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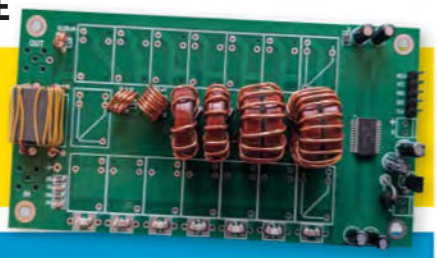

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SDR receiver review

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FULL RESULTS INSIDE

REVIEW **The Editor's view on the 2024 RSGB convention**

All the news, views and rumours as the great and good meet in Milton Keynes

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In-Line Module connections

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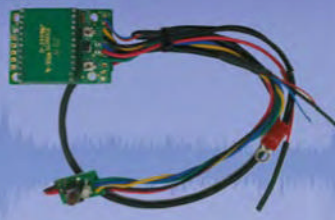
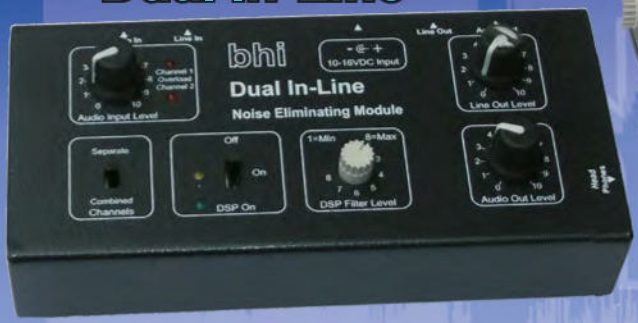


5W amplified DSP noise canceling In-Line module - 8 filter levels 8 to 40dB - Use in-line with your radio - 3.5mm mono inputs and outputs - Headphone socket - Audio input overload

Dual In-Line



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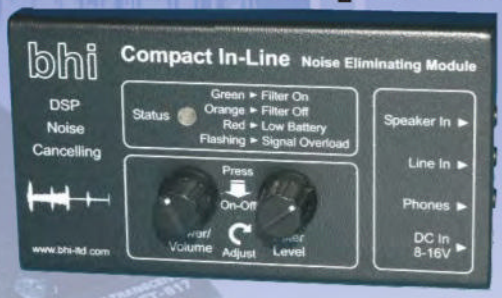
Compact In-Line



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Keylines

I'm writing this having just played 10m single-band (Assisted) in the CQWW Phone Contest. It was a lot of fun. 10m was in great shape with activity well up beyond 29MHz. I worked 143 'countries' over the weekend, including 103 before 1200UTC on the Saturday! A far cry from how the band is at the bottom of the sunspot cycle.

I now need to prepare for the CW leg at the end of November. Whenever I can, I travel for this – this year it's Uganda as 5X1DF – I applied for the licence in May and it finally came through early October. That's Africa for you! Anyway, I'm looking forward to it – I will be single-band 40m as there is no existing Ugandan record for that category.

Recent activities

I need to apologise for holding over one of the promised articles, but this month has seen an unprecedented and very welcome number of reports of club activities, social events and so on. We have several reports from the Railways on the Air weekend and others from Churches and Chapels on the Air. It's great to see all this club activity and even better to receive the reports here at *PW*. And on top of that, we have reports on the Newark Hamfest, DX Féile in Ireland and the RSGB Convention – the social side of amateur radio also seems to be thriving, which is all to the good. My first RSGB 'show' was at the Royal Horticultural Halls in London back in the mid-60s. It later moved to Alexander Palace and after that to the NEC (Birmingham). So, to an extent, it's now a shadow of it's former self, at Newark with far fewer traders (most of them no longer exist) but it still manages to attract several thousand visitors each year. Personally, I think there's nothing to compare with meeting fellow radio amateurs in person and getting up close and personal with the latest gear!

Next month we will also feature an article about Clubs and why they remain important to the future of the hobby.

The Convention

As for the RSGB Convention, as you will read, I was invited to speak about *92 Years of PW*. No, even I don't go back that far although I bought my first PW in 1966 (I was licensed in 1968), so have been engaging with the magazine for well over half its existence. There's a salutary thought! And **Victor G3JNB** (photo in this issue) tells me he first bought the magazine as a teenager in (if I remember correctly) 1949. One snippet to come out of my talk, which I wasn't aware of is that *PW* even got a mention in an episode of Dad's Army. In *Round and Round went the Great Big Wheel* Pike is in Jones's van with a home-built wireless, which he says he built from a design in *PW*!

This issue

Apart from all the activities we report this month, you will find our traditional *Christmas Quiz* (compiled by **Steve G4JVG**) and the *Annual Index*. We also have the results of this year's *PW 144MHz QRP Contest*, compiled as always by our indefatigable adjudicator **Colin G6MXL**. This event has been going for over 40 years, and although entries were slightly down this year, possibly weather-related, it still remains popular as a 'fun' event rather than one for the 'big guns'.

Ofcom Delay

Just before press time Ofcom made an announcement of a delay in implementing their latest software which, among other impacts, will delay the roll-out of Phases 2 and 3 of the amateur radio licence changes. We will, of course, bring you any developments as they are announced but you can keep track yourselves by visiting the Ofcom website.

Correction

It's been pointed out that in last month's issue (*Letters*) **Steve G0FUW** referenced a previous letter from **G0FTN**. It should actually have been **Andy G0FTD**. Our apologies to both.

Happy Christmas and New Year

While this issue becomes available in early November, the next issue is on sale through into January, so this is really the latest opportunity to wish all our readers and contributors a Merry Christmas and a Happy New Year.

Don Field G3XTT
Editor, *Practical Wireless* Magazine

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All I WANT for XMAS is a

The perfect Christmas gift for the radio enthusiast

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Newsdesk

Have you got something to tell our readers about? If so, then email **practicalwireless@warnersgroup.co.uk**

New from Moonraker

The new Pro version of the Anytone AT6666 10m mobile transceiver builds off of their popular design with increased power output, noise reduction technology, programmable mic button, and TX bandwidth settings.

The AT6666 Pro boasts 80W (PEP) on AM/SSB, and 50W FM, where the original version had 60W AM/SSB and 45W FM. The built in noise reduction function works on both receive and transmit to clean up any static or interference.

- Frequency Range: 28.000-29.700MHz (Programmable)
- Channel: 40 channels (programmable) in each band
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- Frequency Control: Phase-Locked-Loop Synthesizer
- Frequency Step: 10Hz, 100Hz, 1kHz, 5kHz, 10kHz, 100kHz, 1MHz
- Frequency Tolerance: ± 5.0ppm
- Microphone: With push-to-talk /UP/DN and coiled cord
- Input Voltage: DC 13.8V normal
- Dimensions: L-252 x W-158 x H-48mm
- Weight: 1.27kg
- Antenna connection: UHF SO239
- Temperature Range: 20 to 50° C
- Price: £249.95

https://moonrakeronline.com

ML&S Open Day

Martin Lynch & his team are once again holding their annual Open Day on Saturday 30 November 2024.

This is the 33rd year Martin has opened his doors to fellow radio hams, the first was in his little corner shop in Ealing a year after he started the business in 1990.

As usual, all the staff will be on hand and refreshments have always been FREE including tasty flame-grilled burgers, hot beverages and biscuits & cakes. Martin's sales manager, **Tony M0TNY** marks down new and used stock with a hefty red marker, taking stock to the lowest offered throughout the year. Trade-ins are always welcome on the day too.

Martin G4HKS said, *"I'm proud to be continuously trading all these years later, not just as a company name but a proper bricks & mortar family-owned business. Every year, I've held a special day for my customers and enjoy meeting the many faces I've served since the mid-seventies during Bernie & Brenda years. We're all getting older, lots of things have changed in the hobby and indeed business since I first started, but our dedication to customer service and keen prices keeps us at the front of people's mind when purchasing new or used ham radio"*

Martin's Hog Roast (without the Hog) starts at 8:30am Saturday morning 30 November at their Staines-upon-Thames HQ, & doors close when the tills stop ringing.

ORLANDO HAMCATION 2025: The Orlando Amateur Radio Club is hosting the 78th Annual Orlando HamCation on Friday, Saturday, and Sunday, 7-9 February, at the Central Florida Fairgrounds and Expo Park. HamCation is the second-largest ham radio convention in the world, with the inaugural event dating back to 1946. Since the first event, HamCation has continued to grow, with a record attendance for all three days in 2024 reaching 25,321.

The HamCation website offers easy-to-use features and a ticket purchasing system. Those who want to attend can purchase tickets, SWAP tables, tailgate spaces, and make RV reservations online now. The user-friendly site also provides information on HamCation activities, vendors, and hotel partnership discounts.

www.hamcation.com

The return of Malta Operation

Back in October 2023 the Marconi Radio Circle and Central Radio Amateur Circle set up and ran 9H6XPO from the Marconi RC HQ in Imtarfa Malta. It went well with 763 contacts and 54 countries worked.

We have decided to repeat the event in October 2025 and after some deliberation have set a date of 6 to 10 October 2025.

The two clubs will sort out the day-to-day running of the station. This is open to any full licensed amateur. Sorry but you need a full licence to operate in Malta.

Operators are invited from any country but will need to sort their own transport and hotels in Malta. All you need for Malta at the moment is a current passport, there are currently no restrictions on travel, but people are advised to keep an eye on the situation in case anything changes.

There will be a small cost for running the station of 25 Euros each (this must be paid up front, and no refunds will be given if you change your mind). This is a one-off payment to cover the running cost of the station such as electric, water and drinks.

There will be a rota for people to choose when they want to operate the station. No one will be expected to operate all the time. There should be enough time for people to explore the island and its culture. Basically, it's a holiday with a bit of radio thrown in for fun.

Times of operation will be between 10:00 and 17:00, with the option of a late night if required (this to be pre-arranged with MARC in advance). Anyone wishing to take part can contact me via email to start with and I will send more information as and when it is available:

Martin G1TYV

radio-circle@live.co.uk

Distance learning for Intermediate Exams

The Bath Based Distance Learning team (BBDL) has helped well over a thousand students to pass UK amateur radio exams with pass rates consistently above the national average. Every student that completed the last Intermediate course passed the exam.

The next BBDL Intermediate course will run from January to May 2025. Students will receive weekly work packages via a virtual classroom. There will be weekly on-line tutorials and revision quizzes. Students will also have access to one of the BBDL remote tutors who will provide feedback and additional guidance when required.

There will be practical exercises to bring the theory to life. Students will be expected to do the exercises at home and report their results. There are a number of revision crossword puzzles, and progress checks spaced throughout the course, and at the end of the course there will be a number of mock exams.

There will be no charge for the training but students will need to provide their own textbook, scientific calculator, electronic parts and tool kit. Students will also have to arrange their own exam at the end of the course, but advice will be provided at the appropriate time.

As part of the application process, there will be some pre-course work to ensure students are able to use our on-line learning systems and to be sure they are ready to study in January.

Another BBDL course for the Full Licence will follow on from the Intermediate course, running from August to December. A further announcement will be made when that course is ready for enrolment. However, we are encouraging all those who intend to study for the Full Licence and passed the Intermediate exam before September 2019 to join our Intermediate course. This will provide good revision and bridge the gaps created by syllabus changes in 2019, 2022 and 2024.

To receive course application details, please e-mail BBDL Team Leader, **Steve G0FUW**, via **g0fuw@bbdl.org.uk**

The deadline for completed course applications is Wednesday 04 December.

PROPAGATION: *"Solar Cycle 25 likely reached the highest sunspot number yet - a value of at least 299. The SWPC non-official, estimated daily sunspot number for 8 August was 337, a value not observed since March 2001. By consequence, we'll see good to excellent high-frequency (HF) long-distance propagation conditions throughout 2025-2026 and far beyond".*

www.swpc.noaa.gov

KLINGENFUSS NEWS: Klingenfuss are now working on new product. among them are:

- 2025/2026 Guide to Utility Radio Stations
- 2025 Shortwave Frequency Guide
- 2025 Super Frequency List on CD
- 2025 Frequency Database for the Perseus SDR to be published on 10 December 2024.

www.klingenfuss.org/ref.htm

THE DUCHESS OF EDINBURGH JOINS 100 GIRLGUIDING MEMBERS IN LIVE CONTACT WITH THE INTERNATIONAL SPACE STATION: In her first official engagement as Girlguiding Patron, **Her Royal Highness The Duchess of Edinburgh** joined 100 excited Brownies, Guides and Rangers in making a live amateur radio contact with the International Space Station (ISS) at a special STEM event held on Saturday 5 October at Brooklands Museum in Weybridge, Surrey.

The event, organised by the RSGB and Amateur Radio on the International Space Station (ARISS), in collaboration with the UK Space Agency, Girlguiding Surrey West and Brooklands Museum's Innovation Academy programme, aimed to promote the engagement and involvement of girls and young women in science, technology, engineering and mathematics (STEM).

Ten chosen Girlguiding Surrey West members aged between 7 and 18 years old were given the once-in-a-lifetime opportunity of asking astronaut **Sunita Williams** questions about her experiences in space, direct via the space station orbiting approximately 270 miles overhead.

Curious about life on the International Space Station, the girls, joined by The Duchess of Edinburgh, asked astronaut Sunita Williams about the food they eat, where they sleep, the temperature, going on space walks, missing Earth, and what space smells like.

Following the contact, the space activities continued long into the day as the Brownies, Guides and Rangers made stomp rockets and learned how satellites work with a demonstration of a CubeSat Simulator.

They also built their own Morse keys in the shape of a snail and then used them to send their name in Morse and play battleships. Two teenage radio amateurs showed the girls how to use BBC Micro:bits for Morse texting – a fun activity that links together the international language of Morse code with modern technology that the girls use in school.

UK reserve ESA Astronaut **Meganne Christian** surprised the girls with a special appearance and answered any further questions they had about space exploration.

Her Royal Highness, who is passionate about empowering girls to discover the best in themselves, joined in the fun and spoke with the girls about space and their interests in science and technology.

The RSGB President said: *"The RSGB has always supported ARISS in its exciting mission to link young people with astronauts on the International Space Station (ISS) via amateur radio, and we understand the lasting impact this can have on everyone at each contact. I am delighted that the Society has been able to work with ARISS to put this special event in place allowing Brownies and Guides to make contact with the ISS in the presence of their President, HRH The Duchess of Edinburgh."*


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The contact was live streamed by ARISS UK Operations and can be viewed on the ARISS UK Operations YouTube Channel: **www.youtube.com/@ARISSUKTeamVideos**

RAILWAYS ON THE AIR: On Sunday 29 September **Furness Amateur Radio Society** joined with 45 other radio clubs to operate from railway stations throughout the land, including three stations from the Republic of Ireland, from Poland and one from Brazil!

In the case of the FARS Club they operated from a miniature railway, the excellent layout operated by the Furness Model Railway Club in Barrow's Park. The antenna was Chris' 40m/20m dipole and radio was the club's ICOM. The FARS Hams set up their radio station, operating on 40m, in a loaned gazebo sited alongside the modellers workshop.

Lots of contacts were made by operators **Chris**, **Martyn** and **Mike**, from Inverness to Dorset, Wales, Yorkshire and in railway parlance all points south. Club chairman Chris even tried to operate RM (railway mobile) sited on the rear bogie of the D49 as it hauled several passengers around the Park track.

Riviera ARC activated GB4BCR (Babbacombe Cliff Railway Torquay) as part of the Railways on the Air (ROTA) event, an event they have supported since 2015 and which is very popular with club members. The club put separate stations on the air for VHF/UHF, including 4m, HF FT8 and HF SSB/CW. Club members were inspired to watch **Lawrence G4GZG** undertaking many contacts on CW using a Yaesu FT1000MP MkV and a DX Commander vertical fan dipole. Many FT8 contacts were logged by **Roger G1VTK** using a Flex6400M and a doublet at about 9m. DX contacts included St Vincent, Martinique, Australia and Angola as well as many into Europe. **Steve G7AHP** had multiple contacts on VHF/UHF using a Yaesu FTM300 and a Diamond 510 at 9m.

Hornsea Amateur Radio Club (HARC) were invited to put on a special event radio station at Fimber Halt to celebrate the anniversary of the first steam powered passenger railway, which took place on 27 September 1825 - the first passenger train ran on

Photo 1: Brownies making radio contact with the International Space Station

Photo 2: Furness Chairman Chris M0KPW (foreground) and Martyn M0TEB getting ready to operate.

Photo 3: Rev. Alan G7NRS Logging and Steve G0KUY on the radio (Oldham).

Photo 4: Riviera Club's Roger G1VTK.

a line in the North East of England from Darlington to Stockton. The radio station was allocated the callsign GB4YWR by OfCom and was operated by **Mike G4SMB** and **Jim 2E0TMM** from the Hornsea club with a visit from the club Chairman, **Graham M1ASR**. The weather was kind, Saturday was bright and sunny, Sunday a tad overcast. Visitors to the Yorkshire Wolds Railway came along to have a look and listen to the radio station after their visit to view the displays and history of the Fimber Halt railway and a train ride on *Eddie*, a diesel-hydraulic 5576 0-4-0 shunter built in 1979. A total of 51 contacts were made on the radio with 17 heritage railways contacted. Other railway enthusiasts called in from around the UK and Europe including Holland and Belgium.

The Huntingdonshire Amateur Radio Society (HARS) successfully ran GB2RMR – Riverside Miniature Railway Special Event Station on Sunday 22nd September 2024 for the Railways on the Air Event (ROTA). Due to other commitments over the ROTA weekend HARS had to bring the SES forward by a week so that they had enough Members to assist. This is the second year they have attended the lovely Riverside Miniature Railway in the St Neots Riverside Park, Cambridgeshire to run the 'RMR callsign for ROTA.

Visitor engagement was the best for many years at their Special Event Stations. They found out that one of the Duty steam engine drivers was a G0 callsign holder, also they found in conversation a lady who was a G4 callsign holder and was now going to look at coming back into the hobby. They also had a Member of the Railway Installation and Design Team and his wife come over and in the process found out that their Daughter holds an Amateur radio licence, which she got when she was studying Engineering at University. They did get quite a few youngsters drop by with parents who had had a ride on the trains and were intrigued by the station, so there were plenty of questions and plenty of listening in, along with comments such as *"wow we could do that sort of thing!"*

CHURCHES & CHAPELS ON THE AIR: On Saturday 14 September several members of the **Oldham Amateur Radio Club** gathered at St. Peter's Church, in Halliwell, a district of Bolton, to take part in the national 'Churches and Chapels on the Air' Event. Members of the parish had been invited and as the event was held outside the radio club's normal area the club's secretary **Dave 2E0OAI** had contacted Bolton Wireless Club to advise them where we were operating and to invite them to join in.

The Club were taking part in the event with the assistance of St. Peter's Vicar **Rev. Alan G7NRS**. Rev. Alan had arranged the special event call sign GB2SPH and had also gone to the trouble of hanging a pulley from the top of the 80ft church tower to make erecting the antenna relatively easy. The equipment they were using was to be kept simple as only HF operation was possible from this location. The centre of a G5RV dipole antenna was raised to the top of the tower with its ends fastened to the branches of a couple of the trees in the churchyard forming an inverted-V.

A Yaesu FT-990 HF transceiver and a laptop computer with additional screen was our main radio with the club's Kenwood TS-2000 to be tested following a recent repair.

At best the event could be described as progressing slowly. For long periods of the day all the HF bands were flat. However, at approximately 1500 just as they were thinking of packing up for the day suddenly the 40m band opened up and contact after contact was being made. It became so busy that Rev. Alan, who was operating at the time, had a pile up to deal with.

In all 38 contacts were made all but one on the 40m band and 13 of those were CHOTA special event stations. A very enjoyable and successful event.

Carmarthen Amateur Radio Society (CARS) have supported the Churches & Chapels event for a number of years, since 2019. The Special Event Station (SES) licence GB2SCC was used.

Due to the type of spire at St. Cynllo's Church, it is not possible to access it except by near-vertical ladder, or by scaffold, so the view is it's impractical (and possibly dangerous) to try to attach any aerial to it. Using knowledge of the site layout from the previous year's events, it was fairly straightforward to plan the location of the station and aerials using a 30ft trailer mast to support a homebrew 'inverted vee' type G5RV for the main HF aerial and a high gain GP-15N white stick for VHF/UHF.

The station was established under canvas in the churchyard with a mains supply run out from the church.

Two radios were used, a Yaesu FT-857 for the HF work, and an Icom 7100 for the VHF/UHF work. The FT-857 was coupled up to a Yaesu Quadra VL-1000 linear amplifier.

Altogether they made 65 HF contacts. A further 21 were made 'locally' on 2m or 70cm FM. This total included 18 CHOTA stations.

Many thanks to the hosts at St. Cynllo's Church for all their help, and for all the attending members of CARS and others who visited.

Licensing changes delayed

Ofcom updated their licensing page on 25 October to the effect that delays with their Licensing Platform Evolution (LPE3) will impact, among other matters, implementation of Phases 2 and 3 of the updated amateur radio licensing framework. The update says, "LPE 3 was originally planned for calendar Q2'2024 and is now expected to be available in calendar Q2'2025". More details later, apparently.

1

Malahit DSP 2

Daimon Tilley G4USI checks out this interesting SDR-based receiver.

Daimon Tilley G4USI
practicalwireless@warnersgroup.co.uk

I tend not to be an early adopter of radio products, as on a few occasions now, I have become disappointed with early performance of some radios until firmware updates come along to fix them, in some cases taking as long as a full year to get the functionality promised at the outset.

I had been aware of the Malahit brand for some time and conducted plenty of due diligence via social media groups dedicated to the brand, and in particular the DSP2. The team behind the product are Russian, but since the invasion of Ukraine and Western sanctions, they decided to licence their products to the Chinese to manufacture. This move, clearly to allow the continued sale of their products, troubled me somewhat as I had a personal dilemma over it. If I bought one sanctions were not being breached, but the team behind it, and therefore the Russian economy, would still benefit. I actually spent some weeks mulling this over. In the end I made a personal decision that I did not know the politics of these Russian amateurs, but they too had families to feed. I went ahead and purchased one from AliExpress. It cost me £263 delivered and arrived in just eight days.

On arrival, the radio was in a neat zipped hard case, which contained the radio and a number of accessories, including: some sticky feet, a sticky tilt-bail stand, wrist lanyard, USB C cable, two telescopic antennas, two spare rotary knobs, a brief instruction manual and a stylus for the screen. Removing the radio itself from the bottom compartment I was immediately struck by the weight and quality of the anodised aluminium case. This is not a lightweight device, with the radio itself weighing in at around 509 grammes, or 1lb 2oz. It does feel very solid and I think it would survive some good knocks.

Fig. 1 shows the complete package, while **Figs 2** and **3** show the top and side controls. These include Power, a USB C port for charging and access to the internal sound card.

Specifications

But what about specifications? Well, that was one of the things that attracted me to the radio. This is a very comprehensive radio. It uses SDR architecture and covers a massive chunk of spectrum, from 10kHz to 2GHz, with just a single gap from 380 – 404MHz. The width of viewable sepctrum is preset at either 192, 96, or 48kHz. This is good, but in use I would liked to have been able to zoom in much closer for my preferred mode of CW, say 24 or even 12kHz of spectrum would be welcome. It can deal with AM, SSB, DSB, CW, NFM and WFM modes, and even includes built-in decoders for FT8, CW and RTTY, all of

Fig. 1: The complete package.
Fig. 2: Top view.
Fig. 3: The left-hand side controls.
Fig. 4: The beautiful colour screen.
Fig. 5: In use with a homebrew transmitter.
Fig. 6: Retro VHF BC scale.

which seem to work very well indeed. Two SMA type antenna connectors are provided. One is for 50Ω antennas, and one is for High Impedance antennas, such as the supplied telescopic whips, or random wire antennas. These two ports can be selected from the menu and a helpful LED on the top edge of the radio shows which antenna is currently selected. The Hi-Z port is only available to select for 0.1 – 50MHz, the radio defaulting to the 50Ω port for higher frequencies. If you can't hear anything, check you are connected to the correct antenna port!

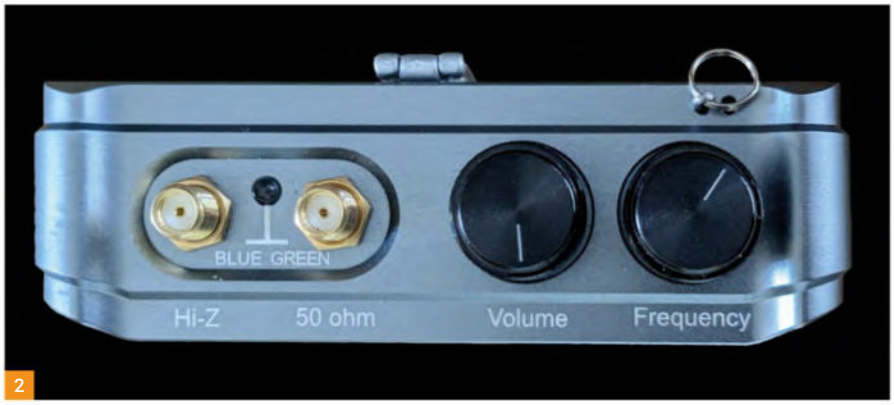
The unit comes with its own internal rechargeable battery (5,000mAh, recharged using a USB C plug) and I was pleased that it was fairly well charged on arrival. Turning the rig on requires a two-step process, initially at least, as there are two power buttons. First is an on/off slide switch, which completely isolates the battery from the radio, and then a momentary press button, used as a Standby switch. The slide switch is great for travelling as it can prevent accidental turn-on and battery depletion. It is also worth using this if leaving the rig for a few hours to prevent unnecessary current draw.

In use – Short, Medium and Long Wave

Starting the receiver for the first time brought up the delightful full-colour touch screen, which is a pleasure to use, **Fig. 4**. This is 3.5in and gives a great waterfall and spectrum display, as well as access to the menu items. I found this viewable in bright sunshine, but not in direct glare. Usefully, you can set a timeout on the screen so that the screen goes to sleep when not tuning around and this significantly prolongs battery life. Switching the radio off brings a CW *"73"* message.

I won't go through the extensive menu system in detail as there are many online resources, as well as a book, dedicated to the radio. Suffice to say that I found these easily navigable and there is a row of buttons along the bottom edge of the screen for different menu layers. In practice I found it easy to change settings such as bandwidth, waterfall and panadapter. I found the Noise Reduction function to be very effective.

HF CW is my main passion, so I will start with my experience there, before looking at lower and higher frequency performance. I found the radio performed very well on CW. The CW decoder, while I don't use it often, performed pretty well. The radio has adjustable filter levels, which you can set yourself in three tiers, Wide, Normal and Narrow – each of which is configurable by the



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user and by mode. For CW I set them at 1kHz, 500Hz and 200Hz respectively and found they performed well without ringing. You press the Volume Control to change its function between control of Attenuation, Volume and Filter width. The Tune control is pressed to change Tuning Step size.

This highlighted a feature I don't particularly like. When adjusting these facilities using either the volume or tune knob, you must move the rotary control several clicks in either direction to make a change, which I found a little counter-intuitive and would have expected a single click to make a single step – but this is only a minor niggle.

Another issue arose out of my CW usage – it took me a while to realise but there is no CW offset applied to the receiver. A CW signal on the transmission frequency will not be heard by a receiver on that same frequency. It is necessary to offset the receiver above or below the transmission frequency by a few hundred Hertz to hear it. In most modern receivers this is automatically applied by the radio, but not by the Malahit. On most receivers, you tune to the CW transmission frequency as shown on the receiver display and can hear the CW transmission on the frequency because the radio is actually listening a few hundred Hertz to one side or the other without you realising it. When it came to using the receiver with my stand-alone homebrew transmitters, this meant I had to tune the receiver to a frequency 700Hz higher or lower than the transmitter, as shown by the two displays in **Fig. 5**.

As I mentioned earlier, as CW is a narrow mode, the minimum bandwidth available on the panadapter/waterfall of 48kHz is really too wide

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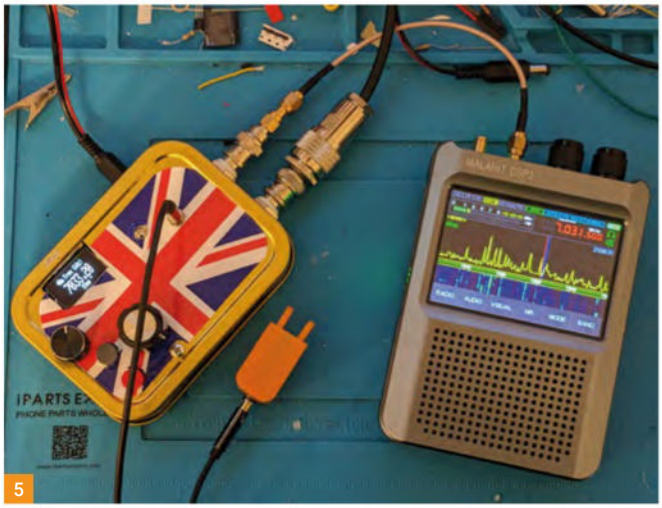
to be helpful, and it would be great if this could be significantly reduced in later versions of firmware.

On SSB I was pleased to see that performance was good and the audio quality was really excellent. Once again filtering and noise reduction was highly effective and tuning around the amateur bands, VOLMET frequencies, etc. was a satisfying experience.

Moving to the HF Broadcast bands revealed a similar experience, the radio was a joy to use and the panadapter was helpful in tuning. Again, audio quality was great and you have the choice between AM and SAM modes.

Although I am not a LW or MW DXer, I did put the receiver through its paces and connected the 50Ω antenna port to my 132ft EFHW antenna. It seemed to perform very well indeed and I was delighted to resolve a great many LW and MW stations from all around Europe, particularly



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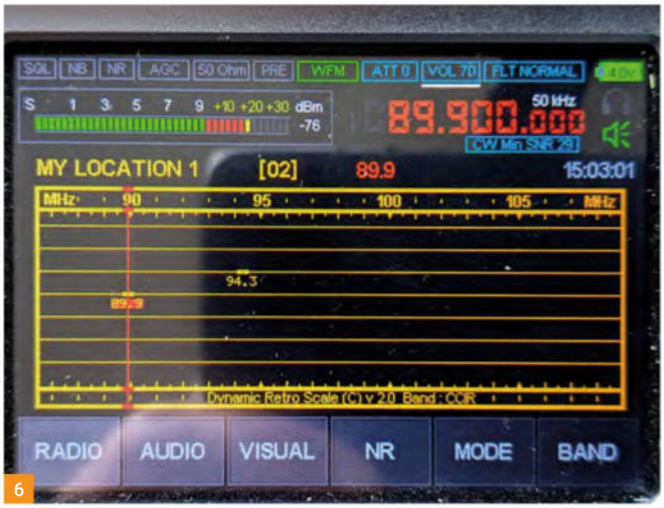

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Spain, which was helpful in practising my Spanish!

Tuning through the Aeronautical Non Directional Beacon (NDB) frequencies, I could resolve Cardiff (CDF) on 387.5kHz, just over the Bristol Channel, but Exeter and Bristol were out of reach. Interestingly, while in this band, I did get very substantial BC breakthrough from TalkSport and BBC Radio Wales, both of whom share a large transmitter some 15 miles from me at Watchet, Somerset. This implied that Band Pass Filtering at these lower frequencies was not particularly effective.

In use - V/UHF

Moving up in frequency, the FM Broadcast section is well catered for, and again the sound quality really impressed. Indeed, at this frequency range it is possible to replace the tuning screen with a retro-style dial similar to that found on old broadcast radios, **Fig. 6**, and this is also customisable. There is an auto-search facility for FM broadcast stations, and this will populate the retro scale with the points at which stations are found, and you can also name these too. You will see from Fig. 6 that only two stations auto-populated my scale, yet tuning around manually found several other reasonably strong stations, so in my limited experience, the auto-search did not work well. I could not get the RDS functionality to work and social media groups for this radio seem to indicate that while this facility works, it is not great.

Living out in the countryside, there is not a huge amount of VHF/UHF amateur activity in my area so I turned to Airband instead of the 2m and 70cm bands. Due to my rather remote location I connected my 144MHz Slim Jim antenna to the receiver to listen around the band, and compared this to Airband on my Yaesu FT-70D handheld, the closest comparison I have. Initially I was disappointed with the Malahit, but then, after playing around with the RF gain control I was able to achieve the same results, levels of sensitivity and quality on both radios. It is clear that, probably due to the wideband nature of this radio, it does pay to play with settings such as RF Gain and others when shifting frequency substantially. Bristol, Cardiff and Exeter airports were all receivable from my 'bottom of the hills' location.

Playing around in the licence-free ISM bands, again I didn't expect to see much, but did receive my own LoRa weather station in the 868MHz band – but that was hardly surprising! It is therefore difficult for me to give an objective appraisal of the VHF/UHF capability of this radio, but my experience on SW and Airband leads me to believe performance will be at least acceptable, especially if making full use of things like the RF Gain control. Of interest to UHF users will be the provision of a Bias-T voltage on the antenna ports to power a masthead Low Noise Amplifier (LNA).

Memories and PC connection

Delving further into the menu structure of the radio revealed 50 regular memory channels, through which you can step or scan slowly. The scanning feature works, but it can be very slow – don't expect this to scan quickly like a traditional 'scanner'. However, I set up the memory banks so that I could quickly select bands and modes. For example, I set up one memory bank, selection of which took me to the CW portion of the amateur bands, focussed on the QRP centre of activity and with appropriate filter and AGC settings, while a second memory band was set for the SSB portions of those bands. A similar approach was taken with the SW BC bands and other bands of interest.

If you wish to use the radio in your shack, then the provision of CAT control (Kenwood TS-480) and audio over the USB cable will be a very useful facility. The IQ output can be used with your favourite SDR software on your computer to provide desktop control of the radio and use of your SDR software's feature set.

It was very interesting to compare this receiver to my main shack receiver, the RSP1a from SDRPlay, using the same antenna, my End Fed Half Wave for 80m. I did not use an ATU. The RSP1a is a good quality but budget (£99) radio which, of course, requires a PC and SDR software to run, but the comparison (which I confined to HF SW) was fascinating, In each case, the Malahit outperformed the RSP1a, on Broadcast, SSB and CW stations. In some cases, I was able to resolve and understand SW BC stations that I could not hear on the RSP1a at all, which was quite the revelation.

My other portable receiver of choice is the diminutive Belka DX, a much smaller radio, albeit with just SW coverage and no fancy panadapter display. The Belka is about the size of the Malahit screen! Testing both radios in the shack on just the supplied telescopic antennas showed similar sensitivity across the SW bands.

Conclusion

In conclusion, I enjoyed using this radio. It is fairly compact and portable, and the provision of case and accessories make a great travel radio. Perhaps the only 'nice to have' accessory would be a compact wire antenna on a winding reel, a bit like the Sony accessory from the 1980's, but this could easily be made or purchased. I believe Tecsun and Sangean versions can still be purchased online, although you would need to change the 3.5mm audio connector, or use an adaptor, to fit the SMA connector on the radio. Alternatively, and I have not tried these, there are a number of very small loop antennas (search for Donut antenna on your favourite search engine) made from PCB material, offered for sale, that attach to the top of the radio directly.

As a final note, the supplied manual is rather light on information, and I found the *Radio Today Guide to the Malahit DSP2 receiver* by **Andrew Barron ZL3DW** to be very helpful. Overall, this radio is a great addition to any shack, especially for the keen portable user, although the facility to connect to SDR software could easily make it your only shack receiver, and a capable one at that. **PW**

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National Hamfest 2024

Joe Chester M1MWD has his usual very personal take on this year's National Hamfest.

If it's Newark it must be Friday (remark for local consumption - we have been on the road a lot lately!). Phileas Fogg was on the road a lot too. Around the World, and in 80 days. He complained all the time about the local food, the trains running late, and even rail lines washed away. That was 150 years ago, and fictional. But it sounds absolutely up to date to me! And so to the National Hamfest. I was last here some five years ago. Like Fogg, not a lot has changed. But I did have a fun day. How so?

We were allowed in early (you will see why in a minute). So, we decided to get a coffee to ward off the chilly wind. Standing in line at the outside food stall, two YLs behind me were deep into a conversation rarely heard at a radio rally. At least I thought so. But what do I know? It might be routine. The topic? The performance of their respective husbands between the sheets. *"We have a completely normal and very typical marriage"*, one said. *"We fight all the time and there is no sex"*. And the reply? *"It's been like that for 37 years for me"*, she said. It got a bit more graphic before my coffee came. Possibly the most interesting conversation in Newark? But back to radio matters.

Item 1 on the agenda was our first meeting with Flossie, **Fig. 1**. A very fine girl she is indeed! **Rob M0VFC** welcomed us on board, quite recovered from the overnight deluge he and the CambHams team suffered in the tents beside the van. We were early, so plenty of time to familiarise ourselves with the two complete Elecraft K3 stations aboard, **Fig. 2**. The station manager from my QTH was sent off to purloin coffee cups, and Rob treated us all to coffee from *"the most important piece of kit on board"* - the coffee machine. *"It's a shame that Elecraft do not have a UK distributor anymore"*, said our first visitor, which prompted a long conversation. Agreed, but what was the conclusion?

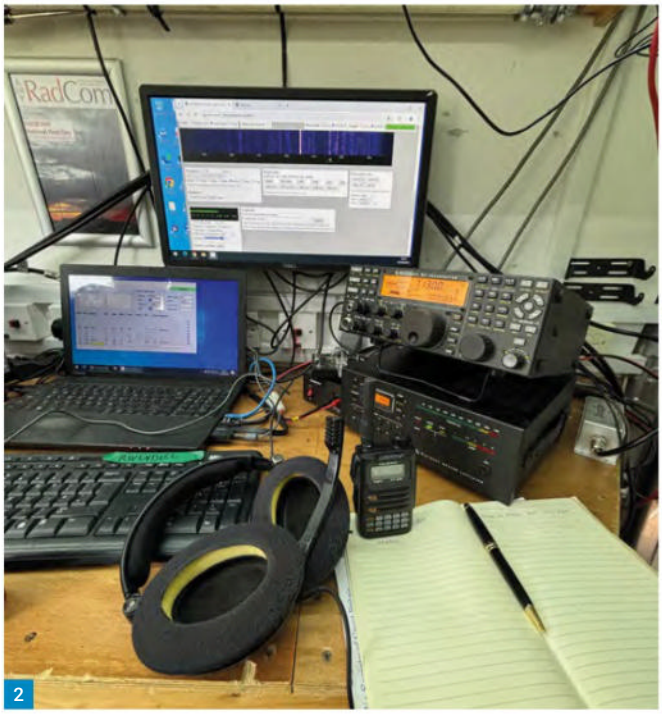
Then time for a wander along the boot sale stands. Plenty to see here, even an Elecraft rig or two. Not tempted, because like OEMs everywhere, spares and repairs have become a bit of a craft industry on these rigs as the boards are no longer available. But I did see a possible future mobile radio platform, **Fig. 3** – QRP maybe?

But back to Flossie and it's time for the NRCnet - the reason we asked CambHams for the loan of Flossie. 7.130MHz was free about 15 mins before the start time, so I used my FT-70D to call on XLX252B, the NRC Digital Radio channel (it's YSF 80484, and also DMR Talk Group 2346306), to see if anyone was available. **Simon GM0SCA** was quick off the mark, so we QSYed to 7.130MHz for a chat. Then at 1030, I called CQ for the Net, and the callsigns streamed in. My callsign for the net was the GB2NHF special event callsign. I worked 17 stations, 5 regular net denizens (including GB3RS, the NRC home station), and 12 new ones, most with 59 plus signals, and I got the same 59 plus reports from everyone - a tribute to the 400 Watts from the Elecraft amplifier. This was the first time that the NRC net was run from a special event station, and we were very pleased with the results. Many thanks to all who joined in, and to Rob and the Cambridge Amateur Radio Society for the use of Flossie. You can find more details of the van here.

www.camb-hams.com/flossie

and this is the full list of stations worked - Simon GM0SCA, **Ed** (x2) at GB3RS, **Laurie G1FNA**, **Roger G8VLR**, **John G4FZA**, **Robbie MM6IXT**, **Ollie M0OLI**, **Bob GM4VIK**, **Peter M0VTS/P**, **Howard GM7ESM**, **Dave G8CXT**, **Bob G4MDB/QRP**, **Andy G7HNG**, **Terry G7MIM**, **Kevin M7KEV**, **Paul G8INS** and **Brian G0KOJ**.

Net finished and knees knocking from the cold, we went over to the main hall. All the usual suspects present and correct, as at every previous event, and in the same locations. One notable entry was Moonraker's stand, bereft of equipment, which looked odd, but we gratefully helped ourselves to the free wall charts on offer. I had a brief chat with a certain **Mr Lynch**, who told me he had been selling radio equipment for over 30 years. Extraordinary! Judge for yourself, but he didn't look that worn out by it! He personally recommended a certain piece of kit to me, of which more in another piece. Then it was RSGB time - and we met **Steve M1ACB**, the RSGB General Manager, and the ubiquitous **Martyn**



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G0GMB, the NRC Chef de Mission. Excitement was evident all around as the annual RSGB Convention was only two weeks away, and preparations for this were top of everyone's to-do list (including mine, I was reminded).

Time for the two major OEMs, and a goodly number of visitors at these stands. Nothing much new to report, but I had a play with an FT-5DE, analogue/digital handheld. It's a bit chunkier than the previous incarnations, including my FT-70D. But it has one very interesting feature - an actual volume knob! More on this in a later piece. Over at Icom, I had a chat with John, the only radio amateur at Icom's Hearne Bay offices. I expressed the view that I hoped that this didn't indicate a lack of interest by Icom in the amateur radio market. And was reassured.

So, what else did I spy at the Newark Hamfest? The usual cheap laptops, and plenty of trays of components, **Fig. 4**. My station manager's eyes lit up when she spied a sign from afar saying jewellery. But closer inspection was somewhat of a disappointment, **Fig. 5**. The Orlando Hamfest promoter told us she was glad to be in the UK with Hurricane Helene battering her home state.

Fig. 1: Flossie. Fig. 2: Inside Flossie. Fig. 3: QRP anyone? Fig. 4: A bit on the quiet side? Fig. 5: Jewellery for radio enthusiasts! Fig. 6: Components by the tray full.

Fig. 7: SDRplay "designed and manufactured in the UK". Fig. 8: Graham Somerville of bhi showing off his product range.
Fig. 9: The recently announced PW2 amplifier from Icom. Fig. 10: So, was it busy at Newark, or not? Fig. 11: The usual clubs and societies were represented. Fig. 12: Good to see Kanga Products still going strong.

We wished them well for the trip home. Random conversations highlighted the usual topics - poor HF propagation, the weather, the rising cost of equipment, and as usual whether digital radio was real radio or not. *"Is BBCTV no longer BBCTV now that's its digital TV?"* I asked one pair. *"That's different"*, I was told. Really? Like Friedrichshafen, I didn't see a single hotspot for sale anywhere. Is this significant? Or has AliExpress cornered that market?

And finally, take a look at **Figs 4** and **10**. You tell me. Were there fewer people than usual? Reports from others who went on the Saturday highlighted the same question. Only the organisers know the answer for sure. The impact of the internet has changed utterly every industry in the world. Traders must struggle with the cost of supporting hamfests all around the world, given every one of them have large online operations. Perhaps the real point of these events is the bags of components, hard to obtain online or elsewhere. People in general like making things. And where else are the makers going to go? **PW**

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2

2024 PW 144MHz QRP Contest Results

Colin Redwood G6MXL has the results of this year's PW 144MHz QRP Contest.

2024 saw 46 entrants submit logs in the 41st *Practical Wireless* 144MHz QRP contest held on Sunday 9th June 2024. The entrants made a total of 1391 valid contacts with stations in 33 different squares (**Fig. 1**). Entries were down on 2023, possibly due to the weather.

2024 winners

The overall winner, leading single operator and leading Welsh station is again the **Hereford VHF Contest Group GW1YBB/P** operated by **Steven Clements G1YBB** from Pen-Y-Gadair (800m asl), the second highest peak in the Black Mountains in South Wales IO81KW (**Fig. 2**). He used a Yaesu FT-817 transceiver and a 9-element DK7ZB antenna**.**

- Runner up and the leading English station is **Steve Marsh G4TCU/P** operating from IO82WJ.
- The leading fixed station is **Tony Collett G4NBS** operating from JO02AF.
- The leading Scottish station is **Bill Ward GM0ICF/P** operating from IO75OR.
- The leading GI/EI station is **Paul Norris EI3ENB/P** operating from IO62JI.
- The leading GJ/GU station is again **Chris Rees GU3TUX** operating from IN89VR.

Full details of the results can be found in the tables in this article.

A check log was received from the **Bolton Wireless Club / Ross Wilkinson G6GVI**.

This year the table of leading stations by square has additional columns to show leading single and leading multi-operator stations by square in addition to the traditional overall leading station for each locator square. It is hoped that this will encourage more entrants in future years.

Weather & solar panels

Many participants were greeted with rain. Regular entrant Dave Hewitt **GW8ZRE/P** from North Wales said that, *"The drive up to IO83JF Halkyn mountain was a wet one. Once at site, the rain stopped enabling successful set up of the aerial, however the idea of using a solar panel to keep battery charged proved to be wishful thinking".*

In Scotland **Bill Ward GM0ICF/P** in IO75OR said that, "*The weather started miserably with wind and rain but to my surprise brightened up considerably to bright sunny periods. My solar panels worked very well keeping my battery charged. I may invest in a couple more. They work great in direct sunlight of course but a few more would help to keep a charge going when it's cloudy (**Fig. 3**).*"

Further south in the Black Mountains, Steve Clements GW1YBB/P said that, *"On the drive to the car park my car's frost alarm went off showing a temperature of 4°C. So much for summer! A cold wind was blowing at the summit and full Goretex was soon donned to try to retain some of the heat generated on the way up. By the time I was in the tent the early morning sun was gone and the rest of the day was cloudy and cold. The wind never relented and kept unzipping the tent door until I noticed the door flapping in the way of turning the mast and letting the cold in more. I had to pull the mast down and I reckon I could have used just two windward guys ropes to keep it up all day. At least there was no liquid cooling this year".* Unlike 2023, at least there no midges reported this year.

Steve Macdonald G4AQB found, *"Operating from home was quite hard going this year. Conditions were poor and I only heard one station in IO91 square from my IO83 square. My furthest contact was in IO90. I didn't hear as many portable stations as last year, but the poor weather may have played its part here. A very enjoyable contest and it was nice to see lots of other fixed stations coming on to give out points."*

Max Townend G4SDX/P said that, *"I've never experienced /P operation in mid-June like it. The weather was truly terrible for most of the day, with 22mph winds, a wind chill of 8°C, driving rain and low cloud. I had to abandon the contest shortly before 2pm as the location was starting to flood with rainwater, and I was getting very cold. I had originally intended to operate the Backpackers contest, alongside the* PW *contest, but common sense and my 72 years of age avoided me requiring the services of the local mountain rescue!" (**Fig.4**).*

Propagation

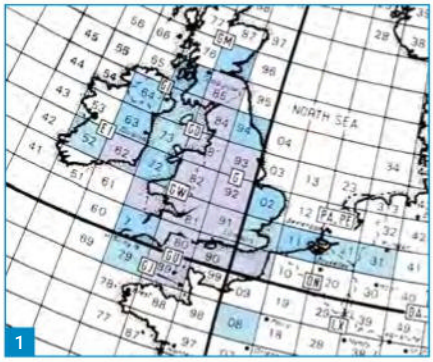
Bill Ward GM0ICF/P thought he did a bit better this year and managed to make some QSOs with stations in the JO squares. He found conditions were variable with signals suffering from deep and cyclical QSB. He continued, *"I don't know if making those contacts in the very south of England was some sort of tropo or aircraft scatter. Sometimes the signals went from being extremely weak to very strong for short periods".*

Dave Shaw M5DWI submitted the entry for the **Sheffield and District Wireless Club G5TO/P**. *He felt that, "Conditions were considered poor both in terms of weather at this portable location and of propagation. The hoped-for sporadic E didn't materialise".*

Activity

Steve Clements GW1YBB/P reported that, *"Activity started off quite good for the first hour, then became*

Fig. 1: Map showing locator squares of stations that entered (in darker blue) and other stations worked (lighter blue). Fig. 2: Steve GW1YBB/P representing the Hereford Group. The photo was taken on a previous occasion. Fig. 3: The solar panels used by Bill Ward GM0ICF/P. Fig. 4 The antenna at the station of Max Townend G4SDX/P on Marsden Moor on the Yorkshire/Lancashire border.



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Description	Name/Team	Callsign
Overall Winner	Hereford VHF Contest Group	GW1YBB/P
Runner Up	Steve Marsh	G4TCU/P
Leading Fixed Station	Tony Collett	G4NBS
Leading Single Operator	Hereford VHF Contest Group	GW1YBB/P
Leading Multi-Operator	Burton-on-Trent ARC	G3NFC/P
Leading English Station	Steve Marsh	G4TCU/P
Leading Welsh Station	Hereford VHF Contest Group	GW1YBB/P
Leading Scottish Station	Bill Ward	GM0ICF/P
Leading EI/GI Station	Paul Norris	EI3ENB/P
Leading GJ/GU Station	Chris Rees	GU3TUX

Table 1: Leading Stations.

	OVERALL			SINGLE OPERATOR		MULTI-OPERATOR	
Square	Name	Call	No. entries	Name	Call	Name	Call
IN89	Chris Rees	GU3TUX	1	Chris Rees	GU3TUX		
IO62	Paul Norris	EI3ENB/P	1	Paul Norris	EI3ENB/P		
IO63	John Coleman	EI8KU/P	1	John Coleman	EI8KU/P		
IO70	Callington ARS	G1XIC/P	1	Callington ARS	G1XIC/P		
IO71	Simon Gosby	GW8OVZ/P	1	Simon Gosby	GW8OVZ/P		
IO72	Carmarthen ARS	GW4YCT/P	1			Carmarthen ARS	GW4YCT/P
IO75	Bill Ward	GM0ICF/P	1	Bill Ward	GM0ICF/P		
IO80	Bob Edgar	G0KYS/P	1	Bob Edgar	G0KYS/P		
IO81	Hereford VHF Contest Group	GW1YBB/P	1	Hereford VHF Contest Group	GW1YBB/P		
IO82	Steve Marsh	G4TCU/P	3	Steve Marsh	G4TCU/P		
IO83	Dave Hewitt	GW8ZRE/P	6	Dave Hewitt	GW8ZRE/P	Thornton Cleveleys ARS	G4ATH/P
IO84	Otley Amateur Radio Society	G3XNO/P	1			Otley Amateur Radio Society	G3XNO/P
IO85	Galashiels & District ARS	GM4YEQ/P	1			Galashiels & District ARS	GM4YEQ/P
IO86	Ruaridh Maclean	GM4ODW/P	1	Ruaridh Maclean	GM4ODW/P		
IO90	Andrew Vare	G4XZL/P	3	Andrew Vare	G4XZL/P		
IO91	Martyn Wright	G4RLF	7	Martyn Wright	G4RLF		
IO92	Burton-on-Trent ARC	G3NFC/P	6	Carl Peake	G0NZI/P	Burton-on-Trent ARC	G3NFC/P
IO93	Spen Valley ARS	G3SVC/P	5	Max Townend	G4SDX/P	Spen Valley ARS	G3SVC/P
IO94	Hambleton ARS	G8FLV/P	1			Hambleton ARS	G8FLV/P
JO00	Southdown ARS	G1KAR/P	2	Keith Bareham	G1RRR/P	Southdown ARS	G1KAR/P
JO02	Tony Collett	G4NBS	1	Tony Collett	G4NBS		
JO11	Frank Laanen	PE1EWR	1	Frank Laanen	PE1EWR		

Table 2: Leading stations in each square.

steady. Conditions seemed average. After the backpacker contest finished it was slow going as usual. I had a spell of 57 minutes without a single caller or anyone new found on S&P. I said to myself if this gets to one hour, I'm going home. Three in three minutes then a few more not too far apart and it was not far from the end anyway so I stayed full term".

Operating

Experienced contester **Tony Collett G4NBS** provided some feedback based on his experience in this year's contest, which might be helpful to less experienced contesters. *"Always surprising what can be heard and worked with low power on 2m outside the bedlam of UKAC and major weekend tests. Unfortunately, this year seemed to be marred by poor operating standards and some poor audio. Not overdriven, just muffled and poor frequency responses making weak signals hard to understand. I understand some of the operating will be down to unfamiliarity with contesting but single call CQ's, finishing a contact and not calling CQ again or at least listening before turning the dial (or beam) might net a few more contacts. Then there are those that only give the details once (seemingly following the guidance in* PW *to the letter?) but didn't seem to realise that if I am weak with them, I might be struggling with more noise than them… A couple just sent the information once and never responded to my requests for repeats so not in my log."*

Logging accuracy

Some interesting errors were encountered in cross-checking the logs. In at least one case, a regular entrant who usually operates portable, decided to operate from home and this caused some stations to incorrectly record a /P suffix. Another station seemed to only add /P occasionally.

One station seemed to have periods of confusing sent and received reports and serial numbers and even seemed to be sending the report received from the previous station they worked. Another station recorded most times as UTC less one hour. Apart from this, most stations lost typically no more than 2 points due to logging errors.


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Pos	Call	Name	Single	QSOs	Squares	Score	Locator	Transceiver	Antenna	Ht. m asl
1	GW1YBB/P	Hereford VHF Contest Group	S	135	29	3915	IO81KW	Yaesu FT-817	HB 9-ele	800
2	G4TCU/P	Steve Marsh	S	70	18	1260	IO82WJ	Yaesu FT-817nd	4-ele Yagi	0
3	G3NFC/P	Burton-on-Trent ARC		67	17	1139	IO92EQ	Kenwood TS-2000 + GaAsFET preamp	2 x 15-ele LFA YagiS	100
4	GW8ZRE/P	Dave Hewitt	S	61	18	1098	IO83JF	Yaesu FT-817	7-ele ZL Special	261
5	G3XNO/P	Otley Amateur Radio Society		66	15	990	IO84VB	Yaesu FT-847	2 x 9-ele Tonna bayed	487
6	G3SVC/P	Spen Valley Amatuer Radio Society		66	13	858	IO93BR	Yaesu FT-847	Ancient ZL Special	250
7	GW8OVZ/P	Simon Gosby	S	45	19	855	IO71OW	Yaesu FT-817	HB 6-ele DK7ZB design	536
8	G0KYS/P	Bob Edgar	S	41	19	779	IO80AQ	Yaesu FT-818	8-ele Jaybeam	550
9	G4XZL/P	Andrew Vare	S	58	13	754	IO90MX	Icom IC-705	HB 9-ele DK7ZB Yagi	270
10	G4NBS	Tony Collett	S	38	17	646	JO02AF	Elecraft K3,M/H Preamp	11-elee @ 12m	60
11	G7UHN/P	Andy Webster	S	44	13	572	IO90OW	Yaesu FT-817	6-el Yagi + DG8 preamp	220
12	G8LED/P	Northampton RC		40	14	560	IO92LH	Yaesu FT-991A	9-ele LFA	135
13	G4RLF	Martyn Wright	S	38	14	532	IO91BB	Trio TS-770 + LNA + Processor	17-ele	80
14	G4HLX/P	Neill Taylor	S	40	12	480	IO91GN	Icom IC-705	10-ele Yagi	220
15	G0NZI/P	Carl Peake	S	39	12	468	IO92EL	Yaesu FT-225	DK7ZB single Quadlong	0
16	G5TO/P	Sheffield & District Wireless Society		35	13	455	IO93FL	Icom IC-7100	HB 11-ele	310
17	G0SRC/P	South Derbyshire & Ashby Woulds ARG		32	13	416	IO92FT	Yaesu FT-817ND	13-ele Tonna	104
18	G4EFE/P	Martin Peters	S	39	10	390	IO91GI	Yaesu FT-817	5-ele Yagi	297
19	G4ATH/P	Thornton Cleveleys ARS		34	11	374	IO83NU	Icom IC-910HX	17-ele Tonna and X50 Vertical	10
20	G1KAR/P	Southdown ARS		31	11	341	JO00DR	Icom IC-9700	13-ele Tonna	147
21	GM0ICF/P	Bill Ward	S	26	12	312	IO75OR	Kenwood TS-2000 + GaAsFET preamp	5 over 5 Slot Fed Yagi	240
22	G0OIW/P	Mark Palmer	S	28	11	308	IO91LO	Icom IC-705	5-ele Yagi	230
23	G0HXR	Geoff Martin	S	21	11	231	IO92UU	Yaesu FT-818ND	Dual Antennas 6-11-ele Yagi	2
24	GW4YCT/P	Carmarthen ARS		23	10	230	IO72WA	Icom IC-7100	2m 6-ele quad + 2m GP-15	400
25	G4SDX/P	Max Townend	S	21	10	210	IO93AP	Icom IC-705	Diamond 144S10R 10-ele Yagi	400
26	G4HZG/P	Burton ARC	S	23	9	207	IO93HE	flex 5k Q5 tvtr	13-ele Yagi	145
27	G4AQB	Bolton Wireless Club	S	25	8	200	IO83TN	Yaesu FT-991a	5-ele Yagi	114
28	G8FLV/P	Hambleton ARS		17	10	170	IO94IJ	Not stated	Not stated	1
29	2E0OPD/P	John Navin	S	19	8	152	IO90KQ	Icom IC-706Mk2G	Diamond A144S5 - 5-ele Yagi	99
30	M0NDA/P	Nuneaton & District ARC		21	7	147	IO92FM	Kenwood TS-790 & Icom IC-705	8-ele ZK7ZB Yagi	172
31	G1XIC/P	Callington ARS	S	14	10	140	IO70UM	Icom IC-705	7-ele Yagi	300
32	G8FMC	Dave Keston	S	17	8	136	IO91NW	Elecrat K3S + MET2-pro TVTR	8-ele Powabeam	115
33	M5AEO/P	Jonathan Kempster	S	16	7	112	IO91ST	Yaesu FT-817	Dipole	145
34	G6EPN/P	Peter Knight	S	15	7	105	IO91DL	Icom IC-705	5-ele Jaybeam Yagi	250
35	G0FCA/P	Iain Groom	S	10	5	50	IO83VS	Icom IC-7000	5-ele LFA	325
36	M1AEA	Mark Waldron	S	11	4	44	IO82WM	Yaesu FT-817	DIAMOND X30	219
37	GX2XW	South Manchester Radio Club		19	2	38	IO83SI	Yaesu FT-817	8-ele Yagi	52
38	G1RRR/P	Keith Bareham	S	7	5	35	JO00BS	Yaesu FT-817ND	5-ele Yagi	69
38	GM4YEQ/P	Galashiels & District ARS		7	5	35	IO85MM	Yaesu FT-991	7-ele beam on 6 mtr mast.	415
40	EI3ENB/P	Paul Norris	S	6	5	30	IO62JI	Yaesu FT-817nd	Diamond A144S10R2 10-ele Yagi	200
41	GU3TUX	Chris Rees	S	7	3	21	IN89VR	Icom IC-9700	5Y	70
42	EI8KU/P	John Coleman	S	4	4	16	IO63NV	KX2 + Ukrainian TVTR (UR3LMZ)	144LFA5	339
43	G0EIY	Simon Pryce	S	5	3	15	IO82OR	Yaesu FT-817	10-ele long Yagi	77
44	PE1EWR	Frank Laanen	S	4	3	12	JO11SL	Icom IC-9700	PA144-9-5A	0
45	GM4ODW/P	Ruaridh Maclean	S	3	2	6	IO86DR	Yaesu FT-817	8-ele Yagi	380
45	2E0RVX	Sheffield & District Wireless Soc	S	3	2	6	IO93GI	Icom IC-9700	Single-ele Halo	137

Table 3: Full Results.

Equipment

For the first time, no station used a Yaesu FT-290 or Icom IC-202 transceiver. Over the years these have been largely replaced by the Yaesu FT-817/FT-818 and the Icom IC-705, which were used by just under half the stations.

Certificates

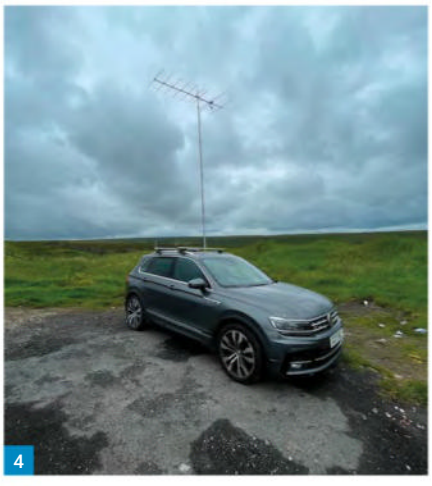
This year certificates will be sent as a pdf file to all entrants by email - not just to leading stations. Look out for the email, which will be sent to the email address you entered into the contest website.

Adjudication problems

I must apologise to entrants who had difficulties using the contest website. Two days before the contest, the company that hosts the website migrated it to a different server, and despite previous assurances that this shouldn't have any significant impact, this proved not to be the case, with numerous configurations setting having been changed and not communicated and their technical resources seemingly overwhelmed with requests for support. This coincided with your adjudicator being away from home on holiday, making matters even more difficult. The problems have been overcome, and entrants to the 4m contest should have found that normal service has been resumed.

Next year

The 2025 *PW* 144MHz QRP Contest is provisionally scheduled for Sunday 15 June 2024. **PW**



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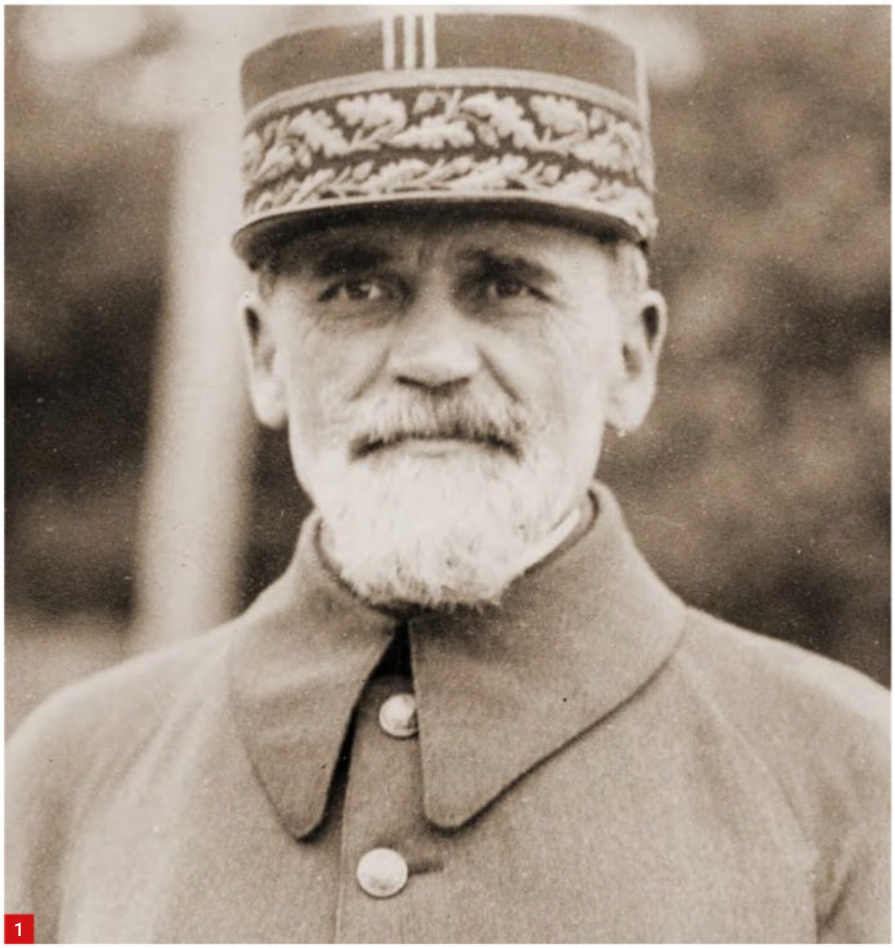
Georg Wiessala
wiessala@hotmail.com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A Race to Progress

Georg Wiessala explains how radio saved the Eiffel Tower from demolition and explores some of the key personalities.

As I write this, there is trouble brewing in Paris: The *2024 Paralympics* have just finished, and **Anne Hidalgo**, the commanding mayor of Paris, has decided that the Olympic Rings should stay attached to the Eiffel Tower as a permanent fixture after the Games are over. 'Not so', say the modern family of the tower's creator: The *Association of Descendants of Gustave Eiffel* (website below) argue that this very emblem of France should not 'degenerate into an advertising billboard'.
https://gustaveeiffel.com/en/home

Olivier Bertelot-Eiffel and **Savin Yeatman-Eiffel** – the great-great-grandsons of old Gustave – are not minded to make an exception, not even for the International Olympic Committee. This is probably just as well since the IOC is infamous for being deeply mired in scandal and controversy.

The tower itself has courted controversy since its inception – as we shall see. It was designed and created by the entrepreneur **Gustave Eiffel** (1832-1913) and his team of engineers, who were the 'Norman Fosters' of their day. Eiffel devised, sold, shipped and built structures all over the world, especially in Asia. The story of how the Eiffel Tower was marketed was inextricably tied to one of the signature events of the 19th century, the Paris Exhibition of 1889. You can actually listen to the voice of Gustave Eiffel, in very crackly French, here:
https://tinyurl.com/4x69rbru

For more background on the fascinating life of Gustave Eiffel and the general history of his eponymous tower, you may want to take a look at the suggestions in **Table 1**.

A 'Second French Revolution'

In this context, few have captured the mood of the age better than **Arthur Chandler**, way back in 1986: *"In the year 1889 there was revolution in Paris. No shots were fired, no buildings torched, no palaces looted. But on the Champ de Mars and the Esplanades des Invalides, the past and the future fought a world war of ideas. Iron battled stone, Javanese ritual music defied the siege of German orchestration, electricity triumphed over gas. It was a year to celebrate a revolution's centennial, a time to consolidate one hundred years of industry, art and social ideals that flowed from the revolutionary events of 1789."*

The *Zeitgeist* in this era dictated an unswerving commitment to the idea of scientific advance, and a belief in reason and progress. But there were shadows too; the French Third Republic (1870-1940) was bookended by the Franco-Prussian War and World War II. The two main political scandals of the time were the Dreyfus affair (1894-1906) surrounding the machinations against the Jewish **Captain Dreyfus**, and the corruption trial over the Panama Canal, in which Gustave Eiffel was subpoenaed and tried. My main argument is that the Eiffel Tower survived only because it was of use in the transmission *sans fil* (wireless) of the then new-fangled 'Hertzian' waves.

In this article, I would like to emphasise three episodes in particular from the 'radio history' of the Eiffel tower, which are fascinating, but which time seems to have all but forgotten: In what follows, I will be looking at the radio pioneers **Gustave-Auguste Ferrié** (1868-1932) and **Eugène Ducretet** (1844-1915), the history of the Eiffel tower wireless time signal station, and the story of 'Radio Eiffel Tower', in those early days from 1921 onwards.

French radio pioneers and transatlantic connections

It is not too difficult to see Gustave-Auguste Ferrié (**Fig. 1**) and Eugène Ducretet (**Fig. 2**) as forgotten radio pioneers; they fulfil all the criteria: they were little known inventors working tirelessly behind the scenes, to build something with wide-ranging consequences, in this case the famous Eiffel tower wireless station. They cemented the Tower's subsequent roles in military and civilian contexts. And after 1909, the site and its three transmitters ensured the extension of Eiffel's land lease for almost another century. Without the radio, in other words, the tower would have been taken down soon enough. But how did this all come about?

Ferrié was both a military man and an early wireless enthusiast. He served on the French Committee whose task it was to evaluate the work of **Guglielmo Marconi** (1874-1937), and he was present when the latter transmitted the first radio signals across the Channel (*La Manche*) in 1899. Just two years before, the French instrument maker Eugène Ducretet had experimented with Morse code transmissions from the tower – eventually reaching all the way

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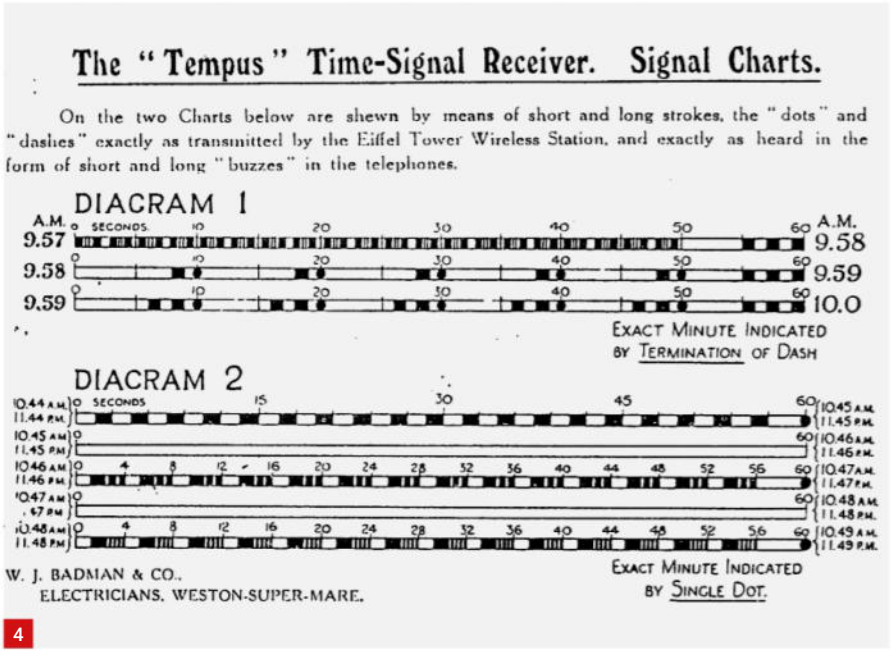

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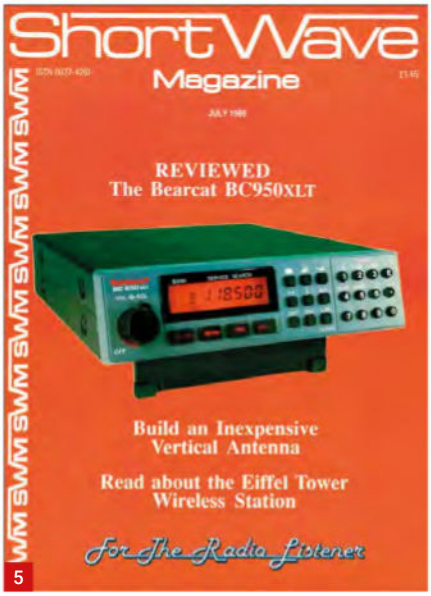

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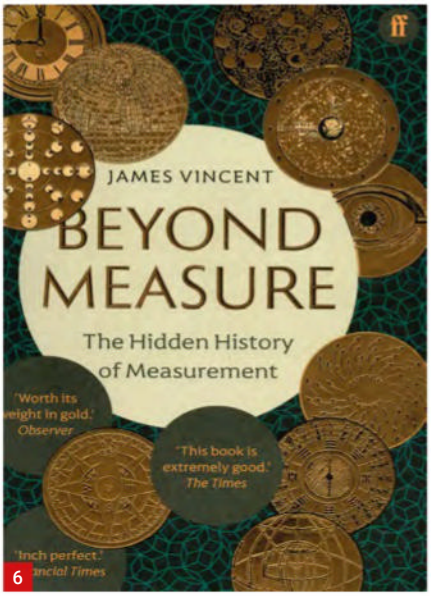

6

to London.

That was the first time that wireless was actually used from the tower. Eiffel had invited Ducretet to use the tower for communication tests. Men like Ferrié and Ducretet were hooked on the idea of wireless transmission and persuaded of the utility of the new medium of radio. As a reward for his efforts, on 5 November 1898, Ducretet sent signals to the Paris *Panthéon* monument, 4km (3 miles) away. His name is still known through the manufacture of the famous Ducretet-Thomson receivers of the 1950s (**Fig. 3**). He was further immortalized on a stamp from Monaco in 1973.

On top of that, Ferrié is further credited with co-inventing, with **Reginald Fessenden** (1866-1932), the electrolytic detector (Crabtree, 1989); and he emulated Marconi by sending the first signals from the Côte d'Azur to Corsica at the turn of the 20th Century. Using the Eiffel Tower as Earth, Ferrié put an experimental receiver on top of it in 1902. This quickly became a permanent fixture.

Some years after that, successful regular wireless links were cemented with French posts near the border with old enemy Germany and through to the French Government in Casablanca, Morocco. 'Here's looking at you, Gustave'. By 1908, the station had achieved a reach of over 6,000km. Gustave Eiffel kept an office at the lofty top of the tower, in which he hosted – among many other radio pioneers – **Thomas Edison** in 1889.

Edison had been in Paris to visit the World Exhibition and present his invention, the phonograph – and to do some essential sightseeing. Move forward in time a little, and in 1908, the American inventor **Lee de Forest** (1873-1961), who had been Marconi's great rival at the St. Louis World's Fair in 1904, was permitted to use the Eiffel Tower setup for groundbreaking early radiotelephony experiments. He would have relished the opportunity. We'll get back to him in a little while.

For some more background to all this, **Ted Simpson** and **Bill Liles** have compiled an informative piece in *IEEE Antennas and Propagation Magazine* in 2023. It vividly brings to life the radio setup, as well as the battles with the French bureaucracy over the installations. There is also a wealth of contemporary

Fig. 1: A military man with radio ambitions: Gustave-Auguste Ferrié (1868-1932). *(Wikipedia)* Fig. 2: First signals from the tower: Eugène Ducretet (1844-1915) *(Wikipedia)*. Fig. 3: Vintage beauty: A Ducretet-Thomson radio of the mid-1950s *(Wikipedia)*. Fig. 4: The time signal code for the Eiffel Tower SFTS Station *(Research Gate)*. Fig. 5: Short Wave Magazine of July 1989 contained an early article on the Eiffel Tower Wireless Station. Fig. 6: James Vincent shows how Paris was the historical hub for measurement, time control and standards *(Faber & Faber)*.

photographs and drawings, bearing pictorial witness to the first radio transmissions from the tower by the French pioneers. In this context, it seems, indeed, more than justified to speak of a uniquely 'Parisian' history of antennas and propagation':
www.eucap2017.org/paris-1/parisian-history

Shared time and accuracy from Paris

During the time of its operation, the Tower served as an experimental platform – quite literally – for the testing of radio waves, gravitational studies, weather observations, and general scientific endeavours, to name but a few. Throughout the year 1916, for example, some vital experiments were undertaken here, towards calculating the exact distance between Europe and the United States. These tests were conducted between the Eiffel Tower station (FL) and the US Navy station at Arlington, Virginia.

To add to these early accomplishments, from 23 May 1910 onwards, the Eiffel Tower wireless station also began to serve as a time signal transmitter (**Fig. 4**). From 1913, this service became standard. Run by the French *Bureau de Longitude* in Paris – the prime city of global standards and measurement of the age – it provided a radio time signal on 120kHz (2,500m) with the callsign 'FL' and a radiated power of 40kW. This became the best-known of the early SFTS (Standard Frequency and Time Signal) stations, and the transmissions easily bridged the Atlantic (Simpson and Liles, 2023: 135).

The signals were transmitted up to the 1920s. They were generated at the Paris Observatory and sent out from the Eiffel Tower twice daily. However, they did not remain unique for long, on a European scale: Just a year later (1911) a German time signal station from Norddeich with callsign 'KAV' initiated time transmissions on 166.6kHz (1,800m; Crabtree, 1989: 7). This was also the age of the early radio amateur station experimenters, and many at the time picked up those time signals, as well as others.

They were primarily intended for maritime use, such as the correction of maritime chronometers. But radio enthusiasts of the era saw them as propagation indicators; watchmakers and jewellers liked to share them too. Some say that the Eiffel Tower can be said to have been instrumental in the general foundational period of European amateur radio (Currie, 2022).

The time signal station antenna consisted of a fan-shape of steel cables, descending from the 300m tower. It is said that this was not universally popular with the French people at the time. Neither was the Eiffel Tower as a whole, it needs to be said – if one is to believe some contemporary sources. Some saw the structure as an eyesore and security risk (Lombardi, 2006: 9; Simpson & Liles, 2023: 131; 135).

Music and spoken word from 'la radio tour Eiffel'

I promised you we would get back to Lee de Forest. Remember how Gustave Eiffel allowed him to use the eponymous tower for basic radio experimentation? Well, this bore some great fruit: On 12 January 1908, de Forest made the first long-distance radio message broadcast from the Eiffel Tower. It was heard by an audience of 50. Then, on 12 January 1912, the famous inventor broadcast the very first entertainment program from the tower. It consisted largely of a music revue, and de Forest co-presented this with his wife, **Nora**.

Later on, a daily music service from 'la Radio Tour Eiffel' (**Fig. 5**) was aimed at a domestic and cultured French audience. It was trialled on 22 December 1921. On 6 February 1922, this service was officially inaugurated, in the presence of the artists and celebrities of the day, like the wonderful singer and actor **Yvonne Printemps** (1874-1977). You can listen to her voice here:
https://tinyurl.com/bdz66bj7

These early entertainment programmes became famous quickly, and they subsequently went out live on a daily basis from 2.30 to 5pm. Memorably, the Lille-based French newspaper *Le Réveil du Nord* reported with great enthusiasm on the first-ever broadcasts from the Eiffel Tower:
https://tinyurl.com/4h2pzcup

In 1925, a spoken-word broadcast – *le journal parlé* – was added to the radio station's broadcast portfolio. This prefigured the beginning of a long and distinguished series of broadcasts from the Eiffel Tower, whose history has always been deliberately linked to that of Paris as a former city of science, broadcasting, and metrology (**Fig. 6**). This continues into the present, with around 100 TV and FM radio stations going out from up there, including RFI (Radio France Internationale):
https://www.rfi.fr/fr

The first Long Wave (LW) transmitter used for the early broadcasts was capable of 800W. From 1925, some initial experimental TV broadcasting was also established. During the 1930s, at a time of unprecedented radio station growth in France, the programmes on 6120 and 9525kHz from the tower developed considerably in scope and reach. However, in June 1940, the German occupation of Paris sadly put an end to the great broadcasts after 19 years, until the US Army took over the tower in August 1944.

On a broader canvas, it has been argued that, across the Channel, the opening of the Eiffel Tower radio station placed significant pressure on the British Government of the time, which eventually paved the way towards broadcasting in Britain (Crabtree, 1989: 12).

I think there may be more than a grain of truth in this assertion. **PW**

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Table 1: Eiffel Tower and early radio resources.

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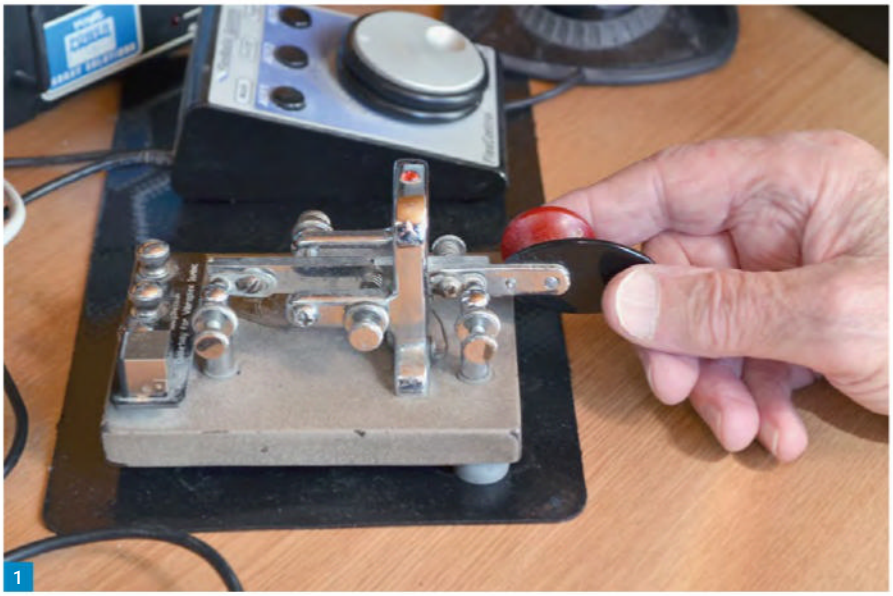
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Morse paddles

Roger Cooke G3LDI starts with Morse keys and moves on to manners and training.

I have been using a single lever Vibroplex paddle since the early 1960s. It has been used with a large variety of keyers, ranging from the early one that I built, the OZ7BO keyer, to some of the latest keyers on the market.

All the Vibroplex paddles of the day were constructed in the same way and indeed you can still buy a paddle with same arrangement these days. In fact, a modern Vibroplex paddle looks very similar to my old one, still using springs in fact. The movement could have standard non-jewelled trunion screws and pins and there are also those that have industrial-grade jewels inserted.

Other than that, it is essentially the same as the one I had bought for me when I was around 20. The main difference is, of course, the price. Mine was bought as a Christmas present by my parents and grandmother. It was expensive even then at £6.10.0 (if you know what that means!).

Vibroplex is the brand of side-to-side mechanical, semi-automatic Morse key first manufactured and sold in 1905 by the Vibroplex Company, after its invention and patent by **Horace Greeley Martin** of New York City in 1904. Paddles came along later, but looking at the very early versions, they too looked very similar to a modern one.

They all have something in common, even that early bug, and that is they came with a finger piece and a thumb piece. I have long been disillusioned by modern manufacturers making a very nice key or paddle and putting a single piece of plastic on the front for the user as an afterthought. I am thinking of the natural shape of a hand, left or right. If you hold your hand in front of you vertically, there is a gap between fingers and thumb, called the purlicue. Also, with this view you can see that the index finger protrudes in front of the thumb, by some inch and a half.

This shape is a natural one and it fits the Vibroplex paddle very well, without the need to bend the index finger to fit. The finger piece sits further back from the thumb piece allowing the finger to extend comfortably without forming a 'hook' to paddle the dashes.

I tried to take pictures of this but failed, not being left-handed. So, **Steve G0KYA** kindly took the two pictures, **Figs 1** & **2**, demonstrating this technique. Maybe I am very pedantic about it, or it stems from being a pianist and having a concern about the position of fingers and thumbs. It is, of course, a very basic approach to being a pianist so I have transferred that to being of help when training to become a good CW operator. If anybody does try this and finds it helpful, I would like to know.

Morse by Eric Clark

Merv MI0TMW recently sent me a small booklet, which dates back to 1943, **Fig. 3**. Inside it says: *"A quick course for beginners especially planned for members of the Fighting Services, Home Guard, A.T.C., Observer Corps, Scouts and others in National Service who desire to attain a working knowledge of Morse as speedily as possible."*

Inside was a piece of paper with copy on it and also on the reverse it ended with the piece shown, **Fig. 4**. I found it intriguing. I have never seen this booklet before; it is about 2in by 3in.

Some of the practice text is interesting too. Callsigns are discussed, obviously military ones, such as ROF, GRH, UK3 and so on. Note the fact that the book cost 8d. If nobody knows what that means, it is 8 old pence, roughly equivalent to 2p in today's money.

The actual teaching in the book is based on five-character grouping, and it advises not to 'ponder' on one character and so on, so teaching methods have not changed that much in the last 80 years! AND, it is still a great communication mode!

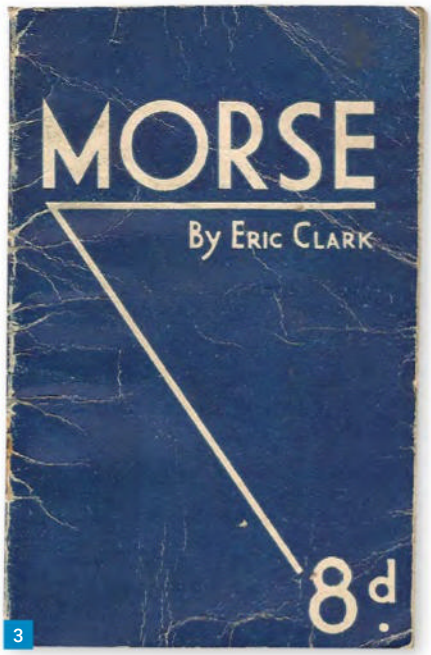
Morse Mode Manners

Working DX on CW is (to me, anyway!) one of the most enjoyable and satisfying ways of working rare DX stations. Sorting out where they are listening and trying to work out the trend, tuning low or high, can take a bit of time but is great when the plan comes together and you work them first call.

However, this enjoyment is marred by the behaviour of several different types of people:

The panic operator. This is the one who does not check the transceiver first to see if he has set it in split operation. He then spends several minutes calling them on their own frequency, thus attracting the wrath of too many others who then between them destroy any possibility of hearing the DX station; much less determine where he is listening and who he is working. The UP UP UP ad nauseam police, the STOP STOP suggestions, the strings of dots senders, breaking down into personal insults; all of this is totally avoidable but of course will never happen.

The permanent callers. These usually emanate from the south-east of the UK, who insist on calling all the time the DX station is working somebody. Why? Don't they realise it won't work? They waste everybody's time, including their own.



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The DQRM types. These types usually zero-beat the DX station and sit there sending garbage, dots, dashes, anything just to spoil others' fun. They often resort to RTTY as well.

Fig. 1: Natural paddle keying.
Fig. 2: Paddle keying with modern single-paddle key. Fig. 3: Morse booklet from 1943.
Fig. 4: Morse exercises from the booklet.

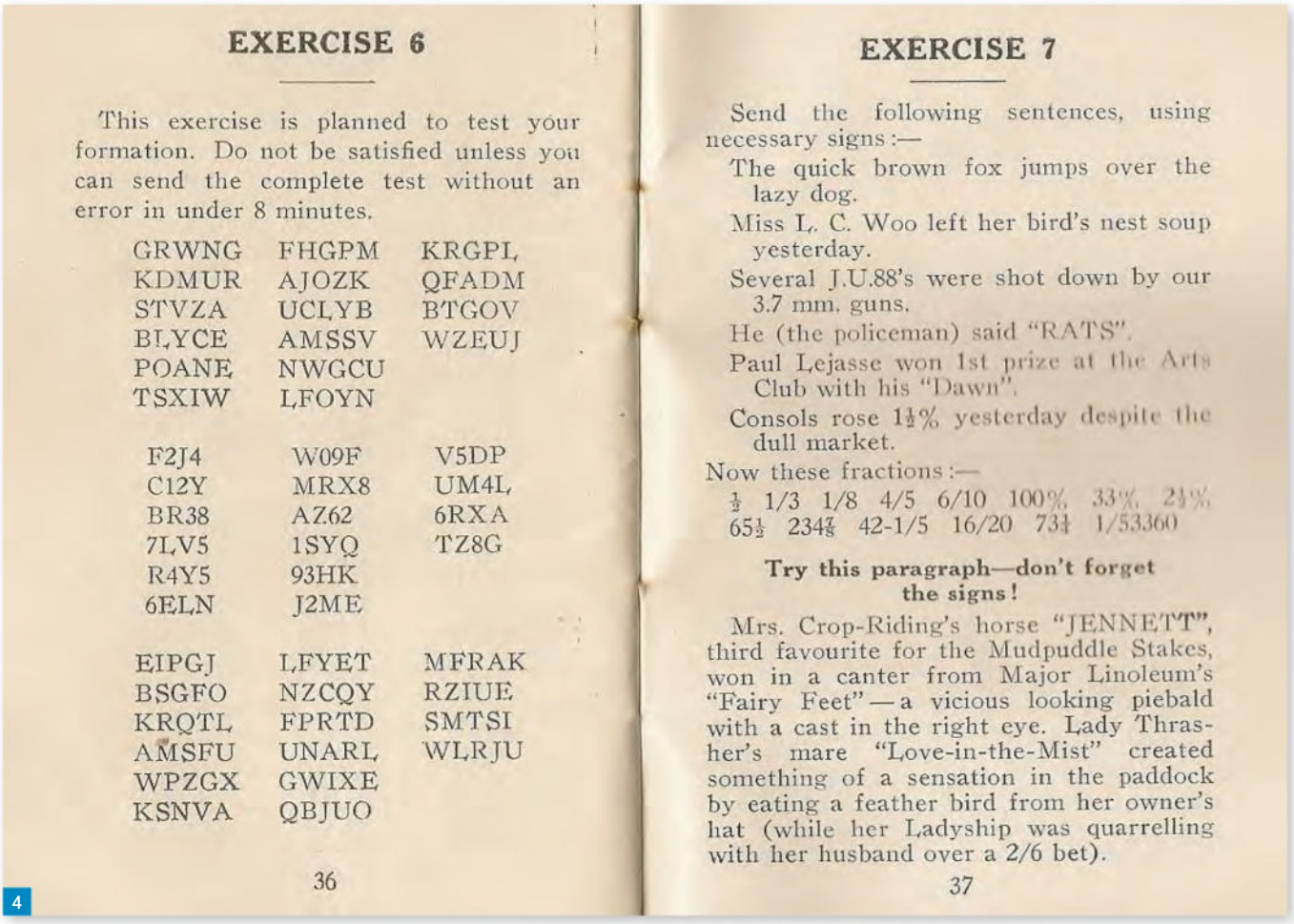
Again, this results in the Police activity on the channel trying to calm the situation but just making it worse.

There are others, even worse, resulting in obscenities and expletives being directed toward others. To think there could be young children listening in to this awful mess is embarrassing to say the least.

It's obvious that not many have read the DX Code of Conduct:
https://tinyurl.com/srya6yps

If everybody reads it and tries to live by it, perhaps we would be more tolerant and polite towards each other. But, looking at the world in general I cannot see that happening any time soon. I was taught manners and respect as a youngster and I try to live by that and show it in all walks of life. Pity it does not play out globally.

Please send all your comments, offerings, information and especially pictures to:
roger@g3ldi.co.uk
73 and May the Morse be with you! **PW**



EXERCISE 6

This exercise is planned to test your formation. Do not be satisfied unless you can send the complete test without an error in under 8 minutes.

GRWNG FHGPM KRGPL,
KDMUR AJOZK QFADM
STVZA UCLYB BTGOV
BLYCE AMSSV WZEUJ
POANE NWGCU
TSXIW LFOYN

F2J4 W09F V5DP
C12Y MRX8 UM4L,
BR38 AZ62 6RXA
7LV5 1SYQ TZ8G
R4Y5 93HK
6ELN J2ME

EIPGJ LFYET MFRAK
BSGFO NZCQY RZIUE
KRQTL FPRTD SMTSI
AMSFU UNARL WLRJU
WPZGX GWIXE
KSNVA QBJUO

36

EXERCISE 7

Send the following sentences, using necessary signs:—

The quick brown fox jumps over the lazy dog.
Miss L. C. Woo left her bird's nest soup yesterday.
Several J.U.88's were shot down by our 3.7 mm. guns.
He (the policeman) said "RATS".
Paul Lejasse won 1st prize at the Arts Club with his "Dawn".
Consols rose 1½% yesterday despite the dull market.

Now these fractions:—

½ 1/3 1/8 4/5 6/10 100% 33⅓% 2½%
65½ 234⅞ 42-1/5 16/20 73¾ 1/53360

Try this paragraph—don't forget the signs!

Mrs. Crop-Riding's horse "JENNETT", third favourite for the Mudpuddle Stakes, won in a canter from Major Linoleum's "Fairy Feet"—a vicious looking piebald with a cast in the right eye. Lady Thrasher's mare "Love-in-the-Mist" created something of a sensation in the paddock by eating a feather bird from her owner's hat (while her Ladyship was quarrelling with her husband over a 2/6 bet).

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Chris Colclough G1VDP
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1

DX Féile 2024

"Féile", is a word taken from the Irish language (Gaelic) and translates into English as Festival. **Chris Colclough G1VDP** reports on the recent event in Ireland.

DX Féile [**1**] is the brainchild of **Dave Deane EI9FBB** and the members of the EI DX Group [**2**]. The first one being held in 2017 on Inis Mór, Aran Islands (EU-006). Then in 2018 they returned to Inis Mor as the last stop on their Irish Islands IOTA Tour 2018 programme. They had two stations on the air using the call EJ1D, with approximately 25 attendees and it was decided to hold the event each year. 2019 was to be the last time at Inis Mor before the pandemic closed down all travel and gatherings. It resumed again in 2022 at the Shannon Springs Hotel, Shannon.

This year it was held at the Temple Gate Hotel, Ennis, County Clare, with over 50 attendees from around Ireland and the world. It is a convention for like-minded DXers to hear and see the presentations from DXpeditions that have happened in the past 12 months. There is also some fun with pile-up competitions and a DX Quiz, not to forget the socialising in the bar and over dinner. This is my second year attending and will not be my last, meeting friends who you have only spoken to on the air or not seen or spoken to since the previous year.

As in 2022 the event was again held at the Shannon Springs Hotel, close to Shannon airport. On that previous occasion with work commitments on the Friday my flight was a late one (which was delayed) so it was close to midnight when I arrived at the hotel. Then the return was early on the Sunday morning, so I missed the main part of socialising with everyone and getting to know folks better. This year I managed to book time off work so I booked flights that allowed me the time to get in earlier and leave a little later.

Travelling to Ennis

The closest airport to Ennis is Shannon international, but the flight times from Birmingham were either bad or the flights were too expensive. So, I changed the route and managed to get a flight from Birmingham to Dublin where I met Dave EI9FBB who had kindly driven from his home in Cork to collect us and drive through Ireland to Ennis. We also met up with **Charles M0OXO**, **Philip DK6SP** and **Tomi HA8RT**. Philip and Tomi had been in Dublin the day before to meet another of their friends from the YOTA (Youth on the Air) group.

Both Charles and I experienced delays in our flights, so rather than us both landing at 14:20 local time, it was almost two hours for me and over two hours for Charles before we landed. We eventually managed to leave Dublin almost three hours behind our original schedule, and with the roads in Ireland from Dublin to Ennis being mostly motorway we arrived at the hotel just after 19:00 local.

Check in and head to the bar to sample the local brew – Guinness – and a meal to refuel. A fun evening with a good group of international friends to catch up with and talk about radio related topics, though for the life of me I have no idea how we got onto the topic of pensions and the navy? We also discussed how we all started in amateur radio, and a theme emerged where it seemed most started as SWL's using a 'ghetto blaster' of the late 70's/early 80's and CB. Now you have to remember that almost all in the group are 300+ DXCC confirmed suggests that this background is a good learning area. As the evening wore on some decided to retire to their rooms, but a small group stayed on to the end enjoying the company and libations – as can be seen in the photo, **Fig. 1**.

Saturday presentations

Following a good hearty Irish breakfast, it was time to enter the hall where the presentations were to take place. The hotel, previously the Temple Gate in Ennis, used to be an abbey before the conversion and new buildings erected. The hall was the old chapel, and the wooden beams were still in place, encompassed into the whole design of the building.

Once everyone was in the room and ready for the day's proceedings to kick off Dave EI9FBB went through the running order of the day and started off with the DX quiz. As suggested by the name all the questions are based on DXing and the DX community, for example, *"If you operate as 6Y7EI which ITU region are you in?"* Or *"JARA is the national society of what country?"* Little did we know but both these questions were clues to the next EiDX Group's expedition, which we will mention more of later. Oh, the answer to the first question should you ask, region 2. This is a team competition and it also gives you chance to meet new people who may only be there as a day visitor.

A quick break to set up the next part and to grab a quick drink before the CW and SSB pileup challenge. It amazes me how the ones who take part in these ever get a full call from them, even though I have been at the sharp end of SSB pileups, and write them down quick enough. But there is always a winner, which were announced at the end of the day following the adjudication by Dave EI9FBB. I must say

Fig. 1: The conviviality starts early! Fig. 2: Adrian KO8SCA, who presented on CY9C and N5J. Fig. 3: The assembled crowd at this year's event.

well done to **Adrian KO8SCA** and **Fred G4BWP** for a tie in the CW challenge, and again to Fred in the SSB challenge, both receiving a small trophy as a memento for their efforts.

The talks then started with Adrian taking the stage to give his first presentation of the day with his trip to CY9C St Paul Island [**3**]. This had only ended four weeks previously and was being shown for the first time at DX Féile, **Fig. 2**. The images showed just how St Paul island can be so hostile. It is known locally as 'the Graveyard of the Gulf' being situated in the Gulf of St Lawrence, Canada. There is a story about a ship being wrecked on the shores of the island and survivors managing to get to the island and burn some wood from the few trees on the island to keep warm and make signal fires. The people on the mainland could see these fires, being only 25km away, yet couldn't get to them for the ice, so they all died. Chilling stories and a fascinating presentation.

Then time for the future of DXpeditions to take the stage, 8R7X [**4**] by Jamie M0SDV, Tomi HA8RT and Philip DK6SP. These three along with **Sven DJ4MX** went to Guyana in March 2024, are all under 27 years old, organised and pulled off one of the best expeditions I have had the pleasure of listening to, and working, in my 40 years of being in the hobby. But this doesn't surprise me knowing the team as I do. From the presentation it wasn't plain sailing to start with or when they were there but having the aid from a local 'fixer' they were treated as royalty. I also think these guys should win the annual 'DXpedition of the Year' award for all they did and achieved.

By now it was lunch time and a break to chat and eat some excellent food. The hotel was not disappointing with what they offered, and with Dave liaising with the staff the menu had talk-themed names for the dishes on offer – St Paul's fish and chips! Well done Dave for this, and to the staff for their fast and friendly service, which we received all weekend.

Back in the room and time for a full-on rookie to give his first presentation ever on his first ever DX trip with the EIDX Group, the 7P8EI Lesotho expedition. **Denis EI5GSB** started with his own view from a rookie's point of view with four or five quick-fire slides, delivered with the Irish humour and wit he is known for, saying thanks and ending saying *"there you go Dave, got back the 45-minute delay"* before giving an interesting and informative look at the trip from his angle as the new boy. Well done Denis, and we look forward to your next presentation in the future.

Back on the stage came Adrian with N5J

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Jarvis Island [**5**]. It was incredible that he had left Jarvis Island, sailed back to Hawaii and onto home to immediately get back on a plane to go to CY9C, his wife must be a very understanding lady – which she is as he had brought her along as part of their holiday to Europe. This expedition was also the first 'big' one to use the RiB (Radio in a Box) concept, and to use off-island operators connecting remotely to give out QSOs. Adrian covered all this and with his Q&A session gave all the information, again satisfying everyone.

And so onto **Jeremy EI5GM** and the announcement for where the EiDX Group are going next. 6Y7EI was announced for 12 to 24 March 2025, which he gave a prize of a bottle of wine for who guessed right saying that there were clues in the quiz. Oh yes that question *"JARA is the national society of what country?"* Jamaica. We should have known. Good luck and safe travels all. Look forward to seeing you on the bands and hopefully making it into the log.

Quiz winners and pile-up challenges winner's announcement time came around before the raffle was drawn and with the many prizes on offer, just about everyone wins something. Next year's date was also announced for the Féile, 11 October, and then closing of proceedings to allow people to get ready for the evening meal and a few more drinks and DX chat in the bar.

Continued on page 30

WSPR & Web-888

Mike Richards G4WNC
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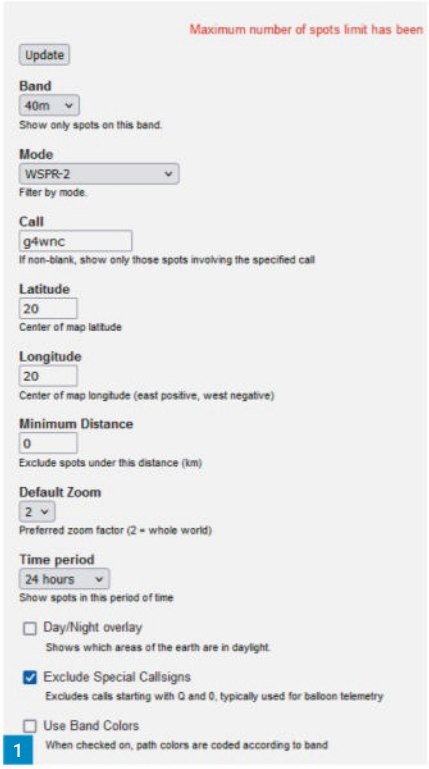
Mike Richards G4WNC follows up on using WSPR data and takes a first look at the Web-888 receiver, the latest development in the 888 series of SDRs.

Last month, I described a budget WSPR beacon using the Raspberry Pi Zero 2 W. This month, I'll run through some of the current tools you can use to make sense of the WSPR data.

WSPR is a fantastic tool for measuring propagation simply because so much data is available. The main limitation is the concentration of monitors in the most developed nations. However, there's still enough coverage for useful investigations. One of the most obvious uses is to see how well your transmit antenna works. By running a transmit WSPR beacon over a day or two, you can use one of the many analysis systems to see how well you're doing on the different bands. The most common choice for this application is the Map section of the **wsprnet.org** website. You use the form below the map to set which spots to plot. The main fields to set are Band, Mode, Call and period. By entering your call, you restrict the display to display only spots that include your call, either as the Tx or Rx station. Concerning the period you can only go back from the current time, i.e. you can't examine a specific period; we need a different tool for more focussed reporting. Fortunately, several third-party applications provide customised reporting that I'll cover later in this *Data Modes*. The other WSPRnet tab that's particularly useful is the database. This uses a form, **Fig. 1**, that you use to specify the returned data. The database access lets you retrieve up to 10,000 spots simultaneously, providing more data than the Map view. The database also lets you specify the transmit station and the reporter separately. You can use this feature to find the best frequency and time to reach a specific location. To do this, first run a query with the boxes set to All bands, All modes, and Count of 10,000, and set the Call to your callsign. Leave Reporter blank, specify the last 24 hours and Sort by Reporter. **NB:** You must ensure the Unique button is NOT ticked. Click the Update button to run the report. You will see a long list of data conveniently grouped by the reporting station.

Examine the list and find a reporting station with plenty of reports across multiple bands in your target area. For the next search, use the same parameters but add the selected reporter and change the sort order to SNR. This will return a table showing the path performance between you and the selected station with the strongest reports at the top. In **Fig. 2** I've selected a table showing the route between WA2TP (New York) and me. This indicates that there are good paths between us on 7MHz, 14MHz and 28MHz at various times, but the 28MHz openings seem quite short, so it's not ideal for a sked. To get a more detailed view, you can repeat the report but restrict the band to 10m and sort by Timestamp, **Fig. 3**. This result indicates that there's currently a weak but reliable path in the early to mid-afternoon.



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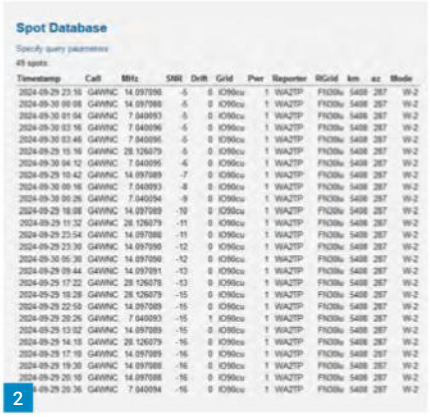

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In addition to running reports, you can download the entire database monthly from the WSPRnet site. This can be very useful if you have database skills to perform your analysis. One word of warning: the downloads are huge! They are supplied as compressed CSV (Comma Separated Values) files of around 2-3GB each. When unpacked, these files often expand to 10GB or more of data, which is difficult to process with standard spreadsheets! If you want to access raw data, some other downloaders are available that let you tailor the download.

For an alternative mapping service, try the LU7AA site at:

lu7aa.org/dx.asp

I've shown an example plot in **Fig. 4**. This site lets you examine data over a range of periods from the last hour to two weeks previously.

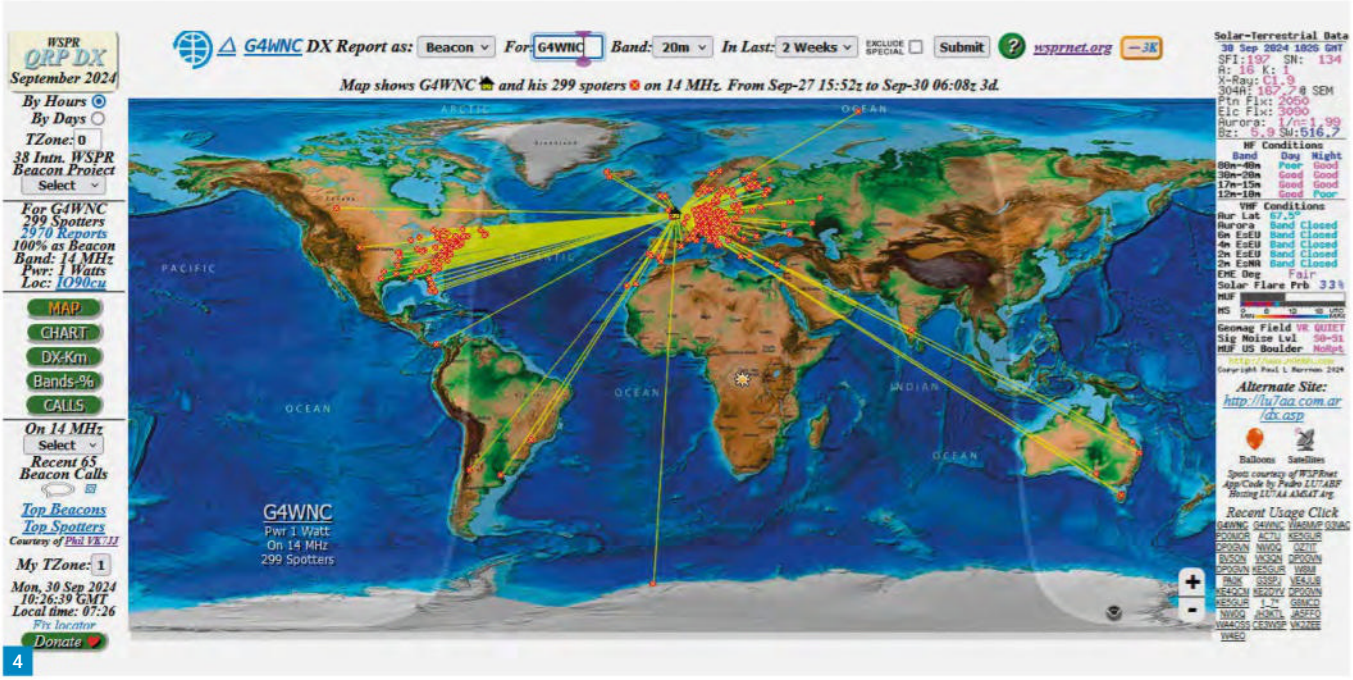
One of my favourites is the WSPR rocks site (URL below) by **Phil VK7JJ**. To use this site, you must set up your search details using the boxes at the top of the home tab, **Fig. 5**. Once you've set up the search, hit the search button, and it will populate the charts and maps. When the search is complete, you can use the Chart, Map and Table tabs to see the results. I particularly like the map as you can click on any path to reveal more information.

https://wspr.rocks

DJ2LS's RF heat map (URL below) provides an alternative look at the data. This site goes a long way to simplifying the vast report databases into a handy format. Once on the site, you need to specify your QTH by entering your locator or by hitting the Auto button to use your geolocation data. Next, select Rx or Tx to see the reports or transmissions you received from others. This is followed by completing the band time and mode fields. As shown in **Fig. 6**, the heatmap provides a particularly helpful view of the current propagation conditions. You may also have noticed the small graph at the top of the display. This provides a six-hour propagation forecast based on report data from the past 24 hours. Overall, this site is very powerful and well worth a visit.

https://maps.dj2ls.de

The WSPR Live site (URL below) has an even more versatile selection of tools. This



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site contains all the reports since 2006 and is updated with real-time data! You need to be careful not to request too much data when looking at historical trends, because many Gigabytes of data are available. One of the most interesting ways to access this site is to use the Grafana GUI, which you'll find on the top menu. Grafana is a very powerful commercial web data analysis tool with a very useful free tier available to all. This site has many report templates, but one particularly interesting report is the radiation pattern tool. This is available from the Dashboard menu: Dashboards – WSPR Station Information – Radiation Pattern. For this to be useful, you must have been running a WSPR beacon on the desired band for at least 24 hours. To see the report, go to the Radiation pattern page, enter your call, set Rx/Tx to Tx, and choose the band in MHz (i.e. 7 for 40m band). At the top right of the screen, set the report period as desired, i.e., for the Last 2 days. If all is well, you should see your radiation pattern. The 1/points field controls radiation pattern smoothing. This defines the number of data points per 10° of direction. Lower numbers in this field provide a more detailed display, whereas higher numbers smooth the plot. The default setting of 10 usually provides a good result. I've shown a plot for my Butternut HF9V in **Fig. 7**, based on running a beacon for two days.

https://wspr.live

This WSPR Live site also provides an attractive 3D global view of RF activity on a selected band, **Fig. 8**. This can be found in Dashboards – General Information – Live World View.

If you want to access the raw spots data, the best tool I've found is the WSPR Exporter on the wspr.live site. This has access to the entire WSPRnet history of over 4,000,000,000 spots, so be careful! The exporter employs an easy-to-use search form where you set the start and end times, send and receive calls or wildcards and the output format. The output is currently limited to 100,000 rows per request or 10,000 rows if requesting table format.

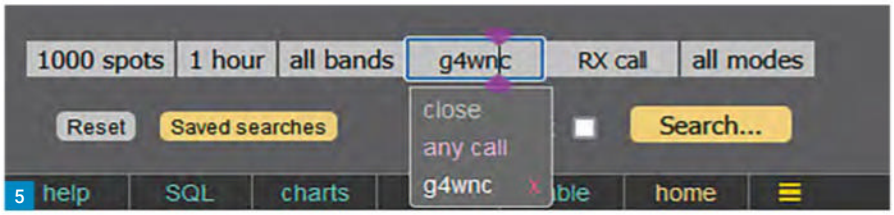

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Fig. 1: WSPRnet database search form.
Fig. 2: WSPRnet report for a single Tx and Rx station.
Fig. 3: WSPRnet report for single Tx and Rx station on 10m sorted by time.
Fig. 4: LU7AA WSPR data map.
Fig. 5: WSPR Rocks site search panel.

Web-888SDR

The latest budget SDR development on the scene is the Web-888 SDR. This has raised much interest on various SDR forums and is an important SDR development. As you may have guessed from the name, this new receiver comes from the design team that developed the RX-888 series of DDC (Direct Digital Conversion) SDRs. These receivers feature a 16-bit ADC (Analogue-to-Digital Converter) and can receive the entire HF and low VHF spectrum in a single high-speed data stream passed to a PC for processing using a high-speed USB-3 port. The RX-888 also includes an R828D tuner chip to extend the upper-frequency limit to 1.7GHz.

The development team soon noted that RX-888 owners were combining their RX-888s with Linux boxes and Raspberry Pi boards to provide Web access to the receiver. The most common software solutions used the KA9Q-Radio and PhantomSDR projects. The team decided it would be simpler to achieve the web functionality by including a modern FPGA (Field Programmable Gate Array) inside the receiver. So, the new design begins with the well-proven HF design of the RX-888 MkII and adds an FPGA.

The new design retains the excellent front-end of the RX-888 with an RF attenuator, low pass filter and low-noise amplifier followed by the ADC. This provides coverage from 100kHz to 60MHz. The new, improved low-pass filter design features increased rejection above 60MHz. This is necessary because they added a second antenna input that feeds the ADC via a 118-145MHz band pass filter and a 20dB LNA (Low Noise Amplifier). This provides coverage of the air band and 2m using the second Nyquist zone of the ADC. The VHF/UHF tuner of the RX-888 has been abandoned to make space for the additional filter and the FPGA.

For the FPGA, the team followed the template

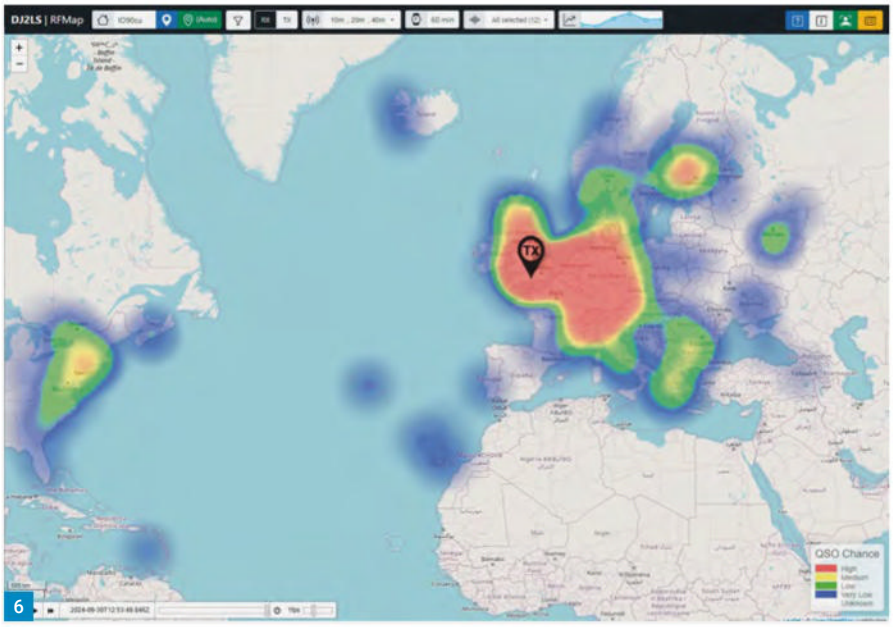
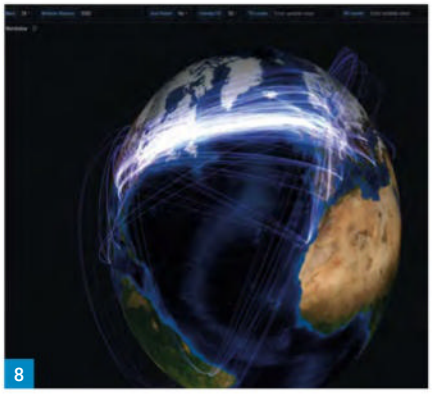


Fig. 6: Informative WSPR heatmap plot from DJ2LS.
Fig. 7: Radiation pattern plot from the WSPR Live site. Fig. 8: WSPR Live 3-D plot of live activity on 10m.

used in the Pluto SDR and employed the Zilinx ZYNQ XC7Z010. This combined FPGA and ARM processor facilitates easy transfer of high-speed data between the FPGA and processor. This processor has dual A9 ARM cores, which gives it plenty of processing power. The firmware for the receiver is closely linked with the RaspSDR and KiwiSDR projects, as the Web-888 authors have been working with both teams.

Frequency stability and accuracy can be crucial with today's data modes, so the Web-888 uses a 0.5ppm TCXO (Temperature Compensated Crystal Oscillator). This is supplemented with an onboard GPS module for even greater stability. Additional features include Reference frequency in and out sockets, USB-2 port for Wi-Fi dongle or CAT control and a GPIO (General Purpose Input Output) port that could be configured for antenna switching or similar.



The net result is a high-performing HF and low VHF receiver that supports 13 simultaneous receive channels and can be accessed using a relatively low-bandwidth network connection. Moreover, it only costs £208, which is a bargain. I have one on order, so I can report in more detail next time. **PW**

Continued from page 27

If we thought the lunch was excellent, the choices for the evening meal were even better, three courses and again with names pertaining to DX. The staff and service were brilliant, as with lunch smiling and friendly.

Sunday departure

Sunday morning was bright and sunny, which was a complete contrast to the previous two days of wet and windy weather. I certainly enjoyed the full Irish breakfast, as with all meals the food was superb. Before checking out of the room and having a chat in the hotel reception with everyone before they all went their separate ways.

My return flight was from Shannon, so it was a farewell to Charles as he got a lift to Dublin with **Declan EI9HQ** and **Piotr LA7RRA**. They had a bad journey with an accident closing the motorway near the airport and a diversion almost costing Piotr his flight, he made it to the gate five minutes before it closed – they called his name as he ran through the airport. Charles was then delayed and didn't get home until 1am.

Dave once again was my taxi driver taking me and Jamie to Shannon airport. Jaimie was on the same flight to Birmingham as me, so we had lunch and waited for the delay announcement we were expecting. But to our amazement we were called to board almost 30 minutes before scheduled departure and left 15 minutes early, landing 30 minutes earlier than scheduled.

Finally, I would like to thank Dave EI9FBB for organising and all his hard work during the event and to the EiDX Group for the invitation. Dave never really stops until the Saturday night after the dinner and even then he is fussing about to check all is OK. I would also like to thank him for collecting me and the other guys from Dublin airport, and then for dropping Jamie M0SDV and me at Shannon for our return flights. To all the attendees for the fun and chat, this just has to be one of the best social and DX orientated events that I have been to, even the events here in UK. I think something like this needs organising over here and keeping small as the old HFC's used to be. Remember the date for next year and I will see you there, **Fig. 3**.

References

[1] **https://www.facebook.com/dxfeile**
[2] **http://eidxg.com/**
[3] **https://t-rexsoftware.com/cy9c/**
[4] **https://8r-2024.com/**
[5] **https://jarvisisland2024.com/**

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See HamRadio.co.uk/KiwiSDR2

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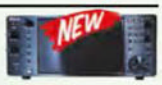

HF & 6M 100W Ultra High Performance SDR. £4395.00

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08.30 Start **A date for your diary: Saturday 30th of November**

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DVMega is a collective name for digital voice and data related kits and modules. C4FM, DMR and D-STAR is supported with more digital voice and data modes added all the time.

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Daimon Tilley G4USI
practicalwireless@warnersgroup.co.uk

1

The N7DDC Auto ATU

Daimon Tilley G4USI builds a cheap but capable auto-ATU.

When operating portable, I do enjoy the convenience and simplicity of operating with a random long wire (LW) and ATU. Some would argue this is inefficient, but I use about 12in of coax between rig and ATU, and connect the LW and counterpoise directly to the ATU output, so feedline losses are minimal, and user convenience (and user efficiency) are high!

In the past I have built various manual ATU's for this purpose, including transmatch and L Match versions. I have previously reviewed the Kanga Transmatch, which is excellent but costs nearly £50. A recent L Match I built into my homebrew /P transmitter was built from the junk box, but I reckon if you had to source the polyvaricon, inductor core, wire, switches and knobs, then you would be talking of spending around £15, plus the need to still have an SWR bridge of some type.

Imagine then, if you could buy a fully automatic ATU, as a kit, which can handle up to 100 watts of RF, can activate a self-tune when SWR rises (at band edges, or when changing bands) as well as give a visual display of power and SWR, all for about £20 delivered? Pie in the sky? Certainly not, and that is the project I will describe this month.

Design and build

This design is not new, dating from over five years ago. Designed by **David Fainitski N7DDC**, the ATU-100 has been produced in large quantities by Chinese manufacturers for some time now, in various iterations. It started life with five sets of inductances and five of capacitance, and then an extended 7 x 7 version was released. Other variants include the ATU-10 (15 watts). You can find many of them on the UK's most famous online auction site, where they vary in price from about £45 to over £100, with no apparent reason for the price difference! Kits are available from about £27 on the same site.

The logic at the heart of the ATU is on a PIC chip, and the latest firmware is v.3.2 – not all sellers are providing this latest firmware, and if you want to update it, you require a PIC programmer and a little bit of computer savvy.

A recent acquisition of a small portable transceiver led me to explore what was on offer directly from China, and I turned to AliExpress, which I use often. There I found on offer the ATU-100 with the latest firmware, and according to the seller, a PIC imported from the US designer and quality imported (non-Chinese) toroids. The kit of parts, once VAT was added, came to a little over £20 without a case. Assembled and in a case was a little more than double this.

What caught my eye was that, among the hundreds of sellers offering this kit on AliExpress, this was from Up Tech Store. I happen to know that this store is the ONLY approved reseller of the DL2MAN TR(u)SDX transceiver, and that DL2MAN periodically checks and approves the quality of the transceiver provided by this store.

If I was ever to believe I was getting the best quality components from a Chinese store, then I thought this was my best shot! I originally thought I would build this ATU into some kind of go-box, so I decided against the boxed version (although the box is also available separately) and ordered the kit of parts without.

The kit arrived in about seven days and was well packaged, **Fig. 1**. All parts were present and there was a circuit diagram and instruction sheet provided. The instructions merely told you how many turns to wind on each toroid, but did also tell you how much of the provided wire to cut for each one, to ensure you didn't run out. I even ended up with two spare electrolytic capacitors, as more had been packed than needed.

I took my time and did a bit of construction at a time over a couple of days. The most time-consuming part were the toroids, although this is easy enough.

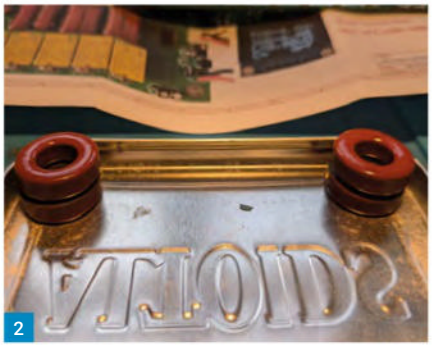
Two of the inductors use two toroids each, and to assist when winding I superglued mine together. When doing this, a good tip to ensure alignment is to put them together inside a right-angled container, I used a mint tin, **Fig. 2**.

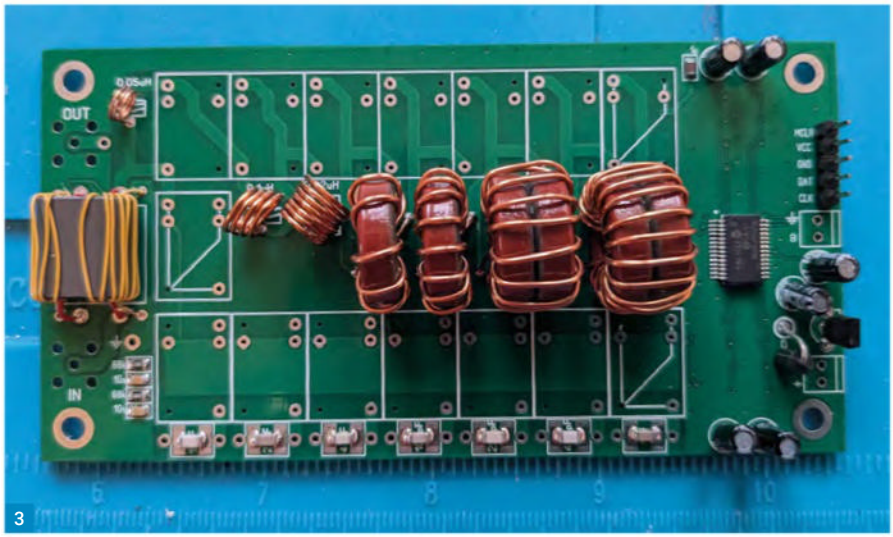
The remaining five inductors use a combination of single toroids and air-wound inductors, which need 6mm and 4mm formers. I used Allen keys, but a drill bit would also be ideal. Finally, there is a binocular core to wind and fit.

It is often said that in kits like this that the fitting of inductors is a common point of failure. I always make sure to strip the enamel thoroughly from the ends to be soldered, even if the enamel coating is designed to be melted by solder. Another tip is to always check continuity of these soldered joints. In the case of this design, that is easy, as all inductors are wired in series, so the simple expedient of checking continuity from the extreme side of an inductor on one side of the board to the extreme side of one on the other side of the board is all that is required, **Fig. 3**.

Satisfied that all was in order, I then fitted the remaining components, including relays, electrolytic capacitors, header pins, coax sockets, etc. This is shown in **Fig. 4**.

When connecting the small OLED display to the header pins on the board, care should be taken for two reasons. First, no connection at all should be made to the pin labelled MCLR, as this is only used when programming the PIC. Second, the order of the four remaining pins used to connect to the display is presented in a different order to how they are presented on the display.





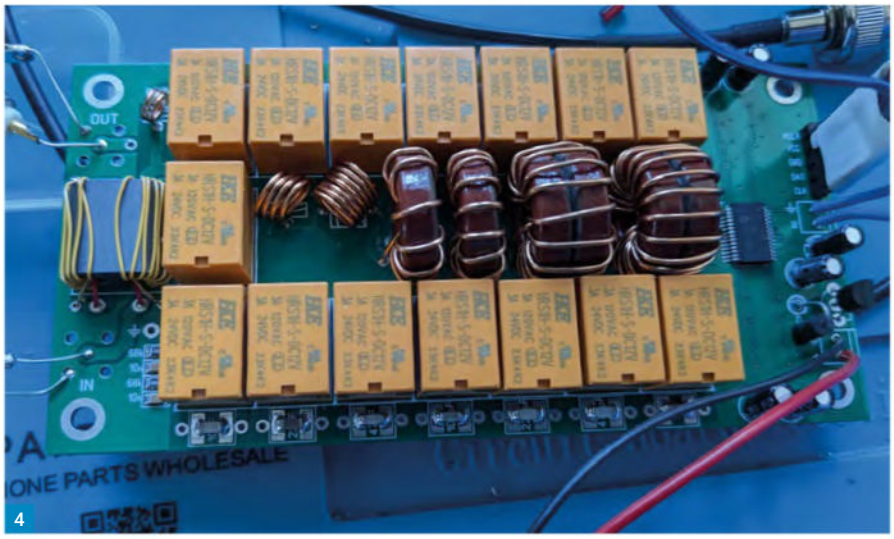


Fig. 1: The ATU-100 as delivered.
Fig. 2: Using a right-angle to align toroids when glueing. Fig. 3: Toroids fitted.
Fig. 4: All components fitted.
Fig. 5: The display. Fig. 6: Display on transmit.

The smoke test and putting it to work

Applying power for the first time (10-14V via the supplied 2.1mm barrel connector socket) I was soon greeted by the display, which after the 'splash' welcome screen, presented the key information provided during use. This is shown in **Fig. 5** but please note the black diagonal line is a result of the screen refresh rate showing on my camera – the display is perfect and easily read in use.

The display is rather helpful. In the standby (non-transmitting state) it displays as shown in Fig. 5, Power and SWR are shown as ZERO and the amount of capacitance and inductance used to provide a match is shown.

Although a 'Tune' button is provided, in practice this is not needed to find a match. This version of firmware will check SWR on first transmission and if a good match (according to the manual on GitHub, this is anything above 1.3 but can be changed by the user in the firmware), then an auto-tune is commenced with no further operator input.

This is incredibly convenient, as if SWR rises when you tune across a band, it is taken care of for you, and if you change bands, that too is automatically checked and, if necessary, tuned.

Once tuned, the display changes slightly and the transmitter power, SWR, power passed to the antenna, and efficiency as a percentage is displayed while you transmit, **Fig. 6**, and once your transmission ends, the degree of inductance and capacitance to achieve that tune is shown, **Fig.7**.

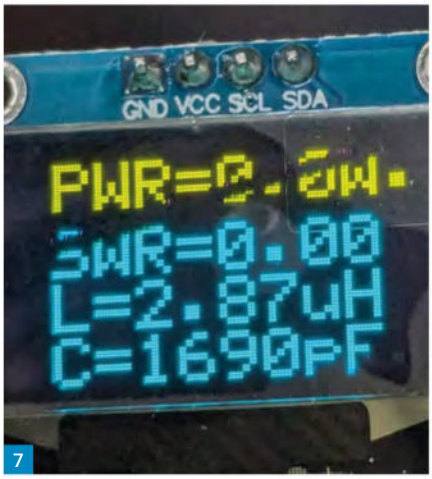
This latter display is interesting, as the maximum inductance available is 8.53µH and the maximum capacitance is 1869pF. By monitoring these values, you can see how close you are to the 'capacity' of the tune to find a 50Ω match.

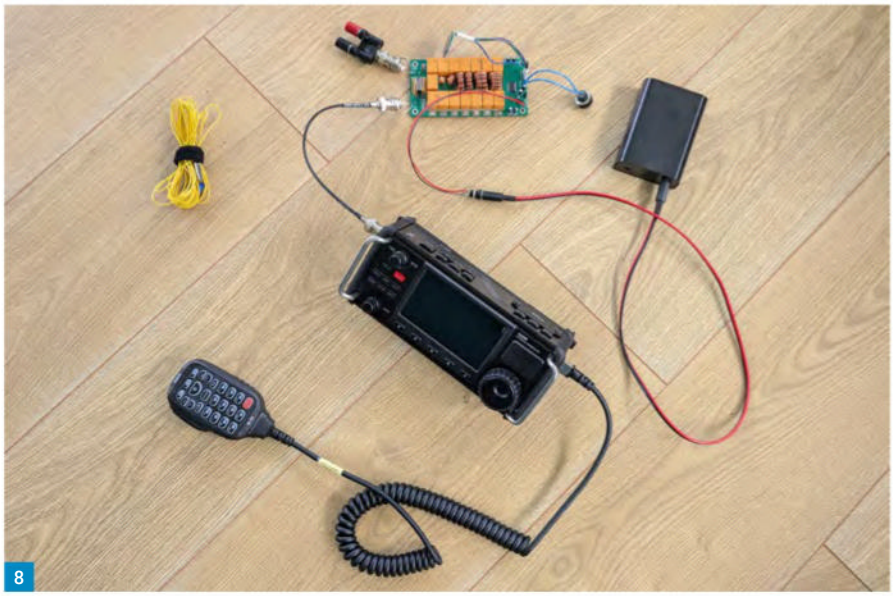
Another great feature is that the device will tune without a constant carrier! Tuning starts on the detection of RF and if this is interrupted, the device pauses and then with more RF continues the tune from where it left off. What this means in practice is yet more convenience. Just start talking or sending CW and the device will tune.

For example, I can readily get the tuner to find a match by holding down the right paddle of my Iambic key at 20wpm. After a few dashes, I have a match. Care is needed here of course as, if your power is high, or finals are not well protected, damage may be caused. You have been warned!

So, the time came to give the ATU some real-world tests. To begin with I made it easy. I connected it between a QRP rig and my full sized EFHW for the 80m band. This antenna already exhibits less than 2:1 SWR from 80 – 10m, although 60m and 30m are around 3:1.

The ATU-100 touched up all of these bands to just over 1:1 SWR, including 60 and 30m. It even gave a good match on Topband (160m) of 1.21:1.





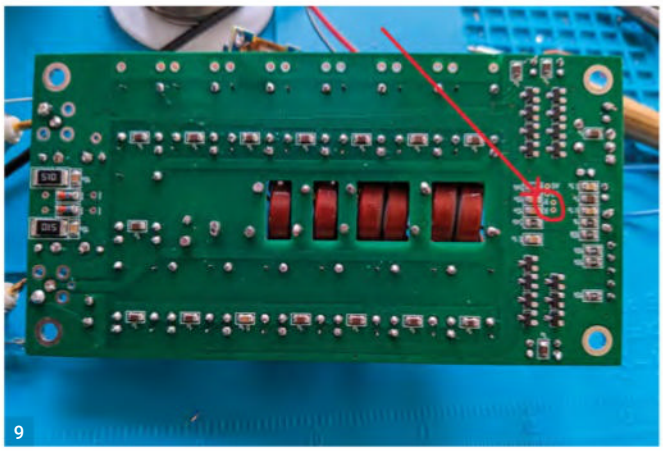


Fig. 7: Front fascia filled.
Fig. 8: The completed restoration.
Fig. 9: The HW-9 'stack'.

A good first step. Now for something a little more real-world for /P use.

I took the ATU, a battery pack, and a Xiegu X6200 that I have for review in this magazine, down into my conservatory, **Fig. 8**. Here I have a random wire, which starts at about 6 feet high and runs for roughly 20m to a point at my stable block which is about 18 feet high. I connected the wire and a 5m counterpoise to the ATU using a BNC to Terminal Post adapter.

I was delighted. The ATU found a match on every band from 80m to 6m. Indeed, watching the display I saw it was able to provide a match when the antenna SWR was almost 10:1 – very good indeed and far better than many other ATU's, especially those built into the popular Japanese rigs.

A little spoiler alert here. If you have read my Xiegu rig reviews in *PW*, you will know that the G90 and X5105 have outstanding tuners, much like this one. When I reviewed the X6100 in this magazine, I found that the tuner appeared downgraded, and it could not tune this same antenna on 40m (due to high impedance being close to a half-wave on that band). The X6200 could not achieve that either, demonstrating Xiegu have clearly, and sadly, saved money or space on their once excellent tuner.

So, so far, so good, well, really good actually!

A few more possibilities?

I am delighted with this absolute bargain and peach of a tuner, so much so I will probably get at least one more. But it doesn't end there. Remember I mentioned that there was a Tune button provided, but not needed. Well, it turns out that in my version that button, with a short press, resets the unit with zero added capacitance or inductance.

I was also a little confused, as the fully-built version contains three buttons! According to the circuit diagram, these buttons connect to RB1 and RB2 on the PIC and are to provide a BYPASS and AUTO Tune function respectively. The Auto Tune seems to be taken care of by this level of firmware so the button appears superfluous, but the Bypass function could perhaps be useful. I couldn't see anywhere to connect these buttons to, and the instructions did not discuss them. I looked at the PIC pinout and identified the correct pins, considering soldering directly to them (no small feat on an SMD!) but then I chanced across a web page and discovered these are broken out to tiny solder pads on the underneath of the PCB. I have indicated these in **Fig. 9** in case that interests you.

Further possibilities are also present with some PIC programming and additional wiring, and we are fortunate that resources supporting these extra uses, and firmware updates, are all available on the GitHub page of N7DDC at:

https://tinyurl.com/48p9tf8s

Why not take a look at these other possibilities for yourself?

And finally.....

As well as being advertised as having firmware with the auto-tune function enabled, the advert also said it had been amended to allow tuning from 1 watt of RF upwards, rather than the original designed 5 watts.

My experimentation revealed that in most cases, tuning could be achieved at 1 watt, but in some cases, nearer two was required. As I often use just 1 watt or less on CW, this was a selling point. Since purchase (and despite the instructions provided) I discovered on the GitHub site that more reliable tuning and matching down to one watt could be achieved by reducing the number of secondary turns on the binocular core from ten to five. I tried this and found I could auto-tune with just 500mW (as low as the rig I was using could go.) BUT I made a mistake. I missed that the PIC needs re-programming to tell it that the number of turns on the tandem match had been reduced. This resulted in a power reading of roughly four times higher than actual power, and makes me wonder if the SWR display/tuning algorithm is also off? So, I now either need to beg, borrow or buy a PIC programmer to amend the firmware, or add the turns back on and live with around 1 watt tune.

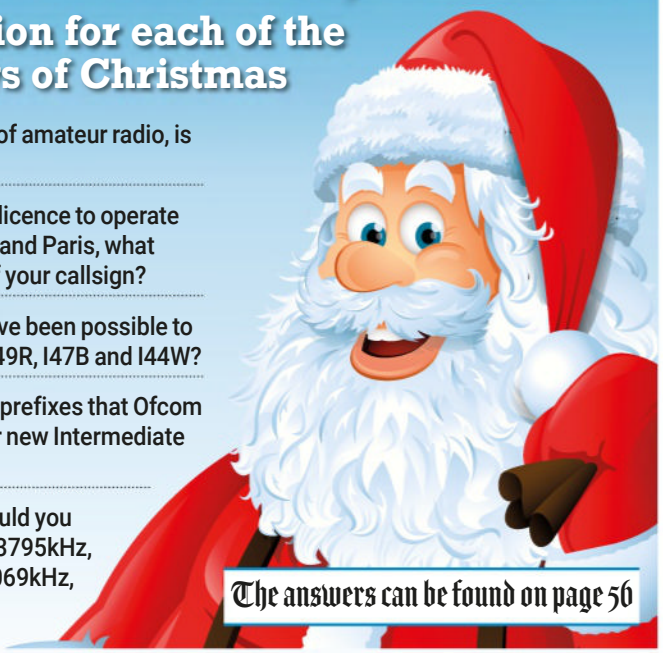
In the final analysis, this thing is an absolute bargain and very, very effective. If you are looking for an auto ATU for home or /P use, buy one – you will not regret it. The link to the seller I used is here:

https://tinyurl.com/2a4bztdz

The Twelve Questions of Christmas

One question for each of the twelve days of Christmas

1. Who lived at Villa Griffone?
2. 18100, 21074, 24915. What comes next?
3. Russia is made up of how many DXCC entities?
4. What major amateur radio operating event will take place in the UK in July 2026?
5. What do callsigns 1A0C, S01WS and Z61DX all have in common?
6. What is the joint claim to fame of DL8JJ and G0VJG?
7. A single "dah" is the only thing that separates the names of two countries when spelt out in Morse code. What are they?
8. What, in the world of amateur radio, is an RIB?
9. If you had a single licence to operate from London, Poland and Paris, what would be the prefix of your callsign?
10. When would it have been possible to make contacts with I49R, I47B and I44W?
11. What are the two prefixes that Ofcom will be introducing for new Intermediate licensees?
12. Which modes would you expect to hear on (a) 3795kHz, (b) 10136kHz, (c) 18069kHz, (d) 145.550MHz?



The answers can be found on page 50

Steve Telenius-Lowe G4JVG
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A busy month!

Steve Telenius-Lowe G4JVG has a packed column of HF news.

Although this column is being completed in mid-October, it is the December issue of *PW*, so I would like to wish all readers a very Merry Christmas (or happy Hanukkah, as appropriate). I hope Santa brings you that new IC-7760, FTdx101, TS-890S, or whatsoever you wish!

There is even more HF news than usual this month, so I'm grateful to the Editor, **Don G3XTT**, for finding an additional page for *HF Highlights* so as to squeeze it all in!

Two new DXCC entities on the horizon?

On 3 October the UK government announced that it will be ceding sovereignty of the Chagos Islands, which includes the UK-US military base on Diego Garcia, **Fig. 1**, and handing control of the islands to Mauritius. According to the BBC news website, a joint statement by the British and Mauritian Prime Ministers read: *"Under the terms of this treaty the United Kingdom will agree that Mauritius is sovereign over the Chagos Archipelago, including Diego Garcia..."* (The UK-US base will continue to exist on a 99-year lease, even though sovereignty of Diego Garcia will pass from the UK to Mauritius.)

bbc.co.uk/news/articles/c98ynejg4l5o

For radio amateurs this is likely to lead to the British Indian Ocean Territory, VQ9, becoming a deleted DXCC entity and, because the Chagos Islands are more than 800km away from the nearest existing Mauritian territory (Agalega, 3B6, see **Fig. 2**), they should become a new DXCC entity after the transfer of sovereignty has been completed.

Meanwhile, here in Europe, another new DXCC entity is a possibility. According to various sources, including Euronews, a 27-acre sovereign state with its own administration, passports and borders will be created within Tirana – the 'Sovereign State of the Bektashi Order', **Fig. 3**. According to Wikipedia, *"on 21 September 2024, Albanian prime minister Edi Rama announced plans to create the Sovereign State of the Bektashi Order..."* The Bektashis are *"a Shiite Sufi order founded in the 13th century in Turkey but now based in Albania."* Comparisons have been made with the Vatican City State, it being an independent sovereign enclave within the city of Rome. See both of:

https://tinyurl.com/4rzkdtm9
https://tinyurl.com/382z3djt

We live in interesting times!

ARRL systems disruption

Those readers who have been following the story of the cyber-attack on ARRL, which caused Logbook of The World (LoTW) to be offline for several weeks (see the August and September *HF Highlights* columns), will be interested to read the ARRL's latest update.

On 25 September the ARRL stated that *"Two major systems that have not been returned to service include DXCC and our accounting system."* The DXCC® software was written around 20 years ago and *"runs on an older version of Windows that is not supported..."* An earlier announcement said: *"Work is continuing to return the DXCC systems to service. DXCC award processing, including the 'Online DXCC' application system, is unavailable at this time. While all DXCC user data is secure and unaffected, we have taken the precautionary measure of keeping the service offline until we can ensure the security and integrity of our networks."*

arrl.org/news/arrl-systems-service-disruption

CQ World Wide news

On 25 September, **John Dorr K1AR**, the Director, CQWW Contests, announced a policy change regarding the participation of Russian and Belarusian stations in all CQ WW contests. Since the invasion of Ukraine, contacts with Russian and Belarusian stations counted zero points and those stations have not been eligible for CQWW contest awards. K1AR stated that: *"the WW contests are one of the few competitions still maintaining this position (or similar). As a result, and after consultation with our WW Contest Directors and WWROF leadership, we will be changing the current policy, effective immediately, and returning all of our contests to normal operation."*

If you use 'the code' (Morse), remember that the CQ World Wide DX CW contest takes place on 23/24 November. Send a 599 report plus your CQ Zone – the UK is in Zone 14. The rules are at:

https://cqww.com

Massive solar activity

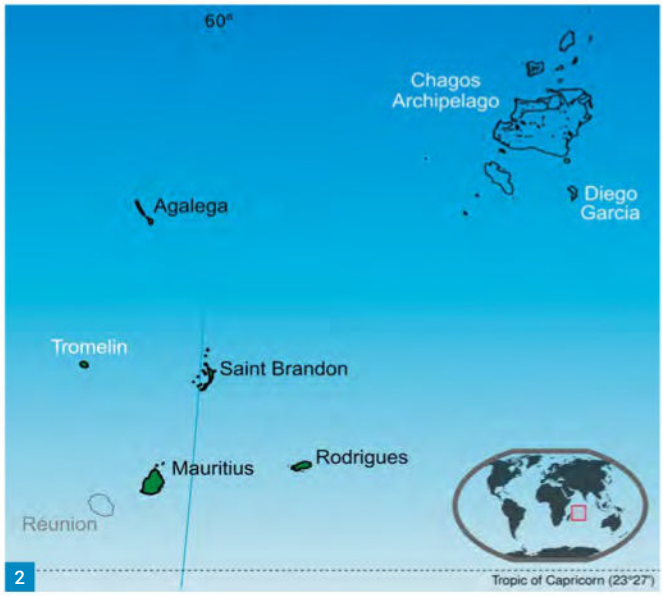
A massive solar flare erupted from sunspot group AR3842 (see **Fig. 4**) on 3 October. It was measured at X9.0 and was the biggest flare thus far during Solar Cycle 25. It followed only three days after a smaller, but still very powerful, X7.1-class flare on 1 October.

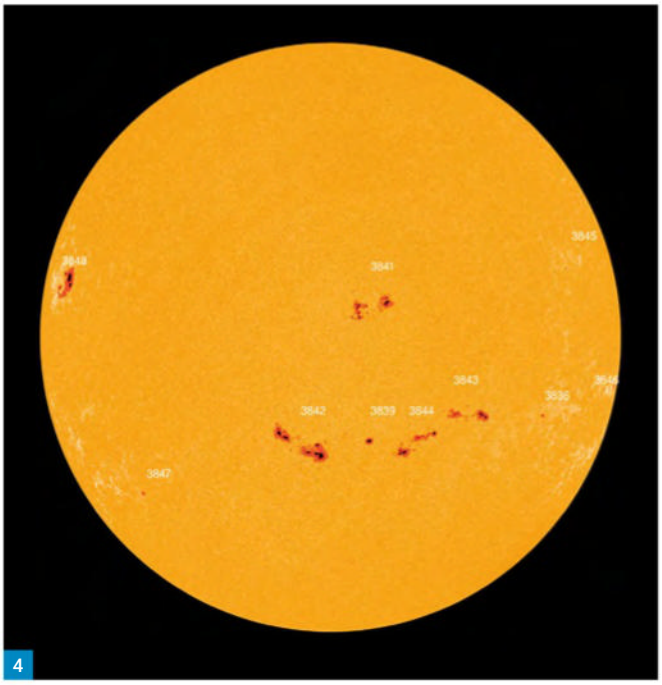
These bursts of solar activity made the national broadcast and print media. A photo of the X9 flare, with a good description of solar flares, their classification, coronal mass ejections (CMEs) and how these phenomena lead to auroras, can be found on the BBC website:

bbc.co.uk/news/articles/cy437gnp28zo

CMEs followed both the X7 and X9 flares and on 4 October the solar flux was recorded at 312 units, with the sunspot number at 206. **Fig. 5** shows that the actual monthly recorded values of solar flux (black line), and the smoothed values (blue line) are well above the predicted flux levels (red curve) and even the predicted flux range (grey band).

High solar flux and sunspot numbers do not always equal great HF propagation and often lead to geomagnetic disturbances causing auroras. In this case, UK and other European amateurs reported unusually strong signals on 28MHz from





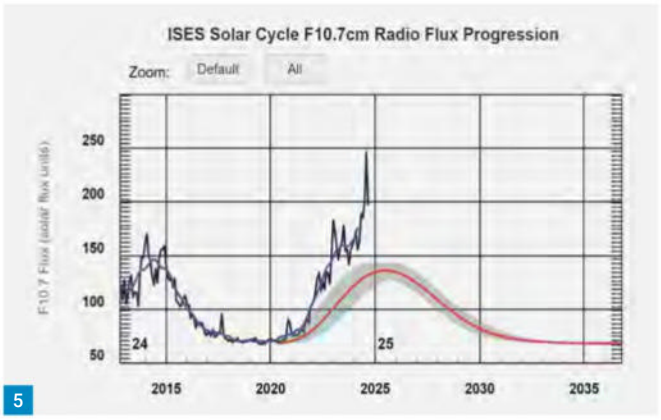


Fig. 1: Diego Garcia, in the Chagos Islands. Fig. 2: Location of the Chagos Islands in the Indian Ocean (*Wikipedia CC BY-SA 3.0 licence*). Fig. 3: The headquarters of the Sovereign State of the Bektashi Order in Tirana, Albania (*Marmontel via Wikipedia CC BY 2.0 licence*). Fig. 4: The sun on 3 October (*SDO/HMI*). Fig. 5: Cycle 25 solar flux values are peaking considerably higher than the predicted levels (*swpc.noaa.gov*).

the Pacific on 3 and 4 October. This phenomenon is known as 'pre-auroral enhancement' which, as its name suggests, can precede a period of very poor conditions caused by auroras. Visual auroras were indeed reported on several successive days, culminating in 'the big one' on the night of 10/11 October, **Fig. 6**. This photo was taken in Exmouth, on the south coast of Devon, and **Keith Le Boutillier GU6EFB** told me that he also saw the aurora on Guernsey.

The month on the air

Bill G0VDE made over 18,000 QSOs as VP6WR from Pitcairn Island between 5 and 15 September. On his way home Bill stopped on Mangareva island in French Polynesia and made a further 3000 contacts as FO/G0VDE.

Pista HA5AO (**Fig. 7**) has been celebrating his 50 years on the air with a one-man DXpedition to Zimbabwe, Zambia and Botswana. He has been active as Z22AO, 9J2AO and A25AO respectively on FT8 and CW. Pista made over 12,500 contacts from Zimbabwe but only about 8000 from Zambia, mainly due to interruptions to the power. He moved on to Botswana and was active from there between 26 September and 14 October.

Vlad OK2WX was active as 5H1WX from Mafia island (IOTA AF-054) in Tanzania from 18 September to 7 October, making over 43,000 QSOs. He used FT8, CW and SSB on all bands from 3.5 to 28MHz.

The 6O3T DXpedition from Somaliland, a *de jure* part of Somalia, that was scheduled for October was cancelled. A Facebook post on 22 September stated that *"The whole team is in good health, although mentally very stressed by the definitely traumatic experience that happened to us..."* The team has produced a seven-page document describing what went wrong, which can be downloaded from:
https://tinyurl.com/57d7ume3

The Rebel DX Group started operations from Rotuma on 2 October. Activity as 3D2V on FT8 / FT4 and 3D22 (that's 3D-twenty-two) on SSB and CW was scheduled for 3 to 4 weeks on all bands, but stormy weather forced an early close down.

From Fernando de Noronha, a team of five experienced contesters and DXpeditioners started activity as PX0FF on 5 October. They had made over 60,000 QSOs in the first five days and were scheduled to continue until 21 October.

Finally, as this column was going to press, 14 experienced German operators started activity as C21MM from Nauru in the central Pacific. Most members of the team were on the very successful P29RO (Papua New Guinea) and T2C (Tuvalu) DXpeditions in 2022 and 2023 respectively. Activity is scheduled on all bands using CW, SSB, FT8 and RTTY.
c21mm.mydx.de

What to look for in November–December

The Dateline DX Association (DDXA) has announced a major DXpedition to Sao Tome and Principe. S9Z should be on the air from 11 to 20 November, with 16 operators on all bands and modes. Just a few of the well-known operators include CT1EEB, I8NHJ/N5NHJ, K3VN, K0IR, KH7U (**Fig. 8**), N2WB, N4XP, N6MZ and W3WL.

s9z.org

A reminder that EA3NT, EI5GM, EI9FBB, MM0NDX and MM0OKG will operate from the Gambia for five days from 25 November. On 27 and 28 November they plan to operate as C5I from the Bijol Islands (IOTA AF-060); the remainder of the time they will be active as C5T from the mainland.

dx-world.net/c5t-c5i-the-gambia

Look for 8R1TM, operated by PY1SAD from Georgetown, Guyana, from October until 24 November. This activity will be on all bands and on SSB, CW and digi-modes.

The Pacific Islands DXpedition Group (PIDXG) will operate as 3D2Y from Rotuma between 15 November and 4 December. There will be six operators (including **Jamie M0SDV, Fig. 10**) on the island, plus two 'NexGenRiBs' operated remotely over the Internet by a team of young operators from all over the world.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Readers' news

Owen Williams G0PHY said that *"The main focus of activity this month was the Oceania SSB contest. The major X-class flare that took place just before the contest weekend did not seem to have much effect here. A goodly number of VK2s, 3s and 4s were worked together with a VK7 and three ZLs. The high point was working ZL/VE6TC and finding out later that he was on Stewart Island and thus I gained a new IOTA. All these were on 14MHz but VK9DX on Norfolk Island was very loud on 28MHz on the Saturday afternoon of the contest* [5 October – ***Ed***]. *Unfortunately, my 28MHz dipole was broken so I couldn't make a full-throttled attempt at getting him. The repair only took about 10 minutes and when I tried it out yesterday I managed to get PX0FF in the log for a new band slot. The contest QSOs were made using the amplifier and running about 500 watts."*

Carl Mason GW0VSW reckoned that *"Band conditions at the moment here are either very good or very poor. I did manage to operate a little more this month and did put my log into the CDXC HF challenge for September. I was never going to be competitive against the towers, beams and linear amps but I enjoyed the challenge with QRP and was pleased with my results running just 5W or less making 260 QSOs in total on 15, 12, 10 and 6m, with 58 countries in total (MGM 53* [i.e. datamodes – ***Ed***]*, CW 19 and SSB 11. I used the inverted G5RV, indoor loop and Sirio Tornado vertical (on HF as well as 6m) throughout the month."*

Tim Kirby GW4VXE also found that conditions were up and down: *"The bands are definitely more lively now. I had forgotten quite how variable conditions can be at the top of the solar cycle – you get some great days but you get some poor ones too! The California QSO party was quite good fun, especially finding 10m open into the west coast well after dark. Happy to get PX0FF and C21MM into the log for two ATNOs"* [All Time New Ones – ***Ed***].

Our resident Belgian castles activator, **Etienne Vrebos OS8D** (**Fig. 11**), has added a couple of new strings to his bow: *"After activating castles, I now activate bunkers and parks (POTA), which mostly join ONFF* [Belgian flora and fauna counters – ***Ed***]. *I feel great being at the 'good' side of the antenna, I'm the activator and like the pile-ups as I always activate ATNOs. I'm sure I found my way in the hobby: being outside or in the car when too bad weather, putting up my dipole in the most difficult places, especially in towns. It gives adrenaline all the time, but trying to explain to outsiders or even police men/women – that's the most difficult part. It seems to them I'm from outer earth!"* Etienne wrote a few days after the massive X9 solar flare and commented that there had been *"ups and downs in space weather, today horrible: I wanted to activate some castles, parks and WWFF, but 40m is totally dead this morning."*

In September **Carl Gorse 2E0HPI** had a holiday in Blackpool, during which he met up with local QRP operator **Michael 2E0MKH**. Carl was very lucky with the weather, with temperatures of 21°C the whole week and although there were a few solar storms he still enjoyed his operation. Carl activated several Parks on the Air locations along the Lancashire coastal route, **Fig. 9**, using a Yaesu FT-857 at 100W on SSB and a Xiegu G9 at 20W on datamodes to a 'Mad Dog' coil vertical antenna.

Jim Bovill PA3FDR found conditions much better this month: *"After several months of poor propagation in the 10 and 12m bands things showed signs of improvement this month. For the first half of the month I experienced good openings to the Far East and Oceania with QSOs to Japan, China, Australia and New Zealand. During the second half North and South America became more active and for the first time in several months I managed a few contacts in the western USA (W7FN, Washington State; N6YJ, California) and Canada (VE7SV, British Columbia; VE4YH, Manitoba). Hopefully propagation will continue to improve for the coming months."*

28MHz beacons

Neil Clarke G0CAS reports on the 28MHz beacons logged during the month of September. This month, Neil's emphasis was on world-wide 28MHz beacons, rather than those beacons heard during the summer Sporadic E season. Firstly, looking at North America, beacons in US call area 4 were heard on 20 days and those from the W5 area on 17 days, while beacons in the W6 call area (California) were logged on 7 days. Beacons were heard from every W call area during September, though not on the same day. Up in Canada, the most heard beacon was VA3KAH 28168,

Fig. 6: The 11 October aurora as seen in Exmouth, on the south coast (*Nick Ward*).
Fig. 7: Pista Gaspar HA5AO has been activating Zimbabwe, Zambia and Botswana.
Fig. 8: Kimo Chun KH7U, one of the 16 operators at S9Z on Sao Tome and Principe.
Fig. 9: Location of 2E0HPI/P on the Lancashire coast near Blackpool.
Fig. 10: Jamie Williams M0SDV will be active from Rotuma in November/December.
Fig. 11: Etienne OS8D/P, now activating Belgian bunkers and parks as well as castles.

on 9 days. In South America, LU2DT 28193 was heard every day, while PY4MAB 28270 was logged on 26 days. VK8VF 28268 from Australia was logged on 13 days with ZL3TEN 28278 in New Zealand on 6 days. 5B4CY 28219 in Cyprus was heard on 26 days and YM7TEN 28225 in Turkey was heard on 19 days. Within Europe, occasional Sporadic E openings took place with OE3XAC 28188, which was the most logged beacon via that mode of propagation, heard on 7 days: several beacons normally heard via that mode were absent throughout the month.

Band highlights

Key: Q = <20W, M = 20 – 100W, H = >100W, S = Single-element antenna, B = Beam.

Owen G0PHY (HS): 14MHz SSB: N1ATV, VJ2W, VK2BY, VK7C, VL3E, VL4A, ZL2UO, ZL/VE6TC, ZM1A. **28MHz SSB:** PX0FF.

Carl GW0VSW (QS): 1.8MHz FT8: EB2AM, HB9CXZ. **3.5MHz FT8:** 4L4DX, TF3VS. **21MHz SSB:** FY5KE. **21MHz CW:** WA2OAX. **21MHz FT4:** N8LPQ. **24MHz SSB:** R5EK. **24MHz CW:** FY5KE. **24MHz FT4:** A61DD, YB3CUG. **28MHz SSB:** P3CR. **28MHz FT4:** A65MR, CX8DS, PP5CF.

Tim GW4VXE (HS): 10MHz FT8: HK4L, PY2ATI. **18MHz FT8:** C21MM, PX0FF. And, operating as **GW4MM (HS): 7MHz CW:** VK2BJ, WP4TZ. **10MHz CW:** FY5KE, PY5ZW. **14MHz CW:** V26K, VK2GR, VK3DBD, VK7BO, VL2G. **18MHz CW:** VK2BJ, XQ6CF. **21MHz CW:** PX0FF, V26K. **24MHz CW:** CO8LY, DS1TUW, FY5KE, HL5KY, V26K, VK2GR. **28MHz CW:** 7X4AN, CX5FK, TI5/N3KS, V26K, various W6, ZA1RR.

Etienne OS8D (HB): 14MHz SSB: HI8R, T32AZ, WH7T, ZG2KX, ZL/VE6TC. **18MHz SSB:** VK7MD/M. **21MHz SSB:** 7E4M, 7M4BEN, 9N7AA, 9W8ZZK, BG0DLA, BY1RX, E2A, EX9A, many JA stations, RZ0L, V85RH, VU2MZT, WH7T. **24MHz SSB:** 5H1WX, FG4AM, KH0/KC0W, XW4KV. **28MHz SSB:** 3D2AG, 4K6FO, 4L4NW, 9M2M, BY0AC, CX8TC, DS1TVW, EK1ET/P, FG5GP, HS0ZPX, JJ2JQF, JY5FA, LU4DJB, S01WS, many UN/UP stations, PY2UD, TI8/N7ZG, TU/TA2YGT, VI7POL, VK5IR, YC0IRH.

Carl 2E0HPI/P (MS): 14MHz SSB: K7RKT, VI7POL, VK3EY, VK4NH, ZL4NVW, VE9CZ. **14MHz FT4:** VK1AO. **18MHz SSB:** NI1Q, VE3CRG, VY2NX, ZS6KBS. **21MHz FT4:** J88IH, PY4PTO, W4USF.

Jim PA3FDR (MS): 10MHz FT8: UA0SU, UN7FU. **14MHz FT4:** DU3JH, JA0LFV, JA5MHD, N8HRZ, R9AV. **14MHz FT8:** BD8CBX, FG5FI, RA0QK/8, UN7LAX. **18MHz FT4:** JA4FKX, JR6IQI. **18MHz FT8:** AA9RR, BD2RJ, JA7QOA, JN1XVA, RW9AD, TA4SSK, UN7ID, VE3DZ, VK2SG, ZL1BQD. **21MHz FT4:** AC9GK, R8CCF. **21MHz FT8:** BG2EFX, HZ1TT, JA2HGF, JE5DWU, JT1CO, JY5IB, N6YJ, UA9SY, VK3NFS, VK7AC. **24MHz FT4:** HL2UOK, JA1DMX. **24MHz FT8:** 7Z94ND, BV2NF, JE6QQN, JQ3IRK, N6YJ, PU2NSA, TA4EGI, VK3AUX, VE4YH, VU2NKS. **28MHz FT4:** HL2ZN, JA1FON, JA4NUE, JH0MXV, KB4XT, TA4RC, VE7SV. **28MHz FT8:** 7Z94ND, A41MI, CO2QU, JJ1LBJ, R9CA, TA3NE, W7FN.

Signing off

Thanks to all contributors. Please send all input for this column to teleniuslowe@gmail.com by the 11th of each month. For the February issue the deadline is 11 December. Photos of your station, antennas or you in the shack are always welcome. 73, Steve G4JVG. **PW**

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Joe Chester M1MWD
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The RSGB Convention 2024

Editor **Don G3XTT** and **Joe Chester M1MWD** give their impressions of this year's RSGB Convention.

As always (well, I did miss one, when I was on the other side of the world!), I made sure I was at the RSGB Convention in October – my 'must attend' event of the year. Not that I get to many of the lectures as, for me, it's an opportunity to catch up with friends and acquaintances, including of course many *PW* readers and contributors.

Once again, the event was at Kents Hill Conference Centre in Milton Keynes although there were some changes to the booking system and the format this year. For example, registration was at the entrance to the Convention area, not in the foyer. Apparently, this was at the venue's specific request but unfortunately it led to long queues at the registration desk. Something for the organisers to think hard about for next year, I guess.

There were the usual trade stalls – sponsor Martin Lynch and Sons, plus Icom and Yaesu as well, of course, as the RSGB bookstall. Coffee and biscuits on tap. The various clubs with their usual stands, including this year the team organising WRTC 26 (World Radio Teamsport Championship – at his presentation **Andy G4PIQ** revealed that the event will be centred on the Wyboston Lakes facility in Cambridgeshire, with operating locations at farms, Scout campsites and the like across East Anglia).

Apparently, the Martin Lynch Friday evening buffet went well although I was out at a local restaurant with friends. The Saturday dinner too – I gather that the guest speaker proved to be entertaining and, for once for mass catering, the food was half-decent!

I only attended two lectures, the first because I was the speaker! I had been invited to talk about *'92 years of Practical Wireless'*, an invitation I could hardly refuse. It was good to have an attentive audience and for a few afterwards to tell me how they had come into their careers through reading the magazine. The other talk was one I was asked to introduce – **Noel Matthews G8GTZ** giving an overview of how to receive live TV from the International Space Station. I was particularly interested because, just a few weeks previously, my son had taken me as a birthday treat to a talk by British astronaut **Tim Peake** (who, I can report, is an extremely capable and entertaining speaker).

As for all the other presentations, you will have to find them in the fullness of time on the RSGB YouTube channel. One of the lecture rooms was live-streamed during the Convention and during the breaks the Live Stream found its way elsewhere in the Convention – for example, I was interviewed both on the subject of *PW* and in my role as President of CDXC (the UK DX Foundation).

As well as the talks there were the usual other sessions such as a chance to question the RSGB Board, a microcontroller programming workshop, trophy presentations and the raffle in aid of the RSGB DXpedition fund.

All in all, yet another great weekend.

From Joe M1MWD

Wonderful! Amazing! I was somewhat delighted to be 'volunteered' by a 'friend' to speak at the Convention this year. Well, delighted might be the wrong word but hey-ho. On arrival, I found my old friend Flossie (the Camb Hams mobile shack) at the front door, racking up QSOs at a rate befitting a team of avid contesters. But no time to chat, as there was a very long queue at registration. One of the duty volunteers, after checking my name on the speakers' list, ushered me forward, where **Martin G0GMB**, the RSGB's everywhere man, was attempting to quell the evident chaos. He handed me my lanyard, and I set off for Lecture Room No1. Hey-Ho Silver Lining!

Rafal EI6LA was the keynote speaker, after the official opening by RSGB President **John GI4BWM**. And immediately the organisers' plan to pack as much as possible into three streams over two days showed its ugly side. I pitied Rafal, standing ready to speak as he watched at least half the audience walk out to go to the other streams. Shame really, because Rafal had much of interest to say about HAREC, and the opportunities this presents for the reform of the training and examination system. He also had much of interest to say about the situation in other countries (I think I heard him say that in Norway radio amateurs go to the Driving Licence Centre to apply for a radio licence).

As you all know, I too have an EI callsign; in fact, I once lived a mile down the road from his current QTH. Chatting in the rather narrow corridor afterwards he told me something which could either be gratifying or terrifying, depending on your interest in radio. We were talking about what attracted new recruits to the hobby. He told me that young people in particular, were drawn in by two things. The first is CW. The second is contesting (they all love video games, he said). What that means for the bands in future I don't know.

Graham G4FSG, a former Board Chairman, joined us, leaning against the wall. He seemed to think that Ofcom would be more than happy if amateur radio ceased to exist, as we are a cost to them without a significant income stream in compensation. Food for thought there too. There was just a vast amount of ideas floating almost in the air at the Convention!

I had a wander around the stands for the special interest groups. **Barry G4SJH**, the RSGB's Microwave Manager, and I had a long chat about whether a UK microwave network, similar to the one in Germany called Hamnet, would be of use or interest in the UK. In case you are unaware of this, Hamnet is essentially a development or replacement even for the old packet radio network, operated via microwave links on amateur frequencies in the GHz range. These days Hamnet is of course a multimedia system, carrying IP voice as well as data. More food for thought?

Then it was time for the RSGB Board session.

Photo 1: Some fascinating gear on show from the Bunkers on the Air team. Photo 2: April Jones M7APR delivered an excellent talk on Parks on the Air (POTA) and updated those present on some of the current criteria for a park to qualify for POTA. Photo 3: Nigel Limb M7FFU gave a moving talk describing his partial loss of sight following a motorcycle accident and how he subsequently discovered amateur radio and passed his Foundation exam. Photo 4: John G3WGV and Allan GM4ZUK check out the new Icom IC-7760. Photo 5: Noel G8GTZ manning the British Amateur TV Club stand. Photo 6: Victor G3JNB (91 years young!) and Steve G4JVG.

Updates aplenty on the current Board Strategy, and then questions, one of which produced a very interesting piece of information. In reply to a question about what the Board was doing to increase awareness among the general public about radio and its uses today, **Heather**, the RSGB's Communications Manager replied. She said that the media watch company, which the RSGB employs to monitor all media references to the RSGB and to amateur radio, reported that in the last year 588 such mentions were reported. *"Which means"*, she said, *"that potentially a billion people would have seen or heard these mentions"*. Well now, make what you will or that. But, fantastical as it seems, it means the one out of every eight people on Planet Earth living today was exposed to one of 588 references. Each one worth in excess of 170,000 people, including men, women and children, on every continent. Yes, I did check with her afterwards that I recorded correctly the numbers she quoted.

More radio stuff then? I put my head into **Don G3BJ's** talk about the early days - fascinating that before country identifiers were added to callsigns there might have been dozens of AA2 callsigns scattered everywhere. A nightmare for DXCC chasers! I then slipped in to hear **Frank W3LPL**, appearing courtesy of Zoom, talking about the current Solar Cycle. I think that for me this was the most interesting slide I saw that day. It was from the Marshall Space Flight Center, and showed their best current predictions of solar activity in the next few years. The scary take away? We may be at increased risk of major disruptions to HF propagation, like the blackout of a few days previously, for up to another five years. Wow!

I missed the other **Don G3XTT's** presentation, and was told in the pub later that I missed an absolute gem! The reason? My friend and best man **Nigel The Guru G4RWI** was Demystifying DMR at the same time. Or was is Demisting? Not sure, but he got a well-deserved round of applause for his efforts. My own take away? That the audio bandwith used by the DMR protocol is the main issue with poor audio quality on DMR handsets.

And that was Day One for me. So much more available than any one human can attend. Further information will have to await the online video sessions when they become available. Sitting with friends slurping coffee in the restaurant the following day (after my own small contribution), I was asked if I would attend again next year. I said yes, but only on condition that the charming couple in the front row at my talk are there to continue a fascinating chat we had. You know who you are, and I will be listening out, on 7130 or thereabouts for your callsigns! Enough.

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RSGB 2024 Convention livestream recordings

Saturday:
https://tinyurl.com/3yj7t95j
Sunday:
https://tinyurl.com/3ubw56vu

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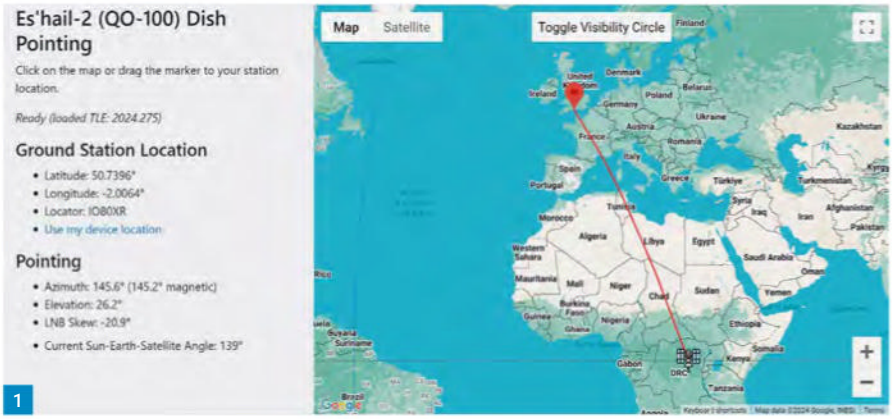


Various

Colin Redwood G6MXL looks briefly at the QO-100 satellite before passing on a few more general hints and tips.

It's some time since I last looked at satellites. Quite a lot has happened in the meantime. Probably the most noticeable event has been the arrival of QO-100 (also known as Es'hail-2) on the satellite scene. Nearly all amateur radio satellites orbit the earth. They require a means to predict when they will be above the horizon at your location. The pass duration will typically be under ten minutes, although some are much longer.

Unlike the orbiting satellites, QO-100 is in geostationary orbit. This means that the satellite stays in the same place in the sky all the time – above the Democratic Republic of Congo on the Equator. This has the big advantage of not needing to predict when the next pass above the horizon will be visible – so no need for prediction software, no rush to make a QSO or two during a pass and no need to be able to rotate the antenna both horizontally (azimuth) and vertically (elevation) – a fixed antenna is sufficient.

Before embarking on a QO-100 project, you'll need to establish whether you can 'see' the satellite from where you propose to place the antenna (most likely a dish) at your particular location. If you can 'see it', then, assuming no local changes that might obstruct the view such as vegetation growth, washing on the washing line, you'll always be able to see it, and make QSOs all the time. To check that you can 'see' the satellite, you'll need to know the azimuth or bearing (from North) and the angle (elevation) above the horizon the satellite will be. Within the British Isles, the azimuth will be between about 135° and 150° (true). The elevation above the horizon will be between about 18° in the very north of Scotland and 28° in southeast England, **Fig. 1**. I'd suggest using a compass and a protractor to help eliminate guesswork, particularly if your location is marginal. You can check the correct values for your location, **Fig. 2**, by visiting:
https://eshail.batc.org.uk/point

If you cannot find a place to set up your antenna on a permanent basis pointed at the satellite, you'll need to re-think your plans and find an alternative location from the one you had in mind. When I came to consider the feasibility of establishing a QO-100 ground station in my back garden, I was concerned that wherever I might locate the antenna, my house or the neighbour's house or the boundary fence would block the line-of-sight path to the QO-100 satellite.

There are a few alternatives that I could consider.

1. I could raise the antenna system to get a view above the roof-line – possibly by mounting the antenna on the house or roof.
2. I could install the antenna system in the front garden instead of the back garden.
3. I could consider a portable QO-100 station and operate away from home from somewhere that has a line-of-site path to the satellite.

At present, I've yet to make up my mind which approach to take. It's a project I'll consider tackling once the sunspot cycle is well past its maximum.

Frequencies

The QO-100 satellite uses the 2.4GHz and 10GHz microwave bands. You transmit to the satellite on 2.4GHz and receive it on 10GHz. You can have a listen to QSOs on QO-100 over the internet by connecting to a receiver at Goonhilly Down in Cornwall. As soon as I clicked on the link, I could see a couple of QSOs in progress, then 'Click to Start Sound' button I could hear QSOs when I tuned in, **Fig. 3**. I think this is a really useful facility as it gives a good feel for the nature of the QSOs that take place before investing in the equipment.
https://eshail.batc.org.uk/nb

If the thought of constructing a two-band microwave station using surface mount devices makes you immediately dismiss the thought of getting on QO-100, I'd like to suggest some further consideration. A complete station can be set up simply by connecting a number of pre-made modules, so there's no component level construction involved!

HF bands

I thought it might be timely to remind newcomers to the hobby of the 11-year sunspot cycle. It is generally agreed that we are somewhere around the peak of the current cycle, meaning that there are lots of sunspots on the sun. This is resulting in enhanced ionisation of the various layers (the F layers in particular) so that they refract signals back to earth rather than letting them escape out to space, giving amateurs the opportunity to make contacts over longer distances than when we get to the sunspot minimum in five or six years-time.

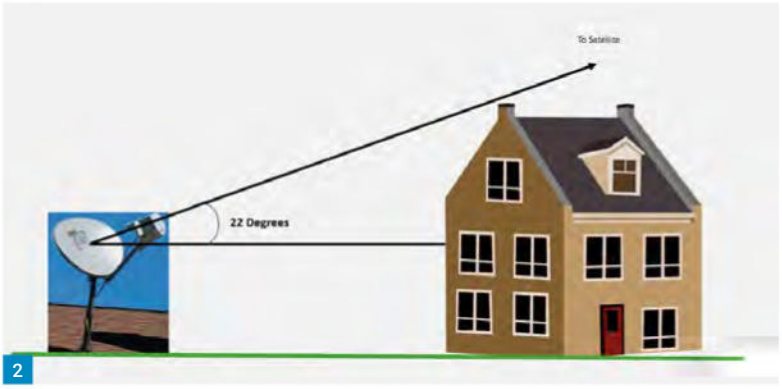
If you have yet to operate on the HF bands, then you could be in for a pleasant surprise. Even low power into a wire antenna such as a dipole, G5RV or long-wire should enable contacts within Europe and well beyond. Feel free to choose your mode; SSB, CW or data should all give good results.

There are occasions when solar flares erupt from the sun, which can cause poor propagation for a few hours or even a day or two. If you visit **Paul Hermann's** website, you can see a propagation forecast. I've found that the HF conditions table, **Fig. 4**, is a useful guide to which bands are likely to be open (good propagation) and which are likely to be closed (poor propagation). They can also be found on numerous amateur radio websites, including QRZ.COM:
www.hamqsl.com/solar.html
www.qrz.com/

If you find a band is so full of signals that you can't find a clear frequency, it might be a good idea to try a nearby WARC band (30m, 17m or 12m), remembering that the 30m band is for CW and data only. If you can find a clear frequency, then it is often a good idea to call *"CQ"*. You could get a very pleasant surprise when a DX (far-away) station returns to your call. If you enjoy using FT8, then FT4 can be a good alternative when the bands are really busy. Personally, I'm focusing any free time in the shack on working DX on the HF bands, as I know that in a few years, the HF bands won't support such good propagation. Work the DX while the sun has spots!

Which band?

It can sometimes be difficult to choose which band to operate on. As a very simple rule of thumb, on the LF/HF bands I find that opting for the highest frequency band that is open is a good choice. In fact, I find this tactic is not a bad approach on the VHF/UHF/SHF bands either.



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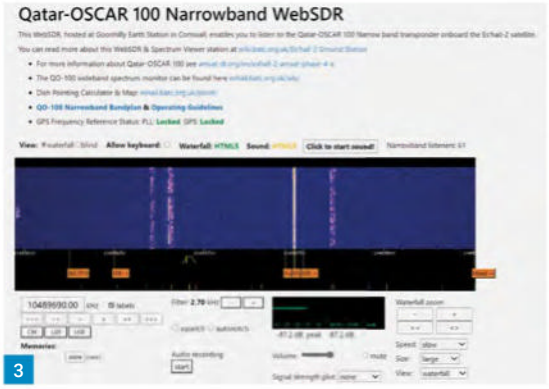

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Fig. 1: The useful antenna pointing information for the author's location in IO80XR.
Fig. 2: Measuring the azimuth – not to scale.
Fig. 3: The web SDR presentation.
Fig. 4: Paul L Hermann's Solar-Terrestrial data and Calculated Conditions can be found on numerous websites and in a variety of formats.
Fig. 5: Some feeders. Notice how the colour-coded one with cable ties is clearly recognisable.

Hints & tips

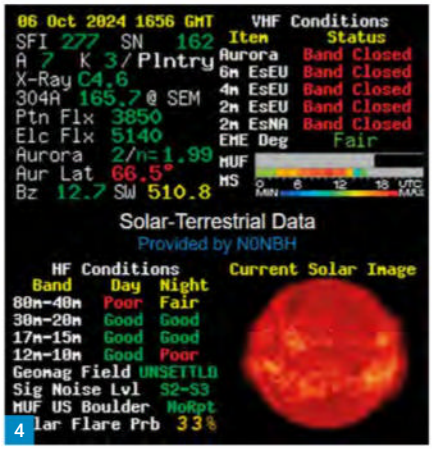
I've recently been on a small holiday-style DXpedition to Lanzarote. I thought I would pass on a few hints and tips based on my experiences as they are not specifically linked to DXpeditions.

FT8/FT4time

With these data modes, I think it is generally well known that time synchronisation is important. The station at one end of the QSO must switch to receive within a second or so of the other station starting to transmit, otherwise they will partially double, and vital QSO data will be missed. I found that for the first day or two of my stay, my laptop stayed sufficiently synchronised based on a synchronisation I did before leaving home. However, by the third day the time had drifted close to two seconds out, and it was clear that I was not seeing all the QSOs in progress and I needed to re-synchronise the time. Using the Wi-Fi in the rented property, I couldn't get my laptop to synchronise with any of the popular time servers. I was wondering if I might have to try manually changing the time in the hope of hitting on a satisfactory synchronisation. Then I had the idea of using my mobile phone as a data hotspot, connecting my laptop via Wi-Fi to my phone, which was connected over the local 4G phone network. A very satisfactory synchronisation was achieved with this approach. It's certainly something I will remember for the future if I can't synchronise via Wi-Fi for whatever reason. For those readers unfamiliar with FT8/FT4, the only occasion you need to connect to the internet to operate these modes is an occasional time synchronisation.

Labelling feeders

I bought an antenna, complete with feeder, from a Silent Key sale a year or two ago. The late amateur had thoughtfully labelled the feeder with a couple of small coloured cable ties, making the feeder instantly identifiable, **Fig. 5**. I found this very helpful in identifying the particular feeder from the feeder on other antennas.



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Choice of bands

I had originally planned on operating at least part of the time on 20m. However, when I put my inverted-V dipole up, I was very disappointed with the results in comparison with 15m and other shorter wavelength bands. When I looked at the setup, I soon realised that the much of the longer 20m antenna was below the height of the roof, thereby blocking signals from the East, North and West. While I could potentially have moved the antenna to the rear of the property, it really wasn't feasible due to the lack of opening windows or doors on the North side of the property.

Computer mouse EMC

I found that on some bands, my external computer mouse connected via a USB port into my laptop was susceptible to RF and would just lock with a Windows error message regarding the USB port. Unplugging the mouse and plugging it back in restored normal operation until the next over. I'm going to investigate this further. I've a feeling that there may have been RF coming off the feeder as there was no balun at the feedpoint for the antenna I was using. It was fine using a different antenna with a balun at the feedpoint. I'm also going to look at either putting a choke in the mouse lead, or perhaps buying a mouse with a built-in ferrite bead.


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Converting ADIF Files

Most computer logging programs can export an adi format file, which can be used to upload to the likes of Logbook of the World (LoTW), Clublog, eQSL and QRZ.COM. If you want to analyse your log, I've come across a useful utility program that will read an adi file and produce a .csv file that can be imported into popular spreadsheet programs such as Excel. The program, written by **Jim Reisert W1JR**, is very sensibly called 'ADIF to CSV' and can handle .adi files containing all the usual fields and many more. It creates a new column for each field it finds in the adi file. I found it useful to analyse my WSJT-X log to get a breakdown of contacts by band and mode during my recent operation from EA8. 'ADIF to CSV' can be found at: **https://ad1c.us/software/ADIF_to_CSV/index.html**

Future topics

I'd welcome reader's suggestions for topics to be covered in future *What Next* columns. An email to the editor at the email address at the top of this column will be forwarded to me. Please include *What Next* in the subject. **PW**

More AN-SOF and CFR

Keith Rawlings G4MIU starts with more on AN-SOF before diving into the design of antennas suitable for the airband.

Keith Rawlings G4MIU
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I am pleased to kick off this month's column with news of another AN-SOF Antenna Simulator update. Version 9.5 has now been released with a number of useful new features, quoting the press release:

Simplified Polarization Analysis: All radiation pattern metrics—power density, directivity, gain, etc.—are now easily decomposed into Vertical (VP), Horizontal (HP), Right-Handed (RHCP), and Left-Handed (LHCP) components.

A new toolbar on all graphs lets you quickly toggle between these polarisation components, making analysis more intuitive than ever.

Enhanced Geometry Input: Helix Primitive Updates: Design axial mode helices and QHAs (Quadrifilar Helical Antennas) more easily by entering values for Diameter, Pitch Angle, and Wire Length.

New 'GB' Command: Import and export wire arcs using this command, which is more versatile than the traditional 'GA' command and simplifies the modelling of curved structures. The benefit of this is no more complex coordinate transformations!

Users will find it is perfect for advanced antenna designs, like those in our Omni Double Bi-Quad post for 2.4 GHz that can be found here:
https://tinyurl.com/yn3r62kz

Improved Wire Recognition: Wire numbers from the 'Tabular Input' window are now shown directly on the workspace, making editing faster and more intuitive for former NEC users:
https://tinyurl.com/mtkuxrnc

Advanced Editing Options: With enhanced 'Scale Wires' and 'Copy Wires' commands, you can easily stretch, compress, or duplicate wire groups. These features simplify the creation of designs like LPDAs and circular arrays.

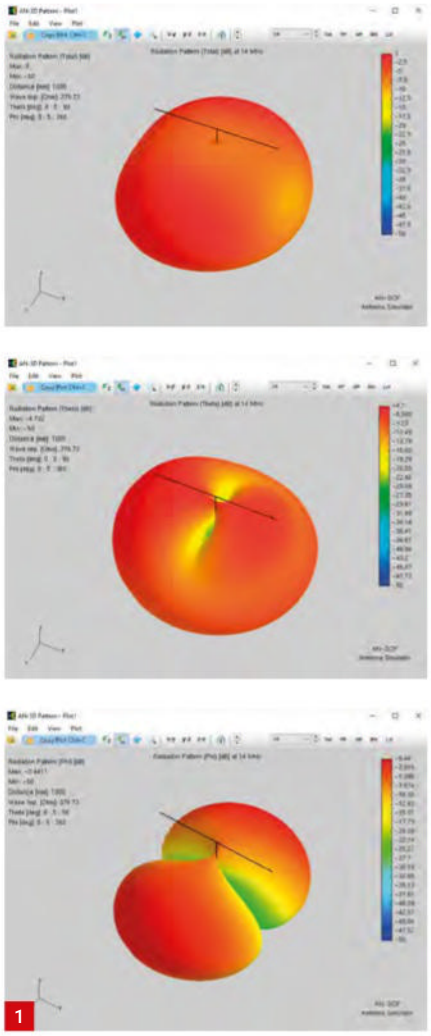
New Features for EMF Compliance Calculations

Power Density Calculations: Power density is now calculated in the near-field region, displayed in both 2D and 3D, helping to determine exclusion zones around antenna installations. (Stay tuned for a complete tutorial on this feature coming soon.)

Time-Averaged Power Settings: In the Tuner tab, you can now set Transmit Mode, Duty Cycle, and Time Transmitting parameters, allowing for more accurate calculations of EIRP, E-field, H-field, and power density. These settings help ensure compliance with exposure regulations.
https://tinyurl.com/yc57ffwc

With this update it is now easier to enter and modify designs and the new features added for EMF compliance calculations should make it a lot easier to determine an antennas EMF compliance, very useful for those antenna types that are not included within compliance calculators.

The new ability to separate patterns in the Far Field Polar and 3D plots by toggling between the Total Field, Vertical (VP), Horizontal (HP), Right-Handed (RHCP), and Left-Handed (LHCP) views provides the user with a separate visualisation of each polarisation in each pattern.



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I have been able to put this latter feature to use by modelling the G2HCG CFR antenna from last month. If you remember, this antenna is a dipole where the feeder section is allowed to radiate resulting in an omni directional radiation pattern.

Fig. 1 demonstrates, at the top, the usual combined radiation pattern of the antenna and below this the new separate radiation patterns of the vertical and horizontal component.

It can be seen at centre in this simulation that the vertical component is not expected to be fully omnidirectional with the pattern being slightly distorted by the horizontal element; also, it seems the horizontal component is slightly distorted by the vertical section as demonstrated at the bottom of the image. I have not modelled the main non-radiating feeder and balun in this model but it does demonstrate this new feature.
https://tinyurl.com/2s398bra

Last month's topic continued

In the last issue I covered the subject of Common Mode Current and discussed that while it can be a nuisance it can also be used to good effect, such as with the above mentioned G2HCG dipole.

Just to re-cap, Controlled Feeder Radiation antennas use the feeder, coaxial cable in the case of the antennas mentioned last month, to deliberately radiate as part of the antenna system. The radiation along the feeder is controlled by the use of a choke, which isolates the wanted radiating part from the main feeder section thereby stopping unwanted currents on the outside of the coax from reaching the equipment in use.

One popular V/UHF vertical antenna that behaves in this way is now colloquially known as a 'Flowerpot Antenna', termed I believe by VK2ZOI and has been described as *"a stealth antenna that can be hidden in a plant pot and covered with leaves and plastic flowers"*.

While the latter is true it may also be used as a non-stealth type of antenna and mounted on a support in much the same manner as any vertical antenna. Being a half-wave it does not require any radials and will provide omnidirectional radiation at a low angle of radiation. Generally, they are housed in a length of plastic tube, such as PVC waste pipe. The radiating element is formed using coaxial cable throughout. The outer shield is stripped back to form the top part of the radiator and is a quarter wave long, the coax outer then forms the bottom λ/4 section (forming what has been described as an end-fed λ/2 dipole)

The coaxial cable then leaves the inside of the pipe and is wrapped around the outside to form the choke before it re-enters the tube. The number of turns of this choke will depend on the diameter of the tube and the frequency involved. That said it is possible to build an 'open' flowerpot with just a choke on a former and without a tube, which may be an easier design if the antenna is to be mounted say in an attic or somewhere out of the weather. The ideas for the particular flowerpots described here were spurred on by reader **Peter** who has been using one for civil airband and also another covering the military airband.

I will describe two 'versions' of the antenna, this month will be based on the dimensions calculated by this website:
https://tinyurl.com/yz9r2czr


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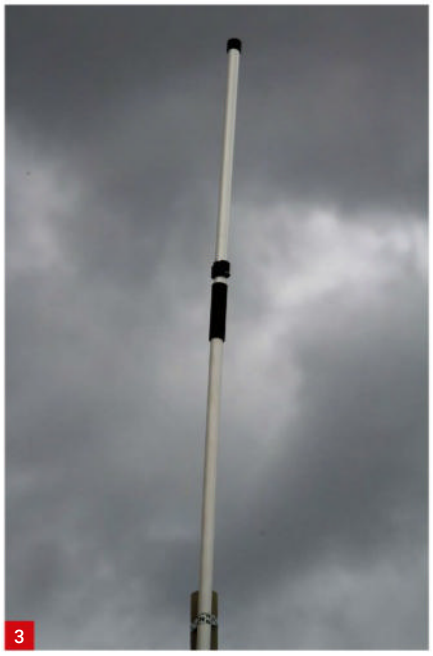
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Fig. 1: New AN-SOF Plots. Fig. 2: Mil Air flowerpot. Fig. 3: Enclosed Mil air flowerpot. Fig. 4: Close up of RG174 constructed Mil air flowerpot. Fig. 5: 25mm former for VHF choke. Fig. 5a: Enclosed Civil air flowerpot. Fig. 6: VSWR plot of Mil air variant. Fig. 7: VSWR plot of Civil air variant.

with the other, next month, being based on the techniques described by **Mike Parkin G0JMI** in the February 2019 and March 2019 *RadCom*.

The antennas are very easy to make and I will stick my neck out and say that for airband reception the dimensions are not too critical and constructors may find that no further adjustment will be needed with a design based on the centre of the band.

Airband from the web-based design

The flowerpot element consists of three sections: the plain wire top section, the radiating coaxial cable section and the choke, so I will call these sections the top section, bottom section and choke.

I will take the airbands as being 118-137MHz and 230-390MHz with centre frequencies of 127.5 and 305MHz (I know this later frequency should be 310MHz but 305MHz is close to a frequency of interest to me).

Access the web design page listed above and enter the wanted frequency in the box 'Working Frequency'. If you are using RG58 cable, then leave the other two boxes as they are.

Click on 'Calculate' and the dimensions for the antenna are displayed (in cm). Note that the calculator will give the overall length of cable needed for the choke with the number of turns determined by the diameter of the tube being used. Also, the page gives details on the construction of the antenna and readers are referred to this for construction details.

Airband dimensions from the web calculator:
Mil Air-Target Frequency 305MHz
- Top section 222.5mm
- Bottom Section 217.5mm
- Choke 350mm.

Civilian Air Target Frequency 127.5MHz
- Top Section 525mm
- Bottom Section 513.3mm
- Choke 838.5mm

So, constructors will need to work out the total length of coax needed for the element and choke. For the antennas described here I then added an additional length of cable after the choke to take a connector, some may wish to just use a single length of coax that runs back to the radio; the choice is yours. To save coaxial cable an ordinary piece of wire may be used for the top section and this is what I have done.

As I used a separate wire for the top section, I measured the length of coax required for the bottom section and marked the end of that section where the choke starts with some insulating tape. I then measured the length required for the choke and marked this section in the same way, so the choke section was marked within the two tape markers. I made four antennas, two civil airband, with one enclosed in a tube and one open and two for mil air, again one enclosed and one open.

Military

Fig. 2 shows an open design using RG58 for military air (hanging on the clothesline for photographs!) and an enclosed model on a short mast can be seen in **Fig. 3**. The enclosed antenna is housed in some 20mm electrical conduit mainly because I have a large amount of it but, to be honest, it is a bit small in diameter for winding RG58 onto. The open version had the choke wound over a short length of the conduit. For a tube with a small diameter RG174 proved to be a better proposition. See **Fig. 4**.

The lowest VSWR of both antennas varied. See at the top of **Fig. 6**. With a target of 305MHz the enclosed variant had a minimum of 1.24:1 at 300MHz. The open version measured 1.29:1 at 303.1MHz but with a wider bandwidth. As seen by the markers at the lower image it has a 3:1 bandwidth of 287.8 to 329.2, so some 40MHz. As the band is some 160MHz wide, its performance will be limited over the entire band. Incidentally I quoted a 3:1 bandwidth rather than the usual 2:1 as the antenna is intended for receiving only.

Civilian

The civil air models were made slightly differently.

I 3D-printed a 'former' for the choke that had a diameter of 25mm (the same as the original flowerpot) with a bore to take the 20mm conduit (I was determined to use that conduit!). See **Fig. 5**. The former also doubles as a joiner so that I could use another section of the conduit to support the antenna, **Fig. 5a**.

With a target frequency of 127.5 the enclosed variant had a minimum VSWR of 1.31 at 129.6MHz and the open version having the same minimum of 1.3:1 but this time at 131.2MHz. Both had a similar 3:1 bandwidth of about 14MHz, **Fig. 7**.

In the air and on the air

I had a lot more success with the civil air version. This is not surprising, however, as I live close to Stansted airport and close enough to London to hear all of the ATC traffic, volmet stations and main airways.

With the antenna mounted at just 3m it was

5

5a

consistently better when switched against my attic mounted discone, which to be fair has a longer run of coax. The band seemed very lively and I think this antenna would be a good choice for VHF airband reception.

The military version I think is restricted by the wider bandwidth of this band. As I am also on the edge of East Anglia I can easily hear military traffic on the band but the flowerpot was quite a bit down on the discone, but then a lot of this traffic heard was on frequencies outside of what I would expect the bandwidth of this variant to be.

Thoughts

In my view the VK2ZOI use of 25mm dia tube is a better choice, especially for longer antennas, as 20mm is probably too small to be suitable for mounting outside in windy weather, although 20mm conduit would be OK for the shorter mil air version.

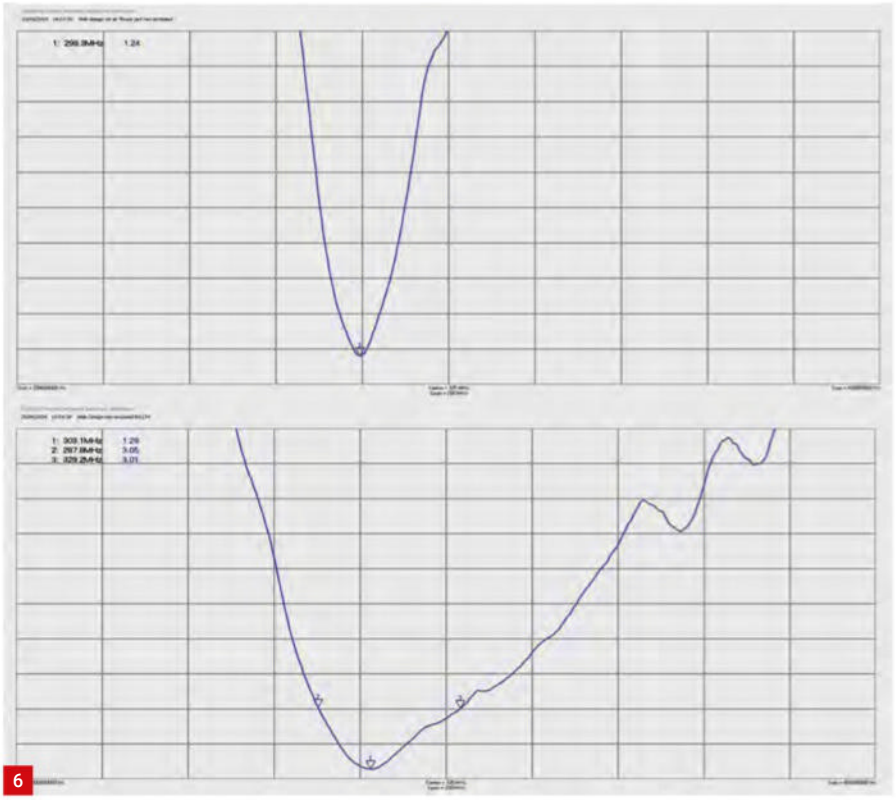
Coax cable does not like tight turns but I've never seen any comment about this regarding the winding of the choke. I experimented with using some RG174 on a VHF version and it was certainly easier to use, returning broadly similar results.

As these were very much evaluation antennas, up to now I have not used any heat sleeving to secure the choke windings but it is something I intend to do. One point to note is that, probably needless to say, dimensions are more critical as the frequency of the antenna rises.

If the antenna is enclosed in tubing/conduit, it may be advisable to check it is OK at RF. I put a small piece of the 20mm conduit in my microwave and it didn't get hot, so it's fine at 2.4GHz at least!

Next month I will conclude airband 'feeder radiation' antennas by discussing ones based on the G0JMI *RadCom* version.

Have a great Christmas! **PW**



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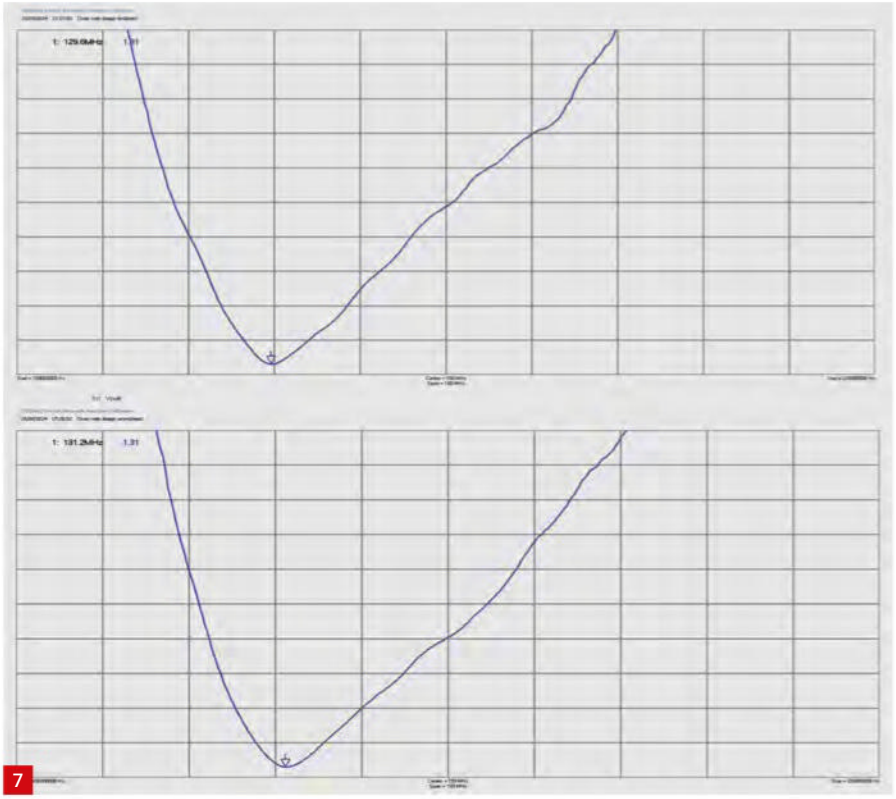

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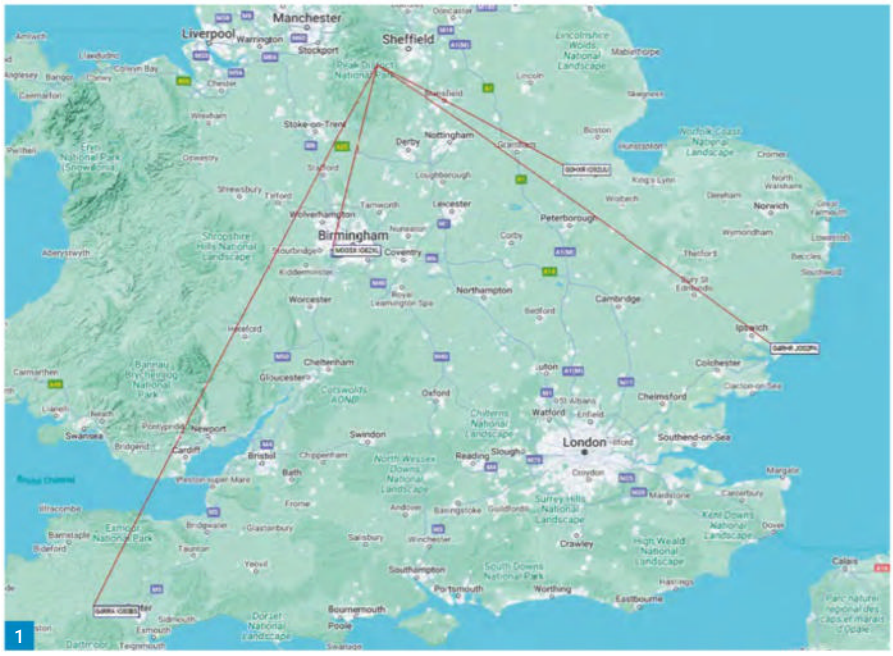
Tim Kirby GW4VXE
gw4vxe@icloud.com



Two metre Tuesdays

Tim Kirby GW4VXE has a number of reports on the 145 and 433 Alive activities.

Steve Rawlings G4ALG kindly wrote, providing a little more information about the CW activities known as 'Two Metre Tuesdays'. *"Two Metre Tuesdays take place from about 18:00 UTC each Tuesday evening around 144.050MHz. Firstly, it's important to highlight that these weekly events are not contests, but simply an opportunity to have a natter on 2m CW. These activities started in October of last year when fellow UK QRP Group member* ***Chris G3XIZ*** *posted a message on the Group's email reflector suggesting that members give 2m CW a try. The first Two Metre Tuesday was subsequently arranged for 24 October 2023. Chris G3XIZ had already made a 5-element Yagi, and I soon assembled a 6-element Yagi for use with, at the time, my only 2m rig: an ageing Icom IC-290E. Several people took part that Tuesday evening, and I had a very fine two-way QRP natter with local station* ***Tony G4WIF****.*

"From these humble beginnings, I have now had many 2m CW contacts, both from home, and when operating /P. All these contacts were made using home-made antennas, and many were made using 5 watts QRP or less. I have very much enjoyed re-discovering the 2m band and am constantly reminded that, even from a poor location, 2m is full of surprises! It's very exciting when, even under seemingly poor conditions, a distant station suddenly pops up above the noise level just long enough to have a contact.

"A list of those supporting Two Metre Tuesdays is maintained by the UK QRP Group at:
https://tinyurl.com/yz25zxwt

"It is hoped that, eventually, all UK counties will be represented on the Supporters List. Although the list is maintained by the UK QRP Group, supporters do not have to be members of the QRP Group, or be QRP operators – or even live in the UK! The UK QRP Group simply wants to help encourage more CW operation on this under-used band.

"Curiously, the 144MHz Band Plan indicates that 144.050MHz is the CW 'Centre of Activity' (CoA), rather than a Calling Frequency. As a result, 144.050MHz can become quite busy on a Tuesday evening. For this reason, those who start a QSO on the CoA are requested to QSY, once reliable communication has been established.

"I have enjoyed very many CW QSOs on Two Metre Tuesdays. For example, when operating from home on the evening of the 17th September, using 5 watts QRP, I worked: ***Paul G4RRA*** *(Spreyton, Devon 145km),* ***Ken G4RHR*** *(Felixstowe,264km),* ***Paul M0GSX*** *(near Dudley, 87km) and* ***John G3YPZ*** *(Long Sutton, Lincs, 210km).*

"My /P operations for Two Metre Tuesday have also been very enjoyable. For example, when running 5 watts to a home-made dual-band Yagi (3 elements on 2m) from Gloucestershire on 27 August, I worked stations in Wiltshire, West Midlands, Devon, Oxfordshire, Flintshire and Lincolnshire.

"Two Metre Tuesdays have, over time, inspired me to design and build Yagi antennas; install an antenna rotator; make many improvements to my home 2m station; and assemble an effective portable station. Over the past year, I have had over 120 'proper' full-format 2m CW QSOs from home, with a further 60 QSOs when operating /P. Across the UK, hundreds of QSOs have taken place that would not have happened without this initiative.

"In addition, the increased activity means that I often check 2m on other days of the week, frequently hearing distant CW stations such as G4DEE (Bury) and G4RHR (Felixstowe) as various times of day. On one occasion, auroral propagation meant that I could use my modest setup at home to work several DX stations on 2m CW, including OE5XBL and OK1FPR."

Steve provides some details of both his 144MHz and 144/432MHz homemade Yagis at the following URLs, which you may find of interest if you fancy building some straightforward Yagis for VHF/UHF:
www.4alg.uk/radio_g/qrp/144yagi.htm
www.4alg.uk/radio_g/qrp/144-432yagi.htm

70cm CW

Steve continues, *"Writing in the August 2024* RadCom*, regular Two Metre Tuesday participant* ***John Petters G3YPZ*** *suggested evening CW activities for the other VHF/UHF bands. Although the 4m and 6m activities have been slow to get going, '70cm Fridays' have received some enthusiastic support - especially earlier in the year when the days were longer, meaning that portable operations on 70cm in the evenings were more popular.*

"Using home-made dual-band antennas, I have managed some contacts from home, including 5 watt QRP QSOs with Paul G4RRA (Spreyton, Devon, IO80BS, 145km) who has an excellent 70cm station.

"I have had more success when operating /P from a local highpoint. For example, when operating /P from Gloucestershire on 30 August, using 5 watts from an IC-706Mk2G to a home-made dual-band Yagi (10 elements on 70cm). I worked stations in Cumbria, Suffolk, Shropshire and Oxfordshire. I have had over 30 CW QSOs on 70cm so far, contacts that would not have taken place had John G3YPZ not suggested '70cm Fridays'!"

432MHz power limit

Last month I included an item which I subsequently realised could have been misinterpreted to suggest that the power limit on 432MHz is 1kW for full licensees. It isn't! As 432MHz is a secondary allocation, full licensees

Photo 1: Stations worked by Dave G0DJA/P during one of the recent 70cm Friday activity events

can run 400W at the antenna. In the item in question, the station involved was running 400W at the antenna and around 750W in the shack to deal with losses in the feeder. Apologies for any confusion caused.

Aircraft scatter

Last month, I posed a question about why **John G8CQX** seemed to get more aircraft reflections from the 2m beacon GB3VHF compared to the 70cm beacon GB3UHF, where I would have expected the reverse to be true. **William G8CMK** wrote saying, *"It might pay to contemplate the vertical radiation patterns of the antenna. It strikes me that our old 2m repeater used two stacked dipoles and the 70cm box used four. Hence, the higher frequency transmitter is much more shallow then the 2m TX. Then there is the RX antenna to consider...."*

Absolutely! I know the Yagis at G8CQX have roughly equivalent vertical patterns, but I haven't yet looked at the vertical patterns of the beacon antennas.

Tony G4NBS wrote, *"Purely looking at my waterfall on the P3 or SDR I would totally disagree, I can see multiple traces on GB3UHF and far fewer on GB3VHF. But if you are merely talking FT8, then multiple aircraft scatter Doppler reflections can be far more destructive on 70cm - I really struggle to work due South or across Luton/Heathrow stacks on 70cm but it's not so much of a problem on 2m.*

"On the other hand, paths to EI or OZ are way better on the higher band and it doesn't seem to matter if the planes are along the path or crossing it (maybe any extra Doppler reflections would be too weak to be destructive unless the plane is local to one of the ends of the path?).

"Away from FT8 I always thought aircraft scatter was more predictable on 23cm than lower frequencies although the 'window' did seem shorter, maybe due to a less capable station?"

The 8m band

Roger Lapthorn G3XBM (Cambridge) has his 8m dipole back up and with the 2.5W of FT8 from his FT-817 has been spotted in the USA, Canada, the Caribbean, South Africa and Eire over the autumn. Roger says he has had a few European QSOs but little DX. He says that when 8m is good, low power and a low dipole seems to work well. Roger wishes that more stations would try ISM level EIRPs (10mw).

ISM level power DOES work and **Frans OE3FVU** and **Norbert HA6AN** both worked PJ4MM using 10mW on the band.

Dave Thorpe G4FKI (Ampthill) was delighted to work ZR1ADI on 13 October. Dave runs 10W to a wire dipole.

The 6m band

Keith Watkins G8IXN (Redruth) leaves his gear monitoring 6m 24 hours a day and noticed an evening opening to Brazil on the evening of 20 September, but says he was busy at just the wrong time!

The openings to the south have continued during the day, with a number of ZS and V5 stations heard here at **GW4VXE** (Goodwick). Paul G4RRA in Devon was able to work ZD9GJ as were one or two others from the UK – nothing here! Nevertheless, there have been some good TEP openings in the evening and I was particularly pleased to find a good one on 13 October with plenty of PY and LU stations being worked. I missed a good opening to XT2AW on 19 September – the computer recorded some good strong signals, but unfortunately I wasn't in the shack!

Having mentioned ZD9GJ, Lance had worked several UK stations on Moonbounce (his preferred mode) early on in his trip but ionospheric propagation from the UK had been sporadic to say the least. However, that changed on 15 October when there was an extended opening during which a number of UK stations made it (including *PW* editor **Don G3XTT**!). The same can't be said for the PX0FF Fernando de Noronha expedition – just a couple of UK contacts at press time. Lance had actually been due to leave Tristan da Cunha somewhat earlier but had to change his plans because of issues with the ship – I'm sure those UK stations are very grateful for the delay!

The 2m band

Paul Stocking M0GSX (Dudley) is another participant in the Two Metre CW Tuesday sessions. Paul runs either an X-50 vertical at 3m or a Dual 2m/70cm 5/9 element Yagi, also at 3m. Paul is a dedicated CW enthusiast and says that generally he can only work a few stations, including G4ALG in Gloucestershire and G0DJA/P in Derbyshire. Using higher power, Paul has worked G4CLG (Leicestershire), G3YPZ (Lincolnshire) and G0GUH (Staffordshire). Paul also reports that a number of other stations are getting ready to join in the fun and says that everyone is welcome, regardless of your CW speed.

Dave Ackrill G0DJA (Derbyshire) takes part in the Two Metre Tuesday CW events as well and says that on Tuesday 17 September he had his best evening so far, working five different stations, including G4RRA in Devon. Dave was particularly pleased with this as he was running 5W to a 5-element. Dave says that over the evenings he has been active he worked 14 different stations in nine squares: JO01, JO02, IO71, IO81, IO82, IO83, IO92 and IO93.

Steve Crask G7AHP (Torbay) is the secretary of the Riviera ARC and wrote with some details of the club's activity in the recent 145 Alive event. Steve writes, *"Riviera ARC used the club callsign G3AH to participate in the September 145 Alive event on 29 September. Unfortunately, the weather was particularly unpleasant with gale force winds and very heavy rain. These conditions did somewhat restrict antenna deployment and the Diamond 510 was limited to 5m height. Station equipment consisted of a Yaesu FT-2980 running at various power levels. Despite the weather-imposed limitations, which may have deterred many stations from venturing out portable or mobile, 18 contacts were made. As net controller this allowed us to initiate contacts between several stations across a fairly wide geographical area. Several stations were using low power transceivers and limited antennas. Several RARC members popped into the G3AH QTH during the three-hour event to enjoy the event and to view the club's custom logging software developed by* ***Chris 2E1WLL****. The event proved another success for the 145 Alive organisers and showed the potential activity possible on 2M."*

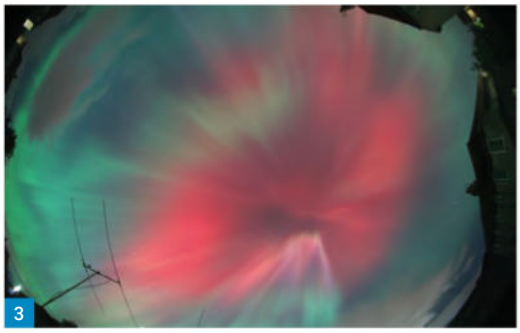
Another '145 Alive' story comes from **Marek Szymanski M7SZY** who writes, *"On the day of the event, I set up at Beacon Country Park (IO83om), near Skelmersdale. I arrived before noon and, as expected, the wind was picking up. Nevertheless, I pitched my tent, secured the antenna mast, and had everything ready well in advance of the 1pm start. With some time to spare, I made a few contacts with stations participating in 'Railways on the Air' (ROTA) to ensure my setup was working as planned. The results were encouraging!*

"At 1pm, the net officially kicked off. Initially, things moved at a steady pace with just a few QSOs in the log and casual chats with operators. Then, out of nowhere, a massive pile-up exploded on the frequency when I called QRZ. It was Ham radio heaven! So many stations began calling in at once that I had to impose some order, taking calls by the numbers or letters in callsigns to manage the chaos.

"This was my first time running a net of this scale, and I have to admit it was quite the learning curve. Many operators called in to check and moved on to other frequencies. Nevertheless, I managed to log the stations efficiently, and time flew by. After about an hour and a half of non-stop operation, I took a short ten-minute break for a coffee and a quick walk around the tent to stretch my legs.

"When I returned, a queue of stations was still waiting to check in. Some had been waiting for nearly an hour! I worked through them as quickly as possible, and by the end of the event, I had logged over 80 contacts. Looking at my logbook, I was astonished by the number of contacts and the sheer activity on the VHF band that day. I even managed to make two contacts over distances of more than 100 miles, which was incredibly satisfying."

Jef Van Raepenbusch ON8NT (Aalter) writes with the highlights of his operation over the month and says that he particularly enjoyed the



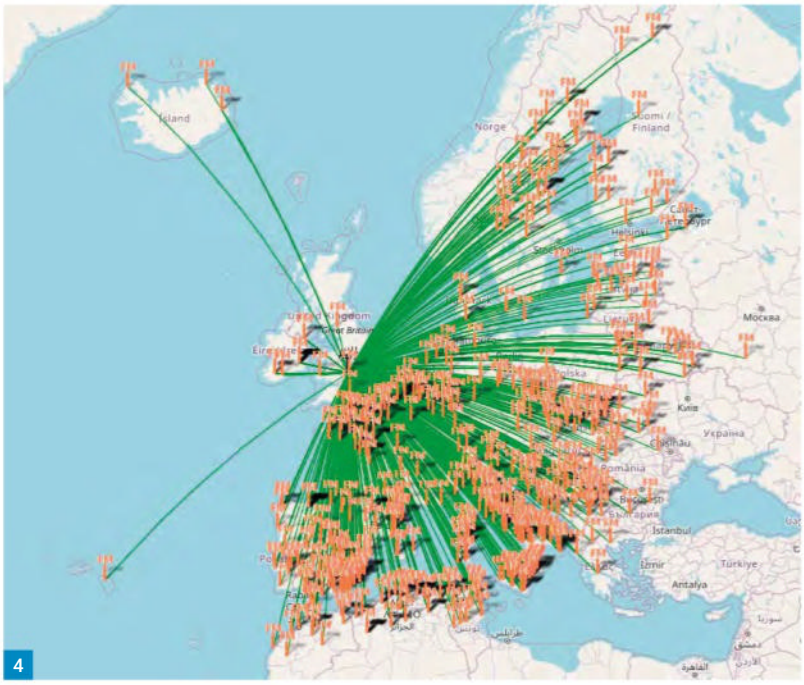


Photo 2: Aurora as seen at Don G3XTT's QTH in Somerset on the evening of 10 October. Photo 3: The Aurora on 10 October as seen from Bill GM0ICF's. Photo 4: Simon Evans' FM DX loggings this year up to mid-October.

chance to work some stations from Scotland this month. Jef lists F0EUI (JN16) and F1NZC (JN15) on 1 September; G7RAU (IN79) on the 4th; EC1A (IN73), F6EGD (IN88), EA2XR (IN83) and EA1G (IN73) on the 15th; on the 17th EI4ACB (IO62), EI8KN (IO62), GI4SNA (IO64), EI3KD (IO51), LA9DM (JO59), GI6ATZ (IO74) and OV3T (JO46). On the 18th, Jef worked GM4FVM (IO85), OZ7UV (JO65), OZ9GA (JO46) and GM0HTT (IO89) with GM4YXI (IO87) worked next day on the 19th. Finally, DK1FC (JN59) was worked on the 21st. All stations on FT8 using 25W and a 5-element LPDA.

Further south, there have been some good TEP contacts made, between ZD7GWM and stations in Portugal. CT1FFU was one of the lucky ones! Further east, **Oleg A65BR** has regularly been working FR4OO and 3B8FA.

The 70cm band

Dave G0DJA has been taking part in the 70cm CW Fridays and has worked six stations so far: G1SCT (IO92), G0HXR (IO92), M0GSX (IO82), G4RRA (IO80), G4RHR (JO02) and G4ALG/P (IO81). The session on 27 September was the best so far, with four stations worked.

Dave also writes, *"I started a Facebook Group called '433 Alive' based loosely on the '145 Alive!' format, but more laid back. I don't try to administer a list of net controllers, locations and callsigns. What I do is suggest a date and time, and I try to encourage others to nominate dates and times but so far it's just been me. The idea is to work as many people on 433MHz FM and post results on the Facebook page. From that information I prepare a map of the stations worked by that station and post it onto the page."*

Dave G4FKI says that he has been playing with low power LORA APRS on 439MHz and is getting very good results and says that he feels there's more APRS activity with 70cm LORA iGates than on 2m.

FM and DAB DX

Simon Evans (Twyning, Gloucestershire) includes a summary of the stations that he has heard so far during 2024 (up until mid-October). On FM Simon has received stations from 38 ITU countries with his best DX being a Russian station just south of Moscow, Radio Radonezh at around 2560km. On DAB, Simon has received signals from six ITU countries with his best DX being a Danish MUX called DAB 2 N on Channel 13B from the Viborg transmitter at a distance of around 887km. Simon says that he has changed his DAB setup slightly, having replaced an RTL-SDR with a second hand RSP1A. Simon says there's no discernible change in sensitivity, but the rejection filter for the FM band included on the RSP1A is handy.

Satellites

Patrick Stoddard WD9EWK (Phoenix) writes, *"It has been a rough stretch for satellite operators... all of the TEVEL satellites reentered, GreenCube (IO-117) went silent, INSPIRE-Sat7 is no more, and a few others are nearing the end (UVSQ-SAT, SO-121, XW-2B and XW-2D). At least some are discovering - or rediscovering - AO-7 and RS-44 for satellite DX. I suppose it could be worse, like in the summer of 2014 when we only had three satellites for voice communications (AO-7, FO-29, SO-50) and some digipeaters (ISS, occasionally NO-44) available. There are still other satellites we can use these days.*

"GreenCube's failure has been tough. With its 6000km orbit, many satellite operators were able to do what had been impossible since the days of AO-40 in the early 2000s... work all 50 US states, work at least 25 CQ zones for the satellite WAZ award, and the satellite DXCC. Hopefully someone can find a way to get satellites into higher orbits like GreenCube, in any mode.

"With many amateur satellites going into lower orbits, generally below 800km, that means these satellites will meet their demise through re-entry within a few years after their launch. We are seeing a lot of that lately. It was fun to work the last of the TEVELs before their demise, as well as INSPIRE-Sat7 (a satellite with an FM repeater that wasn't turned on very much). UVSQ-SAT was on during the weekend of 12/13 October, possibly its last activation before reentry in the next couple of weeks. Too bad this satellite's FM repeater wasn't activated more often.

*"**Endaf N6UTC** and I were on a UVSQ-SAT pass covering the western USA on Sunday 13 October, possibly the last pass we will see for that satellite before its reentry. As we have done in the past, we made quick contacts in D-STAR and FM. I also worked another station on that pass, KK7OVF in Portland (Oregon), in FM. Other than the silent AO-27, UVSQ-SAT is the last of the satellites currently in orbit supporting D-STAR communications. A short video of that UVSQ-SAT pass is available at:* **https://youtu.be/JJulJOdgbqQ**

That's it for this month. Thanks to everyone for their information, please keep it coming. See you next time! **PW**

BBC coronations Part XX

Keith Hamer and **Garry Smith** continue the special series looking back at the BBC's coverage of Coronations since 1937. There is also a vintage Coronation advertisement from the archives for television cabinets. This month sees the concluding instalment of the series featuring unique details about Roland Pièce, the pioneer of Swiss radio broadcasts. The series charting the rise and fall of BBC 198kHz transmissions focuses on the Westerglen transmitter in Scotland. Coverage detailing 60 years of BBC-2 looks at the locations of UHF masts. We also continue our series about the development of Swiss Radio and Television since 1922, with programmes beamed from Europe's highest radio studio on the Jungfraujoch.

Keith Hamer
Keith405625.kh1@gmail.com
Garry Smith
Garry405625.gs@gmail.com

For wireless coverage of the 1953 Coronation on 2 June, microphones were grouped at a number of strategic locations, each having a temporary control room to house equipment and engineers. The microphone outputs intended for transmission abroad were routed to a main control room installed at the *Colonial Office* while those for the BBC's transmitters at home were connected to another main control room in *Westminster Abbey*.

Audio outputs from both centres were sent to *Broadcasting House* for distribution to their various destinations, most of them going via BBC and Post Office transmitters, and others by landline to the Continent. There was a good deal of duplication of equipment and circuits to guard against possible breakdowns, although in fact, none of it actually proved to be necessary.

Vintage coronation television equipment

This month's roam through vintage copies of cobwebby newspapers and magazines has procured an advertisement by *James Tallon & Sons Ltd*. for their bespoke television cabinets, **Fig. 1**. The advertisement dates from June 1953. The text has been left in its original format to reflect the spelling, grammar and punctuation of the time. This is the full description for *Tallon Cabinets*.

After several hours of searching our archives for details of the *P.W. 2-Speed Auto-Gram* mentioned in the advertisement, we could only find the 3-speed version. This was a fully detailed home-construction project in the June 1952 issue of *Practical Wireless*. It was, quote: "*An efficient modern design covering from 15-50, 190-520 and 800-2000 metres, and playing mixed 10-in and 12-in records at 78 or 33⅓ R.P.M. as well as 7-in discs at 45 R.P.M. The equipment is in three separate sections, interconnected by plugs and sockets. The motor-board, with auto-changing mechanism, will take a stack of eight records, 10in. and 12in. mixed, at 78 r.p.m. a stack of 10 records, 10in. and 12in. mixed, at 33⅓ r.p.m. and a stack of eight records, 7in., at 45 r.p.m. This particular unit employs a single pick-up head which may be set with the aid of a small knob to suit whatever type of record is to be played. The point is of the 'permanent' type and should play a total of 4,000 records without replacement.*"

Meanwhile, after another exhaustive search in our archives for information about the *P.T. Coronation Television* and *Argus Television*, we eventually found the full home-construction details in the May 1953 issue of *PW's* companion journal, *Practical Television*. The *Lynx* and *Argus* were introduced as follows: "*A New Receiver 'The Lynx'. Hitherto most of the receivers described in this journal have employed straight circuitry. 'The Lynx' employs a superhet circuit, incorporated in a new system of chassis construction providing much greater accessibility than the normal chassis, making for easier wiring, testing, alignment and servicing. It employs a 12in. tube and 18 valves and like 'Argus' and other designs which we have sponsored, it is backed by our free advisory service. This month we publish the circuit, a list of components and preliminary circuit details. Next month wiring diagrams will be given. We have arranged for the manufacture of a special cabinet for the convenience of readers who are without facilities for woodwork.*"

Roland Pièce archives: Part XIV

This is the final part of our in-depth story about the fascinating life of **Roland Pièce**, the pioneer of radio broadcasts in Switzerland. The series began in the November 2023 issue of *Practical Wireless*.

1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Most of the historical details have kindly been supplied by his Grand-Nephew, **Pierre-Yves Pièce**, from Bex in Switzerland. The information, from his family archives, was originally presented in September 2023 when he addressed the *History of Electrotechnology Conference* in Florence.

Pierre-Yves still lives in the house where Roland began his radio experiments. One eventful afternoon in Bex, before the *First World War*, part of the Ruaz district was suddenly deprived of electricity due to a mysterious short-circuit. Following an exhaustive investigation by the authorities, the culprit was eventually found. He was a teenager, passionate about radio technology, whose receiving aerial had fallen onto the power line in *Avenue de la Gare 18*. It was, of course, none other than Roland! The house (and the infamous power line!), is shown in **Fig. 2**.

For many years, Pierre-Yves has endeavoured to keep the memory of Roland alive. It seems that this has been an uphill task due to the indifference shown by the Swiss authorities. To this end, Pierre-Yves has contributed to a number of radio and television programmes. For example, there's an audio podcast called *Souvenirs de Pierre-Yves Pièce, neveu de Roland Pièce* on the *Radio Télévision Suisse* (*RTS*) website at:

Fig. 1: An advertisement by *James Tallon & Sons Ltd*. for their bespoke cabinets to house *Practical Wireless* and *Practical Television* home-construction projects. The advertisement dates from June 1953.
Fig. 2: The house at *Avenue de la Gare 18* in Bex, Switzerland, where Roland Pièce began his radio experiments.
Fig. 3: Pierre-Yves Pièce proudly standing next to Great Uncle Roland Pièce's original ground-breaking 1922 *Champ-de-l'Air* transmitter, on display at the *ENTER Technikwelt Museum* in Solothurn.


2

3

https://tinyurl.com/4cs9j45r

There is also a fascinating video which was broadcast in August 2022 on *La Télé Vaud-Fribourg*, showing him demonstrating equipment based on Roland's original apparatus. This can be viewed at:

https://tinyurl.com/2j2xk5uf

There is more information, in French, published by the local Bex journal, *Le Point Chablais*, at:

https://tinyurl.com/ykj8nyaf

While the authors were visiting Switzerland during last July and August, Pierre-Yves kindly invited them to his home in Bex to see where it all started with Roland's experiments.

Switzerland's first radio station, *Champ-de-l'Air*, was officially opened on 14 October 1922, and operated by Roland. Together with a friend, **Claude Rubattel**, Pierre-Yves recently visited the *ENTER Technikwelt Museum* at Gewerbestrasse in Derendingen, Kanton Solothurn, and discovered Roland's original *Champ-de-l'Air* transmitter on full display. Naturally, Pierre-Yves had to be photographed standing next to his Great-Uncle's famous 1922 transmitter, **Fig. 3**!

We conclude this in-depth series about Roland Pièce with a few words from Pierre-Yves, a noted Swiss genealogist. He writes: *"Roland Pièce, the pioneer of radio in Switzerland, deserves to be remembered with honour. He had a lovely and imaginative personality and made it possible for Switzerland to be the fourth country in Europe to establish a radio station. He was involved in the founding of radio and spared no effort. Radio was his life, and what a life!"*

The rise and fall of 198kHz: Part XIII

The *Westerglen* medium-wave and long-wave transmitters in Scotland were constructed by the *Anglo-Scottish Construction Company* at a cost of £47,756. The company had previously built the *London Regional* transmitter at *Brookman's Park*, and the *North Regional* transmitter at *Moorside Edge*, near Huddersfield.

Westerglen was similar in layout, but with some improvements. The building work was completed by the end of 1931. A separate contract was signed with the *Radio Communication Company* for the supply and erection of two 500ft steel lattice masts at a cost of £8,950.

When the station opened, the Engineer-in-Charge, **Robert Bird**, estimated that the total cost of the project, including buildings and equipment, was approximately £200,000.

60 years of BBC-2: Part IX

The task of designing and constructing the many new UHF transmitters was perhaps the largest part of the total project. In some cases, existing masts were used (including the BBC site at *Sutton Coldfield*) and it was agreed that some ITA installations could be utilised, such as the one at *Emley Moor*. In all cases, the design of the new UHF installations provided for four channels.

The planning and specifications of the new equipment, including the associated alterations and enlargements of premises, were the responsibility of *BBC Engineering*. While much of the new technical equipment came from the radio industry, a very substantial amount was designed and constructed in the BBC's own workshops

Service information, Switzerland: Part XXII

The radio stations, *DRS-1*, *La Première*, *Rete Uno* and *Radio Rumantsch*, spent most of the summer of 2005 broadcasting 'live' from Europe's highest studio, on the slopes of the *Jungfraujoch* overlooking the *Aletsch Glacier* at an altitude of 3,454m (11,332ft.).

The programmes were known as *Gletscherblick*, *Sur nos monts quand les glaciers* and *Rompiamo il ghiaccio*, in German, French, and Italian, respectively. A suitable English translation would be 'Glacier View'.

In the same year, *Schweizer Fernsehen DRS* was renamed *Schweizer Fernsehen* (*SF*).

Stay tuned!

The first two photos this month are from Keith and Garry's archive collection. The third is courtesy Claude Rubattel, Switzerland. Please send archive photographs, information or suggestions for future topics via the email addresses shown at the top of this column. **PW**

1

Restoring an Argonaut

Mike Dunstan G8GYW restores a classic transceiver.

Mike Dunstan G8GYW
g8gyw@dunstan.uk

When the summer edition of the G-QRP club's *SPRAT* magazine arrived I was immediately taken by the image on the front cover of a transceiver that was unfamiliar to me. It was the subject of a restoration by **Guy Marchal ON5FM** and after reading his article I decided I had to own one. The radio was a Ten-Tec Argonaut 509 and I learned that it is rated at 2 Watts minimum in CW and SSB modes from 80m to 10m with a very capable receiver, **Photo 1**.

I quickly found the Classic Argonauts section on groups.io and started asking questions. This produced a contact from an SWL in the UK who had one that he hadn't used for some years. A deal was done and I was the proud owner of a pretty immaculate but non-functional 509.

A thorough inspection followed, which revealed the following defects:

- No RX audio
- High RX current
- Constant sidetone in CW RX mode
- No TX output
- Dead panel lamps
- Stiff tuning drive
- Slack frequency scale pointer
- Cracked Mullard C280 capacitors

The radio is constructed with plug-in modules and together with a freely available owner's manual, which includes schematics, circuit descriptions, alignment instructions and typical voltages, it is relatively easy to work on, **Photos 2** and **3**.

Making a start

I started by removing the knobs and front, top and bottom panels. The knobs went into my ultrasonic cleaner and came out looking like new. At this point the cause of the lack of RX audio became apparent - the crimped contacts in the loudspeaker cable connector had failed. I replaced them with a two-way motorcycle battery connector and the receiver was up and running again. The panel lamps are 6V miniature bulbs connected in series and replacements are available on eBay.

The frequency scale pointer is suspended between elastic and Dacron cords, the latter winding around the tuning spindle as it is rotated. The elastic cord was sagging badly and I replaced it with a 1mm diameter braided elastic cord purchased from Amazon (don't use the shiny stuff). The Dacron cord was probably OK to reuse but I wanted to replace it anyway. The challenge was finding a non-stretch cord with the correct 0.5mm diameter in a sensible length. The solution was a rigging cord called Dyneema 35, which I found at an online yachting supplier.

The 509 utilises a permeability tuned oscillator (PTO) where the tuning knob winds an iron core into a coil former, **Photo 4**. The drive shaft is supported by ball bearings and becomes stiff when the grease dries out. Dismantling the assembly is not advised, but removing it from the radio chassis is fairly easy and it can then be cleaned and re-greased. I cleaned it by dripping methylated spirits onto the ball bearings and moving parts with a syringe and once the grease had softened I dug it out carefully with a jeweller's screwdriver.

With patience most of the old grease can be removed this way. Once it has dried out, new grease can be applied. I used white lithium grease, which is sold in bicycle shops, as it has the correct viscosity and doesn't harm the plastic components. The drive now turns smoothly again.

The hardest part of the restoration was tracking down the cause of the high RX current and audible sidetone in CW receive mode. After much probing and head scratching, I traced it to a failed MRF402 transistor in the transmit driver stage which was holding up the TX control line.

The MRF402 is no longer available and a suggested alternative is an MRF237 but this has a different pin configuration so I used a 2N3866, which seems to work well enough in this position.

Photo 1: The Argonaut.
Photos 2 & 3: Internal views.

2

3

Read more radio news and reviews at www.radioenthusiast.co.uk/news

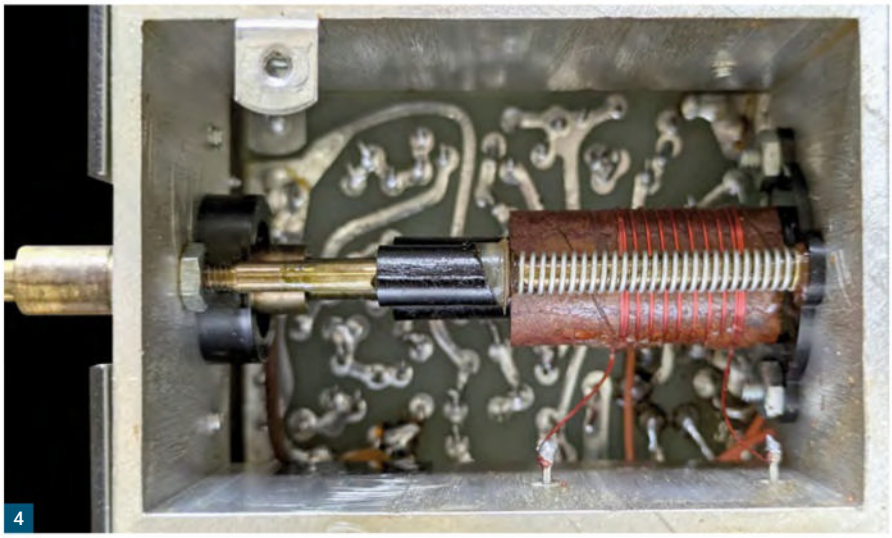

Photo 4: The heart of the PTO.
Photo 5: Typical hairline crack in capacitor.
Photo 6: Homemade adjustment tool.

Nearly there

Nearly there now! The lack of TX output was easily traced to a dead transistor on the PA board. The original devices were TRW PT3647, which have long since been un-obtainable. I replaced them with a pair of Motorola MRF8004s as used in 27MHz CB transmitters.

The radio uses quite a few Mullard C280 capacitors (sometimes called tropical fish or liquorice allsort capacitors). I hadn't seen these since my Philips Electronics Kit in the mid-1960s. Several of them had hairline cracks at the ends and although still functioning were best replaced, **Photo 5**. They can be found on eBay but in my experience many of these have cracks too so I used modern polyester or ceramic capacitors depending on their function in the circuit. Also, as a precaution on a radio that was approaching 50 years old, I replaced all the electrolytic capacitors.

The final task was to adjust the alignment of the PTO to restore the accuracy of the tuning scale after refitting the pointer. This was quite tricky because each band utilises two coils wound on one former and tuned with separate iron dust cores. The cores have a hexagonal hole and the lower one is adjusted by passing a trimming tool though the hole in the upper core. I couldn't find the correct tool anywhere, so a similar one was modified by clamping it in a lathe and reducing the diameter of the stem with emery paper, **Photo 6**. Adjustment of each band took a long time as the coils interact and the best accuracy I could achieve on the vernier dial was ±2kHz.

So, after all that, how well does the transceiver work? The answer is very well indeed! With the Drive control set for full scale deflection on the forward power meter the RF output is 3 Watts or more. I ran through a series of tests and found that receiver sensitivity, transmit harmonics, carrier suppression and intermodulation distortion all meet the original specifications. Putting it on the air I have had compliments on the voice quality from stations across the UK, and my furthest QSO to date was RW4C, that's just under 2000 miles on just 3W SSB.

I'd like to thank Guy ON5FM for sparking my interest in this wonderful old radio and for the advice he gave me during the restoration. **PW**

The Twelve Questions of Christmas

Answers to our Christmas Quiz

Question 1. Guglielmo Marconi, the villa is near Bologna in Italy; **Question 2.** 28074 (these are the 'standard' FT8 frequencies on 17, 15, 12 and 10m respectively); **Question 3.** Four: European Russia, Asiatic Russia, Kaliningrad and Franz Josef Land; **Question 4.** The World Radiosport Team Championship (WRTC); **Question 5.** The prefixes have not been allocated by the International Telecommunication Union; **Question 6.** They operated from Rockall in May-June 2023 ; **Question 7.** Iceland and Ireland; **Question 8.** Radio In a Box – a self-contained generator, transceiver, power supply and antenna in a single portable container; **Question 9.** T32, because you would be on Christmas (Kiritimati) Island in Kiribati; **Question 10.** During the WRTC event held in Italy in July 2023; **Question 11.** M8 and M9, replacing 2*0 and 2*1 respectively; **Question 12.** (a) SSB, (b) FT8, (c) CW, (d) FM.

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BUSH DAC90A BROWN GLASS. Accept whole non-working/damaged radio if correct/intact dial glass. **Godfrey G4GLM: (020) 8958 5113 (after 10am). cgmm2@btinternet.com EDGWARE**

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WATSON W-50 DUAL BAND BASE COLINEAR ANTENNA: 2m 4.5dB gain/70cm 7.2dB gain. Power 200W. VSWR<1.5:1 includes mast brackets and weather shield for SO239 socket. Good condition. £30. **John M0AAO: Tel: 01437 658804. Email: js338@btinternet.com**
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6 METRE 4 ELEMENT BEAM. Various lengths of UR67 / RG213 Coaxe. Two 70cm 18 element beams. Two 2 metre beams. 1kw ++ psu. 2.4kv and 600 volt out.
Robert g4cmi. Mobile: 07597 109429. Email: gm4cmi@dalkeithsdr.co.uk

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Your Letters

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E-mail: practicalwireless@warnersgroup.co.uk

Amateur Radio Exams

Dear Don,
As the Training, Development and Examinations Officer for my local club, The Halifax & District amateur Radio Society (HADARS), I was surprised and dismayed to receive an email from the RSGB, that will no doubt come as a shock to many other Amateur Licence Training Schools everywhere. The email contained an announcement by the RSGB that paper examinations in clubs and examination centres across the UK would be discontinued on 31 December 2024.

The RSGB, were quick to claim that the online examination system that they imposed during the Covid lockdowns had been a 'Huge Success' (which of course it will be if you offer people very little alternative choice!), but it seems the decision has been made without much consultation with Clubs and Examination Centres like ourselves. An exception has been made if a club, or individual, can demonstrate that a paper examination is required in cases of special educational needs (for example in cases where an individual can demonstrate learning difficulties, or for the visually impaired). But for everyone else, it's online or nothing.

The implications for people who are not particularly IT literate, or who might have difficulty setting up the 'two cameras' remote invigilation system required for some exams, are quite profound. I suspect that there are more people in that category than the RSGB would like to admit, and we have had a number of members who have opted for written papers under less stressful conditions within our examination centre. Horror stories about missing content on the RSGB's online electronic question papers are also well known, and have affected at least two members of our own club in the past year.

It also affects clubs and training organisations who might want to offer a full-time training course culminating with an exam for a number of candidates (for example a weekend course for the Foundation license with multiple candidates). This was relatively easy when paper exams were available, but the provision of fully networked PC workstations, with a reliable and fast WiFi connection to each machine for each candidate under the new system, will make this option for smaller clubs virtually impossible, or prohibitively expensive.

The RSGB have hardly covered themselves in glory in the last nine months with the delayed, disorganised, and chaotic transition to the V1.6 Syllabus after the February licence changes issued by Ofcom. Small clubs lost an important opportunity to bring new amateurs into club life, and hopefully convert those prospective licensees into new members, when the RSGB discontinued the mandatory practical training and assessments during the Covid lockdowns. Especially so when the RSGB refused to reinstate them afterwards, and now our ability to offer candidates the convenience of a paper exam within our clubs, has severed another link between Radio Clubs and new prospective licensees. I hope I may have raised an important issue from a club training and examination perspective, and would urge *PW* readers to contact the RSGB if they feel that this transition to fully online exams is a step too far.
Max Townend G4SDX
HADARS Training & Development Officer

*(**Editor's comment**: Thanks for raising this important issue, Max. I'd be interested in views from other readers but, as you say, if concerned, then the best way is to lobby the RSGB. The decision seems to have been made more for cost saving and administrative convenience rather than in the interests of prospective licensees.)*

Portable Operating

Dear Don,
After an absence of four years not working radio after my Carolina Windom came down due to high wind and falling branch's snapping the cable, plus a high noise on 40m S7-9, I decided to try portable and splashed out a couple of hundred pounds after seeing other hams in the Brecon club out portable on an Ampro 40m whip. I also bought a 20m whip and drilled a hole in the back of my van (a self-employed sparky here). I also bought a battery to power the rig and a new charger to charge it, with a quick release connector to unhook and charge in garage.

My dear friend GW0GIH, now a silent key, gave me a Kenwood TS-480sat brand new and still boxed to get me on air waves 12 years ago. So, I fitted it all in the van one afternoon and off I went. I don't have to go far because there's loads of hills around Brecon, ie the Brecon Beacons, and to my surprise it was Lighthouse and Lifeboat weekend. It was not long before I was tuning in and hearing stations so I gave a call out and getting though the pile ups was delighted to be filling in my logbook.
Mike Luxton 2W0MCB
Brecon

Dear Don,
Following up the latest *PW,* after several house moves and job changes I have now relocated to beautiful Morecambe Bay to a three-storey house but on the negative side it's a small garden, overlooked by other houses and a high local noise level, which OFCOM stated is usual and couldn't trace it fully! (look at my QRZ.COM page to show my QTH!)

This means my on-air time from home is not as good as it could be. So, I have started to try going out portable with either an FT-817 or KX3 using a linked dipole, JPC-12 or Ampro verticals. On the positive side in this area I have a mixture of lighthouses, Flora and Forna, Castles, POTA and now I'm enjoying operating under the UKBOTA banner. I find it great being under a pile-up while out portable running QRP sitting in the sun with a brew and my 'cans' on. I started out /p from our allotment during an SP contest and supporting them with quite a few QSOs and the bug bit.

Last October I found the BOTA Programme and after finding out more information I worked a few bunkers, logged onto the website finding there are a couple of close bunkers. You can work within 1km of the actual site, which is great as one is in the middle of a golf course and I'm thinking putting up my pole might not go down with the club members.

It's great sitting in the sun operating my KX3 at 8W PEP to a simple 40/20 linked dipole with a fibreglass pole putting the centre up around 8m as an inverted-vee. You can operate from your car, under a tarpaulin or as I found a couple are near a picnic site so can use a table to operate from.

I'd say to those like me are restricted at home, look at these programmes and have fun.
Chris Baker G4LDS
Morecambe

*(**Editor's comment**: Good to hear from you both, Mike and Chris, and yes, more and more amateurs are finding that portable is the way to go, if only to get away from the increasing man-made noise in towns. And a lot of fun it can be too, especially with all these '….on the air' programmes that are springing up.)*

KSGER Review

Dear Don,

Following my review of the KSGER Soldering Station in the November 2024 issue of *Practical Wireless*, **Terry Mowles VK5TM** has been in touch regarding possible issues with the Power Supplies. Terry says, "*….could I suggest you check to see it both the iron tip and the aluminium case is earthed - by default out of the factory, unless something's changed last 12 months or so, they aren't earthed. The iron tip on the switch mode supply (SMPS) versions can float to about half mains, not something you want on delicate electronics.*"

I checked mine and found that the tip would float up to 70 – 90V AC rms at a current of about 20µA. This is leakage from the SMPS. The tip was connected to the case, but the case was not connected to ground.

I then connected an oscilloscope between ground and tip and found a waveform measuring approximately 270V AC pk-pk, **Fig. 1**. This corresponds to the 70 – 90V AC rms measured at the tip. The same waveform was impressed on the 24V DC output from the SMPS. I connected a green wire, **Fig. 2**, from PE (Protective Earth) to the case and therefore the tip: this brought about a small decrease in the voltage seen at the tip, but not enough to be happy. I also noted that there was a small decrease I the level of RFI in the vicinity of the case, but still very strong at the iron itself that acts as an antenna.

I then substituted my bench top power supply for the SMPS, **Fig. 3**, and all the issues disappeared (ignore the resistor hanging off the red (positive lead)). There was a small waveform, **Fig. 4**, fed back onto the 24V DC supply that appears to be an artefact from the Pulse Width Modulation (PWM) circuitry. I could see the pulse width change during rising temperature phases and reducing to nothing while the temperature dropped. This did not appear at the tip, which is now completely clean.

I did not consider it worth spending a lot of time remedying the SMPS shortcomings. For the time being I shall power it from my benchtop power supply and in the longer term build a 24V DC linear supply into the existing case.

For those who might want to follow this route I note that the maximum current draw

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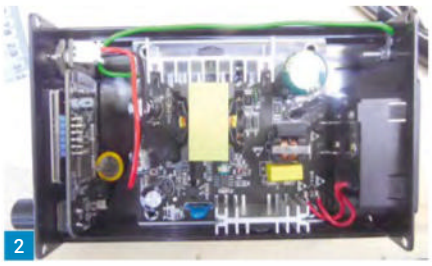
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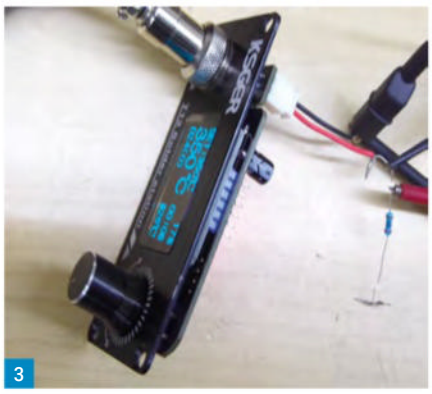
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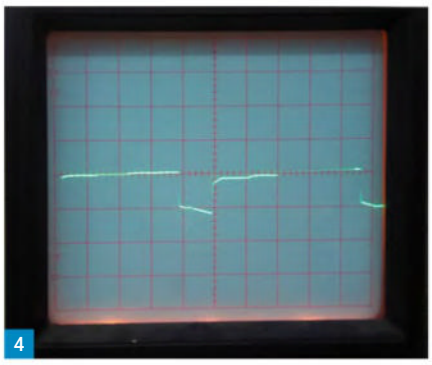
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is 1.9A on the proportional part of heat cycle falling to ~500mA once the target temperature has been achieved. At idle (150°C) or falling temperature the current drawn is 200mA. The unit starts to work on a voltage of 10 – 12V DC, but takes longer to change temperature: 24V DC is really needed for best results. Note, very important, check the polarity of the wires from the SMPS to the main control board: they do not follow the accepted convention on my unit. Black is positive and Red is negative. The correct wiring is shown in Fig. 3, incorrect at Fig. 2. There is a revised version, the 3.1s which, reportedly, addresses the above issues.

There are a lot of comments on the internet, EEVblog in particular, concerning this soldering iron. As always you need to have your filters on and take some comments with a grain of salt.

Michael Jones GW7BBY/GB2MOP
Llangeler

Lack of 2m Activity

Dear Don,

I must respond to the letter regarding lack of 2m activity. It's certainly not the case in our area, The Isle of Thanet, Kent. We have a local net that tunes in every Tuesday evening, a group of locals of 20 or more, half of whom are almost always on every week. There are also regular nets on other evenings of the week very close to us. I also have a radio in my car and when driving it's always on. I always put out a call when I can, it's very seldom I don't get a reply, even if it's just a hi bye! I do agree however SSB on 2m is poor. I do my bit here also and always put out a few calls in the evening waiting for a nice response, so point your Yagi at Birchington on Sea and you might hear me or I hear you. It is getting dark in the evenings now, use the radio!!

It's up to us guys and girls. Switch those radios on and push the buttons. You may be pleasantly surprised and make a new friend that you may never meet!

Alistair Burgess 2E1AJB
Birchington on Sea, Kent

*(**Editor's comment**: Thanks Alistair. I recall that it used to be quite normal for folk to chat on 2m while en route to and from work. Maybe no one drives to work anymore – perhaps they are all working from home! Cellphones simply don't offer the same sort of facility as an open 2m channel to meet new folk and have a pleasant chat.)*

Packaging

Dear Don,

A new aspect of selling used gear.

I have just sold a piece of gear (ANAN-10). Lightweight 2kg. I rescued a box from my garage in the heat of August and used it. However, the proper sealing tape would not properly stick to it. I assume because the cardboard was damp in the garage over a small period of time. So, the storage of equipment boxes is not so sensible sometimes unless they have been kept in a warm place. The cardboard becomes weak, unlike the usual contoured plastic supports within. I found it a total time-consuming pain

to find a suitable box and packing.

It puts me off repeating the process. It also illustrates the maybe useless nature of boxed second-hand equipment. Because few have adequate heated places for cardboard boxes. Anyone know better? I assume new boxes are not a problem but getting the right size and packaging certainly is.

Ian Dilworth G3WRT
Ipswich

*(**Editor's comment**: I sympathise Ian. While I try to keep the boxes that my equipment comes in, as in your case they have to be kept in the garage as there simply isn't space in the house. The result is that they get damp. It does make selling the equipment tricky, if it has to be shipped by courier. Anyone out there with a solution?)*

Protocol Wars, Your Letters

Dear Don,

Joe Chester's *Protocol Wars* (November issue) brought some light onto the subject of digital voice systems. Well, it did for me. The 'trials and tribulations', are it seems, still par for the course in the digital voice comms realm.

Information is the currency and capital for everything worthwhile we do. So, simplifying this particular 'hobbyhorse' is welcome - if not overdue? There is also misinformation about what we do too. As is some of the misinformation that is disseminated with regard to jumping aboard DV operation. As Joe rightly points out, one of the biggest stumbling blocks is the different systems/protocols that different manufacturers insist on using - primarily to protect future profits and intellectual property patents. These radios are easy to buy but not easy to operate.

They can, in some circumstances, create so many problems, that what should have been a fun experience, has instead, turned into a nightmare. I'm exaggerating, but those whose patience-tank is running on empty (like mine) will no doubt get the idea.

The key here, is universality. One system, one protocol. Transparency. Yes, 'OEM's, take the risk'. However, that risk isn't entirely about us as end-users, it's about knocking out the competition and the attempt to create a monopoly at the expense of a K.I.S.S mentality. Confusion reigns. And because of this inconsistency, gateways/bridges have to be built to allow access into each OEM's system. And yes, in the digital world, even easier. I agree that this process is a 'trivial problem' from an engineering prospective, but not from an actual operating prospective. Besides, if it were that easy-peasy, there would be no need for articles or books having to be written explaining how to operate when using digital mode/data mode communications.

Don't get me wrong, because digital voice technology will, one day, be the only mode of choice. SSB, like AM, will be just a nostalgic plaything. When they first appeared, digital voice systems (D-STAR, Fusion, etc) promised much - but what they still haven't delivered is transparent functionality. Hence, why so many people who buy into it, need a crutch of explanation and guidance to become cognisant with it.

And I'm not a fan of short overs ('less than three minutes' flies by), which is annoyingly mandatory when in DV/DMR mode. Then there is that gap between overs to 'allow the timers to reset'. When these modes finally become fully mature (there is still much more to be done tech-wise), the 'gaps' and the 'resets' will be a thing of the past. Like B/W and colour TV. Manual typewriters and word processors.

One last thing. Why did the new 10m rig from Moonraker have a front panel designed in the shape of sunglasses? Was it deliberate?

Oh, it was nice to hear from 'Jeff' and 'Natalie' again.

Ray Howes G4OWY/G6AUW
Weymouth

VHF Use

Dear Don,

Many thanks for the latest edition of *PW* and thanks for publishing my letter. I especially enjoyed reading **Joe Chester's** article, *Protocol Wars*. I learned quite a lot from the article, including the fact that the gateways can 'translate' between digital modes. All clever stuff but in the event of a power failure or major cyber-attack that takes the systems down, communications are lost.

Rallies & Events

All information published here reflects the situation up to and including **24th October 2024**. Readers are advised to always check with the organisers of any rally or event before setting out for a visit. To get your event on this list, email the full details, as early as possible, to: **practicalwireless@warnersgroup.co.uk**

23 November
THE ROCHDALE & DISTRICT AMATEUR RADIO WINTER RALLY: St. Vincent de Paul's Hall, Norden, Rochdale, OL12 7QR. Doors open at 10am with entry still only £3. Usual Traders and caterers. Plenty of free parking.
Martin Shore: 07587 709006
Email: rally.radars@hotmail.com

1 December
WILTSHIRE RADIO WINTER RALLY : Kington Langley Village Hall, Kington Langley, SN15 5NJ, just off Junction 17 of the M4. Opens 09:00 close 13:00. Admission £3.00.
Indoor tables £10.00. Car Boot Car size Pitch £10.00 Van Size Pitch £15.00. Hot and Cold refreshments available on site.
Contact Chairman@Chippenhamradio.club

8 December
MID-DEVON AMATEUR RADIO & ELECTRONICS FAIR 2024: Winkleigh Sports & Recreation Centre, Mid-Devon EX19 8HZ, from 09:00 – 13:00. Entry £3 per person, no charge for partners & under 16s. Easy access from the A3124, free parking, free WiFi, hot food and refreshments available. A chance to pick up electronic components, radio and computer hardware. Traders £5 per 6 foot frontage (tables supplied), pre-booking in advance recommended. Mains electricity available on request. Traders - please pre-book ASAP:
Phil G6DLJ 07990 563147
Email wrg2024@hotmail.com
What3Words ///focal.fountain.laminated

29 December
SPARKFORD RADIO RALLY: Davis Hall, Howell Hill, West Camel, Nr Yeovil, BA22 7QX. Doors Open 9.30am (traders from 7.30am), Admission £2, Free Parking, Refreshments
Luke: 07870 168197 Email: m3vhv@hotmail.co.uk

26 January
LINCOLN SHORT WAVE CLUB, WINTER RADIO RALLY: The Festival Hall, Caistor Road, Market Rasen, LN8 3HT. Doors open at 10.00, Admission £3.00, Indoor event, free car parking, refreshments including our famous bacon butties. Tables £10. To book:
Steve Burke M5ZZZ, m5zzz@outlook.com
Mobile: 07777699069

7-9 February
ORLANDO HAMCATION: Central Florida Fairgrounds & Expo Park.
www.hamcation.com

23 February
RED ROSE WINTER RALLY: Mather Hall, Mather Lane, Leigh, Lancs. WN7 2PJ. Open: 10:00 (Exhibition opens at 08:30). Please note that maximum number of 5ft tables per trader has had to be reduced from 6 to 5. On a brighter note, the price remains as it has been for a number of years, £10 per table.
Enquiries lesjackson@ntlworld.com
wmrc.co.uk

There is a need for reliable CW or speech modes to be battery powered so communications can be maintained. Using CW or plain language (AM, FM or SSB) everyone can receive and understand the messages being sent. I have read several articles about emergency communication packs that an amateur can 'grab and go' in the event of an emergency and then be able to provide necessary links to assist the emergency services.

Tom Brady GW8HEB
Welshpool

*(**Editor's comment**: Thanks Tom. Yes, I recall visiting ARRL HQ some years ago and seeing a large number of, as you say, 'grab and go' boxes with sets suitable for emergency communications, and all paid for by the Federal Government who realised that, in the US at least where extreme weather events and emergency situations are more common than here, radio amateurs have a role to play.)*

Hamfest

Dear Don,

It's great to have *PW* dropping through the letterbox every month. I recently visited Hamfest 24, with a fellow ham, we were rather disappointed with what it seems is a receding event.

It's a shame that *PW* was not represented, some well-known manufacturers and companies were not there this time and Moonraker had a very strange setup.

Normally I am a very positive person and whilst it was really good to visit the stands that did take the trouble to attend and exhibit, whether I will visit next year is questionable.

On another note, perhaps you should rename the *Letters* page the '**Ray Howes**' column.

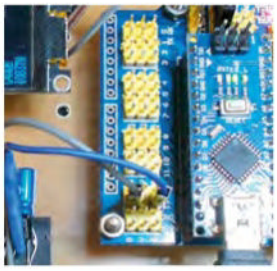
Les Wright GW0PBJ
Deeside

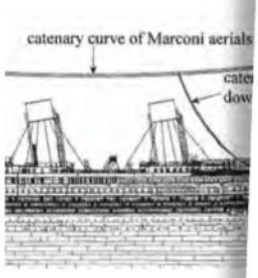
*(**Editor's comment**: Thanks Les. Unfortunately, for various reasons, I didn't get to Newark this year although our advertising manager and Designer dropped by, but I gather numbers were down and there were, as you say, fewer traders. Gone are the days of the huge RSGB show at Alexandra Palace and, later, at the National Exhibition Centre. I wonder why? The internet perhaps, so no need to go and see the latest goodies or travel to meet friends? As for the Ray Howes column, I like it! I'm grateful to Ray and others who usually have something pertinent to say but I'm even more delighted this month that we have a slew of new correspondents – long may it continue!)*

While some stands were undoubtedly very popular, there have been mixed reactions to this year's Hamfest.

Next Month

in the UK's best & only independent amateur radio magazine...





TAKE 20, A SIMPLE ARDUINO NANO MORSE BEACON: Steve Macdonald G4AQB has another handy and cheap project for the shack.
A LAB TUTORIAL: Jeff and Natalie get to grips with the basics of inductors.
FACE BEHIND THE CALL: Roger Dowling G3NKH meets Don Beattie G3BJ and Hilary Claytonsmith G4JKS.
MARCONI 'T' ANTENNA FOR 160M: Vince Lear G3TKN discusses how to achieve good DX results on the 80 and 160m bands with minimum height.
A NEW ANTENNA FOR MY FLAT: Tony Jones G7ETW solves the problem of achieving an external antenna in a block of flats.

There are all your other regular columns too, including HF Highlights, World of VHF, Antennas, Vintage TV & Radio and Data Modes as well as your Letters, Rallies, the latest News and more.

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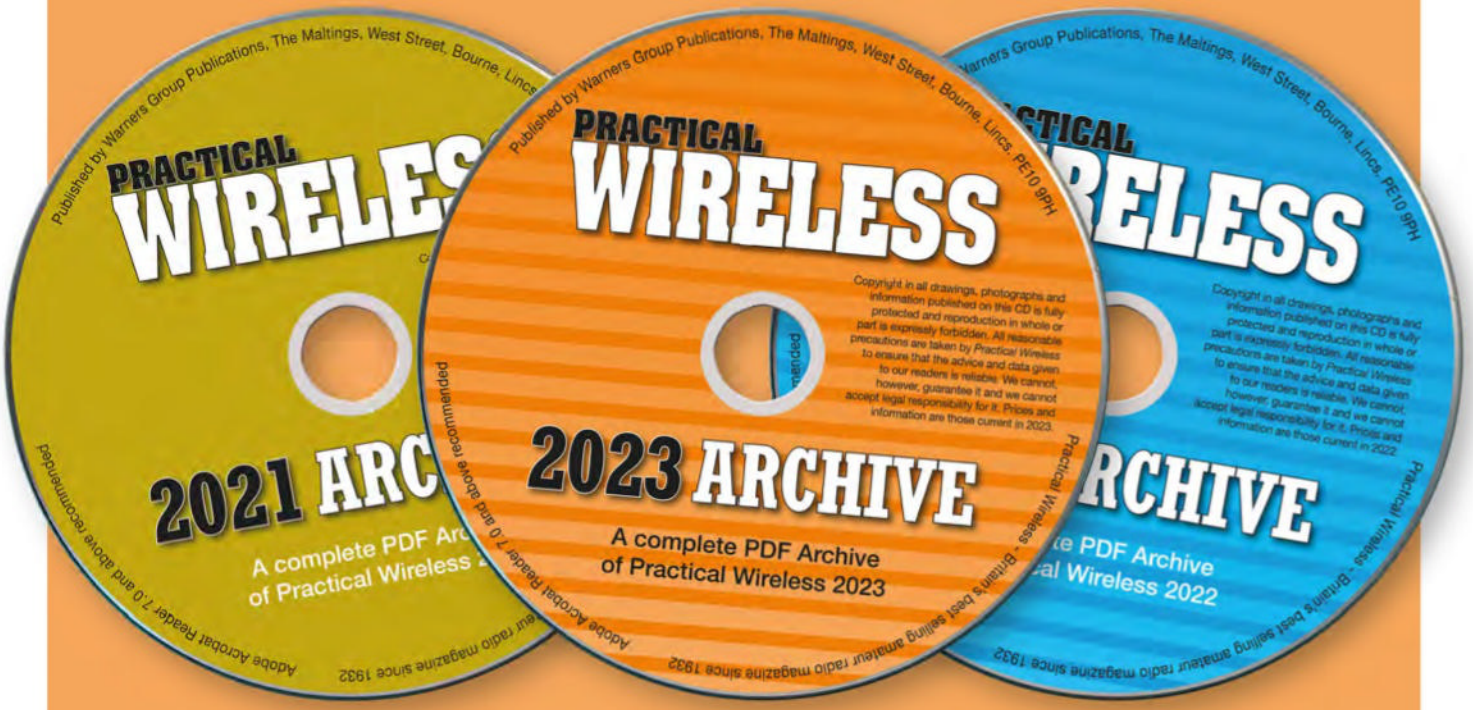

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