Gigatec amplifiers

By Ken Vickers, G3YKI
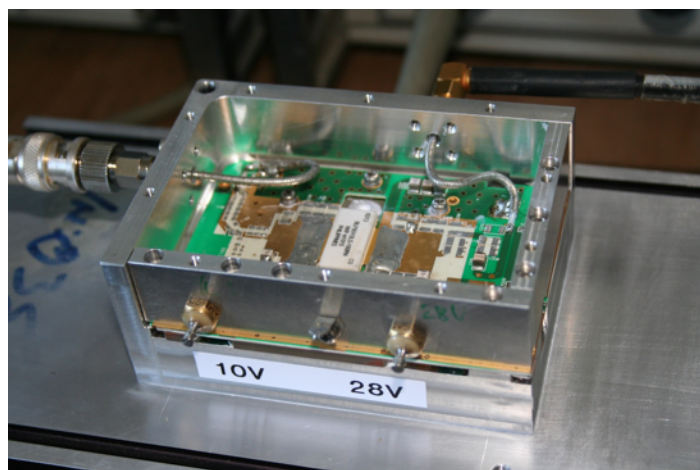
In this Issue

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UKµG WIKI https://wiki.microwavers.org.uk/

RAL MRT 17 June 2018: Microwave Digital ATV Made Easy by Dave, G8GKQ Slides

MMRT 15 April 2018: ATV on 5.6, 10 and 24 GHz Presented at MMRT 2018 by Dave, G8GKQ Slides

See also page 17

Subscription Information

The following subscription rates apply.

UK £6. 00   US $12. 00   Europe €10. 00

This basic sum is for **UKuG membership**. For this you receive Scatterpoint for **FREE** by electronic means (now internet only) via

https://groups.io/g/Scatterpoint/files and/or Dropbox. Also, **free access to the Chip Bank**.

Please make sure that you pay the stated amounts when you renew your subs next time. If the amount is not correct your subs will be allocated on a pro-rata basis and you could miss out on a newsletter or two!

You will have to make a quick check with the membership secretary if you have forgotten the renewal date. Please try to renew in good time so that continuity of newsletter issues is maintained. Put a **renewal date reminder** somewhere prominent in your shack.

Please also note the payment methods and be meticulous with PayPal and cheque details.

PLEASE QUOTE YOUR CALLSIGN!

Payment can be made by: PayPal to

ukug@microwavers. org

or a cheque (drawn on a UK bank) payable to 'UK Microwave Group' and sent to the membership secretary (or, as a last resort, by cash sent to the Treasurer!)

Articles for Scatterpoint

News, views and articles for this newsletter are always welcome.

Please send them to

editor@microwavers.org

The CLOSING date is the FIRST day of the month

if you want your material to be published in the next issue.

Please submit your articles in any of the following formats:

Text: txt, rtf, rtfd, doc, docx, odt, Pages

Spreadsheets: Excel, OpenOffice, Numbers

Images: tiff, png, jpg

Schematics: sch (Eagle preferred)

I can extract text and pictures from pdf files but tables can be a bit of a problem so please send these as separate files in one of the above formats.

Thank you for you co-operation.

Martin G8BHC

Reproducing articles from Scatterpoint

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You may not reproduce articles for profit or other commercial purpose.

You may not publish Scatterpoint on a website or other document server.

UKµG Project support

The UK Microwave Group is pleased to encourage and support microwave projects such as Beacons, Synthesiser development, etc. Collectively UKuG has a considerable pool of knowledge and experience available, and now we can financially support worthy projects to a modest degree.

Note that this is essentially a small scale grant scheme, based on 'cash-on-results'. We are unable to provide ongoing financial support for running costs – it is important that such issues are understood at the early stages along with site clearances/licensing, etc.

The application form has a number of guidance tips on it – or just ask us if in doubt! In summary:-

- Please apply in advance of your project
- We effectively reimburse costs - cash on results (eg Beacon on air)
- We regret we are unable to support running costs

Application forms below should be submitted to the UKuG Secretary, after which they are reviewed/agreed by the committee

www.microwavers. org/proj-support. htm

UKµG Technical support

One of the great things about our hobby is the idea that we give our time freely to help and encourage others, and within the UKuG there are a number of people who are prepared to (within sensible limits!) share their knowledge and, what is more important, test equipment. Our friends in America refer to such amateurs as "Elmers" but that term tends to remind me too much of that rather bumbling nemesis of Bugs Bunny, Elmer Fudd, so let's call them Tech Support volunteers.

While this is described as a "service to members" it is not a "right of membership!"

Please understand that you, as a user of this service, must expect to fit in with the timetable and lives of the volunteers. Without a doubt, the best way to make people withdraw the service is to

hassle them and complain if they cannot fit in with YOUR timetable!

Please remember that a service like our support people can provide would cost lots of money per hour professionally and it's costing you nothing and will probably include tea and biscuits!

If anyone would like to step forward and volunteer, especially in the regions where we have no representative, please email john@g4bao.com

The current list is available at

www.microwavers. org/tech-support. htm

New Tech support needed in Wales as Chris (now G4DGU) has moved to Cornwall.

UKµG Chip Bank – A free service for members

By Mike Scott, G3LYP

Non members can join the UKuG by following the non-members link on the same page and members will be able to email Mike with requests for components. All will be subject to availability, and a listing of a component on the site will not be a guarantee of availability of that component.

The service is run as a free benefit to all members and the UK Microwave Group will pick up the cost of packaging and postage, that is, Jiffy bags, small plastic bags for individual component values, and Large letter 2nd class postage, currently 76p.

Minimum quantity of small components supplied is 10.

The service may be withdrawn at the discretion of the committee if abuse such as reselling of components is suspected. We have asked Mike to

check with the Chairman (or designated officer) if any individual is making excessive requests, and we will ensure that the service is only available to members.

There is an order form on the website with an address label which will slightly reduce what I have to do in dealing with orders so please could you use it.

Also, as many of the components are from unknown sources, if you have the facility to check the value, particularly unmarked items such as capacitors, do so, and let me know if any items have been mislabelled.

The catalogue is on the UKµG web site at www.microwavers. org/chipbank. htm

The Nort Synthesized Local oscillator

Dave Crump, G8GKQ

Introduction

The Nort Synthesized Local oscillator (SLO) runs in the 10 - 14 GHz range and is good for 24 GHz use and useable at 76 GHz. With some modifications the phase noise performance is good enough for QPSK DVB-S DATV at 24 GHz. Output power is in the region of 14 dBm.

Manufacturer's Data Sheet

Circuit Diagram

VK5TX Information

IZ1RFE Information

Description

These units use a 20 MHz TCXO and an ADF4153 to control a VCO running at about 3 GHz. This is multiplied by 4, filtered and amplified to achieve about 14 dBm output at 12 GHz. The nominal supply voltage is 12 volts at about 250 mA and the ADF4153 synthesizer needs to be externally programmed through a 3v3 spi connection. The unit runs very hot to the touch.

External connections are through a 2.5mm pitch SPOX header. Pin connections:

Pin	Connection
1	spi CLK (3v3)
2	spi DATA (3v3)
3	spi LE (3v3)
4	Lock indication
5	Ground
6	+12 V

Frequency Range

The LOs are supplied for a variety of frequency ranges and typically can be programmed over a 500 MHz range (at the output frequency). Without programming, the LO runs near the bottom end of the frequency range; so for an 11.8 GHz output, free running at about 11.6 GHz is desirable - this would also allow the LO to be programmed as a marker at 12024 GHz.

After removing the case top (by removing all the case fixing screws, and the 2 SMA screws on the opposite side to the VCO adjustment screw), the frequency range can be modified by snowflaking the inverted U-bend that can be seen on the VCO PCB inductor below. The inductor is earthed, so the snowflake can be moved using an earthed soldering iron while the oscillator is running and being measured. The snowflake positioning is very critical.

It was not found necessary to modify the output filters for small output frequency changes.

Programming

The ADF4153 Datasheet defines the commands required for programming the VCO. For experimentation, the unit can be programmed from Raspberry Pi, where it is easy to change the settings. This Python program can be used File:VCO.zip. Once the optimum settings have been found, a simple PIC can be set to program the unit on boot-up.

The unit needs 6 24-bit commands sent in sequence to program it:

Command	Role
Register 3	Write all zeros to the noise and spur register
Register 3	Select the noise and spur mode required
Register 2	Enable counter reset
Register 1	Load the R divider register
Register 0	Load the N divider register
Register 2	Disable the counter reset

An example set of codes (for 11805 MHz) is: R3 0x000003, R3 0x0003C7, R2 0x001BC6 R1 0x144281, R0 0x1241F4, R2 0x001BC2. For 12024 MHz, use the codes: R3 0x000003, R3 0x0003C7, R2 0x001BC6 R1 0x144281, R0 0x12C060, R2 0x001BC2.

A simple PIC PCB for programming ADF synthesizers has been designed by G7DOE. It was described in CQ-TV 253 (pp 9 - 12) and further details are here BATC Wiki. This assembler program for the 12F629 will program the Nort LO on one of 4 switch-selected frequencies File:ADF4153-Nortradio.zip. The program actually sends 32-bit words (to allow it to be used with other synthesizers), but setting the first 8 bits of each word to zero allows compatibility with the ADF4153.

Reducing Phase Noise

The phase noise as supplied is too high for QPSK DATV use at 24 GHz. There are 3 steps that can be taken to reduce it:

1. Program the ADF4153 to use the reference frequency doubler
2. Program the ADF4153 to use the maximum possible charge pump current
3. Reduce the noise on the power supply to the VCO

To reduce the noise on the power supply to the VCO, extra smoothing capacitors can be fitted. The higher the value the better, but there is a limit on what can be fitted inside the casing.

To fit extra capacitors, remove all the case fixing screws, and the 2 SMA screws on the opposite side to the VCO adjustment screw. This will allow you to lift the top of the case off.

Remove the existing VCO smoothing capacitor C7 (seen in the photo below about half-way between the VCO inductor and the ADF4153), and replace it with a low-ESR 22uf ceramic. Then find the largest surface mount capacitor that will fit in the case, and using thin wires, wire it in parallel with C7. 220 uf is adequate, but improvements could be gained by fitting anything up to 3300 uf - although clearly that is impractical.
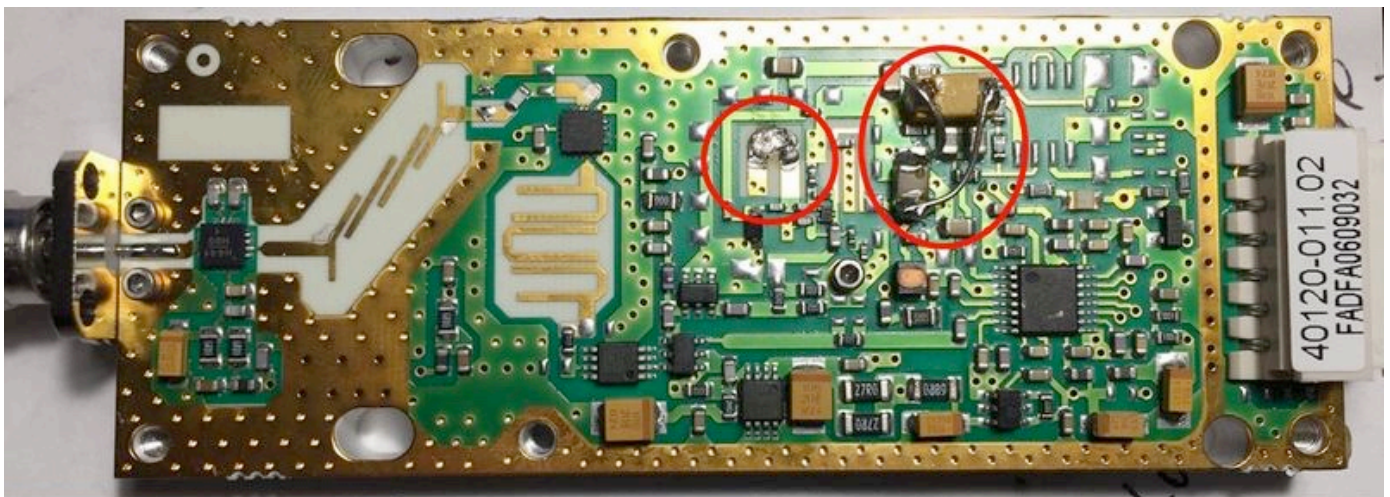
Stability

Initial indications are that the frequency stability is good. Drift during warm-up seemed to be less than 10 kHz when used at 24 GHz. No attempt has yet been made to frequency lock the reference.

Doubling to 24 GHz

Using a Franco 24 GHz doubler (details here - scroll down to Page 11), built from a cheap surplus board, 7dBm at 24 GHz can easily be achieved.

This month I've been mostly...

AKA Chairman's Thoughts

Sam Jewell G4DDK

The shack refurbishment continues, with new insulation added to the shack walls and the floor is now 50mm Celotex overlaid with chipboard. Four layers of Ronseal floor paint completes the job!

New racking, B&Q galvanised, has allowed me to sensibly store much of the stuff that is still required, whilst my trips to the local tip seem to have increased recently, with a great many items that might have been regarded as useful a few years back, now disposed of. The expression, often heard at rallies, '"that might be useful" now fills me with dread!

All of this is to allow me to operate from the outdoor shack through the winter. Moving equipment back to the indoor shack-cum-office has proven to be too disruptive with it often taking weeks to get everything back working again after moving back out in the spring.

Operating wise, the EME dish is now back in use and I have been on 9cm. During the recent DUBUS 9cm EME contest I was in listen-only mode and was suprised at just how much activity there can be on that band from Europe and the USA. I didn't hear anyone from any of the other continents.

By the time this appears the 23cm feed will be back on the dish.

EME2018 is just a few weeks away and my thoughts have turned to getting my talk ready for the Conference. I will be doing the same talk at the RSGB Convention in October.

Photons, Electrons & Waves

From Graham G3YJR

This month I have mostly been fitting a camera next to the dish so that I can see where it is beaming. I can now see when it is beaming into a tree or I can aim at the ridge tiles on Mulehouse road to attempt diffraction to the SW or tweak the elevation for RS into tall thunderclouds to the south.

I've also built a battery-saving device for the car which switches off the supply to my gadgets before my battery gets too low to start the car. It uses a Chinese module.

On-Air activity:

23cm UKAC - I managed 25 contacts, all within the UK. My best DX was Jon GM4JTJ.

https://g3yjr.wordpress.com/2018/06/19/23cm-ukac-19-june-2018/

3cm UK uW Group contest - I managed a few contacts, Nick G4KUX being my best DX.

Peter G3PHO and I finally found a weak reflection for a contact. We were both beaming towards Maurice F6DKW.

https://g3yjr.wordpress.com/2018/06/24/3cm-uk-microwave-group-contest/

SHF UKAC - on 3cm, a call on CW to Kjeld OZ1FF resulted in him calling me back 59 on SSB! I managed 3 other OZs, the best DX being Anders OZ3Z at 786 km. On 13cm I could just hear Jon GM4JTJ, but too weak for my 2W to work. I did work my first continental station on this band: Frank PE1EWR on CW at 405 km.

The good tropo conditions have continued into July & I have often heard DB0GHZ on 3cm recently.

DATV & 10GHz loan kit

From John G4BAO

This month I have been mostly - Looking after my XYL who's just got a new hip joint!....

But..... I have managed to build and get a Minitiouner DATV receiver and software running so I can look at the 23cm GB3PV testcard 24/7 (yep, there's zero activity!)

Also with some excellent help from G4GUO and G0MJW, I now have the DATV express DATV transmit software running on my Lime SDR so I can TX DATV. Now I need to build some RF power and switchery so I can do some proper DATV tests. Any band from 144 up. Anyone in range and interested?

I've also built and am about to test the new UKuG 10GHz loan transverter system that should be available in August to the next person on the waiting list.

Had a little "run-out" on 23cms with G3PYE in VHF NFD but no real transmitting activity other than that apart from the final half hour of July 23cm UKAC.

Next month I'm off to EME2018 in the Netherlands. - It's all "go" as usual

Crawley Round table

This will be held on Saturday 9 September at the Crawley radio club, meeting held at

> Hut 18 Tilgate Drive
> Crawley West Sussex RH10 5HW
> Not Far from Peas Pottage, turn off at end of M23

Doors open 9-30 am

Rolls tea and coffee as always

Morning: Table top sales and nattering. Judging construction competition

Afternoon: A couple of talks

We want to try and get a varied programme of talks so we are open to suggestions and preferably volunteers. Offers to drm108@rsgb.org.uk More info at https://crawleyuwavert.blogspot.co.uk

Denis G0OLX

GMRT 2018 Call for Presentations

Image source: www.gmroundtable.org.uk

The Scottish Round Table will be held on Saturday 3 November 2018.

Details of accommodation, transport and other activities can be found at www.gmroundtable.org.uk

As a departure from previous practice the organisers thought it would be good to have a call for presentations from attendees. In previous years the programme of talks has been assembled by the organisers and was restricted in scope by their knowledge of what people were working on. Do you have a project that would be of interest to the audience? If so why not do a talk about it!

Presentations generally last 30 to 40 minutes and typically would be accompanied by a set of Powerpoint slides. Topics can vary widely but should be microwave related. They could range cover a very wide range of topics such as a review of some commercial kit, modification of surplus gear, test gear, propagation, beacons, software for microwaves, microwave operating, microwave SDRs, antennas, how to get on a new band, microwave construction techniques. The list goes on.

If you are interested please email Brian Flynn, GM8BJF (brian dot flynn at tiscali dot co dot uk) with a title and a very brief outline of your topic.

Gigatec Amplifiers

Ken Vickers, G3YKI

Some of the attendees at Martlesham this year went home with Gigatec power amplifiers for the 700 MHz band, which were being distributed in return for a small donation. While obviously quite complex amplifiers, it seemed possible that one of the devices could be re-purposed for 23cm use.

The device, BLF6G10-160 according to the data sheet is 160W device for 700 to 1000MHz (at 32V). As there are many devices specified for narrower operating bands which have been successfully used on 23 cm this seemed promising.
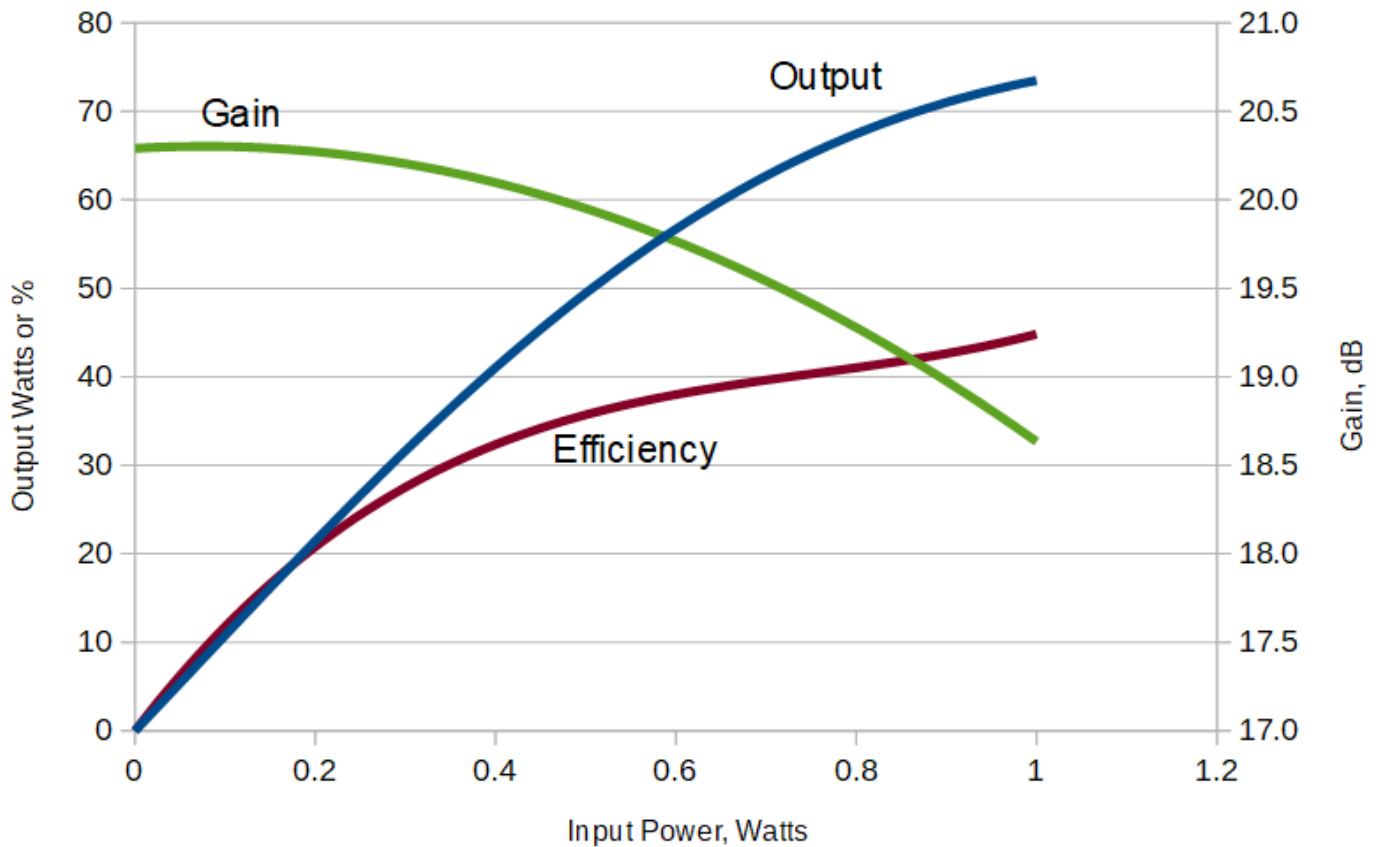
Mechanical

The device is mounted in one corner of the PCB in its own screened compartment. I removed the board and cut out the appropriate part. The transistor is soldered to a copper heat spreader below the PCB. The aluminium chassis was cut down to 95×65mm. The lengthwise screening bar and the lid can be cut to match, and the parts reassembled to make much more compact box. The input and output connections to this stage were both by coaxial cables approaching the PCB from below. New connections were easily made to the top of the board, removing solder resist if necessary to attach the outer of the coax.

Bias

I was not able to identify the device or function of the 6-pin Q211 in the bias circuit, however 9 or 10 volts applied to C221 provides the required gate voltage, adjustable by the small trimmer VR211 on the board as long as the middle one of the 3 tracks connecting the bias circuitry to the controller is grounded.

Matching

I started by removing all the existing matching capacitors apart from the trimmer near the input. (Because of the copper heat spreader below the board, a fairly hot iron is required for adding or removing the capacitors.) At the testing stage the trimmer seemed only to have a negative effect so it was removed as well. I have four matching capacitors fitted, 3.0 and 6.8 pF on the output, 4.7 and 1.5 pF on the input. Their locations are marked on the photo. The ATC type capacitors were recovered from the other parts of the unit. Obviously, as I have only one unit, I do not know whether they are all identical, or will respond to modification in exactly the same way. No changes were made to the PCB tracks or DC feeds to the transistor.
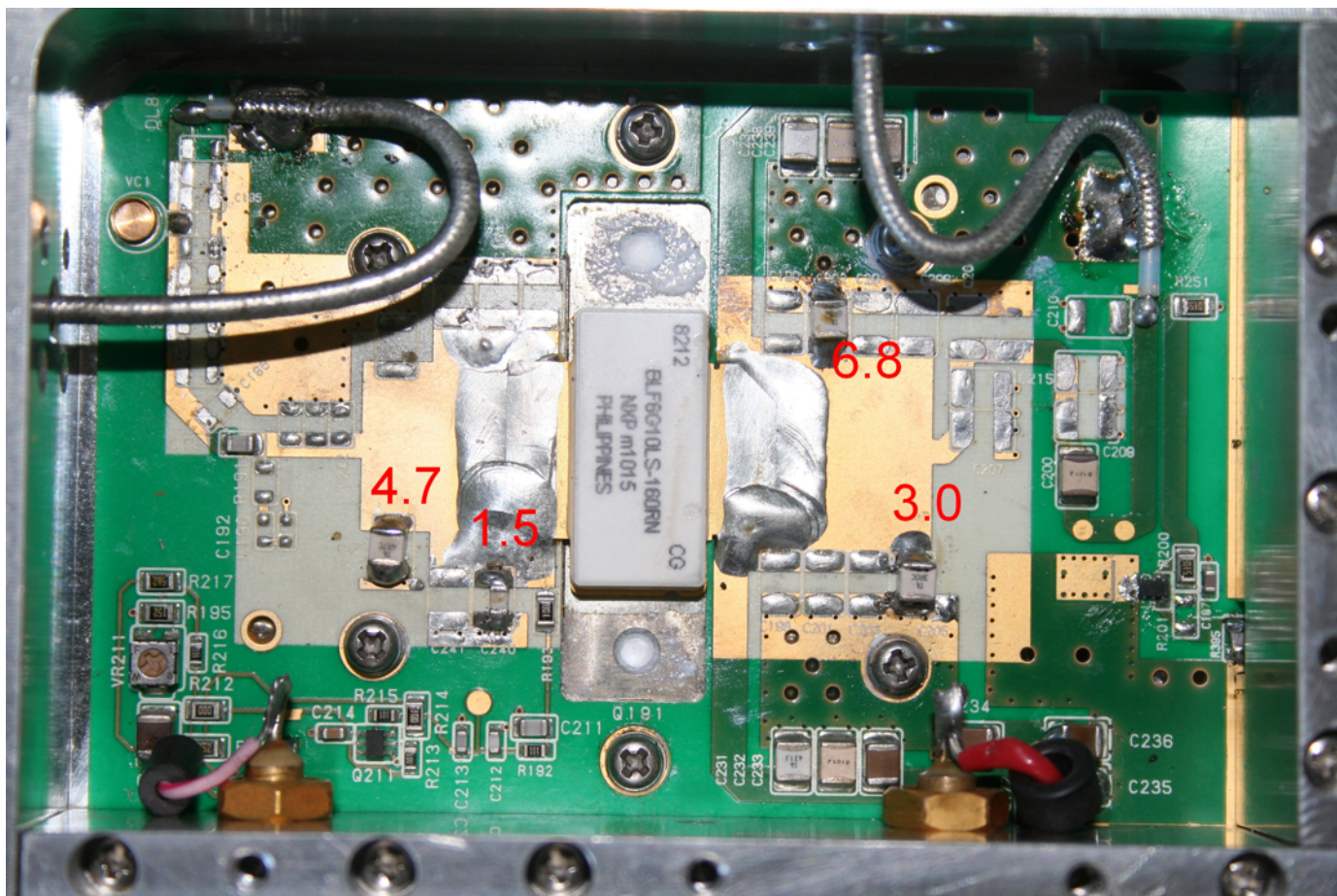
Results

Measured results (on my unverified test equipment) are summarised in the graph and correspond reasonably well to the CW figures in the data sheet. Tests were done with 28 volts on the drain. No further attempts to optimise the amplifier have been made, so there is probably some scope to increase the output power especially if you want to use 32 volt supply. From a 13.8 volt supply at 3.5A, 20W output is available for 0.6W input.

An amplifier such as this would be ideal for users who have started on 23 cm with the low cost 2W transverters recently available, and want to step up to 50 or 70W. With fairly simple modifications, albeit starting with some serious hacksawing, you will have a unit which is comparable with a 399 euro product from Germany.
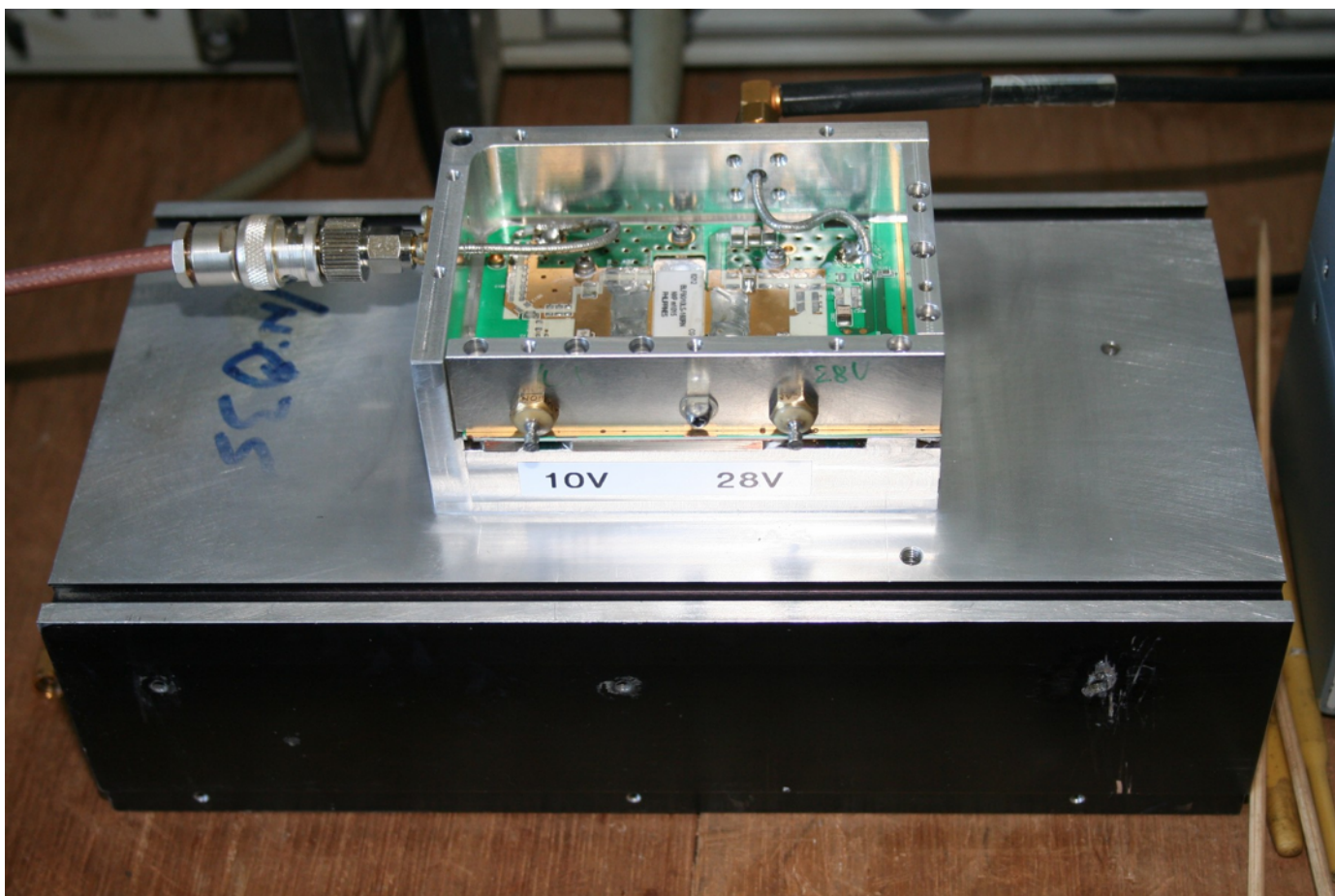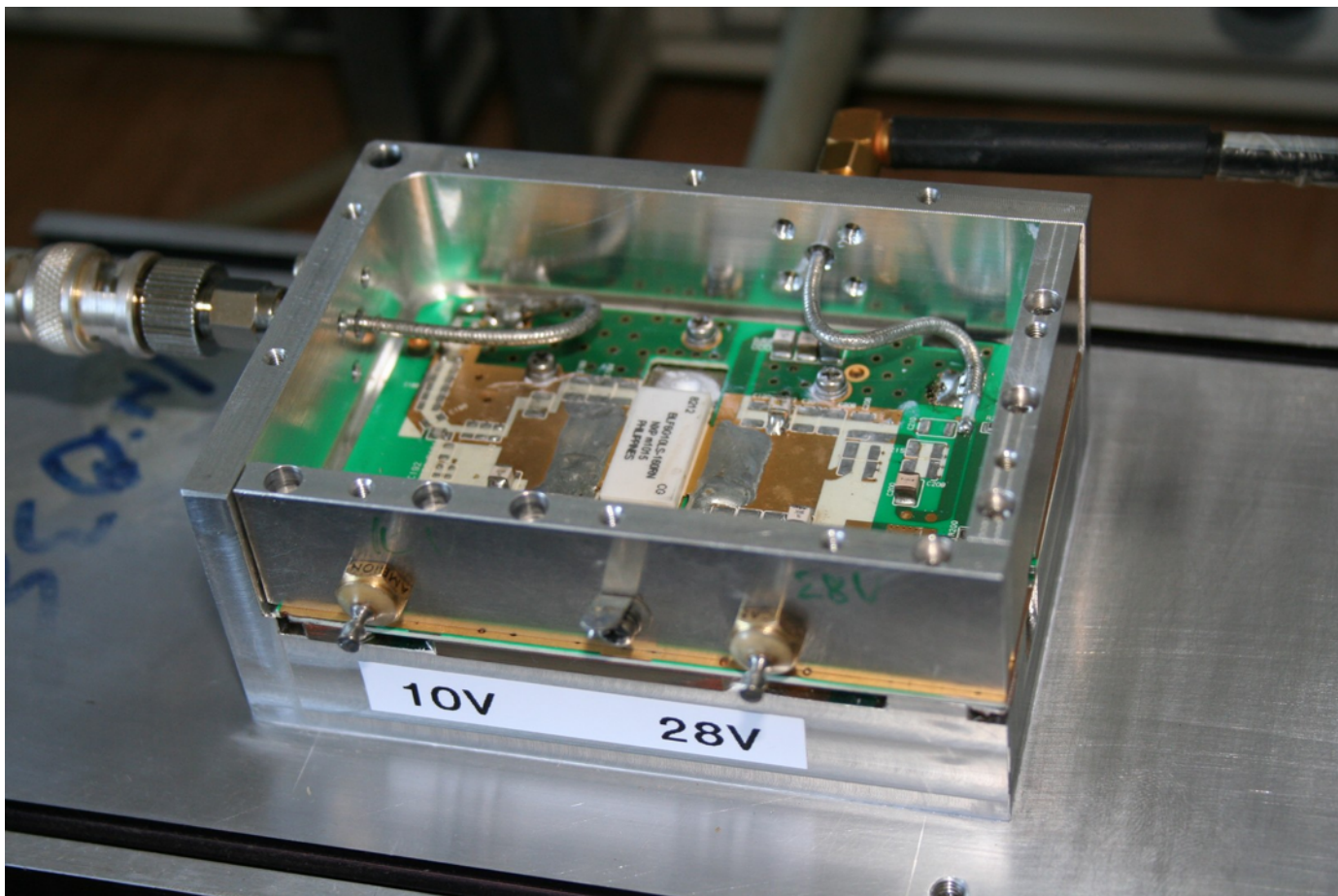
The New GeogWin Software

Andy Talbot G4JNT July 2018

Latest version 18 July 2018   –   Now has the proper NGR to WGS84 conversion for full accuracy

Background

Back in the 1990s I wrote the *Geog2* suite of programmes for distance and bearing calculation and terrain plotting, making use of a 500 metre spatial resolution height database available at that time, and the *Sites.dat* database of operating sites originally put together by G4ELM, G3YGF and others back in the 1980s. That software suite was all written in 16 bit PowerBasic for the DOS environment and ran quite happily in a command prompt in all versions of Windows up to Win-xP. After Win-7 came out and couldn't run 16 bit applications, it was discovered that DOS emulators such as DosBox would run it perfectly – in fact even better than before!

Many ops used that software for site evaluation and bearing calculations during microwave operating sessions. Round about 2006 Mike G0MJW developed his Profile software which duplicated, in the Windows environment, what some portions of my software did, and more importantly added in RF path loss calculations which it was really geared towards. Of even greater import is that Mike used the higher resolution Shuttle Radar Terrain Mapper (SRTM) height database which has about a twenty times better spatial resolution than the one I used and is officially available to all (whereas mine was of dubious 'hacked' origin whose source had to remain anonymous. Its original author, the Ordnance Survey themselves, were apparently bemused in later years to find in it widespread use). What *MJW_Profile* didn't offer was the faster easier terrain viewing and height checking that my suite was intended for.

I wrote a windows version of the distance and bearing calculation, using Sites.dat which has now been expanded to allow for the ten character locators like IO90IV58AK that were beginning to appear on GPS units as well as eight digit, 10 metre resolution NGRs. That *SitecalcWin* programme was written in VB6 and is a proper Windows application with its standard GUI interface. Unfortunately, once the site database Sites.dat started to include these higher resolution locators / NGRs, it was no-longer compatible with the older DOS suite which crashed when trying to read a 8 digit NGR. I tried updating some of those programmes, but running the 16 bit PowerBasic compiler in a DosBox emulator was rather fraught! So it was all put aside for a long time.

As Mike's software was already around for the height stuff, I never did anything with the SRTM data other than working out the database structure and testing with a simple height plotting routine. Mike recently stated that he was unable to do any more updating of *Profile* due to problems with the old compiler, so with a long run of really hot weather that made staying indoors preferable to anything outside, I decided to have a go at updating the most popular of the original suite.

Command Prompt Based

VB6 programming is tedious, having to spend 90% of effort on GUIs and I/O, then having limited and messy functions to do the 'real stuff'. Also VB6 is deprecated for Win-7 onwards; it does run, but with some complications. So I decided to do the *GeogWin* follow-ons in *PowerBasic Console Compiler* (PBCC), a very powerful 32 bit command line compiler for the Windows environment. Being a command line compiler meant it has all the nice and easy programming and feel of the old 16 bit one, but with a very powerful set of commands. Graphical output is straightforward and even better than the old 16 bit one; some limited mouse support is included. (For the 16 bit versions I had had to use BIOS interrupts that sometimes crashed when running it in Win-98 and XP command screens although the [*DOSBox*] emulator does appear to handle. them correctly). All the complex mathematical routines were imported from the 16 bit version of the original, with only minimal changes needed for the vastly improved 32 bit language. The SRTM database reading routines were already in existence. The result is *ProfileJ, LocalmapWin, HorizonPlot* and *ViewWin*. Others may follow.

Common Features

First of all, these are NOT Windows programmes; they run in the Windows operating system but are command line based input with graphical output. Initial data entry has to be done in the classical way, line by line.

Users need to have the SRTM data stored somewhere - look where your *MJW_Profile* software is installed and note its location - you can't browse to it from this software as you would in a normal Windows prog. Also

note where *Sites.dat* is stored. The site database does need to be called that; I don't allow for other site database names. If you have previously stored these files in a complicated Windows folder tree, including bits such as "My Documents", "Users" etc etc etc, it can prove difficult to know what the full install path is for the next stage. In these circumstances it may be easier to just copy the SFRTM database files (all the .HGT ones and *Sites.dat*) to a single folder directly under C:

On running any of these three programmes for the first time you will initially be prompted for the location of the SRTM data. Type in the full path name for this, eg. **C:\MJW_Profile**. Do the same for *Sites.dat* (for example, in my case, **C:\Geog** A size for the plot window is then requested. This has been made variable to allow users to optimise to their own laptops / desktops, etc. If you're not sure, choose something like 600 or 640 to start with, it can be changed later if the bottom of the plot is lost   These settings are saved to a file called *GeogWin.ini* when the programme terminates. This is called up when any of the programmes are next run and can be edited using Notepad, or similar, to change values like the graphical window size or directories, or deleted to allow the software to generate a new .ini file from scratch.

When prompted, enter your base station location. As with the original *Geog* suite, this can be either a (unique) portion of the site name which is searched for in Sites.dat, an NGR or a Locator. The format is detected automatically. Apart from ProfileJ, the programmes can also be started by including the base location on the command line, eg. "*viewwin jnt*" or "*viewwin su49901257*". Then enter the base mast height (a default of 2m is offered just by pressing [rtn]), after that, enter whatever is required for the programme in use. The tropo propagation K factor is always requested with the value of 1.3 for V/UHF propagation offered as a default. For true optical visibility enter a value close to unity.

When all the data has been entered, the software works out which of the many individual files in the SRTM set are needed and loads the chosen ones into a large array. The file names are shown as they are being loaded . (If you look at Windows TaskMaster while these programmes are running, observe just how much memory is in use – the entire height data for up to a maximum of a 600km square is stored in an array. The exception is *ProfileJ* which just opens each SRTM file in turn as it is needed.)

ProfileJ
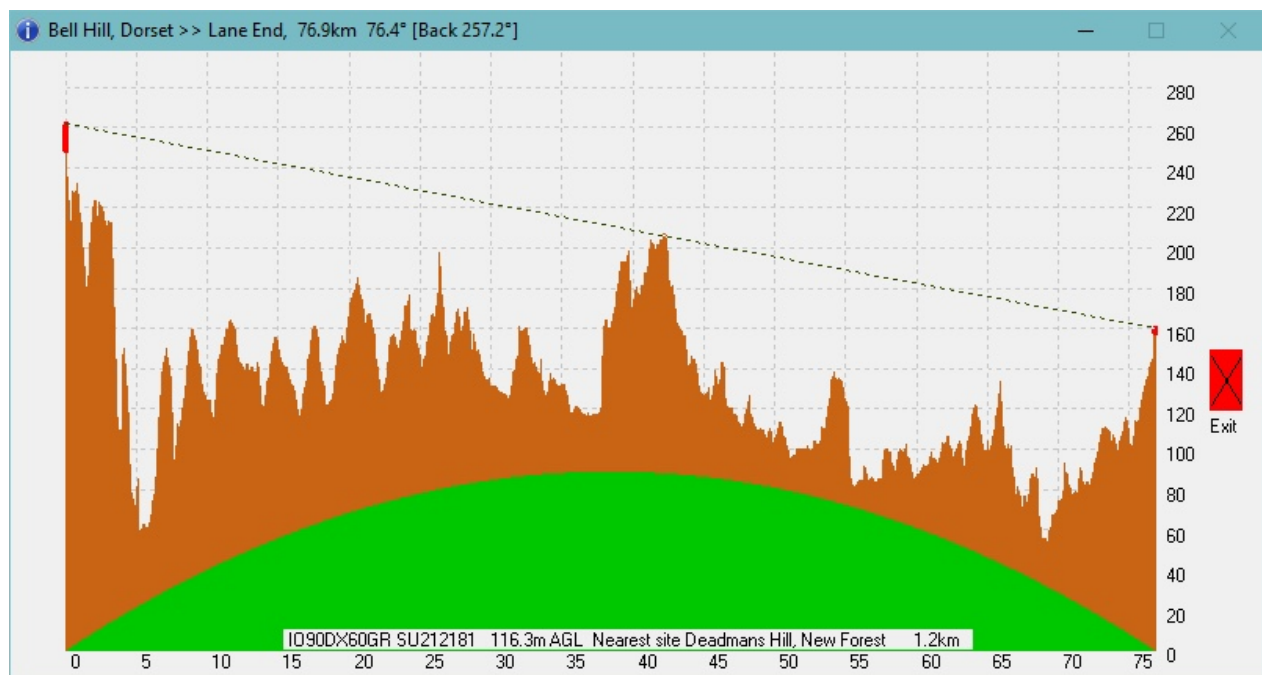
Generates a terrain plot for the path between two stations and has been quite deliberately made to look like Mike's output for the same plot when using the 'curved Earth' display. Unfortunately mouse support for the PBCC language does not allow mouse coordinates to be read off continuously (no 'mouseover' routine in **Windowsspeak**), only mouse click and double-click is supported. A single mouse click on the profile plot reads out the location on the path under the cursor, showing as NGR and Loc. It will also search Sites.dat and show the nearest stored site to that position and the distance to that site. This allows for quick identification of obstructions on any path. A double click just draws LOS lines from each site to the cursor position – nothing special.
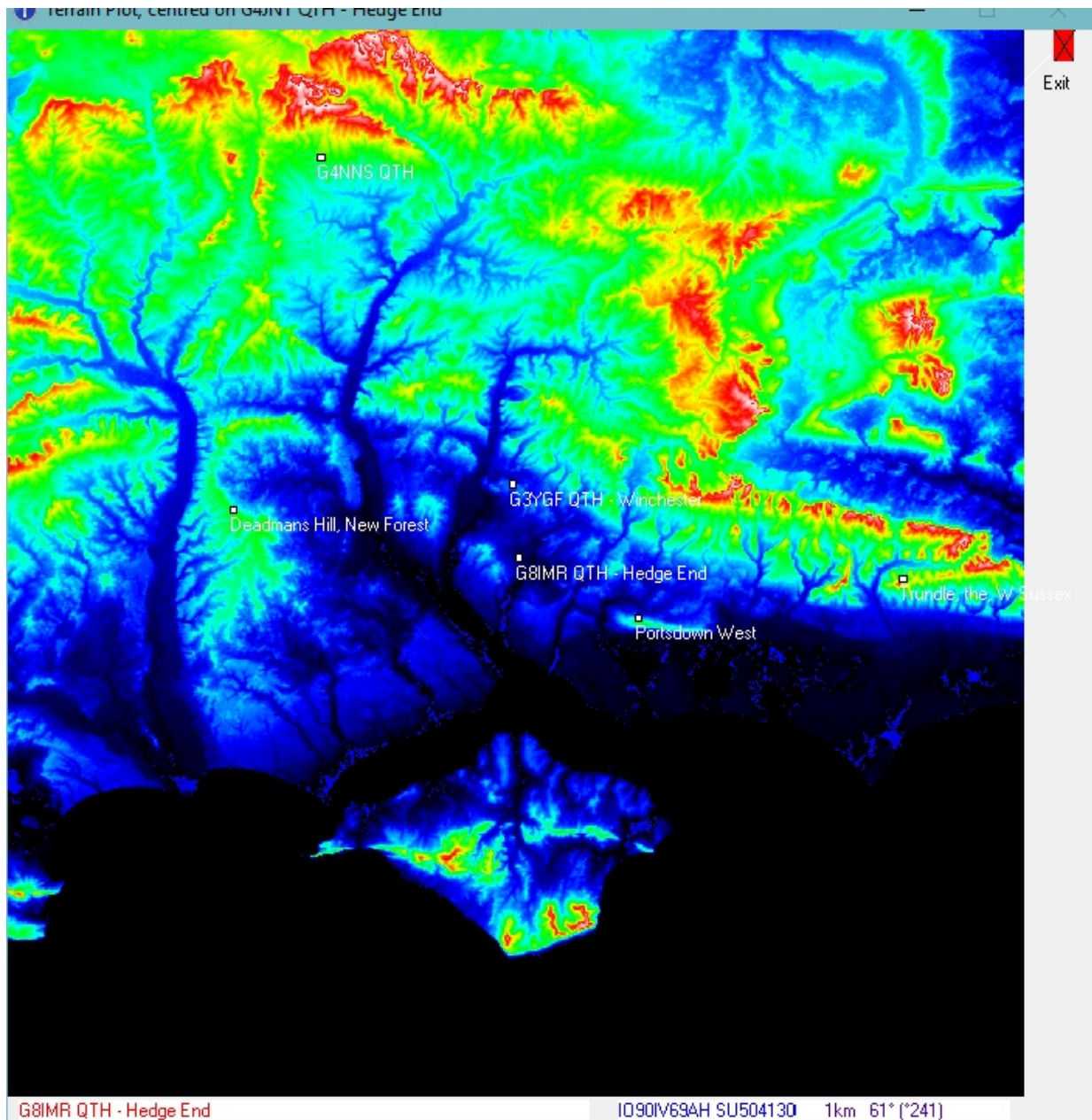
Does the same as its old *Geog2* counterpart *LocalMap* – showing a colour map of the area requested; anything up to a 600km square. A default maximum height is offered at the entry stage by hitting [rtn], with no value specified. This is the highest location found in ALL the 'tiles' loaded, and could actually be outside the requested plot area.

Clicking anywhere on the map shows, at the bottom of the window, the NGR Locator and spot height of the point under the cursor, as well as the distance, bearing and back-bearing from the centre

Double clicking searches for the nearest stored site in *Sites.dat* and shows this on the plot. Useful for identifying high spots and 'interesting sites'.

ViewWin
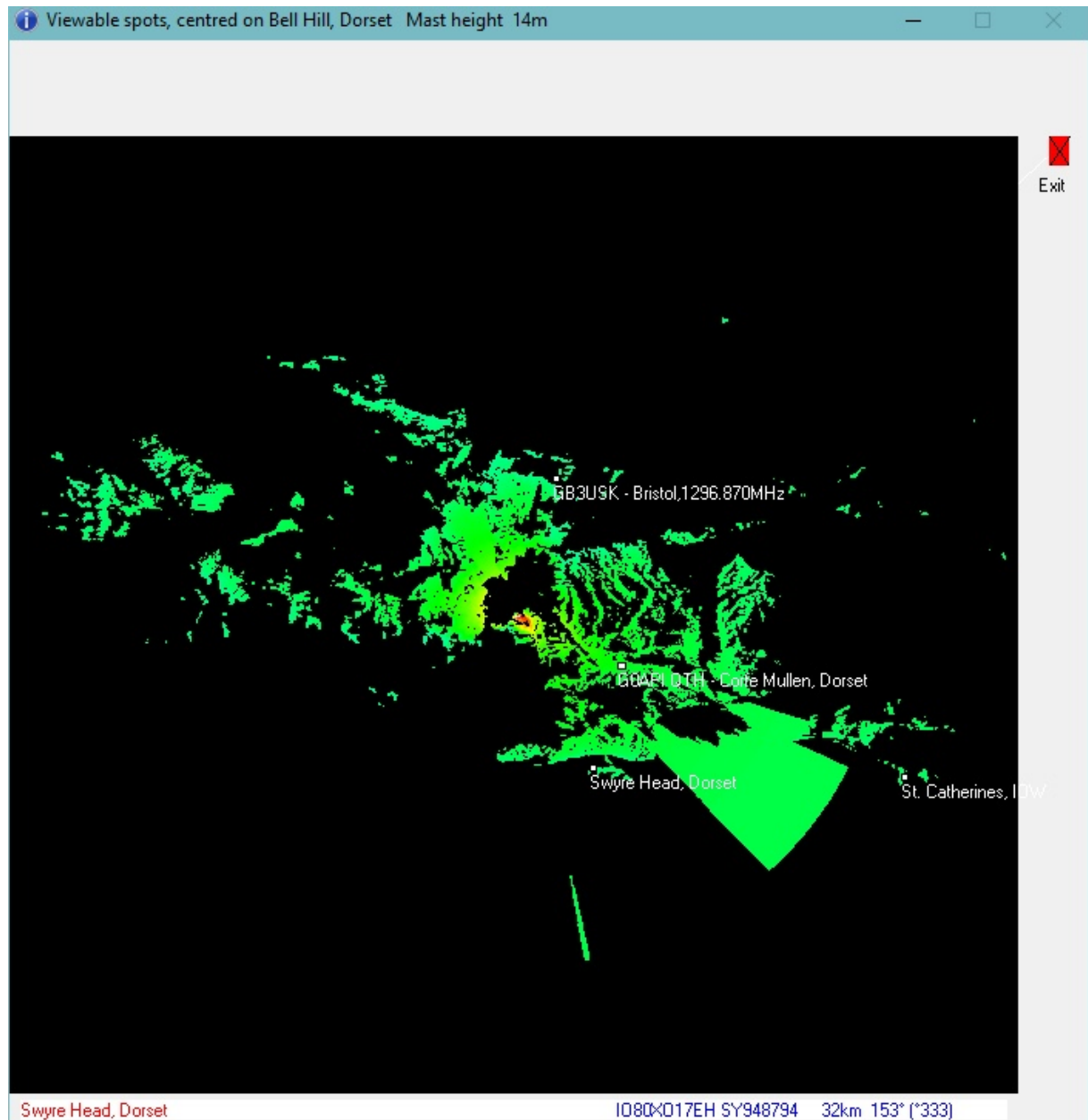
This programme also does the same as its original DOS version but has been updated to show distance and bearing from the centre to the cursor position and the nearest site name in the same way as for *LocalmapWin*.

It shows all visible land that can be seen from a particular site; the plot colour is representative of the horizon angle.
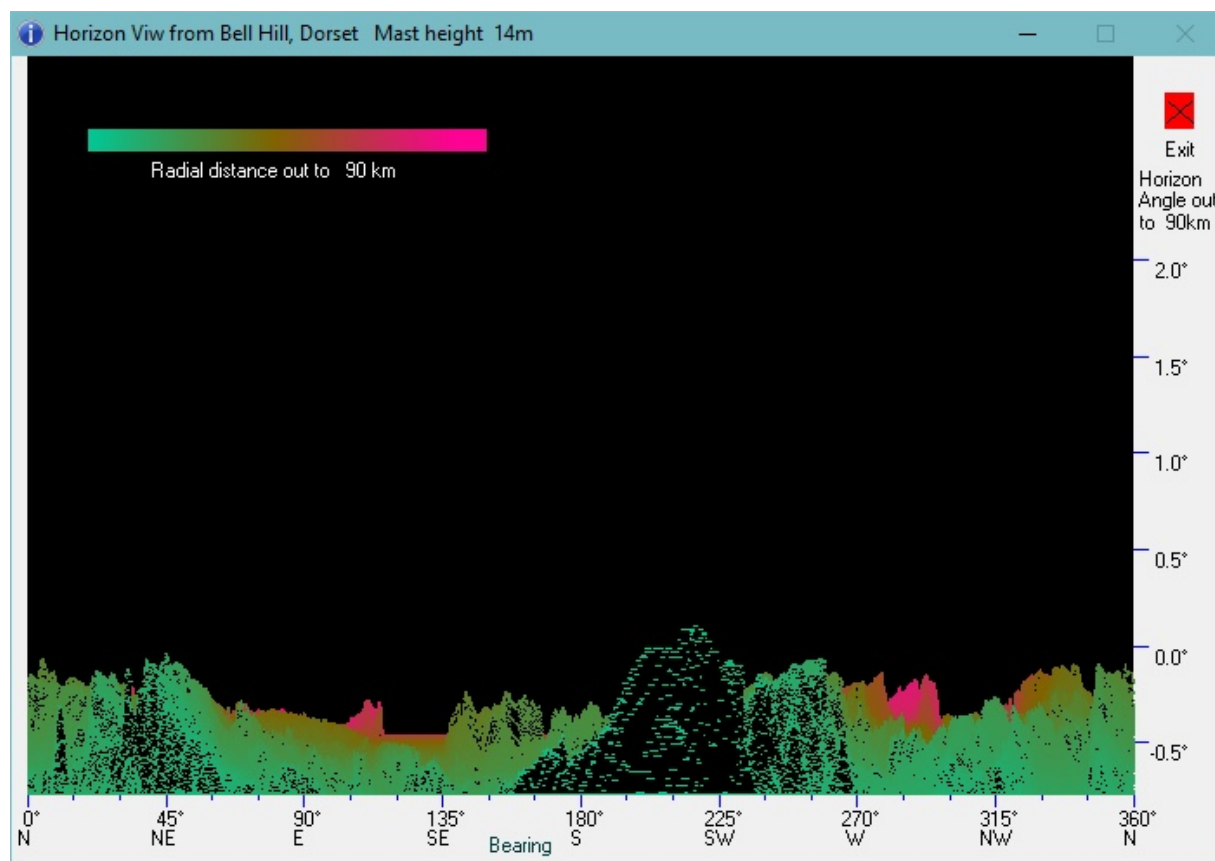
HorizonPlot

The early *GEOG2* suite from 1997 included *Horplot* but that was left out of later versions.   By popular demand it has now been resurrected as *HorizonPlot*. which shows a representation of the view from any site, rotating through 360 degrees.   Vertical scale is the visible horizon, with the colour representing the distance to that point. It clearly shows small bearing windows that can be difficult to visualise in the *Viewwin* plot. Click the mouse to read out and exact bearing under the cursor.

Sites_Heights

Is a command screen programme for sites database lookup, locator conversion, distance and bearing calculation and spot heights. No graphics.

Exiting the software

As this is not a full Windows environment, there is a subtle difference in the way the programmes have to be terminated. When you are finished with the graphical plot click on the red box with a black X in it in the upper right . Do not click the normal Windows close box – that is disabled and will do nothing on the graphical plot window. It had to be done this way as PBCC does not trap return calls from child windows (or at least I couldn't work out how to trap them) so cannot tell if the graphical window has been closed. For *Localmap* , *HorizonPlot* and *View* this returns you to a command prompt ready to run the programme again from scratch. For *ProfileJ* it returns you to the prompt to enter a new distant site, keeping the same base and mast height, and offering the old entry as a default. It was done this way to speed up checking paths with minor location changes and mast height or K options. If you really want to exit, either type 'endendend' as a new location, or close the command window.

Height accuracy and Editing SITES.DAT

The site database format was set back around the year 1990 and I see no reason to change it, apart from updating to allow up to 8 digit NGRs (like SU49901257) and 10 char LOCs (eg. IO90IV58BK). The former are accurate to 10 metres, the latter to around 19m in latitude and 24m in longitude in the S of England; both appreciably smaller than the pixel size in the SRTM data. 6 Digit NGRs (100 metres resolution), 8 character locators (~ 400 metres accuracy) are barely sufficient. 6 character Locs certainly aren't!

SITES.DAT is a simple text file with each line holding the site name followed by a tilde ~ as separator, followed by the location as either an NGR or a Locator. Some sites then have a second tilde separator followed by a few letters and numbers which in the old Dos versions flagged 'popular' sites and a stored mast height. Neither of these secondary pieces of information are called up in this latest suite, and I don't intend to use them now.

The database has grown massively over the years, been passed backwards and forwards between software authors who have all added their own sites – note the number of purely local spots around Didcot, Newbury and the Hedge End, Southampton areas, along with other personalised clusters. It can be edited to add your own sites, delete old ones and SKs and general personalisation. But note that for this suite of programmes is must keep the same file name. Mike's may allow any name for it, mine doesn't!

NGR Calculations

The latest versions of all programmes, as of 18 July 2018, now include the proper WGS84 to NGR conversion. Previously the old GBR36 was used which when compared with WGS84 lead to considerable positioning errors over much of the country making it unsuitable for accessing the SRTM data.

An additional programme has been included in the suite SpheroidConversion.exe to illustrate the conversion between the two spheroids, Airy and WGS84.

This does mean that *SITES.DAT*, which has most of its locations defined by NGR, is now of more value, and is more precise than before for spot height information. It is also easier to update, just by reading the NGR from an OS map

Speed of Plotting

The SRTM height database has more than 20 times the spatial resolution of the old one in *Geog2*, so about five hundred times more height pixels lie in a given plot area. Therefore the plotting speed can still seem slow, even allowing for the many times increase in processing power since that suite was originally developed.

For some unknown reason, probably associated with Windows allocation of resources, the plot time can be speeded up considerably by placing the mouse cursor on the graphics window title bar at the top and holding down the left button. I don't know why, but it does speed things up considerably.

======== ======== ======== ======== ======== ======== ======== ========

And that's it for now. I've checked output in each case against the old DOS versions and, apart from differences due to the improved height database resolution, give the same results. Also checked against the MJW_Profile software.

Few of the rest of programmes in the old *Geog* suite are worth updating – these four are the most useful to microwave operations, along with *SitecalcWin* available separately.

The latest version of the software described can be found at http://www.g4jnt.com/GeogWin.zip

SiteCalcwin can be found at http://www.g4jnt.com/SiteCalcWin.zip and contains a full Windows install package as it was written in VB6 and needs some supporting files.

Please report bugs, errors etc.

Contest results

John Quarmby G3XDY

May 5.7GHz Contest 2018

The rain scatter seen on 10GHz didn't do so much for entrants on 5.7GHz, with low activity and entry levels. Congratulations to Dave G1EHF/P who won this session by a large margin from Neil G4LDR.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G1EHF/P	IO91GI	7	688	G4ALY	216
2	G4LDR	IO91EC	3	227	G4CLA	156
3	G1DFL/P	IO91NM	1	45	G1EHF/P	45

May 10GHz Contest 2018

Some excellent rain scatter during the afternoon was the highlight of this event, with G4KUX making the best DX of the day with F6DKW at 712km. Entry levels were somewhat down from previous years.

Congratulations to Nick G4KUX as winner and Neil G4LDR as runner up in the open section, and to Barry G4SJH/P and Pete G1DFL/P as the only restricted section entrants.

Open Section

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G4KUX	IO94BP	9	3173	F6DKW	712
2	G4LDR	IO91EC	12	2780	PA0T	616
3	G3UVR	IO83KH	6	1121	G4LDR	266
4	G8HAJ	JO01JR	6	944	M0GHZ	210
5	G3YJR	IO93FJ	5	916	G4ALY	373
6	G3VKV	IO81XV	4	661	G4KUX	307

Restricted Section

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G4SJH/P	IO91GI	10	1337	G4KUX	368
2	G1DFL/P	IO91NM	2	115	G4LDR	70

June 2018 1296MHz Lowband Contest Results

This event was very poorly supported this year, with only two entrants and one check log. The coincidence with the Friedrichshafen radio show took some of the usual entrants away.

On 1296MHz John G4ZTR won by a large margin, with some good DX worked using aircraft scatter. Pete GM4BYF was runner up.

No entries were received for the higher bands this time.

Certificates go to the overall Winner G4ZTR and Runner-up GM4BYF.

M0HNA/P have already made sure of holding the overall lead and band leader positions on 2300MHz and 3400MHz in the Low Band Championship. The top places on 1296MHz and 2320MHz will be decided in the final event in November.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX Kms
1	G4ZTR	JO01KW	20	7776	DL0GTH	704
2	GM4BYF	IO85JV	5	1160	G4ZTR	515

Checklog: G1ZAR/P

24GHz Contest June 2018

Summer temperatures and humidity hampered distances on this band, but there were more entries this time.

Congratulations go to Neil G4LDR/P as winner, with Dave G1EHF/P as runner up.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G4LDR/P	IO91CL	3	251	GW3TKH/P	93
2	G1EHF/P	IO91GI	2	175	G4SJH/P	92
3	G4SJH/P	IO80WP	2	166	G1EHF/P	92
4=	GW3TKH/P	IO81LS	2	145	G4LDR/P	93
4=	GW4HQX/P	IO81LS	2	145	G4LDR/P	93
6	G8CUB/P	IO91JB	1	35	G8BKE/P	35

47GHz Contest June 2018

Neil G4LDR/P worked the two GW stations to take top spot, whilst GW4HQX/P also roved as G4HQX/P to provide GW3TKH/P with a second QSO on the band. Congratulations to G4LDR/P as winner and to GW3TKH/P and GW4HQX/P as the joint runners up.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G4LDR/P	IO91CL	2	186	GW3TKH/P	93
2=	GW3TKH/P	IO81LS	2	145	G4LDR/P	93
2=	GW4HQX/P	IO81LS	2	145	G4LDR/P	93
4	G8CUB/P	IO91JB	2	41	G8BKE/P	35
5	G8ACE/P	IO91IB	0	0		0

76GHz Contest June 2018

Joint winners were G4HQX/P and GW3TKH/P who worked each other over a 52km path. Roger G8CUB/P made 3 QSOs but this didn't quite add up to enough to take the lead.

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1=	G4HQX/P	IO81UR	1	52	GW3TKH/P	52
1=	GW3TKH/P	IO81LS	1	52	G4HQX/P	52
3	G8CUB/P	IO91JB	3	47	G8BKE/P	35
4	G8ACE/P	IO91IB	2	6	G8CUB/P	1

June 122GHz – 248GHz Contest 2018

The weather was hot and with relatively high humidity the excess losses at mm-wave frequencies were well up so no great distances were worked. G0FDZ/P operated alongside G8CUB/P as the third station active in this years event. With roving this enabled John G8ACE/P to make 4 contacts to win 122GHz, whilst honours were shared on the higher bands. Overall G8ACE/P is winner and Roger G8CUB/P runner up.

At the distances involved in this contest 6 digit locators are not sufficiently accurate, so for 2019 it is proposed that 8 digit locators will be used for exchanges and logging.

122GHz Contest Results June 2018

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1	G8ACE/P	IO91IB	4	18	G8CUB/P	6
2	G8CUB/P	IO91IB	2	9	G8ACE/P	6

134GHz Contest June 2018

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1=	G8ACE/P	IO91IB	1	3	G8CUB/P	1
1=	G8CUB/P	IO91IB	1	3	G8ACE/P	1

Pos	Callsign	Locator	QSOs	Score	ODX Call	ODX km
1=	G8ACE/P	IO91IB	1	1	G8CUB/P	1
1=	G8CUB/P	IO91IB	1	1	G8ACE/P	1

Lowband Champs

Results after four sessions, the best three events count towards the total

Overall

Pos	Callsign	04/03/2018	08/04/2018	06/05/2018	03/06/2018	TOTAL
1	M0HNA/P	3592	3676	1360	0	8628
2	G4LDR	1940	0	1332	0	3272
3	PA5Y	947	1000	1000	0	2947
4	G4BRK	2233	0	708	0	2941
5	G4ZTR	856	693	0	1000	2549
6	G3UKV	0	1676	0	0	1676
7	G3UVR	499	846	0	0	1345
8	G8EOP	124	590	473	0	1187
9	G8OHM	0	0	1172	0	1172
10	G4KIY	426	382	220	0	1028
11	M0GHZ	0	823	0	0	823
12	G3YJR	47	134	380	0	561
13	G3TCT	362	0	140	0	502
14	G4RQI	0	472	0	0	472
15	GU6EFB	324	0	144	0	468
16	G4BAO	0	266	189	0	455
17	GM4BYF	290	0	0	149	439
18	G8AIM	0	337	0	0	337
19	G3PHO	0	306	0	0	306
20	G3YKI	138	138	0	0	276
21	GM8IEM	69	97	56	0	222
22	G3SQQ	182	0	0	0	182
23	G4NZV	0	172	0	0	172
24	M0OMB/P	0	151	0	0	151
25	G8GTZ/P	129	0	0	0	129
26	G4GSB	57	0	14	0	71
27	G8DOH	0	58	0	0	58
28	G1DFL	36	0	0	0	36
29	G0LGS	0	2	0	0	2
30	M0GDX/P	0	1	0	0	1

1296MHz

Pos	Callsign	04/03/2018	08/04/2018	06/05/2018	03/06/2018	TOTAL
1	PA5Y	947	1000	1000	0	2947
2	G4ZTR	856	693	0	1000	2549
3	M0HNA/P	1000	676	360	0	2036
4	G4KIY	426	382	220	0	1028
5	G4BRK	853	0	74	0	927
6	G4LDR	449	0	100	0	549
7	G3TCT	362	0	140	0	502
8	G4RQI	0	472	0	0	472
9	GU6EFB	324	0	144	0	468
10	G4BAO	0	266	189	0	455
11	GM4BYF	290	0	0	149	439
12	G3UVR	96	315	0	0	411
13	G3PHO	0	306	0	0	306
14	G3YKI	138	138	0	0	276
15	G3UKV	0	275	0	0	275
16	G8EOP	25	155	43	0	223
17	GM8IEM	69	97	56	0	222
18	G8OHM	0	0	193	0	193
19	G3SQQ	182	0	0	0	182
20	G4NZV	0	172	0	0	172
21	M0OMB/P	0	151	0	0	151
22	M0GHZ	0	132	0	0	132
23	G8AIM	0	84	0	0	84
24	G4GSB	57	0	14	0	71
25	G8DOH	0	58	0	0	58
26	G1DFL	36	0	0	0	36
27	G0LGS	0	2	0	0	2
28	M0GDX/P	0	1	0	0	1

2300MHz

Pos	Callsign	04/03/2018	08/04/2018	06/05/2018	03/06/2018	TOTAL
1	M0HNA/P	1000	1000	0	0	2000

2320MHz

Pos	Callsign	04/03/2018	08/04/2018	06/05/2018	03/06/2018	TOTAL
1	M0HNA/P	1000	1000	0	0	2000
2	G4LDR	491	0	1000	0	1491
3	G4BRK	685	0	323	0	1008
4	G8OHM	0	0	979	0	979
5	G8EOP	99	435	430	0	964
6	G3UVR	403	531	0	0	934
7	G3UKV	0	618	0	0	618
8	G3YJR	47	134	304	0	485
9	M0GHZ	0	252	0	0	252
10	G8AIM	0	69	0	0	69

3400MHz

Pos	Callsign	04/03/2018	08/04/2018	06/05/2018	03/06/2018	TOTAL
1	M0HNA/P	592	1000	1000	0	2592
2	G4LDR	1000	0	232	0	1232
3	G4BRK	695	0	311	0	1006
4	G3UKV	0	783	0	0	783
5	M0GHZ	0	439	0	0	439
6	G8AIM	0	184	0	0	184
7	G8GTZ/P	129	0	0	0	129

mm Champs

Positions after two events, the best three count to the total.

24GHz

Pos	Callsign	20/05/17	10/06/17	TOTAL
1	GW3TKH/P	1000	578	1578
2	G4LDR(/P)	244	1000	1244
3	G4SJH/P	423	661	1084
4	G8CUB/P	889	139	1028
5	G1EHF/P	0	697	697
6	GW4HQX/P	0	578	578

47GHz

Pos	Callsign	5/20/17	6/10/17	TOTAL
1	GW3TKH/P	500	780	1280
2	G8CUB/P	1000	220	1220
3	G4LDR(/P)	161	1000	1161
5	GW4HQX/P	0	780	780
4	G8ACE/P	0	0	0

76GHz

Pos	Callsign	5/20/17	6/10/17	TOTAL
1	GW3TKH/P	1000	1000	2000
2	G8CUB/P	667	904	1571
3	G4HQX/P	0	1000	1000
5	G8ACE/P	0	115	115
5	G4LDR	108	0	108

UKµG Microwave Contest Calendar 2018

Dates 2018	Time UTC	Contest name	Certificates
29 -Jul	0600 - 1800	3rd 5.7GHz Contest	F, P,L
29 -Jul	0600 - 1800	3rd 10GHz Contest	F, P,L
26-Aug	0600 - 1800	4th 5.7GHz Contest	F, P,L
26-Aug	0600 - 1800	4th 10GHz Contest	F, P,L
16- Sep	0900 - 1700	3rd 24GHz Contest	
16- Sep	0900 - 1700	3rd 47GHz Contest	
16- Sep	0900 – 1700	3rd 76GHz Contest	
30 -Sep	0600 - 1800	5th 5.7GHz Contest	F, P,L
30 -Sep	0600 - 1800	5th 10GHz Contest	F, P,L
21 -Oct	0900 - 1700	4th 24GHz Contest	
21 -Oct	0900 - 1700	4th 47GHz Contest	
21 -Oct	0900 – 1700	4th 76GHz Contest	
18 -Nov	1000 - 1400	5th Low band 1.3/2.3/3.4GHz	F, P,L

Key:	F	Fixed / home station	P	Portable
	L	Low-power (<10W on 1.3-3.4GHz, <1W on 5.7/10GHz)		

French microwave activity for 2018

Ralph G4ALY

July	WE 28 & 29	September	WE 29 & 30
August	WE 25 & 26	October	WE 27 & 28

Some articles on the UKµG Wiki

- Move up to 23cms - RSGB 2016 File:RSGB_2016.pdf
- GHz Bands Contesting by G4BAO File:RSGB_2013G4BAO.pdf
- Bodger's Guide to Microwaves by G4BAO File:Bodgers_uW.pdf
- Guide to 24GHz Beacons File:Guide to 24GHz beacons.pdf
- Patio Moonbounce File:Patio Moonbounce.pdf
- Patio Moonbounce part 2 - MMRT 21013 File:MMRT2013.pdf
- Ulltralight EME the Camb-Hams way - Finingley 2014 File:Finningley2014.pdf
- Using your 2300NoV - GMRT2016 File:2300NoV.pdf
- Bodger's guide to solid state QRO - Orebro 2011 File:Orebro 2011.pdf

Activity News : June 2018

By Neil Underwood G4LDR

Please send your activity news to:

Introduction

June and early July was a period when high pressure dominated UK weather with hot and dry conditions across much of the country. There were good tropo openings across the North Sea, although as is usually the case didn't extend inland too far and certainly not to my QTH in the southwest corner of IO91 square! There were the occasional enhanced conditions on the higher frequency microwave bands during the evenings as the air cooled, with up to seven of the UK's 10GHz beacons being received at my QTH on some days.

Band Reports – cm Bands

From John, G0API, IO80

During July I have been monitoring UK 10GHz beacons and although there has been no noticeable rain for many weeks, thunder cell developments over Dartmoor to the west, and towards Oxfordshire to the northeast, produced signals on one day from 8 beacons, including 5 on the same 60cm dish heading. RX is a locked Octagon LNB at 6m agl.

The recently returned GB3LEX is a near constant signal, with AS enhancements on top of the tropo signal; RST 579 CW idents were copied during the above RS conditions.

From Keith GU6EFB IN89

On the 26th June I checked 23cm and band was full of very loud beacons from SM, LA and a large part of Europe but the band had no activity that I could here.

I called CQ pointing north and to my amazement SM6DVG came back to my call. Called again and worked the following from my modest station here in GU.

SM6DVG JO66GV Jan 1296.200 at 21:16 RST 55; PE9RX JO22HB Rene 1296.200 at 21:26 RST 55; OZ1FF JO45BO Kjeld 1296.200 at 21:32 RST 59; PE1EWR JO11SL Frank 1296.200 at 21:53 RST 52; SM6CEN JO67AJ Hakan 1296.205 at 22:22 RST 54.

Shame not may stations were active, I think most were on 13cm in the RSGB contest?

From Jim GM3AGU

Quite like old times 30 years ago with every FM channel on 2m sporting a European voice and GB3BT rocketing in at S9+40 on 2m.

Quite lively on microwaves as well. There were two openings, 4th and 5th June and 26th to 30th June. Then, unfortunately, we went away on holiday on the 1st July! All quiet when we came back.

What was peculiar was how some beacons, usually strong with a bit of lift, were not heard or very poorly heard while other beacons in much the same direction were coming in strongly.

For instance, on 26th June around 1000Z on 23cm, PI7ALK, usually very strong with me, was not heard but ON0TB, rather unusually, was S9 with QSB. Both are on the same bearing from here.

Again, on 27th June around 0800Z, PI7ALK was S1 while ON0TB was S8. That was the last time I logged ON0TB but PI7ALK was well received thereafter every day up until 30th June.

Usually 23cm beacons come in more strongly than their counterparts on 13cm, e.g. on 4th June DB0VC on 1296.920 was S5 while only S1 on 2320.920, and sometimes this was the case e.g. on 5th June ON0TB was

S5 on 23 and S4 on 13cm but quite often the 13cm was better than 23cm e.g. SK6UHI was S2 on 23 but S5 on 13cm.

Other beacons heard were PE9GHZ, GB3MHZ and SK6MHI on 23cm, DB0WML, SK6MHI, GB3MHZ and GB3ANT on 13cm and PI7RTD on 3cm.

With help from KST, OZ9PZ was worked at S9 on 23cm SSB on the 26th and I caught, by random CQ, G8DMU/P, G4CLA and G8PNN on 13cm during the activity night of 26th June.

Band Reports – mm Bands

From Roger, G8CUB(/P), IO91

For this year's millimetre contest, I went to Winchester, to try out new/modified gear for the higher bands. In an attempt to cover all bands, I loaded the car with 11 transverters (or separate tx/rx), 11 antennas, 6 tripods, and 10 batteries. A good job I had just changed to an estate car!

Chris G0FDZ joined me on 'Long Walk' with just enough room for two cars plus tripods. The location was chosen to work John G8ACE in his garden, along with Iain VZ5ZD, operating as M/VK5ZD/P at the same location.

The distance was short being 3.62km. So signals were massive with both stations on 47 and 76GHz. Then moving to 122GHz, everything took longer to set up. A good qso with John G8ACE/P resulted, but although Iain initially heard me, the performance of his transverter appeared to drop off. John worked Chris without problem on 122 as well.

Moving to 134GHz, things again took a while to setup. Again another good contact with John. Next 241GHz. I was using a new tx, using a 80GHz horn as antenna, and a new rx with 76GHz 0.3 metre dish. Initially nothing heard either way. However my tx was a bit further off frequency, than I thought. So a bit more tuning from John, and we completed a one way contact, with good signal level. A move to Cheesefoot head, had been pre-planned, so no more time was available.

At Cheesefoot Head, after a few teething problems, I worked Chris G8BKE/P (IO90EV), on 24/47 & 76GHz. Chris & Iain had joined me there, and worked Chris on 47GHz. Though signals were just too weak with them on 76GHz. Iain's combined 47/76/122GHz transverter, was something to admire. All fitting with antenna, into a small suitcase.

Time unfortunately had slipped by, and we had kept John G8ACE waiting at Crabwood radio station.

My 122GHz signal was immediately heard by John at 8km. Now having been joined by Neil G4LDR, they tried transmitting back to me. Nothing was heard. It is believed the local signals were affecting the synthesiser in both transmitters, and one receiver. So just a one way contact, although the 599 report was pleasing.

Having contacts on 24/47/76/122/134/241 GHz on the same day, must be a first!

Time again had evaporated, so a move to a local hostelry with Iain VK5ZD was most welcome, to rehydrate and cool down.

EME

From John, G8API IO80

The Flight Refuelling ARS, G4RFR, will be running live 10GHZ EME during Hamfest on Sunday August 12th, with good Moon availability throughout the day.

Recent refurbishment of their 3.4m dish has resulted in bespoke software being developed to provide full auto tracking to 0.1 degree. The Moon beacon DL0SHF now averages a peak carrier in the 20dB above noise floor region, using an SDR-IQ in a 6HZ RBW at 28MHz.The QRA64D mode used by the beacon appears as a "space Invaders" waterfall, with loud CW idents.

The front end is a modified Octagon LNB, locked to an external 27MHZ GPS ref. The 618 /144MHZ first down-conversion is also GPS locked as is the final 144/28MHZ converter. The feed used is based on VE4MA design data. Solar noise is 16dB and Moon surface noise around 2dB.

A final TVTR layout is near to completion and it is hoped to complete the 10GHZ project with a large TWT final.

Beacon News

From Neil, G4LDR, IO91

John G8ACE has been busy over the last year or so building a replacement 47GHz beacon for Bell Hill in Dorset. The original 47GHz beacon failed a couple of years ago after providing a useful signal being received at over 75km.

It is difficult to provide omni directional coverage at mmWave frequencies with sufficient gain to boost the few tens of mW output from the transmitter to useful levels. Instead a horn antenna was used in the original unit which had a fixed heading of about 75o. The new beacon also has a horn antenna with a little more gain than on the failed unit. The new unit will however be rotatable, controlled over the internet by stations wishing to receive it at their location. The facility will be available at a later date.

At the beginning of July, Andy, G4JNT and I went to the Bell Hill site and after cutting away vegetation that had grown up in the last few years since the last site visit, we gained access to the equipment cabin. The new 47GHz beacon was placed on the cabin roof, it was about 3m agl. However the bushes in the direction we wanted to point the beacon were higher, so Andy and I set about clearing them. (N.B. we did carry out a check that there were no nesting birds before we began).

Although a check was made on site that the beacon was radiating and was on frequency, (47088.905MHz), when a check was made by John, G8ACE at Cheesefoot Head east of Winchester he was unable to hear it over a near LOS path. The following day G8BKE went to the northern part of the New Forest where there was a true LOS path, but was unable to hear the 47GHz beacon but the 24GHz beacon was RST 599. A few days later I was in North Dorset again and tried to receive the beacon from a few km away, nothing copied. I therefore went to the site and was able to confirm it was no longer radiating, so I recovered it and returned it to G8ACE a few days later. After a day or so fault finding John discovered the problem was a loose SMA connector. The beacon is currently undergoing more soak testing before it is again set up at Bell Hill.

The 47GHz Beacon and Andy G4JNT on the roof of the Bell Hill equipment cabin.

…..and finally

The deadline for activity reports to be included in the next issue is Wednesday 1st August 2018.

Beginners workshop on SDR programming using the Gnu Radio Companion

John Worsnop G4BAO

On the day before the RSGB Convention, Friday the 12th of October, Kent's Hill Conference Centre Milton Keynes will be hosting a *"Beginners workshop on SDR programming using the Gnu radio companion"*

The course will be for RSGB members and based around "Gnu Radio" a free, graphical, software development toolkit that provides signal processing blocks to implement software-defined radios and signal-processing systems. It is widely used in hobbyist, academic, and commercial environments to support both wireless communications research and real-world radio systems. This is a PROGRAMMING course, so is aimed at people who want to create their own SDR Applications.

The Course Team

The course will be led by Derek Kozel MW0LNA, a Carnegie Mellon University graduate and Software Design Engineer at Ettus research, and Heather Lomond MIET, M0HMO an Embedded Software Engineer, specialising in Linux, audio and memory systems for mobile phones.

Delegate Requirements

As part of the course fee of £60, the course delegates will be provided with an "RTL Dongle" type SDR receiver and all the required software on a memory stick plus lunch and refreshments throughout the day.

Delegates must provide their own (preferably laptop) computer, meeting a minimum specification of, two or more USB ports, preferably one of which is USB 3.0, 4 GB or more of RAM, Wifi, Intel or AMD processor.

Numbers are strictly limited to 20 on the day. You may apply for a place at the workshop by emailing john@bravoao.co.uk requesting an application form. This will describe the course in more detail and in the interests of getting a balanced course intake it will ask you to provide a brief resume of your interests in Amateur radio and how you plan to use the knowledge gained on the day in advancing the SDR aspect of our hobby.

For further information see http://rsgb.org/sdr-workshop

Some links to whet your appetite

Getting Started 1   https://wiki.gnuradio.org/index.php/Guided_Tutorials

Getting Started 2   https://hackaday.com/2015/11/11/getting-started-with-gnu-radio/

The Manual   https://www.gnuradio.org/doc/doxygen/index.html

80m UK Microwavers net

Tuesdays 08:30 local on 3626 kHz (+/- QRM)

73 Martyn Vincent G3UKV

RALRT 2018 – 17th June

Mike, G8CUL/F4VRB

There was a good turn-out at the RAL Round Table on the 17 June, again held at the Chilton Village hall. About 60 people attended with a number of stalls all selling interesting 'stuff'.

Some of the stalls

Three talks were presented, Gordon, G3WJG helped by Carl, M0ICR introduced us to a low-cost way of getting on the µwave bands using inexpensive modules from China.

This was followed by Dave, G8GKQ on Microwave digital TV made easy, demonstrating some 24GHz live TV pictures.

Finally, Mike, G8CUL showed the work he has done on his mWatt, multi-head power meter which won heat 1 of the project competition at the MMRT in April. Mike also talked about getting good quality, low-cost boards made in China and what was needed to achieve it.

John, G3XDY and Dave, G4FRE judging the Project Competition

The project competition had 3 entries and was won by Dave, G8GKQ with his Portsdown transmitter control system.

Dave, G8GKQ receiving the Project Competition winner's cup from Mike, G8CUL

Food and drinks were provided by the Harwell Amateur Radio Society, led by Ann, G8NVI who did sterling work making the bacon butties in the morning. I'm sure the smell of the cooking bacon lured many into the hall!

Mike, G8CUL/F4VRB

G3VVB Project Competition – RAL Round Table

Judges: John G3XDY, Dave G4FRE

Callsign	Name	Entry	Design	Novelty	Implementation	Total
G3VPF	Ed Harland	5.7GHz ATV TX/RX	6	6	6.5	18.5
G8GKQ	Dave Crump	Compact DATV driver for microwave transverters	8	8	7.5	23.5
G3AAF	Kevin Avery	2200 - 2755MHz source with sweep and modulation control	7.5	7	7.5	22

The winner was Dave Crump, G8GKQ with his compact DATV driver.

Round 3 was held at Finningley on 8th July.

Events calendar

2018

June 1–3	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
June 17	RAL, Chilton Village Hall OX11 0SH	www.microwavers.org/ral-2018.htm
July 7–8	Finningley RT	www.g0ghk.com/
August 17–19	EME2018, Egmond aan Zee,NL	https://www.eme2018.nl
Sept 7–9	63.UKW Tagung Weinheim	www.ukw-tagung.de/
Sept 9	Crawley Round Table	https://crawleyuwavert.blogspot.co.uk
Sept 15–16	BATC Convention (CAT 18), Midlands Air Museum	
		https://forum.batc.org.uk/viewforum.php?f=115
Sept 23–28	European Microwave Week, Madrid	www.eumweek.com/
Sept 28–29	National Hamfest	www.nationalhamfest.org.uk/
Oct 11–14	Microwave Update, Fairborn, Ohio USA	www.microwaveupdate.org/
Oct 12–14	RSGB Convention & AMSAT Colloquium	http://rsgb.org/convention/
Nov 3	Scottish Round Table	www.gmroundtable.org.uk

2019

May 17–19	Hamvention, Dayton	www.hamvention.org/
June 21–23	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
Sept 15–20	European Microwave Week, Utrecht	www.eumweek.com/

NB Some of the 2018/19 event links may not be working/updated yet.