

C.D.A.R.S.

January 2025

CHESHAM & DISTRICT AMATEUR RADIO SOCIETY MONTHLY NEWSLETTER

CDARS AGM-22nd January at Ashley Green Memorial Hall 8pm

We meet the 2nd Wednesday each month at The Golden Eagle Pub in Ashley Green and every 4th Wednesday each month at the Ashley Green Memorial Hall, Ashley Green, HP5 3PP



Feature

All About Antennas -
The Fractal Antenna.

Regulars

*Dates For Your Diary
*Radio Rally Dates
*Contest Results

Want to write something for the newsletter?
Then you can contact me on
cdarsnews@gmail.com

Can't find that elusive part or have anything for sale?
Why not drop me an email and put it in
'For sale and wanted'.

Morse links

If you're interested in Morse code, here are a few useful links:



FISTS CW Club

Promoting Morse Code for 36 years 1987-2023

<https://fists.co.uk>

WIKIHOW

How to learn Morse Code

<https://www.wikihow.com/Learn-Morse-Code>

The Ham Whisperer

Morse Code Course

<http://www.hamwhisperer.com/p/morse-code-course.html>

LEARN MORSE CODE

LEARN MORSE CODE in one minute !

<http://www.learnmorsecode.com/>

Welcome to LCWO.net

Learn Morse Code (CW) Online!

<https://lcwo.net/>



Tools for learning Morse Code

<https://www.aa9pw.com/morsecode/>



Celebrating the unique art form of Morse Code

<https://cwops.org/>



Morse Code by Ray Burlingame-Goff (SK - 29th July 2021)

<http://www.g4fon.net/>

Welcome

Welcome to the January edition of the CDARS newsletter and the start of a New Year. Hopefully everyone had an excellent Christmas and enjoyed the festivities that this time of year offers.



Roger2E0TGU

Looking forward to the year ahead it would be good to add some new aspects for members to get involved in. Not only at club nights but also at weekends (Maybe) too. Also if you have any articles of any interest for the newsletter it would be appreciated. Let other members know what projects you have in mind or completed which may inspire others.

The time to get these ideas started is on the 22nd January when we have the CDARS AGM which this year is being held at the Ashley Green Memorial Hall as its a regular club night. Get your thinking caps on and let everyone know your thoughts and ideas including anything you would like to see in the newsletter.

Lets make 2025 a great year for the club.

As reported last month at the end of November the annual Inter-Club Quiz Night between CDARS members and AVRS members took place. This was hosted at 'The Dog House' public house by AVRS. At the end of the evening Malcolm G3ZNU was the winner of the G6NB trophy.

During the AVRS pre-Christmas get together hosted by Roger G3MEH at his QTH, Malcolm was presented with the trophy (below) by AVRS member Vic G6GDI.



DID YOU KNOW?....

.....at the Titan Missile Museum, sited at Green Valley, Arizona, amateur radio operators are welcome to use their original discone antenna for *free!*

Chairmans Ramble

By the time you read this the Christmas festivities will be over & maybe the New Year as well? I hope it went well for you all, although a bit sad for some of us who have lost someone dear to us recently.

I have actually got my 'remote 70cm PA' system mentioned last month, fully sorted & working! I ended up with 'Option 3' for the remote monitoring of the BNOS 100W brick in the loft.

The 'Tapo C100 Home Security Wi-Fi Camera' was supposed to be easy to set up, but I found quite a struggle as mentioned last month! I plan eventually to get an LED light, powered from the 13.6V PSU to illuminate the BNOS PA front panel, but for now pressed a low energy domestic mains light into service. As mentioned last month, using my phone causes a significant delay in the video display, but not a problem once set up with a carrier.



Dave G8FMC

Given my advanced age etc, the grovelling in the loft with a height clearance of probably less than 1.5m was a bit grim, but I got the task completed eventually. Once I had cut the coax (near to where it goes outside to the mast) I was able to solder a conventional 'N' connector to the longer tail in my lounge, before pushing it back up into the loft. For the short tail in the loft I fitted a 'Solder-less' connector, to simplify the task in a cramped location! I guesstimate that I should now have about 65W instead of say 40W reaching the antenna?

My New Year resolution is to finish building that 70cm Transverter, so that I can benefit from all the features of the Elecraft K3s + P3 Display! Somewhat better than an ancient & deaf Icom 706 MKIIG, that drifts in frequency.

Although I have no plans to 'go EV' myself, I have been on a steep learning curve, as my youngest daughter has got a very good finance deal on a BYD Atto 3 EV Hatchback. I went with her for test drives of the BYD & an MG recently. For the record Liz loved the BYD, but the MG was just about OK! No contest. In a weak moment I said I would get her a proper charger sorted (instead of a slightly suspect outdoor 13A socket arrangement, that had died due to overheating on her old Hybrid. But Phil MONVS had sorted that for us).

So now I am suddenly learning about the bewildering situation (mess?) surrounding EV charging! I have purchased the actual charger unit an 'Ohme ePod'; very neat & compact, with good engineering according to 'Phil the Electrician'. Phil & I are going to sort a good strong supply to it with the proper protection; almost direct from the meter. Phil is aware of many EV charger installations that are very questionable & probably a potential fire risk in the longer term, since they can be running at max rating for extended periods?! (unlike for example a kettle, which is only used in short bursts)

A project for us in the nice chill New Year! I will report back progress in due course.

73 all, Dave K, G8FMC
(Chairman and Contest Coordinator)

Contests/Operating

As mentioned last month all entries for the UKAC's for our whole group (CDARS, AVRS, Northampton & other 'Associate Members') will be under the Northampton banner for 2025. So, don't forget when uploading your logs to scroll just over half way down to; 'Northampton RC' as your selected club. Please note to NOT select 'Northampton Scouts' the next one down!

The rest of the AFS series (starting with 40/80m CW on Sat 4th Jan) will continue under CDARS, as will most weekend contests. The 80m CC's will continue under the Northampton banner.

The UKAC's 2024

We have edged ahead of Hereford after the last few results, including the Dec 144MHz & 432MHz. We now have 2,727 pts, against Hereford on 2,600. There is every likelihood that we will stay ahead of Hereford, when the remaining Dec results come in? This is the 'Battle for 2nd place' as Parallel Lines have a clear lead on all 6 bands & hence have 6,000 pts! It will be rather good if we can pip Hereford in the UKAC's as well as the VHF Championship; which we won!

2024/25 AFS Superleague series:

As anticipated by me last month, we did do well in the 144MHz event on 8th Dec. Our (A) Team (comprising Matt G0XDI, Charlie G0SKA, John G0ODQ & Dave G4RGK) got 3rd place behind Parallel Lines & Trowbridge, pushing Camb-Hams into 4th place. Spalding were in 5th place & our (B) Team bagged 6th place, way ahead of any other clubs (B) team. A very good turnout displaying significant strength in depth.

Overall the present standing is; Camb-Hams 3,846 pts, Spalding 3,667, with CDARS in a strong 3rd place with 3,476. We have the three 40m/80m events in January, where we might struggle a bit, particularly on CW & Data? The final event on 70cm in Feb we should do reasonably well?

Dates are:

Saturday 4th January: 40/80m CW

Sunday 12th January: 40/80m Data (that is old fashioned/traditional data; RTTY & PSK63)

Saturday 18th January: 40/80m SSB

Sunday 2nd February: 70cm multi-mode

Other Contest results:

Dave G4RGK got 2nd place in the Marconi 2m CW which was blessed with fantastic Tropo conditions & 4th place overall (out of 61) in the VHF CW Championship.

Great result Dave, well done.

That is it for this month

73, Dave K, G8FMC

All About Antenna's - The Fractal Antenna.

U.S. Patent

Sep. 17, 2002

Sheet 6 of 12

US 6,452,553 B1

A fractal antenna is an antenna that uses a fractal, self-similar design to maximize the effective length, or increase the perimeter (on inside sections or the outer structure), of material that can receive or transmit electromagnetic radiation within a given total surface area or volume.

Such fractal antennas are also referred to as multilevel and space filling curves, but the key aspect lies in their repetition of a motif over two or more scale sizes, or "iterations". For this reason, fractal antennas are very compact, multiband or wideband, and have useful applications in cellular telephone and microwave communications. A fractal antenna's response differs markedly from traditional antenna designs, in that it is capable of operating with good-to-excellent performance at many different frequencies simultaneously. Normally, standard antennas have to be "cut" for the frequency for which they are to be used—and thus the standard antennas only work well at that frequency. In addition, the fractal nature of the antenna shrinks its size, without the use of any extra components such as inductors or capacitors.

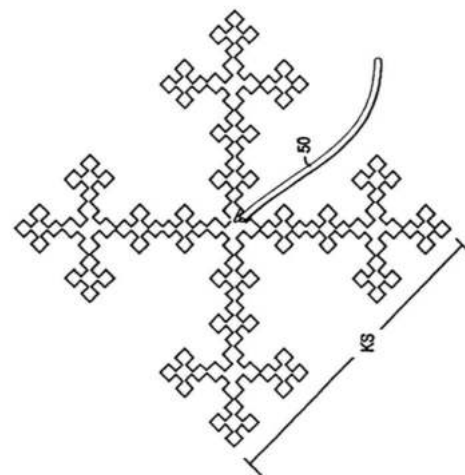


FIGURE 7E

An example of a fractal antenna: a space-filling curve called a "Minkowski Island" or "Minkowski fractal"

1

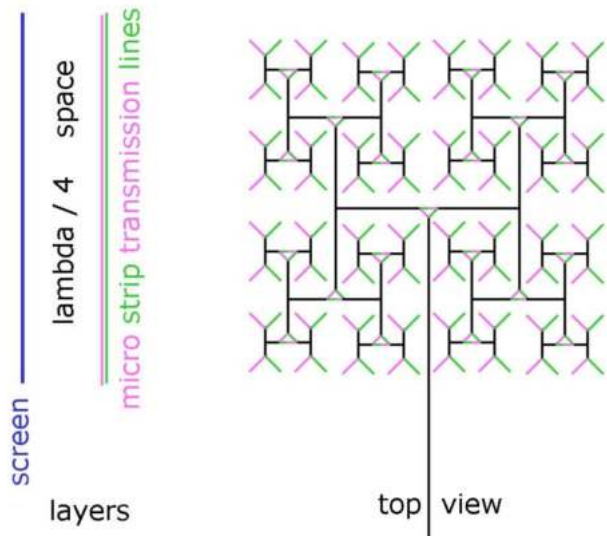
Log-periodic antennas

Log-periodic antennas are arrays invented in 1952 and commonly seen as TV antennas. This was long before Mandelbrot coined the word fractal in 1975. Some authors (for instance Cohen) consider log-periodic antennas to be an early form of fractal antenna due to their infinite self similarity at all scales. However, they have a finite length even in the theoretical limit with an infinite number of elements and therefore do not have a fractal dimension that exceeds their topological dimension – which is one way of defining fractals. More typically, (for instance Pandey) authors treat them as a separate but related class of antenna.

Performance

Antenna elements (as opposed to antenna arrays, which are usually not included as fractal antennas) made from self-similar shapes were first created by Nathan Cohen then a professor at Boston University, starting in 1988. Cohen's efforts with a variety of fractal antenna designs were first published in 1995, which marked the inaugural scientific publication on fractal antennas.

Many fractal element antennas use the fractal structure as a virtual combination of capacitors and inductors. This makes the antenna so that it has many different resonances, which can be chosen and adjusted by choosing the proper fractal design. This complexity arises because the current on the structure has a complex arrangement caused by the inductance and self capacitance. In general, although their effective electrical length is longer, the fractal element antennas are themselves physically smaller, again due to this reactive loading. Thus, fractal element antennas are shrunken compared to conventional designs and do not need additional components, assuming the structure happens to have the desired resonant input impedance. In general, the fractal dimension of a fractal antenna is a poor predictor of its performance and application. Not all fractal antennas work well for a given application or set of applications. Computer search methods and antenna simulations are commonly used to identify which fractal antenna designs best meet the needs of the application. Studies during the 2000s showed advantages of the fractal element technology in real-life applications, such as RFID and mobile phones. Fractals have been used commercially in antennas since the 2010s. Their advantages are good multi-band performance, wide bandwidth, and small area. The gain with small size results from constructive interference with multiple current maxima, afforded by the electrically long structure in a small area.



A planar array fractal antenna (H tree)

2

Some researchers have disputed that fractal antennas have superior performance. S.R. Best (2003) observed “that antenna geometry alone, fractal or otherwise, does not uniquely determine the electromagnetic properties of the small antenna”.

Hansen & Collin (2011) reviewed many papers on fractal antennas and concluded that they offer no advantage over fat dipoles, loaded dipoles, or simple loops, and that non-fractals are always better. Balanis (2011) reported on several fractal antennas and found them equivalent in performance to the electrically small antennas they were compared to. Log periodics, a form of fractal antenna, have their electromagnetic characteristics uniquely determined by geometry, via an opening angle.

Frequency invariance and Maxwell’s equations.

One different and useful attribute of some fractal element antennas is their self-scaling aspect. In 1957, V.H.Rumsey presented results that angle-defined scaling was one of the underlying requirements to make antennas invariant (have same radiation properties) at a number, or range, of frequencies. Work by Y. Mushiake in Japan starting in 1948 demonstrated similar results of frequency independent antennas having self-complementarity.

It was believed that antennas had to be defined by angles for this to be true, but in 1999 it was discovered that self-similarity was one of the underlying requirements to make antennas frequency and bandwidth invariant. In other words, the self-similar aspect was the underlying requirement, along with origin symmetry, for frequency independence. Angle-defined antennas are self-similar, but other self-similar antennas are frequency independent although not angle-defined.

This analysis, based on Maxwell’s equations, showed fractal antennas offer a closed-form and unique insight into a key aspect of electromagnetic phenomena. To wit: the invariance property of Maxwell’s equations. This is now known as the Hohlfeld-Cohen-Rumsey (HCR) Principle. Mushiake’s earlier work on self complementarity was shown to be limited to impedance smoothness, as expected from Babinet’s Principle, but not frequency invariance.

Other uses

In addition to their use as antennas, fractals have also found application in other antenna system components, including loads, counterpoises, and ground planes. Fractal inductors and fractal tuned circuits (fractal resonators) were also discovered and invented simultaneously with fractal element antennas. An emerging example of such is in meta-materials. A recent invention demonstrates using close-packed fractal resonators to make the first wideband meta-material invisibility cloak at microwave frequencies.

Source: *Wikipedia*.

Photo attributes:

1 - *By Nathan Cohen. Public Domain*

2 - *By Arnero - Own work, Public Domain,*

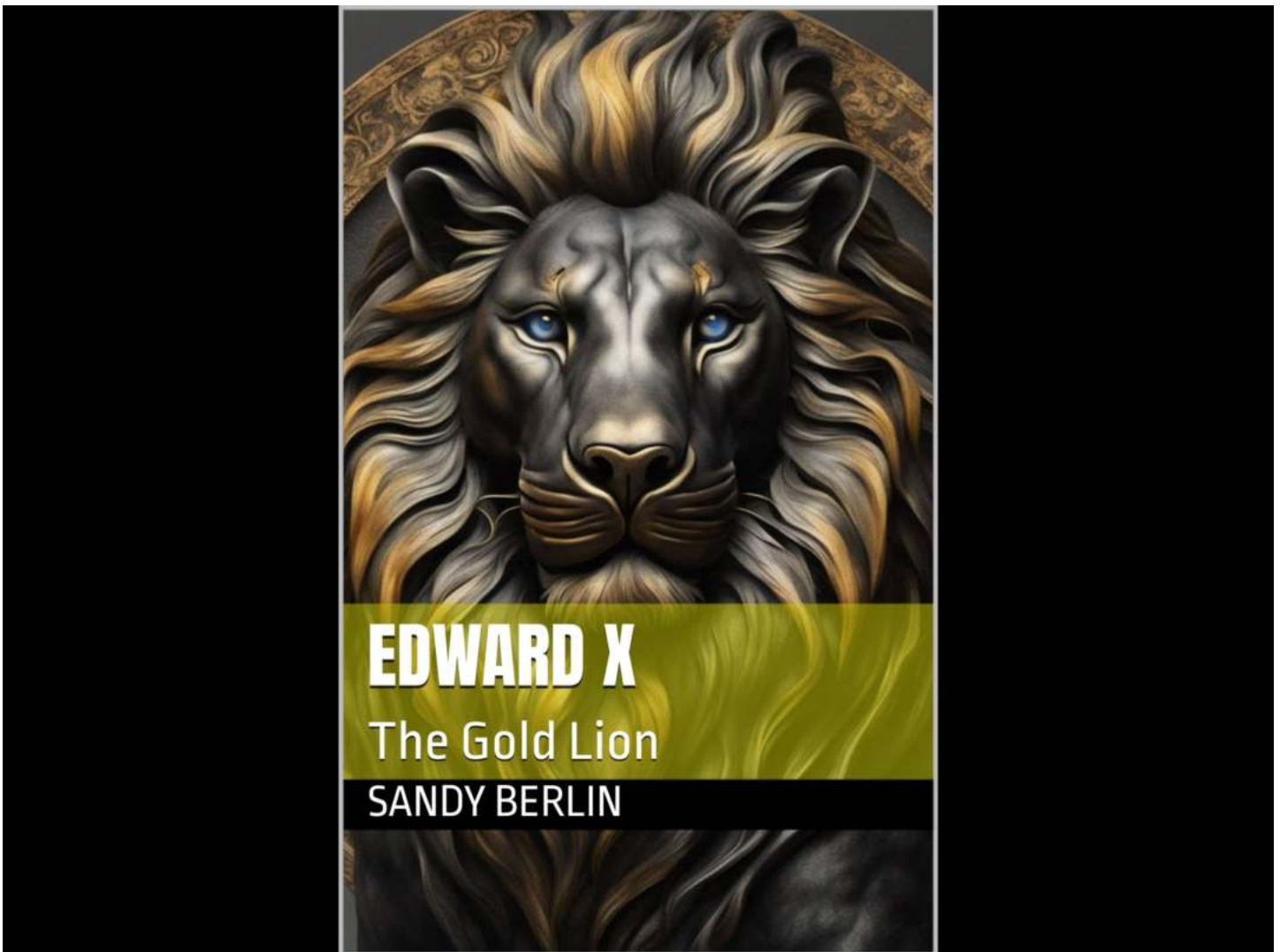
Edward X-The Gold Lion by Mark M7EFR

You may remember just over a year ago we reviewed a novel by Mark M7EFR (aka Sandy Berlin) called 'Edward IX - The Black Lion'. This was Marks' first book which had been in his head for quite sometime. In November last year (2024) Mark released his second book in his 'Edward Gaunt' series, Edward X - The Gold Lion. It is the sequel to the first book about a Plantagenet king returning to England in contemporary times.

Edward has secured England and his Dominions. He sends High Chancellor Levine to what is left of America to find out what has happened to Senator Brevard. Meanwhile retired Colonel Alexandra Rheinart sets sail to track down and meet her birth mother, the Countess of Leuven. Henry Bryant develops an Atlantic Island for hidden resources. Levine meets the mysterious Greywolf and the Indian tribes of America. Rheinart is captured by a certain Count Demetriev who takes the Hypnoid from her. Levine sends Scarman and his men to Northern Russia to rescue her and to thwart a possible challenge to the throne by Demetriev. Greywolf, along with an old comrade from the CIA, hunts down a renegade Chinese group of mercenaries who have discovered the Hypnoid weapon and are possessed by a golden cave in Kentucky.

In the authors words "A load of nonsense really but hopefully a decent read!"

Both books are available on Amazon Kindle and in Paperback.



Contest Calendar for January and February 2025

January - HF

Day	Date	Time(UTC)	Contest Name
Sat	04 Jan	1300-1700	RSGB AFS 80m-40m Contests CW
Sun	12 Jan	1300-1700	RSGB AFS 80m-40m Contests Datamodes
Sat	18 Jan	1300-1700	RSGB AFS 80m-40m Contests Phone
Mon	20 Jan	2000-2200	RSGB FT4 Contest

January - VHF

Day	Date	Time(UTC)	Contest Name
Wed	01 Jan	1700-2100	144MHz FT8 AC (4 hours)
Wed	01 Jan	1900-2100	144MHz FT8 AC (2 hours)
Tue	07 Jan	1900-1955	144MHz FMAC
Tue	07 Jan	2000-2230	144MHz UKAC
Wed	08 Jan	1900-2100	432MHz FT8 AC (2 Hours)
Wed	08 Jan	1700-2100	432MHz FT8 AC (4 Hours)
Thu	09 Jan	2000-2230	50MHz UKAC
Tue	14 Jan	1900-1955	432MHz FMAC
Tue	14 Jan	2000-2230	432MHz UKAC
Thurs	16 Jan	2000-2230	70MHz UKAC
Tue	23 Jan	2000-2230	1.3GHz UKAC
Tue	28 Jan	1930-2230	SHF UKAC

February - HF

Day	Date	Time(UTC)	Contest Name
Mon	03 Feb	2000-2130	80m CC SSB
Sat	08 Feb	1900-2300	1st 1.8MHz Contest
Wed	12 Feb	2000-2130	80m CC DATA
Thu	20 Feb	2000-2130	80m CC CW
Mon	24 Feb	2000-2130	RSGB FT4 Contest

February - VHF

Day	Date	Time(UTC)	Contest Name
Sun	02 Feb	0900-1300	432MHz AFS
Tue	04 Feb	1900-1955	144MHz FMAC
Tue	04 Feb	2000-2230	144MHz UKAC
Wed	05 Feb	1700-2100	144MHz FT8 AC (4 hours)
Wed	05 Feb	1900-2100	144MHz FT8 AC (2 hours)
Tue	11 Feb	1900-1955	432MHz FMAC
Tue	11 Feb	2000-2230	432MHz UKAC
Wed	12 Feb	1700-2100	432MHz FT8 AC (4 hours)
Wed	12 Feb	1900-2100	432MHz FT8 AC (2 hours)
Thurs	13 Feb	2200-2230	50MHz UKAC
Tue	18 Feb	2000-2230	1.3GHz UKAC
Thurs	20 Feb	2000-2230	70MHz UKAC
Tue	25 Feb	1930-2230	SHF UKAC

Dates For Your Diary



Listed below are dates of RSGB, UK and International contests for 2024/25.

****IMPORTANT DATE FOR YOUR DIARY****

CDARS AGM - 22nd January 2025 to be held at Ashley Green Memorial Hall at 8pm.

Hungarian DX Contest - 1200Z, Jan 18 2025 to 1200Z, Jan 19 2025

ARRL RTTY Roundup - 1800Z Jan 4 2025 to 2359Z Jan 5th 2025

EUCW 160m CW party - 2000Z Jan 4 2025 to 2300Z and Sun Jan 5 2025 0400Z to 0700Z

WAB 1.8MHz Phone - 1900Z Jan 11 2025 to 2300Z Jan 11 2025

European Union DX Contest - 1200Z, Feb 1 2025 to 1200Z, Feb 2 2025

CQ WW RTTY WPX Contest - 0000Z, Feb 8 2025 to 2400Z, Feb 9 2025

Dutch PACC Contest - 1200Z, Feb 8th 2025 to 1200Z, Feb 9th 2025

CQ 160-Meter Contest, SSB - 2200Z, Feb 21st 2025 to 2159Z, Feb 23rd 2025

RSGB Commonwealth (BERU) Contest - 1000Z, Mar 8th 2025 to 1000Z, Mar 9th 2025

Russian DX Contest - 1200Z, Mar 15th 2025 to 1200Z, Mar 16th 2025

BARTG HF RTTY Contest 0200Z, Mar 15th 2025 to 0200Z, Mar 17th 2025

CQ WW WPX Contest, SSB - 0000Z, Mar 29th 2025 to 2400Z, Mar 30th 2025

Please double check dates, start/end times etc in good time prior to the event.

Full details and more contests at: <https://www.contestcalendar.com/contestcal.html>

Radio Rally Dates.

Full details of the events are available at: g4gra.org.uk/All & the RSGB website.

January 2025

26th - Lincoln Short Wave Club Winter Radio Rally
The Festival Hall, Caistor Road, Market Rasen, LN8 3HT.

February 2025

9th - Mid Cheshire Amateur Radio Society RadioActive Rally,
Nantwich Civic Hall, Market Street, Nantwich

23rd - Red Rose Winter Rally Mather Hall, Mather Lane, Leigh



(All information courtesy of g4gra.org.uk & the RSGB website)