

# Connacht Regional News



*Servientes Traditiones et Spiritus Experimentalis Radio*



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Vol. 2 Issue 04

April 2023



**International  
Marconi Day  
April 22nd  
2023**

## **In This Issue**

**Forthcoming Events - RSGB Region 8 News - 3D Printing  
A Slim jim for 40MHz - The Radio Lab Experimenter System  
Observations of the OZ7IGY 40MHz Beacon - The Lazy 8 Transverter Project  
An Overview of VARA & VARAC Pt 1 - Conemara the Radio Experimenter's  
Paradise - Club Reports and Activities**

Welcome to the  
thirteenth Edition of  
the Connacht Regional  
News Magazine

The Connacht Regional News Magazine has evolved to its current format over the last year.

We are the only freelance Experimental Radio journal in Ireland. As we are not tied to any National Society or club, we can remain inclusive and unbiased in our content. We can report all activities both North and South of the Border and are delighted to provide a platform to publicise activities or events from all Radio Clubs.

We are fortunate that there are seven radio clubs in Connacht, all of which are very active as can be seen in the club's section of this Magazine.

We repeat forthcoming events in our News Section right up to their date of operation. In this way we hope to encourage as many groups or club to take part.

We promote >>ALL<< radio activities, Special Events and Rallies. If you have anything planned do feel free to send us the details and we will promote it for you.

We welcome any articles submitted for publication and encourage those who have never written for a magazine before to give it a go.

We publish Home-Brew Projects, Technical Articles, Hints for the Shack, QRP Activities, Current technology and so much more.

Due to the overwhelming success and readership of the Connacht Regional News Magazine now going viral we produce a MONTHLY magazine published on the 1st day of every month.

We welcome Feedback  
If you enjoyed this publication please email  
Steve EI5DD  
wright14@gmail.com

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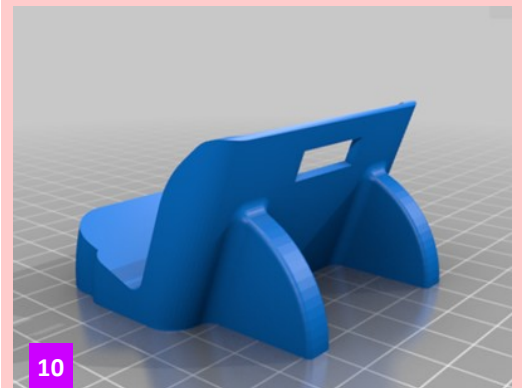
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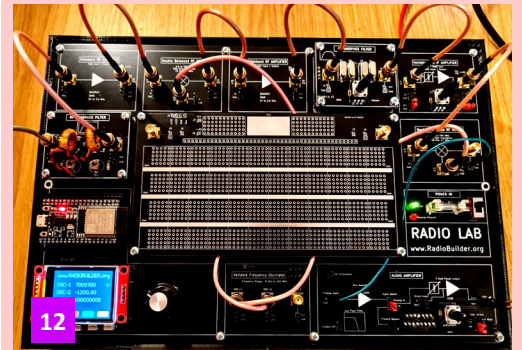
## Submitting Items To This Magazine

We are always delighted to receive any radio related material for this magazine.

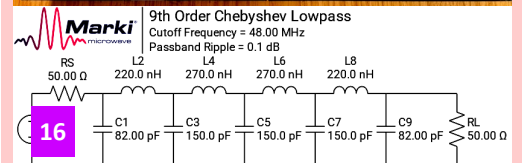
Please E-mail us in advance of submission so that space can be allocated.



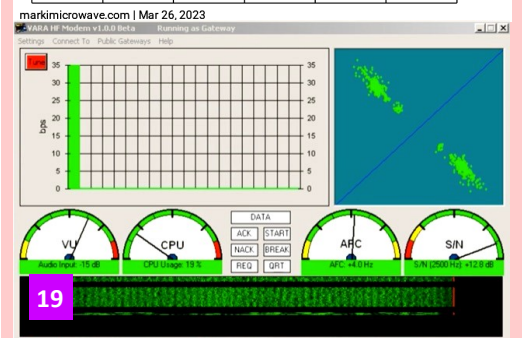
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Cover Image  
International Marconi Day  
Saturday April 2nd 2022

Views expressed in this publication do not necessarily reflect the views of the Editor, those of the Carrion Press or the Galway VHF Group

We may all sell the same products but the service from ML&S is in a different league.

## Don't take our word for it;

### I am new to Ham Radio and needed setup advice

I am new to Ham Radio and was looking for specific setup advice. I visited Martin Lynch and Sons in Staines and got exactly what I wanted. The sales assistant, John Jenkins spent over an hour with me going over every detail, drew helpful diagrams and even soldered the connections in place. All this along with friendly and useful chat. I cannot remember ever being so well treated with a technical purchase - with the possible exception of the Apple store in Regent Street. I strongly recommend this company to novices and experts alike Mr. Romer.

**Date of experience:**  
30 August 2022

### Excellent Service

Very helpful staff when I got in touch with them, the items which I purchased was a quick and easy transaction. Pleasure to do business with. 10/10.

Anne Christian  
**Date of experience:**  
03 August 2022

### I purchased an item on-line

I purchased an item on-line and needed to return it. They received the item back and refunded me without any delay and without any stress. The sign of a remarkable and well-managed company with integrity. They can be trusted and I will be back.

I rarely have to return items, but another part of my big plan - the items needed to be returned within the "cooling off" period

and they (a competitor of Martin Lynch) have been a nightmare to deal with and refuse to simply comply with the law. It's dishonest and it looks like a money claim. I'm so sorry that the items I needed were out of stock at ML&S and I was forced to buy elsewhere.

This is why I'm taking the trouble to endorse Hamradio and Martin Lynch and wish that more companies in this industry were like them.

Many thanks. Much appreciated.  
**Date of experience:**  
02 September 2022

### I have nothing but 100% praise for ML&S

I have nothing but praise for Martin Lynch & Sons. I sent two well packaged Radios for a trade in, they were worth a considerable sum of money, but both went missing. ML&S went out of their way to sort it with the courier with one radio found 13 days later and I was more than happy with the outcome through this company. Trust me, ML&S goes the extra mile for customers and I am very happy to recommend them 100%.

Special thanks are due to Richard and Paul in particular. Fantastic company. MM3GQT

**Date of experience:**  
17 August 2022

### Just what I wanted

Just what I wanted, super quick delivery thanks very much.

Andrew Ward  
**Date of experience:**  
23 August 2022

### I Recently I purchased a radio that...

I Recently I purchased a radio that developed a fault under warranty. I contacted ML&S who arranged for the radio to go back to them, repaired and returned to me. The whole experience was organised and painless for me, the staff were helpful and cared about my problem. Good old fashion customer care. Would recommend them most highly and will purchase again.

Robert  
**Date of experience:**  
07 September 2022

### Have used ML&S for years and can never fault their service

Have used ML&S for years and can never fault the service, be it telephone support or order processing and delivery. Highly recommended.

Graham McCusker  
**Date of experience:**  
05 September 2022

### What can I say but carry on as the service is first rate by a mile

What can I say. Repeat business is always a pleasure with Martin Lynch and Sons and the team. First rate goods be they new or old. Delivery first class. Support first class. I shall be looking in late September for a new shack in a box. Yaesu Ft 991A and some accessories. All the best from Julia Merton, G7LJL

**Date of experience:**  
05 September 2022

### Just a top ham radio shop good website

Just a top ham radio shop good website fast postal service super safe way to pay like PayPal just keep up the good work

**Date of experience:**  
18 August 2022

### Delighted

The Orion 2 roofing filter arrived well packaged in immaculate condition, as represented. It functions perfectly.

I've been trying to acquire one for years. I was especially impressed with the professionalism of the entire transaction.

Jack Preston  
**Date of experience:**  
07 September 2022

## Why shop anywhere else?

New to the hobby or seasoned operator, you'll get the same welcoming and professional greeting every time. I wouldn't have placed my name on the company if we didn't.

Martin Lynch & his Sons Ltd. Established 1990.

**MARTIN LYNCH & SONS LTD. THE WORLD'S FAVOURITE HAMSTORE**

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E-mail: sales@hamradio.co.uk

Opening Hours: Mon - Fri: 8.30am to 5pm. Sat: 9am to 4.30pm.

International Tel: +44 1932 567 333

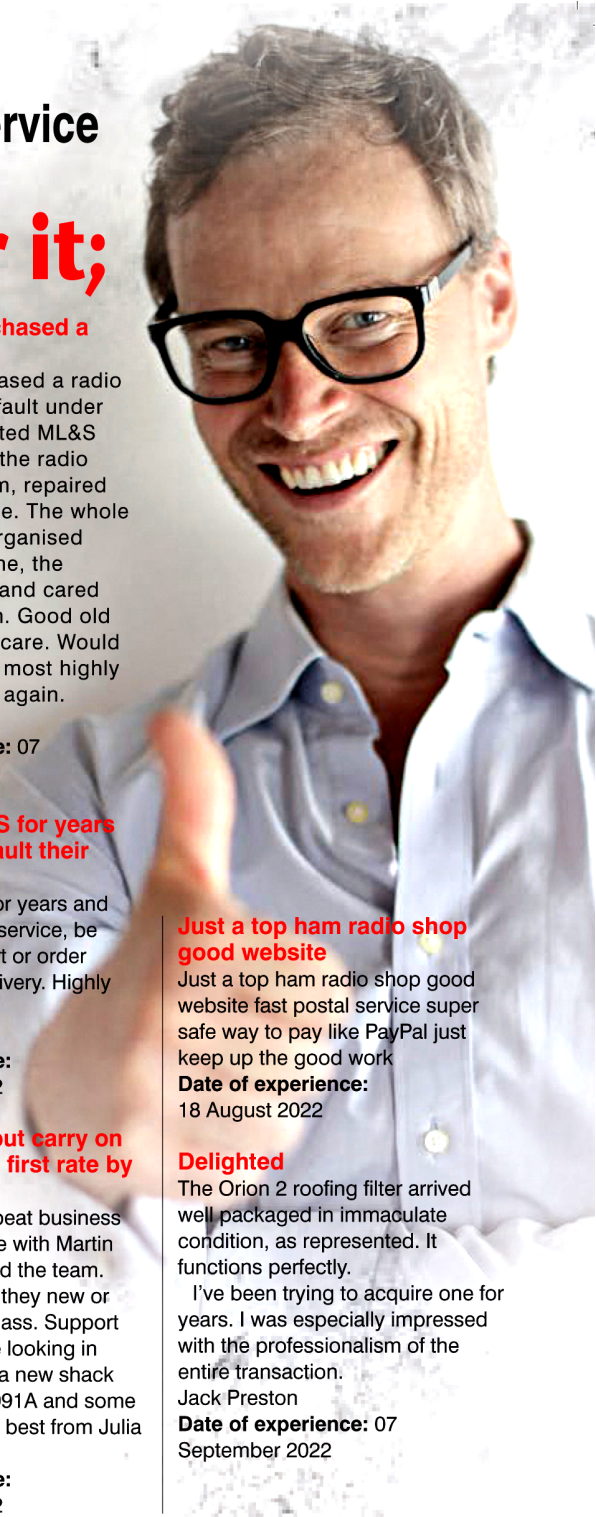
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Every week there's something new. One simple URL

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HamRadioUK



# **Lough Erne Rally**



**Sunday 7th May**

**Share Centre  
Lisnaskea Co. Fermanagh  
BT92 0EQ**

**Doors Open 11:30 am  
Entry £5.00 or €5.00**

**Free tables for trade, Special  
Interest, Shack Clearance Bring and  
Buy etc.**

**RSGB Sales Stall**

**Bar, Food Café, Cooked Lunch  
Free Parking**

**Book tables via**

**[argault91@gmail.com](mailto:argault91@gmail.com)**

# News and Forthcoming Events Planning 2023

## World Amateur Radio Day - April 18th 2023



Every April 18th, radio amateurs worldwide take to the airwaves in celebration of World Amateur Radio Day. It was on this day in 1925 that the International Amateur Radio Union was formed in Paris.

Amateur Radio experimenters were the first to discover that the short wave spectrum, far from being a wasteland, could support worldwide propagation. In the rush to use these shorter wavelengths, Amateur Radio was “in grave danger of being pushed aside,” the IARU’s history has noted. Amateur Radio pioneers met in Paris in 1925 and created the IARU to support Amateur Radio worldwide.

Two years later, at the International Radiotelegraph Conference, Amateur Radio gained the allocations still recognized today — 160, 80, 40, 20, and 10 meters. Since its founding, the IARU has worked tirelessly to defend and expand the frequency allocations for Amateur Radio.

Thanks to the support of enlightened administrations in every part of the globe, radio amateurs are now able to experiment and communicate in frequency bands strategically located throughout the radio spectrum. From the 25 countries that formed the IARU in 1925, the IARU has grown to include 160 member-societies in three regions. IARU Region 1 includes Europe, Africa, the Middle East, and Northern Asia. Region 2 covers the Americas, and Region 3 is comprised of Australia, New Zealand, the Pacific island nations, and most of Asia.

The International Telecommunication Union (ITU) has recognized the IARU as representing the interests of Amateur Radio. Today, Amateur Radio is more popular than ever, with more than 3,000,000 licensed operators! More information at <https://www.iaru.org/on-the-air/world-amateur-radio-day/>

## Special Event Stations

In celebration of the 25<sup>th</sup> anniversary of the establishment of the Hong Kong Special Administrative Region of the People's Republic of China on the 1<sup>st</sup> of July 1997, Hong Kong licensed amateurs are granted the use of the special prefix VR25 until the 30<sup>th</sup> of June 2023. The VR2 Contest Club, and the Hong Kong Amateur Radio Transmitting Society will be using VR25CC and VR25HK, respectively.

YR1400VT is the special callsign that members of Radio Club YO6KGS will be using until the 30<sup>th</sup> of June 2023 to popularise the newly inaugurated Via Transilvanica, a long-distance trail used for hiking, cycling and horse riding that crosses Romania. More information can be found on QRZ.com QSL via eQSL.

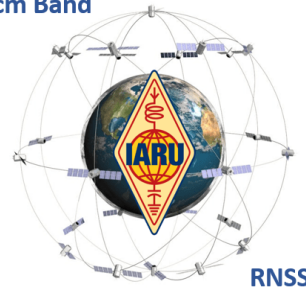
The Isle of Wight radio society will be broadcasting from the Marconi Monument at the Needles on the island for International Marconi Day, 22<sup>nd</sup> April. Call sign GB0MAR. SSB 40m and 20m and probably CW on all bands.

A group of radio amateurs in Jersey will be using special event callsign GB3KCJ as part of the Coronation celebrations. An opportunity exists for groups in each of the UK nations who have a regional secondary locator, and the Crown Dependencies, to apply for similar special event callsigns.

The Isle of Muck is part of the Scottish Small Islands group along with Rhum, Eigg and Canna called the Inner Hebrides situated off the West Coast of Scotland. The intention is to be on the island from 15<sup>th</sup> April 2023 until 21<sup>st</sup> April 2023 using the callsign GB0SIM. There will be two stations operational on all HF Bands from 1.8 - 28MHz SSB & CW.

## The Fate of the 23cm Band in Region 1

### 23cm Band



RNSS

Austria has become the latest country to impose restrictions on Amateur Radio operation in the 23 cm band (1240-1300 MHz) to protect to protect ground-based receivers for the Galileo RNSS satellite constellation. The 23cm band is retained, but the performance was severely

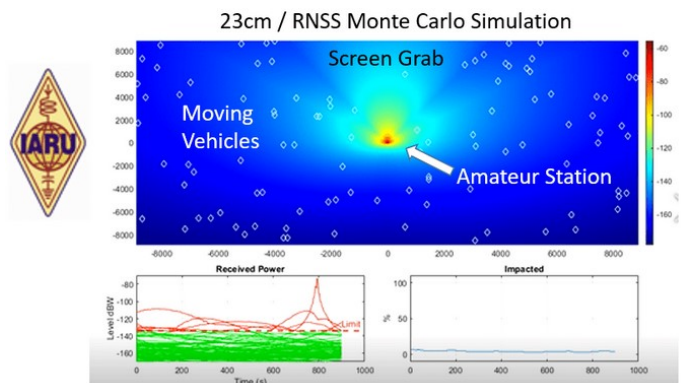
limited to only 10W allowed (previously max. 200W were allowed). Austria’s national amateur radio society ÖVSV say: Changes to the legal conditions in the AFU area from 03/13/2023.

The IARU maintains the view that the likelihood of widespread and persistent interference from amateur radio activities to RNSS (e.g. Galileo) receivers in the 23cm band is minimal. The WRC-23 preparatory studies carried out in the ITU-R study groups have only considered static one-to-one estimations using a minimum coupling loss approach. These studies do not consider the effect of an amateur transmitter on a population of RNSS receivers deployed around an amateur transmitting station.

IARU volunteers have carried out a “Monte Carlo” style study simulating scenarios assuming a fixed and mobile population of RNSS receivers deployed around an amateur station. A 100W amateur ‘home station’ and a 25W eirp ‘repeater station’ have been assumed.

The simulation results suggest that at most only around 1% of a population of fixed and mobile RNSS receivers randomly situated around a transmitting amateur station location would have a small chance of receiving a signal level above the RNSS protection threshold identified in the relevant ITU-R Recommendations. In most scenarios, the percentage of RNSS receivers impacted by interference above the threshold within the “simulation area” is far less than 1%. Even in the densest areas of amateur station activity and with the lowest clutter model the percentages remain less than 5%.

The study assumed that an amateur station is transmitting throughout the whole “Monte Carlo” trial period. However event data collected by the IARU shows that even in the busiest amateur communities the amount of time during which these sporadic transmissions are most likely to occur amounts to less than 2% of time over a one year period.



The IARU maintains its position that the potential for widespread and persistent interference between amateur radio transmissions and RNSS receivers is minimal.

# News and Forthcoming Events Planning 2023

## International Marconi Day April 22nd 2023



IMD is a 24-hour amateur radio event that is held annually to celebrate the birth of Marconi on the 25<sup>th</sup> of April 1874. The event is usually held on the Saturday closest to Marconi's birthday and in 2023 it will be held on 22nd April. On this occasion the period of operation will be from **00:00 – 23:59 UTC on the 22<sup>nd</sup> of April**

The purpose of the day is for amateur radio enthusiasts from around the world to contact **Historic Marconi Sites** using communication techniques similar to those used by Marconi himself.

To become a registered Marconi Station, you must operate from a site which has a connection with Guglielmo Marconi himself. This must be a location somewhere Guglielmo Marconi has personally operated from, lived or set up experimental stations.

To register your station please email [crac.imd@gmail.com](mailto:crac.imd@gmail.com) All official stations must be registered by midnight on April the 21<sup>st</sup> and no later.

There are two categories for contacting Registered Marconi Stations.

### TRANSMITTING AMATEUR

To establish direct two-way communication with 15 different official Award Stations, mixed modes are permitted in the log (mixed modes CW, voice, data)



### SHORTWAVE LISTENERS

To log two-way communications made by 15 different official Award Stations, mixed modes are permitted in the log (mixed modes CW, voice, data)

Please note the following:

Only one radio contact with each IMD Special Event Station (Official Participating Station) will count towards the Award.

The Award is NOT cumulative, ie contacts made in previous or subsequent years with an IMD station WILL NOT count towards the Award. The required number of Award Stations must be worked during the SAME 24 hour period.

### Qualifying Bands

All bands now allowed HF, VHF & UHF

Modes Permitted

CW, SSB, FM, AM and available Data Modes i.e RTTY, PSK, JT, SSTV, FT

More information about the award and how to claim it from <http://gx4crc.com/imd-award/>



SOS Radio Week is one month of fun, operating, an opportunity for amateur radio to celebrate the

work of the Royal National Lifeboat Institution and to raise much needed awareness and funds for them. Any licensed Amateur Radio operator, or Amateur Radio club, based within the United Kingdom, Ireland, Guernsey, Jersey and the Isle of Man can register to run an official SOS Radio Week station. All you need to do is let us know what callsign you will be using during the event, together with your location, and you will become an official Registered SOS Radio Week Station, promoting the work of the RNLI and NCI throughout the event.

SOS Radio Week takes place during the month of May every year to coincide with the (RNLI's) own Mayday fund-raising event. It starts at **00:00 on the 1st May and ends at 23:59 on the 31st May 2023**. Basically you can elect to operate your station any time within the month of May. Registered SOS will be on the air at various times during the event. There is always a large number of stations on the air supporting this event and a list of these may be found at <https://www.sosradioweek.org.uk/registered-stations/sos-radio-week-stations/> it is possible to register your station at <https://www.sosradioweek.org.uk/about/sos-radio-week-registration/> basically it remains to promote your part in the event and where possible raise funds for the lifeboat organisation.



# News and Forthcoming Events Planning 2023



In June 2023 a team will land on Rockall Island, more than 200 nautical miles from the West Coast of Scotland, and the nearest civilisation. Their intention is to survive on the tiny island for one week battling winds and waves in order to raise £50,000 for charity.

The expedition team is made up of a number of highly experienced radio operators who will be running 24x7 transmissions on SSB CW and FT8 for 1 week, with two radios transmitting simultaneously. More details will be posted here soon! Rockall is an uninhabitable granite islet situated in the North Atlantic Ocean. The nearest permanently inhabited place is North Uist, an island in the Outer Hebrides of Scotland, 200NM to the east.

The UK claimed Rockall on the 18th of September 1955 when "Two Royal Marines and a civilian naturalist, led by Royal Navy officer Lieutenant Commander Desmond Scott, raised a Union flag on the islet and cemented a plaque into the rock".



Rockall stands at 17.15m above sea level at its tallest point, covering an area of just 784.3 m<sup>2</sup> it is located at 57° 35'28.79" N 13°41'11.39" W. more information from: <https://www.rockallexped.com/>

## British Railways Amateur Radio Society

During 2023, the British Railways Amateur Radio Society will be marking 55 years since the withdrawal of steam from British Railways in 1968. Special Event Callsigns GB0LMR and the Club call GX4LMR will be active throughout the year operated by Mark G1PIE active from Preston. QSLs via the Bureau, eQSL, or direct to Pam, 2E1HQY enclosing a SAE. More information from <https://www.qrz.com/>



## UK Coronation Celebration Activities



As part of our Coronation celebration activities, Ofcom has approved "R" as the optional Coronation regional secondary locator prefix for all UK radio

amateurs to use during May and June 2023. UK Radio Amateurs may apply to Ofcom for a NOV allowing them to avail of this facility.



## RSGB News Services

For your weekly fix of GB2RS, from 80m to UHF DMR. Full schedule available from [rsgb.org.uk/gb2rsschedule](https://rsgb.org.uk/gb2rsschedule).

09:30 145.5250 FM

10:00 3.6400 LSB

12:00 DMR BM TG2354

19:30 DMR Phoenix TG880

## International Museums on the Air Weekends 2023



Museums on the Air takes place over the weekends of the 17<sup>th</sup> – 18<sup>th</sup> and 24<sup>th</sup> - 25<sup>th</sup> of June. The intention of the event is to set up amateur radio special event stations at as many of the museums as possible throughout the whole of the world on HF, VHF and, if at all possible, a Ui-View (APRS) packet station to be set up at each museum site, but the scope of your station is entirely up to you. The choice of museum is also left very much up to you, however, aim for the largest and/or most unusual site you can find.

The museums taking part over the years have included ships, castles, air museums, Napoleonic forts, pumping stations, wireless museums, racing museums and many others. For the purposes of the event, the word 'museum' is loosely interpreted. There really is no shortage of venues in which such an event can be staged, no matter where in the world you might live.

The event has proven itself to be extremely popular and well supported special event particularly amongst the UK radio amateur population. It also went down very well at the museums which were used as the venues for the event, and invitations have again been extended for the coming June. It has shown itself to be a tremendous public relations exercise, as well as all of us having lots of fun over the IMW weekends.

At least part of the intention for this event, is to present modern amateur radio to members of the public and to help us lose some of the stuffy anorak image. What better place to do this than in the very public and well visited areas of the many museums which can be found in most parts of the world?

Those clubs and museums which do decide to take part, should please use the free on-site 'Registration' facility. The 'Registration' is simply to assist us in administration of the event and provide those taking part with an indication of how many and exactly where the museums taking part are located. We also send out a participation award to all stations that register. More information and registration details at <https://www.radio-amateur-events.org/IMW/index.htm>

# News and Forthcoming Events Planning 2023



**HAM RADIO**  
46<sup>th</sup> International Amateur Radio Exhibition  
**June 23 – 25, 2023**  
Messe Friedrichshafen

OFFICIAL PARTNER  
 **DARC**  
Deutscher Amateur Radio-Club e.V.

**The No.1 in Europe!**

HAM RADIO serves as a platform where radio enthusiasts can get together and exchange information and experience.

As one of the largest amateur radio exhibitions in the world, alongside the Hamvention Dayton/Ohio, USA and the Ham Fair in Tokyo/Japan, HAM RADIO attracts exhibitors and visitors from more than 52 countries all around the world to Friedrichshafen.

A special feature of HAM is the combination of commercial exhibitors, worldwide networked associations and Europe's largest radio flea market with over 300 participants from 16 countries.

## International Lighthouse/Lightship Weekend



The ILLW weekend takes place over the weekend of August commencing from **00:00 19<sup>th</sup> to 23:59 on the 20<sup>th</sup> of August 2023**. August seems to have become the international weekend for lighthouses. Countries all over the world have become involved in one for or another of lighthouse activity. Some years ago the United States Congress declared August 7<sup>th</sup> as their National Lighthouse Day and during that first week in August amateur radio operators in America set up portable stations at lighthouses and endeavour to make contact with each other. This event is known as the US National Lighthouse Week.

In Britain the Association of Lighthouse Keepers, ALK, conducts International Lighthouse Heritage Weekend on the same weekend as the ILLW in August. Their objective is to encourage Lighthouse managers, keepers and owners to open their lighthouse or light station and related visitors' centres to the public with a view to raising the profile of lighthouses, lightvessels and other navigational aids, and preserving our maritime heritage.

The ILLW usually takes place on the 3<sup>rd</sup> full weekend in August each year and attracts over 500 lighthouse entries located in over 40 countries. It is one of the most popular international amateur radio events in existence probably because there are very few rules and it is not the usual contest type event.

## RSGB AGM

The RSGB's 96<sup>th</sup> AGM will take place on Saturday, 15 April 2023.

Full details of the AGM, the voting process and the calling notice will appear in the April 2023 issue of *RadCom*.

In the coming weeks, the Society will publish details of the roles that will form part of the elections, and how you can get involved.

## Irish Net

Active not only on Sundays, but most weekdays starting at around **16:00 UTC**, the **informal gathering on 14.156 MHz** frequently suffers from QRM during contests and DXers unaware of this long standing net of North American operators with an Irish connection. In a recent contact on 20m with W11IDP, QTH Tuscon Arizona, operator Jerry confirmed that the net now also uses the **17m band operating on 18.114 MHz**, avoiding the increased QRM on 20m and taking advantage of improved propagation conditions

## Would You Like to Promote Your Club and its Activities?

Is your club planning an event in the next month?

*Are you planning a club activity?*

*Are you setting up a new Repeater or Gateway?*

**Drop us a line or two and we will include your item in the Connacht Regional Newsletter**

**We Have a Facebook Page**  
**The Connacht Regional**  
**News Magazine**



<https://www.facebook.com/groups/1437072523434876>



# News and Forthcoming Events Planning 2023

## RUV 207KHz Transmitter Closed down

Once ubiquitous, few radios now receive Long Wave broadcasts. Priority is now given to boosting FM signals. RUV's long wave transmitter in East Iceland has been demolished. February 28th 2023 saw RUV's East Iceland long wave transmitter switched off. The mast at Eiðar, at 218 metres the third tallest structure in the country, transmitted RUV's radio services across the east of the country and out into the



Norwegian Sea, was demolished on Monday the 2nd of March 2023. In a statement, RUV says that the equipment needed to maintain the service is very expensive, and few radios now receive LW broadcasts.

The change is being made in association with Iceland's Civil Defence and other bodies concerned with emergencies, as long wave signals have traditionally formed part of emergency communication planning. However, an upgraded FM system will take over this function. The Long Wave signal from Eiður, on 207kHz,

## National Hamfest 2023 Cancelled



A Message from the Directors of National Hamfest (Lincoln) Ltd:

It is with a sad heart that we unfortunately have to advise that the National Hamfest team

will reluctantly have to cancel the 2023 National Hamfest event.

Unfortunately, we have been hit with several curved balls this year. Firstly, our temporary move to Peterborough in October was cancelled by the venue themselves, which has meant finding a new venue or new date. A new venue has proved impossible to find at short notice. We have negotiated some revised dates in July at Newark but after many discussions we have reached the conclusion that the school holidays and the like were a problem for traders big and small. We are also unsure how many of the attendees would also be unable to attend for the same reasons. Finally, we looked at the financial impact and concluded it was not viable to run the event with the reduced trade attendees and the risk of reduced footfall.

We can assure you all, we haven't made this decision lightly. However, we are pleased to confirm that we hope to put on a bigger and better event in 2024 at the Newark Showground on our more usual dates of the 27 & 28 September. Please put the date in your diary now and we hope to see you there.

On behalf of the National Hamfest (Lincoln) Ltd  
[www.nationalhamfest.org.uk](http://www.nationalhamfest.org.uk)

## RSGB tonight@8 Webinars



The RSGB runs a series of monthly Webinars called "Tonight@8" and forthcoming webinars may be found at <https://rsgb.org/main/tonight-at-eight-live-webinars/> Archived webinars may be found at [https://www.youtube.com/results?search\\_query=tonight%408](https://www.youtube.com/results?search_query=tonight%408) The Webinars cover a wide interest so there is something for everyone.

The next Webinar is scheduled for the **3rd of April**, entitled "**Sheep Worrier: A high Altitude Balloon Flight and Recover System**". In this talk Heather covers an introduction to flying HABs (High Altitude Balloons), the radio systems involved, some science experiments she did on their flights, the recovery system she developed to help find the payload when it lands and, of course, lots of pictures from "almost" the edge of space.

### Future Webinars Include:

**15th May: The T41-EP ALPS: A high Performance CW Decoder** by Jack Purdum W8TEE and Al Peter, AC8Y.

Jack and Al collaborated to build the T41-EP, a 7 band, 20W, CW/SSB SDR transceiver and this presentation is chiefly about how they developed the high performance CW decoder.

**5th June: Node-RED for Radio Amateurs** by Mike Richards, G4WNC.

Node-RED is a visual programming language that is very powerful but surprisingly easy to use. The language has matured over recent years and has the potential to be a valuable tool for radio amateurs. In this talk, Mike will provide an introduction to Node-RED programming techniques. He will conclude with a live demonstration to show just how easy it can be to add extra facilities to your rig.

**3rd July: Receiving Antennas are Different** by Eric P. Nichols, KL7AJ.

Almost every ham radio station can benefit from a separate receiving antenna (or several!) While reciprocity applies to both receiving and transmitting antennas, the priorities are different. Effective receiving antennas are optimized for best signal to noise ratio, not necessarily the greatest gain. There are countless interesting means of building high signal to noise ratio receiving antennas and we will explore some of these in 'Receiving Antennas are Different'.



## Lough Erne Rally

### 7th May

Share Centre  
Lisnaskea Co. Fermanagh  
BT92 0EQ

Doors Open 11:30 am  
Entry £5.00 or €5.00

Free tables for trade, Special Interest, Shack Clearance etc.

RSGB Sales Stall

Bar, Food Café, Cooked Lunch  
Free Parking

Book tables via  
[argault91@gmail.com](mailto:argault91@gmail.com)



## Bangor & District ARS Rally

on

Saturday the 17th June

at

Ballygilbert

Presbyterian Church

Bangor

BT19 1UH

## Northern Ireland Radio Club Meetings

The Strangford High Frequency Enthusiasts Group is accepting UK-wide enrolments for the next UK Full licence training programme. They also use Google Meets on Monday evenings. It is completely free, email [GI0VKP@gmail.com](mailto:GI0VKP@gmail.com) for details or see the [QRZ.com](http://QRZ.com) entry for GI0VKP.

On Tuesdays Carrickfergus Amateur Radio Group meets in the Elim church, North Road, Carrickfergus from 7pm. All visitors are welcome. Info from [gi0usx@yahoo.co.uk](mailto:gi0usx@yahoo.co.uk)

Bushvalley Amateur Radio Club has a club net on Tuesdays at 8.30pm on 145.300MHz. On Thursday, the club meets at The United Services Club, Roemill Road, Limavady. Contact Jason, M13UIW, via email to [Bushvalleyarc@gmail.com](mailto:Bushvalleyarc@gmail.com)

West Tyrone ARC holds regular monthly meetings on 2nd Wednesday each month at 19:30 in Strathroy Community Centre, Omagh, BT79 7XE. Contact: [info@wtarc.org.uk](mailto:info@wtarc.org.uk) for more information

Lough Erne Amateur Radio Club normally meets at 7:30pm on the first Monday of each month at the Share Centre, Lisnaskea. More information from: <https://lougherneradioclub.co.uk/>

The Mid Ulster Amateur Radio Club (MUARC) has been active since 1965, our Club call sign is MN0VFW. Please take time to look through our website, where you will find information on our club, activities, events and members as well as a great gallery full of images of our latest activities. Mid-Ulster Amateur Radio Club meets on the air weekly on the GB3WT repeater every Monday evening at 7.30pm. There will always be a net controller from the club but everyone is welcome to call in and join the conversation. The club meets socially on Zoom twice each month. If you're in the region, and would like to take part, the club secretary can be contacted on the following email address: [muarc.secretary@yahoo.co.uk](mailto:muarc.secretary@yahoo.co.uk)

You can go to [www.youtube.com/muarcmedia](http://www.youtube.com/muarcmedia) and that will bring you to our YouTube channel with all our previous lecture videos and much more content in the pipeline.

The Online Radio Club has a virtual radio club night at 7:30 pm every Thursday via Zoom. It is suitable for all Radio Enthusiasts regardless of individual skill level. To to the website for the meeting link <https://onlineradioclub.org/>



# 3D Printing for the Radio Experimenter Part-2 Lez - EI4GEB

This is the second part of my trip into 3D printing use in the amateur radio hobby. More and more amateurs are using 3D printers to help them in their hobby. We build radios, antennas, projects and accessories all related to the wonderful world of amateur radio.

The ability to use a 3D printer to repair, improve, customize or create so many experimental radio related things is beyond amazing. Experimental Radio and 3D printing, these 2 belong together. We love our tools, and 3D printers and what they can be used for are only the beginning of what will be an invaluable tool to the ham radio shack in the near future and beyond.

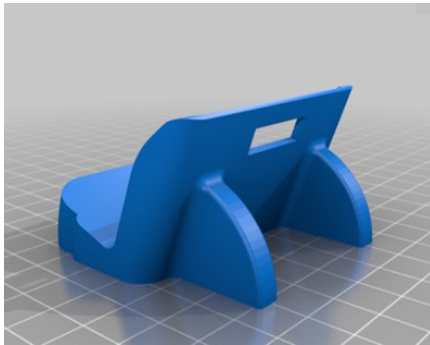
Over the past few years, prices have plummeted, and accuracy has improved. You will find 3D printers are now fairly user friendly. But the vision of a 3D printer in every home (or shack) has faded. You will find the consumer market penetration sits at 5-10% of households. Mostly these are used for printing technical components by hobbyists, some art, replacing small parts, and as a great learning tool for kids.

The Bottom line – hams will find a 3D printer as a great tool for the workbench if they are into building stuff.

So, to recap, 3D printing, also known as additive manufacturing, is a method of creating a three-dimensional object layer-by-layer using a computer created design.

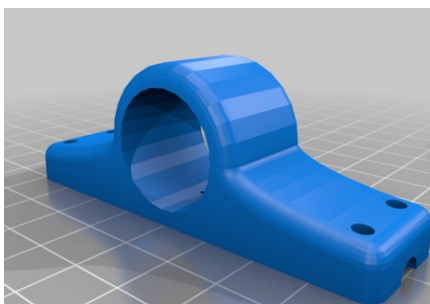
So now that most of you now know what a 3D printer is and how the software works, here are a few other projects I did recently.

## Yaesu FT 5DR H/T Stand



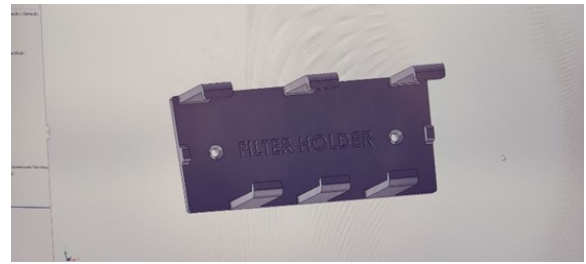
This is a stand for my FT 5 DR N/T for the shack table. Very handy when using it on C4FM or on my HotSpot.

## 8 Metre Yagi Bracket

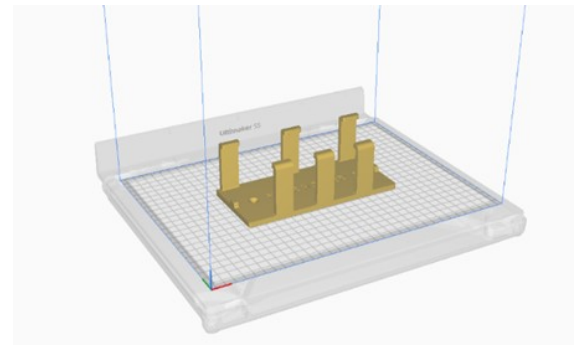


I printed a couple of these brackets for an 8m Yagi I am constructing. I used UV/ARS plastic so it will last in the Irish weather and will not crack from UV light in the sun.

## Bracket For My 8-metre Filter



SolidWorks Design model

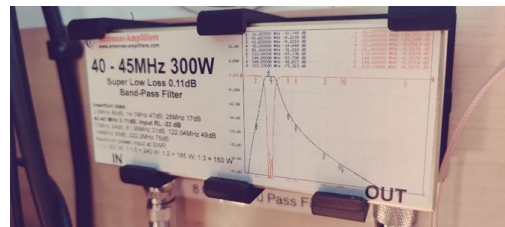


The Slicer program which converts the model into many slices to enable printing



Printing on my Ultimaker 3D printer. It takes around five hours depending on the amount of infill you use. I used 60% infill here for strength

## Finished Bracket mounted with Filter head Firmly supported



As you can see, 3D printing can create intricate and complex shapes using less material subtractive manufacturing processes, such as drilling, welding, injection moulding and other processes. Making prototypes faster, easier, and cheaper allows for more innovation, experimentation, and if fails the first time then modifications can quickly be made to the design. Another skill for the toolbox.

I can see experimenters using 3D printers more and more in the future. Someday you might be able to print your own transceiver. Would that not be cool.

# Slim Jim Antenna for 40 MHz

## SLIM JIM AND J POLE CALCULATOR

The Slim Jim is a vertically polarized omnidirectional end-fed antenna having considerable "gain" and this is concentrated almost parallel to ground toward the horizon rather than skyward making it more efficient than a ground plane type antenna by about 50 percent better. It can be built for almost any frequency.

With the growing interest in the 40 MHz band I decided that it was time to make an effort to try out this band in light of the fact that even as early as March there are regular reports of Sporadic E propagation.

When Sporadic E starts to peak, it is possible to work amazing distances with a Yaesu FT817 and its own set top rubber duck antenna and even a dipole in the loft using QRP.

Slim Jim / J Pole antenna calculator.	
Frequency	40.680 MHz
Velocity Factor (see text*)	0.96 vf
Calculate my Slim Jim / J Pole!	
Actual wavelength	7.37 metres
Wavelength considering velocity factor	7.08 metres
A. Overall length $(\lambda * 0.75) * vf$ (plus gap for Slim Jim)	531.0 cm (J Pole)
	538.3 cm (Slim Jim)
B. Half wave radiator section $(\lambda/2) * vf$	354.0 cm
C. Quarter wave matching section $(\lambda/4) * vf$	177.0 cm
D. 50Ω feed point. Adjust for 1:1 SWR. $(\lambda/40) * vf$	17.7 cm
E. Gap $(\lambda/100)$	7.4 cm
F. Spacing - not critical	16.0 cm

Fig. 1 The M0UKD Slim Jim Antenna Calculator

It is envisaged that 40 MHz signals would be evident at much the same time as 50 MHz opens up. DX-Maps send out emails advising of an opening if one subscribes to their system.

With this in mind, the best page for slim Jim resources and a calculator is the M0UKD website <https://m0ukd.com/calculators/slim-jim-and-j-pole-calculator/> this calculator is for the construction of a Slim Jim using 450 Ω ladder line. I have manufactured both 4 metre and 6 metre antennas using this calculator and the results were impressive. 40.680 MHz seems to be the centre of activity, so this was chosen. The bandwidth of the Slim Jim antenna would give leeway either side of this frequency. If I wanted to shift frequency slightly it would be with in the realms of possibility to retune at the feed point.

The results are shown in the table shown in Fig. 1

Cut the length of 450Ω ribbon feeder to the length A as in Fig.2. Ensure that both ends are shorted. From here it is just a case of cutting the Gap at point E see Fig. 1. In this case it is 7.4cms. The feed-point D is approx. 17.7 from the bottom of the antenna. This can be moved up and down from this point to get a near perfect match. Use an antenna analyser or VNA to check this.

It is recommended to use some form of choke at the feed-point. This can be a couple of clip on ferrites at this frequency or alternatively use 5 turns of the feeder wound around 8 cms diameter. This will prevent radiation from the feeder.

This antenna can be taped to a fiberglass mast or suspended from a branch of a tree or other skyhook. Try to support it as high as possible above ground for best results

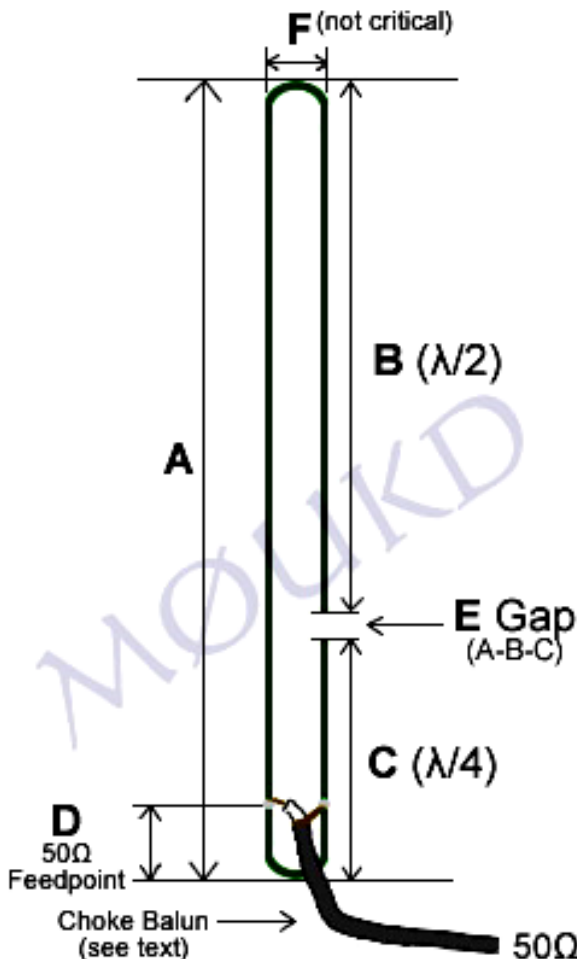


Fig. 2 Substitute the appropriate lengths in the calculator to their respective letters in diagram.

Steve Wright - EI5DD - G4GFC

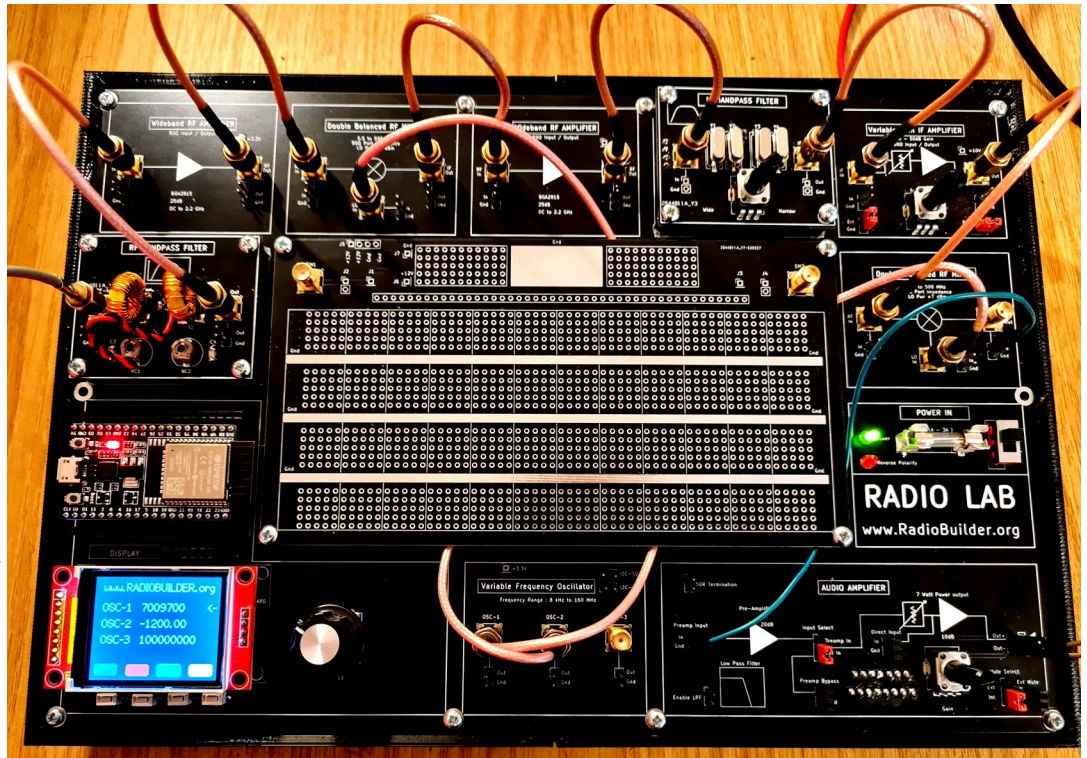
# The Radio Lab Electronics Experimenter System - Louis EI8KI

The Radio Lab electronics experimenter system is similar to a general electronics trainer system, in that it allows you to build and experiment with circuits in a proven environment. The Radio Lab Experimenter System is specifically designed by a radio ham for radio amateurs.

The system had been designed for versatility and expansion. All of the pins of the controller boards are exposed so experimenters can use them for their own needs. The audio amplifier can be used with or without a pre-amplifier and has a mute control for transceiver implementation. The variable gain IF amplifier can be controlled externally allowing automatic gain control implementation. Full schematics are provided allowing a full understanding of the system. Dimensional drawings are included for those that want to build their own add on boards.

People have been asking me where this idea comes from? Well, I have been building and experimenting with radio since I got a crystal set working at the age of 13 using the fantastic Ladybird book by Rev George Dobbs - "Making a transistor radio". I have built hundreds of prototype radios since, but the problem was a lot of the time I just wanted to test a different functional block without having to make a complete radio. I did have some blocks laid out on plywood boards, but it just proved difficult to tie the system together.

I wanted a set of high-end proven blocks that I could plug any new ideas and compare the results quickly. After



*The Radio Lab Electronics Experimenter System*

building the 1st prototype, I was not happy with the performance of the IF amplifier. It generated too much noise at high gain. Using the Radio Lab, I was able to test and compare a new amplifier design in one day. It proved to work much better, and this is the amplifier that is now implemented in the system.

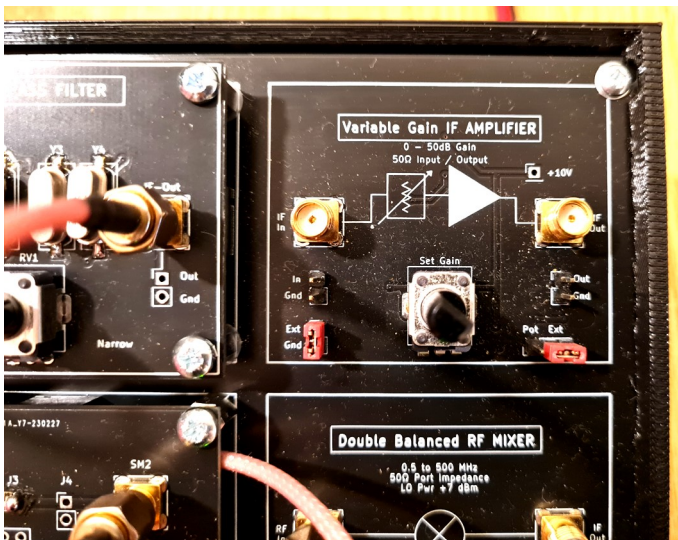
I have many ideas for expansion both in the software capability and modules that can plug into the prototype area. Some of the features I would like added are a CW decoder, CW and SSB transceivers, CW keyer, SDR radio, digital modes, Slow Scan TV receive and transmit, DSP Filters, automatic gain control, high quality PLL FM Broadcast Band receiver.



*Fused Input Section With Reverse Polarity protection*

My hope for the system is that people will develop modules for the system that they want and share those designs and sell kits to others so we can all learn and grow together.

If you want to be involved you can get a kit at



*The Variable Gain IF Section*

# The Radio Lab Electronics Experimenter System - Louis EI8KI

www.RadioBuilder.org and join our Facebook group at <https://www.facebook.com/groups/217136744230409> or Search RadioBuilder.org on Facebook.

The Radio Lab includes proven building blocks to construct high performance receivers from LW to VHF and AM, SSB, and FM demodulation.

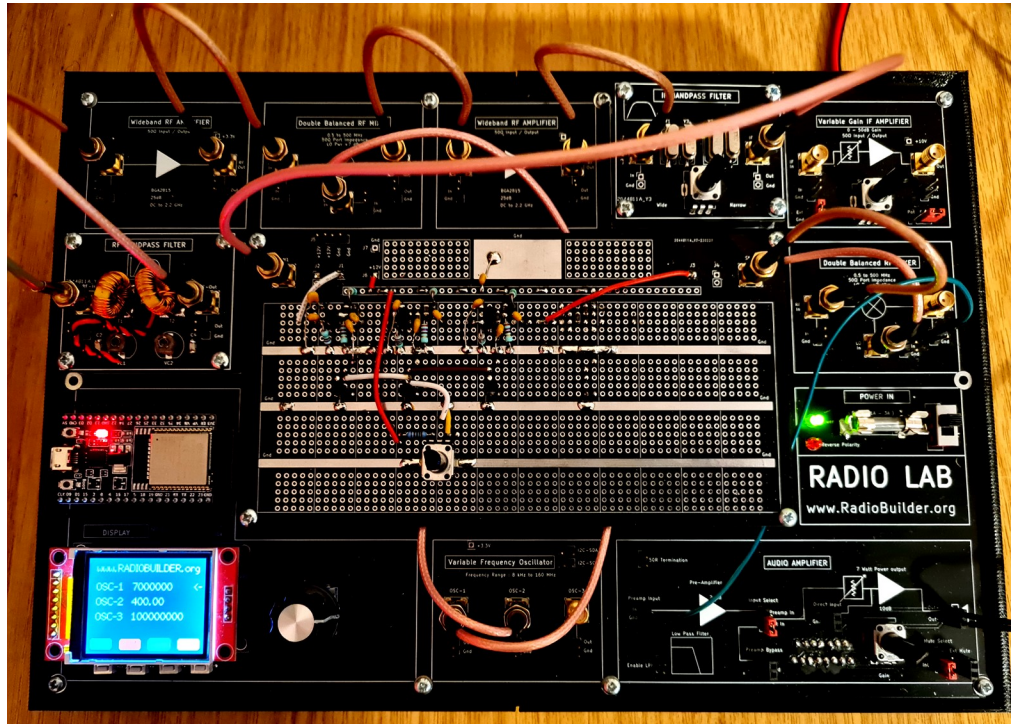
Superheterodyne, and direct conversion receivers can be constructed with the provided building blocks.

The building blocks include:

- Fused Power Input with reverse polarity protection.
- 0 – 2GHZ RF Amplifiers
- 0 – 500MHz Mixers
- Variable Gain IF amplifier
- Audio Preamplifier
- Audio Filter
- 7 Watt Audio Amplifier
- 3 Signal Generators 8KHz to 160MHz
- Color TFT Display
- ESP32 Controller
- Custom RF filter
- Custom and variable bandwidth IF Filter
- 3 Prototyping areas

The building blocks are connected with RF SMA connectors suitable for high frequency use. There are 3 prototype areas where prototyping boards from breadboard to RF experimenter boards can be added.

Beginners can start building simple circuits like AM / FM demodulators and experienced experimenters can build full CW, SSB or FM transceivers.

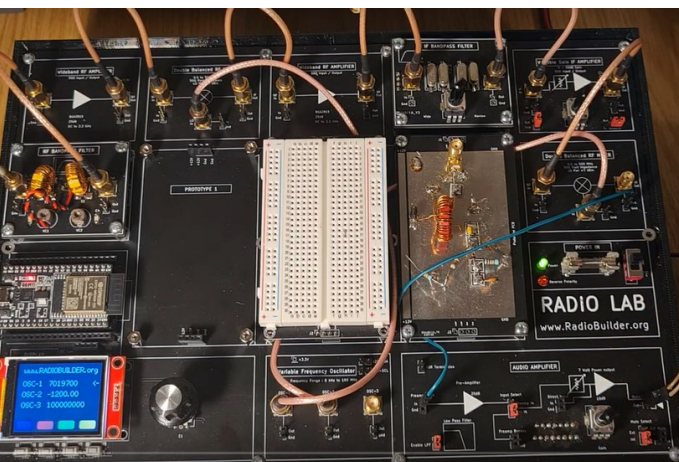


*Radio Lab Project Under Test*

The educational benefits of the Radio Lab are fantastic. Instead of pure theory when studying for a HAM licence people can easily build their own radios using the building blocks provided. People can learn electronics, try out their own ideas without having to build a complete radio from scratch. They can learn how to code, maybe making small changes at first and as they gain experience and confidence implement more complex features. The theory of digital signal processing ( DSP ) can be tested with proven hardware.

Some of the advantages of using Radio Lab system when learning about RF electronics include:

1. Hands-on learning: The Radio Lab allows you to build and experiment with circuits in a hands-on manner, which can be more effective for learning than simply reading about RF circuit theory.
2. Ease of use: Radio Lab includes all the necessary components and instructions for building and experimenting with RF circuits, making it easy for even beginners to get started.
3. Cost effectiveness: The Radio Lab can be a more cost-effective way to learn about RF electronics than buying all the components separately and setting up a workbench.
4. Versatility: An RF electronics trainer system can be used to build and experiment with a wide range of RF circuits, allowing you to learn about a variety of RF electronic principles and applications.
5. Simplicity: Proven circuit blocks are pre-designed circuits that have been tested and proven to work reliably. Using proven circuit blocks can help to simplify the design process, as you can focus on integrating your own circuit blocks into your overall design rather than starting from scratch.
6. Time efficiency: Using proven circuit blocks can save you time and effort in the design process, as you don't have to design and test every individual circuit from scratch.



The software is open source and end users can customise the software to their needs. The powerful controller has two cores and is more than capable of implementing audio filters and digital modes including slow scan TV.

# Observation of the Beacon OZ7IGY on 40MHz

The Danish beacon OZ7IGY also transmits a signal on 40MHz aka the 8m band. From its QTH in JO55WM the distance to the west of Ireland is around 1300km.

I had 40.070MHz programmed in one of the ICOM IC-7300 memories and checked from time to time whether there was anything on. It was more by luck than observation that I actually logged its signal. In recent months I have been using a software defined radio (SDR) to monitor the beacon frequency over a longer period i.e. it is switched on when I am in the shack. During the winter months that is a lot of time.

The beacon transmits in a digital signal mode called "PI4" which can be decoded by dedicated software, logged locally as a clear TXT file and reported automatically over an Internet connection to PSK Reporter. The software, PI-RX or MSHV selecting mode "PI4", provides information of the decoded signal such as the signal-to-noise ratio (SNR) as very often the signal is inaudible but visible on the waterfall. The logged information is available in near real time to anyone using PSK Reporter (without needing to log in) by selecting "8m" band and "OZ7IGY" as the call sign.

On most days in January 2023 and February 2023 there was no signal to be received, the software was decoding but had nothing to show but noise. Propagation conditions changed in March 2023 with the beacon being logged several times, on two days for several hours.

Fig 1. is a spread graph depicting reception moments of

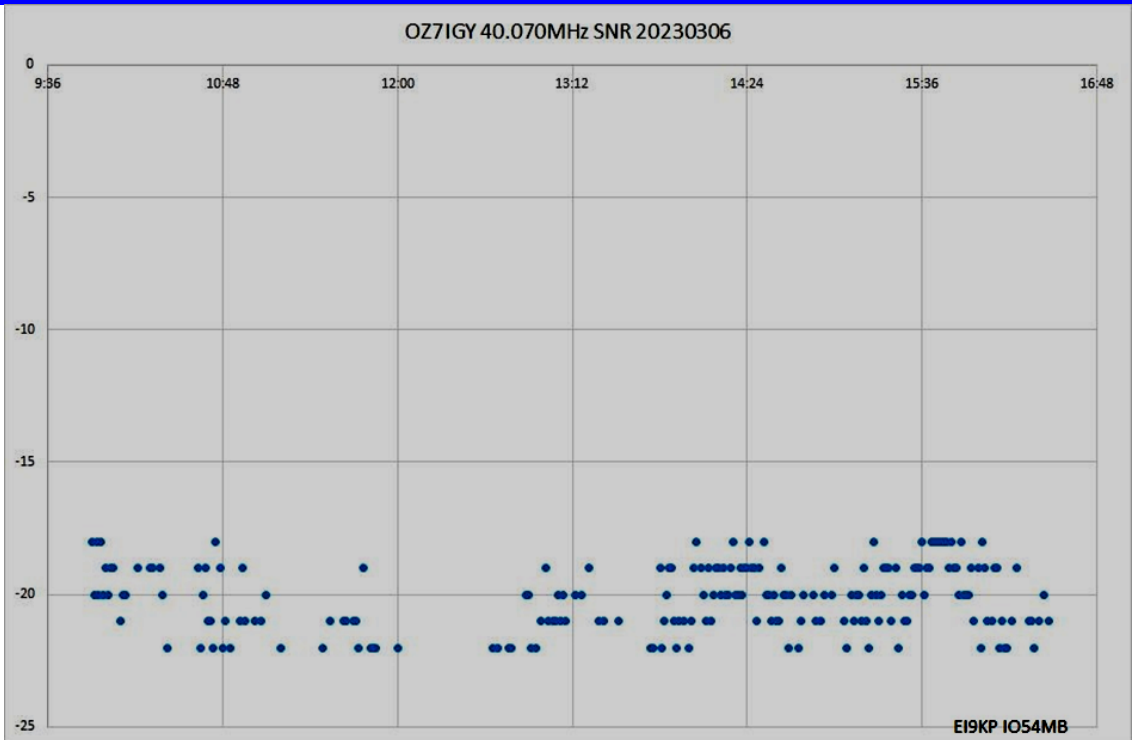


Fig. 1 Spread Graph depicting reception of OZ7IGY on the 6th of March 2023

OZ7IGY on 40.070MHz on March 6<sup>th</sup> 2023. The time line runs left to right, from morning till late afternoon, and each blue dot represents the SNR value (in decibel, dB) of a fully decoded sequence of the PI4 protocol. The signal was inaudible with only faint traces visible on the waterfall. Slow QSB was present, this would have been visible on the waterfall as a very faint line, almost obscured by the background noise.

The question arose: what type of propagation was this? It was not sporadic-E or meteor scatter, the signal fingerprint would have been wildly different. It was also not tropospheric (tropo), the distance to my QTH being 1340km, a bit too far

for tropo, and there was no correlation with the F5LEN or Hepburn tropo forecast maps. A ham suggested *backscatter F2*, this would have been plausible late afternoon as there was F2 propagation to the USA east coast, but it does not explain the morning and midday observations. I ran this graph by a number of hams in EI, GB and OZ and ionospheric forward scatter (*iono scatter*) was suggested as the most likely mode of propagation.

Ionoscatter occurs in the lower ionosphere, between 65km and 90km. The observation of a weak, almost constant signal over a long period of time, with a slow QSB period, tends to agree with iono scatter. This type of propagation is most pronounced

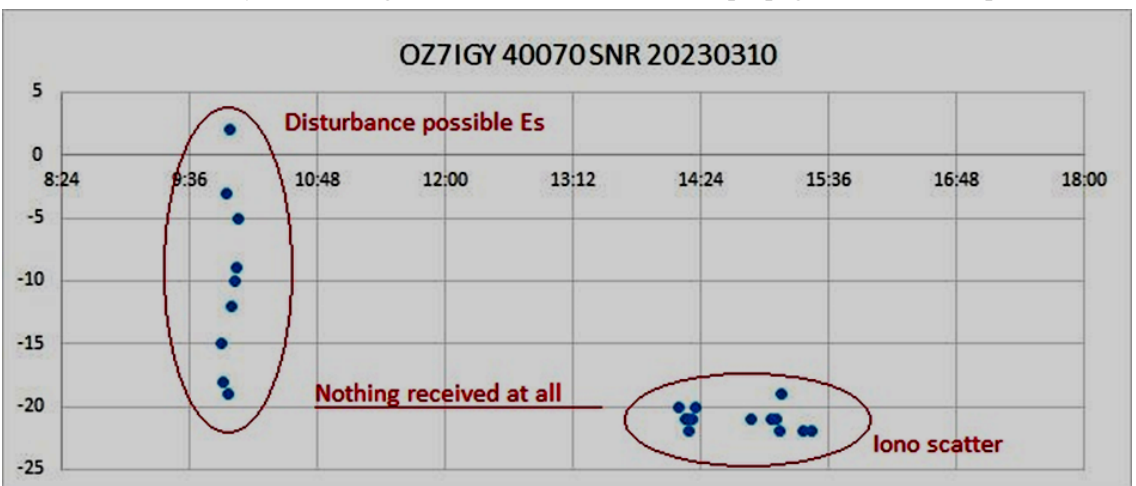


Fig.2 Spread Graph depicting reception of OZ7IGY 10th March 2023

# Observation of the Beacon OZ7IGY on 40MHz

between 40MHz – 60MHz but occasionally extends to 144MHz. If you work 6m a lot you might already be familiar, for me it is a first on the 8m band.

Fig. 2 is a spread graph depicting reception moments of OZ7IGY on 40.070MHz on March 10<sup>th</sup> 2023. The SDR was on from morning till late afternoon. There are two distinct periods where a signal was received, with nothing in between, or at least a signal too weak to be detected by my set-up.

Again each blue dot represents the SNR value (in decibel, dB) of a fully decoded sequence of the PI4 protocol. A disturbance of sorts occurred around 09:45 with the signal SNR rapidly rising and falling, after which nothing was received. This was likely a Sporadic-E event, with the signal SNR reaching a positive 2dB at one point. Signals above -10dB SNR would have been audible. Later,

starting around 14:00 and lasting for 1.5 hours, a signal was present, weak around -20dB SNR and almost constant, and this I would propose was an *ionoscatter* event.

I am at the beginning of a long term observation period (over many months) of this beacon, as well as others in the 8m band. Many modern transceivers cover RX between 30MHz and 70MHz, please have a listen for signals from beacons OZ7IGY on 40.070MHz, S55ZMS on 40.670MHz, GB3MCB on 40.050MHz and our own EI1KNH on 40.013MHz (Co. Wicklow) and EI1CAH on 40.016MHz (Connemara), and please spot through PSK Reporter or DXMaps. Some of these beacons also cover 50MHz 6m and 70MHz 4m, check their QRZ page for frequency and mode.

If you would like to share your own observations on OZ7IGY or any other beacon please consider contributing

to a follow-up article. I can be contacted via email, info on my QRZ page.

## References:

EI7GL, blog page on ionoscatter by John Desmond, including diagrams and graphs. See <https://ei7gl.blogspot.com/2020/07/144-mhz-weak-signal-ionosphere-scatter.html>

OZ1RH, “Ionoscatter on 50MHz and 144MHz” document and presentation by Palle Preben-Hansen.

OZ7IGY, <http://www.oz7igy.dk/>

OZ2M, about the PI4 protocol, <https://www.rudius.net/oz2m/ngnb/pi4.htm>

PSK Reporter on <https://pskreporter.info/pskmap.html>

## Join the G-QRP Club

The G-QRP-Club is an organisation run entirely by volunteers to promote Low Power Radio (QRP).

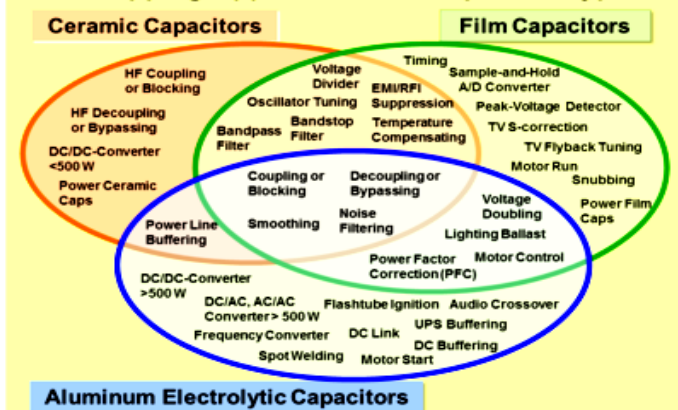
**The G-QRP CONVENTION: 2<sup>nd</sup> - 3<sup>rd</sup> September 2023**  
The 2023 Convention will be Saturday 2<sup>nd</sup> & Sunday 3<sup>rd</sup> September at the Harper Adams University Campus, near Telford, TF10 8NB. More information to follow as plans develop.



The quarterly magazine, SPRAT, provides interesting reading. Articles covering Antennas, Test gear, Transmitters and Receivers of varying complexity. More information: <https://www.gqrp.com/index.htm>

Membership Service include a QSL Bureau, component supplies books and reprints

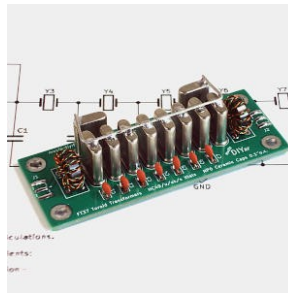
## Overlapping Applications of Capacitor Types



Hardware for  
Hardware-Defined  
Amateur Radio

Check out our site: <https://mostlydiyrf.com/>

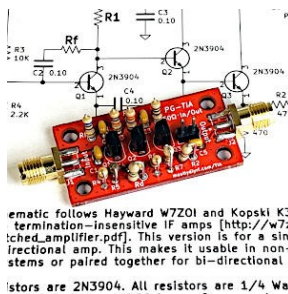
Kits and modules available including :



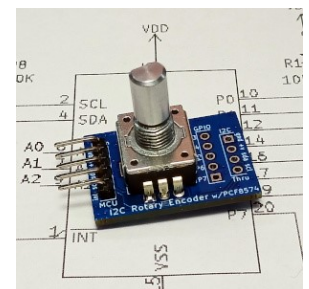
8-Pole QER Crystal Filters



TIA-AGC IF Amplifier



ADE-1 Double Balanced Diode Ring Mixer



12C Rotary Encoder

There is more coming so subscribe to be alerted of our new products



# The Lazy Eight Transverter Project Part 1 - Philip - EI8JT

I have developed an interest in the 8M band. There is no way that I will modify my precious Icom7300 or any other rig in the shack. A transverter would suit but the only one produced has become unavailable. I have also been unable to find a published home-brew one.

So I have been coerced by circumstances to design my own. Spoilt by choice as to solutions it could take ages to find the optimum one. The lazy ham's solution is to modify and plagiarize to fulfil the requirement with minimum effort. Slothfully I set to work.

The first thing to do; produce a design specification. Reading the licence conditions and the band plan produced the provisional output requirements as to: power, harmonic content and bandwidth.

40 to 45MHz maximum power 50W or 17dBW harmonic level - (43 + 10log50) = -60 dB

Back in the day I would have used Z tables to calculate the values for a low pass filter and modelled in using PUFF. (I'm an old DOSser with a microwave work history). Too much work for the lazy ham. So an online design tool was used. <https://rf-tools.com/lc-filter>.

Choosing a suitable filter needs thought. If the harmonic content of the PA stage is known all that needs to be done is add a filter to ensure the output harmonic level is at least -60dB down. All depends on the type of PA, its class and whether it is single ended or balanced.

For the professional engineer everything is designed to a spec at a cost level. They will not use more stages than absolutely necessary to reduce cost / maximize profit. The amateur is not so restricted. With the exception of kit designers, we are not doing a production run were the 10-cent cost of a transistor mounts up if 100,000 units are produced.

I probably will press a QRP labs linear (1) into service or an upgraded JOBT (2). Both balanced outputs which suppresses even order harmonics depending on the degree of balance but not the odd.

The QRP PA spec sheet gives -34dB at 28MHz and -13dB at 42MHz for a 14MHz input. What the balance is at 45MHz is unknown to me.

For 14MHz all I would need is a -26dB filter to reduce the -34dB to -60dB. For 45MHz, who knows.

Plan for the worst ; hope for the best.

It is very unlikely that the second harmonic will be at the same level as the carrier.

Assuming the worst I chose to design for -60dB at least for maximum power of 17dBW.

No matter what PA is used I can sleep easy. I hope!

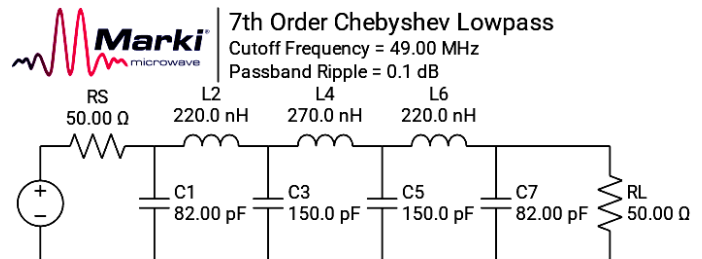
40 to 45Mhz fundamental produces 80 to 90Mhz and 120 to 135Mhz harmonics. The frequency spread I found rules out trapped filters for suppression. They give great attenuation but are narrow bandwidth at the trap frequencies. So I was restricted in choice, after considering the options, I chose a Chebyshev design.

A 0.1dB ripple to reduce insertion loss and maximise attenuation. A cut off frequency of 49Mhz for a 7 element and 48Mhz for the 9. To cover the wanted bandwidth and have the roll off above the wanted the cut off is usually placed about 9% for a 7 pole and 7% for a 9 pole.

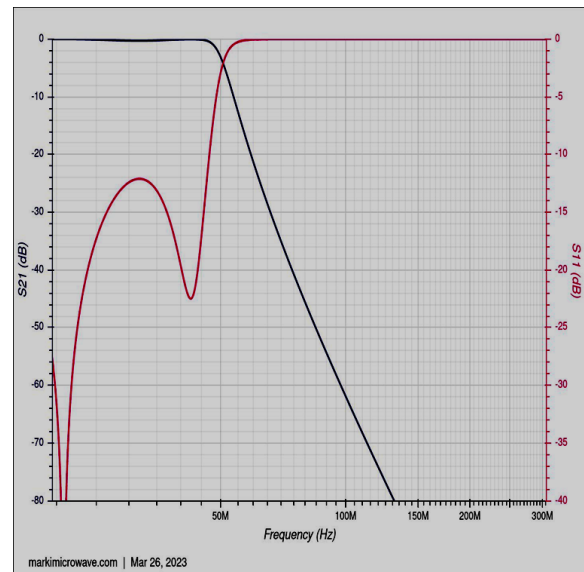
The results from RF-Tools are shown in the diagrams.

<https://qrp-labs.com/linear.html>

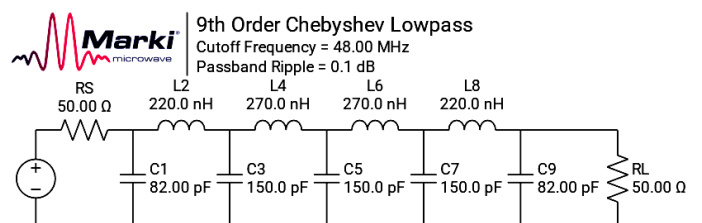
<https://www.vu2ese.com/index.php/2020/06/19/jbot-an-easy-qrp-linear-amplifier/>



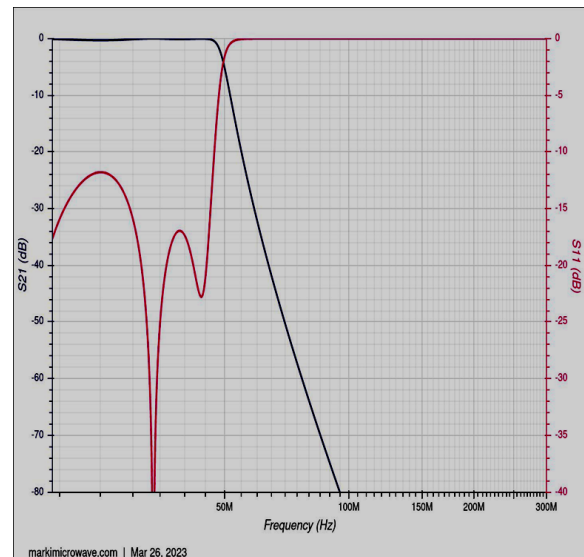
markimicrowave.com | Mar 26, 2023



Response for the 7 Pole Filter



markimicrowave.com | Mar 26, 2023



Response for the 9 Pole Filter

# The Lazy Eight Transverter Project Part 1 - Philip - EI8JT

The results are:

7 pole	80Mhz, -45dB	90Mhz, -54dB	120Mhz, -74dB	135Mhz, -82dB
9 pole	80Mhz, -64dB	90Mhz, -75dB	120Mhz, -100dB	135Mhz, =110dB

Only if the 2<sup>nd</sup> harmonic is known to be at least -15dB would the 7 pole be satisfactory.

For the amateur the additional cost and effort is so low, and for peace of mind, the 9 pole is best.

The capacitors are easy to obtain. The inductors can be wound on toroids or be air wound.

Previously, I would have used the formula for a solenoid and determined coil diameter, length, number of turns and wire gauge or the formula for toroidal inductance.

The lazy way is to use software and fiddle with the variables until a satisfactory outcome is achieved. Google for mini-Ring Core Calculator, DL5SWB and download.

I obtained; with a T50-6 220nH 7turns and 270nH 8 turns.

The turns can be moved on the core until exact value is obtained.

For air core I found 6mm diameter and 8mm length required 8turns for 220nH and 9 turns for 270nH. 1mm wire enamelled used. Play with the software until satisfied. Minor adjustments are made by compressing or stretching the coil.

**Philip Pollock - EI8JT**  
philipscpollock@gmail.com



## IRISH RADIO TRANSMITTERS SOCIETY'S 90TH AGM WEEKEND

SAT 29TH & SUN 30TH  
APRIL 2023

SCHEDULE

**SHORT TALKS**  
Saturday  
1pm

**IRTS Gala Dinner**  
Saturday 7.30pm  
TICKETS €35

**MORSE CODE TESTS**  
by department


**RADIO RALLY**  
Sunday 10.30am  
€5

**MONSTER RAFFLE**  
MFJ Enterprises, Martin Lynch & Sons, Icom UK, Messl & Paoloni, Long Communications, Wescom, Satworld.ie, Airmast, & more!

**IRTS AGM**  
Sunday 2pm  
members only

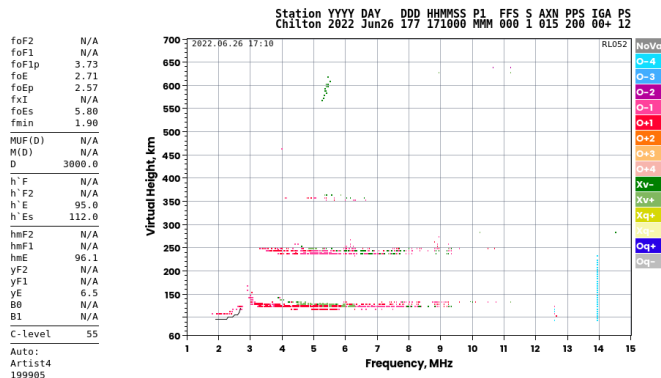
SHEARWATER HOTEL  
BALLINASLOE  
CO. GALWAY H53 F5P9

HOSTED BY SHANNON BASIN RADIO CLUB  
[WWW.SBRC.IE/AGMWEEKEND](http://WWW.SBRC.IE/AGMWEEKEND)



## Sporadic E Season Approaches

Whilst not fully into Sporadic E season, there have been an unusually high number of reports from DX-Maps. Check the Dourbes Ionogram each day. Sometime Es occurs without warning. If the Ionogram resembles the one below this is a good sign for 40 - 70 MHz but bad news for HF



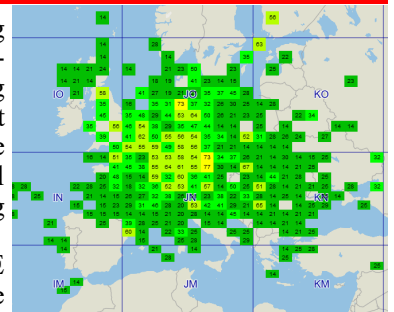
operation. Even during the month of March DX-maps has been revealing Es openings reaching just above 50MHz. As we approach May this will increase and the opening will last most of the day.

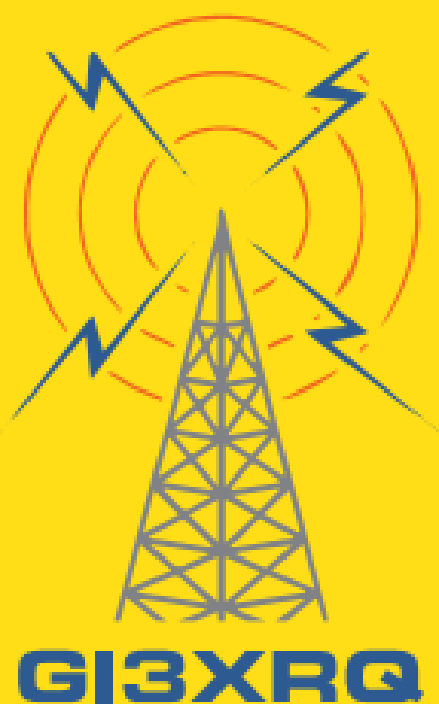
Last year Sporadic E was prevalent from the early morning to at least 7pm on most days. FT8 operators seem to detect an early onset of conditions.

DX-Maps [https://www.dxmaps.com/spots/mapg.php?](https://www.dxmaps.com/spots/mapg.php?Lan=E)

Lan=E

Ionogram from <https://digisonde.oma.be/>





# 54th Annual Radio Rally

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- ▶ **Alan Weise**  
Alan has new and used radios, components and test equipment.  *Billy Goat's Stuff*
- ▶ **Bring & Buy**  
Do you have surplus equipment? Bring it along.
- ▶ **Worked All Britain**  
Ian & Esther WAB G10AZA, G10AZB



**RSGB QSL Bureau**  
and membership stand,  
meet the Region 8  
Representative.

## SATURDAY 17th June 2023

### Ballygilbert Presbyterian Church Hall



**376 Belfast Rd, Bangor BT19 1UH**

**Good parking available in church car-park  
and on roadside verge.**

**Doors open: 11.30am**  
**Admission: £3.00**

Enjoy light refreshments and chat  
face-to-face for a change.



Need directions or to book a table  
contact MI00BR at [andrewis@live.com](mailto:andrewis@live.com)

# An Overview of VARA and VARAC - Part 1

VARA is a software program, developed and written by Jose Nieto Ros, EA5HVK, that serves as a “sound card Terminal Node Connector (TNC) for use with radio. Basically, the TNC translates files and commands into coded sounds which can then be transmitted over radio. It is a digital modem that utilises a variety of techniques to transmit data over the radio. VARA introduces a new standard of technology available for the Radio Experimenter, Commercial and military use. The HF version is designed to work within a maximum bandwidth of 2400 Hz suited to SSB transceivers.

Packet Radio had been popular as an efficient method of accurately transferring data over the air. This was closely followed by PACTOR which has undergone upgrades and is now version PACTOR 5.

The release of FT8 provided an excellent opportunity to decode weak signals and efficient communication was possible using QRP, although many pump out signals at much higher level. Unfortunately, FT8 is an impersonal mode as there is little to no operator interaction apart from pressing the TX enable button or Log Contact.

VARA is a great substitution for PACTOR as it provides the robustness of PACTOR with the resilience of FT8 with a very low entry level price. Sadly, PACTOR Modems are extremely expensive, even on the second-hand market.

VARA HF – Up to 1,543 bits per second (BPS) at 500Hz Bandwidth / 7,050 BPS at 2300Hz BW

VARA FM – Up to 12,750 BPS Narrow / 25,210 Wide

VARA Satellite (QO-100) – As HF bit with latency handling

VARA Free licence operates with a speed limit of 170 BPS which is adequate to get the feel of the mode but the small licence fee of \$69.00 is little considering the potential of the system. The licence fee is a once off payment and covers all three VARA modems.

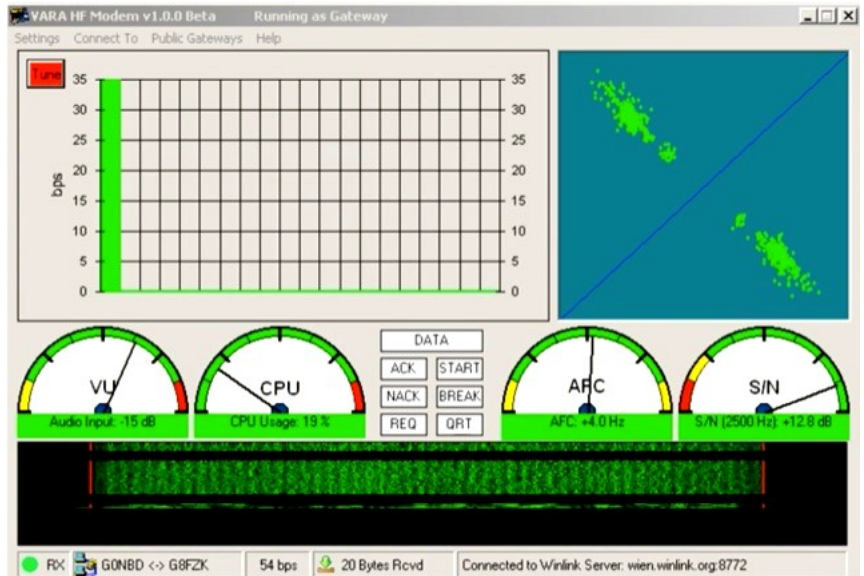
VARA Modem software may be downloaded here:

<https://rosmodem.wordpress.com/>

Keeping things as simple as possible, the VARA system employs Orthogonal Frequency Division Multiplexing (OFDM) modulation. This is a modulation system where data is transmitted as a combination of Orthogonal narrowband signals known as subcarriers. The basic principle of OFDM is that it splits a high-rate data-stream into a number of lower rate streams that are transmitted simultaneously over a number of subcarriers. In this case it is a 37.5 symbol rate with 52 Carriers. **Fig 1.**

The advantage of this system is that it is able to cope with severe channel conditions without complex equalisation filters.

The VARA HF Modem can operate at six different BPSK levels, 4PSK, 8PSK, 16QAM, 32 QAM, and 32 QAM and will, during the course of the transmission of a message, select a “comfortable and efficient” speed at which it will be able to transfer data **Fig.2.**



The VARA Modem

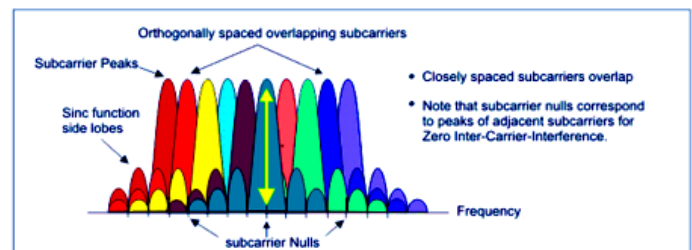


Fig. 1 OFDM Frequency Spectra

Level	Symbol Rate	Carriers	Mod	Bytes / Packet	Net Data Rate	User Data Rate
1	37.5	52	BPSK	20	35	29
2	37.5	52	BPSK	32	54	45
3	37.5	52	BPSK	71	113	94
4	37.5	52	BPSK	150	234	194
5	37.5	52	BPSK	308	476	395
6	37.5	52	BPSK	626	963	799
7	37.5	52	4PSK	1257	1929	1601
8	37.5	52	8PSK	1887	2893	2401
9	37.5	52	16QAM	2951	4521	3752
10	37.5	52	32QAM	3690	5653	4692
11	37.5	52	32QAM	4428	6782	5629

Fig. 2 Modes of Operation and Transfer Rates

The next step is to add a user interface program to control and talk to the modem allowing message and file transfer. **Fig. 3.**



Fig.3 The VARA Station Set-up

Developed by Irad Deutch, 4Z1AC, VARAC is specialised application allowing point-to-point, keyboard to keyboard chat with a more modern approach. Unfortunately, it is, at present, very much person to person as it does not facilitate group chat. This may appear in future iterations. VARAC automatically links into the VARA software modem on startup and utilises the VARA protocols making it a lossless ARQ (Automatic Repeat Request error correction strategy. This guarantees 100% accurate data transfer even under challenging SNR levels even as low as -23 dB. Without any QRM on channel the speed of transfer is very

# An Overview of VARA and VARAC - Part 1

high. Files may be transmitted at high-speed including pictures.

The software is free and maybe downloaded from: <https://www.varac-hamradio.com/>

Once installed and set up by the user, VARAC will perform many tasks. **Fig.4.**

- 1) Connects to the VARA Modem
- 2) Controls the Radio PTT and frequency
- 3) Connect to a Logging Program
- 4) Submits reception reports to PSK Reporter

## Setting UP VARAC

On startup click on settings **Fig. 5**

VARA Connectivity – provided that the VARA program is located in the directory C:\VARA the settings program will have found it.

Connection will be no problem with recent models of transceiver. In most cases it will be easier to utilise CAT control or with some of the older models, via OmniRig.

PTT can be Direct or Via CAT Control.

Frequency control – this program will require frequency control to QSY from the Calling channel after calling CQ and Band change maybe selected via the program.

Beacon Interval may be set here and it is normal to send a beacon every 30 minutes

QSO logger can be set up for many programs such as HRD Log, Log4OM, N1MM, Swisslog, and many more. The program does save its own ADIF file which can be uploaded to your personal Logging program..

PSK Reporter just requires a box to be ticked.

There are a number of YouTube videos available if you get into difficulty

## Setup of the VARA Modem

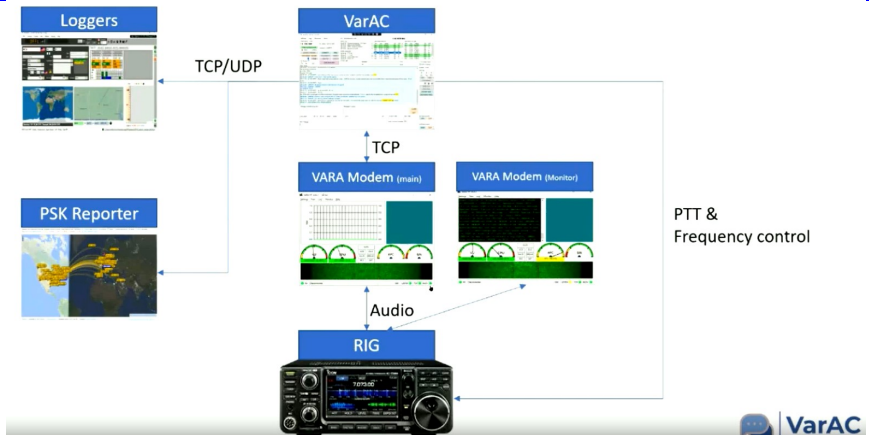
VARA Set-up – **Fig. 6** Inset callsign and registration key if you purchased it. The program will work albeit slowly, without registration. Try it without registering first and if you don't like the system then you will have lost nothing.

Soundcard – **Fig.7** I use a Signalink USB and the definition in this case is USB Audio Codec yours may be different.

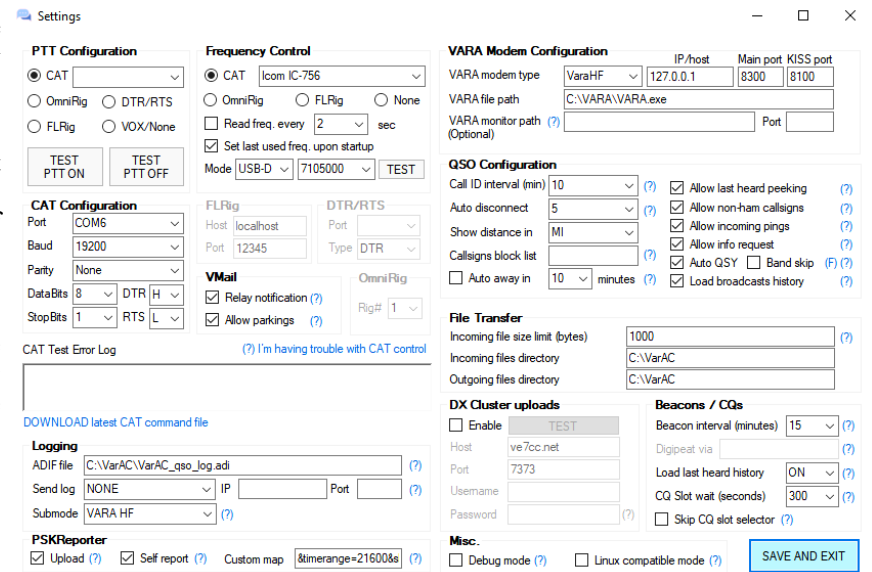
Click on the Red “Tune” Button”. This should switch the transceiver to transmit. I found that setting the slider to the end of travel was perfect for me and then I adjusted the levels using the controls on the Signalink.

The ideal audio level should just place the ALC meter to a level just below one third of the scale after the power levels have been set. My Max power level was 30 Watts although 10 Watts is more than sufficient.

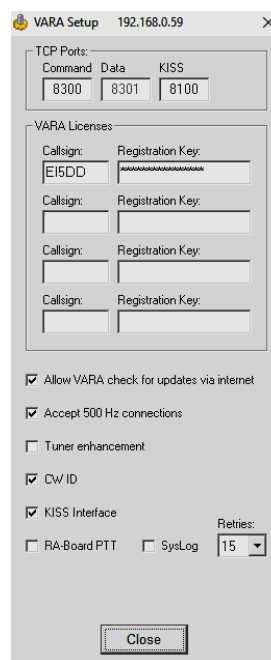
The audio level input should deflect the audio input meter see Fig1, to just between the 1 - 2 o'clock position.



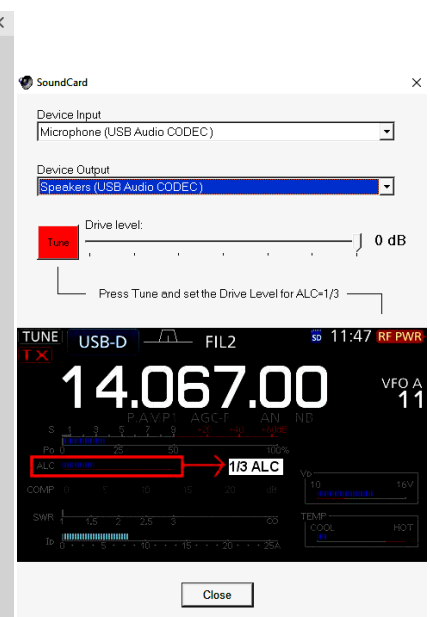
**Fig. 4 The tasks performed by VARAC**



**Fig. 5 The VARAC user interface set-up page**



**Fig. 6 The VARA MODEM Set-up. The program will work at a slower speed if not registered.**



**Fig. 7 The VARA MODEM Sound Card Set up. The setting of the drive level should be set to facilitate a fine tuning on the Signalink USB.**

# An Overview of VARA and VARAC - Part 1

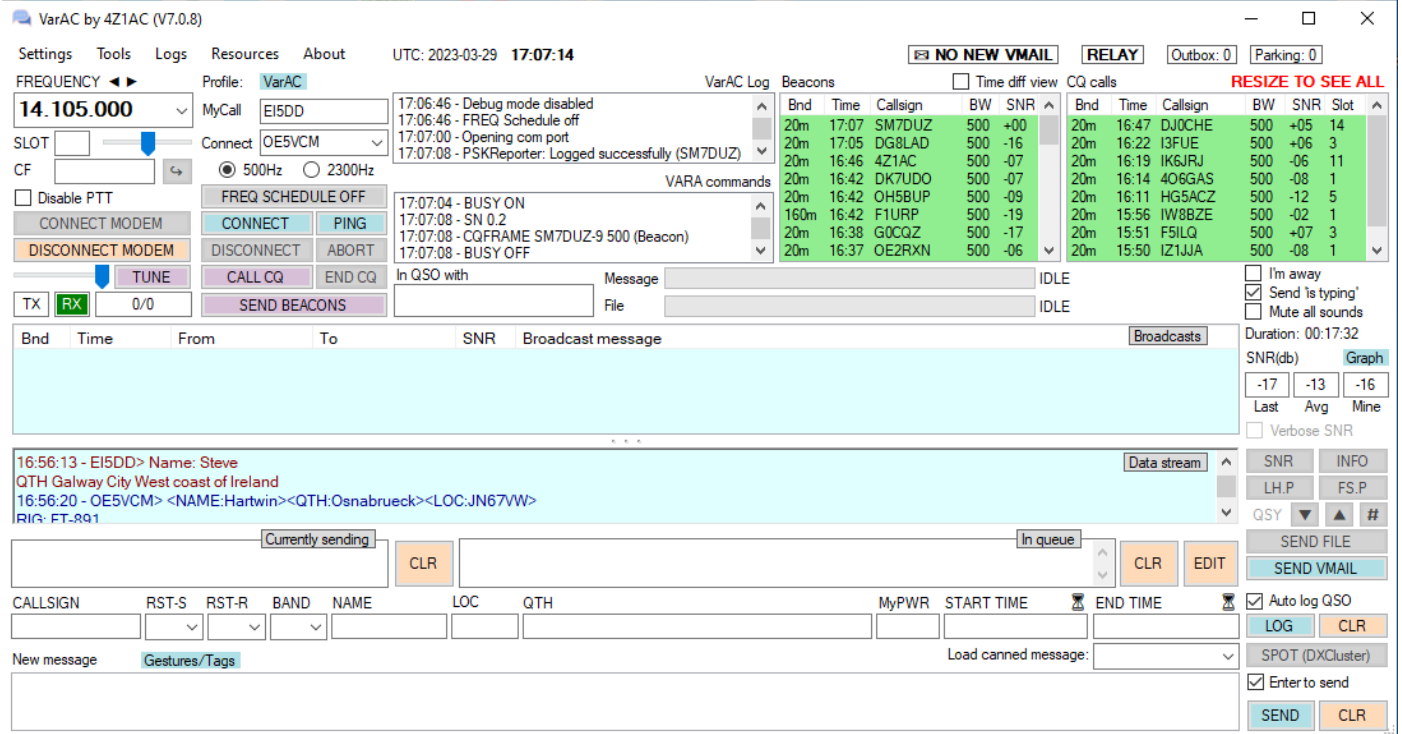


Fig. 8 The VARAC Terminal Screen

Fig. 8 - When the VARAC program is initiated the program will automatically start the VARA modem. The box displaying the frequency has a drop down menu which allows the selection of the desired band of operation. If this is changed and the radio responds all is well.

For normal operation the bandwidth is set to 500Hz and this would be normal for the standard QSO..

The two Boxes at the top right hand side, displaying Callsigns and highlighted in green, show beacons received and to the right, CQ calls.

There is a tune button to allow the transmitter to be keyed and audio levels tweaked and for SWR check.

To the right there is a button marked "Send Beacon" which initiates the sending of Beacons. The intervals between beacons is pre-set in the set-up menu. These are sent on the Calling frequency and are only sent if the channel is clear. Check PSK reporter to see who receives.

To initiate a CQ call click on the button above the Send Beacons. This will bring up the screen in Fig. 9

This allows the QSY slot to be selected as a final check press the slot sniffer to ensure that the slot is clear before calling CQ. There are 5 slots either side of the Calling frequency. These slots are 750 Hz apart. The Calling frequencies are listed in Fig. 10



Fig. 10 Vara Calling frequencies

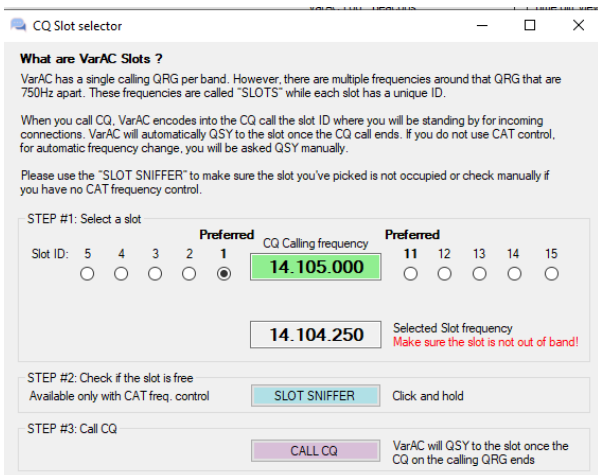


Fig. 9 The CQ Slot Selector

When the CQ call is answered VARAC will automatically QSY to the slot selected as in Fig. 9. If there is no reply VARAC will QSY back to the Calling Frequency.

To call a station who has called CQ, double click on his callsign and once the rig will QSY onto his chosen QSY slot. All simple the QSO can now take place.

The Program will automatically send signal reports to the other station. The QSO now continues at your pace on the keyboard.

Your message is typed into the New Message box at the bottom of the VARAC screen. Hitting Enter places the message in the "In Queue" box above and this will transfer

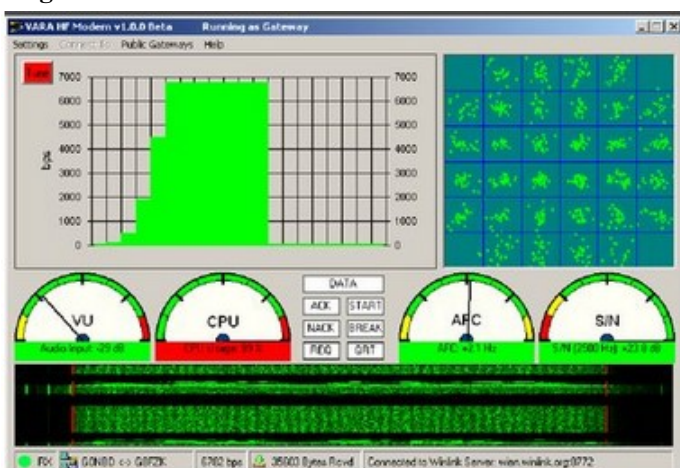
# An Overview of VARA and VARAC - Part 1

into the “currently sending” box. In the mean time you will be receiving the message from your contact.

The progress of the incoming message will be displayed in the message bar just below the list of beacons highlighted in green in Fig.8. as the message is received a green line will move along the message bar showing the progress. This bar will also show the progress of your outgoing message when it is being transmitted.

The speed of transfer is totally dependent on the level of QEM and the strength of the signal being received. VARAC has the ability to switch into any of the 11 modes illustrated in Fig. 2.

The change in pace of the message will be notable by the increase in the speed of the tones and the size of the packet being sent. If the frequency is really clear the system will send the message at high speed and this sounds like a grating white noise. This is the system in overdrive. See Fig. 11



**Fig. 11** To the left note the graph showing the transfer speed of a file in bits per second and size of packets. To the right is the constellation graph representing the signal modulated by QAM (quadrature amplitude modulation)

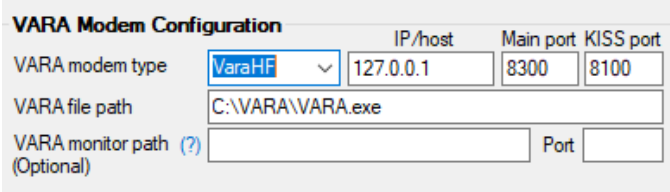
Quite often other modes like RTTY encroach into the VARA slots and these may slow the message transfer. Over the horizon Radars can also create problems but, nevertheless, the message will still get through without error, albeit at a slightly slower speed.

The packets of information will be shorter and may be repeated a few times until the checksum is correct. As soon as the QRM clears the modem will chance sending faster. To see a file being transferred check out the YouTube video at <https://www.youtube.com/watch?v=ke4V0pWVPaw>

VARAC supports file transfer and images (PNG, JPG , and GIF and will appear in the chat stream on completion. Basically binary files of any kind may be sent. The files are compressed before being sent. It is possible to limit the incoming file size. A Good connection would be essential for sending files.

## VARA FM

VARA FM is separate Modem that may be initialised from the VARAC program settings screen. Referring to Fig. 5 the VARA Modem set-up is located at the top right hand corner of the screen. Next to modem type is a drop down box allowing the selection of VARA HF, VARA FM or VARA SAT. See Fig. 12



**Fig. 12** Click on the dropdown box next to VARA Modem Then save and exit. Restarting VARAC will connect to the VARA FM Modem

**There are two sub-modes - 1200 and 9600.**

The 1200 mode is fast on a clear VHF channel but, using the 9400 sub-mode the transfer speed is super fast.

While the Signalink is perfect for operation at 1200 bps, it is necessary to procure a High-Speed sound card for 9600 bps. If you own a Signalink, it is possible to purchase a DRA-SR soundcard which is designed to fit into the Signalink Aluminium case.

VARA FM has sum additional facilities over the VARA HF previously described.

Firstly there are two modes FM Wide and FM Narrow

**Fig. 13**

Level	VARA FM WIDE				VARA FM NARROW			
	Symbol Rate	Carriers	Mod	Net Rate (bps)	Symbol Rate	Carriers	Mod	Net Rate (bps)
1	42	14	4PSK	566	42	14	4PSK	549
2	42	29	4PSK	1188	42	29	4PSK	1181
3	42	58	4PSK	2390	42	58	4PSK	2390
4	42	98	4PSK	4040	42	58	4PSK	3188
5	42	98	4PSK	5387	42	58	8QAM	4252
6	42	98	8QAM	7185	42	58	16QAM	5668
7	42	98	16QAM	9580	42	58	32QAM	7087
8	42	116	16QAM	11340	42	58	64QAM	8505
9	42	116	32QAM	14144	42	58	64QAM	9567
10	42	116	64QAM	16932	42	58	128QAM	11162
11	42	116	64QAM	19003	42	58	256QAM	12750
12	42	116	128QAM	22102				
13	42	116	256QAM	25210				

**Fig. 13** Symbol Rates, Modes, and Net bit rate in bits per second

VARA FM Narrow has a bandwidth of approximately 3KHz whilst the faster 9600 FM Wide has a bandwidth of max 6 KHz. It should be noted that the symbol rates and number of subcarrier is much higher due to the wider bandwidth. This makes this fast in both modes with the same robust and resilient communications link.

VARA FM requires an FM radio capable of handling 9600 Packet Radio with a special soundcard (6KHZ bandwidth) connected via the rear panel of the radio.

VARA FM is suited for EmComms, for use as a Digipeater and as a Gateway for Winlink Email Messaging or gateway to the internet. This would handle messages many times faster than the old Packet Radio Digipeater system.

VARAC connected to the FM Radio will accommodate all of the facilities described for HF operation.

Nest month we will cover **Part 2** which will feature VARA FM in greater detail. We will also cover Winlink Express which will allow the sending and reception of Emails via HF and VHF/UHF FM. Over the next month, tests will be carried out using QRP levels under portable conditions.

Steve Wright - E1SDD - G4GFC

# Connemara The Radio Experimenter's Paradise

Connemara is a district in western Ireland facing the Atlantic. Its coastline has many tiny coves, bays and fishing villages. The Connemara National Park is a vast expanse of mountains, bogs, heathland and lakes. The main town or is Clifden which has been noted throughout the last couple of centuries as holiday resort which was connected to Galway by the Clifden Railway accessible from Galway City. The Irish language is prominent in this region, and it is also renowned for its venues for traditional music.

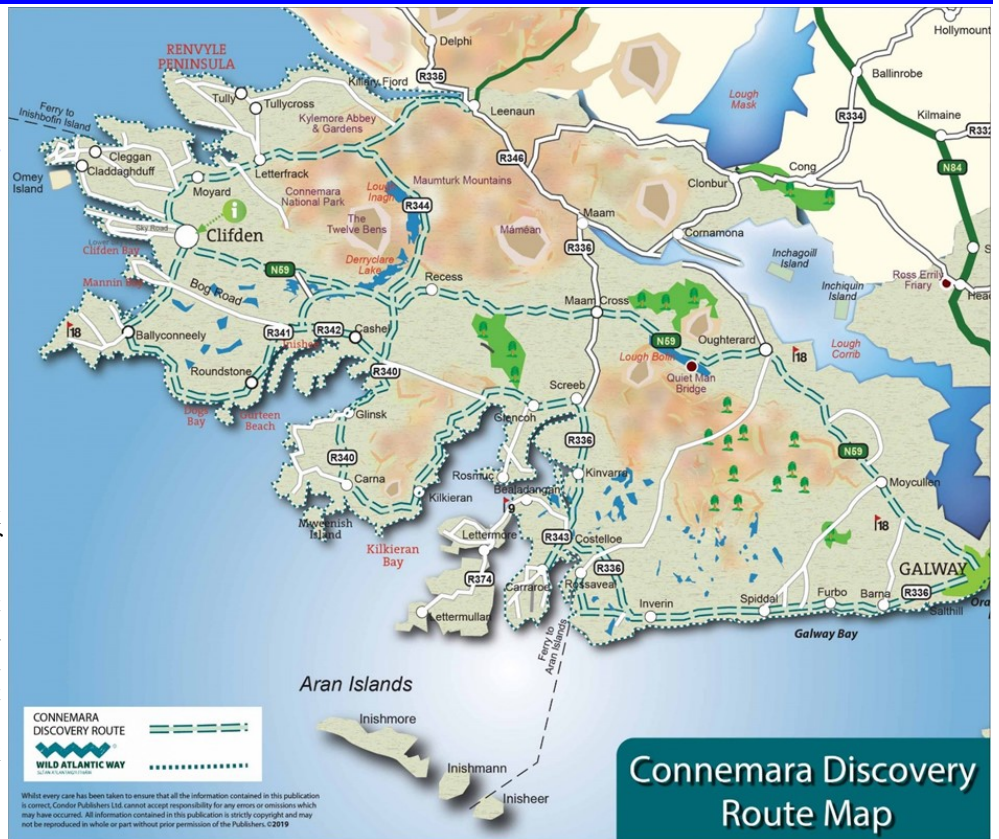
The Connemara National Park covers some 2,000 hectares of scenic mountains such as Benbaun, Benbrack, and Muckanaught, part of the Twelve Bens or Beanna Beola Range. The Connemara National Park includes lands that once formed part of the Kylemore Abbey Estate, the Letterfrack Industrial School and private property of Richard "humanity" Dick Martin, who instigated the formation of the Society for Prevention of Cruelty to Animals.

For the tourist, there are some beautiful walking trails, with unique habitats and rare flora and fauna. Connemara ponies are common in the area and these are a hardy breed of pony that seem to be resilient to the harsh weather conditions predominant in this region.

The Coastline of Connemara forms part of the "Wild Atlantic Way" which is a trail originating in Co. Donegal and ending in Co. Cork.

In the heart of Connemara, there are two predominant mountain ranges – the Maamturks to the east, and the Twelve Bens (twelve Pins) to the west, forming part of the National Park. Both the Aran Islands (Inis Oirr aka "Craggy Island", featured in Fr Ted) and Inis Bofin are also part of Connemara. The two ranges are divided by the Inagh Valley. Lakes and rivers in Connemara are renowned for their wild Salmon and Trout fishing attracting fishermen worldwide.

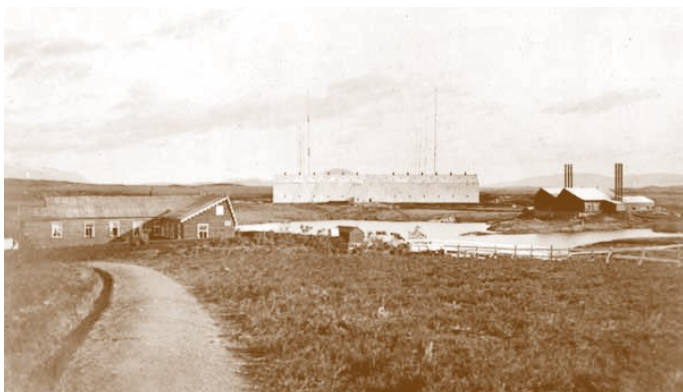
Marconi set up one of his Transatlantic Radio Stations in Derrygimla, circa 1905, not far from Clifden Co. Galway. This site was also where Alcock and Brown crash landed in 1919. Clifden was undoubtedly a thriving town in this era.



With such an amenity, there are many sporting events held in this area, notably cycle events, marathons, cross country walks, the Twelve Bens Mountain challenge and the Maamturks mountain Challenge. The Connemara loop is a popular Marathon and Cycle route.

From a Radio Experimenter Perspective, it is quite reasonable to get totally engrossed in Connemara. Parks on the Air would be possible in the Connemara National Park. There are many summits that qualify for Summits On the Air.

A word of warning to the many "experts", the weather does change quickly so be prepared and, where possible, travel with another operator. As they say, "**You don't want to end up Brown Bread**"



The Aran Islands have a unique IOTA number EU-006 and are well worth a visit. Inis Oirr is the island with the wreck of the Plassey often seen at the introduction to the Fr. Ted series. Inis Mór is the Largest of the three islands. It has an old lighthouse situated on the highest point of the Island. Another popular archaeological site is the prehistoric Dún Aonghasa Fort built on the Western side of the island. Inis Meáin. The residents are very welcoming to radio experimenters as there have been many Dx-Peditions to them in the past.



## Connemara The Radio Experimenter's Paradise

Both the Galway VHF Group and the Galway Radio Experimenter's Club provide Emergency Communications links for the many sporting events in the Area.

The Galway VHF Group provide EmComms for the Connemara Ultra Marathon which has several events, The Ultra, the Full, and the Half Marathon. This is quite challenging from a communications point of view as there are so many mountains in the way. The 80 metre band is normally chosen as the groundwave covers a wide area including the control centres. Even Top band mobile has been tried which really was superior but a bit unwieldy for Mobile operations. The major problem with Connemara is the lack of natural things like trees to hang antennas from. VHF is used between the cars following the Ultra Full and Half Marathons, the range tend to be limited. The 4 metre band generally gives the best results.

APRS is widely used pinging from cell-phones using the App "APRS Droid". The control operator can see all of the participants on a laptop screen eliminating the need for the "where are you now" messages.

The Galway Radio Experimenters Club tend to use VHF and have taken the advantage of a well renowned path from the Maam Community Centre to the Car Park in Leenane. If one park in the correct spot in Leenane, it is possible to have a perfect point to point QSO with a good signal strength. Move a couple of feet one way or the other and this is not possible. This is from years of experience. However, other areas are not VHF friendly.

Extensive research has been done with DMR into hotspots in the car and using the TM7 Internet Radio using cellular networks. Some say this is bad practice as one is wholly dependent on the Cellular networks. Seriously, how often does a Cellular network fail in these modern times! As such, these infrastructures have a fail safe and back up system so we don't worry. In fact, the more worrying thing is dependence on a repeater system linked by internet and located on remote sites.

Other strange phenomena that happened to our advantage are sporadic duct occurring when clouds from over the top of mountains and plateaus. We have managed to pass a UHF signal from one side of a mountain to the other by bouncing it along the interface of the layer of moisture and ground on the top of the mountain. This enabled the Civil Defence UHF handhelds to communicate with each other for the full day. Any other effects may be the bouncing of UHF signals down the sides of a valley. Knife edge propagation is possible but not something to rely on. Changes of weather will surely put pay to any planned VHF operation - it may work one week but when you go out of your way to rely on it - forget it! We have learned this lesson the hard way on many occasions.



*The Coastguard Search and Rescue Helicopter attending an incident in the Maumeen area*

The Maam community Centre is a good old reliable and much used location, ideally suited for base station operation. It has trees and plenty of room for antennas. It has often been used as the first aid centre and ambulance station for events. We have a good rapport with the Red Cross and generally get the use of their Tetra system for calls into their controller for the day.

This is the perfect area for Radio Experimenter to spend a week or two, You won't see it all in a day! Ideally suited for portable operation, mobile activity and also for field day operation.

There is so much choice for the SOTA operators although there are not too many sites one can drive up to for the major part of the way. It will be hard graft. The view from the top of the mountain is so much different from the view from below.



At this point I should mention the *Kylmore Pass Hotel* situated at the end of the Inagh Valley. It is a family run hotel and one of the son's, Sean, is currently working his way up the line having passed his Intermediate Licence. He is going for the Full Licence soon and will get his Irish Licence as soon as he passes the Full Licence examination.

The Connemara National Park visitor's centre is located in Letterfrack, Co. Galway and has the usual items of interest like films, guides and a café etc. Enjoy your trip!

Steve Wright , EI5DD

wright14@gmail.com

## Skywave Radio Club News



The April meeting of the Skywave Amateur Radio Club. E1DSW will take place, Tuesday the 4th of April at 8.00 p.m. at the Old Halfway House, Rathduff, Co. Cork. T23 VN88

New members or anyone interested in learning more about amateur radio are very welcome to attend.

### Skywave Amateur Radio Club

was established in 2018 to cater for like-minded amateur radio operators interested in the technical and fun aspects of radio operation. We represent the interests of radio enthusiasts in the Cork region and beyond. Our aim is to generate an interest in amateur radio and to introduce newcomers to our hobby while enjoying the benefits of group and community activities.

We are a non-profit organisation and use our unique hobby of Amateur Radio as a focal point, to interact with the public and promote our hobby in a fun and visually technical way. The club is fully affiliated with and insured under the Irish Radio Transmitter Society, The national society for Ireland.



Skywave Radio Club were operating from Blackrock Castle, Cork, during the "Lifelong Learning Festival" 2023 held on the 2nd of April.

Visitors were given the opportunity to see a live demonstration of Amateur Radio and the many interests it has to offer

## Galway VHF Group News

Following a harsh winter it will be necessary to service the equipment located on the remote sites. The Abbeyknockmoy DMR Repeater, in the centre of Co. Galway, is not in the best of health following a severe thunder storm in December. It is uncertain how much damage has been caused although recent observations suggest that there is no problem with the antennas. This may be a costly venture to get it back on the air. Hopefully not the case! As the weather improves, it will be possible to drive up to the location and hope that the damage is only down to the power supply and connection into the internet for the gateway system.

Recent checks show that our DMR repeaters in Galway City and located in Loughrea are functioning very well and, if nothing else, we can tweak up the bandpass/reject filters are up-to spec. Always advisable to check the antennas every year as the remote sites do take a battering with the winter storms.

Recent projects include the operation of VARA as a means of keyboard-to-keyboard operation over HF and to establish its relevance to EmComms. To date, emails have been sent quite speedily on HF and the results are impressive. Keyboard-to-keyboard works in all conditions including severe QRM. Some QSOs have been conducted even with the signal barely visible on the waterfall and down to -17dB.

The next experiment will be to try VARA FM which operates on VHF/UHF at considerably higher speeds and naturally due to the reduced amount of competition from large numbers operating on the same frequencies. There is a facility for Digi-peating in this mode and also the facility for WinLink Mail. Not too sure if the one can operate a BBS in a similar way to the old style of packet radio. If it were, the information would be transmitted at colossal rate.

There are not so many projects on the bench for this year apart from a "Shari Pi-Hat" which is a VHF personal Node for Allstar. We do have an existing Allstar node for 4 metres but very few bother to investigate its huge possibilities. For much of the time it is linked into the HUBNet UK and there is a wealth of activity there.

The Wires-X gateway activity seems to have waned from the lack of support from local users. This is a shame as it has so many advantages.

The Bottom line is that some of these projects will need to be reviewed as to whether they should be kept on the air. Lack of use would really need to be reviewed. There is little point in keeping them on the air whilst they waste electricity being just mere "beacons". It is a shame to see them as "one week wonders".

Some time ago, we had an excellent link from the Galway 2m repeater to the Limerick 70cms repeater. This had been quite successful and it was possible to access both machines whilst on the road to and through Limerick. Sadly Limerick took their side of the Wires-X link down and this facility no longer exists. Another example of one step forward and several back!

Of course it is the time of the year to blow the dust off the portable equipment and do a wee bit of maintenance on the antenna systems and portable power packs and service the Generators.

Busy times, ahead but having recently purchased the ICOM 705 it will encourage a bit of "off grid operation". Other projects will include operation on 40 MHz, 23cms and 13cms.

Now all we need is some good weather!



SHEARWATER HOTEL  
BALLINASLOE  
CO. GALWAY H53 F5P9

IRISH RADIO  
TRANSMITTERS  
SOCIETY'S  
90TH AGM  
WEEKEND

SAT 29TH & SUN 30TH  
APRIL 2023

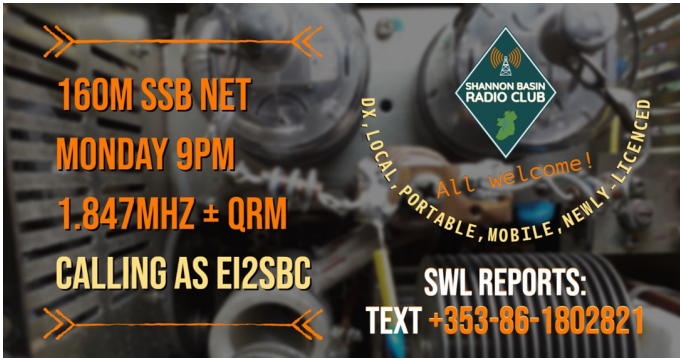
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[WWW.SBRC.IE/AGMWEEKEND](http://WWW.SBRC.IE/AGMWEEKEND)



# Shannon Basin Radio Club

## Weekly SSB nets

Even with the recent time change, our weekly 160m and 80m SSB nets are still running. The club welcomes all stations & SWLs to join in. We are delighted to have QSOs with so many stations around Ireland, Europe, and further afield. The Top-Band 160m net runs on Monday nights on 1.847MHz +/- QRM from 9pm. The 80m net operates on Thursday evenings on 3.775MHz or thereabouts also.



160M SSB NET  
MONDAY 9PM  
1.847MHZ ± QRM  
CALLING AS EI2SBC  
SWL REPORTS:  
TEXT +353-86-1802821

SHANNON BASIN RADIO CLUB  
ALL welcome!  
DX, LOCAL, PORTABLE, MOBILE, NEWLY-LICENSED



80M SSB NET  
THURSDAY 9PM  
3.775MHZ ± QRM  
CALLING AS EI2SBC  
SWL REPORTS:  
TEXT +353-86-1802821

SHANNON BASIN RADIO CLUB  
ALL welcome!  
DX, LOCAL, PORTABLE, MOBILE, NEWLY-LICENSED

During the month of March, a couple of the nets coincided with strong and visible auroral activity. While others may have been observing the dramatic spectacle via cameras, amateur radio is probably the only hobby where we are fortunately (or unfortunately depending on your perspective!) able to interact directly with it. It was a very interesting experience to hear the effects of the aurora on operators signals during the net and changing characteristics over an hour or so.

The club appreciates everyone who joins in and especially the large number of SWLs. We provide a SWL reporting text message service which is proving very useful and hopefully more engaging for SWLs. Text reports can be sent to +353-86-1802821. Where possible, SWL reports are acknowledged on air during the net also.

## Forthcoming Events

The club is busy preparing for the 2023 IRTS AGM weekend. It will be held on April 29th and 30th in the Shearwater Hotel in Ballinasloe, Co. Galway. We are looking forward to warmly welcoming everyone to the event which is lining up to be the largest in Ireland this year.

The short talks on Saturday afternoon will feature the intrepid EIDX group not long back from their radio adventures in Antigua Island, TinyGS - how to build and get involved with an open network of tiny ground stations distributed around the world to receive satellite telemetry, and RTTY (Radio Teletype). We are also delighted to host talks from our youth members and hear about their

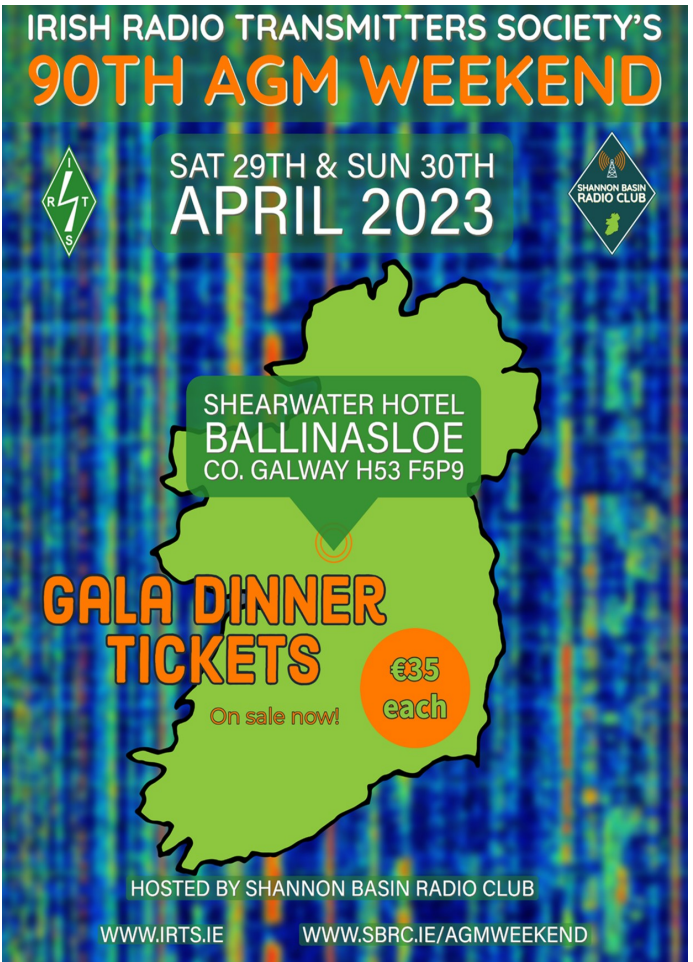
perspectives and adventures with amateur radio. The deadline for trader and club tables at the radio rally was March 16th and no further table requests can be accommodated. We will have a bring 'n' buy table at the event for anyone wishing to avail of that option, however.

The rally will appeal to anyone with an interest in radio and electronics. It will also feature the popular monster raffle. We are delighted to announce that Martin Lynch & Sons, Long Communications, MFJ Enterprises, Satworld, Icom UK, Wescom Ireland Ltd., Messi & Paoloni, and Airmast are among the companies that are very kindly sponsoring prizes for the raffle taking place on Sunday afternoon.

At the time of writing, only one or two hotel rooms remained for booking using the negotiated rate. If booking hotel accommodation using the reference 'SBRC', please note that it only works for bookings made over the phone. Tickets are required for the Gala Dinner on Saturday April 29th. They are €35 each we kindly remind everyone who needs one to secure them quickly to avoid disappointment. Gala dinner ticket purchasing details are available on [www.sbrc.ie/agmweekend](http://www.sbrc.ie/agmweekend)

## Joining Shannon Basin Radio Club

Shannon Basin Radio Club membership continues to grow. If interested in learning more about the club or becoming a member, you can contact the club by email to [admin@sbrc.ie](mailto:admin@sbrc.ie) or find more information on the club's website at [www.sbrc.ie](http://www.sbrc.ie). You can also find information and updates about the club activities via Facebook, Twitter, and Instagram.



IRISH RADIO TRANSMITTERS SOCIETY'S  
90TH AGM WEEKEND

SAT 29TH & SUN 30TH  
APRIL 2023

SHEARWATER HOTEL  
BALLINASLOE  
CO. GALWAY H53 F5P9

GALA DINNER  
TICKETS €35 each  
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# Galway Radio Experimenters' Radio Club

## Our Club Monthly Meetings:

The Galway Radio Club met in the Menlo Park Hotel for the monthly club night. It is generally held on the first Monday of every month, except if it is a Bank Holiday in which case, we meet on the second Monday of the month. We also support a virtual presence via. Jitsi (<https://jitsi.org/>).

It generally a well-attended night with members being both physically and virtually present.

## Focus:

The focus of our monthly club night is, as a rule, all things Ham Radio is about – learning about new things, sharing information on what works (or doesn't work), showing new (or old) pieces of equipment and giving presentations/demo's where we can. Any "club administration" is handled separately by our committee and only bring to the Monday night meeting anything that the club members need to be made aware of. Of course, Monday night club members can also raise questions/concerns/issues etc. to the committee.

## Last Club Night:

Last club night (06-March), we covered several topics including the events in early April along with a presentation by Tom Frawley (EI3ER). It was an relatively short night.

## Forthcoming Events

There are quite a number of upcoming local events that we want to participate in, namely

Date	Event
17-March	Saint Patricks Day
01-April	Maamturk Challenge
22-April	Marconi Weekend
23-April	Connemara Marathon
29/30-April	Gala Dinner, Rally and IRTS AGM

So most of the discussion centred around how we might play a role in the events, what was required to do so, and who would be available to support the who events.

The most pressing, upcoming event was the St. Patricks Day event. We got the special event call-sign EI4SPD and registered as a station with the St. Patricks Day Award website (see <https://www.stpatricksaward.com/>).

**EI4GRC**  
Galway Radio Experimenters Club

Confirming QSO with: \_\_\_\_\_ Via: \_\_\_\_\_

Date	UTC	Freq	Mode	RS(T)

**Saint Patrick's Day**  
March 17th

Steve Wright also worked on our QRZ page (see <https://www.qrz.com/db/EI4SPD>), and in particular came up with a lovely digital QSL card for the event:

**Galway Radio Experimenters Club**

Happy St. Patrick's Day!

**EI4SPD**

**QTH: Galway City**  
**WAI Square: M22 Co. Galway**

While St. Patricks Day is now associated with wearing green, parades and beer, the holiday is grounded in history that dates back more than 1500 years. The earliest known celebrations were held in the 17th century on March 17, marking the anniversary of the death of St. Patrick in the 5th century.

Much of what is known about St. Patrick's life has been interwoven with folklore and legend. Historians generally believe that St. Patrick, the patron saint of Ireland, was born in Britain (not Ireland) near the end of the 4th century. At age 16 he was kidnapped by Irish raiders and sold as a slave to a Celtic priest in Northern Ireland. After toiling for six years as a shepherd, he escaped back to Britain. He eventually returned to Ireland as a Christian missionary.

Among the legends associated with St. Patrick is that he stood atop an Irish hillside and banished snakes from Ireland prompting all serpents to slither away into the sea. In fact, research suggests snakes never occupied the Emerald Isle in the first place. There are no signs of snakes in the countrys fossil record. And water has sunnaded Ireland since the last glacial period. Before that, the region was covered in ice and would have been too cold for the reptiles.

The shamrock, a three leaf clover, has been associated with Ireland for centuries. It was called the scantony by the Celts and was considered a sacred plant that symbolized the arrival of spring. According to legend, St. Patrick used the plant as a visual guide when explaining the Holy Trinity. By the 17th century, the shamrock had become a symbol of Irish nationalism.

The red-haired, green-clothed Leprechaun is commonly associated with St. Patricks Day. The original Irish name for these figures of folklore is lobacian, meaning small bodied fellow. Belief in leprechauns likely stems from Celtic belief in faeries, tiny men and women who could use their magical powers to serve good or evil. In Celtic folktales, leprechauns were cranky souls, responsible for mending the shoes of the other faeries.

**QSL Via EI4GRC**

From there we quickly covered the other upcoming events and then moved on to a presentation by Tom Frawley **Demo – Tom Frawley (EI3ER)**

**Solar-Terrestrial Data**  
06 Mar 2023 1719 GMT  
SFI 180 SN 155  
A 22 K 2  
X-Ray C 2  
3049  
PF 12 168.3 @ SEM  
E<sub>f</sub> 2140  
Aurora 3/n=1.99  
Bz -2.1 SW 627.7

**HF Conditions**

Band	Day	Night
80n-40n	Poor	Good
30n-20n	Poor	Good
17n-15n	Good	Good
12n-10n	Good	Poor

**VHF Conditions**

Band	Conditions
Aur Lat	69.6°
Aurora	Band Closed
6n ESEU	Band Closed
4n ESEU	Band Closed
2n ESEU	Band Closed
2n ESNR	Band Closed
EME Deg	Fair
Solar Flare Prb	75%

**MUF**  
M3000 8 12 18 UTC  
MS 0.1

**Geomag Field QUIET**  
Sig Noise Lvl S1-S2  
MUF US Boulder 36.74  
Current Solar Image

<https://www.pcrdb.com>  
Copyright Paul L Herriman 2023

Tom presented a set of slides he created around HF Radio Communication Propagation. The topics he covered were "How Sun radiation ionizes the ionosphere", "Layers in ionosphere", "Sunspot number", "Solar Cycle", "Solar flux", "K index" and "A index". He used the following as a main guide for the presentation, always bringing us back to it for discussion and what the various numbers etc. meant:

There was a lot of good discussion around this topic and how to understand it. This also led to a discussion on the Ionogram as available at <https://digisonde.oma.be/ionogif/latest.html>.

## AOB

Steve raised an idea on how we might be able to make use of the Wild Atlantic Way as both a means of doing portable radio work while at the same time as doing some sightseeing. I think we can

all agree that "If the weather is nice, sure why would you go abroad?"

**Our next club night is 03-April.**

# Club News

## Mayo Radio Experimenters



### Our Next Meeting

The Mayo Radio Experimenters Network will hold their next club meeting on Wednesday evening April the 5th at 8 pm in the Breaffy House Hotel, Breaffy Co. Mayo. Everybody is welcome to come along for the evening.

## Lough Erne Rally



Sunday 7th May

Share Centre  
Lisnaskea Co. Fermanagh  
BT92 0EQ

Doors Open 11:30 am  
Entry £5.00 or €5.00

Free tables for trade, Special Interest, Shack Clearance Bring and Buy etc.

RSGB Sales Stall

Bar, Food Café, Cooked Lunch  
Free Parking

Book tables via  
[argault91@gmail.com](mailto:argault91@gmail.com)

IRISH RADIO TRANSMITTERS SOCIETY'S  
**90TH AGM WEEKEND**

SAT 29TH & SUN 30TH  
APRIL 2023

SHEARWATER HOTEL  
BALLINASLOE  
CO. GALWAY H53 F5P9

SHORT TALKS  
Saturday 10am

IRTS Gala Dinner  
Saturday 7.30pm

NORSE CODE TESTS

HORSTER RAFFLE  
1000 prizes, 1000 tickets, 1000 prizes

IRTS AGM  
Sunday 12pm

RADIO RALLY  
Sunday 10.30am

HOSTED BY SHANNON BASIN RADIO CLUB  
[WWW.SBRC.IE/AGMWEEKEND](http://WWW.SBRC.IE/AGMWEEKEND)

160M SSB NET  
MONDAY 9PM  
1.847MHZ ± QRM  
CALLING AS EI2SBC

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80M SSB NET  
THURSDAY 9PM  
3.775MHZ ± QRM  
CALLING AS EI2SBC

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# 54th Annual Radio Rally

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Brian has loads of hardware and cables at rock bottom prices.
- ▶ **Alan Weise**  
Alan has new and used radios, components and test equipment. *Billy Goat's Stuff*
- ▶ **Bring & Buy**  
Do you have surplus equipment? Bring it along.
- ▶ **Worked All Britain**  
Ian & Esther WAB G1OAZA, G1OAZB



RSGB QSL Bureau and membership stand, meet the Region 8 Representative.

**SATURDAY**  
**17th June**  
**2023**

Ballygilbert  
Presbyterian  
Church Hall



376 Belfast Rd, Bangor BT19 1UH  
Good parking available in church car-park and on roadside verge.

Doors open: 11.30am  
Admission: £3.00

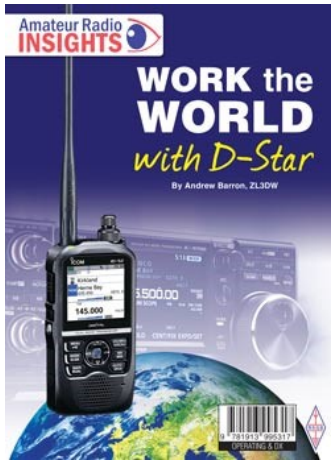
Enjoy light refreshments and chat face-to-face for a change.



Need directions or to book a table contact MI00BR at [andrewis@live.com](mailto:andrewis@live.com)

BangorDistrictARS

# Latest Titles in the RSGB Book Shop



## Work the World With D-Star

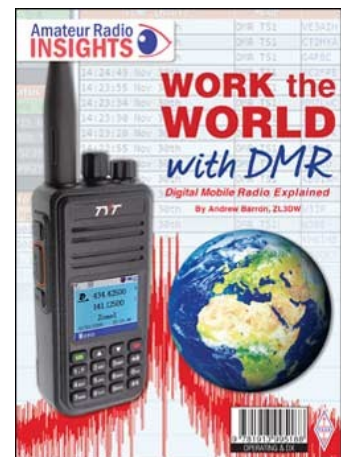
By Andrew Barron, ZL3DW

Work the World with D-Star is a practical guide that explains the steps that you need to follow to make your new D-Star radio work through your local repeater or hotspot. There are terms to discover, including dashboards, reflectors, gateways, hotspots, and Echo. Also, acronyms like AMBE+2, DR, DV, CS, and MMDVM. The book covers how to link to a reflector and what to say when you are making your first calls. If you are using a hotspot you can link to a reflector using the hotspot's Pi-Star dashboard or using the functions on the radio. Or you can use PC software or a phone app. There is guidance on MMDVM (multi-mode digital voice modem) 'hotspots' and step-by-step instructions for configuring the Pi-Star modem. Information on the D-Star data structure and the advantages and disadvantages of digital voice technology over FM, and other digital voice modes such as System Fusion, DMR, and P25 is also discussed. Work the World with D-Star even includes programming instructions for some popular Icom D-Star radios such as the ID-52A, ID-51A +2, IC-705, and IC-9700. As always, not forgotten is Andrew's guide thoughts on "which is best," and "what should I buy?"

## Work the World with DMR

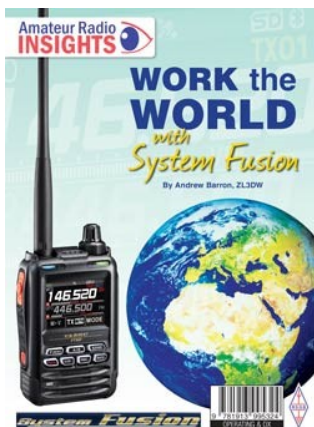
By Andrew Barron, ZL3DW

The Work the World with DMR practical approach explains the steps that you need to follow to make your new DMR radio work on your local repeater or hotspot, and for worldwide contacts. Amateur Radio DMR is not as simple as entering a couple of frequencies and setting a CTCSS tone the way you would for an FM radio. So, you can expect a steep learning curve but of course that's where this book will be the most helpful. You will discover lots of new terms including dashboards, zones, receive groups, colour codes, code plugs, hotspots, Parrot, talk groups, and time slots. Also, acronyms like MMDVM, CPS, IPSC2, DMR-MARC, TGIF, and DMR+. MMDVM (multi-mode digital voice modem) 'hotspots' are very popular accessories and there is information here about their uses and configuration. You will also find coverage of duplex hotspots and the perhaps more familiar simplex hotspots, including a section on how to assemble a hotspot from a kit, a Raspberry Pi, and an SD card. There is even step by step instructions for configuring the Pi-Star hotspot operating system.



## Work the World With System Fusion

By Andrew Barron, ZL3DW



System Fusion and Wires-X are exclusive to Yaesu. Although you have to use a Yaesu radio to access Yaesu Wires-X 'rooms' anyone can access thousands of YSF and FCS reflectors using a hotspot, a DV dongle, or a non-Yaesu repeater. Many of these reflectors are in turn linked to DMR talk groups, D-Star reflectors, Wires-X rooms, and other digital voice modes.

As usual Andrew explains in Work the World with System Fusion the base technology from the C4FM (continuous 4-state frequency modulation) which is similar to the 4FSK modulation used by DMR and the GMSK modulation used for D-Star. The DN digital narrow mode and what happens when you press the Wires-X button. For example, if you are connected to a genuine Yaesu repeater or a PDN or HRI-200 Wires-X node, the search function on the radio will list the available Wires-X rooms. If you are using a hotspot, multi-mode repeater, DV dongle, or non-Yaesu repeater, the search function will list YSF and FCS reflectors. A powerful set of features indeed. There is much more besides in this book, with using the various reflectors explained, alongside Hotspots, Troubleshooting and there is even advice on 'What should you buy!'

# DV SCOTLAND PHOENIX WEEKLY NETS

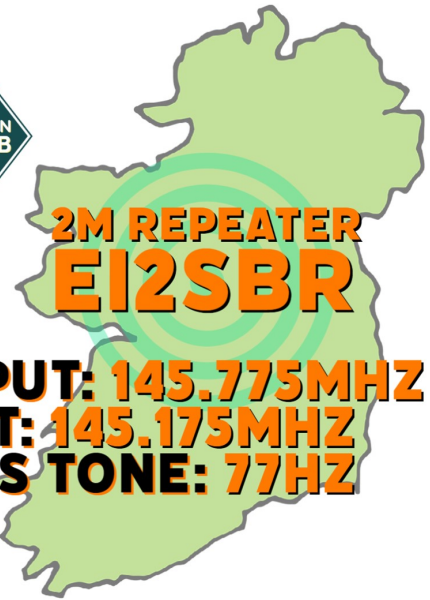


MONDAY NIGHT NET  
8PM TILL 9.30PM UK

SATURDAY NIGHT  
COAST TO COAST NET  
9PM TILL 10PM

STATIC ON TG 23555 & 23556

HAMSHACK HOTLINE : 94110  
HAMS OVER IP : 25001



**2M REPEATER  
EI2SBR**

**OUTPUT: 145.775MHZ  
INPUT: 145.175MHZ  
CTCSS TONE: 77HZ**

160M SSB NET

MONDAY 9PM

1.847MHZ ± QRM

CALLING AS EI2SBC



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# Handmade Ham Radio Gadgets



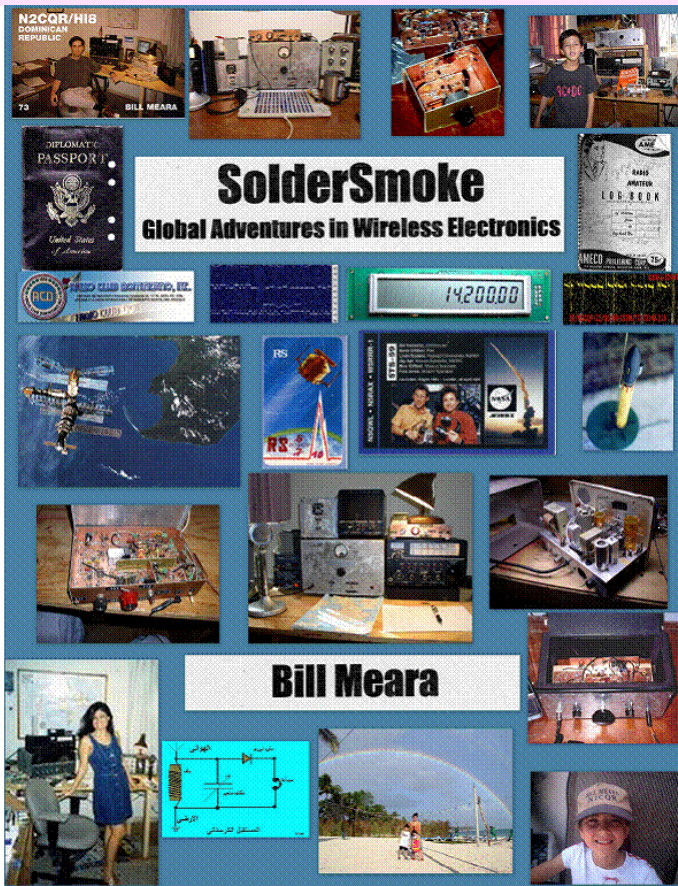
Contact : 0877775249  
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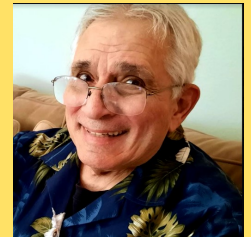
Books are available from the  
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## SOLDER SMOKE THE PODCAST



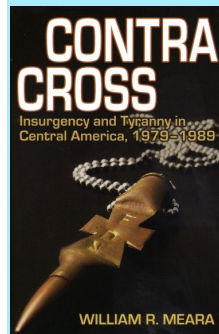
**Serving the world-  
wide community of  
radio and electronic  
homebrewers**

Host - Bill N2CQR

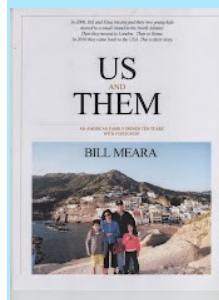


Co Host - Pete N6QW

<https://soldersmoke.blogspot.com/>



A journey through the Central American wars of the 1980s as seen through the eyes of a young American officer who worked on both sides of the insurgency in the region: In El Salvador Bill Meara supported efforts to defeat insurgents; with Nicaraguans he worked to keep an insurgency alive. One of very few Americans to see both sides up close, he takes readers into his world as an advisor struggling with cultural differences and human rights violations while trying to stay alive in murderous El Salvador. We join him on dangerous helicopter rides into contra base camps on the Honduran-Nicaraguan border and into a U.S. Embassy under attack. From Special Forces school at Ft. Bragg to Joan Baez's back-stage party in Managua to a contra POW camp deep in the jungle, we get a taste of Meara's world up close.



What happens if you take an American family and send them to Europe for ten years? In the summer of 2000, Bill and Elisa Meara, accompanied by 2 year-old Billy and 4 month-old Maria, left their home in the suburbs of Washington, D.C. and moved to the Azores. There they experienced the highs and lows of diplomatic life on a small distant island. After three years in the Azores, they spent four years London and three years in Rome. Overseas they lived in two houses and two apartments, went to five schools, used four different health care systems, experienced one earthquake, 9-11, the terrorist attack on London, tea with the Queen, the election of Barack Obama... and all the ordinary things that families go through. They lived mostly with the locals, learned Portuguese, Italian, and a bit of Cockney, and made many friends (foreign friends!) They returned to the United States in 2010 with a changed view of the world. This is their story



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QRP TX, RX and Audio kits

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## Walford Electronics

We are suppliers of electronic kits, with very detailed instructions, for home construction, using mainly analogue circuits which are often used in simple Amateur Radio equipment.

You can choose from [Simple](#) projects for beginners, or slightly more advanced [Intermediate](#) ones, right up to our [Advanced](#) projects for skilled constructors, and of course there are also many [Accessories](#)!

### Get in Touch

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## Shannon Basin's Automated Stations

Sliabh Bán Repeater O/P: 145.775 ,I/P :145.175, CTCSS 77Hz  
Roscommon Multimode Digital Gateway EI2BED 144.8625 MHz

### Current Systems Active in Galway

#### 70cm DMR Repeaters

EI7RHD I/P 430.450 O/P 439.450 CC1  
EI7LRD I/P 430.475 O/P 439.475 CC1  
EI7AKR I/P 438.425 O/P 430.825 CC1  
EJ7IBD I/P 430.500 O/P 439.500 CC1

#### Yaesu Fusion Repeater

EI2KMR I/P 145.025 O/P 145.625 Wires -X

#### Gateways

EI2SHD 144.8125 Wires-X Gateway  
EI2GCD 145.850 P25 Gateway  
EI4GCG 70.425 ALLSTAR node

### What is Waiting in the Wings?

1 x 70cm D-Star Repeater

1 x 70cm DMR Repeater completing the network to the South East.

Radio Society of Great Britain  
Advancing amateur radio since 1913

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12:00 TG2354 Time Slot 2 BM Network

19:30 TG 880 Time Slot 2 Phoenix Network



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 podcast: <http://soldersmoke.com>



### UK Six Metre Group

Dedicated to promoting 50MHz activity around the world



An Amateur Radio publication for the Microwave Enthusiast

## scatterpoint

Published by the UK Microwave Group



**ARRL**  
 The National Association for  
 Amateur Radio®

<http://www.arrl.org/>



<https://www.eurao.org/en/welcome>

## Dates for the Diary

- Worldwide Autism Awareness Week 25th March - 2nd April
- RSGB 2023 AGM - 15th April
- International Marconi Day - Saturday 23rd April
- SOS Radio Week 1st - 31st May
- Lough Erne Radio Club Rally 7th May
- Bangor and District ARC Rally 17th June
- Friedrichshafen June 23rd - 25th
- International Lighthouses on the air 19th - 20th Aug

## RSGB



The Radio Society of Great Britain (RSGB) is the national membership organisation of amateur radio enthusiasts. The society was founded in 1913 and incorporated in 1926. The Society is dedicated to the development of the science and practice of amateur radio. It works to increase awareness and understanding of amateur radio and to make the hobby accessible to everyone. Amateur radio licences were issued to the first UK radio amateurs in 1934. The RSGB represents the interests of UK licensed radio amateurs and is a not-for-profit organization that:

- Promotes the general advancement of the science and practice of radio communication or other relevant subjects.
- Facilitates the exchange of information and ideas on these subjects among its members.

The RSGB aims to obtain the maximum liberty of action consistent with safeguarding the interests of all concerned. RSGB membership is open to all who have an interest in radio communications. The national governing body (The Board) is elected nationally. The regional governing body (The Regional Council) is elected on a regional basis. The day-to-day management of the society is under the control of a small team of full-time employees who are based at the society's head office in Bedford. *RSGB Membership is just £59.00 and this includes 12 monthly technical magazines.* Affiliate your club and get the opportunity for all members to log in and read the online publication of RADCOM, RADCOM Basics and RADCOM Plus as well as receiving a hard copy of the Magazine for the Club. Apply here: <https://rsgb.org/main/join-us/join-the-rsgb/>



### Welcome To EI3CC

What ever your interest in radio is then maybe we can help you.  
 Our aim is operating stations outdoors and getting involved with as many groups as possible. Scouting, youth clubs etc are all welcome. So come join us and enjoy the world of  
**Collective Communication**

## WESCOM RADIO SHOP

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# WESCOM RADIO SHOP

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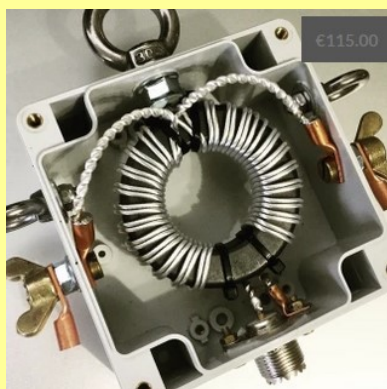
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