Several of these were a bit marginal, especially G3GNR, where several attempts were made and help was needed from Adrian, G4UVZ, to get the exact frequency before signals were heard. Dennis, G3FNQ is usually a no go, so things may have been up a little to the North!

Editor's comment: Around a dozen stations came on for the January Activity Day. This was the greatest concentration of 10GHz activity all winter!

John, G8ACE (Hants) [hazell@cwcom.net] also report the January Activity Day with the following email….

G3JHM and I had a contact on 24G, qth to qth today 31st January. Not a vast distance at 21km but worth recording I suppose. Signals were 5&3 each way on barefoot DB6NT transverters, the equipment being at ground level, mine just about seeing over the fence from the back garden beaming toward Don with his equipment located in his front garden, also at ground level. There was rather more signal with Don when I put the 1/2 watt on!

Regarding 10GHz, there were very poor conditions, I did hear enough 2m stations on 144.175 to count on one hand!

John Tye, G4BYV (Norfolk) would be interested to hear from anyone who has used the splash back feed that is made by Procom for their 10 and 24GHz dishes. John is now on Packet and accessible via GB7TLH and GB7DJK. The 3cm gear is off the tower at the moment until the weather improves.

Paul, G8AYY (Birmingham) is our last contributor this month. On January 31 he operated from Barr beacon with his 10GHz portable gear. He worked G8UYR and G8SWZ, just 24km away but had gear problems that restricted results. Even though he lives in SE Birmingham, in a region of some 1.2 million population, he appears to be the only active 10GHz operator resident there! As a result he has to go /p to carry out any meaningful tests. His 10GHz gear is now as follows:

DDK004 –>WDG002 /WDG003 ->WDG006. A JNT001 module controls the system and he has provision for an external 10w TWT.

MICROWAVE LEAGUE AND SQUARES/DX TABLES

The final 1998 Microwave League Table appears on the next page. A 1999 League has now been opened and will appear as soon as there are a few entrants. Only G8AYY has submitted an entry to date!

The All Time Squares/DX Ladder is to be found on the back page.

Thanks to our reporters this month.. They are the keen, active types… we need more like them!

73 from Peter, G3PHO