

NOVEMBER 2025

THE UK'S NUMBER ONE AMATEUR RADIO MAGAZINE

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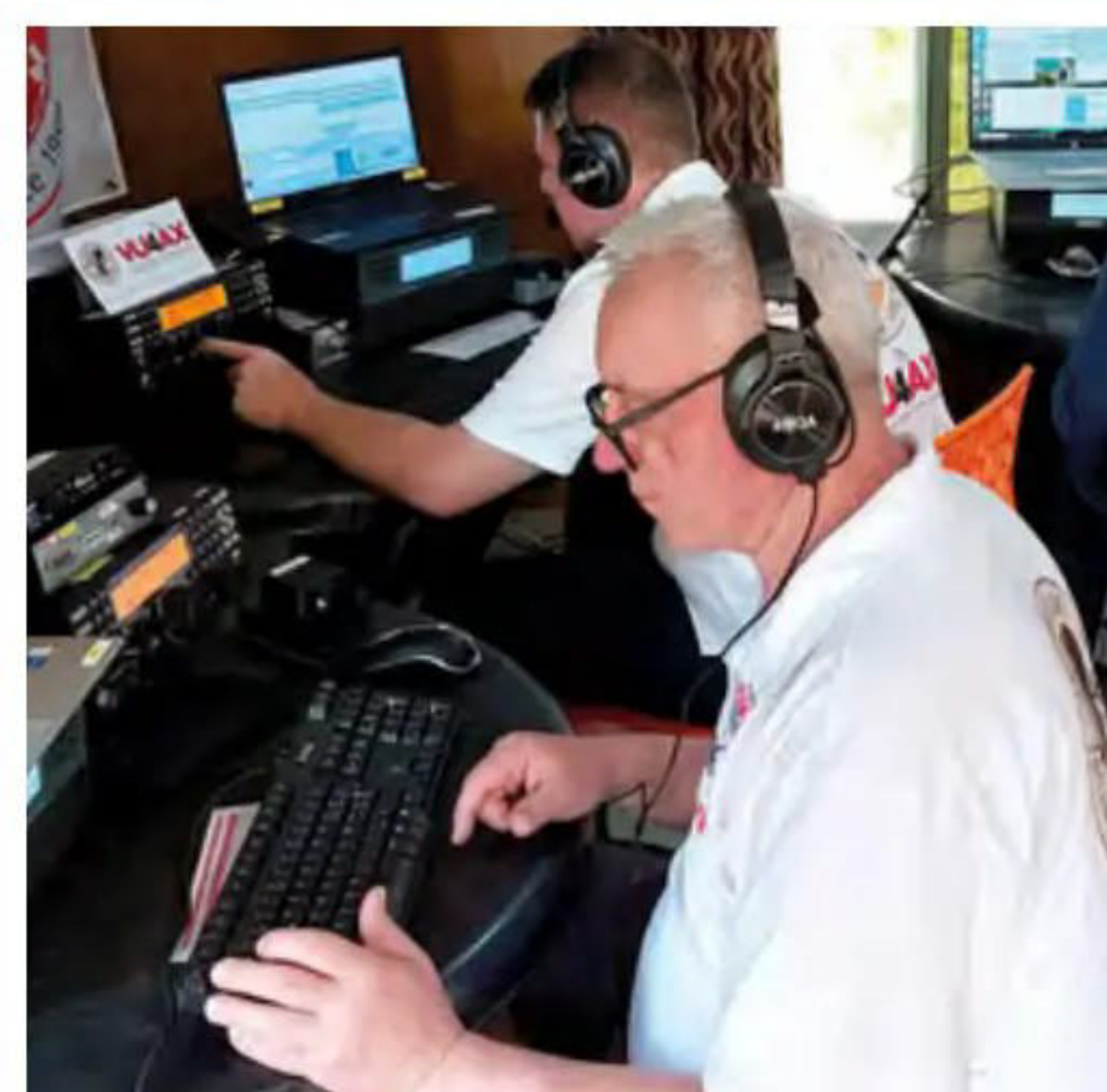
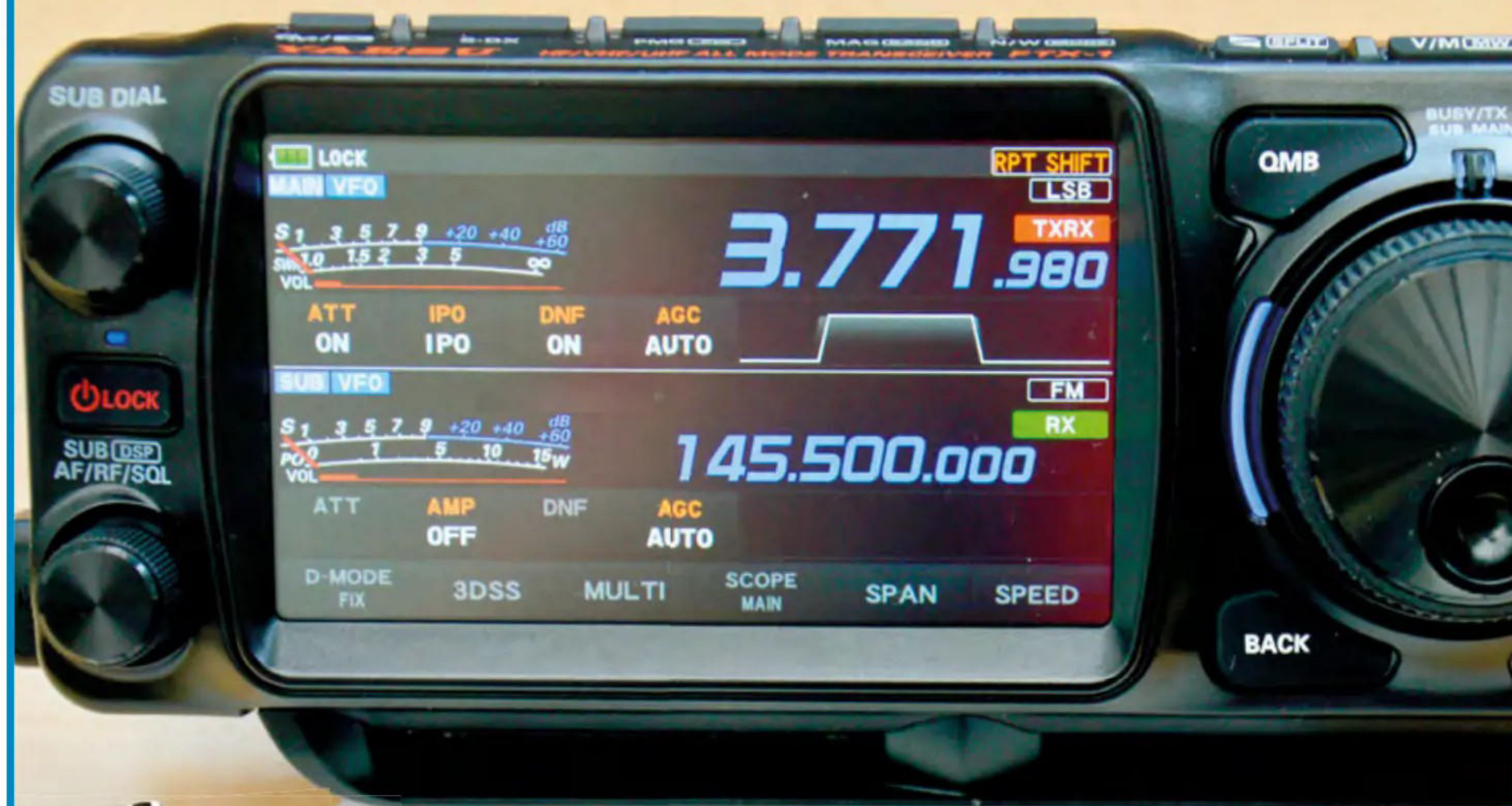
**The Selectone Three: looking
back at this innovative project**



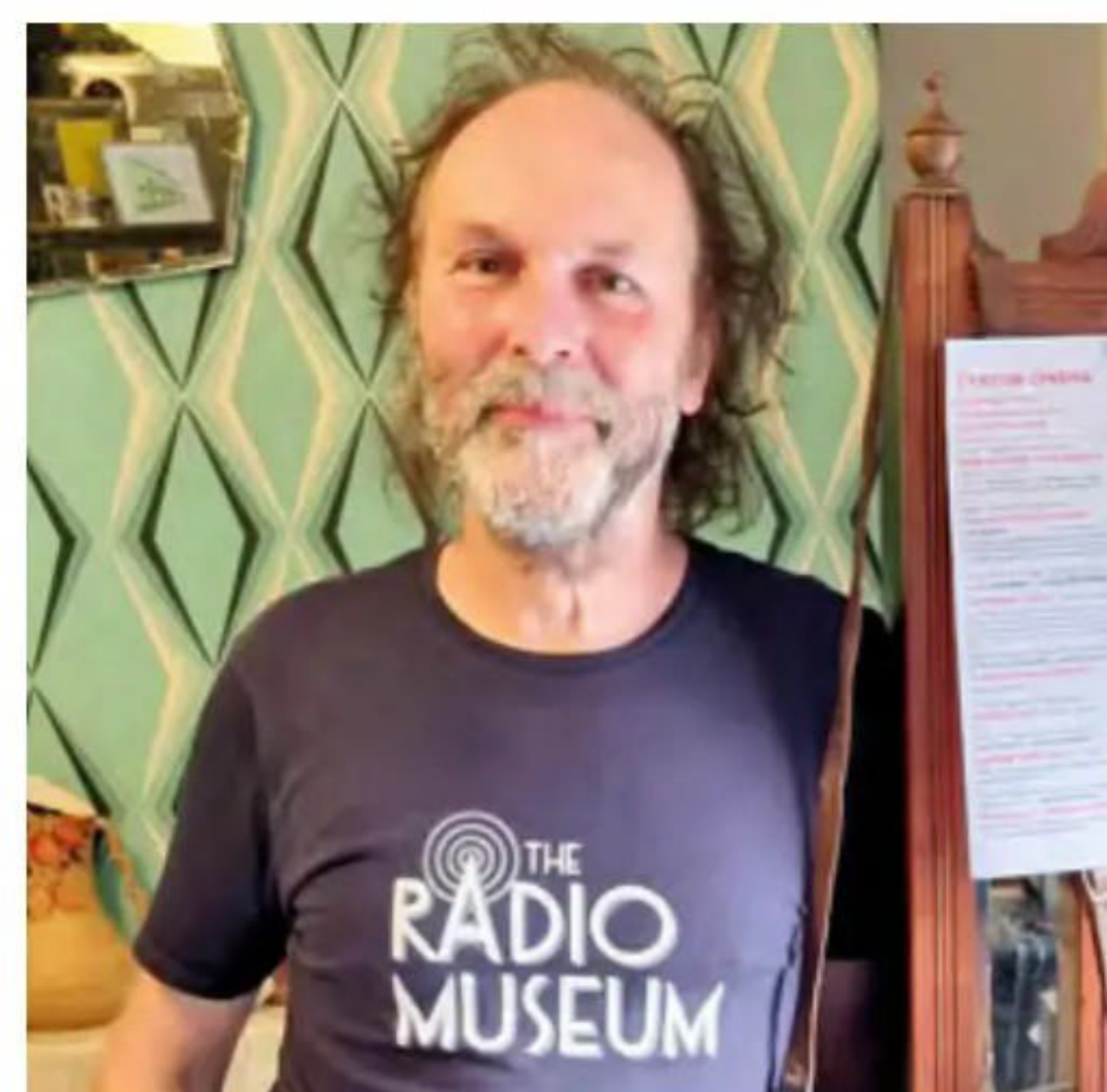
A GAME CHANGER?

PRACTICAL
WIRELESS
REVIEW

Is Yaesu's new FTX-1 really as good as they say



To the back of beyond
News of a spring DXpedition to
the remote Andaman Islands



A journey into the past
The editor visits an unusual
but fascinating radio museum

REVIEW A look inside the
FA-VA6 Vector Antenna Analyser

We investigate this useful piece of kit that is
aimed at both amateurs and professionals

REVIEW The Omni RF
OTG Antenna and RTL SDR

An in-depth look at both this receive
loop antenna and an RTL Dongle

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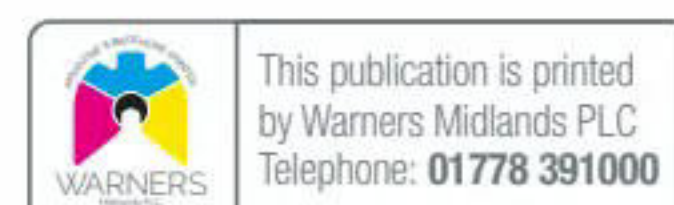
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Keylines

Other than attending an FOC (First Class CW Operators Club) AGM and dinner in Edinburgh and an SSB effort in the monthly 80m Club Championship, I really haven't done much radio in September. Hopefully I can put that right during the coming month, with improved autumn propagation and some interesting DXpeditions expected. And I'm also looking forward to the annual RSGB Convention, always a great opportunity for networking with all and sundry. I've only missed one since they restarted in the 1980s, and that was because I was on a DXpedition to Christmas Island (T32) at the time.

Antenna troubles

I wonder how many readers saw the BBC report in mid-September about **Ray Pratt**, 92. A disabled amateur radio enthusiast, he says his local council has "taken away my life" by telling him to take down poles which allow him to pursue his cherished hobby. He has made friends with fellow radio users all over the world for more than four decades. The case was even taken up on the **Jeremy Vine** show a few days later.

Although Ray has been active for many years, I gather he only recently moved to his current house. Nevertheless, it does seem unreasonable of the council – this is hardly a permanent installation, Ray will not go on for ever. From the photos, it looks as though we are talking about a multiband vertical – hardly an eyesore.

But his first port of call, and that of anyone experiencing such problems, should certainly be the RSGB Planning Advisory Group. This has in its membership a number of retired planning officers who can give excellent advice on matters of planning, whether with an existing or a planned antenna installation. Normally, you would have to be an RSGB member to call upon their services but in Ray's case I gather the RSGB has, in any case, been in touch and offered to help.

Groups with radio amateurs

Following on from my mention in a recent *Keylines* regarding the U3A, the **Revd Barry Keal** has written to say that there are also Freemason lodges dedicated to the hobby. The two foremost in the UK are Radio Millennium Lodge and Radio Fraternity Lodge. There is also the Masonic Lodges on the Air event. Google has this to say:

<https://tinyurl.com/hamlodges>

I'd love to hear of any other groups that have an amateur radio offshoot.

Hobby radio

We have an article this month about Hobby Radio, a beginner's guide to starting with radio. Hobby radio



in the sense of starting with radio for the first time, has certainly changed over the years. The article talks about SDRs, both local and remote, which indeed is a great way to start exploring the hobby nowadays. In my day you started perhaps with an old broadcast set (in my case, acquired after the death of my maternal grandparents) or perhaps an ex-military one (the school radio club I set up with a friend who was a broadcast DXer bought a Philips PCR3). Or for the more ambitious, it was perhaps something home-made. In my case, I opted for kits as I never felt confident about chassis bashing – essential for those valve bases. I first built a Codar Mini Clipper, a one-valve regenerative receiver with plug-in Denco coils. My next effort was much more ambitious – a Lafayette KT-340 receiver, a nine-valve superhet. Once finished it really didn't work but, thanks to a near neighbour, the late **Dave Sellars G3PBV**, it turned out that my construction was faultless but it needed aligning, which Dave was able to do with his signal generator.

When I look at the specifications of modern radios, it quickly becomes clear how far we have progressed in the last 50 years or so. Look, for example, at the specification of the newly announced Icom ID-5200 in this month's *News* pages. Touchscreen, Wi-Fi and Bluetooth, D-STAR and much else. Times have indeed changed! There again, look at the Selectone receiver, the first part of which we feature this month and which appeared back in 1933, and the essentials of radio were already well established. It never ceases to amaze me how few years passed from Marconi's early experiments to a reasonable understanding of both Morse and voice transmission, the basic working of the ionosphere, and many of the other fundamentals of radio science.

Don Field G3XTT

Editor, *Practical Wireless Magazine*

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Keith Hamer and Garry Smith continue their in-depth feature detailing the early days of BBC Broadcasting House in London, focusing on the special sound-proof windows. Following the conclusion of special Coronation advertisements from the archives, this month they resume normal service with an offering for Mazda 2V valves. The series highlighting broadcasting events from exactly 100 years ago looks at November 1925. The saga charting the rise and fall of BBC 198kHz transmissions focuses on the BBC Burghead oven and forks! Coverage detailing 60 years of BBC-2 continues the account of early programme schedules. They also continue our series about the development of Swiss Radio and Television since 1922.

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Locate a rally or event near you; we have our usual comprehensive list.

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ICOM Announces New ID-5200 and AH-6 Concept Models

In addition to the launch of the IC-7300Mk2 HF/50/70MHz transceiver at the Tokyo Hamfair (reported last month), we are pleased to share even more product news from the event.

Icom have used the Tokyo Hamfair to showcase a preliminary look at two new concept models: the ID-5200 144/430MHz Dual-Band Transceiver and the AH-6 Automatic Antenna Tuner. Please note that specifications may be subject to change in the future.

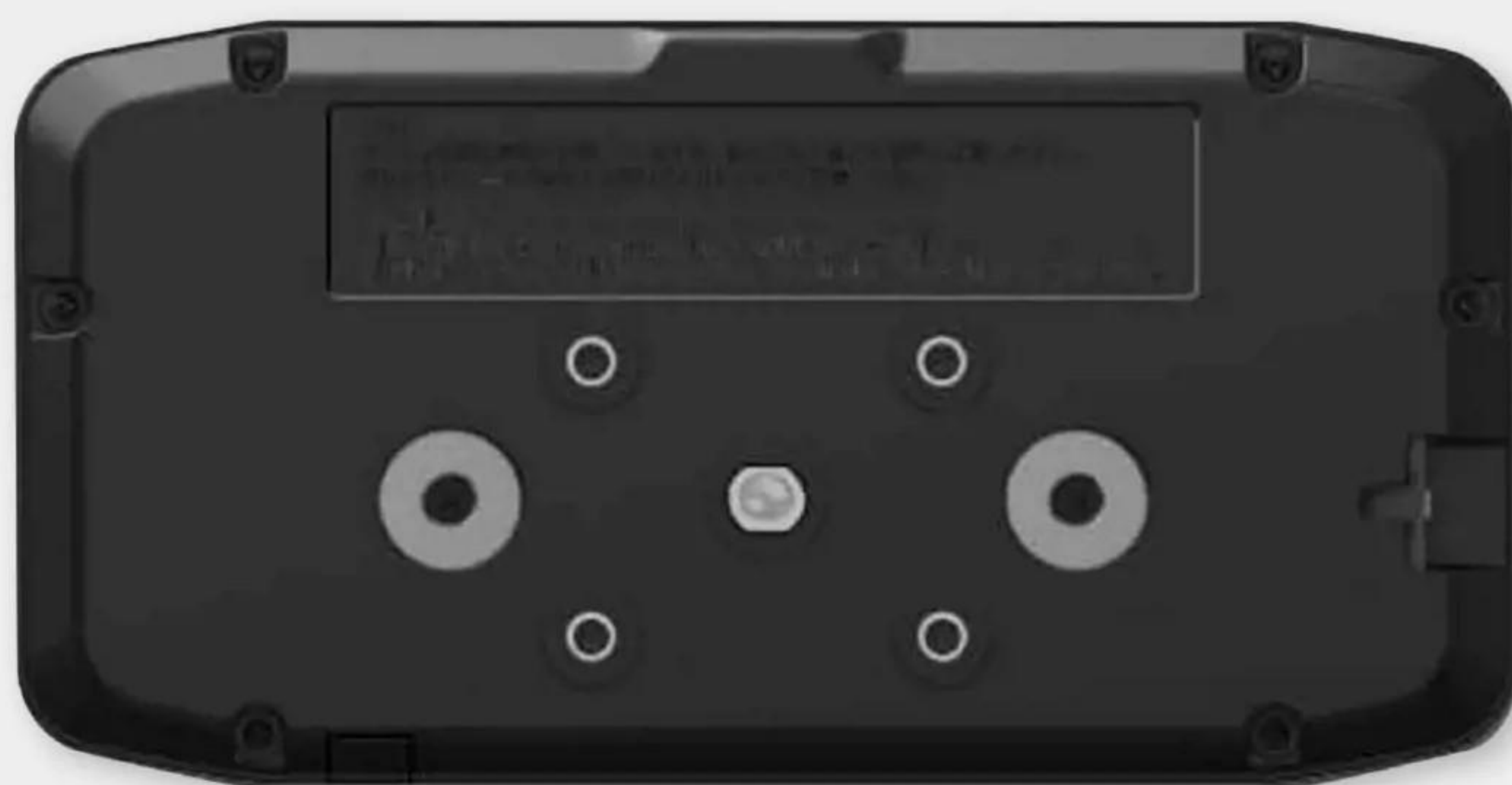
ID-5200 144/430MHz Dual-Band Transceiver

The ID-5200 is a versatile 144/430MHz dual-band transceiver which will support both FM and DV (Digital Voice) modes. A key feature is its ability to perform simultaneous dual reception of FM-FM, FM-DV and DV-DV signals.

- Touchscreen Operation - The unit will feature a touchscreen for intuitive operation and easy access to various settings and functions.
- Broad Reception Capabilities - It will receive VHF, UHF and Airband signals expanding your listening options.
- Wi-Fi and Bluetooth Connectivity - The ID-5200 will be Wi-Fi enabled and includes Bluetooth connectivity allowing for seamless integration with other devices.
- Internal Gateway Function - An internal gateway function will allow you to connect to Wi-Fi and operate in terminal mode or access point mode offering flexible networking options.
- DV Repeater Monitoring - It will support a dedicated DV repeater monitor function to help you stay connected.

AH-6 Automatic Antenna Tuner

The AH-6 is a new automatic antenna tuner designed to be a single, comprehensive solution for your antenna tuning needs.



- Dual Antenna Support - The unit will support both 50Ω (SO-239) and long-wire antennas.
- Wide Frequency Range - It will cover frequencies from 1.8MHz to 50MHz,

making it suitable for a wide range of HF operations.

- Power Rating - The AH-6 will have an input power rating of 100W.

As this is such fresh information Icom UK have no details about pricing and availability. As more information is released about these models as well as the IC-7300Mk2 HF/50/70 MHz Transceiver, they will update their website and inform everyone via their media channels.

icomuk.co.uk

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CHRIS COLCLOUGH G1VDP JOINS ICOM UK AMATEUR RADIO TEAM:

Chris Colclough G1VDP joined the Amateur Radio team at ICOM UK on 1 September.

Many in the hobby and industry already know Chris and Icom were looking forward to welcoming him, his enthusiasm and passion for the hobby to their team in Herne Bay.

LINDARS OPEN DAY: On Saturday, 8 November, Lindars Radios will be having an Open Day at their amateur radio shop at 2 Buckland Rd, Yeovil BA21 5EA. The reason for the Open Day is to mark the shop's 7th anniversary, new shop sign and large open plan showroom.

The event will be opened possibly by an RSGB personality, and one activity of the day will be a demonstration by Yaesu of their latest transceivers.

As well as amateur radio equipment and related items, the shop has a little wireless museum, which displays radio items from World War 2, the 1920s, and earlier. At the Open Day there will be people available who can tell you about the historical and technical aspects of the items on display at the museum.

A main feature of the Open Day will be two raffles, and the prize in each raffle will be a new Yaesu transceiver.

For more details, contact **Justin Lindars**, 01935 474265, Mon to Fri 9am-2pm.

www.amateurradiosales.co.uk

MAXWELL'S EQUATIONS EXPLAINED

ON TONIGHT@8: The Tonight@8 autumn programme kicked off on Monday 1 September with a fascinating presentation from **Kristen McIntyre K6WX**. During the 45-minute session Kristen planned to explain Maxwell's Equations in a visual and relatable way that aimed to leave viewers with an understanding of a topic that can often feel impenetrable. Maxwell's Equations are essential for radio amateurs and explain how RF signals propagate, antennas radiate, and common-mode currents form. By the end of this informative webinar (downloadable from the RSGB website), you'll be able to see how Maxwell's four simultaneous differential



Surrey Electronic Makers and Radio Club

SEMARC, club call GX8KVU, continues into their 4th year. They continue to be practically focussed and have a number of interest groups in the club from microwaves, microcontrollers, construction and just trying new things or things they haven't done.

They are hoping to bring together some of their past workshops and over the coming months design/adapt a design for a project that all will find useful. So they will go from schematic - LTSpice simulation - KiCad PCB design - CAD design of box and 3D printing - (hopefully) a finished and useful bit of kit.

They will continue to outreach to young people and try to lower the average age!

Forthcoming programme:

- October 15 2025: GNU radio and Langstone type projects led by **Colin G4EML** (Langstone Designer)
- November 19 2025: Creating software using AI tools led by **Russell G4CTP**
- December 17 2025: Show & tell with mince pies, Selection of the design, make, build and use project for 2026

Provisional for 2026:

- January 21 2026: LTSpice & Kicad to layout schematic and design for club project
- February 18 2026: 3D Design for the project enclosure

They offer an active programme of workshop-based meetings led by the membership.

The group is developing a number of Special Interest Groups such as APRS, SCD Project, Langstone/Portsmouth Project, Microwaves and WSPR Balloons.

They meet on the third Wednesday of each month from 7:30 until 9:30pm at the Grafham Room, Horsham Road, Grafham GU5 0LJ Guildford:

<https://w3w.co/hiring.hedgehog.prayers>

equations combine to bring the world of radio to life. Kristen discovered amateur radio when she was a student at the Massachusetts Institute of Technology in 1979 and has been active ever since. Among other roles, she is the ARRL

First Vice President and has also recently been inducted into the CQ Amateur Radio Hall of Fame. Learn more about Kristen and this not to be missed webinar by going to:

rsgb.org/webinars

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LINCOLN SHORT WAVE CLUB: This week's discussion (mid-September) focused on the Lincolnshire Wolds Railway in Ludborough. The talk took place before the Railways on the Air event at the end of September. The club would be setting up over the weekend and using the callsign GB0LWR.

The speaker provided valuable insights into the history and preservation efforts of the railway, all thanks to the dedication of their volunteers.

The Lincolnshire Wolds Railway is the only standard gauge heritage steam railway in Lincolnshire. It is crucial to keep our heritage line operational and to preserve steam locomotion. We are essentially living history, with the aim of recreating and maintaining scenes from the railway's past.

HIGH ALTITUDE BALLOON CHALLENGE

The RSGB had a novel challenge this September for all Amateur Radio enthusiasts. It was to create an APRS Automatic Packet Reporting System, (APRS) tracker using low powered, long-range radio (LoRa) to track the flight of a high-altitude balloon which was scheduled to take off from Welshpool in Powys, Wales.

The take-off was scheduled for Saturday morning (20 September), was anticipated to take about two hours and would reach a maximum of 90,000 feet.

The balloon was equipped with a digipeater uplink on 439.850MHz allocated by RSGB UHF/VHF manager solely for the competition and downlink 433.850MHz (unlicensed – low power device 433MHz band). The downlink signals to be captured via a series of special iGates located on a number of UK mountain tops and relayed to the APRS internet service. Furness Amateur Radio Society members rose to the challenge and configured LoRa trackers which would follow the flight of the balloon, transmit a small package to the balloon and hopefully see received information of callsign, location, height etc.

A plan was hatched by club members, **Nick G0HIK**, **Jim M0KYL** and **Mike M0MJX** to take their trackers to Birkrigg, a hilly area on the outskirts of Ulverston, Cumbria on Saturday 20 September and with an assortment of antennas see who could track the balloon best! The three members, Nick with his mobile shack and Jim and Mike in their cars would brave the horrible weather which we had on Saturday, this is their story.

Three of us braved the rain this morning to watch the Balloon launch online and see if we could get our trackers onto it. All of us managed, with some variations of success.



Using a variety of aerals, an 18-element beam, a commercial collinear, a dual-band Magmount and a simple stubby aerial 'rubber duck'. The balloon was up for just over two hours and reached around 40,000ft. All good fun, just taking the kit down in the monsoon we experienced was not so much fun.

JOTA/JOTI: Jamboree on the Air (or the Internet) takes place this year over the weekend of 17 to 19 October. Full details online:

www.jotajoti.info

CHOTA 2025: HADARS (Halifax and district amateur radio society) had a wonderful day's operating from Blackshaw Head Methodist Chapel under the callsign GB0BMC. Once the European skip faded, they were immediately plunged into a continuous pile-up which lasted for most of the day. Apologies to those stations that were unable to get through, the demand was surprising but enjoyably relentless.

By the end of the event, 122 HF contacts were safely in the log. A particular highlight was a QSO with the EI10JOTA station in Ireland, who gave a number of young scouts their very first taste of amateur radio.

Equipment on HF comprised a Yaesu FT-991A into a newly constructed inverted 'V' dipole cut for the 40m band, built by **Max Townend G4SDX**. Despite this being its first deployment,

the antenna proved to be a real star performer, providing solid coverage from the north of Scotland to the south coast of England and over the sea into Ireland.

On VHF, **Paul Rigg G0TVB** ran a 2m SSB station, clocking up over 20 contacts, plus one QSO on D-STAR. Equipment used was a Yaesu FT-857 and a novel 2m Shakespeare inflatable antenna. An Icom ID-52 was used for the D-STAR contact.

Operators on the day were Max G4SDX, **Dean G4DBI**, **Hardy G5HWP**, **Martin M7LAY**, **Tom M7HFX** and Paul G0TVB.

The event was thoroughly enjoyable, and the chapel provided a welcoming and fitting setting for CHOTA 2025. Thanks go to everyone who called in and helped make it such a memorable occasion.

DOUBTS ABOUT SOLAR CYCLE PREDICTION METHODOLOGY:

(from *ICQ Podcast*) Like a solar storm itself, a controversy over solar cycle predictions is heating up.

As this year brings the solar maximum of Cycle 25, a different kind of solar storm has been raging - one that challenges the longstanding and prevailing paradigm scientists use to help arrive at forecasts. Sociologist and statistician (and frequent *PW* contributor) **Frank Howell K4FMH** has done an extensive study of this so-called NASA-NOAA-ISED prediction formula, which utilizes a consensus methodology, pitting it against the work of solar physicist **Scott McIntosh** of Lynker Space.

In this busy, high-profile year for the sun and its activity, Frank has written extensively and presented a series of virtual talks on the subject in the US and overseas. He has also discussed the competing models extensively in his blog, K4FMH.com. Frank's most recent talk, *Progress in the Revolution: Sunspot Cycle Forecast Accuracy at Cycle 25*, was given to Pennine Ham in the UK, and can be seen on their YouTube channel.

HAMTV IS ACTIVE ON THE INTERNATIONAL SPACE STATION:

The installation of new equipment aboard the International Space Station (ISS) to re-enable HamTV appears to be successful. ARISS reports on Mastodon that ground stations over Europe had successfully received the HamTV carrier signal on 29 July.

Documentation on receiving HamTV from the ISS is available from The British Amateur Television Club (BATV). ARISS provides a live feed of video when the ISS is in range of HamTV receiver stations. More Information: <https://live.ariss.org/hamtv>

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FTX-1 Game Changer? (Pt I)

Richard Constantine G3UGF gets to grips with the latest offering from Yaesu.

Richard Constantine G3UGF
richard@norcomm.co.uk

In 2001 at the bottom of the sunspot cycle Yaesu launched a portable low power, battery powered 160m-70cm multimode transceiver with integrated digital display. Many questioned the wisdom thinking that it simply wouldn't sell. However, there was a ready market in Japan, USA, and in countries with power limited incentive licensing. For years low power QRP had been a niche activity. It was mainly the province of homebrewers doing great things with simple transmitters and efficient antennas.

Suddenly Yaesu's versatile FT-817 changed all that. QRP went mainstream proving that a big rig and a kilowatt weren't always the way to have fun. While its battery life left something to be desired, portable activity became available to all and the ideal starter radio for many. Over the years upgrades have followed and it remains one

of the best loved, best-selling radios of all time. Have you got one? I have.

25 years later radio and battery technology has moved on. There's now a growing breed of transportable SDR based, QRP Chinese and Japanese transceiver alternatives. Yaesu's response has finally arrived in the form of the upmarket FTX-1.

It's a little larger and heavier than first impressions indicated. This is due mainly to the 6.4mAh Lithium battery that gives excellent run time and the use of an easily accessible 4.25in colour screen.

Unlike the competition it's a different concept. It can be used either stand-alone adjustable from 0.1W to 6W or up to 10W with an external 13.8V supply.

A word of caution here. Testing at 13.2V plus it was operating at spec on HF, while at 12V both VHF and UHF were delivering around 20% less. The radio is part of a modular system including

an optional 100W power amplifier

At 1.64kg, including its 394g battery, it's a heavy little beast – backpackers and SOTA mountain goats be warned.

Comparison with current market leader the ICOM IC-705 is inescapable in many areas. I will try not to dwell. I won't be parting with mine anytime soon. It's excellent, easy to use and shares its battery packs with my hand-portable. Using Icom's optional heavy duty 3.050mAh battery the FTX-1 is 440g heavier but, of course, has a much longer run time.

Yaesu's battery is unique to the FTX-1. Charging in situ with the power lead takes 7 hours - it's definitely an overnight job. The DC lead quality should also be much better than it is. Stand alone, the battery requires a 13.8V 2A mains charger supply with a USB-C connector. Currently Yaesu don't offer this as an option, why not?

The FT-817/818 was aimed at the go-anywhere

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Photo 1: Dual Band HF. VHF/UHF. (Cover Pic?)

Photo 2: Multi screen operation.

Photo 3: Rear View. Heavy Duty battery, 2 x BNC.

lightweight market. FTX-1 is more likely to be used by the tabletop camper, POTA operator or QRP enthusiast.

What does it do?

The HF side of things extends to 50MHz. and there's a main and sub receiver. The display button allows you to show a single band, both RX's side by side or one above the other. This dual display has two functions, split frequency working and 144/430MHz capability. You can have HF on one display and VHF/UHF on the other.

You can work split frequency on HF using the dual display. The main channel is always on the right. I would have liked the ability to swap over as conventional western reading is from Left to Right.

Despite appearances you cannot listen on two HF frequencies at the same time as it doesn't have a complete second receiver chain. You can't have everything in such a small package. I'm sure that will disappoint many as it's not quite as the pictures suggest.

Pressing the *MULTI* legend at the bottom of the screen brings up the oscilloscope for monitoring audio, both Rx and Tx.

There are two dedicated rear mounted BNC sockets for simultaneous HF/VHF-UHF operation. A minor niggle is that the lower socket



is for VHF/UHF and the upper one for HF. Not a problem unless you attach a small whip to the lower BNC to monitor the local VHF activity while you're on 40m as it obscures the HF socket. I would never recommend transmitting with a whip on a radio like this for dubious matching purposes and maybe that's why it's been done.

Premium product

FTX-1 has a lot of features and functionality. I've had the privilege of working with both Yaesu's FT-710 and FTdx10 and their FTM range of dual banders.

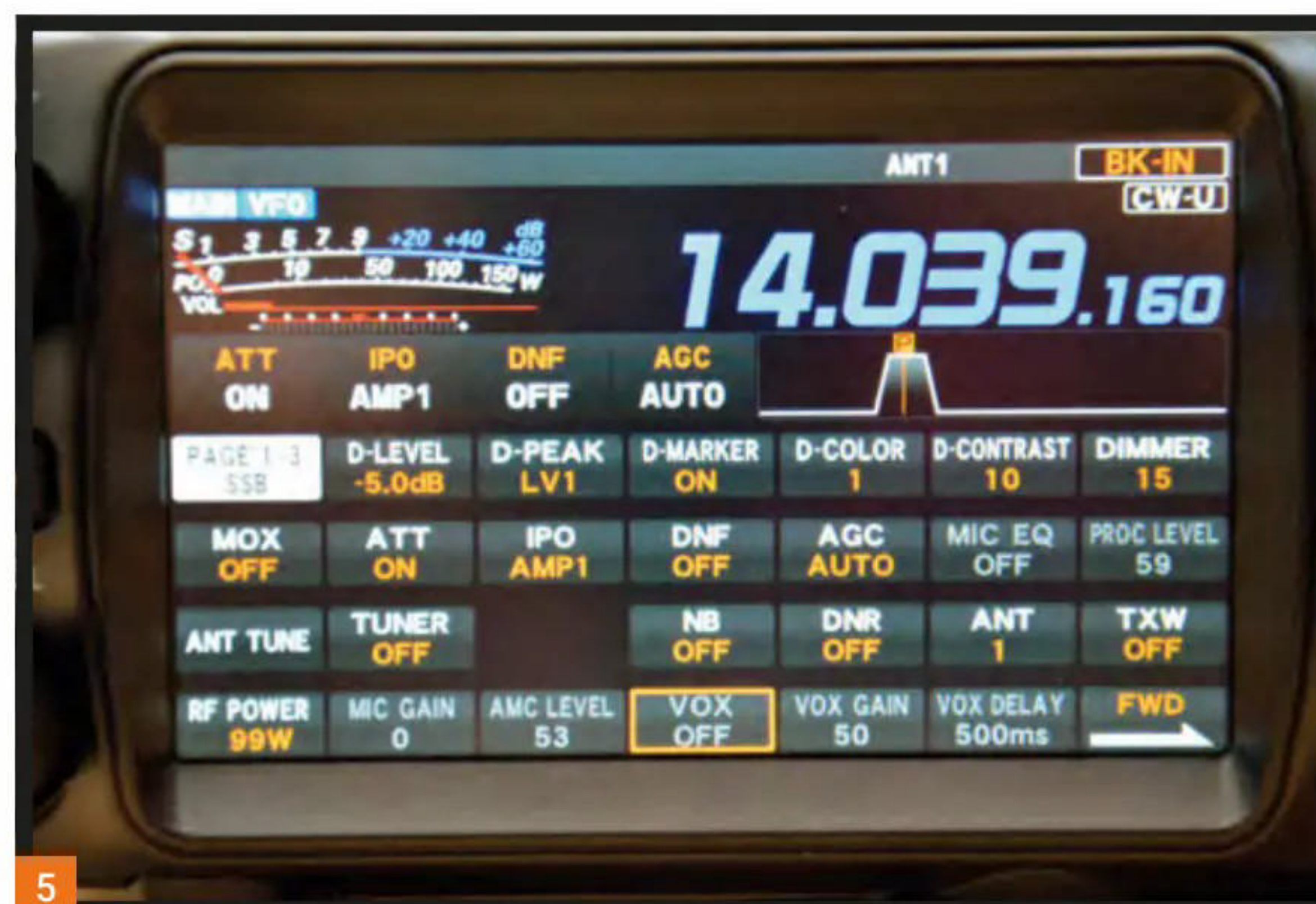
Anyone with experience of these radios will feel quite at home as this one follows almost the same design philosophy in both its architecture and technology but with a few twists. What follows will in some areas be more than familiar to those already in the Yaesu camp. To others perhaps an eye opener and worthy of description. The FTX-1 design is close to that of the FT-710 mixed with the FTM500/510.

I looked at the front panel for quite some time and finally decided that I liked it. It's less cluttered than say the FTdx10 with only four

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4



5

large soft-touch buttons around the main dial. Eight function buttons, mostly dual-action, have been moved to the top edge. That can get a little warm even just on receive.

It has the now familiar 'air scoop' underslung forward-facing dual speakers with separate controls. Yes, you can adjust bass, treble and tone to your liking.

It has all the usual sockets for microphone, key and headphone on the left-hand side. Plus, a socket for the optional GPS unit for APRS. There's one USB-C socket for connection to a PC. While the radio has voice recording, pre-set messaging and contest numbering it doesn't have internal decoders, relying on external software control. Drivers being available to download from the Yaesu website.

The right-hand side has a covered socket for a 32GB micro-SD card.

In addition to recording radio settings you can store screenshots and more according to mode and operation. There's a removable panel for installation of the optional BU-6 Bluetooth module, no more disassembling the radio.

Practicalities

The battery pack slides on and locks at the rear. When fitted the extra weight makes the radio tilt back to give a decent viewing angle. Yaesu also provide a small metal plate that fits over the 1/4in photo type threaded socket underneath the radio.

It's intended to increase the viewing angle by 5° when using a tripod.

Tip: From previous experience a 'Neewar' metal cantilever Z camera mount is ideal for raising the viewing angle.

There's also a similar 1/4in socket on the rear of the radio usable when operated without the battery pack attached.

The package includes the SSM-75G hand microphone. I remember a time when Yaesu didn't give you a microphone! It has the now common four pre-set, buttons that can be reprogrammed to suit the operator's preference, plus up/down and mute functions.

5MHz and 70MHz

5MHz isn't listed on the sales literature.

I was curious to see if both five and seventy were included when I first unpacked the radio. Included was a separate sheet detailing how to change the band coverage of this and other models to meet regional/ country specifications. Hold down the *MAG/band* and *M-Vmt* buttons on the top edge and switch on. Presto!

It's now C2 (UK) spec and both bands are active. No more risking warranties opening the radio to remove tiny diodes or links without the right equipment. What an improvement.

NB: Do it first as otherwise its re-sets everything.

Display

Yaesu use a combination of touchscreen pop-up menus and a more detailed 3-page menu system, activated by pressing the Function control top right.

The pop-ups disappear automatically and too quickly if you're not familiar with the radio. In regular use it's not too much of an issue but it can get frustrating. The on-screen time can't be changed and it's a source of gripe from many Yaesu fans.

However, the comprehensive function list is much improved. It stays until you cancel it. The current menu option is always indicated on-screen top right, so you can immediately return to it.

What the designers have done is to separate the menu choices into three separate pages, with a total of 51 main options for Voice, CW, and APRS/ Radio settings before you get to the sub menus. You can play endlessly with the microphone EQ if you must, using the 3-band equaliser. There's four pages on it in the Advanced manual!

The 3-page menu system allows you to quickly go to whatever suits your current operating style and select what you need to change. No scrolling through endless lists trying to remember the menu number or where it is.

There are separate setting options for each mode.

For me with an interest in CW, page 2 has more keyer adjustments than I will ever use, e.g. I don't want to emulate a bug key for example.

That said what it offers is personal choice and the same goes for most of the other modes also. Paddle keyer and break-in work well. *ZIN* is a small centre zero bar graph display that can be made to appear below the meter. In CW mode it allows you to accurately place your TX on the sender's RX frequency by adjusting the main dial in fine tune mode. (Apart from wine what does *ZIN* mean?)

Using the menu and the user manual it's relatively easy to set up your power, mic gain, meter displays, ALC, speech processor and RX/ TX clarifier. Voice memory and recording is a little more involved but in general the handbook is very good, provided you take it slowly and learn a few things at a time. One or two things need a little thought and concentration, perhaps due to the translation and Yaesu's design philosophy. There is just so much to learn and explore in this radio. It's definitely 'full feature' when you know where to find it and how to do it.

As a memory aide the principal current settings are shown across the top of the display.

The band change menu is displayed by pressing a top mount button. Alternatively, you can simultaneously change band and select a specific frequency by first pressing the smaller Hertz segment of the display. This pulls up a keyboard. Enter a frequency, press *Enter* and the radio makes the change for you. I wish they had made the band options available by pressing the MHz part of the readout. I keep forgetting it doesn't work.

Another pop-up display giving access to either *Width/Shift/Notch & Contour* is accessed and changed by pressing the on-screen legends below the frequency readout followed by a short press and by rotating the *AF/RF control*. Not as convenient as separate rotary controls in my book but space is limited and it's quite clever.



Photo 4: 3DSS Band Scope. Photo 5: Menu Page 2 CW. Photo 6: 2m TX/RX FM & 40m Rx SSB.

ATT&IPO

Below the signal meter that by the way you can select to show *SWR/ALC/PO/etc* and next to the *DNF* digital Noise filter and *AGC* status legends are the *ATT* attenuator and *IPO* (Intercept Point Optimisation) indicators.

An attenuator is particularly useful tool on the noisy LF bands. The *ATT* can be turned on or off but there are no adjustable or stepped values available in this radio. At the time of writing there's little information to be had regarding this, no detailed block or circuit diagram and I wasn't up for opening the radio just yet. Scouring the user/advanced manuals, plus the internet, produced nothing. All the book says is, 'activate to reduce the incoming signal or noise' and tells you that, '*ATT* is set independently for each band.' It's somewhat misleading, I think it means pre-set.

With the *Multi* screen running, I pressed the bandwidth part of the scope display, bottom right. A separate attenuator level popped up revealing a choice of 10dB or 20dB. Selecting either very effectively reduced the background noise on the bandscope but these changes showed no differences to the main *ATT* function

What exactly is going on here remains to be discovered as the two aren't linked. All I can tell you for now is that both are effective in their own way at improving received signals.

Alongside *ATT* is *IPO*. Under harsh or strong signal conditions SDR's downside is that the field gate processor array can overflow, typically producing multiple garbled and out of band signals. It's something very common in early or low cost SDR's. Ways to solve this include among others, multiple band pass filters at the antenna and attenuators. This radio has a 10-divided BPF, two Pre-amp options plus *IPO*. It can bypass the RF amplifiers and input the received signal directly into the IF mixer. This works well.

The real time bandscope waterfall can be displayed in conventional mode or Yaesu's technicolour *3DSS* format. *3DSS* is able to show you QSB and signal variation over time as a

guide to conditions. It can be fun to play with as there are a variety of modes in conjunction with the frequency cursor in Fixed/Centre/Cursor/ Span and Speed modes – It's an acquired taste.

Memories

Try as I might, I didn't find the number of memories in the published specs of the FTX-1. The internet claims the usual 999 Has anyone ever used them all? You can tag/label them, scan or skip some. The radio has *MAG* – memory auto grouping. You can step through the banks in sequence All/HF/50MHz/Air Band/VHF/UHF. An extra bank *M-GRP* stores a group of channels and modes regardless of frequency band.

There's more... Band Stacking. FTX-1 has a triple band stack VFO selection that allows you to store three favourite frequencies and modes into each VFO. If you register a frequency, you can also register such as CW-U/RTTY-L/USB etc. This then allows you to step through the modes and frequency by repeated pressing of the *MAG/Band* button on the top edge.

It's worth noting here that the Advanced Manual gives detailed and separate setting information for Data modes RTTY, PSK etc alongside very detailed information on just about everything else you would ever want in its 86 pages.

VHF-UHF

Below 48MHz the FTX-1 is a Direct Sampling Superhet design whereas above 48MHz the radio becomes a single-conversion IF sampling design.

Receiver sensitivity varies according to mode and band. The figures are quite impressive overall. Typically, SSB/CW 1.8-30MHz and 70MHz with the pre-amplifier on high, it's 0.16µV for 12dB SINAD. For 50/144/430MHz it's even better at 0.125µV.

Owners of FTM series mobiles will find the FTX-1 very familiar as it has all of the features you'd find in many of them. It's very close to that of the FTM500/510 latest models. These include the Auto mode selection between C4FM

Digital and conventional FM. Repeater shift/ CTCSS/DCS. It has the excellent *PMG* (Priority Memory Group) that allows you to store up to five channels. The *SDX* (Super DX) button that works similarly to that of a pre-amp is on the top edge, alongside the *GM/X* button that gives you access to the worldwide Fusion and Wires X system.

This radio doesn't have the *ASP* audio signal processing technology found in the FTM-510.

To use APRS location system you need the plug-in GPS unit.

Back in May USA users reported some problems with APRS messages. As with all new radios these days downloadable software updates keep coming. It pays to check Yaesu.com.

Readers that have seen my FTM-500/510 reviews will know that I love the one-touch *PMG* capability that allows you to quickly store/recall and monitor up to five frequencies in the VHF/UHF bands (not HF). *PMG* works in all modes. It has many uses both in Manual or Auto modes, i.e. where it can receive two channels simultaneously

Apart from Simplex and Repeaters now you can monitor beacons, SSB or CW and Data calling channels, something that might lead to more activity on these modes.

DG-ID. Digital Identity coding facility is included and detailed in the Advanced Manual. The system of creating up to 99 unique or group calls when using C4FM. A feature gaining much traction with club, family and Raynet users.

Is it for you?

This article can only give the reader a flavour of what the FTX-1 is capable of.

If your modus-operandi is mainly from the shack with occasional excursions, the 100W Optima may provide better overall value for some. However, there are alternatives with larger screens, more rotary panel controls at lesser cost and I'll be taking a look into this soon.

Thus far I've just about covered the basics and there is so much more. I would advise anyone thinking of diving in to download both manuals from Yaesu's website and read a small chunk at a time to avoid brain fog.

If you are looking for a QRP portable station that does more than the others but not quite everything, has a good battery life, is part of a modular system you can add to later and you're already familiar with Yaesu's way of doing things, look no further.

FTX-1 is very good at what it does, justifying its current price of £1,599.00. It's a lot of radio but is it a game changer? – only time will tell. **PW**

NEXT TIME: The 100watt Optima version and the accessory range

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Whitham D. Reeve
practicalwireless@warnersgroup.co.uk

Solar coronal hole high-speed streams and x-ray flares pummeled Earth during the first five months of 2025 as Solar Cycle 25 approached its peak. Electromagnetic phenomena related to the Sun’s activities also reached high levels. Observations in Alaska during this period included Ultra Low Frequency (ULF) Waves, geomagnetic storms, periodic ionosphere absorption events, solar radio emissions of many types and *Sudden Frequency Deviations*. A Sudden Frequency Deviation, the subject of this article, is a terrestrial radio propagation phenomenon caused by an extra-terrestrial event, a solar flare.

Four strong solar x-ray flares occurred on 25 May (Table 1). However, only two occurred when the propagation paths from the remote transmitters to the receivers in the Anchorage Radio Observatory in Anchorage, Alaska were sunlit and subject to flare effects, Fig. 1. The X-ray radiation from the two flares rapidly altered the ionosphere, which produced Sudden Frequency Deviations that were observed at 15 and 20MHz.

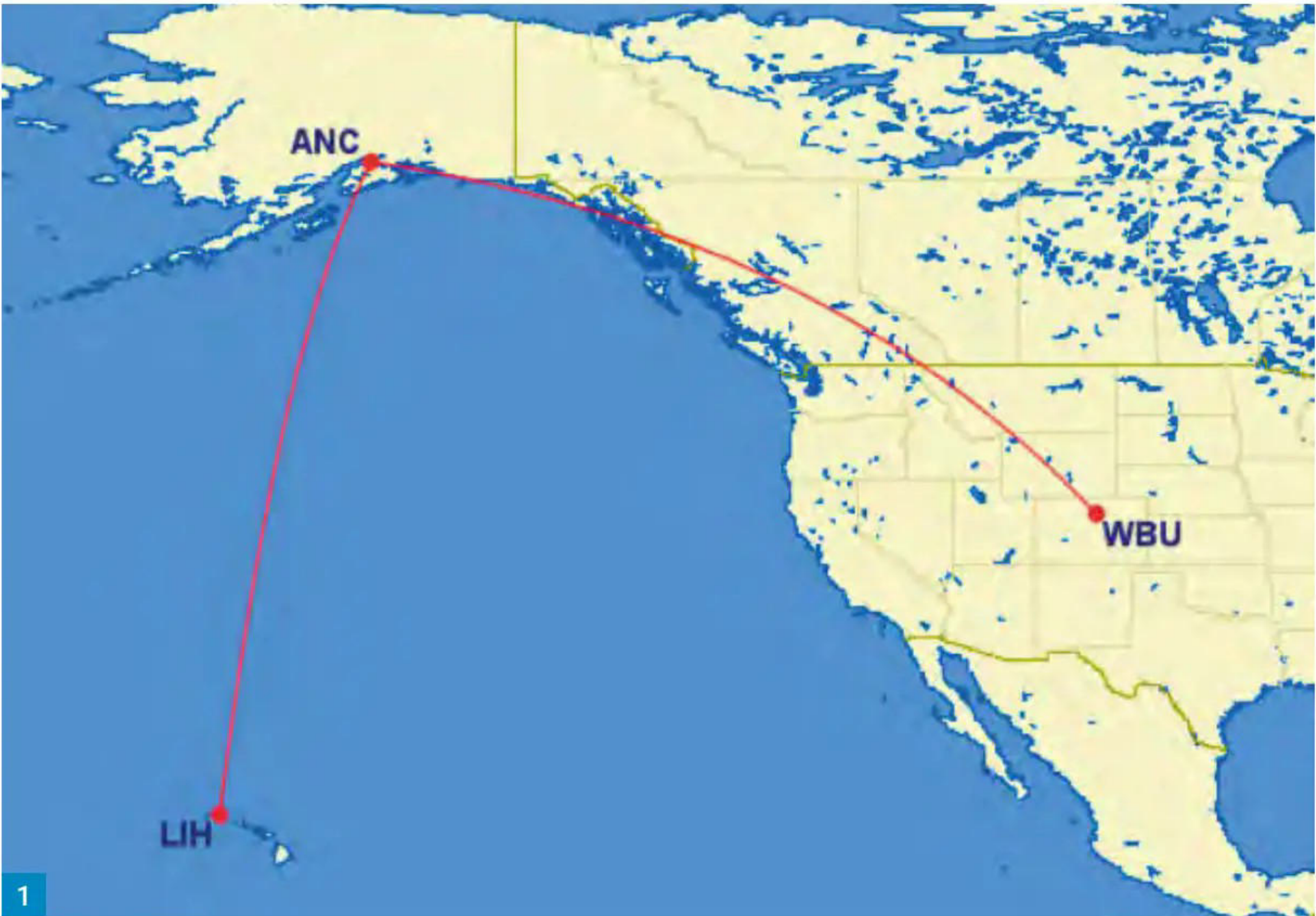
Sudden frequency deviations

From [1]: *Two ionospheric conditions are attributed to sudden frequency deviations, caused by the X-ray, extreme ultraviolet and ultraviolet energy released by a solar flare. First, a slab of ionosphere below the reflection region undergoes a rapid change in refraction index and, second, the ionosphere’s reflection region undergoes a rapid vertical movement. Both conditions introduce a Doppler shift in the radio wave by changing the effective path length. Either one or both together can cause a sudden frequency deviation. Studies have shown that stronger X-ray class flares do not always produce an SFD, thus making it clear that the X-ray class of a flare alone does not determine if an SFD is produced.] See [1] and [2] for a more detailed description and additional observations.*

Observations

The SFDs were recorded by Argo, which is a software application originally designed to capture low-speed digital transmissions in the HF band. It also is very useful for studying other narrowband spectra, including meteor trail, aircraft and aurora radio reflections. In the application discussed here, Argo displays the demodulated spectra from the time-frequency stations WWV at 15 and 20MHz and WWVH at 15MHz.

The receivers in the Anchorage Radio Observatory are set to the lower sideband (LSB) mode and tuned nominally 1kHz above the carrier frequencies, Fig. 2. When the received carriers are demodulated during normal conditions they produce a nominal 1kHz tone that is processed and displayed by Argo as a steady, horizontal trace. Any change in the received carrier frequency is reflected in the plot but



Sudden Frequency Deviation Observations

Whitham Reeve, an RF engineer working in Alaska, looks at the phenomenon of sudden frequency deviations caused by solar storms.

in the opposite direction when LSB is used.

When the receiver is set as described above, the trace will show a downward deviation when the received carrier frequency increases. The receivers could be set to USB mode and then tuned lower than the carrier, but the displayed trace would show an upward deviation when the received carrier frequency increases. The leading edge of an SFD usually is much steeper than its trailing edge. The trace often will show multiple dips and also an oscillating leading or trailing edge. These variations reflect both the flare and ionosphere characteristics.

Sudden Frequency Deviations in the HF band from solar flares usually span less than 10Hz but higher deviations may be observed. The maximum recorded deviation for the SFDs on 25 May was about 6Hz, Fig. 3. The actual receiver frequencies

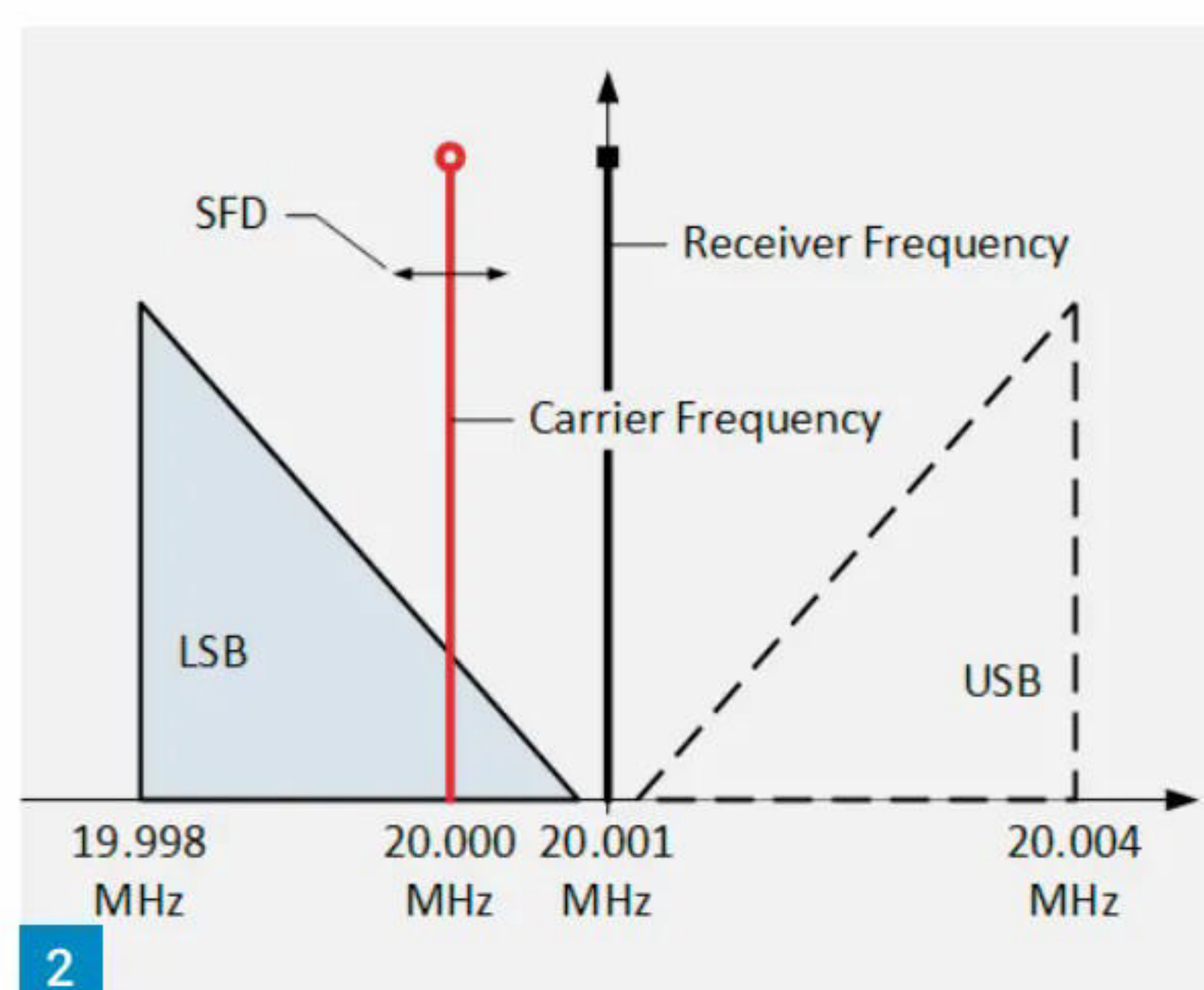
are slightly offset so the individual traces may be identified in the Argo plot. The 15MHz receiver is tuned to 15.000 995MHz to produce a trace at 995Hz under normal conditions, and the 20MHz receiver is tuned to 20.001 005MHz to produce a trace at 1005Hz.

Instrumentation

The instrumentation at Anchorage Radio Observatory includes a tower-mounted log periodic dipole array (LPDA) antenna with a design frequency range of 18-32MHz. This antenna works very well over a much wider range. Its azimuth is controlled by a rotator. The antenna is connected to three Icom R-8600 wideband digital communications receivers through a receiver multicoupler, Fig. 4. Each receiver has a very accurate and stable internal oscillator that is referenced to an even more

Begin	Max	End	Intensity	Solar region	Path
0146	0152	0157	X1.1	4098	Sunlit
0627	0635	0638	M1.7	4098	Dark
1005	1018	1025	M3.4	4098	Dark
1618	1630	1636	M8.9	4098	Sunlit

Table 1: Strong solar flares on 25 May 2025. The begin, maximum and end times are in UTC and based on x-ray flux measurements and are not necessarily the same times as the effects on Earth. There were numerous weaker flares but they had no observable effects on terrestrial radio propagation. Data source: <https://tinyurl.com/3dkaztyt>



accurate and stable external 10MHz frequency source disciplined by a GNSS receiver.

The receivers are tuned to 15, 20 and 25MHz (with an offset as discussed above), corresponding to the transmission frequencies of the time-frequency stations that are usually received at Anchorage. The 25MHz transmissions from WWV were not being received on 25 May due to propagation conditions. The demodulated audio outputs from the receivers are fed through an analogue audio mixer to the PC soundcard for digital conversion and signal processing.

The radio observatory also includes infrastructure such as a DC power supply with battery backup, Network Time Protocol (NTP) time servers, local area network (LAN) equipment and wide area network (WAN) internet connection. The time servers control the PC real-time clock within a few milliseconds of Coordinated Universal Time (UTC).

References & further reading

[1] Reeve, W., Sudden Frequency Deviations Caused by Solar Flares, Part I ~ Concepts, 2015:

<https://tinyurl.com/tyf864hc>

[2] Reeve, W., Sudden Frequency Deviations Caused by Solar Flares, Part II ~ Instrumentation & Observation:

<https://tinyurl.com/3jtcb86j>

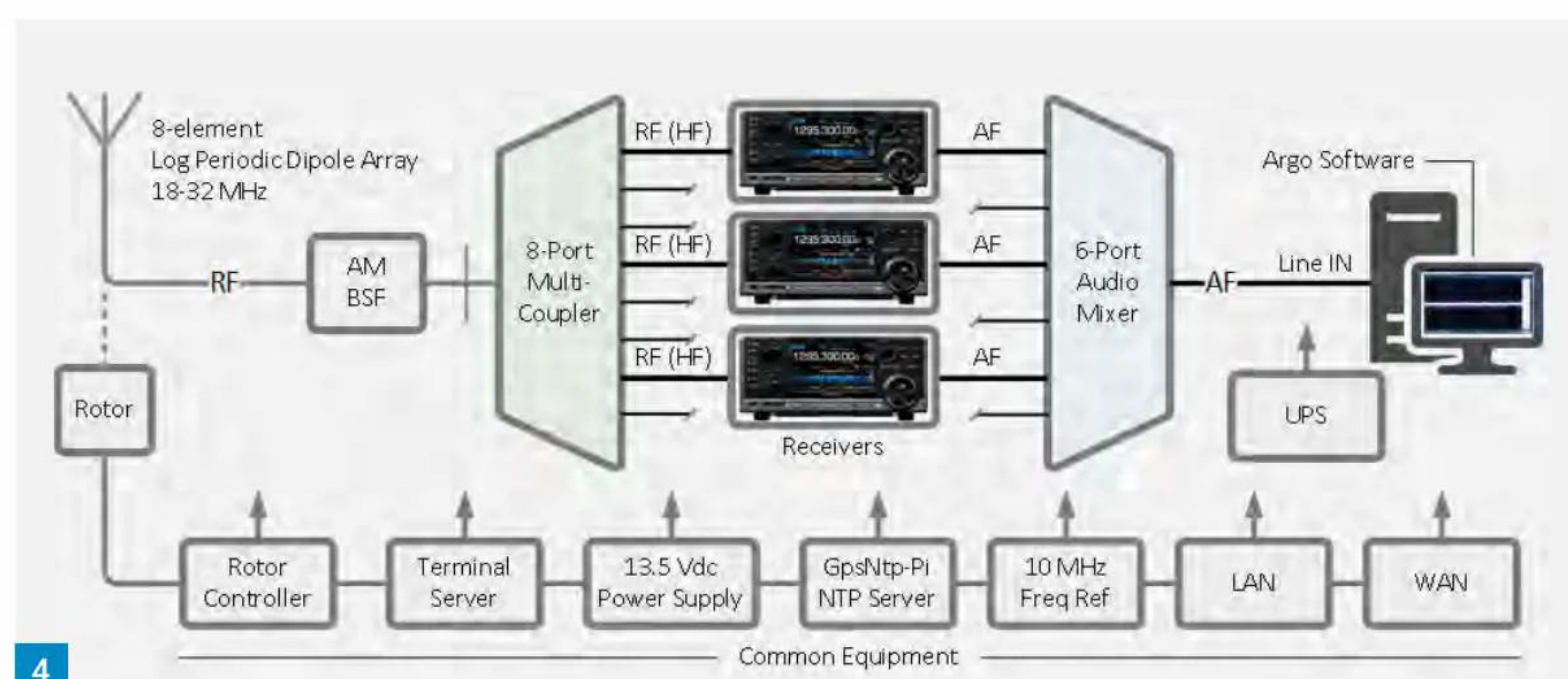
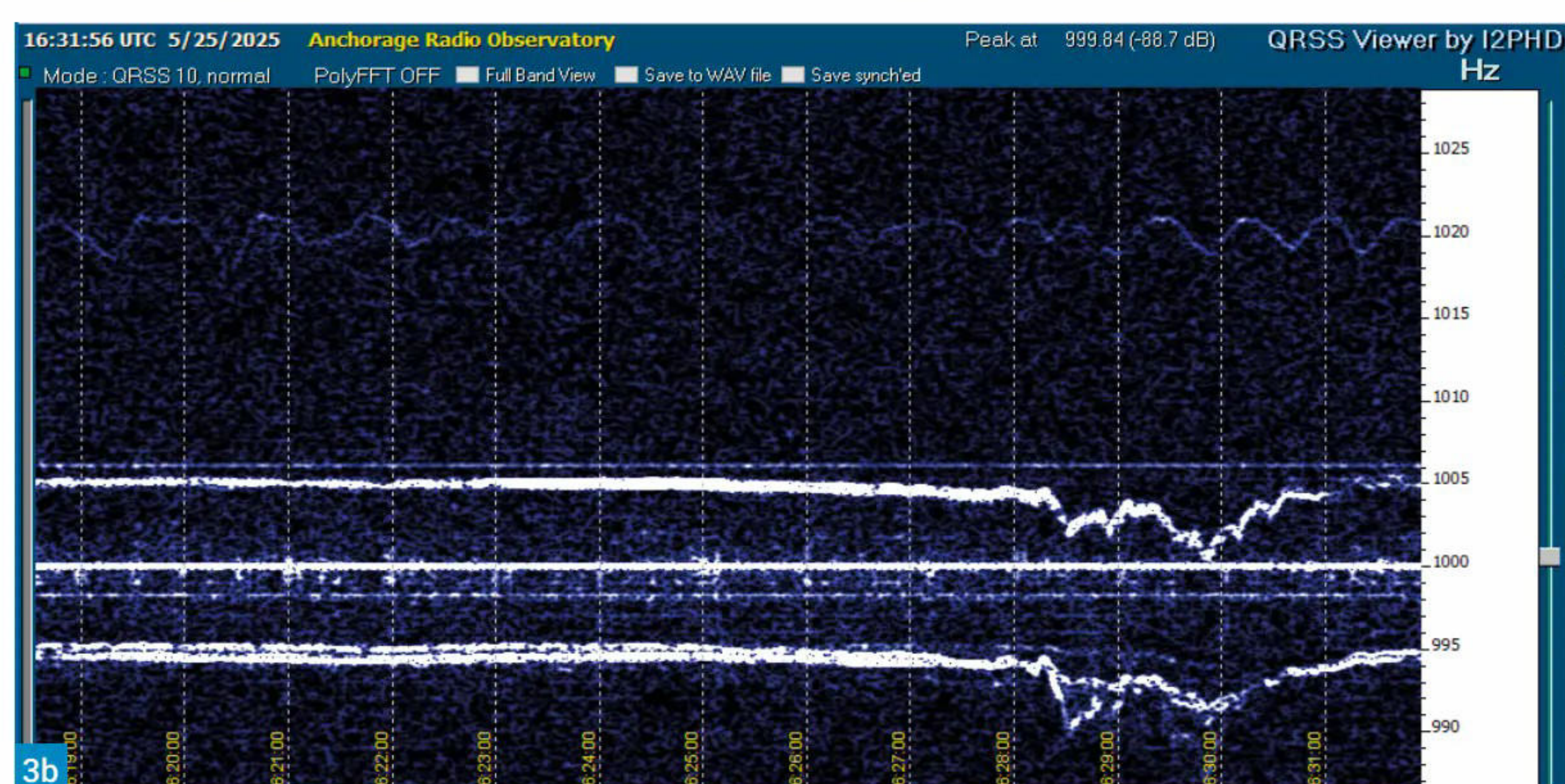
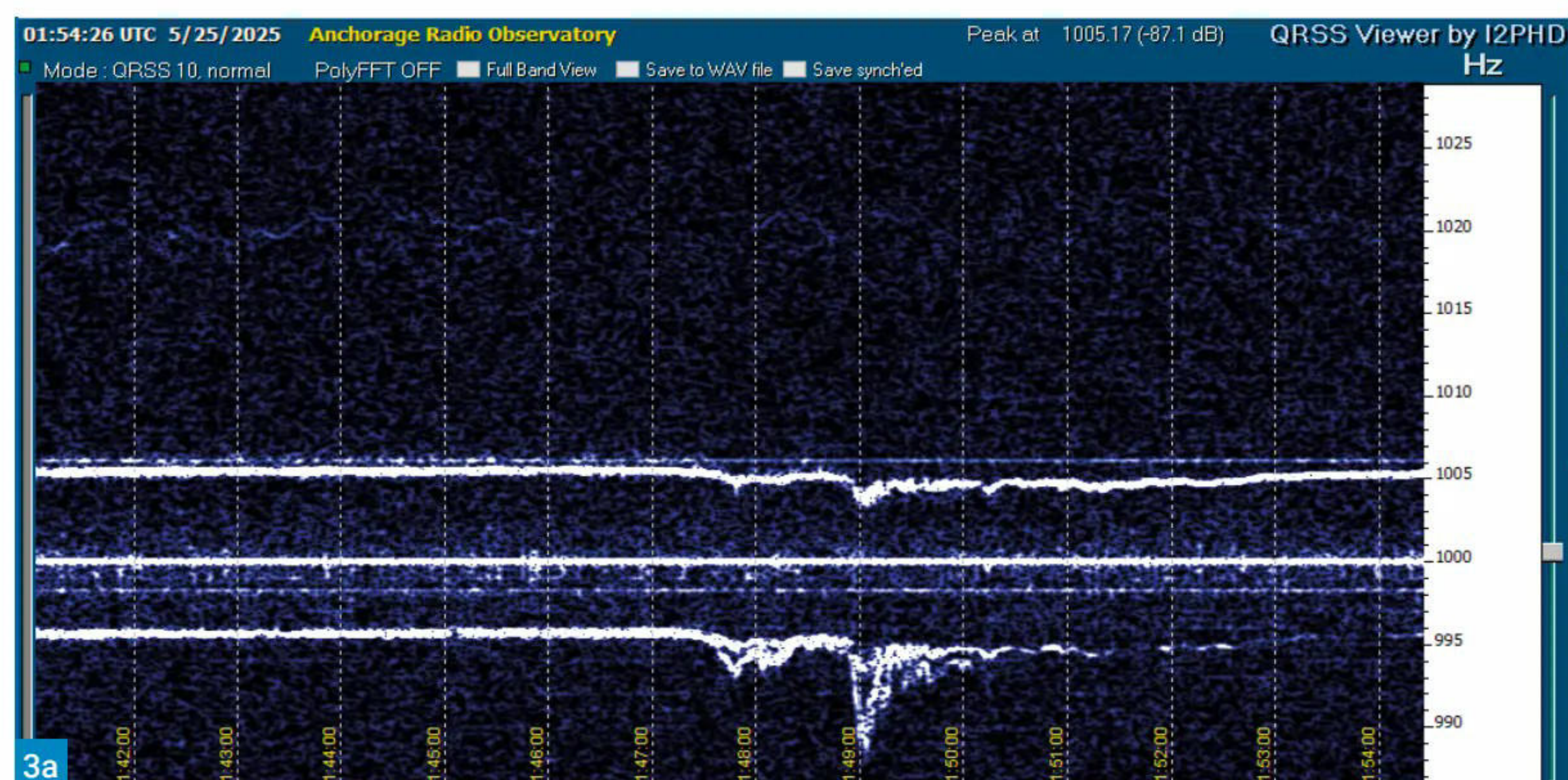
[3] Space Weather Prediction Center:

www.swpc.noaa.gov

[4] Argo software:

www.i2phd.org/argo/index.html

Fig. 1: Propagation paths from WWV (marked as WBU) and WWVH (LIH) to the Anchorage receivers (ANC). The codes designate the airports nearest the stations in Colorado, Hawaii and Alaska, respectively. The WWV transmitters are about 3800km from Anchorage and the signals propagate almost entirely over land. The WWVH transmitter is 4400km distant and the signals propagate almost entirely over water. Because of their lengths, the paths involve multi-hops. Both paths were on the dayside of Earth during the 0152 and 1630 flares but on the nightside from 0700 to 1230. The flare at 0627 occurred when the Sun was less than 2° above the Anchorage horizon and it had no observable effects on the ionosphere along either propagation path. Similarly, the flare at 1005 occurred when the



Sun was about 6° below the horizon. Image source: <http://www.gcmap.com>

Fig. 2: Conceptual spectrum that shows how the receiver tuning (20.001MHz) is set in relation to the transmitted carrier frequency (20.000MHz) when the receiver is set to LSB (shaded sideband in drawing). For the frequencies shown, the carrier will be demodulated and heard as a 1kHz tone. If the received carrier frequency increases, that is, the red vertical line moves to the right in the drawing, the demodulated frequency will decrease Hz-for-Hz. For example, if the received carrier frequency increases 10Hz to 20.000 010MHz, the demodulated frequency will decrease from 1000Hz to 990Hz.

Image: © 2025 W. Reeve

Fig. 3a: SFDs from the X1.1 flare. The SFD is

most apparent at 15MHz with 6Hz deviation (995Hz trace), and it has two deviations about 1 minute apart. The 20MHz carrier (1005Hz trace) experienced almost no deviation. The traces at 998 and 1000Hz are spurious and unrelated to propagation.

Fig. 3b: SFDs from the M8.9 flare. In this example, the frequency deviation at 15MHz (995Hz trace) and 20MHz (1005Hz trace) were comparable and on the order of 4Hz. The SFD event spanned almost 3 minutes.

Fig. 4: Receiver and antenna system at Anchorage. Although the receiving antenna may be pointed to any azimuth, it was set to point to true South (180°) when the SFDs were received. WWV azimuth is 106° and WWVH is 194°. Image: © 2025 W. Reeve

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Georg Wiessala
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Omni RF are a small independent newcomer to the UK antenna market. I was intrigued to see one of their new receive aerials advertised in a recent video, in conjunction with Martin Lynch & Sons (*PW* September 2025, 6, 24-27, **Fig. 2**). I have always been really interested in what reception can be achieved with 'loop-on-ground', or simply 'on-the-ground' (LOG/ OTG) antennas, including those buried *underground* and used for some VLF monitoring. What is more, it seems to have been a while since a new, smaller manufacturer has emerged in an area that currently seems to engage many radio hobby and amateur radio groups.

The engineering and general theory of OTG antennas is covered by most of the major antenna publications (e.g. by the ARRL and RSGB) as well as in *Rothammel's Antenna Book*. The latter is now available in English and is for many the go-to antenna manual. It is **Matt Roberts KK5JY** who is often credited with inventing this kind of magnetic loop-on-the-ground. With this in mind, I recently approached ML&S sales manager, **Tony Wiltshire M0TNY/ZB2TY** for a review unit of the receive-only Omni RF LOG Aerial, and he kindly sent me one. Another Matt, **Matthew Payne M0LMK/ K15GXV**, **Fig. 1**, is the brains behind Omni RF Antenna. Matt has manufactured specialist low-noise receive antennas for HF for use in what he calls 'urban' stations for a while.

Down-to-earth reception: the history of an antenna

When I asked Matt about the underlying motives for developing his antenna, he said, "I started building low noise 'On-The-Ground'-style antennas around

The Omni RF OTG Antenna and RTL SDR Blog V.4 SDR

Two for the price of one: **Georg Wiessala** checks out a receive loop antenna and an RTL Dongle.

*five years ago when the noise floor at my home became unmanageable. The original Loop On Ground that is well documented by **KK5JY** was a great fit for my small garden and was easy to hide in the grass. Within a few weeks, it was almost invisible and now, over five years later, the element is completely hidden and still working very well".*

He then added: "I've spent considerable time over the past five years testing and improving the design, which mostly involved testing different transformer cores and winding combinations in real-world use as well as on the bench. The design that I currently sell is the result of this work, and I am very happy with its performance. The product itself (**Fig. 4**) is handmade in my workshop, using high-quality components. Each assembly is tested throughout the production stages to ensure performance. As for Omni RF, I aim to bring more great products to the market with a focus on optimising the receive side of our hobby and helping to combat the noise that so many of us suffer from."

Key characteristics and description

Remember, the Omni RF is a *magnetic* loop antenna; i.e. it uses only the magnetic part of any radio signal. Designed to resolve noise problems on the HF bands, it is meant to allow users to hear more. The 3-D printed ASA Omni RF base unit (Omni RF

Log-50-50; **Fig. 2**) contains a fully isolated 9:1 transformer with a custom-made PCB 77-mix ferrite core (the standard here is '44'). 'Fully isolated' means the loop terminals are not physically connected to the coaxial one. All hardware is machined from marine-grade stainless steel. The ferrite core, number of windings, and high build quality make this aerial different to other OTG setups, especially cheap 'homebrew' ones.

This loop aims to achieve the minimum amount of loss. Being magnetic, it rejects the electrical component of the EM signal, including local electrical noise generated in metropolitan environments. Key user scenarios may include general shortwave listening, stealth reception, low-band DXing, and running a remote (SDR) station. The matching loop that comes with the transformer is available in 60 or 100 foot lengths. For secure installation, both elements (loop and transformer) peg into the ground with the supplied metal pegs. Heat-shrink markers, spaced at every 15 (or 25) feet on the wire, show you where to place and space.

Lower and cleaner: the ideas behind the Omni RF antenna

What you can achieve by using this antenna, according to Matt, is a lower – but cleaner – degree of usable signal reception. The idea is that the noise

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Fig. 1: Matt, proudly presenting his new antenna.

(Matthew Payne) Fig. 2: "This Antenna Lives on the Ground?" The recent ML&S video about the Omni RF Antenna. (Martin Lynch & Sons Ltd.)

Fig. 3: The Omni RF OTG Antenna is compact and performs surprisingly well. This is the transformer unit. (Martin Lynch & Sons Ltd.) Fig. 4: The front of the RTL SDR Blog V.4 Software-Defined dongle receiver. (RTL Blog)

floor is reduced to a maximum of S1 and the SNR (Signal-to-Noise-Ratio) is improved, especially in a noisy environment. When used in conjunction with a preamplifier, the idea is that this aerial helps you to foreground the wanted signal and minimise the noise. An initial test by Martin Lynch & Sons Ltd. appeared to confirm this; here, Omni RF was compared directly – and favourably – to the popular Mydel JPC-12 portable shortwave antenna kit.

So how did this new OTG aerial fare in my shack and garden? I would say extremely well. I connected it to both an SDR receiver (my new SDRplay nRSP-ST) and my trusted old AOR AR7030 HF radio, and I was very pleased with the DXing results I achieved. I am mainly interested in broadcast DX. Here, noise levels on the main bands during the daytime were considerably lower, while the signals I wanted came through more strongly. Therefore, this antenna does what it says on the tin, as it were – and does it well. It brought me many new signals from Eastern Europe and South America, and I had no problems digging out some special SSB signals, such as radio amateurs, utility data stations like weather data, and time signal stations. The antenna will make a very useful addition to your shack indeed if, like me, your principal interest is in broadcast DXing on Medium and Short Wave. Just don't forget that you have it when you mow your lawn.

The Omni RF Transformer Unit (with BNC or SO239 connector) retails at £75 at Martin Lynch & Sons Ltd. You can add your own element or buy the loop wire kits with the 60 or 100 feet of wire (for a 15- or 25-foot-per-side loop) for another £34. My warm thanks go to **David Millward M0TPT** and the team at ML&S and to **Matthew Payne M0LMK/ KI5GXV** (matt@omni-rf.com) for the loan of the review units and for answering my questions.

The RTL SDR Blog V.4 SDR receiver: the definitive dongle?

I have been cruising the bands for those mysterious, weird and unexplained signals with the aid of various radio receivers this month, among them the brand-new SDRplay nRSP-ST Software-Defined radio, which I reviewed in *PW* April 2025: 16-19. More on this later, as **Fiona Bruce** might say.

In the remainder of this month's column, I'd like to focus on another kind of new radio: the RTL SDR Blog V.4 Software-Defined Receiver dongle (Fig. 3). Some more recent reviews of this updated, limited-edition device are now gradually coming out, e.g. by NNN0BOC:



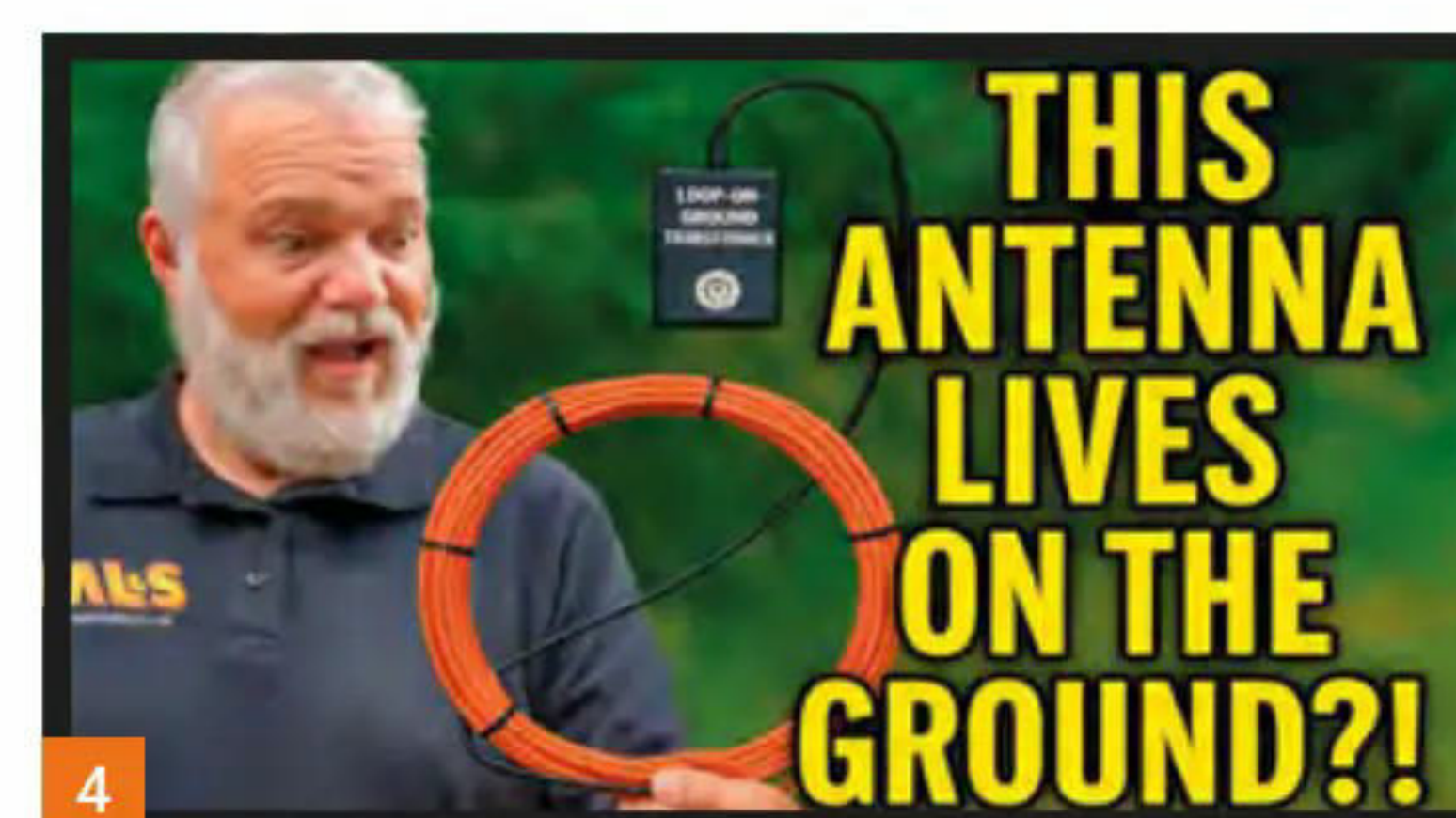
<https://udxf.nl/RTL-SDR-V4-Review.pdf>

I have recently acquired this USB stick receiver because its predecessors (e.g. V.3) have acquired a good name among DXers and general radio hobbyists, in terms of value for money, and ease and versatility of use. I did have the V.3 too, and I had always been very happy with it.

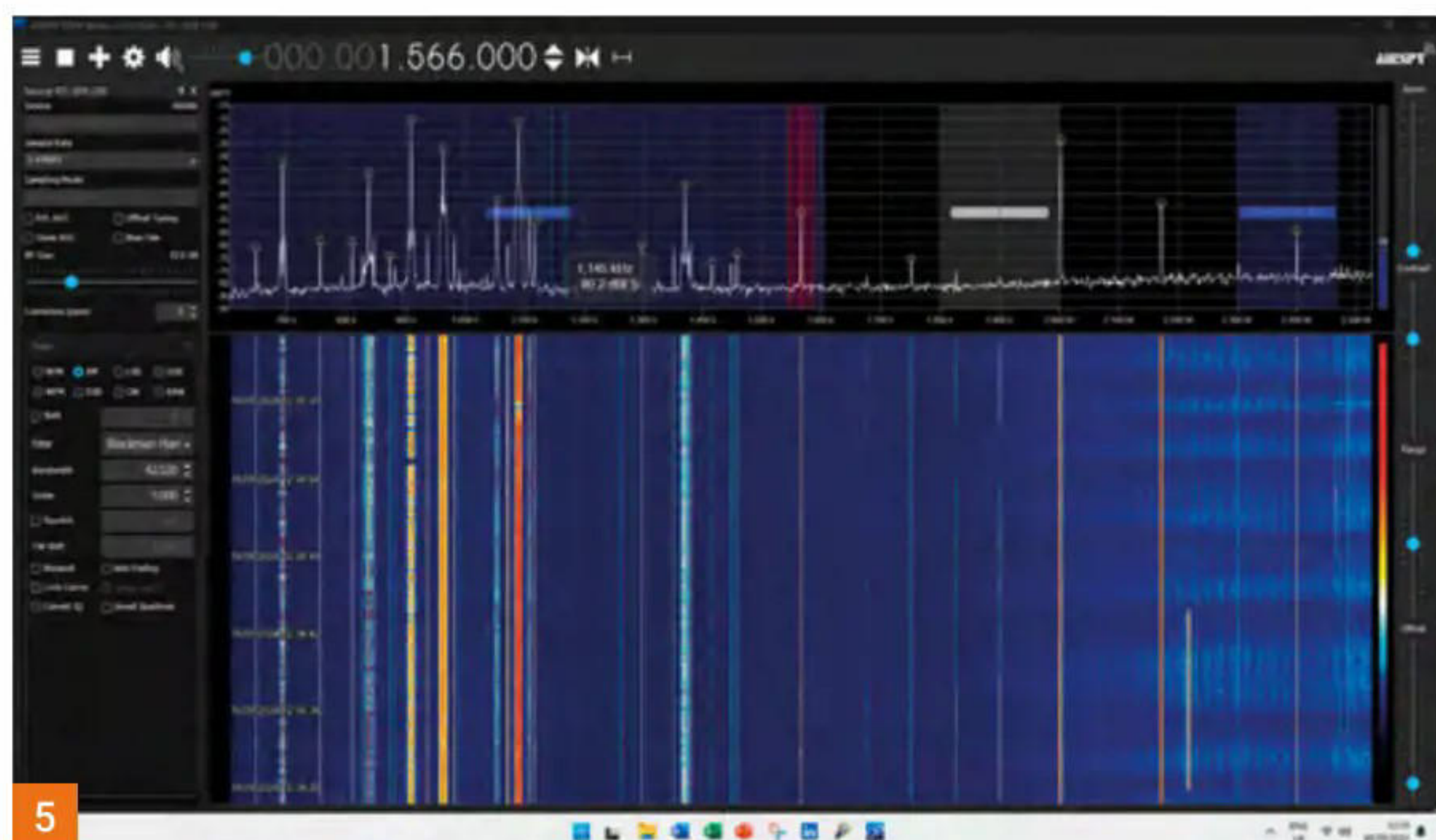
In terms of this successor model (V.4) – and if you are new to Software-Defined Radio (SDR) – you might well benefit from carefully studying the RTL user guide closely when you set this up *and follow it to the letter*. Make sure that you install the V. 4 driver (.dll) correctly and follow instructions as regards the 'Zadig' app. When you download SDR#, you will have to extract it to *its own folder on your PC*. In this context, you may find *The Big Book of SDR# v 5.3*, by **Paolo Romani IZ1MLL**, very useful. You can easily find and download this, and much more useful stuff, from the RTL website:

<https://tinyurl.com/3vyv64hc>

The makers of the V.4 unit promised improved



HF performance via an onboard upconverter and enhanced filtering, which is achieved via a new chip. Before you begin, I would like to suggest that you invest in a short USB (male-to-female) extension cable, so you don't have to connect the RTL SDR directly to your PC. This is for reasons of avoiding too much wear and tear. Naturally, you must treat your RTL SDR to the best antenna that you can afford and use accessories that make sense, such as a galvanic isolator or a specialised aerial if you wish to explore niche areas, such as VLF or satellites (see below).



In use: The RTL SDR Blog V.4 in the shack

I began with WFM broadcast radio with RDS, which worked very well indeed. On VLF, LF and Medium Wave, this dongle was nowhere near sensitive enough at my QTH, but I did manage to pull in some weak Medium Wave broadcast stations, such as a regional small-scale religious broadcaster, *Salaam BCR* from Bury (Lancashire) on 1566kHz (**Fig. 5**). This station has since been shut down by Ofcom, so this may be one of the last catches here.

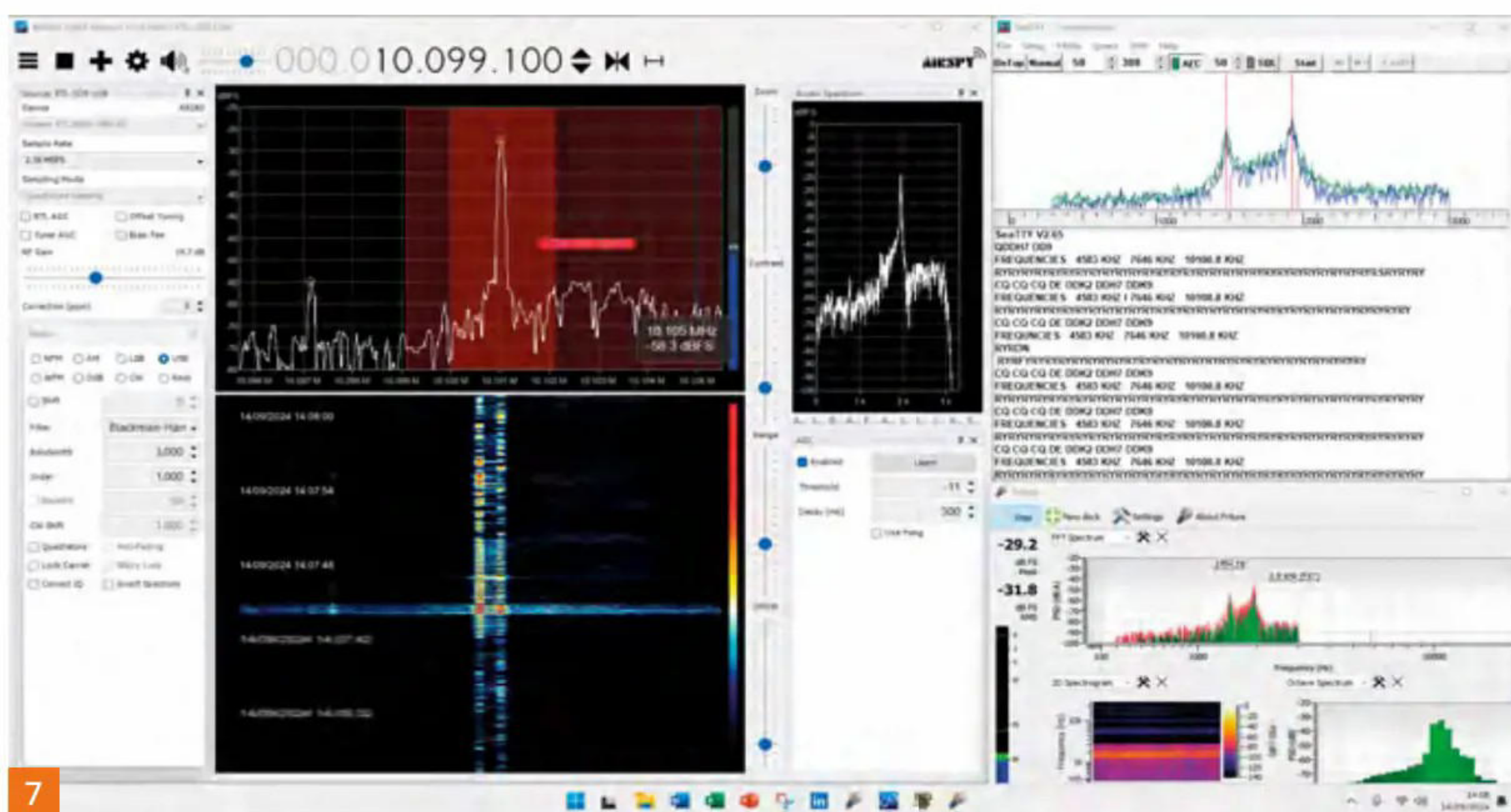
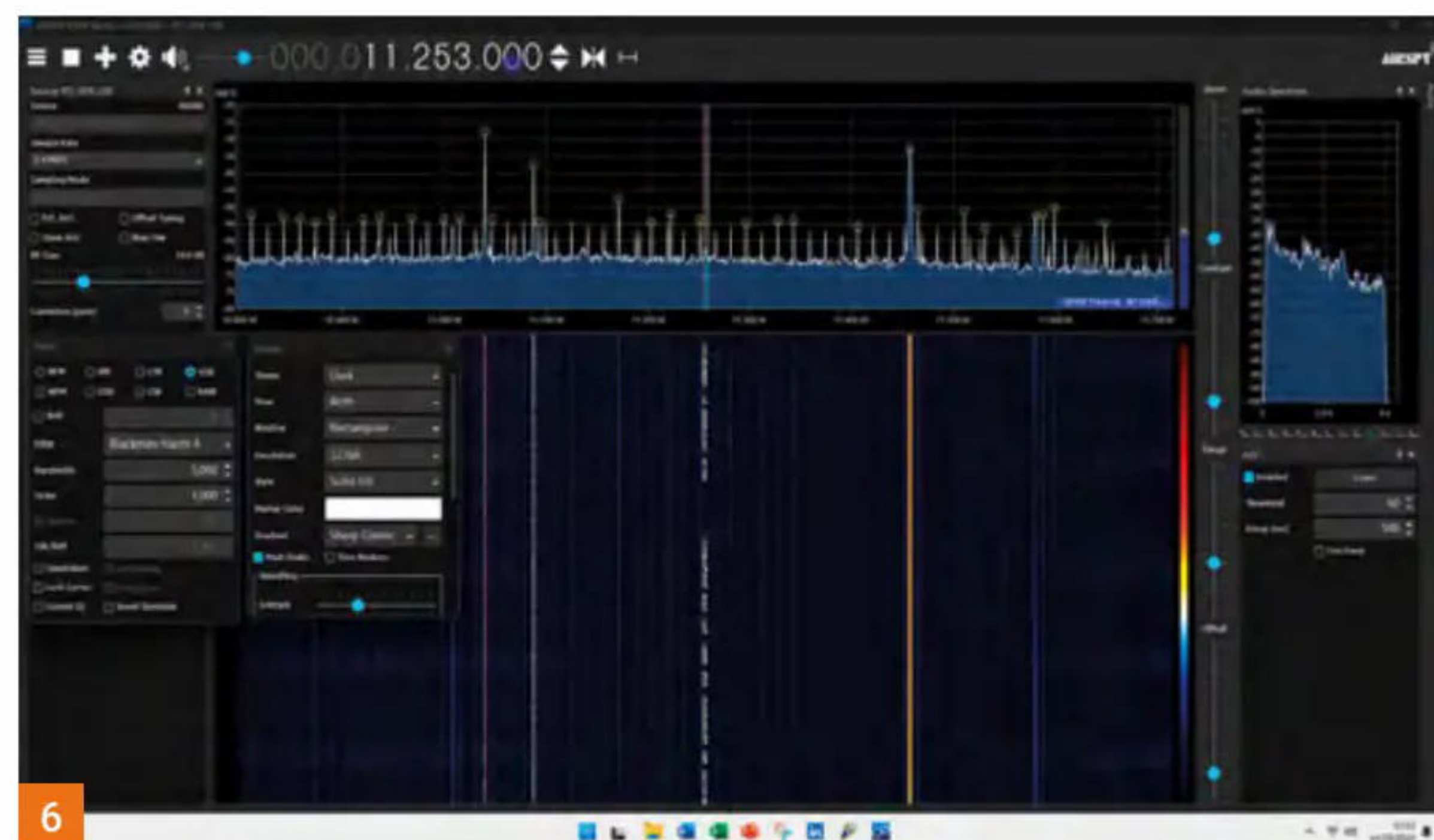
Moving to various HF data transmissions, the automated aeronautical meteorological voice transmissions from Shannon and RAF VOLMET (**Fig. 6**) came in with sufficient quality. The reception of the daily radio teletype (RTTY) broadcasts from the German Weather Service (DWD, *Deutscher Wetterdienst*) near Hamburg on 10100.8 (10099.1) kHz (**Fig. 7**) was reasonably stable during an extended period. This was good for a receiver of this ilk. Last but not least, a recent big contest on the 20m amateur radio band really brought the computer screen to life (**Fig. 8**), and I could find and identify many participating stations. In my brief foray described above, I used *SeaTTY*, *Zorns Lemma 11.42* and *Friture* software for decoding and display.

The RTL SDR Blog V.4 SDR dongle will be very suitable for you if you are a newcomer to the world of Software-Defined Radio, or if you are looking for a secondary device, or a receiver for a dedicated band, service or frequency. This small receiver invites experimentation, and you will soon find that you will want to move on to a more substantial SDR if you are this way inclined.

Crazy spy stuff: a case-study (-...- -.....-...../ .--.-..-/ ---.-..-----

I then undertook a case study of interest to me: I turned to using the RTL SDR Blog V. 4 to receive some 'numbers and oddities' (see headline). By that, I mean those unusual and at times downright weird noises, emissions and signals on HF and elsewhere. Inspired by the book *Shadows of the State*, by **Lewis Bush** (Brave Books, 2018), I hunted what is left of what my XYL calls the 'crazy spy stuff':

This includes those mysterious 'number stations' I found so fascinating when I was growing up in a Germany, still divided by the 'Iron Curtain'. At the



time, many of those transmissions were made by means of the (in-) famous ‘Gerät 32620’ (Device 32620) German *Sprach-Morse Generator* of the East German Stasi (*Staatssicherheit*, the Secret Police of the GDR; cf.: *RadioUser*, May-July 2018; **Fig. 9**).

But even today, many signals on HF can still be exceedingly mysterious and strange. Consider, for instance, the 'Buzzer' (UVB-76 / YB5-76, 4625kHz)? It is said to be a Russian channel marker, located at the Kerro Massiv transmitter site, in Leningrad Oblast, Russia, UVB-76:

<https://en.wikipedia.org/wiki/UVB-76>

I did find that the RTL SDR Blog V.4 was a great instrument for this kind of HF monitoring. With it, you will soon be hunting Morse and voice stations, single-letter and cluster beacons, five-letter CW groups, solitaires, channel markers, NDBs, plus a whole host of others, some of it by radio pirates and jammers. In this context, I found the RTL SDR Blog V.4 really versatile; the dongle positively invites eavesdropping and experimentation.

If you're into strange, unusual signals and weird radio stuff – and who isn't? – this dongle is a great tool indeed. There are some excellent aids for navigating your way around this field, such as *Klingenfuss*, the *Conet Project*, the *Enigma 2000* Group, the *Priyom* homepage, **Lewis Ringway's** *Ringway Manchester Blog*, and the *Signal Analysis for Radio Monitoring*, by **R. Proesch**, which many swear by. **Table 2** is my own personal shortlist of unusual frequencies to try on the RTL SDR Blog V.4.

Fig. 5: Now closed: *Salaam BCR* from Bury (Lancashire) on 1566kHz. (Georg Wiessala)

Fig. 6: RAF VOLMET on 11253kHz USB (MVU, London) came in strongly on the dongle. (Georg Wiessala)

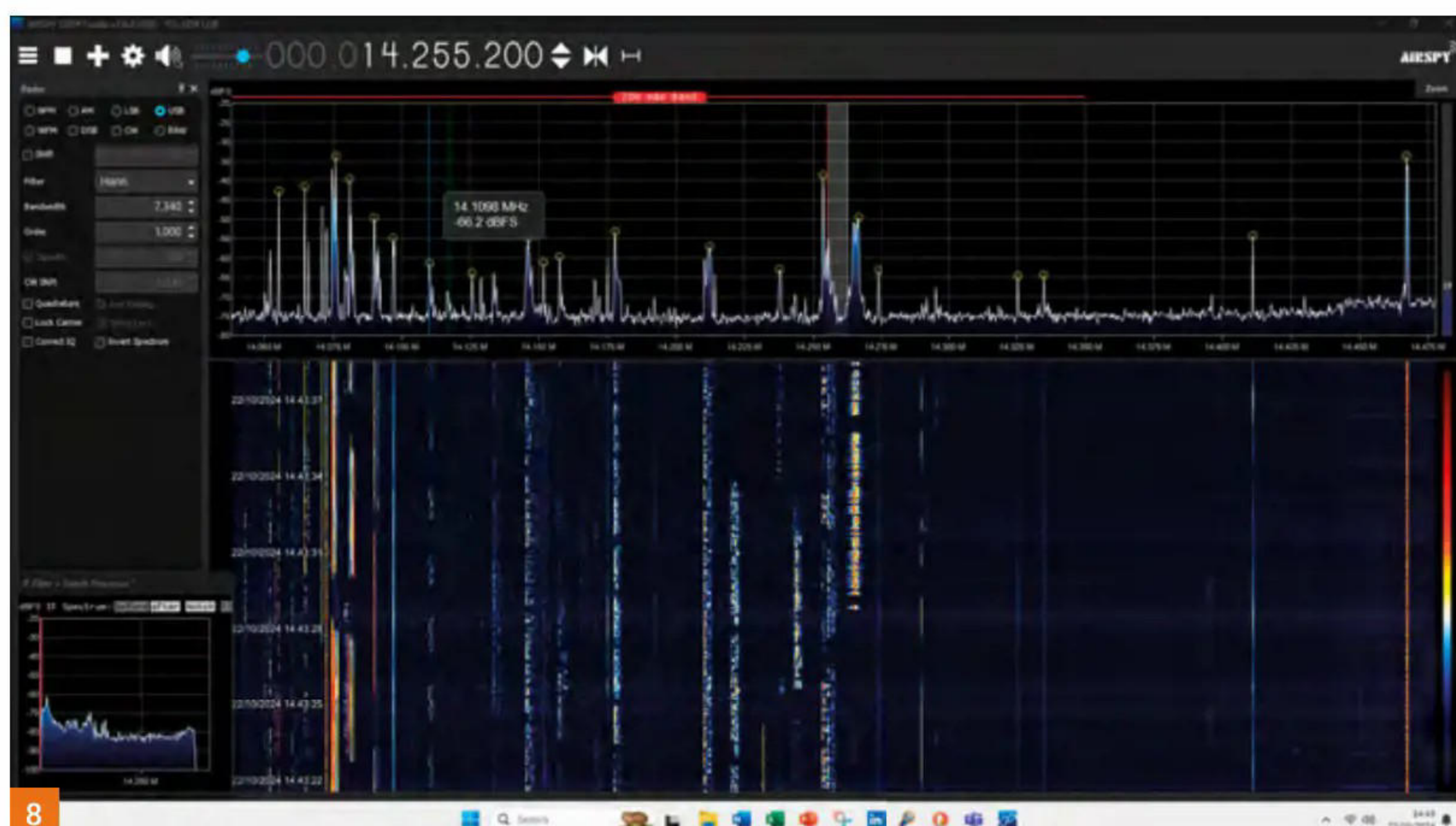
Fig. 7: The German Weather Service (*Deutscher Wetterdienst, DWD*) broadcasting RTTY on 10100.8 (10099.1) kHz. (Georg Wiessala) Fig. 8: A busy weekend contest on the 20-metre band. Here, I heard PA1WLB on 14255.200kHz. (Georg Wiessala) Fig.

9: This recording of the 'Conet' project shows the Gerät 32620 ('Device 32620') German *Sprach-Morse Generator*. (The Conet Project) Fig. 10: *The Big Book of SDR#* is a comprehensive primer to running the RTL SDR Blog V.4 with SDR# software. (Paolo Romani)

Conclusion

The Omni RF OTG Antenna can be highly recommended, is easy to install (and hide), works well and will enhance your pleasure in just listening, as well as for more specialised monitoring applications. On account of its size and portability, it is naturally also a great choice for DXpeditions and holidays. Just don't hammer it down in someone else's garden or leave it behind.

For what it is, the RTL SDR Blog V.4 SDR dongle, which succeeds the 'V.3' model, is a solid SDR receiver. Beware: this might easily become your preferred 'gateway drug', as it were, to more complex exploratory SDR excursions in the future. Or you might make this a main or secondary shack receiver. It's compact and also makes for a useful



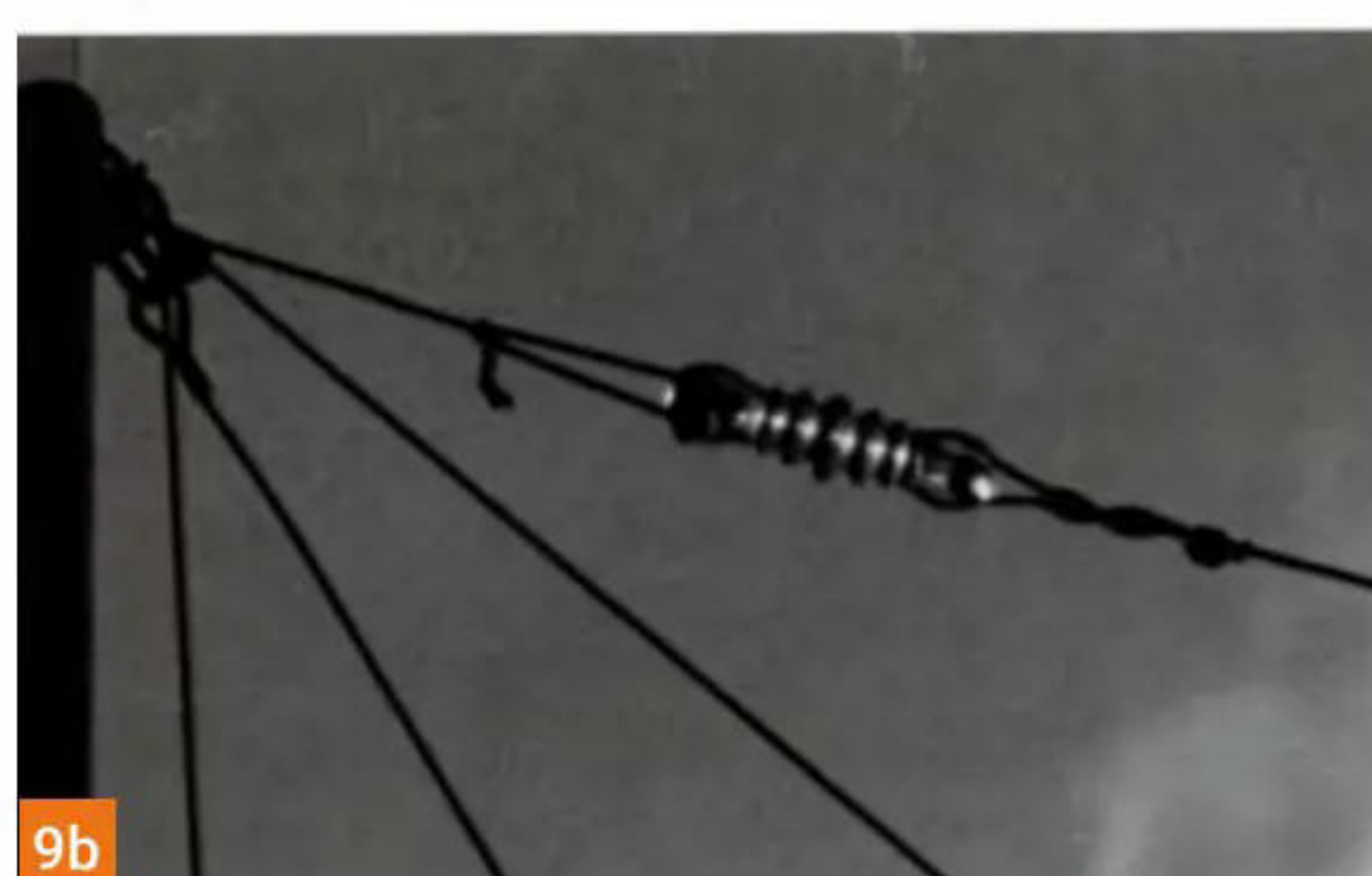
The Conet Project

Recordings of Shortwave Numbers Stations /1111



The Conet Project

Recordings of Shortwave Numbers Stations

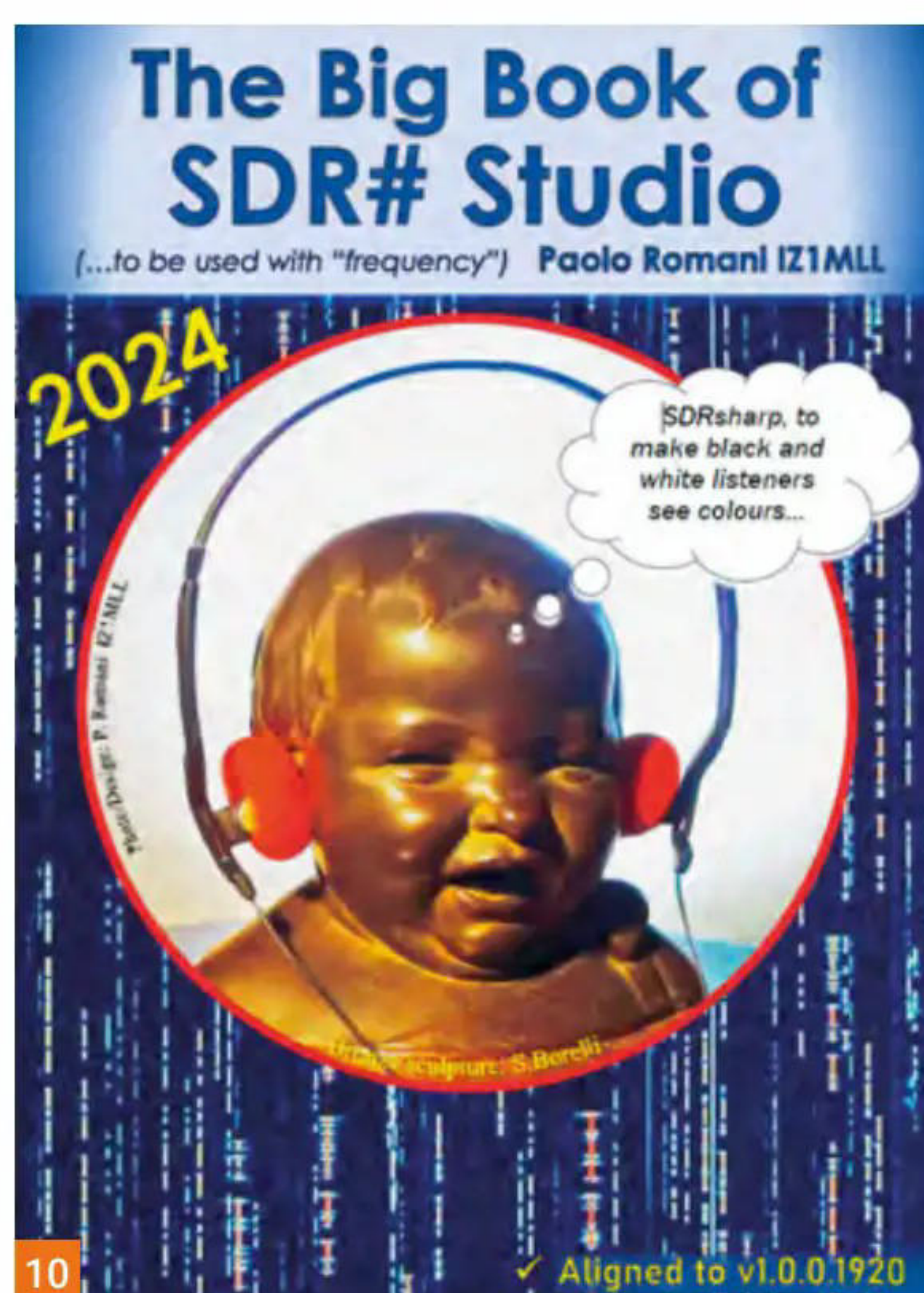


one-frequency monitor over longer periods of time. Use it with the Omni RF antenna (see above), and you have a nice compact monitoring setup in a suitcase. Just like the Cold War spies, in fact...

Paolo Romani's *Big Book of SDR#* (Fig. 10) has given me some ideas about how to use this RTL dongle with the SDR# software. Beyond that, I am planning to delve into more with the RTL Blog SDR V.4, for instance, in the area of satellite transmissions. Heavens above! Especially since we now have a useful and reasonably-priced dish aerial, in the pleasing shape of the crowd-funded and 3D-printed 'Discovery Dish' from Kraken RF:

<https://tinyurl.com/497kvfsx>

A must-have for budding radio astronomy explorers, I should say. More on my experiments



later – please watch this space.

Anyway, I have kept the review units of both the Omni RF OTG Antenna and the RTL Blog SDR V.4. SDR. I shall use the latter this month to explore more voice traffic, data signals and VOLMET transmissions on the Airbands. I was recently inspired by *Airband Radio on the RTL SDR*, a useful short hobby book by **Philip G. Collier**. Beyond Airband, I am putting the RTL SDR Blog V.4 SDR to use in monitoring and observing shifts in wider propagation conditions, to name but one more example.

The RTL SDR Blog V.4 SDR is available now from RTL, some radio retailers, and on eBay and Amazon. The RTL SDR landing page on t'interweb, by the way, is a treasure trove of information, ideas and reviews, ranging from VLF to VHF and beyond. The Omni RF is available from Martin Lynch & Sons Ltd. and Omni RF. The Omni RF Transformer and Loop Wire retail for £75 and £34 respectively; the RTL SDR Blog V.4 is £ 39.49 at PW advertiser TechnoFix UK:

<https://tinyurl.com/4z69rnje>

Further Reading & Resources

- Burger, O. and Dvorský, M.: *Magnetic Loop Antennas* (Looper, 5th ed. 2025): www.loop2er.cz/books
- Bush, L. (2018) *Shadows of the State* (Brave Books) <https://tinyurl.com/4wm6a3s7>
- Collier, P. G. (2021) *Airband Radio on the RTL SDR* (ISBN: 979-8755631945)
- ENIGMA 2000: www.signalshed.com
- European Radio Scene: *The Spectrum Monitor*, September 2025: 71-72.
- KK5JY (Online Article): www.kk5jy.net/LoG
- Laufer, K. (2015) *The Hobbyist's Guide to the RTL SDR* (4th edition)
- Letter Beacons: https://en.wikipedia.org/wiki/Letter_beacon
- ML&S (Test of the Omni RF, July 2025): <https://tinyurl.com/2pu747uz>
- Numbers & Oddities Newsletter: www.numbersoddities.nl/N&O-317.pdf
- Omni RF Homepage: www.omni-rf.com
- Phoenix, J. (2023) e-book ('Behind the Curtain').
- Priyom: <https://priyom.org>
- RTL SDR: www.rtl-sdr.com
- SWLing Post (Blog): <https://tinyurl.com/3yexurfy>
- Utility DXers Forum: www.udxf.nl
- Walton, C. (2024) *Spies – The Epic Intelligence War between East and West* (Abacus)
- Wiessala, G. (2024) 'The Enduring Fascination of Shortwave Sounds' *The Spectrum Monitor*, May 2024: 66

Unusual and Irregular Transmissions to try on the RTL SDR Blog V.4

- The *Buzzer* (UVB-76 / YB5-76, 4625kHz)
- French Military Morse Code Training Centre (FAV22, Mont-Valerien FRA, 3881 and 6825kHz)
- The *Katyusha Folk Tune* (6322kHz)
- The *Pip*: (5448 & 3756kHz day/night; from Rostov-on-Don, Russia)
- The *Squeaky Wheel* (3828 & 5473kHz)
- The *Tennis-Raquet* (or: *Stalingrad Ticking Clock*, 6911kHz)
- *Time-Pips* (?) (6230 & 6930kHz)
- Unid.: 6819kHz (sounds like telephone); bleep-like transmissions on 5780, 6218, 6230, 6402, and 6930kHz.

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Keith Rawlings G4MIU
keith.g4miu@gmail.com

The FA-VA6 is a portable Single Port Vector Antenna Analyser designed by **Michael Knitter DG5MK** and is a much-improved version of his earlier FA-VA5. Like its predecessor it has been aimed at both Amateur and Professional users. It has a frequency range of 10kHz to 1GHz with a resolution of 1Hz and while it retains basically the same signal chain as the earlier FA-VA5 it has been much improved and is designed to undertake a full range of S11 reflection measurements.

Externally, it looks similar to the VA5 as it has the same anodised case and retains the BNC input socket (I am pleased to see this, I am not a fan of the SMA connectors used on a lot of analysers).

This new analyser has a 320 x 240 IPS TFT display, which is readable in sunlight, and the three function buttons of the VA5 have now been replaced with a professional quality silicon rubber 4x4 keypad and the new unit has a USB-C socket for battery charging and PC connectivity.

The VA6 has an internally fitted 18650 industry battery (Panasonic NCR18650BD) with 'extensive' protection and charge control which gives over 12 hours use with full display brightness. The analyser has 'Soft power on/off' with a quoted ten years standby.

The FA-VA6 Vector Antenna Analyser User

Keith Rawlings G4MIU puts this new analyser through its paces.

It comes as a 99% complete kit with a fully assembled and tested PCB, which consists of the SMD-assembled board, BNC Socket, graphic display and 4x4 silicone keypad. Also included is a Lithium-Ion Battery (UK addresses only).

The analyser itself measures 135 x 85 x 28mm with a weight 0.27kg including battery. It comes in a nice presentation case, **Fig. 1**, that will provide protection when not in use, a comprehensive printed assembly/user manual of some 79 pages, USB cable, 3 x Amphenol BNC plugs and a resistor to make up a basic Cal Kit (good to about 100MHz), A test sheet with serial number, four rubber feet, nut and washer for the BNC connector, Li-ion battery, T10-Tork bit (for the supplied screws).

'Kit' assembly

Although the analyser is supplied as a kit, only minimal assembly is required and this is fully

described in the manual (which by the way is very good).

As far as I can tell, purchasers have to remove the PCB from the case, solder a battery holder onto the PCB, insert the battery, replace the PCB back in the case, screw everything back in again and then fix the nut to the BNC socket.

I say 'as far as I can tell' because the model I have for this review arrived pre-assembled. This is due to it being the first model to arrive at **SDR-Kits**, the UK distributor, and was being put through its paces by **Jan G5BBL** before it was sent to me for this review. At the time of writing a full delivery of analysers was expected mid-September.

Because of this I can't bring you the experience of assembly but it looks simple enough and since starting this review I have seen that DM5TU has five short YouTube videos on the subject:

<https://tinyurl.com/yxxhrf5m>

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Fig. 1: The FA-VA6 outfit. Fig. 2: Multi frequency sweep. Fig. 3: TDR reading.

Operation

On switching on, menu button top right of the keypad, the user sees a short intro on the display, and is then presented with the **Main Menu**.

This is scrolled through using the up and down arrow keys and functions selected by pressing the 'Return' key. These keys are all conveniently located together on the same column on the right of the pad. When a Main Menu Item is selected the analyser goes directly to that function and then any different Modes associated with the Function can be cycled through using the Return key.

Frequency entry can be made by either direct entry, in Hz, from the keypad, or stepping through the entry box changing digits using the up/down/left/right keys.

Main Menu Items are Single Frequency, Multi Frequency, TDR, Applications (5 Band SWR, Cable Length/Velocity/Impedance/Loss), USB

Mode, Frequency Generator, Clock, Settings, Power Off.

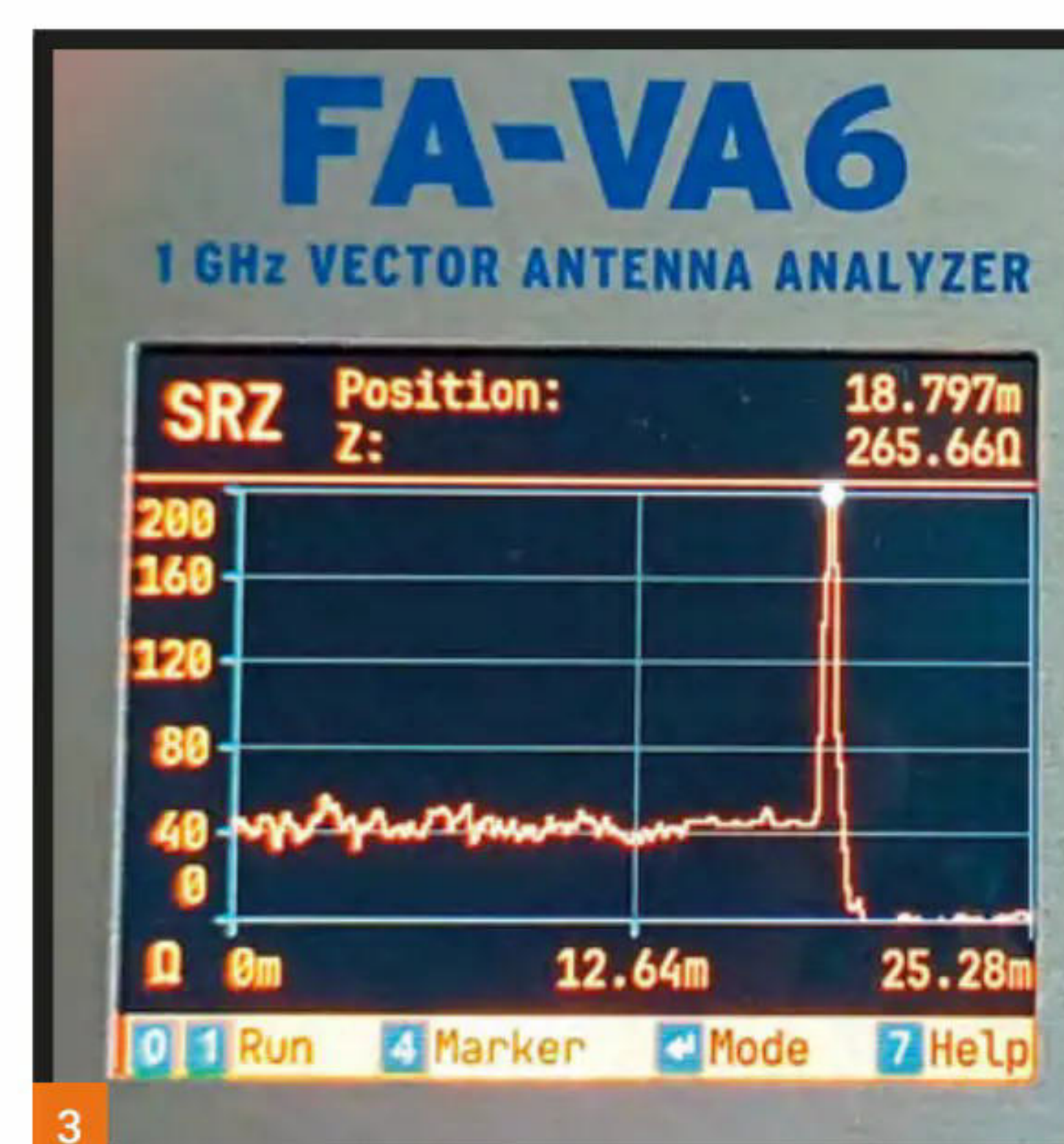
For example, if we select **Multi Frequency**, we are presented with an SWR graphical display with the SWR level on the Y axis and the Frequency in MHz on the X axis along the bottom of the screen. See Fig. 2.

If we now press the Return key, the analyser displays firstly a Z (Impedance) graph, press again and a smith Chart is displayed, again and an S11 graph is shown, pressing once again we get back to SWR.

Pressing 'Menu' steps back one level.

Options available within the selected menu item are displayed at the bottom of the screen. For example, on the same Multi Frequency option pressing '0' initiates a single measurement sweep, '1' initiates a continuous sweep. Pressing '1' again stops the sweep while holding the displayed trace.

Pressing '3' brings up a configuration menu where Start/Stop/Frequency and centre of the Span may be set. Also, Calibration settings



may be selected here in addition to any Port-Extensions required and these may be set as either Time or Length. The analyser's Reference impedance may be set (25, 50, 75, 100, 120, 150, 200, 300, 450, 600Ω). Cable details such as Type, Vf, Sweep Speed, Display Frequency Bands, SWR Marker Autoset, Impedance Model

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Fig. 4: 5-band measurement of my 6, 2, 70cm mobile antenna. Fig. 5: Single frequency reading from a 2:1 test load. Fig. 6: Displaying 'Large' mode. Fig. 7: VA6 as a dip meter. Fig. 8: The VA6 checking an antenna at the Braintree club's operating evening.

Parallel/Serial, Sweep Mode as Fast / Balanced / Accurate.

Pressing '4' sets the analyser into marker mode. Pressing the Left/Right keys moves the marker along the X axis of the graph with reference to frequency. The Up/Down keys alter the Y axis scale of the graph. For example, at its lower setting the SWR graph reads up to 1.4:1 at its maximum setting this will read 100:1.

In addition, pressing '5' brings up a page with full details of the measurement being made, pressed again the analyser reverts to the previous display mode.

Key '7' will display a 'Help' page.

Keys '8' and '9' give the user the option to Save or Retrieve data into one of 49 memories. On Retrieval the saved measurement is displayed on the screen. Amateur bands may be marked on the display in blue if desired. These are according to IARU Region selected in Setup

Returning to the main menu is selected by pressing the top right menu button again.

Note that some buttons will operate differently depending on the Menu option selected.

Single Frequency presents the set Frequency in Hz at the top of the display and an SWR 'Bar Graph' showing SWR value below. Direct Frequency entry can be made by pressing key '2'.

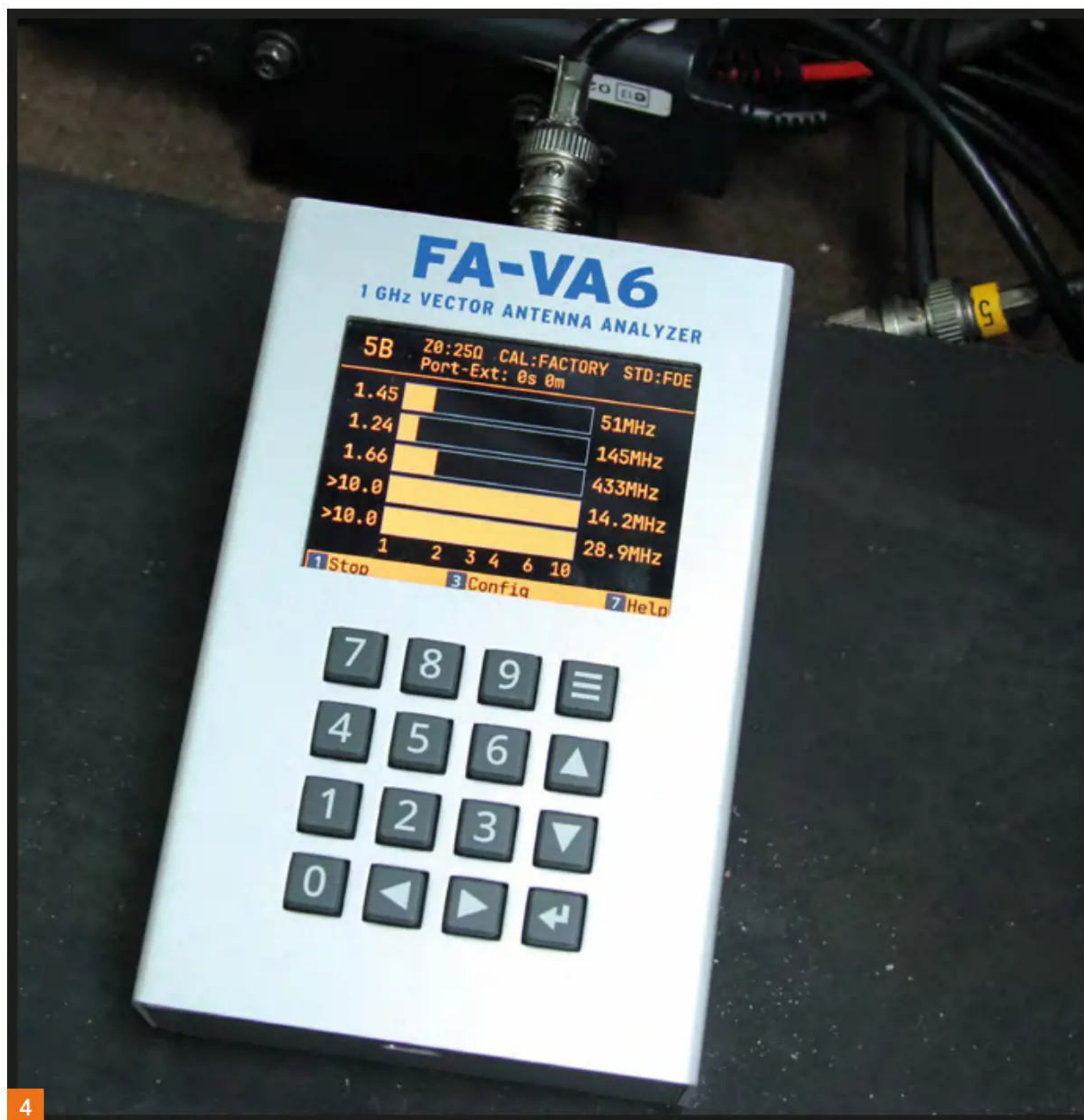
Pressing the '8' key here changes the screen to Large Mode where the SWR value is displayed in large format making for easy reading at a distance.

In addition, pressing '6' brings on an audible indicator with beeps that change speed with SWR value, again making life easier when undertaking antenna adjustment if the analyser is obscured for some reason.

Changing to the next Mode Z Impedance details are displayed, then S11 and finally LCR where component values may be measured at any frequency as set on the analyser.

TDR measurements may be made over cable lengths of 6.3m, 12.6m, 25.3m, 50.6m, 101.3m, 202.7m (with velocity factor 0.66) with settings for Impulse Response over length, Impulse Response in dB over length, Step Response over length, Step Response magnitude of impedance over length, Cable length according to known velocity factor.

The analyser can be used to measure Velocity factor according to known cable length, Characteristic impedance of the cable and



Cable attenuation at 10MHz, 30MHz, 50MHz, 100MHz and 200MHz.

There are over 20 cable types pre-set in the analyser's memory.

The **Signal Generator** is a simple On or Off function with Frequency Setting. For output levels see the online details. Checking the frequency against a Racal Frequency meter at 10MHz I found the output to be within a few Hz.

The analyser comes with Factory Calibration so it may be put into use immediately but it has full options for User Calibration and for the entry of Cal Kit parameters where available, so advanced users have a range of calibration options.

The VA6 can be used with the excellent VNWA software by **Thomas Baier DG8SAQ**. This full-featured software application can be used to fully evaluate saved files from the analyser and, moreover, it can be used to make advanced measurements using the VA6 itself as a single port benchtop VNA.

Tests

Fig. 2 is a 10kHz to 31MHz plot of my receive station random inverted-L End-Fed measured from the shack end using the Multi Frequency Option with Factory Calibration. The measurement was saved to memory and recalled for the photo, which was taken by the

house back door on a dull and dismal wet day! Note the Blue stripes denoting the positions of the amateur bands. As you can see the display is crystal clear and easily readable.

Fig. 3 Comes from Jan G5BBL at SDRkits. This is a TDR picture of his 144MHz Yagi installation that has developed bad VSWR, as Jan states, it clearly shows the fault is at the antenna.

A useful feature is the Five Band 'Bar Graph' SWR measurement. Here up to five frequencies, set by the user, may be monitored simultaneously. This is very useful when making adjustments to multi-band antennas where an adjustment at one frequency may affect another. The display can be clearly seen in **Fig. 4**, which demonstrates my Tri-Band mobile antenna for 6m, 2m and 70cm. As before, this measurement was taken at the end of the coax cable using Factory Calibration. We can see that at 6m the SWR is 1.45:1 at 51MHz, 2m 1.24 at 145MHz and 1.66 at 433MHz.

The images in **Fig. 5** show the characterisation of a homemade 2:1 100Ω test load using Factory Calibration. To the left we have the SWR bargraph reading 1.98:1, the middle is Z Impedance mode reading 98.8Ω, -j0 so a pure resistance of 98.8Ω and right LCR Mode reading the resistance as 98.8Ω. I checked these figures against my VNWA



5a



5b



5c

calibrated with a 12GHz Rosenberger Cal Kit and it returned an impedance of 98.9Ω for the same test load, pretty good!

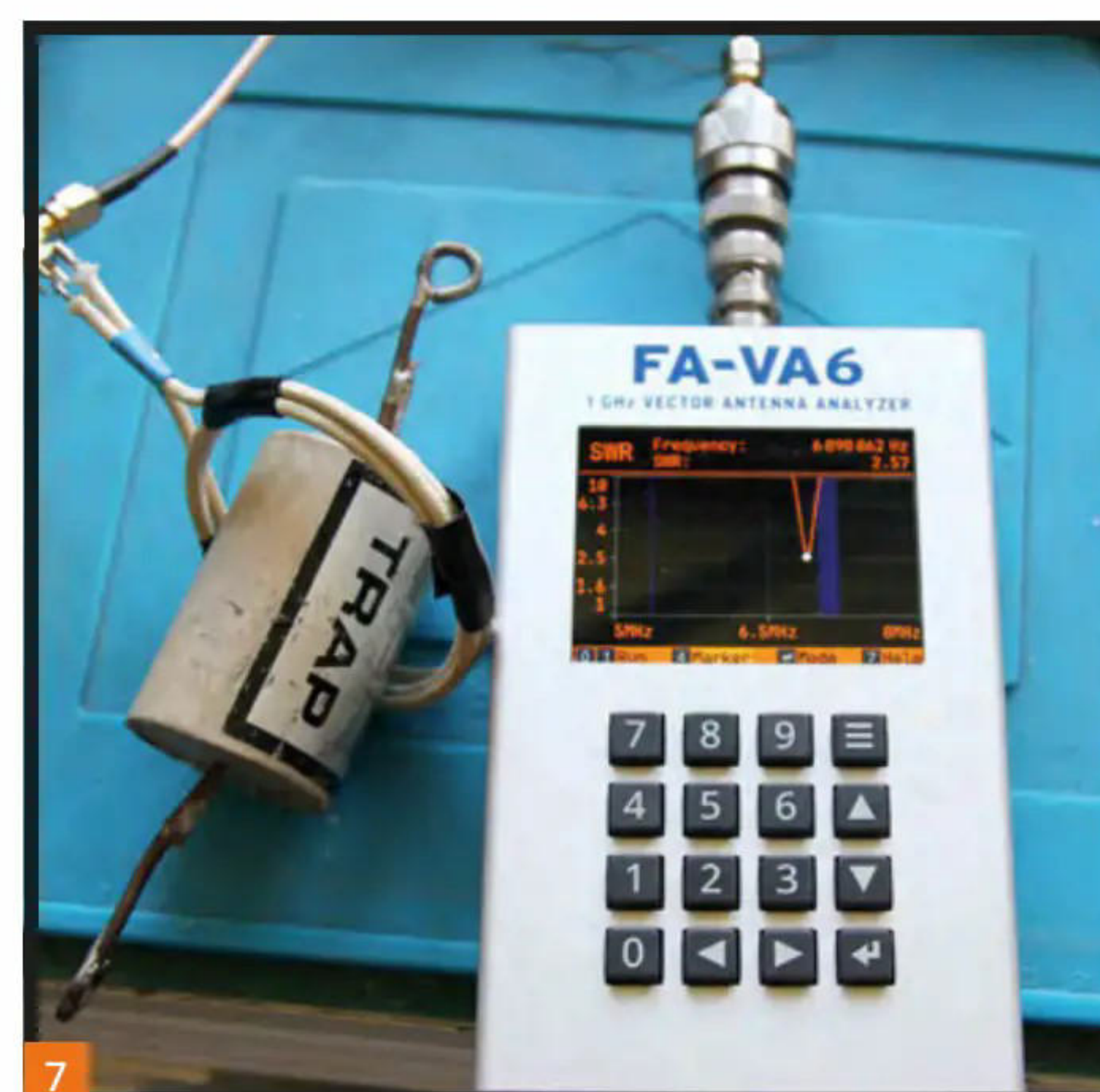
Fig. 6 shows the analyser in VSWR mode with large display measuring the Cal Kit Load (at 10 kHz).

Fig. 7 is a re-run of the trap test from the October issue of *Antennas* and demonstrates the VA6 being used as a dip meter on an antenna trap. This is the second trap of the pair and the 'Dip' is at 6.890MHz. The other trap measured 6.926MHz thus demonstrating the variations that can be found when using an analyser!

Fig. 8 shows checking of the portable antenna strung up at the Braintree club's operating evening.



6



7



8

Conclusion

I found the VA6 to be a very versatile and capable analyser. When comparisons were made against my VNWA, both closely agreed with each other, confirming the VA6's accuracy. The unit is very easy to use and I think the user interface is excellent, helped by the good quality keypad and a clear sharp display. It can be used by 'Beginners' and Pro's alike where it will find uses in both the Shack/Lab and being compact and light, it is ideal for portable work 'out in the field'.

I like the way different options of presenting data may be easily and quickly changed within the menu items while a measurement is underway.

The addition of an internal battery is a great improvement over the VA5 and a single charge lasted me most of the day. The Smith Chart presentation is also an improvement over the VA5.

This is a fully featured analyser, which is capable of much more than simply tuning antennas. It may be used to characterise cables and also to measure components which can be tested at target frequencies. Also, the correct

functioning of antenna feedlines, cables and adaptors can be checked and verified.

Using the FA-VA6 was a lot of fun and I have to say I'm really taken and impressed with it. I have the cost of a new PC looming (thank you Windows 11) but once that is bought there will be a new FA-VA6 finding its way to this QTH sometime soon!

The unit has a lot of features, some of which I

don't have room to describe in this review so for full specifications visit:

<https://tinyurl.com/bdfxed8d>

www.sdr-kits.net/FA-VA6-Kit-Info

My sincere thanks to Jan G5BBL of SDRkits and Michael **DG5MK** for their cooperation in making this review happen.

Current price of the FA-VA6 for **UK orders** £285.00 + shipping **PW**

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Tim Kirby GW4VXE
gw4vxe@icloud.com

Regular readers may recall that last month, I mentioned plans by the Bolton Wireless Society to fly an Arduino powered 2m beacon on a high-altitude balloon. Well, it's happened! **Steve Macdonald G4AQB** takes up the story: "The Bolton Wireless Club 2m Morse Beacon launch on a High-Altitude Balloon (HAB) [Fig. 1] was a resounding success! With permission from the CAA, the final decision to launch was made for the morning of Tuesday 2 September. Other days were not possible because of weather conditions and an unstable jet stream that would carry the Balloon beyond a practical recovery. On the day before, **Nick McCloud** (our HAB expert) carried out final predictions and a checklist of the launch procedure and items required. Meanwhile, the 2m Morse beacon was tested for the final time ready for launch. The Morse beacon was fitted into a polystyrene box along with the batteries and dipole antenna. It transmitted the Morse with callsign G0BWC on 144.091MHz with just 10mW of power.

"Our Mascot was a small Disney character called **Stitch** (as in the film Lilo and Stitch). It was chosen by my grandchildren **Cameron** and **Melissa**. The Mascot was fixed onto a wooden stand holding its little handheld radio and flag with the callsign G0BWC in front of a high-resolution camera. This will send back SSDV pictures throughout the flight. Also, the box contains the tracking and telemetry circuits. This consists of a LoRa tracking system and RTTY 2FSK system constantly transmitting data, SSDV pictures and telemetry at 434MHz to be monitored at ground stations.

"The Balloon flew for two and a half hours reaching a height of 95000ft (30000m) before popping and starting the descent with a parachute [Fig. 2]. The payload landed safely in a field between Ripon and Easingwold in Yorkshire. Meanwhile, Nick set out in his car to track and recover the payload" [Fig. 3].

The CW beacon operated on 144.091MHz, and included live temperature and pressure readings, encoded as integer values: CQ DE G0BWC G0BWC QRPP BEACON TEST DE G0BWC IN IO83 TEMP 2560 PRES 102464 (this example indicates 25.6 Celsius and 1024.64 millibars). However, the temperature readings didn't include the minus sign, and the pressure sensor was only rated down to 300mb. You can read more about the construction of the beacon at:

<https://g4aqb.wordpress.com>

The beacon was received widely, with a number of stations in the south of England at a distance of over 250km receiving it, but best of all was a report from the Outer Hebrides at a distance of over 500km. Impressive results! [Fig. 4]

Since the payload was successfully recovered, I wonder whether Stitch and the G0BWC beacon will fly again!



A two-metre beacon on the edge of space!

Tim Kirby GW4VXE starts with news of a recent successful high-altitude balloon experiment.

DX Chrono—World time visualisation for radio amateurs

Many readers will be familiar, I am sure, with the various dashboards such as HamClock designed to put on a big display in the shack.

Peter Goodhall 2M0SQL has designed and built DX Chrono which runs in a browser. So, you could use a Raspberry Pi, for example, connected to a big monitor in the shack and this would give you a nice display, very similar to the Geochron clocks.

DX Chrono allows you to set up various clocks at locations of your choice around the globe, so you can immediately see what time it is in places of interest. In addition, you can display propagation information for both HF and VHF, aurora forecast, major cities, CQ Zones, ITU Zones, sun position and so on. If you use Peter's Cloudlog logging system, then you can display the last 25 contacts you've made on the map.

It looks great on a big monitor! The best news of all is that it's free, although if you like it and use it regularly, I'd encourage you to press the 'Donate' button to support Peter's work. You can find DX Chrono at:

<https://dxchrono.com>

Getting your CQs to count!

On a recent visit to Cheltenham, I was chatting with **Ken G3LVP**. Ken, like a number of others, prefers traditional modes of CW and SSB to FT8. He finds it frustrating that very often he makes CQ calls on SSB in vain and wonders whether it would

be a good idea to take a leaf out of the old marine radio operators' book and have 'watch periods'. Ken suggested that perhaps CQ calls should be made on the hour. Well, of course, it's a long time to wait if you get to the shack at 5 minutes past the hour! So, what about on the quarter hours? What do you think? I don't think this is a new idea, but it could certainly be worth revisiting.

Thanks to Ken for the idea and if you enjoy SSB and CW, why not give it a go?

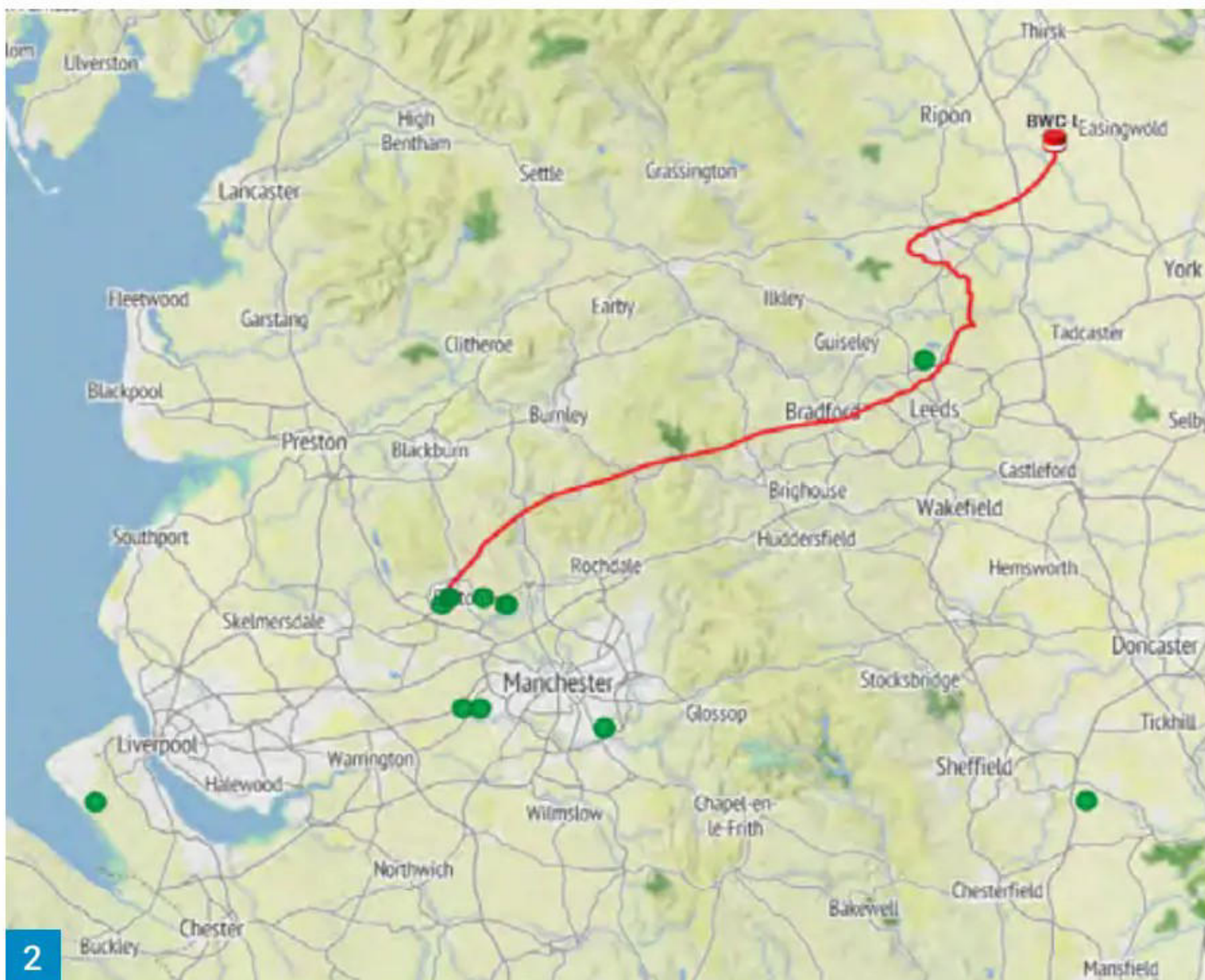
The 6m band

Roger Greengrass EI8KN (Co Waterford) missed the last deadline by an hour or so, but it's great to be able to include his contribution this time. Roger found some nice DX in August, including; 13 August CE2SV (FF47), CE3MRO (FF46), ZP5DBC (GG14), PU2WLA (GG47) and PY5EW (GG46). Next day on the 14th, Roger found the band open to North America, working K4ESE (FM04), N1DG (FN42), N9PGG (FM05), VE1GBD (FN73), AB4SF (FM17), VE1JBC (FN73), WW1L (FN54) and N4PY (FM16) and then on 16 August, Roger caught a brief opening to Japan working JE6WOQ (PM43), JA4LKB (PM63) and JE6KYA (PM53).

Dave Ackrill G0DJA (Bolsover) said he made 13 contacts over the month, mostly on FT8 but one with S57UW on CW and says that there were five new squares in those contacts.

Fig. 1: The HAB carrying the G0BWC beacon reached 90000 feet. What a view!

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Tim Hague M0AFJ (Helston) says that the band is still showing some Es into Scandinavia but that the openings are quite fleeting.

Phil Oakley G0BVD (Great Torrington) enjoyed the opening on 28 August and made a good number of contacts. Best DX in the opening was ES2SF, with OJ0Z from Market Reef also worked.

Roger Laphorn G3XBM (Cambridge) thinks, like me, that the Es season seemed to have gone on longer this year and wonders whether it's anything to do with climate change. An interesting question and I guess we will have to wait to see if the pattern continues before answering. Roger says he's often spotted around Europe when he's using his 5W QRP on FT8.

Dave Edwards G7RAU (The Lizard, Cornwall) caught some TEP on 23, 27 and 29 August to South America which very good signals from the PY7 area. On 29 August there was also TEP to Africa, with Namibia, South Africa, Mauritius, Rodrigues and Reunion stations all being heard.

Jef VanRaepenbusch ON8NT (Aalter) worked S01WS (IL46) on 4 August, CN2JA (IM75) and CN2DX (IM64) on 7 August and 9K2GR (LL49) on 10 August.

Here at **GW4VXE** (Goodwick) the second half of August was still quite good for single hop Es QSOs. A surprise, one day, was seeing **Seraphim CT4KQ** coming through on FT8. Readers who were on the band back in the 1980s and 1990s may remember Seraphim's activity, often on CW. It was good to see him again after all this time. A few contacts of note include 7X5CY (JM26) and OG0C (KO09) on 18 August and OJ0Z (JP90) on 28 August.

The 4m band

Dave G0DJA made seven contacts on the band, all of them on FT8.

Steve Rawlings G4ALG (Lydney, Gloucestershire) writes, "I used to be very active on 4m in the 1970s and 80s, and have recently started listening again on 4m using a home-made

Fig. 2: The flight track taken by the G0BWC Morse beacon. Fig. 3: What goes up, must come down! The G0BWC beacon back on terra firma.

Fig. 4: Map showing the reception reports received of the G0BWC Morse beacon.

Fig. 5: Against a very dark sky, here's Allan GM4ZUK's aerial for the IARU 2m trophy contest.

dipole at 5m AGL and an IC-7000 (which is 'receive only' at 70MHz). Initial impressions are good. This morning (13 September), under flat conditions, I was very pleased to hear Dave G0DJA calling CQ on CW from his home QTH at Bolsover, Derbyshire (183km).

"I have started breadboarding a QRP CW TX using a radio control transmitter crystal that is marked 35.100MHz, but actually has a fundamental frequency of 17.55MHz. I am currently producing 500mW using a 17.5MHz VXO/doubler > 35Mc/s bandpass filter > 2N2222 doubler > BFY51 PA > low pass filter.

"I was surprised that the BFY51 had any gain at all on 70MHz, but this setup enabled me to work local station **Chris G0SDD** in Bream who was running 5 watts from an IC-7300. Although the distance between us was only 5km, it turns out that the CW contact was a first on 4m for both of us!"

Jef ON8NT uses 10W from his IC-7300 and a V-2000 tribander on the band and worked EA4BPO (IN80) and EA4II (IN80) on 4 August and then HA6NN (JN98) on 9 August. All Jef's contacts were on FT8.

The 2m band

Dave G0DJA says that most of his contacts have been on CW during the 'CW Tuesday' events with three of them being over a 200km distance. Dave says that he often operates from sites in the Peak District for the CW Tuesday events, generally Merryton Low (IO93AD), and can hear the beacons in the UK and also the F6ZAQ beacon in JN09.

Tim M0AFJ found some nice tropo to the east



in August with many contacts at a distance of around 1000km, all of them on FT8; 17 August; DL1DBR (JO41), ON4UE (JO20), DL5SDW (JO51), DF1JC (JO31), DK1FG (JN59), DB8VE (JN39), DL5FDP (JN49), DK7RC (JN59), DC1NNN (JP60), DK1FG (JN59), DL2KCK (JO31) and HB9LB (JN37). Then on the 22 August, conditions were good to the south with contacts made to F1RHS (JN03), EA1YV (IN52), EA1CCM (IN52) and F8BON (IN86).

Steve G4ALG writes, "Although the darker evenings mean that I can no longer take part in Two Metre Tuesdays from portable locations, I continue to participate in these weekly 2m CW activities from the home QTH. In addition to local chats on a Tuesday with G00ER, G0SDD, G3LVP, G4KKU and G8EJN, I often have a natter with more distant stations such as G0DJA/P, G3YPZ, and M0GSX".

Mark Savage M0XIC mentions two more 145 Alive events, which unfortunately will have taken place by the time you read this! The first on 27 September and the second, a special event from the RSGB Convention on 11 October. Hopefully next time, we'll be able to include some details of how the events went, but if you want to keep up to date with the 145 Alive sessions, follow the '145 Alive' group on Facebook.



In mid-August, Roger EI8KN found the band good on the 17th, working Switzerland, Germany and a number of French stations. The best DX was DK0A (JN48).

Dave G7RAU found tropo good between 17 and 28 August, working F, HB9, EA, EA8, DL, OZ, SM, SP, OE and OK. On the 17th there was an OK SSB contest and Dave worked five stations with OK1KMP (JO70) at 1489km and SP6SYU (JO71) at 1576km.

Along with Jef ON8NT's normal FT8 activity, he tried out meteor scatter for the first time in the Perseids shower in August and was delighted to work EA2BFM (IN83) quite easily. Jef mentioned that he received quite a number of stations during the shower using the MSK144 mode. On 20 August, Jef found the band good into both Northern Ireland and Eire working GI4SNA (IO64), EI4ACB (IO62), EI8HH (IO53), EI8KN (IO62), GI6ATZ (IO74) and EI3KD (IO51) along with stations in Wales and Cornwall.

Peter Atkins G4DOL (Dorset) finds working to the east difficult because of high buildings close to him, but was very pleased to find the band open in that direction on 17 August working DD3SF (JN39), HB9EFK (JN46), DC6KI (JO30), ON4LDP (JO10), DK1FG (JN59), F1JBT (JN17), DL5FCW (JO71), DL5FDP (JN49), DB9VE (JN39) and then later that day, the band opened to the south allowing Peter to work EA2TZ (IN83). Next day, Peter was pleased to work LA9DM (JO59). Peter also managed some nice UK contacts including GI4SNA (IO64), G6LUE (IO93), G8LZG (IO93) and G4FLM (IO94).

Andy Adams GW0KZG (Letterston) is back on the band and, with his beam a little higher than before, he finds he is hearing more from the east coast of the UK.

Allan Duncan GM4ZUK (Aberdeen) went out for the IARU 2m trophy contest at the start of

September, despite a very unpromising weather forecast, **Fig. 5**. Deciding that discretion is the better part of valour, Allan used a single Yagi rather than a box of four for the first time in many years. Allan still worked some excellent DX, including OL7M (JO80) and HB9GT (JN47). On the Saturday night, there was an aurora and a number of beacons were heard via the aurora, including SK4MPI and OY6BEC, but despite a good number of CW CQs, no auroral contacts were made.

The 70cm band

Dave G0DJA was active for the last 433 Alive event on 24 August when he operated from Merryton Low and made 36 contacts with the most distant being GW4TJC/P (IO83) at a distance of 112km. Dave also enjoys the Friday CW sessions and made six contacts, most of them being in excess of 100km and two being in excess of 200km. Dave says that at the time of writing, the next 433 Alive event is being planned for Sunday, 16 November. If you're interested, keep an eye on the '433 Alive' group on Facebook.

In the tropo on 17 August, Roger EI8KN worked F5APQ (JO00).

Noting that with the evenings getting darker there are fewer portables around for 70cm Fridays, Steve G4ALG wonders if readers of *PW* who have a 70cm station might consider inviting a telegraphist to operate the station on a Friday evening!

The 23cm band

Dave G0DJA took part in the 1296 Alive event on 31 August and made four contacts in excess of 100km. His best DX was 181km to G4BAO (JO02).

Reporting, I think, for the first time on the band is Phil G0BVD who worked GW0RHC on 19 August.

Steve G4ALG writes, "My most recent portable outing on 23cm was to Ruardean, Gloucestershire for the '1296 Alive' event on 31 August. Running 2 watts of CW from an SG Laboratory transverter to a home-made 16 element Yagi, I worked Dave G0DJA/P at Axe Edge, Derbyshire (158km) and John G3XDY in Ipswich (266km). On SSB, I worked **Richard G4HGI** in Billinge, Lancashire (181 km)".

Jef ON8NT reports tests with ON4LX over a 15km path using both SSB and D-STAR on the band.

I'm sure that's the most reports we've ever had in a month for 23cm! Long may it continue.

FM and DAB DX

Simon Evans (Twynning, Gloucestershire) received an FM station from Madeira on 31 August, by Es. It was RTP Antenna2 on 88.4MHz. That takes Simon up to 39 ITU countries received by tropo or Es this year.

Satellites

Simon Evans reports that the 'Ham TV' from the International Space Station went off on 18 August and news is awaited of when it will return.

Patrick Stoddard WD9EWK (Phoenix) writes, "In the past month, two more stations completed their quest to work the 488 continental USA grids. **Grace K8LG** (formerly KE8RJJ), in the state of Michigan, finished her 488 by working N5YIZ, who traveled to grid DL79 in west Texas and put the grid on the air to help Grace. Grace is the youngest operator to earn this accomplishment. Just over a week later, **Bruce VE7PTN**, on Vancouver Island in western Canada, worked his 488th grid thanks to WD5GRW who traveled to grid EM21 in Texas to make that happen. Bruce is the 5th Canadian operator to have worked these 488 grids via satellite.

"In late August, another video showing amateur radio activity from the ISS was posted by NASA astronaut **Jonny Kim KJ5HKP**. During the ARRL Field Day in late June 2025, Jonny and another NASA astronaut, **Nichole Ayers KJ5GWI**, operated as NA1SS on 29 June. Jonny's video, posted on YouTube and other social media platforms, showed various random contacts made by both of them. I made a contact with Nichole during Field Day, and my contact made it into Jonny's video". Jonny Kim's Field Day video is available at:

<https://youtu.be/Y9VY1uNjQ-E>

Jef ON8NT reports that the NOAA satellites have been decommissioned on 137MHz but there is still LRPT on Meteor on the 137MHz band. Jef mentions a useful guide at:

<https://tinyurl.com/2pyvh6c3>

Jef monitored the schools contact from the ISS on 19 August and received SSTV pictures from UMKA-1 on the same day.

Well, that's it for this month. Thanks to everyone who contributed – as ever, it's much appreciated. **PW**

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This month, I'm continuing my look at the QMX+ QRP transceiver from QRP Labs by running through my experiences with the kit. But first, I have a useful RF Analyser for your phone.

RF Analyser for Android

In a recent RTL-SDR Blog post, I saw mention of an RF analyser that provides spectrum and waterfall displays on your Android phone. The software has recently been completely rewritten and uses a modern interface and controls, so it is worth a closer look. The App is available via the Google Play Store with a 7-day trial period. After the trial, the full version costs just £5.99.

The App works with the HackRF SDR rig or the popular RTL-SDR USB range of dongles. If using the latter, you also need to install the SDR driver App, which is available as a free download from the Google Play Store. I was very impressed to see that the latest version is compatible with the V4 variant of the RTL-SDR Blog receiver, as this provides usable HF and LF coverage. In **Fig. 1** I've shown a screenshot of the FT8 slot on the 14MHz band, clearly showing individual signals.

In addition to the software, you will need a standard USB On-The-Go cable, so you can connect your HackRF or RTL-SDR dongle to your phone: In addition to the spectrum and waterfall displays, RF Analyser includes a demodulator that can handle AM, narrow and wide FM, upper and lower sideband, plus CW.

RF Analyser offers complete control over the display, allowing you to adjust key parameters such as FFT size, frame rate, averaging, waterfall speed, and the ratio between the spectrum and waterfall displays. It even includes a peak hold and the facility to change the frequency scale to display relative to the centre frequency. One point to note, if you're using an RTL-SDR Blog V4 device, you need to activate the Allow Out-Of-Bound frequencies in the settings panel. This provides access to the full HF/LF range of that device.

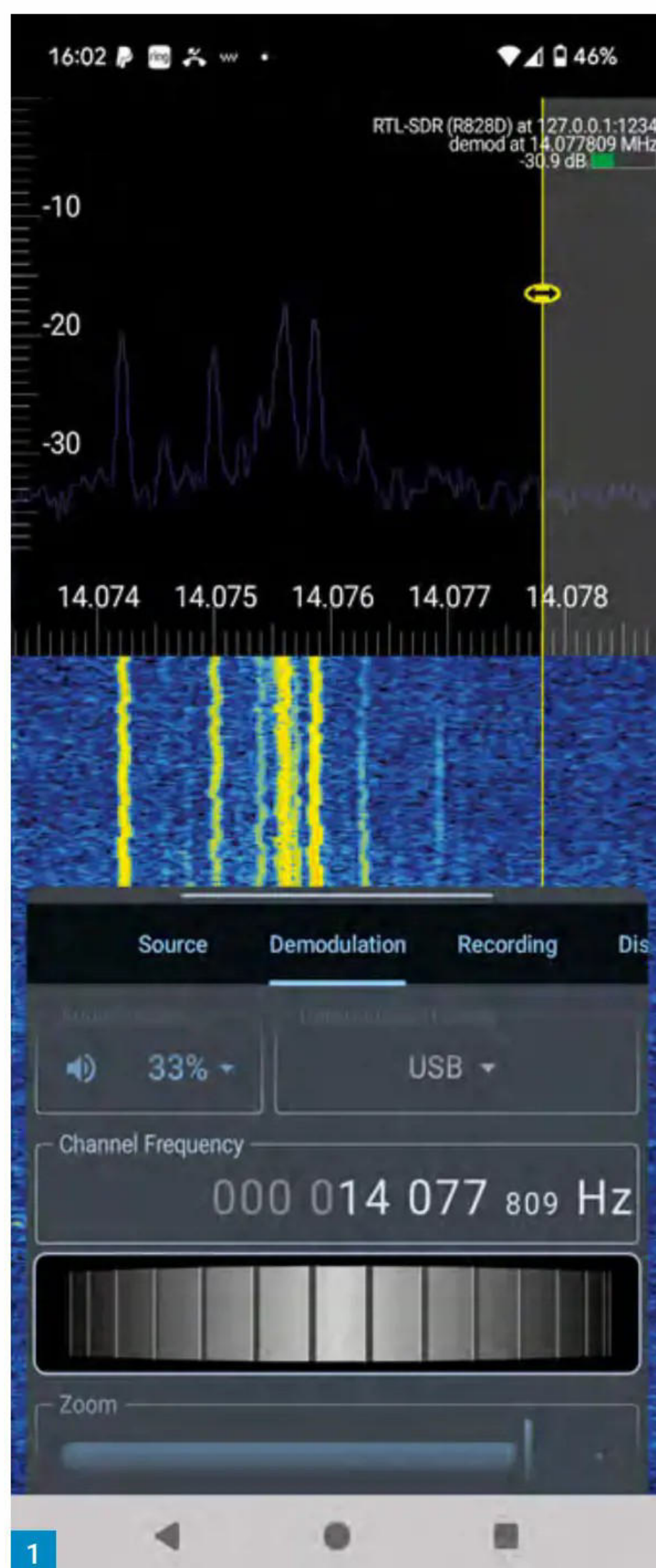
In addition to the comprehensive display options, RF Analyser provides spectrum recording, where it will record the entire 2MHz spectrum from your RTL-SDR dongle. This uses up memory at a rate of 230MB per minute, so you need to be careful, but it is a useful feature.

QMX+ correction

Let me start with a correction from last month. In that column, I said that the current draw on transmit was 1.01A; this was an error. On rechecking, I discovered that my antenna was

More on QMX+

Mike Richards G4WNC starts with an interesting phone-based analyser before returning to his look at the QMX+ transceiver.



mismatched at the test frequency. I repeated the measurement with a good quality dummy load connected and measured just over 800mA when delivering 5 watts into the load.

QMX+ construction tips

Kit construction of the QMX+ is a relatively simple task because all the surface-mount devices, including resistors and capacitors, are factory fitted to the board. All that remains for the constructor is inductor winding and a few through-hole components, plus all the various connectors. By far the most significant part of the construction is the winding and mounting of the toroid inductors and transformers, of which there are 21.

The QRP Labs build instructions are always very comprehensive, and the QMX+ is no exception. The instruction PDF is some 64

pages long and covers all the construction steps in great detail, with lots of photos to illustrate any critical stages. I recommend spending some time getting familiar with the construction manual before you start the build.

One important point to note is that you will need a powerful soldering iron. I used a Hakko FX888DX 65-watt unit, **Fig. 2**. Most of the soldered connections are fine, but the ground connections absorb a significant amount of heat due to the extensive ground plane inside the multi-layer PCB. I found I needed to fit a stubby bit to my 65W iron when tackling these connections, **Fig. 3**. Even then, I had to leave the iron in contact with the board for far longer than usual to achieve a good solder melt.

I also recommend buying the dedicated case for the QMX+ as it is exceptionally well made with smart markings, anodised finish and precise machining, **Fig. 4**. If using the case, it's essential to take extra care when soldering the connectors to the PCB. This is because the panel machining is very close tolerance. If you ensure the connector is square with the PCB edge and centred in the PCB outline, it will fit perfectly. I found the best way to achieve this was to begin by soldering a single pin and checking the position before soldering the rest of the pins.

Inductor winding is straightforward with clear instructions, but it's worth spending a bit of extra time going through the colour-coded toroids to match them to the correct inductor. This is important because there are a few colour options that can change between kits, and some of the colours are not obvious, at least to my tired eyes!

While on the subject of inductor winding, I would recommend either carefully scraping the enamel with a knife or using a fine abrasive cloth to remove the enamel. During construction, I tried burning off the enamel. Although this seemed to work, I ended up with a few dry joints when the inductors were on the PCB.

A final point on inductors: do take care to keep count! I found my attention wandering after I'd done a few and missed some turns. If you have a decent inductance meter to hand, it would be worth using it to check the inductance before mounting the inductor on the PCB. The inductance doesn't have to be precise, because you will almost certainly be trimming the values during the testing and tuning stage.

Final check

I highly recommend going over the PCB with a magnifier to check for dry joints. This is because the PCB has excellent heat conductivity, making it easier than usual to end up with a dry joint or two. I have 60+ years of construction experience behind me, yet I still managed to leave a few dry joints!

Power-up and tuning

The safest way to power up is to use a current-limited bench power supply set to the correct voltage for your model (12V or 9V) with the current limit set to 120mA. Normal receive mode current is just under 100mA. Once you're happy that the consumption is fine and there's no magic smoke, you can refer to the separate Operating Manual to get going.

I'm a bit old-fashioned and prefer a printed manual that I can sit and read, rather than the supplied PDF. I usually get my manuals printed using DoxDirect (URL below). The cost to have the current operating manual (138 pages) printed as A4 spiral bound in black & white with a printed card front cover and a clear outer front cover is just £15, **Fig. 5**. The print quality is always excellent, and the spiral binding lets me open the manual and fold it back on any page.

www.doxdirect.com

Tuning the power output

When you have your QMX+ up and running, you will probably find that the RF output on most bands is lower than expected. The unit is rated at 5 watts RF output, and you should be able to get between 4 and 5 watts (+36-37dBm) reliably. Achieving this on all bands often requires some fine-tuning of the PA filter for each band group. **Hans** shows how to do this in his tuning video, which is well worth a look. However, it might be helpful if I describe my experience.

Some of the filters are shared between adjacent bands as shown in **Table 1**. Each of the PA filters in the QMX+ has two sections. The first is a simple low-pass filter, while the second is a notch filter for the third harmonic. In my experience, adjusting the low-pass filter inductor has the greatest effect on the output. I began by spreading out the turns on the toroid to reduce the inductance and monitored the change in output power. If the power increases with the turns spaced, it indicates that the inductance needs to be reduced.

Rather than completely remove the inductor, I followed Hans' guidance and snipped the lead on the topside of the PCB that was nearest the antenna, **Fig. 6**. I could then remove a couple of turns and resolder the wire to the top PCB pad. I could then continue to trim the performance by adjusting the turn



2



3

spacing. Using this technique, I was able to get all bands up to power. I observed additional minor improvements by adjusting the compression or expansion of the notch filter coils, but it's crucial not to overdo it, as this would shift the notch filter's centre frequency, causing the third harmonic to increase in the output.

Battery & audio

While the QMX+ makes the foundation for a competent portable/holiday station, it lacks a speaker output and battery power. However, that is now available thanks to an ingenious shield produced by **Necati TA7MNA, Fig. 7**. This shield fits on top of the QMX+ and inside the standard QMX+ case. Connections between the battery board and the QMX+ are handled via three PCB connectors on the underside of the battery board. The shield uses three 18650 Li-Ion cells, and I used 3,500mAh

Bands	Low-pass	Notch
160m	L506	L511
80m/60m	L508	L512
40m/30m	L510	L513
20m/17m/15m	L515	L518
12m/11m/10m	L517	L518
6m	L519	L520

Table 1: QMX+ PA filter inductors

units from Fogstar in the UK. This should be sufficient for many hours of remote operation. Other than fitting the PCB connectors, the only modification required is to cut/drill a hole for the USB-C charging socket on the rear panel. At the time of writing, the battery and audio board cost a very reasonable £17 for the kit version plus £9 postage. For more information and to order a board, visit:

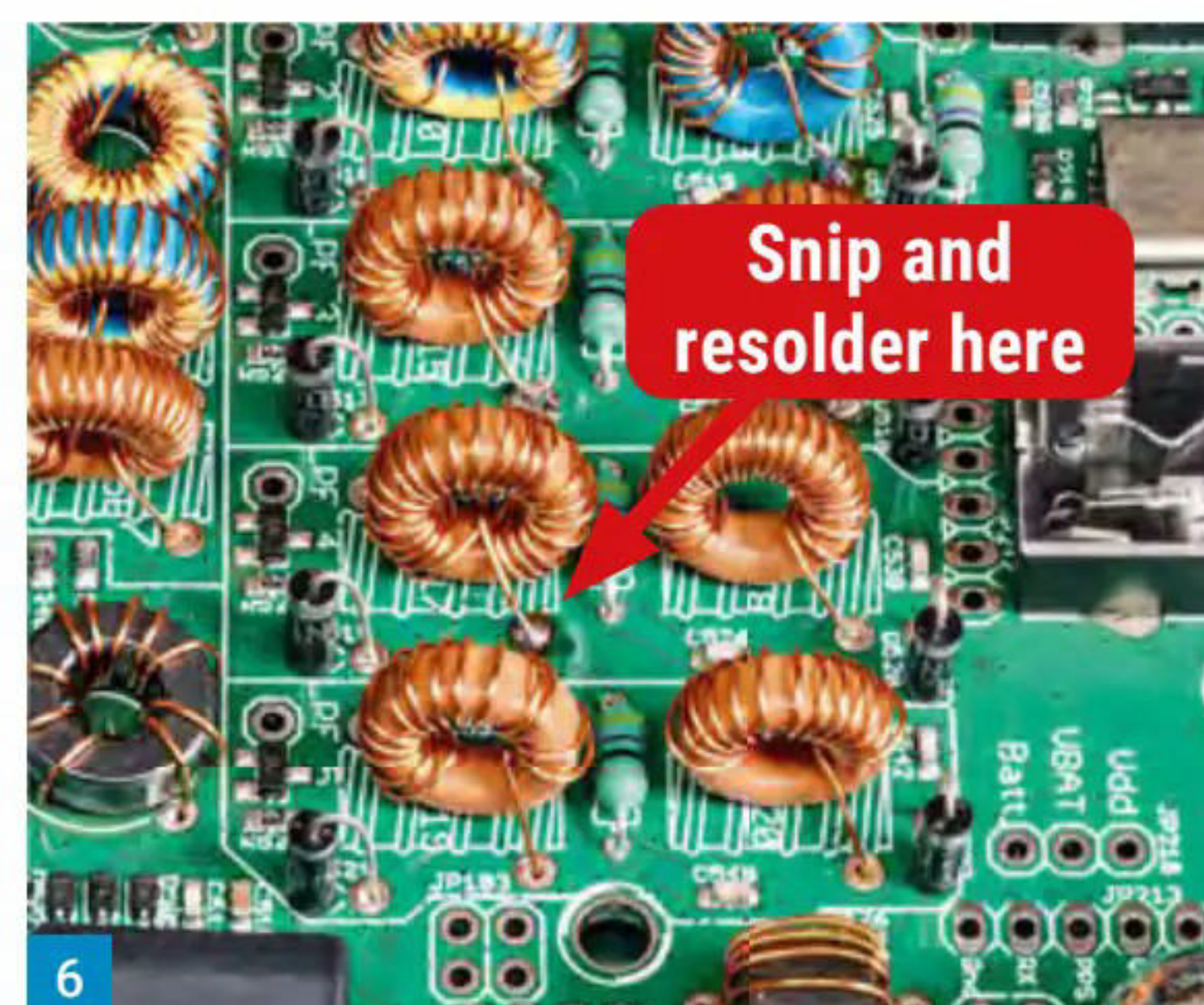
ta7mna.com/blog
and
<https://tinyurl.com/588nm49w>



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6



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Fig. 1: RF Analyser spectrum display – 14MHz FT8 band. Fig. 2: Hakko 65W iron. Fig. 3: Stout iron but for ground plane connections. Fig. 4: QMX+ Standard case. Fig. 5: A4 printed QMX+ operating manual. Fig. 6: QMX+ PCB – Tx filters trimming. Fig. 7: TA7MNA Battery and Audio shield for the QMX+.

NEWS EXTRA

DIRECT TO FULL SYLLABUS UPDATE: The RSGB Examination Standards Committee is pleased to announce the publication of an updated version of the Direct to Full syllabus. The significant changes from the previous version are the moving of some points between Section One on Licensing and Section Two on Operating. These changes bring the Direct to Full syllabus into line with the latest version of the three-part syllabus. You can find the updated syllabus and change documentation on the RSGB website at:

[rsgb.org/syllabus](https://www.rsgb.org/syllabus)

These changes will come into effect from January 2026, so please choose the correct version of the syllabus for the date you plan to take your exam.

A REMINDER TO IDENTIFY YOURSELF CLEARLY WHEN OPERATING: (from RSGB)

Every radio amateur knows that it is important to identify yourself clearly when operating. This includes the mandatory use of a Regional Secondary Locator, or RSL, if you hold an

Intermediate callsign in the 2-series. For example, your callsign would start with 2E0 if you're in England or 2M0 if you're operating in Scotland. This mandatory use of the RSL is shown in the Ofcom licence conditions. You can find a link to that document on the RSGB licence updates web page at:

[rsgb.org/licence-review](https://www.rsgb.org/licence-review)

FCC GRANTS LIMITED USE OF AMATEUR BANDS TO AST SPACEMOBILE:

The Federal Communications Commission approved limited use of amateur frequencies for 20 satellites to be deployed by a Texas broadband company. The FCC's Space Bureau said in a statement that it was giving permission to AST SpaceMobile to use frequencies between 430 and 440MHz on an emergency basis only. The regulator said its move was in direct response to overwhelming concerns raised by US amateur radio operators.

RAOTA NEWS: RAOTA (the Radio Amateur Old Timers' Association) had its usual stand on the Friday of the UK Hamfest and launched a new sales item. The 'Early Years' USB stick contains both volumes of their Early Years books, plus the 'Best of OTNews' compilation edition.

The primary audience is non-members who have an interest in the history of the hobby. If their interest is piqued enough to buy it, the compilation issue of OTNews will give them an idea of the quality of articles they can expect to see in OTNews, which may convince them to join. Potential purchasers can download a PDF from the Sales page on the website showing the contents pages of all three publications on the USB so they know what they will be getting.

www.raota.org

YORKSHIRE TV BACK ON THE AIR: The old Yorkshire TV amateur radio club callsign G3YTV is back on the air.

The new club XYTV ARC is formed of radio amateurs who worked at the Leeds based TV station before its incorporation into ITV1. Most XYTV members are from original club before its sad demise in the mid-1990s.

Club chairman Dennis **Greatbatch G4KCU** would like the club callsign to again fully modulate the bands and asks for licensed amateurs who worked at the station or those who had family who worked there to get in touch.

Dennis' email is

dengreat@aol.com

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HamRadio.co.uk/FTX1F

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500W Integrated SDR
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The World's First Fully
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Modern Tools for Classic Skills.

EXCLUSIVE TO ML&S! Only £99.95

The Topbytes Morse Trainer is a **compact, self-contained CW practice unit** with a feature set designed to make learning Morse code accessible, adaptable, and engaging. Housed in a durable enclosure with a **colour touchscreen display**, it enables easy navigation through practice modes, settings, and even built-in games. Its **USB-C rechargeable battery**, onboard speaker, and **3.5 mm key input** mean it's ready to go right out of the box—whether you're practising at the desk, outdoors, or between QSOs at a club night.

The **Topbytes Morse Trainer** is a thoughtfully designed CW learning aid that blends traditional practice with modern convenience. Its feature set supports a wide range of users, from absolute beginners to those chasing 30+ WPM. The addition of Wi-Fi, games, and a vibrant touchscreen makes it stand out from many of the more spartan alternatives on the market. With its portability, ease of use, and real-world keying options, this is a trainer that doesn't just teach Morse—it encourages you to enjoy it.

See: www.HamRadio.co.uk/topbytes

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We think the nRSP-ST will be ideal for anyone wanting a wideband remote receiver without needing computer skills hours of set-up time and ongoing maintenance at the remote location. We are very much looking forward to making the product available as soon as possible. We are aiming to launch the nRSP-ST in time for the holiday shopping season. **£409.00**



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£3549.00

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ACOM 1400S amplifier is based on the latest LDMOS transistor technology. The final PA stage uses a rugged 65 V LDMOS transistor for heavy operation modes. The amplifier as standard is equipped with an Ethernet interface and thus can be remotely controlled via the Internet through the integrated Web interface.

Acom 500S

**500W 160m-4m 500W
Linear Amplifier IN STOCK**



The ACOM 500S is a state-of-the-art linear power amplifier that covers all amateur bands from 1.8 through 70.5MHz and provides 500W rated output power (PEP or digital) **£2399.00**

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Coming soon for only £312.00

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A minimalistic version of Digirig with the same audio code as regular model of the interface but without serial port.

- Combines audio codec and PTT switch
- Supports PTT by GPIO3 of CM108 audio codec
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PR-40 Microphone New All Black Version **£279.99**

403A Noise Cancelling Headset NC-1 BT



Offers ideal suppression of external noise in any situation. Thus, thanks to ANC (active noise cancelling), you can perfectly concentrate on quiet and weak signals even in noisy environments and are less distracted. In hectic contest operations, this can be a clear advantage!..... **£279.95**



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Don Field G3XTT

practicalwireless@warnersgroup.co.uk

In the first issue Of PRACTICAL WIRELESS the Editor kindly invited me, along with my colleagues, to describe my favourite circuit. Since the time of publication numerous queries have been addressed to me (c/o the Editor) asking for further details and practical data in regard to the construction of a set employing the circuit I described. In each case I have been compelled by reason of our rules to ask those querists to wait for a little while, because (I did not tell them this) I was experimenting on a greatly improved version of my original idea. All readers of PRACTICAL WIRELESS are by now well aware of the fact that we absolutely refuse to supply constructional details of any set which has not been made and subjected to the strictest and most rigorous tests in our own laboratories. In no other way can we give an absolute guarantee of the set's performance. The Selectone, which I am going to describe, started its life on the test bench several months ago as a practical example of 'My Favourite Circuit', but in the ensuing time it has grown to full maturity. It has passed through many experimental stages, and even six weeks ago it was a set of which I was proud. But that was not enough; I was determined that before I would present the design to readers of PRACTICAL WIRELESS the set must not only be good, but it must be as near perfection as possible. I should not have prepared this article now were I not confident that the Selectone is better than any other contemporary receiver in its class, and also that it represents a very definite step forward in design and technique.

Perfect Tone Control

Before telling you just what the Selectone will do let me give an outline of its special features. In the first place the circuit is on the Stenode principle, which means that tuning is so dead sharp as actually to cut off a portion of the sidebands. For this reason, the tuner is purposely designed to weaken the higher musical notes, but by using a variable tone control, which can be operated at will by the listener those notes can be restored to any desired extent. The full significance of this feature must be experienced to be fully appreciated, but it ensures that any desired tone from 'shrill' to 'boomy' bass can be obtained as desired. More than this, however, it makes possible in mild cases the complete elimination of heterodyne whistles created by stations working on adjacent wavelengths. This latter is impossible with any



The Selectone

We go back in time to the early days of Practical Wireless for the first part of a two-part constructional project.

ordinary receiver unless fitted with a special whistle filter. Variable Selectivity Tuning is perfectly sharp, so that no station (even if it is situated a few miles from your aerial) will occupy more than two or three degrees on the special micrometer tuning dial. The Selectone is not merely highly selective, however, but the degree of selectivity is under full control, and can be altered to suit any and every set of conditions. The extreme selectivity ensures a silent background and real enjoyment of the programme being received. On the long waves, Daventry, Zeesen and Radio Paris can all be received separately, even though the frequency separation of the two former stations is only 4 kilocycles, or insufficient to permit of their separation with a band pass tuner. Such stations as North Regional-Langenberg, Midland Regional-Bucharest and North National-Hilversum on the medium waves can be separated with ease, whilst even Miffilacker and LOAM Regional can be received clear of each other by a slight sacrifice of the higher frequencies.

Sensitivity

Most highly selective receivers, except those using a large number of valves, are not particularly

sensitive, but that cannot be said of the set under review. During the first test of the final model (at least four others were made during the experimental period) forty-two stations were well received at good, speaker strength when using an outside aerial of 70ft overall length. Reducing the length to 40ft. had very little effect, and even when the set was transferred to a poor indoor aerial running round the picture rail of a downstairs room, no fewer than twenty-five stations could be brought in at 'good programme-strength'. As the tuner covers a range of from under 200 to just over 500 metres in the medium-wave position, and from about 850 to 2,000 metres on the long waves, practically every worthwhile European and American station is covered. It will be of interest to would-be constructors to learn that a few hours after completion the Selectone brought in two American medium-wave stations, KDKA on 306 metres and WGY on 379.5 metres, at fair speaker strength, even though the time (Greenwich) was only 1 a.m. Such popular Continentals as Fécamp,

Photo 1: Mr. Preston, the designer of this interesting receiver.

This article, authored by its designer, a Mr Frank Preston FRA, appeared in the 7 and 14 January 1933 issues of Practical Wireless, just a few months after the magazine was launched. It gives an idea of the sort of technology that was available at the time.



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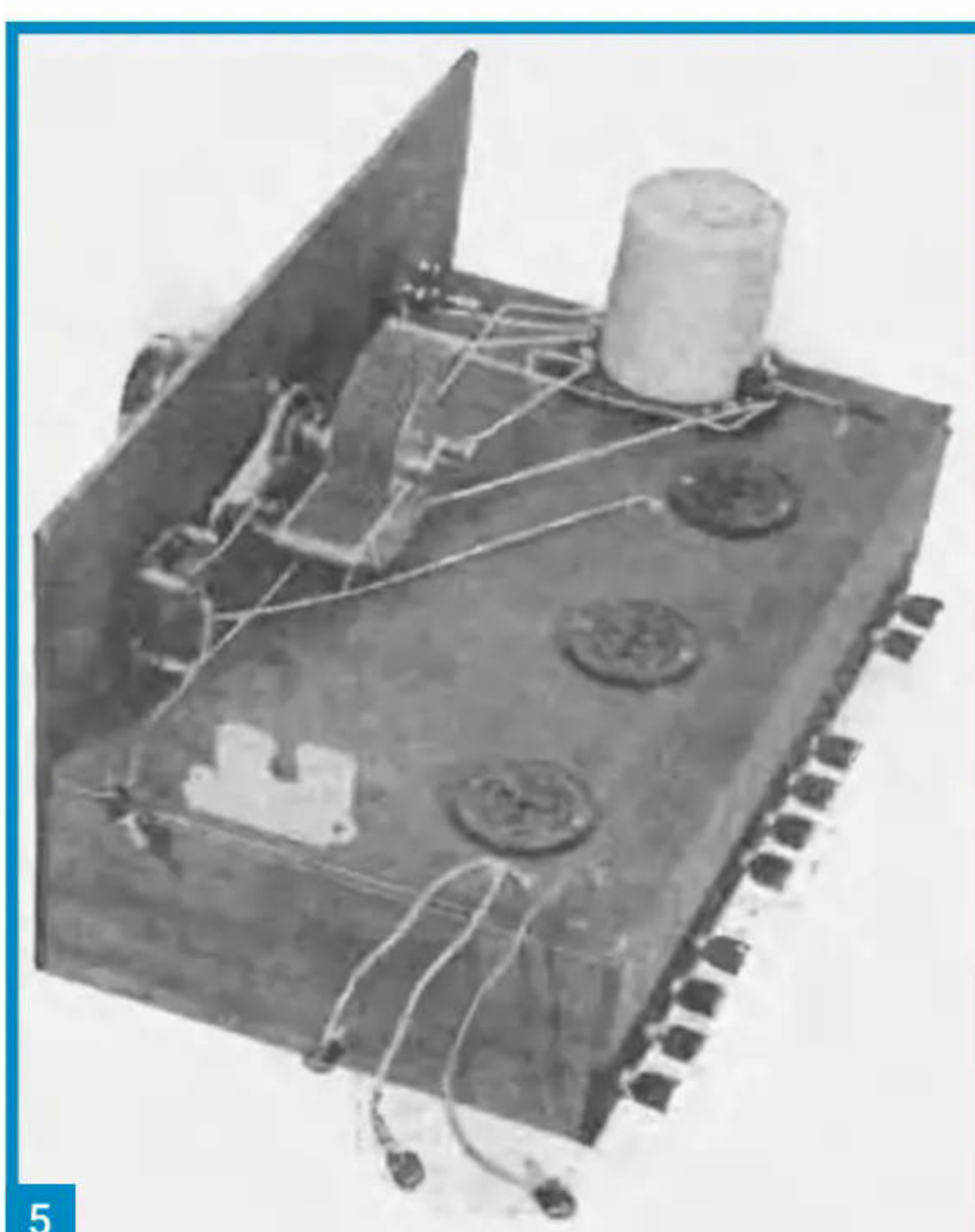
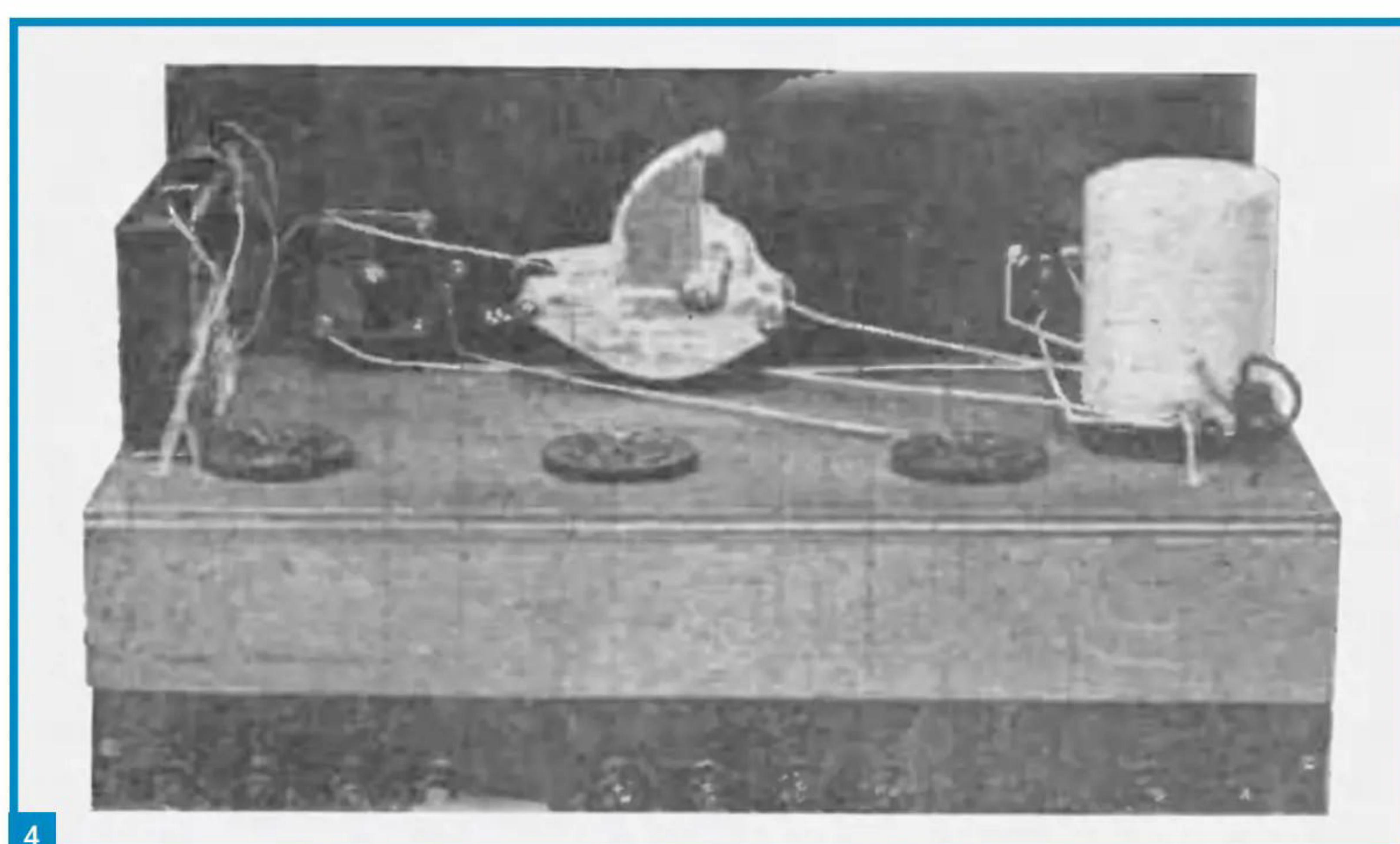
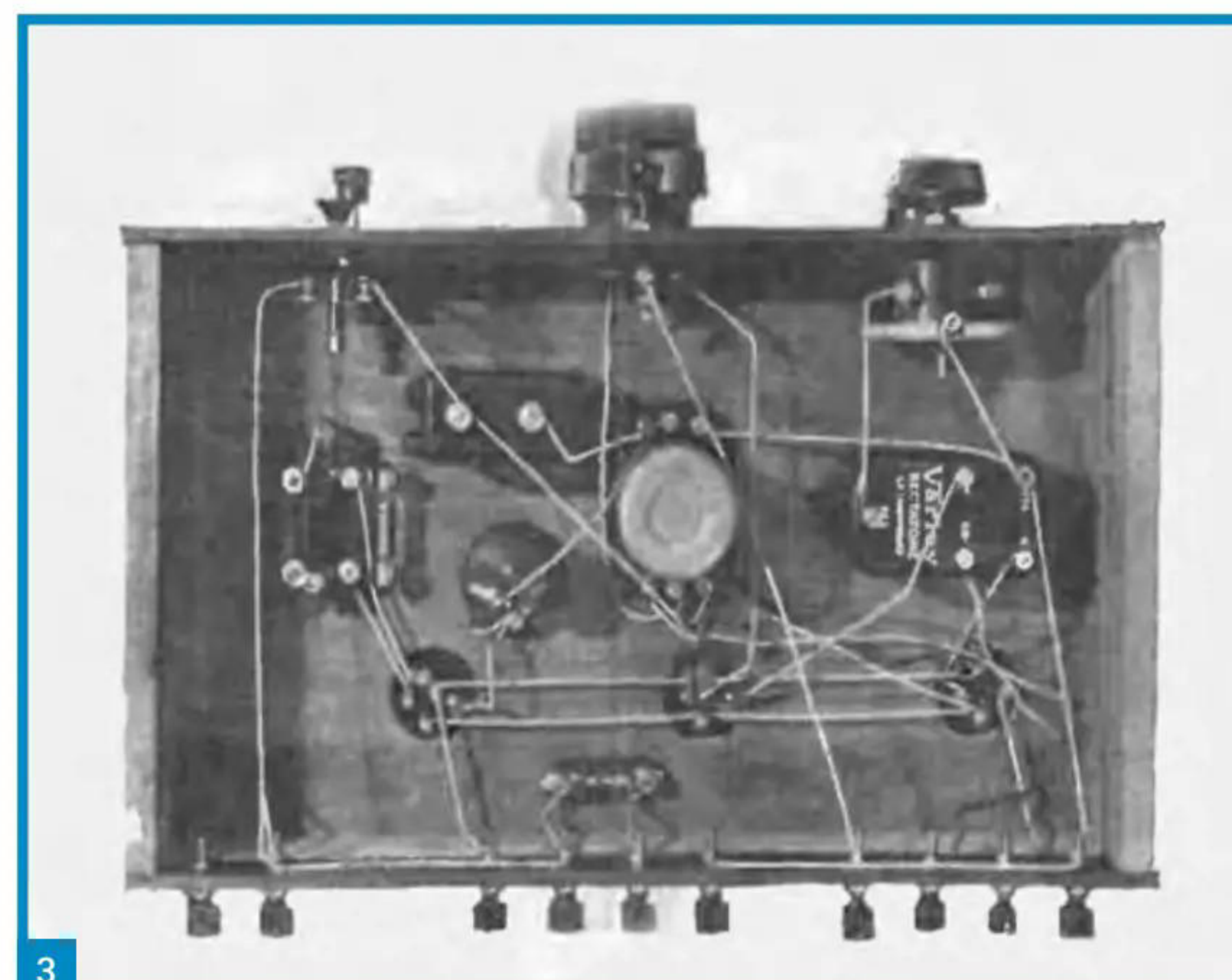
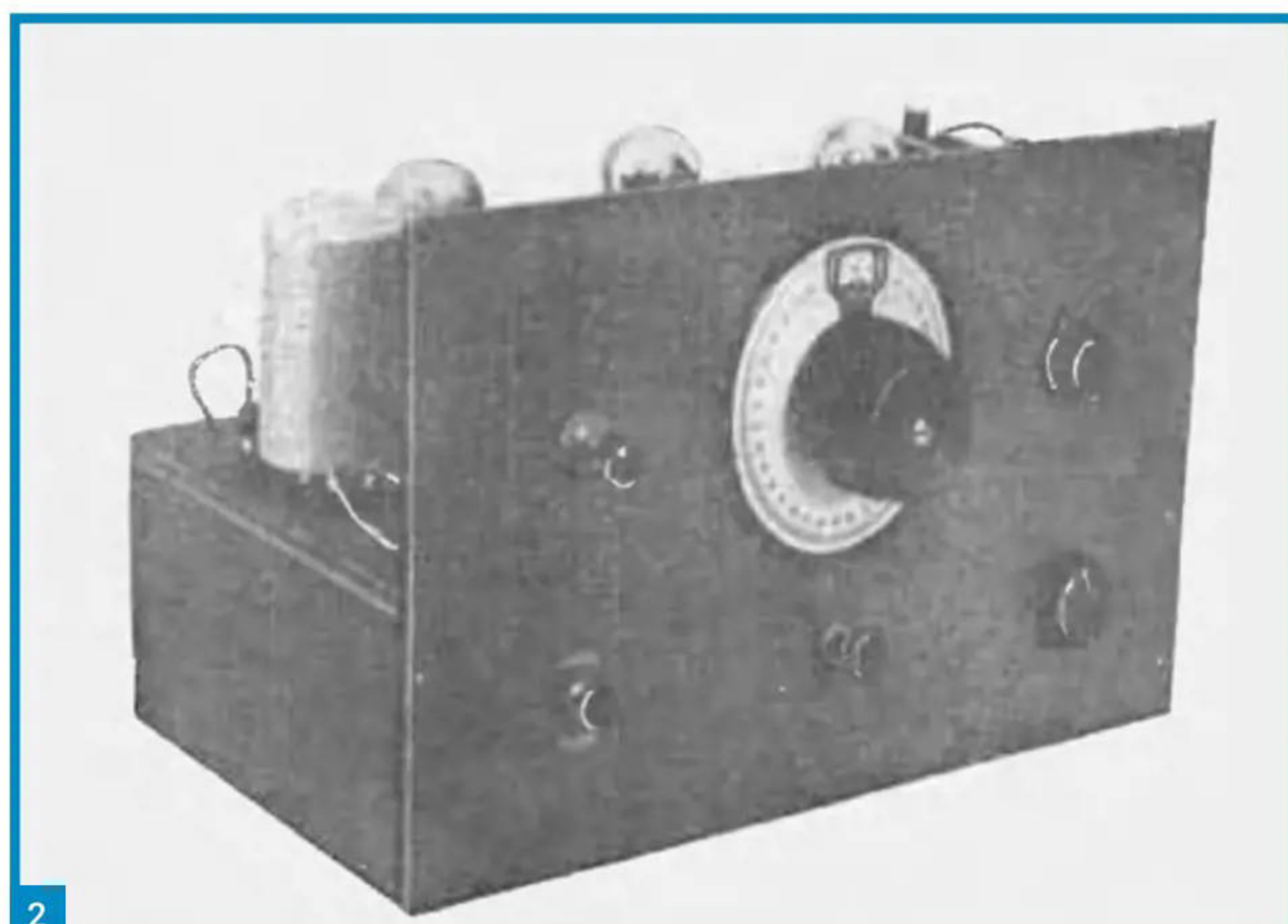


Photo 2: Three-quarter front view of the receiver.
Photo 3: The underside of the baseboard showing the simple wiring.
Photo 4: Rear view of the Selectone, showing the clean appearance.
Photo 5: Another view of the Selectone, showing the simple lines.

Bucharest, Hilversum, Rome, Mühlacker, Moscow and Radio Paris can always be relied upon to provide really good loudspeaker signals at any time of day or night. As a matter of fact a short test during the afternoon enabled me to obtain good reception of a dozen foreigners. I will say no more at this juncture about the actual stations received, but will leave that matter for a later article in which I will give a more complete log and figures in relation to dial readings.

Loud Speaker Quality

The quality of reproduction will meet with the approval of the most fastidious of music lovers, whilst the fact that the actual tone can be varied will be keenly appreciated, whether your taste lies in the direction of jazz, chamber music, brass bands, plays or talks - high-brow or lowbrow is equally well catered for.

Provision for a Pick-Up

Yes, I have made provision for a pick-up, and the quality of gramophone reproduction is just as good as that of radio programmes. The tone control is also operative on gramophone music and, in addition to its normal function, it can be employed

Component list

- 1 Vibranti plywood panel 14in. by 8in.
- 1 Utility Standard .0005 mfd. condenser.
- 1 Utility type W. 181 micro-dial.
- 1 Lissen .00015 mfd. differential condenser.
- 1 Colvern type 'T.D.' coil.
- 1 Lissen 3-point wavechange switch.
- 1 Telsen on-off battery switch.
- 1 Wearite type 'G.C.O.' radio-gram switch.
- 1 Lissen 5,000 ohm. potentiometer.
- 3 Eddystone chassis mounting valveholders.
- 1 T.C.C. .0002 mfd. fixed condenser.
- 1 Dubilier 3 megohm grid leak.
- 1 Dubilier grid leak holder.
- 1 Telsen Standard H.F. choke.
- 1 Benjamin Transfeeda.
- 1 T.C.C. 2-mfd. condenser.
- 1 Varley Rectatone transformer.
- 1 Belling Lee baseboard fuse holder with 60 m.a. fuse.
- 10 Belling Lee 'Junior' terminals; 1 each marked A, B, L.T.+, L.T.-, H.T.+, H.T.-, L.S.+, L.S.-, and 2 marked Pick-Up.
- 6 Belling Lee wander plugs; marked G.B.+, G.B.-, G.B.-1, G.B.-2, H.T.+, H.T.-.
- 1 Strip Becol ebonite, 14in. by 1½ in.
- 1 Bulgin G.B. battery.
- 1 Coil Glazite connecting wire.
- 1 short length flex.
- 1 5-ply baseboard, 14in. by 8in.
- 2 pieces hard wood, 14in. by 3½ in. by ½ in.
- 1 piece 3-ply, 14in. by 2in.
- Approximate total cost - £4 10s. 0d.

Accessories.

- 1 Camco 'Excelsior' or 'Aston Senior' cabinet.
- 3 Cossor valves; 1 type 210 Det. (metallized), 1 210H.L. and 1 220P.
- 1 Ediswan 9v. G.B. battery.
- 1 Ediswan 105v. super capacity H.T. battery.
- 1 Ediswan 2v. 40 a.h. accumulator.
- 1 Celestion Soundex permanent magnet moving-coil loudspeaker.

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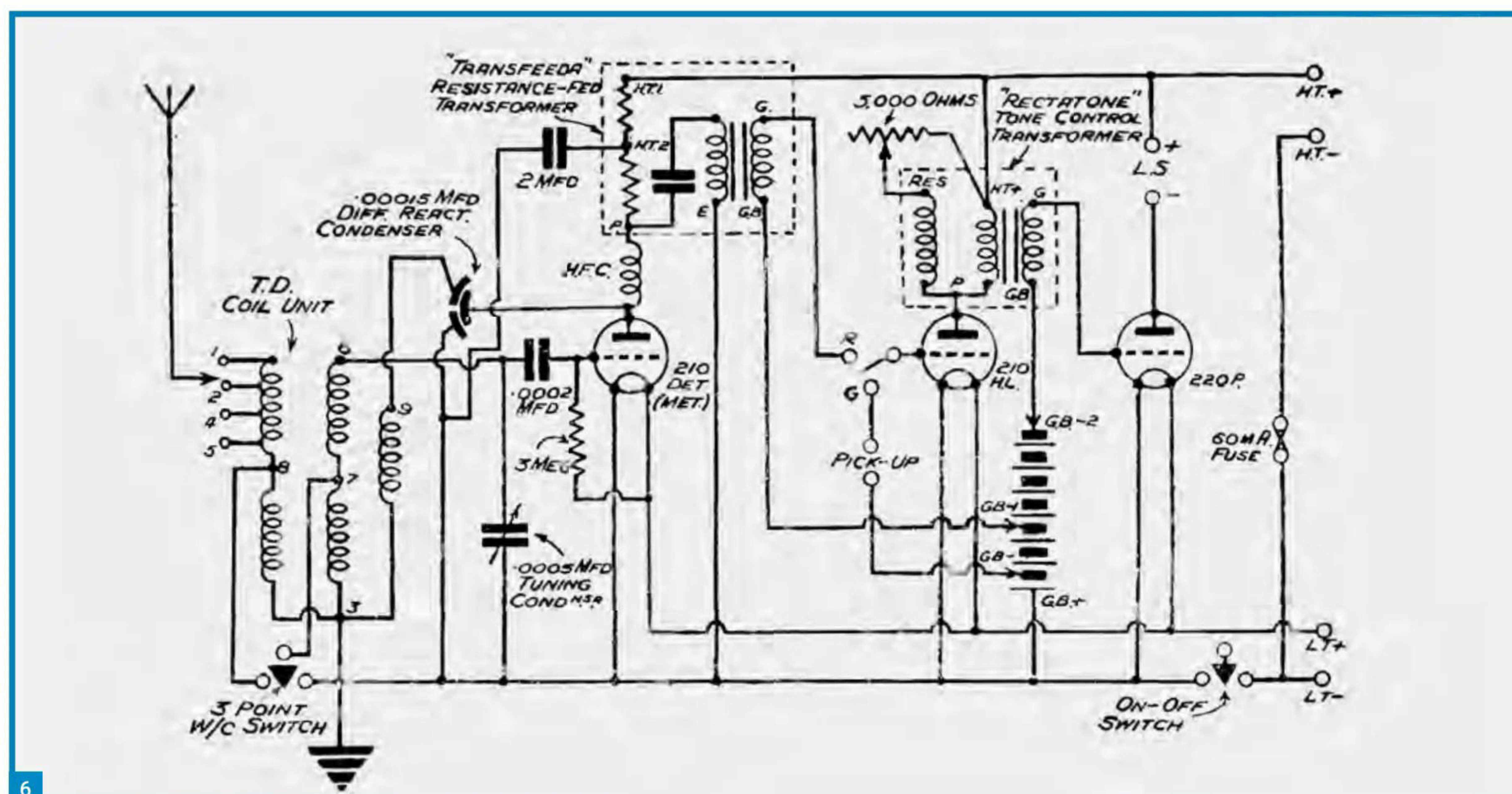


Photo 6: The circuit diagram of the Selectone.

as a scratch filter, so making it possible to eliminate needle scratch. The pick-up is brought into circuit by the action of a switch mounted on the front panel, so there is no need to probe about inside the set to effect the change-over.

Appearance

Both from inside and out the Selectone looks as good as it is. The clean layout and use of a box-form chassis make the interior 'look good', whilst the Camco cabinet, designed specially for this set, is of particularly handsome and attractive appearance; in fact, I can honestly say that the photographs do not do justice to it.

Safety

I must not forget to add that a safety fuse is provided, so that it is impossible to damage either the valves or components by making a wrong connection.

Not an Expensive Set

After reading the above introductory remarks you may have drawn the conclusion that the Selectone is going to cost rather a lot to build. I would not go so far as to say it is a 'cheap' set, but it is definitely not expensive. Considering that it gives results equal to most super-heterodynes, and better than many of them, its cost is distinctly reasonable. You will see from the list of components that the price of the bare set is approximately £4 10s. 0d., in spite of the fact that really high grade and modern components are specified. If you add to this the cost of the cabinet, valves, batteries and speaker you will find that there will be some change out of a ten-pound note.

Low Running Costs

Reasonable cost is not confined to the building of the set though, because running costs are, in proportion, even lower still. The consumption of high-tension current is no more than 7 milliamps when using a 108-volt H.T. battery, or 10 milliamps with 120 volts high tension. Filament current consumption is .4 amp., and so the 30 ampere-hour accumulator will give about 75 hours' running per charge. If you have a H.T. eliminator, even of the smallest type, it will be quite suitable for this set, because adequate decoupling is provided, and only a single H.T. positive tapping is required.

Ample Loud Speaker Output

When using the valves specified, in conjunction with a 108-volt high-tension battery, the Selectone has a maximum undistorted output of about 110 milliwatts, or with a 120-volt battery the output is 140 milliwatts. If desired the undistorted output can be brought up to 170 milliwatts by increasing the H.T. voltage to 150, but this will not be necessary unless the set is to be used in a very large room. For the benefit of those readers to whom the above figures have no significance it should be explained that an output of 100 milliwatts is sufficient to give really good volume in an average sized drawing-room when using a sensitive moving-coil speaker of the type specified.

For 'Old Hands'

The Selectone will have a particularly strong appeal to 'old hands' who are tired of reading descriptions of so many 'new' sets which are obviously mere modifications of those they have been building for years. The new principles, up-to-date constructional methods, deluxe features,

really sensible and easily-calibrated tuning dial and businesslike appearance are just a few of the things that will at once be recognized. In addition, they will be pleased to have a set with which the number of stations receivable varies in proportion to the skill of the operator. By skilful use of the reaction control the range of reception is truly unlimited.

And Beginners

But the beginner will also find the set just to his liking. Its method of construction, combined with the complete wiring charts, sketches and photographs to be given next week (**next month – ed.**), will be found so simple and straightforward that the veriest tyro need not hesitate to build the Selectone with full confidence of success. Although as pointed out in the last paragraph, the results vary in relation to the skill of the operator, I have proved that a person without any experience of receiver operation can bring in a goodly number of stations by the mere process of revolving the tuning knob.

As a matter of fact, I recently asked an oldish lady to see what she could do with the Selectone, after I had connected the batteries. The test was made during the evening on an 80-foot aerial situated some twenty miles from the North Region transmitters. She did not attempt to use the reaction control at all, and yet was able to bring in eleven stations on the medium waves and four on the long. The tuning of each of the Northern stations spread over less than four degrees, and neither station could be heard in the slightest degree when the set was switched over to long waves. What, I think, is wonderful proof of the Selectone's capabilities. **PW**

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45A £16.50



(1 connector = 1 black shell + 1 red shell + 2 contacts)

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Steve Telenius-Lowe G4JVG
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After the 'summer doldrums' the sun suddenly sprang back into life in late August. The solar flux rose to 204 units by 27 August, with the sunspot number at 185. This was apparently as a result of two large sunspot groups growing simultaneously and it provided some excellent high-band propagation for several days. By the 29th the SFI had climbed further to 235, with long-path openings to Japan and South-East Asia as high as the 28MHz band.

However, and almost inevitably, the high levels of solar activity led to a coronal mass ejection, followed by visible auroras reported as far south as Norfolk and Kent.

Most solar cycles tend to have two distinct peaks and it seems very likely that the first peak has already occurred. Only time will tell whether the high solar activity at the end of August marked the beginning of a second peak to Cycle 25 (or, indeed, whether there is a second peak at all).

Why I like SSB

Arguments over which is the 'best', or most enjoyable, mode of transmission have been around almost since the days of spark transmissions! I certainly remember AM operators in the late 1960s denigrating the use of the Donald Duck-sounding SSB on 160 metres. Some users of what are now considered to be the 'legacy' modes of CW and SSB consider the new WSJT digital modes to somehow not be 'proper amateur radio'. So I thought it would be interesting to look at why some operators prefer particular modes, sometimes to the exclusion of all others.

Regular contributor to this column, **Etienne Vrebos OS8D, Fig. 1**, wrote about the reasons he likes to operate using SSB. In fact, Etienne only uses SSB on HF and has worked 273 DXCC entities in about 11 years using that mode. He wrote: "Some friends of mine are that proud to 'work' 150 DXCC [entities] in six months [using FT8 – Ed]. I never make any discussion about it as it's their way of life, but they never heard a Japanese spelling their name in phonetics, they never heard the nicest 'eight', as Scots and Ulster people pronounce it, they never spoke to any Russian – and they can't recognise smokers or non-smokers!"

"Voices are what make humans that important and there are as many voices as flowers in the world. I could listen to Scots for hours and hours – it's delicious – and try to understand a Chinese callsign when they call CQ – you really need a Cluster somewhere to find out [who it is]."

"Indians and Arabs can be recognised, even with low power. Every single voice makes me dream about their country and situation. The Spanish



Better Conditions

This month **Steve Telenius-Lowe G4JVG** reports an improvement in solar activity.

and Italians are the best as they don't care what you answer, as long as they hear their callsign pronounced and are happy and positive people on the radio."

I can agree with a lot of what Etienne says: for around 35 years I used SSB almost exclusively on HF (I made perhaps a dozen or so QSOs on CW in that time). However, as PJ4DX in 2015 I started using CW, purely for DXing purposes (my Morse skills are still not good enough for a rag-chew). Most of my general activity – chatting with friends, DXing and contesting – was still on SSB, but to work DXCC entities that were either not active on SSB or, if I found I could not crack the pile-ups on SSB, I turned to CW. By 2018, with around 300 DXCC entities worked on SSB and 'new ones' becoming more and more difficult to find, 10% of my QSOs were on CW. Then came FT8. I had never used any of the 'legacy' digimodes (RTTY, PSK etc) but I started using FT8 and FT4 in 2020.

I still consider myself to be primarily an SSB operator and, like Etienne, I enjoy listening to operators' accents – e.g. trying to differentiate between Aussies and Kiwis on the air – or attempting to speak a little Swedish or Dutch with my QSO partners. But now I also appreciate the skills of really good CW operators, and I recognise the attraction of FT8 for those who can now make HF amateur radio contacts for the first time even though, for whatever reason, they are unable to build an effective station.

Next month another contributor with 'why I like CW'.

QSL from yesteryear

Last month we looked at the ZS9Z Walvis Bay DXpedition. This month, the second of two old QSLs from deleted DXCC entities that were once parts of South Africa. ZS9Z/1, **Fig. 2**, was an operation from the Penguin Islands in 1990. At the time the islands, located at 26° 37'S, 15° 9'E, were the sovereign territory of the Republic of South Africa (RSA). There are around 20 islands in the Penguin group, some of which have splendidly old-fashioned British names, such as Plumpudding Island and Roast Beef Island, **Fig. 3**.

The ZS9Z/1 operators were, once again, **Chris Burger ZS6BCR** (now **ZS6EZ**, who was on the ZS9Z DXpedition I reported on last month), accompanied by **Martti Laine OH2BH**, **Pertti Turunen OH2RF** and **Wayne Mills N7NG**. Quoting from the reverse of the ZS9Z/1 QSL card, the Penguin Islands "are located off the coast of Namibia, with Namibia left as an intervening country between the islands and the RSA, thus qualifying the Penguins for DXCC country status... The Penguin Islands are just a cluster of barren rocks, today uninhabited. The remaining structures there confirm that a lively guano mining community existed long ago. The rough landing sites are located along the eastern coast, with the island effectively blocking signals to the west... This operation featured multiple beams mounted in the clear on top of the island while the ICOM stations racked up 32,200 QSOs on the waterfront during six days of operating. The first days were spent on selected bands, while some RTTY, 6M, WARC and low-band operating was launched

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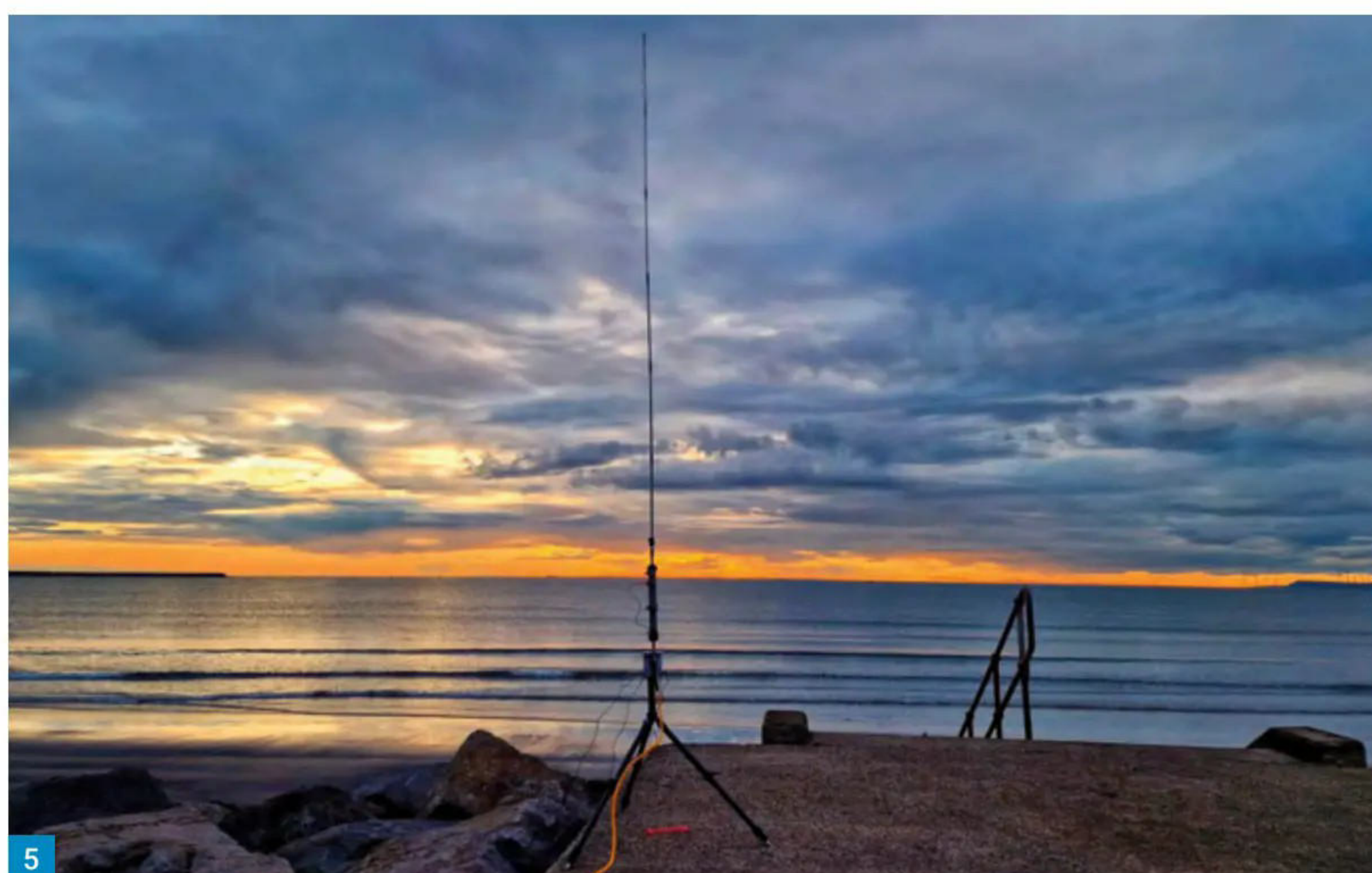


Fig. 1: Etienne OS8D operating his favourite mode: SSB. Fig. 2: QSL from the 1990 Penguin Islands DXpedition. Fig. 3: The Penguin Islands as shown on a map of colonial Africa in the 1897 Gardiner's School Atlas of English History (Wikipedia). Fig. 4: Award for working Indonesian special event stations commemorating the country's 80th anniversary of independence. Fig. 5: 'Mad Dog Coil' vertical antenna used by 2E0HPI/P on the coast at Hartlepool. Fig. 6: Exhibits at Miles Historical Museum in outback Queensland.

later in the week..." My QSO with ZS9Z/1 was at 0730UTC on 30 November 1990, on 28MHz SSB.

According to Wikipedia, in 1990 – when Namibia gained independence from South Africa – the Penguins "remained under South African sovereignty... After further negotiation and the signing of a treaty, at midnight on 28 February 1994, sovereignty over the islands, as well as Walvis Bay, was transferred to Namibia." As a result, the Penguin Islands were moved to the DXCC deleted entities list.

A few years after the ZS9Z/1 operation I met Chris ZS6EZ when he visited the RSGB HF Convention, which was then held in Old Windsor and, some 20 years later, once again in November 2015 when Chris visited Bonaire.

What to look for in October-November

XT2AW will be active from Burkina Faso from 4 to 27 October. Operator **Harald DF2WO** will use SSB and FT modes on all bands from 3.5 to 28MHz.

Celebrating Angola's 50th anniversary of independence, a team of ten operators from Portugal and Spain will activate D2A between 17 and 28 October. They plan to operate six stations on SSB, CW, FT8 and RTTY on all bands from 1.8 to 50MHz.

Nine operators, mainly from Russia, plan activity

as 9U1RU from Burundi between 31 October and 17 November. Expect some big signals as they are planning to use seven high-power stations.

From Fernando de Noronha, look for PY0FB and PY0FBS on all bands 3.5 to 50MHz, SSB and FT modes, between 8 and 15 October.

Five operators from the Netherlands will be on the air from Gambia as C5Y between 23 and 29 October. They plan to emphasise activity on SSB and CW on all bands from 1.8 to 50MHz, including an entry in the CQWW contest.

No doubt there will also be plenty of other 'contest DXpeditions' for the CQWW SSB contest on 25/26 October, many of which will also be active before the event.

The month on the air

Indonesia declared independence from the Netherlands in August 1945, although it was not until 1949 that the Dutch recognised Indonesia as an independent country. Members of the

Indonesian national amateur radio society, ORARI, operated numerous special event stations from 14 to 20 August to commemorate the 80th anniversary using prefixes from 8A80 to 8H80. For example, 8B80JB (Fig. 4) was active from Jawa Barat (West Java).

The Åland Islands are not particularly rare these days but are nevertheless a beautiful place to visit (I operated from there as G4JVG/OH0 several times well over 40 years ago – when they were considered to be quite rare!). Six members of the 'Old House Radio Club', OH5C, were very active as OG0C from 17 to 24 August on all HF bands (plus VHF / UHF). They were using all modes including RTTY and JT65 as well as more usual SSB, CW and FT8.

Market Reef, that small island located between Sweden and the Åland Islands, has been on the air again: OH1MN was active as OJ0MN between 24 and 31 August, while OH1LEG was active as OJ0Z from 26 to 29 August.

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YL2GM and EA5EL started their activity as 3C3W from Malabo in Equatorial Guinea on 1 September. After over 21,500 QSOs they flew on to Annobon, where they had hoped to operate as 3C0W. However, they were unable to obtain a local operating permit there so returned to Malabo and thence home. Since their trip, the Equatorial Guinea authorities have temporarily suspended amateur radio licensing due to 'irregularities' – hopefully this will be resolved in short order.

Iral.lv/3c0w_3c3w_2025

Readers' news

Jim Bovill PA3FDR reckoned "The month has been relatively unspectacular apart from one new DXCC from the small West African country of Benin (TY5AD) and, at least for me, two rather rare USA states, Alaska (KL7FC) and Hawaii (NH6D). I did, however, manage one contact on 10m, but only across the North Sea to Scotland (GM0VGI). Hopefully this is the start of better propagation for the higher frequencies as we move into autumn."

Carl Gorse 2E0HPI has "not been that active of late but I've managed to get out portable a few times". A portable location on, or very close to, the sea can provide excellent results: the photo in **Fig. 5** shows Carl's 'Mad Dog Coil' vertical antenna with a 2.5m whip from M1ECC antennas while located at Hartlepool, "just a few minutes walk from the home QTH". His QSO with VK5PAS was via long path and made with 75W from his Yaesu FT-891.

Martin Burch VK4CG has been on a 4WD drive out in the Australian bush, visiting the Queensland country areas of Dalby, Chinchilla and Miles, **Fig. 6**. However, "being on the road this last month I've missed out on some very good band conditions centred around 24 August, when all bands have opened up world-wide, but unfortunately the times I have been on air have been limited due to other things going on. Looking forward to the future retirement then I can give 100% to the reports!"

Etienne Vrebos OS8D said "I still get pleasure activating ONFF, POTA, BOTA and castles in the most remote places: forests mostly, where no car could reach (and for sure are not allowed!). I really need my satphone to have proof of my QTH (**Fig. 7**), as there is no signal at all for phone / internet... The next small problem was my logging time.

When I make an activation by motorcycle, I do not use a laptop (no place in my sidebags), but pen and paper, with not always the exact time. I have been told that eQSL and HAMLOG do not accept a difference of more than three minutes, otherwise you get a NO MATCH. Now I have an atomic clock with me: no discussion any more!"

Owen Williams G0PHY had "not too much to report this month but there was some good DX on 7MHz during the All Asia phone contest with two new band slots with JA and BY. There was an interesting contact during the International



Lighthouse and Lightship Weekend: I had a contact with N1KSC operating from lighthouse number US0099. A quick check on QRZ.com revealed that N1KSC is the Kennedy Space Center Amateur Radio Club and they were operating from Cape Canaveral Lighthouse. It looks like the rest of September could be spent chasing the GB300RAF and SP300RAF special event stations commemorating the contribution of Polish pilots in the Battle of Britain."

With HF conditions having been so poor over the summer, **Tim Kirby GW4VXE**, operating as **GW4MM**, has been spending some time working SOTA and POTA portables. Out of curiosity, a few weeks ago, Tim uploaded his SOTA log to the SOTA database and was surprised about how many contacts he'd had. SOTA issue a 'Shack Sloth' award for anyone who makes 1000 points chasing portables. Tim was in sight of that total, so spent a few days pouncing on any SOTA portable that he could hear and is now proud to be able to call himself a 'Shack Sloth'. Tim says he has a feeling that **Julie**, his wife, might agree! "Conditions have been improving gently in the last week or two and it's been noticeable that the higher bands have been better in the evenings, with some nice CW chats into the USA on 15m, for example. I was happy to catch several Australian stations in the evenings on 20m as well as VK3CWB on 40m", Tim said.

28MHz beacons

Neil Clarke G0CAS brings us his 28MHz beacon report for August. The number of beacons heard via Sporadic E was down compared to the previous month; in fact the summer season which runs from the beginning of May till the end of August was well down on 2024. However, openings are expected still to take place until towards the end of October but not as intense as during the main period. Out of the top six beacons heard via Sporadic E, five of them were from Italy; the other was OE3XAC 28188. The top

Fig. 7: The Thuraya satphone used by Etienne OS8D/P to indicate latitude and longitude.

Italian beacon logged was IQ8BB 28260. ZB2TEN 28150 was heard every day until the 9th, but was then not heard again. ON0RY 28207 was heard twice on the 3rd and the 26th. The only other time I heard that beacon was on the afternoon of the 18th of June. OY6BEC 28235 and LA5TEN 28238 were both logged on 11 days.

Now a look at the world-wide beacon system on 28200. 4U1UN was heard for a least an hour from 0800 to 0900 hours on the morning of the 5th. It's very unusual to hear it at this time of the day, considering that most of the path is still in darkness. The previous day it was heard during the evening, as one would expect. Beacons in W call areas 1, 3 and 4 were heard on the 31st and call area 5 on the 18th and 28th. Further north in Canada, VE1VDM 28174 and VE3TEN 28175 were logged on the 31st, VE3TEN was heard for the first time since February 2024. Down in South America, LU2DT 28193 was heard on 28 days while PY4MAB 28270 was only logged on 14 days. On paths to the Middle East, 4X6TU 28200 was heard on 26 days, while 5B4CY 28219 and YM7TEN 28225 were logged on nine and four days respectively.

Band highlights

Key: Q = <20W, M = 20 – 100W, H = >100W, S = Single-element antenna, B = Beam (see January HF Highlights for a more detailed explanation).

Jim PA3FDR (MS): 10MHz FT8: N1UL, OG0C, UA9MA. **14MHz FT8:** RA9CUU, TY5AD. **18MHz FT8:** 5Z4VJ, A71QA, BA3QIQ, CN2DX, HS0ZOY, KL7TC, NH6D, R95WDW, PY5BH, TC40A, UA0AV, VE9ZY, YB5WIR, ZS4JAN. **21MHz FT8:** CX6TU, EK1KE, HZ1DL, JA2LMA, JF0CSK, KF9UG, KP4PR, LU2GE, N6DW, OD5KU, PY3GS, RG0S, UN3P. **24MHz FT8:** PU2LJH.

Carl 2E0HPI/P: 14MHz SSB: K2UPD, KN4WHI, N8TT, VE1SK, VE7VIB, VK4NH, VK5PAS.

Martin VK4CG (MS): 7MHz SSB: N6ZBC, VJ2A. **14MHz SSB:** DL0IL/P, KE5EE. **21MHz SSB:** JJ0PKS, JR1AYW.

Etienne OS8D (HB): 14MHz SSB: KH6ML, VK6KN, VK7JON/M, VK7MD/P. **18MHz SSB:** YE4IJ. **21MHz SSB:** 8A80BL, 8B80JB, 8D80SR, 8E80KG, 9M25MA, BH7FFR, JJ0PKS, PZ5TW, YC7ALY, YN9H. **24MHz SSB:** HP1XV, XW4KV. **28MHz SSB:** 7Q4AM, CA2ECJ, FY4JI, J69Z.

Owen G0PHY (HS): 7MHz SSB: A61BR, BY1RX, JH7MQD, UN9L. **14MHz SSB:** A61BR, E2K, TA4A, VK6NF. **21MHz SSB:** UN9L.

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 January 2026 issue the deadline is 11 November. 73, Steve G4JVG. **PW**

Keith Rawlings G4MIU
keith.g4miu@gmail.com

This month we will start to take a look at some of the Two Port S21 measurements that can be made with Two Port VNA's.

As a reminder from the April issue, the calibration and measurement setup for these measurements can be seen in **Fig. 1**. At the top of the image is the calibration procedure for directly calibrating on the VNA itself, but for a Through calibration we would likely use the procedure illustrated in the middle image where the Cal kit is placed on the end of the interconnecting cables. The lower part of the image shows the DUT (Device Under Test) in place where it effectively replaces the 'Through' connector.

For lower frequencies such as HF and probably lower VHF this connection method would suffice but for higher frequencies and greater accuracy it would be of benefit to add port extensions or in the case of the NanoVNA an 'Electrical Delay' to the setup to bring the measurement plane directly to, in the case of Fig. 1, the filter's input 'ignoring' the effect of the connectors. However, to characterise the filter's performance as a whole and for most amateur uses, calibrating to the filter's input connectors will suffice.

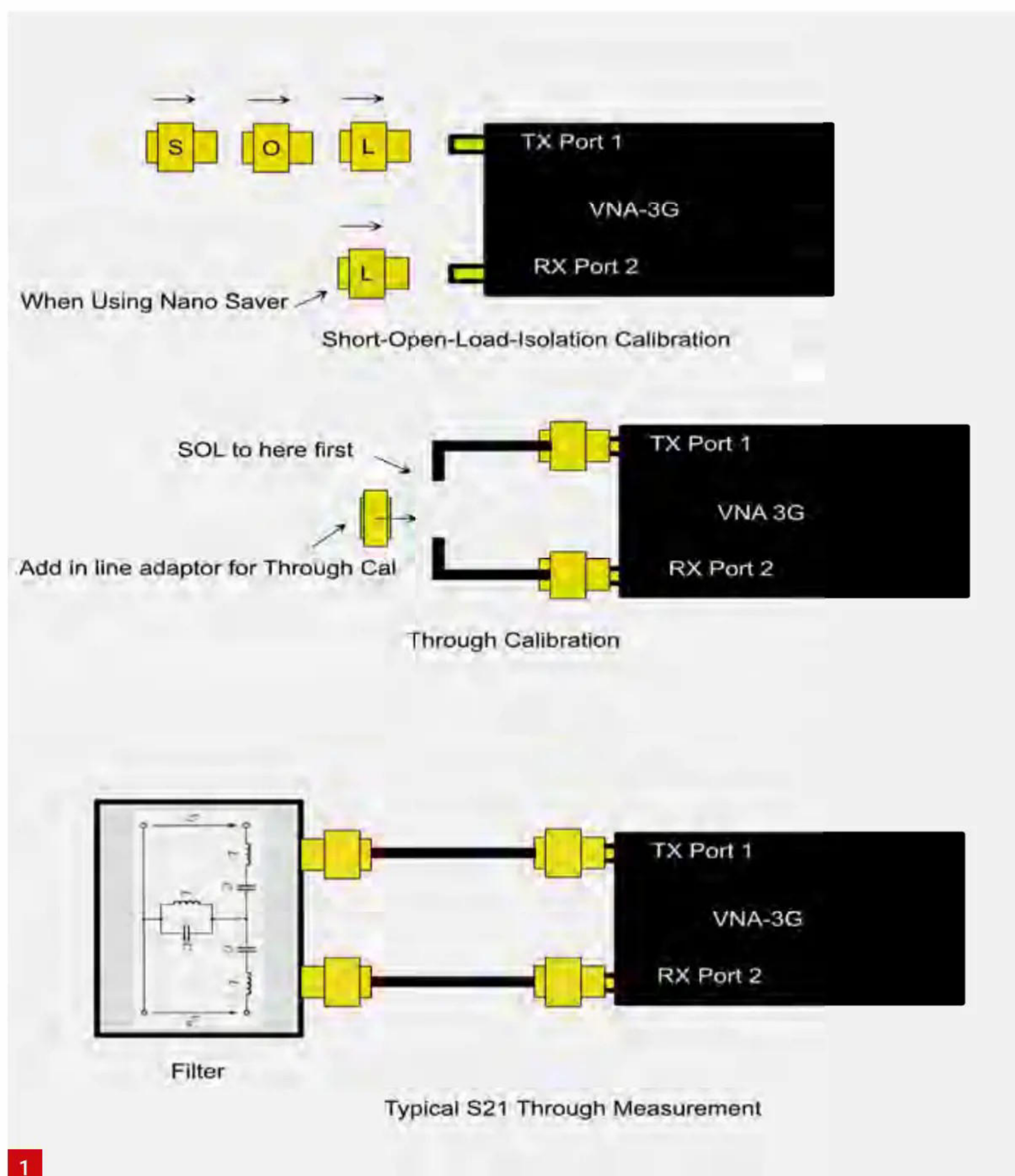
To demonstrate the characterisation of a filter I will use the device seen in **Fig. 2**. This gadget is a 400MHz low pass filter which came from a Collins GR278B military air band receiver, which was a 1750 channel, UHF (225.0-399.9Mc/s) AM base station receiver. The filter was made by Bird with a part number 241-0057-00. It is fitted with BNC connectors and was connected directly between the RF input socket of the receiver and the first RF stage and was no doubt fitted to reject higher frequency radar interference.

The radio itself was a monster and part of the AN/GRC 27 UHF communication system. Its tuning method was purely mechanical, driven by a myriad of electric motors and gears all synchronised to tune the individual RF stages. It was a victory of mechanics over electronics and the internals were a sight to behold but, I imagine, a swine to align.

I forget the number of valves it used but I'm sure it was over 30. In many ways it was the UHF equivalent of the Collins R390A HF receiver. It must date back to the 1950's-1960's. If you feel the need to see one in real life there is one within the AN/GRC 27 setup installed in the Bentwaters Cold War Museum in Suffolk. The GR278B part in the museum can be seen in **Fig. 3**:

<https://bcwm.org.uk>

This radio served me as a mil air receiver until I got my AR2001 which was far more 'domesticated' than the Collins behemoth could ever be! However, I noted that sitting in my car with the AOR during a June air show at RAF Coningsby in the mid 1980's the nearby radar was breaking through quite badly. Removing the antenna stopped the breakthrough, indicating that the radar wasn't getting directly into



Yet More on VNA's!

Keith Rawlings G4MIU's uses his VNA to test a low pass filter.

the radio's stages themselves but was probably overloading the RF stage. While sitting there I thought of this filter that sat in the middle of the GR278B and decided I would remove it and include it as part of my airshow 'kit'.

A whole year later, and sitting close to the spot where I had been previously, I tried the filter and it worked a treat! The filter has managed to survive in my 'cherished items box' all this time and I have never attempted to characterise it, so, I thought it would make an interesting item to look at for this example of using a VNA. The measurement setup can be seen in **Fig. 4**.

I set the VNA-3G to sweep from 150MHz to 1GHz with 1001 sweep points, and fitted SMA-BNC adaptors to the VNA-3G to take two short BNC leads that can be seen fitted to the filter. Neither of the two ports on the filter is marked as either input or output so I assume it's bi-directional.

A BNC Cal Kit was used and firstly a SOL

calibration was performed on the end of the cable fitted to Port 1. I then used the through adaptor of the kit to connect to the lead fitted to Port 2 and performed the Through calibration.

I next setup Trace 1 to read S11 VSWR and Trace 2 to read S21 LogMag (dB). The result may be seen in **Fig. 5**.

I have set markers at 200MHz, the traditional start of the military airband section, 400MHz the end of the traditional airband section and at 578MHz and 1GHz.

The response of the Filter may be clearly seen. With the blue LogMag trace, insertion loss at 200MHz can be read as 0.65dB and at 400MHz 1.43dB, the other two markers show attenuation of 46dB and nearly 52dB at the lowest points. I have only measured to 1GHz, the limit of the Cal Kit, but it can be seen that the trace has bottomed out here and it is likely that this level of attenuation will carry on beyond this frequency, so the filter will offer

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Fig. 1: Calibration Procedure. Fig. 2: The Bird 400MHz Low Pass Filter. Fig. 3: The Collins GR278B/GR. Fig. 4: The Filter Set Up for Testing with the VNA.

exceptional rejection of radar signals that will be much higher in frequency.

The Yellow VSWR trace has been included as it shows how the filter is matched. The worst VSWR through the wanted passband is 1.48:1 at 400MHz and it can then be seen to rise dramatically as the signal goes into the unwanted passband of the filter.

To fully characterise this filter, I also reversed the connections to see what the response was in the opposite direction and both were very similar indicating that this filter is indeed bi-directional. Clearly the filter was a quality item designed to do a job that even now, probably some 75 years later, it is doing very well.

When performing this type of measurement the dynamic range of the VNA has to be taken into account. The VNA-3G is quoted as having an S21 dynamic range of 80dB from 50kHz-1.5GHz and 70dB to 3GHz. This should be more than adequate to characterise most devices used in amateur radio. However, the Nano family of analysers vary in their specification so check that the dynamic range is suitable for your purposes otherwise you might find it impossible to fully adjust a filter network because the trace is lost in the noise floor. For example, it will be impossible to correctly adjust a cavity filter that may require a rejection of 90-100dB (or much more) if the analyser has a noise floor of only 70dB.

More on S21 measurements next month.

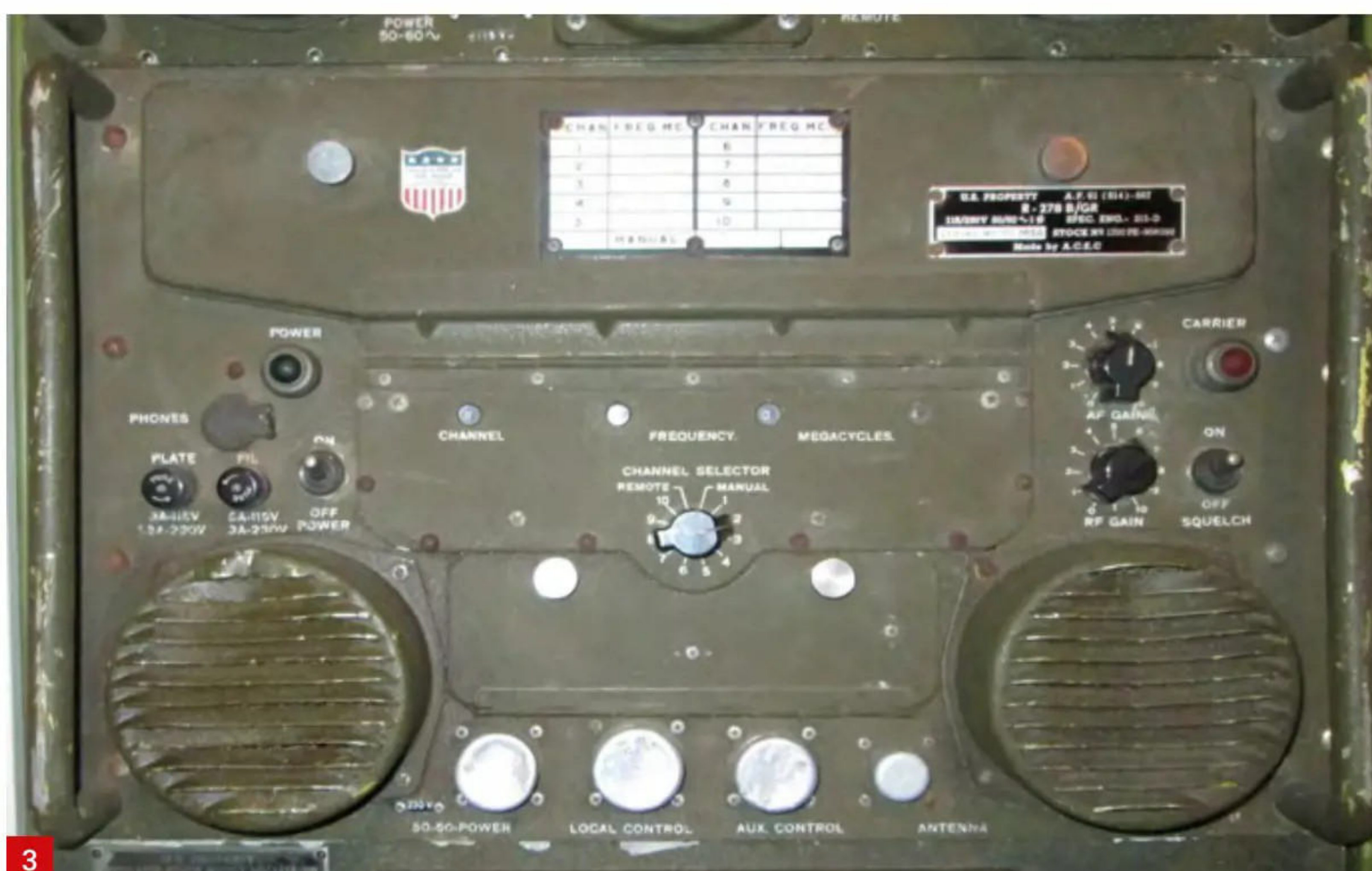
Feedback from Alaska

It is always great to get feedback from readers and especially so from overseas where it is interesting to see where our readers are located. I received a message from reader **Whit Reeve** recently, regarding the NanoVNA and was interested to see his location being Anchorage Alaska. Neither editor **Don** nor myself realised we had readers in Alaska!

I replied to Whit asking about his activities in Alaska and he was kind enough to reply with the following, which are not fully amateur related but are indicative of the antenna related technology Whit works with.

Whit wrote: "I built three radio observatories in Alaska, all dedicated to solar radio observations, radio propagation studies and HAARP research campaigns. I use RF test equipment professionally and co-designed the Analog Receiver (ARX) used in the Long Wavelength Arrays and related radio astronomy applications, so the NanoVNA is more of a curiosity to me. However, I am quite impressed by its utility when quick field tests are needed, and I like reading articles about how other people use it."

"I've attached a recent picture of one of the ARX boards on my lab bench during testing and troubleshooting with a digital microscope. This



particular board had a reflow problem on one of the RF filter switches. Each PCB has 16 RF channels and a total of 2200 components [See Fig. 6].

"An LWA Station uses 32 identical PCBs. It took my colleague and I exactly two years to design and produce the boards for the LWAs in New Mexico, Arizona, Texas and Peru. It was a fun project and we're now working on derivatives of the ARX for other applications."

In addition: "To add to it, I've attached a couple images taken with a digital microscope. One shows the PCB lands associated with one of the RF switches I mentioned last time, and the other shows the switch itself. The switch is only 5mm square and impossible to work on without a microscope. You can see there is no solder on some of the switch pads. We know what happened (no solder paste touched the switch pads) but we don't know why. It only occurred on some of the boards in the production run of 172 boards, but we're presently investigating further. Note [Fig. 7] the Kapton tape, which I used to prevent the hot air during rework to

prevent nearby parts from moving.

"I have both the NanoVNA and TinySA and do use them when I need to make a quick measurement or test and not worried about accuracy, although both instruments are quite good in that respect considering their cost and size. I work with an engineer at a seashore surveying company in Anchorage who uses the NanoVNA in his daily job working with weather satellites."

I replied that I now find working on a lot of electronic devices 'challenging' due to their size and Whit commented: "I know all too well the problem working on modern electronics. In fact, when we designed the ARX, we purposely used parts no smaller than 0805 just so it could be worked on by hand if necessary. The only exceptions are the many RF coupling capacitors where we used 0603 to save space. The RF switches and digital step attenuators both have very small pads but we had no choice but to use the parts we did."

Commenting on the weather, bearing in mind at the time of writing the UK was experiencing

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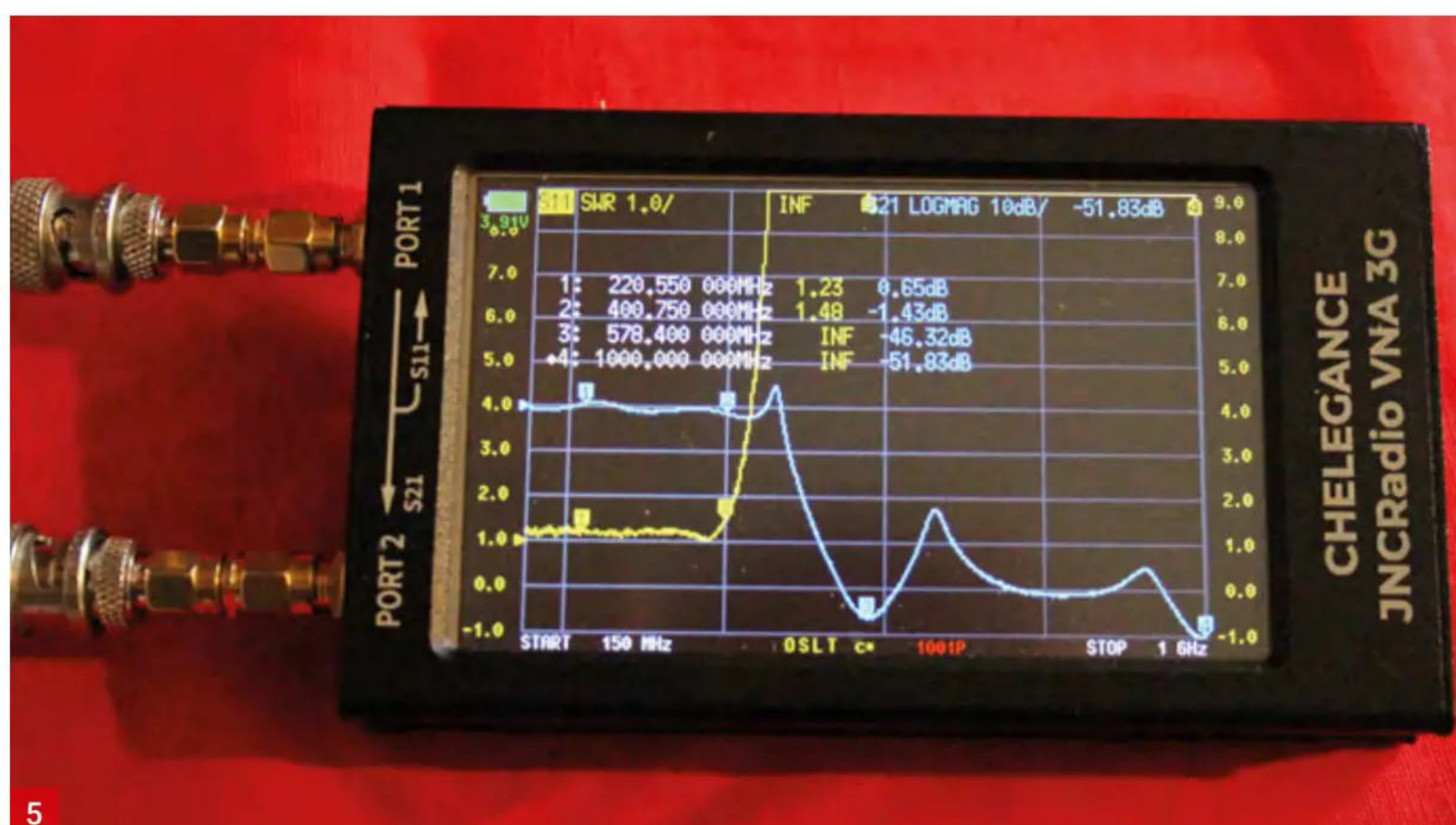


Fig. 5: The S11 VSWR and S21 LogMag Response of the filter. Fig. 6: ARX Board.

Fig. 7: Digital Microscope Images of the Board Under Inspection.

another heatwave: "I live in Anchorage, which is in the southwestern part of the state, so our weather is more coastal and influenced by the Gulf of Alaska/North Pacific Ocean. We usually have really nice weather during the 10 days surrounding our Independence Day (July 4th) holiday but this year the good weather seemed to be exactly one month late. We had snow a couple days ago in the mountains nearby, which indicates that our summer is coming to a close; we call the first sign of snow in the mountains 'termination dust' - termination of summer. Our summers in Anchorage usually go from May to September but the best overall weather is May and June and a 10-day period around July 4th. It seems like this year the good weather was off and on and we didn't have any long stretch of it. But, the variable weather each year is the way Anchorage is -

being so close to the North Pacific."

Whit added: "You might be interested in an article I wrote a few years ago on the calibration standards that came with my nanoVNA-H4:

<https://tinyurl.com/3s8rxths>

In this document Whit has checked the performance of the Calibration Kit and cables that were supplied with his VNA-H4. He used a Keysight Field Fox N9917A Microwave Analyser during his tests using a fully characterised HP Calibration Kit:

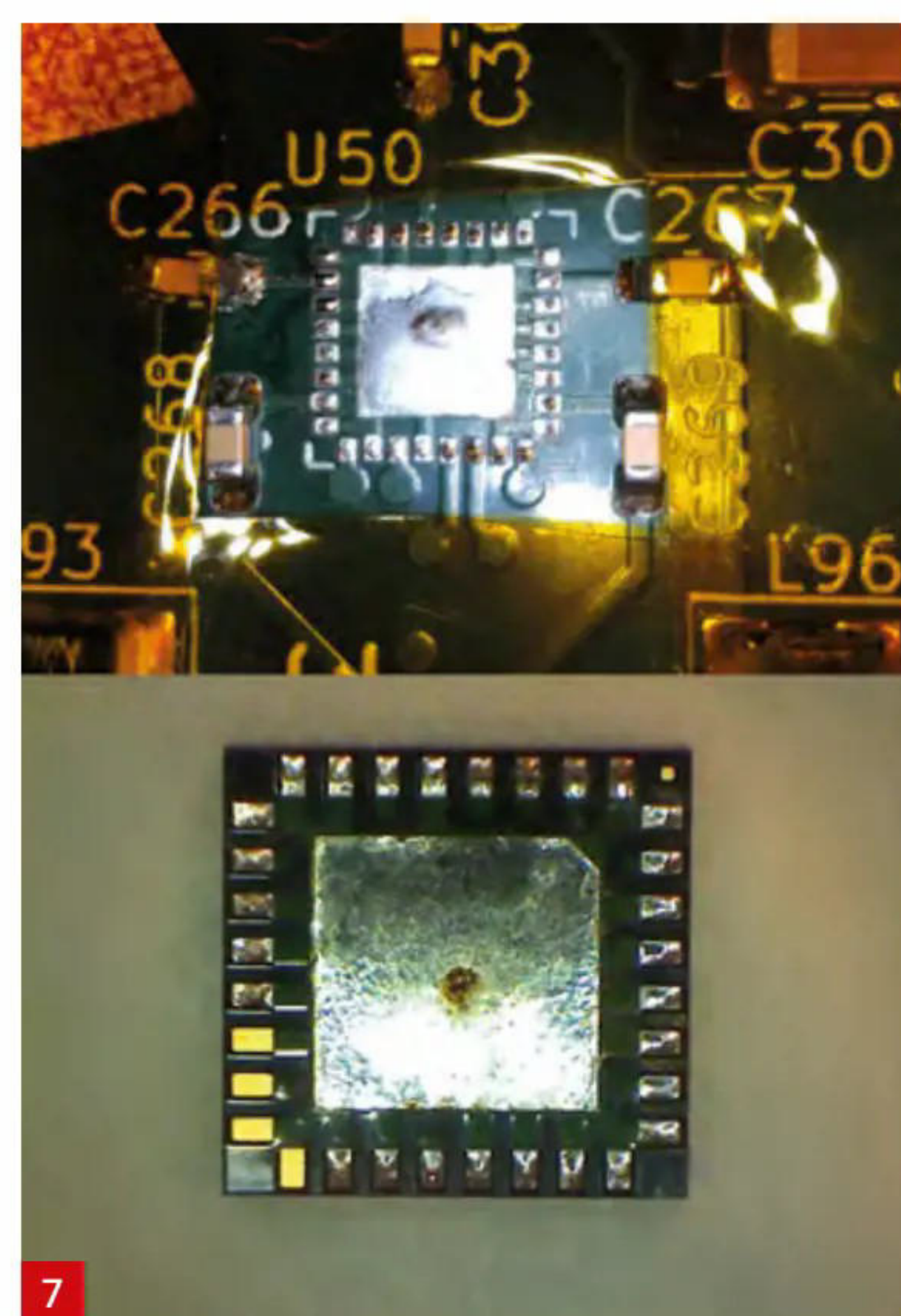
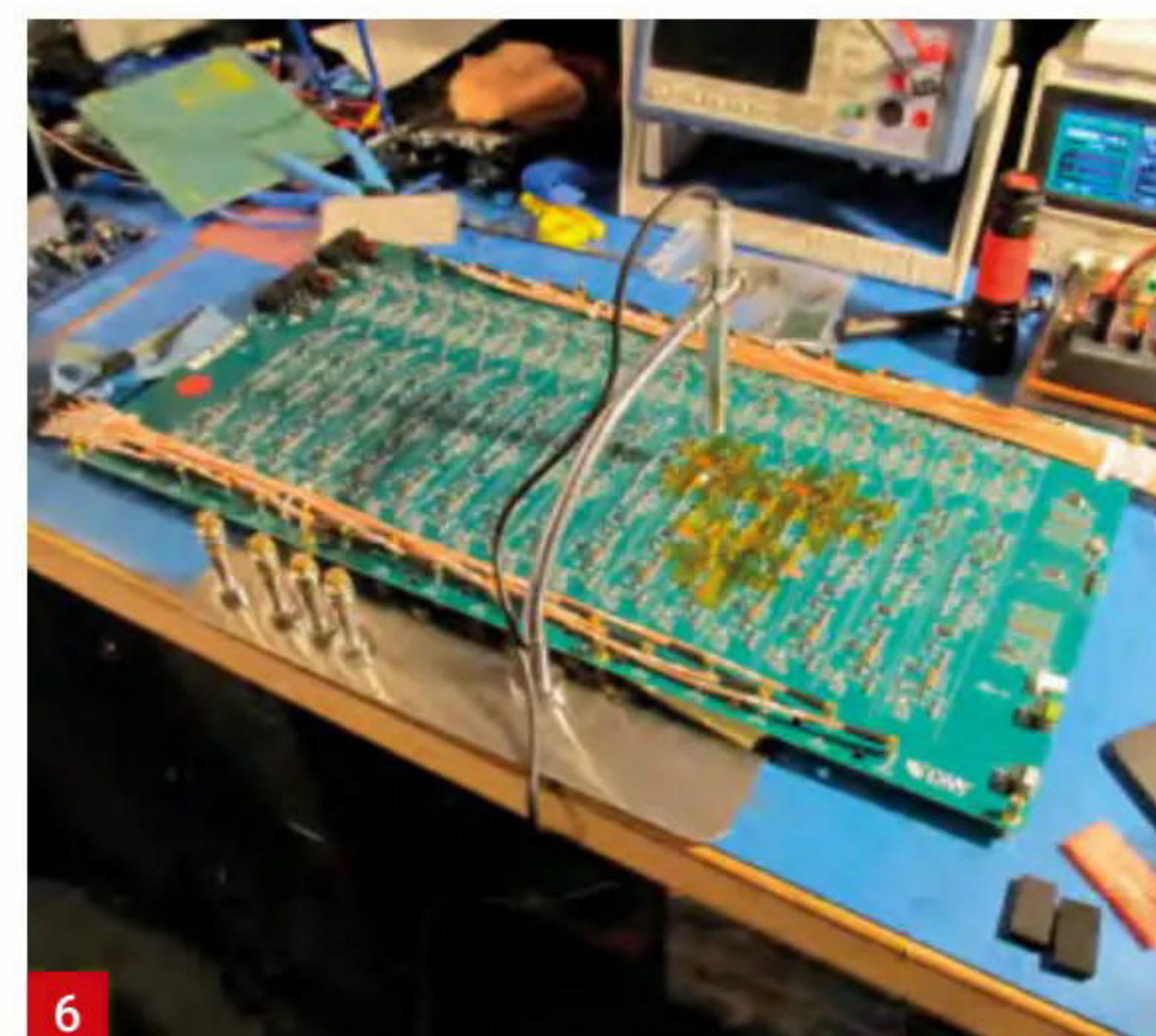
<https://tinyurl.com/4747kp7w>

It was interesting to read Whit's findings especially the effect of the supplied cables. I don't have access to anything as sophisticated (or as nice!) as the Field Fox but the DG8SAQ VNWA I have is an accurate instrument so I think out of interest I might run some tests on the SMA Cal Kit and cables that came with the VNA-3G. Many thanks for your input, Whit!

Links:

<https://leo.phys.unm.edu/~lwa/index.html>

<https://tinyurl.com/y57nv4a3>



And finally

I have recently noticed that there is a firmware update for the VNA-3G Analyser.

This version, 1.4, offers the following additions:

- Port extensions are now supported. Menu path: [CAL] -> [PORT EXTENSION];
- New feature of AVERAGE. Menu path: [CONFIG] -> [SWEEP SETUP] -> [AVERAGE];
- A sweeping progress bar has been added.
- Traces may be saved to a .csv file. Menu path: [STORAGE] -> [SAVE CSV];
- New feature of 'SAVE DELAY' has been added where data will be saved after a certain delay. This is to 'facilitate the measurement of DUTs that are susceptible to the surrounding environment'. Menu path: [STORAGE] -> [SAVE DELAY];
- The 'buzzer' can be turned off by creating a file named "beep_off.txt" in the root directory of the device (the virtual U-disk) by writing the number 1 into the file;
- Add a new console command of 'vbat' for NanoVNA-APP;

The NanoVNA-App by SYSJOINT seems to work well with the VNA-3G. It can be downloaded from:

<https://tinyurl.com/bddfau7f>

That's all for this month. **PW**

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Broadcasting history

Once again, **Keith** and **Garry** invite you to sashay through their archives.

Keith Hamer

Keith405625.kh1@gmail.com

Garry Smith

Garry405625.gs@gmail.com

BBC Broadcasting House, London: Part III

The original plans for *Broadcasting House* called for a twelve-floor building, three of which would be below street-level. In total, there were 22 studios. These ranged in size from a small room for news bulletins to a studio large enough to accommodate a full orchestra and an audience of about 1,000 people. Each facility was associated with a *Silence Room* which had a window looking into the actual studio, and in telephone contact with the main *Control Room* at the top of the building.

In the very early days of broadcasting, audio 'balance and control' were effected by placing the artists relative to the microphone. When the BBC moved to *Savoy Hill* from *Marconi House*, a specialised *Control Room* became necessary following technical improvements in microphones, as well as to accommodate the technicians who controlled the volume, together with the amplifiers required to feed the programmes to the transmitters.

Subsequent technical developments removed the need for centralising all the amplifiers and their power supplies in the *Control Room*. Consequently, installations then worked on the principle of a *Control Cubicle* associated with each studio and separated from it by a soundproof window.

The windows were specially constructed using *pumice concrete* and *eel grass*, **Fig. 2**. Pumice concrete is composed of Portland cement, pumice stones, pumice sand, pumice powder (pozzolan), and water. Compared to standard concrete, the pumice variety offers a reduction of approximately one-third in weight and four times the *r-value*, which indicates the thermal resistance of the material. Eel grass is made from a certain type of seaweed and was originally used in the 1600's by roof thatchers on the island of *Læsø*, Denmark. Eel grass is still used today to produce items such as sustainable acoustic mats and even certain types of furniture.

Vintage radio valve advertisement

This month's wander through vintage copies of tattered newspapers and magazines has elicited an advertisement by *The Edison Swan*

Electric Co. Limited for their range of 2-Volt Mazda Valves, **Fig. 1**. The advertisement dates from 24 September 1932. The text has been left in its original format to reflect the spelling, grammar and punctuation of the time.

Thomas Edison established *The Edison Electric Light Company* in 1878. Three years later, in 1881, **Joseph Swan** established *The Swan United Electric Light Company*. Swan sued Edison in the UK, claiming patent infringement. This was upheld by the British courts. In 1882, Edison counter-sued Swan, claiming infringement of his 1879 patent, lodged in the USA. However, the Edison Company believed they would lose their case if Swan could demonstrate prior research and publication. Subsequently, in order to avoid expensive litigation, the two companies negotiated a compromise and merged to form *The Edison Swan Electric Co. Ltd*. The glass bulbs manufactured in the UK were of Swan's design, with the filaments being produced by Edison.

In 1964, *Associated Electrical Industries Limited (AEI)* merged their lamp, radio valve and cathode-ray tube manufacturing facilities with those provided by *Thorn Electrical Industries* to form *British Lighting Industries, Limited*.

100 years ago: November 1925

This series summarises some of the events, technical achievements and personalities associated with the world of broadcasting from exactly 100 years ago this month.

On 1 November 1925, VARA - the *Vereniging van Arbeiders Radio Amateurs (Association of Worker Radio Amateurs)* was established in the Netherlands. The name was changed to *Omroepvereniging VARA* in 1957.

June Whitfield, the British comic actress, noted for appearing in many early radio and television programmes, was born on 11 November.

The first programme from *Radio RV-10* in the Byelorussian Soviet Socialist Republic (modern-day Belarus, or White Russia) was transmitted on 15 November.

In November 1925, the city of Lausanne in Switzerland was awarded a grant of SFr.32,500 for the modernisation of the *Champ-de-l'Air* radio station, located at the nearby *Blécherette Aerodrome*. The station's Chief Engineer, **Roland Pièce**, visited **Guglielmo Marconi** at *Marconi House* in London with a mission to purchase a new transmitter. The new station was inaugurated in March 1926.



FACTS YOU SHOULD KNOW ABOUT THE MAZDA 2-VOLT RANGE

In this exceptionally efficient range of 2-volt valves will be found types to suit all battery operated sets.

THE HL2, an outstanding example of Mazda sensitivity, is an excellent cumulative grid detector. Amp. Factor: 31. Imped: 20,000 ohms.

THE S215 VM, is a new variable-mu screened grid valve of extreme sensitivity and low inter-electrode capacity.

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THE P220 and P220A will operate balanced armature and moving coil speakers respectively at full volume with extremely economical anode consumptions. Full details of these and other useful Mazda 2-volt types will be found in the Mazda Catalogue, sent FREE on request.

Mazda Valves are fitted by all leading receiver manufacturers. All good radio dealers stock them. LOOK FOR "EDDY" IN YOUR DEALER'S WINDOW

The amazing MAZDA THE BRITISH VALVES
100% BRITISH - Designed by British Engineers
The Edison Swan Electric Co. Ltd. 155 Charing Cross Rd. London, W.C. 2
Associated Electrical Industries Ltd.
 Mazda Radio Valves are manufactured for the British Thomson-Houston Co. Ltd., London and Rugby."

The rise and fall of 198kHz: Part XXIV

A feature of interest at the BBC Burghead and Westerglen transmitters in Scotland was the method used to operate both installations on the same frequency. The master control of frequency adopted was a *tuning-fork*, which was maintained in oscillation by electrical means. The frequency of this fork was set at 1498.05Hz.

Constancy of frequency was ensured by enclosing the tuning-fork in an oven, the temperature of which was automatically regulated within very close limits by electrical means. The air pressure within the oven was also regulated. By this means, it was possible to control the frequency of the fork to approximately 1 part in 1,000,000. The master

Fig. 1: An advertisement from 24 September 1932, for *The Edison Swan Electric Co. Limited* and their range of 2-Volt Mazda Valves.

Fig. 2: An example of a specially constructed sound-proof window featuring eel grass sandwiched between walls of pumice concrete.

Fig. 3: The identification emblem used by *Radio- und Fernsehgesellschaft der deutschen und rätoromanischen Schweiz (DRS)* between 1 January 1985 and 3 March 1999.

tuning-fork was situated at the Westerglen transmitter. The synchronising tone was transmitted by cable from Westerglen to Burghead via Edinburgh, Dundee and Aberdeen.

Spare forks were provided, both at Westerglen and Burghead, in case of failure of either a fork or the intervening line. In the latter case, automatic means were provided whereby a local fork at Burghead, which was maintained as closely as possible to the frequency of the Westerglen fork, was immediately brought into operation in order that the service from the Burghead transmitter was not interrupted.

In certain cases, the effects of slight noise or crosstalk on the lines, which were used to convey the synchronising fork tone from one station to another, gave rise to a particular type of sound which was heard on wireless sets within a common-wave service area. Means were provided on the Westerglen-Burghead service for removing this defect by the provision of an additional tuning-fork at Burghead which was used as a 'filter'. This arrangement permitted the synchronising tone to pass freely.

60 years of BBC-2: Part XX

When BBC-2 opened in April 1964, the general pattern of programmes at weekends was different to the usual weekday offerings. There was no *Play School* for the under-fives. However, there was an alternative to the traditional BBC-1 sports programme, *Grandstand*, from 3.10pm until 6.00pm. The first BBC-2 programme to be shown from 3.10pm was a repeat of the BBC-1 series, *Compact*.

The main attraction on Saturdays was a two-hour 'live' light entertainment magazine programme called *Open House* with former BBC-TV announcer, **Peter Haigh**. It included short Outside Broadcast inserts, but the main part of the show came from *Studio 1* and *Studio 2* at the *BBC Riverside* complex. The first edition of *Open House* featured **The Bachelors, Joe Brown & The Bruvvers, Johnny Dankworth, Billy Fury and the Gamblers, Millicent Martin, and Tony Osborne and his Orchestra**.

BBC-2 closed down at 6.00pm, much to the delight of *Trade Test Transmission* enthusiasts. Programmes resumed at 7.20pm with *Line-Up*. During the evening, BBC-2 showed *The Great War* which was an interesting series of



programmes. *International Cabaret* took over at around 10.00pm. **Shirley Bassey** had just been signed up in New York to open the series.

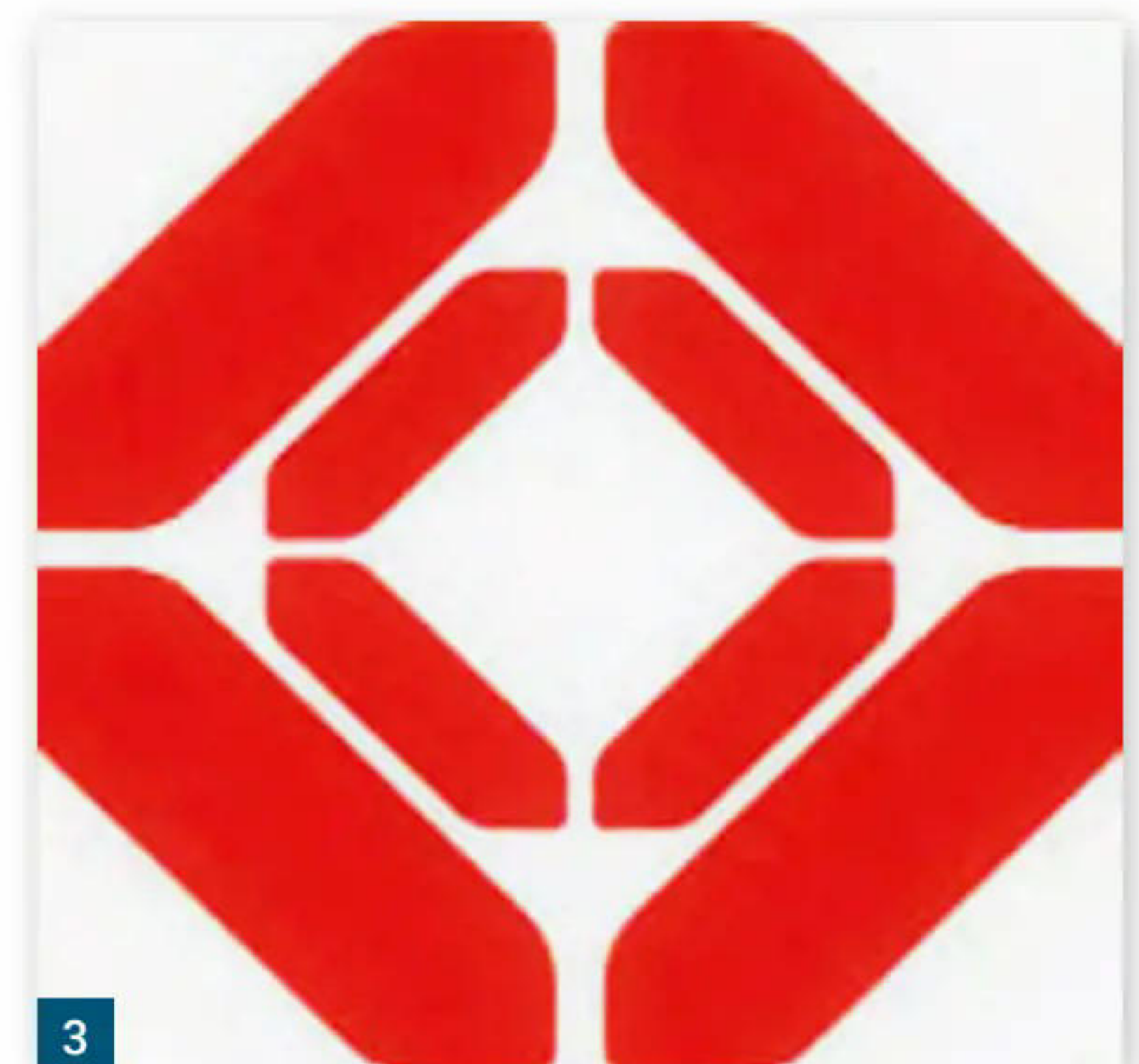
Also scheduled for Saturday evenings was a new approach to classical serials. The programmes were presented in four 45-minute episodes. The first one was *Madame Bovary* which began on 25 April 1964. The serials were produced in the brand-new dual-standard (405/625 lines) *Studio 'A'* in Glasgow.

Service information, Switzerland: Part XXXIII

On 1 January 1985, SRG-SSR introduced a new station identification emblem for their *DRS* (*Radio- und Fernsehgesellschaft der deutschen und rätoromanischen Schweiz*) services, **Fig. 3**. DRS continued until 3 March 1999, at which time the station's name was changed to *SRG SSR idée Suisse*.

In 2016, SRG-SSR made a final transition from DAB (*Digital Audio Broadcasting*) to DAB+.

On 7 November 2020, the national streaming platform *Play Suisse* went 'live'. *Play Suisse* offered Swiss documentary films, series and films with the original soundtracks in the four national languages, together with German,



French, Italian and, occasionally, Rumantsch subtitles.

Play Suisse was made available as an application on smartphones, tablets, desktop computers, and smart-television receivers.

Stay tuned!

The photos are once again from Keith and Garry's collection. Please send archive photographs, information or suggestions for future topics via the email addresses shown at the top of this column. **PW**

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Colin Redwood G6MXL

practicalwireless@warnersgroup.co.uk

2025 saw 44 entrants submit logs in the 42nd *Practical Wireless* 144MHz QRP contest held on Sunday 15 June 2025. The entrants made a total of 1309 valid contacts with stations in 29 different squares (**Fig. 1**). Entries were slightly down on 2024.

2025 winners

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

Runner up and the leading English station is **Leyland & District Amateur Radio Society G1LAD/P** operating from IO83RO (**Fig. 2**).

The leading fixed station is **David Wright G8EQD** operating from IO93GL.

The leading Scottish station is **Colin Stuart GM4YEQ/P** operating from IO85MM.

The leading GI/EI station is **Paul Norris EI3ENB/P** operating from IO62JL.

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.

As last 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

Reports of weather conditions varied a lot. In South Wales, Simon Gosby GW8OVZ/P said that he had, "to call it a day after about three hours; the cloud was low all morning and it started to drizzle, then rain. The temperature dropped and despite having been prepared for cold weather I was too cold to continue, so I packed up and set off back to the car in quite heavy fog, which stayed for most of the way back".

In contrast, **Linda Leavold G0AJJ** reports that the Bittern DX Group M0NBG station had a blistering hot day with copious amounts of tea and coffer consumed. The SADGITS G4RLF/P in Dorset found the weather was hot but very windy. They suffered from lots of bugs in the grass and they sustained several horse fly bites. They even managed to squash a fly onto their log sheet, and struggled to read the report received from their last contact!

On the Brecon Beacons in South Wales, Steve Clements GW1YBB/P had to set up in dense cloud that was condensing onto everything rather



2025 PW 144MHz QRP Contest Results

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

er than actually raining (**Fig. 3**). It did clear during the contest and there were some sunny intervals. Not too windy but windy enough to stop bugs. Rain for packing away of course.

Propagation

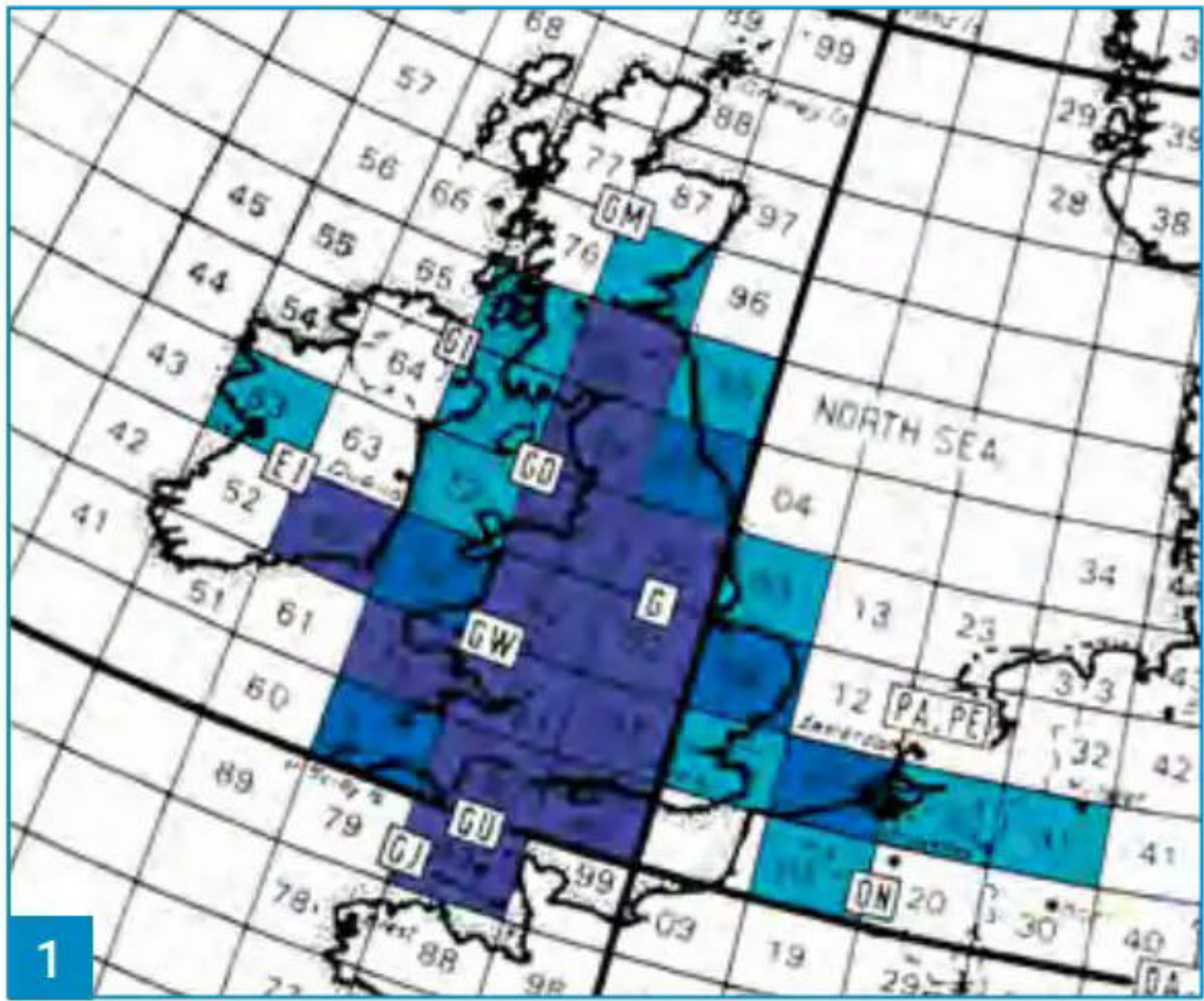
Steve Macdonald G4AQB found propagation conditions fairly flat during the contest in North West England, with no continental stations being heard. Only a couple of days after the contest they had some really good Sporadic E conditions with stations being heard from Spain and Eastern Europe.

Activity

Simon Gosby GW8OVZ/P felt, "it was a reasonably slow pace, with nothing from Europe and only one GM in the log". The only bright spot for him was a station in JN59 square at about 1200km appearing out of the noise, but disappearing just as quickly.

Steve GW1YBB/P said that, "Activity seemed low and the latter half of the contest I wasn't sure if I had a receive problem. So many stations were much weaker than usual. No QRM either which was suspicious. However, I could hear and work the odd decent near EU station so I guess it was OK".

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Description	Name/Team	Callsign
Overall Winner	Hereford VHF Contest Group	GW1YBB/P
Runner Up	Leyland & District Amateur Radio	G1LAD/P
Leading Fixed Station	David Wright	G8EQD
Leading Single Operator	Hereford VHF Contest Group	GW1YBB/P
Leading Multi-Operator	Leyland & District Amateur Radio	G1LAD/P
Leading English Station	Leyland & District Amateur Radio	G1LAD/P
Leading Welsh Station	Hereford VHF Contest Group	GW1YBB/P
Leading Scottish Station	Colin Stuart	GM4YEQ/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		
IO70	Callington Amateur Radio Society	G1XIC/P	1			Callington Amateur Radio Society	G1XIC/P
IO71	Simon Gosby	GW8OVZ/P	1	Simon Gosby	GW8OVZ/P		
IO72	Carmarthen ARS	GW4YCT/P	1			Carmarthen ARS	GW4YCT/P
IO80	SADGITS	G4RLF/P	1			SADGITS	G4RLF/P
IO81	Hereford ARS (Steve Clements)	GW1YBB/P	3	Hereford ARS (Steve Clements)	GW1YBB/P		
IO82	Mark Waldron	M1AEA	3	Mark Waldron	M1AEA		
IO83	Leyland & District Amateur Radio	G1LAD/P	5	Dave Hewitt	GW8ZRE/P	Leyland & District Amateur Radio	G1LAD/P
IO84	Iain Groom	G0FCA/P	2	Iain Groom	G0FCA/P		
IO85	Colin Stuart	GM4YEQ/P	1	Colin Stuart	GM4YEQ/P		
IO86	Ruaridh Maclean	GM4ODW/P	1	Ruaridh Maclean	GM4ODW/P		
IO90	Andrew Vare	G4XZL/P	3	Andrew Vare	G4XZL/P		
IO91	Neill Taylor	G4HLX/P	3	Neill Taylor	G4HLX/P		
IO92	Northampton Radio Club	G4CZB/P	6	Northampton Radio Club	G4CZB/P	South Derbyshire & Ashby Would ARG	G0SRC/P
IO93	Steve Marsh	G4TCU/P	6	Steve Marsh	G4TCU/P		
IO94	GOHEU	G0HEU/P	2			GOHEU	G0HEU/P
JO02	Dr Philip Holt	G4LPP	2	Dr Philip Holt	G4LPP	Bittern DX Group	M0NBG
JO11	Frank L. Laanen	PE1EWR	1	Frank L. Laanen	PE1EWR		

Table 2: Leading stations in each square.

Across the North Sea, **Frank PE1EWR** found activity rather low. He worked the only three stations that he could see on his waterfall. He hoped activity was better in the UK.

Training

The Bittern DX Group M0NBG used the event as training for its members who are relatively new to radio or contesting. Linda Leavold said that, "they may not have put many in the log, but everyone had a really good day, and thanked their host **Richard G4CDN** and **Frank**, the site owner".

Logging accuracy

Logging accuracy was generally high, with many stations having 100% accurate logs, including from several leading stations. One station lost points for logging their contacts in BST rather UTC, which made the adjudicator's job harder when cross-checking logs. Apart from this, only one station lost more than 2 points due to logging errors.

Equipment

No PW Contest report would be complete with-

out at least one station reporting equipment problems. This year it was one of the long-term stalwarts of the contest, the SADGITS group G4RLF/P. They suffered output power down to milliwatts on and off during the contest. Consequently, they packed up early. Subsequent investigations traced the problem down to an enlarged centre hole on the N socket on their pre-amp.

Like last year, many stations used the popular Yaesu FT-817/FT-818 and the Icom IC-705 transceivers. It will be interesting to see whether any entrants next year will be tempted to try the new Yaesu FTX-1.

Certificates

This year certificates will again 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.

Next Year

The 2026 PW 144MHz QRP Contest is provisionally scheduled for Sunday 14 June 2026. **PW**



Pos	Call	Name	Single	QSOs	Squares	Score	Locator	Transceiver	Antenna	Ht. m asl
1	GW1YBB/P	Hereford ARS (Steve Clements)	S	141	27	3807	IO81KW	Yaesu FT-817	9-ele Yagi HB	800
2	G1LAD/P	Leyland & District Amateur Radio		162	21	3402	IO83RO	Icom IC-9700SHF + M/H preamp	2 x 8 LFA homebrew stacked vertically	450
3	G4TCU/P	Steve Marsh	S	78	17	1326	IO82WJ	Yaesu FT-817	4-ele Yagi HB	316
4	G4RLF/P	SADGITS		61	21	1281	IO80WX	TS770 + LNA	13-ele Yagi	277
5	GW8ZRE/P	Dave Hewitt	S	74	17	1258	IO83JF	Yaesu FT-817	7-ele ZL Special Yagi	261
6	G4HZG/P	Michael White	S	62	15	930	IO93BA	Icom IC-9700	Cushcraft 12-ele Yagi	372
7	G4XZL/P	Andrew Vare	S	50	17	850	IO90MX	Icom IC-705	Homebrew 9-ele DK7ZB Yagi	270
8	G7DNM/P	Edmund Ashworth	S	52	16	832	IO93BM	Yaesu FT-991	5-ele Yagi	521
9	G4HLX/P	Neill Taylor	S	41	15	615	IO91GN	Icom IC-705	10-ele Yagi	220
10	G4CZB/P	Northampton Radio Club	S	39	14	546	IO92KG	Icom IC-705	9-ele Tonna	195
11	GW8OVZ/P	Simon Gosby	S	32	17	544	IO71OW	Icom IC-705	6-ele HB DK7ZB design	536
12	G7UHN/P	Andy Webster	S	35	15	525	IO90OW	Yaesu FT-817, DG8 pre-amp	6-el Yagi	220
13	G0FCA/P	Iain Groom	S	32	14	448	IO84SA	Icom IC-7000	5-ele LFA	472
14	GW4YCT/P	Carmarthen ARS		27	13	351	IO72WA	Icom IC-7100	2m 7-ele ZL Special + GP-15	400
15	G8EQD	David Wright		31	11	341	IO93GL	Yaesu FT-991	10-ele Yagi	0
16	G0HEU/P	G0HEU		26	13	338	IO94AT	Yaesu FT-991A	8-ele beam	467
17	G4LPP	Dr Philip Holt	S	24	14	336	JO02SS	Yaesu FT-991A	4 x 8-ele IOJXX xy Yagis	18
18	M0KPW/P	Chris Leviston	S	31	10	310	IO84KF	Icom IC-705	5-ele Yagi	310
19	G0NZI/P	Carl Peake	S	27	11	297	IO92IL	Icom IC-705	2-ele quad HB	138
20	G1XIC/P	Callington Amateur Radio Society		20	14	280	IO70RK	Icom IC-705	4 x 13-ele LFA @10m	160
21	G4CIB/P	Brian Woodcock	S	23	12	276	IO81VX	Yaesu FT-817ND	8-ele Jaybeam Yagi	30
22	M0NBG	Bittern DX Group		18	12	216	JO02QV	Icom IC-7400	14-ele	65
23	G4SDX/P	Max Townend (Halifax & District ARS)	S	20	10	200	IO93BP	Icom IC-705	Diamond A144S10R2 10-ele Yagi	342
24	GU3TUX	Chris Rees	S	15	12	180	IN89VR	Icom IC-705	3-ele Yagi	70
25	G0HXR	Geoff Martin	S	15	10	150	IO92UU	Icom IC-9700	Dual antennas Yagi	2
26	G0FEH	Dave Thickett	S	14	10	140	IO92FH	Icom IC-275E	5-ele Jaybeam Yagi	80
27	M5DWI/P	Dave Shaw	S	15	9	135	IO93HL	Yaesu FT-817	5-ele HB	140
28	GM4YEQ/P	Colin Stuart	S	13	10	130	IO85MM	Kenwood TM-255	7-ele ZL Special, 5m pole.	370
29	G0JQA/P	Hambleton ARS		14	9	126	IO94IJ	Icom IC-9700	7-ele @6m	350
29	M0GQB/P	Martin Cox	S	14	9	126	IO93BQ	Yaesu FT-991	7-ele ZL-Special	229
31	G0XBU	Ian Morley	S	14	8	112	IO83UF	Anan10E + TRVR	9-ele LFA	70
32	G4AQB	Steve Macdonald	S	11	8	88	IO83TN	Yaesu FT-991A +TVTR	5-ele Yagi	114
33	M1AEA	Mark Waldron	S	15	5	75	IO82WM	Yaesu FT-817	Diamond X30	219
34	G0SRC/P	South Derbyshire And Ashby Would ARG		14	5	70	IO92FT	SunSDR 2 DX	Moxon beam	102
34	2E0OGR/P	Martyn Coombes	S	10	7	70	IO91HB	Icom IC-705	Sota portable antenna duoband Yagi	134
36	G6EPN/P	Peter Knight	S	8	7	56	IO91DL	Icom IC-705	5-ele Jaybeam Yagi	250
37	GM4ODW/P	Ruaridh Maclean	S	12	4	48	IO86DR	Yaesu FT-817	8-ele Yagi	370
38	GB4MUD	Christchurch ARS	S	6	5	30	IO90DR	Yaesu FT-817ND	17-ele Tonna Yagi	6
39	EI3ENB/P	Paul Norris	S	4	4	16	IO62JI	Yaesu FT-817ND	8-ele Yagi	190
39	G0EIY	Simon Pryce	S	4	4	16	IO82OR	Yaesu FT-817ND	10-ele long Yagi	77
41	PE1EWR	Frank L. Laanen	S	3	3	9	JO11SL	Icom IC-9700	9-ele	9
42	G4CWS	Chris Wood	S	2	1	2	IO92UQ	Yaesu FT-817	Dipole	6
43	M7LEM	LADAR	S	0	0	0	IO83ON	Yaesu FT-991A	x200	6
43	G6INL	Mark Nagle	S	0	0	0	IO81GE	Yaesu FT-480R	4-ele Yagi	42

Table 3: Full results.



Fig. 1: Map showing locator squares of stations that entered (in dark blue) and other stations worked (light blue).
Fig. 2: The antennas at Leyland & District Amateur Radio G1LAD/P. Fig. 3: Steve GW1YBB/P representing the Hereford Group. Fig. 4: The station of Ruaridh Maclean GM40DW/P.
Fig. 5: Andy Webster's G7UHN/P station on the Southdown Way.

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Ronald Stuy PA3EWP
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Spring 2023 the Belgium DX-Adventure team asked me to join them to the Andaman Islands. The Andaman and Nicobar archipelago is situated south-east of India between the Bay of Bengal and the Andaman Sea.

I had never been on VU4 and many team members were friends, so my decision was quickly made.

At that moment they told me that the biggest issue would be the VU3 licence, our planning was Spring 2024.

We can write a complete book about getting a licence in India, so I won't bother you with the details. It took us 18 months before all team-members got their VU3 licence. Luckily **Francis ON8AZ**, who was responsible for our licences, had great perseverance otherwise we would never have got our licence.

Our new plan became March 2025, one year later than originally planned.

Preparation

Months before this adventure we prepared and tested all the equipment. Team members and support crew were working on this project. The preparation consisted of:

- testing all antennas (TX and RX)
- configuring and testing all radios, amplifiers, computers
- test all bandpass filters, stubs and stops
- packing and documenting all suitcases and boxes

Previous DXpeditions were always near the

Story of the VU4AX DXpedition (IOTA AS-001)

Ronald Stuy PA3EWP describes the spring DXpedition to the remote Andaman Islands.

capital Port Blair. The QRM level was always very high, so we were searching for a place away from the capital. We found The Andaman Sunset View Resort nearly an hour away from Port Blair and on the west coast of South Andaman. It has not the best take-off because the main directions to NA, JA and EU are across the island but is very remote and has less chance for local QRM. We rented the complete resort, so we had no issues with other guests.

Our team consists of members with a mixed (technical) knowledge and a lot of experience with contesting and DXpeditions.

- ON5UR – VU3PFE, **Max**, Team leader
- ON8AZ – VU3OQP, **Francis**, Co Team leader
- ON4AMX – VU3PFV, **Marc**, Team member
- ON4HIL – VU3PFT, **Patrick**, Antenna setup
- ON5RA – VU3PFF, **Pascal**, Team member
- ON5TN – VU3FYS, **Karel**, Team member
- ON6CC – VU3PFN, **Marc**, IT hardware + software
- ON7FT – VU3PFH, **Jonas**, Team member
- ON7USB – VU3PFQ, **Geert**, Team member
- ON7RU – VU3PFJ, **Franky**, Propagation manager
- PA3EWP – VU3PFI, **Ronald**, Club Sponsors
- PA9M – VU3PFO, **Marcel**, Antenna setup

You can only request a special licence four weeks before using it. In January 2025 we

requested our VU4X license. Luckily, we received it very soon, in one week we got VU4AX instead of VU4X. We don't know why they changed it. After some telephone calls Francis noticed that it would be an endless negotiation to change it. We decided to use VU4AX.

Transport and logistics

One of our next challenges was transporting all equipment to Andaman. Our plan was to operate from two shacks, each with three radios. We would be active from 10-160 metres. We skipped 6 metres because our licence was only valid for 25 watts FM. We discussed this with the licence officer in India, but didn't receive any positive feedback/news. In total we had 45 suitcases with equipment, a total weight of 1,100kg. We arranged with Air India that all operators could check in four pieces. A few weeks before our departure we got the message that it was not possible to check in four pieces of luggage from Calcutta to Port Blair. **Max ON5UR** contacted Air India and arranged three weeks before our departure a new flight plan. We had to cancel our tickets and booked new tickets from Paris => New Delhi => Port Blair. Now it was possible to bring all our equipment. We were grateful to our

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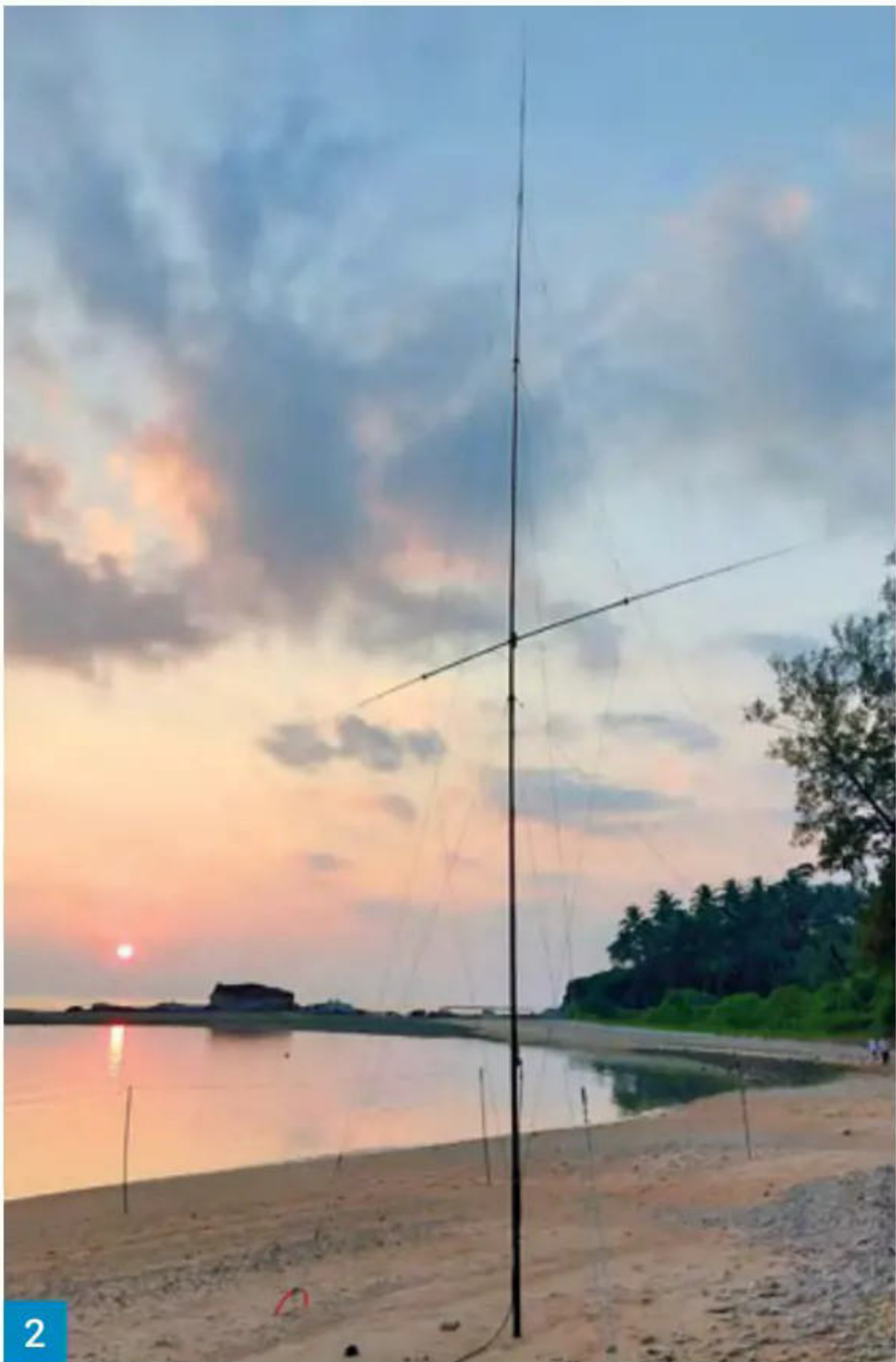


Photo 1: Arrival at Port Blair, Andamans.
Photo 2: The 15m VDA pointed LP to the USA.
Photo 3: The station in operation.
Photo 4: The shack. Photo 5: Explaining to school children what the team is doing.

contact person at Air India for her cooperation, without her it would have been a bigger challenge.

Saturday 8 March we all joined at a large parking lot near Kortrijk, Belgium. We travelled by touring car to Charles de Gaulle airport in Paris. After checking in we flew to New Delhi where we had 20 hours transit time, so we booked a hotel for the night. Next day, we had to get up very early to fly to Port Blair. We arrived at Port Blair and were happy all our luggage made it too. From the airport we went to our resort by minibus. Monday afternoon we arrived at the resort. After a quick investigation of the area, we started assembling the antennas. We had only a few hours left before it went dark. All team members knew what to do but it took more time than expected, especially with the high temperature, 35°C (We left Belgium just above freezing point). During the evening, we installed most of the equipment in the shacks. The next morning at sunrise we continued assembling the antennas and radio setup. A few

Band	Antenna	Description
10-20m	Spiderbeam	10m from beach, + Triplexer
10-20m	Spiderbeam	On water tower, + Pentaplexer
15m	VDA	On beach LP NA
30m	Vertical	On beach
40m	4-square	10m from beach
60m	Vertical	On beach
80m	Vertical	On beach
160m	Vertical top loaded	On beach
RX	3 loops	Low bands EU, JA, NA
RX	Beverage	Low bands NA

Table 1: Antennas used.

hours later we started operating on the higher bands. Only the low band antennas needed a few hours more to finish.

We had two shacks with three complete stations up and running. We used identical setups: six Elecraft K3 and six SPE Expert 1.3kW amplifiers. All stations were networked by N1MM+ and we had an uplink to Clublog for live log checking. For the low bands we had dedicated stations, otherwise we had to switch the receiving antennas and the 4-square for 40m. That would have been complicated. We would be operational for a maximum of nine

days. The first day one of the Expert amplifiers broke down. We had only five stations with high power left.

We used the antennas listed in **Table 1**.

Operating

We knew from the start that the east coast of North America was the most difficult part of the world to reach. That was one of the reasons we installed a 15m VDA on the beach via long path. The propagation was very poor, especially the first days. Looking at the propagation charts we called on different bands for NA, but with no or

Mode	QSOs
CW	18,516
SSB	16,135
RTTY	516
FT8	25,273
FT4	5,521

Table 2: QSOs by mode.

very little response. Also, the noise level on all bands was extremely high, S3 was normal and some days it was even S5. This doesn't help working the other side of the world.

Some days the propagation was so bad so we had six stations running FT8 for hours and even then, the QSO rate was rather low. No response in CW and/or SSB at all. This time the propagation was not our best friend.

We used three pilot stations on different continents, **Björn ON9CFG**, **Peter W2IRT** and **Champ E21EIC**. The pilot stations collected info from the DX community during our adventure. Franky ON7RU contacted the pilots daily for a summary update from the DX community.

We made 65,961 QSOs in nine days. Our focus was on CW and SSB but if propagation was poor, we switched to FT8. The station without an amplifier was running most of the time FT8. And a lot of times only four or five bands were open at the same time. Some RTTY QSO's were made, only on 10m.

The QSOs by mode are listed in **Table 2**.

One of our goals was to work as many NA as possible. All stations had a printed propagation chart. The operators were aware of possible openings. Many times, we stopped the pile-up to EU or AS to try to work NA. But they were not audible because of poor propagation and/or high noise level. During our greyline most of the time we were on the low bands if the noise level was acceptable.

Table 3 shows QSOs by continent and band.

We had four-hour shifts during the day and in the evening/night six-hour shifts. In this case at least every two days you could sleep approx. six hours. But at the end of our DXpedition all operators were exhausted.

Wednesday afternoon we dismantled the 80m, 160m and RX antennas. Thursday morning after breakfast we started to dismantle all the antennas except the Spider-beam. Before darkness the last antenna had to be taken down. We made our last QSO around 1600 local time and went QRT. All equipment had to be packed in the same suitcases. This was done to avoid possible issues at customs. They had stamped all our paperwork when we entered India. If they made random checks and found other stuff in the suitcase, we could have some issues. When most of the equipment was packed, we had dinner for the first time with the whole team in the restaurant. Previous days we were



Photo 6: Team photo. Photo 7: VU4AX QSL card.

always in two or three groups. We had some nice conversations and we drank all the beer that was available (one bottle each, hi). On Friday 21 March at 0500 local time we will be picked up by the minibus to go to the airport in Port Blair.

Journey home & wrap-up

Our journey back home went very well. Saturday afternoon we arrived in Kortrijk Belgium. Family and friends were waiting for us at the parking lot.

We would like to thank all our sponsors (DX clubs, companies and individuals) for their help to make this DXpedition a success. Especially our main sponsors of this DXpedition NCDXF, IndexA and our support crew in Belgium helped us a lot.

Without them it would be difficult. For more information, visit our website:

www.dx-adventure.com/en/home-eng

QSL cards can be requested via OQRS from **Tim MOURX**, see our website for more information.

The DX-Adventure team is working on a VU4AX book. The book has 52 full-colour A4 pages and will contain several VU4AX DXpedition stories and lots of beautiful photos. All profits from this book will go towards the DXpedition and future DX-Adventure DXpeditions.

More info via DX-adventure website:

www.dx-adventure.com/vu4ax-book

Paypal: dxa-book@dx-adventure.com

Costs: Europe €19.95, Rest of the World €22.95 (including shipping costs) **PW**

Band	160	80	60	40	30	20	17	15	12	10	Total	Total%
AF	1	3	14	14	33	55	44	90	52	50	356	0.5
AN	0	0	0	0	0	0	0	0	0	0	0	0
AS	17	405	47	933	660	2619	3775	3887	3689	4278	20310	30.8
EU	360	1301	1069	2453	2577	5660	5527	6992	5625	6606	38170	57.9
NA	0	15	66	76	266	1015	973	993	651	594	4649	7.0
OC	0	34	19	97	120	260	207	312	200	293	1542	2.3
SA	0	5	21	49	155	179	122	244	57	102	934	1.4
Totals	378	1763	1236	3622	3811	9788	10648	12518	10274	11923	65961	

Table 3: QSOs by continent and band.

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David Howard M0BGR

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Hobby Radio is a fascinating subject with many aspects. You do not need expensive equipment, aerials that could fill a football pitch or the electricity provided by a nuclear power station. Actually, you can get started as a listener for free with no more equipment than a computer (or laptop or even a smartphone) and internet connection.

Before I explain how, let me say a few words about why Hobby Radio is so exciting. It is unashamedly a technically-based hobby and in this time where technology, especially in the communications sphere, is developing fast it will give you a first step on the escalator to tomorrow's world. It is also a great motivator for students (young and old) who are studying STEM subjects as it gives them hands-on experience of real technology relevant to their subjects. So, if you have someone in your life who is staring dejectedly physics worksheets, show them these articles as there are many activities in Hobby Radio to motivate them.

But there is more to it than just technology. It can give you direct access to the culture, geography and language of other countries which otherwise you can only obtain through the filter of international media companies. Maybe you want to brush up your colloquial Spanish or listen to Chinese Opera in real time? I exaggerate a little, but you get the idea – it is so much more than just technology. If you have friends and family who live far away or you are planning a vacation, then you can access local radio stations to find out what's going on first hand.

Maybe you have had a lifelong interest in radio, but you are at a stage in your life where you cannot have lots of equipment and aerials and you want to continue your interest. These articles will explain how this is possible.

Use an SDR

This route into Hobby Radio is made possible by the development of Software Defined Radios (SDR). **Photo 1** shows a some of my SDRs and you will see, they are lacking controls, dials etc. because they are controlled by computer programs running on a PC for example. But there is more, SDRs can also be connected to the internet and accessed remotely. Some kind people have gone further and enabled public access to their SDRs so you can use these. Listening to the station that your host is listening to would not be much fun but remote-access apps, which I will explain, enable you to tune the SDR independently of the SDR owner and other users.

Let's jump straight in and see how these online receivers work. The easiest site is Kiwi SDR [1] which provides long, medium and shortwave



Starting Hobby Radio for Free

David Howard M0BGR goes back to basics with an introduction to Hobby Radio.

receivers – I will show you how to access VHF and UHF frequencies later. When you open Kiwi SDR in your browser you will see a list of online SDR receivers. You can scroll this list or use the 'Search' box at the top to find your favourite host station but it is best to use the 'Map' button when you first start.

The map page gives you a world view and you can zoom in to the region of interest. The SDR stations are colour coded [2]. We are interested in the brown/red stations (the brighter the better). Let's go the Melbourne in Australia and by hovering my mouse over the stations I can

see information about them. East of the city I see VK3FSK (Don't worry if it's not available – choose another one). As well as station information, you will see a couple of other useful numbers: SNR is a measure of how 'good' the station is, anything over 10 is fine. 'Users', for example 2/4 means 2 out of a maximum of 4 users are connected so you can proceed. Now click on the information panel and the Kiwi SDR Receiver screen opens Photo 2 (I have hidden the 'Help' Screen but do read this before hiding it). Some stations will ask for your name when you connect – your first name is fine.

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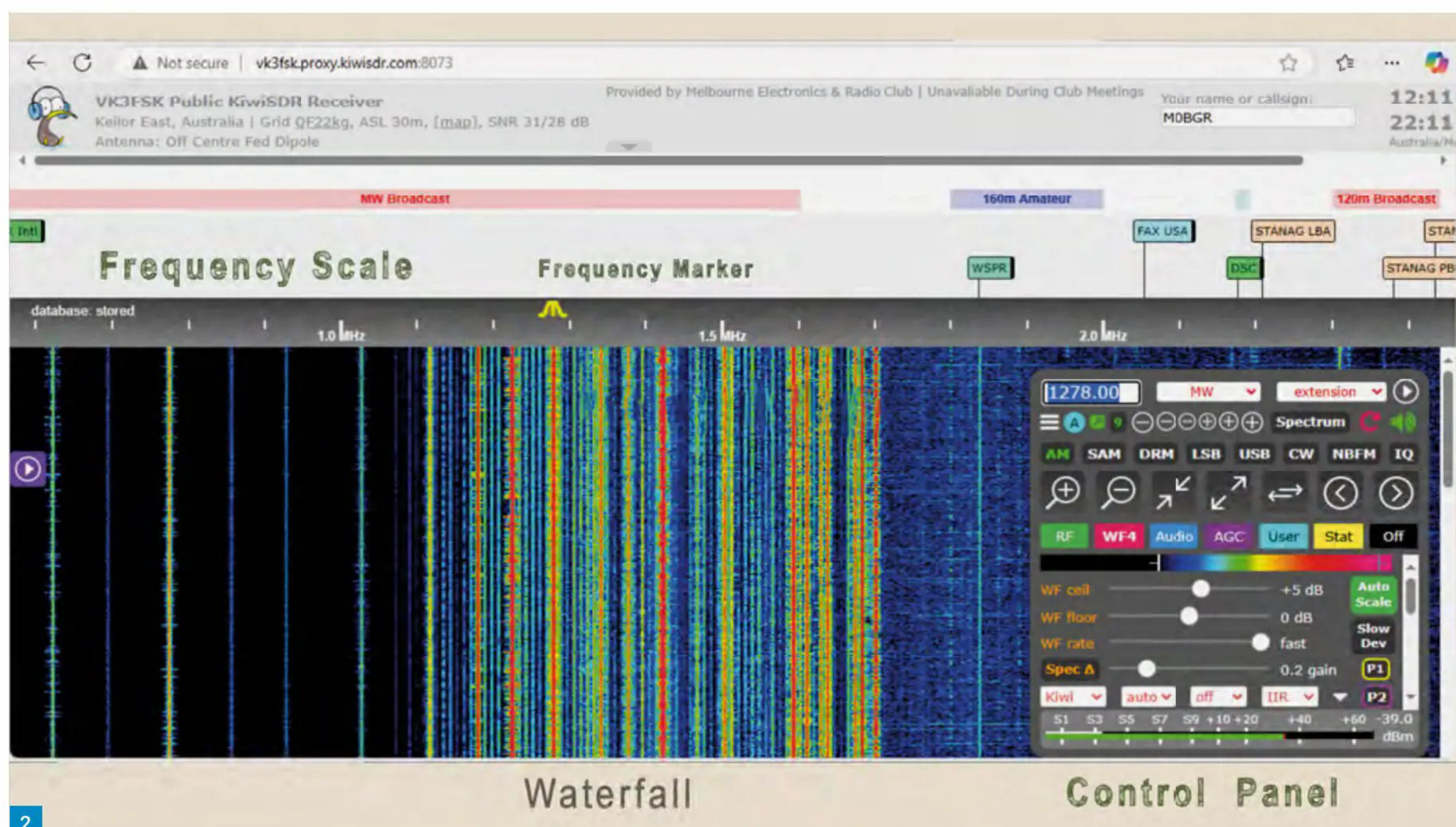


Photo 1: Some of the author's SDR radios.

Photo 2: Display of the VK3FSK online SDR.

The most obvious feature is the scrolling 'waterfall' display covering most of the screen. The red or yellow lines are the stations that are being received and how they change with time. Thick red lines are the strongest station. The frequencies of the stations are in the grey bar above the waterfall, for example '1.5MHz'. The little yellow trapezium, in the grey area, is the Frequency Marker which shows the station you are listening to. It can be dragged to tune to a different station.

On the right-hand side of the screen is the Control Panel. Medium Wave AM stations are easy to listen to as well as giving interesting local information, so we will start with these. Select 'MW' in the Band Select box (middle of the top row of controls). Select 'AM' in the mode control buttons (AM-SAM-DRM ... etc.). Magic 1278 is on 1278kHz so type this in the frequency box (top left of the Control Panel) and hit 'Return' on your keyboard. The yellow trapezium should jump to a position over a strong red line in the Waterfall, which is Magic 1278, and you should hear the station on your computer speakers. If not, you will need turn your volume up or to go to your 'Control Panel' and adjust the settings in 'Manage Audio Devices'. Some old browsers do not work with Kiwi SDR so try changing or updating your browser

Most things on the Control Panel can be ignored (for now!) but a couple more are useful. The large Plus and Minus controls, just below

'AM' and 'SAM', zoom the waterfall in and out so you can see stations more clearly. The small minus and plus icons under the 'Select Band' drop-down menu are coarse and fine tuning controls that let you change stations without dragging the yellow trapezium marker.

Medium-wave stations are not the most exciting things we will do with remote SDR, but stay with it for now so spend time playing around, tuning into different stations selecting different SDR receivers etc. There is no need to worry if you muck up – you can't break the remote SDR and usually 'Back' key on your browser will get you out of trouble. If all else fails, you can always reload Kiwi SDR [1] and start again.

An experiment

Earlier in this article, I promoted Hobby Radio as a good way to learn STEM subjects, so it would be wrong of me to end without a radio-based scientific experiment for you.

Objective – to see if Medium-Wave radio signals travel further by day or by night.

The Experiment (Part 1) – for this, we pick an SDR receiver in SE England with a good SNR score (higher the better). Wait until dusk or after dark. Tune in to a weak signal (thin yellow line on the waterfall) and listen to make sure it is a real station (music or speech. If you hear squawks and whistles, move on). Try to find non-English speaking stations if you can. Make a note of the frequency (the number in the top left of the KiwiSDR Control Panel), the signal strength from the bar at the bottom of the Control Panel (S1,

S3 etc.) and the language, if you can recognise it. On the same SDR receiver, repeat this for a few weak stations. Close your browser when you have finished.

The Experiment (Part 2) – Next day, around the middle of the day, go back to the same SDR receiver and tune to the same frequencies you wrote down in Part 1. Again record the signal strength, or zero if you cannot hear the station from last night. Close your browser when you have finished.

Results – Do you notice any difference between the strength of the stations in Part 1 and Part 2? Do you think day and night time affect medium-wave signals?

Extension – You can carry this experiment a bit further. Pick a weak station (one which is also interesting!) to listen to in late afternoon and make a note of the signal strength every 15 minutes or so until well after dark. What happens? If you happen to be an early riser, you can do the opposite as night turns to day at dawn.

Don't forget to close your browser when you have finished – other people may be waiting to use the SDR receiver.

I will discuss the results of these experiments in the next article, where we will also explore the 'Short Wave' bands.

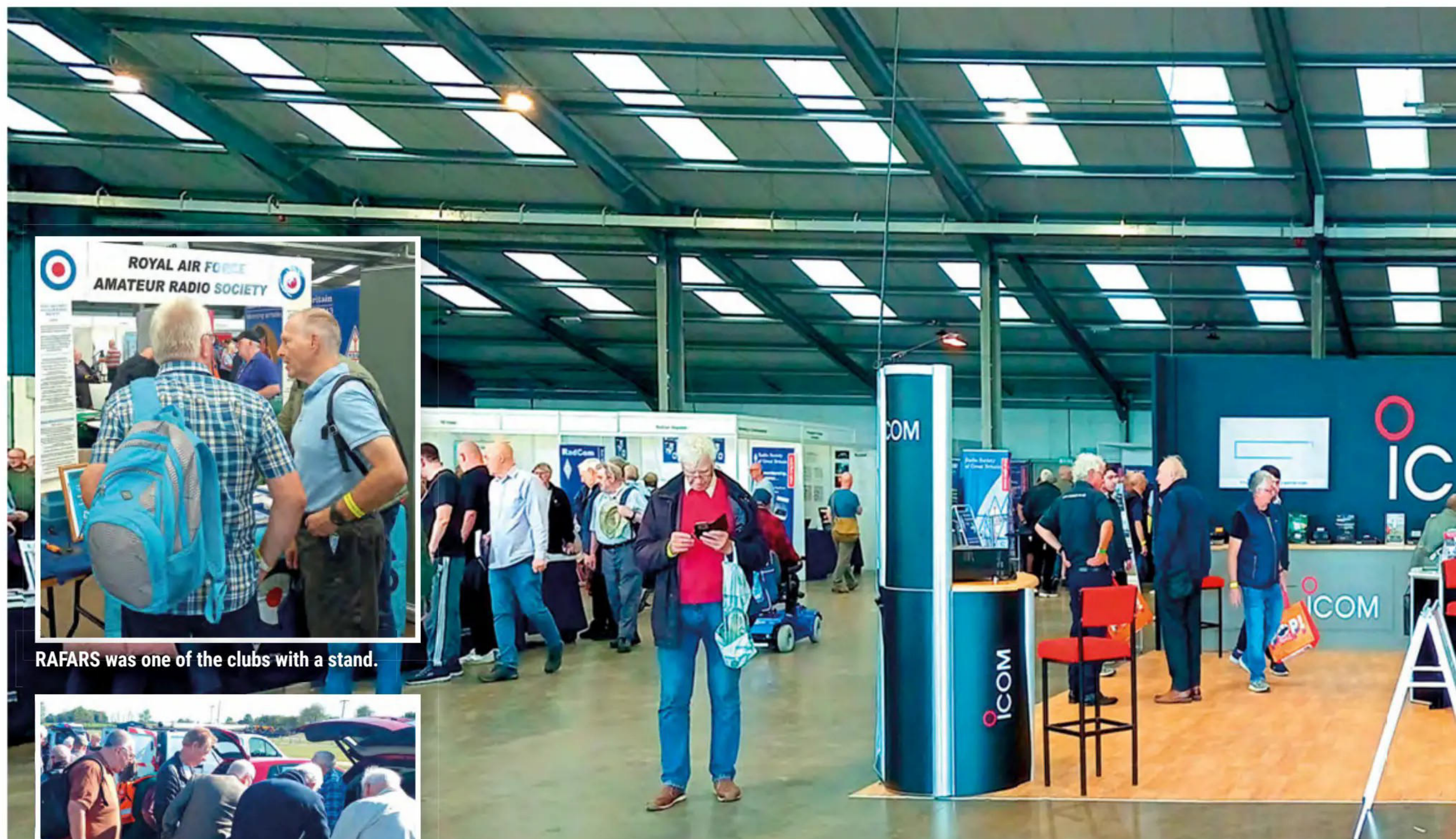
References

[1] Kiwi SDR Site:

kiwisdr.com/public

[2] Kiwi Map Station Colour Codes:

<https://github.com/priyom/dyatlov#legend>



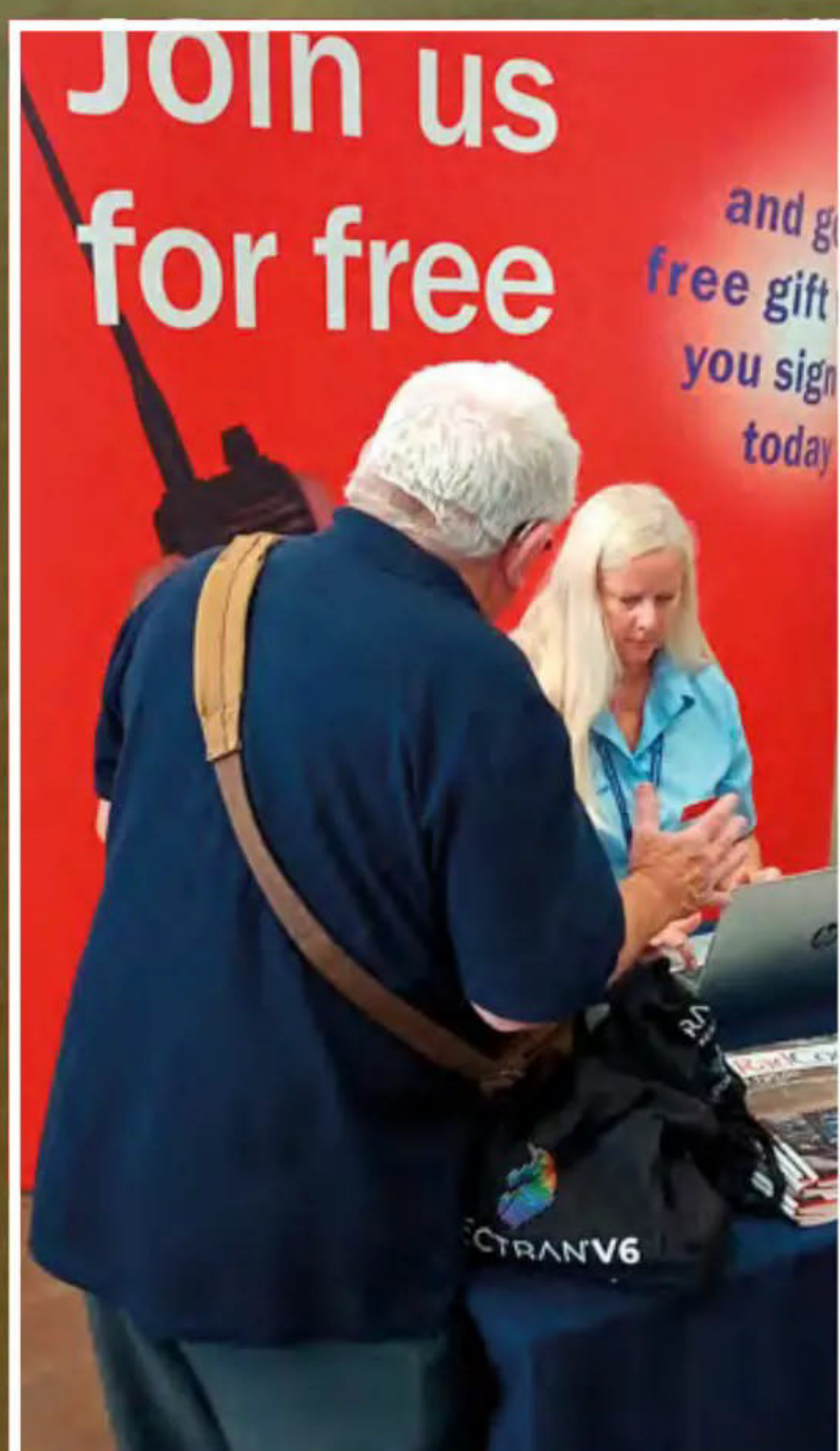
RAFARS was one of the clubs with a stand.



The outdoor flea market is always popular.

Hamfest 2025

Just some of the faces this year's Hamfest, the highlight of the amateur radio calendar, once again held at Newark Showground.



An enticing deal from the RSGB.



Chris G4FZN & Paula G8HQW man the CDXC stand



The man himself, Martin Lynch G4HKS

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Don Field G3XTT

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I've recently had a couple of mentions of a rather unique radio museum here in Somerset. It's called, guess what, the Radio Museum. And it was founded and is run by **Neil Wilson**, a serious enthusiast who started collecting radio-related artefacts from the age of ten, and in 1993 opened his original Washford Radio Museum at Tropiquaria, on the site of the original BBC Washford radio station, which was in service from 1933. Its function and equipment have, of course, changed considerably in the intervening years. In March 1997, all the BBC's domestic transmitting stations were taken over by Castle Transmission International (later to become Crown Castle UK Ltd.). In 2021 the 100kW Marconi transmitter was removed and replaced with a 12kW Nautel unit. The Marconi transmitter had been broadcasting Radio Wales on 882kHz since the station was re-engineered in 1978. It appeared that all medium wave Radio services were being run down.

The front half of the building was, by the late 1970s, no longer required by the BBC but the site was saved from demolition when it was Grade 2 listed by English Heritage in 1984. Various schemes were put forward for use of the redundant Transmitter Hall, Control Rooms and offices including plans for a swimming pool and, in August 1986, a Trust House Forte restaurant in the grounds. However, the building remained empty until, in August 1987, planning permission was granted for conversion to a tourist attraction containing animals, tropical plants, children's playground and café facilities.

The Washford Radio Museum opened in May 1993 at Tropiquaria. Neil's original aim was to give some idea of the intriguing history of the Washford Transmitting Station and its masts, as well as its part in the development of radio broadcasting. The Museum told the story of the BBC's West Regional Station from its inauguration in 1933 to its later use by Arqiva to broadcast BBC Radio Wales and Absolute Radio from its beginnings as Virgin Radio. These ceased from Washford along with its other MF transmitters on 20 January 2023.

You can find more about the history of the Washford station at:

www.radiomuseum.uk/#earlydays

New location

Neil moved the collection to its present location, previously the Anchor Inn in Watchet, in 2015. To quote Neil, "Inside the building I have created a timeline of radio and television history depicting its development through the exhibits. In addition, I have an extensive archive of literature, sound recordings and service data for old equipment. I often receive requests for help in researching



The Radio Museum, Watchet

The editor visits an unusual but fascinating museum of radio history.

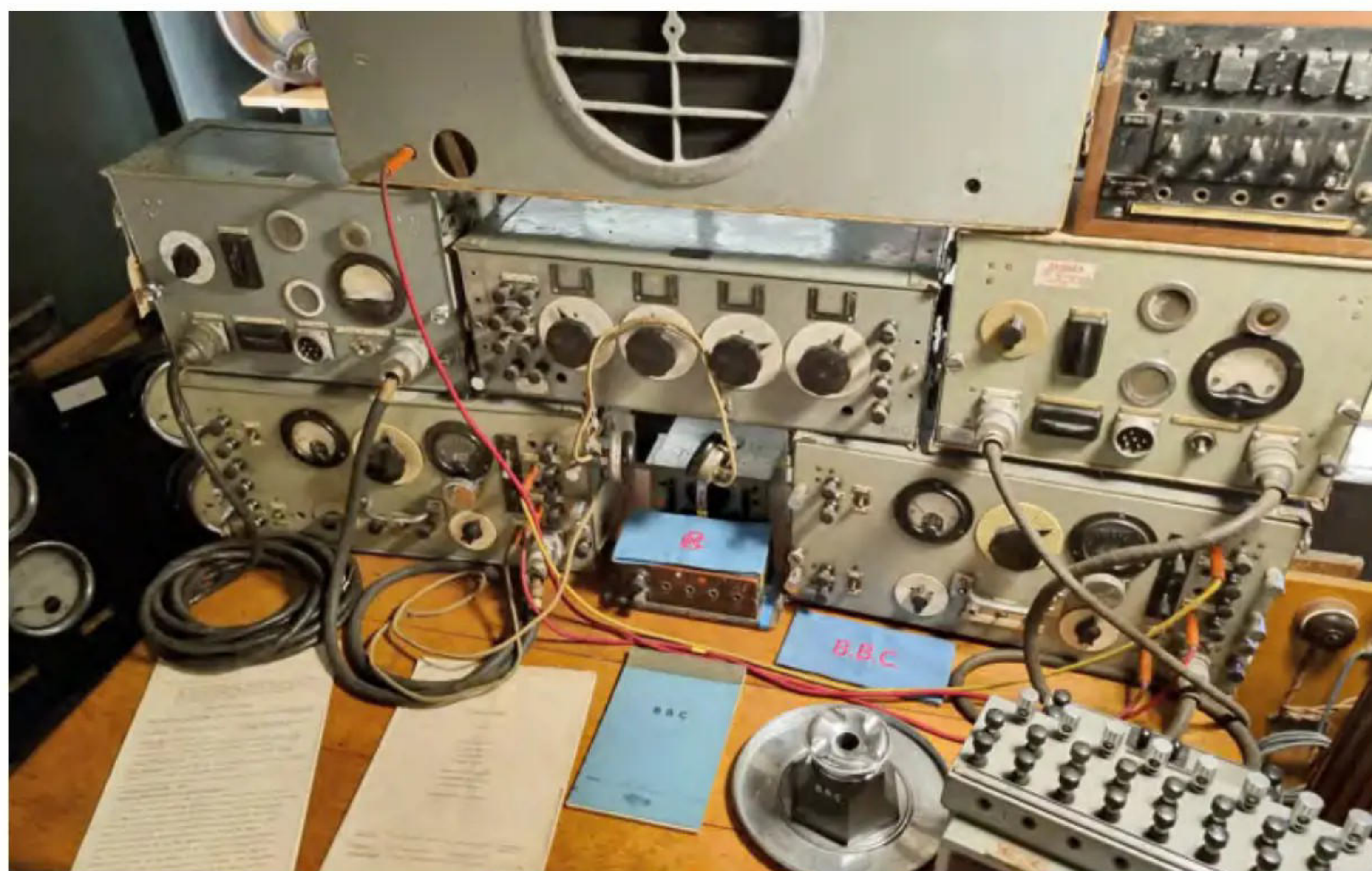
BBC history, from the UK and other countries or in restoring vintage radios, and it is always gratifying that my acquisition of obsolete literature is able to help them!"

The current collection is arranged very much in terms of time, from the 1920s through to the 1970s and later, with a significant section devoted to WWII radio equipment. Perhaps the most substantial exhibit is a transmitter unit of the type used in the early days of Washford, albeit the one on display is from a similar station in the North of England. Quite how Neil transported it, set it up at the previous museum location and then moved it to the present site is

something of a mystery! There are also several old studio desks and an outside broadcast unit, one from the BBC from the 1930s, another from one of the first local radio stations.

Neil also has a huge collection of old magazines (yes, including *PWL*!) and documentation from the early days of radio, many of them on display. In terms of broadcasting history, I was particularly interested to see the old 'portable' sound recorders from the BBC, absolutely massive. There is a photo in the collection of the late, great **Wynford Vaughan-Thomas** in a Lancaster bomber recording a broadcast onto one of these

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machines while on a raid over Europe.

Of course, visiting the museum made me feel old as many of the sets and other paraphernalia on display looked very familiar! There are, incidentally, a handful of amateur radio receivers and transceivers in the collection although that is by no means its main focus and Neil admits that he has never got round to getting a call sign of his own.

Although Neil started by buying the odd piece of equipment for the collection, most of what is now there has been donated. Most is well labelled although the collection is evolving all

the time so Neil is forever busy keeping things up to date and as the museum is now full, some of the equipment, particularly duplicates, is kept in storage.

There is no charge for entry although donations are much appreciated to help cover running costs. The location is 5 Anchor Street, Watchet, Somerset, TA23 0AZ. Car parking is available at Anchor Street car park, bus route 28 (Taunton – Minehead) and Watchet Station on the West Somerset Railway. The museum is open: Wednesdays to Saturdays, 10.30 am to 5.00 pm (Closed: Sundays, Mondays

and Tuesdays). These times may change at short notice so please phone or email before travelling:

neil@radiomuseum.org.uk

or phone on 07544 620 621 or 01984 639154. The museum is also closed during the winter months. See also:

<https://tinyurl.com/mpuy7b9c>

Incidentally, Watchet is well worth a visit in its own right, a quaint harbour town off the main Bridgwater to Minehead road. Even though I have now lived in Somerset for six years it was my first visit but surely won't be my last. **PW**

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Tony Jones G7ETW

charles.jones125@yahoo.co.uk

I'd like to tell you about my current set-up for two and seventy; I won't say why, just yet. There is a serious point to this, I promise you. It's only a couple of pages – read on to the end, why don't you?

Power supply

The PSU pictured in **Fig. 1**, came to me in need of minor repair. The negative terminal had lost its screw-on cover, and the neon indicator in the mains switch had 'gone'. I replaced both binding posts and the switch, at zero cost because I had the bits. The job took me all of 20 minutes; a very satisfying mend it was too.

This is a bare-bones unit, with variability and no metering – hence my add-on voltmeter. The PSU is rated '6A constant, 8A surge' so it's good for radios up to about 60W.

I paid £15. The transformer alone would have cost me more than that.

Radio

Fig. 2 shows an FT-7900, a long-discontinued Yaesu dual-band FM mobile. One has to be careful with FT-7900s, because new ones from China exist and, to put it mildly, they aren't nearly as good as the genuine Japanese article. These 'clones' look the same, are packaged the same, and work the same but they won't program off a PC.

This article isn't a review of the radio, so I'll stop there. It's an easy radio to use, one band at a time with extended receive and four power settings. It has a fan, and regular readers will know my deep feelings with regards forced cooling, but so far it's not offending me.

Antenna

Fig. 3 shows the shack with its two 'white stick' verticals. The one on the right is fairly new; I bought it as a 'could be X50', for £25. It had been taken down with its stub mast and coax still attached. The screw holding it all together was buried deep under a blanket of oily, rubbery material which had turned to rock and had to be cut away. It was only when I got the antenna cleaned up I discovered it had no markings.

One thing's for sure; it's not an X50. At 2.2m in length, in a single piece, it's 50cm too long. Two of its three ground-planes are 50cm, as I'd expect for 2m and 70cm. The third is 1.7m long with a matching coil, suggesting 6m.

On checking VSWRs, I discovered that on 6m the VSWR was quite poor (2.5) and that the corresponding readings for two and seventy were improved by leaving the long ground-plane off.

This does not seem right, to say the least.

Fig. 5 shows the antenna now has three 50cm



Club Sales

Tony Jones G7ETW extols the virtues of club sales.



Fig. 1: The PSU, in need of minor repair.

Fig. 2: The Yaesu FT-7900.

Fig. 3: The shack and 'antenna farm'.

Fig. 4: The 'could be X50' with three radials attached. **Fig. 5:** 2m SWR showing good.

ground-planes. A missing one would skew the omni-directionality, I reasoned, so I made a one from an offcut of threaded 6mm stainless steel rod. **Fig. 4** shows what a good match the antenna is on 2m; 70cm is not quite so good, at VSWR 1.5.

The other antenna (left in **Fig. 3**) is my original Mirfield ME270 dual-band collinear. Two years

it's been up, and it's given no problems. At 1.1m long, it's a good, basic antenna, but it has no gain over a dipole for obvious reasons.

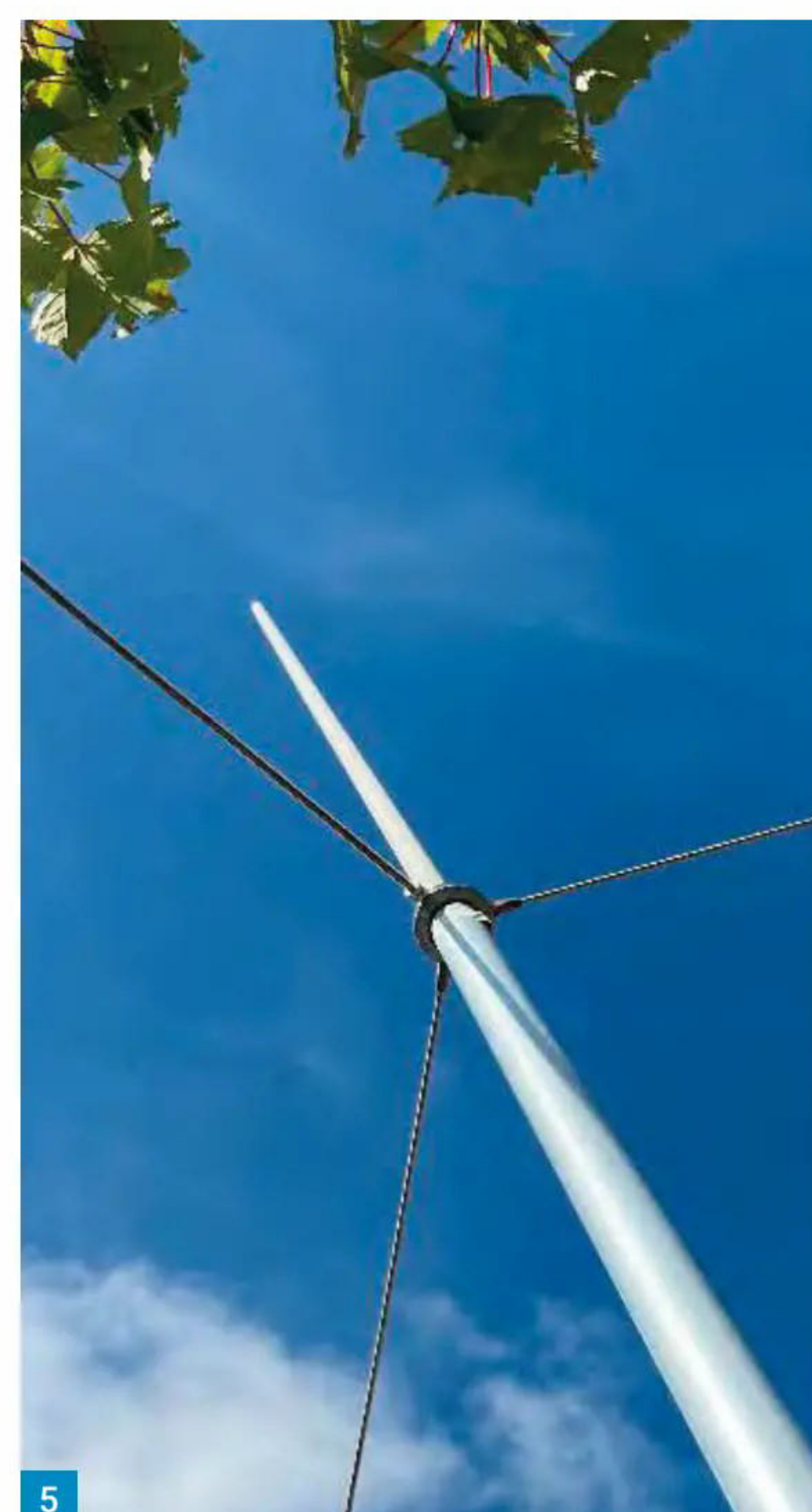
I did a 5W test, with the help of a couple of amateurs I know in Cowes, and my signal reports were 5 and 'one and a half' on the ME270 and 5 and 5 on the 'X50'. Estimating gain from a one-off signal report is hardly scientific, but that sounds like about 7dB gain on 2m, which is respectable.

My 'X50' is a very good antenna. I'll go further; it's the best VHF and UHF aerial I have ever had. But what is it? Is it even intended for amateur use? I'd love to know. If anyone can identify it, please let me know.

And now I get to the point

Everything – even the old-but-superb VHF/UHF analyser – came from club sales. I am a member of several clubs and lists of equipment for sale often arrive in my inbox. I thoroughly enjoy buying equipment this way, and there is the added pleasure of supporting my clubs.

Often these are 'Silent Key' (SK) sales, when an amateur has died and the family asks a local club to clear out a shack and sell off the contents. Sometimes, and this is even sadder, I think, the equipment's owner still lives, but



cannot continue in the hobby for reasons of accommodation such as moving to a residential home or illness such as dementia.

Whatever the need for these sales, that radio clubs put them on is something to be praised and appreciated. Clubs provide a service to the whole hobby by recycling equipment and

supporting our families when, to be blunt, we can't.

I've been an SK team-member a few times, and I know full well how much knowledge, care and sheer hard work goes into these sales. To those clubs and amateurs who do this, I give you my heartfelt thanks. **PW**

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Home Construction

Dear Don,

May I endorse **Daimon Tilley G4USI's** comments about the benefits of home construction, particularly as part of a progressive learning exercise. The 80m CW TX project he described may have been simple but is a useful starting point to learning what components do and gaining a fundamental idea of how radio works.

In an age when our hobby is dominated by expensive black boxes, which nearly all owners dare not take a screwdriver to, let alone know how they really work, the joy of having one's signals received from something one has made oneself is in danger of being lost.

Constructional articles in *Practical Wireless* fulfil a vital role in the self-educational aspects of our hobby, and to my mind if the educational objectives are minimised, then the justification of the hobby is jeopardised.

Barrie Raby G8GTV
Sidmouth

(Editor's comment: Thank you Barrie. Eric Edwards GW8LJJ tells me he has been inundated with requests for the boards, etc following his recent constructional article for a GPS disciplined frequency standard in the September issue, which is certainly reassuring. I generally run all constructional articles I receive, but I could do with more!)

Lessons, EV's & Armageddon

Dear Don

"Lessons for radio amateurs", there are still plenty of those waiting to hatch, and not just for ham radio. **Joe M1MWD** puts forward the lesson that maintaining our skills - if only in the event of a major infrastructure failure, that the ham radio community can provide emergency communications links. The Hurricane Katrina episode being one of them, mentioned by **Roger G3LDI**. There are of course, many more happenings of the catastrophe kind, where our hobby has jumped into the fray to donate help with vital communications, when all else has gone pear-shaped.

Aside from its historical relevance, it is understandable why Morse code has always been promoted as a cheap, low tech and cheerful conduit to engage with ham radio. So, what better way do we have to beguile youngsters, than with

the seeming magic of communications (that connects with a global audience) via a simple and easily put together piece of kit that might, just might, enrol yet another likeminded soul into the passion of radio, and all of its twists and turns? I can't think of one. Well, other than an introduction with computer/internet-based data modes, of course. Yes, Morse is a genuine survival skill that could save lives, but only in the right hands.

Like building antennas, instead of splashing out on fancy and relatively expensive commercially manufactured antennas, that in the main, do exactly the same thing as a DIY antenna, and cheaper, likewise, building simple projects like QRP Morse transmitters and receivers (they don't really need to be elegant nor attempt to replicate commercial products) are cost effective and more importantly, imbue a huge sense of achievement and accomplishment. DIY ham radio gear is a gift for the soul. To borrow a title of one of pop-singer Sting's songs to emphasise the feeling, it *can* feel like a Field of Dreams.

And what is best, the interaction with a mechanical-type Morse key, or the interaction with its digital variant - a keyboard interfaced with a computer? I flip from one to the other. Or perhaps, a bit of both? And I doubt whether many people expend too much time pounding away on an up and down Morse key, it's tiring. Electronic paddle keys are much better, however, doing it the digital way is occasionally a welcome distraction. There is an ad on page 7 of the October issue with a picture of an Icom IC-7300Mk2, which shows Morse code being deciphered on its front screen (probably a 599++ signal). Presumably, with a keyboard connected to this rig, there is no real need for Morse key either. Sit back and relax. Oh, does this rig contain a voice recorder? If so, just talk, whilst it translates your words into perfect Morse code and sends them out skyward. Where's the thrill in that?

Back to Joe Chester, how many people spend £200 a week on fuel? I get to travel about a lot in my fossil fuelled car, and the most I spend each week is about fifty quid. And there's more chance of me buying a brand-new full set of Icom HF rigs, than hopping aboard the EV bandwagon. They're not cheap to buy or run and are definitely not eco-friendly. Most have huge lithium batteries which cannot be recycled, and (many tonnes of lithium salt need to be processed to produce the pure metal), are about the size of a large bed, and weigh about 500kg. They are an impractical solution

for a problem that doesn't exist. EV production causes a great deal more CO₂ emissions than the manufacture of comparable petrol or diesel vehicles too. Perhaps Joe needs to do more homework on the subject of EV's? And I know they take off like a rocket when the throttle is floored. So does a Ferrari with processed oil in the tank. So, I suppose a few more 'windmills' and solar panels, will provide the extra electricity needed for all the EV's - including lorries and public transportation?

No, nuclear war is not survivable. It will be over in a weekend. The big question about nuclear weapons, is why any country would voluntarily harbour them - and why they're still being manufactured. A so-called deterrent? And why anyone is allowed to be within reach of such a device, beggars belief.

More on VNA's. I realise they are popular, perhaps less is better.

The 'Plumber's band' - 23cm. Conveniently small antennas and conveniently 'sexy' in a strange sort of way too. When I used to monitor the band (albeit, years ago), all I ever heard was the background of ambient noise. So good to read that the 'plumber's band' has had a resurgence in popularity. Long may it continue. Greedy corporate eyes probably have it in their collective sights. Use it or lose it is particularly imperative with any of our allocations in the GHz region. These frequencies are *always* at risk.

Ray Howes G4OWY/G6AUW
Weymouth

(Editor's comment: Thanks as always, Ray. Emergency, or survival, communications is always an interesting topic to raise. As you say, nuclear war is not survivable, and indeed, who would want to survive it? But other emergencies can certainly benefit from amateur radio communications as 9/11 and, as you mention, Hurricane Katrina demonstrated. In the USA those benefits have been realised to the extent that the ARRL now holds a number of ready-to-go packs of equipment, all funded by the US government. This country, fortunately, seems to have fewer such emergencies - it irks me that RAYNET still seem to roll out footage of the 1947 east coast floods! But it never hurts to be prepared - anything could still happen. When I lived near Cambridge I was recruited as part of the local authority's planning for emergencies - their particular worry was that a US military aircraft from one of the airbases in East Anglia would bite the dust in a catastrophic way.)

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Rallies & Events

All information published here reflects the situation up to and including **22nd September 2025**. 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



Another shot from this year's Newark Hamfest. This time showing the RSGB's busy stand.

10 to 12 October

RSGB CONVENTION: Kents Hill Park, Milton Keynes.

<https://rsgb.org>

12 October

DARTMOOR RADIO CLUB RALLY: The Autumn Dartmoor Radio Club Rally will be held at The Yelverton War Memorial Hall, Meavy Lane,

Yelverton. Devon, PL20 6AL on Sunday 12 October 2025. Free on-site Parking.

There will be the usual Bring and Buy, Trader Stands and Refreshments available. Doors open at 10:00hrs. Admission is £3.00.

Contact Roger: Tel: 07854 088882, 2e0rph@gmail.com. Always check the Club website before setting out:

www.dartmoorradioclub.uk

15 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. As well as our usual Traders we are pleased to announce that we have new caterers. Plenty of free parking. Contact Martin Shore (Treasurer and Rally Organiser) on:

07587 709006

email: rally.radars@hotmail.com

7 December

MID DEVON AMATEUR RADIO & ELECTRONICS FAIR:

The 2025 Mid Devon Amateur Radio & Computer Fair will be held on Sunday 7 December at Winkleigh Sports & Recreation Centre from 09:00 – 13:00. Entry £3 per person, no charge for partners & under 16s.

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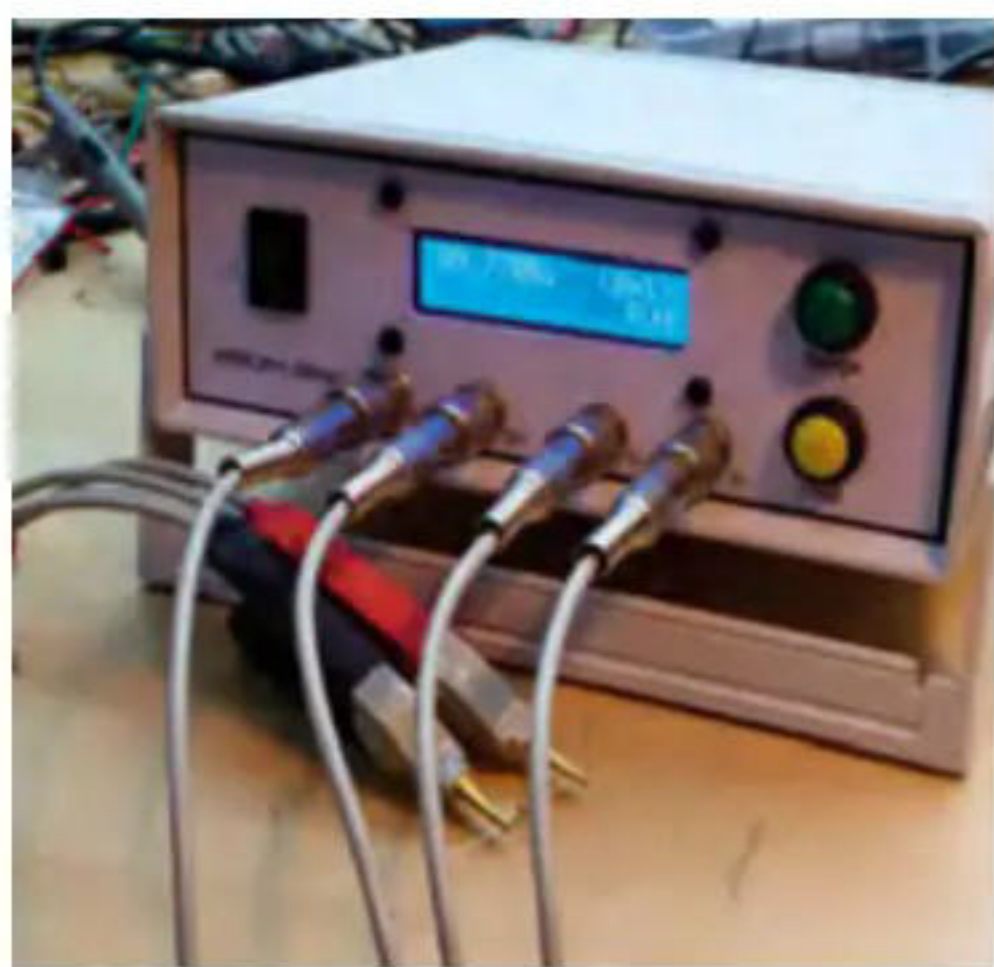
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BOOK REVIEW: 'CONVERSATIONS OVER THE AIRWAVES': Richard Constantine G3UGF reviews a fascinating book about the life of Rowley Shears G8KW.

BUILD A MILLIOHM METER: A constructional project from Michael Jones GW7BBY/GB2MOP.

THE DELTA VEE AUTO-LOOP: A design for a Lightweight Portable Auto-Tuning HF Antenna by Frank Howell K4FMH.

DIGITAL VOICE FOR HF: Eric Edwards GW8LJJ explains how to get started with digital voice for the HF bands.

THE SELECTONE: Part 2 of this historic constructional project.

There are all your other regular columns too, including HF Highlights, World of VHF, Data Modes, Antennas, What Next and Amateur Radio on a Budget as well as your Letters, the latest News and more.

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