An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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UKμG Loan Equipment

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and Neil Underwood, G4LDR

In this Issue

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WIKI

New UKµG wiki - https://wiki.microwavers.org.uk/

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

If you plan to reproduce an article exactly as in Scatterpoint then please contact the Editor – otherwise you need to seek permission from the original source/author.

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

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. **Or come to the Martlesham Round Table!**

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

Chairman's thoughts on GDPR

Sam Jewell G4DDK

A term you may have heard of. It will affect us all very soon. The General Data Protection Regulations is a new set of European Union regulations for the control, storage and access to data. It is more comprehensive than the existing data storage rules and it comes into force in May of this year. GDPR was announced several years ago, but like a lot of organisations (most?) the UKuG have only recently moved to ensure our compliance.

UKuG stores some data on all members as we need to know how to contact you by e-mail for distribution of information about the Group and contact you about your annual subscription.

One major change to the data rules is that you will be required to opt-in to having your data stored. This means you will need to agree to us storing your data. If you don't we will be obliged to erase your records from the database. We are trying to determine an easy way to do this, both for you and for the Membership Secretary.

You will have the right to request knowledge of any data that we might wish to store about you. You will have the right to have any data erased at your request.

We are obliged to keep your data safe from unauthorised access and to immediately inform you if unauthorised access to your data has been detected.

There are more provisions in GDPR, of course, and we will be complying with these regulations.

There is a possibility that there will be a short postponement to the regulations being enacted as a result of a peculiar situation within the way GDPR can be implemented. However, we will be compliant by May. If there are post-May changes, that may mean we also need to make further changes, of course.

Scatterpoint will carry further information on our GDPR changes in a later issue.

73 de Sam

Microwave EME Activity Weekends

Peter Blair G3LTF

In the early days of EME, up to the 1980s we operated a system of what were called Activity Weekends. Picking the weekends when the moon's northerly declination was highest (that meant maximum elevation and longest window) a set of schedules was mailed out and contacts resulted together with a lot of random (non-scheduled) contacts. 99% of the activity then was on 432 and 1296MHz. This system concentrated activity at the weekends when you were most likely to find stations to work. As more stations became active the sked list was dropped and virtually all activity became random. Nowadays many contacts are set up on the HB9Q logger. http://www.hb9q.ch/hb9q/ (although my own preference is for fully random contacts)

About 9 years ago activity started to pick up again on 9, 6 and 3cm EME and following on the pioneering work of Brian, G4NNS, on those bands I built my own systems for 9 and 6cm and then had the idea to re-start the concept of Activity Weekends for each band. Very simply I selected suitable weekends and then announced them on the EME reflectors and in the 432 and above EME Newsletter. http://www.nitehawk.com/rasmit/em70cm.html the announcement essentially says this:

> *For newcomers: The idea of activity weekends is to encourage EME activity on the higher microwave bands outside contest weekends. There are no restrictions... if you wish then use the logger, telephone, HF....and use any mode. It is not a contest. It enables everyone to make QSOs, test new equipment, feeds, preamps etc. Hopefully some of the big guns get on and provide signals for newcomers to look for.*
>
> *We try to have these in the summer time (N. hemisphere) when it's easier to throw stuff together for an initial try at a new band, sometimes just to listen.*

They have been, in general, a great success. In particular activity on 6 and 9cm has increased significantly, and so my reason for writing this for Scatterpoint is to encourage a few more people to try microwave EME; with digital modes stations are making QSOs with quite small dishes down to 1.5m diameter. Microwave EME

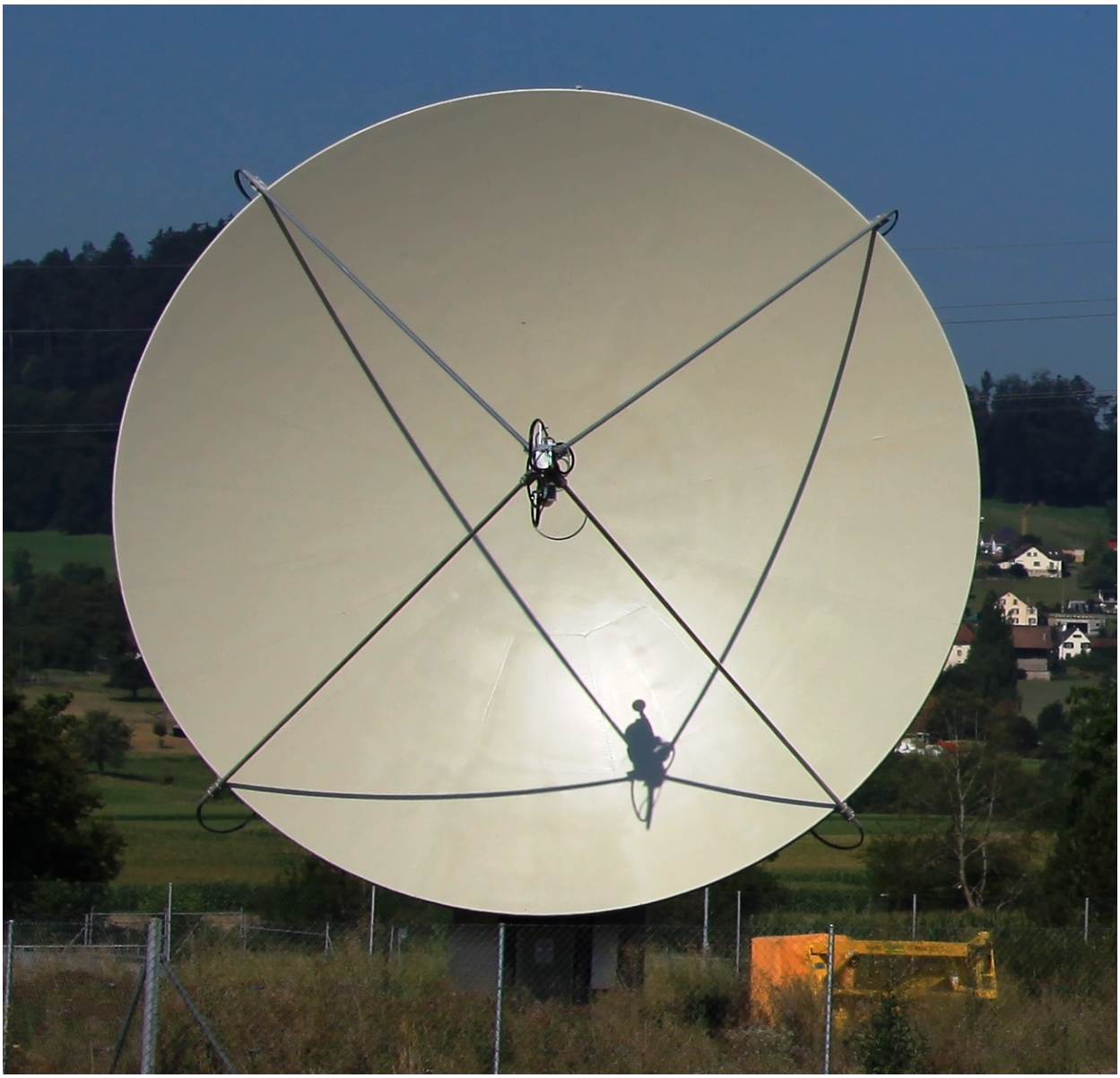
is still a challenge and to make a good low noise receiving system is not a five minute job but the boost to enthusiasm and drive by either hearing your first EME signal, or being heard by one of the big guns will be enormous. If you don't have a calibrated el-az mount then think about a simple polar mount which you can lash up temporarily and calibrate it by peaking on sun noise. Check your receive performance by comparing the noise level between pointing your feed horn at the cold sky and then the ground (anything better than 4-5dB and you are in business)

The dates for 2018 are as follows.

6cm May12/13	Moon Declination –1.4 to +5.8 deg.
3cm June 9/10	Moon Declination +1 to +8 deg.
9cm July ⅞	Moon Declination +3.5 to +10.5 deg.
13cm August 4/5	Moon Declination +6.6 to +12.9

More information on moon position can be found here www.vk3um.com/eme%20planner.html

There will be several microwave EMErs at the MRT, myself, G4NNS and G4BAO for a start, who can give advice if you want to take a look for EME signals in the activity weekends. I also have some 9cm CP feed horns and preamps that I can loan to any serious experimenter.



A "big gun", the 10m solid dish of HB9Q for 23-3cm

Silent Key: Anatoly V. Kokotov UA4HTS

From Alex RA45D

Sad news for our EME community. Well known EME friend Anatoly UA4HTS today [4 March] died after illness at 51. My condolences to his family.

Other condolences on Moon-Net:

Slawek, DL6SH	Ben SM6CKU	Andy Jacek & Paul (SP6JLW, SP6OPN & SQ6OPG)		
John Lambo PA7JB	John Worsnop G4BAO		Jose EA3HMJ	Marius F8DO
Zdenek OK1DFC	Peter G3LTF	Tonda and Vlada for OK1KIR		Juan LU8ENU
Eddie VE3KRP	Roger ZL3RC	Peter OZ1LPR	Dimitry UA3AVR	Chris SP7DCS
Stefano IK6EIW	Dick PA2DW	Andre F1PYR	Dave VK2JDS	Giulio IW3HVB
Franta OK1CA	Dirk ON5GS	Giulio IW3HVB		
Alex, RA4SD				

Silent Key: Daniel Glanc OK1DIG

From Conrad PA5Y

I have just received the very sad news that my good friend Dan OK1DIG passed way last night. We had grown very close in the last few years and had many exciting new projects in progress. I will miss our daily conversations and his big signal on both EME and terrestrial. Most of all I will miss his enthusiasm.

RIP my dear friend Dan

Other condolences on Moon-Net:

Alex Daskalakis OK1DIG		Walter OE6IWG	Vlada Masek OK1DAK
Zdenek OK1DFC	Bernd DF2ZC	Valter IK1FJI	Udo Langenohl DK5YA
Alex SV1NZX	Oguzhan TA2NC	Joe K1JT	John PA5MS

UK Microwave Group Loan Equipment

Don't forget, UKµG has loan kit in the form of portable transceivers available to members for use on the following bands:

5. 7GHz 10GHz 24GHz 76GHz

Contact John G4BAO for more information. Basic descriptions of the 10, 24 and 76GHz systems follow are to be found on our web site here Hardware www.microwavers.org/hw.htm

UK Microwave Group 10GHz Loan Equipment

Basic Description and Operating Instructions.

Introduction

As part of its membership benefits, the UKuG loans out items of GHz bands equipment for short periods, usually 6 months. This allows members to get an idea about operation on the various bands before committing time and money to their own equipment. The equipment represents the type of equipment that can be assembled from a combination of homebrew, surplus and commercial parts.

SYSTEM DESCRIPTION

Built by G4BAO, it consists of a G4DGU 10GHz – 144MHz transverter and a 1.5W PA in a weatherproof diecast box (1) All transmit receive switching is provided in the box, controlled by the external transceiver. It connects to a GW4DGU feedhorn on a 45cm Sky dish via a short SMA patch lead. It has a mounting bracket for an up to 2-inch pole. Cabling for operation with an FT817 is provided. Other rigs can be used but great care must be taken not to exceed the drive levels.

The Transverter produces approximately 1.5W on 10368MHz with a maximum 144MHz drive of 2 Watts.

UNDER NO CIRCUMSTANCES, INCLUDING TRANSIENT, SHOULD THE DRIVE EXCEED THIS POWER.

This corresponds to the FT817 "two bar" power level with a 13.8V supply and it is strongly recommended that the **"one bar"** setting is used.

The transverter has the following, clearly marked, connectors and cables:

- Powerpoles for connection to the 12V supply
- N female for 144MHz IF input
- N female for 10MHz reference input
    - The transverter can be run with or without an external 10MHz reference but if run without, it will be unlocked and may be slightly "off frequency"
- SMA female for 10GHz in/out connection to feedhorn
- Mini power plug to provide 12V to the FT817
- Bulgin Bucanneer connector wired for connection to power and control lead to an FT817
- 8 pin Mini DIN for connection to the FT817 ACC connector
    - TXGND pin provides a PTT low signal to the transverter

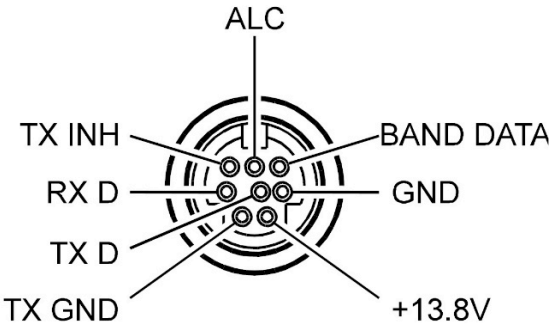


Figure 1
Connections on the FT817 Mini Din plug.
looking at solder side of plug
(NOT THE PINS)

BASIC OPERATION

Mount the dish on a vertical pole or tripod with the feedhorn at the bottom. As the dish is an offset one, the dish face will point downwards by about 27 degrees to beam at the horizon.

It is already set to this for a vertical pole so there is no need to adjust the dish angle

Connect up 12V power to the powerpoles, the SMA patch lead to the feed and transverter (Do not overtighten! Use fingers only unless you have the correct torque wrench for SMA connectors!)

Under no circumstances should you operate the transverter without the feed connected, there is no VSWR protection for the PA!

Connect up the DC power to the FT817 and the lead to the ACC connector.

If you are **NOT** using an FT817 you must make up an adaptor lead for your radio PTT line to plug the DIN plug in to.

Under no circumstances should you take the connector apart and rewire it!

Pressing the PTT on the FT817 should make the transverter transmit. If you listen carefully you will here the transverter's internal relay make a click.

Note

- While the box is weatherproof, the connectors etc are not, so for any operation outdoors you are responsible for providing weather protection. For short portable operations, a plastic bag can be used to keep the rain off, but for more permanent installations, proper weatherproofing of all connectors and leads is the responsibility of the loanee.

G4BAO March 2018

Views of the 24 GHz loan system

SYSTEM DESCRIPTION

Built for G3LQR by DC0DA back in the 1990s, it consists of a DB6NT 144 MHz to 24 GHz transverter, an early DB6NT LO and a DB6NT amplifier. A waveguide switch reverses the amplifier around between transmit and receive. The dish and feed are believed to be from ex-BT 18 GHz equipment.

The transverter is connected to the antenna by a short piece of waveguide to form a single robust unit that is easily transported and readily fixed to a tripod.

Around 1W in is needed at 144 MHz for full output of around 10mW at 24GHz and the unit is accurate to within a few kHz after a relatively short warm up period.

A 2m IF of 144.100 MHz corresponds to 24048.100 MHz.

A suitable 144MHz IF transceiver is the Yaesu FT817 but it has been used successfully with a Yaesu FT290 MkII. It is straightforward to use any 2m transceiver subject to the following guidance:

PLEASE ENSURE YOU SET THE TRANSMIT POWER ON THE 144MHz IF RIG TO A MAXIMUM OF 1W AND/OR USE A SUITABLE RF ATTENUATOR ON THE 2m INPUT.

SYSTEM FRONT PANEL

The transverter has the following connectors and controls:

- 12v Supply Banana Sockets
- 144 MHz In/Out BNC
- PTT Audio type Socket
- Standby Switch - STBY
- Manual TX/RX waveguide switch

(The SMA socket marked “TCVR” is not used and can be left unconnected).

The transverter has the following indications:

- "Operate" LED – Green
- RF Output Level Meter

CONNECTING UP THE SYSTEM

Connect a stable 12V-13.8V 2A supply to the front panel banana sockets. Once the 12v supply is switched on the frequency generating circuitry will be active. The "Operate" LED will not be illuminated.

Connect the 2m radio (subject to the guidance above) to the front panel BNC connector.

If automatic PTT (Gnd for TX) is available then connect it to the audio type front panel connector. Otherwise a toggle switch can be plugged into the connector to manually control the PTT line.

OPERATING THE SYSTEM

A soon as a 12v supply is connected and switched on the frequency reference circuitry is active and draws 0.5A dropping to 0.15A after a few minutes. To fully activate the transverter for a QSO the "STBY" switch needs to be operated so that the green LED is illuminated.

1. Check the WG switch is set to the "RX" position.
2. Check that the "STBY" toggle switch is in the up position.
3. Apply 12v supply and allow about 15mins to stabilise.
4. Activate the "STBY" switch and ensure the green LED is illuminated.

The transverter is now in a receive condition. 144.100 MHz on the 2m receiver = 24048.100 MHz to within a few kHz. To switch to transmit:

1. Switch the WG switch to the "TX" position.
2. If manually operated, ground the PTT line. (Audible click and 2m RX noise decreases)
3. Switch the 2m transceiver to transmit.
4. Check that "whistle-up" provides an indication of around 3 to 4 on the RF level meter.

At the end of the over carry out the reverse:

1. Switch the 2m radio to receive and deactivate the PTT line. (Listen for click and 2m RX noise increase).
2. Switch the WG switch back to "RX". (Easy to forget).

The following helps provide confidence that all is well:

Action	**12v Supply Current**	**2m Noise level / Output level**
12v supply applied	0.5 A decreases to 0.15A	N/A
"STBY" activated	0.67A	Large noise increase / N/A
WG switch to TX	0.67A	Decrease in noise / N/A
PTT activated	0.67A	Decrease in noise / N/A
Whistle up	0.67A	N/A / "3 to 4"

IN USE

During 2017 the gear was used to successfully complete several two-way QSO's including one at 65km between the Guildford area and Walbury Hill with S9 signals received both ways. Already in 2018 a path of 92km has been worked with 55/54 signal reports between Walbury Hill and the Lulworth area. As with any microwave operation it is useful to have a good idea of the correct heading and to be able to operate in a beacon mode for dish alignment. The frequency accuracy of this transverter is excellent and the QSO mentioned above nominally targeted for 144.200 MHz took place on an indicated 144.1975 MHz.

(See: pic.twitter.com/BTBVoola9F)

UK Microwave Group 76GHz Loan Equipment

Basic Operating Instructions.

SYSTEM DESCRIPTION

Rear view of the 76 GHz loan system

The 76GHz loan system was built by the late G4EAT and comprises separate receive and transmit modules on a common support structure. It also comes with a self-contained beacon transmitter, useful for setting up and carrying out short range tests.

On the RX & TX modules the IF is 145-147 MHz for 75.976-75.978GHz, switchable to cover 75.978-75.980GHz using an IF of 144-146MHz.

A full description of the system can be found on the UK Microwave Group web site.

PLEASE TAKE NOTE OF AND ACT UPON THE WARNINGS INCLUDED BELOW.

The system was constructed from surplus and expensive parts which, if damaged, are now impossible to replace.

CONNECTING UP THE SYSTEM

Both the TX/RX modules need to be connected to a stable 12V-13.8V supply using the combined leads supplied.

A suitable 144MHz IF transceiver is the Yaesu FT817 and a cable is supplied to connect this to the transverter.

PLEASE ENSURE YOU SET THE TRANSMIT POWER ON THE 144MHz IF RIG TO A MAXIMUM OF 500mW AND/OR USE A SUITABLE RF ATTENUATOR ON THE INPUT OF THE 76GHz TX MODULE.

The setting to use on the FT817 is “one bar” on its internal power meter

THE FT817 FEATURES A TRANSMIT INHIBIT INPUT AND WHEN CONNECTED TO THE TRANSVERTER VIA THE ACC CABLE IT ENSURES THE 817 CANNOT TRANSMIT UNLESS THE TX SWITCH ON THE TRANSVERTER IS IN THE “UP” POSITION.

NOTE THAT THIS FEATURE IS ONLY SUPPORTED BY THE FT817.

WHEN USING OTHER IF RIGS (NOT RECOMMENDED), PRESSING THE PTT WITHOUT FIRST OPERATING THE TX SWITCH WILL DESTROY THE TRANSVERTER’S RECEIVE MIXER!

PLEASE REMEMBER TO CONNECT THE “ACC” LEAD TO THE FT817 THEN USE A POWER METER TO ENSURE CORRECT OPERATION OF THE INHIBIT LINE EVERY TIME YOU TAKE OUT THE TRANSVERTER.

FAILURE TO DO THIS WILL MEAN YOU WILL DESTROY THE 76GHz RECEIVER WHEN IT IS CONNECTED TO THE 144MHz IF RADIO.

BEACON

The Stand-alone beacon TX unit is also powered from a 12V supply. Note there is no antenna for the beacon, output is via open waveguide. The beacon TX can be set to carrier plus occasional CW (sends '76GHz') or can be keyed.

OPERATING THE SYSTEM

It is recommended that you allow at least 15 minutes for the modules to 'warm' up as they are not frequency locked to a standard. After the initial 'warm' up period the frequency stability is reasonably good, needing only an occasional re-tune of the IF radio to stay on the frequency of the received signal.

It is best to get some practice receiving the beacon TX module before attempting a QSO.

With the RX module switch set to 142 the beacon TX appears between 144.000 and 143.980MHz and will be drifting LF. With the switch set to 145 the signal will be between 147.000 and 146.980MHz. Note if your RX only receives down to 144.000MHz (with the switch in the 142 position) you will hear a number of spurious signals spreading up from 144.000MHz, some are quite strong, but the main carrier below 144MHz will be very much stronger.

The TX beacon (with open waveguide as antenna) has been received at good signal strength using the transverter over a 15km line of sight path.

Once you have mastered setting up and listening for the beacon TX you should be ready to attempt your first 76GHz QSO. Probably best to start with a relatively short range line of sight path.

You will need a stable platform (tripod) to support the transverter which is capable of being locked in position once you have found a signal. The beam width of the horn antennas is very narrow (a couple of degrees) so pointing accuracy is very important to ensure you are able to receive other signals.

Due to the frequencies (and frequency steps) available from the main frequency synthesizer you may need to use a different 144MHz IF than your QSO partner, i.e. if the other station is using an IF of 144.100MHz to transmit on 75.976100GHz you will need to tune to 145.100MHz (with the switch on the RX module set to 142).

When you are confident in using the system for short range contacts you can try longer distances.

BAND CONDITIONS

With the power levels available the system is probably only capable of line of site contacts (it was used when the UK distance record was set (which stands at 129km as of December 2017)). Moisture content of the atmosphere will attenuate signals easily adding 10's of dB loss on hot humid days, so best results are likely to be achieved on cold low humidity days.

It has recently been observed that 76GHz signals can under certain atmospheric conditions get bent even on line of sight paths. It was necessary to offset beam headings by up to 20° on a 90km path on one occasion. There is plenty to be discovered about 76GHz propagation!

Disclaimer

At the time of writing these operating instructions I was not in possession of the 76GHz system. They have been compiled from memory and from the notes I made during the year I had the equipment. If whilst using the equipment you find any inaccuracies or you think something should be added (or deleted) please let me know.

Neil Underwood, G4LDR. g4ldr@btinternet.com December 2017

70cm 3W driver board

I should have kits for the 70cm 3W driver board in time for Martlesham #GHz_bands round table Prices announced soon on [g4bao.com](g4bao.com)

Martlesham Microwave Round Table 2018 & UKµG AGM

The event will open at lunch time on Saturday 14th April and close at 16:00 on Sunday 15th April.

By 18 March 79 people had registered.

Saturday 14th April 2018

10:00	Breakfast at Orwell Truck Stop, A14.
12:00	Doors Open
	Refreshments available from 12:00 (drinks, biscuits & sandwiches)
13:00	Welcome & opening
13:15	Measurements lab
13:45	Depart for Bawdsey*
14:30	Bawdsey Radar Museum Visit
16:00	Depart Bawdsey
16:30	Measurement lab closes
19:30	Meet for Dinner at 20:00

* Details of access to Bawdsey on Saturday will be posted later for those who indicate that they are attending

Sunday 15th April 2018

09:00	Doors Open
09:50	Welcome and Opening
10:00	UK Microwave Group AGM, Trophy Presentations
10:45	Refreshments & Judging of the Construction Contest
11:00	Talk 1: "Introduction to SDRs for Microwavers" by Heather M0HMO
11:45	Talk 2: Airscout by John G3XDY
12:30	Lunch Break
13:30	Talk 3: “ATV on 5.6, 10 and 24 GHz” by Dave G8GKQ
14:15	Talk 4: "The Wednesday Digifest" by John G4BAO
15:00	Refreshments
15:15	UKuG Contest Forum – John G3XDY
16:00	Close

NB Order of talks may change.

Visit

Some 12 years ago there was a visit to Bawdsey Radar by attendees of the MMRT. Over the past two years over £1.5m has been spent refurbishing the site and the exhibition and we have a further opportunity for a private visit on the Saturday afternoon. To quote from the web site, the exhibition now includes

- The story of radar – stroll between interactive exhibits that bring the history of radar to life
- Keeping the secret – introducing the people who made Bawdsey radar possible.
- Timeline wall – radar from 1935 to the present day
- Aircraft tracking with WW2 radar – a simulation experience
- A history of the Bawdsey Estate over the last 130 years
- Air traffic control – a real-time illustration of the power of radar
- Radar today – from the exploration of Saturn’s rings, to satellites and medical scanners
- Independent research – a dedicated focus space in which you can explore our extensive technical archive

The web site is at https://www.bawdseyradar.org.uk/

We have negotiated a small discount on the entry charge which will be payable on the day. We are currently scheduling to be at the site at 2.30pm. Details of access to Bawdsey on Saturday will be posted later for those who indicate that they are attending.

Please book for this visit on the Registration Page.

Accommodation

Accommodation has been arranged at the Holiday Inn Ipswich, London Road, Ipswich IP2 0UA. Double or twin rooms are available for £65 per room per night, including full English breakfast. Please contact the hotel direct to reserve a room on +44 (0) 1473 786700 quoting reference MG1.

Location

The talks will take place at the BT Adastral Park site at Martlesham, Ipswich, in the Antares Building Foyer and Crucible lecture theatre.

Test gear will be located in a nearby room, and the flea market will take place in the Foyer.

Refreshments will be served on the first floor balcony.

Adastral Park is just off the A12 to Lowestoft to the East of Ipswich. From the Holiday Inn Ipswich follow signs for Felixstowe initially and then take the A12 signposted to Lowestoft at Junction 58. Adastral Park is right at the second roundabout on the A12.

Postcode to follow is IP5 3RF

Details of access to Bawdsey on Saturday will be posted later for those that indicate that they are attending.

Test Gear

A range of test gear will be available including:

Noise figure to 10GHz
Network Analysis (scalar) to 6GHz
Power measurement to 18GHz
Spectrum analysis to 22GHz

Further capability may be added later – watch the website.

Chip Bank

Mike will be there with his stock.

Dinner

An informal dinner will take place at the Holiday Inn Ipswich at 1930 for 2000 in the Wolsey Room. The cost will be £25 per person, please book and select your menu choices on the booking page.

Starters

Honey Roasted Carrot and Parsnip Soup
Prawn and Crayfish Cocktail with Marie Rose Sauce
Brussels Pate with Onion Chutney and Toasted Ciabatta

Main Courses

Pan Fried Breast of Chicken with a Red Wine Jus, with roasted potatoes and roasted root vegetables
Grilled Smoked Cod Loin with Beetroot, Sauteed New Potatoes and Samphire
Spinach and Ricotta Cannelloni with Garlic Ciabatta and Roquette and Parmesan Salad

Desserts

Homemade Chocolate Brownie with Chocolate Sauce and Vanilla Ice Cream
Sticky Toffee Pudding with Toffee Sauce and Caramel Ice Cream
Vanilla Bean Panna cotta with Coffee Syrup and Chantilly Cream
Tea and Coffee

Book here

http://mmrt.homedns.org/index.php/book-here/

Contact

Please contact John Quarmby G3XDY for all queries.

Email: g3xdy@btinternet.com Phone: +44 (0)1473 717830

UKµG Notice: 2018 Annual General Meeting

Notice is hereby given that the 2018 Annual General Meeting of the UK Microwave Group will be held at 10:00am on Sunday, 15 April 2018 as part of the Martlesham Microwave Round Table event which takes place over that weekend.

This will include the election of the officers of the committee and the presentation of the Chairman's, Secretary's and Treasurer's Annual Reports.

All Committee officers/members are prepared to stand again, however, new members would be very welcome.

Any UKuG member wishing to stand should notify the UKµG Secretary, John Quarmby G3XDY, by 11th March 2018.

If you have any agenda or AOB items for the AGM then please contact the UKµG Secretary, John Quarmby G3XDY by 11th March 2018, email: secretary@microwavers.org

UKµG Microwave Contest Calendar 2018

Dates 2018	Time UTC	Contest name	Certificates
4-Mar	1000 - 1600	1st Low band 1.3/2.3/3.4GHz	F, P,L
8-Apr	1000 - 1600	2nd Low band 1.3/2.3/3.4GHz	F, P,L
6-May	0800 - 1400	3rd Low band 1.3/2.3/3.4GHz	F, P,L
20-May	0900 – 1700	1st 24GHz Contest	
20-May	0900 – 1700	1st 47GHz Contest	
20-May	0900 – 1700	1st 76GHz Contest	
27-May	0600 - 1800	1st 5.7GHz Contest	F, P,L
27-May	0600 - 1800	1st 10GHz Contest	F, P,L
3-Jun	1000 - 1600	4th Low band 1.3/2.3/3.4GHz	F, P,L
10-Jun	0900 - 1700	24/47GHz Trophy / 76/122-248 GHz	
24-Jun	0600 - 1800	2nd 5.7GHz Contest	F, P,L
24-Jun	0600 - 1800	2nd 10GHz Contest	F, P,L
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)	

Activity News : February 2018

By Neil Underwood G4LDR

Please send your activity news to:

scatterpoint@microwavers. org

Introduction

February band conditions seemed to be similar to those experienced by most in January, i.e. poor. The cold weather at times has not helped with fewer operators venturing out portable for the 1296MHz and the 2320MHZ to 10368MHz UKAC contest on the third and fourth Tuesday of the month, although there are always exceptions as reported below.

The growing level of Digital Amateur Television (DATV) activity on the mm bands has resulted in opportunities to made narrow band contacts on the 24GHz band. In fact I have worked 6 different stations on 24GHz in the last month from my home station near Salisbury.

Band Reports – 10GHz

From Pete G1DFL, IO91.

Pete reports on his 10GHz portable operation late one Tuesday evening.

Quick Dash in the Snow on 10GHz!

It was a snowy wintery moonlit cold night and -6.5C. After missing the January SHF UKAC because of a rain storm I was determined to get out and grab some much needed points for the Drowned Rats! So I packed just the 3cm gear into the car and drove through icy conditions the 10 minutes north to Rememham Hill (IO91NM). Arriving onsite at just before 10pm I found my normal roadside lay-by blocked with an HGV and a van. I elected to try my alternative site which involves off road parking and a short walk up a bridleway/footpath to a farm gate which has clear views to the SE and SW.

After setting-up, I found GB3SEE the Reigate beacon which was a reassuring marker at 53 to 55 and worked out my dial offset which was 6kc high. The ON4KST chat seemed very quiet and I tried with Dave M0GHZ (IO81VK and 93km) but nothing was heard either way.

I then picked out Neil G4LDR (IO91EC and 70km) near Salisbury and we worked easily for my first QSO on 3cm in 2018. Some quick tries with G4BAO and G3XDY before the contest ended at 10.30pm but again nothing heard. The alternative site has high trees to the N and NW which block signals in those directions. It was, despite being chilly, nice to get out and start the GHz season with a successful trip albeit quick and local trip!

Band Reports – 24GHz

As mentioned above DATV activity has seen a rise in narrow band operating on the 24GHz band

From Dave G1EHF IO91.

An interesting impromptu session, which allowed me to activate a new site near Basingstoke in Hampshire, (for me at least, following a suggestion by Noel, G8GTZ)

Signals to and from G4LDR near Salisbury were very strong considering the path, at 59+ on NBFM. The path to G8GTZ/P on Walbury Hill, Berkshire resulted in 57 reports on SSB. The photograph shows the take off towards Walbury (and you might just be able to see Dave's companions for the afternoon by the front of the car. Ed.).

Take off from G1EHF/P location near Basingstoke towards Walbury Hill (G8GTZ/P)

From Neil G4LDR, IO91

Besides the regular Monday evening contacts on 24GHz with G4NNS (near Andover, Hampshire) and G1JRU (near Southampton) and the contact with Dave G1EHF/P (reported above), I have managed to work Noel G8GTZ/P and Dave G8GKQ/P whilst they were both on Chessefoot Head (near Winchester) with 59+ signals on NBFM. I also received DATV from G8GKQ/P over the 29km near line of sight path. For DATV I use a British Amateur Television Club (BATC) Minitouner which I recently built; tuned to the IF (145MHz) of my narrowband 24GHz transverter. I am in the process of building the BATC Portsdown transmitter, so unable to transmit pictures at this time.

Off-air screen shot of G8GKQ/P's 24GHz system at Cheesefoot Head as received via DATV by G4LDR

A week later G8GKQ/P was on Butser Hill north east on Portsmouth where again signals were 59+ on NBFM over an obstructed path, I also received DATV from Dave, but at low symbol rate (low definition) over the 49km path. The DATV equipment used by Dave was some old 'DMC' kit, with an ADF5355 local oscillator. Marginal on the phase noise for DATV use, but clearly good enough! No GPS reference locking was used and Dave reported that it was only 3 kHz off at 24 GHz running on the internal oscillator. Dave's output power was probably 40mW out.

Whilst G8GKQ/P was on Butser, Noel G8GTZ/P was on Walbury Hill. I worked Noel on NBFM on 24GHz. Noel worked both G8GKQ/P and G1EHF/P on narrow band and he also received DATV from Dave, G8GKQ/P over a 50km path.

Further tests of 24GHz DATV are planned from different sites so there should be opportunities for more narrow band operation.

.....and finally

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

OK EME seminar

On 6th to 8th of April 2018 will be the 28th OK EME and MW seminar at hotel ASKINO– Horník (between Prague and Brno). If you have any question about, please send me direct email.

http://www.vhf.cz/seminar-2018-eng/

Zdenek - OK1DFC ok1dfc@seznam.cz www.ok1dfc.com

Laugharne Amateur Radio Rally

10:00 Saturday 24 March 2018

Laugharne Memorial Hall, Carmarthenshire SA33 4QH

This year includes a series of short talks entitled

"Getting started on 10GHz..."

Starting at 1000 promptly featuring:

- Chris Bartram, GW4DGU, "...what you can work on 10GHz from SW Wales."
- Derek Kozel, MW0LNA, "...bits to volts: transmitting and receiving with a software defined radio. An introduction to the GNU radio toolkit with over the air demos of transmit and receive."
- Peter Harston GW4JQP, "...a low cost 10GHz receiver."
- Plus an update on the GB3RPE beacon project and displays of equipment.

Places are strictly limited, so please register interest with Peter GW4JQP, pharston@gmail.com

See last month's Scatterpoint for a map.

MICROWAVE UPDATE 2018

Fairborn, Ohio (near Dayton)
October 11-14, 2018

An international conference dedicated to microwave equipment design, construction, and operation.

The focus is on, but not limited to, amateur radio on the microwave bands.
The Midwest VHF/UHF Society is pleased to host this October 2018 event.
Registration & Conference Updates: www.MicrowaveUpdate.org
(Check the website periodically for updates.)
Location: Holiday Inn Dayton/Fairborn I-675

Seminar Presentations	Antenna Gain Measurements	Door Prizes
Test & Measurement Lab	Flea Market	Banquet
Vendor Demo/Sales Area		Tour: Carillon Historical Park
Tour: Voice of America Museum		Tour: US Air Force Museum

Microwave Update is an ARRL technical conference. ARRL publishes the conference proceedings.

Save the Date, make plans to attend, and help spread the word to others who might be interested.
Further info: Tom Holmes (MUD 2018 General Chair) at n8zm@mvus.org.

Joe Burke, WA8OGS
Publicity

The Midwest VHF/UHF Society is looking forward to welcoming you to Dayton for MUD 2018.

Events calendar

2018

January 13	Heelweg	info@pamicrowaves.nl
February 9–11	Hamcation, Orlando, Florida	www.hamcation.com
February 17	Tagung Dorsten	www.ghz-tagung.de/
March 24	Laugharne Rally (see p15)	Peter Harston GW4JQP, pharston@gmail.com
April 6–8	OK EME and MW seminar	http://www.vhf.cz/seminar-2018-eng/
April 7	CJ-2018, Seigy	http://cj.r-e-f.org
April 9–13	EuCAP 2018 European Conference on Antennas and Propagation, London	www.eucap2018.org
April 13–15	18th Microwave Technical Meeting – Bydgoszcz, Poland	www.mikrofale.iq24.pl
April 14–15	Martlesham Round Table / AGM	http://mmrt.homedns.org/
April 21	RSGB AGM, Birmingham	http://rsgb.org/agm
May 18–20	Hamvention, Dayton	www.hamvention.org/
June 1–3	Ham Radio, Friedrichshafen	www.hamradio-friedrichshafen.de/
June 17 (tbc)	RAL	
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	http://www.ukw-tagung.de/
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	http://www.microwaveupdate.org/
Oct 12–14	RSGB Convention & AMSAT Colloquium	http://rsgb.org/convention/

2019

May 17–19	Hamvention, Dayton	www.hamvention.org/
June TBA	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.

Ham Radio in Friedrichshafen Shifts to Early June this Year

After taking place in late June for many years, Germany's Ham Radio 2018 exhibition — Europe's largest Amateur Radio gathering — has become a bit of a moving target. This year's show will shift to June 1 – 3, in conjunction with the 69th Lake Constance Convention — both organized by the Deutscher Amateur Radio Club — and the separate **Maker Faire**. The Messe Friedrichshafen convention center will be the venue for all three.

80m UK Microwavers net

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

73 Martyn Vincent G3UKV