



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

2000 – JUNE

Do you want the good news or the bad news first?

Well, the good news is that some new beacons should be active before very long. The Telford and District Amateur Radio Club are applying for permission to set up beacons on the 3.4, 5.7 and 24GHz band. You can read more on page 4 of this issue. Some months ago their committee voted to fund the beacons out of monies accumulated over the past few years. They have for many years held a highly successful rally and now wish to say thanks to everyone in this way. That is a fine gesture, one that could well be emulated by other clubs and groups. Microwave beacons are still needed in many other parts of the UK, particularly in the very north of England, in Scotland and Ireland. Offers to help in any way should be forwarded to the RSGB Microwave Committee and/or the UK Microwave Group.

The bad news is that regular amateur microwave activity is still low. The recent millimetre band contest shows how low it can get and how frustrating it becomes for the few that do take part. One wonders at times why people go to the trouble of building expensive, complex microwave equipment to have it gather dust on the shack shelf. We know there are lots of you out there so please reactivate yourselves and make the bands come alive!

Thanks to our contributors this month. We need more of you also!



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



G3PHO: Peter Day 0114 2816701
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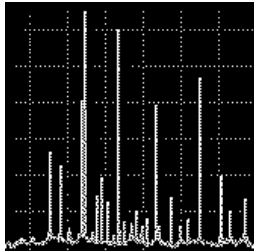


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SUBSCRIPTION ENQUIRIES SHOULD BE SENT TO RSGB HEADQUARTERS AT THE ADDRESS SHOWN AT THE TOP OF THIS PAGE AND NOT TO THE EDITOR ..



DIRECT DIGITAL SYNTHESIS FOR MICROWAVERS

~ by Andy Talbot, G4JNT
[ACTALBOT@dera.gov.uk]

I am in the process of producing a DDS module for the Analog Devices AD9850 and AD9851 devices. This will include an onboard PIC controller to translate simple text-based commands from a PC serial (COM) port to command words for the DDS chip to set frequency and phase. Non-volatile RAM will store a default switch on frequency.

The 45 x 54mm approx PCB will cost around £8.00. A bulk purchase of the DDS chips still has the price to be fixed but 3 years ago it was around £13 - it may be less or more by now though ! Mounting of the tiny 0.65mm pin spaced devices on the PCB may also be possible but for us SMT experienced constructors that shouldn't be a problem anyway.

The board is currently with the PCB manufacturer for delivery in about 3-4 weeks. HF Instruments (WWW.HF-INST.CO.UK) will be handling the sale of the PCB and chips so don't contact G4JNT about them.

The AD9850 will accept a clock input of up to 120MHz and generate an output from DC up to the 40MHz region in tiny steps (which to microwavers will appear to be general coverage). The AD9851 includes an on chip x6 multiplier which will allow an internal clock up to 180MHz with an input of 30MHz, and so give output frequencies up to 70MHz.

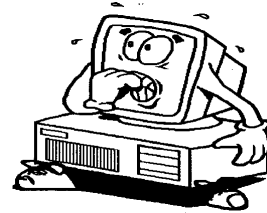
However, a very interesting aspect mentioned in the data sheet is the use of aliased products from the DDS to generate higher frequency components in the range above and below 180MHz by bandpass filtering the DDS output rather than low pass filtering. This means the all important microwave drive range of 90 - 120MHz is directly available allowing a continuously tuneable microwave source after multiplication by the 'DDK etc designs.

For full details of the DDS chips, see the Analog Devices web site at WWW.ANALOG.COM

Andy G4JNT

GREMLIN CORNER

It seems we make errors however much this newsletter is checked before going to press! Apologies are extended to all involved in the errata detailed below



24/47GHz CONTEST RESULTS: APRIL 2000

Apparently the entry from Dave Woodward, G0IVA/P was not included in last month's results table. The amended version is shown below:

		24GHz	47GHz
1)	G8IFT/P IO82QL	630	257
2)	G3FYX/P IO81XW	413	168 (Also 6 on 76GHz)
3)	G3PHO/P IO93AD,FB,FI	479	-
4)	G4BRK IO91DP	265	-
5)	G0IVA/P IO93AD	148	116

GETTING NEWCOMERS INTERESTED ...

The item under this heading on page 2 of last month's edition should have been attributed to Brian Coleman, G4NNS.

Correction to a Microwave Update '99 Article

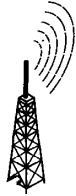
Kerry Banke, N6IZW has submitted a correction to his article in the Microwave Update '99 Proceedings that will be of interest to anyone who is planning to carry out the modifications in the article.

The article was titled "**A 10 GHz Dual Conversion High Side LO Transverter from Surplus Qualcomm Omni Tracks Units**", (page 127). A section of the modification was inadvertently omitted on retuning the X5 Multiplier stage which precedes the LO filter shown in Figure 5 on page 133. If this retuning is not performed, the LO power to the Tx and Rx mixers will be low, and performance will be degraded.

You can access the correction on the SBMS Web Pages at:

<http://www.ham-radio.com/sbms/sd/>

73 from Ed Munn, W6OYJ (edmunn@compuserve.com)



BEACON NEWS

GB3CCX still non-operational...

The latest news from G3FYX is that the Cleeve beacon has been handed over to the riggers but is still awaiting final installation. We earnestly hope that this is soon, as 'CCX has been sorely missed by a number of 10GHz operators!

GB3ZME is the callsign being sought for a new series of beacons that the Telford and District Amateur Radio club are sponsoring this year. A common keyer will be used for the beacons, which will be on the 5.7, 3.4 and 24GHz bands. Various DB6NT modules have been recently acquired. Readers will wish to join in with us in thanking the Telford group, via G3UKV and G8VZT/M5AFG, for their generosity in footing the bill for what will be extremely useful beacons from the West Midlands.

FOR SALE

Inmarsat Sat A transceiver

(1.5-1.6GHz). 25 watts output, Ifs 70MHz and 200MHz approx. Complete with 1.2m dish, dome and technical manual.

Offers and negotiation to Dean Last, GM4THP, tel: 01358 751742 (Scotland)

24 GHz LNA documents online

There are now two new documents on my webpage regarding the 24 GHz LNA project Tony and I completed last quarter. These documents are available at the following address:

<http://iacs5.ucsd.edu/~jkeyzer/projects.html>

The first is a zipfile of the final report we submitted. It is a rough draft but gives a good overall description of what we did and our results. There are several .emf files which are the full page figures included at the end of the report. These can be viewed/printed with **Irfanview** among other programs. Irfanview is available at:

<http://www.softwarecenter.net/irfanview/english.htm>

The second file is a Powerpoint presentation we gave to a research group here at UCSD. You need Microsoft PowerPoint 97 to view it. I believe there is also a free viewer available from Microsoft.

73 from

Jeff KF6PBP

Jeff Keyzer

UCSD EE Undergraduate

jkeyzer@ucsd.edu

A CASE OF THE SUMMER BLUES

Perhaps my reason for writing this is because I feel "dog rough" with a head full of cold and a throat like like emery paper but I've just got to let off steam!

It's now 10 a.m on June 10th, just a few hours away from the start of the June 24/47GHz contest. The past week has been spent emailing the millimetre lads and chatting on the 80m Microwave Net to find out just what their intentions are for Sunday. A couple of activity lists have been circulated as a result. You would think that, after spending a considerable amount of time and money on making equipment for these bands, most folk would be only too anxious to activate their gear that day. **Not so!**

I would estimate there must be around 20 UK stations with working 24GHz equipment. Not a lot I will agree but are half of them coming out on Sunday? **No way!** The support for the event can be counted on the fingers (not the thumb) of my left hand ...four stations! With numbers like that the word contest takes on a whole new meaning! It was the same in April.

All kinds of reasons have been offered for people's non-appearance. Several are indeed very valid ... away in Australia, just moved house, been away for weeks and must spend time with the family, gear rebuild not quite finished. All of these we must respect. However, there has been another excuse that has been floating around this week.... "Well, I don't think I'll bother 'cos it doesn't seem worth it as the others won't be on.." Now where is this attitude to going to get us? All it does is to start a "domino effect" that eventually results in hardly anyone coming on, with the end result that the activity levels on the 24 and 47GHz band fall to a level of that in 1000AD...ie none at all!

Apathy is a creeping disease that

finds its way into the minds of people without them realising it. It knows no age barriers; both young and old suffer from it. As a veteran microwaver I try to encourage newcomers to this exciting branch of our hobby but I'm beginning to find it very difficult to justify them spending their time and money. You see, in a few years time, there'll be no one to talk to on microwaves!

So folks, if you feel a little guilty of being a couch potato on Sunday, 11th June (or any other microwave Sunday) or are one of those who made a lot of noise about the contest programme at last year's microwave meetings but has not been heard on a microwave band since, please keep out of my way for a couple of weeks or so 'cos I still have that raging headache and sore throat and I ain't feeling friendly!

Mind you, I will be out portable tomorrow!

Yours most sincerely,
Peter

Stop Press....

It's 9.45 p.m Saturday and I've just had a 'phone call. Yes, you guessed right... one of the four I counted on my left hand has decided not to out! So now we're down to three ... reminds me of the "Ten Green Bottles Standing on the Wall" song.

Mind you, again, I will be out portable tomorrow!

Sunday 5pm ...

Back home after ONE contact! Thanks Martyn, you made my day.

“BOMBPROOF” ANTENNA SYSTEMS FOR PORTABLE MICROWAVES

~ Peter Day, G3PHO

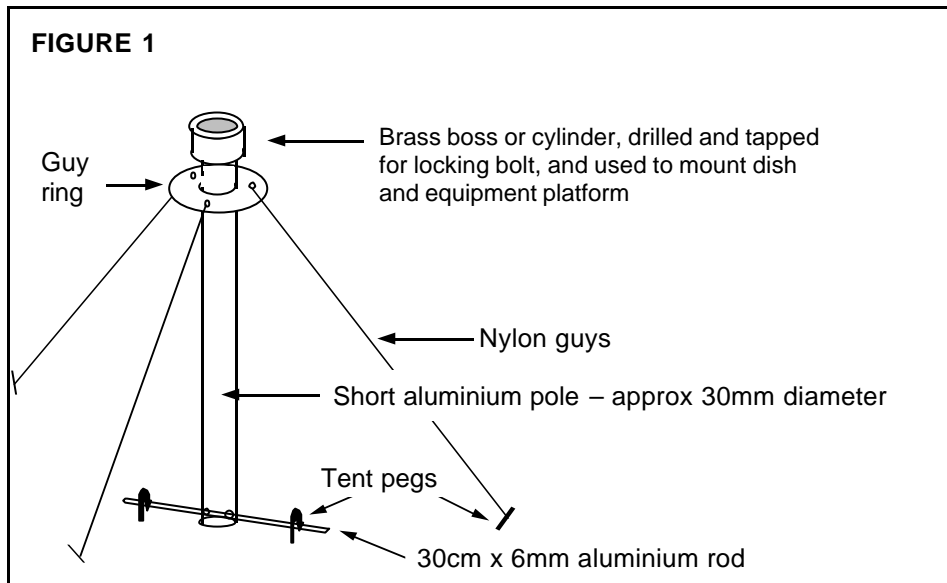
Have you ever had your microwave gear blow over in the wind when out portable? There can't be many portable operators who have not suffered in this way! Since ninety-nine percent of my microwave operating is out-of-doors (and has been for the past 25 years or so) I have gone through many different dish and yagi support systems. Some have been moderately successful but others have been downright disastrous! The aim of this article is to pass along some of the lessons I have learned over the years, in the hope that they may be of help to others. While these support systems refer to a van rather than a car, there is no reason why a smaller vehicle cannot be used in the manner to be described just scale down the masts!

While tripods are still the most widely used dish supports in portable microwave systems, they leave much to be desired, in spite of their obvious advantages of ease of setting up, light weight and compactness. Good tripods are hard to find and are very expensive when purchased new. Few operators own the superb ex-BBC/ITV outside broadcast tripods used by operators such as G0HNW and G3KEU. My National studio tripod, while very sturdy, is not really safe with dish diameters greater than 40cm or so. The present-day tendency is to use offset dishes of 60, 90 or even 100 centimetres diameter. These put a tremendous strain on the average tripod (often not much more than a large camera type). Wind loading, in even light breeze conditions, can be enough to cause the tripod legs to lift off the ground. Unless the tripod is securely guyed, stronger winds can easily tip the whole system over, causing the equipment to crash to the ground and be damaged in the process.

I have never really felt confident with tripod-mounted gear and so have tried a variety of other methods over the years. These have involved guyed masts, both short and tall and, more recently, guyless masts supported by the vehicle.

Guyed masts:

For lightweight, backpacking forays into the hills you can't beat a short length (say 1.5 metre or so) of aluminium tubing as a dish support. This can easily be guyed with three thin nylon cords and tent pegs. The base of the tube is drilled through to take a 60cm length of 5 or 6mm diameter aluminium rod which, in turn, is anchored to the ground with a couple of tent pegs. As this prevents the mast from turning, a dish-to-tripod rotating head mount needs to be fashioned to slip over or into the top of the short mast. A locking bolt tightens the antenna mount when the direction has been determined. **Figure 1** shows the essentials of the system. Of course the mast can be as high as you want it. The writer has used a 3 section, 4 metre mast, with a 48cm dish clamped at 1 metre and a small 144MHz yagi at the top. Such a system was used extensively in the days of 10GHz wideband portable when it was thought essential to get to the highest summits possible! There is still a need for this type of lightweight portable today, with the advent of 47GHz and 76GHz activity. These bands need all the help they can get so “the higher the better” still applies. Such a mast weighs very little and can be easily strapped onto the side of a rucksack, along with a small dish. For these “high altitude” operations the 144MHz talkback equipment need be nothing more than an FT290 or IC202. Provided the output power of the microwave station is in the order of milliwatts rather than watts the battery requirements can be met with Yuasa type “dryfit” batteries rather than the large leisure ones used with high power car-based operations.

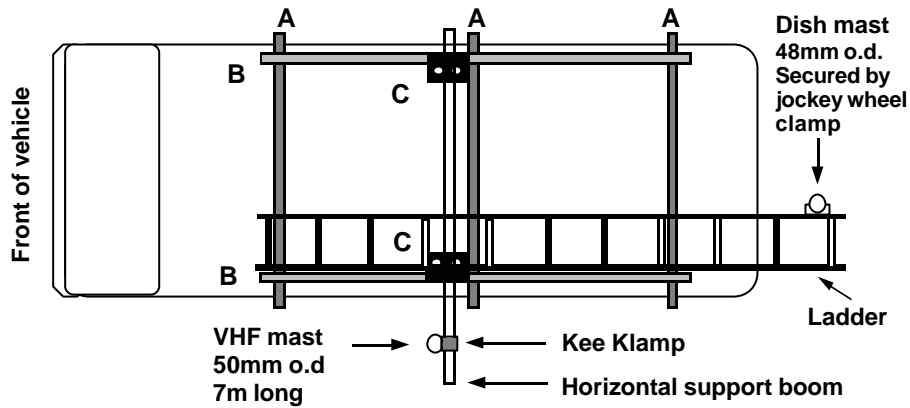


Vehicle supported masts

Over the past twenty years I have operated from a VW Campervan during the all-day microwave contests. This has the advantage of lots of storage room for equipment, a table-and-seat operating position and the satisfaction of remaining out of the wind and rain during bad weather. The idea of standing outside all day, by tripod mounted gear has never appealed to me, even though I am quite used to Scottish mountain winters! In February this year I acquired a new vehicle, a VW Transporter. It was a "bare" panel van when I received it from the dealer but I have since floored and carpeted it as well as lining the interior walls with fibreglass wool, plywood and carpet. Side windows were then fitted in the sliding door and the wall opposite. No rear seats have been fitted as this vehicle is for microwaves only! A small operating bench is bolted to the wall beneath the window.

I fitted three VW roof bars to the vehicle and added two further longitudinal, square-section bars down from the front to the rear roof bars, thus forming a very rigid frame (**Figure 2**). A metal plate, 19cm x 10cm, was then fitted midway along each longitudinal bar and drilled to take U-bolts for a 3 metre long, 50mm diameter, aluminium pipe that runs under the frame from one side of the vehicle to the other. This forms a horizontal support for a 7 metre, 2 section mast that holds the 8 element 2m beam for talkback. No guys are needed as the mast as it has 3mm thick walls and is approximately 50mm diameter. I cut it into two sections and use a joining sleeve for full height. If conditions are extremely windy I can always use just one section but things have not yet come to that! The vertical mast hinges on its support boom by means of a Kee Klamp, a 90 degree joiner used in scaffolding and barrier structures (**Photo 1**). The base of the VHF mast slots over an axle stand (I have two in my garage ... they are rarely used for car servicing!) to allow for easy rotation. The mast is locked into position by tightening the hexagonal bolt in the Kee Clamp.

Figure 2: showing roof bar structure and mast arrangements



- A: Roof bars (spaced approx. 1 metre apart)
- B: 20mm square section steel tubes, secured to roof bars with M6 bolts
- C: Mounting plates, drilled for 50mm U-bolts and secured with M6 bolts to square section tube

Photo 1: VHF mast and support

The mast in the foreground supports the 144MHz beam. A further Kee Klamp holds a turning handle at a suitable height. The 1.2m microwave dish antenna is **not** fixed to this mast as it is on a separate mast fixed to the ladder.

The microwave antenna mast is supported at the end of a short, 4metre ladder section which is clamped to the van roof bars. Here standard ladder clamps are employed. These allow a quick but secure attachment of the ladder to the roof bars. Around 1 metre of ladder projects beyond the back of the vehicle and a 3 metre high mast, consisting of 5mm wall aluminium, 48mm o.d., is attached to the side of the ladder, near the end rung. For this I use a caravan or trailer jockey wheel clamp, obtainable at low cost at any caravan spares supplier. The clamp is bolted to the outside of the ladder so that the ladder can still be used for climbing if need be. **Photo 2** shows the clamp in close-up. Note the sturdy locking handle and general rugged construction.





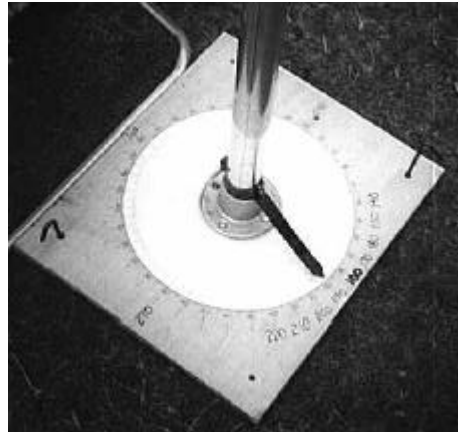
Photo 2: Microwave mast support

The jockey wheel clamp allows both a secure support for the 3 metre mast and a convenient means of locking the mast in position when dish headings have been set.

The mast stands in a further Kee Klamp fitting which is mounted on a wooden board upon which a 360 degree compass scale was carefully drawn and protected with clear varnish. The board is anchored to the ground by means of tent pegs pushed through holes in each corner (see **Photo 3**). A simple direction pointer was made from a strip of aluminium, painted black and clamped to the pole as shown.

Photo 3: Microwave base board

The 1.2m dish has a mounting ring and this is used to attach it to the top of the support mast such that the dish can rotate through a full 360 degree arc, above the van roof. The 10GHz transverter is carried on a small platform attached to the mast, just below and behind the dish. A short length of WG16 flexiguide transfers the RF to a "Chaparral" type feedhorn that came with the dish. Once the mast and dish are elevated into position and clamped to the ladder, the transverter is placed on its platform and secured with a couple of "bungies". A 3-way spirit level (local D.I.Y again!) is then strapped to the mast and everything is trued up.



With 5 watts of RF output, a 1.2m dish and a HEMT receiver front-end, I now find that I can work 400km or more on 10GHz with relative ease, if conditions are anything like normal. I have the distinct impression that the dish performs better at the new height of approximately 3 metres above ground. Plans are now afoot to use the same dish on 5.7GHz with my newly constructed DB6NT 6cm transverter.

With a "bombproof" antenna support system and a roomy vehicle, I can now confidently face anything the British weather throws at me (says he, with fingers crossed!). I hope other readers might find some of this information of use and that we might see more dedicated portable microwave operators out and about in the various activity days and contests.

HARDWARE RESOURCES:

4m ladder section: Local D.I.Y store. Look for light weight aluminium type,

Kee Klamps: Excellent catalogue (Fitting Manual) available from Beeley Fabrications Ltd.,
Niagara Road, Sheffield S6 1NH (Telephone 0114 234 3244 Fax 0114 2343063)

Roof Bars: VW main dealer. **20mm square section steel tube:** Local B&Q.

Dish mast (48mm o.d./5mm wall): Local scaffold supplier at £2 a foot.

VHF Mast (50mm o.d./3mm wall) and joining sleeve: Local TV antenna supplier at £1.25 a foot.

Jockey Wheel clamp: Local caravan suppliers. Approx £3.75 for large size.



Six Centimetres in two Days!

~ Peter Day, G3PHO

I don't know what it was that encouraged me to email Michael Kuhne, DB6NT for one of his 5.7GHz transverter kits but I'm very glad I did! I normally do my construction work during the winter months but, after improving my 24GHz system over the Christmas period with one of Michael's amplifiers, I received his latest catalogue. Inside was an ad for the "3rd Generation 5.7GHz Transverter". The Sterling/Deutsche Mark rate was at the very favourable rate of 3.3DM/£1 in early May so I took the plunge and bought a 6cm kit, the MKU57G2. The kit cost just £190. It arrived within a few days of ordering and it literally took only two days to build into its tinfoil box! A further day was spent making a suitable enclosure for the complete transverter (ie including c/o relay, metering and IC202 interface).

On opening the parcel from Kuhne Electronic, I was immediately impressed by the high standard of presentation. There were two plastic, compartmentalised cases containing the components. Each compartment was labelled with the component value. The construction manual is in English and the circuit, pcb layout and other diagrams, including photographs are beautifully presented. Most of the components are very small SMD types and are a very good test of one's eyesight!

The transverter is of singleboard construction on RO4003 substrate. The DB6NT catalogue guarantees an RF output of more than 200mW. I found it easily did that and much more. A receiver noise of 1dB is claimed but I have not had the opportunity to check this yet. I will have to wait for the next Martlesham (Astrakal Park) Microwave Round Table for that! The pc board is of excellent quality, gold flashed on the ground plane side and with plated-through ground connections from the circuit side. It fits into a tinfoil enclosure 33 x 55 x 150mm. SMA connectors are used for IF input and the separate antenna connections to RX and TX. Feedthroughs are used for the 12V DC input line, PTT, power monitor and the +12V output for external relay control. Everything is provided except for the external c/o relay at 5.7GHz.

As received from DB6NT, the transverter is configured for a 144MHz IF but, with some slight component changes, it can be used with a 432MHz IF. State which you want if you order the kit.

The circuit has an onboard Butler type local oscillator which I found to be very stable once the warm-up period had expired. The crystal uses a 40 degree PTC heater to make this period as short as possible. An external, high accuracy 117MHz source such as the DF9LN LO, can also be fed in if need be. The 117MHz is tripled in a BFR92A and then doubled in a BFP196 to 702MHz. A second BFP196 doubles again to 1404MHz and an MGF1902 quadrupler stage takes it to 5616MHz. Helical filters are used at 351MHz, 702MHz and 1404MHz to provide very good rejection of spurious. A microstrip edge coupled filter selects the 5616 signal to drive an ERA 2 MMIC to 5mW output.

The mixer is a single balanced diode type (BAT15-99 double array). Pin diode

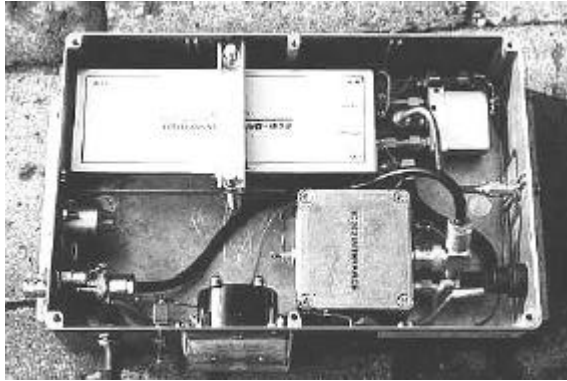
switching takes care of the TX/RX side of things apart from the antenna changeover, where a coax relay is required. The Receiver section uses a two stage HEMT amplifier (2 x NE32584C) followed by an ERA3. A Wilkinson divider couples this to the mixer. The Transmitter has two stages of MGF1902s after the Wilkinson divider to drive an MGF 1601 to over 200mW out. A simple power monitor using a BAT15-03W diode gives a good indication of RF out. Cavity filters are used to provide the necessary LO and image rejection for the RX and TX.

It had been some time since I had tackled a job of this nature, though in recent years I have been experimenting with SMT devices and smaller microwave modules such as the DB6NT 24GHz mixer and various WDG kits. Michael states in the manual that this kit is NOT a beginner's project and he is quite correct. However, anyone who has built up WDG and DDK modules in the past should have few, if any, problems. Essential equipment, in my view, is a temperature-controlled soldering iron (a Vann Draper SL20 in my case) with a fine tip, binocular headset magnifier (RadioSpares part no. 606-589 in my case) or large magnifying glass, a good pair of fine tip tweezers and good lighting! It goes without saying that modern surface mount components are very small and easily lost if allowed to snap out of your tweezers! Of course, you must also take the usual ESD precautions when handling the static sensitive devices.

The actual construction presented no problems. Before the active devices were installed the pcb was checked for soldering errors. The voltage regulators were then installed and checked for the correct output. Then the bipolar devices were fitted and voltages checked. The LO was checked against my frequency counter and adjusted to 117MHz. Finally, the GaAsFETs were installed and bias levels checked. After that the tune up was very straight forward since Michael provides clear instructions with relevant voltage levels for the various test points. The filters tuned up beautifully. No one was more surprised than I was when the marker from my Adret 5401 synthesiser/diode multiplier arrangement was heard very loud and clear at T9, bang on 5760.100MHz!

I use IC202s for my microwave IFs. Both have been modified to give 120mW out instead of the more usual 3 watts. Since the DB6NT kit comes with an IF input attenuator for a 3W input, I had to modify this to allow the lower input value to drive the unit. This meant reducing the 470 ohm resistor in the PI-attenuator to 100 ohms. The fitted variable 100 ohm pot could then be adjusted for correct IF drive to the mixer. The DB6NT transverter, as it stands, is configured to use an FT290 prime mover where +9 volts or so is present on the coax during transmit. This voltage switches a keying transistor into TX mode. I decided to leave the DB6NT intact and to make a simple two transistor keying interface for the IC202 so that, on pressing the microphone switch, the interface would ground the DB6NT PTT terminal, thus switching the module to TX. The IC202 has around +4.5 volts present on the coax inner on RX mode rather than the TX mode of the FT290. The interface was built into a small diecast box.

The tinplate box housing the transverter, the IC202 interface module and the microwave coaxial change-over relay were then installed into an Eddystone diecast box (220mm x 145mm x 55mm) which had been pre-drilled and sprayed with silver hammer finish paint. Switches, input and output connectors plus a meter to monitor both the 12 volt DC input and the TX RF output were also fitted. The photographs on this page show the details. The 12 volt change-over relay came from a Teletra 23GHz TX/RX unit.

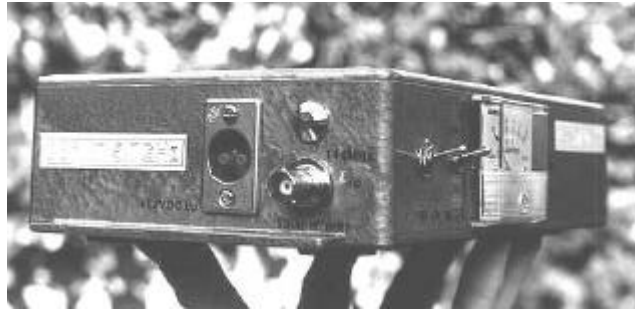


It is an excellent relay and, of course, is to some extent wasted at this lower frequency. However it is the only 12 volt DC one I have, the others being 28 volt Transco types. To keep the DC requirements simple I therefore treated the 5.7GHz transverter to a good relay! In any case it fitted across the SMA connectors on the outside of the tin plate box just perfectly! I used two male-male couplers here plus a short length of semi rigid coax to reach the

bulkhead mounted SMA output socket.

I can easily get over 300mW output from this transverter. At present I have a most inefficient antenna system for it A 60cm offset dish and a VE4MA type feedhorn which is totally unsuited to the f/D of the dish. As a result I doubt whether I am getting more than 20 to 22dB gain from the antenna. Nevertheless I have been very pleased with the results so far, with several stations worked, the best being G0HNNW/P at 265km.

I can thoroughly recommend the DB6NT 5.7GHz transverter to anyone contemplating getting going on this interesting microwave band. You can buy one ready made (and 8 watt PAs also) but you can save a lot of money and at the same time get an immense amount of pleasure by building up a kit. Similar singleboard transverter kits are available for the other microwave bands up to 10GHz. Congratulations to all at Kuhne Electronic for a fine piece of kit!



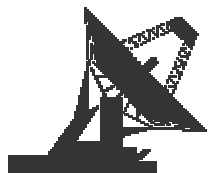
For further details and a catalogue, contact:

Kuhne Electronic, Birkenweg 15, D95119 NAILA/Holle, Germany

Telephone: 0049 9288 8232 **Fax:** 0049 9288 1768

E Mail: kuhne.db6nt@online.de

Website: <http://www.db6nt.com>



ACTIVITY NEWS FROM THE

Stop press!!! First UK 142GHz QSO?

From Sam Jewell, G4DDK's website
we quote this very interesting news
(and many thanks to Sam for letting
us use his "scoop"!)

17:12 4 June 2000

During their current visit to the UK, Dave, WW2R/G4FRE and Meg, G7FRE/N2NQI made what may be the UK's first 142GHz QSO. Using a pair of homebrew 142GHz transverters, Dave and Meg worked over a 1.28km path within JO01BK, Kent.

Dave was disappointed to be denied the first UK 76GHz QSO earlier this year, due to equipment failure by the UK station, so he was determined not to fail this time. Project Y, as it was known, was conceived as a well thought out attempt to make that QSO on 142.704GHz, SSB during his brief stay in the UK in June.!

Meg, operating from the shack of her father, Bert, G3AUA, QSO'd Dave who was situated on an overpass on the A2, using a transmit power of approximately 80uW, whilst Dave had the QRP 30 - 40uW rig. A full write up of the QSO and a description of the rigs will appear on Dave's web page www.flash.net/~g4fre/ww2r.htm in the next few weeks.

Many congratulations Dave ... Editor

MAY RSBG 432 UP AND 10GHZ TROPHY WEEKEND... LATE REPORTS:

Steve, G4KNZ, operated /P from the Suffolk coast, at JO02TD, on Saturday, from 3pm till 9.30pm, with all bands from 1.3GHz to 47GHz. There was some rainscatter on 10GHz, but otherwise conditions were probably around average. A few contacts were made on each band up to 24GHz (two on this band, best being G4LIP/P at 111km), but no stations were found to test with on 47GHz this time. Steve found that

trying to operate this many bands single-handed was quite inefficient and probably quite a few opportunities were lost due to lack of time. Perhaps it would have been better to concentrate on 3 or 4 of the bands. In the end, Steve did take 2m but only 3W and a small yagi - it was used a little - but most microwave contacts were made by starting on 70cm and working up through the bands. Also, being away, a huge storm which should have given interesting rainscatter over the home QTH (Bracknell) on Sunday was missed - there were still piles of hailstones unmelted the nearly a day later, Monday afternoon, and the front garden had been under up to 20cm of water, with the door mat having floated away!

From Ralph, G4ALY/P (Kit Hill, Cornwall)

Just a small point to correct your comment on the May Trophy contest. I actually worked G3FYX, G3JMY, G4LDR and G4MAP/P during the contest and had GDOEMG 539 but he only could just make out my train of dots and therefore no confirmed contact. Before the contest started I worked GOHNNW/P AT 1333z.

From: John Tye [g4byv@woodgate73.freeserve.co.uk]

I worked two 3cm stations on rainscatter phone during the May Trophy weekend: DK0FLT in FJ at 730Km almost T9 and DH6FAE/P in EK ... both RS55. I heard a lot more on the key!

From: Martyn, G3UKV, Shropshire, [ukv@globalnet.co.uk]

For the early May microwave contest, we had the following QSOs, but no real DX on any band!
Location Brown Clee IO82QL
432 MHz 23 QSOs,
1296MHz 22 QSOs,
2320MHz 7,
3400MHz 3,
5760MHz 4,
10368 34 QSOs (32 within the Trophy hours),
24GHz 1 one-way QSO. Receiver duff. Hope it

MAY 10GHz CUMULATIVE REPORTS ...

The first of the Millenium 10GHz cumulatives took place on May 28th with at least 35 operators active. This made for an interesting day, especially as three French stations were participating and there were some excellent rain showers (which should have produced lots of RS signals but somehow never quite made the grade!)

From Paul, G6UAI/P (Walbury, IO91GI):

I really enjoyed the event and was happy to work F for the first time on 3cm, as well as increase my best DX to 389km. I did not make much use of the available rain scatter, as only my last contact was via this mode. Activity was good, apart from a distinct lack of signals from East Anglia!! I tried 6 or 7 times with EI2AK, with Dermot hearing my rain scattered signal at S5 for a short period at about 15:15 (just after I had completed with G4MAP!!).

Peter, G3PHO/P (Butser Hill, IO90MX24)

drove 220 miles south of his usual haunts to spend a great weekend with G3PYB. While their ladies explored the local hills and valleys, the lads spent a fascinating Sunday on Butser Hill. One thing was immediately apparent to Peter and that was how few Northern stations were available! Only two, G0HNNW/P and G3LRP, were heard and worked from north of the Trent! Most of the rest were mere locals in comparison. In spite of frequent checking, no beacons were heard at all! However, among the 27 stations worked were F6APE (IN97QI, 405km) and F6DKW (JN18CS, 335km), Peter's first F contacts. Other good contacts over 200km included G3GNR (IO7OWT) and G4ALY/P (IO7OUM). Interestingly the very obvious rainstorms brought little in the way of rainscatter contacts. As they passed overhead and continued out across the Channel towards ON and PA, one might have expected a few contacts in that direction but it seems no one was on the alert. The 27 stations produced a total score of over 3600 points, around 135km per QSO, well down on the 175km/QSO rate habitually achieved from Peter's Northern sites, with fewer contacts.

John, G0API (IO80XS, Dorset) emailed the following report: I had 22, two-way contacts, in

7 Squares. The best DX was G3LRP (IO93HO) who called me direct on 10GHz following a CQ on the key - 5/7 & 5/9 reports were exchanged on SSB. This contact was during mid-afternoon, during periods of heavy rain and hail. I had a total of 8 identifiable contacts due to varying degrees of rainscatter.

Heard for first time ever, at 1540, was beacon GB3CEM (IO82W) in Wolverhampton – peaking at 549 and audible for several hours with spread beamwidth. The frequency, as detected, was 10kHz above GB3KBQ so looks like it is very close to its listed nominal 10368.880 MHz. During the last 7 years I have now heard 7 UK and 1 PA beacon from this fixed location.

Also new to me on 10GHz were stations G6UAI/P at Walbury . G4MAP(easy copy on 10GHz - poor on 144MHz)and G3LTF/P (handheld in his back garden?). Very strong S9+40db reports were received from Ted G3JMY over the normally scattered path to Bristol. Dish elevation, after optimising azimuth heading, had the effect of reducing the phase distortion almost to zero and at the same time peaking up the signal. Maybe it was an elevated, solid hail reflector near mid-path.

During the several hailstorms the 144MHz rig S meter climbed to mid scale due to charge build-up.

I did not raise my mast to its full 12m height in the morning due to strong wind gusts but did so during afternoon, about 5 minutes before the first clap of thunder and a lightening bolt splat was heard on 144MHz. My station survived the experience and I cannot say if some of the enhanced signals were due to localised ionisation, post strike. Signals from Northern stations such as G0HNNW /P were much stronger during the afternoon rain phase, with several repeat contacts to say the CQ calls were propagating in that direction.

Steve, G1MPW/P operated from Tatsfield (IO91XH)

during the cumulative contest, sporting a new surveyor's tripod and offset fed 60cm dish. He is using the G3PHO dual mode horn and is very pleased with the results. He is now finding, like many of us already, that the main limitation factor is the 144MHz talkback. He is limited to what he can backpack as his choice of drive-on sites is limited. During the contest he worked 10 stations, with G0HNNW/P for best DX

at 254km. Steve's equipment includes a WDG 10GHz system and 1 watt output.

the spectrum analyser at first.

JUNE MILLIMETRE BAND CONTEST REPORTS:

From Steve, G4KNZ: In planning a site, I thought I might have expected to work maybe eight stations on 24G from somewhere like Broadway (FYX, HNW, BRK, MRF, UYM, IFT, PHO, UKV). Well, by late last week, activity had dwindled down to half, with 4 of the above having already announced they would not be out. Still, I thought it would be worthwhile, and perhaps I could operate for just the morning, with time to do something else with the family from mid-afternoon onwards.

By late Saturday, with the gear mostly loaded in the car, I discovered my original list of eight was down to two stations, and it was with some reluctance I decided to pull out as well. Instead, we went to Wisley, to look at the gardens. With days out on the radio somewhat limited, due to work & family commitments, I thought instead I would be better taking the 24/47GHz out some other day, when there was better prospect of contacts. Just possibly this might be 25th June, but not sure yet.

It seems the low activity was a combination of other events (Elvaston rally, Crawley round table) and a few people having other reasons not to be out.

Please don't suggest changes to the contest calendar based on the problems of just one day!

Regards, Steve.

From Peter, G3PHO/P Alport Height (IO93FB):

This was a non-event and must surely be the all-time low for the millimetre bands. However I was pleased to give Martyn, G3UKV his first contact on 24GHz with his new gear. He was S9+30dB over the 88km path to the Wrekin. My own 24GHz gear worked well this time. After it suffered from an attack of the LO jitters in April, I decided to change to a DF9LN OCXO. This now drives the G4DDK004 multiplier. The original DDK 100.2MHz xtal is removed and the 1mW from the DF9LN is fed in to the emitter of the first transistor. Care was needed in final alignment undesirable "sprogies" were seen on

EXPEDITION TO IRELAND

From: Martyn, G3UKV, Shropshire, [ukv@globalnet.co.uk] comes further news of the G3ZME/P summer expedition to Ireland (EI):

We should be on site for the evening of Friday, 28th July. We have two possible sites - hopefully IO63UE but otherwise IO63VD, just to the east, where apparently access is a bit rough. We should have with us 10, 24 and 47GHz, assuming Dave G8VZT/M5AFG is fit enough to come, otherwise no 47GHz.

Talkback will be on 144.175MHz and also via the UK Microwave Net each morning (including Sunday) on 3.625MHz from about 8am local time. Our mobile phone number is 07932 927887 (does it work over there?.. I think so) every day, with mailbox.

We should be operational until Monday evening 31 July. Skeds are very welcome.

My home 'phone number 01952 255416.

**Email: ukv@globalnet.co.uk
73 from Martyn (G3UKV)**

NEXT MICROWAVE CONTEST 25th JUNE 2000

ALL BANDS 1.2-76GHz

**Try to come on at least ONE
band this time!**

